ADVERTISEMENT FOR QUALIFICATIONS
for
ARCHITECTURAL/ENGINEERING/CONSULTING SERVICES
State of Colorado
University of Colorado Denver (GFE)

Notice Status: **OPEN**
Publish Date: **11/01/2021**
 # Notice Revisions: **N/A**
Revision Publish Date: **N/A**

Project No: **22-103067**
Project Title: **CU Denver College of Engineering, Design, and Computing Building and North Classroom Renovations**
Estimated Construction Cost: **$61,715,000**

Settlement Notices

For all projects with a total dollar value above $150,000 Notice of Final Settlement is required by C.R.S. 38-26-107(1).
Final Settlement, if required, will be advertised via: Electronic Media

Project Description

The project will create a new complex for engineering and computing, and enhance the gateway experience into the CU Denver neighborhood along Larimer Street. The building will also serve as a cornerstone for CU Denver's emerging open innovation district. The creation of an innovation district was one of five goals that arose from CU Denver's 2030 Strategic Plan. Located at the intersection of Speer Boulevard and Larimer Street, this project is comprised of a 94,200 GSF new building and approximately 46,000 SF of site improvements. The project also consists of approximately 5,000 SF of renovations in the North Classroom building that will occur after completion of the new building. Should the renovation scope increase, the University may request additional services from the selected project A/E team.

The published program plan identifies the very prominent site that has been selected for the project. The building will play a critical role in the further development of the CU Denver neighborhood, the Innovation District, and this important gateway into the CU Denver neighborhood. The building shall be complimentary of campus scale while continuing to establish a visual connection between LoDo, the Central Business District, and the CU Denver neighborhood. The building must exemplify design-excellence and deliver an iconic presence off Speer Boulevard that both activates the "front side" of campus and facilitates ease of access and mobility around the building. Committed to the creative economy, CU Denver also supports public art as part of the design and will explore community serving retail, and food and beverage spaces as part of the development. Flex-spaces for public convenings,

and areas for socialization and team study, research and collaboration will be essential in the design.

CU Denver is open to discussions with the design team about exploring greater development density than that which has been historically pursued on the campus. These will be campus discussions, and will include representation from the Auraria Higher Education Center. The design team shall endeavor to create a thoughtful and appropriate urban design strategy through design dialog with all stakeholders including, but not limited to: University Leadership, the CEDC, students, Facilities Projects, Facilities Management, the Office of Institutional Planning, AHEC, the City and County of Denver, members of the surrounding community, and potential university partners. The design process is anticipated to include three to four presentations to the Auraria Design Review Team (DRT), an ad hoc group whose membership will be determined following design selection. DRT approval is required for a project to proceed into construction. The team shall implement appropriate best practices, guiding principles, recommendations, and guidelines established in the various guiding documents including, but not limited to: "2019 CU Denver Facilities Master Plan", "2017 AHEC Master Plan", "2009 Auraria Campus Design Guidelines", "CU Denver Facilities Management Guidelines and Standards", and the Office of the State Architect High Performance Certification Program (HPCP) requirements.

As part of the curation of the innovation district, CU Denver is also seeking strategic partnerships – for both programmatic and physical enhancements to the new building. Partnerships may play a role in this project, including the addition of square footage and space types not previously contemplated in the program plan. Themes for partnerships may include co-location opportunities targeting experiential learning opportunities for students, community serving functions (e.g., non-profit organizations tied to the engineering, design or computing professions, STEAM educational programs for children, workforce development opportunities, etc.). Partnerships may also grow the entrepreneurial ecosystem, create access to capital (venture capital, private equity, angel networks, etc), and enhance manufacturing eco-systems and fabrication facilities across Colorado.
The new building will be a cross-disciplinary teaching and research facility, drawing users from beyond CEDC. The new building will reflect a redesigning of engineering and computer science education that will prepare students for a world that is changing at an unprecedented pace. It will promote accelerated innovation and meaningful student-faculty interaction, as well as attract outside industry partners that are important to the success of student recruiting and retention.

CEDC has adopted IMPACT 2024 (IMPACT) — a strategic plan that was created by the college. IMPACT has bold plans to transform engineering education, emphasizing computing technology throughout, with interdisciplinary design-oriented teaching and learning. There will be a dynamic blend of hands-on and on-line pedagogy that can pivot in an agile manner, with an emphasis on cutting-edge technology, such as artificial intelligence and big data driven content delivery.

The CEDC Project aspires to be not only a model for innovative research, teaching, and learning, but also an example of cutting-edge building performance and sustainability on display. These goals are especially relevant given that building systems are a key curricular component in the CEDC. The building will be a "living laboratory" for building and engineering technologies and will demonstrate

sustainable building leadership for the campus' future growth, for the University of Colorado, and in support of the City and County of Denver's ambitious 2030 net zero all electric building goals.

To continue as leaders in the fight against climate change, the University will revise and revisit its sustainability goals in 2026. In the interim, the University will challenge this design team to exceed existing minimum design and code requirements and incorporate the following goals to achieve cutting-edge building performance:

1. Conduct thorough life-cycle cost analyses of potential project enhancements to identify first costs, payback analysis (ROI), environmental costs, and energy savings opportunities and to reduce operations and maintenance costs. This could include the examination of Well Building Certification and on-site energy generation, among others.
2. Go beyond energy code minimums and LEED Gold; and include a measurable energy goal for the project (EUI goals).
3. Explore the opportunities to meet net-zero energy consumption or be net-zero energy ready (highly desirable).
4. Detailed metering and data feedback to be used for data collection, confirmation of EUI goal achievement, and research.
5. Implement improvements that increase efficiency and reduce GHG emissions.
6. Integrate environmental sustainability goals with social and economic sustainability goals.
7. Incorporate the guidance of the New Buildings Institute and their tools, guidelines, and examples of high-performance buildings.

To exemplify CU Denver's commitment to sustainability and high-performance buildings, a National Renewable Energy Laboratory white paper is included in Appendix F. This document outlines "strategies for procuring high-performance buildings on typical construction budgets". While this paper focuses on the design-build procurement strategy, the University is interested in exploring the strategies and concepts outlined with the A/E Team and the CM/GC.

The new building includes the components outlined in Appendix E, College of Engineering, Design and Computing (CEDC) Program Plan.

The scope of work includes consolidating CU Denver's CEDC footprint from seven buildings (North Classroom, Boulder Creek, 5th Street Hub, Administration Building, Lawrence Street Center, CU Denver Building, and St Cajetan's Center) into the new building and the adjacent North Classroom building. The A/E team shall include thorough investigation of all existing CEDC spaces and programs during the confirmation and expansion of the facility's architectural program (concurrent with Concept Design).

CU Denver is actively engaged in fundraising for this project, and the fundraising efforts will continue through the design process. The selected A/E firm will play an important role in these fundraising efforts by engaging in some, or all, of the following:

- Work with subject matter experts and consultants to identify opportunities for branding, donor recognition, and environmental graphic integration within the building design beginning at concept design.

- Prepare materials to provide to potential philanthropic partners and other interested parties including images, renderings, and video “fly-throughs”.
- Produce a physical model of the building to share with interested parties and to display publicly.
- Attend engagements with potential philanthropic partners as needed.

Scope of Services

The **University of Colorado Denver** anticipates using a Construction Manager/General Contractor (CM/GC) approach to project delivery. A Guaranteed Maximum Price (GMP) and an updated project duration schedule will be established by the Architect/Engineer and the Construction Manager/General Contractor in conjunction with the **University of Colorado Denver**. The CM/GC will evaluate, among other things, availability of materials and labor, project schedule, project costs as they relate to the established budget, constructability, and will work closely with the Architect/Engineer and the **University of Colorado Denver | Anschutz Medical Campus** throughout the planning, design and construction phases of the project. Please see attached RFQ for full details on the A/E full scope of services.

Minimum Requirements

Notice is hereby given to All interested parties and firms will be required to meet all minimum requirements to be considered for this project. To be considered as qualified, interested firms shall have, at a minimum:

1. A licensed architect in the State of Colorado; and
2. Individuals that have completed design for two or more examples of either interdisciplinary science, technology, computer science, or engineering buildings for institutions of higher education; and
3. Provided Design and Construction Administration services within the last five (5) years for at least two (2) projects each in excess of $40,000,000 (hard costs), utilizing the expertise present in their Colorado Office; and
4. Demonstrated experience with LEED Gold or beyond; and
1. Demonstrated specific CM/GC experience on projects of similar ground-up scope and complexity with State A/E CM/CG agreement (SC-5.2) and CM/GC Agreement (SC-6.5); and
2. Demonstrated close working relationships with CM/GC, Owner Consultants, and Owner on project scope estimating and scope development; and
3. The ability for all team members including sub-consultants and sub-contractors to successfully complete a background check at the request of the University to include sex offender criminal convictions; and
4. The ability for team member to agree to all of CU Denver’s current and future COVID policies; and
5. A demonstrated commitment to diversity including documented goal-setting and strategies via submission of a “diversity, equity, and inclusion plan” to achieve participation of minority and women owned local firms throughout the design and construction of the project.

   Preferred Requirements:
   1. Experience with mixed-use buildings.

2. Experience with buildings that involve industry partnerships with specific emphasis on innovation.
3. Experience designing buildings on small sites with access limitations.
4. Experience with projects on prominent sites that involved activated outdoor space or gateways.
5. Experience with the goals outlined in the Project Description including, but not limited to: LEED Platinum, Net Zero or Net Zero Ready, Green Globes, WELL Building Standard, Energy Star Buildings, and Colorado High Performance Certification Program (HPCP).
6. Demonstrated experience leading teams to achieve project stretch goals.
7. Experience working on the Auraria Higher Education Center campus.
8. Experience working with the University of Colorado Denver.
9. A commitment to working with the University to provide career pathways for CU Denver students including, but not limited to: experiential learning opportunities, paid-internships, job shadow programs, and mentoring opportunities.
10. Experience working with and coordinating third-party entities including the City and County of Denver, Denver Fire Department, Denver Water, Xcel Energy, and Solar PPA providers.

Firms meeting the minimum requirements may obtain the bidding documents on the website accompanying this advertisement.

University of Colorado Denver | Anschutz Medical Campus Facilities Projects – **Request for Qualifications** website:
https://www.cuanschutz.edu/offices/facilities-management/construction-projects/RFQ

Colorado CORE/ColoradoVSS:
https://www.colorado.gov/pacific/osa/cdnoticces

Other Information

Preference shall be given to Colorado resident bidders and for Colorado labor, as provided by law.

Pre-Submittal Conference

To ensure sufficient information is available to firms preparing submittals, a mandatory pre-submittal conference has been scheduled. The intent of this conference is to tour the site and to have University of Colorado Denver staff available to discuss the project. Firms preparing submittals must have at least one individual attend in person and sign in to have their submittals accepted. *Due to space limitations and maintaining social distancing, General Contractors and any others that do not need to participate in-person are encouraged to attend via Zoom.* A CM/GC RFP will be posted in the near future.

University of Colorado Denver
The Terrace Room, 2nd Floor
1380 Lawrence Street, Denver, CO 80204

ZOOM Attendee Information for contractors:

To receive an invitation for the on-line Zoom pre-submittal conference, you must pre-register in advance using the link below. Zoom attendance is for information purposes only.
https://ucdenver.zoom.us/meeting/register/tJckcOmgqDIqHdNKTg6PZqkN3YRlwGLcw4fi

Comments: **Pre-Bid meeting will begin at 10:00 AM on November 18, 2021. COVID Precautions in place including mandatory masks for attendees.**

Schedule/Submission Details

1. The schedule of events for the RFP process and an outline of the schedule for the balance of the project is as follows:

Advertisement	11/1/2021
Pre-submittal Conference	11/18/2021 10:00 AM
Date Email Questions Due	11/30/2021 3:00 PM
Date Answers Due to all Firms	12/3/2021
RFQ Submittal Due	12/13/2021 3:00 PM
Submittal Screening	12/14/2021 – 12/31/2021
A/E Interview List Released	01/03/2022
A/E Oral Interviews (anticipated)	01/18/2022
A/E Interview Results Posted (anticipated)	01/21/2022
Negotiation of A/E Contract	01/19/2022 – 02/01/2022
Contract Approval (projected)	02/15/2022
Anticipated Design Start	02/16/2022
Anticipated CM/GC Start	05/11/2022
Design Schedule (CEDC Building)	
Programming/Concept Design	02/16/2022 – 04/12/2022
Schematic Design	04/13/2022 – 05/31/2022
Design Development (50%)	06/01/2022 – 07/05/2022
Design Development (100%)	07/06/2021 – 07/26/2022
Construction Documents (80%)	07/27/2022 – 09/06/2022
Construction Documents (100% Not for Construction)	09/07/2022 – 10/04/2022
Construction Documents (100% For Construction)	10/19/2022 – 10/25/2022
Anticipated Building Construction Start/Finish	01/02/2023 – 07/12/2024
Design Schedule (Backfill - North Classroom)	
Design Development – Construction Docs	10/23/2023 – 03/22/2024
Anticipated Backfill Construction Start/Finish	07/01/2024 – 05/30/2025

2. ONE (1) electronic copy is due **12/13/2021** and shall be received no later than **3:00 PM** *(MD/ST),* and shall be submitted via CU Denver Online RFQ Submission at the following address: https://ucdenverdata.formstack.com/forms/rfp_rfq_submission

Agency:	**University of Colorado Anschutz Medical Campus**
Contact Name:	**Ben Bohmann**
Email:	Ben.Bohmann@cuanschutz.edu
Address:	Campus Services Building 1945 Wheeling Street, Mail Stop F418, Aurora, CO 80045

Comments: **Late sealed bids will be rejected without consideration. The University of Colorado Denver (GFE) and the State of Colorado assume no responsibility for costs related to the preparation of submittals.**

3. The above schedule is tentative. Responding firms shall be notified of revisions in a timely manner by email. Respondents may elect to verify times and dates by email, but no earlier than 36 hours before the schedule date and time.

Point of Contact/Clarification

Name:	Ben Bohmann
Agency:	University of Colorado Denver | Anschutz Medical Campus (GFE)
Phone:	303.724.3956
Email:	ben.bohmann@cuanschutz.edu

This Notice is also available on the web at:

Media of Publication(s):	**University of Colorado Denver | Anschutz Medical Campus Facilities Projects Website**
Publication Dates:	**11/01/2021**
VSS	https://codpa-vss.cloud.cgifederal.com/webapp/PRDVSS2X1/AltSelfService

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

REQUEST FOR QUALIFICATIONS
FOR
ARCHITECTURAL/ENGINEERING/CONSULTING SERVICES

For The
University of Colorado Denver (GFE)

For The
CU Denver College of Engineering, Design, and Computing Building and North Classroom Renovations
Project No. 22-103067
11/01/2021

REQUEST FOR QUALIFICATIONS
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ARCHITECTURAL/ENGINEERING/CONSULTING SERVICES

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REQUEST FOR QUALIFICATIONS
UNIVERSITY OF COLORADO DENVER

I. INTRODUCTION

"CU Denver is creating an open innovation district in Downtown Denver to expand technology access, catalyze computing education, and grow economic opportunity in Denver as the nation's first Equity Serving Institution (ESI)"

– Chancellor Michelle Marks

A. BACKGROUND

The University of Colorado Denver (CU Denver) recently adopted a 2030 Strategic Plan that includes five goals; (1) become the nation's first equity-serving institution, (2) become known as a "university for life," providing access to educational excellence over a lifetime, (3) become internationally known for our research and creative work, (4) serve as the anchor institution for an open innovation district in Denver, and (5) be recognized as a people-centered "best place to work," attracting and retaining exceptional people who reflect the rich diversity of our community and are passionate about our purpose.

About the Innovation District and Our Inaugural Anchor Development:

CU Denver's open innovation district in the heart of downtown Denver will catalyze economic growth, spark new companies, commercialize research, cultivate the workforce of the future, and drive social impact. As Colorado's only public urban research university and as the nation's first equity-serving institution, CU Denver will activate unconventional partnerships to create new technologies, nurture creative industries, and advance economic mobility. Prioritizing place-making and sustainable, mixed-use development, CU Denver will architect blended spaces that encourage creative thinking, nurture living laboratories, power the future of discovery, and advance equity in computing.

CU Denver seeks an architecture firm to provide programming, architectural, engineering, and other consulting services for the flagship inaugural development for the open innovation district - a new College of Engineering, Design and Computing (CEDC) building on the Auraria Higher Education Center (AHEC) in downtown Denver. The project will also involve targeted renovations to the North Classroom Building, which is adjacent to the project site. The University expects final approvals from the Capital Development Committee and the University of Colorado Board of Regents in 2022. The project is contingent on these final approvals.

The design and ownership team shall commit to keeping the strategic plan goals at the forefront of the programming and design decision-making process. Please visit https://www.ucdenver.edu/2030/goals-for-2030 for more information about the CU Denver 2030 Strategic Plan.

B. PROJECT DESCRIPTION

The project will create a new complex for engineering and computing, and enhance the gateway experience into the CU Denver neighborhood along Larimer Street. The building will also serve as a cornerstone for CU Denver's emerging open innovation district. The creation of an innovation district was one of five goals that arose from CU Denver's 2030 Strategic Plan. Located at the intersection of Speer Boulevard and Larimer Street, this project is comprised of a 94,200 GSF new building and approximately 46,000 SF of site improvements. The project also consists of approximately 5,000 SF of renovations in the North Classroom building that will occur after completion of the new building. Should the renovation scope increase, the University may request additional services from the selected project A/E team.

The published program plan identifies the very prominent site that has been selected for the project. The building will play a critical role in the further development of the CU Denver neighborhood, the Innovation District, and this important gateway into the CU Denver neighborhood. The building shall be complimentary of campus scale while continuing to establish a visual connection between LoDo, the Central Business District, and the CU Denver neighborhood. The building must exemplify design-excellence and deliver an iconic presence off Speer Boulevard that both activates the "front side" of campus and facilitates ease of access and mobility around the building. Committed to the creative economy, CU Denver also supports public art as part of the design and will explore community serving retail, and food and beverage spaces as part of the development. Flex-spaces for public convenings, and areas for socialization and team study, research and collaboration will be essential in the design.

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2. Go beyond energy code minimums and LEED Gold; and include a measurable energy goal for the project (EUI goals).
3. Explore the opportunities to meet net-zero energy consumption or be net-zero energy ready (highly desirable).
4. Detailed metering and data feedback to be used for data collection, confirmation of EUI goal achievement, and research.
5. Implement improvements that increase efficiency and reduce GHG emissions.
6. Integrate environmental sustainability goals with social and economic sustainability goals.
7. Incorporate the guidance of the New Buildings Institute and their tools, guidelines, and examples of high-performance buildings.

To exemplify CU Denver’s commitment to sustainability and high-performance buildings, a National Renewable Energy Laboratory white paper is included in Appendix F. This document outlines “strategies for procuring high-performance buildings on typical construction budgets”. While this paper focuses on the design-build procurement strategy, the University is interested in exploring the strategies and concepts outlined with the A/E Team and the CM/GC.

The new building includes the components outlined in Appendix E, College of Engineering, Design and Computing (CEDC) Program Plan.

The scope of work includes consolidating CU Denver's CEDC footprint from seven buildings (North Classroom, Boulder Creek, 5th Street Hub, Administration Building, Lawrence Street Center, CU Denver Building, and St Cajetan's Center) into the new building and the adjacent North Classroom building. The A/E team shall include thorough investigation of all existing CEDC spaces and programs during the confirmation and expansion of the facility's architectural program (concurrent with Concept Design).

CU Denver is actively engaged in fundraising for this project, and the fundraising efforts will continue through the design process. The selected A/E firm will play an important role in these fundraising efforts by engaging in some, or all, of the following:

- Work with subject matter experts and consultants to identify opportunities for branding, donor recognition, and environmental graphic integration within the building design beginning at concept design.
- Prepare materials to provide to potential philanthropic partners and other interested parties including images, renderings, and video "fly-throughs".
- Produce a physical model of the building to share with interested parties and to display publicly.
- Attend engagements with potential philanthropic partners as needed.

Current building construction budget

Building & Sitework	$55,228,000
Audio/Visual	$ 2,182,000
Security	$ 195,000
FF&E	$ 2,976,000
TOTAL	**$60,581,000**

Current renovation budget

North Classroom Renovations (appx. 5,000 SF)	**$ 1,134,000**

Total current budget

Total Construction Cost	**$61,715,000**

C. MINIMUM REQUIREMENTS

All interested parties and firms will be required to meet all minimum requirements to be considered for this project. To be considered as qualified, interested firms shall have, at a minimum:

1. A licensed architect in the State of Colorado; and
2. Individuals that have completed design for two or more examples of either interdisciplinary science, technology, computer science, or engineering buildings for institutions of higher education; and
3. Provided Design and Construction Administration services within the last five (5) years for at least two (2) projects each in excess of $40,000,000 (hard costs), utilizing the expertise present in their Colorado Office; and
4. Demonstrated experience with LEED Gold or beyond; and

5. Demonstrated specific CM/GC experience on projects of similar ground-up scope and complexity with State A/E CM/CG agreement (SC-5.2) and CM/GC Agreement (SC-6.5); and
6. Demonstrated close working relationships with CM/GC, Owner Consultants, and Owner on project scope estimating and scope development; and
7. The ability for all team members including sub-consultants and sub-contractors to successfully complete a background check at the request of the University to include sex offender criminal convictions; and
8. The ability for team member to agree to all of CU Denver's current and future COVID policies; and
9. A demonstrated commitment to diversity including documented goal-setting and strategies via submission of a "diversity, equity, and inclusion plan" to achieve participation of minority and women owned local firms throughout the design and construction of the project.

Preferred Requirements:

1. Experience with mixed-use buildings.
2. Experience with buildings that involve industry partnerships with specific emphasis on innovation.
3. Experience designing buildings on small sites with access limitations.
4. Experience with projects on prominent sites that involved activated outdoor space or gateways.
5. Experience with the goals outlined in the Project Description including, but not limited to: LEED Platinum, Net Zero or Net Zero Ready, Green Globes, WELL Building Standard, Energy Star Buildings, and Colorado High Performance Certification Program (HPCP).
6. Demonstrated experience leading teams to achieve project stretch goals.
7. Experience working on the Auraria Higher Education Center campus.
8. Experience working with the University of Colorado Denver.
9. A commitment to working with the University to provide career pathways for CU Denver students including, but not limited to: experiential learning opportunities, paid-internships, job shadow programs, and mentoring opportunities.
10. Experience working with and coordinating third-party entities including the City and County of Denver, Denver Fire Department, Denver Water, Xcel Energy, and Solar PPA providers.

CU Denver will engage an outside firm for project delivery services. That firm (in the role of Project Director) will work in conjunction with CU Denver's offices of Institutional Planning and Facilities Projects to interface with the design and construction teams on this project. The University of Colorado Denver anticipates using a Construction Manager/General Contractor (CM/GC) approach to project delivery. Through the use of an Architect and a Construction Manager/General Contractor, a Guaranteed Maximum Price (GMP) will be established in conjunction with the University of Colorado Denver. The CM/GC will evaluate, among other things, the availability of materials and labor, the project schedule, and project costs as they relate to the established budget and constructability. The CM/GC will work with the Architect and CU Denver to identify opportunities to enhance the ROI and ensure that the project scope aligns with the GMP. These processes will be ongoing throughout all the design phases of the project. The selection process for the CM/GC will begin following the selection of the Architect. The A/E is responsible to keep project design within the established budgets both independently and in collaboration with the CM/GC.

The design team will be responsible for engaging all necessary sub-consultants for the project including landscape, irrigation, civil, structural, mechanical, plumbing, electrical, lighting, energy modeling, vibration and acoustic analysis, IT/technology/DAS (except WIFI), audio/visual, life safety systems, interior design, laboratory, FF&E (including program laboratory equipment and/or shop equipment), environmental graphics (including brand integration and donor recognition), wayfinding, and/or other consultants as necessary.
A commitment to diversity is highly encouraged in the selection of sub-consultants. The University intends for the A/E to hire all consultants directly for completion of their design packages except as otherwise identified.

CU Denver will conduct separate RFP/RFQs and contract directly with the following consultants as it relates to the project: initial and as-built surveying, traffic engineering (if needed), geotechnical engineering services to complete the Phase 1 & Phase 2 reports, commissioning, and LEED Consultants.

The A/E team will not be required to provide project design for WIFI, exterior WIFI, UPS Power, 5G, and network equipment design. CU Denver will provide these designs for the A/E to incorporate into the project models for coordination. The A/E will be responsible for all low-voltage pathways (interior & exterior), backbone cabling, horizontal cabling design elements, and modeling these items into the project design model.

The project design is to be a fully coordinated BIM process including full 3D design and models using Revit by all members of the design team. Site work is expected to be completed in Civil 3D and included with the project models. In project areas with open ceilings, all systems and components are required to be modeled including all exposed conduits, systems, devices, etc. All models shall be setup for into incorporation of Construction Operations Building Information Exchange (COBie) data for the project and be included in the record project models for export integrations into university asset management systems.

B. SELECTION PROCESS

The selection of an architect/engineer/consultant will be conducted in accordance with the Colorado Revised Statutes, 24-30-1401 et. seq. The process will involve two stages: submittals will be screened and scored. A limited number of firms will be short listed and invited to participate in oral interviews. The University of Colorado Denver will attempt to negotiate a contract with the highest ranked firm following the interview segment. Following is additional information relative to the selection process:

1. Mandatory Pre-submittal Conference: To ensure sufficient information is available to firms preparing submittals, a mandatory pre-submittal conference has been scheduled. The intent of this conference is to tour the site and to have University of Colorado Denver staff available to discuss the project. Firms preparing submittals must have at least one individual attend in person and sign in to have their submittals accepted. *Due to space limitations and maintaining social distancing, General Contractors and any others that do not need to participate in-person are encouraged to attend via Zoom.* A CM/GC RFP will be posted in the near future.

   The Pre-Submittal Conference will be held at:

   > CU Denver, The Terrace Room, 1380 Lawrence Street, 2nd Floor, Denver, CO
   > on
   > November 18, 2021 at 10:00 AM (please arrive early).
   > COVID precautions are in place, including mandatory masks for attendees. If you are feeling sick, please do not attend in person.

   ZOOM Attendee Information for contractors:

   To receive an invitation for the on-line Zoom pre-submittal conference, you must pre-register in advance using the link below. Zoom attendance is for information purposes only.
   https://ucdenver.zoom.us/meeting/register/tJckcOmgqDIqHdNKTg6PZqkN3YRlwGLcw4fi

2. Architect/Engineer/Consultant's Submittals: Specific requirements for submittals and scoring criteria are detailed in II. SUBMITTAL REQUIREMENTS. In order to facilitate review, **ONE (1) PDF** of the submittals must be provided. Submittals must be received at:

   > **CU Denver Online RFQ Submission:**
   > https://ucdenverdata.formstack.com/forms/rfp_rfq_submission

   Deadline for submission and receipt is: **12/13/2021 at 3:00 PM**

   Late submittals will be rejected without consideration. The University of Colorado Denver and the State of Colorado assume no responsibility for costs related to the preparation of submittals.

3. Screening Panel/Short List: Submittals will be evaluated by a panel of individuals selected in accordance with state policies. The panel will review and score the submittals. Firms ranked the highest will be invited to an oral interview. It is anticipated no fewer than three (3) or no more than five (5) will be interviewed.

4. Oral Interviews. It is anticipated that oral interviews will be conducted during the week of **January 18th, 2022**. The location of the interviews will be provided to selected firms and is anticipated to be in-person. The time and order of interviews will be randomly determined. Key personnel from the firm and major consultants who will be directly involved with the project should attend the interview. The interview panel will be interested in knowing about the project approach proposed and in meeting the individuals who will act as the primary contacts with the University of Colorado Denver.

Due to the nature of this project, interviews will be scheduled for 90 minutes with up to 60 minutes for presentation and 30 minutes for questions and answers. Additional interview topics and guidance will be provided with interview invitations. A multi-disciplinary interview panel of CU staff and faculty will be assembled to participate and score each interview. The names and positions of the interview panel will not be released prior to the interviews.

The participation of the design team members during the oral interview presentation and Q/A should be proportional and reflect their team members' time commitment to the project.

C. SCHEDULE

Following is a detailed schedule of events for the RFQ process and an outline of the schedule for the balance of the project.

Advertisement	11/1/2021
Pre-submittal Conference	11/18/2021 10:00 AM
Date Email Questions Due	11/30/2021 3:00 PM
Date Answers Due to all Firms	12/3/2021
RFQ Submittal Due	12/13/2021 3:00 PM
Submittal Screening	12/14/2021 – 12/31/2021
A/E Interview List Released	01/03/2022
A/E Oral Interviews (anticipated)	01/18/2022
A/E Interview Results Posted (anticipated)	01/21/2022
Negotiation of A/E Contract	01/19/2022 – 02/01/2022
Contract Approval (projected)	02/15/2022
Anticipated Design Start	02/16/2022
Anticipated CM/GC Start	05/11/2022
Design Schedule (CEDC Building)	
Programming/Concept Design	02/16/2022 – 04/12/2022
Schematic Design	04/13/2022 – 05/31/2022
Design Development (50%)	06/01/2022 – 07/05/2022
Design Development (100%)	07/06/2021 – 07/26/2022
Construction Documents (80%)	07/27/2022 – 09/06/2022
Construction Documents (100% Not for Construction)	09/07/2022 – 10/04/2022
Construction Documents (100% For Construction)	10/19/2022 – 10/25/2022
Anticipated Building Construction Start/Finish	01/02/2023 – 07/12/2024
Design Schedule (Backfill - North Classroom)	
Design Development – Construction Docs	10/23/2023 – 03/22/2024
Anticipated Backfill Construction Start/Finish	07/01/2024 – 05/30/2025

II. SUBMITTAL REQUIREMENTS

Firms will be judged not only on their past experience for the type of work involved, but also on their ability to address issues critical to the success of the project requirements outlined in this RFQ document. **(Note that the primary focus of the prequalification evaluation will be the firm(s) capability and the primary focus of the oral interview will be the proposed Project Management Team members capabilities.)**

Submittals are to be limited to twenty-three (23) 8.5x11 PDF pages of content. Submittals are to be organized per the sections outline below. The cover page and University forms do not count toward the 23 page limit. Fonts shall be no smaller than 11 pt.

Following are elements that will be used to evaluate each firm's qualifications:

A. PROJECT TEAM

Identify the project principal, the project manager, key staff and subconsultants. Present a brief discussion regarding how the team's qualifications and experience relate to the specific project.

- Qualifications and relevant individual experience.
- Unique knowledge of key team members relating to the project.
- Experience on projects as a team.
- Key staff involvement in project management and on-site presence.
- Time commitment of key staff.
- Qualifications and relevant subconsultant experience.

B. FIRM/TEAM CAPABILITIES

- Are the lines of authority and coordination clearly identified?
- Are essential management functions identified?
- Are the functions effectively integrated? (e.g., subconsultants' role delineated)?
- Current and projected work load.
- How would you envision a cutting-edge building as outlined in the RFQ?

Note: Organization charts and graphs depicting your capacity may be included.

C. PRIOR EXPERIENCE

Use this portion of your submittal to describe relevant experiences with the project type described in this RFQ document and various services to be provided.

- Experience of the key staff and firm with projects of similar scope and complexity.
- Demonstrated success on past projects of similar scope and complexity.
- Demonstrated success on LEED Gold or Platinum, Net Zero, WELL, Energy Star, Green Globes, or Carbon Neutral projects.
- References

Note: Include the name and current telephone number of the owner's project manager for every project listed, company, address, email, phone, project name, initial value, final value. Confidential projects without contact info will be scored down.

D. PROJECT APPROACH

For the project and services outlined in the RFQ document, describe how you plan to accomplish the following project control and management issues:

- Budget Methodology/Cost Control.
  - − Establish and maintain A/E estimates of probable cost within owner's established budget.
  - − Control consultant contract costs
  - − Coordinate true value engineering activities

- Quality Control Methodology
  - − Ensure State procedures are followed.
  - − Improve energy efficiency through the use of an integrated design process, life cycle costing, the use of an energy standard (current OSA energy code) and the specification of energy efficient materials, systems, and equipment.
  - − Ensure the project is designed for durability and maintainability.
  - − Ensure operational efficiencies for building usage and flow of student Services.
  - − Ensure CM/GC is maintaining quality during construction.

- Schedule
  - − Manage the required work to meet the established schedule.
  - − Monitor CM/GC construction progress against outlined schedule.

- Processes to include all stakeholders including students.

- Processes to ensure CU Denver management involvement in key decisions before major steps are taken.

E. WORK LOCATION

Describe where the prime and subconsultants will do the key work elements of this project.

- Proximity of firm’s office as it may affect coordination with the University project manager and the project location.
- Identify each design team member’s primary work location (city & state)
- Availability for on-site coordination and site review.
- Firm's familiarity with the project area (demonstrate or provide examples).
- Knowledge of the local labor and material markets (demonstrate or provide examples).

Appendix A

STATE BUILDINGS PROGRAM
PRELIMINARY SELECTION/EVALUATION FORM
ARCHITECT/ENGINEERING/CONSULTANT SERVICES

QUALIFICATION BASED SELECTION (This form is to be used in the first step, i.e. short listing, of an architectural/engineering/consulting services selection process.)

Evaluator #:_____ Date:_____
Name of Firm:_____
Name of Project: CU Denver College of Engineering, Design, and Computing Building and North Classroom Renovations

RFQ REFERENCE
MINIMUM REQUIREMENTS Y ____ N ____

If the minimum requirements have not been met, specify the reason(s):
_____
_____

Acknowledgment and Attestation included: Y _____ N _____

SCORE (PROJECT SPECIFIC QUALIFICATIONS): Weight[2] x Rating[3] = Score

1. PROJECT TEAM[1]

- Qualifications and relevant individual experience. 5 x_____=____
- Unique knowledge of key team members relating to the project. 5 x_____=____
- Experience on projects as a team. 4 x_____=____
- Key staff involvement in project management and on-site presence. 5 x_____=____
- Time commitment of key staff. 4 x_____=____
- Qualifications and relevant subconsultant experience. 4 x_____=____

2. FIRM CAPABILITIES[1]

- Are the lines of authority and coordination clearly identified 3 x_____=____
- Are essential management functions identified? 4 x_____=____
- Are the functions effectively integrated (e.g., subconsultants' roles delineated?) 4 x_____=____
- Current and projected workload. 4 x_____=____
- How would your team envision and describe a cutting-edge building as outlined in the RFQ? 4 x_____=____

3. PRIOR EXPERIENCE[1]

- Experience of the key staff and firm with projects of similar scope and complexity. 5 x_____=____
- Demonstrated success on past projects of similar scope and complexity. 5 x_____=____
- Demonstrated success on LEED Gold or Platinum, Net Zero, WELL, Energy Star, Green Globes, or Carbon Neutral projects. 5 x_____=____
- References. 4 x_____=____

4. PROJECT APPROACH[1]

- Budget methodology/cost control. 4 x_____=____
- Quality control methodology. 4 x_____=____
- Schedule maintenance methodology. 3 x_____=____
- Stakeholder Inclusion. 3 x_____=____
- CU Denver management involvement at major steps. 2 x_____=____

5. WORK LOCATION[1]

- Proximity of firm's office as it may affect coordination with the state's project manager and the potential project location. 3 x____=_____
- Identify each design team member's work location (city & state) 4 x____=_____
- Availability for on-site coordination and site review. 3 x____=_____
- Firm's familiarity with the project area (demonstrate). 3 x____=_____
- Knowledge of the local labor and material markets (demonstrate). 3 x____=_____

TOTAL SCORE: _____[4]

NOTES:

1. **Criteria**: Agencies/Institutions are encouraged to include additional criteria that reflect unique characteristics of the project under each category to help determine the submitter's overall qualifications.
2. **Weights**: Agency/Institutions to assign weights, using whole numbers, to all criteria on evaluation forms for inclusion into RFQ document and prior to evaluations.
3. **Ratings**: Evaluator to assess the strength of each firms' qualifications and assign a numerical rating of 1 to 5 with 5 being the highest rating. (Use whole numbers)
4. **Total Score**: Includes the sum of all criteria. Note: a passing score (as a percentage of the total points available) is optional and should be assigned by the agency/institution prior to evaluation.

Appendix A1

STATE BUILDINGS PROGRAM
ORAL INTERVIEW SELECTION/EVALUATION FORM
ARCHITECTURAL/ENGINEERING/CONSULTANT SERVICES

QUALIFICATION BASED SELECTION (This form is to be used in the second step, i.e. oral interview, of an architectural/engineering/consulting services selection process.)

Evaluator #:_____ Date:_____
Name of Firm:_____
Name of Project:_____

SCORE (OVERALL QUALIFICATIONS)[1]:	Weight[2] x Rating[3] = Score
1. PROJECT TEAM[1]	5 x _____ = _____
2. TEAM CAPABILITIES[1]	5 x _____ = _____
3. PRIOR EXPERIENCE[1]	5 x _____ = _____
4. PROJECT APPROACH[1]	4 x _____ = _____
5. WORK LOCATION[1]	3 x _____ = _____
TOTAL SCORE:	_____[4]

NOTES:

1. **Criteria**: Agencies/Institutions are encouraged to include additional criteria that reflect unique characteristics of the project under each category to help determine the submitter's overall qualifications.
2. **Weights**: Agency/Institutions to assign weights, using whole numbers, to all criteria on evaluation forms for inclusion into RFQ document and prior to evaluations.
3. **Ratings**: Evaluator to assess the strength of each firms' qualifications and assign a numerical rating of 1 to 5 with 5 being the highest rating. (Use whole numbers)
4. **Total Score**: Includes the sum of all criteria. Note: a passing score (as a percentage of the total points available) is optional and should be assigned by the agency/institution prior to evaluation.

Appendix A2

STATE BUILDINGS PROGRAM
FINAL RANKING MATRIX

QUALIFICATION BASED SELECTION
(This form is to be used separately to rank and determine the most qualified architectural/engineering/consulting services firm for both the preliminary and interview evaluations.)

FIRM	**QUALIFICATIONS SCORE[1]**						**CUMULATIVE[2] TOTAL SCORE**	**RANK[3]**
	EVAL #1	EVAL #2	EVAL #3	EVAL #4	EVAL #5	EVAL #6		

NOTES:
1. Insert total score from each evaluator's PRELIMINARY SELECTION AND INTERVIEW SELECTION/EVALUATION FORMS. DO NOT combine scores of the two evaluations.
2. Add all evaluators' total scores to determine the cumulative score. NOTE: Each firm's cumulative total score should be as a percentage of the total points available.
3. Rank all firms with the highest scoring firm being the most qualified.

Appendix B

ARCHITECT/ENGINEER/CONSULTANT CONTRACT
(CM/GC FORMAT)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

ARCHITECT/ENGINEER AGREEMENT
CONSTRUCTION MANAGER/GENERAL CONTRACTOR
(STATE FORM SC-5.2)

DEPARTMENT ID:	GFE
CONTRACT ID #:	N/A
PROJECT #:	{$ProjectNumber}
PROJECT NAME:	{$ProjectName}
VENDOR NAME:	{$VendorName}

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

ARCHITECT/ENGINEER AGREEMENT
CONSTRUCTION MANAGER/GENERAL CONTRACTOR
(STATE FORM SC-5.2)

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EXHIBITS:

- **A.** Architect/Engineer Proposal (including Design Services Schedule and Certificates of Insurance)
- **B.** Wage Rates Schedule
- **C.** Approved State Building Codes (Exhibit A of the Building Code Compliance Policy: Coordination of Approved Building Codes, Plan Reviews and Building Inspections)
- **D.** Code Compliance Plan Review Procedures (Exhibit B of the Building Code Compliance Policy: Coordination of Approved Building Codes, Plan Reviews and Building Inspections)
- **E.** Design Requirements/Facilities Program Plan/Sustainability Goals (as applicable)
- **F.** Certification and Affidavit Regarding Unauthorized Immigrants (State Form UI-1), (required at contract signing prior to commencing work.

G. University of Colorado Denver | Anschutz Medical Campus Supplementary Terms & Conditions
H. Service-Disabled Veteran-Owned Small Business and Minority/Women Business Enterprise Participation Report

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

ARCHITECT/ENGINEER AGREEMENT
CONSTRUCTION MANAGER/GENERAL CONTRACTOR
(STATE FORM SC-5.2)

Department ID: {$DeptID} Contract ID #: NA Project #: {$ProjectNumber}

1. PARTIES. THIS AGREEMENT is entered into by and between the STATE OF COLORADO, acting by and through the Board of Regents of the University of Colorado, a body corporate, for and on behalf of the University of Colorado Denver, hereinafter referred to as the Principal Representative, and **{$VENDORNAME}** having its offices at **{$VendorAddress}** engaged to serve as Architect/Engineer, hereinafter referred to as Architect Engineer.

2. EFFECTIVE DATE AND NOTICE OF NONLIABILITY. This Agreement shall not be effective or enforceable until it is approved and signed by the State Controller or its designee (hereinafter called the "Effective Date"), but shall be effective and enforceable thereafter in accordance with its provisions. The State shall not be liable to pay or reimburse Architect/Engineer for any performance hereunder or be bound by any provision hereof prior to the Effective Date.

RECITALS

WHEREAS, the Principal Representative intends to procure **{$ProjectDescription}** hereinafter called the Project; and

WHEREAS, authority exists in the Law and Funds have been budgeted, appropriated, and otherwise made available, and a sufficient unencumbered balance thereof remains available for payment In Fund Number NA , Account Number NA ; and

WHEREAS, the State has **Appropriated** and the Principal Representative has been authorized to expend the total sum of **{$APPROPRIATEDWRITTENVALUE} DOLLARS (${$APPROPRIATEDNUMERICVALUE})**; for this project including all professional services, *Program Management services*: construction manager/general contractor services, construction/ improvements, project contingencies, furnishings, movable equipment, reimbursable expenses and miscellaneous expenses; and

***WHEREAS**, funds are available for only a portion of the services defined herein, as more fully described in the funding Condition Precedent clause in Article 3.5.*

WHEREAS, the Principal Representative has established the **Fixed Limit of Construction Cost** in the amount of {$FLCCWrittenValue} Dollars (${$FLCCNumericValue}); and

WHEREAS, the Construction Manager/General Contractor shall establish a **Guaranteed Maximum Price** that is within this Fixed Limit of Construction Cost as established by the Principal Representative, at the completion of the Design Development Phase; and

WHEREAS, the Architect/Engineer was selected and determined to be the most qualified, and fees were negotiated in accordance with the provision of Title C.R.S. § 24-30-1401 et seq., as amended; and

NOW THEREFORE,

The Principal Representative and the Architect/Engineer, for the considerations hereinafter set forth, agree as follows:

ARTICLE 1. BASIC SERVICES OF THE ARCHITECT/ENGINEER

1.1 THE SERVICES

1.1.1 The Architect/Engineer's services shall be provided in conjunction with the services of the Construction Manager/General Contractor, hereinafter referred to as Construction Manager or CM, as set forth in the Contract between the State and Construction Manager, hereinafter referred to as the Construction Manager Contract. The Architect/Engineer's services shall consist of **{$NumberDesignPhases}** design phases hereinafter set forth and include normal architectural, structural, mechanical, electrical and civil engineering services; landscaping if any; space planning/interior layout; and any other services included in this Agreement as delineated in the proposal letter dated {$AEProposalDate}, submitted by the Architect/Engineer, which is attached hereto and made a part hereof by reference as **Exhibit A**. Numerous exhibits developed over a period of time are also attached to and made a part of this Agreement, some of which may be in conflict with other exhibits or portions of this Agreement. In the event of any conflict in any of these, the greater service shall be included in the professional services provided and the contract sum without additional compensation to be superseded by applicable amendment sum or supplement.

1.1.2 In the performance of the professional services, the Architect/Engineer acknowledges that time is critical for Project delivery and that portions of the work shall have their design completed as separate Bid Packages and ready for construction before other portions of the work are fully designed. It is further recognized that this accelerated approach to construction utilizing the services of an Architect/Engineer and a Construction Manager/General Contractor is a unique concept and that its feasibility requires maximum cooperation between all parties. It is also recognized that the services to be rendered by the Construction Manager and the interrelationships and coordinative aspects thereof are not traditional. The Architect/Engineer has, however, reviewed the Construction Manager Contract and accepts the terms thereof as expressing a workable concept. In furtherance thereof, in the event there appears to be a duplication, overlap, or conflict of responsibility or duties between the Architect/Engineer and the Construction Manager, or an absence of designation, the question shall be submitted to the Principal Representative for determination. The Architect/Engineer shall abide by the decision of the Principal Representative provided it does not require the performance of services beyond what was reasonably contemplated and accepted by the Architect/Engineer as its responsibility.

1.1.3 The Architect/Engineer further acknowledges that the Fixed Limit of Construction Cost recited above as the Principal Representative's expenditure limit is intended to cover the entire cost of the Project and is sufficient therefore and has been fully appropriated. The Architect/Engineer therefore agrees to cooperate fully with the Principal Representative in the design and construction aspects to keep within these limitations.

1.1.4 The number of Bid Packages shall be established at **{$NumberBidPacks}**. Should the Principal Representative request additional or fewer Bid Packages than the established number, the cost involved in development of additional or the deletion of proposed bid packs shall be reflected in an Amendment to the Agreement for Additional Services.

1.1.5 The Architect/Engineer shall participate in sessions at the close of Schematic Design Phase, Design Development Phase, and as Construction Documents are finalized for each Bid Package. These Project Design Review Sessions shall be attended by the Architect, and a representative of the Principal Representative. The purpose of the Project Design Review Sessions is to (1) ensure consistency with the design intent; (2) ensure complete, coordinated, constructible and cost-effective designs for all disciplines (e.g. architectural, structural, mechanical, electrical); (3) ensure that the design documents are code compliant; (4) endeavor to confirm that all Work has been included and described in sufficient detail to ensure complete pricing of the Work; and (5) allow for phased construction. The Architect/Engineer shall collect all design review comments from the various participants, provide reports to the Principal Representative, and ensure that with the issuance of each progress set of design documents all comments have either been incorporated or resolved to the satisfaction of the Principal Representative.

1.1.6 The Architect/Engineer shall participate in formal value engineering workshops at the end of the Schematic Design Phase and the Design Development Phase, bringing multidiscipline cost estimating and design experts to evaluate alternative designs, systems and materials.

1.1.7 The Architect/Engineer shall make certain to the best of its knowledge, information and belief, that the drawings and specifications prepared by it are in compliance with the Approved Codes as adopted by State Buildings Program (as a minimum standard) as indicated in **Exhibit C**, Approved Codes. Other more restrictive standards as specified by the Principal Representative are as indicated in **Exhibit C**. Drawings and specifications are to be reviewed by the State's approved Code Review Agents at the appropriate phases and with the required information as described in the attached Code Compliance Reviews, **Exhibit D**.

1.2 QUALIFICATIONS

1.2.1 The services shall be performed by the Architect/Engineer or by consultants licensed or registered by the State of Colorado as required by law. If these special consulting services are to be performed by professionals in the Architect/Engineer's employ, then the services must currently be and have been for at least two (2) years previously, regularly a service of the Architect/Engineer's organization.

1.2.2 In the event the Architect/Engineer does not have as part of its regular staff and services certain professional consultants and consulting services, such as but not limited to, architectural, structural, mechanical, electrical, civil, landscaping, and/or space planning/interior layout, then such consulting services shall be performed by practicing professional consultants.

1.2.3 All professional consultants, staff or practicing, must be retained for the duration of the Project, provided, however, that acceptable replacements must have prior approval, in writing, by the Principal Representative which approval shall not be unreasonably withheld.

1.2.4 Prior to designating a professional to perform any of these services, the Architect/Engineer shall submit the name, together with a resume of training and experience in work of like character and magnitude of the project being contemplated, to the Principal Representative, and receive approval in writing therefrom.

1.2.5 No consultant shall be engaged or perform work on the Project wherein a conflict of interest exists, such as being connected with the sale or promotion of equipment or material which may be used on the Project, provided, however, that in unusual circumstances and with full

disclosure to the Principal Representative of such interest, the Principal Representative may permit a waiver, in writing, in respect to the particular consultant.

1.2.6 The Architect/Engineer shall designate all of its consultants in **Exhibit A**, which list may only be modified in accordance with paragraph 1.2.4 or 1.2.5

1.3 PRE-DESIGN PHASE

1.3.1 As designated and defined in the Architect/Engineer's Proposal **Exhibit A**.

1.4 SCHEMATIC DESIGN PHASE

1.4.1 The Architect/Engineer or its duly authorized representative shall attend regular meetings with the Principal Representative and the Construction Manager, and such additional meetings as the Principal Representative may request or as may be requisite to a complete understanding of the Project. All regular meetings shall be scheduled by the Architect/Engineer with the agreement of the Construction Manager and approval of the Principal Representative. The Architect/Engineer shall document all such conference notes and distribute same to the Principal Representative.

1.4.2 The Architect/Engineer shall review the design program furnished by the Principal Representative and/or as prepared under separate contract by the Architect/Engineer, including the approved Facilities Program Plan, to ascertain the requirements of the Project and shall refine the design program in accordance with **Exhibit E**, reviewing and confirming the understandings of these requirements and other design parameters with the Principal Representative.

1.4.3 During the progress of the Schematic Design Phase, the Architect/Engineer shall keep the Construction Manager informed of changes in requirements or in materials, equipment, component systems and types of construction as the drawings and specifications are developed so that the Construction Manager can formulate the Estimates of Construction Cost and the Guaranteed Maximum Price appropriately.

1.4.4 The Architect/Engineer shall review with the Principal Representative and Construction Manager site use and improvements, selection of materials, building systems and equipment, construction methods, and methods of Project delivery.

1.4.5 Based on the mutually agreed upon design program and the Fixed Limit of Construction Cost, the Architect/Engineer shall prepare, for acceptance by the Principal Representative, Schematic Design Documents consisting of drawings, outline specifications and other documents illustrating the scale and relationship of Project components. Schematic Design Documents shall be prepared in sufficient detail and number to come to an agreement on the basic design of the Project.

1.4.6 At intervals appropriate to the progress of the Schematic Design Phase, the Architect/Engineer shall provide copies of schematic design studies for the Construction Manager's review, monitoring, and input, for the in-progress work and any completed components thereof, which will be completed so as to cause no delay to the Architect/Engineer. The purpose of such input shall address efficiency of materials, constructability, availability of components and compatibility of systems.

1.4.7 At intervals appropriate to the progress of the Schematic Design Phase, the Architect/Engineer shall provide the Principal Representative with copies of all materials,

documents, and studies necessary to permit the Principal Representative to monitor, review, provide input to, and any necessary acceptance of, the Schematic Design Phase in progress and completed components thereof. This reviewing process shall be made so as to cause no delay to the Architect/Engineer. The Architect/Engineer shall respond in writing to the Principal Representative's comments resulting from this reviewing process.

1.4.8 At the completion of the Schematic Design Phase, the Architect/Engineer shall:

.1 Provide (**{$ContractDocCopiesSchematicPhase}**) complete sets of drawings, outline specifications and construction materials, and such other documents necessary to fully illustrate the Schematic Design Phase to the Principal Representative and solicit its acceptance;

.2 Provide (**{$ContractorDocCopiesSchematicPhase}**) complete sets of drawings and (1 reproducible) complete set, outline specifications and construction materials, and such other documents necessary for the Construction Manager to prepare an estimate of the cost of construction;

.3 Assist the Construction Manager in reviewing and verifying such Estimates of Construction Cost;

.4 Independent of the Construction Manager, prepare and submit to the Principal Representative a construction cost estimate which will serve as a Statement of Probable Cost.

1.4.9 The Architect/Engineer shall also prepare a written report, accompanied by drawings, setting forth the following as a minimum:

.1 Analysis of the structure as it relates to the Approved Codes as defined in Exhibit D, including responses to the State's Code Review Agent;

.2 Recommend site locations and scope of site development;

.3 Correlation of spaces with approved State standards;

.4 Conceptual drawings of floor plans, elevations, section, and site plan;

.5 Conceptual drawings and descriptions of project plumbing, mechanical and electrical systems as necessary;

.6 Area computations, gross square footage and net square footage, and volume;

.7 Outline of proposed construction materials;

.8 Review of time anticipated for the Construction Phase(s);

.9 Written description of the bid packaging strategy agreed upon with the Construction Manager/General Contractor.

1.4.10 The above Schematic Design data shall be subject to the acceptance in writing by the Principal Representative, Construction Manager and State Buildings Program.

1.4.11 Architect/Engineer shall also assist the Construction Manager in the preparation of the Construction Manager's written report at the end of the Schematic Design Phase summarizing the Construction Manager's value engineering activities.

1.5 DESIGN DEVELOPMENT PHASE

1.5.1 Based on the written acceptance of the Schematic Design Documents and any adjustments authorized by the Principal Representative in the design program or the Fixed Limit of Construction Cost, if any, the Architect/Engineer shall prepare, for acceptance by the Principal Representative and State Buildings Program the Design Development Documents consisting of drawings, outline specifications, and other documents to fix and describe the size and character of the entire Project as to architectural, structural, mechanical, and electrical systems, materials, and such other elements as may be appropriate. The Design Development Documents shall be developed in sequence replicating the proposed Bidding Packages.

1.5.2 During the progress of the Design Development Phase the Architect/Engineer shall keep the Construction Manager informed of changes in requirement or in materials, equipment, component systems and types of construction as the drawings and specifications are developed so that the Construction Manager can formulate the Estimates of Construction Cost and the Guaranteed Maximum Price appropriately.

1.5.3 At intervals appropriate to the progress of the Design Development Phase, the Architect/Engineer shall provide copies of Design Development studies for the Construction Manager's review, monitoring and input, to the in-progress Work and any completed components thereof, which will be completed so as to cause no delay to the Architect/Engineer. The purpose of such input shall address efficiency of materials, systems, and components; constructability within acceptable means; availability of materials, systems, and components; and cost control.

1.5.4 At intervals appropriate to the progress of the Design Development Phase, the Architect/Engineer shall provide the Principal Representative with copies of all materials, documents, and studies necessary to permit the Principal Representative to monitor, review, provide input to, and any necessary acceptance of, the Design Development Phase in progress and completed components thereof. This reviewing process shall be made so as to cause no delay to the Architect/Engineer. The Architect/Engineer shall respond in writing to the Principal Representative's comments resulting from this reviewing process.

1.5.5 At the completion of the Design Development Phase, the Architect/Engineer shall provide:

.1 (**{$ContractDocCopiesDDPhase}**) complete sets of drawings, outline specifications and construction materials, and such other documents necessary to fully illustrate the Design Development Phase to the Principal Representative and solicit its acceptance.

.2 (**{$ContractorCopiesDDPhase}**) complete sets of drawings and (1 reproducible) complete set, outline specifications and construction materials, and such other documents necessary for the Construction Manager to prepare an estimate of the cost of construction.

1.5.6 The Architect/Engineer shall prepare a written report and drawings outlining in detail Design Development Documents from the accepted Schematic Design study. The report,

when submitted for acceptance by the Principal Representative and the Construction Manager shall include as a minimum:

.1 Analysis of the structure as it relates to the Approved Codes defined in **Exhibit D**, including responses to the State's Code Review Agent;

.2 Site development drawings, defining the proposed scope of development including earthwork, surface development, and utility infrastructure;

.3 Plans in one-line format of the proposed structural, mechanical, and electrical systems as necessary to define size, location and quality of equipment, materials, and constructions;

.4 Floor plans including proposed movable equipment and furnishings and exterior elevations;

.5 Cut-sheets and/or samples of proposed materials, equipment and system components including all such items normally specified under the Construction Specifications Institute, Specifications Format Divisions;

.6 Proposed architectural finish schedule, HVAC, plumbing and electrical fixture schedules;

.7 Outline specifications, using CSI format, identifying conditions of the contract, materials, and standards;

.8 Review of the time anticipated for the Construction Phase(s).

These documents shall be of sufficient detail to allow the Construction Manager to enter into an agreement for the execution of the construction based on a Guaranteed Maximum Price.

1.5.7 The Architect/Engineer shall assist the Construction Manager in the preparation of the Construction Manager’s written report at the conclusion of the Design Development Phase summarizing the Construction Manager’s value engineering activities.

1.5.8 The Architect/Engineer shall make certain that to the best of its knowledge, information, and belief the drawings and specifications prepared by it are in full compliance with applicable codes, regulations, laws and ordinances, including both technical and administrative provisions thereof. Such drawings and specifications shall conform to the list of Approved Codes as defined in **Exhibit C.** If the Architect/Engineer shall deviate from such codes, regulations, law or ordinance, without written authorization to do so from the Principal Representative, then the Architect/Engineer shall, at its own expense, make such corrections in the Construction Documents as may be necessary for compliance.

1.5.9 The final Design Development Documents, revised as required by the Construction Manager's approved Guaranteed Maximum Price established within the recited Fixed Limit of Construction Cost, shall be subject to acceptance in writing by the Principal Representative and State Buildings Program.

1.5.10 Independent of the Construction Manager, the Architect/Engineer shall prepare and submit a construction cost estimate which will serve as an update of the Statement of Probable Construction Cost.

1.6 CONSTRUCTION DOCUMENTS PHASE

1.6.1 Based on the Principal Representative and State Buildings Program accepted Design Development Documents and any further adjustments in the scope or quality of the Project or in the Construction Manager's Guaranteed Maximum Price, if any, authorized by the Principal Representative, the Architect/Engineer shall prepare, for acceptance by the Principal Representative, Construction Documents consisting of drawings and specifications setting forth in detail the requirements for the construction of the Project.

1.6.2 During the progress of the Construction Document Phase, the Architect/Engineer shall keep the Construction Manager informed of any changes in requirements or in construction materials, systems or equipment.

1.6.3 At intervals appropriate to the progress of the Construction Document Phase, the Architect/Engineer shall provide copies of documents for the Principal Representative and the Construction Manager's review, monitoring and input to the in-progress Construction Document Phase and any completed components thereof, which will be completed so as to cause no delay to the Architect/Engineer. These intervals shall be no fewer than at 50% and 95% completion of the Construction Documents Phase. The Architect/Engineer shall respond in writing to the Principal Representative's review comments.

1.6.4 These Construction Documents, when each Bid Package is submitted for approval, shall include:

.1 (**{$BidDocCDCopies}**) complete sets and (1 reproducible) complete set of architectural, civil, site development, structural, mechanical and electrical drawings as appropriate to assist in the definition of the submitted Bid Package;

.2 Complete Bidding Documents including architectural, structural, mechanical and electrical specifications for that Bid Package. The format for these technical specifications shall be the current edition of *MasterFormat* published by the Construction Specifications Institute;

.3 The title sheet shall contain the International Building Code (I.B.C.) occupancy type, construction type, gross square footage and net square footage, and gross building volume;

.4 Each Bidding Package, as appropriate, shall contain a Code Compliance Plan as per **Exhibit D**, Code Compliance Reviews, that defines area separation, fire and smoke barriers, exits, exit passages, and exit enclosures.

1.6.5 The Architect/Engineer shall assist the Construction Manager in preparation of the Construction Manager's written report summarizing the Construction Manager's value engineering activities through the completion of this phase of the work.

1.6.6 The final Construction Documents shall be subject to the final acceptance by the Principal Representative, Construction Manager and State Buildings Program in writing.

1.7 BIDDING PHASE

1.7.1 The Architect/Engineer, following the Principal Representative's and State Buildings Program' approval of the Construction Documents, shall assist the Construction Manager in obtaining bids conforming to the requirements of C.R.S. § 24-103-202(7), as amended, by rendering interpretations and clarifications of the drawings and specifications in appropriate written form. The Architect/Engineer shall assist the Construction Manager in conducting mandatory pre-bidding conferences with all principal bidders and pre-award conferences with successful bidders.

1.7.2 The Architect/Engineer shall consult with and make recommendations to the Principal Representative pertaining to the Construction Manager's proposed subcontractors.

1.7.3 In addition to the copies required for the preceding design phases, the Architect/Engineer shall furnish copies of the Construction Documents for each Bid Package as follows, subject to limitations hereinafter set forth

.1 For Bidding Documents: (**{$ContractorBidDocCDCopies}**) sets and (1 reproducible) complete set to ensure distribution among contractors and subcontractors in accordance with the advertisement for bids.

.2 For Contract Documents: The Principal Representative will require (**{$PRContractDocCopies}**) sets of Contract Documents. The Contract Documents for each Bid Package, bearing the professional seal and signature of the Architect/Engineer and the appropriate responsible professional engineering consultants, are to be signed by the Construction Manager and Principal Representative at each contract signing conference. The Architect/Engineer acknowledges that prior to the contract signing conference and State Buildings Program authorizing the Notice to Proceed to Commence Construction Phase State Form SBP-7.26 a Letter of Compliance must be obtained from the State's Code Review Agent verifying that the contract Documents and all addenda, value engineering recommendations and all other changes to the bidding documents are in compliance with the applicable codes as adopted by State Buildings Program as indicated in **Exhibit C.**

.3 For Construction: The Construction Manager shall be furnished with (**{$ContractorContractDocCopiesConstruction}**) sets or partial sets of the Contract Documents to insure prompt prosecution of the work.

.4 (**{$MaximumContractDocCopies}**) complete sets of drawings and specifications shall be the maximum required to be furnished by the Architect/Engineer. The Principal Representative will pay for all other sets of documents or partial sets of documents required at the cost of reproduction.

1.7.4 The Architect/Engineer shall assist the Principal Representative and Construction Manager in the preparation of the necessary bidding information, bidding forms and amendments to the Construction Manager Contract, to include the respective Bid Packages.

1.7.5 The Architect/Engineer shall assist the Principal Representative and Construction Manager in connection with the Principal Representative's responsibility for filing documents required for approvals of governmental authorities having jurisdiction over the Project.

1.7.6 At the completion of each bidding package, the Architect/Engineer shall prepare independent of the Construction Manager and present to the Principal Representative an update

of the Design Development Statement of Probable Construction Cost for each specific Bid Package and the project total.

1.7.7 Prior to the Authorization to Commence Construction Phase for the first Bid Package, the Architect/Engineer and the Construction Manager shall certify that the entire Project has been completed through at least the Design Development Phase of the Architect/Engineer's Agreement and the Construction Manager shall certify that the sum of all proposed individual Bid Package Guaranteed Maximum Prices total the Project Guaranteed Maximum Price. This Project Guaranteed Maximum Price shall be equal or less in sum to the Fixed Limit of Construction Cost. It is agreed that only when those conditions are met and accepted by the Principal Representative may the Authorization to Commence Construction Phase be issued for the first Bid Package.

1.8 CONTRACT ADMINISTRATION PHASE FOR MULTIPLE SEPARATE BID PACKAGES

1.8.1 The Construction Phase will commence with the award of the initial Bid Package and, together with the Architect/Engineer's obligation to provide basic services under this Agreement, will end upon expiration of the one (1) year warranty period from the Notice of Substantial Completion or the Notice of Partial Substantial Completion of the construction.

1.8.2 The Architect/Engineer shall provide the Contract Administration and perform all of the duties to be provided by the Architect/Engineer for the Project as set forth in this Agreement and in the Contract Documents. The Architect/Engineer acknowledges that while most of the construction of the Project will be constructed through the Construction Manager, the State has reserved the right to perform portions of the work on the Project through its own forces or through separate contractors. The Architect/Engineer expressly agrees to perform all of the same services set forth herein and in the Contract Documents with the Construction Manager for any and all separate contractors engaged by the Principal Representative to perform work designed by the Architect/Engineer on the Project.

1.8.3 The Architect/Engineer and Construction Manager shall advise and consult with the Principal Representative during the construction phases. All instructions and written communications with the Construction Manager shall be copied to the Principal Representative. The Architect/Engineer shall have authority to act on behalf of the Principal Representative only to the extent provided in the Contract Documents.

1.8.4 The Architect/Engineer and its structural, mechanical and electrical engineers will visit the site at intervals appropriate to the stage of construction or otherwise agreed by the Principal Representative in writing to become generally familiar with the progress and quality of the Work to determine in general if the Work is being performed in a manner indicating that the Work when completed will be in accordance with the Contract Documents. Observation may extend to all or any part of the Work and to the preparation, fabrication or manufacture of materials. However, the Architect/Engineer shall not be required to make exhaustive or continuous on-site inspections to check the quality of the Work. On the basis of observation as an architect/engineer, the Architect/Engineer shall keep the Principal Representative informed of the progress and quality of the Work, and shall endeavor to guard the Principal Representative against defects and deficiencies in the Work.

1.8.5 If through no fault of the Architect/Engineer, trips to observe construction during the Construction Phase of the project are required in excess of those reasonably necessary to perform all Architectural/Engineering services described herein, the Architect/Engineer's compensation for

the Construction Administration Phase shall be adjusted as an Additional Service for the cost to the Architect/Engineer of such trips, and paid in accordance with Article 3.2.

1.8.6 The Architect/Engineer shall provide notice to the Principal Representative of specific visits to be made during the various phases of construction and provide a written report of conditions observed, instructions given, and actions agreed to.

1.8.7 If requested by the Principal Representative, the Architect/Engineer shall provide, in addition to the above, a full-time representative on site during all regularly scheduled work hours. This representative shall have a minimum of 10 years' experience in work closely related to construction management/general contractor construction field administration and shall be approved by the Principal Representative in writing. If requested by the Principal Representative, the Architect/Engineer's compensation for the Contract Administration Phase shall be adjusted as an Additional Service and paid in accordance with paragraph 3.2.4. The Construction Manager shall provide the full-time representative with a suitable private office supported with standard office equipment including access to copiers, fax machines, etc.

1.8.8 From the time of the Construction Manager's on-site mobilization to the issue of the final Notice of Final Acceptance, the Architect/Engineer, or an appropriate consultant, shall observe for contract compliance, the following without limitation:

.1 Bearing surfaces of excavations before concrete is placed

.2 Reinforcing steel after installation and before concrete is placed

.3 Structural concrete

.4 Laboratory reports on all concrete testing

.5 Structural steel during and after erection and prior to its being covered or enclosed

.6 Steel welding

.7 Mechanical and plumbing work following its installation and prior to its being covered or enclosed

.8 Electrical work following its installation and prior to its being covered or enclosed

.9 Compaction testing reports

.10 Any special or quality control testing required in the Contract Documents

1.8.9 The observation contemplated in this article does not include the responsibility to conduct testing but does include the responsibility to confirm that tests were conducted as required in the Contract Documents as well as a review of the test results.

1.8.10 The Architect/Engineer shall exercise due diligence to safeguard the State against defects, deficiencies, noncompliance with the Contract Documents, and/or unsatisfactory workmanship. If, in the opinion of the Architect/Engineer, the Work is not being carried out in a sound, efficient, workmanlike and skillful manner, the Architect/Engineer shall promptly notify the Principal Representative and Construction Manager setting forth the reasons.

1.8.11 The Architect/Engineer shall keep accurate records with respect to the construction on the Project including fiscal accounting, changes in the work, directives, and other documentation to establish a clear history of the Project.

1.8.12 If at any time the Architect/Engineer delegates any of its responsibility for the observation of the Work to some other person, such other person must be properly qualified by training and experience to observe the work. The Principal Representative and State Buildings Program may review and approve the qualifications of all persons in writing, other than the Architect/Engineer, performing the functions of the Architect/Engineer in respect to the services required by this Agreement.

1.8.13 The Principal Representative and State Buildings Program may also have a representative observing the construction and its progress. Nothing contained herein shall in any way relieve the Architect/Engineer of its responsibilities for Contract Administration.

1.8.14 The Architect/Engineer shall attend all weekly or periodic job progress meetings.

1.8.15 The Architect/Engineer shall not be responsible for, nor have control or charge of, construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Project. The Architect/Engineer shall not be responsible for, nor have control over, the acts or omissions of the Construction Manager, subcontractors, any of their agents or employees, or any other persons performing any part of the construction, nor shall the Architect/Engineer be responsible for the Construction Manager’s obligations.

1.8.16 The Architect/Engineer shall at all times have access to the construction wherever it is in preparation or progress.

1.8.17 The Architect/Engineer shall assist the Principal Representative in the review of the Construction Manager’s Schedule of Values submitted in accordance with the Contract Documents. Further the Architect/Engineer shall attend a conference with the Construction Manager and the Principal Representative to finalize the Schedule of Values. The finalized Schedule of Values will serve as the basis for progress payments and will be incorporated into the form of Project Applications for Payment acceptable to the Architect/Engineer and the Principal Representative. The Architect/Engineer shall further participate in any revisions to the Schedule of Values as provided in the Contract Documents.

1.8.18 The Architect/Engineer shall see to the proper issuance of State form SC-7.2 used as the Construction Manager's Project Certificate and Application for Payment. The Architect/Engineer will, within five (5) working days after the receipt of each Project Application for Payment, review the Project Application for Payment and either execute a Project Certificate and Application for Payment to the Principal Representative for such amounts as the Architect/Engineer determines are properly due, or notify the Principal Representative and Construction Manager in writing of the reasons for withholding a Certificate.

1.8.19 The execution and issuance of a Project Certificate and Application for Payment, State form SC-7.2 shall constitute a representation by the Architect/Engineer to the Principal Representative that, based on the Architect/Engineer’s observations at the site and on the data comprising the Construction Manager's Project Application for Payment, the construction has progressed to the point indicated; that, to the best of the Architect/Engineer’s knowledge, information and belief, the quality of construction is in accordance with the Contract Documents and that the Construction Manager is entitled to payment in the amount certified. However, the issuance of a State form SC-7.2, Construction Manager's Project Certificate for Payment shall not

be a representation that the Architect/Engineer has made any examination to ascertain how or for what purpose the Construction Manager has used the monies paid on account of the previously issued Certificates.

1.8.20 The Architect/Engineer shall be the interpreter of the requirements of the Contract Documents and the judge of the performance thereunder by the Construction Manager and all subcontractors. The Architect/Engineer shall render interpretations necessary for the proper execution or progress of construction, with reasonable promptness.

1.8.21 All interpretations and decisions of the Architect/Engineer shall be consistent with the intent of, and reasonably inferable from the Contract Documents, and shall be in writing or in graphic form and the Architect/Engineer shall send a copy to the Principal Representative and Construction Manager.

1.8.22 The Architect/Engineer's decision in matters relating to artistic effect shall be final if consistent with the intent of the Contract Documents and neutral in terms of cost impact.

1.8.23 The Architect/Engineer shall have authority to reject constructed work which does not conform to the Contract Documents, and whenever, in the Architect/Engineer's reasonable opinion, it is necessary or advisable for the implementation of the intent of the Contract Documents, the Architect/Engineer shall have authority to require special inspection or testing of constructed work in accordance with the provisions of the Contract Documents, whether or not such constructed work be then fabricated, installed or completed; but the Architect/Engineer shall take such action only after consultation with the Principal Representative. However, the Architect/Engineer's authority to act under the Contract Documents and any decision made by the Architect/Engineer in good faith either to exercise or not to exercise such authority shall not give rise to any duty on the part of the Architect/Engineer to the Construction Manager, any subcontractor of any tier, any of their agents or employees, or any other person performing any of the construction.

1.8.24 The Architect/Engineer shall review and approve or take other appropriate action upon Construction Manager's submittals such as shop drawings, product data and samples as indicated in the Contract Documents, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect/Engineer's action shall be taken with such reasonable promptness as to cause no delay in the Work or in the activity of the Principal Representative, Construction Manager or separate contractors, while allowing sufficient time in the Architect/Engineer's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities or for substantiating instructions for installation or performance of equipment or systems designed by the Construction Manager, all of which remain the responsibility of the Construction Manager to the extent required by the Contract Documents. The Architect/Engineer's review shall not constitute approval of a specific item nor indicate approval of an assembly of which the item is a component. When professional certification of performance characteristics of materials, systems or equipment is required by the Contract Documents, the Architect/Engineer shall be entitled to rely upon such certification to establish that the materials, systems or equipment will meet the performance criteria required by the Contract Documents.

1.8.25 All changes in the work shall be documented on Change Order or Amendment State forms SC-6.31 and SC-6.0, supplied by the Principal Representative, and the Architect/Engineer shall keep a current record of all variations or departures from the Agreement as originally approved.

1.8.26 The Architect/Engineer shall prepare all Change Orders and Amendments for the Principal Representative and recommend for approval or disapproval in accordance with the Contract Documents, the Contract Sum, the Contract Time and Code Compliance. If necessary the Architect/Engineer shall prepare, reproduce and distribute drawings and specifications to describe Work to be added, deleted or modified. The Architect/Engineer shall review all requests for changes in the Work with such reasonable promptness as to cause no delay in the Work or in the activities of the Principal Representative, Construction Manager or separate contractors, while allowing sufficient time in the Architect/Engineer's professional judgment to permit adequate review.

1.8.27 The Architect/Engineer shall prepare and issue Emergency Field Change Orders as required by the Principal Representative, but such Emergency Field Change Orders shall be issued only in accordance with the policies of State Buildings Program to order extra work or make changes in the case of an emergency that is a threat to life or property or where the likelihood of delays in processing a normal Change Order will result in substantial delays and or significant cost increases for the Project. Emergency Field Change Orders are not to be used solely to expedite normal Change Order processing absent a clear showing of a high potential for significant and substantial cost or delay.

1.8.28 When the Work is substantially complete in the opinion of the Construction Manager, the Construction Manager is required to file a written Notice with the Architect/Engineer with an attached preliminary punch-list of remaining items to be completed or corrected. The Architect/Engineer shall thereafter notify State Buildings Program and the Principal Representative, that the work, in the opinion of the Construction Manager, is substantially complete under the terms of the Contract. This Notice shall receive prompt action by the notified parties.

1.8.29 When the Architect/Engineer determines after review of the Construction Manager’s written Notice that the Work or a portion of the Work is ready for an inspection to determine whether the Work is substantially complete, the Architect/Engineer with the Principal Representative and the Construction Manager shall, within ten days of receipt of the Construction Manager’s Notice, conduct a final inspection to determine whether the Work is substantially complete and in accordance with the requirements of the Contract Documents. State Buildings Program shall be notified of the final inspection. If the construction has been completed to the required state, a punch list shall be made by the Architect/Engineer in concert with the Principal Representative and Construction Manager in sufficient detail to fully outline to the Construction Manager:

(a) Work to be completed, if any;
(b) Work not in compliance with the Drawings or Specifications, if any;
(c) Unsatisfactory work for any reason, if any;
(d) Date for Completion of the Punch List Items.

1.8.30 If the Architect Engineer determines, after consultation with the Principal Representative, that the Work or a portion of the Work is complete, then the Architect/Engineer shall prepare the Notice of Substantial Completion, State form SBP-07 which the Architect Engineer shall transmit in writing to the Construction Manager and the Principal Representative for signature. The required number of copies of the punch list must be countersigned by the Construction Manager and the Principal Representative and will then be transmitted by the Architect/Engineer to the Construction Manager, the Principal Representative, and State Buildings Program. The Construction Manager shall immediately initiate such remedial work as may be necessary to correct any deficiencies or defective work shown by this report, and shall

promptly complete all such remedial work in a manner satisfactory to the Architect/Engineer and State Buildings Program.

1.8.31 The Principal Representative may require the Architect/Engineer to make a reasonable number of additional inspections to confirm the completion of the punch list by the Construction Manager.

1.8.32 The Notice of Substantial Completion, or the Notice of Partial Substantial Completion, shall establish the Date of Substantial Completion or the Date of Partial Substantial Completion and such date shall be the date of commencement of the Construction Manager's twelve month guarantee, except to the extent stated otherwise in accordance with the limited exceptions provided in the General Conditions of the Contract. The Notice of Substantial Completion, or the Notice of Partial Substantial Completion, shall state the responsibilities of the Principal Representative and the Construction Manager for security, maintenance, heat, utilities, property insurance premiums and damage to the finished construction as required. The Notice of Substantial Completion, or the Notice of Partial Substantial Completion, shall be submitted to the Principal Representative and the Construction Manager for their written acceptance of the responsibilities assigned to them in such Notice. The Notice of Substantial Completion, or the Notice of Partial Substantial Completion, shall attach and incorporate the Architect/Engineer's final punch list and Construction Manager's schedule for the completion of each and every item identified on the final punch list.

1.8.33 The Principal Representative shall have the right to take possession of and to use any completed or partially completed portions of the Work, even if the time for completing the entire Work or portions of the Work has not expired and even if the Work has not been finally accepted, and the Architect/Engineer shall fully cooperate with the Principal Representative to allow such possession and use. Such possession and use shall not constitute an acceptance of such portions of the work. Prior to any occupancy of the Project, an inspection shall be made by the Architect/Engineer, State Buildings Program and the Construction Manager. Such inspection shall be made for the purpose of ensuring that the building is secure, protected by operation safety systems as designed, operable exits, power, lighting and HVAC systems, and otherwise ready for the occupancy intended and the Notice of Substantial Completion has been issued for the occupancy intended. The inspection shall also document existing finish conditions to allow assessment of any damage by occupants. The Architect/Engineer shall assist the Principal Representative in completing and executing State Form SBP-01 Notice of Approval of Occupancy/Use, prior to the Principal Representative's possession and use. Any and all areas so occupied will be subject to a final inspection.

1.8.34 The Construction Manager shall forward the completed close-out documents to the Architect/Engineer for signature. Upon receipt from the Construction Manager of written notice that the Architect/Engineer's final punch list is sufficiently complete the Architect/Engineer shall make a final inspection of work remaining on the final punch list and prepare the Pre Acceptance Checklist State form SBP-05. The Architect/Engineer upon receipt and verification that the close-out documents and the items of work are complete, shall prepare and forward to the Principal Representative a letter (including the signed close-out documents) stating that to the best of the Architect/Engineer's knowledge, information and belief, and on the basis of observations and inspections, the Work, or designated portion thereof, has been completed in accordance with the terms and conditions of the Contract Documents and is ready for the issuance of a Notice of Acceptance or Notice of Partial Acceptance as appropriate. A Notice of Partial Acceptance shall be based only upon the work for which a Notice of Partial Substantial Completion has been executed and all necessary items of work and other requirements have been completed.

1.8.35 Upon receipt from the Architect/Engineer of the letter recommending issuance of a Notice of Final Acceptance or a Notice of Partial Final Acceptance, the Principal Representative shall sign the Notice of Acceptance, State form SC-6.27, and forward to the Construction Manager for its approval and signature. The date of the Notice of Acceptance shall establish the date of final completion of the project. The Notice of Acceptance must be fully executed before final payment is authorized or the project advertised for Final Settlement.

1.8.36 The Architect/Engineer shall receive and forward to the Principal Representative for review, written warranties and related close-out documents assembled by the Construction Manager and reviewed and approved by the Architect/Engineer as consistent with the Contract Documents. A summary of all such requirements shall be located consistently within individual sections of the Specifications. When such materials have been received and approved the Architect/Engineer shall certify the Construction Manager's Final Application for Payment and forward the same to the Principal Representative

1.8.37 Except as otherwise agreed below in 1.9, POST CONSTRUCTION PHASE, the Architect/Engineer, the Principal Representative and the Construction Manager shall make at least two complete inspections of the work after the work has been accepted. One such inspection, the Six-Month Warranty Inspection, shall be made approximately six (6) months after the Date of Substantial Completion or the Date of Partial Substantial Completion; and another such inspection, the Eleven-Month Warranty Inspection, shall be made approximately eleven (11) months after the Date of Substantial Completion or the Date of Partial Substantial Completion. The Principal Representative shall schedule and so notify all parties concerned, including State Buildings Program, of these inspections.

1.8.38 Written lists of defects and deficiencies and reports of these observations shall be made by the Architect/Engineer and forwarded to the Construction Manager, and all of the other participants within ten (10) days after the completion of each observation. The Construction Manager is obligated in its agreement with the Principal Representative to immediately initiate such remedial work as may be necessary to correct any deficiencies or defective work shown by this report, and shall promptly complete all such remedial work in a manner satisfactory to the Architect/Engineer and the Principal Representative. The Architect/Engineer shall follow through on all list items and notify the Principal Representative when such have been completed.

1.9 POST CONSTRUCTION PHASE

1.9.1 (As designated and defined in the Architect/Engineer's Proposal **Exhibit A**.)

ARTICLE 2. REIMBURSABLE EXPENSES

2.1 REIMBURSEMENT

2.1.1 Reimbursable expenses are in addition to the compensation for Basic and Additional Services and include actual expenditures made by the Architect/Engineer and Architect/Engineer's employees, associate Architect/Engineer, and consultants in the interest of the Project. Pay requests for reimbursable expenses shall be submitted with receipts, statements or other acceptable supporting data. The Architect/Engineer understands and agrees that a lump sum dollar amount as enumerated in line (h) of Paragraph 3.1.1 has been established for all reimbursable expenses.

2.1.2 The Architect/Engineer shall be reimbursed for:

.1 All copies over those as required in accordance with the provisions in Articles 1.3, Pre-Design Phase; 1.4.8 Schematic Design Phase; 1.5.5, Design Development Phase; and 1.6.4, Construction Documents Phase; 1.7.3, Bidding Phase, and 1.8, Contract Administration for each of the Bid Packages;

.2 The cost of all items furnished by the Architect/Engineer in accordance with paragraphs 5.1.5, and 5.1.6 as requested by the Principal Representative.

.3 Fees of special consultants, if their employment is authorized in advance by the Principal Representative for other than the required architectural, structural, mechanical, electrical and civil engineering services; landscaping, if any; space planning/interior layout; and any other services included in this Agreement;

.4 Expense of data processing and photographic production techniques when used in connection with Additional Services;

.5 Expense of long distance telecommunications related to the performance of Basic Services;

.6 Expense of renderings, models and mock-ups requested by the Principal Representative other than those described in the designated services;

.7 Expense of mail, deliveries, mileage for local travel other than that necessary for the performance of Basic Services, and expense travel for special consultants as per Article 1 Basic Professional Services. Reimbursement of travel expenses is to be based on reasonable and necessary travel costs within the limits of State/Federal per diem rates as published in the travel section of the State Controller's Fiscal Rules, Meal and Incidental Per Diem Rates, Appendix A1;

.8 Expense of any additional insurance coverage or limits, including professional liability insurance, requested by the Principal Representative in excess of that required in Article 8.

ARTICLE 3. BASIS OF COMPENSATION

3.1 PAYMENT

3.1.1 The total compensation for Basic Services fees (**b** through **f**), including a lump sum price for Reimbursable Expenses and, if applicable, Pre-Design and Post Construction Services fees (a and/or g), shall be allocated as follows:

(a)	Pre-Design Phase (if applicable)	${$CompPreDesign}
(b)	Schematic Design Phase	${$CompSchematicDesign}
(c)	Design Development Phase	${$CompDesignDevelopment}
(d)	Construction Documents Phase	${$CompConstructionDocuments}
(e)	Bidding Phase	${$CompBiddingPhase}
(f)	Contract Administration Phase	${$CompContractAdministration}

(g)	Post Construction Phase (if applicable)	${$CompPostConstruction}
(h)	Reimbursable Expenses (Lump Sum)	${$CompReimbursable}
	TOTAL COMPENSATION	${$CompTotalCompensation}

3.1.2 Payments to the Architect/Engineer shall be made monthly based upon Architect/Engineer's performance and progress, through a properly executed Application for Payment (SC-7.1). Payments shall be due per C.R.S. § 24-30-202(24) (correct notice of amount due), within forty-five (45) days of receipt by the Principal Representative of the Applications for Payment.

3.2 ADDITIONAL COMPENSATION

3.2.1 The Scope of Services to be provided pursuant to this Agreement includes all architectural and engineering services described herein, all services to be provided by the Architect/Engineer as described in **Exhibit A,** Architect/Engineer's Proposal including items which under usual contracting for Architectural/Engineering services could be considered as additional services, and reimbursable items excepting those specifically identified in Article 5 of this Agreement to be reimbursed. All compensation set forth in Article 3.1 hereof shall fully compensate the Architect/Engineer and there shall be no further reimbursement or payment therefore, other than for Additional Services as hereinafter described. For purposes of this Agreement, Additional Services are defined as those not included within the Scope of Services as set forth in Article 3.1 or reasonably inferable therein, are not consistent with the approved Project program, and are specifically requested and approved in writing by the Principal Representative.

3.2.2 Subject to the provisions of paragraphs 6.5.1 and 6.5.2, if the Architect/Engineer is caused Additional Service, drafting or other expense due to changes ordered by the Principal Representative or by other circumstances beyond the Architect/Engineer's control and not occasioned by any neglect or default of Architect/Engineer, then the Architect/Engineer shall be reimbursed for such Additional Service.

3.2.3 Direct personnel expense is defined as the direct salaries of all the Architect/Engineer's personnel engaged on the Project, and the portion of the cost of their mandatory and customary contributions and benefits related thereto, such as employment taxes and other statutory employee benefits, insurance, sick leave, holidays, vacations, pensions and similar contributions and benefits.

3.2.4 The cost of such Additional Service including Principal Architect/Engineer's time, shall be paid at the agreed upon rates shown in the attached Wage Rate Schedule, **Exhibit B**.

3.2.5 For Additional Services of consultants, including associate Architect/Engineer, structural, mechanical, electrical and civil engineering services, the multiple 1.15 times the amounts billed to the Architect/Engineer for such services.

3.2.6 In addition, the Architect/Engineer shall also be reimbursed as described in Article 2.1 and paid as detailed in paragraph 3.2.2 related to the Additional Services.

3.2.7 The Architect/Engineer shall maintain an accurate cost accounting system as to all such additional expenses and shall make available to the Principal Representative all records, canceled checks and other disbursement media to substantiate any and all requests for payments hereunder.

3.2.8 The expenditures under this provision shall be disapproved unless the Architect/Engineer first shall have filed with the Principal Representative an estimate of the maximum cost of such Additional Service and been authorized, in writing, by the Principal Representative to proceed. If such an estimate is filed with the Principal Representative, then payment shall not exceed the maximum cost estimated by the Architect/Engineer and approved by the Principal Representative.

3.2.9 Payment for such Additional Services shall be monthly upon presentation of the Architect/Engineer's statement of services rendered.

3.3 PAYMENTS WITHHELD

3.3.1 No deductions shall be made from the Architect/Engineer's fee on account of penalty, liquidated damages, or other sums withheld from payments to the Construction Manager or on account of changes in Construction other than those for which the Architect/Engineer is held legally liable.

3.4 ARCHITECT/ENGINEER'S ACCOUNTING RECORDS

3.4.1 Records of the Architect/Engineer's Direct Personnel, Consultant, and Reimbursable Expense pertaining to this Project and records of accounts between the Principal Representative and Construction Manager shall be kept on a generally recognized accounting basis and shall be available to the Principal Representative or his authorized representative at mutually convenient times and extending to three (3) years after final payment under this Agreement.

~~3.5 CONDITION PRECEDENT~~

~~3.5.1 *(At the time of the execution of this Agreement, there are sufficient funds budgeted and appropriated to compensate the Architect/Engineer only for performance of the services through and including {$ConditionPrecDesignLevel}. Therefore, it shall be a Condition Precedent to the Architect/Engineer's performance of the remaining services specified in {$ConditionPrecSpecified} and the State's Liability to pay for such performance, sufficient funding must be appropriated and made available to the Principal Representative for the Project prior to {$ConditionPrecPriorto} and, as a further Condition Precedent, a written Amendment is entered into in accordance with the State of Colorado Fiscal Rules, stating that additional funds are lawfully available for the project. If either Condition Precedent is not satisfied by {$ConditionPrecDate}, the Architect/Engineer's obligation to perform services for (scope of work) {$ ConditionPrecPerform} and the State's obligation to pay for such service is discharged without liability to each other. If funding is eventually made available after {$ConditionPrecDate}, the Architect/Engineer has no right to perform services under {$ConditionPrecPerform} (article referencing scope of work) of this Agreement and the State has no right to require the Architect/Engineer to perform the said services.)*~~

ARTICLE 4. TIME

4.1 DESIGN SERVICES SCHEDULE

4.1.1 The Architect/Engineer shall perform Basic and Additional Services as expeditiously as is consistent with professional skill and care and the orderly progress of the Project. The Architect/Engineer shall submit for the Principal Representative's approval, a schedule (Design Services Schedule), **Exhibit A**, for the performance of the Architect/ Engineer's services which may be adjusted as required as the Project proceeds, and which shall include allowances for periods of time required for the Principal Representative's review and approval of

submissions and for approvals of authorities having jurisdiction over the Project. The Architect/Engineer shall consult with the Construction Manager to coordinate the Architect/Engineer's time schedule with the Project Schedule. This schedule, when approved by the Principal Representative, shall not, except for reasonable cause, be exceeded by the Architect/Engineer.

4.2 TERM

4.2.1 The term of this Agreement will end upon expiration of the one (1) year warranty period, or upon subsequent completion and acceptance by the Principal Representative of the Warranty Work identified or in progress at the end of such one (1) year warranty period, following the date of the Notice of Acceptance for the last remaining portion of work.

ARTICLE 5. PRINCIPAL REPRESENTATIVE

5.1 THE RESPONSIBILITIES

5.1.1 The Principal Representative shall provide full information regarding requirements for the Project through the State Buildings Program delegate, including assisting in developing a completed Design Program/Facilities Program Plan, **Exhibit E**, which shall set forth the State's design objectives, constraints and criteria, including space requirements and relationships, flexibility and expandability, special equipment and systems and site requirements. If a State Buildings Program delegate has not been authorized, then the Principal Representative together with State Buildings Program will designate an individual to act on behalf of the Principal Representative as designated in Article 12.10.

5.1.2 The Principal Representative shall establish the Fixed Limit of Construction Cost.

5.1.3 The Principal Representative shall designate a representative authorized to act in the Principal Representative's behalf with respect to the Project as indicated in Article 12.10. The Principal Representative, acting by and through such designated representative shall examine the documents submitted by the Architect/Engineer and shall render decisions pertaining thereto promptly to avoid unreasonable delay in the progress of the Architect/Engineer's services.

5.1.4 The Principal Representative shall retain a Construction Manager to manage and construct the Project. The Construction Manager's services, duties and responsibilities will be as described in the Construction Manager Contract. Once executed, the terms and conditions of the Construction Manager Contract will not be modified without notification to the Architect/Engineer.

5.1.5 The Principal Representative shall furnish a legal description and a certified land survey of the site giving, as applicable, grades and lines of streets, alleys, pavements and adjoining property; rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries and contours of the site; locations, dimensions and complete data pertaining to existing buildings, other improvements and trees; and full information concerning location of service and utility lines, both public and private, above and below grade, including inverts and depths.

5.1.6 The Principal Representative shall furnish the services of geotechnical engineers or other technical or highly specialized consultants when such services are deemed necessary by mutual agreement between the Principal Representative and the Architect/Engineer. Such services shall include test borings, test pits, soil bearing values, percolation tests, air and water pollution tests, ground corrosion and resistivity tests including necessary operations for

determining subsoil, air and water conditions, with reports and appropriate professional recommendations.

5.1.7 The services, information, surveys and reports as required and described in the preceding paragraphs 5.1.1 through 5.1.6, shall be furnished at the Principal Representative's expense, and the Architect/Engineer shall be entitled to rely upon their accuracy and completeness.

5.1.8 The Principal Representative shall furnish such legal, accounting and insurance counseling services as may be necessary for the Project, including such auditing services as the Principal Representative may require to verify the Project Applications for Payment or to ascertain how or for what purposes the Construction Manager has used the monies paid by or on behalf of the Principal Representative. This shall not relieve the Architect/Engineer of reviewing the Construction Manager's Application for Payment for consistency with the current Schedule of Values.

5.1.9 If the Principal Representative observes or otherwise becomes aware of any fault or defect in the Project, or nonconformance with the Contract Documents, prompt written notice thereof shall be given by the Principal Representative to the Architect/Engineer.

5.1.10 The Architect/Engineer recognizes that the Principal Representative is a governmental body with certain procedural requirements to be satisfied. The Architect/Engineer has and will make reasonable allowance in its performance of services for such additional time as may be required for approvals and decisions by the Principal Representative and any other necessary government agency. Such time shall be identified in the preliminary project schedule including, without limitation, time for the State's Code Review consultants.

5.1.11 In the review process of the final Design Development Documents and Construction Documents for each Bid Package, the Architect/Engineer expressly agrees to the following times for concurrent review by the Principal Representative and the Construction Manager:

.1 A period of {$ReviewDaysDDDocsWritten} ({$ReviewDaysDDDocsNumeric}) working days for the review of the Design Development Documents plus an additional {$ReviewDaysGMPWritten} ({$ReviewDaysGMPNumeric}) working days for final development of the Guaranteed Maximum Price.

.2 A period of {$ReviewDaysCDDocsWritten} ({$ReviewDaysCDDocsNumeric}) working days at 50% and 95% completion of the construction documents together with an additional {$ReviewDaysCDDocsAddlWritten} ({$ReviewDaysCDDocsAddlNumeric}) working days after receipt of all bid documents for each bid package.

ARTICLE 6. CONSTRUCTION COSTS

6.1 BUDGETING AND FIXED LIMIT OF CONSTRUCTION COST

6.1.1 The Principal Representative shall provide a preliminary Project Budget to the Architect/Engineer which shall set forth a dollar amount available for the total Construction Cost of the Project, and include contingencies for bidding and construction and other costs which are the responsibility of the Principal Representative. The Architect/Engineer shall assist the Construction Manager in evaluating the Principal Representative's preliminary project budget.

6.1.2 A Fixed Limit of Construction Cost for the Project shall be established by the Principal Representative incorporating the portion of the Project Budget for construction of all elements of the Project designed or specified by the Architect/Engineer. The Fixed Limit of Construction Cost for the Project shall be subject to change only by the determination, in writing, of the Principal Representative.

6.2 CONSTRUCTION COST

6.2.1 When preparing any Estimates of Construction Cost or Statement of Probable Construction Cost, such documents shall include, but without duplication:

.1 All labor, materials, equipment, tools, construction equipment and machinery, water and heat utilities, transportation, construction easements, and other facilities and services necessary for the proper execution and completion of the Project, whether temporary or permanent, and whether or not incorporated or to be incorporated into the Project;

.2 At current market rates, including a reasonable allowance for overhead and profit, the cost of labor and materials furnished by the Principal Representative;

.3 Any State furnished equipment which has been designed, specified, selected or specifically provided for by the Architect/Engineer;

.4 The Construction Manager's compensation for on-site personnel services and the cost of work provided by the Construction Manager;

.5 All bond and property insurance premiums; and

.6 Contingencies for bidding, price escalation, and construction as set forth above.

6.2.2 The Statement of Probable Construction Cost shall not include the compensation of the Architect/Engineer, the Architect/Engineer's consultants or any other sums due the Architect/Engineer under this Agreement, the costs of land, rights of way, financing or other costs which are the responsibility of the Principal Representative, or equipment installed by the Principal Representative under separate contract unless the Architect/Engineer is required by the Principal Representative to prepare drawings and specifications and observe the installation of such equipment.

6.3 CONSTRUCTION MANAGER COST ESTIMATES

6.3.1 By the terms of the Construction Manager Contract, the Construction Manager is obligated to prepare and furnish to the Principal Representative and the Architect/Engineer, Estimates of Construction Cost for the construction, and a Guaranteed Maximum Price proposal. The Construction Manager in preparing its Estimates of Construction Cost and providing the Guaranteed Maximum Price, shall consult with the Architect/Engineer to determine what materials, equipment, components systems and types of construction are to be included in the Contract Documents, to recommend reasonable adjustments in the scope of the construction, and to include in the Contract Documents reasonable alternate items for bid so as to permit the adjustment of the Estimate of Construction Cost to the Fixed Limit of Construction Cost.

6.3.2 The Architect/Engineer shall provide reasonable cooperation to the Construction Manager in the development of Estimates of Construction Cost and the Guaranteed Maximum Price.

6.3.3 The Architect/Engineer shall promptly review the Estimate of Construction Cost and the Guaranteed Maximum Price proposal prepared and submitted by the Construction Manager, and advise the Principal Representative as to whether the Architect/Engineer concurs with each such estimate and the Guaranteed Maximum Price proposal and, if not, the reasons and details of where the Architect/Engineer disagrees.

6.4 ARCHITECT/ENGINEER COST ESTIMATES

6.4.1 The Architect/Engineer, as a design professional familiar with the construction industry, in addition to the Estimates of Construction Cost for the Project and Guaranteed Maximum Price proposal as developed by the Construction Manager, shall develop with the Schematic Design Phase its own Statement(s) of Probable Construction Cost.

6.5 FIXED LIMIT OF CONSTRUCTION COST EXCEEDED

6.5.1 It is recognized that neither the Architect/Engineer nor the Principal Representative has control over the cost of labor, materials or equipment, over the subcontractors' methods of determining bid prices, or over competitive bidding, market or negotiating conditions. Accordingly, the Architect/Engineer cannot and does not warrant or represent that bids or negotiated prices will not vary from the project budget or the Fixed Limit of Construction Cost. Nothing contained in this Article 6 shall otherwise relieve the Architect/Engineer from the responsibility of providing the services required to keep the Project within the Fixed Limit of Construction Cost for the Project. Responsibility for developing the final Statement of Probable Construction Cost and Estimate of Construction Cost, specifically the identification and resolution of all significant differences between the Statement and the Estimate, is a shared responsibility between the Architect/Engineer and the Construction Manager. Should disagreement or confusion involving overlapping or conflicting responsibilities or disagreement as to the Construction Manager's Estimate or Architect/Engineer's Statement of Probable Construction Cost arise, the question shall be submitted and the correct interpretation shall be determined by the Principal Representative consistent with paragraph 1.1.2 and the requirements of this Article 6.

6.5.2 If the Fixed Limit of Construction Cost for the Project, as established by the Principal Representative, is exceeded or projected to be exceeded by:

.1 The lowest figures from responsible proposals, if any, and the Construction Manager's estimate for other elements of the Project; and/or the Architect/Engineer's Statement of Probable Construction Cost for the balance of the Project; or

.2 The Construction Manager's Guaranteed Maximum Price proposal; then, in either event, the Principal Representative shall, in its sole discretion, do one of the following:

.a revise the Project scope and quality as required to reduce the Construction Cost.

.b give written approval for the increase in the Fixed Limit of Construction Cost for the Project;

.c authorize rebidding or renegotiation of the Project or portions of the Project within a reasonable time;

.d abandon the Project, terminating this Agreement in accordance with Article 9; or

6.5.3 In the case of clause .a in the preceding paragraph, the Architect/Engineer shall, at no additional cost to the State, modify the drawings and specifications for any or all of the separate Bid Packages and/or any other appropriate items as may be necessary, to keep the cost of the Project within the Fixed Limit of Construction for the Project, UNLESS: (1) such increase is specifically attributable to a scope increase in the Project requested by the Principal Representative; or (2) the projected cost overrun occurs within the scope of an Estimate of Construction Cost or Guaranteed Maximum Price proposal furnished by the Construction Manager to the Architect/Engineer and upon which the Architect/Engineer promptly communicated in writing to the Principal Representative the Architect/Engineer's refusal to concur, together with the reasons and details therefore.

ARTICLE 7. OWNERSHIP OF DOCUMENTS

7.1 INSTRUMENTS OF SERVICE

7.1.1 Drawings, specifications and other documents, including those in electronic form, prepared by the Architect/Engineer and the Architect/Engineer's consultants are Instruments of Service for use solely with respect to this Project. The Architect/Engineer and the Architect/Engineer's consultants shall be deemed the authors and owners of their respective Instruments of Service and shall retain all common law, statutory and other reserved rights, including copyrights.

7.1.2 Upon execution of this Agreement, the Architect/Engineer grants to the State a perpetual nonexclusive license to reproduce and use, and permit others to reproduce and use for the State, the Architect/Engineer's Instruments of Service solely for the purposes of constructing, using and maintaining the Project or for future alterations, or additions to the Project. The Architect/Engineer shall obtain similar nonexclusive licenses from the Architect/Engineer's consultants consistent with this Agreement. If and upon the date the Architect/Engineer is adjudged in default of this Agreement, the foregoing license shall be deemed terminated and replaced by a second, nonexclusive license permitting the State to authorize other similarly credentialed design professionals to reproduce and, where permitted by law, to make changes, corrections or additions to the Instruments of Service solely for the purposes of completing, using and maintaining the project, or for future alterations, or additions to the Project.

7.1.3 Any unilateral use by the State of the Instruments of Service for completing, using, maintaining, adding to or altering the Project or facilities shall be at the State's sole risk and without liability to the Architect/Engineer and the Architect/Engineer's consultants; provided, however, that if the State's unilateral use occurs for completing, using or maintaining the Project as a result of the Architect/Engineer's breach of this Agreement, nothing in this Article shall be deemed to relieve the Architect/Engineer of liability for its own acts or omissions or breach of this Agreement.

7.2 AS-BUILT DRAWINGS/RECORD DRAWINGS

7.2.1 The Architect/Engineer and its consultants shall, upon completion of the Construction Phase, receive redline As-Built Drawings from the Construction Manager. These

redline changes shall describe the built condition of the Project. This information and all of the incorporated changes directed by Bidding Addenda, Change Order/Amendment or Architect/ Engineer's Supplementary Instructions shall be incorporated by the Architect/Engineer and its consultants into a Record Drawings document provided to the Principal Representative in the form of an electro-media format and a reproducible format as agreed between the parties. The Architect/Engineer shall also provide the Principal Representative with the As-Built Drawings as received from the Construction Manager.

ARTICLE 8. INSURANCE

8.1 GENERAL

The Architect/Engineer shall procure and maintain all insurance requirements and limits as set forth below, at his or her own expense, for the length of time set forth in Contract requirements. The Architect/Engineer shall continue to provide evidence of such coverage to State of Colorado on an annual basis during the aforementioned period including all of the terms of the insurance and indemnification requirements of this agreement. All below insurance policies shall include a provision preventing cancellation without thirty (30) days' prior notice by certified mail. A completed Certificate of Insurance shall be filed with the Principal Representative and State Buildings Program within ten (10) days after the date of the Notice of Award, said Certificate to specifically state the inclusion of the coverages and provisions set forth herein and shall state whether the coverage is "claims made" or "per occurrence".

8.2 COMMERCIAL GENERAL LIABILITY INSURANCE (CGL)

This insurance must protect the Architect/Engineer from all claims for bodily injury, including death and all claims for destruction of or damage to property (other than the Work itself), arising out of or in connection with any operations under this Contract, whether such operations be by the Architect/Engineer or by any Subcontractor under him or anyone directly or indirectly employed by the Architect/Engineer or by a Subcontractor. All such insurance shall be written with limits and coverages as specified below and shall be written on an occurrence form.

General Aggregate	$1,000,000
Products – Completed Operations Aggregate	$1,000,000
Each Occurrence	$1,000,000
Personal Injury	$1,000,000

The following coverages shall be included in the CGL:

1. Additional Insured status in favor of the State of Colorado.
2. The policy shall be endorsed to be **primary and non-contributory** with any insurance maintained by Additional Insureds.
3. A waiver of Subrogation in favor of all Additional Insured parties.

8.3 AUTOMOBILE LIABILITY INSURANCE and business auto liability covering liability arising out of any auto (including owned, hired and non-owned autos).

Combined Bodily Injury and Property Damage Liability (Combined Single Limit):	$1,000,000 each accident
Coverages:	Specific waiver of subrogation

8.4 WORKERS' COMPENSATION INSURANCE

The Architect/Engineer shall procure and maintain Workers' Compensation Insurance at his or her own expense during the life of this Contract, including occupational disease provisions for all employees per statutory requirements. Policy shall contain a waiver of subrogation in favor of the State of Colorado.

The Architect/Engineer shall also require each Subcontractor to furnish Workers' Compensation Insurance, including occupational disease provisions for all of the latter's employees, and to the extent not furnished, the Architect/Engineer accepts full liability and responsibility for Subcontractor's employees.

In cases where any class of employees engaged in hazardous work under this Contract at the site of the Project is not protected under the Workers' Compensation statute, the Architect/Engineer shall provide, and shall cause each Subcontractor to provide, adequate and suitable insurance for the protection of employees not otherwise protected.

8.5 PROFESSIONAL ERRORS AND OMISSIONS LIABILITY

The Architect/Engineer promises and agrees to maintain in full force and effect an Errors and Omissions Professional Liability Insurance Policy in the amounts (indicated in the following table) as minimum coverage or such other minimum coverage as determined by the Principal Representative and approved by the State Buildings Program. The policy, including claims-made forms, shall remain in effect for the duration of this Agreement and for at least three (3) years beyond the completion and acceptance of the Work. The Architect/Engineer shall be responsible for all claims, damages, losses or expenses including attorney's fees, arising out of or resulting from the performance of Professional Services contemplated in this Agreement, provided that any such claim, damage, loss or expense is caused by any negligent act, error or omission of the Architect/Engineer, any consultant or associate thereof, or anyone directly or indirectly employed by the Architect/Engineer. The Architect/Engineer shall submit a Certificate of Insurance verifying said coverage at the signing of this Agreement and also any notices of Renewals of the said policy as they occur.

For a Fixed Limit of Construction Cost	**Minimum Coverage per Claim**	**Minimum Coverage in the Aggregate**
$999,999 and under	$250,000	$500,000
$1,000,000 to $4,999,999	$500,000	$1,000,000
$5,000,000 to $19,999,999	$1,000,000	$2,000,000
$20,000,000 and Above	$2,000,000	$2,000,000

ARTICLE 9. TERMINATION OR SUSPENSION OF AGREEMENT

9.1 DEFAULT

9.1.1 This Agreement may be terminated by either party upon seven (7) days written notice with copies filed with the State Buildings Program and the State Controller, should the other party fail substantially to perform in accordance with its terms through no fault of the other.

9.2 TERMINATION FOR CONVENIENCE OF STATE

9.2.1 The performance of the services under this Agreement may be terminated, in whole or from time to time in part, by the State whenever for any reason the Principal Representative shall determine that such termination is in the best interest of the State.

Termination of services hereunder shall be affected by delivery to the Architect/Engineer of a Notice of Termination specifying the extent to which performance of services under this Agreement is terminated and the date upon which such termination becomes effective.

9.2.2 After receipt of the Notice of Termination, the Architect/Engineer shall exercise all reasonable diligence to accomplish the cancellation of its outstanding commitments covering personal services and extending beyond the date of such termination to the extent that they relate to the performance of any services terminated by the Notice. With respect to such canceled commitments, the Architect/Engineer agrees to:

.1 Settle all outstanding liabilities and all claims arising out of such cancellation of commitments, with approval or ratification of the Principal Representative, to the extent the Principal Representative may require, which approval or ratification shall be final for all purposes of this clause, and,

.2 Assign to the State, in like manner, at the time and to the extent directed by the Principal Representative, all of the rights, title, and interest of the Architect/ Engineer under the orders and subcontracts so terminated, in which case the State shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

9.2.3 The Architect/Engineer shall submit its termination claim to the Principal Representative promptly after receipt of a Notice of Termination, but in no event later than one (1) month from the effective date thereof, unless one or more extensions in writing are granted by the Principal Representative upon written request of the Architect/Engineer within such one (1) month period or authorized extension thereof. Upon failure of the Architect/Engineer to submit its termination claim within the time allowed, the Principal Representative may determine, on the basis of information available to him, the amount, if any, due to the Architect/Engineer by reason of the termination and shall thereupon pay to the Architect/Engineer the amount so determined.

9.2.4 Subject to the provisions of paragraph 9.2.3 above, the Architect/Engineer and the Principal Representative may agree upon the whole or any part of the amount or amounts to be paid to the Architect/Engineer by reason of the termination under this clause, which amount or amounts may include any reasonable cancellation charges thereby incurred by the Architect/Engineer and any reasonable loss upon outstanding commitments for personal services which he is unable to cancel. Any such agreement shall be embodied in an amendment to this Agreement and the Architect/Engineer shall be paid the agreed amount.

9.2.5 The Principal Representative under mutually agreed upon terms and conditions will make partial payments to the Architect/Engineer against costs incurred by the Architect/Engineer in connection with the termination portion of this Agreement.

9.2.6 The Architect/Engineer agrees to transfer title and deliver to the State, in the manner, at the time and to the extent, if any, directed by the Principal Representative, such information and items which, if this Agreement had been completed, would have been required to be furnished to the State, including:

.1 Completed or partially completed plans, drawings, and information; and

.2 Materials or equipment produced or in process or acquired in connection with the performance of the work terminated by the notice.

Other than the above, any termination inventory resulting from the termination of this Agreement may, with written approval of the Principal Representative, be sold or acquired by the

Architect/Engineer under the conditions prescribed by, and at a price or prices approved by, the Principal Representative. The proceeds of any such disposition shall be applied in reduction of any payments to be made by the State to the Architect/Engineer under this Agreement or shall otherwise be credited to the price of services covered by this Agreement or paid in such other manner as the Principal Representative may direct. Pending final disposition of property arising from the termination, the Architect/Engineer agrees to take such action as may be necessary, or as the Principal Representative may direct, for the protection and preservation of the property related to this Agreement which is in the possession of the Architect/Engineer and in which the State has or may acquire an interest.

9.3 SUSPENSION

9.3.1 In the event of an occurrence of non-appropriation, including without limitation restriction, limitation, delay or retraction of appropriation, the Principal Representative may, upon the giving of seven (7) days written notice, suspend the performance of the Architect/Engineer after which the Architect/Engineer shall perform no further work and shall be due no further fees, reimbursable costs or other compensation until the Principal Representative gives notice that the period of suspension has ended. Suspension of services may be in whole or in part, as specified by the Principal Representative.

9.3.2 If the Project is suspended in whole or in part for more than three (3) months for cause not attributable to the Architect/Engineer's services, the Architect/Engineer shall be compensated for all services performed prior to receipt of written notice from the Principal Representative of such suspension or abandonment, together with reimbursable expenses then due and all termination expenses as defined in Article 9.2. If the Project is resumed after being suspended for more than six (6) months, the Architect/Engineer's compensation shall be equitably adjusted.

ARTICLE 10. INTENT OF DOCUMENTS, PARTNERING AND FACILITATED NEGOTIATIONS

10.1 INTENT OF DOCUMENTS

10.1.1 In the event any disagreement exists as to the requirements of this Agreement and its exhibits, or if a conflict occurs between or within the requirements of this Agreement and its exhibits, the following order of precedence shall be followed to resolve the disagreement or conflict.

.1 The Special Provisions, Article 11 of this Agreement (State Form SC-5.1);
.2 Any Amendment of this Agreement;
.3 All other terms of this Agreement (other than the Special Provisions); and
.4 The Architect/Engineer’s proposal letter.

The Special Provisions of this Agreement, Article 11, shall in all cases, and without exception, take precedence, rule and control over all other provisions of this Agreement, any exhibits or amendments.

10.2 PARTNERING

10.2.1 In recognition of the fact that conflicts, disagreements and disputes often arise during the performance of contracts, the Architect/Engineer and the Principal Representative aspire to encourage a relationship of open communication and cooperation between the employees and personnel of both, in which the objectives of the Agreement may be better achieved and issues resolved in a more fully informed atmosphere.

10.2.2 The Architect/Engineer and the Principal Representative each agree to assign an individual who shall be fully authorized to negotiate and implement a voluntary partnering plan for the purpose of facilitating open communications between them. Within thirty days (30) of contract signing, the assigned individuals shall meet to discuss development of an informal agreement to accomplish these goals.

10.2.3 The assigned individuals shall endeavor to reach an informal agreement, but shall have no such obligation. Any plans these parties voluntarily agree to implement shall result in no change to the contract amount, and no costs associated with such plan or its development shall be recoverable under any contract clause. In addition, no plan developed to facilitate open communication and cooperation shall alter, amend or waive any of the rights or duties of either party under the Agreement unless and except by written Amendment to the Agreement, nor shall anything in this clause or any subsequently developed partnering plan be deemed to create fiduciary duties between the parties unless expressly agreed in a written Amendment to the Agreement.

10.3 FACILITATED NEGOTIATIONS

10.3.1 The Architect/Engineer and Principal Representative agree to designate one or more mutually acceptable persons willing and able to facilitate negotiations and communications for the resolution of conflicts, disagreements or disputes between them at the specific request of either party with regard to any Project decision of either of them. The designation of such person(s) shall not carry any obligation to use their services except that each party agrees that if the other party requests the intervention of such person(s) with respect to any such conflict, dispute or disagreement, the non-requesting party shall participate in good faith attempts to negotiate a resolution of the issue in dispute. If the parties cannot agree on a mutually acceptable person to serve in this capacity one shall be so appointed; provided, however, that either party may request the Office of the State Architect to appoint such a person, who, if appointed, shall be accepted for this purpose by both the Architect/Engineer and the Principal Representative.

10.3.2 The cost, if any, of the facilitative services of the person(s) so designated shall be shared if the parties so agree in any partnering plan; or in the absence of agreement the cost shall be borne by the party requesting the facilitation of negotiation.

10.3.3 Any dispute, claim, question or disagreement arising from or relating to the Agreement or an alleged breach of the Agreement may be subject to a request by either party for facilitated negotiation subject to the limitations hereafter listed, and the parties shall participate by consultation and negotiation with each other, as guided by the facilitator and with recognition of their mutual interests, in an attempt to reach an equitable solution satisfactory to both parties.

10.3.4 The obligation to participate in facilitated negotiations shall be as described above and each party's obligations shall be as follows:

.1 a party shall not initiate communication with the facilitator regarding the issues in dispute; except that any request for facilitation shall be made in writing with copies sent, faxed or delivered to the other party;

.2 a party shall prepare a brief written description of its position if so requested by the facilitator (who may elect to first discuss the parties' positions with each party separately in the interest of time and expense);

.3 a party shall respond to any reasonable request for copies of documents requested by the facilitator, but such requests, if voluminous, may consist of an offer to allow the facilitator access to the parties' documents;

.4 a party shall review any meeting agenda proposed by a facilitator and endeavor to be informed on the subjects to be discussed;

.5 a party shall meet with the other party and the facilitator at a mutually acceptable place and time, or, if none can be agreed to, at the time and place designated by the facilitator for a period not to exceed four hours unless the parties agree to a longer period;

.6 a party shall endeavor to assure that any facilitation meeting shall be attended by any other persons in their employ that the facilitator requests be present, if reasonably available;

.7 each party shall participate in such facilitated face-to-face negotiations of the issues in dispute through persons fully authorized to resolve the issue in dispute;

.8 each party shall be obligated to participate in negotiations requested by the other party and to perform the specific obligations described in paragraphs (1) through (10) of this Article 10, Facilitated Negotiation, no more than three times during the course of the Project;

.9 neither party shall be under any obligation to resolve any issue by facilitated negotiation, but each agrees to participate in good faith and any resolution or agreement reached shall be execute through a Supplement or Amendment to the Agreement necessary to implement their agreement; and,

.10 any discussions and documents prepared exclusively for use in the negotiations shall be deemed to be matters pertaining to settlement negotiations and shall not be subsequently available in further proceedings except to the extent of any documented agreement.

10.3.5 In accordance with State Fiscal Rules and Article 52F, Choice of Law and Article 52G Binding Arbitration Prohibited, nothing in this Article 10 shall be deemed to call for arbitration or otherwise obligate the State to participate in any form of binding alternative dispute resolution.

10.3.6 A partnering plan developed as described in Article 10.2, Partnering, may modify or expand the requirements of this Article 10 but may not reduce the obligation to participate in facilitated negotiations when applicable. In the case of small design service projects where the fees are estimated to be valued under $100,000, the requirements of this Article 10 may be deleted from this Agreement.

ARTICLE 11. SPECIAL PROVISIONS

11.1 CONTROLLER'S APPROVAL, C.R.S. § 24-30-202(1)

This contract shall not be valid until it has been approved by the Colorado State Controller or designee.

11.2 FUND AVAILABILITY, C.R.S. § 24-30-202(5.5)

Financial obligations of the State payable after the current fiscal year are contingent upon funds for that purpose being appropriated, budgeted, and otherwise made available.

11.3 GOVERNMENTAL IMMUNITY

Liability for claims for injuries to persons or property arising from the negligence of the State, its departments, boards, commissions committees, bureaus, offices, employees and officials shall be controlled and limited by the provisions of the Colorado Governmental Immunity Act, C.R.S. §

24-10-101 et seq.; the Federal Tort Claims Act, 28 U.S.C. Pt. VI, Ch. 171 and 28 U.S.C. 1346(b), and the State's risk management statutes, §§24-30-1501, et seq. C.R.S. No term or condition of this contract shall be construed or interpreted as a waiver, express or implied, of any of the immunities, rights, benefits, protections, or other provisions, contained in these statutes.

11.4 INDEPENDENT CONTRACTOR

Architect/Engineer shall perform its duties hereunder as an independent contractor and not as an employee. Neither Architect/Engineer nor any agent or employee of Architect/Engineer shall be deemed to be an agent or employee of the State. Architect/Engineer shall not have authorization, express or implied, to bind the State to any agreement, liability, or understanding, except as expressly set forth herein. **Architect/Engineer and its employees and agents are not entitled to unemployment insurance or workers compensation benefits through the State and the State shall not pay for or otherwise provide such coverage for Architect/Engineer or any of its agents or employees. Architect/Engineer shall pay when due all applicable employment taxes and income taxes and local head taxes incurred pursuant to this contract. Architect/Engineer shall (a) provide and keep in force workers' compensation and unemployment compensation insurance in the amounts required by law, (b) provide proof thereof when requested by the State, and (c) be solely responsible for its acts and those of its employees and agents.**

11.5 COMPLIANCE WITH LAW

Architect/Engineer shall comply with all applicable federal and State laws, rules, and regulations in effect or hereafter established, including, without limitation, laws applicable to discrimination and unfair employment practices.

11.6 CHOICE OF LAW, JURISDICTION, AND VENUE

Colorado law, and rules and regulations issued pursuant thereto, shall be applied in the interpretation, execution, and enforcement of this Contract. Any provision included or incorporated herein by reference which conflicts with said laws, rules, and regulations shall be null and void. All suits or actions related to this Contract shall be filed and proceedings held in the State of Colorado and exclusive venue shall be in the City and County of Denver.

11.7 PROHIBITED TERMS

Any term included in this Contract that requires the State to indemnify or hold Architect/Engineer harmless; requires the State to agree to binding arbitration; limits Architect/Engineer liability for damages resulting from death, bodily injury, or damage to tangible property; or that conflicts with this provision in any way shall be void ab initio. Nothing in this Contract shall be construed as a waiver of any provision of C.R.S. §24-106-109. Any term included in this Contract that limits Architect/Engineer liability that is not void under this section shall apply only in excess of any insurance to be maintained under this Contract, and no insurance policy shall be interpreted as being subject to any limitations of liability of this Contract.

11.8 SOFTWARE PIRACY PROHIBITION

State or other public funds payable under this Contract shall not be used for the acquisition, operation, or maintenance of computer software in violation of federal copyright laws or applicable licensing restrictions. Architect/Engineer hereby certifies and warrants that, during the term of this Contract and any extensions, Architect/Engineer has and shall maintain in place appropriate systems and controls to prevent such improper use of public funds. If the State determines that Architect/Engineer is in violation of this provision, the State may exercise any remedy available at law or in equity or under this Contract, including, without limitation, immediate termination of this contract and any remedy consistent with federal copyright laws or applicable licensing restrictions.

11.9 EMPLOYEE FINANCIAL INTEREST/CONFLICT OF INTEREST, C.R.S. § 24-18-201 and C.R.S. § 24-50-507

The signatories aver that to their knowledge, no employee of the State has any personal or beneficial interest whatsoever in the service or property described in this contract. Architect/Engineer has no interest and shall not acquire any interest, direct or indirect, that would conflict in any manner or degree with the performance of Architect/Engineer services and Architect/Engineer shall not employ any person having such known interests.

11.10 VENDOR OFFSET AND ERRONEOUS PAYMENTS, C.R.S. § 24-30-202(1) & C.R.S. § 24-30-202.4

The State Controller may withhold payment under the State's vendor offset intercept system for debts owed to State Agencies for: **(a)** unpaid child support debts or child support arrearages; **(b)** unpaid balances of tax, accrued interest, or other charges specified in §39-21-101, et seq. C.R.S.; **(c)** unpaid loans due to the Student Loan Division of the Department of Higher Education; **(d)** amounts required to be paid to the Unemployment Compensation Fund; and **(e)** other unpaid debts owing to the State as a result of final agency determination or judicial action. The State may also recover, at the State's discretion, payments made to Architect/Engineer in error for any reason, including, but not limited to, overpayments or improper payments, and unexpended or excess funds received by Architect/Engineer by deduction from subsequent payments under this Contract, deduction from any payment due under any other contracts, grants or agreements between the State and Architect/Engineer, or by any other appropriate method for collecting debts owed to the State.

11.11 PUBLIC CONTRACTS FOR SERVICES, C.R.S. § 8-17.5-101

Architect/Engineer certifies, warrants, and agrees that it does not knowingly employ or contract with an illegal alien who will perform work under this Contract and will confirm the employment eligibility of all employees who are newly hired for employment in the United States to perform work under this contract, through participation in the E-Verify Program or the Department program established pursuant to C.R.S. § 8-17.5-102(5)(c), Architect/Engineer shall not knowingly employ or contract with an illegal alien to perform work under this Contract or enter into a contract with a subcontractor that fails to certify to Architect/Engineer that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this Contract. Architect/Engineer **(a)** shall not use E-Verify Program or Department program procedures to undertake pre-employment screening of job applicants while this Contract is being performed, **(b)** shall notify the subcontractor and the contracting State Agency within three days if Architect/Engineer has actual knowledge that a subcontractor is employing or contracting with an illegal alien for work under this Contract, **(c)** shall terminate the subcontract if a subcontractor does not stop employing or contracting with the illegal alien within three days of receiving the notice, and **(d)** shall comply with reasonable requests made in the course of an investigation, undertaken pursuant to C.R.S. § 8-17.5-102(5), by the Colorado Department of Labor and Employment. If Architect/Engineer participates in the Department program, Architect/Engineer shall deliver to the contracting State Agency, Institution of Higher Education or political subdivision a written, notarized affirmation, affirming that Architect/Engineer has examined the legal work status of such employee, and shall comply with all of the other requirements of the Department program. If Architect/Engineer fails to comply with any requirement of this provision or C.R.S.§ 8-17.5-101 et seq., the contracting State Agency, Institution of Higher Education or political subdivision may terminate this Contract for breach and, if so terminated, Architect/Engineer shall be liable for damages.

11.12 PUBLIC CONTRACTS WITH NATURAL PERSONS, C.R.S. § 24-76.5-101

Architect/Engineer, if a natural person eighteen (18) years of age or older, hereby swears and affirms under penalty of perjury that Architect/Engineer (a) is a citizen or otherwise lawfully

present in the United States pursuant to federal law, (b) shall comply with the provisions of C.R.S. § 24-76.5-101 et seq., and (c) has produced one form of identification required by C.R.S. § 24-76.5-103 prior to the effective date of this Contract.

ARTICLE 12. MISCELLANEOUS PROVISIONS

12.1 PROFESSIONAL ASSOCIATION PERMITTED

The Architect/Engineer may, with the prior written consent of the Principal Representative, join with him in the performance of this Agreement any other duly licensed Architect or Architects or registered Engineers with whom he may, in good faith, and enter into an association.

12.2 DISSOLUTION OF PROFESSIONAL ASSOCIATION

In the event there is dissolution of the association, other than by death of a member, the State of Colorado, acting by and through the Principal Representative, shall designate which former member shall continue with the work and may make all payments thereafter falling due in connection with the work directly to the person or persons so designated and without being required to look to the application of such payments as among the former members.

12.3 DEATH OR DISABILITY

In the event of the death of one member of an association, the surviving member or members of the association, as an association, shall succeed to the rights and obligations of the original association hereunder. In the event of the death or disability of a sole Architect/Engineer, which shall prevent his performance of this Agreement after the same shall have been commenced by him, such Architect/Engineer, in the event of his disability, or his executors or administrators, in the event of his death, shall be paid such sums as may be due the Architect/Engineer under this Agreement. In such event all drawings, specifications and models theretofore prepared by the Architect/Engineer shall be delivered to and become the property of the State of Colorado, with full authority to use, employ, or modify the same in the construction of the contemplated building, either at the same site or at some other site.

12.4 SUCCESSORS AND ASSIGNS

Except as otherwise provided for herein, Architect/Engineer's rights and obligations hereunder are personal and may not be transferred, assigned or subcontracted without the prior, written consent of the State. Any attempt at assignment, transfer, subcontracting without such consent shall be void. All assignments, subcontracts or sub-consultants approved by Architect/Engineer or the State are subject to all of the provisions hereof. Architect/Engineer shall be solely responsible for all aspects of subcontracting arrangements and performance.

12.5 WAGE RATES, in accordance with C.R.S. § 24-30-1404 (1)

As amended, the Architect/Engineer has executed a schedule, which is attached hereto and made a part hereof by reference as **Exhibit B**, Wage Rates Schedule, and in doing so is certifying that wage rates and other factual unit costs supporting the compensation paid by the State for these professional services are accurate, complete and current.

The original contract price and any additions thereto shall be adjusted to exclude any significant sums by which the Principal Representative determines the contract price had been increased due to inaccurate, incomplete, or non-current wage rates and other factual unit costs. All such contract adjustments shall be made within one year following the end of this contract.

12.6CONTINGENT FEE PROHIBITION, in accordance with C.R.S. § 24-30-1404 (4)

As amended, the Architect/Engineer warrants that he has not employed or retained any company or person other than a bona fide employee working solely for him, to solicit or secure this contract, and

that he has not paid or agreed to pay any person, company, corporation, individual, or firm, other than a bona fide employee working solely for him, any fee, commission, percentage, gift, or other consideration contingent upon, or resulting from, the award or the making of this contract.

For breach or violation of this warranty, the Principal Representative shall have the right to terminate this contract without liability and, at its discretion, to deduct from the contract price, or otherwise recover the full amount of such fee, commission, percentage, or consideration.

12.7 COPYRIGHT/PATENT VIOLATION LIABILITY

The Architect/Engineer shall pay all license fees for the use of any copyright and shall be responsible for and hold the State of Colorado harmless from and against all losses from copyright infringement contained in the Contract Documents or in the product resulting from the Architect/Engineer's instruments of service, in accordance with paragraph 12.18, Indemnification. The Architect/Engineer shall also be responsible for and hold the State of Colorado harmless from and against all losses from patent infringement based on specified processes contained in the Contract Documents, in accordance with paragraph section 12.18, Indemnification, unless the existence of patents on such processes are brought to the attention of the Principal Representative and the Architect/Engineer. On request of the Principal Representative the Architect/Engineer shall defend against any such suits or claims of copyright or patent infringement.

12.8 EXTENT OF AGREEMENT

This Agreement represents the complete integration of all understandings between the Parties and all prior representations and understandings, oral or written, are merged herein. Prior or contemporaneous additions, deletions, or other changes hereto shall not have any force or effect whatsoever, unless embodied herein.

Principal Representative and Architect/Engineer understand and agree the attachments and exhibits hereto are and shall be integral parts of this Agreement and the terms and provisions thereof are hereby incorporated, made a part of and shall supplement those recited herein. In the event of any conflict, or variance, the terms and provisions of this printed Agreement shall supersede, govern and control.

12.9 PUBLIC ART LAW

In recognition of the Public Art Law, C.R.S. § 24-48.5-312 as amended, if the State determines that this project is eligible for the acquisition of artworks in accordance with this law, the Architect/Engineer agrees to participate in the art selection process as an art jury member and to cooperate with and to advise the State in working with the commissioned artist(s) for this Capital Construction Project.

12.10 DESIGNATED REPRESENTATIVES

The Principal Representative and the Architect/Engineer authorize the following individuals to act on their behalf as Designated Representatives and points of contact as described in paragraphs 1.2.4 and 3.1.3.

For the Principal Representative:	For the Architect/Engineer:
{$PMName}	{$AERepName}
{$PMEmail}	{$AERepEmail}

12.11 CONSTRUCTION OF LANGUAGE

The language used in this Agreement shall be construed as a whole according to its plain meaning, and not strictly for or against any party. Such construction shall, however, construe language to interpret the intent of the parties giving due consideration to the order of precedence noted in Article 1.6, Intent of Documents.

12.12 SEVERABILITY

Provided this Agreement can be executed and performance of the obligations of the Parties accomplished within its intent, the provisions hereof are severable and any provision that is declared invalid or becomes inoperable for any reason shall not affect the validity of any other provision hereof, provided that the Parties can continue to perform their obligations under this Agreement in accordance with its intent.

12.13 SECTION HEADINGS

The captions and headings in this Agreement are for convenience of reference only, and shall not be used to interpret, define, or limit its provisions.

12.14 NO THIRD PARTY BENEFICIARIES

Enforcement of this Agreement and all rights and obligations hereunder are reserved solely to the Parties. Any services or benefits which third parties receive as a result of this Contract are incidental to the Contract, and do not create any rights for such third parties.

12.15 WAIVER

Waiver of any breach under a term, provision, or requirement of this Agreement, or any right or remedy hereunder, whether explicitly or by lack of enforcement, shall not be construed or deemed as a waiver of any subsequent breach of such term, provision or requirement, or of any other term, provision, or requirement.

12.16 INDEMNIFICATION

To the extent authorized by law, the Architect/Engineer shall indemnify, save and hold harmless the State, its employees and agents, against any and all claims, damages, liability and court awards including costs, expenses and attorney's fees, to the extent such claims are caused by any negligent act or omission of, or breach of contract by, the Architect/Engineer, its employees, agents, sub-consultants or assignees pursuant to the terms of this Contract, but not to the extent such claims are caused by any act or omission of, or breach of contract by, the State, its employees, agents, other Architect/Engineers or assignees, or other parties not under the control of or responsible to the Architect/Engineer.

12.17 STATEWIDE CONTRACT MANAGEMENT SYSTEM

If the maximum amount payable to Architect/Engineer under this Contract is $100,000 or greater, either on the Effective Date or at anytime thereafter, this shall apply. Architect/Engineer agrees to be governed by and comply with the Colorado Procurement Code or the applicable procurement code for institutions of higher education, regarding the monitoring of vendor performance and the reporting of contract performance information in the State's contract management system ("Contract Management System" or "CMS"). Architect/Engineer performance shall be subject to evaluation and review in accordance with the terms and conditions of this Contract, Colorado statutes governing CMS, and State Fiscal Rules and State Controller policies.

12.18 BINDING EFFECT

Except as otherwise provided in 11.4, all provisions herein contained, including the benefits and burdens, shall extend to and be binding upon the Parties' respective heirs, legal representatives, successors, and assigns.

12.19 COUNTERPARTS

This Agreement may be executed in multiple identical original counterparts, all of which shall constitute one agreement.

12.20 MODIFICATION

By the Parties, except as specifically provided in this Agreement, modifications hereof shall not be effective unless agreed to in writing by the Parties in an amendment hereto, properly executed and approved in accordance with the Office of the State Architect.

By Operation of Law, This Agreement is subject to such modifications as may be required by changes in federal or Colorado state law, or their implementing regulations. Any such required modification automatically shall be incorporated into and be part of this Agreement on the effective date of such change, as if fully set forth herein.

12.21 SURVIVAL OF CERTAIN CONTRACT TERMS

Notwithstanding anything herein to the contrary, provisions of this Agreement requiring continued performance, compliance, or effect after termination hereof, shall survive such termination and shall be enforceable by the State if Architect/Engineer fails to perform or comply as required.

12.22 TAXES

The State is exempt from all federal excise taxes under IRC Chapter 32 (No. 84-730123K) and from all State and local government sales and use taxes under C.R.S. § 39-26-101 and 201 et seq. Such exemptions apply when materials are purchased or services are rendered to benefit the State; provided however, that certain political subdivisions may require payment of sales or use taxes even though the product or service is provided to the State. Architect/Engineer shall be solely liable for paying such taxes as the State is prohibited from paying or reimbursing Architect/Engineer for such taxes.

12.23 CORA DISCLOSURE

To the extent not prohibited by federal law, this Agreement and the performance measures and standards under the Colorado Procurement Code or the applicable procurement code for institutions of higher education, if any, are subject to public release through the Colorado Open Records Act, C.R.S. § 24-72-201, et seq.

SIGNATURE APPROVALS:

THE PARTIES HERETO HAVE EXECUTED THIS CONTRACT

*Persons signing for Architect/Engineer hereby swear and affirm that they are authorized to act on Architect/Engineer's behalf and acknowledge that the State is relying on their representations to that effect. **Principal is not a recognized title and will not be accepted.**

Project Name/Number: {$ProjectName} / {$ProjectNumber}
Contract ID No.: N/A

THE ARCHITECT/ENGINEER

{$VendorName}
Legal Name of Contracting Entity

*Signature

By
Name (print)Title

Date:

STATE OF COLORADO, acting by and through:
the Board of Regents of the University of Colorado, a body corporate, for and on behalf of the University of Colorado Denver

By:
Michael J. Barden, Director of Facilities Project

Date:

APPROVED
DEPARTMENT OF PERSONNEL & ADMINISTRATION
STATE BUILDINGS PROGRAM
State Architect (or authorized Delegate)

By:
Todd Akey, Associate Director of Facilities Projects and State Buildings Delegate

Date:

APPROVED
DEPARTMENT OF LAW
ATTORNEY GENERAL (or authorized Delegate)

By:
Steve Zweck-Bronner, Special Assistant Attorney General

Date:

ALL CONTRACTS MUST BE APPROVED BY THE STATE CONTROLLER:

C.R.S. § 24-30-202 requires the State Controller to approve all State Contracts. This Contract is not valid until signed and dated below by the State Controller or delegate. Architect/Engineer is not authorized to begin performance until such time. If Architect/Engineer begins performing prior thereto, the State of Colorado is not obligated to pay Architect/Engineer for such performance or for any goods and/or services provided hereunder.

APPROVED:
STATE OF COLORADO
STATE CONTROLLER'S OFFICE
State Controller (or authorized Delegate)

By:
Amy Gannon, Associate Vice Chancellor for Financial Services and Controller or Delegate

Date:

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

ARCHITECT/ENGINEER AGREEMENT
CONSTRUCTION MANAGER/GENERAL CONTRACTOR
(STATE FORM SC-5.2)

EXHIBIT A

ARCHITECT/ENGINEER PROPOSAL
(including Design Services Schedule and Certificates of Insurance, attached)

After signing this document, you must supply your Certificates of Insurance for review before the {$Campus} can continue processing this agreement.

Please email your insurance certificates to:

Elaine Rydberg, helen.rydberg@ucdenver.edu
{$PMName}, {$PMEmail}

_____
A/E Initial

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Name of Insurance Broker / Agent Street Address City ST ZIP	CONTACT NAME: PHONE (A/C, No, Ext): FAX (A/C, No): E-MAIL ADDRESS: PRODUCER CUSTOMER ID #:
INSURED Named Insured (Architect/Engineer - SC5.1-TC/ SC 5.2) or Consultant (SC 5.3) Street Address City ST ZIP	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : Name of Insurance Company INSURER B : Name of Insurance Company INSURER C : Name of Insurance Company INSURER D : Name of Insurance Company INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [ ] LOC	[X]	[X]	POLICY #	MM/DD/YY	MM/DD/YY	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ $ $ 1,000,000 $ 2,000,000 $ 2,000,000
B	AUTOMOBILE LIABILITY [ ] ANY AUTO [X] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [X] HIRED AUTOS [X] NON-OWNED AUTOS	[ ]	[ ]	POLICY #	MM/DD/YY	MM/DD/YY	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
	[ ] UMBRELLA LIAB [ ] OCCUR [ ] EXCESS LIAB [ ] CLAIMS-MADE [ ] DEDUCTIBLE [ ] RETENTION $	[ ]	[ ]		MM/DD/YY	MM/DD/YY	EACH OCCURRENCE AGGREGATE	$ $
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N [ ] (Mandatory in NH) If yes, describe under SPECIAL PROVISIONS below	N/A	[ ]	POLICY #	MM/DD/YY	MM/DD/YY	[X] WC STATU-TORY LIMITS [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 100,000 $ 100,000 $ 500,000
D	PROFESSIONAL LIABILITY	[ ]	[ ]	POLICY #	MM/DD/YY	MM/DD/YY	Per Loss Limit Aggregate	$ 2,000,000 $ 2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

The Regents of the University of Colorado, a Body Corporate, are named Additional Insured with respect to liability and defense of suits arising out of the activities performed by, or on behalf of the Contractor, including completed operations regarding Project # _____. The Professional Liability policy is endorsed to provide a waiver of subrogation against The Regents of the University of Colorado, a Body Corporate.

CERTIFICATE HOLDER

The Regents of the University of Colorado, a Body Corporate
Project Manager:
1945 N. Wheeling Street
Campus Mail Stop F-418
Aurora, CO 80045

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

ARCHITECT/ENGINEER AGREEMENT
CONSTRUCTION MANAGER/GENERAL CONTRACTOR
(STATE FORM SC-5.2)

EXHIBIT B

WAGE RATES SCHEDULE

«AEWageRates»

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

ARCHITECT/ENGINEER AGREEMENT
CONSTRUCTION MANAGER/GENERAL CONTRACTOR
(STATE FORM SC-5.2)

EXHIBIT C

APPROVED STATE BUILDING CODES

https://www.colorado.gov/pacific/osa/bldgcodes

UNIVERSITY OF COLORADO DENVER AND ANSCHUTZ MEDICAL CAMPUS GUIDELINES AND STANDARDS FOR DESIGN AND CONSTRUCTION PROEJCTS

http://www.ucdenver.edu/about/departments/FacilitiesManagement/FacilitiesProjects/Pages/GuidelinesStandards.aspx

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

ARCHITECT/ENGINEER AGREEMENT
CONSTRUCTION MANAGER/GENERAL CONTRACTOR
(STATE FORM SC-5.2)

EXHIBIT D

CODE COMPLIANCE PLAN REVIEW PROCEDURES

See Office of The State Architect website https://www.colorado.gov/pacific/osa/bldgcodes

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

ARCHITECT/ENGINEER AGREEMENT
CONSTRUCTION MANAGER/ GENERAL CONTRACTOR
(STATE FORM SC-5.2)

EXHIBIT E

DESIGN REQUIREMENTS/PROGRAM/FACILITIES PROGRAM PLAN/SUSTAINABILITY GOALS

{$ProgramPlan}

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

ARCHITECT/ENGINEER AGREEMENT
CONSTRUCTION MANAGER/ GENERAL CONTRACTOR
(STATE FORM SC-5.2)

EXHIBIT F

CERTIFICATION AND AFFIDAVIT REGARDING UNAUTHORIZED IMMIGRANTS (State Form UI - 1), (required at contract signing prior to commencing work)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

CERTIFICATION AND AFFIDAVIT REGARDING UNAUTHORIZED IMMIGRANTS

Institution/Agency: {$Campus} / «DeptID»
Project No./Name: «ProjectNumber» / «ProjectName»

A. CERTIFICATION STATEMENTCRS 8-17.5-101 & 102 (HB 06-1343, SB 08-193)

The Vendor, whose name and signature appear below, certifies and agrees as follows:

1.The Vendor shall comply with the provisions of CRS 8-17.5-101 et seq. The Vendor shall not knowingly employ or contract with an unauthorized immigrant to perform work for the State or enter into a contract with a subcontractor that knowingly employs or contracts with an unauthorized immigrant.

2.The Vendor certifies that it does not now knowing employ or contract with and unauthorized immigrant who will perform work under this contract, and that it will participate in either (i) the "E-Verify Program", jointly administered by the United States Department of Homeland Security and the Social Security Administration, or (ii) the "Department Program" administered by the Colorado Department of Labor and Employment in order to confirm the employment eligibility of all employees who are newly hired to perform work under this contract.

3.The Vendor shall comply with all reasonable requests made in the course of an investigation under CRS 8-17.5-102 by the Colorado Department of Labor and Employment. If the Vendor fails to comply with any requirement of this provision or CRS 8-17.5-101 et seq., the State may terminate work for breach and the Vendor shall be liable for damages to the State.

B. AFFIDAVITCRS 24-76.5-101 (HB 06S-1023)

1.If the Vendor is a **sole proprietor**, the undersigned hereby swears or affirms under penalty of perjury under the laws of the State of Colorado that (check one):

[___] I am a United States citizen, or

[___] I am a Permanent Resident of the United States, or

[___] I am lawfully present in the United States pursuant to Federal law.

I understand that this sworn statement is required by law because I am a sole proprietor entering into a contract to perform work for the State of Colorado. I understand that state law requires me to provide proof that I am lawfully present in the United States prior to starting work for the State. I further acknowledge that I will comply with the requirements of CRS 24-76.5-101 et seq. and will produce the required form of identification prior to starting work. I acknowledge that making a false, fictitious, or fraudulent statement or representation in this sworn affidavit is punishable under the criminal laws of Colorado as perjury in the second degree under CRS 18-8-503 and it shall constitute a separate criminal offense each time a public benefit is fraudulently received.

CERTIFIED and AGREED to this _____ day of _____, _____.

VENDOR:
{$VendorName}

BY: _____ _____
Signature of Authorized Representative Title

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

ARCHITECT/ENGINEER AGREEMENT
CONSTRUCTION MANAGER/GENERAL CONTRACTOR
(STATE FORM SC-5.2)

EXHIBIT G

UNIVERSITY OF COLORADO DENVER | ANSCHUTZ MEDICAL CAMPUS
SUPPLEMENTARY TERMS & CONDITIONS FOR ARCHITECT/ENGINEER AGREEMENT

Supplementary Terms and Conditions for Architect/Engineer Agreement
for Design/Bid/Build Contracts (SC5.1 and SC 5.1TC) and CMGC Contracts (SC5.2)

Board of Regents of the University of Colorado
University of Colorado Anschutz Medical Campus

The following Terms and Conditions shall augment or modify this Architect/Engineer Agreement.

For Design/Bid/Build Contracts (SC 5.1 and SC 5.1TC):

ARTICLE 3. BASIC SERVICES OF THE ARCHITECT/ENGINEER

Section 3.2 DEVELOPMENT OF THE PROJECT - Add the following

3.2.B.3 (k) Issued acknowledgement of requirement to follow the University of Colorado Anschutz Medical Campus Guidelines and Standards for Design and Construction Projects (current at the time of the signed Agreement) for new construction and renovations and include submitted and approved Requests for Variance.

3.2.C.1 (i) Issued acknowledgement of requirement to follow the University of Colorado Anschutz Medical Campus Guidelines and Standards for Design and Construction Projects (current at the time of the signed Agreement) for new construction and renovations and include submitted and approved Requests for Variance..

3.2.D.1 (d) Issued acknowledgement of requirement to follow the University of Colorado Anschutz Medical Campus Guidelines and Standards for Design and Construction Projects (current at the time of the signed Agreement) for new construction and renovations and include submitted and approved Requests for Variance.

Section 3.2 DEVELOPMENT OF THE PROJECT – Replace 3.2.E.6 (b) as follows:

3.2.E.6 (b) For Contract Documents: The Principal Representative will require up to (3) sets bearing the seal and the signature of the Architect/Engineer and the appropriate responsible professional Engineering Consultants. The Architect/Engineer acknowledges that prior to the State Buildings Programs authorizing the Notice to Proceed State Form SBP-6.26, a Letter of Compliance must be obtained from the State's Code Review Agent verifying that the contract Documents and all addenda, value engineering recommendations and all other changes to the bidding documents are in compliance with the applicable codes as adopted by State Buildings Programs as indicated in **Exhibit C**.

For CMGC Contracts (SC 5.2):

ARTICLE 1 BASIC SERVICES OF THE ARCHITECT/ENGINEER

Section 1.4 SCHEMATIC DESIGN PHASE – Add the following:

1.4.8.5 Issued acknowledgement of requirement to follow the University of Colorado Anschutz Medical Campus Guidelines and Standards for Design and Construction Projects (current at the time of the signed Agreement) for new construction and renovations and include submitted and approved Requests for Variance.

Section 1.5 DESIGN DEVELOPMENT PHASE – Add the following:

1.5.5.3 Issued acknowledgement of requirement to follow the University of Colorado Anschutz Medical Campus Guidelines and Standards for Design and Construction Projects (current at the time of the signed Agreement) for new construction and renovations and include submitted and approved Requests for Variance.

Section 1.6 CONSTRUCTION DOCUMENTS PHASE – Add the following:

1.6.4.5 Issued acknowledgement of requirement to follow the University of Colorado Anschutz Medical Campus Guidelines and Standards for Design and Construction Projects (current at the time of the signed Agreement) for new construction and renovations and include submitted and approved Requests for Variance.

Section 1.7BIDDING PHASE – Replace 1.7.3.2 as follows:

1.7.3.2 For Contract Documents: The Principal Representative will require up to (3) sets bearing the seal and the signature of the Architect/Engineer and the appropriate responsible professional Engineering Consultants. The Architect/Engineer acknowledges that prior to the State Buildings Programs authorizing the Notice to Proceed State Form SBP-6.26, a Letter of Compliance must be obtained from the State's Code Review Agent verifying that the contract Documents and all addenda, value engineering recommendations and all other changes to the bidding documents are in compliance with the applicable codes as adopted by State Buildings Programs as indicated in **Exhibit C**.

For Design/Bid/Build Contracts (SC 5.1 and SC 5.1TC) and CMGC Contracts (SC 5.2):

Section 7.2 AS-BUILT DRAWINGS / RECORD DRAWINGS - Add the following paragraph:

7.2.2 As-built drawings and record drawings, together with their as-built specifications and auxiliary files, recorded on electronic media, shall conform to the standards found in the Guidelines And Standards For Design And Construction Projects; PART 1.0 - POLICIES PROCEDURES AND RESPONSIBILITIES

ARTICLE 8.1COMMERCIAL GENERAL LIABILITY - Replace Article 8.1 as follows:

The term University, University of Colorado, University of Colorado Anschutz Medical Campus, Principal Representative, are the interchangeable for this replacement of article 8.1.

For purposes of this supplement "Contractor" as used herein shall mean, as appropriate to the State Contract form being used, Architect/Engineer, or Consultant.

The Contractor shall obtain and maintain, at its own expense and for the duration of the contract including any warranty periods under which the Contract are satisfied, the insurance coverages set forth below.

By requiring such insurance, the Principal Representative shall not be deemed or construed to have assessed the risk that may be applicable to the Contractor its agents, representatives,

employees or sub-consultants under this contract. The insurance requirements herein for this Contract in no way limit the indemnity covenants contained in the Contract.

The Principal Representative in no way warrants that the limits contained herein are sufficient to protect the Contractor from liabilities that might arise out of the performance of the work under this Contract by the Contractor, its agents, representatives, employees, or subcontractors. The Contractor shall assess its own risks and if it deems appropriate and/or prudent, maintain higher limits and/or broader coverages. The Contractor is not relieved of any liability or other obligations assumed or pursuant to the Contract by reason of its failure to obtain or maintain insurance in sufficient amounts, duration, or types.

COVERAGES AND LIMITS OF INSURANCE **-** *Contractor* shall provide coverage with limits of liability not less than those stated below.

1. ***Commercial General Liability*** – Occurrence Form – ISO CG 0001 or equivalent. Coverage to include:
   - Premises and Operations
   - Personal / Advertising Injury
   - Products / Completed Operations
   - Liability assumed under an Insured Contract (including defense costs)
   - Broad Form Property Damage

General Aggregate	$2,000,000
Products/Completed Operations Aggregate	$2,000,000
Each Occurrence Limit	$1,000,000
Personal/Advertising Injury	$1,000,000

   a. The policy shall be endorsed to include the following additional insured language: **The Regents of the University of Colorado, a Body Corporate are named as Additional Insured** (ISO Form CG 2010, or equivalent). Further, all policies of insurance shall include a Separation of Insureds Clause (Cross Liability).

2. ***Automobile Liability***
   Bodily Injury and property damage for any owned, hired, and non-owned vehicles used in the performance of this contract.

Bodily Injury/Property Damage (Each Accident)	$1,000,000

3. ***Workers Compensation and Employers' Liability***
   - Statutory Benefits (Coverage A)
   - Employers Liability (Coverage B)

Coverage A (Workers' Compensation)	Statutory
Coverage B (Employers Liability)	
Each accident	$ 100,000
Disease each employee	$ 100,000
Disease policy limit	$ 500,000

This requirement shall not apply when a contractor or subcontractor is exempt under Colorado Workers' Compensation Act, **AND** when such contractor or subcontractor executes the Sole Proprietor Waiver Letter.

4. ***Professional Liability (Errors and Omissions) for Contractor***
(Applies to SC-5.3 if contract is for one of the following professional pre-design services such as; geotechnical investigation and reporting, environmental assessment or land surveying or for construction administrative services such as material testing, then the following Professional Errors and Omissions Liability Insurance coverage applies.)

   - The Contractor shall maintain Errors and Omissions Liability covering negligent acts, errors and/or omissions, including design errors of the Contractor for damage sustained by reason of or in the course of operations under this Contract. The policy/coverages shall be amended to include the following:

     Amendment of any Contractual Liability Exclusion to state: "This exclusion does not apply to any liability of others which you assume under a written contract provided such liability is caused by your negligent acts."
   - the event that any professional liability insurance required by this Contract is written on a claims-made basis, Contractor warrants that any retroactive date under the policy shall precede the effective date of this Contract; and that either continuous coverage will be maintained or an extended discovery period will be exercised for a period of three (3) years beginning at the time work under this Contract is completed.
   - Policy shall contain a waiver of subrogation against The Regents of the University of Colorado, a Body Corporate.

   Wrongful Act$2,000,000
   General Aggregate$2,000,000

ADDITIONAL INSURANCE REQUIREMENTS

1. All Insurers must be licensed or approved to do business within the State of Colorado, and unless otherwise specified, all policies must be written on a per occurrence basis. Professional Liability is acceptable on a claims-made basis.
2. On insurance policies where the Principal Representative is named as an additional insured, the Principal Representative shall be an additional insured to the full limits of liability purchased by the Consultant even if those limits of liability are in excess of those required by this Contract.
3. The Contractor shall provide the Principal Representative a Certificate of Insurance Form evidencing all required coverages, prior to commencing work or entering Principal Representative Premises. Upon request by the Principal Representative, Contractor must provide a copy of the actual insurance policy effecting coverage(s) required by the contract.
4. The Consultant's insurance coverage shall be primary insurance and non-contributory with respect to all other available sources.
5. **The Contractor shall advise the Principal Representative in the event any general aggregate or other aggregate limits are reduced below the required per occurrence limit**. At their own expense, the Contractor will reinstate the aggregate limits to comply with the minimum requirements and shall furnish to the Principal Representative a new certificate of insurance showing such coverage is in force.
6. Contractor's insurance carrier should possess a minimum A.M. Best's Insurance Guide rating of A- VI.

7. Provide a minimum of 30 days advance written notice to the Principal Representative for cancellation, non-renewal, or material changes to policies required under the contract.
8. Certificate Holder: The Regents of the University of Colorado, Project Management, 1945 North Wheeling Street, Campus Mail stop F-418, Aurora, CO 80045.

Failure of the Contractor to fully comply with these requirements during the term of the Contract may be considered a material breach of contract and may be cause for immediate termination of the Contract at the option of the Principal Representative. The Principal Representative reserves the right to negotiate additional specific insurance requirements at the time of the contract award.

Non-Waiver
The parties hereto understand and agree that The Principal Representative is relying on, and does not waive or intend to waive by any provision of this Contract, the monetary limitations or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, *et seq*., as from time to time amended, or otherwise available to the Principal Representative or its officers, employees, agents, and volunteers.

Mutual Cooperation
The Principal Representative and Contractor shall cooperate with each other in the collection of any insurance proceeds which may be payable in the event of any loss, including the execution and delivery of any proof of loss or other actions required to effect recovery.

(Revised 7-21-11)

ARTICLE 11. MISCELLANEOUS PROVISIONS

Delete the following section except for Projects that are ARRA funded:

11.19 STATEWIDE CONTRACT MANAGEMENT SYSTEM

Add the following Section:

11.26 UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS POLICY ON SEXUAL HARASSMENT

.1 The Architect/Engineer shall vigorously pursue to the greatest extent possible, adherence to the university Policy on Sexual Harassment and also require all employees, and employees of all professional consultants of any kind, working on this project to adhere to this Policy.

.2 Statement of Policy: It is the policy of the university to maintain the community as a place of work, study, and residence free of sexual harassment or exploitation of students, faculty, staff, and administrators. Sexual harassment is prohibited on campus and in the university programs. The university is committed to taking appropriate action against any of its officials, employees or students who violate the policy prohibiting sexual harassment.

.3 Definition of Sexual Harassment: For purposes of this Policy, sexual harassment is defined as conduct which is unwelcome and consists of:

1. sexual advances; 2. requests for sexual favors; or 3. other verbal or physical conduct of a sexual nature when submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or academic decisions affecting the individual; or when such conduct has the purpose or effect, of unreasonably interfering with an individual's work or academic performance by creating an intimidating, hostile, or offensive working or educational environment.

Conduct prohibited under this policy may occur between persons of the same sex or of different sexes and may manifest itself in different ways. For example, sexual harassment may be as undisguised as a direct solicitation of sexual favors, or arise from behavior which has the effect of creating an intimidating, hostile, or offensive educational or working environment. In this regard, the following types of acts, if pervasive and continuous, are more likely than not to be considered sexual harassment: unwelcome physical contact, sexual remarks about a person's clothing, body, or sexual relations, conversation of a sexual nature or similar jokes and stories, and the display of sexually explicit materials in the workplace or their use in the classroom without defensible educational purpose.

.4 Consequence of Sexual Offenses: The university may require the Architect/Engineer to remove from the university property any individual or individuals who violate the policy prohibiting sexual harassment.

.5 Contractor acknowledges that all Contractor employees, agents and representatives providing services to the University of Colorado Denver | Anschutz Medical Campus are responsible for complying with University policies and procedures. This includes, without limitation, policies related to professional conduct, sexual misconduct (including non-consensual sexual intercourse, non-consensual sexual contact, sexual exploitation, sexual harassment, intimate partner abuse, and stalking), and discrimination and harassment based on protected characteristic identity (including race, color, national origin, pregnancy, sex, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation, or political philosophy). Please see http://equity.ucdenver.edu/policies-procedures/.

.6 Contractor agrees that its employees, agents and representatives who engage in conduct prohibited by University policies, including related retaliation or failure to report, as determined in the University's sole discretion, will be subject to disciplinary action, up to and including termination by Contractor consistent with Contractor's policies and procedures

.7 Further, as Contractor recognizes and agrees that its selection and hiring of individuals who possess expertise and professional skills to carry out Contractor's obligations in an appropriate and non-discriminatory manner that reflects positively on the University's goodwill and reputation is an essential condition to inducing the University to enter into the Agreement, Contractor agrees to remove or replace any individual whose work or performance under this Agreement is considered by the University as acting inappropriately, unprofessionally, or violating any University policy, in the University's sole discretion, including, without limitation, the aforementioned policies.

.8 Contractor acknowledges that Contractor's activities involve heightened risks as a result of access or exposure by Contractor's employees or agents to one or more security sensitive environments. Contractor expressly acknowledges that Contractor shall take all commercially reasonable measures to mitigate any such risks, which measures shall include but are not limited to conducting criminal history checks, financial background checks when appropriate, and reference checks on all employees or agents who will be performing work at the University. Upon University request, Contractor shall certify in writing that it has complied with this provision and that all employees, agents, and subcontractors performing work hereunder have satisfactorily completed Contractor's background check.

11.27 All costs and time associated with obtaining a University security badge for employees working on campus shall be borne by the Employer.

EXHIBIT C APPROVED STATE BUILDING CODES (Exhibit A of the Building Code Compliance Policy: Coordination of Approved Building Codes, Plan Reviews and Building Inspections) - Add the following requirements:

The Manual of Guidelines and Standards for Design and Construction Projects (use most current version) - website location:

(**www.ucdenver.edu/about/departments/FacilitiesManagement/FacilitiesProjects/Pages/GuidelinesStandards.aspx)**

NIH (use of most current edition); ANSI/AIHA Z9 Accredited Standards Committee available at http://www.aiha.org/insideaiha/standards/Pages/ANSIZ9.aspx, Laboratory Ventilation last updated 2003; ANSI/AIHA Z9.6-2008 Exhaust systems for Grinding, Buffing and Polishing; etc.
Health and Safety Standards for Ventilation Systems;

Biomedical and Animal Research Facilities Design Policies and Guidelines, National Institutes of Health, Aug 2010 and subsequent published revisions; Available at http://orf.od.nih.gov/PoliciesAndGuidelines/;

Biosafety in Microbiological and Biomedical Laboratories (BMBL, 5th edition, 2009);

ILAR Guide for the Care and Use of Laboratory Animals (8th ed, 2011); International Building Code (IBC);
IH Guidelines for Research Involving Recombinant DNA Molecules (NIH Guidelines);

Uniform Federal Accessibility Standards (UFAS); other guidance to consider:

Guidelines for Design and Construction of Hospital and Healthcare Facilities, 2010, (formerly known as "AIA Guidelines"); ANSI/ASHRAE/ASHE Standard 170: Ventilation of Health Care Facilities

Colorado Rules and Regulations pertaining to Radiation Control, 6 CCR 1007 Part 1-20.

The latest edition of the Life Safety Code (NFPA 101) (use most restrictive interpretation where it conflicts with the IBC).

AIHA American Standard for Laboratory Ventilation ANSI/AIHA Z9.5-1992.

Last edition of "Guide for Care and Use of Laboratory Animals."

UCD Campus Standard Biosafety Level (BL3) Construction Standards.

The National Fire Protection Standards, 45, 72 latest addition.

City of Aurora Asphalt and Paving Standards (latest edition).

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

ARCHITECT/ENGINEER AGREEMENT
CONSTRUCTION MANAGER/GENERAL CONTRACTOR
(STATE FORM SC-5.2)

EXHIBIT H

SERVICE-DISABLED VETERAN-OWNED SMALL BUSINESS AND MINORITY/WOMEN BUSINESS ENTERPRISE PARTICIPATION REPORT

University of Colorado
Denver | Anschutz Medical Campus

SERVICE-DISABLED VETERAN-OWNED SMALL BUSINESS AND MINORITY/WOMEN BUSINESS ENTERPRISE PARTICIPATION REPORT

Institution/Agency: {$Campus} / «DeptID»

Project No./Name: «ProjectNumber» / «ProjectName»

TO BE ELIGIBLE FOR AWARD OF THIS CONTRACT, EACH CONTRACTOR (INCLUDING ARCHITECT/ENGINEER/CONSULTANT/CONTRACTOR) IS REQUESTED TO COMPLY WITH THESE REQUIREMENTS.

I. The undersigned Architect/Engineer/Consultant/Contractor hereby certifies that the [___](company) [___] (joint venture) [___](is) [___](is not)* a service-disabled veteran-owned enterprise as defined in this report. The undersigned Architect/Engineer/Consultant/Contractor hereby certifies that the [___](company) [___](joint venture) [___](is) [___](is not)* a minority enterprise as defined in this report. The undersigned Architect/Engineer/Consultant/Contractor hereby certifies the [___](company) [___](joint venture) [___](is) [___](is not)* a woman-owned business enterprise as defined.

*Persons signing hereby swear and affirm that they are authorized to act on Architect/Engineer/Consultant/Contractor's behalf and acknowledge that the State is relying on their representations to that effect. **Principal is not a recognized title and will not be accepted**

ARCHITECT/ENGINEER/CONSULTANT/CONTRACTOR

«VendorName»
Legal Name of Contracting Entity

*Signature

By: _____
Name (print) Title

Date: _____

II. It is the general policy of the State of Colorado to be as inclusive as possible to all member communities when spending taxpayer dollars. It is also the intent of the State to address the goals of the HB14-1224 | CRS 24-103-211 of at least 3% of all contracts by dollar value to be awarded to SDVOSBs.

III. REQUIREMENTS

A. Service-Disabled Veteran-Enterprise (SDVE) means for the purpose of this report, a business who must be incorporated or organized in Colorado or they must maintain a place of business or have an office in Colorado and who are officially registered and verified as a SDVOSB by the Center for Veteran Enterprise within the U.S. Department of Veterans Affairs (www.vip.vetbiz.gov) per CRS 24-103-211

B. Minority Business Enterprise (MBE) means, for the purpose of this report, a business enterprise at least 51 percent that is owned and controlled by minority group members, or, in the case of a publicly owned business, at least 51 percent of the stock of which is owned and controlled by minority group members. Eligible persons are expected to be engaged full time in the day-to-day operation and management of the business. Minority group members are ethnic minorities including African American, Hispanic American, Native American or Asian/Pacific American.

C. Women Business Enterprise (WBE) means, for the purpose of this report, a business enterprise of at least 51 percent of which is owned and controlled by a woman or women, or, in the case of a publicly-owned business, at least 51 percent of the stock of which is owned and controlled by women. Women are expected to be engaged full time in the day-to-day operation and management of the business.

D. The University of Colorado Denver | Anschutz Medical Campus does not have a certification process for nor does it require MBE's and WBE's to be certified.

E. The percentages of service-disabled veteran, minority and women-owned business participation will be determined by dollar value of the work subcontracted to or joint ventured with service-disabled veteran, minority, and women-owned firms, as compared to the total dollar value of the bid amount for all work bid under this contract.

F. Prior to the award of this contract, the contractor will be required to provide to the Principal Representative a list of SDV/M/WBE enterprises, stipulating the dollar amount of each subcontract or supplier of materials on page 2 of this Service-Disabled Veteran, Minority and Women Business Enterprises Participation Report.

G. The contractor will retain records and documents showing the level of participation for two years following completion of this contract. These records and documents, or copies thereof, will be made available at reasonable times and places for inspection by an authorized representative of the Principal Representative, or its designated representatives, and will be submitted to such representatives upon written request.

ARCHITECT/ENGINEER/CONSULTANT/CONTRACTOR:

SDVOE: Yes [___] MBE: Yes [___] WBE: Yes [___]
No [___] No [___] No [___]

Total Contract Amount: $ «CompTotalCompensation»

Name and Address of SDV/M/WBE Subcontractors and/or Suppliers and/or Self-Performed Work by SDV/M/WBE Primes*	**SDVE Contract Amounts**	**MBE Contract Amounts**	**WBE Contract Amounts**	**Type of Work**

*Indicate ethnicity based on Paragraph III. A. above.

Total SDVE Contracts $ _____

Total MBE Contracts: $ _____

Total WBE Contracts: $ _____

Total SDVE % _____

Total MBE %: _____

Total WBE %: _____

Appendix C

CERTIFICATION AND AFFIDAVIT REGARDING UNAUTHORIZED IMMIGRANTS

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

CERTIFICATION AND AFFIDAVIT REGARDING UNAUTHORIZED IMMIGRANTS

Institution/Agency: University of Colorado Denver (GFE)

Project No./Name: 22-106067 / CU Denver College of Engineering, Design, and Computing Building and North Classroom Renovations

A. CERTIFICATION STATEMENT CRS 8-17.5-101 & 102 (HB 06-1343, SB 08-193)

The Vendor, whose name and signature appear below, certifies and agrees as follows:

1. The Vendor shall comply with the provisions of CRS 8-17.5-101 et seq. The Vendor shall not knowingly employ or contract with an unauthorized immigrant to perform work for the State or enter into a contract with a subcontractor that knowingly employs or contracts with an unauthorized immigrant.
2. The Vendor certifies that it does not now knowing employ or contract with and unauthorized immigrant who will perform work under this contract, and that it will participate in either (i) the "E-Verify Program", jointly administered by the United States Department of Homeland Security and the Social Security Administration, or (ii) the "Department Program" administered by the Colorado Department of Labor and Employment in order to confirm the employment eligibility of all employees who are newly hired to perform work under this contract.
3. The Vendor shall comply with all reasonable requests made in the course of an investigation under CRS 8-17.5-102 by the Colorado Department of Labor and Employment. If the Vendor fails to comply with any requirement of this provision or CRS 8-17.5-101 et seq., the State may terminate work for breach and the Vendor shall be liable for damages to the State.

Or

B. SOLE PROPRIETOR AFFIDAVIT CRS 24-76.5-101 (HB 06S-1023)

1. If the Vendor is a **sole proprietor**, the undersigned hereby swears or affirms under penalty of perjury under the laws of the State of Colorado that (check one):

☐ I am a United States citizen, or
☐ I am a Permanent Resident of the United States, or
☐ I am lawfully present in the United States pursuant to Federal law.

I understand that this sworn statement is required by law because I am a sole proprietor entering into a contract to perform work for the State of Colorado. I understand that state law requires me to provide proof that I am lawfully present in the United States prior to starting work for the State. I further acknowledge that I will comply with the requirements of CRS 24-76.5-101 et seq. and will produce the required form of identification prior to starting work. I acknowledge that making a false, fictitious, or fraudulent statement or representation in this sworn affidavit is punishable under the criminal laws of Colorado as perjury in the second degree under CRS 18-8-503 and it shall constitute a separate criminal offense each time a public benefit is fraudulently received.

CERTIFIED and AGREED to this _____ day of _____, 20___.

VENDOR:

_____
Vendor Full Legal Name

BY:
_____ _____
Signature of Authorized Representative Title

Appendix D

ACKNOWLEDGEMENT AND ATTESTATION FORM

By responding to these guidelines, the respondent(s) certify that he/she has reviewed the Agreement and its Exhibits contained herein, and is familiar with their terms and conditions and finds them expressly workable without change or modification.

I certify and declare that the foregoing is true and correct.

Subscribed on _____ at _____,
Date City
_____, State of _____,
County State

_____ _____
Applicant or Corporate Officer Signature Date

_____ _____
Witness Date

NOTE: Use full corporate name and affix corporate seal (if available).

(Seal)

Do not modify or add any text to this form.
Any modifications to this form may fully disqualify submission as non-responsive at the discretion of the University.

Appendix E

College of Engineering, Design, and Computing (CEDC) Program Plan

University of Colorado **Denver**

CU Denver CEDC

University of Colorado Denver

College of Engineering, Design, and Computing

2021 Program Plan Amendment

ZGF

April 1, 2021

Acknowledgements

To those whose support and contributions greatly impacted this project.

University of Colorado
Mark Kennedy, President, University of Colorado

University of Colorado Board of Regents
Glen Gallegos, Chair
Lesley Smith, Vice Chair
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John “Jack” Kroll
Linda Shoemaker
Sue Sharkey

University of Colorado Denver
Michelle Marks, PhD, Chancellor
Dorothy Horrell, PhD, Former Chancellor
Roderick Naim, PhD, Provost and Executive Vice Chancellor for Academic and Student Affairs
Jennifer Sobanet, Vice Chancellor for Administration and Finance

College of Engineering, Design and Computing
Martin Dunn, Dean
Keith Jones, PhD, Associate Dean
Cathy Bodine, PhD, Associate Professor—Bioengineering
Gita Alaghband, PhD, Professor and Chair—Computer Sciences and Engineering
Kevin Rens, PhD, PE, Professor, Chair and Director of Construction
Engineering and Management—Civil Engineering
Sam Welch, PhD, PE, Associate Professor and Chair—Mechanical Engineering
Stephen Gedney, PhD, Professor and Chair—Electrical Engineering
Petrina Morgan, College Administrator

Office of Institutional Planning
Cary Weatherford, Executive Director
Jered Minter, Campus Architect

Facilities Projects
Michael Barden, Director
Kyle Willcott, Project Manager

Consultant Team
ZGF Architects
AEI Engineering
Martin | Martin Engineering

View of North End of CEDC Building

Contents

01 Executive Summary

The University of Colorado Denver is taking the next steps to advance the College of Engineering, Design and Computing. The next phase of the College will enable adaptation and delivery of technological innovations that will impact Colorado and the World.

The College of Engineering, Design and Computing (CEDC) Project creates a new complex for engineering and innovation at The University of Colorado Denver and an enhanced gateway into the CU neighborhood. Located at the intersection of Speer Boulevard and Larimer Street, the CEDC project is comprised of a 94,200 GSF engineering laboratory building and approximately 46,000 SF of site improvements.

The site includes a public plaza that celebrates the entrance into the CU neighborhood, an engineering “alley” that includes outdoor laboratory work space, service area, and pedestrian connectors between the project and adjacent buildings, including a proposed pedestrian bridge connecting to North Classroom at the 2nd floor.

The CEDC building will be a cross-disciplinary teaching and research facility, drawing users from beyond the College. The new building will reflect a redesigning of engineering education that will prepare students for a world that is changing at an unprecedented pace. It will promote accelerated innovation and meaningful student-faculty interaction, as well as attract outside industry partners that are important to the success of student recruiting and retention.

The total project budget for the CEDC Project is $80,911,629. A request for state capital construction funding for 74% of the total project cost ($59,874,606) has been submitted for fiscal year 2022-2023. Additional sources of funding are being reviewed and explored.

View at Speer Boulevard and Larimer Street

02

Introduction & Background

Institutional Background

CU Denver originated in 1912 as an extension of the University of Colorado Boulder. In 1964, the extension division was renamed the University of Colorado Denver Center and granted the authority to offer undergraduate and graduate degree programs.

In 1973, the University Of Colorado Board Of Regents established the University of Colorado System to be led by a president and comprised of four distinct and independently accredited institutions—The University of Colorado Boulder, the University of Colorado at Denver, The University of Colorado Colorado Springs, and the University of Colorado Health Sciences Center. The CU System is now the state's largest public university system.

In 1977, the University of Colorado at Denver became part of an innovative multi-institutional campus known as the Auraria Higher Education Center (AHEC). The Auraria Campus, located on the edge of downtown Denver is shared by the University of Colorado Denver, Metropolitan State University of Denver, and the Community College of Denver and managed by AHEC.

In 2004, the University of Colorado Board of Regents approved the consolidation of the University of Colorado at Denver and the University of Colorado Health Sciences Center into a single institution. The consolidated university was initially named the University of Colorado at Denver and Health Sciences Center, and subsequently in 2007, was renamed the University of Colorado Denver—one institution with two campuses, CU Denver in downtown Denver and CU Anschutz Medical Campus in Aurora, CO. CU Denver and CU Anschutz are a legally consolidated university. Each campus operates independently, though several functions—including facilities, information technology, academic and student affairs, administration and finance, and human resources—are provided through consolidated units.

Beginning in 2006, CU Denver purchased several buildings in downtown Denver that lie outside the boundaries of the Auraria Campus. The CU Denver Building, purchased in 2006, is home to the College of Architecture and Planning and lies directly adjacent to Larimer Square, a popular historic district in Denver. The Lawrence Street Center, also purchased in 2006, houses the School of Public Affairs, the School of Education and Human Development, and many administrative units. The Business School, which reaches into the heart of downtown, was purchased in 2008 and renovated to accommodate and consolidate the school's various programs, departments and centers.

North Classroom Building

Student Commons

Also in 2006, the Lynx Crossing Residence Hall opened immediately adjacent to the Auraria Campus' western boundary. For the first time, CU Denver students could essentially live on campus and have a traditional, residential college experience.

In 2007, the Auraria Master Plan ushered in the concept of institutional neighborhoods - areas of the campus designated for each of the three AHEC institutions. The area of the campus along Speer Boulevard, directly adjacent to Denver's central business district, was established as the CU Denver Neighborhood. The concept allowed for a measure of institutional autonomy and identity not seen before on the campus. For CU Denver, it led to a period of significant change. Student Commons was built in 2014 and consolidated many student services into one location. As the first CU Denver-owned building constructed on the Auraria Campus, Student Commons established an urban design and architectural language that anchors the entry and defines a unique character for the CU Denver neighborhood.

In 2011, students voted to create a CU Denver-specific mascot and Milo the Lynx was introduced in 2013. In 2015, students initiated and led a referendum to construct the Lola and Rob Salazar Student Wellness Center, a facility devoted to enriching all dimensions of wellness for CU Denver students. It opened in August 2018 and is the first named building for CU Denver. This project continued to establish the character of the CU Denver neighborhood through further use of the standards established at Student Commons.

The second CU Denver housing facility will open in the fall of 2021. The City Heights Residence Hall and Learning Commons building is located between 11th and 12th on Larimer Street and its design will continue to solidify and ground the neighborhood in the established CU Denver design language. The residence hall will serve 555 students and will include a full-service dining facility. The Learning Commons is designed to enhance student and faculty development; this portion of the First-Year Student Housing Project will become the new center for academic support and co-curricular life for CU Denver students.

CU Denver serves a distinctive role as Colorado's public urban research university. It combines academic rigor with immersive real-world experiences to educate students through quality academics, relevant research, creative work, and civic engagement in the heart of Denver. More than 14,000 on-campus students thrive in a diverse cultural, professional, and experiential setting, benefiting from CU Denver's unparalleled internship, career, and networking opportunities. All of these opportunities are within easy reach of the central business district, lower downtown (LoDo), the State Capitol, and the global and regional headquarters of major companies, high-tech startups, non-profits, and cultural organizations. CU Denver offers more than 130 degree programs housed within several academic schools and colleges. CU Denver is also a major contributor to the Colorado economy, with a direct impact of $3.3 billion to the Colorado economy, including university expenses of payroll and operations plus indirect earnings and expenses.

The University of Colorado Denver (CU Denver) is submitting a program plan amendment for the College of Engineering, Design and Computing (CEDC) project to the CU Board of Regents (BOR) for approval. This program plan represents the current vision for the CEDC project, including a new site and program requirements.

PROJECT HISTORY

The CEDC project has gone through an evolution spanning over five years. The project has explored at least three different sites and has seen numerous program iterations and overall architectural concepts. All programming and conceptual efforts for CEDC aimed to consolidate and increase collaboration across the college. Currently, CEDC activities on the Denver Campus are distributed across eight buildings: North Classroom, Boulder Creek, 5th Street Hub, Administration Building, Lawrence Street Center (LSC), Inworks at the CU Denver Building, and St Cajetan's Center. Assignable square footage (ASF) areas are identified in the Currently Occupied Space Table.

A revised program has been submitted every year since 2015. Those submissions that include substantial changes are discussed here. The original program plan, approved in May 2015, addressed the space challenges by proposing a new building north of North Classroom. The program plan also proposed the renovation of vacated engineering space in North Classroom to create a "humanities hub" of interdisciplinary space. The site proposed in the 2015 program plan is shown at the right in figure 1.

The Spring 2018 Program Amendment retained the program identified in 2015 but proposed a new site, located south of the Science Building on Speer Boulevard. This site provided a more direct connection to the Science Building for students and faculty, while being situated on a more prominent site. The site proposed in the 2018 amendment is shown in figure 2.

In Spring 2019, the program was updated to emphasize the importance of first-year design and computing classes, as well as collaboration and maker spaces. The architectural concept took advantage of the prominent site and attempted to create an identity for CEDC. It also contemplated how the site might accomodate several building, allowing for future growth. This visionary exercise was not packaged and submitted as an offical program plan amendment.

The 2021 program plan utilizes a program similar to that identified in Spring 2019, while examining a new site between North Classroom and Speer Boulevard. This site provides visibility for CEDC in addition to taking advantage of increased efficiencies resulting from an adjacency to North Classroom. The 2021 site is shown in figure 3.

Figure 1: Site in the 2015 Program Plan Amendment

Figure 2: Site in the 2018 Program and Concept Study

Figure 3: New Site for the 2021 Program and Concept Study

Currently Occupied Spaces

	ASF	ASF to be Vacated
North Classroom	44,992	
LSC 8th Floor	8,803	8,803
5th Street Hub	7,550	7,550
Boulder Creek	7,562	7,562
CU Building (Inworks)	5,000	5,000
Admin Building	1,832	1,832
St Cajetans	1,131	1,131
Total	**76,834**	**31,842**

MISSION & VISION

CEDC has adopted IMPACT 2024 (IMPACT)—a strategic plan that was created by the college. IMPACT has bold plans to transform engineering education, emphasizing computing technology throughout, with interdisciplinary design-oriented teaching and learning. There will be a dynamic blend of hands-on and on-line pedagogy that can pivot in an agile manner, with an emphasis on cutting-edge technology, such as artificial intelligence and big data driven content delivery.

From this distinct platform, CEDC will focus its teaching and learning on two verticals: health and urban solutions. CEDC also realizes the need to be agile and adaptive to strategically differentiate in a rapidly changing world. This forward-leaning vision enables CEDC to leapfrog competitors and establish itself as the academic technological innovation engine of the Denver urban corridor. This vision is embodied in the conceptual programming and architecture of the new building.

“At the CU Denver College of Engineering, Design and Computing, we focus on providing our students with a comprehensive engineering education at the undergraduate, graduate, and professional level.”

KEY POINTS OF IMPACT 2024:

Transform Engineering Education

Emphasis on Computing Technology

Interdisciplinary Design-Oriented Teaching and Learning

Dynamic Blend of Hands-On and Online Pedagogy

Emphasis on Cutting-Edge Technology

Advising and Collaborative Convergence Research with a Focus on Innovation, Entrepreneurship, and Broad Impact

IMPACT 2024:

A NEW MODEL OF ENGINEERING EDUCATION

A NEW GENERATION OF ENGINEERS

IMPLEMENTATION OF IMPACT 2024:

Student Success Record
1,740 enrollment in Fall 2020 – 35% increase since 2017, 17% increase in diversity – through new industry-responsive degree programs and pre-engineering retention program; Engineering Learning Community launched with NSF funding

Curriculum Modernization
Electrical Engineering curriculum and pedagogy redesign; Computer Science curriculum redesign; four new minors and two new certifcates

Computer Science + X
114 students in new CS+X program that connects CS to (X) disciplines across campus (anchored by new BA in CS degree); 36 CS+X major and minor choices across CU Denver

Design and Computing Integration
Flagship frst-year courses in Design and Computing; restructured Capstone Design Program; signifcantly upgraded Edtech and online pedagogy and capabilities across college

Transformational Partnerships
Trimble Technology Lab at CU Denver launched with generous gift from Trimble; Additive Manufacturing (3D Printing) lab launched with generous support from Lockheed Martin

Construction is Booming
Appointed Caroline Clevenger as Director of Construction Engineering and Management; launched BS degrees in Construction Mgmt/ Construction Engineering (Fall 2020); partnership with VERTEX and CU Denver Business School for online graduate programs

Skyrocketing Research
New research awards exceed $25M for 2020; >100% growth since 2017; launched Center for Inclusive Design and Engineering (Cathy Bodine, Director)

Re-brand as College of Engineering, Design and Computing (CEDC)
Launched in 2019

Leadership Recruits
Kris Wood (design), Keith Neeves (bioengineering), and Doug Sicker (computer science) join CEDC

Strengthen and Diversify Faculty
18 outstanding new faculty since 2018; increased overall faculty diversity (gender + racial) by 40%; cluster hire for new faculty in health systems and technology across Bioengineering, Mechanical Engineering, and Computer Science

Innovation and Entrepreneurship
Comcast Center for Media and Technology launched Design Horizons entrepreneurship program with College of Arts and Media and Jake Jabs Center, 24 students in frst cohort; integrated Inworks Innovation Initiative into college; strongest year ever for college startup companies

Earn-Learn Apprenticeship Program
New model for students to work on campus in jobs aligned with professional aspirations

Bioengineering Expansion at CU Anschutz
20,000 sf in new Biosciences 3 building (Fall 2020) to expand research and innovation in medical technologies; new Masters in Biomedical Device Design and Entrepreneurship

Relation to Strategic Plan

"By 2020, CU Denver will be a leading public university with a global reputation for improving the quality of life through excellence in learning, research and creativity, community engagement, and clinical care."

—2008–2020 Strategic Plan

The new CEDC project supports and advances goals and objectives from the Strategic Plan 2008-2020. The goal and objective numbers are taken directly from the strategic plan document and includes an explanation on how the CEDC project supports the goal.

Goal 1.1—Develop, strengthen, and sustain interdisciplinary and dual degree programs that maximize the strengths and bridge the disciplines of the Downtown and Anschutz campuses.

Objective 1.1.1—Develop, strengthen, and sustain new interdisciplinary academic degree programs at the undergraduate, graduate, and professional levels (including joint degrees) that are collaborative and connect the disciplines within and across the campuses.

Objective 1.1.2—Establish mechanisms to plan, pilot, and sustain joint interdisciplinary academic programs.

The new CEDC building will create a cross-college "Academy" to foster interdisciplinary design and computing innovation in education and research across the College. The new CEDC building is positioned to connect efforts across our campuses and facilitate external partnerships; with Inworks and the Comcast Center. The new building will also connect with the Anschutz Medical Campus programmatically by providing space for bioengineering and digitally to enable health technology and systems.

Goal 1.2—Strengthen and sustain existing and develop selected new areas of interdisciplinary research and/or creative work involving faculty across the schools and colleges of both campuses.

Objective 1.2.1—Develop criteria and processes to identify new research areas for investment.

Objective 1.2.2—Provide funding and other resources to support and develop areas of interdisciplinary research and/or creative work.

The new CEDC building will support the College's mission to build a culture of innovation, collaboration, and lifelong learning across the college, empowering students, faculty, and staff to be entrepreneurial. Makerspaces, interdisciplinary research labs, and student space will foster social and professional communities.

Goal 2.1—Deliver superior educational programs on multiple campuses and academic centers across the state, nation, and around the world.

Objective 2.1.4—Build capacity and increase delivery of educational programs aimed at lifelong learners, including returning students seeking degree completion, those seeking continuing and professional education, and those seeking to expand knowledge avocationally.

The conceptual programming of the new CEDC building is dictated by a balance of factors, including the CEDC education and research vision, growth potential, and distinctiveness. This program provides vacated space in other CU assets and the consolidation of spaces for a higher level of utilization and expansion for CU.

Goal 2.9—Broaden the educational experience for students to improve student success.

Objective 2.9.2—Create additional experiential learning opportunities for students.

The new CEDC building will integrate and amplify student success programs by strengthening and expanding teaching capabilities and capacity. The new building will allow the integration of design and computing throughout, connecting concepts, disciplines, and people through hands-on interdisciplinary experiences in authentic contexts in and out of the classroom. The design and programmatic layout will endow every student with exceptional human and social skills and experience, applying cutting-edge technology to enable value-creating solutions.

Goal 3.1—Be a global leader in the translation and application of discovery, innovation, and creativity for societal good.

Objective 3.1.1—Initiate and support community-based research and creative work that leads to the sharing and application of knowledge.

Objective 3.1.3—Fully invest in the signature areas identified for the Downtown Campus, including education research and policy and sustainability.

The new CEDC building will provide state-of-the-art spaces that are flexible, resilient, and generated with elements of the global leading edge. Engineering will be on display, whether that be through glass walls at research labs or through the exposing of building systems—both resulting in excitement for the new vision of the College.

Goal 3.6—Provide superior core research facilities to enhance the discovery, innovation, and creative activities of the university.

Objective 3.6.1—Build and sustain superior core research facilities and infrastructure.

Objective 3.6.2—Continually assess program needs and utilization to determine priorities for ongoing investment in core facilities.

Objective 3.6.3—Create and sustain research computing facilities that meet investigators' needs.

CEDC is redesigning engineering education to create agile and versatile engineers of the future with computation at the core. The program of the new building reflects the diversity of research, teaching, and social experiences the College is expecting for its students.

Goal 6.1—Promote partnerships and active engagement with business, industry, nonprofits, government, schools, and venture capitalists to optimize intellectual and cultural capital for societal use.

Objective 6.1.1—Leverage the capabilities of our centers and institutes to advance partnerships, engage venture capitalists, and provide incubators for businesses.

The visibility of the new CEDC building will offer excitement and opportunities for industries to get involved, or expand their involvement, with the College. There is an opportunity to co-create spaces with partners and deliver a customized solution to engagement.

Goal 7.2—Invest in providing the infrastructure (services and facilities) necessary for a world-class learning and discovery environment for the benefit of our students, faculty, staff, and communities.

Objective 7.2.1—Be recognized as an employer of choice through innovative employee-sensitive policies and practices to maximize productivity and competitiveness.

Objective 7.2.2—Implement the CU Denver facilities capital plan to provide cost-effective, adaptable, maintainable, sustainable, and accessible facilities.

Objective 7.2.3—Address all elements of the student experience at the university to improve the recruitment, graduation, and establishment of lasting connections to the university.

Objective 7.2.6—Facilitate interaction and collaboration solutions across various locations so that geographical separation is not a barrier.

Objective 7.2.8—Create a safe campus environment through implementing effective safety measures and campus safety training and technology.

The new CEDC building will unite disciplines that are currently spread across six buildings and establish a strong presence along a much-traveled urban corridor, better connecting the campus with the City. Flexible classrooms, labs, and collaboration space will support the continual adaptation and value-creating services that respond to the demands of the world, as it moves at an unprecedented scale and pace due to technology, globalization, and demographics.

Future of Engineering & Facilities

The College of Engineering, Design and Computing has adopted IMPACT 2024, which plans out the next phase of Engineering at CU Denver. The plan builds on the advances the College has made over the last decade and sets goals for the next five years. The plan recognizes the world is changing more rapidly than any time in history and that engineers of the future will have to respond to that change—it is the College's responsibility to prepare their students for that future.

Engineering Education

CU Denver's College of Engineering, Design and Computing is redesigning engineering education to create the agile and versatile engineers of the future. Through our pioneering curriculum and convergence research approach, we promote an inclusive culture of inquiry and innovation focused on making a broad impact with all we do.

We integrate the cutting edge of computing technology and design innovation across disciplines, blending this with authentic experiences that develop human and social skills, such as creativity, collaboration, entrepreneurship, and leadership. We embrace and leverage our setting, across urban and medical campuses, to enable social and economic growth of the Denver urban corridor through holistic public and private sector partnerships; we aspire to emerge as its technological innovation engine and significantly impact Colorado and the world.

Engineers of the Future

Engineers must be prepared to meet the rapidly evolving demands of the profession as well as new obligations and opportunities in our increasingly technology-based society. These skills will include:

- Deep and modern technical knowledge and capabilities
- Proficiency in contemporary design, systems, and computing-enabled technology to produce innovative, value-creating solutions that improve people and society
- Exceptional socio-emotional and entrepreneurial skills—critical thinking, creativity, teamwork, leadership, engagement with diversity, and the ability to continually reskill and learn throughout their lives

Engineering Education Must Be Different

Global leaders agree that engineering education must change significantly to deliver future engineers. Engineering Education must include:

- Integrative, active and authentic learning experiences that are interdisciplinary, global, societally-focused, and constantly refreshed
- Mass customized offerings that are increased in flexibility, choices, and diversification while exploiting technology
- Agile and responsive curricula underpinned by new value propositions and business models
- Increased emphasis on social skills and attitudes
- Highly connected research innovation enterprise that leverages and strengthens educational goals and approaches
- Strong alignment of goals between government, industry and academia, especially those that impact "place"

Students of the Future, City of the Future

CU Denver students are diverse urban learners and driven, purposeful doers. The student body will include:

- Widely varying demographics—socioeconomic, age, race, ethnicity, language, first-generational student status, commuter/resident—contributing wide-ranging and meaningful experiences
- Experientially motivated—seeking more from their education, e.g., purposeful opportunities aligned with career ambitions to increase relevance of education and meet fiscal challenges
- Drawn to Denver—seeking the vibrancy of city life with its economic and social opportunities and the development of professional networks

65% of children entering primary school today will end up working in jobs that currently don't exist.[1]

35% of today's core skills will change in next five years—increasing the need for creativity, emotional intelligence, and cognitive flexibility.[2]

Rapidly developing technological solutions require cross-functional collaboration and high-performance teams.

70% of the World's Population will live in Cities by 2050.

1. Dell Technologies, 2017
2. "The Future of Jobs - Employment, Skills, and workforce Strategy for the Fourth Industrial Revolution", World Economic Forum, 2016

Statement of Need and Benefit

The new CEDC building will be a single project, creating an Engineering Hub that promotes design-oriented engineering education that emphasizes deep computing and systems thinking, interdisciplinary and 21st Century skills at CU Denver

New Building Benefits

CONSOLIDATION

Consolidates CEDC downtown activity into two adjacent buildings; facilitated by additional internal moves

PROXIMITY

Close proximity to other CU Denver colleges and schools

VACATE

Vacates space in LSC, CU Building, and 5th Street Hub for growth of other CU Denver programs

CAMPUS GATEWAY

Enables campus gateway on Speer and Larimer; attractive location for fundraising

ENROLLMENT GROWTH

Allows enrollment growth of ~550 students from 1,618 currently (which is a 25% increase since 2018)

ENERGIZES

Energizes CU Denver and CEDC and rapidly supports realization of strategic plan for new engineering education for our diverse student body

Impact on Occupations with the Highest Projected Openings: In-Demand Engineering Jobs

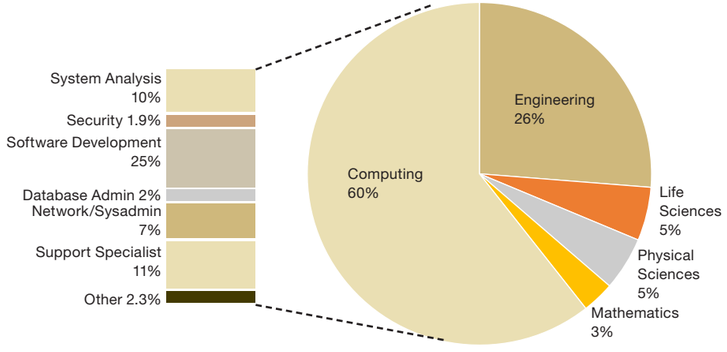
The Colorado Department of Higher Education (CDHE) 2016 Skills for Jobs Act listing of bachelor and graduate degree level jobs in Colorado identified 15 engineering and applied sciences occupations in the top 50, with three in the top 12.

The US Department of Labor Bureau of Labor Statistics ranked Bioengineering and Computer Science + Engineering related occupations among the top 50 fastest growing in the United States, with four of the Top Six In-Demand Engineering Jobs offered by CEDC. CU Denver hosts the only Bioengineering program in Colorado.

In-Demand Engineering, Computer and Information Technology Jobs

	Job Growth Between 2019 and 2029	2019 Median Pay
Biomedical Engineering	5%	$91,410
Computer Hardware Engineering	2%	$117,220
Civil Engineering	2%	$87,060
Mechanical Engineering	4%	$88,430
Software Developers	22%	$107,510

Based on data from Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook (Updated 9/1/2020)



US-BLS Total U.S. STEM Jobs through 2022 by STEM %. Based on data from U.S. Bureau of Labor Statistics Employment Projections, 2012-2022

Alignment with Colorado Rises Master Plan

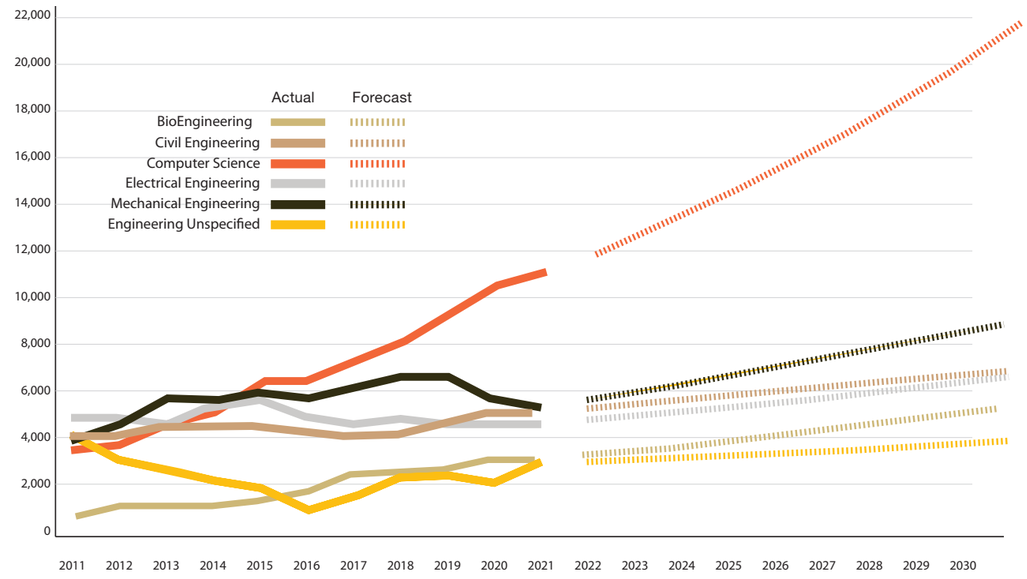
CU Denver has made significant strides to mitigate affordability and equity gaps for students. CU Denver's commitment to, and history of, serving diverse populations will help CU and the State reach their equity attainment goals. A new CEDC facility will increase credential attainment in "top jobs", as described in the CCHE Colorado Rises master plan.

Strategic Goal 1 and 3 of Colorado Rises urges institutions to focus on student outcomes, support, enrollment in STEM and increased persistence and retention.

By providing a modern, well equipped, and agile learning space for the College of Engineering, Design, and Computing, the program will attract and retain top tier faculty and researchers that represent innovative and interdisciplinary thinking.

A contemporary facility will inspire elevated curricula and innovative pedagogy which will attract and retain students.

The new CEDC facility will push the future of engineering and provide engaging opportunities to increase credentials for in-demand STEM education through amenities, cross-college engagement, and an increase in industry partnership.



CEDC Actual and Goal Enrollment History by Department.
UCD OIRE, February 17, 2021.
NOTES: Based on census of each term. Fiscal year is defined as summer, fall, spring with the year displayed being that of spring term.
CAVEATES: State reportable enrollment and credit hours only. Prior to fall 2020 construction management was a track under civil engineering.

Space Needs Alleviation Justification: Classroom and Class Laboratory Utilization

	Number of Rooms	Median ASF	Median Room Capacity	Median ASF per Station	Median Enrollment (Class Size)	Median Weekly Student Contact Hours	Median Weekly Hours Scheduled	Median Percent Occupancy
Classroom	52	970	40	24	26	997	36	67%
Lab / Studio	13	1,049	30	30	20	379	18	72%

NOTES:
From Fall 2018 classroom utilization study for CU Regents.
Includes rooms with any Engineering usage. Utilization includes all courses scheduled in those rooms.
Weekly measures are from the busiest week for each room.

03

Project Description

This project will re-imagine the physical space for CU Denver's College of Engineering, Design and Computing. It will support an educational mission centered on a strong design sense, powerful computing skills, and a larger connection to changing global, economic, and societal needs.

Site — Surrounding relationships, neighbors, and future developments. 1. Nexus, Sliver and Firestation Site Development 2. Larimer Square Redevelopment 3. River Mile Development 4. Sun Valley Eco District Development 5. Denver Performing Arts Center Expansion 6. Pepsi Center Development

Site Selection & Master Plan Consistency

The site proposed for the engineering building, which sits at the intersection of Speer Boulevard and Larimer Street, was identified as a "future construction opportunity" site in the CU Denver 2017 Facilities Master Plan. The site would allow the CEDC project to act as a bookend to the Student Commons building and further define the Larimer Street gateway into the CU Neighborhood. The site also serves as a vibrant urban connector and a pedestrian landing zone for those arriving from LoDo and the Central Business District. Speer Boulevard will generate excitement for the CEDC by embracing the ethos of putting science on display. In return, the CEDC project has the potential to shift Speer Boulevard from a "parkway" to a City Street with enhanced pedestrian connections to downtown.

The site also offers proximity to North Classroom, which is critical because the new building will not accommodate the relocation of all of the CEDC departmental spaces. Some well-established and specialized laboratories will remain in North Classroom. Relocating these recently renovated spaces would significantly burden the project budget. The close proximity and physical connections to North Classroom will provide efficiency and interdisciplinary opportunities for faculty and staff.

Site from Speer Boulevard and Larimer Street

Site from Speer Boulevard and Lawrence Street

Site Highlights

NEIGHBORHOOD ENTRY GATEWAY

This site is the front door to the CU Neighborhood from the Central Business District.

CONNECTION TO DOWNTOWN

On Speer Boulevard and Larimer Street, the site reaches out to the urban fabric to the east. There is potential to respond and integrate future development into the programming and concept of the CEDC project.

PROXIMITY TO NORTH CLASSROOM

A majority of Engineering classes are held in North Classroom. Locating the new CEDC building to the east creates an efficient walking connection for faculty and students.

Site Challenges

EXISTING STORM WATER DETENTION

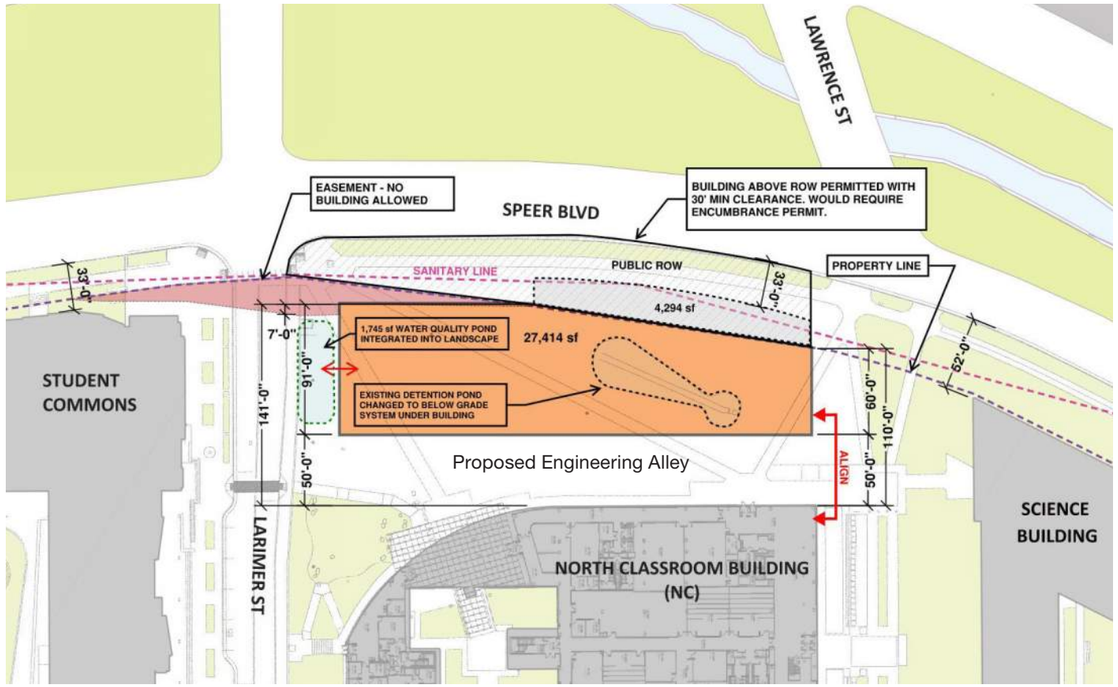
There is currently a storm water detenion pond occupying 0.25 acres of the site. A new strategy will need to be implemented to make up for displacing the existing pond. The proposed budget includes this scope of work.

LIMITED VEHICLE ACCESS

The only existing vehicle access to the site is from Larimer Street. Given the program desires for the main entrance to face Larimer Street, vehicle access will be complicated. The proposed site design offers several potential solutions to this challenge.

RIGHT OF WAY

There is currently a large right-of-way (ROW) bordering Speer Boulevard on the east side of the site. This ROW has pinched the buildable area of the site. The proposed building footprint and massing has taken this into consideration and a potential solution will be further developed during the next phase of design.



Site Boundaries

Site Conditions

Although the site provides opportunities relative to interconnection, gateway, and interdisciplinary collaboration, the site has several constraints. These include a storm water detention pond, limited vehicular access, a significant easement, and a right-of-way (ROW) that includes a 54" sanitary line running along the edge of Speer Boulevard. All of these factors have impacted the buildable area of the site and the resulting conceptual massing.

Easements and Right-of-Way

Along the southbound lanes of Speer Boulevard, there is a ROW extending approximately 52' from the curb into the site. Within the ROW, there is a 54" sanitary pipe.

At the corner of Speer Boulevard and Larimer Street, there is an easement that extends into the north-east area of the site. The project cannot encroach into this easement.

An encumberance permit would be required to build within the ROW, and the design of the building would need to provide vertical and horizontal clearance above the sanitary line.

Stormwater Detention

There is an existing stormwater pond, referred to as Pond 2 in the construction documents for the Science Building, that has a capacity of 10,562 cubic feet. Pond 2 provides both detention and water quality for a portion of the the Science Building site.

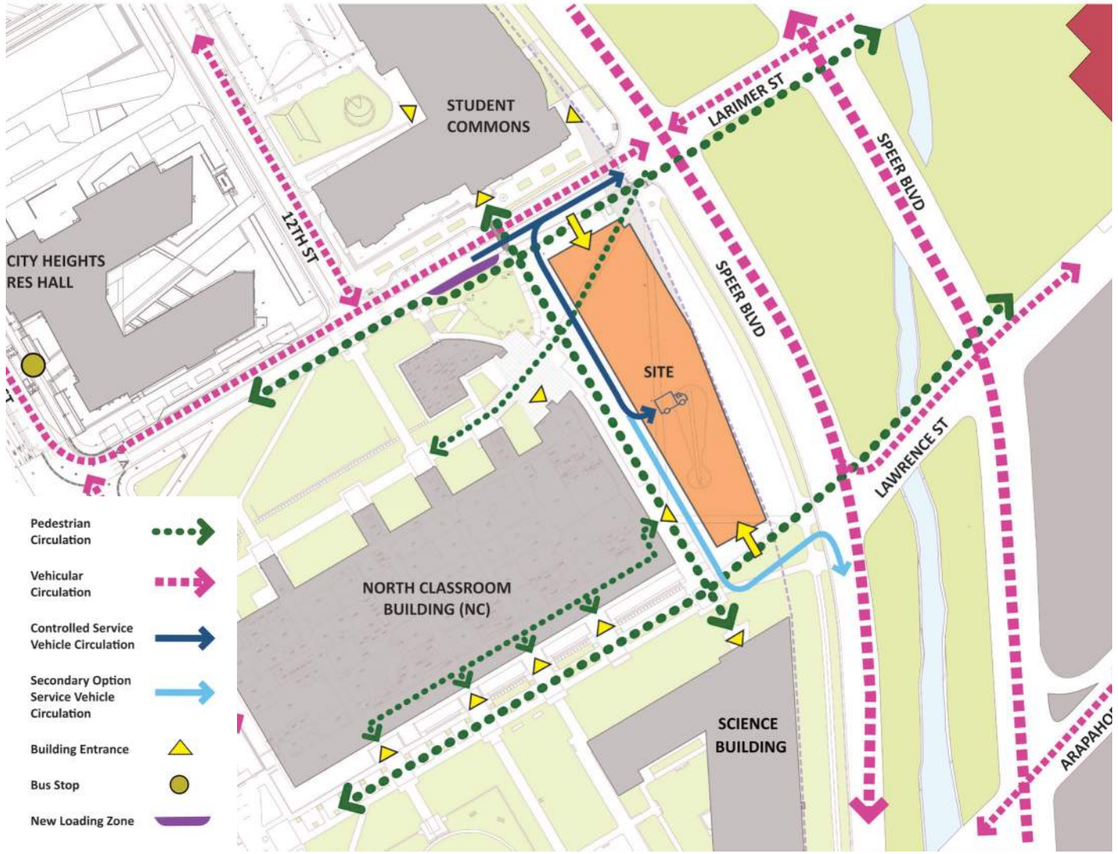
In order to accommodate a building on the site, it is recommended that an underground detention system and a surface water quality feature will be designed. These features accommodate flows from the proposed site as well as the areas tributary to the existing Pond B.

The underground detention system will accommodate approximately 0.36 acre-feet and the above water quality system will accommodate approximately 0.06 acre-feet. It is important to note that the water quality feature has been sized as a rain garden within the plaza and shall remain at a maximum depth of 18", resulting in a footprint of 1,745 SF.

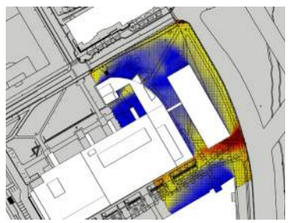
Engineering "Alley"

The space between North Classroom and the new building is critical to the success of this project as it will provide outdoor project space, social space, while creating an iconic urban design feature for the CU Denver campus.

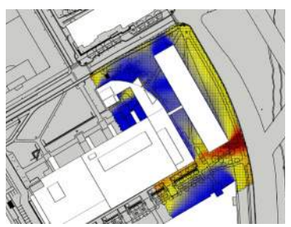
Several scenarios were explored to determine how close the new building could be to North Classroom while still providing ample solar exposure in the winter and an openness that fit the scale of the two buildings. Based on this study, it was determined that a 50' setback from North Classroom provides



Site Circulation Study



Solar Study– Five-story building on Winter Solstice



Solar Study— Four-story building on Winter Solstice

the desired environment, while allowing for floorplate sizes that accommodated a lab module.

Pedestrian Flows

The site acts as a pedestrian connector between Student Commons, North Classroom, and the Science Building in addition to the pedestrian connection to LoDo and the Central Business District at both Larimer Street and Lawrence Street. The site and building will respond to all of these flows—creating enjoyable outdoor space, maintaining safety, and strengthening pedestrian connections with LoDo and the Central Business District.

The pedestrian flows on the site reinforces the importance of treating the Larimer Street and Lawrence Street sides of the building with equal consideration as both are significant to the pedestrian environment on campus and the City.

Vehicular Flows

Currently, there are no curb cuts onto the site nor are there nearby loading zones servicing the surrounding buildings that could be used by occupants of the new building. Based on the proposed program, delivery of materials to the building will be required. In addition, maintenance and service vehicles will need access to the building. Ideally, trash collection would occur at the Larimer Street curb in a manner similiar to Student Commons and Student Wellness.

Given the limited vehicle access to the site, the project will utilize the pedestrian alley between North Classroom and the building to provide delivery and maintenance access. That access could take the form of a dead end vehicular alley with a turnaround or a loop access road with a curb cut on Speer for right turn only. Various options will be analyzed further during the next phase of design.

Neighborhood & Downtown Connections

The University of Colorado Denver is Colorado's only public urban university. In the heart of one of America's fastest growing cities, it connects students with internships, jobs, and a thriving cultural scene.

The CEDC Project is in a key location on campus—directly adjacent to and visible from highly used street; highly visible from one of the primary approaches to the campus along Speer Boulevard; in proximity to multiple development opportunities between campus and downtown. The site has the potential to be both a gateway and a bridge to the CU Denver campus.

Neighborhood Connectivity

At the corner of Speer Boulevard and Larimer Street, the site welcomes pedestrians, bikes, and vehicles into the campus, while also closing the distance between the CU buildings across Speer Boulevard. The site acts as a crossroads between Student Commons, North Classroom, and the Science Building, connecting major circulation paths running between the three buildings.

Currently, the western edge of Speer Boulevard is lined by building facades, until you get to Larimer Street, where the site is located. The site-edge challenges the urban edge as a threshold—a welcoming gateway, while responding to the surrounding context.

Downtown Connection

The 2007 update to the Auraria Master Plan shifted the direction for the campus to prioritize continuity with the surrounding areas. It was no longer intended to be an isolated campus, but instead to create linkages to the adjoining neighborhoods. This is particularly true for LoDo and the Central Business District.

The CEDC site is the closest Auraria site to the CU facilities that are located across Speer Boulevard. For years, there has been talk about creating a physical connection between the Auraria Campus and the Central Business District to avoid pedestrian and vehicle interaction. This site has the potential to be a part of that connection by providing a landing, or a physical link to the building, that would allow pedestrian access to interact with Engineering on Display.

The CEDC site spans two major pedestrian paths, one at Larimer Street and one at Lawrence Street — both heavily trafficked with students commuting between Auraria and the Central Business District. The CEDC building's internal and external pedestrian flows will recognize these existing travel paths to ensure they remain efficient and safe, while using them to enhance student space throughout and around the building.

Connecting Park Space

The CEDC site offers the opportunity to provide a neighborhood gateway plaza to the north of the proposed building — one that welcomes guests onto campus, honors and celebrates North Classroom, and provide outdoor project space for CEDC.

The south side of the site has the responsibility to respond to the Lawrence Street Mall and continue the established pedestrian amenities and urban design language. With optimal daylight and southern exposure, this space can act as a continuation of the outdoor space at the south end of North Classroom.

The space between the new CEDC project and North Classroom (Engineering "Alley") will host performance events, include outdoor project space, and be a main pedestrian thoroughfare for the CU neighborhood. This space will be activated with a variety of outdoor environments, including seating, project work and storage, and vegetated areas—all with daylight and sun exposure being a consideration.

View from Larimer Square to new CEDC Building, new plaza, and North Classroom clock beyond

Aerial Image - Speer Boulevard Facades

Guiding Principles

FORWARD THINKING EXPRESSION

Represent CU Denver as an innovative model for public urban universities. Represent CEDC's vision of a state-of-the-art engineering hub.

ENHANCE THE GATEWAY

Acknowledge the campus and neighborhood gateway at Speer Boulevard and Larimer Street.

BEING A GOOD NEIGHBOR

Respond to the scale, materiality, and architectural aspects of the surrounding buildings and anticipate future development.

ENGINEERING ON DISPLAY

Create transparency into the building to showcase engineering activity. Expose and highlight building systems that can be used as a teaching tool.

RESPECT NORTH CLASSROOM

Acknowledge the existing conditions of North Classroom that could be affected by the new building and reduce the impact.

HIGH PERFORMANCE

Analyze and implement strategies that will reduce the environmental impact and increase the operational efficiency of the building.

Concept Design

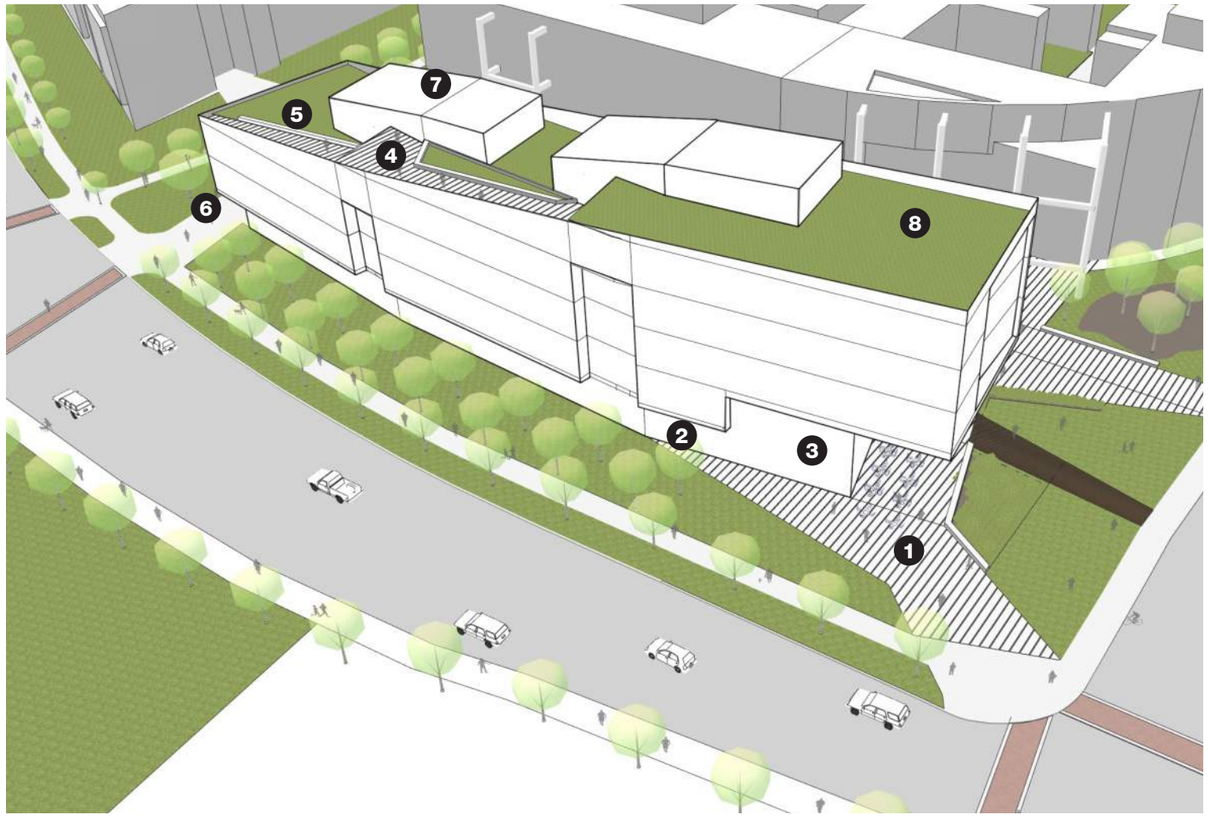
The University of Colorado Denver CEDC Project combines teaching, research, and clinical spaces to further expand and amplify the significance of the engineering profession across a broad range of applications.

The building will promote a highly collaborative model by creating a series of interconnected classroom and research spaces anchored by a centralized maker space.

The "Plaza" seeks to celebrate the act of making, in the engineering and design curriculum, by centralizing key spaces, where activity is on display, within the project's spatial organization. The project team has identified a range of "activation" program spaces that highlight, celebrate and enhance the vision of the CEDC. These spaces include: the computing space, capstone space, and first year design space. The key attributes applied to the development of those spaces are connectedness, openness, and flexibility.

This project will serve to consolidate the engineering programs on the CU Denver campus, strengthen the expression of the CU neighborhood architectural language, and enhance the importance of engineering and design by representing a rethinking of the goals and strategies of the engineering school in a rapidly changing technological world.

This building is imagined as a stepping building form that climbs from the Lawrence Street Mall up to a five story mass at the Larimer Street gateway. The steps of the mass would provide exterior terrace opportunities—one being associated with a large conference room, which would look down on a "project space terrace" where engineering and making will be on display. The building is complimentary of campus scale and space making strategies, and implies a visual and physical connection between LoDo and the Central Business District and the CU Denver neighborhood.



Legend

1	GATEWAY PLAZA
2	MAKER SPACE—ENGINEERING ON DISPLAY
3	VISIBILITY INTO BUILDING - ENGINEERING ON DISPLAY
4	ROOF TERRACE—SOCIAL
5	ROOF TERRACE—PROJECT SPACE
6	ENTRY AT LAWRENCE STREET
7	MECHANICAL SYSTEMS ON DISPLAY
8	GREEN ROOF

Program

The relative proportions of different space types and their physical arrangement has a significant impact on how a building is experienced and how it functions. In the case of the CEDC Project, this mix is critical to achieving the collaborative and interdisciplinary environment that is its mission. Structural bay dimensions were based on a 30' x 21' module. This module is sized for best practice and flexibility of labs and classrooms.

To develop and evaluate the program, space types were grouped into three overarching categories: "Flex Instructional Modules", "Meeting / Social" and "Office". Within the "flex instructional modules", there are accommodations for research labs, classroom labs, and classrooms. Within "meeting / social" there are collaboration spaces (formal and informal), conference, and seminar rooms.

The areas dedicated to each of these space types are a result of relocated CEDC space from other buildings, precedents from other engineering facilities, and growth factors. A 60% efficiency grossing factor was applied to the assignable square footages. This grossing factor is in line with similar facilities across the region and allows for the infrastructure and back of house spaces required for this building type.

As the project proceeds further into the design phases, the team will work with the CEDC to develop the concept program into a detailed program. For this effort, the space types allows for a cost / SF association.

Program	ASF
FLEX INSTRUCTIONAL MODULE	43,700
Research Labs	
Classroom Labs	
Classrooms	
MEETING / SOCIAL	7,000
Conference and Seminar Space	
Collaboration Space	
OFFICE	5,800
TOTAL ASF	**56,500**
TOTAL GSF (60% EFFICIENCY GROSSING FACTOR)	**94,200**

Circulation

Several internal circulation patterns were reviewed and the desire for lab flexibility, chance interactions, and program efficiency resulted in both double loaded corridors and concourse circulation. The concourse circulation allows for back-to-back labs which offers flexibility for future growth or configuration. The double loaded corridors provide opportunities for chance interactions between students leaving or walking to class and reduces the square footage associated with circulation.

The circulation on the west side of the building includes the Grand Stair. The Grand Stair connects the northern lobby to the bridge that connects with North Classroom. The stair is meant to be an active, transparent space that engages with engineering "alley" below.

Service & Loading

As described previously, the service and loading access to the site is a challenge. Conceptually, the service and loading entrance into the building has been located under the Grand Stair, near the north end of the building. This location provides access to a service elevator within the bank of building elevators and limits the vehicle traffic within engineering "alley".

Student Center

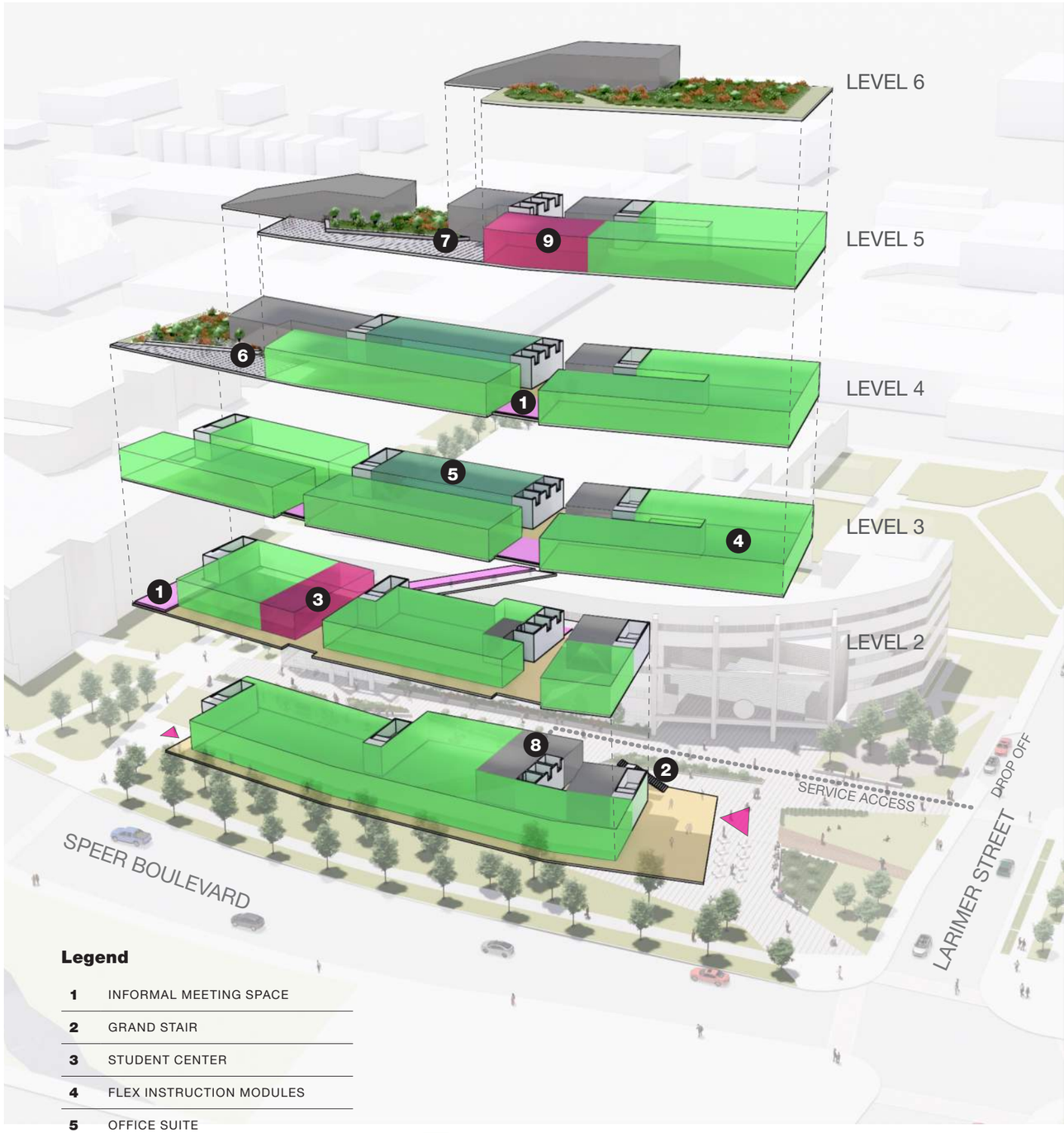
A student center has been located on level 2, at the intersection of the Grand Stair and the bridge to North Classroom. This area will include student lounge space, study space, and tutoring space. The activities combined with the central location, will create a vibrant space with a focus on meeting student's needs - a primary goal of the project.

Office Suite

Office location, size and configuration will be explored more in design but the current concept has offices grouped together on levels three and four. Grouping the offices together into an office suite will support interdisciplinary interactions and provide flexibility for future configurations. The suite can be located near one of the interior stairs which will act as an interconnecting stair between the two suites promoting additional interactions and flexibility.

Outdoor Terraces

The "Plaza" scheme includes two outdoor terraces that face south. Given the Colorado climate, the southern exposure will allow these terraces to be used year round. The upper terrace (Social Terrace) is adjacent to a meeting space which will allow the meeting and activities to spill out onto the terrace. The social Terrace overlooks the lower terrace (Project Terrace) that is adjacent to flexible instructional space. Student projects and work will take place out on this terrace while having a connection back to the instructional space. Both terraces will be a combination of hard surfaces, green roof and vegetation and exposed mechanical systems - all supporting engineering on display.



Legend

1	INFORMAL MEETING SPACE
2	GRAND STAIR
3	STUDENT CENTER
4	FLEX INSTRUCTION MODULES
5	OFFICE SUITE
6	PROJECT TERRACE
7	SOCIAL TERRACE
8	SERVICE / LOADING AREA
9	MULTIPURPOSE / EVENT SPACE

- FLEX INSTRUCTIONAL MODULES
- MEETING / SOCIAL SPACE
- OFFICE
- SUPPORT

Exterior Spaces

The exterior spaces complement the rich and vibrant interior space, while serving as an extension of the program and mission of the CEDC.

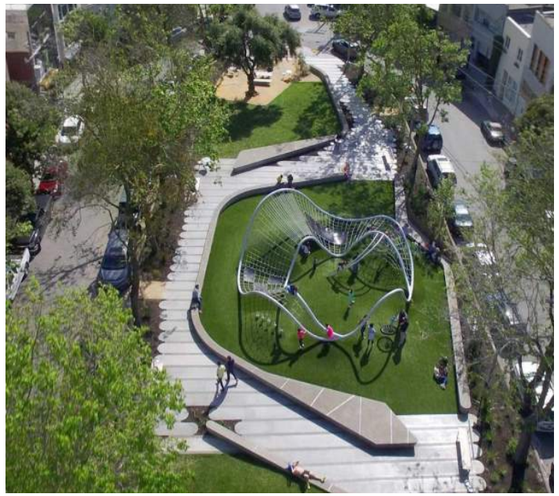
The gateway “welcome” plaza, located at the corner of Larimer Street and Speer Boulevard , provides identity and defines arrival—to the AHEC campus, the CU neighborhood, and the new CEDC building. This plaza will be critical in creating a first impression and giving visitors the first look at “engineering on display”. Including a sculpture in this space will reinforce the significance of the gateway.

The plaza will lead into the engineering “Alley”, which is the space between North Classroom and the new building. This space will act as a zipper between the new building and North Classroom by connecting engineering programs in both buildings, while enhancing a major campus circulation route. The space will be designed for walk-ability, service vehicles, and project space. The new building will include large overhead doors that will allow engineering to spill out into the alley. The University should consider renovating the ground floor circulation space, in the 1000 hallway of North Classroom, to compliment the ground level activation being provided by the new building. This scope is not included in the current renovation square footage in this program plan or the project budget.

Engineering Alley will extend from the north of the building to the south, where it will tie into Lawrence Street Mall—a main pedestrian thoroughfare.

Both the Engineering Alley and the Gateway Plaza will incorporate aspects of water surface treatment to account for the existing detention pond, which this project will decommission. Those surface treatment zones can be in the form of landscaped or pervious paved areas. The project will require approximately 1,700 SF of treatment area.

The new building features two rooftop terraces. Both terraces face south for maximum sun exposure in the winter, which will allow the space to be utilized year-round. The lower terrace is seen as a project space, with the upper terrace being a social space that looks down on the project space and takes advantage of the downtown views.



High Performance

The CEDC Project aspires to be not only a model for innovative research, teaching, and learning, but also an instructional example of cutting-edge building performance and sustainability. These goals are especially relevant given that building systems are a key curricular component at the CEDC. In a building supporting engineering education, some consideration should be given to exposing the mechanical systems that would typically be concealed.

Programming discussions and preliminary analysis of the anticipated spaces has identified a range of opportunities (further discussed below). Implementation of these goals will be explored in more detail in the next phase of design and reconciled with the overall project costs.

Factor 10 Engineering

In a high-performance integrated design, enhancing one building component or element should result in improvements to 10 other components. For example, enhancing the building envelope should result in needing little to no mechanical system, which results in improved indoor environment quality, ultimately resulting in higher productivity from the occupants. The design team will design the building and building systems while embracing this philosophy.

Electrification

In response to the Governor's Executive Order on Greening of State Government (D 2019 016), the project team studied the possibility of building electrification. Selecting building systems that rely on electricity rather than fossil fuels will increase electricity usage, but eliminate the use of on site fossil fuels such as natural gas. As the state power grid shifts away from the burning of fossil fuels to renewable sources, having an electrified building advances the sustainability goals of the university and the State of Colorado, which are supported by the electrical utility provider (XCEL). XCEL has a goal of providing 80% lower carbon emissions by 2030 and 100% carbon-free electricity by 2050. A life cycle cost analysis evaluating building electrification is provided after this section and in appendix A.

Renewable Energy

The orientation of the building on the site provides excellent exposure for the potential addition of photovoltaic panels. Photovoltaic panels are not included in the building budget, but could be installed on the roof or as canopies on the rooftop terraces. The amount of building energy that photovoltaic panels would offset and the potential ROI would be evaluated as the building design advances. If photovoltaics prove to be cost prohibitive, the building can be built with the necessary infrastructure as a minimal cost for future installation.

Transpired Walls

Given the orientation of the building and local climate, the new building could utilize a transpired wall to preheat the air entering the building. A transpired wall would be an integrated part of the building facade that passively heats the outdoor air to up to 40 degrees before it enters the building, significantly reducing the building heating load. A transpired wall is not broken out in the current budget, but can be integrated into the design for a nominal fee. The ROI and effects on energy reduction of a transpired wall would be analyzed before incorporating that into the building design.

Indoor Environment

Air quality strategies and healthy material selection are critical to the performance and health of the occupants. Given the current environment surrounding Covid-19 and respiratory diseases, various mechanical scenarios will need to be explored— will the desire for 100% outdoor air be requested at the cost of a larger energy load, or will a cascading air strategy provide the level of air quality that is desired? Materials will also play a large role in ensuring the health of the occupants. Ensuring that harmful chemicals and pollutant exposure is eliminated will optimize the health of the building occupants.

(Left) The J. Craig Venter Institute has two photovoltaic arrays comprising 26,124 SF of surface area that are predicted to exceed the building demand, pushing excess power generated back into the grid. These arrays are utilized as shading devices in most of the exterior spaces.

(Above) Rocky Mountain Institute Innovation Center utilized Factor 10 Engineering to further each sustainable strategy. The enhanced exterior envelope had a 4 year payback when considering it helped eliminate traditional mechanical systems and improved indoor environment quality resulting in increased productivity and engagement.

(Right) Montana State University, Norm Asbjornson Hall uses transpired walls to preheat outside air. Air passing through the transpired wall is preheated to 60 degrees in the middle of Montana's winter before entering the building. This effort is on track to save MSU millions of dollars in operating costs over the coming years.

View of CEDC building from Northbound Speer Boulevard

Building Electrification LCCA

As required by the Governor's Executive Order on Greening of State Government (D 2019 016), building electrification studies are included. The outcomes have been used to identify strong candidate projects for investment in electrification.

With the electric utility provider committed to zero carbon emissions for electricity generation by 2050 (1 – Xcel Energy), designing all electric buildings will reduce the University's carbon footprint as the utility grid's carbon impact improves. Program plans are the critical phase for major architectural massing decisions, HVAC system selection,and thermal utility analysis. All of these will shape the project's ability to meet carbon and sustainability goals.

The Life Cycle Cost Analysis (summarized in the adjacent charts and included in the Appendix) documents program plan life-cycle cost analysis for various building mechanical systems.

There are no campus thermal utilities for the proposed site, therefore all heating and cooling will be generated on site with either electricity or natural gas. Three all electrically sourced options with varying complexity were compared against a standard baseline option which includes gas and electric sources. Each option was analyzed over a 30-year life cycle. Quantitative values were considered for each option and included Rough Order of Magnitude (ROM) capital cost, operations cost, energy cost, water cost, total energy consumption, water consumption, and carbon emissions.

All electric laboratory designs are novel and there is not an abundance of historical cost data used for the life cycle analysis. As design progresses and more detailed cost estimates are available (using current labor rates, equipment costs, technology availability) , there is reason to believe that the cost between All-Electric Option 3 and the Baseline could be closer than the report predicts, and Option 3 would have a favorable life cycle cost.

The report recommends refining the Baseline and All-Electric Option 3 systems during Schematic Design to further detail initial costs and more accurately reflect the life cycle estimate.

Option	Description	Reason
Option 1: Base	• **AHU DX cooling** • **VAV with HW reheat** • **Natural Gas Hot Water (condensing) Boilers** • **Code Heat Recovery (Wheel) 50% sensible and latent heat recovery effectiveness**	Lowest Capital Cost
Option 2: Better	• **AHU DX cooling** • **VAV with electric reheat** • **Code Heat Recovery (Wheel) 50% sensible and latent heat recovery effectiveness**	Replace gas boilers with electric reheat. Lowest all-electric mechanical capital coStreet
Option 3: Better +	• **AHU DX cooling with Direct Evaporative Cooling** • **VAV with HW reheat** • **Electric Heating (Air Source Heat Pump)** • **Maximized Heat Recovery (Wheel) 70% sensible and latent heat recovery effectiveness**	Replace gas boilers with Electric Air-sourced Heat Pump. Load reduction on mechanical systems with improved heat recovery and reduced peak cooling demand with evaporative cooling. Improved electric heating efficiency over electric reheat.
Option 4: Best	• **AHU/DOAS with Direct Evaporative Cooling (no hydronic coils)** • **Indirect Evaporative Cooling on Exhaust air before entering to the Wheel** • **VAV with HW reheat + chilled water (4-pipe)** • **Active Chilled Beams** • **Electric Heating/Cooling (Sewer Heat Pump)** • **Maximized Heat Recovery (Wheel) 75% sensible and 20% latent heat recovery effectiveness**	Maximized load reducing techniques with indirect/direct evaporative cooling, improved heat recovery, and improved terminal unit design (4-pipe VAV/active chilled beams. Sewer-sourced Heat Pump provides all electric heating and cooling with improved efficiencies over air-sourced heat pump.

Costs	Opt 1: Base	Opt 2: Better	Opt 3: Better+	Opt 4: Best
Initial Capital Cost (Total Mechanical and Electrical Cost)	$16,821,000	$21,813,207	$21,299,159	$22,220,534
Total Energy Cost (Year 1)	$158,442	$196,113	$157,227	$126,094
Energy Savings Compared to Base Option Yyear 1)		-$37,671	$1,215	$32,348
Total Yearly Operation Costs (w/o Energy or Water)	$36,769	$35,846	$37,692	$36,769
Total Yearly Operations Cost Savings Compared to Baseline		$923	-$923	$0
Payback		Never	83 years	54 years

Direct & Indirect Carbon Emissions	Opt 1: Base	Opt 2: Better	Opt 3: Better+	Opt 4: Best
Carbon Emissions - Natural Gas (MTCE)	195	0	0	0
Carbon Emissions - Electricity (MTCE)	1,603	2,149	1,723	1,382
Total Carbon Emissions (MTCE)	1,798	2,149	1,723	1,382
Currently no Carbon tax in Colorado				

Financial Model & Assumptions

The total CEDC Project budget is $80,911,629. The initial concept level breakdown of project costs is below. The total project cost includes 5,000 SF of renovation in North Classroom to accommodate the Machine Shop being relocated from the 5th Street hub.

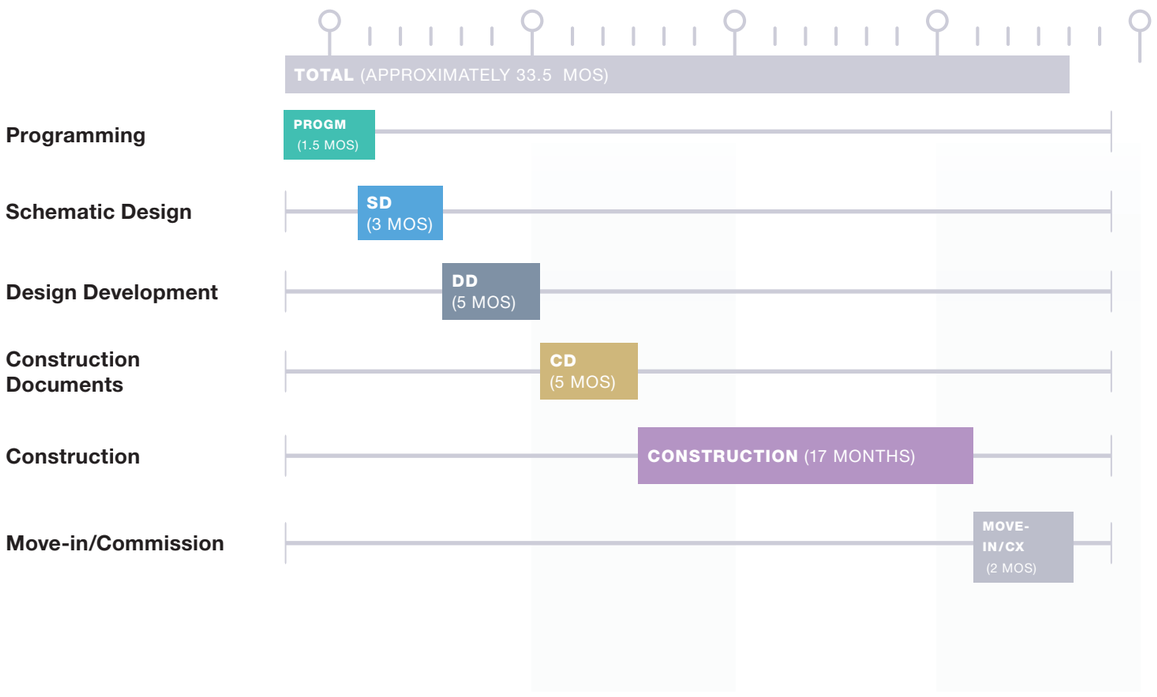
Project Cost		
A	**Professional Services**	$ 10,848,210
B	**Construction - Building**	$ 53,499,870
C	**Equipment and Furnishings**	$ 9,357,757
D	**Miscellaneous**	$ 1,499,787
E	**Program Contingency**	$ 4,572,005
	NEW BUILDING SUBTOTAL	**$79,777,629**
F	**5,000 SF NC Renovation**	$ 1,134,000
	PROJECT CONSTRUCTION BUDGET	**$ 80,911,629**

The construction cost for the CEDC project is $386/SF for classroom and office space and $632/SF for lab space. These costs are based on historical data from past projects on the Auraria Campus. Space types were then lumped into programmatic blocks to arrive at an estimated project cost. Further definition in the design phase will allow for more detailed cost reporting so that the project can be designed to and tracked against the budget. Some sustainability related design features, such as electrification, have the potential to push the project cost beyond the budget, but overall project goals, expected cost and budget will be further explored in the design phases.

View of south end of Engineering “Alley” and Lawrence Street Mall

Schedule

The below schedule is a preliminary schedule that will be reevaluated once Design begins, a delivery method is confirmed, and again when a contractor is added to the team. This schedule is based on similar projects within the region of a similar size and complexity.



Section

04 Appendix

Electrification LCCA

University of Colorado Denver, College of Engineering
Pivot Plan Electrification LCCA

1. Executive Summary

The new College of Engineering, Design, and Computing Project is envisioned to be five-story, 94,200 gross-square foot development to spur innovation in technology, manufacturing, and engineering, while providing opportunities for life-long learning and community connectivity through engineering on display and outdoor circulation zones. As required by the Governor's Executive Order on Greening of State Government (D 2019 016), building electrification studies are included to identify strong candidate projects for investment in electrification. With the electric utility provider committed to zero carbon emissions for electricity generation by 2050 (1 – Xcel Energy), designing all electric buildings will reduce the University's carbon footprint as the utility grid's carbon impact improves. Program plans are the critical phase for major architectural massing decisions, HVAC systems and thermal utility analysis which will shape the project's ability to meet carbon and sustainability goals.

This Life Cycle Cost Analysis documents program plan life-cycle cost analysis for various building mechanical systems. There are no campus thermal utilities for the proposed site, therefore all heating and cooling will be generated on site with either electricity or natural gas. Three all electrically sourced options with varying complexity were compared against a standard baseline option which includes gas and electric sources. Each option was analyzed over a 30-year life cycle. Quantitative values were considered for each option and included Rough Order of Magnitude (ROM) capital cost, operations cost, energy cost, water cost, total energy consumption, water consumption, and carbon emissions. First costs are estimated based on historical data, and it is assumed that the first cost for the electrification options are higher than the first cost for the baseline option due to the novelty of the design. As such, there is reason to believe that the cost between All-Electric Option 3 and the Baseline could be closer than the report predicts, and Option 3 would have a favorable life cycle cost.

The report recommends refining the Baseline and All-Electric Option 3 systems during Schematic Design to further detail first costs and more accurately reflect the life cycle estimate.

(1) https://www.xcelenergy.com/company/media_room/news_releases/xcel_energy_aims_for_zero-carbon_electricity_by_2050

Affiliated Engineers, Inc.

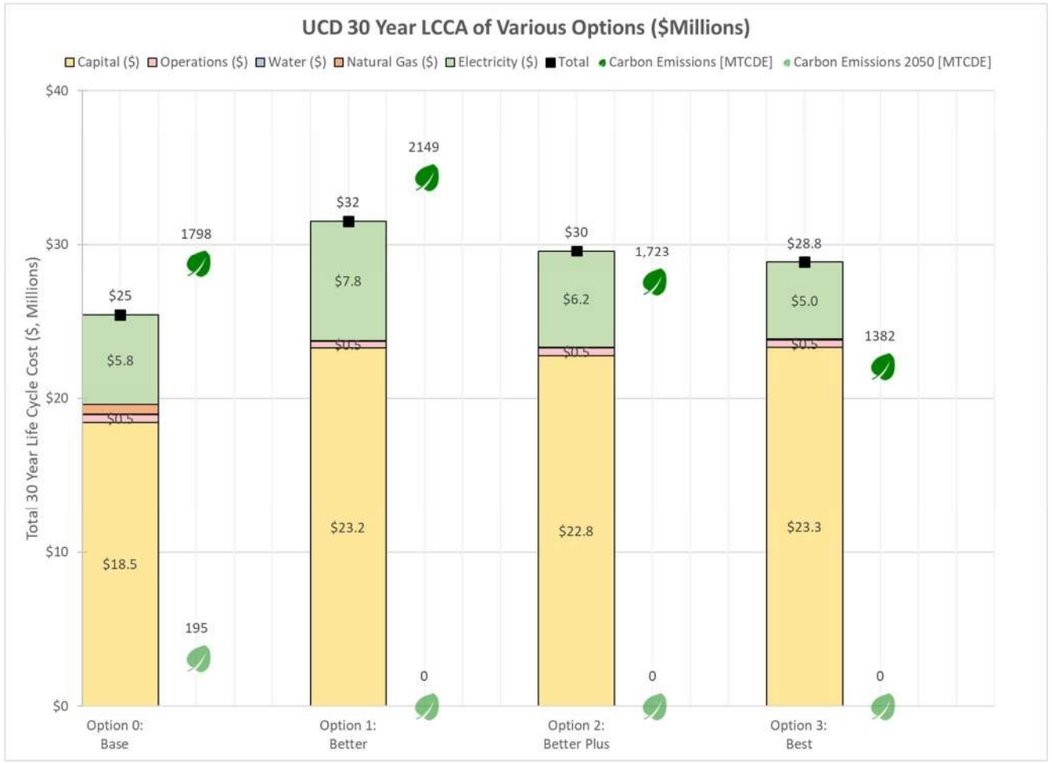


Figure 1– Summary of Life Cycle Cost Analysis
Note: metric ton carbon dioxide equivalent (MTCDE)

Based on the summary of the life cycle cost analysis shown above, AEI would recommend two options for further investigation to refine first costs and impact on a more detailed project program.

1. If a familiar system that uses best practices utilizing electric cooling/ventilation and natural gas heating is preferred, then Option 0 (baseline) should be pursued.
2. If carbon reduction/neutrality is a priority, then Option 3 (Best) should be pursued. The higher initial investment is not justified by life cycle cost savings by today's utility rates. AEI would recommend considering Option 3 based on university goals for carbon neutrality and future planning for an all-electric infrastructure. This option highlights:
   - Less energy consumption (EUI)
   - Zero on-site carbon emissions
   - Less grid carbon emissions dependent on electricity source
   - Longer equipment life
   - Future proof for State electrification requirements

   In addition, unique features of this option can provide educational opportunities to future engineers.

Certain benchmarked assumptions are made in the analysis which could significantly impact the results such as the escalation rate of electric, natural gas, and water costs, the availability of financial incentives and rebates, and the actual cooling and heating demands of the building. Variability in the energy and water costs and/or the implementation of a carbon tax would reduce the payback time for the electrified and more efficient central energy system. Financial incentives could reduce the additional capital investment required.

Electrification Options Considered

Four cases were considered for this study exploring the options of thermal utility sources and delivery systems. Equipment in the outlined systems would be in rooftop penthouses across the building with air-sourced equipment outside on the roof, and the sewer heat pump system or boilers located on the first floor. The options are summarized in table 1 below.

Table 1 - Summary of Options Considered

Options Considered	#	Description	Reason
Base	0	• AHU DX cooling • VAV with HW reheat • Natural Gas Hot Water (condensing) Boilers • Code Heat Recovery (Wheel) 50% sensible and latent heat recovery effectiveness	Lowest capital cost
Better	1	• AHU DX cooling • VAV with electric reheat • Code Heat Recovery (Wheel) 50% sensible and latent heat recovery effectiveness	Replace gas boilers with electric reheat. Lowest all-electric mechanical capital cost.
Better +	2	• AHU DX cooling with Direct Evaporative Cooling • VAV with HW reheat • Electric Heating (Air Source Heat Pump) • Maximized Heat Recovery (Wheel) 70% sensible and latent heat recovery effectiveness	Replace gas boilers with Electric Air-sourced Heat Pump. Load reduction on mechanical systems with improved heat recovery and reduced peak cooling demand with evaporative cooling. Improved electric heating efficiency over electric reheat.
Best	3	• AHU/DOAS with Direct Evaporative Cooling (no hydronic coils)	Maximized load reducing techniques with indirect/direct evaporative cooling, improved heat recovery, and improved

		• Indirect Evaporative Cooling on Exhaust air before entering to the Wheel • VAV with HW reheat + chilled water (4-pipe) • Active Chilled Beams • Electric Heating/Cooling (Sewer Heat Pump) • Maximized Heat Recovery (Wheel) 75% sensible and 20% latent heat recovery effectiveness	terminal unit design (4-pipe VAV /active chilled beams. Sewer-sourced Heat Pump provides all electric heating and cooling with improved efficiencies over air-sourced heat pump.

COVID-19 Considerations

Given the current climate, it is important to understand the implications of the ventilation system during a pandemic. All systems studied provide adequate ventilation air as required by local codes. Options 0 – 2 can allow for 100% of the total volume of air through the air handling unit to be outdoor air. In select spaces where active chilled beams are implemented in Option 3, recirculation air within the space and cannot be avoided. Oversizing equipment to meet the additional load of 100% outside air was not studied in this report and would add to the initial costs of the system. In all cases, operable windows are recommended to allow for user controlled natural ventilation.

Results

The key results of the 30-year lifecycle cost estimate are summarized in the table below:

Costs		Option 0: Base	Option 1: Better	Option 2: Better Plus	Option 3: Best	Notes
Initial Capital Cost						
	Total Mechanical and Electrical Cost (all phases)	$16,821,000	$21,813,207	$21,299,159	$22,220,534	
Water Cost (yr 1)	Total Water and Sewer Cost	$503	$503	$769	$722	
Natural Gas Cost (yr 1)	Total Natural Gas Cost	$12,171	$0	$0	$0	
Electricity Cost (yr 1)	Total Electricity Cost	$146,271	$196,113	$157,227	$126,094	
	Total Energy Cost [$]	$158,442	$196,113	$157,227	$126,094	
	Energy Cost Savings Compared to Option 0		-$37,671	$1,215	$32,348	
Operation Cost						
	Number of Full Time Employees	0.223	0.215	0.231	0.223	based on #hrs/year
	Cost of Labor	$26,769	$25,846	$27,692	$26,769	1 FTE per year /$120,000
	Cost of Maintenance	$10,000	$10,000	$10,000	$10,000	estimate for filters, broken dampers, valves, belts, etc
	Total Operations Cost (w/o Energy or Water)	$36,769	$35,846	$37,692	$36,769	
	Total Operations Cost Savings Compared to Base		$923	-$923	$0	
Payback	Payback	N/A	Never	83 years	54 years	
Direct and Indirect Carbon Emissions	Carbon Emission NG (MTCE)	195	0	0	0	
	Carbon Emission ELE (MTCE)	1,603	2,149	1,723	1,382	
	Total Carbon Emission (MTCE)	1,798	2,149	1,723	1,382	
	Carbon Offset Cost [$]	$0	$0	$0	$0	No carbon tax present for Colorado

Table 2 - Summary of Life Cycle Cost Analysis

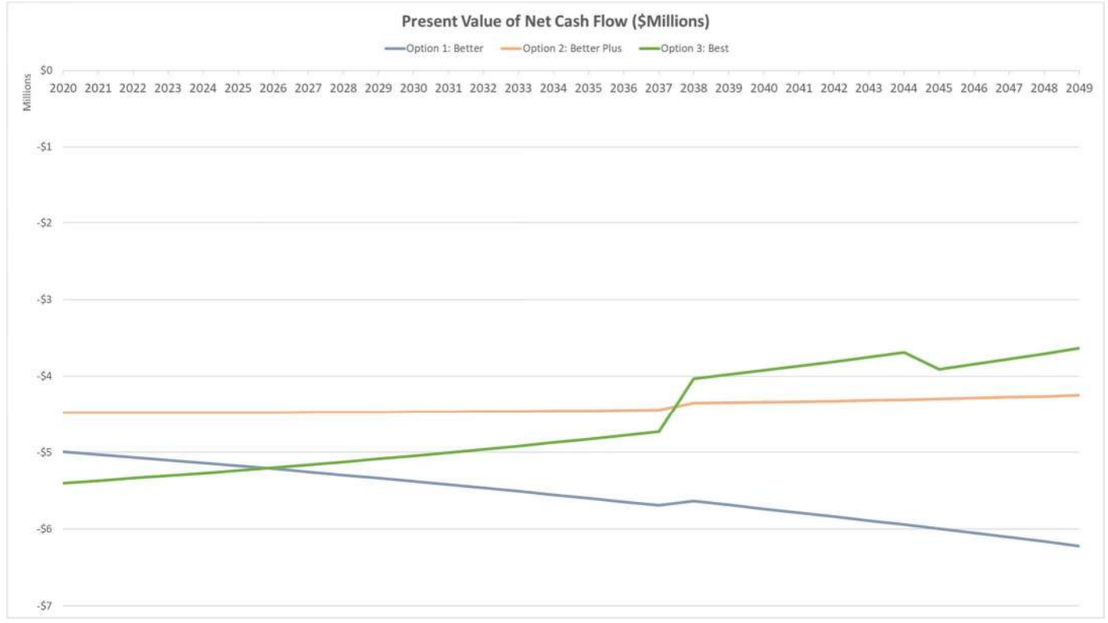


Figure 2 – Present Value of Net Cash Flow

AEI made several observations and conclusions from the Life Cycle Cost Analysis.

It is immediately apparent that Options 1, 2, 3 **DO** meet the all-electric goal but **DO NOT** payback within the 30 analysis when compared to the baseline option (x-axis) when using today's utility rates and considering no carbon neutrality incentives. Option 1 does not reduce energy costs over the baseline and therefore trends away from the x-axis which indicates it will never payback. Options 2 and 3 reduce energy costs and therefore trend upward toward the x-axis which indicates there will be a payback in the distant future. Option 3 trends upwards the quickest indicating that of the three all-electric options it will payback the soonest, but still outside of this 30-year analysis again based on today's utility rates.

Option 1 will generate the most carbon emissions initially but as the electric grid moves from carbon emitting sources to renewable sources, Option 1 will eventually release fewer emissions than the baseline solution. Options 2 and 3 emit fewer emissions from the baseline from the beginning and will continue to do so as the grid improves.

Sensitivity

With the relatively high constructions costs in the Denver area and relatively low utility rates, there is no near-term paybacks. Should utility rates, especially natural gas rates, rise due to political climate around using natural gas or the addition of a carbon tax, the payback for all electric options would reduce. For instance, with a 10% natural gas escalation rate and a $25 per MTCDE carbon tax, Option 3 would have a payback of 38 years. Also, if Option 3 initial costs are within 10% of baseline cost, Option 3 would have a payback within 30 years.

University of Colorado Denver, College of Engineering
Pivot Plan Electrification LCCA

Recommendations

The best performing option to achieve energy and carbon reduction is to invest in Option 3, however this study shows the payback greater than 30 years given the assumed high initial capital cost and the low costs of both electricity and natural gas based on today's utility rates and no carbon neutrality financial incentive mechanisms. If reducing carbon emissions and demonstrating sustainable practices are a priority regardless of payback time-frame, Option 3 best displays these priorities.

The first costs used for the life cycle analysis are based on historical system data. While AEI has significant experience designing all-electric systems, they are novel and there is not an abundance of historical cost data. As such, there is reason to believe that the cost between Option 3 and the Baseline could be closer than our benchmarks predict and Option 3 would have a favorable life cycle cost.

AEI recommends refining the Baseline and Option 3 systems during schematic design to further detail first costs and more accurately reflect the life cycle estimate. If the Baseline Option is selected, the building can be future-proofed for all-electric infrastructure with thoughtful design that does not impact project budget.

APPENDIX

Methodology and Assumptions

Building Load Profile

AEI developed an energy model for the building using EnergyPlus, with a high-performance envelope to determine the annual cooling and heating demand and operational profile based on historical design data.

Table 4 is a high-level summary of inputs assumed for these early massing energy models. The energy model load profiles are calculated using code ASHRAE 90.1 characteristics, and estimated typical internal loads, without any allowances for climate change, construction deviations or occupancy variances. The real operating peak cooling demand is expected to be between 500 and 700 square feet per cooling ton at the LLL tower and residence facility, and between 350 and 500 for the LSTE buildings, which is slightly lower than loads used in this analysis.

The cooling and heating demand calculated by the energy model is summarized below.

Table 3 – Loads Summary

	LSTE (East)
Square Feet	94,200
Peak Cooling (Tons)	200
Cooling (Ton-hours)	420,166
Peak Heating (MBH)	1,317
Heating (MMBtu)	2,876

Table 4 - Energy Model Inputs

General	Weather Data	Denver, CO
	ASHRAE Climate Zone	5B
	Energy Code	ASHRAE 90.1 2013
	Simulation weather file	USA_CO_Denver.Intl.AP.725650_TMY3.epw
	Modeled total floor area	94,200 sf
Building Envelope	Roof constructions	U-factor = 0.050
	Window constructions	U-factor = 0.55, SHGC=0.28
	Exterior wall constructions	U-factor = 0.064
	Window to Wall Area Ratio	40%
System Assumptions	HVAC	See Table 1
	Lighting	LED throughout
	Kitchen	Excluded process gas/steam
	Labs	Excluded process gas/steam
	Equipment (Labs)	8W/sf
	Equipment (Offices)	2W/sf

University of Colorado Denver, College of Engineering
Pivot Plan Electrification LCCA

Lab Air Change Rates per Hour (ACH)	Labs	6ACH occ./4 ACH unocc.
	Other spaces	Compliant with min ventilation per ASHRAE 62.1
Utility Cost	Natural Gas	$3.7/MMBtu (virtual rate calculated based on local utility tariff)
	Electricity	$0.055/kWh (virtual rate calculated based on local utility tariff)
	Water	$2.67 per 1,000 gallons
Economic Factors	Electricity Cost Escalation Rate	3%
	Natural Gas Cost Escalation Rate	4.7%
	Water and Sewer Cost Escalation Rate	3%
	Interest Rate	3%
	Inflation Rate	3.5%

Additional Modelling Results

From the AEI energy model, the results of the different mechanical options are summarized below.

Figure 3. EUI Comparison by End-use Category

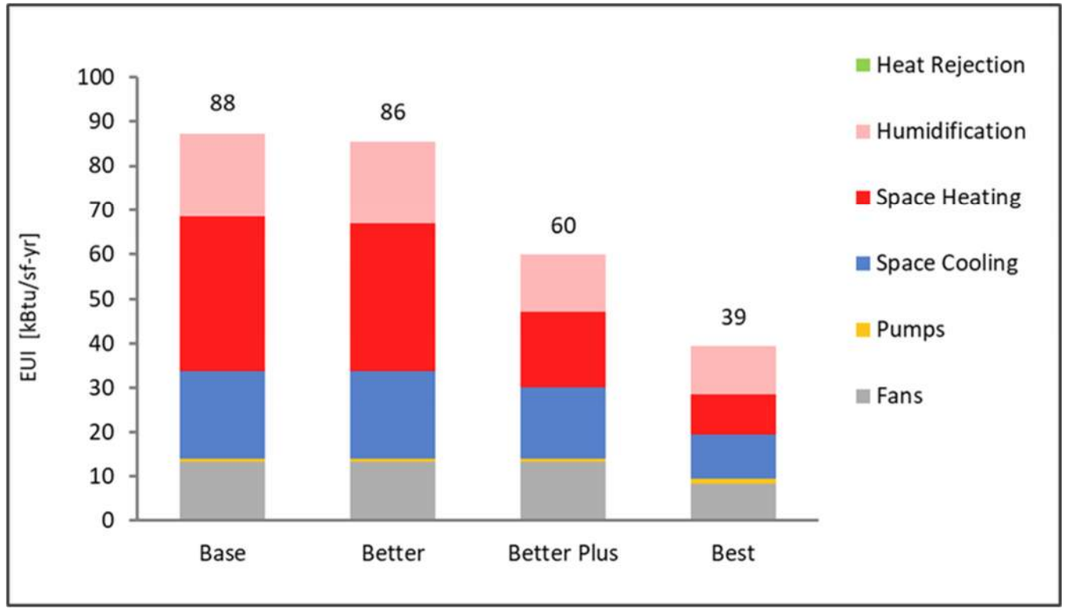


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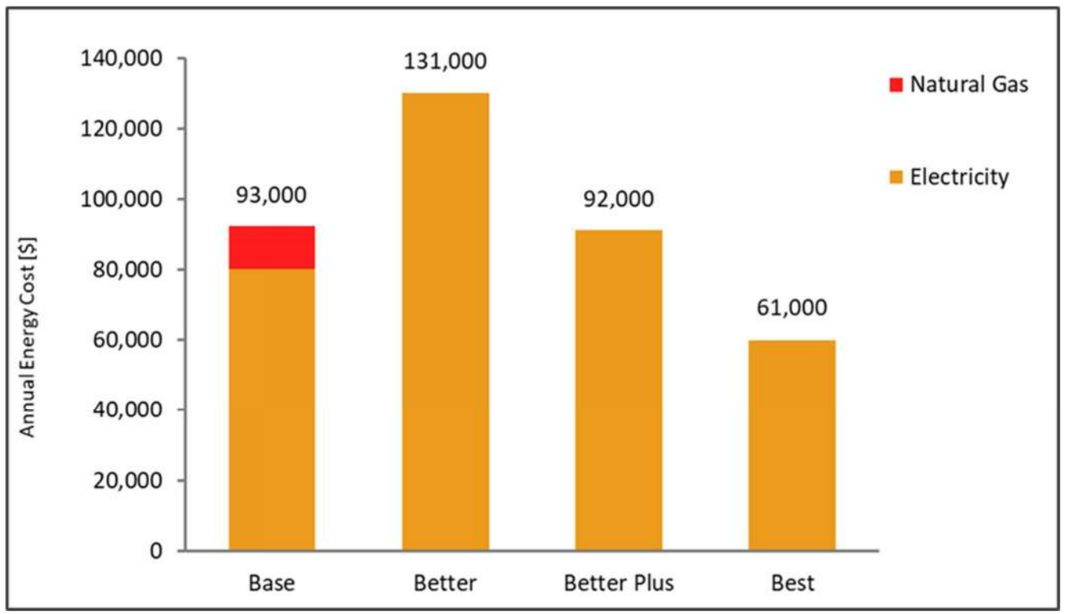
Figure 2. Annual Energy Cost Summary



Third-Party Independent Review

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RE: Third-Party Independent Review
CU Denver College of Engineering, Design, and Computing (CEDC)
2021 Program Plan Amendment

To the CU Denver Team,

We have reviewed the referenced Program Plan Amendment addressing updates to the CU Denver CEDC. We offer the following comments:

Executive Summary:

1. *Executive Summary* is consistent with the findings in the previous program plan exercises conducted since 2015, which articulate the evolving landscape of contemporary engineering education and specifically its cross-disciplinary complexion. The summary identifies the proposed new site for the building, identified as a development site by the CU Denver 2017 Facilities Master Plan, to enhance the gateway into the CU Denver Neighborhood at the Auraria Higher Education Center (AHEC).

Introduction & Background:

2. *Institutional Background* provides a succinct overview of the CU Denver historical evolution within AHEC and downtown Denver, and its role as a public urban research university in the city and the state;
3. *Project History* provides overview of the evolving program plan for the CEDC project since the original 2015 Program Plan, including the exploration of different sites for the project and program iterations focused on consolidation of physical space to reinforce collaborations across colleges.
4. *Mission & Vision* clearly articulates the trending attributes of today's engineering education, and CU Denver's focus with the CEDC project towards establishing itself as a leader of innovation within the Denver urban corridor.
5. *Relation to Strategic Plan* pointedly connects the vision of the CEDC with specific goals and objectives as articulated in the 2008-2020 University of Colorado Denver Strategic Plan.
6. *Future of Engineering & Facilities* reinforces the overarching mission of the CEDC as it relates to the educating and delivering the future generation of engineers.
7. *Statement of Need and Benefit* reflects alignments of the CEDC with current U.S. labor analysis of engineering careers and with Colorado Commission on Higher Education (CCHE) restated goals per its 2017 Master Plan Update; the section also provides a clear summary of classroom and lab spaces needs.

Project Description:

8. The new site proposed is identified as a development site by the CU Denver 2017 Facilities Master Plan.
9. The proposed site is concentrated at what is considered to be the gateway to the CU Denver Neighborhood at AHEC.
10. The CEDC program will maintain a strong affinity with the North Classroom Building (NCB), where current programming resides, and with some programming slated to remain, having been recently renovated during improvements to the NCB.
11. The site conditions – physical patterns, constraints and opportunities - are clearly communicated in the description of the proposed site.
12. The program description articulates a building efficiency factor that is consistent with this building type.
13. The High Performance agenda for the project is briefly described and is consistent with concepts typically explored for State of Colorado projects required to secure LEED-certification; and a specific analysis has been conducted to initially address alignment with State of Colorado steps toward more sustainable state facilities.
14. The Financial Model & Assumptions analysis is consistent and appropriate for construction of a project of this building type and scale, based on our familiarity with projects at AHEC, and with projects of this building type delivered in the Denver-metro region.

In summary, the 2021 Program Plan Amendment for the CU Denver College of Engineering, Design, and Computing (CEDC) puts forth reasonable recommendations that evolve the goals, objectives and findings of the previous program plan efforts since 2015.

Respectfully Submitted,

Joey Carrasquillo AIA LEED AP
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ZGF

Appendix F

National Renewable Energy Laboratory White Paper

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

An Energy-Performance-Based Design-Build Process: Strategies for Procuring High-Performance Buildings on Typical Construction Budgets

Preprint

Jennifer Scheib, Shanti Pless, and
Paul Torcellini

To be presented at the 2014 ACEEE Summer Study on Energy Efficiency in Buildings
Pacific Grove, California
August 17–22, 2014

NREL is a national laboratory of the U.S. Department of Energy
Office of Energy Efficiency & Renewable Energy
Operated by the Alliance for Sustainable Energy, LLC

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An Energy-Performance-Based Design-Build Process: Strategies for Procuring High-Performance Buildings on Typical Construction Budgets

Jennifer Scheib, Shanti Pless and Paul Torcellini, National Renewable Energy Laboratory

ABSTRACT

The National Renewable Energy Laboratory (NREL) experienced a significant increase in employees and facilities on its 327-acre main campus in Golden, Colorado, over the past 5 years. To support this growth, we developed and demonstrated an acquisition method that successfully integrates energy-efficiency requirements into the design-build contracts for new buildings and piloted this process with our large office building, the Research Support Facility (RSF). The process has been replicated and refined in several additional new construction projects including an office building expansion, a smart grid research laboratory with a supercomputer, a parking structure, a site security building, and a cafeteria. Each project incorporated unique and measureable energy performance requirements in the design-build contracts, resulting in the use of aggressive efficiency strategies with typical construction budgets.

We found that, when measureable energy efficiency is a core requirement defined at the beginning of a project, owners can expect facility energy performance to meet design expectations. NREL staff successfully completed the new construction projects and documented recommended practices (RPs) in training materials and a how-to guide so that other owners can learn from our experience and replicate market viable, world-class energy performance in the built environment without increasing first costs. This paper summarizes the RPs and gives context within the NREL projects.

Introduction

A primary goal of the Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) is to lead innovative research and deployment of renewable energy and energy efficiency technologies that address the nation's energy and environmental needs. Due to energy cost increases, energy security concerns, and environmental impacts from energy systems, the market demand for renewable energy and energy efficiency has expanded. NREL's growth has paralleled this increased demand and resulted in a significant increase in employees and facilities on its 327-acre main campus in Golden, Colorado. From 2010-2011, NREL staff levels increased 20% and campus square footage expanded 48%. This pace of campus construction continued through 2013 with the addition of six new structures totaling a construction cost of nearly $400 million.

To support both NREL's growth and DOE's energy and sustainability goals, NREL Commercial Building researchers worked with the capital construction team to develop and demonstrate a construction acquisition method that integrates measureable energy-performance requirements into the project requests for proposals (RFP) and contracts. This process is founded in the idea that cost-effective and deep energy savings are possible when design and construction are well integrated within the constraints of a budget. NREL facility growth provided an opportunity to demonstrate this concept in real projects. We developed and piloted this energy-

performance-based design-build process with the first major construction project in the campus build out, and then replicated and evolved the process with five other buildings. The following is a list of the projects that are referenced in a photo of the campus in Figure 1:

- (1) Research Support Facility (RSF I) – a 824-occupant, 220,000 ft^2 office building with a data center, completed in June of 2010
- (2) Research Support Facility Expansion (RSF II) – a 500-occupant, 138,000 ft^2 office building and conference space expansion to RSF I, completed in November of 2011
- (3) Parking structure and (4) site entrance building (SEB) – a five-deck, 1,800-car parking garage and 1,500 ft^2 campus access control building, both completed in February of 2012
- (5) Staff cafeteria – a 12,000 ft^2 commercial kitchen, servery, and 250-seat dining hall, completed in July of 2012
- (6) Energy Systems Integration Facility (ESIF) − a 182,500 ft^2 smart grid research laboratory with a supercomputer and 200 workstations, completed in January of 2013.

Figure 1. Aerial Picture of the NREL campus taken in May, 2013. *Source*: images.nrel.gov #25812.

Each project features world-class efficiency strategies, performs as expected, and was constructed within typical DOE project budgets.

The goal of this paper is two-fold: to summarize how NREL incorporated energy-performance requirements into the building acquisition process; and to inform owners and owner's representatives of the state of replication and provide resources for improving the operational energy performance of future commercial buildings. Toward this end, this paper is divided into three sections: 1) Definition of an energy-performance-based design-build process using a set of RPs; (2) Examples of how NREL construction projects used the RPs; (3) Outreach and deployment efforts that have sparked replication of the process on a broader scale. The paper concludes with links to the training and how-to materials created for use by owners and design teams interested in replicating the process.

An Energy-Performance-Based Design-Build Process, Defined

NREL's recently constructed buildings incorporate a range of readily available energy efficiency strategies combined in innovative ways. While this should not be overlooked as a key aspect of success, the innovation started with rethinking the acquisition process. Traditionally, NREL had used a design-bid-build method with informal energy-related goals. The designs were highly energy efficient for the time but the process relied on extensive design standards and lacked integration of design with the actual construction and building operation. As an owner, NREL had to heavily participate to keep design standards on the cutting edge of technology and stay within the budget.

In 2007, during the initial acquisition planning for the RSF I, the team opted for a "Best Value Design-Build/Fixed Price with Award Fee" acquisition approach (DBIA 2013). This approach is intended to encourage innovation of the design and construction team, reduce owner's risk, increase the speed of construction and delivery, control costs, and establish measurable success criteria (Pless 2011). For NREL, the success criteria became, among other things, measureable energy use intensity (EUI) and cost control. NREL set an aggressive EUI of 25 kBtu/ft^2/yr and DOE provided a fixed price of approximately $64 million. Based on the final size of the project, the construction cost was $259/ft^2. This is at the low end of the same type of buildings built in the same time period (Pless 2012).

All NREL new construction projects now use an energy-performance-based design-build process. Instead of specifying technical standards such as building size, configuration, conceptual drawings, and other attributes, NREL uses the RFP to prioritize key performance parameters as "Mission Critical," "Highly Desirable," and "If Possible," with energy criteria throughout. Competing design-build teams are judged, in part, based on their ability to incorporate and support as many of the objectives as possible within the overall fixed budget and schedule constraints. All recent NREL projects have proved the feasibility of procuring low-energy buildings on typical construction budgets.

The guidance presented here serves as a cornerstone for achieving real energy savings. The RPs are written for new construction, design-build projects; however, variations of the RPs could be used for retrofits and for projects with other contract structures that encourage an integrated project delivery approach where all team members are responsible for the energy goal from day one into warranty. Following are descriptions of RPs for an energy-performance-based design-build process.

RP #1: Include a Measureable Energy Goal in the RFP and Contract

Energy requirements should be included in prominent parts of the RFP (and later in the contract) and reinforced throughout the document. In the RFP, the owner states the mission of the building and defines the focus of the design team for the project. The RFP should outline a specific, aggressive, and measureable target. This goal should be presented in context with other project requirements.

Energy Goal Options

The following options for energy goals are presented in order of most to least effective for reducing total annual energy use.

- Whole-building EUI target: A building's energy use per unit area, most commonly given in kBtu/ft2/yr.
- Net zero energy building: A building with greatly reduced energy needs through efficiency gains such that the balance of energy needs can be supplied with renewable technologies.
- Percent savings relative to a baseline: Typically, energy cost savings compared to a well-documented baseline representing the code minimum form of the building design.
- Sustainability rating system requirement: An example is Leadership in Energy and Environmental Design (LEED), which encourages wise use of land, materials, water, and energy, while promoting occupant comfort.

In general, owners should consider using a combination of goal types to drive design-build teams to focus on efficiency while achieving general sustainability. Whenever possible, an EUI target should be used. This encourages reducing energy demand before supplying renewable energy, sets a hard boundary for net zero energy design, gives a clear and measureable goal that will focus the design team during design development and into operations, and allows for simple comparison to the performance of other buildings.

Tiered Goal Structure

A tiered goal structure helps the team prioritize an owner's wish list of building features/ functions and design process outcomes. The following is an example of the tier language used on NREL projects to classify the importance of goals such as energy, safety, and schedule.

- Mission Critical: Minimum required for the project. Typically, very few items fit into this category.
- Highly Desirable: Not required by the project to proceed, but plays heavily into design-build team selection. If not Mission Critical, general sustainability goals or aggressive EUI targets can be located in this section of the RFP.
- If Possible: Not required by the contract, but can play into design-build team selection if a number of design competition submittals are similar. This is a good location for stretch goals such as a highly aggressive EUI and percent savings goals.

The key is to rank the importance of the energy efficiency goals in the context of other competing project goals within these categories. As previously mentioned, teams are partially evaluated on the depth in which they can achieve the priorities. Then, the team that wins the competitive procurement process is bound contractually to meeting the items to which they committed. Multiple energy goals should be used throughout the list to maximize the value to the owner and to test the depth that energy efficiency can be achieved within the fixed budget.

RP #2: Develop the Energy Goal Using Multiple Resources

Once the goal type and structure is defined, the owner team must select the value for specific energy use or percent reduction goals. In this task, use a broad range of resources to ensure that it is aggressive yet achievable. The ideal approach to setting whole-building absolute energy use targets makes use of all available data, taking advantage of the strengths of each data type. Examples of data types are:

- High-level sector data: Examples include Commercial Buildings Energy Consumption Survey and ENERGY STAR® Target Finder.
- High performance case studies: Examples include the High Performance Buildings Database (DOE 2013), ASHRAE High Performance Buildings magazine, Advanced Energy Design Guides case studies (Leach et al 2012), and New Buildings Institute reports (NBI 2014).
- Portfolio energy use data: An example is a retailer with a number of stores that share the same prototypical design.
- Whole-building energy simulation: Examples of energy simulation programs include EnergyPlus, eQUEST, and DOE-2.

If goals are properly selected and tiered in the RFP document, the actual number of the goal is less important as the market will determine competitively the level of efficiency that can be achieved for the provided fixed price.

RP #3: Develop the EUI Goal Using Normalization Factors

Normalizing energy use goals to floor area is helpful for building comparisons but unintended consequences could happen when put into a competitive environment. For example, the EUI of a building will decrease if fewer people are in the building and space efficiency can be compromised. In this example, incentive factors can be defined that encourage space efficiency while maintaining the integrity of the energy goal as defined for a given building size and occupancy. For example, NREL used the following two factors in the office building energy goal definitions:

- Occupant density factor: For office spaces, define an increase in EUI for increased occupant density. This can be given as a table or as an equation.
- Parking space density factor: For parking garages, define the energy goal per parking space instead of per area to maximize the number of cars in the structure and/or minimize the footprint of the structure.

Additional normalization factors can be created and defined depending on building unknowns such as data center capacity or other housed services.

RP #4: Include Technology-Specific Efficiency Requirements in the RFP

Additional end use or technology-specific goals can add value by focusing team attention to specific design challenges and encouraging passive building design. Some examples of technology-specific requirement to include in the RFP are:

- Passive system requirements: Include general system requirements such as daylighting or natural ventilation to influence concept design. Add specific performance language such as a daylight quantity-hour metrics to ensure attention to detail in the execution of the passive systems.
- System efficiencies: General language such as “best in class” can be used if specific efficiencies are unknown or cannot be determined. Specific metrics, such as data center power usage effectiveness (PUE), will bring design team attention to the RFP requirement and ensure the desired level of performance.

It is important to note that language should be performance based and not solutions (prescriptive) based. Focus on performance and not on a specific solution. Design teams, along with their contractor, are being paid to generate creative solutions—owners need to provide the boundaries and let them do the job they are being paid to do.

RP #5: Define Owner Specified Energy Loads

Additional RFP language that is helpful to include for both the owner and design team is a detailed list of all loads that the owner intends to include or allow in the building. Expected

counts, efficiencies, and use profiles can be included as baseline information but teams should be encouraged to consider design approaches encouraging highest efficiency use. Examples of owner loads are:

- Miscellaneous loads: This load type primarily consists of plug loads such as computers, printers, phones, and video displays. Create a list of all typically used loads in similar building types, taking care to think through all tasks, occupant types, and season equipment needs to capture potential use cases, which are also potential energy use reduction opportunities (NREL 2011).
- Process equipment: List the equipment required to complete a specialized function such as cooking or surveillance.

In addition to RP #4, which encourages system level efficiency goals, the RFP should include specific equipment-specific efficiencies for owner loads.

RP #6: Provide Calculation Methods for Substantiation

There are many energy calculation/modeling approaches for any given design solution. To prevent ambiguity in how the team is to substantiate that the energy goal is achieved, the RFP should include an appendix that lists all calculation methods to be used. The required methods can be broad, such as calling out specific energy modeling software. Ideally, the required calculation methods should focus on key parameters that will clarify energy goal definitions and influence high-level design decisions. Examples of specific calculation methods to include are:

- Net zero energy site-to-source factors: Multipliers for converting site energy to source energy so that renewable energy systems can be sized accordingly if the energy goal definitions require source net zero energy.
- Central plant and conversion efficiencies: Energy loss factors to be used when calculating the effectiveness of plant or off-site energy resources.
- ALL building loads in energy use requirements: Teams to consider all building loads, and therefore, identify possible efficiency strategies, including distribution transformers, light control parasitic loads, elevator lights and fans, etc.
- Definition of minimal thermal comfort, lighting levels, and ventilation rates: Sets the minimal level of services required for each space type.

RP #7: Require Goal Substantiation Throughout Design

The energy goal and supplemental calculation information/methods are only helpful to the decision making process if substantiation results are available prior to or in tandem with key decision points. Including a substantiation schedule in the RFP will ensure a tandem schedule.

- Energy modeling schedule: This schedule should coincide with design package completion for owner review. Comments on the design package provided by the owner can incorporate ideas on additional energy saving opportunities and questions about modeling assumptions with respect to the plans and specifications. For energy goals, the energy model should match the as-built condition of the building at time of turnover.

- Model results for commissioning: If possible, a final, updated design model should be provided prior to commissioning so that end use system profiles and sequence of operations can be used as an extension of typical functional testing checklists.

RP #8: Develop a Process for Performance Assurance in Operations

RFP language requiring energy goal substantiation should be followed by energy performance assurance expectations so that energy performance is not realized in actual operations. The owner must be able to get feedback on the energy performance throughout the warranty phase (and beyond), compare the results to model predictions, and leverage the design team to correct installation or control mistakes that are inhibiting maximum energy performance. Specific considerations to include in the RFP are:

- Submetering requirements: The granularity of a metering plan will vary depending on building type, but the RFP should require separate metering for at least end use and whole-building energy consumption, water, and gas.
- End use budgets: The design team should provide owners with end use budgets that are determined through the energy goal substantiation process in order to supply a point of reference for comparing end use metering data.
- Real performance incentives: An award fee can be structured so that a large portion of the money can be withheld until predicted energy performance is realized within a defined error range. This delayed incentive can help smooth the transition process of the building from the intimate knowledge of the design team to new owner operation.

It is important to include the design substantiation schedule and performance assurance plan in the RFP so that design teams understand the time commitment necessary to produce a high performance building. While RFP requirements cannot guarantee a world-class energy design, these RPs are a comprehensive list of actions that has proven to be effective for the NREL facilities.

An Energy-Performance-Based Design-Build Process at NREL

This section describes the representative NREL campus projects in terms of their use of the RPs. Each project used the entire RP set in some form; highlights are given.

Measured energy performance results from April 22, 2013 through April 22, 2014 are presented in comparison to each project's highest priority measureable energy goal The results show that, as a whole, the NREL new construction is meeting the energy allowance. Energy use is approximately 5% more than the sum of the model predictions, which is primarily due to a cooler winter and warmer summer than the model weather file used for all projects (TMY3), as well as a few instances of higher than expected miscellaneous electric loads. A detailed assessment of measured performance will be the topic of another report. Overall, though, the interim results support the efficacy of the energy-performance-based acquisition approach.

Research Support Facility I and II

The RSF I (the two wings shown in Figure 2) and the RSF II expansion (a third wing) is NREL's 360,000 ft^2 administrative support office building, and includes 1,375 workstations,

numerous conference rooms, NREL's high efficiency corporate data center, a lunchroom, a library, and an exercise room. The RSF I and II showcase numerous high-performance design features and passive energy strategies such as optimal east-west building elongation, daylighting, static solar shading, transpired solar collectors, a crawl space for thermal storage, radiant heating and cooling, underfloor ventilation-air distribution, and approximately 1.5 MW of PV on the office wing roofs and on the adjacent parking lot canopy (NREL 2014b).

Figure 2. East perspective image of the RSF I wings. *Source*: images.nrel.gov # 19548.

The acquisition process used for the RSF I was the seed for the rest of the campus. The energy goal was developed in preplanning and included in the tiered, best-value RFP with the help of a design-build acquisition consultant (DesignSense 2010). The goal-type diversification, goal status in the RFP structure, and normalization approach was replicated for the other campus construction. The following are snapshots of the first three RPs in application.

RP #1 (Include a measureable energy goal in the RFP and contract)

- RSF I and II goal types: Net zero energy, an EUI, percent reduction, and rating system goals were all specified in the RSF I and II contracts. The team focus for energy goal substantiation was primarily on the EUI.
- Energy Goal RFP Language:
  - Mission Critical: LEED Platinum
  - Highly Desirable: 25 kBtu/ft^2/yr, normalized, as discussed in this section
  - If Possible: Net zero energy design approach

RP #2 (Develop the energy goal using multiple resources)

The EUI goal for the RSF I was developed using high-level sector data, case study comparison, and whole-building energy modeling. An EnergyPlus-based optimization engine, now incorporated into OpenStudio, was used to find a low energy use range when footprint and window-to-wall area ratio were varied (DOE 2014). Since the building was a first of its kind in efficiency, a high level of consideration was required to make sure the goal was aggressive yet attainable. The following NREL campus buildings either reused this goal with some tweaking or used simple spreadsheet estimates to set a new goal.

RP #3 (Develop the energy goal using normalization factors)

An RFP goal of 25 kBtu/ft^2/yr was developed using an assumption of 650 people in a 220,000 ft^2 building for RSF I and 450 people in a 150,000 ft^2 building for RSF II. These values

are based on government office building space utilization standards. A normalization table was given in the RFP with the intent of maintaining a constant energy impact of each employee in the building as was determined for the original goal. The occupant density was increased in coordination with the elongated wings, open floor plan, and compact furniture systems. An additional data center capacity allowance of 65 watts per person (for people using the data center, but not an RSF I or II occupant) was also defined. The space density and data center capacity increased the energy goals as shown in Table 1. The lesson regarding additional data center load accounting is, at a campus scale shared loads should be clearly normalized and allocated to each building when possible.

Table 1. RSF I and II Normalized Energy Goals for Occupant Density and Data Center Load

	kBtu/ft^2/yr			
Project name	RFP goal	Occupant density	External data center users	Contract goal
RSF I	25	+7	+3	35
RSF II	25	+8	0	33
Weighted average	25	--	--	34

Energy Systems Integration Facility

The ESIF has three distinct functions: office, laboratory, and supercomputer. It houses approximately 200 scientists and engineers and a wide range of fully equipped, state-of-the-art laboratories and outdoor test areas. Key energy efficiency strategies that apply to all spaces are reuse of supercomputer waste energy for office and laboratory space heating, evaporative cooling, outside air economizing, daylighting, and high-efficacy fluorescent lighting. Additional strategies used selectively throughout the building include underfloor air distribution, radiant beams for perimeter cooling and heating, natural ventilation with operable windows and ventilation shafts, and ENERGY STAR-rated equipment.

Figure 3. Southeast perspective image of the ESIF. *Source*: images.nrel.gov # 25820.

The full data center build out will equal 10 MW, making this a primary focus of the energy reduction effort. While an EUI requirement was used for the office area, mimicking that of the RSF I and II, the energy use effectiveness goal and heat recovery requirement for the data center were the most prominent RFP energy language.

RP #4 (Include technology-specific efficiency requirements in the contract)

The specific language listed as "required" early in the RFP are:

- Achieve an annualized PUE of 1.06 or lower for the supercomputer. (An annual Energy Use Effectiveness of 0.9 or lower was also included in the RFP to place emphasis on energy recovery from the supercomputer to other parts of the building in addition to the general space efficiency encouraged by PUE.)
- Excess waste heat from the data center above that which is used to heat the facility is exported for use by the remainder of the campus.

The RFP requirement of heat recovery from the data center was the primary driver for early massing decisions. The office (left side of Figure 3) was aligned on an east-west axis. The data center was centrally located between the office and laboratory space for increased heat recovery efficiency to both occupied masses. The laboratory wing consists of high-bay spaces that can use translucent clerestory panels diffusing the low solar angles seen on east and west facades. Additional RFP requirements on hydronic system purpose, heat recovery, and air distribution minimum specifications led to the following sample of design features:

- Data Center: Water-side free cooling, cooling tower plant; low approach cooling towers and heat exchanger; low pressure-drop air delivery system; low pressure-drop piping design
- Labs: Active chilled beams on perimeter; 100% of heating from data center

Cafeteria

The 12,000-ft^2 cafeteria was designed to accommodate 240 guests inside and 70 additional outside. Its efficiency features include daylighting in the dining and servery, with some perimeter daylighting for kitchen staff. Optimal orientation of glazing to the south and north control unwanted summer sun, but allow for winter solar gains and diffuse daylighting year round. A direct/indirect evaporative cooling system provides kitchen and dining area cooling without the use of mechanical cooling equipment.

Figure 4. East perspective image of the cafeteria. *Source*: images.nrel.gov # 21698.

Like the ESIF, the energy use of the cafeteria is driven by equipment. In these instances, the most important set of RPs are to clearly set expectations for equipment and define the loads or equipment that will be needed so that all design team members are clear as to which equipment needs to be "best-in-class" and included in energy calculations.

RP #5 (Define owner-specified energy loads)

The following list is a sample of what was provided to the owner in addition to an extensive survey of best-in-class kitchen equipment.

- Best-in-class energy efficiency kitchen equipment such as commercial induction cook tops
- Best-in-class water efficiency kitchen equipment
- Variable frequency drive demand-based exhaust hoods
- Lowest possible cfm/linear foot of hood (close proximity hoods with side and back panels)
- Integrated off-hours equipment controls to automatically schedule appropriate kitchen/support loads disconnects
- Maximize waste heat energy recovery from exhaust air
- Maximize waste heat energy recovery from hot water drains (only true on some equipment scales, including dishwashing equipment)
- World-class, most efficient commercial kitchen and cafeteria in the world that can attract commercial kitchen partners to demonstrate efficient equipment.

This language helped drive the design team to select ENERGY STAR equipment and higher efficiency models when attainable. For example, the facility's dishwashers use half the water of a standard ENERGY STAR model. The cafeteria's exhaust hoods have high-efficiency filters, wall-style canopies and proximity hoods, with stainless steel end panels to reduce the airflow requirements, and variable volume exhaust, all saving up to 75% of the energy use in a typical kitchen exhaust hood. Additionally, dual-rinse ware washing technology (the unit recycles the dirty rinse water to wash the next load) were specified and condensers were removed from the general proximity to all coolers, freezers and ice machines, thereby reducing the heat generated in the kitchen and the demand on the HVAC cooling systems.

Site Entrance Building

While one of NREL's smallest buildings at 1,500 ft^2, the LEED Platinum SEB includes an array of world-class efficiency and sustainability strategies. The occupied space is fully daylit using light redirecting devices and dimming controls. The high thermal performance envelope includes fiberglass window frames. A radiant heating and cooling system is supplied by ground source water-to-water heat pumps. The underfloor ventilation-air distribution system is connected to energy recovery ventilators. These demand-side efficiency strategies are matched with an 8 kW roof-mounted PV system to allow the SEB to meet a net-zero energy goal.

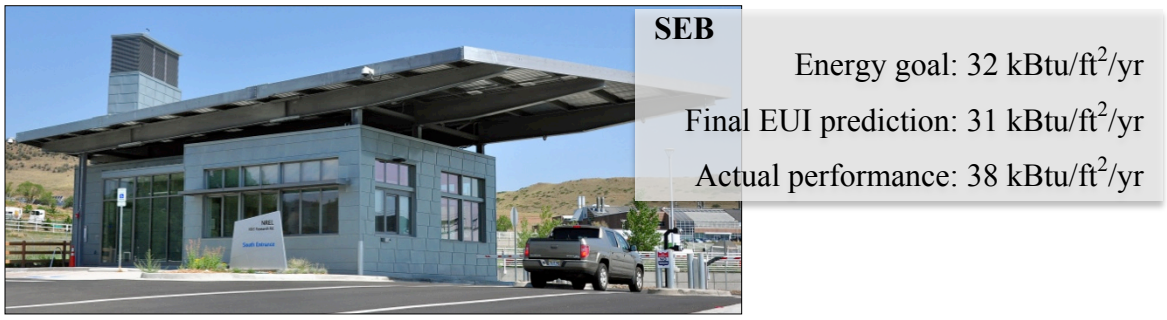

Figure 5. Southeast perspective image of the SEB. *Source*: images.nrel.gov # 22680

Of the NREL campus construction, the energy-performance-based acquisition process for the SEB most closely parallels that developed for the RSF I and II. An EUI was developed, required, and became the focal point of substantiation discussion throughout the project.

RP #6 (Provide calculation methods for substantiation)

Since the RFP requested a net zero source energy definition be used, which accounts for the value of the type of energy supplied to the building, the RFP appendix provided conversion factors for site-to-source energy so that this potentially variable factor was clear to all parties early in design. An additional calculation detail that could have caused ambiguity if not defined was the efficiencies of hot and cold water used from NREL's central plant. The plug load calculations required peak hourly assumptions. The RFP included a description of assumptions used to arrive at the required plug loads and gave consent to decrease the load in the calculation if further efficiency measures were applied in design. A snapshot of the direction given in the RFP is as follows:

"[32 kBtu/ft^2/yr[1]] Annual Goal. This goal is intended to serve as a mechanism to create a building that uses less than this energy intensity annually within its own footprint. The goal is a demand-side goal to be achieved through energy efficiency strategies. Supply-side renewable generation options such as PV, biomass, wind, or renewable energy credits do not count toward the goal. The intent is to use the goal as a tool to develop a comprehensive program of efficiency measures and building operational strategies and policies to reduce energy use in the building as the first priority, rather than encouraging the use of supply side renewable options coupled with a less efficient building where all energy efficiency options have not been first fully exploited.

- The whole-building energy use will be measured at the building footprint. It includes all loads in the building for lighting, HVAC, plug loads, and other miscellaneous equipment connected through the building, such as transformers and control systems. It also includes any façade lighting.
- All losses from transformers and inverters are considered part of this energy calculation.
- Under this definition, PV on or through the building will be considered a supply side technology, and not count toward the goal.
- Transpired collectors, Trombe walls, solar hot water, and other such technologies are considered demand side technologies (e.g., if additional heat was produced using these systems and supplied to another building, that energy could be counted in the supply-side part of the net zero energy calculation).
- Plug loads will be included in the demand side calculation. Equipment included in the annual energy goal derivation:
  - One Dell Latitude E6400 Laptop, and docking station per occupant
  - Two Dell 24" G2410h LCD Monitors per occupant
  - One all-in-one copier/printer/fax machine
  - One LED task light per occupant
  - One VOIP phone per occupant

[1] A planning-phase goal of 9300 kWh was modified early in the project to an area-normalized goal of 32 kBtu/ft^2/yr due to the changing floor area in design and the uncertainty of a number of security-related miscellaneous electric loads.

- One refrigerator
- One coffee pot/maker
- One microwave
- One visitor badge printer
- One visitor badge camera, scanner and signature pad." (DOE 2014)

While the calculation appendix and plug load list was critical to set the stage for the design process and for demonstrating that the building could meet the energy goal, it did not prevent the later addition of loads that are causing the EUI to exceed the energy goal and prediction. The lessons to be learned are that the energy goal helps us understand what loads above and beyond expectation are being added to the building and that, while an energy-performance-based acquisition process is the cornerstone for expected results, it is not sufficient. The building energy use must be tracked and corrective action taken when the goal is not met, as described by RP #8.

Parking Structure

NREL's parking structure project proves that large garages can be designed and built with world-class energy efficiency at no additional cost. While meeting current and future staff needs with 1,800 parking spaces, the structure features energy efficiency and renewable energy technologies such as daylighting, natural ventilation, an 80% reduction in lighting power density versus code, and a PV array to make the RSF complex (RSF I, RSF II, and garage) net zero energy (NREL 2013). At a construction cost of $14,172 per parking space, the high efficiency garage is cost competitive with other comparable, but less efficient garages.

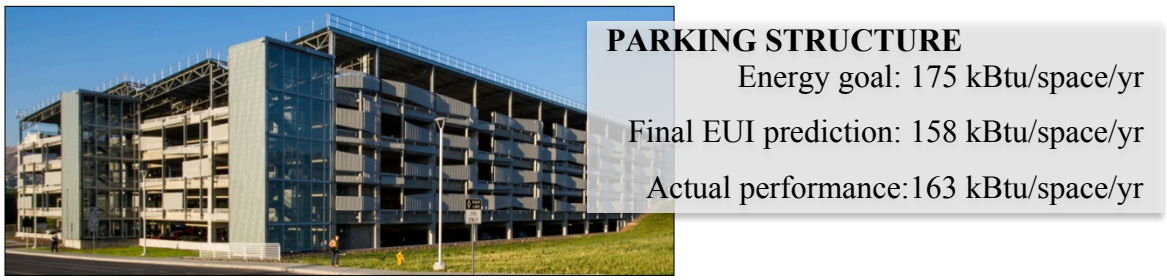

Figure 6. Northeast perspective image of the parking structure. *Source*: images.nrel.gov # 22471.

RP #7 (Require goal substantiation throughout design)

In a unique request for the design team, the parking garage RFP required the use of energy performance calculations throughout design. Typically, garage design focuses on the electric lighting and ventilation systems, but this aggressive goal, which was normalized per parking space, drove the design team to focus on passive technologies first, maximizing daylighting and eliminating all mechanical ventilation requirements through passive natural ventilation. The following shows examples from the parking garage RFP for requiring substantiation for meeting daylighting efficiency requirements at all stages through the design.

- Daylighting: *"*Provide ambient natural lighting in primary spaces that is of intensity adequate for essential tasks when measured on a typical overcast winter day in midafternoon.*"*
- Substantiation:
  - "Proposal: Information on overall building configuration that will permit daylighting to levels specified
  - Design Development: Engineering calculations for representative spaces, predicting anticipated daylighting levels under specified conditions
  - Construction Documents: Details of lighting control mechanisms
  - Construction: Field test of lighting levels verifying compliance with performance requirements." (DOE 2014)

RP #8 (Develop a process for performance assurance in operations)

The parking structure, like the other new NREL buildings, used a variety of approaches to performance assurance in operations. The basic RFP requirements for every project were enhanced commissioning and end use metering. Data visualization was not emphasized in any of the RFPs, although the RSF complex (RSF I, RSF II, and parking structure) does feature dashboards that show instantaneous power and interval analysis results for energy use. The visualizations have proven useful as an energy performance assurance tool in addressing energy loads in operations. For example, lighting energy use was shown to be higher than predicted in evening hours due to cleaning staff hours. Training was provided for the staff to use the egress lighting when possible or switch on entire zones as needed in attempt to realize predicted energy performance.

While the performance assurance process has worked at NREL as a shared responsibility among researchers and site operations staff, we recommend that future projects write a formal energy performance assurance role into the RFP. The role would be responsible for overseeing the best practices presented in this paper as well as tracking energy goals in operations and taking action on discrepancies.

In general, the NREL projects have succeeded in meeting all the energy-specific RFP performance objectives in design, and all of the design predictions in operations; however, two lessons learned warrant identification. The cafeteria did not meet all the "Highly Desirable" or "If Possible" energy objectives in design, which was due to a poorly defined program and budget. The lesson learned here is that specific, measurable energy goals must be set in the contract along with a firm, fixed budget. The SEB is operating at a higher energy use than the prediction. The lesson learned is that high-load density buildings present the biggest challenge to setting an energy goal prior to design. Despite the challenge and required rigor in planning an energy goal for a high-load building, an energy goal would be used again in such a scenario because of its usefulness in calibrating expectations among the team members.

An Energy-Performance-Based Design-Build Process, Deployed

Once the energy-performance-based design-build process had proven successful for the RSF I and II construction, DOE provided funds to NREL to create training materials for a new construction, design-build suited audience. Additionally, organizations such as NASA asked NREL to hold workshops to transfer the RPs and lessons from the integrated project team to their key construction and operations team members. Over the past 5 years, these outreach efforts

have allowed the transfer of information to deployment partners who are now realizing aggressive energy savings in operations. Table 2 lists replication efforts completed or underway. NREL was involved in the formulation of the acquisition process for these projects. Project outcome is not meant to be attributed to NREL; rather, this list shows the replication of project type using an energy-performance-based acquisition process of some form.

Table 2. Sample of Industry Replication of the Energy Performance Based Acquisition Process

Project Name	Description
Federal Center South for the Army Corps of Engineers	200,000 ft^2 General Services Administration office building in Seattle, WA EUI goal: 27.6 kBtu/ft^2/yr including renewables
Fort Carson New Command Air Battalion	$700 million of new construction including barracks Minimum EUI goal: 44 kBtu/ft^2/yr with option to exceed; Net zero energy
SLAC National Accelerator Laboratory	60,000 ft^2 visitor center and office space Tiered EUI goals: 40, 35, and 31 kBtu/ft^2/yr
University of California, San Francisco	Academic office building Tiered EUI goals: 33 and 20 kBtu/ft^2/yr

The how-to guidance, annotated RFPs, case studies, and training materials developed in support of the replication effort can be accessed via a guided website and are applicable to a variety of owner, design, and construction team members (DOE 2014). The primary deployment effort to date, which reaches a much broader audience than NREL can alone, is the development of a Design-Build Institute of America online course (DBIA 2013).

For many building owners and professionals, performance-based design-build is a new and intimidating prospect. The construction industry is notoriously conservative, and it takes time and repeated exposure for building professionals to embrace new concepts and strategies. NREL and DOE, owners of the new NREL campus buildings, had an advantage in that they have engineers and researchers on staff with the technical expertise and personal and professional commitment to write performance criteria that are likely to result in a positive outcome. The training materials developed as a result of the NREL campus experience can serve as a guide for owners and their representatives to replicate our successes and learn from our experiences in attaining market-viable, world-class energy performance in the built environment.

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