STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

REQUEST FOR PROPOSALS
FOR AN
INTEGRATED PROJECT DELIVERY METHOD
UTILIZING
CONSTRUCTION MANAGEMENT/GENERAL CONTRACTING (CM/GC)
SERVICES

For The

University of Colorado Anschutz Medical Campus

For The

CU Anschutz Repair of Utility Vaults PN 20-145005

ADVERTISEMENT FOR
REQUEST FOR PROPOSALS (RFP)
Design Build Services
State of Colorado
University of Colorado Denver | Anschutz Medical Campus (GFE)
Notice Number: PN20-145005

Notice Status:	**OPEN**
Publish Date:	**10/4/2021**
# Notice Revisions:	**0**
Revision Publish Date:	**NA**

Project No:	**20-145005**
Project Title:	**CU Anschutz Repair of Utility Vaults**
Estimated Construction Cost:	**TBD**

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 Vault Repair project includes correction of deficiencies identified across Twenty-Two (22) thermal utility vaults on the Anschutz Medical Campus. This includes repair of Structural, Mechanical, and Electrical deficiencies, a log of the noted deficiencies to be corrected by Vault within the two phases of this project can be found in Appendix G. The project will be funded in two phases beginning with an estimated FLCC of $300,000 in Phase 1 and an estimated FLCC of $900,000 in Phase 2. Funding for phase 2 is expected to be available beginning July of 2022. It is anticipated that the awarded CM/GC will have the opportunity to continue work into Phase 2 and a possible third phase at the discretion of the Principal representative. The evaluation of this RFP following STEP 2 will be based on the Phase 1 and 2 fees combined.

Phase 1 is anticipated to include repair of all deficiencies in Vaults 2, 3, 4, and 5 along with a few specific items requiring immediate repair. Phase 2 to include completion of repair in the remaining Vaults. The CM/GC will have the opportunity to coordinate the start and completion of work for Phase 1 to allow for work to flow into Phase 2 without demobilization with the understanding that some early repair work may be needed on a few select critical items.

The University identifies all of the vault locations at Permit Confined Spaces as defined by OSHA. The CM/GC will be responsible for all equipment, materials, training, supervision, and all Safety Precautions required to support and allow for safe work in the Vaults. Some of the deficiencies such as missing insulation or failed exhaust fans have created

environments that are very warm for work. The CM/GC must be prepared to create a safe work environment for completion of the repair work. The University will not be providing any materials or equipment to allow for safe work in the Vaults. Exhibit A of the contract describes Safety Precautions and Safety Equipment to be included in Reimbursable General Conditions. For this project these would be precautions or equipment ordinarily required by a General Contractor. All labor and equipment specific to working in a confined space shall be included as an allowance in Cost of Work.

Scope of Services

The scope of services will include assistance to the State during the process of assessment, design, construction, and warranty period. Specific tasks to be performed by the Construction Manager/General Contractor (CM/GC) include those generally performed by the CM/GC construction community where the Construction Manager is also the Contractor. The selected CM/GC may be requested to perform point cloud scanning of the Vaults and develop a 3D model of the existing thermal vault loop with this data. A sample copy of the State's CM/GC contract is contained within the RFP. A Guaranteed Maximum Price (GMP) will be required at the completion of Design Development phase.

A public construction project in the amount of five hundred thousand dollars or more shall be subject to the State prevailing wage rate, of the regular, holiday, and overtime wages paid and the general prevailing payments on behalf of employees to lawful welfare, pension, vacation, apprentice training, and educational funds in the State, for each employee needed to execute the contract. Payments to the funds must constitute an ordinary business expense deduction for federal income tax purposes by contractors and subcontractors. Contractors are required to pay their employees at weekly intervals and shall comply with the enforcement provisions of C.R.S. §24-92-209

This agreement is anticipated to be in excess of the thresholds noted in this agreement regarding prevailing wages and apprenticeship utilization. The included Appendix E and F will be in force for this agreement.

Minimum Requirements

Notice is hereby given to all interested parties that all firms will be required to meet ALL of the minimum qualifications to be considered for these projects. To be considered as qualified, interested firms shall have, as a minimum:

1. Provided Construction Management/General Contracting services within the last three (3) years for at least two (2) projects each in excess of $1,000,000 (hard costs), utilizing the expertise present in their Colorado Office; and

2. Demonstrated specific Construction Management/General Contracting experience in projects of similar scope and complexity; and

3. Demonstrated bonding capability up to $2,000,000 for an individual project coincidentally with current and anticipated workloads; provide letter from surety that affirms this capacity.

4) Per C.R.S. §24-92-115 unless prohibited by applicable federal law, contract for any public project in the amount of one million dollars or more, that does not receive federal money, including shall require the general contractor to which the contract is awarded to submit, at the time the mechanical, electrical, or plumbing subcontractor is put under contract, documentation that Identifies the contractors or subcontractors that will be used for all mechanical, sheet metal, fire suppression, sprinkler fitting, electrical, and plumbing work required on the project and certifies that all firms identified participate in apprenticeship programs registered with the United States department of labor's employment and training administration or state apprenticeship councils recognized by the United States department of labor and have a proven record of graduating a minimum of 15% of its apprentices for at least three of the past five years.

5) Contractors working on campus are considered a 'Badged Affiliate' and requires compliance with University of Colorado policy 3012 COVID-19 Vaccination Requirement and Compliance: https://www.ucdenver.edu/docs/librariesprovider284/default-document-library/3000-general-admission/3012---covid-19-vaccination-requirement-and-compliance.pdf?sfvrsn=4e9df3ba_2

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 Proposal** website:
https://www.cuanschutz.edu/offices/facilities-management/construction-projects/RFP

Colorado CORE/ColoradoVSS:
https://codpa-vss.cloud.cgifederal.com/webapp/PRDVSS2X1/AltSelfService

Other Information

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

Pre-Bid Meeting

The Mandatory Pre-Bid Meeting will be held Friday October 8, 2021 at 10:00AM

Join Zoom Meeting
https://ucdenver.zoom.us/j/92920959792?from=addon

Meeting ID: 929 2095 9792

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	October 4, 2021
Mandatory Pre-submittal Conference	October 8, 2021 at 10AM
Date Email Questions Due	October 13, 2021 by 2PM
Date Email Answers Issued	October 18, 2021
Submittals Due (Prequalification: Step I)	October 27, 2021 by 2PM
Interview Short List Announced	November 3, 2021
Sealed Proposal Due (Evaluation and Award: Step II)	November 3, 2021 by 8AM
Oral Interviews (In-Person)	November 10, 2021
Selection Announced	November 12, 2021
Negotiation of CM/GC Contract	November 15, 2021
Contract Approval (projected)	December 3, 2021
Anticipated Design Start	November 2021
Anticipated CM/GC Start	December 2021
Anticipated Construction Start Phase 1	April 2022
Finish Phase 2	March 2023

2. Prequalification submittals shall be submitted ONE (1) electronic copy PDF received no later than Wednesday October 27th at 2:00PM, and shall be submitted via email to Raeann.Gregory@cuanschutz.edu. Late submittals will be rejected without consideration. CU Anschutz and the State of Colorado assume no responsibility for costs related to the preparation of submittal.

3. The above schedule is tentative. Responding teams 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:	**Raeann Gregory**
Agency:	University of Colorado Denver | Anschutz Medical Campus (GFE)
Phone:	NA
Email:	Raeann.Gregory@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:	**10/4/2021**
VSS	https://codpa-vss.cloud.cgifederal.com/webapp/PRDVSS2X1/AltSelfService

REQUEST FOR PROPOSALS FOR AN INTEGRATED PROJECT DELIVERY METHOD UTILIZING CONSTRUCTION MANAGEMENT/GENERAL CONTRACTING (CM/GC) SERVICES

TABLE OF CONTENTS

REQUEST FOR PROPOSALS FOR AN INTEGRATED PROJECT DELIVERY METHOD UTILIZING CONSTRUCTION MANAGEMENT/GENERAL CONTRACTING (CM/GC) SERVICES University of Colorado Anschutz Medical Campus

Settlement Notice

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 in the same location as the original solicitation.

I. GENERAL INFORMATION

A. INTRODUCTION/DESCRIPTION OF PROJECT

The Vault Repair project includes correction of deficiencies identified across Twenty-Two (22) thermal utility vaults on the Anschutz Medical Campus. This includes repair of Structural, Mechanical, and Electrical deficiencies, a log of the noted deficiencies to be corrected by Vault within the two phases of this project can be found in Appendix G. The project will be funded in two phases beginning with an estimated FLCC of $300,000 in Phase 1 and an estimated FLCC of $900,000 in Phase 2. Funding for phase 2 is expected to be available beginning July of 2022. It is anticipated that the awarded CM/GC will have the opportunity to continue work into Phase 2 and a possible third phase at the discretion of the Principal representative. The evaluation of this RFQ following STEP 2 will be based on the Phase 1 and 2 fees combined.

Phase 1 is anticipated to include repair of all deficiencies in Vaults 2, 3, 4, and 5 along with a few specific items requiring immediate repair. Phase 2 to include completion of repair in the remaining Vaults. The CM/GC will have the opportunity to coordinate the start and completion of work for Phase 1 to allow for work to flow into Phase 2 without demobilization with the understanding that some early repair work may be needed on a few select critical items.

The University identifies all of the vault locations at Permit Confined Spaces as defined by OSHA. The CM/GC will be responsible for all equipment, materials, training, supervision, and all Safety Precautions required to support and allow for safe work in the Vaults. Some of the deficiencies such as missing insulation or failed exhaust fans have created environments that are very warm for work. The CM/GC must be prepared to create a safe work environment for completion of the repair work. The University will not be providing any materials or equipment to allow for safe work in the Vaults. Exhibit A of the contract describes Safety Precautions and Safety Equipment to be included in Reimbursable General Conditions. For this project these would be precautions or equipment ordinarily required by a General Contractor. All labor and equipment specific to working in a confined space shall be included as an allowance in Cost of Work.

The University of Colorado Anschutz Medical Campus 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 Anschutz Medical Campus. 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 Anschutz Medical Campus throughout the planning, design and construction phases of the project. Construction is estimated to commence University of Colorado Anschutz Medical Campus.

The process to be used in the selection of the CM/GC is comprised of two steps. STEP I is the Submittal of Prequalification as described in Section II (D). STEP II is the Oral Interview/Cost Proposal as described in detail in Section III. A Jury Panel of individuals who will be involved in the project and/or understand the required services associated with Construction Management/General Contracting will evaluate responses to this RFP for both STEPS. Upon completion of the evaluation of the Submittals of Prequalification, a limited number of firms will be invited to the oral interviews. Sealed fee proposals will be required only from those firms who are interviewed and are to be submitted as indicated in this RFP. Both qualifications and cost will be considered in the final ranking of firms with qualifications given 70% of the value of the weighted criteria and fees for the Cost/ Proposal given 30%.

Selection and award of this project will be based on a combination of qualifications and costs that represents the best overall value to the State.

B. MINIMUM QUALIFICATIONS

Notice is hereby given to all interested parties that all firms will be required to meet ALL of the minimum qualifications to be considered for these projects. To be considered as qualified, interested firms shall have, as a minimum:

1. Provided Construction Management/General Contracting services within the last three (3) years for at least two (2) projects each in excess of $1,000,000 (hard costs), utilizing the expertise present in their Colorado Office; and

2. Demonstrated specific Construction Management/General Contracting experience in projects of similar scope and complexity; and

3. Demonstrated bonding capability up to $2,000,000 for an individual project coincidentally with current and anticipated workloads; provide letter from surety that affirms this capacity.

4) Per C.R.S. §24-92-115 unless prohibited by applicable federal law, contract for any public project in the amount of one million dollars or more, that does not receive federal money, including shall require the general contractor to which the contract is awarded to submit, at the time the mechanical, electrical, or plumbing subcontractor is put under contract, documentation that Identifies the contractors or subcontractors that will be used for all mechanical, sheet metal, fire suppression, sprinkler fitting, electrical, and plumbing work required on the project and certifies that all firms identified participate in apprenticeship programs registered with the United States department of labor's employment and training administration or state apprenticeship councils recognized by the United States department of labor and have a proven record of graduating a minimum of 15% of its apprentices for at least three of the past five years.

5) Contractors working on campus are considered a 'Badged Affiliate' and requires compliance with University of Colorado policy 3012 COVID-19 Vaccination Requirement and Compliance: https://www.ucdenver.edu/docs/librariesprovider284/default-document-library/3000-general-admission/3012---covid-19-vaccination-requirement-and-compliance.pdf?sfvrsn=4e9df3ba_2

C. SCOPE OF SERVICES

The scope of services will include assistance to the State during the process of assessment, design, construction, and warranty period. Specific tasks to be performed by the Construction Manager/General Contractor (CM/GC) include those generally performed by the CM/GC construction community where the Construction Manager is also the Contractor. The selected CM/GC may be requested to perform point cloud scanning of the Vaults and develop a 3D model of the existing thermal vault loop with this data. A sample copy of the State's CM/GC contract is contained within the RFP. A Guaranteed Maximum Price (GMP) will be required at the completion of Design Development phase.

A public construction project in the amount of five hundred thousand dollars or more shall be subject to the State prevailing wage rate, of the regular, holiday, and overtime wages paid and the general prevailing payments on behalf of employees to lawful welfare, pension, vacation, apprentice training, and educational funds in the State, for each employee needed to execute the contract. Payments to the funds must constitute an ordinary business expense deduction for federal income tax purposes by contractors and subcontractors. Contractors are required to pay their employees at weekly intervals and shall comply with the enforcement provisions of C.R.S. §24-92-209

This agreement is anticipated to be in excess of the thresholds noted in this agreement regarding prevailing wages and apprenticeship utilization. The included Appendix E and F will be in force for this agreement.

II. PREQUALIFICATION SUBMITTALS (STEP I)

A. SCHEDULE

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	October 4, 2021
Mandatory Pre-submittal Conference and Tour	October 8, 2021 at 10AM
Date Email Questions Due	October 13, 2021 by 2PM
Date Email Answers Issued	October 18, 2021
Submittals Due (Prequalification: Step I)	October 27, 2021 by 2PM
Interview Short List Announced	November 3, 2021
Sealed Proposal Due (Evaluation and Award: Step II)	November 3, 2021 by 8AM
Oral Interviews (In-Person)	November 10, 2021
Selection Announced	November 12, 2021
Negotiation of CM/GC Contract	November 15, 2021
Contract Approval (projected)	December 3, 2021
Anticipated Design Start	November 2021
Anticipated CM/GC Start	December 2021
Anticipated Construction Start Phase 1	April 2022
Finish Phase 2	March 2023

2. One (1) electronic copy of the submittal is due October 27, 2021 and shall be received no later than 2:00 *PM (MD/ST),* at the following email address:

RAEANN.GREGORY@CUANSCHUTZ.EDU

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.

B. MANDATORY PRE-SUBMITTAL CONFERENCE

1. 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 have University of Colorado Anschutz Medical Campus staff able to discuss the project. Firms preparing submittals must attend and sign-in in order to have their submittals accepted. The pre-submittal conference will be held via Zoom:

Friday October 8, 2021

Join Zoom Meeting
https://ucdenver.zoom.us/j/92920959792?from=addon

Meeting ID: 929 2095 9792

C. CLARIFICATIONS

1. Owner initiated changes to this RFP will be issued under numerically sequenced email addenda. Addenda generally consist of the following items:

   a. Clarifications
   b. Scope Changes
   c. Time and/or Date Changes

   Respondents must acknowledge all issued addenda in their submittal and proposal.

2. Respondent initiated email requests for clarification will be received any time on or before to October 13, 2021 by 2PM. All State responses will be issued by email addenda on or before October 18, 2021.

D. GENERAL INFORMATION

1. All respondents accept the conditions of this RFP, including, but not limited to, the following:

   a. All submittals shall become the property of the State of Colorado and will not be returned.

   b. Late submittals shall not be evaluated. Facsimile submittals shall not be accepted.

c. Any restriction as to the use of submitted materials must be clearly indicated as proprietary. The requested limitation or prohibition of use or release shall be identified in writing on a cover sheet. Blanket claims of proprietary submittals will not be honored. Fee proposals will be considered proprietary.

d. The State reserves the right to reject any or all proposals on the basis of being unresponsive to this RFP or for failure to disclose requested information.

e. The State shall not be liable for any costs incurred by respondents in the preparation of submittals and proposals nor in costs related to any element of the selection and contract negotiation process.

f. The respondent has reviewed Appendix B and by responding has agreed that the terms and conditions of the sample Construction Management/General Contracting Agreement are expressly workable without reservation.

g. Submittals shall be less than 25MB.

E. PREQUALIFICATION SUBMITTALS (STEP I)

1. Respondent must comply with the following items, a through f. The State retains the right to waive any minor irregularity or requirement should it be judged to be in the best interest of the State**. (Note that the primary focus of the Prequalification evaluation will be the firm(s)' capabilities).**

   a. Submit <u>One</u> (1) electronic complete copy of all material.

   b. Submittals shall be formatted and tabbed in the exact form and numeric sequence of the Evaluation Form (1 through 5) in Appendix A. A two-sided single page cover letter addressed to the University of Colorado Anschutz Medical Campus outlining the firm(s) qualifications is required at the front of the submittal. Not counting the cover letter and required Acknowledgement and Attestation form, the entire submittal is to be no more than 25 pages in portrait format, at least 10 font, and in electronic PDF Format not to exceed 25MB.

   c. Submittals shall be evaluated in accordance with criteria as indicated in SECTION IV. A. PREQUALIFICATION SUBMITTAL CRITERIA and ranked on the corresponding Evaluation Form in Appendix A.

   d. Response to all items shall be complete.

   e. All references shall be current and relevant.

   f. Complete and execute the appropriate Acknowledgment and Attestation Form as provided in Section VI and submit at the back of the Prequalification Submittal.

III. ORAL INTERVIEWS/COST PROPOSALS (STEP II)

A. SHORT LIST

From the submittals received, a short list of qualified respondents shall be identified using the scoring indicated on the enclosed Evaluation Form, Appendix A.

Firms failing to meet the minimum required qualifications will not receive further consideration.

B. ORAL INTERVIEW

1. Mandatory oral interviews shall be conducted for the short listed firm(s) only. Interview times and location, will be arranged by the University of Colorado Anschutz Medical Campus and all short listed firms will be notified in advance. At the option of the State, a visit to the short listed firm(s) managing home office and/or representative field office may be required. **(Note that the primary focus of the Oral Interview evaluation in addition to the Cost Proposal will be the proposed Project Management Team members' capabilities).** The oral interviews for this project are anticipate to be done in person at the Campus Services Building on the Anschutz Medical Campus.

C. COST PROPOSALS

1. Only those firms short listed for interview are required to submit their sealed proposals. (Only one copy is required on the scheduled submission date.) Cost Proposals will remain sealed until after the qualitative scoring and will then be opened. The Cost Proposal will then be considered (equivalent to 30 percent of the weighted criteria) in conjunction with the qualitative score from the response and interview (equivalent to 70 percent of the weighted criteria).

2. Cost Proposals shall be submitted on the form provided in Section VII, without modification. A Cost Proposal shall be accompanied with sufficient detail to clearly identify the fee for service and include a detailed schedule of estimated (not-to-exceed) reimbursable and non-reimbursable costs. Percentage of the cost of work is not an acceptable value. The Cost Proposal should be prepared independently in accordance with the following:

    a. Any specific services requested in the RFP and its appendices that are not included should be clearly identified. Exclusion of any required service may result in the proposal being found non-responsive.

    b. Provide a CM/GC staff schedule with staff by name, position and man-hours (assume 8 hour days) per month estimated on the project.

    c. Provide a detailed estimate of reimbursable costs including breakdown of direct salaries and payroll fringes (DPE) for on-site CM/GC personnel associated with the services. Not-to-exceed reimbursable expenses shall be provided at direct cost.

    d. Provide a detailed estimate of non-reimbursable expenses (included in fee).

    e. The State reserves the right to reject any Cost Proposal not prepared in the above manner. Proposals that exceed the available funds may be rejected outright but the State reserves the right to negotiate a reasonable fee for service within the available funds. The CM/GC contract will be a bonded lump sum contract including not-to-exceed reimbursables with a Guaranteed Maximum Price to encompass all construction work; some not-to-exceed allowances may be included as directed by the State.

3. This Fee Proposal is a binding offer to perform the services associated with the Scope of Services described in this RFP and the Designated Services and Method of Payment Matrix in Appendix B. The State reserves the right to negotiate a cost adjustment based on scope clarification subsequent to selection and prior to contract execution.

D. METHOD OF SELECTION AND AWARD

The Jury Panel shall complete a combined evaluation of qualifications and fee in accordance with the criteria as indicated in SECTION IV, B. ORAL INTERVIEWS/COST PROPOSALS/EVALUATION CRITERIA. Numerical ranking and selection of the most qualified firm (including fee) will then occur on the corresponding evaluation forms in Appendix A1.

The final fee amount and scope of services may be negotiated at the State's discretion. Award and contract will be contingent on availability of key proposed Project Management Team staff.

IV. EVALUATION CRITERIA

A. PREQUALIFICATION SUBMITTAL CRITERIA

(Note that the primary focus of the Prequalification evaluation will be the Firm(s) capabilities).

1. QUALIFICATIONS OF THE FIRM(s)

   - ☐ Provide a description of the composition and management structure of your firm. Identify the firm's roles and responsibilities and relevant experience with projects of similar scope and complexity and similar fast track project delivery methods. Describe how the firm's experience will relate to the success of this project.
   - ☐ Provide a description and separate graphic organizational chart complete with working titles identifying the lines of authority, responsibility and coordination.
   - ☐ Provide a detailed description of the process of how your firm selects qualified sub-contractors and manages them effectively on complex multi-phased projects.
   - ☐ Provide a detailed description of how your firm will maximize the Colorado construction work force on this project.
   - ☐ Provide your firms' safety record over the last ten years and describe your firms' efforts to retain and support employees.

2. QUALIFICATIONS OF THE MANAGEMENT TEAM MEMBERS

   - ☐ Describe the qualifications and relevant experience of the superintendent including demonstrated experience working on projects of similar scope and complexity and time commitment for this project.
   - ☐ Describe the qualifications and relevant experience of other key in-house staff and time commitments for this project.
   - ☐ Identify all current office locations of the assigned staff and any other resident expertise intended to be provided under this RFP.

3. PROJECT MANAGEMENT APPROACH

   - ☐ Provide a strategic project approach summary: Include discussion of your firm's approach in providing successful Construction Management/General Contracting services based on prior experience in cost, schedule and quality effectiveness.

Include specific examples (1-2 page excerpts) of actual products (estimates, progress reports, schedules, constructability reviews, value engineering studies, forms, general conditions budgets, organizational structures, etc.).

- ☐ Provide a description of construction work Project Management Team has capability to competitively bid and self-perform, including qualifications to do such. It is the perception of the University of Colorado Anschutz Medical Campus subcontracting CM/GC construction work is in the State's best interest in terms of price competition. The University of Colorado Anschutz Medical Campus may, at its discretion, limit the types and amount of work Project Management Team bids and self-performs.

4. PRIOR PROJECT EXPERIENCE/SUCCESS

Select your three (3) most relevant projects and provide, at a minimum, the following:

- ☐ The project/contract name
- ☐ Description of services provided
- ☐ Overall construction cost of project, as applicable, including initial contract value and change orders including reasons for change orders
- ☐ Organizational structure of service delivery under the contract (include the owner's organization as it interfaced with the respondent's contract)
- ☐ Key assigned in-house staff (name and title)
- ☐ Subcontracts (service) used in the performance of the contract
- ☐ Schedule history
- ☐ Reference(s) for Owner and Architect as described in IV.E
- ☐ Continuing services, if any

a. Timeliness

In general, Construction Management/General Contracting work is seen as successful if it is on time, on budget, and of high quality of workmanship. Timeliness is generally based on completion by the originally scheduled date and is indicated by a Certificate of Occupancy. Please demonstrate for each of the above projects how timely delivery occurred.

b. Budget Considerations

Similar to timeliness, being on budget historically means the work was completed within the originally identified available budget. For purposes of this RFP, the State is interested not only in being within budget but also in the respondent's ability to address and implement the following issues as well:

1. Conceptual estimating
2. Value analysis
3. Alternate solutions
4. Scope reduction that maintains project function
5. Cost/benefit analysis

Demonstrate for the above projects examples of how you accomplished the above cost control services.

c. Quality

Construction quality has the obvious traditional connotations (workmanlike, in compliance with the specifications, normal standard of care, etc.). Demonstrate for the above project examples how a high quality of workmanship was achieved.

d. Services Disruption

Demonstrate how your services on the above project examples dealt with issues of disruption at existing facilities, etc. if applicable.

e. Project Acceptability

Please discuss how your Construction Management/General Contracting services helped achieve owner satisfaction with regard to project quality and acceptability on your project examples.

f. Compliance

Provide information on how compliance with industry standards of care, building codes, etc. was achieved.

5. MISCELLANEOUS CONSIDERATIONS

a. Claims/Litigation History of Firm

Provide information on any past, current or anticipated claims (i.e., knowledge of pending claims) on respondent contracts; explain the litigation, the issue, and its outcome or anticipated outcome.

b. Apprenticeship Training Program

Where an Apprentice Training Program certified by the Office of Apprenticeship located in the Employment and Training Administration in the United States Department of Labor exists in the State, or a comparable program for the training of apprentices is available in the State:

1. Each submitter shall demonstrate access to the certified program or a comparable alternative (Note that it is the responsibility of the submitter to demonstrate the comparability of a non-certified program) and,
2. Each submitter's subcontractor at any tier with a contract value of two hundred fifty thousand dollars or more shall demonstrate access to the certified program or a comparable alternative.

c. Self-Performed BIM/3D Modeling Qualifications

Describe your firms experience with 3D modeling and coordination. Please describe how you have utilized these tools to increase value on utility work. Describe the services provided by your firm.

B. ORAL INTERVIEWS/COST PROPOSALS EVALUATION CRITERIA

(Note that the primary focus of the Oral Interview evaluation in addition to the Cost Proposal will be the proposed project management team members' capabilities).

1. QUALIFICATIONS OF THE FIRM

   - ☐ Explain the composition and structure of your project management team and how the firm will support their efforts in the field throughout this project.
   - ☐ Are the lines of authority, responsibility and coordination clearly identified?

2. QUALIFICATIONS OF THE MANAGEMENT TEAM MEMBERS

   - ☐ Explain the prior experience with projects of similar scope and complexity and similar fast track project delivery methods of the superintendent and all other project management team members. Explain their roles and responsibilities and authority and why they are the right team members for this project.
   - ☐ Explain anticipated project management team staff current and projected workload.

   - ☐ Identify all current office locations and the resident expertise intended to be provided under this RFP. Identify the location of the staff for the performance of this contract, their expertise, and generic equipment that will be located in Colorado and act in support of the anticipated contract.

3. PROJECT MANAGEMENT APPROACH

   - ☐ Explain the strategic project approach for this project in summary: Include discussion of your team's approach in providing successful CM/GC services based on the needs of this specific project utilizing the team's prior past experience including cost, schedule, and quality control.
   - ☐ Explain the construction work the project management team has the capability to competitively bid and self-perform including qualifications to do such work.
   - ☐ Provide a detailed description of how your project management team will select qualified sub-contractors and manage them effectively on this project.

4. PRIOR PROJECT EXPERIENCE/SUCCESS

   - ☐ Explain the most relevant projects the superintendent and the team members have completed together and/or separately and what their role was. University of Colorado Anschutz Medical Campus at its discretion contact references and/or conduct independent performance analysis on projects on which the team member has worked).
   - ☐ Provide descriptions of other related experience of superintendent and other project management team members.

5. MISCELLANEOUS CONSIDERATIONS

   - ☐ Craft Labor Capabilities
     Describe the availability of resources that will be utilized to successfully complete the project.
   - ☐ Apprenticeship Training Program
     Describe access to federal or state-approved apprenticeship programs, as available.

- ☐ Self-Performed BIM/3D Modeling Qualifications
  Describe your firms experience with 3D modeling and coordination. Please describe how you have utilized these tools to increase value on utility work. Describe the services provided by your firm.

V. CM/GC CONTRACT INFORMATION

A. Carefully review the CM/GC Contract sample (Appendix B) before initiating your response submittal. Any exceptions to the contract must be communicated formally in accordance with the written questions schedule in II.A.

B. Appendix C of this RFP is the Certification and Affidavit Regarding Illegal Immigrants, a mandatory portion of the contract agreement.

C. Appendix E and F of this RFP includes mandatory State apprenticeship and prevailing wage requirements based on the construction value of the project. The first phase is not anticipated the reach the value limit for these requirements. However, in anticipation of Phase 2 funding and continued work with the CM/GC under the same contract the CM/GC shall be required to comply with the State apprenticeship and prevailing wage requirements outlined in this RFP for both phases of work.

D. The State reserves the right to make non-material changes to the appended model agreement, including additions and /or modifications that may be necessary to more completely describe the services defined or implied herein.

E. Any approved reimbursable expenses made under the terms of the final agreement shall be a direct pass-on cost with no adjustment to the fee described therein.

F. Any and all products, systems, methods, and procedures developed, as a result of this agreement shall remain the exclusive property of the State.

VI. ACKNOWLEDGEMENT AND ATTESTATION FORM

A. Several versions of the Acknowledgment and Attestation Form follow this section. Proper completion of the appropriate form is a mandatory requirement for a respondent to be considered responsive to this RFP Prequalification Submittal.

B. Qualifications made by a respondent in executing this form may render a submittal non-responsive as determined by the State.

VII. COST PROPOSAL FORM

A. Immediately following the Acknowledgement and Attestation Form is a Cost Proposal Form to be utilized to summarize the fee proposal for the services. Only those firms short-listed will be required to submit fee proposals as directed by University of Colorado Anschutz Medical Campus.

B. This RFP document, it's appendices, and any written addenda issued prior to the submittal of proposals, and written clarifications prior to the interview shall serve as the only basis for proposals.

C. The respondent, by submitting this proposal, does hereby accept that minor changes by the State to the exhibited contract and its exhibits, which do not adversely affect the

respondent, shall not be cause for withdrawal or modification of the amounts submitted herein. Exceptions to the RFP documents and/or modification of the proposal may render the proposal non-responsive.

D. Upon due consideration and review of this document along with its appendices, written addenda, and written clarifications prior to the interview, the respondent does hereby submit the following proposal for Construction Management/General Contracting fees, consistent with the schedules provided in the Scope of Services. Respondents are hereby advised that it is the State's desire to accelerate design and construction schedules where reasonably possible, without adverse cost impact.

E. Respondent should complete the Cost Proposal Form by filling in all blanks on the form that follows.

F. Respondents should include a separate detailed not-to-exceed reimbursable estimate

End of RFP

ACKNOWLEDGEMENT AND ATTESTATION FORM
(Partnership Format)

Date: _____

By responding to this RFP, the respondent(s) certify that he/she has reviewed the Construction Management/General Contracting sample contract, and its exhibits contained herein, and is familiar with their terms and conditions and finds them expressly workable without change or modification.

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

Subscribed on _____ at _____
Date City

_____, State of _____
County State

1)_____
Partner Signature

Typed Name:_____

2)_____
Partner Signature

Typed Name:_____

Notary:_____ _____
Date

Commission Expires:_____

Note: Add additional signatures if there are more than two partners.

ACKNOWLEDGEMENT AND ATTESTATION FORM
(Joint Venture Format)

Date: _____

By responding to this RFP, the respondent(s) certify that he/she has reviewed the Construction Manager/General Contractor sample contract, and its exhibits contained herein, and is familiar with their terms and conditions and finds them expressly workable without change or modification.

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

Subscribed on _____ at _____,
Date City

_____, State of _____.
County State

1)_____ _____ _____
Venture Partner Binding Signature Date

_____ Typed Name: _____
Type of Business Title: _____

_____ _____
Witness Date

Typed Name: _____

2)_____ _____ _____
Venture Partner Binding Signature Date

_____ Typed Name: _____
Type of Business Title: _____

_____ _____
Witness Date

Typed Name: _____

Note:
1. Add additional venture partners as necessary.
2. Witnesses of venture partners shall be corporate secretary for corporations, partners for partnerships, and notaries for sole proprietorships.
3. Attach venture agreement
4. Type of business shall identify the venture partner as a corporation, venture, partnership, sole proprietorship, or other legal entity.

ACKNOWLEDGEMENT AND ATTESTATION FORM
(CORPORATE FORMAT)

Date: _____

By responding to this RFP, the respondent(s) certify that he/she has reviewed the Construction Management/General Contracting sample contract, and its exhibits contained herein, and is familiar with their terms and conditions and finds them expressly workable without change or modification.

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

Subscribed on _____ at _____,
Date City

_____, State of _____.
County State

_____ _____
Corporate Officer Signature Date

_____ _____
Secretary Date

Note: Use full corporate name and attach corporate seal here.

(SEAL)

ACKNOWLEDGEMENT AND ATTESTATION FORM
(Sole Proprietorship Format)

Date: _____

By responding to this RFP, the respondent(s) certify that he/she has reviewed the Construction Management/General Contracting sample contract, and its exhibits contained herein, and is familiar with their terms and conditions and finds them expressly workable without change or modification.

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

Subscribed on _____ at _____,
Date City

_____, State of _____.
County State

_____ _____
Respondent Date

Typed Name: _____

Notary: _____ _____
Date

Commission Expires: _____

COST PROPOSAL FORM
CONSTRUCTION MANAGER/GENERAL CONTRACTING (CM/GC) SERVICES

Date:_____

CU Anschutz Repair of Utility Vaults PN 20-145005
Project Title

		Phase 1	Phase 2
1.	CM/GC Preconstruction Fee	$ _____	$ _____
2.	CM/GC Construction Fee	$ _____	$ _____
3.	General Conditions On-Site CM/GC Staff	$ _____	$ _____
4.	Other Reimbursable General Conditions (NTE)	$_____	$_____
	Total CM/GC Fee	$ _____	$ _____

Fees are to be calculated per Exhibit A (SC-6.5), CM/GC Designated Services and Method of Payment.

Please provide a detailed breakdown to adequately describe the CM/GC staff provided, term of their services, and associated anticipated reimbursable costs so as to demonstrate as complete an understanding as possible of the services provided.

Reimbursable general condition expenses are generally confined to the on-site CM/GC construction phase staff reimbursed at direct personnel expense, plus those on-site materials, equipment and facilities to support the work of the CM/GC staff and construction subcontractors.

Acknowledge receipt of Addendum Nos. _____

Anticipates Services outside the United States or Colorado* ☐ Yes ☐ No

If the respondent anticipates services under the contract or any subcontracts will be performed outside the United States or Colorado, the respondent shall provide in a written statement which must include, but need not be limited to the type of services that will be performed at a location outside the United States or Colorado and the reason why it is necessary or advantageous to go outside the United States or Colorado to perform such services. (Does not apply to any project that receives federal moneys)

Will comply with 80% Colorado Labor ☐ Yes ☐ No

For State Public Works Project per C.R.S 8-17-10, Colorado labor shall be employed to perform at least 80% of the work. "Colorado Labor" means any person who is a resident of the state of Colorado at the time of the Public Works project. Respondents indicating that their bid proposal will not comply with the 80% Colorado Labor requirement are required to submit written justification along with the bid submission. A governmental body that allows a waiver shall post notice and justification for the waiver on its web site. (Does not apply to any project that receives federal moneys)

Bidder is a Service-Disabled Veteran Owned Small Business* ☐ Yes ☐ No

A Service-Disabled Veteran Owned Small Business (SDVOSB) per C.R.S. 24-103-905, means a business that is incorporated or organized in Colorado or maintains a place of business or has an office in Colorado and is officially registered and verified by the Center for Veteran Enterprise within the U.S. Department of Veteran Affairs. Attach proof of certification along with the proposal submission.

**Does not apply to projects for Institutions of Higher Education that have opted out of the State Procurement Code.*

_____
Applicant or Corporate Officer Signature

_____
Title

Appendix A

STATE BUILDINGS PROGRAM
PREQUALIFICATION SUBMITTAL/EVALUATION FORM
CONSTRUCTION MANAGEMENT/GENERAL CONTRACTING (CM/GC) SERVICES

Name of Firm:_____
Name of Project: CU Anschutz Repair of Utility Vaults PN 20-145005
Evaluator No:_____ Date: _____

RFP REFERENCE
MINIMUM REQUIREMENTS Y ____ N ____

If the minimum requirements (including letter from surety) have not been met, specify the reason(s):

_____
_____

Acknowledgement and Attestation included: Y _____ N _____

SCORE

	Weight[2]	x	Rating[3]	=	Score
1. QUALIFICATIONS OF THE FIRM(s)[1]					
☐ Qualifications of the firm	4	x		=	
☐ Organizational structure/lines of authority	4	x		=	
☐ Subcontractor selection and management	4	x		=	
☐ Colorado workforce	4	x		=	
☐ Safety/employee support	5	x		=	
2. QUALIFICATIONS OF THE MANAGEMENT TEAM MEMBERS[1]					
☐ Qualifications and relevant experience of superintendent	5	x		=	
☐ Qualifications and relevant experience of in-house staff	5	x		=	
☐ Location/Access	4	x		=	
3. PROJECT MANAGEMENT APPROACH[1]					
☐ Approach to successful CM/GC Services					
a. Cost effectiveness	5	x		=	
b. Schedule effectiveness	5	x		=	
c. Quality effectiveness	5	x		=	
☐ Competitively Bid/Self Performed Work	5	x		=	

4. PRIOR PROJECT EXPERIENCE/SUCCESS[1]

☐ Project #1			3	x		=
a. Timeliness	d. Disruption					
b. Budget Considerations	e. Acceptability					
c. Quality	f. Compliance					
☐ Project #2			3	x		=
a. Timeliness	d. Disruption					
b. Budget Considerations	e. Acceptability					
c. Quality	f. Compliance					
☐ Project #3			3	x		=
a. Timeliness	d. Disruption					
b. Budget Considerations	e. Acceptability					
c. Quality	f. Compliance					
☐ Related experience of the firm			4	x		=

5. MISCELLANEOUS[1]

☐ Claims/litigation history	2	x		=	
☐ Apprenticeship Training Program	2	x		=	
☐ Self-Performed BIM/3D Modeling Qualifications	4	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 INTERVIEWS/COST PROPOSALS EVALUATION FORM
CONSTRUCTION MANAGEMENT/GENERAL CONTRACTING (CM/GC) SERVICES

Name of Firm:_____
Name of Project: CU Anschutz Repair of Utility Vaults PN 20-145005
Evaluator No:_____ Date:_____

SCORE

	Weight[2]	x	Rating[3]	=	Score
1. QUALIFICATIONS OF THE TEAM[1]	5	x	_____	=	_____
2. QUALIFICATIONS OF THE MANAGEMENT TEAM MEMBERS[1]	5	x	_____	=	_____
3. PROJECT MANAGEMENT APPROACH[1]	5	x	_____	=	_____
4. PRIOR PROJECT EXPERIENCE/SUCCESS[1]	5	x	_____	=	_____
5. MISCELLANEOUS[1]					
☐ Craft Labor Capabilities	3	x	_____	=	_____
☐ Apprenticeship Training Program	3	x	_____	=	_____
☐ Self-Performed BIM/3D Modeling Qualifications	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
SUBMITTAL AND ORAL INTERVIEW RANKING MATRIX

QUALIFICATIONS 70%/FEE 30% ~~*(Optional 80%/20%)*~~

FIRM	QUALIFICATIONS[1]						AVERAGE QUALS[2]	QUALS SCORE[3]	FEE SCORE[4]	QUALS & FEE SCORE[5]	RANK[6]
	EVAL #1	EVAL #2	EVAL #3	EVAL #4	EVAL #5	EVAL #6					

NOTES:

1. Insert total score from each evaluator's PREQUALIFICATION SUBMITTAL or ORAL INTERVIEW/ COST PROPOSALS/EVALUATION FORMS. (Note that the use of the Matrix for the PREQUALIFICATION SUBMITTAL EVALUATION does not consider cost proposals only qualifications). DO NOT combine the scores of the two evaluation forms.

2. Add all evaluators' total scores and divide by the number of evaluators to determine the average score for each firm's qualifications.

3. The highest score for qualifications on the evaluation form is to receive 70 points and the other team scores are to be determined as a percentage of the 70 points. To score each average qualification score, use the example formula.

   Assume the highest score is 700.

   SCORING OF QUALIFICATIONS

   FIRM B: $\frac{700}{700} \times 70 \text{ points} = 70 \text{ points}$

   FIRM C: $\frac{600}{700} \times 70 \text{ points} = 60 \text{ points}$

   FIRM A: $\frac{500}{700} \times 70 \text{ points} = 50 \text{ points}$

4. Determine score for each firm's sealed cost proposal with the lowest fee being equivalent to a score of 30 points. To score each fee, use the example formula.

   Assume the lowest fee was $100,000.

   SCORING OF FEES

   FIRM A: $\frac{\$100,000}{\$100,000} \times 30 \text{ points} = 30 \text{ points}$

   FIRM B: $\frac{\$100,000}{\$125,000} \times 30 \text{ points} = 24 \text{ points}$

   FIRM C: $\frac{\$100,000}{\$150,000} \times 30 \text{ points} = 20 \text{ points}$

5. Add the average qualification score to the fee score to determine cumulative qualifications and fee score.

6. Numerically rank all firms with the highest scoring firm being the most qualified.

Appendix B

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(FORM SC-6.5)
(Sample)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CMGC) AGREEMENT
(STATE FORM SC-6.4)

DEPARTMENT ID:	GFE
CONTRACT ID #:	N/A
PROJECT #:	**20-145005**
PROJECT NAME:	**CU ANSCHUTZ VAULT REPAIR**
VENDOR NAME:	

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

TABLE OF CONTENTS……...Page

EXHIBITS:

A. – P. (As described in ARTICLE 2. DEFINITIONS, 2.1.6, Contract Documents)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR AGREEMENT
(STATE FORM SC-6.4)

Department ID: GFE Contract ID #: N/A Project #: 20-145005

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 having its offices at engaged to serve as Construction Manager/General Contractor, hereinafter referred to as the Construction Manager.

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 Construction Manager for any performance hereunder or be bound by any provision hereof prior to the Effective Date.

RECITALS:

WHEREAS, the Principal Representative intends to procure **CU Anschutz Vault Repair** 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 N/A, Account Number N/A; and

WHEREAS, the State has **Appropriated** and the Principal Representative has been authorized to expend the total sum THREE HUNDRED THOUSAND DOLLARS ($300,000) for this project including all professional services, construction management/general contractor services, construction/improvements, project contingencies, reimbursables, furnishings, movable equipment, 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 9.6.*

WHEREAS, the Principal Representative has established the **Fixed Limit of Construction Cost** in the amount of THREE HUNDRED THOUSAND Dollars ($300,000); and

WHEREAS, the Construction Manager shall establish a **Guaranteed Maximum Price (GMP)** (including Construction Manager's fee) that is within the Fixed Limit of Construction Cost as established by the Principal Representative at the completion of the Design Development Phase; and

WHEREAS, in accordance with Article 9 Compensation the Construction Manager's fee for the Project is **DOLLARS ($)**; and

WHEREAS, the Architect/Engineer for the project is STANLEY CONSULTANTS; and

WHEREAS, the Construction Manager acknowledges the statutory authority and responsibility of the Principal Representative within the State of Colorado; and

WHEREAS, the Construction Manager was selected after a determination that its proposal was the most advantageous to the Principal Representative pursuant to a request for proposal issued and awarded on Sep 28, 2021.

WHEREAS, the Construction Manager and the Principal Representative have negotiated the terms of this Agreement pursuant to the Colorado Procurement Code or the applicable procurement code for institutions of higher education;

NOW, THEREFORE, the Principal Representative and the Construction Manager for the consideration hereinafter set forth, agree as follows:

ARTICLE 1. THE WORK

1.1 THE WORK

1.1.1 The Principal Representative intends to design and construct a Utility Vault Repair, hereinafter referred to as the Project.

1.1.2 In the performance of the Work under this Agreement, the Construction Manager acknowledges that time is critical for Project delivery and that portions of the Work could have their design completed as separate Bid Packages and under 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 Construction Manager/General Contractor is an unique concept and that its utilization requires maximum cooperation between all parties. It is also recognized that the services to be rendered by the Construction Manager and the inter-relationships and coordinative aspects thereof are in the developmental state and not fully defined. The Construction Manager has reviewed the Architect/Engineer's Agreement 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 the responsibilities of or duties between the Architect/Engineer and Construction Manager or an absence of designation, the question shall be submitted to the Principal Representative for determination. The Construction Manager shall abide by the decision of the Principal Representative provided it does not require the performance of work beyond what was reasonably contemplated and accepted by the Construction Manager as its responsibility. If the Construction Manager claims any increase in the Work arises by virtue of such a decision, it shall give its Notice of Claim as provided in Article 19.

1.1.3 The Construction Manager acknowledges that the Principal Representative shall provide **TWO (2) Bid Packages** to accomplish the Work. In the event the Construction Manager for any reason within the Construction Manager's control, requests more than TWO (2) Bid Packages to be furnished by the Principal Representative, the Principal Representative shall make arrangement with the Architect/Engineer for the additional Bid Packages desired and shall directly compensate the Architect/Engineer for all fees and cost associated therewith. The Construction Manager shall reimburse the Principal Representative for all of the Architect/Engineer's fees and costs associated therewith and an appropriate Amendment or Change Order shall be issued deducting the same from the payments then or thereafter due to the Construction Manager. If those payments are not sufficient to cover such amount, the Construction Manager shall pay the difference to the Principal Representative.

1.1.4 The Construction Manager agrees to cooperate fully with the Principal Representative in the design and construction aspects of the Work to keep within the Principal Representative's monetary limitations, as stipulated above.

1.1.5 The Construction Manager understands the relationship of trust and confidence established between it and the Principal Representative and accepts those responsibilities as described in this Agreement. The Construction Manager covenants with the Principal Representative to furnish its best skill and judgment and to cooperate with the Architect/Engineer in furthering the interests of the Principal Representative. The Construction Manager agrees to furnish efficient business administration and superintendence and to use its best efforts to complete the work in an expeditious and economical manner consistent with the interest of the Principal Representative.

1.1.6 The Construction Manager, the Principal Representative, and the Architect/Engineer, called the Construction Team, shall work during design through to construction completion. The Construction Manager shall provide leadership to the Construction Team on all matters relating to construction.

1.1.7 The Architect/Engineer is a representative of the Principal Representative as provided in the Contract Documents and its Agreement is with the Principal Representative. In case of termination of employment or death of the Architect/Engineer, the Principal Representative shall appoint a capable and reputable Architect/Engineer against whom the Construction Manager makes no reasonable objection, whose status under the Agreement shall be the same as that of the former Architect/Engineer.

1.1.8 The Contract Documents shall not be deemed to create any contractual relationship between the Architect/Engineer and the Construction Manager or any separate contractors, subcontractors of any tier or suppliers on the Project; nor shall anything contained in the Contract Documents be deemed to give any third party any claim or right of action against the Principal Representative, the Architect/Engineer or Construction Manager which does not otherwise exist without regard to the Contract Documents.

1.1.9 The initial Work of the Construction Manager shall consist of its services in connection with the Preconstruction Phase. The Preconstruction Phase of the CM/GC Services shall be parallel and coincidental with the Schematic Design, Design Development, and Construction Document Phases of the Architect/Engineer’s Services. As the Bid Packages are prepared and prices are established for the work to be performed within each respective Bid Package, the parties contemplate that the work to be performed by the Construction Manager shall be adjusted by Amendment or Change Order to this Agreement to place the work contained within the various Bid Packages within the work to be performed by the Construction Manager with corresponding adjustments made to the Contract Sum, Guaranteed Maximum Price and Contract Time.

1.1.10 Subject to the provisions of Article 10.4, execution of this Agreement by the Construction Manager is a representation that the Construction Manager has visited the site, become familiar with the local conditions under which the Work is to be performed, and has correlated personal observations with the requirements of the Contract Documents.

1.1.11 The intent of the Contract Documents are to include all items and services necessary for the proper execution and completion of the Work. The Contract Documents are complementary,

and what is required by any one shall be as binding as if required by all. Work not covered in the Contract Documents shall be required unless it is not consistent therewith and is not reasonably inferable there from as being necessary to produce the intended results. Words and abbreviations which have well known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings. If there are conflicting variances between the Drawings and Specifications, the requirements of the Specifications shall control unless the Architect/Engineer directs otherwise in writing. Numerous exhibits to be developed over a period of time are to be also attached to and made a part of the Contract Documents, some of which may be in conflict with other exhibits or portions of this Agreement. In the event of any conflict between any of them, the greater service, better quality or greater quantity shall be included in the Work, Contract Sum and Guaranteed Maximum Price without additional compensation, to be superseded by applicable Amendments and Change Orders.

1.1.12 The organization of the Specifications into division, section, and article, and the arrangement of Drawings shall not control the Construction Manager in dividing the Work among subcontractors or in establishing the extent of the work to be performed by any trade.

ARTICLE 2. DEFINITIONS

2.1 DEFINITIONS

2.1.1 The words "Agreement" or "Contract" shall be considered to be this written Agreement entered into by the Principal Representative and the Construction Manager for the performance of the Work and payment therefore.

2.1.2 "Architect/Engineer" shall mean the legally approved professional Architect/Engineer, or group or association or professional corporation of such approved professional Architect/Engineers, engineers and consultants, who have contracted with the Principal Representative to accomplish the architectural and engineering services necessary to the Project.

2.1.3 The term "Colorado Labor," as provided in C.R.S. § 8-17-101(2)(a), as amended, means any person who is a resident of the state of Colorado, at the time of the public works project, without discrimination as to race, color, creed, sex, sexual orientation, marital status, national origin, ancestry, age, or religion except when sex or age is a bona fide occupational qualification. A resident of the state of Colorado is a person who can provide a valid Colorado driver's license, a valid Colorado state-issued photo identification, or documentation that he or she has resided in Colorado for the last thirty days.

2.1.4 The "Date of Completion of the Work" or designated portion thereof is the date certified by the Architect/Engineer when construction is complete, in accordance with the Contract Documents.

2.1.5 "Construction Manager" shall mean that the individual, partnership, or corporation which has, by virtue of its in-house capabilities of budgeting, cost estimating, management and labor relations personnel, the required technical and professional services expertise to work with the Principal Representative and the Architect/Engineer in order to help formulate the Project Budget, furnish the Architect/Engineer with the information on construction technology and market conditions to help assure that the building design stays within the Project Budget, Fixed Limit of Construction Cost and Guaranteed Maximum Price (except for changes made pursuant to Article 10), manage the procurement effort, and supervise the construction of the Work.

2.1.6 The "Contract Documents" consist of:

.1 This Agreement;

.2 The Conditions of the Contract (General, as included within this Agreement, and Supplementary, if applicable);

.3 The Drawings released for Construction (**Exhibit I.1**);

.4 The Specifications released for Construction **(Exhibit I.1)**;

.5 **Exhibit A**, CM/GC Designated Services and Method of Payment (Attached);

.6 **Exhibit B**, Construction Manager's Certification (Attached);

.7 **Exhibit C,** Construction Manager's Certificate of Liability Insurance (Attached);

.8 **Exhibit D,** Certification and Affidavit Regarding Unauthorized Immigrants (Form UI-1) (Attached as Exhibit I.8)

.9 **Exhibit E,** Not Used;

.10 **Exhibit F**, List of Pre-Qualified Subcontractors (when approved by the Principal Representative **and prior to bidding)**;

.11 **Exhibit G**, Schematic Design Estimate Summary and Updated Summaries (when approved by the Principal Representative);

First Amendment (incorporating GMP) Exhibits

.12 **Exhibit H.1,** Guaranteed Maximum Price Documents, Drawings and Specifications including Addenda and Modifications (when approved by the Principal Representative);

.13 **Exhibit H.2,** Schedule of Bid Package Descriptions and Issuance Dates;

.14 **Exhibit H.3,** Schedule of Values (prepared at the time of **the Guaranteed Maximum Price Amendment);**

.15 **Exhibit H.4,** Allowance Schedule (prepared at the time of **the Guaranteed Maximum Price Amendment);**

Second and Subsequent Amendments (incorporating Bid Packages) Exhibits

.16 **Exhibit I.1**, Contract Documents and Specifications (when approved by the Principal Representative);

.17 **Exhibit I.2,** All Addenda issued prior to and all Modifications issued after execution of Amendment(s). A Modification to the Agreement includes (1) a written Amendment to this Agreement signed by both parties, (2) a Change Order, (3) a

written interpretation issued by the Architect/Engineer pursuant to Article 4.3, or (4) a written order for a minor change in the Work issued by the Architect/Engineer pursuant to paragraph 10.5.1;

.18 **Exhibit I.3,** Schedule of Values (consistent with GMP Schedule of Values), include Labor Overhead (direct labor burdens) for each Subcontractor to be applied to all change orders and amendments;

.19 **Exhibit I.4,** Allowance Schedule (consistent with GMP Allowance Schedule);

.20 **Exhibit I.5,** Performance Bond;

.21 **Exhibit I.6,** Labor and Material Payment Bond;

.22 **Exhibit I.7,** Property Insurance Certificate;

.23 **Exhibit I.8**, Certification and Affidavit Regarding Unauthorized Immigrants (Attached);

.24 **Exhibit I.9,** Notice to Proceed to Commence Construction Phase (Form SC-7.26) (when issued);

.25 **Exhibit I.10,** Preliminary and Detailed Construction Schedules (when approved by the Principal Representative);

.26 **Exhibit I.11,** Notice of Substantial Completion (Form SBP-07) (when Issued);

.27 **Exhibit I.12,** Notice of Approval of Occupancy/Use (Form SBP-01) (when issued);

.28 **Exhibit J**, Notice of Acceptance (when issued);

.29 **Exhibit K**, Notice of Contractor's Settlement (when issued);

.30 **Exhibit L**, Request for Proposal (Dated **OCT 04, 2021**) (Attached);

.31 **Exhibit M**, Construction Manager's Fee Proposal (Dated **SEP 28, 2021**) (Attached);

.32 **Exhibit N,** Sales and Use Tax Forms Attached**;**

.33 **Exhibit O,** Building Code Compliance Policy: Coordination of Approved Building Codes, Plan Reviews and Building Inspections (Attached).

.34 **Exhibit P,** University of Colorado Denver | Anschutz Mechanical Campus Supplementary General Conditions.

2.1.7 Unless otherwise provided, the "Contract Time" shall commence as set forth in paragraph 6.1.1 and shall end on the final completion date of the Project as defined in paragraph 17.4.

2.1.8 The term "Day" as used in the Contract Documents shall mean calendar day unless specifically designated otherwise.

2.1.9 The word "Drawings" shall mean all Drawings approved by the Principal Representative which have been prepared by the Architect/Engineer showing the work to be done.

2.1.10 The "Fixed Limit of Construction Cost" shall set forth a dollar amount available for the total Construction Cost for construction of all elements of the Work designed or specified by the Architect/Engineer including but not limited to the Construction Manager's fee, bond and insurance premiums, all reimbursables, together with any and all Construction Manager contingency amounts in accordance and as adjusted as set forth in paragraphs 3.4.1 through 3.4.3.

2.1.11 The term "Guaranteed Maximum Price" shall mean that maximum amount for which the work shall be accomplished (including Construction Manager's fee) and it shall be computed by the Construction Manager in accordance with the provisions of paragraph 9.3 hereinafter.

2.1.12 The word "Notice" shall mean any communication in writing from either contracting party to the other by such means of delivery that receipt cannot be properly denied.

2.1.13 The term "Principal Representative," shall mean: "The governing board of a state department, institution or agency or its designee; or if there is no governing board, then the executive head of a state department, institution, or agency, as designated by the governor or the General Assembly," and as shall be specifically identified in the Contract Documents.

2.1.14 The "Project" is the total construction of which the Work performed under the Contract Documents is a part, and may include construction by the Principal Representative or by separate contractors.

2.1.15 "State Buildings Program" shall mean an entity of the Department of Personnel & Administration of the Executive Branch of the State government or designee as shall be established to perform statutory responsibilities current at any time during the performance of this Agreement.

2.1.16 The term "Subcontractor" shall mean a person, firm, or corporation supplying labor and materials, or only labor, for the Work, under separate contract or agreement with the Construction Manager.

2.1.17 The terms “Substantial Completion” or “Substantially Complete” mean the stage in the progress of the work when the construction is sufficiently complete, in accordance with the Contract Documents as modified by any Change Orders, so that the Work, or at the discretion of the Principal Representative, any designated portion thereof, is available for its intended use by the Principal Representative and a Notice of Substantial Completion can be issued. Portions of the Project may, at the discretion of the Principal Representative, be designated as Substantially Complete.

2.1.18 The term "Supplier" shall mean any manufacturer, fabricator, distributor, material man or vendor.

2.1.19 The "Work" means the construction and services required by the Contract Documents, whether completed or partially completed and includes all other labor, materials, equipment and services provided or to be provided by the Construction Manager to fulfill the Construction Manager's obligations. The Work may constitute the whole or a part of the Project.

2.1.20 The "Preconstruction Phase" shall mean the Work done by the Construction Manager in the management and definition of the project prior to the awarding of construction contracts for any bidding package.

2.1.21 The "Construction Phase" shall mean the work done by the Construction Manager in the management and construction of the project from the awarding of construction contracts for any bidding package until the final acceptance of that package of Work.

2.1.22 The "Direct Cost of the Work" shall be those items defined in the Guaranteed Maximum Price; the General Conditions and Supplementary General Conditions directly related to construction and not otherwise defined under the Construction Phase of the Work; and reimbursable expenses including transportation and maintenance of all materials, supplies, equipment, temporary facilities, and hand tools not owned by the workmen, which are employed or consumed in the performance of the Work.

2.1.23 The "Schedule of Values" shall be defined as the itemized listing of description of the Work by Division and Section of the Specifications. The format shall be the Form SC-7.2. Included shall be the material costs, and the labor and other costs plus the sum of both.

2.1.24 The term "Construction Cost" shall be defined as provided in paragraph 3.4.6.

2.1.25 The term "Contract Sum" shall be defined as provided in paragraph 9.4.1.

2.1.26 The term “Occupancy” means occupancy taken by the State as Owner after the Date of Substantial Completion at a time when a building or other discrete physical portion of the Project is used for the purpose intended. The Date of Occupancy shall be the date of such first use, but shall not be prior to the date of execution of the Notice of Approval of Occupancy/Use (Form SBP-01). Prior to the date of execution of a Notice of Approval of Occupancy/Use, the State shall have no right to occupy and the project may not be considered safe for occupancy for the intended use.

2.1.27 The terms “Final Acceptance” or “Finally Complete” mean the stage in the progress of the work, after Substantial Completion, when all remaining items of work have been completed, all requirements of the Contract Documents are satisfied and the Notice of Acceptance can be issued. Discrete physical portions of the Project may be separately and partially deemed Finally Complete at the discretion of the Principal Representative when that portion of the Project reaches such stage of completion and a partial Notice of Acceptance can be issued.

2.1.28 The term "Amendment" shall be defined as provided in paragraph 10.1.2.

2.1.29 The term "Change Order" shall be defined as provided in paragraph 10.1.3.

ARTICLE 3. CONSTRUCTION MANAGER'S SERVICES

The Construction Manager shall perform the following services under this Agreement in each of the phases described below:

3.1 COMPLETION WITHIN FISCAL AND TIME CONSTRAINTS AND VALUE ENGINEERING

3.1.1 The Construction Manager expressly recognizes that this Project is being undertaken on an accelerated basis and must be completed within the time and fiscal constraints as set forth throughout this Agreement. The Construction Manager further represents to the Principal Representative that by executing this Agreement, it has been fully informed and has thoroughly reviewed: the goals of the Project; the work effort of the Architect/Engineer performed to date for the Project; all of the Exhibits and documents attached to this Agreement and when executed, specifically including **Exhibit A**, CM/GC Designated Services and Method of Payment, **Exhibit H.1**, Guaranteed Maximum Price Documents, Drawings and Specifications when approved by the Principal Representative, **Exhibit H.2**, Schedule Of Bid Package Descriptions and Issuance Dates, **Exhibit H.3**, Schedule of Values, **Exhibit H.4,** Allowance Schedule, and **Exhibit F**, List of Pre-Qualified Subcontractors, all of which exhibits are incorporated herein and by reference made a part hereof; has been informed of the Principal Representative's general time as well as fiscal constraints and contingencies applicable to the Fixed Limit of Construction Cost; and all of the services to be provided by the Construction Manager pursuant to the Contract Documents. Based upon this review and analysis and recognizing that the contract for design services is between the Principal Representative and the Architect/Engineer, the Construction Manager nonetheless represents to the Principal Representative that it shall provide all the necessary services and perform all of the Work within the requirements of the Contract Documents.

3.1.2 To accomplish the objectives set forth in paragraph 3.1.1, the Construction Manager shall provide consultation throughout the Preconstruction and Construction Phases including but not limited to the furnishing of all necessary Value Engineering services. The object of the Value Engineering is to achieve optimum value for each construction dollar spent and keep the time of completion and cost of the Work within the time and fiscal constraints set forth throughout the Contract Documents. In cooperation with the Architect/Engineer and Principal Representative, the Construction Manager shall:

.1 Formulate and evaluate alternative designs, systems, materials;

.2 Provide cost estimates of the alternatives to be evaluated. Cost estimates shall include industry standard operating and maintenance costs when appropriate to evaluate life-cycle costs of the alternatives. The Construction Manager shall review the Statement of Probable Construction Cost prepared by the Architect/Engineer at the completion of the Schematic Design phase and include an analysis and commentary as to any discrepancies observed in the report referenced in 3.1.2.4 below;

.3 Evaluate the alternatives on the basis of costs, time schedules, availability of labor and materials, construction feasibility, etc.;

.4 With the assistance of the Architect/Engineer, prepare written reports at the end of the Schematic Design Phase and the Design Development Phase summarizing the Value Engineering activities accomplished and any recommendations developed within each phase.

.5 If Estimates of Construction Cost and/or bids received for the Work contained in any Bid Package cause the anticipated cost of the Work to exceed the then current Estimate of Construction Cost, the Fixed Limit of Construction Cost, the Guaranteed Maximum Price or Schedule of Values, the Construction Manager shall, at no additional cost to the Principal Representative unless caused by an increase in the Construction Manager's Work requested by the Principal Representative, provide

additional Value Engineering services in conjunction with any and all appropriate items in the Estimate of Construction Cost, the Fixed Limit of Construction Cost, the Guaranteed Maximum Price, and/or the Schedule of Values for the Work.

.6 Participate in a formal Value Engineering workshop at the end of the Schematic Design review and estimating tasks, bringing multidiscipline cost/construction experts to evaluate alternative designs, systems and materials.

.7 Lead a formal Value Engineering workshop at the end of the Design Development Design review and estimating tasks, bringing multidiscipline cost/construction experts to evaluate alternative designs, systems and materials.

3.1.3 The Principal Representative shall participate in the formulation and evaluation of alternatives in the Value Engineering activity.

PRECONSTRUCTION SERVICES

3.2 AVAILABLE FUNDS

3.2.1 The Construction Manager acknowledges that the Principal Representative is limited in the funds available to design and construct the Project. Should funding of a lesser amount be made available for the Project, it is the obligation of the Principal Representative to revise the Project scope consistent with the ultimate appropriation.

3.2.2 Consultation During Project Development: The Construction Manager shall review conceptual design; advise on-site use and improvements, selection of materials, building systems and equipment; and provide recommendations on construction feasibility, availability of materials and labor, local construction activity as it relates to schedules, and time requirements for installation and construction.

3.3 BUDGETING AND FIXED LIMIT OF CONSTRUCTION COST

3.3.1 The Construction Manager shall assist the Architect/Engineer in evaluating the Principal Representative's preliminary budget. Based on consultation with the Architect/Engineer and the Construction Manager, the Principal Representative shall furnish a Project Budget to the Construction Manager which shall set forth a dollar amount available for the total Construction Cost of the Project and include contingencies for bidding and construction.

3.3.2 The Fixed Limit of Construction Cost has been established by the Principal Representative, converting the applicable portion of the Project Budget into the Fixed Limit of Construction Cost, as set forth in the recital above.

3.3.3 The Fixed Limit of Construction Cost may be revised only by approved Amendments and Change Orders issued after execution of the Contract Documents.

3.4 COST ESTIMATING

3.4.1 It is the desire of the Principal Representative to incorporate as many alternate bid items into the Project as reasonable and otherwise increase the Work to be performed by the Construction Manager, and all parties recognize that although the availability of funds will depend in part upon favorable market conditions, with thorough and careful planning, cost estimating and

cooperation, funds may become available for the alternates through procurement at less than the Construction Manager's estimated cost therefore, together with savings through the unexpended portion of the bidding contingency.

3.4.2 To accomplish the inclusion of alternates and/or increases, the project contingency shall be as follows:

.1 The bidding contingency for all Bid Packages together with the construction of the Work shall be equal to two point five percent (2.5%) of the Guaranteed Maximum Price.

.2 The construction contingency for the Work shall be equal to three percent (3%) ~~three and one-half percent (3.5%)~~ of the initial Guaranteed Maximum Price.

The bidding contingency shall be allocated between the presently anticipated **TWO (2) Bid Packages**, at the discretion of the Construction Manager. The Construction Manager shall notify, in writing, the Principal Representative of the allocation of the bidding contingency for each Bid Package.

3.4.3 At the conclusion and award of the Bid Packages, all differences between the Construction Manager's estimated cost of the work contained within the Bid Packages, exclusive of contingency, versus the actual cost thereof as determined by bidding and award (buyouts) shall be promptly calculated and totaled. If the total of all of the buyouts exceed the Construction Manager's estimated cost therefore, the bidding contingency identified in paragraph 3.4.2.1 shall be applied by the Construction Manager, after prior written notice to the Principal Representative, to cover any overrun per Bid Package.

3.4.4 After all of the Bid Packages have been bought out, any and all savings achieved through the buyouts of the Bid Packages together with all unexpended sums remaining in the bidding contingencies shall forthwith accrue to the Principal Representative to be applied by the Principal Representative, in its sole and absolute discretion, to the inclusion of desired alternates into the Work or to otherwise increase the Work to be performed by the Construction Manager, and/or to reduce the Guaranteed Maximum Price.

3.4.5 The construction contingency shall only be used to cover costs for labor, materials, equipment and similar costs for items or work to be furnished during the construction phase of the Project. It is not the intent of this Agreement to use the construction contingency for costs incurred during the Preconstruction phase or bidding phase or for costs to correct any errors, omissions, mistakes or rejected work caused by subcontractors. The construction contingency may be used to cover the Construction Manager’s costs (i) arising from estimating cost overruns in the costs of Exhibit H.4 Allowance Schedule; (ii) unexpected additional trade coordination costs incurred for work directly performed by the Construction Manager that could not have been reasonably contemplated; (iii) items required and reasonably inferable from the Contract Documents which the Construction Manager can show were not specifically called out within estimate or bid documents of the Construction Manager or any Subcontractor; (iv) losses or damages to property related to the Work not covered by insurance provided by the Construction Manager, but not including any insurance deductible(s); (v) arising from expediting or acceleration of the Project schedule where such cost is not a basis for an increase in the GMP under Article 6; (vi) Bid Package buyout overrun costs for additional Bid Packages that were not part of anticipated Bid Packages defined in 1.1.3, but only if bidding procedures contemplated hereunder were followed and the bidding contingency has been exhausted; or (vii) other costs incurred not reasonably to

have been expected that are approved by the Principal Representative in the Principal Representative's sole discretion, so long as those costs are not recovered under any insurance policy provided pursuant to this Agreement and so long as the total costs under this Agreement do not exceed the Guaranteed Maximum Price. No expenditure from the construction contingency for any matters or work activities shall be made without the prior written approval of the Principal Representative, which approval, with the exception of item (vii) above, shall not be unreasonably withheld. Expenditures from the construction contingency shall be made only by Change Order.

3.4.6 Construction Cost: When preparing any Estimates of Construction Cost and in development of the Schedule of Values, such documents shall include, without duplication:

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

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

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

.5 All bond premiums; and

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

3.4.7 The Estimates of Construction Cost shall not include the compensation of the Architect/Engineer, the Architect/Engineer's consultants or any other sums due the Architect/Engineer, the costs of land, right of way, financing or other costs which are the responsibility of the Principal Representative.

3.4.8 The Construction Manager, in preparing its Estimates of Constitution Cost and providing the Guaranteed Maximum Price, shall consult with the Architect/Engineer to determine what materials, equipment, component systems and types of construction are to be included in the Contract Documents, to make reasonable adjustments in the scope of the Work, and to include in the Contract Documents alternate items, as approved by the Principal Representative in writing, for bid so as to permit the adjustment of the Estimate of Construction Cost.

3.4.9 The Construction Manager shall prepare an Estimate of Construction Cost as soon as major Project requirements have been identified and update it periodically. For the Schematic Design Phase, the Construction Manager shall prepare a quantity take-off cost estimate based on building systems, assemblies, components, etc., and update periodically. During the Design Development Phase, the Construction Manager shall prepare a final cost estimate in preparation for a Guaranteed Maximum Price and update periodically. All Estimates of Construction Cost shall make allowance for bidding and price escalation. During the Construction Documents Phase, the Construction Manager shall continually monitor the cost estimates and develop a cost estimate to help assure that the cost of the Work remains within the applicable portion of the Project Budget, Fixed Limit of Construction Cost and Guaranteed Maximum Price.

3.4.10 Estimates shall be independently prepared but in coordination with the Architect/Engineer and shall be based on quantitative takeoffs whenever possible and shall be supported in sufficient depth and organization to be used in preparing budgets based on Construction Specifications Institute (CSI) Division, funding sources, sub-trades, combinations of sub-trades, building systems, Bid Packages or combinations thereof. The specific cost coding structure, estimating guidelines, assumptions, and contents of the cost estimates shall be mutually resolved between the Construction Manager and the Architect/Engineer prior to development of the first cost estimate to assure that estimates developed by all parties can be compared and reconciled. Lump sum estimates are not acceptable.

3.4.11 During the preparations of cost estimates, the Construction Manager shall notify the Principal Representative if it appears that the Estimate of Construction Cost will exceed the applicable portion of the Project Budget or Fixed Limit of Construction Cost as may be applicable, satisfactorily demonstrate the accuracy of its estimate in such detail as shall be reasonably required by the Principal Representative, and make reasonable recommendations for corrective action consistent with the Project Budget or Fixed Limit of Construction Cost, as may be applicable. The Construction Manager shall submit cost estimates to the Principal Representative for review and acceptance. Concurrently, the Construction Manager shall provide copies to the Architect/Engineer for review and verification.

3.4.12 The Principal Representative shall reasonably cooperate with the Construction Manager to keep the Work within the applicable portions of the Project Budget or Fixed Limit of Construction Cost, as may be applicable, including but not limited to the giving of appropriate and reasonable consideration to all reasonable recommendations of the Construction Manager, approving redesign, deductive alternatives or reductions in Work, requesting additional Value Engineering, making modifications to the Contract Documents or exercising such other rights or remedies as may be available elsewhere under this Agreement including termination for convenience. However, the Principal Representative shall be under no duty to reduce the Work to accommodate for any construction contingency used to cover costs to correct errors, omissions, mistakes or rejected work pursuant to paragraph 3.4.5.

3.4.13 Architect/Engineer/Construction Manager Cooperation: The Architect/Engineer, by the terms of its agreement with the Principal Representative, is obligated to provide reasonable cooperation to the Construction Manager in the development of Estimates of Construction Cost and the Guaranteed Maximum Price. Conversely, the Construction Manager, by the terms of this Agreement is obligated to provide reasonable cooperation to the Architect/Engineer in the development of Statements of Probable Construction Cost and the Guaranteed Maximum Price. Additionally, both Architect/Engineer and Construction Manager are obligated to reconcile their respective cost estimates at the completion of each design phase of the Work including the Guaranteed Maximum Price in a timely manner so as not to negatively impact the Project Schedule.

3.4.14 A contract-control/project-management software (hereafter “Project Management Software”) approved by the Principal Representative, shall be used as a primary tool for project control, communication and documentation control by all the project participants, to include the Principal Representative, Construction Manager, and Architect. The Construction Manager shall utilize the Project Management Software to implement a cost forecasting, monitoring, control and reporting system for the Project. The Project Management Software shall be maintained throughout the project, both during the Preconstruction and construction phases. Cost analyses shall be based upon data analyses as developed/described within Section 3.4 and shall include analyses of all trades and Project components making a significant contribution for total Project costs. The Project

Management Software shall provide for development of a Project cost model, monitoring the design process and periodic reviews of the cost estimates/forecasts to identify variances from the cost model. Additionally, the Project Management Software shall identify variances between actual and budgeted or estimated costs or the Fixed Limit of Construction Cost and, consistent with paragraph 3.4.9, advise the Principal Representative and Architect whenever projected costs are expected to exceed Project Budgets, estimates of construction Cost, the Fixed Limit of Construction Cost, or the Guaranteed Maximum Price as may be applicable.

The Construction Manager shall use the Project Management Software for the major contract administration processes to include, but not limited to:

.1 Submittals:
   a. Construction Manager shall create a Submittal log and Submittal schedule.
   b. Submittals shall be directly submitted to the Architect and directly returned from the Architect.

.2 Requests for Information:
   a. Construction Manager shall submit requests for information using the Project Management Software.
   b. Architect shall answer requests for information via the Project Management Software. Requests for Information responses that have cost impact will have corresponding Change Order Bulletin (Form SC 6.311) issued by the Architect/ Engineer.

.3 Change Management: Entire change management process including Notices and Change Orders shall be managed using the Project Management Software, and utilizing Contract Amendment (Form SC 6.0), Change order(Form SC 6.31), Change Order Bulletin (Form SC 6.311), Change Order Proposal (Form SC 6.312) and Change Order Log.

.4 Pay-applications: Construction Manager shall be responsible for creating and distributing pay-application in the Project Management Software using an earned-value calculation through the CPM Schedule & utilizing Application and Certificate for Contractor's Payment (SBP7.2)**.**

.5 Meeting Minutes: Construction Manager shall be responsible for creating and distributing construction-meeting minutes in the Project Management Software.

.6 Daily Report: Construction Manager shall be responsible to prepare and distribute daily reports in the Project Management Software.

.7 Insurance certificate: Construction Manager shall responsible for storing all the insurance related information of subcontractors in the Project Management Software.

.8 Punchlists: Construction Manager shall be responsible to update the Substantial Completion Punchlist status using the Project Management Software.

.9 All correspondence with Architect or Principal Representative shall be in the Project Management Software.

3.5 OTHER PRECONSTRUCTION SERVICES

3.5.1 The Construction Manager shall perform those items designated as Required Services as set forth in the CM/GC Designated Services and Method of Payment schedule designated as **Exhibit A**. In addition and not in limitation, the Construction Manager shall also perform the other Preconstruction Services designated in this Article 3 together with such other services as are normally and customarily provided by a Construction Manager.

3.5.2 The Construction Manager shall review the Drawings and Specifications as they are being prepared, recommending alternative solutions whenever design details affect construction feasibility, schedules or cost; however, nothing contained in this paragraph shall be construed to require the Construction Manager to provide Architect/Engineer services.

3.5.3 The Construction Manager shall make recommendations to the Principal Representative and the Architect/Engineer regarding the division of Work in the Drawings and Specifications to facilitate the bidding and awarding of subcontracts, allowing for phased construction and funding, if applicable, taking into consideration such factors as time of performance, availability of labor, overlapping trade jurisdictions, provisions for temporary facilities, etc.

3.5.4 The Construction Manager shall review Drawings and Specifications with the Architect/Engineer to (1) eliminate areas of conflict, overlapping trade jurisdictions, and overlapping in the Work to be performed by the various subcontractors, (2) endeavor to confirm that all Work has been included, and (3) allow for phased construction.

3.5.5 The appropriate representatives of the Principal Representative shall review documents submitted by the Construction Manager and shall render decisions pertaining thereto without unreasonable delay.

3.5.6 Copies for Review: The Principal Representative through the Architect/Engineer and consistent with the Principal Representative's contract with the Architect/Engineer, shall furnish the Construction Manager a sufficient quantity of documents required for the Preconstruction Services.

3.5.7 As part of the Schematic Design review and estimating tasks, the Construction Manager shall develop a preliminary Project Schedule that is coordinated with the Architect/Engineer's design schedule, the milestone dates specified in **Exhibit H.2**, the Date of Completion specified in paragraph 6.3.1, the scope of work described within the Contract Documents, and the work described within the Schematic Design Documents. The Construction Manager shall utilize the Project Management Software to develop and manage the schedule. The schedule as agreed to shall be Critical Path Method (CPM) with reasonable detail to allow for assessment of procurement schedules for equipment to be furnished by the Principal Representative, the adequacy of the construction duration/period, critical paths among the activities for the building systems, peak manpower requirements, and crunch points within the Project's logic/critical path. As part of the Design Development Document review and estimate, this preliminary schedule shall be updated by the Construction Manager to reflect the work described in the Design Development Documents, and shall be utilized by the Principal Representative to assess the Guaranteed Maximum Price.

3.5.8 The Construction Manager shall attend all regular meetings with the Principal Representative and the Architect/Engineer and such additional meetings as the Principal Representative may request. All regular meetings shall be scheduled by the Architect/Engineer with the agreement of the Construction Manager and approval of the Principal Representative. All additional meetings shall be scheduled by the Principal Representative.

3.5.9 The Construction Manager shall implement a cost forecasting, monitoring and control program and reporting system for the Project. The system shall be maintained throughout the project, both during the Preconstruction and Construction Phases. Cost analyses shall be

based upon data analyses as developed/described within paragraph 3.4 and shall include analyses of all trades and Project components making a significant contribution for total Project costs. The system shall provide for development of a Project cost model, monitoring the design process and periodic reviews of the cost estimates/forecasts to identify variances from the cost model. Additionally, the system shall identify variances between actual and budgeted or estimated costs or the Fixed Limit of Construction Cos and, consistent with paragraph 3.4.9, advise the Principal Representative and Architect/Engineer whenever projected costs are expected to exceed Project Budgets, Estimates of Construction Cost, the Fixed Limit of Construction Cost, or the Guaranteed Maximum Price as may be applicable.

3.5.10 The Construction Manager shall investigate and recommend materials and equipment that could be purchased by the Principal Representative; consider long lead time procurement and mass purchasing power in making such recommendations; recommend a schedule for such purchases after coordination with the Architect/Engineer in the schedule for preparation of Contract Documents; and expedite and coordinate delivery of these purchases to facilitate their delivery by the required dates.

3.5.11 The Construction Manager shall: prepare necessary bidding information, bidding forms, and pre-qualification criteria for bidders; develop subcontractor interest in the Project; establish bidding schedules; advertise for bids; and conduct pre-bid conferences to familiarize bidders with the bidding documents and management techniques and with any special systems, materials, or methods. If the Construction Manager becomes aware prior to any bid date that less than three (3) pre-qualified subcontractors plan to bid any portion of any Bid Package or that anticipated bids from previously approved or pre-qualified subcontractors listed on **Exhibit F**, are likely to exceed the then current Schedule of Values or Estimate of Construction Cost, the Construction Manager shall promptly so notify the Principal Representative and Principal Representative shall be entitled to treat the situation as an unforeseeable circumstance pursuant to paragraph 7.2.2.

3.5.12 The Construction Manager shall receive and open bids when advertised, prepare a bid analysis, conduct pre-award conferences, and notify the Principal Representative and Architect/Engineer concerning which bids shall be accepted. The Principal Representative and Architect/Engineer shall be notified in advance of the time and place of all bid openings and may elect to attend such openings with their representatives. A proposal to accept other than a low bid shall be justified in writing by the Construction Manager and subject to prior approval by the Principal Representative.

3.5.13 The Construction Manager shall provide the requirements and assignment of responsibilities for safety precautions and programs as required for the execution of the Work, temporary project facilities and for equipment, materials and services for common use of subcontractors and verify that all are included in the Contract Documents.

3.5.14 The Construction Manager shall participate in Project design review sessions at the close of the Schematic Design Phase, the Design Development Phase, and as Construction Documents are finalized for each Bid Package. The Project design review sessions shall be attended by the Architect/Engineer and representatives of the Principal Representative. The purposes of the Project design review sessions are to (1) assure consistency with the design intent; (2) ensure complete, coordinated, constructible and cost-effective designs for all disciplines (e.g. architectural, structural, mechanical); (3) assure that the design documents are code compliant as per **Exhibit O**, Approved Building Codes Plan Reviews and Building Inspections; (4) endeavor to confirm that all Work has been included and described in sufficient detail to assure complete pricing

of 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.

3.5.15 The Construction Manager shall provide not later than the first of each month a monthly report documenting the current status of the project's schedule, costs, minority and women owned business enterprises, requests for information, submittals, manpower, safety, and other pertinent information. The report shall be separate from the monthly schedule update/report. The report shall include a narrative discussion of the progress achieved, activities anticipated for the next month, and issues that are affecting the rate of progress. Progress photographs should be attached/included. This monthly report shall be provided in Design and Construction Phase of the project.

3.5.16 If the Construction Manager or any of its subcontractors of any tier participating in the Design Reviews observes that any of the Contract Documents are at variance with applicable laws, statutes, building codes, ordinances, rules or regulations, in any respect the Construction Manager shall promptly notify the Principal Representative in writing, noting the applicable drawing or specification, and recommending an appropriate alternative for correcting the design.

CONSTRUCTION PHASE SERVICES

3.6 CONTROL OF THE WORK

3.6.1 The Construction Manager shall supervise and direct the work of its subcontractors and coordinate the Work with the activities and responsibilities of the Principal Representative and the Architect/Engineer to complete the Project in accordance with the Principal Representative's objectives of cost, time and quality.

3.6.2 The Construction Manger shall establish on-site organization and lines of authority in order to carry out the overall plans of the Construction Team.

3.6.3 The Construction Manager shall schedule and conduct weekly progress meetings at which the Principal Representative, Architect/Engineer, and Construction Manager can discuss jointly such matters as procedures, progress, and problems.

3.7 SUPERVISION AND CONSTRUCTION PROCEDURES

3.7.1 The Construction Manager shall supervise and direct the Work, using the Construction Manager's best skill and attention. The Construction Manager shall be solely responsible for all construction means, methods, techniques, sequences, and procedures and shall coordinate all portions of the Work under the Contract Documents.

3.7.2 The Construction Manager shall be responsible to the Principal Representative for the acts and omissions of the Construction Manager's employees, subcontractors of all tiers, their agents and employees, and any other persons performing any of the Work or furnishing materials under a contract with the Construction Manager.

3.7.3 The Construction Manager shall not be relieved from the Construction Manager's obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of the Architect/Engineer in its administration of this Agreement, or by inspections, tests,

or approvals required or performed by persons other than the Construction Manager. Nothing contained in this paragraph shall preclude the Construction Manager from asserting any rights it may have under this Agreement in the event of unreasonable delays to the Construction Manager in the making of any inspections, tests, approvals, or other action by the Architect/Engineer upon which the Construction Manager is dependent.

3.7.4 During the Construction Phase, the Construction Manager shall employ at a minimum on a full time basis a site based superintendent, together with such additional superintendence, project management, engineering and clerical support as may be reasonably required and appropriate to the stage of construction (as per the Construction Manager Designated Services and Method of Payment, Exhibit A). The Superintendent and Project Manager shall not be changed except with the consent of the Principal Representative, unless the Superintendent or Project Manager proves to be unsatisfactory to the Construction Manager or ceases to be in its employ. The Construction Manager shall employ the services of at least one person fully qualified and with a minimum of 5 years' experience in critical path scheduling on projects of similar size and scope for the duration of the Work.

3.7.5 The Construction Manager shall at all times enforce strict discipline and good order among the Construction Manager's employees and shall not employ on the Work any unfit person or anyone not skilled in the task assigned to them.

3.8 ADMINISTRATION

3.8.1 The Architect/Engineer shall provide administration of this Agreement on behalf of the Principal Representative as described throughout this Agreement.

3.8.2 The Architect/Engineer shall be the Principal Representative's representative during construction and until the one (1) year warranty period has expired. The Architect/Engineer and the Construction Manager shall advise and consult with the Principal Representative. All instructions and communications by the Architect/Engineer to 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.

3.8.3 Except where expressly provided to the contrary in the Contract Documents, the Construction Manager's contact person shall forward all communications in writing and all documents to the Principal Representative's contact person and the Architect/Engineer's contact person simultaneously as listed below:

For the Principal Representative:
Daniel, daniel.miro@cuanschutz.edu
With copies to:
Michael J Barden, michael.barden@ucdenver.edu

For the Architect/Engineer:
,

For the Construction Manager:
,
With copies to:
,

3.9 SCHEDULE, COORDINATION AND COST CONTROL

3.9.1 In the performance of the Work under this Agreement, the Construction Manager acknowledges that time is of the essence of this Agreement. The Construction Manager shall begin the Work upon receiving Notice to Proceed to Commence Construction Phase, in accordance with paragraph 6.1. The Construction Manager shall schedule and coordinate the work of all of its subcontractors on the Project including their use of the site. The Construction Manager shall keep the subcontractors informed of the Project construction schedule to enable the subcontractors to plan and perform the work properly. The Construction Manager shall carry the Work forward expeditiously with adequate forces and shall achieve completion of the Work prior to the Date of Completion specified in paragraph 6.3, as adjusted by Change Orders and Amendments.

3.9.2 Preliminary Construction Schedule:

.1 Within fourteen (14) calendar days after being authorized to proceed to commence construction phase, the Construction Manager shall submit for the Architect/Engineer's and the Principal Representative's review and acceptance a Preliminary Construction Schedule. The Preliminary Construction Schedule shall include the Work of the entire project, in a manner that is consistent with previously issued schedules, and shall comply with the Date of Completion of the Work authorized by the current Contract Documents. The submittal shall be developed in the Critical Path Method as agreed to in paragraph 3.5.7. Although the Preliminary Construction Schedule shall describe the entire construction work anticipated to be required by the Project, the schedule shall provide particular detail for the Work described within the first Bid Package, for the remaining design activities for the balance of the Bid Packages, for the equipment procurement activities, and for the actions required from the Principal Representative.

.2 The Preliminary Construction Schedule shall be the basis for progress payments during the first ninety (90) calendar days of the Contract while the Detailed Construction Schedule (discussed hereafter) is being developed and accepted. The Preliminary Construction Schedule shall be updated on a monthly basis while the Detailed Construction Schedule is being developed and approved.

3.9.3 Detailed Construction Schedule:

.1 Within forty-five (45) calendar days of receiving Notice to Proceed to Commence Construction Phase, the Construction Manager shall submit to the Architect/Engineer and Principal Representative a detailed Construction Schedule for the complete construction work scope.

.2 Upon acceptance by the Principal Representative, the Construction Schedule shall be used as a basis for determining progress payments.

3.9.4 Technical Requirements:

.1 The Detailed Construction Schedule shall be developed utilizing commercially available scheduling software as approved by the Principal Representative and the Precedence Diagramming Method. The level of detail of the Construction Manager's schedule shall be a function of the complexity of the work involved. The milestones

and total number of activities shall be subject to approval by the Principal Representative. The activities shall be coded such that the Schedule of Values can be sorted by CSI Division, funding sources, sub-trades, building systems, Bid Packages or combinations thereof. The specific coding structure, resource/cost loading guidelines and assumptions and the allocation of the cost estimates shall be mutually resolved between the Construction Manager, the Architect/Engineer prior to development of the first submission.

.2 Schedule activities shall be cost-loaded as agreed to and the assigned dollar value (cost loading) of each activity of the network shall cumulatively equal the total Construction Cost. Costs for mobilization, bonds, permits, insurance costs may be shown separately. For any items that the Construction Manager intends to bill for stored materials, these items need to be shown as separate material procurement activities in the schedule and the material dollars only placed on these activities. Billing for stored materials on any other schedule activities not broken out in this manner shall not be allowed. General Conditions costs, overhead, profit, et cetera shall not be included within the cost loading and payment for these costs/fees shall be administered separately.

.3 The Construction Manager shall assign manpower loading as agreed to for each activity of the network. In addition, the Construction Manager shall prepare and submit a separate manpower summary analysis in graphic format depicting manpower by subcontractor and aggregate. The graph(s) shall show the number of man-days of effort, by month, over the duration of the Construction Schedule.

.4 For all major equipment and materials fabricated or supplied for this project, the network shall show a sequence of activities including, preparation of shop drawings and sample submissions, review and approval of shop drawings and samples, shop fabrication and delivery, erection or installation, and testing of equipment and materials.

3.9.5 SUBMITTALS:
FOR THE DETAILED CONSTRUCTION SCHEDULE SUBMITTALS, AS WELL AS FOR EACH SCHEDULE UPDATE, THE CONSTRUCTION MANAGER SHALL SUBMIT THE FOLLOWING:

.1 Hard copies of schedule reports, to include the following minimum items:

a. Cost report showing activity dollar value, dollar value of work in place to-date and dollar value for current period.
b. Cost report showing activity dollar value, dollar value of work in place to-date, and dollar value for current period summarizing to schedule of values.
c. Resource report showing man-day allocations by specific trade on each activity.
d. Variance report comparing current dates to target dates.
e. Cash flow report showing monthly projections of expenditures.

.2 A narrative schedule report documenting:

a. Description of the actual work accomplished during the reporting period.

b. Description of any problem areas.
c. Description of current and anticipated delays with recommended corrective actions to mitigate such delays.
d. A list of proposed modifications, additions, deletions, and changes in logic to the approved construction schedule.

.3 A Construction Manager's Schedule to the Principal Representative in an electronic format.

3.9.6 The Construction Manager shall utilize the Project Management Software to prepare and keep current, for the Architect's approval, a time schedule of submittals in a submittal log which is coordinated with the Construction Manager's construction schedule and allows the Architect a reasonable time to review submittals.

3.9.7 Schedule Management

.1 Weekly Progress Meetings: Once each week, on a day mutually agreed to by the Principal Representative and the Construction Manager, a meeting shall be held to assess the progress achieved by the Construction Manager during previous work week, discuss and resolve issues affecting the progress, and review the critical activities anticipated for the following two weeks. The Construction Manager is to provide short interval schedules documenting the activities to be accomplished during the past week and the activities forecast for the next two weeks.

.2 Monthly Project Review Meetings: Once each month on or about the 25th of the month, a meeting shall be held to review a draft pay application/schedule update, assess and agree to the progress achieved by the Construction Manager during the previous month, discuss and resolve issues affecting the progress, and review the critical activities to be accomplished during the following 90 days. The Construction Manager is to provide a draft Pay Application and Schedule Update reflecting the work accomplished during the previous month. If necessary, a joint job-site walk through shall be completed to validate the progress on any questioned activities.

.3 Monthly Schedule Reporting: Upon finalization of the Monthly Project Review and Joint Job Walk, but not later than the 28th of the month, the Construction Manager shall update the Construction Schedule and submit the Pay Application and the current submittal log consistent with paragraph 3.9.6

.4 Schedule Modifications: If, as a result of the monthly Schedule Update, it appears the Construction Schedule no longer represents the actual /logical progression of the work or the Construction Manager's plan for prosecution and progress of the work, the Principal Representative shall require the Construction Manager to submit a revision to the Construction Schedule. Such revisions to the Schedule shall not alter any of the Project Milestone dates.

.5 Schedule Impacts, Schedule Delays, Time Extensions: During the course of the Project, it may be appropriate to revise the Schedule to incorporate impacts or delay issues into the Project Schedule. If the Construction Manager feels he has encountered schedule impacts that he feels may warrant a time extension, he shall present an Impacted Schedule in accordance with Article 6, to the Principal Representative supporting his claim.

.6 Recovery Schedule: In the event progress falls behind schedule dates, the Construction Manager shall prepare a recovery schedule indicating its revised plan

to assure the timely completion of the Work. The recovery plan shall be subject to the Principal Representative's approval.

3.10 AMENDMENTS AND CHANGE ORDERS

3.10.1 The Construction Manager shall assist in developing and implementing a system for the preparation and processing of Amendments and Change Orders and recommend necessary or desirable changes to the Principal Representative and the Architect/Engineer.

3.11 PERMITS, FEES AND REGULATIONS

3.11.1 The Construction Manager shall secure and pay for all permits and governmental fees, licenses, and inspections necessary for the proper execution and completion of the on-site Work which are customarily secured after execution of the Agreement for construction and which are legally required at the time the Guaranteed Maximum Price is provided to the Principal Representative.

3.11.2 The Construction Manager shall give all notices and comply with all laws, ordinances, rules, regulations, and lawful orders of any public authority bearing on the performance of the Work.

3.12 SALES AND USE TAXES

Attached as Exhibit N are the following tax information forms applicable to this project:

Colorado Department of Revenue - Contractor Application for Exemption certification: (Form DR 0172).

Agency Tax exemption Number: 98-02565-0000 (Colorado), 98-00799-0000 (City of Aurora)

Additional Tax exemptions the agency may have with local Cities or Counties (as applicable).

a. Colorado Department of Revenue – Certificate of Exemption for State Sales/Use Tax, dated August 25, 2017.
b. Colorado Department of Revenue – Sales Tax Exemption Certificate Multi-Jurisdiction
c. State of Colorado letter confirming Adams County, RTD, Stadium, and Cultural Tax Exemptions dated April 7, 2006
d. City of Aurora Sales and use Tax exemption dated March 12, 2001
e. City and County of Denver confirmation of tax exemption status dated February 19, 2014
f. Colorado Department of Revenue - Contractor Application for Exemption certification

3.12.1 The Construction Manager shall include in the Contract Sum and Guaranteed Maximum Price and pay all applicable sales, consumer, use and other similar taxes for the Work which are legally enacted at the time bids are received, whether or not yet effective.

3.12.2 The Project is being constructed by the Principal Representative and may be exempt from local sales and use taxes. The Construction Manager is required to verify with the Principal Representative and the local jurisdiction prior to establishing the initial cost estimate as to whether the Project is exempt or if the Construction Manager is entitled to a refund of taxes paid. The Construction Manager shall take any and all appropriate action to obtain such exemption or refunds of taxes paid and shall not charge the Principal Representative for any such taxes. If the Project is

not exempt or the Construction Manager is not entitled to receive any refunds of taxes paid, the Construction Manager shall pay all applicable sales and use taxes required to be paid and shall maintain such records in respect to its Work, which shall be separate and distinct from all other records maintained by the Construction Manager. The Construction Manager shall furnish such data as may be necessary to enable the State, acting by and through the Principal Representative, to obtain any refunds of such taxes which may be available under the laws, ordinances, rules or regulations applicable to such taxes.

3.12.3 The Construction Manager shall require each of its subcontractors of all tiers to comply with the requirements of 3.12.1 and 3.12.2, to maintain such records and furnish the Construction Manager with such data as may be necessary to obtain refunds of the taxes paid by such subcontractors.

3.12.4 No State sales taxes are to be paid on material to be used in the Work.

3.12.5 The Construction Manager shall exclude the amount of any applicable federal excise or manufacturer's taxes from its proposal. The Principal Representative shall furnish the Construction Manager, on its request, the necessary exemption certificates.

3.13 PRINCIPAL REPRESENTATIVE CONSULTANTS

3.13.1 If required, the Construction Manager shall assist the Principal Representative in selecting and retaining the professional services of a surveyor and special consultants, and coordinate these services, without assuming any responsibility or liability of or for these consultants.

3.14 LABOR AND MATERIALS

3.14.1 Unless otherwise provided in the Contract Documents, the Construction Manager shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work, whether temporary or permanent, and whether or not incorporated or to be incorporated in the Work.

3.14.2 The Construction Manager shall provide the Principal Representative a letter of certification on company letterhead that states all products used in the Project are asbestos free. A copy of this letter shall be included in the operations and maintenance manual.

3.15 ROYALTIES AND PATENTS

3.15.1 The Construction Manager shall pay all royalties and license fees. The Construction Manager shall defend all suits or claims for infringement of any patent rights, and shall hold the Principal Representative and the Architect/Engineer harmless against any and all claims, damages, liability and court awards including costs, expenses, and attorney fees and related costs on account thereof, except that the Principal Representative or the Architect/Engineer, as the case may be, shall be responsible for all such loss when a particular design, process, or the product of a particular manufacturer or manufacturers is selected by the Principal Representative or Architect/Engineer or its consultants, provided, however, if the Construction Manager knew or, by virtue of common knowledge in the construction industry, should have known that the design, process, or product selected is an infringement of a patent and failed to promptly notify the Principal Representative and Architect/Engineer in writing, the Construction Manager shall be responsible

for any and all such claims, damages, liability and court awards including costs, expenses, and attorney fees and related costs.

3.16 DOCUMENTS AND SAMPLES AT THE SITE

3.16.1 The Construction Manager shall:

.1 Maintain at the Project site on a current basis, one record copy of all Drawings, Specifications, Addenda, Amendments, Change Orders, and other Modifications, in good order and marked currently to record all changes made during construction, and approved Shop Drawings, Product Data, and Samples. The record copies shall be documented within fourteen (14) days from the date performed in the field and available to the Architect/Engineer and Principal Representative;

.2 Maintain at the Project site on a current basis a log to record receipt of all items set forth in paragraph 3.16.1 so as to record and permit the determination of the most current copies; and

.3 Advise the Principal Representative on a current basis of all changes in the Work made during construction.

3.17 LAYOUT OF WORK

3.17.1 Based upon monuments or benchmarks furnished by the Principal Representative, the Construction Manager shall establish all lines, levels and marks necessary to facilitate the operations of all concerned in such Construction Manager's Work. The Construction Manager shall lay out the Work making permanent records of all lines and levels required for excavation, grading and foundations and for all other parts of the Work.

3.18 USE OF SITE

3.18.1 The Construction Manager shall confine all operations at the site to areas permitted by law, ordinances, permits, and the Contract Documents, and shall not unreasonably encumber the site with any materials or equipment.

3.19 CUTTING AND PATCHING OF WORK

3.19.1 The Construction Manager shall be responsible for all cutting, fitting, or patching that may be required to complete the Work or to make its several parts fit together properly.

3.19.2 The Construction Manager shall not damage or endanger any portion of the Work or the work of the Principal Representative or any separate contractors by cutting, patching, or otherwise altering any work, or by excavation. The Construction Manager shall not cut or otherwise alter the Work of the Principal Representative or any separate contractor except with the written consent of the Principal Representative and of such other contractor. No required consents shall be unreasonably withheld.

3.20 CLEANING UP

3.20.1 The Construction Manager shall keep the buildings and premises free from all surplus material, waste material, dirt and rubbish caused by its performance of the Work, including but not limited to its subcontractors of all tiers and suppliers, and at the completion of the Work, shall remove all such surplus material, waste material, dirt and rubbish, as well as all tools, equipment and scaffolding and shall leave the Work thoroughly clean unless more exact requirements are specified elsewhere in the Contract Documents and where necessary, refit windows, doors and cabinet work. The Construction Manager shall also replace all broken and scratched glass and clean all window glass and all plumbing fixtures. The Construction Manager shall make such minor repairs and alterations in respect to its work as may be necessary to make the buildings and premises ready for occupancy.

3.20.2 If the Construction Manager fails to clean up within five (5) days after written notice from the Principal Representative, the Principal Representative may do so and the cost therefore shall be charged the Construction Manager.

3.21 PROTECTION OF PERSONS AND PROPERTY

3.21.1 In accordance with the provisions of paragraph 3.5.13, the Construction Manager shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work.

3.21.2 The Construction Manager shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury, or loss to:

.1 All employees on the Work and all other persons who may be affected thereby;

.2 All the Work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Construction Manager or any of the Construction Manager's subcontractors of all tiers;

.3 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction; and

.4 The work of the Principal Representative or other separate contractors provided, however, that the Construction Manager shall not be responsible to furnish the safety programs or direct protection of the work of the Principal Representative or other separate contractors.

3.21.3 The Construction Manager and subcontractors shall follow all applicable federal, State and local laws/regulations pertaining to safety, health, pollution control, water supply, fire protection, sanitation facilities, waste disposal and other related items. The Construction Manager shall educate its employees and subcontractors as to the site specific Health and Safety Plan and enforce adherence to safe work procedures.

3.21.4 The Construction Manager shall erect and maintain, as required by existing conditions and the progress of the Work, all reasonable standards for safety and protection, including posting danger signs warning against the hazards created by such features of construction as protruding nails, hoists, well holes, elevator hatchways, scaffolding, window openings, stairways

and falling materials, promulgating safety regulations, and notifying owners and users of adjacent utilities.

3.21.5 When the use of or storage of explosive or other hazardous materials or equipment is necessary for the execution of the Work, the Construction Manager shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel in accordance with all applicable federal, state, and local laws, rules and regulations.

3.21.6 The Construction Manager shall reasonably provide all necessary bracing, shoring, and tying of all decks, framing and structures or structural elements to prevent the failure of materials or temporary facilities required in the execution of the Work which could result in damage to property or the injury or death of persons; take all reasonable precautions to insure that no part of any structure of any description is loaded beyond its carrying capacity with anything that will endanger its safety at any time during the execution of the Work; and reasonably provide for the adequacy and safety of all scaffolding and hoisting equipment. The Construction Manager shall not permit open fires. The Construction Manager shall construct and maintain all necessary temporary drainage and do all pumping necessary to keep excavations, floors, pits, and trenches free of water. Nothing contained within this paragraph shall render the Construction Manager liable for any errors or omissions related to means, methods, techniques, sequences, or procedures on the part of the Architect/Engineer or its consultants unless the Construction Manager knew or in the exercise of reasonable care should have known of such error or omission and failed to act to prevent damage.

3.21.7 The Construction Manager shall take due precautions when obstructing sidewalks, streets, or other public ways in any manner, and shall provide, erect and maintain barricades, temporary walkways, roadways, trench covers, colored lights or danger signals and any other devices necessary to assure the safe passage of pedestrians and automobiles.

3.21.8 The Construction Manager shall promptly remedy all damage or loss (other than damage or loss insured under Article 11) to any property caused in whole or part by the Construction Manager, any subcontractor of any tier, anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, except damage or loss attributable to the acts or omissions of the Principal Representative, the Architect/Engineer, or anyone employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable to the fault or negligence of the Construction Manager. The foregoing obligations of the Construction Manager are in addition to the Construction Manager's obligations under Article 12.

3.21.9 The Construction Manager shall assign a qualified safety engineer from the Construction Manager’s organization at the site whose duty shall be the prevention of accidents. This person shall report to the Construction Manager’s Project Manager and shall be identified in writing to the Principal Representative.

3.21.10 In any emergency affecting the safety of persons or property, the Construction Manager shall act, at the Construction Manager's discretion, to prevent threatened damage, injury, or loss. Any additional compensation or extension of the Contract Time claimed by the Construction Manager on account of emergency work shall be pursuant to the Construction Manager's written Notice of Claim and determined as provided in Articles 6 and 19 pertaining to Time of Commencement and Completion and Claims for Additional Costs and Damages respectively.

3.21.11 Should the Construction Manager observe a subcontractor or its employee engaged in an unsafe act or improperly utilizing equipment in such a manner that creates an inherently dangerous condition, which puts the life or safety of job site personnel at risk or in danger then the

Construction Manager may immediately stop such Work or acts. The Construction Manager shall as soon as possible notify the subcontractor and the Principal Representative of the violation or hazard and record the incident. The Construction Manager or subcontractor shall correct the hazard or condition prior to resuming operation in the area.

3.21.12 The Construction Manager shall develop a written site safety program, maintain injury records as required by OSHA, keep the Principal Representative informed of all serious and/or lost time injuries, and make available to the Principal Representative information on injury logs, safety meetings and their topics, inspection reports and other items concerning Project safety.

3.21.13 The Construction Manager shall coordinate with the requirements of an industry standard Owner Controlled Insurance Program if provided by the Principal Representative**.**

3.22 START-UP

3.22.1 The Construction Manager, with the Principal Representative's maintenance and/or contracted testing personnel, shall direct the checkout of utilities, operations, systems and equipment for readiness and assist in their initial start-up and testing by the subcontractors of all tiers.

3.22.2 Prior to the Date of Completion of the Work or earlier date for phased occupation of the Work as requested by the Principal Representative, the Construction Manager shall schedule and conduct with the Principal Representative and Architect/Engineer a complete review, commissioning, demonstration, start-up and operational testing of all equipment and mechanical and electrical systems installed by the Construction Manager or its subcontractors on the Project, and shall also review the operation and maintenance of such systems with the Principal Representative's maintenance personnel.

3.22.3 Subsequent to this review, the Construction Manager, with reasonable promptness and at no cost to the Principal Representative shall make all adjustments or corrections required by the Principal Representative or Architect/Engineer and shall balance all systems in order to make all equipment and systems perform as required by the Contract Documents and to reflect the actual use and occupancy of the Project. If necessary or requested by the Architect/Engineer or Principal Representative, the Construction Manager shall require the subcontractor, supplier or material supplier to make adjustments, corrections or balancing required by this process.

3.23 CONSTRUCTION METHODS

3.23.1 The Architect/Engineer shall not be responsible for or have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work and except for the Architect/Engineer's specifically enumerated Contract Administration duties such as observation of the Work, shall not be responsible for the Construction Manager's failure to carry out the Work in accordance with the Contract Documents. The Architect/Engineer shall not be responsible for or have control or charge over the acts or omissions of the subcontractors of any tier or any of their agents or employees, or any other persons performing any of the Work.

3.24 ACCESS TO WORK

3.24.1 The Architect/Engineer and Principal Representative shall at all times have access to the Work wherever it is in preparation and progress. The Construction Manager shall provide

safe and reasonable facilities for such access so that the Architect/Engineer and Principal Representative may exercise their rights and perform their functions under the Contract Documents.

3.25 ARCHITECT/ENGINEER'S AUTHORITY

3.25.1 The duties, responsibilities and limitations of authority of the Architect/Engineer as the Principal Representative's representative during construction as set forth in the Contract Documents, shall not be modified or extended without written consent of the Principal Representative, the Architect/Engineer, and the Construction Manager, which consent(s) shall not be unreasonably withheld.

3.26 NO RESPONSIBILITY FOR ARCHITECT/ENGINEER

3.26.1 The Construction Manager shall not be responsible for the failure of the Architect/Engineer or its consultants to properly discharge their duties and responsibilities as set forth in the Agreement between the Principal Representative and Architect/Engineer.

ARTICLE 4. DRAWINGS AND SPECIFICATIONS

4.1 OWNERSHIP AND USE OF DOCUMENTS

4.1.1 All 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. 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.

4.1.2 The Drawings and Specifications and other documents are to be used only with respect to this Project and are not to be used on any other project. With exception of one contract set for each party to this Agreement, such documents are to be returned or suitably accounted for to the Principal Representative on request at the completion of the Work. Submission or distribution to meet official regulatory requirements or for other purposes in connection with the Project is to be approved by the Principal Representative.

4.2 REVIEW OF THE CONTRACT DOCUMENTS

4.2.1 The Construction Manager shall carefully study and compare the Contract Documents and shall at once report to the Principal Representative any error, inconsistency, or omission that may be discovered. The Construction Manager shall perform no portion of the Work at any time without Contract Documents or, where required, approved Drawings, Specifications, instructions, Shop Drawings, Product Data, or Samples for such portion of the Work.

4.2.2 If the Construction Manager or any of its subcontractors of any tier observes that any of the Contract Documents are at variance with applicable laws, statutes, building codes, ordinances, rules, or regulations, in any respect, the Construction Manager shall promptly notify the Principal Representative in writing, and any necessary changes shall be accomplished by appropriate Amendment or Change Order.

4.2.3 If the Construction Manager or any of its subcontractors of any tier perform any work with knowledge or reason to know that it is contrary to such laws, statutes, building codes, ordinances, rules, or regulations, and does not notify the Principal Representative, as required in paragraph 4.2.2, the Construction Manager shall assume full responsibility therefore and shall bear all costs attributable therefore.

4.2.4 Nothing contained in this paragraph 4.2 shall be construed to require the Construction Manager to fully coordinate all of the Drawings or undertake to provide a full and complete review of the Drawings and/or Specifications for compliance with all applicable codes.

4.3 INTERPRETATIONS

4.3.1 The Architect/Engineer shall be the initial interpreter of the requirements of the Contract Documents and the initial judge of the performance thereunder.

4.3.2 The Architect/Engineer shall render interpretations consistent with the intent of, and reasonably inferable from the Contract Documents, consisting of additional instructions by means of drawings or otherwise, necessary for the proper execution or progress of the Work, in accordance with agreed upon time limits and otherwise so as to cause no unreasonable delay. The Construction Manager may make written request to the Architect/Engineer for such interpretations and decisions.

4.4 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

4.4.1 Shop Drawings are drawings, diagrams, schedules, and other data specifically prepared for the Work by the Construction Manager or any subcontractor of any tier, manufacturer, supplier, or distributor, to illustrate some portion of the Work.

4.4.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Construction Manager to illustrate a material, product, or system for some portion of the Work.

4.4.3 Samples are physical examples which illustrate materials, equipment, or reasonable workmanship, and establish standards by which the Work shall be judged.

4.4.4 The Construction Manager shall furnish for approval, all samples as directed by the Architect/Engineer. The Architect/Engineer shall check and approve such samples with reasonable promptness.

4.4.5 The Construction Manager shall prepare, review, approve, and submit to the Architect/Engineer, with reasonable promptness and in such sequence as to cause no unreasonable delay in the Work or in the work of the Principal Representative or any separate Contractor, all Samples and sufficient copies of all Shop Drawings and Product Data required by the Contract Documents. Specific quantities, format, size, etc. of Samples, Shop Drawings, and Product Data shall be described in the Contract Documents prepared by the Architect/Engineer. All drawings shall contain identifying nomenclature and each submittal shall be accompanied by a letter of transmittal identifying in detail all enclosures.

4.4.6 By preparing, approving, and submitting Shop Drawings, Product Data, and Samples, the Construction Manager represents that the Construction Manager has determined and verified all materials, field measurements, and field construction criteria related thereto, or shall do

so with reasonable promptness, and has checked and coordinated the information contained within such submittal with the requirements of the Work, the Project, the Contract Documents and prior approvals.

4.4.7 The Construction Manager shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Architect/Engineer's approval of Shop Drawings, Product Data, or Samples unless the Construction Manager has specifically informed the Principal Representative and Architect/Engineer in writing of such deviation at the time of submission and the Architect/Engineer and Principal Representative have both given written approval to the specific deviation. The Construction Manager shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data, or Samples by the Architect/Engineer's approval of them.

4.4.8 The Construction Manager shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, or Samples, to revisions other than those requested by the Architect/Engineer on previous submittal.

4.4.9 No portion of the Work requiring submission of a Shop Drawing, Product Data, or Sample shall be commenced until the submittal has been approved by the Architect/Engineer as provided in paragraph 4.4.10. All such portions of the Work shall be in accordance with approved submittal. Work which is improperly fabricated, whether through incorrect Shop Drawings, faulty workmanship or materials, shall not be acceptable unless previously accepted in writing by the Principal Representative.

4.4.10 The Architect/Engineer shall review and approve or take other appropriate action upon the Construction Manager's submittal such as Shop Drawings, Product Data, and Samples, but only for conformance with the design concept of the Work and the information given in the Contract Documents. Such action shall be taken with reasonable promptness so as to cause no unreasonable delay. The Architect/Engineer's approval of a specific item shall not indicate approval of an assembly of which the item is a component. Any and all approved substitutions shall be coordinated with the Contract Documents and all prior approvals.

4.4.11 Transmittal of Shop Drawings and Product Data copies to the Principal Representative is solely for convenience of the Principal Representative and shall neither create or imply a responsibility or duty of review by the Principal Representative.

4.4.12 As required in paragraph 3.4.14 and further described here, the Construction Manager shall utilize the integrated management control system(s) as established in cooperation with the Principal Representative: to develop a submittal log and schedule for managing and controlling the submission, review, and approval of Shop Drawings, Product Data and Samples. The submittal log and schedule must be submitted to the Architect/Engineer for review and approval with the Preliminary Construction Schedule, within fourteen (14) days of receiving the Notice to Proceed to Commence Construction Phase for each Bid Package. The Construction Manager throughout the project, both the Preconstruction and Construction Phases, shall maintain the log.

ARTICLE 5. THE PRINCIPAL REPRESENTATIVE RESPONSIBILITIES

5.1 THE RESPONSIBILITIES

5.1.1 The Principal Representative shall furnish the Construction Manager with detailed program requirements, the Project Budget and Fixed Limit of Construction Cost established for the Work as detailed elsewhere in this Agreement.

5.1.2 The Principal Representative shall designate a representative (other than the Architect/Engineer) authorized to act on its behalf with respect to the Project (*as indicated in paragraph 3.8.3*).

5.1.3 The Principal Representative shall retain an Architect/Engineer for preparation of the design and Construction Documents for the Project. The Architect/Engineer's services, duties, and responsibilities are described in the Agreement between the Principal Representative and the Architect/Engineer, a copy of which has been previously furnished to the Construction Manager.

5.1.4 The Construction Manager shall be furnished, without charge ONE (1) set(s) of copies of the drawings and specifications and one (1) set of reproducible. Additional sets, as mutually agreed upon to meet construction needs, shall be a direct cost of Work.

5.1.5 The Principal Representative shall furnish the site of the Project, all necessary surveys describing the physical characteristics, legal limitations, utility locations, and a legal description.

5.1.6 The Principal Representative shall identify and make available to Construction Manager copies of reports of geotechnical explorations and tests of subsurface conditions at the site which have been utilized by Architect/Engineer in preparing the Drawings and Specifications. The Principal Representative does not represent that these reports show completely and accurately the existing conditions and the Principal Representative does not guarantee any interpretation of the reports. Except as provided in paragraph 10.4, the Construction Manager expressly assumes all responsibility for deductions and conclusions which may be made as to the nature of the materials to be excavated, and the difficulties of making and maintaining the required excavations, and of doing other work affected by the geology of the site of the Work. The geotechnical information discussed above is for reference only and is not part of the Contract Documents.

5.1.7 The Principal Representative shall secure and pay for necessary approvals, permanent easements, assessments, and charges required for the construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

5.1.8 The Principal Representative shall furnish such legal, accounting, and insurance counseling services as may be necessary for the Project, and such auditing services as the Principal Representative may require to ascertain how or for what purposes the Construction Manager has used the monies paid to it under this Agreement.

5.1.9 The services, information, surveys, and reports required by paragraphs 5.1.3 through 5.1.8 shall be furnished on a timely basis and at the Principal Representative's expense, and except as may be provided to the contrary elsewhere in this Agreement, the Construction Manager shall be entitled to rely upon the accuracy and completeness thereof.

5.1.10 The Construction Manager recognizes that the Principal Representative is a governmental body with certain procedural requirements to be satisfied. The Construction Manager has and shall make reasonable allowance in its performance of the Work for such additional time as may be required for approvals and decisions by the Principal Representative, in addition to the times specifically provided in paragraph 5.1.11.

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

.1 A period of fourteen (14) days for the review of the Design Development Documents; and

.2 A period of fourteen (14) days prior to completion of the Construction Documents together with an additional seven (7) days after receipt of all bid documents for each Bid Package, commencing with the date of receipt by the Principal Representative of all documents and any other items which are required to be furnished to the Principal Representative by the terms of the Principal Representative's contract with the Architect/Engineer.

It is expressly understood and expected that the Construction Manager shall develop the Guaranteed Maximum Price as the Design Development Documents are developed and that the final establishment of the Guaranteed Maximum Price shall occur within twenty eight (28) days of receipt of the final full scope of the Design Development Drawings and Specifications, including all associated Addenda.

5.1.12 The foregoing are in addition to other duties and responsibilities of the Principal Representative enumerated elsewhere in the Contract Documents.

ARTICLE 6. TIME OF COMMENCEMENT AND COMPLETION

6.1 COMMENCEMENT

6.1.1 The Contract Time shall commence on the date of this Agreement but no work shall be performed prior to the delivery of all documents and certificates required to be furnished by the Construction Manager.

6.1.2 The Construction Phase shall commence on the date the first Bid Package is added to this Agreement by Amendment unless there is an Early Release Bid Package as approved by the Owner in accordance with paragraph 1.1.3 of this Agreement.

6.1.3 The commencement of the Construction Phase is expressly conditioned upon and shall not commence until:

.1 The Guaranteed Maximum Price and Schedule of Values have been approved and accepted by the Principal Representative;

.2 The date for Completion of the Work has been approved and accepted by the Principal Representative;

.3 **Exhibit I.8**, Certification and Affidavit Regarding Unauthorized Immigrants has been approved;

.4 All required Performance and Labor and Material Payment Bonds and insurance certificates have been approved and accepted by State Buildings Program; and

.5 **Exhibit I.9**, Notice to Proceed to Commence Construction Phase has been issued by the Principal Representative and made a part of the Contract Documents.

If any of the preceding material conditions to be performed by the Construction Manager have not been fully satisfied by reason of any act or omission on the part of the Construction Manager through no fault of the Principal Representative, the Principal Representative shall give the Construction Manager written notice of any and all such deficiencies and allow ten (10) days from the date of such notice to correct and cure such deficiency or deficiencies, and in the event the deficiency or deficiencies are not fully corrected and cured within the ten (10) day period, the Principal Representative may declare the Construction Manager to be in default of this Agreement.

6.2 TIME OF ESSENCE

6.2.1 Time is of the essence of this Agreement. The Construction Manager shall begin the Work on the date of Commencement as defined in paragraph 6.1.1. The Construction Manager shall carry the Work forward expeditiously with adequate forces and shall achieve Completion of the Work within the Contract Time.

6.3 COMPLETION DATE

6.3.1 The Date of Completion shall be established per Bid Package Amendment. Upon approval by the Principal Representative of the Detailed Construction Schedule as outlined in paragraph 3.9.3, the Date of Completion may be revised by mutual agreement.

6.4 DELAYS AND EXTENSIONS OF DATE OF COMPLETION OF WORK

6.4.1 Extensions of the Contract Time required under any of the various contract clauses shall be granted only to the extent that the critical path was delayed or the time allowed for any activity or activities affected exceed the identified available float or slack that occurs, or should occur, along the channels involved.

6.4.2 Subject to the limitations as provided in paragraph 6.4.1, if the Construction Manager is delayed at any time in the progress of the Work by any act or neglect of the Principal Representative, the Architect/Engineer, or of any employee of either, or by any separate contractor, or by changes ordered in the Work, or by strikes, lockouts, fire, unusual delay in transportation, directed suspensions of the Work pursuant to paragraph 6.5.1, unavoidable casualties, or any other causes beyond the Construction Manager's control, the Contract Time shall be extended by the Principal Representative for such period of time as the Principal Representative may determine based upon the Construction Manager's showing of the delay to the critical path in accordance with paragraph 6.4.1 and that it could not have avoided the delay by the exercise of due diligence.

6.4.3 If adverse weather conditions are the basis for a claim for an extension of the Contract Time, such claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and that the weather conditions complained of had an adverse effect on the critical path. Substantiation shall be based

on a comparison of current conditions with recorded conditions for the same time period over the duration of the past 10 years.

6.4.4 If the Construction Manager intends to assert a claim for an extension of the Contract Time, the Construction Manager shall give written Notice of Claim for each such delay to the Architect/Engineer and the Principal Representative within fifteen (15) days from the beginning of the delay and shall submit its written claim for an extension of the Contract Time within fifteen (15) days after the period of delay has ceased. No claim for extension to the Contract Time shall be valid unless such written Notice of Claim and written claim are submitted as herein required. In the case of a continuing delay, only one written Notice of Claim shall be necessary.

6.4.5 If no schedule is prepared fixing the dates on which various detail drawings and instruction (not including final Construction Documents to be released for construction) will be needed, no extension to the Contract Time shall be allowed for failure to furnish such drawings or instructions as needed, except in respect of that part of any delay in furnishing drawings or instructions extending beyond a period of two (2) weeks after written demand for such drawings or instructions is received by the Architect/Engineer. In any event, any claim for an extension of the Contract Time for such cause shall be recognized only to the extent of the delay directly caused by failure to furnish drawings or instructions pursuant to schedule, or such two (2) weeks demand, without fault on the part of the Construction Manager or those for whom the Construction Manager is responsible.

6.5 TEMPORARY SUSPENSION OF WORK

6.5.1 The Principal Representative shall have the authority to suspend the Work, either wholly or in part, for such period or periods as it may deem necessary due to:

.1 Unsuitable weather;

.2 Faulty workmanship;

.3 Improper superintendence;

.4 Construction Manager's material and substantial failure to carry out orders or to perform any provision of the Contract Documents;

.5 Conditions which are considered unfavorable for the prosecution of the Work; or

.6 Any other reason, with or without cause, including but not limited to the availability of funding for the Project as well as any other construction projects and the need to allocate funds between them.

6.5.2 If it should become necessary to suspend the Work for an indefinite period, the Construction Manager shall store all materials in such manner that they shall not become an obstruction or become damaged in any way; and it shall take every precaution to prevent damage to or deterioration of the Work, provide suitable drainage, and erect temporary structures where necessary.

6.5.3 Such Notice of Suspension of Work shall be in writing and the Construction Manager shall again proceed with the Work when so notified in writing. The Construction Manager may

assert any claims for an adjustment of the Contract Sum, Guaranteed Maximum Price and Contract Time as provided in paragraphs 6 and 19 of this Agreement.

6.6 DELAY DAMAGES

6.6.1 The Principal Representative's liability for delay damages shall be limited to delays of Completion of the Work caused by:

.1 Directed suspensions of the Work, except where the Construction Manager or those for whom the Construction Manager is responsible is at fault;

.2 Any delay caused by the Principal Representative beyond the times allowed for each of the reviews of the Design Development Documents and Construction Documents as set forth in paragraph 5.1.11;

.3 Any delay caused by any separate Contractor not assigned to the Construction Manager for coordination pursuant to Article 10;

.4 The negligent or wrongful acts or omissions of the Principal Representative only;

.5 The Principal Representative or the Architect/Engineer in the release of any separate Bid Packages or **Exhibit I.9**, Notice to Proceed to Commence Construction Phase, which delay is in excess of fourteen (14) days beyond the dates established in **Exhibit H.2**, Schedule for Bid Package Descriptions and Issuance Dates for the release thereof, and in any subsequent Amendments or Change Orders, and further, is not caused in whole or in part by the Construction Manager and the associated cost has not been compensated otherwise; and/or;

.6 Construction Manager's discovery of hazardous substances that have not been rendered harmless pursuant to paragraph 10.6

In the event of such delay the Construction Manager must give its written Notice of Claim within fifteen (15) days after the commencement of the event giving rise thereto, with full and complete documentation in support of the period of delay damages to be submitted within thirty (30) days after the commencement or such other time as the Principal Representative shall agree in writing, or such claim shall be forever barred. If a claim is so barred, the Principal Representative shall not be liable for delay damages under any circumstances giving rise to that claim for delay nor any damages Construction Manager suffered thereby.

6.7 Liquidated Damages

6.7.1 If the Construction Manager shall neglect, fail or refuse to complete the Work within the times specified in the Agreement, such failure shall constitute a breach of the terms of the Contract and the State of Colorado, acting by and through the Principal Representative, shall be entitled to liquidated damages for such neglect, failure or refusal, as specified in paragraph 21.9, Modification of Article 6.

6.7.2 The Construction Manager and the Construction Manager’s Surety shall be jointly liable for and shall pay the Principal Representative, or the Principal Representative may withhold, the sums hereinafter stipulated as liquidated damages for each calendar day of delay until the entire Project is 1) substantially completed, and the Notice (or all Notices) of Substantial

Completion are issued, 2) Finally Complete and accepted and the Notice (or all Notices) of Acceptance are issued, or 3) both. Delay in Substantial Completion shall be measured from the Date of the Notice to Proceed to Commence Construction Phase and delay in final completion and acceptance shall be measured from the Date of the Notice of Substantial Completion.

6.7.3 In the first instance, specified in paragraph 21.9 Modification of Article 6, liquidated damages, if any, shall be the amount specified therein, for each calendar day of delay beginning after the stipulated number of days for Substantial Completion from the date of the Notice to Proceed to Commence Construction Phase, until the date of the Notice of Substantial Completion. Unless otherwise specified in any Supplementary General Conditions, in the event of any partial Notice of Substantial Completion, liquidated damages shall accrue until all required Notices of Substantial Completion are issued.

6.7.4 In the second instance, specified in paragraph 21.9, Modification of Article 6, liquidated damages, if any, shall be the amount specified in paragraph 21.9, Modification of Article 6 for each calendar day in excess of the number of calendar days specified in the Construction Manager 's bid for the Project and stipulated in the Agreement to Finally Complete the Project (as defined by the issuance of the Notice of Acceptance) after the final Notice of Substantial Completion has been issued.

6.7.5 In the third instance, when so specified in both paragraphs 21.9 (1) and (2), both types of liquidated damages shall be separately assessed where those delays have occurred.

6.7.6 The parties expressly agree that said amounts are a reasonable estimate of the presumed actual damages that would result from any of the breaches listed, and that any liquidated damages that are assessed have been agreed to in light of the difficulty of ascertaining the actual damages that would be caused by any of these breaches at the time this Contract was formed; the liquidated damages in the first instance representing an estimate of damages due to the inability to use the Project; the liquidated damages in the second instance representing an estimate of damages due to the additional administrative, technical, supervisory and professional expenses related to and arising from the extended closeout period including delivery of any or all guarantees and warranties, the submittals of sales and use tax payment forms, and the calling for the final inspection and the completion of the Substantial Completion Punch List.

6.7.7 The parties also agree and understand that the liquidated damages to be assessed in each instance are separate and distinct, although potentially cumulative, damages for the separate and distinct breaches of delayed Substantial Completion or Final Acceptance. Such liquidated damages shall not be avoided by virtue of the fact of concurrent delay caused by the Principal Representative, or anyone acting on behalf of the Principal Representative, but in such event the period of delay for which liquidated damages are assessed shall be equitably adjusted in accordance with paragraph 6.4, Delays And Extensions Of Time.

ARTICLE 7. SUBCONTRACTS

7.1 CONTRACT PERFORMANCE OUTSIDE THE UNITED STATES OR COLORADO

7.1.1 After the contract is awarded, the Construction Manager is required to provide written notice to the Principal Representative no later than twenty (20) days after deciding to perform services under this contract outside the United States or Colorado or to subcontract services under this contract to a subcontractor that will perform such services outside the United States or Colorado. The written notification must include, but need not be limited to, a statement

of the type of services that will be performed at a location outside the United States or Colorado and the reason why it is necessary or advantageous to go outside the United States or Colorado to perform the services. All notices received by the State pursuant to outsourced services shall be posted on the Colorado Department of Personnel & Administration's website. *If the Construction Manager knowingly fails to notify the Principal Representative of any outsourced services as specified herein, the Principal Representative, at its discretion, may terminate this contract as provided in the Colorado Procurement Code or the applicable procurement code for institutions of higher education.* (Does not apply to any project that receives federal moneys)

7.2 SUBCONTRACTS

7.2.1 The Construction Manager shall request and receive proposals from the subcontractors and subcontracts shall be awarded after the proposals are tabulated in a pre-approved format which compares to each GMP budgeted line item and, reviewed by the Architect/Engineer, Construction Manager, and Principal Representative.

.1 Proposals for all subcontracts shall be opened in the presence of the Construction Manager, the Architect/Engineer, the Principal Representative and others as requested by the Principal Representative.

.2 Should the Construction Manager submit a proposal for subcontract work (work not included in the Construction Manager's Construction Phase Fee and/or General Conditions), the proposal conditions used shall be the same as for all subcontractor proposals. These Construction Manager proposals for subcontract work shall be submitted to the Principal Representative twenty-four (24) hours prior to receipt of other subcontractor proposals and be opened with the other proposals.

7.3 SUBCONTRACTOR PREQUALIFICATION

7.3.1 The Construction Manager shall use as subcontractors for the various major trades, subcontractors who have been pre-qualified by the Construction Manager and are acceptable to the Principal Representative, which acceptance shall not be unreasonably withheld. All major trade subcontractors prequalified by the Construction Manager and approved by the Principal Representative prior to signing this Agreement are set forth in **Exhibit F.**

7.3.2 In the event unforeseeable circumstances necessitate the use of any major trade subcontractors not set forth in **Exhibit F**, the Construction Manager shall pre-qualify one or more proposed major trade subcontractors to be added to **Exhibit F** and submit the same to the Principal Representative for review. The Principal Representative shall inform the Construction Manager in writing of the names of those subcontractors who are acceptable. The Construction Manager expressly recognizes its commitment pursuant to the Contract Documents to complete the Work within the constraints set forth elsewhere in the Contract Documents and the necessity to use pre-qualified major trade subcontractors. Except as provided in paragraph 3.5.12 or where requested by the Construction Manager and with the prior written approval of the Principal Representative, proposed additions or substitutions of major trade subcontractors on **Exhibit F** because their price is less expensive than any pre-qualified subcontractors shall not constitute an unforeseeable circumstance or otherwise be a basis for any change.

7.3.3 Prior to the Notice to Proceed to Commence Construction Phase for the first construction phase, the Construction Manager shall submit to the Architect/Engineer and the Principal Representative a complete list of all other proposed pre-qualified subcontractors not

provided for in accordance with paragraph 7.3.1, which shall be on a schedule prepared by the Construction Manager for such submittal. The Construction Manager shall not employ any subcontractor that the Architect/Engineer and Principal Representative, within ten (10) days after the date of receipt of the Construction Manager's prequalified subcontractors' lists, objects to in writing as being unacceptable to either the Architect/Engineer or the Principal Representative,

7.3.4 If the Principal Representative refuses to accept a subcontractor recommended by the Construction Manager pursuant to paragraph 7.3.3, the Construction Manager shall recommend an acceptable substitute and the Contract Sum and Guaranteed Maximum Price, if applicable, shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate Amendment or Change Order shall be issued.

7.4 SUBCONTRACT FORMS

7.4.1 All subcontracts shall be between the Construction Manager and the subcontractors. The form of subcontracts, including any Supplementary Conditions thereto, shall be furnished to the Principal Representative for review and consent as to form, which consent shall not be unreasonably withheld.

7.5 CONSTRUCTION MANAGER RESPONSIBLE FOR SUBCONTRACTORS

7.5.1 The Construction Manager shall be responsible to the Principal Representative for the acts and omissions of its agents and employees, suppliers, subcontractors performing work under a contract with the Construction Manager, and such subcontractors' lower tier subcontractors, agents or employees.

7.6 SUBSTITUTION OF SUBCONTRACTORS

7.6.1 The substitution of any subcontractor listed in the Construction Manager's approved lists in accordance with paragraphs 7.3.1 and 7.3.3 shall be justified in writing not less than ten (10) days after the date of the Notice to Proceed to Commence Construction Phase, and shall be subject to the approval of the Principal Representative. For reasons such as the Subcontractor's refusal to perform as agreed, subsequent unavailability or later discovered proposal errors, or other similar reasons, such substitution may be approved. The Construction Manager shall bear any additional cost incurred by such substitutions.

7.7 SUBCONTRACTUAL RELATIONS

7.7.1 By an appropriate agreement, written where legally required for validity, the Construction Manager shall require each subcontractor, to the extent of the Work to be performed by the subcontractor, to be bound to the Construction Manager by the terms of the Contract Documents, and to assume toward the Construction Manager all the obligations and responsibilities which the Construction Manager, by these Documents, assumes toward the Principal Representative and the Architect/Engineer. Said agreement shall preserve and protect the rights of the Principal Representative and the Architect/Engineer under the Contract Documents with respect to the Work to be performed by the subcontractor so that the subcontracting thereof shall not prejudice such rights. Where appropriate, the Construction Manager shall require each subcontractor to enter into similar agreements with their subcontractors. The Construction Manager shall make available to each proposed subcontractor, prior to the execution of the subcontract, copies of the Contract Documents to which the subcontractor shall similarly make copies of such

Documents available to their sub-subcontractors. Each subcontractor shall be bound by this paragraph 7.7.1.

7.8 PRINCIPAL REPRESENTATIVE/SUBCONTRACTOR RELATIONSHIP

7.8.1 The parties recognize that the bidding and subcontracting procedures prescribed herein are intended to promote pricing of the work that shall be fair and reasonable and based on full and open competition. The Construction Manager agrees to comply in a timely manner with reasonable requests for information concerning pre-qualification of a prospective subcontractor, the evaluation and award of bids, or other obligations under this contract concerning pre-qualification, bidding, and subcontracting. Upon notice by the State, the Construction Manager agrees to meet and confer with the state and other invited, interested persons at the Denver office of State Buildings Program or at the site, the choice of such location to be made by the State, or at some other location mutually agreeable to the State and Construction Manager, concerning its pre-qualification, bidding and subcontracting procedures. The Construction Manager agrees to meet within three (3) business days of an election by the State and to comply with reasonable requests for information to be provided at such meeting. The State agrees that this administrative procedure shall be exhausted prior to the State's exercising any contractual or other remedy relating to the pre-qualification, bidding, or subcontracting procedures specified herein.

7.8.2 Nothing contained in the Contract Documents, including this Agreement, shall be deemed to create any contractual relationship between any subcontractor of any tier and the Principal Representative. Further, consistent with paragraph 21.12, nothing in the Contract Documents, including this Agreement and the pre-qualification, bidding and subcontracting procedures specified herein, is intended to create or shall be deemed to create third party beneficiary or other rights inuring to the benefit of any prospective subcontractor, subcontractor, or any other third person.

ARTICLE 8. WORK BY PRINCIPAL REPRESENTATIVE OR BY SEPARATE CONTRACTORS

8.1 PRINCIPAL REPRESENTATIVE'S RIGHT TO PERFORM WORK AND TO AWARD SEPARATE CONTRACTS

8.1.1 The Principal Representative reserves the right to perform work related to the Project with the Principal Representative's own forces, and to award separate contracts in connection with other portions of the Project or other work on the site under these or similar conditions of this Agreement.

8.1.2 When separate contracts are awarded for different portions of the Project or other work on the site, the term separate contractor in the Contract Documents in each case shall mean the contractor who executes each separate Principal Representative-Contractor Agreement.

8.2 COORDINATION

8.2.1 To the extent separate contractors are not assigned to the Construction Manager for coordination pursuant to Article 10, the Principal Representative shall provide and be responsible for the coordination of the Work of the Principal Representative's own forces and of each separate contractor with the Work of the Construction Manager, who shall cooperate therewith as provided in paragraph 8.3.1 through 8.4.1.

8.3 MUTUAL RESPONSIBILITY

8.3.1 The Construction Manager shall afford to Principal Representative and separate contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall connect and coordinate the Work with theirs as required by the Contract Documents.

8.3.2 To insure the proper execution of its subsequent Work, if any part of the Construction Manager's Work depends for proper execution or results upon the Work of the Principal Representative or any separate contractor, the Construction Manager shall, prior to proceeding with the Work, inspect and promptly report to the Principal Representative any apparent discrepancies or defects in such other work that renders it unsuitable for such proper execution and results. The Construction Manager shall also measure work already in place and shall promptly report to the Architect/Engineer any discrepancy between the executed work and the Drawings. Failure of the Construction Manager to so inspect, or report, shall constitute an acceptance of the Principal Representative's or separate contractor's work as fit and proper to receive the Work, except as to defects which may develop in the separate contractor's Work after execution of the Work.

8.3.3 Any costs caused by defective or ill-timed work shall be borne by the party responsible therefore.

8.3.4 Should the Construction Manager cause damage to the Work or property of the Principal Representative or to other work or property on the site, the Construction Manager shall promptly remedy such damage.

8.3.5 Should the Construction Manager wrongfully delay or cause damage to the work or property of any separate contractor, the Construction Manager shall, upon due notice, promptly attempt to settle with such other separate contractor by agreement or otherwise to resolve the dispute. If such separate contractor sues the Principal Representative on account of any delay or damage alleged to have been caused by the Construction Manager, the Principal Representative shall notify the Construction Manager, the Principal Representative shall defend any proceedings, and if any judgment or award against the Principal Representative arises therefrom and to the extent that Construction Manager is responsible, the Construction Manager shall pay or satisfy it and reimburse the Principal Representative for all attorney's fees and court costs which the Principal Representative has incurred.

8.4 PRINCIPAL REPRESENTATIVE'S RIGHT TO CLEAN UP

8.4.1 If a dispute arises between the Construction Manager and any separate contractors as to their respective responsibilities for cleaning up, the Principal Representative may clean up and charge the cost thereof to the Construction Manager and separate contractors responsible therefore as the Principal Representative shall determine to be just.

ARTICLE 9. COMPENSATION

9.1. Construction Manager’s Fee and General Conditions

9.1.1 Subject to the provisions of Sections 6.6, 9.5, 9.6 and 20.2, and in consideration of the performance of this Agreement, the Principal Representative shall pay the Construction Manager in current funds as compensation for its services, a Total Fee amount and separate General Conditions amount as listed below:

Construction Manager's Fee

.1	Pre-Construction Phase Fee	$
.2	Construction Phase Fee	$
.3	Total Fee (.1+.2)	$

General Conditions

.4	Direct Personal Expenses of On-Site CM/GC Staff (Not to Exceed)	$
.5	Other Reimbursable General Conditions (Not to Exceed per Pgh 9.1.3)	$
.6	Total General Conditions (including Direct Personnel Expenses of Staff) (.4+.5)	$

Total Fee and General Conditions (.3+.6) $

9.1.2 The Construction Manager's fee shall include all job indirect costs, and General Conditions costs as defined in **Exhibit A**, CM/GC Designated Services and Method of Payment, home office overhead, and profit, included but not limited to the following:

.1 Salaries or other compensation of the Construction Manager's employees at the principal office and branch offices;

.2 General operating expenses of the Construction Manager's principal and branch offices other than the field office;

.3 Any part of the Construction Manager's capital expenses, including interest on the Construction Manager's capital employed for the Project;

.4 Overhead or general expenses of any kind;

.5 Salaries of the Construction Manager's employees engaged on the road in expediting the production or transportation of materials and equipment;

.6 Cost of all employee benefits and taxes for such items as unemployment compensation and social security, insofar as such cost is based on wages, salaries or other remuneration paid to employees of the Construction Manager and included in the fee under paragraphs 9.1.2.1 through 9.1.2.5;

.7 All transportation, traveling, moving, and hotel expenses of the Construction Manager or its officers or employees incurred in discharge of duties connected with the Work;

.8 Costs, including transportation and maintenance, of all materials, supplies, equipment, temporary facilities, and hand tools not owned by the workmen, which are employed or consumed in the performance of the Work;

.9 Cost of the premium for all insurance which the Construction Manager is required to procure by this Agreement or is deemed necessary by the Construction Manager;

.10 Minor expenses such as facsimile messages, telegrams, long distance telephone call telephone service at the site, express mail, and similar petty cash items in connection with the Work;

.11 All other items set forth in **Exhibit A**, Designated Services and Method of Payment, that are specifically designated as Preconstruction Services Fee, Construction Services Fee or General Conditions. All Items listed in the columns designated as Required of Architect/Engineer and Required of Owner are not included in the Construction Manager's fee, and the items designated as Direct Cost of Work shall be included in the separate Bid Packages.

.12 Except as expressly provided to the contrary elsewhere in this Agreement, costs in excess of the Guaranteed Maximum Price.

9.1.3 General conditions items, as set forth in paragraph 9.1.2, shall generally include the direct cost of Construction Phase on-site construction management staff and those temporary facilities, services and equipment to support the work of construction subcontractors. General conditions items are more fully identified in Exhibit A, DESIGNATED SERVICES AND METHODS OF PAYMENT, and shall be reimbursed at direct cost, without mark-up, based upon pre-approved not-to-exceed budgets. General conditions (exclusive of the Construction Manager's staff) provided directly by the Construction Manager must be at market competitive rates. Each monthly request for progress payment shall be justified with reasonable support for expenses to include:

.1 Invoice or receipt for any vendors or suppliers for material, rented equipment, etc.
.2 Labor/timesheet reports (by task number) for direct labor, provide bare labor rate & itemized breakdown of labor burden prior to initial billing.
.3 Owned equipment shall be compensated per pre-negotiated rates established in accordance with the Colorado Procurement Code or the applicable procurement code for institutions of higher education. In no case shall cumulative/total cost of owned equipment exceed the value of the equipment minus salvage value. The Principal Representative shall approve all rental rates and salvage values in writing prior to initial billing.
.4 Labor, material and equipment cost may be audited by the principal representative.

9.2 ADJUSTMENTS IN FEE

9.2.1 Adjustments in fee shall be made as follows: If, after the total Guaranteed Maximum Price is accepted, in writing, by the Principal Representative, the Principal Representative directs additions to or other changes made in the Work, the Construction Manager's fee shall be adjusted as follows:

.1 If the changes in the aggregate increase the total Guaranteed Maximum Price the Construction Manager's fee for any and all other changes in the Work shall be calculated at the rate of FOUR percent (4%) (plus appropriate General Condition costs) of the estimated cost of such work and shall be agreed upon between the Construction Manager and the Principal Representative as a fixed fee for the effect of the change (or changes), prior to starting the changed work. The adjustments stated above shall only be deemed valid after the Principal Representative accepts the adjustments in writing and, are the only adjustments to the fee that shall be granted for changes authorized to the GMP. Adjustments to these fees beyond these values shall not be granted. However, General Condition costs directly attributable to time extensions may be charged in accordance with the provisions of paragraphs 6.4.1 through 6.4.5.

9.2.2 The Construction Manager shall also be paid an additional fee at the rate as set forth in paragraph 9.2.1.1 if the Construction Manager is placed in charge of the reconstruction of any insured loss.

9.2.3 If there is a material reduction in the scope of work greater than fifteen percent (15%) of the Fixed Limit of Construction Cost, the Principal Representative reserves the right to negotiate an equitable reduction in the Construction Phase fee and the General Conditions.

9.3 GUARANTEED MAXIMUM PRICE

9.3.1 At the conclusion of the Design Development Phase, the Construction Manager shall deliver to the Principal Representative, a Guaranteed Maximum Price proposal which shall agree to perform all of the work even though all of the Construction Documents have not all been finalized and released for construction, and guarantee the maximum price to the Principal Representative for the entire cost of the Work, as adjusted by deductive alternates required to maintain the Guaranteed Maximum Price below the Fixed Limit of Construction Cost which have been previously approved by the Principal Representative pursuant to paragraph 3.2.

9.3.2 The Guaranteed Maximum Price shall include all of the Construction Manager's obligations to be performed pursuant to the terms of the Contract Documents and may include, but not be limited to, the total of the following:

.1 The total of all prices already received for all items bid before the establishment of the Guaranteed Maximum Price;

.2 The Construction Manager's estimate of the cost of all other work to be performed but not yet bid, excluding the approved deductive alternates unless said work can be incorporated into the Contract Documents by application of the contingency per the provisions of paragraphs 3.4.1 through 3.4.5, with the consent of the Construction Manager which consent shall not be unreasonably withheld;

.3 The installation cost of items to be procured by the Principal Representative and assigned to the Construction Manager for installation, as defined in the Contract Documents;

.4 The estimated maximum cost of all work to be performed by the Construction Manager;

.5 Construction Manager's fee as provided under this Agreement and General Condition costs, as provided under this Agreement;

.6 The cost of all Performance and Labor and Material Payment Bonds furnished by the Construction Manager pursuant to Article 13;

.7 The premiums for insurance to protect the Project pursuant to paragraph 11.2; and

.8 Authorized adjustments as set forth elsewhere in this Agreement, to include but may not be limited to: taxes; fees for licenses, and royalties; special conditions, commissioning, startup services, and warranty support; and contingencies.

9.3.3 The Guaranteed Maximum Price proposal as set forth in paragraph 9.3.1 shall:

.1 Set forth a stated dollar amount;

.2 Set forth the Schedule of Values therefore which shall be consistent with previously approved Schedules of Values, as adjusted as required pursuant to Design Development cost estimating;

.3 Contain no conditions or exceptions;

.4 Not exceed the Fixed Limit of Construction Cost; and

.5 Contain no allowances except for those set forth in **Exhibit H.4**, Allowance Schedule of which all allowances are to be a not-to-exceed dollar amount;

.6 Be substantiated with complete supporting documentation acceptable to the Principal Representative, to clearly define the anticipated Work to be performed by the Construction Manager and facilitate a determination thereafter when final drawings and specifications are released for construction, as to whether there has been an increase in the Work required of the Construction Manager in the documents released for construction from the Design Development documents on which the Guaranteed Maximum Price was based. If at any time thereafter, any Claim is asserted by the Construction Manager for an increase to the Contract Sum or Guaranteed Maximum Price and/or extension of the Contract Time because of an alleged increase in the Work to be performed by the Construction Manager as contained in the drawings or specifications released for construction, the Construction Manager shall be required to satisfactorily demonstrate the increase in the Work; otherwise the Construction Manager shall be entitled to no increase in the Contract Sum, Guaranteed Maximum Price or extension of the Contract Time.

9.3.4 If, through no fault on the part of the Construction Manager, and after receiving reasonable cooperation by the Principal Representative and Architect/Engineer, the Construction Manager submits a Guaranteed Maximum Price proposal contrary to the provisions of paragraph 9.3.2 and 9.3.3, the proposal may be rejected by the Principal Representative; the Principal Representative shall be under no obligation to award subsequent Bid Packages; the Principal Representative may declare the Construction Manager to be in default; and payment may be withheld from the Construction Manager, excepting the Construction Manager's fee for the Preconstruction Services, until a Guaranteed Maximum Price is furnished in accordance with the foregoing.

9.3.5 If, in developing a Guaranteed Maximum Price, the Construction Manager believes any documentation or information, consistent with the Design Development level of documentation, is not sufficiently complete to clearly define the anticipated work, the Construction Manager shall be responsible for making all necessary inquires and requests to establish the same.

9.3.6 When the Guaranteed Maximum Price is agreed upon and accepted by the Principal Representative, it shall be made a part of the Contract Documents by Amendment, shall supersede updated summaries and all documents relating to Schedules of Values and Estimates of Construction Cost; and shall be subject to modification for Changes in the Work as provided in Article 10. If the Construction Manager, in good faith, furnishes the Principal Representative with a Guaranteed Maximum Price proposal which meets the criteria of paragraphs 9.3.1, 9.3.2, and 9.3.3

and the parties fail to mutually agree to that number as set forth above, the parties expressly agree that default termination of the Construction Manager shall not be a remedy therefore under this Agreement, and, the Principal Representative shall be entitled to proceed with the Project and Work as set forth elsewhere in this Agreement.

9.3.7 When the Construction Manager provides a Guaranteed Maximum Price, the trade contracts for the Work shall either be with the Construction Manager or shall contain the necessary provisions to allow the Construction Manager to control the performance of the Work. The Principal Representative shall also authorize the Construction Manager to take all steps necessary in the name of the Principal Representative to assure that any separate contractors, having separate contracts with the Principal Representative for the Project, perform their contracts in accordance with their terms.

9.4 CONTRACT SUM

9.4.1 Subject to the provisions of Article 3, Article 9 and paragraph 20.2, the Contract Sum shall equal the total of:

.1 The lump sum price for the aggregate of the Bid Packages added to the Construction Manager's Work by Amendment;

.2 The cost of installation of items to be procured by the Principal Representative and assigned to the Construction Manager for installation;

.3 The portions of the Construction Manager's total fee and General Conditions cost as set forth in paragraph 9.1.1;

.4 The cost of all Performance and Labor and Material Payment Bonds furnished by the Construction Manager pursuant to Article 13;

.5 The premiums for the property insurance to protect the Project pursuant to paragraph 11.4;

.6 Authorized adjustments as set forth elsewhere in this Agreement;

and shall be the total amount payable by the Principal Representative to the Construction Manager for the performance of all Work under the Contract Documents.

9.5 PAYMENTS

9.5.1 Preconstruction Services Fee: For the performance of the Preconstruction Services, the fee therefore as set forth in paragraphs 9.1.1 shall be paid monthly based upon detailed invoices totaling the aggregate of all work previously performed as submitted by the Construction Manager, with the total payment not to exceed the fee for such services as set forth in paragraph 9.1.1.

9.5.2 Construction Services Fee: Notwithstanding the stated fee set forth in paragraph 9.1.1 for Construction Services, the portion of the fee to be paid to the Construction Manager for the Construction Phase shall be determined and paid as follows:

.1 After execution of the first Amendment to the Agreement establishing and accepting the Guaranteed Maximum Price of the Work, the Construction Manager shall be paid

the sum ZERO Dollars ($0) for the mobilization and front end costs including the premiums to protect the Project;

.2 With the addition of the second Amendment incorporating the first Bid Package and subsequent Amendments incorporating subsequent Bid Packages, the portion of the fee to be paid (total fee for all Construction Services less that paid pursuant to paragraph 9.5.2.1) shall be equivalent to the ratio of the dollar value of each Bid Package to the Guaranteed Maximum Price including the premiums for the Performance and Labor and Materials Payment Bonds with coverage up to the value of the Contract Sum.

The portion of the fee payable in accordance with paragraph 9.5.2.1 shall be due and payable with the first Certificate and Application for Contractor's Payment (State form SC-7s) after commencement of the Construction Phase. The remaining portion(s) of the Construction Manager's fee as determined above shall be included in each Certificate and Application for Contractor's Payment in proportion to the percent of the Work that is complete. Any balance of the fee shall be paid at the time of final payment.

9.5.3 Schedule of Values

.1 At the time of the agreement and acceptance of the Guaranteed Maximum Price as set forth in paragraph 9.3, the Construction Manager shall submit to the Principal Representative, using the CPM Schedule developed in accordance with paragraph 3.9 and forms approved by State Buildings Program, a complete, detailed, and itemized Schedule of Values. The Schedule of Values shall be allocated to the various portions of the Work described by the CPM schedule activities; allow for tracking of progress based upon CSI Division, funding sources, sub-trades, combinations of sub-trades, building systems, Bid Packages or combinations thereof; aggregate to the total of the Guaranteed Maximum Price; and be supported by such data to substantiate its accuracy as the Architect/Engineer and the Principal Representative may require. The Construction Manager's fee and the estimated Project General Conditions costs shall be set forth as a separate line item(s).

.2 At least ten (10) days before submission of the first Certificate and Application for Contractor's Payment for the Construction Phase, a conference attended by the Construction Manager, Architect/Engineer and Principal Representative shall be held to finalize the Schedule of Values. The finalized Schedule of Values shall serve as the basis for progress payments and shall be incorporated into the form of a Project Certificate and Application for Contractor's Payment acceptable to the Architect/Engineer and Principal Representative. Subject to the prior approval of the Principal Representative, the finalized Schedule of Values shall be adjusted to reflect changes made to the Work by Amendment.

.3 As subsequent Bid Packages are added into this Agreement by Amendment or upon the agreement and acceptance of the Guaranteed Maximum Price as set forth in paragraph 9.3, whichever is first to occur, and at such other times as the Principal Representative shall approve and/or direct, the Construction Manager shall submit proposed revisions to the Schedule of Values to more accurately reflect the actual values of the specific activities and other items, supported by such data to substantiate its accuracy as the Architect/Engineer and the Principal Representative may require. Except as provided above, the Construction Manager shall make no

other adjustment to the currently approved Schedule of Values. Where a preliminary value has been assigned to any specific item on a Schedule of Values and that portion of the Work is to be performed by the Construction Manager, the Construction Manager shall determine as soon as practical the cost of such item and submit to the Principal Representative a final value to use in the then current Schedule of Values supported by such data to substantiate its accuracy as the Architect/Engineer and Principal Representative may require. If the Construction Manager shall fail or refuse to make such submission, the value approved by the Principal Representative in the then current approved Schedule of Values shall be used and the Construction Manager shall be entitled to no further compensation for that item beyond the then currently approved amount therefore until such requirements are fulfilled.

9.5.4 Applications for Payment: On or before the first day of each month and no more than five (5) days prior thereto, the Construction Manager shall submit to the Architect/Engineer an itemized Certificate and Application for Contractor's Payment covering the portion of the Work completed as of the date indicated in the Application together with the portion of the Construction Manager's fee and General Conditions then due as provided for in paragraph 9.5.10 together with such additional documentation substantiating the Construction Manager's right to payment as the Principal Representative and Architect/Engineer may require, and reflecting retainage, if any, as provided elsewhere in the Contract Documents. The form of Certificate and Application for Contractor's Payment shall be as furnished by the Principal Representative. All Project Certificates and Applications for Contractor's Payment, except the final Certificate and Application for Contractor's Payment, shall be subject to correction including revision to the next Project Certificate and Application for Contractor's Payment rendered following the discovery of any error.

9.5.5 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials or equipment not incorporated in the Work but delivered and suitably stored at the site and, if approved in advance by the Principal Representative, payments may similarly be made for materials or equipment suitably stored at some other location agreed upon in writing. Payments for materials or equipment stored on or off the site shall be conditioned upon submission by the Construction Manager of bills of sale or such other documents or procedures satisfactory to the Principal Representative to establish the Principal Representative's title to such materials or equipment or otherwise protect the Principal Representative's interest, including applicable insurance and transportation to the site for these materials and equipment stored off the site.

9.5.6 The Construction Manager warrants that title to all Work, materials, and equipment covered by a Certificate and Application for Contractor's Payment shall pass to the Principal Representative either by incorporation in the construction or upon receipt of payment by the Construction Manager whichever occurs first, free and clear of all liens, claims, security interest, or encumbrances, hereinafter referred to in this Article 9 as liens; and that no work, materials, or equipment covered by a Certificate and Application for Contractor's Payment shall have been acquired by the Construction Manager, or by any other person performing work at the site or furnishing materials and equipment for the Work, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Construction Manager or such other person. The warranty of this Article shall survive the termination of this Agreement.

9.5.7 Retainage Withheld: Unless otherwise provided in the Contract Documents, an amount equivalent to five percent (5%) of the amount shown to be due the Construction Manager on each Certificate and Application for Contractor's Payment for the Construction Phase shall be

withheld until the Work required by the Contract Documents has been performed. The withheld percentages of the Contract Sum shall be administered according to C.R.S. § 24-91-103, as amended, and C.R.S. § 38-26-107, as amended, and shall be retained until the Work or discrete portions of the Work, have been completed satisfactorily, finally or partially accepted, and advertised for final settlement as further provided in Article 17.5.

9.5.8 Release of Retainage: The Contractor may, for satisfactory and substantial reasons shown to the Principal Representative's satisfaction, make a written request to the Principal Representative and the Architect/Engineer for release of part or all of the withheld percentage applicable to the Work of a Subcontractor which has completed the subcontracted Work in a manner finally acceptable to the Architect/Engineer, the Contractor, and the Principal Representative. Any such request shall be supported by a written approval from the Surety furnishing the Contractor's bonds and any surety that has provided a bond for the Subcontractor. The release of any such withheld percentage shall be further supported by such other evidence as the Architect/Engineer or the Principal Representative may require, including but not limited to, evidence of prior payments made to the Subcontractor, copies of the Subcontractor's contract with the Contractor, any applicable warranties, as-built information, maintenance manuals and other customary close-out documentation. Neither the Principal Representative nor the Architect Engineer shall be obligated to review such documentation nor shall they be deemed to assume any obligations to third parties by any review undertaken.

The Contractor's obligation under these Contract Documents to guarantee Work for one year from the date of the Notice of Substantial Completion or the date of any Notice of Partial Substantial Completion of the applicable portion or phase of the Project, shall be unaffected by such partial release; unless a Notice of Partial Substantial Completion is issued for the Work subject to the release of retainage.

Any rights of the Principal Representative which might be terminated by or from the date of any final acceptance of the Work, whether at common law or by the terms of this Contract, shall not be affected by such partial release of retainage prior to any final acceptance of the entire Project.

The Contractor remains fully responsible for the Subcontractor's Work and assumes any risk that might arise by virtue of the partial release to the Subcontractor of the withheld percentage, including the risk that the Subcontractor may not have fully paid for all materials, labor and equipment furnished to the Project.

If the Principal Representative considers the Contractor's request for such release satisfactory and supported by substantial reasons, the Architect/Engineer shall make a "final inspection" of the applicable portion of the Project to determine whether the Subcontractor's Work has been completed in accordance with the Contract Documents. A final punch list shall be made for the Subcontractor's Work and the procedures of Article 17, Completion, Final Inspection, Acceptance and Settlement, shall be followed for that portion of the Work, except that advertisement of the intent to make final payment to the Subcontractor shall be required only if the Principal Representative has reason to believe that a supplier or Subcontractor to the Subcontractor for which the request is made, may not have been fully paid for all labor and materials furnished to the Project.

9.5.9 The Architect/Engineer shall, within five (5) days after the receipt of each Certificate and Application for Contractor's Payment, review the Project Application for Payment and either execute a Project Certificate for Payment to the Principal Representative for such amounts as the

Architect/Engineer reasonably determines are properly due, or notify the Construction Manager in writing of the reasons for withholding a Certificate as provided in paragraph 9.5.15.

9.5.10 The issuance of a Certificate and Application for Contractor's Payment shall constitute a representation by the Architect/Engineer to the Principal Representative that, based on the Architect/Engineer's observations at the site as provided in Article 14 and the data comprising the Certificate and Application for Contractor's Payment, the Work has progressed to the point indicated; that, to the best of the Architect/Engineer's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work for conformance with the Contract Documents upon completion of the Work, to the results of any subsequent tests required by or performance under the Contract Documents, to minor deviations from the Contract Documents correctable prior to completion, and to any specific qualifications stated in the Certificate and Application for Contractor's Payment); and that the Construction Manager is entitled to payment in the amount certified. However, the issuance of a Certificate and Application for Contractor's Payment shall not be a representation that the Architect/Engineer has made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, has reviewed the construction means, methods, techniques, sequences, or procedures, or has made any examination to ascertain how or for what purpose the Construction Manager has used the monies paid on account of the Contract Sum.

9.5.11 Progress 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 applications for payment that have been certified by the Architect/Engineer.

9.5.12 The Construction Manager shall promptly pay each subcontractor and supplier upon receipt of payment from the Principal Representative, out of the amount paid to the Construction Manager on account of such subcontractor's or supplier's work or materials furnished, the amount to which said subcontractor or supplier is entitled, reflecting the percentage actually retained, if any, from payments to the Construction Manager on account of such subcontractor's or supplier's work or materials furnished. The Construction Manager shall, by an appropriate agreement with each subcontractor or supplier, require each subcontractor or supplier to make payments to their sub-subcontractors or suppliers in similar manner.

9.5.13 The Architect/Engineer may, on request and at the Architect/Engineer's discretion, furnish to any subcontractor or supplier, if practicable, information regarding the percentages of completion or the amounts applied for by the Construction Manager and the action taken thereon by the Architect/Engineer on account of work done by such subcontractor or supplier.

9.5.14 Neither the Principal Representative nor the Architect/Engineer shall have any obligation to pay or to see to the payment of any monies to any subcontractor of any tier or supplier.

9.5.15 Payments Withheld: The Architect/Engineer, following consultation with the Principal Representative, may decline to certify payment and may withhold execution of the Certificate and Application for Contractor's Payment in whole or in part to the extent necessary to reasonably protect the Principal Representative, if, in the Architect/Engineer's opinion, the Architect/Engineer is unable to make the representations to the Principal Representative as provided in paragraph 9.5.9, and to certify payment in the amount of the Project Application for Payment, the Architect/Engineer shall notify the Construction Manager as provided in paragraph 9.5.8. If the Construction Manager and the Architect/Engineer cannot agree on a revised amount, the Architect/Engineer shall promptly issue a Certificate and Application for Contractor's Payment for the amount for which the Architect/Engineer is able to make such representations to the Principal

Representative. The Architect/Engineer may also decline to certify payment and the Principal Representative may decline to make payment, or because of subsequently discovered evidence or subsequent observations, the Architect/Engineer may nullify the whole or any part of any Certificate and Application for Contractor's Payment previously executed and the Principal Representative may withhold from any subsequent payments due to the Construction Manager, to such extent as may be necessary to protect the Principal Representative from loss because of:

.1 Defective work not remedied;

.2 Claims filed by third parties or reasonable evidence indicating probable filing of such claims;

.3 Failure of Construction Manager to make payments properly to subcontractors, or for labor, materials, or equipment;

.4 A reasonable doubt that this Agreement can be completed for the unpaid balance of the Contract Sum or Guaranteed Maximum Price;

.5 Damage to the Principal Representative or any separate contractor;

.6 Reasonable evidence that the Work will not be completed within the Contract Time;

.7 Failure to carry out the Work in accordance with the Contract Documents;

.8 Failure to obtain necessary permits or licenses or to comply with applicable laws, ordinance, codes, rules or regulations;

.9 Failure of the Construction Manager to keep its Work progressing in accordance with the construction schedule;

.10 Failure to keep a Superintendent on the site; or

.11 Unauthorized deviations by the Construction Manager from the Contract Documents.

The Principal Representative may also decline to pay and the Architect/Engineer may also decline to so certify or may nullify execution of any prior Project Certification and Application for Contractor's Payment, for the Construction Manager's failure or refusal to submit any Project schedule or monthly or other periodic update thereto.

9.5.16 When the grounds in paragraph 9.6.15 above are removed, payment shall be made for amounts withheld because of them.

9.5.17 No certification of a progress payment, or any partial or entire use or occupancy of the Project by the Principal Representative, shall constitute an acceptance of any Work not in accordance with the Contract Documents.

9.5.18 Final Payment: Final payment constituting the unpaid balance of the Contract Sum shall be paid by the Principal Representative to the Construction Manager pursuant to the provisions of Article 17.

9.5.19 Failure to Make Payment: If the Principal Representative should fail to pay the Construction Manager within forty five (45) days after the date for payment of any amount due in accordance with paragraph 9.5.11, then the Construction Manager may, upon seven (7) additional days written notice to the Principal Representative and the Architect/Engineer, stop the Work until payment of the amount owing has been received.

9.5.20 Re-negotiation of Compensation: If the Work is suspended for more than six (6) months and is then resumed, the Construction Manager's Fee, Guaranteed Maximum Price and Contract Sum shall be subject to re-negotiation and any adjustment shall take into account the degree of fault on the part of the Construction Manager in the suspension.

~~9.6 CONDITIONS OF COMPENSATION/*CONDITION PRECEDENT*~~

~~9.6.1 Financial obligations of the Principal Representative payable after the current fiscal year are contingent upon funds for the purpose being appropriated, budgeted, and otherwise made available.~~

~~*9.6.2 At the time of the execution of this Agreement, there are sufficient funds budgeted and appropriated to compensate the Construction Manager only for performance of the Work through and including . Therefore, it shall be a Condition Precedent to the Construction Manager's performance of the remaining Work specified in and the State's liability to pay for such performance, sufficient funding must be made available to the Principal Representative for the Project prior to and, as a further Condition Precedent, a written Amendment to this Agreement 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 , the Construction Manager's obligation to perform Work for and the State Buildings Program' obligation to pay for such Work is discharged without liability to each other. If funding is eventually made available after , the Construction Manager has no right to perform the work under of this Agreement and the State has no right to require the Construction Manager to perform said Work.*~~

9.6.3 The total cost of the Work including but not limited to the Construction Manager's Fee, all sums otherwise due the Construction Manager as the cost of construction, and any and all sums claimed by the Construction Manager to be due as set forth throughout this Agreement, are expressly subject to the limitations set forth in paragraphs 9.6.1, and 9.6.3 and nothing herein contained shall be construed or understood to commit the Principal Representative to a total expense greater than that which is provided in the appropriation or allocation. Further, no funds appropriated or allocated for any other purpose shall be expended for this Project. The Principal Representative agrees not to issue any directed Amendments or Change Orders or Modifications which would cause the sums due the Construction Manager pursuant to this Agreement to exceed the appropriation or allocation for the Work.

ARTICLE 10. CHANGES IN THE WORK

10.1 AMENDMENTS AND CHANGE ORDERS

10.1.1 The Principal Representative, with the approval of State Buildings Program and the State Controller, without invalidating this Agreement and without notice to any surety, may order extra work or make changes by altering, adding to, or deducting from the Work, the Contract Sum, Guaranteed Maximum Price and Contract Time being adjusted accordingly.

10.1.2 An Amendment is a written order to the Construction Manager signed by State Buildings Program, the State Controller, and the Principal Representative or its authorized agent, issued after the execution of this Agreement, authorizing a change in the Work, the method or manner of performance, an adjustment in the Contract Sum, Guaranteed Maximum Price, the Construction Manager's Fee, or the Contract Time. Each adjustment in the Contract Sum, Guaranteed Maximum Price or Contract Time resulting from an Amendment shall clearly separate the amount attributable to the cost of the Work and the Construction Manager's Fee, if any. The Contract Sum, Guaranteed Maximum Price and Contract Time may be changed only by Amendment.

10.1.3 Except as expressly authorized in this Agreement, Change Orders shall only be used to effect changes in the Work which apply the bidding and construction contingency amounts set forth in paragraphs 3.4.1 through 3.4.5. Any changes in the Work that result in an increase in said contingency shall be added to this Agreement by an Amendment pursuant to paragraph 10.1.2.

10.2 ADJUSTMENTS IN CONTRACT SUM WITHIN THE GUARANTEED MAXIMUM PRICE (for Subcontractor Direct Cost of Work)

10.2.1 The value of any change order shall be determined in one or more of the following ways:

.1 By estimate and acceptance in a lump sum;

.2 By unit prices named in the Contract Documents or subsequently agreed upon;

.3 By actual cost plus a fixed fee being agreed upon prior to starting the changed work; or

.4 In the absence of agreement by the parties, by a unilateral determination by the Principal Representative of the costs attributable to the events or situation under such clauses with an adjustment to the subcontractor direct cost of work, all as computed by the Principal Representative pursuant to the applicable sections of any rules issued under the Colorado Procurement Code or the applicable procurement code for institutions of higher education, and subject to the provisions of C.R.S. § Title 24, Article 109.

The Construction Manager and subcontractor shall be required to submit cost or pricing data if any adjustment in subcontractor direct cost of work or Guaranteed Maximum Price is subject to the provisions of the Colorado Procurement Code or the applicable procurement code for institutions of higher education.

Changed work shall be adjusted and considered separately for the work either added or omitted. The amount of adjustment for work omitted shall be estimated at the time it is authorized, and the agreed adjustment shall be deducted from the subsequent monthly estimates.

10.2.2 The Construction Manager shall keep and present a correct account of the several items of cost on the Change Order Form (State form SC-6.31), when applying bidding and construction contingencies. This requirement applies equally to work done by subcontractors of all tiers.

10.2.3 The Principal Representative reserves the right to contract with any person or firm other than the Construction Manager for any or all changed work.

10.2.4 The Construction Manager shall receive no markup on construction Change Orders, within the Guaranteed Maximum Price unless the Construction Manager is acting as a subcontractor consistent with the provisions of Article 7. Subject to the provisions of this paragraph 10.2 and paragraph 10.3.2, cost for changes shall be limited to the following: cost of materials, including applicable sales tax and cost of delivery; cost of labor, including social security, old age and unemployment insurance, and fringe benefits required by agreement or custom; workers' or workmen's compensation insurance; the rental value of equipment and machinery; payments made by the Construction Manager to subcontractors for work performed by subcontractors, provided, however, the maximum amount to be paid to any subcontractor for all job indirect or General Condition costs, home office general and administrative or overhead costs and profit shall be fifteen percent (15%) of the subcontractor's direct costs; ten percent (10%) of any sub-tier contractor's direct costs; and property insurance and bond premiums. Construction Manager to submit fully executed copies of insurance and bonds which reflect the full amount of the contract sum incorporating the changes to the Work along with any Change Order to the Principal Representative for approval in writing.

.

.1 In all cases where the value of the extra or changed work is not known based on unit prices in the Subcontractor's bid or the Agreement, a detailed change proposal shall be submitted by the Subcontractor on a Change Order Proposal (SC-6.312), or in such other format as the State Buildings Program approves, with which the Principal Representative may require an itemized list of materials, equipment and labor, indicating quantities, time and cost for completion of the changed work. Such detailed change proposals shall be stated in lump sum amounts and shall be supported by a separate breakdown, which shall include estimates of all or part of the following when requested by the Architect/Engineer or the Principal Representative:

a. Materials, indicating quantities and unit prices including taxes and delivery costs if any (separated where appropriate into general, mechanical and electrical and/or other Subcontractors' work; and the Principal Representative may require in its discretion any significant subcontract costs to be similarly and separately broken down).
b. Labor costs, indicating hourly rates and time and labor burden to include Social Security and other payroll taxes such as unemployment, benefits and other customary burdens.
c. Costs of project management time and superintendence time of personnel stationed at the site, and other field supervision time, but only where a time extension, other than a weather delay, is approved as part of the Change Order, and only where such project management time and superintendence time is directly attributable to and required by the change; provided however that additional cost of on-site superintendence shall be allowable whenever in the opinion of the Architect/Engineer the impact of multiple change requests to be concurrently performed shall result in inadequate levels of supervision to assure a proper result unless additional superintendence is provided.
d. Construction equipment (including small tools). Expenses for equipment and fuel shall be based on customary commercially reasonable rental rates and

schedules. Equipment and hand tool costs shall not include the cost of items customarily owned by workers.

e. Workers' compensation costs, if not included in labor burden.
f. The cost of commercial general liability and property damage insurance premiums but only to the extent charged the Subcontractor as a result of the changed work.
g. Overhead and profit, as hereafter specified.
h. Builder's risk insurance premium costs.
i. Bond premium costs.
j. Testing costs not otherwise excluded by these General Conditions.
k. Sub Tier Subcontract costs.

.2 Overhead and profit shall not exceed the percentages set forth in the table below.

	OVERHEAD	PROFIT	COMMISSION
To the Subcontractor or Sub-tier contractors for the portion of work performed with their own forces:	10%	5%	0%
To the Subcontractor or Sub-tier contractors for work performed by others at a tier immediately below either of them:	5%	0%	5%

.3 Overhead shall include: a) insurance premium for policies not purchased for the Project and itemized above, b) home office costs for office management, administrative and supervisory personnel and assistants, c) estimating and change order preparation costs, d) incidental job burdens, e) legal costs, f) data processing costs, g) interest costs on capital, h) general office expenses except those attributable to increased rental expenses for temporary facilities, and all other indirect costs, but shall not include the Social Security tax and other direct labor burdens. The term "work" as used in the proceeding table shall include labor, materials and equipment and the "Commission" shall include all costs and profit for carrying the subcontracted work at the tiers below except direct costs as listed in items 1 through 11 above if any.

.4 On proposals for work involving both additions and credits in the amount of the Contract sum, the overhead and profit shall be allowed on the net increase only. On proposals resulting in a net deduct to the amount of the Contract sum, profit on the deducted amount shall be returned to the Principal Representative at fifty percent (50%) of the rate specified. The inadequacy of the profit specified shall not be a basis for refusal to submit a proposal.

.5 Except in the case of Change Orders or Emergency Field Change Orders agreed to on the basis of a lump sum amount or unit prices as described in paragraphs 10.2.1.1 and 10.2.1.2 above, The Value of Changed Work, the Contractor shall keep and present a correct and fully auditable account of the several items of cost, together with vouchers, receipts, time cards and other proof of costs incurred, summarized on a Change Order form (SC-6.31) using such format for supporting documentation as the Principal Representative and State Buildings Program approve. This requirement applies equally to work done by Subcontractors. Only auditable costs shall be reimbursable on Change Orders where the value is

determined on the basis of actual cost plus a fixed fee, or where unilaterally determined by the Principal Representative on the basis of an equitable adjustment in accordance with the Procurement Rules.

.6 Except for proposals for work involving both additions and credits, changed work shall be adjusted and considered separately for work either added or omitted. The amount of adjustment for work omitted shall be estimated at the time it is directed to be omitted, and when reasonable to do so, the agreed adjustment shall be reflected on the schedule of values used for the next Contractor's application for payment.

.7 The Principal Representative reserves the right to contract with any person or firm other than the Contractor for any or all extra work; however, unless specifically required in the Contract Documents, the Contractor shall have no responsibility without additional compensation to supervise or coordinate the work of persons or firms separately contracted by the Principal Representative

.8 The Principal Representative reserves the right to audit labor and equipment rates.

10.2.5 Except for the possible substantial increases to the Work to be performed as set forth in paragraph 10.1.1 which shall require the mutual agreement of the parties, the Construction Manager shall promptly proceed with the Work involved provided a written Amendment or Change Order signed by the Principal Representative, State Buildings Program and the State Controller is received.

10.3 VARIATIONS IN ESTIMATED QUANTITIES

10.3.1 Where the quantity of a pay item in this Agreement is an estimated quantity, and where the actual quantity of such pay item varies more than fifteen percent (15%) above or below the estimated quantity stated in this Agreement, an adjustment in the Construction Sum and Guaranteed Maximum Price shall be made upon demand of either party. The adjustment shall be based upon any increase or decrease in costs due solely to the variation above 115% or below 85% of the estimated quantity. If the quantity variation is such as to cause an increase in the time necessary for completion, the Principal Representative shall, upon receipt of a timely written request for an extension of the Contract Time prior to the date of final settlement of this Agreement, ascertain the facts and make such adjustment for extending the Contract Time as in the judgment of the Principal Representative the findings justify.

10.3.2 Adjustment of Price: Any adjustment in Contract Sum and Guaranteed Maximum Price made pursuant to this clause shall be determined in accordance with the Colorado Procurement Code or the applicable procurement code for institutions of higher education.

10.4 DIFFERING SITE CONDITIONS

10.4.1 The Construction Manager shall promptly, and before such conditions are disturbed, notify the Principal Representative in writing of:

.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents; or

.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

10.4.2 The Principal Representative shall promptly investigate the conditions, and if such conditions do materially so differ and cause an increase or decrease in the Construction Manager's cost of, or the time required for, performance of any part of the work under this Agreement, whether or not changed as a result of such conditions, an equitable adjustment in the Contract Sum and/or the Contract Time shall be made and this Agreement modified in writing by Amendment or Change Order.

10.4.3 No claim by the Construction Manager or Principal Representative for an equitable adjustment hereunder shall be allowed if asserted after final payment under this Agreement.

10.5 MINOR CHANGES IN THE WORK

10.5.1 The Architect/Engineer shall have authority to make minor changes in the Work, not involving extra cost or an extension of the Contract Time, and not inconsistent with requirements of the Contract Documents, except in an emergency endangering life or property, no extra work or change in the Contract Documents shall be made unless by 1) a written Amendment, approved by the Principal Representative, State Buildings Program, and the State Controller prior to proceeding with the changed work; or 2) by an Emergency Field Change Order approved by the Principal Representative and State Buildings Program as hereafter provided in Article 10.7.1 EMERGENCY FIELD CHANGE ORDERS; or 3) by an allocation in writing of any allowance already provided in the encumbered contract amount, the Contract Sum being later adjusted to decrease the Contract by any unallocated or unexpended amounts remaining in such allowance. No change to the Contract Sum shall be valid unless so ordered.

10.6 HAZARDOUS MATERIALS

10.6.1 The Principal Representative represents that it has undertaken an examination of the site of the Work and has determined that there are no hazardous substances, as defined below, which the Construction Manager could reasonably encounter in its performance of the Work. In the event the Principal Representative so discovers hazardous substances, the Principal Representative shall render harmless such hazards before the Construction Manager commences the work.

10.6.2 In the event the Construction Manager encounters any materials reasonably believed to be hazardous substances which have not been rendered harmless, the Construction Manager shall immediately stop work in the area affected and report the condition to the Principal Representative, in writing. For purposes of this Agreement, "hazardous substances" shall include asbestos, lead, polychlorinated biphenyl (PCB) and any or all of those substances defined as "hazardous substance", "hazardous waste", or "dangerous or extremely hazardous wastes" as those terms are used in the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA), and shall also include materials regulated by the Toxic Substances Control Act (TSCA), the Clean Air Act, the Air Quality Act, the Clean Water Act, and the Occupational Safety and Health Act. The Work in the affected area shall not therefore be resumed except by written agreement of the Principal Representative and the Construction Manager, if in fact materials that are hazardous substances have not been rendered harmless. The Work in the affected area shall be resumed only in the absence of the

hazardous substances or when it has been rendered harmless or by written agreement of the Principal Representative and the Construction Manager.

10.6.3 The Construction Manager shall not be required to perform work without consent in any areas where it reasonably believes hazardous substances that have not been rendered harmless are present.

10.7 EMERGENCY FIELD CHANGE ORDERS

10.7.1 The Principal Representative, without invalidating the Agreement, and with the approval of State Buildings Program and without the approval of the State Controller, may 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. Such changes in the work may be directed through issuance of an Emergency Field Change Order signed by the Contractor, the Principal Representative (or by a designee specifically appointed to do so in writing), and approved by the Director of State Buildings Program or his or her delegate. The change shall be directed using a State Change Order form (SC-6.31E) Emergency Field Change Order.

10.7.2 If the amount of the adjustment of the Contract price and time for completion can be determined at the time of issuance of the Emergency Field Change Order, those adjustments shall be reflected on the face of the Emergency Field Change Order. Otherwise, the Emergency Field Change Order shall reflect a not-to-exceed (NTE) amount for any schedule adjustment (increasing or decreasing the time for completion) and an NTE amount for any adjustment to Contract sum, which NTE amount shall represent the maximum amount of adjustment to which the Contractor shall be entitled, including direct and indirect costs of changed work, as well as any direct or indirect costs attributable to delays, inefficiencies or other impacts arising out of the change. Emergency Field Change Orders directed in accordance with this provision need not bear the approval signatures of the State Controller.

10.7.3 On Emergency Field Change Orders where the price and schedule have not been finally determined, the Contractor shall submit final costs for adjustment as soon as practicable. No later than seven (7) days after issuance, except as otherwise permitted, and every seven days thereafter, the contractor shall report all costs to the Principal Representative and the Architect/Engineer. The final adjustment of the Emergency Field Change Order amount and the adjustment of the Emergency Field Change Order amount and the adjustment to the Project time for completion shall be prepared on a normal Change Order form (SC-6.31) in accordance with the procedures described in paragraph 10.2. Unless otherwise provided in a writing signed by the Director of State Buildings Program to the Principal Representative and the Contractor, describing the extent and limits of any greater authority individual Emergency Field Change Orders shall not be issued for more than $25,000, nor shall the cumulative value of Emergency Field Change Orders exceed an amount of $100,000.

ARTICLE 11. INSURANCE

11.1 GENERAL

The Construction Manager 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 Construction Manager 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".

11.2 COMMERCIAL GENERAL LIABILITY INSURANCE (CGL)

This insurance must protect the Construction Manager 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 Construction Manager or by any Subcontractor under him or anyone directly or indirectly employed by the Construction Manager 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	$2,000,000
Products – Completed Operations Aggregate	$2,000,000
Each Occurrence	$1,000,000
Personal Injury	$1,000,000

The following coverages shall be included in the CGL:

1. Per project general aggregate (CG 25 03 or similar)
2. Additional Insured status in favor of the State of Colorado and any other parties as outlined in The Contract and must include both ONGOING Operations AND COMPLETED Operations per CG2010 10/01 and CG 2037 10/01 or equivalent as permitted by law.
3. The policy shall be endorsed to be **primary and non-contributory** with any insurance maintained by Additional Insureds.
4. A waiver of Subrogation in favor of all Additional Insured parties.
5. Personal Injury Liability
6. Contractual Liability coverage to support indemnification obligation per Article 53.I
7. Explosion, collapse and underground (xcu)

The following exclusionary endorsements are prohibited in the CGL policy:

1. Damage to Work performed by Subcontract/Vendor (CG 22-94 or similar)
2. Contractual Liability Coverage Exclusion modifying or deleting the definition of an "insured contract" from the unaltered SO CG 0001 1001 policy from (CG 24 26 or similar)
3. If applicable to the Work to be performed: Residential or multi-family
4. If applicable to the Work to be performed :Exterior insulation finish systems
5. If applicable to the Work to be performed: Subsidence or Earth Movement

The Construction Manager shall maintain general liability coverage including Products and Completed Operations insurance, and the Additional Insured with primary and non-contributory coverage as specified in this Contract for three (3) years after completion of the project.

11.3 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

11.4 WORKERS' COMPENSATION INSURANCE
The Construction Manager 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 Construction Manager 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 Construction Manager 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 Construction Manager shall provide, and shall cause each Subcontractor to provide, adequate and suitable insurance for the protection of employees not otherwise protected.

11.5 UMBRELLA LIABILITY INSURANCE (for construction projects exceeding $10,000,000, provide the following coverage):
The Construction Manager shall maintain umbrella/excess liability insurance on an occurrence basis in excess of the underlying insurance described in Section B-D above. Coverage shall follow the terms of the underlying insurance, included the additional insured and waiver of subrogation provisions. The amounts of insurance required in Sections above may be satisfied by the Construction Manager purchasing coverage for the limits specified or by any combination of underlying and umbrella limits, so long as the total amount of insurance is not less than the limits specified in each section previously mentioned.

Each occurrence	$5,000,000
Aggregate	$5,000,000

11.6 BUILDER'S RISK INSURANCE
Unless otherwise expressly stated in the Supplementary General Conditions (e.g. where the State elects to provide for projects with a completed value of less than $1,000,000), the Construction Manager shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made or until no person or entity other than the Owner has an insurable interest in the property, or the Date of Notice specified on the Notice of Acceptance, State Form SBP-6.27 or whichever is later.

This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project as named insureds.

All associated deductibles shall be the responsibility of the Construction Manager. Such policy may have a deductible clause but not to exceed ten thousand dollars ($10,000.00).

Property insurance shall be on an “all risk” or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect’s and Contractor’s services and expenses required as a result of such insured loss.

Construction Manager shall maintain Builders Risk coverage including partial use by Owner.
The Construction Manager shall waive all rights of subrogation as regards the State of Colorado and the Principal Representative, its officials, its officers, its agents and its employees, all while acting within the scope and course of their employment For damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section or other property insurance applicable to the Work. The Construction Manager shall require all Subcontractors at any tier to similarly waive all such rights of subrogation and shall expressly include such a waiver in all subcontracts.

Upon request, the amount of such insurance shall be increased to include the cost of any additional work to be done on the Project, or materials or equipment to be incorporated in the Project, under other independent contracts let or to be let. In such event, the Construction Manager shall be reimbursed for this cost as his or her share of the insurance in the same ratio as the ratio of the insurance represented by such independent contracts let or to be let to the total insurance carried.

The Principal Representative, with approval of the State Controller, shall have the power to adjust and settle any loss. Unless it is agreed otherwise, all monies received shall be applied first on rebuilding or repairing the destroyed or injured work.

11.7 POLLUTION LIABILITY INSURANCE

If Construction Manager is providing directly or indirectly work with pollution/environmental hazards, the Construction Manager must provide or cause those conducting the work to provide Pollution Liability Insurance coverage. Pollution Liability policy must include contractual liability coverage. State of Colorado must be included as additional insureds on the policy. The policy limits shall be in the amount of $1,000,000 with maximum deductible of $25,000 to be paid by the Subcontractor/Vendor.

11.8 ADDITIONAL MISCELLANEOUS INSURANCE PROVISIONS

Certificates of Insurance and/or insurance policies required under this Contract shall be subject to the following stipulations and additional requirements:

1. Any and all deductibles or self-insured retentions contained in any Insurance policy shall be assumed by and at the sole risk of the Construction Manager;
2. If any of the said policies shall fail at any time to meet the requirements of the Contract Documents as to form or substance, or if a company issuing any such

policy shall be or at any time cease to be approved by the Division of Insurance of the State of Colorado, or be or cease to be in compliance with any stricter requirements of the Contract Documents, the Construction Manager shall promptly obtain a new policy, submit the same to the Principal Representative and State Building Programs for approval if requested, and submit a Certificate of Insurance as hereinbefore provided. Upon failure of the Construction Manager to furnish, deliver and maintain such insurance as provided herein, this Contract, in the sole discretion of the State of Colorado, may be immediately declared suspended, discontinued, or terminated. Failure of the Construction Manager in obtaining and/or maintaining any required insurance shall not relieve the Construction Manager from any liability under the Contract, nor shall the insurance requirements be construed to conflict with the obligations of the Construction Manager concerning indemnification;

3. All requisite insurance shall be obtained from financially responsible insurance companies, authorized to do business in the State of Colorado and acceptable to the Principal Representative;
4. Receipt, review or acceptance by the Principal Representative of any insurance policies or certificates of insurance required by this Contract shall not be construed as a waiver or relieve the Construction Manager from its obligation to meet the insurance requirements contained in these General Conditions.

ARTICLE 12. INDEMNIFICATION

12.1 INDEMNIFICATION

12.1.1 The Construction Manager 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 the Construction Manager, its employees, agents, subcontractors 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 contractors or assignees, or other parties not under control of or responsible to the Construction Manager.

12.1.2 In any and all claims against the Principal Representative, its agents or employees, by any employee of the Construction Manager, any subcontractor of any tier, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation under this Article 12 shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Construction Manager or any subcontractor of any tier under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

12.1.3 The obligations of the Construction Manager under this Article 12 shall not extend to the liability of the Architect/Engineer, its consultants, agents or employees, arising out of : (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Amendments, Change Orders, designs or specifications; (2) the giving of or the failure to give direction or instructions by the Architect/Engineer, its consultants, agents or employees, provided such giving or failure to give is the primary cause of the injury or damage; or (3) any acts of the Architect/Engineer, its consultants, agents or employees outside of the scope of their duties pursuant to the Contract Documents.

ARTICLE 13. CONSTRUCTION MANAGER'S PERFORMANCE AND PAYMENT BONDS

13.1 PERFORMANCE AND PAYMENT BONDS

13.1.1 The Construction Manager shall furnish a Performance Bond and a Labor and Material Payment Bond on approved State forms, executed by a corporate surety licensed to transact such business in the State of Colorado, each in the full amount of the Contract Sum attendant with the Amendment for the addition of the first Bid Package to this Agreement. The Construction Manager shall also furnish such other bonds as may be required by the Supplementary Conditions. If subsequent Amendments are made to this Agreement which substantially increase the Contract Sum, increased bond limits shall be furnished by the Construction Manager upon the acceptance of the increase in the Contract Sum. The then current bonds shall apply to all work included within the scope of this Agreement, including but not limited to all prior work which may have been performed when previous bonds were in effect.

13.1.2 The Performance Bond shall remain in effect until at least one (1) year after the date when final payment becomes due, except as otherwise provided by law or regulation or by the Contract Documents. The Labor and Material Payment Bond shall remain in effect for not less than the required statutory period. All Bonds shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Account, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act. All Bonds must be acceptable to the Principal Representative and State Buildings Program.

13.1.3 The initial Bonds shall be filed with the Principal Representative at the time of execution of the initial Bid Package Amendment.

13.1.4 If the surety on any Bond furnished by Construction Manager is declared a bankrupt, becomes insolvent, its right to do business in the State of Colorado is terminated or it ceases to meet the requirements of paragraphs 13.1.1 and 13.1.2, Construction Manager shall within ten (10) days thereafter, substitute another bond and surety, both of which must be acceptable to the Principal Representative and State Buildings Program.

13.1.5 Upon the issuance and acceptance of the Performance and Labor and Material Payment Bonds, the premium therefore shall be included in the first Project Certificate and Application for Contractor's Payment. The premiums for all Bonds and increases thereto to be provided by the Construction Manager as well as those subcontractors required to be bonded by the Construction Manager shall be included in the Guaranteed Maximum Price, Contract Sum and the price of each Amendment and Change Order, and the Construction Manager shall not be entitled to additional compensation therefore.

ARTICLE 14. ACCESS TO WORK AND OBSERVATION

14.1 ARCHITECT/ENGINEER'S WORK

14.1.1 The Architect/Engineer shall be in the first instance, the judge of the performance of the Construction Manager as it relates to compliance with the Contract Documents and quality of workmanship and material.

14.1.2 The Architect/Engineer and its professional consultants, staff or practicing, shall make visits to the site appropriate to the stage of construction to become familiar with the progress and quality of the Work, and to determine that the Work is proceeding 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. The Architect/Engineer shall exercise due diligence to safeguard the Principal Representative against defects, deficiencies, non-compliance with the Contract Documents, and unsatisfactory materials and workmanship.

14.1.3 In addition to the services to be provided under paragraph 14.1.2, the Architect/Engineer shall also observe the following for compliance with the Contract Documents:

.1 Shop Drawings;

.2 Bearing surfaces of excavations before concrete is poured;

.3 Reinforcing steel after installation and before concrete is poured;

.4 Structural concrete;

.5 Laboratory reports on all concrete;

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

.7 Mechanical 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;

.10 Any special testing required in the Contract Documents;

.11 Compliance with applicable buildings codes; and

.12 Elements of construction relating to the building envelope.

14.1.4 The Architect/Engineer shall have authority to reject work which does not conform to the Contract Documents, and to require special inspection or testing whether or not such work is fabricated, installed, or completed, but shall take such action only after consultation with the Principal Representative. However, the Architect/Engineer's authority to act under this paragraph 14.1.4 and any decision made by it 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 work.

14.2 SAMPLES AND QUALITY CONTROL TESTING

14.2.1 Samples: The Construction Manager shall furnish for approval, with such promptness as to cause no delay in its work or in that of the Principal Representative or any separate Contractor, all samples as directed by the Architect/Engineer. The Architect/Engineer shall check and approve such samples with reasonable promptness. The work shall be uniformly in accordance with approved samples.

14.2.2 Quality Control Testing - General: The Construction Manager shall provide all tests and collect and forward all samples called for in **Exhibit A**, Designated Scope of Services and Method of Payment. The Construction Manager shall provide such equipment and facilities as the Architect/Engineer may require for conducting quality control field tests and for collecting and forwarding of samples. The Construction Manager shall not use any materials or equipment represented by samples until tests, if required, have been made and the materials or equipment found to be acceptable. Any materials which become unfit for use after approval thereof shall not be incorporated into the Work. All materials or equipment proposed to be used may be tested at any time during their preparation or use. Products may be sampled either prior to shipment or after being received at the site of the Work. Tests shall be made by an accredited testing laboratory. Except as otherwise provided, sampling and testing of all materials, and the laboratory methods and testing equipment shall be in accordance with the latest standards and testing methods of the American Society of Testing Materials (A.S.T.M.). The Construction Manager shall pay for all testing services as described in **Exhibit A**, Designated Scope of Services and Method of Payment.

14.3 QUALITY ASSURANCE AND OTHER TESTING

14.3.1 The Principal Representative shall retain an independent testing agent to perform quality assurance testing services for the project. The testing agent's services, duties and responsibilities include tests/inspections performed as described in the various Divisions of the Specifications and shall include but not be limited to: asphaltic concrete, cast-in-place concrete, mortar and grout, structural steel welds and bolt connections, steam pipe welding, and geotechnical investigation.

14.3.2 The Construction Manager is responsible to:

1. Provide sufficient notification in advance of operations to permit laboratory personnel assignment and scheduling.

2. Coordinate with laboratory personnel and provide access to the Work and manufacturer's operation.

3. Furnish casual labor to facilitate sample handling and testing at the project site.

4. Provide facilities for laboratory's exclusive use to store and cure samples.

5. Supply preliminary representative samples of products and materials, if required.

6. Supply mill test report if required.

7. Retain separate equally qualified independent testing lab to perform additional services required for Construction Manager's convenience and when initial service indicate products, material and work do not comply with the Contract Documents.

14.3.3 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any portion of the Work to be inspected, tested or approved, the Construction Manager shall give the Principal Representative timely notice of its readiness so the Principal Representative and the Architect/Engineer may observe such inspection, testing or approval. The Construction Manager shall bear all costs of inspections, tests or approvals which were legally required when this Agreement was executed, whether or not yet effective or

merely scheduled to go into effect. The Principal Representative shall bear all costs of inspections, tests or approvals which may be required thereafter.

14.3.4 If the Principal Representative determines that any Work requires special inspection, testing or approval which paragraph 14.2 and paragraph 14.3.1 do not include, the Construction Manager shall, upon written authorization from the Principal Representative order such special inspection, testing or approval, and the Construction Manager shall give notice as provided in paragraph 14.3.1. If such special inspection or testing reveals a failure of the Work to comply with the requirements of the Contract Documents, the Construction Manager shall bear all direct costs thereof, including compensation for the Architect/Engineer's additional services made necessary by such failure; otherwise the Principal Representative shall bear such costs, and an appropriate Amendment or Change Order shall be issued.

14.3.5 Required certificates of inspection, testing, or approval shall be secured by the Construction Manager and the Construction Manager shall promptly deliver them to the Principal Representative and the Architect/Engineer.

ARTICLE 15. UNCOVERING OF AND CORRECTION OF WORK

15.1 UNCOVERING OF WORK

15.1.1 If any portion of the Work should be covered contrary to the reasonable request of the Architect/Engineer, or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect/Engineer, be uncovered for its observation and shall be replaced at the Construction Manager's expense.

15.1.2 If any other portion of the Work has been covered which the Architect/Engineer has not specifically requested to observe prior to it’s being covered, it may request to see such work and it shall be uncovered by the Construction Manager. If such work is found in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate Amendment or Change Order, be charged to the Principal Representative. If such work is found not in accordance with the Contract Documents, the Construction Manager shall pay such costs unless it is found that this condition was caused by the Principal Representative or a separate Contractor as provided in Article 8, in which event, the Principal Representative shall be responsible for the payment of such costs.

15.2 CORRECTION OF WORK

15.2.1 The Construction Manager shall promptly remove from the premises all materials and correct all work rejected by the Architect/Engineer as defective or as failing to conform to the Contract Documents, whether observed before or after completion of the Work and whether or not fabricated, installed or completed. The Construction Manager shall bear all costs of correcting such rejected work, including compensation for the Architect/Engineer's additional services made necessary thereby.

15.2.2 If the Construction Manager fails to remove rejected materials and/or correct defective or non-conforming work, the Principal Representative may remove the same and/or correct it. In such case, an appropriate Amendment or Change Order shall be issued deducting from the payments then or thereafter due to Construction Manager, all costs of removing such materials and correcting such deficiencies, including compensation for the Architect/Engineer's additional services made necessary by such default, neglect or failure. If the payments then or

thereafter due the Construction Manager are not sufficient to cover such amount, the Construction Manager shall pay the difference to the Principal Representative.

15.2.3 If the Construction Manager does not proceed with the correction of such defective or non-conforming work within a reasonable time fixed by written notice from the Architect/Engineer issued through the Principal Representative, the Principal Representative may remove it and store the materials or equipment at the expense of the Construction Manager. If the Construction Manager does not pay the cost of such removal and storage within ten (10) days thereafter, the Principal Representative may, upon ten (10) additional days written notice, sell such work at auction or at private sale, and shall account for the net proceeds thereof, after deducting all the costs that should have been borne by the Construction Manager, including compensation for the Architect/Engineer's additional services made necessary thereby. If such proceeds of sale do not cover all costs which the Construction Manager should have borne, the difference shall be charged to the Construction Manager and an appropriate Amendment or Change Order shall be issued. If the payments then or thereafter due the Construction Manager are not sufficient to cover such amount, the Construction Manager shall pay the difference to the Principal Representative.

15.2.4 The costs for correcting rejected work and for making good any other work of the Principal Representative or separate contractors destroyed or damaged by such correction or removal shall be allocated in accordance with paragraph 3.4.5.

15.2.5 Should any defective work or material be discovered during the progress of construction, or should reasonable doubt arise as to whether certain material or work is in accordance with the Contract Documents, the value of such defective or questioned material or work shall not be included in any Project Application for Payment, or if previously included, shall be deducted by the Architect/Engineer from the next application submitted by the Construction Manager.

15.2.6 Nothing contained in this paragraph 15.2 shall be construed to establish a period of limitation with respect to any other obligation which the Construction Manager might have under the Contract Documents, including Article 18 hereof.

15.3 ACCEPTANCE OF DEFECTIVE OR NONCONFORMING WORK

15.3.1 If the Principal Representative prefers to accept defective or non-conforming work, the Principal Representative may do so instead of requiring its removal and correction, in which case an Amendment or Change Order shall be issued to reflect a reduction in the Contract Sum and Guaranteed Maximum Price where appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

15.4 PRINCIPAL REPRESENTATIVE'S RIGHT TO CARRY OUT THE WORK

15.4.1 If the Construction Manager defaults or neglects to carry out the Work in accordance with the Contract Documents, and fails within seven (7) days after receipt of written notice from the Principal Representative to commence and continue correction of such default or neglect with diligence and promptness, the Principal Representative may, and without prejudice to any other remedy the Principal Representative may have, make good such deficiencies. In such case, an appropriate Amendment or Change Order shall be issued deducting from the payments then or thereafter due the Construction Manager, all costs of correcting such deficiencies, including compensation for the Architect/Engineer's additional services made necessary by such default, neglect or failure. If the payments then or thereafter due the Construction Manager are not sufficient

to cover such amount, the Construction Manager shall pay the difference to the Principal Representative.

ARTICLE 16 RIGHT OF EARLY OCCUPANCY

16.1 RIGHT OF OCCUPANCY

16.1.1 Subject to the provisions of paragraph 11.4.2, 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 Completion of the Work or such portions of the Work has not expired and even if the Work has not been finally accepted. Such possession and use shall not constitute an acceptance of such portions of the Work.

16.1.2 If the Principal Representative elects to take possession of and to use any completed or partially completed portions of the Work prior to the time for Completion of the Work or portion thereof, prior to any such possession or use, an inspection shall be made by the Architect/Engineer, the Principal Representative and the Construction Manager. The Construction Manager shall assist the Principal Representative in completing and executing Form SBP-01, 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 when the Construction Manager complies with Article 17, Completion, Final Completion, Acceptance and Final Payment.

16.1.3 At the time of the inspection made pursuant to paragraph 16.2, the parties shall also agree upon the responsibilities of the Principal Representative and the Construction Manager for security, maintenance, heat, utilities, and damage to the Work. If the Construction Manager can also satisfactorily demonstrate to the Principal Representative any actual cost for warranties for the period prior to the date of Notice of Substantial Completion, the Principal Representative shall reimburse the Construction Manager for that portion of such cost attributable to the portion of the Work occupied by the Principal Representative for the period of time of such occupancy. In the event the Construction Manager believes there will be additional cost associated with completion of the Work while the Principal Representative occupies the Work in whole or in part, the Construction Manager shall advise the Principal Representative of all such costs at or before the time of inspection and an agreement shall be reached on the responsibilities of the Principal Representative and the Construction Manager therefore. If the Construction Manager fails or refuses to furnish such cost information as required, the Construction Manager hereby waives any and all rights to assert any claim therefore at any time thereafter.

ARTICLE 17. COMPLETION, FINAL INSPECTION, ACCEPTANCE AND SETTLEMENT

17.1. NOTICE OF COMPLETION

17.1.1 When the Work, or a discrete physical portion of the Work (as hereafter described) which the Principal Representative has agreed to accept separately, is Substantially Complete and ready for final inspection, the Construction Manager shall file a written Notice with the Architect/Engineer that the Work, or such discrete physical portion, in the opinion of the Construction Manager, is Substantially Complete under the terms of the Contract. The Construction Manager shall prepare and submit with such Notice a comprehensive list of items to be completed or corrected prior to final payment, which shall be subject to review and additions as the Architect/Engineer or the Principal Representative shall determine after inspection. If the Architect/Engineer or the Principal Representative believe that any of the items on the list of items submitted, or any other item of work to be corrected or completed, or the cumulative number of

items of work to be corrected or completed, shall prevent a determination that the Work is Substantially Complete, those items shall be completed by the Construction Manager and the Notice shall then be resubmitted.

17.2. FINAL INSPECTION

17.2.1 Within ten (10) days after the Construction Manager files written Notice that the Work is Substantially Complete, the Architect/Engineer, the Principal Representative, and the Construction Manager shall make a "final inspection" of the Project to determine whether the Work is Substantially Complete and has been completed in accordance with the Contract Documents. State Buildings Program shall be notified of the inspection not less than three (3) business days in advance of the inspection.

17.2.2 The Construction Manager shall provide the Principal Representative and the Architect/Engineer an updated Punch List in sufficient detail to fully outline the following:

.1 work to be completed, if any; and
.2 work not in compliance with the Drawings or Specifications, if any.

17.2.3 A Punch List shall be made by the Architect/Engineer in sufficient detail to fully outline to the Construction Manager:

.1 work to be completed, if any;
.2 work not in compliance with the Drawings or Specifications, if any; and
.3 unsatisfactory work for any reason, if any.

17.2.4 The required number of copies of the Punch List shall be countersigned by the authorized representative of the Principal Representative and shall then be transmitted by the Architect/Engineer to the Construction Manager, the Principal Representative, and State Buildings Program. The Architect/Engineer's final Punch List shall control over the Construction Manager's preliminary Punch List.

17.3. NOTICE OF SUBSTANTIAL COMPLETION

17.3.1 Notice of Substantial Completion shall establish the Date of Substantial Completion of the Project. The Construction Manager acknowledges and agrees that because the departments, agencies and institutions of the State of Colorado are generally involved with the business of the public at large, greater care must be taken in establishing the Date of Substantial Completion than might otherwise be the case to ensure that a project or building or discrete physical portion of the Work is fully usable and safe for public use, and that such care necessarily raises the standard by which the concept of Substantial Completion is applied for a public building.

17.3.2 The Notice of Substantial Completion shall not be issued until the following have been fully established:

.1 All required building code inspections have been called for and the appropriate code officials have affixed their signatures to the Building Inspection Record indicating successful completion of all required code inspections;
.2 All required corrections noted on the Building Inspection Record shall have been completed unless the Architect/Engineer, the Principal Representative and State Buildings Program, in their complete and absolute discretion, all concur that the

condition requiring the remaining correction is not in any way life threatening, does not otherwise endanger persons or property, and does not result in any undue inconvenience or hardship to the Principal Representative or the public;

.3 The building, structure or Project can be fully and comfortably used by the Principal Representative and the public without undue interference by the Construction Manager's employees and workers during the completion of the Substantial Completion Punch List taking into consideration the nature of the public uses intended and taking into consideration any stage or level of completion of HVAC system commissioning or other system testing required by the Specifications to be completed prior to issuance of the Notice of Substantial Completion;

.4 The Project has been fully cleaned as required by these General Conditions, and as required by any stricter requirements of the Specifications, and the overall state of completion is appropriate for presentation to the public; and

.5 The Construction Manager has provided a schedule for the completion of each and every item identified on the Substantial Completion Punch List which specifies the Subcontractor or trade responsible for the work, and the dates the completion or correction of the item shall be commenced and finished, with the exception of only those items which are beyond the control of the Construction Manager despite due diligence. The schedule shall provide for a reasonable punch list inspection process. Unless liquidated damages have been specified, the cost to the Principal Representative, if any, for re-inspections due to failure to adhere to the Construction Manager's proposed Substantial Completion Punch List completion schedule shall be the responsibility of the Construction Manager and may be deducted by the Principal Representative from final amounts due to the Construction Manager.

17.3.3 Substantial Completion of the entire Project shall not be conclusively established by a decision by the Principal Representative to take possession and use of a portion, or all of the Project, where portions of the Project cannot meet all the criteria noted above. Notice of Substantial Completion for the entire Project shall, however, only be withheld for substantial reasons when the Principal Representative has taken possession and uses all of the Project in accordance with the terms of Article 16, Right Of Early Occupancy. Failure to furnish the required completion schedule shall constitute a substantial reason for withholding the issuance of any Notice of Substantial Completion.

17.3.4 The Construction Manager shall have the right to request a final inspection of any discrete physical portion of the Project when in the opinion of the Architect/Engineer a Pre-Acceptance Punch List can be reasonably prepared, without confusion as to which portions of the Project are referred to in any subsequent Notice of Partial Final Settlement which might be issued after such portion is finally accepted. Discrete physical portions of the Project may be, but shall not necessarily be limited to, such portions of the Project as separate buildings where a Project consists of multiple buildings. Similarly, an addition to an existing building where the Project also calls for renovation or remodeling of the existing building may constitute a discrete physical portion of the Project. In such circumstances, when in the opinion of the Principal Representative, the Architect/Engineer and State Buildings Program, the requirements for issuance of a Notice of Substantial Completion can be satisfied with respect to the discrete portion of the Project, a partial Notice of Substantial Completion may be issued for such discrete physical portion of the Project. The ability to beneficially occupy a discrete physical portion of the Project shall also be considered.

17.4. NOTICE OF ACCEPTANCE

17.4.1 The Notice of Acceptance shall establish the final completion date of the Project. It shall not be authorized until the Construction Manager shall have performed all of the work to allow completion and approval of the Pre-Acceptance Checklist (SBP-05).

17.4.2 Where partial Notices of Substantial Completion have been issued, partial Notices of Final Acceptance may be similarly issued when appropriate for that portion of the Work. Partial Notice of Final Acceptance may also be issued to exclude the work described in Change Orders executed during late stages of the Project where a later completion date for the Change Ordered work is expressly provided for in the Contract as amended by the Change Order, provided the work can be adequately described to allow partial advertisement of any Notice of Partial Final Settlement to be issued without confusion as to the work included for which final payment shall be made.

17.5 SETTLEMENT

17.5.1 Final payment and settlement shall be made on the date fixed and published for such payment except as hereafter provided. The Principal Representative shall not authorize final payment until the Notice of Acceptance is issued, and the Notice of Contractors Settlement is published. If the Work shall be Substantially Completed, but Final Acceptance and thereof shall be prevented through delay in correction of minor defects, or unavailability of materials or other causes beyond the control of the Construction Manager, the Principal Representative in his or her discretion may release all amounts due to the Construction Manager except such amounts as may be in excess of three (3) times the cost of completing the unfinished work or the cost of correcting the defective work, as estimated by the Architect/Engineer and approved by State Buildings Program. Before the Principal Representative may issue the Notice of Contractor's Settlement and advertise the Project for final payment, the Construction Manager shall have corrected all items on the Substantial Completion Punch List except those items for which delayed performance is expressly permitted, subject to withholding for the cost thereof, and shall have:

.1 Delivered to the Architect/Engineer:

a. All guarantees and warranties;
b. All statements to support local sales tax refunds, if any;
c. Three (3) complete bound sets of required operating maintenance instructions; and,
d. One (1) set of as-built Contract Documents showing all job changes.

.2. Demonstrated to the operating personnel of the Principal Representative the proper operation and maintenance of all equipment.

.3. Delivered to the State of Colorado Department of Personnel & Administration in accordance with the Colorado Procurement Code or the applicable procurement code for institutions of higher education:

a. A written disclosure of the five most costly goods incorporated into the project, including iron, steel, or related manufactured goods and the total cost and country of origin of those five goods and whether the project was subject to any existing domestic content preferences.

17.5.2 Upon completion of the foregoing, the Project shall be advertised in accordance with the Notice of Contractor's Settlement by two publications of Notice, the last publication appearing at least ten (10) days prior to the time of final settlement. Publication and final settlement should not be postponed or delayed solely by virtue of unresolved claims against the Project or the Construction Manager from Subcontractors, suppliers or materialmen based on good faith disputes; the resolution of the question of payment in such cases being directed by statute.

17.5.3 Except as hereafter provided, on the date of final settlement thus advertised, provided the Construction Manager has submitted a written Notice to the Architect/Engineer that no claims have been filed, and further provided the Principal Representative shall have received no claims, final payments and settlement shall be made in full. If any unpaid claim for labor, materials, rental machinery, tools, supplies or equipment is filed before payment in full of all sums due the Construction Manager, the Principal Representative and the State Controller shall withhold from the Construction Manager on the date established for final settlement, sufficient funds to insure the payment of such claim, until the same shall have been paid or withdrawn, such payment or withdrawal to be evidenced by filing a receipt in full or an order for withdrawal signed by the claimant or his or her duly authorized agent or assignee. The amount so withheld may be in the amount of 125% of the claims or such other amount as the Principal Representative reasonably deems necessary to cover expected legal expenses. Such withheld amounts shall be in addition to any amount withheld based on the cost to compete unfinished work or the cost to repair defective work. However, as provided by statute, such funds shall not be withheld longer than ninety (90) days following the date fixed for final settlement with the Construction Manager, as set forth in the published Notice of Contractor's Settlement, unless an action at law shall be commenced within that time to enforce such unpaid claim and a Notice of such action at law shall have been filed with the Principal Representative. At the expiration of the ninety (90) day period, the Principal Representative shall release to the Construction Manager all other money not the subject of such action at law or withheld based on the cost to compete unfinished work or the cost to repair defective work.

17.5.4 Notices of Partial Final Settlement may be similarly advertised, provided all conditions precedent have been satisfied as though that portion of the work affected stood alone, a Notice of Partial Acceptance has been issued, and the consent of surety to the partial final settlement has been obtained in writing. Thereafter, partial final payments may be made to the Construction Manager subject to the same conditions regarding unpaid claims.

ARTICLE 18. WARRANTIES

18.1 WARRANTY TIME AND DOCUMENTATION

18.1.1 The Construction Manager warrants to the Principal Representative and the Architect/Engineer that all materials and equipment furnished under the Contract Documents shall be new unless otherwise specified, and that all Work shall be of good quality, free from faults and defects and in conformance with the Contract Documents. All work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the Architect/Engineer or the Principal Representative, the Construction Manager shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not limited by the provisions of paragraph 18.1.2.

18.1.2 The Construction Manager shall warrant and guarantee the Work or a designated portion thereof for a period of one (1) year after the Notice of Substantial Completion. If, within one (1) year after the Notice of Substantial Completion, or within such longer period of time as may be prescribed by the terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be defective or not in accordance with the Contract Documents, the Construction Manager shall correct it promptly after receipt of a written notice from the Principal Representative to do so unless the Principal Representative has previously given the Construction Manager a written acceptance of such condition. This obligation shall survive both final payment for the Work or designated portion thereof and termination of this Agreement. The Principal Representative shall give such notice promptly after discovery of the condition and in any event no later than one (1) year after the issuance of the Notice of Substantial Completion.

18.1.3 In case of work performed for which other warranties are required by the Contract Documents, the Construction Manager shall secure the required warranties and deliver the same to the Principal Representative through the Architect/Engineer in accordance with paragraph 17.3.2. These warranties shall not in any way lessen the Construction Manager's responsibilities under the Contract Documents. Whenever guarantees or warranties are required by the Contract Documents for a longer period than one (1) year, such longer period shall govern.

18.1.4 The establishment of the time periods noted in paragraph 18.1.2, or such longer period of time as may be prescribed by law or by the terms of any warranty required by the Contract Documents, relates only to the specific obligation of the Construction Manager to correct the Work, and has no relationship to the time within which the Construction Manager's obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Construction Manager's liability with respect to the Construction Manager's obligations other than specifically to correct the Work.

18.2 WARRANTY INSPECTIONS AFTER COMPLETION

18.2.1 The Architect/Engineer, the Principal Representative, and the Construction Manager together shall make two (2) complete inspections of the Work after issuance of the Final Notice of Substantial Completion. The Six-Month Warranty Inspection shall be made approximately six (6) months after the issuance of the Notice of Substantial Completion. The Eleven-Month Warranty Inspection shall be made approximately eleven (11) months after the issuance of the Final Notice of Substantial Completion. The Principal Representative shall schedule and so notify all parties concerned of these inspections.

18.2.2 Written lists and reports of these inspections shall be made by the Construction Manager and forwarded to the Principal Representative, Architect/Engineer and all of the other participants within ten (10) days after the completion of each inspection. The Construction Manager shall immediately initiate such remedial work as may be necessary to correct any deficiencies or defective work shown by these reports, and shall promptly complete all such remedial work in a matter satisfactory to the Architect/Engineer and the Principal Representative.

18.2.3 If the Construction Manager fails to promptly correct all deficiencies and defects shown by any report, the Principal Representative may do so after giving the Construction Manager ten (10) days written notice of its intention to do so, and the Principal Representative shall be entitled to collect from the Construction Manager and its surety all costs and expenses incurred by it in correcting such deficiencies and defects, as well as all damages directly resulting from such deficiencies and defects.

ARTICLE 19. CLAIMS FOR ADDITIONAL COSTS AND DAMAGES

19.1 CLAIMS FOR ADDITIONAL COSTS

19.1.1 If, for any reason, the Construction Manager claims that it is entitled to an increase in the Contract Sum or Guaranteed Maximum Price or an extension of agreed completion date (paragraph 6.3), the Construction Manager shall give the Principal Representative its written Notice of Claim thereof within fifteen (15) days or such other time period as may be specifically set forth elsewhere in this Agreement, whichever is the lesser, after the occurrence of the event giving rise to such claim and in all cases before proceeding to execute the work, except in an emergency endangering life or property in which case the Construction Manager shall proceed in accordance with paragraph 3.22.10. No such claim shall be valid unless so made. Any approved change in the Contract Sum or Guaranteed Maximum Price resulting from such claim shall be authorized by Amendment.

19.2 INJURY TO PERSON OR DAMAGE TO PROPERTY

19.2.1 Should either party to this Agreement suffer injury or damage to person or property because of any act or omission of the other party or of any of the other party's employees, agents, or others for whose acts such party is legally liable, Notice of Claim shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

19.3 COST RECORDS

19.3.1 In all claims for changes to the Contract Sum or Guaranteed Maximum Price, the Construction Manager shall keep a correct accounting of the extra costs, in such reasonable form as the Principal Representative may require, and shall present such account, supported by receipts. The Principal Representative shall be entitled to reject any claim for extra costs if such documentation is not provided.

19.3.2 Any payments to the Construction Manager with respect to claims for increases in the Contract Sum or Guaranteed Maximum Price shall be limited to reimbursement for the additional expenditure by the Construction Manager, with the costs to be determined in accordance with paragraph 10.2 and the Construction Manager's Fee to be determined in accordance with paragraph 9.2.1, as limited and controlled by paragraph 6.4.2, when applicable.

19.4 RIGHTS AND REMEDIES

19.4.1 The Construction Manager's attention is directed to the Colorado Procurement Code or the applicable procurement code for institutions of higher education pertaining to remedies, all of which shall apply to this Agreement.

19.4.2 The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to, and not a limitation of, any duties, obligations, rights or remedies otherwise imposed or available by law.

19.4.3 No action or failure to act by the Principal Representative or the Architect/Engineer shall constitute a waiver of any right or duty afforded any of them under the Contract Documents nor shall any such action or failure to act constitute an approval or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

19.5 WRITTEN NOTICE

19.5.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or member of the firm or entity or to an officer of the corporation for whom it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving the notice.

Any notice to be given to the Principal Representative shall be given or sent to:

Attn: MICHAEL BARDEN, MICHAEL.BARDEN@UCDENVER.EDU
UNIVERSITY OF COLORADO DENVER
MAIL STOP F418
1945 WHEELING STREET, RM 334
AURORA, CO 80045

With a Copy: DANIEL, DANIEL.MIRO@CUANSCHUTZ.EDU

Any notice to be given to the Construction Manager shall be given to:

Attn: ,

With a Copy To: ,

ARTICLE 20 PRINCIPAL REPRESENTATIVE'S RIGHT TO TERMINATE CONTRACT

20.1 TERMINATION FOR DEFAULT

20.1.1 If the Construction Manager should be adjudged bankrupt, or if it should make a general assignment for the benefit of its creditors, or if a receiver should be appointed to take over its affairs, or if it should fail to prosecute the Work with due diligence and carry the Work forward in accordance with its work schedule or if it should fail to subsequently perform one or more of the provisions of the Contract Documents to be performed by it, the Principal Representative may service written notice on the Construction Manager and the surety on its Performance and Labor and Material Payment Bonds, stating its intention to exercise one of the remedies hereinafter set forth and the grounds upon which the Principal Representative may, without prejudice to any other right or remedy, exercise one of such remedies, at once, having first obtained a certificate from the Architect/Engineer that sufficient causes exist to justify such action.

20.1.2 Conditions and Procedures:

.1 The Principal Representative may terminate the services of the Construction Manager, which termination shall take effect immediately upon service of notice thereof on the Construction Manager and its surety, whereupon the surety shall have the right to take over and perform the Agreement. If the Surety does not commence performance of this Agreement within ten (10) days after service of the Notice of Termination, the Principal Representative may take over the Work, take possession of and use all materials, tools, equipment, and appliances on the premises, and

prosecute the Work to completion by such means as it shall deem best. In the event of such termination of its service, the Construction Manager shall not be entitled to any further payments under this Agreement until the Work is completed and accepted. If the Principal Representative takes over the Work and if the unpaid balance of the Contract Sum or Guaranteed Maximum Price exceeds the cost of completing the Work, including compensation for any damages and expenses incurred by the Principal Representative through the default of the Construction Manager, such excess shall be paid to the Construction Manager. If, however, the cost, expenses, and damages as certified by the Architect/Engineer exceed such unpaid balance of the Contract Sum, Guaranteed Maximum Price or Fixed Limit of Construction Cost as the case may be, the Construction Manager and its surety shall pay the difference to the Principal Representative.

.2 The Principal Representative may take control of the Work and either make good the deficiencies of the Construction Manager or direct the activities of the Construction Manager in doing so, employing such additional help as the Principal Representative deems advisable. In such event the Principal Representative shall be entitled to collect from the Construction Manager and its surety, or to deduct from any payment then or thereafter due the Construction Manager, the costs incurred in having such deficiencies made good and any damages or expenses incurred through the default of the Construction Manager, provided the Architect/Engineer approves the amount thus charged to the Construction Manager.

.3 The Principal Representative may require the surety on the Construction Manager's Performance Bond to take control of the Work at once and see to it that all the deficiencies of the Construction Manager are made good, with due diligence. As between the Principal Representative and the surety, the cost of making good such deficiencies shall all be borne by the surety. If the surety takes over the Work, either upon termination of the services of the Construction Manager or upon instructions from the Principal Representative to do so, the provisions of the Contract Documents shall govern in respect to the work done by the surety, the surety being substituted for the Construction Manager as to such provisions, including provisions as to payment for the Work and provisions of this Article as to the right of the Principal Representative to do the Work or to take control of the Work.

20.2 TERMINATION FOR CONVENIENCE OF STATE

20.2.1 The performance of work under this Agreement may be terminated, in whole or from time-to-time in part, by the Principal Representative whenever for any reason the Principal Representative shall determine that such termination is in the best interest of the Principal Representative. Termination of Work hereunder shall be effected by delivery to the Construction Manager of a Notice of Termination specifying the extent to which performance of Work under this Agreement is terminated and the date upon which such termination becomes effective.

20.2.2 After receipt of the Notice of Termination, the Construction Manager shall cancel its outstanding commitments hereunder covering the procurement of all materials, supplies, equipment, and miscellaneous items. In addition, the Construction Manager shall exercise all reasonable diligence to accomplish the cancellation or diversion 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 work terminated by the Notice. With respect to such canceled commitments, the Construction Manager agrees to:

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

.2 Assign to the Principal Representative in the manner, at the time and to the extent directed by the Principal Representative, all of the right, title, and interest in the Construction Manager under the orders and subcontractors so terminated, in which case the Principal Representative 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.

20.2.3 The Construction Manager 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 Construction Manager within such one year period or authorized extension thereof. Upon failure of the Construction Manager to submit its Termination Claim within the time allowed, the Principal Representative may determine, on the basis of information available to it, the amount, if any, due to the Construction Manager by reason of the termination, and shall thereupon pay to the Construction Manager the amount so determined.

20.2.4 Costs claimed, agreed to, or determined pursuant to paragraphs 20.2.3 and 20.2.5 shall be in accordance with the provisions of the Colorado Procurement Rules or the applicable procurement code for institutions of higher education as in effect on the date of this Agreement all of which is limited to the authorized expenditure noted in the recitals of this Agreement and the provisions of paragraphs 9.6.1, 9.6.2, and 9.6.3. The sums to be paid to the Construction Manager shall not include any compensation, loss, or lost profit on work unperformed by the Construction Manager or any of its subcontractors of any tier or suppliers.

20.2.5 Subject to the provisions of paragraph 20.2.3 above, the Construction Manager and the Principal Representative may agree upon the whole or any part of the amount or amounts to be paid to the Construction Manager by reason of the termination under this clause, which amount or amounts may include any reasonable cancellation charges thereby incurred by the Construction Manager and any reasonable loss upon outstanding commitments for personal services which it is unable to cancel; provided, however, that in connection with any outstanding commitments for personal services which the Construction Manager is unable to cancel, the Construction Manager shall have exercised reasonable diligence to divert such commitments to its other activities and operations. Any such agreement shall be embodied in an Amendment to this Contract, and the Construction Manager shall be paid the agreed amount.

20.2.6 The Principal Representative may from time to time, under such terms and conditions as it may prescribe, make partial payment against costs incurred by the Construction Manager in connection with the terminated portion of this Contract, whenever, in the opinion of the Principal Representative, the aggregate of such payment is within the amount to which the Construction Manager shall be entitled hereunder.

20.2.7 The Construction Manager agrees to transfer title and deliver to the Principal Representative, 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 Principal Representative, including:

.1 Completed or partially completed plans, drawings (including As-Built Drawings), and information; and

.2 Materials and 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 the written approval of the Principal Representative, be sold or acquired by the Construction Manager 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 Principal Representative to the Construction Manager under this Contract, or shall otherwise be credited to the price or cost of Work 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 Construction Manager 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 Construction Manager, and in which the Principal Representative has or may acquire an interest.

20.2.8 Any dispute as to questions of fact which may arise hereunder shall be subject to the provisions of the Colorado Procurement Code or the applicable procurement code for institutions of higher education.

20.3 CONSTRUCTION MANAGER'S RIGHT TO STOP WORK AND/OR TERMINATE CONTRACT

20.3.1 If the Work shall be stopped under an order of any court or other public authority for a period of three (3) months through no act or fault of the Construction Manager or of anyone employed by it, then the Construction Manager may on seven (7) days written notice to the Principal Representative and the Architect/Engineer stop work or terminate this Agreement and recover from the Principal Representative payment for all work executed, and losses sustained on any plant or material and a reasonable profit. If the Principal Representative shall fail to issue any Project Certificate and Application for Contractor's Payment within ten (10) days after it is due, or if the Principal Representative shall fail to pay the Construction Manager within thirty (30) days after its maturity and presentation of any sum certified by the Architect/Engineer, then the Construction Manager, on ten (10) days written notice to the Principal Representative and the Architect/Engineer, may stop work and give written notice of intention to terminate this Agreement. If the Principal Representative shall thereafter fail to pay the Construction Manager within ten (10) days after receipt of such notice, then the Construction Manager may terminate this Agreement and recover from the Principal Representative payment for all work executed and losses sustained upon any plant or materials, and a reasonable profit.

ARTICLE 21, MISCELLANEOUS PROVISIONS

21.1 ARCHITECT/ENGINEER

It is expressly understood that the Principal Representative shall be directly retaining the services of an Architect/Engineer.

21.2 LABOR AND WAGES

In accordance with the laws of Colorado, C.R.S. § 8-17-101(1), as amended, Colorado Labor shall be employed to perform at least eighty percent of the work. If the Federal Davis-Bacon Act shall be applicable to the Project, the minimum wage rates to be paid on the Project shall be the prevailing Federal Davis-Bacon wage rates at the time of bidding of each bid package. If the box is marked below, the Federal Davis-Bacon Act shall be applicable to the Project.

☐ Principal Representative Initial: _____ date: _____

21.3 NON-DISCRIMINATION

The Construction Manager agrees to comply with the letter and spirit of all State and federal laws respecting discrimination and unfair employment practices.

21.4 LIENS

Colorado statutes do not provide for any right of lien against public buildings. In lieu thereof, Sections C.R.S. § 38-26-107 et seq., as amended, provided adequate relief for any claimant having furnished labor, materials, rental machinery, tools, equipment or services toward construction of the particular public work in that final payment may not be made to a Construction Manager until all such creditors have been put on notice by publication in the public press of such pending payment and given opportunity to stop payment to the Construction Manager in the amount of such claims.

21.5 EXTENT OF AGREEMENT

This Agreement represents the entire and integrated Agreement between the Principal Representative and the Construction Manager and supersedes all prior negotiations, representations, or agreements, either written or oral. When Drawings and Specifications are complete, they shall be identified by Amendment or Change Order to this Agreement. This Agreement may be amended only by written instrument signed by all signatories hereto.

The invalidity of any one or more of the covenants, phrases, sentences, clauses or provisions of this Agreement or any part thereof shall not affect the remaining portions of this Agreement or any part thereof and in the event any one of the same shall be declared invalid, this Agreement shall be construed as if such invalid portion had not been inserted provided the same does not work a substantial injustice.

21.6 BENEFITS AND ASSIGNMENT

This Agreement shall be binding upon and inure to the benefit of the parties hereto, their partners, heirs, personal representatives, successors and duly approved assigns. The Construction Manager shall not assign the whole or any part of this Agreement or any monies due or to become due hereunder without the prior written consent of the Principal Representative. No assignment, without said prior approval, shall be valid. In case the Construction Manager makes any assignment of any monies which is consented to by the Principal Representative, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to the Construction Manager shall be subject to all claims of all persons, firms, or corporations for services rendered or materials supplied for the performance of the work called for in this Agreement, whether such service or materials were supplied prior to or after the assignment.

21.7 MISCELLANEOUS

It is contemplated by the parties that certain exhibits hereto shall not be accomplished or finalized at the time this Agreement is executed as such exhibits must, by the nature of the provisions relative thereto, be executed by the parties subsequent to the execution of this Agreement. The parties shall be diligent in accomplishing such exhibits at the earliest appropriate time in accordance with the provisions hereof.

The terms of this Agreement shall supersede any inconsistent provision contained in the General Conditions, the Special Supplementary General Conditions, or any other of the Contract Documents.

21.8 NO THIRD PARTY BENEFICIARIES

It is expressly understood and agreed that the enforcement of the terms and conditions of this contract, and all rights of action relating to such enforcement, shall be strictly reserved to the State and the named Construction Manager. Nothing contained in this Agreement shall give or allow any claim or right of action whatsoever by any other third person. It is the express intention of the State and the Construction Manager that any such person or entity other than the State and the Construction Manager receiving services or actual benefits under this Agreement shall be deemed an incidental beneficiary only.

21.9 MODIFICATION OF ARTICLE 6. TIME OF COMMENCEMENT AND COMPLETION

If an amount is indicated immediately below, liquidated damages shall be applicable to this Project as, and to, the extent shown below. Where an amount is indicated below, liquidated damages shall be assessed in accordance with and pursuant to the terms of Article 6, Time Of Commencement and Completion, in the amounts and as here indicated. The election of liquidated damages shall limit and control the parties' right to damages only to the extent noted.

1. For the inability to use the Project, for each day after the number of calendar days specified in the Construction Manager's bid for the Project and the Agreement for achievement of Substantial Completion, until the day that the Project has achieved Substantial Completion and the Notice of Substantial Completion is issued, the Construction Manager agrees that an amount equal to ZERO ($0) shall be assessed against Construction Manager from amounts due and payable to the Construction Manager under the Contract, or the Construction Manager and the Construction Manager's Surety shall pay to the Principal Representative such sum for any deficiency, if amounts on account thereof are deducted from remaining amounts due, but amounts remaining are insufficient to cover the entire assessment.

2. For damages related to or arising from additional administrative, technical, supervisory and professional expenses related to and arising from the extended closeout period, for each day in excess of the number of calendar days specified in the Construction Manager's GMP Proposal for the Project and the Agreement to Finally Complete the Project (as defined by the issuance of the Notice of Final Acceptance) after the issuance of the final Notice of Substantial Completion, the Construction Manager agrees that an amount equal to ZERO ($0) shall be

assessed against Construction Manager from amounts due and payable to the Construction Manager under the Contract, or the Construction Manager and the Construction Manager's Surety shall pay to the Principal Representative such sum for any deficiency, if amounts on account thereof are deducted from remaining amounts due but amounts remaining are insufficient to cover the entire assessment.

21.10 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.

21.11 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

21.12 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.

21.13 INDEPENDENT CONTRACTOR

Contractor shall perform its duties hereunder as an independent contractor and not as an employee. Neither Contractor nor any agent or employee of Contractor shall be deemed to be an agent or employee of the State. Contractor shall not have authorization, express or implied, to bind the State to any agreement, liability, or understanding, except as expressly set forth herein. **Contractor 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 Contractor or any of its agents or employees. Contractor shall pay when due all applicable employment taxes and income taxes and local head taxes incurred pursuant to this contract. Contractor 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.**

21.14 COMPLIANCE WITH LAW

Contractor 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.

21.15 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.

21.16 PROHIBITED TERMS

Any term included in this Contract that requires the State to indemnify or hold Contractor harmless; requires the State to agree to binding arbitration; limits Contractor's 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 Contractor's 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.

21.17 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. Contractor hereby certifies and warrants that, during the term of this Contract and any extensions, Contractor has and shall maintain in place appropriate systems and controls to prevent such improper use of public funds. If the State determines that Contractor 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.

21.18 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. Contractor has no interest and shall not acquire any interest, direct or indirect, that would conflict in any manner or degree with the performance of Contractor's services and Contractor shall not employ any person having such known interests.

21.19 VENDOR OFFSET AND ERRONEOUS PAYMENTS C.R.S. § 24-30-202 (1) and C.R.S. § 24-30-202.4

[*Not Applicable to intergovernmental agreements*] 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 Contractor in error for any reason, including, but not limited to, overpayments or improper payments, and unexpended or excess funds received by Contractor by deduction

from subsequent payments under this Contract, deduction from any payment due under any other contracts, grants or agreements between the State and Contractor, or by any other appropriate method for collecting debts owed to the State.

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

[*Not Applicable to agreements relating to the offer, issuance, or sale of securities, investment advisory services or fund management services, sponsored projects, intergovernmental agreements, or information technology services or products and services*] Contractor 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), Contractor 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 Contractor that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this Contract. Contractor **(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 Contractor 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 Contractor participates in the Department program, Contractor shall deliver to the contracting State Agency, Institution of Higher Education or political subdivision a written, notarized affirmation, affirming that Contractor has examined the legal work status of such employee, and shall comply with all of the other requirements of the Department program. If Contractor 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, Contractor shall be liable for damages.

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

Contractor, if a natural person eighteen (18) years of age or older, hereby swears and affirms under penalty of perjury that Contractor **(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.

21.22 STATEWIDE CONTRACT MANAGEMENT SYSTEM

If the maximum amount payable to Contractor under this Contract is $100,000 or greater, either on the Effective Date or at anytime thereafter, this shall apply. Contractor 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"). Contractor 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.

21.23 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 Contractor/Consultant hereby swear and affirm that they are authorized to act on 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.**

THE CONTRACTOR/CONSULTANT:

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 Projects, or
Mark R. Kennedy, President, University of Colorado

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, Chris Puckett or Jenny Willits
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. Contractor is not authorized to begin performance until such time. If Contractor begins performing prior thereto, the State of Colorado is not obligated to pay Contactor 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

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT A

CMGC DESIGNATED SERVICES AND METHOD OF PAYMENT
(attached)

Exhibit A, Designated Services and Method of Payment, requests the CM/GC to include the following items in their estimates for the general conditions. This additional information/clarification is intended to augment the descriptions and requirements included within the actual matrix. Wherever the matrix includes more specific information or this document conflicts with the requirements noted in the matrix, the requirements included in the matrix govern.

1. A/E Trailer – (Temporary Facilities) - Will not be required.
2. Construction Manager's Payment & Performance Bonds – (Insurance and Bonds) - Base upon preliminary budget, will be adjusted if necessary.
3. General Liability, Automobile, Product Liability, and Excess Liability Insurance – (Insurance and Bonds) - Base upon preliminary budget, will be adjusted as necessary.
4. Builder's Risk Insurance – (Insurance and Bonds) - Base upon preliminary budget, will be adjusted as necessary. Costs begin when the construction starts.
5. Construction (Site) Fencing – (Temporary Facilities) - Assume fencing the entire site for the duration of the construction period.
6. Handrails & Toe Boards – (Temporary Facilities) - Provide allowance based on what would be reasonable for a project of this type and schedule.
7. Opening Protection – (Temporary Facilities) - Provide allowance based on what would be reasonable for a project of this type and schedule.
8. Temporary Stairs – (Temporary Facilities) - Provide allowance based on what would be reasonable for a project of this type and schedule.
9. Temporary Power Service – (On-Site Utilities and Services) - Provide allowance based on what would be reasonable for a project of this type and schedule.
10. Temporary Heating – (Temporary Heating) – The Temporary Heating Phase of Exhibit A contains and allocates many elements of anticipated reimbursable general conditions and direct costs. Provide appropriate allowances for these elements of reimbursable general conditions costs based upon what would be reasonable for a project of this type and schedule.
11. Field Inspector and trailer – (Quality Control) – The Quality Control Phase of Exhibit A contains and allocates many elements of anticipated reimbursable general conditions and direct costs. If the CM/GC submitting the proposal feels they will require Field Inspectors as part of their staff for managing the project, the appropriate costs should be reflected in the DPE for staff and reimbursable general condition expenses for transportation, office, and equipment. Please note and include as appropriate the other elements of general conditions cost included in Exhibit A's Quality Control Phase, project photographs, operator on-site training, and prepare operation/maintenance manuals.

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: PRECONSTRUCTION	PRE-CONST SVCS FEE	CONST SVCS FEE	GEN CONDS.	DIRECT COST OF WORK		
ARCHITECTURAL SELECTION						X
STRUCTURAL, MECHANICAL AND ELECTRICAL (CONSULTANT)					1	2
SPECIAL CONSULTANT SELECTION						X
SURVEYOR SELECTION						X
SITE SELECTION RECOMMENDATIONS					2	1
REVIEW DESIGN CONCEPTS	X					
DEVELOP BID PACKAGES/SUB-CONTRACTING STRATEGY	1				2	
SITE USE RECOMMENDATIONS	2				1	
MATERIAL SELECTION RECOMMENDATIONS	2				1	
BUILDINGS SYSTEMS RECOMMENDATIONS	2				1	
BUILDING EQUIPMENT RECOMMENDATIONS (MOVEABLE)	2				2	1
BUILDING EQUIPMENT RECOMMENDATIONS (FIXED)	2	2			1	
CONSTRUCTION FEASIBILITY RECOMMENDATIONS	X					
PROJECT MASTER SCHEDULING	X					
BID PACKAGE RECOMMENDATIONS	1				2	
LIFE CYCLE COSTING ANALYSIS	2				1	
INFORMAL AND FORMAL VALUE ENGINEERING	X					
ENERGY USE ANALYSIS AND RECOMMENDATIONS	2				1	
PRELIMINARY TOTAL COST FEASIBILITY REVIEW	X					
LABOR AVAILABILITY REVIEW (SUBCONTRACTORS)	X					
MATERIAL EQUIPMENT AND CONTRACTOR AVAILABILITY	X					

Responsibility: x = Total 1 = Primary 2 = Secondary

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: PROJECT BUDGETING AND COST CONTROL	**PRE-CONST SVCS FEE**	**CONST SVCS FEE**	**GEN CONDS.**	**DIRECT COST OF WORK**		
TOTAL PROJECT COST BUDGET						X
CONSTRUCTION COST BUDGET	X					
CONSTRUCTION COST BUDGET ESTIMATES	X					
PRELIMINARY COST MODEL	X					
SCHEMATIC DESIGN PHASE ESTIMATES	X					
DESIGN DEVELOPMENT PHASE ESTIMATES	X					
BID PACKAGE/SUBCONTRACT ESTIMATES	X					
CASH FLOW PROJECTIONS	X					
PHASE FUNDING MODELING	X					
MATERIAL SURVEYS	X					
TRADE CONTRACTOR ESTIMATES	X					
CHANGE ORDER ESTIMATES			X			
SET-UP COST ACCOUNTING			X			
SET-UP REPORTING METHODS			X			
SET-UP PAYMENT PROCEDURES			2			1
SET-UP CHANGE ORDER PROCEDURES			1		2	1
CONTINUAL PROJECT COST MONITORING			1		2	1

Responsibility: x = Total 1 = Primary 2 = Secondary

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: SUB-CONTRACTING SELECTION AND PURCHASING	PRE-CONST SVCS FEE	CONST SVCS FEE	GEN CONDS.	DIRECT COST OF WORK		
SET PRE-QUALIFICATION CRITERIA	X					
RECOMMEND CONTRACTOR SELECTION METHODS	X					
RECOMMEND CONTRACTOR AWARD SELECTION METHODS	X					
DEVELOP CONTRACTOR INTEREST	X					
PREPARE BIDDING SCHEDULES	X					
CONDUCT PRE-BID CONFERENCE AND ISSUE PLANS	X					
RECEIVE BIDS	X					
ANALYZE BIDS	X					
RECOMMEND AWARD	1				2	
VERIFY UNIT COSTS	X					
NEGOTIATE UNION RATES AND MANPOWER COSTS REQUIRED		X				
CONDUCT PRE-AWARD CONFERENCE			X			
PREPARE CONTRACTS	X					
SUPPLIER AND SUBCONTRACTOR REVIEW	X					
ORIGINATE RFI'S AFTER SCREENING			X			
PREPARE CHANGE ORDERS			2		1	
VERIFY CORRECTNESS OF QUANTITIES AND PRICES OF CHANGE ORDERS			1		2	
COORDINATE OWNER-SUPPLIED FIXED EQUIPMENT			2		1	1

Responsibility: x = Total 1 = Primary 2 = Secondary

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: CONTRACT DOCUMENTS COORDINATION	**PRE-CONST SVCS FEE**	**CONST SVCS FEE**	**GEN CONDS.**	**DIRECT COST OF WORK**		
FEASIBILITY REVIEW AND RECOMMENDATIONS	X					
CONSTRUCTABILITY REVIEW AND RECOMMENDATIONS	X					
SUBCONTRACTOR WORK SCOPING	X					
RESPONSIBILITY FOR: SAFETY PRECAUTIONS			X			
SAFETY PROGRAMS			X			
TEMPORARY FACILITIES			X			
COMMON USE EQUIPMENT			X			
COMMON USE SERVICES			X			
REVIEW FOR: JURISDICTIONAL OVERLAP	X					
INCLUSION OF ALL WORK	X					
PHASE CONSTRUCTION COORD.	X					
IDENTIFY LONG LEAD ITEMS	X					
OBTAIN AGENCY APPROVALS					2	1
ASSIST IN OBTAINING PERMITS (AS NEEDED)			X			

Responsibility: x = Total 1 = Primary 2 = Secondary

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: CONSTRUCTION PHASE STAFF	PRE-CONST SVCS FEE	CONST SVCS FEE	GEN CONDS.	DIRECT COST OF WORK		
PROJECT MANAGER (AS REQUIRED)			X			
PROJECT SUPERINTENDENT (AS REQUIRED)			X			
ASSISTANT PROJECT SUPERINTENDENT			X			
MECHANICAL COORDINATOR (AS REQUIRED)			X			
ELECTRICAL COORDINATOR (AS REQUIRED)			X			
OFFICE ENGINEER (AS REQUIRED)			X			
ENGINEERING AND LAYOUT (AS REQUIRED)				X		
FIELD ENGINEER-LINE AND GRADE (AS REQUIRED)				X		
DRAWING CHECKER (AS REQUIRED)			X			
TIME KEEPER/CHECKER (AS REQUIRED)			X			
SCHEDULING ENGINEER (AS REQUIRED)			X			
PROJECT COORDINATOR			X			
COST ENGINEER (AS REQUIRED)			X			
CLERK-TYPIST (AS REQUIRED)			X			
RODMAN AND HELPERS (AS REQUIRED)				X		
SAFETY ENGINEER (AS REQUIRED)			X			

Responsibility: x = Total 1 = Primary 2 = Secondary

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: TRAVEL AND LODGING	**PRE-CONST SVCS FEE**	**CONST SVCS FEE**	**GEN CONDS.**	**DIRECT COST OF WORK**		
STAFF TRAVEL COST		X				
STAFF TRANSPORTATION		X				
PROJECT STAFF MOVING EXPENSES		X				
PROJECT STAFF SUBSISTENCE COSTS			X			
PHASE: TEMPORARY FACILITIES						
SAFETY EQUIPMENT AND FIRST AID SUPPLIES			X			
HANDRAILS AND TOE BOARDS			X			
OPENING PROTECTION			X			
FIRE EXTINGUISHERS			X			
WATCHMAN SERVICE				X		
OFFICE OR TRAILER RENTAL			X			
WATERBOY CUPS			X			
TEMPORARY STAIRS			X			
PROJECT SIGNS			X			
BULLETIN BOARDS			X			
CONSTRUCTION FENCING			X			
BARRICADES AND COVERED WALKWAYS (AS REQUIRED)				X		
SAFETY NETS (AS REQUIRED)				X		
A/E TEMPORARY OFFICE			X			
TEMPORARY TOILETS			X			

Responsibility: x = Total 1 = Primary 2 = Secondary

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: ON-SITE UTILITIES AND SERVICES	**PRE-CONST SVCS FEE**	**CONST SVCS FEE**	**GEN CONDS.**	**DIRECT COST OF WORK**		
TEMPORARY TELEPHONE INSTALLATION AND EXPENSE (INCLUDING LOCAL A/E)			X			
TEMPORARY POWER SERVICE			X			
POWER SERVICE			X			
TEMPORARY WATER AND HEATING			X			
HEATING ENERGY CHARGES				X		
TEMPORARY WIRING				X		
LIGHT BULBS				X		
DAILY CLEAN-UP			1	2		
WEEKLY TRASH-REMOVAL			1	2		
FINAL CLEAN-UP			1	2		
DUMP PERMITS AND FEES				X		
DEBRIS HAULING/REMOVAL				X		
FLAGMAN/TRAFFIC CONTROL (AS REQUIRED)				X		
FUELS FOR INITIAL TANK FILLING				X		
TEMPORARY ROADS				X		
ROADWAY MAINTENANCE				X		
DUST CONTROLS				X		
TEMPORARY EROSION CONTROL				X		
TEMP. WATER /SEWER EXPENSE & WATER EXPENSES - SITE GRADING & COMPACTION				X		
TWO-WAY RADIO EQUIPMENT (AS REQUIRED)			X			
TRASH CHUTE AND HOPPERS (AS REQUIRED)				X		

Responsibility: x = Total 1 = Primary 2 = Secondary

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: ON-SITE EQUIPMENT	PRE-CONST SVCS FEE	CONST SVCS FEE	GEN CONDS.	DIRECT COST OF WORK		
AUTOMOBILE AND FUEL (AS REQUIRED)			X			
PICK-UP TRUCK AND FUEL (AS REQUIRED)			X			
FLATBED TRUCK AND FUEL (AS REQUIRED)			X			
WATER TRUCK (AS REQUIRED)				X		
AIR COMPRESSOR AND FUEL (AS REQUIRED)				X		
DEWATERING EQUIPMENT AND FUEL (AS REQUIRED)				X		
TEMPORARY GENERATOR AND FUEL (AS REQUIRED)			X			
DEBRIS REMOVAL/HAULING EQUIPMENT (AS REQUIRED)				X		
SNOW REMOVAL (AS REQUIRED)			X			
TIRES AND MAINTENANCE COST (AS REQUIRED)			X			
FORKLIFT OPERATOR				X		
MATERIAL HOIST OPERATOR			X			
PERSONNEL OPERATOR			X			
FIXED CRANE OPERATOR				X		
TRAVEL CRANE OPERATOR				X		

Responsibility: x = Total 1 = Primary 2 = Secondary

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: TEMPORARY HEATING	**PRE-CONST SVCS FEE**	**CONST SVCS FEE**	**GEN CONDS.**	**DIRECT COST OF WORK**		
REMOVE SNOW AND ICE (AS REQUIRED)			X			
TEMPORARY ENCLOSURES (AS REQUIRED)				X		
PIPING COST IN BUILDING (AS REQUIRED)			X			
FUEL COST FOR HEATING (AS REQUIRED)				X		
POWER COST FOR HEATING (AS REQUIRED)			X			
FURNACE RENTAL (AS REQUIRED)			X			
HEATER RENTAL (AS REQUIRED)			X			
BOILER RENTAL (AS REQUIRED)			X			
OPERATOR - TEMPORARY SYSTEMS (AS REQUIRED)			X			
OPERATION FIRE WATCH (AS REQUIRED)				X		
CLEANING COST (AS REQUIRED)				X		
MAINTENANCE COST (AS REQUIRED)				X		
EXTENDED WARRANTY COST (AS REQUIRED)				X		
FILTER CHANGE (AS REQUIRED)				X		
TEMPORARY OFFICE HEATING (AS REQUIRED)			X			
TEMP WEATHER PROJECTION & HEATING FOR SUBCONTRACTORS (AS REQ'D)				X		

Responsibility: x = Total 1 = Primary 2 = Secondary

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: REPRODUCTION/PRINTING AND DATA PROCESSING	PRE-CONST SVCS FEE	CONST SVCS FEE	GEN CONDS.	DIRECT COST OF WORK		
COST STUDY DOCUMENTS					X	
SYSTEMS STUDY DOCUMENTS					X	
BID PACKAGE SETS (SEE PARAGRAPH 5.1.4)				2		1
BIDDING INSTRUCTIONS	X					
CONSTRUCTION DOCUMENTS ORIGINAL					X	
POSTAGE AND EXPRESS COSTS (CM/GC ISSUES PLANS)			X			
AS-BUILT SUB-DOCUMENTS				X		
AS-BUILT DOCUMENTS			X			
ACCOUNTING FORMS		X				
FIELD REPORTING FORMS			X			
SUBCONTRACT AGREEMENT FORMS	X					
SCHEDULE REPORT FORMS			X			
ESTIMATING FORMS	X					
COST REPORTING FORMS	X					
VALUE ANALYSIS STUDIES PRINTING	X					
DATA PROCESSING (MAIN OFFICE)		X				
REFERENCE MATERIALS			X			
SHOP DRAWING PRINTING				X		
ON-SITE FAX AND COPIER			X			
DATA PROCESSING (ON-SITE)			X			
MAINTENANCE MANUALS (FROM SUBS) AND OPERATIONS MANUALS (FROM SUBS)				X		

Responsibility: x = Total 1 = Primary 2 = Secondary

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: QUALITY CONTROL	**PRE-CONST SVCS FEE**	**CONST SVCS FEE**	**GEN CONDS.**	**DIRECT COST OF WORK**		
FIELD INSPECTOR (AS REQUIRED)			X			
INSPECTORS' OFFICE (AS REQUIRED)			X			
INSPECTORS' TRANSPORTATION (AS REQUIRED)			X			
INSPECTORS' EQUIPMENT (AS REQUIRED)			X			
SPECIAL INSPECTION CONSULTANTS						X
SPECIAL TESTING CONSULTANTS						X
CONCRETE SUBSTRUCTURE-OBSERVATIONS						X
CONCRETE TESTING						X
MASONRY TESTING						X
COMPACTION TESTING						X
WELDING TESTING						X
PIER INSPECTION/TESTING						X
SOILS INVESTIGATION						X
SPECIAL TESTING SERVICES (EXCEPT AS NOTED)						X
PROJECT PHOTOGRAPHS			X			
WARRANTY INSPECTIONS		1			2	
AIR AND WATER BALANCING				X		
OPERATOR ON-SITE TRAINING			X			
PREPARE OPERATION/MAINTENANCE MANUALS			2	1		

Responsibility: x = Total 1 = Primary 2 = Secondary

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: PERMITS AND SPECIAL FEES	**PRE-CONST SVCS FEE**	**CONST SVCS FEE**	**GEN CONDS.**	**DIRECT COST OF WORK**		
STORAGE YARD RENTAL				X		
PARKING LOT RENTALS AND SHUTTLE EXPENSES (AS REQUIRED)				2		1
FIELD OFFICE STAFF PARKING FEES			X			
SIGN PERMITS			X			
STREET/CURB PERMIT				X		
BUILDING PERMITS						X
PLAN CHECK FEES						X
WATER SYSTEM DEV. FEE						X
SEWER USE & DRAINAGE PERMIT/DEV. FEE						X
STORM CONNECTION FEE						X
GAS AND POWER SERVICE CHARGE (PERMANENT)						X
GAS AND POWER SERVICE CHARGE (TEMPORARY)				X		
STEAM SERVICE CHARGE						X
CHILLER WATER SERVICE CHARGE						X
SPECIAL TAP FEES						X
CONTRACTORS LICENSES		X				
CONSTRUCTION EQUIPMENT LICENSES		X				
CONSTRUCTION EQUIPMENT PERMITS				X		

Responsibility: x = Total 1 = Primary 2 = Secondary

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: INSURANCE AND BONDS	PRE-CONST SVCS FEE	CONST SVCS FEE	GEN CONDS.	DIRECT COST OF WORK		
BUILDERS RISK INSURANCE			X			
GENERAL LIABILITY, INCLUDING AUTOMOBILE			X			
PRODUCT LIABILITY			X			
EXCESS LIABILITY COVERAGE			X			
WORKERS COMPENSATION (FIELD OFFICE STAFF)			X			
FICA INSURANCE (FIELD OFFICE STAFF)			X			
FEDERAL UNEMPLOYMENT (FIELD OFFICE STAFF)			X			
STATE UNEMPLOYMENT (FIELD OFFICE STAFF)			X			
CONSTRUCTION MANAGER'S PAYMENT BOND			X			
CONSTRUCTION MANAGER'S PERFORMANCE BOND			X			
STATE/LOCAL BONDS				X		
* SUBCONTRACTOR BONDS				X		

Responsibility: x = Total 1 = Primary 2 = Secondary

* ONLY AS MUTUALLY AGREED UPON BETWEEN THE PRINCIPAL REPRESENTATIVE AND THE CM.

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: OTHER COSTS	PRE-CONST SVCS FEE	CONST SVCS FEE	GEN CONDS.	DIRECT COST OF WORK		
CONSTRUCTION EQUIPMENT				X		
CONSTRUCTION SERVICES LABOR				X		
CONSTRUCTION MATERIALS				X		
COST OF DESIGN AND ENGINEERING						X
A/E FAST TRACK COST EXTRAS						X
PRELIMINARY SOILS INVESTIGATION						X
TITLE/DEVELOPMENT COST						X
BUILDING OPERATION AFTER MOVE-IN						X
BUILDING MAINTENANCE AFTER MOVE-IN						X
MOVING COORDINATION						X
MOVING COSTS						X
COSTS OF EMERGENCY WORK				X		
CM GENERAL OVERHEAD COST		X				
CM PROFIT MARGIN		X				
GMP FINANCIAL RESPONSIBILITIES		X				
STATE REQUIRED INSPECTIONS						X

Responsibility: x = Total 1 = Primary 2 = Secondary

Designated Services and Method of Payment

CONSTRUCTION MANAGEMENT SERVICES	REQUIRED OF CM/GC				REQUIRED OF ARCH	REQUIRED OF OWNER
PHASE: OFF-SITE SERVICES	PRE-CONST SVCS FEE	CONST SVCS FEE	GEN CONDS.	DIRECT COST OF WORK		
CORPORATE EXECUTIVES (AS REQUIRED)	X	X				
PRINCIPAL IN CHARGE (AS REQUIRED)	X	X				
PROJECT EXECUTIVE (AS REQUIRED)	X	X				
LEGAL - BASIC SERVICES (AS REQUIRED)	X	X				
ACCOUNTING (AS REQUIRED)		X				
PURCHASING (AS REQUIRED)	X					
SAFETY OFFICER (AS REQUIRED)		X				
EEO OFFICER (AS REQUIRED)	X	X				
SECRETARIAL AND CLERK-TYPIST (AS REQUIRED)	X	X				
BENEFITS AND VACATIONS FOR ABOVE	X	X				

Responsibility: x = Total 1 = Primary 2 = Secondary

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT B

CONSTRUCTION MANAGER'S CERTIFICATION

I hereby certify:

a. That I am the _____ and duly authorized representative of the firm of:
;
and

b. That the wage rates and other factual unit costs supporting the compensation to be paid by the State for these professional services are accurate, complete, and current; and

c. That I understand the original contract price and any additions shall be adjusted to exclude any significant sums by which the State determines the contract price had been increased due to inaccurate, incomplete, or non-current wage rates and other factual unit costs;
and

d. That all such contract adjustments shall be made within one year following the end of this contract.

CONSTRUCTION MANAGER

_____
Signature

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT C

CONSTRUCTION MANAGER'S CERTIFICATE OF LIABILITY INSURANCE

After signing this document, you must supply your Certificates of Insurance for review before the University of Colorado Anschutz Medical Campus can continue processing this agreement.

Please email your insurance certificates to:

Elaine Rydberg, helen.rydberg@ucdenver.edu
Daniel, daniel.miro@cuanschutz.edu

_____
Initial

ACORD

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

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT D

CERTIFICATION AND AFFIDAVIT REGARDING UNAUTHORIZED IMMIGRANTS
(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: University of Colorado Anschutz Medical Campus / GFE
Project No./Name: 20-145005 / CU Anschutz Vault Repair

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.

B. 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 on this day _____.

VENDOR:

_____
Vendor Full Legal Name

BY: _____ _____
Signature of Authorized Representative Title

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT E

(Not Used)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT F

LIST OF PRE-QUALIFIED SUBCONTRACTORS
(when approved by the Principal Representative and prior to bidding)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT G

SCHEMATIC DESIGN ESTIMATE SUMMARY AND UPDATED SUMMARIES
(when approved by the Principal Representative)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT H

FIRST AMENDMENT (INCORPORATING GMP) EXHIBITS

H.1 Guaranteed Maximum Price Documents, Drawings, and Specifications including Addenda and Modifications (when approved by the Principal Representative)

H.2 Schedule of Bid Package Descriptions and Issuance Dates

H.3 Schedule of Values

H.4 Allowance Schedule

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT H.1

GURANTEED MAXIMUM PRICE DOCUMENTS, DRAWINGS, AND SPECIFICATIONS INCLUDING ADDENDA AND MODIFICATIONS (WHEN APPROVE DBY THE PRINCIPAL REPRESENTATIVE)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT H.2

SCHEDULE OF BID PACKAGE DESCIPRTIONS AND ISSUANCE DATES

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT H.3

SCHEDULE OF VALUES

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT H.4

ALLOWANCE SCHEDULE

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT I

SECOND AND SUBSEQUENT AMENDMENT (INCORPORATING BID PACKAGES) EXHIBITS

I.1 Contract Document Drawings and Specifications (when approved by the Principal Representative)

I.2 All Addenda and Modifications

I.3 Schedule of Values (consistent with GMP Schedule of Values), include Labor Overhead (direct labor burdens) for each Subcontractor to be applied to all change orders and amendments

I.4 Allowance Schedule (consistent with GMP Allowance Schedule)

I.5 Performance Bond

I.6 Labor and Material Payment Bond

I.7 Property Insurance Certificate

I.8 Certification and affidavit regarding unauthorized Immigrants (UI-1)

I.9 Notice to Proceed to Commence Construction Phase (Form SC 7.26)

I.10 Preliminary and Detailed Construction Schedules (when approved by the Principal Representative).

I.11**.** Notice of Substantial Completion (Form SBP-07).
https://www.colorado.gov/pacific/osa/formsproc

I.12**.** Notice of Approval of Occupancy/Use (Form SBP-01).
https://www.colorado.gov/pacific/osa/formsproc

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT I.1

CONTRACT DOCUMENT DRAWINGS AND SPECIFICATIONS (WHEN APPROVED BY THE PRINCIPAL REPRESENTATIVE)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT I.2

ALL ADDENDA AND MODIFICATIONS

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT I.3

SCHEDULE OF VALUES

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT I.4

ALLOWANCE SCHEDULE (CONSISTENT WITH GMP ALLOWANCE SCHEDULE)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT I.5

PERFORMANCE BOND

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

PERFORMANCE BOND

Institution/Agency: University of Colorado Anschutz Medical Campus / GFE
Project No./Name: 20-145005 / CU Anschutz Vault Repair

BONDING COMPANY: DO NOT MAKE ANY CHANGES TO THE LANGUAGE IN THIS BOND.

KNOW ALL PERSONS BY THESE PRESENTS:

That the Contractor

as Principal and hereinafter called "Principal,"

and

as Surety and hereinafter called "Surety," a corporation organized and existing under the laws of _____ are held and firmly bound unto **the STATE OF COLORADO** acting by and through Board of Regents of the University of Colorado, a body corporate, for and on behalf of the University of Colorado Denver.

hereinafter called the "Principal Representative", in the sum of _____ _____ Dollars ($_____)

for the payment whereof the Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly, by these presents.

WHEREAS, the Principal and the State of Colorado acting by and through the Principal Representative have entered into a certain Contract, hereinafter called "Contract," dated _____ _____, 20___, for the construction of a PROJECT described as

which Contract is hereby by reference made a part hereof;

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION, is such that, if the Principal shall promptly, fully and faithfully perform all the undertakings, covenants, terms, conditions and agreements of said Contract during the original term of said Contract any extensions thereof that may be granted by the Principal Representative with or without notice to the Surety, and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

AND THE SAID SURETY, for value received hereby stipulates and agrees that whenever the Principal shall be, and declared by the Principal Representative to be in default under said Contract, the State of Colorado having performed its obligations thereunder, the Surety may promptly remedy the default or shall promptly (1) Complete the Contract in accordance with its terms and conditions, or (2) Obtain a bid or bids for submittal to the Principal Representative for completing the Contract in accordance with its terms and conditions, and upon determination by the Principal Representative and Surety of the lowest responsible bidder, arrange for a contract between such bidder and the State of Colorado acting by and through the Principal Representative and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion, less the balance of the contract price but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount hereinbefore set forth. The term "balance of the contract price" as herein used shall mean the total amount payable to the Principal under the Contract and any amendments thereto, less the amount properly paid by the State of Colorado to the Contractor.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the State of Colorado.

IN WITNESS WHEREOF said Principal and Surety have executed this Bond, this _____ day of , A.D., _____ 20____.

(Corporate Seal)

THE PRINCIPAL

_____

ATTEST:

By: _____

_____ Title: _____

Secretary

(Corporate Seal)

SURETY

_____

By: _____

Attorney-in-fact

THIS BOND MUST BE ACCOMPANIED BY POWER OF ATTORNEY, EFFECTIVELY DATED

Note: This bond is issued simultaneously with another bond conditioned for the full and faithful payment for all labor and material of the contract.

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT I.6

LABOR AND MATERIAL PAYMENT BOND

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

LABOR AND MATERIAL BOND

Institution/Agency: University of Colorado Anschutz Medical Campus / GFE
Project No./Name: 20-145005 / CU Anschutz Vault Repair

BONDING COMPANY: DO NOT MAKE ANY CHANGES TO THE LANGUAGE IN THIS BOND.

KNOW ALL PERSONS BY THESE PRESENTS:

That the Contractor

as Principal and hereinafter called "Principal,"

and

as Surety and hereinafter called "Surety," a corporation organized and existing under the laws of _____ are held and firmly bound unto the STATE OF COLORADO acting by and through Board of Regents of the University of Colorado, a body corporate, for and on behalf of the University of Colorado Denver.

hereinafter called "Principal Representative," and to all subcontractors and any others who have supplied or furnished or shall supply or furnish materials, rental machinery, tools, or equipment actually used in the performance of the hereinafter identified Contract, or who have performed or shall perform labor in the performance of or in connection with said Contract, hereinafter called "Obligees" in the sum of _____ _____ Dollars ($_____)

together with interest at the rate of eight per cent (8%) per annum on all payments becoming due in accordance with said Contract, from the time such payments shall become due until such payment shall be made, for the payment of which, well and truly made to the Obligees, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly, by these presents.

WHEREAS, the Principal and the State of Colorado acting by and through the Principal Representative have entered into a certain Contract, hereinafter called "Contract," dated _____, 20___ for the construction of a PROJECT described as

which Contract is hereby by reference made a part hereof;

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal and the Surety shall fully indemnify and save harmless the State of Colorado and the Principal Representative from and against any and all costs and damages, including patent infringements, which either may suffer by reason of any failure or failures of the Principal promptly and faithfully to perform all terms and conditions of said Contract and shall fully reimburse and repay the State of Colorado and the Principal Representative all outlay and expense which the State of Colorado and the Principal Representative may incur in making good any such failure or failures, and further, if the Principal and his subcontractors shall duly and promptly pay for any and all labor, materials, team hire, sustenance, provisions, provender, rental machinery, tools, or equipment and other supplies which have been or shall be used or consumed by said Principal or his subcontractors in the performance of the work of said Contract , and it said Principal shall duly and promptly pay all his subcontractors the sums due them for any and all materials, rental machinery, tools, or equipment and labor that have been or shall be furnished, supplied, performed or used in connection with performance of said Contract, and shall also fully indemnify and save harmless the State of Colorado and the Principal Representative to the extent of any and all expenditures which either or both of them may be required to make by reason of any failures or defaults by the Principal or any subcontractor in connection with such payments; then this obligation shall be null and void, otherwise it shall remain in full force and effect.

It is expressly understood and agreed that any alterations which may be made in the terms of said Contract or in the work to be done under said Contract, or any extension(s) of time for the performance of the Contract, or any forebearance on the part of either the State of Colorado or the Principal to any of the others, shall not in any way release the Principal and the Surety, or either of them, their heirs, executors, administrators, successors or assigns from their liability hereunder, notice to the Surety of any such alteration, extension or forbearance being hereby waived.

IN WITNESS WHEREOF, the Principal and the Surety have executed this Bond, this _____ day of _____, A.D., 20_____.

(Corporate Seal)

THE PRINCIPAL

_____

ATTEST:

By: _____

_____ Title: _____

Secretary

(Corporate Seal)

SURETY

_____

By: _____

Attorney-in-fact

THIS BOND MUST BE ACCOMPANIED BY POWER OF ATTORNEY, EFFECTIVELY DATED

Note: This bond is issued simultaneously with another bond conditioned for the full and faithful performance of the contract.

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT I.7

PROPERTY INSURANCE CERTIFICATE

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT I.8

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

University of Colorado
Denver | Anschutz Medical Campus

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

Institution/Agency: University of Colorado Anschutz Medical Campus / GFE

Project No./Name: 20-145005 / CU Anschutz Vault Repair

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. (*Strike out where inapplicable.)

*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

_____
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: $ _____,

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 %: _____

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT I.9

NOTICE TO PROCEEED TO COMMENCE CONSTRUCTION PHASE (FORM SC-7.26)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

NOTICE TO PROCEED TO COMMENCE CONSTRUCTION PHASE (CM/GC CONTRACT)

Date of Notice: _____
Date to be inserted by the Principal Representative

Amendment No./Date: /

Bid Package(s) No.:

Institution/Agency: University of Colorado Anschutz Medical Campus / GFE

Project No./Name: 20-145005 / CU Anschutz Vault Repair

Attach Notice of Code Compliance from Code Review Agent/Building Official for Documents Listed Above

To:

This is to advise you that your Performance Bond, Labor and Material Payment Bond, Insurance Policy and Certificates of Insurance, and Affidavit Regarding Unauthorized Immigrants have been received. Our issuance of this Notice does not relieve you of responsibility to assure that the bond and insurance requirements of the Contract Documents are met for the duration of the Agreement. The Amendment # _____ for the above described work has been fully executed.

You are hereby authorized and directed to proceed within ten (10) days from date of this Authorization as required in the Agreement. Any liquidated damages for failure to achieve Substantial Completion by the date agreed that may be applicable to this contract will be calculated using the date of this Notice for the date of the commencement of the Work.

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

By _____
Michael J Barden, Date
Director of Facilities Projects

When completely executed, this form is to be sent by certified mail to the Construction Manager by the Principal Representative; or delivered by any other means to which the parties agree.

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT I.10

PRELIMINARY AND DETAILED CONSTRUCTION SCHEDULES

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT J

NOTICE OF ACCEPTANCE (when issued)

Form located on the Colorado Office of the State Architect webpage at:
https://www.colorado.gov/pacific/osa/formsproc

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT K

NOTICE OF CONTRACTOR'S SETTLEMENT (when issued)

Form located on the Colorado Office of the State Architect webpage at:
https://www.colorado.gov/pacific/osa/formsproc

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT L

REQUEST FOR PROPOSAL (DATED Oct 04, 2021)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT M

CONSTRUCTION MANAGER'S FEE PROPOSAL

Note: Supervisory rates and equipment rental rates included in the proposal are for estimating purposes only. These rates are subject to review/audit prior to the first billing and will be adjusted to actual rates for specific individuals and agreed upon rates for equipment.

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT N

SALES AND USE TAX FORMS

a. Colorado Department of Revenue – Certificate of Exemption for State Sales/Use Tax, dated August 25, 2017.
b. Colorado Department of Revenue – Sales Tax Exemption Certificate Multi-Jurisdiction
c. State of Colorado letter confirming Adams County, RTD, Stadium, and Cultural Tax Exemptions dated April 7, 2006
d. City of Aurora Sales and use Tax exemption dated March 12, 2001
e. City and County of Denver confirmation of tax exemption status dated February 19, 2014
f. Colorado Department of Revenue - Contractor Application for Exemption certification

DR 0160 (02/16/11)
COLORADO DEPARTMENT OF REVENUE
DENVER CO 80261-0013

CERTIFICATE OF EXEMPTION FOR STATE SALES/USE TAX ONLY

USE ACCOUNT NUMBER for all references	LIABILITY INFORMATION	ISSUE DATE
09802565	G 010180	Aug 25 2017

THIS LICENSE IS NOT TRANSFERABLE

STATE OF COLORADO/ OFFICE OF STATE CONTROLLER
ATTN: OFFICE OF UNIVERSITY CONTROLLER
1800 N GRANT ST STE 600
DENVER CO 80203-1148

Executive Director
Department of Revenue

DR 0563 (08/30/13)
COLORADO DEPARTMENT OF REVENUE
Denver CO 80261-0013

130563 19999

Sales Tax Exemption Certificate
Multi - Jurisdiction

See page 2 for instructions

Last Name or Business Name	First Name	Middle Initial

Address		

City	State	ZIP

I Certify That

Name of Firm (Buyer)
The Regents of University of Colorado

Address		
1800 Grant Street, Suite 600		
City	**State**	**ZIP**
Denver	CO	80203

Qualifies As (Check each applicable item)

☐ Wholesaler ☐ Retailer ☐ Manufacturer ☐ Charitable or Religious

☒ Political Subdivision or Governmental Agency ☐ Other (Specify)

If Other, specify here

1) and is registered with the below listed states and cities within which your firm would deliver purchases to us which are for resale or lease by us in the normal course of our business which is Institution of Higher Education or

2) that such purchases are exempt from payment of sales or use tax in such states and cities because our buyer is:

☒ Political Subdivision or Governmental Agency ☐ Charitable or Religious ☐ Otherwise Exempt By Statute (Specify)

If Otherwise Exempt By Statue, specify here

City or State	State Registration or ID Number	City or State	State Registration or ID Number
City of Aurora	98-00799-0000	Colorado (Boulder campus)	98-02915-0000
Colorado	98-02565-0000	Texas	32002730391

If the list of states and cities is more than six(6), attach a list to this certificate.
I further certify that if any property so purchased tax free is used or consumed by the firm as to make it subject to a Sale or Use Tax we will pay the tax due direct to proper taxing authority when state law so provides or inform the seller for added tax billing. This certificate shall be part of each order which we may hereafter give to you, unless otherwise specified, and shall be called until canceled by us in writing or revoked by the city or state.

General Description of products to be purchased from seller

Under penalties of perjury, I swear or affirm that the information on this form is true and correct as to every material matter.

Authorized Signature *(owner, Partner or Corporate Officer)*	Title	Date (MM/DD/YY)
Robert C Kuehn	Associate Vice President/University Controller	9/4/18

STATE OF COLORADO

TAXPAYER SERVICE DIVISION
Department of Revenue

1375 Sherman Street
Denver, Colorado 80261

Michael J. Barden
University of Colorado at Denver and Health Sciences Center(UCDHSC)
Building 500, Mail Stop F418
P.O. Box 6508
Aurora CO 80045

April 7, 2006

Dear Mr. Barden:

This is in response to your letter of March 1, 2006, to Bruce Nelson of the Department of Revenue regarding sales tax exemption from county and special district sales taxes for UCDHSC construction projects at the Fitzsimons campus. Mr. Nelson has left the Department, so I am responding to your inquiry.

In regards to Adams County sales and use tax, the sales tax is collected by the Department of Revenue, not the city of Aurora. Use tax on building materials is collected by the county when issuing building permits. Under 29-2-105(d), 39-26-708(1)(a) and 39-26-708(2)(a), C.R.S., UCDHSC and its contractors and sub-contractors are exempt from county sales and use tax on construction and building materials for State/UCDHSC owned real property.

In regards to special district sales and use taxes, UCDHSC and its contractors and sub-contractors are exempt from sales and use tax pursuant to the exemptions granted in 39-26-708(1)(a) and 39-26-708(2)(a), C.R.S., for the Regional Transportation District under 32-9-119(2)(c)(II), C.R.S, for the Scientific and Cultural District under 32-13-107(2), C.R.S, and for the Metropolitan Football Stadium District under 32-15-110(2)(a), C.R.S.

Additionally, for construction projects in the City and County of Denver, UCDHSC and its contractors and sub-contractors are exempt from the aforementioned special district sales and use taxes, as well as state sales and use tax.

Should you have additional questions regarding these matters, feel free to contact me.

Respectfully,

Steve Asbell

Steve Asbell
Taxpayer Service Policy Group
Colorado Dept of Revenue
Ph:303.866.3889 email: sasbell@spike.dor.state.co.us

FINANCE DEPARTMENT

Administration
1470 South Havana Street
Aurora, Colorado 80012
303-739-7055
FAX: 303-739-7068

March 12, 2001

Wayne F. Henderson
Vice Chancellor for Administration and Finance
University of Colorado Health Sciences Center
Fitzsimons, Building 500, Room C1003
P.O. Box 6508
Aurora, Colorado 80045-0508

RE: Letter of Commitment

Dear Mr. Henderson:

I am in receipt of your letter dated February 27, 2001, requesting that I issue a letter of commitment to the University of Colorado Health Sciences Center ("UCHSC") pursuant to *City Code Section 130-63(c)*. It is my understanding that UCHSC is part and parcel of the University of Colorado, a public institution of higher education of the State of Colorado. *§ 23-20-101, et seq., C.R.S.* You have asked for some assurance that UCHSC is exempt from the payment of City sales and use tax, as well as the employer portion of the City occupational privilege tax.

City Code Section 130-157(1) exempts all sales of tangible personal property and taxable services to the various political subdivisions of this state from imposition of City sales tax. Identical exemptions exist in both the City Use Tax ordinance (*City Code § 130-198(5)*) and the City Employer Occupational Privilege Tax ordinance (*City Code § 130-405(1)*). Accordingly, UCHSC falls squarely within each of these three exemptions.

It should be noted, however, that these exemptions do not extend to the collection of City tax. For instance, UCHSC must collect, report, and remit City sales tax on any retail sale of tangible personal property or taxable services it makes to a non-exempt third party. *City Code § 130-160.* Likewise, UCHSC

must also collect, report, and remit the employee portion of the City occupational privilege tax for each person it employs within the City for any period of time within a calendar month sufficient to receive no less than $250.00 as compensation for such employment. *City Code § 130-464.*

With respect to the deposit and ultimate payment of City use tax on construction materials, it is the longstanding policy of the City that the party who contracts for and directs and controls the construction of building improvements is liable for such tax. *See Fifteenth Street Investment Co. v. People, 102 Colo. 571, 81 P.2d 764 (1938).* Under the circumstances described in your request, it is UCHSC, and not its contractors, upon whom sole liability for the payment of City use tax would rest. Because UCHSC is an exempt entity, no use tax is due and owing on the purchase and subsequent use of construction materials for the development of UCHSC's property at the Fitzsimons site.

With regard to your additional requests, the City has no objection if UCHSC's contractors wish to use this letter to present to City building officials and third-party retailers as evidence of UCHSC's tax exemption. As for any future revocation of this letter, unless the status of UCHSC as a political subdivision changes, the various City tax exemptions which UCHSC is entitled to claim cannot be lawfully repealed without the prior approval of the City's voters. *See Colo. Const. Art. X, § 20(4)(a).* Therefore, the City believes UCHSC will be adequately informed in the event that the City decides to seek approval for any change in its tax laws that would impact UCHSC's tax-exempt status.

Very truly yours,

John Gross
Director of Finance

Department of Finance
Treasury Division
Tax Compliance – Audit Unit

201 W Colfax Ave #1009
Denver, CO 80202
fax: 720- 913-9455
www.denvergov.org/treasury

DENVER
THE MILE HIGH CITY

February 19, 2014

University of Colorado
Procurement Service Center
1800 Grant Street, Suite 500
Denver, CO 80203

Ladies/Gentlemen:

The above named entity is exempt from the Denver sales tax per Sec. 53-26(1) of the City Retail Sales Tax Article:

Sec. 53-26 (1) Exemptions

There shall be exempt from taxation under the provisions of this Article the following: (1) All sales to the United States Government, to the State, its departments and institutions and the political subdivisions thereof, only when purchased in their governmental capacities.

To qualify for the exemption, purchases must be billed direct to the organization, and payment made from funds of the organization.

The exemption does not extend to construction contractors who may perform contracts for you; they are the consumer of all property purchased and used in the performance or contracts for others. Nor does the exemption apply to purchases by employees or members for their own personal use.

You may reproduce this letter to furnish to suppliers as needed.

Sincerely,

Donald Korte, Audit Manager
Tax Compliance/Audit Section
720-913-9339

DO NOT SEND

DR 0172 (05/01/18)
COLORADO DEPARTMENT OF REVENUE
Denver CO 80261 - 0009
(303) 238-SERV (7378)

Special Notice

Purpose of this application

The exemption certificate for which you are applying must be used only for the purpose of purchasing construction and building materials for the exempt project described below. This exemption does not include or apply to the purchase or rental of equipment, supplies, and materials which are purchased, rented, or consumed by the contractor and which do not become a part of the structure, highway, road, street, or other public works **owned** and **used** by the exempt organization.

Any unauthorized use of the exemption certificate will result in revocation of your exemption certificate and other penalties provided by law.

A separate certificate is required for each project.

Colorado Withholding Account Number

A Colorado Account Number (CAN) should be provided in this field. Applications that are left blank or list N/A will not be processed and will be returned.

Subsidiary:
This box is marked when a subsidiary is using the parents withholding account number (only when it does not have its own.) Provide the parents CAN.

Subcontractor:
This box is marked when a contractor does not have employees of their own and outsources their employees through a subcontractor. List the subcontractor or subcontractors name and CAN(s).

Staffing Agency:
This box is marked when a contractor does not have employees of their own and outsources their employees through a staffing agency. Provide the Staffing Agency's name and CAN.

No employees/no subcontractors:
For contractors with no employees, no subcontractors/ staffing agencies:

Write no employees in the (CAN) box and provide explanation. For example, I have no employees or subcontractors and perform all of the work myself.

Subcontractors:
Subcontractors will not be issued Certificates of Exemption by the Department of Revenue. Upon receipt of the Certificate, the prime contractor should make a copy for each subcontractor involved in the project and complete it by filling in the subcontractor's name and address and signing it. The original Certificate should always be retained by the prime contractor. Copies of all Certificates that the prime contractor issued to subcontractors should be kept at the prime contractor's place of business for a minimum of three years and be available for inspection in the event of an audit.

See FYI Sales 95 for information about qualifying affordable housing projects.

To avoid a returned application ensure you have done the following:

- ☐ Accurately completed all applicable boxes of the form.
- ☐ Provided a copy of the Contract or agreement page. The Contract or Agreement page lists the type and scope of work.
- ☐ Bid amount on Contract or Agreement page matches the amount listed on the application (to the penny).
- ☐ Contract or Agreement page contains the signatures of the contracting parties.
- ☐ The form DR0172 (application) is signed.
- ☐ The exempt organizations number was provided and is correct.

140172 19999

DR 0172 (05/01/18)
COLORADO DEPARTMENT OF REVENUE
Denver CO 80261 - 0009
(303) 238-SERV (7378)

Contractor Application for Exemption Certificate

This exemption does not include or apply to the purchase or rental of equipment, supplies, and materials which are purchased, rented, or consumed by the contractor and which do not become a part of the structure, highway, road, street, or other public works **owned** and **used** by the exempt organization.

Any unauthorized use of the exemption certificate will result in revocation of your exemption certificate and other penalties provided by law. A separate certificate is required for each contract.

Send completed forms to: Colorado Department of Revenue, Denver, CO 80261-0009
Failure to accurately complete all boxes of the form or provide all supporting documentation will cause the application to be denied.

For Department Use Only. Do not write in this section.

Contractor/Account No.	Period (MM/YY-MM/YY)
89-	

Must be completed by applicant

Contractor Information

Trade name/DBA

Owner, partner or corporate last name	First Name	Middle Initial

Mailing Address	City	State	Zip

E-Mail Address	FEIN	Bid amount for your contract (Must match to the penny)
		$

Fax number	Business Phone number

Colorado withholding tax account number (See instructions)

☐ Subsidiary ☐ Subcontractors ☐ Staffing Agency
☐ No employees/subcontractors (see below)

No Employees/Subcontractors. (Provide explanation or attach a letter of explanation).

Exemption Information

Copies of contract or agreement page, identifying the contracting parties, bid amount, type of work, and signatures of contracting parties **must** be attached

Name of exempt organization (as show on contract)	Exempt organization's number
	98

Address of exempt organization	City	State	Zip

Principal contact at exempt organization-Last Name	First Name	Middle Initial

Housing Authority (if applicable)	Name of Project (if applicable)

Owner of the Project (if applicable)

Physical location of project site (give actual address when applicable and Cities and/or County (ies) where project is located)

City	State	Zip	Principal contact's telephone number

Scheduled construction start date (MM/DD/YY)	Estimated completion date (MM/DD/YY)

I declare under penalty of perjury in the second degree that the statements made in this application are true and complete to the best of my knowledge.

Signature of the business owner, partner or corporate officer	Title of corporate officer	Date (MM/DD/YY)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT O

BUILDING CODE COMPLIANCE POLICY: COORDINATION OF APPROVED BUILDING CODES, PLAN REVIEWS AND BUILDING INSPECTIONS

Colorado Office of the State Architect – Building Codes
https://www.colorado.gov/pacific/osa/bldgcodes

CU Denver | Anschutz Guidelines and Standards for Design and Construction Projects
http://www.ucdenver.edu/about/departments/FacilitiesManagement/FacilitiesProjects/Pages/GuidelinesStandards.aspx

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) AGREEMENT
(STATE FORM SC-6.4)

EXHIBIT P

UNIVERSITY OF COLORADO DENVER | ANSCHUTZ MEDICAL CAMPUS CONSTRUCTION MANAGER/GENERAL CONTRACTOR – SUPPLEMENTARY GENERAL CONDITIONS

The Construction Manager/General Contractor Agreement shall be amended as follows:

Article 3.4.2.2 Change language to: The construction contingency for the Work shall be equal to three percent (3.0%) of the initial Guaranteed Maximum Price.

The terms University, University of Colorado, University of Colorado Denver, University of Colorado Anschutz Medical Campus, CU Denver, CU Anschutz, Principal Representative, are the interchangeable for this replacement of Article 11.

ARTICLE 11 INSURANCE - Replace Article 11 as follows:

For purposes of this supplement "Contractor" as used herein shall mean, as appropriate to the State Contract form being used, Contractor, Standing Order Contractor, Construction Manager/General Contractor, or Design/Build Entity.

The Contractor shall obtain and maintain, at its own expense and for the duration of the contract including any warranty periods under 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 subcontractors 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 – ISO CG 0001 or equivalent. Coverage to include:***
   - Premises and Operations
   - Explosions, Collapse and Underground Hazards
   - Personal / Advertising Injury
   - Products / Completed Operations

- Liability assumed under an Insured Contract (including defense costs assumed under contract)
- Independent Contractors
- Designated Construction Projects(s) General Aggregate Limit, ISO CG 2503 (1997 Edition)
- Additional Insured—Owners, Lessees or Contractors Endorsement, ISO Form 2010 (2004 Edition or equivalent)
- Additional Insured—Owners, Lessees or Contractors Endorsement (Completed Operations), ISO CG 2037 (7/2004 Edition or equivalent)
- **The policy shall be endorsed to include the following additional insured language on the Additional Insured Endorsements specified above: "The Regents of the University of Colorado, a Body Corporate, named as an 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".**
- Commercial General Liability Completed Operations policies must be kept in effect for up to three (3) years after completion of the project. For buildings with a construction cost greater than $99 million, the Commercial General Liability Completed Operations policies must be kept in effect for up to eight (8) years after the completion of the project.
- **An umbrella and/or excess liability policy may be used to meet the minimum liability requirements provided that the coverage is written on a "following form" basis.**

Liability Limits	**General Aggregate**	**Products/Completed Operation Aggregate**	**Each Occurrence**	**Personal/Advertising Injury**
Primary General Liability	$2,000,000	$2,000,000	$1,000,0000	$1,000,000
Umbrella or Excess Liability*	$5,000,000	$5,000,000	$5,000,000	$5,000,000

***Umbrella or Excess Liability does not apply to projects totaling $500,000 or under.**

The following exclusionary endorsements are prohibited in the CGL policy:

1. Damage to work performed by subcontract/vendor (CG 22-94 or similar);
2. Contractual liability coverage exclusion modifying or deleting the definition of an "insured contract";
3. If applicable to the work to be performed: Residential or multi-family;
4. If applicable to the work to be performed: Exterior insulation finish systems;
5. If applicable to the work to be performed: Subsidence or earth movement.

2. ***Automobile Liability***

Bodily Injury and Property Damage for any owned, hired, and non-owned vehicles used in the performance of this contract

Minimum Limits:

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

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

   a. Policy shall contain a waiver of subrogation in favor of the Principal Representative.

   b. 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 appropriate sole proprietor waiver form.

Minimum Limits:

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

4. ***Contractors Pollution Liability***
   - Coverage shall apply to sudden and gradual pollution conditions resulting from the escape of release of smoke, vapors, fumes, acids, alkalis, toxic chemicals, liquids, or gases, natural gas, waste materials, or other irritants, contaminants, or pollutants (including asbestos). Policy shall cover the Contractor's completed operations.
   - If the coverage is written on a claims-made basis, the Contractor warrants that any retroactive date applicable to coverage under the policy precedes the effective date of this Contract; and that continuous coverage will be maintained or an extended discovery period will be exercised for a period of three (3) years beginning from the time that work under this contract is completed.
   - **The policy shall be endorsed to include the following as Additional Insureds: The Regents of the University of Colorado, a Body Corporate, named as an additional insured with respect to liability and defense of suits arising out of the activities performed by, or on behalf of the Construction Manager, including completed operations.**
   - Endorsements CA9948 and MCS-90 are required on the Automobile Liability Coverage if the Contractor is transporting any type of hazardous materials.
   - **Contractors Pollution Liability policies must be kept in effect for up to three (3) years after completion of the project.**

Minimum Limits (Projects at or under $500,000):

Per Loss	$	1,000,000
Aggregate	$	1,000,000

Minimum Limits (Projects over $500,000):

Per Loss	$	2,000,000
Aggregate	$	2,000,000

5. ***Professional Liability (Errors and Omissions)***
   (This Professional Liability requirement applies only to Design/Build Entity SC-8.0 and 9.0.)
   - 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."

- In 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

6. ***Builder's Risk/ Installation Floater***

Unless otherwise provided or instructed by the Principal Representative, the Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the project is located, Builder's Risk Insurance in the amount of the initial contract amount as well as subsequent modifications for the entire project at the site on a replacement cost basis without optional deductibles. This coverage is required for new buildings or additions to existing buildings and for materials and equipment to be installed in existing structures.

- Covered Cause of Loss: Special Form
- Include Theft and Vandalism
- Labor costs to repair damaged work
- Shall be written for 100% of the completed value (replacement cost basis)
- Deductible maximum is $50,000.00
- Waiver of Subrogation is to apply
- The Regents of the University of Colorado, a body corporate, shall be added as **Additional Named Insured on Builders Risk**.

1. Policy must provide coverage from the time any covered property becomes the responsibility of the Contractor, and continue without interruption during construction, renovation, or installation, including any time during which the covered property is being transported to the construction installation site, or awaiting installation, whether on or off site.
2. The Policy shall be maintained, unless otherwise provided in the contract documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made or until no person or entity other than the Principal Representative has insurable interest in the property to be covered, whichever is later.
3. The Builder's Risk insurance shall include interests of the Principal Representative, and if applicable, affiliated or associated entities, the General Contractor, subcontractors and sub-tier contractors in the project.
4. Builders' Risk Coverage shall be on a **Special** Covered Cause of Loss Form and shall include theft, vandalism, malicious mischief, collapse, false-work, temporary buildings and debris removal including demolition, increased cost of construction, architect's fees and expenses, flood (including water damage), earthquake, and if applicable, all below and above ground structures, piping, foundations including underground water and sewer mains, piling including the ground on which the structure rests and excavation, backfilling, filling, and grading. Equipment Breakdown Coverage (a.k.a.

Boiler & Machinery) shall be included as required by the Contract Documents or by law, which shall specifically cover insured equipment during installation and testing (including hot testing, where applicable). Other coverages may be required if provided in contract documents.

5. The Builders' Risk shall be written for 100% of the completed value (replacement cost basis) of the work being performed. The Builders' Risk shall include the following provisions:
   a. Replacement Cost Basis - including modification of the valuation clause to cover all costs needed to repair the structure or work (including overhead and profits) and will pay based on the values figured at the time of rebuilding or repairing, not at the time of loss
   b. Modify or delete exclusion pertaining to damage to interior of building caused by an perils insured against are covered; also provide coverage for water damage

   Note, if the addition, or renovation is to an existing building, The Principal Representative requires that the Contractor provide as an option to include the existing building into the Builders' Risk Policy. The Principal Representative shall provide the replacement cost value of the existing building
6. At the option of the Principal Representative, the Principal Representative may include Soft Costs (including Loss of Use)/Delay in Opening Endorsement under the builder's risk policy. The Principal Representative agrees to provide the necessary exposure base information for quotation by the Builder's Risk carrier. The Principal Representative agrees to pay the premium associated with the Soft Costs coverage, the Principal Representative decides to purchase this coverage.
7. The Builders' Risk Policy shall specifically permit occupancy of the building during construction. Partial occupancy or use of the work shall not commence until the insurance company or companies providing insurance have consented to such partial occupancy or use. The Principal Representative and Contractor shall take reasonable steps to obtain consent of the insurance company or companies and delete any provisions with regard to restrictions within any Occupancy Clauses within the Builders' Risk Policy. The Builders' Risk Policy shall remain in force until acceptance of the project by the Principal Representative.
8. The deductible shall not exceed $50,000 and shall be the responsibility of the Contractor except for losses such as flood (not water damage), earthquake, windstorm, tsunami, volcano, etc. Losses in excess of $50,000 insured shall be adjusted in conjunction with the Principal Representative. Any insurance payments/proceeds shall be made payable to the Principal Representative subject to requirements of any applicable mortgagee clause.

   The Contractor shall pay subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require subcontractors to make payments to their sub-subcontractors in similar manner.

   The Principal Representative shall have the authority to adjust and settle any losses in excess of $50,000 with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Principal Representative exercise of this power. It is expressly agreed that nothing in this section shall be subject to arbitration and any references to arbitration are expressly deleted.
9. The Contractor is responsible for providing 45 days' notice of cancellation to the Principal Representative. The policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to the Project.

If the Contractor does not intend to purchase such Builder's Risk Insurance required by the Contract and with all of the coverages in the amount described above, the Contractor shall so inform the Principal Representative as stated in writing prior to commencement of the work. The Principal Representative may then affect insurance that will protect the interests of the Principal Representative, the General Contractor, Subcontractors and sub-tier contractors in the project. Coverages applying shall be the same as stated above including other coverages that may be required by the Principal Representative. The cost shall be charged to the Contractor. Coverage shall be written for 100% of the completed value of the work being performed, with a deductible not to exceed $50,000 per occurrence for most projects.

All deductibles will be assumed by the Contractor. Waiver of Subrogation is to apply against all parties named as insureds, but only to the extent the loss is covered, and Beneficial Occupancy Endorsements are to apply.

If the Principal Representative is damaged by the failure or neglect of the Contractor to purchase or maintain insurance as described above, without so notifying the Principal Representative, then the Contractor shall bear all reasonable costs properly attributable thereto.

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.
2. Contractor's insurance carrier should possess a minimum A.M. Best's Insurance Guide rating of A- VI.
3. On insurance policies where the Principal Representative are named as additional insureds, the Principal Representative shall be additional insureds to the full limits of liability purchased by the Contractor even if those limits of liability are in excess of those required by this Contract.
4. Contractor shall furnish the Principal Representative with certificates of insurance (ACORD form or equivalent approved by the Principal Representative) as required by this Contract. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf.

   All certificates and any required endorsements are to be received and approved by the Principal Representative before work commences.

   Each insurance policy required by this Contract must be in effect at or prior to commencement of work under this Contract and remain in effect for the duration of the project. Failure to maintain the insurance policies as required by this Contract or to provide evidence of renewal is a material breach of contract.
5. Upon request by the Principal Representative, Contractor must provide a copy of the actual insurance policy effecting coverage(s) required by the contract.
6. The Contractor's insurance coverage shall be primary insurance and non-contributory with respect to all other available resources.
7. 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.
8. Provide a minimum of thirty (30) days advance written notice to the Principal Representative for cancellation, non-renewal, or material changes to policies required under the Contract (45 days for builders' risk coverage.
9. 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.

Subcontractors
Contractor's certificate(s) shall include all subcontractors as additional insureds under its policies **or** subcontractors shall maintain separate insurance as determined by the Contractor, however, subcontractor's limits of liability shall not be less than $1,000,000 per occurrence / $2,000,000 aggregate.

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 12/09/2019)

ARTICLE 21. MISCELLANEOUS. PROVISIONS

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

21.22 STATEWIDE CONTRACT MANAGEMENT SYSTEM

Add the following:

21.24 UNIVERSITY OF COLORADO DENVER | ANSCHUTZ MEDICAL CAMPUS POLICY ON SEXUAL HARASSMENT

.1 The Contractor 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.

21.25 UNIVERSITY OF COLORADO DENVER | ANSCHUTZ MEDICAL CAMPUS POLICY ON SECURITY BADGING

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

Appendix C

CERTIFICATION AND AFFIDAVIT REGARDING Unauthorized Immigrants (Form UI-1)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

CERTIFICATION AND AFFIDAVIT REGARDING UNAUTHORIZED IMMIGRANTS

Institution/Agency: University of Colorado Anschutz Medical Campus / GFE
Project No./Name: 20-145005 / CU Anschutz Vault Repair

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.

B. 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 on this day _____.

VENDOR:

_____
Vendor Full Legal Name

BY: _____ _____
Signature of Authorized Representative Title

Appendix D

DIRECT LABOR BURDEN (SBP-6.18)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

DIRECT LABOR BURDEN CALCULATION

Institution/Agency: University of Colorado Anschutz Medical Campus / GFE

Project No./Name: 20-145005 / CU Anschutz Repair of Utility Vaults

This form is required to be submitted for review prior to execution of a construction agreement.

List items below by the percentage of what makes up the total labor burden; Items include benefits that a contractor pays to employees on their payroll. Examples include taxes, pension cost, health and dental insurance etc. The Labor Burden amount must be agreed to by both the contractor and Principal Representative and will be included in the contract as part of Exhibit A and will be used in the calculation of any future Change Order Proposals (SC-6.312) Line 2.

Major sub-contractors defined as electricians, plumbers, mechanical contractors, excavators, millwork, concrete, block layers etc. Please provide one (1) Labor Burden Calculation Sheet per contractor and for each sub-contractor. These labor burdens shall be used in the calculation of any future Change Order Proposals (SC-6.312) Line 10.

State reserves the right to require back-up confirmation of all information included in this calculation.

	Percent of Salary Paid	
Payroll Taxes		
Pension Costs		
Health Insurance		
Dental Insurance		
Life Insurance		
Other (Specify)		Description: _____
Other (Specify)		Description: _____
Total Labor Burden:	0%	

Appendix E

APPLICABLE PREVAILING WAGE RATES

"General Decision Number: CO20210015 07/23/2021

Superseded General Decision Number: CO20200015

State: Colorado

Construction Type: Building

County: Adams County in Colorado.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate,if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/01/2021
1	01/15/2021
2	03/05/2021
3	07/23/2021

CARP0055-004 11/01/2019

	Rates	Fringes
CARPENTER (Includes Acoustical Ceiling Installation and Drywall Hanging; Excludes Metal Stud Installation)	$ 29.95	10.99

CARP1607-001 06/01/2020

	Rates	Fringes
MILLWRIGHT	$ 35.50	14.68

ELEC0068-012 06/01/2020

	Rates	Fringes

ELECTRICIAN (Includes Low Voltage Wiring).....$ 38.00 16.97

ELEV0025-001 01/01/2021

	Rates	Fringes
ELEVATOR MECHANIC	$ 48.09	35.825

FOOTNOTE:
a.Vacation: 6%/under 5 years based on regular hourly rate for all hours worked. 8%/over 5 years based on regular hourly rate for all hours worked.
b. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday after Thanksgiving Day; and Christmas Day.

ENGI0009-017 05/01/2018

	Rates	Fringes
POWER EQUIPMENT OPERATOR (Crane)		
141 tons and over	$ 31.07	10.70
50 tons and under	$ 28.40	10.70
51 to 90 tons	$ 28.57	10.70
91 to 140 tons	$ 29.55	10.70

IRON0024-009 11/01/2020

	Rates	Fringes
IRONWORKER, ORNAMENTAL	$ 32.00	12.01

IRON0024-010 11/01/2020

	Rates	Fringes
IRONWORKER, STRUCTURAL	$ 32.00	12.01

PAIN0079-006 08/01/2017

	Rates	Fringes
PAINTER (Brush, Roller and Spray; Excludes Drywall Finishing/Taping)	$ 20.50	8.41

PAIN0419-001 07/01/2016

	Rates	Fringes
SOFT FLOOR LAYER (Vinyl and Carpet)	$ 20.00	10.83

PAIN0930-002 07/01/2019

	Rates	Fringes
GLAZIER	$ 31.92	10.49

PLUM0003-009 06/01/2020

	Rates	Fringes
PLUMBER (Excludes HVAC Duct, Pipe and Unit Installation)	$ 38.38	16.67

PLUM0208-008 01/01/2021

	Rates	Fringes
PIPEFITTER (Includes HVAC Pipe and Unit Installation; Excludes HVAC Duct Installation)	$ 37.55	17.88

SFCO0669-002 01/01/2021

	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers)	$ 38.23	25.30

* SHEE0009-004 07/01/2021

	Rates	Fringes
SHEET METAL WORKER (Includes HVAC Duct Installation; Excludes HVAC Pipe and Unit Installation)	$ 36.45	20.15

SUCO2013-001 07/31/2015

	Rates	Fringes
BRICKLAYER	$ 21.96	0.00
CARPENTER (Metal Stud Installation Only)	$ 17.68	0.00
CEMENT MASON/CONCRETE FINISHER	$ 20.33	6.76
DRYWALL FINISHER/TAPER	$ 18.77	6.37
INSULATOR - MECHANICAL (Duct, Pipe & Mechanical System Insulation)	$ 21.49	5.20
LABORER: Common or General	$ 14.93	4.24
LABORER: Mason Tender - Brick	$ 15.99	0.00
LABORER: Mason Tender - Cement/Concrete	$ 16.00	0.00
LABORER: Pipelayer	$ 16.96	3.68
OPERATOR: Backhoe/Excavator/Trackhoe	$ 20.78	5.78
OPERATOR: Bobcat/Skid Steer/Skid Loader	$ 19.10	3.89
OPERATOR: Grader/Blade	$ 21.50	0.00
ROOFER	$ 16.96	0.00

TRUCK DRIVER: Dump Truck.....$ 17.34 0.00

WATERPROOFER.....$ 16.94 0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing

this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

==========

END OF GENERAL DECISION"

COLORADO
Office of the State Architect
Department of Personnel & Administration

COLORADO APPRENTICE/JOURNEYMEN TRAINING

TRADE

International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers

Local Union #101

Any member of The International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers may call himself or herself a Boilermaker, and many do even though they do not actually work in boiler construction and repair. Many also refer to themselves by some other trade our union represents through its many divisions. So you may hear our members refer to themselves as blacksmiths, forgers, ship builders, cement workers, stove workers, metal polishers, or numerous other job descriptions.
Our members fabricate, erect and repair systems and components throughout the commercial and industrial sector of the Power Generation, Pollution Control, Petro-Chemical, Steel, Pulp & Paper, Ship Repair, Mining, Storage Tanks, Towers & Pressure Vessels, Cement and other related industries.

Geographic Region: Colorado — Apprenticeship Rate $ 1.50

International Union of Bricklayers and Allied Craft Workers (CO/WY)

Local Union #07

Geographic Region: Colorado unless noted otherwise

description here

Refractory Projects	Apprenticeship Rate $	0.25
Tile, Terrazzo, Marble Stone, Finishers	Apprenticeship Rate $	0.25
Masonry - Northern Counties	Apprenticeship Rate $	0.25
Masonry - Southern Counties	Apprenticeship Rate $	0.25

OSA:
Covering Northern Colorado Counties of Adams, Arapahoe, Boulder, Broomfield, Clear Creek, Denver, Douglas, Eagle Garfield, Gilpin, Grand, Jackson, Jefferson, Larimer, Logan, Moffat, Morgan, Phillips, Pitkin, Rio Blanco, Routt, Sedgewick, Summit, Washington, Weld and Yuma counties

OSA:
Covering Southern Colorado Counties of Alamosa, Archuleta, Baca, Bent, Chaffee, Cheyenne, Conejos, Costilla, Crowley, Custer, Delta, Dolores, El Paso, Elbert, Fremont, Gunnison, Hinsdale, Huerfano, Kiowa, Kit Carson, La Plata, Lake, Las Animas, Lincoln, Mesa, Mineral, Montezuma, Montrose, Otero, Ouray, Park, Prowers, Pueblo, Rio Grande, Saguache, San Juan, San Miguel and Teller counties

Carpet, Linoleum and Resilient Tile Layers (IUPAT)

Local Union #419

Floor and decorative covering workers' work will includes measuring, cutting, fabricating, fitting, installing to be cemented, tacked or otherwise applied to its base and/or underlayment(s); whether used either as a decorative covering, topping or as an acoustical appliance such as carpets, sheet rubber, sheet linoleum, sheet vinyl, laminate floors and laminate floor systems, rubber tile, linoleum tile, asphalt tile, cork flooring, interlocking tile, vinyl tile, vinyl composition tile, composition in sheet or tile form, top set base of any kind including profile rubber base, and all derivatives of above; artificial turf and its derivatives which includes the operation, maintenance and repair of the following equipment when used in the installation of artificial turf and its derivatives (forklifts, air compressors and any attachments, skid steer, skip loader, utility cart/top dresser and lay-more ride on sweeper); all resilient seamless materials such as epoxy, polyurethane, plastics, resinous and liquid flooring and their derivatives; installation of solid wood and solid glue down wood;
The fitting of all devices for the attachment of the above materials and the fitting of all decorative or protective trim to and adjoining the above materials this also includes but is not limited to sanding, substrate preparation and the application of all self-leveling, trowelable and board underlayments; the removal of the aforementioned installed material from its base and/or underlayments as required; the cleaning of rugs or carpets and all drapery, make-up and the installation of drapes and window treatments; the application of moisture barrier and/or membrane in connection with the installation and flooring covered above.

Geographic Region: — Apprenticeship Rate $ 0.29

Glazier, Architectural Metal and Glass Workers, (IUPAT)

Local Union #930

The Glazing industry is comprised of many facets and applications of construction technology. Glaziers cut, install and replace all types of glass related products in commercial and residential window, storefront, skylight, architectural panel and curtain wall systems. They are proficient in the installation of all types of aluminum and glass doors, understand the intricacies of waterproofing and flashing, as well as the ability to perform quality custom shower door and mirror work.
The Journeyman Glazier possesses an understanding of math and layout skills, an ability to read shop drawings and blueprints and is trained to feel comfortable with a builder's level, laser level or the use of today's most sophisticated power tools to perform their work. Naturally the Glazier is safely at home in or on most scaffoldings, aerial stages, lifts and platforms. Journeyperson status is achieved after completion of a three (3) year- state certified apprenticeship.

Geographic Region: Colorado — Apprenticeship Rate $ 0.80

Painters and Drywall Finishers (IUPAT)

Local Union #79

Painters apply paint, stain, varnish, and other finishes to residential, commercial and industrial structures. They are able to choose the right paint or finish for the surface to be covered by taking into account durability, ease of handling, method of application and customer desires.

Drywall finishers (or tapers) prepare unfinished interior drywall panels for painting by taping and finishing joints and imperfections.

Geographic Region: Colorado — Apprenticeship Rate $ 0.30

Operative Plasterers and Cement Masons International Association

Local Union #577

Concrete: The following are but a few examples of the wide range of job descriptions for concrete and concrete finishers who place and finish, including all types of repairing of this solid rock material. Concrete tradespeople work on commercial residential and heavy & highway construction, curb and gutter, decorative concrete, concrete flatwork, epoxy coatings, waterproofing, grouting and shotcrete, including but not limited to the setting of concrete forms.

Plasterer: The following are examples of the various plaster products and the skill sets of OPCMIA members that utilized in the walls and ceiling industry today: exterior insulation finish systems (EIFS), fireproofing, free form & theme plastering, historical restoration, interior gypsum plaster, motion picture & special effects, Portland cement plaster (Stucco), specialty & colored finishes.

Geographic Region: Colorado — Apprenticeship Rate $ 0.60

International Brotherhood of Electrical Workers (IBEW)

Local Union #111

IBEW-Grand Junction Electrical Apprenticeship

Outside Linemen: Electrical linemen build and maintain power lines. They work on high-voltage transmission lines, substations, distribution lines.

Inside Wiremen: Inside Wiremen install conduit, electrical wiring, fixtures, and electrical equipment inside commercial buildings and in industrial settings, digging, climb ladders and work in cold and hot environments.

Telecommunications Installer-Technicians, also known as VDV and equipment for telephones, computer networks, video distribution systems, security and access control systems, and other low voltage systems in residential, commercial and industrial settings.

Geographic Region: Zone 1 — Apprenticeship Rate $ 0.75
Geographic Region: Zone 2 — Apprenticeship Rate $ 0.75
Geographic Region: Zone 3 — Apprenticeship Rate $ 0.75

OSA: Mesa, Delta, Montrose, Rio Blanco, Routt, Moffat, Garfield, Hinsdale Dolores, Gunnison, Montezuma, and La Plata Counties

OSA: Pitkin, San Miguel, San Juan, Ouray Counties

OSA: Mesa, Delta, Montrose, Garfield, Rio Blanco Counties

OSA: Adams; Arapahoe; Boulder; Broomfield; Clear Creak; Denver; Douglas; Eagle; Gilpin; Grand; Jackson; Jefferson; Lake; Larimer; Logan; Morgan; Phillips; Sedgwick; Summit; Washington; Weld and Yuma Counties

International Brotherhood of Electrical Workers (IBEW)

Local Union #68

Geographic Region: Commercial Apprenticeship Rate $ 0.58
Residential Apprenticeship Rates $ 0.17

International Brotherhood of Electrical Workers (IBEW)

Local Union #12

description here

Geographic Region: Commercial Apprenticeship Rate $ 0.60
Residential Apprenticeship Rate $ 0.23

OSA: Adams; Arapahoe; Boulder; Broomfield; Clear Creak; Denver; Douglas; Eagle; Gilpin; Grand; Jackson; Jefferson; Lake; Larimer; Logan; Morgan; Phillips; Sedgwick; Summit; Washington; Weld and Yuma Counties

International Brotherhood of Electrical Workers (IBEW)

Local Union #113

IBEW-Colorado Springs Joint Electrical Apprenticeship

Outside Linemen: Electrical linemen build and maintain power lines. They work on high-voltage transmission lines, substations, distribution lines.

Inside Wiremen: Inside Wiremen install conduit, electrical wiring, fixtures, and electrical equipment inside commercial buildings and in industrial settings, digging, climb ladders and work in cold and hot environments.

Telecommunications Installer-Technicians, also known as VDV and equipment for telephones, computer networks, video distribution systems, security and access control systems, and other low voltage systems in residential, commercial and industrial settings.

Geographic Region: El Paso County — Apprenticeship Rate $ 0.70

International Union of Elevator Constructors

Local #25

Apprentices are responsible for assisting in the installation, maintenance and repair of the passenger and freight elevators, escalators, dumbwaiters and moving sidewalks under the direction of a Mechanic. This description is intended to describe the general content, identify the essential functions, and set forth the requirements for performance of this job. Other duties may be assigned and this is not to be construed as an exhaustive statement of duties, responsibilities, or requirements.

Geographic Region: Colorado — Apprenticeship Rate $ 0.64

International Association of Heat and Frost Insulators and Allied Workers

Local Union #28

Today's insulator is trained and skilled at a multitude of construction trades including but not limited to mechanical insulation, fire stopping, asbestos and lead mitigation or abatement, sound attenuation and specialty fabrications required in custom mechanical insulation installations. In addition, union insulators and contractors utilize best practices for green installation and are most qualified for LEED certified projects. Below is a listing of each trade areas and descriptions of the type of work and application:

Geographic Region: Colorado — Apprenticeship Rate $ 0.50

International Association of Bridge, Structural, Ornamental, and Reinforcing Iron Workers

Local Union #24

Structural: Unload, erect, and connect fabricated iron beams to form the project skeleton.

Reinforcing: Fabricate and place steel bars (rebar) in concrete forms to reinforce structures.

Ornamental: Install metal windows into buildings a building's masonry or wooden openings.

Rigging and Machinery Moving: Load, unload, move and set machinery, structural steel and curtain walls.

Welding and Burning: Welding and burning equipment are considered tools of the trade and performed by structural, reinforcing, ornamental and rigging ironworkers to secure their work to the structure. Ironworkers can be tested to be designated a certified welder.

Industrial — Apprenticeship Rate $1.84

Commercial — Apprenticeship Rate $0.48

Geographic Region: Colorado

Laborers' International Union of North America (LIUNA)

Local Union #720

Environmental Remediation: Asbestos abatement, air sampling and monitoring, work area preparation

Concrete Installation: Site preparation, forming, finishing, curing, repair, sawing, coring, and decorative installation

Bridge Work: Bridge construction, renovation, demolition, rigging, signaling

Building Work: Scaffold building, tube and clamp scaffold, systems scaffold, building frame scaffold

Highway and Roadwork: Asphalt patching and repair, asphalt placing and paving, electronic grade and slope control

Landscaping Work: Installation and maintenance of plants and irrigation systems

Pipeline Work: Front end pipeline work, ground surface pipe handling and welding, pipe handling in the trench

Weatherization Work: Weatherization technician, installer, sealing the building envelope, sealing duct work, energy auditing, lead renovation, lead dust containment

Renewable Energy Work: Concrete work, digging footers, laying underground utilities

Tunnel Work: Crane safety, tunnel-boring, concrete work

Geographic Region: Colorado — Apprenticeship Rate $ 0.68

International Union of Operating Engineers

Local Union #9

We operate the bulldozers, the motor graders, the backhoes, the cranes helping to form and shape the infrastructure and skylines. We work the mines and dig wells.

Geographic Region: Colorado — Apprenticeship Rate $ 0.80

Pipefitters (United Association-UA)

Local Union #208

Geographic Region: Denver & Northern Colorado

description here

Commercial — Apprenticeship Rate $ 0.78

Industrial — Apprenticeship Rate $ 0.78

Service — Apprenticeship Rate $ 0.28

Plumbers & Pipefitters

Local #58

description here

Geographic Region: Southern Colorado — Apprenticeship Rate $ 1.60

Western Colorado Pipe Trades:

Local Union #145

The steamfitter-pipefitter is a trades person with the knowledge and ability to layout, fabricate, assemble, install, maintain, and repair piping systems that transport all types of fluids, slurries and gas in the residential, commercial and industrial sectors. They are the only trade to specialize in planning, design, and installation of low- and high-pressure steam systems. Their work is diverse and in fields such as oil refineries, paper mills, nuclear power plants, manufacturing plants, and in the automotive industry. The systems that the steamfitter-pipefitter may work on are some of the highest pressure and temperature applications and require a thorough knowledge of scientific principles to complete this work safely. The Pipefitter trade also includes all HVAC/R service work, including, heating and cooling and refrigeration equipment found in commercial or industrial properties.

The plumber installs, repairs, maintains, and services piping and plumbing systems and equipment used for drinking (potable) water distribution, sanitary storm water systems, and waste disposal. They also work on technical installations for Medical Gas, Hydronic in-floor heating, Solar Panels, Heat Pumps, Cross-Connection Control and many other systems necessary for the health and safety of the general public. Their work is found mostly in the new home building and renovation, high rises, and commercial construction sectors including hospitals schools and other institutional buildings.

Industrial — Apprenticeship Rate $0.50

Commercial — Apprenticeship Rate $0.80

Geographic Region:

OSA:
Western Colorado, commencing at the Colorado New Mexico state lines, including the following counties: Archuleta, Hinsdale, Gunnison, Pitkin, and that portion of the Eagle County west of the line to and including the town of Edwards and northerly to the southwest corner of Routt County, Routt, Moffat, Rio Blanco, Garfield, Mesa, Delta, Montrose, Ouray, San Miguel, San Juan, Montezuma, La Plata and Dolores Counties

Plumbers (UA)

Local Union #3

Geographic Region: Denver and Northern Colorado

Commercial	Apprenticeship Rate	$ 0.85
Industrial	Apprenticeship Rate	$ 0.85
Pipe tradesman	Apprenticeship Rate	$ 0.85
Utility	Apprenticeship Rate	$ 0.85

United Union of Roofers, Water Proofers, and Allied Workers

Local Union 58

Roofing in the commercial and industrial sector is generally of the built-up type or the single-ply category.
Another area of roofing is the residential type. Although these applications can also be done in the commercial and industrial sector as well. They include composition shingles, slate, tile and metal roofs.
Waterproofing is a protecting a building against moisture intrusion. Waterproofing can be below grade, It can also be done on plaza decks, parking garage floors and other sections of a building where water or moisture protection is crucial.

Geographic Region: Colorado — Apprenticeship Rate

Sheet Metal Workers International Association

Local Union #9

Denver Sheet Metal Workers JATC

Colorado Springs Sheet Metal Workers JATC

Grand Junction Sheet Metal Workers JATC

Sheet Metal Workers take ordinary types of flat metal and make them into specialized products for various duct and ventilation systems, as well as architectural and specialized metal fabrication

	1st year Apprenticeship Rate	$1.02
	2nd year Apprenticeship Rate	$1.21
	3rd year Apprenticeship Rate	$1.30
	4th year Apprenticeship Rate	$1.49
Geographic Region: Colorado	Journeyman Apprenticeship Rate	$1.86

Southwest Regional Council of Carpenters

Local Union #555

Heavy and Highway work

Geographic Region: Colorado — Apprenticeship Rate $ 0.40

Southwest Regional Council of Carpenters

Local Union #555

Statewide Building Construction

Geographic Region: Colorado Apprenticeship Rate $ 0.55

Southwest Regional Council of Carpenters

Local Union #555

Independent Drywall, Ceiling and Interior Systems and Millwright

Geographic Region: Colorado Apprenticeship Rate $ 0.47

Sprinkler fitters (UA)

Local Union #669

A Sprinkler fitter installs fire sprinkler piping systems in the commercial, residential and industrial sectors. With proficient knowledge of fire codes and responsibility for safety applications this tradesperson installs and maintains pressurized piping equipment and devices to supply fire protection and extinguishing systems with water, foam, carbon dioxide and other materials in places such as hospitals, homes and manufacturing plants – just to name a few.

Geographic Region: Colorado Apprenticeship Rate $ 0.52

EMPLOYEE RIGHTS

FOR EMPLOYEES ON APPLICABLE STATE OF COLORADO CONSTRUCTION PROJECTS

Prevailing Wage For Public Projects

PREVAILING WAGES

You must be paid not less than the wage rate listed in the Davis-Bacon Wage Decision posted with this Notice for the work you perform.

OVERTIME

You must be paid not less than one and one-half times your basic rate of pay for all hours worked over 40 in a work week. There are few exceptions.

ENFORCEMENT

Contract payments can be withheld to ensure workers receive wages and overtime pay due, and liquidated damages may apply if overtime pay requirements are not met. Prevailing wage and apprenticeship contract clauses allow contract termination and debarment of contractors from future State contracts per C.R.S. §24-109-105. A violation of C.R.S §24-92-204 is subject to a private right of action as defined in C.R.S. §24-92-210. Enforcement of rules by the Colorado Department of Labor & Employment are defined in C.R.S. §24-92-209.

APPRENTICES

Apprentice rates apply only to apprentices properly registered under approved State apprenticeship programs for projects in the amount of $1M dollars or more. This pertains to the contractors or subcontractors that will be used for all mechanical, sheet metal, fire suppression, sprinkler fitting, electrical and plumbing work required on the project. The provisions of this requirement do not apply to the Colorado Department of Transportation, regardless of the amount of funding source of the public project. The provisions of this requirement do not apply to any county, city and county, city, municipality, town, school district, special district, or any other political subdivision of the state.

PROPER PAY

If you do not receive proper pay, or require further information on the applicable wages, contact the Contracting Officer listed below:

Insert by Agency/Institution Division if applicable
Contact phone number • Contact email address

Employees can contact the Division of Labor Standards and Statistics by calling 303-318-8441 (888-390-7936 toll free) or by emailing cdle_labor_standards@state.co.us.

COLORADO
Office of the State Architect
Department of Personnel & Administration

Appendix F

APPRENTICESHIP CERTIFICATION (SBP-6.17)

STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAM

APPRENTICESHIP UTILIZATION CERTIFICATION
(Public Projects of $1 million or more)

Institution/Agency: University of Colorado Anschutz Medical Campus / GFE
Project No./Name: 20-145005 / CU Anschutz Repair of Utility Vaults

For each trade listed below attach documentation that all firms identified participate in apprenticeship programs as described in the Certification Statement below.

TRADE	SUBCONTRACTOR
Mechanical	
Sheet Metal	
Fire Suppression	
Sprinkler Fitting	
Plumbing	
Electrical	

CERTIFICATION STATEMENT § 24-92-115, C.R.S. (SB 19-196)

The above named General Contractor certifies and agrees as follows:

That all firms identified above participate in apprenticeship programs registered with the United States Department of Labor's Employment and Training Administration or state apprenticeship councils recognized by the United States Department of Labor and have a proven record of graduating apprentices at a minimum of fifteen percent of its apprentices for at least three of the past five years. The General Contractor shall supply supporting documentation from the United States Department of Labor's office of apprenticeship verifying the certification.

The above documentation shall be made publicly available by the contracting agency through its website within thirty (30) days from when it is submitted.

The General Contractor shall agree to provide additional documentation to the contracting agency regarding affected apprenticeship training programs relating to the requirements above. If a contracting agency determines that a subcontractor has willfully falsified documentation or willfully misrepresented their qualifications, the agency shall direct the General Contractor to terminate the subcontractor contract immediately and the subcontractor will be immediately removed from the public project. At the discretion of the Director of the Department of Personnel, the State may initiate the process to debar the General Contractor pursuant to § 24-109-105, C.R.S., and may pursue any other remedy provided by law.

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

GENERAL CONTRACTOR:

_____
Full Legal Name

BY: _____ _____
Signature of Authorized Representative Title

Appendix G

Campus Utility Vault Evaluation Report

University of Colorado Anschutz Medical Campus

Campus Utility Vaults Evaluation

University of Colorado Anschutz Medical Campus (CU Anschutz)
Aurora, Colorado

FINAL
February 2, 2021

Stanley Consultants INC.
A Stanley Group Company
Engineering, Environmental and Construction Services - Worldwide

Executive Summary

Introduction

The purpose of this evaluation is to provide visual observations and assessment of the existing condition of twenty-two (22) campus utility vaults that included V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V10.1, V11, V12A, V12B, V13, V14, V15, V16, V17, V18, V19, V20 and document deficiencies and areas of concern, so that repair or replacement projects can be anticipated, properly planned, and budgeted. The evaluation is intended to meet certain goals for the campus, and identify the necessary upgrades required to provide a safe, reliable, flexible, maintainable and cost-effective infrastructure system while considering existing conditions, constructability and optimizing available capital and schedule. Conceptual estimates of probable construction costs were developed for systems of concern that, in our opinion, pose a significant concern in terms of structural, mechanical, and electrical reliability and life safety. Systems of concern identified were documented in condition assessment tables and then ranked to help establish maintenance priorities for performing the necessary repairs. Overall site general arrangement drawings of the campus distribution systems and utility vaults were also prepared with the evaluation.

Structural Evaluation

The structural evaluation of the campus utility vaults focused on observing the condition of the structural components that could be seen from the interior of the vault. The main structural system of each vault is composed of cast-in-place (CIP) floors, walls, precast ceiling panels, roof beams, and roof support columns. Secondary components of each vault include the concrete support pedestals, structural steel pipe supports, structural steel platforms, and manhole assemblies. Below is a general overview of the assessment of the structural systems observed and evaluated in the campus utility vaults. In all categories below, the infiltration of water into the vault is the most significant issue leading to the problems with each structural component. Water infiltration should be mitigated by properly waterproofing each vault from the exterior when the opportunity arises. Until each vault can be properly waterproofed from the exterior, measures should be taken to mitigate the infiltration of water from the inside of the vault. Water accumulating above the sumps should also be pumped out of the vault as soon as possible to limit further corrosion to the structural systems of the vault.

Concrete Floor, Walls, and Roof: To evaluate the condition of the concrete floor, walls, and roof of each vault beyond visual inspection, non-destructive testing (NDT) is required in order to determine the condition of the rebar. NDT was not performed and is beyond the scope of this evaluation. The floor, walls, and roof of each vault were visually examined for signs of stress cracking, corrosion of the concrete, and corrosion of the reinforcement. Typically, the corrosion of the reinforcement can't be seen directly, but spalling, cracking, and delaminating are indicators of reinforcement corrosion. Cracking due to stress and corrosion can be identified by the direction of the cracks as they propagate from the surface into the material. Most of the issues with the floor, walls, and ceilings are attributed to reinforcement corrosion.

Structural Steel Beams and Columns: To evaluate the condition of the structural steel beams and columns of each vault beyond visual inspection, non-destructive testing (NDT) is required in order to determine the condition of the base metal. NDT was not performed and is beyond the scope of this evaluation. The structural steel beams and columns were visually examined for signs of overstress and corrosion. Overstress can be seen as permanent deflection, localized bending of flanges and bearing plates, and buckling. There were no signs of overstress in any of the vaults examined. The main issue with the structural steel beams and columns was corrosion.

Structural Steel Pipe Supports: To evaluate the condition of the structural steel pipe supports of each vault beyond visual inspection, non-destructive testing (NDT) is required in order to determine the condition of the base metal. NDT was not performed and is beyond the scope of this evaluation. The structural steel pipe supports were visually examined for signs of overstress and corrosion. Overstress can be seen as permanent deflection, localized bending of flanges and bearing plates, and as buckling. There were no signs of overstress in any of the vaults examined. The main issue with the structural steel pipe supports was corrosion. The functionality of the supports is detailed in the sections below and in the appendices.

Concrete Pipe Support Pedestals: To evaluate the condition of the concrete pipe support pedestals of each vault beyond visual inspection, non-destructive testing (NDT) is required in order to determine the condition of the rebar. NDT was not performed and is beyond the scope of this evaluation. The concrete pipe support pedestals in each vault were visually examined for signs of stress cracking, corrosion of the concrete, and corrosion of the reinforcement. Typically, the corrosion of the reinforcement can't be seen directly, but spalling, cracking, and delaminating are indicators of reinforcement corrosion. Cracking due to stress and corrosion can be identified by the direction of the cracks as they propagate from the surface into the material. Most of the issues with the pedestals are stress cracks, as well as crumbling of the concrete, due to overloading. Overloading is most likely caused by improper functionality of the pipe guides and vertical supports.

Structural Steel Platforms: To evaluate the condition of the structural steel platforms of each vault beyond visual inspection, non-destructive testing (NDT) is required in order to determine the condition of the base metal. NDT was not performed and is beyond the scope of this evaluation. The structural steel platforms were visually examined for signs of overstress and corrosion. Overstress can be seen as permanent deflection, localized bending of flanges and bearing plates, and buckling. There were no signs of overstress in any of the vaults examined. The main issue with the structural steel platforms was corrosion. Some platforms had corroded so badly that pieces of the platform have fallen off. Another area of concern that was seen among the platforms was improper grating support. When grating is

improperly supported, large deflections occur and can create safety issues such as tripping or even failure of the grating itself.

Manhole Assemblies and Access Ladders: To evaluate the condition of the manhole assemblies and access ladders of each vault beyond visual inspection, non-destructive testing (NDT) is required. NDT was not performed and is beyond the scope of this evaluation. The manhole assemblies and access ladders were visually examined for signs of overstress and corrosion. Overstress is not an issue when it comes to these components of the vaults. Most of the issues with the manhole assemblies was the infiltration of water through the joints of the precast risers. The access ladders were generally in good condition. Some of the ladders were corroded near the base. A few attachments from the ladders to the walls and manhole risers were loose and should be addressed immediately.

Mechanical Evaluation

The mechanical evaluation of the campus utility vaults focused on the condition and functionality of the piping systems and accessories (steam, condensate, and chilled water), associated equipment (expansion joints, valves, steam traps), supports (anchors, guides, slides, and rollers), insulation and jacketing, and ventilation system (fan, intake and exhaust piping/ductwork). Below is a general overview of the assessment of the mechanical systems observed and evaluated in the campus utility vaults.

Vault Piping: To evaluate the physical condition of the piping systems beyond visual observations, noninvasive ultrasonic testing is typically necessary to determine pipe wall thickness and have results that show that there is or is not sufficient wall thickness remaining for the piping systems tested. Typically deteriorating pipe wall thickness is not a concern with steam and chilled water distribution systems due to the chemical treatment program implemented at the Central Utility Plant. However, condensate distribution systems are acceptable to deteriorating pipe wall thickness due to the presence of oxygen in the service, which is the reason for the schedule 80 pipe wall thickness requirement. Most of the piping systems visually observed appeared to be in good operating condition, but there were some issues and deficiencies identified that are detailed in the sections below and appendices.

Vault Expansion Joints: The expansion joint assemblies removeable insulation blankets were not removed, but the expansion joints visually observed appear to allow for the acceptable axial and lateral movement of the piping systems. The expansion joints also appear to have been sufficiently sized with the travel to accommodate the thermal expansion movement of the piping systems to prevent an overstressed piping situation and meet the allowable code stress. The primary deficiency associated with many of the utility vaults anchored expansion joint assemblies is the deterioration of the concrete anchor pedestals that have compromised the ability to properly anchor the expansion joints. The expansion joints visually observed appeared to be in good operating condition, but there were some issues and deficiencies identified associated with the concrete anchor pedestals that are detailed in the sections below and appendices.

Vault Valves: The valves where not physically operated, but most of the isolation valves visually observed appeared to be in good operating condition and had no signs of leaking or significant corrosion, but there were some issues and deficiencies identified that are detailed in the sections below and appendices.

Vault Steam Traps: Visual observations cannot identify all faulty steam traps, but most of the steam trap assemblies visually observed appeared to be in good operating condition and had

no signs of leaking or significant corrosion, but there were some issues and deficiencies identified that are detailed in the sections below and appendices.

Vault Anchors: Most of the pipe anchor assemblies visually observed appear to have been properly installed and are restraining the piping systems, and there are no significant signs of corrosion, bending, twisting or stress on the pipe and expansion joint structural steel anchor assemblies. The primary deficiency and potential life safety issue associated with a number of the utility vaults anchored assemblies is the deterioration of the concrete anchor pedestals that have compromised the ability to properly anchor the piping systems. The steel anchor assemblies visually observed appeared to be in good operating condition, but there were some issues and deficiencies identified associated with the concrete anchor pedestals that are detailed in the sections below and appendices.

Vault Guides: Most of the pipe guide assemblies visually observed appear to have been properly installed with the required cold offset to accommodate the anticipated movement of the piping systems when at operating temperature. There are no significant signs of binding, twisting or stress on the pipe guide assemblies. However, the majority of the pipe guide assemblies have significant corrosion in the form of rust, that eventually or may already be preventing or limiting the guides from having the free axial and lateral movement as intended, resulting in increased frictional stress and forces to the guide assembly, and associated piping and concrete pedestal. Another deficiency associated with several of the utility vaults guide assemblies is the deterioration of the concrete pedestals, that have compromised the ability to properly support and guide the piping systems. The pipe guide issues and deficiencies identified are detailed in the sections below and appendices.

Vault Supports: Most of the pipe roller supports appear to support the vertical load of the piping systems. There are no significant signs of stress on the pipe roller support assemblies. However, the majority of the pipe roller assemblies have significant corrosion in the form of rust, that eventually or may already be preventing or limiting the rollers from having the free axial and lateral movement as intended, resulting in increased frictional stress and forces to the support assembly, and associated piping and concrete pedestal or structural steel pipe stanchion. Another deficiency associated with several of the utility vaults support assemblies is the deterioration of the concrete pedestals or the significant corrosion in the form of rust to the base of the structural steel pipe stanchions, that have compromised the ability to properly support the piping systems. The pipe support issues and deficiencies identified are detailed in the sections below and appendices.

Vault Insulation and Jacketing: Most of the piping insulation and jacketing visually observed appeared to be in good condition, properly terminated, sealed and had no signs of significant physical damage or moisture damage. The piping insulation appeared to be of sufficient thickness to prevent excessive heat loss, condensation and maintain a safe temperature for maintenance personnel. However, there are some locations in the utility vaults that are missing a section of piping or valve insulation and jacketing most likely due to a repair that required the removal of the insulation and jacketing. The insulation and jacketing issues and deficiencies identified are detailed in the sections below and appendices.

Vault Ventilation: Many of the utility vaults visually observed included insufficient ventilation systems and piping/ductwork layouts with some fans inoperable and others in poor operating condition to provide an adequate amount of airflow within the utility vaults. In general, the ventilation systems within the utility vaults are necessary to reduce the humidity and temperature to acceptable levels and provide a good operating environment for

the utility systems, as well as a good working environment for the maintenance personnel. The ventilation issues and deficiencies identified are detailed in the sections below and appendices.

Electrical Evaluation

Electrical power is supplied to each vault via cables routed in below-grade ductbank which power dry-type transformers and panelboards dedicated to each vault. The panel boards feed lighting fixtures, convenience receptacles, vault ventilation fans and water level detection equipment. Each vault has a raceway system comprised of conduit, fittings and wireway which convey the power and signal circuits around the vault.

Vault Electrical: Each of the components cited above were visually inspected to ascertain their condition. Many vaults' electrical systems were in excellent shape with only minor issues such as missing covers or disconnects that were not weatherproof. Other vaults' electrical systems had experienced significant damage from heat, moisture and corrosion. The extent of these issues are detailed in the sections below and appendices.

Summary

After compiling the condition assessment tables that can be found in Appendix B, that list and prioritize the structural, mechanical, and electrical issues identified for each of the campus utility vaults observed, estimates of probable construction costs for each repair/replacement priority was prepared. The repair/replacement cost for each issue identified in the twenty-two (22) campus utility vaults was estimated using quotes for materials and equipment that are consistent with the materials and equipment that is currently being used within the campus utility vaults. The estimated costs for each repair/replacement priority group is listed in the Table below. A complete list of all detailed costs for each campus utility vault issue identified can be found in Appendix C.

The deterioration of utility vault's structural, mechanical, and electrical systems can primarily be contributed to ground water or piping leaks in the vaults and extreme temperatures in the vaults. Monitoring ground water in the vaults with the leak detection system and routine inspections and identifying and repairing pipe leaks in the vaults quickly will minimize the deterioration of the structural, mechanical, and electrical components. Monitoring and ensuring the piping systems and equipment are properly insulated and jacketed to minimize the heat in the vault and monitoring and ensuring adequate ventilation airflow throughout the vault will help to minimize the deterioration and extend the life of the structural, mechanical, and electrical systems.

Table of Contents

TABLES

APPENDICES

Section 1

Overview

Introduction

The University of Colorado Anschutz Medical Campus operates campus-wide steam, condensate and chilled water looped distribution systems throughout the Anschutz Medical Campus utilizing direct buried pre-insulated piping infrastructure systems with strategically located utility vaults housing expansion joints, valves, steam traps, building branch connections and other distribution system and utility vault accessories. The campus Central Utility Plant (CUP) located on the east side of the campus generates and distributes steam for heating and process services and chilled water for cooling and process services at the buildings spread throughout the Anschutz Medical Campus.

The purpose of this evaluation is to provide visual observations and assessment of the existing condition of the campus utility vaults and document deficiencies and areas of concern, so that repair or replacement projects can be anticipated, properly planned, and budgeted. The evaluation is intended to meet certain goals for the campus, and identify the necessary upgrades required to provide a safe, reliable, flexible, maintainable and cost-effective infrastructure system while considering existing conditions, constructability and optimizing available capital and schedule. Conceptual estimates of probable construction costs were developed for systems of concern that, in our opinion, pose a significant concern in terms of structural, mechanical, and electrical reliability and life safety. Systems of concern identified were documented in condition assessment tables and then ranked to help establish maintenance priorities for performing the necessary repairs. Overall site general arrangement drawings of the campus distribution systems and utility vaults were also prepared with the evaluation.

Background

The assessment evaluated twenty-two (22) campus utility vaults that included V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V10.1, V11, V12A, V12B, V13, V14, V15, V16, V17, V18, V19, and V20. The evaluation included visual observations and assessment of the structural integrity of the utility vaults and pipe support assemblies, and condition and functionality of the piping systems, associated equipment and supports, insulation and jacketing, ventilation system, lighting and convenience outlets.

The campus utility vaults are primarily large rectangular structures constructed of cast-in-place concrete walls and floor and pre-cast concrete roof assemblies to house the steam, condensate and chilled water piping systems and associated equipment, including expansion joints, valves, steam traps, air vents, vacuum breakers, pressure gauges, temperature gauges, pipe anchors, guides, and supports. The piping systems are primarily supported from structural steel support assemblies either anchored into concrete pedestals integral to the vault floor or anchored directly into the vault floor, and in some locations supported from hanger assemblies attached to the roof of the vault. The campus utility vaults generally have sufficient space for personnel to move around and perform maintenance on the piping systems and equipment. Access into the utility vaults can be through one of two manhole assemblies at grade with individual-rung ladders down into the vault typically to a structural steel platform assembly above the piping systems with a ladder assembly to the vault floor. The utility vaults are equipped with ventilation fans and exhaust air piping and intake air piping that terminate above grade with gooseneck assemblies. The utility vaults are also equipped with lighting that has a light switch mounted near each manhole access point into the vault and convenience outlets.

Objective

The objective of the evaluation was to visually observe the condition of twenty-two (22) campus utility vaults, develop overall site general arrangement drawings of the campus distribution systems and utility vaults, and develop condition assessment tables to document deficiencies and utility vault components of concern that could impact campus utility reliability, flexibility, maintainability and life safety. Deficiencies and systems of concern identified were prioritized based on urgency of repair or replacement to establish maintenance priorities for performing the necessary repairs or replacement, reference Table 1-1 below for repair/replacement priority definitions. Note that while the repair or replacement priority time period identified for deficiencies and systems of concern is based on our engineering judgement, there are other factors that are out of our control that can accelerate the urgency of the repair or replacement time period.

Table 1-1 Repair/Replacement Priority Definitions

Repair/Replacement Priority	Time Period
1	Immediately
2	1-5 Years
3	5-10 Years
4	Monitor

Conceptual cost estimates were developed to facilitate project planning and aid in funding requests for the repairs or replacements. The estimates of probable construction cost for each utility vault deficiency or system of concern were prepared, based on cost estimating data handbooks, past projects, and by contacting suppliers and obtaining budgetary pricing. The cost estimates include an undeveloped design contingency line item which is equal to 20% of the total labor and materials costs. The contingency for undeveloped design details costs is included at the conceptual design phase of the project as an allowance for equipment, materials and labor that will be included in the design that have yet to be addressed in detail. Additionally, the cost estimates include a 5% allowance for mobilization, 2.5% allowance for the bond, 8% allowance

for overhead, 7% allowance for profit, a 10% allowance for engineering, and a 6% allowance for inflation per year after the date of the cost estimate. These allowances are a percentage of the total labor and material costs.

The campus utility vault components that Stanley Consultants inspected and evaluated involved the following:

Vault Structures: The utility vaults structural walls, floors, and roofs were observed and locations where there are deficiencies in the concrete, i.e. cracking or spalling, were documented. Penetrations in the walls and roof that are allowing water and/or soil to enter the vault were also documented. In addition to the concrete, the steel platforms, beams and columns that support the roof panels were observed and locations of corrosion were documented.

Vault Pipe Supports: The overall condition of the concrete and structural steel pipe support assemblies utilized to support the piping systems and associated equipment, including anchors, guides and supports (i.e. roller supports) were documented. Any local deficiencies on individual pipe supports were noted.

Vault Piping Systems: The overall condition and functionality of the steam, condensate, and chilled water piping systems including expansion joints, valves, steam traps, anchors, guides, and supports were observed and locations where there are deficiencies in the piping systems and associated components, i.e. piping deterioration or leaking or misaligned expansion joints, insufficient or leaking valves, failed or leaking steam traps, and failed anchors, guides, or supports were documented.

Vault Piping Insulation & Jacketing: Insulation and jacketing for all piping systems were observed and locations where there are deficiencies in the piping insulation and jacketing systems, i.e. missing, deteriorated, or damaged and requiring replacement were documented. The observation assessment did not determine if insulation is asbestos containing material (ACM). Any insulation covering valves, expansion joints or other piping system accessories was not removed to allow for visual observation.

Vault Ventilation: The overall condition and functionality of the ventilation fans, associated piping/ductwork systems, and aboveground intake and exhaust piping were observed and locations where there are deficiencies in the ventilation system, i.e. deterioration, insufficient ventilation airflow, or hot air temperatures were documented.

Vault Lighting and Convenience Outlets: The overall condition and functionality of the vaults electrical lighting and convenience outlets were observed and locations where there are deficiencies in the electrical systems, i.e. deterioration or hazardous life safety issues were documented.

Section 2

Structural Evaluation

General

The structural evaluation of the campus utility vaults focused on observing the condition of the structural components that could be seen from the interior of the vault. The exterior of the vaults can only be visually observed by digging out the vault, which is impractical. Locations where there are deficiencies in the concrete and steel were documented. Penetrations or joints in the walls and roof that are allowing water and/or soil to enter the vault were also documented.

Structural drawings of the vaults were provided by CU Anschutz. While the vaults were designed by different companies at various times, the layouts, structural systems, and details are very similar. The vault floors and walls are cast-in-place (CIP) and the roof panels are removable precast concrete panels. The roof panels are supported by the concrete walls at the ends and a steel beam at or near the panel midspan. The steel beams are supported at the ends using beam pockets in the walls and in the center by a steel pipe column. Steel platforms with integral ladders provide access over the pipes at various locations in the vaults.

During inspection, some of the actively had standing water between two and six inches, and it was evident that most, if not all, had standing water up to two feet at some point in time. The joint between the walls and floor was cast with a waterstop in place which, when done correctly, creates a watertight seal that will last as long as the concrete itself. The roof panels were made to be removable, and thus the joints could not be cast with waterstops but were sealed using backer rod and joint sealant. Joint sealant is susceptible to failure by various methods including chemical attack, erosion, cracking due to age and joint movement. Joint sealant must be replaced periodically over time to maintain its effectiveness.

A geotechnical report, provided by CU Anschutz, was prepared by CTL Thompson Inc., project number DN44,558-125 in 2009 for the UC Denver Health and Wellness Building located at the intersection of Montview Boulevard and Quentin Street. The geotechnical report did not indicate elevated levels of sulfates or chlorides but did recommend that all walls in contact with subsoils be damp-proofed to avoid superficial damage.

Assessment

The concrete floor, walls, and roof that make up the envelope of the vaults were visually observed from the inside of the vault. Stress cracks, delaminating, spalling, and reinforcement corrosion were the main issues observed. Stress cracks were visually observed with crack depths running perpendicular to the depth of the concrete member. Delaminating and spalling are caused by reinforcement corrosion which is a result of excessive exposure to water containing sulfates or chlorides. When reinforcement corrodes and rust starts to form, the expansive nature of the rust pushes against the concrete until failure of the concrete surface occurs. Most of the issues with the floor, walls, and ceilings are attributed to reinforcement corrosion.

Structural steel beams and columns support the precast roof panels in each of the vaults. Corrosion of the beams, columns, base plates, anchorage, and beam pockets was the main issue observed. The corrosion of steel in the form of rusting can be observed on the surface however determination of the extent of rust into the thickness of the steel would require non-destructive testing (NDT) which was not performed. Most steel observed was painted with a red oxide shop coating which is not effective against corrosion due to excessive moisture exposure. A few vaults contained structural steel that was galvanized.

Similar to the steel beams and columns in the vaults, the main concern with the structural steel pipe support assemblies is corrosion. These pipe supports are designed to act as anchors, guides, or pins, depending upon the piping design arrangement. When pipe supports are required to move, corrosion in the form of rusting can restrict motion and create unintended support conditions which change the load path in the system. When the load path in the system is changed, pipe, pipe supports, structural steel supports, and pipe support pedestals can fail due to overloading. For more detail of the condition and functionality of the pipe supports refer to Section 3, Mechanical Evaluation. In this Section, the emphasis of evaluation is on the anchorage, base plates, and structural steel to which the pipe support attaches. In some instances, the pipe supports are directly anchored to concrete pedestals, and no structural steel is present.

Concrete pipe support pedestals support the various pipe anchors and guides in the vaults. These pedestals were observed for stress cracking, concrete breaking/crumbling as well as corrosion in the form of spalling or delaminating.

In order to access various areas and components in the vaults, steel platforms with integral ladders are used. Overall stability, presence of corrosion and base plate and anchorage integrity was observed at each platform. Similar to the steel beams and columns in each vault, the platform steel corrosion in the form of rusting could only be seen on the surface as NDT was not performed.

Precast manhole assemblies were present in all the vaults observed, with either cast in ladder rungs or post installed ladders down to the vault floor. These precast assemblies make up the difference in elevation from the top of the vaults to grade while the ladders provide access from grade into the vault. The assemblies consist of precast risers and manhole lid sections. The primary issue with these assemblies is corrosion of the ladder and anchorage, as well as deterioration and corrosion of the concrete.

Concrete Floor, Walls, and Roof

Vault 1:

Overall the vault floor, walls, and roof are in very good condition. Vault 1 has access from the Central Utility Plant (CUP), and maintenance can be easily done. Evidence of water

leaking into the vault was seen at the manhole penetrations, and the wall to ceiling joints. Evidence of the vault floor having been patched was seen and caused no concern.

Vault 2:
Access to the vault floor was limited due to the significant corrosion of the ladders. From what could be seen, the floor is in good condition. Delaminating could be seen on both the walls and ceiling panels. Evidence of past ceiling repairs was seen. Evidence of water leaking into the vault was seen at the manhole penetrations and at the joints between the ceiling and walls.

Vault 3:
Standing water was observed to a depth of about 2" above the top of the sump pit. Despite the standing water, the floor is in good condition. The ceiling is in good condition overall, except at the location of the manhole openings. Splitting is most likely due to corrosion of the reinforcement. The walls are in good condition, except for the infill portion at the pipe penetrations. Buckling and delaminating was seen in the infill portion of the wall. Evidence of water leaking at the ceiling to wall joints was seen.

Vault 4:
The vault floor is in good condition. Some walls and ceiling panels have delaminating and spalling present. Between pipe penetrations, spalling of the walls was observed. One ceiling panel is not set properly onto the walls and supporting beam. Evidence of water leaking was seen due to the panel not being correctly set as well as at the ceiling to wall joints.

Vault 5:
Standing water was observed to a depth of about 1" above the top of the sump pit. Despite the standing water, the floor is in good condition. The ceiling is in good condition. The walls are in good condition, except for a few areas where delaminating and spalling was observed. Evidence of water leaking at the ceiling to wall joints could be seen.

Vault 6:
The vault floor and ceiling panels are in good condition. Some walls have delaminating present. Evidence of water leaking at the ceiling to wall joints was seen.

Vault 7:
The vault floor is in good condition. Delaminating was seen on both the walls and ceiling panels. Past repair of the walls and ceiling panels near the manhole openings was observed. Evidence of water leaking into the vault was seen at the manhole penetrations, at the joints between the ceiling and walls, at the joints between ceiling panels, and at the HVAC penetrations.

Vault 8:
The vault floor and walls are in good condition. Splitting was observed at one of the ceiling panels at the manhole opening, most likely due to corrosion of the reinforcement. Minor spalling was seen at a few of the piping penetrations. Evidence of water leaking into the vault was seen at the manhole penetrations, at the joints between the ceiling and walls, and at the joints between ceiling panels.

Vault 9:
The vault floor is in good condition. Delaminating was seen on both the walls and ceiling panels. Spalling, due to core drilling of the walls, was observed at some of the pipe

penetrations. Evidence of water leaking into the vault was seen at the manhole penetrations, at the joints between the ceiling and walls, and at the joints between ceiling panels.

Vault 10:
Overall the vault floor, walls, and roof are in good condition. Evidence of water leaking into the vault was seen at the manhole penetrations, at the joints between the ceiling and walls, and at the joints between ceiling panels.

Vault 10.1:
Overall the vault floor, walls, and roof are in good condition. Evidence of water leaking into the vault was seen at the manhole penetrations and at a few of the piping penetrations.

Vault 11:
The vault floor is in good condition. Delaminating was seen on both the walls and ceiling panels. Evidence of water leaking into the vault was seen at the manhole penetrations and at the joints between the ceiling and walls.

Vault 12A:
Standing water was observed to a depth of about 1" above the top of the sump pit. Despite the standing water, the floor is in good condition. The walls and ceiling are in good condition. Evidence of water leaking at the ceiling to wall joints was seen.

Vault 12B:
The vault floor is in good condition. Delaminating was seen on the walls. The ceiling panels are in good condition. Evidence of ceiling repair was observed near one of the manholes. Evidence of water leaking into the vault was seen at the manhole penetrations, at the joint between the ceiling and walls, and at the joint between ceiling panels.

Vault 13:
The vault floor is in good condition, despite being covered by a thick mineral layer. Delaminating was seen on both the walls and ceiling panels. Evidence of water leaking into the vault was seen at the manhole penetrations, at the joints between the ceiling and walls, and at the joints between ceiling panels.

Vault 14:
Overall the vault floor, walls, and roof are in good condition. One of the sump pits was completely full of debris at the time of observation. Evidence of water leaking into the vault was seen at the manhole penetrations, at the joints between the ceiling and walls, and at a few of the piping penetrations.

Vault 15:
The vault floor is in good condition. Delaminating was seen on the walls. The ceiling panels are in good condition. Evidence of water leaking into the vault was seen at the manhole penetrations, at the joints between the ceiling and walls, and at the joints between ceiling panels.

Vault 16:
Overall the vault floor, walls, and roof are in good condition. Evidence of water leaking into the vault was seen at the manhole penetrations and at the joints between the ceiling and walls.

Vault 17:
Overall the vault floor, walls, and roof are in good condition. Evidence of water leaking into the vault was seen at the manhole penetrations and at the joints between the ceiling and walls.

Vault 18:
Overall the vault floor, walls, and roof are in good condition. Evidence of water leaking into the vault was seen at the manhole penetrations, at the joints between the ceiling and walls, and at a few of the piping penetrations.

Vault 19:
Standing water was observed to a depth of about 1" above the top of the sump pit. Overall the vault floor, walls, and roof are in good condition. Evidence of water leaking into the vault was seen at the manhole penetrations and at the joints between the ceiling and walls.

Vault 20:
Overall the vault floor, walls, and roof are in good condition. Evidence of water leaking into the vault was seen at the manhole penetrations and at the joints between the ceiling and walls.

Structural Steel Beams and Columns
Vault 1:
Overall the beams and columns are in good condition. There is minor corrosion at locations where water is leaking in through the roof panel joints both at the joints between panels and joints between the panels and the walls.

Vault 2:
The structural steel beam supporting the ceiling panels is in good condition. Major corrosion was seen at the column base, with rusty material actively flaking off.

Vault 3:
The structural steel beam supporting the ceiling panels is in good condition. Major corrosion was seen at the column base, despite standing water obscuring line of sight.

Vault 4:
The structural steel beam supporting the ceiling panel is in good condition. One ceiling panel is not fully bearing on the support beam as it was designed to do. Minor corrosion was seen at the column base.

Vault 5:
The structural steel beam supporting the ceiling panel is in good condition. Moderate corrosion was seen at the beam seat at the wall. Moderate corrosion was seen at the column base.

Vault 6:
The structural steel beam supporting the ceiling panels is in good condition. Minor corrosion could be seen at the beam pockets. Major corrosion was seen at the column base, with rusty material actively flaking off.

Vault 7:
The structural steel beam and column are in good condition.

Vault 8:
The structural steel beam and column are in good condition. The concrete pedestal supporting the steel column has some spalling due to reinforcement corrosion.

Vault 9:
The structural steel beam and column are in good condition.

Vault 10:
The structural steel beam and column are in good condition.

Vault 10.1:
This vault is smaller than the others on site, and no structural steel beam or column is present.

Vault 11:
The structural steel beam supporting the ceiling panels is in good condition. Minor corrosion was seen at the column base.

Vault 12A:
The structural steel beam supporting the ceiling panels is in good condition. Moderate corrosion was seen at the column base.

Vault 12B:
The structural steel beam supporting the ceiling panels is in good condition. Minor corrosion was seen at the column base.

Vault 13:
The structural steel beam supporting the ceiling panels is in good condition. Major corrosion was seen at the column base.

Vault 14:
The structural steel beam supporting the ceiling panels is in good condition. Moderate corrosion was seen at the column base.

Vault 15:
The structural steel beam supporting the ceiling panels is in good condition. Minor corrosion was seen at the beam seat at the wall. Major corrosion was seen at the column base.

Vault 16:
The structural steel beam supporting the ceiling panels is in good condition. Moderate corrosion was seen at the column base.

Vault 17:
The structural steel beam supporting the ceiling panels is in good condition. Minor corrosion was seen at the column base.

Vault 18:
The structural steel beam supporting the ceiling panels is in good condition. Minor corrosion was seen at the column base.

Vault 19:
The structural steel beam supporting the ceiling panels is in good condition. Minor corrosion was seen at the column base.

Vault 20:
The structural steel beam supporting the ceiling panels is in good condition. Minor corrosion was seen at the column base.

Structural Steel Pipe Supports
Vault 1:
The structural steel pipe supports are in very good condition.

Vault 2:
Access to the vault floor was limited due to the significant corrosion of the ladders. From what could be seen, the structural steel pipe supports were moderately corroded.

Vault 3:
The structural steel pipe supports were observed to have moderate corrosion.

Vault 4:
The structural steel pipe supports were observed to have moderate corrosion.

Vault 5:
The structural steel pipe supports were observed to have major corrosion.

Vault 6:
Most of the structural steel pipe supports are in good condition. A few of the supports are moderately corroded.

Vault 7:
The structural steel pipe supports were observed to have moderate corrosion.

Vault 8:
The structural steel pipe supports were observed to have moderate corrosion.

Vault 9:
The structural steel pipe supports were observed to have minor corrosion.

Vault 10:
The structural steel pipe supports were observed to have moderate to major corrosion.

Vault 10.1:
The structural steel pipe supports were observed to have moderate to major corrosion.

Vault 11:
The structural steel pipe supports were observed to have moderate to major corrosion.

Vault 12A:
The structural steel pipe supports were observed to have moderate to major corrosion.

Vault 12B:
The structural steel pipe supports were observed to have moderate corrosion.

Vault 13:
The structural steel pipe supports were observed to have major corrosion.

Vault 14:
The structural steel pipe supports were observed to have moderate corrosion.

Vault 15:
The structural steel pipe supports were observed to have moderate to major corrosion.

Vault 16:
The structural steel pipe supports were observed to have major corrosion.

Vault 17:
The structural steel pipe supports were observed to have minor to moderate corrosion.

Vault 18:
The structural steel pipe supports were observed to have minor corrosion.

Vault 19:
The structural steel pipe supports were observed to have minor to moderate corrosion.

Vault 20:
The structural steel pipe supports were observed to have moderate to major corrosion.

Concrete Pipe Support Pedestals
Vault 1:
The concrete pipe support pedestals are in very good condition.

Vault 2:
Access to the vault floor was limited due to the significant corrosion of the ladders. All the concrete pipe support pedestals are in poor condition. The pedestals were observed to be delaminating, crumbling, and showed signs of stress cracking.

Vault 3:
Most of the concrete pipe support pedestals are in good condition. A few pedestals have minor cracking and corners broken off. A pedestal was repaired with steel clamping the pedestal together. This pedestal repair was not fully done in accordance with the design drawings.

Vault 4:
The concrete pipe support pedestals are in good condition. Minor surface corrosion and broken corners were seen.

Vault 5:
Most of the concrete support pedestals are in poor condition. The pedestals were observed to be crumbling and showed signs of stress cracking. Some pedestals were repaired with steel

clamping the pedestal together. These pedestals repairs were not fully done in accordance with the design drawings.

Vault 6:
Most of the concrete pipe support pedestals are in good condition. A few pedestals were observed to have spalling. One pedestal shows signs of stress cracking with portions of the concrete starting to fall off from the rest of the pedestal.

Vault 7:
One of the concrete pipe support pedestals is in poor condition and is cracking and crumbling. The rest of the pedestals are in good condition.

Vault 8:
One of the concrete pipe support pedestals is in poor condition and is cracking and crumbling. The rest of the pedestals are in good condition

Vault 9:
The concrete pipe support pedestals are in good condition.

Vault 10:
The concrete pipe support pedestals are in good condition.

Vault 10.1:
The concrete pipe support pedestals are in good condition.

Vault 11:
One of the concrete pipe support pedestals is in poor condition and is cracking and crumbling.

Vault 12A:
The concrete pipe support pedestals are in good condition.

Vault 12B:
The concrete pipe support pedestals are in good condition.

Vault 13:
The concrete pipe support pedestals are in good condition.

Vault 14:
The concrete pipe support pedestals are in good condition. One pedestal was repaired with steel clamping the pedestal together. This pedestal repair was not fully done in accordance with the design drawings.

Vault 15:
The concrete pipe support pedestals are in good condition.

Vault 16:
The concrete pipe support pedestals are in good condition.

Vault 17:
The concrete pipe support pedestals are in good condition.

Vault 18:
The concrete pipe support pedestals are in good condition.

Vault 19:
The concrete pipe support pedestals are in good condition.

Vault 20:
The concrete pipe support pedestals are in good condition.

Structural Steel Platforms
Vault 1:
The structural steel platforms are in very good condition from a material standpoint. There is minor corrosion on the base of one platform. Stability of two platforms is a concern. Upon inspection, no grout is installed under the base plates of the platforms.

Vault 2:
The structural steel platforms are in very poor condition. Support legs are completely eaten through by corrosion and have fallen off. The platforms deflect significantly under the weight of a single person and are no longer performing as designed. The bearing bars on the grating are either spanning incorrectly, or a supporting member is no longer where it should be to provide adequate support.

Vault 3:
The structural steel platforms are in poor condition. Support legs and bases showed major corrosion. The bearing bars on the grating are either spanning incorrectly, or a supporting member is no longer where it should be to provide adequate support.

Vault 4:
One of the structural steel platforms is in poor condition, while the other is in fair condition. Support legs, bases and beams showed minor to major corrosion. The bearing bars on the grating are either spanning incorrectly, or a supporting member is no longer where it should be to provide adequate support.

Vault 5:
One of the structural steel platforms is missing and it appeared that the base had completely corroded through. The other platform is in poor condition. The support legs and bases showed major corrosion. The bearing bars on the grating are either spanning incorrectly, or a supporting member is no longer where it should be to provide adequate support.

Vault 6:
The structural steel platforms are in fair condition. Support legs and bases showed moderate to major corrosion.

Vault 7:
One of the structural steel platforms is in poor condition, while the other is in fair condition. Support legs and bases showed minor to major corrosion.

Vault 8:
Only one of the original two structural steel platform is present. Support legs and bases showed moderate corrosion.

Vault 9:
The structural steel platforms are in good condition. Support legs and bases showed minor corrosion.

Vault 10:
The structural steel platforms are in good condition. Support legs and bases showed minor corrosion.

Vault 10.1:
This vault is smaller than the others on site, and no structural steel platforms are present.

Vault 11:
The structural steel platforms are in fair condition. Support legs and bases showed moderate to major corrosion.

Vault 12A:
The structural steel platforms are in fair condition. Support legs and bases showed moderate to major corrosion.

Vault 12B:
The structural steel platforms are in fair condition. Support legs and bases showed moderate to major corrosion.

Vault 13:
One of the structural steel platforms is in poor condition, while the other is in fair condition. Support legs and bases showed moderate to major corrosion.

Vault 14:
Only one of the original two structural steel platform is present. Support legs and bases showed moderate corrosion.

Vault 15:
The structural steel platforms are in fair condition. Support legs and bases showed moderate to major corrosion.

Vault 16:
The structural steel platforms are in fair condition. Support legs and bases showed moderate to major corrosion.

Vault 17:
The structural steel platforms are in fair condition. Support legs and bases showed minor to moderate corrosion.

Vault 18:
The structural steel platforms are in good condition. Support legs and bases showed minor to corrosion.

Vault 19:
The structural steel platforms are in fair condition. Support legs and bases showed minor to moderate corrosion.

Vault 20:
The structural steel platforms are in good condition. Support legs and bases showed minor corrosion.

Manhole Assemblies and Access Ladders
Vault 1:
The vault is accessed via doorways adjacent to the CUP and the manholes and ladder rungs are not used for access. At one manhole, there is evidence of water leaking into the vault which can be seen on the ceiling.

Vault 2:
The manhole risers are cracked and showed signs of past repair. Water can be seen leaking through the cracks and joints of the risers. The ladders from grade do not extend fully to the vault floor, nor is there a platform directly under the ladders. Moderate corrosion is present on the ladders and anchor rods.

Vault 3:
The manhole risers are in good condition. The ladders from grade do not extend fully to the vault floor, nor is there a platform directly under the ladders. Minor corrosion is also present on the ladders and anchor rods.

Vault 4:
The manhole risers are in good condition. The ladders from grade do not extend fully to the vault floor, nor is there a platform directly under the ladders. Minor corrosion is present on the ladders and anchor rods

Vault 5:
The manhole risers are in good condition. Minor corrosion is present on the ladders and anchor rods.

Vault 6:
The manhole risers are in good condition. The ladders are also in good condition.

Vault 7:
The manhole risers have been repaired in the past. The repair seems to be holding up well. The ladders are in good condition, but some of the anchorage is loose.

Vault 8:
The manhole risers are in good condition. Both ladders are in poor condition and present safety concerns. Major corrosion is present on the ladders and anchor rods.

Vault 9:
The manhole risers are in good condition. The ladders are also in good condition.

Vault 10:
The manhole risers are in good condition. The ladders are also in good condition.

Vault 10.1:
The manhole risers are in good condition. One of the ladders has moderate corrosion at the base.

Vault 11:
The manhole risers are in good condition. The ladders are also in good condition.

Vault 12A:
The manhole risers are in good condition. The ladders are also in good condition.

Vault 12B:
The manhole risers have been repaired in the past. The repair seems to be holding up well. The ladders are in good condition.

Vault 13:
The manhole risers are in good condition. The ladders are also in good condition.

Vault 14:
The manhole risers are in good condition. The ladders are also in good condition. One of the ladders is loose near the top and should be tightened.

Vault 15:
The manhole risers are in good condition. One of the ladders has moderate corrosion at the base.

Vault 16:
The manhole risers are in good condition. The ladders are also in good condition.

Vault 17:
The manhole risers are in good condition. The ladders are also in good condition.

Vault 18:
The manhole risers are in good condition. The ladders are also in good condition.

Vault 19:
The manhole risers are in good condition. The ladders are also in good condition.

Vault 20:
The manhole risers are in good condition. The ladders are also in good condition.

Section 3

Mechanical Evaluation

General

The mechanical evaluation of the campus utility vaults focused on the condition and functionality of the piping systems, associated equipment (expansion joints, valves, and steam traps), supports (anchors, guides, slides, and rollers), insulation and jacketing, and ventilation system (fan, intake and exhaust piping/ductwork). The piping systems and accessories housed in the campus utility vaults include:

Steam Supply (STM): Steam operating at a pressure of 125 psig and 353 °F is supplied throughout the campus for building heating, domestic hot water, and research process needs. The steam distribution system from the Central Utility Plant to the campus buildings utilizes direct-buried pre-insulated high temperature, combination of drainable, dryable, testable type conduit system with cast-in-place concrete utility vaults to house the steam system expansion joints, valves, steam traps, insulation and jacketing, anchors, guides, supports, and branch connections to the campus buildings.

Condensate Return (CND): Condensate operating at a pressure of 15 psig and 200 °F is returned to the Central Utility Plant utilizing condensate return pumps at the campus buildings. The condensate distribution system from the campus buildings to the Central Utility Plant utilizes direct-buried pre-insulated high temperature, combination of drainable, dryable, testable type conduit system with cast-in-place concrete utility vaults to house the condensate system expansion joints, valves, insulation and jacketing, anchors, guides, supports, and branch connections from the campus buildings.

Chilled Water Supply and Return (CHWS/R): Chilled water operating at a supply temperature of 40 °F and a return temperature of 56 °F is distributed throughout the campus for building cooling and research process needs. The chilled water distribution system from/to the Central Utility Plant and from/to the campus buildings utilizes direct-buried pre-insulated low temperature system with cast-in-place concrete utility vaults to house the chilled water system valves, insulation and jacketing, supports, and branch connections from/to the campus buildings.

Ventilation Fans: The ventilation system to maintain acceptable temperatures within the utility vaults consists of an inline ventilation fan connected to piping that exhausts the hotter air within the vault to the outdoors through buried piping to an above grade gooseneck assembly, and another separate pipe is stubbed into the vault to allow cooler make-up (intake) outside air to be drawn into the vault through buried piping to an above grade gooseneck assembly.

The main twenty-two (22) campus utility vaults that were evaluated except for the newer branch vault V10.1 to the northwest house the main utility distribution systems consisting of 20-inch Steam Supply, 8-inch Condensate Return, and 20-inch Chilled Water Supply and Return. The east side of the main utility distribution loop nearest the Central Utility Plant that includes utility vaults V1, V2, V3, V4, V5, V15, V16, V17, V18, V19, and V20 have dual 20-inch Chilled Water Supply and Return mains. The west side of the main utility distribution loop that includes vaults V7, V8, V9, V10, V11, V12A, V12B, V13, and V14 have single 20-inch Chilled Water Supply and Return mains. The utility vault V6 in the middle of the distribution loop allows for a bypass between the east side of the main utility distribution loop and the west side of the main utility distribution loop from the north vault V5, through vault V6, and completes the main bypass at the south vault V15. The campus utility vaults also house branch steam, condensate, and chilled water utility distribution systems of various sizes feeding the campus buildings near each of the vaults, or allow for future connections for branch steam, condensate, and chilled water feeds for campus buildings. Overall site utility distribution systems general arrangement drawings identifying the campus utility vaults, main distribution piping sizes, and the various branch piping to campus buildings and piping sizes can be found in Appendix A.

Assessment

The campus utility vault mechanical systems observed and evaluated included piping, expansion joints, valves, steam traps, anchors, guides, supports, insulation and jacketing, and ventilation. The on-site field observations of the mechanical systems located within the utility vaults did result in the identification of some deficiencies and systems of concern, and the identification of some potential life safety issues. Most of the deficiencies identified are contributed to issues over the years from system leaks primarily from the condensate service or ground water into the vaults, and excessive heat in the vaults from damaged or the lack of insulation and jacketing and insufficient or inoperable ventilation fans. These issues are typical of most utility vault systems, and CU Anschutz has been proactive over the years to take the necessary measures to help minimize the deterioration of the utility vault systems. CU Anschutz has implemented a leak detection system in each vault to identify any leaks or ground water in the vaults as early as possible, the piping systems have been reinsulated with ridged cellular glass insulation and aluminum jacketing to better withstand any damage and breakdown from being walked on, and there are plans to upgrade the ventilation fan systems and reroute the piping/ductwork as necessary to better ventilate each of the vaults. In general, considering accessibility and the environment the utility vaults have been exposed to, most of the mechanical systems appear to be in acceptable condition, are being maintained, and in good operating condition. Below is an overview of the assessment of the mechanical systems observed and evaluated in each of the campus utility vaults. For descriptions and identification of repair/replacement priorities in each of the campus utility vaults reference the mechanical condition assessment table in Appendix B.

Vault Piping

The large-bore (typically 2-1/2-inch and larger) piping systems observed for main and branch distribution systems consist of butt-welded carbon steel piping with flange connections to expansion joints and valves. The steam supply and chilled water supply and return piping systems are constructed of schedule 40 carbon steel piping. The condensate return piping systems are constructed of schedule 80 carbon steel piping. The small-bore (typically 2-inch

and smaller) piping systems observed for steam trap assemblies, steam valve bypass assemblies, drain assemblies, and air vent and vacuum breaker assemblies consist of threaded schedule 80 carbon steel piping.

Typically, deficiencies or areas of concern within piping systems are typically associated with the condensate service, or may be caused by a problem in the vault, such as a chronic vault leak that damaged or saturated insulation, frequent fluid velocity issues due to under sizing of pipes, an emergency repair that was never permanently fixed, insufficient steam drip leg assemblies or failed steam trap assemblies, improperly supported, aligned or restrained piping resulting in excessive stress or expansion joint failure, piping layout resulting in excessive stress, or simply the age of the piping in the area is near the end of its service life expectancy.

To evaluate the physical condition of the piping systems beyond visual observations, noninvasive ultrasonic testing is typically necessary to determine pipe wall thickness and have results that show that there is or is not sufficient wall thickness remaining for the piping systems tested. Typically deteriorating pipe wall thickness is not a concern with steam and chilled water distribution systems due to the chemical treatment program implemented at the Central Utility Plant. However, condensate distribution systems are acceptable to deteriorating pipe wall thickness due to the presence of oxygen in the service, which is the reason for the schedule 80 pipe wall thickness requirement. Most of the piping systems visually observed appeared to be in good operating condition, but there were some issues and deficiencies identified. Below is an overview of the assessment of the vault piping observed and evaluated in each of the campus utility vaults.

Vault 1:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations.

Vault 2:
The direct buried branch pre-insulated condensate piping system service to the south outside the vault has failed from the piping inside out and leaked condensate into the pre-insulated piping conduit system and then eventually into the vault. A project is in place to replace the section of pre-insulated condensate piping that has failed outside of the vault. Most of the small-bore piping and associated air vents, vacuum breakers, and gauges are deteriorating and have significant corrosion in the form of rust. The large-bore piping appears to be in good operating condition. Many of the vault penetrations piping link-seals appear to be damaged/melted and may not be sealing the penetration due to the excessive heat in the vault.

Vault 3:
Pressure gauge, air vent, vacuum breaker assembly on chilled water riser is rotated 90 degrees and is in the horizontal orientation rather than the vertical orientation. Steam and condensate pre-insulated piping penetration assemblies for branch piping services to the north are very damaged due to what appears to be excessive heat or a leak at one time. The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations, except for the steam and condensate branch piping services to the north appear to be damaged/melted due to the excessive heat.

Vault 4:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations. The condensate riser is missing the pressure gauge.

Vault 5:
Ground water is leaking into the vault and it may be coming in through the manhole covers. The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition but may require adjustment to make sure the vault piping penetrations are not allowing ground water to leak into the vault.

Vault 6:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations.

Vault 7:
The large-bore piping appears to be in good operating condition. Most of the small-bore piping and associated air vents, vacuum breakers, and gauges are deteriorating and have significant corrosion in the form of rust. The main steam valve bypass assembly on the east end of the vault has been removed and needs to be reinstalled. The link-seal assemblies are in good condition and are sealing the vault piping penetrations, however the link-seal assembly on the chilled water main on the west end of the vault is not properly installed and appears to be the incorrect size for the piping penetration.

Vault 8:
The large-bore piping appears to be in good operating condition. Most of the small-bore piping and associated air vents, vacuum breakers, and gauges are deteriorating and have significant corrosion in the form of rust. No walkway platform over the piping on the west end of the vault has been installed. The link-seal assemblies are in good condition and are sealing the vault piping penetrations.

Vault 9:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations.

Vault 10:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations.

Vault 10.1:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations. It appears that ground water most likely from the irrigation system is leaking into the vault between the concrete vault wall and the steel wall sleeve for the steam, condensate, and chilled water piping penetrations for services to the west.

Vault 11:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assembly on the steam branch service to the east appears to have melted due to excessive temperatures, but all the other link-seal assemblies are in good condition and are sealing the vault piping penetrations.

Vault 12A:
The pipe nipple for the steam trap assembly at the connection to the condensate branch service to the south has corroded and is leaking. The pipe nipple for the air vent, vacuum breaker, and pressure gauge assembly on the condensate branch service to the south has corroded and is leaking. All the other small-bore piping and accessories appear to be in good operating condition. The large-bore piping appears to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations.

Vault 12B:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations.

Vault 13:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations.

Vault 14:
The large-bore and small-bore piping and accessories appear to be in good operating condition. Some of the small-bore piping and accessories are showing signs of corrosions in the form of rust, specifically on the condensate system. The pressure gauge assembly on the condensate branch riser service to the south is leaking. Many of the vault penetrations piping link-seals appear to be damaged/melted and may not be completely sealing the penetration due to the excessive heat in the vault.

Vault 15:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations.

Vault 16:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations. This is a pass-thru vault with piping mains only and doesn't include any branch services or connections for future branch services.

Vault 17:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations.

Vault 18:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping

penetrations. The steam main penetration on the west end of the vault appears to at one time allowed ground water to leak into the vault either at the link-seal or between the concrete vault wall and the steel wall sleeve.

Vault 19:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations.

Vault 20:
The large-bore and small-bore piping and accessories appear to be in good operating condition. The link-seal assemblies are in good condition and are sealing the vault piping penetrations.

Vault Expansion Joints
The expansion joint assemblies observed consist of either single or double packed slip tube with anchor base type which allows for additional packing to be injected while the expansion joint is under full line pressure. The expansion joint assemblies require piping supports, guides and anchors at specific locations and distances to allow for the proper support, alignment, restraint and displacement of the piping due to thermal expansion of the steam and condensate systems.

Typically, deficiencies or areas of concern within piping expansion joint assemblies are caused by insufficient or incorrect guiding and anchoring of the piping to allow for the required axial and lateral movements, incorrect support types located on the piping systems to accommodate the acceptable expansion joint movements, and undersized expansion joint travel to accommodate the displacement of the piping systems due to the thermal expansion. All these issues can result in the piping and expansion joints being overstressed or misaligned and exceeding the allowable code stress limits imposed by ASME B31.1. Expansion joint assemblies that show signs of leaks or corrosion can often be attributed to problems with neighboring supports or guides that allow the expansion joint to become misaligned.

The expansion joint assemblies removeable insulation blankets were not removed, but the expansion joints visually observed appear to allow for the acceptable axial and lateral movement of the piping systems. The expansion joints also appear to have been sufficiently sized with the travel to accommodate the thermal expansion movement of the piping systems to prevent an overstressed piping situation and meet the allowable code stress. The primary deficiency associated with many of the utility vaults anchored expansion joint assemblies is the deterioration of the concrete anchor pedestals that have compromised the ability to properly anchor the expansion joints. The deterioration and issues with these concrete anchor pedestals are addressed under Section 2, Structural Evaluation. Below is an overview of the assessment of the vault expansion joints observed and evaluated in each of the campus utility vaults.

Vault 1:
The bellows type expansion joint on the steam mains bypass piping appears to be in good working condition and does not include a removeable insulation blanket.

Vault 2:
The double slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 3:
The single slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 4:
The double slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 5:
There are no expansion joints on the steam and condensate services, only anchor assemblies.

Vault 6:
The double slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 7:
The single slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 8:
The single slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 9:
The single slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 10:
The single slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 10.1:
The single slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 11:
The double slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 12A:
The single slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 12B:
The single slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 13:
The single slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 14:
The single slip expansion joints on the steam and condensate services appear to be in acceptable working condition and include a removable insulation blanket.

Vault 15:
There are no expansion joints on the steam and condensate services, only anchor assemblies.

Vault 16:
The two single slip expansion joints on each of the steam and condensate services on the east and west ends of the vault appear to be in acceptable working condition and include a removable insulation blanket. The expansion joints do not include an integral anchor base, the piping systems have a separate structural steel anchor assembly.

Vault 17:
There are no expansion joints on the steam and condensate services, only anchor assemblies.

Vault 18:
The two single slip expansion joints on each of the steam and condensate services on the east and west ends of the vault appear to be in acceptable working condition and include a removable insulation blanket. The expansion joints do not include an integral anchor base, the piping systems have a separate structural steel anchor assembly.

Vault 19:
There are no expansion joints on the steam and condensate services, only anchor assemblies.

Vault 20:
The two single slip expansion joints on each of the steam and condensate services on the north and south ends of the vault appear to be in acceptable working condition and include a removable insulation blanket. The expansion joints do not include an integral anchor base, the piping systems have a separate structural steel anchor assembly.

Vault Valves
The large-bore butt-welded piping manual isolation valves observed for main and branch piping systems consist of double-flanged or lug type butterfly valve assemblies. The steam piping manual isolation valves generally consist of double flanged Style, triple offset, metal seated, bi-directional zero leakage butterfly valves. The condensate piping manual isolation valves generally consist of lug style, double offset butterfly valves. The chilled water piping manual isolation valves generally consist of lug style, resilient seated butterfly valves. The small-bore threaded piping manual isolation valves observed for steam trap assemblies, steam valve bypass assemblies, drain assemblies, and air vent and vacuum breaker assemblies consist of a combination of threaded ball, gate or globe valves.

Typically, deficiencies observed with manual isolation valves can be caused by the valves not being routinely exercised, as well as the heat and pressure applied by the system overtime. Isolation valves often develop external leaks at the stem packing and flange gaskets, or internal leaks at the seats and disc that doesn't allow the valve to have a tight shutoff.

The valves where not physically operated, but most of the isolation valves visually observed appeared to be in good operating condition and had no signs of leaking or significant corrosion, but there were some issues and deficiencies identified. Below is an overview of

the assessment of the vault valves observed and evaluated in each of the campus utility vaults.

Vault 1:
The large-bore piping butterfly valves and the small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault 2:
Many of the large-bore piping butterfly valves have actuators that show signs of significant corrosion in the form of rust and may not be operable due to the corrosion. Most of the small-bore ball, gate, and globe valves are deteriorating and have significant corrosion in the form of rust and may not be operable due to the corrosion.

Vault 3:
The condensate riser butterfly valve is leaking on the valve stem bottom and requiring the vault to be pumped out regularly. The ball drain valve after the leaking butterfly valve for the condensate service to the south is leaking. The other large-bore piping butterfly valves and the small-bore piping ball, gate, and globe valves appear to be in good working condition

Vault 4:
The large-bore piping butterfly valves and the small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault 5:
The large-bore piping butterfly valves and the small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault 6:
The large-bore piping butterfly valves and the small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault 7:
The large-bore piping butterfly valves appear to be in good working condition. Most of the small-bore ball, gate, and globe valves are deteriorating and have significant corrosion in the form of rust and may not be operable due to the corrosion.

Vault 8:
The large-bore piping butterfly valves appear to be in good working condition. Most of the small-bore ball, gate, and globe valves are deteriorating and have significant corrosion in the form of rust and may not be operable due to the corrosion.

Vault 9:
The large-bore piping butterfly valves and the small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault 10:
The large-bore piping butterfly valves and the small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault 10.1:
The large-bore piping butterfly valves and the small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault 11:
The large-bore piping butterfly valves and the small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault 12A:
The large-bore piping butterfly valves appear to be in good working condition. The small-bore piping ball, gate, and globe valves appear to be in good working condition, except for those valves on the condensate branch service to the south are corroded.

Vault 12B:
The large-bore piping butterfly valves appear to be in good working condition. The small-bore piping ball, gate, and globe valves appear to be in good working condition, except for the steam trap assembly bypass valve on the branch service piping to the south is leaking and needs replaced.

Vault 13:
The large-bore piping butterfly valves and the small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault 14:
The large-bore piping butterfly valves and the small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault 15:
The large-bore piping butterfly valves and the small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault 16:
There are no isolation valves on the west end of the vault for the steam, condensate, and chilled water main piping. The large-bore piping butterfly valves appear to be in good working condition. The small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault 17:
There are no isolation valves on the west end of the vault for the chilled water main pipes furthest to the south. The large-bore piping butterfly valves appear to be in good working condition. The small-bore piping ball, gate, and globe valves appear to be in good working condition

Vault 18:
There are no isolation valves on the west end of the vault for the steam, condensate, and chilled water main piping. The large-bore piping butterfly valves appear to be in good working condition. The small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault 19:
There are no isolation valves on the west end of the vault for the steam, condensate, and chilled water main piping. The large-bore piping butterfly valves appear to be in good working condition. The small-bore piping ball, gate, and globe valves appear to be in good working condition, except for the steam trap assembly bypass valve on the branch service piping to the south is leaking and needs replaced.

Vault 20:
There are no isolation valves on the south end of the vault for the steam, condensate, and chilled water main piping. The large-bore piping butterfly valves and the small-bore piping ball, gate, and globe valves appear to be in good working condition.

Vault Steam Traps
The steam trap assemblies observed consist of the mechanical inverted bucket type. The steam trap assemblies are connected to drip legs on the steam distribution piping system and have threaded connections, unions on each side of the trap, an isolation valve and Y-type strainer on the inlet, a check valve and isolation valve on the outlet, and a bypass piping assembly with a globe valve around the steam trap assembly. The duty of the steam trap assemblies is to discharge condensate, air and other incondensable gases from a steam system while not permitting the escape of live steam.

Typically, deficiencies observed with steam trap assemblies can be caused by a lack of routine testing and maintenance of the traps. Steam traps will either be in good working order, leaking steam, or blocking flow. A major problem has always been the accurate identification of faulty traps. Wrong diagnosis can allow faulty traps to remain troublesome, and perfectly sound traps to be replaced unnecessarily.

Visual observations cannot identify all faulty steam traps, but most of the steam trap assemblies visually observed appeared to be in good operating condition and had no signs of leaking or significant corrosion, but there were some issues and deficiencies identified. Below is an overview of the assessment of the vault steam traps observed and evaluated in each of the campus utility vaults.

Vault 1:
The steam trap assemblies appear to be in good working condition.

Vault 2:
The steam trap assemblies are deteriorating and have significant corrosion in the form of rust and may not be in good working condition or faulty due to the corrosion.

Vault 3:
The steam trap assemblies appear to be in good working condition.

Vault 4:
The steam trap assemblies appear to be in good working condition.

Vault 5:
The steam trap on the drip leg for the steam service to the north has failed and needs to be replaced. The bypass around the steam trap assembly is open and is being utilized for the drip leg.

Vault 6:
The steam trap assemblies appear to be in good working condition.

Vault 7:
The steam trap assemblies are deteriorating and have significant corrosion in the form of rust and may not be in good working condition or faulty due to the corrosion.

Vault 8:
The steam trap assemblies are deteriorating and have significant corrosion in the form of rust and may not be in good working condition or faulty due to the corrosion.

Vault 9:
The steam trap assemblies appear to be in good working condition.

Vault 10:
The steam trap assemblies appear to be in good working condition.

Vault 10.1:
The steam trap assemblies appear to be in good working condition.

Vault 11:
The steam trap on the branch steam service drip leg to the east has been replaced with what appears to be a smaller capacity steam trap, however all the steam trap assemblies appear to be in good working condition.

Vault 12A:
The steam trap on the main steam drip leg has been replaced with what appears to be a smaller capacity steam trap, however all the steam trap assemblies appear to be in good working condition.

Vault 12B:
The steam trap assemblies appear to be in good working condition.

Vault 13:
The steam trap assemblies appear to be in good working condition.

Vault 14:
The steam trap assemblies appear to be in good working condition.

Vault 15:
The steam trap assemblies appear to be in good working condition.

Vault 16:
The steam trap assemblies appear to be in good working condition.

Vault 17:
The steam trap assemblies appear to be in good working condition.

Vault 18:
The steam trap assemblies appear to be in good working condition.

Vault 19:
The steam trap assemblies appear to be in good working condition.

Vault 20:
The steam trap assemblies appear to be in good working condition.

Vault Anchors
The pipe anchor assemblies observed consist of either an anchor base assembly integral to the single slip or double slip expansion joints by the manufacturer or fabricated structural steel assemblies welded to the piping. The structural steel pipe anchor assemblies are mounted on concrete anchor pedestals formed into the cast-in-place concrete vault floor. The pipe anchor assemblies are utilized on the steam and condensate piping systems to adequately accommodate the thermal expansion forces of the distribution systems.

Typically, deficiencies observed with pipe anchor assemblies are caused by missing anchor bolts, deteriorated or insufficiently reinforced concrete structures to resist the loads, insufficiently sized structural steel members to resist bending or twisting from the loads, and failures of the welds at the piping and steel members due to corrosion or cracking (bad welds).

Most of the pipe anchor assemblies visually observed appear to have been properly installed and are restraining the piping systems, and there are no significant signs of corrosion, bending, twisting or stress on the pipe and expansion joint structural steel anchor assemblies. The primary deficiency and potential life safety issue associated with a number of the utility vaults anchored assemblies is the deterioration of the concrete anchor pedestals that have compromised the ability to properly anchor the piping systems. The deterioration and issues with these concrete anchor pedestals are addressed under Section 2, Structural Evaluation. Below is an overview of the assessment of the vault anchors observed and evaluated in each of the campus utility vaults.

Vault 1:
The structural steel pipe anchor assemblies on the steam and condensate systems look to be in good condition.

Vault 2:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in acceptable condition with some surface rust.

Vault 3:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in acceptable condition with some surface rust.

Vault 4:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in acceptable condition with some surface rust.

Vault 5:
The structural steel pipe anchor assemblies on the steam and condensate systems look to be in acceptable condition with some surface rust.

Vault 6:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in acceptable condition with some surface rust.

Vault 7:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in acceptable condition with some surface rust.

Vault 8:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in acceptable condition with some surface rust.

Vault 9:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in good condition.

Vault 10:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in good condition.

Vault 10.1:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in good condition.

Vault 11:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in good condition.

Vault 12A:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in good condition.

Vault 12B:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in good condition.

Vault 13:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in good condition.

Vault 14:
The anchor base assembly integral to the expansion joint on the steam and condensate systems look to be in acceptable condition with some surface rust.

Vault 15:
The structural steel pipe anchor assemblies on the steam and condensate systems look to be in acceptable condition with some surface rust.

Vault 16:
The structural steel pipe anchor assemblies on the steam and condensate systems look to be in good condition.

Vault 17:
The structural steel pipe anchor assemblies on the steam and condensate systems look to be in good condition. The steam, condensate, and chilled water branch piping services to the south and north include anchor plates attached to vault wall.

Vault 18:
The structural steel pipe anchor assemblies on the steam and condensate systems look to be in good condition. The steam, condensate, and chilled water branch piping services to the north include anchor plates attached to vault wall.

Vault 19:
The structural steel pipe anchor assemblies on the steam and condensate systems look to be in good condition.

Vault 20:
The structural steel pipe anchor assemblies on the steam and condensate systems look to be in good condition.

Vault Guides
The pipe guide assemblies observed consist of fabricated low friction graphite pipe guides that allow for the vertical support, restricted lateral movement, and unrestricted axial movement and expansion of the steam and condensate piping systems. The pipe guide assemblies are welded to the piping and mounted on concrete pedestals formed into the cast-in-place concrete vault floor.

Typically, deficiencies observed with pipe guide assemblies are caused by not accounting for the required cold offset position to accommodate the hot movement and prevent the piping at the attached guides from moving outside the guide frame assembly. Also binding and twisting of the pipe guide assemblies due to missing anchor bolts, frictional forces on insufficiently sized structural steel pipe support assemblies or corrosion is common.

Most of the pipe guide assemblies visually observed appear to have been properly installed with the required cold offset to accommodate the anticipated movement of the piping systems when at operating temperature. There are no significant signs of binding, twisting or stress on the pipe guide assemblies. However, the majority of the pipe guide assemblies have significant corrosion in the form of rust, that eventually or may already be preventing or limiting the guides from having the free axial and lateral movement as intended, resulting in increased frictional stress and forces to the guide assembly, and associated piping and concrete pedestal. Another deficiency associated with several of the utility vaults guide assemblies is the deterioration of the concrete pedestals, that have compromised the ability to properly support and guide the piping systems. The deterioration and issues with these concrete pedestals are addressed under Section 2, Structural Evaluation. Below is an overview of the assessment of the vault guides observed and evaluated in each of the campus utility vaults.

Vault 1:
The pipe guide assemblies on the steam and condensate services look to be in good working condition.

Vault 2:
The pipe guide assemblies on the steam and condensate services are deteriorating and have significant corrosion in the form of rust that appears to be preventing or limiting the guides from having the free axial and lateral movement as intended.

Vault 3:
The pipe guide assemblies on the steam and condensate services are deteriorating and have significant corrosion in the form of rust that appears to be preventing or limiting the guides from having the free axial and lateral movement as intended. The guide assembly on the condensate main on the west side of the vault has failed and is no longer attached to the concrete pedestal with anchor bolts or attached to the piping.

Vault 4:
The pipe guide assemblies on the steam and condensate services show some signs of surface rust but look to be in good working condition. The exception to this is the guide on the condensate main on the west side of the vault has been installed at a slight angle and could be preventing or limiting the guide from having the free axial and lateral movement as intended.

Vault 5:
Pipe guide assemblies on the steam and condensate services are not installed since expansion joints are not utilized in the vault and only anchor assemblies are utilized for the systems.

Vault 6:
The pipe guide assemblies on the steam and condensate services show some signs of surface rust but look to be in good working condition.

Vault 7:
The pipe guide assemblies on the steam and condensate services are deteriorating and have significant corrosion in the form of rust that appears to be preventing or limiting the guides from having the free axial and lateral movement as intended.

Vault 8:
The pipe guide assemblies on the steam and condensate services are deteriorating and have significant corrosion in the form of rust that appears to be preventing or limiting the guides from having the free axial and lateral movement as intended.

Vault 9:
No pipe guide assemblies are utilized on the steam and condensate services. Pipe roller supports are utilized on the steam and condensate services.

Vault 10:
No pipe guide assemblies are utilized on the steam and condensate services. Pipe roller supports are utilized on the steam and condensate services.

Vault 10.1:
No pipe guide assemblies are utilized on the steam and condensate services. Pipe saddle type supports are utilized on the steam and condensate services.

Vault 11:
No pipe guide assemblies are utilized on the steam and condensate services. Pipe roller supports are utilized on the steam and condensate services.

Vault 12A:
No pipe guide assemblies are utilized on the steam and condensate services. Pipe roller supports are utilized on the steam and condensate services.

Vault 12B:
No pipe guide assemblies are utilized on the steam and condensate services. Pipe roller supports are utilized on the steam and condensate services.

Vault 13:
No pipe guide assemblies are utilized on the steam and condensate services. Pipe roller supports are utilized on the steam and condensate services.

Vault 14:
The pipe guide assemblies on the steam and condensate services show signs of surface rust but look to be in fair working condition.

Vault 15:
Pipe guide assemblies on the steam and condensate services are not installed since expansion joints are not utilized in the vault and only anchor assemblies are utilized for the systems.

Vault 16:
No pipe guide assemblies are utilized on the steam and condensate services. Pipe supports are utilized on the steam and condensate services.

Vault 17:
No pipe guide assemblies are utilized on the steam and condensate services. Pipe supports are utilized on the steam and condensate services.

Vault 18:
No pipe guide assemblies are utilized on the steam and condensate services. Pipe supports are utilized on the steam and condensate services.

Vault 19:
No pipe guide assemblies are utilized on the steam and condensate services. Pipe supports are utilized on the steam and condensate services.

Vault 20:
No pipe guide assemblies are utilized on the steam and condensate services. Pipe supports are utilized on the steam and condensate services.

Vault Supports
The typical pipe support assemblies observed consist of a cast iron roller assembly that is manufactured to fit each pipe size with an insulation protection saddle to allow for the vertical support, and unrestricted axial movement of the steam, condensate and chilled water piping systems. The roller support assemblies are mounted on either concrete pedestals formed into the cast-in-place concrete vault floor or structural steel pipe stanchions anchored directly to the vault floor.

Typically, deficiencies observed with pipe support assemblies involve the pipe support not in contact with the piping system or piping insulation protection saddle and needing adjustment.

Also binding and corrosion prevent the pipe roller support from allowing the free axial movement of the piping as intended, or the pipe roller support is simply damaged and no longer properly supporting the vertical load of the piping.

Most of the pipe roller supports appear to support the vertical load of the piping systems. There are no significant signs of stress on the pipe roller support assemblies. However, the majority of the pipe roller assemblies have significant corrosion in the form of rust, that eventually or may already be preventing or limiting the rollers from having the free axial and lateral movement as intended, resulting in increased frictional stress and forces to the support assembly, and associated piping and concrete pedestal or structural steel pipe stanchion. Another deficiency associated with several of the utility vaults support assemblies is the deterioration of the concrete pedestals or the significant corrosion in the form of rust to the base of the structural steel pipe stanchions, that have compromised the ability to properly support the piping systems. The deterioration and issues with these concrete pedestals or structural steel pipe stanchions are addressed under Section 2, Structural Evaluation. Below is an overview of the assessment of the vault supports observed and evaluated in each of the campus utility vaults.

Vault 1:
The pipe support assemblies on the chilled water service look to be in good working condition. No roof hanger supports are utilized.

Vault 2:
The pipe support assemblies on the chilled water services are deteriorating and have significant corrosion in the form of rust that appears to be preventing or limiting the supports from having the free axial and lateral movement as intended. Some of the roof hanger supports are detached and others show signs of significant corrosion in the form of rust.

Vault 3:
The pipe support assemblies on the chilled water services are deteriorating and have significant corrosion in the form of rust that appears to be preventing or limiting the supports from having the free axial and lateral movement as intended. The roof hanger support for the condensate service to the north is detached.

Vault 4:
The pipe support assemblies on the chilled water services show some signs of surface rust but appear to be in good working condition. The roof hanger supports look to be in good working condition.

Vault 5:
The pipe support assemblies on the chilled water services are deteriorating and have significant corrosion in the form of rust that appears to be preventing or limiting the supports from having the free axial and lateral movement as intended. The roof hanger supports appear to be in good working condition.

Vault 6:
The pipe support assemblies on the chilled water services are deteriorating and have significant corrosion in the form of rust that appears to be preventing or limiting the supports from having the free axial and lateral movement as intended. The roof hanger supports appear to be in good working condition.

Vault 7:
The pipe support assemblies on the chilled water services are deteriorating and have significant corrosion in the form of rust that appears to be preventing or limiting the supports from having the free axial and lateral movement as intended.

Vault 8:
The pipe support assemblies on the chilled water services are deteriorating and have significant corrosion in the form of rust that appears to be preventing or limiting the supports from having the free axial and lateral movement as intended.

Vault 9:
The pipe support assemblies on the steam, condensate and chilled water services appear to be in good working condition. No roof hanger supports are utilized.

Vault 10:
The pipe support assemblies on the steam, condensate and chilled water services appear to be in good working condition. No roof hanger supports are utilized.

Vault 10.1:
The pipe saddle type support assemblies on the steam, condensate and chilled water services appear to be in good working condition. The roof hanger supports appear to be in good working condition.

Vault 11:
The pipe support assemblies on the steam, condensate and chilled water services appear to be in good working condition. The roof hanger supports appear to be in good working condition.

Vault 12A:
The pipe support assemblies on the steam, condensate and chilled water services appear to be in good working condition. No roof hanger supports are utilized.

Vault 12B:
The pipe roller support assembly on the steam main piping on the west end of the vault is bent to the west and appears to be not allowing for the free axial and lateral movement as intended. The other pipe support assemblies on the steam, condensate and chilled water services appear to be in good working condition. No roof hanger supports are utilized.

Vault 13:
The pipe support assemblies on the steam, condensate and chilled water services appear to be in good working condition. No roof hanger supports are utilized.

Vault 14:
The pipe support assemblies on the chilled water services show signs of surface rust but appear to be in fair working condition. The roof hanger supports look to be in good working condition.

Vault 15:
The pipe roller support assembly on the condensate piping main on the west end of the vault has been removed. The pipe support assemblies on the steam, condensate and chilled water

services show some signs of surface rust but look to be in good working condition. The roof hanger supports look to be in good working condition.

Vault 16:
The pipe support assemblies on the steam, condensate and chilled water services appear to be in good working condition. No roof hanger supports are utilized.

Vault 17:
The pipe support assemblies on the steam, condensate and chilled water services appear to be in good working condition. No roof hanger supports are utilized.

Vault 18:
The pipe support assemblies on the steam, condensate and chilled water services appear to be in good working condition. No roof hanger supports are utilized.

Vault 19:
The pipe support assemblies on the steam, condensate and chilled water services appear to be in good working condition. The roof hanger supports look to be in good working condition.

Vault 20:
The pipe support assemblies on the steam, condensate and chilled water services appear to be in good working condition. No roof hanger supports are utilized.

Vault Insulation and Jacketing
The piping insulation and jacketing systems observed for the large-bore steam, condensate and chilled water piping systems consist of rigid cellular glass pipe insulation with aluminum jackets. The small-bore piping systems for steam trap assemblies, steam valve bypass assemblies, drain assemblies, and air vent and vacuum breaker assemblies are typically either uninsulated or have ridged fiberglass pipe insulation with an all service jacket. The expansion joints typically include removable reusable insulation blankets. The butterfly valves typically include a combination of removable reusable insulation blankets or have rigid cellular glass pipe insulation with aluminum jackets.

Typically, deficiencies or areas of concern involving piping insulation and jacketing are dependent on the age of the piping or the utility vault construction to maintain a dry environment, as well as the location of the piping in the utility vault. High personnel traffic areas increase the likelihood of damage, and locations near access into the utility vault, piping intersections or low crossing piping are more likely to see damage from personnel moving through the utility vault. Locations near valves and other accessories are more likely to have damage caused by moisture leaks. Missing insulation and jacketing on piping is typical at piping repairs that required the removal of the insulation and new insulation was not re-installed.

In comparison to ridged fiberglass pipe insulation in the vaults the use of ridged cellular glass pipe insulation in the vaults to properly insulated the piping systems will also allow the insulation to better withstand any damage and breakdown from maintenance personal and contractors walking on and working around the insulated piping systems.

Most of the piping insulation and jacketing visually observed appeared to be in good condition, properly terminated, sealed and had no signs of significant physical damage or moisture damage. The piping insulation appeared to be of sufficient thickness to prevent

excessive heat loss, condensation and maintain a safe temperature for maintenance personnel. However, there are some locations in the utility vaults that are missing a section of piping or valve insulation and jacketing most likely due to a repair that required the removal of the insulation and jacketing. Below is an overview of the assessment of the vault insulation and jacketing observed and evaluated in each of the campus utility vaults.

Vault 1:
The rigid fiberglass pipe insulation with all service jacketing on the large-bore and small-bore piping systems looks to be in good condition.

Vault 2:
The rigid cellular glass pipe insulation with aluminum jacketing on all the large-bore piping systems looks to be in good condition. Most of the small-bore piping is uninsulated. The butterfly valve on the condensate riser for the branch service piping to the south needs to be reinsulated.

Vault 3:
The rigid cellular glass pipe insulation with aluminum jacketing on all the large-bore piping systems looks to be in good condition. The small-bore piping is insulated, and the insulation and jacketing looks to be in good condition. After repairs have been completed on the leaking condensate butterfly valve, the valve needs to be re-insulated and jacketed or a removeable insulation blanket should be installed. The elbow above the valve needs to be re-insulated and jacketed as well.

Vault 4:
The rigid cellular glass pipe insulation with aluminum jacketing on all the large-bore piping systems looks to be in good condition. The small-bore piping is uninsulated.

Vault 5:
The rigid cellular glass pipe insulation with aluminum jacketing on the condensate main piping on the west end of the vault needs to be replaced. The steam riser valve and the condensate riser valve on the west end of the vault need to be re-insulated and jacketed or a removeable insulation blanket should be installed on these valves. The rigid cellular glass pipe insulation with aluminum jacketing on all the other large-bore piping systems looks to be in good condition. Most of the small-bore piping is uninsulated.

Vault 6:
The rigid cellular glass pipe insulation with aluminum jacketing on all the large-bore piping systems looks to be in good condition. The small-bore piping is uninsulated.

Vault 7:
The valve on the chilled water main on the east end of the vault and to the north looks to have a temporary insulation cover and should have the removeable insulation blanket replaced. The condensate main piping on the east end of the vault needs the ridged cellular glass pipe insulation repaired and the aluminum jacketing reinstalled. The chilled water mains, risers, and future branch connections aluminum jacketing is covered with exterior vault membrane proofing that has managed to leak through the joint of the pre-cast roof panels above. The rigid cellular glass pipe insulation with aluminum jacketing on all the other large-bore piping systems looks to be in good condition. Most of the small-bore piping is uninsulated.

Vault 8:
The rigid cellular glass pipe insulation with aluminum jacketing on the large-bore piping systems looks to be in good condition. Most of the small-bore piping is uninsulated.

Vault 9:
The removable insulation blanket on the valve on the condensate main on the west end of the vault is missing and needs to be replaced. The valves on the chilled water mains on the west end of the vault need the ridged cellular glass pipe insulation repaired and the aluminum jacketing reinstalled. The rigid cellular glass pipe insulation with aluminum jacketing on the large-bore piping systems looks to be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition.

Vault 10:
The removable insulation blanket on the valve on the condensate main on the west end of the vault is missing and needs to be replaced. The valves on the chilled water mains on the west and east ends of the vault need the ridged cellular glass pipe insulation repaired and the aluminum jacketing reinstalled. The rigid cellular glass pipe insulation with aluminum jacketing on the large-bore piping systems looks to be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition.

Vault 10.1:
The steam, condensate, and chilled water branch piping services to the west near the vault wall penetrations are missing ridged cellular glass pipe insulation and aluminum jacketing. The rigid cellular glass pipe insulation with aluminum jacketing on all the other large-bore piping systems looks to be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition.

Vault 11:
The drip leg on the branch steam piping service to the east is missing ridged cellular glass pipe insulation and aluminum jacketing. The rigid cellular glass pipe insulation with aluminum jacketing on the large-bore piping systems looks to be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition.

Vault 12A:
The chilled water branch piping services to the south at the wall penetration and including the bypass piping and valves are missing ridged cellular glass pipe insulation and aluminum jacketing. The valves on the chilled water mains on the east end of the vault need the ridged cellular glass pipe insulation repaired and the aluminum jacketing reinstalled. The condensate main piping on the west end to the vault is missing ridged cellular glass pipe insulation and aluminum jacketing, and the valve is missing a removable insulation blanket. The steam main piping drip leg is missing aluminum jacketing. The rigid cellular glass pipe insulation with aluminum jacketing on all the other large-bore piping systems looks to be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition.

Vault 12B:
The valves on the chilled water mains on the east end of the vault need the ridged cellular glass pipe insulation repaired and the aluminum jacketing reinstalled. The condensate branch piping service to the south is missing ridged cellular glass pipe insulation and aluminum jacketing, and the valve is missing a removable insulation blanket. The rigid cellular glass pipe insulation with aluminum jacketing on all the other large-bore piping systems looks to

be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition.

Vault 13:
The valves on the chilled water mains on the west end of the vault need the ridged cellular glass pipe insulation repaired and the aluminum jacketing reinstalled. The removable insulation blanket on the valve on the condensate branch piping service to the north is missing and needs to be replaced. The rigid cellular glass pipe insulation with aluminum jacketing on the large-bore piping systems looks to be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition.

Vault 14:
The removable insulation blanket on the valve on the condensate branch piping service to the south is missing and needs to be replaced. The elbow on the condensate branch piping services to the west is missing ridged cellular glass pipe insulation and aluminum jacketing. The rigid cellular glass pipe insulation with aluminum jacketing on all the other large-bore piping systems looks to be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition.

Vault 15:
The rigid cellular glass pipe insulation with aluminum jacketing on the chilled water branch piping/elbow service to the north needs to be replaced. The rigid cellular glass pipe insulation with aluminum jacketing on all the other large-bore piping systems looks to be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition.

Vault 16:
The aluminum jacketing on the valve on the steam main piping on the east end of the vault is missing and needs replacement. The rigid cellular glass pipe insulation with aluminum jacketing on all the other large-bore piping systems looks to be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition

Vault 17:
The rigid cellular glass pipe insulation with aluminum jacketing on the valve on the condensate branch piping service to the south is missing and needs replacement. The aluminum jacketing on the valve on the condensate branch piping service to the north is missing and needs replacement. The aluminum jacketing on the valve on the steam branch piping service to the south is missing and needs replacement. The aluminum jacketing on the valves on the steam main piping on the east and west ends of the vault is missing and needs replacement. The rigid cellular glass pipe insulation with aluminum jacketing on all the other large-bore piping systems looks to be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition.

Vault 18:
The aluminum jacketing on the two valves on the condensate branch piping service to the north is missing and needs replacement. The valve on the steam branch piping service to the north needs to be re-insulated with rigid cellular glass pipe insulation with aluminum jacketing or a removeable insulation blanket should be installed. The aluminum jacketing on the valve on the steam main piping on the east end of the vault is missing and needs replacement. The rigid cellular glass pipe insulation with aluminum jacketing on all the other

large-bore piping systems looks to be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition.

Vault 19:
The chilled water main piping on the south side at the west wall penetration needs a section of the rigid cellular glass pipe insulation repaired and the aluminum jacketing replaced. The rigid cellular glass pipe insulation with aluminum jacketing on all the other large-bore piping systems looks to be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition.

Vault 20:
The aluminum jacketing on the valves on the steam and condensate branch piping services to the east and west is missing and needs to be replaced. The aluminum jacketing on the valve on the steam main piping on the north end is missing and needs to be replaced. The rigid cellular glass pipe insulation with aluminum jacketing on all the other large-bore piping systems looks to be in good condition. The insulation and jacketing on the small-bore piping systems looks to be in good condition.

Vault Ventilation
The utility vaults ventilation system consists of a forced ventilation system with a centrifugal inline fan connected to piping/ductwork that exhausts the hotter air within the vault to the outdoors through buried piping to an above grade gooseneck assembly. Another separate pipe is stubbed into the vault to allow cooler make-up (intake) outside air to be drawn into the vault through buried piping to an above grade gooseneck assembly. In some utility vaults the configuration of the ventilation system has been switch by CU ANSCHUTZ due to the ventilation fan motor overheating and failing. In these utility vaults the ventilation fan supplies cooler outsider air into the vault and across the fan motor, and the other separate pipe exhausts the hotter air out of the vault.

Typically, deficiencies observed with a utility vault ventilation system are one of two problems. Either insulation and jacketing are missing or not properly installed to limit the heat gain from the piping systems and equipment, or there is insufficient ventilation airflow installed for the size of the vault and associated heat gains or the fan has failed and is not operating. In order for the ventilation system to continuously properly operate as designed and maintain an acceptable temperature within the vault the heat generated from the piping systems and equipment needs to be limited by properly insulating these components to industry standards. Insufficient ventilation airflow in a utility vaults will result in airflow being stagnant and high ambient temperatures are experienced. A utility vault system environment with high ambient temperatures can deteriorate the concrete, contribute to the development of high humidity within the vault and rust components, de-rate the electrical equipment and systems, and negatively affect the performance of the chilled water system.

The vault exhaust air piping/ductwork and the intake air piping/ductwork should be configured such that the intake air ductwork is routed along the wall near the chilled water piping systems and terminated approximately 12 inches above the vault floor, and the exhaust air piping connected to the ventilation fan is routed along the wall near the steam piping systems and terminated up high near the vault ceiling. The exhaust air opening and the intake air opening should be located as far apart as possible within the vault to allow the cooler outside intake air at the floor level to be drawn across the entire vault interior, piping systems and equipment and then the hot air within the vault exhausted at the ceiling level.

Many of the utility vaults visually observed included insufficient ventilation systems and piping/ductwork layouts with some fans inoperable and others in poor operating condition to provide an adequate amount of airflow within the utility vaults. In general, the ventilation systems within the utility vaults are necessary to reduce the humidity and temperature to acceptable levels and provide a good operating environment for the utility systems, as well as a good working environment for the maintenance personnel. Below is an overview of the assessment of the vault ventilation observed and evaluated in each of the campus utility vaults.

Vault 1:
The vault is at an acceptable temperature and the ventilation system, including the fan and piping/ductwork is in good working condition. The ventilation fan is in the central utility plant and ducted into the vault to exhaust the hot air out. There is no outside intake air piping/ductwork directly into the vault, it appears that the intake air into the vault is coming from the central utility plant. The exhaust air ductwork is at the ceiling level along the west wall of the vault.

Vault 2:
A mobile fan unit was utilized for access into the vault. The vault is extremely hot and the ventilation system, including the fan and piping/ductwork is severely corroded in the form of rust and is not operational. The fan motor is no longer attached to the fan and the vault has no power. A complete replacement of the entire ventilation system in the vault is required. The ventilation fan appears to have been switch such that it is pulling outside air into the vault and exhausting the hot air out the other ventilation pipe/ductwork. The ventilation fan discharge duct has been connected to the fan motor housing to keep the motor cool and is not directly blowing into the vault. The outside intake air piping/ductwork is at the ceiling level approximately in the center of the vault, and the exhaust air piping/ductwork is at the ceiling level above the chilled water mains.

Vault 3:
The vault is at an acceptable temperature and the ventilation system, including the fan and piping/ductwork is in good working condition. The ventilation fan appears to have been switch such that it is pulling outside air into the vault and exhausting the hot air out the other ventilation pipe/ductwork. The outside intake air piping/ductwork is at the ceiling level above the steam main, and the exhaust air piping/ductwork is at the floor level near the chilled water mains.

Vault 4:
The vault is somewhat hot and the ventilation system, including the fan and piping/ductwork is not in good working condition. The ventilation fan is operating, but it doesn't appear to be enough airflow. The ventilation fan appears to have been switch such that it is pulling outside air into the vault and exhausting the hot air out the other ventilation pipe/ductwork. The ventilation fan discharge duct has been connected to the fan motor housing to keep the motor cool and is not directly blowing into the vault. The outside intake air piping/ductwork is at the ceiling level above the steam main, and the exhaust air piping/ductwork is at the ceiling level above the chilled water mains.

Vault 5:
The vault is hot and the ventilation system, including the fan and piping/ductwork is not in good working condition. The ventilation fan is not operating, and the vault does have power. The configuration of the ventilation system appears to have the fan exhausting the hot air out

of the vault and the other ventilation pipe/ductwork is for the outside intake air. The outside intake air piping/ductwork is at the ceiling level above the chilled water mains on the east end of the vault, and the exhaust air piping/ductwork is at the ceiling level above the chilled water mains on the west end of the vault.

Vault 6:
The vault is hot and the ventilation system, including the fan and piping/ductwork is not in good working condition. The ventilation fan is operating, but it doesn't appear to be enough airflow. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The outside intake air pipe/ductwork in the vault since the original installation has been modified to include an inline booster fan, but the fan is not in operation. The outside intake air piping/ductwork is at the ceiling level approximately in the center of the vault, and the exhaust air piping/ductwork is at the ceiling level approximately in the center of the vault.

Vault 7:
The vault is hot and the ventilation system, including the fan and piping/ductwork is not in good working condition. The ventilation fan is operating, but it doesn't appear to be enough airflow. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The outside intake air pipe/ductwork in the vault since the original installation has been modified to include an inline booster fan, but the fan is not in operation. The outside intake air piping/ductwork is at the ceiling level above the chilled water mains, and the exhaust air piping/ductwork is at the ceiling level above the steam main.

Vault 8:
The vault is hot and the ventilation system, including the fan and piping/ductwork is severely corroded in the form of rust, the fan is not operational, and the vault has no power. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The outside intake air piping/ductwork is at the floor level near the chilled water mains, and the exhaust air piping/ductwork is at the ceiling level above the steam main.

Vault 9:
The vault is at an acceptable temperature and the ventilation system, including the fan and piping/ductwork is in good working condition. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust piping/ductwork is at the ceiling level above the steam main, and the outside intake air piping/ductwork is at the floor level near the chilled water mains.

Vault 10:
The vault is at an acceptable temperature and the ventilation system, including the fan and piping/ductwork is in good working condition. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust piping/ductwork is at the ceiling level above the steam main, and the outside intake air piping/ductwork is at the floor level near the chilled water mains.

Vault 10.1:
The vault is at an acceptable temperature and the ventilation system, including the fan and piping/ductwork is in good working condition. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust piping/ductwork is at the ceiling level above the piping penetrations to the west, and the outside intake air piping/ductwork is at mid-level on the east side of the vault.

Vault 11:
The vault is hot and the ventilation system, including the fan and piping/ductwork looks to be in good working condition, however the fan is not operational. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust piping/ductwork is at the ceiling level above the steam main, and the outside intake air piping/ductwork is at the floor level near the chilled water mains.

Vault 12A:
The vault is hot and the ventilation system, including the fan and piping/ductwork appear to be in good working condition, however the ventilation fan is operating, but it doesn't appear to be enough airflow. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust piping/ductwork is at the ceiling level above the steam main, and the outside intake air piping/ductwork is at the floor level near the chilled water mains.

Vault 12B:
The vault is hot and the ventilation system, including the fan and piping/ductwork appear to be in good working condition, however the ventilation fan is operating, but it doesn't appear to be enough airflow. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust piping/ductwork is at the ceiling level above the steam main, and the outside intake air piping/ductwork is at the floor level near the chilled water mains.

Vault 13:
The vault is hot and the ventilation system, including the fan and piping/ductwork appear to be in good working condition, however the ventilation fan is operating, but it doesn't appear to be enough airflow. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust piping/ductwork is at the ceiling level above the steam main, and the outside intake air piping/ductwork is at the floor level near the chilled water mains.

Vault 14:
A mobile cooling unit was required for access into the vault. The vault is extremely hot and the ventilation system, including the fan and piping/ductwork is severely corroded in the form of rust and is not operational. The fan motor is missing the belt. A complete replacement of the entire ventilation system in the vault is required. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust air piping/ductwork is at the ceiling level above the steam main, and the outside intake air piping/ductwork is at the ceiling level above the chilled water mains.

Vault 15:
The vault is at an acceptable temperature and the ventilation system, including the fan and piping/ductwork is in good working condition. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust piping/ductwork is at the ceiling level above the steam main, and the outside intake air piping/ductwork is at the ceiling level above the chilled water mains.

Vault 16:
The vault is at an acceptable temperature and the ventilation system, including the fan and piping/ductwork is in good working condition. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust piping/ductwork is at the ceiling level above the steam main, and the outside intake air piping/ductwork is at the floor level near the chilled water mains.

Vault 17:
The vault is at an acceptable temperature and the ventilation system, including the fan and piping/ductwork is in good working condition. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust piping/ductwork is at the ceiling level above the steam main, and the outside intake air piping/ductwork is at the floor level near the chilled water mains.

Vault 18:
The vault is hot and the ventilation system, including the fan and piping/ductwork looks to be in good working condition, however the fan is not operational. The ventilation fan has been removed and is laying on the platform walkway. It appears that the fan motor has been replaced and the fan just needs to be reinstalled in the ductwork and powered. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust piping/ductwork is at the ceiling level above the steam main, and the outside intake air piping/ductwork is at the floor level near the chilled water mains.

Vault 19:
The vault is at an acceptable temperature and the ventilation system, including the fan and piping/ductwork is in good working condition. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust piping/ductwork is at the ceiling level above the steam main, and the outside intake air piping/ductwork is at the floor level near the chilled water mains.

Vault 20:
The vault is at an acceptable temperature and the ventilation system, including the fan and piping/ductwork is in good working condition. The configuration of the ventilation system appears to have the fan exhausting the hot air out of the vault and the other ventilation pipe/ductwork is for the outside intake air. The exhaust piping/ductwork is at the ceiling level above the steam main, and the outside intake air piping/ductwork is at the floor level near the chilled water mains.

Section 4

Electrical Evaluation

General

Electrical power is supplied to each vault via 480 V cable routed in below-grade ductbank between each of the utility vaults. These cables connect to primary disconnects which feed dry-type transformers dedicated to each vault. These transformers range from 5 kVA to 15 kVA and are installed in one of three ways: above-grade near the vault manholes, in the vault as a separate transformer or in the vault combined with the panelboards in mini-power centers. These transformers feed panelboards in the vaults which are 240/120 V single phase in some vaults and 208/120 V three phase in others. These panelboards contain branch circuits which feed lighting fixtures, convenience receptacles, the vault ventilation fan and the water level detection equipment.

The lighting fixtures are fluorescent type controlled by 3-way switches located at each entrance. The receptacles are weatherproof GFCI type. The ventilation fans are powered by fractional horsepower motors with local disconnects. The signals for the water level detection system connect to an above-grade electrical enclosure mounted on the vault ventilation ducts.

Each vault has a raceway system comprised of conduit, fittings and wireway which convey the power and signal circuits around the vault. A combination of rigid galvanized steel, PVC coated steel and liquid-tight flexible metal conduit were used. Lastly, each vault has a grounding and bonding system comprised of grounding electrode connections to ground rods local to the vaults.

Assessment

Each of the components cited above were visually inspected to ascertain their condition. Instances where equipment was discovered to be inoperable were noted. The results of this assessment are summarized below and are detailed in the condition assessment table attached. Where there were no issues identified, the components were excluded from the narratives below; however, these are noted in the electrical condition assessment table.

Vault 1:
The only issue discovered in this vault was that there were instances in which the raceway for the signal cable was discontinuous. Where the cable is not contained in raceway, it is exposed and has the potential of being damaged.

Vault 2:
The padlock was missing from the transformer primary disconnect which is accessible to the public. There was significant corrosion on the panelboards, receptacles and light switches. The light fixtures have been damaged by heat and were inoperable. The ventilation fan motor was disassembled and inoperable[1]. Some of the conduit supports were attached to damaged concrete. The bonding was compromised as a result of the raceway corrosion. The water level detection probe was corroded.

Vault 3:
The padlock was missing from the transformer primary disconnect switch. There were covers missing from the convenience receptacles which compromises their weatherproof characteristics. Lighting fixtures were missing covers exposing the lamps to physical damage. The motor cover on the ventilation fan was damaged and the local disconnect was not weatherproof (see footnote reference under Vault 2). There was raceway discontinuity for the signal cable exposing it to damage. The water level detection probe was corroded.

Vault 4:
The slab that supports the transformer and its disconnect had settled which pulled apart the conduit from the conduit fittings. The receptacles were missing covers. The light fixtures were operable; however, there were missing covers exposing the lamps to damage. There were instances of exposed power wiring on the ventilation fan circuit and the local motor disconnect was not weatherproof (see footnote reference under Vault 2).

Vault 5:
The padlock was missing from the transformer disconnect. The receptacles were corroded. The ventilation fan motor was inoperable, and the local motor disconnect was not weatherproof (see footnote reference under Vault 2). There were instances where liquid-tight flexible metal conduit spanned unsupported distances greater than that allowed by the NEC. There were covers missing from some conduit fittings and there were discontinuities in the signal cable raceway exposing the cable to damage.

Vault 6:
Covers were missing from the convenience receptacles and light fixtures. The inline fan was inoperable and the disconnect was not weatherproof (see footnote reference under Vault 2). Power circuits existed without raceway and the signal cable raceway was discontinuous.

Vault 7:
The local disconnect for the ventilation fan was not weatherproof (see footnote reference under Vault 2). There were some damaged conduit supports. There were power circuits routed without conduit.

[1] Note that the replacement of the electrical systems for the ventilation equipment is included in a separate project. As such, related deficiencies are included herein for informational purposes, the replacement work is not included in the cost estimate.

Vault 8:
Some convenience receptacles had been exposed to corrosion. The light fixtures were inoperable, and the covers were either damaged or missing. A light switch was missing. The ventilation fan was inoperable (see footnote reference under Vault 2). Corrosion was present on the raceway affecting its bonding efficacy.

Vault 9:
No significant issues were identified except that the ventilation fan motor cover was missing exposing the belt to personnel (see footnote reference under Vault 2). The local motor disconnect was not weatherproof.

Vault 10:
No significant issues were identified except that the ventilation fan motor cover was missing exposing the belt to personnel (see footnote reference under Vault 2). The local motor disconnect was not weatherproof.

Vault 10.1:
The only issue discovered in this vault was that there were some conduit fitting covers missing.

Vault 11:
No significant issues were identified except that the ventilation fan motor cover was missing, exposing the belt to personnel (see footnote reference under Vault 2). The local motor disconnect was not weatherproof. Some corrosion was present on the water level detection enclosure; however, this is not expected to affect its performance.

Vault 12A:
No electrical issues were identified in this vault.

Vault 12B:
The ventilation fan motor cover was missing, exposing personnel to the belt (see footnote reference under Vault 2). The local motor disconnect was not weatherproof. There were instances where liquid tight flexible metal conduit spanned unsupported lengths greater than allowed by the NEC.

Vault 13:
The ventilation fan motor cover was missing, exposing personnel to the belt (see footnote reference under Vault 2). The local motor disconnect was not weatherproof. There were instances where liquid tight flexible metal conduit spanned unsupported lengths greater than allowed by the NEC.

Vault 14:
There was raceway corrosion present which can affect the bonding performance of the raceway. The cover on the panel board could not close due to corrosion. The light fixtures had covers missing. The ventilation fan was inoperable, the motor cover was missing, and the local motor disconnect was not operable (see footnote reference under Vault 2). The wireway was missing covers, some of the flexible conduit was under-supported and there was at least one instance where signal cable is routed in the same wireway as power conductor which is not allowed by the NEC if the power cable voltage exceeds the signal cable insulation level.

Vault 15:
The ventilation fan motor cover was missing, exposing personnel to the belt (see footnote reference under Vault 2). Also, the local motor disconnect was not weatherproof. There were instances where liquid tight flexible metal conduit spanned unsupported lengths greater than allowed by the NEC.

Vault 16:
The local motor disconnect was not weatherproof (see footnote reference under Vault 2). No issues were identified.

Vault 17:
The only issue discovered was that there was a wireway with a missing cover and there were power cables routed in the same wireway as signal cables.

Vault 18:
The ventilation fan was disassembled and inoperable (see footnote reference under Vault 2).

Vault 19:
The disconnect on the fan motor was not weatherproof (see footnote reference under Vault 2). Also, some of the liquid tight flexible metal conduit spanned unsupported lengths greater than that allowed by the NEC.

Vault 20:
This vault had an inoperable light fixture. The fan motor disconnect was not weatherproof (see footnote reference under Vault 2). There are instances where signal cable is routed unsupported without raceway. Where the cable is not contained in raceway, it is exposed and has the potential of being damaged.

Replacement and Repair

The measures required to address the assessment issues in the Electrical Condition Assessment Table are itemized in the electrical cost estimate spreadsheets. Where there were no issues identified, the items were given the lowest replacement priority (RP-4) and included in the cost estimate; however, these actions do not need to be undertaken until deficiencies present themselves in the future.

Additionally, the electrical work required for the replacement of the ventilation systems was not included in the estimates because this work resides in a separate project.

Section 5

Summary and Conclusions

Summary

After compiling the condition assessment tables that can be found in Appendix B, that list and prioritize the structural, mechanical, and electrical issues identified for each of the campus utility vaults observed, estimates of probable construction costs for each repair/replacement priority was prepared. The repair/replacement cost for each issue identified in the twenty-two (22) campus utility vaults was estimated using quotes for materials and equipment that are consistent with the materials and equipment that is currently being used within the campus utility vaults. The estimated costs for each repair/replacement priority group is listed in Table 5-1 below. A complete list of all detailed costs for each campus utility vault issue identified can be found in Appendix C.

Table 5-1 Repair/Replacement Priority Cost Estimate Summary

Repair/Replacement Priority	STRUCTURAL Estimate of Probable Construction Costs ($)	MECHANICAL Estimate of Probable Construction Costs ($)	ELECTRICAL Estimate of Probable Construction Costs ($)	Repair/Replacement Time Period
RP-1	$ 158,586	$ 140,413	$ 94,190	Immediately
RP-2	$ 93,681	$ 254,160	$ 148,038	1-5 Years
RP-3	$ 47,732	$ 60,228	$ 46,237	5-10 Years
RP-4	$ 63,923	$ 126,955	$ 1,192,735	Monitor
TOTAL	$ 363,922	$ 581,756	$ 1,481,200	

Conclusions

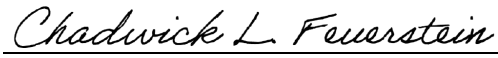
It is recommended that all of the Repair/Replacement Priority 1 issues be addressed immediately. As funding becomes available, Priority 2 through Priority 4 should be addressed in order of severity. If funding is limited, the lower priority work could be delayed but should be completed before the recommended time frame expires. Timely repairs will result in a system with fewer

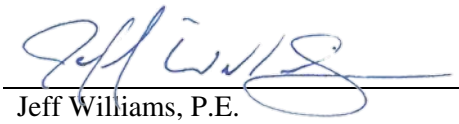
outages, shorter downtime for shutdowns, and a lower overall cost of ownership. If funding is available, all priority groups could be addressed immediately to minimize the number and duration of outages associated with this work.

The deterioration of utility vault's structural, mechanical, and electrical systems can primarily be contributed to ground water or piping leaks in the vaults and extreme temperatures in the vaults. Monitoring ground water in the vaults with the leak detection system and routine inspections and identifying and repairing pipe leaks in the vaults quickly will minimize the deterioration of the structural, mechanical, and electrical components. Monitoring and ensuring the piping systems and equipment are properly insulated and jacketed to minimize the heat in the vault and monitoring and ensuring adequate ventilation airflow throughout the vault will help to minimize the deterioration and extend the life of the structural, mechanical, and electrical systems.

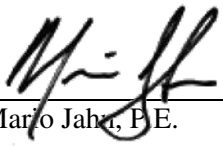
Respectfully submitted,

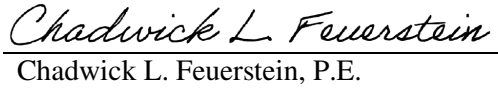
Stanley Consultants, Inc.

Prepared by 
Chadwick L. Feuerstein, P.E.


Jeff Williams, P.E.


Joe Thornam, P.E.

Reviewed by 
Mario Jahn, P.E.

Approved by 
Chadwick L. Feuerstein, P.E.

Contributor(s):

Attachment(s):

cc:

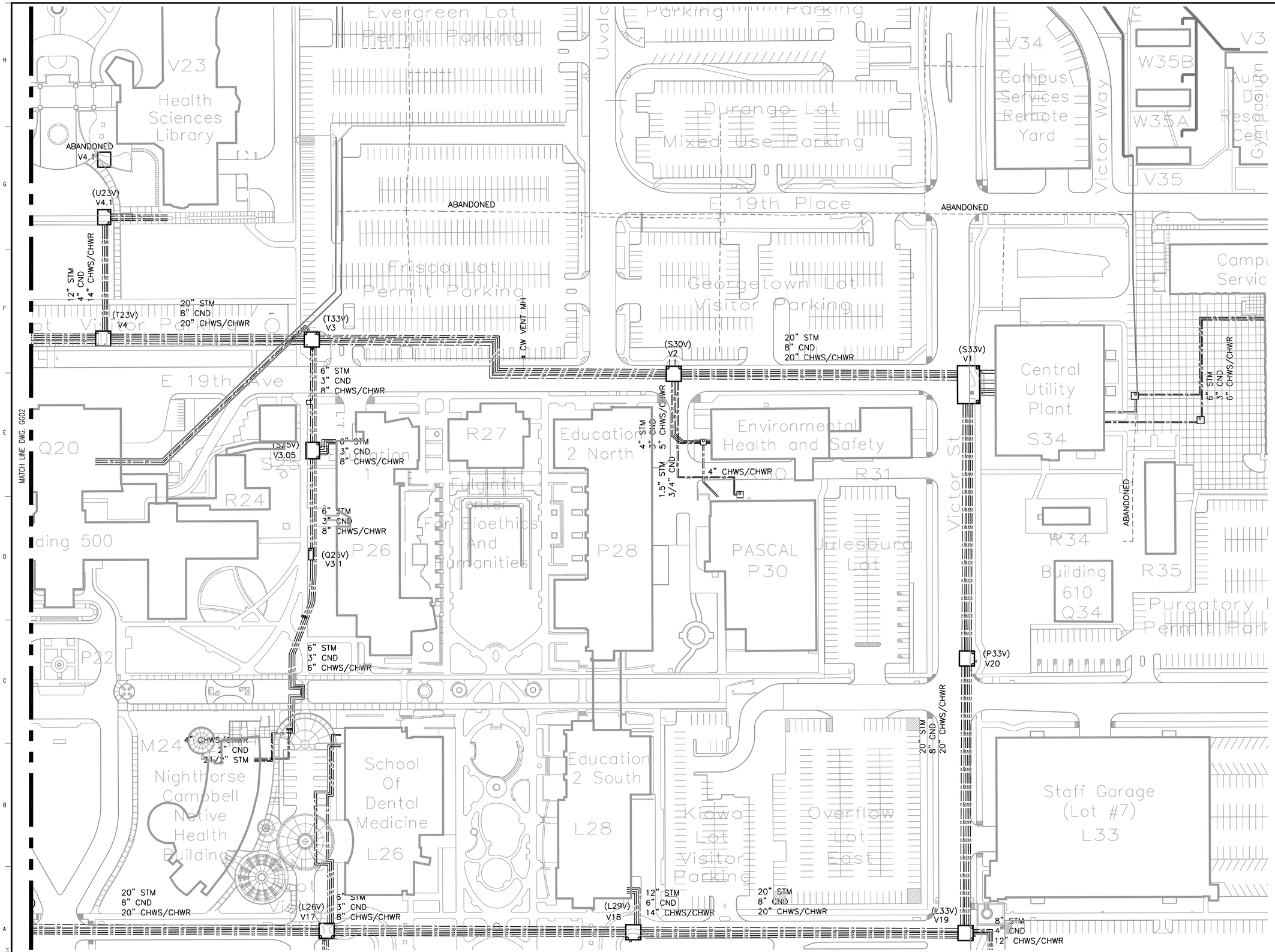
initials

Appendix A

General Arrangement Drawings

EVALUATED VAULTS:

VAULT-V1
VAULT-V2
VAULT-V3
VAULT-V4
VAULT-V17
VAULT-V18
VAULT-V19
VAULT-V20



NORTH

UTILITY DISTRIBUTION SYSTEM OVERALL SITE PLAN - SHEET 1

SCALE: 1" = 60'- 0"

NO.	REVISIONS	DSGN	CHKD	APVD	DATE

Stanley Consultants INC.
8000 South Chester Street, Suite 500, Centennial, Colorado 80112-3520
www.stanleyconsultants.com

UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS
CAMPUS UTILITY VAULTS EVALUATION
AURORA, COLORADO

UTILITY DISTRIBUTION SYSTEM OVERALL SITE PLANT - SHEET 1

DESIGNED	C.L. FEUERSTEIN
DRAWN	C.L. FEUERSTEIN
CHECKED	
APPROVED	
APPROVED	
DATE	02/02/2021

SCALE: AS NOTED
NO. 29652
REV. A
GG01

CADD D1-R4

EVALUATED VAULTS:

- VAULT-V5
- VAULT-V6
- VAULT-V7
- VAULT-V8
- VAULT-V9
- VAULT-V10
- VAULT-V10.1
- VAULT-V11
- VAULT-V12A
- VAULT-V12B
- VAULT-V13
- VAULT-V14
- VAULT-V15
- VAULT-V16

(W09V) V10.1
2" CND
5" STM
6" CHWS/R

ABANDONED CRAWL TUNNEL 154 155 156 157 159 160 68 66 65 63
153
161
162
163
165 CRAWL TUNNEL
164
81 CRAWL TUNNEL 80
ABANDONED

3" STM
2" CND

12" STM
6" CND
16" CHWS/CHWR

20" STM
8" CND
20" CHWS/CHWR

6" STM
3" CND

4" STM
2" CND

20" STM
8" CND
20" CHWS/CHWR

12" STM
4" CND
14" CHWS/CHWR

6" STM
4" CND

8" STM
4" CND

EMERGENCY
CHWS/CHWR

CWS/CWR

10" CHWS/CHWR

20" STM
8" CND
20" CHWS/CHWR

12" STM
8" CND
14" CHWS/CHWR

6" STM
3" CND
8" CHWS/CHWR

(S09V) V10
(S12BV) V9.1
(S12V) V9
(S15V) V8
(S18V) V7
(T20V) V5
VENT MH (U20V) V5.1
(P09V) V11
(P19V) V6
(L09V) V12A
(L11V) V12B
(L14V) V13
(L16V) V14
(L19V) V15
(L22V) V16

MATCH LINE DWG. GG01

Aspen Lot Permit Parking
Henderson Parking Garage
V17
V20
School of Pharmacy
University Police
U09
Building 406
Breckenridge Lot Permit Parking
T09
Ignacio Lo
E 19th Ave
Building 402
S09
Building 401
R09
Overflow Lot West (Future)
Anschutz Health Sciences Building
P12
Research 2
P15
Research 1 North
P18
R18
Build
Cheyenne Wells Lot Visitor Parking
E 17th Place
M08
Leprino Building
L10
UCH Parking Garage
L12
Academic Office 1
L15
Research 1 South
L18
Barbara Davis Center For Childhood Diabetes
M20
Barbara Davis Lo Visitor

NORTH

UTILITY DISTRIBUTION SYSTEM OVERALL SITE PLAN - SHEET 2

SCALE: 1" = 60'-0"

NO.	REVISIONS	DSGN	CHKD	APVD	DATE

Stanley Consultants INC.

8000 South Chester Street, Suite 500, Centennial, Colorado 80112-3520
www.stanleyconsultants.com

UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS
CAMPUS UTILITY VAULTS EVALUATION
AURORA, COLORADO

UTILITY DISTRIBUTION SYSTEM OVERALL SITE PLANT - SHEET 2

DESIGNED	C.L. FEUERSTEIN
DRAWN	C.L. FEUERSTEIN
CHECKED	
APPROVED	
APPROVED	
DATE	02/02/2021

SCALE: AS NOTED
NO. 29652
REV. A
GG02

CADD D1-R4

Appendix B

Condition Assessment Tables

STRUCTURAL CONDITION ASSESSMENT TABLE

VAULT NUMBER	ASSESSMENT NUMBER	ASSESSMENT TYPE	ASSESSMENT ITEM	REPLACEMENT/REPAIR PRIORITY (RP)	ASSESSMENT ISSUE	PHOTO NAMES
V1	S2	STRUCTURAL	STEEL BEAMS	3	CORROSION IS PRESENT AT LOCATIONS WHERE WATER IS LEAKING THROUGH THE CEILING JOINTS	V1-STR19
V1	S3	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	THE NORTH AND SOUTH MOST PLATFORMS ARE UNSTABLE DUE TO MISSING GROUT	V1-STR6, V1-STR24
V2	S6	STRUCTURAL	CEILING	1	REINFORCEMENT CORROSION, CONCRETE SPALLING AT E. MANHOLE OPENING	V2-STR6, V2-STR7, V2-STR8
V2	S7	STRUCTURAL	CEILING	1	REINFORCEMENT CORROSION, CONCRETE SPALLING AT W. MANHOLE OPENING	V2-STR23
V2	S8	STRUCTURAL	WALL	1	REIFORCEMENT CORROSION, DELAMINATION'S AT BOTTOM OF NE.	V2-STR9, V2-STR24, V2-STR34, V2-STR35, V2-STR36
V2	S9	STRUCTURAL	WALL	1	REIFORCEMENT CORROSION, DELAMINATION'S AT BOTTOM OF NW .	V2-STR25, V2-STR26
V2	S10	STRUCTURAL	STEEL COLUMN	1	MAJOR CORROSION AT BASE	V2-STR32, V2-STR33
V2	S11	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	CORROSION OF BASE PLATE, GUIDES AND ANCHORS AT CONDENSATE SUPPORT	V2-STR13
V2	S12	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	1	CONCRETE CRUMBLING AT SE. MAIN STEAM PEDESTAL	V2-STR11, V2-STR12
V2	S13	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	1	CONCRETE CRUMBLING AT E. COMBINED SUPPORT PEDESTAL	V2-STR13
V2	S14	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	1	CONCRETE CRUMBLING AT CONDENSATE PEDESTAL	V2-STR14, V2-STR15, V2-STR30
V2	S15	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	1	CONCRETE CRUMBLING AT CENTER MAIN STEAM PEDESTAL	V2-STR17
V2	S16	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	1	STRESS CRACKS PRESENT AT NW. MAIN STEAM PEDESTAL	V2-STR29,
V2	S17	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	1	CONCRETE CRUMBLING AT W. COMBINED SUPPORT PEDESTAL	V2-STR18
V2	S18	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	LOSS OF STRUCTURAL INTEGRITY DUE TO SUPPORT LEGS MISSING ON E. PLATFORM AT N. SIDE	V2-STR10, V2-STR24
V2	S19	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION ON BEAMS ON E. PLATFORM	V2-STR10, V2-STR25
V2	S20	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	IMPROPERLY SUPPORTED GRATING ON E. PLATFORM	V2-STR21
V2	S21	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	LOSS OF STRUCTURAL INTEGRITY DUE TO SUPPORT LEGS MISSING ON W. PLATFORM AT N. SIDE	V2-STR22, V2-STR27
V2	S22	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION ON BEAMS ON W. PLATFORM	V2-STR22, V2-STR27
V2	S23	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	IMPROPERLY SUPPORTED GRATING ON E. PLATFORM	-
V2	S24	STRUCTURAL	MH ASSEMBLY	2	CRACKING OF PC RISERS AT E. MH	V2-STR5, V2-STR8
V2	S25	STRUCTURAL	ACCESS LADDERS	1	W. LADDER DOES NOT FULLY EXTEND TO SAFE WORKLING LEVEL	V2-STR22,
V2	S26	STRUCTURAL	ACCESS LADDERS	1	E. LADDER DOES NOT FULLY EXTEND TO SAFE WORKLING LEVEL	V2-STR9
V2	S27	STRUCTURAL	ACCESS LADDERS	1	E. LADDER ANCHORAGE AND ATTACHMENT IS CORRODED	V2-STR8, V2-STR9
V3	S29	STRUCTURAL	CEILING	2	CONRETE SPLITTING AT W. MH OPENING	V3-STR5, V3-STR6
V3	S30	STRUCTURAL	WALL	1	CONCRETE INFILL AT E. WALL IS CRACKED AND BUCKLING	V3-STR11, V3-STR25,V3-STR26
V3	S31	STRUCTURAL	STEEL COLUMN	1	MAJOR CORROSION AT BASE	-
V3	S32	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	2	CORROSION OF BASE PLATE AND ANCHORS AT E. SUPPORTS	V3-STR13
V3	S33	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	2	CORROSION OF BASE PLATE AND ANCHORS AT W. SUPPORTS	V3-STR16
V3	S34	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	3	CORROSION OF BASE PLATE AND ANCHORS AT MAIN STEAM GUIDE	V3-STR20
V3	S35	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	SUPPORT HAS LOST CONTACT WITH PIPE AT CONDESATE SUPPORT	V3-STR29
V3	S36	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	3	CONCRETE CRACKED AT E. COMBINED SUPPORT PEDESTAL	V3-STR13
V3	S37	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	3	CONCRETE CRACKED AT W. COMBINED SUPPORT PEDESTAL	V3-STR16
V3	S38	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	2	STEEL CLAMP NOT INSTALLED PER DESIGN DRAWINGS	V3-STR19
V3	S40	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON E. PLATFORM	V3-STR7, V3-STR9
V3	S41	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION ON BEAMS ON E. PLATFORM	V3-STR10
V3	S42	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON W. PLATFORM	V3-STR14, V3-STR15
V3	S43	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	IMPROPERLY SUPPORTED GRATING ON W. PLATFORM	V3-STR17, V3-STR23
V3	S44	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	IMPROPERLY SUPPORTED GRATING ON E. PLATFORM	-
V3	S45	STRUCTURAL	ACCESS LADDERS	1	W. LADDER DOES NOT FULLY EXTEND TO SAFE WORKLING LEVEL	V3-STR14
V3	S46	STRUCTURAL	ACCESS LADDERS	1	E. LADDER DOES NOT FULLY EXTEND TO SAFE WORKLING LEVEL	V3-STR7, V3-STR11
V3	S47	STRUCTURAL	ACCESS LADDERS	3	W. LADDER ANCHORAGE AND ATTACHMENT IS CORRODED	V3-STR14
V4	S49	STRUCTURAL	CEILING	1	N. CEILING PANEL IS NOT BEARING ON SUPPORT BEAM	V4-STR7, V4-STR24
V4	S50	STRUCTURAL	CEILING	2	MIDDLE CEILING PANEL HAS AREA OF REINFORCEMENT CORROSION AND SPALLING	V4-STR29
V4	S51	STRUCTURAL	WALL	2	REIFORCEMENT CORROSION, DELAMINATION'S AT BOTTOM OF NE. CORNER	V4-STR18
V4	S52	STRUCTURAL	WALL	3	CONCRETE SPALLING AT PIPE PENETRATIONS ON N. WALL	V4-STR16
V4	S53	STRUCTURAL	STEEL COLUMN	3	MINOR CORROSION AT COLUMN BASE	V4-STR6
V4	S54	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	3	CORROSION OF BASE PLATE AND ANCHORS AT MAIN STEAM ANCHOR	V4-STR10
V4	S55	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	3	CORROSION OF BASE PLATE, GUIDES AND ANCHORS AT W. MAIN STEAM GUIDE	V4-STR11
V4	S58	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON W. PLATFORM ON S. SIDE	V4-STR12, V4-STR13
V4	S59	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROCION AT SUPPORT BASE ON W. PLATFORM ON N. SIDE	V4-STR15
V4	S60	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION ON BEAMS ON W. PLATFORM	V4-STR14
V4	S61	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON E. PLATFORM ON N. SIDE	V4-STR17, V4-STR20, V4-STR21, V4-STR22
V4	S62	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	IMPROPERLY SUPPORTED GRATING ON W. PLATFORM	V4-STR26
V4	S63	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	IMPROPERLY SUPPORTED GRATING ON E. PLATFORM	-
V4	S64	STRUCTURAL	ACCESS LADDERS	1	W. LADDER DOES NOT FULLY EXTEND TO SAFE WORKLING LEVEL	-
V4	S65	STRUCTURAL	ACCESS LADDERS	1	E. LADDER DOES NOT FULLY EXTEND TO SAFE WORKLING LEVEL	-
V5	S67	STRUCTURAL	WALL	2	REIFORCEMENT CORROSION, EXPOSED REINFORCEMENT AT NE. CORNER	V5-STR6, V5-STR9
V5	S68	STRUCTURAL	STEEL COLUMN	2	MODERATE CORROSION AT COLUMN BASE	V5-STR17
V5	S69	STRUCTURAL	STEEL BEAM	2	MODERATE CORROSION AT BEAM SEAT	V5-STR12
V5	S70	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	CORROSION OF BASE PLATE, SUPPORT AND ANCHORS AT NE. PIPE SUPPORT	V5-STR7, V5-STR8
V5	S71	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	CORROSION OF BASE PLATE, SUPPORT AND ANCHORS AT MIDDLE N. PIPE SUPPORT	V5-STR4
V5	S72	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	CORROSION OF BASE PLATE, SUPPORT AND ANCHORS AT COMBINED CENTRAL PIPE SUPPORT	V5-STR23, V5-STR25
V5	S73	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	2	STEEL CLAMP NOT INSTALLED PER DESIGN DRAWINGS	V5-STR21
V5	S74	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	1	CONCRETE CRUMBLING AT NE. PIPE SUPPORT	V5-STR7, V5-STR8
V5	S75	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	1	CONCRETE CRUMBLING AT MIDDLE N. PIPE SUPPORT	V5-STR4
V5	S76	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	1	CONCRETE CRUMBLING AT COMBINED CENTRAL PIPE SUPPORT	V5-STR23, V5-STR25
V5	S77	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	LOSS OF STRUCTURAL INTEGRITY DUE TO SUPPORT LEGS MISSING ON E. PLATFORM AT N. SIDE	V5-STR11, V5-STR15
V5	S78	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON S. PLATFORM ON E. SIDE	V5-STR27, V5-STR29
V5	S79	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	IMPROPERLY SUPPORTED GRATING ON E. PLATFORM	V5-STR15
V5	S80	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	IMPROPERLY SUPPORTED GRATING ON S. PLATFORM	-
V5	S81	STRUCTURAL	ACCESS LADDERS	3	MINOR CORROSION OF W. LADDER AT BASE	V5-STR11
V5	S82	STRUCTURAL	ACCESS LADDERS	3	MINOR CORROSION OF E. LADDER AT BASE	-
V6	S84	STRUCTURAL	WALL	2	REIFORCEMENT CORROSION, DELAMINATION'S AT BOTTOM OF SE. CORNER	V6-STR6
V6	S85	STRUCTURAL	STEEL BEAM	3	MINOR CORROSION AT BEAM SEATS	V6-STR19
V6	S86	STRUCTURAL	STEEL COLUMN	1	MAJOR CORROSION AT BASE	V6-STR12, V6-STR22
V6	S87	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	CORROSION OF BASE PLATE, SUPPORT AND ANCHORS AT N. COMBINED SUPPORT	V6-STR9
V6	S88	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	CORROSION OF BASE PLATE, SUPPORT AND ANCHORS AT S. COMBINED SUPPORT	V6-STR14
V6	S89	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	2	EXPOSED REBAR AND CORROSION AT S. COMBINED SUPPORT	V6-STR14
V6	S90	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	1	STRESS CRACKS AND CONCRETE FALLING OFF AT S. MAIN STEAM PEDESTAL	V6-STR24, V6-STR25
V6	S91	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON S. PLATFORM ON E. SIDE	V6-STR4, V6-STR5
V6	S92	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON N. PLATFORM ON E. SIDE	V6-STR15, V6-STR16
V7	S94	STRUCTURAL	CEILING	1	REINFORCEMENT CORROSION, CONCRETE SPALLING AT E. MANHOLE OPENING	V7-STR3
V7	S95	STRUCTURAL	WALL	2	REIFORCEMENT CORROSION, DELAMINATION'S AT NE. CORNER	V7-STR4, V7-STR5
V7	S96	STRUCTURAL	WALL	2	REIFORCEMENT CORROSION, DELAMINATION'S AT NE. CORNER	V7-STR4, V7-STR20,V7-STR21
V7	S97	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	CORROSION OF BASE PLATE, SUPPORT AND ANCHORS AT E. COMBINED SUPPORT	V7-STR8
V7	S98	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	CORROSION OF BASE PLATE, SUPPORT AND ANCHORS AT W. COMBINED SUPPORT	V7-STR10
V7	S99	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	1	CONCRETE CRUMBLING AT E. PIPE SUPPORT	V7-STR6, V7-STR8
V7	S100	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON E. PLATFORM ON N. SIDE	V7-STR6, V7-STR7
V7	S101	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON E. PLATFORM ON S. SIDE	-

STRUCTURAL CONDITION ASSESSMENT TABLE

VAULT NUMBER	ASSESSMENT NUMBER	ASSESSMENT TYPE	ASSESSMENT ITEM	REPLACEMENT/REPAIR PRIORITY (RP)	ASSESSMENT ISSUE	PHOTO NAMES
V7	S102	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON W. PLATFORM ON N. SIDE	V7-STR13, V7-STR14
V7	S103	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON W. PLATFORM ON S. SIDE	-
V7	S104	STRUCTURAL	ACCESS LADDERS	1	E. LADDER ATTACHEMENT IS LOOSE	V7-STR2
V8	S106	STRUCTURAL	CEILING	3	CONCRETE SPLITTING AT W. MANHOLE	V8-STR3
V8	S107	STRUCTURAL	WALL	3	CONCRETE SPALLING AT W. PIPE PENETRATION	V8-STR9
V8	S108	STRUCTURAL	STEEL COLUMN	2	COLUMN PEDESTAL SPALLING	V8-STR13
V8	S109	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	CORROSION OF BASE PLATE, SUPPORT AND ANCHORS AT E. COMBINED SUPPORT	V8-STR16
V8	S110	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	CORROSION OF BASE PLATE, SUPPORT AND ANCHORS AT W. COMBINED SUPPORT	V8-STR12
V8	S111	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	1	CONCRETE CRUMBLING AT E. PIPE SUPPORT	V8-STR16
V8	S112	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON E. PLATFORM ON N. SIDE	V8-STR16, V8-STR17
V8	S113	STRUCTURAL	ACCESS LADDERS	1	MAJOR CORROSION AND MISSING RUNGS ON W. ACCESS LADDER	V8-STR5
V8	S114	STRUCTURAL	ACCESS LADDERS	1	MAJOR CORROSION AND MISSING RUNGS ON E. ACCESS LADDER	V8-STR14, V8-STR15
V9	S116	STRUCTURAL	CEILING	1	REINFORCEMENT CORROSION, CONCRETE SPALLING AT E. MANHOLE OPENING	V9-STR3, V9-STR10
V9	S117	STRUCTURAL	CEILING	1	MIDDLE CEILING PANEL HAS REINFORCEMENT CORROSION, DELAMINATION	V9-STR15, V9-STR21
V9	S118	STRUCTURAL	WALL	2	REIFORCEMENT CORROSION, DELAMINATION'S AT TOP OF NE. CORNER	V9-STR3, V9-STR11, V9-STR13
V9	S119	STRUCTURAL	WALL	2	REIFORCEMENT CORROSION, DELAMINATION'S AT NW. CORNER	V9-STR17, V9-STR18, V9-STR19
V9	S120	STRUCTURAL	WALL	3	CONCRETE SPALLING AT 2 PIPE PENETRATIONS ON S. WALL	V9-STR22
V9	S121	STRUCTURAL	WALL	3	CONCRETE SPALLING AT PIPE PENETRATIONS ON S. WALL	V9-STR23, V9-STR24
V9	S122	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	3	MINOR CORROSION OF BASE PLATE AND ANCHORS AT E. 2 SUPPORTS	V9-STR14
V9	S123	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON E. PLATFORM ON N. SIDE	V9-STR14
V9	S124	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON E. PLATFORM ON S. SIDE	V9-STR14
V10	S126	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	3	MINOR CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V10-STR13
V10	S127	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	MAJOR CORROSION OF BASE PLATE AND ANCHORS AT 2 SUPPORTS	V10-STR14, V10-STR15
V10	S128	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON E. PLATFORM ON N. SIDE	V10-STR12
V10	S129	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON W. PLATFORM ON N. SIDE	V10-STR16
V10.1	S131	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	MAJOR CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V10.1-STR7, V10.1-STR8
V10.1	S132	STRUCTURAL	ACCESS LADDERS	2	MODERATE CORROSION ON W. ACCESS LADDER	V10.1-STR6
V11	S134	STRUCTURAL	CEILING	2	REINFORCEMENT CORROSION, CONCRETE SPALLING AT N. MANHOLE OPENING	V11-STR20, V11-STR21
V11	S135	STRUCTURAL	WALL	2	REIFORCEMENT CORROSION, DELAMINATION'S AT MIDDLE OF E. WALL	V11-STR24, V11-STR25
V11	S136	STRUCTURAL	STEEL COLUMN	3	MINOR CORROSION AT COLUMN BASE	-
V11	S137	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	3	MINOR CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V11-STR9
V11	S138	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	2	MODERATE CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V11-STR9, V11-STR10, V11-STR11
V11	S139	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	1	CONCRETE CRUMBLING AT MAIN STEAM ANCHOR	V11-STR16, V11-STR34
V11	S140	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON N. PLATFORM ON W. SIDE	V11-STR17
V11	S141	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON S. PLATFORM ON W. SIDE	V11-STR8
V11	S142	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON N. PLATFORM ON E. SIDE	V11-STR19
V11	S143	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON S. PLATFORM ON E. SIDE	V11-STR29, V11-STR30
V12A	S145	STRUCTURAL	STEEL COLUMN	2	MODERATE CORROSION AT COLUMN BASE	V12A-STR8
V12A	S146	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	2	MODERATE CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V12A-STR6, V12A-STR7
V12A	S147	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	MAJOR CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V12A-STR6, V12A-STR7
V12A	S148	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON E. PLATFORM ON S. SIDE	V12S-STR5
V12A	S149	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON W. PLATFORM ON S. SIDE	-
V12A	S150	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON E. PLATFORM ON N. SIDE	-
V12A	S151	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON W. PLATFORM ON N. SIDE	-
V12B	S153	STRUCTURAL	WALL	2	REIFORCEMENT CORROSION, DELAMINATION'S AT BOTTOM OF SW. CORNER	V12B-STR8
V12B	S154	STRUCTURAL	STEEL COLUMN	3	MINOR CORROSION AT COLUMN BASE	V12B-STR13
V12B	S155	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	2	MODERATE CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V12B-STR10
V12B	S156	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON W. PLATFORM ON S. SIDE	V12B-STR9
V12B	S157	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON W. PLATFORM ON N. SIDE	-
V12B	S158	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON E. PLATFORM ON S. SIDE	V12B-STR12
V12B	S159	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON E. PLATFORM ON N. SIDE	V12B-STR17
V13	S161	STRUCTURAL	CEILING	2	REINFORCEMENT CORROSION, CONCRETE DELAMINATION'S AT W. MANHOLE OPENING	V13-STR7
V13	S162	STRUCTURAL	CEILING	2	REINFORCEMENT CORROSION, CONCRETE DELAMINATION'S AT E. MANHOLE OPENING	V13-STR15
V13	S163	STRUCTURAL	WALL	2	REIFORCEMENT CORROSION, DELAMINATION'S AT TOP OF SW. CORNER	V13-STR7
V13	S164	STRUCTURAL	STEEL COLUMN	1	MAJOR CORROSION AT COLUMN BASE	V13-STR14
V13	S165	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	MAJOR CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V13-STR10, V13-STR13
V13	S166	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON W. PLATFORM ON S. SIDE	V13-STR9
V13	S167	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON W. PLATFORM ON N. SIDE	-
V13	S168	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON E. PLATFORM ON S. SIDE	-
V13	S169	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON E. PLATFORM ON N. SIDE	-
V14	S171	STRUCTURAL	STEEL COLUMN	2	MODERATE CORROSION AT COLUMN BASE	V14-STR8
V14	S172	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	2	MODERATE CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V14-STR15
V14	S173	STRUCTURAL	CONCRETE SUPPORT PEDESTAL	2	STEEL CLAMP NOT INSTALLED PER DESIGN DRAWINGS	V14-STR15
V14	S174	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON E. PLATFORM ON S. SIDE	V14-STR6
V14	S175	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON E. PLATFORM ON N. SIDE	-
V14	S176	STRUCTURAL	ACCESS LADDERS	1	E. LADDER ATTACHEMENT IS LOOSE	-
V15	S178	STRUCTURAL	WALL	3	REIFORCEMENT CORROSION, DELAMINATION'S AT TOP OF SE. CORNER	V15-STR9
V15	S179	STRUCTURAL	WALL	2	REIFORCEMENT CORROSION, DELAMINATION'S AT TOP OF N.WALL	V15-STR17, V15-STR18, V15-STR19, V15-STR22
V15	S180	STRUCTURAL	STEEL COLUMN	1	MAJOR CORROSION AT COLUMN BASE	V15-STR23
V15	S181	STRUCTURAL	STEEL BEAM	3	MINOR CORROSION AT BEAM SEAT	V15-STR19, V15-STR22
V15	S182	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	2	MODERATE CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	-
V15	S183	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	MAJOR CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V15-STR10
V15	S184	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON E. PLATFORM ON S. SIDE	V15-STR8
V15	S185	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON W. PLATFORM ON S. SIDE	V15-STR11, V15-STR12
V15	S186	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON W. PLATFORM ON N. SIDE	V15-STR13
V15	S187	STRUCTURAL	ACCESS LADDERS	2	MODERATE CORROSION ON E. ACCESS LADDER	V15-STR7
V16	S189	STRUCTURAL	STEEL COLUMN	2	MODERATE CORROSION AT COLUMN BASE	V16-STR12
V16	S190	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	MAJOR CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V16-STR6, V16-STR7, V16-STR8, V16-STR10
V16	S191	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON W. PLATFORM ON S. SIDE	V16-STR5
V16	S192	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	1	MAJOR CORROSION AT SUPPORT BASE ON W. PLATFORM ON N. SIDE	-
V16	S193	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON E. PLATFORM ON S. SIDE	-
V16	S194	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON E. PLATFORM ON N. SIDE	-
V17	S196	STRUCTURAL	STEEL COLUMN	3	MINOR CORROSION AT COLUMN BASE	V17-STR9
V17	S197	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	3	MINOR CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V17-STR7
V17	S198	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	2	MODERATE CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V17-STR7, V17-STR8
V17	S199	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON W. PLATFORM ON N. SIDE	V17-STR6
V17	S200	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON W. PLATFORM ON S. SIDE	V17-STR5
V17	S201	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON E. PLATFORM ON N. SIDE	-
V17	S202	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON E. PLATFORM ON S. SIDE	-
V18	S204	STRUCTURAL	STEEL COLUMN	3	MINOR CORROSION AT COLUMN BASE	V18-STR7

STRUCTURAL CONDITION ASSESSMENT TABLE

VAULT NUMBER	ASSESSMENT NUMBER	ASSESSMENT TYPE	ASSESSMENT ITEM	REPLACEMENT/REPAIR PRIORITY (RP)	ASSESSMENT ISSUE	PHOTO NAMES
V18	S205	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	3	MINOR CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V18-STR6
V18	S206	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON W. PLATFORM ON S. SIDE	V18-STR5
V18	S207	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON E. PLATFORM ON S. SIDE	-
V19	S209	STRUCTURAL	STEEL COLUMN	3	MINOR CORROSION AT COLUMN BASE	V19-STR12
V19	S210	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	3	MINOR CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V19-STR8
V19	S211	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	2	MODERATE CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V19-STR7
V19	S212	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON S. PLATFORM ON E. SIDE	V19-STR6
V19	S213	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	2	MODERATE CORROSION AT SUPPORT BASE ON S. PLATFORM ON W. SIDE	-
V19	S214	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON N. PLATFORM ON E. SIDE	-
V19	S215	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON N. PLATFORM ON W. SIDE	-
V20	S217	STRUCTURAL	STEEL COLUMN	3	MINOR CORROSION AT COLUMN BASE	V20-STR15
V20	S218	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	1	MAJOR CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V20-STR8
V20	S219	STRUCTURAL	STRUCTURAL STEEL PIPE SUPPORT	2	MODERATE CORROSION OF BASE PLATE AND ANCHORS AT SUPPORTS	V20-STR6, V20-STR7
V20	S220	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON N. PLATFORM ON E. SIDE	V20-STR5
V20	S221	STRUCTURAL	STRUCTURAL STEEL PLATFORMS	3	MINOR CORROSION AT SUPPORT BASE ON N. PLATFORM ON W. SIDE	-

MECHANICAL CONDITION ASSESSMENT TABLE

VAULT NUMBER	ASSESSMENT NUMBER	ASSESSMENT TYPE	ASSESSMENT ITEM	REPLACEMENT/REPAIR PRIORITY (RP)	ASSESSMENT ISSUE	PHOTO NAMES
V2	M10	MECHANICAL	VAULT PIPING	2	SMALL-BORE PIPING AND ASSOICATED AIR VENTS, VACUUM BREAKERS, AND GAUGES ARE DETERIORATING AND HAVE SIGNIFICATION CORROSION.	V2-MECH2, V2-MECH12
V2	M13	MECHANICAL	VAULT VALVES	2	LARGE-BORE BUTTERFLY VALVES HAVE ACTUATORS THAT SHOW SIGNS OF SIGNIFICANT CORROSION AND MAY NOT BE OPERABLE DUE TO CORROSION.	V2-MECH3, V2-MECH8
V2	M14	MECHANICAL	VAULT VALVES	2	SMALL-BORE BALL, GATE, AND GLOBE VALVES ARE DETERIORATING AND SHOW SIGNS OF SIGNIFICATION CORROSION AND MAY NOT BE OPERABLE DUE TO CORROSION.	V2-MECH5
V2	M15	MECHANICAL	VAULT STEAM TRAPS	2	STEAM TRAP ASSEMBLIES ARE DETERIORATING AND AND HAVE SIGNIFICATION CORROSION AND MAY NOT BE IN GOOD WORKING CONDITION OR FAULTY DUE TO CORROSION.	V2-MECH6
V2	M17	MECHANICAL	VAULT GUIDES	1	PIPE GUIDES ARE DETERIORATING AND HAVE SIGNIFICATION CORROSION THAT MAY BE LIMITING FREE MOVEMENT. FOR CONCRETE PEDESTALS SEE STRUCTURAL TABLE.	V2-MECH18
V2	M18	MECHANICAL	VAULT SUPPORTS	1	PIPE SUPPORTS ARE DETERIORATING AND HAVE SIGNIFICATION CORROSION THAT MAY BE LIMITING FREE MOVEMENT. FOR CONCRETE PEDESTALS SEE STRUCTURAL TABLE.	V2-MECH13, V2-MECH14, V2-MECH16
V2	M19	MECHANICAL	VAULT INSULATION AND JACKETING	1	REMOVEABLE INSULATION BLANKET ON THE CONDENSATE RISER BUTTERFLY VALVE FOR THE BRANCH PIPING SERVICE TO THE SOUTH NEEDS REPLACED.	V2-MECH16, V2-MECH21, V2-MECH22
V2	M20	MECHANICAL	VAULT VENTILATION	1	VENTILATION FAN AND DUCTWORK IS SEVERELY CORRODED AND THE FAN IS NOT OPERATIONAL. COMPLETE REPLACEMENT OF THE VENTILATION SYSTEM IS REQUIRED.	V2-MECH1, V2-MECH4, V2-MECH9, V2-MECH10, V2-MECH11
V3	M21	MECHANICAL	VAULT PIPING	2	STEAM AND CONDENSATE PRE-INSULATED PIPING AT BRANCH SERVICE TO THE NORTH PENETRATIONS ARE DAMAGED AND MELTED DUE TO VAULT HEAT OR A LEAK.	V3-MECH6, V3-MECH12
V3	M24	MECHANICAL	VAULT VALVES	1	THE CONDENSATE RISER BUTTERFLY VALVE IS LEAKING ON THE VALVE STEM BOTTOM AND REQUIRING THE VAULT TO BE PUMPED OUT REGULARLY.	V3-MECH5
V3	M25	MECHANICAL	VAULT VALVES	1	THE BALL DRAIN VALVE AFTER THE LEAKING BUTTERFLY VALVE FOR THE CONDENSATE BRANCH SERVICE TO THE SOUTH IS LEAKING.	V3-MECH10, V3-MECH11
V3	M28	MECHANICAL	VAULT GUIDES	2	PIPE GUIDES ARE DETERIORATING AND HAVE SIGNIFICATION CORROSION THAT MAY BE LIMITING FREE MOVEMENT. FOR CONCRETE PEDESTALS SEE STRUCTURAL TABLE.	V3-MECH9
V3	M29	MECHANICAL	VAULT GUIDES	1	PIPE GUIDE ON CONDENSATE MAIN ON WEST END OF VAULT HAS FAILED AND IS DETACHED FROM PIPE AND PEDESTAL. FOR CONCRETE PEDESTALS SEE STRUCTURAL TABLE.	V3-MECH2
V3	M30	MECHANICAL	VAULT SUPPORTS	2	PIPE SUPPORTS ARE DETERIORATING AND HAVE SIGNIFICATION CORROSION THAT MAY BE LIMITING FREE MOVEMENT. FOR CONCRETE PEDESTALS SEE STRUCTURAL TABLE.	V3-MECH9
V3	M31	MECHANICAL	VAULT INSULATION AND JACKETING	1	REMOVEABLE INSULATION BLANKET ON THE CONDENSATE RISER BUTTERFLY VALVE FOR THE BRANCH PIPING SERVICE TO THE SOUTH NEEDS REPLACED.	V3-MECH3
V3	M32	MECHANICAL	VAULT INSULATION AND JACKETING	1	RIGED CELLULAR GLASS INSULATION AND ALUMINUM JACKETING ON THE CONDENSATE RISER PIPE ELBOW FOR THE BRANCH PIPING SERVICE TO THE SOUTH NEEDS REPLACED.	V3-MECH7
V3	M33	MECHANICAL	VAULT VENTILATION	3	VENTILATION FAN AND DUCTWORK ARE IN ACCEPTABLE CONDTION AND ARE CURRENTLY MAINTAINING AN ACCEPTABLE TEMPERATURE IN THE VAULT.	V3-MECH1
V4	M34	MECHANICAL	VAULT PIPING	3	CONDENSATE RISER IS MISSING A PRESSURE GAUGE.	V4-MECH7
V4	M42	MECHANICAL	VAULT VENTILATION	1	VENTILATION FAN AND DUCTWORK IS CORRODED AND NOT IN GOOD WORKING CONDITION. COMPLETE REPLACEMENT OF THE VENTILATION SYSTEM IS RECOMMENDED.	V4-MECH1, V4-MECH2, V4-MECH4, V4-MECH8
V5	M46	MECHANICAL	VAULT STEAM TRAPS	1	STEAM TRAP ON THE DRIP LEG FOR THE STEAM BRANCH SERVICE TO THE NORTH HAS FAILED AND THE BYPASS ASSEMBLY AROUND THE STEAM TRAP IS BEING UTILIZED.	V5-MECH7
V5	M49	MECHANICAL	VAULT SUPPORTS	1	PIPE SUPPORTS ARE DETERIORATING AND HAVE SIGNIFICATION CORROSION THAT MAY BE LIMITING FREE MOVEMENT. FOR CONCRETE PEDESTALS SEE STRUCTURAL TABLE.	V5-MECH2
V5	M50	MECHANICAL	VAULT INSULATION AND JACKETING	1	RIGED CELLULAR GLASS INSULATION AND ALUMINUM JACKETING ON THE CONDENSATE MAIN PIPING ON THE WEST END OF THE VAULT NEEDS REPLACED.	V5-MECH9
V5	M51	MECHANICAL	VAULT INSULATION AND JACKETING	1	REMOVEABLE INSULATION BLANKET ON THE CONDENSATE MAIN BUTTERFLY VALVE ON THE WEST END OF THE VAULT NEEDS REPLACED.	V5-MECH9
V5	M52	MECHANICAL	VAULT INSULATION AND JACKETING	1	REMOVEABLE INSULATION BLANKET ON STEAM RISER BUTTERFLY VALVE ON WEST END OF THE VAULT NEEDS REPLACED, CONDENSATE RISER VALVE BLANKET NEEDS RE-ATTACHED.	V5-MECH8
V5	M53	MECHANICAL	VAULT VENTILATION	1	VENTILATION FAN AND DUCTWORK IS CORRODED AND FAN IS NOT OPERATIONAL. COMPLETE REPLACEMENT OF THE VENTILATION SYSTEM IS RECOMMENDED.	V5-MECH1, V5-MECH4, V5-MECH5
V6	M60	MECHANICAL	VAULT SUPPORTS	1	PIPE SUPPORTS ARE DETERIORATING AND HAVE SIGNIFICATION CORROSION THAT MAY BE LIMITING FREE MOVEMENT. FOR CONCRETE PEDESTALS SEE STRUCTURAL TABLE.	V6-MECH2, V6-MECH9
V6	M62	MECHANICAL	VAULT VENTILATION	1	VENTILATION FAN AND DUCTWORK IS CORRODED AND NOT IN GOOD WORKING CONDITION. COMPLETE REPLACEMENT OF THE VENTILATION SYSTEM IS RECOMMENDED.	V6-MECH1, V6-MECH3, V6-MECH4
V7	M63	MECHANICAL	VAULT PIPING	2	SMALL-BORE PIPING AND ASSOICATED AIR VENTS, VACUUM BREAKERS, AND GAUGES ARE DETERIORATING AND HAVE SIGNIFICATION CORROSION.	V7-MECH9, V7-MECH10
V7	M64	MECHANICAL	VAULT PIPING	2	THE STEAM MAIN BUTTERFLY VALVE WARM-UP BYPASS ASSEMBLY ON THE EAST END OF THE VAULT HAS BEEN REMOVED AND NEEDS TO BE REPLACED.	V7-MECH8
V7	M67	MECHANICAL	VAULT VALVES	2	SMALL-BORE BALL, GATE, AND GLOBE VALVES ARE DETERIORATING AND SHOW SIGNS OF SIGNIFICATION CORROSION AND MAY NOT BE OPERABLE DUE TO CORROSION.	V7-MECH6, V7-MECH9
V7	M68	MECHANICAL	VAULT STEAM TRAPS	2	STEAM TRAP ASSEMBLIES ARE DETERIORATING AND AND HAVE SIGNIFICATION CORROSION AND MAY NOT BE IN GOOD WORKING CONDITION OR FAULTY DUE TO CORROSION.	V7-MECH14
V7	M70	MECHANICAL	VAULT GUIDES	1	PIPE GUIDES ARE DETERIORATING AND HAVE SIGNIFICATION CORROSION THAT MAY BE LIMITING FREE MOVEMENT. FOR CONCRETE PEDESTALS SEE STRUCTURAL TABLE.	V7-MECH10
V7	M71	MECHANICAL	VAULT SUPPORTS	1	PIPE SUPPORTS ARE DETERIORATING AND HAVE SIGNIFICATION CORROSION THAT MAY BE LIMITING FREE MOVEMENT. FOR CONCRETE PEDESTALS SEE STRUCTURAL TABLE.	V7-MECH2, V7-MECH10
V7	M72	MECHANICAL	VAULT INSULATION AND JACKETING	2	REMOVABLE INSULATION BLANKET ON THE CHILLED WATER MAIN BUTTERFLY VALVE TO THE NORTH ON THE EAST END OF THE VAULT NEEDS REPLACED. TEMPORARY COVER.	V7-MECH3, V7-MECH4
V7	M73	MECHANICAL	VAULT INSULATION AND JACKETING	1	RIGID CELLULAR GLASS INSULATION AND ALUMINUM JACKETING ON THE CONDENSATE MAIN PIPING ON THE EAST END OF THE VAULT NEEDS REPLACED.	V7-MECH13
V7	M74	MECHANICAL	VAULT VENTILATION	1	VENTILATION FAN AND DUCTWORK IS CORRODED AND NOT IN GOOD WORKING CONDITION. COMPLETE REPLACEMENT OF THE VENTILATION SYSTEM IS RECOMMENDED.	V7-MECH1, V7-MECH5, V7-MECH6, V7-MECH7, V7-MECH15
V8	M75	MECHANICAL	VAULT PIPING	3	SMALL-BORE PIPING AND ASSOICATED AIR VENTS, VACUUM BREAKERS, AND GAUGES ARE DETERIORATING AND HAVE SIGNIFICATION CORROSION.	V8-MECH8, V8-MECH9, V8-MECH10, V8-MECH12
V8	M77	MECHANICAL	VAULT VALVES	3	SMALL-BORE BALL, GATE, AND GLOBE VALVES ARE DETERIORATING AND SHOW SIGNS OF SIGNIFICATION CORROSION AND MAY NOT BE OPERABLE DUE TO CORROSION.	V8-MECH9, V8-MECH10, V8-MECH11
V8	M78	MECHANICAL	VAULT STEAM TRAPS	3	STEAM TRAP ASSEMBLIES ARE DETERIORATING AND AND HAVE SIGNIFICATION CORROSION AND MAY NOT BE IN GOOD WORKING CONDITION OR FAULTY DUE TO CORROSION.	V8-MECH9
V8	M80	MECHANICAL	VAULT GUIDES	1	PIPE GUIDES ARE DETERIORATING AND HAVE SIGNIFICATION CORROSION THAT MAY BE LIMITING FREE MOVEMENT. FOR CONCRETE PEDESTALS SEE STRUCTURAL TABLE.	V8-MECH7
V8	M81	MECHANICAL	VAULT SUPPORTS	1	PIPE SUPPORTS ARE DETERIORATING AND HAVE SIGNIFICATION CORROSION THAT MAY BE LIMITING FREE MOVEMENT. FOR CONCRETE PEDESTALS SEE STRUCTURAL TABLE.	V8-MECH4, V8-MECH7
V8	M83	MECHANICAL	VAULT VENTILATION	1	VENTILATION FAN AND DUCTWORK IS SEVERELY CORRODED AND THE FAN IS NOT OPERATIONAL. COMPLETE REPLACEMENT OF THE VENTILATION SYSTEM IS REQUIRED.	V8-MECH1, V8-MECH2, V8-MECH3, V8-MECH6
V9	M91	MECHANICAL	VAULT INSULATION AND JACKETING	1	REMOVABLE INSULATION BLANKET ON THE CONDENSATE MAIN BUTTERFLY VALVE ON THE WEST END OF THE VAULT NEEDS REPLACED.	V9-MECH8
V9	M92	MECHANICAL	VAULT INSULATION AND JACKETING	2	RIGID CELLULAR GLASS INSULATION NEEDS REPAIRED AND ALUMINUM JACKETING REPLACED ON THE CHILLED WATER MAIN BUTTERFLY VALVES ON THE WEST END OF THE VAULT.	V9-MECH5, V9-MECH8
V10	M101	MECHANICAL	VAULT INSULATION AND JACKETING	1	REMOVABLE INSULATION BLANKET ON THE CONDENSATE MAIN BUTTERFLY VALVE ON THE WEST END OF THE VAULT NEEDS REPLACED.	V10-MECH9
V10	M102	MECHANICAL	VAULT INSULATION AND JACKETING	2	RIGID CELLULAR GLASS INSULATION NEEDS REPAIRED AND ALUMINUM JACKETING REPLACED ON THE CHILLED WATER MAIN BUTTERFLY VALVES ON BOTH ENDS OF THE VAULT.	V10-MECH9, V10-MECH13
V10.1	M111	MECHANICAL	VAULT INSULATION AND JACKETING	1	RIGID CELLULAR GLASS INSULATION AND ALUMINUM JACKETING ON STEAM, CONDENSATE, AND CHILLED WATER BRANCH PIPING TO THE WEST AT THE WALL IS MISSING.	V10.1-MECH4, V10.1-MECH8, V10.1-MECH9
V11	M120	MECHANICAL	VAULT INSULATION AND JACKETING	1	RIGID CELLULAR GLASS INSULATION AND ALUMINUM JACKETING ON THE DRIP LEG FOR THE STEAM BRANCH PIPING TO THE EAST NEEDS REPLACED.	V11-MECH5, V11-MECH13
V11	M121	MECHANICAL	VAULT VENTILATION	1	VENTILATON FAN AND DUCTWORK APPEAR TO BE IN GOOD CONDITION, BUT THE FAN IS NOT OPERATIONAL. THE VENTILATION FAN MOTOR AND BELT MAY NEED REPLACED.	V11-MECH1, V11-MECH9
V12A	M122	MECHANICAL	VAULT PIPING	1	PIPE NIPPLE FOR FOR THE STEAM TRAP ASSEMBLY AT THE CONNECTION TO CONDENSATE BRANCH PIPING TO THE SOUTH HAS CORRODED AND IS LEAKING.	V12A-MECH10
V12A	M123	MECHANICAL	VAULT PIPING	1	PIPE NIPPLE FOR THE AIR VENT, VACUUM BREAKER, AND PRESSURE GAUGE ASSEMBLY ON CONDENSATE BRANCH PIPING TO THE SOUTH HAS CORRODED AND IS LEAKING.	V12A-MECH11, V12A-MECH12
V12A	M125	MECHANICAL	VAULT VALVES	2	SMALL-BORE BALL, GATE, AND GLOBE VALVES ON CONDENSATE BRANCH PIPING TO SOUTH ARE DETERIORATED, CORRODED AND MAY NOT BE OPERABLE DUE TO CORROSION.	V12A-MECH9, V12A-MECH10, V12A-MECH11, V12A-MECH15
V12A	M130	MECHANICAL	VAULT INSULATION AND JACKETING	2	RIGID CELLULAR GLASS INSULATION AND ALUMINUM JACKETING ON CHILLED WATER BRANCH PIPING AND BYPASS PIPING AND VALVES TO THE SOUTH AT THE WALL IS MISSING.	V12A-MECH2, V12A-MECH3
V12A	M131	MECHANICAL	VAULT INSULATION AND JACKETING	2	RIGID CELLULAR GLASS INSULATION NEEDS REPAIRED AND ALUMINUM JACKETING REPLACED ON THE CHILLED WATER MAIN BUTTERFLY VALVES ON EAST END OF THE VAULT.	V12A-MECH6
V12A	M132	MECHANICAL	VAULT INSULATION AND JACKETING	1	RIGED CELLULAR GLASS INSULATION AND ALUMINUM JACKETING ON THE CONDENSATE MAIN PIPING ON THE WEST END OF THE VAULT NEEDS REPLACED.	V12A-MECH13
V12A	M133	MECHANICAL	VAULT INSULATION AND JACKETING	1	REMOVEABLE INSULATION BLANKET ON THE CONDENSATE MAIN BUTTERFLY VALVE ON THE WEST END OF THE VAULT NEEDS REPLACED.	V12A-MECH13
V12A	M134	MECHANICAL	VAULT INSULATION AND JACKETING	1	ALUMINUM JACKETING ON THE DRIP LEG FOR THE STEAM MAIN PIPING NEEDS REPLACED.	V12A-MECH17
V12A	M135	MECHANICAL	VAULT VENTILATION	1	VENTILATON FAN AND DUCTWORK APPEAR TO BE IN GOOD CONDITION, BUT THE FAN AIRFLOW IS NOT ENOUGH. THE VENTILATION FAN MOTOR AND BELT MAY NEED REPLACED.	V12A-MECH1, V12A-MECH4, V12A-MECH7, V12A-MECH14
V12B	M138	MECHANICAL	VAULT VALVES	1	SMALL-BORE GLOBE BYPASS VALVE ON STEAM TRAP ASSEMBLY FOR DRIP LEG STEAM BRANCH PIPING TO THE SOUTH IS LEAKING.	12B-MECH2, 12B-MECH10, 12B-MECH18
V12B	M143	MECHANICAL	VAULT INSULATION AND JACKETING	2	RIGID CELLULAR GLASS INSULATION NEEDS REPAIRED AND ALUMINUM JACKETING REPLACED ON THE CHILLED WATER MAIN BUTTERFLY VALVES ON EAST END OF THE VAULT.	12B-MECH17
V12B	M144	MECHANICAL	VAULT INSULATION AND JACKETING	1	RIGED CELLULAR GLASS INSULATION AND ALUMINUM JACKETING ON THE CONDENSATE BRANCH PIPING TO THE SOUTH NEEDS REPLACED.	12B-MECH3
V12B	M145	MECHANICAL	VAULT INSULATION AND JACKETING	1	REMOVEABLE INSULATION BLANKET ON THE CONDENSATE BRANCH PIPING BUTTERFLY VALVE TO THE SOUTH NEEDS REPLACED.	12B-MECH3
V12B	M146	MECHANICAL	VAULT VENTILATION	1	VENTILATON FAN AND DUCTWORK APPEAR TO BE IN GOOD CONDITION, BUT THE FAN AIRFLOW IS NOT ENOUGH. THE VENTILATION FAN MOTOR AND BELT MAY NEED REPLACED.	12B-MECH1, 12B-MECH7, 12B-MECH11
V13	M154	MECHANICAL	VAULT INSULATION AND JACKETING	2	RIGID CELLULAR GLASS INSULATION NEEDS REPAIRED AND ALUMINUM JACKETING REPLACED ON THE CHILLED WATER MAIN BUTTERFLY VALVES ON WEST END OF THE VAULT.	V13-MECH13
V13	M155	MECHANICAL	VAULT INSULATION AND JACKETING	1	REMOVEABLE INSULATION BLANKET ON THE CONDENSATE BRANCH PIPING BUTTERFLY VALVE TO THE NORTH NEEDS REPLACED.	V13-MECH17
V13	M156	MECHANICAL	VAULT VENTILATION	1	VENTILATON FAN AND DUCTWORK APPEAR TO BE IN GOOD CONDITION, BUT THE FAN AIRFLOW IS NOT ENOUGH. THE VENTILATION FAN MOTOR AND BELT MAY NEED REPLACED.	V13-MECH1, V13-MECH5, V13-MECH14
V14	M157	MECHANICAL	VAULT PIPING	1	PRESSURE GAUGE ASSEMBLY ON THE CONDENSATE RISER FOR THE BRANCH PIPING TO THE SOUTH IS LEAKING.	V14-MECH13
V14	M165	MECHANICAL	VAULT INSULATION AND JACKETING	1	RIGED CELLULAR GLASS INSULATION AND ALUMINUM JACKETING ON THE CONDENSATE BRANCH PIPING ELBOW TO THE WEST NEEDS REPLACED.	V14-MECH11
V14	M166	MECHANICAL	VAULT INSULATION AND JACKETING	1	REMOVEABLE INSULATION BLANKET ON THE CONDENSATE BRANCH PIPING BUTTERFLY VALVE TO THE SOUTH NEEDS REPLACED.	V14-MECH10
V14	M167	MECHANICAL	VAULT VENTILATION	1	VENTILATION FAN AND DUCTWORK IS SEVERELY CORRODED AND THE FAN IS NOT OPERATIONAL. COMPLETE REPLACEMENT OF THE VENTILATION SYSTEM IS REQUIRED.	V14-MECH1, V14-MECH3, V14-MECH14, V14-MECH15
V15	M174	MECHANICAL	VAULT SUPPORTS	1	PIPE ROLLER ASSEMBLY ON THE CONDENSATE MAIN PIPING ON THE WEST END OF THE VAULT IS MISSING AND SHOULD BE REPLACED.	M15-MECH11, M15-MECH12, M15-MECH19
V15	M175	MECHANICAL	VAULT INSULATION AND JACKETING	2	RIGED CELLULAR GLASS INSULATION AND ALUMINUM JACKETING ON THE CHILLED WATER BRANCH PIPING AND ELBOW TO THE NORTH NEEDS REPLACED.	M15-MECH13
V15	M176	MECHANICAL	VAULT VENTILATION	3	VENTILATION FAN AND DUCTWORK ARE IN ACCEPTABLE CONDTION AND ARE CURRENTLY MAINTAINING AN ACCEPTABLE TEMPERATURE IN THE VAULT.	M15-MECH1, M15-MECH6, M15-MECH10, M15-MECH14
V16	M184	MECHANICAL	VAULT INSULATION AND JACKETING	2	ALUMINUM JACKETING ON THE STEAM MAIN PIPING BUTTERFLY VALVE ON THE EAST END OF THE VAULT NEEDS REPLACED.	V16-MECH13
V17	M194	MECHANICAL	VAULT INSULATION AND JACKETING	1	RIGED CELLULAR GLASS INSULATION AND ALUMINUM JACKETING ON THE CONDENSATE BRANCH PIPING BUTTERFLY VALVE TO THE SOUTH NEEDS REPLACED.	V17-MECH2
V17	M195	MECHANICAL	VAULT INSULATION AND JACKETING	2	ALUMINUM JACKETING ON THE CONDENSATE BRANCH PIPING BUTTERFLY VALVE TO THE NORTH NEEDS REPLACED.	V17-MECH15
V17	M196	MECHANICAL	VAULT INSULATION AND JACKETING	2	ALUMINUM JACKETING ON THE STEAM BRANCH PIPING BUTTERFLY VALVE TO THE SOUTH NEEDS REPLACED.	V17-MECH2
V17	M197	MECHANICAL	VAULT INSULATION AND JACKETING	2	ALUMINUM JACKETING ON THE STEAM MAIN PIPING BUTTERFLY VALVES ON THE EAST AND THE WEST END OF THE VAULT NEED REPLACED.	V17-MECH16, V17-MECH20
V18	M207	MECHANICAL	VAULT INSULATION AND JACKETING	2	ALUMINUM JACKETING ON THE CONDENSATE BRANCH PIPING BUTTERFLY VALVES TO THE NORTH NEED REPLACED.	V18-MECH18
V18	M208	MECHANICAL	VAULT INSULATION AND JACKETING	1	RIGED CELLULAR GLASS INSULATION AND ALUMINUM JACKETING ON THE STEAM BRANCH PIPING BUTTERFLY VALVE TO THE NORTH NEEDS REPLACED.	V18-MECH13
V18	M209	MECHANICAL	VAULT INSULATION AND JACKETING	2	ALUMINUM JACKETING ON THE STEAM MAIN PIPING BUTTERFLY VALVE ON THE EAST END OF THE VAULT NEEDS REPLACED.	V18-MECH15
V19	M214	MECHANICAL	VAULT VALVES	1	SMALL-BORE GLOBE BYPASS VALVE ON STEAM TRAP ASSEMBLY FOR DRIP LEG STEAM BRANCH PIPING TO THE SOUTH IS LEAKING.	V19-MECH15
V19	M219	MECHANICAL	VAULT INSULATION AND JACKETING	2	RIGID CELLULAR GLASS INSULATION NEEDS REPAIRED AND ALUMINUM JACKETING REPLACED ON SOUTH CHILLED WATER MAIN PIPING AT WALL ON WEST END OF THE VAULT.	V19-MECH12, V19-MECH16
V20	M228	MECHANICAL	VAULT INSULATION AND JACKETING	2	ALUMINUM JACKETING ON THE CONDENSATE BRANCH PIPING BUTTERFLY VALVES TO THE EAST AND TO THE WEST NEED REPLACED.	V20-MECH10, V20-MECH14
V20	M229	MECHANICAL	VAULT INSULATION AND JACKETING	2	ALUMINUM JACKETING ON THE STEAM BRANCH PIPING BUTTERFLY VALVES TO THE EAST AND TO THE WEST NEED REPLACED.	V20-MECH10, V20-MECH13
V20	M230	MECHANICAL	VAULT INSULATION AND JACKETING	2	ALUMINUM JACKETING ON THE STEAM MAIN PIPING BUTTERFLY VALVE ON THE NORTH END OF THE VAULT NEEDS REPLACED.	V20-MECH15

ELECTRICAL CONDITION ASSESSMENT TABLE

VAULT NUMBER	ASSESSMENT NUMBER	ASSESSMENT TYPE	ASSESSMENT ITEM	REPLACEMENT/REPAIR PRIORITY (RP)	ASSESSMENT ISSUE	PHOTO NAMES
V1	E8	ELECTRICAL	Raceway and Wireway	2	Signal cable raceway discontinuous	V1-ELEC04, V1-ELEC06, V1-ELEC17
V2	E11	ELECTRICAL	Transformer Primary Overcurrent Protection/Disconnect	1	Padlock missing, disconnect in moderate conition	V2-ELEC02, V2-ELEC03
V2	E12	ELECTRICAL	Transformer	3	No issues identified, average condition	V2-ELEC02, V2-ELEC03
V2	E13	ELECTRICAL	Panelboard	1	Significant corrosion	V2-ELEC05, V2-ELEC08
V2	E14	ELECTRICAL	Convenience Receptacles	1	Significant corrosion, missing covers	V2-ELEC13, V2-ELEC113
V2	E15	ELECTRICAL	Light Fixtures	1	Significant heat damage	V2-ELEC17
V2	E16	ELECTRICAL	Light Switches	1	Significant corrosion	V2-ELEC12
V2	E18	ELECTRICAL	Raceway and Wireway	2	Significant corrosion, supports attached to damaged concrete	V2-ELEC10, V2-ELEC24
V2	E19	ELECTRICAL	Grounding and Bonding	2	Grounding electrode connection in average condition, bonding in poor condition as a result of raceway corrosion	V2-ELEC02, V2-ELEC10, V2-ELEC24
V2	E20	ELECTRICAL	Water level detection	2	Probe corroded	
V3	E21	ELECTRICAL	Transformer Primary Overcurrent Protection/Disconnect	1	Padlock missing	V3-ELEC34
V3	E22	ELECTRICAL	Transformer	3	No issues identified, average condition	V3-ELEC34
V3	E24	ELECTRICAL	Convenience Receptacles	2	Covers missing	V3-ELEC11
V3	E25	ELECTRICAL	Light Fixtures	1	Fixtures operable, but missing covers	V3-ELEC03, V3-ELEC12
V3	E28	ELECTRICAL	Raceway and Wireway	1	Signal cable raceway missing, power raceway fitting covers missing	V3-ELEC08, V3-ELEC15, V3-ELEC18, V3-ELEC30
V3	E30	ELECTRICAL	Water level detection	2	Probe corroded	V3-ELEC04, V3-ELEC24
V4	E31	ELECTRICAL	Transformer Primary Overcurrent Protection/Disconnect	1	Slab settlement, padlock missing	V4-ELEC03, V4-ELEC05
V4	E32	ELECTRICAL	Transformer	1	Slab settlement	V4-ELEC05
V4	E33	ELECTRICAL	Panelboard	2	Moderate condition	V4-ELEC06
V4	E34	ELECTRICAL	Convenience Receptacles	1	Receptacle damaged, covers missing	V4-ELEC14, V4-ELEC21
V4	E35	ELECTRICAL	Light Fixtures	1	Fixtures operable, but missing covers	
V4	E38	ELECTRICAL	Raceway and Wireway	1	Slab settlement caused conduit damage, wireway covers missing, LTFMC undersupported, signal cable raceway missing, power wiring exposed	V4-ELEC05, V4-ELEC07, V4-ELEC09, V4-ELEC14, V4-ELEC17, V4-ELEC12
V5	E41	ELECTRICAL	Transformer Primary Overcurrent Protection/Disconnect	1	Padlock missing	V5-ELEC03, V5-ELEC04, V5-ELEC05
V5	E44	ELECTRICAL	Convenience Receptacles	2	Receptacle box corroded	V5-ELEC06
V5	E48	ELECTRICAL	Raceway and Wireway	2	LTFMC undersupported, conduit fitting covers missing, signal cable conduit missing	V5-ELEC10, V5-ELEC27, V5-ELEC35
V6	E54	ELECTRICAL	Convenience Receptacles	1	Covers missing	V6-ELEC17
V6	E55	ELECTRICAL	Light Fixtures	1	Covers missing	V6-ELEC13, V6-ELEC22
V6	E58	ELECTRICAL	Raceway and Wireway	2	Raceway missing for power conductors, signal cable raceway discontinuous	V6-ELEC13, V6-ELEC15, V6-ELEC35
V6	E59	ELECTRICAL	Grounding and Bonding	2	Discontinuous raceway	V6-ELEC13
V7	E68	ELECTRICAL	Raceway and Wireway	2	Conduit supports damaged, power wiring conduit missing, LFMC undersupported	V7-ELEC08, V7-ELEC18
V7	E69	ELECTRICAL	Grounding and Bonding	2	Raceway missing	V7-ELEC18
V8	E74	ELECTRICAL	Convenience Receptacles	2	Corrosion present	V8-ELEC28
V8	E75	ELECTRICAL	Light Fixtures	1	Inoperable, covers damaged/missing	V8-ELEC11, V8-ELEC24
V8	E76	ELECTRICAL	Light Switches	1	Switch missing	V8-ELEC07
V8	E78	ELECTRICAL	Raceway and Wireway	2	Corrosion present	V8-ELEC25
V10.1	E108	ELECTRICAL	Raceway and Wireway	2	Conduit fitting covers missing	V10.1-ELEC03
V11	E120	ELECTRICAL	Water level detection	2	Corrosion present	V11-ELEC11
V12B	E138	ELECTRICAL	Raceway and Wireway	2	LTFMC undersupported	V12B-ELEC06
V13	E148	ELECTRICAL	Raceway and Wireway	2	LTFMC undersupported	V13-ELEC05
V14	E151	ELECTRICAL	Transformer Primary Overcurrent Protection/Disconnect	2	Raceway corrosion present	V14-ELEC16
V14	E153	ELECTRICAL	Panelboard	2	Corrosion present, cover won't close	V14-ELEC17, V14-ELEC33
V14	E155	ELECTRICAL	Light Fixtures	1	Covers melted/missing	V14-ELEC04
V14	E158	ELECTRICAL	Raceway and Wireway	2	Wireway missing covers, flex between disconnect and transforemer undersupported, signal cable raceway missing, signal and power in same wireway	V14-ELEC20, V14-ELEC23, V14-ELEC35, V14-ELEC36
V15	E168	ELECTRICAL	Raceway and Wireway	2	LTFMC undersupported	V15-ELEC20
V17	E188	ELECTRICAL	Raceway and Wireway	1	Wireway cover missing, signal and power cable in same raceway	V17-ELEC06
V19	E208	ELECTRICAL	Raceway and Wireway	2	LTFMC undersupported	V19-ELEC18
V20	E215	ELECTRICAL	Light Fixtures	1	Fixture inoperable, suspect burned out lamps	V20-ELEC04
V20	E218	ELECTRICAL	Raceway and Wireway	2	Signal cable raceway discontinuous	V20-ELEC10, V20-ELEC12


V-2-S12


V-2-S99


V14-E158


V2-S6


V3-S42


V5-S71


V2-M20


V2-E13
GE PowerMark Gold
8 Circuit Load Center
PUSH TO TEST 10
GALVANIZED


V3-E30