



MSN + DPT PROGRAM PLAN

**CSU HEALTH AND MEDICAL CENTER
AUGUST 2025**

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01

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

This project will renovate the majority of the 26,797 square foot 4th floor of the existing Health and Medical Center. The renovation will allow for a new 3+2 Bachelor of Science/Master's of Nursing Program and a new Doctorate in Physical Therapy. The renovated space for the Nursing and Physical Therapy programs will include a large, state-of-the-art clinical education and simulation space required to deliver the curriculum in these two programs. The existing space will be entirely vacated for the new programs by the current users, the **CU School of Medicine Medical School Branch Campus**. Although the CSU School of Medicine will relocate, the new clinical education and simulation space will also be ideal for sharing with students in the Medical School branch at Fort Collins for Interprofessional Education, thus expanding opportunities for students in the Medical School. The relocation of the CU School of Medicine program is not included as a part of this program plan, but is a separate project which is included in the appendix of this report. The project includes all the specialized spaces for the new programs.

The estimate total project budget is estimated at \$14.2 M. The funding will be comprised of a mix of grant dollars and donor funding. The College currently has a \$3m startup grant in hand from a local foundation.

The project timeline has been projected as construction occurring between January and September of 2028 with move-in, equipment setup, and commissioning of the simulation capture software systems throughout the remainder of 2028. Classes in the new space will start in the Spring Semester of 2029.

02

JUSTIFICATION

2.1 HISTORY, ROLE AND MISSION

This program plan is for new programs in Nursing and Physical Therapy – neither of which currently exist on the CSU campus, and both of which will attract new students to CSU. The programs fit squarely into the CSU land-grant mission, the CSU Roadmap, and the mission of the College of Health and Human Sciences. Specifically, these programs will train professionals and provide discovery in essential professional health fields that support the health and well-being of people in our state and nation.

NURSING

Owing to a lack of a nursing program, CSU loses students every year who desire such training. At the same time, the state and nation face a nursing shortage. The rural population growth in Northern Colorado along with the demand for rural healthcare services is contributing to the ever-expanding need for nurses in Colorado. Colorado Center for Nursing Excellence Colorado Registered Nurse Workforce: Demand and Supply Analysis (November 2024) reported Colorado can anticipate 2000 new Registered Nurses in the hospital workforce with shortage of approximately 5,500 registered nurses in 2025. Without an increase in nursing graduates from programs with successful pass rates, this will continue. Accordingly, CSU has been exploring nursing as an integral part of the CSU System for many years and has been in serious collaboration discussion with CSU Pueblo for the past five years.

In 2019, CSU and CSU Pueblo Deans began exploring collaborative options for a dual BS program. After conducting a market analysis, conferring with several institutions across the nation, seeking input from CSU Health Science program advisors, Fort Collins community healthcare settings, and administration at both universities decided to develop a 3+2 BS/MS in Nursing collaborative degree program. The nursing faculty evaluated several direct entry nursing programs in the US and modeled the same prelicensure curriculum as CSU Pueblo's accelerated BSN program with successful national exam (NCLEX) pass rates adding master's degree level courses to meet nursing accreditation requirements. This 3+2 program addresses the requests for a nursing program from CSU students, university alumni and donors, and the Fort Collins community. This will be attractive to the student population at CSU seeking a BS in one of three majors (Food Science

and Human Nutrition, Human Development and Family Studies, or Health and Exercise Science), who will provide the BS degree pathways in the program. This 3+2 BS/MS program will expand career opportunities to earn a MS degree in nursing. In addition, this program will minimize applicant competition with other local nursing programs because it is the only such program in the state.

PHYSICAL THERAPY

The need for a Doctorate of Physical Therapy (DPT) is equally clear. The state of Colorado has only three DPT programs to meet the growing needs of Colorado residents in need of physical therapy as well as students seeking training in the program. A large labor market analysis showed that in the last 36 months, the number of job postings for DPT program graduates grew at a faster rate than for all doctoral-level jobs. Over the next 10 years, employment growth in physical therapy is projected to outpace all occupations at both the statewide and national level, suggesting increasing job opportunities for relevant program graduates.

As well, data from CSU indicate that an estimated 75% of incoming undergraduates in Health and Exercise Science (HES), a large undergraduate major with 1100+ students, indicate interest in pursuing a career in physical therapy. HES undergraduates responding to a survey in their senior year indicate that 15-20% go on to a DPT program. Further, data from the Assistant Director of Health Professions Advising indicate that there are currently 120 advisees voluntarily seeking guidance with CSU Health Professions Advising, who intend to seek admission to DPT programs. Additionally, ~30-40 new CSU students each year seek Health Professions Advising for a career in PT. However, CSU does not currently have a clear pathway for students to succeed in this career development goal.

Co-locating both of these programs on the 4th floor of the Health and Medical Center will utilize space synergistically and efficiently. When both programs are fully enrolled, the space will house 150 *new* DPT students and *new* 120 3+2 BS/MSN students who would not otherwise be attending CSU, along with options for collaboration in Interprofessional Education with the Medical School Branch program.

2.2 PROGRAM NEEDS AND TRENDS / FUTURE OPPORTUNITIES

Both programs are new and as such require space for clinical education and hand-on simulation and live-patient training. The program plan assessed needs for 150 DPT and 120 3+2 BS/MSN students and has maximized utilization of the space. The programs will require lecture space, and these can be accommodated through use of existing general assignment classrooms on the Fort Collins campus. Thus, this plan adequately captures the teaching needs for both programs when maximally enrolled. These are large programs that will be accredited for these numbers, and we will enroll students at these capped targets; the space therefore will remain adequate.

Over time, however, there are options for further growth that will be evaluated in terms of available space, funding, and personnel. The 3+2 BS/MSN program is the only such program in the state, and one of few nationwide. In the broader Northern Colorado landscape, however, there is opportunity for the 3+2 nursing program to articulate to other programs. For example, there are two local community colleges, Front Range and Aims, both offering associate degrees in nursing and one offering a post-graduation BSN completion program. As well, the University of Northern Colorado offers BSN, MSN, DNP and PhD in nursing degrees with concentrations in FNP, Nursing Leadership, Quality and Safety and a PhD in Nursing Education.

There are also options for enhanced training in clinical sites external to CSU. Clinical site placement is a natural limiter on the size of nursing programs. The CSU Pueblo 3+2 Nursing Program Director attended the bi-annual nursing education meeting held at UC Health-Greeley on Tuesday, June 3, 2025. Local Universities and Community Colleges utilizing pre-licensure clinical sites in Fort Collins, Loveland and Greeley participated in a discussion about current community healthcare service gaps and difficulty filling RN positions. UC Health presented the growth trends in Northern Colorado and the expansion of their obstetrical, medical/ surgical and sub-acute bed capacity plans at all three hospitals with construction in progress and plans for additional community growth and healthcare needs increasing with more opportunities for nursing clinical areas for student rotations. The hospitals identified new nurse gaps in knowledge and skills with a robust curriculum discussion and the need for an action plan. A follow-

up meeting will be scheduled, and CSU Pueblo School of Nursing was invited to participate. As clinical sites expand, we will evaluate opportunities for program growth.

Opportunities also exist for the DPT program. Given the strong student interest from students in our Health and Exercise Program, the opportunity exists to eventually create a 3+3 BS/DPT program. In addition, conversations are currently underway with Athletics and others on the value of both nursing and DPT to the development of a sports performance concept at CSU.

2.3 BENEFITS OF PROJECT

The project provides space for two new state-of-the-art programs that bring new students and new revenue to CSU and CSU Pueblo. When fully implemented, 150 DPT (50 new each year) and 120 (40 new each year) 3+2 BS/MSN students will be enrolled each year. Conservative estimates are that once fully enrolled, the DPT program will bring \$4.5M in new tuition annually, and the 3+2 BS/MSN program will bring \$3.9M to CSU and \$2.4M to CSU Pueblo annually.

Both programs also address needs of the state and nation for qualified health professionals in nursing and physical therapy. This proposed 3+2 collaboration would provide an innovative direct entry nursing education pathway option in Northern Colorado with a high demand for nurses in local rural areas. A job search in May 2025 demonstrates a significant shortage of nurses. There are currently 200 open positions for Registered Nurses (RN's) at Banner Health and UC Health facilities in Fort Collins, Loveland and surrounding areas. This does not include the additional healthcare facilities hiring nurses in these rural areas.

The project aligns with the CSU System Strategic Priorities and CSU Road Map and will grow reputation and service to the state in key healthcare areas. The nursing program aligns with the 2023-2028 CSU System five Strategic priority goals: Priority goal number 3 includes Innovation and Additional Endeavors to meet state demands for nursing education. Priority 4 expresses program collaboration across the three system campuses. The CSU Strategic Roadmap 2035 likewise highlights campus collaboration and prioritizes the 3+2 BS/MSN program as elevating CSU's distinction and new academic programs, like DPT for example, as expanding our educational programming in critically needed areas.

Finally, the collaboration between CSU and CSU Pueblo for the nursing program also holds substantial benefit for addressing numerous tactical challenges that have been previous barriers to joint campus programming including, but not limited to, student matriculation and graduation, revenue sharing, space cohabitation, hiring, and others. The MOU between the two campuses can be used as a model for other programs, and many of the afore-mentioned issues have been resolved.

2.4 RELATION TO ACADEMIC OR INSTITUTIONAL STRATEGIC PLANS

The CSU System supports this collaboration and has identified collaborative programs, including nursing as a priority initiative in their 2023-2028 Strategic Plan. As well, the CSU Strategic Roadmap 2035 likewise highlights campus collaboration and prioritizes the 3+2 BS/MSN program as elevating CSU's distinction and new academic programs, like DPT for example, as expanding our educational programming in critically needed areas. In October and December 2024, the CSU System Board of Governors, Chancellor, Presidents, and Provosts of both campuses supported CSU Pueblo and CSU in Fort Collins to move forward with program development, approval processes continue engaging donor interest to support the startup costs for this collaboration. Finally, the development of nursing and physical therapy programs are in priority 1 of the College of Health and Human Sciences strategic plan.

2.5 RELATION TO OTHER PROGRAMS OR ENTITIES

INTERPROFESSIONAL EDUCATION

The renovated space for the Nursing and Physical Therapy programs will include a large, state of the art clinical education and simulation space required to deliver the curriculum in these two programs. This clinical education space will also be ideal for sharing with students in the Medical School branch at Fort Collins for Interprofessional Education. Best practices and accreditation standards for physicians, nurses, and physical therapists require that students gain hands-on experience practicing with different disciplines. This newly renovated space will be an optimal setting for all three groups of students to interact together in a realistic environment, including around hospital beds, interacting with realistic robot mannequins and in some cases, actors simulating patients. This clinical education space will not only serve the needs of the Nursing and Physical Therapy students, but it will also greatly expand opportunities for clinical, interprofessional education for students in the Medical School.

LOCAL COMMUNITY

In consideration of local and nearby nursing programs, clinical sites were contacted for student placement availability and numerous sites have agreed to place students including UCHealth, Banner, Columbine Health Systems, Summitcare, and Poudre School District. There are two local community colleges, Front Range and Aims, both offering associate degrees in nursing and one offering a post-graduation BSN completion program. The University of Northern Colorado offers BSN, MSN, DNP and PhD in nursing degrees with concentrations in FNP, Nursing Leadership, Quality and Safety and a PhD in Nursing Education. The 3+2 BS/MSN program will minimize applicant competition with other local nursing programs because it is the only such program in the state. The DPT program is earlier in its development, and conversations are beginning related to placements and community healthcare partnerships.

2.6 EXISTING PROGRAMMING / OPERATIONAL DEFICIENCIES

Given that the programs have not started, there are no current operational or programming deficiencies. Both the 3+2 BS/MSN and the DPT program need space and this is addressed in the current plan. Both programs are in various states of approval processes, but are on schedule for the targeted launch dates. The 3+2 BS/MSN program is awaiting CO State Board of Nursing and ACEN approval processes. Anticipated needs in planning, implanting and continuing the program include obtaining and maintaining local clinical site commitments and hiring qualified nursing faculty have been planned for and addressed.

2.7 CURRENT ENROLLMENT / CASELOAD

After receiving approval for substantive change request to CO State Board of Nursing (SBON) and ACEN nursing accreditation approval processes, pre-nursing student admission to three BS programs at CSU is anticipated fall 2026 and successful qualified applicants starting nursing courses at CSU spring 2029. We anticipate approval for 35 student cohorts the first two years, expanding to 40 nursing student admissions with the third cohort. At full capacity, the program will have 120 students in the 3+2 program.

The DPT program is in process to recruit students to start SP29 or FA30. Cohorts of 50 students/year will be recruited for this 3-year program. At full capacity, 150 students will be in the program each year.

2.8 PHYSICAL CONDITION / FUNCTIONALITY OF SPACE

No current dedicated space at CSU in Fort Collins campus. The CSU Board of Governors will review program space options and renovation anticipated costs considering funding to supplement current and potential donor funding. Space renovation would need to begin approximately August 2026 with completion by August 2028, equipment and supplies delivered and functioning by September 2028 to maintain time for nursing courses to begin spring 2029

2.9 TOTAL NEW SPACE REQUIREMENTS / EQUIPMENT

SPACE REQUIREMENTS

The space requirements and room design were based on industry standards and comparable institutions offering similar programs. Much of the size of the spaces is driven by the anticipated cohort sizes for each program and the ratios of equipment for hands on learning. The 4th floor will include the necessary specialty program spaces as well as faculty offices, storage, and support spaces for each program. However, the standard large teaching classrooms that will be required by the programs are anticipated to be located elsewhere on campus.

The DPT program anticipates a (50) person cohort with (3) cohorts for a total of (150) students total over (3) years. The critical learning space for this program is Physical Therapy lab with a single cohort of (50) students plus instructors. The students will learn at (25) therapy benches with a 2:1 ratio. The program provides (2) of these large Physical Therapy Labs.

The MSN program anticipates a (40) person cohort with (3) cohorts for a total of (120) students total over (3) years. The critical learning spaces for this program are the Nursing Skills Lab and High Fidelity Simulation areas. Each Nursing Skills Lab will accommodate 1/2 of a cohort with tables for (20) students and a minimum of (5) nursing beds for a 4:1 ratio. The program provides (2) of the Nursing Skills Labs. The High Fidelity Simulation Area will include (3) simulated hospital rooms

with associate control and debrief rooms for each. The program also includes (2) patient exam rooms.

The full program has been attached as an appendix to this program plan.

EQUIPMENT LIST

The specialized programs also require a myriad of accompanying equipment. For the DPT program this includes the therapy benches in the PT labs as well as various equipment for supporting physical activity and therapeutic exercise. For the MSN program this includes hospital beds and headwalls, simulation manikins, various hospital equipment, and a variety of medical consumable goods.

A full equipment list has been attached as an appendix to this program plan.

2.10 ALTERNATIVE ANALYSIS

There is currently no space allocated for the DPT and MSN programs. Locating these programs in the Health and Medical Center allows them to function in a working healthcare environment that is advantageous to both programs. These programs are able to fully occupy areas of the building that are currently underutilized. This development also allows the CU School of Medicine Medical School Branch Campus to be relocated adjacent to the anatomy teaching spaces in the Anatomy/ Zoology building, which allows for good program and curriculum synergies.

03

DESIGN CRITERIA

3.1 ARCHITECTURAL NARRATIVE

The design for the new Master's of Nursing Program and the new Doctorate in Physical Therapy is located entirely within the existing 4th floor of the Health and Medical Center. This space is currently in use by the CU School of Medicine Medical School Branch Campus which will be relocated in its entirety as a part of this project. No exterior modifications to the existing building are anticipated as a part of the project.

The area of renovation on the 4th floor includes the entirety of the floor plate. Existing walls and rooms have been maintained to the greatest extent possible based on the new program requirements. The location of the corridors and flow of the existing spaces have been maintained. The floor plan has been organized to provide two distinct zones to house the programs while still sharing amenity spaces. The DPT program is located in the north and west side of the building while the MSN program is located in the south and east of the building. The existing kitchenette, new changing room, hallway lockers, and restrooms will be shared between the two programs.

The existing finishes are in good condition and will remain wherever possible like inside the existing office suite. The new finishes will coordinate with the existing motifs and color palette. New finishes within the simulation spaces will mimic those of a healthcare environment to provide a realistic learning environment.

3.2 MECHANICAL NARRATIVE

GENERAL

The project is located on the 4th of the Health and Medical Center Building. Existing mechanical and plumbing systems will be modified to accommodate the new program. The goal of the mechanical and plumbing building systems will be to provide a safe and reliable facility that meets the requirements of the facility users along with meeting the needs of project budget, energy conservation, sustainable design and building maintenance.

Refer to the Architectural plans and narrative for additional information.

DESIGN CRITERIA

Location: Ft Collins, Colorado, 5,000 ft. above sea level

Outside Design Conditions (based on CSU Standards):

Summer:	98°F DB, 62°F MCWB
Winter:	-5°F DB

Indoor Design Temperatures:

Cooling, occupied spaces:	72°F, +/- 2°F
Cooling, unoccupied spaces:	80°F
Heating, occupied spaces:	72°F, +/- 2°F
Heating, unoccupied spaces:	60°F
Humidity Control:	None

SUPPLY AND RETURN AIR SYSTEMS

The 4th floor is served by an overhead VAV air distribution system. Reheat is provided at each zone by heating water coils at the VAV boxes.

There are 33 existing VAV boxes on the 4th floor. For the new space configuration:

(14) VAV's will remain in place as is and be reused.

(17) VAV's will be reused but with duct distribution and diffuser modifications.

(2) VAV's will be removed.

(11) new VAV's and associated ductwork distribution to new diffusers will be provided.

TAB adjustments and reporting will be performed for all devices on the 4th floor.

Return air is configured as a plenum return. New transfer air ductwork will be provided at full height walls to connect the plenum return system.

EXHAUST AIR SYSTEMS

A new general exhaust system will be provided to serve new restrooms, changing and storage rooms.

PLUMBING SYSTEMS

Existing sinks that are not part of the new program will be demolished. Hot and cold water, waste and vents will be extended to new plumbing fixture locations. Waste connections to new fixtures will have some impact on the floor below to connect new piping to existing risers.

FIRE PROTECTION SYSTEMS

The building is required to be sprinkled throughout. Modifications to existing sprinkler placement will be required to accommodate the new program.

The fire protection system shall be designed to comply with CSU Standards and FM Global requirements, in addition to the applicable NFPA requirements.

3.3 ELECTRICAL NARRATIVE

GENERAL

The project is located on the 4th of the Health and Medical Center Building. Existing electrical systems (power, lighting, lighting controls and fire alarm) will be modified to accommodate the new program. The goal of the electrical building systems will be to provide a safe and reliable facility that meets the requirements of the facility users along with meeting the needs of project budget, energy conservation, sustainable design and building maintenance.

Refer to the Architectural plans and narrative for additional information.

EXISTING CONDITIONS

Electrical Distribution System:

Normal power and standby power branch circuit panelboards are located in the electrical room on the fourth level. This equipment is fed from the main distribution equipment located on the main level. It appears one branch circuit panelboard is located within a storage room on the South side of the building.

Emergency (life safety) panelboards are located on the third

level to serve loads on the fourth level.

Lighting and Lighting Controls System:

The existing lighting system consists of a variety of LED luminaires.

The existing lighting control system consists of a low-voltage system deploying manual switching, occupancy/vacancy sensors, daylight harvesting photosensors, etc. throughout the space.

General Power System:

Receptacles are located throughout the floor on walls, floors and ceilings to provide general power and dedicated power for equipment.

Fire Alarm System:

The existing fire alarm system consists of ceiling mounted, speaker/strobes and strobes to provide audible and visual notification of alarms.

Manual pull stations are located near each stair.

Photoelectric smoke detectors are located within the electrical closet, IDF room, server room and elevator lobby.

ELECTRICAL DISTRIBUTION SYSTEM

Major modifications to the existing electrical distribution system are not anticipated. The existing branch circuit panelboards and step-down transformers located in the electrical closet will remain. New branch circuits will be connected to this equipment as required.

The existing branch circuit panelboard located in the storage room on the South side of the building may need to be relocated based on the intended space plan modifications.

LIGHTING AND LIGHTING CONTROLS SYSTEM

Existing LED luminaires will be removed as required to accommodate wall and ceiling demolition. The existing luminaires will be reused and relocated as much as possible within the renovated spaces. New LED luminaires will be provided as required for the fourth level renovation.

New LED luminaires will be specified to match the color temperature and color rendering index of the existing lighting system.

Existing lighting control devices will be disconnected and removed as required to accommodate wall and ceiling demolition. The existing lighting control devices will be reused and relocated within the renovated spaces. New lighting control devices will be provided as required and will match the manufacture of the existing lighting control system.

GENERAL POWER SYSTEM

Existing receptacles and power connections located on walls or ceilings scheduled for demolition will be disconnected and removed. Existing branch circuits will be protected in these areas to accommodate connection to new devices and equipment.

Existing power connections to mechanical and other equipment scheduled for removal will be disconnected and removed. The associated branch circuits for these components will be removed entirely back to the source panelboards.

New receptacles and connections will be provided as required for the space plan modifications.

GFCI receptacles will be provided where required by NEC 210.8.

Automatic controlled receptacles will be provided where required by IECC C405.11. The receptacles will be split-controlled utilizing local lighting occupancy sensors.

All receptacles will be specification grade.

Floor receptacles will be provided in meeting rooms as required by NEC 210.65.

All duplex and special purpose receptacles indicated for specific equipment will be connected to a dedicated circuit.

Convenience receptacles for general use, such as offices, lounges, lobbies, etc., will have a maximum of six (6) duplex receptacles per 20A, single-pole circuit.

Power will be for mechanical equipment and owner equipment as required.

FIRE ALARM SYSTEM

Existing fire alarm devices will be relocated and reconnected to the existing system as required for the space plan modifications.

New fire alarm devices will be provided as required and will match the manufacture of the existing fire alarm system.

3.4 TECHNOLOGY NARRATIVE

The technology systems for the MSN and DPT programs are critical to program success. Due to teaching methodologies, the ability to run simulations, capture, and record training and teaching scenarios is mission critical for the hands-on learning approach of the healthcare industry. As such, great care has been given to creating a technology plan that accommodates the rigorous program requirements. The entire report has been included as a appendix to this document.

3.5 PARKING REQUIREMENT

The building is to be supported by the existing site infrastructure. Parking is provided in the adjacent surface lots and parking garages that support the general university academic functions.

3.6 SUSTAINABILITY GOAL

The project shall strive to improve energy efficiency using an integrated design process, life cycle costing, the use of an energy standard (current OSA energy code) and the specification of energy efficient materials, systems, and equipment. Senate Bill 07-051 directs that state buildings undergoing substantial renovation or new construction conform to the High Performance Certification Program. Based on the current project design and funding model the project falls below the mandatory threshold for the program. However sustainability should remain as a critical factor in project design decisions. Some key areas of focus will include:

- Utilize a third-party commissioning agent to review systems design and systems implementation.
- Design to minimize water usage within the facility.
- Design of mechanical and electrical systems to minimize energy usage.
- Selection of materials high in post-consumer recycled content.
- Use of paints, coatings, sealants and adhesives that have recommended low levels of volatile organic compounds.
- Where possible incorporate the use of natural daylight within human occupied spaces.
- Provide user controllability for lighting systems while still meeting specified requirements.
- Develop the construction schedule to allow for building flush out to minimize the chance of off-gassing within the building.

The project shall comply with the Buy Clean Colorado (BCCO) Act (C.R.S. 24-92-117) which applies to current State public projects for which the project cost exceeds five hundred thousand dollars. The Office of the State Architect (OSA) administers the program pertaining to all construction projects for institutions of higher education. This law requires the OSA to establish a maximum acceptable global warming potential (GWP) limit for eligible materials. These materials are the focus for Buy Clean Colorado due to their high carbon emissions impact and volume use in public projects and since reducing the impact of these materials will provide the greatest reduction of greenhouse gas emissions during the construction of State public projects. Through design optimization and responsible selection of materials, reduction of embodied carbon emissions from building materials can be accomplished. Currently, only the GWP limits of glass are a part of the project scope.

3.7 CSU STANDARDS

The CSU Building Construction Standards Manual is available at:

http://www.fm.colostate.edu/constr_standards

The CSU Standards are to be used as guidelines for design. They are

divided into 3 parts for use by Architects and Engineers: the first part is administrative; the second part discusses requirements for design and deliverables at each stage of the design process; the third part consists of the technical standards arranged by CSI division. The Standards are a work in progress, and as such, any question about the applicability of a standard should be discussed with the project manager. The Standards should never be referenced or copied in Contract Documents – the design is expected to embody and conform to the Standards. Contractors are not to be directed to review the Standards as a contract requirement.

3.8 CSU INCLUSIVITY STANDARDS

Colorado State University requires all capital construction projects to provide inclusive facilities. These facilities are consistent with CSU Strategic Plan, Climate Action Plan (CAP) and Principles of Community that “create and nurture inclusive environments,” and “welcome, value and affirm members of our community, including their various identities, skills, ideas, talents, and contributions.” Standards for each room type are located at:

http://www.fm.colostate.edu/constr_standards

CSU Accessibility Standards outline additional ADA requirements.

Additional information can also be found at the website for the Inclusive Physical & Virtual Campus located at:

<https://inclusivecampus.colostate.edu>

3.9 CODE ANALYSIS NARRATIVE

EXISTING ANALYSIS:

Construction Type: II-B

Separated Mixed Use

Fully Sprinklered

Emergency Voice / Alarm System Throughout

Existing Areas: (No Square Footage Changes)

Basement: 17,340 SF

First Floor: 38,186 SF

Second Floor: 37,079 SF

Third Floor: 37,095 SF

Fourth Floor: 26,797 SF (Area of Renovation)

Total Area: 156,327SF

The project design does not anticipate any significant changes to the existing building code approach. The new project will be developed in accordance with the current building codes as adopted by the Colorado Office of the State Architect (OSA). The current codes are as follows:

The 2024 edition of the International Building Code (IBC)

(As adopted by the Colorado State Buildings Program as follows: Chapter 1 as amended, Chapters 2-35 and Appendices C and I).

The 2024 edition of the International Existing Building Code (IEBC)

(As adopted by the Colorado State Buildings Program as follows: Chapters 2-16, Appendices AC and Resource A) Effective December 2020.

The 2024 edition of the International Mechanical Code (IMC)

(As adopted by the Colorado State Buildings Program as follows: Chapters 2-15 and Appendix A)

The 2024 edition of the International Energy Conservation Code (IECC)

(As adopted by the Colorado State Buildings Program and Colorado Energy Office)

The 2023 edition of the National Electrical Code (NEC) (NFPA 70®)

(As adopted by the Colorado State Electrical Board Effective August 1, 2024) For amendments refer to the Secretary of State Code of Colorado Regulations 3 CCR 710-1

The 2021 edition of the International Plumbing Code (IPC), first printing (March 2020)

(As adopted by the Colorado State Plumbing Board of Plumbers Effective April 30, 2025) For amendments refer to the Secretary of State Code of Colorado Regulations 3 CCR 720-1

The 2021 edition of the International Fuel Gas Code (IFGC) first printing (August 2020)

(As adopted by the Colorado Examining Board of Plumbers Effective May 15, 2023)

The National Fire Protection Association Standards (NFPA)

(As adopted by the Department of Public Safety/Division of Fire Prevention and Control)

The 2024 edition of the International Fire Code (IFC)

(As adopted by the Department of Public Safety/Division of Fire Prevention and Control (DFPC).

The Current edition of ICC/ANSI A117.1, Accessible and Usable Buildings and Facilities

As referenced in the adopted edition of the International Building Code.

04

PROJECT SCHEDULE

+

FINANCING

+

COST ESTIMATE

4.1 PROJECT SCHEDULE AND PHASING

Once necessary approvals and funding are in place the project will take approximately 3 years to complete. A package indicating the details of the nursing program is currently under review by the Colorado State Board of Nursing. A critical component of the design and construction schedule will be a space completed and ready for the CU School of Medicine Medical School Branch Campus to move into so that the 4th floor of the Health and Medical Center can be vacated in the fall of 2027 for renovation.

ANTICIPATED MILESTONES

Fall 2025	Project Approval
Fall 2027	4th Floor Vacated
Jan 2028	Construction Begins
Sept 2028	Construction Completion
Fall 2028	Simulation Software Cx and Move-In
Spring 2029	Classes Start

4.2 FINANCING

PENDING

In 2023, CSU obtained startup funding in the amount of 3 million dollars from a local foundation for this 3+2 collaborative nursing program. This funding is the lead gift towards a campaign to support space renovation, and salary for the recently hired CSU Pueblo 3+2 Nursing Program Director in Fort Collins, nursing staff and faculty salaries during the initial 2-3 years of the program, until tuition is fully flowing with full enrollment. This allows faculty and staff to finalize simulation, laboratory, faculty orientations including clinical site and classroom set-up and LMS course preparation for the initial nursing courses planned to begin in January 2029. CSU is actively fundraising and anticipates additional donor funding will be obtained after SBON and nursing accreditation program approvals are complete; indeed, several conversations are in final stages. CSU and CSU Pueblo will continue to explore additional donor funding for student scholarships and to supplement individual universities and system financing.

4.3 COST ESTIMATE

Construction cost estimates were developed by a 3rd-party General Contractor based on databases of cost for other CSU campus projects as well as recently completed similar programs in the Front Range area. The technology systems and simulation software costs were estimated by the technology consultant with assistance from the system manufacturer's representative based on similar system design and installation across the nation. CSU standards specify that the A/E document 20% of the construction budget in bid alternates, to cover potential volatility in the construction market as the project progresses.

05

APPENDICES

A. SITE MAP

B. SPACE PROGRAM

C. EQUIPMENT LIST

D. FLOOR PLANS

E. CONCEPTUAL RENDERING AND FLY-THROUGH

F. BUDGET AND 3RD PARTY COST ESTIMATE

G. TECHNOLOGY PROGRAM

**H. CU SCHOOL OF MEDICINE: MED SCHOOL
BRANCH CAMPUS RELOCATION STUDY**

APPENDIX A



University Avenue

Center Avenue Mall

Libby Coy Way

S Mason Street

S College Ave

Remington Street

W Pitkin St

W Lake Street

W Prospect Road

Max Guideway

S College Ave

Remington Street

Project Site:
CSU Health and Medical Center
4th Floor



APPENDIX B

4th Floor Plan

Program Area	NSF/Space	Qty. of Spaces	Total NSF	Mult.	NASF	# Staff/Students/Area	Notes
Shared Nursing/PT Program Spaces							
Instructional Spaces							
Large Classroom	1,000	0	0	1.0	0	40 N	ELSEWHERE ON CAMPUS
Small Classroom/Seminar/Meeting Room	350	1	350	1.0	350	15	Small classroom/seminar room to also be used for large meeting room
Subtotal Shared Instructional Spaces			350		350		
Shared Support Spaces							
Student Break Room	783	1	783	1.0	783	25 to 30	nursing 4-5 students at one time, if other places to go to. mostly grad students)Students are on campus in the facility 8 hours/day for both PT and Nursing and need a place to break for lunch, store lunches, couple microwaves (also in a social area?) to warm food, refrigerator, sink. Should be remote from skills testing for privacy. PT would like an extra PT bench where students can practice skills during non-class hours
Small Meeting Room	225	1	225	1.3	293	6 to 8	can be shared
Group Study/Collaboration Room Medium	160	2	320	1.3	416	6 to 8	
Group Study/Collaboration Room Small	100	2	200	1.3	260	2 to 4	
Subtotal Support Spaces			1,528		1,752		
Shared Office Support Spaces							
Reception Desk	150	1	150	1.3	195	2	2 Computers for administrative staff, 1 helps students through the program & housing.
Reception Storage	100	1	100	1.3	130	0	Houses equipment that students can check out (for nursing students)
Office Waiting Area	100	1	100	1.3	130	4	How many people should this support at one time?
Faculty Workroom	102	1	102	1.3	133	0	Printer, paper products storage, work table space.
Faculty Kitchenette	61	1	61	1.3	79	2	Kitchenette with Microwave, refrigerator, sink, coffee pot. Not a place to eat lunch
Office Storage	82	1	82	1.3	107	0	
Subtotal Shared Office Spaces			595		774		
Shared Programs Total			2,473		2,875		
Nursing Program							
Offices							
Grad Program Director	160	1	160	1.3	208	3	planning for (9) FTE
Reception Admin Assistant	120	1	120	1.3	156	2	Included in shared space above
Faculty	120	6	720	1.3	936	0	
Adjunct Faculty	120	1	120	1.3	156	1	Open Office
Storage	82	1	82	1.3	107	0	
Subtotal Nursing Offices			1,202		1,563		
Dedicated Nursing Classrooms							
Large Classroom	1,025	0	0	1.0	0	40	ELSEWHERE ON CAMPUS: Each cohort = 40 students, there will be three cohorts running concurrently once they grow to full capacity. Won't ever have all 120 students in the facility at one time. 1/3 in simulation, 2/3 in clinicals or general classes elsewhere. Will move equipment into the classroom for demonstrations, so wider doors would be beneficial. This can be a shared classroom with PT if more than one option and works with scheduling. currently included above in shared spaces
Subtotal Nursing Classrooms			0		0		
Simulation Labs							
Simulation Suite:							
Simulation Hospital Room	200	3	600	1.3	780	0	(1) bed each sim hospital room. Can only have (12) students max in sim suite at one time
Sim Lab Control Room	75	3	225	1.3	293		Locate control rooms between pairs of sim hospital rooms. (2) people each room, will run (2) simulations at one time
Debriefing Rooms	264	3	792	1.0	792	13	Don't need direct visibility into simulation labs but connected to sim hospital rooms via AV, (12) students + instructor
Nurses Station / Sim Operations Specialist Workstation	149	1	149	1.0	149	2	(1-2) computer stations, mock phone, microphone/camera for simulations.
Med Dispensing Room	67	1	67	1.3	87	1	In an enclosed room with a microphone and camera for simulations, Confirm current requirements for (2) separate lockable doors. Lockate behind nursing station. Larger door to accommodate cart sizes, undercounter fridge
Sim Restroom	99	1	99	1.3	129	2	(1) sim toilet (1) sim shower with lift
Skills Labs:							
Skills Lab/Instruction Area	1,260	2	2,520	1.0	2,520	21	The 40 student cohort will be subdivided into two skills labs (or four rooms for 10 students each), (4) students/bed, total of (5) beds min each lab. Provide attached storage room to support both skills labs. (2) sinks each lab. Integrate instructional area for (20) seats. 20 cubbies Max of 12 students in a group. (1) AV video capture at 2 beds, each side of room so no audio overlap. need eye wash station (vinegar/bleach) check with Tony for csu standards. can it be countertop mounted adj to sink?
Sim Skills Lab Storage/Supply room	155	1	155	1.0	155	0	They like having a connecting door between storage room and each skills lab so can access both labs from storage room. One side for graduate supplies, one side for undergraduate supplies

OSCE/Standardized Patient Exam Suite							
Exam Rooms	208	2	416	1.3	541	8	Used as an OSCE space with standardized patient actors. provide video cameras and microphones for skills capture Large enough so they can be flexible for other uses, meeting room with chairs/table. Also used for back-up space for skills practice, for check-offs which are private and need cameras. Wider doors to move beds in and out.
Changing Room	201	1	201	1.3	261	1	(4) lockers, separate from sim suite. Can be shared with PT
Simulation General Storage	132	1	132	1.3	172		storage for additional manikins, several hospital beds & gurneys, simulators
Prep Room	95	1	95	1.3	124	2	stainless steel utility sink and countertop that's easily cleanable for fake blood. Hooks on wall, tubes, fridge for chickens
Subtotal Simulation Spaces			5,451		6,002		
Nursing Space Total			6,653		7,564		

Physical Therapy							
Offices							
Directors Office	181	1	181	1.3	235	1	(15) Total, (8) would have offices elsewhere on campus, 4-5 on site FT needing private offices
Clinical Coordinator Office	120	4	480	1.3	624	1	
Shared Faculty Workstations	30	8	240	1.3	312	1	Shared workstations for faculty who have offices elsewhere on campus. Shared 2 people/station
Subtotal PT Offices			901		1,171		
Dedicated Physical Therapy Labs							
PT Lab	2,438	2	4,876	1.0	4,876	53	Cohort of 50 will be all together in one lab space. Instructors will include a lead instructor plus (2) clinical faculty/adjuncts). (25) Hi-lo, motorized therapy benches for students, plus (1) table for demonstration by an instructor. Each bench needs a 10'x7' space clear. All to face an instruction wall with projector/markerboards. (1) demonstration table with video camera above and projected to monitors for students visibility. (1) podium.. There will be a total of (3) cohorts for a total of 150 students over 3 years. 1/3 of them will be in clinical rotations, so will have 100 students at one time on the floor. Ideally, they'd have (2) labs or (1) lab plus multi-purpose flex space. It could be one large space with an operable partition. Equipment: (1) treadmill, (1) low, flat square table, strength testing. Refrigerator, ice machine (could be shared with nursing, locate in a break room?), PT needs an autoclave, but nursing doesn't. Power needed for all tables, for e-stim equipment, computers
Lab Storage	70	2	140	1.3	182	20	Shelving, physio balls, linens, bands
Washer/Dryer and Linens Storage	76	1	76	1.3	99		can be shared with nursing
Subtotal PT Labs			5,092		5,157		
Physical Therapy Total			5,993		6,328	0	

Support Spaces & Common Areas							
Student Lounge / Social Spaces	500	0	0	1.0	0		
Gender Neutral Toilet Rooms	218	0	0	1.3	0		leave in existing location. NIC in floor take-off
Storage	90	0	0	1.3	0		
Custodial Closet	67	0	0	1.3	0		leave in existing location
Personal Health	87	0	0	1.3	0		leave in existing location
Electrical	100	0	0	1.3	0		leave in existing location
IT Room	260	0	0	1.0	0		leave in existing location
Support Spaces Total			0		0		

Summary of Departments	Total NSF	NASF		Notes
Shared Use Program Spaces	2,473	2,875		
Nursing	6,653	7,564		
Physical Therapy	5,993	6,328		
Support Space Common Areas	0	0		
Total Net Assignable Square Feet		16,767		
TOTAL GROSS SQ FT - 63% Efficiency		* 26,615		
4th floor Existing Available Area		26,797		

APPENDIX C.1

FURNITURE ONLY			
SPACE TYPE	QTY	COST/SPACE	EXTENDED COST
Reception	1	\$ 17,486.00	\$ 17,486.00
Private Office	13	\$ 5,658.00	\$ 73,554.00
Workstation	3	\$ 2,646.00	\$ 7,938.00
Group Study Medium	2	\$ 11,000.00	\$ 22,000.00
Group Study Large	1	\$ 14,200.00	\$ 14,200.00
VR/AR Room	1	\$ -	\$ -
Student Break Room	1	\$ 29,300.00	\$ 29,300.00
Staff Kitchenette	1	\$ -	\$ -
Instructor Workroom	1	\$ 11,660.00	\$ 11,660.00
Conference	2	\$ 5,000.00	\$ 10,000.00
Nursing Skill Lab	2	\$ 105,200.00	\$ 210,400.00
Skills General Storage & Prep	1	\$ 4,050.00	\$ 4,050.00
W/D Linen Storage	1	\$ -	\$ -
Exam Room	2	\$ 4,800.00	\$ 9,600.00
Nurse's Station	1	\$ 11,404.00	\$ 11,404.00
Med Disp	1	\$ -	\$ -
High Fidelity Test Sim	3	\$ 13,300.00	\$ 39,900.00
Sim Lab Observation	3	\$ 1,500.00	\$ 4,500.00
Debrief	3	\$ 16,800.00	\$ 50,400.00
Sim Bathroom	1	\$ -	\$ -
Seminar	1	\$ 22,000.00	\$ 22,000.00
Lactation	1	\$ 3,700.00	\$ 3,700.00
Physical Therapy Suites	2	\$ 42,500.00	\$ 85,000.00
Lab Storage	2	\$ 1,350.00	\$ 2,700.00
Lounge Small (bench)	11	\$ 1,500.00	\$ 16,500.00
Lounge Medium	4	\$ 8,900.00	\$ 35,600.00
Storage Room - Exam	1	\$ 13,400.00	\$ 13,400.00
Patio	1	\$ 48,800.00	\$ 48,800.00

COST OF FURNITURE	\$	744,092.00
10% DEALER DESIGN FEES	\$	74,409.20
5% FREIGHT/SHIP CHARGES	\$	37,204.60
15% INSTALLATION FEES	\$	111,613.80

GRAND TOTAL	\$	967,319.60
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APPENDIX C.2

Itemized List / Room Type

Room Type	Item	Quantity	Unit Cost	Extended Cost
Private Office	Height Adjustable Desk	1	\$ 952.00	\$ 952.00
	Fixed Height Return Desk	1	\$ 410.00	\$ 410.00
	Mobile B/F Pedestal	1	\$ 282.00	\$ 282.00
	Bookcase	1	\$ 565.00	\$ 565.00
	Lateral File	1	\$ 586.00	\$ 586.00
	Task Chair	1	\$ 800.00	\$ 800.00
	Guest Chair	2	\$ 298.00	\$ 596.00
	Guest Table	1	\$ 365.00	\$ 365.00
	Task Light	1	\$ 300.00	\$ 300.00
	Single Monitor Arm	1	\$ 202.00	\$ 202.00
	Glass Markerboard	1	\$ 600.00	\$ 600.00
			TOTAL	\$ 5,658.00
Instructor Workspace	Height Adjustable Desk	1	\$ 952.00	\$ 952.00
	Fixed Height Return Desk	1	\$ 410.00	\$ 410.00
	Mobile B/F Pedestal	1	\$ 282.00	\$ 282.00
	Task Chair	8	\$ 800.00	\$ 6,400.00
	Single Monitor Arm	8	\$ 202.00	\$ 1,616.00
	Panels & Dividers	1	\$ 2,000.00	\$ 2,000.00
				TOTAL
Workstation	Height Adjustable Desk	1	\$ 952.00	\$ 952.00
	Fixed Height Return Desk	1	\$ 410.00	\$ 410.00
	Mobile B/F Pedestal	1	\$ 282.00	\$ 282.00
	Task Chair	1	\$ 800.00	\$ 800.00
	Single Monitor Arm	1	\$ 202.00	\$ 202.00
				TOTAL
Reception	Reception Style Desk	1	\$ 8,000.00	\$ 8,000.00
	Mobile B/F Pedestal	1	\$ 282.00	\$ 282.00
	Task Chair	2	\$ 800.00	\$ 1,600.00
	Single Monitor Arm	2	\$ 202.00	\$ 404.00
	Lounge Chairs A	2	\$ 3,000.00	\$ 6,000.00
	Side Table	1	\$ 1,200.00	\$ 1,200.00
				TOTAL
Group Study Medium	24" x 60" Mobile Nesting Tables	4	\$ 1,400.00	\$ 5,600.00

Meeting Room Chairs	8	\$	600.00	\$	4,800.00
Glass Markerboard	1	\$	600.00	\$	600.00
			TOTAL	\$	11,000.00

Group Study Large

24" x 60" Mobile Nesting Tables	5	\$	1,400.00	\$	7,000.00
Meeting Room Chairs	10	\$	600.00	\$	6,000.00
Glass Markerboards	2	\$	600.00	\$	1,200.00
			TOTAL	\$	14,200.00

Student Break Room

Round Tables- 36"	7	\$	700.00	\$	4,900.00
Booth	2	\$	2,000.00	\$	4,000.00
Guest Chairs	20	\$	500.00	\$	10,000.00
Lounge Chairs	2	\$	2,500.00	\$	5,000.00
Side Table	1	\$	1,200.00	\$	1,200.00
Bench	3	\$	1,000.00	\$	3,000.00
Laptop Table	2	\$	600.00	\$	1,200.00
			TOTAL	\$	29,300.00

Lactation

Lounge Chairs	1	\$	2,500.00	\$	2,500.00
Side Table	1	\$	1,200.00	\$	1,200.00
			TOTAL	\$	3,700.00

Patio

Loveseat	4	\$	2,800.00	\$	11,200.00
Lounge Chair Medium	8	\$	1,600.00	\$	12,800.00
Side Chair	24	\$	600.00	\$	14,400.00
Round Table	6	\$	1,200.00	\$	7,200.00
Cocktail Table	2	\$	800.00	\$	1,600.00
Side Table	4	\$	400.00	\$	1,600.00
			TOTAL	\$	48,800.00

Seminar

24" x 60" Mobile Nesting Tables	8	\$	1,400.00	\$	11,200.00
Meeting Room Chairs	18	\$	600.00	\$	10,800.00
			TOTAL	\$	22,000.00

Lounge Small

Bench	11	\$	1,500.00	\$	16,500.00
			TOTAL	\$	16,500.00

Instructor Workspace

Task Chairs	8	\$	1,500.00	\$	12,000.00
			TOTAL	\$	12,000.00

Lounge Medium	Lounge Chair Medium	2	\$	2,500.00	\$	5,000.00
	Side Table	1	\$	1,200.00	\$	1,200.00
	Laptop Table	2	\$	600.00	\$	1,200.00
	Power Tower	1	\$	1,500.00	\$	1,500.00
					TOTAL	\$
Nursing Skills Lab	Headwall	6	\$	5,000.00	\$	30,000.00
	Hospital Bed	6	\$	3,500.00	\$	21,000.00
	Monitor and Keyboard for Vitals	6	\$	1,000.00	\$	6,000.00
	Bed Locator Wall Protector	6	\$	1,500.00	\$	9,000.00
	Bedside Table	6	\$	500.00	\$	3,000.00
	Overbed Table	6	\$	500.00	\$	3,000.00
	24" x 60" Mobile Nesting Tables	10	\$	1,400.00	\$	14,000.00
	Classroom Chairs	20	\$	600.00	\$	12,000.00
					TOTAL	\$
Exam Room	Exam Table	1	\$	2,000.00	\$	2,000.00
	Monitor and Keyboard for Vitals	1	\$	700.00	\$	700.00
	Glass Markerboard	1	\$	600.00	\$	600.00
	Nurses Stool	1	\$	1,500.00	\$	1,500.00
	24" x 60" Mobile Nesting Tables	4	\$	1,400.00	\$	5,600.00
	Classroom Chairs	13	\$	600.00	\$	7,800.00
				TOTAL	\$	18,200.00
Nurse's Station	Single Monitor Arm	2	\$	202.00	\$	404.00
	Reception Style Desk	1	\$	8,000.00	\$	8,000.00
	Task Chairs	2	\$	1,500.00	\$	3,000.00
				TOTAL	\$	11,404.00
High Fidelity Test Sim	Hospital Bed	1	\$	5,000.00	\$	5,000.00
	Bed Locator Wall Protector	1	\$	1,500.00	\$	1,500.00
	Headwall	1	\$	5,000.00	\$	5,000.00
	Bedside Table	1	\$	500.00	\$	500.00
	Markerboard	1	\$	600.00	\$	600.00
	Monitor and Keyboard for Vitals	1	\$	700.00	\$	700.00
				TOTAL	\$	13,300.00
Conference	60" Round Table	1	\$	1,400.00	\$	1,400.00
	Classroom Chairs	6	\$	600.00	\$	3,600.00

TOTAL \$ 5,000.00

Sim Lab Observation	Task Chairs	1	\$	1,500.00	\$	1,500.00
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Debrief	24" x 60" Mobile Nesting Tables	6	\$	1,400.00	\$	8,400.00
	Markerboard	1	\$	600.00	\$	600.00
	Classroom Chairs	13	\$	600.00	\$	7,800.00
				TOTAL	\$	16,800.00

Sim Bathroom no furniture

Physical Therapy Suite	Adjustable Height Treatment Tables	26	\$	2,100.00	\$	54,600.00
	Classroom Chairs	50	\$	600.00	\$	30,000.00
	Storage Racks	6	\$	600.00	\$	3,600.00
	Pneumatic Stools	26	\$	350.00	\$	9,100.00
				TOTAL	\$	97,300.00

Storage Room- Exam	24" x 60" Mobile Nesting Tables	4	\$	1,400.00	\$	5,600.00
	Classroom Chairs	13	\$	600.00	\$	7,800.00
				TOTAL	\$	13,400.00

		TOTAL	\$	-
Exam Room - Per Room				
Included In Furniture Budget	Exam Table	1	\$ 2,000.00	\$ 2,000.00
	Monitor and Keyboard for Vitals	1	\$ 700.00	\$ 700.00
	Glass Markerboard	1	\$ 600.00	\$ 600.00
	Nurses Stool	1	\$ 1,500.00	\$ 1,500.00
	24" x 60" Mobile Nesting Tables	4	\$ 1,400.00	\$ 5,600.00
	Classroom Chairs	13	\$ 600.00	\$ 7,800.00
		TOTAL	\$	18,200.00

Nurse's Station

Equipment	Item	Quantity	Unit Cost	Extended Cost
	Equipment?			
Nurse's Station				
Included In Furniture Budget	Single Monitor Arm	2	\$ 202.00	\$ 404.00
	Reception Style Desk	1	\$ 8,000.00	\$ 8,000.00
	Task Chairs	2	\$ 1,500.00	\$ 3,000.00
		TOTAL	\$	11,404.00

High Fidelity Test Suite - not per room, per suite

Equipment	Item	Quantity	Unit Cost	Extended Cost
	CUBICLE CURTAIN ON CEILING MOUNTED TRACK	3	\$ -	\$ -
	MOBILE VITALS MACHINE W/ BP CUFF (STORE IN STORAGE RM)	2	\$ -	\$ -
	GLOVE DISPENSER (WALL MOUNTED OR ON HEADWALL)	3	\$ -	\$ -
	SHARPS CONTAINER	3	\$ -	\$ -
confirm AV	WALL MOUNTED PHONE CONNECTED TO CONTROLS ROOMS	3	\$ -	\$ -
confirm AV	NURSE CALL BUTTON	3	\$ -	\$ -
confirm AV	49" INSTRUCTION MONITOR	3	\$ -	\$ -
	SOAP DISPENSER	3	\$ -	\$ -
	PAPER TOWEL DISPENSER	3	\$ -	\$ -
	HAND SANITIZER (WALL MOUNTED)	3	\$ -	\$ -
	CRASH CART FOR SUITE	1	\$ -	\$ -
	LINENS CART	1		
	Other Equipment?		\$ -	\$ -
		TOTAL	\$	-
High Fidelity Test Suite - not per room, per suite				
Included In Furniture Budget	Hospital Bed	1	\$ 5,000.00	\$ 5,000.00

	Bed Locator Wall Protector	1	\$	1,500.00	\$	1,500.00
	Headwall	1	\$	5,000.00	\$	5,000.00
	Bedside Table	1	\$	500.00	\$	500.00
	Monitor and Keyboard for Vitals	1	\$	700.00	\$	700.00
	Markerboard	1	\$	600.00	\$	600.00
					TOTAL	\$ 13,300.00

Sim Lab Observation

Equipment	Item	Quantity	Unit Cost	Extended Cost	
	WALL-MOUNTED PHONE (CONNECTED TO HOSPITAL RM)	1	\$ -	\$ -	
	other equipment?		\$ -	\$ -	
				TOTAL	\$ -

Sim Lab Observation

Included In Furniture Budget	Task Chairs	1	\$	1,500.00	\$	1,500.00
					TOTAL	\$ 1,500.00

Debrief

Equipment	Item	Quantity	Unit Cost	Extended Cost	
	49" MONITOR	1	\$ -	\$ -	
	other equipment?		\$ -	\$ -	
				TOTAL	\$ -

Debrief

Included In Furniture Budget	24" x 60" Mobile Nesting Tables	6	\$	1,400.00	\$	8,400.00
	Classroom Chairs	13	\$	600.00	\$	7,800.00
	Markerboard	1	\$	600.00	\$	600.00
					TOTAL	\$ 16,800.00

Sim Bathroom

Equipment	Item	Quantity	Unit Cost	Extended Cost	
by contractor	SIM SHOWER	1	\$ -	\$ -	
by contractor	SIM TOILET	1	\$ -	\$ -	
by contractor	SIM SINK	1	\$ -	\$ -	
	BARIATRIC LIFT FOR SHOWER	1	\$ -	\$ -	
	SLIDE BOARD FOR PATIENT TRANSFER	1	\$ -	\$ -	
	other equipment?	1	\$ -	\$ -	
				TOTAL	\$ -

W/D Linen

Equipment	Item	Quantity	Unit Cost	Extended Cost
	Washing Machine	1	\$ 750.00	\$ 750.00
	Dryer	1	\$ 750.00	\$ 750.00
	other equipment?		\$ -	\$ -
			TOTAL	\$ 1,500.00

Student Breakroom

Equipment	Item	Quantity	Unit Cost	Extended Cost
existing to remain?	Microwave	2	\$ 250.00	\$ 500.00
existing to remain?	Refrigerator with Freezer	2	\$ 1,300.00	\$ 2,600.00
existing to remain?	Dishwasher	1	\$ 1,000.00	\$ 1,000.00
	other equipment?		\$ -	\$ -
			TOTAL	\$ 4,100.00

Student Breakroom

Included In Furniture Budget	Item	Quantity	Unit Cost	Extended Cost
	Round Tables- 36"	7	\$ 700.00	\$ 4,900.00
	Booth	2	\$ 2,000.00	\$ 4,000.00
	Guest Chairs	20	\$ 500.00	\$ 10,000.00
	Lounge Chairs	2	\$ 2,500.00	\$ 5,000.00
	Side Table	1	\$ 1,200.00	\$ 1,200.00
	Bench	3	\$ 1,000.00	\$ 3,000.00
	Laptop Table	2	\$ 600.00	\$ 1,200.00
			TOTAL	\$ 29,300.00

Storage Rooms

Equipment	Item	Quantity	Unit Cost	Extended Cost
Sim Lab Storage	MANIKIN STORAGE RACK	1	\$ -	\$ -
Sim Lab Storage	GURNEY	1	\$ -	\$ -
Sim Lab Storage	MANIKIN - HARVEY CARDIAC	1	\$ -	\$ -
Sim Lab Storage	CRIB	1	\$ -	\$ -
Skill General Storage & Prep Room	STAINLESS STEEL UTILITY SINK W/ DRAIN BOARDS EA SIDE	2	\$ -	\$ -
Skill General Storage & Prep Room	SUPPIES CART	1	\$ -	\$ -
Skill General Storage & Prep Room	I.V. POLES		\$ -	\$ -
Skill General Storage & Prep Room	SIM ARMS		\$ -	\$ -
Skill General Storage & Prep Room	SIM ARM SKINS		\$ -	\$ -
Skill General Storage & Prep Room	BINS TO DIVIDE SUPPLIES BY COURSE		\$ -	\$ -

Skill General Storage & Prep Room	PAPER TOWEL DISPENSER	2	\$ -	\$ -
Skill General Storage & Prep Room	SOAP DISPENSER	2	\$ -	\$ -
Skill General Storage & Prep Room	HAND SANITIZER (WALL MOUNTED)	2	\$ -	\$ -
	other equipment?			
			TOTAL	\$ -

Included In Furniture Budget	Storage Racks	9	\$ 2,100.00	\$ 18,900.00
			TOTAL	\$ 18,900.00

Med Dispenser

Equipment	Item	Quantity	Unit Cost	Extended Cost
	MED DISPENSING MACHINE	1	\$ 60,000.00	\$ 60,000.00
	UNDERCOUNTER REFRIGERATOR	1	\$ -	\$ -
	other equipment?		\$ -	\$ -
			TOTAL	\$ 60,000.00

VR/AR Room	*don't have this room			
Equipment				
	need any equipment?			
VR/AR Room				
Placeholder in Furniture	24" x 60" Mobile Nesting Tables	0	\$ 1,400.00	\$ -
	Classroom Chairs	0	\$ 600.00	\$ -
	Glass Markerboards	0	\$ 600.00	\$ -
			TOTAL	\$ -

Signage
 Appliances
 Corridors
 Podiums
 Trash/Recycle

LCD Screens
 Computers
 Docking Stations
 Phones

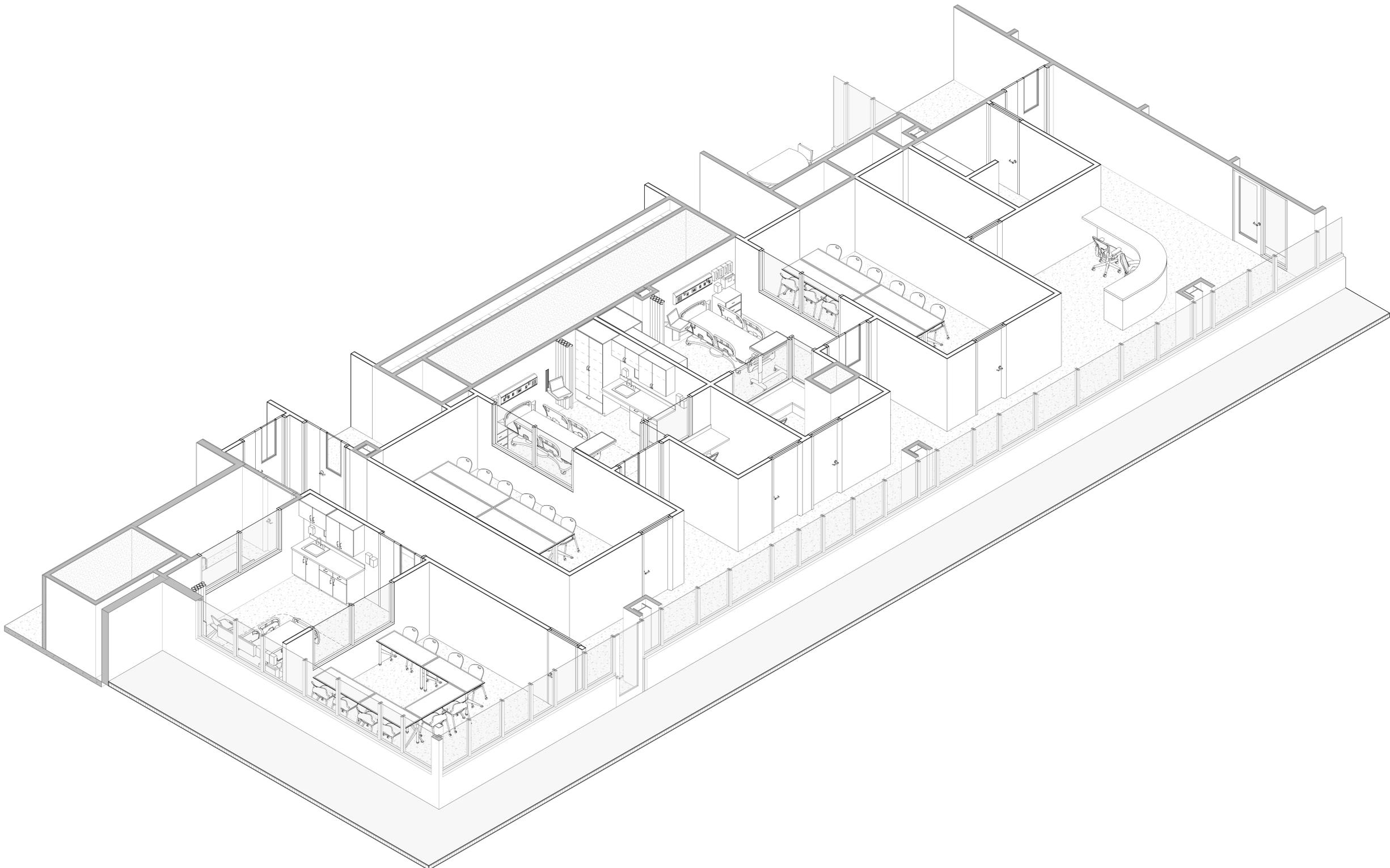
APPENDIX C.4

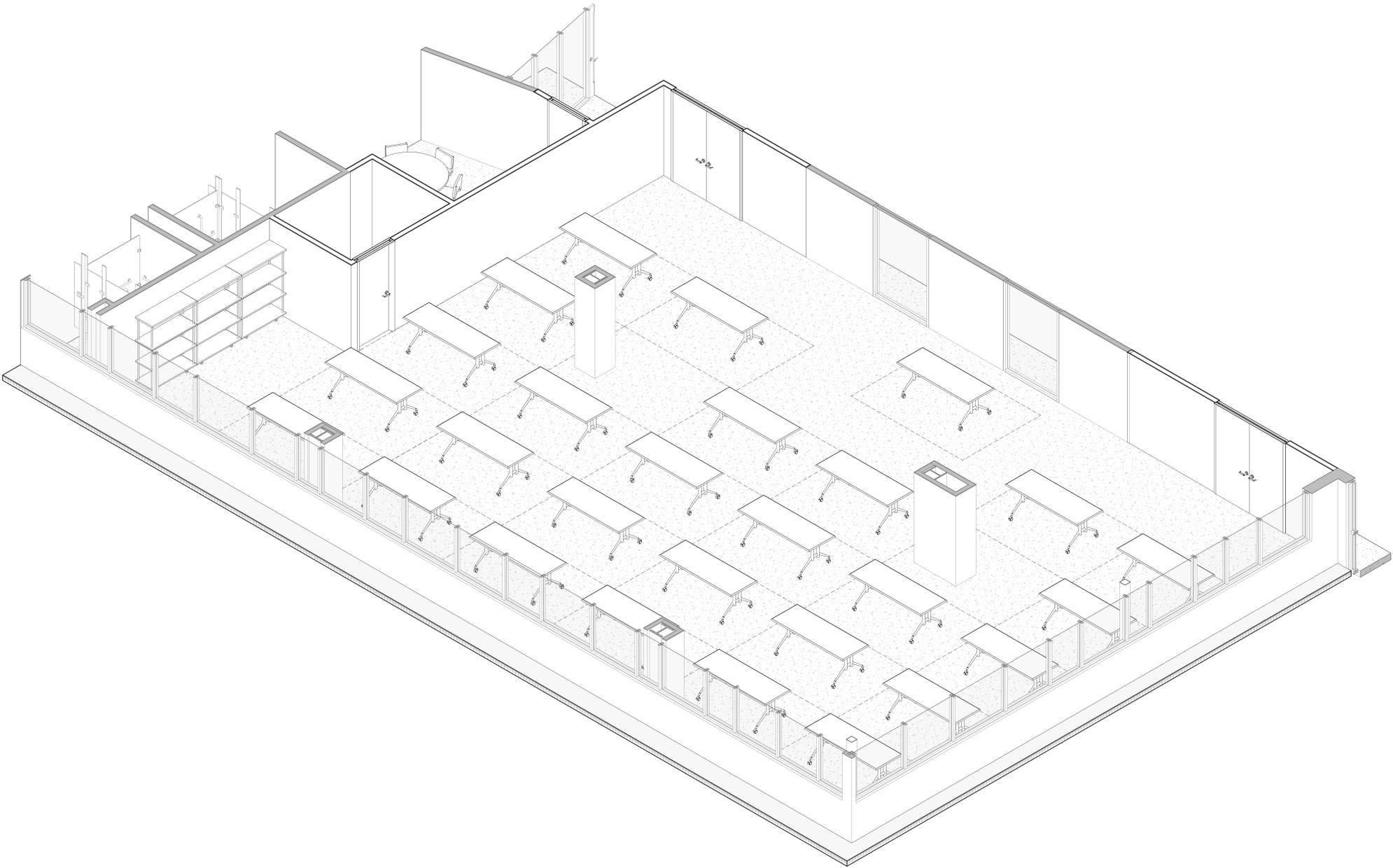
Itemized List / Room Type

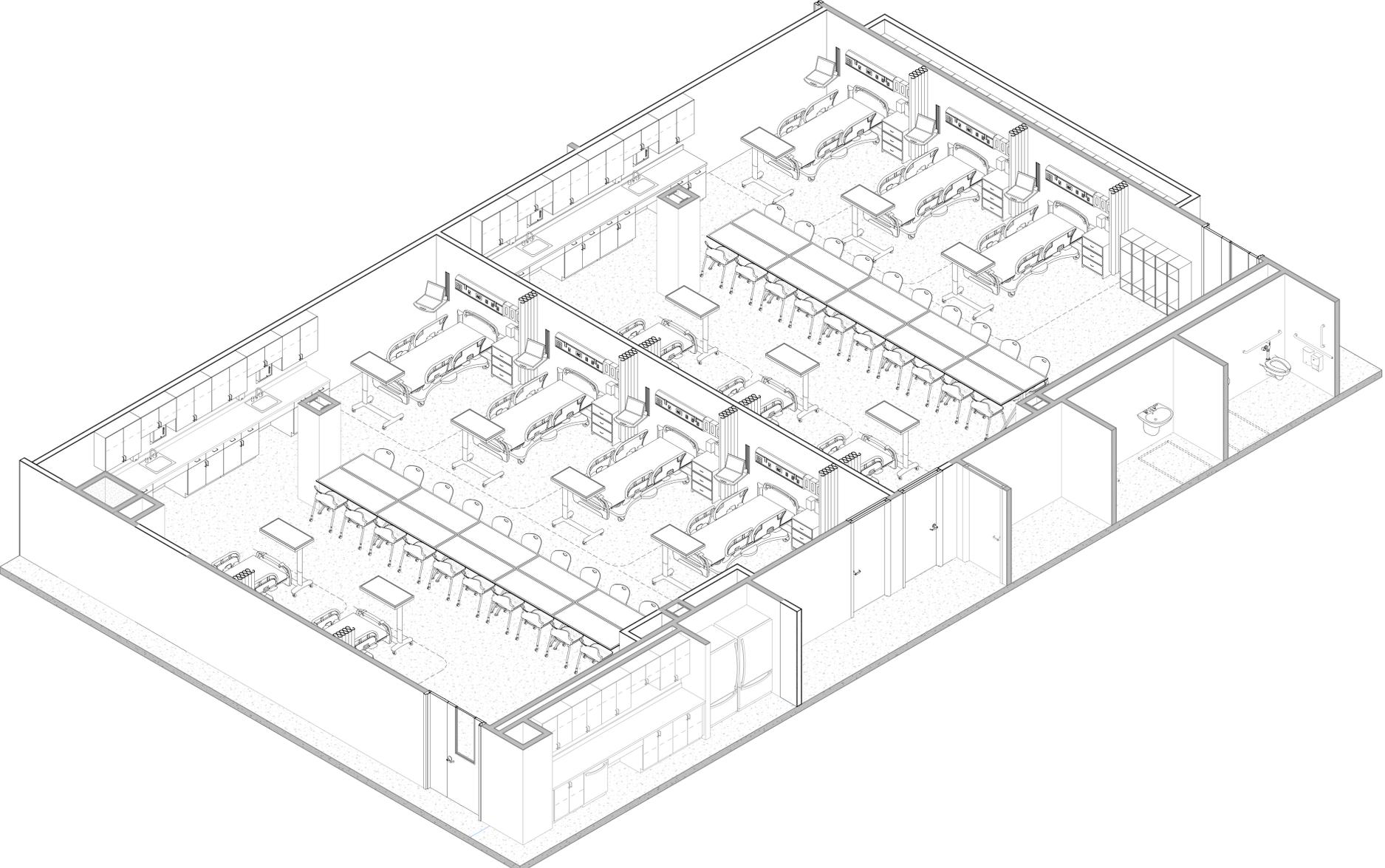
Room Type	Item	Quantity	Unit Cost	Extended Cost
Physical Therapy Suite (Includes both Rooms)				
EQUIPMENT - REF: Draft CSU Dept - Equipment	Item	Quantity	Unit Cost	Extended Cost
	Wall Mounted Upholstered Mat Platform	1	\$ 1,600.00	\$ 1,600.00
	resistance exercise-hand weights	10	\$ 250.00	\$ 2,500.00
	medicine balls	10	\$ 300.00	\$ 3,000.00
	TENS/NMES/IFC units	25	\$ 175.00	\$ 4,375.00
	2 full anatomical skeletons	2	\$ -	\$ -
	2 sets joint models	2	\$ -	\$ -
	inclinometers	50	\$ 45.00	\$ 2,250.00
	goniometers	50	\$ 25.00	\$ 1,250.00
	CPM Machine	3	\$ 4,000.00	\$ 12,000.00
	steps, bolsters, and therapeutic pillows	5	\$ 1,020.00	\$ 5,100.00
	low mat table (can be mounted to wall to save space)*	1	\$ 1,600.00	\$ 1,600.00
	medical step stools	52	\$ 40.00	\$ 2,080.00
	tape measures	100	\$ -	\$ -
	stop watches	50	\$ 9.00	\$ 450.00
	transfer boards	26	\$ 25.00	\$ 650.00
	reflex hammers	100	\$ -	\$ -
	ace wrap bandages (various sizes)	25	\$ 10.00	\$ 250.00
	Purdue pegboard tests	5	\$ 200.00	\$ 1,000.00
	hand grip dynamometer	5	\$ 280.00	\$ 1,400.00
	handheld dynamometers	15	\$ 1,300.00	\$ 19,500.00
	scales (weight)	2	\$ 300.00	\$ 600.00
	BTrackS portable force plates	2	\$ 3,150.00	\$ 6,300.00
	stethoscopes	26	\$ 22.00	\$ 572.00
	BP cuffs	26	\$ 22.00	\$ 572.00
	gait belts	26	\$ 9.00	\$ 234.00
	airex foam pads	26	\$ 82.00	\$ 2,132.00
	Y-balance test kit	5	\$ 270.00	\$ 1,350.00
	leg wedge pillows (instructional sets)	2	\$ 300.00	\$ 600.00
	vestibular rocker boards	5	\$ 230.00	\$ 1,150.00
	Bosu platforms	5	\$ 150.00	\$ 750.00
	exercise balls	5	\$ 210.00	\$ 1,050.00



1 FLOOR PLAN-OVERALL- LEVEL 04
PR-1 1/8" = 1'-0"







APPENDIX E.4



FLY-THROUGH ANIMATION

<https://vimeo.com/1093148472/9aebcd01a8>

APPENDIX F.1

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CSU Nursing + DPT Feasibility Study

Overall Project Budget

8/29/2025

Total Project Budget **\$14,208,208**

Operational and Staffing Costs **\$500,000**

Soft Costs **\$3,186,465**

Owner Contingency (5% of soft cost + construction cost)	\$595,000
Permitting and Inspections	\$50,000
CSU Project Management Fee (1.75% + 125k)	\$289,500
FFE Budget	\$1,267,320
Furniture	\$967,320
PT Equipment	\$100,000
Nursing Equipment	\$200,000
AV Budget (Included In Construction Below)	\$1,721,200
Design Fee (Assumed at 10% of construction cost)	\$933,952
Furniture Design Fee (Assumed 4% of FFE)	\$50,693

Construction Cost **\$9,339,518**

Direct Construction Cost	\$7,881,498
Construction Contingency (3% of construction cost)	\$236,445
General Conditions	\$660,000
Warranty + Insurance	\$196,585
Preconstruction Fee (.25%)	\$22,436
GC's Fee (3%)	\$278,257
Bond	\$64,297

Escalation (.75% per month) **\$10,521,743**

20 Months (January 2027 construction start)

PROPOSAL DATE: May 23, 2025

CSU Nursing and PT Reno - Program Set - Dated April 23, 2025 by HCM			
TRADE DESCRIPTION	PROJECT TOTAL	Cost per GBA	NOTES
DIVISION 01 - SITE LOGISTICS & GENERAL REQUIREMENTS	\$ 470,522	\$ 17.20	
00B Site Logistics	\$ 450,000	\$ 16.45	
01F Final Cleaning	\$ 20,522	\$ 0.75	
DIVISION 02 - EXISTING CONTITIONS	\$ 218,904	\$ 8.00	
02A Demolition	\$ 218,904	\$ 8.00	
02B Hazardous Material Removal	\$ -	\$ -	NA
DIVISION 05 - METALS	\$ 15,685	\$ 0.57	
05B Miscellaneous Metal Fabrications	\$ 15,685	\$ 1.00	
DIVISION 06 - WOODS, PLASTICS, & COMPOSITES	\$ 189,709	\$ 6.93	
06A Rough Carpentry	\$ 39,213	\$ 2.50	
06B Architectural Woodwork	\$ 150,497	\$ 5.50	
DIVISION 07 - THERMAL & MOISTURE PROTECTION	\$ 10,945	\$ 0.40	
07H Firestopping	\$ 4,104	\$ 0.15	
07I Joint Sealants	\$ 6,841	\$ 0.25	
DIVISION 08 - OPENINGS	\$ 326,524	\$ 11.93	
08A Door, Frame, & Hardware Installation	\$ 39,213	\$ 2.50	
08B Door, Frame, Hardware Supply	\$ 191,541	\$ 7.00	
08C Access Doors	\$ 6,841	\$ 0.25	
08E Aluminum Glazing Systems	\$ 88,930	\$ 3.25	
DIVISION 09 - FINISHES	\$ 868,775	\$ 31.75	
09B Gypsum Board Systems	\$ 328,356	\$ 12.00	
09D Acoustical Ceilings & Wall Panels	\$ 218,904	\$ 8.00	
09G Resilient Flooring & Carpet	\$ 198,382	\$ 7.25	Most working spaces prob receive LVT - 15,000 SF
09H Resinous & Special Flooring	\$ 13,682	\$ 0.50	NA
09J Painting & Wallcoverings	\$ 82,089	\$ 3.00	
09K Interior Finish Allowances	\$ 27,363	\$ 1.00	
DIVISION 10 - SPECIALTIES	\$ 171,019	\$ 6.25	
10A Visual Display Boards	\$ 20,522	\$ 0.75	
10B Signage	\$ 6,841	\$ 0.25	
10C Toilet Compartments & Accessories	\$ 41,045	\$ 1.50	
10D Cubicle Curtains	\$ 54,726	\$ 2.00	
10G Wall & Corner Protection	\$ 20,522	\$ 0.75	
10H Fire Protection Specialties	\$ 6,841	\$ 0.25	
10I Lockers, Benches, Shelving, & Racks	\$ 20,522	\$ 0.75	
DIVISION 21 - FIRE SUPPRESSION	\$ 191,541	\$ 7.00	
21A Fire Protection Systems	\$ 191,541	\$ 7.00	Modify heads only
DIVISION 22 - PLUMBING SYSTEMS	\$ 820,890	\$ 30.00	
22A Plumbing Systems	\$ 820,890	\$ 30.00	
DIVISION 23 - MECHANICAL SYSTEMS	\$ 1,368,150	\$ 50.00	
23A Mechanical Systems	\$ 1,368,150	\$ 50.00	
DIVISION 26 - ELECTRICAL SYSTEMS	\$ 1,504,965	\$ 55.00	
26A Electrical Systems	\$ 1,504,965	\$ 55.00	
DIVISION 27 - LOW VOLTAGE SYSTEMS	\$ 1,723,869	\$ 63.00	
27B Audio & Video Systems	\$ 1,723,869	\$ 63.00	Per NV5 quote
DIRECT COST TOTAL	\$ 7,881,498	\$ 288.03	
CONTINGENCIES			
Construction Contingency 3.00%	\$ 236,445	\$ 8.64	
CONTINGENCIES COST TOTAL	\$ 236,445	\$ 8.64	
GENERAL CONDITIONS	\$ 660,000	\$ 24.12	See BECK Detail
DIRECT COST, CONTINGENCIES, AND GENERAL CONDITIONS SUBTOTAL >>>	\$ 8,777,943	\$ 320.80	
PROJECT INDIRECTS	\$ 44,833	\$ 1.64	
Design and Professional Services	By Owner	\$ -	
Sales Tax	Included	\$ -	
Use Tax	By Owner	\$ -	
Subcontractor Default Insurance	Add	\$ -	
Materials Testing	By Owner	\$ -	
Warranty Reserve and Maintenance 0.48%	\$ 44,833	\$ 1.64	
Building Permit	By Owner	\$ -	
Plan Check Fees	By Owner	\$ -	
Tap and Development Fees	By Owner	\$ -	
INSURANCE COST TOTAL	\$ 151,752	\$ 5.55	
Project Specific Insurance 1.18%	\$ 104,109	\$ 3.80	
Builders Risk Insurance 0.54%	\$ 47,643	\$ 1.74	
CONSTRUCTION FEES COST TOTAL	\$ 300,693	\$ 10.99	
CM/GC Preconstruction Services 0.25%	\$ 22,436	\$ 0.82	
CM/GC Construction Fee 3.00%	\$ 278,257	\$ 10.17	
BOND COST TOTAL	\$ 64,927	\$ 2.37	
Payment & Performance Bond 0.70%	\$ 64,927	\$ 2.37	
PROJECT TOTALS >>>	\$ 9,340,147	\$ 341.34	
GROSS BUILDING AREA >>>	27,363	GBA	
NET RENTABLE SQUARE FOOTAGE >>>	0	NRSF	
COST PER NET RENTABLE SQUARE FOOTAGE >>>	\$ -		
NUMBER OF UNITS >>>	0	UNITS	
COST PER UNIT >>>	\$ -		
SUGGESTED ESCALATION VALUES			
November 2025 Start 4.50%	\$ 9,729,676	\$ 355.58	6 Months Escalation
February 2026 Start 6.75%	\$ 9,853,397	\$ 360.10	9 Months Escalation
May 2026 Start 9.00%	\$ 10,046,457	\$ 367.15	12 Months Escalation

APPENDIX F.3

Colorado State University
Nursing and PT Renovation



Planning and Programming Technology Systems Opinion of Probable Cost		Unit Costs					Ext. Costs				
Spaces	Space Qty	General Construction	Audiovisual Systems	AV Software Development	Owner Provided	Unit Total	General Construction	Audiovisual Systems	AV Software Development	Owner Provided	Extended Room Subtotal
Room Specific Audiovisual Systems											
PT Lab	2	\$ 11,200	\$ 96,500	\$ 6,300	\$ 1,100	\$ 115,100	\$ 22,400	\$ 193,000	\$ 12,600	\$ 2,200	\$ 230,200
Conference Room	2	\$ -	\$ 14,800	\$ 900	\$ 1,250	\$ 16,950	\$ -	\$ 29,600	\$ 1,800	\$ 2,500	\$ 33,900
Group Study	3	\$ -	\$ 9,850	\$ 650	\$ 1,100	\$ 11,600	\$ -	\$ 29,550	\$ 1,950	\$ 3,300	\$ 34,800
Seminar Room	1	\$ -	\$ 39,600	\$ 2,350	\$ 1,100	\$ 43,050	\$ -	\$ 39,600	\$ 2,350	\$ 1,100	\$ 43,050
Hi-Fidelity Sim + OBS	1	\$ -	\$ 217,150	\$ 12,900	\$ 5,150	\$ 235,200	\$ -	\$ 217,150	\$ 12,900	\$ 5,150	\$ 235,200
Debrief Room	3	\$ -	\$ 26,250	\$ 1,600	\$ 1,100	\$ 28,950	\$ -	\$ 78,750	\$ 4,800	\$ 3,300	\$ 86,850
Exam Room	2	\$ -	\$ 139,050	\$ 8,100	\$ 1,100	\$ 148,250	\$ -	\$ 278,100	\$ 16,200	\$ 2,200	\$ 296,500
SIM Bathroom	1	\$ -	\$ 36,900	\$ 2,150	\$ -	\$ 39,050	\$ -	\$ 36,900	\$ 2,150	\$ -	\$ 39,050
Skills Lab	2	\$ 5,650	\$ 302,750	\$ 17,950	\$ 1,100	\$ 327,450	\$ 11,300	\$ 605,500	\$ 35,900	\$ 2,200	\$ 654,900
MedSim Core	1	\$ -	\$ 63,100	\$ 3,650	\$ -	\$ 66,750	\$ -	\$ 63,100	\$ 3,650	\$ -	\$ 66,750
Subtotal:							33,700	1,571,250	94,300	21,950	\$ 1,721,200
Subtotal:											\$ -
Breakdown of Costs Shown Above											
Total Equipment/Materials Costs											\$ 1,344,750
Total Installation Labor Costs											\$ 282,150
Total Software Development Costs											\$ 94,300
Totals:											
Subtotal:											\$ 1,721,200
State & Local Taxes at 0%											\$ -
Contingency at 10%											\$ 172,100
Market Condition Premium at 5%											\$ 86,050
Total Technology Systems OPC For All Above:											\$ 1,979,350

Notes:

- 1.) All estimates above represent complete systems, including equipment including Laerdal, installation materials, installation labor, 5 Year Licensing for Laerdal, Owner Provided Equipment and general user training.
- 2.) Cost opinions shown above have been determined using Manufacturer's Suggested Retail Price or other published prices for equipment. The Owner should expect to receive a discount for equipment during competitive bidding. The amount of this discount will be dependent on factors such as market conditions at the time of bidding, final product selections, schedule of the installation. An estimated discount for the complete package has been applied.
- 3.) An estimated discount off MSRP equipment pricing as well as an allowance for freight has been included in the above numbers.
- 4.) Typical infrastructure items such as back boxes, conduit, cable pathways, AC power and so on are typically provided by the General Contractor or Electrical Contractor and are not included in this OPC.
- 5.) Related items not included are: Outside Plant, structured cabling systems, voice/data electronics, access control, surveillance systems, specialty lighting fixtures and dimmer controls, traditional white boards, computers and Smart

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Skills Lab / Qty: 2

Item / Description	Scope	Mod Qty	Ext Qty
Display Systems:			
7k Lumens Projection System w/ Motorized Screen			1
7,000 Lumen Lumens Projector/Lens/Mount	AV	1	1
Medium Motorized Projection Screen	GC	1	1
Receiver/Decoder w/ Scaler	AV	1	1
Audiovisual Sources:			
Wireless Screen Sharing Device			1
Wireless Screen Sharing Device	AV	1	1
Transmitter/Encoder	AV	1	1
Local Computer with Wireless Keyboard/Mouse			1
Local PC w/ KB and Mouse	Own	1	1
Transmitter/Encoder w/ Dante, USB	AV	1	1
HDMI Wall Plate Transmitter			1
Transmitter/Encoder	AV	1	1
Sound Reinforcement System:			
Ceiling Loudspeaker w/ Audio Amplifier Allowance			8
Ceiling Loudspeaker	AV	1	8
70-Volt Audio Amplifier Allowance	AV	0.13	1
Wireless Microphone System			1
Single Channel Wireless Microphone System with Hand Held and	AV	1	1
Simulation Capture			
Med Sim Capture Station (PTZ Camera(s)/Audio)			2
PTZ IP-Camera	AV	2	4
Ceiling mounted Cardioid Microphone - White	AV	1	2
4x4 Channel Mic/Line I/O AES67 Interface, PoE	AV	1	2
MedSIM Network Audio Interface	AV	1	2
MedSIM Network Audio Interface	AV	1	2
Networked Video Recorder Allowance (per simulation event, Based on			8
SimCapture Enterprise Node, CCM Cloud - Year 1. Minimum 5Y Subscription. Includes Capture Appliance and HDMI to USB	AV	5	40
Audiovisual Furniture:			
Rack System for Millwork			1
Rack System for Existing Casework (Single Bay)	AV	1	1
Audiovisual Control and Processing:			
IP-Based AV Processing/Control Equipment: Audio DSP, Network Switch, Controller			1
Medium AV Control System Processor	AV	1	1
24-port Managed Network Switch	AV	1	1
Small Audio DSP with Dante/VoIP/USB	AV	1	1
Control System Touch Panel			1
Large Touch Screen - 10"	AV	1	1

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SIM Bathroom / Qty: 1

Item / Description	Scope	Mod Qty	Ext Qty
Bathroom Capture, Display, and Source Devices			
Pan-Tilt-Zoom IP-Camera			1
PTZ IP-Camera	AV	1	1
Ceiling Microphone(s) for In-Lab Audio Capture			1
Ceiling mounted Cardioid Microphone - White	AV	1	1
4x4 Channel Mic/Line I/O AES67 Interface, PoE	AV	1	1
MedSIM Network Audio Interface	AV	1	1
Ceiling Loudspeaker w/ Audio Amplifier Allowance			1
Ceiling Loudspeaker	AV	1	1
70-Volt Audio Amplifier Allowance	AV	0.13	1
Simulation Capture Control and Processing			
Simulation Control Station Processing/Control Equipment			1
MedSIM Network Audio Interface	AV	1	1
Networked Video Recorder Allowance (per simulation event, Based on			1
SimCapture Enterprise Node, CCM Cloud - Year 1. Minimum 5Y Subscription. Includes Capture Appliance and HDMI to USB	AV	5	5

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Exam Room / Qty: 2

Item / Description	Scope	Mod Qty	Ext Qty
Exam Room Capture Devices			
Pan-Tilt-Zoom IP-Camera			1
PTZ IP-Camera	AV	1	1
Digital Pan/Zoom IP-Camera			1
Digital Pan/Scan IP-Camera	AV	1	1
Ceiling Microphone(s) for In-Lab Audio Capture			1
Ceiling mounted Cardioid Microphone - White	AV	1	1
4x4 Channel Mic/Line I/O AES67 Interface, PoE	AV	1	1
MedSIM Network Audio Interface	AV	1	1
Portable Encoder/Decoder Transport			1
Transmitter/Encoder w/Dante, USB	AV	1	1
Exam Room Display/Audio Devices			
EMR/SP Computer with Integrated Camera; Sit/Stand Mount			1
Local PC w/ KB and Mouse	Own	1	1
Computer Monitor	AV	1	1
Monitor Track, Arm (EMR)	AV	1	1
Display Capture Unit	AV	1	1
Web Camera w/ Built-in Microphone	AV	1	1
Ceiling Loudspeaker w/ Audio Amplifier Allowance			1
Ceiling Loudspeaker	AV	1	1
70-Volt Audio Amplifier Allowance	AV	0.13	1
MedSIM Network Audio Interface	AV	1	1
Simulation Capture Control and Processing			
Networked Video Recorder Allowance (per simulation event, Based on			4
SimCapture Enterprise Node, CCM Cloud - Year 1. Minimum 5Y Subscription. Includes Capture Appliance and HDMI to USB	AV	5	20

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Debrief Room / Qty: 3

Item / Description	Scope	Mod Qty	Ext Qty
Display Systems:			
75" Flat Panel Display			1
75" Flat Panel Display with Mount	AV	1	1
Receiver/Decoder w/ Scaler	AV	1	1
Display Capture Unit	AV	1	1
Audiovisual Sources:			
Wireless Screen Sharing Device			1
Wireless Screen Sharing Device	AV	1	1
Local Computer with Wireless Keyboard/Mouse			1
Local PC w/ KB and Mouse	Own	1	1
HDMI Laptop Input in Table Pocket			1
Cable Enclosure	AV	1	1
Transmitter/Encoder	AV	1	1
Sound Reinforcement System:			
Ceiling Loudspeaker w/ Audio Amplifier Allowance			4
Ceiling Loudspeaker	AV	1	4
70-Volt Audio Amplifier Allowance	AV	0.13	1
Capture, Streaming and Conferencing:			
Powered USB Soundbar w/ Auto-framing Camera and Microphone			1
USB Soundbar w/ Auto-Framing Camera, Microphone	AV	1	1
Medical Simulation Capture			
Pan-Tilt-Zoom IP-Camera			2
PTZ IP-Camera	AV	1	2
Ceiling Microphone(s) for In-Lab Audio Capture			1
Ceiling mounted Cardioid Microphone - White	AV	1	1
4x4 Channel Mic/Line I/O AES67 Interface, PoE	AV	1	1
MedSIM Network Audio Interface	AV	1	1
Audiovisual Furniture:			
Slim Credenza for Audiovisual Equipment			1
3-Bay Slim Credenza for Audiovisual Equipment	AV	1	1
Audiovisual Control and Processing:			
Control System Touch Panel			1
Large Touch Screen - 10"	AV	1	1
Building Wide Systems			
Interactive Room Scheduling Touch Panel			1
7" Room Schedule Touch Panel	AV	1	1

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Hi-Fidelity Sim + OBS / Qty: 1

Item / Description	Scope	Mod Qty	Ext Qty
In-Lab Capture/Source Devices			
Pan-Tilt-Zoom IP-Camera			2
PTZ IP-Camera	AV	1	2
Digital Pan/Zoom IP-Camera			1
Digital Pan/Scan IP-Camera	AV	1	1
Ceiling Microphone(s) for In-Lab Audio Capture			1
Ceiling mounted Cardioid Microphone - White	AV	2	2
4x4 Channel Mic/Line I/O AES67 Interface, PoE	AV	1	1
MedSIM Network Audio Interface	AV	1	1
HDMI Wall Plate Transmitter			1
Transmitter/Encoder	AV	1	1
In-Lab Display/Audio Devices			
In-Lab Vitals Monitor			1
Computer Touch Monitor w/ Articulating Arm	Own	1	1
Receiver/Decoder w/Dante, USB, Scaler	AV	1	1
EMR Station with Telehealth Support			1
Medical PC Cart (EMR, Telemed)	AV	1	1
Local PC w/ KB, Mouse, Dual Output	Own	1	1
Computer Monitor	AV	1	1
Transmitter/Encoder w/Dante, USB	AV	1	1
Point-to-Point Wireless Video Extender	AV	1	1
In-Lab Ceiling and Manikin Speaker System			1
Manikin Talkback Loudspeaker (pillow locate)	AV	1	1
Dante Amplifier	AV	1	1
Ceiling Loudspeaker	AV	1	1
In-Lab Display/Collaboration System			1
55" Flat Panel Display with Mount	AV	1	1
Wireless Screen Sharing Device	AV	1	1
Receiver/Decoder w/ Scaler	AV	1	1
Passive Aux Input Panel	AV	1	1
Medium Touch Screen - 7"	AV	1	1
Nurse Call System			1
Wired Ethernet Module with 4 Relay Ports	AV	1	1
Wired Ethernet Module with 4 Digital Inputs	AV	1	1
Audio DSP Allowance with Dante	AV	2	2
Set of Two Telephones with Audio Tap for Recording			1
Telephone Handset IFB Tap	AV	1	1
VoIP Desktop Phone (allowance)	Own	2	2
Control Station Audio/Video Devices			
Simulation Control PC			1
Local PC w/ KB, Mouse, Dual Output	Own	1	1
Transmitter/Encoder w/Dante, USB	AV	1	1
Computer Monitor	AV	2	2
Manikin Control Laptop and Vitals PC (Control Room)			1
Laptop	Own	1	1
All-In-One PC	Own	1	1
Transmitter/Encoder w/Dante, USB	AV	1	1
Receiver/Decoder w/Dante, USB, Scaler	AV	1	1
Display Capture Unit	AV	1	1
Control Room Audio Monitoring (speakers/headphones)			1
2 source 4-channel Stereo Headphone Amplifier	AV	1	1
Closed Back Headphones / inline volume control	AV	3	3
Powered Desktop Loudspeakers	AV	1	1
Control Room Audio Talkback System with Voice Processor (Manikin +			1
1 Zone PTT Desk Paging Microphone (Manikin Voice)	AV	1	1
2 Zone PTT Desk Paging Microphone (Overhead Speakers)	AV	1	1
Voice Pitch Changer for Manikin Voice	AV	1	1
Eight Channel Audio Expander w/ GPIO	AV	1	1
4 Channel Wireless Microphone System with In-Ear Audio Talkback			1
4 Channel Wireless Microphone system with Talk Back Channel	AV	1	1

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Hi-Fidelity Sim + OBS / Qty: 1

Item / Description	Scope	Mod Qty	Ext Qty
HDMI Wall Plate Transmitter			1
Transmitter/Encoder	AV	1	1
Simulation Capture Control and Processing			
Control System Touch Panel			1
Large Touch Screen - 10"	AV	1	1
Joystick Camera Controller			1
Joystick Remote Controller for PTZ Cameras	AV	1	1
Simulation Control Station Processing/Control Equipment			1
Networked Video Recorder Allowance (per simulation event, Based on			5
SimCapture Enterprise Node, CCM Cloud - Year 1. Minimum 5Y Subscription. Includes Capture Appliance and HDMI to USB	AV	5	25
Audiovisual Furniture:			
Control Room Power Distribution and Racking			1
Half-Height free standing Equipment Rack	AV	1	1
Large Uninterruptible Power Supply	AV	1	1

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Seminar Room / Qty: 1

Item / Description	Scope	Mod Qty	Ext Qty
Display Systems:			
85" Flat Panel Display			1
85" Flat Panel Display with Mount	AV	1	1
Receiver/Decoder w/ Scaler	AV	1	1
Audiovisual Sources:			
Wireless Screen Sharing Device			1
Wireless Screen Sharing Device	AV	1	1
Transmitter/Encoder	AV	1	1
Local Computer with Wireless Keyboard/Mouse			1
Local PC w/ KB and Mouse	Own	1	1
Transmitter/Encoder w/Dante, USB	AV	1	1
HDMI Laptop Input in Table Pocket			1
Cable Enclosure	AV	1	1
Transmitter/Encoder	AV	1	1
Sound Reinforcement System:			
Ceiling Loudspeaker w/ Audio Amplifier Allowance			9
Ceiling Loudspeaker	AV	1	9
70-Volt Audio Amplifier Allowance	AV	0.13	2
Capture, Streaming and Conferencing:			
HD USB Pan-Tilted-Zoom Camera			1
HD Pan-Tilt-Zoom USB Camera	AV	1	1
Beamforming Ceiling Microphone			1
Ceiling Microphone - Array	AV	1	1
Audiovisual Furniture:			
Slim Credenza for Audiovisual Equipment			1
3-Bay Slim Credenza for Audiovisual Equipment	AV	1	1
Audiovisual Control and Processing:			
IP-Based AV Processing/Control Equipment: Audio DSP, Network Switch, Controller			1
Medium AV Control System Processor	AV	1	1
24-port Managed Network Switch	AV	1	1
Small Audio DSP with Dante/VoIP/USB	AV	1	1
Control System Touch Panel			1
Large Touch Screen - 10"	AV	1	1
Building Wide Systems			
Interactive Room Scheduling Touch Panel			1
7" Room Schedule Touch Panel	AV	1	1

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Group Study / Qty: 3

Item / Description	Scope	Mod Qty	Ext Qty
Display Systems:			
75" Flat Panel Display			1
75" Flat Panel Display with Mount	AV	1	1
Audiovisual Sources:			
Wireless Screen Sharing Device			1
Wireless Screen Sharing Device	AV	1	1
Local Computer with Wireless Keyboard/Mouse			1
Local PC w/ KB and Mouse	Own	1	1
Passive HDMI Wall Plate			1
Passive Aux Input Panel	AV	1	1
Capture, Streaming and Conferencing:			
Powered USB Soundbar w/ Camera and Microphone			1
USB Soundbar w/ Camera, Microphone	AV	1	1
Audiovisual Control and Processing:			
Button Panel Control System			1
Button Panel/Controller	AV	1	1
Building Wide Systems			
Interactive Room Scheduling Touch Panel			1
7" Room Schedule Touch Panel	AV	1	1

Colorado State University
Nursing and PT Renovation

Conference Room / Qty: 2

Item / Description	Scope	Mod Qty	Ext Qty
Display Systems:			
65" Flat Panel Display			1
65" Flat Panel Display with Mount	AV	1	1
Receiver/Decoder w/ Scaler	AV	1	1
Audiovisual Sources:			
Wireless Screen Sharing Device			1
Wireless Screen Sharing Device	AV	1	1
All-in-One Computer			1
All-In-One PC	Own	1	1
HDMI Laptop Input in Table Pocket			1
Cable Enclosure	AV	1	1
Transmitter/Encoder	AV	1	1
Capture, Streaming and Conferencing:			
Powered USB Soundbar w/ Auto-framing Camera and Microphone			1
USB Soundbar w/ Auto-Framing Camera, Microphone	AV	1	1
Audiovisual Control and Processing:			
Small Traditional AV Processing/Control Equipment			1
Small AV Control System Processor	AV	1	1
4x2 HDMI Switcher	AV	1	1
Button Panel Control System			1
Button Panel/Controller	AV	1	1
Building Wide Systems			
Interactive Room Scheduling Touch Panel			1
7" Room Schedule Touch Panel	AV	1	1

Colorado State University
Nursing and PT Renovation

PT Lab / Qty: 2

Item / Description	Scope	Mod Qty	Ext Qty
Display Systems:			
7k Lumens Projection System w/ Motorized Screen			2
7,000 Lumen Lumens Projector/Lens/Mount	AV	1	2
Medium Motorized Projection Screen	GC	1	2
Receiver/Decoder w/ Scaler	AV	1	2
55" Flat Panel Display			8
55" Flat Panel Display with Mount	AV	1	8
Receiver/Decoder w/ Scaler	AV	1	8
Audiovisual Sources:			
Wireless Screen Sharing Device			1
Wireless Screen Sharing Device	AV	1	1
Transmitter/Encoder	AV	1	1
Local Computer with Wireless Keyboard/Mouse			1
Local PC w/ KB and Mouse	Own	1	1
Transmitter/Encoder w/ Dante, USB	AV	1	1
HDMI Wall Plate Transmitter			1
Transmitter/Encoder	AV	1	1
Sound Reinforcement System:			
Ceiling Loudspeaker w/ Audio Amplifier Allowance			12
Ceiling Loudspeaker	AV	1	12
70-Volt Audio Amplifier Allowance	AV	0.13	2
Wireless Microphone System			1
Single Channel Wireless Microphone System with Hand Held and	AV	1	1
Capture, Streaming and Conferencing:			
HD USB Pan-Tilted-Zoom Camera			1
HD Pan-Tilt-Zoom USB Camera	AV	1	1
Camera Attached to Ceiling-Mounted Articulating Arm			1
HD PTZ Camera - 12x Optical Zoom - 73 Deg. FOV - HDMI Output - 1080p/60 Native	AV	1	1
Ceiling-Mounted Articulating Arm	AV	1	1
Transmitter/Encoder	AV	1	1
Audiovisual Furniture:			
Slim Credenza for Audiovisual Equipment			1
3-Bay Slim Credenza for Audiovisual Equipment	AV	1	1
Audiovisual Control and Processing:			
IP-Based AV Processing/Control Equipment: Audio DSP, Network Switch, Controller			1
Medium AV Control System Processor	AV	1	1
48 Port Managed Network Switch	AV	1	1
Medium Audio DSP with Dante/VoIP/USB	AV	1	1
Control System Touch Panel			1
Large Touch Screen - 10"	AV	1	1

Colorado State University
Nursing and PT Renovation

MedSim Core / Qty: 1

Item / Description	Scope	Mod Qty	Ext Qty
Audiovisual Furniture:			
Full-Height free standing Equipment Rack			4
Full-Height free standing Equipment Rack	AV	1	4
Audiovisual Control and Processing:			
IP-Based AV Processing/Control Equipment: Audio DSP, Network Switch, Controller			1
Large AV Control System Processor	AV	1	1
48 Port Enterprise-Grade Managed Network Switch	AV	1	1
Large Audio DSP with Dante/VoIP/USB	AV	1	1
General Allowance for Additional Equipment/Materials	AV	1	1
DigitalMedia NVX Director – Virtual Switching Appliance,	AV	1	1



COLORADO STATE UNIVERSITY

NURSING AND PT RENOVATION

TECHNOLOGY PROGRAM

PRESENTED TO:
Hord Coplan Macht
1800 Wazee Street
Suite 450
Denver, CO 80202

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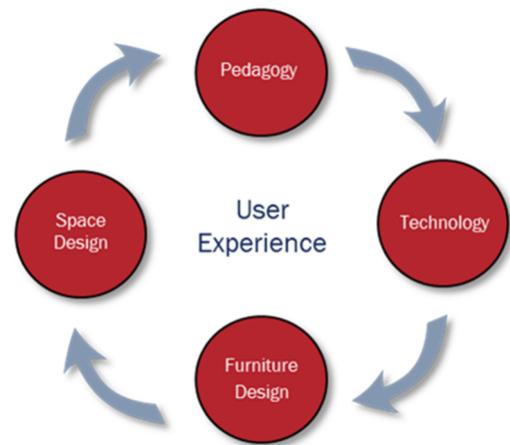
INTRODUCTION

Colorado State University (CSU) is planning a renovation for a new Nursing Program and PT that will build a strong foundation for interprofessional learning, practice and research. Our endeavor is to furnish the project with technological solutions that not only encourage interprofessional experiences and opportunities but also consider cost, are user-friendly and aligned with existing CSU standards. We are committed to implementing strategies that facilitate seamless management of both immediate needs and future upgrades. To this end, our design approach emphasizes flexibility and scalability, ensuring ample room for expansion while adhering to budgetary constraints and performance expectations.

USER EXPERIENCE

The technology systems for this project are envisioned to provide students and faculty with an experience that is progressive, flexible, collaborative, mobile, and unique to the Health Sciences collaboration. This vision requires starting with the end in mind; the journey people will take while using these spaces. Throughout this process it will be important to consistently reflect on, and refine, the target user.

Pedagogy, Technology, Furniture Design, and Space Design are four cornerstones for building successful learning spaces. These four elements are completely interdependent on each other. When viewing these elements from the perspective of the student and faculty, no one element is more important than the other. For example, an active learning space with state-of-the-art technology being used for passive didactic style pedagogy will likely miss the target user experience.



EQUIPMENT PLANS

The equipment plans within the Audiovisual section of this document communicate design intent only to assist in establishing an understanding of the equipment locations in each space. As the concept plans are being developed, the equipment plans are based on a representation of the room type to aide discussion during the SD phase. Not all spaces or systems have equipment plans associated with them. The equipment locations will change over time as the design progresses.

Refer to the following legend when reviewing the equipment:

	Audio Conference Device		Credenza		Lectern
	Bluetooth		Display Cart w/55" Display		Low Profile Credenza
	Cable Cubby		Equipment Rack		Projection System
	Camera on Articulating Arm		Equipment Rack		Room Scheduler
	Camera		Flat Panel Display		Screen Control
	Ceiling Camera		Floor Box		Soundbar
	Ceiling Mic		I/O Plate		Surface-Mount Mic
	Ceiling Speaker		Intercom Station		Surface-Mount Speaker
	Computer		IR Emitter		Telecom Rack
	Control Panel		Keyboard and Mouse		Wireless Screen Sharing

AUDIOVISUAL REQUIREMENTS

PHYSICAL THERAPY SUITE

The PT labs allows students to see these principles in action as Use Case specific presentation space for active learning and engagement. Demonstration and presentation are combined into dynamic environment fostering experiential teaching and providing resource tools for both students and educators. By presenting real time demonstrations by instructors, students can observe and interact with the lesson while developing individual skills.

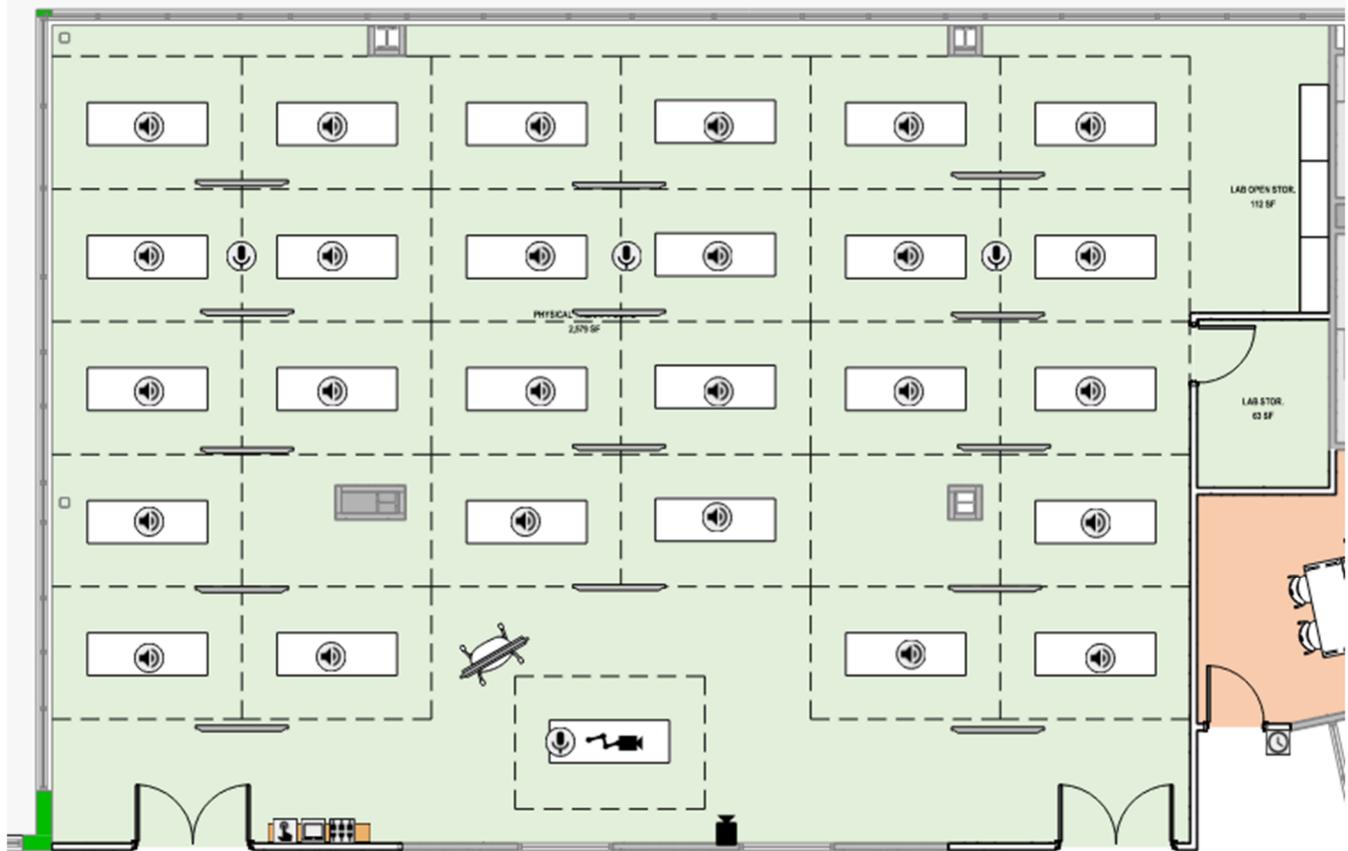
Within the lab, student work areas are strategically clustered facilitating small group collaboration within a larger instructor-led environment. To support the flexibility and functionality of these spaces, additional camera and microphone systems are implemented to “share” skills training back to the instructor or share with the wider class.

Leveraging a centralized headend in a local technology room optimizes space utilization for lectures and teaching activities, enhancing the overall learning experience.

SYSTEM FEATURES

- ◆ The multi-display system supports showing the same content (source) on all displays for optimal viewing, alternatively, the system may also show unique content (sources) on each display (ceiling displays grouped together).
- ◆ The instructor presents from a demonstration area. A dedicated wireless microphone will be provided to support voice lift and ADA assistive listening requirements.
- ◆ One of the mat stations is equipped with a camera fastened to a ceiling-mounted articulating arm to capture an instructor or student exercise.
- ◆ Instructor camera(s) can be integrated into task lighting or ceiling mounted above a chair / table.
- ◆ The system supports local and remote collaboration via web-conferencing software provided as part of a room system. (e.g., Zoom, Teams, etc.) The system will leverage the room systems camera and microphones.
- ◆ The system supports wired wireless screen sharing between the instructor’s or student devices and the display systems.
- ◆ The user controls the system from a wall mounted touch panel near the teaching location.
- ◆ The room schedule/availability is accessible to users via an interactive touch panel mounted outside of the room.

SAMPLE SPACE LAYOUT



INITIAL AV EQUIPMENT LIST

Item / Description	Qty
Display Systems:	
65" Flat Panel Display	14
Audiovisual Sources:	
Wireless Screen Sharing Device	1
Local Computer with Wireless Keyboard/Mouse	1
HDMI Wall Plate Transmitter	1
Sound Reinforcement System:	
Ceiling Loudspeaker w/ Audio Amplifier Allowance	26
Wireless Microphone System	1
Capture, Streaming and Conferencing:	
HD USB Pan-Tilted-Zoom Camera	1
Camera Attached to Ceiling-Mounted Articulating Arm	1
Beamtracking Ceiling Microphone	4
Audiovisual Furniture:	
Slim Credenza for Audiovisual Equipment	1
Audiovisual Control and Processing:	
IP-Based AV Processing/Control Equipment: Audio DSP, Network Switch, Controller	1
Control System Touch Panel	1

STANDARDIZED PATIENT (SP) EXAM ROOM

GENERAL

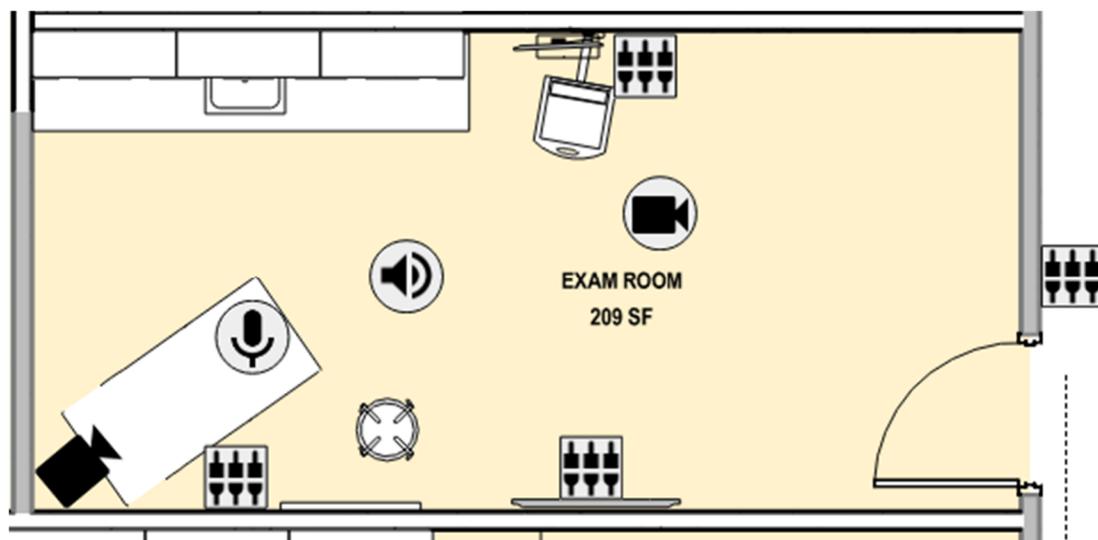
The Exam simulation space configuration are purpose-built environments reflecting clinical spaces that mirror the form and functionality of a modern intake or exam spaces. Staffed by actors, these spaces are technology enabled active learning environments where instructors are tasked with creating ever changing real-world situations for students to respond to in a safe and repeatable manner.

Simulation observation technologies are from a dedicated control room or office where students can be observed unobtrusively through video feeds for after action review and debriefing.

SYSTEM FEATURES

- ◆ Control of the medical capture software/hardware is via computers, a joystick controller, and a control touch panel located in the central control room.
- ◆ Operators in the central control can speak through overhead speakers.
- ◆ The system supports capturing audio/video of the lab and electrotonic medical records (EMR).
- ◆ The EMR station supports simulated telehealth via the local computer and a web camera.
- ◆ A large monitor in the lab may be used to display content such as simulated X-rays, in-room collaboration content, other instructional content relevant to the simulation.

SAMPLE SPACE LAYOUT



INITIAL AV EQUIPMENT LIST

Item / Description	Qty
Exam Room Capture Devices	
Digital Pan/Zoom IP-Camera	1
Ceiling Microphone(s) for In-Lab Audio Capture	1
Portable Encoder/Decoder Transport	1
Exam Room Display/Audio Devices	
EMR/SP Computer with Integrated Camera; Sit/Stand Mount	1
Ceiling Loudspeaker w/ Audio Amplifier Allowance	1
Simulation Capture Control and Processing	
Networked Video Recorder Allowance (per simulation event, Based on Laerdal)	4

DEBRIEF ROOMS

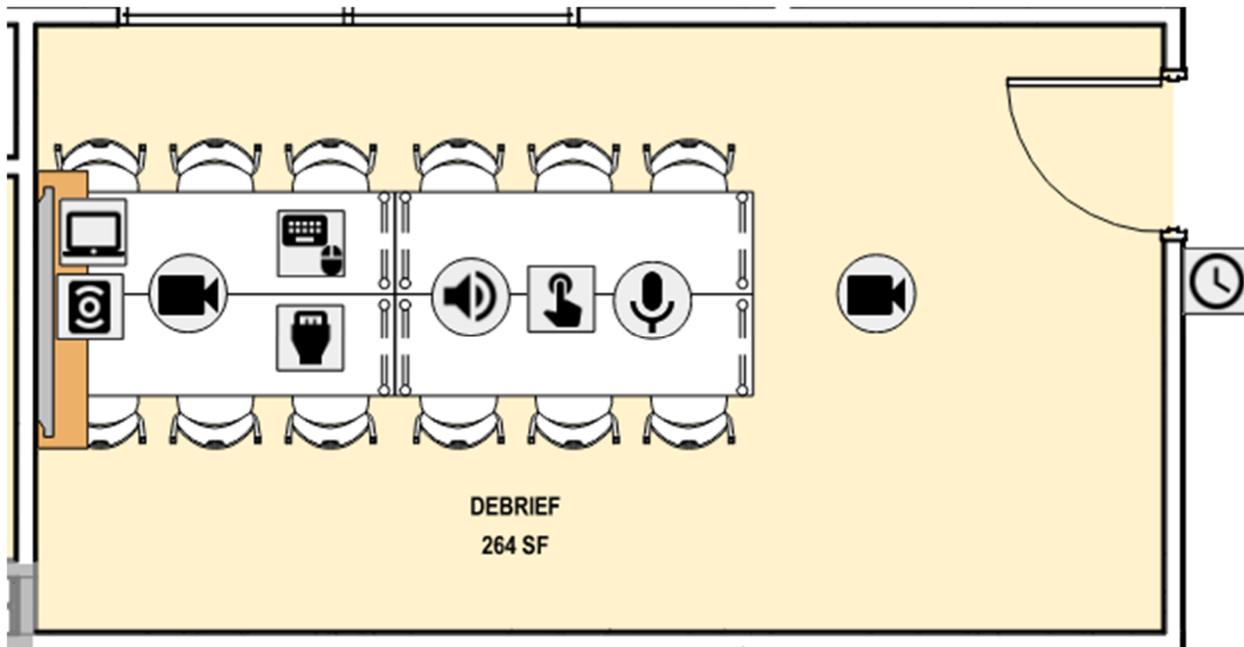
GENERAL

The Debrief Room shall be used for prepping, reviewing and debriefing of student simulations to discuss and improve the learning experience. Cameras and integrated microphones shall be provided to support the debriefing review capture of the post simulation assessment. Certification requirements are starting to require capture of the debrief session as part of the simulation activity so the Debrief Rooms will include capture functionality by the Medical Simulation Capture platform.

SYSTEM FEATURES

- ◆ The room system features a single large wall mounted display creating a dynamic and high-resolution viewing experience for content presentation and review of captured simulation content.
- ◆ The system supports local and remote collaboration via web-conferencing software native to user devices (BYOD) (e.g., Zoom, Teams, etc.) The system will leverage the room systems all-in-one camera and microphone solution.
- ◆ The system will provide automated signal detect and switching of BYOD sources to the display. The input point will be provided at the table via a dedicated floor box/poke-through.
- ◆ A wireless presentation system will be included for screen sharing of BYODs.
- ◆ Microphones are integrated into the ceiling will provide for audio capture for the debriefing capture system as provided by the simulation capture system. Ceiling speakers will allow for playback of content. The DSP unit will provide feedback suppression as well as automatic echo cancelation.
- ◆ The control system will utilize a dedicated control panel located on the wall adjacent to the display or on the table surface. The control panel will provide a GUI for the selection of sources and destinations to the primary display surface.
- ◆ The room schedule/availability is accessible to users via an interactive touch panel mounted outside of the room.

SAMPLE SPACE LAYOUT



INITIAL AV EQUIPMENT LIST

Item / Description	Qty
Audiovisual Sources:	
Wireless Screen Sharing Device	1
Local Computer with Wireless Keyboard/Mouse	1
HDMI Laptop Input in Table Pocket	1
Sound Reinforcement System:	
Ceiling Loudspeaker w/ Audio Amplifier Allowance	4
Capture, Streaming and Conferencing:	
Powered USB Soundbar w/ Auto-framing Camera and Microphone	1
Medical Simulation Capture	
Pan-Tilt-Zoom IP-Camera	2
Ceiling Microphone(s) for In-Lab Audio Capture	1
Audiovisual Furniture:	
Slim Credenza for Audiovisual Equipment	1
Audiovisual Control and Processing:	
Control System Touch Panel	1
Building Wide Systems	
Interactive Room Scheduling Touch Panel	1

HI-FIDELITY SIMULATION AND CONTROL ROOM

GENERAL

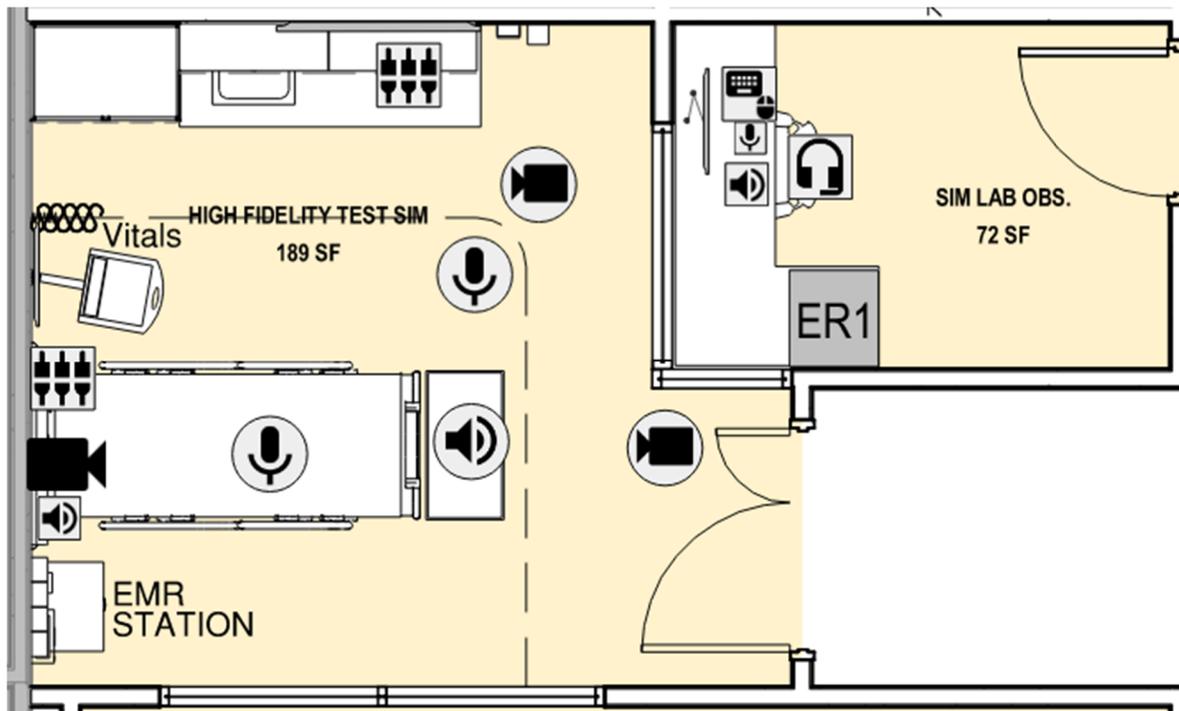
Simulation spaces are purpose-built environments reflecting clinical spaces that mirror the form and functionality of a modern Acute Care, Critical Care, Labor and Delivery or Intensive Care delivering environment. Utilizing a remote-controlled patient simulator manikin, these spaces are technology enabled active learning environments where instructors are tasked with creating ever changing real-world situations for students to respond to in a safe and repeatable manner. It would be desirable to have spaces that support multiple patient simulation at the same time including Labor/Delivery.

Simulation control equipment for the simulation manikin as well as teaching technologies are centralized and managed from a control room directly adjacent where students can be observed unobtrusively through a window or through video feeds for after action review and debriefing.

SYSTEM FEATURES

- ◆ Control of the medical capture software/hardware and the manikin(s) is via computers, a joystick controller, and a control touch panel located in the adjacent control room.
- ◆ Operators can speak through the manikin, overhead speakers, and in-ear monitors worn by the actors in the room.
- ◆ The system supports capturing audio/video of the lab, patient vitals, electrotonic medical records (EMR), aux inputs (such as simulated X-rays), and the lab phone system.
- ◆ The EMR station supports simulated telehealth via the local computer and a web camera.
- ◆ The system supports a simulated nurse call system.
- ◆ A large monitor in the lab may be used to display content such as simulated X-rays or other instructional content relevant to the simulation.

SAMPLE SPACE LAYOUT



INITIAL AV EQUIPMENT LIST

Item / Description	Qty
In-Lab Capture/Source Devices	
Digital Pan/Zoom IP-Camera	1
Ceiling Microphone(s) for In-Lab Audio Capture	1
HDMI Wall Plate Transmitter	1
In-Lab Display/Audio Devices	
In-Lab Vitals Monitor	1
EMR Station with Telehealth Support	1
In-Lab Ceiling and Manikin Speaker System	1
In-Lab Display/Collaboration System	1
Nurse Call System	1
Set of Two Telephones with Audio Tap for Recording	1
Control Station Audio/Video Devices	
Simulation Control PC	1
Manikin Control Laptop and Vitals PC (Control Room)	1
Control Room Audio Monitoring (speakers/headphones)	1
Control Room Audio Talkback System with Voice Processor (Manikin + Lab)	1
4 Channel Wireless Microphone System with In-Ear Audio Talkback	1
HDMI Wall Plate Transmitter	1
Simulation Capture Control and Processing	
Control System Touch Panel	1
Joystick Camera Controller	1
Simulation Control Station Processing/Control Equipment	1
Networked Video Recorder Allowance (per simulation event, Based on Laerdal)	5
Audiovisual Furniture:	
Control Room Power Distribution and Racking	1

SIM BATHROOM

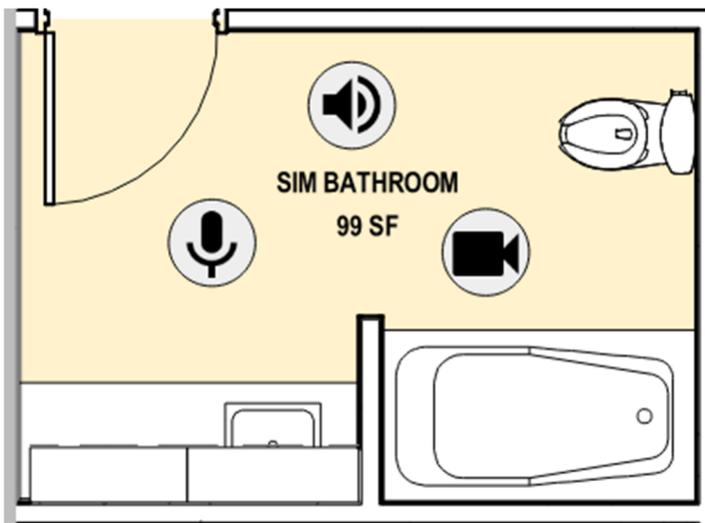
GENERAL

The SIM Bathroom is a space that allows students to practice and test on helping patients in a home environment. Simulation observation technologies are from a dedicated control room or office where students can be observed unobtrusively through video feeds for after action review and debriefing.

SYSTEM FEATURES

- ◆ Control of the medical capture software/hardware is via computers, a joystick controller, and a control touch panel located in the central control room.
- ◆ Operators in the central control can speak through overhead speakers.

SAMPLE SPACE LAYOUT



INITIAL AV EQUIPMENT LIST

Item / Description	Qty
Bathroom Capture, Display, and Source Devices	
Pan-Tilt-Zoom IP-Camera	1
Ceiling Microphone(s) for In-Lab Audio Capture	1
Ceiling Loudspeaker w/ Audio Amplifier Allowance	1
Simulation Capture Control and Processing	
Simulation Control Station Processing/Control Equipment	1
Networked Video Recorder Allowance (per simulation event, Based on Laerdal)	1

SKILLS LABS

GENERAL

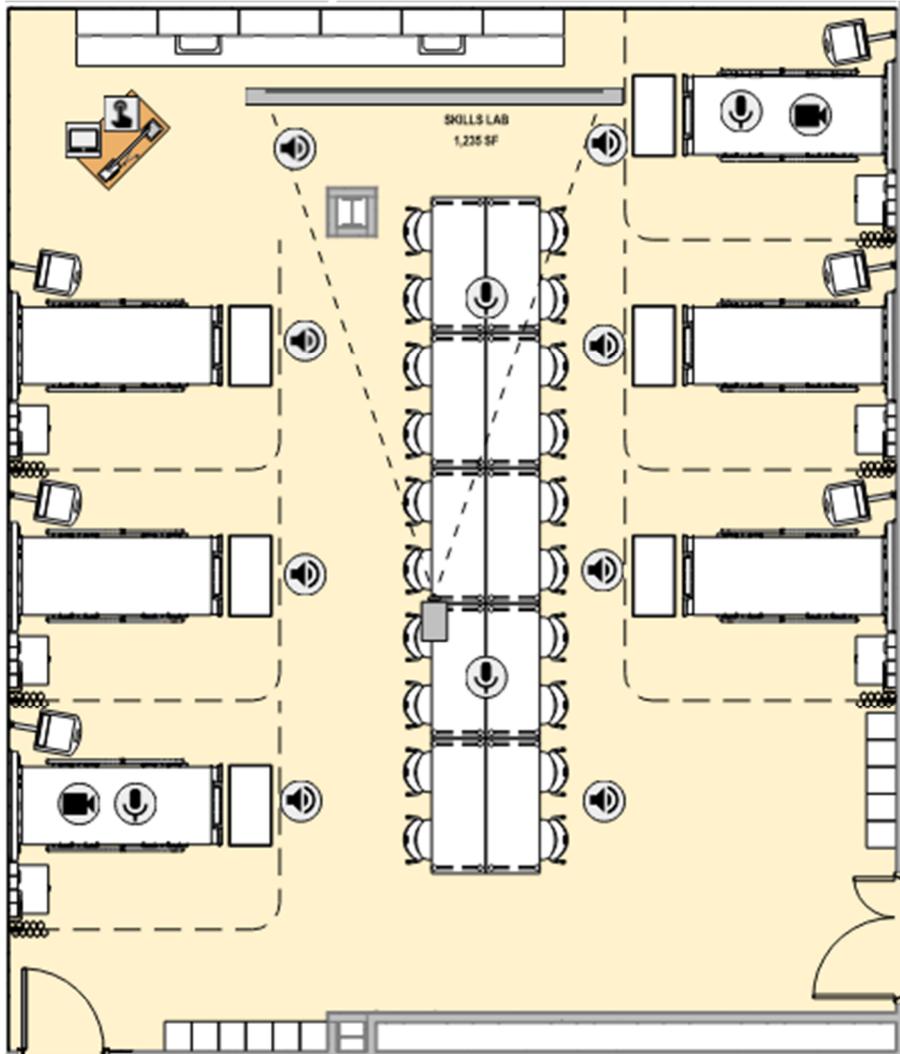
The Skills Lab serves as a use case specific presentation space for active learning and presentation. Working as a dynamic environment fostering experiential teaching and providing resource tools for both students and educators. Capturing and presenting real time demonstrations by instructors at a designated location, students can observe and interact with the lesson while developing individual skills.

Additionally, within these labs, student collaborative work areas are centered around beds that allow students to develop their skills. To support the flexibility and functionality of these spaces, additional camera and microphone systems can be implemented to “share” skills training back to the instructor or share with the wider class.

SYSTEM FEATURES

- ◆ The instructor presents from a lectern or touch down station located at the front of the room. They may draw (digitally) over computer content via the annotation monitor. A dedicated wireless microphone will be provided to support voice lift and ADA assistive listening requirements.
- ◆ The system supports local and remote collaboration via web-conferencing software native to user devices (BYOD) (e.g., Zoom, Teams, etc.) The system will leverage the room system’s camera and microphones.
- ◆ The user controls the system from a touch panel controller at the teaching location. Additional integration into the room’s lighting control system will allow for programmable scenes optimized for the flexibility of the space.
- ◆ Two of the beds are set-up as demonstration beds both for live streaming as well as capture for skills training.

SAMPLE SPACE LAYOUT



INITIAL AV EQUIPMENT LIST

Item / Description	Qty
Display Systems:	
7k Lumens Projection System w/ Motorized Screen	1
Annotation Monitor at Presenter Station/Lectern	1
Audiovisual Sources:	
Wireless Screen Sharing Device	1
Local Computer with Wireless Keyboard/Mouse	1
HDMI Wall Plate Transmitter	1
Sound Reinforcement System:	
Ceiling Loudspeaker w/ Audio Amplifier Allowance	8
Wireless Microphone System	1
Simulation Capture	
Med Sim Capture Station (PTZ Camera(s)/Audio)	2
Networked Video Recorder Allowance (per simulation event, Based on Laerdal)	8
Capture, Streaming and Conferencing:	
Audiovisual Furniture:	
Mobile (tethered) Height-Adjustable Lectern/Presenter Station	1
Audiovisual Control and Processing:	
IP-Based AV Processing/Control Equipment: Audio DSP, Network Switch, Controller	1
Control System Touch Panel	1

GROUP STUDY

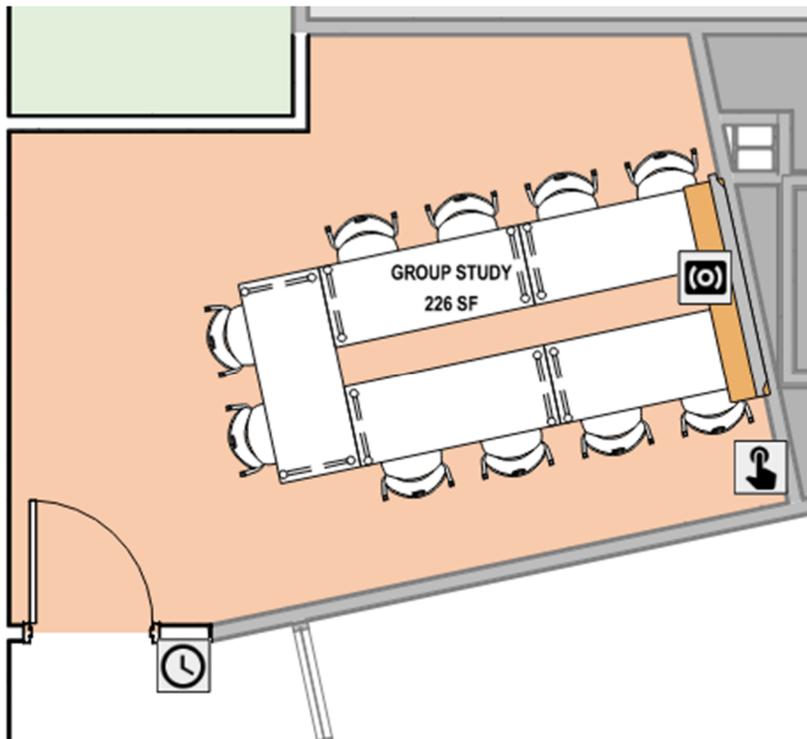
GENERAL

The Group Study Rooms shall be used for meetings and collaboration.

SYSTEM FEATURES

- ◆ The room system features a single large wall mounted display creating a dynamic and high-resolution viewing experience for content presentation.
- ◆ The system supports local and remote collaboration via web-conferencing software native to user devices (BYOD) (e.g., Zoom, Teams, etc.) The system will leverage the room systems all-in-one camera and microphone solution.
- ◆ A wireless presentation system will be included for screen sharing of BYODs.
- ◆ An integrated sound bar with camera and microphone for videoconferencing capability.
- ◆ The control system will utilize a dedicated control panel located on the wall adjacent to the display or on the table surface. The control panel will provide a GUI for the selection of sources and destinations to the primary display surface.
- ◆ The room schedule/availability is accessible to users via an interactive touch panel mounted outside of the room.

SAMPLE SPACE LAYOUT



INITIAL AV EQUIPMENT LIST

Item / Description	Qty
Display Systems:	
75" Flat Panel Display	1
Audiovisual Sources:	
Wireless Screen Sharing Device	1
Local Computer with Wireless Keyboard/Mouse	1
Passive HDMI Wall Plate	1
Capture, Streaming and Conferencing:	
Powered USB Soundbar w/ Camera and Microphone	1
Audiovisual Control and Processing:	
Button Panel Control System	1
Building Wide Systems	
Interactive Room Scheduling Touch Panel	1

CONFERENCE ROOMS

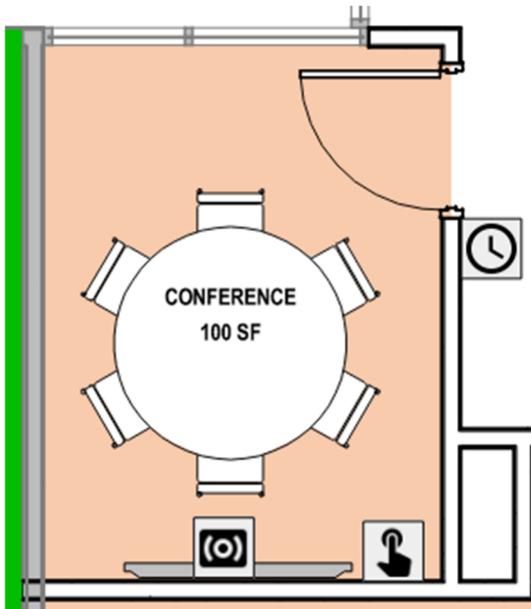
GENERAL

The Conference Rooms shall be used for meetings and collaboration.

SYSTEM FEATURES

- ◆ The room system features a single large wall mounted display creating a dynamic and high-resolution viewing experience for content presentation.
- ◆ The system supports local and remote collaboration via web-conferencing software native to user devices (BYOD) (e.g., Zoom, Teams, etc.) The system will leverage the room systems all-in-one camera and microphone solution.
- ◆ A wireless presentation system will be included for screen sharing of BYODs.
- ◆ An integrated sound bar with camera and microphone for videoconferencing capability.
- ◆ The control system will utilize a dedicated control panel located on the wall adjacent to the display or on the table surface. The control panel will provide a GUI for the selection of sources and destinations to the primary display surface.
- ◆ The room schedule/availability is accessible to users via an interactive touch panel mounted outside of the room.

SAMPLE SPACE LAYOUT



INITIAL AV EQUIPMENT LIST

Item / Description	Qty
Display Systems:	
65" Flat Panel Display	1
Audiovisual Sources:	
Wireless Screen Sharing Device	1
All-in-One Computer	1
HDMI Laptop Input in Table Pocket	1
Capture, Streaming and Conferencing:	
Powered USB Soundbar w/ Auto-framing Camera and Microphone	1
Audiovisual Control and Processing:	
Small Traditional AV Processing/Control Equipment	1
Button Panel Control System	1
Building Wide Systems	
Interactive Room Scheduling Touch Panel	1

INFORMATION TECHNOLOGY

The project's technology systems will be designed in compliance with the Owner's technology expectations, industry standards, best engineering practices, building codes, existing site-specific conditions and as determined by the Authority Having Jurisdiction.

For a renovation project, new telecom horizontal cabling to serve the renovated areas will route to and terminate in the existing Level 04 IDF. Existing cable trays in the adjacent common corridors shall remain in place and be used as the primary cable route to the IDF. It should be confirmed if the Level 04 IDF room has enough telecom rack space to support the addition of patch panels and switches as required to support the needs of the project.

All existing cable trays throughout main corridors shall remain in place for reuse. In areas of renovation, it should be anticipated that all existing data outlets and data cabling will be removed to the source. Any other existing data cabling circuits on the floor which will remain active must be protected in place during construction. Contractor shall coordinate all related low voltage systems work with CSU IT prior to any demolition.

ELECTRONIC PHYSICAL SECURITY

The physical security of the occupants and assets as part of the renovation project requires special consideration considering the following key design issues:

- The project's electronic security systems will be designed in compliance with the Owner's standards.
- The renovation is within an existing building with existing systems and infrastructure.
- The security measures required should not inhibit the welcoming feeling of the CSU campus or detract from the building's functionality.
- Assets are dispersed throughout the renovation spaces. Due to staffing limitations, occupants will have access to assets while not in view of staff.
- CSU has placed a significant emphasis on providing safe and secure facilities for all campus occupants

In general, building security systems are intended to control or monitor pedestrian flow throughout the building based on certain flexible criteria. Themes such as individual pass card holder permissions and time of day access control are key to the design.

This Technology Program prepared for: Colorado State University

Prepared by: **NV5**

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www.NV5.com/tech

CSU PROGRAM PLAN CU SCHOOL OF MEDICINE RELOCATION

CSU Planning, Design, and Construction | August 2025



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OVERVIEW

A. EXECUTIVE SUMMARY

The University of Colorado School of Medicine (CUSOM) on the Colorado State University (CSU) campus is a regional medical campus. The 4 year Doctor of Medicine program was established in 2021, based on current chancellor - system goals to expand their integrated efforts in human health and build upon their long-standing robust research partnerships.

The first 4 year class of 12 students recently graduated from this program in May of 2025, and the class size has been expanded to 14 students for the incoming class of 2029. This will result in a total of 56 students across all four years. The class size could be increased to 20 students in the future. This expansion would be partially dependent on the capacity of the local community to provide the necessary clinical experience in the local community.

The program is currently housed in 26,797 SF on the fourth floor of the CSU Health and Medical Center, but their current space has been determined to be necessary for other CSU programming. CSU is planning to begin a 3+2 Nursing program and start a new Physical Therapy program, both located in the Health and Medical Center, with the 2 year master of science in nursing planned to occupy the space that currently houses the CUSOM.

8,683 sf of space in the Anatomy and Zoology building has been targeted for the CUSOM to relocate into, as this space has synergies with the gross anatomy labs in that building, and will be vacated by students in the Veterinary Medicine program as they move to the south campus in spring of 2026 when the Veterinary Health and Education Complex is complete.

The current estimated total cost of this project is \$7,462,194.

Scheduling this work will be driven by availability of the space in Anatomy and Zoology building for construction beginning in spring 2026, and the need to begin construction for the nursing program in their current space in August 2027. The CUSOM academic year begins in mid-July, substantial completion and move in would be required prior.

B. PROGRAM DESCRIPTION

GOALS AND OBJECTIVES

Specific goals for this project revolve around maintaining a high quality student experience, achieving full accreditation by the Liaison Committee on Medical Education (LCME) and providing the new space within the necessary schedule parameters:

- Student experience: Create a welcoming space, and avoid any perception that students have been displaced to a suboptimal space.
- Accreditation: Currently the school is operating under a provisional accreditation, this project should support achievement of full accreditation
- Schedule: CUSOM to be moved in and fully operational in their new space by July of 2027

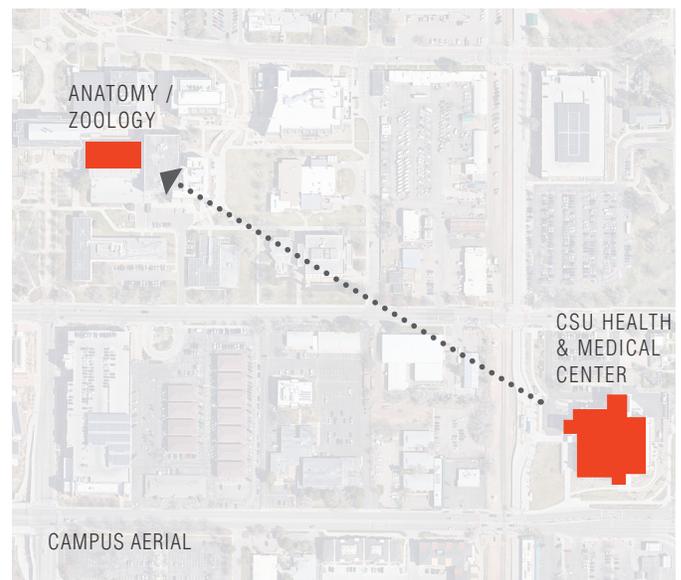
PROGRAM OVERVIEW

The University of Colorado School of Medicine at CSU works closely with the College of Veterinary Medicine and Biomedical Sciences (CVMB) at CSU to effectively teach foundational and advanced science content. These medical student cohorts from the CU Anschutz Medical Campus will complete their core clinical training in the Fort Collins medical community. The clinical community and the patients in Northern Colorado have been tremendous partners in this endeavor, paving the way for excellent clinical training.

The CU School of Medicine works with the Northern Colorado community on many levels with the goal of preparing graduates to address the complex health care issues that individuals and society face. This campus provides novel opportunities by integrating some of the best of what both institutions have to offer from science education to translational research to a One Health framework that focuses on the intersection of the health and wellbeing of humans, animals and the environment to pioneer innovative solutions to address global challenges.

C. RELATIONSHIP TO FACILITIES MASTER PLAN

Because of the space demands placed on the health and medical center, coupled with the fact that the majority of non-student space is utilized by the College of Health and Human Sciences, the CUSOM is the right program to relocate to make space for the new CSU nursing program. The CU School of Medicine falls under the College of Veterinary Medicine and Biological Sciences (CVMB) department at CSU. The Anatomy and Zoology (AZ) building that is proposed as the future location for the CUSOM is primarily allocated to the CVMB, which makes the AZ building an appropriate home for this program long term. The Veterinary Medicine program currently occupying the proposed space in the AZ building will be relocating to the Veterinary Health Education Complex on the south campus when that facility is complete in Summer 2026. Moving the CUSOM to the AZ building will allow better proximity and access to anatomy.





JUSTIFICATION

A. EXISTING CONDITIONS, CHANGING FACTORS AND PROJECTED NEEDS

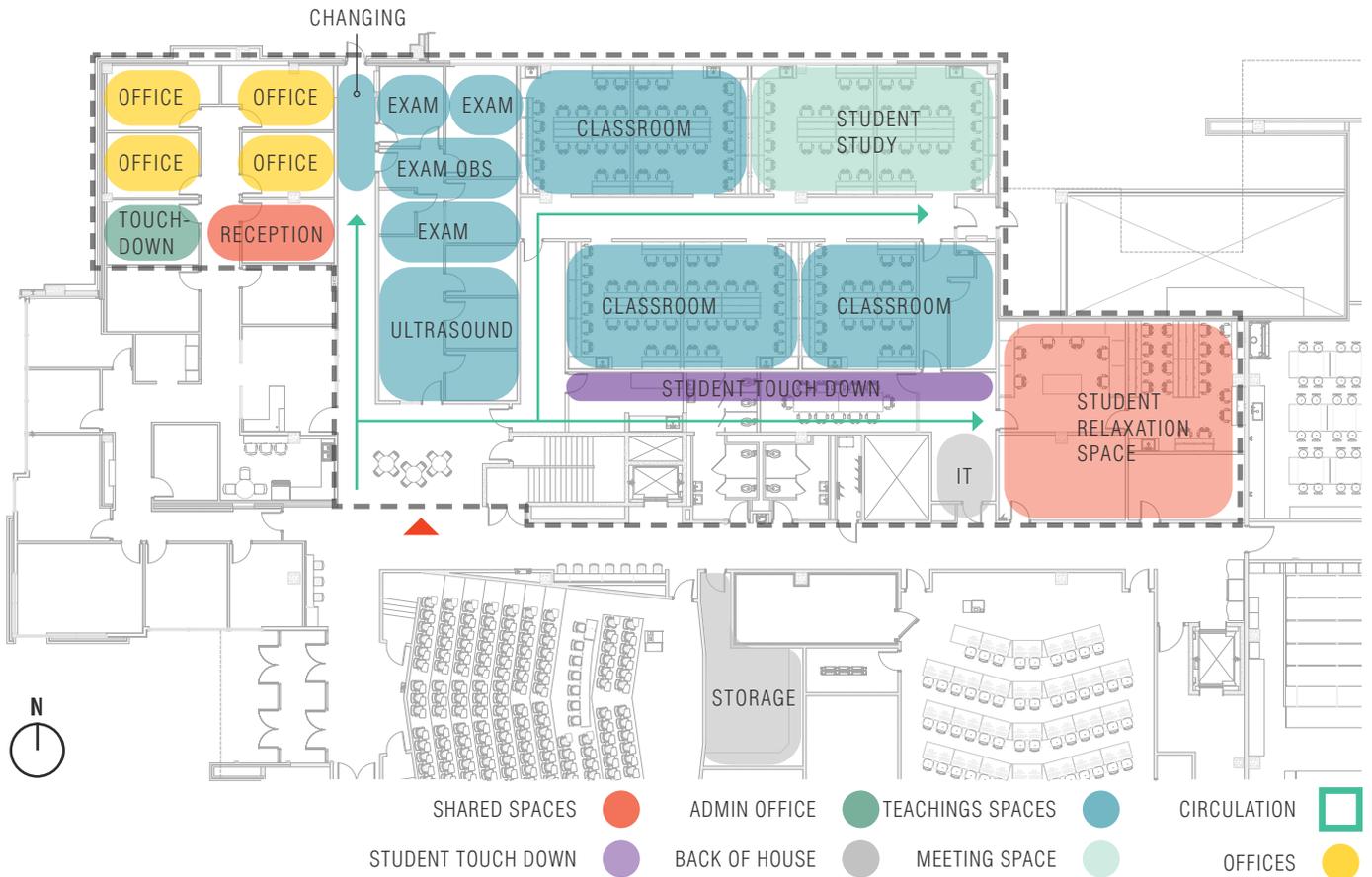
The CUSOM program opened in 2020, and is currently housed on the 26,797 sf fourth floor of the CSU Health and Medical Center. This building is primarily utilized for student healthcare and has space allocated to the College of Health and Human Sciences. The fourth floor is planned to house the CSU Bachelor of Science in Nursing program, which constitutes the final two years of the new 3+2 nursing program that CSU will be adding to their campus along with a new graduate medicine program that will also be housed in the facility.

B. TOTAL SPACE REQUIREMENTS

The CUSOM program consists of four years of curriculum. The first year students spend the majority of their time on campus. Second year is approximately 90% offsite in clinical environments, and 3-4 year students are onsite about half the time. Based on the program matrix below, the square footage necessary to house the department is 8,319 sf.

CU School of Medicine				
ROOM AREA MATRIX				
9/12/2025				
SPACE	QTY	AREA	TOTAL	NOTES
CLASSROOM	3	600	1800	25 SF PER SEAT, ACTIVE LEARNING CLASSROOMS 2-3 CLASSROOMS FOR UP TO 20 FIRST YEAR STUDENTS. 1 CLASSROOM COULD FLEX TO BE ANATOMY VR LAB.
STAFF OFFICE	4	140	560	EACH OFFICE SIZED TO ACCOMMODATE 3 DESKS/PEOPLE AT ONCE. SPACE FOR PRINTER, PAPER, AND MISC STORAGE.
FACULTY TOUCHDOWN OFFICE	1	140	140	OPEN STATIONS FOR THREE FACULTY TO TOUCH DOWN IN. COULD BE A SEPARATE ENCLOSED SPACE
RECEPTION AREA	1	200	200	SEPARATE ENTRANCE, 1 DESK WITH TWO CHAIRS, SUPPLIES ETC
STUDENT STUDY TOUCHDOWN SPACES	20	20	400	VARIABLE STUDY ARRANGEMENTS, SPRINKLED THROUGHOUT THE SPACE INCLUDING BOOTHS, OPEN SEATING WITH TABLES
STUDENT STUDY: SMALL GROUP WORKROOMS	4	160	640	SIZED FOR 8 SO THESE CAN BE SHARED WITH THE SIM SPACE BREAKOUT FUNCTION, 3 SMALL GROUP MEETING ROOMS FOR FACULTY, STAFF, AND STUDENT PRIVATE MEETINGS.
STUDENT RELAXATION SPACE	54	20	1080	ENOUGH SPACE FOR ALL 80 STUDENTS, COMFORTABLE ARRANGEMENTS, CONSOLIDATED INTO ONE AREA, INCLUDING KITCHEN/FRIDGE, MICROWAVE COULD SYNERGIZE WITH EXTERIOR SPACE BUT ALSO SPACE FOR ALL 80 TO GATHER AT ONCE IF NEEDED
STUDENT LOCKERS	54	1.25	68	HALF HEIGHT LOCKERS, 12X15, ONE PER STUDENT
SECURE EQUIPMENT STORAGE	1	200	200	MATCH SIZE OF ROOM 177 CURRENTLY
GENERAL STORAGE	1	335	335	HALF THE SIZE OF CURRENT GENERAL STORAGE, WIL LSTORE A HOSPITAL BED
MOCK EXAM ROOMS	3	140	420	STANDARD EXAM ROOM SIZE, ALLOW SEPARATE ENTRY FO RSTANDARDIZED PATIENTS CURRENTLY ONLY HAVE TWO
EXAM OBSERVATION ROOM	1	200	200	1-2 PEOPLE WATCHING THROUGH 1 WAY GLASS-MUST BE CONGOUOUS WITH THE EXAM ROOM
STANDARDIZED PATIENT CHANGING ROOM	1	140	140	
SIM SPACE BREAKOUT-SHARED WITH SMALL GROUP STUDY ROOMS	1	160	160	DEBRIEF ROOM FROM MOCK EXAM. NEED 6 STUDENTS PLUS FACULTY AND PATIENT, SO 8 SEATS PER ROOM, COULD BE ONE OF THE SMALL GROUP STUDENT STUDY ROOMS
EXAM PROCTORING SPACE	0		0	WIL LUSE ACCOMMODATED TESTING CENTER ELSEWHERE ON CAMPUS
ULTRASOUND TEACHING SPACE	1	400	400	2 ULTRASOUND MACHINES, 2 HOSPITAL BEDS, 20 STUDENTS, 2 SP'S AND FACULTY AT ONCE PLUS STANDARDIZED PATIENT
SERVER/DATA	1	300	300	
ANATOMY LAB	1		0	PROVIDED OUTSIDE THEIR SUITE
CLINICAL SUITES	1		0	PROVIDED OUTSIDE THEIR SUITE
0.20 DEPARTMENTAL GROSSING FACTOR			1409	
TOTAL DEPARTMENTAL ASSIGNABLE			8451	
TOTAL ASSIGNABLE AREA			8451	





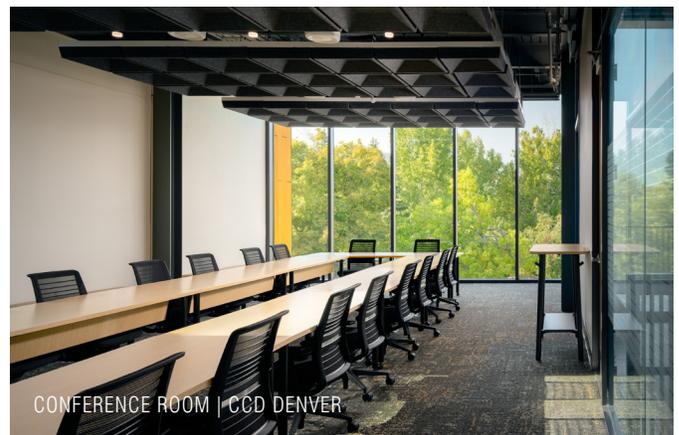
CLASSROOMS:

When on campus, students are meeting in an active learning classroom environment or performing mock procedures in the simulation labs. The program requires three classrooms, each accommodating 20 students in an active learning environment with movable tables and chairs. Because of their use patterns, these classrooms are difficult if not impossible to centrally schedule and share with other programs. One classroom serves first year students, and is occupied continuously through the day. The other two classrooms are occupied for full days at a time, but those days are variable based on the teaching module, the coordination with clinicals and the timing of virtually connected classes at the Anschutz campus. All three classrooms must be setup with the CU standard AV systems, as well as CSU where applicable, and must have high quality microphones and cameras to support conversations in classrooms across campuses including the Anschutz campus.



ADMINISTRATIVE AREA:

The department requires an administrative area to include a reception area with a desk that can seat two, along with 2 chairs for waiting students. This front desk will also include a modest workspace, including space for a printer and miscellaneous office supplies. This area will also require three staff offices, each of which contain three separate desks so they can be shared across three staff. A single office containing three workstations will be required for faculty touchdown. Because there is a lot of student traffic in the administrative area, this suite should have an entrance that does not require students to traverse the rest of the departmental space to access.



STUDENT STUDY AND RELAXATION SPACE:

Common student study space is an accreditation requirement. This space can be provided in a variety of forms, and should include small group study rooms that can accommodate 6-8 students at a common table. It may also include open booth seating and single or double user study tables and carrels. These may be located throughout the space, and should provide a variety of options to accommodate a range of student preferences and study modes. After hours secure access is required.

STUDENT RELAXATION SPACE:

In addition to study space, a separate relaxation space must also be provided for accreditation. This space should include a variety of comfortable seating, and some table/chair groupings. Because many students bring their lunch, a small kitchenette with microwave and refrigerator is required in this space. Ideally, this space should have some connection to the outdoors, even providing some seating outside if possible. In addition to the student lounge function, this space should be able to accommodate the entire class for occasional all department events such as orientations or the like. If furniture must be moved to accommodate this, provide adequate storage for the furnishings that are displaced.

STORAGE:

There are two types of storage needed for the department. Secure storage is required to accommodate some of the more expensive equipment such as ultrasound machines. General storage is necessary to store more general materials for the department. Secure records storage is not a requirement, information stored in this department is not subject to HIPAA requirements.

MOCK EXAM SUITE:

A mock exam suite will be required for the students to conduct mock procedures under observation. Three mock exam rooms will be necessary to accommodate the program size with some room for growth. These exam rooms will have an exam table and millwork as well as equipment such as blood pressure monitor to replicate a physician office. If possible a wet sink should be provided in each. These rooms will require an adjacent observation room with a one way mirror into each exam room so that faculty can observe the students. They will also require recording and connectivity to the Anschutz campus so that students can be graded consistent with the grading standards on that campus. These mock exams will involve standardized patients, and as such, those patients will require a changing facility with their own access into the mock exam rooms, distinct from the student access. The exam rooms will each have two entry doors to keep the student and patient pathways separate. A breakout space will be required nearby to accommodate the instructor, the patient and 10 students to debrief after the mock procedure. This breakout space could be shared, using one of the nearby small group student study spaces.

ULTRASOUND TEACHING SPACE:

The ultrasound teaching space will be used for hands on learning. This space requires two hospital beds and ultrasound machines, and should accommodate two standardized patients, two instructors and 20 students at once. This space should also be in proximity to the standardized patient changing room.



STUDENT STUDY SPACE | CCD DENVER



STUDENT RELAXATION SPACE | LABRIOLA INNOVATION HUB



MOCK EXAM ROOM | ROCKY VISTA UNIVERSITY

ADDITIONAL SHARED SPACES:

In addition to the dedicated spaces outlined above, there are some spaces that the CUSOM will require access to, but do not need to be fully dedicated to the department.

GROSS ANATOMY LAB:

This is a core part of the CUSOM curriculum. The department will have access to the anatomy lab that is located in the addition to the AZ building

ACCOMMODATED TESTING:

As with any academic program, there is a percentage of students that require testing accommodations. These students will require access to the accommodated testing centers elsewhere on campus. CVMBS operates one that would serve this department.

OUTDOOR SPACES:

PARKING:

Because many of the physician instructors are volunteers to the program and have commitments off campus throughout the day, convenient parking is a necessity. Dedicated parking stalls for physician and standardized patients, in close proximity to the facility, will benefit the program. Availability to be negotiated with Parking Services.

EXTERIOR AMENITY SPACE:

If possible, adjacent outdoor space for students to relax, eat lunch, or study would be a welcome amenity.

C. ALTERNATIVES ANALYSIS

Because of the various shifts in space usage on campus, there is some interconnectivity between the movement of this department and the campus' ability to implement the new nursing program. As such, there are few alternatives to this project.

D. ALTERNATIVE #1: DO NOTHING

If the CUSOM were to remain in their current location in the Health Sciences Building, it would prevent the renovation of space to suit the needs of the new nursing program. Nursing could possibly fit into the AZ building space but that would result in poor proximity of this program to others within its respective college. This could delay or prevent the ability to launch that program.

E. ALTERNATIVE #2: DO OTHER

The CUSOM could relocate to another space on campus, but that would eliminate the synergies that can be found by locating them in the AZ building in proximity to the gross anatomy labs and other synergistic programs within CVMBS. In addition, other options on campus would likely require more substantial infrastructure improvements, or don't have the necessary space available in the time frame needed for this program.

F. ALTERNATIVE #3: DO THIS PROJECT

The CUSOM move to the AZ building will collocate the program in a facility that is heavily utilized by the college they are under, yielding better synergy with related programs and opening up more interprofessional education opportunities. The AZ building has space such as the gross anatomy lab that are part of the CUSOM curriculum.

DESIGN CRITERIA AND IMPLEMENTATION

A. DESIGN CRITERIA

The design of the new CUSOM space must consider the student experience. Because students are coming from a relatively new space, it will be important that the new space be designed to be welcoming, and that it does not give occupants the impression that they have been displaced to a suboptimal space. The improvements should be designed with student and faculty comfort and wellness in mind. Accreditation reviews require that in addition to teaching spaces and mock treatment spaces, there is ample student study space as and relaxation space.

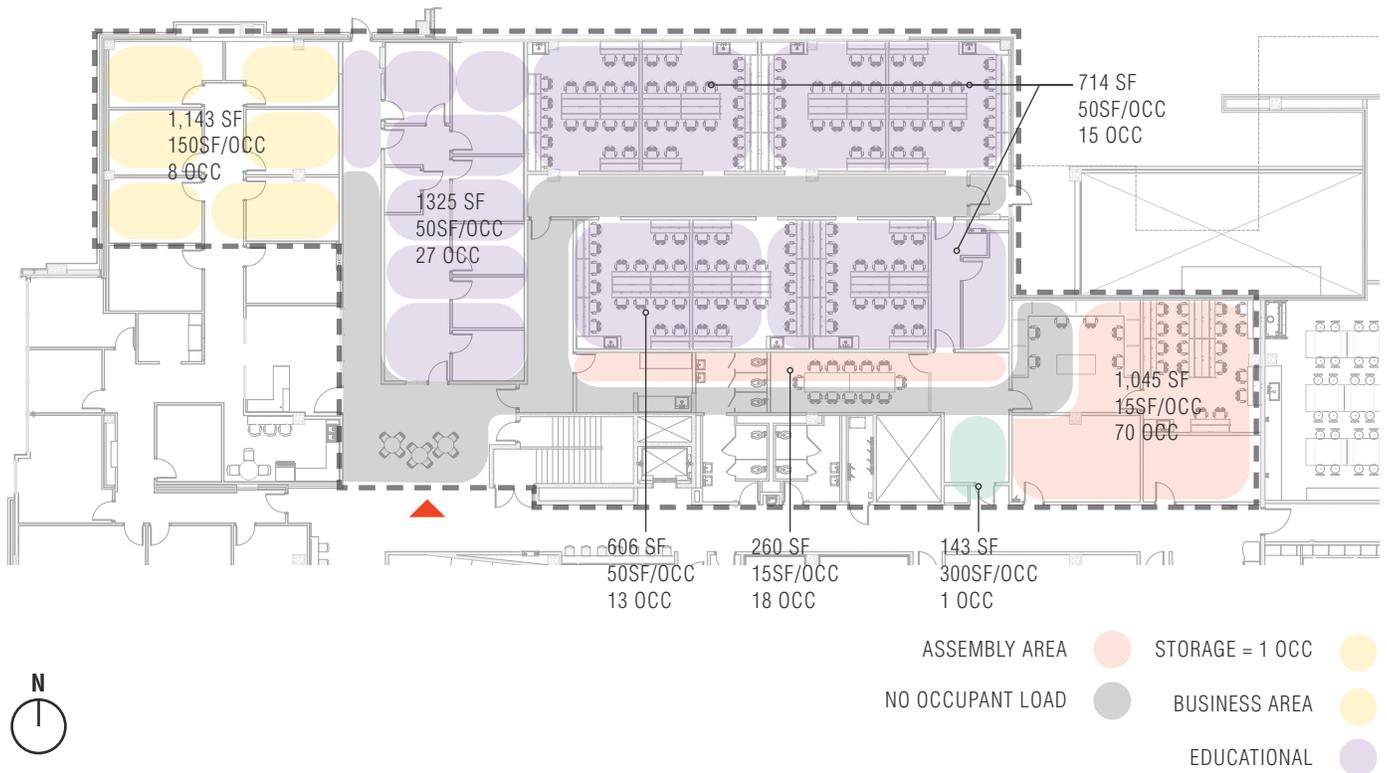
B. INTERPROFESSIONAL EDUCATION

The renovated space for the Nursing and Physical Therapy programs will include a large, state of the art clinical education and simulation space required to deliver the curriculum in these two programs. This clinical education space will also be ideal for sharing with students in the Medical School branch at Fort Collins for Interprofessional Education. Best practices and accreditation standards for physicians, nurses, and physical therapists require that students gain hands-on experience practicing with different disciplines. This newly renovated space will be an optimal setting for all three groups of students to interact together in a realistic environment, including around hospital beds, interacting with realistic robot mannequins and in some cases, actors simulating patients. This clinical education space will not only serve the needs of the Nursing and Physical Therapy students, but it will also greatly expand opportunities for clinical, interprofessional education for students in the Medical School.



B. CODE

2024 INTERNATIONAL BUILDING CODE (IBC)
 2024 INTERNATIONAL FIRE CODE (IFC)
 2024 INTERNATIONAL MECHANICAL CODE (IMC)
 2024 INTERNATIONAL PLUMBING CODE (IPC)
 2024 INTERNATIONAL FUEL AND GAS CODE (IFGC)
 2021 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
 2017 ICC/ANSI A117.1, 2009
 2023 NATIONAL ELECTRICAL CODE (NEC)



C. ACCREDITATION REQUIREMENTS

As a medical school, this facility must be designed to support accreditation by the Liason Committee on Medical Education (LCME). The program is currently operating under a provisional accreditation subordinate to the accreditation for the main program housed on the Anschutz campus in Denver. Accreditation reviews occur approximately every 7 years, although because of the provisional accreditation, a follow up review is expected within the next 1-2 years. Thus, a permanent structured space is essential to the program's future.

D. HVAC SYSTEMS IMPROVEMENTS:

MECHANICAL/PLUMBING:
 EXISTING CONDITIONS:

The existing Anatomy/Zoology building was set up as a central air handling system with constant volume reheat boxes utilizing hot water reheat coils. Zoning of the reheat boxes is consistent with CSU standards in that larger rooms would have their own zones,

and some zones include smaller rooms adjacent to the larger rooms.

Parts of the area being remodeled appear to have been slightly renovated into smaller rooms; however, it is not known if any of the HVAC infrastructure was updated at that time. For the purposes of this report, it is assumed HVAC systems and zoning would not be re-used.

The air handling system and heating water piping appear original to the building and has exceeded its useful life. Areas of concern should be the integrity of the ductwork and piping materials. To better understand the systems material capabilities, a pre-TAB measurement of airflow and water flow to the zones affected by this renovation should occur before the design is finalized should systems need replacement or repair. Pressure tests for duct leakage rates should also be considered prior to construction. The pre-Tab effort should also include the measurement and control of the outside airflow at the main air handling units to determine upgrades needed to meet current code requirements for fresh air to occupied zones.



The plumbing systems should be evaluated for re-use including scoping and video of existing waste pipes.

There does not appear to be fire sprinklers on the 1st floor.

NEW CONSTRUCTION:

Since the existing system is a constant volume ventilation (CAV) system and only a portion of the building is considered for renovation, upgrades should be made to allow future modifications from a constant volume system into a variable volume system.

All of the areas being renovated should have ductwork, CAV Boxes, piping and controls upgraded to VAV operation. It is anticipated the new layout would require the duct mains to be replaced and rerouted in this zone. Since the main air handling system cannot be upgraded as whole for this renovation, the new VAV boxes can be set to a constant volume amount and operate as it currently operates until such time when the remainder of the system is upgraded to VAV at which point the VAV's under this project could be released to control as VAV.

This project will affect 17 existing zones over approximately 9,000 square feet currently supplying approximately 11,000 cfm.

The new space layout will require approximately 15 zones assuming certain spaces can be combined on the same zone. It is anticipated that all 11,000 cfm will be re-used.

The new zones will have new VAV boxes with reheat coils that are sized for a future low temperature hot water system. Since the low temperature hot water system often requires more flow, the existing pipe sizes will need to be evaluated to determine if the piping mains in this area are replaced in this project and ready for future piping upgrades in the whole building so this area will not have to be affected during that conversion.

A new IDF/server room is anticipated to be provided. A new transfer fan, ductwork and thermostat will be provided to transfer the warm air out into the plenum space of an adjacent hallway and air made up via a transfer duct or door undercut.

Plumbing systems will need to be upgraded to route water, waste and vent to the new sink locations and demolition of old fixtures. While no infrastructure is planned for medical gases, the simulation spaces should be planned with "mock" medical gas turrets for air, oxygen and vacuum.

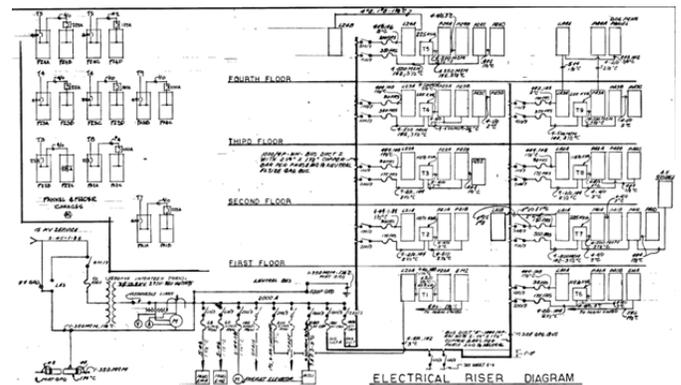
Controls are anticipated to still be a pneumatic system. Some rooms near this renovation have updated VAV controls (W102P, W102N, W102Q and W102L), therefore access to the BAS is possible. There is also a MS/TP FC trunk that connected to newer CGM JCI controllers for 3rd floor that may be accessible for this renovation. The remodeled area should have a controls upgrade with new controllers that can communicate with the new VAV boxes and integrated into the existing DDC system of the building. Raceway for this connectivity is likely required. Worst case scenario is a new raceway to route to the basement IDF E08 room where the JCI DX-9100 controller is located.

The Fire sprinkler system should be expanded to serve this renovation for better life safety and asset protection. This space would be treated as a light hazard occupancy. Parts of the original building may be sprinkled, such as the basement. If not, there is a relatively new fire sprinkler system in the East HEOC addition that can be used to protect more of the original building.

E. ELECTRICAL IMPROVEMENTS:

EXISTING CONDITIONS:

The existing Anatomy/Zoology building is served from the campus medium-voltage distribution system via unit substation switchgear equipped with a 1500-kVA, 480/277-volt, 3-phase, 4-wire secondary transformer and 2000-amp distribution sections. Fused switches are utilized to distribute power to building distribution equipment and loads. It appears the main distribution switchgear is located in a main electrical room on the basement level. Distribution equipment located on the first thru fourth floors are served by two (2) vertical bus duct risers on the West and East wings of the building. Refer to the existing electrical one-line diagram below for reference.



Existing lighting appears to consist of fluorescent sources, LED sources and line voltage lighting controls. The existing lighting and lighting control devices will be replaced entirely within the anticipated renovation area. The existing LED sources may be relocated and reused as requested by the Owner and Architect.

General power receptacles exist throughout the anticipated renovation area. Existing devices located on walls scheduled for demolition will be disconnected and removed. Existing devices located on walls to remain will be replaced with new devices. Additional furring and partition walls may be required to accommodate future power and data connectivity.

The existing fire alarm system is anticipated to be modified only as required for the anticipated renovation. Existing notification and initiation devices will be relocated as appropriate.



NEW CONSTRUCTION:

Modifications to the existing electrical distribution system is anticipated to be limited. Due to the age of the electrical distribution system, existing branch circuit panelboards, the step-down transformer and associated feeders, located in the first floor, West wing electrical room, are anticipated to be replaced.

New LED luminaires will be provided throughout the anticipated renovation area. Luminaires selections will be coordinated with the Architectural team and will be dependent upon the ceiling types in each area. Luminaires in individual rooms will be dimmable.

Low voltage lighting controls will be provided throughout the renovation area. The lighting control system will consist of occupancy/vacancy sensor, manual control switches, and daylight harvesting photosensors as necessary to meet the current International Energy Conservation Code (IECC) requirements.

New receptacles and equipment connections will be provided as required based on the space plan requirements. Controlled receptacles will be provided as required by the 2024 International Energy Conservation Code (IECC) in private offices, open office areas, conference/meeting rooms, classrooms, breakrooms, etc. and will be controlled by the lighting control system.

Existing fire alarm notification and initiation devices will be relocated with new devices being added to meet current code requirements within the designated renovation area. New fire alarm devices will match the existing fire alarm system.

F. IT/AV/SECURITY IMPROVEMENTS:

TECHNOLOGY SUMMARY:

The University of Colorado School of Medicine (CUSOM) at Colorado State University (CSU) is expanding its regional medical campus to enhance student and campus-wide educational experiences. This narrative outlines the core technology systems planned for the project, including audiovisual, medical simulation support, structured cabling, and security solutions—each designed to meet specific functional and technical needs.

Audiovisual:

Digital collaboration among students, faculty, and during classes will be a cornerstone of presenting a modern and “high-tech” feel of the CUSOM. Classroom, Medical Simulation, Debriefing, Student, and Administration spaces will receive dedicated solutions to meet the functional requirements of each environment.

Consisting of displays, transport, capture, and reproduction of content from portable and local sources consistency across spaces is key to usability and support. Systems must be compatible with multiple devices and scalable to meet CU’s enterprise-level needs, especially for standardized patient programs and OSCE exams.

Telecommunications:

The telecommunications infrastructure will feature a scalable system of pathways and spaces with a standardized wiring plant, allowing for future technology upgrades with minimal cost and disruption. The CU network may operate independently of the CSU network.

A Technology Distribution Room (TDR) will support network, AV, simulation, and communications equipment. The local TDR will connect to the building backbone via fiberoptic cabling where horizontal cabling will use category cable, with outlet configurations tailored to specific use cases.

The wireless network will operate as a separate system connected to the Tenant’s core network. Access points will be placed to ensure full coverage of the renovation. The design will support future upgrades like 802.11be/bf enabling active load balancing and high-density coverage throughout the facility.

Security Systems:

As the renovation occurs within an existing building, security systems must integrate seamlessly with current infrastructure and operations. Access control will use CSU-standard card systems managed by Campus Security, allowing permissions based on user roles and time-of-day access. Traditional keys will be limited to faculty offices and storage areas.

Video surveillance will also follow CSU standards, with high-definition IP PoE cameras monitoring public and critical areas. Camera types will be selected to suit specific environments, ensuring effective coverage and usability. Both access control and surveillance systems will be monitored and supported by local Police Services, providing a secure yet functional and inviting space for all users.

Infrastructure:

Technology infrastructure includes junction and specialty boxes for AV and electrical systems, with structured pathways using wire baskets for long runs and J-hooks for shorter ones. Conduit connects pathways to devices, where free-air cables will be supported by J-hooks in accessible ceilings and routed through conduit in open-ceiling areas. Low-voltage circuits must be dedicated and isolated from motorized or inductive loads. IT and security systems should have emergency power or UPS backup, with centralized systems supported by building UPS. Structured cabling will include all necessary AV and security ports, with specialty cabling installed by the contractor.



ROOM BY ROOM SUMMARY:

CLASSROOMS:

Within these labs, student collaborative work areas are strategically clustered, facilitating small group collaboration within a larger instructor-led environment. This can include displays around the perimeter of the room for each group, or part of an integrated furniture system. Through standard connections, students can seamlessly transition between independent group work and sharing and presenting their work to the entire class.

To support the flexibility and functionality of these spaces, distributed power and systems connectivity may be integrated within the perimeter walls or flooring accommodating student furniture arrangements. Leveraging a centralized headend in a local technology room optimizes space utilization for lectures and teaching activities enhancing the overall learning experience.

System Features

In this instructional space, the instructor presents from a lectern located at the front of the room, utilizing a digital annotation monitor to draw over computer content during presentations. Dual large format displays display content to the full class located in the front of the classroom. Dedicated smaller displays are arrayed around the perimeter of the room or attached to collaboration tables for student collaboration. High quality microphones to support voice lift and meet ADA assistive listening requirements, while additional microphones may be installed at student tables to facilitate participation and enable lecture capture across the campuses. The system supports both wired and wireless screen sharing between instructor and student devices may include a wireless presentation system for enhanced Bring Your Own Device (BYOD) integration.

Local and remote learning across campuses is enabled through web-conferencing platforms such as Zoom and Microsoft Teams, leveraging the room's integrated high-quality cameras and microphones for far side participation. Audio is delivered through ceiling-recessed speakers, and the system includes both wired and wireless microphones, along with an assistive listening system, to support voice reinforcement and program audio across partitioned spaces. Advanced digital signal processing ensures feedback suppression and automatic echo cancellation for clear audio quality.

Users control the system via a touch panel located at the teaching station, while room scheduling and availability are accessible through an interactive touch panel mounted outside the room.

VIRTUAL REALITY LEARNING LAB:

Within one of the Classrooms the project may include a Virtual Reality (VR) Learning environment supporting 14-20 students. Within these labs students engage in instructor led program materials standing within the open space with a teaching station and confidence monitors located within the space to view student perspectives in real time.

To support the VR system, students and VR equipment is tethered to a permanent channel-based infrastructure with supporting power and network connectivity within an open ceiling system. A system head-end will be in a nearby technology closet to maximize space utilization and flexibility of the space for both furniture and VR cases.

System Features

In the VR room configuration, the functionality builds on the Classroom fit out allowing the instructor leading VR content engagement from the teaching station at the front of the room. Leveraging a VR command console, the instructor loads and engages with students from within the VR space while a body-worn high-quality microphone captures speech into the VR environment and ADA assistive listening requirements. Additional microphones may be integrated into the VR headset or installed within the ceiling to facilitate student participation.

Instructors control the room systems using a combination of in-room computer dedicated to the VR system and a touch panel located at the teaching location, while room scheduling and availability are accessible through an interactive touch panel mounted outside the room.

ADMINISTRATIVE AREA:

As a centrally located high traffic area, Administrative Areas are often equipped with a dynamic digital bulletin board displaying campus and community news, events, or other relevant information for students and faculty.

System Features

Equipped with strategically located wall mounted displays, a signage player residing on the local network would provide scheduled content to the display as managed by the CUSOM administrators.

STUDENT STUDY SPACE:

System Features

These acoustic rated spaces are optimized for audio-visual presentations and collaborative activities, offering an ideal environment for focused group work or after-hours study and relaxation. Each room features a single wall-mounted display that delivers a dynamic, high-resolution viewing experience. Users can connect their own devices (BYOD) via a dedicated input point located in the table's floor box or poke-through, with automated signal detection and switching to streamline content sharing.

For added flexibility, a wireless presentation system can be included to allow multiple participants to share screens simultaneously. The system supports both local and remote collaboration through web-conferencing platforms such as Zoom and Microsoft Teams, which run natively on users' devices.

Control of the room's technology is simple and intuitive, managed through a push-button interface mounted near the display.



Additionally, room availability and scheduling are easily accessible via an interactive touch panel located outside the room.

STUDENT RELAXATION SPACE:

System Features

This acoustic rated space is designed to promote focus and minimize distractions, offering a quiet and comfortable environment for individual or small group use. Often equipped with wall-mounted digital signage, the space serves as a dynamic bulletin board displaying campus and community news, events, or other relevant information. In some cases, the signage may function as a television, with audio reproduced through speakers integrated directly into the display, enhancing the user experience without disrupting the room's acoustic integrity.

MOCK EXAM SUITE:

Mock Exam Space

The Medical Simulation system addresses the acquisition, storage, playback and management of audio and video from multiple microphones and cameras as well as data from clinical instruments such as full-body manikins and task trainers.

The Audiovisual supporting systems are compatible with several devices from MedSim vendors and extend to assessment, grading, research, remote access for faculty and students (with proper credentials), scheduling and other administrative tasks associated with managing a medical simulation environment.

System Features

Simulation observation technologies are centralized and managed from a dedicated control room located adjacent to the simulation space, allowing operators to observe students unobtrusively either through the physical window or via live video feeds. These feeds also support after-action review and debriefing. The spaces are acoustically rated to ensure speech privacy and maintain a focused learning environment. Control of the medical capture software and hardware is facilitated through computers, a joystick controller, and a touch panel interface within the control room. In some cases, simulation recording may begin automatically when a student badges into the EMR (Electronic Medical Record) computer.

Operators can communicate with participants using overhead speakers, enhancing coordination during simulations. The system captures both audio and video from the lab, as well as data from the EMR platform. The EMR station also supports simulated telehealth interactions via a local computer and webcam. Within the lab, a large monitor is available to display instructional content such as simulated X-rays, collaborative materials, or other visuals relevant to the simulation experience.

DEBRIEF ROOM:

Debrief Rooms are acoustically rated to ensure speech privacy and are purposefully designed to support the presentation of audio-visual content and post-simulation assessments. With (6)

student seats and the instructor, these rooms are equipped with cameras and integrated microphones to enable high-quality capture of debriefing sessions, which are increasingly required for certification as part of the simulation activity. Capture functionality is provided through the Laerdal Medical Simulation Capture platform.

System Features

A single large wall-mounted display offers dynamic high-resolution viewing experiences for presenting instructional materials and reviewing recorded simulation content. The system supports both local and remote collaboration via web-conferencing platforms such as Zoom and Microsoft Teams, utilizing an all-in-one camera and microphone solution. Users can connect BYOD (Bring Your Own Device) sources through a dedicated input point at the table, with automated signal detection and switching, and a wireless presentation system is included to facilitate screen sharing.

Boundary microphones-either table-mounted or ceiling-integrated enable clear audio capture for debrief recordings, while ceiling speakers provide playback of content. A digital signal processing (DSP) unit ensures optimal audio quality through feedback suppression and automatic echo cancellation. System control is managed via a dedicated touch panel located either on the wall adjacent to the display or on the table surface, offering a graphical interface for source and destination selection. Room scheduling and availability are accessible through an interactive touch panel mounted outside the room.

ULTRASOUND TEACHING SPACE:

These dynamic skills lab environments are designed to foster experiential teaching by providing essential tools and resources for both students and educators. Instructors conduct real-time demonstrations from designated bed locations allowing students to observe, engage, and develop individual skills through interactive learning.

System Features

Within the labs, student areas are organized into two collaborative clusters of 7 persons each supporting small group skill-building within a larger instructor-led setting. Each student station is equipped with a dedicated display and connectivity to SP (Skills Practice) locations, medical equipment or other sources enabling hands-on training or participation in broader room presentations. To enhance flexibility and functionality, additional camera and microphone systems can be implemented to share student activities back to the instructor or broadcast them to the wider class ensuring a fully integrated and responsive learning experience.

Refer to appendix for further information.



G. PROJECT SCHEDULE, COST ESTIMATE AND FINANCIAL ANALYSIS:

To be written...driven by move out of current occupants in spring 2026, and construction start to accommodate next program in their current space. Schedule concern-timing of construction vs accreditation review. And move timing related to semester and finals.

H. BUDGET:

The current estimated total cost of this project is \$7,462,194.

I. CC_C SPREADSHEET:

J. PROJECT DELIVERY METHOD:

This project will utilize a CM/GC delivery method.

K. DETAILED COST ESTIMATE:

L. FUNDING SOURCES:

M. ACKNOWLEDGMENTS:

CSU:

Tony Rojewski
Capital Construction Project Manager

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Mechanical Engineering Principal

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Associate Principal

Cumming Group:
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OZ ARCHITECTURE

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APPENDIX



CSU School of Medicine Relocation

Feasibility Study - R3

September 22, 2025

**CUMMING
GROUP**

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EXECUTIVE SUMMARY

1.1 Introduction

This estimate has been prepared, pursuant to an agreement between OZ Architecture and Cumming Group, for the purpose of establishing a probable cost of construction at the feasibility phase of design

The project scope encompasses the design and construction of a new build tenant improvement / relocation of the existing Colorado School of Medicine (CUSOM) on the Colorado State University (CSU) campus, located in Fort Collins, CO.

1.2 Base Scope Construction Cost Estimation - Summary

The total estimated construction cost within our full cost report is summarized below:

Element	Area	Cost / SF	Total
TOTAL ESTIMATED CONSTRUCTION COST	8,320	\$592	\$4,924,462

1.3 Estimated Soft Costs

The total estimated project soft costs as found on the soft cost summary (PDF page 5) are summarized below

Element	Area	Cost / SF	Total
Total Estimated Soft Costs	8,320	\$154.53	\$1,285,633
Total Estimated Owner Contingency (5%)	8,320	\$74.65	\$621,010
TOTAL ESTIMATED SOFT COSTS	8,320	\$229	\$1,906,643

1.4 Estimated Total Project Cost

The total estimated project cost = estimated construction cost (section 1.2) + estimated soft costs (section 1.3)

Element	Area	Cost / SF	Total
TOTAL ESTIMATED PROJECT COST	8,320	\$821	\$6,831,105

1.5 Alternates Cost Estimation - Summary

The total estimated (net) **project costs** for presented additive alternates summarized below:

Alternate 1: Code Required Upgrades - including restroom renovations	\$631,089
Alternate 2: Pre Tab - Mechanical Systems Validation	\$7,274
Alternate 3: Mechanical Sytems Upgrade - Complete (net cost including base scope estimate)	\$975,919

1.6 Project Schedules

Cumming Group understands that the project's current construction schedule includes the dates below. These dates and durations are used in the development of estimated general conditions, general requirements, as well as material and labor escalation factors for the estimate.

	Start	Finish	Duration
TOTAL ESTIMATED CONSTRUCTION COST 0	Aug-26	Jan-27	6 months

1.7 Key Assumptions & Exclusions

This document should be read in association with Appendix 1 (starting PDF page 25) which outline assumptions, project understanding, approach, and cost management methodology. Summary of key assumptions and exclusions include:

Key Exclusions:

Seismic upgrades associated with existing facilities, structures and systems

Key Assumptions | Clarifications:

This estimate has been up revised to now included estimated costs of construction, estimated project soft costs and allowance for owner's contingency.

SUMMARY MATRIX - Estimated Project Costs

Element	Med School Relocation		
	Total	Cost/SF	
A) ESTIMATED CONSTRUCTION COST			
Direct Cost of Construction	\$3,492,691	\$419.82	
Design Contingency and Escalation	\$615,417	\$73.97	
Construction Cost Indirect Cost (Mark-Up)	\$816,354	\$98.13	
SUBTOTAL - ESTIMATED CONSTRUCTION COST	\$4,924,462	\$592	
B) ESTIMATED SOFT COSTS			
Design and Engineering	9.00%	\$443,202	\$53.27
Wet Dry Utility Connections	0.40%	\$19,698	\$2.37
Code Review	0.75%	\$36,933	\$4.44
Testing and Inspections	0.75%	\$36,933	\$4.44
Facilities Management Fees	LS	\$220,000	\$26.44
Agencies and Permits	1.50%	\$73,867	\$8.88
FF&E (<i>allow \$15 per SF</i>)	LS	\$130,000	\$15.63
Med Sim System - including AV support (<i>excludes licensing</i>)	LS	\$325,000	\$39.06
Owners Representation / Construction Mgmt.	<i>Excluded</i>		
Land Purchase and Development Costs	<i>N/A</i>		
Groundbreaking and Opening	<i>Excluded</i>		
Marketing PR Communications	<i>Excluded</i>		
Finance Costs	<i>Excluded</i>		
Freight / Installation / Warehousing / Other	<i>Excluded</i>		
SUBTOTAL - ESTIMATED PROJECT SOFT COSTS	\$1,285,633	\$155	
C) OWNER COSTS			
Owner Contingency, allow	10.0%	\$621,010	\$74.65
SUBTOTAL - OWNER COSTS	\$621,010	\$75	
ESTIMATED PROJECT COST TOTAL	\$6,831,105	\$821	

SUMMARY MATRIX - Construction Costs

Element	Med School Relocation 8,320 SF		Sitework		Overall Totals
	Total	Cost / SF	Total	Cost / SF	Total
01 General Requirements	\$25,000	\$3.00			\$25,000
02 Existing Conditions	\$82,376	\$9.90			\$82,376
03 Concrete	\$66,556	\$8.00			\$66,556
04 Masonry	\$74,876	\$9.00			\$74,876
05 Metals	\$15,600	\$1.88			\$15,600
06 Wood, Plastics, And Composites	\$395,176	\$47.50			\$395,176
07 Thermal And Moisture Protection	\$33,278	\$4.00			\$33,278
08 Openings	\$93,500	\$11.24			\$93,500
09 Finishes	\$661,255	\$79.48			\$661,255
10 Specialties	\$100,976	\$12.14			\$100,976
11 Equipment					
12 Furnishings	\$8,500	\$1.02			\$8,500
13 Special Construction			No Sitework Scope Anticipated		
14 Conveying Systems					
21 Fire Suppression	\$37,438	\$4.50			\$37,438
22 Plumbing	\$294,271	\$35.37			\$294,271
23 HVAC	\$343,869	\$41.33			\$343,869
25 Integrated Automation	\$94,925	\$11.41			\$94,925
26 Electrical	\$327,991	\$39.42			\$327,991
27 Communications	\$681,946	\$81.97			\$681,946
28 Electrical Safety And Security	\$155,159	\$18.65			\$155,159
31 Earthwork					
32 Exterior Improvements					
33 Utilities					
Subtotal Cost	\$3,492,691	\$420			\$3,492,691
Design & Estimating Contingency 12.00%	\$419,123	\$50.38	No Sitework Scope Anticipated		\$419,123
Escalation 5.02%	\$196,295	\$23.59			\$196,295
Subtotal - Estimated Direct Construction Cost	\$4,108,108	\$494			\$4,108,108
General Conditions 6.00%	\$246,486	\$29.63	No Sitework Scope Anticipated		\$246,486
General Requirements 4.00%	\$174,184	\$20.94			\$174,184
Bonds & Insurance 2.00%	\$90,576	\$10.89			\$90,576
Contractor's Fee 3.50%	\$161,677	\$19.43			\$161,677
Construction Contingency 3.00%	\$143,431	\$17.24			\$143,431
Subtotal - Estimated Indirect Construction Cost	\$816,354	\$98			\$816,354
Total Estimated Construction Cost	\$4,924,462	\$592			\$4,924,462

SCHEDULE OF AREAS AND CONTROL QUANTITIES

Schedule of Areas	CUSOM		BUILDING TOTALS
	Program Space Count	Area per Program Area	Building Program
1. Enclosed Areas (x 100%)			
Classroom	3	600	1,800
Staff Office	4	140	560
Faculty Touchdown Office	1	140	140
Reception Area	1	200	200
Student Study Touchdown Spaces	20	20	400
Student Study: Small Group Workrooms	5	160	800
Student Relaxation Space	54	20	1,080
Student Lockers	54	1.25	68
Secure Equipment Storage	1	200	200
General Storage	1	225	225
Mock Exam Rooms	3	140	420
Exam Observation Room	1	200	200
Standardized Patient Changing Room	1	140	140
SIM Space Breakout - Shared with Small Group Study Rooms	1	<i>Shared with Other Program</i>	
Exam Proctoring Space		<i>Outside of Program</i>	
Ultrasound Teaching Space	1	400	400
Server / Data	1	300	300
Anatomy Lab	1	<i>Outside of Program</i>	
Clinical Suites	1	<i>Outside of Program</i>	
Subtotal			6,933
Departmental Grossing Factor	1	1,387	1,387
TOTALS			8,320

2. Sitework | Site Development

No Scope Anticipated

Sitework - Total Site Area (Excluding Footprint)

Med School Relocation

SUMMARY - MED SCHOOL RELOCATION

Element		Total	#REF!
01	General Requirements	\$25,000	\$3.00
02	Existing Conditions	\$82,376	\$9.90
03	Concrete	\$66,556	\$8.00
04	Masonry	\$74,876	\$9.00
05	Metals	\$15,600	\$1.88
06	Wood, Plastics, And Composites	\$395,176	\$47.50
07	Thermal And Moisture Protection	\$33,278	\$4.00
08	Openings	\$93,500	\$11.24
09	Finishes	\$661,255	\$79.48
10	Specialties	\$100,976	\$12.14
11	Equipment		
12	Furnishings	\$8,500	\$1.02
13	Special Construction		
14	Conveying Systems		
21	Fire Suppression	\$37,438	\$4.50
22	Plumbing	\$294,271	\$35.37
23	HVAC	\$343,869	\$41.33
25	Integrated Automation	\$94,925	\$11.41
26	Electrical	\$327,991	\$39.42
27	Communications	\$681,946	\$81.97
28	Electrical Safety And Security	\$155,159	\$18.65
31	Earthwork		
32	Exterior Improvements		
33	Utilities		
Subtotal		\$3,492,691	\$420
Design & Estimating Contingency	12.00%	\$419,123	\$50.38
Escalation to MOC, 10/16/26	5.02%	\$196,295	\$23.59
Subtotal - Estimated Direct Cost		\$4,108,108	\$494
Subtotal		\$4,108,108	\$493.79
General Conditions	6.00%	\$246,486	\$29.63
Subtotal		\$4,354,595	\$523.42
General Requirements	4.00%	\$174,184	\$20.94
Subtotal		\$4,528,778	\$544.36
Bonds & Insurance	2.00%	\$90,576	\$10.89
Subtotal		\$4,619,354	\$555.24
Contractor's Fee	3.50%	\$161,677	\$19.43
Subtotal		\$4,781,031	\$574.68
Construction Contingency	3.00%	\$143,431	\$17.24
TOTAL ESTIMATED CONSTRUCTION COST		\$4,924,462	\$592

Total Area: 8,320 SF

DETAIL ELEMENTS - MED SCHOOL RELOCATION

Element	Quantity	Unit	Unit Cost	Total
01 General Requirements				
CM/GC Preconstruction fees, allow	1	ls	\$25,000.00	\$25,000
Total - General Requirements				\$25,000
02 Existing Conditions				
Temporary air tight partition at existing adjacent spaces, allow Demolition at Existing Anatomy and Zoology Building	1	ls	\$7,500.00	\$7,500
Assume light demolition of existing space and finishes	8,320	sf	\$9.00	\$74,876
Total - Existing Conditions				\$82,376
03 Concrete				
Concrete Scope Concrete patch and repair to accommodate systems modification and re- routing, allowance	8,320	sf	\$8.00	\$66,556
Total - Concrete				\$66,556
04 Masonry				
Masonry Scope Masonry modification / patch and repair based on the understanding that many of the interior partition walls are non-load bearing masonry	8,320	sf	\$9.00	\$74,876
Total - Masonry				\$74,876
05 Metals				
Structural Steel	<i>No Primary Steel Scope Anticipated</i>			
Miscellaneous Metals Miscellaneous metals, allowance	3	tn	\$5,200.00	\$15,600
Total - Metals				\$15,600
06 Wood, Plastics, And Composites				
Rough Carpentry / Backing / Blocking, Allowance - for new casework, etc.	8,320	gsf	\$2.50	\$20,799

DETAIL ELEMENTS - MED SCHOOL RELOCATION

Element	Quantity	Unit	Unit Cost	Total
Casework / Millwork New millwork systems, allow	8,320	sf	\$45.00	\$374,378

Total - Wood, Plastics, And Composites				\$395,176
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07 Thermal And Moisture Protection

Exterior Envelope / Façade				<i>No Scope Anticipated</i>
Roofing Allow for patch and repair based on needs for new penetrations	8,320	sf	\$2.75	\$22,879
Miscellaneous Caulking allowance	8,320	gfa	\$1.25	\$10,399

Total - Thermal And Moisture Protection				\$33,278
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08 Openings

Doors, Frames, Hardware				
Exterior Doors Allowance for new door at exterior entry	1	ls	\$6,500.00	\$6,500
Interior Doors Interior doors including frames and hardware, no known count or type - allowance	1	ls	\$65,000.00	\$65,000
Interior Glazing Interior Glazing - allowance	1	ls	\$22,000.00	\$22,000

Total - Openings				\$93,500
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09 Finishes

Exterior Framing				<i>No Scope Anticipated</i>
Interior Framing				
Interior Partitions New wall framing and furring at existing masonry walls, including gypboard and finish, allowance	8,320	sf	\$22.00	\$183,029
Wall Finishes Paint walls, allow	8,320	sf	\$10.35	\$86,107

CSU School of Medicine Relocation

Fort Collins, CO
Feasibility Study - R3

Project # 25-00000.00
09/22/25

DETAIL ELEMENTS - MED SCHOOL RELOCATION

Element	Quantity	Unit	Unit Cost	Total
Specialty wall finish, allow	8,320	sf	\$12.65	\$105,242
Flooring and Base Finish - allow by programmed area - finish types / materials are TBD				
Classroom	1,800	sf	\$4.80	\$8,640
Staff Office	560	sf	\$4.80	\$2,688
Faculty Touchdown Office	140	sf	\$9.60	\$1,344
Reception Area	200	sf	\$21.60	\$4,320
Student Study Touchdown Spaces	400	sf	\$9.60	\$3,840
Student Study: Small Group Workrooms	800	sf	\$9.60	\$7,680
Student Relaxation Space	1,080	sf	\$4.80	\$5,184
Student Lockers	68	sf	\$3.00	\$203
Secure Equipment Storage	200	sf	\$3.00	\$600
General Storage	225	sf	\$3.00	\$675
Mock Exam Rooms	420	sf	\$42.00	\$17,640
Exam Observation Room	200	sf	\$42.00	\$8,400
Standardized Patient Changing Room	140	sf	\$42.00	\$5,880
Ultrasound Teaching Space	400	sf	\$42.00	\$16,800
Server / Data	300	sf	\$9.60	\$2,880
Ceiling Finishes - allow by programmed area - finish types / materials are TBD				
Classroom	1,800	sf	\$13.80	\$24,840
Staff Office	560	sf	\$13.80	\$7,728
Faculty Touchdown Office	140	sf	\$13.80	\$1,932
Reception Area	200	sf	\$13.80	\$2,760
Student Study Touchdown Spaces	400	sf	\$13.80	\$5,520
Student Study: Small Group Workrooms	800	sf	\$13.80	\$11,040
Student Relaxation Space	1,080	sf	\$20.70	\$22,356
Student Lockers	68	sf	\$13.80	\$932
Secure Equipment Storage	200	sf	\$2.30	\$460
General Storage	225	sf	\$2.30	\$518
Mock Exam Rooms	420	sf	\$29.90	\$12,558
Exam Observation Room	200	sf	\$29.90	\$5,980
Standardized Patient Changing Room	140	sf	\$29.90	\$4,186
Ultrasound Teaching Space	400	sf	\$29.90	\$11,960
Server / Data	300	sf	\$13.80	\$4,140
Miscellaneous				
Miscellaneous finishes, allowance	8,320	sf	\$10.00	\$83,195

Total - Finishes				\$661,255
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10 Specialties

Building Specialties				
Digital signage, allow at lounge spaces	3	ea	\$7,000.00	\$21,000

DETAIL ELEMENTS - MED SCHOOL RELOCATION

Element	Quantity	Unit	Unit Cost	Total
Allowance for code signage	8,320	sf	\$2.00	\$16,639
Wall protection, allowance	8,320	sf	\$3.00	\$24,959
Fire extinguisher and cabinet, allowance	6	ea	\$850.00	\$5,100
Misc specialties, allowance	8,320	sf	\$2.00	\$16,639
Kitchen Equipment				
Kitchenette appliance package, allow	8,320	sf	\$2.00	\$16,639
Laboratory Casework / Specialties				<i>By Owner</i>
Total - Specialties				\$100,976

11 Equipment *No Scope Anticipated*

Total - Equipment				
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12 Furnishings

Window Covering				
Mechoshades - manual, allow	1	ls	\$8,500.00	\$8,500
Fixtures Furniture & Equipment				
FF&E				<i>By Owner</i>

Total - Furnishings				\$8,500
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13 Special Construction *No Scope Anticipated*

Total - Special Construction				
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14 Conveying Systems *No Scope Anticipated*

Total - Conveying Systems				
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21 Fire Suppression

Wet-pipe sprinklers, allow head modification and relocation (not a full system)	8,320	sf	\$4.50	\$37,438
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Total - Fire Suppression				\$37,438
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DETAIL ELEMENTS - MED SCHOOL RELOCATION

Element	Quantity	Unit	Unit Cost	Total
22 Plumbing				
Demolition				
Sawcut existing slab for plumbing tie in and potential new fixtures	1	ls	\$1,500.00	\$1,500
Sanitary Fixtures				
Floor drain	2	ea	\$794.90	\$1,590
Rough-ins				
Complete rough-in per fixture, allow	4	ea	\$3,043.00	\$12,172
Domestic Cold Water				
Domestic Cold Water Piping, sf allowance w/ insulation	8,320	sf	\$0.75	\$6,240
Domestic Hot Water				
Domestic Hot Water Piping, sf allowance	8,320	sf	\$0.75	\$6,240
Waste Piping				
Waste & Vent Piping, sf allowance	8,320	sf	\$2.00	\$16,639
Roof Drainage				
Roof Drainage, Allowance				<i>Not Required</i>
Plumbing Fixtures				
New / upgraded fixtures, allow	8,320	sf	\$4.50	\$37,438
Lab Plumbing				
Allow for lab piping and infrastructure	8,320	sf	\$22.00	\$183,029
Additional Plumbing Requirements				
Test / clean plumbing	25	ls	\$87.71	\$5,000
Start-up/check-out	25	hr	\$105.25	\$2,631
Commissioning assist	15	hr	\$92.33	\$1,385
Penetrations and firestopping for plumbing	8,320	sf	\$0.65	\$5,408
Miscellaneous plumbing allowance	1		\$15,000.00	\$15,000
Total - Plumbing				\$294,271

23 HVAC

HVAC Demolition				
HVAC demolition, allow	8,320	sf	\$3.25	\$27,038
Hot Water Distribution				
Coil connection kit	15	ea	\$1,935.00	\$29,025
HHW distribution - rework existing	8,320	ea	\$5.53	\$46,007
Air-Side Equipment				
Terminal units				
VAV box - with reheat for future use	15	ea	\$1,572.00	\$23,580
Fans				
Transfer fans	150	cfm	\$3.19	\$479
Air Distribution				
Ductwork				
Ductwork, galv, self-fab'd, incl shop OH	7,072	lbs	\$19.12	\$135,217
Duct insulation, wrap	6,188	sf	\$2.77	\$17,141
Grilles and diffusers				

DETAIL ELEMENTS - MED SCHOOL RELOCATION

Element	Quantity	Unit	Unit Cost	Total
Diffusers, grilles and dampers	8,320	sf	\$1.80	\$14,975
Additional HVAC Requirements				
TAB, start up, commissioning, BIM	1	ls	\$30,000.00	\$30,000
Penetrations and firestopping for HVAC	8,320	sf	\$0.65	\$5,408
Miscellaneous HVAC	1	ls	\$15,000.00	\$15,000

Total - HVAC				\$343,869
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25 Integrated Automation

HVAC Controls				
DDC controls	8,320	sf	\$11.41	\$94,925

Total - Integrated Automation				\$94,925
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26 Electrical

Service And Distribution				
Replace existing branch panel boards, allow	1	ls	\$31,000.00	\$31,000
Replace existing step down transformer, allow	1	ea	\$4,700.00	\$4,700
HVAC and equipment connections				
Equipment connections at modified HVAC equipment and systems, allow	1	ls	\$1,500.00	\$1,500
Convenience power				
Convenience power - includes duplex outlets, double duplex outlets, duplex GFI outlets, floor boxes, conduit and wire for modified interior layout, allow	8,320	sf	\$7.15	\$59,484
Lighting and lighting control				
Lighting and lighting control, all new LED at renovated spaces, allow	8,320	sf	\$26.00	\$216,307
Additional electrical requirements				
Start-up, third party testing, commissioning assist, labels, firestopping, pipe penetrations, seismic, and misc.	1	ls	\$5,500.00	\$5,500
General conditions / General requirements				
General conditions / General requirements - Includes Small Tools, Office Staffing, Indirect Labor, Cosumables, Equipment Rental & General Expenses	1	ls	\$9,500.00	\$9,500

Total - Electrical				\$327,991
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DETAIL ELEMENTS - MED SCHOOL RELOCATION

Element	Quantity	Unit	Unit Cost	Total
27 Communications				
Voice And Data System				
Classroom AV - equipment and installation (backbone, raceway included below)	3	ea	\$125,000.00	\$375,000
Classroom VR systems - equipment and installation (backbone, raceway included below), allows for 5 users and base station	1	ls	\$110,000.00	\$110,000
Non-classroom AV - equipment and installation (backbone, raceway included below).	6,520	sf	\$20.00	\$130,390
Voice and data system - includes boxes, conduit and pull string to an accessible ceiling space, j-hooks to be installed to a corridor cable tray system. Sleeves will be installed at every fire rated wall. Equipment, cabling and installation included above.	8,320	sf	\$8.00	\$66,556
Total - Communications				\$681,946

28 Electrical Safety And Security

Closed Circuit Television System				
Closed circuit television system, (rough-in only) - includes boxes, conduit and pull string to an accessible ceiling space, j-hooks to be installed to a corridor cable tray system. Sleeves will be installed at every fire rated wall. Cabling by others.	8,320	sf	\$4.50	\$37,438
Access Control System				
Access control system, allowance - includes backbone, cabling and devices includes boxes, conduit and devices	8,320	sf	\$11.00	\$91,515
Fire alarm system				
Fire alarm system - including new devices to match existing building FA infrastructure	8,320	sf	\$3.15	\$26,206
Total - Electrical Safety And Security				\$155,159

APPENDIX 1 - SCOPE ASSUMPTIONS

Description	Assumed Scope
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General Project Info

- Escalation included through Q4 / 2026.
- Local GC laydown / compound area within proximity.
- Local trade parking available both onsite.
- All sub trades to be competitively bid.
- Labor pool from greater Fort Collins region

Detailed Assumptions - Building Relocation / Tenant Fit Out

- | | |
|-------------------------------|--|
| 1. Substructure / Foundations | - No work anticipated (existing building renovation / tenant fit out) |
| 2. Structure | - Minimal scope - allow for some concrete patch and repair due to sawcut or penetrations tied to new MEP systems installation |
| 3. Envelope / Roofing | - No exterior wall finish modifications anticipated
- Roofing system - allow for patch and repair due to penetrations |
| 4. Interiors | - Cost per SF benchmarks used to price out finishes at programmed areas.
- Cost allowances for casework / millwork
- Lab equipment excluded
- Kitchenette equipment, allowance
- All FF&E is excluded |
| 5. Vert. Transportation | - No Scope Anticipated |
| 6. Plumbing | - Modifications to existing plumbing systems to allow for new fixture / relocated fixtures

- No roof drainage |
| 7. HVAC | - Full HVAC system including, not including central plant (not required) |
| 8. Electrical | - Minor updates to existing panels and transformer.
- Upgrades to LED lighting and LED lighting controls
- Modifications / relocation to existing fire alarm systems
- Low voltage systems (T/D, CCTV, security, panic, emergency phone.), conduit and rough in only. |
| 9. Fire Protection | - Modification and relocation of existing systems |
| 10. Sitework | - No scope anticipated |

APPENDIX 1 - SCOPE ASSUMPTIONS

Description	Assumed Scope
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11. Exclusions

- Monument signage.
- Seismic upgrades
- Hazmat abatement (not anticipated)

APPENDIX 4 - APPROACH & METHODOLOGY

Basis of Estimate	<ul style="list-style-type: none">- OZ_CSU Program Plan-Reloc CU Schl Medicine_250829-DRAFT- Email and meeting correspondence with OZ- Estimate mark-up provided by OZ and design consultants.
Estimate Format	A CSI systems format has been used for the preparation of this estimate. It classifies costs by 48 CSI divisions of work.
Cost Mark Ups	<p>The following % mark ups have been included in each design option:</p> <ul style="list-style-type: none">- Design & Estimating Contingency (12.00% compound)- Escalation to MOC, 10/16/26 (5.02% compound) Assumed construction start date: 6.1.2026 Assumed construction completion date: 1.1.2027- General Conditions (6.00% on direct costs)- General Requirements (4.00% compound)- Bonds & Insurance (2.00% compound)- Contractor's Fee (3.50% compound)- Construction Contingency (3.00% compound)
Escalation	All subcontract prices herein are reflective of current bid prices. Escalation has been included on the summary level to the stated mid point of construction.
Design Contingency	An allowance of 12.00% for undeveloped design details has been included in this estimate. As the design of each system is further developed, details which historically increase cost become apparent and must be incorporated into the estimate while decreasing the % burden.
Construction Contingency	It is prudent for all program budgets to include an allowance for change orders which occur during the construction phase. These change orders normally increase the cost of the project. It is recommended that a 3.0 % construction contingency is carried in this respect.
Construction Schedule	Costs included herein have been based upon a construction period of 5 months. Any costs for excessive overtime to meet accelerated milestone dates are not part of this estimate.
Method of Procurement	The estimate is based on a design build delivery model.
Bid Conditions	This estimate has been based upon competitive bid situations (minimum of 3 bidders) for all items of subcontracted work.
Basis For Quantities	Wherever possible, this estimate has been based upon the actual measurement of different items of work. For the remaining items, parametric measurements were used in conjunction with other projects of a similar nature.

APPENDIX 4 - APPROACH & METHODOLOGY

Basis for Unit Costs

Unit costs as contained herein are based on current bid prices in the greater Fort Collins, CO area. Sub overheads and profit are included in each line item unit cost. Their overhead and profit covers each sub's cost for labor burden, materials, and equipment, sales taxes, field overhead, home office overhead, and profit. The general contractor's overhead is shown separately on the master summary.

Sources for Pricing

This estimate was prepared by a team of qualified cost consultants experienced in estimating construction costs at all stages of design. These consultants have used pricing data from Cumming's database for core and shell / tenant fit out construction, updated to reflect current conditions in the greater Fort Collins, CO area.

Key Exclusions

The following items have been excluded from our estimate (at this time):

- Lab Equipment
- Seismic upgrades
- Hazmat Abatement
- Escalation beyond the estimated mid-point of construction.
- Any costs associated with the project outside of the general contractors scope of work. Including professional services, permit, legal, land costs etc.

Items Affecting Cost Estimate

Items which may change the estimated construction cost include, but are not limited to:

- Modifications to the scope of work included in this estimate.
- Unforeseen sub-surface conditions.
- Restrictive technical specifications or excessive contract conditions.
- Any specified item of material or product that cannot be obtained from 3 sources.
- Any other non-competitive bid situations.
- Bids delayed beyond the projected schedule.

APPENDIX 4 - APPROACH & METHODOLOGY

Statement of Probable Cost

Cumming has no control over the cost of labor and materials, the general contractor's or any subcontractor's method of determining prices, or competitive bidding and market conditions. This estimate is made on the basis of the experience, qualifications, and best judgement of a professional consultant familiar with the construction industry. Cumming, however, cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from this or subsequent cost estimates.

Cumming's staff of professional cost consultants has prepared this estimate in accordance with generally accepted principles and practices. This staff is available to discuss its contents with any interested party.

Pricing reflects probable construction costs obtainable in the project locality on the target dates specified and is a determination of fair market value for the construction of this project. The estimate is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the construction work for all sub and general contractors with a range of 3 - 4 bidders for all items of work. Experience and research indicates that a fewer number of bidders may result in higher bids. Conversely, an increased number of bidders may result in more competitive bid day responses.

Recommendations

Cumming recommends that the Owner and the Architect carefully review this entire document to ensure it reflects their design intent. Requests for modifications of any apparent errors or omissions to this document must be made to Cumming within ten days of receipt of this estimate. Otherwise, it will be assumed that its contents have been reviewed and accepted. If the project is over budget or there are unresolved budget issues, alternate systems / schemes should be evaluated before proceeding into further design phases.

It is recommended that there are preparations of further cost estimates throughout design by Cumming to determine overall cost changes since the preparation of this preliminary estimate. These future estimates will have detailed breakdowns indicating materials by type, kind, and size, priced by their respective units of measure.



SERVICES

- Mechanical
- Electrical
- Plumbing
- Fire Protection
- Technology
- Architectural Lighting
- Commissioning

LOCATIONS

- Boise - ID
- Cheyenne - WY
- Denver Metro - CO

MEP General Information

The following narrative describes the intent of the work required for the proposed building renovation. Infrastructure capacity, including mechanical, electrical, and plumbing systems will require verification prior to the commencement of this project. Any work required for the building infrastructure to accommodate the CUSOM program within the AZ building may be considered a separate project.

Mechanical/Plumbing:

Existing Conditions:

The existing Anatomy/Zoology building was set up as a central air handling system with constant volume reheat boxes utilizing hot water reheat coils. Zoning of the reheat boxes is consistent with CSU standards in that larger rooms would have their own zones, and some zones include smaller rooms adjacent to the larger rooms.

Parts of the area being remodeled appear to have been slightly renovated into smaller rooms; however, it is not known if any of the HVAC infrastructure was updated at that time. For the purposes of this report, it is assumed HVAC systems and zoning would not be re-used.

The air handling system and heating water piping appear original to the building and has exceeded its useful life. Areas of concern should be the integrity of the ductwork and piping materials. To better understand the systems material capabilities, a pre-TAB measurement of airflow and water flow to the zones affected by this renovation should occur before the design is finalized should systems need replacement or repair. Pressure tests for duct leakage rates should also be considered prior to construction. The pre-Tab effort should also include the measurement and control of the total airflow and outside airflow at the main air handling units to determine upgrades needed to meet current code requirements for fresh air to occupied zones.

It has been reported that the airflow to the anatomy labs in this area of the building are inadequate, therefore the project should review any impact to those areas based on this renovation.

An add-alternate should be considered to perform a pre-Tab measurement of all spaces connected to the ventilation system serving this programmed space to understand the system as a whole.

The plumbing systems should be evaluated for re-use including scoping and video of existing waste pipes.

There does not appear to be fire sprinklers on the 1st floor.

New Construction:

Since the existing system is a constant volume ventilation (CAV) system and only a portion of the building is considered for renovation, upgrades should be made to allow future modifications from a constant volume system into a variable volume system.

All of the areas being renovated should have ductwork, CAV Boxes, piping and controls upgraded to VAV operation. It is anticipated the new layout would require the duct mains to be replaced and rerouted in this zone. Since the main air handling system cannot be upgraded as whole for this renovation, the new VAV boxes can be set to a constant volume amount and operate as it currently operates until such time when the remainder of the system is upgraded to VAV at which point the VAV's under this project could be released to control as VAV.

This project will affect 17 existing zones over approximately 9,000 square feet currently supplying approximately 11,000 cfm.

The new space layout will require approximately 15 zones assuming certain spaces can be combined on the same zone. It is anticipated that all 11,000 cfm will be re-used. The new zones will have new VAV boxes with reheat coils that are sized for a future low temperature hot water system. Since the low temperature hot water system often requires more flow, the existing pipe sizes will need to be evaluated to determine if the piping mains in this area should be replaced in this project and ready for future piping upgrades in the whole building so this area will not have to be affected during that conversion.

A new IDF/server room is anticipated to be provided. A new transfer fan, ductwork and thermostat will be provided to transfer the warm air out into the plenum space of an adjacent hallway and air made up via a transfer duct or door undercut.

Based on the results of the system wide pre-TAB report, upgrades to other areas of the building served by this zone should be identified prior to construction of this renovation. However, any additional work needed outside of this renovation should be identified as a separate project.

Plumbing systems will need to be upgraded to route water, waste and vent to the new sink locations and demolition of old fixtures. While no infrastructure is planned for medical gases, the simulation spaces should be planned with "mock" medical gas turrets for air, oxygen and vacuum.

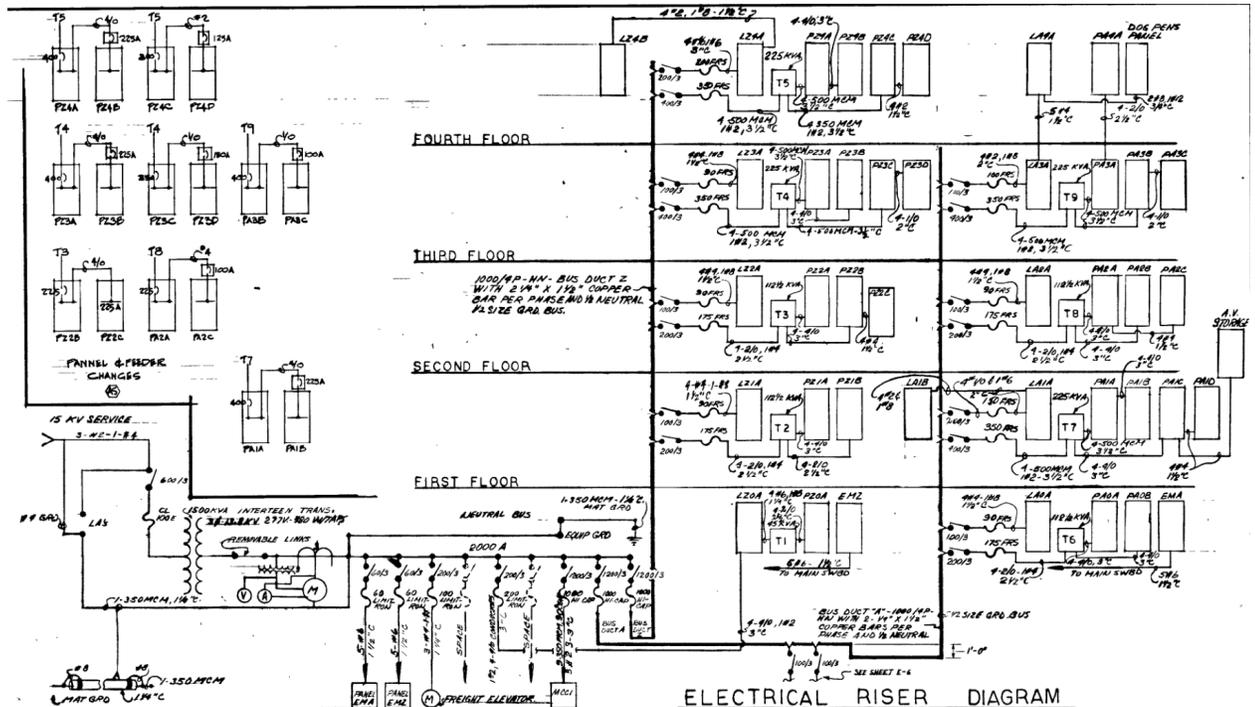
Controls are anticipated to still be a pneumatic system. Some rooms near this renovation have updated VAV controls (W102P, W102N, W102Q and W102L), therefore access to the BAS is possible. There is also a MS/TP FC trunk that connected to newer CGM JCI controllers for 3rd floor that may be accessible for this renovation. The remodeled area should have a controls upgrade with new controllers that can communicate with the new VAV boxes and integrated into the existing DDC system of the building. Raceway for this connectivity is likely required. Worst case scenario is a new raceway to route to the basement IDF E08 room where the JCI DX-9100 controller is located.

The Fire sprinkler system should be expanded to serve this renovation for better life safety and asset protection. This space would be treated as a light hazard occupancy. Parts of the original building may be sprinkled, such as the basement. If not, there is a relatively new fire sprinkler system in the East HEOC addition that can be used to protect more of the original building.

Electrical:

Existing Conditions:

The existing Anatomy/Zoology building is served from the campus medium-voltage distribution system via unit substation switchgear equipped with a 1500-kVA, 480/277-volt, 3-phase, 4-wire secondary transformer and 2000-amp distribution sections. Fused switches are utilized to distribute power to building distribution equipment and loads. It appears the main distribution switchgear is located in a main electrical room on the basement level. Distribution equipment located on the first thru fourth floors are served by two (2) vertical bus duct risers on the West and East wings of the building. Refer to the existing electrical one-line diagram below for reference.



Existing lighting appears to consist of fluorescent sources, LED sources and line voltage lighting controls. The existing lighting and lighting control devices will be replaced entirely within the anticipated renovation area. The existing LED sources may be relocated and reused as requested by the Owner and Architect.

General power receptacles exist throughout the anticipated renovation area. Existing devices located on walls scheduled for demolition will be disconnected and removed. Existing devices located on walls to remain will be replaced with new devices.

The existing fire alarm system is anticipated to be modified only as required for the anticipated renovation. Existing notification and initiation devices will be relocated as appropriate.

New Construction:

Modifications to the existing electrical distribution system is anticipated to be limited. Due to the age of the electrical distribution system, six (6) existing branch circuit panelboards, one (1) step-down transformer and associated feeders, located in the first floor, West wing electrical room, are anticipated to be replaced.

New LED luminaires will be provided throughout the anticipated renovation area. Luminaire selections will be coordinated with the Architectural team and will be dependent upon the ceiling types in each area. Luminaires in individual rooms will be dimmable.

Low voltage lighting controls will be provided throughout the renovation area. The lighting control system will consist of occupancy/vacancy sensor, manual control switches, and daylight harvesting photosensors as necessary to meet the current International Energy Conservation Code (IECC) requirements.

New receptacles and equipment connections will be provided as required based on the space plan requirements. Controlled receptacles will be provided as required by the 2024 International Energy Conservation Code (IECC) in private offices, open office areas, conference/meeting rooms, classrooms, breakrooms, etc. and will be controlled by the lighting control system. Receptacles will be added in classrooms to accommodate student computer workstations as required to facilitate learning and testing requirements.

Existing fire alarm notification and initiation devices will be relocated with new devices being added to meet current code requirements within the designated renovation area. New fire alarm devices will match the existing fire alarm system.

STC/aqs

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APPENDIX

Technology Systems

The recommendations and design principles outlined herein have been developed to cater specifically to the unique requirements and aspirations of this project. They are informed by our understanding of the functional needs and preferences of the CSU-CU campus communities, as well as insights gleaned from our experience with similar projects.

In the Programming phase of a project, it's crucial to adopt a forward-thinking approach from a systems perspective, envisioning emerging learning and communication models of instruction and collaboration and contemplating how the systems might evolve over the next five to ten years. This proactive process not only informs the design team but also guides the development of the technology systems infrastructure to accommodate future evolution and growth seamlessly. By anticipating and integrating forthcoming advancements and trends in education and communication, we can ensure that CSU-CU remains at the forefront of innovation and continues to meet the evolving needs of its users effectively.

This document is the first draft expressing our interpretation of what we gathered from meetings and collaboration to date in addition to our experience designing similar spaces. Where there are no specific directions provided, we will be guided by our experience, focusing on innovative applications which will enrich and strengthen the student experience.

We will rely on feedback and commentary from the design team, Owner, and user groups to confirm this document and allow us to move on to the next design phase of the project.

Information Technology

The project's technology systems will be designed in compliance with the Owner's technology expectations, industry standards, best engineering practices, building codes, existing site-specific conditions and as determined by the Authority Having Jurisdiction.

The telecommunications infrastructure shall be designed as a structured, robust, system of pathways and equipment spaces populated by an applications independent wiring plant. The system shall be designed with enough capacity to accommodate multiple changes in technology over the life of the building with the goal of minimal cost and operational impact.

As a renovation within an existing building with an Owner managed infrastructure, we anticipate the CU network, and systems shall operate independently of the CSU network and common infrastructure. Where required, systems or cabling may share spaces, though only to the extent approved by CSU and CU IT and operations decision makers.

Design Guidelines:

The CUSOM technology systems will be designed in compliance with the Tennant technology and networking standards in conjunction with the Owner's standards, industry standards, building codes, existing site-specific conditions and as determined by the Authority Having Jurisdiction.

The telecommunications infrastructure shall be designed as a structured, robust system of pathways and equipment spaces populated by an applications independent wiring plant. The capacity shall be sufficient to accommodate multiple changes in technology over the life of the CUSOM renovation with the goal of minimal cost and operational impact.

In addition to all applicable codes, the telecommunications design shall comply with or exceed the most recent recommendations and requirements of:

- ◆ Administration Standard for the Telecommunications Infrastructure of Commercial Buildings ANSI/TIA/EIA
- ◆ American National Standards Institute (ANSI).
- ◆ National Electrical Manufacturers Association (NEMA).
- ◆ Institute of Electrical & Electronics Engineers (IEEE).
- ◆ American Standards Association (ASA).
- ◆ Building Industry Consulting Service International (BICSI) Telecommunications Distribution Methods Manual
- ◆ (TDMM) – Current edition.
- ◆ National Fire Protection Agency (NFPA) - 70,
- ◆ National Electrical Code (NEC) - 2011

The project will require a Technology Distribution Room (TDR) to house and support the network requirements of the CUSOM renovation. A (TDR) provides a secure, flexible, and managed location for the structured cabling systems, network electronics, Audiovisual, Simulation and other technology and communications equipment throughout the building. TDRs house a variety of technology systems and system components and may house individual and departmental servers, which can affect the spatial and support needs of the room. Specific design elements have been included below:

- ◆ The room should be no less than 10'-0" x 14'-0", to ensure it meets the current and future needs of the WIC. Racks shall be installed in a manner that would allow for a minimum of 3'-0" clearance from the front and rear of the mounting surface. Where wall mounted equipment impede clearance, additional width to the room shall be provided. A minimum of 10" shall be provided between the wall and the first rack rail to allow for vertical cabling management.
- ◆ Provide 4-post equipment racks for equipment each measuring 19" wide and standing at 7 feet tall for patching and server equipment.
- ◆ Power for each shall receive (2) two 120/20 VAC (5-20) dedicated circuits mounted on the ladder rack above the PDU equipment.
- ◆ Power shall be managed with (2) two power distribution Units ("PDU's") at each rack providing multiple connectors in combinations of C-13 and C-19 types. It is recommended that the PDU units have local Amperage Readouts for each phase and have the ability for remote monitoring through IP-addressable interfaces

Pathways:

“Primary Pathways” shall utilize wire basket to support any cabling run greater than 50’. Suspended 6” above the ceiling, wire basket shall be supported by the wall, or in open corridors by the structural deck above.

“Secondary horizontal pathways” shall utilize “J” hooks to support the horizontal cables in runs under 50’ either as an individual compliment or small groups of compliments from the primary horizontal pathway to the device pathways.

Conduit shall be provided from Primary and Secondary pathways to device locations located within walls or through the slab floors. Conduit shall be sized to suit the cable volume and purpose of each location. Conduit diameter shall be a minimum of 1”.

Cabling:

The CUSOM Renovation shall be designed with the local TDR being connected to the Building Main Technology Distribution Room (MTDR) fiber and copper cables. All fiber cabling shall be terminated in rack mounted housings at the top of each rack or cabinet to provide flexibility for cross-connecting of various networks and equipment and to provide redundancy.

Category cable will be utilized for all horizontal cabling. Outlet configurations will vary depending on the locations. As the design progress the overall horizontal cabling plan will be documented for installation.

- ◆ The Backbone cabling shall include (1) 12-strand Single Mode Fiber Optic cable originating from the TDR back to the Building MTDR. Intra-building fiber optic cabling shall be Armored and Plenum rated.
- ◆ The horizontal cabling system consists of twisted pair cables (CAT 6) and is visible to the end user in the form of wall faceplates. The system shall Utilize the same cable type regardless of the device using the cable – computer, telephone, surveillance camera, etc. unless otherwise noted herein.

Outlet Configurations

Outlet configurations will vary depending on the use case and individual requirements of each outlet location. The project consultant shall produce detailed drawings and matrices depicting the requirements of each outlet type and condition for installation.

Specific requirements include:

- ◆ Each outlet shall be terminated on an 8-position, 8- conductor Category 6 SL series jack to the T568B color code standard. All outlets shall be mounted to single gang boxes, box eliminators, surface mount boxes and/or floor monuments (3rd party) as required.
- ◆ Faceplates shall use modular jacks and faceplates. Modular jacks shall match the appropriate color for designation of data, voice, or life safety at the office/work area.
- ◆ Modular furniture outlets shall use appropriate faceplates as determined by the manufacturers of the furniture.

Preliminary definitions for the recommended work area outlet configurations are as follows:

- ◆ The "Standard" workstation outlet consists of two (2) Category 6 cables.
- ◆ Additional single cable outlet types are typically characterized by specialty mounting heights and locations. Examples of required "Voice-Only" outlets will include:
 - ◆ Entry telephones (on campus dialing only) in sections of the building
 - ◆ The "Dual" Outlet consists of two (2) Category 6 cables on a single-gang faceplate.
 - ◆ The "Triple" Outlet consists of three (3) Category 6 cables on a single-gang faceplate.
 - ◆ The "Quad" Outlet consists of four (4) Category 6 cables on a single-gang faceplate.
 - ◆ The "High Density" Outlet consists of six (6) or more Category 6 cables on a single-gang faceplate.
- ◆ Wireless Access Points (WAP) cabling will be provided with a "Dual" outlet; one cable for console port connection and the other for the network uplink.

Wireless Network

The renovated space's wireless network will be designed to complement a traditional wired network throughout the CUSOM space. The CU wireless network will operate as a separate dedicated wireless network connecting back to the CU core network.

Access points will be located throughout the renovation area and will be calibrated as needed to complement the base building-wide wireless coverage provided and maintained by others. The wireless infrastructure design will be based on the latest IEEE-802.11x standard and can adapt to and support future standards such as (802.11be/bf)

Power over Ethernet (PoE) technology will be used to simplify installation and increase system flexibility by centrally locating all power requirements for wireless access points. This design methodology greatly increases the availability of network bandwidth by adding the capability of connecting to the network via multiple frequencies and channels. The goal of the wireless system design is to allow for wireless coverage for the entire facility, including adjacent exterior areas, utilizing high density and dynamic load balancing wireless network standards.

Audiovisual Technologies

Digital collaboration among students, faculty, and during classes will be a cornerstone of the CUSOM while presenting a modern and “high-tech” feel of the spaces. With an expectation that the teaching spaces will allow for the ability to enable hybrid/distance learning, a robust collaborative hardware/software system is essential enabling sharing of content across dedicated computers, laptops, and other BYOD devices.

Where established standards are not available, selecting the optimal collaborative solution is pivotal to the success of this project aiming for a unified solution deployed across multiple locations within the project renovation space. While a few specialized spaces may require unique solutions, consistency and standardization should prevail.

The recommendations and Design Principles outlined herein have been developed to cater specifically to the unique requirements and aspirations of this project. They are informed by our understanding of the functional needs and preferences of the campus community, as well as insights gleaned from our extensive experience with similar projects. While this document serves as a decision-making tool for both planning and budgeting purposes, the document also provides technical and design level information to allow for the coordination across design trades on the project.

Design Standards

The building technology systems will be designed in compliance with the Owner’s technology expectations, industry standards, best engineering practices, building codes, existing site-specific conditions and as determined by the Authority Having Jurisdiction.

In addition to all applicable codes, the Audiovisual Systems design shall comply with or exceed the most recent recommendations and requirements of:

- ◆ Provided client standards dated February 2024
- ◆ 2023 National Electrical Code with Local Amendments
- ◆ 2010 Americans with Disabilities Act (ADA)
- ◆ Audiovisual and Integrated Experience Association (AVIXA)
- ◆ Audio Engineering Society, Inc. (AES)
- ◆ Telecommunications Industry Association (TIA)
- ◆ Electronic Industry Association (EIA)
- ◆ National Electric Code (NEC)
- ◆ National Fire Protection Association (NFPA)

Based on our experience, early decisions regarding this technology are advantageous, enabling beta-testing and phased rollouts prior to finalizing the design. This proactive approach ensures smoother implementation and user adoption, enhancing the overall effectiveness of the collaborative environment envisioned for the CU Renovation. Basic design principles to further the dialogue are included below:

- ◆ **IP-Based Technologies:** Collaboration System Equipment shall utilize a standard ethernet switch fabric for communication avoiding proprietary or point-to-point cabling.

This enhances the value of the converged network and facilitates better overall support and maintenance by technical support staff.

- ◆ **Permanently Installed Systems:** All systems should be "permanently installed," discouraging the use of roaming devices. This includes proprietary cables, dongles, displays, or any removable components that could impact a room's functionality.
- ◆ **Video and USB Distribution:** Systems must easily accommodate owner-provided laptops and tablets as sources in any space. Additionally, video and USB transport should be designed with the assumption that laptops and tablets will serve as the primary functional components for video conferencing, presentations, audio recording, file sharing, and digital collaboration.

Infrastructure:

The design of the technology systems within the facility will be divided between the categories of "Base Building" and "FF&E". Base Building design is typically associated with those items that are provided by the General Contractor or its subcontractors. This includes the infrastructure or junction boxes and pathways required for the low voltage/audiovisual systems as well as the Structured Cabling and Security Systems.

The FF&E design is associated with the audiovisual systems. We group this with "Fixtures, Furniture, and Equipment" because this equipment is not part of the building itself. All audiovisual system equipment will be provided by a specialty AV Contractor who may be a sub-contractor to the General Contractor or as Contractor direct to the Owner.

Base Building Elements

- ◆ Junction boxes, wall boxes, specialty flat panel display boxes, specialty projector plenum boxes and specialty floor boxes. Conduit size shall vary depending on the application and cable quantity and shall be rigid or EMT steel (not flexible) PVC, or aluminum.
- ◆ Free-air cables in accessible ceiling shall be placed in J-hooks secured to the hard deck ceiling. Free air cables are not permitted in open-ceiling conditions and shall be placed in point-point conduit.
- ◆ In-wall blocking for equipment and structural supports and backing for projection screens, projectors, flat panel displays, cameras, speakers, etc.
- ◆ Projection screens, both cases and screens.
- ◆ Electrical Circuits and Outlets for Technology
- ◆ All circuits powering low voltage equipment shall be dedicated strictly to technology devices and shall not share circuits powering motorized equipment, lighting system dimmers, or any other inductive electrical loads.
- ◆ Information Technology and Security Systems should be on emergency power and or a local or centralized UPS is recommended for these systems.
- ◆ All structured cabling ports necessary for the audiovisual systems and security systems will be included within the structured cabling documents.
- ◆ Specialty AV cabling (speaker cable, video cable, etc) will be provided by the AV Contractor during equipment installation.

Electronic Physical Security

The physical security of the occupants and assets at the new CUSOM Renovation requires special consideration considering the following key design issues:

- ♦ The renovation is within an existing building with existing systems and infrastructure.
- ♦ The security measures required should not inhibit the welcoming feeling of the CSU campus or detract from the building's functionality.
- ♦ Assets are dispersed throughout the renovation spaces. Due to staffing limitations, occupants will have access to assets while not in view of staff.
- ♦ CSU has placed a significant emphasis on providing safe and secure facilities for all campus occupants

In general, building security systems are intended to control or monitor pedestrian flow throughout the building based on certain flexible criteria. Themes such as individual pass card holder permissions and time of day access control are key to the design.

Access Control

As an extension of the base building system access cards will be campus standard managed by CSU Campus Security with monitoring and response from local Police Services. In general, building security systems are intended to control or monitor pedestrian flow throughout the building based on certain flexible criteria. Themes such as individual pass card holder permissions and time of day access control are key to the design.

An Access Control system will provide card access at certain non-public entry and exit points of the building or departmental perimeters or at any other area or space deemed a priority by the University team. It is likely that the only traditional keys given to faculty would be for their individual offices and any storage rooms that are under their control.

Architecturally specified door hardware configurations detailed in the Architect's Door Hardware Schedule require close integration with the access control system to ensure proper operation for normal and alarmed conditions. The door hardware schedule should include not only standard door hardware devices such as locksets and closers, but it also details electronic security devices and components to create a more comprehensive schedule.

The typical security door configuration will include a reader, interface to the electric locks, door position switches, and request to exit components. Emergency exit doors will employ door position switches and sounders (door open alarms). Delayed exit devices will be used on some of these doors. The typical door configuration will consist of a common pull box located above the door on the secure side for the interconnection of the various door control and signaling components.

Video Surveillance

As an extension of the base building system video surveillance systems will be the campus standard managed by CSU Campus Security with monitoring and response from local Police Services

A system of fully integrated network security cameras will monitor the public-use areas and critical spaces of the renovation. The camera type is standardized on high-definition, IP PoE security

cameras. Fixed camera types may include standard 90-degree, multi-sensor 180 or 360-degree view, and megapixel format cameras.

During the design phase, interior coverage for the CU renovation will be explored. Several camera types will be considered in support of a range of environments and conditions specified as appropriate for each application as required to provide quality, usable security video.