ARIZONA DEPARTMENT OF TRANSPORTATION

UTILITY AND RAILROAD ENGINEERING (URR)

Mohamed Ali Noun, PE
Statewide Utility Engineer
MNoun@azdot.gov
602 712-8689

UTILITY COORDINATION

PROCESS OVERVIEW

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What are Utilities
What is Utility Coordination
What it takes to be a coordinator
Why we need to do utility coordination
The Process in PDP Project Development & Construction

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

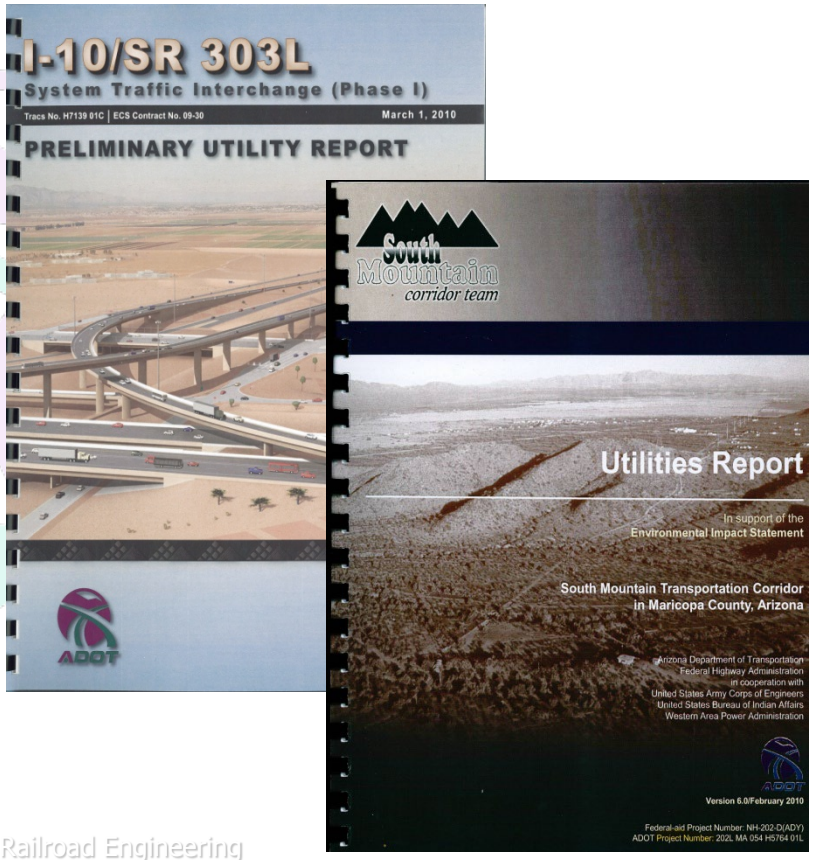
Existing utilities abound!

…and…

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

ADOT Utility & Railroad Engineering

Utility Coordination Process



Key Objectives

- **Public Safety:** Minimize / Eliminate liability on roadway CNST projects
- **Project Schedule:** Support project Construction Schedule & Service Delivery
- **Project Budget:** Ensure Cost Effective Operations & avoid unnecessary costs

Utility Coordination

- PROCESS:

clearing the right-of-way of utility conflicts in advance of highway construction projects; in a safe, efficient, and cost-effective manner.

- RESULT:

UTILITY CLEARANCE PRIOR to PROJECT ADVERTISEMENT

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 the Engineer & Contractor to prevent unforeseen problems involving utility facilities.

Stakeholders

External

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

Internal

- Executive Mgmt
- PMG
- Contracts & Specifications
- Design & Construction Staff
- Environmental Group
- Right of Way Group
- Financial Services
- Audit & Analysis Office

FEDERAL & STATE LAWS

- FHWA 23 CFR
  - Utility Relocations, Adjustments & Reimbursement
  - Accommodation of Utilities

- Arizona Revised Statutes (ARS):
  - ARS 28-7092: Land acquisition for utility relocation
  - ARS 28-7156: Utility Relocation & Reimbursement

What does it take to do Utility Coordination

Art

vs.

Engineering

Art vs. Engineering

Art…

Not this Art…

A position with ADOT if you know who this is!

Art vs. Engineering

This kind of Art:

- Knowledge of the Utility Coordination Process
- Knowledge of Standards and Procedures
- Knowledge of State Statutes (ARS)
- Knowledge of FHWA regulations (CFR)

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

Why we need Utility Coordination!

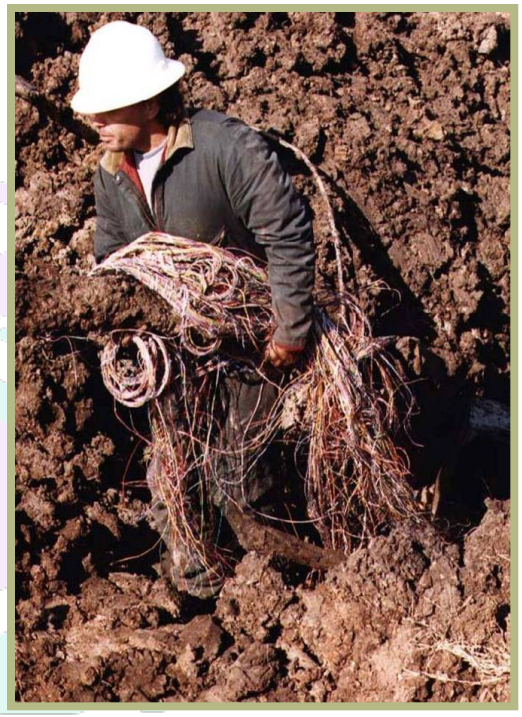
Design in Progress

- 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!!!

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

The Process
in
Project Development

Project Develop. Phases

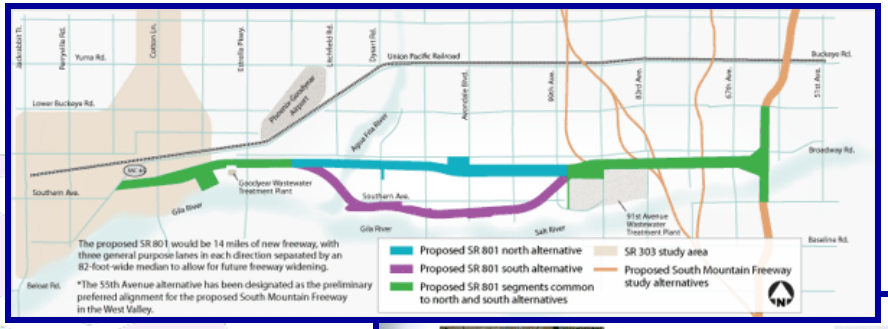
- Scoping Phase: SL / PA / L-DCR
- Design Phase:
  - Stage I : 15% (F-DCR)
  - Stage II: 30%
  - Stage III: 60%
  - Stage IV: 95%
  - Stage V: 100% (PS&E)
- Construction Phase

Scoping Phase (SL / PA / L-DCR)

Early Coordination:

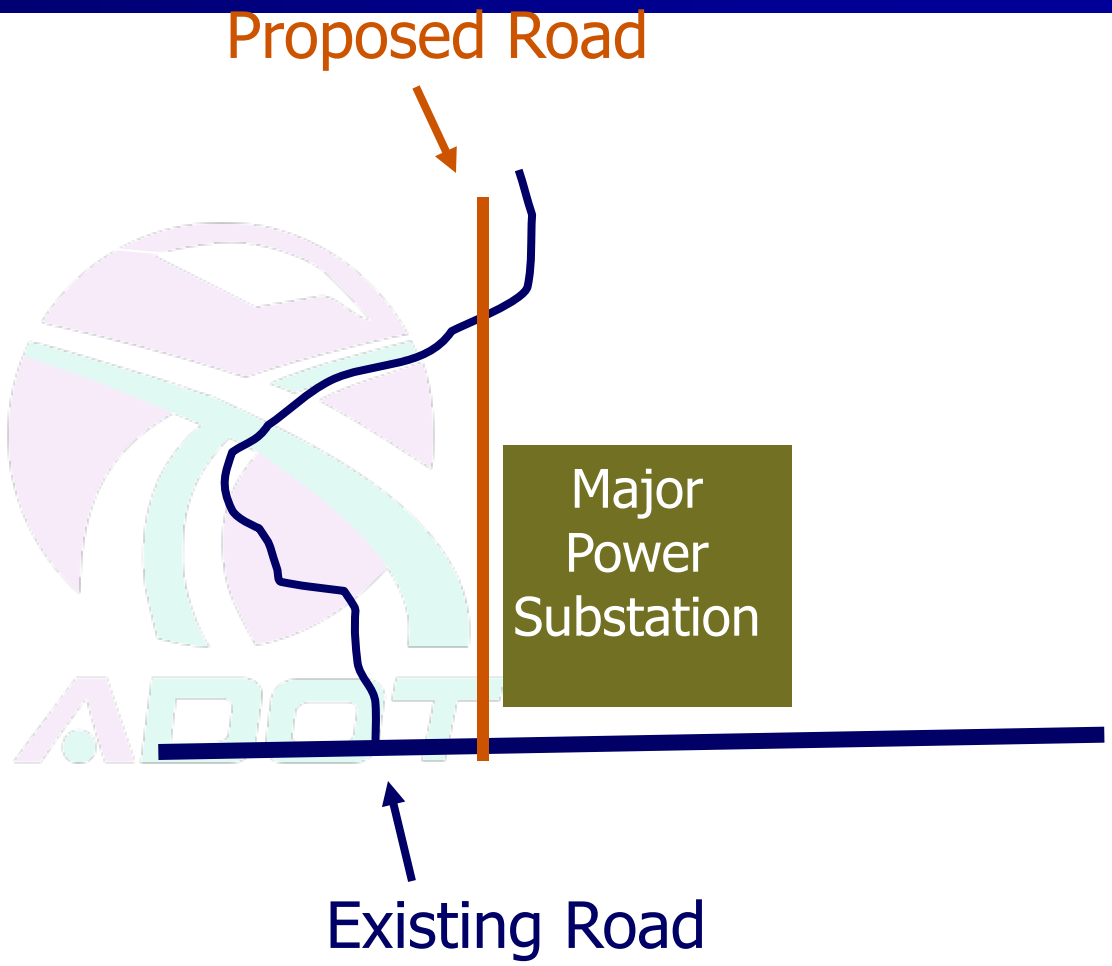
- Alignment Selection impacts on utilities
- Utility Relocation impacts on:
  - Environment
  - Right-of-way

***Corridor Studies



Initial Proposed Alignment

- Consider impact to utilities

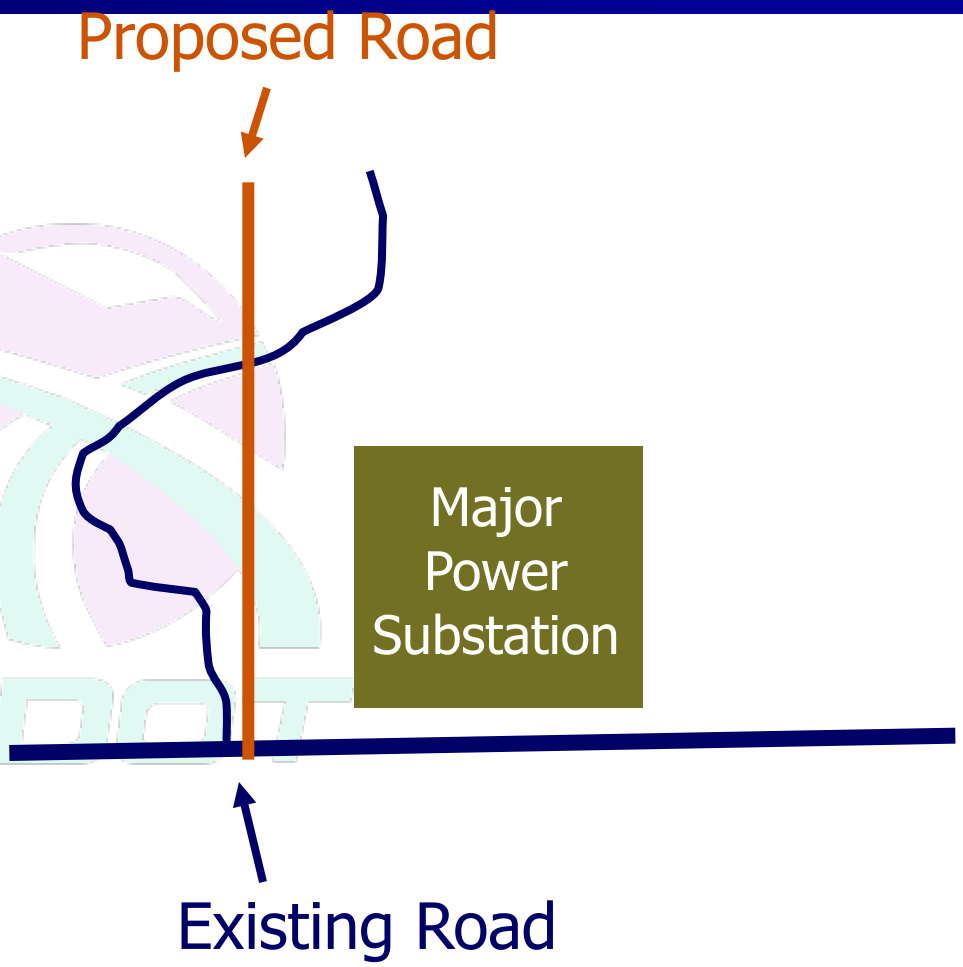


Final Alignment

- Utility has Prior Rights

(project pays)

- Project 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

***Project may re-align roadway/ modify design to avoid & minimize impact to Utilities

Design Phase

Process 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 (Land Rights, Cost, Plans & Sch.)
7. Issue the Utility Clearance Letter

1. Identify Utilities (Data Collection)

- Contact AZ blue stake center
- Utility owners listing & Field Review
- Obtain As-Builts / Facility maps from Ut.
- Research Permit Database (Existing & proposed Ut.)
- Review Existing R/W plans

2. SUE Phase I
(Designate utilities)

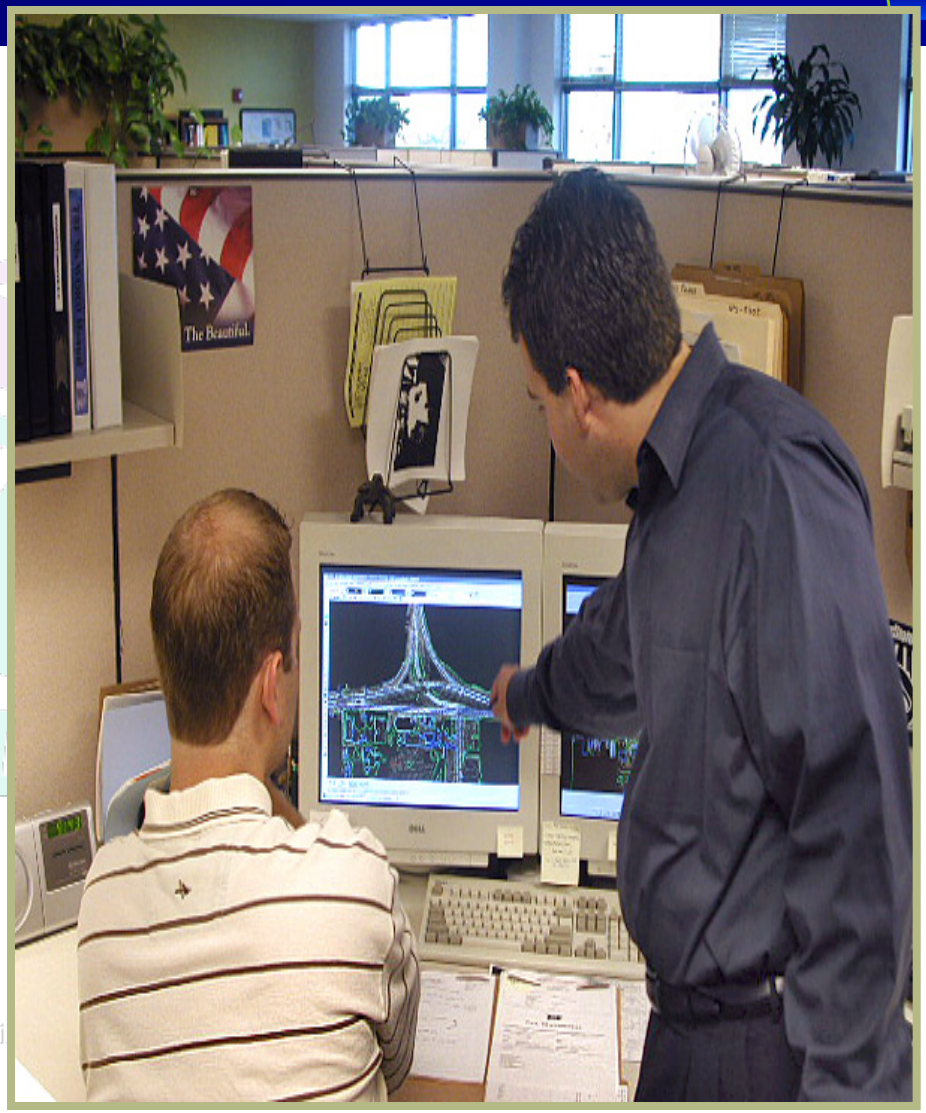
Surveying/Mapping:

- Request utility designation (horizontal QL-B)

- Map designated utilities in GIS/CADD within Project limits

3. Utility Conflict Analysis

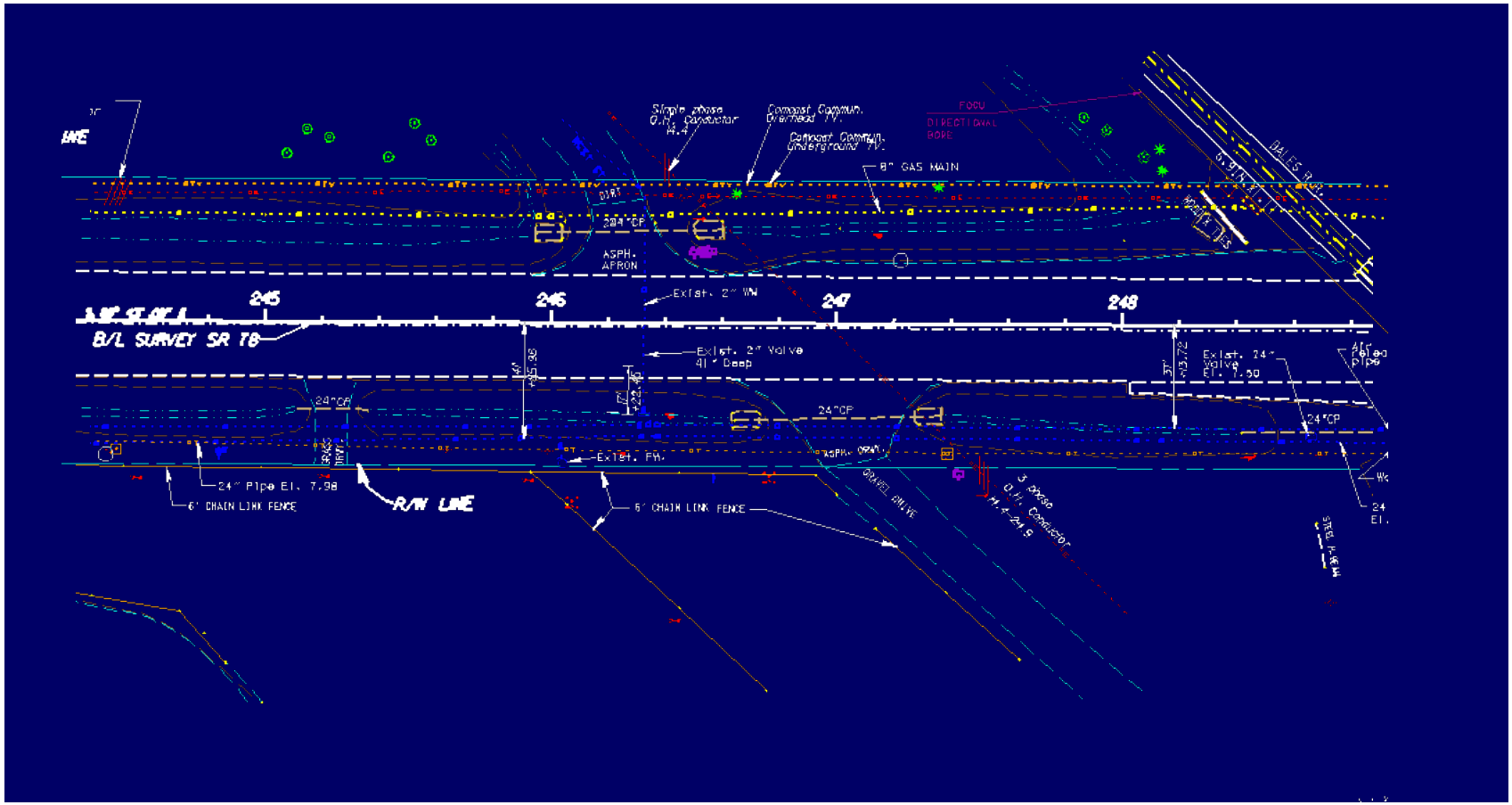
- Lay out horiz. Designated utilities on the design plans (Stage II)
- Determine potential utility conflicts:
  - Review plans
  - Engineering analysis



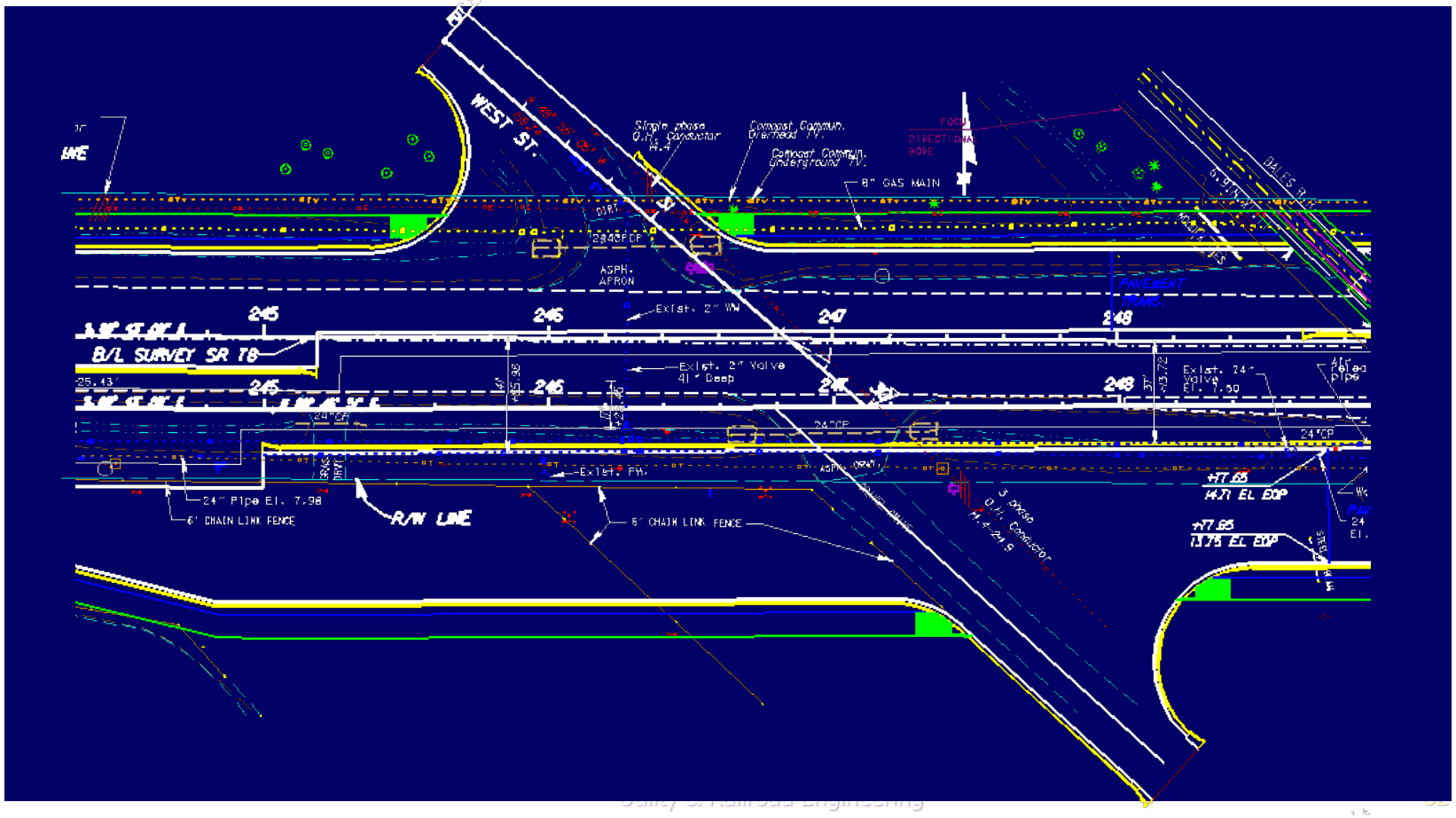
Start With the Topography

Add Existing R/W

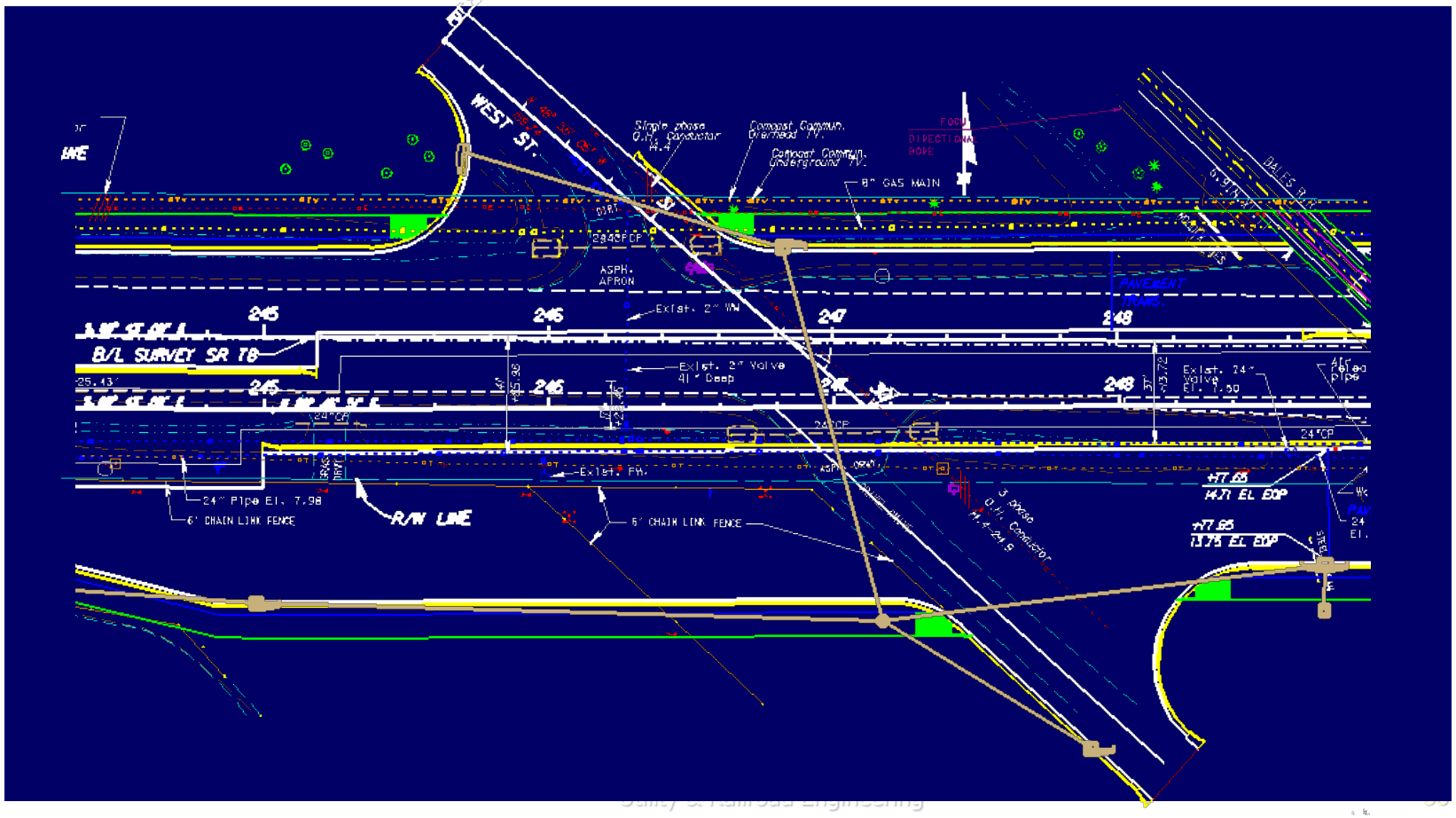
Add Existing Utilities (QL-B)



Add Preliminary Roadway Design



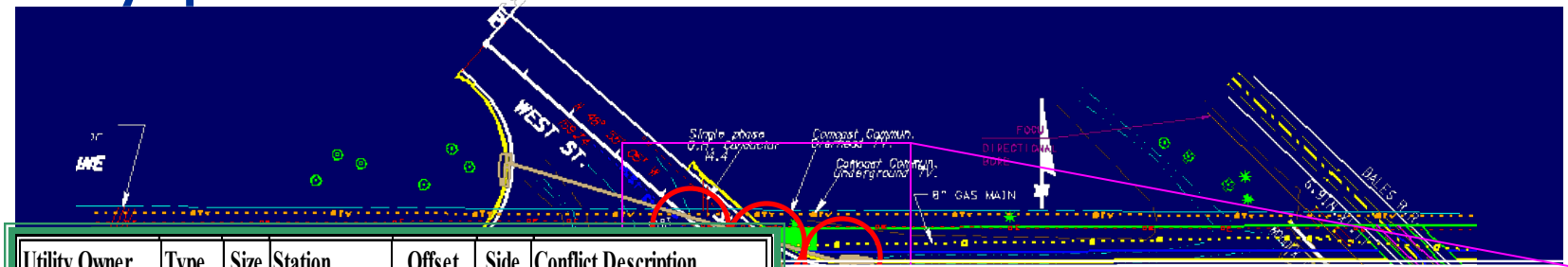
Add Preliminary Drainage Design



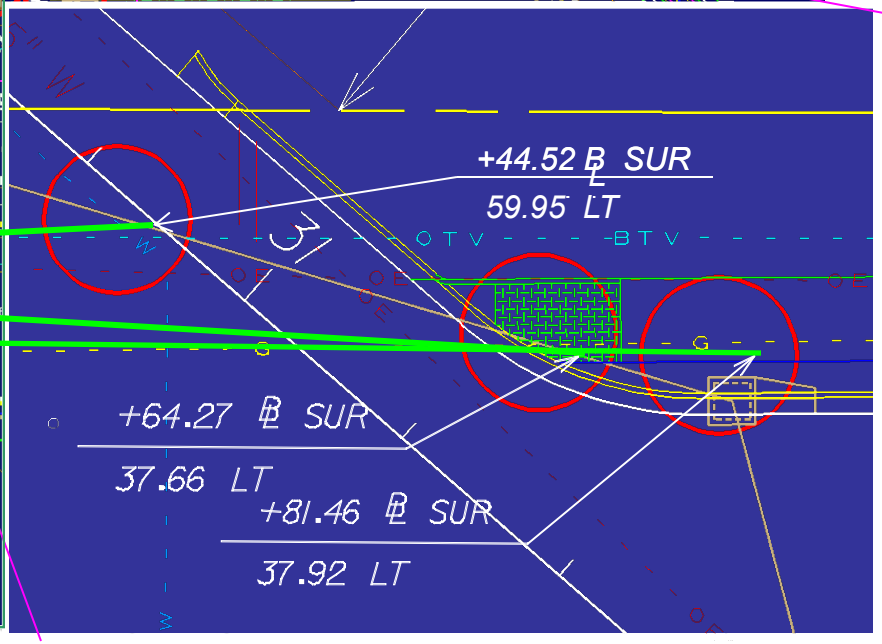
Analyze Conflicts

Identify potential Conflicts

Build Conflict Matrix



Utility Owner	Type	Size	Station	Offset	Side	Conflict Description
Teco	Gas	8"	237+34.02	64.29	LT	Off-Site SW Trunk Line
Teco	Gas	8"	241+22.35	57.25	LT	Main Line Cross Drain
Teco	Gas	8"	243+22.43**	57.25	LT	Main Line Cross Drain
Teco	Gas	8"	243+22.43**	56.23	LT	Main Line Cross Drain
Teco	Gas	8"	243+22.43**	62.68	LT	Main Line Cross Drain
Lee Co.	Water	12"	246+44.52	59.95	LT	Side Street Cross Drain
Teco	Gas	8"	246+64.27	37.66	LT	Side Street Cross Drain
Teco	Gas	8"	246+82.75***	56.25	LT	Main Line Cross Drain
Teco	Gas	8"	247+01.13	56.25	LT	Main Line SW Trunk Line
Teco	Gas	8"	250+29.49	56.25	LT	Main Line SW Trunk Line
Teco	Gas	8"	256+00.00	43.14	LT	Main Line SW Trunk Line
N. Ft. Myers	Sewer	4"	256+49.69	71.37	RT	Pond 1A Trunk Line
N. Ft. Myers	Sewer	4"	256+87.96	72.85	RT	Pond 1A Outfall
N. Ft. Myers	Sewer	4"	260+72.70^	57.58	LT	Main Line Cross Drain



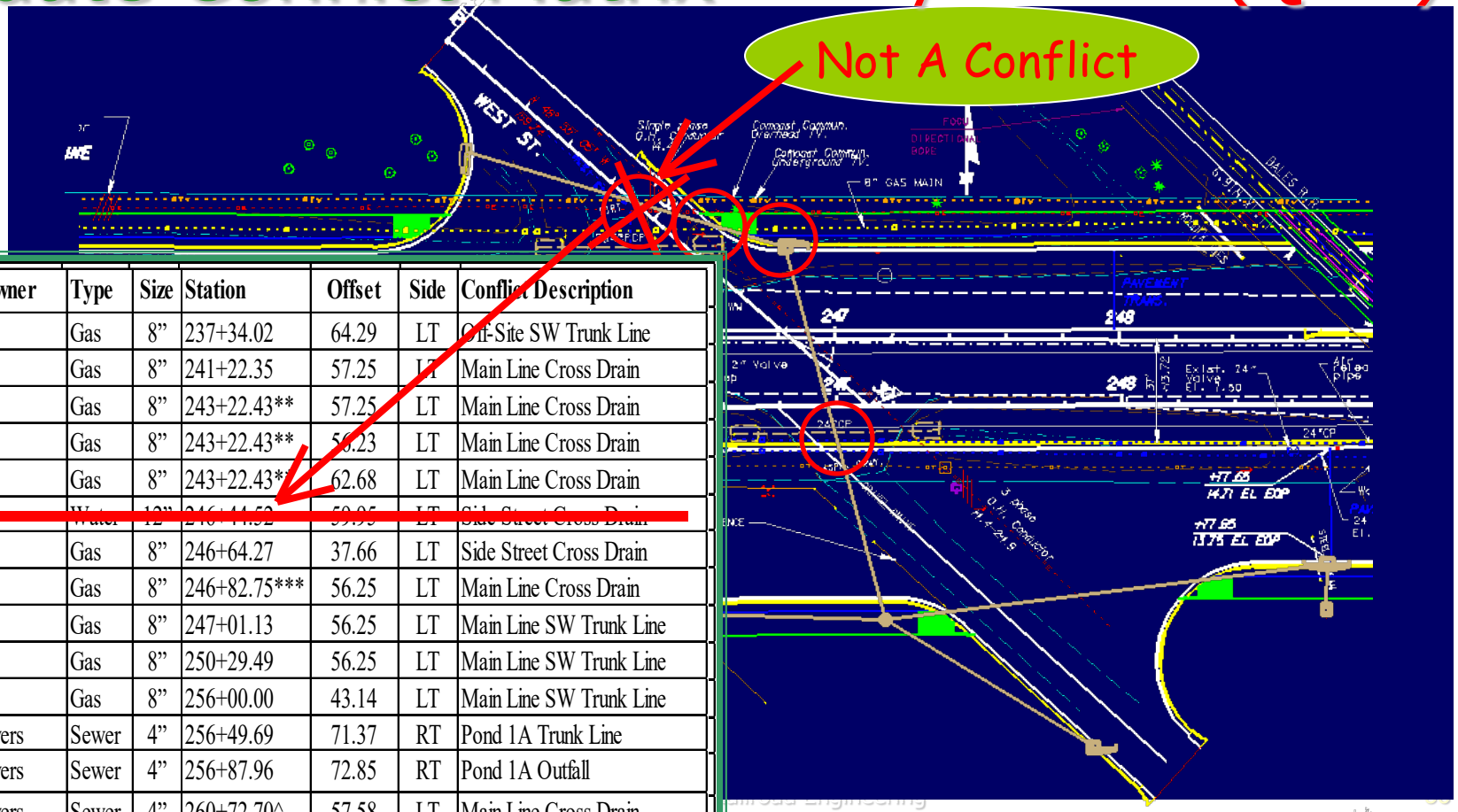
4. SUE Phase II (Locate Utilities)

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

Identify Actual Conflicts

Update Conflict Matrix

Analyze Data (QL-A)



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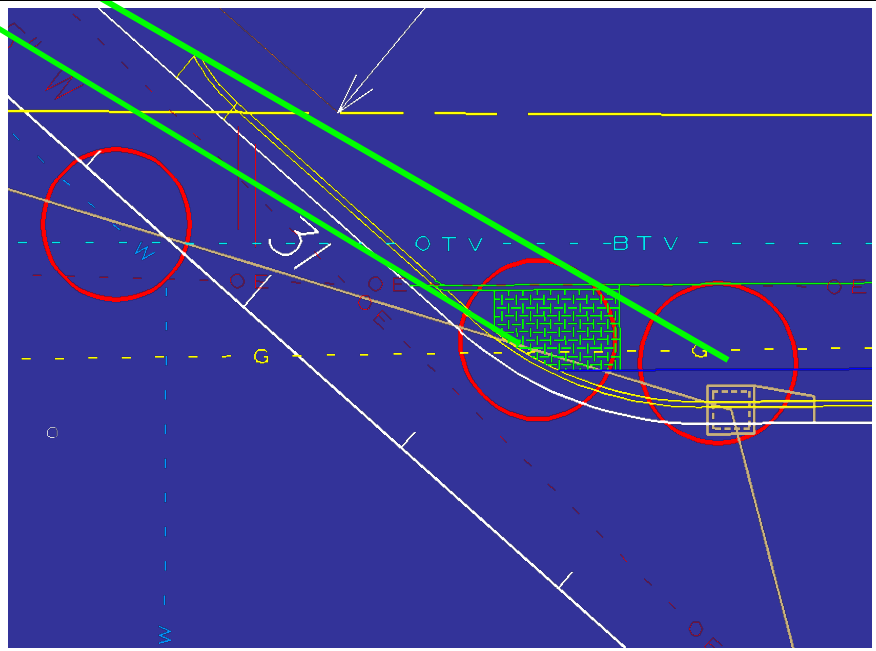
N. Ft. Myers	Sewer	4”	260+72.70^	57.58	LT	Main Line Cross Drain

Actual Conflict Matrix

Station & Offset	Utility	Comments	Action Required
246+64.27, 37.66 LT (x&y)	Teco	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)	Teco	Proposed Side street Cross drain on top of 8" gas line	Confirmed 8' gas line at 2.65' deep. CONFLICT



5. Resolve Utility Conflicts

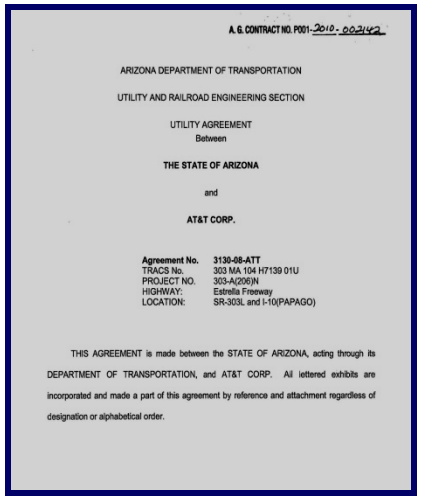
Provide technical guidance to the design team:

- 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



A. G. CONTRACT NO. P001-2010-002142

ARIZONA DEPARTMENT OF TRANSPORTATION

UTILITY AND RAILROAD ENGINEERING SECTION

UTILITY AGREEMENT
Between

THE STATE OF ARIZONA

and

AT&T CORP.

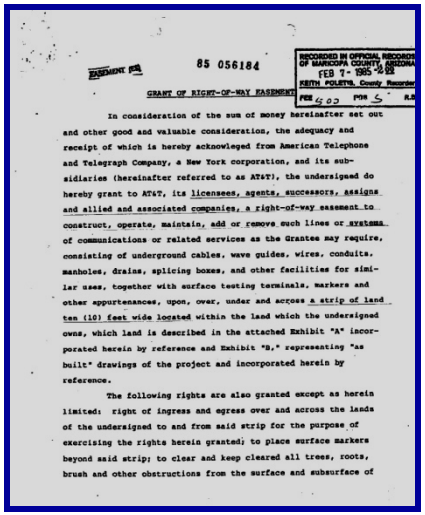
Agreement No.	3130-08-ATT
TRACS No.	303 MA 104 H7139 01U
PROJECT NO.	303-A(206)N
HIGHWAY:	Estrella Freeway
LOCATION:	SR-303L and I-10(PAPAGO)

THIS AGREEMENT is made between the STATE OF ARIZONA, acting through its DEPARTMENT OF TRANSPORTATION, and AT&T CORP. All lettered exhibits are incorporated and made a part of this agreement by reference and attachment regardless of designation or alphabetical order.

*** **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.



EASEMENT FOR 85 056184

RECORDED IN OFFICIAL RECORDS OF MARICOPA COUNTY, ARIZONA
FEB 7 - 1985 - 8:00
KEITH POLETIS, County Recorder
FEE 4.00 FOR 5

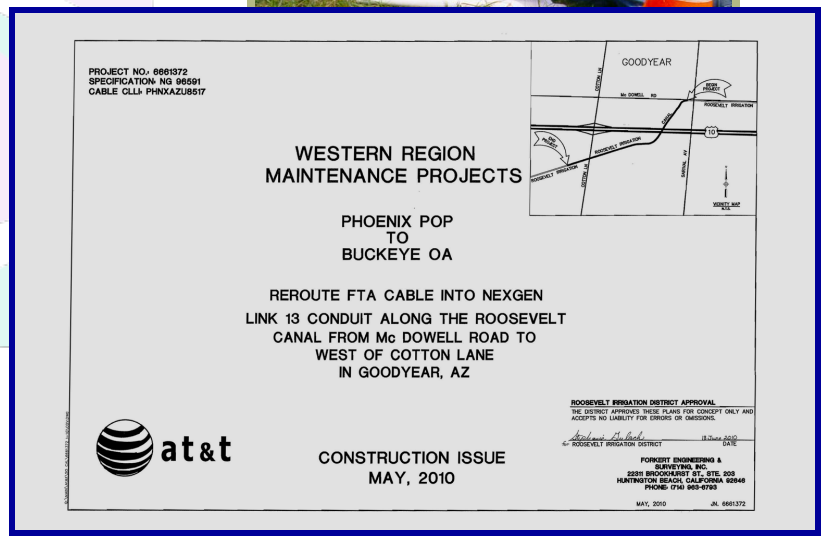
GRANT OF RIGHT-OF-WAY EASEMENT

In consideration of the sum of money hereinafter set out and other good and valuable consideration, the adequacy and receipt of which is hereby acknowledged from American Telephone and Telegraph Company, a New York corporation, and its subsidiaries (hereinafter referred to as AT&T), the undersigned do hereby grant to AT&T, its licensees, agents, successors, assigns and allied and associated companies, a right-of-way easement to construct, operate, maintain, add or remove such lines or systems of communications or related services as the Grantee may require, consisting of underground cables, wave guides, wires, conduits, manholes, drains, splicing boxes, and other facilities for similar uses, together with surface testing terminals, markers and other appurtenances, upon, over, under and across a strip of land ten (10) feet wide located within the land which the undersigned owns, which land is described in the attached Exhibit "A" incorporated herein by reference and Exhibit "B," representing "as built" drawings of the project and incorporated herein by reference.

The following rights are also granted except as herein limited: right of ingress and egress over and across the lands of the undersigned to and from said strip for the purpose of exercising the rights herein granted; to place surface markers beyond said strip; to clear and keep cleared all trees, roots, brush and other obstructions from the surface and subsurface of

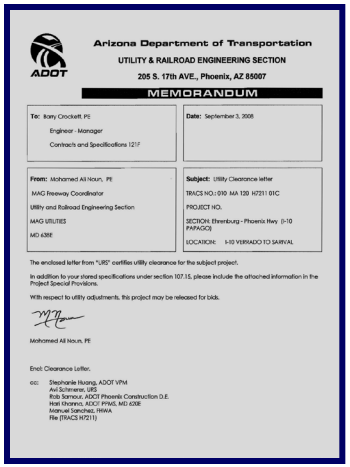
Approve Relocation Plans

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



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; including schedule & permit # for relocations.
- Issue the utility clearance letter authorizing project construction



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 Nour, PE
MAG Freeway Coordinator
Utility and Railroad Engineering Section
MAG UTILITIES
MD 638E

Subject: Utility Clearance letter
TRACS NO.: 010 MA 120 H7211 01C
PROJECT NO.:
SECTION: Ehrenburg - Phoenix Hwy (I-10 PAPAGO)
LOCATION: I-10 YERMADO TO SANYAL

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 Nour, PE

Encl: Clearance Letter.

cc: Stephanie Huang, ADOT VPM
Avi Schmerer, URS
Rob Samour, ADOT Phoenix Construction D.E.
Hani Khoury, ADOT PPMS, MD 630E
Manuel Sanchez, FHWA
File (TRACS H7211)

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

Questions?

Thank you!

UTILITY AND RAILROAD ENGINEERING

Railroad Q & A

Sayeed Hani

Railroad State Liaison