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Back to the Future:

How to Manage the Legal Risks Associated with BIM, Scanning Technology, and Smart Contracts

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Angela Richie
February 14, 2023

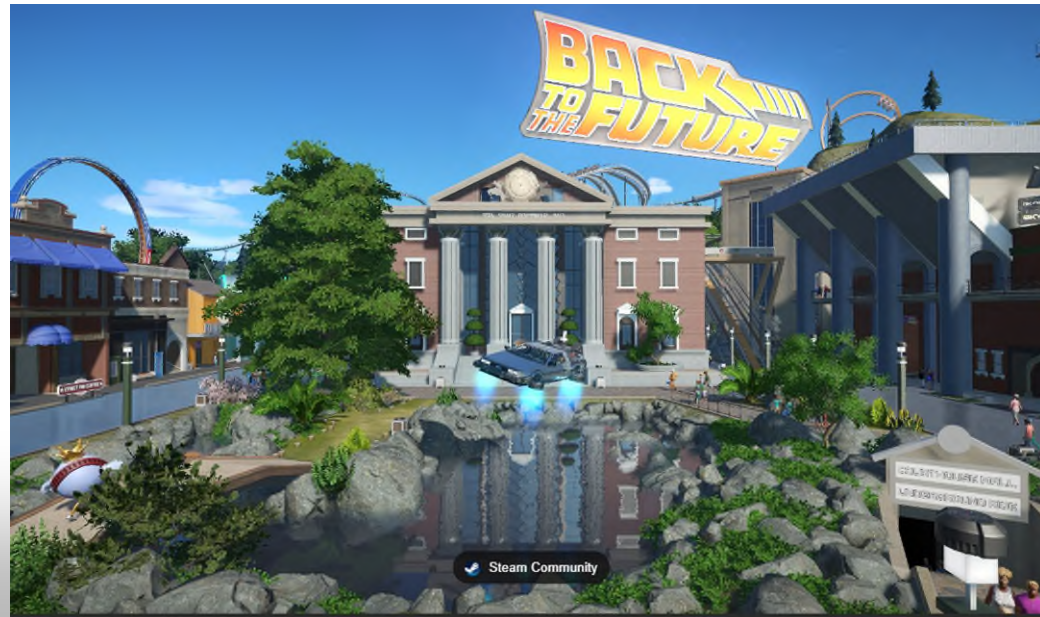
Save the Date – Second Tuesdays of each month.

- 3/14 – You Can't Always Get What You Want – How to Get What You Need in Upstream Contracts
- 4/11 – *See you at NASCC!*
- 5/9 – “Don't go chasing Waterfalls, please stick to the rivers and the lakes that you're used to.” Best practices in selecting, negotiating with, and managing downstream subcontractors and vendors.
- 6/13 – Heffalumps & Woozles: “Beware! Beware! Be a very wary bear!” OSHA lessons learned.
- 7/11 – Avoid the Wolf in Sheep's Clothing. Best practices for defending against bogus backcharge claims.
- 8/8 – “The Times They Are A-Changin'”: Putting together change orders that will get paid.
- 9/12 - Alphabet Soup and the Insurance Industry: What do you need to know about OCIP, CCIP, GCL, Builder's Risk, Subguard, and Bonding to protect your company from upstream and downstream risks.

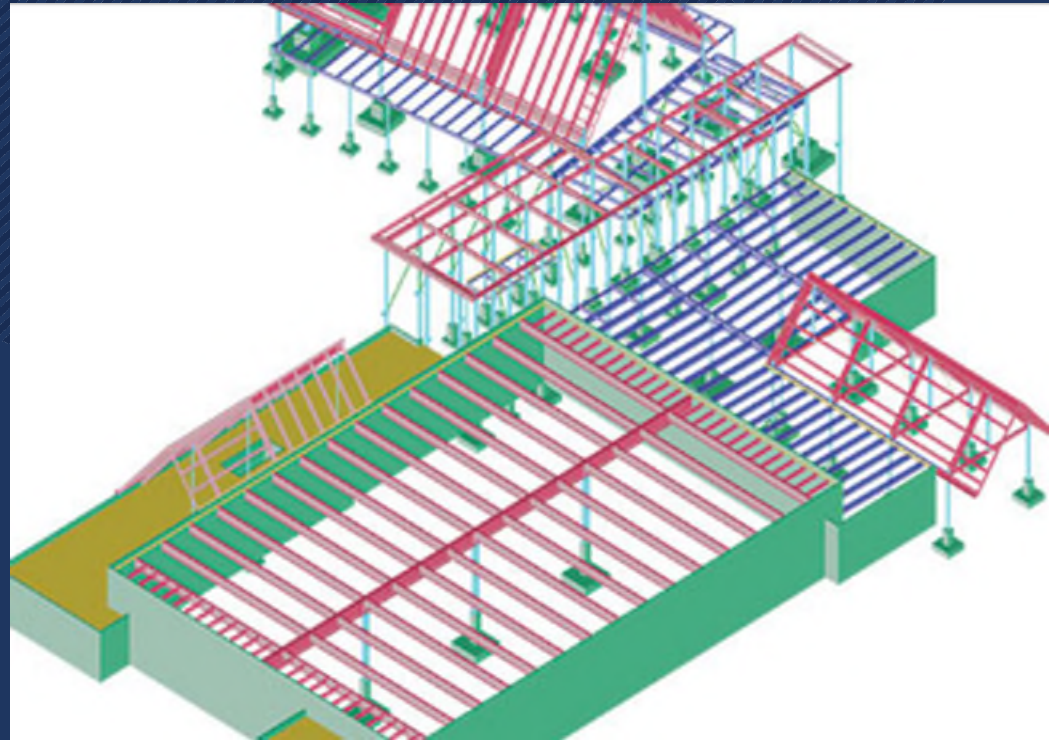


Session Overview

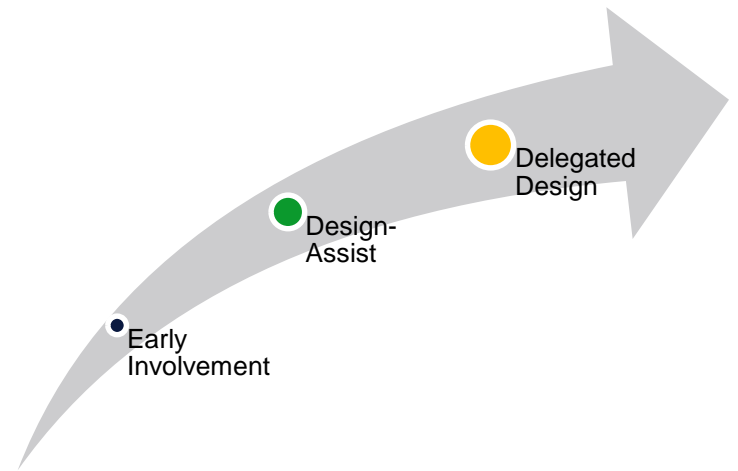
- BIM Coordination & Design Assist
 - Use of BIM for Change Orders
- Progress Tracking Tech
 - Barcodes, Scanners, Robots
 - Potential Delay Claim Arguments
- Payment Disputes Arising from Software & Tracking Systems
- Cybersecurity



BIM Coordination & Design Assist



Design Assist



Offer **recommendations** on:

- Constructability and product reliability
- Scheduling
 - Availability of materials and labor;
 - Timing of fabrication; and
 - Timing of erection.
- Price
 - Preliminary budgets;
 - Costs of alternative designs; and
 - Cost reductions.

No guarantees that the information will be accurate, or you will be liable

Opinions are just intended as means and methods

EOR remains solely responsible for suitability, adequacy, and building code conformance of design

BIM Coordination & Ownership of Model

- Many Custom BIM Coordination Contract Exhibits
 - Review prior to bid
- Ownership depends on Work for Hire language



BIM – Reliance on Model

- Reliance
 - What does the BIM Addendum say?
 - » Not on Electronic Information?
 - » But on Coordinated Model?
 - Take reasonable steps to verify Model Elements consistency with the Contract Documents
 - Make sure the EOR is still responsible for the suitability, adequacy, and code conformance of the design.



BIM Coordination - Meetings & Level of Coordination



- Participate in Coordination Meetings
 - » Weeks v. months?
 - » Hours v. days?
 - » Cost included in lump sum?



BIM Coordination - Meetings & Level of Coordination

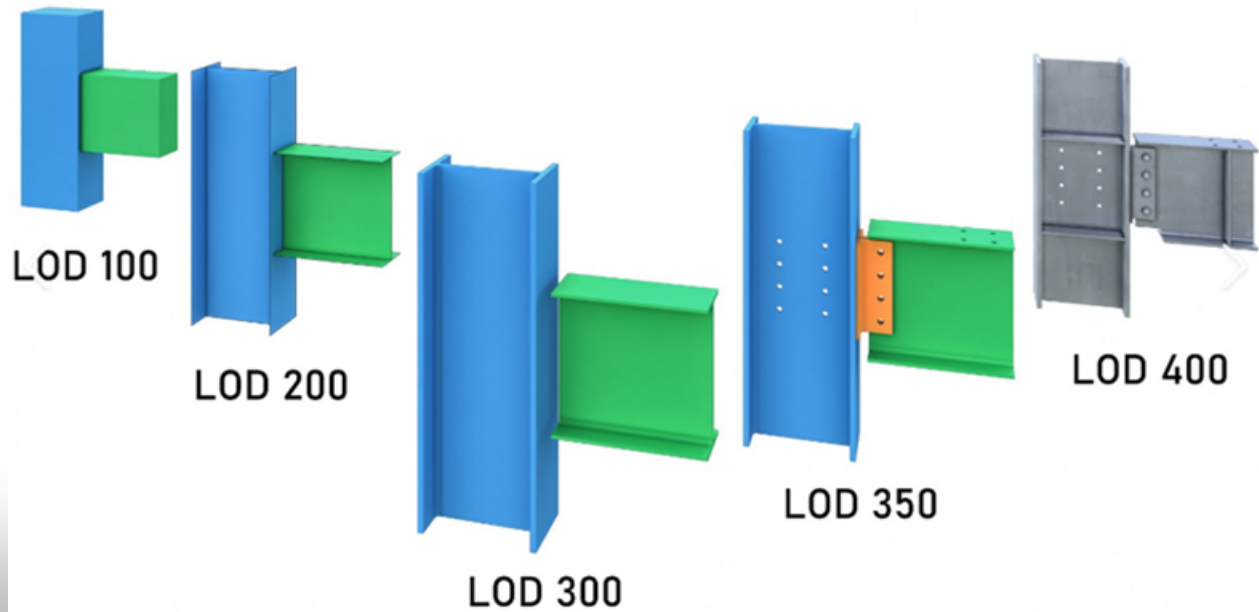


– Example changes:

- » Steel Fabricator will participate in Modelling and Virtual Design and Construction meetings; however, nothing in this agreement shall require Steel Fabricator be responsible for the design, data provided by others, nor the **coordination of the design**.
- » The Scope of Work includes __ meetings, which are expected to last __ hours a piece. Travel to such meetings is not included. The VDC process is planned to take place between __ and ____. Steel Fabricator's role in the VDC process shall conclude upon the approval of each sequence of shop drawings. Should the meetings or duration of the VDC process increase or additional detailing work be necessitated by this process, Steel Fabricator shall have a right to seek an adjustment to the Contract Sum and Contract Time.
- » To the extent the VDC process results in changes to the scope of work, Steel Fabricator shall be entitled to a change in the Contract Sum and Contract Time.

BIM Coordination- What LOD is necessary?

- 100 – Akin to a Schematic Design level which provides primarily massing and volumetric information.
- 200 – Akin to a Design Development level of design.
- 300 – At this level, there is sufficient information to allow for the preparation of traditional shop drawings.
- 400 – Complete fabrication, assembly and detailing information and as such can be used for shop fabrication.
- 500 – Record Model for use in facility management.



BIM Coordination- What LOD is necessary?

- “The Subcontract does state that [the Defendants’] Modeling and Building Information Modeling process aims to improve construction delivery by enhancing quality and creating efficiencies.” (Subcontract 16 (Dkt. No. 20-4).) **But this does not appear to promise a particular level of development.**”

Brian Trematore Plumbing & Heating, Inc. v. Walsh Constr. Grp., LLC, No. 19-CV-9764 (KMK), 2021 WL 1225950, at *6 (S.D.N.Y. Mar. 31, 2021)(holding that a plumbing/HVAC subcontractor on a \$17 million dollar healthcare facility did not adequately plead a claim for negligent misrepresentation against the contractor because the contract did not adequately specify a level of design for the BIM model).

**If it isn't
written
down, it
didn't
happen**

BIM Coordination – Data Security

- Risks
 - Ensuring plans are not altered or given to bad actors
 - Held hostage with ransomware
- Tools
 - Party managing software should be responsible for security breach
 - Limit who has access to the model
 - Require dual factor authentication
 - Security training for access to the model.



Use Model for Change Orders!
& RFIs

The
FUTURE
depends on
what we do
in the
PRESENT.
Mahatma Gandhi

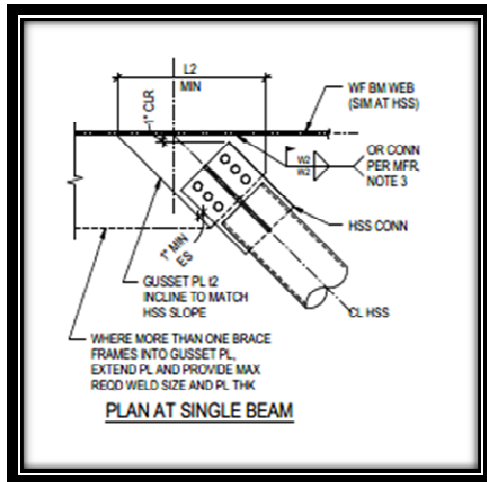
NEDD -- ENTITLEMENT

- **E = Entitlement**
 - Legal Entitlement
 - Factual Entitlement
 - » Original Drawing
 - » Revised Drawing or RFI
- Tools to prove entitlement:
 - Plans and specifications - **BIM**
 - Code of Standard Practice
 - Building Code

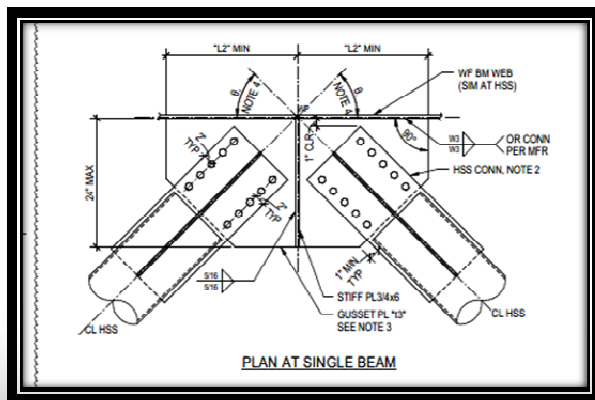


Bowl Steel Connections

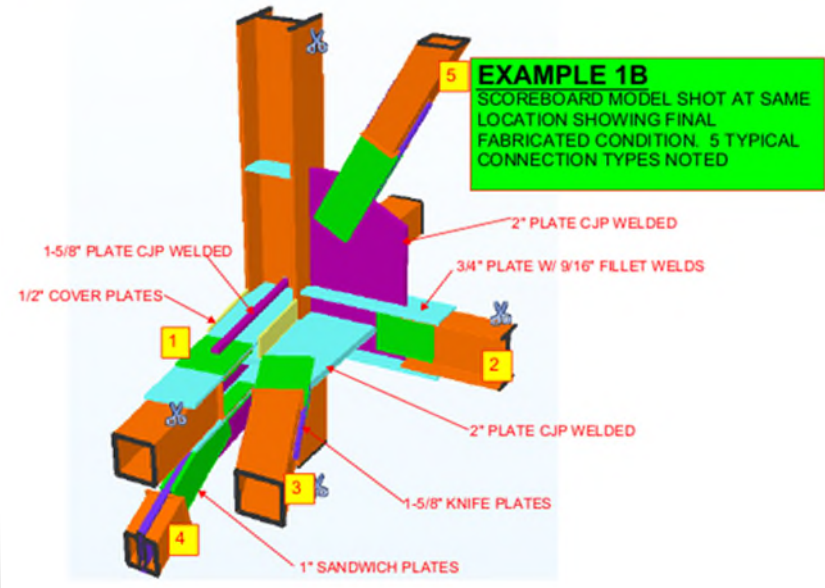
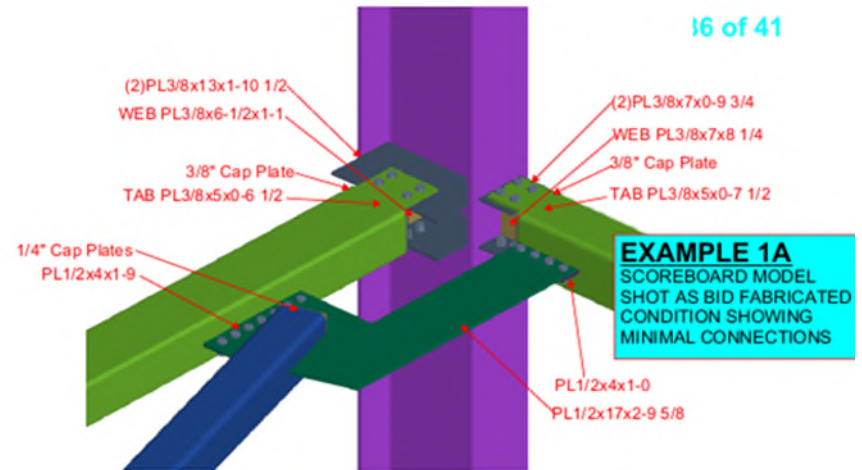
RFP



Revised



16 of 41





Scope

Useful Contract Terms to Watch

Scope – Addendum #1



- Codes
 - *Nothing contained in this Agreement shall require Subcontractor to conduct a peer review of the design to ensure its suitability, adequacy, or building code conformance.*
- Coordination
 - *Subcontractor shall provide information to Contractor such that Contractor can coordinate Subcontractor's Work with the Contractor and work of other subcontractors.*
- Survey / Field Verification
 - *Nothing in this Agreement shall be construed to require Subcontractor to wait to commence fabrication until the field verification of foundations (including anchor bolts) has been completed and all necessary submittals provided to Subcontractor...*

Warranties

- Is there an express warranty?
 - Goods are fit for the ordinary purpose for which those type goods are used.
- 11. *Warranties. Subcontractor warrants labor and materials provided by the Subcontractor only and specifically disavows any warranty of merchantability, habitability, or fitness for particular purpose.*

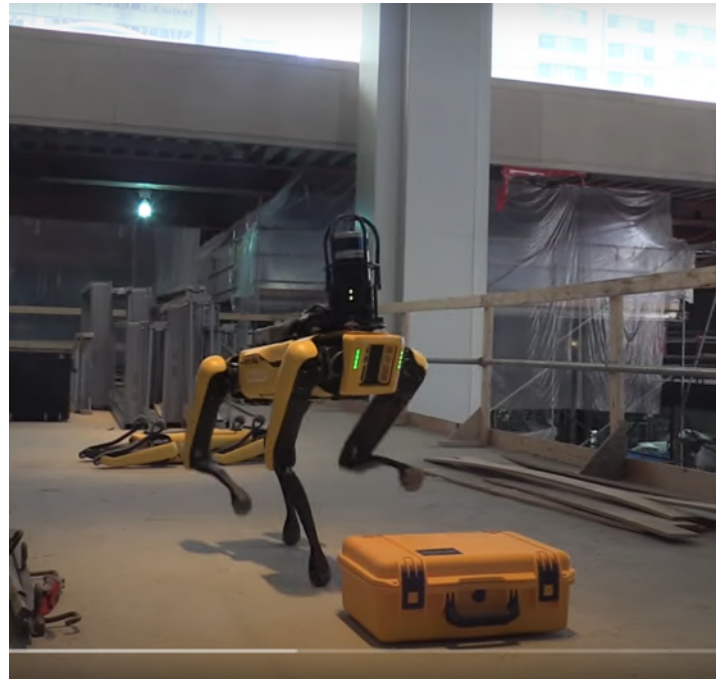




Data Gathering Tools: Robots, Drones, Scanners

Data Gathering Tools

- Intent
 - Track Progress and Payment
 - Monitor Safety - **OSHA**
 - Facilitate Communications
- Cameras all around
 - Can flip over
 - Works in small spaces



Boston Dynamics robot dog used to inspect construction work at Virginia Tech

MAY 21, 2021 BY DAVID EDWARDS — LEAVE A COMMENT

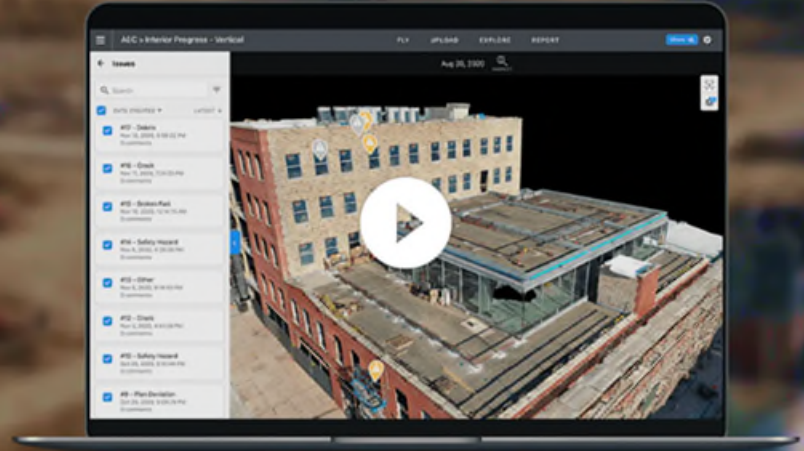
<https://www.brasfieldgorrie.com/news/press-releases/alabama-general-contractor-partners-with-technology-industry-leaders-on-new-industry-workflow/>

Data Gathering Tools

DroneDeploy for Construction

Create accurate, high-resolution digital replicas with 3D models, real-time 2D maps, and 360 virtual tours for any construction site

[Request Demo](#)



Pre-Construction

Create an interactive site view including maps, photos, panoramas, and videos



Construction

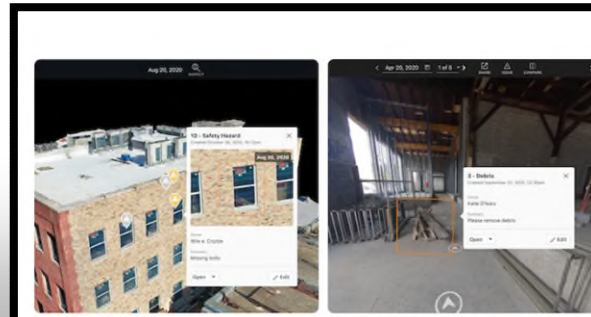
Create, document, and share a visual timeline with all stakeholders to keep teams on track



Post-Construction

Document your entire job site safely using aerial & ground imagery

- Turning data into 3D models
- Creating overlays to track actual construction with plans
- Track Progress and Payment
- Monitor Safety - **OSHA**
- Facilitate Communications



QA/QC & Inspection

By discovering an issue early, you can save up to millions of dollars in repairs, fines, and disputes across all of your projects. DroneDeploy enables you to **perform safer, quicker inspections** with accurate reconstructions of your job sites.

[Learn More](#)

Data Gathering Tools – Tracks Schedule

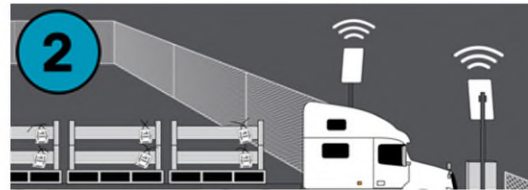
How Does Track & Trace Work?

Track and trace can be done by a number of technologies, depending on the circumstances of the materials in question. A few of the technologies used are GPS, cellular trilateration, barcodes, Bluetooth® Low Energy (BLE), active and passive RFID, and RealTime Location Services (RTLS).

Geo-contextual automation begins when a tag (active or passive RFID, barcode, etc.) is attached to a material and "associated" in the Jovix database. Once attached and associated, the tagged material can then be tracked at any point in the supply chain.



1. A worker attaches an RFID tag to a material and, using a mobile device, associates that specific tag to that specific material.



2. As tagged materials pass chokepoints throughout the supply chain, they are read by fixed gate readers. The location and status of the material is updated.



3. Once the material arrives at a new location, the tag is read by vehicle- or drone-mounted readers that sweep the yard in a routine fashion. The location and status of the material is confirmed or updated with every read.

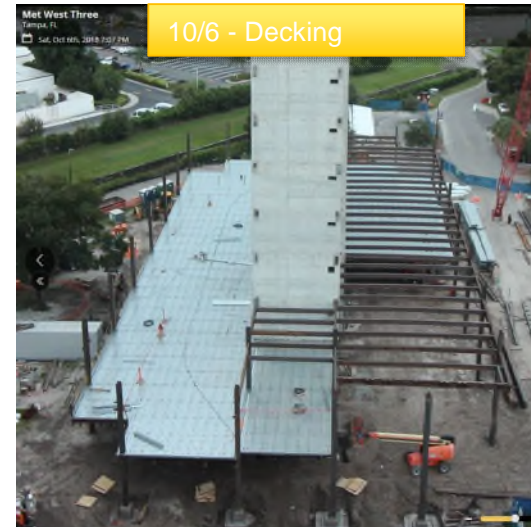
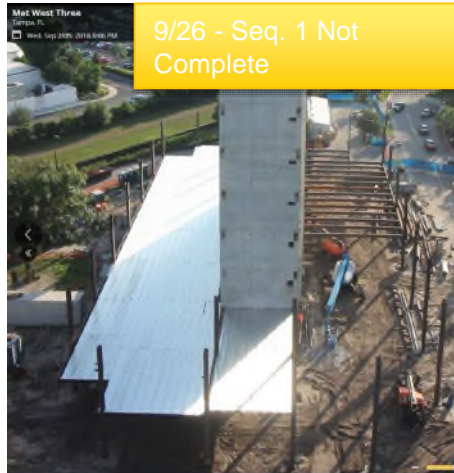
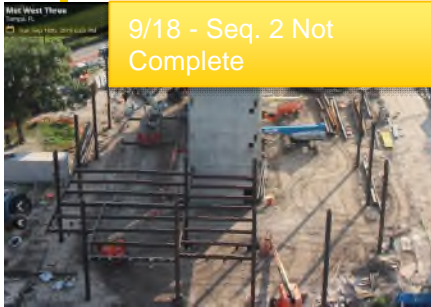


4. When the material is ready to be issued to construction, a member of the pick crew uses a mobile device to quickly find that specific item. The location and status of the material are updated again as it is issued to construction.

Questions Worth Asking

- Types of data collected?
- Where and how stored?
- How is the data secured?
- How will the data be used?

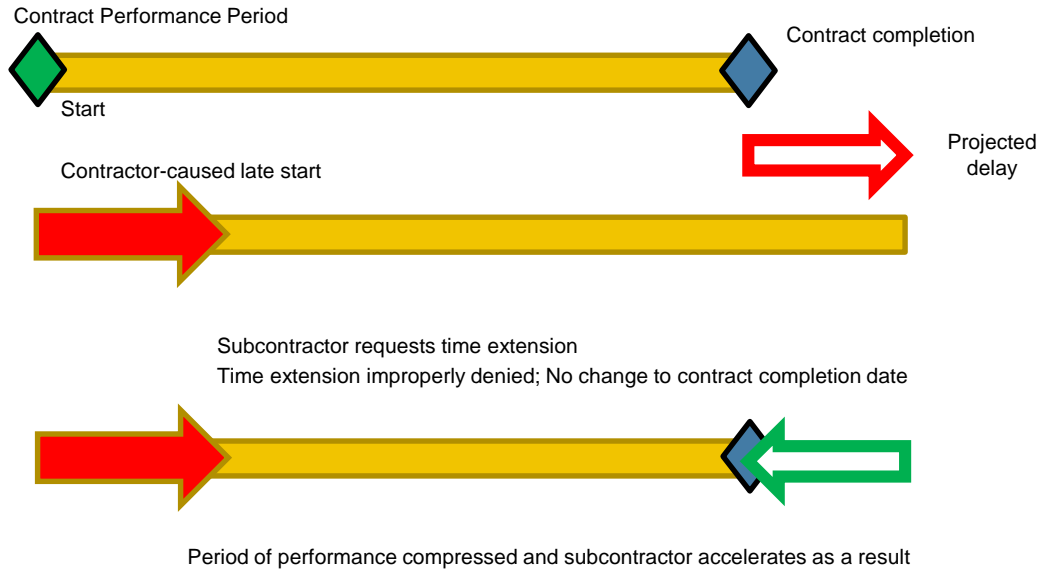
Pictures are still worth 1000 words!





Schedule –Contract Time

Constructive Acceleration



Entitled to: overtime premiums, added premium cost for higher priced workers if OT workforce capacity exceeded
Need to prove additional impacts, such as loss of productivity with productivity analysis

Directed Acceleration



Contractor directs subcontractor to complete earlier than contract completion



Either agreement on scope/cost impact and accelerated date (adjust contract completion date)

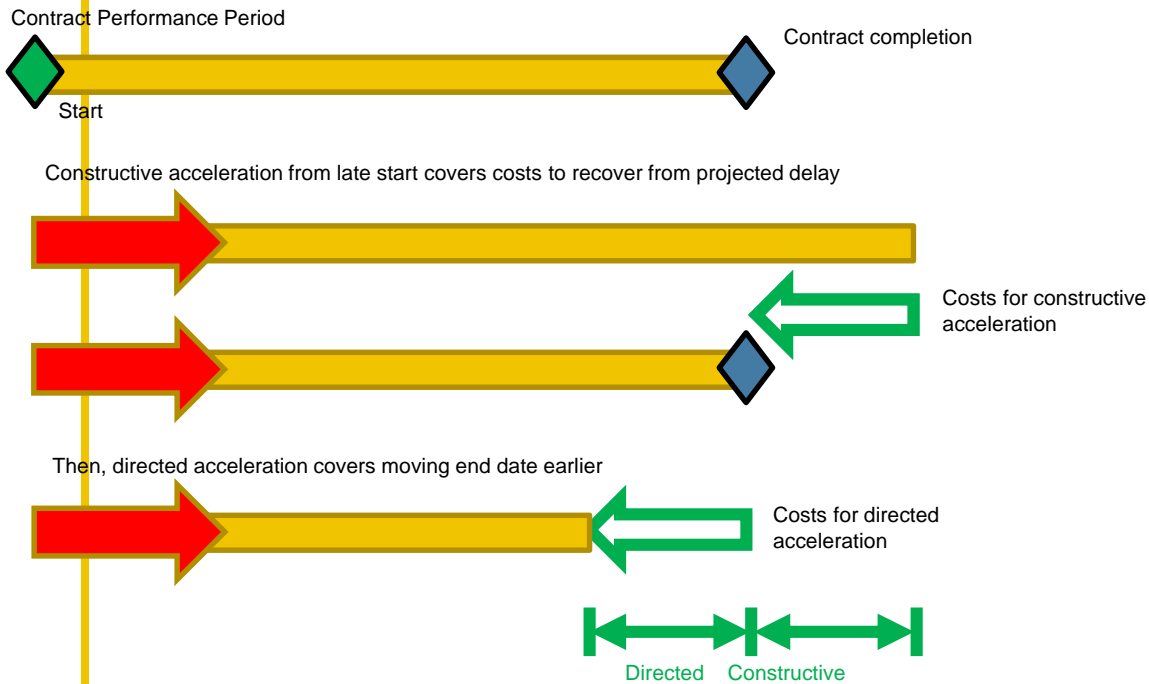


or agreement on payment for level of effort such as open ended payment of acceleration premiums



If no agreement, subcontractor disputes directive—contractor may rescind or subcontractor proceeds under protest, and Subcontractor still needs to prove all of its additional costs spent (required overtime premiums and loss of productivity analysis)

Constructive & Directed Acceleration



Pre-Construction Services -Duration

- Duration of Pre-Construction Services?
 - In person meetings?
 - Compensation for re-detailing work?
 - When will you actually get RFCs?



- Released for construction. The term that describes the status of contract documents that are in such a condition that the **fabricator and the erector can rely upon them** for the performance of their work, including the ordering of material and the preparation of shop and erection drawings or fabrication and erection models.
- COSP 4.1. Owner Responsibility. The owner shall furnish, in a timely manner and in accordance with the contract documents, the **complete structural design documents** and specifications that have been released for construction.
- COSP 9.5.1. The contract schedule shall state when the design documents will be released for construction, if the design documents are not available at the time of bidding, and when the job site, foundations, piers and abutments will be ready, free from obstructions and accessible to the erector, so that erection can start at the designated time and continue without interference or delay caused by the owner's designated representative for construction or other trades.

Delays & Acceleration

- *Delays and Acceleration. Subcontractor shall be entitled to an equitable adjustment resulting from any change of schedule which results in delay, acceleration, or out-of-sequence work caused by others for whom Subcontractor is not responsible.*



Establish Milestone Dates

- “Subcontractor's Baseline Schedule is attached hereto as Exhibit ____.
The Subcontract Time and the achievement of Milestones in this Agreement are contingent upon:
 - (1) **Issued for Construction Drawings**, which comply with Section 3.1 of the AISC Code of Standard Practice, current edition, obtained on or before ____;
 - (2) **Return of approved shop drawings** within __ business days of submission to Contractor,
 - (3) **Prompt return of RFI responses** to Subcontractor, but in any event, no later than __ hours of submission by Subcontractor, and
 - (4) **Subcontractor being given approved shop drawings __ weeks** prior to the necessary delivery date for that sequence of work.”





Blockchain

Smart Contract Software - Blockchain

- Automates execution and admin portions of a contract
- Verify and enforce agreed upon contract terms
- Ex: Scan of % complete sent from drone through software and payment is made.
 - » Works well for volumes of site work
 - » What about for steel fabricators?
 - Exclude this for fabrication phase of work
 - For erection phase, clear milestones need to be setup for payment (Sequences or floors).
 - » Will this be dependent upon a 3rd party inspector's scan or electronic sign off?
 - » Use retainage to deal with 3rd party sign-offs



Payment Disputes Arising from Software

Payment - Textura

- Games by GCs not allowing invoice submissions
 - *3b. Contractor's allowance of Subcontractor's submissions of Applications for Payment or approval of Applications for Payment through Textura shall not be unreasonably withheld.*
- Watch Lien Waivers

Why am I signing this now?

You are being asked to electronically sign your current period unconditional lien waiver now so you can receive payment via ACH.

Our lien waiver policy states no other organizations can see the signature on unconditional lien waiver documents until three business days after disbursement.

For more information on the lien waiver policy, [refer to section 1.2 of the Textura Payment Management and Textura Early Payment Cloud Service - Service Descriptions and Metrics \(PDF\) contract.](#)

1.2 Lien Waivers

You may use the TPM Services for the electronic exchange of conditional and unconditional lien waivers.

ORACLE MAY RELEASE UNCONDITIONAL LIEN WAIVERS ONLY AFTER PAYMENT TO WHICH THE WAIVER(S) RELATE HAS BEEN FINALIZED (AS DEFINED BELOW) TO THE RELEASING PARTY ("PAYEE"), UNLESS OTHERWISE EXPRESSLY SPECIFIED IN THE PAYOR'S CONTRACT WITH THE PAYEE AND THEN, ONLY IF BOTH EXPRESSLY INSTRUCTED BY THE PAYOR AND AGREED TO BY PAYEE. ORACLE HAS THE RIGHT TO DEMAND REASONABLE VERIFICATION OF THE EXISTENCE OF SUCH CONTRACTUAL PROVISIONS.

Cybersecurity



Why the sector is a major target

#1

Manufacturing industry rank for attacks

Manufacturing replaced financial services as the top attacked industry in 2021, representing 23.2% of the attacks X-Force remediated last year. Ransomware was the top attack type, accounting for 23% of attacks on manufacturing companies.

Cyber attacks on manufacturing up 300% in a year

NTT also found that application-specific and web-application attacks accounted for two-thirds of all cyber crime

CYBER THREATS TO CRITICAL MANUFACTURING SECTOR INDUSTRIAL CONTROL SYSTEMS (ICS)

The Critical Manufacturing Sector is at risk from increased cyber-attack surface areas and limited cybersecurity workforces related to the COVID-19 pandemic. These trends increase the vulnerability⁴ of the Critical Manufacturing Sector to the growing number of ransomware attacks aimed at private businesses by increasing attack surfaces and reducing protective abilities. To mitigate future threats, the Critical Manufacturing Sector should prioritize the management of risks.

The threat landscape

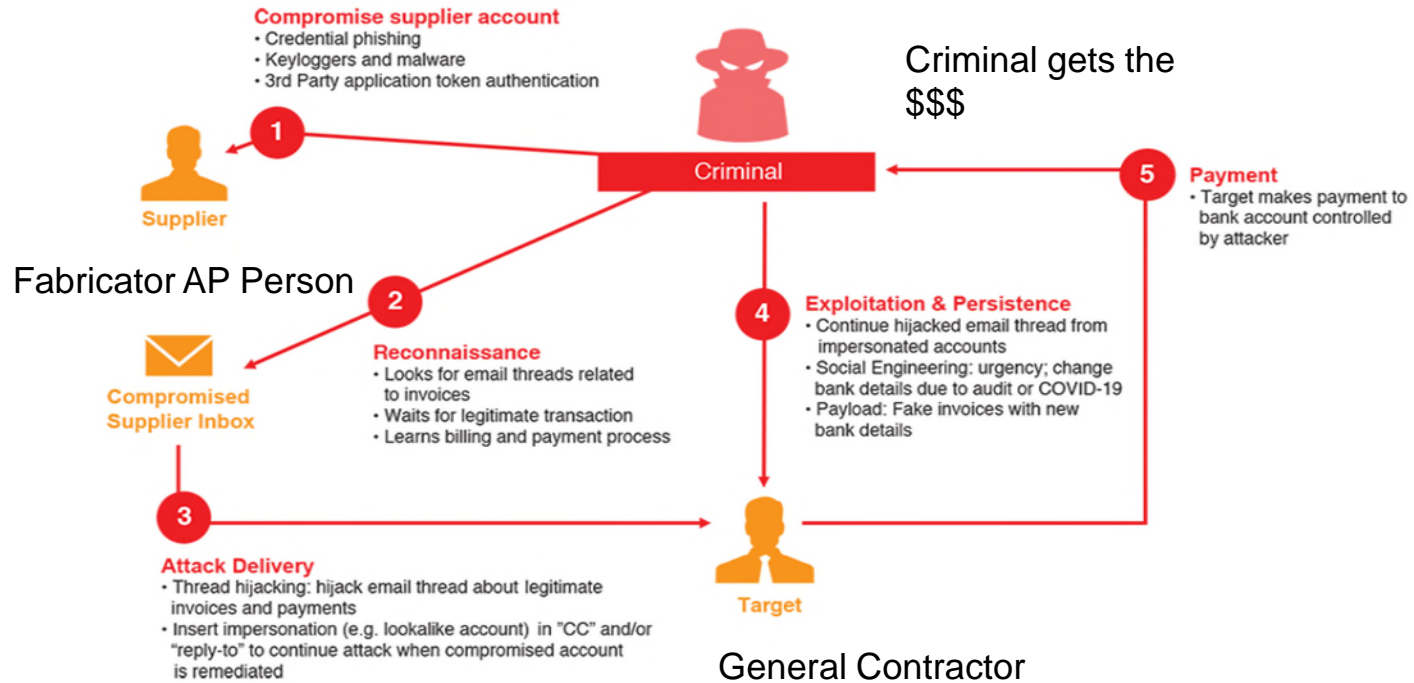
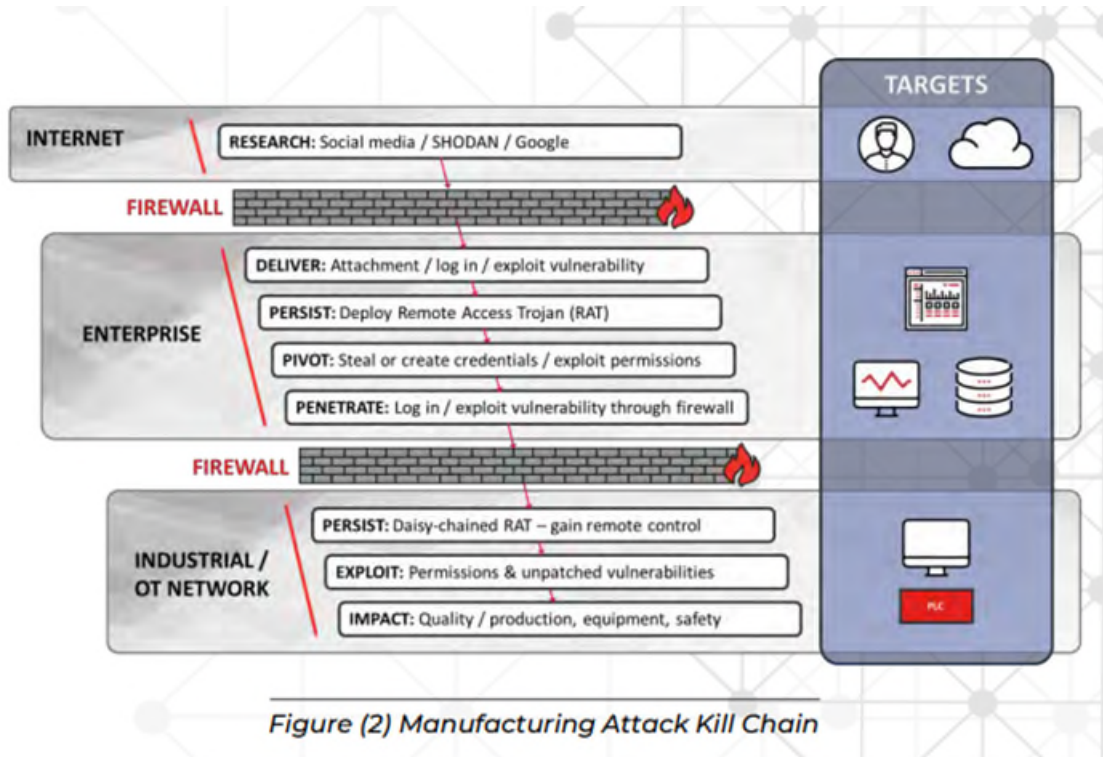
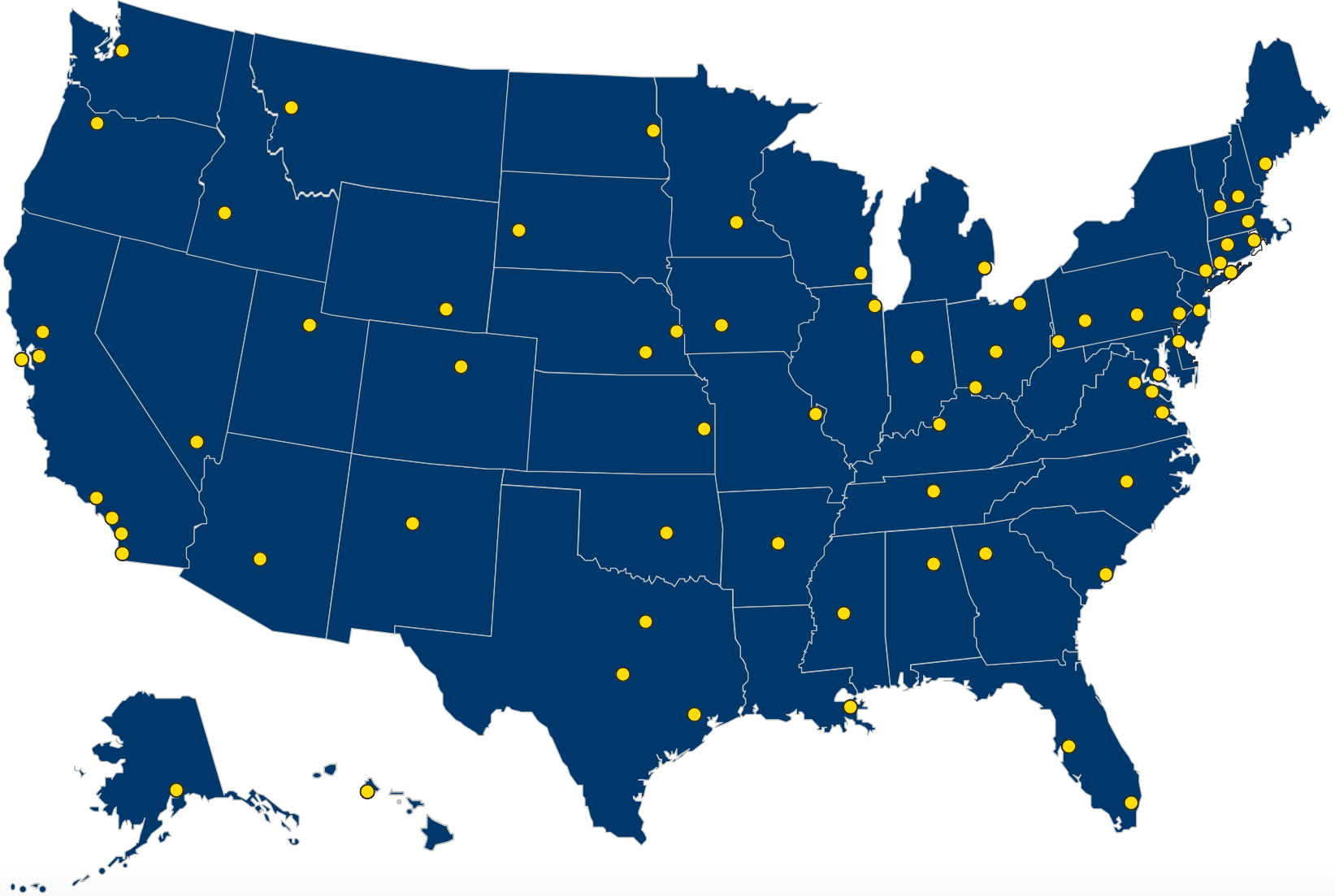


Figure 1: Anatomy of a Supplier Invoicing Fraud Attack

The threat landscape –Ransom Attack



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