

Remediation System Trenching Planning & Pitfalls

**Perry Frix, PG – Sarasota Co
Air & Water Quality**

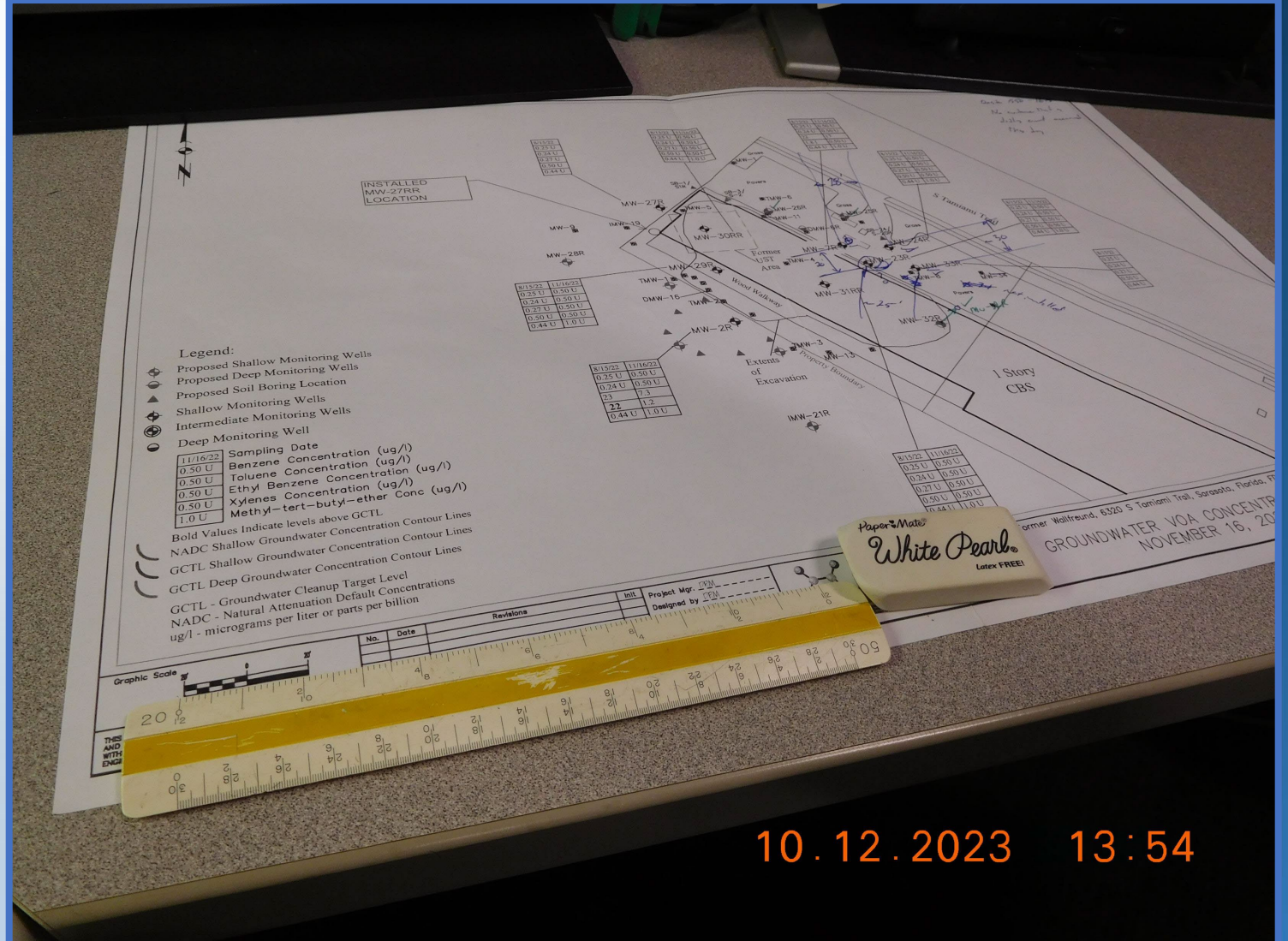
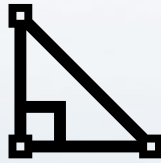
Why Trenching Estimate Matters

- 'Burn Rate' – costs can accumulate at \$300-\$500 per foot.
- Field Request for Change Contingency budget won't be instantly exhausted.
- An agreed-upon starting point for all stakeholders.

Trenching – Cost Buildup & Field Verification

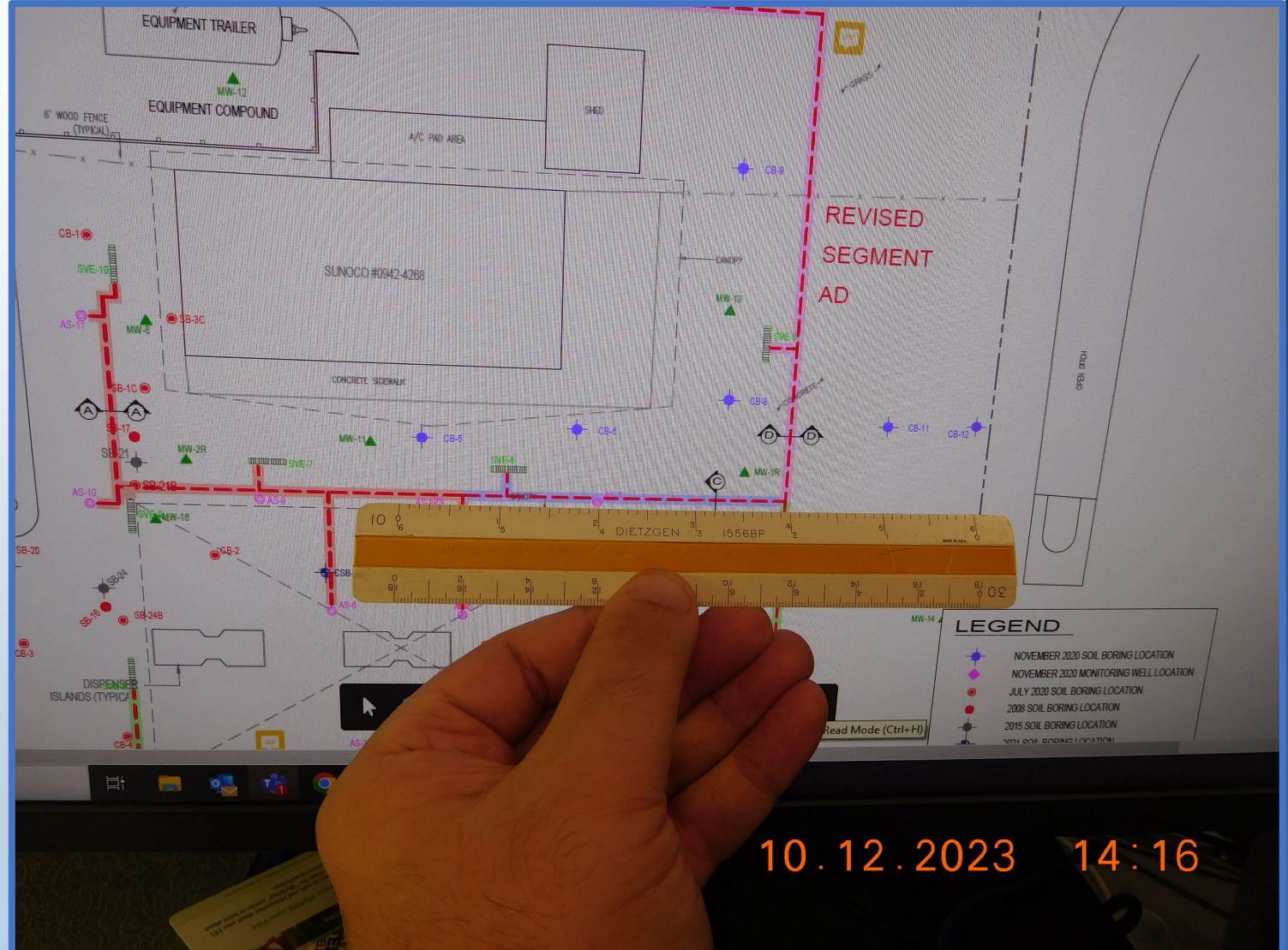
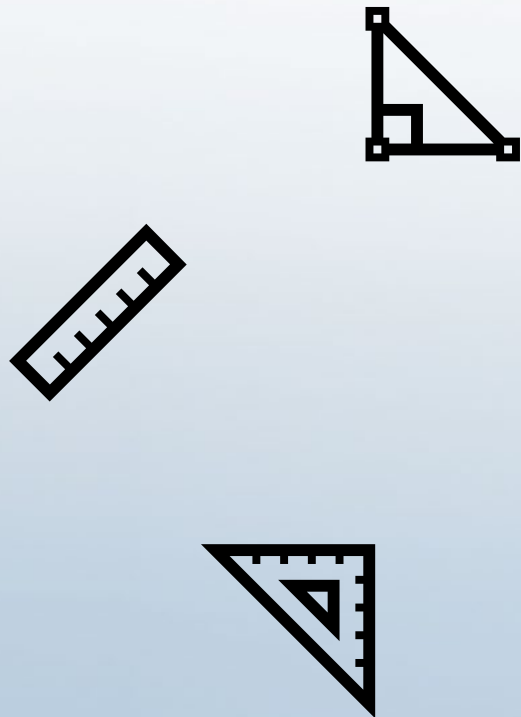
- Classical Methods.
- New Wave Methods.
- Useful Knock-On Effects.
- Ground Truthing.
- Unusual Uses for Trenching.

Classical Methods



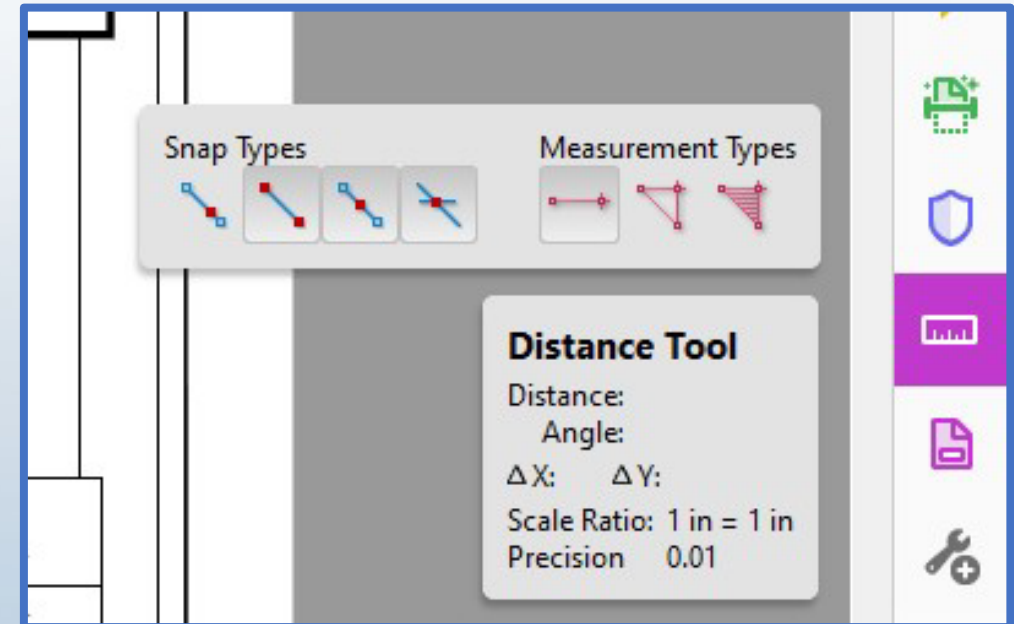
10.12.2023 13:54

Classical Methods (Continued)



A New Wave – Best Practice

- Presented for your approval: the Acrobat Measure Tool.
- Creates an objective, annotated record on a forked draft of the system layout figure.



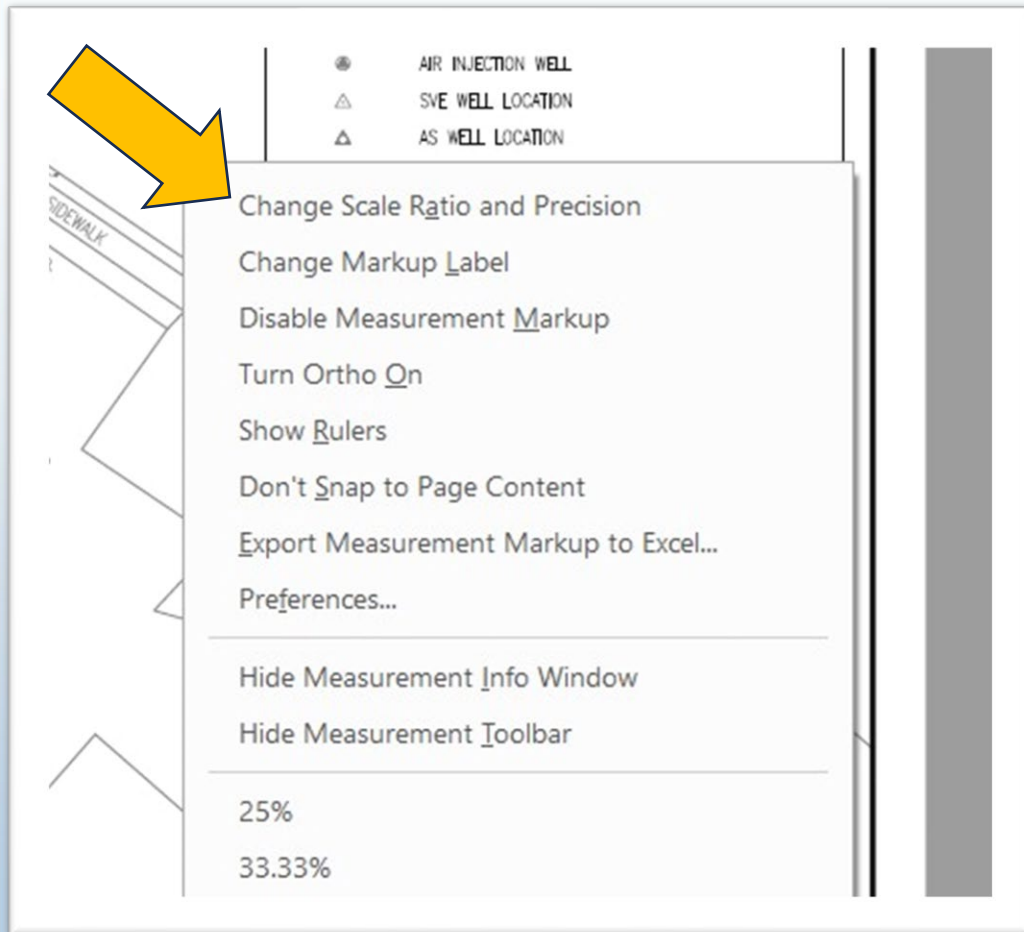
Trenching Measurement Exercise



Adobe Tool Video



Measure Tool



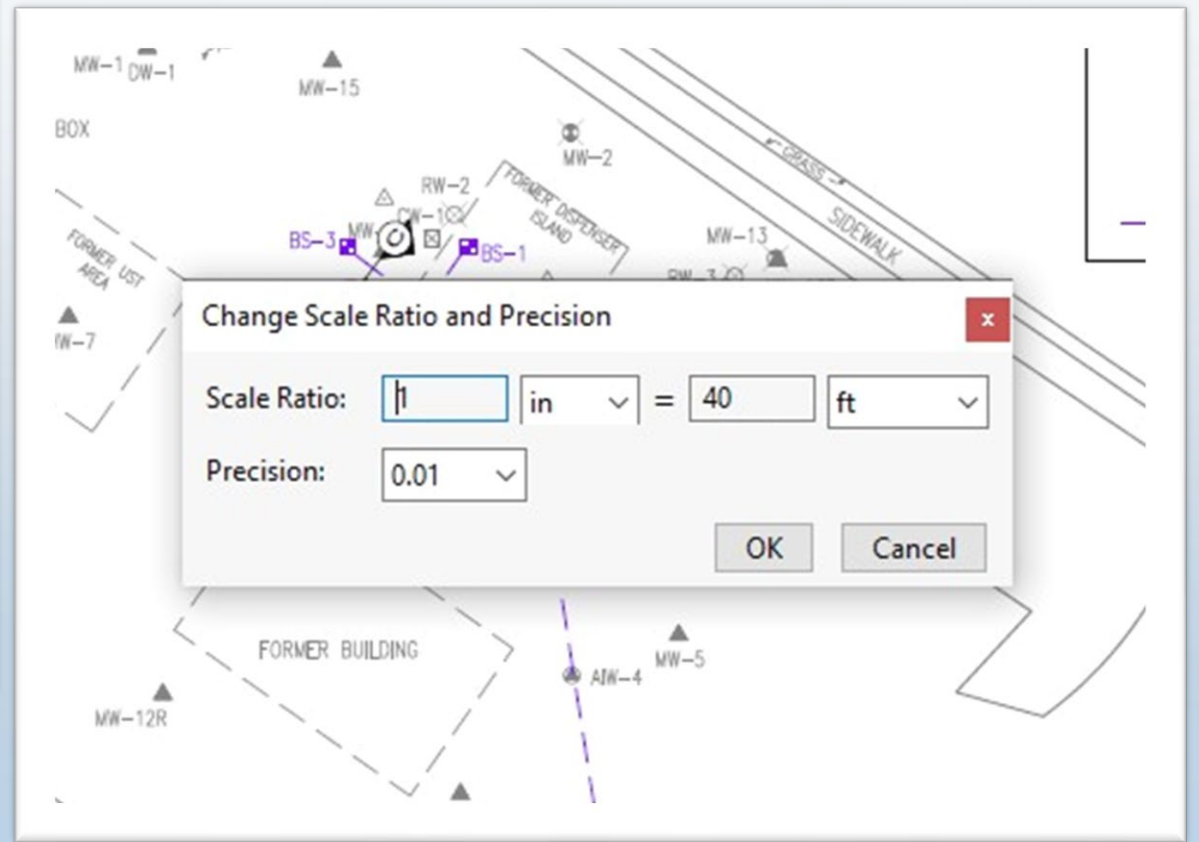
AIR INJECTION WELL
SVE WELL LOCATION
AS WELL LOCATION

- Change Scale Ratio and Precision
- Change Markup Label
- Disable Measurement Markup
- Turn Ortho On
- Show Rulers
- Don't Snap to Page Content
- Export Measurement Markup to Excel...
- Preferences...

- Hide Measurement Info Window
- Hide Measurement Toolbar

25%

33.33%



Change Scale Ratio and Precision

Scale Ratio: 1 in = 40 ft

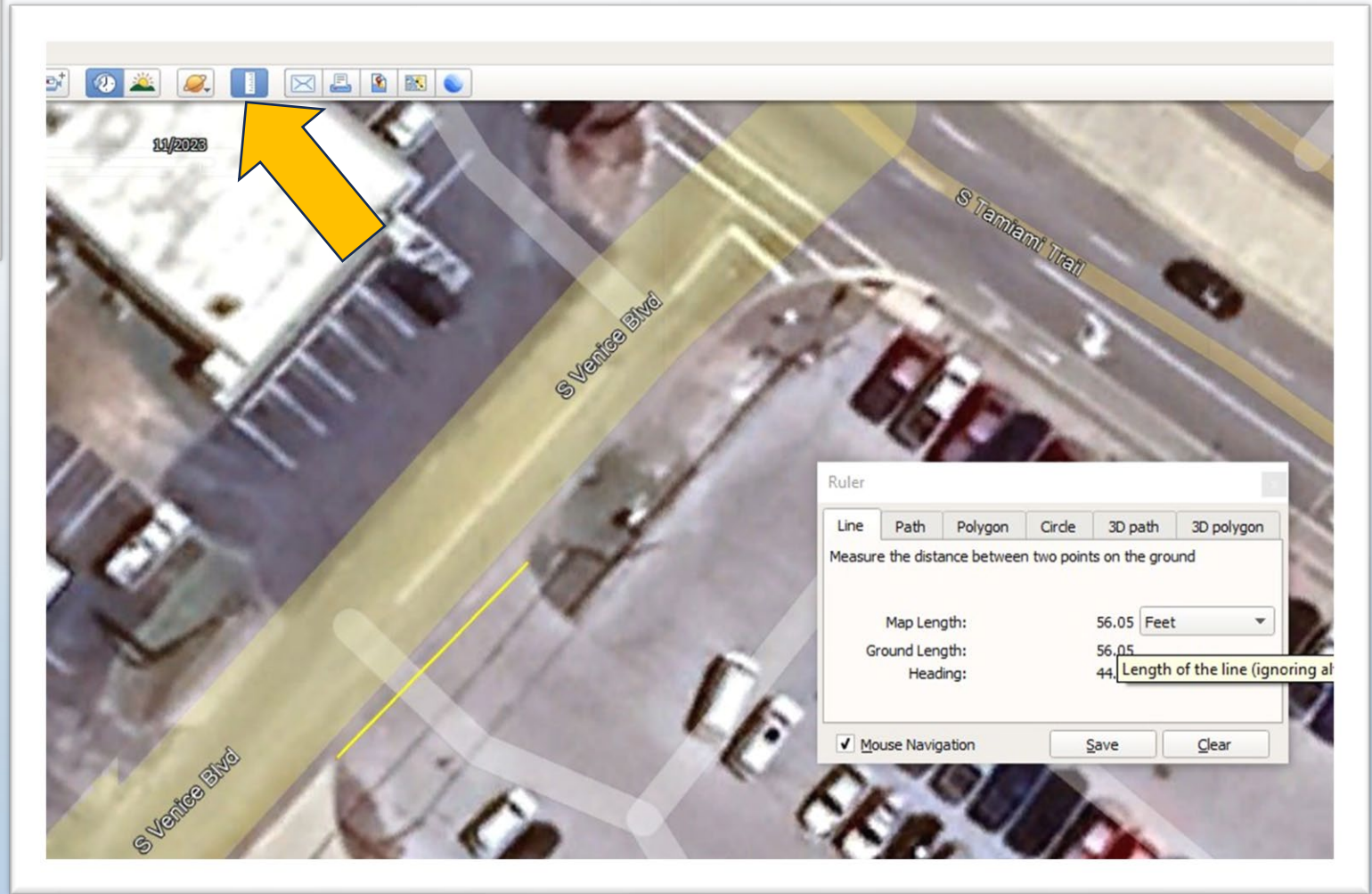
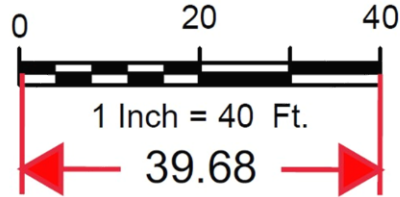
Precision: 0.01

OK Cancel

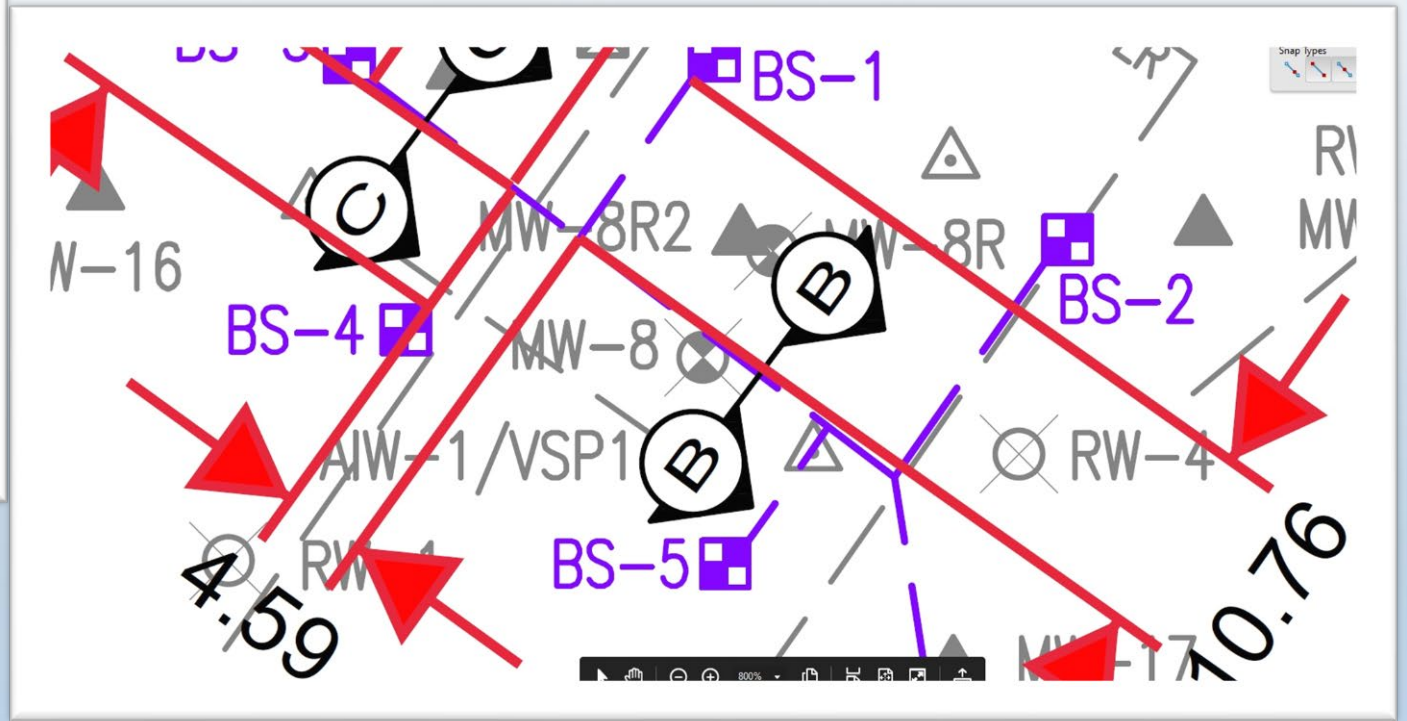
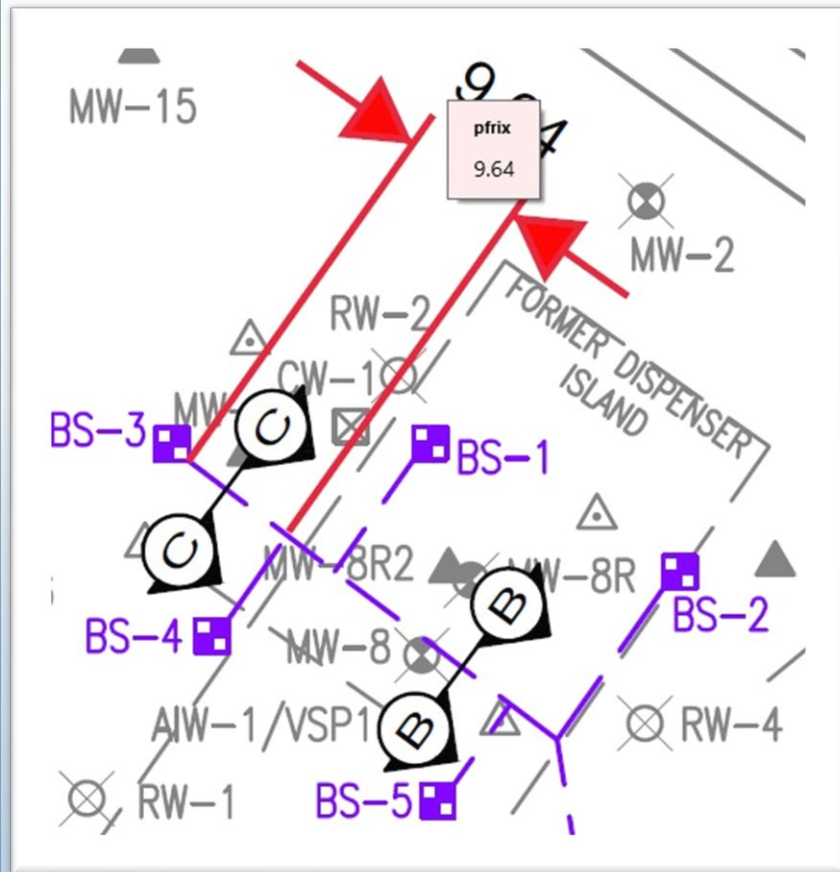
The background map shows various well locations labeled MW-1, MW-2, MW-5, MW-12R, MW-13, MW-15, RW-2, BS-1, BS-3, and ATW-4. Other features include 'FORMER DISPENSER ISLAND', 'FORMER BUILDING', 'FORMER UST AREA', 'SIDEWALK', and 'GRASS'.

Scale Verification

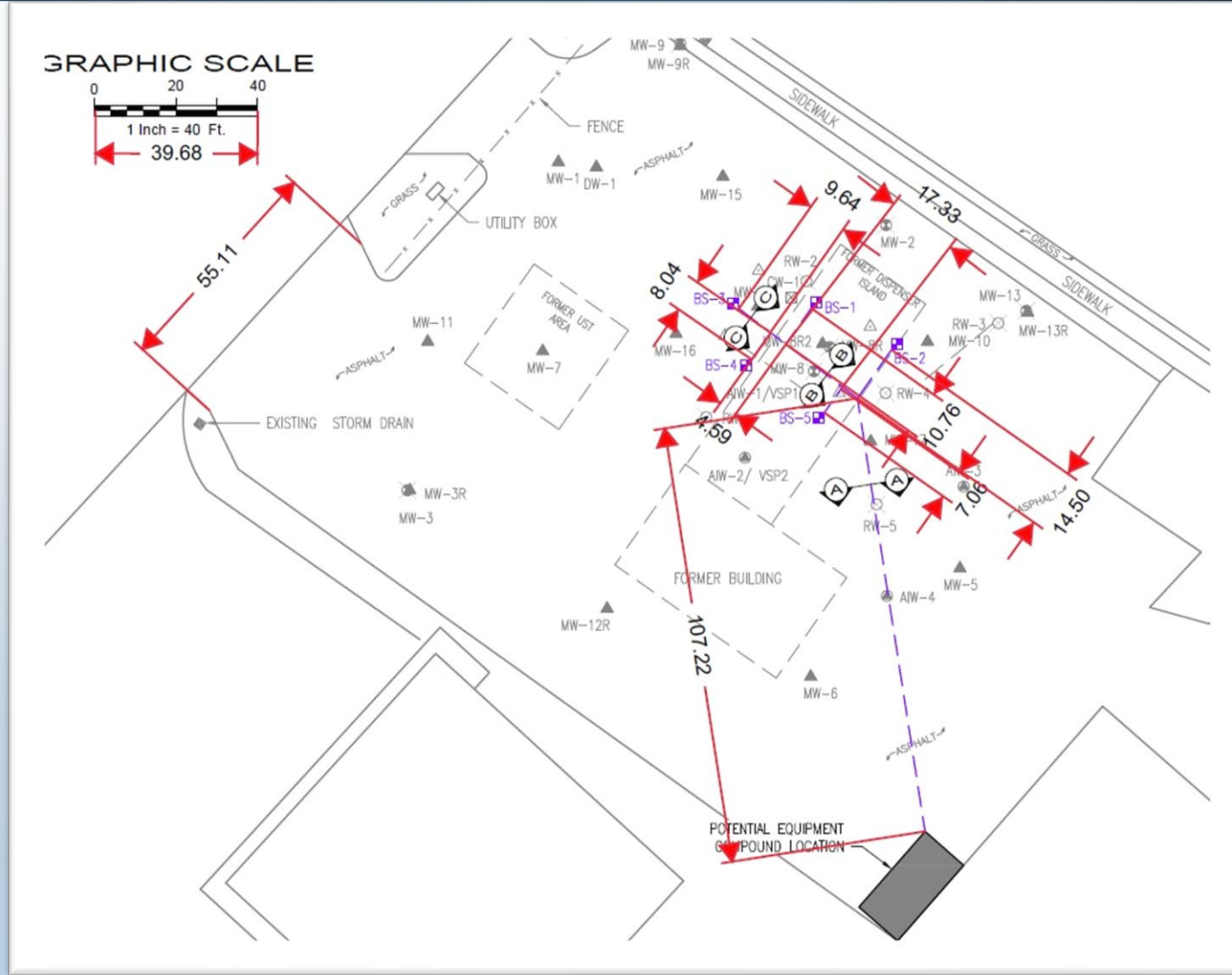
GRAPHIC SCALE



Segment Measurement



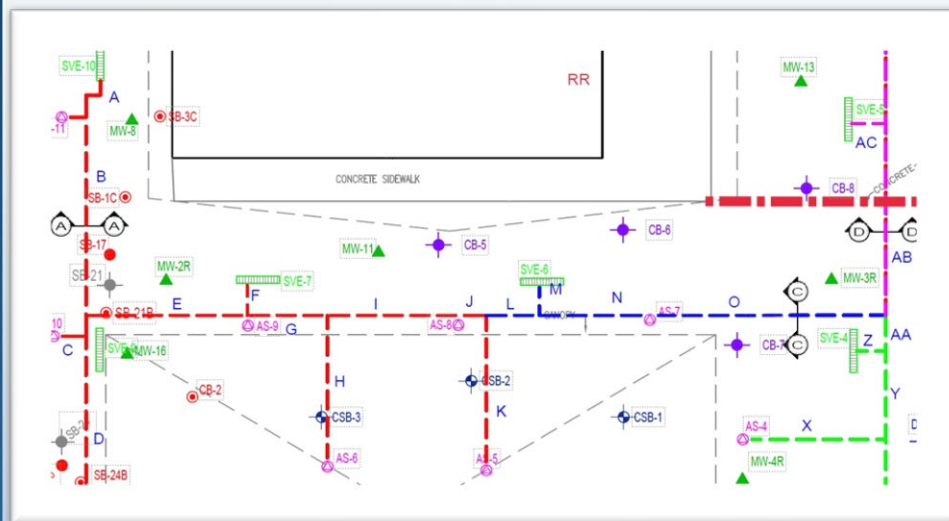
Segment Measurement



Useful Knock-On Effects

- What else can the trenching table be leveraged for?
- Accurate PVC Pipe Materials Estimate:
 - Add field for number of pipes in trench by type and compute totals.
- Surface Cover/Restoration Estimate:
 - Add field for surface cover type and compute totals.

Materials Quote Accuracy



| SPI Item 15-1.c. | Number of AS Pipes in Trench | Number of VE Pipes in Trench | Total Length of AS Pipe in Trench | Total Length of VE Pipe in Trench | Notes |
|--|----------------------------------|------------------------------|-----------------------------------|-----------------------------------|---|
| Trenching Installation of 21-30 Plumbing lines (linear foot of trench) | | | | | |
| 0 | 0 | 1 | 0 | 4 | Spur to SVE-10 |
| 0 | 1 | 1 | 17 | 17 | Jct near AS-11 to jct near AS-10 |
| 0 | 1 | 0 | 2 | 0 | Spur to AS-10 |
| 0 | 0 | 1 | 0 | 25 | SVE-8 to jct near AS-10 |
| 0 | 2 | 3 | 26 | 39 | Jct near AS-10 to jct near AS-9 |
| 0 | 0 | 1 | 0 | 2 | Spur to SVE-7 |
| 0 | 3 | 4 | 18 | 24 | Jct near AS-9 to jct east of AS-9 |
| 0 | 1 | 0 | 12 | 0 | Spur to AS-6 |
| 0 | 4 | 4 | 44 | 44 | Jct east of AS-9 to AS-8 |
| 0 | 4 | 3 | 32 | 24 | Jct near DW-6 to jct near SVE-4 |
| 0 | 0 | 1 | 0 | 2 | Spur to SVE-4 |
| 0 | 4 | 4 | 12 | 12 | Jct near SVE-4 to trunk conn north of SVE-4 |
| 0 | 11 | 9 | 176 | 144 | Trunk line to jct near SVE-5 |
| 0 | 0 | 1 | 0 | 2 | Spur to SVE-5 |
| 78 | 11 | 10 | 858 | 780 | Trunk line from jct near SVE-5 to edge of equipment compound. |
| 0 | 0 | 1 | 0 | 21 | Feed to infiltration gallery. (NEw) |
| 78 | | | | | |
| | | | | | |
| | Total Est. Length of 1" PVC Pipe | | 1603 | 1432 | Total Est. Length of 2" PVC Pipe |
| 107 | | | 2150 | 1770 | TOTALs in Materials Quotes |

34 % Overage

Ground Truthing

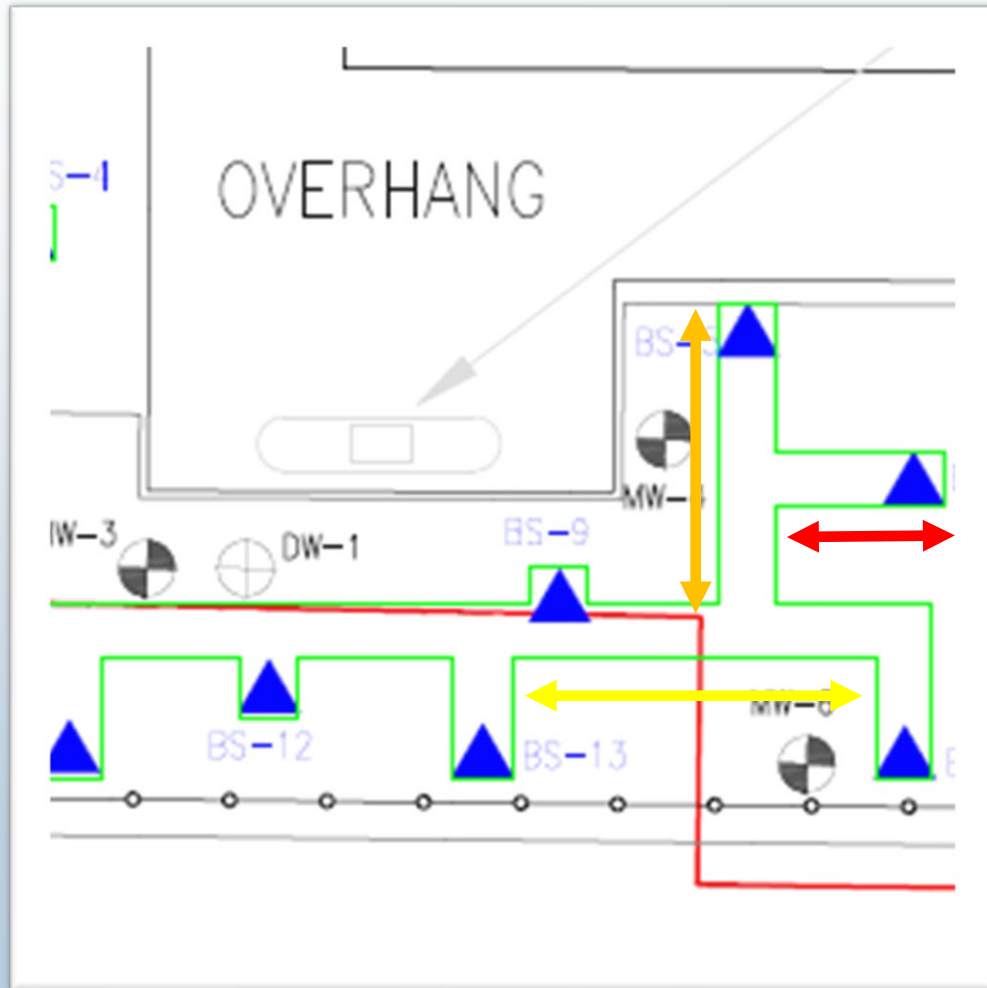
Typically accomplished on a mid-construction site visit through use of a measuring wheel.

Optimal timing of measurement:

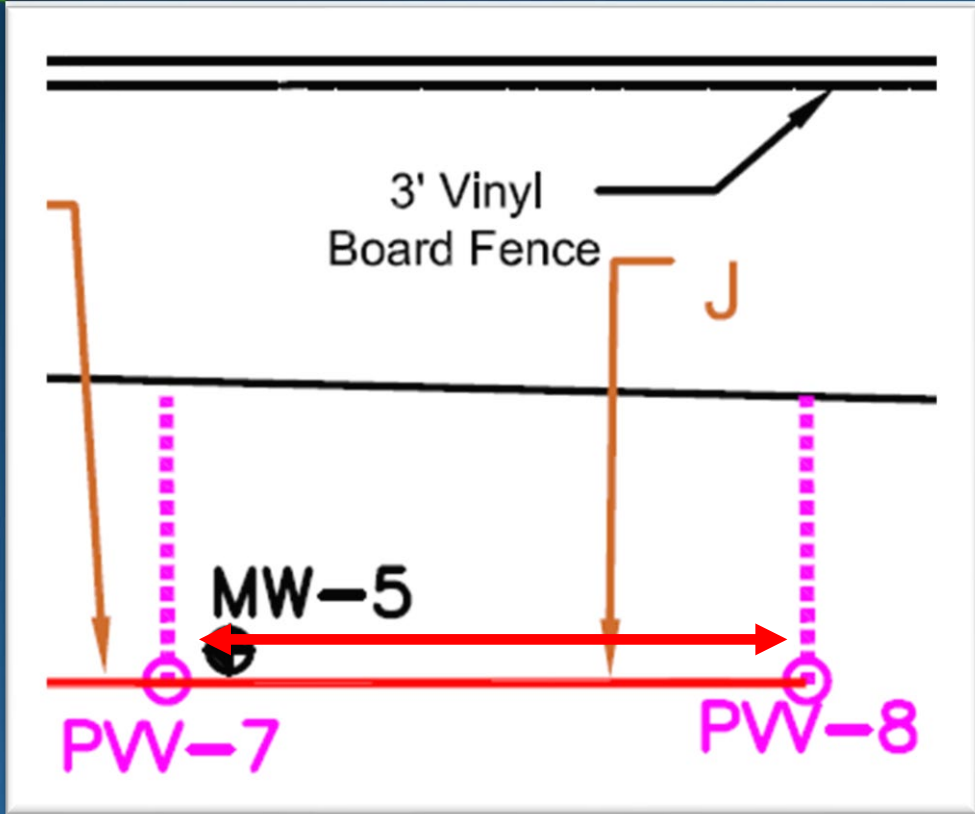
- All surface removal is complete.
- Concrete or asphalt cuts are visible.
- Not obscured by splashed concrete.
- Not obscured by traffic plates.



Ground Truthing – Corners and Junctions

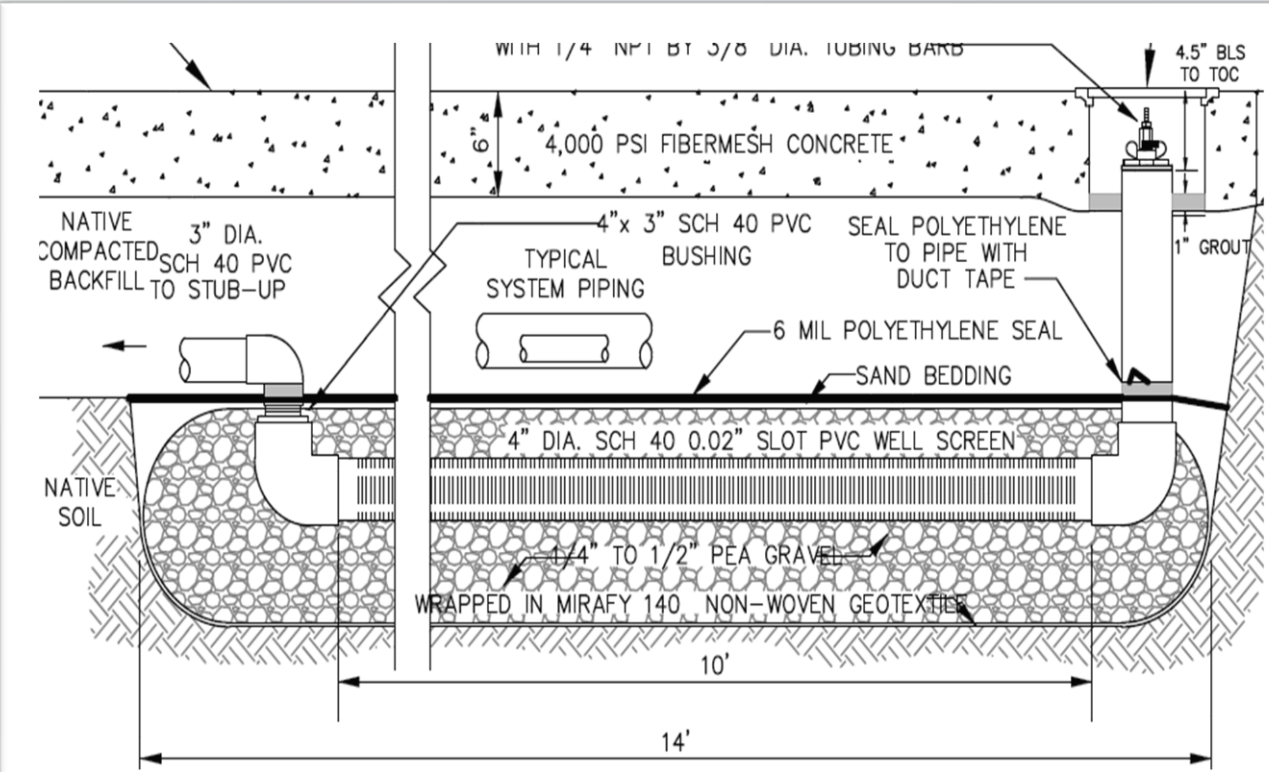
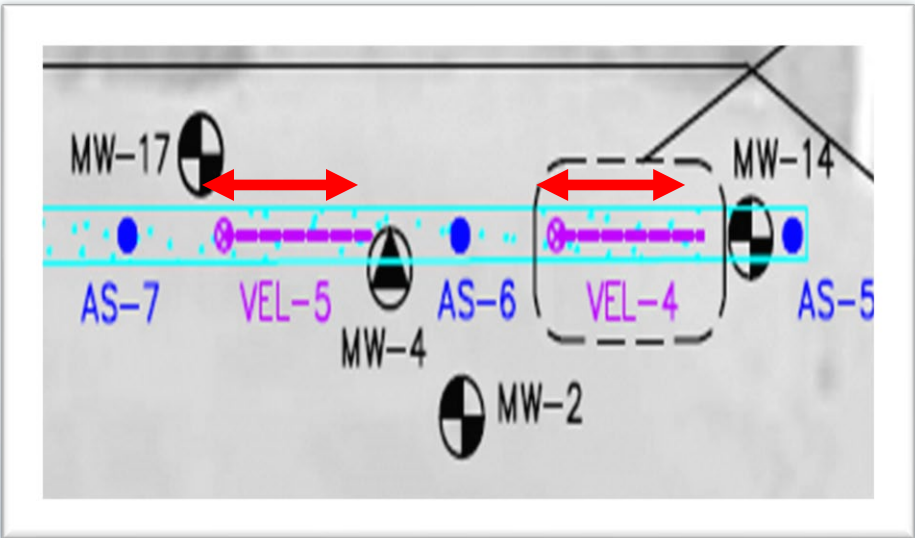


Ground Truthing – Terminal VE Laterals



11.20.2023 13:54

Ground Truthing Abutting vs. In-Line VE Laterals



Ground Truthing Abutting vs. In-Line VE Laterals

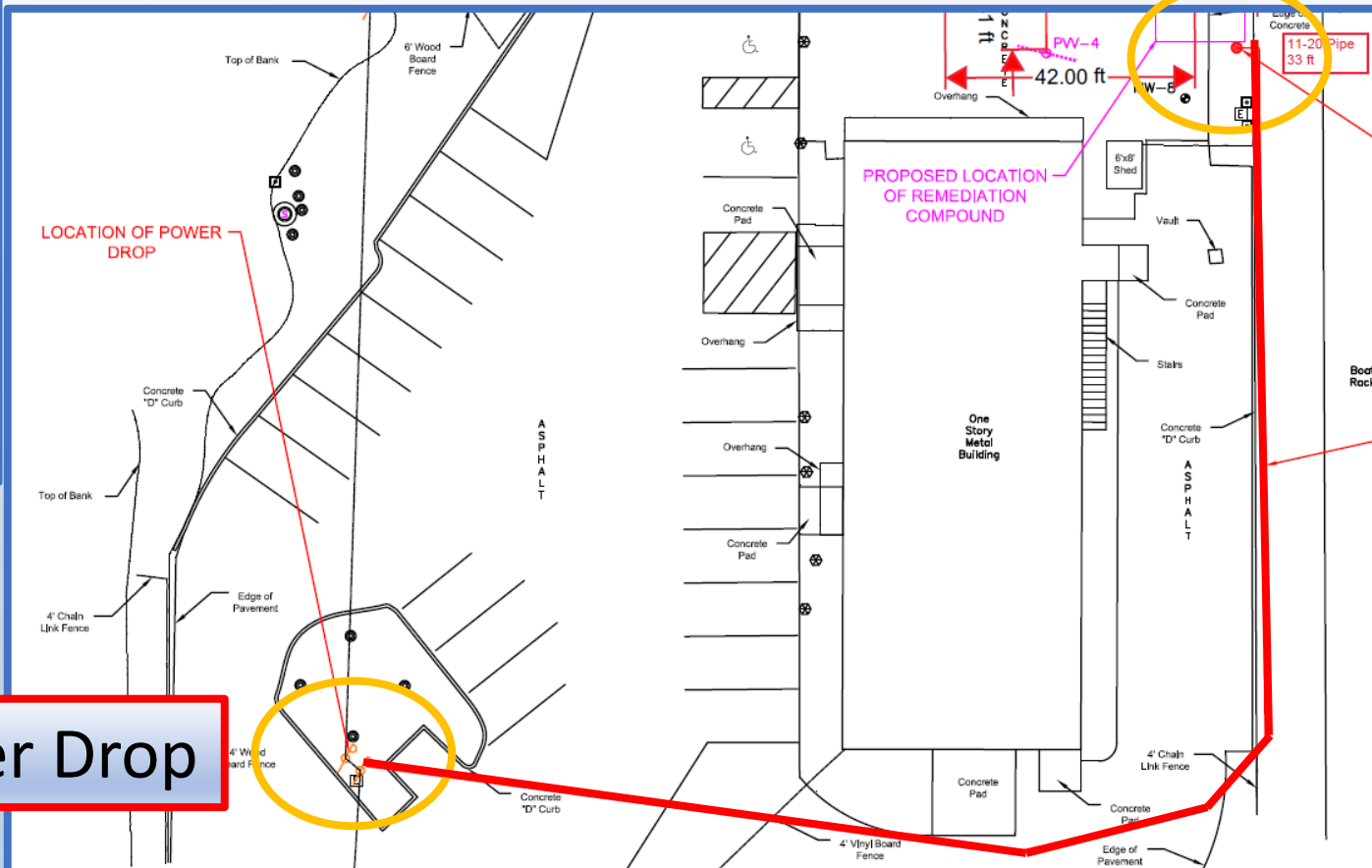


Ground Truthing Abutting vs. In-Line VE Laterals



Power Drop

Power Meter



Measuring Area Exercise



Adobe Tool Video



Tell Us About Your Experiences

3-17. Mini Excavator/Loader (Bobcat™) Mobilization - < 100 miles each way. [Per Round Trip].



Questions?



**Perry Frix, PG
941-861-0907
pfrix@scgov.net**