

## Managing Effective Plan Reviews:

APPA Facilities Institute - January 2019  
Faculty Members: Sadie Greiner and Jeff Gee




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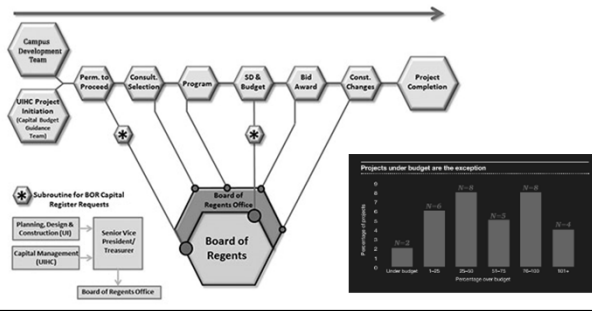
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### Path of a Major Project -




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## Why? Risk Management - Mitigation

- Project scope changes
- Project budget creep
- Project schedule extension
- Quality concerns
- Material delays
- Safety concerns – construction / occupancy
- Incomplete design documents
- A/E and GC resource availability




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### Case Example – Golf Club House Project

- Budget \$9,950,000
- Donor Funding
- Replace Existing Clubhouse
- Open Golf Season 2020
- Set to bid April 2018
- 1<sup>st</sup> Bid September 2018
- 2<sup>nd</sup> Bid December 2018



North Elevation

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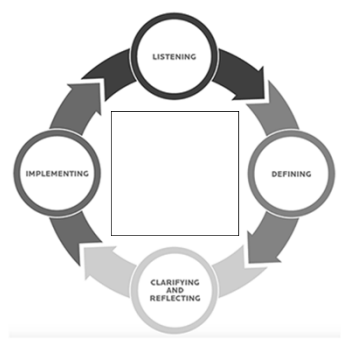
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Engage campus stakeholders, customers, agencies, and outside experts



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graph TD; LISTENING --> DEFINING; DEFINING --> CLARIFYING_AND_REFLECTING[CLARIFYING AND REFLECTING]; CLARIFYING_AND_REFLECTING --> IMPLEMENTING; IMPLEMENTING --> LISTENING;
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### Hold Kick Off Meeting

- Define Roles
- Set Expectations
- Review Scope
- Discuss Schedule and Budget
- Document (Meeting Minutes)

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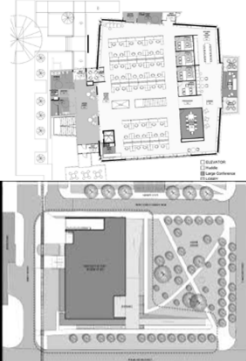
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### Project Scope Review

- Align to Campus Master Plan
- Develop Project Team Members
- Establish Process
- Initiate Participation
- Validate Programming (space/equipment)
- Review Submittal requirements



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### Program Compliance

- Capital Project Programming
- Space Requirements
- System Requirements
- Campus Design Standards
- Local / State / Federal Requirements
- Safety Review
- Life Cycle Analysis
- Sustainability/LEED
- Commissioning



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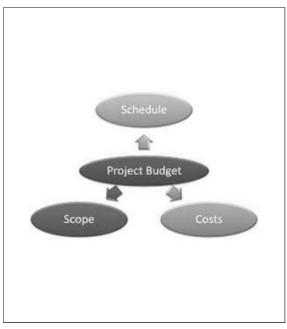
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### Design Review Schedule

- Review project goals
- Construction Season Impact
- Availability of Market Resources
- Material Availability
- Budget Constraints
- Design Review Time
- Contingency Built In?
- Drive project forward



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graph TD; Schedule((Schedule)) --> ProjectBudget((Project Budget)); ProjectBudget --> Scope((Scope)); ProjectBudget --> Costs((Costs));
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Schedule – Plan – Timeline

EDUNTING BACKWARDS	PM:	CM:	DP:
DESCRIPTION		DATES	PERTINENT INFORMATION
1. BID DATE			Entered on Bid Calendar
2. LAST ACCENDUM RECEIVED BY Plan Holders			Plan reach plan holders 48 hours prior to Bid Date. By 2:00pm
3. LAST recommended day to Submit Addendum for printing			PMSC, results by 9 AM. If not possible, there needs to be a discussion between PM&C and the consultant
4. PRE BID Conference			
5. Project posted to UH/FM website	day 4		Adds must be AT LEAST 10 days prior to bid date Do not count off holidays
6. Document printing in process	day 3		
7. BID STAGE Documents to CityBlue	day 2		
8. ADV' FOR BID and FORM OF BID to DC	day 1		
9.			
10. FINAL REVIEW MEETING			
11. Upload of Final Review documents to CityBlue			
12. Initiate BlueTeam review with Document Center			
13. DESIGN DEVELOPMENT REVIEW MEETING			
14. Upload of DD Review documents to CityBlue			
15. Initiate BlueTeam review with Document Center			
16. SCHEMATIC DESIGN REVIEW MEETING			
17. Upload of SD Review documents to CityBlue			
18. Initiate BlueTeam review with Document Center			

Sample

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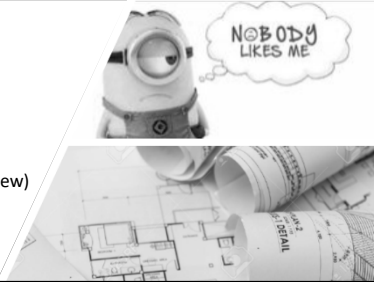
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### Construction Documents Review

- What?
  - Drawings
  - Specifications
- Confirm
  - scope, budget, quality, schedule
- Check (Constructability Review)
- Recheck
- File Documents




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### Constructability Reviews

"An independent and structured review of construction bid documents by construction professionals to make certain that the work requirements are clear; the documents are coordinated, and that they assist the contractor in bidding, construction and project administration to result in reduced impacts to the project."

Stephen Pettee, PE, CCM




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### What is Not in a Constructability Review

- Program Compliance
- Adherence to Campus Standards
- Peer Review
- Code Review
- Safety Review
- Life Cycle Analysis
- Sustainability/LEED
- Commissioning



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### Benefits



- Reduced change order
- Reduced Request for Information (RFI)
- Reduced Cost Overruns
- Reduced Schedule Delays
- Reduced potential for disputes and litigation

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### Cost Benefits

- Various Studies
- \$10 worth of savings for every CR Dollar spent
- 3% - 5% of the entire construction cost
- Costs are avoided with a complete constructability review, so detailed numbers are not regularly available



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### Managing Expectations

- Not all issues will be found
- Change Orders and RFI's will not be eliminated
- Design changes after reviews may likely cause issues




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### Elements of a Constructability Review



- Coordination
- Build-ability
- Bid-ability
- Building Systems Integrity

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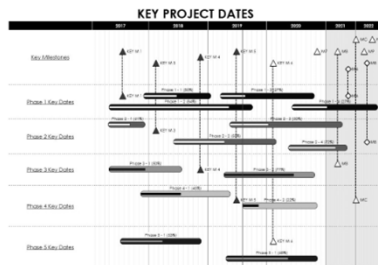
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### Constructability Review Milestones

- 100% Design Development
- 50% Construction Documents
- 90% Construction Documents




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### Constructability Review Team



- Architect
- MEPT
- Construction Superintendent
- Owner

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### Document and Backcheck

- Document all issues identified
  - Clear and concise
  - Spreadsheet
  - Comments directly on plans
- Backcheck – absolutely required
- Build in time for constructability review in project schedules



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### Constructability Review Format

- Name of Reviewer
- Phase of Plans
- Item Number
- Location (sheet/page/specification)
- Issue Identified
- Acceptance by Designer
- Conformance
- Comment/Backcheck



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### Sample Format

Project Title: School of the Holy Spirit  
 Project Address: 6000 Old St. The Palms, CA 90272  
 School District: SDGS  
 Project Number: 2018-00000001  
 Contract Number: 2018-00000001  
 SRFID 2011 Prep A Bond Program  
**Constructability/Peer Review Comments**

Item #	Item	Item Description	Constructability/Peer Review Comments
1	00	General	
2	01	00	
3	01	01	
4	01	01	
5	01	01	
6	01	01	
7	01	01	
8	01	01	
9	01	01	
10	01	01	
11	01	01	
12	01	01	
13	01	01	
14	01	01	
15	01	01	
16	01	01	
17	01	01	
18	01	01	
19	01	01	
20	01	01	
21	01	01	
22	01	01	
23	01	01	
24	01	01	
25	01	01	
26	01	01	
27	01	01	
28	01	01	
29	01	01	
30	01	01	

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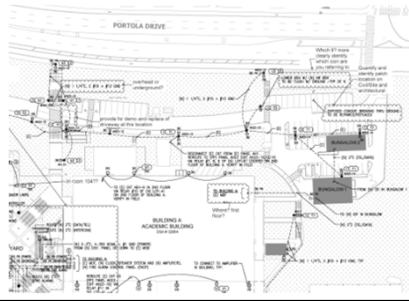
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### Sample Format




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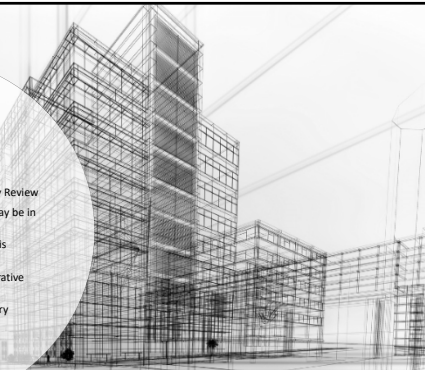
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### Constructability Review vs. BIM

- Clash detection is not a Constructability Review
- Clash detection identifies issues that may be in conflict
- Clash detection does not identify what is missing
- Clash detection works best in a collaborative Team environment
- Will not work in design-bid-build delivery




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### Constructability Reviews

- Reviews need to be planned for:
  - Budget
  - Schedule
- Reviews need to be managed and checked
- Reviews can save money/avoid costs
- Reviews can avoid costly time delays
- The architects and engineers retain their professional obligations

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### Bidding – Addenda Review

- Postpone bidding
- Bid Set
- Construction Set




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### Construction Phase

- Change Orders
- Program Alignment – Documentation!
- Commissioning

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