



# Construction Project Management






## Course 409

**APPA Institute  
for Facilities Management**

**Jeffrey Gee, AIA**  
Swinerton Management & Consulting

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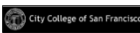




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# INTRODUCTION













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# AGENDA

- Multiple Choice
- Immediate Take-Away
- Managing Expectations
- Process/Controls
- Terms & Conditions
- Start of Construction

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## AGENDA



### Construction Management

- Schedules
- Schedule of Values
- Submittals
- Payment Applications
- Requests for Information
- Change Order Requests
- Change Orders

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## AGENDA

- Budget Forecasting
- Substantial Completion
- Close-out
- Managing Construction Time
- Common Issues During Construction
- Construction Claims
- Improving the Construction Process



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## AIA CONTINUING EDUCATION

Credit(s) earned on completion of this course will be reported to American Institute of Architects (AIA) Continuing Education Session (CES) for AIA members.

Certificates of Completion for both AIA members and non-AIA members are available upon request.

This course is registered with AIA CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product.

Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

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## COURSE DESCRIPTION

- This session is a complete review of the process of managing a construction project.
- Discuss procedures for construction inspection, change orders, communications, scheduling, payments, and dispute resolution.
- Review the insurance and bonding issues involved in construction contracting.
- Discuss the fundamental project duties and responsibilities of the owner, designer and contractor.
- Review the steps necessary to evaluate and ensure compliance with contract documents, codes and standards.

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## LEARNING OBJECTIVES

- Review the process of managing construction projects.
- Review the steps necessary to evaluate and ensure contract document compliance with codes and standards.
- Discuss construction inspection, change orders, scheduling payments and dispute resolution.
- Review insurance and bonding issues

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## IMMEDIATE TAKE-AWAY

“A colleague of mine is currently faced with the following challenge.....”



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**CONSTRUCTION PHASE**

“Where the rubber hits the road...”

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**THE PHASE WHERE WE CORRECT THE DESIGN  
– “I JUST BUILT WHAT THE PLANS SAID”**



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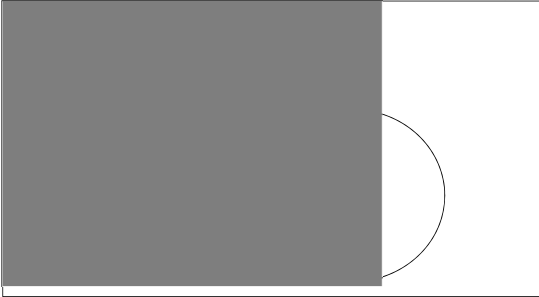
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**SPEAKING OF RUBBER HITTING THE ROAD.....**



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### MULTIPLE CHOICE - #1

Standard contracts for design services and for construction provide mutual and clear definitions of project success.

- A) True
- B) False




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### MULTIPLE CHOICE - #2

The construction contract for a summer renovation project has been signed and awarded to a contractor. The schedule is very aggressive. Two weeks before the scheduled start of construction, the Project Manager learns that the classroom has been vacated a few days earlier than anticipated. The Project Manager wants the contractor to start work earlier.

The Project Manager should:

- A) Change the Notice to Proceed
- B) Plead with the Contractor to start work early
- C) Review with the Contractor and issue a Change Order
- D) Advise the Contractor that it is in his best interest to start




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### MULTIPLE CHOICE - #3

The CFO for a major college has advised the construction contractor that he can authorize changes in the work. In addition, the architect and the construction manager are also authorized to approve changes.

Is this a good recipe for a successful project?

- A) True
- B) False




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### MULTIPLE CHOICE - #4

As part of the construction contract, a schedule is required from the Contractor within 30 days of the NTP. The project has a very aggressive schedule and the Contractor is working along with his subcontractors. However, the Contractor has not submitted a schedule for the last 2 pay periods (months). The College is withholding payments valued in excess of \$2 million. This is within the contractual rights of the University.

Will this strategy help the project be completed on time?

- A) True
- B) False




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### MULTIPLE CHOICE - #5

Construction is underway on a renovation project. The Contract duration is 12 months. As part of the submittal process, the contractor has submitted his finishes (carpet, paint, etc.) for review and approval per plans and specifications. The College has decided that they want to revise the interior standards for all campus buildings and management has directed the Project Manager "not to get back to the Contractor" on this submittal for 3-4 months.

Is this a good strategy for addressing this issue?

- A) Yes
- B) No




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### MULTIPLE CHOICE - #6



In most cases, construction change orders can be classified into how many basic categories?

- A) 1
- B) 10
- C) 2
- D) 5




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### MULTIPLE CHOICE - #7

When changes to the base contract start to exceed the following percentage, the Project Manager should start to become concerned about the issue of Cardinal Change.

The percentage is:

- A) 5%
- B) 50%
- C) 10%
- D) 25%




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### MULTIPLE CHOICE - #8

The construction contract clearly states that the contract period is 24 months. The contractor is planning to complete the project in 20 months. Seeing that the building will be vacant for 4 months, the Project Manager is directing a change order to complete Additional work. However, the issue of extended General Conditions is in dispute.

Is the Contractor Entitled to additional costs for extended General Conditions?

- A) Yes
- B) No




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### MULTIPLE CHOICE - #9

The General Contractor is responsible for Scheduling and coordinating the work of The University's IT department and other Contractors hired by the University.

- A) True
- B) False




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## MULTIPLE CHOICE - #10

The General Contractor has been raising concerns about the length of time that it is taking the architect and engineers to respond to RFI's, Submittals and Change Order Requests. The architect's comment in response to the Contractor is that the University is not paying me enough.

The Project Manager should:

- A) Pay the architect additional fees
- B) Take over the architect's responsibilities
- C) Pay the contractor for delays
- D) Demand that the architect perform




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## MANAGING EXPECTATIONS OWNER



### EXPECTATIONS

- Quality
- Function
- Performance
- Aesthetics
- Scope

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## MANAGING EXPECTATIONS OWNER



### EXPECTATIONS

- On Time
- Within Budget
- Per Contract

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**MANAGING  
EXPECTATIONS  
THE CONTRACTOR**

**EXPECTATIONS**

- Maximize Productivity
- Make Planned Profit
- Enhance Reputation
- Per Plans & Specifications

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**MANAGING  
EXPECTATIONS  
DESIGN  
PROFESSIONAL**

**EXPECTATIONS**

- Owner/Client Satisfaction
- Future Commissions
- Professional Recognition

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**MANAGING EXPECTATIONS**

**Inherent differences**

- Owner
- Contractor
- Design Professional



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**POTENTIAL CONFLICT**



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**ALIGNMENT**

- Partnering
- Common Definition of Success



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**MANAGING CONFLICT**

☉ This is what not to do!



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## IS EVERYTHING IN PLACE?



- Notice of Intent
- Certificate of Insurance
  - Owner named as additional insured
- Risk Builder's Insurance in place
- Bonds
  - Payment Bond
  - Performance Bond
- Contract is signed




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## OTHER CONSULTANT AGREEMENTS

- Contract(s) in place
  - Materials/Special Inspections
  - Construction Manager
- Identify scheduling requirements
- Document requests for inspection
- Document cancelled inspections
- Back-charge for cancelled re-inspections (if specified)




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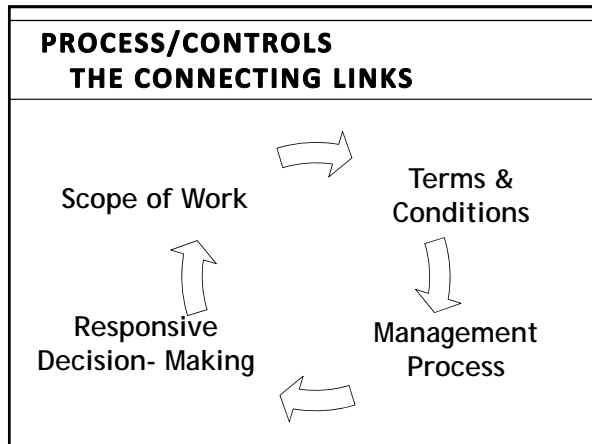
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**PROCESS/CONTROLS**

- Read the contract(s)
- Know what is in it
- Document clearly
- Specified controls are part of the contract

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**TERMS**

**Examples:**

- Requests for Information (RFI)
- Bulletins
- Architect's Supplementary Instruction (ASI)
- Change Proposal Request (CPR)
- Change Proposal Estimate (CPE)
- Change Order Request (COR)

***Which terms are the right ones?***

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## TERMS & CONDITIONS

**Defined in the Contracts:**

- Design Professional Agreement
- Construction Contract
  - Contract
  - General Conditions
  - Specifications
  - Plans
- Other Consultant Agreements



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## THE START OF THE CONSTRUCTION CONTRACT



- Issuing the Notice to Proceed
- Procedure Meeting
- Pre-construction Meeting
- Contractor's Schedule
- Schedule of Values



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**NOTICE TO PROCEED**

Always use a Notice to Proceed

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**NOTICE TO PROCEED**

- Specify start date of contract
- Identify date as day one of the contract

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**NOTICE TO PROCEED**

Specify contract duration in calendar days from:

- Date of Notice to Proceed
- OR**
- Identification of Completion Date

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**NOTICE TO PROCEED**

**Some Basic Strategies:**

- Avoid phased completion dates especially precedent activities
- Notice to Proceed date can be a future date

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## MULTIPLE CHOICE - #2

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## PROCEDURE MEETING

- Make sure that the right people attend
- May not be the same staff in the field
  - Staff handling the paperwork
  - Accounting is critical in FEMA-funded projects




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## PROCEDURE MEETING

- What is the regular meeting schedule?
- Who attends?
- Who takes meeting notes?
- Who is authorized to approve/direct changes?
- Who maintains logs?
- When are Payment Applications Due?
- How will retention be held?




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### MULTIPLE CHOICE - #3

The CFO for a major college has advised the construction contractor that he can authorize changes in the work. In addition, the architect and the construction manager are also authorized to approve changes.

Is this a good recipe for a successful project?

- A) True
- B) False




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### COMMUNICATIONS

- Protocols and procedures
- Site Visitors
- University Events
- Who is in charge?




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### SITE SAFETY

- The General Contractor is solely responsible for site safety
- A Contractor's EMR Rate of 1.0 or lower is a good rate, if it is higher, you should ask questions
- Everyone is responsible for pointing out unsafe conditions if observed
- Everyone is responsible for complying with the Contractor's safety requirements




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## SITE SAFETY

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## SITE SAFETY – WHAT WOULD YOU DO IF....

**The Setting**

- The Chancellor announces that he would like to take a tour of active construction sites on campus.
- The Chancellor arrives at your project site that is under construction, and site work is underway.
- He has a group with him.
- One individual is dressed in jeans, and appropriate clothing, but is only wearing tennis shoes(not hard sole shoes).
- The General Contractor's Project Manager does not say anything as the group begins walking the construction site.

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## SITE SAFETY – WHAT WOULD YOU DO IF....

**Part 1**

- As the Project Manager for the University, do you say something to the person that is not wearing Personal Protection Equipment?
- If you do say something, what would you say?

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### SITE SAFETY – WHAT WOULD YOU DO IF....

Part 2.....




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### PRECONSTRUCTION MEETING

- Project focused
- Field focused
- Mobilization
- The right attendance:
  - Contractor's field staff
  - Architect/Key Consultants
  - Owner's staff
  - Inspection forces





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### CONTRACTOR'S BASELINE SCHEDULE



- Obtain Contractor's Baseline Schedule per contract requirements
- Loaded
  - Include dates/milestones
  - Staffing/Cost
- Requires Approval
- Absolute necessity




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### CONTRACTOR'S BASELINE SCHEDULE

**Remedies:**

- Withhold GC's on Payment Application
- Independently prepared schedule



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### POTENTIAL REMEDIES

- Withholding a stipulated sum
- Holding subsequent pay applications
- 3<sup>rd</sup> Party Preparation, Costs to be deducted from Amounts Owed



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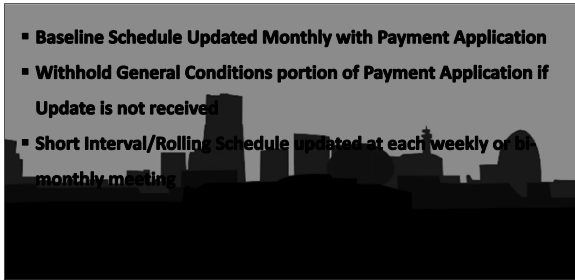
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### SCHEDULE MANAGEMENT

- **Baseline Schedule Updated Monthly with Payment Application**
- **Withhold General Conditions portion of Payment Application if Update is not received**
- **Short Interval/Rolling Schedule updated at each weekly or bi-monthly meeting**



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**SHORT INTERVAL/ROLLING SCHEDULE**

# SHORT INTERVAL SCHEDULE #05

OWN: SUNSHINE, INCORPORATED

PROJECT NAME & NO.:

WEEK OF: 02/20/24 - 100

ACT. NO.	DESCRIPTION	SUB	CURRENT WEEK							SECOND WEEK							THIRD WEEK							QUANTITY			
			1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7				
1	TEMP POWER PANEL	SJA / SWS																									
2	LAY OUT FOUNDATION	SJA																									
3	TRUST, ELEVATION @ FOUNDATION	SJA, ALABELO																									
4	PLACE FOUNDATION REBAR A-D / 6-8	ALABELO																									
5	REBAR TEMPLATES A-D / 6-8	SJA																									
6	SET ANCHOR BOLTS A-D / 6-8	SJA																									
7	CAST FOUNDATION A-D / 6-8	SJA																									
8	FORM LOWER SECTION EJECTOR WALLS	SJA																									
9	CAST LOWER SECTION EJECTOR WALLS	SJA																									
10	FOUNDATION REBAR C-D / 6-8	ALABELO																									
11	REBAR TEMPLATES C-D / 6-8	SJA																									
12	SET ANCHOR BOLTS C-D / 6-8	SJA																									
13	CAST FOUNDATION C-D / 6-8	SJA																									
14	FOUNDATION REBAR E-H / 1-4	ALABELO																									
15	REBAR TEMPLATE E-H / 1-4	SJA																									
16	ANCHOR BOLTS E-H / 1-4	SJA																									
17	CAST FOUNDATION E-H / 1-4	SJA																									

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**MULTIPLE CHOICE - #4**

As part of the construction contract, a schedule is required from the Contractor within 30 days of the NTP. The project has a very aggressive schedule and the Contractor is working along with his subcontractors. However, the Contractor has not submitted a schedule for the last 2 pay periods (months). The College is withholding payments valued in excess of \$2 million. This is within the contractual rights of the University.

Will this strategy help the project be completed on time?

- A) True  
 B) False

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**SCHEDULE OF VALUES**

- As required in specifications
  - AIA Format
  - Other Format
- Recognize Multiple Funding Sources
- Requires Approval



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## MANAGING CONSTRUCTION SUBMITTALS

- Affirms Quality
- As specified in the contract
  - Number of copies
  - Requires approval
- Substitutions
  - Burden of Proof is on Contractor
- Maintain Log
  - Review weekly
  - Do not let submittals age



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## MANAGING CONSTRUCTION SUBMITTALS

### A COMMON MISCONCEPTION

There is no time limit on the review of submittals unless specified



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## SUBMITTAL LOG

SUBMITTAL #	DESCRIPTION	RECEIVED FROM SUB	SENT TO RATCLIFF	RETURNED FROM RATCLIFF	STATUS
100-200	TOWER CRANE FOUNDATION	27-Aug-04	27-Aug-04	19-Sep-04	APPROVED
101-2130	BLAST-RESISTANT WEAPONS WATERPROOFING	29-Aug-04	29-Aug-04	1-Sep-04	APPROVED
103-1188	GRAPHIC COATINGS	29-Aug-04	29-Aug-04	7-Sep-04	APPROVED
103-15810	DUCTS	29-Aug-04	29-Aug-04	24-Sep-04	APPROVED
104-2381	PHOTOCURE	27-Aug-04	29-Aug-04	8-Sep-04	APPROVED
105-15080	TECHNICAL INSULATION	28-Aug-04	27-Aug-04	24-Sep-04	APPROVED
106-15822	DUCT ACCESSORIES	28-Aug-04	7-Sep-04	24-Sep-04	APPROVED
107-19990	TESTING, ADJUSTING, BALANCING	28-Aug-04	27-Aug-04	24-Sep-04	APPROVED
108-15075	STEEL BOLDS, WELDING & BONDING CONTROL	28-Aug-04	27-Aug-04	24-Sep-04	APPROVED
109-7640	PRELIMINARY HEAD OF WALL	28-Sep-04	21-Sep-04		PENDING
110-7812	IMPERMEABLE PERIMETER DRAINAGE SYSTEMS	28-Sep-04	21-Sep-04		PENDING
111-7920	BEARINGS - HEAD OF WALL	28-Sep-04	21-Sep-04	30-Sep-04	APPROVED
112-15736	ENVIRONMENTAL REQUIREMENTS	29-Sep-04	21-Sep-04		PENDING
113-5100	STRUCTURAL STEEL - WELDING PROCEDURES / SHOP ONLY	31-Aug-04	31-Aug-04	23-Sep-04	APPROVED
114-15400	PLUMBING - SHOP DRAWINGS (UNDERGROUND ONLY)	3-Sep-04	2-Sep-04	17-Sep-04	APPROVED
115-1340	WELLS, SINKS	3-Sep-04	3-Sep-04	25-Sep-04	APPROVED
116-1595	CONSTRUCTION WASTE MANAGEMENT PLAN	7-Sep-04	7-Sep-04		OVERDUE
117-3250	SHIELD CONCRETE & ANCHORS IN CONCRETE/STEEL GROUP	7-Sep-04	7-Sep-04	24-Sep-04	APPROVED
118-3255	EXPANSION ANCHORS	7-Sep-04	7-Sep-04	24-Sep-04	APPROVED
118-1-3258	CO2 - REPORT TO BE SUBMITTED	7-Sep-04	7-Sep-04	17-Sep-04	APPROVED
119-3260	CONCRETE FINISHES - GROUT & CURING COMPOUND	7-Sep-04	7-Sep-04	24-Sep-04	APPROVED
120-3360	SPECIAL ENVIRONMENTAL REQUIREMENTS - INDOOR AIR QUALITY	8-Sep-04	8-Sep-04		OVERDUE
121-3200	CONCRETE REINFORCEMENT - ELEVATOR PIT/SLOP & ELEVATORS J.A.	8-Sep-04	8-Sep-04	17-Sep-04	APPROVED
122-8100	STRUCTURAL STEEL - ANCHORS BOLTS/STUB COLUMNS	8-Sep-04	8-Sep-04	22-Sep-04	APPROVED
123-3200	CONCRETE REINFORCEMENT - FOR C-PILE CAP @ G LINE	8-Sep-04	8-Sep-04	21-Sep-04	APPROVED

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## MULTIPLE CHOICE - #5

Construction is underway on a renovation project. The Contract duration is 12 months. As part of the submittal process, the contractor has submitted his finishes (carpet, paint, etc.) for review and approval per plans and specifications. The College has decided that they want to revise the interior standards for all campus buildings and management has directed the Project Manager "not to get back to the Contractor" on this submittal for 3-4 months.

Is this a good strategy for addressing this issue?

- A) Yes
- B) No




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## MANAGING CONSTRUCTION PAYMENT APPLICATIONS

- Set regular cycle for review, once every 30 days
- Based on approved Schedule of Values
- Prepare a DRAFT in the field
- Finalize in the office
- Submitted by the Contractor
- Approved by Architect/Owner




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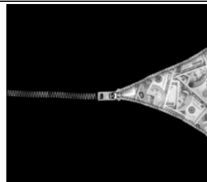
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## MANAGING CONSTRUCTION PAYMENT APPLICATIONS

- Retention
- Typically 10% of Application
- Options
- Held by Owner
- Securities in lieu of Escrow



- As individual trades are completed, retention can be reduced by Change Order
- As project nears completion, retention can be reduced by Change Order




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## MANAGING CONSTRUCTION PAYMENT APPLICATIONS

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**ADDITIONAL REQUIREMENTS**

- Updated construction schedule
- Status of As-built drawings/documentation
- Lien releases and Conditional/Unconditional lien releases



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## SAMPLE PAYMENT APPLICATION

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Application is made for payment under the Contract as shown below and in Schedule I attached hereto:

1. ORIGINAL CONTRACT SUM.....	\$5,698,712.00
2. NET CHANGE BY CHANGE ORDERS.....	\$600,163.00
3. CONTRACT SUM TO DATE (Line 1 Line 2).....	\$6,298,875.00
4. TOTAL AMOUNT COMPLETED TO DATE (Column E on Schedule 1).....	\$4,835,312.00
5. RETENTION: 10% of Completed Work (Column H on Schedule 1).....	\$0.00
a. Current Value of Securities Deposited in Escrow.....	\$0.00
b. Current Value of Retention Deposited in Escrow.....	\$0.00
c. Retention Held by University.....	\$0.00
Current Retention Value (a + b + c).....	\$0.00
6. TOTAL EARNED LESS RETENTION (Line 4 less Line 5).....	\$4,835,312.00
7. TOTAL AMOUNT PREVIOUSLY PAID.....	\$4,220,602.00
8. CURRENT PAYMENT DUE (Line 6 less Line 7).....	\$614,810.00
9. BALANCE TO FINISH, PLUS RETENTION (Line 3 less Line 6).....	\$1,463,563.00

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## IS THE PROJECT GOING TO BE FINISHED ON TIME?

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- Look at Monthly
- Evaluate how much work has been put in on a monthly basis
- Look at how many months are remaining on the base contract

*Example:*

- 18 month duration, \$40 million contract value
- 10 months have passed with avg. monthly pay of \$2.2 million



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## MANAGING CONSTRUCTION REQUESTS FOR INFORMATION



- Typically initiated by the Contractor
- Intended for clarification
- Answered by Design Team
- Always should be in writing
- Responses should be timely
- Cautions
  - Excessive RFI's
  - Changes caused by Responses
- Maintain Log
  - Review weekly

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## RFI LOG

RFI #	DESCRIPTION	CONTRACTOR	DATE SENT TO OWNER	REQUIRED FROM OWNER	RECEIVED FROM OWNER	DAYS TO RESPONSE	DELAY IMPACT	POTENTIAL CORRECTIONS	STATUS
101	Prepwork per A. I. A. NET	J. Smith	8/10/04	8/12/04	8/10/04		No	No	Closed
102	Power Plant Data for Fire Protection	Value FF	8/10/04	8/12/04	8/10/04		No	No	Closed
103	Control System	Johnson	8/10/04	8/12/04	8/10/04		No	No	Closed
104	Design Engineer P/E Design	Artemus	8/10/04	8/12/04	8/10/04		No	No	Closed
105	Shop Fabrication Methods	Alamella	8/10/04	8/12/04	8/10/04		No	No	Closed
106	Industrial HSE Drawings	Artemus	8/10/04	8/12/04	8/10/04		No	No	Closed
107	RFI As-Built	Artemus	8/10/04	8/12/04	8/10/04		No	No	See RFI 1
107.1	RFI As-Built	Artemus	8/10/04	8/12/04	8/10/04		No	No	See RFI 2
107.2	RFI As-Built	Artemus	8/10/04	8/12/04	8/10/04		No	Yes	CR 1
108	QAC RFI 703	Guyte	8/12/04	8/12/04	8/12/04		No	No	Closed
109	QAC RFI 702	Guyte	8/12/04	8/12/04	8/12/04		No	No	Closed
110	QAC RFI 704	Guyte	8/12/04	8/12/04	8/12/04		No	No	Closed
111	QAC RFI 703	Guyte	8/12/04	8/12/04	8/12/04		No	No	Closed
112	QAC RFI 703	Guyte	8/12/04	8/12/04	8/12/04		No	No	Closed
113	QAC RFI 703	Guyte	8/12/04	8/12/04	8/12/04		No	No	Closed
114	QAC RFI 703	Guyte	8/12/04	8/12/04	8/12/04		No	No	Closed
115	QAC RFI 702	Guyte	8/12/04	8/12/04	8/12/04		No	No	Closed
116	QAC RFI 703	Guyte	8/12/04	8/12/04	8/12/04		No	No	Closed
117	QAC RFI 703	Guyte	8/12/04	8/12/04	8/12/04		No	No	Closed
118	QAC RFI 703	Guyte	8/12/04	8/12/04	8/12/04		No	No	Closed
119	QAC RFI 704	Guyte	8/12/04	8/12/04	8/12/04		No	No	Closed
120	QAC RFI 704	Guyte	8/12/04	8/12/04	8/12/04		No	No	Closed

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## MANAGING CONSTRUCTION CHANGE ORDER REQUESTS

- Initiated by Contractor
- Asserts a change in contract conditions, plans or specifications
- Requires timely review
  - Do not age well
- Maintain log
  - Review regularly



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MANAGING CONSTRUCTION CHANGE ORDER REQUESTS												
Line #	Item #	Description of Change Order	Unit	Rate	Quantity	Amount	Original Contract #	Change Order #	Change Order Description	Change Order Amount	Change Order Status	Change Order Date
1001	1001	1001										
1002	1002	1002										
1003	1003	1003										
1004	1004	1004										
1005	1005	1005										
1006	1006	1006										
1007	1007	1007										
1008	1008	1008										
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**Document Problems**

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**Approval Agency**

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**Owner Scope  
Changes**

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## SITE CONDITIONS

Site Condition Video




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## MULTIPLE CHOICE - #6

In most cases, construction change orders can be classified into how many basic categories?

- A) 1
- B) 10
- C) 2
- D) 5




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## MANAGING CONSTRUCTION CHANGE ORDERS

Formal change to the contract should include:

- *Description of scope*
- *Actual cost of the work*
- *Any time extension*
- *Any extended overhead*

Reservation of Rights should be an exception – not the norm




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## MANAGING CONSTRUCTION CHANGE ORDERS



Owner has the right to expect that once the change order is signed, contractor WILL NOT come back and request additional time or money.

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## CHANGE ORDER REQUEST— WHAT WOULD YOU DO IF....

- Construction is underway
- The construction market is very robust
- Construction labor is short and competition for staff is highly competitive
- National policy imposes tariffs on a variety of construction materials specified in plans and specifications
- The Contractor is claiming that subcontractors are facing unknown material costs and product delivery
- What would you do?

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## CARDINAL CHANGE

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## MULTIPLE CHOICE - #7

When changes to the base contract start to exceed the following percentage, the Project Manager should start to become concerned about the issue of Cardinal Change.

The percentage is:

- A) 5%
- B) 50%
- C) 10%
- D) 25%




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## BUDGET FORECASTING

- Critical key to successful project management
- Accounting reports tell what you have and where you have been
- Accounting reports do not tell you where you are going
- Needs to be combined with forecasts of time and money




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## WAG'S

- It is better to anticipate then to be unpleasantly surprised
- Take the number of RFI's, COR's, etc. that have Cost impacts and have been approved to date
- Divide the numbers to obtain an average
- Apply the average to the number of RFI's, COR's, etc. that are open
- Budget for these potential cost impacts




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## SUBSTANTIAL COMPLETION

- Owner's use of the project for its intended purpose, but not all requirements of the contract are complete
- Similar to Beneficial Occupancy
- Document:
  - Specify parts of the project occupied
  - Specify parts of building systems that are taken over
  - Starts warranty period on occupied spaces
  - Responsible for utility costs and maintenance

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## CLOSE OUT

- Commissioning
  - Systems check
  - Start-up
  - Testing and Balancing
- Pre-Punch
- Punch-list
- Contract Requirements
  - As-Builts
  - Warranties
  - Operation and Maintenance Manuals



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## COMMISSIONING

- Commissioning begins during the design phase
- Identify participants
  - Architect/Engineer
  - General Contractor/Subcontractors
  - Commissioning Agent
- Quality Assurance/Quality Control Plan
- Commissioning Plan

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## PUNCH LIST

- Pre-punch Lists
  - Punch list as construction proceeds
- Punch List
  - Specify procedures and participants
  - Architect/engineers
  - Building engineer
  - Facilities staff

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

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## AS-BUILTS

Separate line item on Schedule of Values

- **As-builts**
  - Continuously maintained at the site
  - Reviewed monthly w/Payment Application
  - Final documents at completion

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## WARRANTIES

- Procedures
- Call list
- Follow-up






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## OPERATIONS & MAINTENANCE

- Training
- Extra Stock
- Preventive Maintenance
- Operations and Maintenance Manuals



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## FINAL COMPLETION

- File Notice of Completion (NOC) only when:  
**all aspects of the contract are completed**
- Starts statutory time limits on liens
- Absent a filing on NOC, lien limits become longer

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**Managing  
Construction  
Time**

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## MANAGING CONSTRUCTION TIME

- The meter is running once the Notice to Proceed is issued
- Time is money:
  - During design, time will erode the buying power of your budget
  - During construction, extended general conditions can be substantial



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## TIME EXTENSIONS DUE TO CHANGES

Do not give a time extension unless the affected activity(ies) is on the critical path

Contractor MUST demonstrate it is entitled to extensions.

Settle time extensions at the time the change order is agreed upon

Contractor MUST demonstrate it is entitled to extensions.

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## EARLY COMPLETION

### WHO OWNS THE FLOAT?

- Contract specifies completion of project on JUNE 30
- The contractor's schedules shows a completion date of JUNE 1
- The owner ADDS ONE CHANGE ORDER to the contract which delays the contractor one month

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### EARLY COMPLETION

- The contractor completes the project on JUNE 30



- Had it not been for the CHANGE ORDER, the contractor would have completed on JUNE 1

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### EARLY COMPLETION

- A contractor is entitled to the RIGHT OF EARLY COMPLETION provided the following are met:
  - The contractor's intent was to complete early from the beginning
  - The contractor formally advised owner about the early completion
  - Early completion date is reasonable

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### MULTIPLE CHOICE - #8

The construction contract clearly states that the contract period is 24 months. The contractor is planning to complete the project in 20 months. Seeing that the building will be vacant for 4 months, the Project Manager is directing in a change order to complete Additional work. However, the issue of extended General Conditions is in dispute.

Is the Contractor Entitled to an add for extended general conditions?

A) Yes  
B) No

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SPECIFIC TO A UNIVERSITY

- Missed Expectations
- Coordination of Campus Service Providers
- Conflicts with the Academic Calendar
- Conflicts with University Events
- Conflicts with University Housing Contracts
- Contractor Workforce Parking
- Restoration of Landscape Areas




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SEPARATE CONTRACTORS

The General Contractor is not responsible for coordination of separate contractors






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MULTIPLE CHOICE - #9

The General Contractor is responsible for Scheduling and coordinating the work of The University's IT department and other Contractors hired by the University.

A) True  
B) False

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### ADMINISTRATION

Owner has obligation to provide sufficient resources to process submittals, drawings, vendor data, samples, and change orders in a timely manner. Failure to do so may result in constructive change.

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

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### MULTIPLE CHOICE - #10

The General Contractor has been raising concerns about the length of time that it is taking the architect and engineers to respond to RFI's, Submittals and Change Order Requests. The architect's comment in response to the Contractor is that the University is not paying me enough.

The Project Manager should:

- A) Pay the architect additional fees
- B) Take over the architect's responsibilities
- C) Pay the contractor for delays
- D) Demand that the architect perform

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### MANAGING CONSTRUCTION

- Before Starting
  - Board/Trustee/State approvals are obtained
  - All of your paperwork is signed
  - All contracts are in place
  - Procedure Meeting
  - Preconstruction Meeting
- Issue the Notice to Proceed

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## MANAGING CONSTRUCTION

- Determine the construction meeting schedule
- Determine who will have the "Power of the Pen"



## MANAGING CONSTRUCTION

- Construction Meeting Agenda:
  - Document Issues
  - Assign responsible party(ies)
  - Identify critical due dates
  - Track delays
  - Manage to close items



## MANAGING CONSTRUCTION

OAC MEETING MINUTES

Item #	Description	Item Resp.	Due Date	Open / Close
1.1.3	3 week look ahead schedule issued. Ceiling closure inspection by Mechanical engineer before 7/13 & 7/26. Diego to send notification to AIA.	BCI	6/28	OPN
1.1.4	Noise, Dust and Mud Control. Request to enforce strict dust control, truck tire cleaning, careful handling of soil throughout the duration of project. <ul style="list-style-type: none"> <li>BCI On going monitor and clean up by BCI.</li> <li>Complaint by Hotel manager about noise, noise have been starting work at 7 a.m. BCI to enforce start time of 8 a.m. BCI sent letter out to all subcontractors enforcing 8 a.m. start time. No new complaints.</li> <li>Site debris clean-up on regular basis, BCI letter sent to subs.</li> </ul>	BCI	6/28	OPN
1.1.5	SWPPP Monitoring: <ul style="list-style-type: none"> <li>BCI On going, no issues.</li> </ul>	BCI	6/28	OPN
1.1.7	Utilities: <ul style="list-style-type: none"> <li>BCI Power shut down by PG&amp;E to raise splice box on 6/17/11. Lewis &amp; Tibbs to set traffic rated walk. More work needed to be done, another shut down required.</li> <li>Gas Be-In - Lewis &amp; Tibbs to do be-in as part of their contract with Town when the scaffold is down.</li> <li>Comcast internet connection for commissioning needs. (6/24) Diego confirmed pathway. (6/24) Written commitment from Verizon &amp; Comcast received. Bruce to forward to BCI.</li> <li>Water Be-In. (6/20) 2 baselines will to be built when cuts are built.</li> <li>Verizon phone - (6/16) 60 pair copper and VOF ordered. Bruce to follow up.</li> </ul>	BCI	6/28	OPN



## MANAGING CONSTRUCTION

### OAC MEETING MINUTES

Item #	Description	Firm/ Resp.	Due Date	Open/ Close
1.4.3	<b>FFE Tracking:</b> -a (07/20) met with 3 vendors and has ordered required Furniture	Town	6/28	OPN
40.4.3	Messier salvaged from old site - Bruce to follow up with Town Manager's office - (6/21) Bruce to walk with Pamela after bio-seal is done.	BCI	6/28	OPN
<b>V</b>	<b>Payment</b>			
1.5.2	<b>Payment Application:</b> -a (07/4) Pay app #12 on 6/28.	Town	6/28	OPN
2.5.3	<b>Potential Back Charges:</b> -a (8/24/12) Item to remain on minutes pending action	BCI	6/28	OPN
<b>VI</b>	<b>Holiday / Vacation schedule for the core group</b>			
	Crage - 6/13-17 Timmone - 7/21-22 Bruce - 7/28 - 8/8	AH	6/28	OPN
<b>VII</b>	<b>COR Log</b>			
1.7.1	<b>PCO Log - ongoing (see attached log)</b> -a Town requested for gates to the back patio to deter entry into area during off hours.	AH	6/28	OPN
<b>VIII</b>	<b>Supplemental Meeting Schedule</b>			
10.5.2	Identify library systems with Town facilities manager, Library staff, N&T, SMC, Bogard.	AH	TBD	OPN

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## MANAGING CONSTRUCTION

● As part of meeting, review:

- Submittal Log
- RFI Log
- COR Log
- Three-week Rolling Schedule
- Monthly Schedule Update
- Monthly Payment Application

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## MANAGING CONSTRUCTION

● Some days, managing construction is like being a referee!

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## CONSTRUCTION CLAIMS

- Claims are a common part of the construction process.



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## GENERAL COUNSEL'S VIEW

- What does the contract say?
- Is the claim time barred?
- What was the approved schedule?
- What did the Owner do to affect the critical path?
- What was the Change Order rate on the project?
- How has the Owner been damaged?
- Who else can we get involved?

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## WHAT HAPPENS IF THERE IS A CLAIM?



- Do not get overly excited
- Notify the administration
- Gather resources
  - Administration
  - Legal Counsel
  - 3<sup>rd</sup> Party Experts
- Pay close attention to timelines

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## MANAGING CONSTRUCTION

- ◎ Determine if there is a entitlement
  - Typically this first starts with the designer of record
  - Make them decide yes or no
- ◎ Look for the root cause
- ◎ Evaluate time and money components
- ◎ Document agreement through a Change Order

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## IMPROVING THE CONSTRUCTION PROCESS



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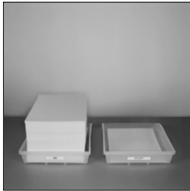
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## GENERAL CONTRACT RECOMMENDATIONS

**IMPROVE OWNER-CONTRACTOR RELATIONSHIP BY:**

Avoiding use of onerous contract conditions



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**GENERAL CONTRACT RECOMMENDATIONS**

**IMPROVE OWNER-CONTRACTOR  
RELATIONSHIP BY:**

Establishing GOOD  
communication channels.



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**GENERAL CONTRACT RECOMMENDATIONS**

**IMPROVE OWNER-CONTRACTOR  
RELATIONSHIP BY:**

Giving authority to On-Site  
Managers



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**GENERAL CONTRACT RECOMMENDATIONS**

**IMPROVE CONTRACT EXECUTION BY:**

More owner investment in  
preconstruction studies



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### GENERAL CONTRACT RECOMMENDATIONS

IMPROVE CONTRACT EXECUTION BY:

Better defining risk



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### GENERAL CONTRACT RECOMMENDATIONS

IMPROVE CONTRACT EXECUTION BY:

- Developing procedures for handling risks
- Independent cost estimates
- Constructability review
- Peer review



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### DETERMINANTS OF PROJECT SUCCESS

Project Manager

- Experience
- Total construction experience
- Ability to communicate with all parties
- Some suited to design phase, others to construction phase



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**DETERMINANTS OF PROJECT SUCCESS**

**Project Team**

- Team turnover/ players remaining
- Commitment to project



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**DETERMINANTS OF PROJECT SUCCESS**

**Control Systems**

- Usable & understandable systems
- Ability to get budget/accounting updates often



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**DETERMINANTS OF PROJECT SUCCESS**

**Planning**

- Overall approach to control of project



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## WAS THE PROJECT SUCCESSFUL?

### Planning

- On time?
- On budget?
- Did all participants agree that the achieved performance outcome was better than expected?

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## ALMOST FINISHED.....

This concludes The American Institute of Architects Continuing Education Systems Course

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