

Want a Better Project? Look at Your Process!

How to Make Design, Construction
and Operations More Effective

AWWA Annual Conference

Sun Valley Idaho

September 2013



**HANSEN
ALLEN
& LUCE_{inc}**
ENGINEERS

Typical Project Problems

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Budget
Overrun

Schedule
Overrun

Functional
Problems

Efficiency
Problems

Unforeseen
Issues

Public
Relations
Issues

**What Are Your
Stories?**

Underlying Causes

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- **Stakeholder Involvement**
- **Planning and Design**
- **QA/QC in Design and Construction**

Issue # 1

Stakeholder Involvement



Stakeholders

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**Sometimes Important
Stakeholders Are Not
Contacted Until 50% - 100%
Design is Completed!**

**(or when the Contractor
mobilizes to the job site!)**



Stakeholders

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Anyone Affected by the Project

Owners

Management

Engineers

Operators

Landowners

Regulatory Agencies

ROW Owners

Community Councils

Customers/Project Users



Stakeholders Need to Have Input:

- **Project Scoping**
- **Design Preferences**
- **Permitting**
- **Construction Disturbance**
- **Progress Reviews**
- **Operations & Maintenance**



Suggestions

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**Get Stakeholders Input First,
Then Make Decisions !**



Issue #2

Planning and Design



Budget Constraints



**Low Bid Design Services
(i.e., less design work)**

Planning and Design

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Quote from City Engineer to a Consultant that was not selected:

“...You were the only consultant who really understood the scope of work...”

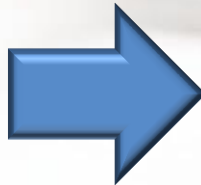
Quote From a Supplier:

“...When we receive an incomplete set of plans we must guess, and if we are wrong we may lose the job...”

Planning and Design

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**Reduced
Planning
and Design**



**Less Complete
Plans and Specs**

**Greater
Unknowns During
Bidding**

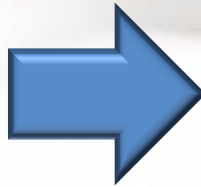
**Contractor
Finishes Design
During
Construction**



Planning and Design

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Reduced
Planning
and Design



Higher Bids &
Change Orders



Lower Quality
Construction

Adversarial
Relations &
Lawsuits



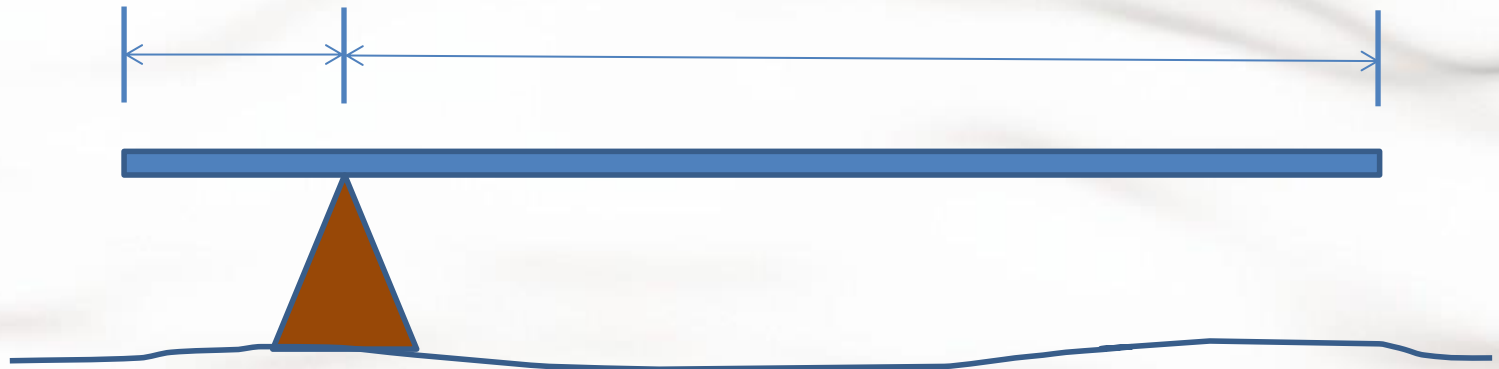
Planning and Design

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Design/Construction Relationship

**10% \$
Planning &
Design**

**90% \$
Construction**



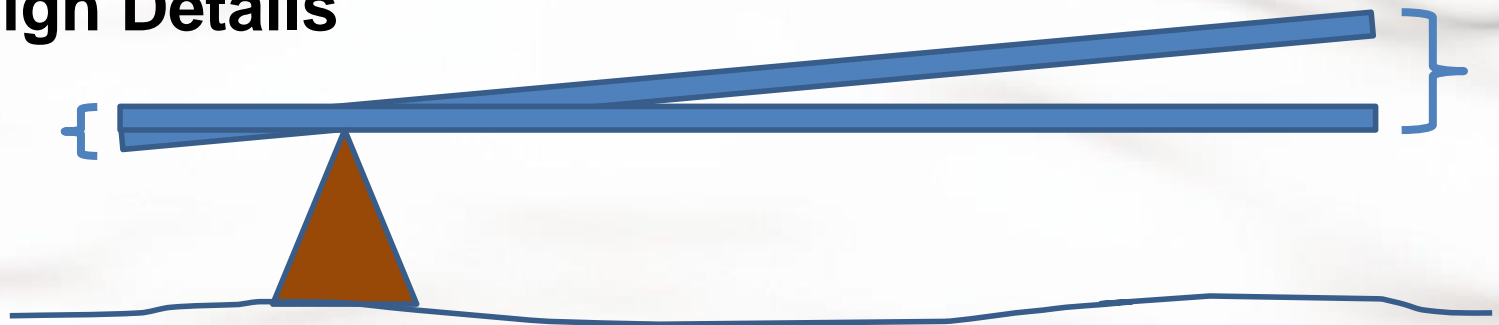
Planning and Design

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Less Planning & Design Leads to Higher Construction Costs

**Less Planning &
Design Details**

**Greater Unknowns
More \$**



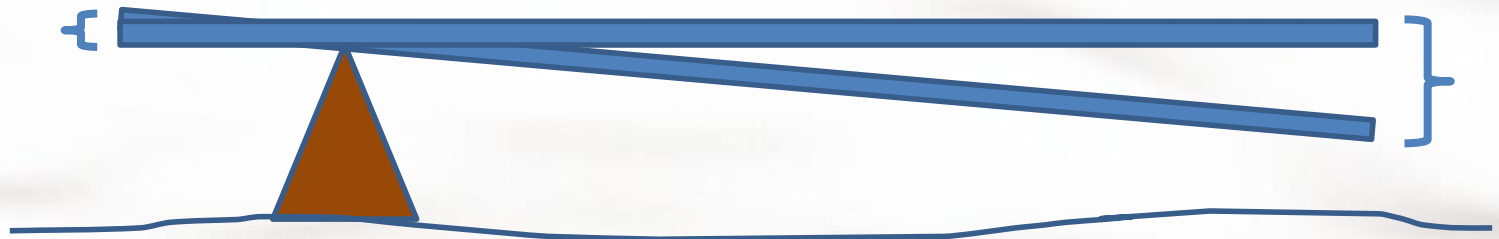
Planning and Design

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**More Planning & Design Leads to
Lower Construction Costs and
Better Projects**

**More Planning
& Design**

**Less \$
Better Project**



Suggestions

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Select Project Engineer Carefully

**Qualified &
Experienced**



Suggestions



**Utah State and the
Federal Government**

**Recommend the Qualifications
Based Selection (QBS) Process**

Suggestions

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**Step 1 – Solicit Statements of Qualification
(No Fee Estimate)**

**Step 2 – Develop a Short List of Qualified
and Experienced Firms**

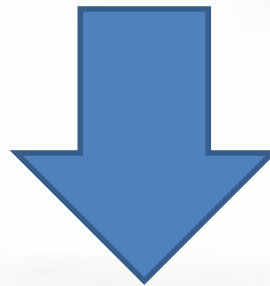
**Step 3 – Solicit Proposals from
Short Listed Firms**

**Step 4 – Negotiate with Highest Ranked
Firm to Finalize Scope of Work
and Fee Estimate**



Value Engineering

**3rd Party Evaluation
of the Design**



**Benefits: 10% - 20% Savings
+ Better Design**

Suggestions

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Ongoing Coordination with Stakeholders

Weekly On Site Meetings

Monthly Council or Board Meetings

Special Coordination Mtgs



Issue #3

QA/QC During Construction



What is Quality Assurance and Quality Control?

- **Reviewing Submittals**
- **On Site Observation by Designers**
- **Photographs & Daily Reports**
- **Materials Testing**
- **WQ Samples**
- **Flushing and Pressure Testing**



Lack of QA/QC Leads to:

- Contractor Making Field Decisions
- Problems Going Unresolved
- Quality of Construction Suffering
- Design Intent not being Achieved
- Stakeholders Feeling “Out of the Loop”



Poor QA/QC Lead to:

- **Unresolved Problems
(may not discover until years later)**
- **Quality of Construction Suffers**
- **Conflicts**
- **Lawsuits**



Suggestions

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Bidding Phase:

- **Pre-Qualify Eligible Bidders**
- **Check References Carefully**
- **Adequate Bidding Period**
- **Pre-Bid Meeting**
- **Addenda**
- **Check Low Bid Carefully & Reject if it is not Responsive**

Suggestions

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Construction Phase:

- **Pre-Construction Conference**
- **Weekly Field Coordination Meetings**
- **Realistic Schedule**
- **Consider Early Completion Bonus**
- **Realistic Punch Lists**



Suggestions

Construction Phase:

Partnering Agreement:

- **Establishes a Win-Win Relationship Between Owner, Engineer and Contractor**
- **Benefit: Significant Quality Improvement**



Summary

- **Stakeholder Involvement**
- **Planning and Design**
- **QA/QC in Design and Construction**



Questions?

■

A dynamic background image featuring a large, energetic splash of blue water against a white background. The water is captured in mid-motion, with many bubbles and droplets visible, creating a sense of movement and freshness. The splash originates from the bottom left and extends towards the right side of the frame.

Thank You!