PROGRAM PLAN
Center for Health Education and Simulation

September 1, 2019
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SECTION 1 – Overview

Executive Summary

In the fall of 2018, Pikes Peak Community College (College or PPCC) received approval from the State Board for Community Colleges and Occupational Education (SBCCOE) to purchase and partially renovate a 70,000 square foot (SF) building to house allied health programs. This was followed up with approvals from the Colorado Department of Higher Education (CDHE) and the Colorado Legislative Capital Development Committee. In December of 2018, the College finalized the purchase of the building and began Phase 1 renovation in April of 2019. The new allied health building has been named the Center for Health Education and Simulation (CHES).

Phase 1 was complete for the fall 2019 semester (Aug 2019). Educational areas open and operational include nursing simulation, nursing fundamentals, emergency medical services (EMS), two general education classrooms, and associated storage/simulation/support spaces. The College is now prepared to begin the Phase 2 renovation. Phase 2 consists of approximately 50,000 SF that will house dental assisting, the remainder of EMS, medical assisting, pharmacy technician, surgical technology, additional classrooms, and administrative/office space. The College anticipates complete buildout of the building to be done in Phase 2, however, this is dependent on construction costs. In recent months, construction costs in the Colorado Springs area have surged and we are concerned this cost escalation may limit what the College can accomplish in Phase 2. Ultimately, we may be forced to split Phase 2 into multiple phases. Based on current estimates, we believe construction costs alone will be approximately $250 to $275 per square foot. We estimate the cost to fully build out the remainder of the building will be approximately 17 – 18 million dollars or $340 to $360 per square foot. The College is working closely with the PPCC Foundation to procure additional funds. To date the Foundation and the College have secured $1.5 million.
The purchase and renovation of the CHES:

- Supports community and regional needs by providing much needed allied health professionals and educational programs.
- Improves the student learning experience and provides more program synergy by consolidating allied health programs from multiple locations and campuses into one location. This will increase interdisciplinary training, contributing to student success and certificate or degree completion.
- Provides students with best practice, hands-on training by dramatically improving undersized labs and facilities.
- Reduces a significant overall campus space deficit by freeing space currently occupied by existing allied health programs in order to address community and workforce needs in other high growth industries.

Background

The development of the CHES was encouraged by area employers and has potential to transform the health of the greater community. It provides the opportunity for more students to have access to healthcare education, as well as for them to have access to both current and new technology appropriate to their field of study. These opportunities to learn lead to living-wage employment for PPCC’s students, allowing them to become productive members of the community. PPCC contributes $390.3 million to the local economy, and PPCC students receive a rate of return of 13% on the money they invest in tuition. Creating a larger healthcare workforce also generates a need for more hands-on training than the hospitals and clinics in the area can provide. Integrated healthcare simulation equipment allows students to perform a significant portion of their clinical training in a classroom, while still receiving the benefits of a hands-on experience.
From the College perspective, this initiative transforms the health sciences division. PPCC’s allied health programs have experienced marked growth in recent years. Prior to fall 2019, a lack of space meant programs have resided apart from one another, operating primarily in isolation on different campuses. There has been no previous coordination between programs, students, and faculty, and at times there is as much as 20 miles geographically separating them. The new building and simulation spaces allow for the integration of specialties and services, providing a more realistic and comprehensive training environment.

The University of Colorado Colorado Springs (UCCS) Economic Forum reported that during July of 2018, the number one in top 10 job titles was registered nurse, 6th was medical assistant, and certified nursing assistant was 8th. Colorado Springs Style Magazine reports, “nursing shortage reaches critical mass,” citing information from the Bureau of Labor Statistics projecting 16% job growth by 2024, and a lack of nurses to fill those jobs. Looking at data from the county, state, and country, the need for trained healthcare professionals is acute. Providing high-quality clinical educational experiences for students creates an ongoing challenge for nursing and other types of allied health programs. The creation of an interdisciplinary simulation center is the most prudent way to address the challenges to train students. It mitigates competition for limited clinical sites, facilities not granting students access to electronic medical records, as well as clinics and hospitals excluding students from clinical experiences due to the organization’s internal patient safety initiatives.

There are six interdisciplinary simulation-training labs in the new health education center. The disciplines include: nursing, pharmacy technician, surgical technologist, emergency medical services, medical assisting, and dental assisting. Interdisciplinary exercises are a key component of the simulation spaces; they are being designed specifically to allow many
different disciplines to use them simultaneously as well as individually. Phase 1 funding supported the purchase of the CHES facility, master planning design for PPCC allied health programs, and the renovation of approximately 25% of the building. This program plan is to support funding for Phase 2, the design and build-out of the remainder of the CHES.

Phase 1 of the project renovation is completed and students are now occupying the facility. The renovation is approximately 25% of the existing space, or 17,000 SF, with 50,000 SF still to be renovated. Phase 1 construction was limited to nursing, nursing fundamentals program, EMS, two general education classrooms, and associated storage/simulation/support spaces.

Phase 2 construction includes classrooms and student lounge spaces, as well as simulation lab spaces dental assisting, EMS, medical assisting, pharmacy technician, surgical technology, and administrative/office space. The renovation will suit the needs of students and faculty, including adding appropriate HVAC and ADA accessibility modifications, as well as specialized infrastructure essential to the functioning of the six new simulation laboratories.
Academic Programs & Instructional Methodology

The following academic programs are part of this project:

Nursing:
The program allows nursing students to practice and learn in dedicated simulation areas. These include simulated nursing wards, hi-fidelity private patient rooms, and nursing skills laboratories with private skills checkoff areas. There are dedicated simulation laboratory spaces specifically to address nursing fundamentals. The Nursing Simulation Center is seeking provisional simulation center accreditation through the Society for Simulation in Healthcare.

PPCC began offering a BSN in fall of 2019. Other nursing programs include an Associate’s of Applied Science, pre-nursing, and a nursing assistant certificate.

PPCC’s Nursing Program has continuing full approval from the Colorado State Board of Nursing and is accredited by the Accreditation Commission for Education in Nursing (ACEN).
Dental Assistant:
The dental assisting program prepares students for employment as chair-side dental assistants in a variety of clinical settings. Simulation areas for the program will allow for a variety of skill specific labs. The suite of X-ray and darkrooms will provide hands-on training on a variety of oral diagnostic radiographs.

In addition to a new set of laboratory classrooms, the CHES allows the program to expand their capability and have a dental operatory suite.

PPCC graduates are eligible to take the Dental Assistant National Board Certified Dental Assistant exam.
Emergency Medical Services:
Emergency medical services prepares students for employment in a variety of healthcare settings like working in ambulances, disaster medical assistance teams, emergency rooms, hospitals, and other aspects of allied health. Simulation areas for the program will allow for a variety of skill specific labs, including an ambulance simulator.

The PPCC paramedic program is accredited by the Commission on Accreditation of Allied Health Education Programs, upon the recommendation of the Committee on Accreditation of Educational Programs for Emergency Medical Services Professions.
Graduates in the Associates of Applied Science Degree for Medical Assisting are eligible to take the National Certification exam for Registered Medical Assistant (RMA) and Certified Medical Administrative Assistant (CMAS) with American Medical Technologist. Graduates from the Certification for Clinical Office Assistant program also have certification exam options from national associations.
Pharmacy Technician:
The program provides students broad knowledge and training in pharmacy, preparing students to assist licensed pharmacists, allowing the pharmacist to focus on patient education, pharmaceutical care and medication management. This is the only program in Colorado to offer an Associate Degree option.

New simulation areas include a multi-station retail pharmacy with state-of-the-art dispensing stations. There is a large laboratory for extemporaneous compounding and lectures, as well as a clean room facility for sterile compounding.

The pharmacy technician program is the only nationally accredited program in southern Colorado. It is accredited by the American Society of Health-System Pharmacists. In addition, during the 2019 legislative session, legislation was passed that requires pharmacy technicians be certified by the Colorado State Board of Pharmacy.
Surgical Technology (New in Spring 2020):

This program trains surgical technologists, preparing the student to become an integral part of the surgical team including the surgeon, anesthesiologist, and nurse to deliver patient care before, during, and after surgery. They help prepare the operating room by setting up surgical instruments and equipment. During surgeries, technologists pass instruments and other sterile supplies to surgeons and assistants. Simulation is a natural fit for this equipment-driven occupation.

New simulation areas include a large laboratory with multiple surgical beds and stations. Adjacent to the laboratory is a gowning simulation suite. On the other side of the lab is an adjacent decontamination area to practice appropriate sterile techniques.

Graduates of this program are prepared to take the national certification exam for surgical technology. The curriculum is in alignment with the standards set forth by the Association of Surgical Technologists.
The opening of the CHES brings with it a new paradigm in instructional methodology. Research has shown that the use of simulation, specifically inter-professional education (IPE), enhances the quality of education provided to students in the healthcare setting. IPE is a learning technique that brings together members of multiple disciplines with a common goal of improving patient outcomes. Patients have better outcomes when all members of the healthcare team work together as a unified team. Additionally, IPE activities promote increased cooperation and communication among the students, as well as enhanced clinical skill attainment. Historically, students at PPCC would only have the opportunity to work with other disciplines after they graduated, due to space and logistical constraints. Using simulation-based pedagogy in the CHES allow for bringing the various disciplines together earlier in their education. This will improve the students’ education as well as the quality of care to members of our community.

Historically, didactic nursing education was conducted in a traditional classroom and the clinical component was conducted in the hospital setting. Current methods of education now incorporate simulation-based education as a teaching staple in the curricula. The change in the delivery of nursing education has necessitated a different spatial configuration for the learning environment. Nursing programs utilizing simulation in their curricula are required to ensure that the space is adequate for simulation activities. Simulation spaces are not designed in the same way as traditional classrooms, skills labs, or even the same as functioning hospital units. Simulation spaces require additional square footage, as well as “on-stage” and “off-stage” educational spaces to execute simulation-based education according to standards set forth by accrediting/governing bodies.
Relationship to Facilities Master Plan

The proposed project is in alignment with the PPCC Facilities Master Plan (FMP) completed March 27, 2018. The FMP outlines available classroom, lab, and student space at the Rampart Range campus, the primary location of the allied health programs. Examining the utilization of the existing spaces and projected program growth, the lack of appropriate educational spaces available for lectures and labs is easily identifiable.

The FMP identified three significant projects for the Rampart Range campus:

1) Installation of a new roadway off of Interquest Parkway connecting Federal Drive to the campus site, along with a traffic signal.
2) Design and construction of a new 42,000 ASF/60,000 GSF allied health building that includes teaching spaces and a dedicated conference space for public assemblies.
3) Various remodels of the existing main building to create needed study space, open labs, office commons, meeting rooms and other auxiliary space.

Item 2 relates to the CHES and is in direct alignment with PPCC strategic plan, specifically:

- Goal 2, Tactic 03 – Ensure excellence in teaching and learning.
- Goal 3, Tactic 02 – Expand where and how classes are offered to meet student’s needs.
- Goal 3, Tactic 05 – Strategically plan and invest in campus physical and technology infrastructures to support high quality learning environments.
- Goal 4, Tactic 01 – Grow the capacity to develop high-demand programming.
The CHES also directly aligns with the Colorado Community College System strategic plan’s goals:

- Transform the student experience.
- Redefine our value proposition.

The CHES also directly aligns with “Colorado Rises,” the Colorado Commission on Higher Education master plan goals:

- Strategic Goal # 3 – Improve student success.
- Strategic Goal # 4 – Invest in affordability and innovation.
SECTION 2 – Justification

Existing Conditions

Current Program Enrollment
- Nursing – FY19 Enrollment = 348
- Nursing Fundamentals – The fundamentals skills area is a part of the nursing department
- Surgical Technologist (projection) – Enrollment = 12
- Medical Assistant/Phlebotomy – FY19 Enrollment = 254
- Pharmacy Technician – FY19 Enrollment = 57
- Dental Assistant – FY19 Enrollment = 139
- Emergency Medical Services – FY19 Enrollment = 353

Assessment of Space Functionality
In addition to the allied health academic programs being scattered across multiple campuses, they have further deficits:

Nursing Simulation
- Lacks direct observation of each existing simulation space from control center
- Lacks adequate number of nursing stations
- Lacks video capture and play back

Nursing Fundamentals
- Existing classroom does not support student class size

Dental Assistant
- Existing classroom has inadequate space for equipment and students

Emergency Medical Services
- Existing classroom has inadequate space for equipment and students

Medical Assistant/Phlebotomy
- Existing classroom does not support student class size
Pharmacy Technician
- Existing classroom has inadequate space for equipment and students

Surgical Technologist
- New program to be introduced – no space available at any campus site

Current Space Utilization by Classroom/Lab Hours
According to the utilization study in the FMP, the Rampart Range campus reported overall medium to heavy use of their facility in fall of 2017. The space needs analysis confirmed deficits of 39,249 actual square footage (ASF) in teaching lab/service, open lab/service, study and learning commons, assembly, physical plant, lounge, food, meeting, and merchandising spaces combined. This deficit is approximately 42% of the Rampart Range campus’s ASF in fall 2017. In contrast, the analysis reported a surplus of 5,644 ASF in classroom/classroom service, and a surplus of 4,870 ASF in offices. The consultants recommend PPCC review this surplus space in concert with review of the building inventory to determine ideal and appropriate use of their existing building.

Facilities Condition Evaluation
PPCC had a preliminary building evaluation conducted by Hall Architects in August of 2018 (Appendix A). This preliminary evaluation report provides a synopsis of the general conditions of the various components and elements of the property with highlights on specific and significant concerns.

The report notes no significant deficiencies with the building and has many infrastructure amenities including interior and exterior walls, windows, and doors are in good condition, there are existing sprinkler
systems, and an existing elevator at the main building entrance. As the building is remodeled, any building code deficiencies will be brought up to comply with current codes, as well as addressing any ADA requirements.

**Specific Health/Life/Safety Deficiencies**

The College will be remodeling the entire building; any life/health/safety deficiencies will be addressed as part of the new design, so they will be included as part of the renovation. For example, the second floor west wing is inaccessible as per ADA guidelines. An elevator is being added to the building to provide ADA accessibility to the second floor. Additionally, the existing fire sprinkler system will be upgraded to accommodate the new spaces. These and any other identified health/life/safety deficiencies will be accounted for in the scope of the building renovation.

**Changes and Projections**

**Enrollment Projections**

Enrollment has consistently decreased as the state and nation have recovered from the great recession of 2008.
However, during the same period, student retention rates have increased for the College. This is an indicator that techniques employed by the College, such as creating new programs and providing cutting edge facilities, are resulting in more students successfully transitioning from college to jobs, directly impacting the economy. Health care degrees in particular have significant job placement rates, many programs have 80% or more of their students move directly from school to employment.

New or Modified Academic Programs
The College will begin its first new health sciences program in the fall of 2019, a 4 year nursing degree. The following semester, spring of 2020, the surgical technology program will be launched. The new programs starting in the fall of 2019 and upcoming semesters are created specifically to address community needs, as informed by data, including the UCCS Economic Forum and a study conducted by Gray and Associates, as well as specialties specifically requested of the College by area healthcare employers.

Changes to Learning Spaces
The CHES changes the learning paradigm for allied health students. The College will now be able to serve more students and serve
students with cutting edge clinical simulation space, adding a
dimension to education that many programs do not have access to.
PPCC is changing the spaces students are learning in. Labs and
classrooms are now integrated and labs are a part of all learning. Lab
integration into the general classroom environment is beneficial in that
it allows more learning space overall and it will model/replicate
students’ potential workplaces.

Total Space Requirements

PPCC requested information across the allied health programs to better
understand the departments’ current and future needs. Department heads
were asked the following:

- What is your current and future anticipated enrollment? (5 years)
- What is your current and future anticipated staff needs? (5 years)
- What are the existing facilities conditions? What is working and
  what is not; how can new spaces be reorganized to support current
  and future anticipated instruction models?
- What is the number of offices required?
- What are the number of classrooms and instructional laboratories
  required?

As part of this effort, a departmental team meeting was held to discuss
potential efficiencies through the utilization of shared spaces. Classroom
schedules were also analyzed to determine the anticipated utilization
rates.

As the departmental numbers developed, test to fit studies were
performed within the building to determine how and which departments
best fit within the new building. A component of these studies was
understanding of how some departments can better co-utilize space and
leverage cross teaching within multiple programs.
The allied health programs hold a high level of simulated instruction. Medical learning environments are most effective when they mirror or replicate the environments of the workforce. Preliminary program layouts were developed with selected College staff to better understand the type of equipment/furniture needed for each program.

**Planned Program Space Utilization**
An inventory of space shows how much space has been allocated to each respective program. Space allocation was based upon needs and equipment required for simulation training.

**Phase 1**
- Nursing (simulation and fundamentals): 14,242 SF
- EMS: 1,045 SF
- Classrooms: 6,344 SF

**Phase 2**
- Medical Assisting/Phlebotomy: 2,488 SF
- Surgical Technology: 1,908 SF
- Pharmacy Technician: 3,018 SF
- Dental Assisting: 6,266 SF
- EMS: 4,497 SF
- Administration and Support: 3,766 SF
- Classrooms/storage/student areas: 5,484 SF

**Alternative Analysis**
1) One option to address the space deficit was to build a building on the Rampart Range campus. The building would have been a long term endeavor and it would be multiple years before it would be available for occupancy. Although not located on the Rampart Range campus, the
purchase of the building provided immediate access to space appropriate for renovation.

2) Prior to the College purchasing the building, several lease opportunities were investigated. Leasing opportunities were generally 10 year terms with total rent over that term in excess of $10 million. This figure did not include any site improvements. The College felt the best alternative was to purchase a building. Purchasing created the best financial scenario for the College and best aligned with PPCC’s immediate instructional needs.

3) PPCC worked with Quantum Real Estate. There were other building purchase options but none that suited needs as well as the CHES.

Currently Phase 1 of the project is completed and opened for students in August 2019. Phase 1 included the renovation of approximately 1/4 of the building interior and will house nursing simulation, nursing fundamentals, and EMS.
SECTION 3 – Design Criteria and Implementation

PPCC hired FBT Architects to provide design services, which included a review the existing building systems. In cooperation with PPCC’s Facilities staff, PPCC design guidelines were overlaid on the buildings existing infrastructure and a plan to move forward with systems reuse and/or upgrade was developed.

The project process started with the programming phase in order to develop a summary of needs. FBT Architects met with each user group to conduct an area inventory of existing program spaces currently serving the allied health programs and discussed future expansion needs. FBT worked with PPCC to understand PPCC’s design criteria for electrical, mechanical, plumbing, security, and access control. PPCC and FBT visited the existing facility and developed individual strategies for each system based upon selected reuse of existing systems.

Spatial Relationships

Diagrammatic Plans

FBT worked with College staff to develop diagrammatic plans for each program space identified. Furniture/equipment layouts were included to verify assignable square footage. Relationships of spaces were also defined. End users, facilities personnel, and department heads were all consulted in the development of these diagrams. Given the type of programs involved, consideration of equipment size and placement within the rooms, casework locations and furniture were integrated to appropriately size the spaces.

From this initial information gathering, FBT studied the functionality and usable area of the existing building, overlaying the allied health program needs. During schematic design the existing building was test
fit for the proposed program areas. The test fit included overlaying the proposed program areas in the existing building, studying adjacencies of these programs, and confirming functionality of the building in a diagrammatic manner.

The final program model developed and refined placement for all allied health disciplines designated to go into the building. The plan was split into two phases to allow time for construction and to spread out costs over time.

**Phasing**

Optimally, the CHES project will take place in two Phases. Phase 1 was completed in August 2019. Phase 2 is the renovation of the remaining building and programming spaces. It has an expected completion date of August 2020, however, this is dependent on construction costs. In recent months, construction costs in the Colorado Springs area have surged and we are concerned this cost escalation may limit what the College can accomplish in Phase 2. Ultimately, we may be forced to split Phase 2 into multiple phases.

Programs included in each phase are outlined below:

**Phase 1 Construction:** February 2019 - August 2019
- Nursing
- Nursing fundamentals
- EMS (partial)
- Classroom spaces

**Phase 2 Construction:** January 2020 – August 2020
- Shared classrooms
- Shared commons space (breakroom, study area, etc.)
- Administration
- EMS
Surgical Technologist
Pharmacy Technician
Dental Assistant
Medical Assistant

Revised Final Program Model
The final program model locates nursing on the first level in the east wing, along with EMS, allowing for IPE. All classroom spaces will be located on the first level in the west wing, which is ideal for natural light. The classroom space requirement was able to be reduced for shared spaces. The second level east wing would hold medical assistants, surgical technology, dental assisting, and pharmacy tech. The east wing on the second level would house administration.

Site Improvements and Requirements
The site is located on Cypress Semi Drive in Colorado Springs, Colorado, and is approximately one mile directly north of the Rampart Range campus.

Site Area: .........................261,360 SF; 6 acres

Zoning: .........................PIP – 1/CR

Public Transportation: ......None

Parking: .........................156 Existing Spaces
...............................................(103 standard, 46 compact, 3 HC, 4 motorcycle)

Bicycle: .........................No accessible bike lanes

INTERNATIONAL BUILDING CODE CRITERIA

Occupancy: .........................Group B – Business (A-3 – Assembly)

Construction Type: ..............IIB – Sprinklered
Campus Adjacency
Design Requirements

See Appendix B, “Drawings,” for existing and phased development drawings for the CHES. The existing building is a two-story office/manufacturing facility. The building sits within a business park just north of Ridgeline Drive and east of Voyager Parkway. Sitework will be limited to striping an existing concrete paved semi-truck access zone adjacent to the original loading dock, as well as roofline infill under a portion of the loading dock that will receive a new mechanical room. No other finish work is anticipated on the exterior.

The manufacturing portion of the facility has been demolished down to its shell, minimizing demolition costs for improvements. The space is open to structure and stripped of mechanical and electrical systems, otherwise known as a cold shell. PPCC’s programs look to leverage this open high bay area to support their nursing and EMS simulation labs with a mock hospital ward and a mock EMS response conditions space.

New Utilities Required
None. All utilities are available and onsite. See existing building system assessment below.
Building Systems

The existing building was originally a manufacturing/office building. The manufacturing portion of the building is ready for renovations with limited demolition. The office portion of the building will require reconfiguration to support administrative and classroom functions. The overall facility will require upgrades to the existing mechanical systems and reorganization of the electrical systems. The overall condition of the existing building skin is good condition. PPCC will need to budget exterior skin upgrades including roof, waterproofing and glazing on a ten-year cycle.

The project includes renovation of existing two-story building. The overall building square footage is approximately 70,000 square feet that will accommodate classrooms, simulation laboratories, computer labs, health occupation classrooms, and administrative offices. The individual systems will be elaborated upon in respective sections below. The overall goal of this effort is intended to produce a sustainable building which meets the intent of LEED v4 commercial interiors; although the project will not be pursuing LEED certification. This narrative presents mechanical and electrical design concepts and intent along with assumptions used in the design.

References

The mechanical and electrical system design will adhere to the following codes to ensure safe and proper installation of the system.

- American Society of Heating, Refrigeration, Air Conditioning Engineers (ASHRAE)
• Americans with Disabilities Act (ADA)
• National Fire Protection Code & Life Safety (NFPA)

**Electrical Systems**

Interior Load – The individual space loads are not currently well defined. Heating and cooling load calculations will be based on engineering judgment and similar project values until the loads are better understood.

**People:** 250 British thermal units per hour (Btu/hr) (sensible), 200 Btu/hr (latent). Space occupancy will be based on architectural furniture plans and ASHRAE standards where no information is available.

**Lights:** 1. Watts per ft^2 average

**Miscellaneous Equipment:**
- Classrooms ..... 0.35 Watts per ft^2
- Computer Lab.... 7 Watts per ft^2
- Office ............... 1.5 Watts per ft^2
- Science Lab....... 0.5 Watts per ft^2
- IDF/Telecom...... 36 Watts per ft^2

*Ventilating and Indoor Air Quality Strategies*

Use ASHRAE Standard 62.1-2007 to meet ventilation and indoor air quality requirements.

Ventilating Requirements: 10 cubic feet per minute (cfm) per person and 0.06 cfm per square foot for classrooms and 7.5 cfm for assemblies as required by ASHRAE 62.1-2007.
Exhaust Requirements: All janitor closets, lockers and restrooms are exhausted at a rate of two cubic feet per minute per ft² or 16 air changes per hour per ASHRAE. A dedicated exhaust and/or purge exhaust system will be provided for each science lab and biology lab. Provide filters capable of 60% or greater duct spot efficiency.

Noise Requirements
Standard design per ASHRAE for normally occupied areas.

Mechanical Systems

Existing HVAC Systems
The building was originally constructed in 1989. This is a 2-story building with west and east wings. The original building was used for some manufacturing/cleanroom functions along with some administrative office functions.

The following is outline of the mechanical systems:
The mechanical HVAC system is variable air volume (VAV) air handling system with chilled water and hot water heating. Existing systems have not been fully evaluated by the mechanical engineer to date. This narrative will be updated as additional information becomes available. Water cooled Trane chillers reside on the ground floor in the southeast corner of the building. Gas fired hot water boilers reside in the second floor boiler room.

Main medium pressure ductwork shall be replaced. The ductwork shall be cleaned after demolition and prior to installation of new terminal units. The ductwork shall be sealed for any leakage. New insulation will be provided.
New air handlers will be required to serve areas that were formerly cleanroom or warehouse. Air handling units will be furnished with mixing boxes and 100-percent outside air economizer sections to take advantage of low outdoor air temperatures available during the intermittent months to provide free cooling to reduce operation of the building refrigeration system to the maximum possible extent.

Fan/motor assemblies shall be internally isolated.

All outdoor equipment with compressors are to be furnished with sound attenuation packages.

Balancing dampers shall be opposed blade and shall be separated from air devices by five to ten feet of ductwork with one 90-degree elbow minimum. All dampers shall be square shaft quadrant lock style. Wing nut spin in dampers are not allowed.

Supply and return branch takeoffs to air devices shall be provided with smooth, low pressure drop fittings such as 45-degree Y or T-type fittings per SMACNA requirements. D20 prefers 45 degree shoe taps. Terminal units shall be selected for a manufacturer’s noise rating which is 10 dB quieter than the actual NC value required for the space.

All ductwork and piping connections to equipment shall utilize flexible connectors to avoid short circuiting to adjacent structure.
Flexible duct runouts to diffusers shall be limited to 5'-0" maximum.

All round ductwork, both exposed and concealed, shall be spiral type. Adjustable fittings and elbows are not allowed.

All ductwork shall be protected with blue wrap until the time of system startup.

All janitor closets, restrooms, science classrooms, kitchens, locker rooms, weight rooms, etc. will be exhausted at a rate listed above or one cubic feet per minute per square foot per ASHRAE recommendations. Roof mounted exhaust fans with direct drive ECM motors will be provided for each major restroom group, unless opportunities for energy recovery equipment are suitable for the application.

The existing cooling tower will be evaluated to determine if any changes are required for the new building function.

New tenant occupancy and internal equipment loads will determine the existing system is accurate. These load calculations have not yet been performed for Phase 2.

The building is served by a Trane Tracer Control system. All new controls shall integrate into that system and all building controls shall be integrated into PPCC Honeywell front end. Control systems for the building's mechanical components will utilize a new BACnet IP
energy management control system (EMCS). System shall integrate into the existing Honeywell controls system. General space HVAC systems will operate only when buildings are occupied. Setback operation will occur during unoccupied hours. All setpoints shall be adjustable.

Chilled water and heating hot water flow will be controlled through the new EMCS.

Remote monitoring and alarms of building equipment, temperature, humidity, and pressure relationships will be accomplished via the new EMCS integrations.

A graphic representation of each mechanical system will be displayed at the existing PPCC Honeywell central operator’s terminal/workstation.

All room air volume/temperature parameters will be monitored and controlled by the EMCS stand-alone Direct Digital Control (DDC) modules to form a global building local area network (LAN). This global LAN will permit implementation of the most energy conservative strategies to the central air handling system, and the chilled and heating hot water systems.

**Fire Protection Systems**

*Sprinklers*

The capacity of the existing fire sprinkler system will be assessed during design to determine what portions, if any, can be reused. It is anticipated that the existing
sprinkler service will remain and branches and heads will need to be modified to coordinate with new walls, ceilings, and room dimensions.

Automatic fire sprinklers will be designed to protect all interior spaces based upon the requirements of the National Fire Protection Association (NFPA) 13. Intermediate-temperature sprinkler heads will be utilized in protected attics, concealed spaces, high-bay spaces, and where heads are exposed to direct sunlight. Quick-response heads will be used throughout the facility unless noted otherwise. The atrium equipped with glazing systems will be protected with water wash sprinkler system to maintain the rating of the partitions. Fire sprinkler zones will be limited to 40,000 square feet of coverage for ordinary group one hazard classification and 52,000 square feet of coverage for light hazard occupancy classification.

**Plumbing Systems**

*Plumbing Fixtures*

It is anticipated that all plumbing fixtures and trim will be removed and replaced with new as defined in the architectural drawings. All plumbing fixtures will be specified using commercial quality materials and trim and will be fully compliant with all applicable accessibility requirements and conservation standards. Service sinks will be specified to be floor mounted. Floor drains with trap seals and loose key hose bibs will be installed in each restroom to facilitate floor cleaning. Plumbing fixtures in the building will be selected to reduce the
Handicap compliance will be designed into appropriate fixtures as depicted within the architectural drawings.

Basis of design is for American Standard battery powered sensor flush valves and lavatories. Fixture quantities will comply with the International Plumbing Code (IPC).

All faucets, flush valves, and shower heads for the building plumbing fixtures will be low water consumption design in accordance with State of Colorado rules and regulations and will comply with ADA requirements. The plumbing fixtures will be designed and selected for water conservation versus the EPACT baseline flows.

All plumbing fixtures and trim will be specified using commercial quality materials free from imperfections and will be fully compliant with all applicable accessibility requirements and water conservation standards. Water closets will be wall mounted flush valve type with four point fixture carrier. Urinals will be pint or low flow type, wall hung with fixture support carriers. Sinks will be undercounter mounted and lavatories will be either wall hung or undercounter mounted arrangement. Service sinks will be specified to be floor mounted. Floor drains with a trap seal system will be installed in restrooms with more than two fixtures. Bi-level electric water coolers with bottle fill attachments will be installed in various locations throughout the building.
Sanitary Sewer

The facility waste and vent systems will be evaluated during the design phase in terms of adequacy of size, internal/external condition, and code compliance. The systems will be visually assessed and, to the degree possible, deficiencies will be identified and corrected within the new design.

All plumbing fixtures will be connected to a conventional gravity-type sanitary sewer and vent system utilizing cast iron materials and will connect to the main utility systems. Hubless cast iron pipe will be used within the building with 4-band couplings. All system connections will be trapped and vented with vents routed to termination at the roof level.

An oil minder sump pump (Zoeller basis of design) will be furnished for the new elevator.

Condensate drains shall be copper.

All system connections within the building will be trapped and vented with vents routed to termination at the roof level. All vents will be maintained a minimum of 10'-0” from outside air intake openings. The system will be provided with traps, vents, and cleanouts as required by code. Trap guards will be provided for floor drains and floor sinks susceptible to a loss of water seal by evaporation. Sanitary waste and vent piping will be sized according to the IPC. All grade cleanouts shall be line size, dual direction.
**Storm Sewer**

The facility storm sewer systems will be evaluated during the design phase in terms of adequacy of size, internal/external condition, and code compliance. The systems will be visually assessed and, to the degree possible, deficiencies will be identified and corrected within the new design.

Storm water collection systems including primary and secondary systems, will be designed for roof drainage, area, and deck drainage.

The existing roof drainage and storm water system is anticipated to remain mostly unchanged.

**Domestic Water**

The facility water systems will be evaluated during the design phase in terms of adequacy of size, internal/external condition, and code compliance. The systems will be visually assessed and, to the degree possible, deficiencies will be identified and corrected within the new design.

Domestic cold water will be designed to go outside the building and from main systems with backflow preventers provided as required. Domestic hot water supply will be provided by gas fired, electronic ignition (no standing pilot) water heaters located in the mechanical room(s).

Domestic (potable) cold, hot, and hot water recirculation mains will be routed through the facility. Industrial water systems will be designed to meet the utility needs of the planned equipment. Tempered hot water will be provided to the general bathroom lavatories. As a part of a
Legionella control strategy, hot water will be generated and stored at 140 degrees F and tempered to 120 degrees F for distribution to the facility. Hot and cold water will be furnished to all classroom instructors’ sinks. Valves will be installed at each branch connection to provide isolation for maintenance. Zone valves will be strategically located so as to allow isolation of segments of the system, thus preventing a system wide shut down and drain down to facilitate maintenance/repair/renovation. It is anticipated that pressure boosting pumps will not be needed. Nonetheless, the systems will be analyzed during the initial design phase to determine actual need. Emergency shut-off provisions will be incorporated into instructional areas as deemed appropriate.

Hot water recirculation will be provided in accordance with International Energy Conservation Code, (IECC) 2015 requirements for runouts to lavatories.

All domestic hot water piping will be sized according to the IPC to maintain a maximum velocity of 5’ per second to help control noise and turbulence within the piping system. Domestic hot water piping within the building will be Type “L” hard drawn copper with wrought copper sweat type fittings utilizing lead free solder. All domestic hot water supply and re-circulating piping will be insulated.
Natural Gas

The facility's natural gas system will be evaluated during the design phase in terms of adequacy of size, internal/external condition, and code compliance. The system will be visually assessed and, to the degree possible, deficiencies will be identified and corrected within the new design.

The natural gas system is anticipated to largely remain in existing routing, however, modifications may be needed for additional domestic hot water or other equipment needs. Medium pressure 2 psi natural gas will be distributed to the building with regulators dropping down to low pressure, 14” w.c., natural gas piping distribution system will be extended from the regulator to the heating hot water boilers and domestic hot water heaters. Valves will be installed at each floor level and at each branch equipment connection to provide isolation for maintenance, system modification, etc.

Electrical Systems

Existing Electrical System

Colorado Springs Utilities (CSU) transformers feed a static transfer switch, which then feeds the 2000 Amp 480Y/277V main service switchboard (MSB). The MSB is in the main electrical room on the 2nd floor of the east wing. CSU metering is located in the MSB.

Electrical rooms are in the east and west wings on both floors. Additionally, flush mount and surface mount panelboards existing in corridors and open spaces on/in
the walls. In general, electrical rooms have 480Y/277V panels, 480-120Y/208V transformers, and 208Y/120V power panels.

**New Electrical System**

**Building Data:** The approximate square footage is 35,252 square feet / floor or 70,504 square foot total.

**Codes and Applicable Standards**

- International Building Code.
- Uniform Fire Code (UFC).

**Electrical Sizing Information**

Preliminary electrical service sizing is based on 20VA/sf. Therefore, 20VA/sf x 70,504 sf = 1,410 kVA or 1696A at 480V. This estimate is conservative overall, as the only the simulation areas will approach this power density, and the administrative, common, corridor, and similar areas will be lower. It is anticipated that the existing electrical service will be large enough to serve the new load.

It is anticipated that a second elevator will be added in the east wing; there is an existing elevator in the west wing that will remain (see the architectural section of the narrative for additional information). It is anticipated that
new HVAC equipment will be added in the west wing (see mechanical section of the narrative for additional information).

**Branch Circuits**
Individual circuits will be used for general lighting and receptacle loads. Generally, loading on lighting circuits will be limited to 75% or less of the branch breaker rating. A minimum of 20% spare breakers / space will be allowed in all branch circuit panel boards. Minimum wire size for branch circuits is no. 12 AWG copper, except that no. 10 AWG copper will be used on 120 volt circuits longer than 100 feet. An equipment grounding conductor will be run in each branch circuit conduit.

**Emergency Power**
There is an existing generator that feeds an Automatic Transfer Switch (ATS) (the ATS is also fed by the MSB). The ATS feeds 480V panelboard “L2C”, which feeds a 30 kVA transformer and 208V panelboard “R2F”. To provide separate distribution for NEC 700 and 702 loads, it is anticipated that a 2nd ATS will be added, along with another 480V panelboard, transformer, and 208V panelboard.

NEC 700 loads include emergency egress lighting, and fire alarm systems. NEC 702 loads include owner required IT systems, servers, and other similar equipment.
**Surge Suppression**

A Surge Protective Device (SPD) is installed at the main switchboard. SPDs can be installed at the panelboard level of distribution to meet owner requirements, including IT systems, servers, etc.

**Lighting**

Lighting design will consider ease of maintenance, energy efficiency, and suitability for the environment. The focus is to provide appropriate levels of lighting for the spaces while minimizing energy use. Lighting will be LED, 80+ CRI, 4000K.

Night/Security lighting will be provided at the exits and in other key areas yet to be defined. Illumination levels will be in accordance with IESNA recommendations and school requirements. Typical maintained illumination levels will be designed to the following levels:

- In regular classrooms, media centers, computer labs, and offices, 2x2 recessed lay-in luminaries will be utilized to provide a better working and learning environment with reduced glare. Room light levels will be designed for 30-50 foot candles.
- Visual-intensive classrooms, nursing simulation, etc. will have 50-70 fc.
- In corridors 2x2 recessed luminaries will be utilized. Foot candle levels will be 15-20 fc.

Special consideration will be given to common
areas, focal points, and the like.

Storage spaces/utility rooms will have surface mounted utility strips will be used for general illumination. Foot candle levels will be 20-25 fc.

Exterior building mounted is generally existing to remain.

Parking/site lighting is generally existing to remain. If the existing east semi-truck turn-around lot is turned into regular parking, the lighting levels will be calculated and evaluated, and replaced as needed. Preference will be given to replacing the heads in-place on existing poles if possible. Where not possible, new poles/fixtures will be provided.

In electrical, mechanical, and IT rooms, strip fixtures will be utilized. Foot candle levels will be 40-45 fc.

Lighting Controls
Lighting control design will consider ease of maintenance, staff use, and applicable codes and standards. In general, enclosed spaces will have local occupancy, daylight harvesting, and dimming controls, while open/common spaces will have relay-based controls on astronomic, programmable time-clock lighting control panels. Low voltage over-ride switches will be provided at all entrance/exits, and when transitioning between lighting control zones.
Classrooms
Master control of room will be via a dual technology ceiling mounted sensors. In some rooms the sensor may be wall mounted. Sensor will turn on and off the room switch control. One low voltage dimming switch will be installed at classroom entries to allow for control of light levels.

In classrooms equipped with video projection display systems or teaching walls, a second or third dimming switch will be installed at the room entry, to provide dimming control of the section(s) of luminaries located closest to the projection screen wall or teaching wall.

Offices
Offices will have wall mounted occupancy sensors with integrated dimming control similar to the classrooms.

Large Open Office Areas
Lighting will be controlled by Lighting Control Package (LCP). No occupancy sensors will be used. Photocells will be used where required.

Corridors
Lighting will be controlled by LCP. No occupancy sensors will be used. Photocells will be used where required.

Utility Room, Janitors Closet, Small and Large Restrooms
Master control of rooms will be via a dual technology ceiling or wall mounted sensor. Sensor will turn on and
off room switch control. Toggle and or keyed toggle switches will be installed at entry to room.

*Electrical, Mechanical, and IT Rooms*
For safety and service, only manual ON/OFF switches will be provided.

*Exterior Building*
All exterior lighting will be controlled via LCP. This will allow programming by the owner.

*Site/Parking*
All site / parking lighting will be controlled via LCP. This will allow programming by the owner.

*All areas*
Day lighting (photo-sensing) controls will be utilized where required by codes.

*Receptacles*
General-purpose duplex receptacles, in addition to user required outlets, will be provided as follows:

- Corridors – for 50 feet on center for cleaning purposes.

- Classrooms, offices, etc. – 8-10 feet on center or one per wall with consideration for special or computer use receptacles.
Computer room – one quad receptacle per computer station and additional receptacles for servers, printer, etc.

Special purpose outlets will be located based on equipment layouts and requirements.

GFCI receptacles will be used in building exteriors, in restrooms, and within 6 feet of sinks. GFCI receptacles will also be installed within 25 feet of roof or exterior mounted mechanical equipment. Dedicated receptacles will be provided for special equipment, i.e. copiers, printers, fax machines, coffee makers, microwaves, etc.

**Fire Alarm System**

A new addressable fire alarm system will be provided to meet IBC requirements and be installed in accordance with NFPA requirements. The construction drawings will show a device and equipment layout for design intent only. The new fire alarm system must be designed by a NICET certified designer and have the following features and equipment:

- **Pull stations** - at all exits

- **Horns** – horns will be located accordance with NFPA 72 requirements.

- **Strobes** – strobes will be located in accordance with UFAS (ADA) requirements.
Sprinkler system - flow and supervisory switches will be tied into the new fire alarm panel.

Duct detectors with remote test stations (RTSs) – required in both supply and return for all AHUs > 2000 CFM.

Smoke and heat detectors – required in elevator hoist way.

**IT Spaces:**

IT spaces will consist of equipment rooms (ER) and telecommunications rooms (TR); these rooms will be configured on the floor to allow stacking to allow for ease during cable installations.

**Equipment Rooms:**

The new building requires a new equipment room (ER) to allow for proper distribution of existing and future proposed IT services. The ER shall be sized as per PPCC’s standards but might need to be larger depending on what equipment will be housed in it. While this room has 300 SF of space, it is critical for the room to be shaped appropriately to allow maximum usable square footage. This room will have additional entrance conduits. While it is preferred for these conduits to enter from the floor, it may be necessary to allow wall penetrations as there are existing entrance conduits from the previous building tenants. All penetrations will utilize trade size 4 conduits spaced a maximum of 8” apart when measured center to center. These conduits will be provided with
bushings to protect cables originating or terminating within the equipment room. All penetrations will be required to be fitted with an approved fire rated assembly.

There will be a need to provide appropriate HVAC service for this room with cooling being required 24 hours a day, 7 days a week, 365 days a year. The system should provide temperatures in the range of 75 – 80 degrees Fahrenheit with a relative humidity level of 40% - 60%. Further coordination with the owner will be required to determine cooling and heating requirements.

The electrical requirements include the HVAC system being provided on both standard and emergency power. There will be a demand of an individual sub-panel installed in the ER to provide service for the ER and only the ER. There will be a requirement for a 200 amp sub-panel with space for 30 breakers. Each rack in the ER will require two 20 amp circuits and one 30 amp circuit. There will be a need for minimum of two convenience outlets per wall within the ER. There will need to be further coordination with PPCC and their standards to verify power requirements.

The flooring within the ER shall be anti-static VCT. Lighting shall provide a minimum of 50 foot candles when measured 3’ AFF. The door for this facility will be provided with access control and will open outward of the room. The interior walls of the ER will be wrapped with fire retardant ¾” A/C grade plywood, painted with two
coats of white fire retardant paint. Four post 7’ equipment racks will be installed in each ER, specific counts will be determined further into the design efforts. Each rack will be anchored to the floor utilizing appropriate hardware for the installation.

*Telecommunications Rooms:*  
Each floor within the building will require one telecommunications room (TR) centrally located within the building, preferably stacked directly above the ER. The TR shall be adequately sized for the equipment housed in that space. It is critical for the room to be shaped accordingly to allow maximum usable square footage. This room will have additional entrance conduits; while it is preferred for these conduits to enter from the floor it may be necessary to allow wall penetrations. All penetrations will utilize trade size 4 conduits spaced a maximum of 8” apart when measured center to center. These conduits will be provided with bushings to protect cables originating or terminating within the equipment room.

There will be a need to provide appropriate HVAC service for this room; cooling is required 24 hours a day, 7 days a week, 365 days a year. The system should provide temperatures in the range of 75 – 80 degrees F with a relative humidity level of 40% - 60%. Further coordination with the owner will be required to determine cooling and heating requirements.
The electrical requirements include the HVAC system has both standard and emergency power. There will be an individual sub-panel installed in the TR to provide service exclusively for the TR. There will be a requirement for a 200 amp sub-panel with space for 30 breakers. Each rack in the TR will require two 20 amp circuits and one 30 amp circuit. There will be a need for minimum of two convenience outlets per wall within the TR.

The flooring within the TR shall be anti-static VCT. Lighting shall provide a minimum of 50 foot candles when measured 3’ AFF. The door for this facility will be provided with access control and will open outward of the room. The interior walls of the TR will be wrapped with fire retardant ¾” A/C grade plywood, painted with two coats of white fire retardant paint. Four post 7’ equipment racks will be installed in each TR, specific counts will be determined further into the design efforts. Each rack will be anchored to the floor utilizing appropriate hardware for the installation.

Cabling

**Backbone Cabling**

**Copper Backbone Cabling:**

It is proposed all analog service for the building will be supported through paired copper cable originating from the service entrance and possibly tying back into the campuses existing technology loop. This cable will be broken into 50 pair counts to service each individual floor. The paired copper
cable will terminate on a wall mount 110-style termination field with 25 pair or 50 pair cables extending to each floor’s assigned TR. Within the ER the assigned 50 pair will be extended to a rack mount 48 port (voice grade) patch panel. The TR’s copper feeds will also terminate on a rack mount 48 port (voice grade) patch panels. PPCC has advised they utilize Falcon Broadband for ISP services.

Fiber Optic Cabling
The building will be supported with new fiber optics. PPCC has expressed the desire to have the new fiber optic cable extended from the Rampart Range campus’s existing technology loop. Further coordination is required with PPCC. This cable will be fusion spliced to a low water peak or zero water peak fiber optic pigtail running from the fiber splice enclosure to a 4 rack unit (RU) fiber distribution unit (FDU). This FDU will service not only the backbone, but also the intra building fiber distribution. Further coordination is required for exact specifications of fiber optic cable for the entrance fiber and the intra building fiber. PPCC has advised they utilize Falcon Broadband for ISP services.

Horizontal/Workstation Cabling
All workstation cabling or devices will be served by the ER or TR located on that floor. All cables will be Category 6 plenum rated cables terminated on
rack mount 48 port Category 6 patch panels in the TR and Category 6 RJ45 8pin/8conductor telecommunications outlets (TO) at the workstation. Each location will be provided with minimum of two TOs. Wireless access points will be serviced by Category 6 plenum rated cables originating from the ER or TR associated with the corresponding floor. VOIP to be on emergency power.

Pathways

Cable Pathways
Cabling pathways will consist of basket style cable tray throughout the halls and open office spaces with threaded rod supports. J-hooks will be provided and installed on the threaded rod to support security, alarm and cabling. At locations where the horizontal cabling is required to exit the tray J-hooks or conduit will be provided.

Assumptions
The owner will provide and install all network and telephony equipment. All fiber and copper patch cables will also be provided and installed by the owner.

Security System
The security system will be designed for a pre-wired IP based security/surveillance system. Specification for equipment and system is to be determined by the owner. Access control for entries, data rooms, and other spaces
will be prewired with cabling and power. Specification for equipment and system to be determined or by owner.

The owner has expressed the desire to use fixed cameras by Axis and no PTZ style cameras. Genetic hardware to be used for surveillance and access control.

At this time, there is not a requirement for full building paging/intercom, however in the sim labs this will be required. Further coordination with owners to discuss overall building paging/intercom needs.

Further coordination required with owner to determine current security system standards, in order to have new building tie back into PPCC’s existing system.

Television System
Cable/satellite TV cabling distribution and digital signage will be designed as required.

Audio Visual System
Pathways and pre-wire for IP devices will be roughed in. These devices would include classroom projectors, digital displays/monitors and input and control panels for these devices.

Scope of work for design and specifications for projection, audio playback, controls, and other specialty AV systems to be determined by the owners.
Sim labs spaces will require additional coordination with owners to complete audio-visual design of those spaces.

**Architectural Design Features**

*Parking, Access & Security*

The existing building site is situated at the top of an inclined driveway with views to the west of Pikes Peak and the Rampart Range. Close proximity to I-25 and CO-83 will provide easy access for students commuting to classes. The facility has an excellent solar orientation with the building facing north and south with the parking area located on the south side of the building. The site has 156 parking spaces to accommodate students, staff, and visitors (103 standard, 46 compact, 3 HC, 4 motorcycle). The loading dock on the south side of the building allows for convenient delivery access separated from vehicular circulation.

Through Phase 1, three handicap parking spaces will be added to the parking lot. The amount of parking necessary for staff and students will exceed the existing parking available (see vehicular circulation study). At this time PPCC is discussing shuttle options from the Rampart Range campus to provide supplemental parking at this campus, as well as other parking solutions.

Once on site, the building offers security with one main point of entry that is currently on access controls, as well as an existing security office off the main lobby space. The site will have both interior and exterior cameras for student and staff safety, along with security personal.
Finish Assemblies

Exterior Assemblies

- Exterior walls and assemblies to remain. There are no scheduled modifications to the exterior walls, windows, and door assemblies.
- Exterior doors to have access control security entrances.
- Window Coverings:
  - Existing window coverings to remain.

Roof Coverings

Existing roofing system to remain, patching and repair as required for new roofing penetrations for ductwork, venting and exhaust as required.

Interior Partitions

Typical metal stud partition framing throughout; 6” metal studs. All studs and gypsum board to extend from floor to structure. Provide deflection tracks at all wall heads. All walls to have one layer of gypsum board each side. All walls to have acoustic construction (acoustic batt and details) for required sound rating.

Partition Height

- Metal stud partition framing throughout; 6” metal studs. All studs and gypsum board to extend from floor to structure. Provide deflection tracks at all wall heads. All walls to have one layer of gypsum board each side. All
walls to have acoustic construction (acoustic batt and details) for required sound rating.

**Gypsum Board Finish Levels**
- Finish panels to levels indicated below:
  - Level 1: Ceiling plenum areas, concealed areas, and where indicated.
  - Level 4: At panel surfaces that will be exposed to view unless otherwise indicated in wall finish section.

**Fire rated walls**
- One hour fire separation will be added between the east and west wings of the building.
- All elevator shafts and stair enclosures to be two-hour rated construction.

**Interior Doors**
- Standard interior doors to administrative areas shall be 36" wide by 7'-0" high flush solid core wood doors with transparent finish, unless noted below. When interior doors have relites, the frame shall be 5 ply constructions with stiles and rails bonded to the core by means of hot press adhesive. Provide FSC certified wood veneer and solid hardwood edges typical.
- Oversize doors and rolling door 48" wide by 7'-0" high will be required in lab simulation spaces and all pathways from loading dock to lab and simulation spaces.
- Fire rated door will be required at fire separation. Corridor doors will be on magnetic hold openers.

**Fittings**

Provide marker boards at the following locations:

- Classroom Spaces
- Conference Rooms
- Break Room
- Pharmacy Tech
- Surgical Tech
- Nursing Simulation
- Nursing Fundamentals
- EMS
- Debrief Rooms

**Video or Projector & Screens:**

- Classroom Spaces
- Conference Rooms
- Break Room
- Pharmacy Tech
- Surgical Tech
- Nursing Simulation
- Nursing Fundamentals
- EMS
- Debrief Rooms

**Restrooms**

- Existing restrooms to remain with some remodel and additional fixtures.
- Some remodel to include ADA accessibility.
Stair Construction

- Existing stairs to remain.

Wall Finishes

- Provide painted gypsum board with level 4 finish and rubber wall base unless noted otherwise: Low volatile organic compounds (VOC) interior paints typical.
- Fiberglass Reinforced Panel in designated wet areas.
- Acrovyn or equal wall protection from base to 48" a.f.f. in all hallways and classrooms scheduled for hospital bed or EMS stretcher movement.
- All wood to be FSC certified.

Floor Finishes

- Administration/Conference: Carpet
- Classrooms: Carpet/ LVT
- Lab/Simulation Spaces: LVT / Epoxy Resin
- Corridors: LVT
- Restroom: Existing Flooring
- Electrical, Mechanical, Telecom, Janitor Rooms: Existing Sealed Concrete

Ceiling Finishes

- Painted Gypsum Board
- Acoustical Ceiling Tile
**Elevators & Lifts**

- Existing elevator to remain

- Add one elevator as follows:
  - Manufacturer: Kone or equal
  - Product/Type: EcoSpace
  - Capacity: 2500#
  - Number of stops: 2
  - Cab Size: 1800mmx2700mm minimum
  - Cab Enclosure
    - Walls: Stainless Steel
    - Front: Stainless Steel
    - Car Operating Panel: Stainless Steel #4
    - Door Arrangement: Single Speed, Front Opening
    - Threshold: Aluminum
    - Ceiling: Wood panel with LED light fixtures
    - Handrails: Stainless steel #4, Rear Wall Only

**Pre-Fabricated Simulation Lab Headwall**

**Fixed Casework**

Custom casework: Provide AVS Custom Grade, FSC Certified wood:

- Simulation Lab: Plastic laminate base cabinets with solid surface or epoxy resin tops.
- Classroom Casework: Plastic laminate upper and base cabinets with solid surface or epoxy resin tops.
- Administration/Common Area: Plastic laminate upper and base cabinets with plastic laminate countertop.

**Sustainability Objectives**

This project will comply with all building requirements as outlined by the Colorado State Office of the State Architect (OSA). Both phases of the project were granted an exemption to the State’s High Performance Certification Program by OSA. It was determined by the College, and confirmed by OSA, that to meet a LEEDs certification would be cost prohibitive. It is understood that for renovation purposes the College will use energy efficient fixtures whenever possible for electrical and plumbing, as well as anywhere else that is appropriate.

**Project Schedule, Cost Estimation and Financial Explanation**

Phase 1 of the project was completed in August 2019. It included the renovation of approximately 1/4 of the building interior and will house nursing, nursing fundamentals, and EMS.

Phase 2 design and construction documents are scheduled to be completed December 2019, with construction beginning in January 2020, pending all required approvals. Construction duration is scheduled to be 7 months with expected completion for Phase 2 in August 2020. This is dependent on construction costs. In recent months, construction costs in the Colorado Springs area have surged and we are concerned this cost escalation may limit what the College can accomplish in Phase 2. Ultimately, we may be forced to split Phase 2 into multiple Phases.

**Cost Estimates**

The College used input from local general contractors, architectural firms as well as recent projects to establish the cost model matrix. Review of trends in construction
material and labor costs were provided by recent PPCC projects such as Phase 1 of Cypress, the Aspen Learning Commons, and Studio West renovation. We estimate total cost to complete Phase 2 build out will be between $340 and $360 per square foot. This includes costs for professional services, construction and equipment and furnishing.

**Financing Explanation**

Phase 2 renovation costs will be funded using PPCC reserves and offset costs using grant funds and donations.
PRELIMINARY FACILITY EVALUATION
1850 CYPRESS SEMI DRIVE
COLORADO SPRINGS, COLORADO
AUGUST 29, 2018

I. PURPOSE AND METHODOLOGY
This preliminary report is prepared for the exclusive use by Pikes Peak Community College (PPCC) to assist in evaluating the potential purchase of the property described as: 1850 Cypress Semi Drive in Colorado Springs, Colorado.

The methodology utilized to perform this facility evaluation is consistent with standard professional procedures, however due to the limited ability to test many of the building systems, a complete report is not feasible. Hence this is considered a PRELIMINARY FACILITY EVALUATION REPORT. This preliminary evaluation report provides a synopsis of the general conditions of the various components and elements of the property with highlights on specific and significant concerns. We encourage that additional testing and investigation be performed to establish a formal action plan prior to the scheduling of any occupancy. In addition, it is our understanding that current State procurement policies limit the appropriation of controlled maintenance funds for newly purchased properties for a significant period of time unless the Office of the State Architect has been fully apprised of the conditions of the facility. Therefore a complete facility audit may need to be conducted prior to the State’s formal acquisition of the property.

The evaluation team was tasked to perform a limited and cursory visual observation of the building and its site, with primary focus on the code compliance aspects of the building for an anticipated use as a College facility for Nursing and similar Allied Health programs. This is not considered a Title 1 Environmental report.
The on-site observations and general research were performed on August 6, 2018. This report summarizes the observations and research of the following participants: Hall Architects Architectural, Structural, general building and systems conditions, miscellaneous limited document research.

The evaluation procedures utilized included the following specific tasks: the evaluation team participated in a general facility tour conducted by the building’s current occupant; we located and reviewed the available as-built documents found within the facility and became familiarized with the building’s physical make-up; we conducted general observations of all accessible building elements, documenting and photographing both specific and general conditions as observed; we prepared a draft report for the review and comment of all evaluation participants; and we finalized the preliminary report summarizing the conditions and general noted deficiencies and/or concerns as to the continued use of a system, component or finish.

II. BUILDING HISTORY

Known History: The original building was constructed in 1989-90 as an office/research/fabrication facility. The site is located in a predominantly residential neighborhood approximately 1 mile north of PPCC’s Rampart Range campus. The site is located on a hillside fronting on the north side of Cypress Semi Drive. The original building was designed by Architect James Nakai & Associates in Colorado Springs, the structure was engineered by Martin/Martin from Denver and the mechanical system was designed by ME Engineers of Colorado Springs. The facility has undergone several renovations over the years, but it appears that they mostly revolved around the eastern fabrication areas of the building.

As-Built Building Plan Documentation: Documents for the original building and numerous improvements can be found on the premises in 2nd floor room at the NE corner of the building. We did not have time to go through all of the records, but they seem to be well maintained and pretty complete. It was noted that a renovation plan
in the archives prepared in 2011 by Studio-Que Architecture may not have been implemented.

We have not researched the records of the Pikes Peak Regional Building Department.

III. BASIC BUILDING CODE CRITERIA AND USE CHANGE EVALUATION
The purpose of this Code Analysis is three-fold. First we will look at code compliance issues associated with the continued use of the building as is, and to look at the code issues associated with adding an Assembly A-occupancy.

Existing General Building Information
Mixed Use: Office Building (B), Storage (S-1)
Stories: 2
Construction Type: II-B

Are Corridors rated: Yes
Fire Alarm System: Yes
Fire Sprinkler: Yes

Existing Building Size: 1st Floor 35,058 s.f.
2nd Floor 34,412 s.f.
Total 69,470 s.f.

Basic Building Code Criteria:
Occupancy/Uses:
The current use of the building is considered a mixed-use office/storage: “B/S-1” occupancy. It previously had an “F” occupancy, but that appears to have been abandoned. It is our understanding that the building is to be used as a College classroom/office building, with some storage and possibly some large
classroom/meeting rooms that would be categorized as Assembly “A-3” occupancies.

**Construction Type/Allowable Area:**
Given the construction is Type II-B, sprinklered with its current “B/S-1” non-separated occupancy, the current building code (2015 IBC) would limit this facility to 52,500 square feet per floor prior to allowed sideyard increases. Since the existing building’s largest floor is only 35,058 s.f., the current building size is within limitations. The anticipated addition of Assembly “A-3” spaces will need to be looked at carefully to stay within allowable building size criteria. It can be dealt with by either limiting the overall A-3 spaces to less than 10% of any individual floor, or by separating them with rated construction. The use of allowable floor area increase due to side yard separations also appears to be a practical methodology to allow for the A-3 occupancies without rated separations.

**Sprinkler System:**
The 2015 IBC requires that Group S-1 buildings with a Fire Area of greater than 12,000 must be fire sprinklered. Since this building exceeds this size, the building must be sprinklered, and it is. The anticipated addition of A-3 occupancies will also require sprinkler systems, so the sprinkler system will need to be maintained, and will need to be evaluated for system flow design with any renovation that occurs.

**Fire Alarm System:**
The 2015 IBC requires that Group B buildings be provided with a manual fire alarm system if the building occupant load exceeds 500 total, or if it exceeds 100 above the level of egress discharge. As previously mentioned, the existing fire alarm system is recommended to be upgraded. The current building use exceeds the 100 occupant limitation on the second floor and it is provided with a fire alarm system. Again the anticipated addition of A-3 occupancies will maintain the fire alarm requirements. Although none of the planned uses of the building appear to require a Voice/Alarm system, the use of such a system does allow for some egress width
reductions at stairs, corridors and doors, which may be beneficial since it is anticipated that the overall occupant load of the building will increase significantly with the classroom additions. It does not appear that the current fire alarm system has this capability.

Egress Requirements:
Given that the existing facility is only partially occupied with offices, and that the eastern half of the building is primarily Storage and “unused” open area, the current calculated occupant load of the building is probably just below 500 occupants. However, the planned College use of the building, if fully utilized could drive that occupant load to approximately 1500. This could impact the egress requirements of stair quantity and widths, building exits and corridor widths. Without a conceptual plan to evaluate, the specifics of these impacts cannot be fully evaluated, however it is quite likely that at least one if not two additional stairs may need to be added from the second level. In addition, the elevation change to the eastern half of the second floor needs to be reviewed carefully as the separation of egress routes from this area are possibly problematic. Also meeting common path of egress requirements could be a concern in the western half of the building if corridors are not addressed properly in the design. The quantity and width of ground floor exits does not appear to be a concern.

Two of the three stairs discharge back into the building, which was allowed when the building was originally constructed, however is only allowed under certain conditions. This will need to be studied in depth with a conceptual floor plan, but could possibly be solved with the addition of another stair, or the use of a rated Exit Passageway. Additionally, it was observed that the main lobby stair has open risers which are not allowed under current code provisions and will need to be addressed with the remodel.
At the time of original construction, the corridors were required to be rated, however now fully sprinklered buildings with these occupancies/uses no longer requires the corridor rating.

**Handicapped Accessibility Requirements:**
There are limited accessible routes into and egress from this building. There do not appear to be any fully accessible restrooms in this facility. Current building code criteria requires that accessible routes and restroom facilities be provided with any renovation to a primary use in the facility. And the cost of making those accessible improvements may be required up to 20% of the overall cost of construction. This will need to be studied closely during design, but in particular the restroom provisions need to be addressed.

**Location on Property:**
We have not attempted an in depth evaluation of exterior wall rating or protection requirements due to the building location on the property. By visual analysis, there does not appear to be any concern here.

**Structural:**
The building was originally designed and constructed under the 1985 UBC. The design was based on an 85 mph basic (fastest mile) wind speed with an Exposure “C” and an important factor of 1.0. The structural design criteria for wind design has changed over the years, and the original design is roughly equivalent to a current 126 mph (Vult 3-sec gust). However the current code criteria for a Risk Factor III building at this location will be Vult = 150mph. This will impact any re-roofing project, as it may cause some minor structural improvements to be made under the re-roof project.

The second floor on the west side of the building was designed for a 50 psf live load + 20 psf for a partition allowance. This is adequate for the intended College uses of classrooms and offices. Larger assembly occupancies with fixed seats currently
require a 60 psf design load which will probably be okay within this building without modification.

The second floor on the east side of the building was originally designed for a 75 psf live load + equipment loads for the original “Fan Room” above the original “Fabrication” Area on the 1st floor. This will be adequate for most College needs other than major storage which requires 125 psf, or very large Assembly areas with moveable seats which requires 100 psf which might not be able to be dispersed/averaged adequately. The floor will probably be adequate for a significant HVAC mechanical room which will be needed on this side of the building.

The roof was designed for a 30 psf snow load + Drifting which is still the current load criteria. But it doesn’t appear to have been slated for much of a mechanical equipment load.

The 1st floor is generally 4” slab-on-grade concrete on the west side, and 5” slab-on-grade concrete on the east side, except there is a large area of isolated 8” thick concrete located in the central and the east side of the building (which is fairly visible) in the existing warehouse area. These areas may want to be avoided for new plumbing runs as they will involve significant work to remove.

The structural lateral system uses braced steel frames, both along the exterior of the building and some located interior. These will need to be avoided during renovations to avoid significant structural improvements.

[These are estimated load capacities, a detailed engineering study should be performed if more accurate determination is needed.]

Plumbing Fixture Requirements:
It appears that the current building is provided with the following restroom facilities which is compliant for the original building with the large process/fab or storage area, but not if the complete building is considered an office building:

- Men’s WC’s: 6
- Men’s Lavs: 6
- Urinals: 4
- Women’s WC’s: 8
- Women’s Lavs: 8
- Drinking Fountains: 4
- Service Sinks: 2

A full College build-out will increase the overall building occupant load by approximately 30 – 60%. Assuming an increase of occupant load of about 40% overall (from 702 to 984) for a College Classroom type building, the plumbing fixture requirements will be as follows:

**IBC Table 2902.1 & IPC Table 403.1**

A 50:50 Male/Female Ratio has been applied per IBC 2902.1.1

<table>
<thead>
<tr>
<th></th>
<th>(B) Offices 400 occup.</th>
<th>(E) Education 584 occup.</th>
<th>Total 984 occup.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men’s WC’s</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1:25 first 50, 1:50)</td>
<td>(1:50)</td>
<td></td>
</tr>
<tr>
<td>Req’d</td>
<td>5.00</td>
<td>5.84</td>
<td>11</td>
</tr>
<tr>
<td>Provided</td>
<td>6 (5 short, &amp; 1 short w/ Ur.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Men’s Lavs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1:40 first 80, 1:80)</td>
<td>(1:100)</td>
<td></td>
</tr>
<tr>
<td>Req’d</td>
<td>3.50</td>
<td>2.92</td>
<td>7</td>
</tr>
<tr>
<td>Provided</td>
<td>6 (1 short)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Urinals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(may reduce WC by not more than 67%)</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td><strong>Women’s WC’s</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1:25 first 50, 1:50)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Req’d</td>
<td>5.00</td>
<td>5.84</td>
<td>11</td>
</tr>
<tr>
<td>Provided</td>
<td>6 (5 short)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
While it appears that the building currently has enough fixtures for its current office occupants, the layout of the restrooms is not in compliance with current plumbing code requirements for the pending College use, nor are the restrooms accessible. Furthermore, if the overall occupant load is increased to about 1500 (which is possible with a higher concentration of classrooms or A-3 occupancies), the fixture shortfall may increase significantly.

**Energy Code Criteria:**
The 2015 IECC has three general sections that will impact certain planned renovations to the building.

Insulation: When roofing is replaced, the roof insulation will need to be upgraded to the current minimum requirements. Under the 2015 and 2018 codes that value is R-30. The original drawings don’t indicate a specific R-value, however they appear to show about 3” of rigid which equates to about an R-18 to R-21. The increased thickness of insulation should be easily accommodated within the current parapet and curb heights except along the base of the Kalwall barrel vault skylight which would require some specialized detailing.

The exterior walls at the western half of the building have 6” of batt insulation within stud walls with 4” cmu facing (roughly R-15), however the eastern half of the building has no wall insulation, as the walls are a single wythe of 8” cmu. The code requires that any unconditioned space that is altered to become conditioned will require to be brought into full compliance, so the eastern half of the building will require this insulation upgrade and will require a demonstration of envelop compliance.

<table>
<thead>
<tr>
<th></th>
<th>B(1:40) first 80, 1:80</th>
<th>3.50</th>
<th>2.92</th>
<th>7</th>
<th>6 (1 short)</th>
<th>E (1:50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women’s Lavs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking Fountains</td>
<td>E (1:100)</td>
<td>4.00</td>
<td>5.84</td>
<td>10 tot 4</td>
<td>6 short</td>
<td></td>
</tr>
<tr>
<td>Service Sinks</td>
<td>B(1) E (1) (may be shared)</td>
<td>1 tot</td>
<td>2 (OK)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lighting & Lighting Control: The lighting was not reviewed in detail at this time, but it was noted that only a few T-12 lamp fixtures were present in the mechanical spaces. The energy code criteria for lighting and lighting control will need to be followed with any significant remodel involving more than 10% of the lighting within the area of renovation. These improvement would include both the overall energy performance of the lighting, as well as modifying the switching and controls.

HVAC Equipment: Energy code criteria will apply to all new mechanical systems. The existing systems appear to be in general compliance, with the exception of maybe some controls issues. We don’t anticipate any significant modifications to the existing systems except as needed to accommodate the renovation.

IV. OBSERVATIONS AND PRELIMINARY EVALUATIONS
Attached documents provide a general recreation of the existing plans and photographic representation of some of the conditions observed and discussed within this preliminary report.

Structure: The original building is constructed with a structural steel column and beam system with diagonal braces and standard shallow spread footings. We did not observe any concerns with the condition of the structure. We did however note that the roofing system on the eastern half of the building was a bit bouncy. We are concerned that any rooftop mounted equipment may need some additional structural support.

Additionally, it was observed that there have been a significant quantity of infill patches to holes that were present in the second floor of the eastern half of the building. We did find a letter from a structural engineer that acknowledges that these are properly designed. Our only concern with these is that the 2nd floor surface is a bit rough with these patches, which will require some additional floor finish preparation in this area.
**Roofing:** The roof structure is metal decking over steel joists. The roofing is a gravel covered asphaltic built-up roofing system. The original plans called for a 4-ply BUR system, which usually have a serviceable life of about 15-20 years. Since the building is now about 28 years, we are assuming that this is a second roofing system. Based on the limited amount of deterioration observed, we estimate that this roof is about 8 – 12 years old. We expect it to provide another 6 – 8 years of serviceable life before replacement will need to be considered. However, there are a few minor repairs that should be made to the existing conditions to extend its life. Specifically, there are some gravel bare areas and some base flashing seams that should be touched up.

**Exterior Walls:** The interior face of the 2nd floor masonry walls exhibit a lot of efflorescence. This is indicative of moisture intrusion into the wall systems. These appear to be single wythe concrete block walls. This area is not currently provided with formal environment control (no HVAC system), which could be contributing to the conditions at are allowing this moisture intrusion and efflorescence. As previously discussed these walls will require an insulation system to be installed. We recommend that proper conditioning of this space be implemented prior to the application of the insulation system to properly drive out moisture and minimize the possibility of mold growth within the wall systems.

Most exterior wall blockwork appears to be in very good condition. We noted very little cracking or other deficiencies. Most of the exterior sealant joints appeared to be in relatively good condition.

**Doors and Windows:**

**Exterior Doors:** The main lobby entrance storefront doors appear to be in good condition and have an interior vestibule.
Most other exterior doors, frames, and hardware, including panic hardware, appear to be original steel, and in good condition as well.

**Exterior Windows:** Most windows appear to be the original dual-pane glazing set in aluminum storefront frames. We did not observe any window water or dust infiltration, and believe that the window systems are in very good condition.

**Skylight:** The Kal-Wall barrel vault is original to the building. The fiberglass surface does exhibit some minor hail damage that will need to be evaluated further, but in general we did not observe any actual breaches of the fiberglass, nor did we observe any water infiltration in the vicinity of the skylight.

**Interior Doors:** Most interior doors, frames, and hardware, appear to be original, but are in relatively decent condition. Many of the doors have glazing that appears to be non-safety. The condition of the doors varies widely, but we would suggest replacement of all non-conforming glazing with any significant building renovation.

**General Conditions of the Interiors:** Many of the existing interior finishes appear to be original.

**Flooring:** Carpet areas are a mixture of broadloom and carpet tile installations. The condition of the carpet ranges from fair to good. As mentioned in the structural section, exposed concrete surfaces will require a fair amount of preparation work for finish surfaces to be applied.

**Walls:** Most interior walls are of framed and drywall construction. Given the intent to renovate, we did not attempt to evaluate specific conditions, but overall they appeared to be in decent condition.

**Ceilings:** 2x4 suspended ceiling panels are present in most occupied rooms. There is some variation in the tile types used, and there are a few, but not many, locations
with damage tiles. The structure above is open in most areas within the eastern half of the facility.

**Casework:** The built-in plastic laminate cabinets and counters are generally in decent condition. They are functional, but might be considered for replacement with any significant renovation project.

**Handicapped Access:** The only accessible entrance into the building is the central lobby doors on the west side of the building. The building code does not require that accessible means of egress be created with remodels, but given the mission of the College, consideration of addressing accessible means of egress is advisable since several of the egresses have exterior steps.

The most significant accessibility concern is with the restrooms. There are no stalls compliant with current code standards. Furthermore, there are showers located in the central restrooms which are not accessible. If these are to remain, the building code will require that accessible showers be installed as well. See the Elevator section below for another accessibility issue.

General site access and accessible parking needs appear to be met.

**Elevators:** There is only one elevator in the building. It is hydraulic passenger cab and has been inspected by the building department with maintenance performed within the last month. It has a capacity of 2500 lbs. It appears to be in good physical and operational condition and appears to be acceptable for HC access to western upper floor of the building. However, there is a floor elevation change to the eastern half of the building that is not accessible via the existing elevator. The elevation change should be addressed, and it is probably advisable to add another elevator to the eastern end of the facility.

**Mechanical Systems:**
Boilers: There are currently 2 immersion gas fired hot water boilers feeding the heating water hydronic system in the building. They were manufactured by Sellers Boiler Company, model 15 Commodore C-125-W, 5.2 MBTU and appear to be original to the building. They were last inspected by the State Boiler Inspector in February 2018. We have no specific knowledge about the condition of these boilers, but at 28 years old, we would expect them to be near the end of their expected serviceable life and may need to be replaced in as soon as 4 to 10 years. This manufacturer typically warrants this product for 20 years.

The flue termination is rusting and the rain cap attachment ring is cracked. This will need to be monitored and possibly replaced with the boilers.

Chillers: There are two Trane Series R Helical Rotary Liquid Chillers in the facility. Chiller 1 is a 90 Ton Model RTWD unit that was installed in 2015, Chiller 2 is a Model RTHD 175-200 Ton unit that was installed in 2009. Given the relatively young age of both units, there is no expectation of major equipment needs here for quite a while. Both chillers are charged with R-134A refrigerant which should be available for the life of the equipment, as it is not being phased out for new equipment until 2024.

(The above-mentioned cooling capacity of these chillers is based on our reading of the model number codes. This information should be confirmed with a mechanical engineer, but if accurate, the combined cooling tonnage appears adequate for cooling the entire 70,000 sf facility as a College classroom/office use, providing approximately 1 Ton cooling for each 250 sf.)

Cooling Towers: There are two cooling towers that work in unison with an indoor condenser water sump. These cooling towers were installed in 2004. They are exhibiting some early signs deterioration, but at 14 years old, we would expect them to be serviceable for at least another 6 years. The structural concrete curbs that support them have some spalling damage that will need to be addressed when the
towers are replaced. The piping to the cooling tower is run below grade and is shown to be an 8" supply and a 10" return to the pit.

We were not able to inspect the inside of the condenser water sump, however it does appear that the condenser water pumps are leaking.

In addition to the chillers, there is a heat exchanger for a small amount of “Free Cooling”.

Hydronic Piping and Pumps: There are three HW main system pumps, two 45 deg CHW main system pumps, and two 55 deg CHW main system pumps. The 55 deg system appears to have served previous process water needs and appears to be capped off. All pumps appear to be in decent operational condition. It was observed that the strainer baskets for the HW pumps were not installed. The piping for both systems appears to be welded pipe with no Victaulic fittings. The expansion tank for the HW system is original to the building. The expansion tank for the CHW system was installed in 2016. We observed very little ceiling tile staining and the one location where we observed a terminal box HWS/R piping connection, the piping appeared to be in excellent condition.

Air Handler Units: There is a single Air Handler Mechanical Room located on the 2nd floor in the central section of the building. There are two AHU’s located here, both are original to the building and serve the western and central sections of the building. There essentially are no mechanical means of ventilation or air conditioning in the eastern wing of the building. AHU-1 and AHU-2 appear to be identical Trane Climate-Changer Units and are equipped with both heating and cooling coils. Although these units are 28 years old, this product has been to known to provide up to 40 years of serviceable life. The Fans do not appear to have VFDs which might be beneficial for energy savings. There are duct smoke detectors on the SA side of the units, but current code requires them on the RA stream, so that probably will need to be addressed during any significant renovation of the system.
As mentioned, there are no mechanical ventilation units in the east half of the building, however there is a very large outside air opening located on the 2nd floor with a manual damper. This opening will need to be eliminated or repurposed and properly controlled as part of the renovation to meet energy code criteria.

Terminal Boxes and Diffusers: We did not investigate the terminal boxes during this brief site visit, however based on one visual observation, it appears that they are original to the building and have hydronic heating coils. Manufacture was not determined.

Most air supply diffusers are 4ft long slot diffusers integrated into the suspended ceilings. These may not be ideal for reuse in an educational facility.

Other Air Conditioning Units: There are two CRAC units located in the 1st floor western laboratory area, age unknown. It is not known if the equipment will be left behind or removed with other lab equipment. There are two roof mounted condensers, a Sanyo mini-split unit with R410A refrigerant and a Trane Condenser unit (yr 2013) also with R410A refrigerant. We are not sure what areas these units serve, but probably IT closets.

Other Roof Top Equipment: There is an abandoned gas-fired MAU on the east wing roof. The gas has been disconnected.

Exhaust Fans: We observed six roof mounted EF’s, one in-line EF (#8) in the main AHU mechanical room, and a ceiling mounted EF (#3) in the Chiller Room. (We saw an EF-9 designation on one of the roof mounted units). All but two the roof mounted EF’s appeared original to the building. The EF-8 unit discharge duct has been tapped into for apparent exhausting of the mech room with assistance of a fan-powered inlet, but this tap has no back-draft damper and is not effective.
**Systems Controls:** The original building temperature controls system was a pneumatic Robert Shaw system. It was replaced by a Trane Tracer Summit system (year unknown but it utilizes category 5e cabling which was first introduced in 2001). The Robert Shaw control panels are still in place and appear to have been somewhat integrated into the Trane system, but all actuators and sensors appear to now be digital. It is not known which version of software is being used.

**Air Compressors & Vacuum Pumps:** There are two 50 hp industrial rotary screw air compressors located on the 2nd floor east side. It is not readily apparent what they serve since the temperature control is no longer pneumatic, so we assume they are for process equipment needs. They are both manufactured by Sullair, the newer unit is a ShopTek 37 model ST3708 AC, the older unit is model 3709V/A. It is not known whether these will be left behind or removed with other lab equipment but both appear to be in good operating condition.

There are two vacuum pumps located in the same vicinity as the air compressors, but they are disconnected and not currently in use. Again, it is not known whether these will be left behind or removed with other lab equipment.

**Plumbing:**

**Domestic Water:** The water service entrance is located adjacent to the fire service entrance. It appears that it is a 3” service, but has multiple 2” lines that are fed from it. These separate lines appear to have separate meters, but it is assumed that these meters are for internal tracking information only. It appears to have required backflow prevention with recent inspections. Generally there were no observed problems or concerns with the copper domestic water piping in the building. The water color looks clear, so we do not suspect any problems.

**Water Heaters:** We only observed one domestic hot water storage tank in the building (room 116). It is an electric 120 gallon tank manufactured by Rheem. The age is not known, but the nameplate references 1992 ASHRAE standards. Given
this apparent age, it is anticipated that this heater may need to be replaced soon. There is re-circulation pump and a thermal mixing valve associated with the hot water from this tank. The TMV appears to be leaking.

**Sanitary Sewer:** The condition of the wastewater lines within the building are not known as they are primarily located in concealed spaces and underground.

**Restrooms and General Fixtures:** The restroom fixtures appear to be original to the facility but are considered to be in decent operational condition.

Based on our code analysis earlier in this report, it does not appear that there are sufficient toilet fixtures for the increase occupant load planned for the building. Nor are any of the current restrooms properly designed for current handicapped access requirements which will be required to be remedied during any significant renovation to the building.

**Water Coolers:** There are few electric water coolers located in the building. We did not verify their compliance with current ADA accessibility requirements.

**Roof Drainage:** Roof drainage is via primary roof drains located along the northern and southern roof perimeters and have overflow scuppers through the parapets. The roof drains appear to discharge to grade through the parking lot. It is not known if this discharge causes any icing problems in the parking lot.

**Fire Protection Systems:** The fire water service is a 6” line with a double check BFP. It was last inspected in July 2018. There appears to be some discrepancy with the pressure gauges as the incoming gauge is indicating 100 psi, and the gauge on the riser is at 115 psi. We did not observe any concerns with the sprinkler system installation.
**Electrical:** The service to the building is 480Y/277 three-phase and terminates on a main switch board with a 2000A capacity. The original plans show a 1500 kva skid mounted emergency generator, however the current pad mounted generator is only 150kw. Most of the panels are Square-D equipment and are still very serviceable. The main MSB has several spare breakers, as does the sub-distribution panel which is 120/208 1600A equipment. We do not see any outward concerns with the power availability or distribution within the building.

The lighting throughout the facility is varied, but is mostly achieved with fluorescent T-8 type fixtures. Current light levels appear to be mostly adequate, however some of the suspended linear fixtures are finished with dated colors and the quality of lighting is less than desirable. The energy consumption of these type of fixture is moderate but could be improved by replacing the existing fluorescent fixtures with newer LED fixtures. The light switching in most areas is not compliant with current lighting control requirements.

The existing Emergency lighting is assume to be integrated into the general lighting fixtures, as we did not observe any “frog-eye” type fixtures. The entire system needs to be tested for operation and distribution of fixtures, and all deficient conditions will require correction prior to occupancy.

Locations of illuminated exit signs appear to be adequate in the general public areas, and appear to be of LED type.

There is a roof mounted lightning protection system, however its overall continuity or effectiveness was not determined. We did not observe any disconnects to the system at the roof level.

**Fire Alarm:** The main Fire Alarm Control Panel (FACP) is a Simplex model 4100 system and appears to be original to the facility. The digital display currently indicates that there are no faults in the system. As we previously indicated, there
may be a desire to upgrade the system to a voice/alarm system to take advantage of some code provisions. This older system will need a significant overhaul to accommodate such a change. It was also noted that the existing AHU’s only have duct detection on the Supply Air side of the units, however current codes require duct detection on the Return Air.

Simplex’s web site indicates that any fire alarm system that is over 10 years old has probably exceeded its useful life and indicates that this system should be replaced with a modern “addressable” system with remote monitoring. We concur with Simplex’s general statement that this system should be replaced but further evaluation is needed to know if it is acceptable to re-use the system for the College’s initial renovation.

**Security Systems:** We did not evaluate the security system.

**Telephone and Data Systems:** We did not evaluate the telephone or data cabling systems.

**Site Utilities:**
*Fire Hydrants and Fire Water:* At this time, we have not attempted to evaluate these utilities.

*Domestic Water:* At this time, we have not attempted to evaluate these utilities.

*Sanitary Sewer:* At this time, we have not attempted to evaluate these utilities.

*Storm Sewer:* At this time, we have not attempted to evaluate these utilities.

*Gas:* At this time, we have not attempted to evaluate these utilities.

*Electrical:* At this time, we have not attempted to evaluate these utilities.
Environmental Considerations:
Asbestos Abatement: To be determined under separate report.

Lead-Based Paint: To be determined under separate report.

Water Quality: To be determined under separate report.

Soils: To be determined under separate report.

END OF PRELIMINARY EVALUATION REPORT
Reviewed by Hall Architects
1935 Dominion Way, Suite 202
Colorado Springs, CO 80918
Voice: 719 277-7300
Distribution: Bob Rogers, PPCC

_______________________________
Stephen Hall, RA, ICC
Appendix B
First Floor

DEPARTMENT LEGEND
- CIRCULATION
- SERVICE
- ADMINISTRATION
- EMT / PARAMEDIC
- NURSING FUNDAMENTALS
- NURSING SIMULATION
- SHARED SPACES
- STUDENT SERVICES

MARCH 26, 2019
PIKES PEAK COMMUNITY COLLEGE
CYPRESS BUILDING
FINAL PHASE - OVERALL FIRST FLOOR PLAN