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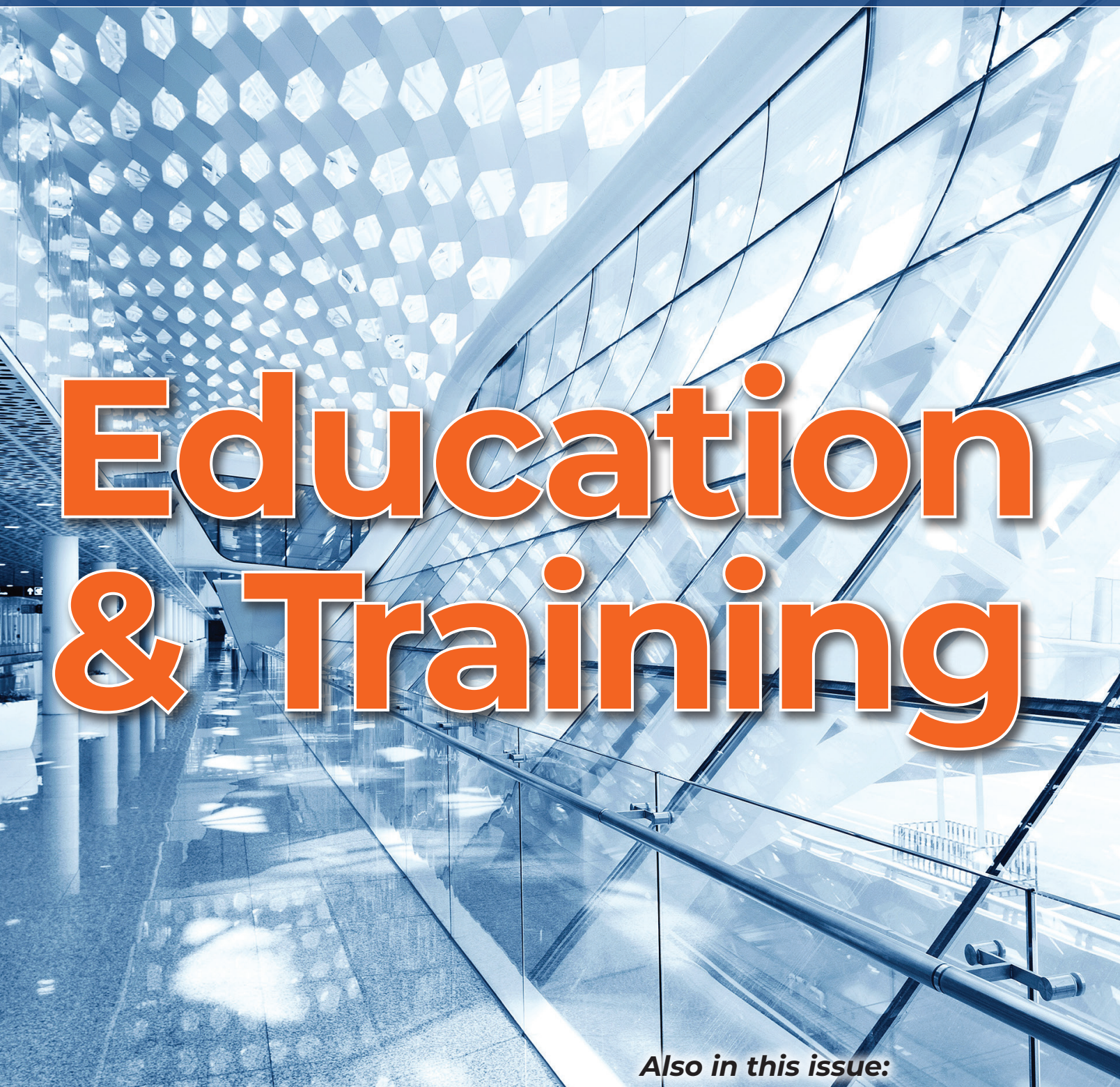
The Official Publication of the AUGI Design Community

November 2023



Education & Training

Also in this issue:

BricsCAD | buildingSMART | SOLIDWORKS

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AUGI
From the President

HELLO AUGI MEMBERS,

Every day we get opportunities to learn new things, both at work and in our personal lives. Skills like mastering a specific tool in our BIM/CAD software or learning how to better understand people we live and work with.

"Education is not the filling of a pail, but the lighting of a fire." — *William Butler Yeats*

This quote describes perfectly how education and training affect us. The purpose is to ignite a flame that will encourage us to keep striving for more. Compare this to CAD/BIM software, no one will ever know everything in a software program. The human minds that are using and programming the software are constantly creating and modifying the tools. I find it invigorating to open a new version of a software program and comb through it looking for new and exciting things! Which is perhaps why I have the career that I do. I'm sure all of you can find something about your career that invigorates you or creates that spark or flame inside of you!

In the next couple of weeks I will be headed to Las Vegas to attend Autodesk University, I imagine I'll see a few of you there as well. I have high hopes that this year's conference will offer a great learning experience for all that attend! For all of you that I only see once a year at AU, I look forward to seeing you soon!

Remember to check out our *AUGIWORLD* Podcast. The title of the podcast is *AUGIWORLD The Podcast* and can be found on any podcast platform.

Sincerely,

KaDe

AUGIWORLD

www.augi.com

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A Global Community for AEC Professionals to Learn, Grow and Exchange Knowledge.

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by: David Harrington

In Loving Memory

Jay Zallan

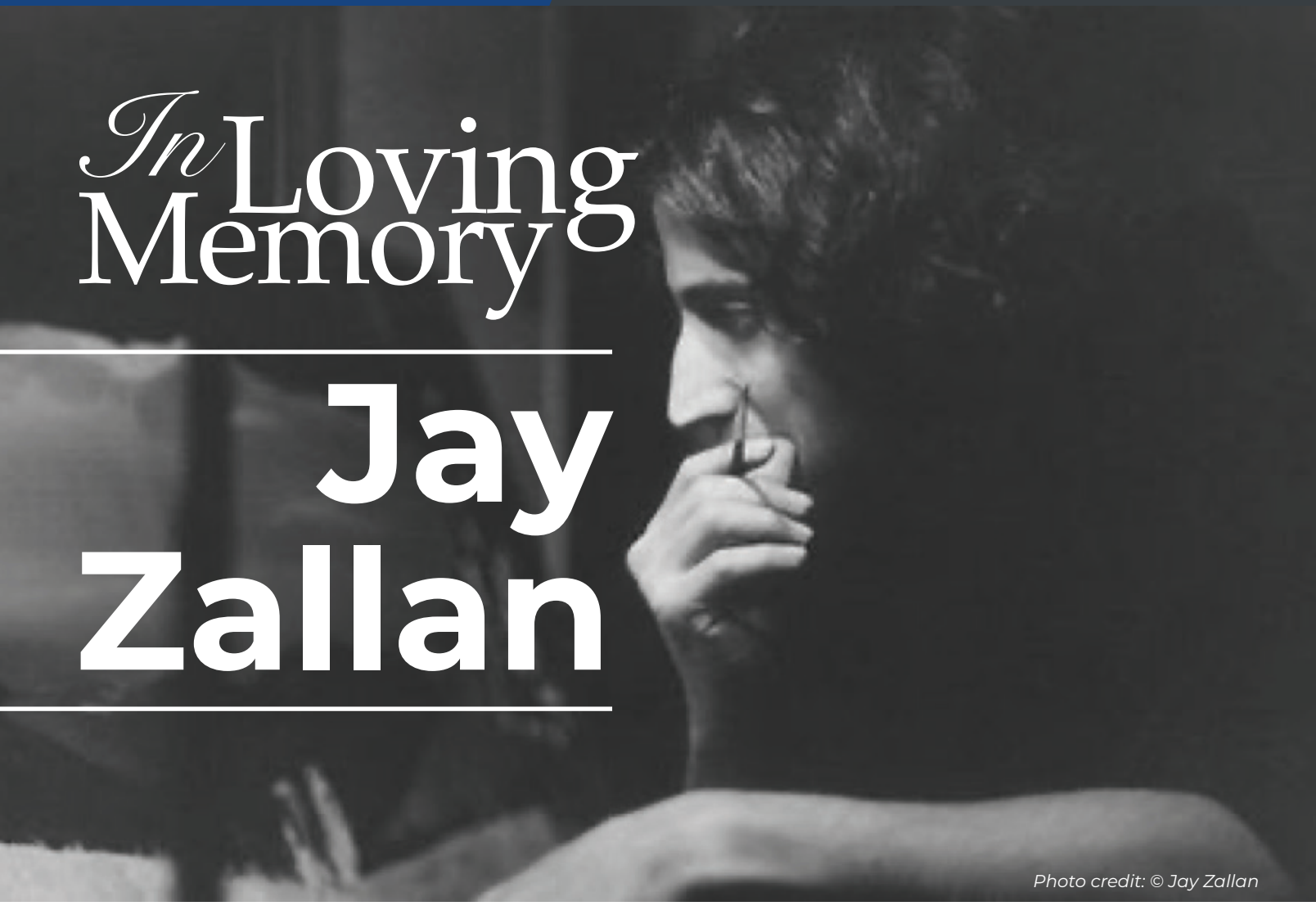

Photo credit: © Jay Zallan

It is with great sadness I must report on the recent passing of my friend Jay Zallan. Although I do consider it a privilege to be asked "say a few words" about Jay, those that really knew Jay, very few words would properly describe his personality. Jay was a social butterfly at events, usually adored with fanciful outfits to garner a few odd looks. To him, that is success. Making people think for a second about the world they live in and the wonderful and beautiful creatures that inhabit it.

My friendship with Jay began around 2005 and my learning Revit Structure. Jay, along with Daniel Turquoise and Marcello Sgambelluri, helped me greatly to learn how to leverage this architectural modeling program for structural drawings. This then led to Jay writing articles for *AUGIWORLD* magazine and then Jay then took it even further (he is Jay after all) and helped publish AW on a monthly basis, by helping new authors write their own articles. Jay's passion for whatever he was doing at the time was all-consuming. There are no half-ass or half-brained attempts with Jay, and we would all stand amazed at the shear boldness that the man possessed.

Jay was not, not in any sense, a conformist. No, not in a million years. Conforming would be akin to shoving a round peg in a round hole. He would prefer to just get rid of the hole and peg and use modeling clay instead. Build your skill set and then imagine whatever you want! Break the design and reassemble it and make something even more creative.

Our hearts do go out to his family and his two young adult children, his son Ram, and daughter Noya. Know that no amount of time can pass to truly dim the light of Jay shining through you two. The AEC industry as a whole has been made so much better from Jay's leadership and contributions. I know he would want both of his kids to go kick ass, just like he always tried to do. He will be missed for sure.

CURRENT CONTEXT AND INSIGHT FOR PLANNING AND DESIGN

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*The first 10 companies to schedule and complete a full Nearmap demo (~15 minutes) will receive a $200 gift card. Demos can be scheduled at Booth #804 and must be completed on-site before expo close on Nov 15, 2023. Offer not valid for current Nearmap customers.

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nearmap

by: Brian Chapman

Adapting to the AI-Driven 3D Frontier:

Navigating Innovation with 3ds Max

In this age of rapid technological progress, we are witnessing remarkable innovations that significantly boost human productivity. 3D technology, driven by Artificial Intelligence (AI) advances, is a prime example. Technologies like Gaussian Splatting in Unity have achieved exceptional levels of precision, accuracy, and realism, allowing us to capture reality vividly in 3D representations using nothing more than a smartphone or a short video clip. As professionals in 3ds Max, we know this rapid technological leap can be unsettling. Unlike previous advances, which had a relatively steady and gradual impact, today's AI-powered progress offers little time to adapt between rapid changes. AI's continuous evolution with the constant influx of new information sets these advancements apart from the past. Our role as professionals now demands a commitment to adapt and grow more than ever. One effective way to achieve this is by focusing on essential skills and lifelong learning.

In the face of these swift changes and the dynamic nature of AI-driven progress, it's crucial to realize that challenges also offer opportunities for growth and collaboration. As professionals in the field of 3D Design, we have a unique chance to leverage the collaborative power of teamwork and the potential of education. By promoting collaboration across various fields of expertise and embracing lifelong learning, we can not only adapt but also thrive in the fast-paced world of 3D technology. We can turn these challenges into steppingstones towards an innovative and thrilling future.

Learning opportunities abound, catering to our individual needs and goals. These avenues include exploring vast online resources on platforms like

YouTube and Udemy and pursuing traditional educational paths like earning degrees in relevant fields. Whether you choose specialized schools that focus on game or video design or opt for a more scientific path within STEM disciplines, with a primary focus on mastering the discipline and 3D skills as a secondary aspect, you'll find ample opportunities to develop your abilities. These educational options empower us to remain well-equipped to navigate the ever-evolving landscape of 3D technology and AI-driven Innovation.

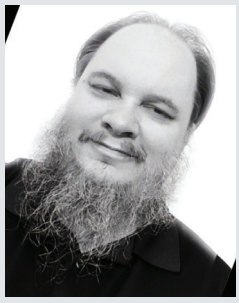
For individuals passionate about 3D Design and seeking careers that don't necessarily lead to project management, numerous alternative paths offer artistic freedom and creative opportunities. Roles such as 3D animation, game design, digital marketing, and creative advertising provide fertile ground for artistic expression and Innovation. In these roles, you can immerse yourself in visual storytelling, create immersive experiences, and pursue cutting-edge artistry. These roles offer the flexibility to contribute your artistic vision to projects that captivate and inspire audiences across various platforms. However, it's essential to acknowledge that these creative careers, while fulfilling, often come with challenges such as job stability and unconventional work patterns. Many of these positions may involve a nomadic lifestyle or freelancing, requiring adaptability and resilience to navigate the ups and downs of projects and opportunities.

STEM careers use 3D technology from a distinct perspective, emphasizing its applications in scientific domains. These career paths often revolve around cultivating solid foundations in scientific data, math, and principles, ultimately leading individuals toward project management roles where creativity may take a back seat to the prominence of interpersonal and organizational skills.

As you embark on your journey in the world of 3D, here are some potential career directions to consider:

- Engineering: Focused on using software to design and prototype complex structures and products, typically in industries like aerospace, automotive, or civil engineering.
- Video Game Designer: Focused on creating immersive and interactive virtual worlds, characters, and gameplay experiences within the gaming industry.
- 3D Printing Technician: Focused on operating and maintaining 3D printing equipment to bring digital designs to life, often within manufacturing and rapid prototyping domains.
- Graphic Designer: Focused on using 3D graphics and visual elements to craft attention-grabbing designs for branding, advertising, and various digital and print media.
- 3D Animator: Focused on bringing characters and objects to life through motion and storytelling, with opportunities commonly found in animation studios, film production, and the entertainment industry.
- 3D Designer: Focused on creating three-dimensional visual assets for diverse applications, spanning product design, advertising, and architectural visualization.
- Architectural Designer: Emphasis on using 3D modeling to design and visualize architectural structures, interiors, and spaces within the realm of architecture and construction.
- Professor: Focused on educating and mentoring aspiring 3D professionals, imparting your knowledge and skills within academic institutions or training programs.
- Art Director: In this role, you guide and oversee the creative direction of visual projects, including 3D graphics, in fields such as advertising, film production, and marketing.
- Web Developer: Focused on integrating 3D elements and interactive graphics into websites and web applications, enhancing user experiences in the digital realm.

These diverse paths offer many opportunities tailored to your unique interests and aspirations within the ever-evolving world of 3D technology.



Brian Chapman is a Las Vegas 2D/3D design professional, creating content for the AEC industry, games, film, entertainment, and software development. Brian can be reached at procadman@pro-cad.net

by: Mark Kiker

Secrets about People

Continuing my series on the Secrets that Tech Managers Keep, I move on to some that might be tough to think about and are seldom mentioned out loud. These are people-focused.

SOME PEOPLE REALLY NEED TO IMPROVE

This secret is only related to tech improvements, not personality, attitude, or trade skills. Some of the staff just don't know how to use technology. This may seem harsh, but if I asked you to think of the top three people you would NOT want on your team for the next project, you would not have much trouble defining who they are. Or maybe it can be worded like this... Think of your worst users. "Users" may not be a complimentary term, but you get the point. You know who they are. Some folks consistently make tech mistakes, bad choices, use old methods, take too long to do simple tasks, use the tech tools the wrong way, or flat out just do not know how to use them well. They may be great designers, or managers or licensed professionals in their trade, but they just don't seem to use technology very well. They have been trained. They have been taught. That is not the issue. They just can't seem to get it right.

What to do about it – It is not your job to demean the worse users. It is your job to not let them think that misuse is okay. Everyone needs to improve, and everyone can improve. They improve at different rates, but there should be advances in their development. Help them along. Keep explaining how things are done, why they are better done in a uniform way and how it helps others and themselves to be productive. When they continue to stagnate, and some will, then keep it to yourself, but work to minimize the impact by teaming them up with great tech users.

This is a secret you may want to keep... I almost did not write about it. These people probably do not work for you, so this can be a touchy topic. Never tell anyone about their lack of tech skills unless it is really damaging to your firm or the project. Then only tell their boss. And do it in such a way as to not attack the person or their dignity. Keep it narrowly focused on their use of the technology. Use very respectful terms. But it may be the secret you want to not bring up... Some folks should not be in critical positions that demand higher tech skills.

NO ONE CARES

Well, let's just say that a lot of folks don't care about the things you are passionate about. There are

those that don't use tech the best way possible and then there are those who just don't care. No one really cares about your issues and the focus you put on getting things structured, secure and effective. They just want to get their job done and they don't want tech to get in the way. Maybe not everyone. But the ones that don't care can become an annoyance and even a liability. When those that do not care come in contact with technology, things can go awry. Some don't care about standards. Some don't care about procedures. Some care, but they set aside the proper way of doing things because they think it will get their project done sooner. The processes that you think are locked in, may not be. The guidelines are in place, people should follow them... right? But they don't do that all the time.

What to do about it – Keep emphasizing the need to "do it right". Do not say "you did it wrong" but remind them of a better way (which is the right way). Tell people why you care about getting it right. Not just because you want to dictate what everyone does, but because the most productive environments have guidelines so that everyone knows what to expect. Remind them how much they do not like it when others deviate from the proper path, and they must clean it up. Let them know that you take pride in a good product and the client is watching the quality of work also. You should also review what they are doing that does not match the guidelines. Maybe they have a better way. Don't just write it off. Some guidelines may not be achieving the impact you thought they would and are just burdensome. Maybe they need to be changed.

NO ONE SUPPORTS ME

Akin to the "no one cares" is the feeling that no one supports you. This is a secret that may carry the most emotion with it. It is because this concept is pointed at you. Unlike the "no one cares", which is pointed at things and not people. This one is pointed right at you. Feeling like you get little to no support can frustrate and deflate you quickly. This feeling may come when you have new ideas, suggest corrective measures, or just remind people of what the guidelines say. You feel like you "don't get no respect".

What to do about it – It may seem like there is not much you can do about it. Sometimes it is true. Some firms just have a culture that does not reinforce authority in your area of oversight. Some think that the Tech Manager is a service-oriented position that just does whatever they are told and can be ignored whenever it suits people. But there is hope. You can remind folks what it was like before you brought control to the chaos.

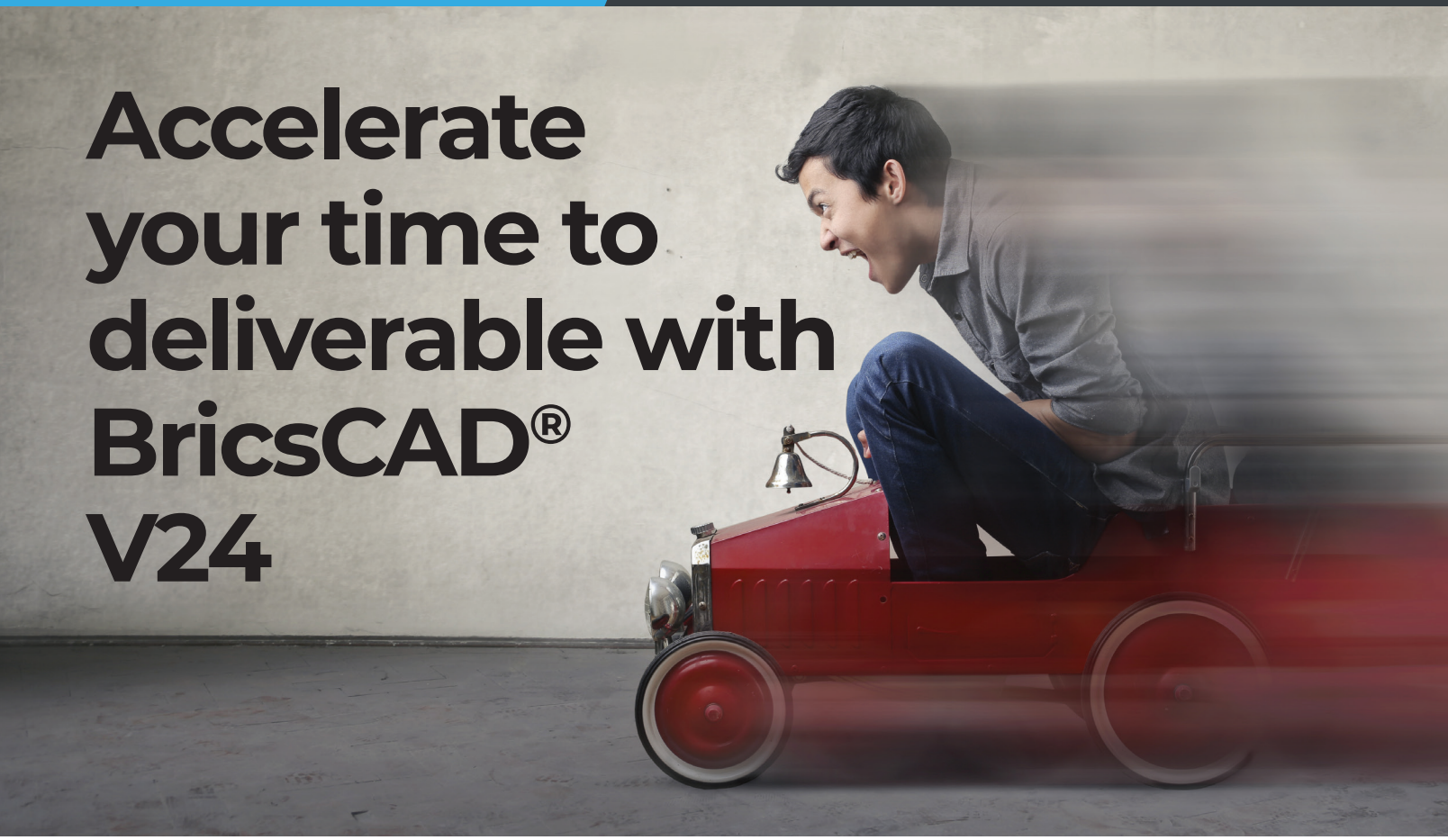
Keep going and don't give up. You can command respect, without being demanding. You need to have the fortitude to point out (gently) the things that are not working and explain why they happen and how to fix it. Be willing to go the extra mile to get things back the way they should be even if you are the one who must do the work that others are not willing to support you on. Gather support before you need it. Help others and support them in their efforts. Pay it forward and help them get things done.

If it is your new ideas that are not supported, and others don't seem like they support your efforts, you may be able to get them to neutrality and not oppose your progress. None support can take the form of stalling, avoiding, delaying or saying they want to rethink your initiatives. Try to get them to agree to just give you some time and space to get things going. Agree on some timeframe that they will not push back, or stand in the way and then remind them if you see them slipping. Agree when to get together and review progress. Be nice, smile a lot, but just keep moving forward.

Mark Kiker has more than 30 years of hands-on experience with technology. He is fully versed in every area of management from deployment planning, installation, and configuration to training and strategic planning. He is an internationally known speaker, writer and former AUGI Board member and president. Mark is currently serving as Chief Technology Officer for SIATech, a non-profit public charter high school focused on dropout recovery. He oversees two web sites, www.caddmanager.com and www.bimmanager.com. He can be reached at mark.kiker@augi.com and would love to hear your questions, comments, and perspectives.

by: Craig Swearingen

Accelerate your time to deliverable with BricsCAD® V24



In mid-October, Bricsys®, a part of Hexagon AB, released their latest version of BricsCAD® V24 during their annual Bricsys product launch. This epic livestream event provided an update on the latest and greatest innovations including enhancements to the UI/UX, a host of new features, as well as workflow advancements for mechanical, BIM, civil & survey sectors.

Jan Syssauw, Vice President of Product Development, led the way by stating BricsCAD V24 is "professional CAD software without compromise", allowing users to "accelerate your time to deliverable without compromising on performance, cost, licensing flexibility, and data security.

While that might seem like a hearty statement, over the next two hours, the BricsCAD Product Owners and team demonstrated exactly how and why BricsCAD can state their claim. So, let's see how BricsCAD V24 can finish your design tasks quickly.

WHAT IS BRICSCAD?

BricsCAD is a modern, familiar, easy-to-adopt, 2D/3D CAD system with innovative features and workflows that provide a highly compatible user experience.

With familiar command structures, dwg compatibility, as well as familiarity with tools and workflows, it is easy to learn BricsCAD and master it too.

ONE GOAL: ACCELERATE THE DESIGN PROCESS

BricsCAD is driven to be the leader in drawing fidelity, compatibility, and drawing health management. BricsCAD wants to accelerate and automate the re-use of existing data and importing data design. BricsCAD is focused on removing the friction from the detailed design process, enabling designers and teams to access, view, and mark up CAD data from anywhere/anytime from any device, which in the end, greatly assists the speed at which the accurate 2D documentation is created. So how can that be accomplished?

For one, the modernized BricsCAD IU/UX provides a simple and accessible toolset for all users. New features and enhancements include:

- QuickCalc: Fast, accurate math calculations directly inside BricsCAD.
- Sheet Set Manager: New Panel, new Drawing View Manager, and multi-user access.

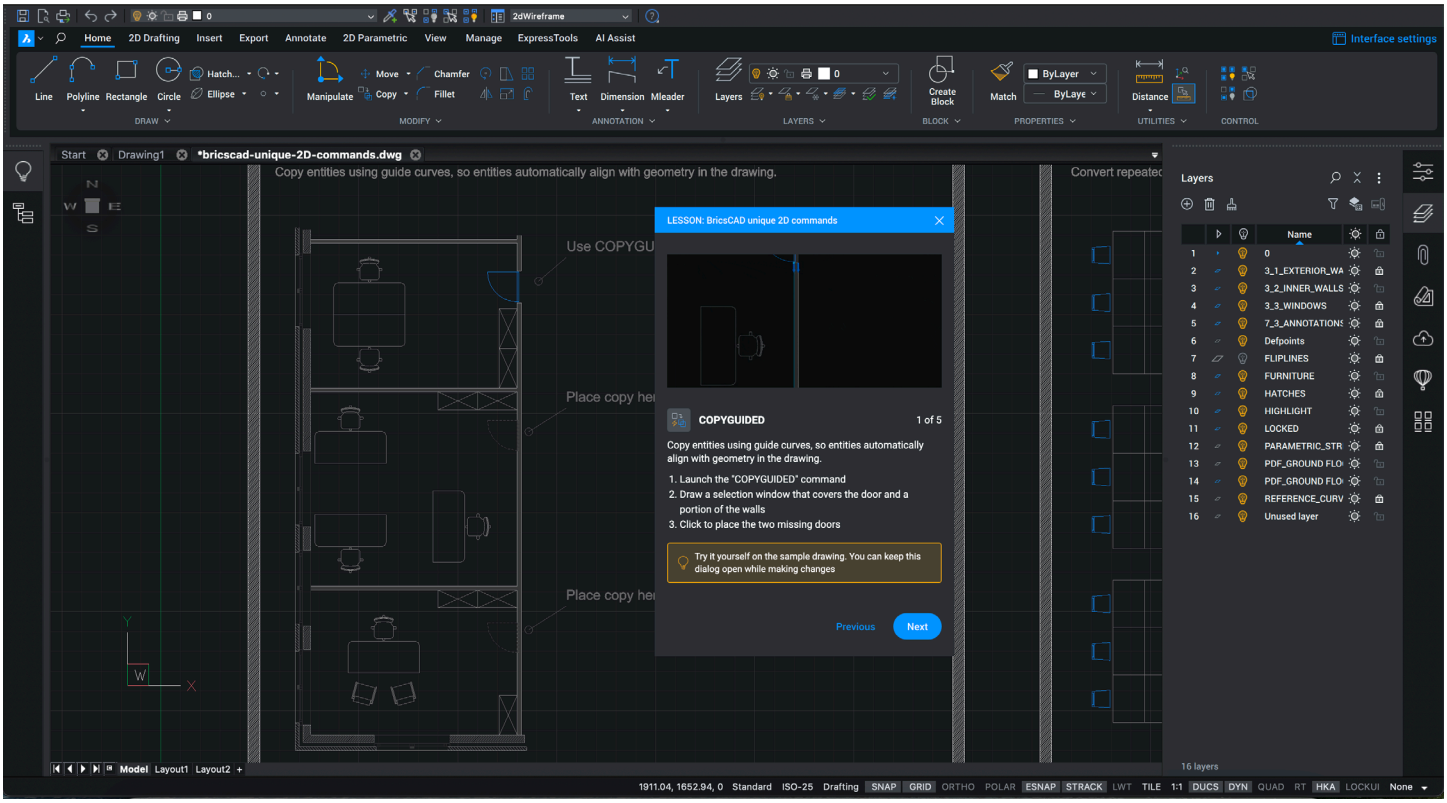


Figure 1

- Ribbon: Now QT-based, with search, a better layout and command presentation, and tool size control. (See Figure 1)

BricsCAD V24 continues to deliver a familiar and compatible CAD experience to help users get comfortable and productive in one day by further enhancing the user experience. New features and enhancements include:

- QDIM: Simple but powerful quick dimension entry placement.
- Print to Raster: Additional output formats (BMP, JPG, PNG, TIFF) and better WMF file output quality (x64).
- Drawing Views: Better performance when generating drawing views/layouts from 3D models.
- SmartCell Copy: Easy creation and editing of table formulas and data.

Bricsys is building innovative ways to accelerate your time to deliverable through BricsCAD's AI-based features, including:

- Sketch-based Features: Better naming of SBF's, profile modifications with constraint retention.
- BlockConvert: More consistent performance and conversion of Dynamic Blocks.
- AI Assist: Delivers better command suggestions from all user inputs.
- DWGHEALTH: Easier to use with new cleanup routine creation tools and "Overkill" integration.
- COPYGUIDED: Smart copying of constraints for source and detail entities.

CIVIL/SURVEY WORKFLOWS IN BRICSCAD® PRO

Quick fact: Did you know there are more than fifteen Civil/Survey Partner applications that perform in tandem with BricsCAD? Our Civil/Survey partner applications provide the specific, high-end, engineering, and surveying tools that are needed by the industry. Rick Ellis, Product Owner of BricsCAD Civil/Survey Toolkit, also walked us through the incredible advancements made to our civil/survey platform. Highlights include:

- GIS Workflows: Leverage existing GIS data for background information or edit and create GIS data to deliver to a GIS system. Filter, add, edit, and delete GIS attribute data.

- TIN Surface Definition for Contour Data & UI Improvements.
- Weeding and Supplementing Factors: Optimizes break line data to skip vertices and sample additional data when needed (See Figure 2)
- Enhanced Grading: Create “sharp corners” on grading objects, not just radial corners.
- Label Style UI improvements: Added new UI elements and dialog/command panels.
- Transparent Commands: Allows users to draw linework and data with legal terms. (Bearing/Distance, Azimuth/Distance, Station/Offest, point number, and point object).

BRICSCAD® BIM

Senior Product Manager, Melissa Rivera, and the team identified some key challenges that small to medium-sized general contractors and subcontractors face day to day. How can BricsCAD assist with accurate building modeling without complexity, removing friction when collaborating, and saving time by automation when going from scan to BIM?

- BricsCAD’s redesigned 3D modeling tools will help users easily generate 3D models and speed up their BIM coordination, QTO, and planning process.
- The benefit of using BricsCAD’s OpenBIM approach is that it allows you to easily collaborate on multiple platforms of your choice. Export to IFC or RVT. Once you have created your BIM Model, we will support you in your process by removing any compatibility issues and friction.
- Using automatic room detection and room fitting, the user will be able to increase productivity by at least 3x when having to model a 3D building from a scan. (See Figure 3)

BRICSCAD® MECHANICAL

Cliff Brown, Executive Product Manager of BricsCAD® Mechanical gave us a rundown of why BricsCAD Mechanical is the fastest path to complete and accurate production materials. From a full suite of symbols and annotations to power dimensioning and workflow compatibility with part references and parts lists, BricsCAD Mechanical has more of the design and drafting tools that you have requested, closing the key 2D design and drafting functionality gaps. (See Figure 4)

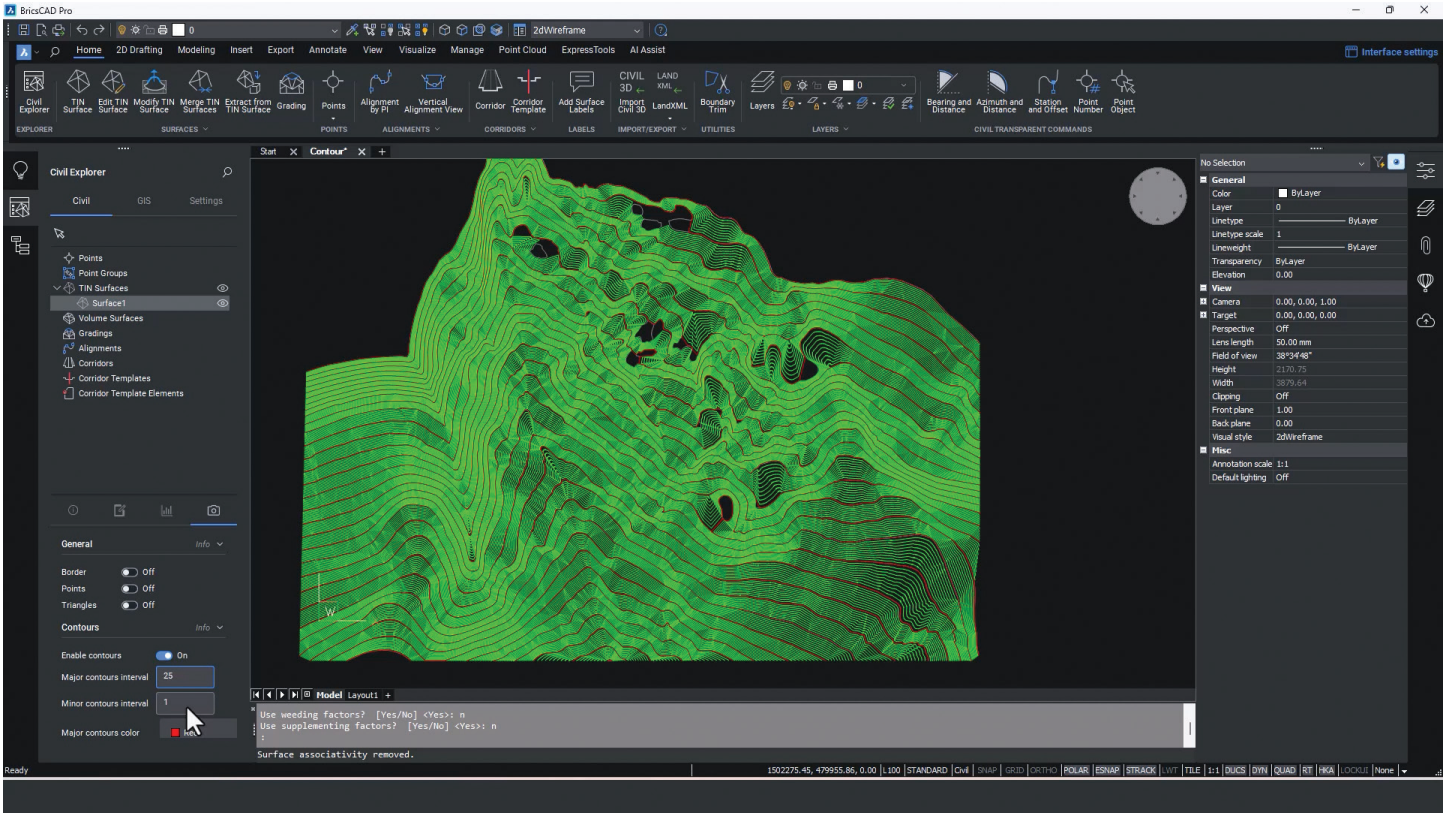


Figure 2

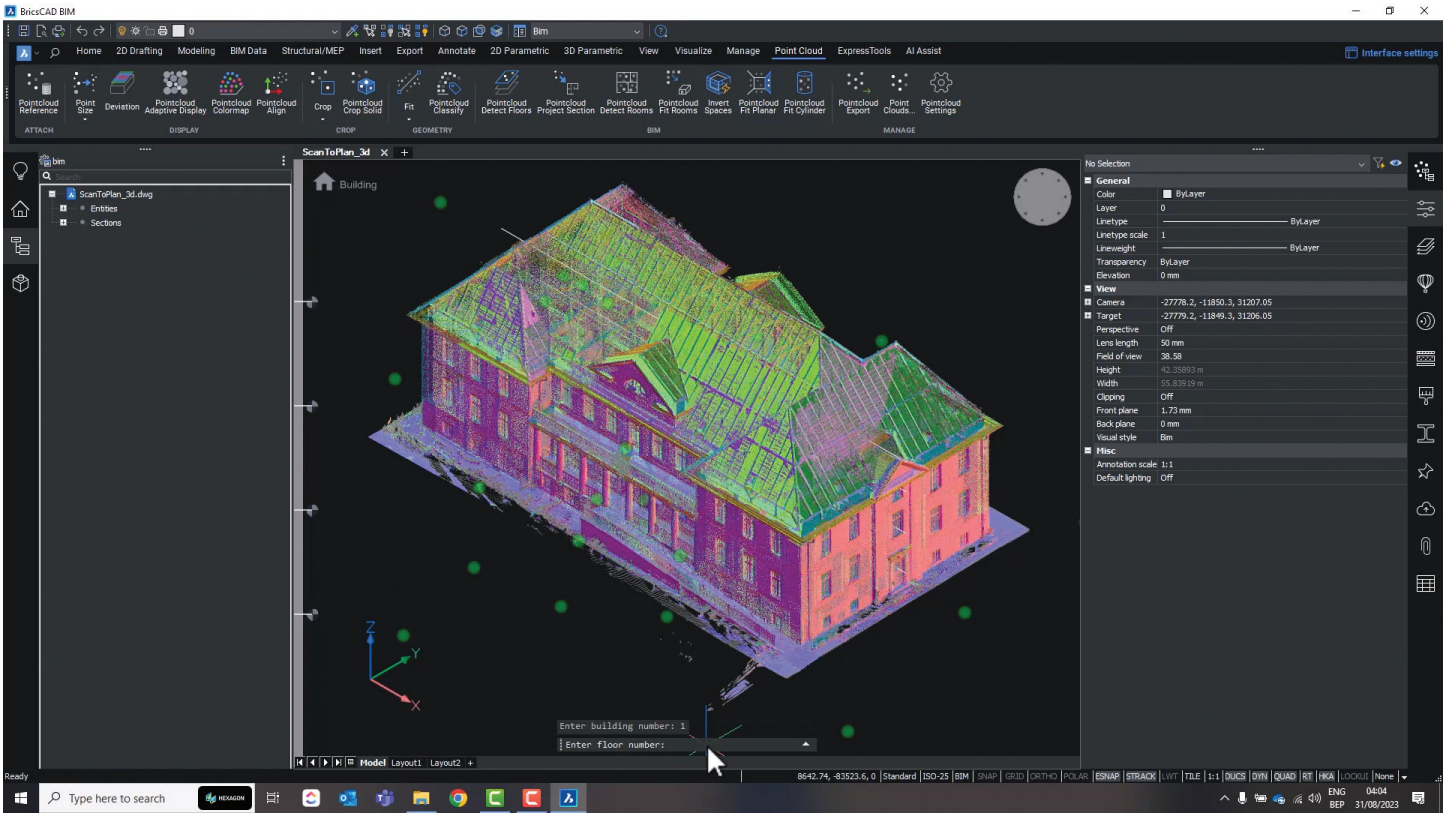


Figure 3

Another key highlight demonstrated was how BricsCAD is providing non-3D experts access to the benefits of 3D in their design and production material creation workflow. Additionally, create 2D instruction manuals from 3D assemblies, use existing 3D models to optimize designs for manufacturing and assembly, and go from scans to 3D models to complete and accurate 2D production drawings, further demonstrating that BricsCAD provides unparalleled value with a 2D/3D CAD solution.

LET BRICSCAD ASSIST

As you can tell, BricsCAD continues to develop CAD software with the users in mind. How can BricsCAD assist you in getting your design tasks completed faster? What impact would that have on your business and profitability? A fundamental component of our strategy is to help our customers reduce the time required to complete a task or produce a final deliverable. (See Figure 5) We accomplish this by providing innovative product capabilities that optimize existing design processes or generate new streamlined workflows.

We provide several licensing options, including perpetual, subscription, and network, making it easy for customers to find a solution that fits their business needs or situation. Many companies choose BricsCAD over other CAD platforms because it provides technology compatibility that makes it significantly easier to move between 2D and 3D. For companies only using 2D today or doing a small amount of 3D work, having the ability to transition to 3D on a single platform they are already familiar with and remain with their existing file format helps minimize the impact of the transition. Finally, BricsCAD offers unparalleled value by delivering professional 2D and 3D CAD capabilities at a price point as much as 50% less than other competitors.

MORE ABOUT BRICSCAD®

Bricsys® BricsCAD® is professional CAD software without compromise. Accelerate your time to deliverable without compromising on performance, cost, licensing flexibility, and data security. Not ready to buy? Download the free, 30-day trial of BricsCAD® at Bricsys.com. Would you like free lessons? We have that available with Bricsys Learning. Ready to migrate to BricsCAD®?

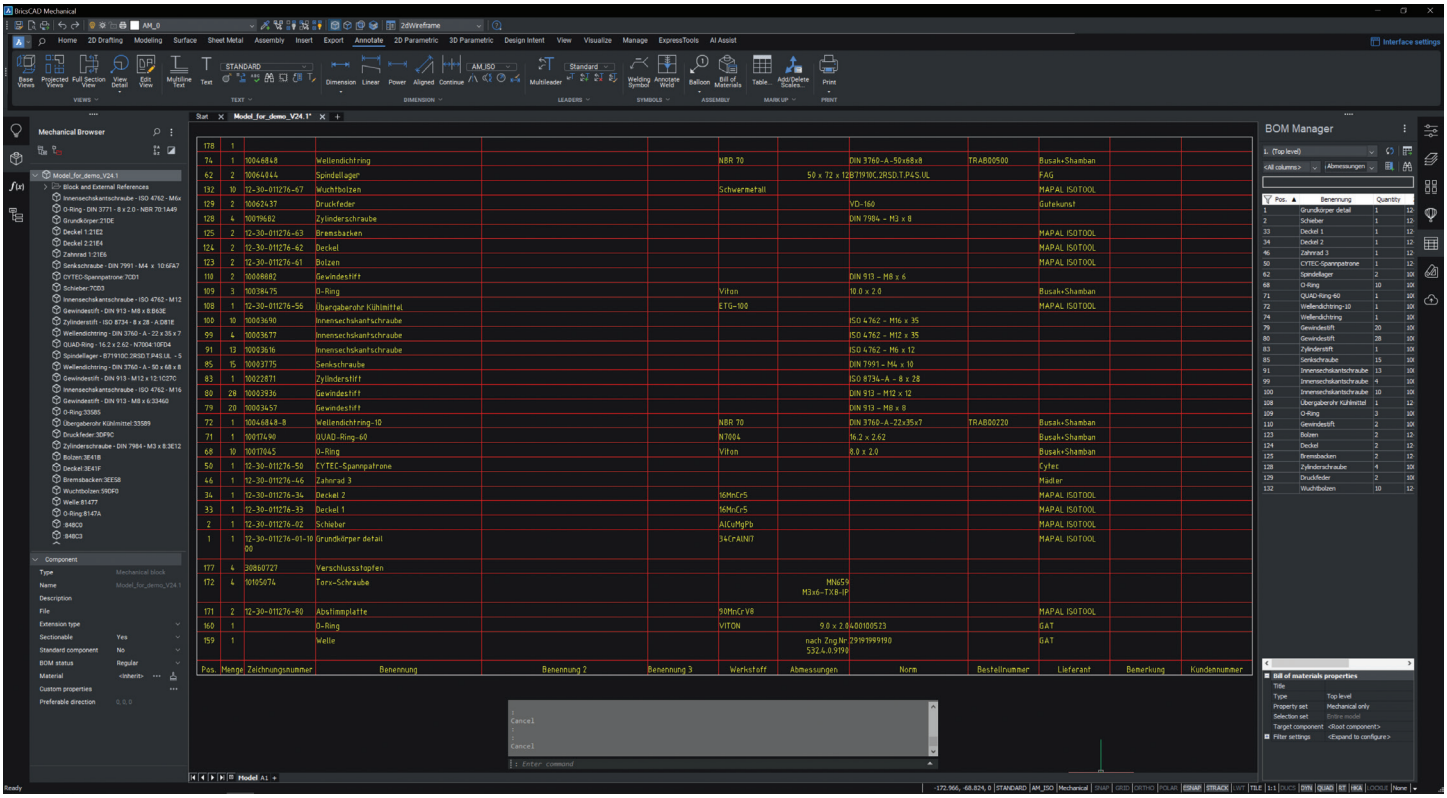


Figure 4

Download the Migration Guide. The latest version of BricsCAD® improves the tools and features users love, as well as new functionality and UI that supercharge productivity. Follow us today on LinkedIn or Youtube.

"... the adoption of BricsCAD was simple and painless. The similar interface helped our designers have an immediate and comfortable transition. The training needed to move from our old software was minimal."

Umberto Verga – Head of Product & Plant Engineering at POMINI

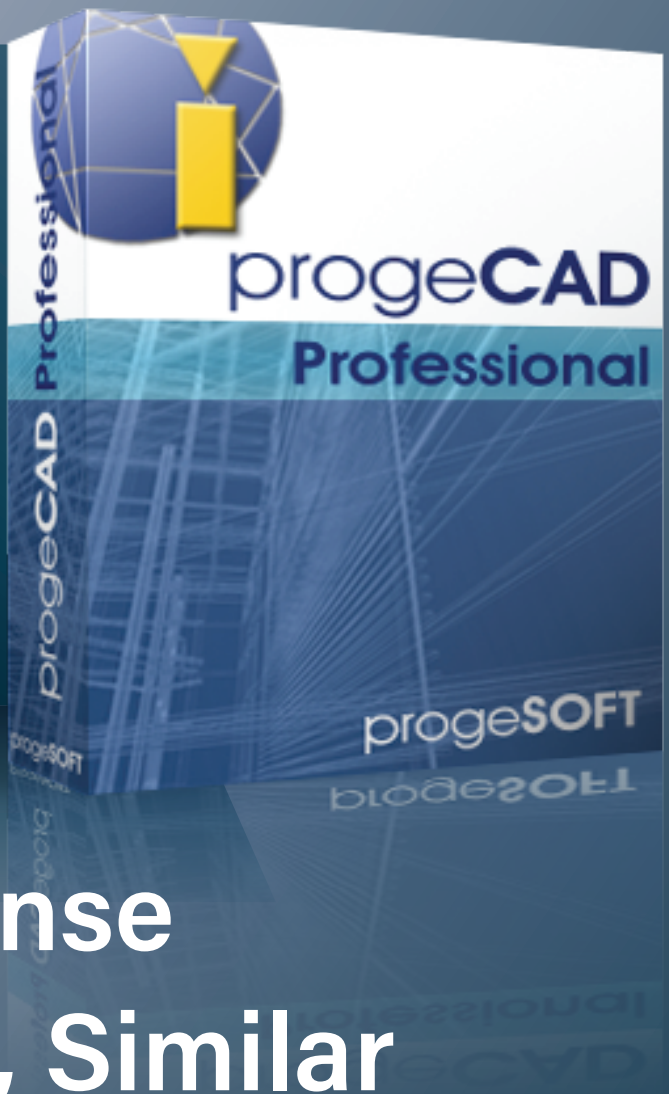
MORE ABOUT BRICSYS®

Bricsys®, part of Hexagon®, is the global technology company that creates the BricsCAD® family of computer aided design (CAD) products and the Bricsys® 24/7 project collaboration platform. We are relentlessly committed to the success of our customers by offering cost-effective, mission-critical CAD software with industry-leading product support. Learn more at www.Bricsys.com.

Hexagon is a global leader in digital reality solutions. Learn more about Hexagon (Nasdaq Stockholm: HEXA B) at hexagon.com and follow us @HexagonAB.

Mr. Craig Swearingen is a Global Implementation Specialist and Consultant at Bricsys. Currently, Craig provides migration and implementation guidance, management strategies, and technical assistance to companies that need an alternative, compatible CAD solution. Craig spent 19 years in the civil engineering world as a technician, Civil 3D & CAD power user, becoming a support-intensive CAD/IT manager in high-volume production environments. Craig is a longtime AUGI member (2009), a Certified Autodesk® AutoCAD® Professional, and he enjoys networking with other CAD users on social media.

2D/3D DWG EDITOR



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by: Adam Black

Education and Training

Hello again, this month I want to start off by telling a story from 2010. After the 2007 Global Financial Crisis hit; creating a downturn in the global Engineering & Construction Industries (along with many others), I found myself with an involuntary year off work.

Of course, I do not like sitting idle and wasting good, valuable time, (that is unless it is a deliberate choice). Therefore, I continued with further R&D on all things CAD related and the AutoMENU CAD System.

After a year off, I was getting a little concerned about when the global economy was going to turn around enough for me to return back to full time paid work.

A close friend suggested that, with my years in the business and extensive CAD knowledge I should go visit some educational institutions that taught CAD within their scheduled curriculum to investigate the idea of becoming a teacher for them. I had to scoff, because of course I knew immediately exactly what was going to happen, since I had seen and worked with many a fresh out of college Cadet Drafter and had always been somewhat surprised on how little they had actually learnt in the 3 years of 3 evening per week, (3 months per module) of CAD classes. Totaling approximately 1,000 hours in the classes alone, plus any home study they had completed.

But my family jumped on me and pressured me to go and do it, stating that I did not know what I was talking about (how could I?). A bit of a contradiction.

Anyway, to cut a long story short, I went and had an impromptu meeting with Australia's' #1 government funded colleges... TAFE. Initially they seemed rather keen to take me on, but once I hit them up with the question of whether I had to teach their developed and structure curriculum or could I teach it my way. Well, they killed that off faster than Speedy Gonzales. Of course, I knew that question would put an end to it because of my personal experience in the industry.

So, this month I really want to stress the importance of making a clever and informed decision on where and who you are going to invest your valuable time, energy and money into helping teach you all CAD Design and Drafting techniques: the correct way!

Of course, such a contentious topic is all a matter of personal perception. Your view verses my view and everyone else's view. No doubt it is a minefield, but one that will pay off both in your ROI and becoming a competent, professional 2D & 3D CAD Designer. After all being a Designer is the real job description after all (not fixing CAD issues half of your days).

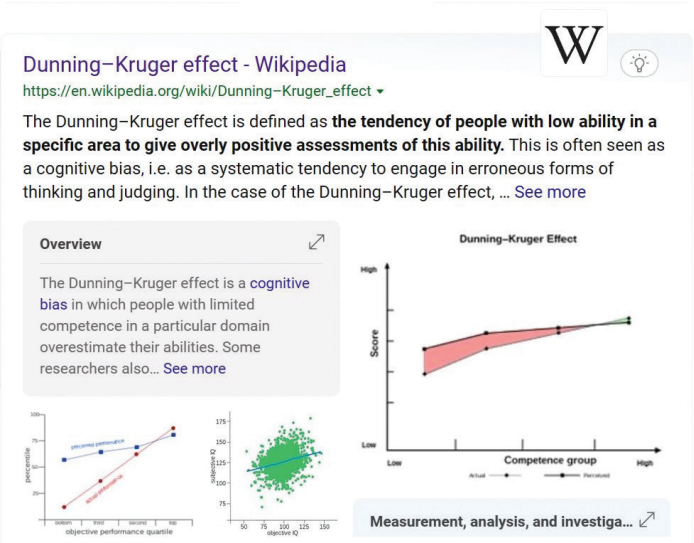
That really is the role of the assigned CAD Manager no matter their level of skill, knowledge, years and/or experience, running with their strategy is far better than an office of CAD Designers all doing whatever they want. That my friend is the road to pure chaos, guaranteed! You know, I have said it before so I will say it again, who wants to work in a chaotic office?

Therefore, (based on what I just said above), I can only provide you with my ideas of how to find that elusive competent, professional, teacher and here is the first important tip. Do not focus on the institutions only. They are a business, there to make money. So, whilst they might have the very best intentions and totally believe they have your #1 interests in mind, from my own personal experience is, they do not! Because if I can (and have several times) teach the right mind not only how to use 2D and 3D CAD environments but given my students and comprehensive insight in the job of a Designer, where I then secured them their first jobs in the industry, they still work in today.

What are these institutions doing? I will tell you this. Making their own career out of it. There is no money to be made teaching you, what I can teach in only 2 weeks (unless the 1000's of dollars of the two weeks).

I hope this statement hits you right where it counts because it needs to. This has got to be your front of mind focus when searching and deciding who you are going to trust with your whole career future.

NOT SOMETHING THAT SHOULD BE TAKEN LIGHTLY



How do you find this teacher? This is my best advice.

1. Experience is gold. No one and I do mean no one can learn these systems and processes in a short amount of time to a degree where they can then teach their own students how to get enough knowledge to start-up quickly. A good teacher has done all the hard work, to a point where they can now see just how simple and uncomplex (relatively speaking) these CAD systems and processes really are. This is what I see in the industry. They think it is all very complex, therefore, it is (for them). Please don't get me wrong, the job of a CAD Designer/Technicians are equal to paralegals and nurses. A CAD Designer/Technician are the qualified professional's right-hand man.

2. Do not waste time watching tutorial videos where there is no sound, (a big red flag). And where the instructor just seems like he/she does not really know want they are doing. Rely on, listen to your gut instinct please.

3. If you see any contradictions from different resources, question both of them, research them. Maybe you have just discovered you have invested in the wrong resource despite your best efforts to find a true professional.

4. Read, research the Danning-Kruger Effect and apply this understanding to your final choice before you hand over any money.

5. My experience, the best CAD people are usually very serious and intense. They are probably autistic. But they do need to be highly functioning autistic types though. Such types see everything (that is Autism) and often have memories like elephants.

Your new teacher should be more focused on teaching you the philosophy of these CAD systems and industry rather than Tip & Tricks. There are many good Tip & Trick resources out there to take care of that. Without a deep leaning of the philosophy of them, you could find the systems complex and confusing and become very overwhelmed and disillusioned.

As a final note here. In my 43 plus years' experience (with 23 plus in the CAD realm), I have seen far more bad teaching, systems, and processes than good. Be aware of this and wade though the minefield with all the care and intelligence you can muster. Hopefully you will find your good teacher and they will help set your career on the right path, not the wrong one.

I hope this article will help you become one of the rare individuals who are Part of the Solution rather than Part of the Problem the industry suffers from.

BE AWARE OF THE BLIND LEADING THE BLIND.

Adam Black is a next level AutoCAD solutions, systems and technologies professional with over 43 years of experience within the Engineering and Construction community. His focus is on providing innovative AutoCAD based implementations for the Engineering Infrastructure and Resources sectors.

He is the creator of the AutoMENU CAD System.

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by: Tony Rinella

bS-USA Certification & Training Programs

Entry level introduces open standards and openBIM concepts in a clear way — streamlined, not simplified — for those working in the built asset industry or those in the process of education in this domain, and may not yet be directly engaged with BIM delivery

Foundation level training helps building owners, designers, consultants, builders and project managers understand the opportunities collaboration within a virtual, openBIM environment offers

Management level addresses needs of those who must competently, confidently, and productively manage open standards empowered projects without necessarily mastering hands-on production skills

Practitioner level serves professionals engaged with the delivery of BIM (in planning, construction and/or operations), who possess considerable theoretical and technical knowledge, as well as some practical project experience

MOTIVATIONS & CURRENT PROGRAM

buildingSMART offers certification and training programs to help improve global dispersion and reliability of open standards and openBIM® knowledge.

Initially inspired by a regional grassroots effort, since 2017 PCERT has been expended to become a global program now approaching 18,000 qualified professionals. Participants in the program rate the education as valuable, well presented, and useful in their daily work.

The program demystifies open standards and services such as Industry Foundation Classes [IFC] and BIM Collaboration Format [BCF] and shows how these can be leveraged to advantage in projects of any size and degree of complexity. Participants learn how to confidently guide teams through processes such as defining Owner Information Requirements used to specify Asset Information Models, and how to ensure your project delivers what you truly need.

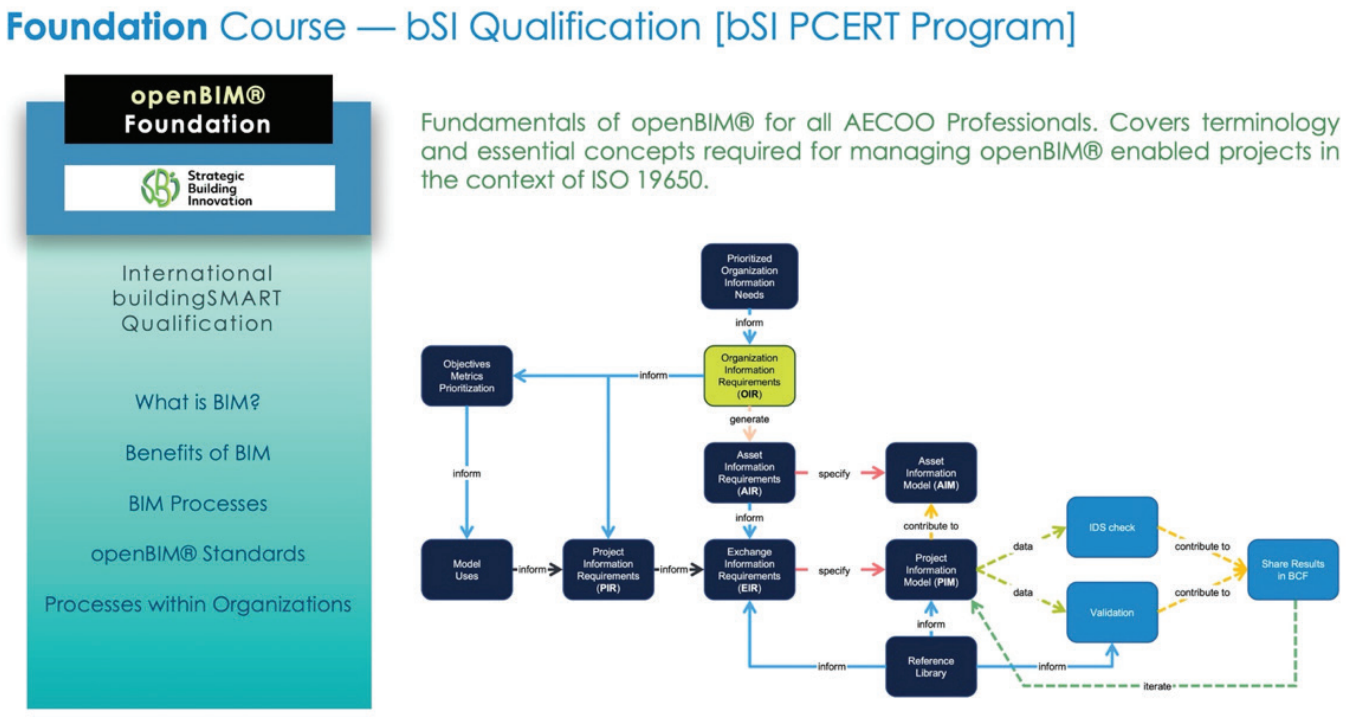
The popular *Foundation* qualification that provides and verifies essential openBIM® knowledge was recently expanded to include advanced Professional Certification modules. In the United States, a new offering — *Leveraging openBIM® for Project Management* — augments the Foundation level qualification with knowledge of special techniques and management strategies to improve project efficiency, collaboration, information management, and performance outcomes of projects using openBIM®.

The buildingSMART International Professional Certification program offers courses and acknowledgements at four levels, each tailored to specific needs, stages of career development, and professional aspirations.

FOUNDATION COURSE — BSI QUALIFICATION [BSI PCERT PROGRAM]

This course benefits anyone connected with BIM-empowered projects — openBIM® extends the benefits of BIM (Building Information Modeling) by improving the accessibility, usability, management, and sustainability of digital data in the built asset industry, including horizontal infrastructure and vertical building types. At its core, openBIM® is a collaborative process that is vendor neutral. openBIM® processes can be defined as sharable project information that supports seamless collaboration for all project participants. openBIM® facilitates interoperability to benefit projects and assets throughout their lifecycle.

Fundamentals of openBIM® for all AECOO Professionals. Covers terminology and essential concepts required for managing openBIM® enabled

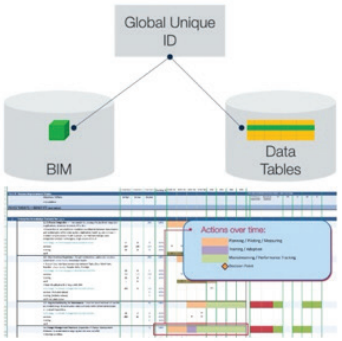


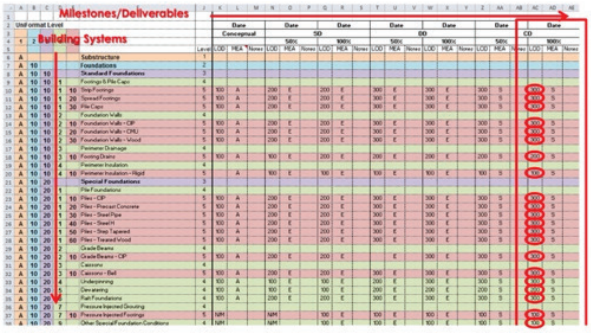
Leveraging openBIM® for Project Management [bS-USA PCERT Program]

Practical knowledge needed to optimize outcomes of projects employing Integrated Digital Delivery and openBIM®, leveraging new technologies and processes to optimize outcomes.

Highlights:

- **essential knowledge** & **skills** essential to manage all openBIM projects
- **overall concepts** providing context, value, & meaning for key elements
- **practical guidelines** and **procedures** to successfully manage openBIM
- the course is presented in **live webinar sessions** with instructors





projects in the context of ISO 19650. Topics include:

- What is BIM?
- Benefits of BIM
- BIM Processes
- openBIM® Standards
- Processes within Organizations

LEVERAGING OPENBIM® FOR PROJECT MANAGEMENT

Even seasoned project managers can benefit from this course as it offers advanced tools and capabilities for enhancing project management, collaboration, risk mitigation, and overall project success; leveraging openBIM® processes and technologies can help project managers stay at the forefront of the construction industry and deliver more efficient and effective project outcomes.

NEW CONTENT makes this a must-take course and credential for project manager and their teams. This course covers essential knowledge and skills for every project manager, supply chain or client representative, using openBIM® to design, deliver, and operate projects. This prepares project teams to develop Organization Information Requirements (OIR), specify requirements in Requests for Proposals (RFP), mitigate risks, manage and execute projects, leverage new technologies, and processes, gaining value from the new objectives they support.

VIRTUAL DESIGN AND CONSTRUCTION

The buildingSMART-USA chapter is privileged and unique among regional chapters is having direct participation in our Education & Certification Committee by faculty from Stanford University's Center for Integrated Facility Engineering — the birthplace of Virtual Design and Construction curricula. This special relationship supports knowledge of advanced and emerging collaboration and management aspects of the bS-USA Education Program. Elements of the program have been used for Advanced Management courses by Singapore's Building and Construction Authority, Hong Kong's Construction Industry Council, and other industry organizations around the world.

MONTHLY WEBINAR SERIES

The chapter provides free monthly educational webinars featuring industry leaders, educators, and researchers demonstrating leading-edge research and practical applications of open standards applications, technologies, and business strategies.

Those who attend the live sessions are given ample opportunity to ask questions and engage in real-time dialogue with the presenters. The webinars are also available as on-demand videos published after the webinar events.

ACADEMIC INTEROPERABILITY COALITION

The chapter also benefits from direct participation of the Academic Interoperability Coalition [AiC] on the Education & Certification Committee, the AiC has actively promoted interoperability awareness and capability building through higher education institutions for more than sixteen years and continues to be an active force preparing the next generation of designers, builders, and operators of build environment to maximize benefits through data connectivity.

RESOURCES

- buildingSMART USA Chapter: https://www.buildingsmartusa.org/
- buildingSMART USA Webinars: https://www.buildingsmartusa.org/us-activities/webinars/bs-usa/

Tony Rinella, SBI's Co-founder and Senior Director, leverages over 45 years of AECOO experience in built environment design, software development, education, business metrics, and advisory consulting. In addition to SBI duties, he serves buildingSMART-USA as Professional Certification Director, and buildingSMART International on the Professional Certification Steering Committee.

Tony's passion for education prompted him to create learning centers and wikis focused on BIM, Computer Programming, Sustainability, Evidence-Based Design, and Medical Planning/Design. He originated a virtual conference approach for the American Institute of Architects (AIA), and with partners at LearnVirtual launched DESIGN[realized], a live, interactive, internet-delivered educational program for the AEC industry and facility owners/operators.

As principal and CIO of a large international architecture practice, leading technology innovation there for over two decades, Tony initiated programs for smart CAD, BIM, QA/QC, decision support, knowledge management, research and reference, and facility management. He advised product development and/or improvement for firms including Autodesk, Graphisoft, Systemes Dassault, and Canterbury Systems, and independently developed original software and websites.

His participation in professional organizations includes current service for buildingSMART, and past service as national chair of AIA Technology in Architectural Practice Knowledge Community, contributions to National BIM Standard, collaboration with Lawrence Berkeley National Laboratories on BIM research supporting sustainability and cost control goals, and case studies for National Institute of Standards and Technology (NIST). Tony wrote sections on technology for AIA's The Architect's Handbook of Professional Practice (2008 & 2014 editions).

by: Jacob Matuseski

Drawings are like Onions, they have Layers!

INTRODUCTION

Layers are deeply integrated in each and every aspect of AutoCAD and its respective verticals. Layers help us manage and classify our objects at the surface, but are also embedded within our styles, blocks, and commands. With their ever-present existence, it's important to understand how to use them to your advantage.

In this article, I will peel the DWG environment back to reveal its many layers, as well as discuss powerful workflows you can implement to effectively manage them. I will explain where layer assignments can be found and show how deeply they are integrated. I will touch on tips for building templates that automate layer allocation to increase efficiency. I will then highlight tools/procedures that can be leveraged in day-to-day production to significantly reduce overall effort such as the Layer Properties, Quick Select, and other layer-centric workflows. Finally, I will share procedures for promoting standardization and increasing quality with the use of Layer Translations, States, and Groups.

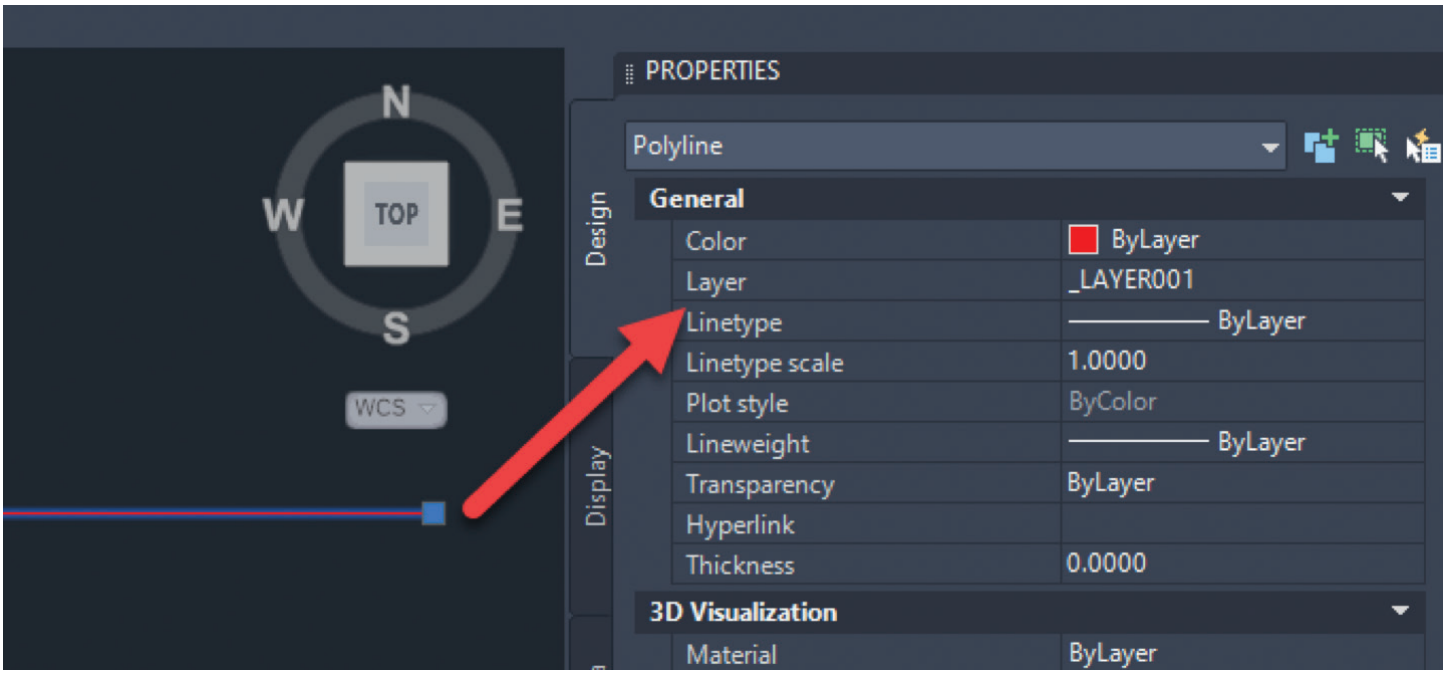


Figure A

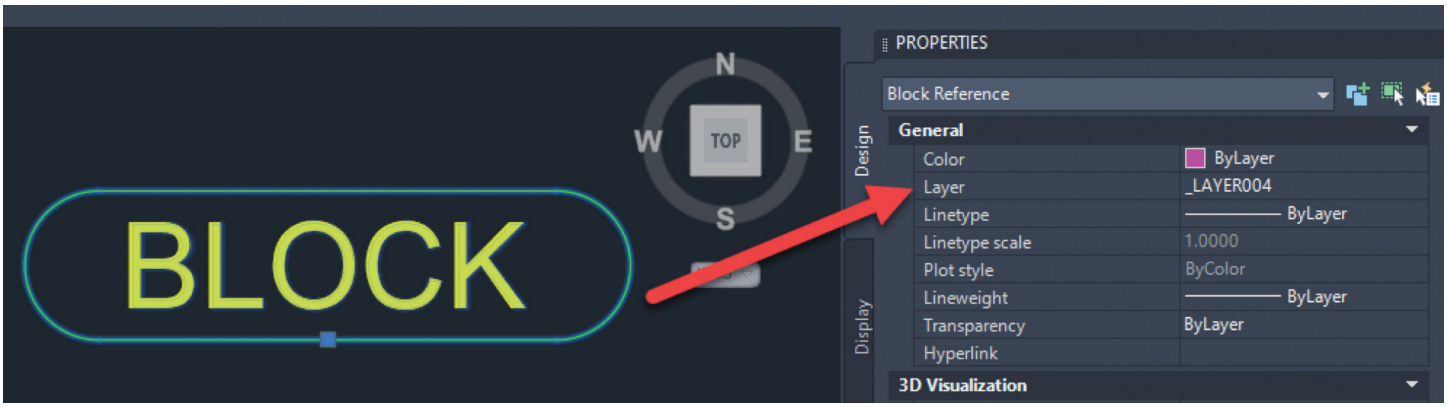


Figure B

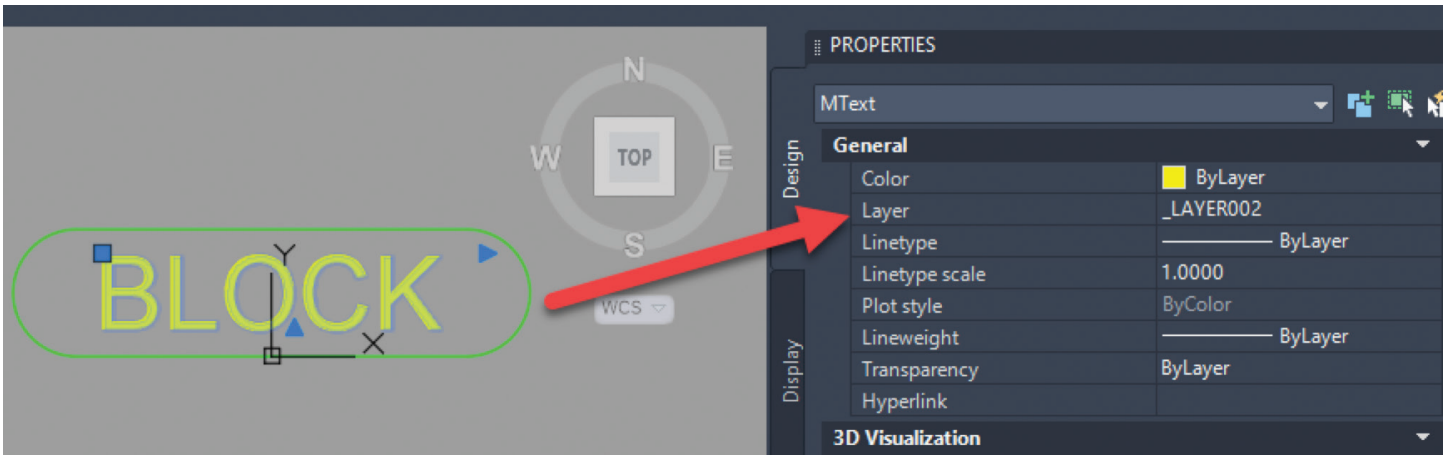


Figure C

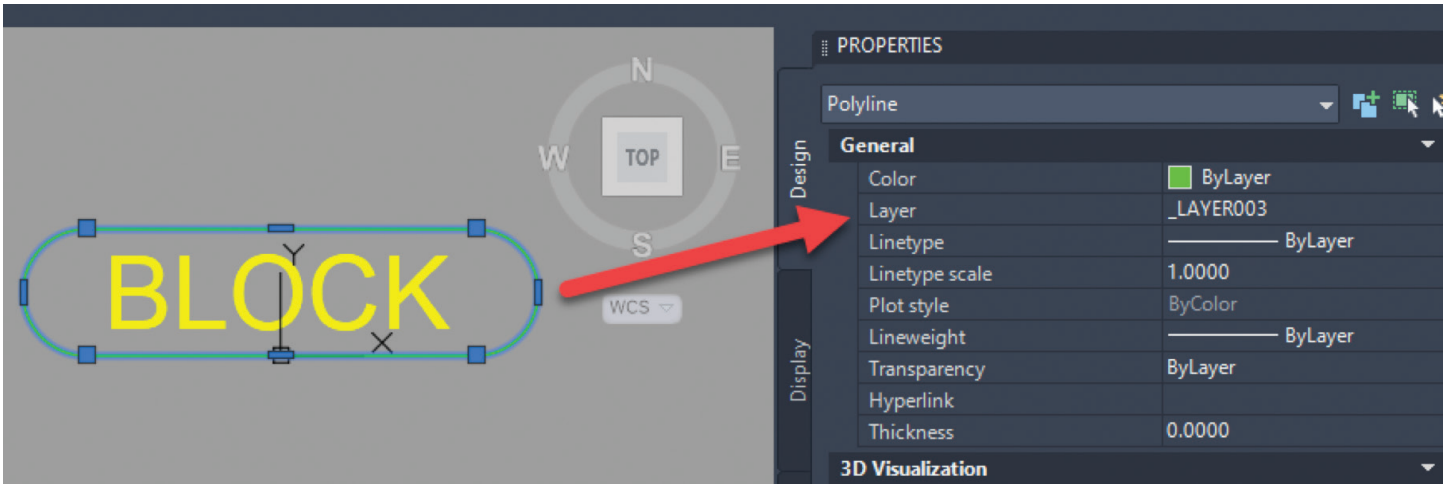


Figure D

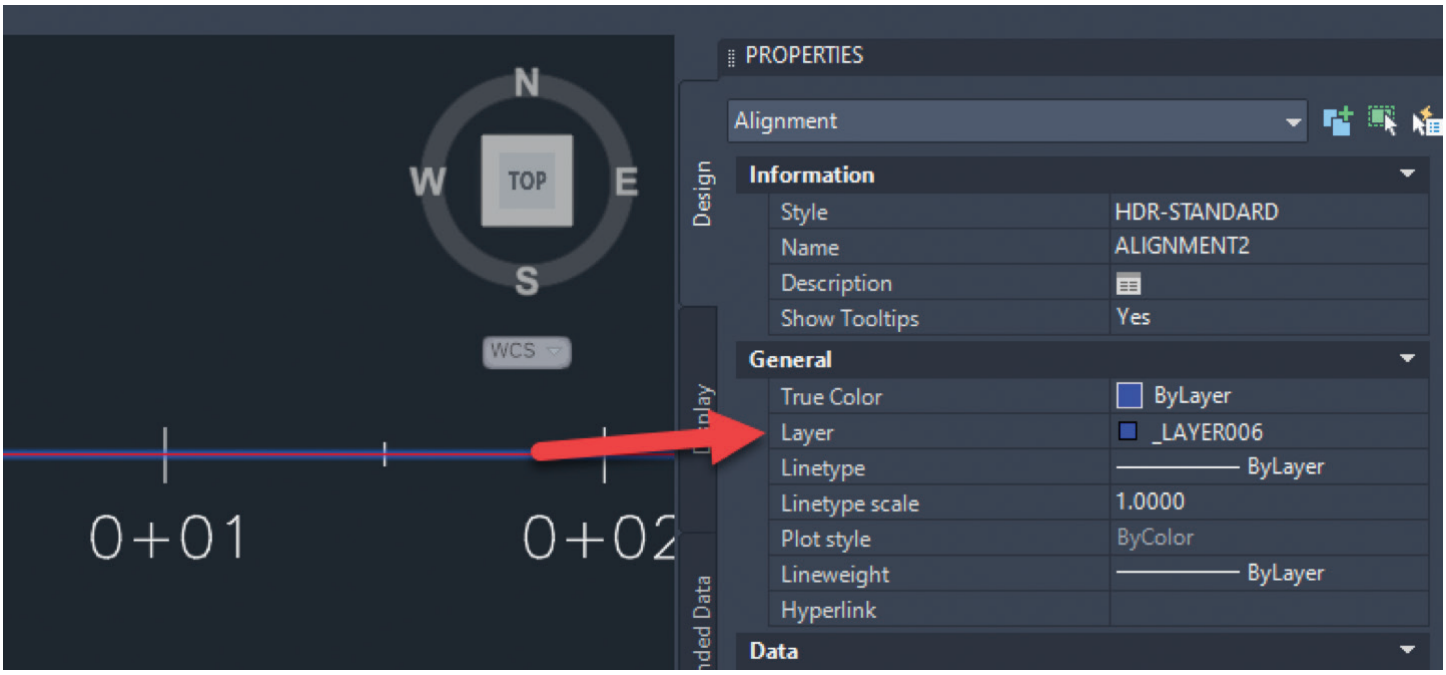


Figure E

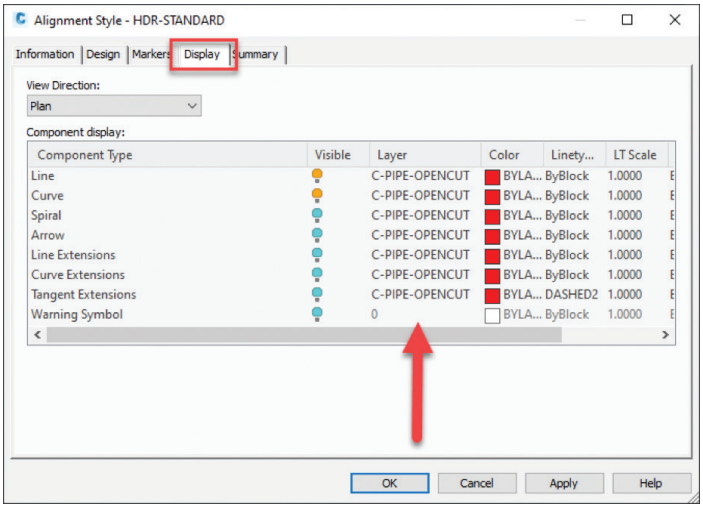


Figure F

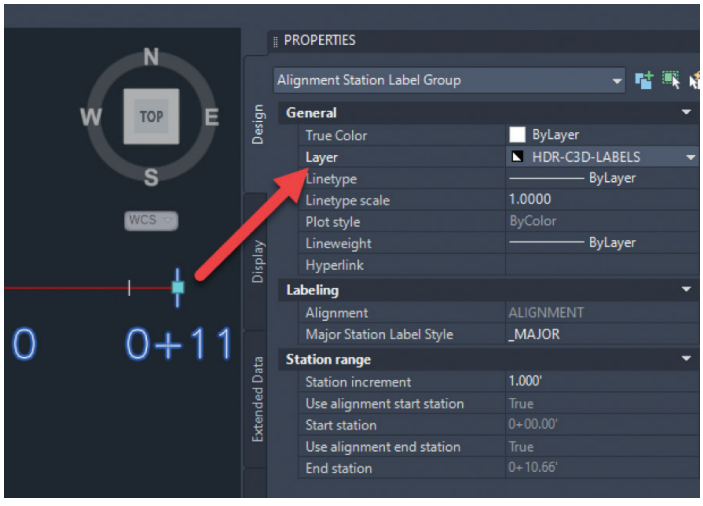


Figure G

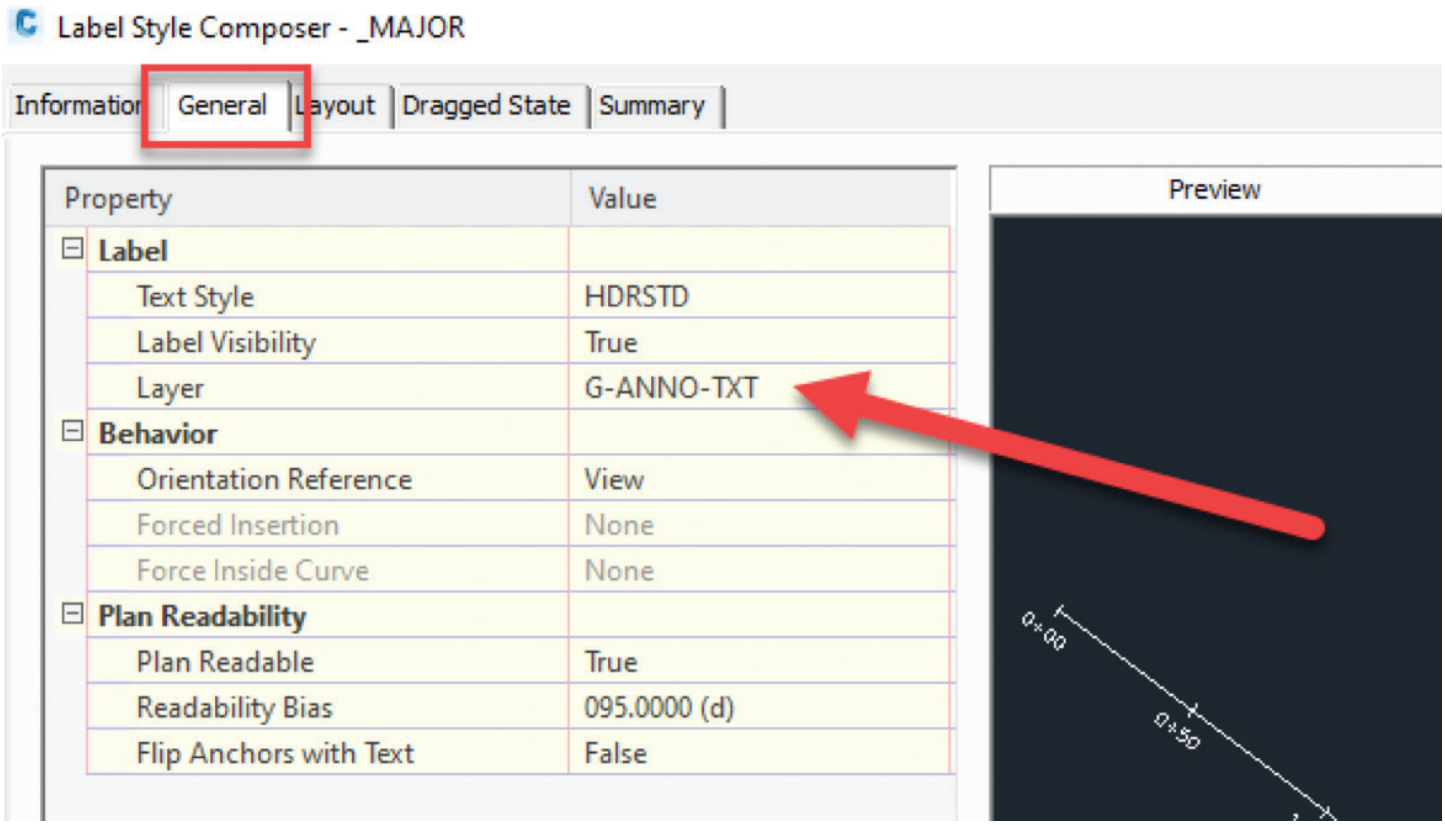


Figure H

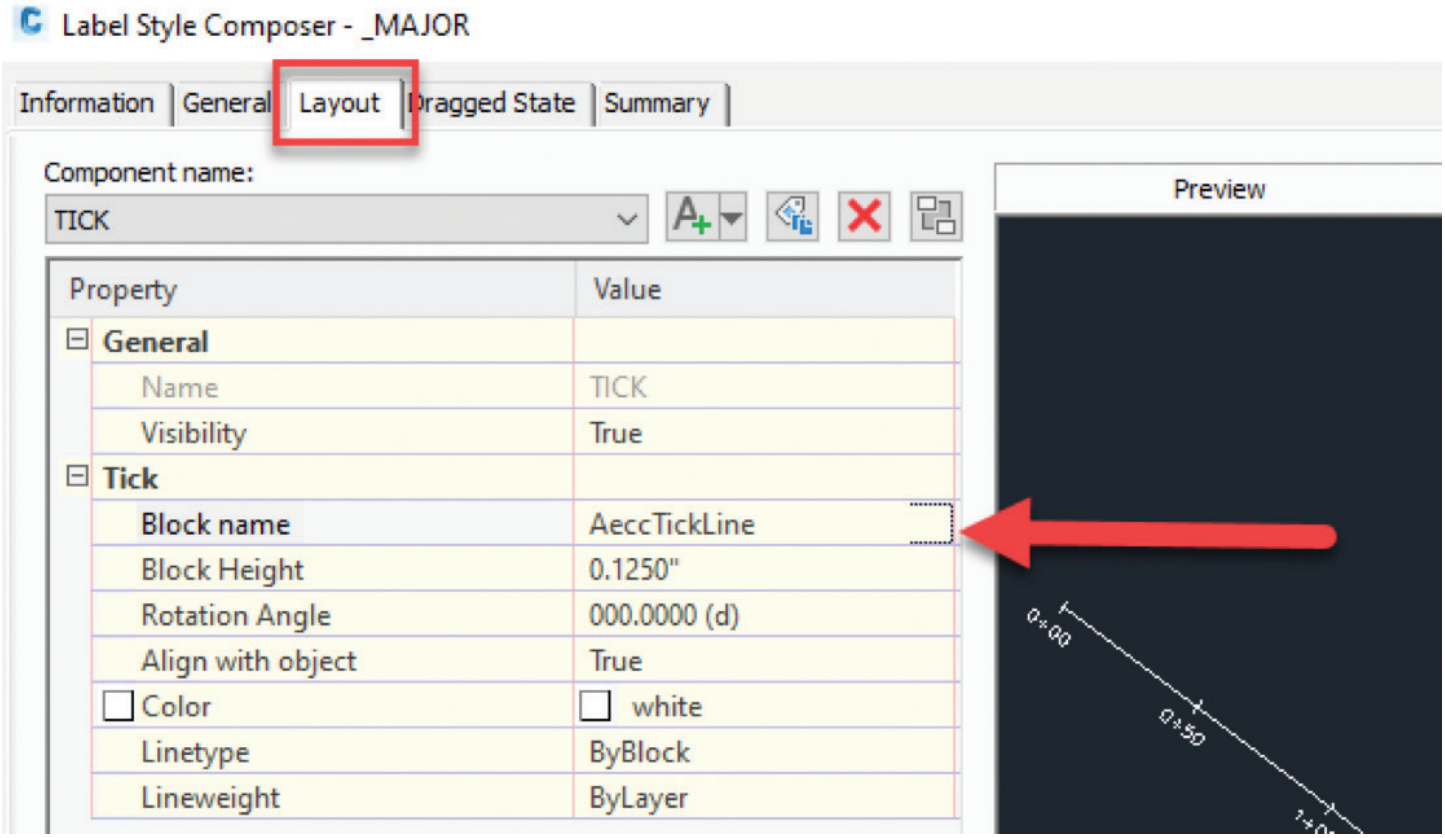


Figure I

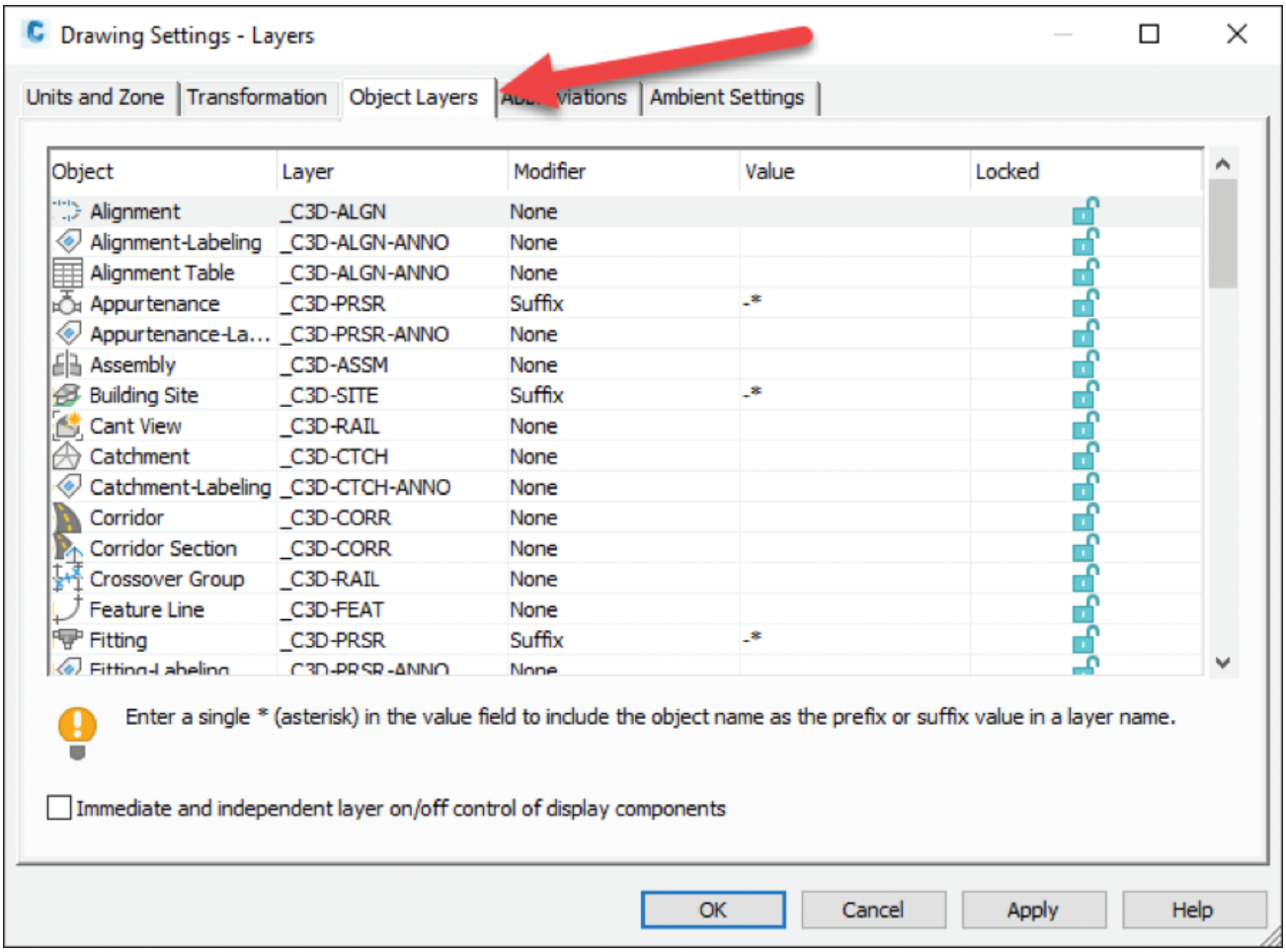


Figure J

LAYERS LAYERS LAYERS (OR TIERS)

All objects within AutoCAD and its respective verticals have a layer or layers assigned. At its most basic level, you have a line or polyline, set to a specific layer. Other objects like annotation, circles, rectangles, etc., work in a comparable manner, one object, one layer, assigned through the object's properties *(Figure A)* (or through the active layer/object defaults, more to come on this).

If the above objects could be grouped as one or single tier layered objects, then the next in order of complexity would be two or double-tier objects like blocks. For blocks, you have the layer the object is assigned through its properties *(Figure B)*, similar to polylines, but in addition to that, you have the layers the objects within the block are assigned *(Figure's C & D)*. The layers that make up the block's contents are theoretically limitless and can extend into several visibility states as well. Is the tier concept making sense? One tier for the object, one tier for the contents within the object.

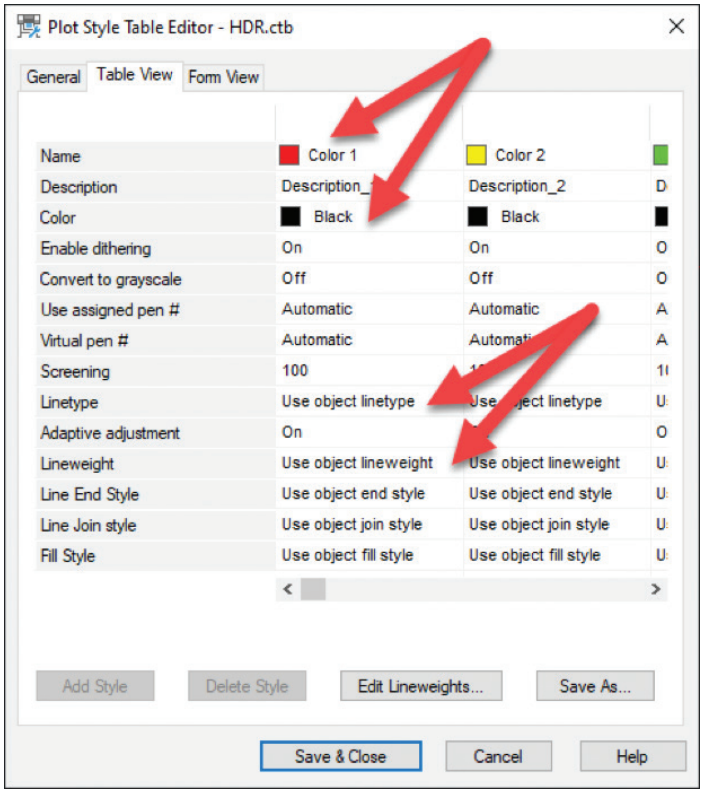


Figure K

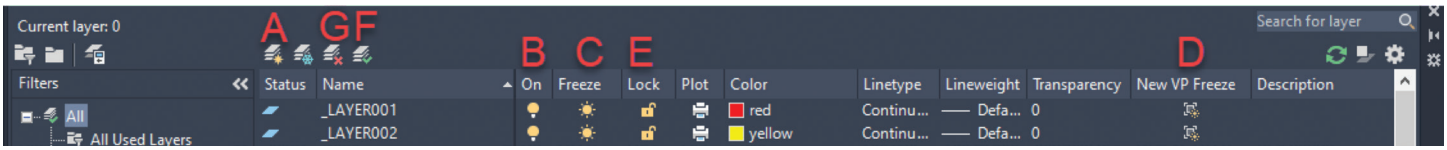


Figure L

Fun Fact: Layer 0 is a tricky one, when objects within a block are placed on layer 0, they will act as if they are on the same layer the block is on.

Similar to blocks, yet more complex yet, are styles. In the case of styles, (continuing with the tier theme) you have tier one, the objects assigned layer in properties *(Figure E)* (whether it be an alignment, surface, corridor, etc.). Next, you have tier two which is within the style's settings *(Figure F)*, how this looks will vary based on the object.

Additionally, we also recognize that each Civil 3D object also has label styles, which are multi-tier in nature as well!

Take an alignment label style for instance, where you have tier one being the layer the labels are assigned via properties *(Figure G)*. Next, you have tier two being the layer assigned within the style under the General tab in Label Style Composer *(Figure H)*. Lastly, you have a third tier which includes the components within the style *(Figure I)*.

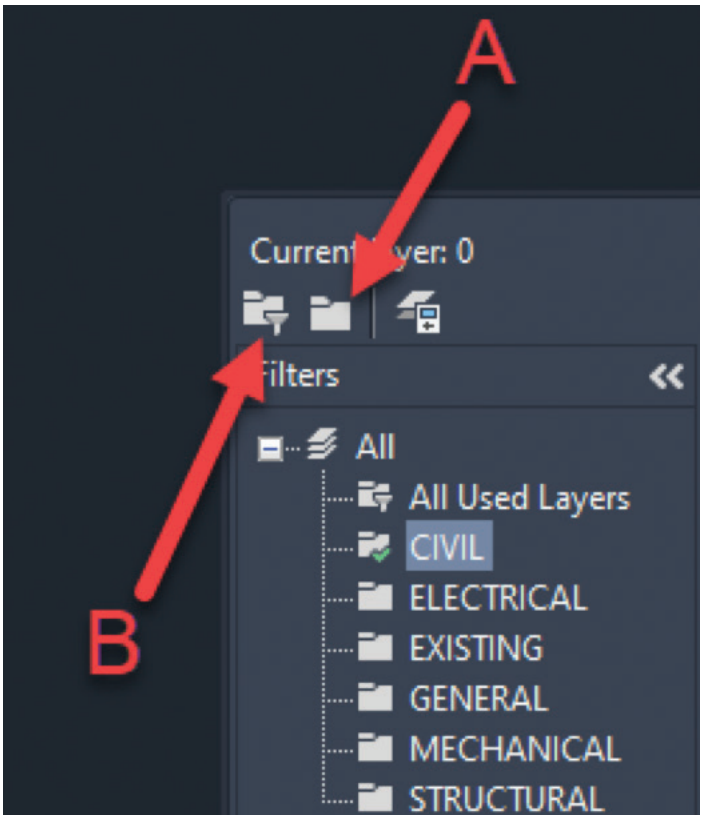


Figure M

STANDARDS AND TEMPLATES

So how in the world do you keep all this straight and ensure you are getting the results you're expecting? CAD Standards and Templates! HDR, similar to other organizations, has recognized the importance of CAD standards and invested in their development and implementation. The further your objects are defined across all tiers, the more efficient the development of a higher-quality project you can expect within your organization.

CAD Standards in the case of layers includes well-developed templates (DWT's) and plot files (CTB's and STB's).

Within your templates you can first define/setup the layers themselves, which would be the starting point. From there, you are ready to assign your layers to the various objects that require them. Next, build blocks that leverage your standard layers and setup styles with thoughtful layer assignments (at all levels of their components). Lastly, define Object Layers within your Drawing Settings *(Figure J)* so that each time an object is created it is placed on the desired layer regardless of what layer is active.

Additionally, within your plot files *(Figure K)*, you can further define what placing an object on a layer really means to the end deliverable (presumably a PDF). Red could plot black, or blue for that matter. Green could plot bold, Magenta thin, and White might not plot at all.

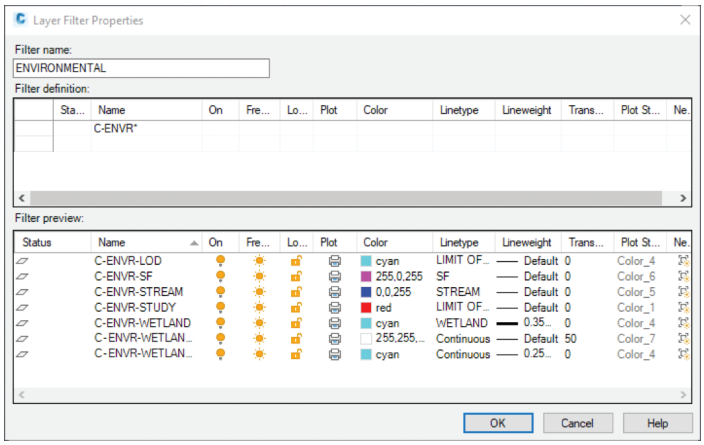


Figure N

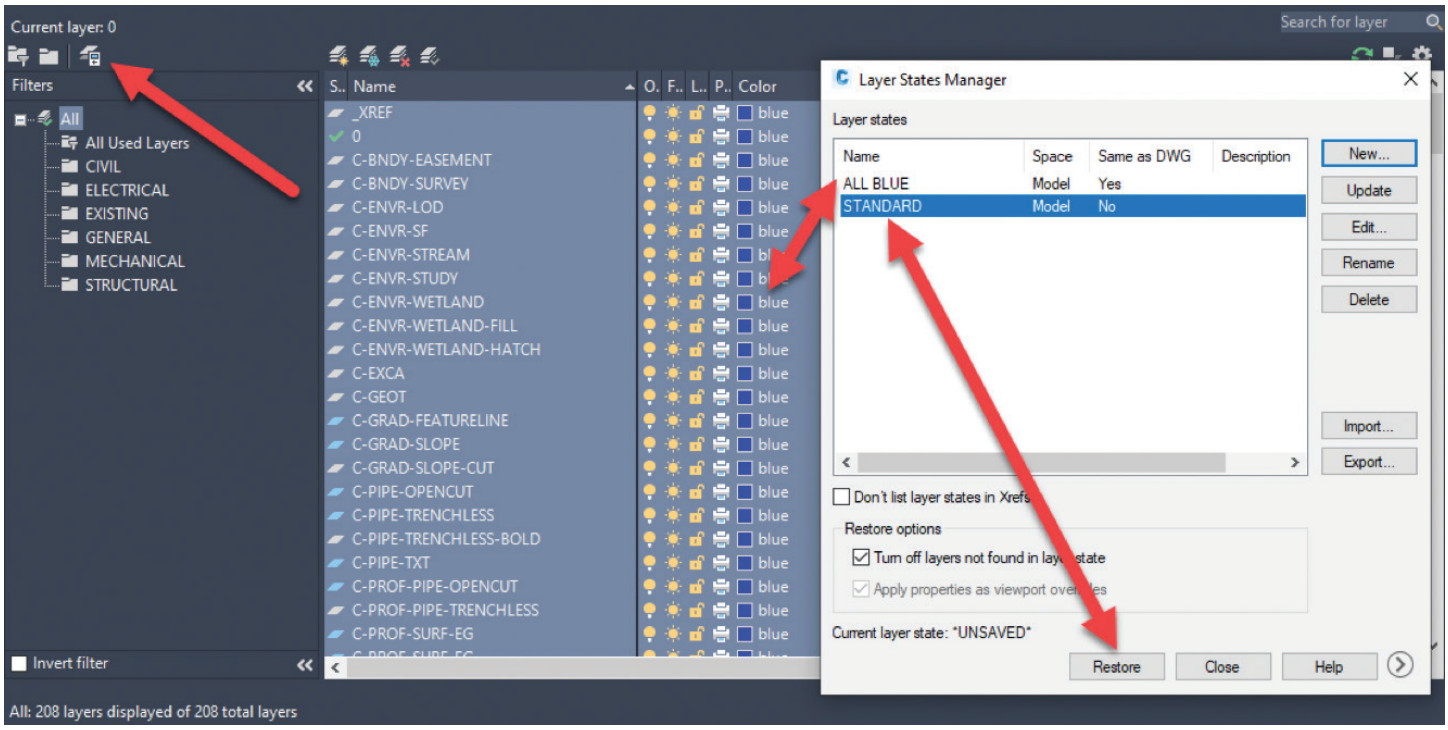


Figure O

LAYER CONTROL

Now with all these layers developed, defined, and assigned, how do you control them efficiently on a day-to-day basis? There are several tools/procedures to help with this within AutoCAD including Layer Properties, Quick Select, your active layer, and other object-specific options.

First, let's look at the Layer Properties window *(Figure L)*, the obvious hub for layer transactions. Within Layer Properties, you have the ability to create (A) and edit layers, but you are also afforded the ability to control your layers. You can toggle them on and off (B), freeze and thaw (C), in paper, model, and specific viewports (D), and even lock them all together (E). You can select which ones are active (F), as well as which ones to delete (G).

Also, don't forget to check out the Layer Settings by simply right clicking a layer in the Layer Properties, where you'll find additional controlling functions there!

Next, let's take a look at Filters, these Filters can be Groups (manually added layers) or Properties (defined by one or more of a layer's properties).

To create a Group Filter *(Figure M)*, simply select New Group Filter (A), name your Group Filter, then drag your layers in.

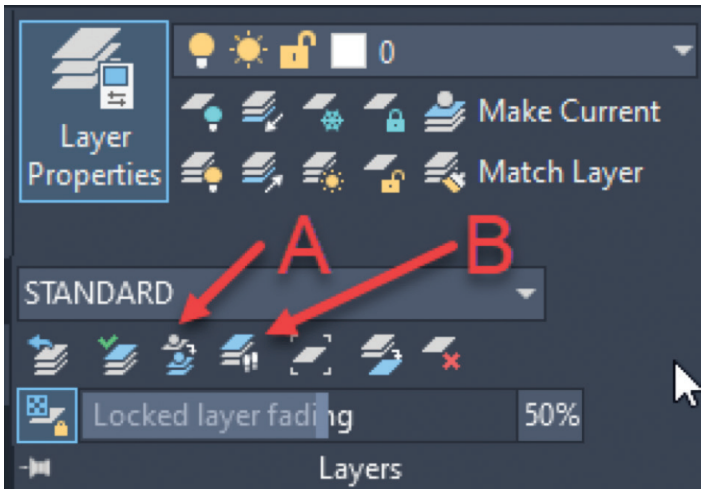


Figure P

To create a Property Filter *(Figure M)*, select New Property Filter (B), name your Property Filter, then define the properties to be filtered by. For instance *(Figure N)*, we can create an ENVIRONMENTAL Property Filter by defining the Name field as "C-ENVR*"

Lastly within Layer Properties is the Layer States Manager *(Figure O)*. This is a powerhouse when discussing layer control. With this tool, a user can save the current settings of layers as a "Standard" State, make modifications to the layers (perhaps for a specific deliverable), save that as a "Deliverable" State, then easily toggle back to "Standard". In

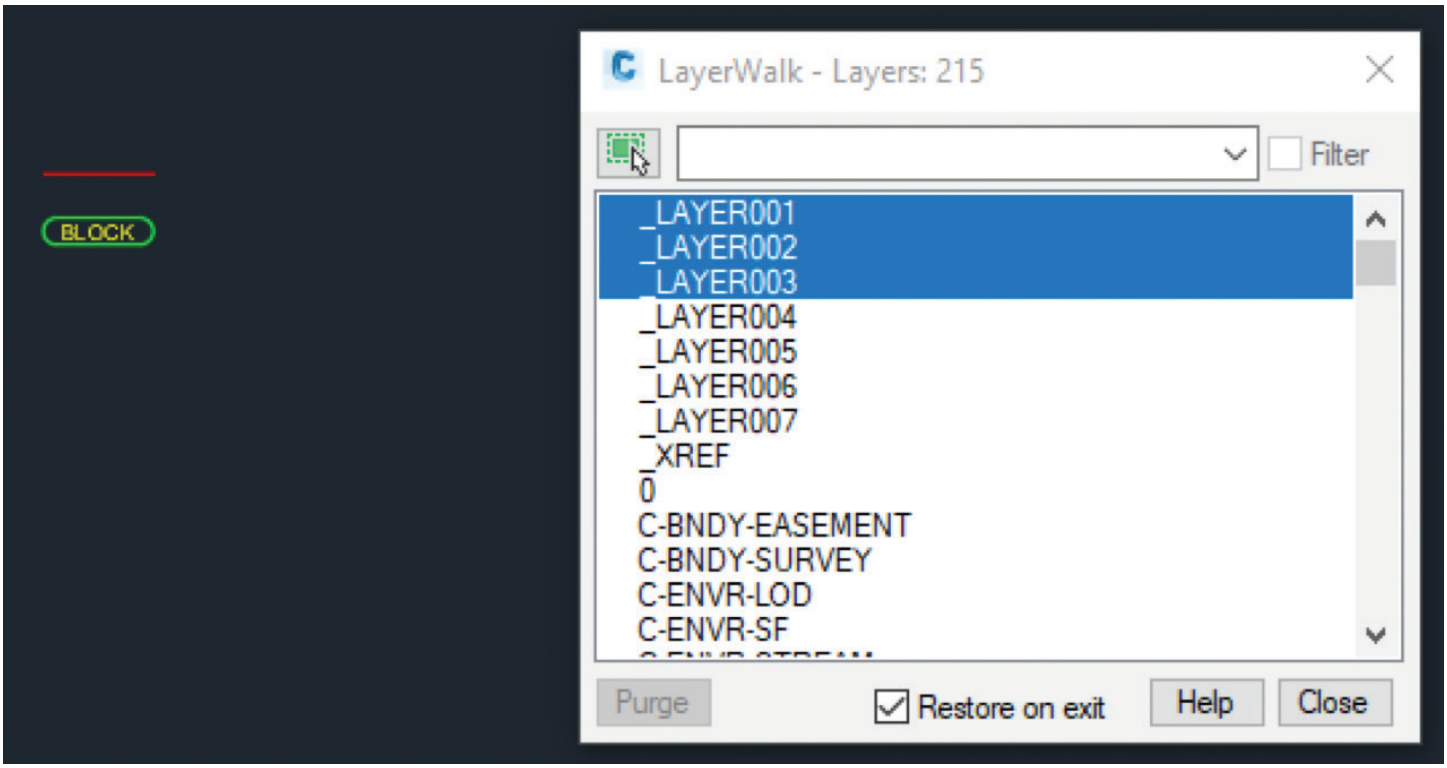


Figure Q

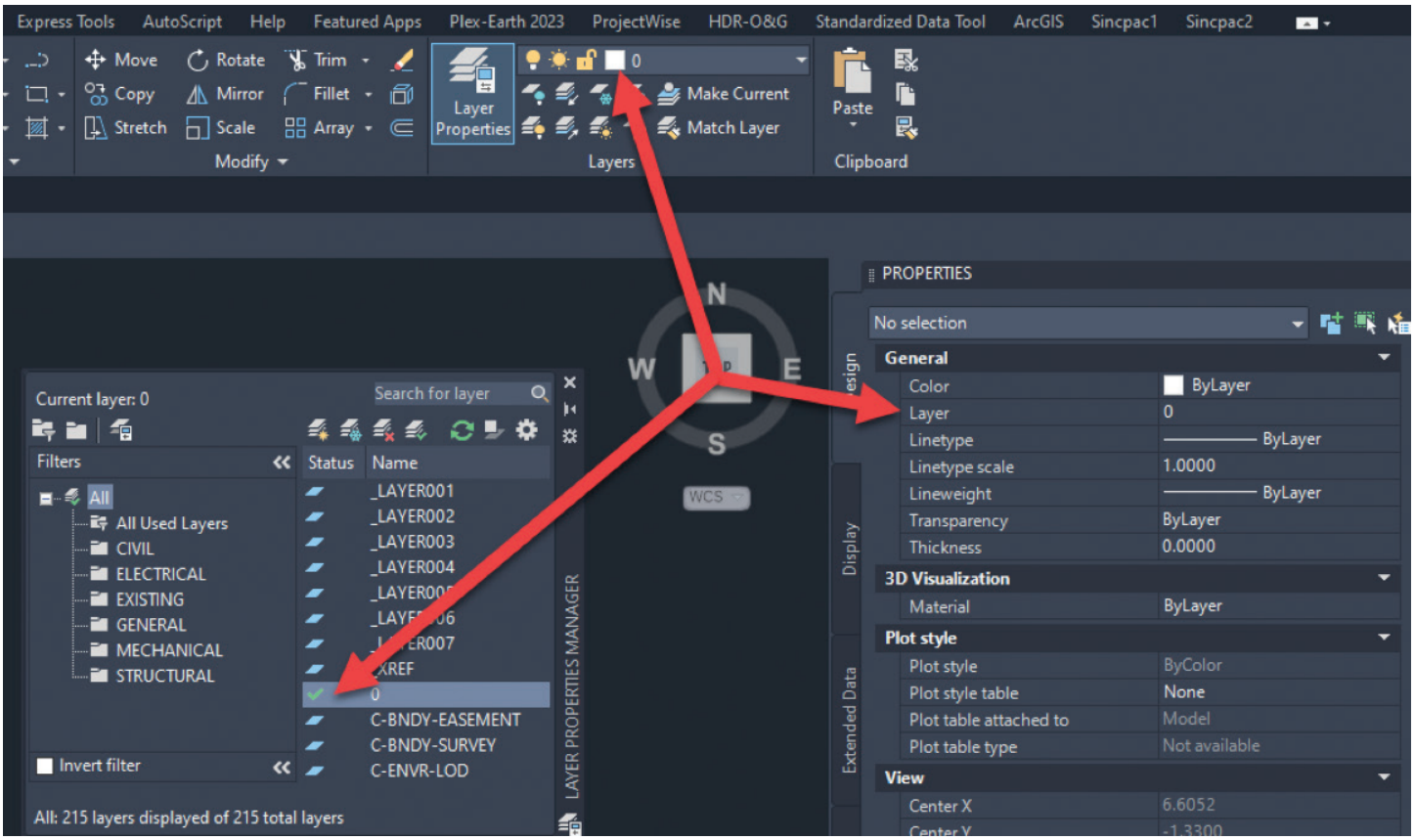


Figure R

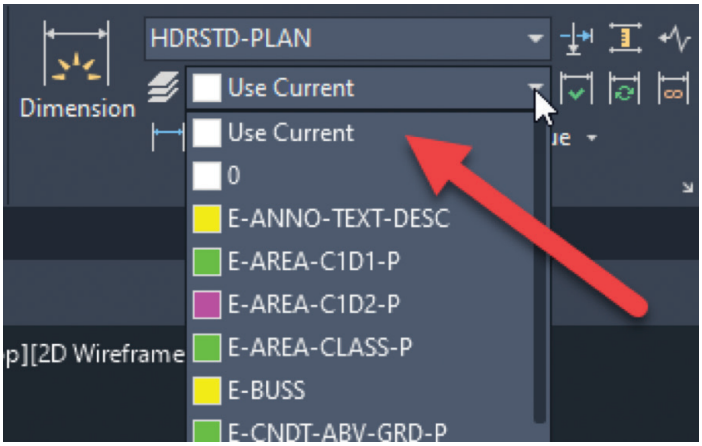


Figure S

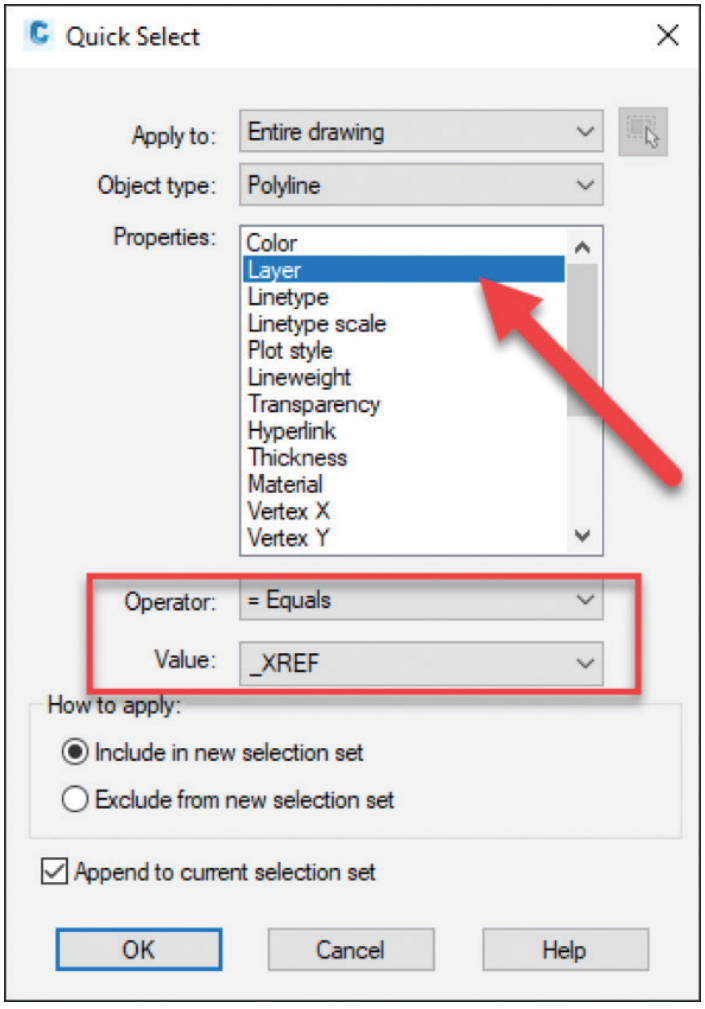


Figure T

addition to that, if those layers were wrongfully edited, you can quickly toggle back to "Standard", rectifying any accidental adjustments.

Now, let's move over to the Ribbon. In the Ribbon *(Figure P)*, you get many (not all) of the same options found in Layer Properties, just in a more condensed view. You do however get a few new tools like Layer Walk (B) and Copy Objects to New Layer (A). Layer Walk is a unique tool in that it allows the user to dynamically isolate objects by layer through selection in the LayerWalk dialog box *(Figure Q)*.

Other things to keep in mind are keeping the layer active that you wish to place the object you're creating on. For instance, if you want all your annotation to be placed on the G-ANNO layer, you will then want to set G-ANNO active prior to creating text, dimensions, leaders, etc.

Your active layer can be found in a few locations *(Figure R)*.

Dimensions have a twist of their own of course.

On the Ribbon *(Figure S)*, you can define what layer a Dimension is placed on.

Although there are many other layer control command settings (e.g. -LAYER, -LAYMCH, XREFLAYER, etc.), we'll finish thoughts on layer control with Quick Select.

Quick Select *(Figure T)* is a powerful tool that allows you to select objects based on their properties. And, as we covered previously, all objects have layers, making this a great Property to use for selecting objects.

LAYER STANDARDS

Finally, you've put your best foot forward, your templates are flawless, and your users are rockstars at layer control, how do you ensure drawings coming in are up to snuff? How do you efficiently check them and, in turn, efficiently revise them?

First, prerequisites, in order to leverage the following tools, you will first need to set up a Standards File (DWS). To do so, simply take your template file (DWT) and perform a save as, changing the file type to DWS.

With your Standard File created, let's first look at an Autodesk program external to an instance of AutoCAD, the Batch Standards Checker.

The Batch Standards Checker allows you to check multiple drawings at once as compared to your predefined Standard File. You are also given the ability to check specific plug-ins like Dimension Styles, Layers, Linetypes, and/or Text Styles *(Figure U)*.

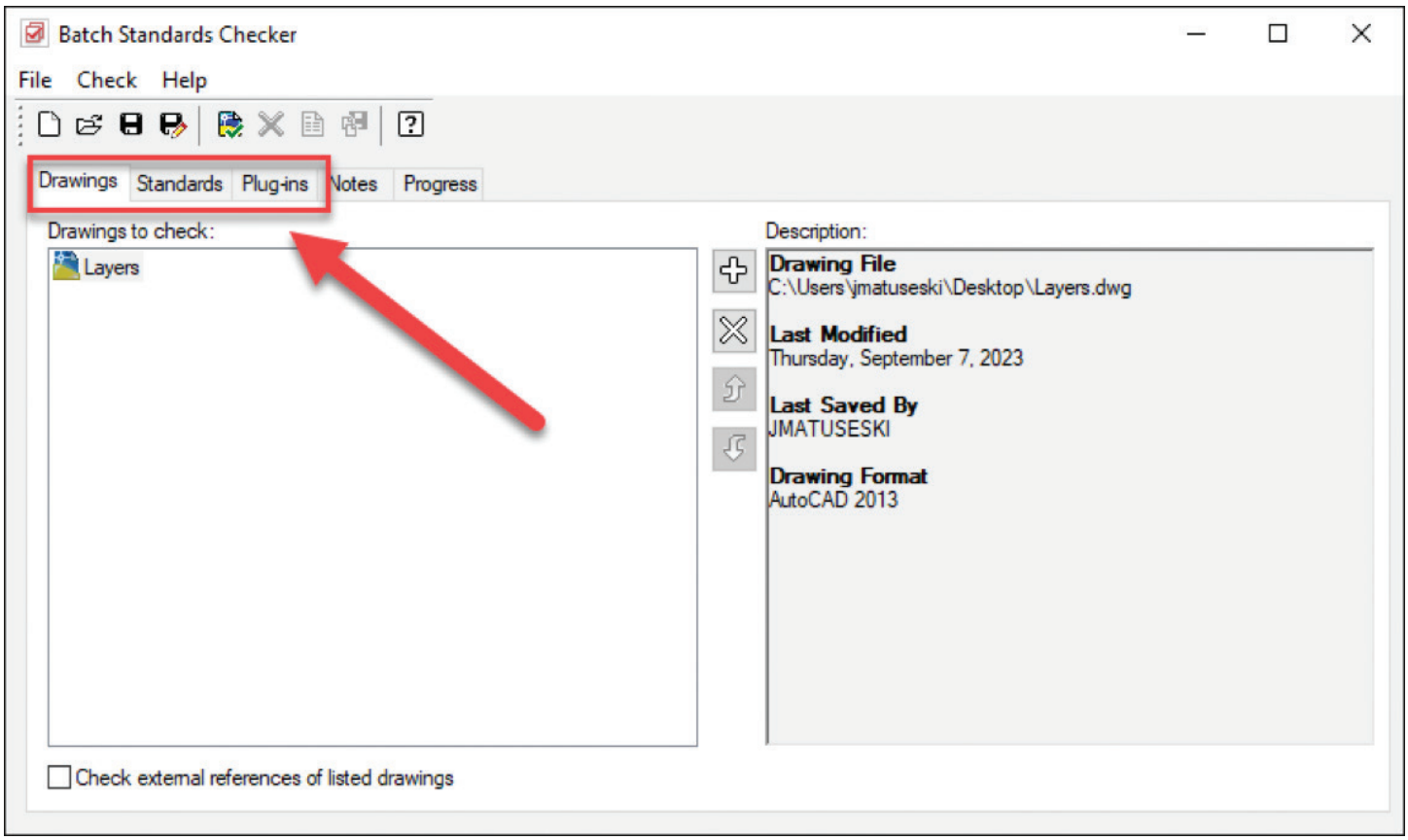
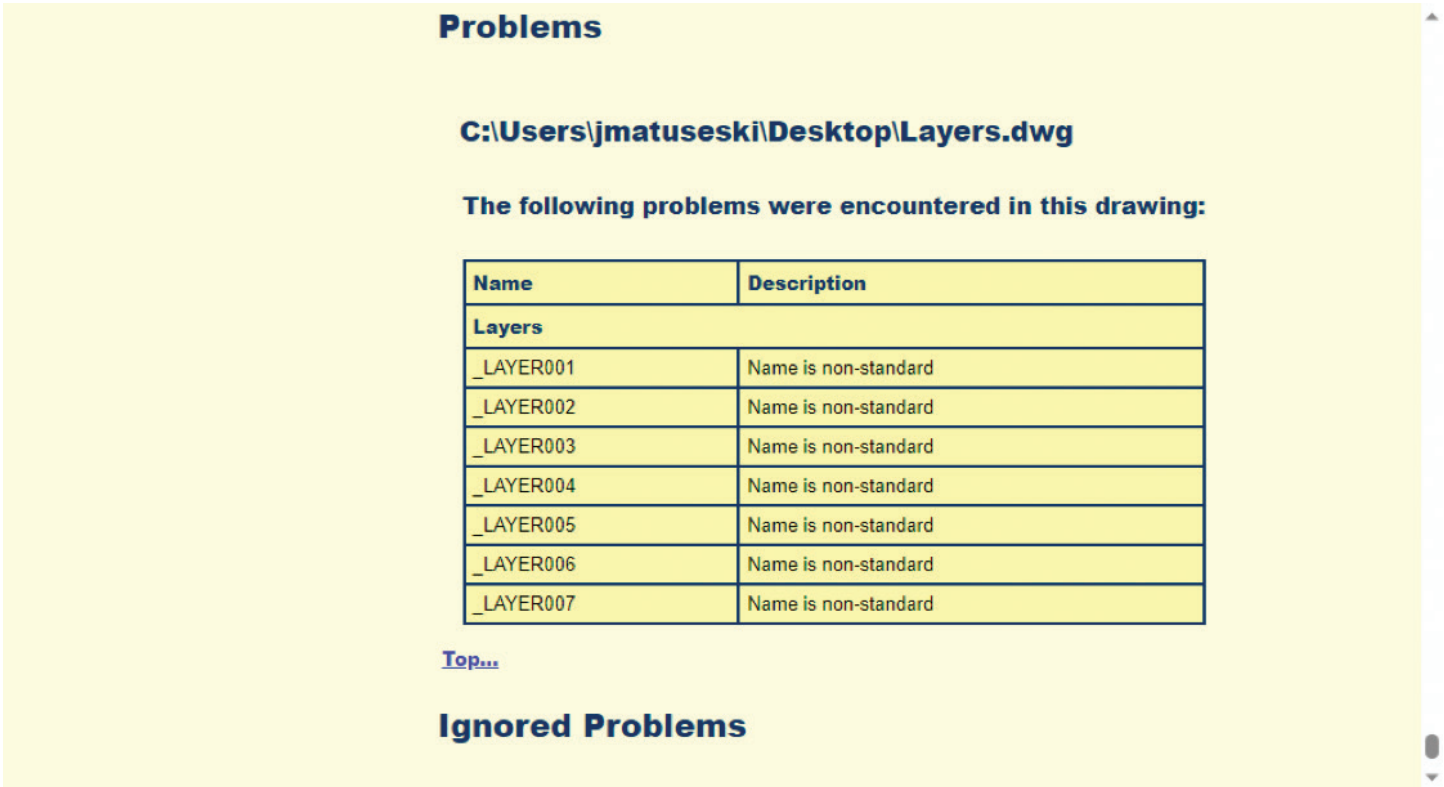


Figure U



Problems

C:\Users\jmatuseski\Desktop\Layers.dwg

The following problems were encountered in this drawing:

Name	Description
Layers	
_LAYER001	Name is non-standard
_LAYER002	Name is non-standard
_LAYER003	Name is non-standard
_LAYER004	Name is non-standard
_LAYER005	Name is non-standard
_LAYER006	Name is non-standard
_LAYER007	Name is non-standard

Top...

Ignored Problems

Figure V

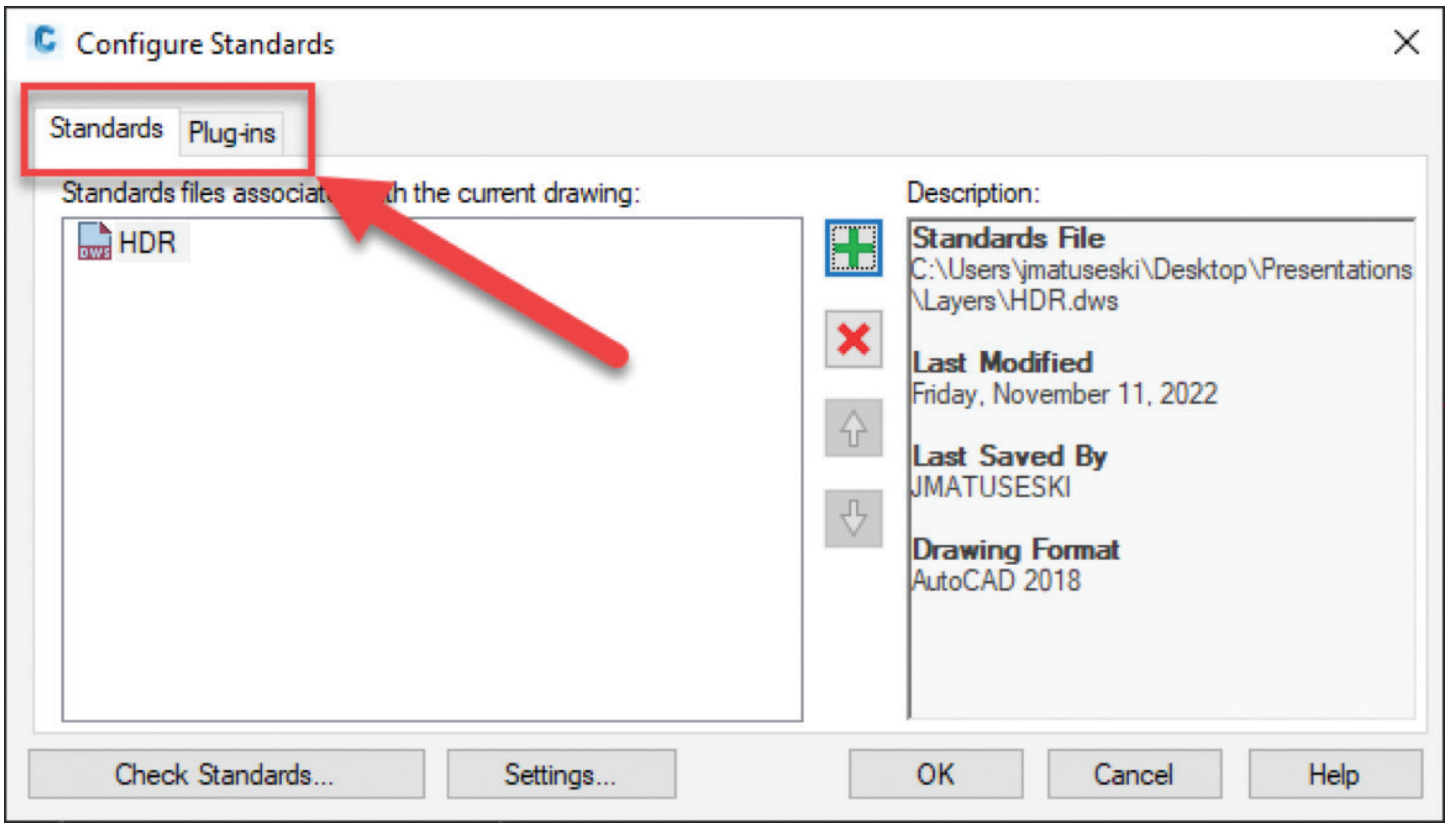


Figure W

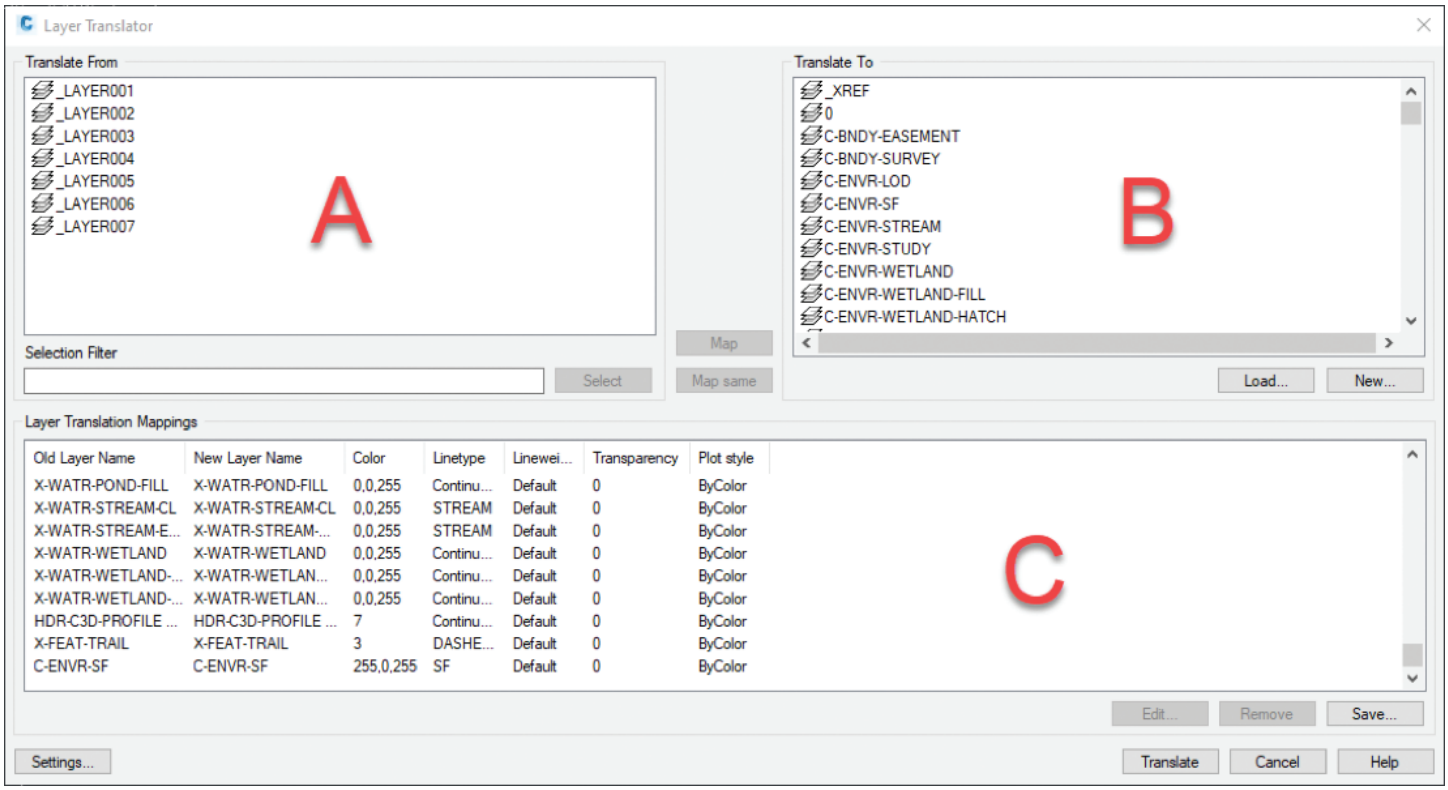


Figure X

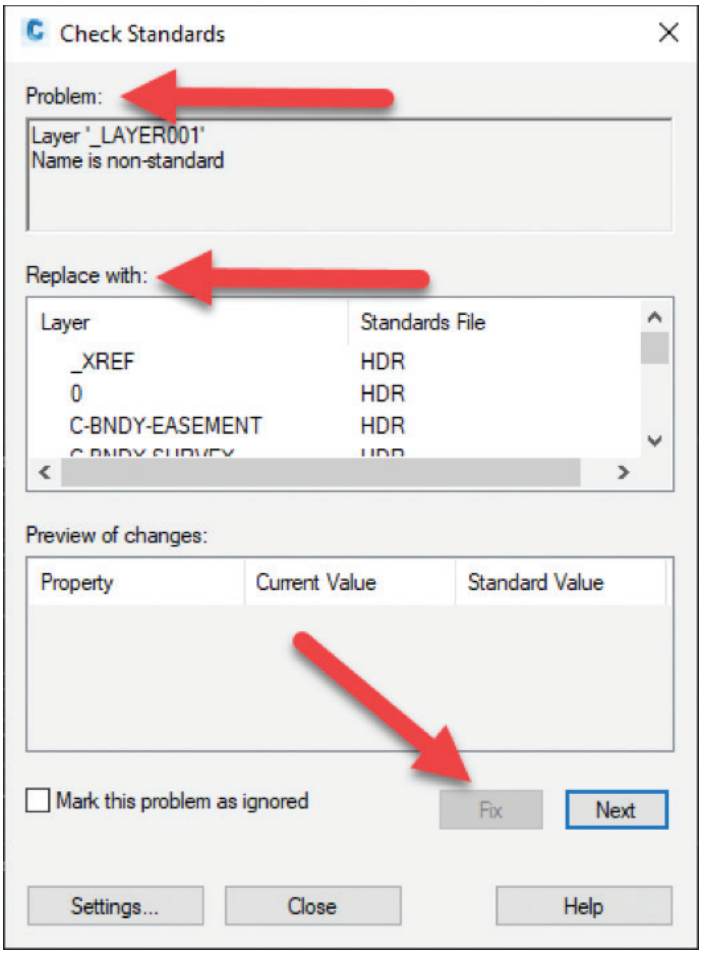


Figure Y

Once the Batch Standards Checker has run, an HTML report will be generated for your viewing *(Figure V)*. The report contains information on the Standard File used, the drawing(s) checked, and the problems encountered. This can be a great asset in determining the overall state a group of drawings may be in.

Next, let's look at the Check Standards tool *(Figure W)* within AutoCAD. This can be found on the Ribbon under the manage tab or by keying in CHECKSTANDARDS.

First, you must define a Standards File to check against (the DWS you previously created from your template). Then you can define your desired plug-ins, just like the Batch Standard Checker.

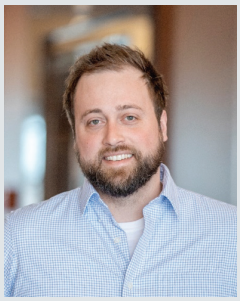
From here, you can then toggle through each problem identified in your file and choose to fix or ignore the issue *(Figure X)*.

Saving the best for last, I will now touch on the Layer Translator, also found in the Ribbon under the Manage tab.

The layer translator *(Figure Y)* in my opinion is one of the more powerful standard-related tools when it comes to layers. It allows a user to quickly take a non-standard layered drawing (A) and translate the layers to standard per a pre-defined Standards File (B). The Layer Translation Mappings (C) can then be saved and used in the future, perhaps on something like reoccurring survey deliverables.

CONCLUSION

In conclusion, the power of a layer is not to be underestimated, nor is the importance of a thorough understanding of them. In addition, proper setup of layers within templates and in turn Standards Files can pay dividends down the road. Their application to objects can affect production efficiency as well as deliverable quality. Taking the tips mentioned in this article and a better understanding of where layer assignments can be found, you can develop (or enhance) your templates, take control of your layers in day-to-day activities, and globally manage your layer standards, increasing quality and efficiency for you and your practice.



Jacob Matuseski is the Oil and Gas Pipelines and Station CAD Lead within HDR's Resources Business Group, a global leader in Engineering, Architecture, Environmental and Construction services. Jacob has been in the AEC industry for 12 years with 11 years' experience in the oil and gas industry, during this time he has managed multidisciplinary teams of technicians and designers from project inception to as built. In Jacobs current role, he is responsible for the development of CAD standards, understanding and utilizing client CAD standards, monitoring and forecasting design personnel workloads, technology advancement and implementation, and quality assurance. Jacob can be reached for questions or comments at Jacob.Matuseski@HDRinc.com or on LinkedIn.

by: Rafael Testai

Mechanisms & Mentorship: Mechanisms for Measurements

THIS ARTICLE IS BEST READ AND VIEWED IN THE ELECRONIC VERSION OF AUGIWORLD

https://youtu.be/VbrrGyIoWYE

Ever wondered what it would be like to be mentored one-on-one by a senior engineer that's using SOLIDWORKS to successfully deliver solutions to industry clients? My name is Rafael Testai, and in this video series *Mechanisms & Mentorship,* we'll take a look behind the scenes to see how a hand-picked engineer has designed one of their mechanisms in granular detail. We'll "open the hood" to analyze their CAD design and thought process behind the solution. I'll ask them questions about the project, roadblocks, challenges, specific insights they learned, and how they're using SOLIDWORKS to solve real world problems.

You'll learn a mixture of soft skills and hard skills. This series is perfect for viewers who are already proficient in SOLIDWORKS (CSWA, CSWP, CSWE) and want to take the next step in their careers.

In this episode of *Mechanisms & Mentorship*, I'll interview Mechanical Engineer & LabView Programmer, Ben Sandoval from TeamPipeline. us in Arizona. We'll focus on the two clever fixtures he designed to take a repeatable non-contact measurement on medical devices, and a method to measure the frictional forces induced while inserting shafts through non-linear pathways. The video starts off a bit technical. Hence, if you're having trouble following the verbal explanations, feel free to fast forward to min 20:30, where we'll show pictures, videos, and mechanisms to support & compliment these statements later in the episode.

TIME STAMPS:

What Problem Were You Trying to Solve? (Min 0:25)

- Problem #1: Develop a fixture that enables non-contact measurement on a suspended device shaft.
- Problem #2: Develop a machine to measure the frictional forces while traversing non-linear geometries.
- Problem #3: Design, procure, assemble, program, validate, and deliver both fixtures within the time window.

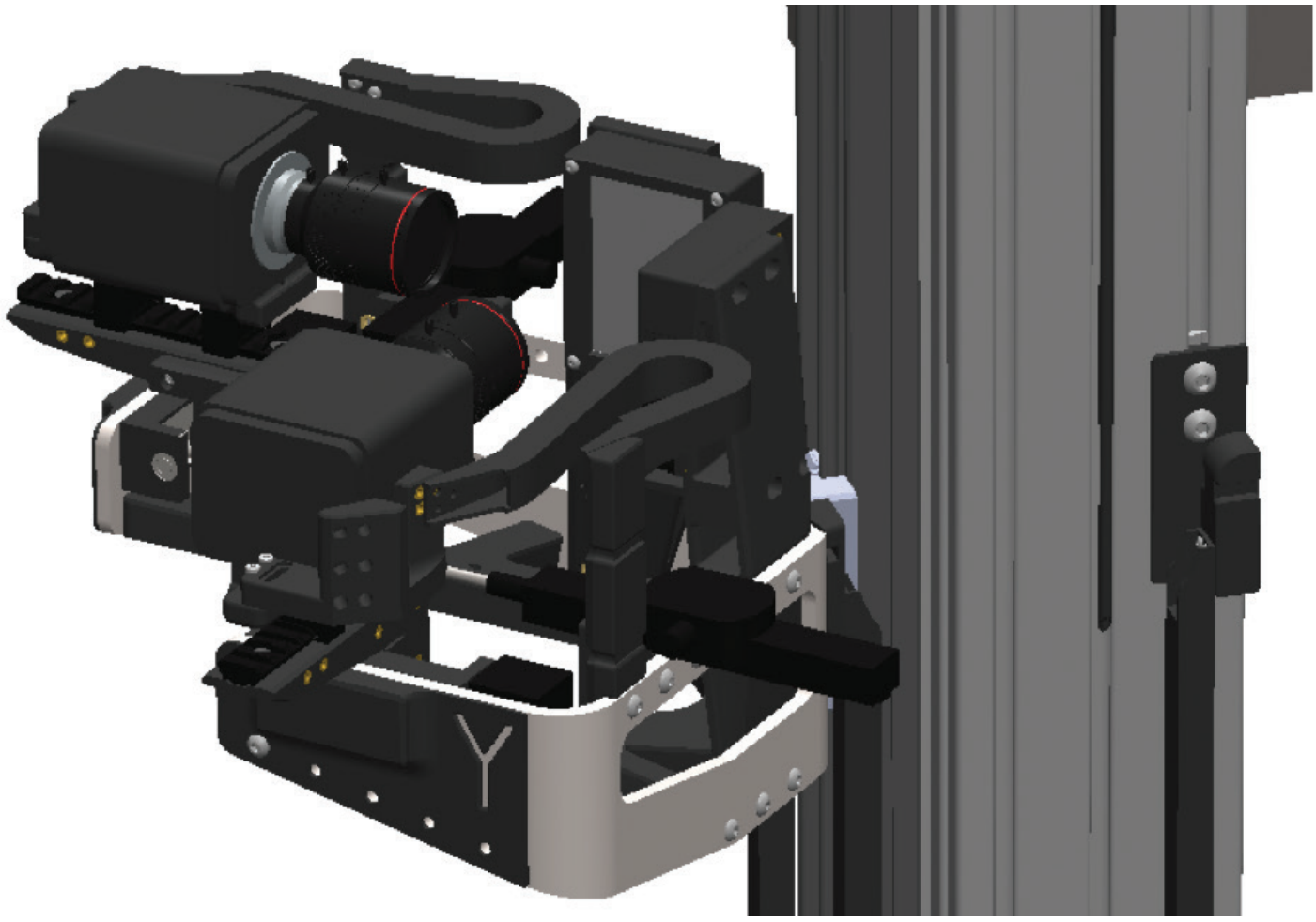
How Does a Senior Mechanical Designer Approach a Problem? (Min 4:45)

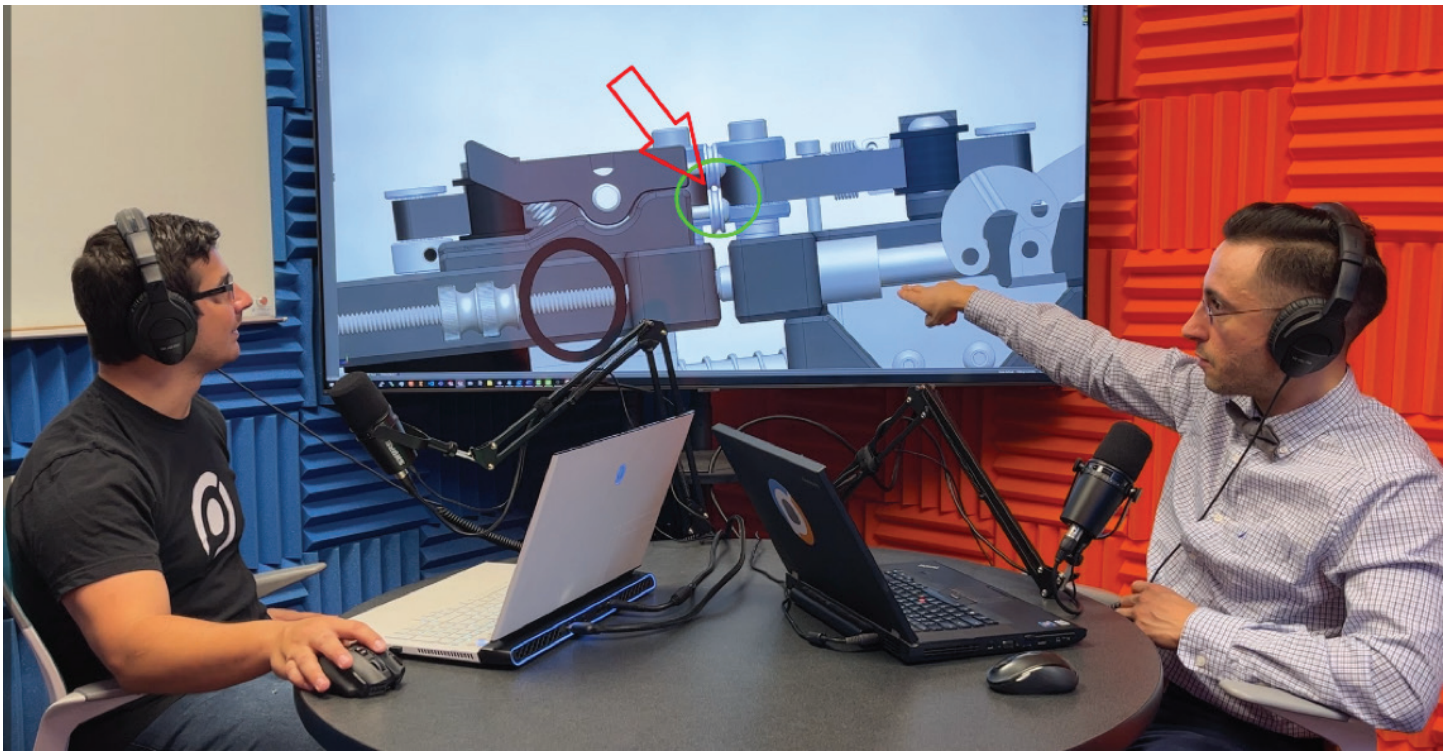
- First, it is necessary to gather as much information about the problem as possible through multiple meetings with the customer. We keep detailed notes and documentation to ensure that our completed systems perform up to customer expectations.

Then, we step back and quantitatively define what we're trying to accomplish and how it is different from owned by the customer and those readily available off the shelf – this opens a lot of insight into customer expectations and operational capability.

- What parts of the system can be purchased off the shelf? Are there components of the System that can only be purchased off the shelf?
- How does the customer want the test system packaged – Environmental conditions? Sensors/Systems/Controls/Automation Level and UI, Repeatability, Accuracy and Traceability; Test Conditions? User Interaction and Safety Constraints.


MSI





Researching Existing State-of-the-Art Technologies

"State-of -the-Art" can loosely be described as 'the most modern technologies and processes in that specific area of innovation.' Ben researched state-of-the-art currently used to perform these inspections to begin understanding how to solve the problem. Specifically, he looked at the interventional device testing equipment (IDTE) from MSI for insights and inspiration. (See image below) (**Min 16:11)**

The Solution: CAD of the 2 Assemblies (Min 20:15)

For taking non-contact measurements, Ben uses a 1200mm linear actuator, 2x 50mm actuators tied to micron precision digital gauges, 2x HDMI screens, and 2x 4K high speed smart cameras. This allows the operator to take accurate measurements at any point along the shaft. I highly recommend you watch the details of his explanation on the video.

Mechanism to Clamp Small Shafts/Cables (Min 28:00)

For measuring induced friction, Ben used a two-part fixture. The first half contains a carriage mounted on linear rods and a belt-based clamping drive system. When the two sides clamp together, they squeeze the shaft with the rubber belt allowing high gripping forces without damaging shaft materials or surface finish. The second half is made up of a carriage floating on air bearings that translate the induced friction into lbsF read by a force sensor at the far end.

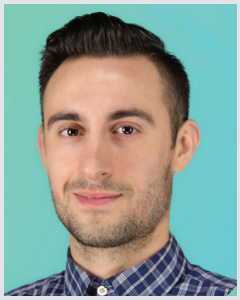
If you read until the very end, I greatly appreciate it. I would encourage you to follow me on Linkedin so that we can stay in touch, and you can be notified when more articles like this one get published. I lead with value and my writing style is direct and to the point.

https://www.linkedin.com/in/testai/

Any recommendations on who you think I should interview next? Feel free to reach out to me on Linkedin or Instagram. I read all correspondence.

Linkedin: https://www.linkedin.com/in/testai/

Instagram: https://www.instagram.com/rafael_testai/



RAFAEL TESTAI
SolidWorks Influencer.
FOLLOW to watch exclusive videos I create that quicklv teach you the inner working mechanism of interesting products / Mechanical Product Designer I LinkedIn/Instagram/TikTok/ Podcast/More articles: https://linktr.ee/testai

by: Shawn Herring

Best Practices for Civil 3D Training: A Guide on how I Approach a Training

To harness the full potential of Autodesk software, such as Civil 3D, effective and ongoing training is essential. This article outlines my approach when being engaged on a Civil 3D consulting opportunity. However, regardless of the software, a similar approach has been proven to be very effective and a higher return on the user's investment is typically achieved.

ENGAGE QUALIFIED INSTRUCTORS

Hiring qualified instructors with extensive experience in the software is essential. You may have experts in your office who are capable of performing training, but sometimes the message is better coming from outside sources! I can tell my 15-year-old daughter what is needed to achieve a higher vertical leap, but it's not until I pay an "expert" 200 buck an hour to tell her the exact same thing that she finally listens! These experts not only possess in-depth knowledge but also have the skills to effectively communicate complex concepts to trainees. You want instructors with not only software knowledge, but industry knowledge is what can really take your ROI on a training engagement to the next level.

ASSESS TRAINING NEEDS

Before diving into training, it's crucial to assess the specific needs of the trainees and the company. An alignment meeting crucial. Determine their current skill levels and identify any knowledge gaps. This assessment will guide the training process, ensuring that participants receive instruction tailored to their skillset and goals.

IDENTIFY TARGET AUDIENCE

Understand the background, experience level, and needs of your target audience. Are they beginners, intermediate users, or advanced users of Civil 3D? Do they need an AutoCAD or Civil 3D refresher course before the specific engagement?

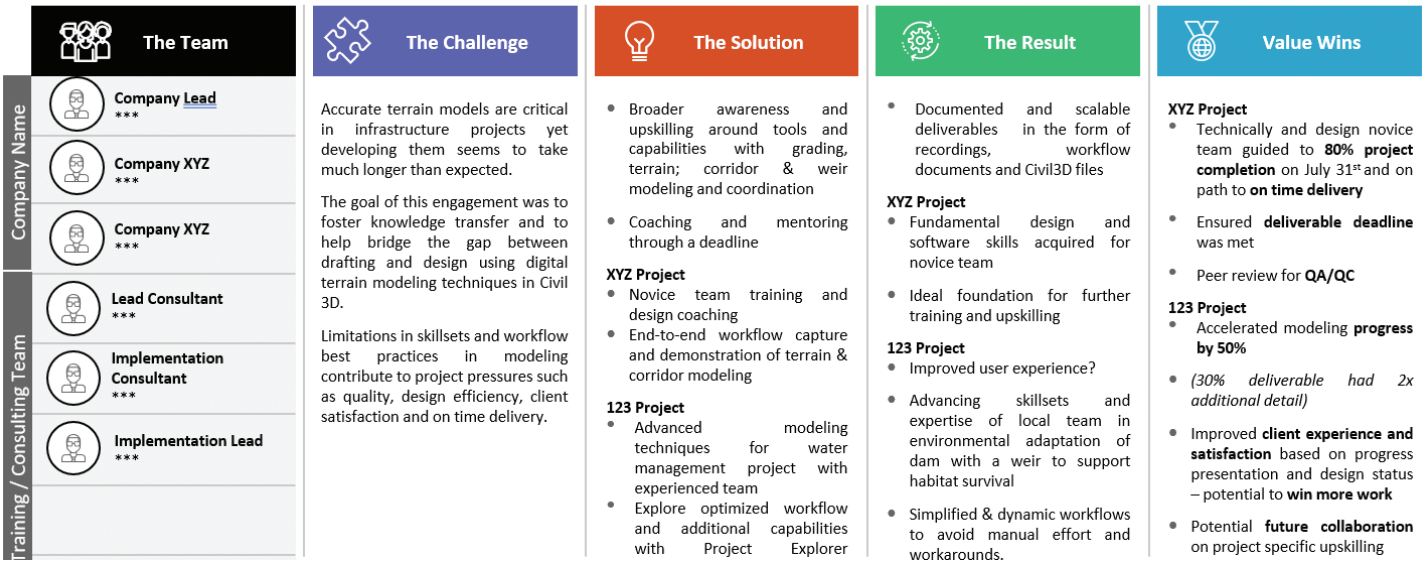
You must first understand the basics of AutoCAD and Map 3D! Before diving into Civil 3D, make sure you have a solid understanding of basic AutoCAD functionality. Civil 3D builds upon AutoCAD, so knowing how to navigate, draw, and edit in AutoCAD will be very helpful. I've gone into way too many Civil 3D training engagements and the attendees aren't just new to Civil 3D, but new to AutoCAD in general! Not having the AutoCAD basics down can really derail a training. In this case, I'd highly recommend that the first day of training, or a prerequisite to training, would be to do a full day of AutoCAD basics overview, or require the attendees to complete an AutoCAD class online using one of many online training platforms. Ideally, enroll your staff in an effective, yet inexpensive, online training solution such as Global-E-Training, and require them to pass some AutoCAD modules prior to entering a Civil 3D class.

SET CLEAR OBJECTIVES

Establish clear learning objectives for the training program. What skills or competencies should trainees acquire by the end of the training? Objectives provide direction and help participants track their progress. The four items I like to track for each engagement are the following:

1. **The Challenge**
    a. Why do you need training?
    b. What workflow seems to be an issue?
    c. What limitations in skillsets are you currently facing?
    d. Are projects being done on time and on budget?
2. **The Solution**
    a. What solutions (software type and workflow) need to be addressed?

Mobilization Meeting & Closeout Notes



b. What type of training are you looking for? Hands-on, project mentoring/coaching, project support, etc.

c. What type of deliverables? Videos, documentation, etc

3. The Result

a. Document the results during and after the training.

4. The Value Wins

a. Identifying the successes is important to not only the users, but upper management as well.

b. i.e., At the end of this training we were able to increase efficiency in piping design by xxx%

c. i.e., We met a 60% design stage during the training engagement by using a live project.

Now, all that should happen before your training. It may seem like a lot of effort, but the initial effort will save you time and money in the long run. So, take the assessment and alignment meetings seriously and try to identify as much as you can prior to the first day of training.

UTILIZE A STRUCTURED CURRICULUM

Develop a structured curriculum that covers essential concepts and progressively builds on them. Ensure that the training materials are well-organized and easy to follow. Break down complex topics into manageable modules to facilitate comprehension.

Structure this curriculum in a typical project workflow. For example, you may want to put the survey section and data sharing/shortcut section towards the beginning of the training. Most projects begin with some sort of existing data consumption, so start the training off just like you would a typical project.

Create Module(s):

Give each module a clear and descriptive title that reflects its content. For example:

Module xx: Introduction to the Autodesk Civil 3D Interface

Module xx: Creating and Editing Alignments

Module xx: Grading and Corridor Design

Module xx: Pipe Networks and Pressure Networks

For each module, break it down into individual lessons or topics. Include subtopics and key learning points within each lesson.

Module xx: Grading and Corridor Design

- Sites and Feature Lines
- Grading Criteria and Objects
- Corridor Subassemblies & Assemblies

Then set learning objectives for each module by clearly defining what participants should learn from each lesson. Use specific and measurable learning objectives.

Civil 3D – 202x

Agenda and Schedule

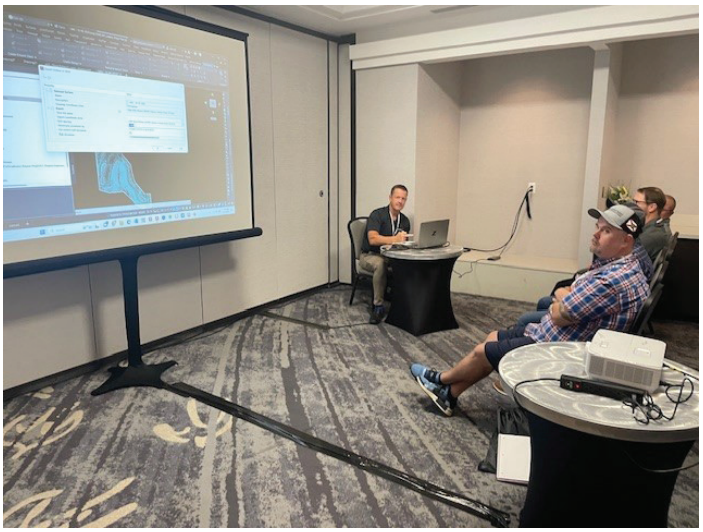
	Topic	Notes
	Introductions	
	Training Setup: ☐ Data sets, computers, etc. NEED: SCHEDULE: • Week 1(June 26 & 28)- 12p-4p (EST) both days. • Week 2 (July 5 & 6)- 12p-4p (EST) both days.	Version 202x w/ Grading Optimization & Project Explorer Datasets: XYZ Project 123 Project Phase 1 No courseware
	☐ Civil 3D – User Interface Overview o Interface o Toolspace o Settings / Styles ☐ Civil 3D - Surfaces o Create Surface from Survey Data ▪ Points ▪ Breaklines	

USE YOUR TEMPLATE! This is an often-overlooked key to success in Civil 3D training. Too many times I've gone in for a training engagement and have found that past training used out of the box templates and exercises. Going through training and using other templates can lead to confusion once the users get back into their environments. Using their template will allow the users to get comfortable with their settings and styles, their naming conventions, and a great way to help update/modify their template as you go! This is value added to any training if the company can get a deeper understanding of their template, and updated as they see fit during the training sessions.

USE YOUR PROJECTS! This is key, by far the number one thing in my opinion is to use a project that you are familiar with during your training. This could be an existing project that is completed or a new project you're just getting started on. Why not pay for your training while billing some to your clients? The use of new projects helps critical thinking and solving of real-world problems they would typically face.

HANDS-ON LEARNING

Most software is best learned through hands-on experience. Times have sure changed over the last few years and more and more training requests are being done via screen share, but there is no replacement for in-person hands on training. More questions are asked when the instructor is there live and more in-depth project discussions typically take place. In the trainings I've done via Zoom or Teams, I see many users checking out or focusing on emails or other work during the training. And less and less questions are being asked during these trainings. This approach typically takes longer for users to retain the information presented, where being in person tends to capture the user attention more effectively. There is a time and place for training over the web though. An update training, lunch and learn or "what's new" is a good use of a web training. Something less than 90 minutes and involving a lot of users could and should be done online.



PROVIDE ACCESS TO RESOURCES

Offer trainees access to a wide array of resources, including tutorials, documentation, and online forums. Autodesk's official website, as well as numerous online communities, can be invaluable sources of information and support. Did you record the training? With simple software such as Camtasia, recording your training session is easier than ever. This is a great resource for those that attended the training and those that may have missed out.

REGULAR ASSESSMENTS AND FEEDBACK

Incorporate regular assessments and feedback sessions to gauge trainee progress. Constructive feedback helps identify areas that need improvement and allows for course corrections as necessary. Not 1 training should ever be the same! I've done hundreds of Civil 3D training sessions all over the world, and every single one has been different. The next should always be better than the last, we should always be willing to adjust the curriculum, the datasets and the deliverables at all times. Otherwise, things get boring and stale. And every group of attendees has different questions and needs, so being able to roll with it and switch gears as needed is a very important quality in selecting an instructor.

ENCOURAGE PROBLEM SOLVING

Autodesk software often presents challenges that require creative problem-solving. Encourage trainees to explore solutions independently and promote a culture of innovation. Allow users during a training to struggle through things without holding their hand. Allow them to think for themselves on finding a solution before jumping right in to assist them. I try to let other attendees jump in and answer questions or help their peers as well. This type of open environment has been good for both the instructor and the attendees. And a good instructor learns something after every training session! I see things done all the time that I've never thought of, and it only helps me in future trainings.

CUSTOMIZE TRAINING TO INDUSTRY NEEDS

Tailor training content to the specific industry of the attendees. For example, if the firm doesn't do in house survey, maybe minimize the focus on survey to just include consuming the survey data as delivered by their consultant. You don't want to be training on best practices for subdivision design, if all the company does is highway infrastructure or wastewater management. This is where the initial alignment meeting is so important, identify these things up front so there are no questions asked.

STAY CURRENT WITH UPDATES

Autodesk software is regularly updated with new features and enhancements. Ensure that training materials and instructors stay current with the latest software versions to maximize training effectiveness. At minimum, do a "What's New" lunch and learn or "tips and tricks" session at least once a month.

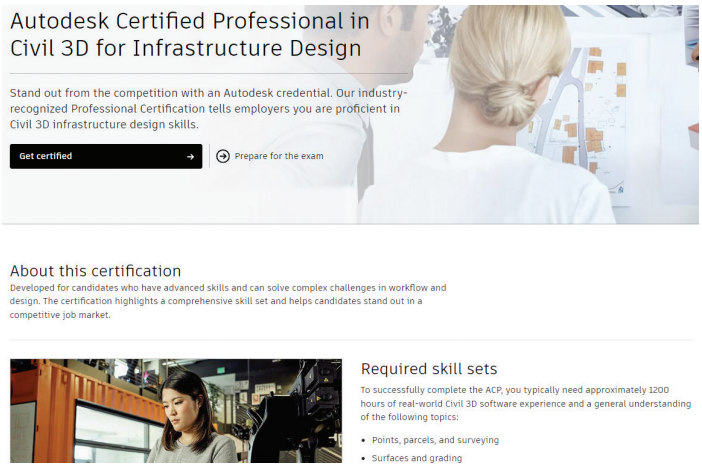
Foster collaboration among trainees to mimic real-world working environments. Encourage them to work on group projects, share insights, and learn from each other's experiences.

SUPPORT AND TROUBLESHOOTING

Provide ongoing support for trainees as they encounter challenges in their work. Address issues promptly and offer solutions to keep productivity high. A support or troubleshooting "ticket system" should be discussed and a solution put in place.

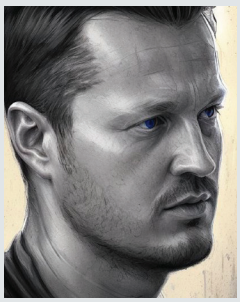
CERTIFICATION OPPORTUNITIES

Consider offering certification or incentive programs for trainees. Autodesk certifications are globally recognized and can enhance career prospects by demonstrating expertise in the software. Company incentives can go a long way in boosting the morale of your users. Maybe tie a raise or bonus program to completion training and certification. I worked with one company who incentivized their users by sending them to Autodesk university in Vegas if they completed certain courses and certifications. Be creative in ways to reward your users, after all, them getting training is a huge benefit to the company and well as the individual!



CONCLUSION

By following these best practices, trainers and organizations can ensure that trainees acquire the necessary skills to excel in their roles. Whether you are a beginner looking to master the basics or an experienced user seeking to expand your proficiency, these guidelines will help you navigate the world of training, or being trained on, ANY software with confidence and success.



Shawn has been a part of the design engineering community for roughly 15 years in all aspects of design, construction and software implementations. He has implemented and trained companies across the Country on Civil 3D and other infrastructure tools and their best practice workflows. Shawn can be reached for comments or questions at sherring@prosoftnet.com.

by: Jason Toy

5 Concerns AI Developers Need to Prevent from Materializing

From machine-learning algorithms to ChatGPT, artificial intelligence has been invaluable for companies looking to streamline operations and amplify work output, sales, and overall business success. AI-powered home products like cleaning robots and security systems have also helped make life easier and better for consumers. However, while the AI industry has brought forth innumerable benefits, it has also been found to pose some critical concerns.

In my experience as the founder of the **88stacks** AI image generator (which provides easy-to-use and affordable tools to democratize access to generative modeling and images), I have seen a number of issues unfold in the AI industry. Here are 5 of the biggest concerns and how AI developers can prevent them from materializing:

ETHICAL IMPLICATIONS

As AI becomes more powerful, there are growing concerns about its potential misuse, the presence of biases in algorithms, and the other ethical implications surrounding its use in decision-making processes. For example, AI-powered job application software has been found to favor male candidates over female ones, leading to culture-damaging gender bias in companies. Also, AI customer assistance chatbots have been found to provide varying levels of service and respect to people based on their gender, ethnicity, or age.

To prevent the ethical implications of AI from materializing, it is essential for researchers, developers, and policymakers to adopt a proactive approach. Implementing ethical guidelines and standards in AI development can help ensure responsible use and mitigate potential biases in algorithms. Open discussions and transparency about AI's capabilities and limitations can promote public understanding and engagement, building trust in AI systems.

Moreover, incorporating multidisciplinary teams in AI research and development can bring diverse perspectives to address ethical considerations effectively.

JOB DISPLACEMENT

The increasing automation through AI has raised fears of job displacement in certain industries, potentially leading to economic and social challenges. I do believe that generative AI is going to end up displacing many more jobs because of how well the technology can understand and generate human language. All the lower-end blue collar jobs will disappear, and it will be the people that know how to use AIs and adapt that will survive and thrive.

To address concerns about job displacement, a collaborative effort is necessary. Governments, businesses, and educational institutions should invest in reskilling and upskilling programs to equip the workforce with the necessary skills to adapt to an AI-driven world. Promoting a culture of lifelong learning can empower individuals to stay competitive and embrace new opportunities created by AI technologies. Moreover, public-private partnerships can foster responsible AI adoption, ensuring that AI complements human skills rather than replacing them.

DATA PRIVACY AND SECURITY

A customer data breach or financial fraud can completely wreck any business, so preventing this from happening needs to be a top priority for every company. However, the extensive use of AI involves collecting and analyzing vast amounts of data, which has raised significant concerns about data privacy breaches and security vulnerabilities. If an AI system that processes data is compromised by hackers, they can have immediate access to loads of financial information.

For data privacy and security, strict data protection measures must be enforced. Companies handling large amounts of data should adhere to privacy regulations, implement robust encryption techniques, and prioritize cybersecurity measures. Transparency in data collection and usage can enhance public confidence in AI applications. Moreover, data governance frameworks that prioritize user consent and data anonymization can alleviate concerns regarding data privacy.

LACK OF TRANSPARENCY

Some AI algorithms can be highly complex and difficult to interpret, leading to a lack of transparency in the decision-making processes driven by AI. For example, the reasoning behind AI-powered autonomous vehicles' decisions is often unknown to passengers, which can lead to confusion and concerns about the cars' driving safety. Also, some companies are highly secretive about their operations' AI algorithms, which can lead to public scrutiny and reputational damage.

To improve transparency in AI decision-making, efforts should be made to develop explainable AI models. Research in interpretable machine learning can provide insights into the rationale behind AI-generated decisions, making them more understandable to users and stakeholders. Developing tools and interfaces that allow users to interact with AI systems and understand the reasoning behind AI-generated outcomes can enhance trust and acceptance.

POTENTIAL MISUSE OF AI-GENERATED CONTENT

The ease of generating realistic images and content through AI raises valid concerns about its misuse, such as spreading disinformation or creating deepfake content. For example, ChatGPT has been proven to generate false information about certain news stories, which can misinform users. Also, deepfake images can show high-profile business leaders doing something wildly inappropriate, which can lead to a huge loss of customers and permanent reputational damage.

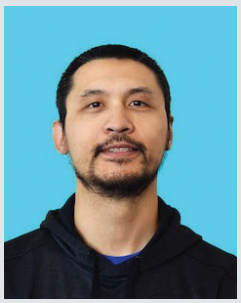
Addressing the potential misuse of AI-generated content requires a multi-faceted approach. Technological solutions such as AI-based content detection algorithms can help identify and flag misleading or harmful content. Public awareness campaigns can educate users about the risks associated with AI-generated content and promote critical thinking.

Collaboration between technology companies and policymakers can establish guidelines to prevent the malicious use of AI-generated content.

TO WRAP IT ALL UP

Artificial intelligence has revolutionized so many companies and made life easier for consumers, but there are also a number of major concerns with the AI industry. For example, some AI algorithms have been proven to have biases and other ethical implications. AI has also displaced jobs and caused data breaches and other security issues. Fostering collaboration among researchers, industries, governments, and the public is essential to address these concerns effectively.

By promoting responsible AI development, transparency, ethical guidelines, and continuous dialogue, we can assure the public that AI technologies can be harnessed for the greater good and minimize potential risks and negative consequences.



Jason Toy is the founder of the 88stacks AI image generator, which provides easy-to-use and affordable tools to democratize access to generative modeling and images. Jason believes that everyone should have the opportunity to explore and create with generative technology, regardless of their technical background or expertise. To achieve this goal, 88stacks is dedicated to developing innovative solutions that simplify the process of generative modeling and image creation, while also offering comprehensive training and support to our users. Jason has a strong passion for machine learning and artificial intelligence, where he has contributed significantly to both practical implementation and cutting-edge research. www.88stacks.com

AUGIWORLD brings you recent developments in Autodesk and related software items

by: Shaun Bryant

This month's topic is Education and Training, so we have some apps from the App Store that allow you to educate yourself about Autodesk software and the tools they provide. They will assist your workflows, and you may also learn something! I believe in the hashtag #alwaysbelearning, so I hope these apps adhere to that ethos.

Sometimes, though, you may have a specific tool in mind, so make sure you search the store, as I'm sure you will find many apps that will customize your processes within your Autodesk applications and help you work smarter, not harder.

So, on that note, here are this month's opportunities to advance your skills, processes, and workflows with the most current industry-related software and hardware updates available.

BLOCK BEST PRACTICES FOR AUTODESK® AUTOCAD®

https://apps.autodesk.com/ACD/en/Detail/Index?id=5681759743358091659&appLang=en&os=Win32_64

Autodesk AutoCAD
Version: 2022, 2021, 2020, 2019, 2018

Blocks are one of the most important productivity tools in Autodesk® AutoCAD®. By optimizing your blocks, you will find that AutoCAD is not just about drawing lines or getting the drawings done. You can draw lines fast, but productivity is beyond that. It's not just to get the drawings done. You need to be able to modify drawings easily during the design process. You may be able to finish your drawing very quickly, but you may spend too much time when you're doing revisions.

If you do, then you're not productive. Drawings also should provide the necessary information. Furthermore, you will want to add some intelligence to automate some processes. This e-book will teach you how to create, automate, and manage your blocks. We're not only discussing features, but we're also talking about the productivity concept. And how you can use blocks to solve problems in AutoCAD. This e-book can be used by AutoCAD users, from beginners to intermediate users. However, I believe advanced users can still use the information. The download consists of a zip file containing a PDF version of the book and supporting DWG files.

You can never learn too much about AutoCAD blocks! This e-book is proof of that!

KEYBOARD SHORTCUT TUTOR

https://apps.autodesk.com/RVT/en/Detail/Index?id=8254543212181997427&appLang=en&os=Win64

Autodesk Revit
Version: 2021, 2020, 2019, 2018

Boost Your BIM's Revit keyboard shortcut tutor gives you a friendly reminder in a small modeless dialog box when you use the mouse to click on a command that has a keyboard shortcut.

A button in the dialog can be used to see a list of all shortcuts.

We all want to use all the Revit keyboard shortcuts, right? Well, here's the app you need to do it!

AUTOFEM TUTORIAL 3.5

https://apps.autodesk.com/ACD/en/Detail/Index?id=11049188233091965&appLang=en&os=Win32_64

Autodesk AutoCAD
Version: 2020, 2019, 2018, 2017

If you have some news to share with us for future issues, please let us know. Likewise, if you are a user of a featured product or news item and would like to write a review, we want to know. **shaun.bryant@cadfmconsult.co.uk**

Autodesk AutoCAD Mechanical
Version: 2020, 2019, 2018, 2017

Autodesk AutoCAD Architecture
Version: 2020, 2019, 2018, 2017

The AutoFEM Analysis Tutorial allows you to learn the finite-element analysis of mechanical structures.

It can be used separately or together with AutoFEM Analysis finite-element analysis software, integrated with Autodesk® AutoCAD®.

AutoFEM Analysis Tutorial consists of several lessons presenting step-by-step and video instructions. Complete examples of solving finite-element analysis problems are available for study.

You should use this app if you use finite-element analysis (FEA) regularly in conjunction with AutoCAD. It's a great way of learning and furthering your knowledge of FEA!

DOCUMENT MANAGEMENT WITH SHEET SET

https://apps.autodesk.com/ACD/en/Detail/Index?id=6124767696006002875&appLang=en&os=Win32_64

Autodesk AutoCAD
Version: 2022, 2021, 2020, 2019, 2018

This 50+ pages e-book covers how to prepare, create, and use your drawings using Sheet Set. You will learn to create page setup, title block, automatic view title, automatic sheet list, batch plot/publish... and more! This e-book covers everything from the beginning until you can use and utilize it. You will not just learn how to add sheets to your Sheet Set.

You will also learn about:

- Prepare the page setup, and title block with fields, templates, and blocks for Sheet annotation.
- Create your own Sheet Set
- Import the existing layout as a sheet
- Create a new sheet using Sheet Set.
- Place saved views with an automatic view title.
- Place callout block
- Change Sheet Set, Sheet, and View properties.
- Create an automatic sheet list, transmittal, and batch publish your drawing documents.

Sheet Sets will allow you to manage your project drawings quickly and easily. If you work with AutoCAD drawings and need to manage them quickly, this e-book will save a lot of pain (and time)!

Please let us know if you have some news to share with us for future issues. Likewise, if you are a featured product or news item user and would like to write a review, we want to know. Drop me a line at: shaun.bryant@cadfmconsult.co.uk. We'd love to hear from you!

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