

Central/West Construction Round Table Situation Report

Summary

as of April 17, 2020

Session Presenters

- Maria Dominguez, Nora Flooring
- Ryan Shipley, Hill & Wilkinson
- Rahul Deshmukh & Buck Akyroyd, Vaughn

Construction Cost Trends, Page

- **Owners don't wait; get your design projects shovel-ready now**

Flooring Vendor Insight, Nora Flooring

- To date, **no supply chain issues**. Expedited shipments are increasing. There have been minor delays within shipping due to staff members contracting COVID-19, but overall most orders are on time.
- International Orders: any major impact? **14-16 weeks** for products coming out of Germany. Issues arise when flooring contractors do not want to carry the cost burden of pre-purchasing products and storing.
- Possible **1-2-week delay** for various products upon arriving in the U.S

Contractor Insight, Hill & Wilkinson

- COVID Construction Resources (Cost, Subcontractor Participation, etc.): Implementing safety protocols of resources and partners onsite. **Task Force** (15-18 individuals) focusing on site activity of individuals arriving and leaving the job site.
- Impact of Manpower Onsite: Monitor site attendance and diving into the details of what is leading to an increase of individuals onsite. Maintaining a clear path of **communication** of testing throughout of workers that are pending results.
- National Construction Information: Northeast region and Washington state projected decrease in annual revenue of **25-35%**.
- **Short Term Construction Trends**
 - The majority of clientele are impacted negatively, with exception, a very small minority are busy
 - \$10mil project went to market early March 2020 and reissued to market end of March 2020 to evaluate what was the cost impact. Early preliminary estimate indicates a **4-6% reduction in construction cost** compared to early March estimate
 - Once the pandemic begins to settle down there may be a **spike in pricing**
 - **Subcontractor coverage** of established companies that did not bid on prior projects are participating on Invitation to Bid
- **Market Sectors**
 - Mission critical projects have had **no impact**
 - Manufacturing too soon to tell but some clients that have vacancy within their program are allocating for production of medical equipment
 - Healthcare: One project in the Houston market to accommodate Bed Capacity
- **Risk Management**
 - Evaluating how to maintain safety and maintain production

Virtual Inspection, Training, and Remote Assistance, Vaughn Construction

- How do we adapt and continue our construction projects? Remote inspector and onsite contractor work together to evaluate scope. The team consists of 3 people.
 - **Camera Captain (Hard Hat Mounted)**: camera stability, lighting conditions, connectivity
 - **Safety Escort/Punchlist Recorder**: walkthrough plan, laser pointer, zone light, flashlight, etc.



- **Remote Inspector:** monitor via video software (WebEx, Microsoft Teams, ZOOM), drawings, project specifications, punch list, and communication
- **Benefits of Virtual Inspection**
 - **Safety First**
 - Productivity
 - Time Savings
 - Support & Learning
- Challenges? **Connectivity** with reliable data service (4G/LTE internet) or stronger. A more preferred outlet is a Wi-Fi connection. Lighting is also a critical area that should be reviewed before any virtual inspections take place.
- Preparation between the Camera Captain and the Remote Inspector develop a **walkthrough plan** on how they will conduct this process successfully. Verify all parties have the necessary **equipment, software, and licensing** prior to the virtual inspection taking place.
- **Things to Remember**
 - Define the process: specify the purpose and goal of the inspection
 - Start Simple: choose the technology
 - Identify the team: select staff performing the virtual inspection
 - Train by schedule remote training for the field staff performing the virtual inspection
 - Practice: plan walk through and perform a trial run
- **Next Steps**
 - Utilize remote assistance consider using Dynamics365 Remote Assist
 - 360 Degree Cameras: obtain updated software (Open Space) for instantaneous upload to the cloud data storage

Future Topics

- Legal Considerations in the current Construction Market
- General Contractor Insight, Bid Data
- Impact on Institutional Planning and Programming
- Subcontractor Insight, Drywall
- Subcontractor Insight, Steel Manufacturing
- Subcontractor Insight, Curtainwall
- Health Insurance, Personal & Corporate



VIRTUAL INSPECTIONS, REMOTE TRAININGS AND REMOTE ASSISTANCE

Introduction

In the world of travel restrictions, social distancing, and remote work, contractors need creative solutions to adapt and continue construction projects. Vaughn Construction is leveraging virtual inspections, remote training, and remote assistance to manage risk and streamline processes while maintaining project progress. We can execute virtual inspections throughout each phase of the project to ensure work progresses smoothly. We can use virtual inspections for:

- Preparing punch lists and monitoring work progress
- Performing pre-final and final inspections
- Performing commissioning activities with third party commissioning agents remotely
- Ensuring smooth project hand-over.

We currently are deploying virtual inspections on select projects. Virtual inspections are an effective alternative when inspectors are not immediately available or when sites are affected by travel bans or restrictions. We can facilitate various levels of virtual inspections, as necessitated by the situation, organized in a short timeframe, to maintain compliance, ensure quality and maintain the project schedule.

Implemented the right way, virtual solutions can make inspections, training, and remote assistance easier, ensure visibility on site, streamline processes, and improve efficiency levels.

Concept

The virtual inspection is a co-witnessed process that utilizes real-time video streaming. This process provides a form of mixed reality for the remote user. We use video calling, a pre-determined walkthrough plan, and communication protocol, coupled with best practices, to connect remote inspectors to the job site. Additionally, we use a robust, pre-configured checklist software, so inspectors do not have to travel to the site to observe and approve the punch list items. An alternative option is an offline inspection consisting of a pre-recorded inspection paired with video transmittal.

We schedule a pre-inspection meeting to plan a trial run of the walkthrough and ensure equipment and software works. During the execution of the pre-determined walkthrough plan, our camera captain, with the help of a safety escort and punch list recorder, captures the areas of work with mobile equipment, streams the video, and transmits the images directly to the remote inspector. The roles of the virtual inspection site team include:

- **Camera Captain** – navigates the hard hat-mounted or handheld camera device
- **Safety Escort** – maintains safe path for the camera captain and ensures proper lighting and a safe walkthrough
- **Punchlist Recorder** – assists with capturing data and notes

This basic virtual inspection process can be achieved using any typical streaming platform such as WebEx, Microsoft Teams, Zoom Meeting, etc. If required, we can record the entire inspection process by just push of a button.

Virtual inspections, remote trainings and remote assistance can benefit projects in several ways:

- Safety First
- Productivity
- Time Savings
- Support and Learning

Equipment Setup and Requirements

We designed our virtual inspection process to provide the same level of technical expertise and insight as an in-person inspection, in a safe, flexible, and efficient way. We can stream high-quality data with smart-phone cameras and mobile connectivity, which is easily adaptable to the streaming platform most comfortable for the inspector.

Suggested Requirements:

- **Equipment** – Use mobile device (smartphone, iPad, or other tablet) with reliable data service (4G/LTE internet) OR a strong Wi-Fi connection (preferred).
- **Connectivity** – Ensure your inspection location has strong connectivity and your device is always within range of those services during the entire walkthrough. Slower and/or weaker connectivity may not provide the speed and clarity required to complete the inspection.
- **Inspection Preparation** – Plan the walkthrough and conduct a trial run.

Challenges to Address in Trial Run

A solid plan to mitigate challenges before the virtual inspection should include:

Connectivity – Ensure the inspection location has strong connectivity and devices are within range of the data service or strong Wi-Fi connection during the entire walkthrough.

Camera Stability – Conduct trial run with both hard-hat mounts and monopods for camera support to select the best video streaming method. Review hard hat mount with safety professional for compliance with safety policies and procedures.

Lighting Conditions – Provide and practice with hand lights (lighting stands, if necessary) for adequate lighting during walkthrough.

Things to Remember

Define the process – Specify the purpose and goal of the inspection.

Start simple – Choose the technology

Identify the team – Select the staff performing the virtual inspection.

Train – Schedule remote training for staff executing the virtual inspection.

Practice – Plan the walkthrough and trial run.

Next Steps

Once a project team masters the basic workflow of virtual inspections, consider the following options to enhance the user experience:

- Consider using Dynamics 365 Remote Assist with a Microsoft HoloLens for a more immersive video experience with 3D context, as well as adding telestration capability.
- Consider using 360-degree cameras. Software application like OpenSpace upload 360 photos to cloud data storage and tied to floor plans within 15 minutes. This immediate access allows a remote inspector to conference with the project team and generate inspection issues directly into an issue tracking program such as BIM 360.
- Research the use of platforms such as ScopeAR for developing virtual training applications deployed with a Microsoft HoloLens.
- Incorporate livestream drone video for site and skin inspections.

Virtual and remote solutions in construction are here to stay regardless of the circumstances. The COVID-19 outbreak pushed construction to a new reality where virtual and remote solutions are the go-to strategy wherever possible. We work in an industry that can adapt quickly to the new reality and take the right safety measures in a timely and responsible manner. We are using technology to provide creative solutions to keep construction projects on schedule while staying safe.