

Contracting 101



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Pete Fowler
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Services, Inc.

INTRODUCTION

Managing construction is hard. So is understanding who is responsible for what. Contracting 101 will explain the fundamentals of building construction contracting, including the roles and responsibilities of the parties and the flow of documents and information. This is a simplified framework to show the fundamental relationships of the parties in construction. In addition, since virtually no two projects are exactly alike, the framework serves as a comparison to illustrate the differences in various project delivery schemes. Contracting 101 is designed to help you understand the "Big Picture" so you can understand and avoid most common pitfalls that cause project shortcomings, defects, delays, cost over-runs, legal disputes and headaches in general.

Through case studies, horror stories, document review and open discussion we will help you better understand the many roles played in construction contracting. This presentation is for attorneys, adjusters, property managers, real estate agents, design and construction professionals, general contractors, building officials, and anyone involved or interested in the construction business.

PROGRAM OUTLINE

1. Introduction
2. Contracting 101
3. DBSKCV CM Method
4. Key Construction Documents
5. Building Lifecycle Management
6. Allocation of Responsibility
7. Conclusion

LEARNING OBJECTIVES

- Introduce the Contracting 101 framework and use it to explain the roles and responsibilities of the various parties in construction.
- Introduce the fundamentals of emerging science and profession of Project Management.
- Introduce the DBSKCV Construction Management Method, which is a 6 step framework for planning and managing successful construction projects.
- Introduce the most important construction documents and how they are used.
- Outline the fundamentals of risk management for construction.

BACK-UP MATERIALS

1. Contracting 101 Complete (257 pages)
2. DBSKCV Construction Management Method
3. Managing Property Maintenance & Improvement
4. Managing Construction Quality
5. Meeting Management:
Google "Pete Fowler Meeting Management"

PROGRAM CONTENTS

1. Introduction
 - A. Presenter Information
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 - C. CE Certificates
 - D. Feedback
 - E. Learning Objectives
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 - G. The Big Picture
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 - B. A Simplified Case Study
3. DBSKCV CM Method
 - A. Overview
 - B. Menu of Deliverables
 - C. Define
 - D. Budget
 - E. Schedule
 - F. (K) Contract
 - G. Coordinate
 - H. Verify
4. Key Construction Documents
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 - B. Case Study
 - C. Schedule of Values
 - D. Payment Application #1-3
 - E. What to Study
5. Building Life Cycle Management
 - A. BLM Defined
 - B. Deep Thoughts
 - C. Why Lawyers Should Care
 - D. I Have a Dream!
 - E. Building Construction Lifecycle
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6. Allocation of Responsibility
 - A. Allocation of Responsibility
 - B. Exposure Analysis
 - C. Case Study
 - D. A Real, Professional Allocation
 - E. Contracting 101
 - F. Analyzing Construction Defects: 14 Questions
 - G. Plans, Specifications, Codes & Standards
7. Conclusion
 - A. Learning Objectives
 - B. Program Outline
 - C. Back-Up Materials
 - D. Webinar Materials/CE Certificate
 - E. Feedback

We know buildings

EXPERTISE

PROJECT MANAGEMENT

TECHNOLOGY

STANDARDS

RESULTS

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Contracting 101



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February 14th, 2017

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1. INTRODUCTION

PFCS: We Know Buildings



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1. INTRODUCTION

PFCS: Who We Are

SOLUTIONS

We specialize in creating **REAL PRACTICAL SOLUTIONS** that help our clients spend the right amount, on the right work, at the right time.



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1. INTRODUCTION

PFCS: We Know Buildings



CLIENTS

- Property Owners & Managers
- Builders & Developers
- Contractors
- Product Manufacturers
- Insurers
- Lawyers


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1. INTRODUCTION

The PFCS Way: SOLUTIONS

- **EXPERTISE:** Technical experts who are focused on real practical solutions is surprisingly hard to find. We found them. And we work to keep that focus.
- **PROJECT MANAGEMENT:** To deliver valuable work with measurable return on investment (ROI), we have to manage the Scope, Budget and Schedule of our work.
- **TECHNOLOGY:** We use proprietary technology to create valuable work faster, better and cheaper, to make the information available to all applicable stakeholders, and to create a permanent digital record at no extra cost.
- **STANDARDS:** To help clients manage building lifecycle performance and costs, we compare each project to industry standards and best practices, then apply professional judgment to develop strategies and step-by-step plans for maximizing ROI for maintenance and repair expenditures.


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PFCS Services

CLAIMS & LITIGATION

- Construction Defect Litigation (Also see BLM)
- General (Property) Liability Claims
- Construction Accidents
- Traditional Claims related to contracts, payments, performance, change orders and delays

BUILDING LIFECYCLE

- Building Inspection, Testing and Property Assessment
- Specifications for Building Maintenance and Repairs
- Construction Budgets and Cost Estimating
- Construction Management
- Quality Assurance Plans and Inspections



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The PFCS Way

ON ALL PROJECTS

Building Information Management: We pick up where Zillow and Google leave off. We use technology to collect, organize, structure and store documents and building info forever.

Evaluate Performance: We perform structured building inspection and testing evaluations, exceeding the highest standards.

Specify Solutions: We analyze, report, make recommendations and compose specifications and estimates for construction, maintenance & repairs.

BLM OR LITIGATION?

Manage Quality: We apply professional construction management discipline to get work done, and create and execute construction quality assurance plans.

Allocate Responsibility: For insurance and legal clients we use our expertise in evaluating, specifying and managing construction to compare what happened in problem projects to what should have. We apply professional judgment to allocate responsibility.



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1. INTRODUCTION

Program Outline

1. Introduction
2. Contracting 101
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1. INTRODUCTION



1. INTRODUCTION

Introduction

- Presenter Information
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Pete Fowler

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1. INTRODUCTION

Webinar Materials

PFCS Client Access Projects Publications **Seminars** Users

PFCS Webinar 1/30/2014: Building Life Cycle Management


Seminar Information


Event Date	01/30/2014
Event Time	10:00am
Location	Online via GoToWebinar

Video

There is no video version of this presentation available.

Attachments / Backup Materials

File
 Backup Materials

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1. INTRODUCTION

CE CERTIFICATES WILL BE SENT OUT WITHIN 3 BUSINESS DAYS

(There is no need to contact us, Certificates of Attendance are sent to all who logged in for the seminar).

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1. INTRODUCTION

Your Feedback is Important

SURVEY SAYS!



You will receive a survey link immediately following the webinar. We put a lot of effort into providing these programs free of charge, we just ask that you take a few seconds to leave your feedback on today's presentation



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1. INTRODUCTION

Learning Objectives

- Introduce the Contracting 101 framework and use it to explain the roles and responsibilities of the various parties in construction.
- Introduce the fundamentals of emerging science and profession of Project Management.
- Introduce the DBSKCV Construction Management Method, which is a 6 step framework for planning and managing successful construction projects.
- Introduce the most important construction documents and how they are used.
- Outline the fundamentals of risk management for construction.



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1. INTRODUCTION

Program Introduction

WHY THIS IS IMPORTANT

Managing construction is hard. So is understanding who is responsible for what. Contracting 101 will explain the fundamentals of building construction contracting, including the roles and responsibilities of the parties and the flow of documents and information. This is a simplified framework to show the fundamental relationships of the parties in construction. In addition, since virtually no two projects are exactly alike, the framework serves as a comparison to illustrate the differences in various project delivery schemes. Contracting 101 is designed to help you understand the "Big Picture" so you can understand and avoid most common pitfalls that cause project shortcomings, defects, delays, cost over-runs, legal disputes and headaches in general.



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1. INTRODUCTION

Program Introduction

WHY THIS IS IMPORTANT

Through case studies, horror stories, document review and open discussion we will help you better understand the many roles played in construction contracting. This presentation is for attorneys, adjusters, property managers, real estate agents, design and construction professionals, general contractors, building officials, and anyone involved or interested in the construction business.



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1. INTRODUCTION

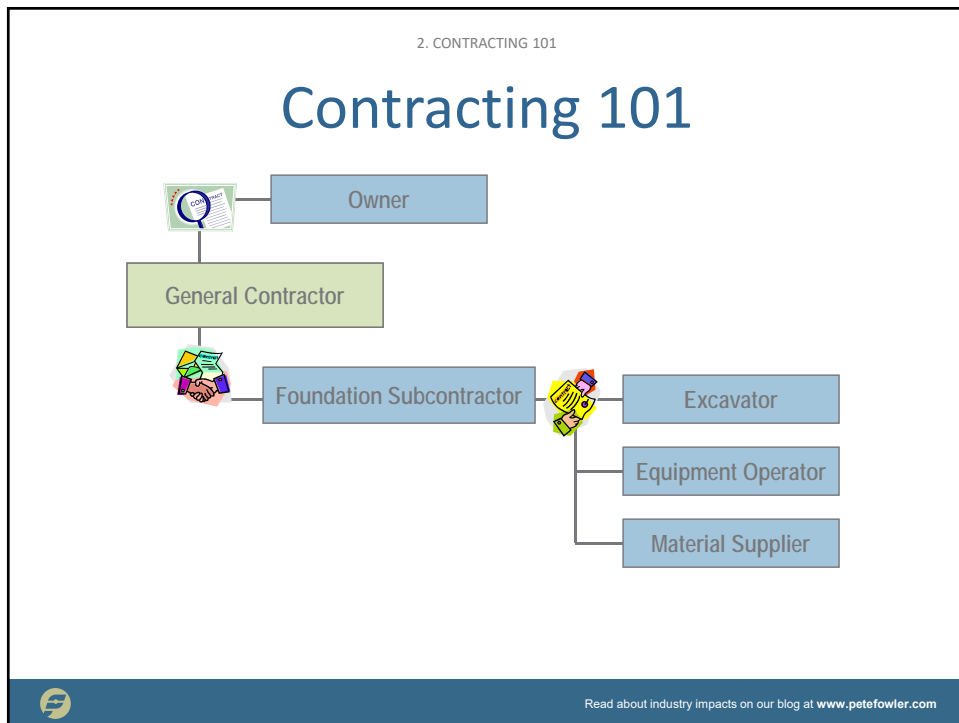
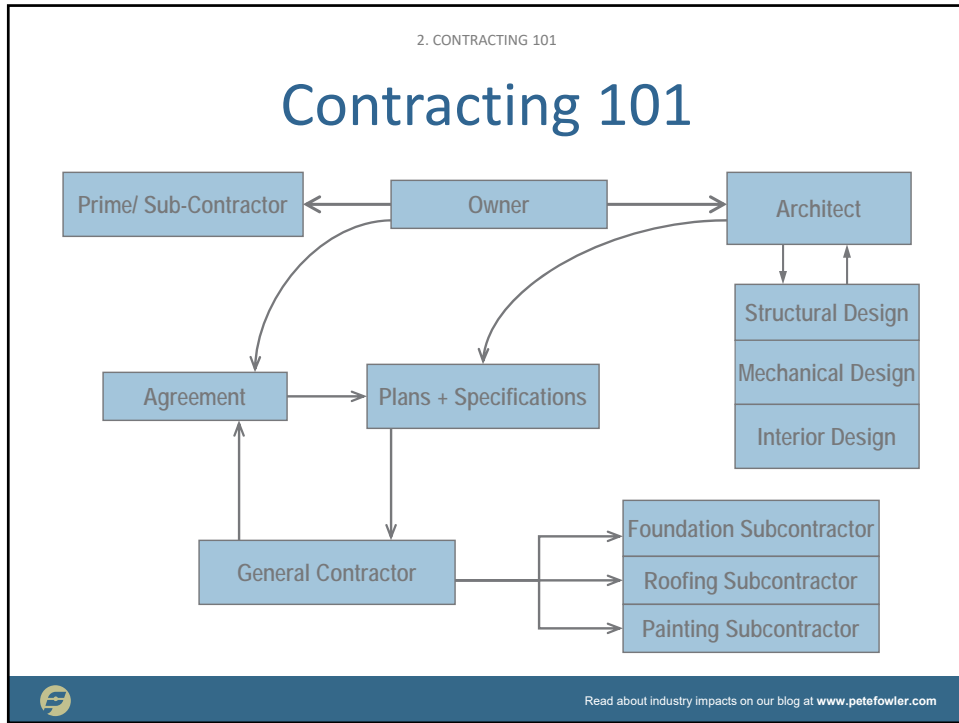
The Big Picture

- Contracting 101
- DBSKCV CM Method
- Key Documents
- BLM
- Allocation of Responsibility
- Why We Know Best



2. CONTRACTING 101





2. CONTRACTING 101

Contracting 101

- The Owner (1.) wants a project, similar to anyone who wants to buy something, such as a car, but with a construction project the product being purchased is not something that is already built.
- The Owner goes to an Architect (2.) to translate his/her desires into a set of documents.

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2. CONTRACTING 101

Contracting 101

- The Architect works with (3.) Specialty (Sub) Designers such as structural engineers, mechanical engineers and interior designers to place the details in the (4.) Plans and Specifications (Construction Documents) what the Owner wants to buy from a (5.) General Contractor (GC).
- The Plans and Specifications are sent to qualified and interested GCs, who then submit the proposals to the Owner. Ultimately the Owner and a GC compose an (6.) Agreement (or Contract).

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2. CONTRACTING 101

Contracting 101

- An Agreement (or Contract) for construction is simply "a promise by the Contractor to deliver what is described in the Plans and Specifications and a promise by the Owner to pay for it."
- The Agreement refers to the Plans & Specifications and should include the Scope of Work including: Inclusions and Exclusions, Allowances, a provision for handling Change Orders, and Payment Milestones or a Schedule of Values. GCs usually hire (7.) Subcontractors, who are specialists in their respective trades, to help deliver what has been promised in the Agreement.



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2. CONTRACTING 101

Contracting 101

- There is nothing in this scheme which prohibits the Owner from hiring (8.) Prime Contractors (Specialty / Trade / Subcontractor) directly for work that is not in the Scope of Work in the Agreement with the GC.

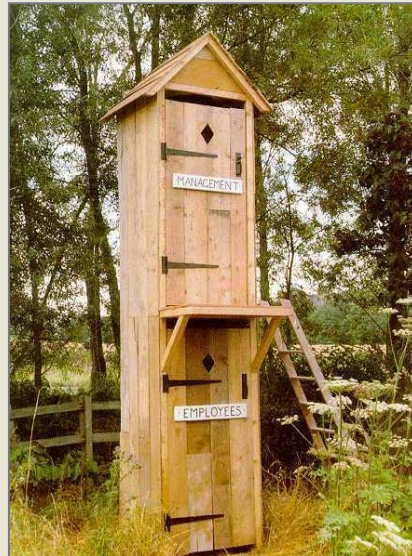


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2. CONTRACTING 101

A Simplified Case Study

OTTO'S OUTHOUSE



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2. CONTRACTING 101

A Simplified Case Study

OTTO'S OUTHOUSE

- Define: A new outhouse approx. 100 feet from an existing rural residence. Not pretentious; a quality and esthetic consistent with the residence. The building shall be 4 feet square and 8 feet tall, a single door and one interior seat. Wood frame construction, exterior wood siding, and sloped roof with asphalt composition shingles. See Specifications for details.
- Budget: Total project costs of approx. \$1,000.
- Schedule: We need to have this new construction completed before the end of this year.



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2. CONTRACTING 101

A Simplified Case Study

OTTO'S OUTHOUSE

- Contract: We intend to construct this project under a traditional Design-Bid-Build scenario, with a construction manager as advisor.
- Coordinate: We will have a construction manager as advisor to the owner who stewards the project from beginning to end, coordinating design professionals, soliciting bids, facilitating contract agreements, processing payments, and verifying conformance.
- Verify: The construction manager will process payment applications, conduct site visits at pre-defined hold points and conduct a final walk-through with the general contractor.



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2. CONTRACTING 101

A Simplified Case Study

SCOPE OF WORK & SPECIFICATIONS

1. Excavation: Strict conformance with National Outhouse Builders Association (NOBA) *Manual of Practice* for excavation.
2. Walls
 - A. Materials: Top quality lumber. Non-corrosive fasteners.
 - B. Workmanship: Strict conformance with NOBA *Manual*.
3. Roof
 - A. Materials: GAF roofing materials. Style selected by Owner.
 - B. Workmanship: Conform with manufacturers instructions.
4. Signage: See photograph
5. Paint
 - A. Paint Materials: Matched primer and two top coats from a national manufacturer.
 - B. Sealant Materials: Shall conform with ASTM C920
 - C. Workmanship: Strict conformance with manufacturer's recommendations.



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2. CONTRACTING 101

A Simplified Case Study

SCHEDULE OF VALUES

#	Scope	Milestone	Value	PMT #1	PMT #2	PMT #3	Total Paid
1	Excavation	200	250	0	0	0	0
2	Walls *1	200	300	0	0	0	0
3	Roof	200	200	0	0	0	0
4	Signage*2	100	50	0	0	0	0
5	Paint*3	100	100	0	0	0	0
6	Complete	200	100	0	0	0	0
7	Total	1,000	1,000	0	0	0	0
8	-	-	-	-	-	-	-
9	CO#1	-	-	-	-	-	-
10	CO#2	-	-	-	-	-	-
11	CO#3	-	-	-	-	-	-
12	CO#4	-	-	-	-	-	-
13	-	-	-	-	-	-	-
14	Total	-	-	-	-	-	-



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2. CONTRACTING 101

A Simplified Case Study

FINAL PAYMENT APPLICATION

Notes:

- (1.) Allowance of \$30 for hardware.
- (2.) Allowance of \$40 for signs.
- (3.) Allowance of \$40 for material.
- (4.) Exclusion - Ladder

#	Scope	Value	PMT #1	PMT #2	PMT #3	Total Paid
1	Excavation	250	200	50	0	250
2	Walls *1	300	30	270	0	300
3	Roof	200	0	200	0	200
4	Signage*2	50	0	50	0	50
5	Paint*3	100	0	0	100	100
6	Complete	100	0	0	100	100
7	Total	1,000	230	570	200	1,000
8	-	-	-	-	-	-
9	CO#1: Hardware	10	10	-	-	10
10	CO#2: Delete Signs	-50	-	-50	-	-50
11	CO#3: Paint	60	-	-	60	60
12	CO#4: Landscaping	100	-	-	100	100
13	-	-	-	-	-	-
14	Total	1,120	240	520	360	1,120



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Introduction

Poor work by property improvement contractors is often the one of the number one consumer complaint in the U.S. Our company often works for insurance companies, lawyers and owners in disputes over construction projects gone bad, so this is no surprise to us. Our experience is that only a small percentage of contractors involved in property maintenance or improvement are unscrupulous; unfortunately, many are so incompetent that they might as well be stealing.

Large maintenance projects should be considered “construction projects”, and managed with professionalism and processes. Due-diligence for property managers often requires the collection of apples-to-apples bids for maintenance, repairs, and improvements; overcoming the difficulty of getting comparable proposals from contractors requires tremendous effort and professionalism. This article series offers a process through the planning and purchase of construction services to help you avoid common pitfalls that can lead to project shortcomings, physical defects, delays, cost over-runs, legal disputes and headaches.

For the sake of discussion, we are talking about projects for maintenance or repairs of \$2,000 to \$200,000. For larger projects, we recommend professional construction-management help. In truth, we feel projects of \$50,000 or less can be well served with professional help on budgets, bidding, contractor selection, contract development, coordination and inspection, but many owners or managers refuse to incur the front-end expense, not having the experience to recognize total project savings.

Growing legal risks, administrative issues, skyrocketing workers’ compensation costs,

increasing fees and taxation, and complicated insurance issues are only a few of the reasons why the price of construction is higher today than ever before. Since the prices are so high, saving a small percentage of total project costs can be quite meaningful. In addition, managing risk and facilitating a smooth operation are reasons enough to use a system for the management of your project. Don’t rely on contractors to act professionally – if they do, let it be a pleasant surprise, and when some don’t, have a system in place to manage the problem.

The quality of contractors ranges from excellent to criminally incompetent, which can make the process range from complex but satisfying, to nightmarish and costly. Sadly, nice but incompetent contractors might cost the owner more than a competent criminal. If you use a process to guide you in dealing with problem contractors and project pitfalls, success is more likely. Planning is the key. The right activities at the beginning of the project will equip you to deal with the incompetent or the unscrupulous.

Our System

1. Define the Scope of Work (this includes the design phase).
2. Budget: Identify how much the project will cost the contractor and owner.
3. Schedule when the construction will happen (and share this information).
4. (K) Contract: Who is doing what? Everyone should know what to expect.
5. Coordinate the work.
6. Verify, document and communicate that everyone is doing what they should.

I. Define the Scope of Work

The “Define” phase of construction management consists of documenting the work to be performed. This can be done graphically and in writing with plans, specifications and detailed “Scope of Work” documents. Getting a clear, specific and detailed project scope is the first step in the construction project management process.

A complete, detailed Scope of Work document moves the parties toward mutual understanding of what is being bought and sold. We have worked on many projects where the owner and the contractor were in dispute, and the root cause was a lack of clarity from the beginning. A maintenance or improvement project with a good “scope of work” is like building on a proper foundation. A good scope of work should identify the quantities and locations (“scope”) of work as well as methods to be employed or standards of workmanship.

Until you have specified in writing the location, size, shape, materials, fixtures and workmanship you are envisioning for your project, you are not ready to move forward in the planning process. We suggest creating your own scope of work document, and updating it as necessary throughout the process.

Keep in mind that the method used can mean the difference between long term success and failure. As an example, the right paint specifications can double the life of a paint job.

For many reasons, you should not sign a one or two page “Proposal” from a contractor for a significant property improvement or repair. The Scope of Work will not likely be adequate to clearly define the work specifically enough to protect you if the workmanship is poor and the contract language will not benefit or protect the owner like a contract generated specifically on your behalf. See the next two articles in this

series for a more complete discussion of the importance of good construction contracts.

II. Budget

We don’t have time here to discuss the estimating and budgeting process in detail, but a good estimate for construction is based on lots of assumptions, including most importantly, the scope of work. If the scope is a moving target, so will the construction costs. Direct costs of construction are usually categorized by Labor, Materials, Equipment and Subcontractors. Most good contractors estimate what they think construction costs will be, and then add for overhead, profit, other project costs and contingency, to come up with a contract price.

Total construction cost is made up of so many little pieces that it easily becomes incomprehensible without a management system. We have worked on projects in dispute where the records were maintained so poorly that it was impossible to determine the exact costs of construction. Don’t let yourself be the victim of a contractor’s lack of sophistication.

The importance of managing the budget cannot be understated. Before, during and after construction you should know where you stand relative to the budget. During the course of construction you should know exactly what you have paid and the approximate remaining amount you will pay to complete the project.

III. Schedule

A schedule can take many forms, but the simplest is a list of activities and when they will be performed. For property maintenance or improvement schedules we usually use bar charts. A competent contractor should be willing to put a schedule in writing. The owner can add some contingency time of their own, but the schedule can give everyone an idea of what will go on and when. The schedule will serve as a measuring stick to compare plan to

actual progress, and with this tool everyone can identify problems early.

Scheduling is about communication. Successful project management requires communication of expectations with everyone involved: owner(s), designers, contractor(s), government agencies, subcontractors, suppliers, and more. Each activity in construction is usually pretty simple; the greatest difficulty is often in coordination of so many parties. There are often more things to do and coordinate than people can keep organized in their head. Unfortunately, many property maintenance or improvement projects never have a schedule put to paper.

IV. Contract

A contract is a binding agreement. It should be used as a communication tool to make sure that all parties understand and agree exactly what is being bought and sold. Like any other powerful tool, it can be dangerous, so be careful. Don't let the excitement of a big project, a smooth talking contractor, or a busy schedule allow you to gloss over the details.

A prime construction contract is an agreement between the owner and a contractor. A subcontract is an agreement between a prime contractor and some other contractor who will perform all or a portion of the work covered in the prime contract. Thus, if you contract directly with a "subcontractor" like a painter, this is not a subcontract; it is a prime contract. Prime and subcontractors have different rights and responsibilities. Unfortunately, some prime and sub-contractors do not operate professionally. All contracts for construction should be in writing. We will be dedicating an entire article to the topic in this series, so we will just hit the high-points here.

At a minimum, construction contracts need:

- Full contact information for all parties to the agreement, including contractor license

information, physical location of all parties, and a description of the property in question.

- Detailed "Scope of Work" with material, equipment and workmanship specs. This might include plans, and written description of the work in detail, a list of fixtures, etc...
- Contract Price
- Payment Schedule
- Construction Schedule and any consequences for failure.

Change Orders are a natural part of construction and a contingency for them should be built into the budget. Change orders become a part of the construction contract, should always be in writing, and should be negotiated and signed at the time the change occurs, not at the end of the project.

A payment schedule should be negotiated at the time the contract is signed. Try to never pay more than the value of the work in place. That is, if the project is 50% complete and you have paid 75% of the contract price, then you are in a dangerous position.

Contractors' lien rights are a complicated collection of legal protections to make sure contractors get paid for improving property. Collection of lien releases verifies that contractors have been paid and protects the property from liens.

V. Coordinate

The "coordinate" phase of construction management takes our planning and puts it to work. We spend a lot of time and energy in the define, budget, schedule, and contract phases, even though we get none of the satisfaction of seeing physical work take place. Remember: When the time to perform has arrived, the time to prepare has passed. If you effectively defined, budgeted, scheduled, and contracted the project, then this phase will go as smoothly as construction ever goes (so there will still be some problems to solve). Coordination of

contractors, subcontractors, materials, equipment, inspections, changes, unforeseen conditions, personalities and forces of nature is always a challenge.

In addition to the real “work” of a construction project, the coordination phase is where the miscommunication, screaming matches, fistfights, litigation and endless frustration often occur; we could also call this phase “Herding Cats”. Stewarding a project from beginning to end requires a combination of construction knowledge, management, sophistication, and patience. While construction is usually a simple assemblage of labor, material, equipment and subcontractors, there are so many moving parts that things regularly can and do go wrong. Management of construction requires effective communication. Let’s make this as clear as possible: COMMUNICATE, COMMUNICATE, COMMUNICATE (in writing!).

You need to have a filing system for your project and religiously document and file all information. Forms that might be used and/or updated include: Scope of Work, Finish Schedule(s) , Budget, Project Schedule, Change Orders, Purchase Orders, Contacts List, Daily Reports / Log (who did what, how long it took, noteworthy conversations, etc...), Safety / Accident Reports, Inspection Check-Lists, Municipal inspection (card) information We don’t have time here to explain all of this in detail, but if you search on the internet for “construction” followed by the term you do not understand, it will not take long to find an explanation and example form.

VI. Verify

Verifying that the construction is proceeding as planned is critical. This is where we compare our progress to plan. Big problems start small. When we find variations from plan, we use our documentation system to memorialize them. Remember that contractors have become the #1

consumer complaint in the U.S.; if you do not want to be a sad statistic, then problems need to be nipped-in-the-bud.

The building department might want to see the project at specified points for life-safety issues. If your contractor tells you that no permit is required, ask them to put this fact in writing or call the building department. Remember: The building department is not where inspection ends; we have listened to scores of people bemoaning their fate saying, “Where were the city inspectors?”, when they had buildings that leaked or were constructed poorly. Someone needs to “verify” at various hold-points to ensure the quality of workmanship. There may be critical assemblies like roofs, decks, windows or weather-resistive assemblies that should be tested to make sure they will perform.

The contractor will be asking for payment draws based on the Payment Schedule and you will need to verify the work is complete and built to the standards from the “define” phase. In addition, the owner will want to collect lien releases for work that is completed and paid.

Conclusion

To really prepare for a big project, be sure to read the next four articles in the series. They will go into more detail about maintaining control during this complicated process of maintaining or improving your property. Remember: 1. Use a system to document your objectives and the process of construction, in writing. 2. Communicate with all of the players in the process. 3. Put everything in writing: People are more committed and more accountable when they have put all their promises in writing.

Good Luck!

3. DBSKCV CM METHOD



3. DBSKCV CM METHOD

DBSKCV CM Method

1. Overview
2. Menu of Deliverables
3. Define
4. Budget
5. Schedule
6. (K) Contract
7. Coordinate
8. Verify



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3. DBSKCV CM METHOD

Overview

- Define the Scope of Work (this includes the design phase).
- Budget: identify how much the project will cost the contractor and owner.
- Schedule when the construction will happen (and share this information).
- Contract (K): Who is doing what? Everyone should know what to expect.
- Coordinate the construction.
- Verify, document and communicate that everyone is doing what they should.



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3. DBSKCV CM METHOD

Menu of Deliverables

Define

Plans
Details
Schedules
RFI
Scope of Work

Verify

Inspection Checklists
Field Reports
Hold Points
Punch Lists

DBSKCV Method

Define	
Excavation	Excavation Manual (2014), NOBA Manual (2014)
Walls	Excavation Manual (2014), NOBA Manual (2014)
Roof	Excavation Manual (2014), NOBA Manual (2014)
Other	Excavation Manual (2014), NOBA Manual (2014)
Verify	
Excavation	Excavation Manual (2014), NOBA Manual (2014)
Walls	Excavation Manual (2014), NOBA Manual (2014)
Roof	Excavation Manual (2014), NOBA Manual (2014)
Other	Excavation Manual (2014), NOBA Manual (2014)

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3. DBSKCV CM METHOD

Define

- Excavation: Strict conformance with National Outhouse Builders Association (NOBA) Manual of Practice for excavation.
- Walls
 - Materials: Top quality lumber. Non-corrosive fasteners.
 - Workmanship: Strict conformance with NOBA Manual.
- Roof
 - Materials: GAF roofing materials. Style selected by Owner.
 - Workmanship: Conform with manufacturers instructions.

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3. DBSKCV CM METHOD

Define

- Signage: See photograph
- Paint
 - Paint Materials: Matched primer and two top coats from a national manufacturer.
 - Sealant Materials: Shall conform with ASTM C920
 - Workmanship: Strict conformance with manufacturer's recommendations.

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3. DBSKCV CM METHOD

Define

Some years ago, Congress tasked the National Research Council to study the issue of cost growth of construction contracts.

Conclusions from that study determined that there was no perfect or complete set of specifications and drawings.

The reality is that most projects are not really “design-bid-build,” but rather “design-bid-build-figure out the design-build-change the design-build-argue over the design-build”

- Construction Claims On-Line

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3. DBSKCV CM METHOD

Budget

MILESTONES VS. VALUES

Notes:

- (1.) Allowance of \$30 for hardware.
- (2.) Allowance of \$40 for signs.
- (3.) Allowance of \$40 for material.
- (4.) Exclusion - Ladder

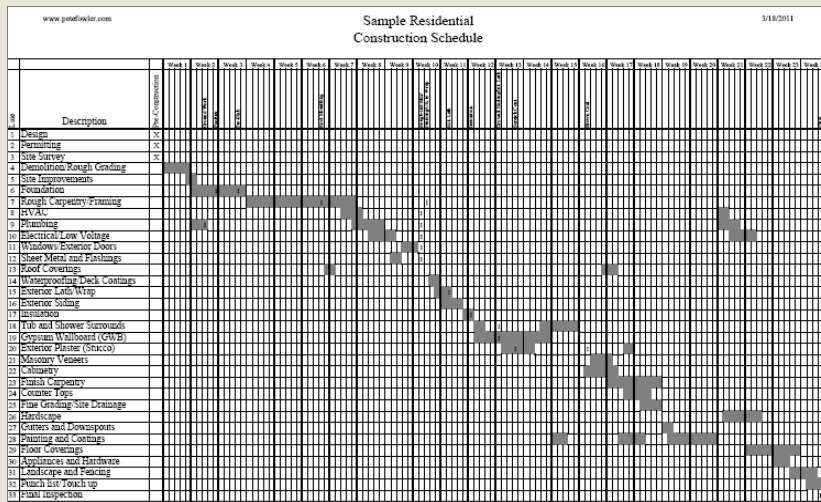
#	Scope	Milestone	Value	PMT #1	PMT #2	PMT #3	Total Paid
1	Excavation	200	250	0	0	0	0
2	Walls *1	200	300	0	0	0	0
3	Roof	200	200	0	0	0	0
4	Signage*2	100	50	0	0	0	0
5	Paint*3	100	100	0	0	0	0
6	Complete	200	100	0	0	0	0
7	Total	1,000	1,000	0	0	0	0
8	-	-	-	-	-	-	-
9	CO#1	-	-	-	-	-	-
10	CO#2	-	-	-	-	-	-
11	CO#3	-	-	-	-	-	-
12	CO#4	-	-	-	-	-	-
13	-	-	-	-	-	-	-
14	Total	-	-	-	-	-	-



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3. DBSKCV CM METHOD

Schedule



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3. DBSKCV CM METHOD

Schedule

#	Description	Weeks						
		Duration	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
1	Pre-construction							
2	Plan development	1	█					
3	Permit Process	1		█				
4	Contractor Approval	2	█	█				
5	Contact Development	1			█			
6								
7	Construction							
8	02-300 Grading & Excavation	1				█		
9	06-100 Framing	1					█	
10	07-300 Roofing	1						█
11	01-710 Final Clean-Up	1						█
12								
13								



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3. DBSKCV CM METHOD

(K) Contract

**DON'T SIGN A CONTRACT
CREATED BY THAT
CONTRACTOR!**

If you only learn one thing today, this is that one thing.



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3. DBSKCV CM METHOD

(K) Contract

- Con·trac·tor 1: one that contracts or is party to a contract: as a: one that contracts to perform work or provide supplies b: one that contracts to erect buildings.
- Con·tract 1: to agree upon
- Documented negotiation
- A contract is a binding agreement. It should be used as a communication tool to make sure that all parties understand and agree exactly what is being bought and sold.

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3. DBSKCV CM METHOD

(K) Contract

- Think like The One Minute Manager: What does good performance look like? What are the rewards for good performance? What are the ramifications for poor performance?
- Operating from a position of strength.
- Make sure you know and live by The Golden Rule: The one who has the gold makes the rules.

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3. DBSKCV CM METHOD

(K) Contract

- SCOPE OF WORK: Definition of what is being bought and sold. References to plans, specification, prescriptive specifications, performance specifications, substitutions. Allowances.
- IMPLIED TERMS: Owner Obligations: Site Access, Timely Review, Timely Access, Not Interfere, Coordinate Consultants, Timely Furnish Owner Equipment, Timely Inspection. Contractor Obligations: Cooperate with Owner, Quality Construction, Work to Conform with Contract Documents, Coordinate Trade Contractors, Field Coordination.

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3. DBSKCV CM METHOD

(K) Contract

- PAYMENT TERMS: Invoice Requirements: Lien Releases, Schedule Updates. Approvals. Retention. Final Invoices: O & M Manuals, As-Built Drawings, Insurance Certificates, Written Warranties. Right to Suspend for Non-Payment. Right to Withhold Payments: 150% of Amounts in Dispute.
- INDEMNIFICATION: Purpose: Reassign, consolidate or transfer risks. Types of Clauses - Limited: Each party is responsible for their share; Intermediate: One party will pay for all damages if it is partly responsible; Broad Form: One party will pay for all damages even if they have not caused any of the damages. Illegal in many states.

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3. DBSKCV CM METHOD

Coordinate

- Project Kick-Off Meeting
- Hold Point: Excavation Complete
- Approve Roofing Materials
- Hold Point: Flashing & Sheetmetal
- Approve Change Orders



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3. DBSKCV CM METHOD

Coordinate

CHANGE ORDERS

- Change Orders are a natural part of construction and a contingency for them should be built into the budget.
- Change orders become a part of the construction contract, should always be in writing, and should be negotiated and signed at the time the change occurs, not at the end of the project.



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3. DBSKCV CM METHOD

Coordinate



Scope	Budget	Actual	Schedule
1. Item 1	\$ XXX	\$ XXX	Plan/Actual
2. Item 2	\$ XXX	\$ XXX	Plan/Actual
3. Item 3	\$ XXX	\$ XXX	Plan/Actual
4. Item 4	\$ XXX	\$ XXX	Plan/Actual
5. Item 5	\$ XXX	\$ XXX	Plan/Actual
6. TOTAL	\$ X,XXX	\$ X,XXX	



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3. DBSKCV CM METHOD

Coordinate

CHANGE ORDERS

SE-480 Construction Change Order 07/01 Edition

AGENCY: _____

PROJECT: _____ (Name)
Plumbing Paint

CHANGE ORDER NO.: _____

1. Change Order Control: Enhance Project Corrected Condition Design Completion Designer Request Reduce Cost Schedule Change Design Correction Other

2. Description of the Change Order, and the proposed adjustments in Contract Scope: (Reference any attachments by name and date)

3. Adjustments in the Contract Sum: (The overhead and profit combined shall not exceed the values allowed in the Contract)

a. Original Contract Sum: _____

b. Change by Previously Approved Change Orders: _____

c. Contract Sum prior to this Change Order: _____

d. Amount of this Change Order, including overhead and profit: _____

e. New Contract Sum, including this Change Order: _____

4. Adjustments in Contract Time:

a. Original Date for Substantial Completion: _____

b. Change in Days by Previously Approved Change Orders: _____ Days

c. Change in Days for this Change Order: _____ Days

d. New Date for Substantial Completion: _____

3. Adjustments in the Contract Sum: *(The overhead and profit combined shall not exceed the values allowed in the Contract)*

a. Original Contract Sum: _____

b. Change by Previously Approved Change Orders: _____

c. Contract Sum prior to this Change Order: _____

d. Amount of this Change Order, including overhead and profit: _____

e. New Contract Sum, including this Change Order: _____

4. Adjustments in Contract Time:

a. Original Date for Substantial Completion: _____

b. Change in Days by Previously Approved Change Orders: _____ Days

c. Change in Days for this Change Order: _____ Days

d. New Date for Substantial Completion: _____



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3. DBSKCV CM METHOD

Coordinate

CHANGE ORDERS

- What Does the Contract Say?
- Refer to the Scope of Work
- Frequency
- Causes
- Changes in Scope
- Changes in Cost
- Changes in Time
- Authorization
- Accounting for Change Orders
- Disputes
- How To



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3. DBSKCV CM METHOD

Verify

- Hold Points
- Inspections
- Documentation
- Lien Releases
- Payment Processing
- Project Close



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The DBSKCV™ Construction Management Method

What is this DBSKCV™ “Method”?

Since the time of the ancient Greeks, humans have been creating and using problem solving “methods” to help us structure situations to aid in identifying the best available alternatives. Some examples of these methods include:

- Classic Problem Solving (Where are we? Where are we going? How do we get there?)
- Scientific Method (Observe, Hypothesize, Predict, Test, Repeat)
- Alcoholics Anonymous’ 12-Steps (admit, believe, decide, inventory, confess, prepare, ask, list, amends, continue inventory, pray for knowledge, help)
- Dr. Deming’s 14-Points for Quality Management (purpose, philosophy, variation, suppliers, improvement, training, leadership, fear, barriers, slogans, eliminate MBO, workmanship, self-improvement, transformation)
- Six Sigma for Process Improvement (Define, Measure, Analyze, Improve, Control)
- Franklin Covey’s Project Management Method (Visualize, Plan, Implement, Close)
- Project Management Institute’s 9 Project Management Categories (Management of Scope, Time, Cost, Human Resource, Risk, Quality, Procurement, Communication, Integration)
- ASTM Standards: E 2018 Property Condition Assessments, E 2128 Standard Guide for Evaluating Water Leakage of Building Walls, E 1739 Guide for Risk Based Corrective Action.

The DBSKCV™ (pronounced “dib-skiV” - DiB-SKCiV) Method is a six-category framework to aid construction professionals in achieving construction project objectives. The DBSKCV™ Method begins with a

Project Plan (Figure 1), which starts with identification of the project Objective. We then use the *DBSKCV™ Menu of Deliverables* (Figure 2) as a menu to select documents or actions that will aid us in moving from where we are to our stated objective. The final step in project planning is to create a step-by-step list of actions. First we plan the work, and then we work the plan. Take a minute or two to review the plan and menu.

This is harder than it sounds. Construction people have a bias toward action; which is a good thing – we like to see things happen. But we need to resist the temptation to do work before planning. This way, we can be sure to not waste time on unnecessary activity, which is a common source of project failure.

What is Construction Management (CM)?

The Construction Management Association of America (CMAA) says the 120 most common responsibilities of a Construction Manager fall into the following 7 categories: 1. Project Management Planning, 2. Cost Management, 3. Time Management, 4. Quality Management, 5. Contract Administration, 6. Safety Management and 7. CM Professional Practice. This includes specific activities like defining the responsibilities and management structure of the project management team, organizing and leading by implementing project controls, defining roles and responsibilities and developing communication protocols,

and identifying elements of project design and construction likely to give rise to disputes and claims.

Why is Construction and Construction Management Important?

Construction professionals are living in a new world. The following social & economic realities make construction, CM and professionalism in construction critical:

- Building construction is a fundamental component of human society.
- Construction constitutes nearly 10% of Gross Domestic Product (GDP).
- Consumers are expecting quality increases and price decreases in all products.
- The building industry, in general, is not keeping pace with the quality and price improvements that many industries are making.
- The building industry is not attracting the brightest young people into the industry.
- Consumers are more litigious than ever and are becoming more and more so.
- There is a proliferation of attorneys.
- The built-environment has been altered dramatically in the last 20 years.
- Consumers are more conscious of building related health issues than ever.
- In some areas, a lack of skilled construction labor makes the construction professional's job even more critical.

Project Planning and Management

There is no way to 100% guarantee project success. The closest I have found to a guarantee (and I have been looking long and hard) is to hire highly experienced geniuses, or to use a proven **system**. So if you are not a genius, or can not afford an entire team of them, you better read on.

It is also my experience that **planning always saves time**. As I mentioned before, construction people want to see things happen and it takes discipline to resist the temptation to start working before completing the Project Plan. Remember: Planning is the closest we can get to a guarantee of project success.

Growing legal risks, administrative issues, sky-rocketing workers' compensation costs, increasing fees and taxation, and complicated insurance issues are only a few of the reasons why the price of construction is higher today than ever before. In addition, managing risk and facilitating a smooth operation are reasons enough to use a system for the management of your project.

We have all heard the adage: "Good people are hard to find." I think good companies are even harder to find. All great businesses create systems that help good people achieve the goals of the company. Most companies, particularly in the construction industry, rely on individuals to develop their own systems. This means the individual has to be some kind of genius. Geniuses **are** hard to find, but not as hard to find as good companies with good systems.

The construction industry is attracting fewer "geniuses" than other industries. We need to make it easier for construction managers to succeed, giving them tools and techniques to keep promises, balancing the big three (cost, quality, and time), to offer continuously improving value (more quality for less cost and time), and to **earn** the money they could make in competing industries. Teaching construction managers to plan profitable projects and manage them through fruition is a fundamental that the construction industry is not doing well enough.

Dealing with contractors and subcontractors requires skill, professionalism, and a system.

The quality of contractors ranges from excellent to criminally incompetent, which can make the process range from complex but satisfying, to nightmarish and costly. We can not rely on contractors to act professionally – if they do, let it be a pleasant surprise, and when some don't, we must have a system in place to manage the problem. My experience suggests that a nice but incompetent contractor might cost us more than a competent criminal. Don't let yourself be the victim of a contractor's lack of sophistication. If you use a *process* to guide you in dealing with problem contractors and project pitfalls, success is much more likely. The right planning activities at the beginning of the project will equip you to deal with the incompetent or the unscrupulous.

Summary of the DBSKCV™ Method

- Define the Scope of Work (this includes the design phase).
- Budget: identify how much the project will cost the contractor and owner.
- Schedule when the construction will happen and share this information.
- Contract: Who is doing what? Everyone should know what to expect.
- Coordinate the construction.
- Verify, document and communicate that everyone is doing what they should.

Each of these categories could be books by themselves. The idea here is to fly over the subject of Construction Management so that we see the big-picture. We need to understand the forest, so we don't get lost in the trees. Dealing with details before understanding the big picture can be dangerous. In construction, dangerous means expensive.

I. Define the Scope of Work

The "Define" phase of construction management consists of documenting the

work to be performed. This is usually done graphically and in writing with plans, specifications, references to codes and standards, and detailed "Scope of Work" documents. Getting a clear, specific and detailed project scope is the first step in the construction project management process.

See the DBSKCV™ Method Menu of Deliverables (Figure 2) for the most common scope of work documentation. Depending on the type of project, this is sometimes the work of architects and engineers, but many projects are defined by owners and contractors.

Complete, detailed scope of work documentation allows parties a mutual understanding of what is being bought and sold. My company has consulted on many projects where the owner and the contractor were in dispute and the root cause was a lack of clarity from the beginning. A good "scope of work" is like building on a proper foundation and should identify the quantities and locations ("scope") of the work as well as materials, specifications, methods and standards of workmanship. Until you have specified in writing the location, size, shape, materials and workmanship you are envisioning for your project, you are not ready to move forward in the planning process. The "scope of work" (i.e. mutual understanding of what is being bought and sold) should be updated as necessary throughout the project.

Keep in mind that the specifications or methods that are defined in the Scope of Work can mean the difference between long term success and failure. As an example, the right paint specifications can double the life of a paint job. If the owner thinks they are buying a 10-year paint job, but the specification will not deliver, a "re-meeting of the minds" might be called for.

Owners or their representatives should not sign a one or two page "Proposal" from a contractor. The "Scope of Work" in such a document is not likely to contain information specific enough to protect the owner if the workmanship is poor. In addition, the contract language will not protect the parties as well as a more complete and professional contract.

II. Budget

Estimating and budgeting are stand-alone areas of professional practice which some construction professionals dedicate their entire careers to. A good estimate for construction is based on lots of assumptions, including the scope of work. If the scope is a moving target, so will the construction costs. Direct costs of construction are usually categorized by Labor, Materials, Equipment and Subcontractors. Most good contractors estimate what they think direct construction costs will be, and then add for overhead, profit, other project costs and contingency, to come up with a contract price.

Total construction cost is made up of so many little pieces that it can become incomprehensible without a system for management. My company has worked on projects in dispute where the records were maintained so poorly that it was impossible to determine the exact costs of construction.

The importance of managing the budget cannot be understated. Before, during and after construction, the construction manager should always know where the project stands relative to the budget. During the course of construction you should know exactly what has been paid and the approximate amount remaining to complete the project.

Keeping an Expense Register that is coded to allocate all expenses is a critical activity

so the original and updated Schedule of Values can be compared to the actual project expense. A Budget Worksheet (similar to AIA form G703) should be setup at the beginning of the project and maintained through project close.

III. Schedule

A schedule can take many forms, including Barr / Gantt charts, or CPM (Critical Path Method) Schedules, but the simplest is a list of activities and when they will be performed. A competent contractor should be willing to put a schedule in writing. The owner should add some contingency time of her own. The schedule gives everyone an idea of what will go on and when and will serve as a measuring stick to compare plan to actual progress. With this tool, everyone can identify problems early.

Scheduling is about communication. Successful project management requires communication of expectations with everyone involved: owner(s), designers, contractor(s), government agencies, subcontractors, suppliers, and more. Each activity in construction is usually pretty simple; the greatest difficulty is often in coordination of so many parties. There are often more things to do and coordinate than people can keep organized in their heads. Unfortunately, many projects never have a schedule put to paper, or even if they have one at the beginning, it is not used as a management tool throughout construction.

IV. Contract

A contract is a binding agreement. It should be used as a communication tool to make sure that all parties understand and agree exactly what is being bought and sold. Like any other powerful tool, it can be dangerous, so be careful. Don't let the excitement of a

big project, a smooth talker, or a busy schedule allow you to gloss over the details.

A prime construction contract is an agreement between the owner and a contractor. A subcontract is an agreement between a prime contractor and some other contractor who will perform all or a portion of the work covered in the prime contract. Thus, if an owner contracts directly with a “subcontractor” like a painter, this is not a subcontract; it is a prime contract. Prime and subcontractors have different rights and responsibilities. Unfortunately, some prime and sub-contractors do not operate professionally.

All contracts for construction should be in writing. We will hit only the high-points here, but at a minimum, a construction contract should contain:

- Full contact information for all parties to the agreement, including contractor license information, physical location of all parties, and a description of the property in question.
- Detailed “Scope of Work” with material, equipment and workmanship specifications. This might include plans, and written specifications describing the work in detail, a list of fixtures, etc...
- Contract Price (Schedule of Values, Allowance Schedule, etc...)
- Payment Schedule
- Construction Schedule and any consequences for failure.

Change Orders are a natural part of construction and a contingency for them should be built into the budget. Change orders become a part of the construction contract, should always be in writing, and should be negotiated and signed at the time the change occurs, not at the end of the project.

A Payment Schedule should be negotiated at the time the contract is signed. Try to never pay more than the value of the work in place. That is, if the project is 50% complete and you have paid 75% of the contract price, then you are in a dangerous position.

Contractors’ lien rights are a complicated collection of legal protections to make sure contractors get paid for improving property. Collection of lien releases verifies that contractors have been paid and protects the property from liens.

V. Coordinate

The “coordinate” phase of construction management takes our planning and puts it to work. We spend a lot of time and energy in the define, budget, schedule, and contract phases, even though we get none of the satisfaction of seeing physical work take place. Remember: When the time to perform has arrived, the time to prepare has passed. If you effectively defined, budgeted, scheduled, and contracted the project, then this phase will go as smoothly as construction ever goes (so there will still be some problems to solve). Coordination of contractors, subcontractors, materials, equipment, inspections, changes, unforeseen conditions, personalities and forces of nature are always a challenge.

In addition to the real “work” of a construction project, the coordination phase is where the miscommunication, screaming matches, fistfights, litigation and endless frustration often occur; we could also call this phase “Herding Cats”. Managing a project from beginning to end requires a combination of construction knowledge, management skills, political savvy, and patience. While construction is usually a simple assemblage of labor, material, equipment and subcontractors, there are so

many moving parts that things regularly can and do go wrong.

Management of construction requires effective communication. Let's make this as clear as possible: OVER COMMUNICATE, in writing. If you have never read *The One Minute Manager*, do so before you start your next project; it takes less than 2-hours and will save more than that in the first week. The point is: (1.) Figure out what good performance looks like, communicate and document it in writing, and get agreement that everyone shares your vision (One Minute Goals). (2.) Make sure there are rewards for good performance because we all want to feel good about doing good work (One Minute Praisings), and (3.) have the courage to administer consequences for poor performance (One Minute Reprimands).

You need to have a filing system for your project and religiously document and file the mountain of project information. There are things that should be performed regularly to keep the project progressing. Forms that might be used and/or updated include: Scope of Work, Specifications, Finish Schedule(s), Schedule of Values, Budget, Expense Register, Project Schedule, Change Orders, Purchase Orders, Contacts List, Daily Log (who did what, how long it took, noteworthy conversations, etc...), Correspondence, Safety Meeting Minutes, Accident Reports, Inspection Check-Lists, Municipal inspection information, etc.

VI. Verify

Verifying that the construction is proceeding as planned is critical. This is where we compare our progress to plan. Big problems start small. When we find variations from our plan, we use our documentation system to memorialize them. Remember that property improvement contractors have become the #1 consumer complaint in the

U.S.; if you do not want to be a sad statistic, then problems need to be nipped-in-the-bud.

The building department might want to inspect at specified points for life-safety issues. If someone says no permit is required, ask them to put it in writing, or call the municipality. Remember: The building department is not where inspection ends. We have listened to scores of owners bemoaning their fate saying, "Where were the city inspectors?", when they had buildings that leaked or were otherwise constructed poorly. The owner or representative will want to "verify" at various hold-points to ensure the quantity and quality of workmanship. There may be special assemblies like roofs, decks, windows or weather-resistive assemblies that should be tested to make sure they were constructed appropriately.

The contractor will be asking for payments based on the Payment Schedule and you will need to verify the work is complete and built to the standards established in the "define" phase of planning. In addition, the owner will want to collect lien releases for work that is completed and paid.

Conclusion

Remember: 1. Use a system to document your objectives and the process of construction, in writing. 2. Communicate with all of the players in the process. 3. Put everything in writing: People are more committed and more accountable when they have put all their promises in writing.

DBSKCV Method

Project Plan - CM

Objective	Generic Objective: We will complete and deliver the construction project as promised, with the negotiated level of quality, appropriate building performance, within budget and schedule. Based on our professionalism and effectiveness we will have EARNED enthusiastic recommendations from the client, the respect of other skilled professionals with whom we worked, and the profits we had planned for.
------------------	--

Method		
		Description
1	D	Define
2	B	Budget
3	S	Schedule
4	K	Contract
5	C	Coordinate
6	V	Verify
7		
8		
9		
10		

Deliverables				
	Description	Priority	Who	When
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Actions / Tasks / Work Breakdown Structure						
	Description	Priority	Who	When	Time	\$
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
					-	\$ -

Define	
Deliverables	
Project Summary (AIA G806, G808 & G809)	Workmanship / Trade Standards
Project Checklist (AIA D200)	Architect's Supplemental Instructions (AIA G710)
Plans (As-Built, New Work)	Construction Change Directive (AIA G714, G714 CMA)
Details (Plan, Section, Elevation)	RFI (Request for Information) (AIA G716)
Specifications	RFI (Request for Information) Log
Code References	RFP (Request for Proposal)
Building Standards (ASTM, AAMA, Etc.)	Submittal Transmittal
Testing Standards	Submittal Checklist/Log (Shop Drawing & Sample Record AIA G712)
Schedules: Room, Location, Area, Finishes, Equipment, Door, Window, etc.	Scope of Work (Prime & Sub)

Budget	
Deliverables	
Estimate: Feasibility	Expense Log / Check Register
Estimate: Design/Development	Payment / Application for Payment Log (CSI Form)
Estimate: Bid / Proposal	Allowance Schedule
Estimate Back-Up	Budget: Update (Weekly/Monthly)
Budget (Pre-Construction)	Change Order Summary / Log
Schedule of Values / Budget Worksheet (AIA G703)	

Schedule	
Deliverables	
Project Schedule: List	Project Schedule Actual vs. Plan
Project Schedule: Gantt / Bar	Notice to Proceed
Project Schedule: CPM	Work Breakdown Structure (WBS)

(K) Contract	
Deliverables	
Design Contract (AIA B141, B151, B155)	Indemnity Agreement
CM Contract (AIA B801 CMA)	Addenda (Other)
Consultant Agreement (AIA C141, C142, C727)	RFP (Request for Proposal)/Instructions to Bidders (AIA G709, A701)
Prime Contract (incl. Home Improvement) (AIA A101, A105, A107)	Bid Analysis
General Conditions (AIA A201, A201 CMA)	Proposal (incl. Prime K, Scope & Budget)
Contractor's Qualification Statement (AIA A305)	Subcontract (AIA A401)
Bid, Performance and Payment Bonds (AIA A310, A312)	Work Changes Proposal Request (AIA G709)
Supplemental Conditions (AIA A511)	Change Order (AIA G701, G701 CMA)
Insurance Requirements	Purchase Order

Coordinate	
Deliverables	
Project Plan	Materials List
Correspondence (Letter, Fax, Memo, E-Mail) (AIA G810)	Meeting Agenda
Communication Log	Meeting Minutes
Daily Log	Project Contacts (AIA: Subs G805, Team Directory G807)
Project File (Table of Contents)	One Minute Goals (via One Minute Manager)

Verify	
Deliverables	
Inspection Check-Lists	Safety Plan & Meeting Minutes
Inspection Documentation / Field Report (AIA G711)	Accident / Incident Reports
Municipal Inspection Documents	Timesheets
Hold Points	Punch List
Payment Schedule	Project Close Documents
Application for Payment (AIA G702/703, G702 CMA)	Certificate of Substantial Completion (AIA G704, G704 CMA)
Lien Releases (AIA G70)	Insurance & Additional Insured Endorsements
Contractor's Affidavit of Payment of Debts (AIA G706)	

DBSKCV Method Project Plan - CM Sample

Objective	Generic Objective: We will complete and deliver the construction project as promised, with the negotiated level of quality, appropriate building performance, within budget and schedule. Based on our professionalism and effectiveness we will have EARNED enthusiastic recommendations from the client, the respect of other skilled professionals with whom we worked, and the profits we had planned for.
------------------	--

Method			
		Description	
1	D	Define	The project is a 4,200 SF commercial tenant improvement.
2	B	Budget	The contract price is \$168,000.
3	S	Schedule	The Project Schedule allows for 4 months to complete.
4	K	Contract	The contract is a standard AIA Form Fixed Price Agreement.
5	C	Coordinate	The plans are now in plan check, and should be ready in 2 weeks.
6	V	Verify	Hold points include paint color sign-off, and the Payment Schedule is monthly.
7			
8			
9			
10			

Deliverables					
		Description	Priority	Who	When
1		Plans	A	ARCH	IP
2		Scope of Work	A	PF	Done
3		Schedule of Values	B	PF	Done
4		Finish Schedule	B	PF	Done
5		Budget Worksheet	B	KL	This Week
6		Allowance Schedule	B	KL	Next Week
7		Project Schedule	B	PF	Next Week
8		Prime Contract	Done	PF	Done
9		Subcontracts (Drywall, ELEC, PLMG, Paint, Cleiling, Flooring)	B	KL	Soon
10					

Actions / Tasks / Work Breakdown Structure							
		Description	Priority	Who	When	Time	\$
1		Call city to check on plans	A		This Week	0.5	
2		Compose Scope of Work document	A	PF	Done		
3		Port Schedule of Values to Budget Worksheet	B	KL	This Week	1.0	
4		Update Finish Schedule by room	B	PF	Done		
5		Create Allowance Schedule and Forward to Owner	B	KL	Next Week	2.0	
6		Create Project Schedule and forward to owner	B	PF	Next Week	2.0	
7		Lay-Out subcontracts & generic Scope of Work	B	KL	Next Week	5.0	
8		Coordinate with subcontractors and deliver information	B	KL	Next Week	8.0	
9		Finalize subcontract for Drywall	B	KL	Soon	4.0	
10		Finalize subcontract for ELEC	B	KL	Soon	4.0	
11		Finalize subcontract for PLMG	B	KL	Soon	4.0	
12		Finalize subcontract for Paint	B	KL	Soon	4.0	
13		Finalize subcontract for Ceiling	B	KL	Soon	4.0	
14		Finalize subcontract for Flooring	B	KL	Soon	4.0	
15		Prepare for project kick-off	B	PF	Soon	4.0	
16							
17							
18							
19							
20							
						46.5	\$ -

4. KEY CONSTRUCTION DOCUMENTS



General Conditions of the Contract for Construction AIA Document A201 - 1997 1997 Edition - Electronic Format

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4. KEY CONSTRUCTION DOCUMENTS

Overview

KEY DOCUMENTS

- | | |
|------------------------------|--|
| 1. Plans | 14. General Conditions to the Contract |
| 2. Specifications | 15. Subcontract |
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| 8. Allowance Schedule | 21. Application for Payment |
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| 12. Prime Contract | 25. Inspection Documentation |
| 13. Contract Addenda | |



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4. KEY CONSTRUCTION DOCUMENTS

Case Study

Otto's Schedule of Values and 3 Applications for Payment

Our Simplified Case Study: Otto's Outhouse



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4. KEY CONSTRUCTION DOCUMENTS

Schedule of Values

Notes:

- (1.) Allowance of \$30 for hardware.
- (2.) Allowance of \$40 for signs.
- (3.) Allowance of \$40 for material.
- (4.) Exclusion - Ladder

#	Scope	Milestone	Value	PMT #1	PMT #2	PMT #3	Total Paid
1	Excavation	200	250	0	0	0	0
2	Walls *1	200	300	0	0	0	0
3	Roof	200	200	0	0	0	0
4	Signage*2	100	50	0	0	0	0
5	Paint*3	100	100	0	0	0	0
6	Complete	200	100	0	0	0	0
7	Total	1,000	1,000	0	0	0	0
8	-	-	-	-	-	-	-
9	CO#1	-	-	-	-	-	-
10	CO#2	-	-	-	-	-	-
11	CO#3	-	-	-	-	-	-
12	CO#4	-	-	-	-	-	-
13	-	-	-	-	-	-	-
14	Total	-	-	-	-	-	-



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4. KEY CONSTRUCTION DOCUMENTS

Payment Application #1

Notes:

- (1.) Allowance of \$30 for hardware.
- (2.) Allowance of \$40 for signs.
- (3.) Allowance of \$40 for material.
- (4.) Exclusion - Ladder

#	Scope	Value	PMT #1	PMT #2	PMT #3	Total Paid
1	Excavation	250	200	0	0	200
2	Walls *1	300	30	0	0	30
3	Roof	200	0	0	0	0
4	Signage*2	50	0	0	0	0
5	Paint*3	100	0	0	0	0
6	Complete	100	0	0	0	0
7	Total	1,000	230	0	0	230
8	-	-	-	-	-	-
9	CO#1: Hardware	10	10	-	-	10
10	CO#2: Delete Signs	-	-	-	-	-
11	CO#3: Paint	-	-	-	-	-
12	CO#4: Landscaping	-	-	-	-	-
13	-	-	-	-	-	-
14	Total	1,010	240	-	-	240



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4. KEY CONSTRUCTION DOCUMENTS

Payment Application #2

Notes:

- (1.) Allowance of \$30 for hardware.
- (2.) Allowance of \$40 for signs.
- (3.) Allowance of \$40 for material.
- (4.) Exclusion - Ladder

#	Scope	Value	PMT #1	PMT #2	PMT #3	Total Paid
1	Excavation	250	200	50	0	250
2	Walls *1	300	30	270	0	300
3	Roof	200	0	200	0	200
4	Signage*2	50	0	50	0	50
5	Paint*3	100	0	0	0	0
6	Complete	100	0	0	0	0
7	Total	1,000	230	570	0	800
8	-	-	-	-	-	-
9	CO#1: Hardware	10	10	-	-	10
10	CO#2: Delete Signs	-50	-	-50	-	-50
11	CO#3	-	-	-	-	-
12	CO#4	-	-	-	-	-
13	-	-	-	-	-	-
14	Total	960	240	520	-	760



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4. KEY CONSTRUCTION DOCUMENTS

Payment Application #3

Notes:

- (1.) Allowance of \$30 for hardware.
- (2.) Allowance of \$40 for signs.
- (3.) Allowance of \$40 for material.
- (4.) Exclusion - Ladder

#	Scope	Value	PMT #1	PMT #2	PMT #3	Total Paid
1	Excavation	250	200	50	0	250
2	Walls *1	300	30	270	0	300
3	Roof	200	0	200	0	200
4	Signage*2	50	0	50	0	50
5	Paint*3	100	0	0	100	100
6	Complete	100	0	0	100	100
7	Total	1,000	230	570	200	1,000
8	-	-	-	-	-	-
9	CO#1: Hardware	10	10	-	-	10
10	CO#2: Delete Signs	-50	-	-50	-	-50
11	CO#3: Paint	60	-	-	60	60
12	CO#4: Landscaping	100	-	-	100	100
13	-	-	-	-	-	-
14	Total	1,120	240	520	360	1,120



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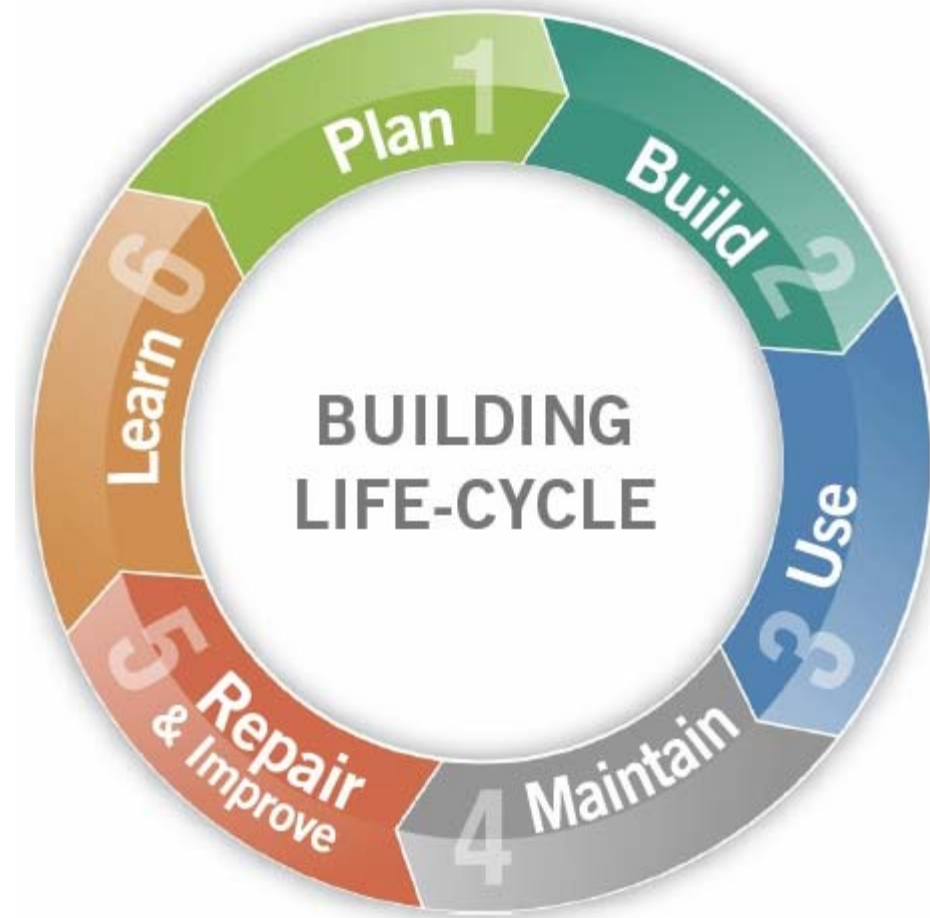
4. KEY CONSTRUCTION DOCUMENTS

What To Study

- PFCS Contracting 101 – 2008. 257 pages
 - AIA 101 Prime Contract
 - AIA 201 General Conditions
- AGC 200 Prime Contract and General Conditions
- PFCS The DBSKCV Construction Management Method whitepaper
- PFCS Managing Property Maintenance, Repair and Improvement whitepaper
- PFCS Managing Construction Quality whitepaper



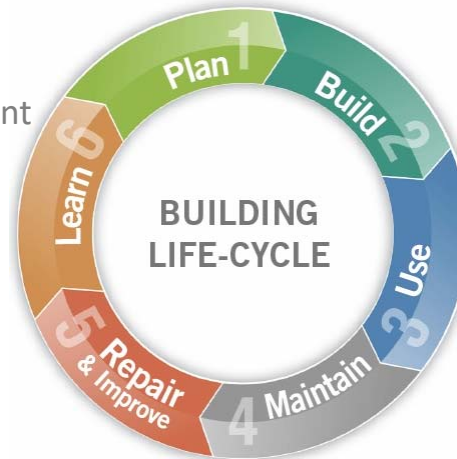
5. BUILDING LIFECYCLE MANAGEMENT



5. BUILDING LIFECYCLE MANAGEMENT

BLM Defined

PFCS Definition of Building Lifecycle Management:
 Actions taken with the intent of making intelligent, proactive decisions about building design, construction, use, maintenance, repair, and improvement, all while considering the entire service-life of the property.



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5. BUILDING LIFECYCLE MANAGEMENT

Deep Thoughts

- Buildings are really expensive.
- Buildings are complicated.
- Building performance evaluation is a specialized profession.
- Making smart decisions about building maintenance, repair and improvements is hard but it saves money.



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5. BUILDING LIFECYCLE MANAGEMENT

Deep Thoughts

- To make any smart decision we need good information.
- Most building owners don't maintain good historical documentation related to scope, methods, costs, dates and players involved in maintenance, repair and improvements over their building's life. This hinders optimal decision making and requires "reinventing the wheel" over and over.



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5. BUILDING LIFECYCLE MANAGEMENT

Deep Thoughts

- The business of building maintenance, repair and improvements is messy and inefficient, or really expensive, or both.
- Our system is engineered to help owners make smart decisions about building maintenance, repair and improvements (that is, BLM).



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5. BUILDING LIFECYCLE MANAGEMENT

Deep Thoughts

The major system components include:

1. **EVALUATING** the individual building elements (sometimes called components or assemblies),
2. **SPECIFYING** the right maintenance, repair and improvements,
3. **MANAGING** the cost and quality by exercising construction management discipline, and
4. **ORGANIZING** and saving all of this information in a modern, cloud-based system so that it is available for good decision making throughout the building lifecycle.



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5. BUILDING LIFECYCLE MANAGEMENT

Why Lawyers Should Care

Issues	Total Cost of Ownership		
	With Defects	Without Defects	Difference
1. Substructure	\$	\$	\$
2. Superstructure	\$	\$	\$
3. Interiors	\$	\$	\$
4. Services	\$	\$	\$
5. Equipment & Furnishings	\$	\$	\$
6. Special Construction & Demo	\$	\$	\$
7. Site Work	\$	\$	\$
Total	\$	\$	\$



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5. BUILDING LIFECYCLE MANAGEMENT

I Have A Dream! (Of Connected Dots)



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5. BUILDING LIFECYCLE MANAGEMENT

Building Construction Lifecycle

Plan – Build – Use – Maintain – Decommission



San Onofre Nuclear Power Plant



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Building Construction Lifecycle

	Year 1		Year 2		Years 3-5		Years 6-10		Years 10-20		Years 20-30		Years 30-40		Total	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
Construction + Maintenance																
1																
2																
3																
4																
5																
6																
7																
Sub total																
OPERATION																
1																
2																
3																
4																
5																
6																
7																
Sub total																
Total	#	#														

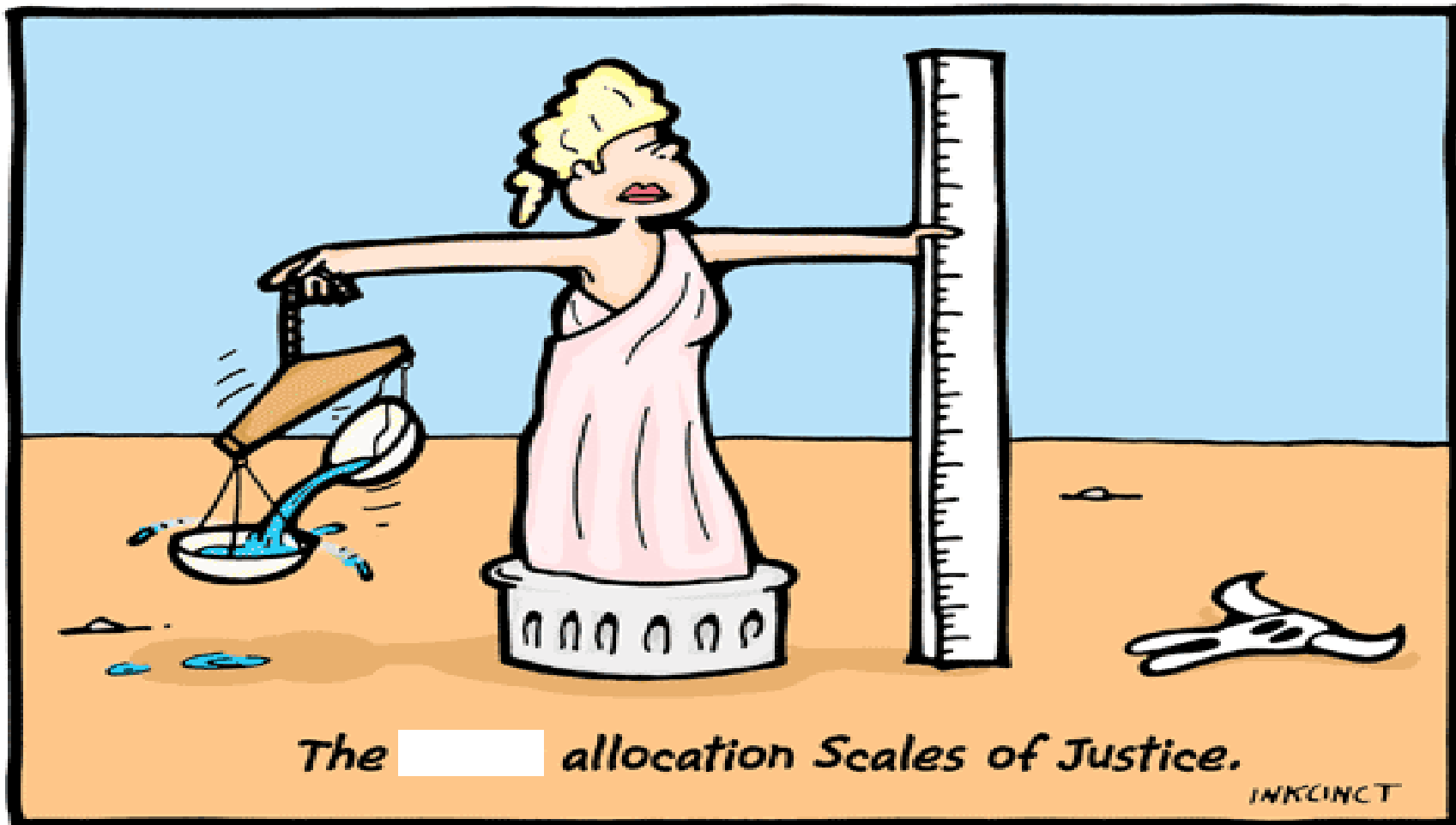


“Building” Costs

- Building (verb) Costs:
Incurred during construction.
- Building (noun) Costs:
Incurred after construction.
- Estimating Service Life: Reserve Studies
- Budget vs. Actual



6. ALLOCATION OF RESPONSIBILITY



6. ALLOCATION OF RESPONSIBILITY

Allocation of Responsibility

The process for Allocation of Responsibility for Construction Defects is mostly “science”, but some critical parts include the art of applying professional judgment. This program outlines the mechanics of the process including:

- make a sensible, allocatable, list of defects,
- assign values to each defect issue or category,
- make a list of all the parties who might be involved, and
- understand what each of them did on the project and where, and assign supportable portions of responsibility for each issue.



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6. ALLOCATION OF RESPONSIBILITY

Allocation of Responsibility

ISSUES			VALUE	PARTIES		
#	CODE	DESCRIPTION	\$	#	who	WHAT + where
1				A		
2				B		
3				C		
4				D		
5				E		
6				F		
7				G		
8				H		
9				I		
10				J		
				K		
TOTAL			\$			



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6. ALLOCATION OF RESPONSIBILITY

Allocation of Responsibility

- Begin with defect list (down) and players (across the top of a matrix).
- Figure out who did what and where.
- Try to allocate all of the costs across the Issues.
- Identify all applicable parties on an issue-by-issue basis
- Allocation Schemes:
 - Joint & Several Method
 - The “Kill Them All, Let God Sort it Out” Method
 - Allocation by Issue Method
 - Allocation Matrix. This can get REALLY complex when there are lots of issues (left column of the matrix), lots of parties (across the top of the matrix), and is then complicated when multiple parties work on the same trade in various phases or physical areas.

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6. ALLOCATION OF RESPONSIBILITY

Exposure Analysis

- Begin with the Issue List
- Best Case vs. Worst Case
 - Joint & Several Analysis (worst case?)
 - Issue by Issue (best case?)
- Repair Costs (including **Burden** or Total Project costs)
- Relocation and Other Expenses
- Legal Fees

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6. ALLOCATION OF RESPONSIBILITY

Exposure Analysis

- Expert Expenses (inspection, testing, analysis, meetings, testimony, etc.)
- Other Expenses
- Risk of the Unknown
- **Pain & Suffering**, Punitive Damages, Economic Losses
- See PFCS's Portfolio Management of Construction Claims

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6. ALLOCATION OF RESPONSIBILITY

Exposure Analysis

SIMPLIFIED

	Best Case	Most Likely	Worst Case
1. Issue 1	\$	\$	\$
2. Issue 2	\$	\$	\$
3. Issue 3	\$	\$	\$
4. SUB	\$	\$	\$
5. Other	\$	\$	\$
6. TOTAL	\$	\$	\$

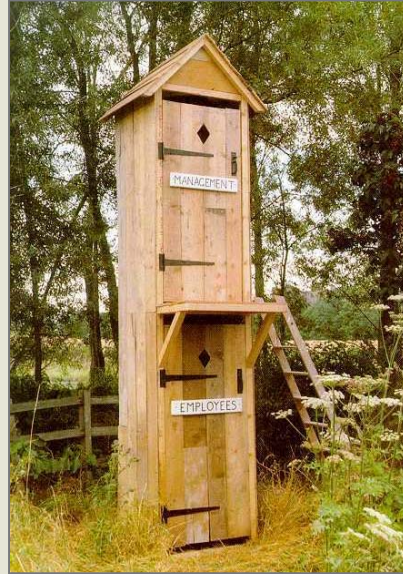
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6. ALLOCATION OF RESPONSIBILITY

Case Study

Otto Hired A Lawyer!

*Our Simplified Case Study:
Otto's Outhouse*



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6. ALLOCATION OF RESPONSIBILITY

Case Study: Defect List

- A1010 Foundations: The structure was constructed without a concrete foundation.
- B2012 Exterior Enclosure: Siding & Trim: The nailing of the siding is grossly inadequate.
- B2030 Exterior Doors: The doors leak, causing damage to the interior finishes.
- D 1000 Conveying: The conveying system (ladder) is defective in its manufacture and the design does not meet minimum ADA requirements.
- D3000 HVAC: The heating system is inadequate to heat the interior to 70 degrees 3 feet above the floor.
- G2050 Landscaping: Half the landscape planting died within the first year and required replacement.



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6. ALLOCATION OF RESPONSIBILITY

Case Study: IIACC Analysis

- Issue 1: A1010 Foundations - The structure was constructed without a concrete foundation.
- Investigation: PFCS has reviewed the available project documents (see Index), visually inspected the project, researched the applicable building standards and corresponded with the building department.
- Analysis: The structure was designed and constructed in conformance with the applicable code at the time of construction, and with the approval of the building department, utilizing a preservative treated (rot resistant) wood foundation technique.
- Conclusion: The structure is performing well in service. No repairs.
- Costs: \$0



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6. ALLOCATION OF RESPONSIBILITY

Case Study: IIACC Analysis

- Issue 3: B2030 Exterior Doors - The doors leak, causing damage to the interior finishes.
- Investigation: PFCS has reviewed project documents, visually inspected, researched building standards, investigated in conformance with ASTM Standards E2128 and observed the Owner's expert test in conformance with ASTM E1105.
- Analysis: While the performance expectation of this structure is not perfection, the E1105 testing not applicable or required for the analysis, the doors allow excessive leakage and cause damage.
- Conclusion: Door weatherization is inadequate, allowing leakage and causing damage. Repairs will include reinstallation of existing doors properly weatherized, and repair of damaged finishes.
- Costs: \$362.80



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6. ALLOCATION OF RESPONSIBILITY

Case Study: Exposure Analysis

#	Code	Description	PLTF	DEF	Best	Likely	Worst
1	A1010 Foundations	The structure was constructed without a concrete foundation.	800.00	-	-	-	800.00
2	B2012 Ext. Enclosure	Siding & Trim: The nailing of the siding is grossly inadequate.	500.00	-	-	250.00	500.00
3	B2030 Exterior Doors	The doors leak, causing damage to the interior finishes.	300.00	362.80	362.80	362.80	300.00
4	D1000 Conveying	The conveying system (ladder) is defective in it's manufacture and does not meet minimum ADA requirements.	4,000.00	-	-	-	4,000.00
5	D3000 HVAC	The heating system is inadequate to heat the interior to 70 degrees 3 feet above the floor.	1,250.00	-	-	-	1,250.00
6	G2050 Landscaping	Half the landscape planting died within the first year and required replacement.	500.00	-	-	100.00	500.00
7		Total Construction Costs	7,350.00	362.80	362.80	712.80	7,350.00
8							
9		Attorneys Fees					
10		Expert Fees					
11		Other Costs					
12							
12		Grand Total	7,350.00	362.80	362.80	712.80	7,350.00



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6. ALLOCATION OF RESPONSIBILITY

Case Study: Assigning Values

- Allocated line items should be “Burdened” with all of the general project costs.
- Generally, I prefer to make legal fees a separate line item, or better yet, leave them out.
- General project costs can include, but are not limited to: General Conditions (project specific overhead), Overhead & Profit, Design Fees, Permits & Fees, Moving & Storage, Etc.
- When estimating, I put as much into the line items as possible. Examples: Dumpsters, scaffolding, equipment.
- This requires the application of professional judgment.



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6. ALLOCATION OF RESPONSIBILITY

Case Study: Otto's Outhouse

A SIMPLE "JOINT AND SEVERAL" ALLOCATION (IN FOR A PENNY, IN FOR A POUND)

#	Code	PLTF	Owner	GC	Design	Landscape	TOTAL
1	A1010 Foundations	800.00	-	-	800.00	-	800.00
2	B2012 Ext. Enclosure	500.00	-	500.00	-	-	500.00
3	B2030 Exterior Doors	300.00	-	300.00	300.00	-	600.00
4	D1000 Conveying	4,000.00	4,000.00	-	-	-	4,000.00
5	D3000 HVAC	1,250.00	1,250.00	-	1,250.00	-	2,500.00
6	G2050 Landscaping	500.00	500.00	-	-	500.00	1,000.00
7	TOTAL	7,350.00	5,750.00	800.00	2,350.00	500.00	9,400.00
8							
9	Attorneys Fees						
10	Expert Fees						
11	Other Costs						
12							
12	Grand Total	7,350.00	5,750.00	800.00	2,350.00	500.00	9,400.00



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6. ALLOCATION OF RESPONSIBILITY

A Real, Professional Allocation

- You have a sensible Issues List
- You have realistic values assigned to each issue, including O&P and all "Other Project Costs"
- You know who did what and where, and have evidence to support your conclusions
- You allocated each value fairly to an applicable party
- The total of the allocated amounts add up to the total value of the issues (to the penny)
- The only things people can argue with are the values and percentages allocated



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6. ALLOCATION OF RESPONSIBILITY

Contracting 101

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6. ALLOCATION OF RESPONSIBILITY

Contracting 101

- Roles and responsibilities in a construction project
- What do the contracts say (R.T.F.C.!!)
- The Owner
- The Owner / Developer / General Contractor / Seller
- The General Contractor
- Trade Contractors
- Babysitting
- Brother's Keeper

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6. ALLOCATION OF RESPONSIBILITY

Analyzing Construction Defects: 14 Questions

- What is the allegation?
- How does it relate to the party we are working with?
- Where and how many times is it alleged to be an issue?
- What do all the parties say about the issue, including costs?
- Did we see the issue?
- Is the assembly performing as the owner might hope?
- Is the assembly performing as we should expect?
- Is it a defect?
- Is it causing damage?
- Is a repair required?
- What are the applicable standards?
- What is a reasonable repair?
- How much will the repair cost?
- Who is responsible?



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6. ALLOCATION OF RESPONSIBILITY

Plans, Specifications, Codes & Standards

- When you reach this level of analysis, you are addressing the fine points of an allocation.
- Plans: Make references to plan sheets and details.
- Specifications: Make references to variations from requirements in the specifications. Copy the pages into the file organized by issue or by party.
- Codes: Refer to code requirements
- Standards: Make references by issue or party.



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The Good Old Days

Successful construction projects used to go something like this: Owners would hire experienced, hard working Architects and Engineers who developed plans and specifications that were not perfect, but good enough that experienced, hard working General Contractors could hire experienced, hard working Trade Contractors to do the work of making a project happen. We worked through the inherent difficulties of construction by working long hours, keeping our word and understanding that “stuff happens”. We accepted that no project was perfect, that people screw up, and knew that there was little use in crying over spilled milk. The satisfaction of a job well done carried us through the toughest days.

We didn't spend much time telling specialists, like trade contractors, how to do their job. They had skilled tradesmen, the construction was relatively simple, and most contractors did things pretty much the same. If we had a contract, it was something the “suits” put together, and copies might not be sent to the job site since they had little or no connection to the “getting the job done”.

The New World

Construction professionals are living in a new world:

- Consumers expect quality increases and price decreases in all products.
- The building industry is not keeping pace with the quality and price advances many industries are making.
- Consumers are more litigious than ever and there is a proliferation of attorneys.

- The building industry is not attracting the best and brightest young people.
- The built-environment has been altered in the last 20 years, including increased complexity, less fault-tolerant materials, and tighter, slower drying buildings.
- Consumers are more conscious of building-related health issues than ever.
- In some areas, a lack of skilled construction labor makes the construction professional's job even more critical.

Construction Management

Our company delivers training in construction management and we have categorized the phases of project planning and management in a framework we call “The DBSKCV™ (pronounced “dib-skiv” - DiB-SKCiV) Method.”

Summary of the DBSKCV™ Method

- Define the Scope of Work (this includes the design phase).
- Budget: Identify how much the project will cost the contractors and owner.
- Schedule when the construction will happen and share this information.
- Contract (K): Who is doing what? Everyone should know what to expect.
- Coordinate the construction.
- Verify, document and communicate that everyone is doing what they should.

For details, please read *The DBSKCV™ Construction Management Method*.

Construction Risk Management

Growing legal risks, administrative issues, sky-rocketing workers' compensation costs, increasing fees and taxation, and complicated insurance issues are only a few of the reasons why the price of construction is higher today than ever before. Managing construction risk is a full time vocation for many professionals and beyond the scope of this article (we do training on this too).

THE ABC'S OF RISK MANAGEMENT

- A = Avoid Potentially Dangerous Situations (Impossible in construction)
- B = Be Really Good At What You Do
- C = Cover Your Assets

The ABC's apply to Managing Construction Quality because (A.) we must face the fact that "risk avoidance" as a construction professional is impossible, (B.) being good at what you do means doing all you can to make sure a project succeeds, and doing a little bit of someone else's job will sometimes become necessary, and (C.) the best "coverage" is avoiding problems by delivering work that meets expectations. Just accept buyers expect high quality *and* performance, even when they pay rock-bottom prices, and lawyers expect perfection; the former is hard, but easier than the latter.

Project Definition

The "Define" phase of construction management consists of documenting the work to be performed. This is usually graphic and written with plans, specs, references to codes and standards, and detailed "Scope of Work" documents. Getting a clear, specific and detailed project scope is the first step in the construction project management process and it is where a project's "quality" is established.

SOME QUICK DEFINITIONS

- Plans and Details: Graphic representation of construction.
- Specifications: Specs are the written representation of construction, which usually includes a greater level of detail regarding construction performance, process, products, and quality.
- Construction Contract: Agreement between two or more parties for the delivery of construction; plans and specifications are used as the definition of what is being bought and sold.
- Standards: Documents, with graphic and written information, referenced by plans, specifications and construction contracts, which specify performance criteria and/or methods in greater detail than typical plans or specifications. Standards are created by standards setting bodies like ASTM, product manufactures, and industry trade groups.
- Scope of Work: The written representation of all labor, materials and equipment required to complete the project described in the contract documents. A list or description of the responsibilities for various categories of work plus exclusions; serves to memorialize a meeting of the minds as to what is being bought and sold. It should conform to the fundamentals of a 2 or 3 level "Work Breakdown Structure" collectively representing 100% of the project scope.
- Hold-Point: Critical time in the construction process where construction should stop for verification of conformance with plans, specifications, standards (including performance) and contracts. Verification can include inspection, testing, recording, and reporting.

In "the good old days" we left the details of "how to" to the trade contractors. After all, they are the specialists. But for the reasons

stated above, leaving the details to trade contractors to work out among themselves has left a lot of projects in a less than enviable position: lack of integration, quality problems, re-work, leaks, lack of durability, and on and on.

Owners or their representatives should no longer sign a one or two page “Proposal” from a contractor which serves as the “Scope of Work.” Such documents are not likely to contain information specific enough to ensure the scope is complete, to ensure that the parties are on the same page for quality or performance, and they lack adequate contractual protections.

Specification writers making obscure references to documents that are difficult to obtain is not new. But acquiring these documents is much easier due to the internet. It is now possible to “define” (design) our projects using readily accessible documents that we can use during the building process to make sure the on-site work is being installed and integrated correctly. This information needs to be integrated throughout the plans, specifications, standards and contracts. In practice, these documents should be created or referenced in the *Define* phase, referenced in the *Contract* phase, and used to compare the actual work in the field to the plan during *Coordination* and *Verification*.

Managing Construction Quality

There is no way to 100% guarantee project success and performance; the closest I have found is the use of a proven system.

Think of it this way: *Construction plans and specifications are a hypothesis, and a hypothesis should always be verified.* The hypothesis is that the designers and specialty consultants have composed a set of documents that are appropriate to build a

project that will meet the *performance expectations* of the owners and applicable codes. The contractors on the project then work under the hypothesis that the design is functional, and that the work they do will also meet *performance expectations*.

Question: How do we verify our construction projects are going to perform?

Answer: (1.) During the define phase, we make sure our design hypothesis is reasonable by having someone with experience in building performance issues review, comment and recommend improvements; (2.) We make sure the plans, specifications, standards, and contracts are consistent in describing to the contractors who will install the specified material “what good performance looks like”; (3.) We establish a procedure to “verify” at specified *Hold-Points* during construction; (4.) During construction we inspect to verify conformance with the design (plans, specs, standards, and contracts). (5.) After the initial assemblies are installed, test them to verify performance, or build a mock-up and test it before construction (whichever is more cost effective).

Remember: We must be willing to administer consequences to project team members who don’t do what they promise. You will get resistance. If a contractor has signed a contract to perform consistent with a specified standard, it will sometimes take a strong will to make some of them perform.

ATTACHMENT: The attached *Managing Construction Quality* spreadsheet is a matrix of optional activities one might perform or purchase from a consultant. The minimum activities required, for a third party to be of assistance in ensuring project quality, are identified; higher levels of service are like buying more insurance. Remember, this does not include *doing* the actual design. At a minimum, this is making sure the project

definition is close to complete, and helping assure that proper installation and integration of the assemblies will lead to appropriate performance. Further work can ensure a connection between the plans, specifications, standards and contract scope of work documents.

Quality Management Plan

Here is the system, organized in the context of The DBSKCV Method. Remember, the DBSKCV Method is iterative, meaning we walk through all steps many times throughout the life of a project. We should go through the “D-B Loop” (e.g Define-Budget-Repeat) many times before moving forward.

DEFINE

- Architectural, Structural, and Specialty Design
- Specification Writing
- Referenced Standards

QUALITY PLANNING

- Evaluation of plans and specs
- Evaluation of referenced standards, and contract / scope of work language review (Optional)
- Hold Point Development and performance verification planning (Optional)
- Mock-Up of assemblies and testing (Optional)
- Recommendations (final) from Quality Review Consultant
- Meetings or teleconferences between Quality Review Consultant and Owner, Designers and/or Contractors (Optional).
- Review of updated design, specification, referenced standards and contracts made in response to Recommendations from Independent Quality Review Consultant (Optional).

BUDGET: Update as necessary throughout the process. Make active decisions about “how much insurance to buy”.

SCHEDULE:

- Establish Hold Points
- Be prepared to stop the project if acceptable performance cannot be achieved

CONTRACT

- Connect the Plans, Specifications, and Standards, Quality Management Plan, including Hold Points, to the Contract and Scope of Work documents so that Quality does not “cost extra” (in change orders) during construction.

COORDINATE

- Make sure prime and trade contractors know the standards they will be held to during the Verify phase.
- Coordinate actions at Hold Points in the construction schedule to verify quality of installations.

VERIFY

- Visual Inspection at Hold Points to verify conformance with project definition (plans, specs, standards and contract scope of work documents) and to evaluate any on-site changes (Optional)
- Testing to verify performance (Optional)
- Final Report that might include: Quality control process, design summary, evaluation process, inspection summary, testing summary and on-going maintenance recommendations (Optional)

Independent Quality Review

Line	Description of Potential Services	Service Level																		Typical Durations	
		1A	1B	1C	2A	2B	2C	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	6C	Low	High
1	Evaluation of plans and specifications	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	8	40
2	Evaluation of referenced standards		x	x		x	x		x	x		x	x		x	x		x	x	4	40
3	Evaluation of contracts (scope of work)			x			x			x			x			x			x	4	40
4	Hold Point Development							x	x	x	x	x	x	x	x	x	x	x	x	4	40
5	Mock-Up of Assemblies and Testing										?	?	?	?	?	?	x	x	x	16	80
6	Recommendations (final)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	8	80
7	Meetings or Teleconferences	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	2	40
8	Review of Updated Design	?	?	?	?	?	?	?	?	?	?	?	?	x	x	x	x	x	x	4	40
9	Visual Inspection				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	4	160
10	Testing							x	x	x	x	x	x	x	x	x	x	x	x	8	80
11	Final Report										x	x	x	x	x	x	x	x	x	8	40
12																					
13	Potential Deliverables																				
14	Opinion Letter re: Evaluation	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
15	Issues List with Recommendations	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
16	Inspection Summary				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
17	Inspection Report										x	x	x	x	x	x	x	x	x		
18	Location Matrix				?	?	?	?	?	?	?	?	?	x	x	x	x	x	x	1	16
19	Hold Points				?	?	?	x	x	x	x	x	x	x	x	x	x	x	x		
20	Testing Protocol							x	x	x	x	x	x	x	x	x	x	x	x		
21	Testing Summary Report							x	x	x	x	x	x	x	x	x	x	x	x		
22	Project Close Report							?	?	?	?	?	?	x	x	x	x	x	x		

Explanation of Service Levels

L1: No Inspection

L2: Limited Visual Inspection

L3: Limited Visual, Limited Testing

L4: Periodic Inspection, Limited Testing

L5: Extensive Inspection, Limited Testing

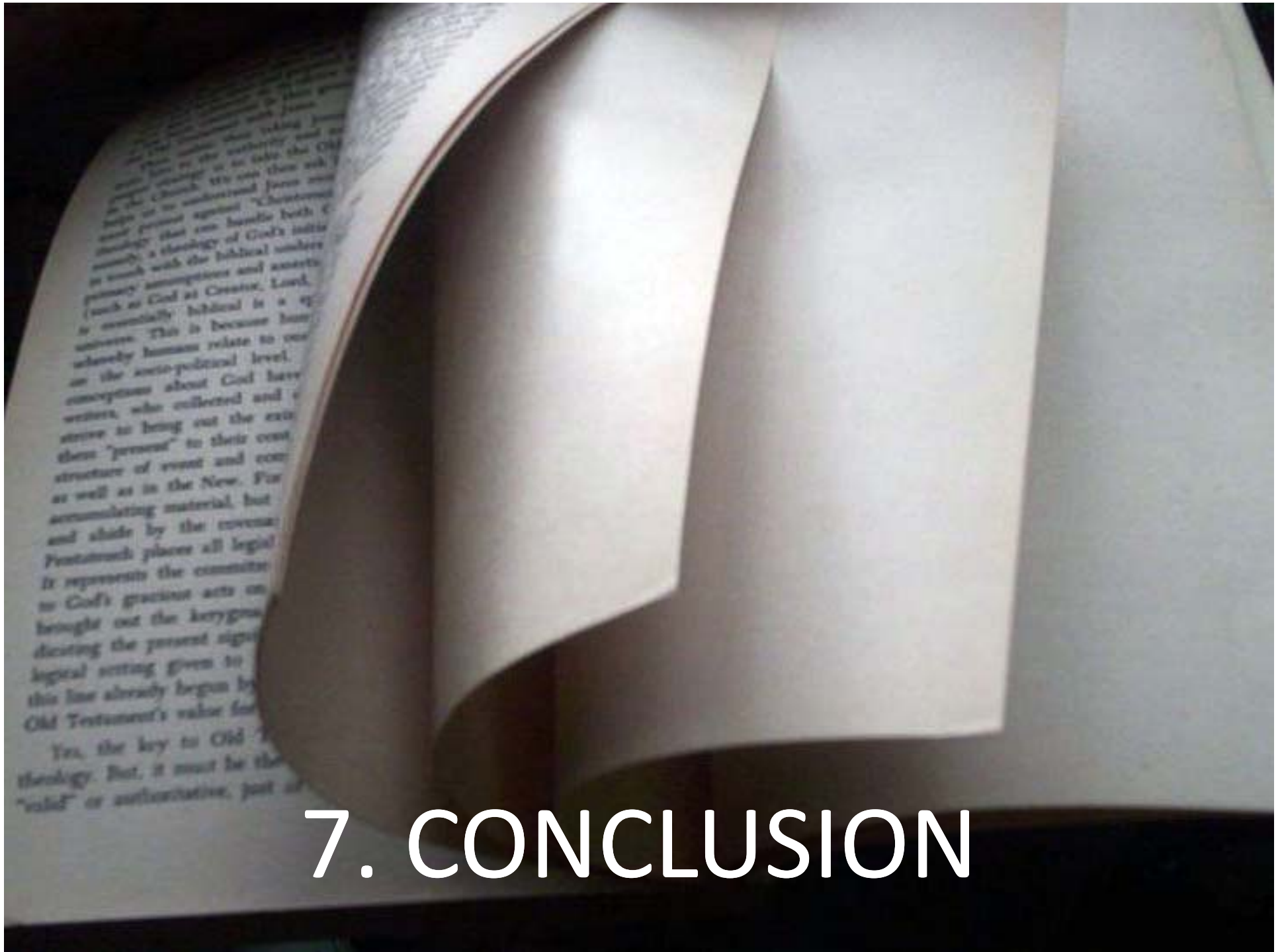
L6: Extensive Inspection, Extensive Testing

Document Review Levels

A: Plans and Specs only

B: Plans, Specs, and Standards

C: Plans, Specs, and Standards and Contracts



7. CONCLUSION

7. CONCLUSION

Conclusion

- Learning Objectives
- Program Outline
- Back-Up Materials
- Webinar Materials/CE Certificates
- Feedback



Read about industry impacts on our blog at www.petefowler.com

7. CONCLUSION

Learning Objectives

- Introduce the Contracting 101 framework and use it to explain the roles and responsibilities of the various parties in construction.
- Introduce the fundamentals of emerging science and profession of Project Management.
- Introduce the DBSKCV Construction Management Method, which is a 6 step framework for planning and managing successful construction projects.
- Introduce the most important construction documents and how they are used.
- Outline the fundamentals of risk management for construction.



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7. CONCLUSION

Program Outline

1. Introduction
2. Contracting 101
3. DBSKCV CM Method
4. Key Construction Documents
5. Building Lifecycle Management
6. Allocation of Responsibility
7. Conclusion



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7. CONCLUSION

Back-Up Materials

- Contracting 101 Complete (257 pages)
- DBSKCV Construction Management Method
- Managing Property Maintenance & Improvement
- Managing Construction Quality
- Meeting Management:
Google "Pete Fowler Meeting Management"



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Webinar Materials

PFCS Client Access Projects Publications **Seminars** Users

PFCS Webinar 1/30/2014: Building Life Cycle Management


Seminar Information

Event Date	01/30/2014
Event Time	10:00am
Location	Online via GoToWebinar

Video

There is no video version of this presentation available.

Attachments / Backup Materials

File
 Backup Materials



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CE CERTIFICATES WILL BE SENT OUT WITHIN 3 BUSINESS DAYS

(There is no need to contact us, Certificates of Attendance are sent to all who logged in for the seminar).



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Your Feedback is Important

SURVEY SAYS!



You will receive a survey link immediately following the webinar. We put a lot of effort into providing these programs free of charge, we just ask that you take a few seconds to leave your feedback on today's presentation



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