Design Review Process

FACILITY OPERATIONS
DESIGN REVIEW LEAN TEAM – AUGUST 2016
CONTENTS

Introduction ................................................................................................................................................................3
Participants .................................................................................................................................................................3
  Design Reviewers – Facility Operations..................................................................................................................4
Providing Feedback ....................................................................................................................................................5
Design Review Sessions ..............................................................................................................................................6
  Bluebeam Studio ....................................................................................................................................................6
    Change ID from uNID to Name in Bluebeam ......................................................................................................7
    Changing Review Status ...................................................................................................................................9
  Responses to Review Comments ...........................................................................................................................9
Design Review Meetings ............................................................................................................................................9
Design Process ......................................................................................................................................................... 10
  Programming ....................................................................................................................................................... 10
  Schematic Design ............................................................................................................................................... 10
  Design Development ........................................................................................................................................... 10
  Construction Documents ..................................................................................................................................... 10
Design and Construction Documentation ............................................................................................................... 11
  MasterFormat 2004 ............................................................................................................................................. 12
INTRODUCTION

This document is intended to be used as a guide for those participating in the University’s Design Review Process, with a focus on the University of Utah Facilities Management Department. The University invests a great amount of time and resources in conducting design reviews and expects all participants to contribute in making each project a success.

The University’s Design Review Process is intended to allow all vested parties the opportunity to perform plan checks, design reviews, and comment upon design and construction documents prepared by Design Teams. Design reviews facilitate communication between the design team, owners, and customers. These reviews provide an opportunity to ensure all reasonable design options have been considered, identify potential flaws, and ensure projects comply with University and regulatory requirements.

The vested parties at the University may include end users, occupants, donors, steering committee members, and many departments on campus including, but not limited to: Facility Operations, Commuter Services, University Information Technology (UIT), Occupational and Environmental Health and Safety (OEHS), Center for Disability Services, Space Planning, Campus Planning, Purchasing, Hospital Facilities and Engineering, and Construction Project Delivery (CPD).

PARTICIPANTS

**Design Team:** The Design Team, consisting of Architects and Engineers (A/E), is responsible for producing design and construction documents that comply with the DFCM and University Design Manuals, and all applicable regulations, codes, and ordinances. The Design Team is expected to adhere to the submittal requirements for each design phase as listed in the Design Manuals. In order for the design reviewers to provide meaningful comments and feedback, the Design Team must ensure that their work is complete prior to submitting for review by the University. Additional expectations and requirements of the Design Team can be found in the Design Manuals.

**Project Manager:** The University’s designated representative for all design and construction projects is a Project Manager (PM) from either Campus Planning or Construction Project Delivery, depending on the scope and phase of the project. The PM’s role in the design review process is to be knowledgeable of and assess the requirements of the particular phase of the design review. Once the requirements for that phase have been assessed then the PM must work with the Design Team to establish the expectations for the submittal prior to receiving the design review documents. Once the design review documents have been submitted to the PM, they must review them to ensure all the requirements and expectations for the specific design review session have been met. If the documents are inadequate for the specific review, the PM must notify the Design Team where the documents are deficient. Once adequate documents are submitted, then the PM will initiate the required design review for the specific phase and help the Project Assistant ensure the review runs well through its fruition.

**Project Assistant:** The role of Project Assistant, as it relates to the design review process, is to facilitate the flow of information between all vested parties. The PA will make available the required documents and any necessary information to the appropriate design reviewers through Bluebeam. Once all comments have been made the document is opened up to the consultants for replies, once compiled the Project Assistant sends the details back to reviewers to verify all comments were adequately addressed. If there are any issues with the responses the Project Assistant will facilitate the discussion between commenter and consultant in order to resolve the original
issue. Once all is resolved the Project Assistant will archive the data obtained during the review, and provide notification to the Project Manager and Consultant.

**DESIGN REVIEWERS – FACILITY OPERATIONS**
The overall responsibilities of the design reviewers are to review the documents at each design phase to ensure compliance with University design requirements, best practices, and to submit feedback, comments or questions during the scheduled design review session. They are responsible for reviewing within their area of expertise. The reviewers must distinguish between a design concept that they may dislike personally, but that meets the design criteria and guidelines, and a design that is unsuitable because it clearly violates the design criteria and guidelines. The design reviewers must develop and adhere to a consistent set of standards and review procedures so that every project is reviewed fairly. In addition, their review includes identifying any issues within the documents where the safety of the University’s students, faculty, and employees as well as existing facilities and systems may be put at risk due to the construction of the project.

**Design Review Coordinator:** The Design Review Coordinator’s role is to identify the appropriate design reviewers from their department for each design review session. They should review the scope of work, drawings and specifications for each project to ensure the correct reviewers are included. They are responsible to maintain and update the list of design reviewers, and ensure the design reviewers in their department adhere to their responsibilities.

**Technical Resource Team:** The Technical Resource Teams are composed of subject matter experts for civil site work, mechanical (HVAC), electrical, plumbing, fire systems, and building controls. Each team is composed of engineers and technical experts with long standing knowledge of the University’s infrastructure and building systems. They should use their experience with past design errors and documented lessons learned to prevent mistakes in the design, and to verify the design will not negatively or unintentionally alter the operational and functional design of the building, utility or system. Their role is to ensure the documents conform to the University’s standards with respect to the project’s integration into the campus infrastructure.

**Facility Engineer:** As a member of the Technical Resource Team, the Facility Engineer’s role in the Design Review Process includes not only a technical review, but also an overall general review of the design documentation to ensure adequate engineering has been completed for the Project. That may include review of the design calculations as well as a review of the coordination between the drawings and specifications. Through the review process, a general evaluation of the quality of the construction documents may be made to the Project Manager for transmittal to the Design Team. This provides constructive criticism with the intent to improve the quality of the construction documents.

**Core Shop Supervisor:** Campus Support Services is made up of various shops that provide many workplace services at the University. The core shops that participate in the design review process include: Carpentry, Electronics, Building Access, Landscape, Irrigation, Metals, Heavy Equipment, Waste and Recycling, and Custodial services. The Shop Supervisor (or subject matter expert) is responsible to review design documentation to ensure design standards are met and approved materials are specified. Their review should identify any design that may conflict with their work orders, procedures, or maintenance activities. Each shop is responsible to develop a consistent set of standards and review procedures within their area of expertise.

**District Manager:** The District Manager’s role in the design review process includes an overall review of the drawings and specifications for all projects within their district. Their review is to ensure the project will meet
the needs and expectations of their customers, facility users, and building occupants. Their responsibilities include identifying any potential impacts the project may have on their customers.

**Facility Coordinator:** The Facility Coordinator’s role in the design review process includes an overall review of the drawings and specifications for all projects within their District. Their review is to verify future facility maintenance activities can be completed, including verifying they have properly trained staff and the necessary equipment. They are to verify the project won’t conflict with other potential or ongoing construction projects, including work orders and maintenance programs.

**Building Maintenance Manager:** The Building Maintenance Manager’s role in the design review process is an overall review of the drawings and specifications for all projects within their District. Their review is to verify future building maintenance can be completed, with a focus on custodial and finishes. They are to verify future custodial work can be completed, including proper training for staff and the necessary equipment is available. They are to verify the project won’t conflict with other potential or ongoing construction projects, including work orders.

**PROVIDING FEEDBACK**

Providing valuable and meaningful feedback is one of the main responsibilities of all the design reviewers. This section is intended to provide guidance on giving meaningful feedback and value-added comments that the Design Team can incorporate into the project. The Design Team is expected to provide responses for all feedback and comments generated during a design review session, so providing value-added feedback is important.

Value-added feedback and comments are generally defined as those that relate directly to the project, the scope of work, and the design phase. Reviewers are encouraged to ask questions about the design and construction during the review sessions, and especially during the design review meetings. Providing timely feedback is very important, addressing comments and questions early in the design helps to prevent costly changes during construction.

Reviewers should avoid comments that will add to the project scope. If additional scope is needed to make the design work, the reviewer should notify the Project Manager. Reviewers need to consider the goals of the project and of the end users, which may include donors and various departments on campus.

Reviewer’s comments and feedback need to be as specific as possible. Feedback that states “this won’t work” or a similar statement is not acceptable without further explanation. The reviewers need to provide explanations and/or suggestions to help the Design Team.

Reviewers should note that design is subjective. It’s easy to critique a project that’s in development – either it works or it doesn’t. When it comes to providing feedback, the reviewers need to overcome their initial response of “this works, or this doesn’t” to then provide meaningful content and constructive criticism. Comments or feedback about a design that are really just complaints are not acceptable.
DESIGN REVIEW SESSIONS

BLUEBEAM STUDIO

The University uses Bluebeam Studio to conduct the design review sessions. This software allows multiple participants to review the documents in real time and to mark up and make comments in a collaborative environment.

Design reviewers not familiar with Bluebeam are encouraged to view the many tutorials available online. A few select training videos are below.

- Basic PDF Markups: https://www.youtube.com/watch?v=HFgZACzGx74
- Bluebeam Studio Sessions: https://www.youtube.com/watch?v=SWyLLBEjMps
- Advanced PDF Markups: https://www.youtube.com/watch?v=6pNlzaUtAOg

The Project Assistant will schedule the Bluebeam Studio Session and will invite all design reviewers as identified by the Design Review Coordinator. The review session will typically run for one week to allow all reviewers the opportunity to participate.

Each design reviewer will receive an email invite from Bluebeam Studio to join a Studio Session with a link to the review session. The invite will include information about the project, the Project Manager, and when comments are due. See example below. All reviewers should log in to each review session they are invited to, as this communicates back to the Project Manager and Design Team that the reviewer was given the opportunity to review.

You're Invited

andrew.elkins@fm.utah.edu has invited you to a Bluebeam Studio collaboration Session. Please click the Session link below to join:

Session Name: 21468_SD_Osh Redevelopment
Session ID: 975-168-332
Server: studio.bluebeam.com

Title: 21468–OSH Redevelopment Schematic Design Review
Project Name: 0054–OSH Redevelopment (UNIV)
Initiator: Lori Kaczka
Project Number: 21468
Project Lead: Lori Kaczka

Creation Date: 05/09/2016 02:32 PM (UTC-7)
Comments Due Date: 05/20/2016 05:00 PM (UTC-7)
Review Type: Schematic Design

Will a Review Meeting be Held? Yes
Meeting Location: USB241
Meeting Date: 05/23/2016 01:00 PM (UTC-7)

Review Instructions: This is the Schematic Design Review for OSH. Please see the attached for project scope/basis of design. In addition, they have been asked to challenge the Univ standards and the potential list of variances is also attached.
CHANGE ID FROM UNID TO NAME IN BLUEBEAM

All design reviewers (i.e. users) are required to update their initial sign-in name from their uNID to their first and last name. This allows all participants in the review session to be easily identified, anonymous comments and markups are not allowed. Every comment or markup made in a review session is linked to participant’s login email. Instructions are provided below.

Open Bluebeam – Select ‘Settings’ – ‘Preferences’
Select 'Studio'

Click 'Manage Servers'

Double click
CHANGING REVIEW STATUS
When design reviewers initially log in to a Bluebeam Studio session, they are asked to change their status to indicate where they are at in their review. This feature is helpful in communicating with the other participants. If the reviewer has no comments or markups or when the reviewer has completed their review, they should update their status to ‘Finished’.

RESPONSES TO REVIEW COMMENTS
The Design Team is required to provide responses for all feedback and comments generated during a design review session. The responses should typically include justification for the design decisions, provide further explanation to the reviewer, and provide assurance that the comment/feedback will be addressed in the design. If the comment/feedback is not able to be addressed in the design, the Design Team is required to provide an explanation. The Design Team is responsible for making decisions based on their professional experience and area of expertise, and to provide solutions that work.

DESIGN REVIEW MEETINGS
Design review meetings are typically scheduled following the review session and before work begins on the next phase of design. These meetings are an opportunity for the owner, users, reviewers, design team and any additional vested parties to collaborate on a project. All participants should review the design or construction documents prior to the meeting and come prepared to contribute. The majority of the time in design review meetings should be spent on a detailed discussion (i.e. not presentation) of the project, with the goal of resolving any outstanding issues, confirming assumptions made on the project, and receiving any final feedback regarding the design. These meetings are not intended to be a substitute for the actual review session conducted in Bluebeam, but rather as a time to discuss specific design items or comments that were generated as a result of the review session.
DESIGN PROCESS
The following section briefly describes the different design phases a typical project will go through leading up to the construction phase. The design reviewers are expected to have a basic understanding of each design phase and make their comments appropriately. The DFCM and University Design Manuals have additional information about the requirements for each design phase.

PROGRAMMING
Architectural programming is the thorough and systematic evaluation of the inter-related values, goals, facts, and needs of a client’s organization, facility users and the surrounding community. A “Program” is defined as a written statement setting forth design objectives, constraints, and criteria for a project, including space requirements and relationships, flexibility and expandability, special equipment and systems, and site requirements.

SCHEMATIC DESIGN
In the Schematic Design phase, the Design Team documents the general extent, scale, and relationship of the project components, the type of construction and incorporates the systems selected in the previous phase. These documents are used to inform the University of the proposed design elements, components, and systems to be used in the project. The design is generally presented in a "single-line" type drawing showing the type of construction and materials to be used and a visual organization of the total facility and site.

During schematic design, study drawings, documents, or other media are developed that illustrate the concepts of the design and include spatial relationships, relationships between building components, scale, and form.


DESIGN DEVELOPMENT
Design Development is the phase subsequent to the Schematic Design where the design decisions are worked out in greater detail and refinement. A clear and coordinated description of all aspects of the design including Architectural, Mechanical, Plumbing, Electrical and Fire Protection systems is worked out providing a basis for the preparation of Construction Documents.

The design development phase fixes and describes the size and character of the entire project. In order for the project design to be considered successful, only minor modifications to the location of the facility on the site, the floor plans, and facility sections should be required during the Construction Documents Stage. Submittal drawings should have enough detail with a scale large enough to show furnishings, equipment, and all elements necessary for the proper function of the facility and the spaces within.


CONSTRUCTION DOCUMENTS
The construction documents are the written and graphic documents prepared or assembled by the Design Team for communicating the project design for construction and administering the construction contract. The documents are reviewed by the authorities having jurisdiction, members of the steering committee, and all vested parties on campus.

DESIGN AND CONSTRUCTION DOCUMENTATION

The design reviewers should have a basic understanding of the documents typically provided in a design review session. These documents include: Basis of Design, Design / Construction Drawings, and a Project Manual containing Specifications.

The Basis of Design document is a written description of the project from the design team that includes all the assumptions, important features, and details of the design decisions made to meet the owner’s project requirements (OPR). This document should be reviewed by facilities and maintenance staff to make more informed decisions regarding equipment operations, maintenance, repairs, and replacements by retaining the original intent of the system design.

The Design/Construction Drawings show size, form, quantity, relationship, generic type, and graphic representation of construction materials. The Specifications define the qualitative requirements for products, materials, and workmanship upon which the construction contract is based. The specifications also describe administrative and contractual procedures regarding both drawings and specifications.

The Project Manual, commonly referred to as the specifications, contains the written specifics about the work, service, or products required. The actual specifications for a project are only one of the many construction documents contained in the project manual. This manual may also contain procurement requirements, contracting forms, and conditions of the contract and much more.

The Design Team is required to use MasterFormat 2004 for all University/DFCM projects. This is the most widely used standard for organizing specifications and other written information for commercial and institutional building and construction projects in the US. This structure for provides standardized numbers and titles for various subjects necessary for the construction, operation, and maintenance of a facility, and to improve communication among all parties involved. The following is a list of all Specifications and Subgroups used. Division 01 includes all the general information for each project, including administrative, contractual responsibilities. Division 02-49 are considered the technical specifications. Only specifications used should be included in the Project Manual, but every project will include a Division 01 section.
MASTERFORMAT 2004

GENERAL REQUIREMENTS SUBGROUP:
Division 01 – General Requirements

FACILITY CONSTRUCTION SUBGROUP:
Division 02 — Existing Conditions
Division 03 — Concrete
Division 04 — Masonry
Division 05 — Metals
Division 06 — Wood, Plastics, and Composites
Division 07 — Thermal and Moisture Protection
Division 08 — Openings
Division 09 — Finishes
Division 10 — Specialties
Division 11 — Equipment
Division 12 — Furnishings
Division 13 — Special Construction
Division 14 — Conveying Equipment

FACILITY SERVICES SUBGROUP:
Division 21 — Fire Suppression
Division 22 — Plumbing
Division 23 — Heating Ventilating and Air Conditioning
Division 25 — Integrated Automation
Division 26 — Electrical
Division 27 — Communications
Division 28 — Electronic Safety and Security

SITE AND INFRASTRUCTURE SUBGROUP:
Division 31 — Earthwork
Division 32 — Exterior Improvements
Division 33 — Utilities
Division 34 — Transportation
Division 35 — Waterways and Marine Construction

PROCESS EQUIPMENT SUBGROUP:
Division 40 — Process Integration
Division 41 — Material Processing and Handling Equipment
Division 42 — Process Heating, Cooling, and Drying Equipment
Division 43 — Process Gas and Liquid Handling, Purification and Storage Equipment
Division 44 — Pollution Control Equipment
Division 45 — Industry-Specific Manufacturing Equipment
Division 46 — Water and Wastewater Equipment
Division 48 — Electrical Power Generation