Construction CPM Conference
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Scheduling Claims Avoidance and the Preconstruction Manager's Role

Project Controls Training

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- **Corporate Director of Project Controls, Alpha Corporation**
- Responsible for developing corporate standards, training, recruiting and oversight for scheduling, estimating, and dispute resolution projects
- Certified as a PSP (Planning and Scheduling Professional), AACE
- Certified as a CCM (Certified Construction Manager), CMAA
- Certified as a PMP (Project Management Professional), PMI
- Served as Chief Estimator and Scheduling Manager for General Contractors and CMs, setting up project controls departments, including Planning & Scheduling, Cost Estimating, and Disputes Resolution
- Over 40 years experience in all phases of construction management and hands-on CPM scheduling and estimating experience
- Presents project controls topics at PMI College of Scheduling, AACE, CMAA, and DBIA national conferences as well as local chapters
- Trained hundreds of project controls staff, and provided 40 years of estimating, scheduling, analysis and testimony

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Alpha Corporation

Alpha Corporation is a full-service consulting firm offering a wide array of engineering and management services for every phase of project or program development and delivery. Over the years we have served a broad spectrum of clients, including government agencies, municipalities, institutions, private enterprises, developers and contractors. By combining our technical skills and talents with hands-on industry knowledge and experience, we deliver solutions that optimize our clients' budgets, schedules and operations while yielding functional, sustainable and high quality projects.

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Central Park 08, Dubai International Financial Center
Arabtec Construction LLC

Alpha Corporation

- International engineering and construction company, providing professional CM services
- Structural & Civil Design, Construction and Program Management, CM Services, Project Controls (Scheduling, Estimating, Dispute Resolution), Quality Assurance and Control, Primavera Technical Services, Training
- Offices in Northern Virginia, Baltimore, Norfolk, Winchester, Miami, Seattle, Georgia, Ohio, New Orleans, United Kingdom, United Arab Emirates, Abu Dhabi, Saudi Arabia, and Colombia.
- Ranked Top 50 Construction and Program Managers by Engineering News Record (ENR), 2008 - 2011

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Claims Examples

- Site Contractor suing Owner for delay and disruption based on Baseline Schedule.
- General Contractor suing USACE for problems with structural design, causing buildings to be torn down and re-built during planned construction.
- Electrical contractor suing Owner for changed conditions from bid documents.
- Site Contract suing Government for delays due to Owner coordination failures.
- Multiple local Subcontractors on foreign project suing Government over interpretation of specifications.
- Litigation involving Owner supplied components conflicting with schedules an international airport project
- Constructive Acceleration claim from a General Contractor due to prolonged Owner CM response time.

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Claims Avoidance

While each of these Claims has its own set of influences and conditions and each claim must be proved/disproved on the merits….

ALL CAN BE LINKED TO ADMINISTRATION OF THE PRECONSTRUCTION PROCESS

The majority of claims that Alpha encounters are related to management decisions and actions during Preconstruction

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Claims Avoidance
(Preconstruction Phase)

Historically speaking, what are the major sources of claims that originate during the Preconstruction process ?

What can a Preconstruction Manager do to identify and mitigate risk from these sources?

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Claims Avoidance (Preconstruction Phase)

Major Claim Sources Include:

- Contractual Issues
- Plans and Specification Clarity
- Project Controls Initiation Failure
- Project Communication Failure

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Claims Avoidance (Preconstruction Phase)

- **Contractual Issues**

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Claims Avoidance
(Preconstruction Phase)

- **Contractual**
  - Identification of Roles
    - *Clear identification*
    - *Follow through on role assignments*
  - Identification of Responsibilities
    - *Single source responsibility for decisions*
    - *Clear process displayed*
  - Identification of Authority
    - *Single source authority*
    - *Authority has ability to grant time & money*

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Claims Avoidance (Preconstruction Phase)

- **Contractual**
  - Proper Project Delivery Method Choice
    - *Design-Bid-Build*
      - Owner has document quality risk, Contractor has performance
    - *Multi-Prime Contracting*
      - Coordination risk on Owner
    - *CM at Risk*
      - Document quality risk shared, Contractor has performance risk after GMP
    - *Design-Build*
      - Original program clarity risk on Owner
      - Document quality & performance risk on Contractor

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Claims Avoidance (Preconstruction Phase)

- **Contractual**
  - Understanding of Project Delivery Method
    - *Owners*
      - Must understand advantages & disadvantages of each
      - Recommend training in specific methods, especially DB
    - *Contractors*
      - Also must understand each
      - Should be prepared to operate according to method
        - DBB – strong change management process
        - Multi-Prime – strong scheduling/coordination
        - CM at Risk – strong project controls
        - DB – strong conceptual estimating of various stages of design documents

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Claims Avoidance (Preconstruction Phase)

- **Contractual**
  - Proper Contract Vehicle
    - *Appropriate contract for project*
      - AIA, CMAA, Joint Docs as well as specific contract type
    - *Appropriate delivery method for design documents*
      - Incomplete, consider Design-Build
      - Complete, Design-Bid-Build appropriate
    - *Realistic Timetable for Project Completion*
      - Determined by conceptual schedule
    - *Good Schedule Specifications*
      - Time is largest risk, drives triple constraint risks
      - Good scheduling protects time, cost, scope risks

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Claims Avoidance (Preconstruction Phase)

- **Contractual**
  - Rational Allocation of Risk
    - *No Damages for Delay*
      - Use carefully, if at all, only for specific, predictable risks
    - *Liquidated Damages*
      - Consider assigning to important interim milestones
    - *Incentive Clauses*
      - Use appropriately
      - Watch contract language
      - Watch implementation in schedule

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Claims Avoidance (Preconstruction Phase)

- **Contractual**
  - Clear statement of Owner's program
  - Allow adequate design time & funding
  - Ensure clear definition of scope
  - Clear and concise dispute resolution process, including realistic notification timeframes.
  - Contractual controls for potential project overruns (time and material force account work)
  - Alignment of triple constraint priority: time, cost, quality (sometimes also scope & risk)

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Claims Avoidance (Preconstruction Phase)

- **Plans and Specification Clarity**

Claims Avoidance (Preconstruction Phase)

Common Sources of Problems in Drawing and Specs include:

- Cutting and Pasting of design info from previous projects (Boilerplate Design)
- Inability to coordinate different design scopes, (i.e. mechanical vs. architectural.)
- Inability of designer to incorporate submittals and shop drawings into current set of docs.
- Conversely the utilization of contractor shop drawings to convey design or change.
- Abuse of the “as noted” designation on marked up shop drawings/submittals

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Claims Avoidance (Preconstruction Phase)

- **Plans and Specification Clarity**
  - Problems with contract drawings
    - *The GC and CM role*
      - Cost & time accuracy
      - Scope assignment
      - Subcontractor bid reconciliation
      - Risk protection through contingency/risk assessment
    - *~75% of change orders categorized as claims due to faulty contract documents*
    - *Often not discovered until they affect performance*
    - *Often buried in submittal reviews*

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Claims Avoidance (Preconstruction Phase)

- **Plans and Specifications**
  - Use constructability reviews (No. 1 rule)
  - Monitor & control design schedule
  - Ensure all current information is adopted into current set of drawings/specifications.
  - Ensure all scopes of design are coordinated
  - Appropriate use of specification type
    - *Performance specification*
    - *Design specification*

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Claims Avoidance (Preconstruction Phase)

- **Project Controls Initiation Failure**

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Claims Avoidance (Preconstruction Phase)

- **Initiation of Project Controls**
  - Define Cost Control Requirements
    - *Integrated Cost & Schedule System*
    - *Establish a Cost Baseline*
      - Good Cost Estimates that evolve with each level of design maturity.
      - Require Bid Preparation Documentation
    - *Reasonable Cost Contingency*
      - Reasonable Unit Prices prescribed for potential overruns.
      - Applicable and Reasonable Markups allowed on all Change Orders.

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Claims Avoidance (Preconstruction Phase)

- **Initiation of Project Controls**
  - Develop and refine cost estimates during the process of design maturation
  - AACE has a proscribed method of estimate maturation during the Preconstruction Phase
    - *Recommended Practice No. 18R-97 Cost Estimate Classification System*

Claims Avoidance (Preconstruction Phase)
Estimates

- **AACE Cost Estimate Classes**
  - Class 5 – Concept Screening
  - Class 4 – Study or Feasibility
  - Class 3 – Budget Authorization or Control
  - Class 2 – Control or Bid/Tender
  - Class 1 – Check Estimate or Bid/Tender

Claims Avoidance (Preconstruction Phase)
Estimates

- **AACE Cost Estimate Classes**
  - **Class 5 – Concept Screening**
    - *Capacity factored, parametric models, judgment or analogy.*
    - *Estimate accuracy is between -20% to +100%.*

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Claims Avoidance (Preconstruction Phase) Estimates

- **AACE Cost Estimate Classes**
  - **Class 4 – Study or Feasibility**
    - *Equipment factored or parametric models*
    - *Estimate accuracy is between -15% to +50%*

Claims Avoidance (Preconstruction Phase) Estimates

- **AACE Cost Estimate Classes**
  - **Class 3 – Budget Authorization or Control**
    - *Semi-Detailed unit costs with assembly level line items.*
    - *Estimate contingency is between -10% to +30%*

Claims Avoidance (Preconstruction Phase) Estimates

- **AACE Cost Estimate Classes**
  - **Class 2 – Control or Bid/Tender**
    - *Detailed unit cost with forced detailed take-off*
    - *Estimate contingency is between -5% to +20%*

Claims Avoidance (Preconstruction Phase) Estimates

- **AACE Cost Estimate Classes**
  - **Class 1 – Check Estimate or Bid/Tender**
    - *Detailed unit cost with detailed take-off*
    - *The estimate contingency at this level may vary between -3% and +15%*

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Claims Avoidance (Preconstruction Phase)

- **Initiation of Project Controls**
  - Define Schedule Control Requirements
    - *Integrated Cost & Schedule System*
      - Cost Loaded Schedule
      - Resource Loaded Schedule
    - *Establish Schedule Baseline on most current information and update as design documentation matures*
    - *Reasonable schedule risk management*
    - *Reasonable and accurate float calculations achieved through good practices in CPM scheduling*

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Claims Avoidance (Preconstruction Phase)

- **Initiation of Project Controls**
  - Develop and refine schedules during the process of design maturation
  - AACE has a proscribed method of schedule maturation during the Preconstruction Phase
    - Recommended Practice No. 37R-06 Schedule Levels of Detail

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Claims Avoidance (Preconstruction Phase)

- **AACE has a proscribed method of schedule maturation during the Preconstruction Phase**
  - Program/Project Summary Schedule
  - Milestone Schedule
  - Project Level Schedule
  - Project Control Schedule
  - Look Ahead Schedule
  - Task Lists
  - Supporting Data

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Claims Avoidance (Preconstruction Phase)

- **Initiation of Project Controls**
  - Determine time frame for schedule development
    - *Consider using an Initial Project Schedule*
      - Summary schedule for entire project
      - Detailed schedule for first 180 days
      - Allows time to develop Detailed Project Schedule
    - *Detailed Project Schedule (DPS)*
      - Must be a continuation of IPS
      - IPS is used for management during DPS development

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Claims Avoidance (Preconstruction Phase)

- **Initiation of Project Controls**
  - *Establish a schedule baseline*
    - Good CPM practices
    - Require schedule narrative (basis of schedule)
    - Include procurement process (buy-out, submittal, approval, fab/lead time, deliver) in schedule
    - Include Owner responsible items in schedule
    - Involve major subcontractors in schedule development
    - Require resource plan and actual from GC & major subcontractors to protect against inefficiency and acceleration claims
  - *Reasonable time contingency/risk management approach*

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Claims Avoidance (Preconstruction Phase)

- **Initiation of Project Controls**
  - Perform formal schedule development session
    - *Based on PM team's knowledge of plans*
    - *Include schedule risk management in schedule development*
    - *Submit issues discovered during schedule development as RFIs*
    - *Goal is to have a detailed schedule in place before starting work*

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Claims Avoidance (Preconstruction Phase)

- **Project Communication Failure**

Claims Avoidance (Preconstruction Phase)

- **Communication Failures**
  - Lack of complete buy-in by all parties to baseline schedule and costs
  - Inefficient submittal review and RFI process
  - Inability to communicate and coordinate design changes to all potentially effected parties
  - Failure to set up project documentation requirements that accurately track resources and equipment on site
  - Lack of authority to quickly resolve time/costs
  - Lack of contingency cost pools for over runs

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Claims Avoidance (Preconstruction Phase)

- **Communication Failures**
  - Proper Contractor Selection
    - *Check references*
    - *Assure detailed relevant experience*
    - *Bond all General Contractors and major subcontractors*
    - *Select Bid List*
    - *Require conceptual project schedule as part of qualifying process*

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Scheduling Claims Avoidance and the Preconstruction Managers Role

Summary

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Claims Avoidance

- Requires intensive effort during the Preconstruction Time Period
- Focuses on the following sources of potential claims
  - Contractual Issues
  - Plans and Specification Clarity
  - Project Controls Initiation Failure
  - Project Communication Failure