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"I Can't Make it on Time"
How to Defend and Prosecute Delay Claims

Angela M. Richie
Jean M. Terry

Every Claim

What Should Have Happened

vs

What Actually Happened

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Every Claim

- Entitlement
  - Time
  - Money

- Quantification
  - Time
  - Money

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Entitlement

- Contract

- Proof = Facts + Documentation

- Contract Administration

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Contract

- Basis for Entitlement
  - ✓ Money
  - ✓ Time

- Sets the rules for compliance and recovery

- Discuss with counsel

- Understand what you're signing

- Project Management = Contract Administration

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Contract Provisions

- Change Order Clause

- Time Extension

- Notice Requirements

- Claim Provisions

- Schedule Requirements

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Contract

- General Contract
- General Conditions
- Supplementary Conditions
- Specifications
- Drawings
- Special Provisions
- Government / Incorporation by Reference

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Contract

- Before You Sign
  - ✓ Review with counsel
  - ✓ Read thoroughly, ask questions

- After You Sign
  - ✓ Tab for reference
  - ✓ Create an extract
  - ✓ Ask questions if needed
  - ✓ Comply with provisions

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How to Prepare and Defend Against Claims

Communicate your Plan
- Prepare and obtain agreement on Baseline Schedule

Establish costs tracking
- Capture estimated and actual costs (capture cost in same manner as impacted)

Communicate your Progress
- Prepare monthly schedule updates

Build your Tools
- Maintain documentation and information

Use your Tools
- Prepare and defend claims to successfully protect job profit margins

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SCHEDULE DEVELOPMENT

- ## Schedule Submission / Contract Schedule

- ## Subsequent Detail Schedule Development / Baseline Schedule

"Communicate your Plan"

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INITIAL SCHEDULE SUBMISSION

✓ Present Summary Level Dates

✓ Milestones / Target dates dictated by Project

"Communicate your Plan"

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SUBSEQUENT DETAILED SCHEDULE DEVELOPMENT

• Erection - coordination of, identification/ designation of, sequences/priorities/areas for fabrication, delivery and erection

• Detailing - fabrication shop drawing schedule

• Fabrication – (Internal v. External Schedules)

– Internal schedule greater level of detail

– External schedule – roll-up info incorporated into Project Schedule

"Communicate your Plan"

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Erection Plan

Sequence/Priorities

Logic (flow of steel and existing constraints)

- Crane Path – how is work limited by crane travel
- Delivery to hook v. Marshalling yard
- Predecessor work – steel work v. other trades

Durations – primary stand/erect v. detailing

Equipment Plan – identify pieces and positioning

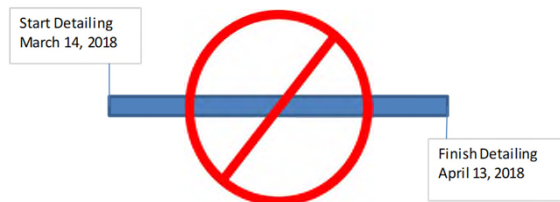Special Requirements - delivery, assembly, and staging of materials

- Delivery to hook, crane path, tower crane usage commitments, etc…
- Specific areas for assembly of materials
- Staging of materials in designated areas

"Communicate your Plan"

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Detailing Must Be Scheduled

Detailing must have a *detailed* schedule

- Start and finish dates are not a schedule

Start Detailing
March 14, 2018

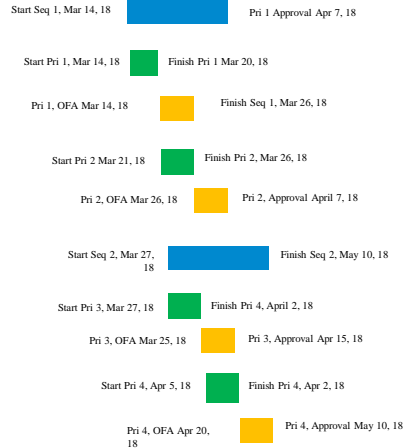Finish Detailing
April 13, 2018

"Communicate your Plan"

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Detailing Must Be Scheduled

The Erection Plan is the basis of the detailing schedule

- Follows the Sequences and Priorities so that the first steel erected is the first steel drawn
- Include time for drawing, submittal, and approval
- Communicate plan and impacts to plan

Start Seq 1, Mar 14, 18 — Pri 1 Approval Apr 7, 18

Start Pri 1, Mar 14, 18 — Finish Pri 1 Mar 20, 18

Pri 1, OFA Mar 14, 18 — Finish Seq 1, Mar 26, 18

Start Pri 2 Mar 21, 18 — Finish Pri 2, Mar 26, 18

Pri 2, OFA Mar 26, 18 — Pri 2, Approval April 7, 18

Start Seq 2, Mar 27, 18 — Finish Seq 2, May 10, 18

Start Pri 3, Mar 27, 18 — Finish Pri 4, April 2, 18

Pri 3, OFA Mar 25, 18 — Pri 3, Approval Apr 15, 18

Start Pri 4, Apr 5, 18 — Finish Pri 4, Apr 2, 18

Pri 4, OFA Apr 20, 18 — Pri 4, Approval May 10, 18

"Communicate your Plan"

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Fabrication Schedule

- The Fabrication Schedule should encompass
  - Detailing
  - Fabrication
  - Erection
- This will become the Baseline Schedule submitted to the GC

"Communicate your Plan"

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Fabrication Schedule

Durations constrained by various factors

- Detailing
- Approval
- Shop Production Schedule
- Estimated Fabrication Hours
- Shipping
- Erection Schedule

"Communicate your Plan"

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The Fabrication Schedule Becomes the Baseline Schedule

Must be Accurate / Realistic

- ✓ Sufficient Logic
- ✓ Proper Predecessor / Successor
- ✓ Manageable Durations
- ✓ Some Specifications Limit Duration

"Communicate your Plan"

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9/1/2020

Get Agreement on Baseline Schedule

- Communicate your plan in writing
- Understand your plan in the context of the Project
- Get agreement on your plan
  - ✓ Get written plan incorporated as exhibit to subcontract
  - ✓ If subcontractor to fabricator, written plan should be exhibit to fabricator's subcontract with upstream contractor
  - ✓ If not part of contract, identify as baseline
  - ✓ Do not overwrite (maintain Baseline and update schedules)

"Communicate your Plan"

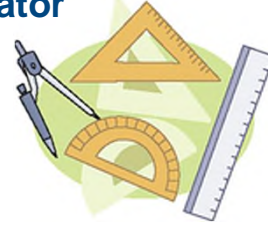19

Establish Cost Tracking

Document Estimated Hours and Costs
- ✓ Detailing
- ✓ Fabrication
- ✓ Erection

Document Transition from Estimate to Job Cost Tracking (Bid to costs conversion)

"Establish Cost Tracking"

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Capture Actual Costs - Fabricator

Job Cost Reporting
- ✓ Sufficient Detail
- ✓ Sequence / Priority /Area
- ✓ Identification of RFIs and Design Change Notices
- ✓ Timely Update
- ✓ Tracking Hours

"Establish Cost Tracking"

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Capture Actual Costs - Erector

Setup and Use of Job Cost Data

Labor cost codes at least equal to various activities in schedule

- a. Erect mainframe members
- b. Bolt-up/Connection work of mainframe
- c. In-fill Work
- d. Decking
- e. Platforms/Grating
- f. Detail work

Track labor hours (labor cost) by sequence/priority (per Schedule breakdown)

Cost code info should accompany weekly payroll data from field

Compliance and confirmation of compliance on regular basis is a MUST

If maintained, provides historical database for estimating and future claim use

"Establish Cost Tracking"

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Schedule Development

- Schedule Updates

- Progress Data

- Notice of Problems and Delays

"Communicate your Progress"

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Contractual Requirements for Updated Schedules

- Contractor updates typically required on at least a monthly basis

- Usually required as part of payment application submittal to Owner

- Owner may require "schedule narrative" from Contractor highlighting schedule issues and progress achieved for preceding month

"Communicate your Progress"

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Schedule Updates

- Prepare and provide updates whether they are required or not

- Provide descriptive narrative / letter / email

- Notice of problems / delays

- Be consistent but <u>not</u> robotic

"Communicate your Progress"

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Periodic Schedule Update Summary

✓ Incorporate Fragnets or Delays <u>at Least Monthly</u>

✓ Do Not Constrain the Completion Date

✓ Do Not Accept Rejection of the Schedule
  – Create alternate schedule if necessary

✓ Do Not Overwrite

"Communicate your Progress"

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Progress Data – Who Will Track this?

- Document progress / as-built dates

- Daily reports and photos

- Share with GC or Fabricator or Erector

- Pay Application data consistency

- Save updates

- Save narratives   *"Communicate your Progress"*

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Notice of Problems / Delays

✓ Actual

✓ Anticipated

✓ Action taken

"Communicate your Progress"

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Project Documents & Information

Common Documents
- Contract Baseline Schedule
- Job Cost Report
- GC Monthly Schedule Updates
- Daily / Weekly Progress Reports
- Pay Applications
- Meeting Minutes
- Correspondence
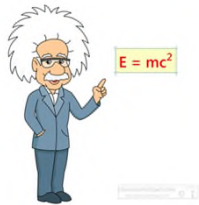- Change Order Logs
- Submittal Tracking

Information
- As-Built Dates
- Areas Worked
- Manhours Worked
- Quantities Achieved
- Areas Delayed

"Build your Tools"

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Quantification of Claims

$E = mc^2$

Proof = Facts & Documentation → Entitlement

Proper Measurement → Quantification

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Schedule Related Claims

- Claims for Delay

- Claims for Acceleration

- Claims for Lost Productivity

"use your Tools"

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Claims for Delay

Baseline (Subcontract) Schedule

Monthly Schedule Updates

As-Built Schedule

"Use your Tools"

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Time Extensions / Time Impact Analysis

AACEI Recommended Practice No. 52R-06 states:

"The TIA is a "forward-looking", prospective schedule analysis technique that adds a modeled delay to an accepted contract schedule to determine the possible delay of that delay to project completion"

- When done retrospectively, this is a "Windows Analysis"

"Use your Tools"

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Time Impact Analysis - Procedure

- Identify the initiating event, and open a PCO, Issue File, Serial Control # or other tracking mechanism
- Discuss the implications of the event with affected subcontractors
- Identify the affected schedule activities and related predecessor relationships
- Develop additional schedule activities and relationships to be added to the schedule to describe the change – this is called a FRAGNET

"Use your Tools"

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Time Impact Analysis - Procedure

FRAGNET

This can be as simple as:

Detail Seq 3, Priority 7

Complete Detailing Seq3, Priority 7

Waiting for RFI 13

"Use your Tools"

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Time Impact Analysis - Procedure

- Insert FRAGNET into schedule
- Assess the schedule for mitigation efforts that can be achieved at little or no cost to minimize the overall delay. Incorporate these mitigation efforts into the FRAGNET, or into a separate FRAGNET.
- Input the FRAGNETS into the schedule, and compute a new Completion Date
- Determine the associated Project Delay – the change in Project Completion Dates
- REALITY CHECK the result!
- Prepare a narrative description of the Change, describing the affected activities, mitigation efforts, and overall impact, and notify the Owner (this should be a follow-up to the original notice of potential impact.

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Time Impact Analysis

- The benefits of the Time Impact Analysis, if properly employed, include:
- It is THE preferred method
- It isolates the effect of subject events, because it compares a properly updated Project schedule before and after the insertion of event-related activities and relationships
- It is performed during the course of the Project, so the resultant delay is incorporated into ongoing and upcoming work – eliminates the "constructive acceleration" conundrum.
- It uses current Project information – the results are not retrofit to best fit a later claim, i.e., no Monday morning quarterbacking
- Contractor retains performance risk / reward

"Use your Tools"

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Time Impact Analysis

However:

- Requires accurate monitoring of actual progress - your project managers and superintendents must be doing their jobs
- Requires open, honest communication with Owner – it is a two or more party discussion, and any of them can derail the process, and lead to the dispute resolution process
  - Owner may have overriding constraints that preclude entertaining a schedule extension
  - To the extent possible, always have a mitigation plan and cost available for discussion
- Being prospective in nature, agreement on delay and cost impacts may be reached before the full impacts are realized
- Like any forward priced Change Order, Contractor takes risk for schedule impact

"Use your Tools"

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Time Impact Analysis

- The Time Impact Analysis should NOT be used if:
  - If schedule updates are not accurate
  - If the delay issue can be overcome at little or no cost

"Use your Tools"

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Claims for Delay - Detailing

Identify delays on the schedule to the smallest area of impacted work

- Does it impact one priority or multiple priorities
- Does it impact one sequence or multiple sequences
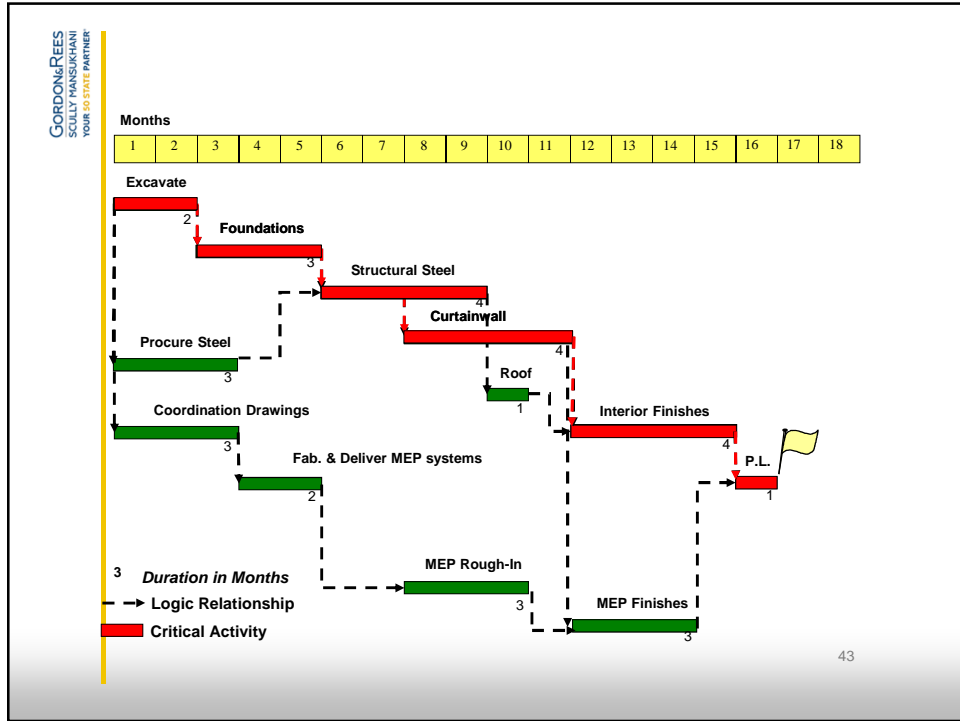- Does it impact the entire Project

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Claims for Delay - Detailing

Resolution

- How many detailing hours were lost
- Add resources to accelerate
- Increase hours to accelerate
- Track time spent by issues

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Claims for Delay - Fabrication

The fabrication schedule should be properly linked to both the Project Schedule *and* the Shop Fabrication Schedule

- Delivery and erection schedule should be identified at bid time
- Shop capacity and backlog should be identified at bid time and at Project start

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Claims for Delay - Fabrication

Steel is *always* on the Critical Path

- Seldom are delays to steel allowed to extend the Project Duration
- Owners and General Contractors look to the Fabricator to recover the schedule
- GC minimizes acceleration cost by limiting acceleration to a few subcontractors

Claims for Delay – Fabrication
Acceleration / Recovery Plan

Develop the Recovery Schedule
- Identify number of days to be recovered
- Evaluate feasibility of recovery
- Do not overcommit

Price the Recovery Schedule
- Additional manpower
- Additional supervision
- Overtime premiums
- Expediting fees
- Lost efficiency / productivity
- Consider a declining Change Order

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Claims for Delay – Fabrication
Acceleration / Recovery Plan

Consider a Declining Change
- 100% of Change Order to Meet "x" date
- 75% of Change Order to Meet "x + 2 weeks"
- 50% of Change Order to Meet "x + 4 weeks"

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Claims for Delay – Fabrication
Acceleration / Recovery Plan

Consider "farming out" Work
- Find available fabrication hours in another shop
- Include cost for shipping raw steel to new shop
- Increased level of Project Management
- Increased shipping cost
- Mark-up on sub-let Work
- Negotiate with the GC to achieve the Schedule
    - Document in Change Order

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Claims for Delay – Fabrication
Acceleration / Recovery Plan

Options for recovery
- Overtime
    - Increase Hours/Day
    - Weekends
    - Nightshift
    - Factor for sustained overtime work

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Claims for Delay – Fabrication
Hole in the Shop

The fabricator is always asked to recover the Project Schedule, but what happens when the Project impact *suspends* the Fabrication Production Schedule
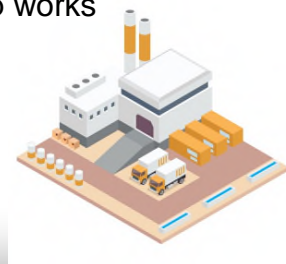
- "We have a hole in the Shop"

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Claims for Delay – Fabrication
Hole in the Shop

As part of communicating your plan & progress, the GC should already know:

✓ How long it takes to get drawings from the detailer on to the shop floor
✓ How long the shop backlog is
✓ How many hours the shop works

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Claims for Delay – Fabrication
Hole in the Shop

You have to Quantify and Share
information with the GC

- Demonstrate the number of hours lost until the next work can get to the shop floor
- Prove the cost of Shop Hours
- Prove the cost for Shop Overhead
- Be willing to share accounting information
- Consider negotiating the shop rate and the average shop overhead rate as part of the Subcontract

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Claims for Delay – Fabrication
Hole in the Shop

Average Shop Overhead Rate

- Average shop overhead cost per shop hour over a 3 year period
- If you do government work you may already have an audited rate
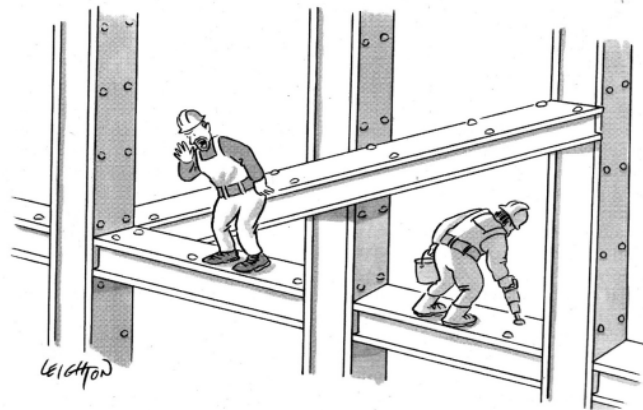- Try to include rate in your Subcontract to avoid dispute

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Claims for Delay – Fabrication
Hole in the Shop
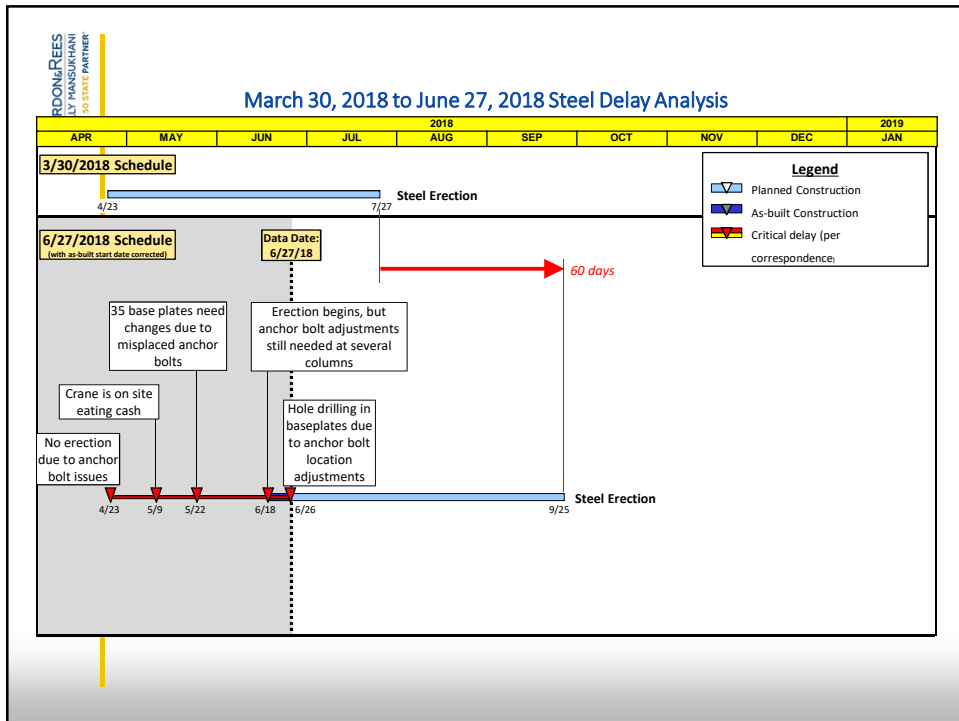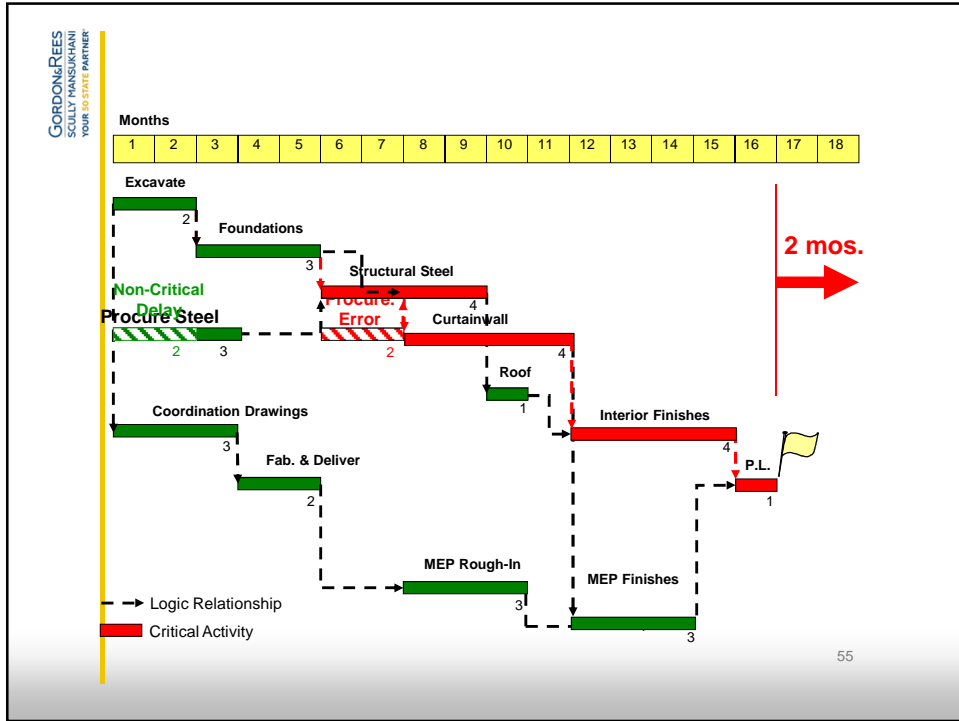
Present easy to follow information
- ✓ Hours lost due to the GC/Owner
- ✓ The cost of the hours (shop rate)
- ✓ The cost of shop overhead

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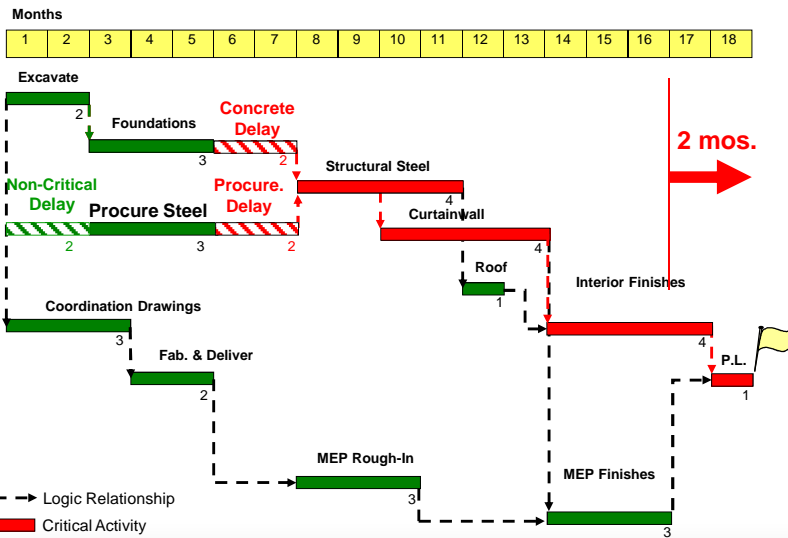## Claims for Delay – Erection

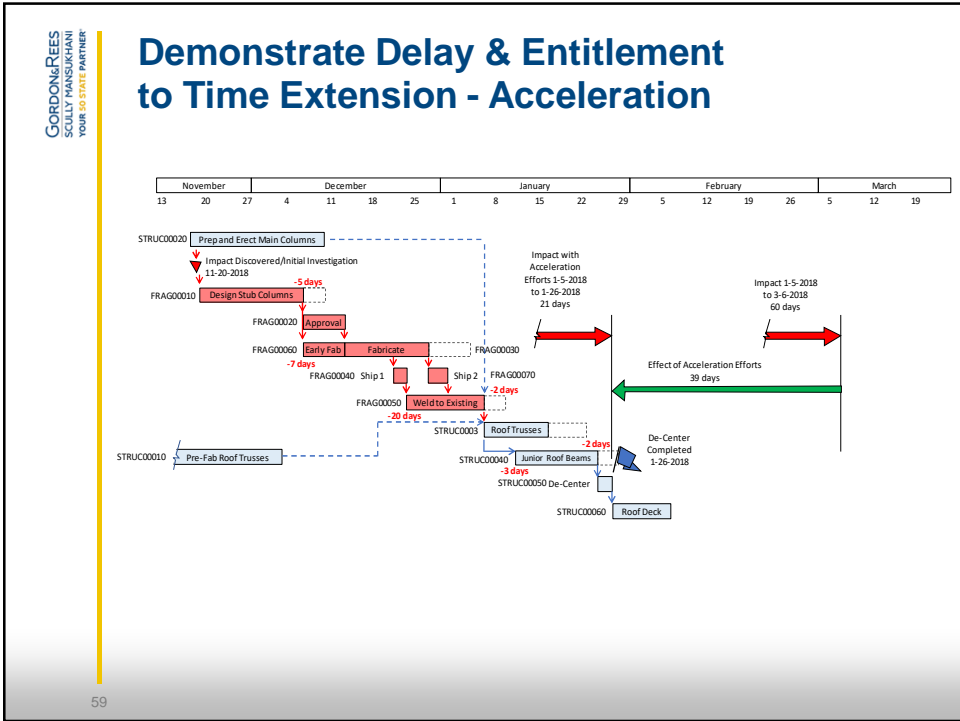

"Escher! Get your ass up here."

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Concurrent Delays

- A situation where two or more delays occur on separate critical paths with both affecting the end date

- Concurrent delays prevent either party from recovering delay damages

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Months

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |

Excavate 2

Foundations 3

Concrete Delay 2

Non-Critical Delay

Procure Steel 2 3

Procure. Delay 2

Structural Steel 4

2 mos.

Curtainwall 4

Roof 1

Interior Finishes 4

Coordination Drawings 3

Fab. & Deliver 2

P.L. 1

MEP Rough-In 3

MEP Finishes 3

→ Logic Relationship

■ Critical Activity

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Slide 59

Demonstrate Delay & Entitlement to Time Extension - Acceleration

Slide 60

Claims for Delay – Erection
Acceleration / Recovery Plan

Develop the Recovery Schedule
- Identify number of days to be recovered
- Evaluate feasibility of recovery
- Do not overcommit

Price the Recovery Schedule
- Additional manpower
- Additional supervision
- Overtime premiums
- Additional crane cost
- Lost efficiency / productivity
- Consider a declining Change Order

Claims for Lost Productivity

Definition

Causes & Contributing Factors

Damages

Methodologies for Recovery

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Lost Productivity

Labor inefficiency, cumulative impact, ripple effect, death by a thousand cuts …

Effort necessary to complete defined scope of work beyond what is required absent any impacting events

- For Example,
  - Non-impacted work: 50 pieces lifted per day (8 man crew)
  - Impacted work: 35 pieces lifted per day (8 man crew)
  - Lost Productivity = effort required to lift 15 pieces per day

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Causes of Lost Productivity

✓ Delay

✓ Disruption

✓ Acceleration

✓ Changes

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Contributing Factors of Lost Productivity

- Extended Overtime

- Stacking of Trades

- Changes to Work (design)

- Changes to Work Sequence

- Limited / Restricted Access

- Learning Curves

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Lost Productivity Damages

Additional Labor / Equipment
- Must account for possible built in LOP in original plan
- Work week based on 5-10's, 6-8's or 6-10's?
- Did original estimate have added hours for anticipated LOP?

Labor Premiums

Additional Field Overhead
- Added supervision
- Extended duration
- Combination of both

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Methodologies for Recovery

Methods Not Based on Schedule Analysis
- Total Cost / Modified Total Cost
- Industry Studies

Schedule Supported Methods
- Measured Mile
- Discreet Cost Tracking

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Total Cost / Modified Total Cost

- Comparison of estimated man-hours and actual man-hours

- Comparison of estimated duration and actual duration

- Overly simplistic and disfavored by courts

- May be only recourse depending on disruptions
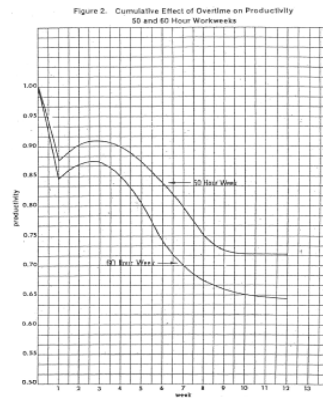
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Industry Studies

Business Roundtable
- Overtime

NECA
- Overtime

MCAA
- Overtime and Factors

Figure 2. Cumulative Effect of Overtime on Productivity 50 and 60 Hour Workweeks
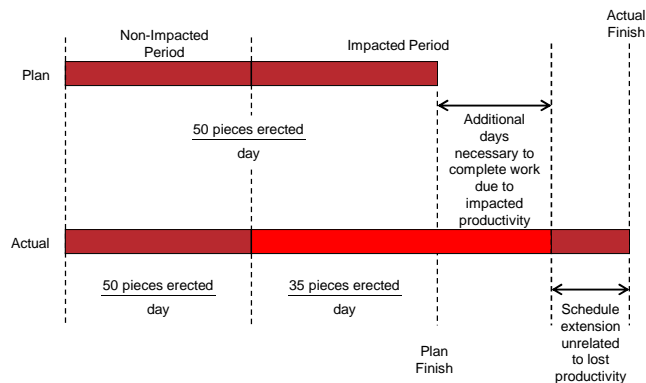
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Measured Mile

- Compares effort required for impacted and non-impacted work activities

- Highly regarded methodology

- Isolates influence of impact

- Utilization of data from same project most desired

- Historical data on past jobs as fallback option
  - Job cost report data from prior jobs with no claims
  - Must ensure prior jobs have same work week schedules
  - The more detailed the breakout of labor data the better

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Measured Mile

Steel Erection: Eight Man Raising Gang

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Use your tools
- Prepare and defend claims to successfully protect job profit margins

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