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FROM RUST TO RESILIENCE: STORAGE OVERHAUL IN THE DESERT

American Water Works Association
Pacific Northwest Section

2026 AWWA PNWS | Tacoma, WA
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PRESENTERS

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PRESENTATION OUTLINE

- Foothills Utilities Overview
- Problem Identification and Condition Assessment
- Program Development And Strategy
- Key Design Elements
- Construction and Implementation
- Lessons Learned
- Questions

Foothills UTILITIES™

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FOOTHILLS UTILITIES OVERVIEW

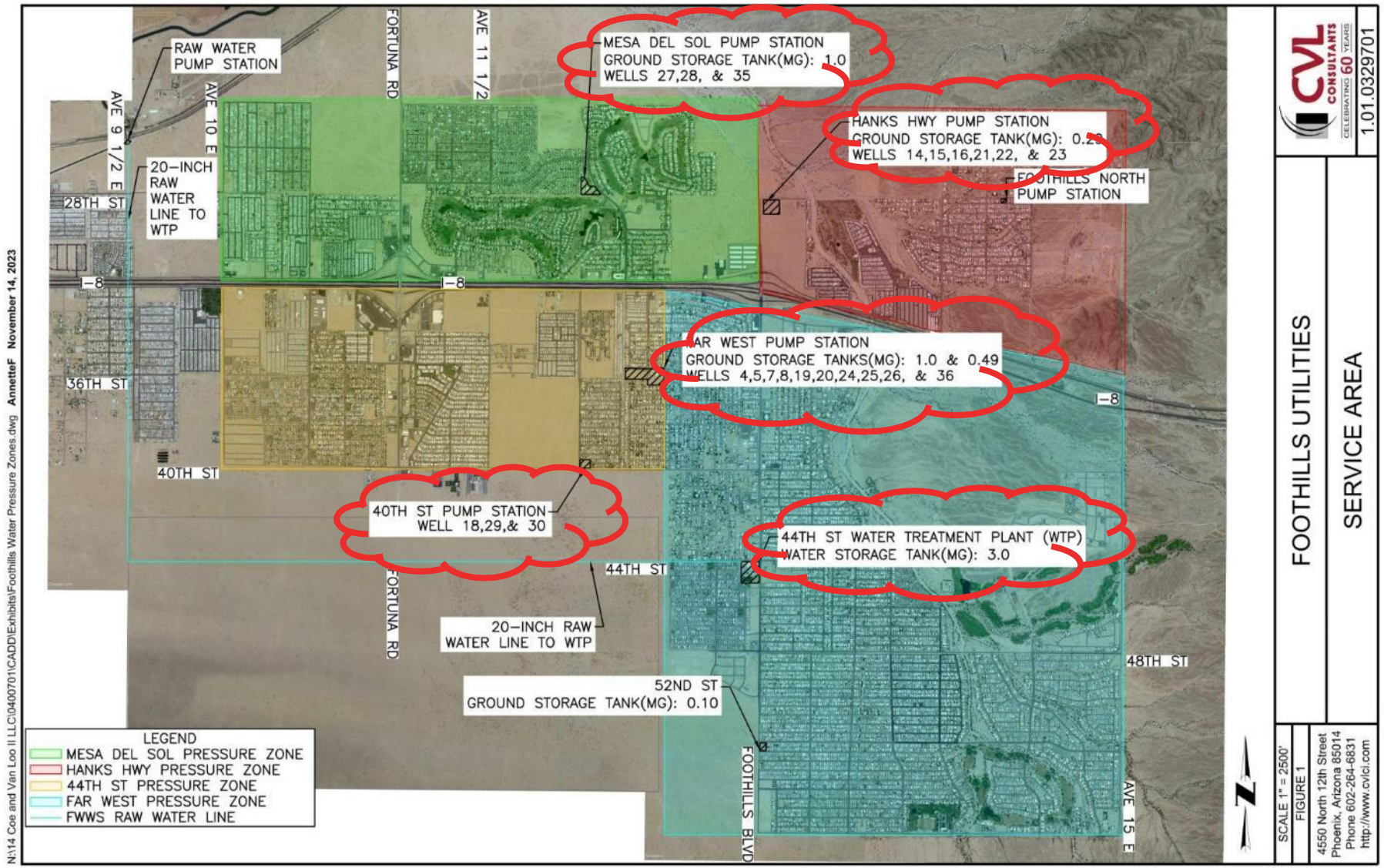
- Located east of Yuma, AZ in Fortuna Foothills
- Climate:
  - Extremely hot, very dry desert
  - 3 to 4 inches of rain per year
- New Ownership:
  - Owned by NW Natural Water
  - Far West Water & Sewer became Foothills Utilities in 2022.

NW Natural WATER™

Foothills UTILITIES™



FOOTHILLS UTILITIES OVERVIEW OF SYSTEM OPERATION



- Pumped Storage – Highlighting the importance of the tanks coupled with BPS to maintain water service
- Limited to no redundancy (review FH Emergency Response plan)

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SUMMARY OF TANKS



Mesa Del Sol
1 MG



Hanks Hwy
0.29 MG

To Yuma, AZ

Far West: 1 MG
0.49 MG (Not Included)

Fortuna
Foothills

40th St
0.17 MG



44th St. WTP
3 MG

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PROBLEM IDENTIFICATION AND CONDITION ASSESSMENT



INITIAL INSPECTIONS (AUG/SEP 2024)

- Divers would not enter the tanks due to extent corrosion around the hatch, ladder, and roof.
- Drone footage observed roof deformation; worst condition was Mesa Del Sol.



Mesa Del Sol



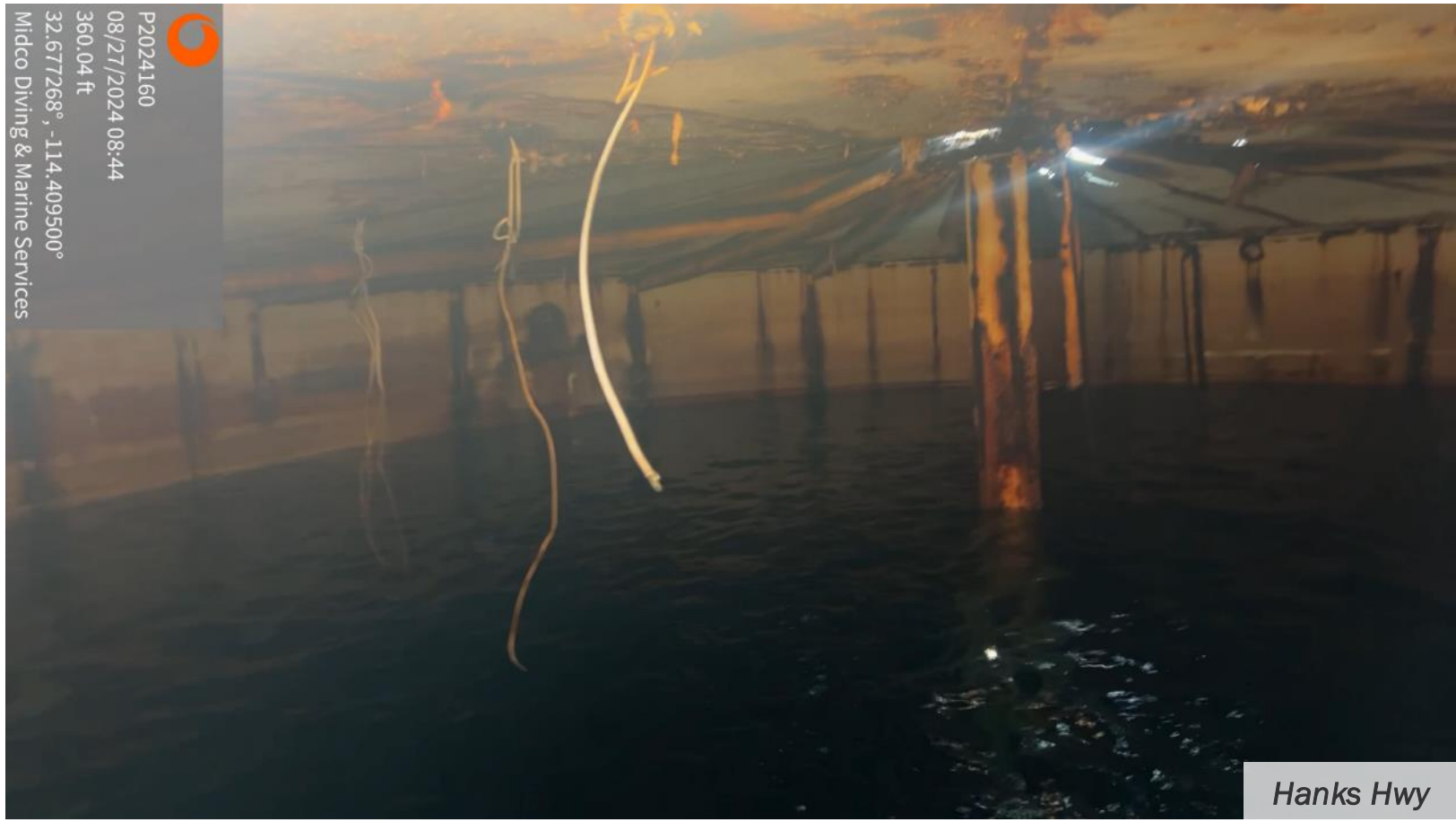
Mesa Del Sol

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INSPECTION PHOTOS



Mesa Del Sol



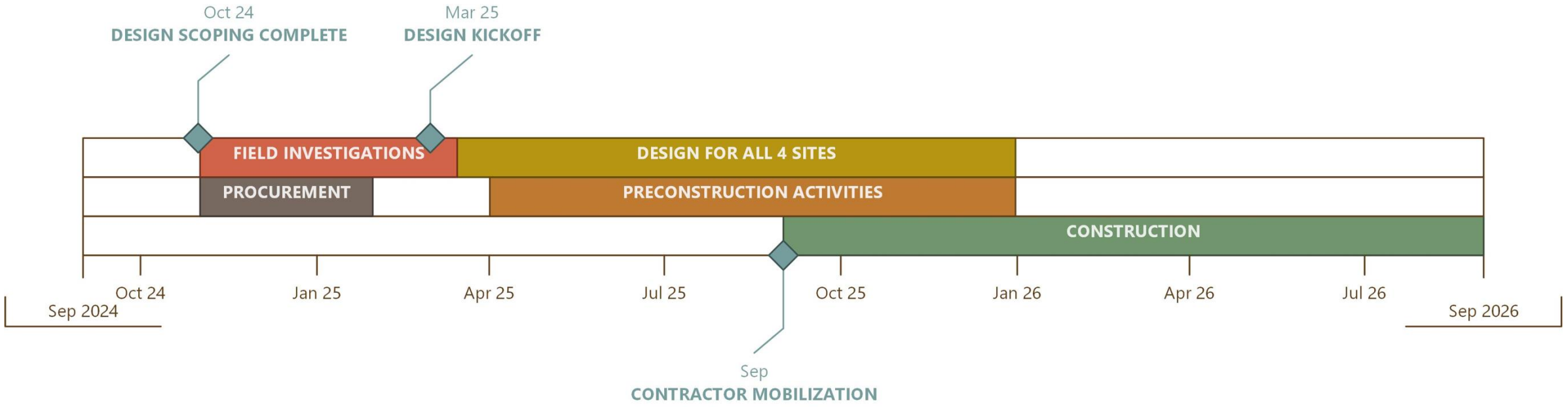
Hanks Hwy

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PROGRAM DEVELOPMENT AND STRATEGY



TANK REPLACEMENT PROGRAM DEVELOPMENT

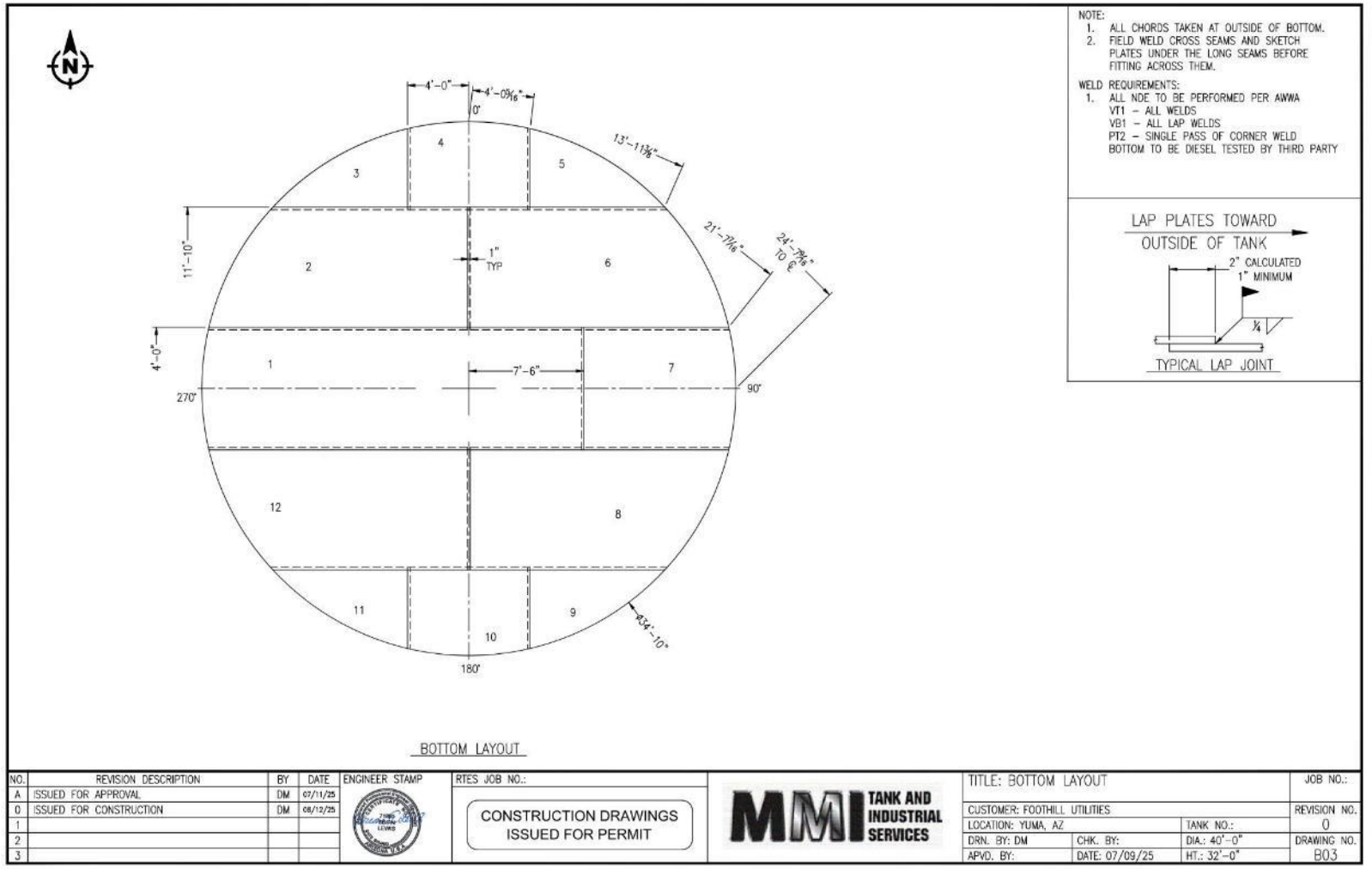


- Regulatory Hurdle
  - ADEQ (replace-in-kind strategy to remove review requirements)
  - Yuma County Permitting
- Fastest Way to get Contractor Onboard
  - Construction Manager At Risk (CMAR) – Selection of Contractor in Parallel with Design

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DESIGN / CONSTRUCTION STRATEGIES

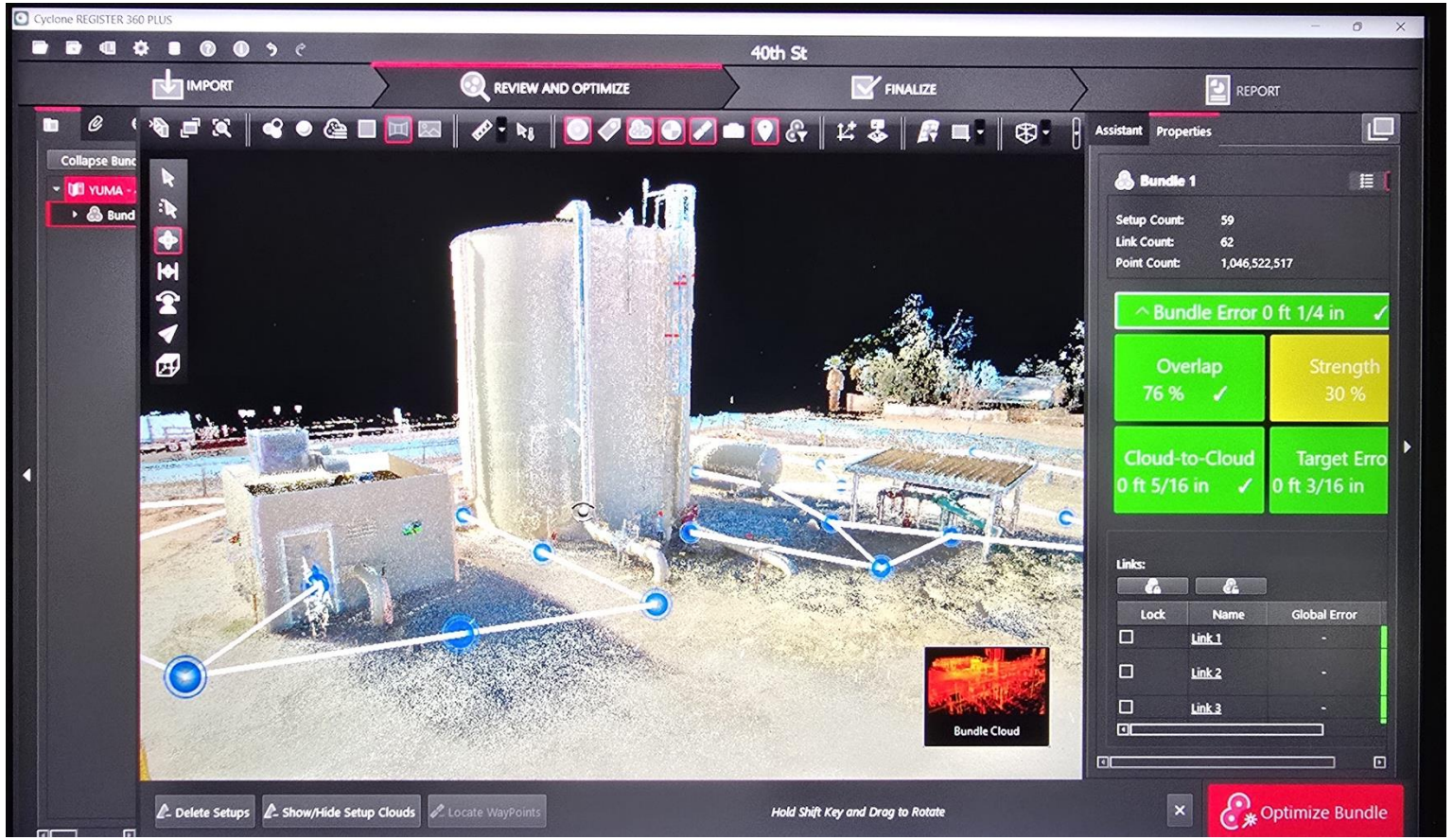
- Tank / Site Design in Parallel
  - Allowed for contractor to start tank shop drawing early
  - Tank Nozzle -> Site Coordination
  - Materials and Tariff considerations
- Sequence Permitting Activities
  - Mes Del Sol site first
  - Leverage review input for other sites



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DESIGN DATA NEEDS

- Data Gathering
  - Topographic survey
  - 3D Laser Scan of all sites
  - Subsurface utilities – GIS, operator knowledge, limited locates
  - Geotechnical Investigation - Required AWWA and ACI Subsurface Information
  - Contractor potholing



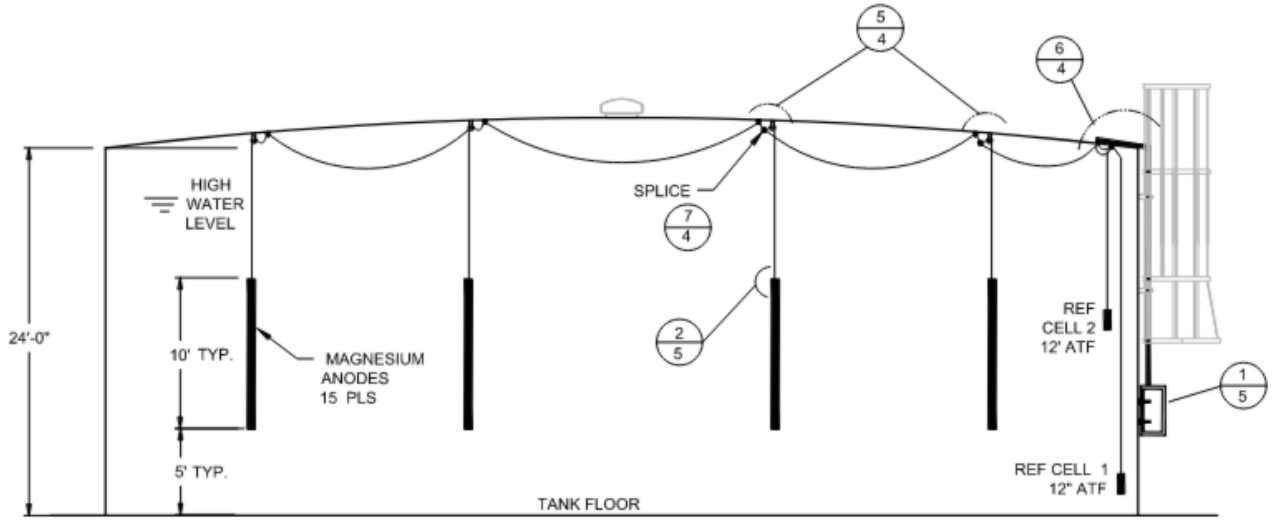
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KEY DESIGN ELEMENTS



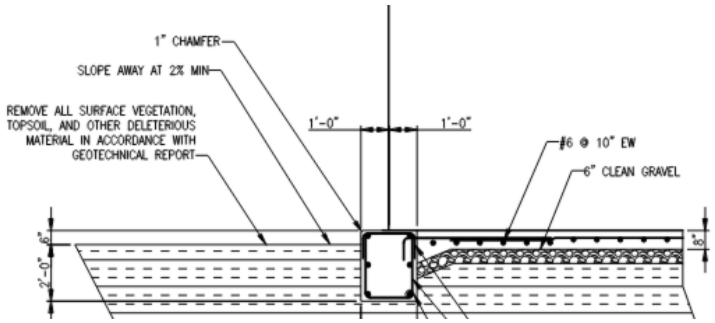
CORROSION PROTECTION STRATEGIES

- Challenges
  - Extreme temperatures and sun exposure
  - High moisture in tank head space
  - Corrosive soils
- Corrosion Approach
  - Coating Selection (NW Corrosion)
  - Vented Headspace Design Considerations
  - Cathodic Protection Systems
  - Slab Foundation Approach (Avoidance of extensive cathodic protection system)



MESA DEL SOL TANK SECTION

NTS



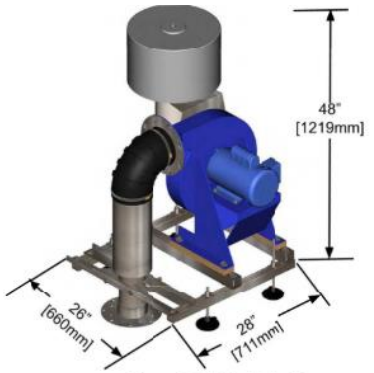


Figure 1: *F4 Ventilation Blower (Steel roof mount configuration shown.)*



OVERFLOW DESIGN CHALLENGES

- Sunken grade or flat sites
- Disperse on site
- Yuma County stormwater rules

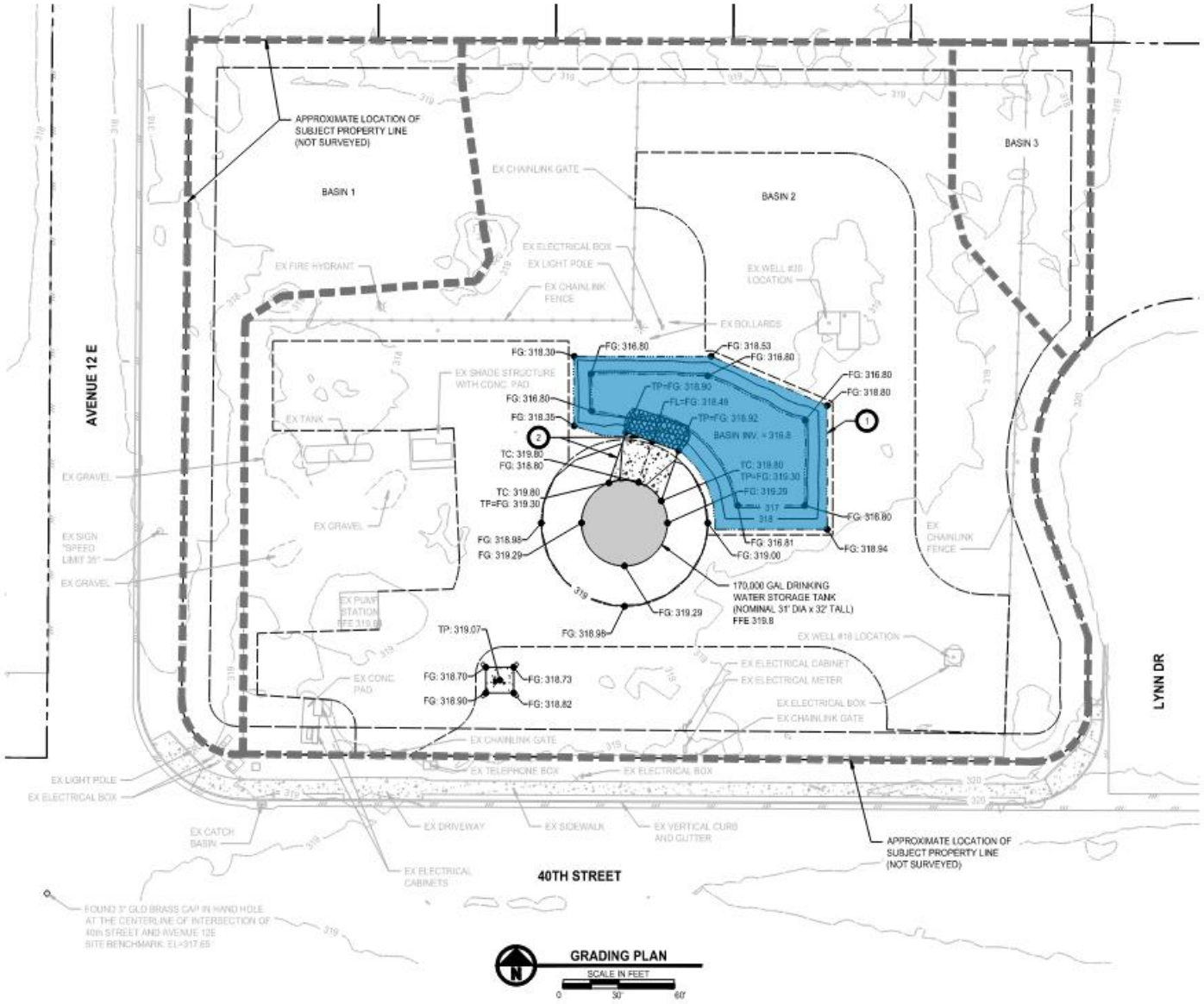


Mesa Del Sol



Far West

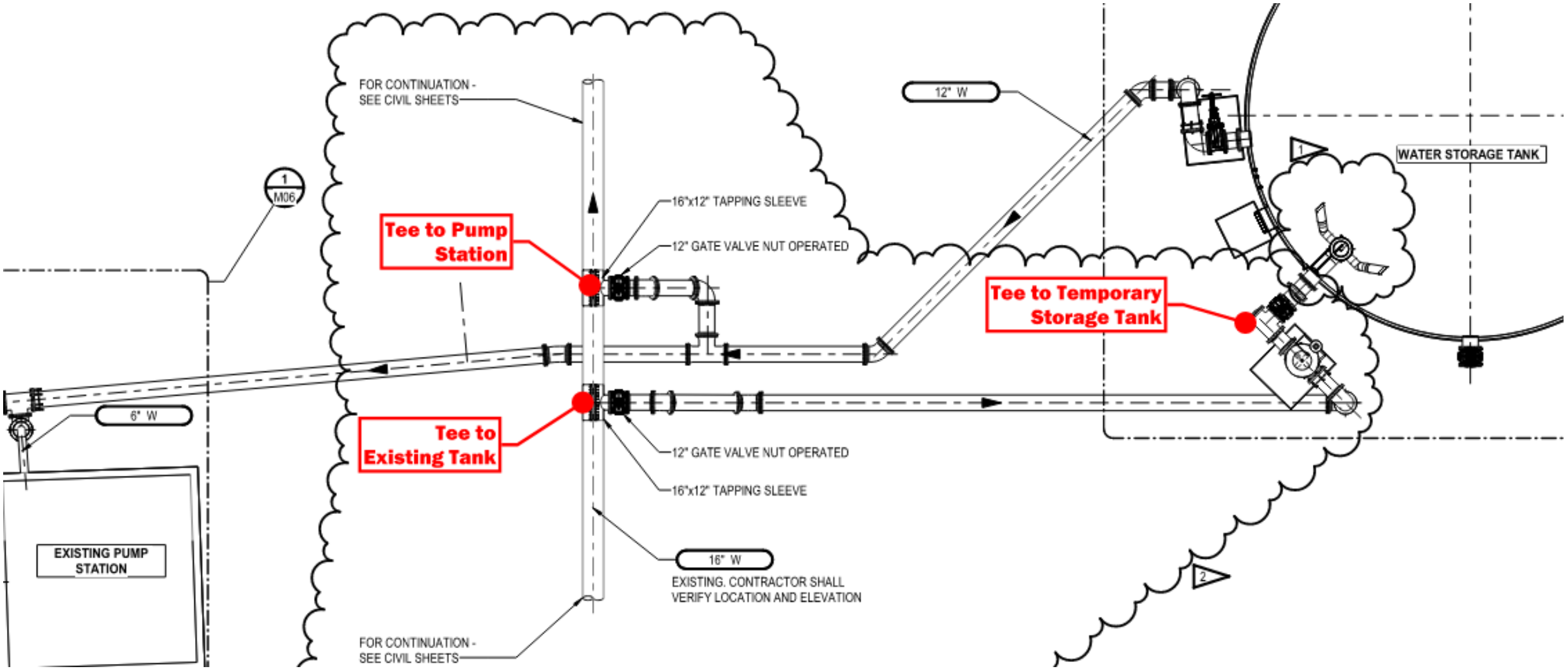
OVERFLOW DESIGN CHALLENGES



- Overflow Resilience
  - Target 15 minutes of overflow rate w/ no infiltration
  - 6” foundation reveal
  - Altitude valve
  - Tank level transducer tied into SCADA
  - Exterior manual level gauge

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OPERATIONAL RELIABILITY



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CONSTRUCTION AND IMPLEMENTATION



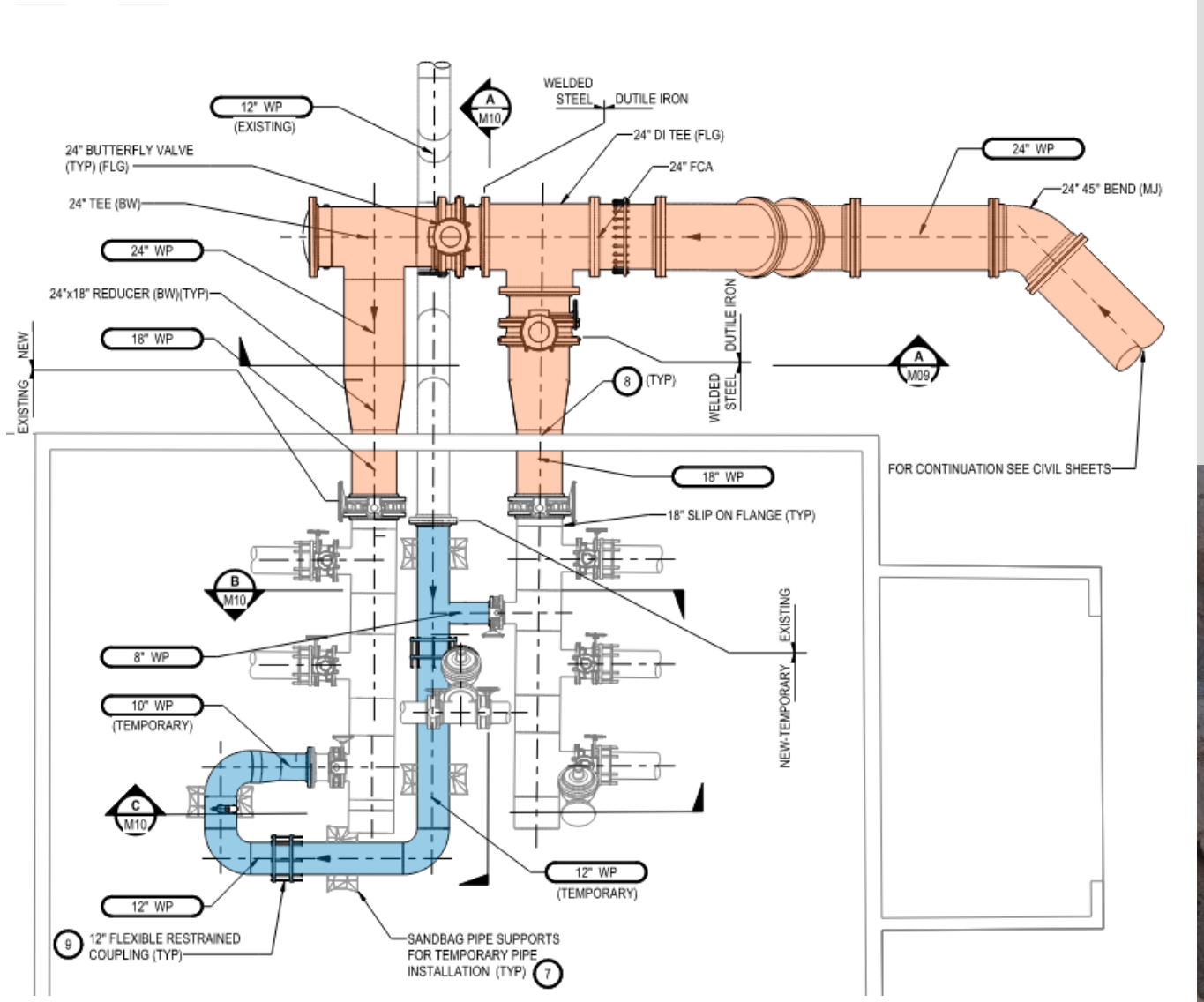
PHASING TO AVOID SERVICE INTERRUPTION

- Phasing difficulty varied between tank sites





MAINTAINING OPERATIONS DURING ACTIVE CONSTRUCTION



- Incorporated the following
  - Temporary pump station header – Far West
  - Hydra-Stop Insta-Valves for isolation
  - Hot Taps



LESSONS LEARNED



CURRENT STATUS

- Hanks Highway Tank fully erected
- 40th Street tank mostly erected
- Mesa Del Sol – Power relocation complete, tank started
- Far West – Foundation to begin soon.



Hanks Hwy



Mesa Del Sol



40th Street

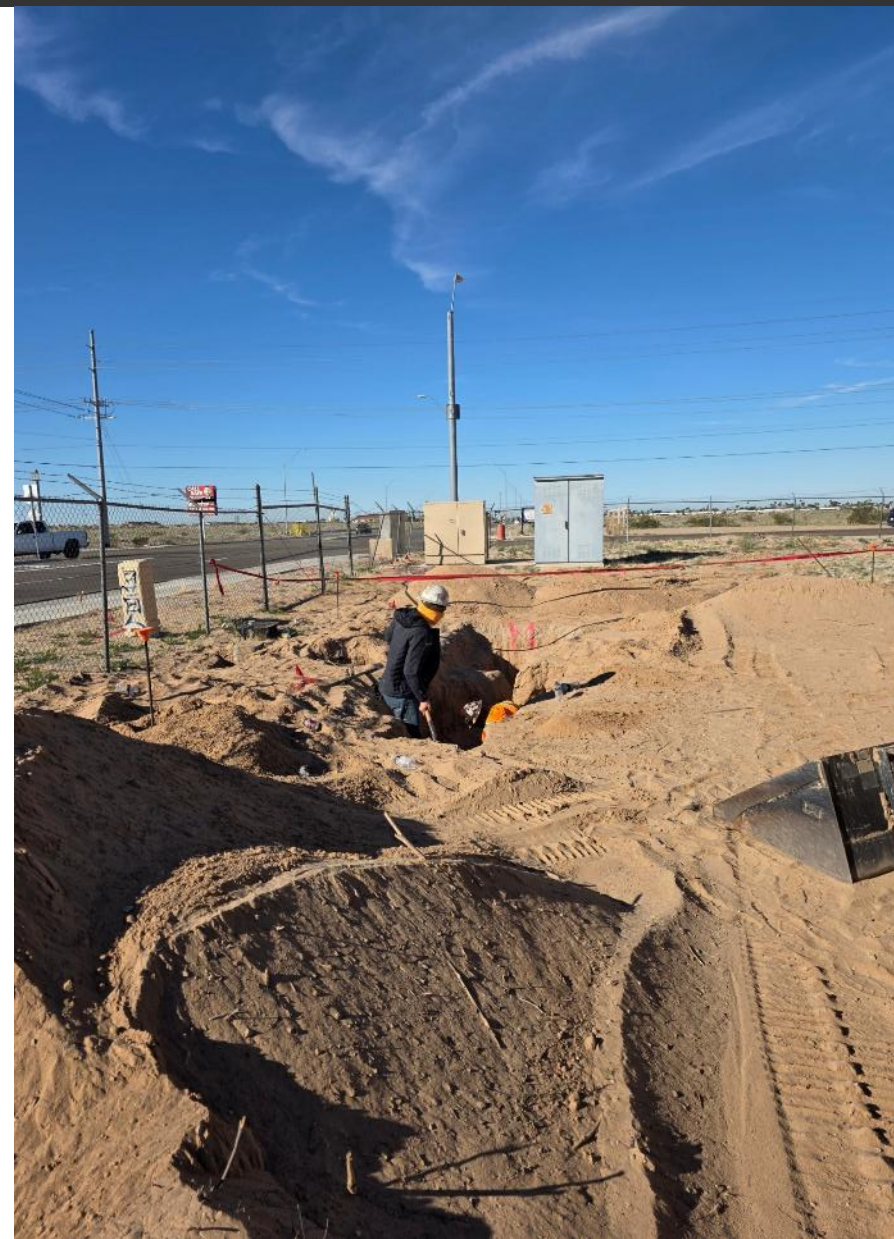
UTILITY LOCATES

- Early and Expanded Locates
- Define Critical Connection Points That Need Verification









CMAR COLLABORATION BENEFITS AND CHALLENGES

- **Contractor Onboarding Timing**
- Challenges
  - At Concept Design Level – Limited VE Opportunities
  - Limited ability for contractor to assist with field investigation until they are fully mobilized
  - Getting the contractor engaged on phasing (viewed as future activity)
- Benefits
  - Detailed Tank Design
  - Material Procurement



CRITICAL PATH IN EMERGENCY INFRASTRUCTURE REPLACEMENT

- Data Drives Decisions
  - Data Needs for Design
  - Data Needs for Contractor
- Balancing Urgency with Compliance



QUESTIONS?



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