

# The Intersection of Utility Coordination and SUE

Natalie Parks, PE  
Ken Kerr, PE

**THE CHALLENGE:**

Utility related issues during construction have historically been the cause of billions of dollars in cost overruns, claims, redesign costs and significant project schedule delays.

Complete, accurate, and comprehensive utility coordination combined with complete, accurate, and comprehensive utility investigations early in project development enable effective risk management decisions by designers and contractors.



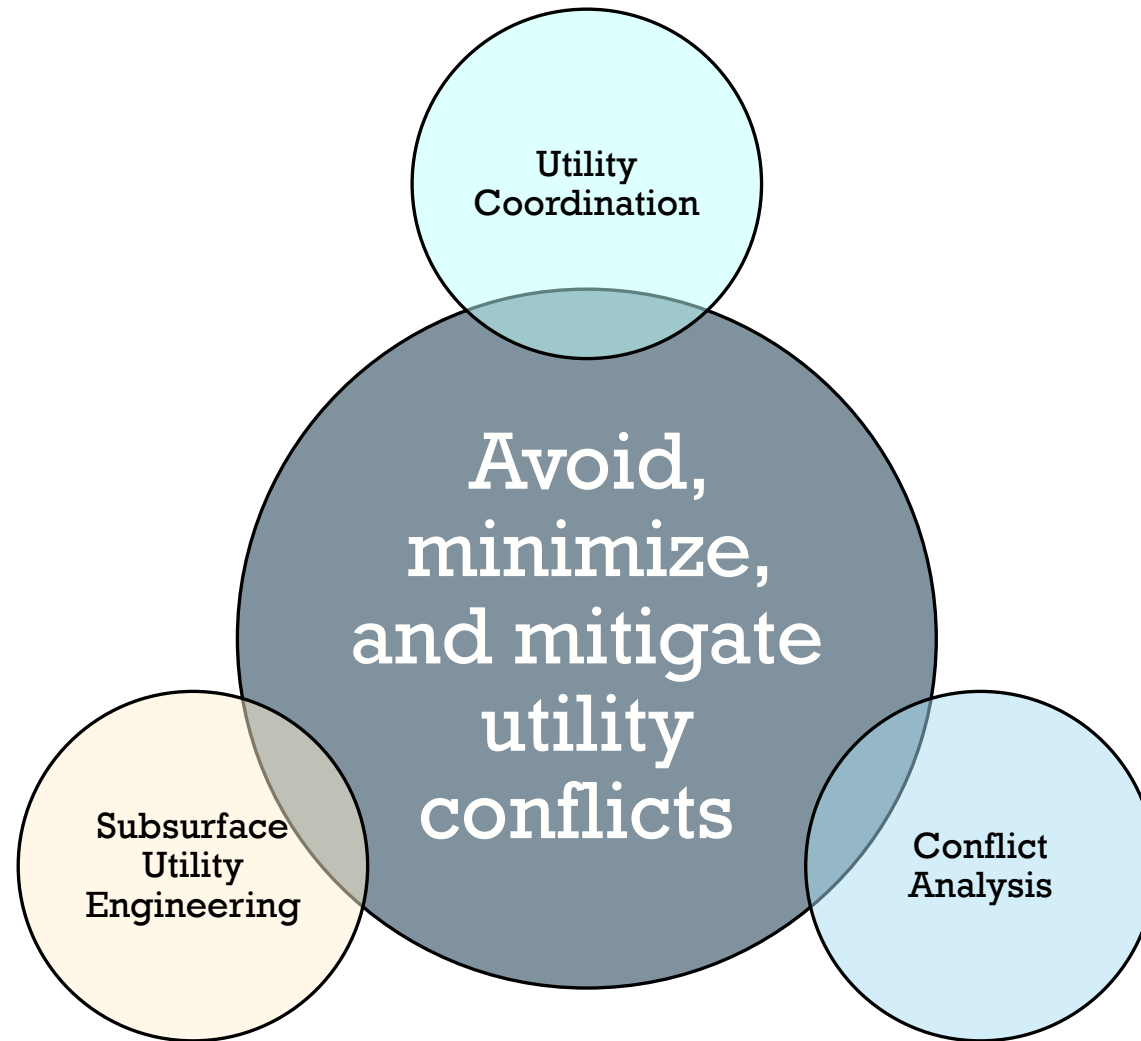
## What is Utility Coordination?

The collaborative effort between a design team, project owner, and utility stakeholders to review proposed improvement plans for accuracy of existing facilities, anticipate potential conflicts, and develop a plan to avoid, minimize, or mitigate conflicts prior to and during construction.



# What is Subsurface Utility Engineering (SUE)?

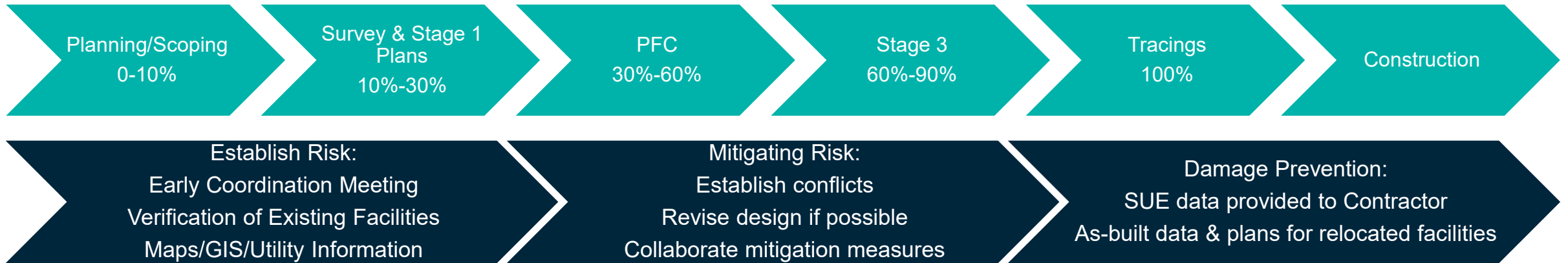
The specialty practice of Civil Engineering's Utility Engineering branch that includes the investigation, analysis, judgment, and documentation of existing utility networks.



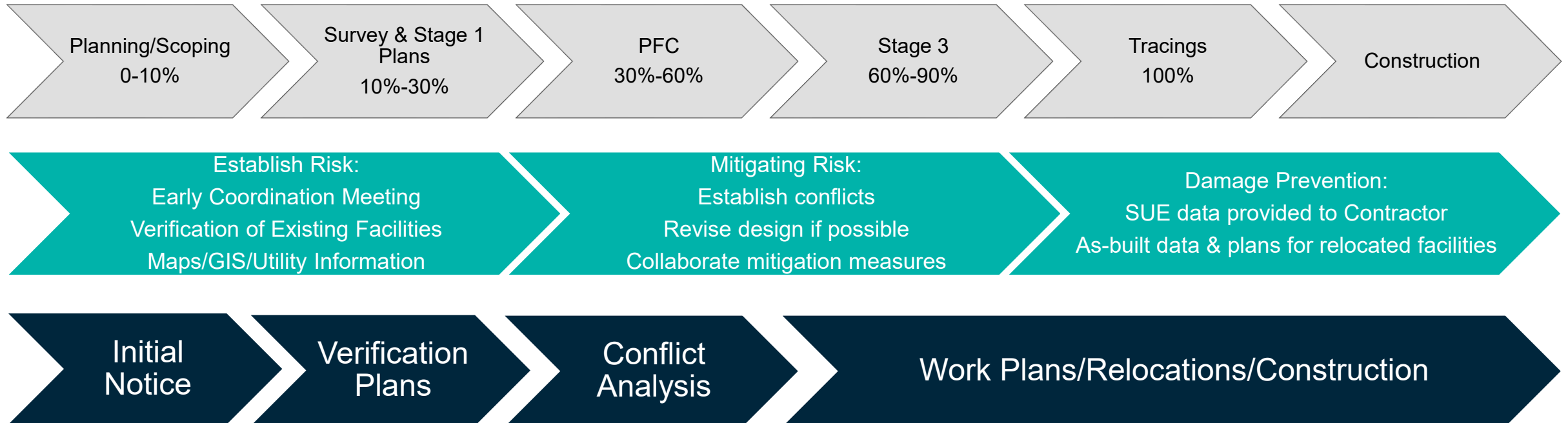
# Project Development Process



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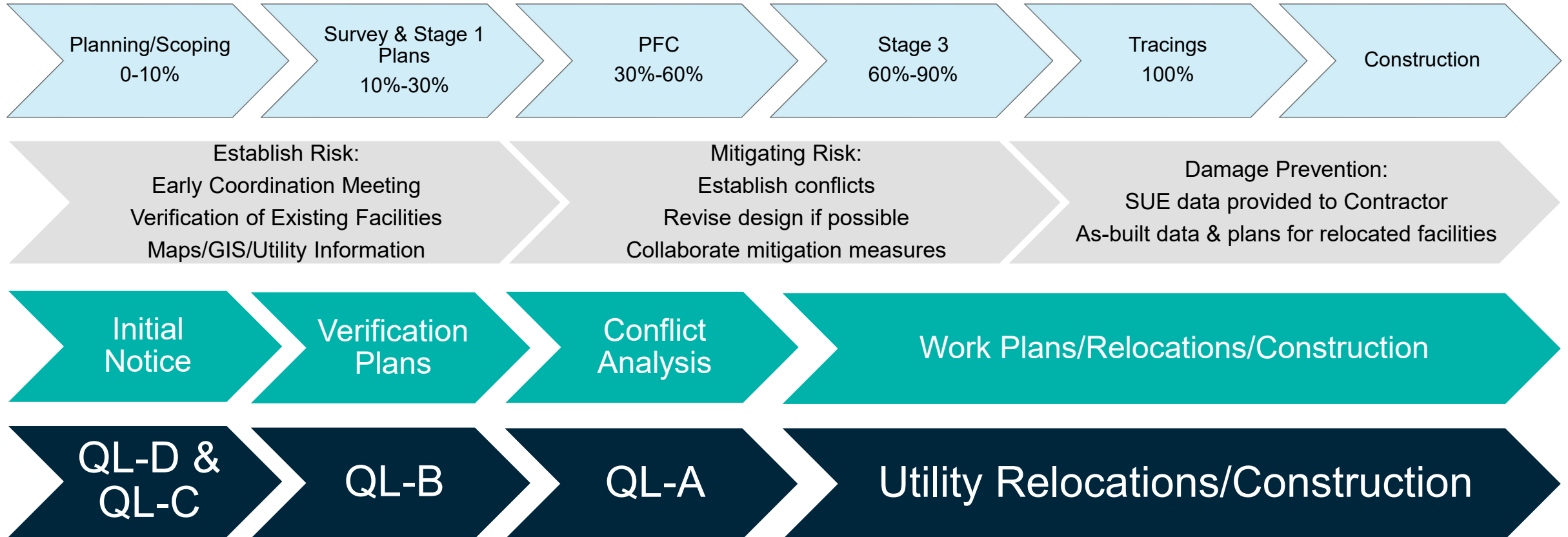


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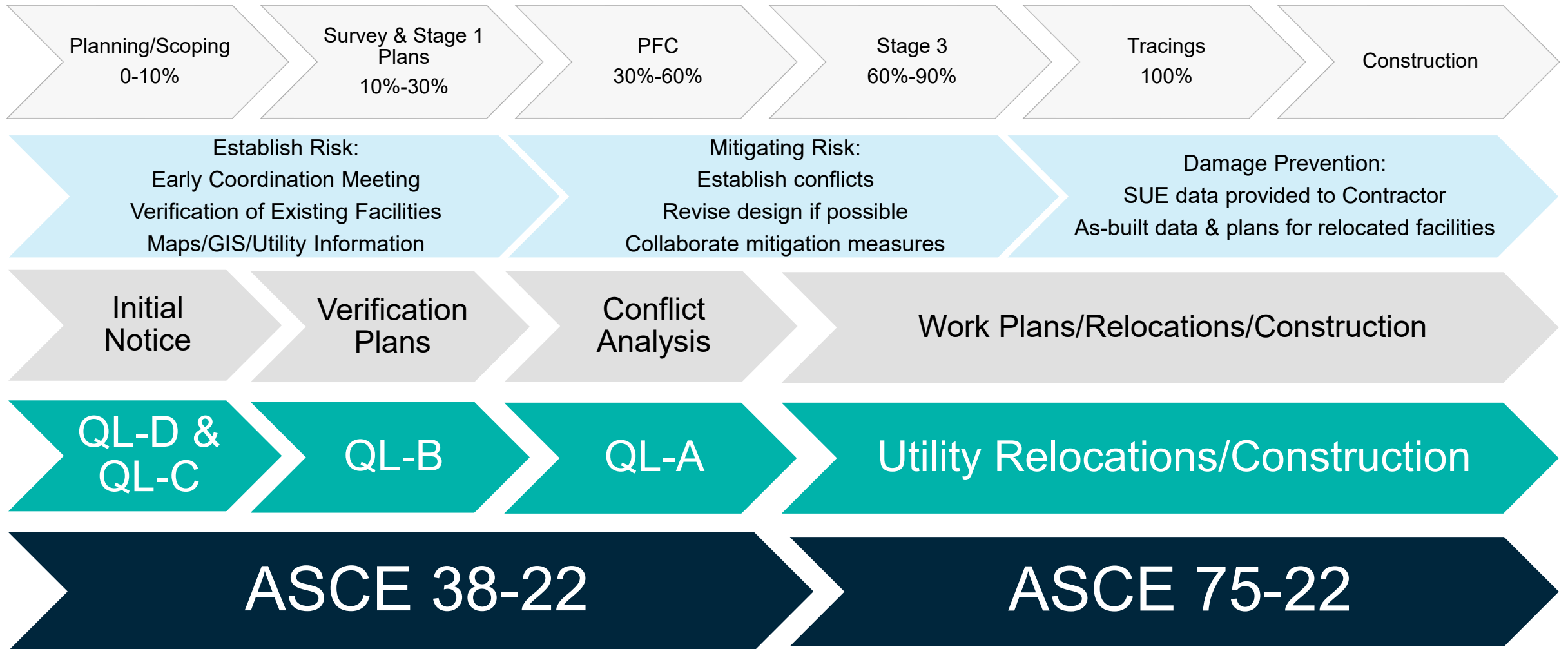




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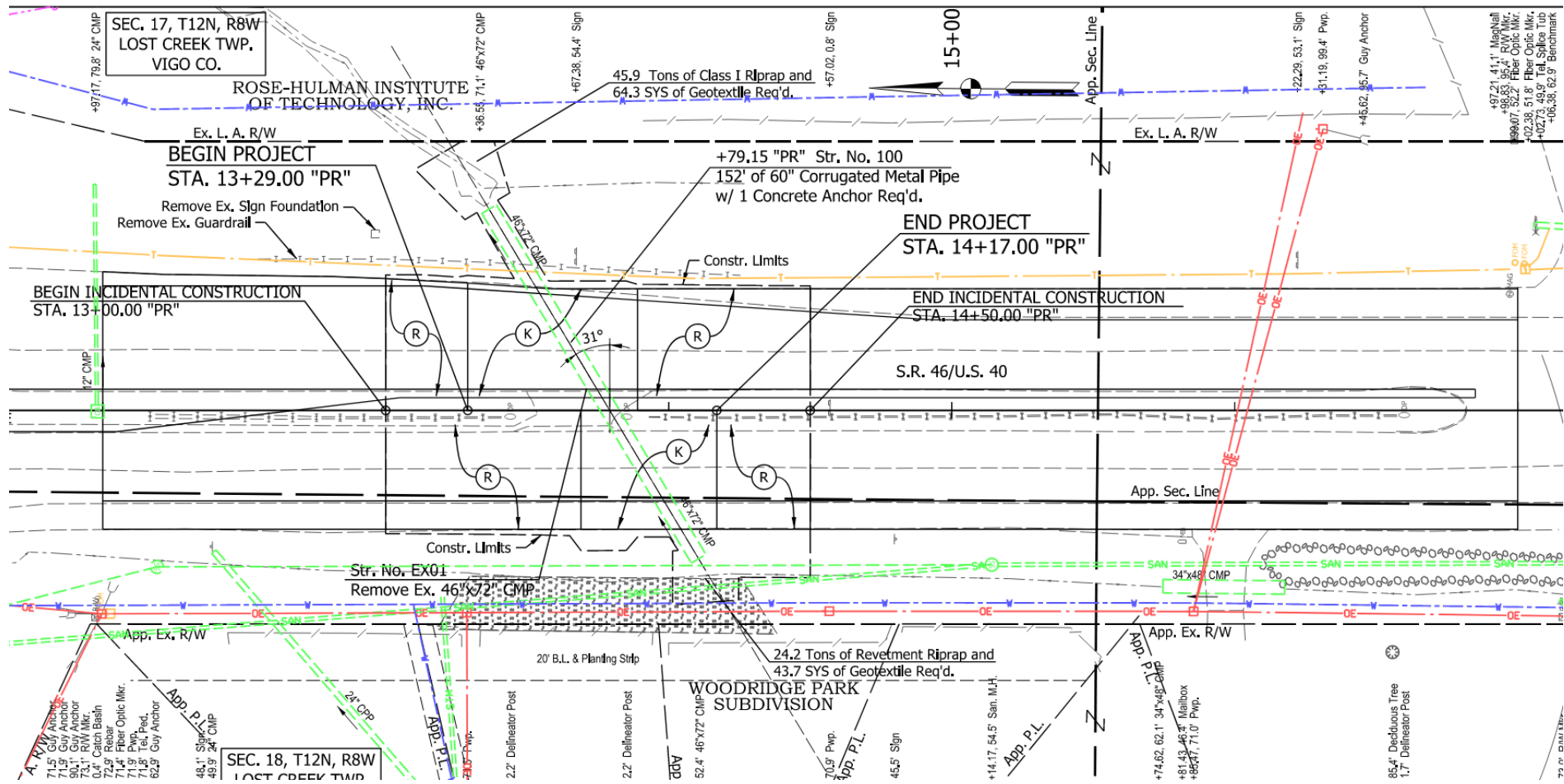


- District Utility/Railroad Coordinator contacts their specified Utility/Railroad Administrator by email (**CC PM**) with the following information
  - Des #
  - Type of Request UC, RC or SUE
  - General Scope of work needed
  - RFC and desired completion date
- Utility/Railroad Administrator inputs the request in On-Call Tracking Report and replies to District Utility/Railroad Coordinator email while adding the consultant company and requesting fee proposal. Email contains the following:
  - Detailed Scope of Work
  - Required timeline
  - Project data/drawings/files as available

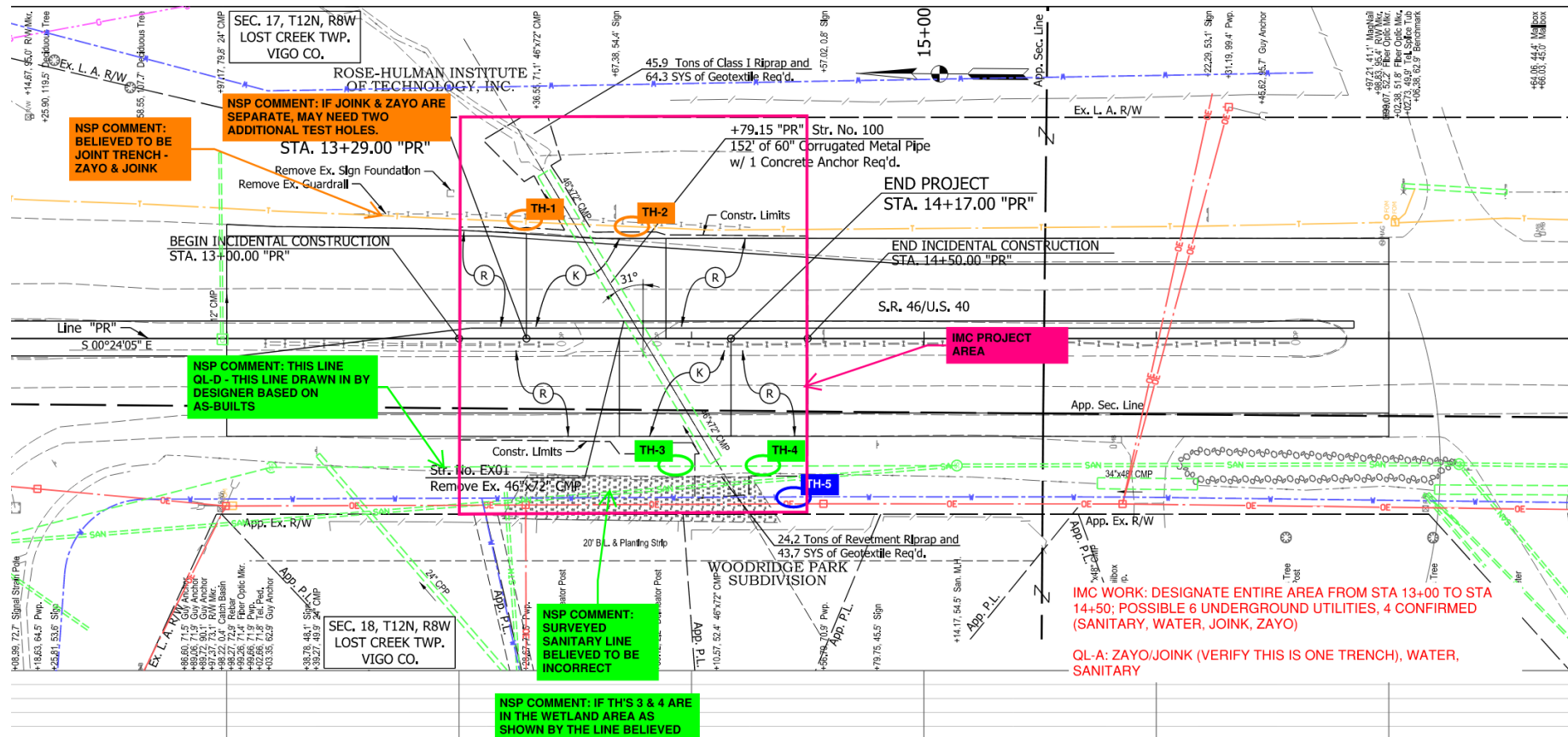
**INDOT has provided a guidance document on UMS outlining how to request SUE using the On-Call.**

- For SUE work requested, the on-call consultants will require additional information that should be compiled by the District or consultant Utility Coordinator while the SUE consultant develops their proposal. This information includes:
  - Topo, design, and alignment CADD files
  - Coordinate system and survey tie in information
  - Most current plans available
  - Any test holes or geotechnical work that has been done to date
  - Any anticipated access concerns including but not limited to right-of-way constraints, steep slopes, heavily forested areas, or guardrail
  - Confirmation of how any test holes in pavement should be restored
  - A project contact in case problems/questions occur in the field
  - Any utility information already obtained such as contact information or as-builts
  - If exact station and offset of QL-A location needed is known, that information (location of line to be confirmed in field by SUE provider)

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Plan sheet provided lacks clear guidance regarding what SUE work is needed

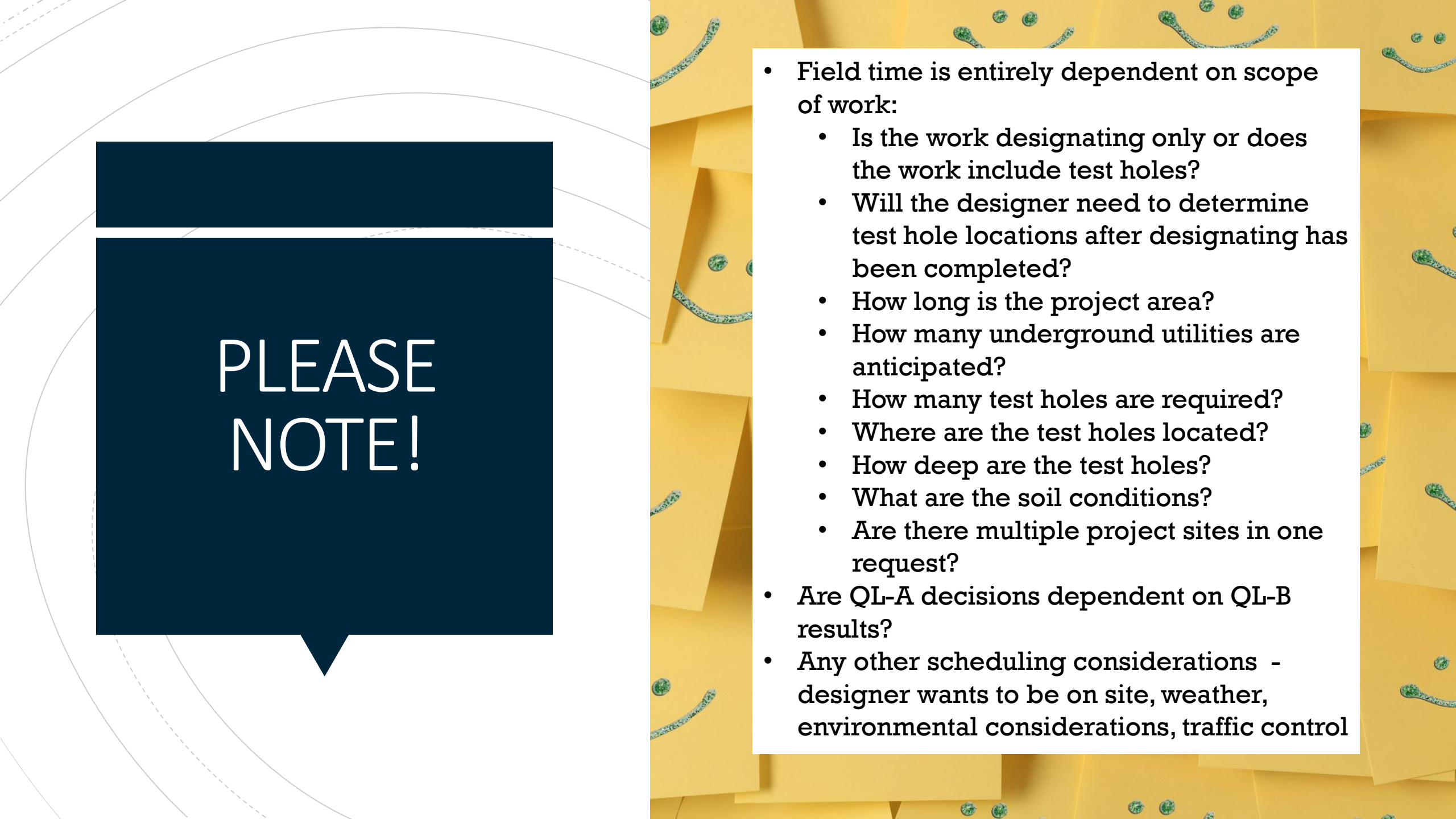


- SUE professional contacted Design team to discuss project for clarity
- Discussed project scope
- Identified SUE project limits

- Explained purpose for SUE
- Provided additional information regarding utility information shown
- Identified areas where test holes are needed and why

<b>Activity</b>	<b>Time</b>
Designer submits request to District PM and/or UC	1 week
District PM reviews & submits to Central Office	1 week
Central office assigns a SUE provider and requests and estimate	1 week
SUE provider reviews information and submits an estimate to Central Office	1 week
Central office sends estimate to designer and District for review and approval	1 week
Central office requests PO	4 weeks
Central office provides NTP to SUE provider	1-4 weeks to start field work
SUE provider performs field work & completes deliverable	1-2 months depending on SUE scope

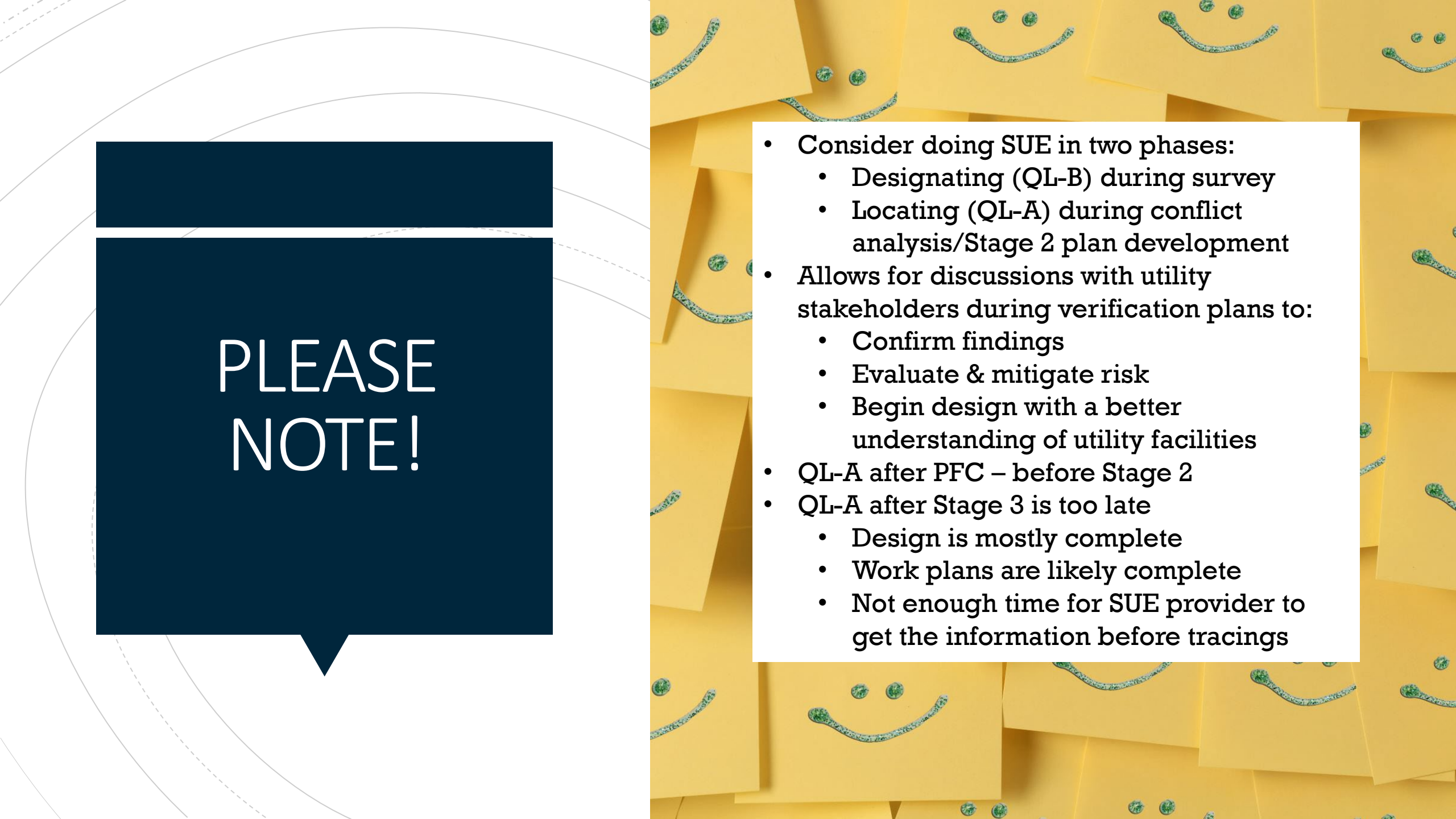
Use SUE early in design to allow for the schedule



**PLEASE  
NOTE!**

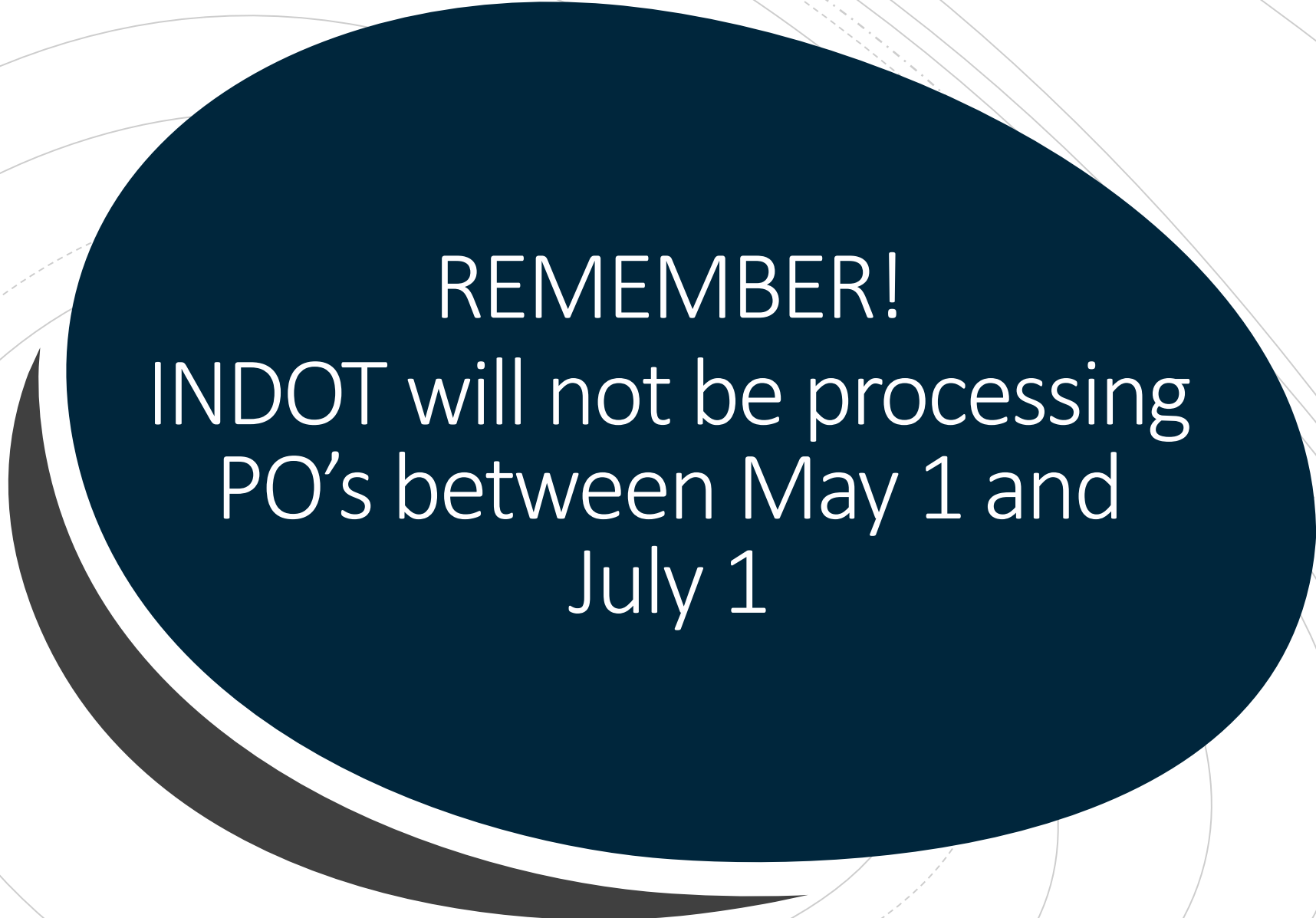
- **Field time is entirely dependent on scope of work:**
  - Is the work designating only or does the work include test holes?
  - Will the designer need to determine test hole locations after designating has been completed?
  - How long is the project area?
  - How many underground utilities are anticipated?
  - How many test holes are required?
  - Where are the test holes located?
  - How deep are the test holes?
  - What are the soil conditions?
  - Are there multiple project sites in one request?
- Are QL-A decisions dependent on QL-B results?
- Any other scheduling considerations - designer wants to be on site, weather, environmental considerations, traffic control





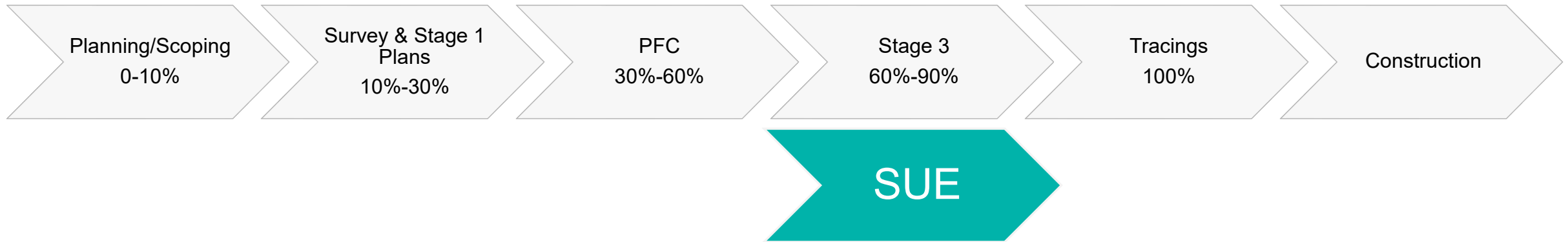
**PLEASE  
NOTE!**

- Consider doing SUE in two phases:
  - Designating (QL-B) during survey
  - Locating (QL-A) during conflict analysis/Stage 2 plan development
- Allows for discussions with utility stakeholders during verification plans to:
  - Confirm findings
  - Evaluate & mitigate risk
  - Begin design with a better understanding of utility facilities
- QL-A after PFC – before Stage 2
- QL-A after Stage 3 is too late
  - Design is mostly complete
  - Work plans are likely complete
  - Not enough time for SUE provider to get the information before tracings



**REMEMBER!**  
INDOT will not be processing  
PO's between May 1 and  
July 1

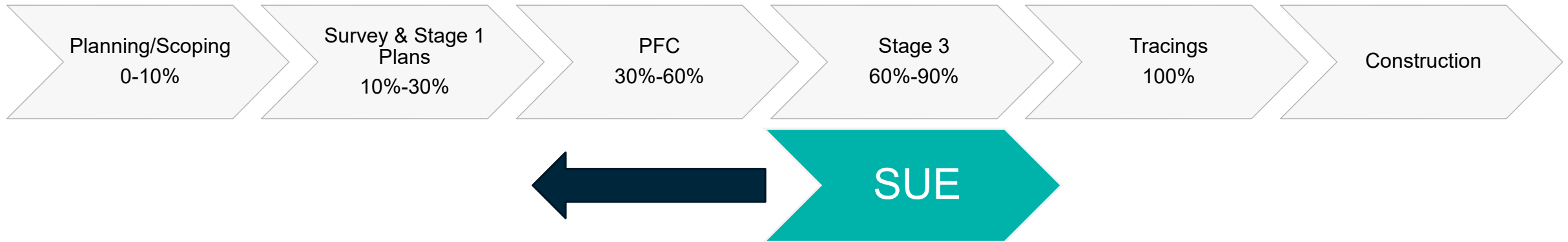
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**Test holes are being requested towards the end of design**

- **Used to supplement utility record information**
- **Not taking advantage of utility designating (QLB) for design**
- **Wasting time including utility record information in plans, why not designate?**
- **Utilizing utility records to identify conflict locations:**
  - **where conflict may not even exist**
  - **Missing utility conflicts that do exist**

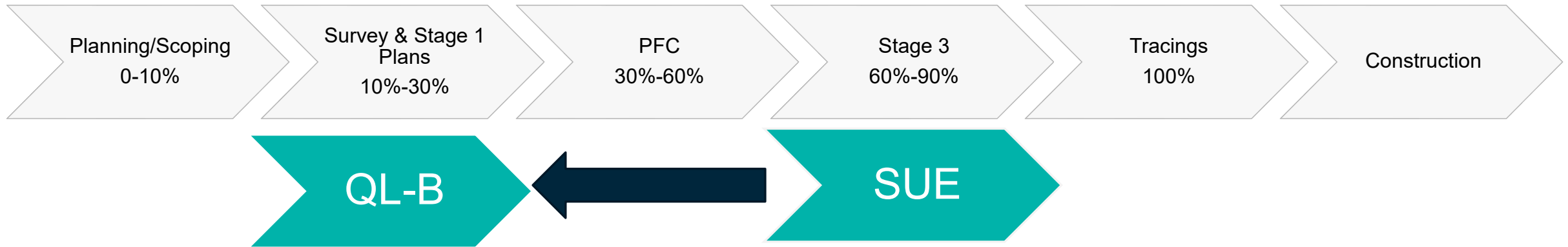
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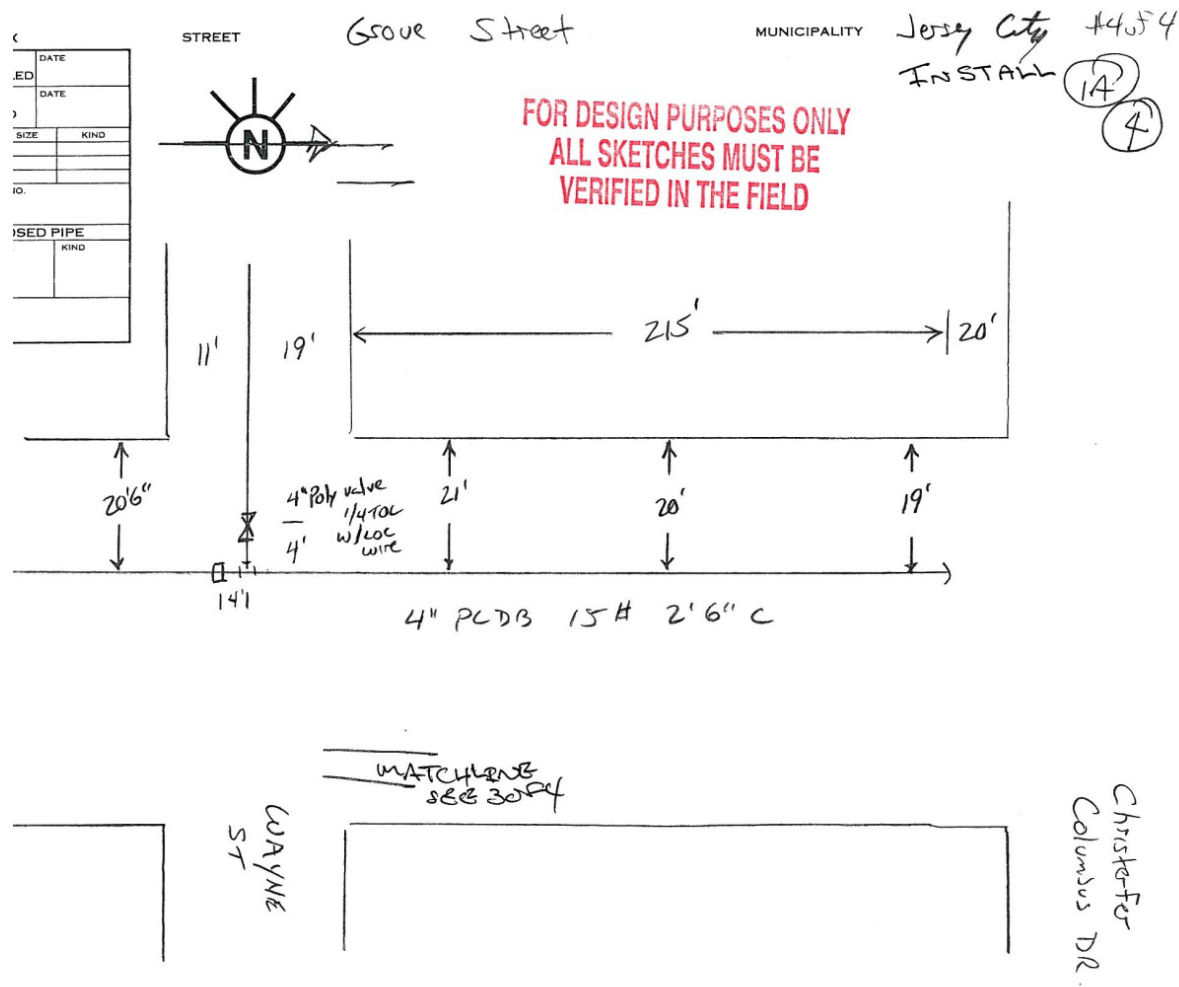
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## Let Utility Designating work for your design

- Have accurate horizontal utility information early in design
  - Ability to design around existing utilities
  - Ability to communicate conflicts with utility companies
  - Save the cost of utility relocations
  - Better understanding of relocations of necessary



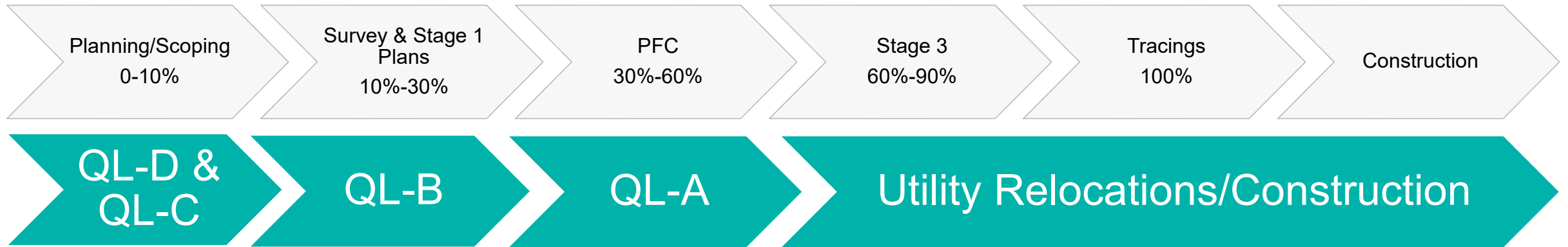
Why not just get records from the utility company?

- Utility records can be inaccurate, incomplete, and unreliable

Why not make One Calls, let them mark it out and survey marks?

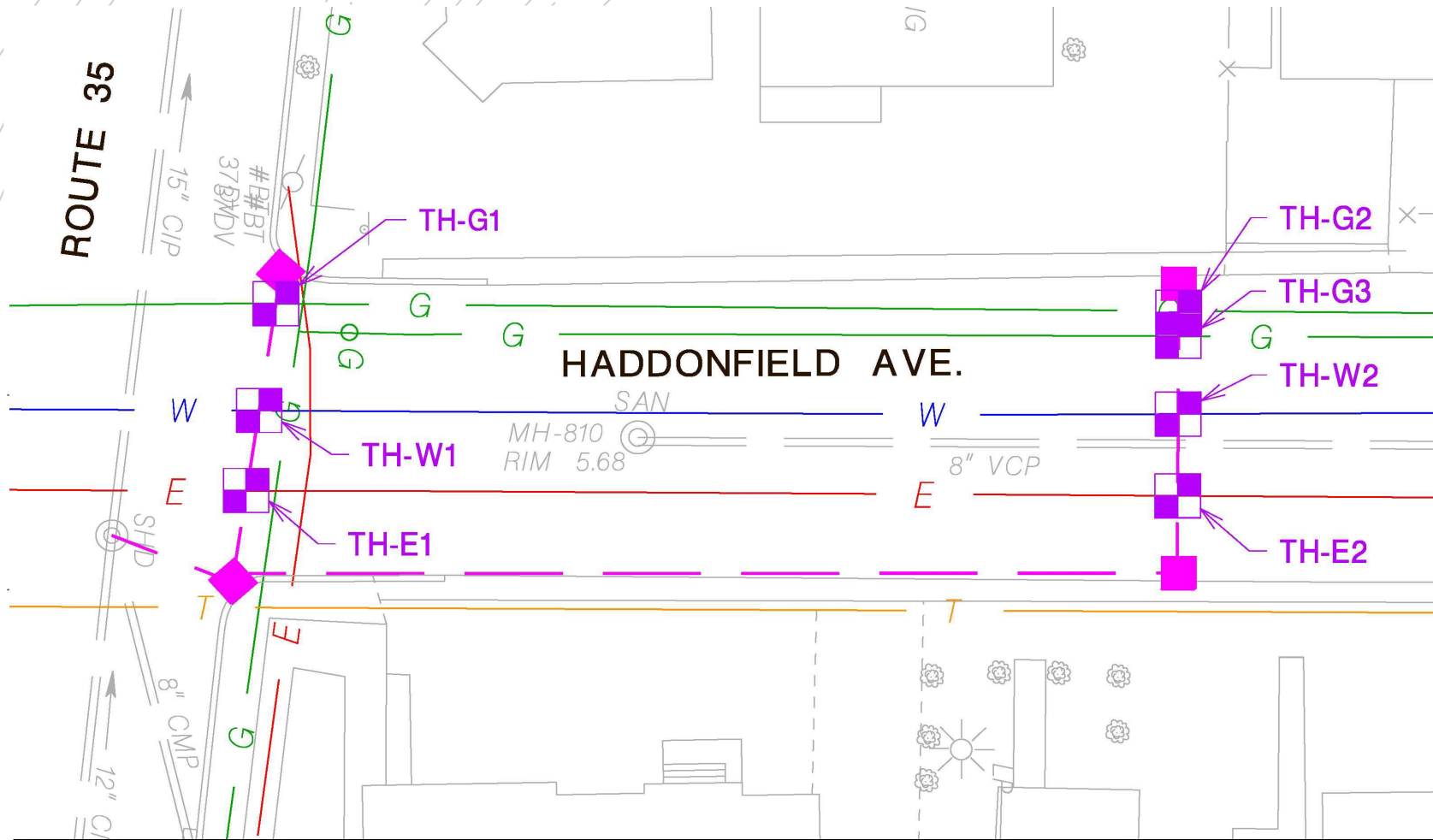
- Lack of liability and accuracy
- One Call is there to protect the excavator, not for design
- Unmarked utilities
- Not even considered QLD

# Project Development Process



**Follow the SUE Process for Design, it works!**

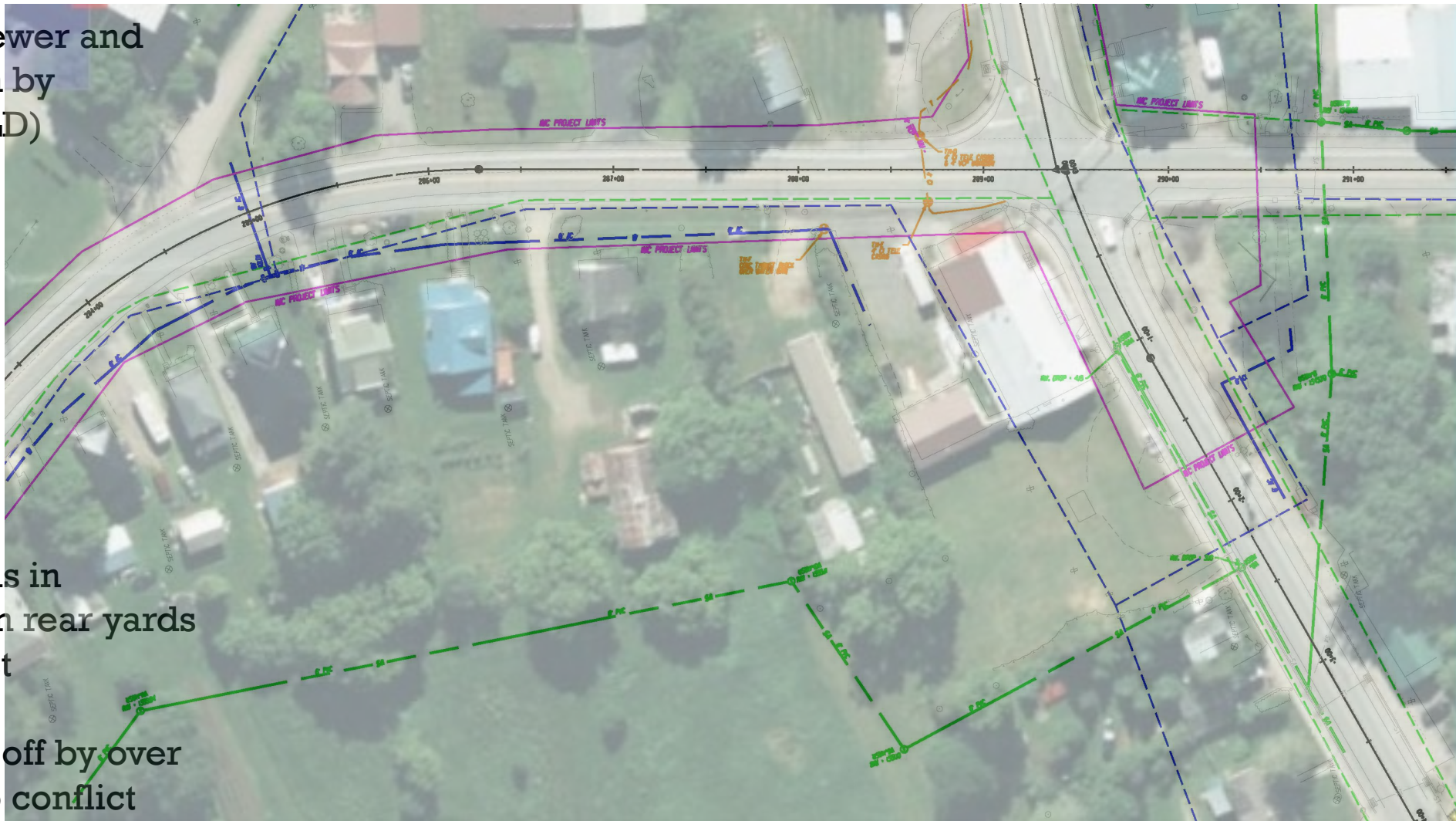
# Project Example 1 – Proposed Drainage Improvement





# Project Example 2 – Drainage and roadway realignment

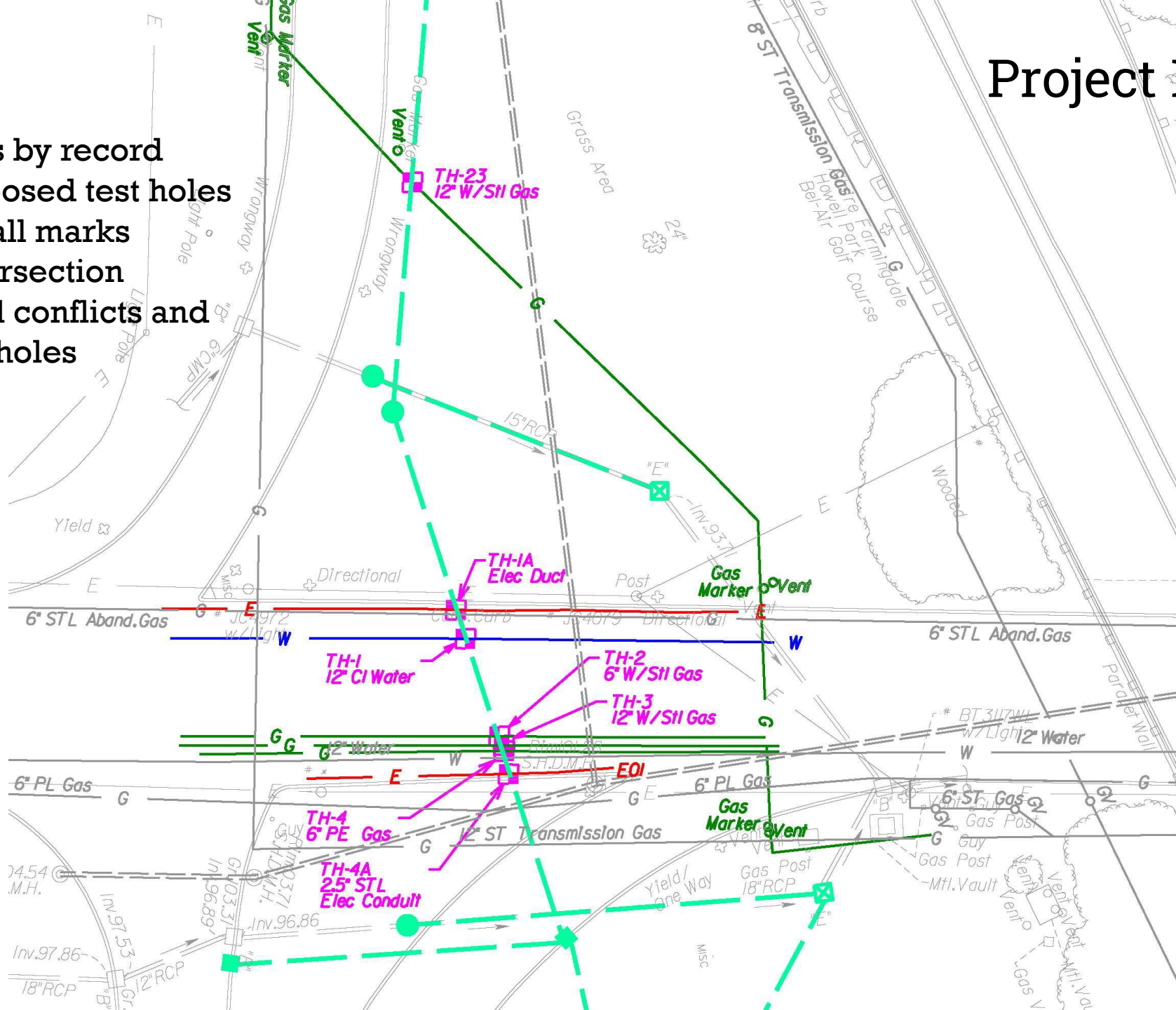
Sanitary Sewer and Watermain by record (QLD)



- Sanitary was in easement in rear yards – no conflict
- Watermain off by over 10 feet – no conflict

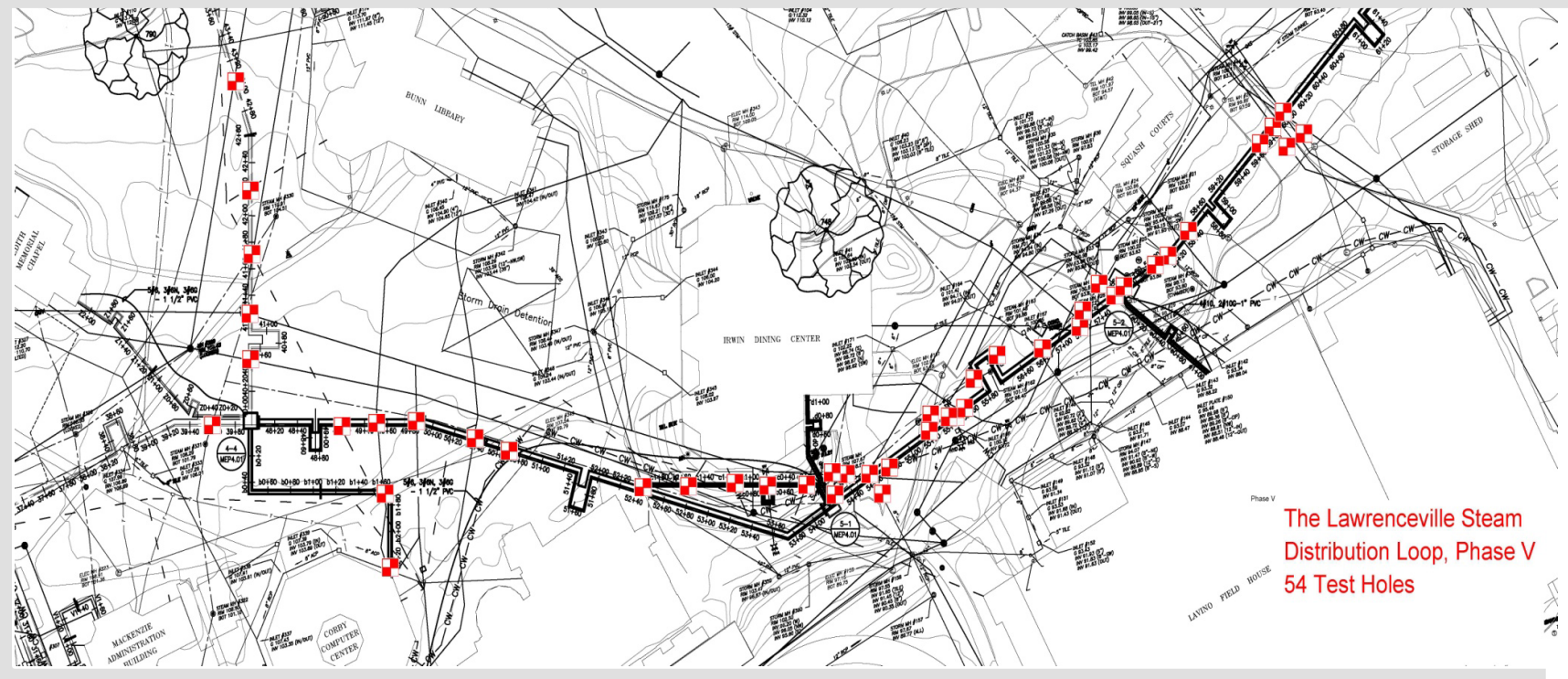
# Project Example 3

- Existing Utilities by record
- Requested proposed test holes based on one call marks
- Designated intersection
- Identified actual conflicts and performed test holes



# Project Example 4

- Proposed steam distribution loop
- Designate the proposed utility corridor alignment
- Over 50 test holes at all utility conflict locations to determine vertical clearance
- Contractor was able to order precast fittings expediting field installation
- Contractor came in months ahead of schedule
- Client indicated the additional SUE information provided LOWER project bids



The Lawrenceville Steam Distribution Loop, Phase V  
54 Test Holes

# TAKEAWAYS

- Use the SUE Process for Design
- Don't use unreliable and inaccurate utility records by surveying one call marks
- Designate and map utilities accurately
- Use test holes for design conflict locations
- As early in design phase as possible!

# Using the SUE Process, Federal Highway Administration says:

Benefits  
In addition, the FHWA found numerous benefits obtained when using SUE on highway projects.

By using SUE, significant benefits are derived for the DOT, utility companies, SUE consultants, contractors, and the general public. Some of the benefits that have been obtained are as follows:

- Reduction in unforeseen utility conflicts and relocations;
- Reduction in project delays due to utility relocations;
- Reduction in claims and change orders;
- Reduction in delays due to utility cuts;
- Reduction in project contingencies;
- Lower project bids;
- Reduction in costs caused by conflict redesign;
- Reduction in the cost of project delays;
- Reduction in travel delays during construction;
- Improvement in contractor productivity;
- Reduction in utility companies' costs;
- Minimization of utility customer complaints;
- Minimization of damage to existing infrastructure;
- Minimization of traffic disruption;
- Improvement in working relationships;
- Increased efficiency of surveying surveys;
- Facilitation of electronic mapping accuracy;
- Minimization of the chance of environmental damage;
- Inducement of savings in risk management and insurance;
- Introduction of the concept of a comprehensive SUE process;



# THANK YOU!

Natalie Parks, PE

Midwest Director

[natalie.parks@inframap.net](mailto:natalie.parks@inframap.net)

C: 317.526.9045

Ken Kerr, PE

Executive Vice President

[Ken.kerr@inframap.net](mailto:Ken.kerr@inframap.net)

C: 609.743.5237

