FACILITY DESIGN PLAN FOR
AMERICAN INDIAN STUDENT CENTER
SOUTH DAKOTA STATE UNIVERSITY
DATE: May 18, 2018

SDSU requests approval of this Facility Design Plan for the creation of an American Indian Student Center to be located on the SDSU main campus in Brookings, SD.

The State Legislature passed and the Governor signed Senate Bill 50 on March 7th, 2018. The bill authorized the construction of an American Indian Student Center on the campus of South Dakota State University for an estimated cost of $4,500,000. The Facility Program Plan was approved by the Board of Regents at the December 2017 meeting. A building committee was appointed and the design team of TSP Architects was selected on Monday, October 30th, 2017. The Preliminary Facility Statement was approved by the Board of Regents at the June 2017 meeting.

1.A. ARCHITECTURAL, MECHANICAL AND ELECTRICAL SCHEMATIC DESIGN

The spaces are consistent with the program requirements and facility described in the Facility Program Plan. It was determined in schematic design that the administrative offices for the Wokini Director will not be accommodated in the American Indian Student Center. The square footage has been removed from the overall plan of the facility. The following drawings are attached that illustrate the design:

Drawing Title	Page No.
Site Plan	11
Lower Level Floor Plan	12
First Floor Plan	13
Second Floor Plan	14
Exterior Elevations	15
Exterior Elevations	16
Architectural Renderings SW and SE Elevations	17

Architectural and Structural Schematic:

As noted in the Facility Program Plan, SDSU plans to create an American Indian Student Center (AISC) that would enhance the academic services provided to American Indian students and provide contemporary multi-purpose academic general classroom space to the greater campus community. The AISC is the hub of cultural programming, services and advocacy that supports the recruitment, transition, retention, persistence, and graduation of American Indian students at South Dakota State University. AISC assists the University community in understanding the significance, value and strength of the American Indian experience. The new facility would provide work space for the AISC staff as well as support space for American Indian students on campus. The facility would also provide contemporary multi-purpose and meeting spaces that would be available to the entire campus community. The program spaces would help further the mission of the AISC program.

This project follows the key guiding principles for campus development, as outlined in the 2025 Master Plan. The project would in-fill a site located within the campus footprint and enhance student services on the south side of campus. The project is part of South Dakota State University's Wokini Initiative to better serve the Dakota, Lakota and Nakota residents of South Dakota. It aligns with the historic mission of the U.S. land-grant system of public higher education to provide greater access to higher education for all. The project would also reinforce the retention goals set forth in the 2018 Strategic Plan, through the creation of a prominent and welcoming home for American Indian students on campus. In addition, the building would reinforce the University's goals of greater diversity, equity and inclusion by providing more opportunities to underrepresented populations.

Through the schematic design phase the AISC is approximately 12,310 gross square feet. The footprint of the building would be approximately 105 feet north-south and 116 feet east-west. The basement level would contain steam, chilled water, electrical equipment, elevator equipment, and general storage. The lower level is 1,700 gsf. The first floor would be 8,483 gsf and contain administrative offices, student suite, multi-purpose room, general classroom, conference room, and service spaces. The second floor would be approximately 2,127 gsf and contain mechanical space, storage, small meeting room and student study space.

American Indian Student Center Space Program

Program Function	**Space Use Code***	**Gross Square Footage (GSF)**	**Notes**
General Classroom	110	1,778	Large University and AISC Scheduled Classes, Meetings & Seminars
Office Suite	310	1,118	Director AISC, Program Coordinator, Native Student Recruiter, Retention Specialists (2), Administrative Assistant, Graduate Assistant(s), & Student Employees (3)
Office Service	315	256	Waiting Area, File, Copy, and Resource Room
Meeting Rooms	350	794	Conference Rooms, Workroom, and Collaboration.
Study Space	410	1,479	General Open Student Study Space, Technology Labs, and Quiet Study
Storage	780	714	General Building, Department, and Student Organization Storage.
Building Service	XXX	3,315	Restrooms, Custodial, Vending, IT, Electrical, Mechanical, Walls, and Chases
Circulation Space	WWW	2,856	General Building Circulation and Entrance Lobby
	Total GSF	**12,310**	

**Space use codes as defined by the National Center for Education Statistics Facilities Inventory and Classification Manual (FICM)*

The majority of the building structure is planned as a conventional concrete foundation or slab-on-grade. The primary above grade structure would consist of metal joists with concrete composite floor construction. The floor framing would be supported by a combination of steel posts and beams along with masonry bearing walls. Exterior wall construction would be metal stud framing with masonry or metal cladding. Interior partition walls will be metal stud framing with gypsum wall board. Interior finishes wall finishes will be coordinated with the design concept and space function to produce a durable and aesthetically pleasing spaces.

Vertical circulation will be by two stairs and an elevator. The north stair and elevator will serve all three floors. The south stair will create an open air connection between the main floor and second floor of the building. All floors will be accessible and meet or exceed the American's with Disabilities Act design guidelines. Interior construction will consist of masonry and metal stud framing. Finishes will be selected for durability, ease of maintenance, and aesthetic continuity.

Maintenance & Repair:
Existing site utilities in the area will be modified or upgraded as required to adequately serve the building.

Mechanical Schematic:

The design of the building HVAC system shall provide for the safe operation of the building as well as the health and comfort of the occupants. Code requirements and LEED V4 silver rating shall be the standard for the design of the HVAC systems of this facility.

The building will be supplied with steam for heating from the Central Heating Plant and chilled water from the Central Chiller Plant. The building will access these lines from the shallow trench located on the north edge of the construction site. The new building will not require additional capacity at the Central Plants.

Heating
Primary heating for the facility would be provided by a single heating water loop to serve all heating loads including air handler heating coils, reheat coils and perimeter radiation. Perimeter heating systems would include a combination of fin-tube radiation and radiant ceiling panels at exterior walls. Fin tube radiation is preferred and would be utilized at large glass areas. Cabinet, ceiling, and inline unit heaters would protect entry vestibules and stairwells.

Cooling
Chilled water service would be connected to the 8" campus service mains located in close proximity to the new building. The existing mains would be rerouted to avoid the new building foundations. A plate and frame heat exchanger would be utilized to separate the plant loop from the building loop. The chilled water system would be a variable-primary system with 2-way control valves. A building loop automatic bypass valve would allow for minimum pump flow.

Ventilation
A single air-handling unit would be utilized for building supply air systems. This air-handling unit would consist of supply and return air fans, outside air economizer section, MERV 8 pre-filter and MERV 13 filter banks, heating coil section, access section between coils, and cooling coil section. Supply and return fans would be direct drive plenum type, complete with variable frequency drives for capacity control, and piezo-ring type airflow measuring stations. The supply fans would modulate to maintain the supply duct static pressure set point. Supply air would be distributed throughout the building via medium pressure ductwork to single duct variable air volume terminal units with hydronic reheat coils. Perimeter zones in all areas would be integrated with the associated radiant heating systems.

The air distribution system would be constructed of galvanized sheet metal, rectangular, round or oval ductwork per SMACNA standards. Exposed medium pressure supply ductwork would utilize double-wall insulated construction. Exposed low pressure supply and return duct would be single-wall construction. Supply and return ductwork in concealed locations would be single-wall construction. Supply air ducts would be insulated with insulation wrap in accordance with the 2015 International

Energy Conservation Code. Internal duct liner would be utilized on return and transfer air ducts to address sound reduction / mitigation.

Separation of interior and exterior zones would be provided for optimum zone control. A maximum of two offices would be served on a single zone to comply with LEED Thermal Comfort credit. Multi-occupant spaces such as conference rooms and study rooms would each be served by a dedicated HVAC zone. An enthalpy-based outside air economizer would allow for free and reduced energy cooling when available. Systems would be designed to limit HVAC related background sound levels to NC 25-30 in office and meeting rooms; and NC 35 to 40 in multipurpose spaces and student gathering areas.

Controls

The building automation systems shall be designed as a direct extension of the existing campus system. The system shall contain all points and programming as required to allow for automated control and monitoring of the new heating, cooling and ventilation system.

Plumbing Schematic:

Domestic Water Service

A 3" water service would be extended to the new building from the existing 8" service line located south of the project site. A separate water meter would be provided to measure domestic hot water usage to meet LEED credit requirements.

Sanitary Sewer Service

A new 6" sanitary sewer line would be routed from the new building to the campus main. The building drain would be connected to the existing campus main located to the southeast of the project site. A lift station would be required to serve the lower level floor drains in the mechanical room.

Fire Protection Service

A new 6" fire service would be extended to the new building from the existing 8" service line located south of the project site. Hydrant flow testing indicates the service would have adequate flow and pressure to serve the fire sprinkler system without the need for a fire pump.

Plumbing Fixtures

Plumbing fixtures will meet ADA requirements and be low flow sensor operated, except water closets, per SDSU design standards.

Gas Service

Gas service would be required for miscellaneous loads. Appliances that would require a gas service include the hot water heater and fireplace. Primary heating and cooling will be provided by the Central Utility Plants.

Electrical Schematic

The campus electrical loop would be intercepted to the southeast of the project site near the existing transformer that serves Brown Hall. A new vault would be provided at that location. The new building service would be run through the new vault and duct bank to the new AISC building transformer that

would be located on the northeast side of the building. The new transformer secondary voltage would be 208Y/120 volts. Service conductors would be run from the transformer underground to the distribution panel in the lower level of the facility. Service size is anticipated to be 800 amps.

Site Lighting
Site lighting would be a continuation of existing site lighting established for the engineering quadrangle and residence halls. Site lighting would also be designed to meet LEED requirements.

Grounding
All grounded buses from switchboards and panel boards would be connected at a central ground system in the electrical room.

Security System
Card readers, latch bolt monitoring, and surveillance cameras would be installed at all exterior doors. Door hardware at main entrances shall be specified for key card access and latch bolt monitoring. Rough-ins would be provided for card readers and cameras at the office suite, student suite, custodial closet, workroom, and mechanical rooms.

Lighting Systems
LED lighting fixtures would be utilized where possible. Occupancy and/or vacancy detectors would be used to provide automatic on-off switching of lights in offices, storage rooms, bathrooms, and other selected rooms in accordance with LEED requirements. The use of task-oriented lighting would also be examined. Daylight harvesting strategies would be used to supplement electrical lighting where appropriate. Exterior lighting would be controlled by a photocell.

Emergency Egress Lighting
Interior light would have a central battery backup system for emergency egress lighting. Exit signs will be LED with battery backup.

Data & Communications
Hardwired data ports would be provided in all offices, conference rooms, mechanical rooms, custodial closets and classrooms. Wireless system access points would also be provided in the basement, first and second floors.

Fire Alarm System
An addressable fire alarm system would be designed into the project and consist of an main fire alarm control panel, smoke and heat detectors in accordance with NFPA 101 & 72 standards.

Fire Sprinkler System
The building would be fully sprinklered in accordance with NFPA 13 standards. All sprinkler heads and pipe serving vestibules or other semi-conditioned spaces shall be dry-type.

Energy Conservation

There are a number of strategies being implemented to reduce energy consumption within the building. The energy conservation strategies include: energy recovery units, variable frequency drives (VFDs), LED light fixtures, occupancy sensors, super insulated building envelope, insulated glazing, and optimizing daylight.

American Indian Student Center Building Systems

Building System	Description
Envelope	Enhanced performance, shall exceed ASHRAE 2010 baseline standards for envelope performance
Lighting	Lighting design shall emphasize the use of daylighting strategies. Electric lighting shall be energy efficient LED lamps, unless otherwise approved by the University
HVAC	Connections to the Central Heating & Chiller Plants will be used. Enhanced indoor air quality strategies will be implemented to meet ASHRAE and LEED V4 standards
Energy Recovery	Energy performance of the building will improve on the ASHRAE 2010 baseline standards; all utilities to the building will be independently metered to track building performance
Life Safety & Security	Facility will be equipped with fire alarm and sprinkler, main entrances will be equipped with key card access, video surveillance, latch monitoring and people counters
Accessibility	Meet current ADA Design Standards and University standards for accessibility, provide on-site parking for commuter students
Domestic Water	Reduce potable water usage beyond current building code requirements
Storm Water	Detain and filter storm water runoff onsite and reduce impervious surfaces within the project site to reduce contaminates and pressure on the existing storm water system
Utilities	Connect to existing gas, domestic water, sanitary sewer, power, communications, chilled water, and steam infrastructure; lines will be extended as required

Performance Standards:

- ASHRAE 90.1/2010
- LEED V4 New Construction & Major Renovations – Minimum Silver Rating
  - Goal of the project is to exceed the minimum State requirement of LEED Silver
- International Building Code 2018

1.B. CHANGES FROM THE FACILITY PROGRAM PLAN

Program and Scope Changes

Due to changes in institutional organization the Wokini Director's office suite will not be accommodated in the American Indian Student Center.

Area Changes

Due to program changes the overall square footage of the building has been reduced from 16,000 GSF represented in the Facility Program Plan to 12,310 GSF currently represented in the Facility Design Plan. The most significant reductions occurred in the general classroom (multi-purpose) and the administrative functions of the building (office suite). The general classroom has been sized to accommodate 66 with tables and 138 with row seating. The classroom would be a lecture mobile style setup that would allow for a number of different configurations. The room would also accommodate banquet style seating for AISC events; as well as, row seating for large presentations. In the office suite reductions have been made to individual offices and shared work/storage spaces, along with reductions to the overall office count associated with the Wokini Director.

1.C. IMPACT TO EXISTING BUILDING OR CAMPUS-WIDE HEATING/COOLING/ELECTRICAL SYSTEMS

The facility would not require an upgrade to existing campus utilities. The utilities serving the facility would be an extension of the existing utilities surrounding the building site. Descriptions of specific utilities are listed below.

Electrical Distribution
Electrical power would come from the existing campus distribution. A new transformer and vault pit would be provided.

Existing Tunnels (and associated utilities)
A shallow trench is located north of the construction site, which runs east-west across the Rotunda Green. The trench carries steam, which would be accessed to serve the building. A new vault would be constructed for the steam connections and shutoffs.

Chilled Water System
Direct buried piping from the Central Chiller Plant is located within the boundaries of the anticipated construction site. The pipe would be relocated and accessed to serve the building.

Network Service
All fiber optic and telephone connections would be routed from the building to the central hub in Morrill Hall through a new utility duct and existing tunnel system. The new lines will be trenched from the building site and follow the shallow trench to the west. The lines will be bored into the existing tunnel in the AME parking lot and run north to the server room located in Morrill Hall.

Storm Sewer
The existing storm water drainage pathways shall be modified to reduce the potential of water infiltration to the building from storm water runoff. Connection to the existing storm sewer system will be to the south and east of the building. On-site storm water detention will be located to the east of the building. On-site detention will reduce the project's impact on the existing storm water system.

Sanitary Sewer
Sanitary sewer for the building will be connected to an 8" service south of the building. Connection will be made at an existing manhole south of the building. The new sanitary sewer system will likely exit the building on the east side.

Water
A new water service; sized to handle the domestic water and fire protection requirements for the building will be extended from the existing water main located southeast of the building site. The existing fire hydrant located southeast of the building site will remain.

1.D. TOTAL CONSTRUCTION COST ESTIMATES

American Indian Student Center Probable Project Cost

Description	**Cost ($)**	
General Construction Costs		
General Construction Contract	$	2,602,000
Utility System Development		174,000
Site Improvements		386,000
Subtotal		**3,162,000**
Incidental Costs		
Exterior Signage		8,000
Voice/LAN Cabling		30,000
Construction Testing		13,000
Project Contingency		320,000
Subtotal		**371,000**
Soft Costs		
A/E Design Services		435,900
Geotechnical Services		5,000
Commissioning Agent (Enhanced)		93,640
Office of the State Engineer		19,000
SDSU Facilities & Services		57,000
SDSU Administrative Services		124,000
Printing (Facility Bid Documents)		1,000
Bid Advertisement		1,200
Miscellaneous Costs (keying, accessories, etc.)		35,000
Subtotal		**771,740**
Furniture, Fixtures, & Equipment (FFE)		
Classroom & Office Furniture		120,000
Technology		65,000
Interior Signage		10,000
Subtotal		**195,000**
PROBABLE PROJECT COST	**$**	**4,499,740**
Add Alternates		
Rammed Earth Wall @ Hearth		24,000
Increase Height of South Stairwell		16,000
Additional Exterior Glass Storefront		16,000
Increase Metal Cladding @ Multi-Purpose		9,000
Exterior Canopy @ Entrances		11,000
Terrazzo Flooring @ Lobby & Main Hallway		30,000
Subtotal		**106,000**
PROBABLE PROJECT COST w/ ALTERNATES	**$**	**4,605,740**

American Indian Student Center Funding Sources

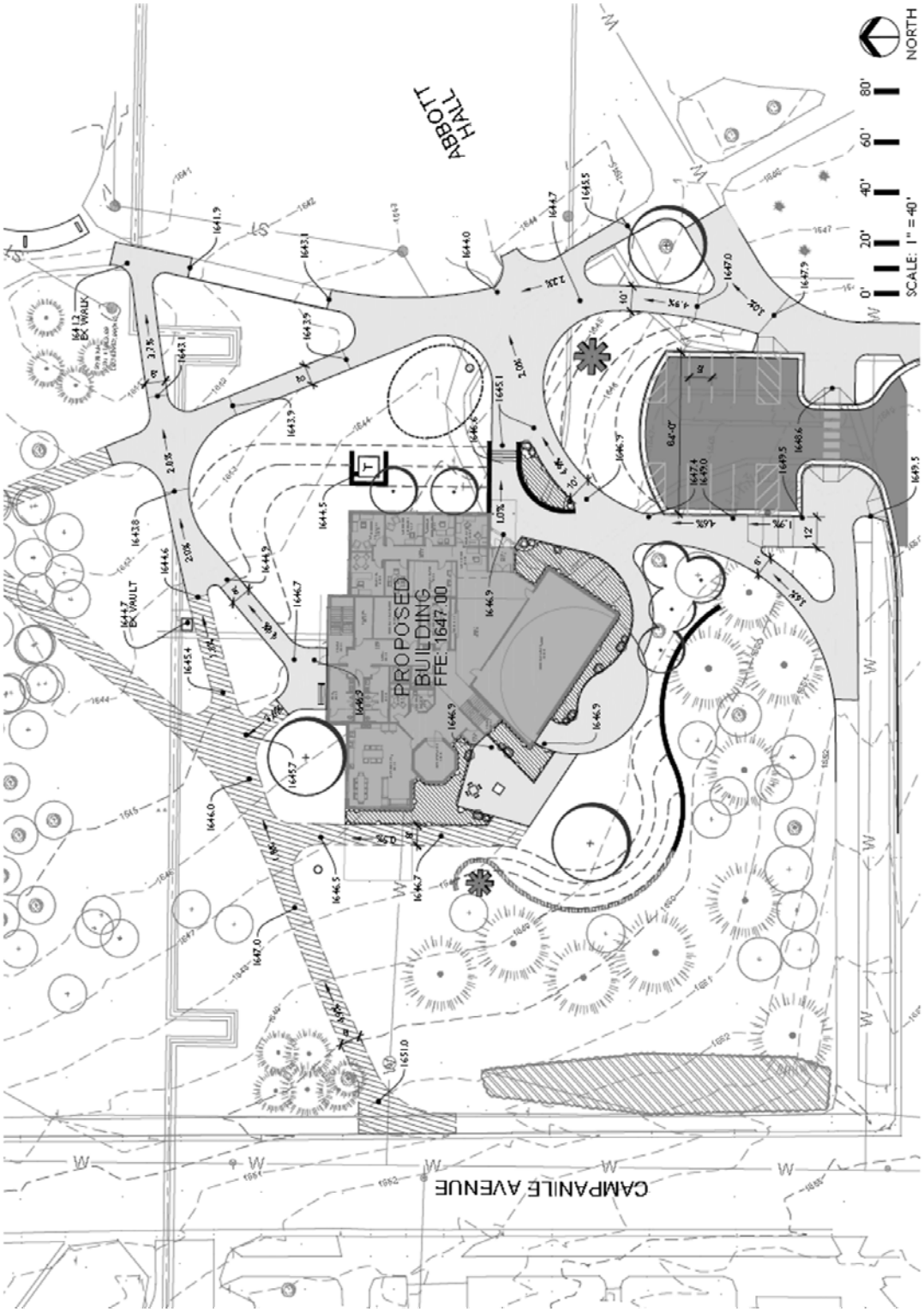
Construction		
Private Donor Funds	$	4,000,000
School and Public Lands		500,000
Total		**4,500,000**
Annual OM & MR Expenses		
Utilities	$	13,000
Operational Costs		37,000
Maintenance & Repair		60,000
Total		**110,000**

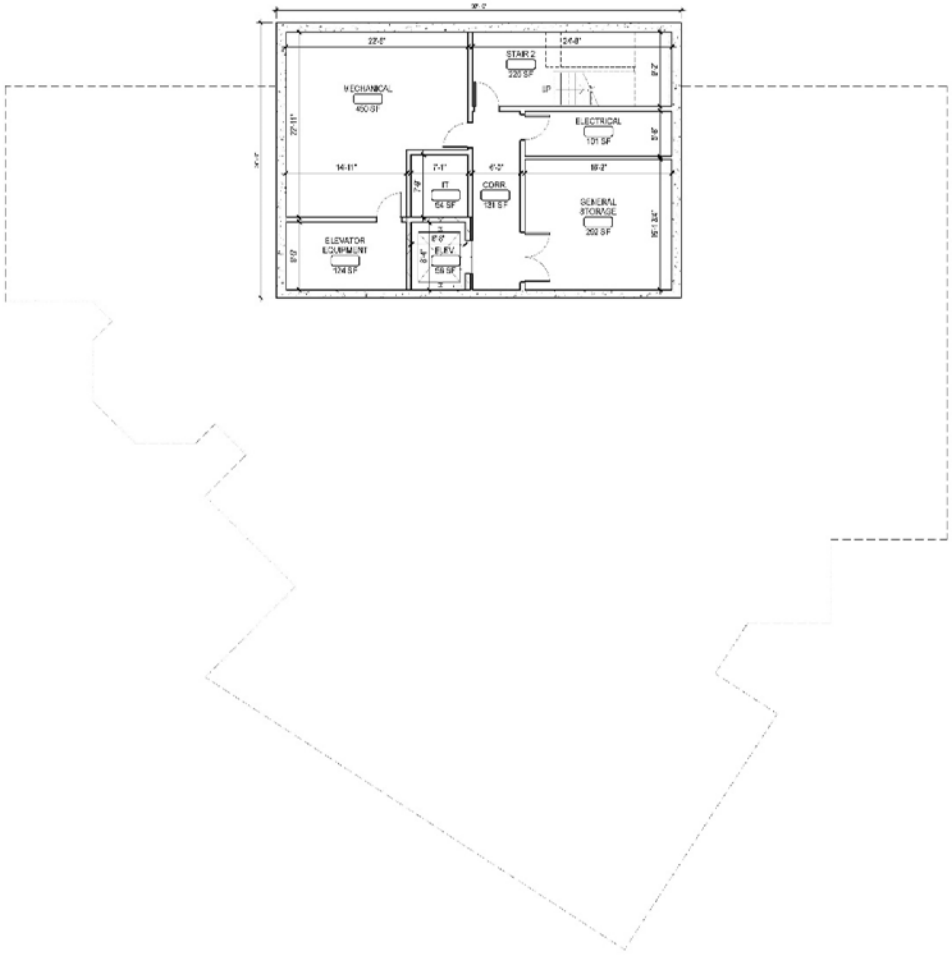
1.E. CHANGES FROM COST ESTIMATES FOR OPERATIONAL OR M&R EXPENSES

The impact to anticipated M&R, custodial, routine maintenance, utilities, and operational cost has been increased from the estimated amounts in the FPP. The increase reflects updates to anticipated utility and custodial costs for the new facility.

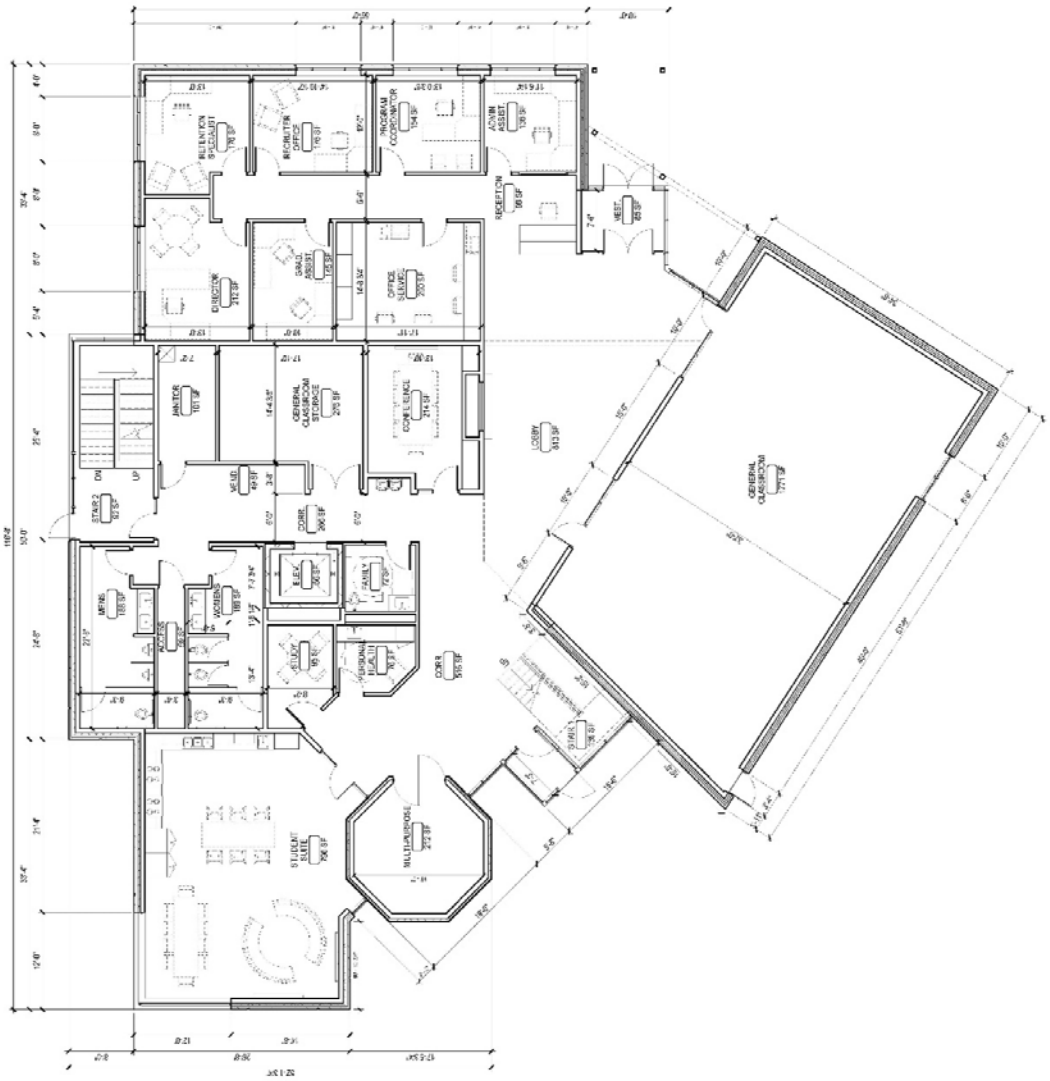
End of Report

Attachments: Site Plan, Floor Plans, Elevations, & Three Dimensional Renderings

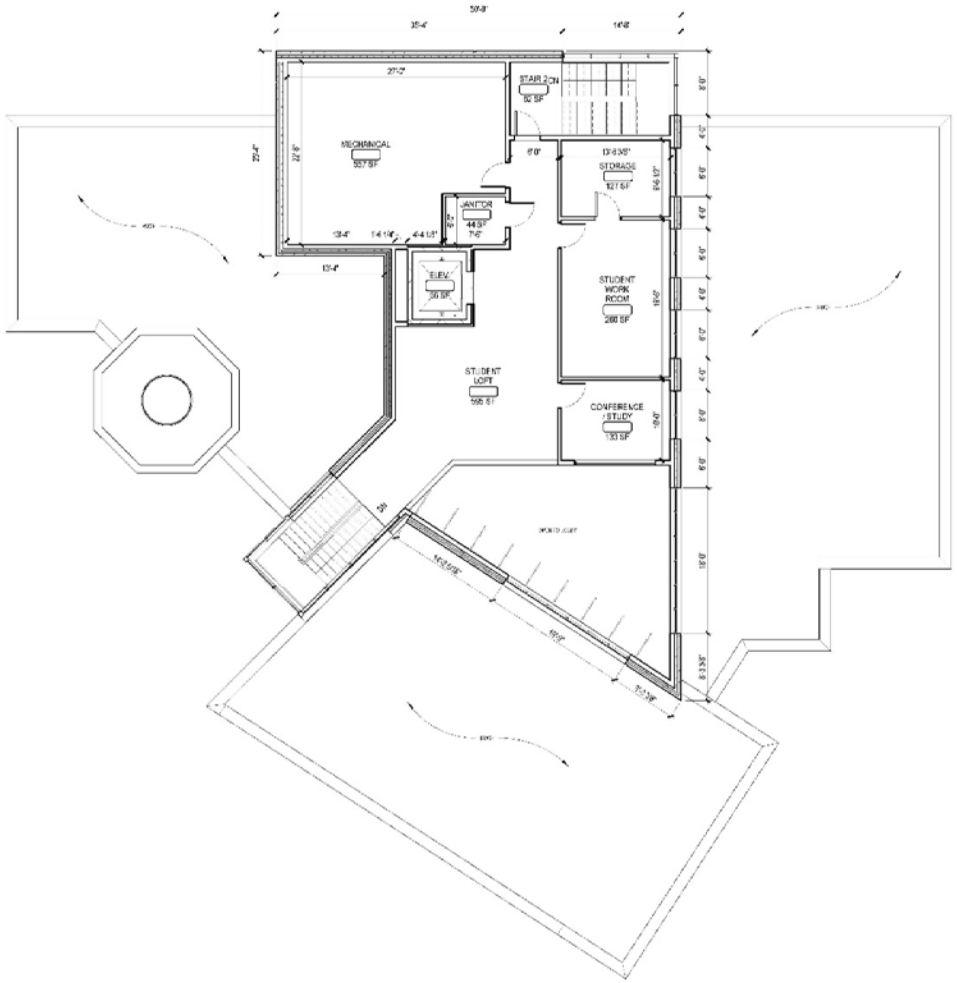

ABBOTT HALL
CAMPANILE AVENUE
PROPOSED BUILDING
FFE: 1647.00
NORTH
SCALE: 1" = 40'
0'
20'
40'
60'
80'



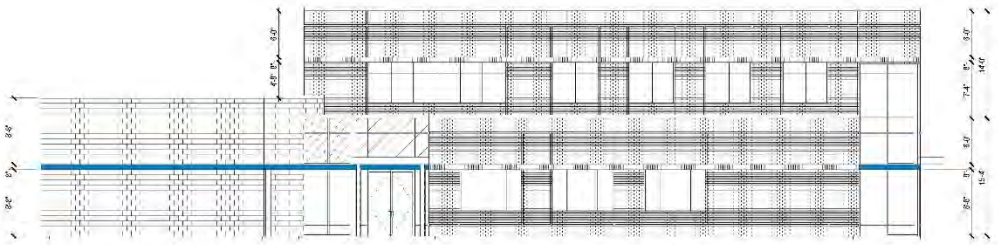
1 LOWER LEVEL FLOOR PLAN
SCALE: 3/8" = 1'-0"



1 FIRST LEVEL FLOOR PLAN
SCALE: 1/8" = 1'-0"

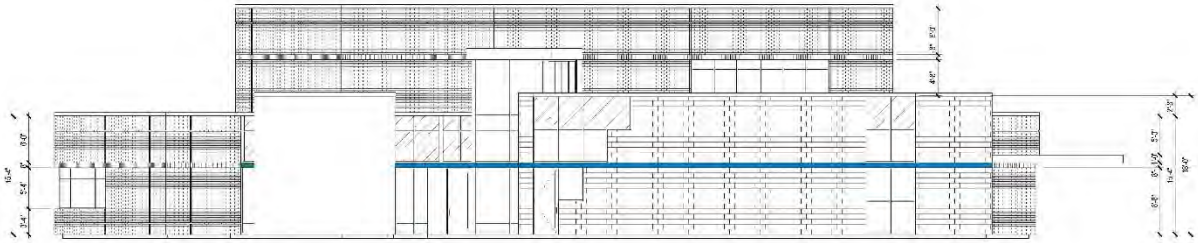


1 SECOND LEVEL FLOOR PLAN
SCALE: 1/8" = 1'-0"

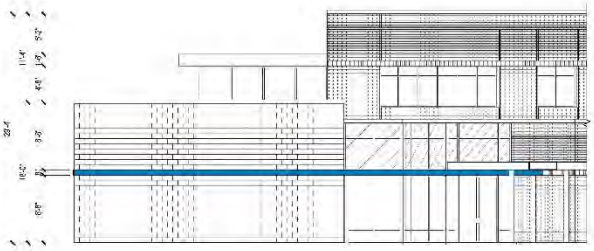


C1 EXTERIOR ELEVATION - EAST
SCALE: 1/8" = 1'-0"

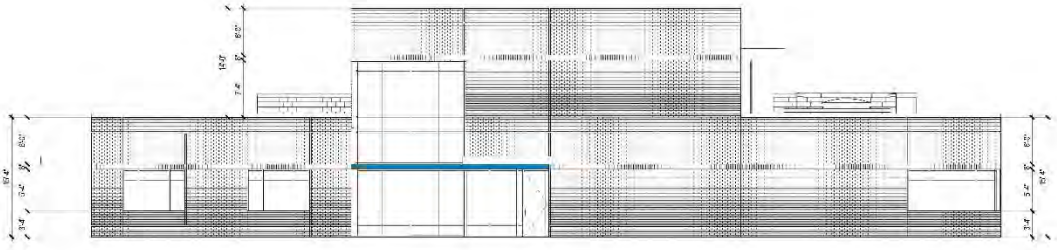
B1 EXTERIOR ELEVATION - SOUTH
SCALE: 1/8" = 1'-0"



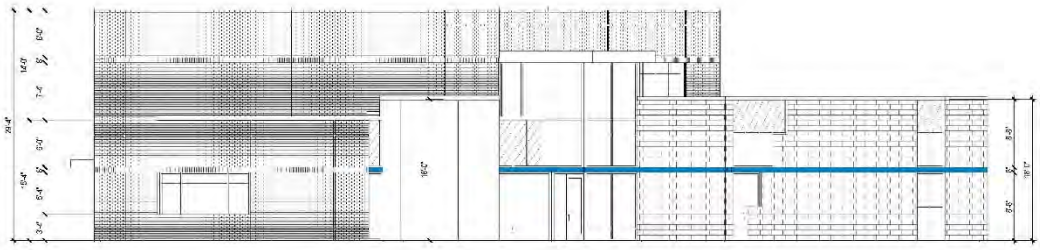
A1 EXTERIOR ELEVATION - SOUTHWEST
SCALE: 1/8" = 1'-0"



C1 EXTERIOR ELEVATION - SOUTHEAST
SCALE: 1/8" = 1'-0"



B1 EXTERIOR ELEVATION - NORTH
SCALE: 1/8" = 1'-0"



A1 EXTERIOR ELEVATION - WEST
SCALE: 1/8" = 1'-0"