



**maxim**

CONSULTING GROUP

**Construction Contracts:  
Alternate Delivery  
Methods & Preconstruction  
Planning**

**SMACNA 2019**

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## **PROJECT DELIVERY METHODS: DESIGN BUILD BEST PRACTICES FOR ESTIMATORS**

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### **AGENDA**

- Alternate Delivery Methods
  - Project Delivery Methods
  - Assessing Prime Contract Terms for Risk
  - Design-Build Fundamentals
- Preconstruction Planning

### **OWNERS ALWAYS ASK TWO QUESTIONS**

- How much is it going to cost?
- How long is it going to take?
- How do the answers differ in a:
  - Hard Bid Project?
  - Design Build Project?
  - Cost Reimbursable Project?
  - CM at Risk Project?

### **THE CHANGING WORLD**

- How Owners buy buildings
- Market drivers
- How teams form
- How teams design and construct buildings

## PROJECT DELIVERY METHODS

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### CHOOSE THE DELIVERY METHOD FOR THE RIGHT REASON

- Not all project delivery methods are right for each project
- Not all owners are capable of managing a design build project
- Not all teams are capable of delivering a design build project
- Team members must be educated in alternate project delivery methodologies and best practices

### PROJECT DELIVERY METHODS

- Design-Bid-Build
- Design-Build (Single Party)
- Construction Management at Risk / Guaranteed Maximum Price
- Design-Assist
- Cost Plus / Reimbursable
- IPD (Multi Party)

### DESIGN-BID-BUILD

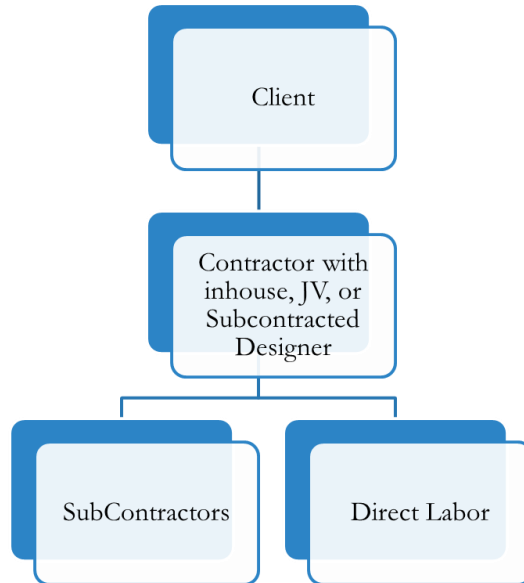
#### Pros

- Most common contracting method and is widely understood
- A defined construction cost that can be identified relatively early
- Reduced reporting and compliance requirements compared to other models
- Since the contract cost is defined early, efficiencies by the contractor are defined early
- A clear hierarchy where each stakeholders' role is defined

#### Cons

- Change orders can be difficult/confrontational and expensive
- Greater project risks will result in increased bid costs
- Loss of constructability opportunities and value engineering opportunities by bringing contractors in after the design is fully or nearly complete
- An overall delivery schedule that is linear in nature, where one can only proceed from one task to the next (conception, design, engineering, bid, award, construction, close-out)

## DESIGN BUILD



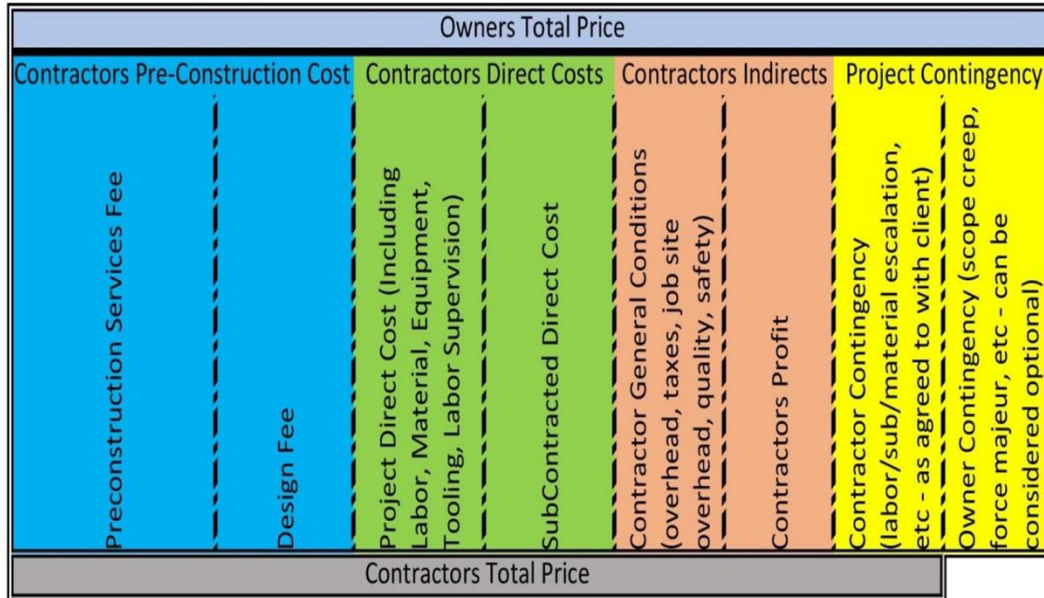
### Pros

- Single entity responsible for delivering the project
- Cost and schedule is known before the project start
- Teamwork between the designer and contractor is enhanced. Pre-bid planning/innovations are available creating cost savings within the proposals
- Less exposure for change orders unless scope changes or differing site conditions are encountered.
- A reduced, or fast-tracked, schedule is allowed for

### Cons

- Making design changes can be expensive
- The client has lost control of the design as the design-build entity has its own incentives from a design standpoint to reduce cost and improve schedule
- The client has lost the check and balance relationship from the designer to advise them and provide a check on the contractor
- Greater definition of the project goals is required up front
- Greater risk for design-build entities which could reduce the potential cost savings opportunities.
- Greater upfront costs in proposal preparation, hiring an engineering team, and design meetings

## CONSTRUCTION MANAGEMENT AT RISK



### Pros

- Early contractor engagement that leads to cost appropriate approaches for the client
- Earlier contractor engagement yields constructability opportunities
- Qualifications based bidding approach allows for selection of competent contractors rather than “lowest bid”
- Shared savings incentivized between client and contractor
- Design and construction overlap allow for a reduced or faster schedule
- Client risk is capped

### Cons

- Self-perform limitations can prevent the lowest construction cost from being achieved
- Contractor bears the risk of cost overruns
- Increased accountability and reporting requirements to ensure cost visibility to client
- Risk of overestimating the GMP to minimize contractor risks or increase the probability of a higher profit

## DESIGN-ASSIST

### Pros

- Improved Design Efficiency by engaging key subcontractors early
- Reduced exposure to Requests for Information or Field Changes
- Greater accuracy in pricing
- Shorter project delivery window
- Innovations & Value Engineering Opportunities increase

### Cons

- Lack of familiarity with the process can cause team members to revert to traditional roles
- Selecting Subcontractors early can reduce competitive pricing options
- Increase design costs and time required due to greater upfront involvement from multiple parties
- Greater collaboration between parties can raise questions about who has legal design responsibilities

## COST REIMBURSABLE

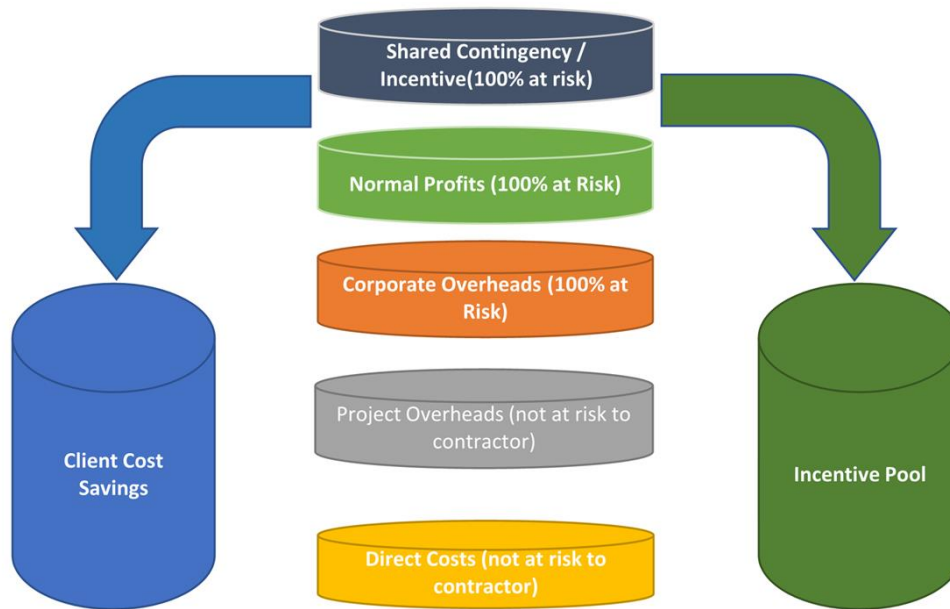
### Pros

- Can result in a higher quality project as contractor is less concerned with minimizing costs or efficiency
- Contractor assumes less risk and client pays only actual costs
- Beneficial for projects with many unknowns and can facilitate an early start

### Cons

- Owner assumes risk
- Efficiency is not a factor
- Requires increased cost reporting and compliance requirements
- Need to clearly define what are allowable costs up front

## INTEGRATED PROJECT DELIVERY



### Pros

- Increased transparency among all team members
- Increased levels of collaboration among client, contractors, and designers
- Reduction of duplicate efforts among team members by eliminating handoffs
- Shared accountability, risks, and rewards
- Constructability and logistics are incorporated into the design
- Teams tend to have a history of working together and self-select
- The entire team is aligned with the project goals thus increasing the chances of success

### Cons

- Lack of familiarity in the industry working in a non-adversarial manner makes the chance of failure most dependent on individual behaviors within the team
- Finding teams with high levels of trust can be difficult
- Insurance industry stipulations on individual liability vs team liability can be limiting
- Actual final contract can take an extended amount of time to complete, which the client might be paying for in time if not in money
- Pricing might be difficult to complete at the time of team selection or even after the final contract is agreed to
- IPD Contracts have not been tested in law



## PROJECT DELIVERY RISK AND COLLABORATION LEVELS

Project Delivery Method	Contractor Risk Profile	Typical Selection Criteria	Collaboration Level
<b>Lump Sum (Design-Bid-Build)</b>	Low	Most Common: Low Bidder, Rarely based on Qualifications	Low, and in some cases can be adversarial
<b>Cost Plus and Fixed Fee</b>	Low – Client assumes most risk	Most commonly based on fee	Low-Contractor performs at direction of client
<b>Construction Management at Risk (GMP)</b>	Medium – Contractor is involved earlier and can identify risk more easily, but assumes more risk	Most commonly based on best qualifications; price evaluation based on fees and general conditions	High between client and contractor
<b>Design-Build</b>	High – Contractor is guaranteeing a design to meet performance spec requirements and assumes design risk	Most commonly based on a combination of best qualifications, design, and price	High between contractor and designer
<b>Design-Assist</b>	High – Contractor and Subcontractors are assuming greater risk in helping develop the design	Most commonly based on a combination of best qualifications, design, and price	High between all parties
<b>Integrated Project Delivery</b>	High – Contractor relies on all parties collaborating successfully and performing successfully	Most commonly based on Qualifications	High – all parties are forced to work together for the good of the project

## PRIMARY SELECTION METHODS

- Best Value (BVS)
- Qualification Based (QBS)
- Low Bid
- Low Price, Technically acceptable
- Single Step (no Qual's)
- Two Step (Quals, proposal)

## COMPARISON OF PROJECT DELIVERY METHODS

<b>Metric</b>	<b>DB vs. DBB</b>	<b>CM@R vs. DBB</b>	<b>DB vs. CM@R</b>
Unit Cost	6.1% lower	1.6% lower	4.5% lower
Construction Speed	12% faster	5.8% faster	7% faster
Delivery Speed	33.5% faster	13.3% faster	23.5% faster
Cost Growth	5.2% less	7.8% more	12.6% less
Schedule Growth	11.4% less	9.2% less	2.2% less

CII/Penn State Study

<b>Research Study</b>	<b>CII Penn State (US)</b>	<b>Reading DB Forum (UK)</b>
<b>Parameter</b>	<b>DB vs. DBB</b>	<b>DB vs. DBB</b>
Unit Cost	6% Less	13% Less
Construction Speed	12% Faster	12% Faster
Delivery Speed	33% Faster	30% Faster

CII/Penn State & Univ. of Reading

- D-B delivers equal or higher quality:
- D-B out performed traditional D-B-B in every category
  - Startup
  - Call Backs
  - O&M
  - Exterior & Structure
  - Interior
  - Environmental
  - Equipment

## ASSESSING PRIME CONTRACT TERMS FOR RISK

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### WHAT IS A CONTRACT?

“A promise or a set of promises for the breach of which the law gives a remedy, or the performance of which the law in some way recognizes as a duty.”

- Restatement (Second) of Contracts

**= LEGALLY ENFORCEABLE AGREEMENT**

### PURPOSE OF WRITTEN CONTRACTS

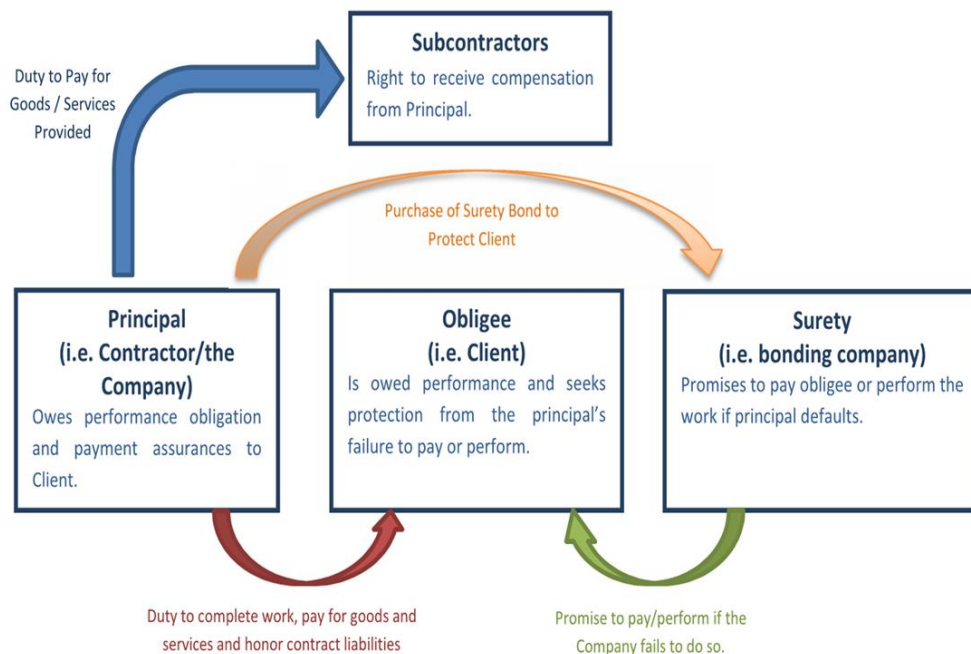
- Performance
  - Documents expectations and obligations of the parties and products/services to be provided
- Protection
  - Provides remedies for the unexpected (i.e. breach)

### PRIME CONTRACT CLAUSES

- Performance Clauses:
  - Scope
  - Schedule
  - Design and Performance Levels
  - Fees
  - 3rd Parties
- Protection Clauses
  - Security and Bonds
  - Access
  - Payment Terms
  - Right to Adjustments
  - Site Conditions
  - Force Majeure
  - No Damages for Delay
  - Liquidated Damages
  - Total Limit of Liability
  - Consequential Damages
  - Indemnification

## SECURITY AND BONDS

- Security is most commonly used to protect against non-payment or non-performance.
  - Bonds
  - Letter of Credit
  - Retention
  - Lien Rights
  - Parent Company Guarantees
- Bond – 3 Party Agreement
  - Surety or Independent 3rd party offering protection
  - Obligee or Protected Party
  - Principal or Performing Party



## PAYMENT TERMS

- Ceiling Price
- Timing of Payment
- Pay-When-Paid vs Pay-If-Paid
- Accord and Satisfaction – A Payment Trap
- Client's Right to Withhold Payment

## ACCESS

- Should be provided without delay upon issuance of NTP
- Can be impacted by 3rd party agreements
- Does the contract provide a right to equitable relief for failure to provide access?
- Does the contract provide boundaries on the rights of the client for access to the site during the work?

## SITE CONDITIONS

- Differing Site Conditions
- Site Inspection Provisions
- Provisions related to Contractor's ability to 'rely on' information from clients

## RIGHT TO SCHEDULE AND PRICE ADJUSTMENTS

- The Right to a Change
  - Changes requested by Contractor
  - Changes requested by Client
  - Unilateral Change Orders issued by Client when the parties are unable to agree

Contractor shall provide written notice to Client of any event or circumstance which may give rise to a claim as soon as practicable but in no event less than 10 days after Contractor becomes aware, or should have become aware, of the event or circumstance.

If the Contractor fails to give the required notice, no modification of the Contract Time or Contract Price shall be granted and the client shall be discharged from all liability in connection with the claim.

Contractor shall provide written notice to Client of any event or circumstance which may give rise to a claim as soon as practicable after Contractor becomes aware of the event or circumstance may reasonably give rise to a Change Request.

Only if absolutely required:

If the Contractor fails to give notice after the Project Manager becomes aware or reasonably should have become aware of an event or circumstance that may reasonably give rise to a Change, modification of the Contract Time or Price shall be limited to the additional time or cost which would have been required had the Contractor timely provided the notice.

## FORCE MAJEURE

- Force Majeure Definition
  - “Greater Force”
- Not contemplated at time of Contracting
- Uncontrollable
- Unavoidable
- Prevents a party’s contract performance

“Force Majeure Event shall include any of the following events and effects of such events (provided such events are beyond the control of the Contractor and are not due to **any act or omission** of the Contractor or any Subcontractor) which materially and adversely affect the Contractor’s obligations hereunder and which event (or the effects of which event) **could not have been avoided by the Contractor**”

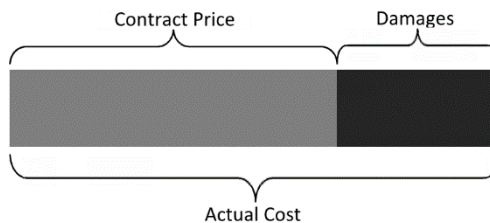
“Force Majeure Event shall include any of the following events and effects of such events (provided such events are beyond the control of the Contractor and are not due to a **negligent act or omission** of the Contractor or any Subcontractor) which materially and adversely affect the Contractor’s obligations hereunder and which event (or the effects of which event) **could not have been avoided by due diligence and use of reasonable efforts by the Contractor**”

## NO DAMAGES FOR DELAY

- Defining No-Damages-For-Delay
  - Limits Contractor Recovery of Damages
- Limitation of Liability
- Waiver

## LIQUIDATED DAMAGES

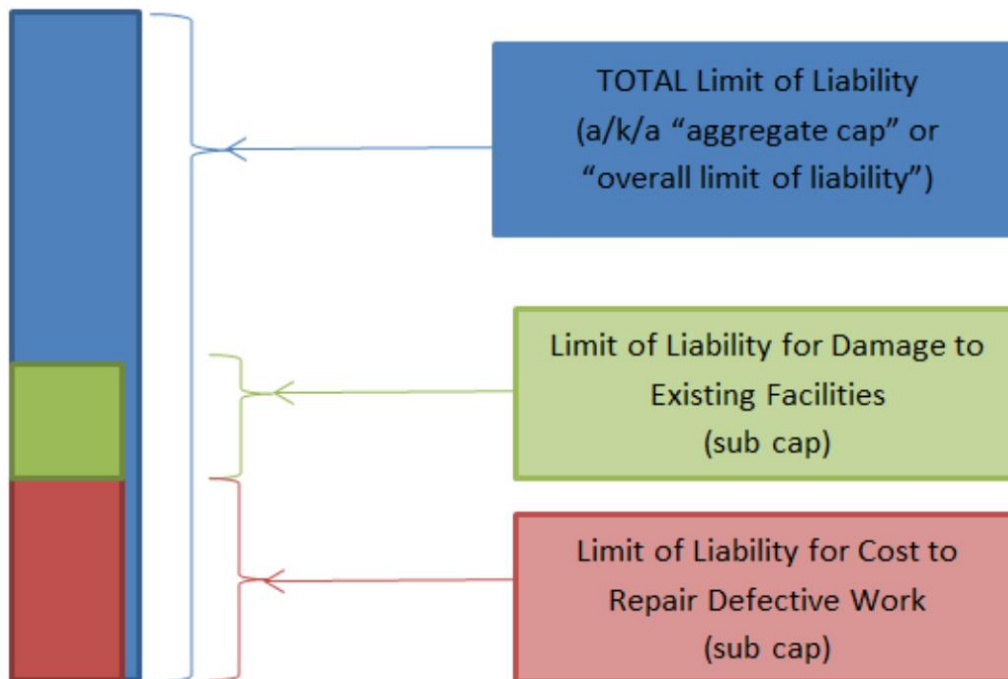
- A Party’s failure to meet a contractual obligation. Damages can be:
  - Actual
  - Liquidated
- Not construed as a Penalty
- Should be tied to a milestone



## TOTAL LIMIT OF LIABILITY

A limitation of liability (LOL) provision permits contracting parties to pre-determine the total extent of their liability for damages should there be a contract breach.

- A limitation of liability (LOL) provision permits contracting parties to pre-determine the total extent of their liability for damages should there be a contract breach.
- Aggregate Caps
  - Limits total liability under the contract
- Sub-Caps
  - Limits liability which arise from a specific clause
  - Should be within the total aggregate



## CONSEQUENTIAL DAMAGES

- Direct Damages arise as a result of a wrongful act, including breach of contract or negligence.
- Consequential Damages are a consequence of that act – special, derivative, indirect, or secondary.

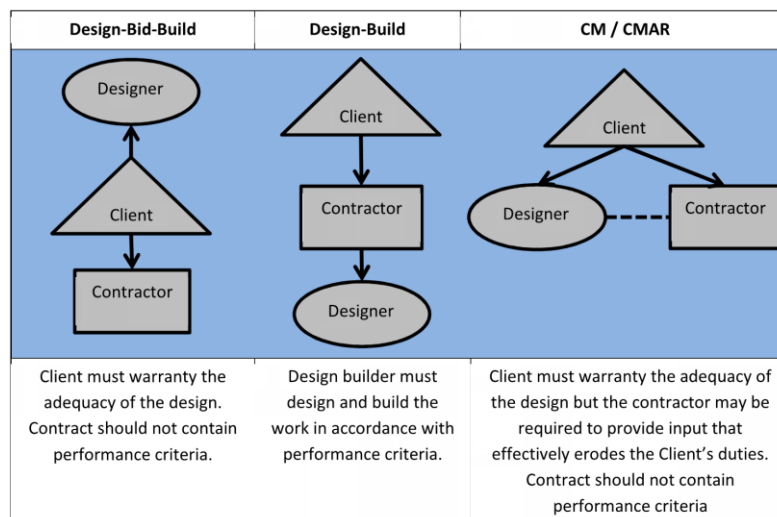
## DEFENSE, INDEMNITY, AND HOLD HARMLESS

- Be sure “hold harmless from liability” language is broad enough. Should include:
  - Arising from breach of contract;
  - Negligence of the other party or its agents;
- Include “defend” language? If so, include language for right to hire own attorney. If not, include language that vendor will pay all (reasonable) attorney fees and associated costs.
- Limit to certain third-party claims (not the Client or other Contractors under Client control)

## DESIGN AND PERFORMANCE CLAUSES

Design Criteria are the criteria that must be satisfied in performing the work. They detail the material or technology to be used and explicitly state how the contract is to be performed. They come with an implied warranty, that if followed and performed correctly, the Contractor can produce an acceptable product.

Performance criteria detail the requirements for function, capacity, output, etc. They describe the result but not the method for obtaining the result.



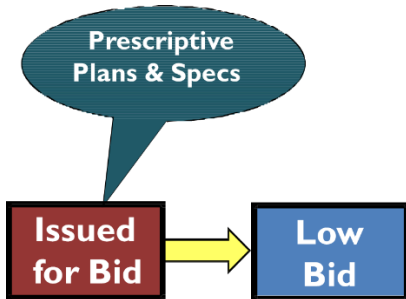
## OTHER PROTECTION CLAUSES

- Risk of Loss
- Termination for Convenience
- Termination for Default
  - Material Breach Only
- Warranty



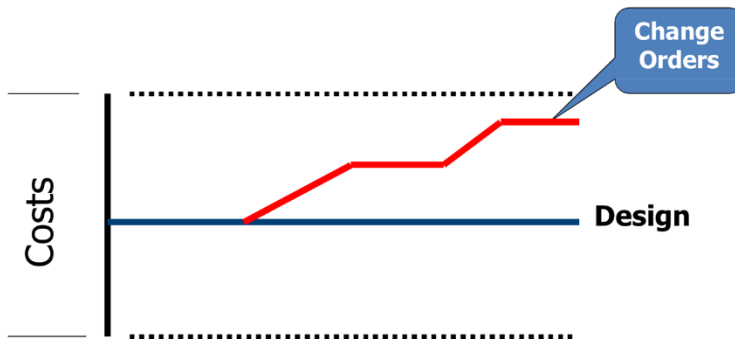
## DESIGN BUILD FUNDAMENTALS

### SOLICITATION & BASIS OF AWARD *DESIGN-BID-BUILD*

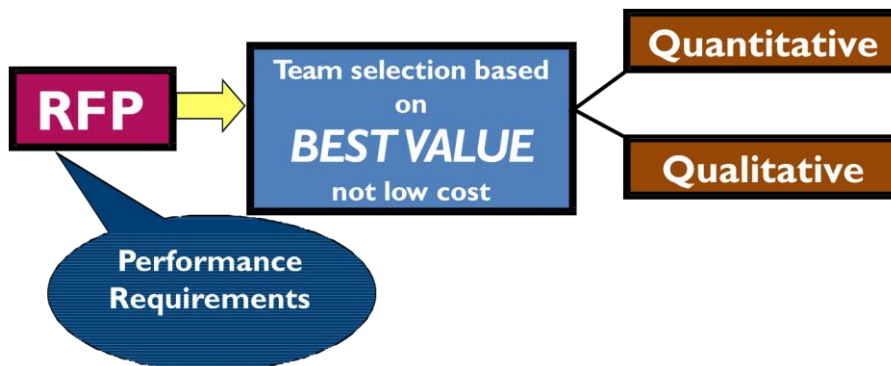


### DESIGN/COST RELATIONSHIP *DESIGN-BID-BUILD*

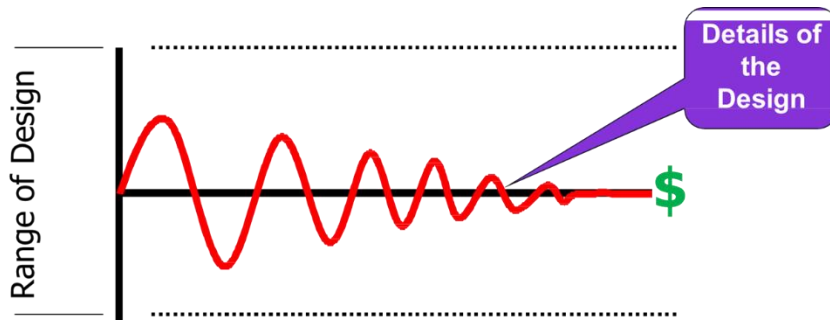
Design is Fixed – Design dictates cost  
(and performance becomes a variable)



### SOLICITATION & BASIS OF AWARD *DESIGN-BUILD*

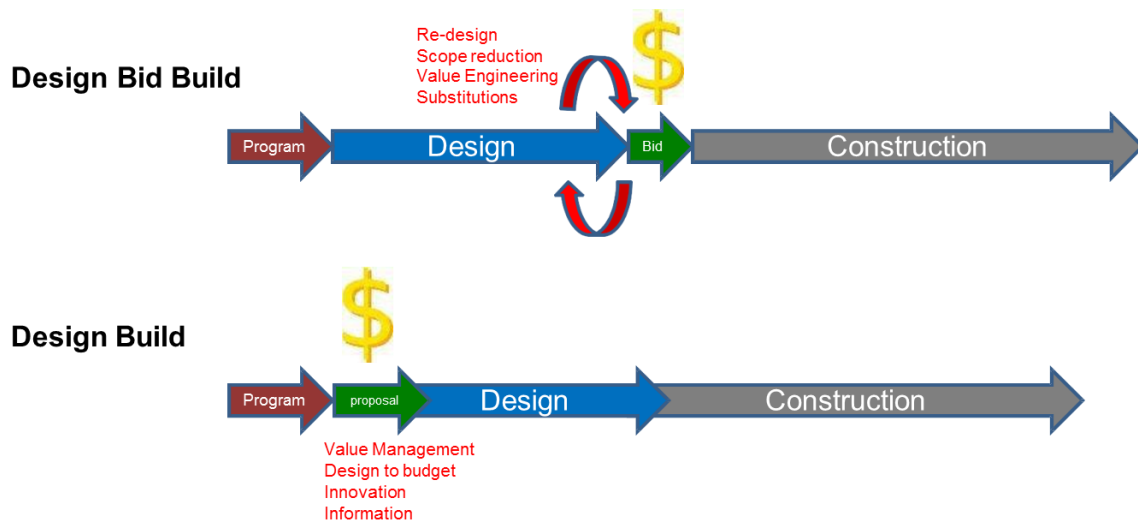


## DESIGN/COST RELATIONSHIP DESIGN-BUILD



**Cost (and performance are fixed) – We are designing to the cost**

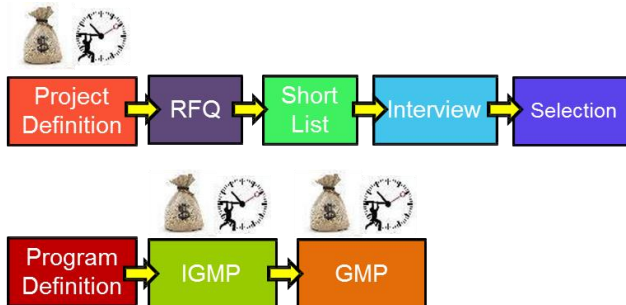
## DESIGN-BUILD EARLY COST DETERMINATION



## QBS – QUALIFICATION BASED DESIGN BUILD

- Progressive D-B
  - Prequalification of 3-5 teams
  - Teams selected on caliber of the proposed team members and fees
  - May include RFP or may require development of Program, budget and schedule
  - Scope developed with Owner and Design Builder

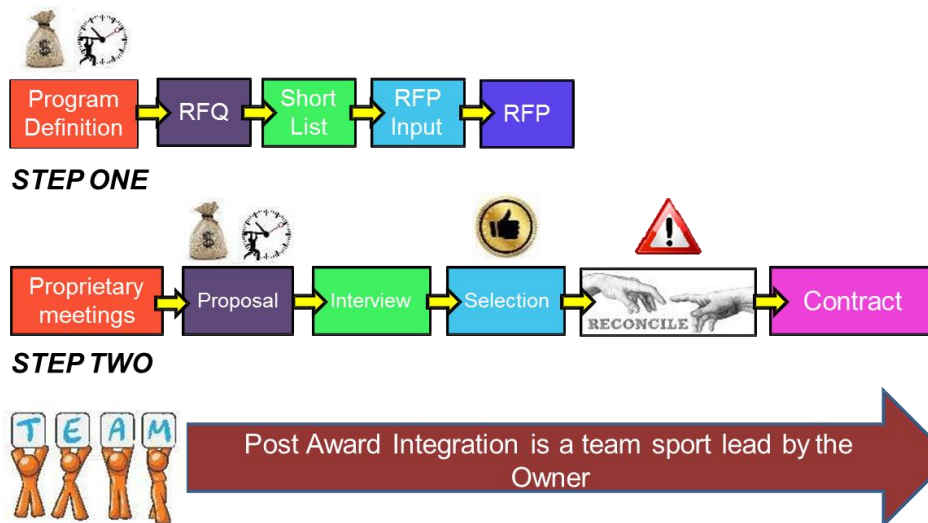
## QUALIFICATION BASED SOURCE SELECTION



## BVS – BEST VALUE DESIGN BUILD

- Usually a Two Step Process
  - Prequalification of 3-5 teams
  - Competition based on satisfaction of RFP criteria within budget
- Cost Model (Fixed Price/ Best Value) can vary
  - Stipulated Sum
  - Max Allowable Contract
  - Low Price, technically acceptable

## TWO STEP SOURCE SELECTION (BEST VALUE)



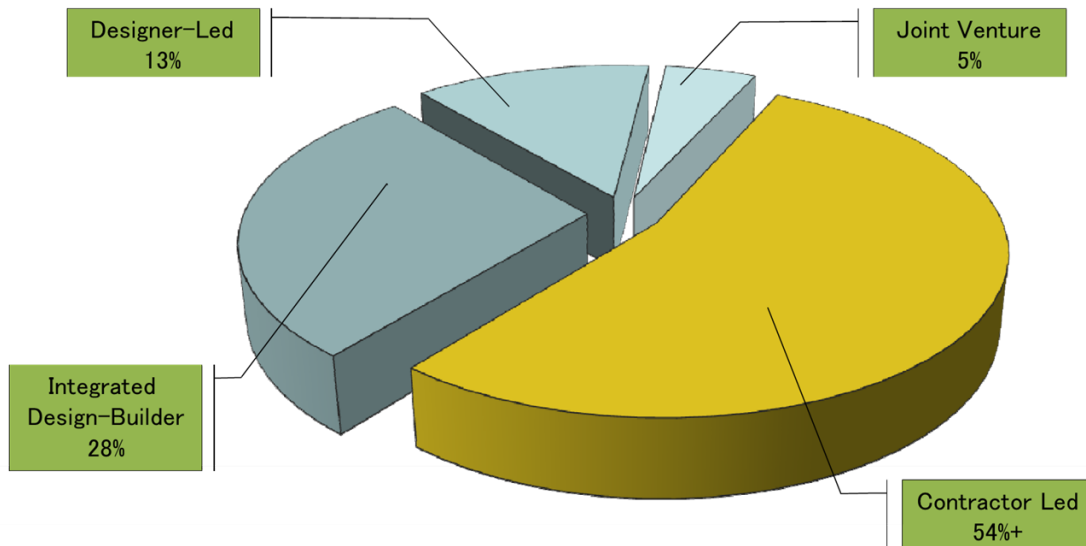
## UNDERSTANDING THE COSTS OF SOLICITATION

- Cost of pursuit
  - Designers
  - Contractor
  - Trades
- Level of Design for selection
- Level of Design for risk mitigation
- Contracts, Fees
- Technical review
- Project management

## STIPENDS

- Compensation to losing teams
- Defers some of cost to compete
- Important in both hot and cold markets
- Shows commitment

## COMMON DESIGN BUILD TEAM CONFIGURATIONS

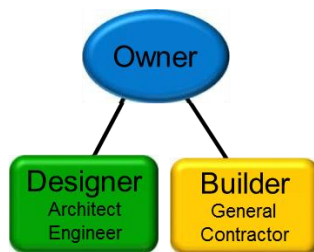


## ESSENTIAL CONCEPTS OF DESIGN-BUILD

- Contractor & A/E have a direct contractual relationship
- Solicitation & basis of award
- Design process
- Design-cost relationship
- Plans & spec warranty
- DB teaming
- Value proposition
- Single Point of Responsibility

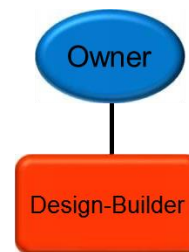
## DESIGN-BUILD RESPONSIBILITY

- Design-Build relies on a single point of responsibility contract and is used by the project owner to:
  - *minimize risks*
  - *find innovative solutions*
  - *manage cost*
  - *reduce the schedule*



**Design-Bid-Build**

Dual  
Responsibility



**Design-Build**

Singular  
Responsibility

## HOW DESIGN-BUILD IS DIFFERENT

- Compressed schedule with concurrent interdependent design, procurement & construction activities
- More interfaces within the project team
- Cost/schedule risk analysis as design details develop
- Continuous new information that must be integrated into the solution
- Merged cultures, attitudes, preferences, prejudices, agendas & learning curves

## THE RIGHT TEAM

- The ability to operate & perform effectively on an Integrated Team is NOT automatic ... and not for everyone
- Not every Architect, Contractor, Engineer, or Owner has what it takes
- Effective Design-Build project participants possess Unique Talents

## CULTURAL DIFFERENCES AN MOTIVATORS

### Designers

- Safety, health and welfare
- Start with a blank sheet
- Solution oriented
- Problem solvers
- Spatial relationships
- Aesthetics
- Intangibles
- Technologists
- Integrators
- Quality assurance
- Professionals

### Builders

- Safety oriented
- Solution with a plan
- Schedule driven
- Problem solvers
- Action and tangible results
- Linear processes
- High degree of expertise
- Cost conscious
- Logistical problem solvers
- Quality control
- Professionals

### Owners

- Safety, health and welfare
- Satisfy the business needs
- Prescriptive or performance
- Seasoned or rookie
- Aesthetics
- Schedule oriented
- Cost conscious
- Risk adverse
- Conflict adverse
- Level of experience
- Level of integration
- ROI
- O&M

## WHO OWNS THE DESIGN **RISK**?

### The Spearin Doctrine...

#### There is an implied warranty

“If the contractor is bound to build according to plans and specifications prepared by the owner, the contractor will not be responsible for the consequences of defects in the plans and specifications”

(Change orders, schedule extensions etc.)

In Design Build, the design risk shifts to the design builder – except where the Owners provide prescriptive specifications.

*Those best able to manage the risk should be assigned the risk*

## **PLANS/SPECS WARRANTY**

### **In Design-Bid-Build**

Courts find Owner warrants the sufficiency of the plans and specs to the Contractor

- Owner owns the details of design
- Owner is liable for any “gaps” between the plans and specs and the Owner’s requirements for performance
- Any short falls-Owner pays

In short,

The **Owner** bears the risk of the design

### **Under Design-Build:**

The Design-Builder warrants the sufficiency of the plans and specs to the Owner

- Design-Builder owns the details of design
- Design-Builder liable for any “gaps” between plans & specs and Owner’s requirements for performance
- Any short falls-the Design Builder pays

In short,

The **Design Builder** bears the risk

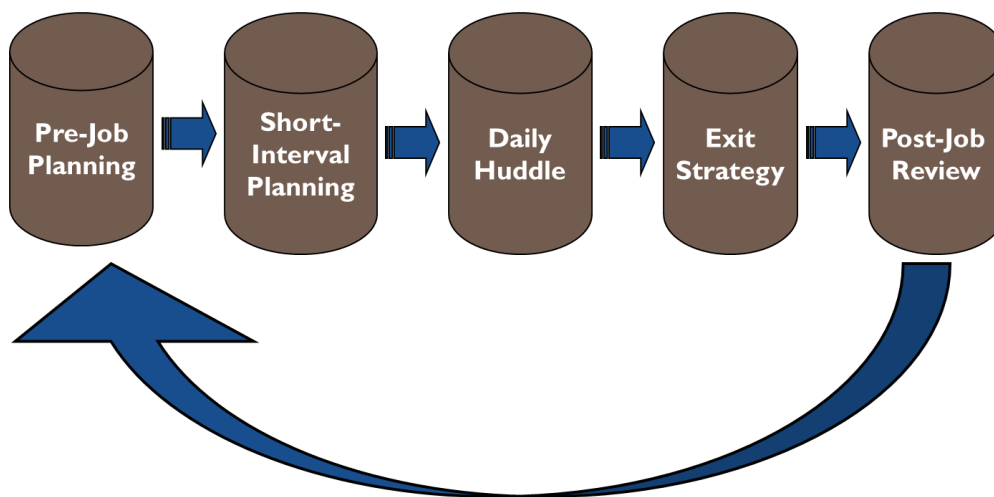
## PROJECT PLANNING: FROM PRECONSTRUCTION TO CLOSEOUT

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### OBJECTIVES

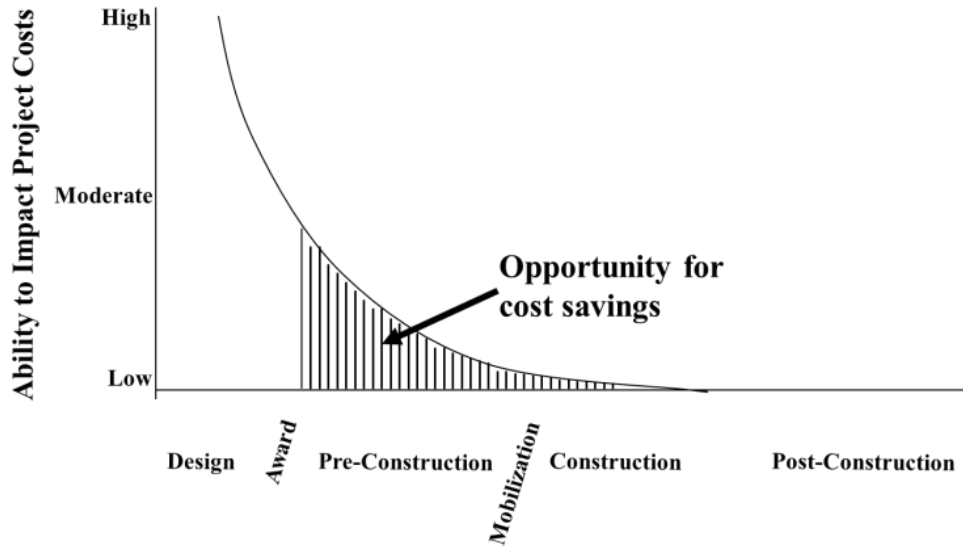
- Understand the components of an effective prejob plan
- Discuss the power of a short interval plan
- Identify the results desired from a daily huddle
- Become familiar with the exit strategy process
- Discover the necessary feedback loop of the lessons learned meeting

### PROJECT PLANNING

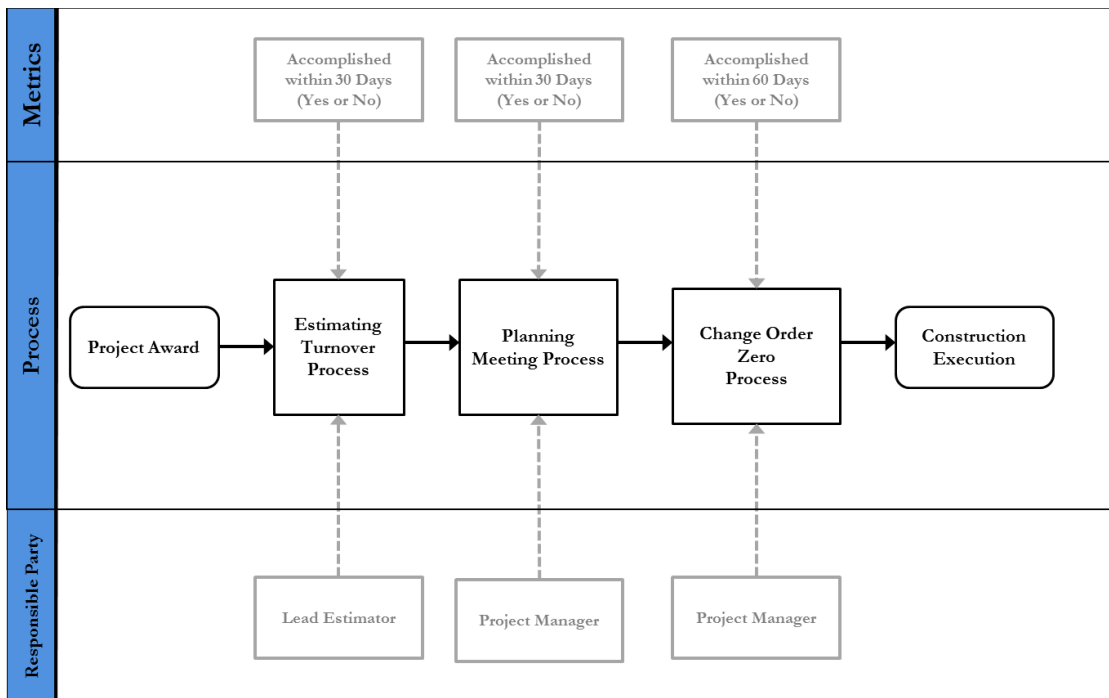




## COST IMPACT ANALYSIS



## PRE-JOB PLANNING PROCESS



## PRE-JOB PLANNING

### Prejob Planning Process

- Estimating Turnover Meeting
- Estimating Budget
- Planning Meeting
- Change Order Zero
- Operating Budget

## SHORT INTERVAL PLAN

Home
Short Interval Planning
Time Entry
Quantity Tracking
Approval
Settings
Sign Out

Short Interval Planning Weekly Planner - Entry

---

Job Name:

Project Manager:

For Week (1):  ← Week 1 →

Did you receive Job Cost Feedback last week?

Did your PM call you to discuss your SIP?

[Cancel Changes](#)

Show Activity for:   [Show All](#)

Daily Shift Length: 

Sat	Sun	Mon	Tue	Wed	Thu	Fri
0	0	8	8	8	8	8

[Save Plan](#)

* Activities planned for week ENDING: 04/13/2012								Materials		Tools		Production Rate		Daily Manpower							Production Target				
Cost Code	Description	Area	Source	Status	Eqp	Qty	UM	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Qty	UM									
01-L1-01A	Install Conduit - Area 1	01				2.5	LF	0	0	3	3	3	0	0	180.0	LF									
01-L2-033B	Cabling - Area 1	01				4.0	LF	0	0	0	2	2	2	0	192.0	LF									
<== Add New ==>																									
								Manpower Totals:		<table border="1" style="font-size: 8px; border-collapse: collapse;"> <tr><td>0</td><td>0</td><td>3</td><td>5</td><td>5</td><td>2</td><td>0</td></tr> </table>							0	0	3	5	5	2	0		
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[Activity Plan](#)
[Alternate Work](#)
[Notes / Issues](#)

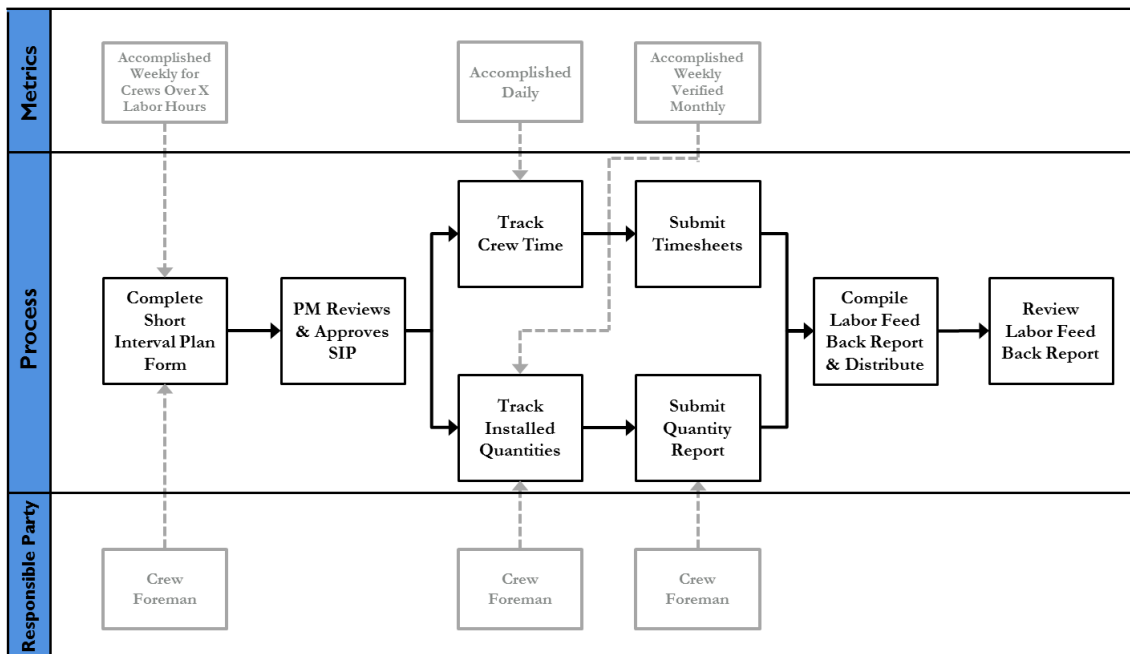
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### SHORT-INTERVAL PLANNING TOOL- 1 WEEK LOOK AHEAD

Objective= Fill out by Wednesday noon and review with work crew. Fax to office by the end of the workday on Wednesday of each week.

PROJECT _____		Project Manager _____							Week Ending _____			
FOREMAN _____		Manpower <i>(Indicate how many people you will need on each day)</i>							What materials & equipment are needed to complete planned work for next week?			
What work is planned and scheduled to be completed next week?		Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Are materials on site?		Is this a "Repeat Request"?	
									Yes	No	Yes	No
What alternate work is planned if scheduled work happens to fall through? (i.e. PLAN B WORK)												
Total manpower needed to complete next weeks work.												
Did you receive a follow-up phone call from your project manager discussing last week's 1 week look-ahead? <input type="checkbox"/> YES <input type="checkbox"/> NO		Did you discuss this with your crew before sending it in? <input type="checkbox"/> YES <input type="checkbox"/> NO										
What subcontractors do you need next week?												
What issues need resolutions or answers? From whom do you need answers? When is it needed?												
What plans should we be making beyond the next week? Who should be planning? When will it be critical?												
Do you have any foremen working on your project next week? If so, please list them below and the expected durations.												

### PRODUCTION TRACKING PROCESS



## WHAT IS A FOREMAN'S DAILY HUDDLE

- Planning and communication process used by the best foremen
- Three to five minutes of planning and communication with your crew at the beginning and end of every day
- Involves your crew in the plan by getting ideas, input and suggestions
- Results in specific production goals or targets

## DAILY HUDDLE

- Review SIP
- Set production targets
- Discuss alternate work plans
- Identify potential obstructions
- Identify potential costs/gains
- Review past performance

## HOW DO CREWS START THEIR DAY?

- Are you frequently or always on site when your crew started their day?
- Is it important?
- Why?

### **Task Master: Assigns one task at a time**

#### Example:

“You three guys go up to the 2<sup>nd</sup> floor and install the light fixtures, and when you are done, come see me.”

### **500 Pound Gorilla: Tells the crew what to do, how to do it and how much to get done**

#### Example:

“You three guys need to get the 10 remaining fixtures on the 2<sup>nd</sup> floor installed by 11:30 a.m., then get all of the piping to the generator completed by the end of the day.”

### **Superstar: Tells the crew what to do and involves them in a discussion of how to do it and how much to do**

#### Example:

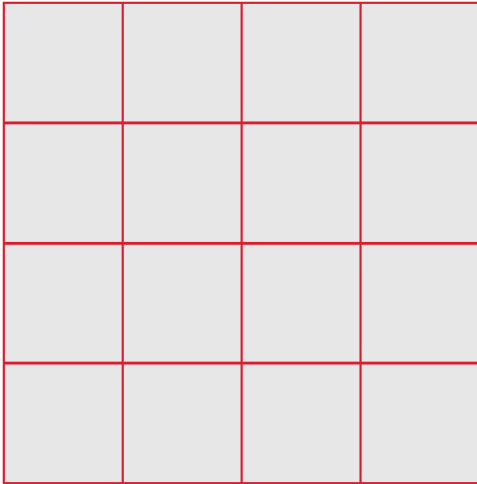
“We need to install fixtures on the 2nd floor and run the generator piping.”

- Do we have everything that we need?
- How long should each task take?
- How much should we be able to get completed by the end of the day?
- Does anyone have any questions or ideas?
- What would make this easier?
- Does anyone see any safety issues?

## DAILY HUDDLE IDEAS

- Cue cards
- Dry erase boards
- White trucks
- In the job trailer
- Magnetic signs on gang boxes, etc.
- On a laptop or iPad

## THE BENEFITS OF TEAMWORK



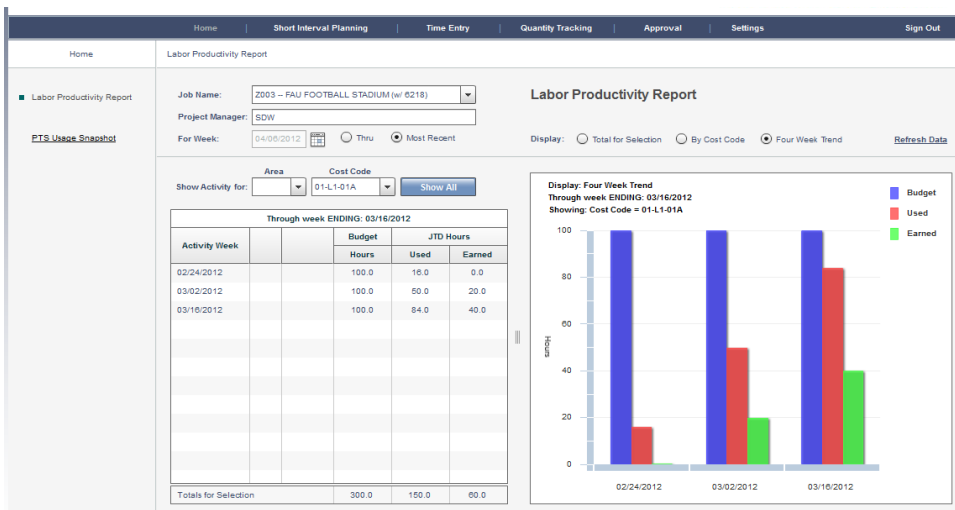
How many squares do  
**you** see?

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How many squares does  
**your team** see?

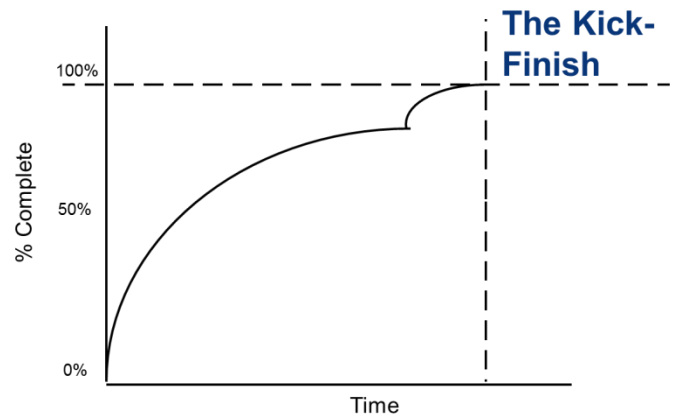
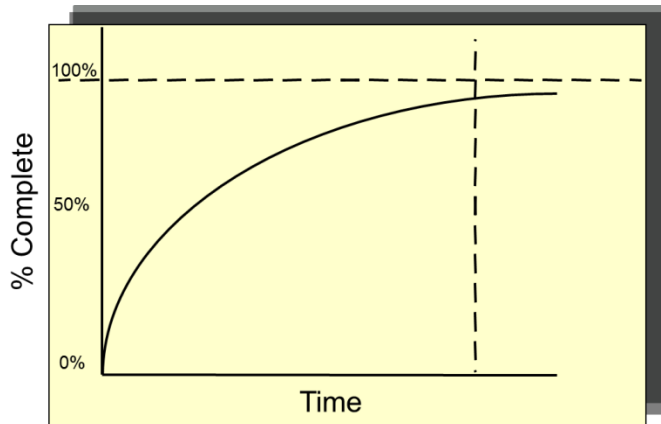
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## REAL TIME FEEDBACK



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## EXIT STRATEGY



## WHAT PREVENTS US FROM COMPLETING PROJECTS 100%?

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## EXIT STRATEGY

- “Pre-job planning” for the end of the job
- Re-energize and refocus the team
- Identify critical issues and action plan the last components of the project

## POST JOB REVIEW

What type of information do you want to know when you finish a project?

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## **POST JOB REVIEW**

- Conduct a review for a mix of projects – NOT just the bad ones
- Take the time to capture important cost information
- Share best practices (i.e., training, “lunch and learn,” etc.)
- Focus on the controllable and influenceable
- Feedback to estimating with accurate turnout data

## **SUMMARY & CLOSING POINTS**

- Planning is key to improved profitability and ability to sustain downturn
- Tracking productivity is necessary to measure improvement
- Use planning tools to drive productivity

## SPEAKER BIO

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#### Professional History

- Maxim Consulting Group  
*Associate Director*
- Mass. Electric Construction Co.  
*Systems Integration Manager*  
*Systems Project Manager*  
*Construction Manager*  
*Superintendent*  
*Field Engineer*
- Kiewit Industrial  
*Field Engineer*
- Adesta Communications  
*Systems Engineer*

#### Education

- Executive Masters of Business Administration  
University of Denver, Denver CO
- BS in Electrical Engineering  
Louisiana State University, Baton Rouge, LA

Walead Atiyeh is an Associate Director at Maxim Consulting Group responsible for the evaluation and implementation processes with our clients. Walead works with construction related firms of all sizes to evaluate business practices and assist with management challenges. With extensive experience working in the industrial, telecom, and infrastructure construction markets, Walead is keenly aware of the business and, most specifically, operational challenges that firms face. His areas of expertise include: strategic management, planning, estimating, sourcing, project management, design management, execution, productivity improvement, training and implementation of construction and engineering projects.

#### PROFESSIONAL EXPERIENCE

Walead possesses seventeen years of experience with an achievement and project oriented skill set in construction and engineering, a majority of the time spent leading multi-disciplinary teams, and coupled with an Executive MBA from the University of Denver.

Walead has ascended through a variety of roles from estimating engineer, to field/cost engineer, project engineer, superintendent, project manager, and department manager. His versatility has allowed him to excel in all areas, allows him to quickly identify areas of strength and weakness, and to put in place action plans to succeed. Walead has worked with a variety of clients, subcontractors, and vendors and is familiar with the challenges that all parties face in executing successful construction projects. His project experience includes the LADWP Haynes Repowering Project in Huntington Beach, CA, RTD I-25 Southeast Corridor Transportation Expansion Project in Denver, CO, Sound Transit Link Light Rail Projects in Seattle, CO, RTD Denver Union Station Project.