CAD and GIS, Better Together Leveraging ArcGIS Enterprise to Enhance the Civil3D Design Process

2021 ESRI Infrastructure Management & GIS Conference

Today's Discussion.....

- **Export GIS from CAD**
- **Uploading to ArcGIS Online**
- **Create a Field Map**
- **GPS and Attachments**
- **Field Use**
- **Field Data Back Into CAD**
- **Refine Design**

In the Beginning.....

Example of Recent 1.3-mile Force Main Design Project

Started with a site survey from the field	→	Initial Design is laid out within Civil 3D	→	Alignment and Stationing are applied	→	Profiles and vertical design are added

LJA

Export to GIS Platform.....

Design Sheet in Civil3D


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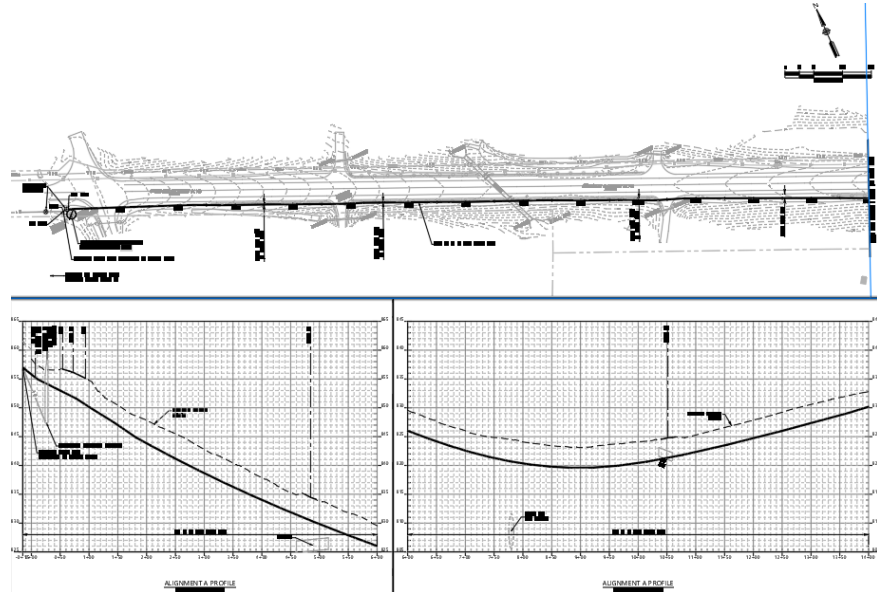
Design Twin in Portal

- **With AutoCAD 2020 and up design databases are able to be exported to GIS formats easily**

  - **Export directly to ArcGIS Online (Not Recommended)**
 - **Export to File Geodatabase**

Export Options.....

- ## Export directly to ArcGIS Online (Not Recommended)
  - Exporting directly to ArcGIS Online is a great feature but currently limited by inability to overwrite feature service

- ## Export to File Geodatabase (Preferred)
  - Allows for cleaner updates to feature services and deployed map products
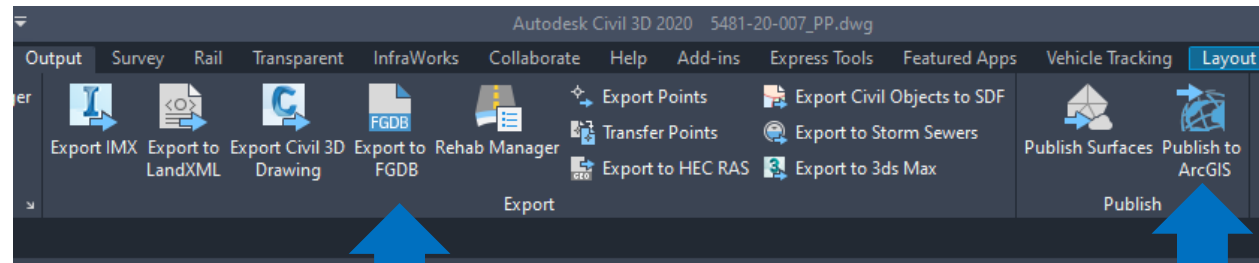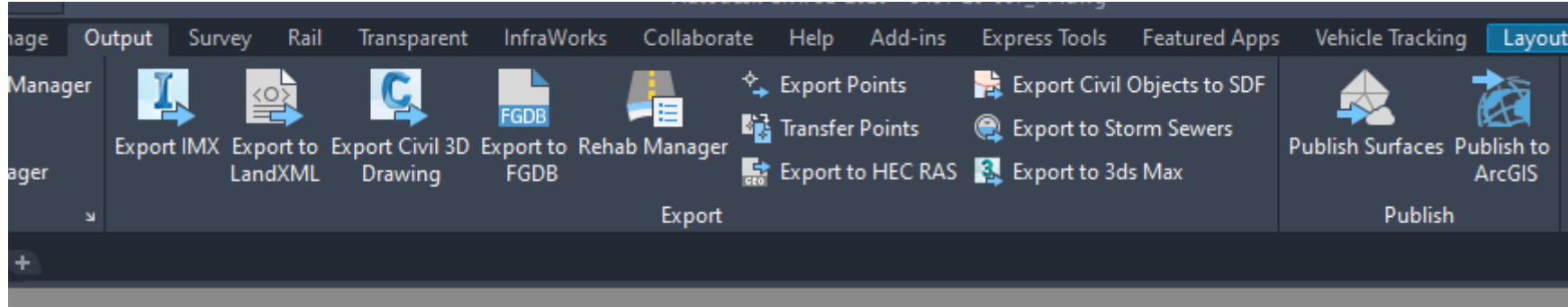

Export to File Geodatabase

Publish to ArcGIS

Prepping for Export.....
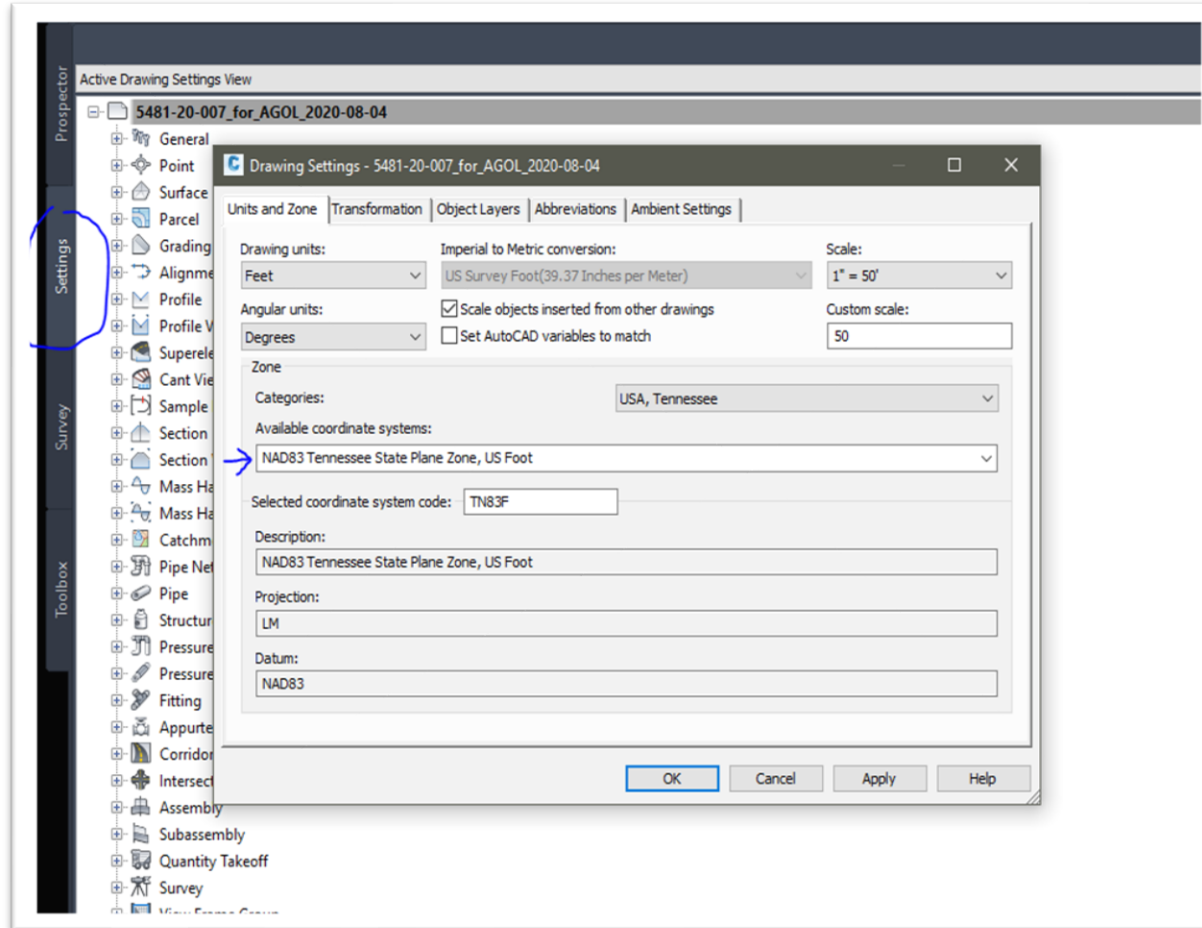
- **Ensure the drawing is set to the proper coordinate system**
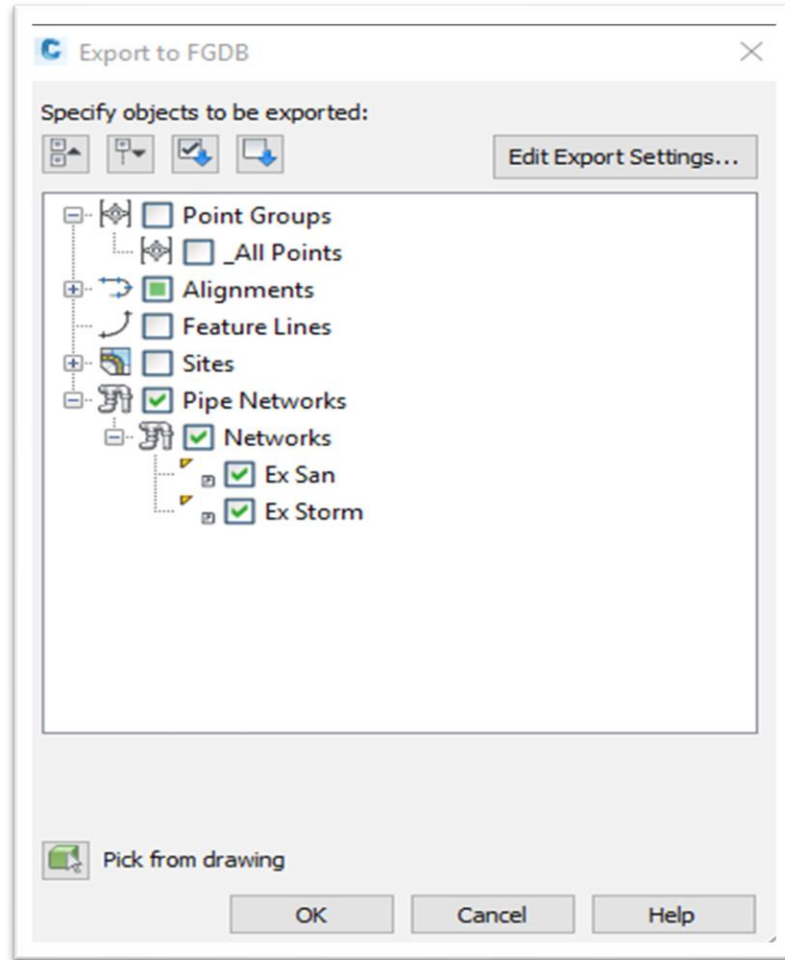 - **Ours is based on NAD83 Tennessee StatePlane, US Foot**

The EASY Button.....

In the world of CAD and GIS – "THE EASY BUTTON" has been located...

It lives under the "Output" toolbar in Civil 3D

Running the Export…..Export Interface

- **Items will be exported to the selected FGDB into separate features**
- **Alignment (Linework) = Polyline Feature**
  - **Stationing will be exported under a separate process**
- **Pipes = Line Feature**
- **Structure = Point Feature**
  - **Will include all pipe assets of existing-proposed under sanitary and storm**

Stationing Export.....
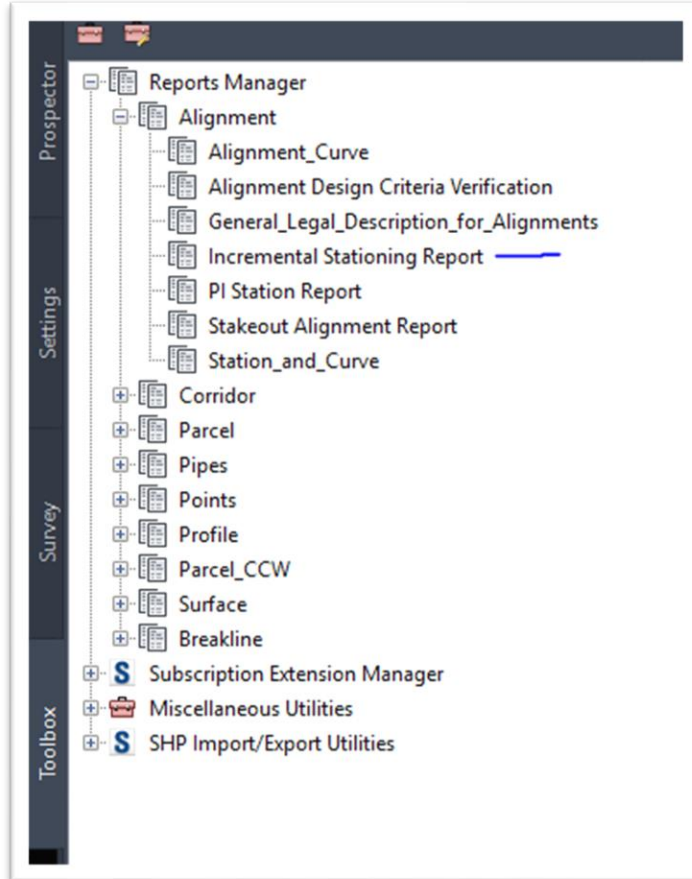
- **Within Civil 3D launch "Incremental Stationing Report"**
- **Generate the report selecting all stations and associated values**
- **Save as CSV and add to working map in ArcDesktop**
- **Run the Display XY data and save your resulting events matching the projection from CAD, add to FGDB**
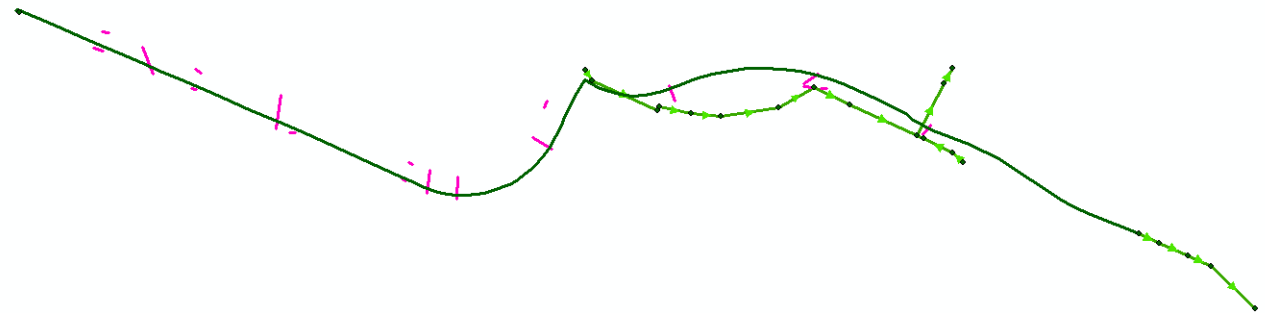- **Publish out as a feature service and add to your web map**
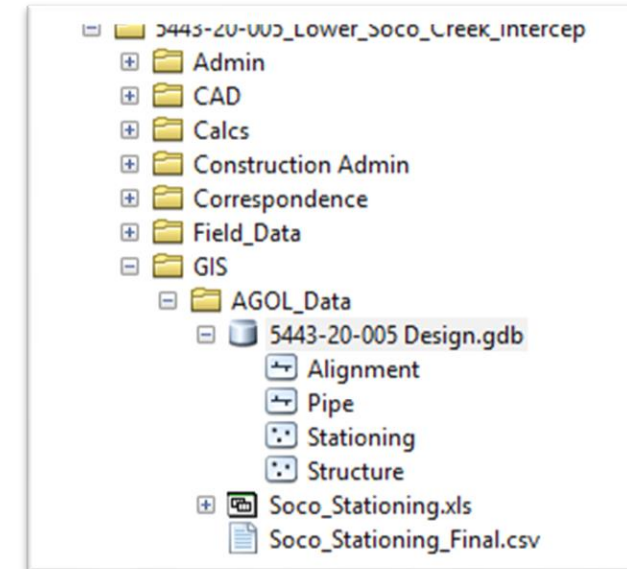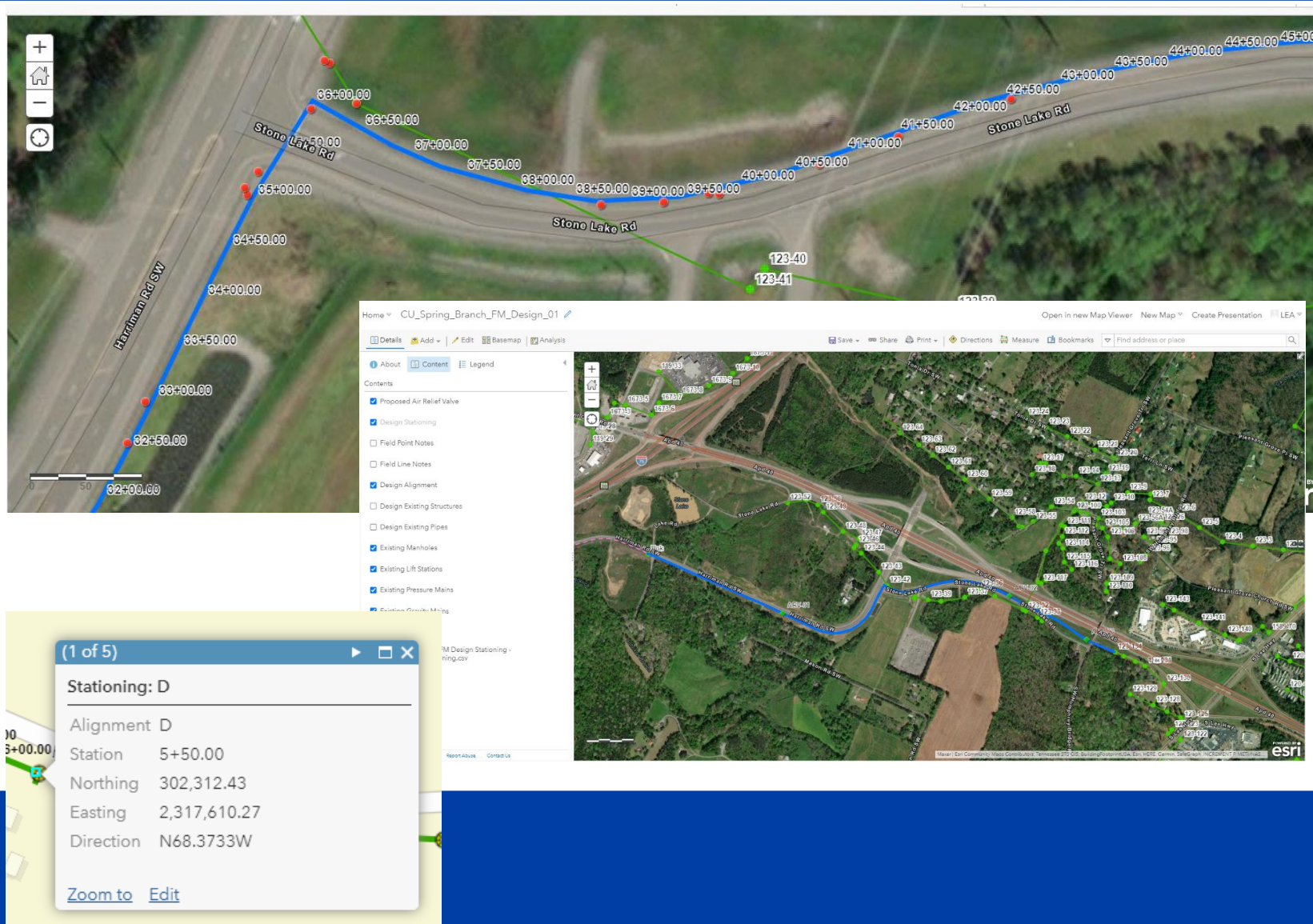
GIS World and Deployment.....

- **In ArcCatalog create a FGDB to house the newly exported data**
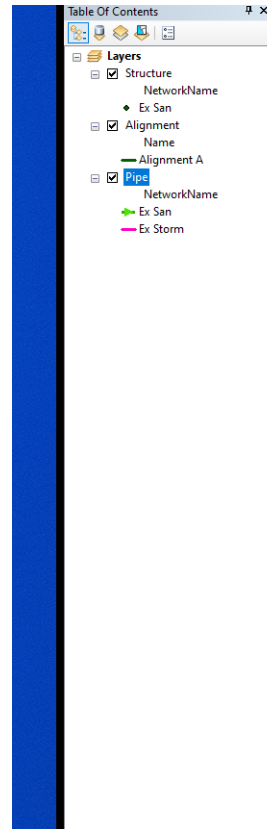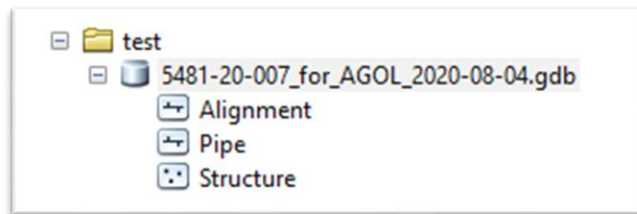
Add data to MXD and prepare to publish to your AGOL or Portal Account

Deploy the Map…..

- **Within your online account develop a working map which can be deployed to mobile devices**

- **Build into your data required GPS fields if tethering with a GPS antenna and running in Collector**

- **Enable attachments so site photos can be associated to collected points**

Field Collection and Verification.....
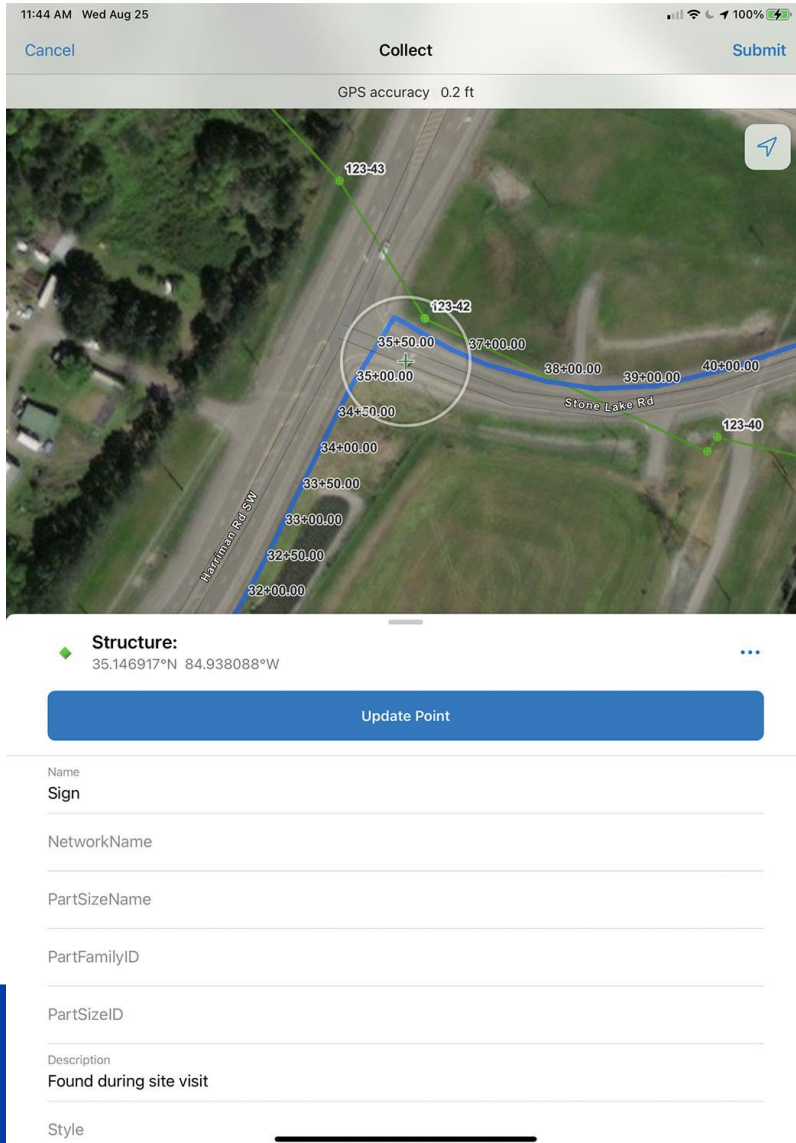
- **Now the map is mobile and possibly with GPS enhancements; you have gained the benefits of....**
  - Walking site for review of critical crossings
  - Touring with the client on site
  - Documenting items in field with notes and photos
  - All data is linked back to the online database, including photos
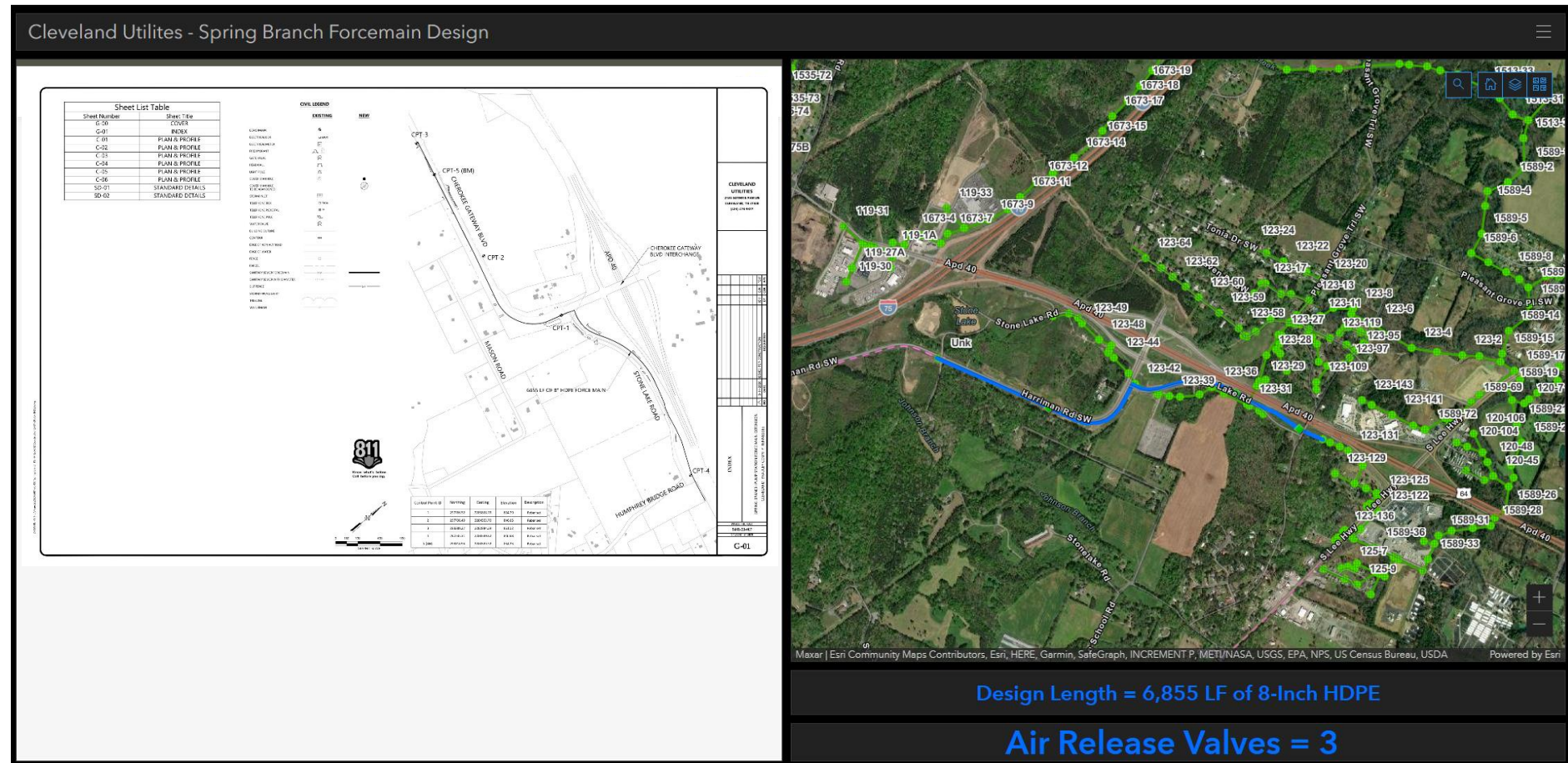
Back to CAD.....

Data points from the field can be brought into CAD for reference of items noted, allowing for design to be refined using the tools out of two separate platforms

Monitoring Progress.....

- **Deploying through Web allows easy collaboration using a Dashboard**
- **Sample to right is simple map with dynamic design quantities along the bottom**
- **On left is a live view of the design plans and allows the client to download plans for review and markup**

Cleveland Utilites - Spring Branch Forcemain Design

Design Length = 6,855 LF of 8-Inch HDPE

Air Release Valves = 3

Contact Information.....

Jeff McCann

Senior Designer

Southeast Region

Chattanooga, Knoxville, Murfreesboro

LJA Engineering | We seek solutions

265 Brookview Centre Way, Suite 504

Knoxville, TN 37919

P: 865.328.3138

C: 317.508.8478

E: jmccann@lja.com