

# **Facility Design Plan**

Health Sciences Building

THE UNIVERSITY OF SOUTH DAKOTA

## **Introduction:**

The Facility Program Plan for a three (3) story state-of-the-art 45,000 square-foot Health Sciences Building was approved at the April 2020 BOR meeting. The Facility Design Plan was approved in September 2020 by the Building Committee.

The building will be located on the Vermillion campus, on the corner of East Clark Street and North Dakota Street and will attach via a link to the existing Lee Medical building on levels 1 and 3.

The new Health Sciences building will support the necessary and anticipated growth in demand for a health care workforce and provide a contemporary facility that strengthens the opportunities for inter-professional, collaborative, hands-on experiences in simulation, classroom, and lab settings.

In addition to accommodating for growth within the health sciences programs, the new building will unite programs under one roof, thus creating operational efficiencies. The building will include technology-enhanced active learning classrooms, shared faculty and staff workplace, health science labs, simulation rooms, student collaboration and study spaces, and an active community dental hygiene clinic. The first floor will house the Dental Hygiene clinic as well as the labs and therapy rooms for various programs. The second and third floors will include study spaces, labs, classrooms, and offices. All three floors will have restrooms and the first floor will include a mother's room.

Primary constituents to be served by this facility are the students, faculty, and staff of eight (8) of the ten (10) Health Sciences majors (Addiction Counseling and Prevention, Dental Hygiene, Health Sciences, Masters of Public Health, Medical Laboratory, Nursing, Physician Assistant, and Social Work). The focus of this project is to provide a state-of-the-art contemporary building which will support the academic, research, and service missions of eight (8) of USD's fastest growing majors in health professional disciplines.

## **Architectural, Mechanical, and Electrical Schematic Design:**

The new Health Sciences building will be a three (3) story, 45,000 SF building that will be located directly west of the existing Lee Medical building and connected via a link. The design of the new building is to complement the existing Lee Medical building by use of similar building materials. The new building will be made of structural steel frame with architectural precast exterior that includes both brick and smooth finished surfaces.

The new building will incorporate high performance curtainwall glazing systems that puts learning on display and allows natural light within the building. The project will be striving to achieve LEED (Leadership in Energy and Environmental Design) Silver rating and therefore will be utilizing building materials that have low VOC (volatile organic compounds) materials and high performance mechanical and electrical systems.

The project will include a small parking lot to the south of the building for ADA parking as well as patient parking for the Dental Hygiene Clinic.

### **Mechanical Systems:**

The mechanical systems for this building will be completely stand-alone systems from the existing Lee Medical building and the campus-wide heating system. This will provide better heating and cooling capabilities within the new building and will save costs due to excessive infrastructure that would be required in order to get campus-wide heating system to the building. The mechanical systems will be designed to be efficient and meet LEED Silver rating requirements.

Utilities include a new 4-inch sanitary sewer service, new 3-inch domestic water service, new 6-inch fire main service, and new natural gas service and meters for water and natural gas. The mechanical equipment will be in a mix of locations throughout the building, which include outdoor space on south side (in service yard area) , first floor mechanical room, 2nd floor mechanical room, and the roof.

The systems will include an Open Well Geothermal system that utilizes the aquifer under Vermillion, SD as a heat sink for the building. This system will handle heat rejection or heat addition required within the building and would not require supplemental cooling or heating systems. Therefore, it will be efficient and save on overall energy costs. The system will utilize a heat recovery water cooled chiller, thermal ice storage system, two (2) dedicated outdoor air handling units (AHU's), single-duct variable air volume (VAV) system with hot water reheat, and perimeter radiant ceiling panels at glass curtainwalls. All mechanical equipment will be tied into the Universities existing building automation system for monitoring of equipment and addressing heating/cooling issues within the building remotely if needed.

Plumbing fixtures throughout the building will be high-efficiency, low water consumption fixtures. Natural gas-fired, high-efficiency domestic water heaters will be utilized for domestic hot water heating throughout the building. The sanitary and vent piping will utilize no-hub cast iron piping and water piping will utilize copper piping with proper insulation.

The fire suppression system will be served with a new 6-inch fire protection service main to the building. The building will be fully fire protected with a complete wet pipe fire sprinkler system that is designed and installed in accordance with the 2019 edition of NFPA 13, state, and local building codes. The system will utilize flush concealed heads in finished areas and non-concealed heads in non-finished spaces and will be zoned by floor. All flow and tamper switches will be connected to buildings fire alarm system.

### **Electrical Systems:**

The building will utilize a new 1,000 kVA transformer that will be tied into the existing main campus electrical distribution system and located in the service yard south of the building. One new 1600-amp 480Y/277V service switchboard will be provided to serve the new building and feed distribution panels throughout the building.

The building will utilize ground fault protection, copper busses, phase and balance loading of panels, dry-type transformers, and voltage surge suppression. All electrical wiring will be routed in conduit for distribution throughout the building, along with cable tray system for voice and data wiring.

Lighting throughout the building will be LED (Light Emitting Diode) type fixtures and lighting levels will comply with applicable standards and energy code requirements. Lighting will be a combination of 2x2,

2x4, and Linear LED light fixtures. Lighting in offices, meeting rooms, labs, study rooms, and classrooms will be fully dimmable, and the entire building will have occupancy sensor controls to reduce energy consumption while providing flexibility to the occupants.

Voice and data systems will include jacks, cabling, conduit, racks, patch panels, testing, camera's, TV's, projectors, and card access.

Fire Alarm system for the new building will be an addressable system that includes new control panels and devices throughout. The new system will include manual pull stations, smoke detectors, visual devices, audible devices, connection to fire sprinkler flow/tamper switches, connection to fire/smoke dampers and will be connected to the Universities building automation system for notification to the University Police Department.

#### **Changes from the Facility Program Plan:**

There are no changes from the Facility Program Plan.

#### **Impact to Existing Building or Campus Heating/Cooling/Electrical Systems:**

The Health Sciences building will not impact the existing Lee Medical building as it will be a stand-alone building with its own heating, cooling, and electrical service.

#### **Total Project Cost Estimate:**

The overall project cost estimate is \$22,000,000. The following table shows the breakdown of the estimate:

Construction Costs	\$17,950,400
A/V & IT	\$700,000
FF&E	\$1,000,000
A&E Fees	\$1,621,000
Pre-Construction Fee	\$58,000
LEED/Commissioning	\$115,000
Testing	\$65,000
OSE/USD Fees	\$225,000
Owner's Contingency	\$265,600
<b>Total Project Estimate</b>	<b>\$22,000,000</b>

The available funding sources for the project are:

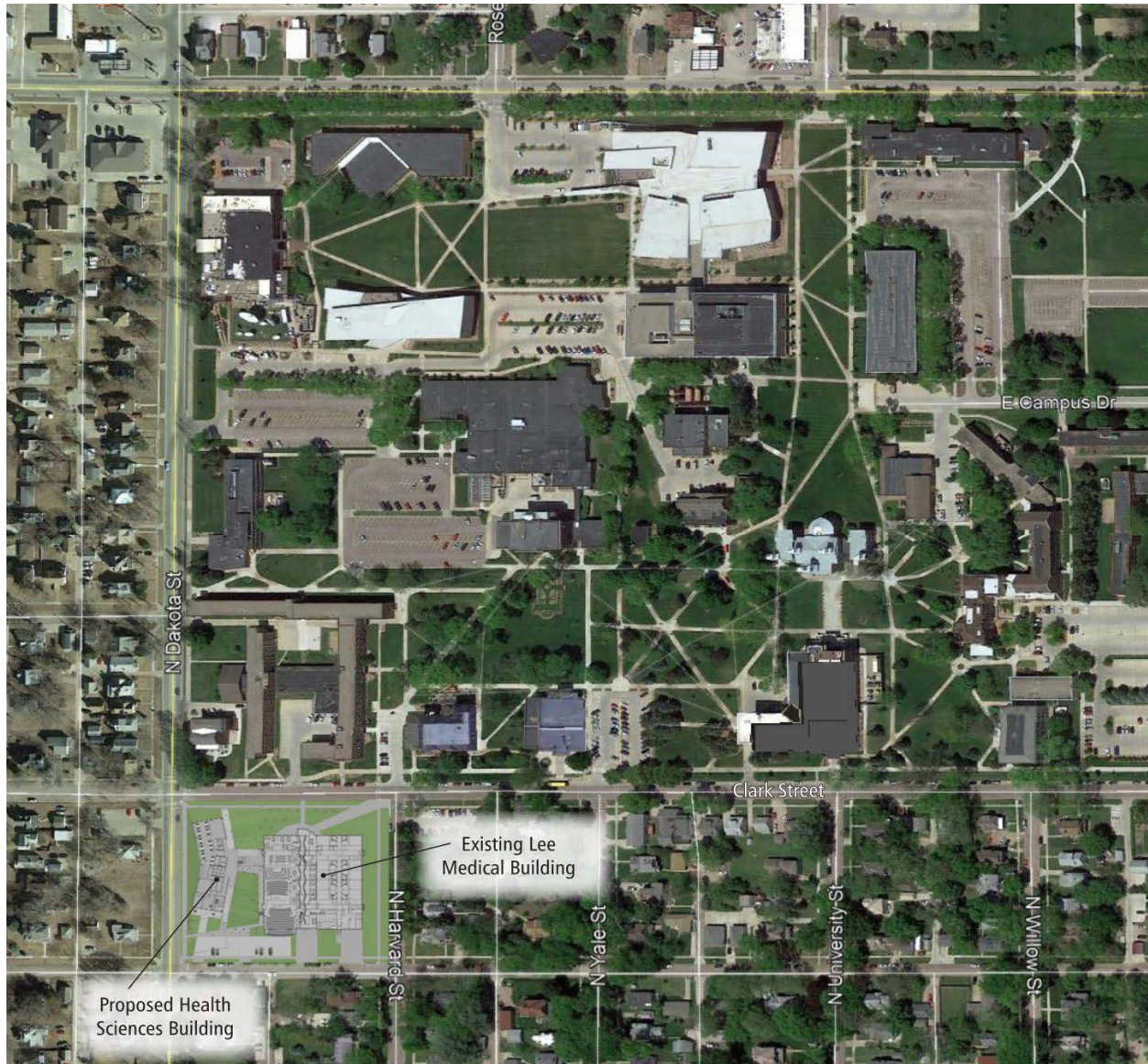
HEFF/M&R Bonds	\$12,500,000
Private Funds	\$4,500,000
One-Time State Appropriation	\$5,000,000
<b>Total Funding</b>	<b>\$22,000,000</b>

### Changes from cost estimate for operational and M&R expenses:

There are no changes from the Facility Program Plan. This is part of USD's plan to reduce total square footage. The plan has been previously approved by the BOR and Legislature (SB's 40, 41, and 42).

### Aerial and Site Plan:

Aerial of Site





Aerial Looking South



Aerial Looking North



Exterior View - North

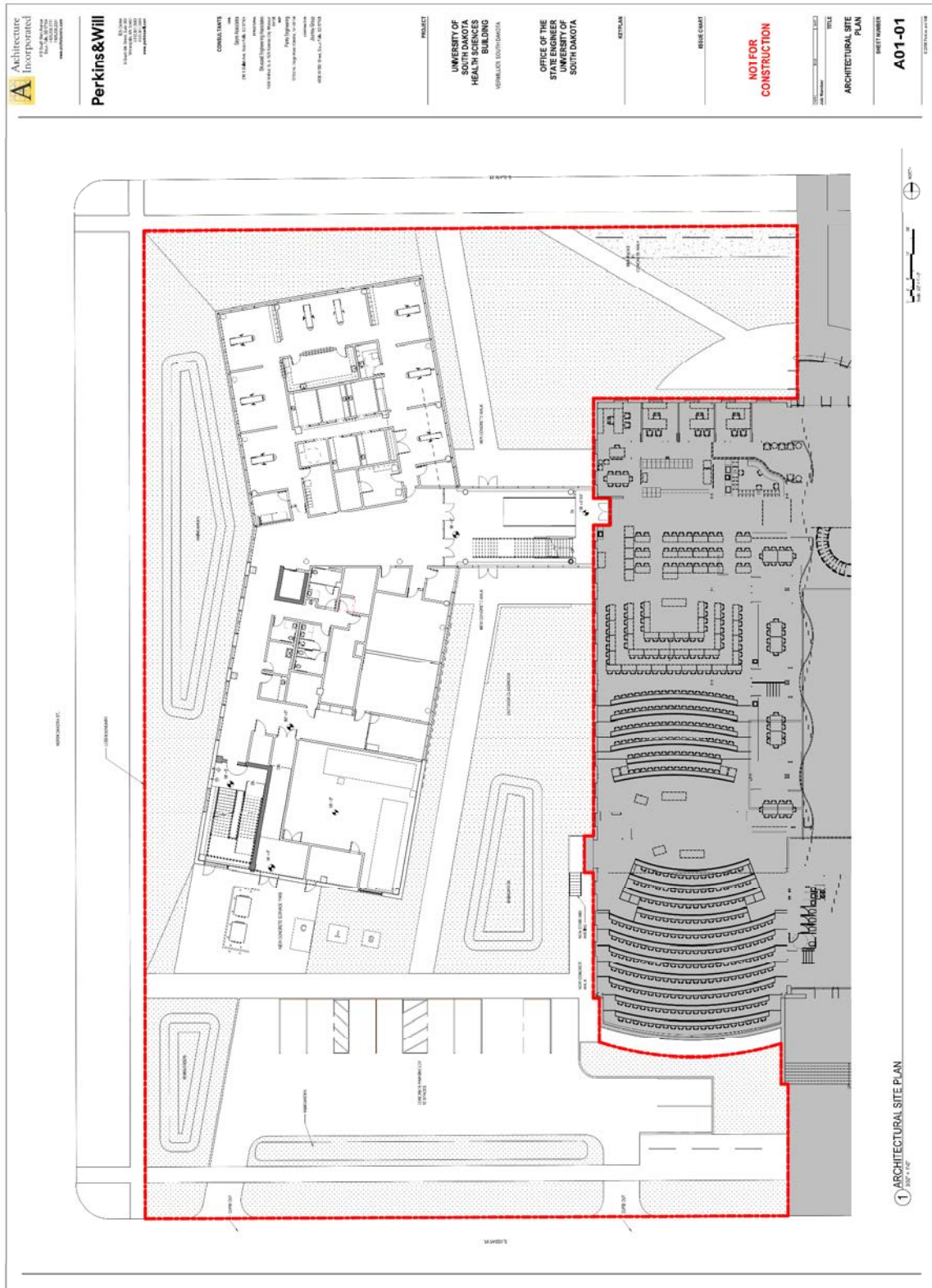


Exterior View - Northwest



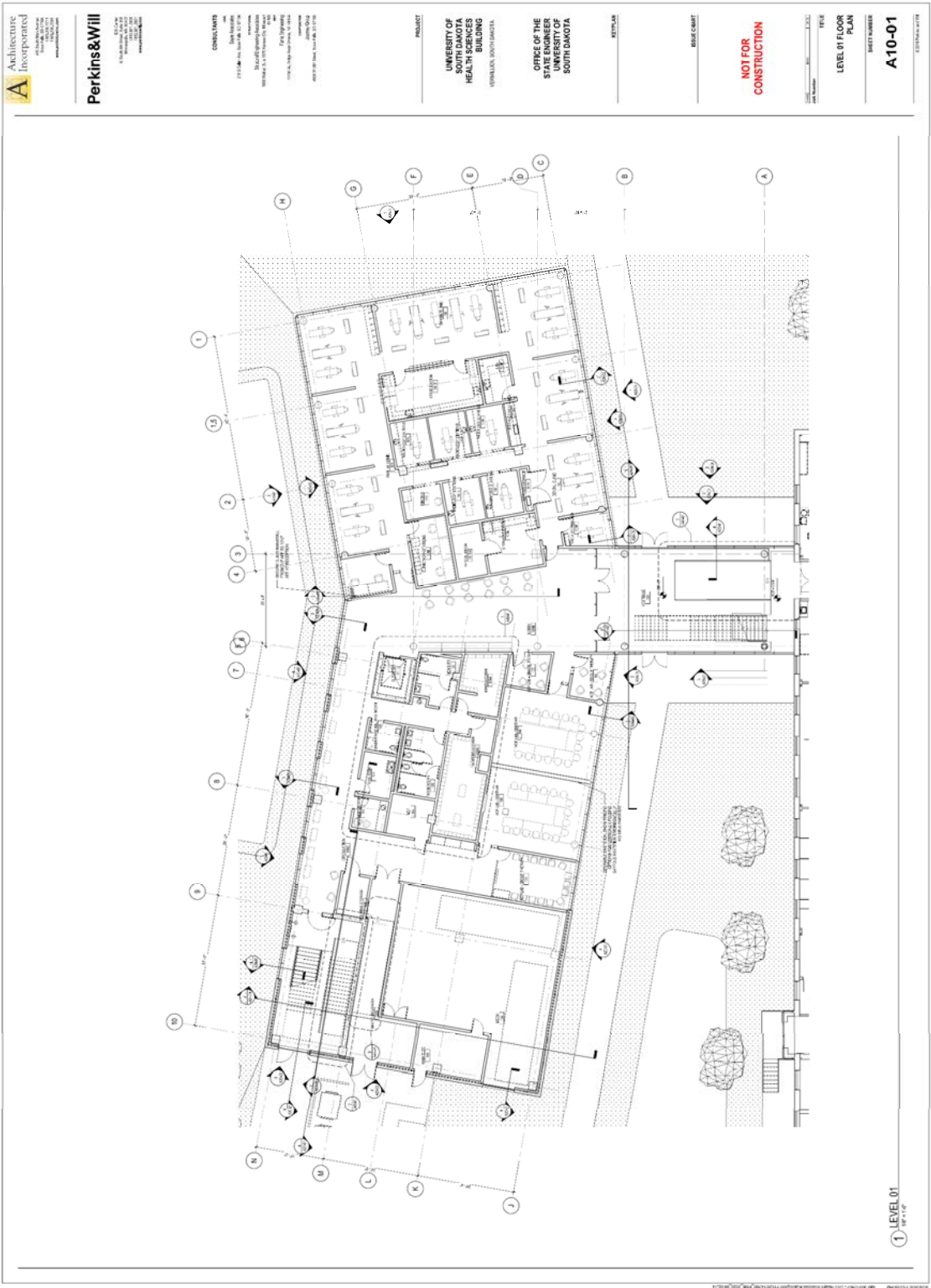


## Site Plan



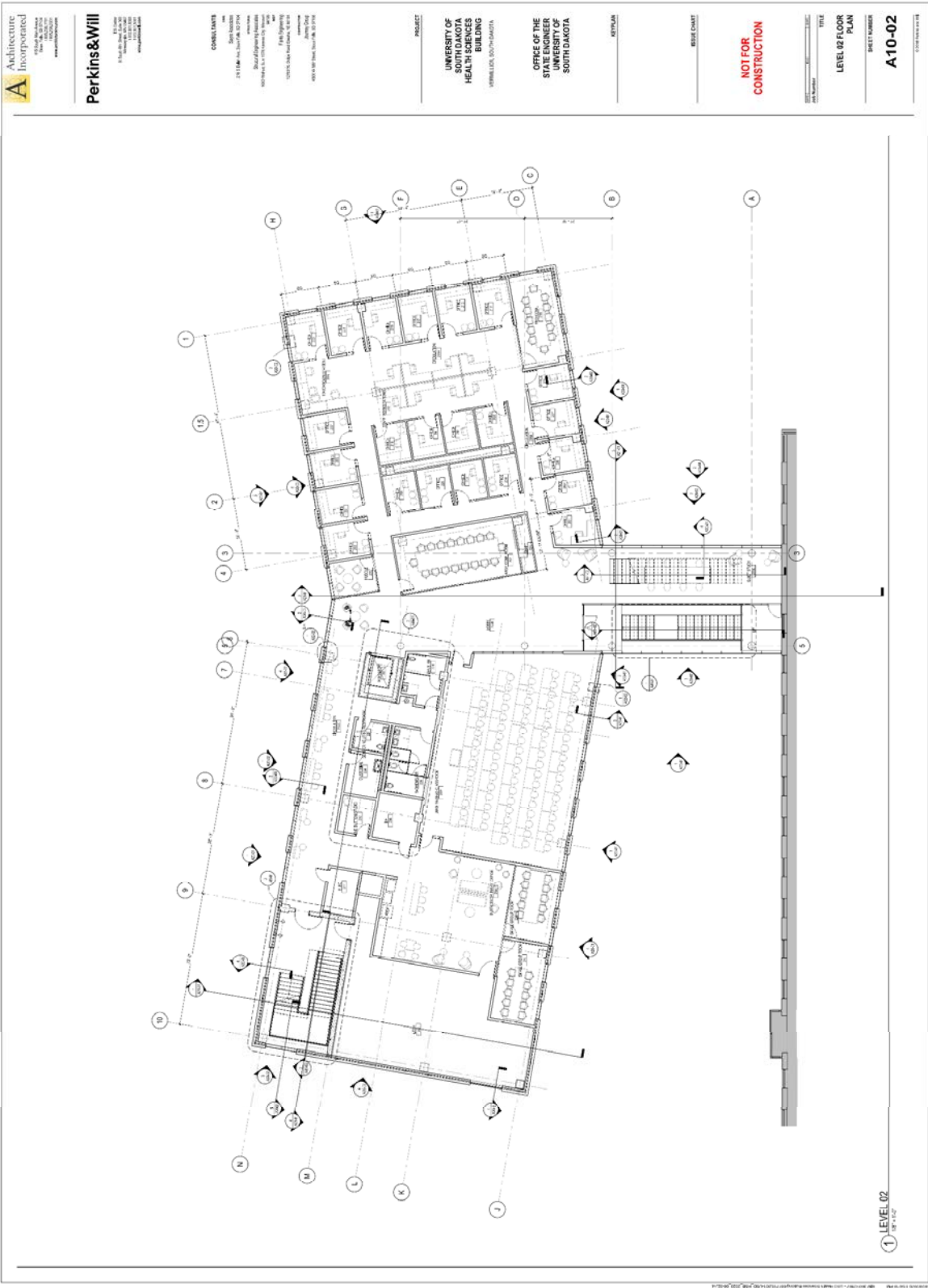
Floor Plans:

First Floor





Second Floor



Third Floor

