

Dimensions+

Mixed Reality Best Practices, Tips & Tricks and Advanced Features

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Overview

 **XR10 Hardware**

 **HoloLens Windows
Software**

 **Model Preparation and
Organization**

 **Alignment and Drift**





XR10 (Hardware)





Battery Management

- Charging Both Devices
 - Short (6 inch) USB-C cable [🔗](#)
 - MobiWAN constantly charged
 - Just charge XR10
- Extending Use with Power Bank [🔗](#)
 - Requirements
 - TRY.SRC compatible
 - At least 5V/1.5A
 - Up to 27W
 - Negates intrinsic safety
 - Decreases ergonomics
 - Potential for overheating
 - Start at full internal battery
 - Limit to 1.5A





Presenting to Others

- Wireless Display Adapter [🔗](#)
- HDMI coupler [🔗](#)
- USB wall charger [🔗](#)





Trimble HoloTint [🔗](#)

- Improves Hologram Contrast in Bright Environments
- Photochromatic Lens
 - Automatically Adjusts Based on UV Rays
 - Not Instantaneous
- Easily Removable





Miscellaneous



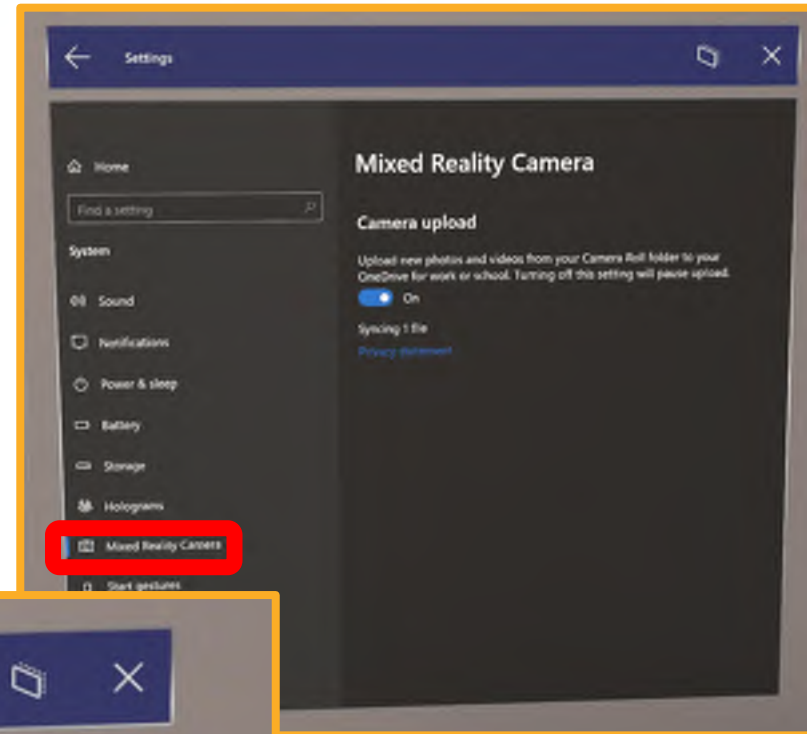
- Cleaning
 - Keep sensors sensing!
 - Microfiber cloth for visor
 - 70% isopropyl alcohol
 - USB-C cap or can of air
- Bluetooth Keyboard
 - Quick data input on site
 - Near touch keyboard is slow
 - Cortana is unreliable





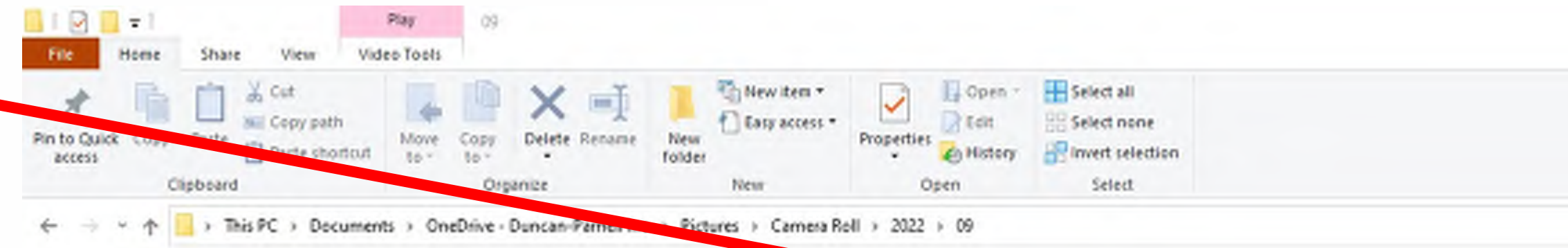
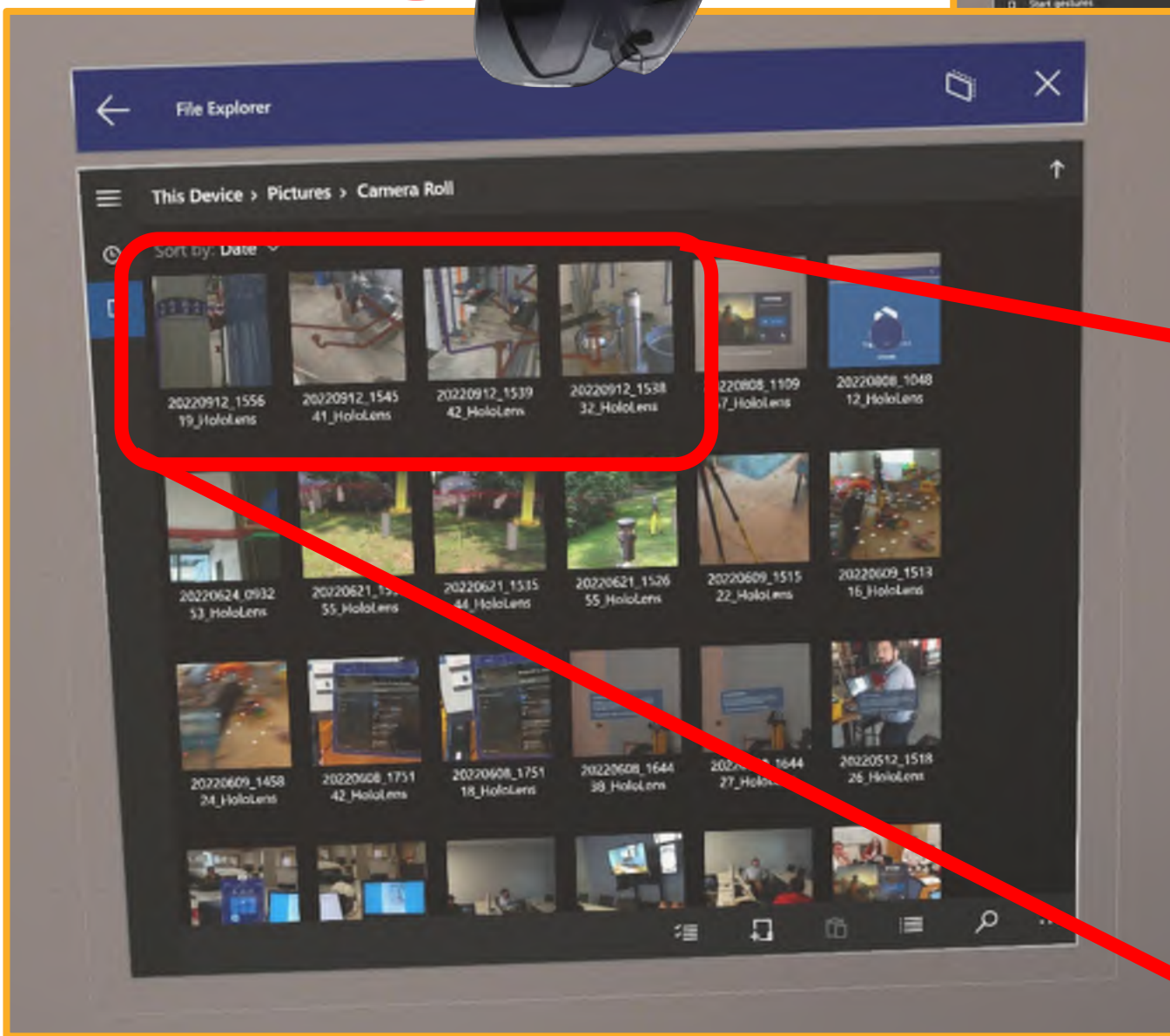
HoloLens Windows (Software)





Images & Video

- Snapshot and Recording with Volume Buttons
- Auto Sync Photos/Videos through OneDrive

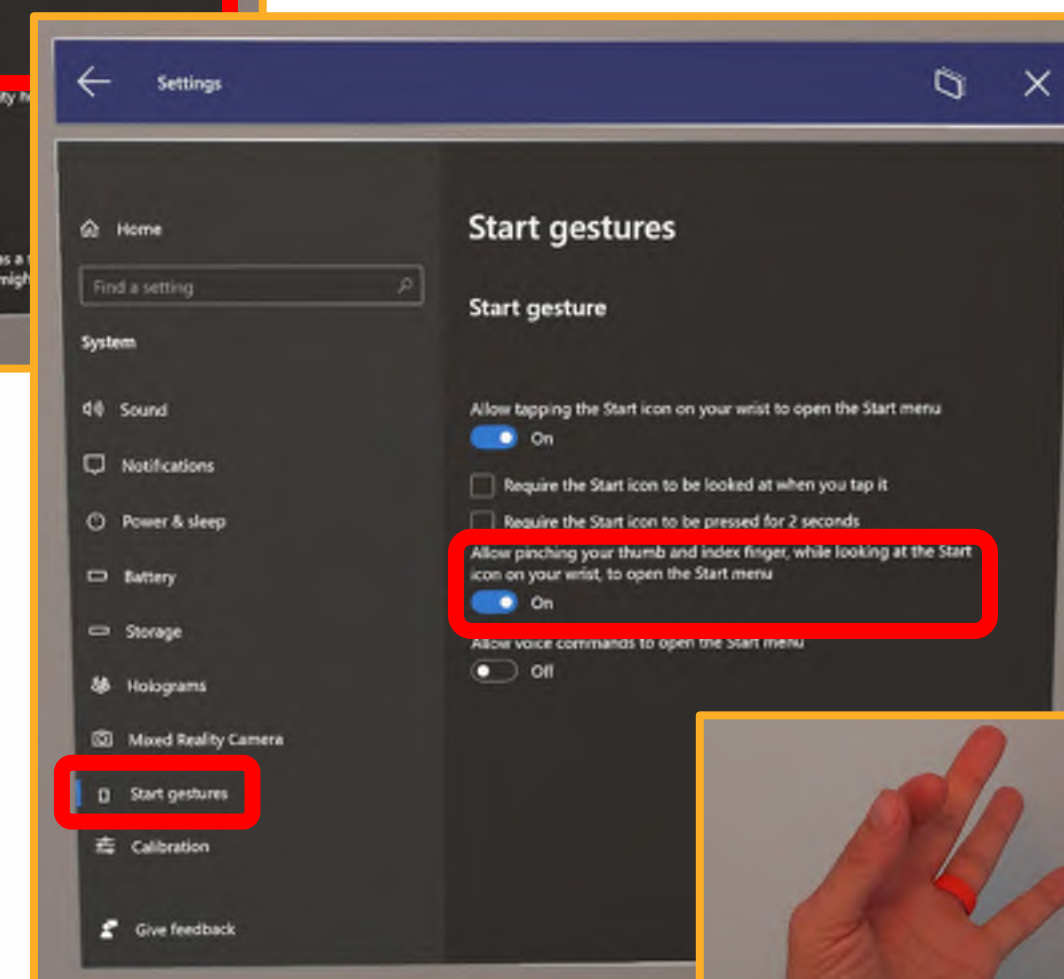
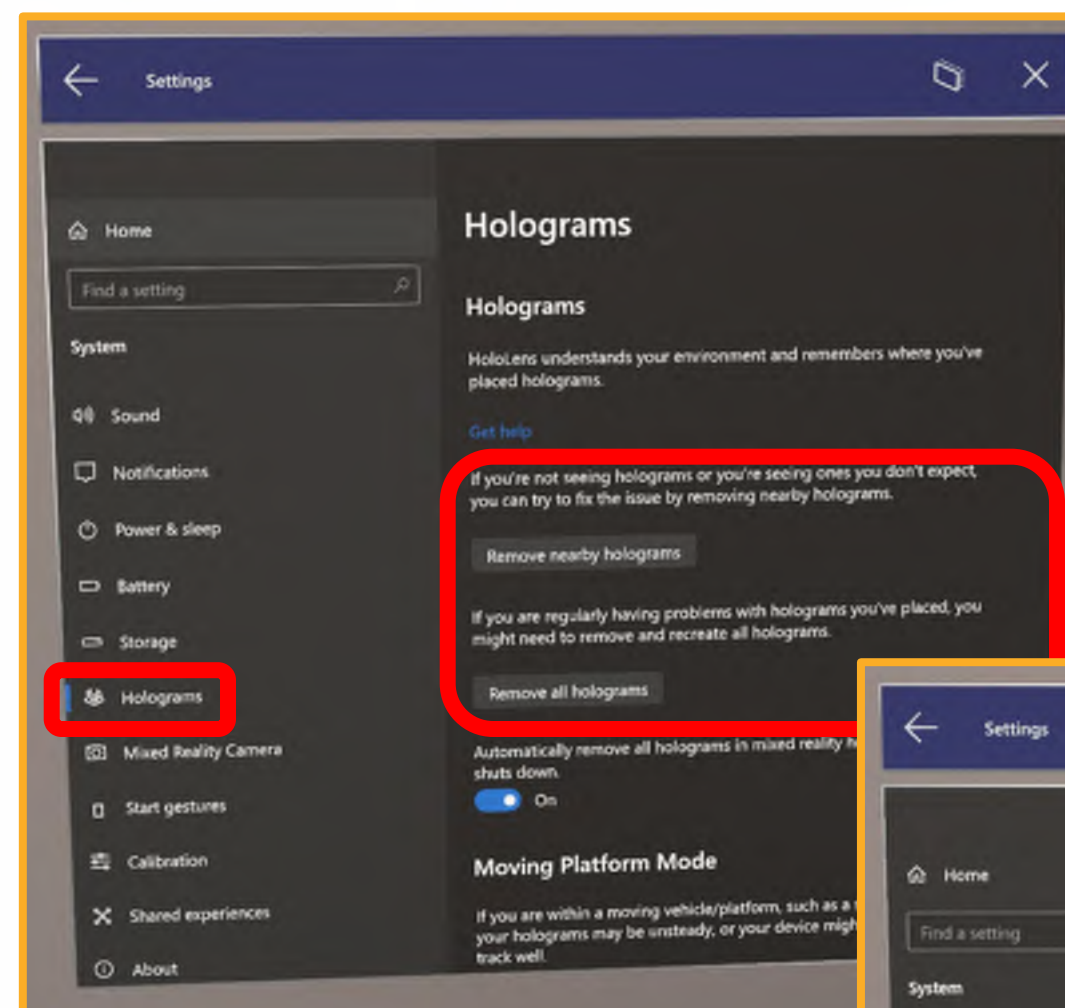




Miscellaneous

- Always Check for Windows Updates!
- Clear Out Holograms/Spaces in Settings to Clean Up Device
- One Handed Home Screen Call Up
- Screen Share and Keyboard Via iOS

App called HoloCapture and HoloKeyboard





Model Preparation and Organization





Trimble Connect

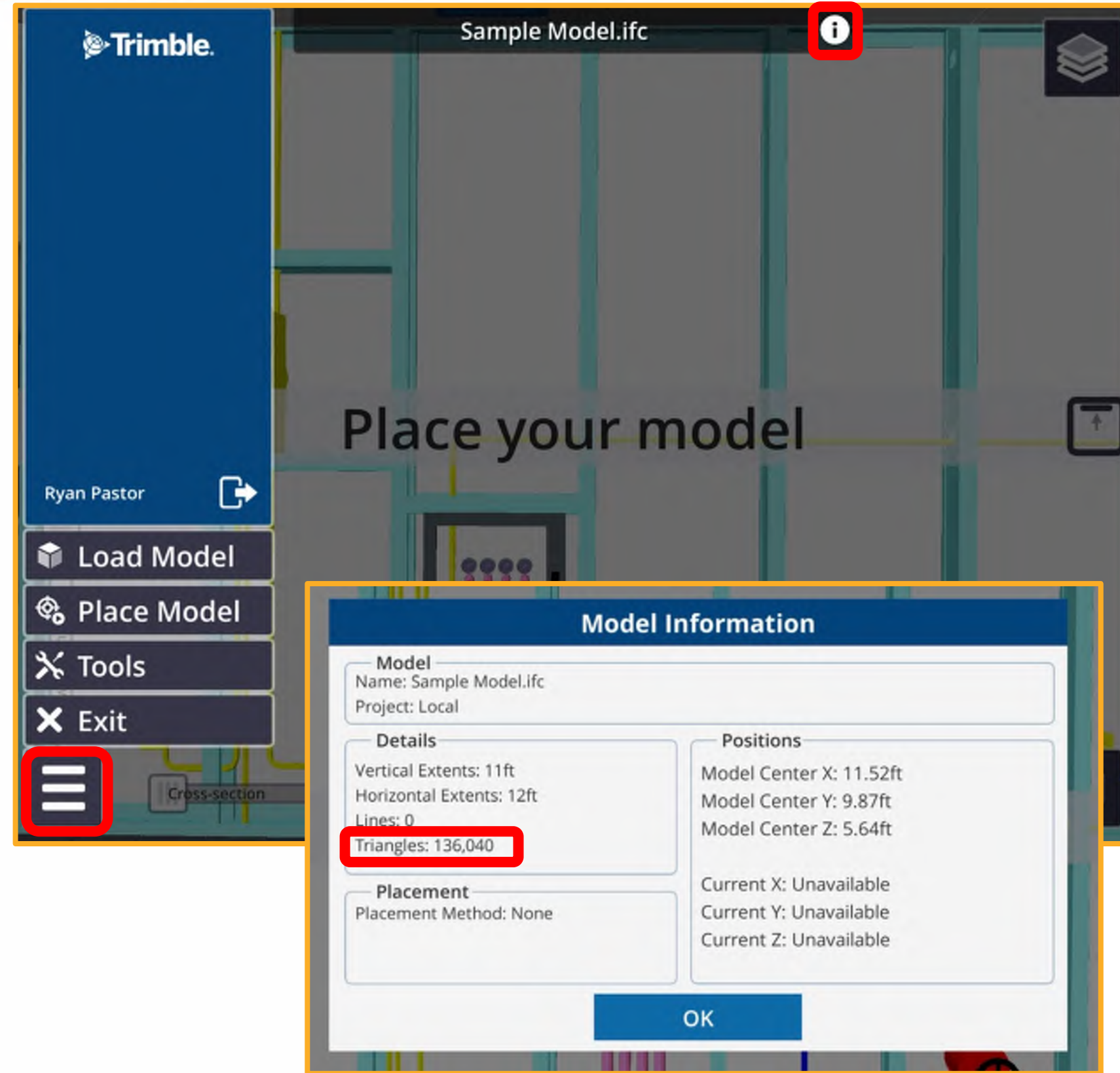
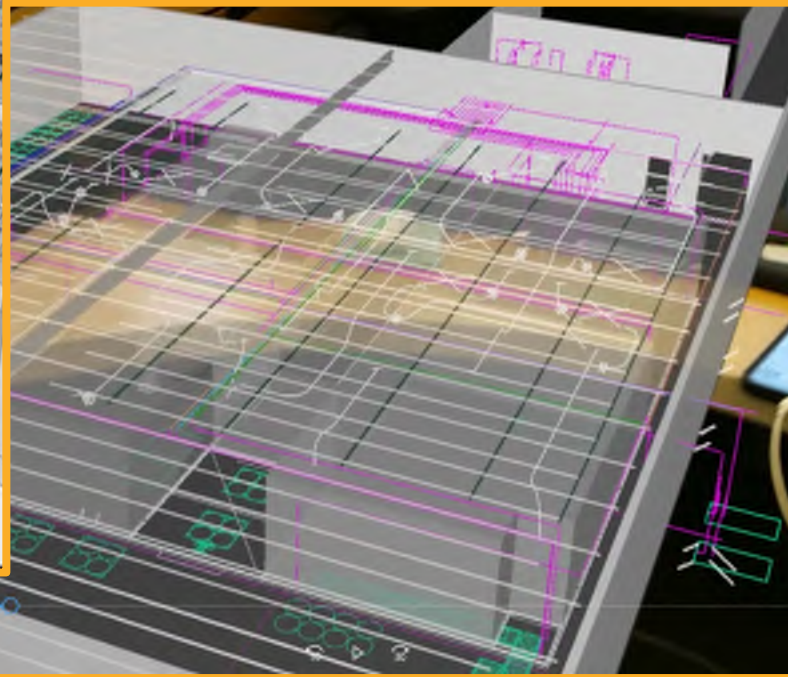
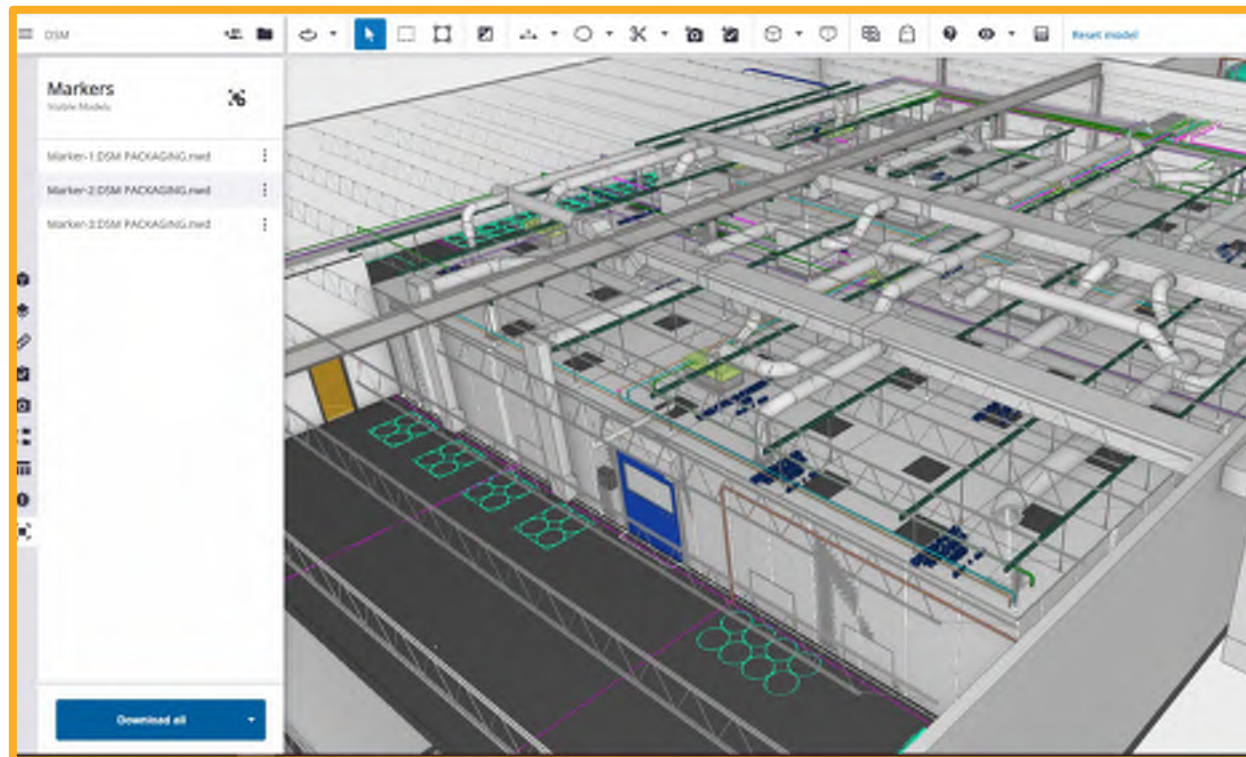
- Project Set Up
 - Always create project from MR & AR entitled account!
 - Invite others to the project

The screenshot shows the 'Project Details' page for a project named 'BPSE HoloLens Models'. The 'Project ownership' dropdown menu is highlighted with a red box and contains the text 'TRIMBLE COLORADO | TRMB'. Other visible details include the project license 'Trimble Connect for Mixed Reality - Annual | 227020-22', the project server location 'North America', and the creation date 'Jun 11 2018 12:03 pm EDT By Ryan Pastor'.

The screenshot shows the 'Project members' page for 'Project Lonestar Demo'. The 'Invite people to project' button is highlighted with a red box. The page displays a table of project members with columns for Name, Employer, Role, Status, and Last accessed. The 'Team' menu item in the left sidebar is also highlighted with a red box.

Name	Employer	Role	Status	Last accessed
Ryan Pastor ryan.pastor@buildingpointssoutheast.com	BuildingPoint SouthEast	Admin	Active	Oct 15 2022, 01:51 PM
Scott Mayer scott.mayer@buildingpointssoutheast.com	BuildingPoint SouthEast	Admin	Active	--





Less Effective

- Fish Bowl
- Performance/Detail
- Section Box
- Turning Off Models/Layers
 - AR App will show you polygon (triangle) count

TC-MR ~370,000 triangles
 TC-AR Millions of triangles

More Effective

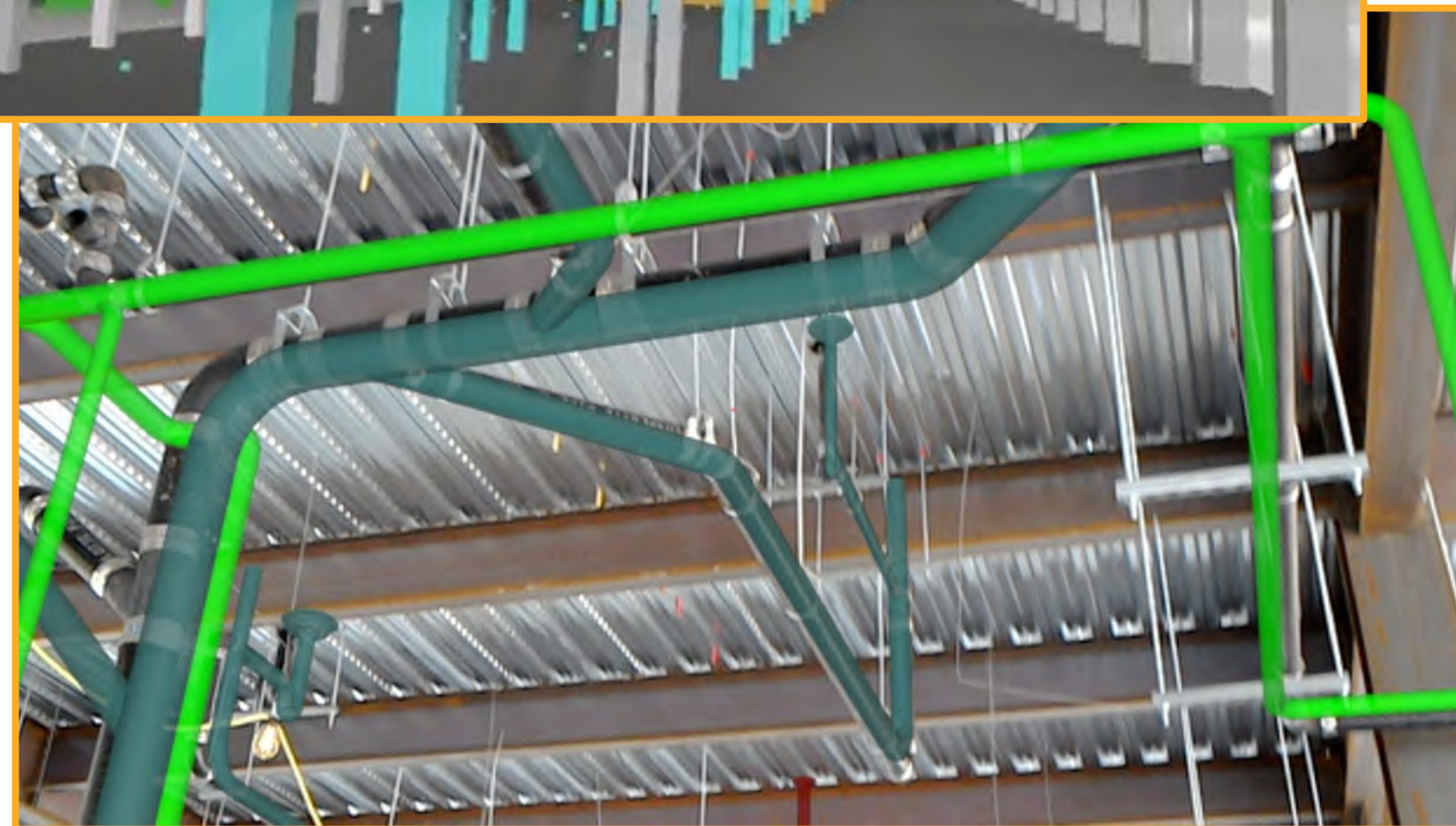
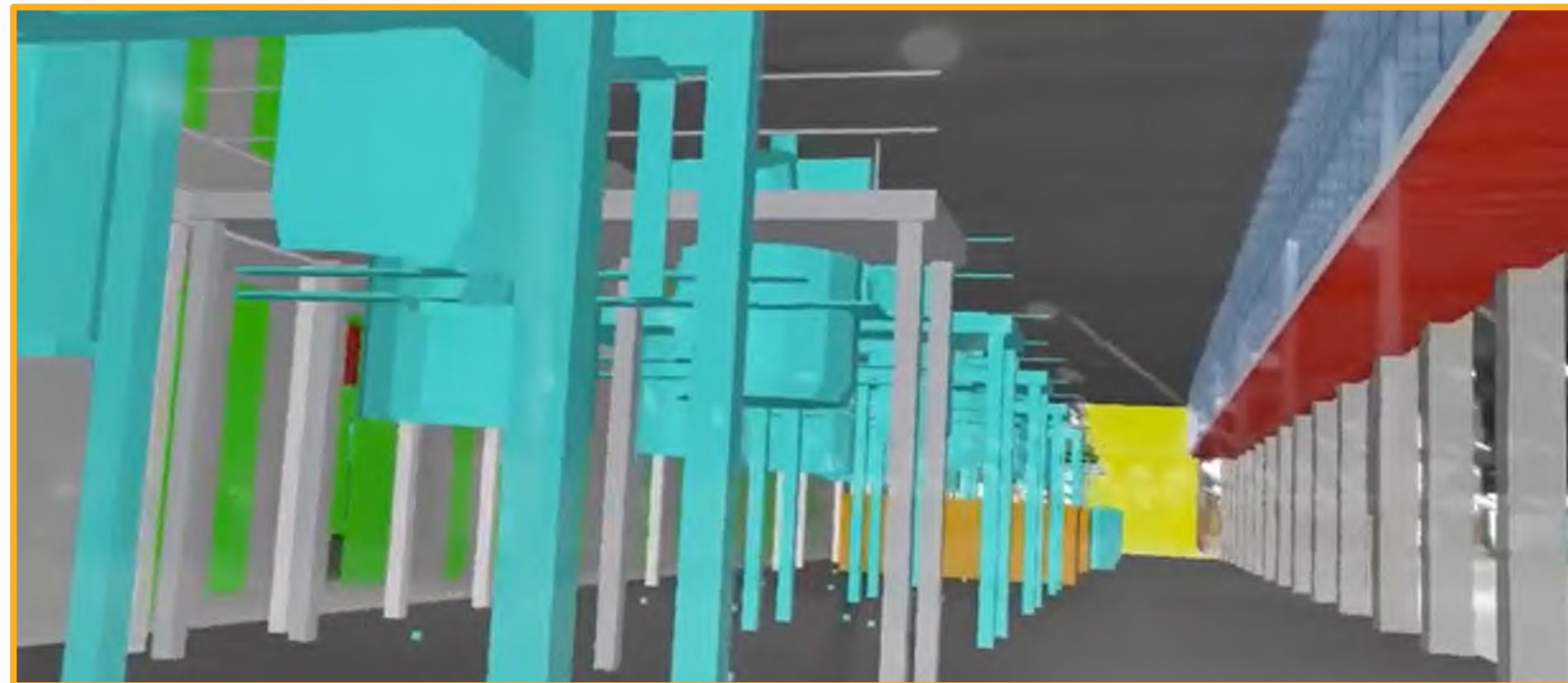
Polygon Management





Models & Layers

- Where Do You Want Your Time Spent?
- Layers are Hard to Manage. Models are Easier
- Break Out Geometry with Large Surfaces
 - Prevents washing out the view
 - Floors, Ceilings, Walls
- Break Out Geometry Inside/Behind Other Geometry
 - Rebar in Concrete. Pipes in walls. Duct above ceilings
 - By level so you don't see geometry above/below
- Best File Types? DWG / RVT / IFC / NWC?
 - Geometry Color
 - Geometry Transparency
 - Metadata





NWC/NWD Conversion



Web

Models
Selected models ▾

- #906-21 UMMS Laurel Me...
Conversion failed
- ARCH_ASI_17.nwc
Conversion failed
- Pevco-PTS_Laurel FMF_Lev...
Conversion failed
- Pevco-PTS_Laurel FMF_Lev...
Conversion failed
- UMMC-LMC-L1-PL.nwc
Conversion failed
- UMMC-LMC-L2-PL.nwc
Conversion failed
- UMMC-LMC-RF-PL.nwc
Conversion failed
- UMMC-LMC-UG-L2-PL.nwc
Conversion failed
- UMMC-LMC-UG-PL.nwc
Conversion failed
- UMMS LAUREL_NSS_ALL_S...
Conversion failed
- UMMS LAUREL_SM_L1.nwc
Conversion failed
- UMMS LAUREL_SM_L2.nwc
Conversion failed
- UMMS LAUREL_SM_ROOF....
Conversion failed



Windows

Explorer

View

- Electrical Room
- Forrester NWC Testing
 - #906-21 UMMS Laurel Medical Center.nwc
 - ARCH_ASI_17.nwc
 - Pevco-PTS_Laurel FMF_Level1.nwc
 - Pevco-PTS_Laurel FMF_Level2.nwc
 - UMMC-LMC-L1-PL.nwc
 - UMMC-LMC-L2-PL.nwc
 - UMMC-LMC-RF-PL.nwc
 - UMMC-LMC-UG-L2-PL.nwc
 - UMMC-LMC-UG-PL.nwc
 - UMMS LAUREL_NSS_ALL_STRUT.nw
 - UMMS LAUREL_SM_L1.nwc
 - UMMS LAUREL_SM_L2.nwc
 - UMMS LAUREL_SM_ROOF.nwc
 - UMMS_Laurel_E_L0.nwc
 - UMMS_Laurel_E_L1.nwc
 - UMMS_Laurel_E_L2.nwc
 - UMMS_Laurel_E_L4.nwc

OS (C:) > Users > ryan.pastor > .TrimbleConnect > .files > TRB File

Name
49409e4d957b538774bd4e976a21e419.trb
6b36de576690f39a430865021e8cdc28.trb
5d4c1f19d205f175789a79106191c029.trb
28bd4f7ae66cd7bfb0ed1b8208977d1e.trb
8367a8a336b351412ca0a66feb56133a.trb
7627a07c6eb73acdc4c09229bbdbf892.trb
f642bab21e9658d12bf49c2a2655b04a.trb
18b95ca685607b2585619818dd071052.trb
492cdf91ba4f9be610094a5bd3373d574.trb
68fb7d9cb2ab8ba4d819bc5962cdebfd.trb
b41ad5189bf12c6fb09b23da6237011f.trb
80a69a79f0c832b96aad1212c04bdd57.trb
0f88f8a0df7fd1bee76f504092c269eb.trb
655830e3d2946e1e1d69504706f9ea53.trb
95bec276e8d5d02a02840d027f5c5c39.trb
ce51c9d5d889c6d9af0a1364915e20b3.trb
b093cb9828077092e9b935cec19f913e.trb
c6467e30f2c4fa2be6189e398888a3b6.trb
41da37e25cf39a20b46800e1634a74f8.trb



Web

Models
Selected models ▾

- #906-21 UMMS Laurel ...
- ARCH_ASI_17.nwc
- Pevco-PTS_Laurel FMF_...
- Pevco-PTS_Laurel FMF_...
- UMMC-LMC-L1-PL.nwc
- UMMC-LMC-L2-PL.nwc
- UMMC-LMC-RF-PL.nwc
- UMMC-LMC-UG-L2-PL...
- UMMC-LMC-UG-PL.nwc
- UMMS LAUREL_NSS_AL...
- UMMS LAUREL_SM_L1...
- UMMS LAUREL_SM_L2...
- UMMS LAUREL_SM_RO...
- UMMS_Laurel_E_L0.nwc
- UMMS_Laurel_E_L1.nwc
- UMMS_Laurel_E_L2.nwc
- UMMS_Laurel_E_L4.nwc
- UMMSLAUREL_SPK_LEV...
- UMMSLAUREL_SPK_LEV...



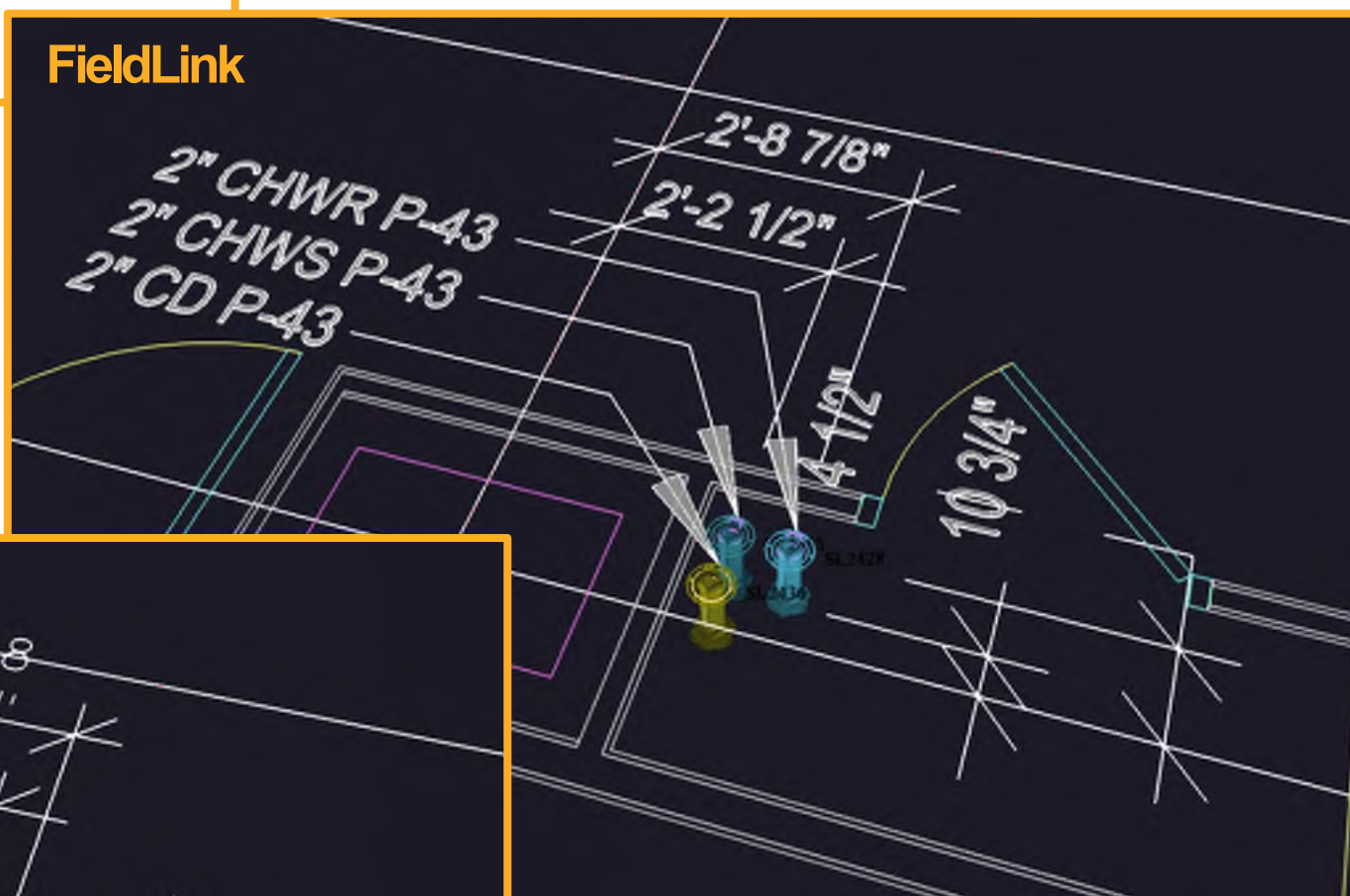


FieldLink > Plumbing Sleeves > Models > Cache

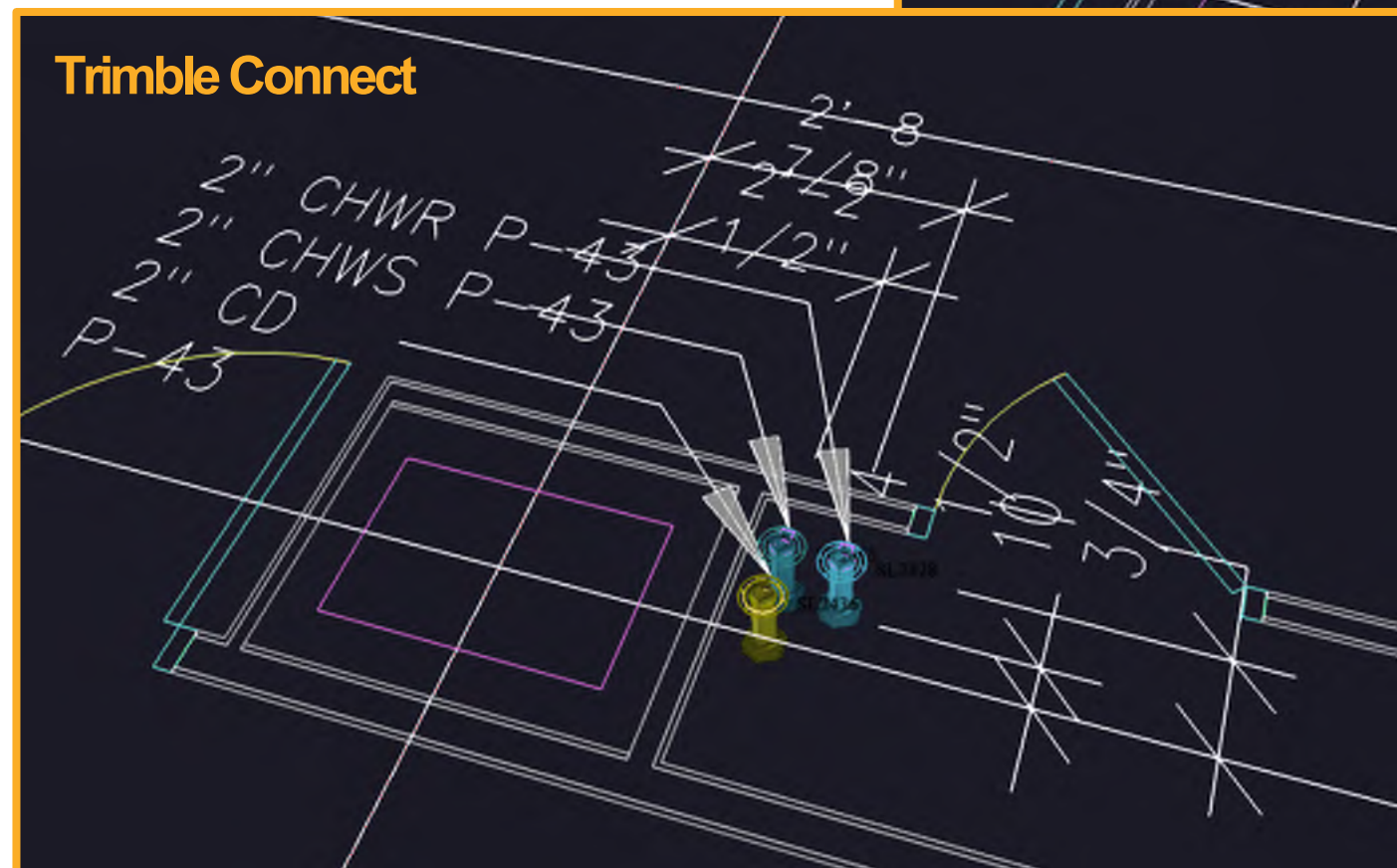
Name

- Plumbing Sleeves Floor Plan.dwg.trb
- Plumbing Sleeves Penetration Plan.dwg.trb
- Plumbing Sleeves.nwc.trb

FieldLink



Trimble Connect



.TRB Files

- Break out models for MR but bind them in TC Windows to a .TRB for AR viewing
 - Sectioning does not hold, but hiding geometry does
- Take Advantage of (And Help) Other Trimble Workflows Too!
 - Bring in 2D drawings as DWG
- Rendering .TRB files
 - FieldLink v6.3 creates a .TRB and caches it in the models folder
 - DWG text shows differently from the same file





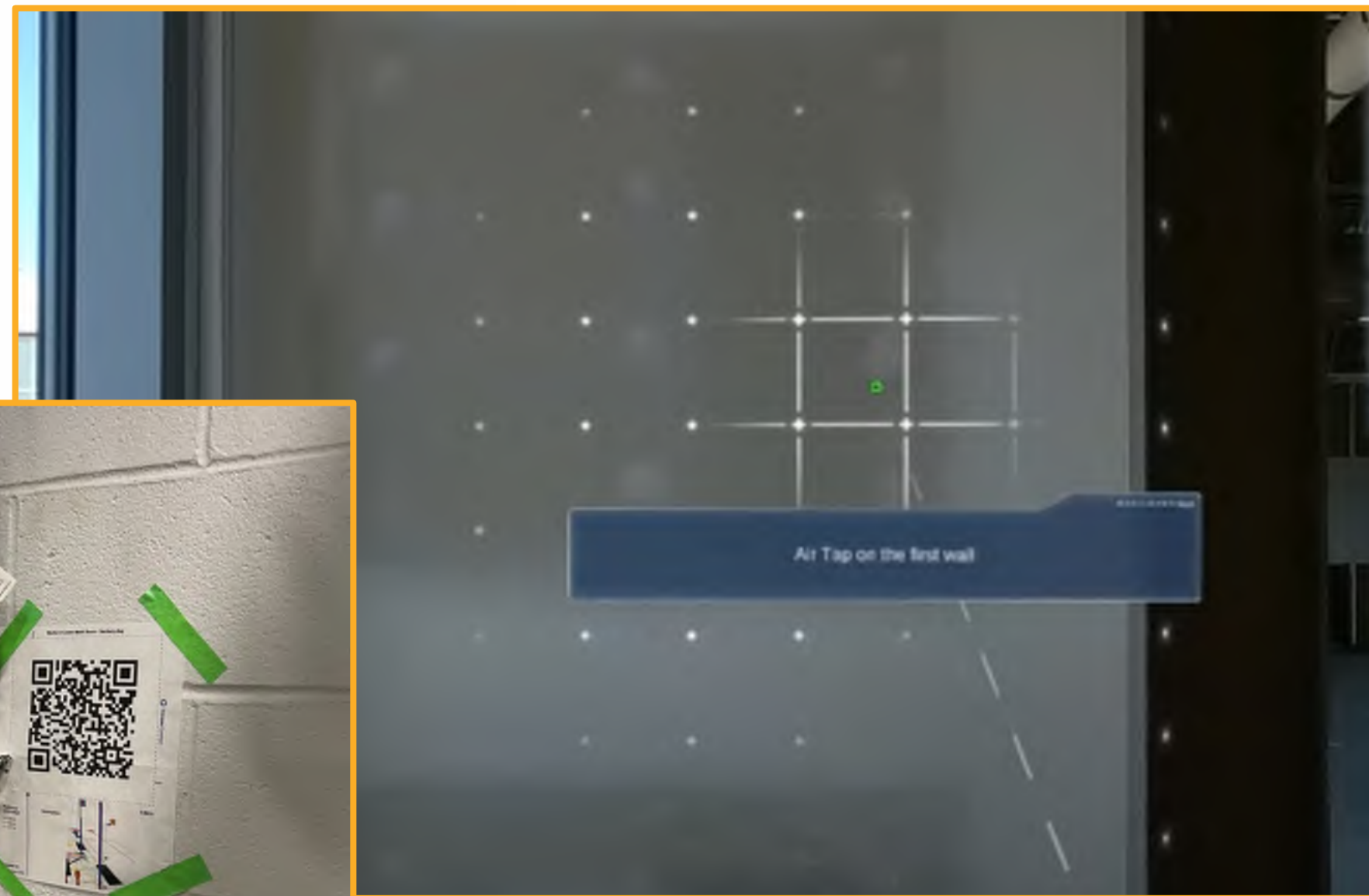
Alignment and Drift





Working Environment and Alignment

- Importance of Environment Lighting
 - Structured Light Sensors
 - Too much light is as bad as too little light
- Ideal Working Space from Alignment Point
 - ~150' for XR10 According to White Paper
 - ~30'-45' from Alignment Point for AR
- Rotational Alignment is Most Crucial
 - Hardest to achieve accurately
 - Importance of stabilization planes





Markers

- Placing Marker in the Model
 - Place on individual structural model
 - Can bind to other models in TC Windows to a .TRB and scan in AR as well
 - 5 feet high is best practice
 - Don't place the marker on the floor or slanted surface
- Printing the Marker
 - Copy and paste a screenshot into your marker PDF
 - Print at 100% Scale (A4 vs Letter Paper Size)
 - Use thick / laminated paper for reliable results
 - Don't Cut of the Dotted line
 - Minimum space needed to reliably scan the marker
- MR Marker Improvements Coming Soon!
 - Load model from marker
 - Place model from any marker

Marker-1:Harborside L2 AR Model.trb



Trimble Connect

x = -9.458 ft / y = -8.424 ft / z = 5.000 ft

Reference point offset

x = 1.000 ft
y = 0.000 ft
z = 5.000 ft

Created on
5 October 2022

