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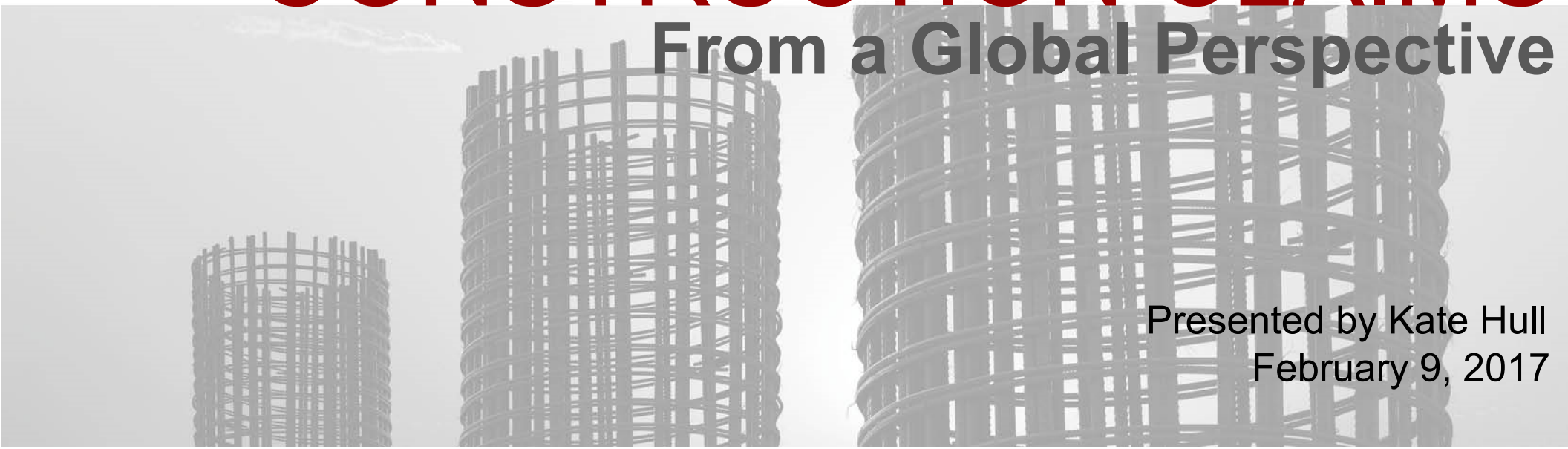
aace International
WOMEN IN PROJECT CONTROLS

# CONSTRUCTION CLAIMS

## From a Global Perspective



Presented by Kate Hull
February 9, 2017

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## Overview

- Introduction
- Case Study Overview
- Identifying & Quantifying Claims
  - Schedule Delays
  - Acceleration
  - Productivity Loss
- Preparing Claims Documents

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## INTRODUCTION

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- ENR Top 20 Under 40
- SWE Senate Deputy Speaker
- $1.2 Billion Project Portfolio
- CPM Scheduling
- Complex Construction Projects

## KATE HULL, MS, LEED GA

Ms. Kate Hull, **Managing Consultant**, assists owners, contractors, and subcontractors on both proactive and forensic projects and has worked on more than 50 projects globally ranging in value from $1 million to $1.2 billion. Ms. Hull provides clients with the necessary foresight and planning to ensure their project goals and budgets are met. She performs critical path method (CPM) scheduling services, including preparation of the baseline schedule and monthly schedule updates for complex construction projects in the residential and mixed use, government, and healthcare markets, to name a few. Ms. Hull specializes in guiding clients involved in complex construction-related disputes through the claims and litigation process. She prepares clients' positions in litigation, arbitration, and mediation by evaluating and analyzing schedules to quantify delays and accelerations; identifying and quantifying loss of labor productivity; and identifying construction defects.

**Education**

Master of Science in Civil Engineering
The University of Texas at Austin

Bachelor of Science in Architectural Engineering
The University of Texas at Austin

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## WHAT IS A CLAIM?

INTRODUCTION

- Assertion of the truth of something (typically in dispute)
- Demand or request for something considered due
- Application of compensation under an insurance policy
- Right or title to something
- Informal right to something
- Legal action to obtain money, property or the enforcement of a right against another party
- **Simply Put: A claim is an unresolved change order**

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## WHAT CAN LEAD TO A CLAIM?

INTRODUCTION

- Language & cultural barriers
- Remote geographic locations
- Shortage of skilled labor
- Procurement issues
- Changed work
- Hostile political climates
- Strict local government requirements

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## CASE STUDY OVERVIEW

## PROJECT BACKGROUND

CASE STUDY OVERVIEW

- Multi-million dollar power plant
- Commercial Operation in February 2011
- Located in Latin America
- Stakeholders from multiple countries
- Scope of Work:
  - Civil Works Contract
  - Mechanical Works Contract
  - Tankage Contract
- Dispute between Contractor & Subcontractor

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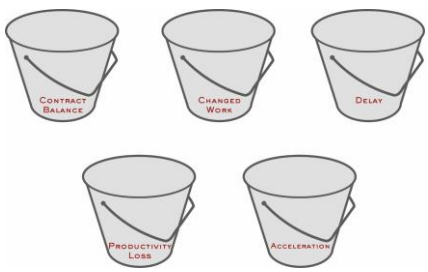
## DAMAGES CATEGORIES

CASE STUDY OVERVIEW

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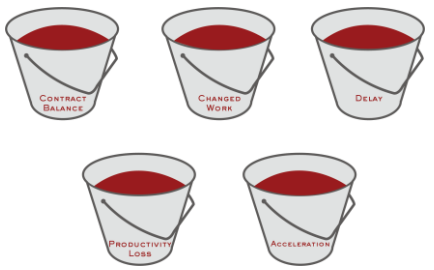
## DAMAGES CATEGORIES

CASE STUDY OVERVIEW

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## IDENTIFYING & QUANTIFYING CLAIMS

## SCHEDULE DELAYS

- Extended duration of an activity or prevention of an activity from starting or finishing on time
- Delays must affect the critical path in order to establish entitlement to an extension of time
- Definition elements:
  - Late start delay
  - Extended performance delay
  - Early vs. late dates

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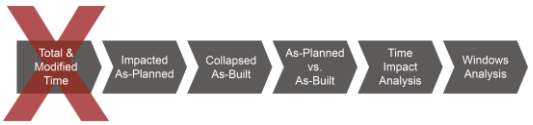
## METHODOLOGIES
SCHEDULE DELAYS

**Commonly Used Methodologies for Delay Analysis**




- Some methodologies are better than others
- Selecting a methodology is dependent on several factors

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## SELECTING A METHODOLOGY
SCHEDULE DELAYS

- Factors to consider:
  - Contractual requirements
  - Purpose of analysis
  - Source data availability
  - Size of the dispute
  - Complexity of the dispute
  - Budget for forensic schedule analysis
  - Time allowed for schedule analysis
  - Expertise of the forensic analyst & resources available
  - Forum for resolution & audience
  - Legal or procedural requirements

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## AS-PLANNED VS AS-BUILT ANALYSIS
SCHEDULE DELAYS

- Compares baseline or other planned schedule to as-built or update schedule that reflects progress

**Strengths:**
- Easy to understand
- Technically simple to perform
- Can be performed with very rudimentary schedules & as-built data

**Considerations:**
- Suitable for simple schedules & short projects
- As-built data must be accurate
- Does not account for changing critical path throughout the project

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## PERFORMANCE STEPS
SCHEDULE DELAYS

1. Contract analysis
2. Review & validate/compile as-planned schedule
3. Review & validate/compile as-built schedule
4. Identify variances between as-planned & as-built schedules
5. Causation analysis
6. Identification
7. Quantification
8. Delay apportionment

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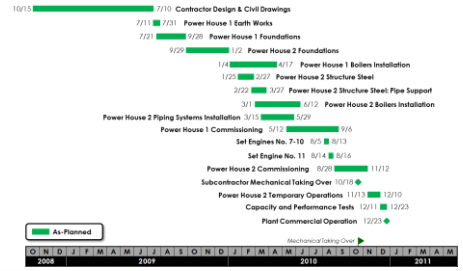
## AS-PLANNED CRITICAL PATH
SCHEDULE DELAYS

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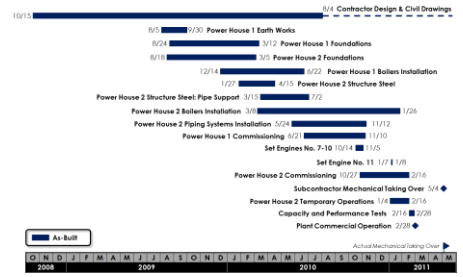
## AS-BUILT CONDITIONS
SCHEDULE DELAYS

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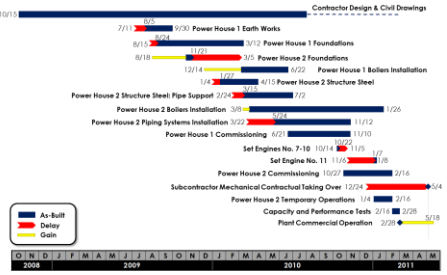
## AS-PLANNED VS AS-BUILT

SCHEDULE DELAYS

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## SUMMARY

SCHEDULE DELAYS

| Time Impact | Inc | Cum | Delay / Gain |
|---|---|---|---|
| TI - 1 Late Start of Power House 1 Earth Works | 25 | 25 | Delay |
| TI - 2 Late Start of Power House 1 Foundations | 9 | 34 | Delay |
| TI - 3 Early Start of Power House 2 Foundations | -76 | -42 | Gain |
| TI - 4 Late Finish of Power House 2 Foundations Concrete Works | 104 | 62 | Delay |
| TI - 5 Early Start of Power House 1 Boilers Installation | -83 | -21 | Gain |
| TI - 6 Late Start of Power House 2 Structure Steel | 23 | 2 | Delay |
| TI - 7 Late Start of Power House 2 Structure Steel: Pipe Support | 19 | 21 | Delay |
| TI - 8 Early Start of Power House 2 Boilers Installation | -14 | 7 | Gain |
| TI - 9 Late Start of Power House 2 Piping Systems Installation | 63 | 70 | Delay |
| TI -10 Late Finish of Setting Engines #7-10 | 14 | 84 | Delay |
| TI -11 Late Start of Setting Engine #11 | 62 | 146 | Delay |
| TI -12 Early Finish of Plant Commercial Operation | -79 | 67 | Gain |

Calendar Days of Delay / Gain

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## CAUSES

SCHEDULE DELAYS

- Late drawings & design deliverables
- Late equipment & material deliveries
- Inclement weather
- Changed work
  - Design Revisions & corrections to defective design
  - Scope additions

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## ACCELERATION

**Acceleration (Involuntary)**
Work is expedited in an attempt to complete performance earlier than planned.

**Direct Acceleration**
Owner formally directs contractor to complete performance earlier than scheduled.

**Constructive Acceleration**
Owner refuses to grant a justified claim for time extension.

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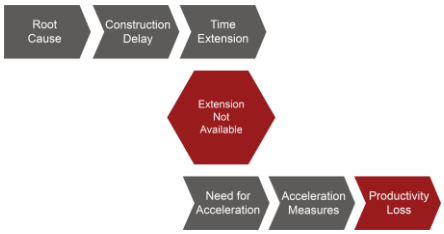
## CAUSATIVE LINKAGE
ACCELERATION

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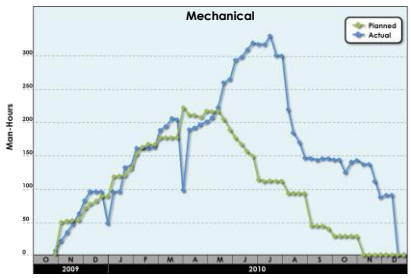
## LABOR HOURS
ACCELERATION

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## CAUSES & IMPACTS
ACCELERATION

**Causes**

- Additional work
- Delays
  - Late drawings & design deliverables
  - Late material deliveries
- Failure to provide time extensions

**Impacts**

- Additional labor, equipment, hours, & second shift
- Overtime & shift premiums
- Productivity impacts
  - Scheduled overtime
  - Higher peak labor than planned – more manpower

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## PRODUCTIVITY LOSS

- State of being less productive or efficient than expected or planned
- Factors that can cause labor productivity loss include:
  - Acceleration
  - Availability of skilled labor
  - Changes, ripple impact, cumulative impact of multiple changes & rework
  - Crowding of labor or stacking of trades
  - Defective engineering, engineering rework
  - Dilution of supervision
  - Excessive Overtime – extended or scheduled
  - Learning Curve
  - Out-of-Sequence Work
  - Rework and errors
  - Schedule Compression

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## MEASURED MILE ANALYSIS
PRODUCTIVITY LOSS

- Recommended & accepted methodology
- Measures & quantifies productivity loss
- Compares performance between unimpacted & impacted periods

**Strengths:**

- Data derived from project records
- Data agreed to by parties
  - Payroll, payment applications

**Considerations:**

- Inaccurate / insufficient project records
- Non-impacted / least impacted period of time
- Multiple factors affecting productivity

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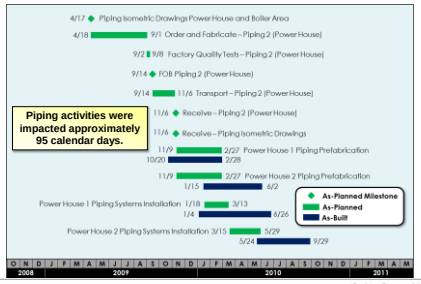
## PIPING SCHEDULE ANALYSIS

PRODUCTIVITY LOSS

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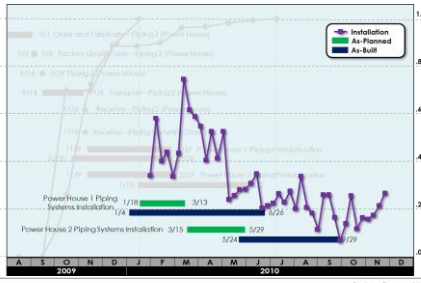
## PIPING INSTALLATION PRODUCTIVITY

PRODUCTIVITY LOSS

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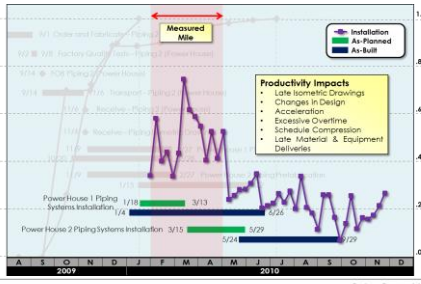
## PIPING INSTALLATION MEASURED MILE

PRODUCTIVITY LOSS

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## PIPING INSTALLATION LOST MAN-HOURS

PRODUCTIVITY LOSS

$$Productivity = \frac{Quantity\ of\ Work\ Complete}{Hours\ Expended\ to\ Complete\ Work}$$

$$Productivity\ for\ Non-Impacted\ Period = P_{MM} = 0.25\ DINCH/MH$$

$$Productivity\ for\ Impacted\ Period = P_{IP} = 0.16\ DINCH/MH$$

$$Productivity\ Factor, P.F = \frac{P_{IP}}{P_{MM}} = \frac{0.16}{0.25} = 0.64$$

$$Lost\ Manhours = TH_{IP} * (1 - P.F) = 182{,}411 * (1 - 0.64) = 65{,}688\ MH$$

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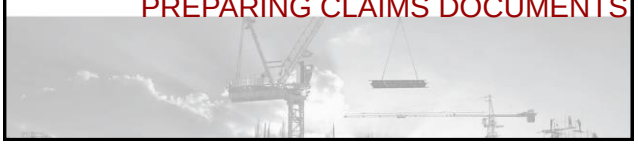
## PREPARING CLAIMS DOCUMENTS



## BUILDING BLOCKS OF DAMAGES ANALYSIS

PREPARING CLAIMS DOCUMENTS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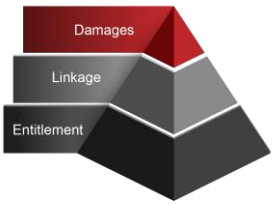
## PRESENTING A CLAIM
PREPARING CLAIMS DOCUMENTS

**A Claim Should Include the Following:**

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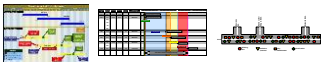
## PRESENTATION OF LINKAGE
PREPARING CLAIMS DOCUMENTS

Facts

Correspondence

Illustrations



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## PROCEDURE
PREPARING CLAIMS DOCUMENTS

- Steps for preparing claims documents:
  - Draft claim outline (based on requirements analysis)
  - Locate, organize, & summarize substantiation
  - Develop claim (text, analysis, graphics, etc.)
  - Assemble claim documents (claim, substantiation, appendices, etc.)
  - Review claim
  - Submit or present claim

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YOUR VISION BECOMES A REALITY?

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