SOUTH DAKOTA BOARD OF REGENTS

Budget and Finance

AGENDA ITEM:  6 – D
DATE:  October 7, 2020

******************************************************************************

SUBJECT

BHSU Library and Learning Center Renovation Facility Design Plan (FDP)

CONTROLLING STATUTE, RULE, OR POLICY

SDCL 5-14-1 – Classification of Capital Improvements
SDCL 5-14-2 – Supervision by Bureau of Administration of Capital Improvement Projects – Payment of Appropriated Funds
SDCL 5-14-3 – Preparation of Plans and Specifications for Capital Improvements – State Building Committees – Approval by Board or Commission in Charge of Institution
BOR Policy 6:4 – Capital Improvements
BOR Policy 6:6 – Maintenance and Repair

BACKGROUND / DISCUSSION

BHSU is submitting, for approval, its Facility Design Plan (FDP) for the renovation, remodel, and replacement of infrastructure of the E.Y. Berry Library. The South Dakota Legislature approved the E.Y. Berry Library Renovation project with HB1051 in 2012 as part of the Board’s ten-year capital improvement plan. The South Dakota Legislature approved to amend HB1051 to the E.Y. Berry Library Renovation project with HB1045 to allow additional gross square feet in March 2020. The Board of Regents approved the Facility Program Plan for this project in December 2019.

BHSU is seeking to revitalize the library as a campus center to better serve all students, including residential and commuter, traditional and non-traditional, undergraduate, and graduate. The ultimate goal is to advance student success at BHSU.

This project consists of four main components: a student success center, a new entrance, a technology and design upgrade, and an infrastructure upgrade.

(Continued)

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DRAFT MOTION 20201007_6-D:

I move to approve BHSU’s Facility Design Plan for the E.Y. Berry Library and Learning Center Renovation at a cost not to exceed $9,695,000, funded by a combination of HEFF, M&R, and other funds.
Changes from Facility Program Plan (FPP)
No new components have been added or deleted since the approval of the Facility Program Plan in December 2019. The most significant change from the program plan is the request to pursue an exemption from LEED certification. SDCL 5-14-33 requires all buildings to be LEED certified; however, the law also allows for exemptions in certain situations. Architects estimate the cost of LEED Silver certification at up to $1 million, a 10% cost increase, making it cost prohibitive.

Cost Estimate
The initial cost estimate in the Facility Program Plan was $9,372,244 and was prepared in cooperation with Williams & Associates Architecture and Ratio Architects. The current estimate includes new construction, renovation, site work, contingencies, and fees. The table below identifies a slight increase from the program plan resulting from an expanded remodel in the lower level of the building for the university archives ($190,320), upgraded wall and tile in the restrooms ($31,737), and fees for the State Engineer’s Office (OSE) which were excluded in the initial estimate. The eight percent contingency of $549,821 may be able to cover these costs if not needed elsewhere; however, since this is a renovation project and not new construction, the contingency may be needed for unforeseen items.

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<td>$0</td>
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<tr>
<td>Total Cost Estimate</td>
<td>$9,372,245</td>
<td>$9,694,989</td>
<td>$322,744</td>
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</table>

It is our preference to proceed with the project bids for the currently designed building and if the bids come in above budget, we will pursue it with one of these three options:

- Value engineer the project to get it within budget. Examples include:
  - Change exterior wall insulation
  - Reduce restroom upgrade
  - Change terrazzo to carpet
  - Interior office frames to hollow metal
  - Change plaza from pavers to concrete
- Identify 1-3 alternates in the bid package to allow for cost adjustments
- Increase the M&R funding to meet the increased cost

Funding Sources
The Higher Education Facilities Fund (HEFF) will contribute $3 million in funding from the anticipated FY22 bond issue. With minor exceptions, the remaining $6.325 million is from BHSU’s maintenance & repair funding. BHSU received $2.6 million in M&R funding in FY20 from HEFF, General Funds, and the M&R Fee. FY20’s commitment of $1 million of this funding or 39.8% is allotted to the library. Although this represents a
significant percentage of M&R dollars allocated to a single building, it is important to remember no major work has been done to the library since it was built.

**Library Renovation Project Funding**

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY20 M&amp;R</td>
<td>$1,060,000</td>
<td>Approved by Board - December 2018</td>
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<td>Submit to Board - December 2019/May 2020</td>
</tr>
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<td>Submit to Board - December 2020</td>
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<tr>
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<td>$3,000,000</td>
<td>Authorized by HB1051 in 2012</td>
</tr>
<tr>
<td>Performance Contract</td>
<td>$30,000</td>
<td>Approved by Board - June 2019</td>
</tr>
<tr>
<td>M&amp;R Bond</td>
<td>$2,400,000</td>
<td>Requires Legislative Approval - 2020</td>
</tr>
<tr>
<td>Black Hills Energy</td>
<td>$25,000</td>
<td>Donation is in BHSU Foundation</td>
</tr>
<tr>
<td><strong>Total Funds</strong></td>
<td><strong>$9,380,000</strong></td>
<td></td>
</tr>
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</table>

**IMPACT AND RECOMMENDATIONS**

The library is in the most need of attention of all the buildings on the BHSU campus. The building was completed in 1973 and still has all its original systems. Once this project is complete, the demand on current M&R funds will decrease as the old systems are upgraded or replaced reducing the current demand for repairs.

Utilities are projected to decrease with the installation of energy efficiency equipment and LED lighting. Solar panels will be installed on the new roof by the end of the summer, thus reducing the building’s energy demand from WAPA and Black Hills Energy. BHSU currently exceeds the summer WAPA allocation and purchases supplemental power from Black Hills Energy, but the addition of solar power on campus will eliminate the need for supplemental power and dramatically decrease the cost of energy. No new custodial/janitorial staff will be required to maintain the renovated building.

Given the needed structural improvements and the reduction in demand of future M&R work, approval of the design plan is recommended.

**ATTACHMENTS**

Attachment I – BHSU Library Facility Design Plan Detailed
Attachment II – HB1045
Attachment III – SB43
Attachment IV – Renderings
Attachment V – Floor Plans
Attachment VI – Architectural Design
Attachment VII – Mechanical Electrical Design
Black Hills State University
E.Y. Berry Library & Learning Center Renovation
Facility Design Plan
Submitted 8-19-20

Introduction
BHSU is seeking to revitalize the E.Y. Berry Library and Learning Center as a campus center to better serve all students, including residential and commuter, traditional and non-traditional, undergraduate and graduate. The ultimate goal is to advance student success at Black Hills State University.

The E.Y. Berry Library and Learning Center was constructed with 62,036 gross square feet in 1973, nearly 50 years ago. Although the building’s systems have been maintained during that time, there have been few upgrades since the building was built. Collections, enrollment, technology, and student learning styles have changed dramatically during that time. The library was built when baby boomers were in college, so it has served Boomers, Generation X, Millennials, and now Generation Z. We want it to be ready and able to serve Generation Alpha, what some are saying will be the most transformative generation ever.

Building Components
This project consists of the following main components: a student success center, a minor addition, a new entrance, a technology and design upgrade, and an infrastructure upgrade.

Student Success Center – Student success is the focal point of this project. The first floor of the newly renovated library will house a new Student Success Center that will include the Math Assistance Center, the Writing Assistance Center, the Professional Advising Center, tutoring stations and the Career Center. Additionally, individual and group study spaces with power and technology access will be available throughout the space.

Addition – A small addition will be constructed on the southeast corner of the second story of the library. The addition will provide discrete student study areas with an abundance of natural light and views of Lookout and Spearfish Mountains. The addition will create a canopy above the main north-south walkway on the east side of the building, protecting it from snow and ice. It will also provide cover for the new outdoor café for student, faculty and staff to enjoy the campus green.

New Entrance – The main entrance is currently located on the east side of the building, which was the main pedestrian pathway when the building opened in 1973. Since that time, many changes have been made to the campus landscape including razing Cook Gymnasium, building Meier Hall and the Young Center, and eliminating a road through the middle of campus. Another entrance on the west side of the building along the current major north/south pedestrian path will create easier access to the facility as students, faculty, and staff pass through the academic core of the campus from Jonas Hall to the Young Center. This will ultimately increase traffic counts into the library and make the new Student Success Center more accessible for students.
Technology and Design Upgrade - This project will provide state-of-the-art technology in the library to maximize opportunities to students. Specific components include a video creation and editing space, a maker space, and a virtual reality lab. The student help desk will be relocated from the lower level to the first floor with expanded services making it an integral part of the Student Success Center.

Infrastructure Upgrade - While the Library is almost 50 years old, regular maintenance of the building has left a sound exterior envelope and a recently replaced roof; however, the facility is in need of electrical, HVAC, plumbing, lighting, and window upgrades or replacements, all of which will increase the energy efficiency of the facility.

Project Approval
The following table provides a summary of the Board of Regents and Legislative approvals received to date in addition to those pending for this project.

<table>
<thead>
<tr>
<th>Date</th>
<th>Item</th>
<th>Approving Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 2012</td>
<td>HB1051 – BOR 10-year Capital Plan</td>
<td>SD Legislature</td>
</tr>
<tr>
<td>May 2012</td>
<td>Preliminary Facility Statement</td>
<td>Board of Regents</td>
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<tr>
<td>December 2019</td>
<td>Facility Program Plan</td>
<td>Board of Regents</td>
</tr>
<tr>
<td>March 2020</td>
<td>HB1045 – Additional Gross Square Feet</td>
<td>SD Legislature</td>
</tr>
<tr>
<td>August 2020 – Pending</td>
<td>Facility Design Plan</td>
<td>Building Committee</td>
</tr>
<tr>
<td>October 2020 – Pending</td>
<td>Facility Design Plan</td>
<td>Board of Regents</td>
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</table>

Requested Action
BHSU is requesting the Building Committee’s approval of the Facility Design Plan in accordance with Board of Regents policy 6:4, Capital Improvements. The Facility Design Plan is based on input from students, faculty, and staff using our architects, Williams & Associates Architecture and Ratio Architects, as facilitators.

Attachments

<table>
<thead>
<tr>
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<td>Attachment I</td>
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<td>SB43 – Authorized maintenance &amp; repair bonding</td>
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<td>Attachment IV</td>
<td>Building Renderings</td>
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<td>Attachment V</td>
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<td>Attachment VI</td>
<td>Architectural Schematic Design</td>
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<td>Attachment VII</td>
<td>Mechanical &amp; Electrical Schematic Design</td>
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Facility Design Plan

A. *Architectural, mechanical and electrical schematic design plan*

The architectural schematic design plans, including the site plan and floor plan diagrams are presented in Attachment VI. The mechanical and electrical schematic designs are documented in Attachment VII.
B. Changes from Facility Program Plan
Although some departments have moved locations within the building, no new components have been added or deleted since the approval of the Facility Program Plan in December 2019.

The most significant change from the program plan is the request to pursue an exemption from LEED certification. SDCL 5-14-33 requires all buildings to be LEED (Leadership in Energy and Environmental Design) certified; however, the law also allows for exemptions in certain situations (SDCL 5-14-34). BHSU is very passionate about our sustainability and energy efficiency efforts and many of these components will still be incorporated into the building. In fact, BHSU has already invested in a 130-watt solar array on the roof of the building, and will include LED lighting, reduced water usage, increased daylight views, and recycling stations throughout the building. Our architects have estimated the cost of LEED Silver certification at up to $1 million, a 10% cost increase, making it cost prohibitive, which is not unusual with a renovation project. It is much easier to incorporate LEED into a new construction project.

C. Impact to existing building or campus-wide heating/cooling/electrical systems
The campus electric distribution system, steam production and distribution system and central chilled water piping distribution system all have adequate capacity to accommodate the renovation and addition. The central chiller was upgraded in 2018 and included additional HVAC load to accommodate the addition of air conditioning to Woodburn Hall, the construction of Bordeaux Hall, and the Library renovation project.

D. Total construction cost estimates
Cost Estimate
The initial cost estimate in the Facility Program Plan was $9,372,244 and was prepared in cooperation with Williams & Associates Architecture and Ratio Architects. The current estimate includes new construction, renovation, site work, contingencies, and fees. The table below identifies a slight increase from the program plan resulting from an expanded remodel in the lower level of the building for the university archives ($190,320), upgraded wall and tile in the restrooms ($31,737), and fees for the State Engineer’s Office which were excluded in the initial estimate. The 8% contingency of $549,821 may be able to cover these costs if not needed elsewhere; however, since this is a renovation project and not new construction, the contingency may be needed for unforeseen items.

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**Project Funding**

The Higher Education Facilities Fund will contribute $3 million in funding from the anticipated FY22 bond issue. With minor exceptions, the remaining $6.325 million is from BHSU’s maintenance & repair funding including $2.4 million from the M&R bonding authorized in SB43.

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**E. Changes from cost estimates for operational or M&R expenses**

There are no significant changes to the operational or M&R expenses from those provided in the facility program plan. The library is the space in the most need of attention on our campus. The building was built in 1973 and still has all its original systems. Once this project is complete, the demand on current M&R funds will decrease as the old systems are upgraded or replaced reducing the current demand for repairs. The roof was also replaced last summer.
2020 South Dakota Legislature

House Bill 1045

ENROLLED

AN ACT

ENTITLED An Act to authorize the Board of Regents to contract for the design, renovation of, and addition to, the E.Y. Berry Library on the campus of Black Hills State University and to make an appropriation therefor.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF SOUTH DAKOTA:

Section 1. The Board of Regents may contract for the design, renovation of, and construction of an addition to the E.Y. Berry Library, on the campus of Black Hills State University, with furnishings and equipment including heating, air conditioning, plumbing, water, sewer, electric facilities, sidewalks, parking, landscaping, architectural and engineering services, asbestos abatement, and other services or actions required to accomplish the project for an estimated cost not to exceed nine million three hundred seventy-two thousand two hundred forty-five dollars, subject to any adjustments authorized in section 3 of this Act.

Section 2. There is hereby appropriated from the higher education facilities fund allocable to Black Hills State University for the purposes of maintenance and repair the sum of six million three hundred seventeen thousand two hundred forty-five dollars ($6,317,245), or so much thereof as may be necessary; the sum of three million dollars ($3,000,000), or so much thereof as may be necessary, from revenue bonds authorized by subdivision (1) of section 2 of chapter 107 of the 2012 Session Laws; and the sum of fifty-five thousand dollars ($55,000), or so much thereof as may be necessary, in other fund expenditure authority, to the Board of Regents, for the purposes authorized in section 1 of this Act and any adjustments authorized in section 3 of this Act.

Section 3. The cost estimates contained in this Act are stated in terms of 2019 values. The Board of Regents may adjust the cost estimates to reflect inflation as measured by the Building Cost Index, reported by the Engineering News Record and additional expenditures required to comply with regulations adopted after the effective date of this Act. Any adjustments to construction cost estimates for the project may not exceed one hundred twenty-five percent of the estimated project construction cost stated in section 1 of this Act.
Section 4. The acquisition, construction, completion, remodeling, maintenance and equipping of the E.Y. Berry Library by the Building Authority being in the public interest, the South Dakota Building Authority may finance up to five million four hundred thousand dollars of the design and construction costs of the E.Y. Berry Library project through the issuance of revenue bonds, in accordance with this Act and chapter 5-12.

Section 5. The executive director of the Board of Regents shall approve vouchers and the state auditor shall draw warrants to pay expenditures authorized by this Act.

Section 6. Any amounts appropriated in this Act not lawfully expended or obligated shall revert in accordance with the procedures prescribed in chapter 4-8.

Section 7. No indebtedness, bond, or obligation incurred or created under the authority of this Act may be or may become a lien, charge, or liability against the State of South Dakota, nor against the property or funds of the State of South Dakota within the meaning of the Constitution or laws of the state.

Section 8. The Board of Regents may make and enter into a lease agreement with the Building Authority and make rental payments under the terms thereof, pursuant to chapter 5-12, from the higher education facilities fund or any other available funds authorized pursuant to this Act or any other law.
An Act to authorize the Board of Regents to contract for the design, renovation of, and addition to, the E.Y. Berry Library on the campus of Black Hills State University and to make an appropriation therefor.

I certify that the attached Act originated in the:

House as Bill No. 1045

_________________________  Chief Clerk

_________________________  Speaker of the House

Attest:

_________________________  Chief Clerk

_________________________  Governor

STATE OF SOUTH DAKOTA, ss.

Office of the Secretary of State

_________________________  President of the Senate

Attest:

_________________________  Secretary of the Senate

_________________________  Secretary of State

House Bill No. 1045
File No. _____
Chapter No. _____

By _____________________________  Asst. Secretary of State
ENTITLED An Act to authorize the South Dakota Building Authority to issue revenue bonds to provide for maintenance and repair on facilities controlled by the Board of Regents and to provide appropriation therefor.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF SOUTH DAKOTA:

Section 1. It is in the public interest that the South Dakota Building Authority contract for the construction, completion, furnishing, equipping, and maintaining of, including heating, air conditioning, plumbing, water, sewer, electric facilities, sidewalks, parking, landscaping, architectural and engineering services, and any other services or actions required, to address deferred maintenance and repair of facilities under the control of the Board of Regents, at the estimated cost of twenty-four million five hundred thousand dollars. The South Dakota Building Authority may finance up to twenty-four million five hundred thousand dollars of the construction costs through the issuance of revenue bonds, in accordance with this Act and chapter 5-12.

Section 2. The Building Authority and the Board of Regents may accept, transfer, and expend any property or funds obtained for these purposes from federal sources, gifts, contributions, or any other source, all of which shall comprise a special fund for the benefitted project and all moneys deposited into that fund are hereby appropriated to the projects authorized by this Act in addition to the amounts otherwise authorized by this Act.

Section 3. No indebtedness, bond, or obligation incurred or created under the authority of this Act may be or may become a lien, charge, or liability against the State of South Dakota, nor against the property or funds of the State of South Dakota within the meaning of the Constitution or statutes of the state.

Section 4. The Board of Regents may make and enter into a lease agreement with the Building Authority and make rental payments under the terms thereof, pursuant to chapter 5-12, from the higher education facilities fund for the purposes of this Act.
An Act to authorize the South Dakota Building Authority to issue revenue bonds to provide for maintenance and repair on facilities controlled by the Board of Regents and to provide appropriation therefor.

I certify that the attached Act originated in the:

Senate as Bill No. 43

________________________
Secretary of the Senate

________________________
President of the Senate

Attest:

________________________
Secretary of the Senate

________________________
Speaker of the House

Attest:

________________________
Chief Clerk

_________________________________
Governor

STATE OF SOUTH DAKOTA, ss.
Office of the Secretary of State

________________________
Secretary of State

Senate Bill No. 43
File No. _____
Chapter No. _____

By _________________
Asst. Secretary of State
GENERAL NOTES

1. ALL DIMENSIONS ARE EXCEPT WHERE OTHERWISE NOTED. USE IMPRINTED BARS TO CONFIRM SCALE DIMENSIONS.
2. UNLESS OTHERWISE NOTED, ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CODES OF THE STATE.
3. CONTRACTOR TO PROVIDE ALL BLOCKING, FRAMING, OR BRACING FOR WALL/CEILING MOUNTED APPLICATIONS.
4. CONTRACTOR TO PROVIDE ALL LARGE SCALE DRAWINGS AND DETAILS.
5. CONTRACTOR TO PROVIDE ALL BLOCKING, FRAMING, OR BRACING FOR WALL/CEILING MOUNTED APPLICATIONS.
6. CONTRACTOR TO PROVIDE ALL LARGE SCALE DRAWINGS AND DETAILS.

BUILDING DATA

OWNER: BLACK HILLS STATE UNIVERSITY
PROJECT ADDRESS: 125 E. Colorado Blvd., Suite 2A Spearfish, South Dakota 57783

CONSULTANTS

ARCHITECT: WILLIAMS & ASSOCIATES ARCHITECTURE, INC.
PHONE: (605) 642-2009 FAX: (605) 642-3339
ADDRESS: 125 E. Colorado Blvd., Suite 2A Spearfish, South Dakota 57783

MECHANICAL ENGINEER: SKYLINE ENGINEERING
PHONE: (605) 737-3800

ELECTRICAL ENGINEER: SKYLINE ENGINEERING

PROJECT NO.: BHSU E.Y. LIBRARY & LEARNING CENTER
ISSUE DATE: 100'-0" ELEVATION
PRINT STAMP: SDB

DRAWING SYMBOLS

ABBREVIATIONS

DRAWING SYMBOLS

MATERIALS LEGEND
GENERAL NOTES

1. SEE CIVIL DRAWINGS FOR ALL FINAL GRADING, SIDEWALK AND STREET DESIGN.

2. ALL CONCRETE CURB & GUTTER, ASPHALT, AND SIDEWALKS TO MEET LOCAL CITY PUBLIC WORKS DEPARTMENT STANDARDS.

3. ALL DIMENSIONS TO CURB AND SIDEWALK ARE TO FACE OF CURB OR FACE OF SIDEWALK.

4. GENERAL CONTRACTOR TO PROVIDE ALL REQUIRED CONCRETE PADS FOR MECHANICAL/ELECTRICAL EQUIPMENT. VERIFY WITH MECHANICAL AND ELECTRICAL DRAWINGS.

5. GENERAL CONTRACTOR TO COORDINATE BACKFILL REQUIREMENTS PER THE SOILS REPORT RECOMMENDATIONS.

6. REFER TO ARCHITECTURAL DRAWINGS FOR OVERALL BUILDING DIMENSIONS.

7. PROVIDE CONTROL JOINTS WITHIN CONCRETE WALK AT 20'-0" OC. MAXIMUM FOR 5'-0" WIDE SIDEWALKS AND 30'-0" O.C. MAXIMUM FOR WIDER SIDEWALKS. CONTROL JOINTS TO BE 3/8" TOOLED JOINT WITH EXPANSIVE JOINT FILLER.

8. MAXIMUM CROSS SLOPE TO DIRECTION OF TRAVEL TO BE 2%. COORDINATE EXACT PAVEMENT SLOPE WITH SPOT ELEVATIONS SHOWN ON CIVIL PLANS.

9. GENERAL CONTRACTOR IS RESPONSIBLE FOR FINAL GRADING AROUND THE BUILDING AND ANY DISTURBED AREAS.

10. SEE PLUMBING, MECHANICAL, ELECTRICAL, AND CIVIL DRAWINGS FOR UTILITY LOCATIONS.
GENERAL NOTES

1. Finish floor elevation to be (architectural = 100'-0")

2. All dimensions are to face of block, stud, or concrete unless noted otherwise.

3. General contractor shall verify all dimensions in the field prior to fabrication.

4. General contractor shall verify all dimensions and coordinate the work of all trades involved in the project as part of the contract.

5. General contractor shall verify all conditions at the site and report all discrepancies.

6. General contractor shall provide a complete and proper execution of the work as indicated on all drawings. If errors in layout dimensions or details are found between architectural, mechanical, or electrical drawings, contact the architect immediately.

7. General contractor shall have the responsibility to coordinate with the owner's work and/or supplied items that are "owner furnished contractor installed" (O.F.C.I.) or are "not in contract" (N.I.C.) but are attached to the contractor's work.

8. General contractor to provide all blocking, framing, or bracing for wall/ceiling areas.

9. All larger scale drawings and details govern or supersede all smaller scale drawings and details.

10. Provide gypsum board expansion joints at 30'-0" max. in straight walls or as recommended by the installer.

11. Water resistant gypsum board shall be installed in all restrooms and janitor closet areas. Provide cementitious or fiberglass backer board behind wall tile areas (typical).

12. See sheet 3.00 for wall types and descriptions.
GENERAL NOTES

1. FINISH FLOOR ELEVATION TO BE (ARCHITECTURAL = 100'-0")

2. ALL DIMENSIONS ARE TO FACE OF BLOCK, STUD, OR CONCRETE UNLESS NOTED OTHERWISE.

3. GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION.

5. GENERAL CONTRACTOR SHALL VERIFY ALL CONDITIONS AT THE SITE AND REPORT ALL DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.

6. GENERAL CONTRACTOR SHALL PROVIDE A COMPLETE AND PROPER EXECUTION OF THE WORK AS INDICATED ON ALL DRAWINGS. IF ERRORS IN LAYOUT DIMENSIONS OR DETAILS ARE FOUND BETWEEN AND/OR SUPPLIED ITEMS THAT ARE "OWNER FURNISHED CONTRACTOR INSTALLED" (O.F.C.I.) OR ARE "NOT IN CONTRACT" (N.I.C.) BUT ARE ATTACHED TO THE CONTRACTOR'S WORK. MOUNTED EQUIPMENT, FIXTURES, AND HARDWARE (IN CONTRACT, O.F.C.I., OR N.I.C.).

9. ALL LARGER SCALE DRAWINGS AND DETAILS GOVERN OR SUPERSEDE ALL SMALLER SCALE DRAWINGS AND DETAILS.

10. PROVIDE GYPSUM BOARD EXPANSION JOINTS AT 30'-0" MAX. IN STRAIGHT WALLS OR AS RECOMMENDED BY THE INSTALLER.

12. SEE SHEET 3.00 FOR WALL TYPES AND DESCRIPTIONS.

THESE DRAWINGS AND THE DESIGNS HERE ILLUSTRATED ARE THE SOLE PROPERTY OF WILLIAMS & ASSOCIATES ARCHITECTURE INC. AND MAY NOT BE REPRODUCED IN WHOLE OR IN PART WITHOUT EXPRESS WRITTEN PERMISSION.
REFLECTED CEILING PLAN SHEETS

GENERAL NOTES

1. FINISH FLOOR ELEVATION TO BE (ARCHITECTURAL = 100'-0")

2. ALL DIMENSIONS ARE TO FACE OF BLOCK, STUD, OR CONCRETE UNLESS NOTED OTHERWISE.

3. GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION.

4. GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND COORDINATE THE WORK OF ALL TRADES

5. GENERAL CONTRACTOR SHALL VERIFY ALL CONDITIONS AT THE SITE AND REPORT ALL DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.

6. GENERAL CONTRACTOR SHALL PROVIDE A COMPLETE AND PROPER EXECUTION OF THE WORK AS ARCHITECTURAL, MECHANICAL, OR ELECTRICAL DRAWINGS, CONTACT THE ARCHITECT IMMEDIATELY.

7. GENERAL CONTRACTOR SHALL HAVE THE RESPONSIBILITY TO COORDINATE WITH THE OWNER'S WORK AND/OR SUPPLIED ITEMS THAT ARE "OWNER FURNISHED CONTRACTOR INSTALLED" (O.F.C.I.) OR ARE "NOT IN CONTRACT" (N.I.C.) BUT ARE ATTACHED TO THE CONTRACTOR'S WORK.

8. GENERAL CONTRACTOR TO PROVIDE ALL BLOCKING, FRAMING, OR BRACING FOR WALL/CEILING AREAS.

9. ALL LARGER SCALE DRAWINGS AND DETAILS GOVERN OR SUPERSEDE ALL SMALLER SCALE DRAWINGS AND DETAILS.

10. PROVIDE GYPSUM BOARD EXPANSION JOINTS AT 30'-0" MAX. IN STRAIGHT WALLS OR AS RECOMMENDED BY THE INSTALLER.

11. WATER RESISTANT GYPSUM BOARD SHALL BE INSTALLED IN ALL RESTROOMS AND JANITOR CLOSET AREAS. PROVIDE CEMENTITIOUS OR FIBERGLASS BACKER BOARD BEHIND WALL TILE AREAS (TYPICAL).

12. SEE SHEET 3.00 FOR WALL TYPES AND DESCRIPTIONS.
GENERAL NOTES

1. ACOUSTICAL CEILING HEIGHTS TO BE 9'-0" ABOVE FINISH FLOOR ELEVATION UNLESS NOTED OTHERWISE.

2. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION. REPORT ANY DISCREPANCIES TO THE ARCHITECT AS SOON AS POSSIBLE.

3. SEE REFERENCE / DIMENSION PLANS FOR WALL TYPES AND CONSTRUCTION INCLUDING REQUIRED FIRE / SMOKE RATINGS.

LEGEND

# KEYNOTE, SEE KEYNOTES THIS SHEET ONLY

2x2 ACOUSTICAL CEILING TILE
GYPSUM BOARD SOFFIT AND/OR CEILING, SEE INTERIOR ELEVATIONS FOR MORE INFORMATION

INDICATES LOCATION OF UNDER CABINET LIGHT FIXTURE
LIGHT FIXTURE
LIGHT FIXTURE
LIGHT FIXTURE
RECESSED LIGHT FIXTURE
LARGE PENDANT LIGHT FIXTURE
SMALL PENDANT LIGHT FIXTURE
SPOT TYPE DIRECTIONAL ART LIGHT FIXTURE
ACCENT LIGHT FIXTURE
OUTDOOR DOWN LIGHT FIXTURE
TRACK TYPE ART LIGHTS
WALL MOUNTED ART FIXTURE LIGHT FIXTURE. FIELD VERIFY HEIGHT WITH ARCHITECT
SECURITY CAMERA ROUGH-IN
EMERGENCY LIGHTING ELECTRICAL DEVICE
REMOTE EGRESS FIXTURE

SUPPLY AIR GRILLE. REFER TO MECHANICAL DRAWINGS
RETURN AIR GRILLE. REFER TO MECHANICAL DRAWINGS
EXHAUST AIR GRILLE. REFER TO MECHANICAL DRAWINGS

8'-0" VERIFY INDICATES HEIGHT OF CEILING ABOVE FINISH FLOOR ELEVATION IMMEDIATELY BELOW. "BOS" REPRESENTS BOTTOM OF STRUCTURE

KEYNOTES
GENERAL NOTES

1. ACOUSTICAL CEILING HEIGHTS TO BE 9'-0" ABOVE FINISH FLOOR ELEVATION UNLESS NOTED OTHERWISE.

2. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION. REPORT ANY DISCREPANCIES TO THE ARCHITECT AS SOON AS POSSIBLE.

3. SEE REFERENCE/DIMENSION PLANS FOR WALL TYPES AND CONSTRUCTION INCLUDING REQUIRED FIRE/SMOKE RATINGS.

REFER TO THE ELECTRICAL DRAWINGS FOR MORE INFORMATION ON ALL LIGHT FIXTURES LISTED BELOW THAT APPEAR ON THE REFLECTED CEILING PLANS.

LEGEND

- SMALL PENDANT LIGHT FIXTURE
- # KEYNOTE, SEE KEYNOTES THIS SHEET ONLY
- SPOT TYPE DIRECTIONAL ART
- 2X2 ACOUSTICAL CEILING LIGHT FIXTURE
- TILE
- ACCENT LIGHT FIXTURE AND/OR CEILING, SEE A6.00
- INTERIOR ELEVATIONS FOR OUTDOOR DOWN LIGHT FIXTURE
- VERIFY ABOVE FINISH FLOOR ELEVATION IMMEDIATELY BELOW. "BOS"
- WALL MOUNTED ART LIGHT FIXTURE
- LIGHT FIXTURE VERIFY HEIGHT WITH STRUCTURE
- REMOTE EGRESS FIXTURE
- LARGE PENDANT LIGHT FIXTURE
- LARGE RECESSED LIGHT FIXTURE
- UNDER CABINET LIGHT FIXTURE
- UNDER SHELF LIGHT FIXTURE
- SECURITY CAMERA ROUGH-IN
- ELECTRICAL DEVICE LIGHT FIXTURE
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- LARGE RECESSED LIGHT FIXTURE
- UNDER CABINET LIGHT FIXTURE
- UNDER SHELF LIGHT FIXTURE
- SECURITY CAMERA ROUGH-IN
- ELECTRICAL DEVICE LIGHT FIXTURE
GENERAL NOTES

1. ACoustical Ceiling heights to be 9'-0" above finish floor elevation unless otherwise indicated.

2. See mechanical and electrical drawings for additional information. Report any discrepancies to the architect as soon as possible.

3. See reference/dimension plans for wall types and construction including required fire/smoke ratings.

LEGEND

# KEYNOTE, SEE KEYNOTES THIS SHEET ONLY
2x2 Acoustic Ceiling Tile
Gypsum Board Soffit
And/or ceiling, see interior elevations for more information

INDICATES LOCATION OF UNDER CABINET LIGHT FIXTURE

LIGHT FIXTURE

LIGHT FIXTURE

LIGHT FIXTURE

LIGHT FIXTURE

RECESSED LIGHT FIXTURE

LARGE PENDANT LIGHT FIXTURE

SMALL PENDANT LIGHT FIXTURE

SPOT TYPE DIRECTIONAL ART LIGHT FIXTURE

REFER TO THE ELECTRICAL DRAWINGS FOR MORE INFORMATION ON ALL LIGHT FIXTURES LISTED BELOW THAT APPEAR ON THE REFLECTED CEILING PLANS

ACCENT LIGHT FIXTURE

OUTDOOR DOWN LIGHT FIXTURE

TRACK TYPE ART LIGHTS

WALL MOUNTED ART LIGHT FIXTURE

FIELD VERIFY HEIGHT WITH ARCHITECT

SECURITY CAMERA ROUGH-IN

EMERGENCY LIGHTING ELECTRICAL DEVICE

REMOTE EGRESS FIXTURE

SUPPLY AIR GRILLE. REFER TO MECHANICAL DRAWINGS

RETURN AIR GRILLE. REFER TO MECHANICAL DRAWINGS

EXHAUST AIR GRILLE. REFER TO MECHANICAL DRAWINGS

SECRETARY

DIRECTOR

LIBRARY

STUDYROOM

DIGITAL MEDIA OFFICE & STORAGE

TOILET

WEST STAIRWELL

DIR NCS

INFR

BREAK ROOM

SERVER TECH

TESTING OFFICE

DISABILITY SERVICE AND TESTING

CONFERENCE ROOM

PROGRAMEROFFICE

INSTRUCTIONAL TECH OFFICE

PROGRAMEROFFICE

INFR

STUDYROOM

STORAGE

PROGRAMEROFFICE

INFR

STUDYROOM

STORAGE

PROGRAMEROFFICE
**MECHANICAL NARRATIVE**

**Codes and Standards**

**Building Codes and Regulations**

- 2015 International Building Code (IBC)
- 2015 International Mechanical Code (UMC)
- 2015 South Dakota Plumbing Code
- 2015 International Fuel Gas Code (IFGC)
- Americans with Disabilities Act (ADA)
- National Fire Protection Association – Fire Sprinkler Code (NFPA-13)

**Standards and Listings**

- Air Conditioning and Refrigeration Institute (ARI)
- Air Movement and Control Association (AMCA)
- American Gas Association (AGA)
- American National Standards Institute (ANSI)
- American Society of Heating, Refrigeration and Air-conditioning Engineers (ASHRAE)
- American Society of Mechanical Engineers (ASME)
- American Society of Testing and Materials (ASTM)
- Sheet Metal and Air-Conditioning Contractors’ National Association (SMACNA)
- Underwriters Laboratory (UL)

**Demolition**

**Plumbing**

Main restrooms on each level will remain with only minor modifications.

Existing water fountains will be removed along with associated water and waste piping.

Existing roof drainage in southeast corner will be modified to accommodate new addition.

Natural gas piping will be prepared for connection of natural gas piping to serve new gas fireplace.

**HVAC**

**Lower Level HVAC and Hydronic Piping:**

Approximately 50% of the sheet metal will be removed from this floor. All existing diffusers will be removed.

The existing multizone unit will remain in place with minimal modifications under base bid. See sheet 15.13 for preliminary scope.

All existing hot water convectors around the perimeter will be removed. Hot water piping will be removed where no longer needed to eliminate dead end runs. The heating water pumps and steam to water convertor will be evaluated and likely removed for upgrade.
The abandoned chiller bundle that is no longer used will be removed. Chilled water pumps and air separator will be removed for replacement.

**First Level HVAC and Hydronic Piping:**

All of the existing linear slot troffer type diffusers will be removed along with approximately 40% of the ductwork.

The existing multizone unit will remain in place with minimal modifications under base bid. See sheet 15.14 for preliminary scope.

All existing hot water convectors around the perimeter will be removed. Hot water piping will be removed where no longer needed to eliminate dead end runs.

Existing steam humidifiers and associated steam piping will be removed.

**Second Level HVAC and Hydronic Piping:**

All ductwork including linear slot troffer type diffusers will be removed.

Existing multizone air handling unit will be completely refurbished under base bid. See sheet 15.15 for preliminary scope.

All existing hot water convectors around the perimeter will be removed. Hot water piping will be removed where no longer needed to eliminate dead end runs.

Existing steam humidifiers and associated steam piping will be removed.

**Controls**

The Schneider Electric temperature control system will be removed where extensive modification is occurring. Any remaining pneumatic control systems will be removed.

**Plumbing**

**Sanitary Sewer**

Existing sanitary sewer will be reused throughout the building as much as possible. New underfloor piping will be installed where necessary to serve new fixtures.

**Roof Drainage**

The only anticipated storm water change will involve re-routing the interior roof drainage piping in the southeast corner of the building. This re-route is necessary to accommodate the new building addition on the southeast corner of the building.

Any new roof drain bodies and horizontal runs will be insulated with 1”
fiberglass insulation.

**Domestic Water**

Domestic hot and cold water piping will be copper with sweat or mechanically joined fittings.

The existing lower level water service will be reused.

Domestic hot water will come from the existing domestic hot water system or be generated by point of use water heaters located near remote fixtures.

**Plumbing Fixtures**

Commercial grade plumbing fixtures shall be used throughout with stops and chrome plated brass traps

a. **Water Closets and Urinals:** Commercial wall-mounted white vitreous china fixtures and manual flush valves. (Water Closet and Urinal: American Standard or equivalent; Flush Valve: Sloan or equivalent) ADA accessible fixtures will be used in areas where applicable.

b. **Water Cooler:** Individual high/low self-contained units with side and front operation and integral bottle fillers (Elkay or equivalent)

c. **Floor Drains:** Provided in all toilet rooms, dishwashing, kitchen, and mechanical rooms. (JR Smith or equivalent).

d. **Lavatories and Sinks:** Wall hung or drop in vitreous china or stainless steel. (American Standard, Elkay or equivalent)

e. **Hose Bibbs:** Provided in mechanical rooms - polished chrome with removable handle (Chicago Faucet or equivalent)

f. **Miscellaneous:** Water hammer arrestors will be provided in the hot and cold water piping as necessary for all quick closing valves, such as flush valves.

**Fire Protection**

Entire facility will be served by a wet sprinkler system installed in accordance with NFPA 13.
a. **Service:** A new fire sprinkler service will be routed into the building from near the east fire hydrant. A post indicating valve will be installed on the outside of the building and a fire department connection will be installed on the side of the building.

b. **Pre-action System:** The archive storage area will utilize a dry pre-action system for protection. This system will employ a dry system release valve coupled with a heat/smoke detection system in the space. Both a head release and heat/smoke detection must occur before water will be allowed to flow into the space from any sprinkler head.

c. **Wet Sprinkler System:** The remaining areas including the existing photography space will be served by sprinkler systems designed and installed according to light or ordinary hazard classification. Provide semi-recessed or concealed, quick response type, pendent and sidewall fire sprinkler heads in all finished areas. Corridors and public areas will utilize flush mount concealed heads.

d. The existing FM-200 gaseous fire suppression system will remain in the IT server room with no addition of wet or dry water suppression systems.

**HVAC**

*HVAC Systems*

The existing 25,000 CFM multi-zone air handling units serving each floor will be re-used. Units utilize steam heating coils, chilled water cooling coils, variable speed supply fan, economizer box and variable speed return fans. A multizone mixing box is used on the end of each unit that can accommodate up to nine individual zones.

The lower level and main level units will be maintained as is under base bid. Condition of units will be reviewed, and any repairs and necessary control upgrades made.

The second level multizone unit will be upgraded to include replacement variable speed multi-fan arrays for the supply and return paths. New chilled water and heating coils will be placed in the units along with refurbishing the unit casing and adding access doors. Fans and coils will be sized to handle the additional capacity necessary to serve the new second floor addition. New zone dampers will be added as necessary to serve new zones based on the floor plan layouts.

Under an alternate bid item, the lower level and main level units will be refurbished with new fans and coils similar to the second level unit.

After demolition of ductwork, new ductwork will be installed from points of disconnection to serve all spaces. Existing zones defined by the existing multizone system will be used as primary zones. Each primary zone will use its existing multizone damper to control discharge temperature to a setpoint that is most beneficial to the sub-zones served. Each sub-zone will have an opposed blade volume control damper, an airflow measuring station and a single row reheat coil. Temperature for each subzone will be controlled with a sequence of operation like a standard Variable
Archive Storage

The archive storage area on the lower will require stable temperature and humidity control (72 F, 40% RH +/- 5%). A computer room air conditioner (CRAC) will be used to accomplish this. The CRAC unit condenser will use chilled water for cooling in the summer when the chilled water plant is operating and will have a free cooling dry cooler located on the exterior for wintertime cooling.

Ventilation for the archive storage will utilize one of the existing multizone branches.

Chiller Water System

The chilled water serving the building comes from the central utility plant via the chilled water piping in the campus utility tunnel. The chilled water has 30 percent propylene glycol mixture which will be introduced at the physical plant. The pumps and distribution will be modified as necessary to serve the upgraded coils and additional chilled water loads. All chilled water loads will have an economizer function for cooling when the cooling plant is off-line.

Heating Water System

Heating water will be generated using low pressure steam from the central utility plant via the campus utility tunnel. A new steam to hot water shell and tube type converter may be utilized to generate heating hot water. The converter will be in the existing mechanical room located on the lower level. A pre-mixed solution of 30% propylene glycol and 70% water will be used for the heating water medium.

Piping and Pumps

The hydronic system piping shall be schedule 40 black steel or type M copper with 1½” – 2” fiberglass insulation depending on pipe size and system type.

In general pumps shall be base mounted or vertical in-line, (2) Variable Speed Heating Water pumps and (1) Variable Speed Chilled Water pumps located on housekeeping pads. Each hydronic system will have thermal expansion compensation and air control.

Ventilation and Building Pressure

Minimum ventilation rate will be calculated based on ASHRAE guidelines, and the International Mechanical Code.

Under normal conditions, the building will be maintained at a slight positive air pressure differential to the outdoors to prevent infiltration.

Ductwork

Supply and return/exhaust mains shall be sized in a low to medium velocity range as defined by ASHRAE. Turning vanes or long sweep radius elbows shall be used, along with volume dampers located as far as
possible from the diffusers for balancing. Normal system operation shall be designed for less than 35 NC. Fire and fire/smoke dampers will be provided as required.

**Diffusers**

Diffusers and grilles, standard color or field painted, of steel or aluminum construction shall be provided for the new addition. Typical supply diffusers to be louvered face, 24x24 lay-in type. Typical return diffusers to be egg crate face, lay-in type. (Krueger or equivalent)

**Unit Heaters**

Hot water horizontal or cabinet type unit heaters will be used where spot heating is required in areas such as stairwells, entry vestibules, and mechanical rooms. (McQuay or equivalent)

**Insulation**

Board insulation on exposed supply, outside air and combustion air ductwork in the mechanical room and shafts, blanket on all concealed supply ductwork shall be provided. All hydronic heating water; and domestic water piping shall be insulated. PVC jacket on all exposed piping that might be subject to damage shall be provided.

**Controls and Monitoring**

The temperature control system for this building will be connected to the existing campus Schneider Electric System. Equipment connected to the Campus Building Management System will include chilled and heating water pumps, Air Handling Units and mechanical room related equipment. Room thermostats will also be connected to the BMS.
ELECTRICAL - SCHEMATIC NARRATIVE

Codes and Standards as Applicable

**Building Codes and Regulations**
- 2018 International Building Code (IBC)
- 2020 National Electrical Code (NEC)
- National Fire Protection Association – Fire Code (NFPA-72)
- Americans with Disabilities Accessibility Guidelines (ADAAG)
- Life Safety Code (NFPA 101)
- ASHRAE 90.1 – 2010

**Standards and Listings**
- National Electrical Manufacturing Association (NEMA)
- Illumination Engineering Society (IES)
- American National Standards Institute (ANSI)
- Institute of Electrical and Electronics Engineers (IEEE)
- Underwriters Laboratory (UL)
- American Society of Testing and Materials (ASTM)

**General**

**Materials/Quality**
Materials shall be new, UL labeled and of type and quality as required by the specifications. Materials and equipment shall be supplied to the site in original packages, containers, or crates. Housekeeping pads shall be provided for all electrical equipment being installed on any floor.

**Raceways**
The majority of existing electrical raceways within the building are EMT. Conduit shall be used for all new power & lighting conductor raceways. All conduits shall be sized, provided and installed per industry standards and codes. Conduit shall be concealed or embedded where possible. All empty conduits shall be provided with a pull wire and opposite-end labeling for future installations.

The majority of existing communication cabling is installed free-air above accessible ceilings and within surface raceways where exposed. For fire alarm & other low voltage systems, conduit is to be installed from the device junction box to accessible, yet concealed ceiling space. Throughout corridors and other common places, cabling shall be run by free-air methods or enclosed as directed or deemed necessary for protective reasons.

The conduit system shall include rigid PVC, rigid steel, electrical metallic tubing, flexible metal conduit, and liquid tight flexible metal conduit as appropriate for the installation and as allowed by code. Minimum 3/4” conduit. Conduit shall be suitable for the location in which it is installed.

**Conductors**
Facility conductors shall be copper, shall be sized per the National Electric Code and shall be 600-volt THHN or THWN insulation. Branch conductors shall be No 12 minimum size. Color coding shall be per NEC.

Any ceilings will be return plenums, so all low-voltage cabling routed free-air, shall be plenum-rated.

**Commissioning**
Commissioning of certain electrical systems is recommended to verify the
system is performing as intended to provide optimal and safe operation within equipment operating parameters. Commissioning of the building systems may be performed by 3rd party, self-performed by the contractor with substantiating reports and/or spot verifications by the engineer or owner.

A few recommended electrical commissioning items:
- Lighting controls set as specified by construction documents.
- Insulation resistance testing (Meggering) will be performed by the contractor for feeder conductors. Meggering will confirm that the insulation was not damaged during installation. Any conductors failing the meggering test shall be replaced.
- Fire Alarm Detection system - as required by codes.

Demolition
Demolition will include the majority of interior spaces. Spaces unaffected by the renovation include photography, kitchen, server areas & mechanical spaces. Minor exterior demolition will be required to support the expansion, this includes pedestrian scale light poles, building mounted wall pack fixtures and recessed downlighting in the exterior soffit above the main entrance.

Warranties
Warranties will be specified as the manufacturer's standard or as specifically requested by the owner.

Lighting
Features/General
Light fixtures shall be UL listed for appropriate applications. All light fixtures shall be properly supported and grounded. Fixtures and their installations shall be UL listed, shall meet all electrical codes and be installed in compliance with NECA standards. Fixtures shall be provided and verified to comply with damp locations, wet locations and UL labeled for other specific uses. LED fixtures will be 277 VAC to match the existing lighting voltage. Lamps shall be high-efficiency LED with 4000K CCT and 70+ CRI.

Emergency Egress/Exit Lighting
Emergency egress illumination and exit lighting will be provided using the facility normal lighting fixtures connected to generator power via emergency lighting relays, in accordance with UL and life safety codes. Emergency lighting will be provided throughout all common-use and restroom spaces.

Exterior Canopy
Exterior lighting below the canopy area will primarily be a function of architectural interest but will likely include recessed LED downlights.

Entrance
Entrance lighting will consist of recessed linear LED fixtures installed in wood ceilings. Target light levels will be 30 foot candles. Lighting controls will consist of ceiling mounted occupancy sensors or may be controlled on a time schedule.

Atrium
Atrium lighting is anticipated to be accomplished using large diameter, pendant mount LED halo style fixtures suspended from the exposed waffle slab structure.

Corridors
Corridor lighting will be accomplished with recessed LED downlights.
installed in ACT clouds. Target light levels will be 20-30 foot candles. Ceiling mounted occupancy sensors will be used for lighting control.

**Restroom Lighting**

General lighting in the restrooms is anticipated to be accomplished by 2’x2’ LED flat panel fixtures. Decorative vanity fixtures will likely be used above the mirrors. The light level will target 20 foot candles on average and have additional vertical foot-candles by the mirrors. An occupancy sensor will control the lighting in these spaces.

**Office Lighting**

Office lighting will consist of 2’x2’ dimmable LED flat panel fixtures. The target light level will be 60 foot candles. Lighting control will be accomplished by either a dual technology occupancy sensor with integral dimming or a ceiling mount dual technology occupancy sensor used in conjunction with a wall mounted dimmer, depending on the shape and size of the room.

**Café**

Café lighting will consist of dimmable, pendant mount linear LED fixtures. These fixtures will be suspended from the exposed waffle slab structure. Target light levels will be 30-50 foot candles. Lighting control will be accomplished with ceiling mount occupancy sensors in conjunction with a dimmer switch located behind the serving counter.

**Circulation Desk**

Circulation desk lighting will be accomplished with a combination of recessed, linear LED fixtures installed in the soffit and dimmable, recessed LED downlights installed above the workstations. Target light levels will be 50-60 foot candles. Ceiling mounted occupancy sensors and dimmer switches will be utilized for lighting control.

**Main Level Open Seating Areas**

Lighting in the open seating area of the main floor will be accomplished with pendant mount, dimmable linear LED fixtures installed between ACT clouds. Target light levels will be 50 foot candles. Ceiling mounted occupancy sensors will likely be used for lighting controls. 24/7 powered night light fixtures will be installed throughout these areas to prohibit a full-off lighting condition.

**Upper Level Open Seating & Stacks**

Multiple lighting techniques will be utilized in the upper level open seating and stack areas. They will likely consist of recessed linear LED fixtures installed in ACT clouds, gyp soffits and wood ceilings. These fixtures may be supplemented with large diameter pendant fixtures suspended from the exposed waffle slab structure above seating areas. Target light levels will be 50 foot candles. 24/7 powered night light fixtures will be installed throughout these areas to prohibit a full-off lighting condition.

**Math Lab, Writing Center & Career Center**

General lighting in these areas will consist of recessed, linear LED fixtures installed in ACT clouds along with recessed LED downlights installed in gyp ceilings and soffits. Target light levels will be 50-60 foot candles. Ceiling mount occupancy sensors and wall mounted dimmer switches will be utilized for lighting control.

**Study & Conference Rooms**

Study & conference room general lighting will consist of recessed, dimmable LED flat panel fixtures installed in ACT ceilings. Target light levels will be 50-60 foot candles. Lighting controls in these areas will accomplished with wall mounted, dual technology occupancy sensors with integral dimming.
Tutoring

General lighting in the tutoring areas will be accomplished with a combination of pendant mount, linear LED fixtures suspended from the exposed waffle slab structure and recessed LED downlights installed in the perimeter gyp soffit. Target light levels will be 50-60 foot candles. Ceiling mounted occupancy sensors used in conjunction with dimmer switches for multiple zones will be used for lighting controls.

Storage

Storage room lighting will consist of 2’x2’ flat panel LED fixtures installed in ACT ceilings. Lighting controls will include wall mounted or ceiling mounted occupancy sensors, depending on room size and shape.

Power

Main Service

The power distribution system was recently replaced and consists of a 1200A, 277/480V, 3Ø 4W Main Switch feeding a lineup of (39) 480V fusible switches ranging from 60-400A. Integral to the MDP is a 300KVA 480V Primary, 120/208V, 3Ph, 4W Secondary, dry-type transformer. The 120/208V sections of the MDP are rated at 1200A and consist of (27) 208V fusible switches ranging from 60-200A.

Site Primary

An alternate will be issued to relocate site primary power around the footprint of the upper level expansion area. The existing primary should remain unaffected by this project, but relocation would allow added flexibility and accessibility for future repairs.

Emergency Generator

An existing 150 KW, natural gas generator serves two transfer switches in the facility. Loads that are currently backed up by the generator include emergency egress & exit lighting, fire alarm, IT/Server equipment and the security access control system.

Fire Pump

No fire pump is anticipated at this time.

Lightning Protection

No lightning protection system is anticipated at this time.

Electrical Distribution

Power panels are distributed throughout the building. The basement level has (13) power panels. All but two of these panels have been recently replaced and upgraded. Two existing panels in the basement may need to be relocated to support the new floorplan. The main level and upper floor each have (4) power panels that have recently been replaced and upgraded. These panels will remain in place throughout construction. Two new power panels are anticipated to be installed within this project in the upper level to support the additional electrical load of the expansion and installation of a new elevator.

Branch Circuiting

Most of the branch circuiting in the facility is original and consists of multi-wire branch circuits sharing a neutral. Based on the extent of the remodel, most of this circuiting will be replaced. Circuiting in areas not affected by the remodel will be maintained. These areas include the photography, server & mechanical spaces in the basement, the kitchen & mechanical spaces on the main level, and mechanical space on the upper level. Separate neutrals will be installed for all affected existing circuits and all new circuits.

Safety and Disconnect

Fusible or non-fusible, NEMA 1 or 3R shall be provided as applicable.
Switches
Disconnect contacts shall be of quick-make, quick-break, general-duty type. Disconnects shall contain class R fuse holders and shall be manufactured by Square D, G.E., Siemens or Cutler Hammer.

Fuses
High performance fuses shall be utilized. Fuses shall be Bussman Hi Cap, Low Peak and Fusetron, current limiting. Spare fuses shall be provided, one extra set for each size. Fuses shall be 200,000 RMS symmetrical A.I.C.

General Receptacles and Miscellaneous loads
Wiring devices shall be high quality commercial grade. They shall be manufactured by Hubbell, Bryant, P & S, Leviton or equal. Receptacles are anticipated to be white in color.

The receptacle cover-plate materials and color shall be as preferred by the architect, but are anticipated to be as follows:
- Indoors/Any Duty: Cover plates, thermoplastic, white.
- Outdoor/Any Duty: Low-profile in-use cover, weatherproof, tamperproof, weather resistant, shall be Arlington SDHB1 Series.

Electrical connections will be installed as required for all motorized doors and equipment identified by the Architect. Receptacles will be installed for all signal equipment, including fire alarm system, televisions/monitors, door control, CCTV, etc. See Signal/Systems descriptions below.

Duplex receptacles shall be installed as required by the NEC and as required by codes. Ground Fault Interrupting (GFI) receptacles shall be provided around counters with sinks, in toilet areas, outside and on roofs as required by the NEC.

Grounding
The existing grounding system shall be used.

Signal/Systems

Fire Alarm System
The existing fire alarm devices and cabling in the facility is obsolete. All existing devices are non-addressable and shall be replaced. All fire alarm cabling in the facility shall be replaced with new. An addressable Simplex 4100ES Fire Alarm Control Panel has recently been installed and will be interfaced with all new devices.

The system changes shall be complete with the necessary auxiliary relays and connections to shut down designated fan motors, release magnetic door holders, trigger HVAC control, shutdowns, damper closures, and dial to a legally authorized monitoring service.

Components shall be prescribed in accordance with the 2018 IBC and 2018 IFC requirements and the SDCL for a Business (B occupancy) as follows:
- Duct Detectors
  - HVAC return shutdown for units over 2000 CFM.
- Photo Smoke Detection
  - As required for magnetic door hold release
  - At the Fire Alarm Control Panel
- Heat Detection
  - Mech/Elect Rooms
Pull Station
- Constantly attended location

Monitoring Equipment of Fire suppression

Notification appliances
- Horn-Strobe: Corridors, large offices, and any public use area.
- Visual Only: Restrooms, Fire Alarm Control Panel

Horns shall be configured to serve all areas such that the system provides 15dB above ambient everywhere within the facility. Visual units are required in the paths of egress and any accessible normally occupied areas.

Telephone, Data
All existing communications cabling in the areas of renovation will be replaced with Cat6 or Cat6A Mosaic cabling per owner preference. Outlets for telephone/data jacks shall be located throughout the facility as requested by the users. Conduits shall be routed from each outlet to an accessible ceiling space. Wiring shall be provided from the jack to a patch panel. Each outlet will be complete with jack, cover plate, wiring, raceway, terminations, testing and appropriate documentation. Telephone & Data head end infrastructure is existing and shall be used to support the renovation.

Paging/Sound System
No separate full area sound or paging system is anticipated at this time but may be implemented if desired. Paging functions are anticipated within the telephone system.

Clocks
An existing wireless atomic clock system with master transmitter is currently used in the facility and will be utilized in all renovation and expansion areas.

A/V
Special systems, including Audio/Visual conduit/infrastructure requirements will be coordinated with the owner and third-party vendors/equipment suppliers.

Television (CATV)
No Television (CATV) head-end equipment or cabling is anticipated within this project.

Access Controls
An existing Blackboard security access system is currently used in the facility. This system will be revised and expanded to the areas of expansion and renovation at locations defined by the owner & architect. The system components will include backboxes, conduit and associated wiring as defined by owner vendor.

CCTV
Cabling infrastructure for the existing digital CCTV system will be expanded into the renovation and expansion areas in locations coordinated with the owner and owner vendor.

End of Electrical Narrative