

Project Delivery Academy

DEVELOPMENT MODULE 3: UTILITY CLEARANCE

UTILITY AND RAILROAD ENGINEERING (URR)

**Mohamed Ali Noun, PE
Statewide Utility Engineer**

UTILITY AND RAILROAD ENGINEERING (URR)

URR

- Mission
- Structure
- Deliverables

What are Utilities

What is Utility Coordination Process & Why we do it

Utility Coordination in PDP

URR Mission

URR is responsible for:

- ▶ **Clearing the right-of-way of utility conflicts in advance of highway construction projects; in a safe, efficient, and cost-effective manner.**
- ▶ **Also, improving safety of public railroad crossings in Arizona.**

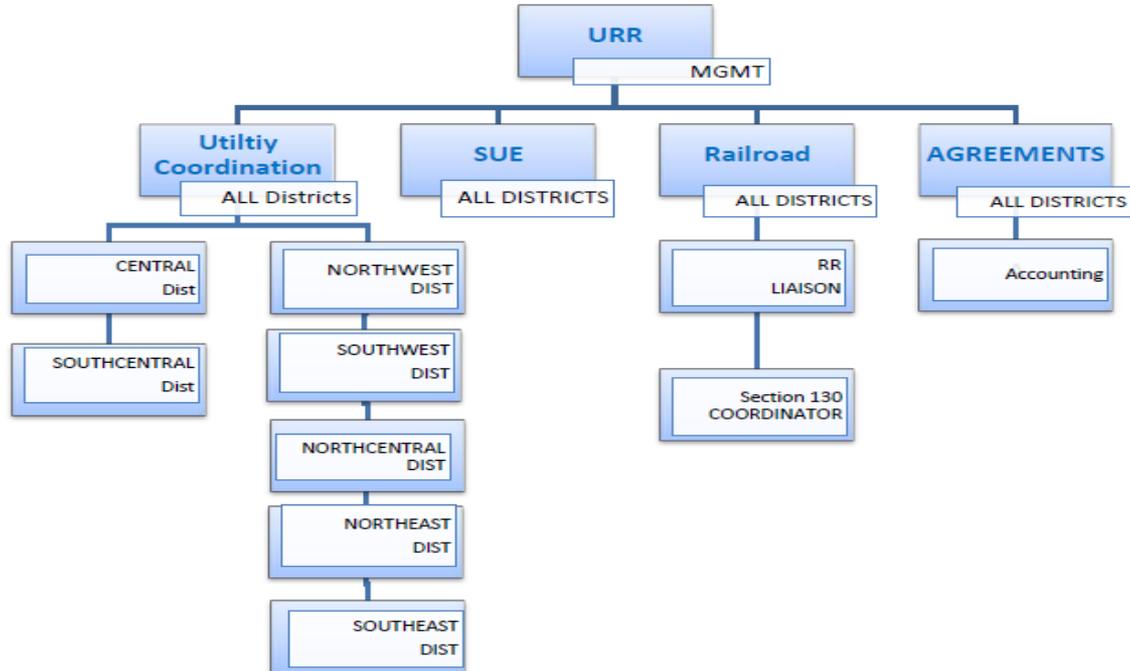


KEY OBJECTIVES



- ▶ **Safety:** Minimize / Eliminate risks & liability on Highway Construction projects & Improve safety at public railroad/highway crossings in Arizona.
- ▶ **Project Schedule:** Support ADOT's Construction program Schedule Delivery
- ▶ **Project Budget:** Ensure Cost Effective Operations & avoid unnecessary costs

URR STRUCTURE



DELIVERABLES

UTILITY CLEARANCE CERTIFICATION

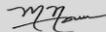
is required **PRIOR** to any
PROJECT ADVERTISEMENT

 Arizona Department of Transportation UTILITY & RAILROAD ENGINEERING SECTION 205 S. 17th AVE., Phoenix, AZ 85007	
MEMORANDUM	
To: Barry Crockett, PE Engineer - Manager Contracts and Specifications 121F	Date: September 3, 2008
From: Mohamed Ali Noun, PE MAG Freeway Coordinator Utility and Railroad Engineering Section MAG UTILITIES MD 438E	Subject: Utility Clearance letter TRACS NO.: 010 MA 120 H7211 01C PROJECT NO. SECTION: Ehrenburg - Phoenix Hwy (I-10 PAPAGO) LOCATION: I-10 VERRADO TO SARIVAL

The enclosed letter from "URS" certifies utility clearance for the subject project.

In addition to your stored specifications under section 107.15, please include the attached information in the Project Special Provisions.

With respect to utility adjustments, this project may be released for bids.


Mohamed Ali Noun, PE

Encl: Clearance Letter.

cc: Stephanie Huang, ADOT VPM
Avi Schinner, URS
Rob Samour, ADOT Phoenix Construction D.E.
Hani Khanna, ADOT PPMS, MD 620E
Manuel Sanchez, FHWA
File (TRACS H7211)

Utility Clearance

- ▶ All Utility-related concerns have been addressed in the Utility Clearance Letter.
- ▶ The project Plans, Specifications, & Estimates (PS&E) contain all the information needed by State and contractor forces to prevent unforeseen problems involving utility facilities.

Projects Handled by URR

URR Role is integral and critical to State Construction Program

All Highway CNST Projects must be cleared by URR

- 100-200 Projects Cleared in a FY:
 - Designed by Consultants projects
 - Designed by ADOT Groups (In-House) projects
 - Local Public Agency(LPA) Projects: **(Non-CA only)**
 - Railroad/Highway Crossing Safety Improvement Projects(section 130) **Admin by ADOT URR**

Stakeholders

External

- Utility companies
- Counties, Cities and Towns (LPA)
- On-Call Consultants
- Design Consultants
- Railroad Companies
- AZ Corporation Commission(ACC)
- AZ Attorney General(AG)
- FHWA

Internal

- Executive Mgmt (SEO)
- Project Mgmt (PMG)
- Contracts & Specifications(C&S)
- Design & Construction Staff
- Environmental Group(EPG)
- Right of Way Group (ROW)
- Financial Services
- Audit & Analysis Office (A&A)

FEDERAL & STATE LAWS

- ▶ **FHWA 23 CFR**
 - Utility Relocations, Adjustments & Reimbursement
 - Accommodation of Utilities
 - Railway/Hwy Crossings (Sec 130)
- ▶ **Arizona Revised Statutes (ARS):**
 - ARS 28-7092: Land acquisition for utility relocation
 - ARS 28-7156: Utility Relocation & Reimbursement

What are Utilities?

Utilities are the Veins and Arteries
of our Cities and Roads...



Utilities:

- **Electric Power**
- **Gas - Oil - Product Lines**
- **Telecom./Cable TV**
- **Water**
- **Sanitary Sewer**
- **Reclaimed Water**
- **RR (treated as a Utility)**

Utilities

**Existing utilities
abound!**

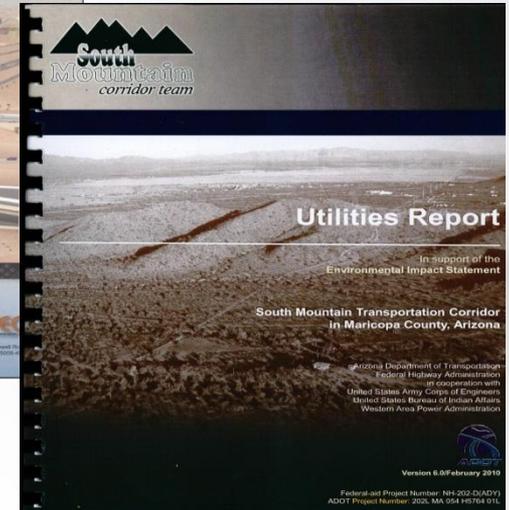
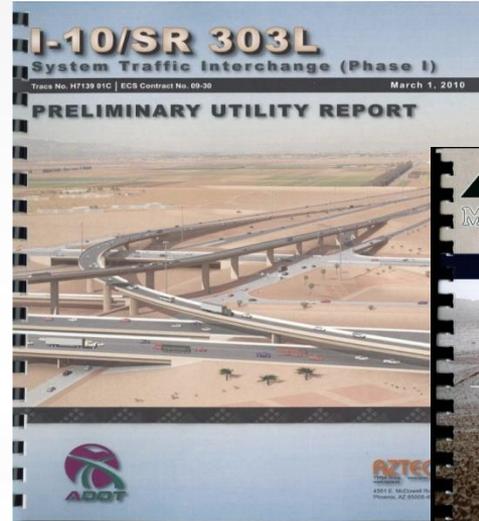
... and...

**How do you ever
identify and avoid
these facilities!!!**



ADOT Utility & Railroad Engineering

Utility Coordination Process



Utility Coordination

Art *vs.* *Engineering*



Art vs. Engineering

Art...

Not this Art...

**A position with URR
if you know who this is!**



Art vs. Engineering

This kind of Art:

- ▶ **Knowledge of the Utility Coordination Process**
- ▶ **Knowledge of State Statutes (ARS) and FHWA regulations (CFR)**
- ▶ **Effective Verbal & Written Communication Skills**
- ▶ **Negotiation & Organizational Skills**
- ▶ **Productive Relationships with Utility Owners**
- ▶ **Also, a personality helps!**

Art vs. Engineering

Engineering:

- **Plan Reading**
- **Field Reviews**
- **Utility Conflict Analysis**
- **General Utility Design Concepts & Alternatives**
- **Utility Construction and Inspection**
- **Principles and Practices of Civil Engineering**
- **ADOT Standards and Procedures**



Why we need Utility Coordination!

Design in Progress

- ▶ Multiple Existing underground facilities.



Traffic Signal foundation is designed right here!

Why we need Utility Coordination!

Construction
in
Progress!



Lack of Communication!

Why we need Utility Coordination!

Safety ... Safety ... Safety!!!

**UNIFORM COLOR CODE
FOR MARKING UNDERGROUND FACILITIES**

- Proposed Excavation
- Temporary Survey
- Electric Power
- Gas, Oil, Dangerous Materials, Product Lines
- Communication, Cable Television, Fiber Optics (- letter F)
- Water Systems, Slurry Pipelines
- Reclaimed Water
- Sanitary Sewer Systems

Know what's below.
Call before you dig.

811

Call **811**
602-263-1100
800-STAKE-IT
Outside of Maricopa County

ARIZONA
Blue Stake, Inc.



Why we need Utility Coordination!

- ▶ 36" gas line explosion



Why we need Utility Coordination!

Construction Completed!



Not what we expected!!!

Why we need Utility Coordination!

That's Why:

- ▶ **Public Safety**
- ▶ **Project Schedule**
- ▶ **Project Budget**

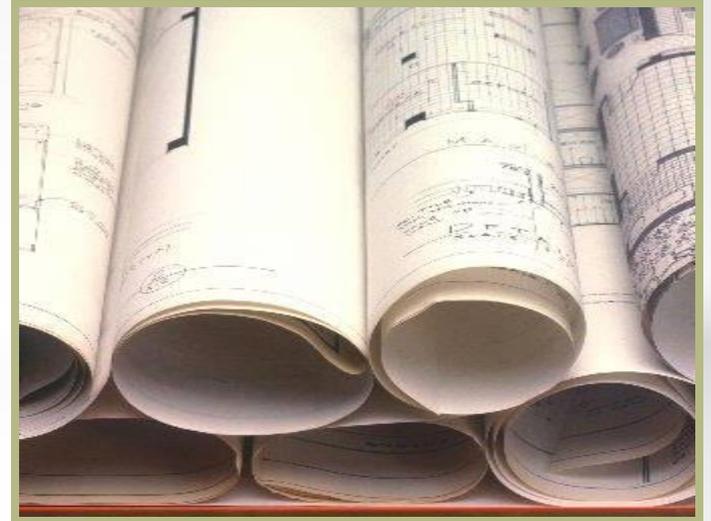


*****No unexpected delays/expenses occur during construction as a result of conflicts with utility or railroad facilities.**

Utility Coordination in Project Development Process

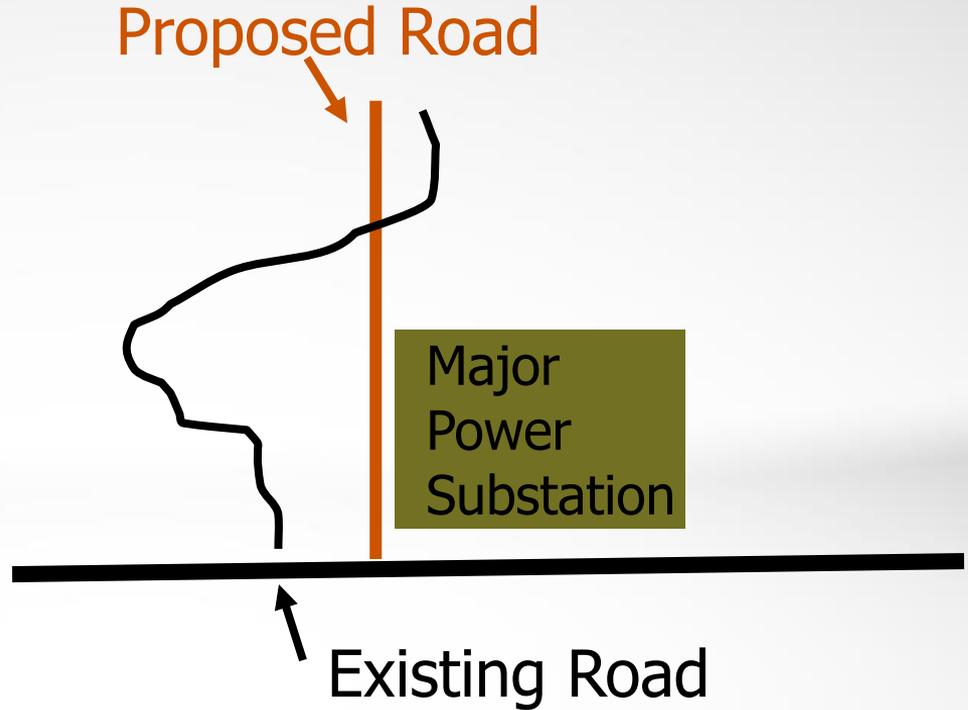
Project Develop. Phases

- **Scoping Phase: PA / DCR**
- **Design Phase:**
 - Stage I : 15%
 - Stage II: 30%
 - Stage III: 60%
 - Stage IV: 95%
 - Stage V: 100% (PS&E)
- **Construction Phase**



Initial Proposed Alignment

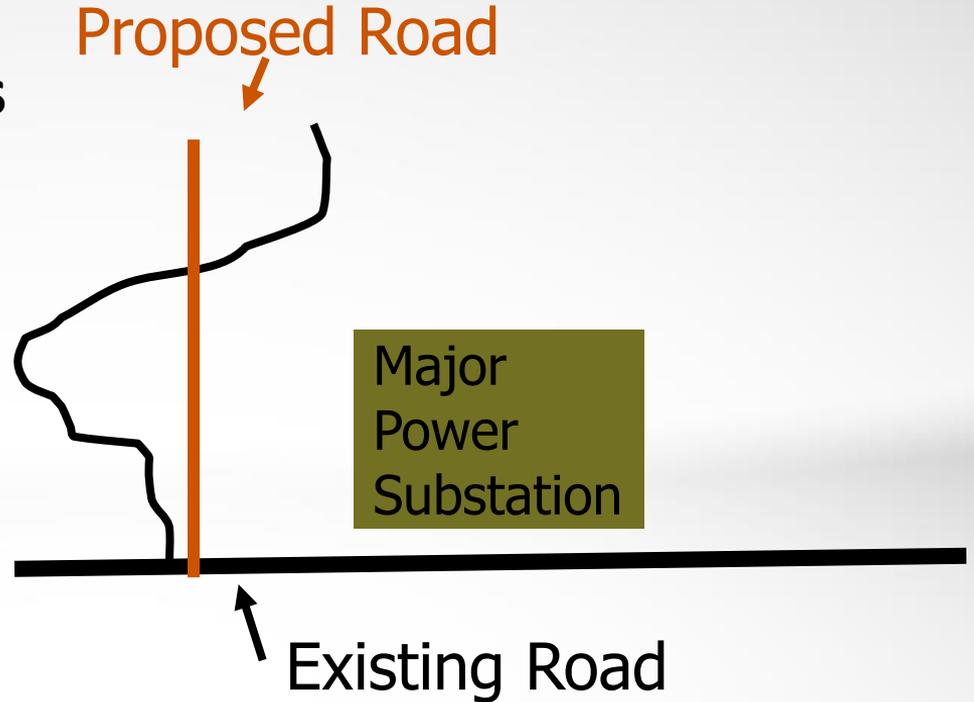
- ▶ Consider impact to utilities



Final Alignment

- ▶ **Utility has Prior Rights
(ADOT pays)**

- ▶ **ADOT Savings:**
 - Time
 - Money



Avoid...Avoid...Avoid Utility Conflicts

- ▶ Suggest Alternatives:
 - Move alignment
 - Change grade
 - Widen only one side of highway
 - Move ramps
 - Other design modifications

***Team can re-align modify design to avoid/minimize impact to Utilities

Design Phase



URR Milestones:

1. Identify utilities within project limits
2. Subsurface Utility Engineering (SUE Phase I)
3. Utility Conflicts Analysis
4. Subsurface Utility Engineering (SUE Phase II)
5. Resolve utility conflicts
6. Agreements (Cost, Plans, Land Rights & Sch.)
7. Issue the Utility Clearance Letter

1. Identify Utilities (Data Collection)

- ▶ **Contact AZ blue stake center (811)**
- ▶ **Utility owners listing & Field Review**
- ▶ **Obtain As-builts / Facility maps from Ut.**
- ▶ **Research ADOT Permit Log
(Existing & proposed Utilities)**
- ▶ **Review Existing R/W plans**



2. SUE Phase I (Designate utilities)

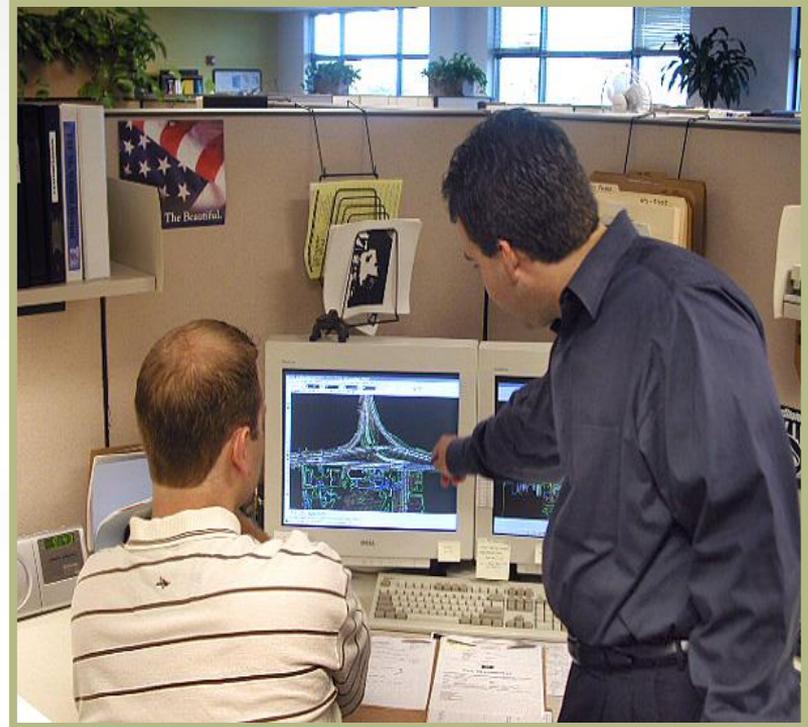
Surveying/Mapping:

- ▶ Request utility designation (horizontal QL-B)
- ▶ Map designated utilities in CADD within Project limits

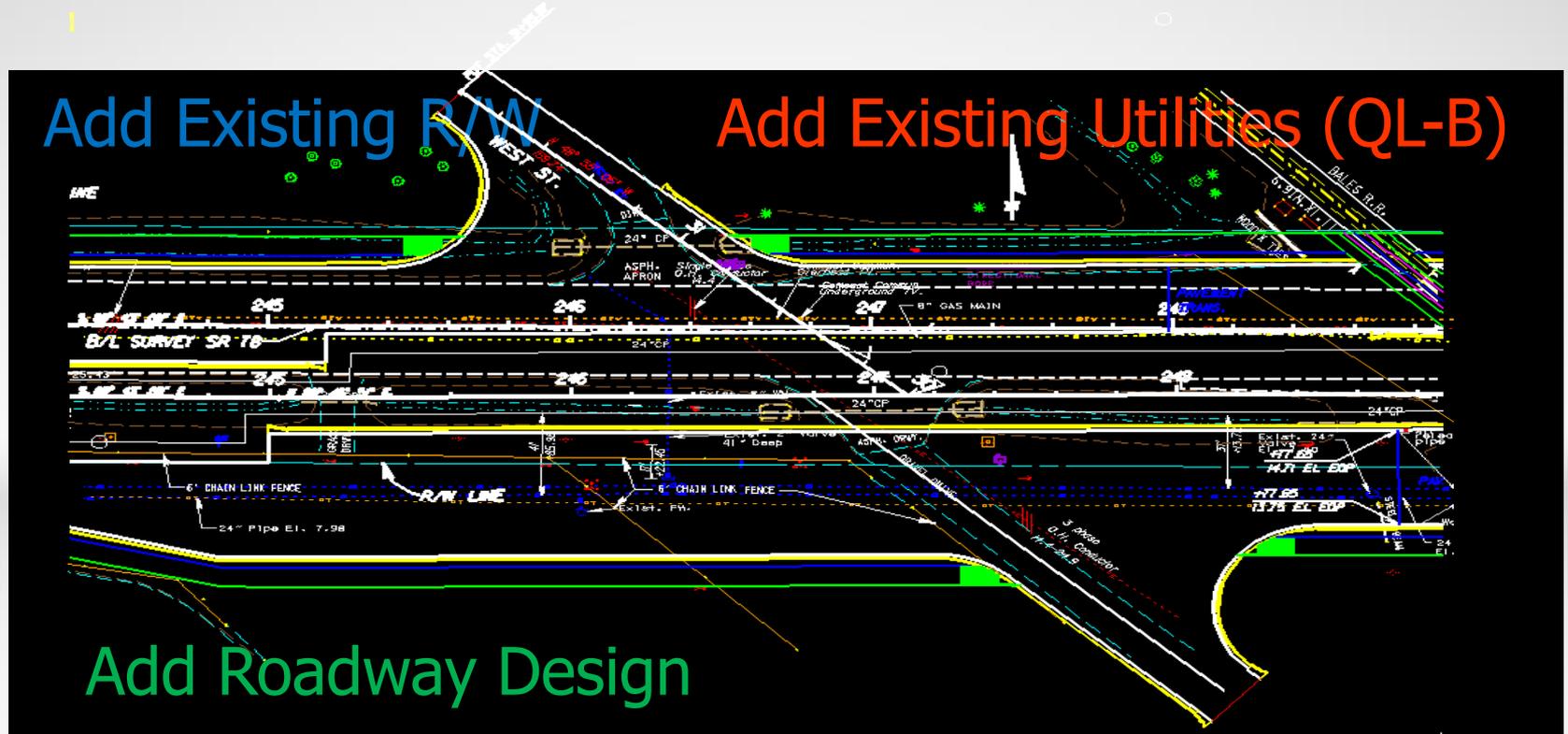


3. Utility Conflict Analysis

- ▶ Lay out horizontal. Designated utilities on the design plans (Stage II)
- ▶ Determine potential utility conflicts:
 - Review plans
 - Engineering analysis



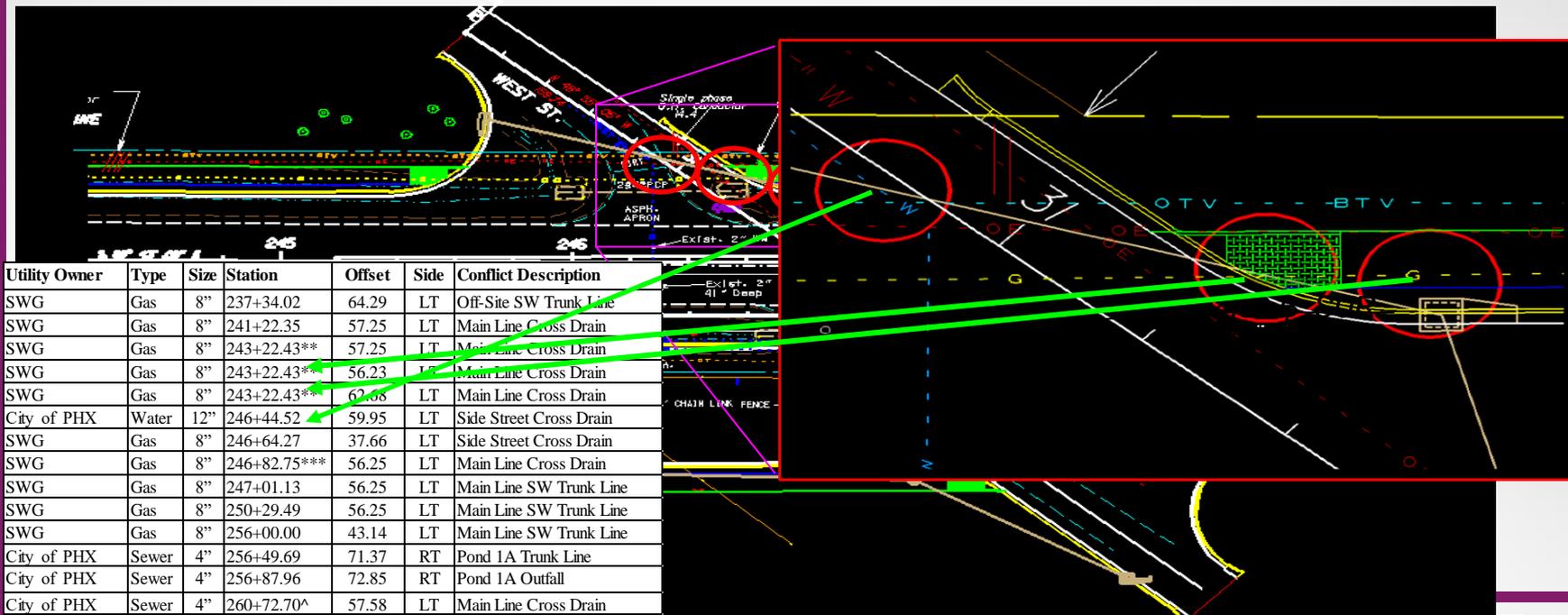
Start With Topography



Analyze Conflicts

Identify potential Conflicts

Build Conflict Matrix



4. SUE Phase II (Locate Utilities)

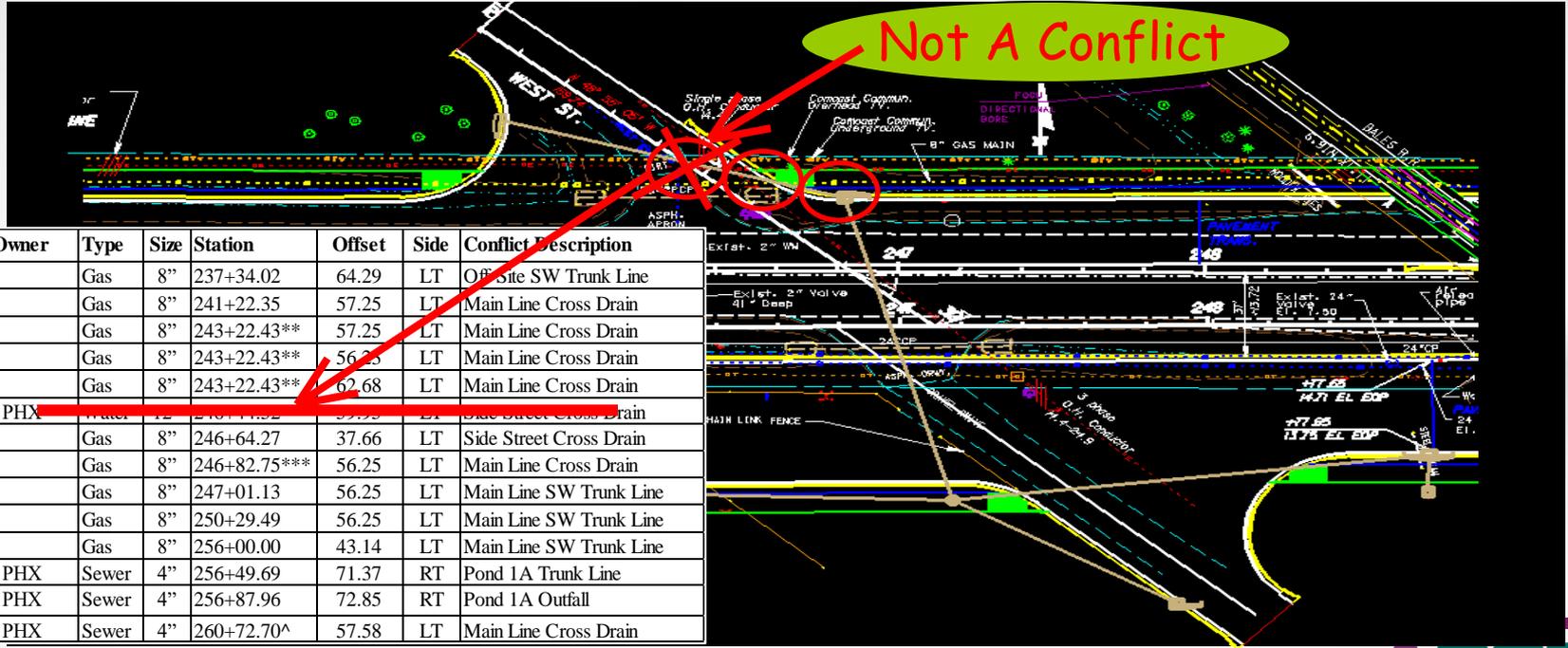
- ▶ Request utility vertical locating services (Potholing QL-A) to confirm/rule out potential conflicts.



Identify Actual Conflicts

Update Conflict Matrix

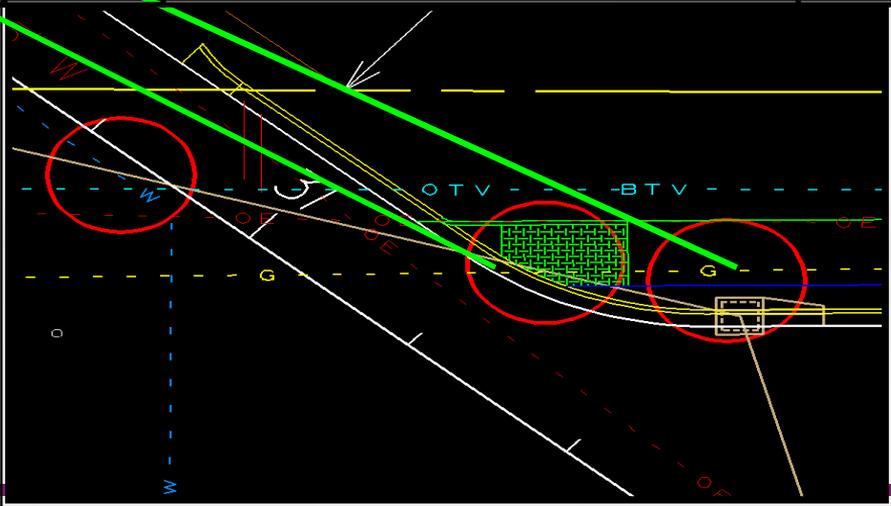
Analyze Data (QL-A)



Utility Owner	Type	Size	Station	Offset	Side	Conflict Description
SWG	Gas	8"	237+34.02	64.29	LT	Off Site SW Trunk Line
SWG	Gas	8"	241+22.35	57.25	LT	Main Line Cross Drain
SWG	Gas	8"	243+22.43**	57.25	LT	Main Line Cross Drain
SWG	Gas	8"	243+22.43**	56.25	LT	Main Line Cross Drain
SWG	Gas	8"	243+22.43**	62.68	LT	Main Line Cross Drain
City of PHX	Water	12"	240+71.52	57.55	RT	Side Street Cross Drain
SWG	Gas	8"	246+64.27	37.66	LT	Side Street Cross Drain
SWG	Gas	8"	246+82.75***	56.25	LT	Main Line Cross Drain
SWG	Gas	8"	247+01.13	56.25	LT	Main Line SW Trunk Line
SWG	Gas	8"	250+29.49	56.25	LT	Main Line SW Trunk Line
SWG	Gas	8"	256+00.00	43.14	LT	Main Line SW Trunk Line
City of PHX	Sewer	4"	256+49.69	71.37	RT	Pond 1A Trunk Line
City of PHX	Sewer	4"	256+87.96	72.85	RT	Pond 1A Outfall
City of PHX	Sewer	4"	260+72.70^	57.58	LT	Main Line Cross Drain

Actual Conflict Matrix

Station & Offset	Utility	Comments	Action Required
246+64.27; 37.66 LT (x&y)	SWG	Proposed main line drain in close proximity to 8" gas line	Confirmed 8" gas line at 2.67' deep. CONFLICT
246+82.75; 56.25 Lt (x&y)	SWG	Proposed Side street Cross drain on top of 8" gas line	Confirmed 8' gas line at 2.65' deep. CONFLICT



5. Resolve Utility Conflicts

Provide technical guidance to the utility relocation design team:

- Safe option
- Cost effective
- R/W
- Environmental
- Permit
- Multiple Utility

Relocations Schedule

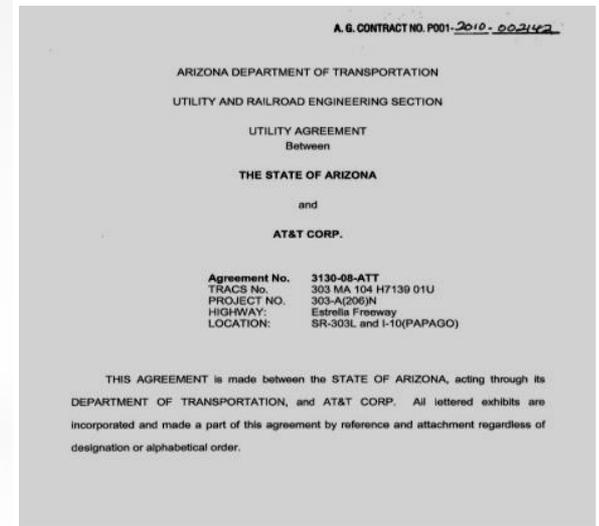


6. Utility Agreements

Prepare, review and process legal Utility Agreement Contracts:

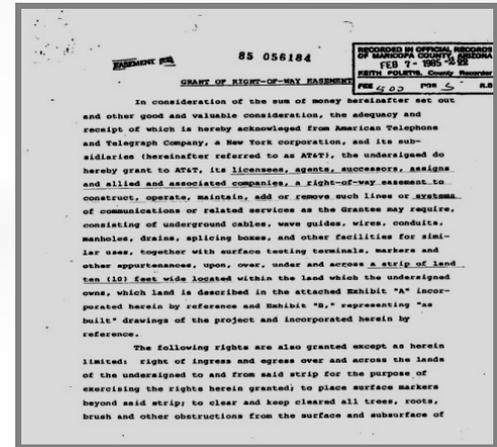
- ▶ Scope of work
- ▶ Utility Design Authorization
- ▶ Cost Estimates
- ▶ Utility Relocation plans
- ▶ Land Rights documents
- ▶ Schedule of work
- ▶ Utility Construction Authorization
- ▶ Payments Approval

***** All components in compliance with ADOT Standards & Policies; and with Federal Requirements.**



Land Rights

- ▶ Evaluate land rights documentation
 - County maps, title reports, Easements, R/W plans, ADOT permit log and other property plans and legal descriptions
- ▶ Determine prior rights status
- ▶ Validate financial responsibilities for relocations as appropriate.



Approve Relocation Plans

- ▶ Utility relocation plans and specifications are in compliance with ADOT applicable standards, policies and regulations



PROJECT NO. 666372
SPECIFICATION: NG 05591
CABLE CLLL-PHXKAZUR517



WESTERN REGION
MAINTENANCE PROJECTS

PHOENIX POP
TO
BUCKEYE OA

REROUTE FTA CABLE INTO NEXGEN
LINK 13 CONDUIT ALONG THE ROOSEVELT
CANAL FROM Mc DOWELL ROAD TO
WEST OF COTTON LANE
IN GOODYEAR, AZ

 at&t

CONSTRUCTION ISSUE
MAY, 2010

ROOSEVELT SEWATER DISTRICT APPROVAL
THE DESIGN APPROVALS WILL REMAIN FOR CONCEPT ONLY AND
ACCEPTS NO LIABILITY FOR ERRORS OR OMISSIONS.

FORNEY ENGINEERING &
CONSULTANTS, P.C.
2000 WEST WASHINGTON AVENUE, SUITE 100
HEALTHY HAVEN BEACH, CALIFORNIA 92548
PHONE: 714-945-5000 FAX: 714-945-5000

MAY, 2010 JN 666372

7. Utility Clearance

Write the Utility Clearance Letter with Special Provisions language to include in the Project Specifications

State clearly the status of each utility facilities within the project limits.

Issue the utility clearance letter releasing project for construction

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Construction Phase

- ▶ **Attend Partnering/Pre-construction Meetings**
- ▶ **Alert Utilities & Contractor to comply with project CNST schedule**
- ▶ **Ensure minimal interruptions to Utility Services during construction**
- ▶ **Resolve any arising utility issues during project construction**



ADOT Utility and Railroad Engineering

Thank you!

Questions?