UNIVERSITY OF CALIFORNIA, DAVIS

UC Davis Health
Main Hospital Seismic Upgrade Project (Increments 3 and 4)

June 2024

Reviewed by:
Janet Cox, Principal Auditor

Approved by:
Ryan Dickson, Audit and Management Advisory Services Director

Jason Nietupski, Executive Director – Facilities Planning & Development

June 26, 2024

Dear Jason,

I am writing to share a final report on an advisory review of the Main Hospital Seismic Upgrade Project Increments 3 and 4. The report is intended to provide an independent assessment of the reasonableness of construction costs, project scheduling, relevant project controls, and potential improvements to UC Davis Health's Hospital Seismic Upgrade Project.

UC Davis Audit and Management Advisory Services engaged a third-party reviewer to determine scope, perform fieldwork, maintain work papers, identify conclusions, and prepare reporting. The third-party is the sole author of this document, which does not constitute an audit in accordance with any generally accepted auditing or review standards.

The report makes recommendations to improve:

- Project Setup, Execution, and Monitoring
- Cost Management
- Schedule Management
- Project Controls

The report does not issue Management Corrective Actions. Completing the Seismic Upgrade on schedule and as close to budget as possible is your team's priority, and we do not wish to cause delays over coming months. AMAS will revisit observations made in this report as part of a planned audit of capital project management during quarter three of fiscal year 2025, and may follow up on the third-party's recommendations at that time.

At the request of the third-party reviewer, I will disclose that work has been limited in scope and time, and therefore more detailed analysis and procedures may reveal issues that this project has not identified. The third-party reviewer assumes no responsibility to any user of the report other than UC Davis or UC Davis Health.

I would be pleased to convene further discussion with you and the reviewer about any aspect of their procedures or report observations. If you have any questions, please reach out to me at rsdickson@ucdavis.edu.

Thank you,

Ryan

Ryan Dickson
Director
Audit and Management Advisory Services, UC Davis

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1. Executive summary: background, purpose and scope, and conclusion

1.1 Background

The University of California, Davis Health (UCDH) campus is the cornerstone for regional health care needs in Sacramento and is critical to support the surrounding Northern California region. The UCDH Facilities Planning and Development (FP&D) team oversees the UCDH building portfolio, with a mission to fulfill UCDH's promise of delivering advanced health care throughout Sacramento and beyond.

The Department of Health Care Access and Information (HCAI), formerly the California Office of Statewide Health Planning and Development (OSHPD), is responsible for planning, overseeing and regulating California's health care infrastructure. This includes ensuring that health care facilities are constructed in a manner that is safe and capable of providing services to the public during natural disasters. In 1994, California Senate Bill 1953 mandated that primary care facilities must comply with regulatory building codes on prescribed timelines to mitigate the risks and impacts of potential seismic activity. These building codes and standards are among the most stringent in the United States.

In response to the regulatory mandates, UCDH developed a plan to achieve seismic compliance. A component of this plan included upgrading the Main Hospital (North/South Wing and East Tower) to comply with these codes. The Main Hospital is an operating hospital with a history of construction and renovations spanning the 1920s, 1960s, 1980s, and 1990s, resulting in its current integrated form.

UCDH FP&D initiated the Hospital's Seismic Upgrade Project in 2014. UCDH leadership and FP&D originally estimated this project would have a larger budget than past projects. This influenced the decision to split the project into five "increments," segmenting the work into smaller projects for separate funding approvals. The five increments are listed below:

- Increment 1 — Mechanical Buildout/Systems
- Increment 2 — East Wing Fire Systems
- Increment 3 — East Wing Stair Tower & Corridor Upgrade
- Increment 4 — North/South Wing Decommissioning
- Increment 5 — North/South Wing Demolition

The focus of this report is Increments 3 and 4 of UCDH's Main Hospital Seismic Upgrade Project, which includes the East Wing stair tower and corridor upgrade, and North/South Wing decommissioning. In 2014, UCDH originally appropriated funds for Main Hospital Seismic Upgrade Increments 3 and 4. UCDH decided that each increment would be bid in a multiple-prime format, a delivery method previously frequently used by UCDH, wherein each Prime Trade Contractor (PTC) (i.e., mechanical, electrical, etc.) is contracted directly with UCDH and is responsible for an independent scope of work. UCDH would also contract a third-party construction manager to oversee the project, as well as a design team.

PTCs initially submitted lump sum bids in 2018 but rebid in 2019 due to unaddressed site conditions in the design documents. Original bids were based on these documents, but PTCs identified site-specific issues not accounted for in the design documents, leading to higher contingency costs for unknown conditions and bid values. After escalating these concerns to the Construction Manager and UCDH FP&D, revised design documents were created, resulting in a 2019 rebid that increased the Increment 3 budget to cover the project scope. The project began in 2019 with key project contractors.

The table below lists the prime trade contractors, including original and current, and associated scope.

Table 1.1.A – Increments 3 and 4 project contractors and scope			
#	**Scope**	**Original contractor (2019)**	**Current contractor**
1	Architect	Lionakis	Lionakis
2	Construction manager	McCarthy Building Companies	Rudolph & Sletten (R&S)
3	General services contractor	Carter Kelly	Carter Kelly
4	Electrical contractor	Helix Electric	Helix Electric
5	Environmental contractor	JM Environmental	Parc Contractors (MIII subcontractor)
6	Mechanical contractor	MIII Mechanical	MIII Mechanical
7	Fire protection contractor	Cosco Fire Protection	Cosco Fire Protection

As work progressed through 2019 and 2020, it became clear that the 2020 target date to achieve seismic compliance would not be reached. HCAI granted an extension to UCDH to continue operations as a critical regional care facility while project execution was underway.

The project faced delays and fund depletion due to unforeseen site conditions, incomplete designs, scope gaps, and inadequate construction management, leading to an additional funding request to complete Increment 3. An independent review revealed several instances of contractual noncompliance, including questionable change orders, inadequate reporting, and lack of project controls.

In 2022, the project team experienced changes to various roles. The FP&D Project Manager, the Construction Manager team, and the environmental PTC were replaced. Prime Business and Lombardia Consulting were onboarded as cost and scheduling consultants to address known issues and observations documented in the third-party review. UCDH onboarded Rudolph & Sletten to take over the construction management services. The new teams and team members began to gain an understanding of the project status and develop expectations for the remaining cost to complete and associated schedule. This prompted a fourth augmentation to the Increment 3 budget in Q1 2024 for $18,100,000. The fourth augmentation is intended to capture the remaining funds expected to deliver the project, including any necessary contingency.

Table 1.1.B – Increment 3 project augmentation history					
#	**Date**	**Description**	**Budget and increases**	**Total value**	**Estimated completion**
0	September 2014	Original Appropriation	$12,945,000	$12,945,000	July 2018
1	October 2018	Augmentation #1 – Rebid	+$9,935,000	$22,880,000	November 2020
2	April 2020	Augmentation #2 – Unforeseen conditions	+$13,420,000	$36,300,000	April 2022
3	October 2022	Augmentation #3 – Team Change	+$5,445,000	$41,745,000	April 2022
4	March 2024 – pending	Augmentation #4 – Proposal for Project Completion	+$18,100,000	$59,845,000	November 2024

For Increment 4, there have been two funding augmentations resulting in a total project budget of $15.5m.

Table 1.1.C – Increment 4 project augmentation history

#	Date	Description	Budget and increases	Total value	Estimated completion
0	September 2018	Original Appropriation	$14,181,974	$14,181,974	November 2021
1	October 2023	Augmentation #1	+$926,124	$15,108,098	June 2022
2	January 2024	Augmentation #2	+$400,000	$15,508,098	N/A (Increment 4 is being descoped)

In order to complete Increment 4, the N/S Tower must be decommissioned. Some activities within the original Increment 4 scope were not critical to achieve seismic compliance. Several of these activities have been “descoped”, or transferred, into alternative projects. As such, there is not a significant amount of remaining spend associated with Increment 4, relative to Increment 3. FP&D directed PTCs to stop work on the project as they develop the necessary documentation to close out the project, as is. The majority of remaining Increment 4 work will involve FP&D and R&S coordinating with HCAI to confirm that the scope being removed from Increment 4 is being captured by other projects.

AMAS engaged a third-party reviewer to assess the current state of the project and identify potential improvements related to project setup and execution, cost management, schedule management, and project controls. This report is prepared by the third party, and presents the findings of the assessment, as well as associated risks and recommendations based on industry leading practices.

1.2 Purpose and scope

The objective of the assessment was to assess the reasonableness of construction costs when compared to information provided, review relevant controls, contractual compliance, and estimated cost and timeline at completion, and to provide an independent assessment of potential improvements needed for UCDH's Hospital Seismic Upgrade Construction project's completion by November 2024. The following activities were performed:

- Used a sampling approach to review relevant project contracts, change orders, and payment requisitions for accuracy and compliance with contractual agreements
- Used a sampling approach to evaluate negotiated rates to confirm they are within fair market value and/or contract equipment schedule or rate card
- Reviewed the sufficiency of documentation supporting contract time extensions, delay changes, and change order estimates
- Reviewed the design and effectiveness of controls in place to monitor, escalate and report on the project
- Used a sampling approach to review whether labor rates are clearly defined and match actual labor costs incurred
- Reviewed the presence and application of payroll certifications as outlined in the contract
- Conducted a high-level review of the project completion status/schedule based on available documentation
- Reviewed the controls implemented in response to auditor recommendations from 2022 and assess their current functionality
- Proposed improvements for monitoring costs, progress, and reporting, and evaluated their application in reporting to UCDH, UC Davis, University of California Office of the President and Board of Regents
- Reviewed the effectiveness of cost control measures and identified potential cost overruns
- Conducted a high-level review of the estimate to completion (ETC) and identified inconsistencies that may indicate potential budget overruns
- Reviewed the accuracy of quantities, unit prices and rates used in cost calculations
- Used a sampling approach to analyze invoices, receipts and other construction-related expenses

The third-party reviewer identified potential process gaps or areas of concern for project team members. They conducted this assessment by three primary means:

- Reviewing project documents and reperforming cost calculations
- Interviewing key project personnel
- Performing site walk to observe construction progress

The fieldwork associated with this review took place between March and May 2024. After reviewing relevant project documents (listed in Appendix D) for the Main Hospital Seismic Upgrade, they took a top-down approach in interviewing project team members (listed in Appendix C), starting with UCDH and R&S, followed by the Prime Trade Contractors (PTC) to obtain a holistic perspective of the current state of the progress and challenges associated with Increments 3 and 4. Section 3 provides detailed observations for each of the areas of focus.

1.3 Conclusion

The FP&D team and the new construction manager, Rudolph & Sletten, have made progress on project execution, established baseline project governance procedures, and improved management and controls, including changes made in response to prior audit findings.

Detailed observations and recommendations are included within Section 3 of this report. UC Davis AMAS will be responsible for developing management corrective actions based on the observations and recommendations detailed within this report.

2. Executive summary: observations and recommendations

2.1 Summary of observations

UCD AMAS engaged a third-party reviewer to perform a review of the UCDH Hospital Seismic Upgrade Project (Increments 3 and 4) to assess the reasonableness of current project controls, contractual compliance, and estimated cost and timeline at completion based on information provided. The third-party reviewer observed 11 key observations that could further impact the project:

Project set up and execution

1. **Project delivery method resulted in delivery challenges** — The multi-prime construction delivery method used in this project required increased administrative effort and strong management relative to other methods. The project was divided into five increments to secure funding, but this added complexity and made it difficult to manage the overall scope and budget. The original management team struggled with project coordination and execution due to the multi-prime structure. The current management team has improved the situation by implementing enhanced coordination, proactive scheduling, and collaborative problem-solving.
2. **Unforeseen conditions have caused additional delays and overruns** — The project faced challenges due to the lack of accurate as-built construction documents, leading to difficulties in precisely estimating the project's cost and scope. This resulted in additional expenses and modifications to the work and schedule. While most areas of concern have now been investigated and the current budget proposal includes contingency, this may not fully account for potential unknowns in the remaining areas of construction.
3. **Balancing construction with active hospital operations has added complexity** — The construction coordination for this project is complex as there is a need to maintain hospital operations while advancing construction. In some instances, project activities have been delayed to avoid impacting hospital operations. Additionally, the hospital campus is undergoing multiple projects simultaneously, which have historically resulted in coordination challenges, such as overlapping requests for inspections and approvals necessary for the advancement of construction.
4. **Enhanced team coordination despite administrative and budgetary challenges** — The project team has seen improved communication and coordination with the addition of R&S and additional project team members. The increased coordination efforts have led to numerous recurring meetings, which are essential for managing project scope.

Cost management

5. **Estimate to Complete (ETC)** — An additional $18.1m in funding was requested and approved to supplement the Increment 3 budget, which was intended to cover all known and potential costs through project completion. Based on the Increment 3 cost tracker and ETC, it appears that the current approved and available project funds are adequate to cover the estimated remaining project costs in scope. Similarly, the Increment 4 funds appear adequate to cover the estimated remaining project costs in scope. There is a risk of exceeding available project funds if all Increment 3 potential future costs and claims are incurred. FP&D is actively negotiating potential future costs and claims to minimize the cost impact to UCDH and stay within the current funding. Additional costs may be incurred if the project extends beyond December 31, 2024.
6. **Extended change order approval process** — The FP&D and R&S teams have implemented more robust change order review processes with increased monitoring. The project is experiencing extended durations in processing change orders, with a number taking longer than the contractually agreed one-month period, some extending up to nine months. Contractors are concerned about prolonged approval times, which could potentially lead to work stoppages and tension in contractor relationships if payments for work started without finalized change orders are not made promptly. The PTCs appear committed to executing the remainder of the project in collaboration with the new R&S and FP&D teams.

7. **Contractor payment delays** — The project is facing delays in paying contractors despite being current with payment applications, with the UC Davis system taking longer than anticipated to process payments. At times, PTCs have been self-financing to maintain progress due to slow change order reviews and payment processing. Historically, the project has faced challenges staying within the approved budget due to the extended process for augmentation approval and disbursement. Lack of access to project funds increases the risk of contractual breach, contractor liquidity, and ongoing project execution.

Schedule management

8. **Project schedule management improvements and ongoing challenges** — The project initially struggled with an inaccurate and fragmented schedule due to prime contractors working independently with minimal coordination, resulting in inefficiencies and rework. FP&D and R&S have introduced new schedule management practices, enhancing work sequencing and execution. Even with these scheduling improvements, it appears that there is a consensus among team members that the anticipated completion date will be after November 2024. However, the FP&D team anticipates to achieve and secure HCAI approval for the critical HCAI milestones prior to the December 31, 2024 deadline.
9. **HCAI inspections and additional UCDH Plant Operations and Maintenance (POM) coordination impact project schedule** — HCAI regulates design and construction of healthcare facilities throughout California, which can have implications on project scope, schedule, and costs. Unforeseen conditions have necessitated additional redesign and approvals from HCAI. Coordination issues with PTCs and POM have affected their ability to review and accommodate shutdown requests, potentially hindering project efficiency and timely completion.

Project controls

10. **Remediation status of 2022 project control deficiencies** — UCDH FP&D set out to establish project controls with an updated team and have made strong progress to manage project risk. FP&D has implemented several project controls processes, enabling more transparent monitoring and management of the project. There are still opportunities to enhance the master project schedule, contractual compliance, and regular reporting processes. Further strengthening these areas may mitigate the potential risks of cost and schedule overruns.
11. **Additional project control opportunities** — The FP&D and R&S teams have brought in new processes and capabilities to enhance project management. They have implemented additional controls, such as cost substantiation measures, a comprehensive schedule mapping, and improved coordination among PTCs. They have also addressed previous project control deficiencies by introducing tools such as a comprehensive cost tracker, a project dashboard, and an integrated master project schedule. There appear to be additional opportunities to further develop project controls on this project and future projects.

Section 3 of this assessment provides the details of all observations pertaining to UCDH Hospital Seismic Upgrade Project (Increments 3 and 4).

2.2 Summary of recommendations

The overall assessment indicates that the UCDH team has made significant progress on the scope of work for its Hospital Seismic Upgrade Project. This assessment noted some industry-leading practices that are in place in different areas and improved controls are evident since 2022. Areas for improvement and associated recommendations were noted in the following areas:

Project setup and execution

1. **Strong project management to support multi-prime project delivery method** — To enhance the management of the multi-prime project, continue to maintain an integrated master schedule that includes the detailed work schedules of all PTCs to confirm proper sequencing and minimize conflicts. Continue to host regular coordination meetings with all PTCs to address issues quickly and confirm all PTCs are following the project plan and adhering to established schedules. Consider

confirming that project documentation is comprehensive and current to prevent knowledge loss and accurately track progress.

2. **Monitor potential unforeseen conditions** — Consider proactively monitoring whether contingency is sufficient to cover unexpected challenges in the field. Consider creating and maintaining an up-to-date comprehensive risk management plan as the project progresses. Continue documenting all modifications and findings according to current standards to assist with future projects. Continue maintaining a collaborative relationship with regulatory bodies to advance the approval and inspection processes, and proactively uncover any potential unknowns.
3. **Enhance coordination activities while executing work in an active hospital** — To address the coordination challenges of construction activities in an active hospital, management may consider establishing an integrated project management office to monitor all campus projects and further support inter-project coordination and resource allocation. Consider developing a comprehensive campus-wide strategy to manage inter-project dependencies and improve communication among all contractors. Consider streamlining the POM approval processes through joint inspections where feasible. Additionally, consider developing risk mitigation measures to minimize the impact on patient care, including effective communication plans and training for contractors to work cohesively with hospital operations.
4. **Maintain close project team collaboration** — Continue to maintain close coordination with PTC teams to facilitate timely project execution. Consider developing a fair and efficient dispute resolution process for financial or contractual issues. Consider maintaining transparent communication about financial aspects, such as payment schedules and funding status, to foster trust.

Cost management

5. **Increase ETC oversight** — Consider regularly updating the ETC with the latest cost projections and providing transparent methods for estimating costs due to change orders and delays. UCDH may consider preparing for potential project extensions, including reassessing associated costs, and implementing a tracking system to monitor all potential expenses and maintain budget transparency.
6. **Streamline change order process** — Consider streamlining approvals by enforcing tighter review and response deadlines. Continue to maintain clear and ongoing communication with contractors about change order statuses and resolution efforts. Continue to establish baseline expectations for PTC change order requests and cost substantiation. Consider establishing a straightforward dispute resolution process to promptly address conflicts arising from change orders. Lastly, consider implementing a monitoring and reporting system to track the time taken for change order processing, helping to identify and address inefficiencies.
7. **Improve contractor payment processing** — Consider assessing the Accounts Payable team's processes and capacity to process payments more efficiently. Clear and consistent communication with contractors about payment schedules and fund availability will help manage expectations and maintain trust. A transparent and effective dispute resolution process is essential for quickly resolving payment-related conflicts. Finally, continue monitoring payment processing times to help identify and rectify inefficiencies on an ongoing basis.

Schedule management

8. **Reinforce schedule management** — Continue to closely oversee and assist the scheduling consultant to create a thorough schedule that aligns with project requirements for Increments 3 and 4. Continue regularly reviewing and updating milestone dates to reflect the actual progress and set realistic expectations. Continue driving PTC progress based on the master project schedule. Continue reviewing upcoming activities with PTCs to confirm all parties are aligned to the master project schedule.
9. **Promote HCAI and POM collaboration** — Continue to closely collaborate with HCAI for identifying any unforeseen conditions and facilitating efficient redesign and review processes. Consider advocating for or requesting increased POM availability, potentially by assigning a dedicated decision-making team member to avoid delays. Consider adjusting project schedules to realistically incorporate HCAI and POM review times. Consider requesting that POM conducts preemptive site investigations to prepare for future shutdowns.

Project controls

10. **Enhance project controls** — Consider further developing and enabling standardized project management practices and controls. To enhance project control and oversight, consider establishing comprehensive monthly reports tracking project status, reconciling the UCDH schedule regularly, and maintaining a risk register for proactive risk management. Additional key performance indicators may be implemented and monitored to reflect true project progress beyond current spend.
11. **Further develop project controls** —Continue implementing the controls outlined in the UCDH Project Controls Manual. Consider establishing formalized and routine reporting processes for schedule, cost, and risk updates as well as key performance indicators. Consider adopting Earned Value Management techniques for a comprehensive assessment of project performance. Consider maintaining a formal risk register to manage potential risks throughout the project lifecycle.

3. Detailed observations and recommendations

3.1 Project setup and execution

3.1.1 Project delivery method resulted in delivery challenges

Observation

Multiple-prime (multi-prime) is a construction project delivery method wherein each prime trade is governed by an independent construction contract. Instead of having a single general contractor that is responsible for all construction activities, the owner contracts with several prime contractors, each responsible for a specific portion of the project, such as mechanical, electrical and structural work.

The multi-prime project delivery method utilized on this project is not the most commonly employed method for renovation projects of this type. Multi-prime contracting typically requires additional administrative efforts and necessitates strong construction management leadership and experience. The incremental approach introduced additional complexity to the project. Additionally, by separating the project into increments, the FP&D team introduced obstacles to effectively manage the full project scope and associated budget.

Based on the lack of project documentation from the original project team, it appears that the previous construction management team struggled to facilitate effective project coordination and execution in the multi-prime structure. The complex nature of the project requires PTCs to share common work areas with one another and closely coordinate activities. The challenges of the multi-prime delivery method were exacerbated by the previous construction management team's management practices. Additionally, the contractual requirement for each PTC to independently develop and manage its own project schedule without a centralized entity effectively orchestrating the projects schedules further complicated coordination, hindering the project's execution (further detailed in Observation 3.3.1).

The current management team has made strides to move the project forward while mitigating the project's challenges and risks. This is evident through their enhanced contractor coordination, proactive scheduling, and collaborative problem-solving efforts.

Potential risk

- The multi-prime approach can lead to coordination difficulties among various PTCs, resulting in inefficiencies and potential rework.
- Ineffective management and leadership in a multi-prime setting can exacerbate coordination issues and lead to project delays.
- Without a single point of responsibility, there is a risk of scheduling conflicts among PTCs, which can cause delays and additional costs.

Recommendation

Management should consider one or a combination of the following industry-leading practices:

- Continue implementing the integrated master schedule that includes all PTCs' detailed work schedules to confirm proper sequencing and reduce the risk of conflicts.
- Refine regular coordination meetings with all PTCs to facilitate effective communication and address any issues promptly.
- Continue to confirm that all project documentation is thorough and up-to-date to prevent knowledge loss and to provide a clear record of project progress.
- Continue to oversee the construction management activities to confirm that all PTCs are adhering to the project plan and schedules.

3.1.2 Unforeseen conditions have caused additional delays and cost overruns

Observation

The Main Hospital was constructed and renovated in multiple phases across the 1920s, 1960s, 1980s and 1990s. There have been significant advancements in construction design and regulatory requirements since that time. Due to the building's initial construction and renovation history, the available as-built drawing documentation does not accurately capture the existing building conditions. Ideally, contractors would have access to detailed as-built drawings to utilize in their planning and bidding process, which enables more comprehensive cost and schedule estimates.

Given the lack of information available, the PTCs made broad assumptions when bidding on the project, with the requirement to develop an accurate and comprehensive project budget and schedule. This issue was noticed when bidding the project and prompted the first augmentation where the contractors attempted to capture the potential impacts in their re-bid documentation. Unforeseen conditions have continued to affect the project and are a primary driver of the 179 change orders that have been submitted to date across Increments 3 and 4 (further detailed in Observation 3.2.2).

Due to unforeseen conditions, work was halted in various locations, which required the project and design teams to collaborate on developing remediation strategies. The proposed solutions would need to be submitted to HCAI for approval. Upon receiving HCAI's approval, the implementation of the solutions may have necessitated additional effort from the PTCs, resulting in an expanded scope with potential cost and schedule impacts (further detailed in Observation 3.3.2).

During interviews, project team members reported that they do not anticipate a significant number of additional unforeseen circumstances but cannot be certain that none remain. They estimated that approximately 95% of unforeseen conditions have been discovered, to date. There is still a risk of uncovering additional uncovered within the remaining scope. This has the potential to further increase the project cost to complete and delay the project completion date.

Potential risk

- There is a risk of discovering additional unknown issues that could further increase costs and extend the project timeline.
- The potential need for additional design efforts and regulatory approvals may further increase costs and extend the project timeline.

Recommendation

Management should consider one or a combination of the following industry-leading practices:

- Proactively manage the contingency budget and its usage to confirm it is adequate to address any unforeseen issues that may emerge due to the building's complex history.
- Develop a comprehensive risk management strategy that includes regular reviews and updates as the project nears completion.
- As the project continues, confirm that all changes and discoveries are thoroughly documented to modern standards to aid future work.
- Continue to work closely with regulatory agencies to confirm compliance and to expedite approvals and inspections, and attempt to identify any unknowns where possible.

3.1.3 Balancing construction with active hospital operations has added complexity

Observation

The strategic coordination for construction activities on this project faces unique challenges. The hospital must balance the critical need to maintain the number of available beds, in line with the HCAI guidelines, with the ongoing construction efforts. The current and projected bed counts fall short of the minimum

requirements, creating a balance between the necessity for hospital operations and the advancement of the project.

The initial project plan for the project's seismic upgrades included a series of coordinated shutdowns within the East Wing to allow for concentrated work in N/S Tower. To navigate these constraints, the project team has implemented temporary solutions to progress with construction while minimizing disruption to hospital services. Despite these efforts, there appear to have been instances where the hospital operations have taken priority, causing delays in the planned work for Increments 3 and 4.

In the broader context of UCDH, the hospital campus is a hub of concurrent projects, including the Main Hospital Seismic Increments 1-4, the demolition of the N/S Tower (Increment 5), non-critical seismic compliance work (Red Projects), and the Vision 2030 suite. The multitude of projects and the apparent lack of comprehensive coordination have led to complications, such as redundant requests for HCAI and POM inspections and approvals in areas where the scope has been altered by the activities of other project teams. This disjointed approach may continue to affect ongoing projects as new designs and inspections are required for the various active initiatives.

Although many key trades and construction management firms are involved across the UCDH project portfolio, PTCs have identified inter-project coordination as a challenge. Some projects are interdependent and would benefit from enhanced strategic planning and coordination, beyond what is currently in place for the individual scopes of each project. In late 2023, FP&D began hosting inter-project coordination meetings with relevant UCDH stakeholders to facilitate efficient project execution. It appears that ad hoc meetings are also held for specific topics. While recent efforts appear to have improved inter-project coordination, there may be a need for a more integrated approach to planning and efficiently completing construction activities while maintaining the highest standards of patient care.

Potential risk

- Construction activities, especially during demolition, pose risks to patient care and safety, potentially impacting the hospital's reputation and operations.
- Multiple simultaneous projects without adequate coordination can lead to inefficiencies, duplicated efforts, and inspection and approval delays.
- Lack of coordination among interdependent projects can result in conflicts and delays, affecting the overall project timeline and budget.

Recommendation

Management should consider one or a combination of the following industry-leading practices:

- Establish an integrated project management office to oversee all UCDH campus projects, ensuring coordination and alignment of schedules and resources.
- Develop a comprehensive coordination strategy that addresses inter-project dependencies and facilitates communication among PTCs.
- Streamline the inspection and approval process by coordinating with HCAI and POM to schedule joint inspections where possible.
- Implement risk mitigation measures to address potential disruptions to patient care during construction activities, such as developing communication plans and training contractors to coordinate with hospital end-users.

3.1.4 Enhanced team coordination despite administrative and budgetary challenges

Observation

The project team highlighted that communication and coordination have improved relative to earlier in the project timeline with the addition of R&S and experienced contractor team members. However, there is a heavy administrative burden relative to the complex nature of the project and misalignment on a single target delivery date amongst multiple involved parties. The additional coordination is helpful for facilitating

project execution but has resulted in a significant number of recurring meetings. While helpful for coordinating and delivering a cohesive project, it is important to remember that each PTC is responsible for executing independent scopes of work

Despite the challenges faced throughout this project and documented in this report, the current project team and contractors appear to be aligned on the remaining activities to complete the project. There is some concern among the PTCs regarding the extended project duration. Ultimately, the PTCs continue to collaborate diligently with R&S and each other to execute the project.

There is an underlying concern from contractors regarding what they might expect to be paid from UCDH, further discussed in Observation 3.2.3. Given this uncertainty and funding the project out of pocket at times, several PTCs have indicated that they no longer have a positive margin on the job. They are incentivized to complete the project and receive payment as soon as possible. The new FP&D and R&S project team appears to be balancing effectively managing the budget, while facilitating and expediting project execution.

Potential risk

- Concerns about payment from UCDH may lead to reduced contractor motivation and potential disputes related to compensation.
- The project's extension beyond the current expected completion date may affect contractor morale, and financial stability, negatively impacting the PTC's outlook and commitment as the project approaches completion.

Recommendation

Management should consider one or a combination of the following industry-leading practices:

- Continue to coordinate closely with the PTC teams to facilitate the on-time execution of project activities.
- Establish a fair and efficient dispute resolution mechanism to address any financial or contractual disagreements.
- Maintain open and transparent communication regarding financial matters, including payment schedules and funding status, to build trust among PTCs.
- Adopt efficient meeting strategies, such as focused agendas and action items, to maximize the effectiveness of communication without overwhelming participants.

3.2 Cost management

3.2.1 Estimate to complete

An Estimate to Complete (ETC) is a financial management tool for construction projects. Its primary purpose is to forecast the costs yet to be incurred to complete a project. The ETC predicts future project costs to help keep spending on track. It combines detailed project plans, project spend, future potential spend and stakeholder input to make accurate forecasts. The ETC requires regular updates to stay accurate as the project evolves. The ETC is essential for controlling financial risks and making sure the project stays within budget.

Increment 3

The most recent augmentation, $18.1m, was approved by the UC Regents and intended to cover any known or potential future project costs. This augmentation increased the total approved Increment 3 project funding to approximately $59.8m. The total incurred project costs are $41.5m, with $18.3m remaining in available funding (Table 3.2.A).

Table 3.2.A – Summary of Increment 3 project budget and spend

#	Description	Estimated value
1	Current approved and available project budget (Augmentation #4 - March 2024)	$ 59,845,000
2	Executed & Committed Project Spend	($ 41,530,782)
3	Current available funds	$ 18,314,217
4	Estimate to Complete (Refer to Table 3.2.B)	$ 10,845,082
5	Estimated remaining funds available	$ 7,469,136

The FP&D cost tracker estimates the current “exposures” are approximately $10.8m, which includes known expected and potential future costs, as show in Table 3.2.B. Based on the FP&D cost tracker and ETC, it appears that the current approved and available project funds, 18.3m, are adequate to cover the estimated remaining project costs in scope.

Table 3.2.B – Increment 3 Estimate to Complete (per FP&D cost tracker)

#	Description	Estimated value
1	Exposures (May 2024) *Note: 1.1-1.8 make up the Exposures.*	$ 10,878,055
1.1	Carter Kelly (Current and Past CORs, Pending and Potential Compensable Delays)	$ 932,844
1.2	Helix (Current and Past CORs, Pending and Potential Compensable Delays)	$ 988,734
1.3	Mark III (Current and Past CORs, Pending and Potential Compensable Delays)	$ 978,118
1.4	Cosco (Current and Past CORs, Pending and Potential Compensable Delays)	$ 190,310
1.5	All PTCs: future CORs	$ 750,000
1.6	All PTCs: disputed CORs	$1,742,621
1.7	Rudolph & Sletten (Construction management services through December 2024)	$ 4,012,628
1.8	Other costs (Architect, FP&D costs, POM costs, material testing)	$ 1,282,800

2	Anticipated deduction from contract descoping	($32,973)
Estimate to complete		**$ 10,845,082**

There are also known claims (Table 3.2.C), which may exceed the remaining available funds, if paid in full. However, it appears that these claims may be negotiated down.

Table 3.2.C – Estimate to complete – potential future costs

#	Description	Estimated value
1	Former environmental contractor claims	$ 8,765,000
2	Previously paid former environmental contractor claims	($430,230)
Total potential future costs		**$8,334,770**

If the known claims were to be paid in full, there is a possibility that the Increment 3 project spend may exceed available funding by $0.9m. Furthermore, if the project timeline extends beyond 2024, there may be additional future costs incurred. Upon reviewing the estimated remaining project costs in scope (Table 3.2.B), the following observations were noted:

- Item 1.1 – 1.4: The FP&D cost tracker appears to include funds for all known PTC change order requests as well as pending and potential future compensable delays. If the project were to be delayed beyond the current expected completion date, additional compensable delay costs may be incurred.
- Item 1.5: The FP&D cost tracker appears to include funds for potential future PTC change orders.
- Item 1.6: The FP&D team appears to account for all disputed change order requests (COR) in the ETC. It is possible that UCDH may not incur all of these costs and they may be negotiated down. It appears FP&D included a conservative estimate to allocate funds for all disputed CORs, if needed.
- Item 1.7: The FP&D cost tracker appears to include $4m for R&S construction management services through December 2024. If the project timeline were to extend into 2025, additional R&S costs may be incurred.
- Item 1.8: The FP&D cost tracker appears to include funds allocated for the architect (Lionakis) to perform design work through December 2024. Similar to Item 1.7, if the project timeline were to extend into 2025, additional Lionakis costs may be incurred.
- Item 2: The value of expected descoped work, $33k, in the FP&D cost tracker appears to be an estimate.

The known project exposures within the construction budget appear to include embedded contingencies for future compensable delays, future change orders, and all disputed change orders, each of which may be negotiated to a lesser value, which would increase the likelihood of the project finishing within budget even if portions of the known claims are realized. The method for tracking and managing contingency at a detailed level appears to be unclear.

Increment 4

The Increment 4 project is nearing completion, with the majority of construction activities finished or on track. Any pending scope is being evaluated for potential descoping. The current approved Increment 4

funding is $15.5m. There have been two funding augmentations for Increment 4, to date. The total incurred project costs as of May 2024 were $13.3m, with $2.2m remaining in current available funding.

Table 3.2.E – Summary of Increment 4 project budget and spend		
#	Description	Estimated value
1	Current approved and available project budget (Augmentation #2 - March 2024)	$ 15,508,298
2	Executed & Committed Project Spend	($ 13,335,460)
3	Current available funds	$ 2,172,838
4	Estimate to Complete (Refer to Table 3.2.F)	$ 1,036,618
5	Estimated remaining funds available	$ 1,136,220

The FP&D cost tracker estimates the current “exposures” remaining for Increment 4 are $1.6m. However, the FP&D team estimates that $550k will be descoped from the project, reducing the anticipated remaining costs to approximately $1.0m. The breakdown of the Increment 4 ETC is available in Table 3.2.F, below.

Table 3.2.F – Estimated remaining Increment 4 project costs in scope (per FP&D cost tracker)		
#	Description	Estimated value
1	Exposures	$ 1,452,609
1.1	Carter Kelly (Current and Past CORs)	$32,577
1.2	Helix (Current and Past CORs)	$ 229,442
1.3	Mark III (Current and Past CORs)	$ 381,279
1.4	Cosco (Current and Past CORs)	$ 0
1.5	All PTCs (disputed CORs)	$ 0
1.6	Rudolph & Sletten (Construction management services through December 2024)	$ 700,000
1.7	Other costs (Architect, FP&D costs, POM costs, material testing)	$ 247,320
2	Anticipated deduction from contract descoping	($554,000)
Estimated remaining scope costs		**$ 1,036,618**

The current funding appears sufficient to cover the known potential additional costs and contractor claims (Table 3.2.G), even if paid in full.

Table 3.2.G – Estimate to complete – potential future costs		
#	Description	Estimated value
1	Former environmental contractor claims	$756,956
2	Previously paid former environmental contractor claims	($ 111,506)
Total potential future costs		**$ 645,450**

Upon reviewing the estimated remaining Increment 4 costs in scope, the following observations were noted:

- Item 1.1-1.4: The FP&D cost tracker appears to include funds for all known PTC change orders. The FP&D team does not anticipate future change orders or compensable delays for Increment 4.
- Item 1.5: The FP&D cost tracker indicates that there are no disputed change orders related to Increment 4.
- Item 1.6: The FP&D cost tracker appears to include funds allocated for the architect (Lionakis) to perform design work. The remaining design scope in Increment 4 is primarily related to descoping and coordination between the design team and HCAI.
- Item 1.7: The FP&D cost tracker appears to include $0.7m for the remaining R&S construction management services through December 2024. This FP&D estimate is based on the limited scope and work remaining in Increment 4. If the Increment 4 scope were to increase, there may be potential additional costs beyond the estimated $0.7m.
- Item 2: The value of expected descoped work of $554,000 in the FP&D cost tracker appears to be a rough estimate.

Given the Increment 4 work is largely complete or being descoped and probable upcoming negotiations, it appears likely that the project would finish within the current available funding. If the project timeline extends beyond 2024, there may be additional future costs incurred.

Through review of the FP&D cost tracker for Increments 3 and 4, it appears as though the FP&D team performed a thorough review of the remaining potential costs. FP&D estimates appear to include embedded contingencies.

Potential risk

- The total potential costs for Increment 3 may exceed the available funds if no cost savings are captured by negotiating down future change orders, compensable delays, disputed change orders, and the former environmental contractor claim.
- The internal FP&D cost tracker does not appear to manage contingency at a line item level, which may present a challenge when managing potential future costs.
- Further additional costs may be incurred if the projects extend beyond December 31, 2024, notably for compensable delays, the architect’s design services, and R&S construction management services.

Recommendation

Management should consider one or a combination of the following industry leading practices:

- Developing standardized reporting methods and recordkeeping practices that facilitate consistent and transparent project and leadership reporting.
- Reviewing and updating the ETC to reflect the most current and accurate cost projections.
- Aligning initial project contingency based on the complexity of scope and site conditions for future projects.
- Providing clear methodologies for estimating costs related to change orders, unforeseen conditions, and compensable delays.
- Routinely reassessing and documenting the descoping work estimate to reflect the latest developments.
- Analyzing disputed CORs to determine their likelihood of incurring costs and adjust the budget accordingly.

- Preparing for potential project extensions by reassessing time-related costs for key contractors and services.
- Establishing a clear tracking mechanism for all potential costs to improve visibility of overruns and increased executive reporting transparency.
- Proactively communicate potential budget overages to the Office of the President and Regents.

3.2.2 Extended change order approval process

Observation

A Change Order (CO) is a contractual amendment signed by the University and PTC that records mutually agreed modifications to the work scope, budget adjustments, schedule changes, or other contractual revisions. Its purpose is to formally authorize and document variations from the original construction contract, confirming that all parties are aligned on the new terms. A change order may contain several CORs. PTCs are required to submit CORs within seven days following a field directive or the discovery of new conditions. These CORs may present initial cost estimates and note any yet-to-be-determined details necessary for finalizing the price, while granting PTC the University's provisional approval to continue with the current work.

As of April 2024, 128 COs had been submitted to date for Increment 3. Of those COs, 39 have been approved, 69 are in review status, and 20 have been denied. There had been 51 COs submitted for Increment 4. Of the Increment 4 COs, 13 have been approved, 24 are in draft state, and 14 are in review. Many of these change orders can be attributed to unforeseen conditions in the field, which prompted additional scope, cost, and time needed to complete work.

In 2022, the third-party project review highlighted that sampled change orders included inadequate cost proposal substantiation and appropriateness, as well as inadequate labor rate validation controls, and contractor-owned equipment charges exceeding fair market value. Cost consultants were engaged to support and augment change order request review procedures. The COR review scope has since been taken over by Rudolph & Sletten, in addition to general construction management services.

Since the R&S team arrived in 2022, there appears to be a new process and additional oversight on the change order process and approvals. The current process is to review a proposed change order in weekly meetings facilitated by R&S. Following R&S's review and approval, an FP&D representative reviews on a biweekly cadence to provide final UCDH sign-off and approvals. The updated approach has resulted in improved rigor of change order request review.

The associated change orders for the field order work appear to take an extended amount of time to be approved and processed. PTCs have voiced concerns that the typical change order review and approval process takes an extended amount of time. Through inquiry, several CORs were noted by PTCs as remaining outstanding as of April 2024 by more than nine months. The contractual requirement for response by the UC Representative is "within a reasonable time" (A 4.2.3.4). Article 4.2.5 to the general conditions requires a 30-day response period upon a written demand from the PTC to the University Representative for final decision.

The time to process change orders was not readily discernable within the Change Order Log Report provided by FP&D. Through sample testing, several exceptions were noted ranging from two to four months to approve the COR. Extended review times may be attributable, in part, due to:

- Extended discussions to resolve differences of opinion between PTCs and FP&D/R&S related to CO cost, scope and schedule.
- PTCs submitting incomplete supporting documentation as part of their CORs.
- FP&D bundling smaller CORs with a larger change to the work to facilitate CO approval and distribution of funds at one time. Some COs have also been held as pending to allow the FP&D team to receive the latest augmentation funding for payment.

- The ongoing FP&D descoping efforts that are aimed at eliminating activities from the contract that are not essential to the project requirements. In some cases, FP&D has to take out certain items and costs that will be removed from the project scope.
- Extended approval processes for CO approval and payment authorization (further detailed in Observation 3.2.3). Approvals are required from five parties prior to processing the change order. The parties signing for change order review in sequence are the Construction Manager, University Project Manager, FP&D Contract Manager, FP&D Capital Finance, and FP&D Director.

Table 3.2.H, below, includes a subset of reviewed change order and compensable delay (CD) change samples from Increments 3 and 4 that appear to have had an approval timeline of greater than 30 days. There appears to be fewer examples of extended change order review periods after R&S and new FP&D team members joined and implemented new processes in 2022.

Table 3.2.H – Change order – Review and approval duration exceptions (30+ days)

Sample No.	CCDR No.	Contractor	Date submitted	Date approved (by FP&D Director)	Time to approval
CO – 1	BP5-001	Cosco Fire	07/07/2021	09/21/2022	76 days
CO – 4	BP4-007	Helix Electric	04/19/2022	06/13/2022	55 days
CO – 5	BP1-010	Carter Kelly	07/07/2023	12/01/2023	146 days
CO – 9	Inc4-005	Carter Kelly	08/19/2023	10/16/2023	58 days
CD – 6	BP4-007	Helix Electric	4/19/2023	6/13/2023	55 days
CD – 7	BP4-008	Helix Electric	12/22/2023	1/30/2024	39 days

Potential risk

- The extended time taken to review and approve change orders can cause further potential project delays and contractor dissatisfaction.
- The process of descoping work to focus on critical activities can complicate the change order process and delay approvals.
- The contractual term “within a reasonable time” for change order responses is vague and can lead to lack of accountability in the timeline for approval of change orders.
- Lack of timely review and approval by individuals with decision-making authority may lead to stoppage of work.
- With no approved and available funds to pay the contractor, this may impact relationships with PTCs and their performance.

Recommendation

Management should consider one or a combination of the following industry-leading practices:

- Continue to train and communicate to PTCs what is required to be submitted as part of a COR to help facilitate fewer reviews and approvals.
- Streamline the change order process to reduce approval times, possibly by setting stricter timelines for review and response.
- Maintain transparent communication with contractors regarding the status of change orders and efforts to resolve them.
- Develop a proactive strategy for descoping work that minimizes the impact on the change order process and aligns with the project’s schedule.

- Establish a clear dispute resolution mechanism to handle disagreements related to change order requests promptly.
- Implement a system for monitoring and reporting on the duration of change order processing to identify bottlenecks and improve efficiency.

3.2.3 Contractor payment delays

Observation

In addition to the extended review and approval process PTCs experience for contract change orders (detailed in Observation 3.2.2), there appears to be a bottleneck in processing approved payments.

As per Article 9.3.1 of the General Conditions, contractors are required to submit applications for payment on or before the 10th day of the month. During review of the payment application logs provided, it appears that all approved PTC payment applications to date have been authorized for payment. Per the contract Articles 9.3-9.4, when a PTC submits a payment application, the University shall either issue a Certificate for Payment to the PTC or notify the PTC that the payment application requires revision no later than five working days after submission. The specific payment applications reviewed appear to comply with the relevant contract terms from both an owner's and contractor's perspective.

Once payment applications are approved, several contractors cited there is a two-to-four-month timeframe to receive payment.

Per Article 9.3.2, applications for payment are only to be submitted for project work authorized at bid-set or through authorized change orders. Therefore, any legitimate changes within the pending change orders prohibit contractor progress billings. There appear to be instances in which the PTCs have proceeded with work based on direction received in field orders. By commencing the work without an executed change order, the contractor may be assuming the liability to pay their suppliers and labor timely without an immediate payment for that work.

As a result, many of the PTCs appear to be paying out of their own pocket to fund project activities and continue execution. It was noted further during interviews that verbal conversations have taken place wherein PTCs have been informed that delays for contractor payment may be due to inadequate available project funds for Increment 3 scope.

Table 3.2.I – Increment 3 funded construction budget vs. committed spend (Top five PTCs)

Increment 3 - Augmentation #	A: Budget	B: Committed spend		A-B: Balance
	Total construction budget	Owner costs	Total effective contract value	Funded budget, less commitments
Augmentation 3 (as of October 2022)	$ 41.8m	$ 8.1m	$ 33.9m	$ -0.2m
Augmentation 4 (as of March 2024)	$ 59.9m	$ 8.1m	$ 34.8m	$ 17m

Based on the reviewed project budget and augmentations, it appears that the total effective contract values, including change orders, exceeded the available project funding at times. While the project has received additional funding through the latest augmentation, the extended augmentation approval process created a challenge for the FP&D team to execute the project and stay within approved funds.

Potential risk

- Contractors funding project activities out-of-pocket due to delayed payments may face cash flow problems, potentially leading to financial instability and a reluctance to continue work without timely payment.

- The extended time for processing payments can lead to project delays, as contractors may be hesitant to proceed and focus on other projects.
- The slow payment process and potential lack of funds could strain relationships between UCDH and contractors, affecting current and future collaborations.
- Contractors proceeding with work without executed change orders are at risk of not being reimbursed, which may lead to legal disputes and additional costs for the University.

Recommendation

Management should consider one or a combination of the following industry-leading practices:

- Review the current Account Payable team's staffing levels to assess whether they are appropriately resourced to execute timely processing of payments.
- Maintain open lines of communication with contractors regarding payment timelines and project fund availability to manage expectations.
- Implement financial controls and forecasting to prevent overcommitment and ensure adequate funds are available for contractor payments.
- Establish a clear and efficient dispute resolution process to handle any disagreements related to change orders and payments swiftly.
- Implement a system to monitor the duration of payment processing and report regularly to identify bottlenecks and areas for improvement moving forward.

3.3 Schedule management

3.3.1 Project schedule management improvements and ongoing challenges

Observation

Prior to the current management team coming onboard, it appears that the project team did not maintain an accurate and consolidated project schedule for Increments 3 or 4. Prime trade contractors were contractually obligated to maintain their own schedules, but there was little coordination in the planning and sequencing of activities, resulting in inefficiencies and rework. According to interviews, the previous construction manager would not regularly update milestone dates to reflect the latest true schedule (impact of unforeseen conditions, coordination issues, HCAI reviews, etc.). This resulted in misguided expectations and reporting of expected project completion.

Since Rudolph & Sletten joined the project, they have implemented pull planning utilizing the vPlanner software to align schedule expectations. Pull planning is a lean construction practice wherein teams establish a target milestone date and work backward to identify required tasks, interdependencies, and critical path. One drawback of pull planning according to the Lean Construction Institute is that it requires batch processing of critical path items. For this reason, pull planning alone is not recommended as a scheduling best practice.

Based on the schedules provided, vPlanner is the primary source for the FP&D Increment 3 project schedule, which has facilitated improvements to work sequencing and execution. The pull planning sessions that inform the vPlanner schedule require a significant amount of time from project team members. Currently, pull planning commitments are established in a Tuesday planning session, followed by a Thursday check-in meeting. In addition to the recurring pull planning sessions, UCDH/Rudolph & Sletten have onboarded an independent scheduling consultant, Lombardia, to develop a Primavera (P6) schedule for the remaining Increment 3 work based on the outputs of the vPlanner sessions. The scheduling consultant team completed its first draft of a comprehensive schedule in May 2024 with full participation from the PTC teams. This is anticipated to be the master project schedule that will be used to drive and track project execution as well as enhance coordination of ongoing construction activities. Based on a high-level review of the UCDH/R&S P6 Schedule, it appeared that schedule activities were linked with basic schedule logic that will be further refined. Furthermore, the schedule does not appear to include allocation of labor and resources.

Similarly, the PTCs have also onboarded an independent third-party scheduler, OnTrack, to capture the schedule and any updates or potential owner-directed changes. This appears to be a means for documenting and tracking project delays to request additional funds for compensable delays as opposed to driving and tracking project execution. The PTC schedule appears to use inputs from the vPlanner pull planning sessions but appears to include different activity durations and assumptions compared to the R&S/UCDH schedule. This contributes to the contrasting expected completion dates, further detailed below.

While the schedule management practices appear to have improved project tracking, coordination, and execution, there are still differing perspectives as to when the project team members expect the project to finish. The differing perspectives are shown in the table, below.

Table 3.3.A – Current reported completion dates

#	Schedule	Reported completion date
1	Target completion date	November 2024
2	UCDH/Rudolph & Sletten schedule	December 2024
3	PTC schedule	March 2025+

The UCDH/R&S and PTC project schedules suggest different completion dates, but both indicate the project will conclude post-November 2024. HCAI has warned that if the N/S Wings are not separated from

the Main Hospital by December 31, 2024, it could potentially lead to a loss of use due to a non-compliant exit route from the East Tower. However, the FP&D team expects to achieve and secure HCAI approval for this critical milestone before the deadline.

There is not a comprehensive schedule available related to Increment 4. The Increment 4 scope has been reduced significantly and descoped primarily to Increment 3. Through interviews, it is understood that FP&D has directed PTCs to stop work and the remaining Increment 4 scope consists primarily of design and inspection activities to achieve project close-out with HCAI.

Potential risk

- The project may encounter additional unforeseen conditions, which may further extend the project schedule and require UCDH to request additional funding.
- Failure to meet HCAI milestone dates may lead to potential penalties ($5,000 per day).
- The trade work schedule and project schedules are not aligned, resulting in different estimated completion dates.

Recommendation

Management should consider one or a combination of the following industry-leading practices:

- Continue to provide oversight and support for the scheduling consultant to monitor that the schedule is comprehensive and serves the project's needs.
- Conduct regular reviews of milestone dates and adjust them based on current project realities to manage expectations accurately.
- Continue to build out the project schedule to include detailed logic and resource allocation for a more accurate and complete project timeline.
- Continue to streamline pull planning sessions to minimize the time commitment while maintaining their effectiveness.
- Confirm that any delays are accurately captured and documented and that all parties understand the process for addressing these delays.

3.3.2 HCAI inspections and additional POM coordination impact project schedule

Observation

Department of Health Care Access and Information (HCAI)

HCAI is involved in regulating the design and construction of healthcare facilities across California, which can have implications on project design and schedule. Based on the HCAI requirements, the PTCs are responsible for addressing any issues that may arise when performing construction activities in the build area.

Given the history of the building and initial challenges with available as-built documentation, unknown conditions have given rise to scope and design changes. Many changes to the scope of work require additional redesign activities, approvals, and inspections to comply with HCAI requirements. The discovery of unforeseen conditions and associated design changes have steadily extended the project timeline.

During the initial planning phases of the project, UCDH had an established memorandum of understanding (MOU) with HCAI to internally perform onsite reviews and inspections of HCAI-related project design across the campus. The MOU and associated onsite presence benefitted UCDH by making HCAI reviews more efficient and timelier. The initial project duration estimate may have factored this efficiency into the original timeline.

During 2019, the MOU appears to have been rescinded by HCAI. As a result, UCDH no longer had an onsite HCAI presence. Instead, HCAI oversight came from the head office with heightened enforcement. This enforcement resulted in stricter reviews and approvals for all seismic upgrade components. The updated process may have resulted in extended processing times.

In addition, there have been instances wherein the architect and project team develop alternate construction and delivery methods that they believe address HCAI's relevant open questions and concerns. Upon installation, there were instances where HCAI requested additional changes to the design, which may have contributed to project delays. Specifically, several members of the project team noted the Stair 5 Negative Air Handling Unit and associated Fire Suppression System, which required a complete redesign upon installation.

Based on interviews with the project team, it appears as though the HCAI relationship and review process has become more streamlined. It also appears that the architect, Lionakis, has bolstered its team's presence and involvement to improve HCAI coordination and address changes efficiently. Team members believe that HCAI is invested in completing the project in line with the required time frame.

UCDH Plant Operations and Maintenance

The UCDH POM team is "responsible for the repair, inspection, and maintenance of all utility systems throughout the UCDH system," per the UCDH website. Given the breadth of scope being executed in an active hospital during the Main Hospital Seismic Upgrade, there is a significant amount of coordination performed with POM. For example, POM must be consulted when performing work on any utility system in the N/S Tower. POM conducts inspections, reviews work plans, and approves requests for shutdown (RFS) to ensure that project activities do not impact hospital operations. Based on interviews, POM appears to offer minimal opportunity during a one-hour weekly meeting to review and provide comments on requested RFS activities. If an RFS does not make the weekly POM agenda or if comments and subsequent RFS revisions are needed, this may extend the project timeline. From interviews, it appears as though PTCs may not always prepare the requisite documentation needed by POM to approve RFS requests, which may contribute to the extended approval timelines.

This added layer of coordination increases the complexity to execute project activities. PTCs have expressed that if they were to receive reasonable open access to their needed work areas, work execution may become more efficient.

As the project nears completion, there will be critical activities that require area shutdowns. Coordination with POM and end users will be essential to allow this work to be completed. From the PTC perspective, it is unclear who manages the end-user coordination. There have been instances where work was delayed to avoid impacting hospital operations. For example, PTCs have received an RFS approval and arrived to perform the work but discovered that a surgery was about to begin in the planned work area. The team postponed the work and adjusted the schedule to minimize the impact to hospital operations.

There is a general sentiment among the contractors that if the project had a more dedicated presence from POM, HCAI Inspectors, Fire Safety Inspectors, and an onsite Design team, there may be efficiencies to be gained.

Potential risk

- Lack of coordination and alignment with HCAI has the potential to result in additional rework, impacting project budget and schedule.
- A lack of POM coordination and alignment with their limited availability to review, approve, and execute the requests for shutdowns may delay project activities.
- Contractors face uncertainty regarding who is responsible for coordinating with end users, leading to potential project delays and operational conflicts.

Recommendation

Management should consider one or a combination of the following industry-leading practices:

- Continue to work closely with HCAI to resolve any remaining unforeseen issues and conduct redesign activities. This may support a streamlined review process to address design changes more effectively.
- Effectively sequence activities in the project schedule to reflect HCAI and POM review periods to provide a realistic timeline.

- Advocate for more dedicated time from POM to review and approve shutdown requests to prevent project delays. Consider requesting a dedicated POM team member to the project who has the authority to make decisions in a timely manner.
- Consider having POM perform site investigation ahead of the contractors to explore and address certain areas and prepare for potential future RFS.
- Consider clarifying and documenting the roles and responsibilities for end-user coordination to prevent misunderstandings and work stoppages.
- Consider the benefits of having dedicated onsite teams, including POM and design professionals, to improve project efficiency.
- Schedule and communicate critical shutdowns and other activities well in advance, with contingency plans for unexpected hospital operations.

3.4 Project controls

The project controls in place have improved relative to those observed and documented in a third-party project review conducted in 2022. The third-party review highlighted eight observations, and nine areas needing improvement, all of which have been addressed to different extents. Notably, the project's schedule alignment and change order review processes have seen enhancements, yet there is room to elevate them further to match leading industry practices. While progress has been made, there are ongoing opportunities to enhance scheduling, budgeting, reporting, and the efficiency of change order and payment processing. The current project controls highlight the importance of continued refinement to align with UCOP policies and to adopt a more standardized approach to project management for optimal results.

3.4.1 Remediation status of 2022 project control deficiencies

In 2022, UCDH engaged a third-party to review Increments 3 and 4 of the Main Hospital Seismic Upgrade Project, resulting in audit recommendations detailed in Appendix E. This section provides an overview of the actions taken to address these recommendations and examines other project controls implemented.

Observations:

1. **"Contractor should provide documentation to validate contractor owned equipment charges — compared with fair market value"**

   During the contract and change order review, PTCs provided equipment substantiation, with usage itemized by days and charged at daily or monthly rates. Post-2022 change orders show PTCs reducing billings as the equipment purchase price is neared. FP&D assesses equipment charges during the change order process, confirming they align with California Caltrans Rates as per Article 7.3.3.7. FP&D also checks that contractor-owned equipment charges reflect fair market value and may request further documentation or independently validate standard rental rates for additional verification.

2. **"University to implement controls around scheduling and cost impacts."**

   The UCDH FP&D and R&S teams have improved controls surrounding scheduling and cost management. The FP&D and R&S teams have implemented pull-planning sessions and onboarded a third-party consultant to develop a complete project schedule and actively manage the identification, coordination, and sequencing of remaining activities (further detailed in Observation 3.3.1).

   The current PTC and FP&D schedules do not appear aligned on the estimated completion date. As FP&D continues to refine the current project schedule, they may consider analyzing the two schedules to gain alignment.

   While there may be opportunities for improvement related to scheduling and the associated cost impacts, the FP&D and R&S teams have enhanced the project's scheduling controls. For additional information related to these controls, refer to Observation 3.3.1.

3. **"Contractor to provide all contract required documents in support of Compensable Delay changes."**

   For a delay to be compensable, it must be attributable to the University without fault on the part of the PTC and must lead to an extension of the project timeline. The multi-prime agreement, specifically Articles 7.3.9 and 8.4.1, outlines the criteria for contract sum adjustments due to delays.

   Documentation supporting delay changes from 2022 to 2024 varies, but PTCs appear to rely on the PTC schedule as the main justification for compensable delays. PTCs may not be providing adequate support for compensable delay changes with project files often missing cost-impact assessments. It appears that a primary factor in disputes related to compensable delay changes is the discrepancy between the project schedule and PTC schedule.

FP&D might consider requiring an authorized representative to approve the trade schedule monthly, as recommended in Volume 5: Bidding & Construction Administration of the UCOP Facilities Manual. It also appears that the new augmentation includes additional funds to cover potential compensable delay claims.

4. **"University to develop a method to track cost to complete, including forecast and variance reports."**

   The FP&D team appears to have developed an improved method to track cost to complete, utilizing an internal dashboard. The tracker includes the available and requested project funds and accounts for the estimated costs to complete, including potential costs. In addition to the internal tracker, FP&D utilizes a project management information system software, PMWeb. PMWeb is able to run regular reports that show the fund appropriations, approved commitments, expenditure to date, draft commitments, and balances of funds available for the project. The FP&D team runs reports via PMWeb on a regular basis to review any changes to the project costs.

   It appears that the FP&D project manager is maintaining the project budget at a sufficient level of detail to track current and forecasted project spend. Given the number of change orders to date, there is potential that the forecasted project spend may change regularly and these PMWeb reports may need to be run on a more routine basis.

5. **"University to implement policies and procedures to ensure accountability of the CM to scope, roles and responsibilities."**

   The FP&D team appears to have implemented certain governance to monitor whether the construction manager, R&S, is executing their contractual scope, roles and responsibilities. The previous construction manager appeared to lack accountability for their scope, roles and responsibilities.

   R&S's construction management services are outlined in a blanket agreement with the UC Regents, with key responsibilities from Article 2 including:

   - Assisting in dispute resolution between design professionals and contractors
   - Maintaining and updating the Cost Control System, with monthly cost reports that compare budget projections to current costs, and providing a narrative of changes and cost factors
   - Assisting in evaluating and making recommendations on Contractor Change Order Requests

   Since R&S joined the project, it appears that the change order approval process has improved. It appears R&S has been effective in managing field coordination and skilled labor for Field Order issuance and Change Order review. It appears R&S has improved the scheduling management practices by developing vPlanner and milestone schedules to inform the P6 schedule, which is expected to improve activity sequencing and execution.

   It does not appear that R&S is regularly issuing monthly cost reports or estimates to complete, which is included in their key responsibilities. The FP&D and R&S teams appear to have partnered closely in daily operations to plan and communicate updates to execute the remaining project scope. While certain reports are not regularly provided, it appears that FP&D generally holds R&S accountable for executing their contracted scope of services.

   For future engagements with CM services, FP&D may consider enforcing the process controls specified in the FP&D Project Playbook, and the governing agreement, to continuously validate that the construction manager is fulfilling their contractual obligations.

6. **"University to assess strengths and weaknesses for selecting delivery methods."**

   Through discussions with the UCDH FP&D team, the Strategic Programs department aims to deliver projects as efficiently as possible while abiding by the bylaws of the UCOP. The FP&D

team referenced the UCOP Facilities Manual as a primary source in departmental policies and procedures.

The UCOP Facilities Manual clearly defines the Required Modes of Contracting (Volume 4 Chapter 1). The Single Contract and Multiple Prime Contracts are authorized contract types (Volume 4 Chapter 2). The FP&D team have acknowledged the challenges associated with the chosen the multi-prime contract type. Based on the UCOP-recommended project management practices, lump sum contracting should only be used when design specifications are clear, which appears to have been a misstep at project inception.

Based on the lessons learned with Main Hospital Seismic Compliance, it appears as though FP&D understands the strengths and weaknesses of the approved project delivery methods. They appear to be aligned that a single contract type project delivery will be preferred in future projects to establish clear governance and accountability. When selecting project delivery methods for future projects, FP&D may consider documenting the rationale for selecting a contracting and project delivery method.

7. "University to establish policies and procedures for reviewing, processing Change Orders per UCOP policies & procedures."

The FP&D team, in coordination with R&S, appears to have established a process for reviewing, approving and processing change orders. R&S largely manages the change order review process for FP&D. There appears to be recurring meetings to review, provide comments and approve change orders.

UCDH engaged multiple cost consultants to augment the change order review procedures to validate costs, which includes required backup documentation for approval. The basic requirements for change order submissions are defined in Articles 4.2 and 7.3 of the General Conditions of the contract, which appears to be the basis of the review process.

While the change order process may extend beyond the anticipated review and approval period at times, there appears to be an established review and approval process in place. For additional details regarding the change order process, refer to Observation 3.2.2.

8. "University to implement controls to have labor rates submitted and verified."

The FP&D team appears to have implemented controls to have labor rates submitted and verified. Contractors and subcontractors are expected to maintain certified copies of employee payroll records in line with the UCOP Labor Compliance Program and the California Labor Code Section 1776 and 1771. The contractor is obligated to furnish the records if requested by FP&D, per the contract (General Conditions, A 14.4, Supplementary Conditions, A 14.3.4).

It was observed that Certified Payroll Record and the Related Attestations are furnished by PTCs to the Construction Manager. As noted in the 2022 report, certain records prior to July 2022 were not originally available but have since been uploaded through the state labor compliance site and retained by FP&D. The FP&D review and approval of labor rates is evident by their markup of relevant support within the change order cost proposals.

UCDH appears to have implemented controls to have labor rates submitted by contractors and reviewed by R&S and FP&D team members.

9. "University to implement billing controls that accurately reflect progress in the field."

FP&D has shown enhancements in its cost management practices following the integration of new team members and the R&S team. A third-party review suggested discrepancies between billings and actual field progress. Despite this, the FP&D team adheres to the billing approval process as outlined in Articles 9.3 and 9.4 of the General Conditions. Payment applications reviewed appear to comply with Article 9.3.1, accepting only work authorized by change orders or the initial schedule of values for payment by UCDH. Additionally, lien waivers for billed values

appear to be submitted, including the release for work from the previous billing cycle in accordance with Article 9.3.4.

In August 2023, the project team undertook a thorough review of outstanding change orders to reinforce control over this process. CORs that met the approval criteria were authorized, while the remaining pending change orders were deferred for further review pending additional funding. The cost substantiation procedures referenced in the change order approval process (3.2.2) are employed to validate the schedules of values for billing purposes.

Despite the implementation of cost management procedures by UCDH, concerns persist regarding the accuracy of billing controls in mirroring field progress. The accumulation of pending change orders and the advancement of PTC progress suggest that fieldwork may be outpacing the processing of change orders, as directed by the owner. This discrepancy has raised questions about the potential misalignment between the percentage of contract billings and the project budget, as indicated in Table 3.2.I.

Summary of project controls remediation efforts:

The majority of findings from the 2022 third-party review appear to have been largely addressed by the FP&D and R&S management teams. While there may be additional opportunities for improvement in certain control areas, the team's oversight appears to have enhance project progress and associated controls.

3.4.2 Additional project control opportunities

The current FP&D and R&S team joined the project in 2022 and identified areas to improve the management of the project. Several of the new FP&D team members came from the University system and brought along established processes, policies, and procedures utilized at the UC Davis Campus. The new team and leadership appear to have enhanced the control over the project. This team appears to have established additional controls to manage the project. For example, it appears that the team has established cost substantiation and control measures, developed a schedule that maps project activities through completion, and strengthened coordination efforts across the PTCs.

In addition to addressing the project controls deficiencies (detailed in Observation 3.4.1), it appears that the UCDH FP&D team has developed supplemental project controls, detailed below.

- An internal tracker to monitor project costs and the estimate to complete
- A project dashboard that provides insights into inspection status, pending and issued field orders, project constraints and actions, and logged architect's supplemental instructions (ASI)
- A project milestone schedule, leveraging vPlanner pull planning sessions to coordinate work in the field and serve as a basis for a complete project schedule
- An integrated P6 schedule to track progress on the remaining activities to complete
- Processes to maintain project control, such as cost management and change order review and approval sessions
- Developed improved standards for PTCs to follow when submitting change order requests for approval, including equipment charges, labor rates, and certified payroll records
- Developed minimum reporting required to validate cost of work to the UCDH as required by UCOP policies and procedures and contractual requirements
- The Project Stoplight Report was developed in Compass in 2023, which facilitates FP&D reporting of individual project status across the complete FP&D project portfolio.
- The Project Watchlist was initiated in 2022 by the FP&D team to provide status updates monitoring progress and risk across the development portfolio.

To further enhance the controls on this project, and future projects, FP&D may consider the following industry-leading practices:

- Utilizing Earned Value Management techniques to measure project performance and progress in terms of scope, time and cost
- Continuing to implement additional controls detailed in the UCDH Project Controls Manual
- Establishing more formalized and routine reporting processes to document and track ongoing project schedule, cost and risk updates
- Maintaining a formal risk register to identify, manage and mitigate potential risks throughout the project lifecycle
- Developing and actively monitoring key performance indicators such as planned percentage complete and critical path indexing

Appendix A Funding/budget outline

Table A.1 – Increment 3 Funding Outline								
Subproject	**Subproject Name**	**Original Base Budget** 01/24/2017	**Aug #1 Rebid** 10/01/2018	**Base Contract** 10/01/2018	**Aug. #2** 04/01/2020	**Aug. #3** 10/24/2022	**Aug. #4 Proposal** 2023	**Total Budget**
Sub 0	Site Clearance	N/A	N/A	N/A	N/A	N/A	N/A	N/A-
Sub 1	Construction	$ 8.8m	$ +7.2m	$ 16m	$ +10.9m	$ +4m	$ +15.5m	$ 46.46m
Sub 2	Exterior Utilities	N/A	N/A	N/A	N/A	N/A	N/A	$ -
Sub 3	Equipment	N/A	N/A	N/A	N/A	N/A	N/A	$ -
Sub 4	Site Development	N/A	N/A	N/A	N/A	N/A	N/A	$ -
Sub 5	A&E	$ 2.1m	$ +1.7m	$ 3.8m	$ +0.6m	$ +0.7m	$ +1.5m	$ 6.5m
Sub 6	Fees	$ 1.1m	$+0.2m	$ 1.4m	$ +0.3m	$ +0.2m	$ +0.2m	$ 2.1m
Sub 7	Surveys Tests	$ 0.3m	$+0.3m	$ +0.5m	$ + 0.3m	$ +0.1m	$ +0.1m	$ 1m
Sub 8	Special Items	$ 0.3m	$ -0.1m	$+0.2m	$+0.2m	$ +0.1m	$-	$ 0.6m
Sub 9	Contingency	$ 0.4m	$ +0.6m	$ 1m	$+1.2m	$ +0.3m	$ +0.8m	$3.2m
Total Budget:		$ 13m	$ +9.9m	$ 22.9m	$ 13.4m	$ 5.4m	$ 18.1m	$ 59.8m

Table A.2 – Contingency Line as % Budget								
	Bid 1: 01/24/2017	**Bid 2: 10/01/2018**	**Base Contract**	**04/01/2020 (Aug #2)**	**10/24/2022 (Aug #3)**	**Total current allocation**	**2023 Proposal**	**Total as of Aug. #4:**
Contingency	$0.4m	$ 0.6m	$ 1m	$ 1.2m	$0.3m	$ 2.4m	$ 0.8m	$3.2m
Total Budget	$13m	$9.9m	$22.9m	$13.4m	$5.5m	$10.8m	$18.1m	$37m
% Contingency	**3.4%**	**5.6%**	**4.4%**	**8.6%**	**5.2%**	**5.8%**	**4.3%**	**5.4%**

Appendix B Contractual compliance review

Table A.1 - Multi-prime contract compliance review				
#	**Area of focus**	**Description**	**Observation**	**Reference to report content**
1	Scheduling	Under the Advertisement for Bid, and Article 4 of the General Conditions, the PTC is required to perform its work in accordance with a Master Project Schedule maintained by the University Representative. Article 3.9 of the General Conditions defines PTCs' role in project scheduling. PTCs are expected to update and maintain the initial master project schedule in adherence to A 3.9.1. Per A 3.9.2, the University Representative is expected to develop and issue the Master Project Schedule based on relevant inputs.	The initial project schedule was used to reestablish a baseline milestone schedule in 2022 upon UCDH inquiring with the prior Construction Manager. The University Representatives have not maintained a Master Project Schedule throughout the course of the project.	Observation 3.3.1
2	Change order request processing	Change orders are required to be responded to by the University Representative within a reasonable time frame. Upon a written request for response, there is an obligatory 30-day response period. (General Conditions, A4.2.3.3-4). The change order should meet the criteria for changes to the work as defined in Article 7 of the General Conditions.	Of the approved change order requests, noted longer than expected processing times on 71% of samples. Of the pending change order requests, many requests from prior to 2022 are yet to be processed. Change orders executed after 2022 generally appear to be substantiated, or sent back for revision, prior to processing.	Observation 3.2.2, 3.2.3
3	Certified payroll rates	Contractors and subcontractors are expected to maintain certified copies of employee payroll records in line with the California Labor Code Section 1776. Upon University, or other regulatory request, contractor is obligated to furnish the records. (General Conditions, A 14.4, Supplementary Conditions, A 14.3.4)	Prior to 2022, certain certified payroll records were not available. It appears that the relevant records have been located and retained by the University. The PTCs reviewed appear to currently maintain labor compliance controls. Records are provided to the University on a weekly or monthly basis, based on the mode of tracking. Certain labor rates paid by contractors brought rise to question.	Observation 3.4.1-9
4	Compensable delay substantiation	The University retains the right to delay work, as discussed in Article 8.5 of the General Conditions. To establish justification for an adjustment to contract sum resulting from delay, the parties must agree that the five conditions defined in Article 7.3.9 are met. In summary: the delay must extend duration, the delay is caused by an owner error or omission, the delay is not concurrent with a delay subject to the conditions for adjustment defined in Article 8.4.	To date, the project has lacked a mutually agreeable schedule. The Master Schedule, or approved Trade Schedules, are key contract documents in establishing mutually agreeable adjustments to the project duration. Compensable delay claims generally do not include outright proof of the specific conditions for adjustment.	Observation 3.3.1
5	Equipment billings	Rental charges for necessary machinery and equipment are relevant to the Cost of Extra Work as used in Article	The PTCs reviewed provide cost proposal schedules detailing proposed equipment charges. Of the equipment	Observation 3.4.1-1

		7.3. Equipment charges should not exceed the current equipment rental rates published by the State of California as evidenced by a copy of the equipment schedule (A 7.3.3.7).	charges reviewed, the appropriate schedules appear to be provided. Through an independent review it was determined that the rates match to those published by the Division of Construction.	
6	Payment application review and processing	Article 9.3 of the General Conditions requires contractors to submit application for payment on or before the 10th day of the month. The payment application must detail current contract and billings following a standard contract form. Applications for payment must be substantiated by the contracted schedule of values or an authorized change order (A 9.3.2). At the request of the University, subcontractor invoices are to be provided (A9.3.3). Scope included in the payment application must be free from claims and stop notices (A 9.3.4). If the conditions in Article 9.3 are satisfied, a certificate for payment must be issued by the University Representative within five working days.	PTC applications for payment are submitted based on approved contract documents and work performed. Questioned contract position per contractor billings as opposed to per authorized change orders at specific points in time. The sampled applications for payment appear to include appropriate approval per the UCOP Delegation of Authority, and contain all relevant support regarding scheduled values, lien release details, and overall accuracy. Specific to the subcontracted environmental scope, equipment, materials, and labor invoices are provided within change orders supporting the PTC application for payment.	Observation 3.2.3

Appendix C Personnel interviewed

Table C.1 Interviewees list			
Company or Team	**Name**	**Title**	**Interview date(s)**
UC Davis Health FP&D	Jill Tomczyk	Executive Director – FP&D	April 10th & May 7th, 2024
UC Davis Health FP&D	Greg Secor	Director – FP&D	April 11th & May 7th, 2024
UC Davis Health FP&D	Jared Webster	Project Manager – FP&D	April 12th & May 7th, 2024
Rudolph & Sletten	Jill Davis	Project Executive	April 17th, 2024
Lionakis	Michael Burke	Sr. Associate	April 18th , 2024
Rudolph & Sletten	Dan Lynch	Senior Superintendent	April 17th , 2024
Rudolph & Sletten	Site Walk	Project Executive, Senior Mechanical Coordinator, Superintendent	April 18th , 2024
Carter Kelly	Jim Kelly	Partner	April 17th , 2024
Carter Kelly	Matt Vanderpool	Project Manager	April 17th , 2024
Mark III	Jared Burdick	VP	April 18th , 2024
Mark III	Justin Thompson	Project Engineer	April 18th , 2024
Helix Electric	Matt Liefer	Project Executive	April 25th , 2024
Cosco Fire	Darin Forrester	District Design Manager	April 17th , 2024

Appendix D Documents reviewed

Table D.1 Documents reviewed
01) Original Budget Summary: N/A - not received (refer to Observation 3.2.1)
02) Project Schedule: 2024-03-29 - Inc 3 - 2 Week Lookahead by RP
02) Project Schedule: 2024-03-29 - Inc 3 - L1 & 1516
02) Project Schedule: 2024-03-29 - Inc 3 - L2
02) Project Schedule: 2024-03-29 - Inc 3 - Sewage Ejector Pit
02) Project Schedule: 2024-03-29 - Inc 3 - SPF-1
02) Project Schedule: 2024-03-29 - Inc 3 - Stair 1
02) Project Schedule: 2024-03-29 - Inc 3 - Stair 5
02) Project Schedule: 2024-03-29 - Inc 3 - Stair 9 & L2 Roof
02) Project Schedule: 2024-03-29- Inc 3 - Daily Planning Board
02) Project Schedule: 24.03.27 - Inc 3 & 4 P6 Schedule
02) Project Schedule: Not Received (refer to Observation #3.3)
03) Subcontract Bid Analysis: 9559040-M030667(BP-01 Second Rebid)BidSummary
03) Subcontract Bid Analysis: 9559040-M030667_BidSummary
03) Subcontract Bid Analysis: Bid-Summary(RebidBP-03)
03) Subcontract Bid Analysis: Bid-Summary-RebidBP-01
04) Project Contracts: 9559040 - Contract Cosco L001519
04) Project Contracts: 9559040 - Contract Helix L001517
04) Project Contracts: 9559040 - Contract JME L001515
04) Project Contracts: 9559040 - Contract Mark III L001516
04) Project Contracts: 9559040-Contract Carter-Kelly L004171
04) Project Contracts: 9559040-Contract Outerbridge L006927
04) Project Contracts: 9559040-SPECS-1
04) Project Contracts: PLANS Inc#3_BID SET
04) Project Contracts: 9559040-M030667-ADDENDUM-1
04) Project Contracts: 9559040-M030667-ADDENDUM-2
04) Project Contracts: 9559040-M030667-ADDENDUM-3
04) Project Contracts: UCDMC Stair 5 and 9 Geotechnical Report Update 12-18-13
04) Project Contracts: W&K Geotechnical report May 2011
04) Project Contracts: East Wing Pre cast panel construction (1)
04) Project Contracts: East Wing precast ties (1)
04) Project Contracts: East Wing Steel frame (1)
04) Project Contracts: Inc 3 staging plan (1)
04) Project Contracts: Increment 2 Fire Alarm shop drawings (1)
04) Project Contracts: Increment 2 Fire Sprinkler drawings (1)
04) Project Contracts: RPGA1463_New Stair 5 Pressurization System Basis of Design_UCDMC Hospital Seismic Upgrade Increment 3_20171106rev1 (1)
04) Project Contracts: West Laydown yard (1)
04) Project Contracts: M030667-Contract Carter-Kelly L004172
04) Project Contracts: M030667-Contract Cosco Fire L001520
04) Project Contracts: M030667-Contract Helix L001518

Table D.1 Documents reviewed
Document Title:
04) Project Contracts: M030667-Contract JME L001521
04) Project Contracts: M030667-Contract Mark III L001513
04) Project Contracts: M030667-SPECS
04) Project Contracts: PLANS Inc#4_BID SET
05) Monthly Reports: Not Received (refer to Observation 3.4.1-5)
06) Final Budget Summary or ETC: Inc 3 Budget Workbook 2024-0220
07) Payment Applications: 9559040 L004171 CARTER-KELLY PAY APP 34
07) Payment Applications: Carter-Kelly Inc 3 Payment App Log
07) Payment Applications: 9559040 L001519 COSCO FIRE PAY APP 12 DOC 69903639
07) Payment Applications: Cosco Fire Inc 3 Pay App Log
07) Payment Applications: 9559040 L001517 HELIX ELECTRIC PAY APP 32.PDF
07) Payment Applications: Helix Inc 3 Pay App Log
07) Payment Applications: 9559040 L001515 JM ENVIRONMENTAL PAY APP 14 DOC 65587064
07) Payment Applications: JME Inc 3 Pay App Log
07) Payment Applications: 9559040 L001516 MARK III PAYMENT APPLICATION 41
07) Payment Applications: Mark III Inc 3 Pay App Log
07) Payment Applications: Carter-Kelly Inc 4 Pay App Log
07) Payment Applications: M030667 L004172 CARTER KELLY PAY APP 20 DOC 71343413
07) Payment Applications: Cosco Fire Inc 4 Pay App Log
07) Payment Applications: M030667 L001520 COSCO FIRE PAY APP 10 DOC 69903439
07) Payment Applications: Helix Inc 4 Pay App Log
07) Payment Applications: M030667 L001518 HELIX ELECTRIC PAY APP 32.PDF
07) Payment Applications: JME Inc 4 Pay App Log
07) Payment Applications: M030667 L001521 JM ENVIRONMENTAL PAY APP 7 DOC 65772811
07) Payment Applications: M030667 L001513 MARK III PAY APP 37
07) Payment Applications: Mark III Inc 4 Pay App Log
07) Payment Applications: UNCOND1
08) Job Cost Reports: Not Received (refer to Observation 3.2.1)
09) Cost Code Determination List (SOV): Schedule of Values - Project Dashboard
10) Payroll Register: Carter-Kelly Inc 3 – Redacted
10) Payroll Register: Cosco Fire - Inc 3_Redacted
10) Payroll Register: Helix - Inc 3_Redacted
10) Payroll Register: JME - Inc 3_Redacted
10) Payroll Register: Mark III - Inc 3_Redacted
10) Payroll Register: Parc Environmental - Inc 3_Redacted
10) Payroll Register: Parc Specialty - Inc 3_Redacted
10) Payroll Register: Carter-Kelly Inc 4_Redacted
10) Payroll Register: Cosco Fire - Inc 4_Redacted
10) Payroll Register: Helix - Inc 4_Redacted
10) Payroll Register: JME - Inc 4_Redacted
10) Payroll Register: Mark III - Inc 4_Redacted
11) Change Order Log: Increment 3 PCCO PCO Log (All PTC's) 03.01.2024

Table D.1 Documents reviewed
11) Change Order Log: Increment 3 PCCO PCO Log (CKI) 03.01.2024
11) Change Order Log: Increment 3 PCCO PCO Log (COSCO) 03.01.2024
11) Change Order Log: Increment 3 PCCO PCO Log (HEI) 03.01.2024
11) Change Order Log: Increment 3 PCCO PCO Log (MIII) 03.01.2024
11) Change Order Log: Increment 3 PCO Log (All PTC's VOID) 03.01.2024
11) Change Order Log: Increment 4 Not Received (refer Observation 3.2.2)
12) Change Orders: 9559040 - CKEL - CO 1
12) Change Orders: 9559040 - CKEL - CO 2
12) Change Orders: 9559040 - CKEL - CO 3
12) Change Orders: 9559040 - CKEL - CO 4
12) Change Orders: 9559040 - CKEL - CO 5
12) Change Orders: 9559040 - CKEL - CO 6
12) Change Orders: 9559040 - CKEL - CO 7
12) Change Orders: 9559040 - CKEL - CO 8 Part 1
12) Change Orders: 9559040 - CKEL - CO 8 Part 2
12) Change Orders: 9559040 - CKEL - CO 9
12) Change Orders: M030667 - C-KEL - CO 1
12) Change Orders: M030667 - C-KEL - CO 2
12) Change Orders: M030667 - C-KEL - CO 3 – PART 1
12) Change Orders: M030667 - C-KEL - CO 1 – PART 2
12) Change Orders: M030667 - C-KEL - CO 4
12) Change Orders: M030667 - C-KEL - CO 5
12) Change Orders: 9559040 COSCO FIRE CO 1
12) Change Orders: 9559040 COSCO FIRE CO 2
12) Change Orders: M030667 COSCO FIRE CO 1
12) Change Orders: 9559040 - Helix - CO 1
12) Change Orders: 9559040 - Helix - CO 1 - Backup
12) Change Orders: 9559040 - Helix - CO 2
12) Change Orders: 9559040 - Helix - CO 3
12) Change Orders: 9559040 - Helix - CO 4
12) Change Orders: 9559040 - Helix - CO 5
12) Change Orders: 9559040 - Helix - CO 6
12) Change Orders: 9559040 - Helix - CO 7
12) Change Orders: 9559040 - Helix - CO 8
12) Change Orders: 9559040 - JME CO 1
12) Change Orders: M030667 - HELIX CO 1
12) Change Orders: M030667 - HELIX CO 2
12) Change Orders: 9559040 - JME CO 2
12) Change Orders: 9559040 - JME CO 3
12) Change Orders: 9559040 - JME CO 4
12) Change Orders: 9559040 - JME CO 5
12) Change Orders: 9559040 - JME CO 6
12) Change Orders: 9559040 - JME CO 7

Table D.1 Documents reviewed
12) Change Orders: 9559040 - vJME CO 8
12) Change Orders: 9559040 - JME CO 9
12) Change Orders: 9559040 - JME CO 10
12) Change Orders: M030667 C-JMEI - CO #1
12) Change Orders: M030667 C-JMEI - CO #2
12) Change Orders: M030667 C-JMEI - CO #3
12) Change Orders: M030667 C-JMEI - CO #4
12) Change Orders: M030667 C-JMEI - CO #5
12) Change Orders: 9559040 - Mark III - CO 01
12) Change Orders: 9559040 - Mark III - CO 02
12) Change Orders: 9559040 - Mark III - CO 03
12) Change Orders: 9559040 - Mark III - CO 04
12) Change Orders: 9559040 - Mark III - CO 05
12) Change Orders: 9559040 - Mark III - CO 06
12) Change Orders: 9559040 - Mark III - CO 07
12) Change Orders: 9559040 - Mark III - CO 08
12) Change Orders: 9559040 - Mark III - CO 09
12) Change Orders: 9559040 - Mark III - CO 10
12) Change Orders: 9559040 - Mark III - CO 10 backup
12) Change Orders: 9559040 - Mark III - CO 11
12) Change Orders: 9559040 - Mark III - CO 12
12) Change Orders: M030667 - MARK III - CO 1
12) Change Orders: M030667 - MARK III - CO 2
12) Change Orders: M030667 - MARK III - CO 3
13) Policies & Procedures: UCDH FP&D Inquiry: UCOP Facilities Manual
13) Policies & Procedures: UCDH FP&D Inquiry: PCM 2024-0320 - less than 100M PCM Reviewed (all sections)
14) Project Execution Plan: Not Received (refer Observation 3.1)
15) Project Controls Documentation: Project Dashboard 2024-0408
16) Hospital FP&D Org Chart: FP&D Org Chart
17) Project Org Chart: Not Received (refer Observation 3.1.4)
18) Risk Register: Not Received (refer Executive Summary 2.1-2.2)
19) Previous Audits: 2022-07 Audit Summary Inc3 and 4_RACI
19) Previous Audits: Moss Adams Construction Audit Summary Inc3 and 4 8-15-22
19) Previous Audits: Moss Adams Inc3 Construction Audit Fact Validation Report 07-01-2022
UCDH FP&D Inquiry: INC 3 Budget overview update 2024-0213
MIII Email: 11902 Change Order Log for auditors
MIII Email: Change Order Log- copy for audit
MIII Email: DD 24Apr24 - 6 Week Lookahead (11x17)
MIII Email: DD 24Apr24 - Longest Critical Paths (11x17)
MIII Email: DD 24Apr24 - Remaining Activities (11x17)
MIII Email: DD 24Apr24 - Remaining Stair 5 (11x17)
MIII Email: DD 24Apr24 - Remaining Stair 9 (11x17)
MIII Email: DD 24Apr24 - UCD Dependent Activities (11x17)

Table D.1 Documents reviewed
MIII Email: Increment 3 - CE 001 - Mark III
MIII Email: UCD Compensable Delays - APPROVAL received 1-26-22
UCDH FP&D Inquiry: Project Stoplight Report (January & April 2024)
UCDH FP&D Inquiry: R&S CM Blanket Agreement 2022-1005
UCDH FP&D Inquiry: CM Extended Proposal 9559040 Inc3 2022-1207
UCDH FP&D Inquiry: 9559040 Inc 3 Staffing Proposal Through June 2023
UCDH FP&D Inquiry: 9559040 Staff Resp Matrix 7-25-23
UCDH FP&D Inquiry: 9559040 Inc 3 Staffing 7.2.23 to 12.31.24
UCDH FP&D Inquiry: Project Watchlist
UCDH FP&D Inquiry: first UCD - PFR 11810.3 - 004 - 9559040 - Hospital Seismic Upgrade - Stair Tower and Exit Corridor Upgrades - CIB Augmentation - SIGNED (2)
UCDH FP&D Inquiry: second UCD - PFR 11810.4 - 004 - 9559040 - Hospital Seismic Upgrade - Stair Tower and Exit Corridor Upgrades - 2nd CIB Augmentation - SIGNED (1)
UCDH FP&D Inquiry: third DocuSign 7 UCD - Project Funding Request - Augmentation (3)
UCDH FP&D Inquiry: fourth DocuSign 8 UCD - Project Funding Request - Augmentation (3)
UCDH FP&D Inquiry: 24.05.07 - Inc 3 & 4 P6 Detailed Schedule - DRAFT

Appendix E 2022 third-party review findings

Table E.1 – Third-party review findings

ID	Issue	Recommendation
1	Contractor-Owned Equipment Charges in Excess of Fair Market Value	- Enforce contractual requirement for contractor to provide backup that equipment charges align with FMV. - Review that equipment charges are in line with the most current project budget/executed change orders. - Perform independent FMV equivalent/buying alternatives assessment and compare to actual billings.
2	Noncompliant Executed and Estimated Compensable Delay Change Order Values and Controls	- Continuous Project Monitoring (Schedule, Cost) - Delays to planned project schedule should be supported by adequate documentation and reviewed for excusable/compensable distinction. Compensable delays warrant additional documentation requirements. - Project schedule variances should be reviewed and justified on a routine basis via project variance report. - For any compensable delay changes submitted by contractor, perform a cost impact assessment and review. - Notice of Deficiencies are to be documented to the contractor submitting a denied compensable delay change.
3	Unsupported Project Budget Augmentation Change Order Estimates	- Continuous Project Monitoring (Cost) - Reperform estimated time/cost to completion as % of budget prior to any change order execution. - Project schedule variances should be reviewed and justified on a routine basis via project variance report. - Explicit authorization of change order and supporting documentation.
4	Contract Compliance - Inadequate Project and Prime Trade Contractor Monitoring, Internal Escalation, and Reporting Controls	- Implement policies and procedures to enforce accountability of the CM to its scope, roles, and responsibilities, and key deliverables and milestones. - Consider improved reporting policies and procedures to key stakeholders to continuously monitor project progress and performance of the CM. - Assess internal strengths and weaknesses prior to selecting a project delivery method. The selected delivery method should provide clear accountability, align goals, and incentivize efficiency.
5	Contract Compliance - Inadequate Change Management Controls (Cost Proposal Substantiation and Appropriateness)	- Implement policies and procedures to define the roles and responsibilities and controls for inputting, processing, and approving change orders. - Establish minimum reporting required to validate cost of work to the University as required by UCOP policies and procedures and contractual requirements.
6	Contract Compliance - Inadequate Controls Surrounding Change Order Labor Rate Validation	- Verify the actual labor costs submitted to date prior to any change orders being processed.
7	Contract Compliance - Inadequate Certified Payroll Records Controls	- Routinely request timely CPR records from contractors in line with contract terms - Perform routine review to validate compliance with prevailing wage requirements.
8	Contract Compliance - Inadequate Pay App Review Controls	- Implement billing controls to enforce that payment applications reflect progress in the field accurately. - Payment application approval – responsibility of signer for goods/service acceptance in line with policy.

Note: In addition to the eight issues and associated recommendations noted above, this assessment included a review of the controls around scheduling and cost impacts, which came from the FP&D Summary Overview PPT and is an essential component of project delivery.