Important Note:

Due to your overwhelming response to this webinar (over 2,000 participants pre-registered), we intend to aggregate the questions you submit into thematic categories.

We will address some questions at the end of this webinar, but we intend to use the aggregated questions for our next joint PSMJ/XL webinar to drill down further into the problem of change management.

Thanks again for your interest in this important problem.
Using the technology

To minimize the meeting panel, click the arrow

To adjust your screen size, click on the screen button at the lower right corner and then select “full screen”

Webinar leaders

David vanArsdall has worked in engineering and consulting since 1983 and has been with XL Group’s Design Professional unit since 1996. He came to Design Professional from The IT Group, a $1.4B per year NYSE-traded environmental engineering company, where he was the director of government programs. Prior to joining PSMJ, David was a senior principal for Parsons Corporation (one of the nation’s largest and most respected engineering firms), he has held a variety of responsible positions from 1972 through 1997 including President of Parsons’ 1600-person environmental subsidiary and President of Parsons’ 120-person planning subsidiary. David has published four best-selling books and served as principal editor for “Chapter 1: Project Management” for McGraw-Hill’s Standard Handbook of Environmental Engineering. He has conducted over hundreds of seminars to thousands of engineers, architects and other design professionals.

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  - PSMJ Newsletter – Webinar participants receive 18 months of this newsletter for the price of 12 months.
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• Content providers of management information
• Focused exclusively on the A/E/C industry for over 30 years

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<th>Surveys &amp; Books</th>
<th>Seminars &amp; Conferences</th>
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<td>✓</td>
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<td>✓</td>
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<td>✓</td>
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<td>Finance</td>
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<td>Transition</td>
<td>✓</td>
<td>✓</td>
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Learning objectives

After participating in this webinar, you will learn:
- What happens when you fail to plan for project change
- Common causes of change
- How to recognize when change has occurred
- How to bring change to the client
- How to dealing with small, incremental changes
Agenda

1. Why is change management important?
2. Planning for change
3. Dealing with changes during the project
4. When a change turns into a liability claim
5. Summary
6. Discussion

---

Why is project change management important?

---
Have you ever measured rework?

Recent example
- 28 projects
- One calendar year
- Range of fee sizes
- All less than 6 months

Rework hours as percent of total

<table>
<thead>
<tr>
<th></th>
<th>Best</th>
<th>Median</th>
<th>Worst</th>
</tr>
</thead>
<tbody>
<tr>
<td>8%</td>
<td>13%</td>
<td>23%</td>
<td></td>
</tr>
</tbody>
</table>

Client-driven changes

A major engineering firm studied how well they manage client-driven changes

They were collecting only 60 cents on the dollar for client driven changes.

**Client driven.**

So why didn’t they collect what they were due?
- Not asking for the change
- Asking too late
- Poor documentation when they did ask
Most frequent professional liability claim

NOTE: All legal claims must specify some damage by the plaintiff, for which they are seeking redress

The most frequent damage alleged = Economic Loss (48% of total)

29% = Economic loss due to cost overruns

6% = Economic loss due to schedule delays

65% = Economic loss due to inappropriate or faulty design
Communication issues

- 51% - Lack of procedure to identify conflicts, errors and omissions
- 17% - Project issues and potential disputes not handled correctly
- 13% - Scope of services not explained to client
- 9% - Lack of documentation re: changes in scope, budget, etc.
- 6% - Project staff not aware of responsibilities
- 3% - Other
- 1% - Regular progress reports regarding changes not approved

Please quantify the problem...

Estimated losses on construction projects due to mishandled change:

- $15.88B/year – designers responsible for about 7%
  NIST Study 2004 [fire.nist.gov/bfrlpubs/build04/pdf/b04022.pdf]

- 5%-7% of total project profit for designers written off
  Internal XL study 2006

- 7.25%-10.89% range total direct and indirect costs due to rework, scope, and schedule creep
  "The Impact of Rework On Construction & Some Practical Remedies" Navigant Consulting, August 2012
Because each type of change can affect others...

- Political / Public Acceptance
- Changes in IT systems
- Changes in codes
- Security concerns
- Environmental and permitting changes
- Underground/hidden conditions
- Client’s “NFWs” (non-funded wishes)
- Adjacency (land use, tenants, etc.)

Early recognition is easier & cheaper

<table>
<thead>
<tr>
<th>Time</th>
<th>SCHEMATIC DESIGN</th>
<th>DETAILED DESIGN</th>
<th>BID &amp; AWARD</th>
<th>CONSTRUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of the Change</td>
<td>OCCUPANCY</td>
<td>OCCUPANCY</td>
<td>OCCUPANCY</td>
<td>OCCUPANCY</td>
</tr>
</tbody>
</table>
You can’t manage change unless you plan for it

Step 1: Make sure the client understands that change happens

Step 2: Agree on a system for documenting changes

Step 3: Establish “freeze milestones”

Step 4: Agree on how to handle changes that require additional compensation

Step 5: Document the client’s change approval process

Step 6: Set up a “change management reserve fund”

Step 0: Identify the client’s contracting culture
Is it flexible? (Like most small private sector clients)

1. Most change decisions can be handled with a phone call and confirming email.
2. Client PM is typically authorized without the need for a Contracting Officer (but not always).
3. Still important to identify the transactional change steps at the beginning of the project to assure a mutual understanding.

Or is it rigid? (Like most large public sector clients)

Requires forms, pre-approvals and compliance with a contracting policy.

1. Often involves a separate Contracting Office, separate from the client PM who drives technical features.
2. Client PM is charged with getting things done.
3. Client PM will try to persuade the AE PM to embrace change WITHOUT complying with his/her organization’s contracting rules.
4. The AE operates at great risk if they allow this to happen.
5. You CANNOT circumvent your client’s bureaucracy!
6. Document how to process change BEFORE it happens (and it will happen)!
Step 1: Make sure the client understands that change happens as a normal part of the project.

At the kick-off meeting, discuss with client how to handle potential changes in...

- Scope
- Client requirements
- Deliverables
- Fee
- Schedule
- Field conditions
- Codes, standards, regulations
- Our staffing
- Our idea of how to do the project
- Client's PM
- Other potential changes

Step 2: Agree on a system for documenting no-cost decisions and changes

<table>
<thead>
<tr>
<th>Category</th>
<th>Question</th>
<th>Decision Maker</th>
<th>Requested Decision Date</th>
<th>Actual Decision Date</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>Will DOT allow an on-site precast plant for curved PT U-girders?</td>
<td>Paul</td>
<td>July 5</td>
<td>July 5</td>
<td>Yes - can put yard on site for precast tubs</td>
</tr>
<tr>
<td>Design</td>
<td>Barriers: DOT gave direction to use 42&quot; barrier for all ramps and mainline bridges</td>
<td>Jim</td>
<td>October 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geometry</td>
<td>What is the possibility of the existing EB 215 being removed and replaced?</td>
<td>Sarah</td>
<td>July 5</td>
<td>July 9</td>
<td>EB 215 is being removed and replaced</td>
</tr>
<tr>
<td>Utilities</td>
<td>36&quot; Riverside pipeline: when will we be receiving pothole information for this line?</td>
<td>Paul</td>
<td>Sept 20</td>
<td>Sept 20</td>
<td>Received 9/20/11, files located in PW</td>
</tr>
</tbody>
</table>
Step 3: Agree on “freeze milestones”

“The following submittals, upon review and comment by Owner, will serve as the basis for the remaining work to be done by Engineer/Architect. If any change made subsequently by Owner requires Engineer/Architect to perform rework, such rework will be compensated by a mutually agreeable amount.”

Examples:
- Conceptual Design Report
- Basis of Design Report
- Preliminary Engineering Report
- Schematic Design Documents
- Design Development Documents
- 30% Review documents
- 60% Review documents
- 90% Review documents

Stop THE PRESSES!

Step 4: Get agreement on how to handle changes that require additional compensation

Example for a cost-plus-fixed-fee contract

<table>
<thead>
<tr>
<th>Change</th>
<th>Initiated by Owner</th>
<th>Initiated by Consultant</th>
<th>Initiated by Outside Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope</td>
<td>Consultant may request an increase for both cost and fixed fee</td>
<td>Consultant must convince Owner that proposed change is advantageous. In that case, Consultant may request an increase in both cost and fixed fee.</td>
<td>Consultant may request an increase in cost but not fixed fee.</td>
</tr>
<tr>
<td>Field conditions</td>
<td>Consultant may request an increase in cost but not fixed fee.</td>
<td>Consultant may request an increase in cost but not fixed fee.</td>
<td>Consultant may request an increase in cost but not fixed fee.</td>
</tr>
<tr>
<td>Schedule</td>
<td>Consultant may request an increase in cost but not fixed fee.</td>
<td>No increase in cost.</td>
<td>Consultant may request an increase in cost but not fixed fee.</td>
</tr>
</tbody>
</table>
Step 5: Document the client’s approval process

- What documentation is needed?
- When does it need to be submitted?
- To whom is it submitted?
- Who else needs to approve it?
- How long does the process normally take?
- What to do while awaiting approval?

Find out if they have contractual time limits

LA County
- 60 days for Change Notification
- 20 days for Force Majeure

DuPont
- 45 days for Change Notification
- 20 days for Force Majeure

Others???
Step 6:
Ask the client to set up a “change management reserve fund”

- A contingency account controlled by your client’s PM
  - part of your contract, accessed only with client approval
  or
  - a line item in your client’s budget
- Especially good for small changes
- Possibly reduces the need for contract amendments
- Makes it easier to process change requests

And set up a system to keep a running total of the changes

<table>
<thead>
<tr>
<th>Item # and Description</th>
<th>Date</th>
<th>Source</th>
<th>Scope/Work Effort Impact</th>
<th>Budget Impact</th>
<th>Schedule Impact</th>
<th>Notices Required Date Approved</th>
<th>Approvals Required Date Approved</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting Upgrade</td>
<td>9/10/2012</td>
<td>Owner</td>
<td>No</td>
<td>$25,000 over allowance</td>
<td>No</td>
<td>Owner 9/10/2012</td>
<td>Owner 9/10/2012</td>
<td></td>
</tr>
<tr>
<td>CO #4 Building Size</td>
<td>9/20/2012</td>
<td>Owner</td>
<td>Increased by 4,000 sq ft</td>
<td>$250,000</td>
<td>4 weeks est.</td>
<td>Architect Contractor Subcontractors HVAC</td>
<td>Owner 9/20/2012</td>
<td>Site prep drawings must be revised to accommodate larger footprint</td>
</tr>
</tbody>
</table>
What about Value Engineering changes?

“If Engineer presents Owner with a better or more cost-effective approach to the project, such improvements (if approved by Owner) will be considered to be value engineering.

If value engineering is performed, either by Engineer or by a third party, any rework required to implement desirable changes will be compensated by a mutually agreeable amount that considers the value to Owner and the time spent by Engineer.”

How to avoid bait-and-switch by your Subs

• Get all the key personnel identified before agreeing to take them on as a sub
• Find out exactly what other project commitments they have during the duration of your project
• Get them to sign a personal agreement that they will play the proposed role on the project
• Require your advance approval for any changes in key personnel
Concerned about what happens when the client changes their PM?

Protect yourself by adding this term to the contract:

*The parties recognize that a change in key personnel by either party may adversely affect the other party. Therefore, if either party changes assignment of the following key positions, the other party shall be entitled to reasonable, mutually agreeable compensation to offset its costs of lost efficiency:*

- Engineer’s project manager
- Owner’s project manager
- (List any other key positions)

---

Plan for these common trips and traps

1. Spell out applicable codes by edition
2. Insist on a thorough underground investigation
   - Locate utilities
   - Verify soil conditions
3. Locate the project control points and relate everything to the control point.
4. Review the contract boiler plate carefully for wording that may cause you to do uncompensated work, e.g., VE
When the client asks you for extra work on the project...

What do you do in each of these situations?

1. You’re on a lump sum contract and running out of money.

2. You’re on a lump sum contract but are running under budget.

3. You’re on a T&M contract and you are concerned that the additional scope will cause you to exceed your not-to-exceed.

4. You’re on a T&M contract and you are pretty sure you can handle the increase within the not-to-exceed amount.

5. You’re on a T&M contract with no limit.

Evaluating project changes

- Mandatory/external or optional/internal?
- Impact on critical success factors?
- Impact on project risk?
- Who has approval authority?
- Cost within budget contingency?
- Schedule Impacts?
- Potential impacts on stakeholders and interest groups.
What about when you are a Sub?

1. Whenever there's a change, find out immediately if it is owner-driven or prime-driven.
2. If it's prime-driven, agree on who will pay for it before beginning work.

When do you have the most leverage for increasing the fee?

A. Before you start working on the change
B. While you're working on the change
C. When you've completed working on the change
D. When you've submitted the completed change
When do you have the most leverage?

A. Before you start working on the change  
B. While you’re working on the change  
C. When you’ve completed working on the change  
D. When you’ve submitted the completed change

What happens when... you begin working on a change prior to getting the client’s approval?

a. The client will be appreciative because...
b. The client will be unhappy because...
Present some options

- What will happen if we don’t make the change?
- Can we make the change in a way that won’t increase time or costs (e.g., deleting something else from the scope)?
- What are the cost & time implications of making the change?

Got clients frequently requesting small changes?

**Don’t**
- Ignore and hope for the best
- Pursue every little change order
- Accumulate until they become huge

**Do**
- Keep track of them
- Maintain a log of minor changes
- Advise the client of them
- Accumulate to a cost threshold, then negotiate a change
Small Change Log

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Description</th>
<th>Cause(s)</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 21</td>
<td>Change sump pump to submersible type</td>
<td>Request from client's O&amp;M group</td>
<td>• Additional 8 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• No schedule impact</td>
</tr>
<tr>
<td>Jan 26</td>
<td>Provide 6 additional copies of concept design report</td>
<td>Request from Harry to involve more people in the report review</td>
<td>• Additional 4 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• $1,400 additional for printing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• No schedule impact</td>
</tr>
<tr>
<td>Feb 2</td>
<td>Meet with building department to discuss zoning variance</td>
<td>Request from Jill to overcome zoning problem</td>
<td>• Additional 6 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• No schedule impact</td>
</tr>
<tr>
<td>Feb 16</td>
<td>Extend client review period by 3 days</td>
<td>Request from Harry due to his vacation</td>
<td>• Extend schedule by 1 week</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Additional 8 hours of lost productivity</td>
</tr>
</tbody>
</table>

Documenting the change

• Minutes of the meeting in which the client requested the change
• E-mail confirming the client’s request for the change
• Weekly e-mail progress report
• Monthly progress report

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Have you ever…

- Failed to plan properly for the change, and…
- Failed to notify the client promptly of the change, and…
- Failed to properly document the change?

… and still been paid for the change?

How did it happen?

Did you ever have to clean up another PM’s mess?

1. Find out where all the bodies are buried
   ➔ Status the project
2. Develop a detailed recovery plan as if it were a new project
   • Understand the client’s goals & objectives
   • Review deliverables, outstanding scope
   • Assess every team member
   • Assess schedule status, critical path tasks, deliverable due dates
   • Perform an EVA to determine budget status
3. Internal meeting to discuss project status, issues & concerns, plan path forward with team and PIC
4. Get your PIC and client to sign off on your plan
5. Commit to making it happen!
Our “Play Book” for Wrapping Up Study and Design Projects

Will it meet all project objectives if we don’t change it?

Yes, but...

Don’t change it!

No

Define which work is needed to complete

Assign tasks and deadlines

Validate that changes were made properly

Follow Arup’s post-project procedures

What are the warning signs that a change might turn into a liability claim?
Have you ever...

- Client or Prime changes PM
- Client increasingly slow to pay
- Meetings held without you
- Contingency fees broached early in project cycle
- Deluge of RFI's (requests for information)

Advice from the Special Forces...

Run towards the problem
So how do you do all this?

Where do you begin?

• Start with what you know – your own projects
• Take time at the end of projects to review what you can anticipate in the next project.
• Since most designers enjoy an 80% repeat client rate, the odds are very high you will work with the same client/prime/subs at some time in the future.
• Learn to anticipate changes by client type as well as by individual client.
Who pays for this?

- You do. It is overhead time, but it is an investment in your firm's future.
- If you can control scope and schedule creep and respond positively to control change, the payoff for the overhead investment will be many times its cost.
- If you plan for it in advance and involve your client properly, you can often make a post-mortem a billable activity.

Final thoughts

Change is inevitable, but you can control:
- The rate of change taking place
- The documentation of the sources of change
- How you (as a firm) react to change
- How to recognize the first signs of change as they occur
Questions?

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