Construction Risks

Presented by

Andrew Lonergan

JS|HELD

J.S. Held LLC Company Background

J.S. Held is a leading consulting firm specializing in construction claims services, forensic architectural & engineering services, and environmental consulting services.

Our organization is built upon three fundamental pillars:

1. To provide high-quality technical expertise;
2. To deliver an unparalleled client experience; and
3. To be a catalyst for change in our industry.

Our Consulting & Engineering Services include:

- Construction Claims Services
- Property Damage Consulting
- Builders Risk Consulting
- Appraisals
- Drone Services
- Commercial Equipment Consulting
- MEP Consulting
- Construction Defect Consulting
- Project Scheduling & Planning
- Litigation Support
- Expert Witness Testimony
- Code Review
- Origin & Cause Analysis
- Mold & Indoor Air Quality Consulting
- Environmental Assessment (IH)
- Surety Claim Services
- Construction Management
- Project Monitoring
- Roof Consulting & Roof Lab

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Presenter Introductions

Andrew Lonergan
Vice President – Construction Advisory Practice Group

Construction Risks

Presented to:

UCIP Risk Management Workshop

Presented by J.S. Held LLC

Andrew Lonergan
Vice President | Construction Advisory

October 23, 2019

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Today's Learning Objectives

1. What are the Risks
2. Shifting of Risk = Claims
3. Builders Risk Specifics
4. Documents
5. Claim Costs
6. Claimed Time

Q & A

Part 1

What Are the Risks

“Who is responsible?”

Construction Risks

- Accidents
- Force Majeure
- Unforeseen Conditions / Errors & Omissions
- Contractor Delays or Defaults / Errors in the Work

Construction Risk Response

Accidents

- Builders Risk Claim- Time & Money for Multiple Parties

Force Majeure

- Excusable & Non-Compensable Change Order- Time to Contractor with no Money paid by Owner

Construction Risk Response

Unforeseen Conditions / Errors & Omissions

- Excusable & Compensable Change Order – Time to Contractor & Money paid by Owner

Contractor Delays or Defaults / Errors in the Work

- Non-Excusable & Non-Compensable, No Change Order- No time or Money given by Owner, possible collection of LD's with proper Notice.

Part 2

Shifting of Risk = Claims

"This is not what I signed up for…."

Shifting of Risk = Claims

Impossible to predict all types of claims

- Delays-Compensable & Non-Compensable
- Changes- Unforeseen, Disputed
- Manpower Issues
- Material Issues
- Defective work
- Accidents

The Risk does not go away, it changes hands. Documentation helps prove Entitlement and support Damages

Conditions Which Can Lead to Time Impact Claims

- Extended period of performance (E.P.P.)
- Disruption (can lead to E.P.P.)
- Acceleration (can flow from disruption and (maybe) lack of E.P.P.)

Delay Claim

Impact to critical path (actually delayed project)

- There was timely and proper notice given
- Impact and delay was not concurrent with other impacts
- There is a link to damages claimed

Schedule Driven Analysis

(As-Plan vs As Built / TIA / But-For)

Acceleration Claim

Despite a delay, you must finish on time

- Owner/GC refusal to grant time extension
- Express or implied order of Owner/GC to perform to schedule
- Contractor/Sub efforts to speed up work resulting in extra costs
- Schedule Driven Analysis

Loss of Productivity Claims

Project Conditions- We could not complete the work the way we intended to do it

- Environmental
- Sequencing changes
- Labor assignments
- Timing
- Related to “accelerated conditions” (trade stacking, concurrency, etc.)

Methods for Loss of Productivity Claims

LOP claims are made for activities where additional costs were incurred.

The process is often a backing into the loss

Methods:

- Total Cost Method (TCM)
- Modified Total Cost (MTC)
- Estimate based upon causal factor impact - MCAA
- Earned Value Analysis
  - Stand alone for discrete activities AND/OR
  - Substantiate MTC
- Measured Mile
  - Stand alone for discrete activities AND/OR
  - Substantiate MTC
  - Data Driven Analysis, Schedule Supported

Defenses are:

- Notice and waiver
- Accord and Satisfaction
- Exculpatory and limiting clauses

- No causation shown - correlation does not = causation
- No mitigation efforts
- Bid errors – material errors?

No link between causal factors shown to be responsibility of other party and damages of claiming party

Part 3

Loss Basics & Coverage Issues –

"What do you mean I didn't buy that coverage?"

Builder's Risk Is Unique

- Coverage is for properties in the course of construction or renovation
- Coverage Amount is based on a concept that may change during construction
- Any delays must be due to a covered cause of loss

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Typical Coverage Issues – Is It Covered?

- Usually Covered - Property intended to become a "permanent" part of the structure
- Potentially Covered - Land and Water, but only to the extent that they are "consequentially" involved in the project such as excavations
- Usually Not Covered – Equipment, materials, and systems used in the construction of the project which are temporary or can not be re-used:
  - *Formwork*
  - *Cranes & Equipment*

Additional Coverage

Policies will often provide extra expense and expediting expense coverage:

- Extra Expense – costs associated with the impact of a loss on the contractors non loss related (base contract) work

- Expediting Expense – Expediting base contract work (non loss related repairs) and/or Expediting loss related repairs

Time Element Coverage

Soft Cost Coverage for a “delay” caused by a covered cause of loss usually includes:

- Interest on Construction Financing
- Additional Real Estate Taxes
- Additional Marketing and Leasing Expenses
- Additional Architect and Engineering Costs
- Additional Administrative Costs
- Additional Legal and Accounting

- Deductible is typically a “waiting period”

Measuring Time Element Claims

Measurement requires determining two important dates:

- The date the project would have completed had no loss occurred.
- The amount of delay caused by the loss.

Losses are typically measured by measuring the period of delay, less any waiting period.

Time Element Coverage Trigger

- Coverage is only afforded if a covered loss results in a delay (must have physical damage).
- The "delay" is not measured by the time it would take to make repairs. Delay is the time the project completion is extended beyond the date it would have completed had the loss not occurred.
- The period of indemnity commences on the date that the project would have completed had no loss occurred - therefore the "period of restoration" for physical damage and period of delay for time element losses "rarely" run concurrently.
- In other words: **Period of Repair ≠ Period of Delay**

Typical Disputes

- Cost of repair – labor, material, productivity, overhead, profit, and other fees
- What is P.D. versus Non-P.D. expense?
- Establishing the date the project would have completed had no loss occurred
- The period of loss related delay

Early Involvement in Loss Projects Allows Us to:

- Set expectations regarding delay analysis, document requirements, and the claim review
- Photograph the progress of the project at time of loss, which will allow us to determine if project was on schedule
- Document and reach mutual agreement on scope of loss, then allows us to track the progress of repairs
- Review potential for mitigation or acceleration (i.e. can we spend $10,000 to save $20,000?)

Early Loss Project Inspection:

- Inspect loss related damage and areas, but also……

- Inspect non-loss related areas for:
  - Status of overall project
  - Progress of work in non-loss areas of the project
  - Preparation for potential delay claim

Part 4

Documents

"Why do you need all of this stuff?"

Documents – Tell the story

<u>Proof of Actual Performance-</u>

- Daily Reports, Meeting Minutes, Correspondence, & Inspection Reports
- Contracts & Subcontracts
- Schedule and sequence- CPM, Pull Mtgs, 3-Week LA
  - Are they accurate?
- Pay Applications, Estimates (Unit prices, Labor productivity ,Detailed take-offs)

We use these documents to put together the status of the project in order to validate or dispute the claim.

Documents – Cost Verification

Proof of Damages

- Detailed Job Cost Transaction Report- Coding is critical
- General conditions
- Payroll information: Lost Production = Actual Costs Spent
- Change Orders- Accord & Satisfaction/ Double Dipping

We use these documents to verify Overhead and Profit Markups, Staff/Personnel Rates, Values of Work, Unit Prices Labor Rates, Material Cost, Equipment Costs.

Daily Construction Reports

- Knowledgeable person (sign)…contemporaneous
- Describe what happened, where, with whom
- Describe what it was like (environmental conditions as well as general work conditions for each area)
- Describe what was supposed to happen and could not
- Impacts to certain activities
- Identify why an activity that was started but not worked on (and possibly why)
- Changed or possible changes worked on with all of the above described

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Date Tue 04/30/2019 **Job #** 2861BC **Prepared By**

Weather

6:00 AM	12:00 PM	4:00 PM
45°	60°	58°
Clear	Partly Cloudy	Clear
Wind: 6 MPH | Precipitation: .0" | Humidity: 74%	Wind: 9 MPH | Precipitation: .0" | Humidity: 44%	Wind: 12 MPH | Precipitation: .0" | Humidity: 40%

Work Logs

Name	Description	Quantity	Hours	Hours To Date
Alliant Systems LLC	Installing under slab plumbing between gridlines E8-E15. Ryan Sloane | 04/30/19 | 05:03PM	3	10	424
Caughlan's Flooring		0	0	0
Central Coast Excavation	Set and compact grade for curb at SW parking lot. Dig for Alliant under slab plumbing, backfill and set grade for Concrete. Install irrigation sleeves from new building to upper pond. Ryan Sloane | 04/30/19 | 05:15PM	7	10	185
Cole Surveying	Survey curb at 9th street Ryan Sloane | 04/30/19 | 05:16PM	2	3	40
Columbia Concrete Sawing Co.	Concrete removal at BRB locations. Brick removal on west elevation. Ryan Sloane | 04/30/19 | 05:17PM	4	8	812.25
Eagles View Const.	Cutting C-channel and installing on second floor per note 7 on SR1.22 referring to detail 9/SR 2.23. Removing welded light and equipment boom support structures. Ryan Sloane | 04/30/19 | 05:20PM	6	10	696
FEI		0	0	1.5
GroundFX		0	0	25
Harvey & Price	Removal of sprinkler pipe on second floor and penthouses. Ryan Sloane | 04/30/19 | 05:22PM	2	8	168
Mid Valley Construction		0	0	205.75
Mill Plain Electric	Auger and set sonotube, rebar cages, and run conduit for light pole bases in SW parking lot. Ryan Sloane | 04/30/19 | 05:26PM	4	10	774.5
	Jared removing debris from roofs and removing felt paper from exterior walls. Foreman meeting held this morning. Reviewing Submittals. Ryan Sloane | 04/30/19 | 05:30PM	6	8	2198.75
NorthStar		0	0	1824
Out Door Fence Co.		0	0	0
People Ready	Joe cutting and removing brick lintel on east side of 88'.	1	8	32
	Ryan Sloane | 04/30/19 | 05:33PM			
Rau Plumbing		0	0	8
RK Construction	Forming for footing at electrical/IDF/bio bumpout. Ryan Sloane | 04/30/19 | 05:34PM	2	6	28
Salem Fire		0	0	8
Samaritan / Owner-Subs		0	0	303.5
ThyssenKrupp		0	0	15
W.L Thomas Environmental		0	0	0.75
Total		37	322	9598.75

Time Cards

Notes, Issues, Concerns

Survey

Questions	N/A	No	Yes	Description
1. Did any schedule delays occur?	☐	☐	☑	Removal of the roof has not started back up since 4/18/19 and awaiting results from roof sampling for asbestos. Ryan Sloane | 04/30/19 | 05:42PM
2. Did weather cause any delays?	☐	☑	☐	
3. Was a QC Walk performed today?	☐	☑	☐	
4. Were there any QC/QA deficiency items issued or corrected?	☑	☐	☐	
5. Any inspections today? What was inspected?	☐	☐	☑	Alliant, UG sanitary waste and vent hydrostatic test inspection between gridlines 14.1-15. Ryan Sloane | 04/30/19 | 05:42PM
6. Any 3rd party inspections today? What was inspected?	☐	☑	☐	
7. Was the SWMP inspection performed today? (Please comment)	☐	☑	☐	
8. Any safety warnings issued and to whom?	☐	☑	☐	
9. Any safety observations entered in the project OAE database?	☐	☑	☐	
10. JHA/SOW safety checks reviewed?	☐	☑	☐	
11. Was a job safety meeting held on site today? With whom?	☐	☐	☑	Nee mee join Ryan
12. Any safety incidents on site today? Was an Incident Analysis performed?	☐	☑	☐	
13. Were any RFI's sent or received today?	☐	☑	☐	
14. Any EWA's issued today? To whom?	☐	☐	☑	CCE, installation of irrigation Sleeve to upper retention pond. Ryan Sloane | 04/30/19 | 05:46PM
15. Any materials delivered today?	☐	☐	☑	Alliant) Grease trap. Ryan Sloane | 04/30/19 | 05:46PM
16. Any equipment rented on site? (Please comment)	☐	☐	☑	8k Forklift and a 65' stick boom. Ryan Sloane | 04/30/19 | 05:46PM
17. Any visitors on site? (Please comment)	☐	☑	☐	

RS

I have reviewed and completed this report.
Ryan Sloane | 04/30/19 | 05:47PM

Meeting Minutes

- Prompt preparation and review; respond back in writing if any misunderstandings
- Use other documentation tools (logs and schedules) to run meetings and document meeting proceedings
- Identify action requirement (who and date) and why
- Keep factual
- Use as notice but don’t rely upon too heavily for cost or time events
- Request knowledge of Impacts or Disruptions

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MEETING MINUTES

Meeting Subject: OAC Meeting
Meeting Date: Tuesday, April 30, 2019 10:00 AM

Project #:
Project Name:
Project Address:

Meeting #: 055
Meeting Track: Owner Meeting Minutes
Meeting Location:

Attendees

	Attendee	Company	Notes
X	Dave		
X	Troy		
X	Walt		
X	Dan		
X	Jess		
X	Mike		
	Cara		

Attendee	Company	Notes
Andre		
David		
Erik B		
Migue		
Mike S		
Taylor		

Acceptance/Exceptions of Meeting Minutes

The above meeting minutes constitute our understanding of the topics discussed and directives given. These meeting minutes are hereby submitted to the Owner's Representatives for formal review and acceptance. Please review these meeting minutes for accuracy. It will be assumed that the meeting minutes are accepted unless you provide written exceptions to The Neenan Company within 3 days of receipt.

Meeting Agenda

Item ID	Description and Notes	Responsibility	Due Date
00.000.00 NEW ITEMS			
00.000.00 Open	**Agenda**		
10.000.00 SCHEDULE			
10.000.01 Open	**Schedule** 04/23/2019 Interior: Flooring & base to be completed this week. Glassing ongoing complete next week. Entry lobby finishes ongoing t be completed in 2 weeks. Exterior: Weather on April 10th delayed site work for 3 days Wed - Friday. for the West deck & site concrete & grading. Site concrete at front entry ongoing with cap replacement set to be complete next week.		

Item ID	Description and Notes	Responsibility	Due Date
	04/30/2019 Front entry Metal panels shipment date pushed back to mid May, exact date TBD. Interior: Final inspections are schedule for next week 5/08. Flooring & glazing on going. Entry lobby tracking to complete by 5/10. Exterior: Parking area sub-grade needs additional day to complete, weather permitting. Paving on dates are set for 5/15 & 5/16. Exterior painting is progressing, complete on the north and moving around the east & south. Landscape will begin after the paving is complete & will not be complete by the 5/31. Owners understand and agree on the sequencing.		
20.000.00 OWNER ITEMS			
20.000.33 Open	**Restroom wall tile base** 04/09/2019 The Schluter cove fix installed by MVF is not acceptable. 04/23/2019 will work with MVF to provide and acceptable solution. MVF will replace the base tile with cove base, removing the existing base tile. Schedule will need to be coordinated with Madwire & is TBD.		
20.000.35 Open	**Pricing and additional work** 03/12/2019 Dan to provide Contingency Log update, Madwire pricing & OIL update by end of week. 04/09/2019 Owner C&S change order 004 revision will be reviewed and finalized by end of the week, 4/12. 04/30/2019 Owners provided executed OCO 04 & 05.		
20.000.40 Open	**Basement demo & equipment consolidation** 04/02/2019 Dan, Dave and Troy will meet today with all the subs 04/09/2019 The basement scope meeting held on 4/02, provided coordination for the remaining work. Kobobel will remove the branch fire protection heads around the ductwork that will be removed and use the existing main system near the ceiling to provide the code required coverage in the basement. A chase area below the Madcafe was identified that may need closed with gypboard to allow the basement fire protection to function correctly. Other ceiling chases may need to be addressed, and will be looked at once the ducts are removed over the next week or two. Bret's will look at removing the fire alarm boxes if it can be done without affecting the overall alarm system. Bret's will also complete their electrical panel & sub-panel consolidation as agreed. Additional coordination with Owner & Shadrach will continue & is important for safety. HVAC & Plumbing did not have any additional work at this time. 04/23/2019 Walt provided a code review confirming that 3 story shafts must be 1 hour rated & 2 hour shafts are ok.		

Correspondence

- What counts as Correspondence?
  - Letters, Email, Text, Photos, Spreadsheets
- Establish outgoing protocol and ingoing protocol (by or to whom, what, filing, dating, numbering, etc.)
- If NOTICE, understand technical requirements
- Short and to the point

Correspondence

- Clear & Simple
- Specific
- Timely
- Consistent with contract requirements
  - Be aware of contract terms
- Don’t Sound like a lawyer
- Objective & Factual - Keep emotions out
- How will it read 3 years from now?
- Solution Focused-Proactive
- Close the loop - Don’t leave anything hanging!

Project Schedule Basics

Project Schedule:

- The plan for construction of the project which is typically created by the construction manager or general contractor, and which depicts the sequence and duration of construction activities, typically in Bar Chart or “Gantt” chart format

Critical Path:

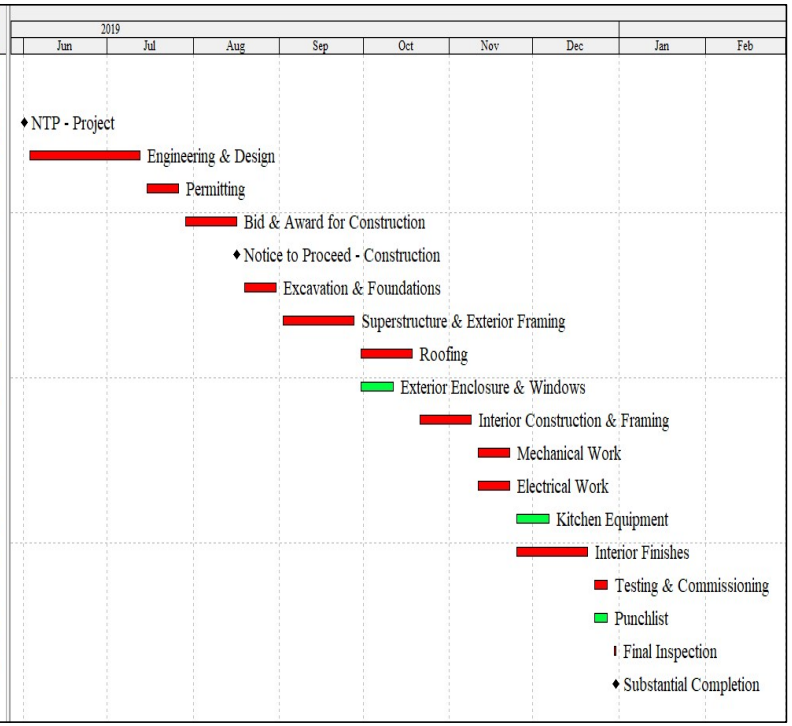
- The longest continuous chain of activities which establishes the minimum overall project duration

Total Float:

- The amount of time that an activity can be delayed from its early start date without delaying the project finish date

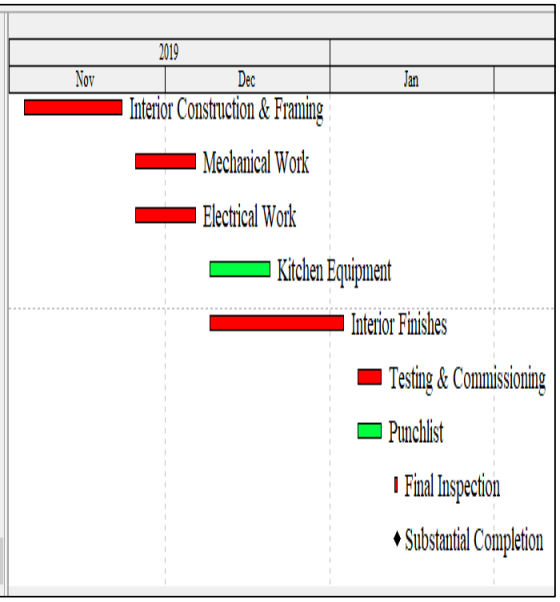
Bar Chart ("Gantt" Chart) & Critical Path

Activity ID	Activity Name	Original Duration	Total Float
Bar Chart Example		1653	0
A1190	Demo & Debris Removal	15	1542
A1000	NTP - Project	0	0
A1020	Engineering & Design	30	0
A1030	Permitting	10	0
A1040	Bid & Award for Constructio	15	0
A1050	Notice to Proceed - Construc	0	0
A1060	Excavation & Foundations	10	0
A1070	Superstructure & Exterior Fra	20	0
A1080	Roofing	15	0
A1120	Exterior Enclosure & Windov	10	30
A1090	Interior Construction & Fram	15	0
A1100	Mechanical Work	10	0
A1110	Electrical Work	10	0
A1130	Kitchen Equipment	10	16
A1140	Interior Finishes	20	0
A1150	Testing & Commissioning	5	0
A1170	Punchlist	5	1
A1160	Final Inspection	1	0
A1180	Substantial Completion	0	0



Activity Float

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Total Float
A1090	Interior Construction & Fram	15	15	04-Nov-19	22-Nov-19	0
A1100	Mechanical Work	10	10	25-Nov-19	06-Dec-19	0
A1110	Electrical Work	10	10	25-Nov-19	06-Dec-19	0
A1130	Kitchen Equipment	10	10	09-Dec-19	20-Dec-19	16
A1140	Interior Finishes	20	20	09-Dec-19	03-Jan-20	0
A1150	Testing & Commissioning	5	5	06-Jan-20	10-Jan-20	0
A1170	Punchlist	5	5	06-Jan-20	10-Jan-20	1
A1160	Final Inspection	1	1	13-Jan-20	13-Jan-20	0
A1180	Substantial Completion	0	0		13-Jan-20	0



Basics of Scheduling

- A project schedule should represent the contractors plan to successfully achieve the project goals, i.e. complete the project "on time and on budget"
- Contractors will typically update the schedule at least monthly;
- Schedules include "logic" – relationships between the work activities in order to reflect the sequence of work

Basics of Scheduling

Contractors are expected to re-sequence activities to overcome or at least minimize delays from events such as losses that can arise on any construction project.

But… Stuff Happens… So…

Contractors typically:

- Adequately plan the project
- Execute the plan
- Monitor the plan
- Adjust the plan for actual conditions
- Re-plan the plan

How Schedules Are Developed

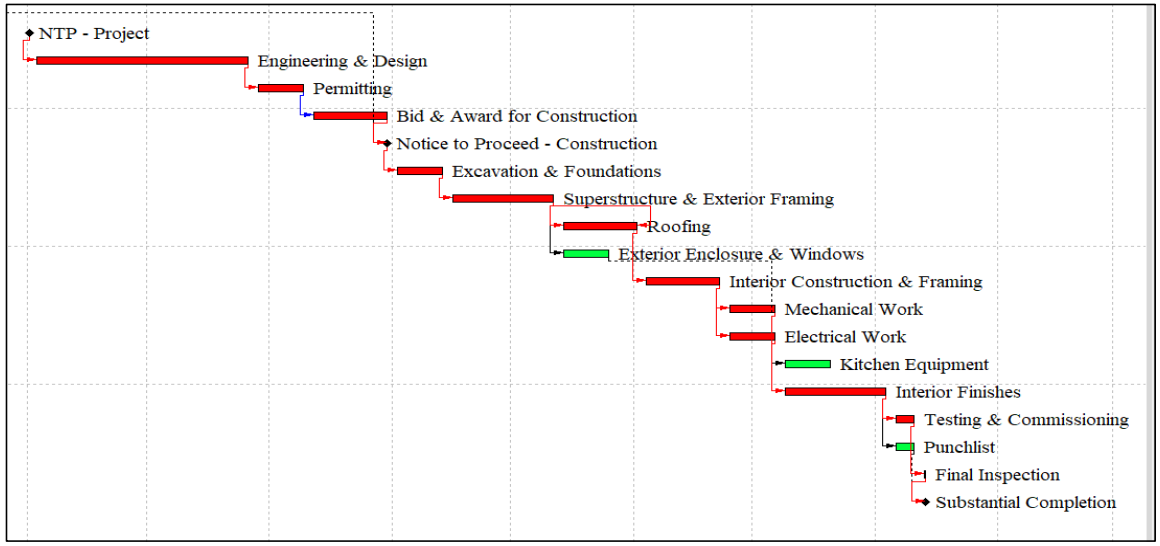
- List of activities that can be measured
- Durations are calculated, not guessed:

$$\frac{\text{QUANTITY}}{\text{PRODUCTIVITY}} = \text{DURATION}$$

- Logical sequence of activities – Predecessors & Successors

Activities & Logic

Each activity in the schedule is connected by logic ties called Predecessors and Successors:



Document Review

"That's a lot to keep up with."

Impact/Change Events

- Have a system of documentation collection
- Require and follow through with notice requirements
- Collect as much data regarding labor, equipment and materials
- Be aware of and sensitive to contractors documentation (external and internal) and notice of [potential] change events
- Track Contractors & Subcontractors Labor and Performance
- Keep logs and use in meetings
- Reference in OAC reports

Create an Issue File

Types Of Documents

- Bid Docs/ Estimates
- Construction schedules
- Submittal/Procurement schedule/log
- Contract Documents
- Meeting Minutes
- Daily Construction Reports
- Correspondence
- Important “milestone” events
- Change event documents
- RFIs and logs
- Supplier Material Logs
- Coordination drawings
- Photographs & Video
- Project Close-out documents
  - Punch lists
- Inspection/QA-QC Documentation
  - Engineer/Architect Field Report
  - Non-conformance Log and Reports
- Job Cost Reports
- Payment Applications
- Sub Contracts & Proposals

Part 5

Claimed Costs

"How much is all this going to cost, and who's paying for it?"

Valuation Issues

Builders Risk v Non-Insured Claim

<u>Builders Risk</u>

- Coverage is usually at replacement cost
- Amount is usually determined from either original estimates or contracts
- Overhead & Profit (Markups) – Per contract terms or what is “Reasonable”?
- Markup definition – What’s included and what isn’t (jobsite overhead, home office overhead, insurance, bonds, etc.,)

<u>Non-Insured Claim</u>

- What can be proven to be necessary and reasonable

Delay Costs and Extended General Conditions (GC's)

Builders Risk & Non-Insured Claim

- Only paid if a critical path delay
- What additional costs were incurred due to the loss/impact……and what costs weren't?
- What was rate of GC expenditure at time of loss/impact (verify with pay apps or job cost documents)
- Historical/Pre-Loss/impact basis for Extended GC's – verify with pre-loss time extension change orders, contract terms

Extended General Conditions (GC's)

Row Labels	Grand Total	Non-Labor Subtotal	Non-Mgt Labor Only Subtotal
01-013 Misc Office Supplies	$2,375.93	$2,375.93	
01-019 Temp Heat	$31,154.12	$31,154.12	
01-020 Trucking/Mileage	$15,156.12	$15,156.12	
01-021 Cell Phone/Internet	$8,097.67	$8,097.67	
01-023 Small Tools	$12,372.80	$12,372.80	
01-030 Rent Adjacent Lot	$37,240.34	$37,240.34	
01-500 Temp Utilities	$59,622.47	$59,622.47	
01-520 Job Office	$18,541.10	$18,541.10	
01-521 Storage Unites	$0.00	$0.00	
01-540 Safety/OSHA	$17,476.63	$17,476.63	
01-561 Dumpsters	$0.00	$0.00	
01-562 Portable Toilets	$33,994.49	$33,994.49	
01-920 Site Labor (Reduced by $7000 from CO#5)	$103,586.16		$103,586.16
01-930 Misc GC Items ($2,500/mo Allow)	$65,000.00	$65,000.00	
Refund of Temp Heat-Amerigas	-$1,545.90	-$1,545.90	
Grand Total	$403,071.93	$299,485.77	$103,586.16
Start thru Jan 2019 (6/1/16-7/24/18=784 cd)		784	784
Sub-Total Daily Rate GC's		$382.00	$132.13
Total Daily Rate GC's			$514.12
Daily Rate GC's			$514.12
Avg. Rate for Staff Labor During Impact Period			$1,910.22
Total GC & Staff Labor Daily Rate			**$2,424.34**

Claim Cost Analysis and Issues

- Delay costs disguised as direct repair costs
- Acceleration/overtime for base contract work – Premium Time only
- Lack of documentation provided or maintained
- Inefficiency/Lost Productivity Claims
  - Difficult to prove and substantiate
  - Supporting Documents – actual productivities ("Measured Mile")

Calculation of Labor Cost

Calculation of Average Daily Labor Rate- Staff Labor

Month	Production Period	Wages	Benefits	Taxes & Fees	Total Labor	Sum Prod. Period	Start	Finish	CD	$/CD	$/MO
Jun-16	Earthwork & Concrete	$ 12,263.10	$ 2,087.99	$ 769.68	$ 15,120.77						
Jul-16	Earthwork & Concrete	$ 10,263.10	$ 1,911.28	$ 581.30	$ 12,755.68						
Aug-16	Earthwork & Concrete	$ 14,193.10	$ 2,588.86	$ 682.48	$ 17,464.44						
Sep-16	Earthwork & Concrete	$ 25,174.05	$ 1,899.48	$ 2,099.93	$ 29,173.46						
Oct-16	Earthwork & Concrete	$ 29,802.96	$ 5,735.23	$ 1,862.46	$ 37,400.65						
Nov-16	Earthwork & Concrete	$ 34,071.21	$ 4,773.20	$ 1,803.40	$ 40,647.81		**Average Rate During Earthwork & Concrete**				
Dec-16	Earthwork & Concrete	$ 32,703.21	$ 5,619.22	$ 1,922.08	$ 40,244.51	192,807.32	6/1/2016	12/31/2016	214	**$ 900.97**	$ 27,407.47
Jan-17	Production Construction	$ 34,825.35	$ 4,501.49	$ 3,000.15	$ 42,326.99						
Feb-17	Production Construction	$ 36,333.24	$ 5,997.60	$ 2,352.12	$ 44,682.96						
Mar-17	Production Construction	$ 56,517.86	$ 6,997.07	$ 5,379.97	$ 68,894.90						
Apr-17	Production Construction	$ 38,457.49	$ 6,030.77	$ 2,158.75	$ 46,647.01						
May-17	Production Construction	$ 37,638.12	$ 5,555.37	$ 2,295.79	$ 45,489.28						
Jun-17	Production Construction	$ 41,667.49	$ 6,365.33	$ 2,548.39	$ 50,581.21						
Jul-17	Production Construction	$ 33,899.62	$ 4,820.80	$ 2,533.54	$ 41,253.96						
Aug-17	Production Construction	$ 34,614.74	$ 5,332.10	$ 2,067.43	$ 42,014.27						
Sep-17	Production Construction	$ 48,229.36	$ 7,429.31	$ 2,880.60	$ 58,539.27						
Oct-17	Production Construction	$ 32,843.99	$ 4,952.60	$ 2,090.30	$ 39,886.89						
Nov-17	Production Construction	$ 38,206.12	$ 5,762.56	$ 2,432.17	$ 46,400.85						
Dec-17	Production Construction	$ 38,622.49	$ 5,532.48	$ 2,981.43	$ 47,136.40		**Average Rate During Period of Impact**				
Jan-18	Production Construction	$ 42,810.39	$ 6,470.47	$ 3,552.56	$ 52,833.42	529,714.53	12/1/2017	8/30/2018	273	**$ 1,940.35**	$ 59,025.33
Feb-18	Production Construction	$ 44,418.54	$ 6,869.43	$ 3,362.92	$ 54,650.89	-8,225.00	Reduction for Direct Cost (CO#5)				
Mar-18	Production Construction	$ 67,261.56	$ 9,060.58	$ 5,491.60	$ 81,813.74	521,489.53			273	**$ 1,910.22**	$ 58,108.83
Apr-18	Production Construction	$ 48,235.37	$ 10,469.72	$ 4,392.32	$ 63,097.41						
May-18	Production Construction	$ 45,735.04	$ 9,525.16	$ 4,356.40	$ 59,616.60						
Jun-18	Production Construction	$ 47,707.29	$ 6,067.80	$ 3,419.41	$ 57,194.50						
Jul-18	Production Construction	$ 50,161.29	$ 6,624.54	$ 3,674.15	$ 60,459.98						
Aug-18	Production Construction	$ 44,557.18	$ 5,086.48	$ 3,267.93	$ 52,911.59		**Average Rate During Production Period**				
Sep-18	Production Construction	$ 5,000.00	$ 4,361.49	$ 2,237.72	$ 11,599.21	1,068,031.33	1/1/2017	9/30/2018	638	**$ 1,674.03**	$ 50,924.00
Oct-18	Closeout	$ 5,000.00	$ 631.46	$ 383.08	$ 6,014.54		**Average Rate During Closeout Period**				
Nov-18	Closeout	$ 5,000.00	$ 692.82	$ 368.13	$ 6,060.95	12,075.49	10/1/2018	1/31/2019	123	**$ 98.17**	$ 2,986.47
	Avg	$ 34,540.44	$ 5,325.09	$ 2,564.94	$ 42,430.47		**Total Average Daily Rate**		30.42	**$ 1,394.97**	
	Ttl				$ 1,272,914.14						

Part 6

Time Element Analysis

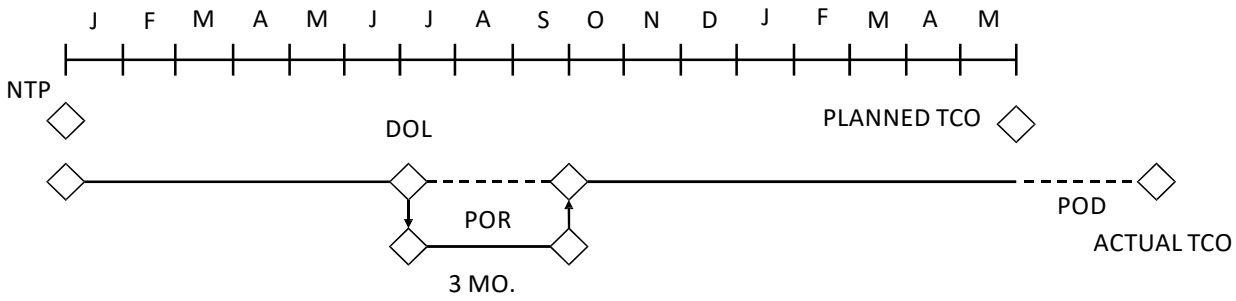
“How long will this take?”

Analyzing a Schedule

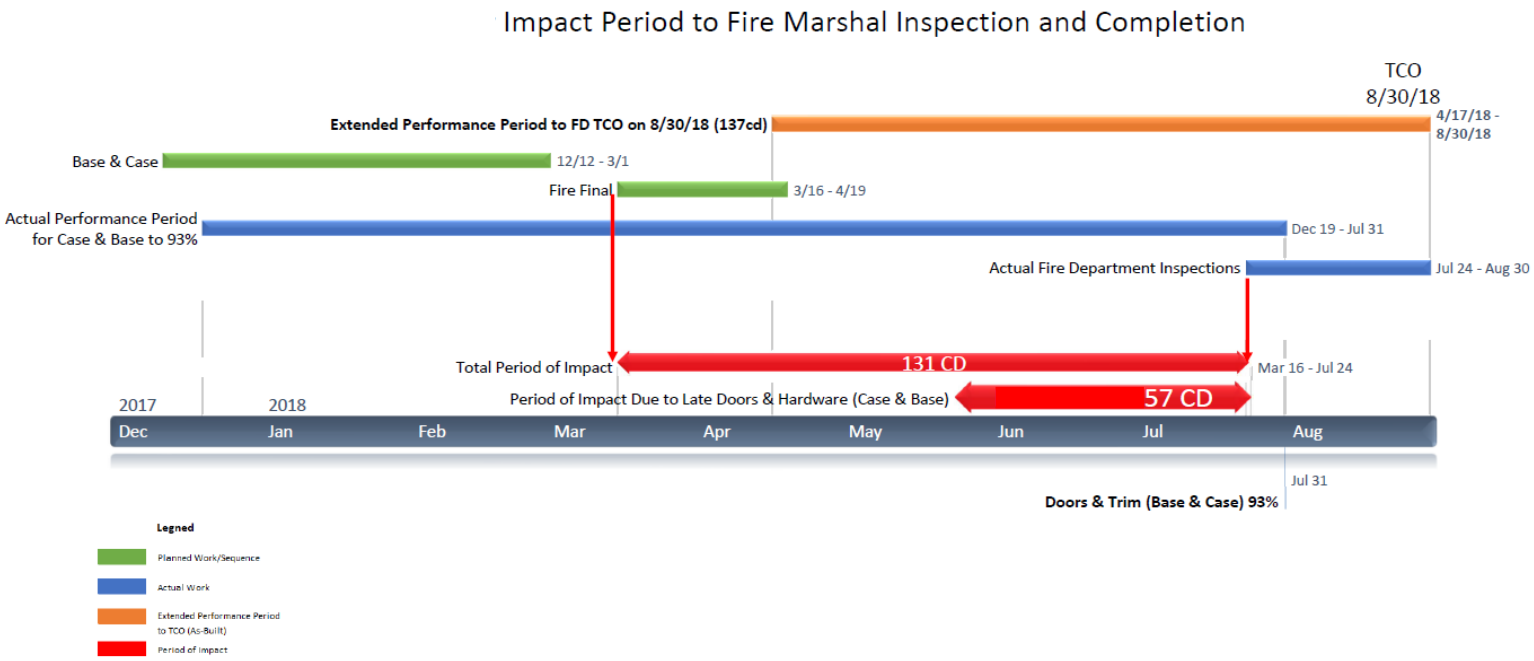
- PDF schedules vs. electronic schedules – “We need native files!!!”
- Month-to-Month progress and completion date
- Logical and Reasonable Critical Path
- Activities with Constraints
- Activities without Predecessors & Successors
- Planned vs Actual activity durations
- Owner change orders affecting the schedule

Developing the Period of Restoration and Resulting Period of Delay

- What constitutes delay?
- What is concurrency?
- **Period of Repair ≠ Period of Delay**



Measurable Impacts



Takeaways

- Risks do not go away- transferred between parties.
- Claims arise when one party believes it was required to bear the results of a risk it did not agree to accept.
- Claims come in many “flavors”- understand them and how to defend against them.
- Action and Documentation help tell the story and identify the responsible parties.
- Contract requirements help tighten the proof necessary to prove a claim.

Questions and Discussion

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