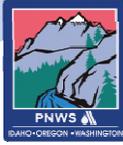


# Managing Construction Risk

Dave Mustonen – Moderator  
Nancy Davidson - Owner  
Bill Hawkins – Construction Manager  
Ann Anderson – Insurance Broker  
John Fowler – Contractor  
Clark Balfour – Attorney

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## Panelists

### **Construction Manager**

Bill Hawkins  
Construction Services Manager  
CH2M HILL  
Portland, Or  
(503) 872-4482  
bill.hawkins@ch2m.com

### **Contractor**

John Fowler  
Vice President  
James W. Fowler Co.  
Dallas, Or  
(503) 623-5373  
johnf@jwfowler.com

### **Owner**

Nancy Davidson  
Engineering Manager  
Alderwood Water and Wastewater District  
Lynnwood, Wa  
(425) 743-4605  
ndavidson@Alderwoodwater.com

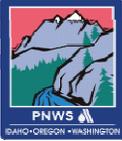
### **Insurance Broker**

Ann S. Anderson  
Vice President  
Construction Project Risk Practice  
Marsh USA  
Portland, Or  
(503) 248-163  
ann.s.anderson@Marsh.com

### **Attorney**

Clark Balfour  
Partner  
Cable Huston Benedict Haagensen & LLOYD. LLP  
Portland, Or  
(503) 224-3092  
cbalfour@chbh.com





# What can be done to help reduce construction phase cost risks?

*Bill  
Nancy*

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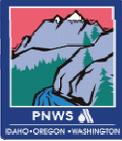


## **Bill**

1. Independent 3rd party cost estimate review to add confidence that the engineer's estimate is closely representative of real-market conditions
2. Constructibility review to analyze the probable approaches to be used by contractors to construct the work and determine if more cost effective or less risky means can be employed possibly through changes to the design.
3. Minimize claims during construction. Employ a Construction Manager who is motivated to evaluate the work in advance of actual construction to discover issues prior to costs being incurred, then find solutions to allow construction to progress smoothly.

## **Nancy**

1. Conduct a risk analysis to identify areas of risk and tools to minimize risk. Identify and include methods to transfer risk to the contractor in the construction documents.
2. Discuss options, risk and costs with a supplier and/or contractor that will not be bidding on the project.



## What can be done to help reduce construction phase schedule risks?

*Bill  
Nancy  
Ann*

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1:38

### **Bill**

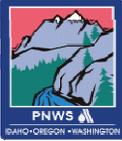
1. By employing a cost-loaded schedule as the means for payment, the contractor will be required to update their schedule to get paid. A consistently and accurately updated schedule will give all parties better knowledge of where the project is headed.
2. By actively monitoring the daily activities of the contractor in comparison to the critical path schedule, it will be easy to determine if there are delays and their cause in a timely manner, and therefore minimizing disagreements over the responsibility for any impact at a later date.
3. Additional schedule performance analysis can be performed to give a much better picture of the potential outcome of a project such as total float consumption monitoring.

### **Nancy**

1. Provide mechanisms in the contract documents to enforce contract and schedule requirements (i.e. reductions in pay estimates)
2. Carefully track deadlines for submittal and other reviews to make sure you are not delaying the contractor.
3. Monitor any float contained in the contract schedule.

### **Ann**

1. Assessing risk will also identify schedule impact and ways to mitigate or fund for those delays.



# What can be done to help reduce construction phase quality risks?

*Bill  
Nancy*

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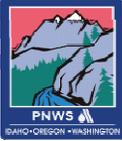


## **Bill**

1. By employing a cost-loaded schedule as the means for payment, the contractor will be required to update their schedule to get paid. A consistently and accurately updated schedule will give all parties better knowledge of where the project is headed.
2. By actively monitoring the daily activities of the contractor in comparison to the critical path schedule, it will be easy to determine if there are delays and their cause in a timely manner, and therefore minimizing disagreements over the responsibility for any impact at a later date.
3. Additional schedule performance analysis can be performed to give a much better picture of the potential outcome of a project such as total float consumption monitoring.

## **Nancy**

1. Make sure that any last minute contract document changes are coordinate through the appendices (particularly Geotechnical Baseline Reports), specifications, and design elements of the contract.
2. Approach contract addendums carefully making sure that you fully understand the changes and the implications to all sections of the contract documents
3. Inspection should provide good and timely information to the owner so that they can address and prepared for issues as they arise.



## What are some of the ways to control risks or finance risks:

*Ann*

1:44

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### **Ann**

1. Avoid the exposure (makes a loss impossible)
2. Employ loss control measures (reduces frequency)
3. Employ loss reduction measures (reduces severity)
4. Contractual transfer for risk control (shifts exposure – possibility of loss – by contract)
5. Retain losses
6. Contractual transfer for risk financing
7. Commercial insurance



**Why is it important to assess the risks associated with a particular project and what methods are there to assist me in the assessment?**

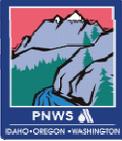
*Ann*

1:47

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**Ann**

1. There are many tools available, and perhaps the most useful requires a collaborative relationship between owner/developer, contractor and architect/designer. A Risk Register involves all parties to the project, working together to evaluate at each milestone what risks will be faced, what the potential impact is, assign a severity ranking and identify the best risk control or financing technique to address the risk, then identify who is in the best position to employ that technique. Ideally, the Risk Register would be a “living” document that is constantly being reviewed and reassessed.
2. Brokers are key in conferring on what risk control and financing techniques are best for the applicable risk identified



**Underground construction projects sometimes contain significant risk - do Geotechnical Baseline Reports (GBRs) serve as an effective tool to manage subsurface risk?**

*John  
Nancy  
Ann*

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### **John**

1. Very effective tool for both contractor and owner to price/allocate risk.
2. Must accurately represent expected ground conditions and behavior based upon best judgment from a qualified geotechnical expert (avoid assigning all risk to the Contractor) and must be compatible with means and methods being specified
3. Must avoid becoming a tool for the contractor to unfairly manipulate the contract or for the owner to eliminate legitimate differing site condition or unknown obstruction claims

### **Nancy**

1. Geotechnical Baseline Reports provides a basis for evaluation and resolution of differing site conditions
2. A key element for a good GBR is to identify areas of risk to be addressed in the GBR and owner risk tolerance. Owner must be fully aware of the risks associated with a GBR.
3. Make sure the project staff is experience with GBRs and the means and methods required for the work. At the end of the process, document all risks and their allocation to the owner and the contractor.

### **Ann**

1. For insurers a GBR is essential to show credibility in the process of obtaining information on soil conditions. However, GBR's do not provide a complete picture of the exposures and contingencies should still be held for unknown conditions.



**The Construction Manager-General Contractor (CM/GC) delivery method has been gaining popularity in recent years. Describe the overall advantages of this method and the advantages they offer to a project owner.**

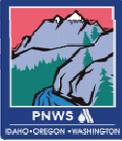
*John*

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**John**

1. Can offer the owner a better value for their construction dollar on projects that contain particularly risky elements where a contractor is better able to price and control risk
2. Offer unique opportunity for owner and contractor to collaborate and develop value engineering opportunities that benefit the owner
3. Owners have the opportunity to select a contractor based on experience, qualifications and best value as opposed to least cost only.



**Under what circumstances should a project owner consider the pre-qualification of bidders and what benefits does the process offer to the owner?**

*John  
Bill*

1:56

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**John**

1. Pre-qualification allows an owner to develop specific criteria for selecting a contractor that match the intent of the project
2. Avoids risk of protest based upon other contractors qualifications or perceived qualification technicalities
3. Allows owner to market a project through workshop, etc. to gauge the number of qualified, capable and interested bidder

**Bill**

1. Some utilities fear protests as a result of using a Pre-qualification process, while others embrace the process. We have found that the utilities that embrace the process have great success. There have been some protests, but if the utility does a good job in developing the process, the outcome of the protests have not been problematic.



# What items pose the greatest risk during construction?

Nancy  
Bill  
Ann

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1:59

## **Nancy**

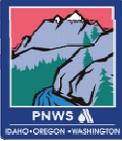
1. A full risk analysis should be conducted prior to completion of contract design to identify areas of risk and opportunities to minimize it. Safety issues need to be identified and addressed. Contract changes after bidding can also pose a greater risk since they are not as well thought out as approaches considered during design.

## **Bill**

1. Catastrophic failure involving property damage or death, severe cost or schedule overrun. Employing effective risk evaluation analysis techniques in advance to reduce potential risks. Changes to design, changes to schedule, and changes to the contractor's approach can all be looked at as a means to mitigate identified risks.

## **Ann**

1. Greatest risk can be those of severity or of frequency. Risk analysis utilization to predict as many variables.
2. An example of a severe risk might be the risk of structural collapse prior to completion. This might be as a result of negligent construction of part of the facility, faulty workmanship, poor design, uncertain ground conditions or even a natural disaster. Identifying the likely sources would be and controlling them won't eliminate the potential for loss, but will highly reduce it and will help quantify the impact to the project;
3. On the other hand, theft of contractors' hand tools happens frequently but individually may seem insignificant. Without controls they can accumulate and actually lead to theft of higher valued items



**Are there any effective incentives for contractors and construction projects?**

Nancy  
Bill  
Ann

2:02

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### **Nancy**

1. Incentives can be challenging in contract documents. They are difficult to identify, cost and treat fairly. Often they require value engineering and benefits shared between the contractor and the owner. Thus, incentives generally have to be significant enough to want to make the contractor do the work to convince the owner of the value.

### **Bill**

1. Incentives can be a double edged sword. If there is a true value to a less costly and earlier completion, financial incentives can be employed to that end, but the impact of incentives must be fully analyzed. Also, defining an effective measurement means for a quality incentive can be extremely difficult, and can put inspection staff into conflict with the contractor.

### **Ann**

1. Incentives should be carefully be considered as they should be measurable and be able to be controlled by one or both of the parties involved. If they are not specific enough, one of the parties to the agreement may have an advantage that causes friction with the other party.



# What is your recommendation for sharing risk and why?

Nancy  
Bill

2:05

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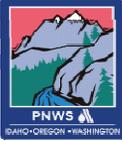


## **Nancy**

1. This question is very project specific and depends on the type of project. Schedule for equipment procurement can be risky and can significantly impact meeting a project schedule. Including appropriate owner controlled float in a construction schedule can be used to minimize schedule risks.

## **Bill**

1. There is no fixed equation for sharing risk. An equal basis of risk sharing across the owner engineer and contractor will provide the most successful outcome. Example— When owners used materials indexed contracts, they were generally able to take some buy-out risk away from the contractors, thereby allowing lower bid prices, ending up paying only for the real cost of materials instead of a price that the contractor felt would cover their risk (including a safety factor in many cases)



**What techniques have you used effectively to achieve an partnership between the contractor and the owner?**

*Nancy  
Bill*

2:08

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### **Nancy**

1. Recognizing that construction of the project requires a team that includes the engineer, contractor, permitting agencies, owners and others as appropriate. Each member of the team has something valuable to contribute to the successful completion of the project and must work together.
2. Open communication about what is happening and being planned is very important. Partnering is useful to effective communication and relationships that build to project success.

### **Bill**

1. Formal partnering techniques are good, but limited if the participants in the project do not have the right attitude. Incorporating a reasonable basis of risk sharing amongst the project team will go a long way toward allowing the right attitudes in support of effective partnering.



**In your opinion, where do owners typically skimp in the preparation of the contract documents? How risky is that and what can be done to overcome it?**

*Nancy  
Bill*

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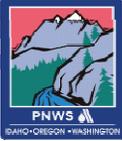


### **Nancy**

1. Typically, owners do not pay careful attention to last minute changes to contract documents. All last minute changes need to be documented and share with the team. These changes particularly need to be shared with the team addressing the subsurface conditions.
2. Coordination of addendums, response to questions and other issues that come up during bidding between the engineer and the geotechnical engineer is particularly important.

### **Bill**

1. Knowledge of subsurface conditions often presents a significant risk. Improved knowledge through more test bores and geotechnical investigation seems to be an area that would nearly always provide a favorable return on investment



# Is it beneficial to use standard contract conditions such as Engineers Joint Council on Contract Documents (EJCDC) or should an agency have its own forms?”

*Clark  
Bill*

2:15

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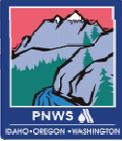


### Clark

1. It is a coin toss in that the Agency must have a set of working documents that it feels comfortable in using and fits their concept of project delivery and management. Staff needs to have some training, familiarity and continuity with the project documents. If that means developing a standard Agency set of documents and they have the means to make that investment, that decision can't be faulted. Typically a contract form developed by an Agency will rely heavily on industry standard documents that are then amended from generic to specific. But an Agency large or small can use standard documents on a project by project basis. The use of standard contract conditions such as EJCDC's is beneficial in that there is a consistency of terminology and symmetry in the allocation of risks and responsibilities. Further there has typically been a body of commentaries or court or arbitration decisions interpreting the documents so some certainty as to intent is present. However, there will always be a need to tailor the "front end" of any contract to meet legal requirements for that public agency and to have carefully crafted supplemental general conditions to deal with specific issues such as the role of the Project Engineer, insurance coverage, dispute resolution, etc.

### Bill

1. There are significant advantages of using standard General Conditions that have been tested, however, the EJCDC standards for example may not apply to a particular utility's circumstances, requiring significant effort to develop Supplemental General Conditions to fit the standard GC's to the project, or utility in general. In these cases the utility would be well suited to employ a legal professional to craft General conditions that apply to their environment, *but also dove-tail well with technical specifications that are designed to work with EJCDC GC's (many of who's technical specifications are designed to merge with EJCDC GCs).*



# What is the role of the Design Professional ?

*Clark  
Bill*

2:18

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## **Clark**

1. Whether in the D-B-B or CM/GC, standard contract documents often state that claims and disputes will be routed through the design professional for initial decision and will be a condition precedent to further dispute resolution such as mediation, arbitration or court proceedings. In doing so, the DP will endeavor to be impartial.
2. I always modify documents to state that the DP is the Owner's agent but does not occupy an independent decision making role. The DP will receive any claim, analyze and make a recommendation to the Owner but the Owner makes the decision. From there dispute resolution processes can occur. The DP is hired by the Owner and should be a resource to the Owner.
3. The same would apply if a 3rd party (or agency) CM is contracted to the owner for disputes.

## **Bill**

1. The standard language in many of the standard contract documents used in our industry can become confusing if a 3rd party (or agency) CM, or Program Manager is involved in the project. If the delivery method employs a 3rd party, care must be taken to clearly define the role of the design professional during construction versus the CM (or other 3<sup>rd</sup> party).



# How should insurance be handled

Clark  
Ann

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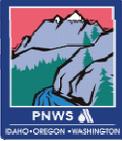


## **Clark**

1. The agency should require that specified coverage will be provided by the contractor at \$ limits with the Owner and Design Professional named as additional insureds. However, the Owner will not be able to obtain additional insured coverage on the DP's professional liability (errors and omissions) policy.

## **Ann**

1. Legal consultation and broker consultation to determine what the most appropriate limits are for a given project.
2. Project-specific coverages such as Project Professional or Owners Protective Professional, Contractors Pollution Liability or Pollution Legal Liability.



# What about indemnity clauses

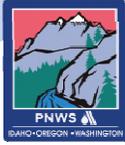
*Clark*

2:25

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## **Clark**

1. In the construction setting, the Agency cannot employ a clause that extends the liability of a party (or its surety or insurance carrier) to a construction contract beyond that party's own negligence. A court will void the clause under ORS 30.140.



## Questions from the audience

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