



# Providing VDC Training to Journeymen and Apprentices

BLD502973 | United Association (UA)

Ken Schneider

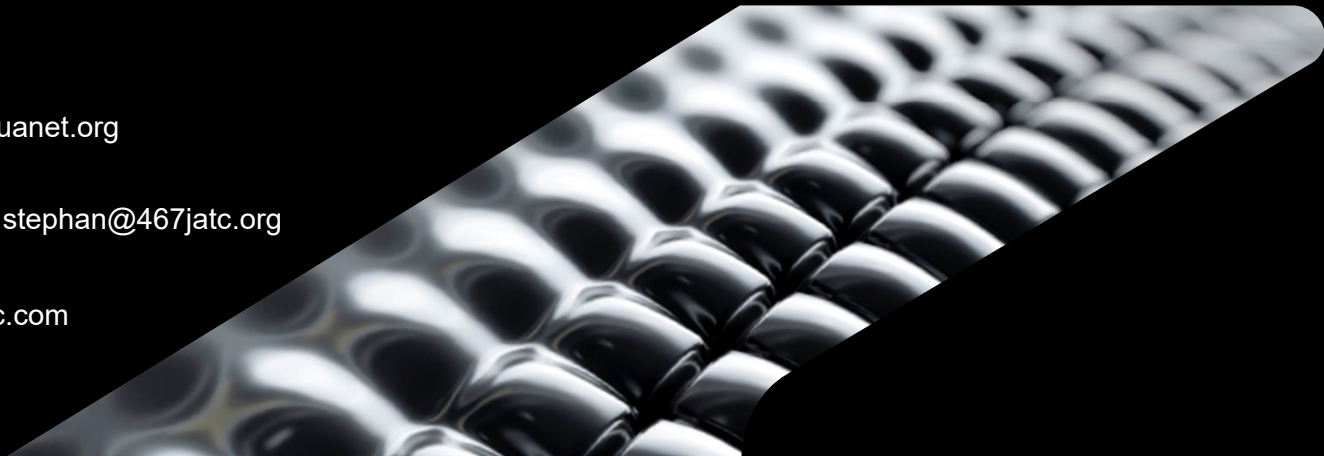
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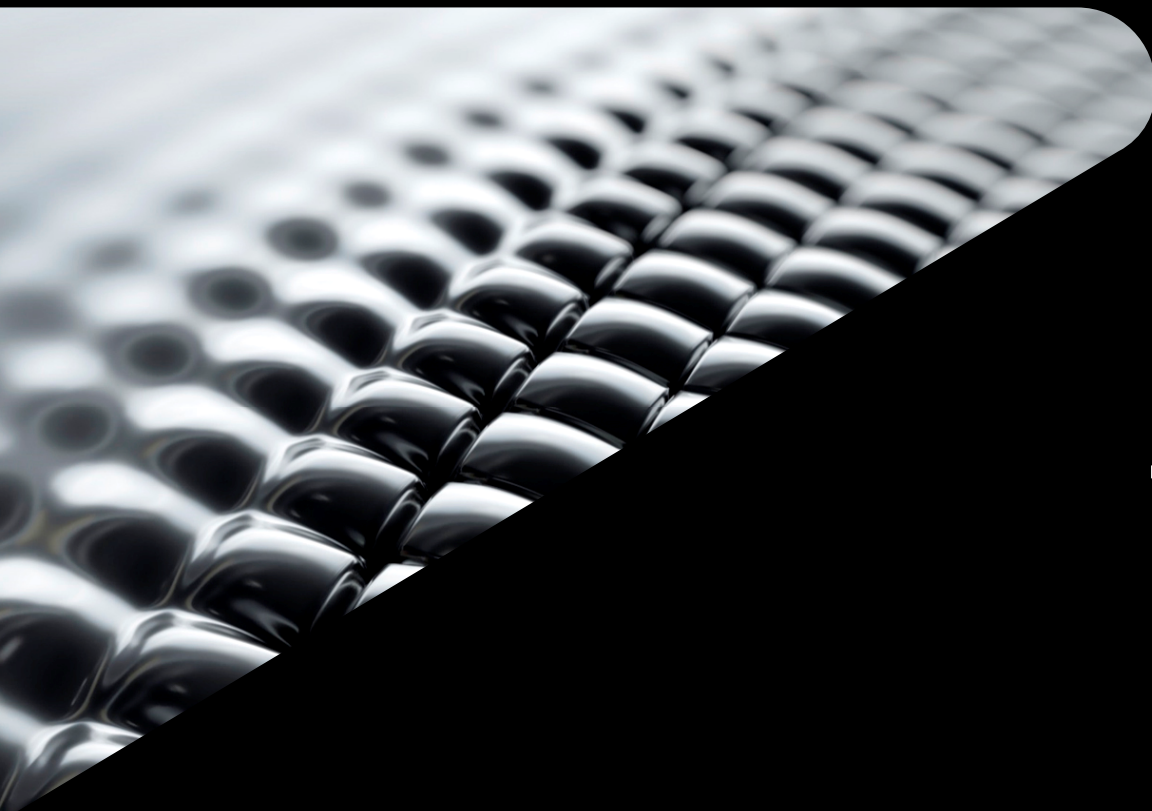
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# Course Description

## Providing VDC Training to Journeymen and Apprentices

- Drafting in VDC programs takes a **combination of industry knowledge and software knowledge**. In order to be proficient, a drafter must pull from both knowledge sets and the best VDC personnel have some level of field experience in order to know how systems should be built correctly and efficiently.
- This session will moderate a discussion on ways to train union labor, both from the field and through the apprenticeship. In both cases, there is a need for some level of proficiency.
- For apprentices, more jobsites are incorporating coordination software in the field. They need to be able to use the software tools to read, interpret and build.
- For journeymen using their experience to become draftsmen, they need training on how to use software to design, coordinate and fabricate.
- The discussion will talk about how contractors around the country are approaching this training, what content should be taught to each set of people and how they approach bringing in labor to the office.



# The Speakers

A little about your panel...

# The Speakers

## Ken Schneider UA ITF – Training Specialist

- UA Local 268 – St. Louis, MO
  - Sprinklerfitter
  - Apprentice
  - Journeyman
  - Instructor
  - Director of Training (past)
- United Association Education and Training Department
  - Training Specialist
    - Fire Protection
    - Technology / VDC

## Stephan Schnell UA Local 467 – Director of Training

- UA Local 467 – San Mateo, CA
  - Plumber
  - Apprentice
  - Journeyman
  - Instructor
  - Director of Training (current)
- United Association
  - Instructor
    - Technology / VDC

## Eric Posey FUSED - Owner

- UA Local 440 – Indianapolis, IN
  - Steamfitter
  - Apprentice
  - Journeyman
  - Instructor
  - Director of Training (past)
- FUSED
  - Owner / President
    - BIM/VDC Services
    - Custom Training



# The UA @ AU

What we do and who we represent...

# United Association

of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada



**1889**

## YEAR FOUNDED

As of 2022, the UA is a 133-year-old organization

**360K**

## MEMBERS

Plumbers, Pipefitters,  
Sprinkler Fitters, HVACR  
Service Technicians,  
Welders and Pipeliners

**274**

## LOCAL UNIONS

Regional local unions and training centers cross the United States and Canada

**4**

## COUNTRIES

United States, Canada, and international affiliations with Australia and Ireland

# United Association

What we do and why we do it...



## Our product

- We provide a product - **Labor**
- We invest heavily in **training** and **educating** our membership
  - Today, over **\$1B+** is spent every 4 years on training our membership
  - Apprenticeship programs, specialized processes, accelerated welding training, management courses, certification programs, college degree programs
  - In 1936, The UA's joint apprenticeship program was the **first** nationally registered program recognized by the DOL in the United States

## Our Mission

- Great wages
- Generous benefits
  - Retirement pensions
  - Healthcare
  - Training opportunities
- Work opportunities
  - Our membership consists of apprentices, journeymen, educators, supervision, project management, estimators, contractor/owners, organizers, union leaders, and much more!



Commercial and  
Institutional



Energy and  
Infrastructure



Fabrication



Fire Protection



HVACR



Industrial



Medical and  
Pharmaceutical



Residential

A central image showing two hands shaking, symbolizing partnership. One hand is light-skinned and the other is dark-skinned, representing diversity and collaboration.

# Industry Partnerships



A close-up photograph of a black, glossy surface with a grid-like pattern of raised squares, creating a textured, almost 3D effect. The surface is partially obscured by a black diagonal shape that serves as a background for the text.

# Industry Challenges

Problems facing our industry...

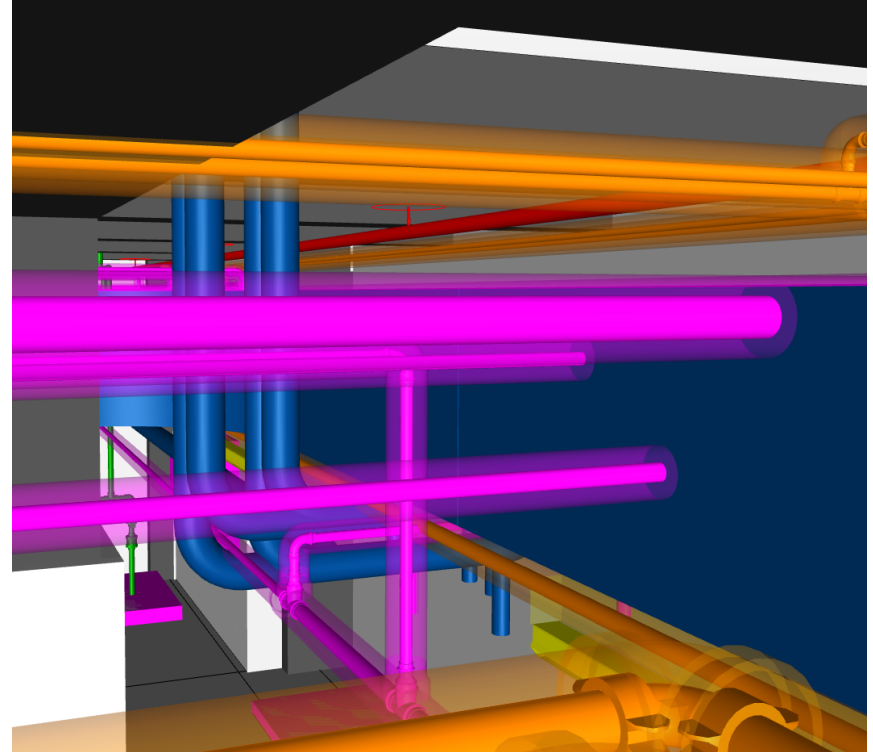
# Solving Industry Challenges

- Shortage of **skilled** construction workers
  - 'Baby Boomers' retiring from workforce
  - Population is growing – that means more buildings and infrastructure are needed
  - Approximately 2.2 million **new** workers needed over the next 3 years in the construction sector to meet demand
- Shortage of Virtual Design & Construction (VDC) workers
- High schools push students into college degree programs rather than vocational schools



# VDC-Specific Challenges

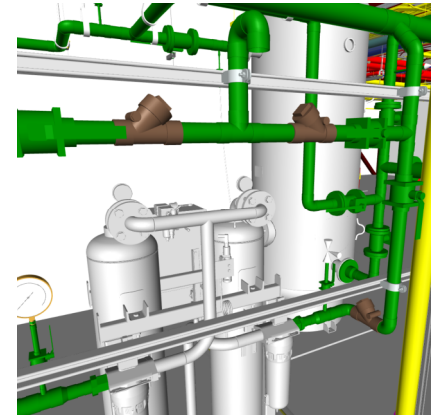
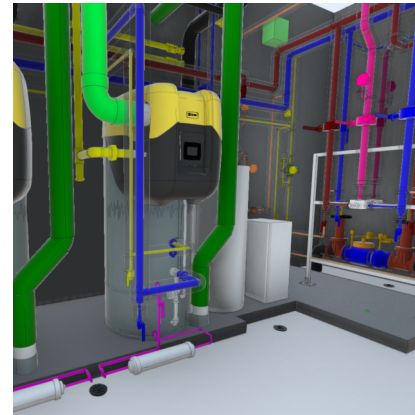
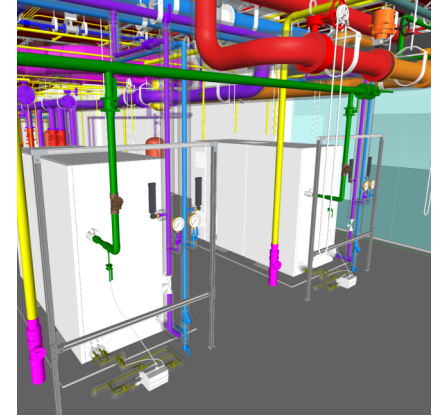
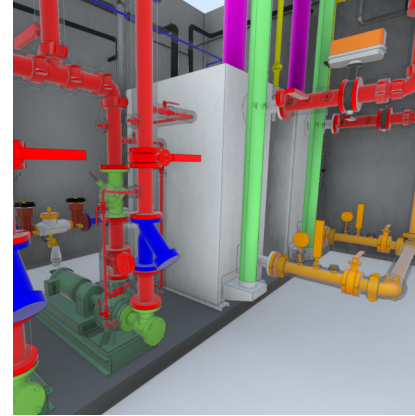
- Engineers are providing design intent models for approval and bidding rather than buildable models for construction
- Contractors are typically chosen very late in the pre-construction process
- Contractors are inheriting bad models with thousands of clashes amongst various trades
- Project schedules are increasingly shorter. MEPF Contractors typically need to start BIM coordination the same week they are awarded the project without ample time to source qualified manpower
- Many workers coordinating BIM models have no construction experience or no prior knowledge of how to build

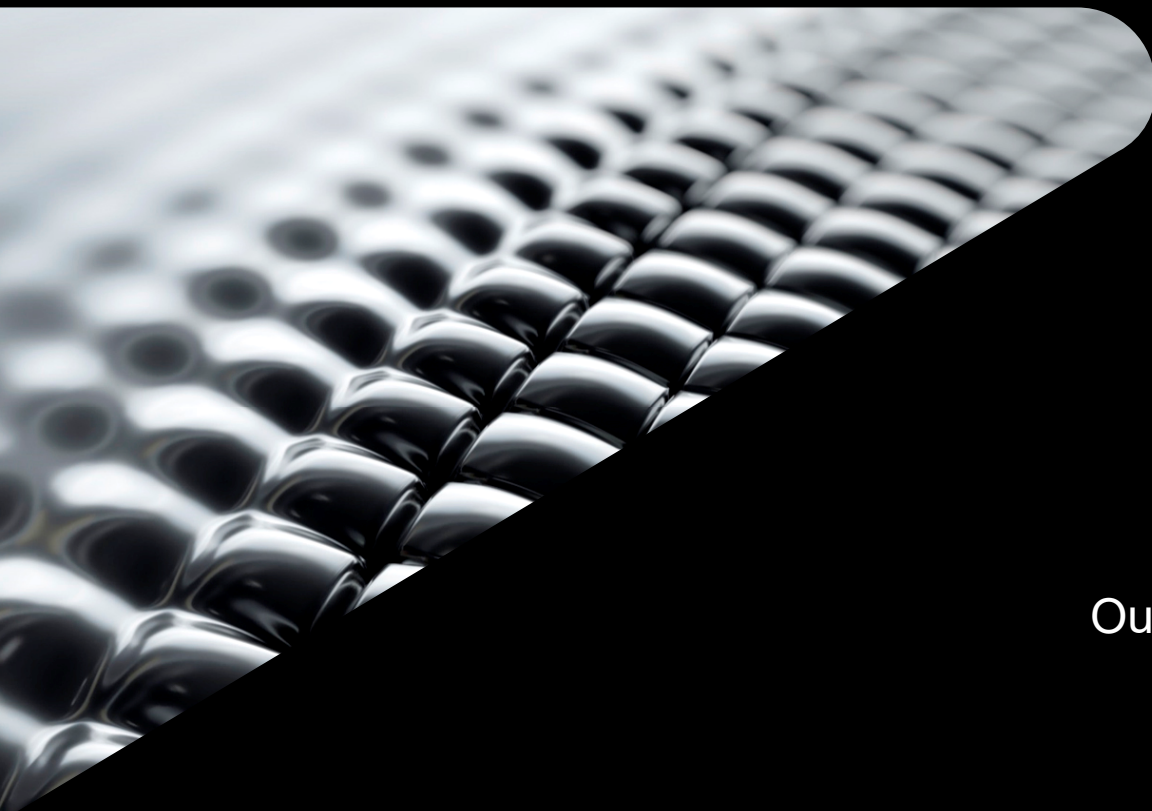


# The UA Solution

## ...Training!

- Train workers how to build...
  - MEPF industry **best practices** and **applicable codes** for a successful installation
  - How to build efficient and **lean**
  - **DfMA** best practices to expedite construction schedules
  - Allow VDC manpower **ample time on real construction sites** to understand the importance of proper design and project planning
- Train workers on how to properly use VDC tools...
  - **Design software** - e.g., Revit
  - **Coordination software** – e.g., Navisworks & Autodesk Construction Cloud
  - **Reality Capture** – Leveraging 3D laser scanners and resulting point clouds on remodel projects or to QA/QC new installations
  - **Mobile Technology** – Leveraging mobile devices and apps on the jobsite
  - **Jobsite Technology** – Using RTS and other advanced methods like AR to layout out the virtual model on the physical jobsite





# The Past

Our history of technology training...

# Our history of VDC training runs deep...

1990-1993



## CAD

In 1990, the UA began teaching Intro to CAD courses which became our AutoCAD course by 1993.

1994-1997



## 3D CAD

By 1994, the UA began focusing on 3D CAD training allowing much more advanced workflows than previously taught.

1998-2015



## BIM & VDC

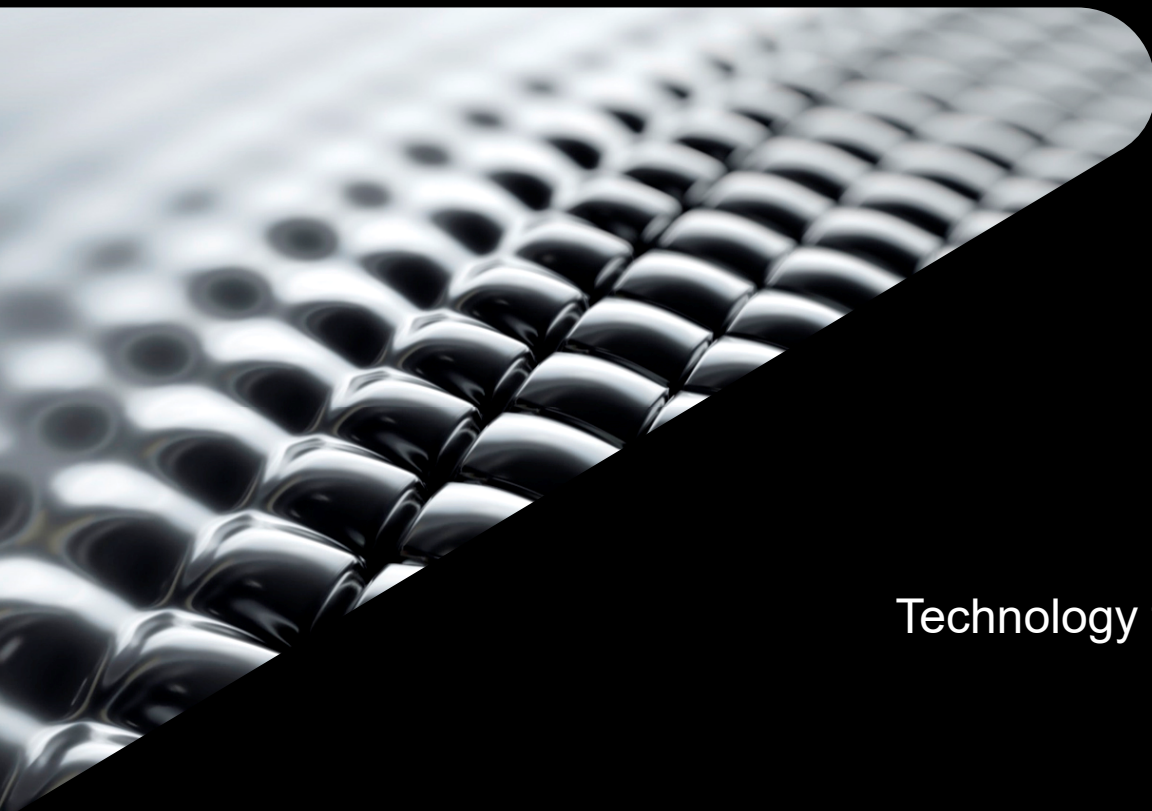
For almost the next 20-years, additional courses were added based on industry standard BIM practices like BIM, Laser Scanning, Robotic Total Station, and Jobsite Technology were added.

2016-Present



## Emerging Tech

By 2016 to present-day, even more BIM/VDC courses like Revit, Mobile Technology, Lean Construction, DfMA, and much more are taught.



# The Present

Technology training currently implemented...

# The present state of VDC training

Courses the UA teaches now...

## **Instructor Training Program (ITP)**

(train-the-trainer format courses)

- Methods in Teaching Drawing Interpretation and Plan Reading
- Advanced Plan Reading
- Autodesk® Revit® MEP
- Advanced Autodesk® Revit® MEP
- Robotic Total Station Layout – Topcon - Sokkia
- Robotic Total Station Layout – Leica
- Robotic Total Station Layout – Trimble®
- Advanced RTS Training
- Utilizing Jobsite Technology
- Mobile Technology for the Construction Industry
- Understanding the BIM/VDC Workflow in Today's Construction Industry
- DfMA and Modular Construction

## **Regional Courses**

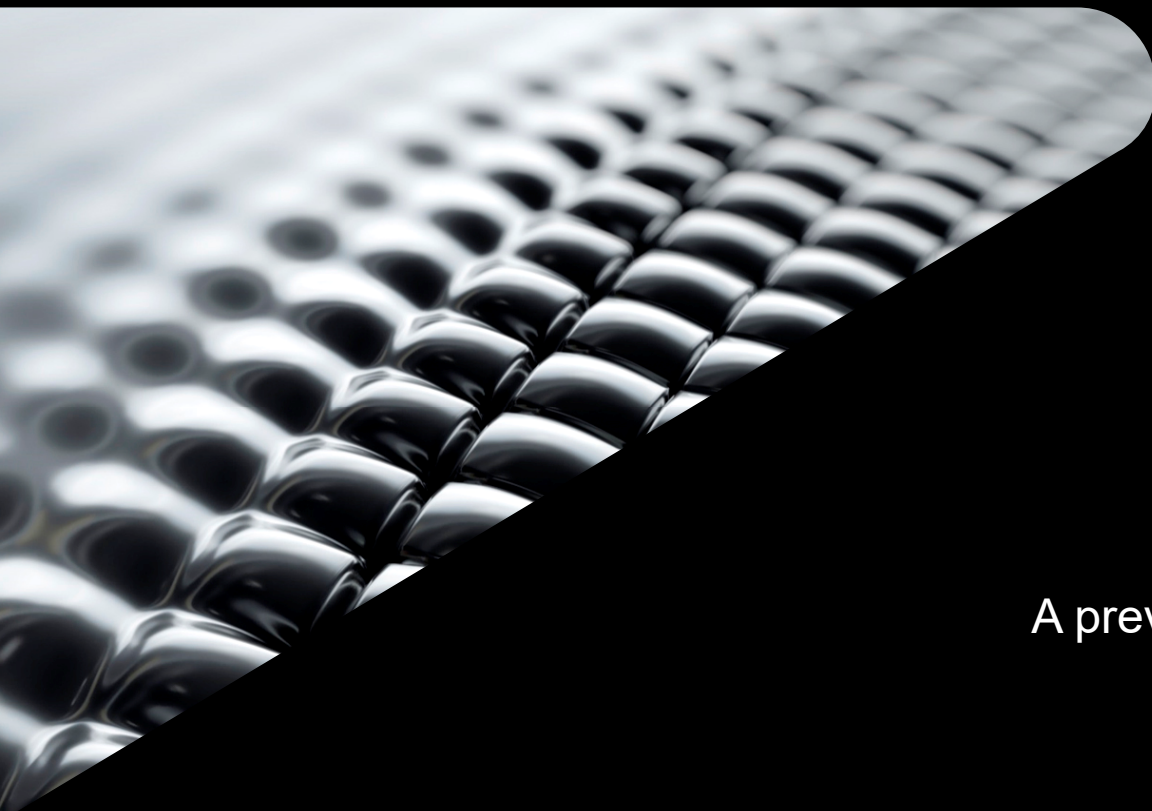
(train-the-student format courses)

- Laser Scanning: Reality Capture for Construction Applications
- Mobile Technology for the Construction Industry
- Revit® Online - Level 1 - Revit Core
- Revit® Online - Level 2 - Revit Piping
- Utilizing Revit® for UA Training
- DfMA and Modular Construction
- SysQue for Revit®

## **Local Courses**

(train-the-student format courses)

- Much more taught at over 100 training centers signatory to the Autodesk Skilled Trades Program



# The Future

A preview of what is to coming soon...

# Our path forward...

- Implement a **mechanical drafter** registered apprenticeship program
  - Train our industry on how to **build properly** both **physically and virtually**
  - Formal government worker classification
- Create an industry-recognized **certification program** setting the benchmark for VDC
  - Employers will be confident that the VDC workers they employ are **well trained** and **turnkey** ready





# Looking for a career in Tech? Look to the United Association!

The United Association offers good paying jobs with great benefits, *and* apprentices get to work with pretty cool tech! Find out how the UA can help you build an exciting future, like Diana, Ashley, and Liz.

After college, Diana worked as a graphic artist. But when she relocated back home, Diana didn't find a job right away, so friends and family convinced her to give the UA a try.

With her background in graphic design and her previous experience in AutoCAD, the UA gave Diana the perfect opportunity to work both in the field and with CAD. This combination has given Diana a great deal of flexibility in her career.

Today, Diana's projects are in Revit, though they also utilize Bluebeam, BIM 360, and Navisworks. Because BIM and VDC require you to know so much about a project, it is a whole new world full of opportunities: "It's great to be a part of the future - the construction process is constantly evolving, and I'm thankful for the training opportunities the UA has provided me with to succeed."

Diana is also really excited to be part of the newly-formed tech team at her local. They are currently exploring new options, including pushing tech initiatives offering BIM classes, and implementing the 4D Technologies UA Curriculum.



**Diana Lee**

Local 601

Milwaukee & Madison, WI

Trade: Steamfitter

Job Title: Project Planner



**Ashley Trg**

Local 290, Tualatin, Oregon

Trade: Steamfitter

Job Title: CAD Manager

Seven years ago, Ashley discovered the UA apprenticeship program: "What drew me to it was the stability. ...It's not just a job—you inherit a second family."

Today, Ashley's local has even partnered with a community college so that apprentices earn an associate degree through the program.

Ashley originally worked in the field, but because of her background in AutoCAD and Navisworks, when she got the opportunity, she jumped at the chance to work in Revit: "It's just a matter of time before everybody is going to be using that platform. It's a lot easier to communicate with the engineers and architects, and it makes sense for the industry as a whole to go that direction."

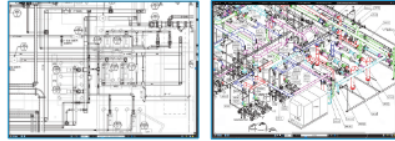
She also sees tech becoming a more important part of both the construction industry and her local over the next few years. At work, they are utilizing the HoloLens on remodels, and at her local, they are providing each apprentice with a tablet. They also have a total station and are adding new software programs, including an emphasis on Navisworks.

Ashley is excited that she found the apprenticeship program at the UA. "It's just really cool. You come out and get paid competitive wages, you have benefits, and pensions. You get to work with the latest tech. It isn't easy to come by these types of jobs anymore."



For years as a steamfitter, Liz was out in the field, working out of a service van and running small jobs. But when she needed a change of pace, Liz decided to learn CAD so that she could stay in the trades and still be part of the work that she loves.

Liz specializes in transforming projects from 2D into 3D with Revit. She also updates the plans to make sure that the final project will be easy to navigate and maintain. From the Revit model, Liz creates a PDF with color-coding, text, and dimensions, which is simple to read and use in the field.



Liz is also really excited about the use of total stations: "Back in the old days, we had to dimension every single hanger, and every single sleeve." Now, with total stations, they simply make a Trimble file and load it into the total station. It tells them where to add a little insert. They don't even have to drill after anymore!

Today, Liz is part of a group developing curriculum for the technology classes at her local. She is reviewing the 4D Technologies UA Curriculum, as well as developing classes for Blue Beam and Navisworks.

**Liz Diemer**

Local 32  
Seattle, Washington  
Trade: Pipefitter  
Job Title: Pipe Detailer



#### Tech in the UA

- **BIM:** Building Information Modeling
- **VDC:** Virtual Design and Construction
- **AR/VR:** Augmented reality/virtual reality
- **Revit:** BIM/VDC authoring software
- **Navisworks:** Model review/coordination software
- **AutoCAD:** 2D/3D computer-aided design and drafting software
- **BIM 360:** Project delivery and construction management software
- **Bluebeam:** PDF review/coordination software
- **Total Station:** Surveying/layout instrument
- **Hololens:** AR/VR headset

#### 4D Technologies UA Curriculum

All UA members get free access to the 4D Technologies UA Curriculum. Designed with UA members, for UA members, this 12-module Revit Core curriculum introduces you to powerful software that is revolutionizing the construction industry.

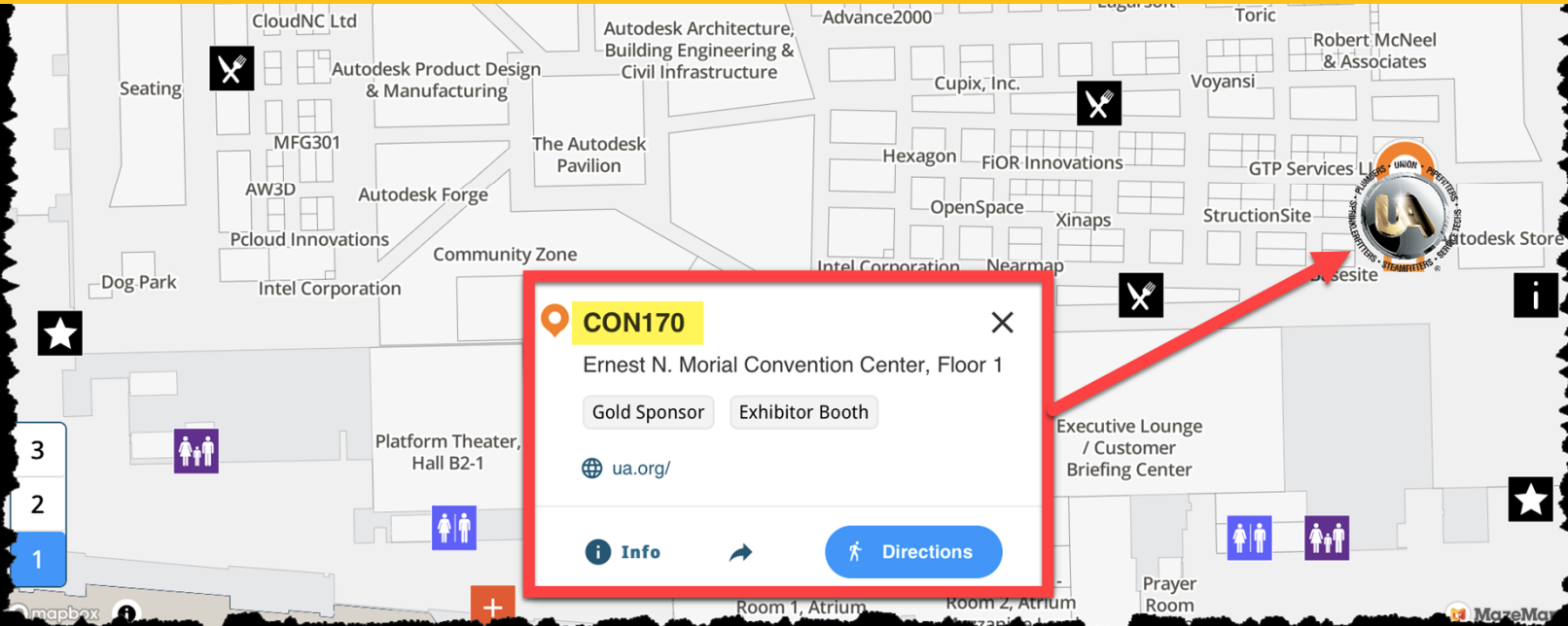
UA members also get access to the full CADLearning Autodesk training library for a special rate of just \$70 per year.

**Ready to learn more about a  
career in tech at the UA?**

Scan the bar code or visit <http://ua.org/join>.



# Questions?





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