TRAINING MATERIALS

2017
SCDOT Utility Coordination Training

SCDOT Utility Coordination Policy & Processes Training Class
SHRP2 Identifying & Managing Utility Conflicts

DAY 1 Course Agenda

9:00 AM– 9:30 AM	Introductions and Course Overview
9:30 AM– 10:15 AM	Utility Conflict Concepts
	SCDOT Project Development Process Overview
	Utility Coordination Process Overview
	Utility Company Process Overview
10:15 AM– 10:30 AM	**Morning Break**
10:30 AM– 11:00 AM	Utility Accomodations Policy Overview
	Prior Rights, Risks & Opportunities, Lessons Learned
11:00 AM– 12:00 PM	Utility Conflict Identification & Management
	Identification of Utility Conflicts
	Utility Coordination BMPs
	Utility Coordination Tools
12:00 PM– 1:00 PM	**Lunch Break**
1:00 PM - 1:30 PM	Hands- On Activity for Utility Scoping
1:30 PM– 2:00 PM	Presentation of Group Decisions / Discussion
2:00 PM– 2:30 PM	Utility Coordination Plans & Reports
	Using Consultants for Utility Coordination
2:30 PM– 2:45 PM	**Afternoon break**
2:45 PM - 3:30 PM	Hands-On Activity for Utility Coordination Strategy
3:30 PM– 4:00 PM	Present Utility Coordination Plans / Discussion
4:00 PM - 4:30 PM	**Wrap Up**

DAY 2 Course Agenda

8:00 AM – 8:30 AM	Utility Data Collection / SUE
	Utility Investigations / SUE
8:30 AM - 8:45 AM	How to Read Utility Sheets
8:45 AM - 9:30 AM	*Selection of Test Hole Locations / Examples*
9:30 AM– 9:45 AM	**Morning Break**
9:45 AM – 10:30 AM	Hands-On Activity for SUE decisions
10:30 AM – 11:00 AM	Presentation of Group Decisions / Discussion
11:00 PM – 11:30 AM	Environmental Permitting & Utility Relocations
11:30 AM – 12:00 PM	Constructability Reviews in Utility Coordination
12:00 PM– 1:00 PM	**Lunch Break**
1:00 PM – 1:30 PM	Utility Certifications
1:30 PM - 2:15PM	Hands-On Utility Conflict Management
2:15 PM– 2:30 PM	**Afternoon break**
2:30 PM–3:30 PM	Presentation of Group Decisions / Discussion
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Utility Coordination Training

SHRP2 Identifying and Managing Utility Conflicts

Presenters

Mark Attaway
State Utility Engineer
(803) 737-1296
AttawayMC@scdot.org

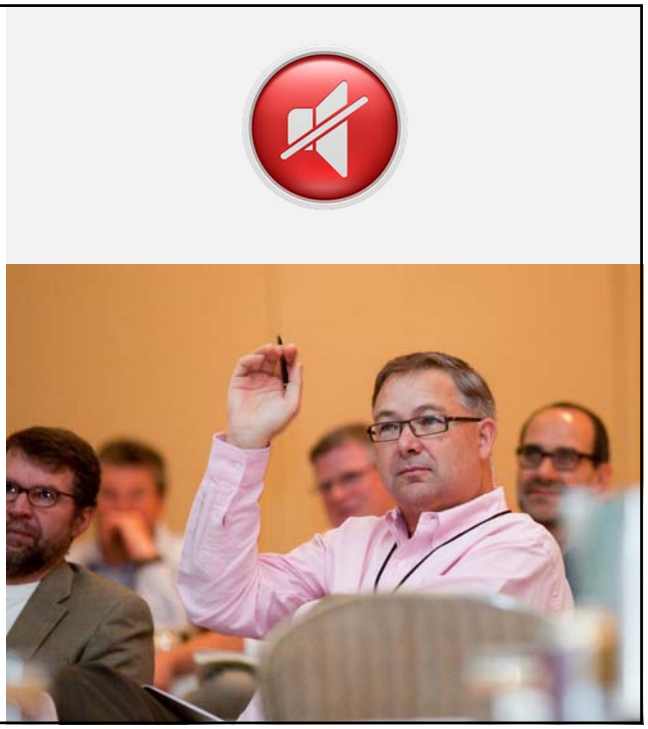
Joy Riley, PE
RPG 1 Program Manager
(803) 737-1346
RileyJ@scdot.org

Marvin Dawson, PLS
Surveys – On-Call Manager
(803) 737-2047
DawsonMH@scdot.org

Cedric Keitt
Asst. Utility Engineer
(803) 737-1407
KeittCC@scdot.org

Housekeeping

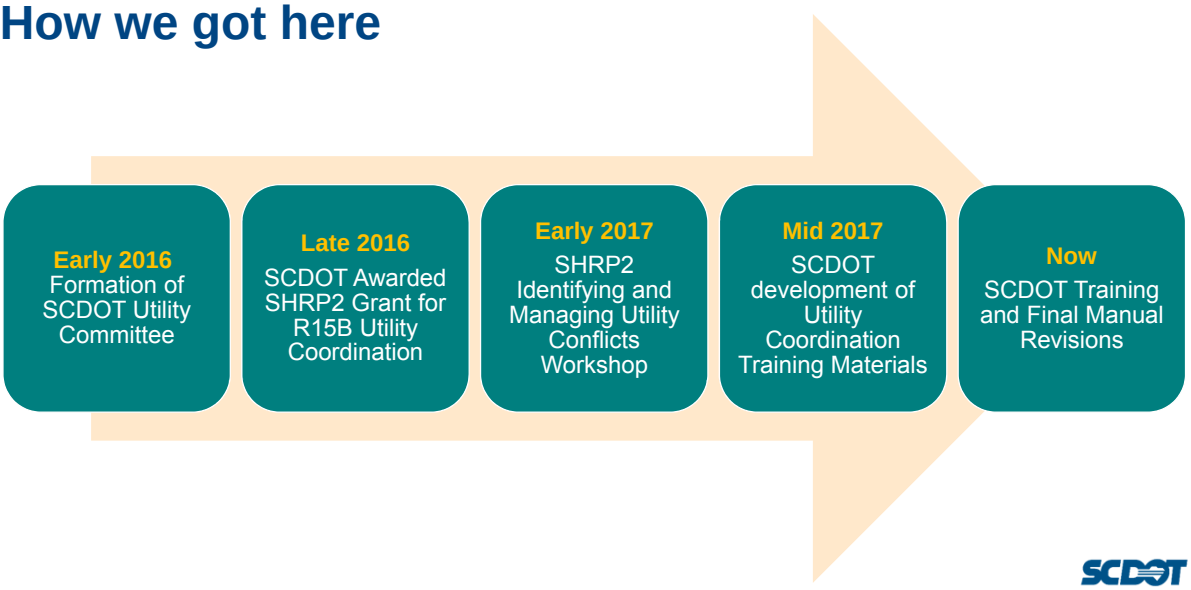
- Make course time as productive as possible
  - Turn off cell phones
  - Return from breaks and lunch on time
  - Stay on task during activities
- Ask questions
- Use sign-in sheet
- Use course feedback form
- Miscellaneous



Introductions

- Name
- Where do you work?
- What is your role in the utility coordination process?
- Experience with the utility process?
- Expectations for this course?

How we got here



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SHRP2

R15B Research Findings

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SHRP2 R15B Products

Product 1: Compact, standalone UCM

- Low number of data items
- Spreadsheet (MS Excel)

Product 3: One-day UCM training course

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SHRP2 R15B Products

- SHRP2 collected 26 sample UCMs for comparison
  - Many states use tables or spreadsheets to manage utility conflicts
  - Wide range of styles and content
- Developed a one-day training course on identifying and managing utility conflicts.
- SHRP2 FHWA Utility Conflicts Website @ https://www.fhwa.dot.gov/goshrp2/Solutions/Renewal/R15B/Identifying_and_Managing_Utility_Conflicts

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Course Overview

Day 2

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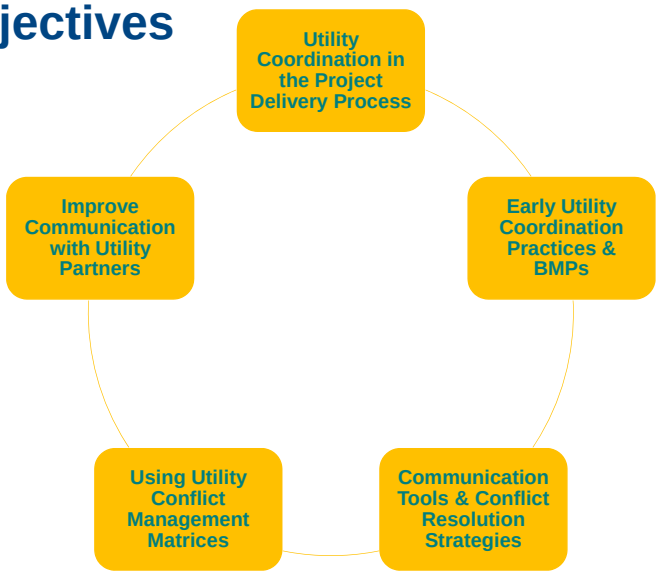
Training Objectives



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Participant Workbook

Section A: PowerPoint Slides
Section B: Handouts
- SCDOT Utility Coordination Process
- Utility Coordination Checklist
- Utility Company Process
- Utility Company Checklist
- Sample SUE Sheet
- SUE Decision Diagrams
- Best Practices Sheet
- UCM Spreadsheet

Section C: Mock Project Information
Section D: Course Evaluation Forms

Utility Conflict Concepts

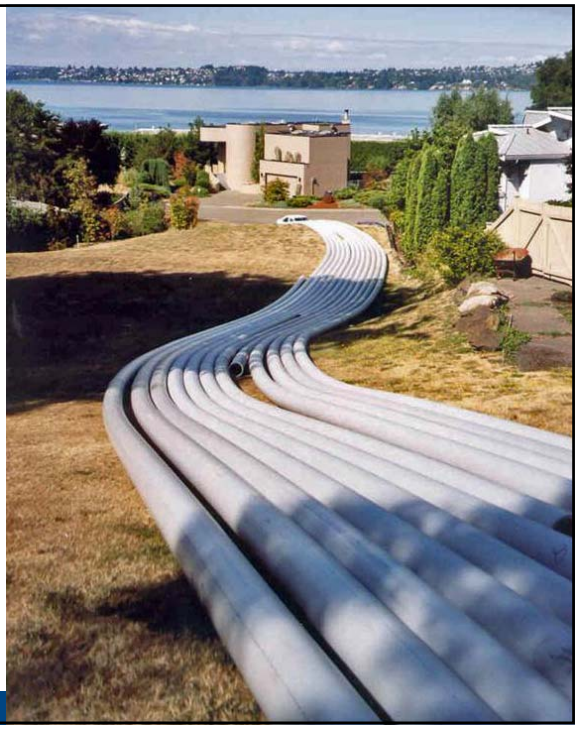
Introduction

AGENDA

- Utility Conflict Concepts
- Utility Conflict Resolutions
- SCDOT Project Development Process
- Utility Coordination Process
- Utility Company Process

Definition of Utility

- **Utility:** A entity that owns and provides a public service such as electricity, water, sewer, telephone, etc.
- **Private Utility:** A utility that does not meet the requirements of a “Public Utility” as defined below.
- **Public Utility:** Any organization, corporation, municipality, county, authority or other association providing any type of utility service to the general public, or segments thereof, for compensation and subject to the applicable South Carolina State law.



Utility Conflict Scenarios

- Utility facility **vs.** transportation design feature (existing or proposed)
- Utility facility **vs.** transportation construction activity or phasing
- Planned utility facility **vs.** existing utility facility
- Noncompliance with:
  - Utility accommodation statutes, regulations, and policies
  - Safety or accessibility regulations

Challenges

Frequently cited reasons for project delays from a **DOT PERSPECTIVE**:

- Short timeframe for developing projects
- Project design changes
- Environmental process delays
- Utility-related inefficiencies
- Inaccurate location and marking of existing utility facilities
- Identifying utility conflicts late in the design phase
- Disagreements on recommended utility-related solutions
- Utility relocation costs not included in utility company budget
- Limited response and adherence to deadlines

Challenges

Frequently cited reasons for project delays from a **UTILITY OWNER PERSPECTIVE**:

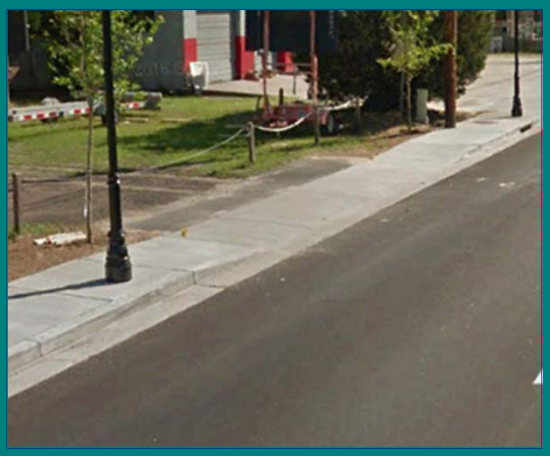
- Limited resources (financial and personnel)
- Internal demands (maintenance, service upgrades)
- Utility owner's project development process protocols
- Coordination with other stakeholders during design
- Coordination with other stakeholders during construction
- Changes in DOT design and schedules
- Unrealistic schedule by DOT for utility relocations
- Acts of God (weather events)
- Easement acquisition hurdles

Inefficient Management of Utility Issues

- Lack of accurate, complete utility data
- Resolution and management of utility conflicts
- Negative impacts:
  - Limited information to avoid or minimize impacts during design
  - Disruptions during construction
  - Damage to utility installations
  - Delays and project overruns
  - Unplanned environmental corrective actions
  - Unnecessary utility relocations
  - Additional cost to SCDOT and utilities

Utility Conflict Scenarios

Utility Conflict Scenarios



Solution Strategies

- Early communication to **AVOID** or **MINIMIZE** conflicts during preliminary design
- Remove, abandon, or relocate utilities in conflict
  - Relocating utilities **NOT NECESSARILY OR ALWAYS** the best or most cost-effective solution
- Modify transportation facility
- Protect-in-place utility installation
- Accept an exception to policy

Solution Strategy: AVOID and MINIMIZE

- Identify location of utilities **EARLY**
  - SC811 ticket to have utilities marked in field before scoping meeting
  - Utility Company provides utility records and/or agrees to work with SCDOT to obtain general location information.
- Early coordination and information on utility locations is essential
  - Allows utility impacts to be considered in the NEPA alternatives analysis.
  - Assists SCDOT in designing footings, abutments, pilings and drainage.

Avoid → **Minimize** → **Mitigate**

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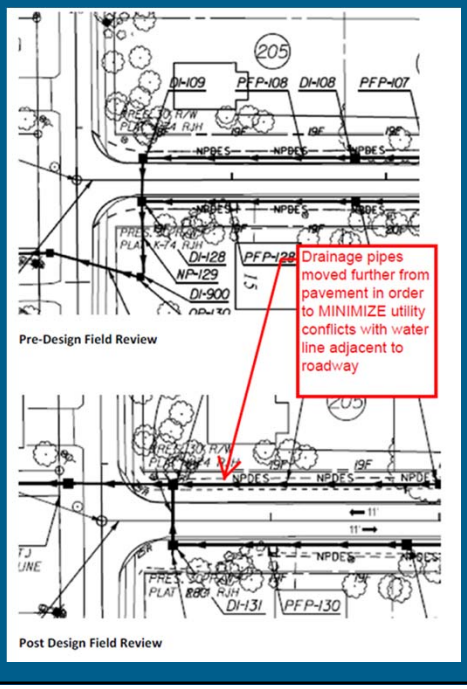
Example: Avoid and Minimize

- Edisto Drainage Improvements & Resurfacing Project
- Design Field Review
  - 6” water line identified that would interfere with the proposed storm drainage system
  - Additional Present ROW available to allow for adjustments and/or relocations

Example:
Avoid and Minimize *(continued)*

- Town suggested SCDOT flume the runoff from the roadway valley gutter to drop inlets located behind the existing 6” water main.
- Plans updated to reflect the new piping system offset 12’ from the existing edge of pavement to reduce impacts to the water system.
- Utility Cost Savings = $50,000
- SCDOT Cost for design adjustment = $7,500
- Estimated Cost Savings= $42,500
- Estimated time savings: 4-6 months
- Improved goodwill with utilities: priceless



Solution Strategy:
Transportation Design Considerations

- Geometric alignment (horizontal/vertical):
  - Adjustments to grade
  - Offset centerline, widen one side of highway
  - Move ramps, driveways
- Structure dimensions, other characteristics:
  - Modify embankment slope
  - Add/modify retaining wall to reduce slope encroachment
  - Consider utilities in design of bridge footings and abutments, pilings
  - Consider utilities in design of drainage structures
  - Clear zones

SCDOT must have the Utility Location Information EARLY in order to consider in Design!

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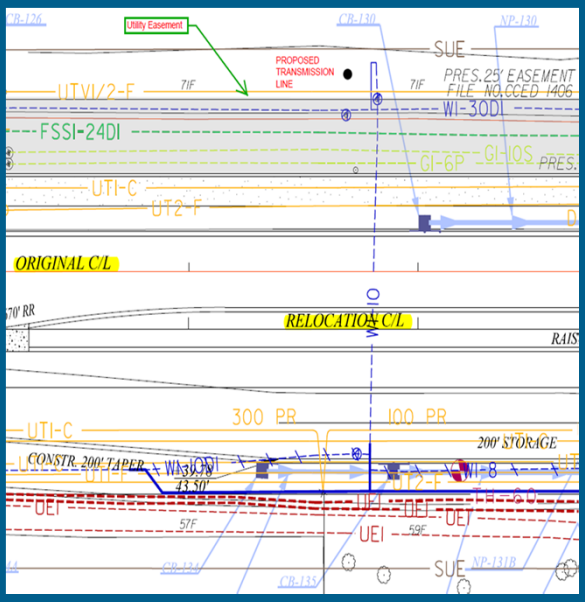
Example:
Transportation Design Widening Both Sides vs. One Side of Highway

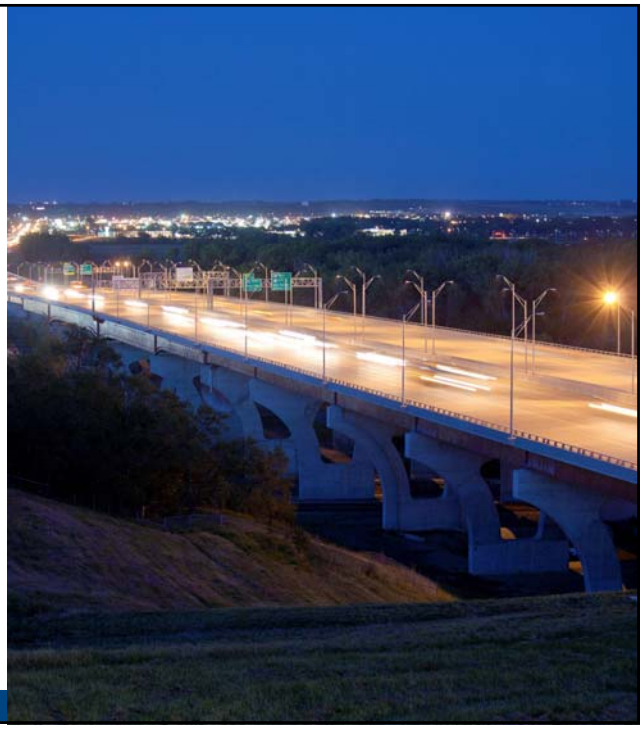
Clements Ferry Road Widening Alternatives:

- Widen to east
- Widen symmetrically to both sides
- Widen asymmetrically to both sides
- Widen to west — Preferred Alternative
- Estimated cost savings: $25,000,000
- Estimated time savings: 12 months
- Improved goodwill with utilities: priceless



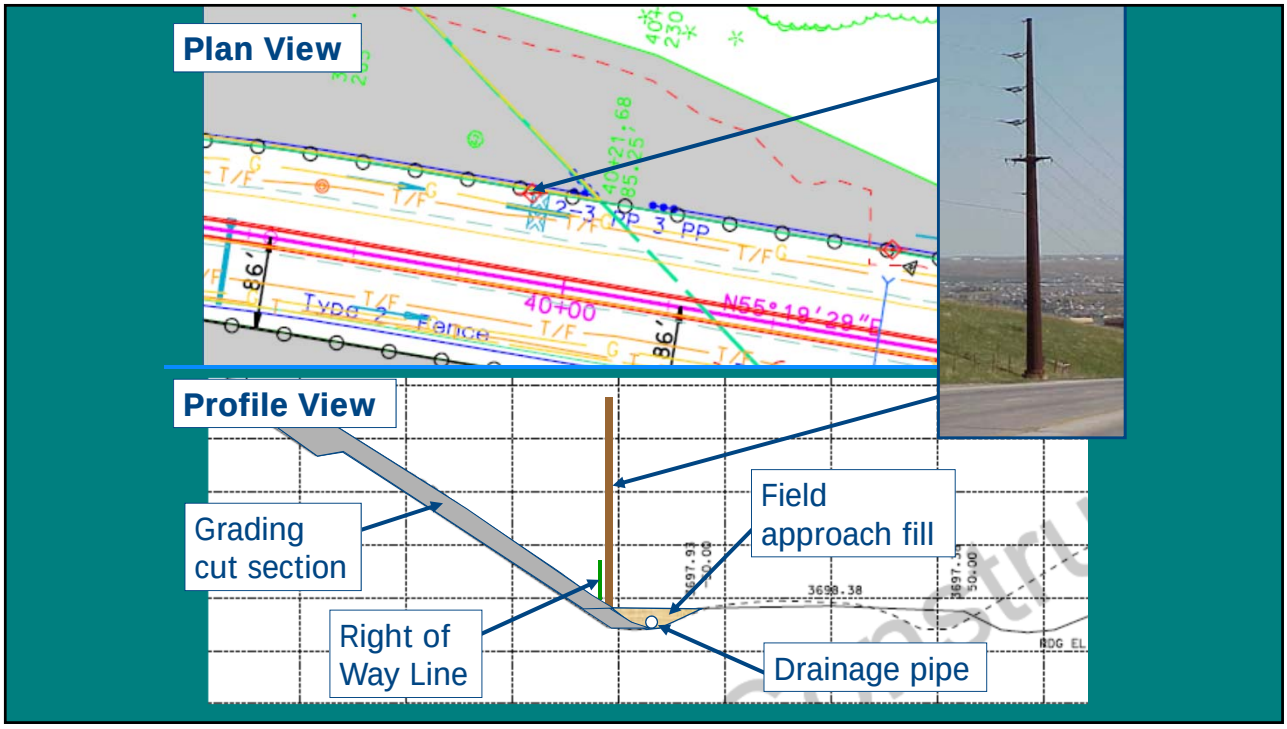
Example:
Missed Opportunity

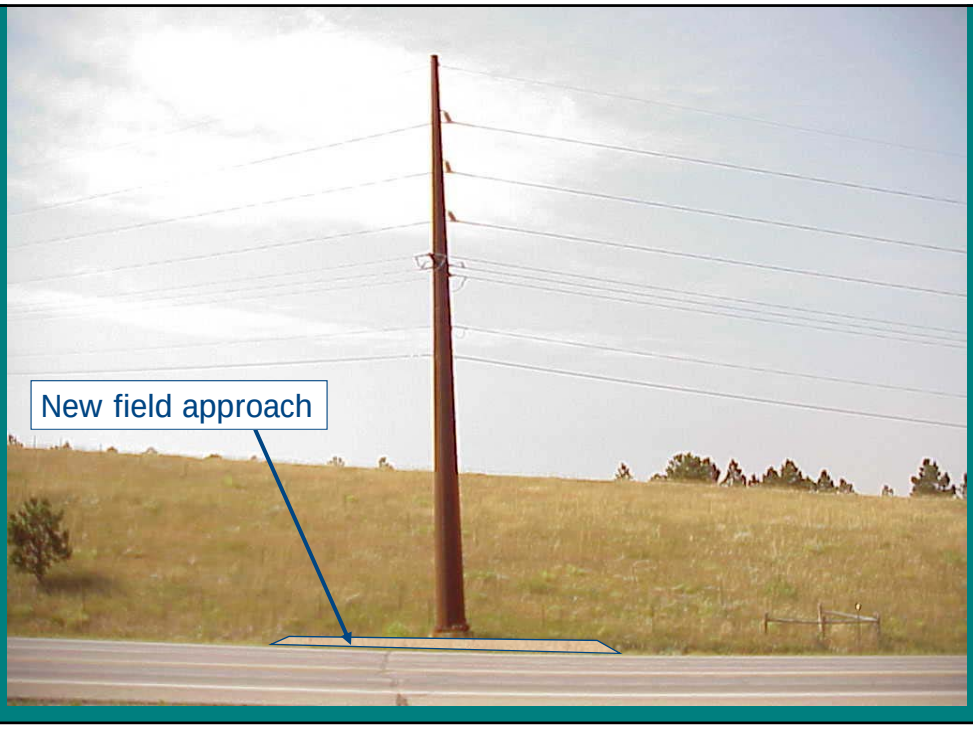
- Bridge project affected multiple utilities (power, water, sewer, etc.)
- Modifying horizontal bridge alignment slightly
  - Would have avoided any utility impact
  - Would not have impacted right-of-way
  - Would not have compromised bridge construction
- Discovered during construction… too late!
- Utility relocation costs = $5,000,000

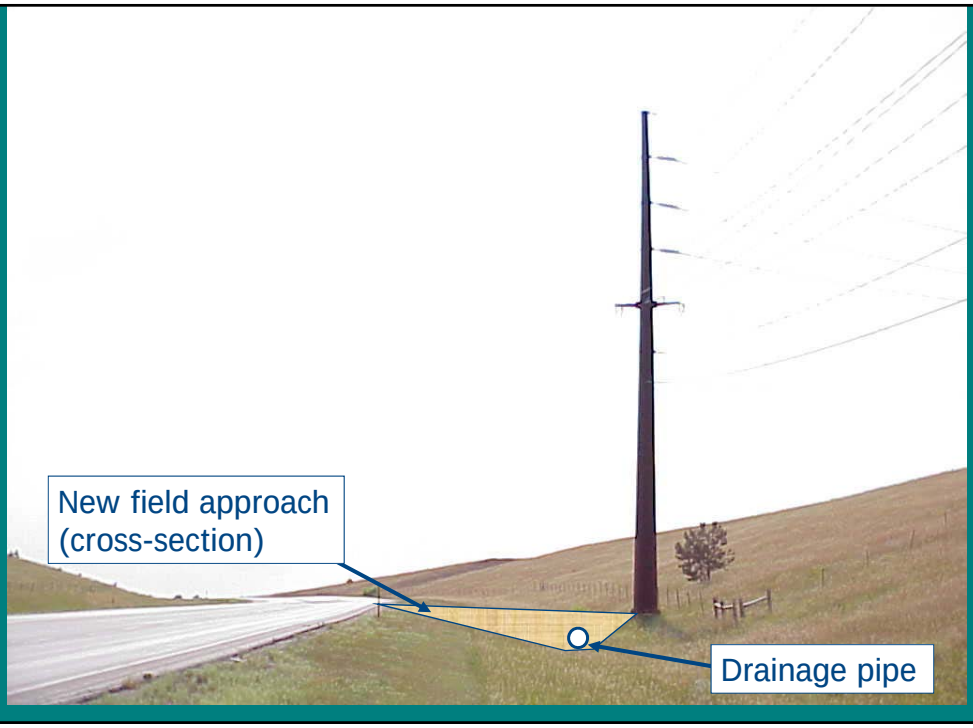


Example:
Design Adjustment
Power Pole

- Rapid City, South Dakota
- Conflict discovered at 30% coordination meeting discussion
- Redesign avoided utility adjustment
- Additional costs were paid by utility
- Utility Relocation Cost est. $60,000
- DOT Redesign Costs $3,000
- Estimated cost savings: $57,000
- Estimated time savings: 12 months
- Improved goodwill with utilities: priceless

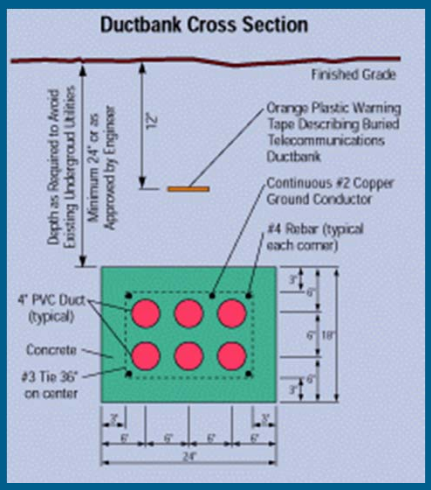


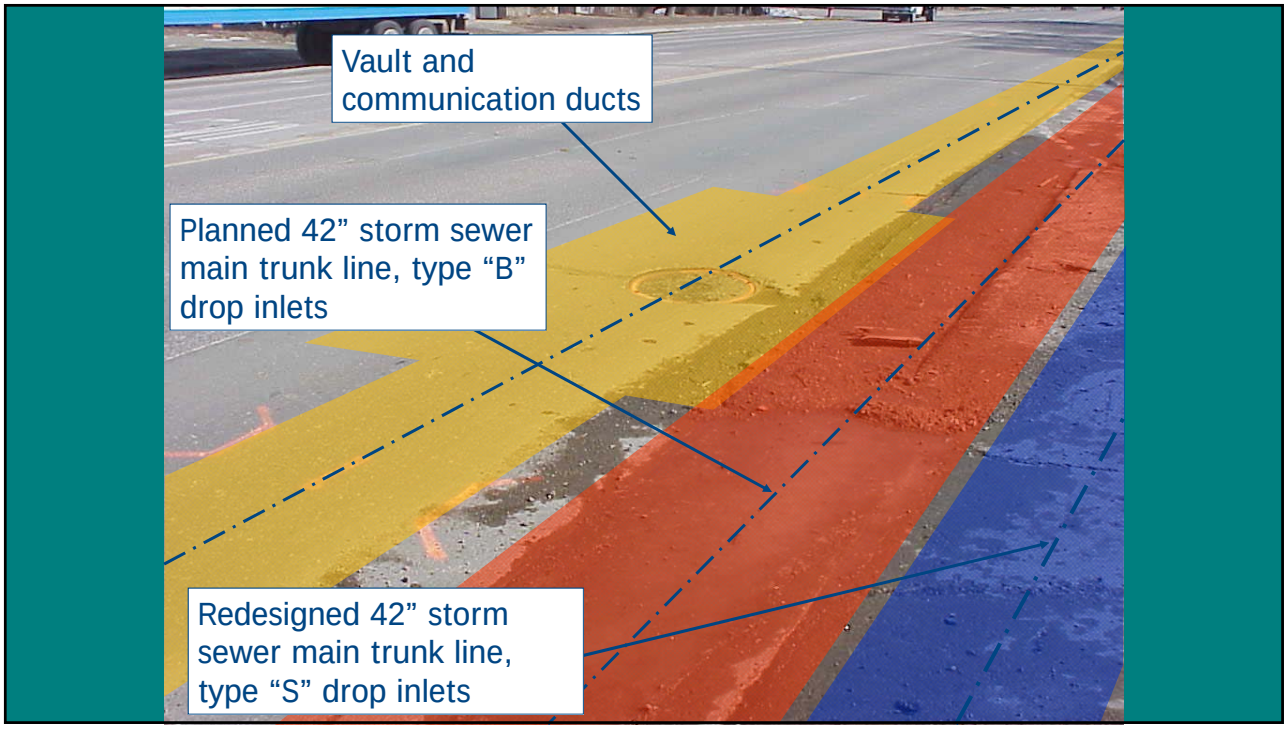

New field approach


New field approach
(cross-section)
Drainage pipe

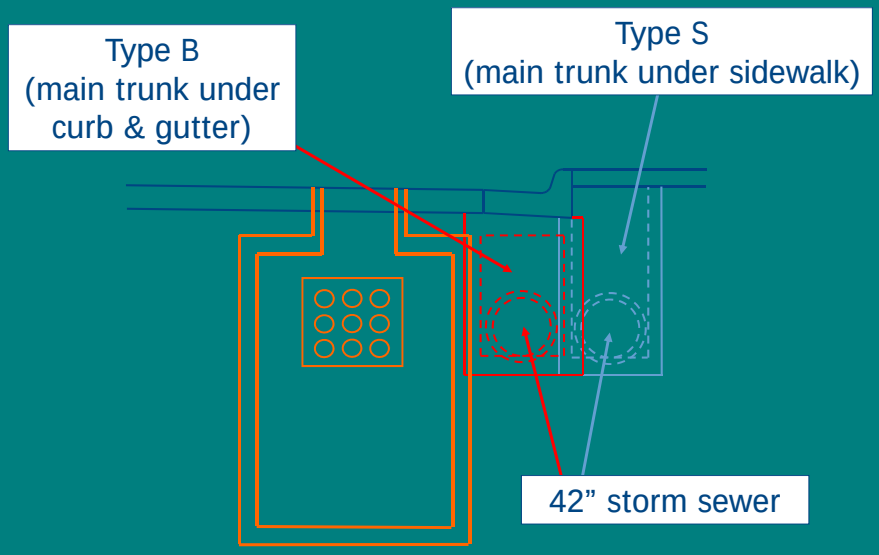
Example:
Design Adjustment
Communication Duct System

- Aberdeen, South Dakota
- Communication ducts along 5 blocks of city
- 5 vaults (5 feet x 7 feet x 12 feet) connected with 9 4-inch ducts encased in concrete
- In conflict with planned storm sewer
- Utility Relocation Cost est. $750,000
- DOT Redesign Costs $37,270
- Estimated cost savings: $712,730
- Estimated time savings: 12 months
- Improved goodwill with utilities: priceless





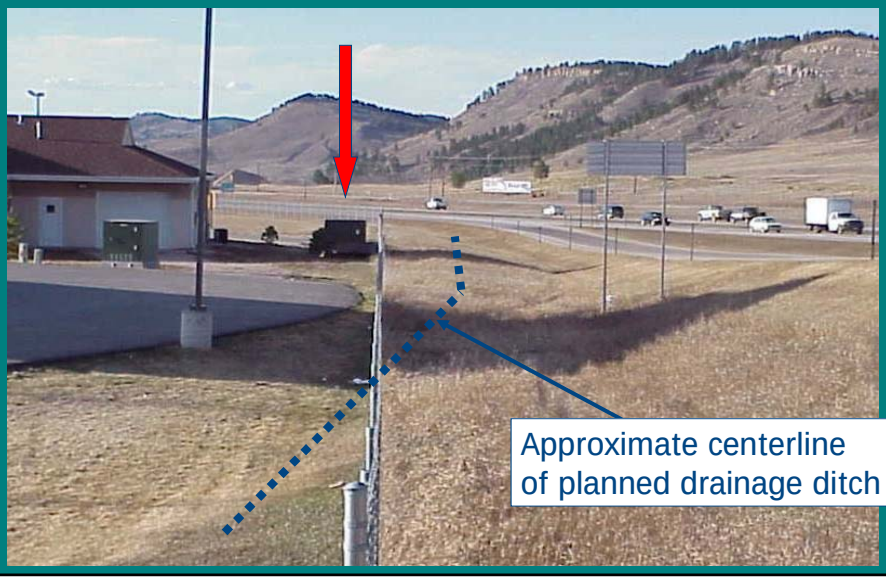
Redesign of Storm Sewer Main



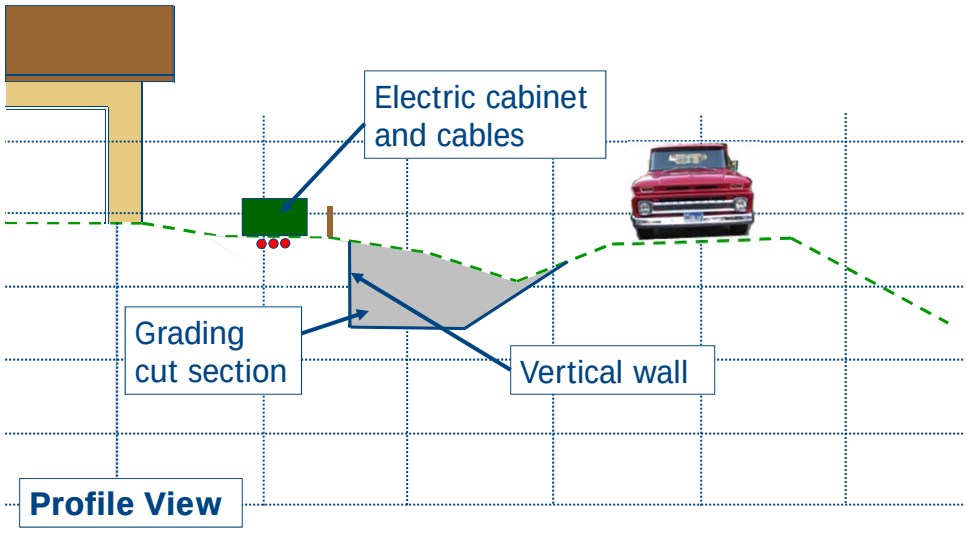
Example:
Design Consideration
Drainage Channel

- Rapid City, South Dakota
- Impact discovered during preliminary project scoping phase
- Typical concrete lined drainage ditch would have affected electrical cabinet and cables
- Recommendation: redesign sloped ditch to vertical wall
- Additional benefit: elimination of some real property acquisition
- WIN - WIN

Example: Drainage Channel



Recommended Redesign



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Example:
Design Adjustment
Traffic Signal Footing

- Deadwood, South Dakota
- Signal Pole proposed in close proximity to existing utilities
- Pole location surveyed on ground by DOT
- Utilities in vicinity identified by One Call
- High cost to relocate existing utilities $95,000
- QLA utility investigation (cost $5,785)
- Recommendation: Reduce pole footing diameter from 36” to 30”
- Estimated cost savings: $89,215
- Improved goodwill with utilities: priceless

Vacuum excavation

Example: Traffic Signal Footing

3 conduits interfere with 36” pole footing diameter

Redesign using 30” sonotube (longer, narrower footing)

Key Concepts

- Utility conflict management:
  - Should start at project scoping / before surveys (not at ROW)
  - Includes Utility Construction Coordination through project construction
- Goal: **AVOID** or **MINIMIZE** utility impacts
- Strategies:
  - ✓Involve utility owner **EARLY** and **OFTEN**
  - ✓Know the **Right Questions to ASK** for open communication
  - ✓Avoid unnecessary utility relocations
  - ✓Evaluate design alternatives with utility relocation impacts included
  - ✓Conduct utility conflict analysis and constructability reviews
  - ✓Relocation is not the only solution to a conflict
  - ✓Not all strategies apply to all conflicts
- Not all projects or locations need QLB/QLA SUE data for a successful outcome!

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General References

- ASCE Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data (CI/ASCE 38-02)
- AASHTO Guide for Accommodating Utilities Within Highway Right-of-Way
- AASHTO Policy on the Accommodation of Utilities Within Freeway Right-of-Way
- AASHTO Right of Way and Utilities Guidelines and Best Practices
- FHWA Program Guide
- SHRP 2 R15B Report

SCDOT Project Development Process

Overview

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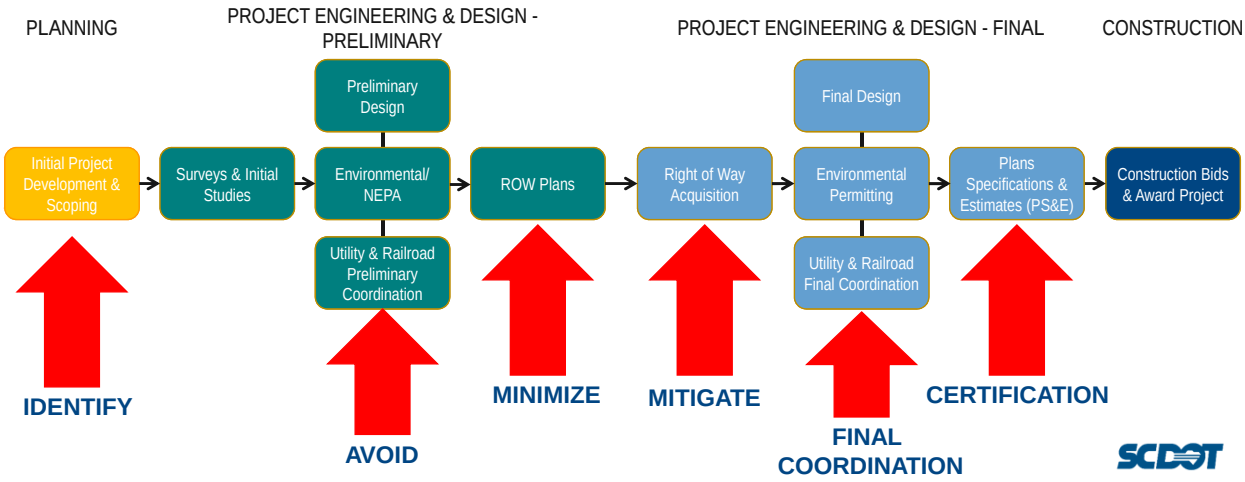
Current Project Development Process

Where does Utility Coordination occur?



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Utility Coordination Process

Overview

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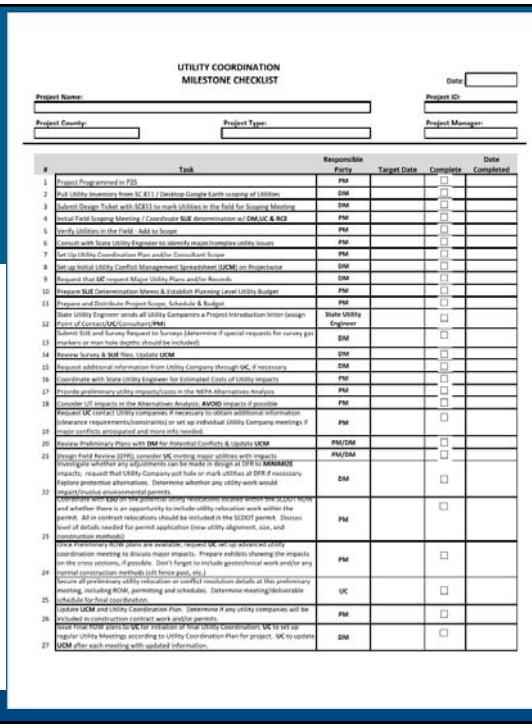
What Is Utility Coordination?



UTILITY COORDINATION
MILESTONE CHECKLIST

Date:

Project Name:

Project ID:

Project County:

Project Type:

Project Manager:

#	Task	Responsible Party	Target Date	Complete	Date Completed
1	Project Programmed in PZ6	PM		☐	
2	Pull Utility Inventory from SC 811 / Desktop Google Earth scoping of Utilities	DM		☐	
3	Submit Design Ticket with SC811 to mark Utilities in the field for Scoping Meeting	DM		☐	
4	Initial Field Scoping Meeting / Coordinate SUE determination w/ DM, UC & RCE	PM		☐	
5	Verify Utilities in the Field - Add to Scope	PM		☐	
6	Consult with State Utility Engineer to identify major/complex utility issues	PM		☐	
7	Set Up Utility Coordination Plan and/or Consultant Scope	PM		☐	
8	Set up Initial Utility Conflict Management Spreadsheet (UCM) on Projectwise	DM		☐	
9	Request that UC request Major Utility Plans and/or Records	DM		☐	
10	Prepare SUE Determination Memo & Establish Planning Level Utility Budget	PM		☐	
11	Prepare and Distribute Project Scope, Schedule & Budget	PM		☐	
12	State Utility Engineer sends all Utility Companies a Project Introduction letter (assign Point of Contact/UC/Consultant/PM)	State Utility Engineer		☐	
13	Submit SUE and Survey Request to Surveys (determine if special requests for survey gas markers or man hole depths should be included)	DM		☐	
14	Review Survey & SUE files. Update UCM	DM		☐	
15	Request additional information from Utility Company through UC, if necessary	DM		☐	
16	Coordinate with State Utility Engineer for Estimated Costs of Utility Impacts	PM		☐	
17	Provide preliminary utility impacts/costs in the NEPA Alternatives Analysis	PM		☐	
18	Consider UT impacts in the Alternatives Analysis. AVOID impacts if possible	PM		☐	
19	Request UC contact Utility companies if necessary to obtain additional information (clearance requirements/constraints) or set up individual Utility Company meetings if major conflicts anticipated and more info needed.	PM		☐	
20	Review Preliminary Plans with DM for Potential Conflicts & Update UCM	PM/DM		☐	
21	Design Field Review (DFR), consider UC inviting major utilities with impacts	PM/DM		☐	
22	Investigate whether any adjustments can be made in design at DFR to MINIMIZE impacts; request that Utility Company pot hole or mark utilities at DFR if necessary. Explore protective alternatives. Determine whether any utility work would impact/involve environmental permits.	DM		☐	
23	Determine how UC on the preferred utility relocations located within the SCDOT ROW and whether there is an opportunity to include utility relocation work within the permit. All in contract relocations should be included in the SCDOT permit. Discuss level of details needed for permit application (new utility alignment, size, and construction methods)	PM		☐	
24	Once Preliminary ROW plans are available, request UC set up advanced utility coordination meeting to discuss major impacts. Prepare exhibits showing the impacts on the cross sections, if possible. Don't forget to include geotechnical work and/or any normal construction methods (silt fence post, etc.)	PM		☐	
25	Secure all preliminary utility relocation or conflict resolution details at this preliminary meeting, including ROW, permitting and schedules. Determine meeting/deliverable schedule for final coordination	UC		☐	
26	Update UCM and Utility Coordination Plan. Determine if any utility companies will be included in construction contract work and/or permits.	PM		☐	
27	Issue final ROW plans to UC for initiation of final Utility coordination; UC to set up regular Utility Meetings according to Utility Coordination Plan for project. UC to update UCM after each meeting with updated information.	DM		☐	

Objectives in Utility Coordination

- Identify utility locations early in project scoping
- Utilize Utility Information in Design
- Address all impacted utility facilities
- ***SCDOT preference***: Complete utility accommodations prior to construction (not always possible).
- ***Reality:*** Many utilities are relocated during construction under a utility window or in contract.

Utility Considerations

Contact and Coordinate Early and Often

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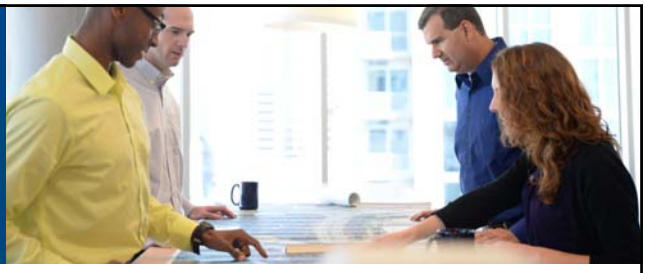
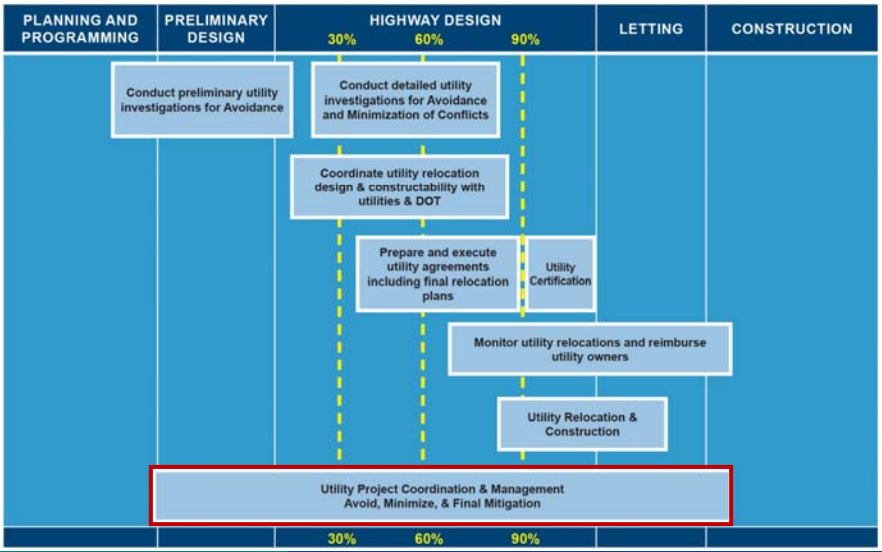


Utility Company Commitment

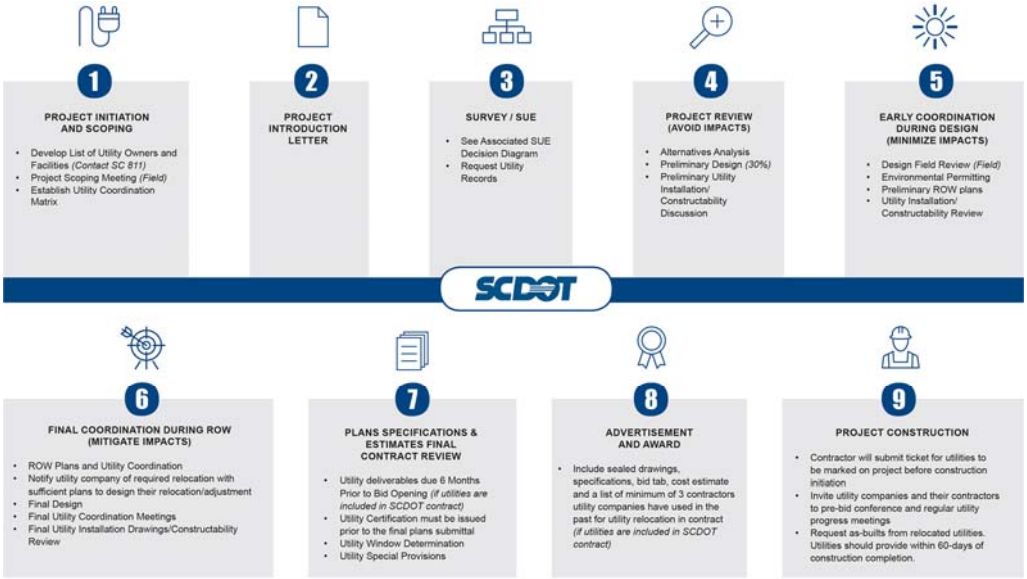
Communicate, Participate & Contribute

- Provide **Utility Records** and/or Plans in a timely manner
- Work with SCDOT to **pot hole** critical utility locations on project
- **Attend** Utility Meetings
- Come prepared to provide constraints, strategies, schedules and cost **information**
- **Commit** to SCDOT Utility Deliverable Due dates

Utility Coordination Process at SCDOT



Utility Coordination Process Quick Reference Diagram



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Planning & Scoping Phase

Where does Utility Coordination Occur?

- Utility Coordination **STARTS** here!
- Project Initiation & Scoping
- Project Introduction Letter

Initial Project Development Team Meeting (Scoping Meeting)

SCDOT

1. Project Initiation and Scoping

- ✓ Develop List of Utility Owners and Facilities

Tip: Utilize SC 811

- ✓ Project Scoping Meeting (Field)
- ✓ Verify General Utility Locations in the Field
- ✓ Identification of Potential Utility Impacts
- ✓ Preliminary Estimation of Prior Rights
- ✓ Coordinate with State Utility Engineer
- ✓ Establish Utility Conflict Management Matrix

Tool: UCM Excel Spreadsheet

Tool: Utility Coordination Checklist

2. Project Introduction Letter

Utility Engineer will issue a Project Introduction Letter

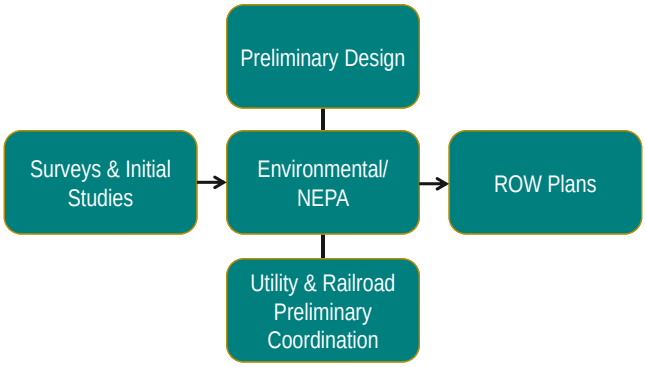
- ✓ Sent to utility companies within the project corridor after the scoping meeting
- ✓ Provides information about upcoming project and SCDOT project contacts
- ✓ Provides consultant contact information, if necessary.
- ✓ Include Utility Company Checklist

Tool: Utility Company Checklist

Project Engineering & Design - Preliminary

When does Utility Coordination occur?

- Focus is on **AVOID** and **MINIMIZE**
- Survey / SUE
- Project Review
- Early Coordination during Design



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3. Survey / SUE

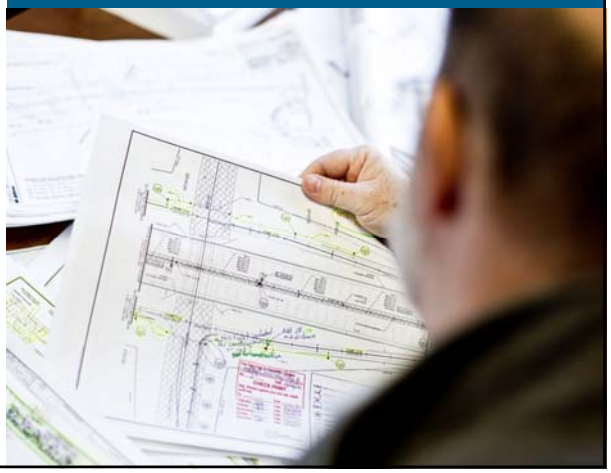
- ✓ Request Utility Records and Plans
- ✓ Determine the level of SUE and survey
- ✓ SUE Decision Memo / Documentation
- ✓ Review survey files
- ✓ Update Utility Conflict Management Matrix
- ✓ Request additional survey as you move through future coordination steps, if needed.

***Tool:* SUE Decision Diagram**

4. Project Review

Tip: ***Purpose of this step is to AVOID utility impacts***

- ✓ Conceptual Design / NEPA Alternatives Analysis
  - Identify utilities that may be avoided
  - Consider utilities in alternatives analysis
- ✓ Preliminary Design (30%)
  - Design Field Review to minimize impacts
  - Utility Installation/Constructability Reviews
- ✓ Early Coordination Meeting with Utilities (if necessary)
- ✓ Obtain additional survey/SUE/Pot Holes, if needed
- ✓ Discuss whether Utilities may be included in SCDOT Environmental Permitting
  - Utility Company submits request to be included
- ✓ Update Utility Conflict Management Matrix



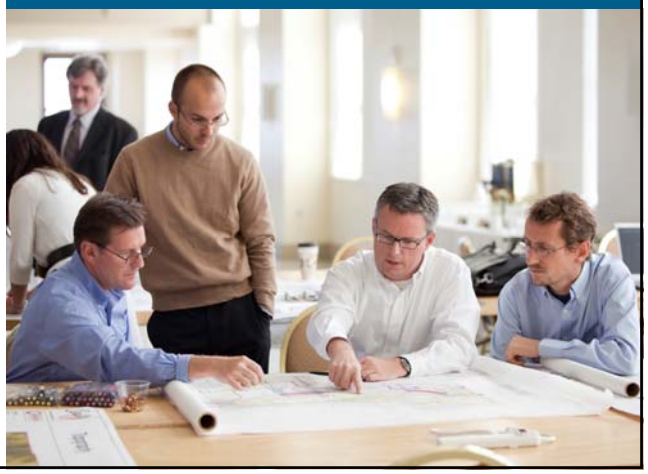
5. Early Coordination During Design

Tip: Purpose of this step is to MINIMIZE impacts to utilities

- ✓ Design Field Review

Tip: Invite utility companies

- ✓ Preliminary ROW Plans
  - Incorporate SUE information
  - Advance meetings with utilities to discuss options to minimize impacts
- ✓ **IF** utility is included in SCDOT environmental permits
  - Utility provides relocation alignment & construction methods to SCDOT
- ✓ Utility Installation/Constructability Discussion
- ✓ Update Utility Conflict Management Matrix



Project Engineering & Design – Right of Way

When does Utility Coordination occur?

- Focus of this stage is **MITIGATION**
- Final Utility Coordination Initiation

Right of Way Acquisition

SCDOT

6. Final Coordination During ROW

***Tip:* Purpose of this step is to MITIGATE impacts to utilities**

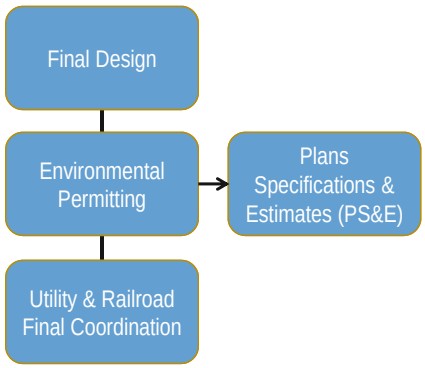
- ✓ Final ROW Plans and Utility Coordination
- ✓ Initiate Regular Utility Coordination Meetings
- ✓ Review Plans & Cross Sections with Utility Companies to discuss conflict resolution strategies (consider protections)
- ✓ Determine if any additional construction details are necessary for utility relocation design
- ✓ Initiate Final Utility Design
- ✓ Utility Installation / Constructability Review
- ✓ Environmental Permitting
- ✓ Update Utility Conflict Management Matrix

***Tip:* Review and monitor design changes as they may introduce new conflicts**

Project Engineering & Design - Final

When does Utility Coordination occur?

- Final Utility Installation/Constructability Review
- Secure Final Utility Deliverables
- Coordinate Utility Relocation Order & Construction Schedule
- Utility Certification



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7. Plans Specifications & Estimates Final Contract Review

- ✓ Utility deliverables DUE 6 Months prior to Bid Opening
  - Utility Relocation Plans
  - Agreements and/or MOA/MOUs
  - No-cost letters and/or no-conflict letters
  - PS&E Packages for in-contract work
- ✓ Final Utility Relocation Plan Review & Approval
- ✓ Utility Certification
- ✓ Utility Window Determination
- ✓ Utility Special Provisions
- ✓ Encroachment Permits Issued (if required)
- ✓ Final Utility Installation Plan Constructability Review
- ✓ Utility Construction Order & Schedules

8. Advertisement & Award

IF Utility Work included in contract with SCDOT

- ✓ Include sealed drawings, specifications, cost estimate and a list of minimum of 3 contractors utility companies have used in the past for utility relocation in contract
- ✓ Separate bid worksheet for the utility relocation items in the utility relocation plans
- ✓ SCDOT will seek Utility Company concurrence on utility construction bid

Construction Phase

When does Utility Coordination occur?

- Final coordination of utility construction activities

Construction Bids & Award Project

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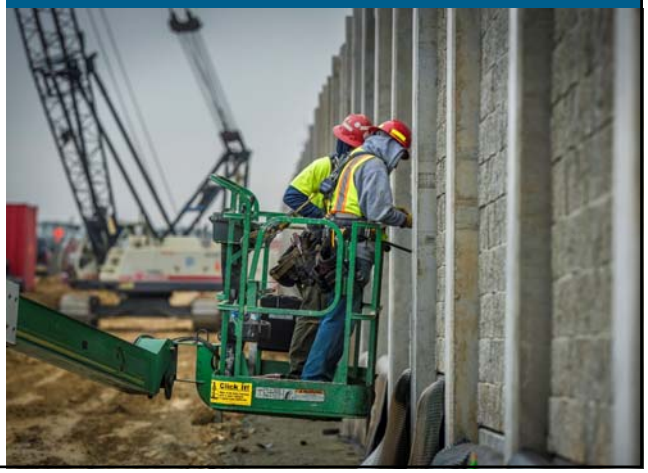
9. Project Construction

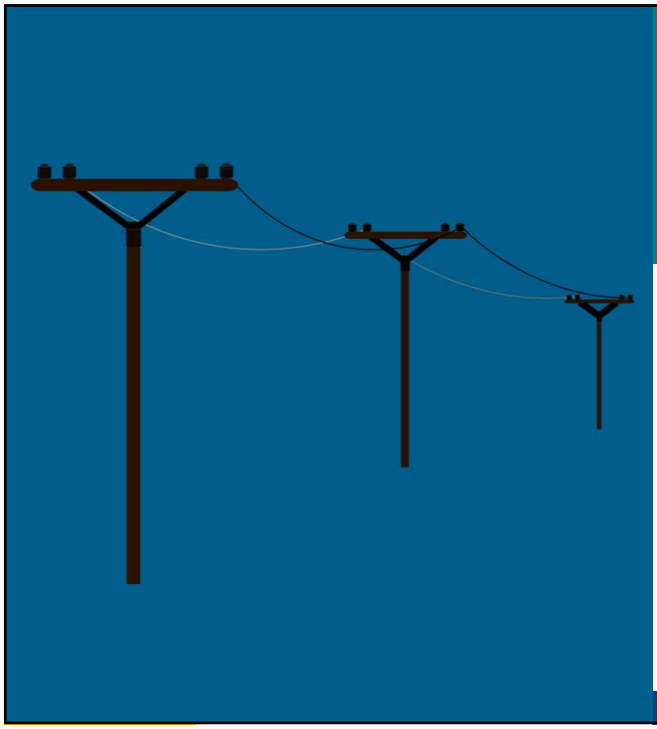
- ✓ Contractor will submit ticket for utilities to be marked on project before construction initiation

Tip: ***Utilize SC 811***

- ✓ Pre-construction conference & Status Meetings
- ✓ Update any schedule/order changes in UCM
- ✓ Continue to document unforeseen conflicts as they arise in UCM
- ✓ Change Orders Review & Approval as they arise
- ✓ Invoicing & Billing for Utility Reimbursements
- ✓ Follow SCDOT dispute resolution process
- ✓ Request as-builts from relocated utilities. Utilities should provide within 60-days of construction completion.

Tip: ***Invite utility companies and their contractors to pre-bid conference and regular construction progress meetings***





Utility Company Process

Understand Utility Project Development

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Utility Company Process Quick Reference Diagram

1 PROJECT INITIATION AND SCOPING
- SCDOT notifies utility company of project
- Comply with SC 811 Design Ticket to mark utilities in the field
- Fulfill SCDOT requests for utility records and/or plans
- Initiate identification of potential funding sources for utility project

1-2 weeks

2 RESOURCE STRATEGY
- Design Staff Assignment or
- Design Consultant Procurement

6-8 weeks

3 PRIOR RIGHTS RESEARCH

4 SURVEY/SUE

5 UTILITY RELOCATION DESIGN

Depending on complexity of design

3-12 months

6 ENVIRONMENTAL PERMITTING

Depending on impacts

3-12 months

7 SCDOT TECHNICAL REVIEW OF UTILITY RELOCATION PLANS

15 - 30 days

8 SUBMITTAL OF FINAL RELOCATION PLANS & UTILITY AGREEMENTS TO SCDOT FOR APPROVAL

Encroachment Permit Application included for relocations proposed within SCDOT ROW

30 days

9 RIGHT OF WAY ACQUISITION (IF NECESSARY)

Depending on number of tracts

3-12 months

10 MANUFACTURE ORDER FOR MATERIALS
- Materials may have to be manufactured to specification
- Materials are not typically ordered until all approvals, permits and ROW are secured

2-8 months

11 CONSTRUCTION WORK ORDER
- Scheduling of in-house or outside forces for utility construction
- May include procurement of construction contractor for work

6-8 weeks

12 NOTIFY SCDOT OF UTILITY RELOCATION CONSTRUCTION INITIATION

13 CONSTRUCTION OF UTILITY RELOCATION

Depending on utility type and complexity of utility relocation

1 week to 2 years

14 INSPECT UTILITY RELOCATION FOR COMPLIANCE & SUBMIT REIMBURSEMENT
- Notify SCDOT of change orders as they occur

15 ATTEND SCDOT PROJECT PRE-CONSTRUCTION CONFERENCE
- Notify SCDOT and contractor of utility relocation status
- Mark new utility relocations in field as requested by SCDOT contractor
- For utility relocations to be performed within the previously requested SCDOT Utility Window, coordination of relocation activities with the SCDOT contractor would occur at the Pre-Con meeting or as designated by SCDOT.

16 PROJECT CONSTRUCTION
- SC 811 Ticket
- Attend Regular SCDOT Project Progress Meetings as necessary during construction while utility relocations are ongoing.

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Project Initiation & Scoping

- SCDOT Project Notification
- Mark Utilities in field
- Provide Utility Records/Plans
- Identify potential **funding** sources for utility project

1

1 – 2 weeks

Resource Strategy

- Design Staff Assignment
- Incorporate into Existing **Workloads**
- OR Design Consultant **Procurement**

TIP

Remember that delays may occur in initiation of work the project due to utility company workloads

2

6 – 8 weeks

Prior Rights Research

- Review Company property documents
- Review Company Records
- Review Plans
- Responsibility for providing **documentation** of prior rights is on the Utility Company

3

Overlapping

Surveys & SUE

- May be included in the consultant contract and overlapping other activities
- Not all utility companies have the resources for Surveys and SUE

4

6-8 weeks

Utility Relocation Package

- Time to complete is dependent on level of **complexity** of the relocation

5

3-12 months

Environmental Permitting

- Depending on impacts

6

3 – 12 months

SCDOT Technical Review of Utility Relocation Plans

7

- Submitted to the local SCDOT Utility Coordinator
- Reviewed by the Resident Construction Engineer
- IF SCDOT is using a Utility Consultant, then the consultant reviews the plans on behalf of SCDOT and then recommends approval

15 – 30 days

Submittal of Final Relocation Plans & Utility Agreements

8

- Encroachment Permit application included for those relocations planned in SCDOT ROW
- SCDOT review of Deliverables

30 days

Right of Way Acquisition

- Utility Company may have to execute a **ROW phase** for relocations outside SCDOT ROW
- Timing depend on complexity

TIP

SCDOT may be able to purchase ROW for utility relocations in the future under proposed rule changes

9

3 – 12 months

Manufacture Order for Utility Materials

- Materials may have to be **manufactured to specification**
- Materials are not typically ordered until all approvals, permits and ROW are secured

10

2 – 8 months

Construction Work Order

- Scheduling of in-house or outside forces for utility construction
- May include **procurement** of construction contractor for work

11

6 – 8 weeks

Notify SCDOT of Utility Relocation Construction Initiation

- Utility to notify RCE before any work begins in the field

12

Overlapping

Construction of Utility Relocation

- Varies depending on utility type and **complexity** of utility relocation

13

1 week – 2 years

Inspect Utility Relocation for Compliance & Submit Reimbursements

- Utility company to ensure that utility is **installed as planned**
- Notify SCDOT of change orders as they occur

14

Overlapping

Attend SCDOT Project Pre-Construction Conference

- Notify SCDOT and contractor of utility relocation status
- Mark new utility relocations in field as requested by contractor
- For relocations performed in Utility Window, coordination of relocation activities with the contractor at Pre-Con or Utility meetings

15

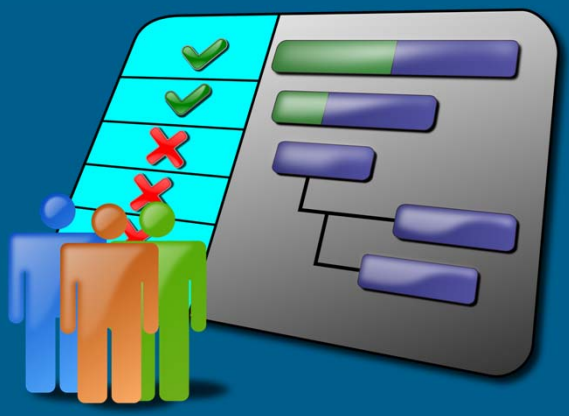
Overlapping

Project Construction

- SC 811 Ticket
- Utility Company to attend Regular Project Construction Progress **Meetings** as necessary while utility relocations are ongoing

16

Overlapping



Project Schedules

Incorporate Utility Project Schedules into Project Schedule for Successful Project Delivery Dates

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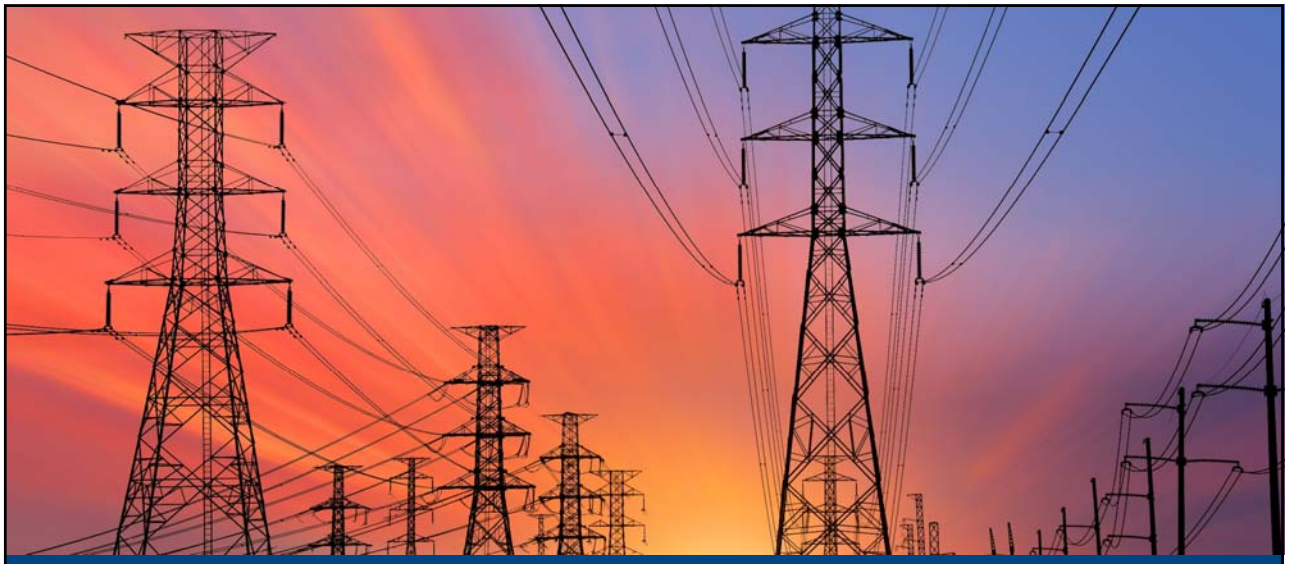
Questions?



2017 Utilities Accommodation Manual

A Policy for Accommodating Utilities on Highway Rights of Way

AGENDA

- Utility Accommodations Policy
- Prior Rights
- Risks & Opportunities
- Lessons Learned
- Utility Conflict Identification
- Utility Conflict Management
- Utility Coordination Best Practices
- Utility Coordination Tools

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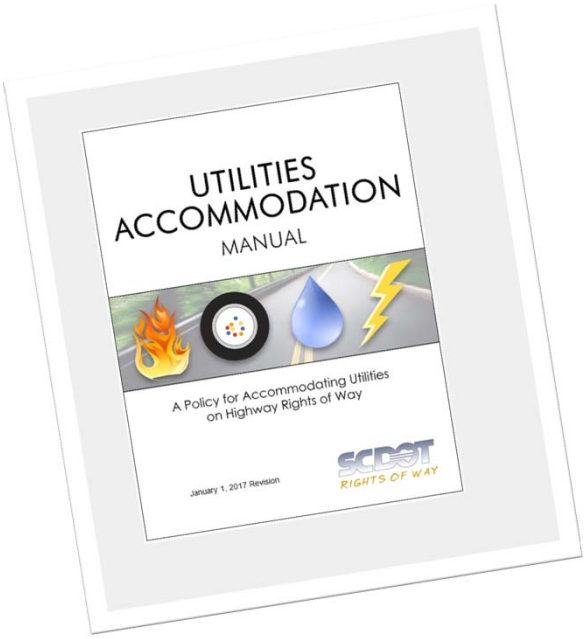
SCDOT Utility Manual

Review of Manual Table of Contents and Appendices

Currently UNDER REVISION



Legal Authorities

Oversight

- Federal Codes and Regulations (*Title 23- Chapter 1 – Part 645; Subpart A: Utility Relocations, Adjustments, and Reimbursement*)
- State Codes and Regulations
  - Law
  - Statutes
  - Rules
  - South Carolina Utility Policies
  - ROW Acquisition Manual
- Industry Policies and Compliance Documents

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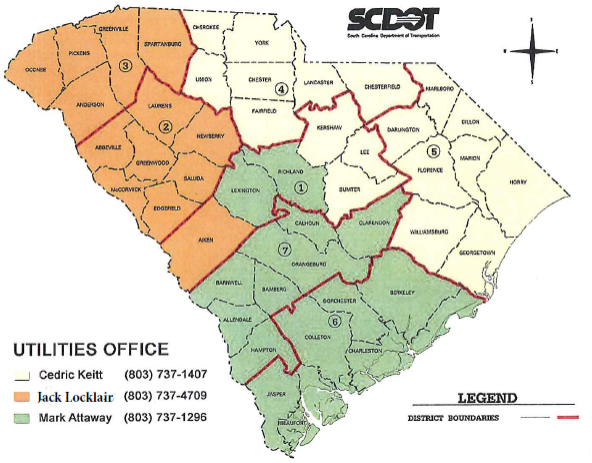
SCDOT HQ Utility Office Area of Responsibility



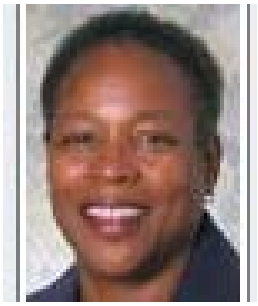
Mark Attaway
Districts 1,6 & 7
(803) 737-1296

Cedric Keitt
Districts 4 & 5
(803) 737-1407

Jack Locklair
Districts 2 & 3
(803) 737-4709

SCDOT

SCDOT District Office Utility Coordination Contacts



Vanetta Jackson

District 1 Utility Coordinator

Lexington, Richland, Kershaw, Lee & Sumter Counties

Ann Ward

District 2 Utility Coordinator

Abbeville, Anderson, Edgefield, Greenwood, Laurens, McCormick, Newberry & Saluda

Robert Ryggs

District 3 Utility Coordinator

Greenville, Spartanburg, Pickens & Oconee Counties

Jamie Fowler

District 4 Utility Coordinator

Cherokee, Chester, Chesterfield, Fairfield, Lancaster, Union & York

SCDOT

SCDOT District Office Utility Coordination Contacts

Johnson Dean

District 5 Utility Coordinator

Marlboro, Darlington, Dillon, Florence, Marion, Horry, Williamsburg & Georgetown Counties

Yvette Oliver

District 6 Utility Coordinator

Charleston, Beaufort, Berkeley, Colleton, Dorchester & Jasper Counties

Jim Porth

District 7 RCE

Aiken, Allendale, Bamberg, Barnwell, Calhoun, Clarendon, Hampton, Orangeburg Counties

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Changes in 2017 Manual

Overview of New Chapters added to the Manual

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TABLE OF CONTENTS

01 Application

02 Roles and Responsibilities NEW!!!

03 Utility Communication & Coordination Procedures NEW!!!

04 SUE NEW!!!

05 Insurance Requirements

06 Utility Accommodation Controls & Standards

07 Real Estate Involvement in Utility Relocations NEW!!!

08 Environmental Permits NEW!!!

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TABLE OF CONTENTS

09 Preparation of Utility Relocation Plans NEW!!!

10 Utility Construction Coordination

11 Utility Agreements

12 Utility Relocation Work in Highway Contracts NEW!!!

13 Encroachment Permits

14 Utility Certifications NEW!!!

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APPENDICES

A	Statutes
B	Pipelines
C	References
D	Utility Coordination Checklist and Utility Company Checklist
E	Utility Coordination Management Spreadsheet
F	Certification of Utility & Railroad Coordination
G	Forms
H	Sample Utility Coordination & SUE Utility Mapping Scope of Services

Chapter 2: Roles and Responsibilities

Chapter provides an overview of roles and responsibilities for those involved in Utility Coordination:

- FHWA
- Utility Engineer
- Utility Coordinator
- Program Manager
- Design Manager
- District or Resident Construction Engineer
- Surveys
- Utility Company
- Consultant Roles

Chapter 3: Utility Communication & Coordination Procedures

Chapter provides an overview of early Utility Coordination Goals:

- Facilitate advance **Coordination** for identification and resolution of right of way, permitting and utility issues on the project.
- Promote **Cooperation** through working relationships where SCDOT and utilities can share mutual concerns and establish realistic objectives.
- Promote efficiency through open collaboration and clear, concise **Communication** throughout project development.
- **Commitment** to a mutual goal of eliminating unnecessary costs to the public and design changes.

Chapter 3: Utility Communication & Coordination Procedures

Utility Coordination during the following activities:

- Project Initiation and scoping
- Project introduction letters
- Survey
- Project review / avoidance of utility impacts
- Early coordination during design / minimize utility impacts
- Final coordination during ROW / mitigate utility Impacts
- Plans, Specifications, and Estimate (PS&E) Final Contract Review
- Advertisement and Award
- Project construction (Attendance at pre-construction meeting)

Constructability Reviews

Chapter 4: Subsurface Utilities Engineering (SUE)

Chapter provides an overview of:

- Project considerations when making a determination for SUE mapping and investigation data
- Potential tasks related to SUE
- SC 811 Survey
- SUE Quality Levels (A – D)
- SUE in the Project Development Process
- Implementation of SUE into the plans
- Using SUE for Utility Coordination
- Alternative methods of locating utilities on projects

Day 2 of Training will provide details on SUE and selection of test hole locations!

Chapter 5: Insurance Requirements

Chapter provides an overview of:

- Applicant must provide Certificate of Insurance to SCDOT for encroachment only
- Applicant can establish self-insurance

Chapter 6: Utility Accommodations Controls & Standards

Chapter provides an overview of:

- Location of Utility Facilities within SCDOT ROW
- Design of Utility Facilities
- Pipelines
- Overhead Power and Communication Lines
- Underground Electric Power and Communications Lines
- Trenchless Installations
- Out of Service & Deactivated Underground Utilities
- Irrigation and Drainage Pipes, Ditches, and Canals
- Installations on Highway Structures
- Scenic Enhancement
- Controlled Access Highways
- Utility Tunnels & Utility Bridges

Chapter 7: Real Estate Involvement

Chapter provides an overview of:

- Determining Prior Rights
- Utility easements
- Utility special provisions and permits

Chapter 8: Environmental Permits

Chapter provides an overview of:

- Permit coverage
- Clearing and grubbing
- Environmentally sensitive areas
- Sediment & erosion control
- Permits for boring in navigable waters
- Contaminated soils
- Clean up

Day 2 of Training will provide details on utility relocations in environmental permitting!

Chapter 9: Preparation of Utility Relocation Plans

Chapter provides an overview of:

- Relocation Plan Standards
- Review of Plans
- Approval of Plans

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Chapter 10: Utility Construction Coordination

Chapter provides an overview of:

- General Considerations
  - Disturbed areas
  - Drainage
  - Tree trimming
  - Control of traffic
  - Records
  - Permanent markers
- Construction techniques
- Notification and coordination
- Revised plans
- Construction inspection

Chapter 11: Utility Agreements

Chapter provides an overview of:

- Buy America requirements
- Billing and payments

Chapter 12: Utility Relocation Work in Highway Contracts

Chapter provides an overview of:

- Agreements
- Utility plans, specifications, and estimates
- Bid review and award concurrence
- Utility relocation windows in construction contracts

Chapter 13: Encroachment Permits

Chapter provides an overview of:

- Application:
  - Utility companies should establish an account in EPPS to facilitate the application process.
- Processing
- Blanket permits
- Mini antenna installations
- Activities not requiring encroachment permits
- Liability and controls

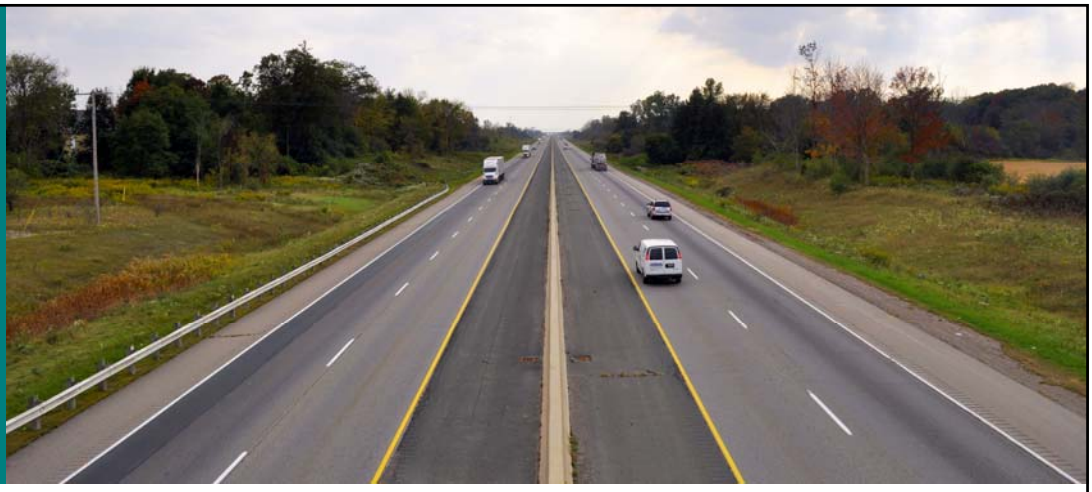
Chapter 14: Utility Certifications

Chapter provides an overview of:

- Requirements
- Applicability
- Conditions for Utility Certification
- Documentation

Prior Rights, Risks & Opportunities

Lessons Learned



What are Prior Rights?

Where a utility occupies a strip of land by fee simple title, easement or other legal means. The utility must prove their claim of rights by supplying a document that clearly shows the utility's rights predates the Department's ROW acquisition.

Circumstances of PRIOR RIGHTS

- Utility facility was constructed on private property through a recorded easement
- Utility facility was relocated or remained in SCDOT right of way under a previous project, and at the time SCDOT agreed in writing to allow the utility to retain its prior rights status
- Service agreements where the landowner gave the power cooperative the permission to install their facilities on their land in exchange for power.

Burden of Proof for PRIOR RIGHTS

- Utility company must prove their claim of prior rights by supplying a document that clearly shows the utility's rights predicates the Department's right of way acquisition.
- For those utility facility's that have prior rights, SCDOT will be responsible for permanent relocation costs as defined by the federal code.

Burden of Proof for PRIOR RIGHTS

Q: What if a portion of the utility facility has prior rights and other portion does not have prior rights?

A: A percentage of financial responsibility would be determined based on the percentage of the relocation that has been verified as having prior rights.

Final determinations:

- SCDOT makes the final determination of prior rights.
- Utility companies may request to retain their prior rights if they provide evidence that they tried to relocate on a private easement or show evidence of circumstances beyond their control.

Eligible Expenses with PRIOR RIGHTS

- Design costs
- Right of Way costs
- Environmental permitting & mitigation costs
- Utility relocation construction costs
- In-House staff costs for inspection & compliance

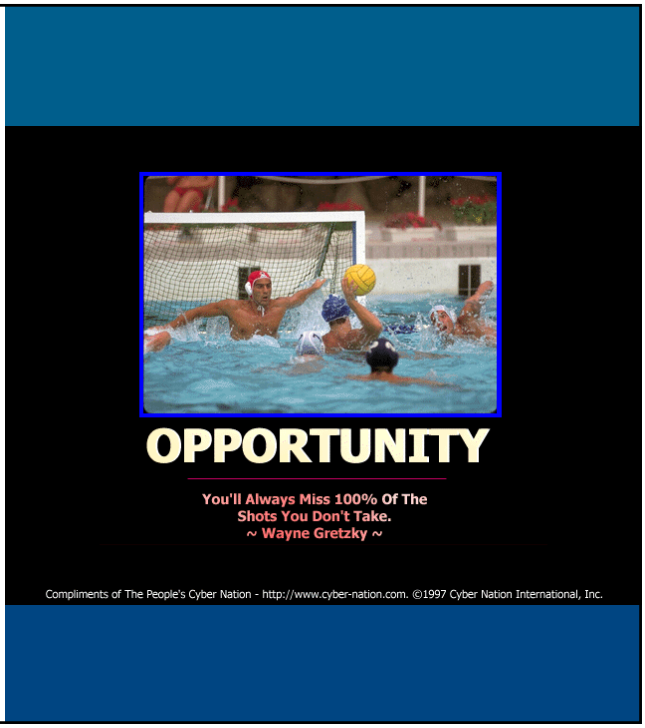
- An **Utility Agreement** with all supporting documentation will be established in writing that outlines the obligations and responsibilities of each party.
- Utility companies may propose **betterments** which is any upgrading to the utility facility being relocated made solely for the benefit of and at the election of the utility and not attributed to the highway construction.
- **Cost of Betterments** would be accounted for in the Utility Agreement

Risks

- **Safety** of workers
- Late discovery of **unexpected conflicts**
- Utility relocation **delays**
- Late utility relocation **design changes**
- Late SCDOT **Plan changes**
- **Lack of response** from utility companies
- Unnecessary relocations
- **ROW** necessary for relocations **not clear**
- Utility environmental **permitting delays**

Opportunities

- Greater control over timing of utility work reduces RISK and construction **COSTS**
- Reduce **COSTS** and **DELAYS** by including utility relocation work in the SCDOT Environmental Permits when feasible
- Early **COMMUNICATION** with Utility Companies allow them more time to explore alternatives and to plan for utility work.
- Early **COMMUNICATION** allows for Utility Companies to provide information so that SCDOT may be able to **AVOID** unnecessary utility relocations when possible.
- Align goals between SCDOT & Utility Companies
- **COMMITMENT** between parties to work together and follow through on schedules.



Opportunities

- Early Coordination = Opportunity for most cost effective approach for the **PUBLIC INTEREST**
- Improved **RELATIONSHIPS** with Utility Companies
- **PRIORITIZE** ROW acquisitions for relocations
- **FEWER** contractor change orders
- **REDUCE** construction delays
- **IMPROVE** project delivery; anticipating and resolving utility conflicts early – lowers RISK
- Better **COMMUNICATION** with utilities
- **REDUCE IMPACTS** to public (traffic/UT service)
- Improve worker & public **SAFETY**

Lessons Learned

Lessons Learned

Meetings	Constraints	Scheduling
• **Commitment** from SCDOT and utility companies to attend meetings • Keep detailed minutes of all meetings • **Clearly communicate** what is needed • Supply Utility Plans/Records and GIS data at **first** utility meeting • Provide information in a **timely manner**	• Establish utility company constraints **EARLY** • Reduce the constraints to a minimum distance acceptable to all parties • **Document** constraints • Discuss constraints during constructability reviews	• Contact utility companies **early and often** • Establish preliminary schedules with **hard deadlines** • Incorporate the **utility schedule** into project schedule • Revise schedule as needed and distribute • Request out of the ordinary must be submitted early • **Realistic** schedules

Team Organization

- RCE/RME should be part of the team
- Conduct **Regular meetings**
- Request construction person for utility company meetings (***especially constructability reviews***)
- Create a detailed **lead time** chart for each utility company
- Have one POC for each utility company

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Project Development

- Understand utility company processes
- Establish design criteria for each utility **early**
- Have **constructability reviews** throughout project development
- Determine where and number of test holes / pot holes needed
- Show existing, proposed utilities, drainage, MSE walls, signal locations, retaining walls, etc. on cross-sections
- Establish a **submittal date** for documentation to SCDOT
- Identify traffic control, signals, temporary shoring walls
- After final Constructability Review, no utility changes can be made
- Changes will domino on other utilities
- Identify cut and fill sections
- Determine if **encroachment** documents are needed from other utility companies
- Ensure that SCDOT work in utility easements do not require **licensing** or permits
- Consider utilities **abandoned** in place during design
- Set **installation priority** (who goes where and who goes first)
- Identify areas where **assistance** from other utilities is needed

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Utility Conflict Identification and Management

Identification of Utility Conflicts

SCDOT

AGENDA

- Utility Investigations
- Utility Conflict Analysis & Resolution
- Utility Coordination
- Utility Construction Management
- Best Practices
- Utility Coordination Tools

SCDOT

Utility Investigations

Importance of having the right information available at the right time.

- Characterization of subsurface and above ground utility installations
- SC811
- SUE Investigation Quality Levels ***More Information on Day 2!***
- ASCE Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data (ASCE/CI 38-02)

SCDOT

Utility Conflict Analysis and Resolution

Processes:

- Utility conflict analysis at critical milestones
- Evaluation of alternatives (utility and project)
- Meetings, discussions and commitments with stakeholders

Tools:

- Utility layouts (plan sheets, cross sections, details)
- Utility Conflict Management matrix
- Project schedules
- Project and utility specifications

More Details Later!

SCDOT

Utility Conflict Analysis and Resolution

Outcomes:

- Alternatives for utility conflict resolution
- Utility construction phasing
- Constructability recommendations
- Traffic control plan
- Utility Conflict Management Reports to share information during design
- Utility Conflict Management Reports to during construction
- Plans, schedules, and estimates
- Special Provisions in PS&E assembly

SCDOT

What is Utility Coordination?

Coordination and liaison with utility owners, consultants, designers, other stakeholders

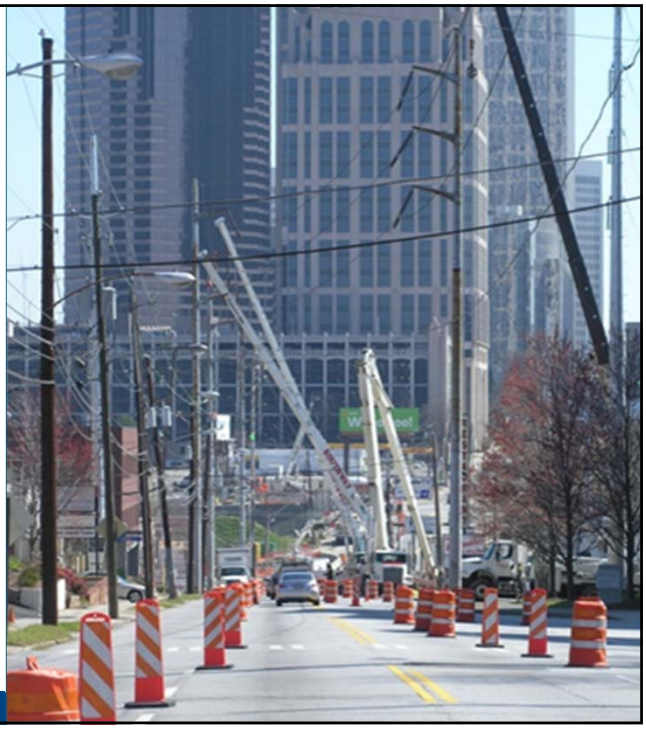
Scope of work could include:

- Coordination of utility relocations
- Notifications, meetings, minutes, and work plans
- Permits and rights of entry
- Utility agreement assemblies
- Funding and escrow agreements
- Processing of as-built information

SCDOT

Utility Construction Management

- Coordination of utility construction (Pre and post letting)
- Inspection and verification
- Compliance with policies (e.g., utility accommodation policy, traffic control, SW3P, OSHA, etc.)
- Payment request reviews
- Gathering or preparing as-built plans



Utility Coordination

Best Practices

SCDOT

Best Practices Quick Reference

First Steps

- **Project** Introduction Letter to Utilities
- **Communicate** early, effectively, and often
- **Identify** utilities early
- **Determine** when SUE is required and what level of SUE is appropriate.
- **Avoid, Minimize, or Mitigate**
  - Avoid - if possible
  - Minimize the Impact – might not fully avoid the adjustment but may reduce cost/effort
  - Mitigate – relocate or adjust the utility facility

AVOID

MITIGATE MINIMIZE

Invite

- **Invite** utilities with potential conflicts to meet in order to identify alternative solutions
- **Invite** utility companies to design field reviews
- **Invite** utility companies to pre-bid meetings and pre-construction conferences and include in construction progress meetings
- **Invite** utility companies to constructability review meetings

Incorporate

- **Document** all correspondence and conflicts
- **Adhere** to terms of the utility agreement
- **Know your project**
- **Include** utility relocations in SCDOT Environmental Permits when feasible
- **Incorporate** utility relocation work in the project schedule
- **Track and document** as-built work
- **Constructibility** reviews through-out the design process
- **Relocation** staging (who goes in first and where)

Review

- **Review**
  - Traffic Control Plans
  - Traffic Signal Plans
  - Lighting Plans
  - Landscaping Plans
  - temporary work-a-rounds
  - drainage/excavation
  - overhead crane areas
  - ground modifications
  - review fill and cut sections for utility installations
  - OSHA areas
  - other utility plans for utility conflicts not just the roadway plans, determine if future maintenance easements are needed for utilities.
- **Review** and monitor design changes as they may introduce new conflicts
- **Review** utility relocation drawings/ plans for conflicts
- **Inspect** the relocation/ adjustment of utility relocations for compliance and cost.
- **Right of Entry** and separation from other utilities

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First Steps

- Project Introduction Letter
- Communicate **EARLY**, **EFFECTIVELY** and **OFTEN**
- Identify Utilities **EARLY**
- Determine when SUE is required and what **level of SUE** is appropriate
- **AVOID** conflicts if possible
- **MINIMIZE** conflicts where feasible
- **MITIGATE** the conflicts through relocation or adjustment

Invite

- **Invite** utilities with potential conflicts to meet in order to identify alternative solutions
- **Invite** Utility Companies to Design Field Reviews
- **Invite** Utility Companies to Pre-bid meetings, Preconstruction conferences, and include in construction progress meetings
- **Invite** Utility Companies to constructability review meetings

Incorporate

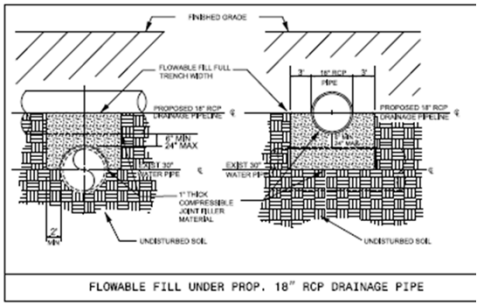
- **Document** all conflicts and correspondence
- **Adhere** to the terms of the utility agreement
- **KNOW your PROJECT**
- **Include** utility relocations in SCDOT Permits when feasible
- **Incorporate** utility company schedule into the project schedule
- **Track & Document** as-built work
- **Constructability** considered throughout the process
- Relocation **Staging**

Review

- **Review** all the planned work
- **Review** & Monitor design changes as they may introduce new conflicts
- **Review** utility relocation drawings for conflicts with SCDOT other utilities
- **Inspect** utility relocations work for compliance
- **Right of Entry** and separation from other utilities

- ❖ **Traffic Control Plans**
- ❖ **Traffic Signal Plans**
- ❖ **Lighting Plans**
- ❖ **Landscaping Plans**
- ❖ **Temporary work-a-rounds**
- ❖ **Drainage/Excavations**
- ❖ **Overhead Crane Areas**
- ❖ **Ground Modifications**
- ❖ **Cut & Fill Sections**
- ❖ **OSHA areas**
- ❖ **Other Utility Plans**
- ❖ **Future Maintenance Easements**

Relocations are not the ONLY solution to Utility Relocations



FLOWABLE FILL UNDER PROP. 18" RCP DRAINAGE PIPE

FINAL UTILITY DELIVERABLES CHECKLIST

☐ Final Utility Submittal, including:

Utility Window:
- ☐ None Required
- ☐ 1 month Window
- ☐ 2 month Window
- ☐ 3 month Window
- ☐ 6 month Window
- ☐ 9 month Window
- ☐ Other: ___ month

In-Contract Relocation:
- ☐ No
- ☐ Yes

Encroachment Permit:
- ☐ No
- ☐ Yes, included

NO UTILITY CONFLICTS:
- ☐ No Conflict Letter on Utility Company Letterhead

NO COST UTILITY RELOCATION:
- ☐ No Cost Letter on Utility Company Letterhead
- ☐ Utility Relocation Plans
- ☐ Utility Relocation Environmental Permit, if required
- ☐ Utility Relocation Construction Schedule

UTILITY RELOCATION by AGREEMENT:
- ☐ Utility Agreement with cost share outlined
- ☐ Utility Relocation Plans
- ☐ Utility Relocation Environmental Permit, if required
- ☐ Utility Relocation Construction Schedule

UTILITY RELOCATION IN-CONTRACT with SCDOT:
- ☐ Financial Participation Agreement with cost share outlined
- ☐ Utility Relocation Plans (must be 24 X 36)
- ☐ Utility Relocation Environmental Permit, if required
- ☐ Utility Construction Specifications
- ☐ Utility Construction Cost Estimate
- ☐ List of Pre-Qualified Contractors, if applicable

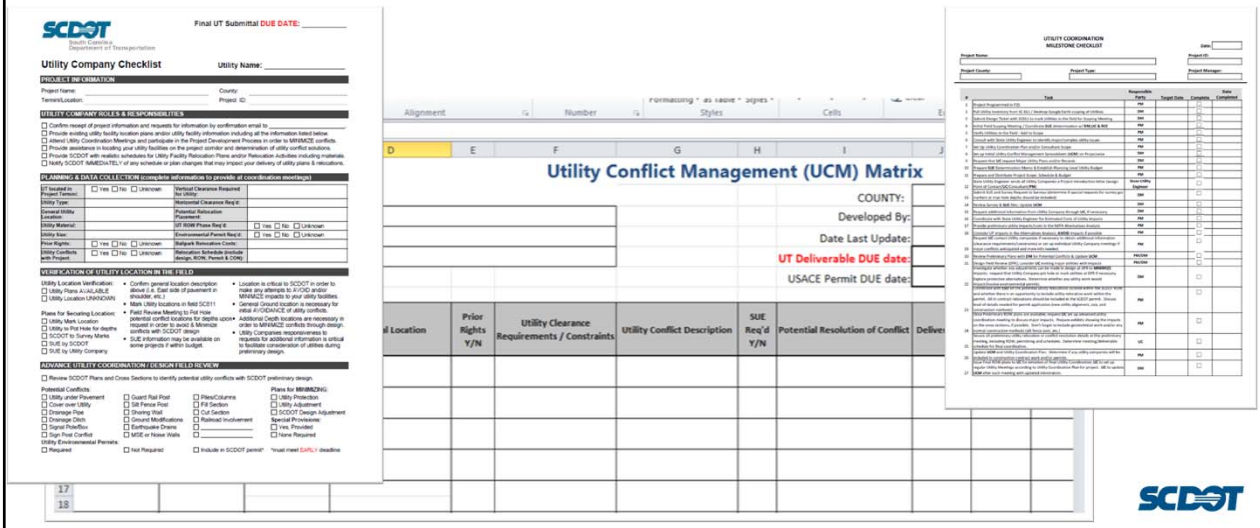
Utility Coordination Tools

UCM Spreadsheet & Utility Coordination Checklists

SCDOT

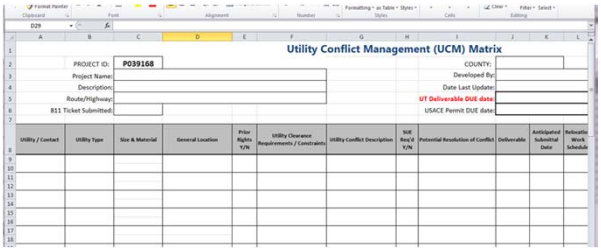
Utility Coordination Tools

What tools can be used to facilitate effective communication?



Utility Conflict Management Spreadsheets

- Utility Conflict Management Matrix is an important tool for managing utility conflicts
- SCDOT Utility Committee reviewed other DOT approaches & identified best practices
- Developed a RECOMMENDED UCM approach and documented related processes
- Developed this Training program to implement UCM tools and practices



Why use UCM?

These tools are designed to assist in **facilitating clear communication between internal staff and utility companies** which will result in better cooperation and commitment between SCDOT and Utility Companies. Also used for:

- Track Project Utility Conflicts at a Facility Level from Project Initiation through Construction
- Update the UCM Regularly (Projectwise)
- Management report during project development
- Management report during construction
- Cost savings report after construction

Successful Utility Coordination includes:

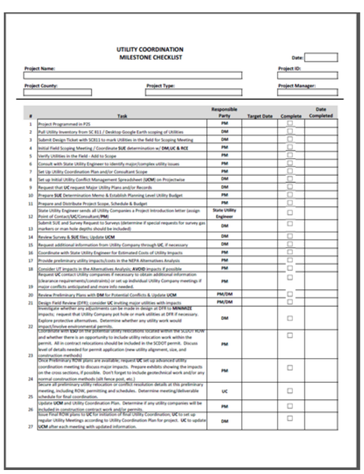
COMMUNICATION

COOPERATION

COMMITMENT

Utility Conflict Management Matrix Components:

Utility Coordination Milestone Checklist



UTILITY COORDINATION
MILESTONE CHECKLIST

Date:

Project Name: | Project ID:

Project County: | Project Type: | Project Manager:

#	Task	Responsible Party	Target Date	Complete	Date Completed
1	Project Programmed in P25	PM		☐	
2	Pull Utility Inventory from SC 811 / Desktop Google Earth scoping of Utilities	DM		☐	
3	Submit Design Ticket with SC811 to mark Utilities in the field for Scoping Meeting	DM		☐	
4	Initial Field Scoping Meeting / Coordinate **SUE** determination w/ **DM,UC & RCE**	PM		☐	
5	Verify Utilities in the Field - Add to Scope	PM		☐	
6	Consult with State Utility Engineer to identify major/complex utility issues	PM		☐	
7	Set Up Utility Coordination Plan and/or Consultant Scope	PM		☐	
8	Set up Initial Utility Conflict Management Spreadsheet (**UCM**) on Projectwise	DM		☐	
9	Request that **UC** request Major Utility Plans and/or Records	DM		☐	
10	Prepare **SUE** Determination Memo & Establish Planning Level Utility Budget	PM		☐	
11	Prepare and Distribute Project Scope, Schedule & Budget	PM		☐	
12	State Utility Engineer sends all Utility Companies a Project Introduction letter (assign Point of Contact/**UC**/Consultant/**PM**)	State Utility Engineer		☐	
13	Submit SUE and Survey Request to Surveys (determine if special requests for survey gas markers or man hole depths should be included)	DM		☐	
14	Review Survey & **SUE** files; Update **UCM**	DM		☐	
15	Request additional information from Utility Company through **UC**, if necessary	DM		☐	
16	Coordinate with State Utility Engineer for Estimated Costs of Utility Impacts	PM		☐	
17	Provide preliminary utility impacts/costs in the NEPA Alternatives Analysis	PM		☐	
18	Consider UT impacts in the Alternatives Analysis; **AVOID** impacts if possible	PM		☐	
19	Request **UC** contact Utility companies if necessary to obtain additional information (clearance requirements/constraints) or set up individual Utility Company meetings if major conflicts anticipated and more info needed.	PM		☐	
20	Review Preliminary Plans with **DM** for Potential Conflicts & Update **UCM**	PM/DM		☐	
21	Design Field Review (DFR); consider **UC** inviting major utilities with impacts	PM/DM		☐	
22	Investigate whether any adjustments can be made in design at DFR to **MINIMIZE** impacts; request that Utility Company pot hole or mark utilities at DFR if necessary. Explore protective alternatives. Determine whether any utility work would impact/involve environmental permits.	DM		☐	
23	Coordinate with **ESO** on the potential utility relocations located within the SCDOT ROW and whether there is an opportunity to include utility relocation work within the permit. All in contract relocations should be included in the SCDOT permit. Discuss level of details needed for permit application (new utility alignment, size, and construction methods)	PM		☐	
24	Once Preliminary ROW plans are available; request **UC** set up advanced utility coordination meeting to discuss major impacts. Prepare exhibits showing the impacts on the cross sections, if possible. Don't forget to include geotechnical work and/or any normal construction methods (silt fence post, etc.)	PM		☐	
25	Secure all preliminary utility relocation or conflict resolution details at this preliminary meeting, including ROW, permitting and schedules. Determine meeting/deliverable schedule for final coordination.	UC		☐	
26	Update **UCM** and Utility Coordination Plan. Determine if any utility companies will be included in construction contract work and/or permits.	PM		☐	
27	Issue Final ROW plans to **UC** for initiation of final Utility Coordination; **UC** to set up regular Utility Meetings according to Utility Coordination Plan for project. **UC** to update **UCM** after each meeting with updated information.	DM		☐	

- Tracks major milestones in the Utility Coordination process
- Identifies the person responsible for the activity
- Establishes a target date for completion
- Tracks completed and incomplete tasks
- Tracks actual date completed

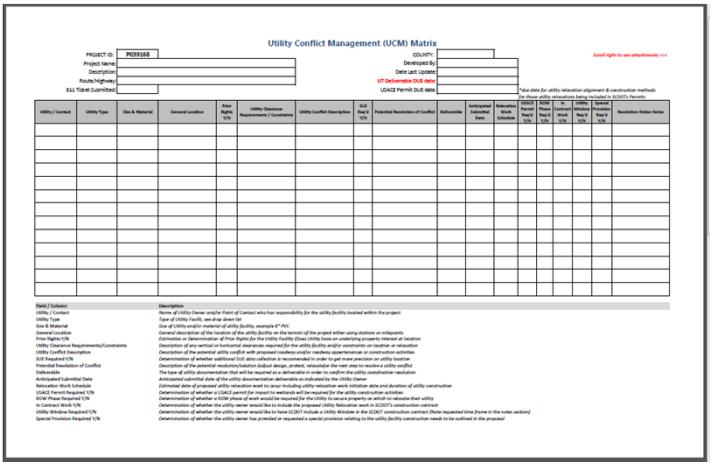
TIPS

*Early identification of utility facilities and early communication with utility companies reduces project **RISK***

SCDOT

Utility Conflict Management Matrix Components:

UCM Matrix Summary Sheet


Utility Conflict Management (UCM) Matrix

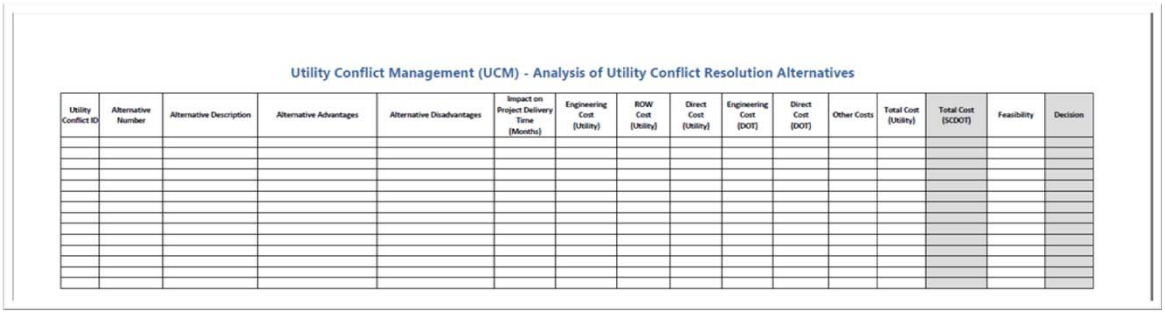
- Summarizes the Utilities on Project
- Identifies the general location
- Outlines utility constraints/clearance
- Identifies potential conflicts
- Identifies DUE dates for deliverables
- Identifies utility work phases
- Notes resolution status
- Identifies anticipated deliverable type

TIPS

Using the Utility Company Checklist may assist in collection of information for this UCM Summary.

Utility Conflict Management Matrix Components:

Utility Conflict Management - Analysis of Conflict Resolution Alternatives


Utility Conflict Management (UCM) - Analysis of Utility Conflict Resolution Alternatives

Utility Conflict ID	Alternative Number	Alternative Description	Alternative Advantages	Alternative Disadvantages	Impact on Project Delivery Time (Months)	Engineering Cost (Utility)	ROW Cost (Utility)	Direct Cost (Utility)	Engineering Cost (DOT)	Direct Cost (DOT)	Other Costs	Total Cost (Utility)	Total Cost (SCDOT)	Feasibility	Decision

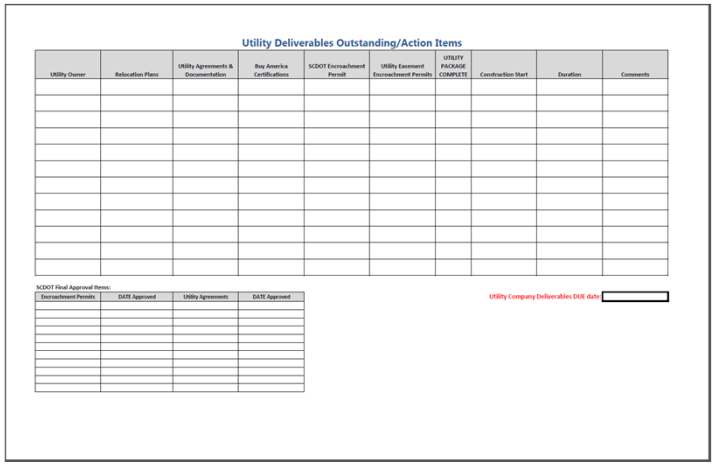
- Tracks the utility conflict resolution alternatives considered (Impacts/Costs/Feasibility/Decision)
- Enhances communication between Project Development Team & Utility Companies

TIPS

Utility relocation is not always the only option to Utility Conflict Solution; open communication with Utility Companies may reveal other lower cost alternatives and options.

Utility Conflict Management Matrix Components:

Utility Deliverables Outstanding/Action Items Worksheet



Utility Deliverables Outstanding/Action Items

Utility Owner	Relocation Plans	Utility Agreements & Documentation	Buy America Certifications	SCDOT Encroachment Permit	Utility Easement Encroachment Permits	UTILITY PACKAGE COMPLETE	Construction Start	Duration	Comments

SCDOT Final Approval Items:

Encroachment Permits	DATE Approved	Utility Agreements	DATE Approved

Utility Company Deliverables DUE date

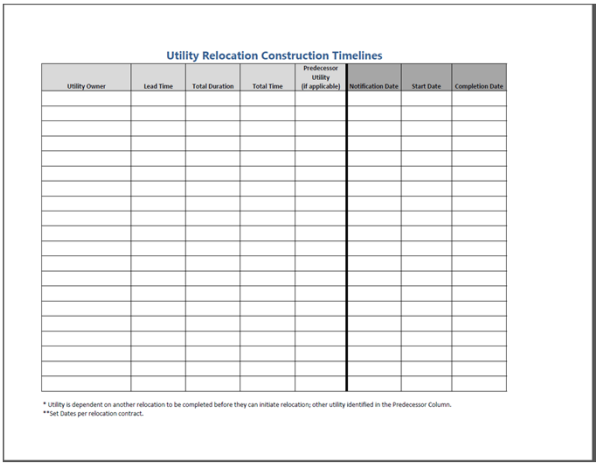
- List of Final Deliverables Required
- Tracks Specific Components
- Tracks Outstanding items needed
- Tracks Action Items
- Tracks Approvals

TIPS

Drop down lists in this spreadsheet make identifying which items are outstanding clearly visible.

Utility Conflict Management Matrix Components:

Utility Relocation Construction Timelines



Utility Relocation Construction Timelines

Utility Owner	Lead Time	Total Duration	Total Time	Predecessor Utility (if applicable)	Notification Date	Start Date	Completion Date

* Utility is dependent on another relocation to be completed before they can initiate relocation; other utility identified in the Predecessor Column.
**Set Dates per relocation contract.

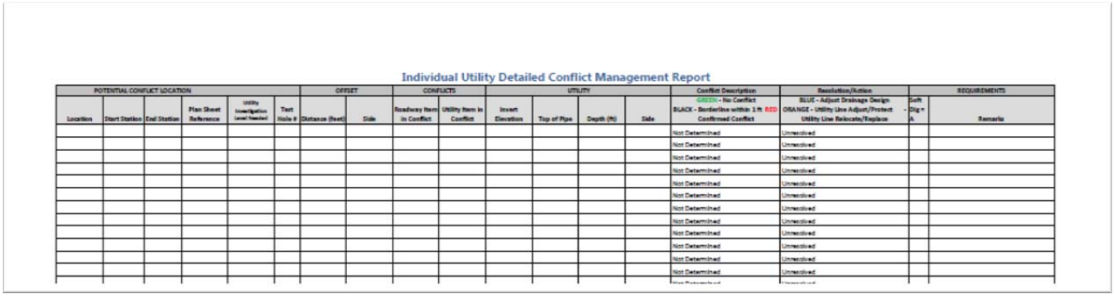
- Final Coordination of Utility Relocations
- Outlines Order of Relocations
- Identifies Dependencies
- Identifies the Lead Times necessary
- Identifies Total Duration of proposed relocation work once initiated
- Tracks actual dates work

TIPS

Constructability is an important topic that must be considered at each stage of utility coordination. Some relocations may not be able to begin relocation until other relocations are completed.

Utility Conflict Management Matrix Components:

Individual Utility Detailed Conflict Analysis Report



Individual Utility Detailed Conflict Management Report

POTENTIAL CONFLICT LOCATION						OFFSET		CONFLICTS		UTILITY				Conflict Description	Resolution/Action	REQUIREMENTS	
Location	Start Station	End Station	Plan Sheet Reference	Utility Investigation Level Needed	Test Hole #	Distance (feet)	Side	Roadway Item in Conflict	Utility Item in Conflict	Invert Elevation	Top of Pipe	Depth (ft)	Side	GREEN - No Conflict BLACK - Borderline within 1 ft RED Confirmed Conflict	BLUE - Adjust Drainage Design ORANGE - Utility Line Adjust/Protect Utility Line Relocate/Replace	Soft Dig = A	Remarks
														Not Determined	Unresolved		
														Not Determined	Unresolved		
														Not Determined	Unresolved		
														Not Determined	Unresolved		
														Not Determined	Unresolved		
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														Not Determined	Unresolved		
														Not Determined	Unresolved		
														Not Determined	Unresolved		

- Detailed Worksheets can be created for each Utility in Conflict to analyze the details
- Organizes complex utility conflict location details obtained from test hole data
- Details the conflict resolution and status

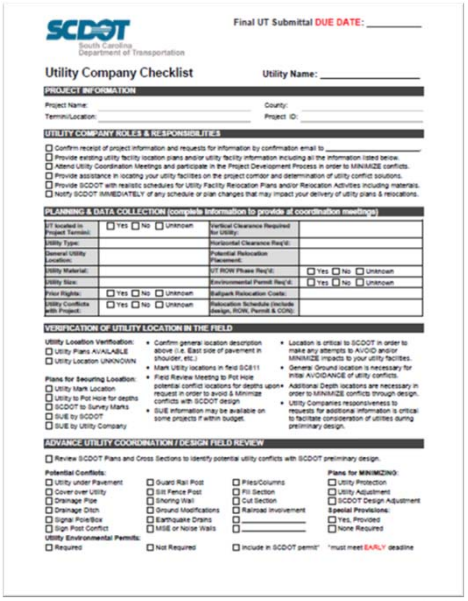
TIPS *Useful for utility facilities with lots of conflict locations and where alternate resolutions are implemented @ some locations along the corridor but not all resolutions are the same strategy.*

Utility Company Checklist
(front)

- Used to Communicate Expectations to Utilities
- One sheet front & back
- Distributed at every contact & meeting
- Used to collect utility information
- Back side includes final utility company package checklist

TIPS

*This form can be used to provide **CLEAR COMMUNICATION** with Utility Companies on what information SCDOT needs from them during the Utility Coordination Process*



SCDOT
South Carolina
Department of Transportation

Final UT Submittal DUE DATE: __________

Utility Company Checklist

Utility Name: __________

PROJECT INFORMATION

Project Name: __________
County: __________
Termini/Location: __________
Project ID: __________

UTILITY COMPANY ROLES & RESPONSIBILITIES

☐ Confirm receipt of project information and requests for information by confirmation email to __________.
☐ Provide existing utility facility location plans and/or utility facility information including all the information listed below.
☐ Attend Utility Coordination Meetings and participate in the Project Development Process in order to MINIMIZE conflicts.
☐ Provide assistance in locating your utility facilities on the project corridor and determination of utility conflict solutions.
☐ Provide SCDOT with realistic schedules for Utility Facility Relocation Plans and/or Relocation Activities including materials.
☐ Notify SCDOT IMMEDIATELY of any schedule or plan changes that may impact your delivery of utility plans & relocations.

PLANNING & DATA COLLECTION (complete information to provide at coordination meetings)

UT located in Project Termini:	☐ Yes ☐ No ☐ Unknown	Vertical Clearance Required for Utility:	
Utility Type:		Horizontal Clearance Req'd:	
General Utility Location:		Potential Relocation Placement:	
Utility Material:		UT ROW Phase Req'd:	☐ Yes ☐ No ☐ Unknown
Utility Size:		Environmental Permit Req'd:	☐ Yes ☐ No ☐ Unknown
Prior Rights:	☐ Yes ☐ No ☐ Unknown	Ballpark Relocation Costs:	
Utility Conflicts with Project:	☐ Yes ☐ No ☐ Unknown	Relocation Schedule (include design, ROW, Permit & CON):	

VERIFICATION OF UTILITY LOCATION IN THE FIELD

Utility Location Verification:
☐ Utility Plans AVAILABLE
☐ Utility Location UNKNOWN

Plans for Securing Location:
☐ Utility Mark Location
☐ Utility to Pot Hole for depths
☐ SCDOT to Survey Marks
☐ SUE by SCDOT
☐ SUE by Utility Company

- Confirm general location description above (i.e. East side of pavement in shoulder, etc.)
- Mark Utility locations in field SC811
- Field Review Meeting to Pot Hole potential conflict locations for depths upon request in order to avoid & Minimize conflicts with SCDOT design
- SUE information may be available on some projects if within budget.

- Location is critical to SCDOT in order to make any attempts to AVOID and/or MINIMIZE impacts to your utility facilities.
- General Ground location is necessary for initial AVOIDANCE of utility conflicts.
- Additional Depth locations are necessary in order to MINIMIZE conflicts through design.
- Utility Companies responsiveness to requests for additional information is critical to facilitate consideration of utilities during preliminary design.

ADVANCE UTILITY COORDINATION / DESIGN FIELD REVIEW

☐ Review SCDOT Plans and Cross Sections to identify potential utility conflicts with SCDOT preliminary design.

Potential Conflicts:
☐ Utility under Pavement
☐ Cover over Utility
☐ Drainage Pipe
☐ Drainage Ditch
☐ Signal Pole/Box
☐ Sign Post Conflict

☐ Guard Rail Post
☐ Silt Fence Post
☐ Shoring Wall
☐ Ground Modifications
☐ Earthquake Drains
☐ MSE or Noise Walls

☐ Piles/Columns
☐ Fill Section
☐ Cut Section
☐ Railroad Involvement
☐ __________
☐ __________

Plans for MINIMIZING:
☐ Utility Protection
☐ Utility Adjustment
☐ SCDOT Design Adjustment
Special Provisions:
☐ Yes, Provided
☐ None Required

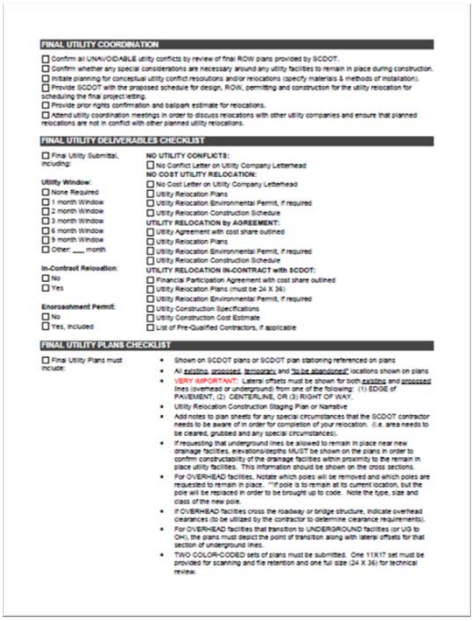
Utility Environmental Permits:
☐ Required
☐ Not Required
☐ Include in SCDOT permit*
*must meet EARLY deadline

Utility Company Checklist
(Back)

- Back side includes final utility company package checklist
- Outlines the information required on a set of relocation plans
- Can be submitted with the final utility package as a cover sheet

TIPS

This form also allows the utility company to clearly indicate whether a utility window is required or whether this is an IN-CONTRACT utility relocation submittal.



FINAL UTILITY COORDINATION

- ☐ Confirm all UNAVOIDABLE utility conflicts by review of final ROW plans provided by SCDOT.
- ☐ Confirm whether any special considerations are necessary around any utility facilities to remain in place during construction.
- ☐ Initiate planning for conceptual utility conflict resolutions and/or relocations (specify materials & methods of installation).
- ☐ Provide SCDOT with the proposed schedule for design, ROW, permitting and construction for the utility relocation for scheduling the final project letting.
- ☐ Provide prior rights confirmation and ballpark estimate for relocations.
- ☐ Attend utility coordination meetings in order to discuss relocations with other utility companies and ensure that planned relocations are not in conflict with other planned utility relocations.

FINAL UTILITY DELIVERABLES CHECKLIST

☐ Final Utility Submittal, including:

Utility Window:
- ☐ None Required
- ☐ 1 month Window
- ☐ 2 month Window
- ☐ 3 month Window
- ☐ 6 month Window
- ☐ 9 month Window
- ☐ Other: ___ month

In-Contract Relocation:
- ☐ No
- ☐ Yes

Encroachment Permit:
- ☐ No
- ☐ Yes, included

NO UTILITY CONFLICTS:
- ☐ No Conflict Letter on Utility Company Letterhead

NO COST UTILITY RELOCATION:
- ☐ No Cost Letter on Utility Company Letterhead
- ☐ Utility Relocation Plans
- ☐ Utility Relocation Environmental Permit, if required
- ☐ Utility Relocation Construction Schedule

UTILITY RELOCATION by AGREEMENT:
- ☐ Utility Agreement with cost share outlined
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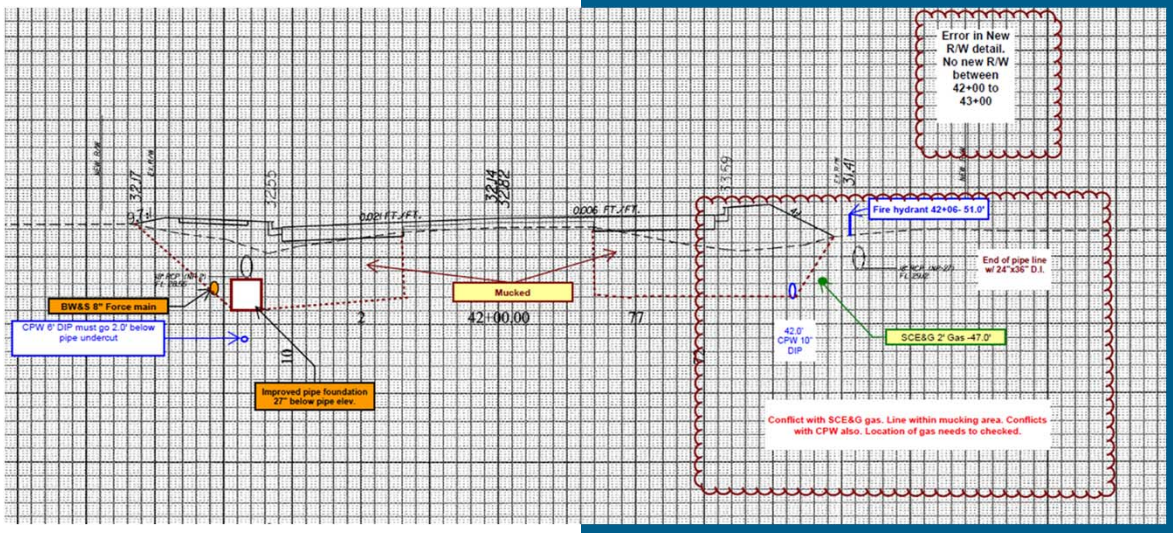
UTILITY RELOCATION IN-CONTRACT with SCDOT:
- ☐ Financial Participation Agreement with cost share outlined
- ☐ Utility Relocation Plans (must be 24 X 36)
- ☐ Utility Relocation Environmental Permit, if required
- ☐ Utility Construction Specifications
- ☐ Utility Construction Cost Estimate
- ☐ List of Pre-Qualified Contractors, if applicable

FINAL UTILITY PLANS CHECKLIST

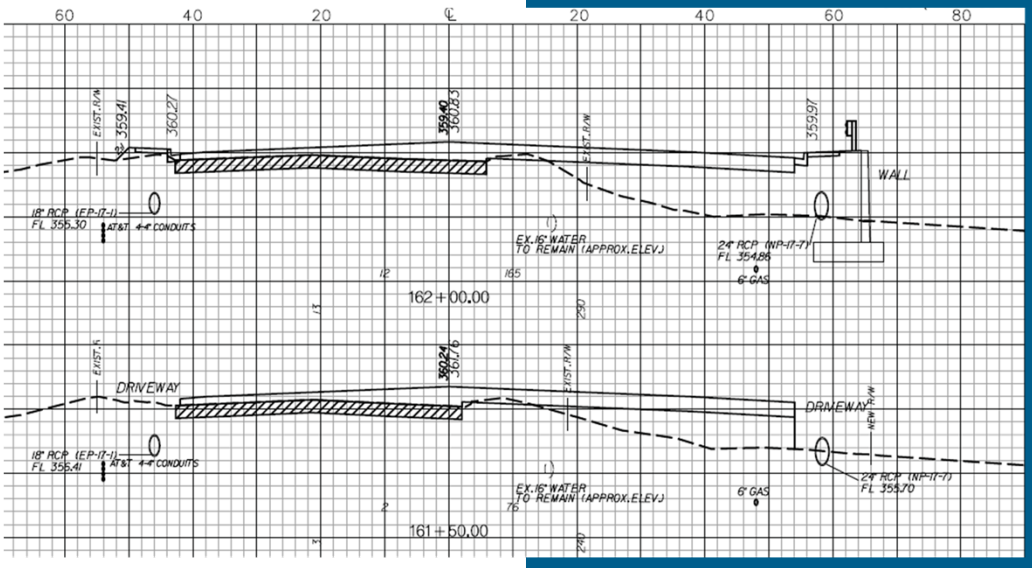
☐ Final Utility Plans must include:

- Shown on SCDOT plans or SCDOT plan stationing references on plans
- All existing, proposed, temporary, and "to be abandoned" locations shown on plans
- VERY IMPORTANT: Lateral offsets must be shown for both existing and proposed lines (overhead or underground) from one of the following: (1) EDGE of PAVEMENT, (2) CENTERLINE, OR (3) RIGHT OF WAY.
- Utility Relocation Construction Staging Plan or Narrative
- Add notes to plan sheets for any special circumstances that the SCDOT contractor needs to be aware of in order for completion of your relocation. (i.e. area needs to be cleared, grubbed and any special circumstances).
- If requesting that underground lines be allowed to remain in place near new drainage facilities, excavations/depths MUST be shown on the plans in order to confirm constructability of the drainage facilities within proximity to the remain in place utility facilities. This information should be shown on the cross sections.
- For OVERHEAD facilities, Notate which poles will be removed and which poles are requested to remain in place. **If pole is to remain at its current location, but the pole will be replaced in order to be brought up to code. Note the type, size and class of the new pole.
- If OVERHEAD facilities cross the roadway or bridge structure, indicate overhead clearances (to be utilized by the contractor to determine clearance requirements).
- For OVERHEAD facilities that transition to UNDERGROUND facilities (or UG to OH), the plans must depict the point of transition along with lateral offsets for that section of underground lines.
- TWO COLOR-CODED sets of plans must be submitted. One 11X17 set must be provided for scanning and file retention and one full size (24 X 36) for technical review.

Cross Section Exhibits

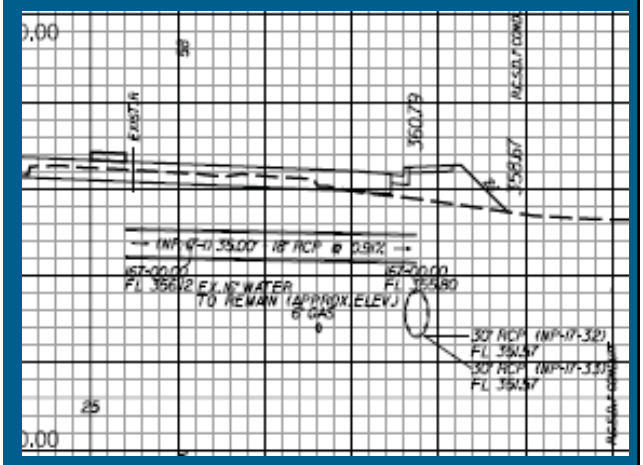


Cross Section Exhibits



Cross Section Exhibits

- Not necessary for every project
- Useful on Projects with high density of utilities
- Demonstrates all the excavations and structures that could impact utility relocations
- Useful for sketching in proposed relocations as well as existing utility facilities for coordination
- Can be produced by hand in Adobe Professional or Plotted in Microstation



When to Utilize Tools in the Utility Coordination Process?

Timing is Everything

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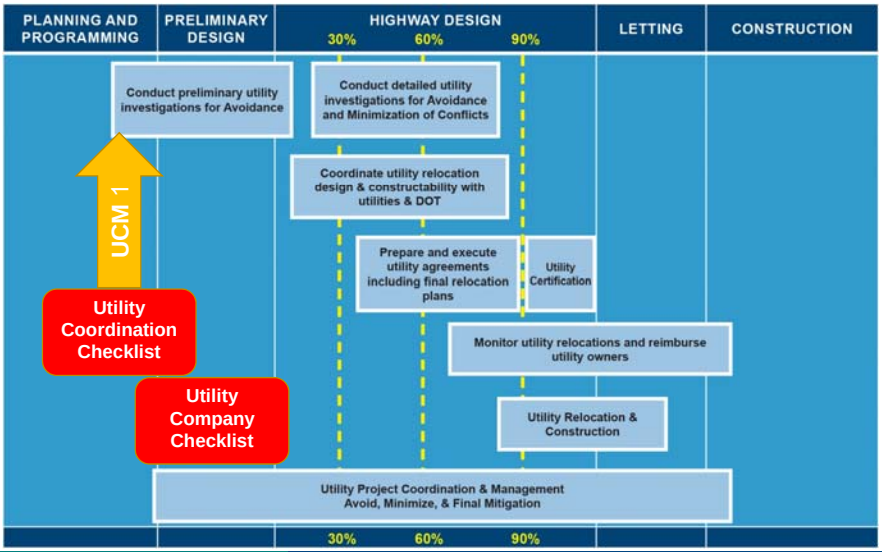
SCDOT Utility Coordination Process: Stage 1



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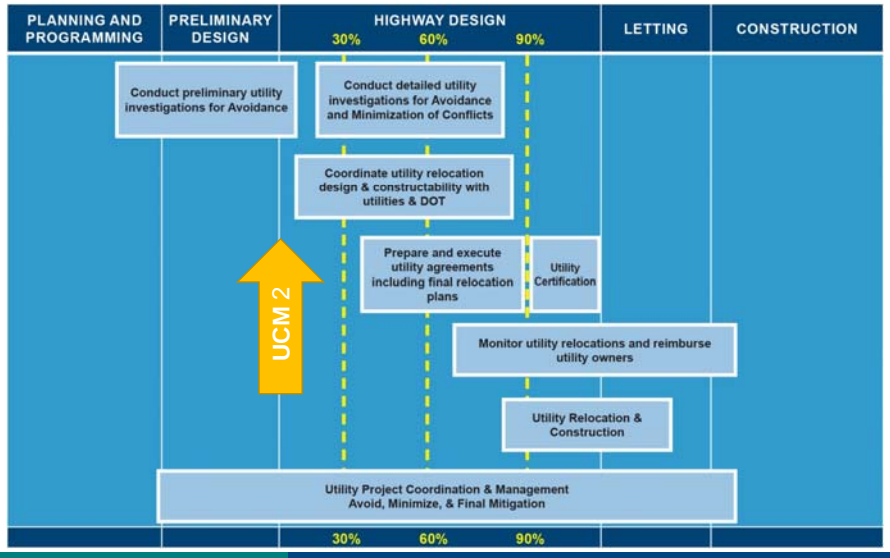
SCDOT Utility Coordination Process: Stage 2



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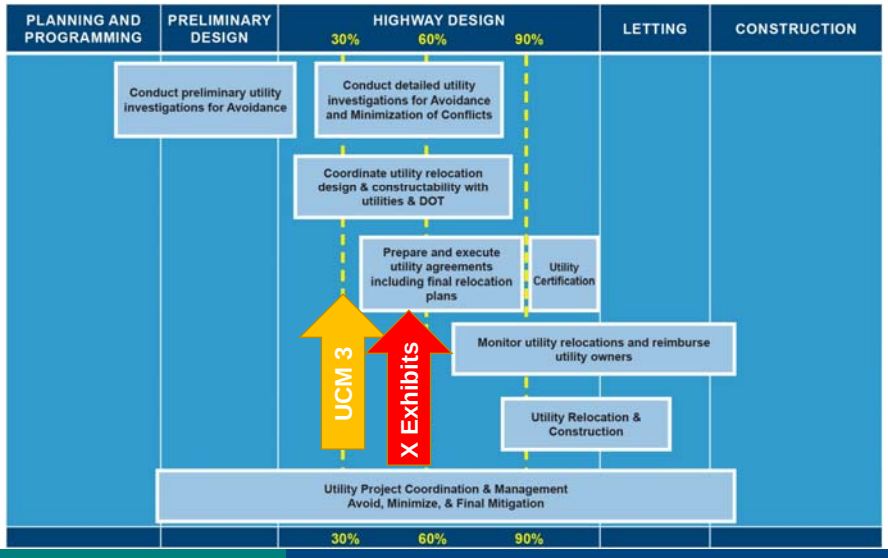
SCDOT Utility Coordination Process: Stage 3



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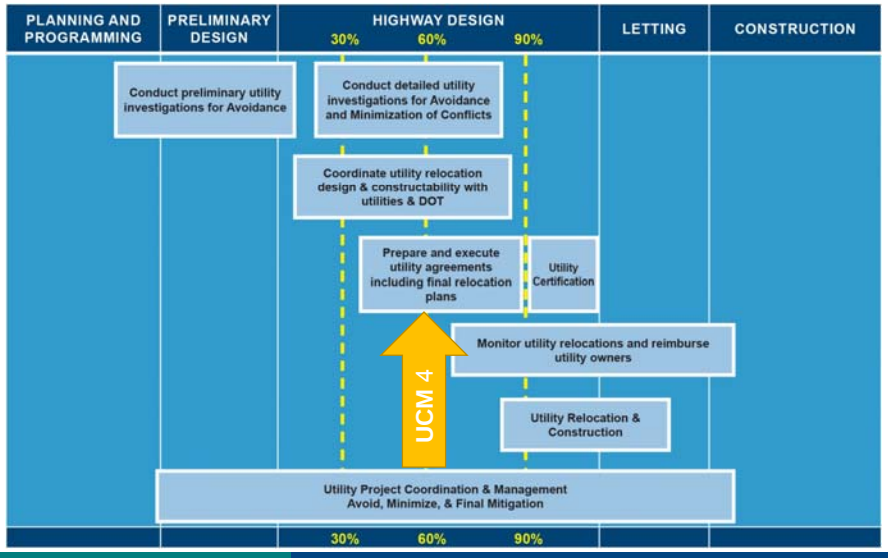
SCDOT Utility Coordination Process: Stage 4



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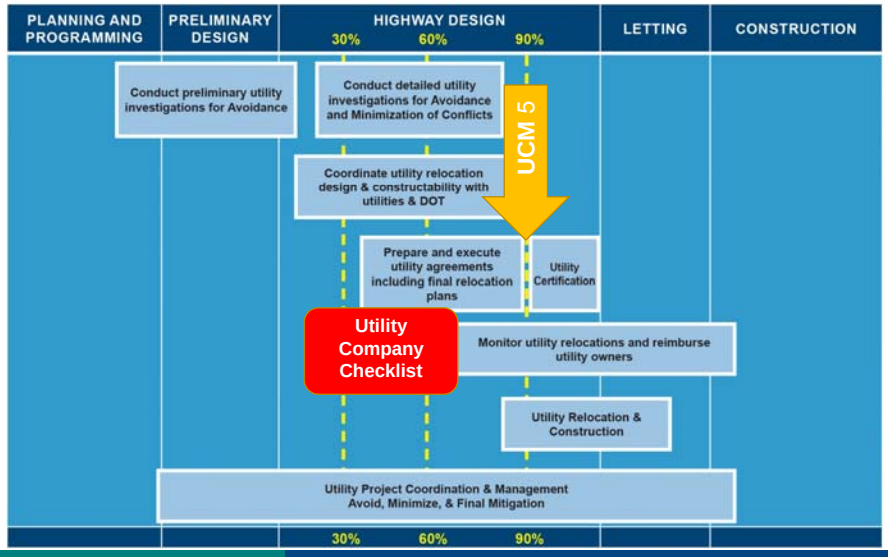
SCDOT Utility Coordination Process: Stage 5



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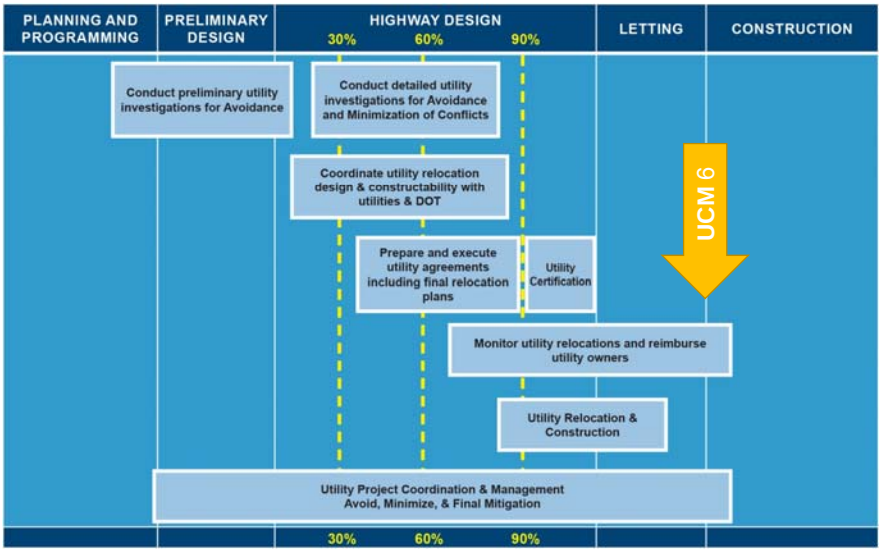
SCDOT Utility Coordination Process: Stage 6



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Key Concepts

- Gather & Document available information
- Work with Utility Companies to Secure Additional Location Information
- Identify where additional SUE data should be collected
- Identify potential utility conflicts
- Prepare utility conflict management matrix
- Review Potential Conflicts with Utility Companies
- Evaluate alternatives (both utility and project)
- Conduct utility conflict analysis & Resolution
- Coordinate with stakeholders
- Iterative process (pending design progression)
- **GOAL:** Collect, Organize & Analyze data to **AVOID** and **MINIMIZE** unnecessary utility relocations

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Questions

Hands-On Project Scoping Exercise

- ❑ Break up into groups of 5-6 for this exercise
- ❑ Your team has been assigned the project outlined in the project summary sheet in the notebook
- ❑ Your team is responsible for scoping the project and identifying potential utility issues and risks
- ❑ Each Team will report back on the following:
  - ❖ Major Utility Issues/Conflicts Identified?
  - ❖ Is additional SUE investigations recommended?
  - ❖ Would any of these potential utility conflicts play a major role in the selection of the roadway alignment through your NEPA analysis?

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Utility Coordination Plans & Reports

AGENDA

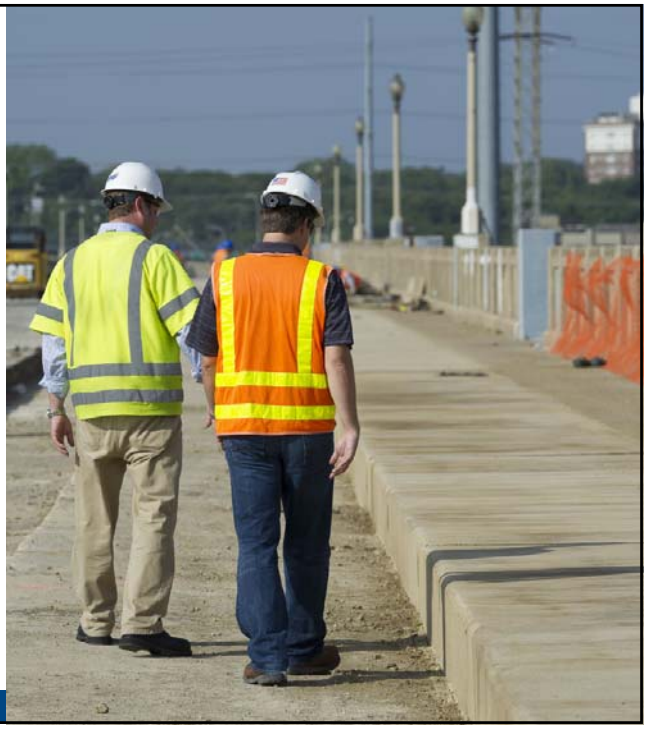
- Preliminary Utility Reports
- Utility Coordination Strategy Plan
- Final Utility Reports
- Utility Coordination Consultants
- Contracting Methods
- Contract Roles & Responsibilities
- Contract Assistance

Preliminary Utility Report Contents

- ✓ Utility Conflict Management **matrix summary** & supporting worksheets
  - Including list of utility facilities & company contact information within project limits
- ✓ Utility Coordination **meeting minutes**, sign-in sheets & notes
- ✓ Utility Company **records** and/or utility location information (SUE sheets)
- ✓ Preliminary recommendations on extent of **prior rights** for each utility
- ✓ Preliminary identification of potential utility **impacts**
- ✓ Preliminary recommendations for utility conflict **AVOIDANCE** & **MINIMIZATION**

Preliminary Utility Reports Contents
(continued)

- ✓ Recommendations for additional **SUE** and/or location investigations
- ✓ Planning level **costs** for each utility company impact
- ✓ Preliminary recommendations for potential **in-contract** utility work
- ✓ Preliminary recommendations for utility work to be included in **USACE Permits**, or for utility to obtain their own permits
- ✓ Recommendations for utility relocations to be completed prior to start of construction
- ✓ Preliminary requests for **special provisions**
- ✓ **Utility Coordination Strategy Plan**



Utility Coordination Strategy

Begin with the END in mind

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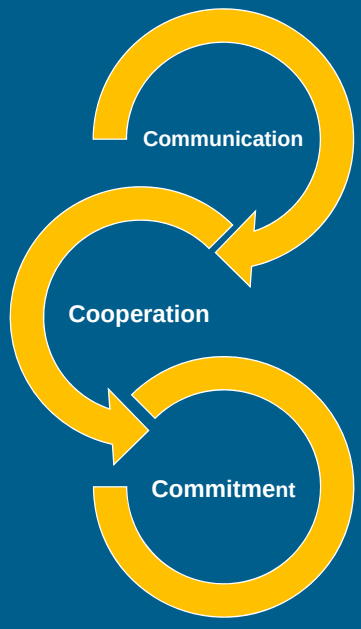
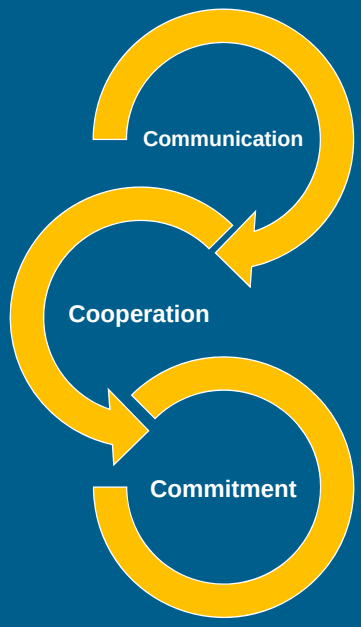
Utility Coordination Project Strategy Plans

- ✓ Identify Major Utility **Risks** & **Opportunities**
  - Lack of Utility Location Data & recommended path forward
  - Opportunities to work with Utility Company to obtain information on-site
- ✓ Recommend Utility Coordination **Meeting Plan**
  - Individual Utility Company Meeting Schedule
  - Utility Company Group Meeting Schedule
- ✓ Outline Strategic Timing of Meetings & Plan **Exhibits** to be presented
  - Roll Plots of Design
  - Cross Section Exhibits



Utility Coordination Project Strategy Plans *(continued)*

- ✓ Recommend **Strategies for Reducing Risk** *(temporary pole attachments, utility protections, alternatives to relocations, utilities sharing trenches…)*
- ✓ Utility **Conflict Resolution Strategies** for non-responsive Utility Companies (1 on 1 Meetings, Conference Call, Elevate to Dispute Resolution)
- ✓ Interim **Milestone Delivery Deadlines** for Each Utility
  - Incorporate Utility Schedule into SCDOT Project Schedule
  - Identify critical path dates for Utility Plan Development, ROW, Permitting, etc… in order to identify interim deadlines for Utility progress.



Final Utility Reports Contents

- ✓ Utility Conflict Management **matrix** summary & supporting worksheets
  - Including list of utility facilities & company contact information within project limits
- ✓ Utility company coordination **meeting minutes**, sign-in sheets & notes
- ✓ Utility conflict **exhibits** and/or plans provided at each meeting
- ✓ **Prior rights** supporting documentation for each utility
- ✓ Final assessment of **utility impacts** to each utility company & ultimate **resolution**
- ✓ Utility company **relocation plans**
- ✓ Final estimated **cost** for each utility company relocation/adjustment impact
- ✓ In-contract utility work **PS&E packages**
- ✓ Signed agreements for in-contract work in **MOA/MOU**
- ✓ **License agreements** and/or approvals for SCDOT work within utility easements (if required)

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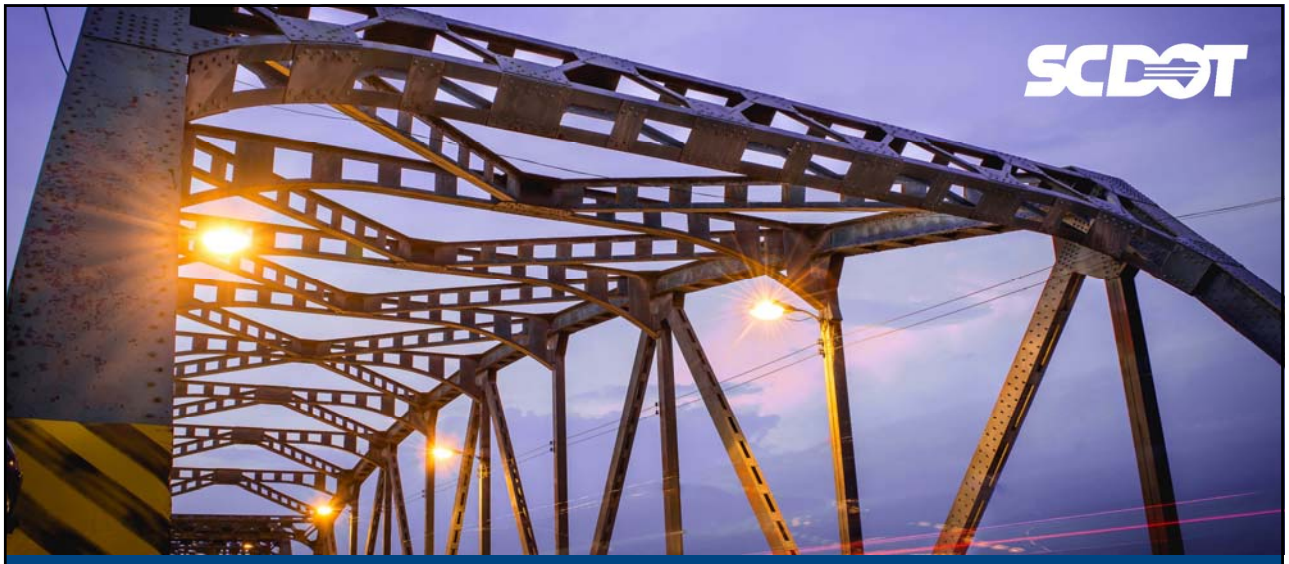
Final Utility Reports Contents *(continued)*

- ✓ Copies of **USACE permits** for utility relocations (either secured by the utility or included in SCDOT permit)
- ✓ Utility relocation **schedules** (completed prior to start of SCDOT construction)
- ✓ Final utility **special provisions** (utility windows, special considerations, protections, etc…)
- ✓ "No Cost" Letters
- ✓ "No Conflict" Letters
- ✓ Utility Agreements
- ✓ SCDOT encroachment permits (if necessary)
- ✓ Utility **sheets** and/or **exhibits** with utility locations
- ✓ Recommendation for approval of the final utility agreements & relocation plans
- ✓ Draft utility **certification** with recommendation for approval



Using Consultants for Utility Coordination

Utility Coordination Contracting Options

- **On-Call Design** Consultants – Determine if any other services need to be contracted out and package up Utility Coordination and SUE with these services.
- **Small Purchase** Contracts – Ideal for smaller projects where utility coordination is the only service that needs to be outsourced
- **On-Call CEI** Consultants – For projects where assistance is only needed for Final Utility Coordination, and the District plans to utilize a CEI on-call firm. This firm can be contracted with prior to construction in order to perform Utility Coordination prior to the start of Construction Services.
- **SUE Work Orders** will continue to be utilized for any necessary SUE work to be performed unless included in a turn-key or above on-call contracts.

Utility Coordination Consultants

- Important to select an **experienced** consultant in Utility Coordination
- Ensure that they have experience with the **level of complexity** your project demands
- Clearly communicate your **expectations** up front for the utility coordination on the project
- Set clear **milestone project delivery dates** to ensure the Coordination is progressing effectively

Roles & Responsibilities of the Consultant

Utility Coordination Checklist outlines role and responsibilities of the Utility Coordination Team

- **Design Manager (DM)**
- **Program Manager (PM)**
- **Utility Coordinator (UC)**
- **Resident Construction Engineer (RCE)**
- **Environmental Services Office (ESO)**
- **State Utility Engineer**

Consultant typically will assume most of the **PM, DM and UC roles** in a **turn key contract** where the consultant team is performing all of the design and project management for the project. SCDOT staff still serves in an oversight and review capacity on the projects to guide and direct the consultants work.

For **On-call** or **Small Purchase** Contracts where the design and project management are still being performed by SCDOT staff, the consultant typically only performs the **Utility Coordinator role**.

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Consultant Contracting Assistance

The **Preconstruction Surveys Office** provides the following assistance:

- SUE scope of work and man hour estimates
- SUE work orders
- Utility coordination scope of work
- Assistance with utility coordination man hour estimates
- Guidance on procurement of small purchase contracts for utility coordination

The **State Utility Engineer's Office** can assist with technical questions regarding specific utility facilities, utility contacts and complex utility issues.

Consultant Contract Management

Determination should be made during initiation and scoping of the contract as to which SCDOT staff person will serve as the **main point of contact** for the consultant contract.

Contact person is typically the **Program Manager** for:

- Turn-Key Contract Work
- On-Call Contracts
- UC Small Contracts

Contact person is typically the **Surveys Office** for:

- SUE Work Order Contracts

The **District Utility Coordinator**, **Resident Construction Engineer**, **State Utility Engineer** & **Environmental Services office** serve in a technical advisory and review role to the SCDOT Point of Contact and the consultant on these projects.

Questions?

Hands-On Utility Coordination Strategy Exercise

- Break up into the same group teams that you were in for the previous exercise
- After your team has scoped the project and determined the level of complexity of the utility coordination through the previous exercise, you will now think through your UTILITY COORDINATION STRATEGY
- Teams can utilize the White Poster Sheets and sticky notes to demonstrate what critical tasks they selected and when in the Project Development Process they would initiate these tasks
- THINK big picture, CRITICAL strategies, you do not have to outline the entire coordination process
- Teams will report back on the following:
  - What utility coordination strategies does your team feel will be critical to incorporate on this project?
  - What is the appropriate phase of work to initiate these critical tasks?

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Utility Data Collection / SUE

Utility Investigations and Mapping

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UTILITY DATA COLLECTION / SUE

Topics Covered in this session

- Utility investigation and mapping
- How to read utility sheets
- How to select test hole locations

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SUE Utility Investigation and Mapping

- Definition: The ability to **Collect**, **Interpret** and **Graphically** depict underground utility information in a usable format at a defined **Standard** of accuracy.
- SUE Utility Investigation and Mapping involves multiple disciplines (civil engineering, surveying and geophysics) and evolving technologies (vacuum excavation and surface geophysics).
- Underground utilities are not easily visible standing on the project site.

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SUE Utility Investigation and Mapping

Steps involved in the SUE Utility Investigation and Mapping:

- **Standards** for the collection and graphical depiction of existing subsurface utility data.
- **Collection** of utility records and field survey of existing underground utilities.
- **Interpreting** utility records as they apply to the field evidence of existing utilities.
- **Graphically** map the utilities.

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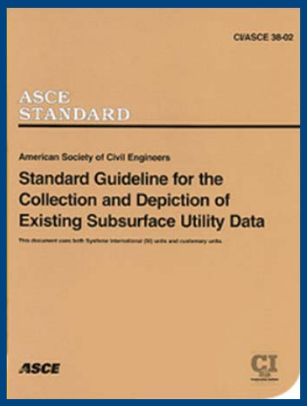
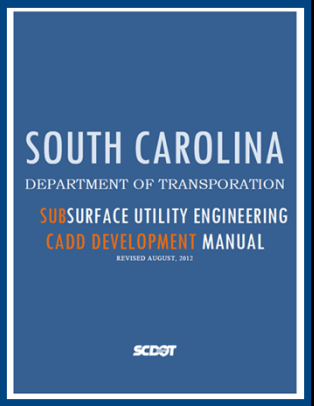
SUE Standards

- American Society of Civil Engineer's (ASCE) Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data (CI/ASCE 38-02).
- SCDOT Subsurface Utility Engineering CADD Development Manual.





ASCE 38-02 SUE Standard

- Subsurface Utility Engineering **(SUE) "**involves managing certain risks associated with **utility mapping at appropriate quality levels**, utility coordination, utility relocation design and coordination, utility condition assessment, communication of utility data to concerned parties, utility relocation cost estimates, implementation of utility accommodation policies, and utility design."
- **Intent** of the ASCE 38-02 SUE Standard is to "present a system of **classifying the quality** of existing subsurface utility data."

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ASCE 38-02 SUE Standard

- "Such a classification will allow the project owner, engineer, and constructor to develop strategies to **reduce risk**, or at minimum, to **allocate risk** due to existing subsurface utilities in a defined manner."

- **Quality Levels** of utility information
  - SCDOT **SC811 Survey: One Call Design Ticket**
  - ASCE 38-02 Quality Level **D: Existing Records Research**
  - ASCE 38-02 Quality Level **C: Surface Visible Feature Survey**
  - ASCE 38-02 Quality Level **B: Designating**
  - ASCE 38-02 Quality Level **A: Locating Through Excavation**

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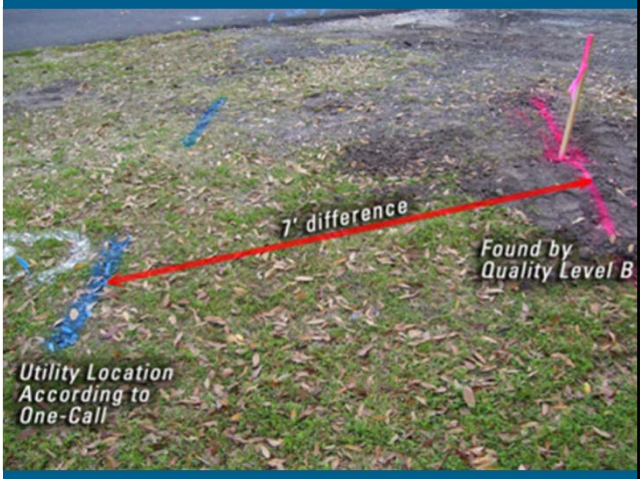
SCDOT SC811 Survey

Warning

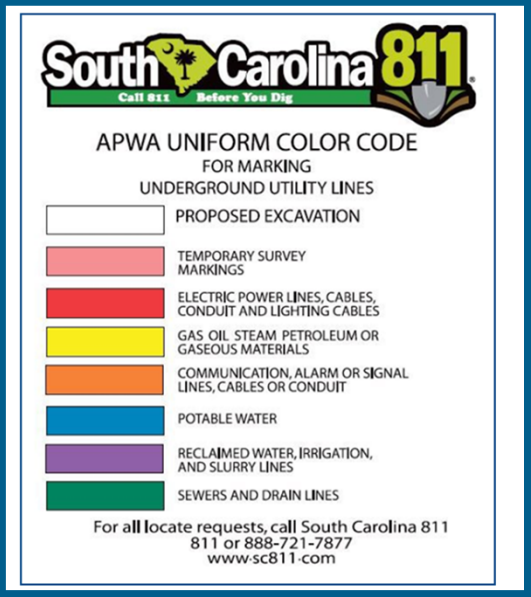
- SC811 Survey utilizes a One-Call SC811 **design ticket** for marking of utilities.
- One-Call is a risk based system **used for excavation**.
- One-Call information has **no** guarantee of reliability.
- Utility data records research, interpretation and **designation** not performed under the responsible charge of a registered professional (no QA/QC performed).



SCDOT SC811 Survey

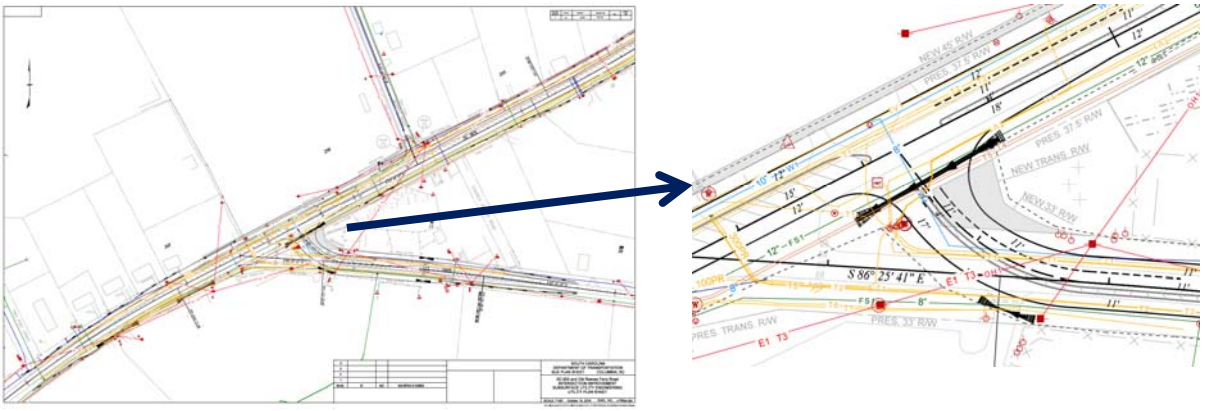
Steps for SC811 Survey

- Submit a SC811 **design ticket**.
- Coordination with individual utility companies may be needed especially for larger projects.
- After utilities have been marked, request survey.
- SC811 Survey will be drafted using SCDOT SUE CADD QLD line styles.



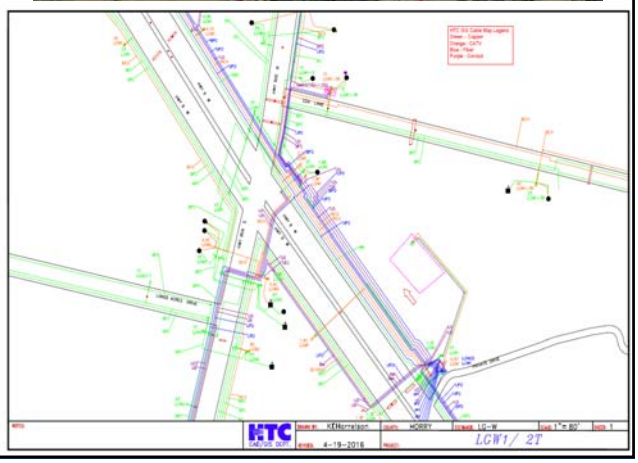
SCDOT SC811 Survey

Example of SC811 Survey / Utility Company Coordination Composite Drawing



ASCE Quality Level D (QLD)

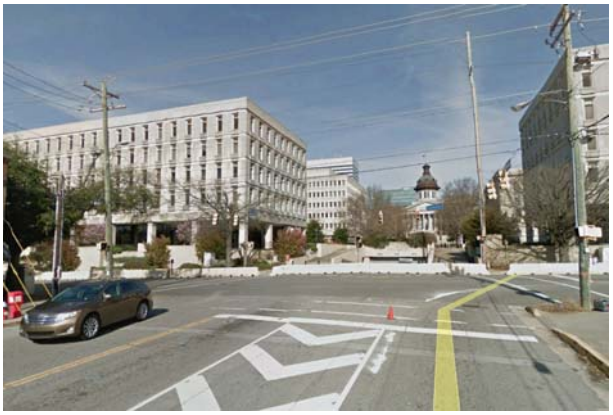
- Information derived from existing records or oral recollections.
  - Utility owner records (as built drawings)
  - Construction drawings
  - County Clerk's records
  - GIS databases
  - One-Call markings
  - Visual site inspection
  - Oral Histories
- Deliverables: Composite Drawing (QLD)

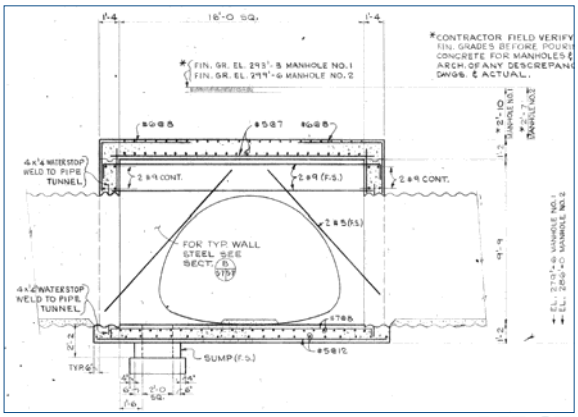


Visual Site Inspection

Example of Energy Tunnel Record Drawings

South Main Street – Columbia, SC





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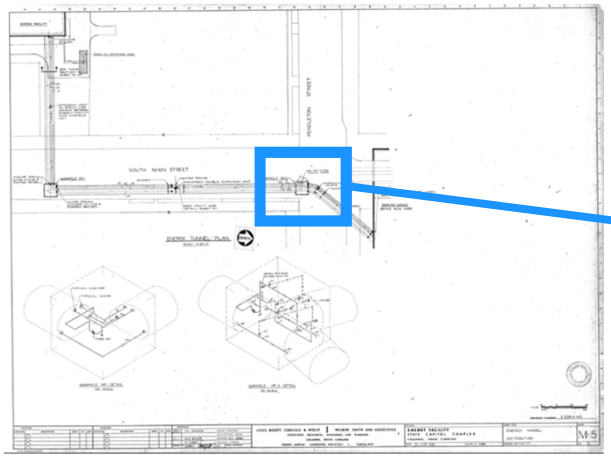
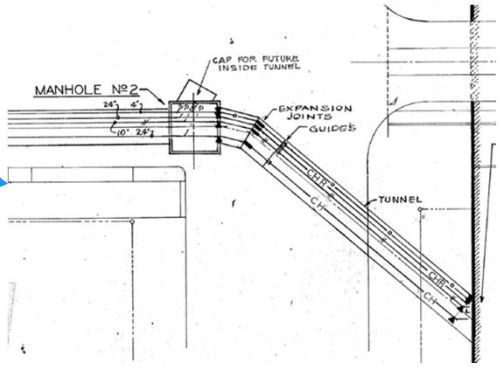
Example of Energy Tunnel Record Drawings

South Main Street – Columbia, SC





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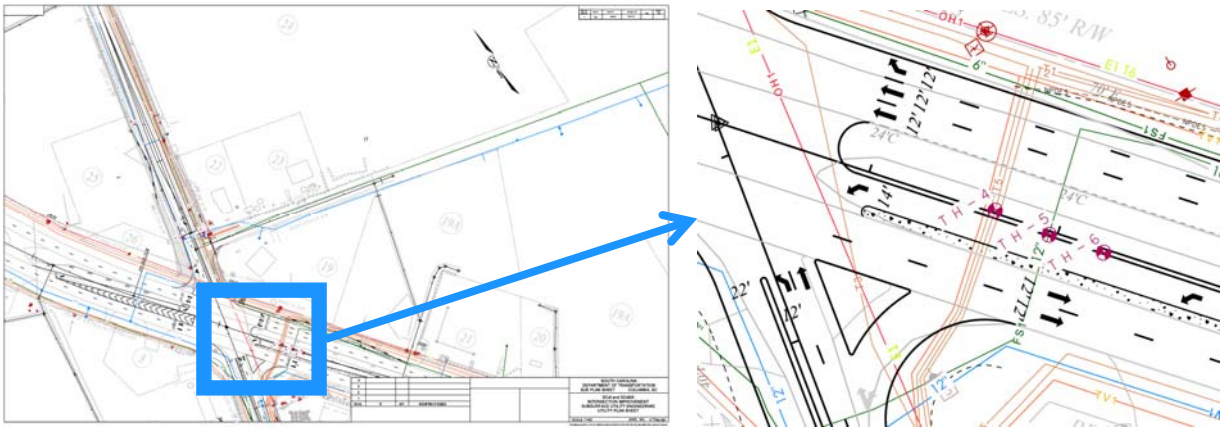
ASCE Quality Level D (QLD)

Example of QLD Utility Composite Drawing



ASCE Quality Level C (QLC)

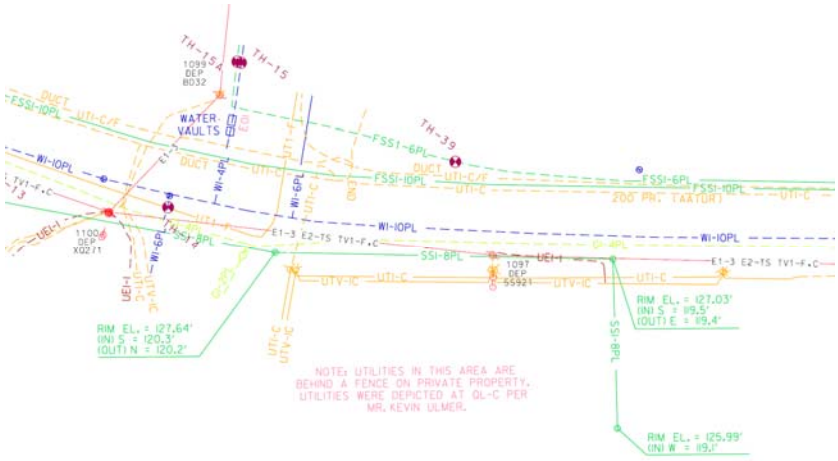
QLC is information obtained by surveying and plotting visible utility features and using professional judgement in correlating field evidence to Quality Level D information.

- **Survey surface utility features** (e.g. valve covers, pedestals and manhole covers)
- Use the project survey control datum
- **Correlate utility records** to surveyed features
- Resolve discrepancies

Deliverables: Composite Drawings (QLC and QLD)

ASCE Quality Level C (QLC)

Example of QLC depicted on the South Cashua widening project



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ASCE Quality Level B (QLB)

- QLB is information obtained by the use of surface geophysical methods.
- **Designating** is the process of using surface geophysical methods to determine the approximate horizontal position of subsurface utilities.
  - Mark presence of utilities on the ground surface
  - Accuracy depends on geophysical method
  - Survey markings using project survey control datum
  - No vertical positions (elevations) field collected
  - Correlate utility records to surveyed features
  - Resolve discrepancies

Deliverables: Composite drawings (QLB, QLC, QLD)

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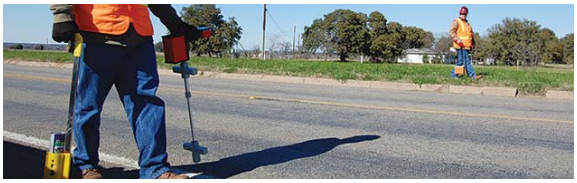
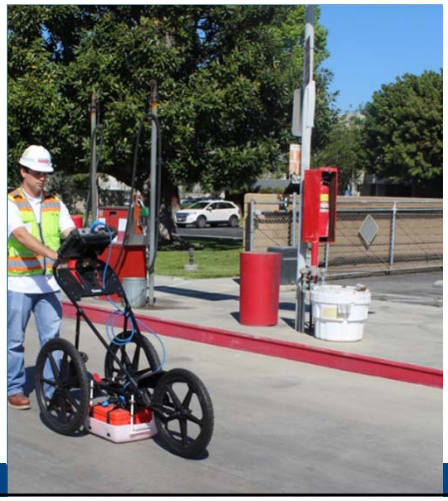
ASCE Quality Level B (QLB)

Surface Geophysical techniques

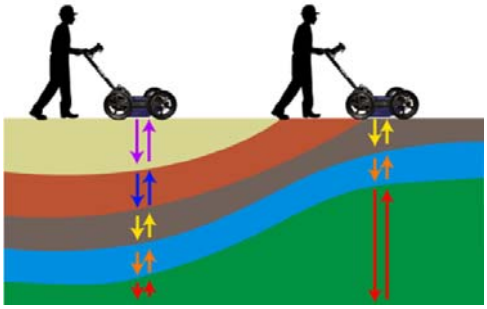
- **Pipe and Cable EM Locators**
- Terrain Conductivity
- Resistivity Measurements
- Metal Detectors
- **Ground Penetrating Radar**
- Optical Methods
- Infrared (Thermal) Methods
- X-Ray Methods (Penetrating Radiation)

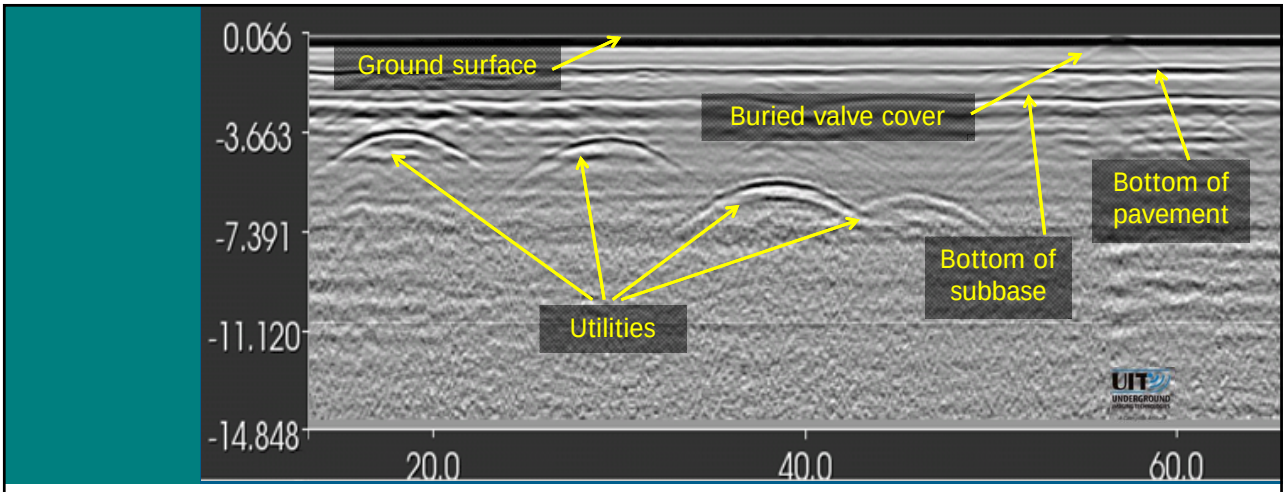




Pipe and Cable EM Equipment

Ground Penetrating Radar



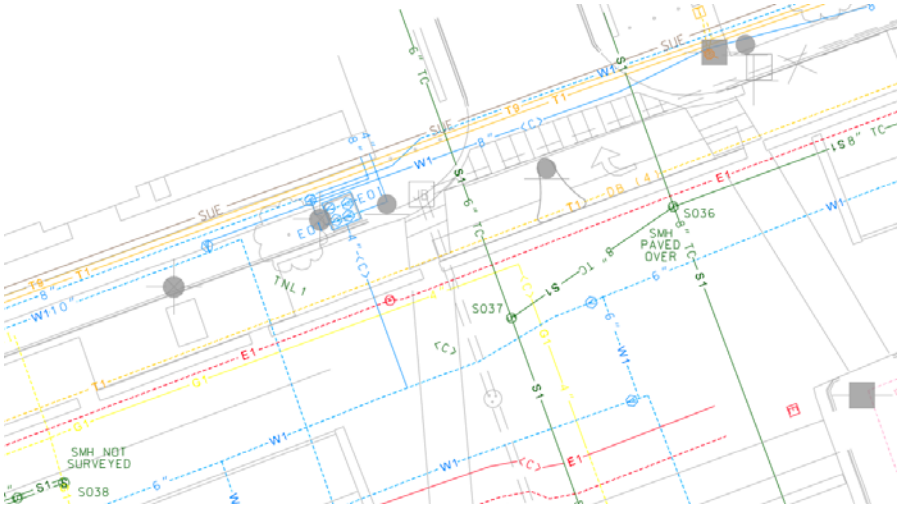


QLB Example

Ground Penetrating Radar

ASCE Quality Level B (QLB)

Example of Quality Level B Composite Drawing of South Main Street



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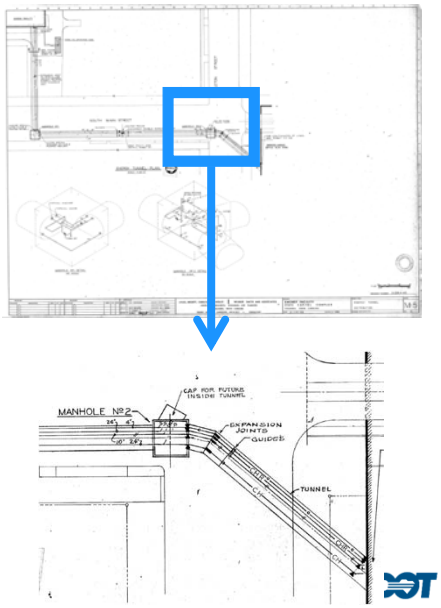
Example of Energy Tunnel Record Drawings on South Main Street



Field Surveyed Energy Tunnel showing discrepancy with record drawings

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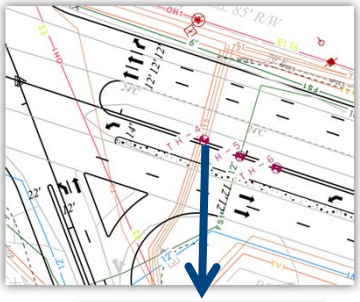
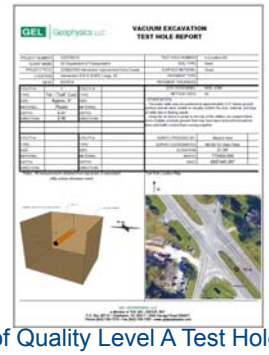
ASCE Quality Level A (QLA)

- Precise horizontal and vertical location of utilities obtained by the actual exposure and subsequent measurement of the utility, usually at a specific point.
  - Test hole excavation (minimally intrusive)
  - Data gathered during construction
  - Survey utility using project survey control datum
  - Elevation of existing grade at test hole
  - Depth from existing grade to top of utility
  - Size, type and material of utility
  - Soil type
  - Pavement type and thickness
  - Utility Company

Deliverables: test hole report(s), CADD Drawing depicting the location of test hole(s).

SCDOT

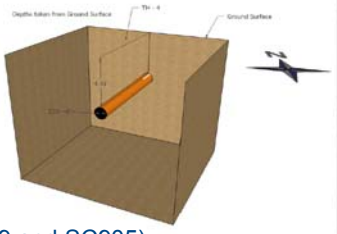




GEL Geophysics LLC

VACUUM EXCAVATION TEST HOLE REPORT

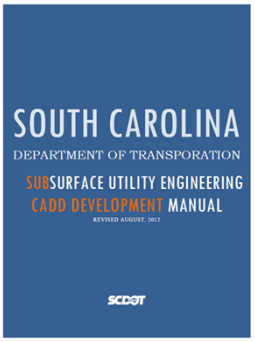
PROJECT NUMBER:	SCDT00216			TEST HOLE NUMBER:	4 (Location #3)
CLIENT NAME:	SC Department of Transportation			SOIL TYPE:	Sand
PROJECT TITLE:	SC94/SC905 Intersection Improvement Horry County			SURFACE MATERIAL:	Grass
LOCATION:	Intersection SC9 & SC905, Longs, SC			PAVEMENT TYPE:	-
DATE:	8/2/2016			PAVEMENT THICKNESS:	-
UTILITY #:	1	UTILITY #:		SITE PERSONNEL:	WAE, KDM
TYPE:	Tel. / Traff. Cont.	TYPE:		METHOD USED:	Air
SIZE:	Approx. 6"	SIZE:		OTHER NOTES:	The water table was encountered at approximately 3.31' below ground surface and we were unable to visually confirm the size, material, and type of utility due to flowing sands. Using the air lance to probe to the top of the utilities, we suspect there were multiple conduits present that may have been telecommunications lines and traffic control lines running together
MATERIAL:	Plastic	MATERIAL:			
DEPTH:	4.41'	DEPTH:			
DIRECTION:	E-W	DIRECTION:			
UTILITY #:		UTILITY #:		SURVEY PROVIDED BY:	Mead & Hunt
TYPE:		TYPE:		SURVEY COORDINATES:	NAD83 SC State Plane
SIZE:		SIZE:		ELEVATION:	31.09'
MATERIAL:		MATERIAL:		NORTH:	773434.999
DEPTH:		DEPTH:		EAST	2687445.387
DIRECTION:		DIRECTION:			



Example of Quality Level A Test Hole Report (SC9 and SC905)

How to Read Utility Sheets

- SUE mapping data is graphically depicted using the SCDOT guidelines listed in the Subsurface Utility Engineering CADD Manual.
  - **SUE Legend Sheet**
  - **SUE Title & Reference Sheet**
  - **SUE Planimetry Sheet**
  - **Utility & Pole Data Sheet**
  - Test Hole Data
  - Manhole Report
  - SUE Test Hole Planimetry



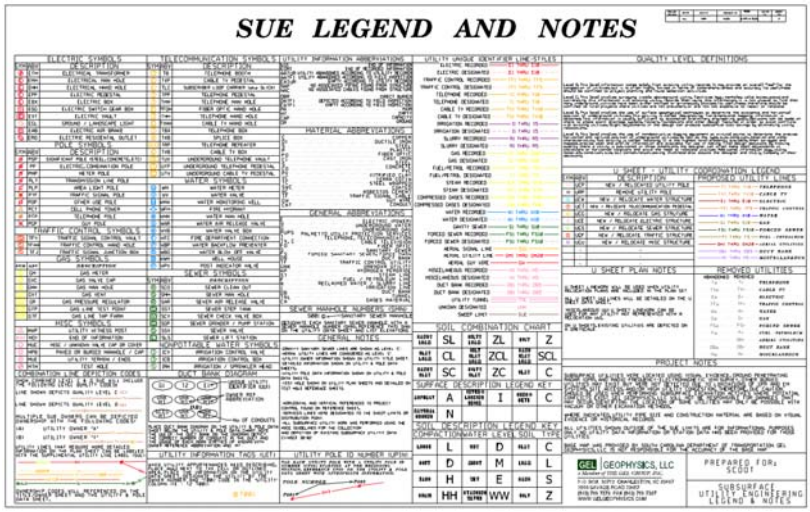
UTILITY	LOCATION METHOD	UNIQUE ID	LINE APPEARANCE	LINESTYLE NAME
ELECTRIC	LEVEL B	E1 THRU E10	DASHED	SDE1 – SDE10
ELECTRIC	LEVEL C	E1 THRU E10	SOLID	SRE1 – SRE10
ELECTRIC	LEVEL D	E1 THRU E10	SOLID	SRE1 – SRE10
AERIAL UTILITY	N/A	OH1 THRU OH20	SOLID	SROH1 – SROH20
AERIAL GUY WIRE	N/A	GW	SOLID	SGW
TRAFFIC CONTROL	LEVEL B	TF1 THRU TF5	DASHED	SDTF1 – SDTF5
TRAFFIC CONTROL	LEVEL C	TF1 THRU TF5	SOLID	SRTF1 – SRTF5
TRAFFIC CONTROL	LEVEL D	TF1 THRU TF5	SOLID	SRTF1 – SRTF5
AERIAL TRAFFIC SIGNAL	N/A	SIG	SOLID	SIG
TELEPHONE	LEVEL B	T1 THRU T10	DASHED	SDT1 – SDT10
TELEPHONE	LEVEL C	T1 THRU T10	SOLID	SRT1 – SRT10
TELEPHONE	LEVEL D	T1 THRU T10	SOLID	SRT1 – SRT10
CABLE TV	LEVEL B	TV1 THRU TV10	DASHED	SDTV1 – SDTV10
CABLE TV	LEVEL C	TV1 THRU TV10	SOLID	SRTV1 – SRTV10
CABLE TV	LEVEL D	TV1 THRU TV10	SOLID	SRTV1 – SRTV10
GAS	LEVEL B	G1 THRU G10	DASHED	SDG1 – SDG10
GAS	LEVEL C	G1 THRU G10	SOLID	SRG1 – SRG10
GAS	LEVEL D	G1 THRU G10	SOLID	SRG1 – SRG10
STEAM LINE	LEVEL B	ST1 THRU ST5	DASHED	SDST1 – SDST5
STEAM LINE	LEVEL C	ST1 THRU ST5	SOLID	SRST1 – SRST5
STEAM LINE	LEVEL D	ST1 THRU ST5	SOLID	SRST1 – SRST5
FUEL / PETROLEUM	LEVEL B	F1 THRU F5	DASHED	SDP1 – SDP5
FUEL / PETROLEUM	LEVEL C	F1 THRU F5	SOLID	SRP1 – SRP5
FUEL / PETROLEUM	LEVEL D	F1 THRU F5	SOLID	SRP1 – SRP5
GASEOUS MATERIAL	LEVEL B	CA1 THRU CA5	DASHED	SDCA1 – SDCA5
GASEOUS MATERIAL	LEVEL C	CA1 THRU CA5	SOLID	SRCA1 – SRCA5
GASEOUS MATERIAL	LEVEL D	CA1 THRU CA5	SOLID	SRCA1 – SRCA5
WATER	LEVEL B	W1 THRU W10	DASHED	SDW1 – SDW10
WATER	LEVEL C	W1 THRU W10	SOLID	SRW1 – SRW10
WATER	LEVEL D	W1 THRU W10	SOLID	SRW1 – SRW10
IRRIGATION	LEVEL B	I1 THRU I5	DASHED	SDI1 – SDI5
IRRIGATION	LEVEL C	I1 THRU I5	SOLID	SRI1 – SRI5
IRRIGATION	LEVEL D	I1 THRU I5	SOLID	SRI1 – SRI5
RECLAIMED / SLURRY	LEVEL B	R1 THRU R5	DASHED	SRR1 – SRR5
RECLAIMED / SLURRY	LEVEL C	R1 THRU R5	SOLID	SRR1 – SRR5

UTILITY	LOCATION METHOD	UNIQUE ID	LINE APPEARANCE	LINESTYLE NAME
RECLAIMED / SLURRY	LEVEL D	R1 THRU R5	SOLID	SRR1 – SRR5
GRAVITY SEWER	LEVEL C	S1 THRU S10	SOLID	SRS1 – SRS10
GRAVITY SEWER	LEVEL D	S1 THRU S10	SOLID	SRS1 – SRS10
FORCED SEWER	LEVEL B	FS1 THRU FS10	DASHED	SDSF1 – SDSF10
FORCED SEWER	LEVEL C	FS1 THRU FS10	SOLID	SRSF1 – SRSF10
FORCED SEWER	LEVEL D	FS1 THRU FS10	SOLID	SRSF1 – SRSF10
DUCT BANK	LEVEL B	DB1 THRU DB5	DASHED	SDB1 – SDB5
DUCT BANK	LEVEL C	DB1 THRU DB5	SOLID	SRB1 – SRB5
DUCT BANK	LEVEL D	DB1 THRU DB5	SOLID	SRB1 – SRB5
UTILITY TUNNEL	LEVEL B	TNL	SOLID	SDTNL
UTILITY TUNNEL	LEVEL C	TNL	SOLID	SRTNL
UTILITY TUNNEL	LEVEL D	TNL	SOLID	SRTNL
MISC	LEVEL B	M1 THRU M5	DASHED	SDM1 – SDM5
MISC	LEVEL C	M1 THRU M5	SOLID	SRM1 – SRM5
MISC	LEVEL D	M1 THRU M5	SOLID	SRM1 – SRM5
UNKNOWN	DESIGNATED	UNK	DASHED	UNK
SWEEP LIMITS	N/A	SUE	SOLID	SUE

http://www.scdot.org/doing/technicalPDFs/cadd/sue/SCDOT_SUE_CADD_Dev_Manual.pdf

How to Read Utility Sheets

SUE Legend and Notes Sheet



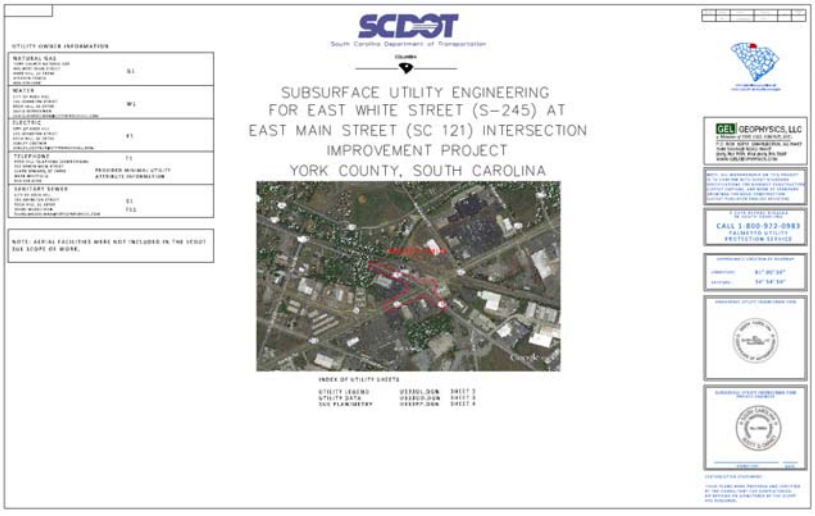
SEWER SYMBOLS	
SYMABV	DESCRIPTION
SCO	SEWER CLEAN OUT
SMH	SEWER MAN HOLE
SAR	SEWER AIR RELEASE VALVE
SST	SEWER STEP TANK
SCV	SEWER CHECK VALVE BOX
SGP	SEWER GRINDER / PUMP STATION
SSV	SEWER VALVE
SLS	SEWER LIFT STATION
NONPOTTABLE WATER SYMBOLS	
ICV	IRRIGATION CONTROL VALVE
ICB	IRRIGATION CONTROL BOX
IRH	IRRIGATION / SPRINKLER HEAD

MATERIAL ABBREVIATIONS	
C	COPPER
DI	DUCTILE IRON
S	STEEL
P	PLASTIC
FO	FIBER OPTIC
CI	CAST IRON
S	STEEL
C	CONCRETE
PV	PVC
VC	VITRIFIED CLAY
TC	TERRA COTA
SWC	STEEL WRAPPED COATED
AC	ASBESTOS CEMENT
TF	TRAFFIC SIGNAL CABLE
GW	GUY WIRE
CNT	CONDUIT

SCDOT

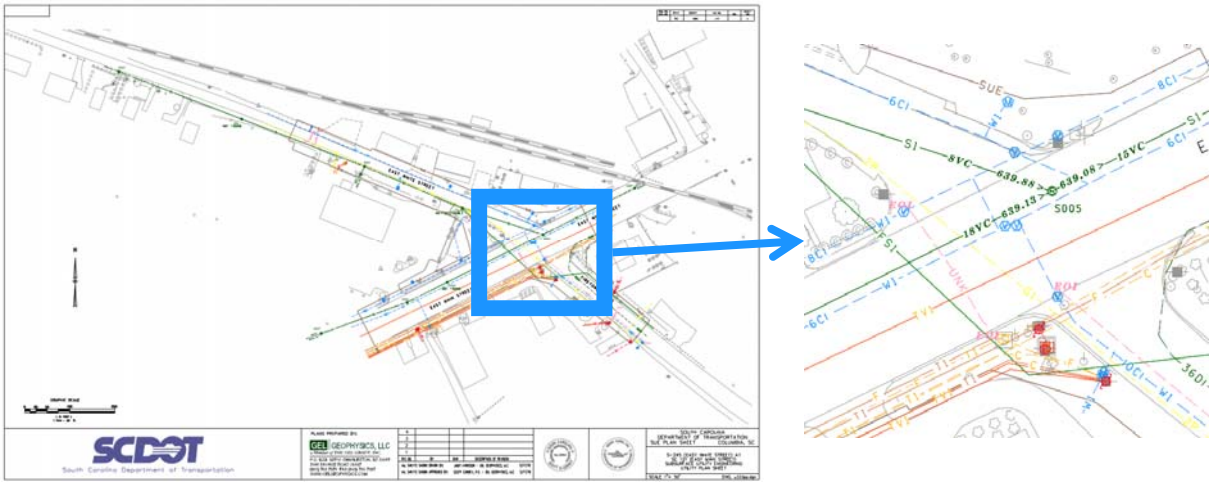
How to read Utility Sheets

Title & Reference Sheet

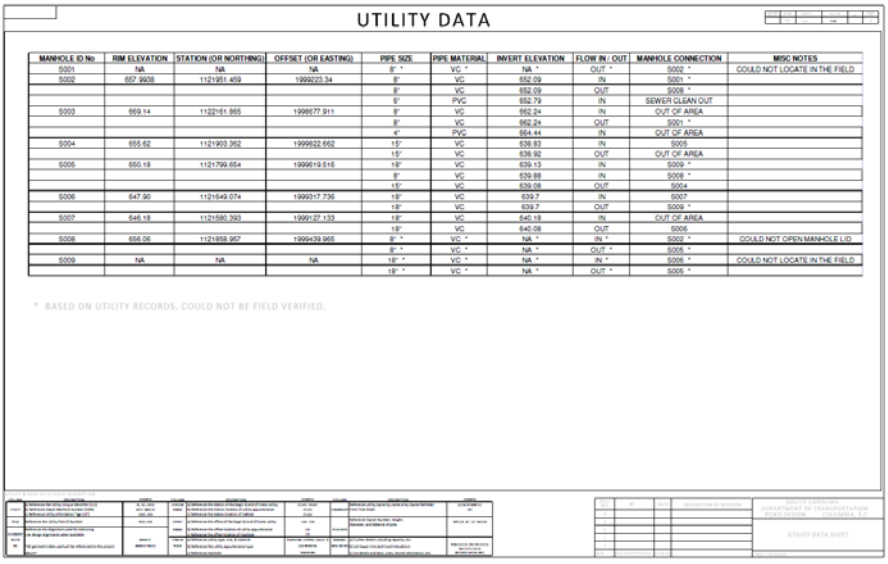


SCDOT

How to Read Utility Sheets
SUE Planimetry Sheet



How to Read Utility Sheets
Utility & Pole Data Sheet



UTILITY DATA

MANHOLE ID No	RIM ELEVATION	STATION (OR NORTHING)	OFFSET (OR EASTING)	PIPE SIZE	PIPE MATERIAL	INVERT ELEVATION	FLOW IN / OUT	MANHOLE CONNECTION	MISC NOTES
S001	NA	NA	NA	8" *	VC *	NA *	OUT *	S002 *	COULD NOT LOCATE IN THE FIELD
S002	657.9938	1121951.459	1999223.34	8"	VC	652.09	IN	S001 *	
				8"	VC	652.09	OUT	S003 *	
				6"	PVC	652.79	IN	SEWER CLEAN OUT	
S003	669.14	1122161.865	1999677.911	8"	VC	662.24	IN	OUT OF AREA	
				8"	VC	662.24	OUT	S001 *	
				4"	PVC	664.44	IN	OUT OF AREA	
S004	655.62	1121903.262	1999822.662	15"	VC	638.83	IN	S005	
				15"	VC	638.92	OUT	OUT OF AREA	
S005	650.18	1121799.654	1999619.516	18"	VC	639.13	IN	S009 *	
				8"	VC	639.88	IN	S008 *	
				15"	VC	639.08	OUT	S004	
S006	647.90	1121649.074	1999317.736	18"	VC	639.7	IN	S007	
				18"	VC	639.7	OUT	S009 *	
S007	646.18	1121580.393	1999127.133	18"	VC	640.18	IN	OUT OF AREA	
				18"	VC	640.08	OUT	S006	
S008	656.06	1121858.967	1999439.965	8" *	VC *	NA *	IN *	S002 *	COULD NOT OPEN MANHOLE LID
				8" *	VC *	NA *	OUT *	S005 *	
S009	NA	NA	NA	18" *	VC *	NA *	IN *	S006 *	COULD NOT LOCATE IN THE FIELD
				18" *	VC *	NA *	OUT *	S005 *	

* BASED ON UTILITY RECORDS. COULD NOT BE FIELD VERIFIED.

Selection of Test Hole Locations

Example Project: Intersection Improvement (Firetower Road)

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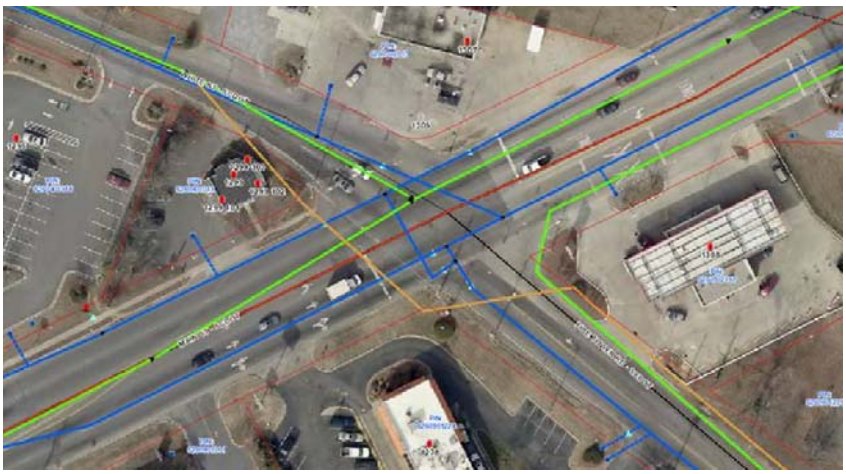
Selection of Test Hole Locations

GIS map from City



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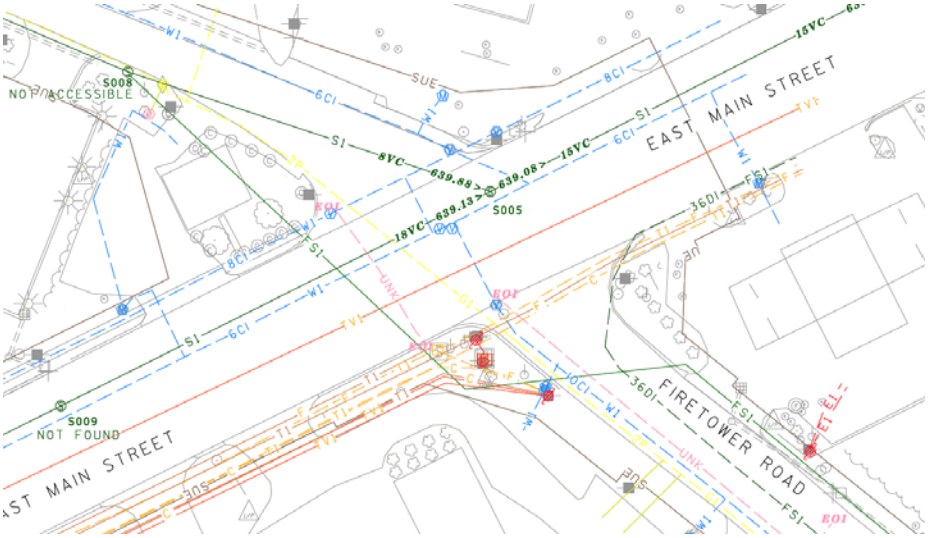
Selection of Test Hole Locations

SUE Quality Level B



SCDOT

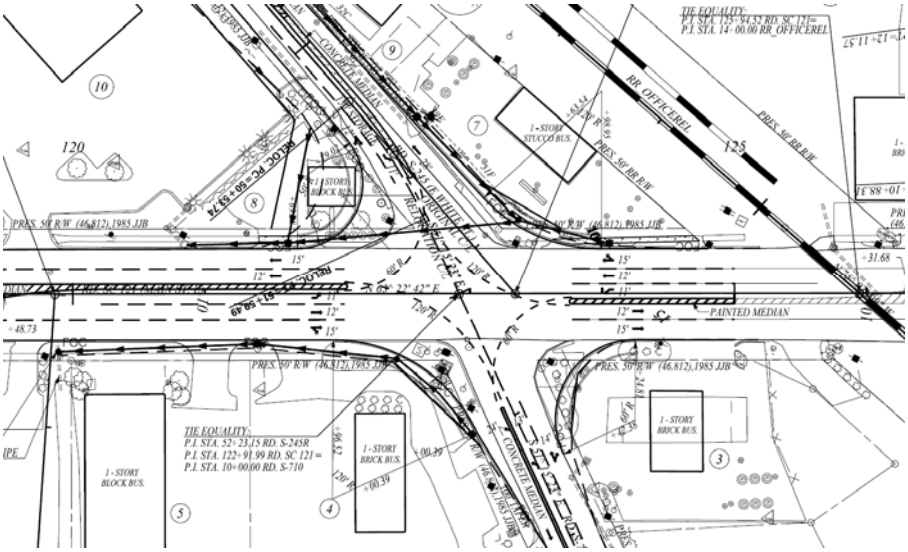
Selection of Test Hole Locations

QLB data superimposed onto aerial photograph

SCDOT

Selection of Test Hole Locations.

Proposed Storm Drainage Locations



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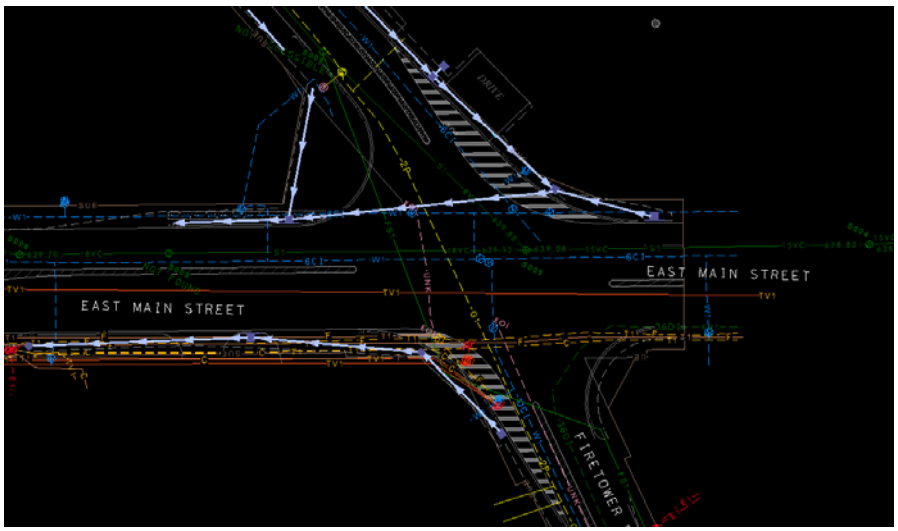
Selection of Test Hole Locations

SUE QLB referenced to Design Drawing



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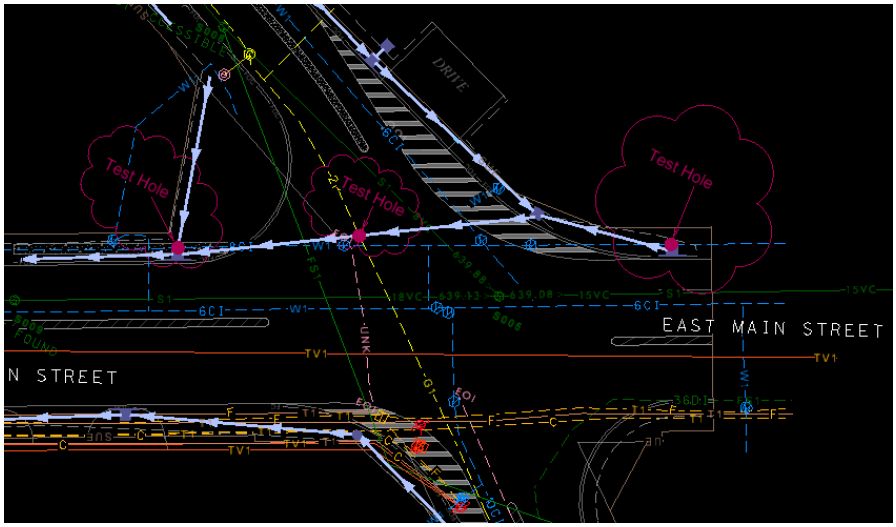
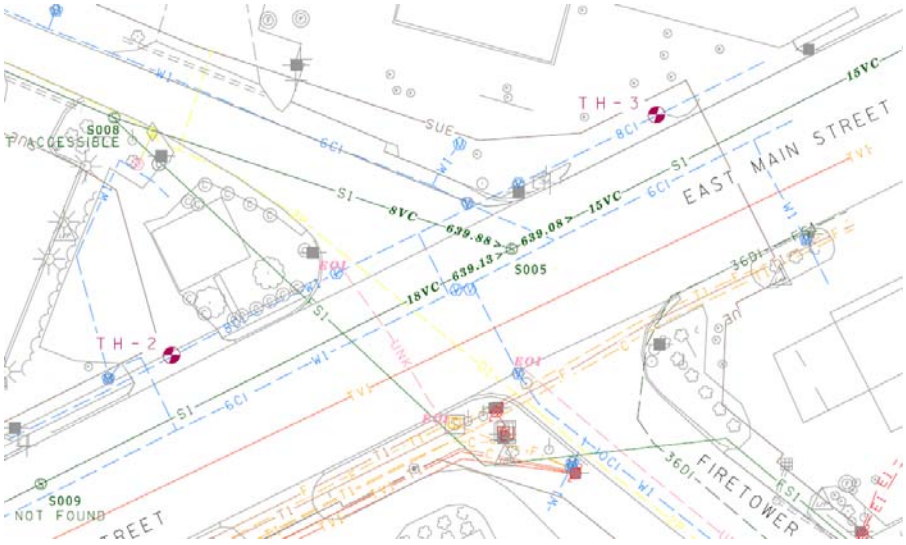
Selection of Test Hole Locations
Requested Test Hole Locations

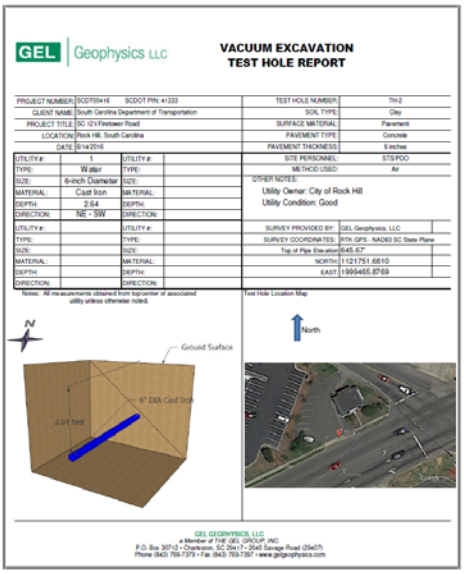


Selection of Test Hole Locations
Delivered Test Hole Locations



Selection of Test Hole Locations

Test Hole Reports



GEL Geophysics LLC

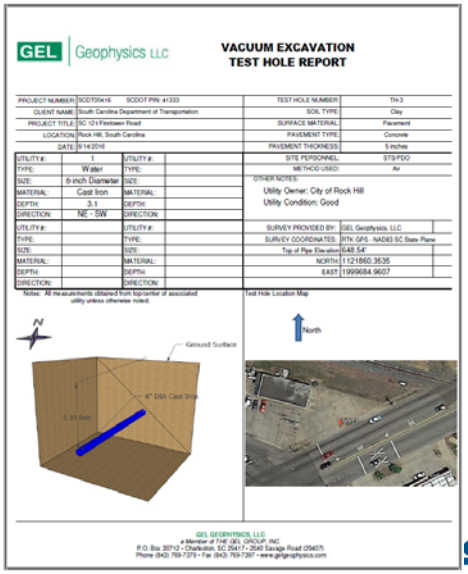
VACUUM EXCAVATION TEST HOLE REPORT

PROJECT NUMBER	SCDT00416 SCDOT PIN: 41333	TEST HOLE NUMBER	TH-2
CLIENT NAME	South Carolina Department of Transportation	SOIL TYPE	Clay
PROJECT TITLE	SC 121/Firetower Road	SURFACE MATERIAL	Pavement
LOCATION	Rock Hill, South Carolina	PAVEMENT TYPE	Concrete
DATE	6/14/2016	PAVEMENT THICKNESS	6 inches
UTILITY #:	1	SITE PERSONNEL	STS/PDO
TYPE:	Water	METHOD USED:	Air
SIZE:	6-inch Diameter	OTHER NOTES:	Utility Owner: City of Rock Hill Utility Condition: Good
MATERIAL:	Cast Iron		
DEPTH:	2.64		
DIRECTION:	NE - SW		
SURVEY PROVIDED BY:		GEL Geophysics, LLC	
SURVEY COORDINATES:		RTK GPS - NAD83 SC State Plane	
Top of Pipe Elevation:		645.67'	
NORTH:		1121751.6810	
EAST:		1999465.8769	

Notes: All measurements obtained from top/center of associated utility unless otherwise noted.

Test Hole Location Map

GEL GEOPHYSICS, LLC
a Member of THE GEL GROUP, INC.
P.O. Box 30712 • Charleston, SC 29417 • 2540 Savage Road (29407)
Phone (843) 769-7379 • Fax (843) 769-7397 • www.gelgeophysics.com



GEL Geophysics LLC

VACUUM EXCAVATION TEST HOLE REPORT

PROJECT NUMBER	SCDT00416 SCDOT PIN: 41333	TEST HOLE NUMBER	TH-3
CLIENT NAME	South Carolina Department of Transportation	SOIL TYPE	Clay
PROJECT TITLE	SC 121/Firetower Road	SURFACE MATERIAL	Pavement
LOCATION	Rock Hill, South Carolina	PAVEMENT TYPE	Concrete
DATE	6/14/2016	PAVEMENT THICKNESS	5 inches
UTILITY #:	1	SITE PERSONNEL	STS/PDO
TYPE:	Water	METHOD USED:	Air
SIZE:	6-inch Diameter	OTHER NOTES:	Utility Owner: City of Rock Hill Utility Condition: Good
MATERIAL:	Cast Iron		
DEPTH:	3.1		
DIRECTION:	NE - SW		
SURVEY PROVIDED BY:		GEL Geophysics, LLC	
SURVEY COORDINATES:		RTK GPS - NAD83 SC State Plane	
Top of Pipe Elevation:		648.54'	
NORTH:		1121860.3535	
EAST:		1999684.9607	

Notes: All measurements obtained from top/center of associated utility unless otherwise noted.

Test Hole Location Map

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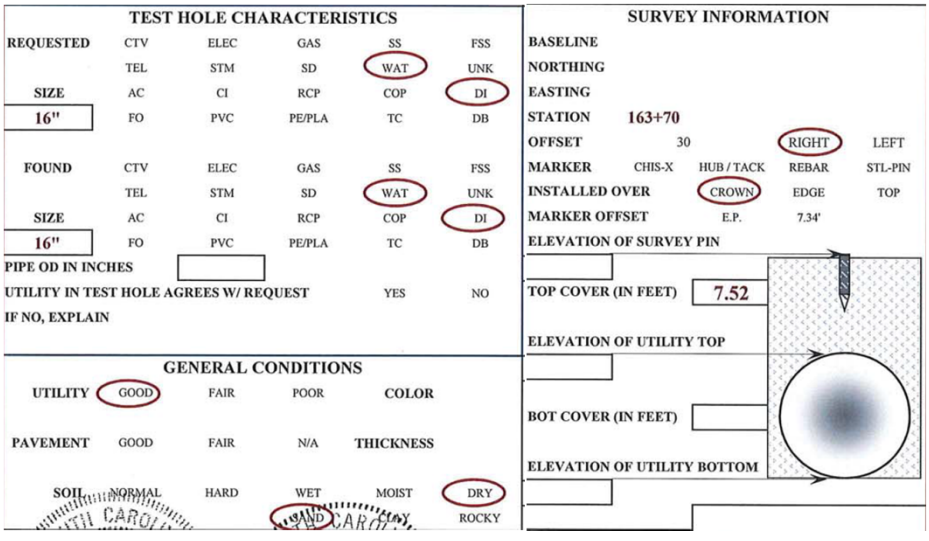
How to Read a Test Hole Report



TEST HOLE CHARACTERISTICS

REQUESTED	CTV	ELEC	GAS	SS	FSS
	TEL	STM	SD	(WAT)	UNK
SIZE	AC	CI	RCP	COP	(DI)
16"	FO	PVC	PE/PLA	TC	DB
FOUND	CTV	ELEC	GAS	SS	FSS
	TEL	STM	SD	(WAT)	UNK
SIZE	AC	CI	RCP	COP	(DI)
16"	FO	PVC	PE/PLA	TC	DB

PIPE OD IN INCHES [ ]

UTILITY IN TEST HOLE AGREES W/ REQUEST YES NO

IF NO, EXPLAIN

GENERAL CONDITIONS

UTILITY	(GOOD)	FAIR	POOR	COLOR	
PAVEMENT	GOOD	FAIR	N/A	THICKNESS	
SOIL	NORMAL	HARD	WET	MOIST	(DRY)
			(SAND)		ROCKY

SURVEY INFORMATION

BASELINE

NORTHING

EASTING

STATION 163+70

OFFSET	30		(RIGHT)	LEFT
MARKER	CHIS-X	HUB / TACK	REBAR	STL-PIN
INSTALLED OVER		(CROWN)	EDGE	TOP
MARKER OFFSET		E.P.	7.34'	

ELEVATION OF SURVEY PIN [ ]

TOP COVER (IN FEET) 7.52

ELEVATION OF UTILITY TOP [ ]

BOT COVER (IN FEET) [ ]

ELEVATION OF UTILITY BOTTOM [ ]

SCDOT

QUESTIONS?

Hands-On SUE Exercise

- ❑ Break up into the same groups/teams that you were in for Day 1 of the class
- ❑ Using the information that you developed as a team for previous exercises, review the SUE sheets provided in the notebook to review the potential utility conflicts
- ❑ Each team will select one utility facility to analyze and update in the Utility Conflict Management Matrix
- ❑ Review that utility facility for potential conflicts and identify critical locations for test holes in order to gather the information you need to confirm the conflict
- ❑ Each team will report back on the following:
  - ❖ Outline the types of potential conflicts identified for the utility facility
  - ❖ Brief summary of the team's SUE test hole recommendations for the utility facility selected in order to confirm the conflicts
  - ❖ If there was no budget for SUE, what alternative approach is recommended?

SCDOT

Utility Coordination

During NEPA and Environmental Permitting

AGENDA

- Introduction to SCDOT ESO
- NEPA Process
- Environmental Permitting
- Utility coverage in SCDOT Permits
- Utility Company Obtains Permits
- Clearing and Grubbing
- Environmentally Sensitive Areas
- Sediment and Erosion Control
- Contaminated Soils and Clean Up

Environmental Services Office – Utility Coordination Contacts and Permit Coordinators

Will McGoldrick
RPG 1
(803) 737-1326
McGoldriWR@scdot.org

Chris Beckham
RPG 2
(803) 737-1332
BeckhamJC@scdot.org

Siobhan Gordon
RPG 3
(803) 737-1337
GordonSO@scdot.org

Ann-Marie Altman
RPG 4
(803) 737-0946
AltmanAM@scdot.org

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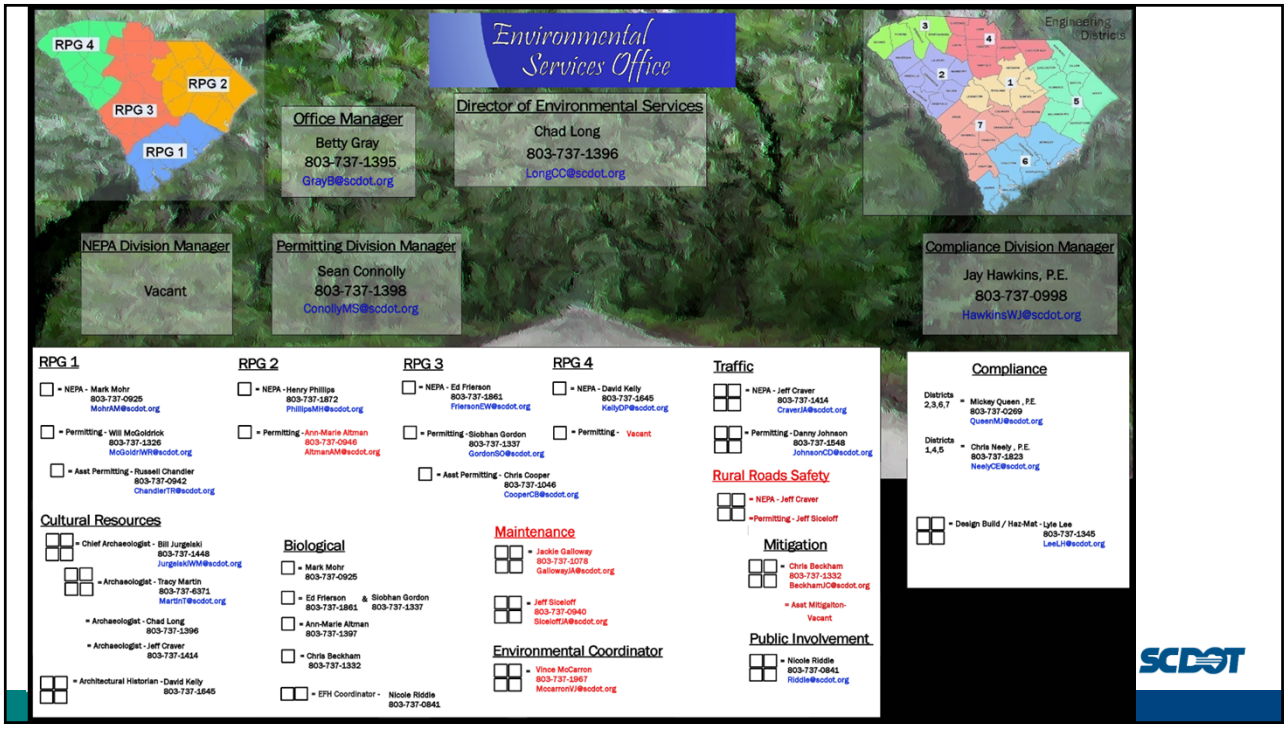


ROLES AND RESPONSIBILITIES

1. **Utility Engineer**
   - Assists in the determination of whether utility relocation impacts should be included in the Department's environmental permits
2. **Utility Coordinator**
   - Coordinates with Utility Companies to determine whether environmental permits will be required for the anticipated utility relocations.
   - Secures permitting strategy and schedule for the utility and updates in the Utility Coordination Matrix.
3. **Program Manager**
   - Coordinates with Environmental Services Office to determine whether any utility relocation impacts would need to be included in the Department's environmental permits.
4. **Environmental Services Office**
   - Assist PM with identification of ESAs, JD areas, compiles info to share with utilities and coordinates to incorporate potential utility relocations/impacts into SCDOT environmental documents/permits

SCDOT

When does utility coordination occur during the environmental process?

- National Environmental Policy Act (NEPA)
- Clean Water Act (Section 404 / 401) Permitting
- NPDES Land Disturbance Permitting
- Construction

NEPA Process

- Utilities identified during project scoping
- General understanding of utility locations
- SUE data not needed at this phase of project
- Presence of utilities can be considered during the analysis of design alternatives
- Identify Environmentally Sensitive Areas (ESA)
- Preferred Design Alternative is documented in the NEPA Environmental Assessment or Impact Statement
  - *CAN BE PROVIDED TO UTILITY AS NEEDED*
- Begin discussions about permit coverage
- Environmental commitments are established in NEPA document (i.e. protected species moratorium, migratory birds, avoidance of archaeological sites)

SCDOT

Environmental Permitting

- **SCDOT 401/404 permits do not automatically cover impacts associated with utility relocations**
- **Just because SCDOT has a permit does not mean the utility is covered under that permit**

- Concurrence Letter/Request regarding inclusion in SCDOT environmental permitting process
  - Sent from utility to SCDOT Project Manager, copy Utility Coordinator
  - Ideally sent shortly after Scoping Meeting or Advance Utility Coordination Meeting
  - Conditions related to permitting, mitigation, and compliance are identified in Concurrence Letter

SCDOT

Environmental Permitting

- Early coordination during design:
  - SCDOT/Utility concurrence to be incorporated into SCDOT contracted work and permitting
  - Consider during Design Field Review whether environmental permitting is required for utility relocations
  - Discuss coverage of utility relocations in SCDOT permits
- At Preliminary ROW plans:
  - SCDOT and Utility should understand permitting requirements
  - Identify type of permit (Individual, General, Nationwide)
  - Determine whether utilities will be included in SCDOT permit

Environmental Permitting: Two Options

Utility covered under SCDOT Environmental Permit

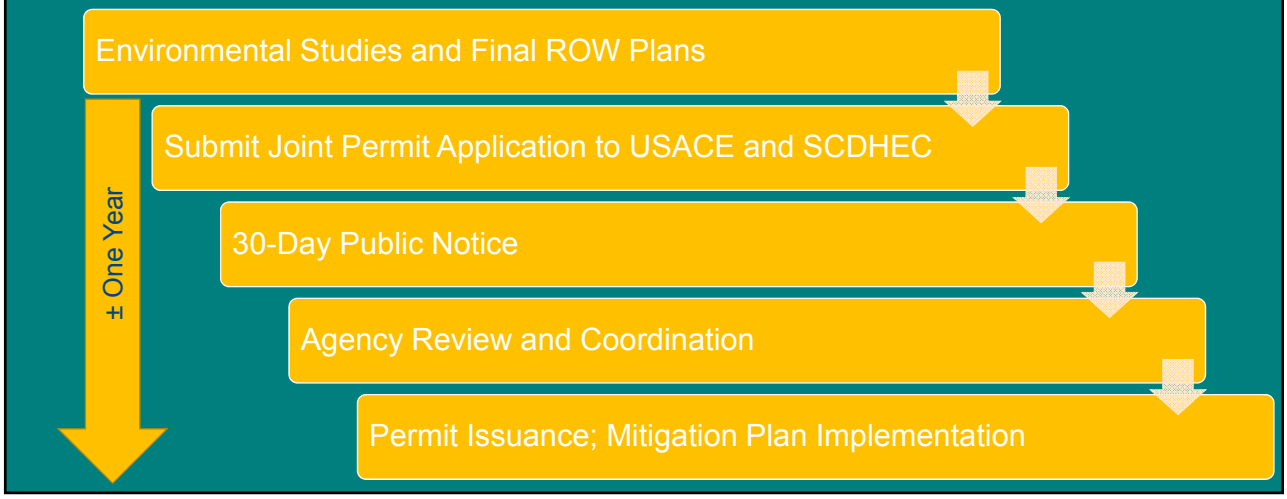
- Incorporated into Individual or SCDOT General Permit
- Streamlined approval process
- Cost benefit to both parties

Utility obtains Environmental Permits

- Nationwide 12 Permits
- SCDOT permitting liaisons not involved in review
- SCDOT has reporting and schedule conditions

SCDOT Permitting Process

Individual Permits



Impact Threshold = Varies

SCDOT Permitting Process

SCDOT General Permit

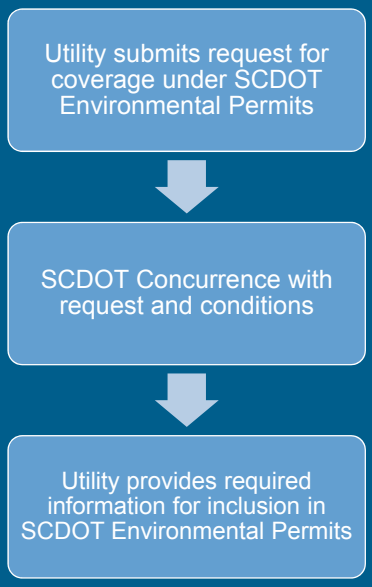
Section 401/404 - SCDOT General Permit

http://www.sac.usace.army.mil/Portals/43/docs/regulatory/SCDOT_General_Permits_v1-17.pdf?ver=2017-01-20-112558-893

Permit/Certification Type	Project Types	Impact Thresholds	Expiration	Approximate Approval Timeframe
SCDOT GP Road Widenings SAC 2015-1280 Intersection Improvements SAC 2015-1281 Bridge Replacements SAC 2015-1282	Modification of existing roads. Cannot be used on new alignments.	Freshwater – 3.0 acres wetland 300 lf stream Tidal – 0.50 acres wetland	Expires July 20, 2021. Construction must be complete 1 year after expiration.	4-6 months
SCDOT GP Roadway Improvements SAC 2015-1283 (shoulder widening, pedestrian accommodations)	Modification of existing roads. Cannot be used on new alignments.	Freshwater – 2.0 acres wetland 300 lf stream Tidal – 0.50 acres wetland	Expires July 20, 2021. Construction must be complete 1 year after expiration.	4-6 months
SCDOT GP Roadway Maintenance and Riprap/Scour Protection SAC 2015-1284	Protection and maintenance of existing roadway surfaces	Freshwater – 2.0 acres wetland 200 lf stream Tidal – 0.50 acres wetland	Expires July 20, 2021. Construction must be complete 1 year after expiration.	45 days following USACE receipt of complete application
SCDOT GP Pipe and Culvert Maintenance SAC 2015-1285	Maintenance, replacement or extension of existing pipe or culvert	Freshwater – 1.0 acres wetland 100 lf stream Tidal – 0.50 acres wetland	Expires July 20, 2021. Construction must be complete 1 year after expiration.	45 days following USACE receipt of complete application
SCDOT GP Cleaning and Repairing Existing Structures and Ditches SAC 2015-1286	Modification of existing drainage ditches, installation of rip rap	Freshwater – 1.5 acres wetland 300 lf stream Tidal – 0.50 acres wetland	Expires July 20, 2021. Construction must be complete 1 year after expiration.	45 days following USACE receipt of complete application

Utility coverage under SCDOT Permit

- Conditions:
  - Concurrence signed by Utility and SCDOT
  - Installation of utility lines in Waters of the US must not change pre-construction contours.
  - Does not include activities that permanently drain a water of the US
- Timing:
  - **Scoping Meeting or Advance Utility Coordination Meeting:** Utility submits request to SCDOT to be included in permit
  - **ROW Design:** Utility provides information required to support permit application
- Conditions related to permitting, mitigation, and compliance are identified in Concurrence Letter.



Utility Coverage under SCDOT Permit

Utility company must provide the following information:

- Signed concurrence between SCDOT and the Utility Company for execution of utility relocation work within project limits and permit responsibilities.
  - *ONLY IN CONTRACT WORK WILL BE COVERED BY SCDOT PERMITS*
- Proposed utility relocation alignment on SCDOT ROW plans
- Provide information on documentation to be used for access outside SCDOT ROW
- Anticipated construction methods
- Locations and dimensions of bore pits (if applicable)
- CADD design files (if available)
  - *To be included in SCDOT permit narrative and permit drawings*

SCDOT

Utility Company obtains Permits

Utility provides SCDOT with permitting schedule

Utility obtains their own environmental permits

Utility provides proof of valid permit for SCDOT review

Work cannot begin until SCDOT encroachment permit and No Cost Relocation Letters are issued.

Utility Permitting Process

Impact Threshold =
½ Acre of Waters of the US

Nationwide 12 (Utility Line Activities)

Utility completes relocation plans

Submit Pre-Construction Notification to USACE and SCDHEC

Agency Review and Coordination

Permit Issuance; Mitigation Plan Implementation

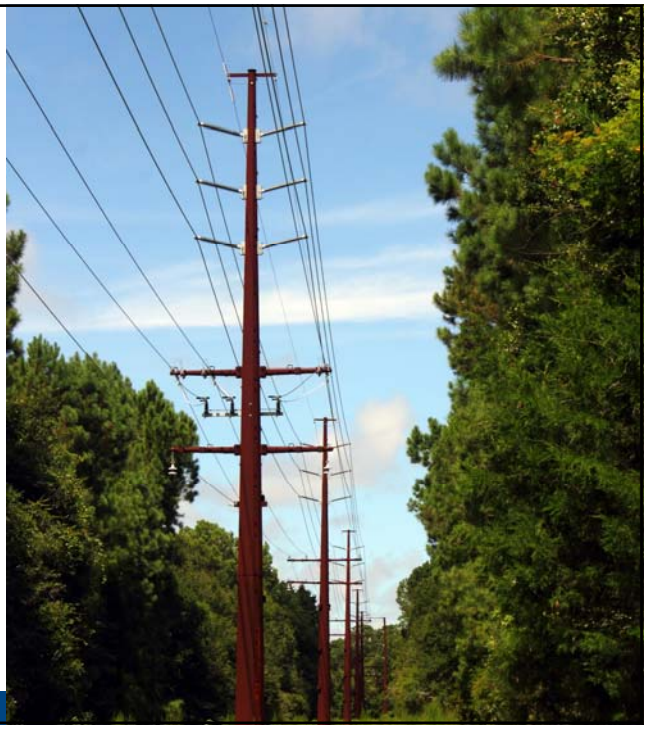
± 3 to 6 months

Permits for boring in Navigable Waters and Critical Area

- Applies to installation of utility lines by directional boring or aerial crossing by public utilities in State Navigable Waters. This includes all Critical Areas and tidal areas.
- **If Utility is covered by SCDOT Environmental Permits**, Navigable Waters and Critical Area Permitting will be conducted by SCDOT.
  - **Utility may still be required to present to SC Department of Administrative Services for review**
- **If the Utility is obtaining their own permits**, the Utility Company is required to secure Navigable Waters Permit and/or Critical Area Permit prior to conducting the proposed work.
  - SCDHEC-OCRM GP-96-001: Directional boring for utilities

Clearing and Grubbing

- SCDOT may be able to facilitate an advanced clearing and grubbing contract for utilities or allow for a Utility Relocation Construction Window to facilitate access to the relocation sites located within SCDOT ROW.
- **If the utility company elects to perform utility relocations without clearing and grubbing assistance,** the Utility company will be responsible for securing all necessary state and federal permits for their proposed construction.



Environmentally Sensitive Areas (ESAs)

- Identified during NEPA process
- No work shall occur on delineated or known ESA unless permitted and approved by SCDOT prior to construction.
- ESA will be delineated prior to and during construction with appropriate orange fencing.
- Stop work if the utility encounters an ESA that was not previously delineated or known and contact the District Construction Engineer or Resident Construction Engineer.

Sediment and Erosion Control

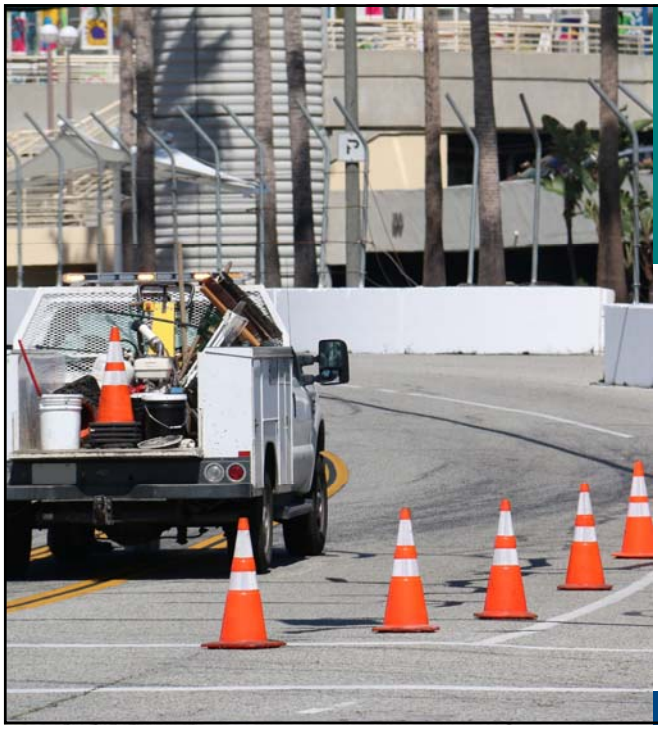
- **If utility is IN-CONTRACT for utility relocations,** SCDOT will include the utility relocation plans in their storm water permit applications for the project and secure all necessary permits for the utility relocation work.
- **If relocations are being performed independently,** utility must contact SCDHEC/OCRM and the local municipality to determine requirements and permits.

Contaminated Soils & Clean Up

- If contaminated soil is encountered during utility relocations, the Utility Company should cease work immediately and contact the RCE or DCE for the project. The RCE or DCE should contact ESO Compliance at this time.
- Prior to acceptance of relocation work performed on the SCDOT ROW, the Utility Company shall restore all areas of disturbance and leave the right-of-way in an acceptable condition.

Key Concepts

- Understand where major utilities are located during the NEPA process
- Consider utility relocations in design alternatives
- Don’t assume because the SCDOT has a permit, that the utility relocations are covered by that permit
- Coordinate early and often if utility relocation could be included in the SCDOT permit
- Concurrence Letter signed by Utility and SCDOT
- Follow erosion and sediment control best practices during construction



Constructability Reviews in Utility Coordination

Overview

SCDOT

Utility Considerations in ROW

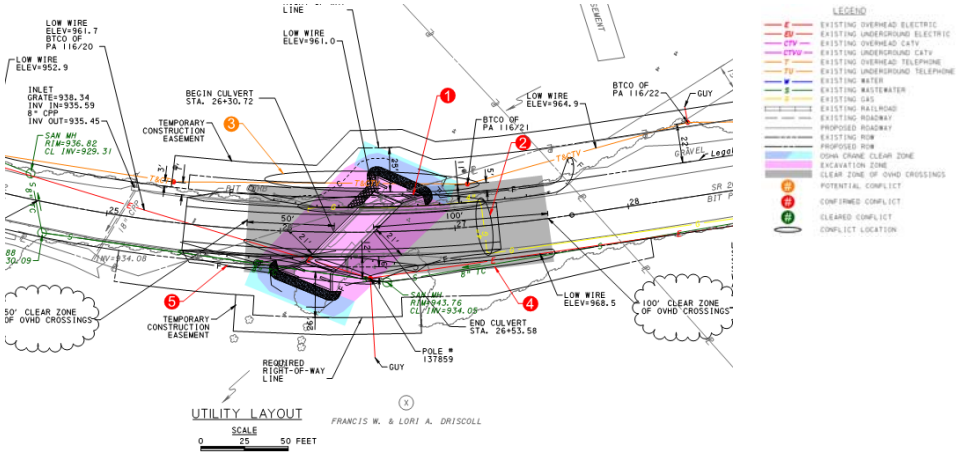
Contact and Coordination

Early and Often

SCDOT

Objectives in Utility Constructability

- Identify conflicts between utilities and opportunities for joint installations and/or staging
  - Document location and timing of relocations
- Assure all utilities can be constructed and maintained
- Identify opportunities for prioritizing ROW acquisitions to expedite utility relocations
- Maintain the safety of construction crews and traveling public
- Provide continuous service to utility customers



Areas of Potential Constructability Issues

Utility Accommodation

SCDOT

Types of Constructability Issues

- Fill Sections
  - Constructing a sewer line above the existing ground or too shallow.
  - Inadequate structural strength of facility to withstand compaction equipment.
- Deep Installations
  - OSHA requirements for trench protection
- Cut sections
  - Exposing a utility in a cut slope
- Ground Modifications
- Construction and maintenance easements

Types of Constructability Issues

Soil Types

- Rock, costly and difficult boring
- Sand or soils that will cave in easily

Close proximity to existing highway structures or other utilities

- Easy to damage or diminish surrounding protection
- Clearance requirements between utilities

Types of Constructability Issues

Overhead Crane zones

- Areas in which loading/unloading or construction equipment may impact overhead communication lines during operations. Approaches to bridges.

OSHA Zones

- Areas in which loading/unloading or construction equipment may impact overhead electrical lines during operations. Approaches to bridges.

Types of Constructability Issues

Pole Heights and Spacing

- Spanning over an Interstate
- Overhanging private property or ROW
- Higher poles requiring different materials
- Footprint of transmission towers

Multiple occupants and each having their own requirements

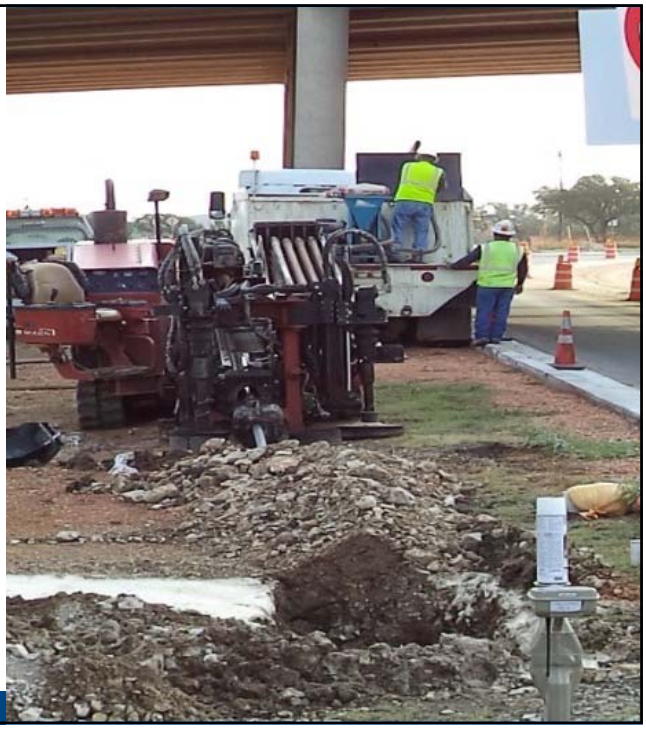
Types of Constructability Issues

Limited ROW *(not enough room for all utilities)*

- Joint trenching
- Adequate ROW to perform installation of utility facility
- Proximity of water lines and sanitary sewer lines
- Proximity of gas lines and required cathodic protection

ROW not acquired for the utility to relocate

- Phased or temporary relocations



Types of Constructability Issues

Construction Phasing

- Detours and Work a Rounds

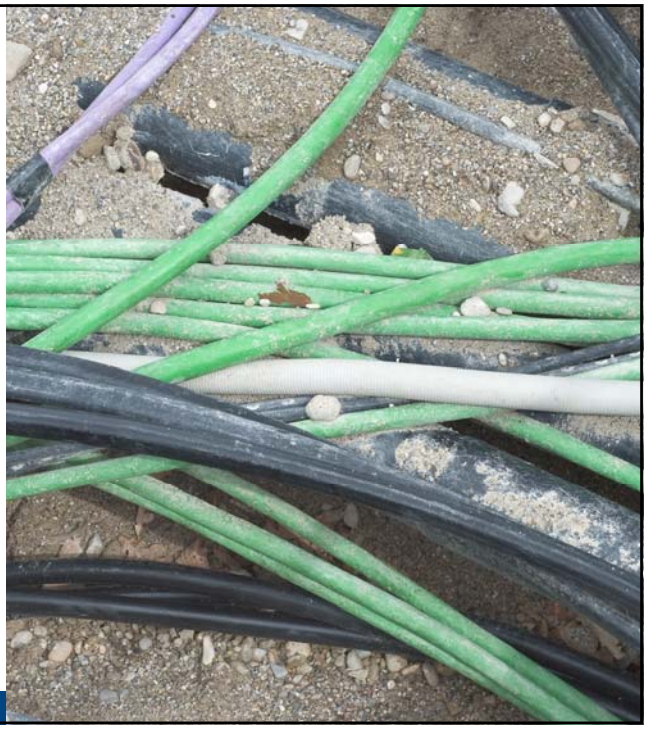
Temporary easements for construction

- Bore pits
- Equipment & material storage

Lead time on material delivery

Types of Constructability Issues

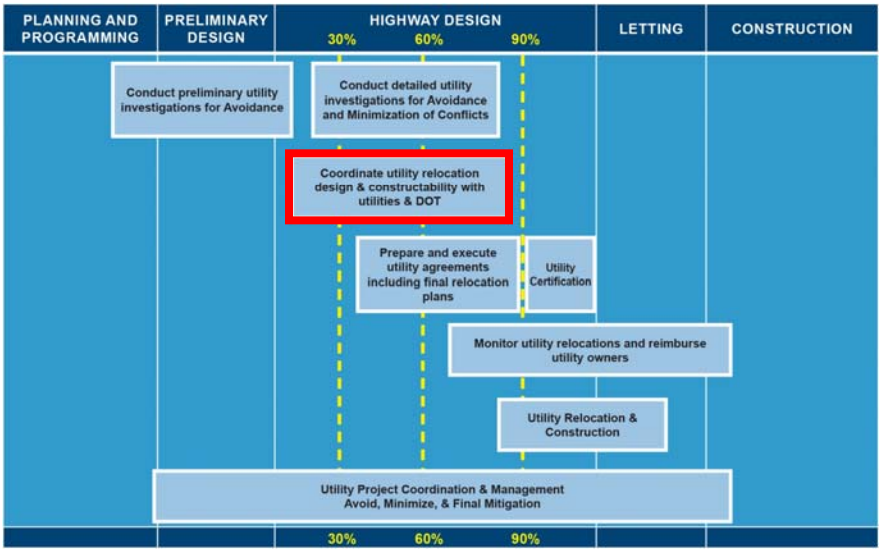
- Fiber Communication Lines requiring replacement to next splice point
- Fiber Companies occupying joint duck banks but requiring separate manholes for access
- Room for access to Fire Hydrants
- Maintaining manholes when located in pavement.
  - Adjusting heights for overlays and seal coats.
  - Street closures and access



Constructability Best Practices / Tips

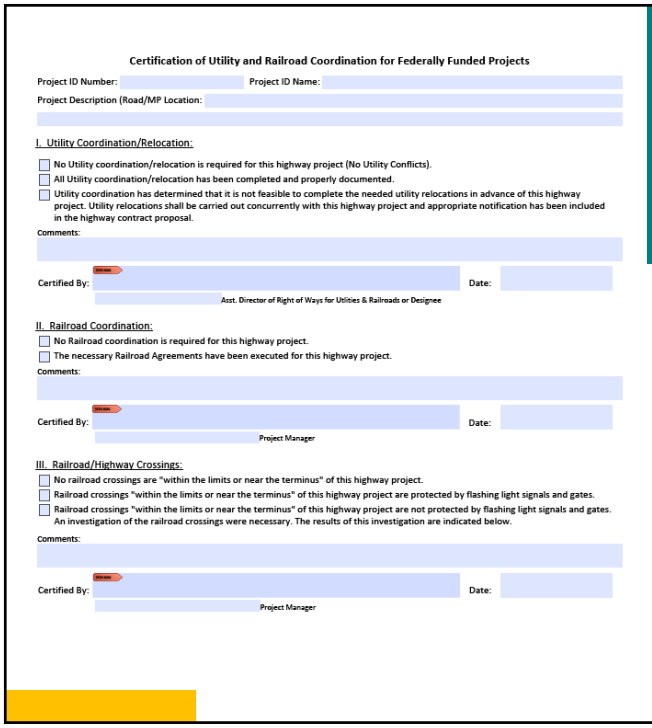
- Have constructability reviews throughout project development
- Obtain Test Holes at conflict points
- Show existing, proposed utilities, drainage, MSE walls, signal locations, retaining walls, etc. on cross-sections
- Produce cross-section exhibits showing all utility locations, planned relocations, and SCDOT construction excavations

Utility Process (Constructability Review)



Utility & Railroad Certifications

Requirements



Certification of Utility and Railroad Coordination for Federally Funded Projects

Project ID Number: Project ID Name:

Project Description (Road/MP Location:

I. Utility Coordination/Relocation:

- ☐ No Utility coordination/relocation is required for this highway project (No Utility Conflicts).
- ☐ All Utility coordination/relocation has been completed and properly documented.
- ☐ Utility coordination has determined that it is not feasible to complete the needed utility relocations in advance of this highway project. Utility relocations shall be carried out concurrently with this highway project and appropriate notification has been included in the highway contract proposal.

Comments:

Certified By: Date:

Asst. Director of Right of Ways for Utilities & Railroads or Designee

II. Railroad Coordination:

- ☐ No Railroad coordination is required for this highway project.
- ☐ The necessary Railroad Agreements have been executed for this highway project.

Comments:

Certified By: Date:

Project Manager

III. Railroad/Highway Crossings:

- ☐ No railroad crossings are "within the limits or near the terminus" of this highway project.
- ☐ Railroad crossings "within the limits or near the terminus" of this highway project are protected by flashing light signals and gates.
- ☐ Railroad crossings "within the limits or near the terminus" of this highway project are not protected by flashing light signals and gates. An investigation of the railroad crossings were necessary. The results of this investigation are indicated below.

Comments:

Certified By: Date:

Project Manager

Certification that Utility & Railroad Coordination is COMPLETE

Implemented October 2016

No Certification = No Letting

Circumstances for Utility Certification

- NO CONFLICT - Utility facilities will not be affected by the project
- All Utility relocation work will be completed PRIOR to construction
- Arrangements are made to have utility work undertaken DURING construction within a Utility Window or included as in-contract work

Utility Certification Background

- Initiated by Federal Highway Association (FHWA)
- Went into Effect in October, 2016
- Required on All Projects with Federal Funds
- Certification Must be Signed Before FHWA Will Authorize Funding
- Certification Issued a Minimum of 120 Days Before LETTING

What does this mean?

- For **Utility Agreements** the Following Must Be Submitted and Approved
  - Utility Agreement
  - Cost estimate
  - Relocation drawings
  - Prior Rights Documentation
  - Easements obtained
  - Environmental Permits obtained if required
  - Construction Schedule
  - Concurrence from the Consultant (if applicable)
  - Concurrence from Resident Construction Engineer and District Engineering Administrator

SCDOT

What does this mean?

- For **No Cost Relocation Sketches:**
  - No Cost Letter from the utility company
  - Relocation Drawings
  - Environmental Permits obtained if required
  - Encroachment Permit
  - Construction Schedule
  - Concurrence from the Consultant if applicable
  - Concurrence from Resident Construction Engineer and the District Engineering Administrator
  - Easements

SCDOT

What does this mean?

- Submittal of **No Conflict Letters**
- If Relocation Work is in **In-Contract**
  - Sealed Drawings
  - Sealed Specifications
  - Bid Tab
  - Cost Estimate
  - List of at Least 3 Contractors per the SCDOT's Rainbow Chart
  - Approved Memorandum of Approval by the Utility Company and SCDOT

Federally Funded Projects

No Certification = No Project Letting

Certification of Utility and Railroad Coordination for Federally Funded Projects

Project ID Number: _____ Project ID Name: _____

Project Description (Road/MP Location: _____

I. Utility Coordination/Relocation:

- ☐ No Utility coordination/relocation is required for this highway project (No Utility Conflicts).
- ☐ All Utility coordination/relocation has been completed and properly documented.
- ☐ Utility coordination has determined that it is not feasible to complete the needed utility relocations in advance of this highway project. Utility relocations shall be carried out concurrently with this highway project and appropriate notification has been included in the highway contract proposal.

Comments:

Certified By: _____ Date: _____

Asst. Director of Right of Ways for Utilities & Railroads or Designee

II. Railroad Coordination:

- ☐ No Railroad coordination is required for this highway project.
- ☐ The necessary Railroad Agreements have been executed for this highway project.

Comments:

Certified By: _____ Date: _____

Project Manager

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Comments:

Certified By: _____ Date: _____

Project Manager

QUESTIONS?

Hands-On Utility Conflict Management Exercise

- ❑ Break up into the same groups/teams from previous exercises
- ❑ Using the information your team developed in previous exercises, your team will select one utility facility conflict to analyze and develop potential resolution alternatives.
- ❑ Think outside the box to explore potential alternative solutions to the selected conflict.
- ❑ Consider potential ball park costs of various alternatives to determine which one might be most feasible.
- ❑ Each team will report back on the following:
  - ❖ Brief summary of the anticipated utility conflict they selected to Analyze
  - ❖ Potential conflict resolution strategies considered & recommendations?

SCDOT

Wrap Up

Did you feel that this class provided you with useful additional knowledge & Skills?

Were there any topics that you felt were no covered in enough detail?

Were there any topics that were not covered that should be included?

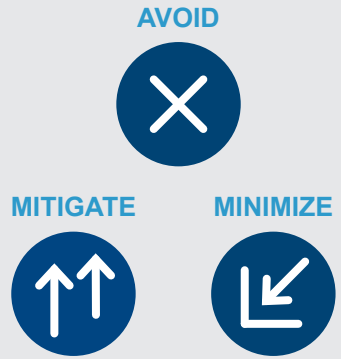
Is there anything that we can do better?

Thank you for participating!

UTILITY COORDINATION BEST PRACTICES

First Steps

- **Project** Introduction Letter to Utilities
- **Communicate** early, effectively, and often
- **Identify** utilities early
- **Determine** when SUE is required and what level of SUE is appropriate.
- **Avoid, Minimize, or Mitigate**
  - Avoid - if possible
  - Minimize the Impact – might not fully avoid the adjustment but may reduce cost/effort
  - Mitigate – relocate or adjust the utility facility



Invite

- **Invite** utilities with potential conflicts to meet in order to identify alternative solutions
- **Invite** utility companies to design field reviews
- **Invite** utility companies to pre-bid meetings and pre-construction conferences and include in construction progress meetings
- **Invite** utility companies to constructability review meetings

Incorporate

- **Document** all correspondence and conflicts
- **Adhere** to terms of the utility agreement
- **Know your project**
- **Include** utility relocations in SCDOT Environmental Permits when feasible
- **Incorporate** utility relocation work in the project schedule
- **Track and document** as-built work
- **Constructibility** reviews through-out the design process
- **Relocation** staging (who goes in first and where)

Review

- **Review**
  - Traffic Control Plans
  - Traffic Signal Plans
  - Lighting Plans
  - Landscaping Plans
  - temporary work-a-rounds
  - drainage/excavation
  - overhead crane areas
  - ground modifications
  - review fill and cut sections for utility installations
  - OSHA areas
  - other utility plans for utility conflicts not just the roadway plans, determine if future maintenance easements are needed for utilities.
- **Review** and monitor design changes as they may introduce new conflicts
- **Review** utility relocation drawings/ plans for conflicts
- **Inspect** the relocation/ adjustment of utility relocations for compliance and cost.
- **Right of Entry** and separation from other utilities

AUGUST 2017

UTILITY COORDINATION
MILESTONE CHECKLIST

Date:

Project Name:

Project ID:

Project County:

Project Type:

Project Manager:

#	Task	Responsible Party	Target Date	Complete	Date Completed
1	Project Programmed in P2S	**PM**		☐	
2	Pull Utility Inventory from SC 811 / Desktop Google Earth scoping of Utilities	**DM**		☐	
3	Submit Design Ticket with SC811 to mark Utilities in the field for Scoping Meeting	**DM**		☐	
4	Initial Field Scoping Meeting / Coordinate **SUE** determination w/ **DM,UC & RCE**	**PM**		☐	
5	Verify Utilities in the Field - Add to Scope	**PM**		☐	
6	Consult with State Utility Engineer to identify major/complex utility issues	**PM**		☐	
7	Set Up Utility Coordination Plan and/or Consultant Scope	**PM**		☐	
8	Set up Initial Utility Conflict Management Spreadsheet (**UCM**) on Projectwise	**DM**		☐	
9	Request that **UC** request Major Utility Plans and/or Records	**DM**		☐	
10	Prepare **SUE** Determination Memo & Establish Planning Level Utility Budget	**PM**		☐	
11	Prepare and Distribute Project Scope, Schedule & Budget	**PM**		☐	
12	State Utility Engineer sends all Utility Companies a Project Introduction letter (assign Point of Contact/**UC**/Consultant/**PM**)	**State Utility Engineer**		☐	
13	Submit SUE and Survey Request to Surveys (determine if special requests for survey gas markers or man hole depths should be included)	**DM**		☐	
14	Review Survey & **SUE** files; Update **UCM**	**DM**		☐	
15	Request additional information from Utility Company through **UC**, if necessary	**DM**		☐	
16	Coordinate with State Utility Engineer for Estimated Costs of Utility Impacts	**PM**		☐	
17	Provide preliminary utility impacts/costs in the NEPA Alternatives Analysis	**PM**		☐	
18	Consider UT impacts in the Alternatives Analysis; **AVOID** impacts if possible	**PM**		☐	
19	Request **UC** contact Utility companies if necessary to obtain additional information (clearance requirements/constraints) or set up individual Utility Company meetings if major conflicts anticipated and more info needed.	**PM**		☐	
20	Review Preliminary Plans with **DM** for Potential Conflicts & Update **UCM**	**PM/DM**		☐	
21	Design Field Review (DFR); consider **UC** inviting major utilities with impacts	**PM/DM**		☐	
22	Investigate whether any adjustments can be made in design at DFR to **MINIMIZE** impacts; request that Utility Company pot hole or mark utilities at DFR if necessary. Explore protective alternatives. Determine whether any utility work would impact/involve environmental permits.	**DM**		☐	
23	Coordinate with **ESO** on the potential utility relocations located within the SCDOT ROW and whether there is an opportunity to include utility relocation work within the permit. All in contract relocations should be included in the SCDOT permit. Discuss level of details needed for permit application (new utility alignment, size, and construction methods)	**PM**		☐	
24	Once Preliminary ROW plans are available; request **UC** set up advanced utility coordination meeting to discuss major impacts. Prepare exhibits showing the impacts on the cross sections, if possible. Don't forget to include geotechnical work and/or any normal construction methods (silt fence post, etc.)	**PM**		☐	
25	Secure all preliminary utility relocation or conflict resolution details at this preliminary meeting, including ROW, permitting and schedules. Determine meeting/deliverable schedule for final coordination.	**UC**		☐	
26	Update **UCM** and Utility Coordination Plan. Determine if any utility companies will be included in construction contract work and/or permits.	**PM**		☐	
27	Issue Final ROW plans to **UC** for initiation of final Utility Coordination; **UC** to set up regular Utility Meetings according to Utility Coordination Plan for project. **UC** to update **UCM** after each meeting with updated information.	**DM**		☐	

28	Coordinate final deliverables, **MITIGATE** conflicts through relocation plans, through regular Utility Coordination Meetings. Coordinate with RCE to perform Constructability review of the Utility relocations at the Coordination meetings in order to determine the phasing and timing of all planned utility relocations.	**UC**		☐	
29	Secure all final utility deliverables at least 150 days prior to LET date.	**UC**		☐	
30	Coordinate review of final relocation plans, agreements & permits.	**UC**		☐	
31	Submit final packages to State Utility Engineer for Final Review & Approval.	**UC**		☐	
32	Coordinate with **PM** for recommendation and preparation of Utility & Railroad Certification.	**State Utility Engineer**		☐	
33	Utility Ready to Construct. Utility Certification Signed.	**State Utility Engineer**		☐	

*If consultant services are utilized on the project, then tasks 8-11 & 12-32 would be delegated to the consultant team.

PM Program Manager
DM Design Manager or Designee
UC Utility Coordinator
RCE Resident Construction Engineer
ESO Environmental Services Office
UCM Utility Conflict Management Spreadsheet

South Carolina Department of Transportation

Final UT Submittal DUE DATE: _____

Utility Company Checklist

Utility Name: _____

PROJECT INFORMATION

Project Name: _____ County: _____

Termini/Location: _____ Project ID: _____

UTILITY COMPANY ROLES & RESPONSIBILITIES

- ☐ Confirm receipt of project information and requests for information by confirmation email to _____.
- ☐ Provide existing utility facility location plans and/or utility facility information including all the information listed below.
- ☐ Attend Utility Coordination Meetings and participate in the Project Development Process in order to MINIMIZE conflicts.
- ☐ Provide assistance in locating your utility facilities on the project corridor and determination of utility conflict solutions.
- ☐ Provide SCDOT with realistic schedules for Utility Facility Relocation Plans and/or Relocation Activities including materials.
- ☐ Notify SCDOT IMMEDIATELY of any schedule or plan changes that may impact your delivery of utility plans & relocations.

PLANNING & DATA COLLECTION (complete information to provide at coordination meetings)

UT located in Project Termini:	☐ Yes ☐ No ☐ Unknown	**Vertical Clearance Required for Utility:**	
Utility Type:		**Horizontal Clearance Req'd:**	
General Utility Location:		**Potential Relocation Placement:**	
Utility Material:		**UT ROW Phase Req'd:**	☐ Yes ☐ No ☐ Unknown
Utility Size:		**Environmental Permit Req'd:**	☐ Yes ☐ No ☐ Unknown
Prior Rights:	☐ Yes ☐ No ☐ Unknown	**Ballpark Relocation Costs:**	
Utility Conflicts with Project:	☐ Yes ☐ No ☐ Unknown	**Relocation Schedule (include design, ROW, Permit & CON):**	

VERIFICATION OF UTILITY LOCATION IN THE FIELD

Utility Location Verification:
- ☐ Utility Plans AVAILABLE
- ☐ Utility Location UNKNOWN

Plans for Securing Location:
- ☐ Utility Mark Location
- ☐ Utility to Pot Hole for depths
- ☐ SCDOT to Survey Marks
- ☐ SUE by SCDOT
- ☐ SUE by Utility Company

- Confirm general location description above (i.e. East side of pavement in shoulder, etc.)
- Mark Utility locations in field SC811
- Field Review Meeting to Pot Hole potential conflict locations for depths upon request in order to avoid & Minimize conflicts with SCDOT design
- SUE information may be available on some projects if within budget.

- Location is critical to SCDOT in order to make any attempts to AVOID and/or MINIMIZE impacts to your utility facilities.
- General Ground location is necessary for initial AVOIDANCE of utility conflicts.
- Additional Depth locations are necessary in order to MINIMIZE conflicts through design.
- Utility Companies responsiveness to requests for additional information is critical to facilitate consideration of utilities during preliminary design.

ADVANCE UTILITY COORDINATION / DESIGN FIELD REVIEW

☐ Review SCDOT Plans and Cross Sections to identify potential utility conflicts with SCDOT preliminary design.

Potential Conflicts:
- ☐ Utility under Pavement
- ☐ Cover over Utility
- ☐ Drainage Pipe
- ☐ Drainage Ditch
- ☐ Signal Pole/Box
- ☐ Sign Post Conflict
- ☐ Guard Rail Post
- ☐ Silt Fence Post
- ☐ Shoring Wall
- ☐ Ground Modifications
- ☐ Earthquake Drains
- ☐ MSE or Noise Walls
- ☐ Piles/Columns
- ☐ Fill Section
- ☐ Cut Section
- ☐ Railroad Involvement
- ☐ _____
- ☐ _____

Plans for MINIMIZING:
- ☐ Utility Protection
- ☐ Utility Adjustment
- ☐ SCDOT Design Adjustment

Special Provisions:
- ☐ Yes, Provided
- ☐ None Required

Utility Environmental Permits:
- ☐ Required
- ☐ Not Required
- ☐ Include in SCDOT permit*

*must meet EARLY deadline

FINAL UTILITY COORDINATION

☐ Confirm all UNAVOIDABLE utility conflicts by review of final ROW plans provided by SCDOT.
☐ Confirm whether any special considerations are necessary around any utility facilities to remain in place during construction.
☐ Initiate planning for conceptual utility conflict resolutions and/or relocations (specify materials & methods of installation).
☐ Provide SCDOT with the proposed schedule for design, ROW, permitting and construction for the utility relocation for scheduling the final project letting.
☐ Provide prior rights confirmation and ballpark estimate for relocations.
☐ Attend utility coordination meetings in order to discuss relocations with other utility companies and ensure that planned relocations are not in conflict with other planned utility relocations.

FINAL UTILITY DELIVERABLES CHECKLIST

☐ Final Utility Submittal, including:

Utility Window:
☐ None Required
☐ 1 month Window
☐ 2 month Window
☐ 3 month Window
☐ 6 month Window
☐ 9 month Window
☐ Other: ___ month

In-Contract Relocation:
☐ No
☐ Yes

Encroachment Permit:
☐ No
☐ Yes, included

NO UTILITY CONFLICTS:
☐ No Conflict Letter on Utility Company Letterhead

NO COST UTILITY RELOCATION:
☐ No Cost Letter on Utility Company Letterhead
☐ Utility Relocation Plans
☐ Utility Relocation Environmental Permit, if required
☐ Utility Relocation Construction Schedule

UTILITY RELOCATION by AGREEMENT:
☐ Utility Agreement with cost share outlined
☐ Utility Relocation Plans
☐ Utility Relocation Environmental Permit, if required
☐ Utility Relocation Construction Schedule

UTILITY RELOCATION IN-CONTRACT with SCDOT:
☐ Financial Participation Agreement with cost share outlined
☐ Utility Relocation Plans (must be 24 X 36)
☐ Utility Relocation Environmental Permit, if required
☐ Utility Construction Specifications
☐ Utility Construction Cost Estimate
☐ List of Pre-Qualified Contractors, if applicable

FINAL UTILITY PLANS CHECKLIST

☐ Final Utility Plans must include:

- Shown on SCDOT plans or SCDOT plan stationing referenced on plans
- All existing, proposed, temporary and "to be abandoned" locations shown on plans
- VERY IMPORTANT: Lateral offsets must be shown for both existing and proposed lines (overhead or underground) from one of the following: (1) EDGE of PAVEMENT, (2) CENTERLINE, OR (3) RIGHT OF WAY.
- Utility Relocation Construction Staging Plan or Narrative
- Add notes to plan sheets for any special circumstances that the SCDOT contractor needs to be aware of in order for completion of your relocation. (i.e. area needs to be cleared, grubbed and any special circumstances).
- If requesting that underground lines be allowed to remain in place near new drainage facilities, elevations/depths MUST be shown on the plans in order to confirm constructability of the drainage facilities within proximity to the remain in place utility facilities. This information should be shown on the cross sections.
- For OVERHEAD facilities, Notate which poles will be removed and which poles are requested to remain in place. **If pole is to remain at its current location, but the pole will be replaced in order to be brought up to code. Note the type, size and class of the new pole.
- If OVERHEAD facilities cross the roadway or bridge structure, indicate overhead clearances (to be utilized by the contractor to determine clearance requirements).
- For OVERHEAD facilities that transition to UNDERGROUND facilities (or UG to OH), the plans must depict the point of transition along with lateral offsets for that section of underground lines.
- TWO COLOR-CODED sets of plans must be submitted. One 11X17 set must be provided for scanning and file retention and one full size (24 X 36) for technical review.

GENERAL UTILITY COMPANY PROCESS DIAGRAM

1 PROJECT INITIATION AND SCOPING

- SCDOT notifies utility company of project
- Comply with SC 811 Design Ticket to mark utilities in the field
- Fulfill SCDOT requests for utility records and/or plans
- Initiate identification of potential funding sources for utility project

1-2 weeks

2 RESOURCE STRATEGY

- Design Staff Assignment or
- Design Consultant Procurement

6-8 weeks

3 PRIOR RIGHTS RESEARCH

4 SURVEY/SUE

5 UTILITY RELOCATION DESIGN

Depending on complexity of design

3-12 months

6 ENVIRONMENTAL PERMITTING

Depending on impacts

3-12 months

7 SCDOT TECHNICAL REVIEW OF UTILITY RELOCATION PLANS

15 - 30 days

8 SUBMITTAL OF FINAL RELOCATION PLANS & UTILITY AGREEMENTS TO SCDOT FOR APPROVAL

Encroachment Permit Application included for relocations proposed within SCDOT ROW

30 days

9 RIGHT OF WAY ACQUISITION (IF NECESSARY)

Depending on number of tracts

3-12 months

10 MANUFACTURE ORDER FOR MATERIALS

- Materials may have to be manufactured to specification
- Materials are not typically ordered until all approvals, permits and ROW are secured

2-8 months

11 CONSTRUCTION WORK ORDER

- Scheduling of in-house or outside forces for utility construction
- May include procurement of constructon contractor for work

6-8 weeks

12 NOTIFY SCDOT OF UTILITY RELOCATION CONSTRUCTION INITIATION

13 CONSTRUCTION OF UTILITY RELOCATION

Depending on utility type and complexity of utility relocation

1 week to 2 years

14 INSPECT UTILITY RELOCATION FOR COMPLIANCE & SUBMIT REIMBURSEMENT

- Notify SCDOT of change orders as they occur

15 ATTEND SCDOT PROJECT PRE-CONSTRUCTION CONFERENCE

- Notify SCDOT and contractor of utility relocation status
- Mark new utility relocations in field as requested by SCDOT contractor
- For utility relocations to be performed within the previously requested SCDOT Utility Window, coordination of relocation activities with the SCDOT contractor would occur at the Pre-Con meeting or as designated by SCDOT.

16 PROJECT CONSTRUCTION

- SC 811 Ticket
- Attend Regular SCDOT Project Progress Meetings as necessary during construction while utility relocations are ongoing.

AUGUST 2017

UTILITY COORDINATION PROCESS

1

PROJECT INITIATION AND SCOPING

- Develop List of Utility Owners and Facilities *(Contact SC 811)*
- Project Scoping Meeting *(Field)*
- Establish Utility Coordination Matrix

2

PROJECT INTRODUCTION LETTER

3

SURVEY / SUE

- See Associated SUE Decision Diagram
- Request Utility Records

4

PROJECT REVIEW (AVOID IMPACTS)

- Alternatives Analysis
- Preliminary Design *(30%)*
- Preliminary Utility Installation/ Constructability Discussion

5

EARLY COORDINATION DURING DESIGN (MINIMIZE IMPACTS)

- Design Field Review *(Field)*
- Environmental Permitting
- Preliminary ROW plans
- Utility Installation/ Constructability Review

6

FINAL COORDINATION DURING ROW (MITIGATE IMPACTS)

- ROW Plans and Utility Coordination
- Notify utility company of required relocation with sufficient plans to design their relocation/adjustment
- Final Design
- Final Utility Coordination Meetings
- Final Utility Installation Drawings/Constructability Review

7

PLANS SPECIFICATIONS & ESTIMATES FINAL CONTRACT REVIEW

- Utility deliverables due 6 Months Prior to Bid Opening *(if utilities are included in SCDOT contract)*
- Utility Certification must be issued prior to the final plans submittal
- Utility Window Determination
- Utility Special Provisions

8

ADVERTISEMENT AND AWARD

- Include sealed drawings, specifications, bid tab, cost estimate and a list of minimum of 3 contractors utility companies have used in the past for utility relocation in contract *(if utilities are included in SCDOT contract)*

9

PROJECT CONSTRUCTION

- Contractor will submit ticket for utilities to be marked on project before construction initiation
- Invite utility companies and their contractors to pre-bid conference and regular utility progress meetings
- Request as-builts from relocated utilities. Utilities should provide within 60-days of construction completion.

AUGUST 2017

SUBSURFACE UTILITIES ENGINEERING (SUE) DECISION DIAGRAM

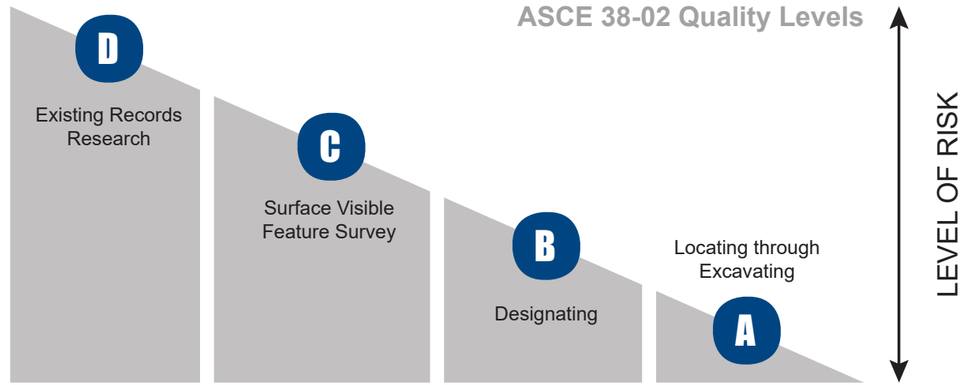
Purpose of Diagram

To determine what level of SUE to use on a project and whether or not to utilize SUE consultant services. The decision should be documented with a detailed justification for the decision by the SCDOT Program Manager.

SUE Quality Levels

SC811 Survey

ONE CALL DESIGN TICKET – An SC811 Design Ticket is submitted to allow the field survey of utilities as marked by individual utility companies or the company's representative. (Accuracy is not certifiable. Utility size and material not available)



ASCE 38-02 Quality Levels

QUALITY LEVEL D:

Existing Records Research
Most basic level of information for utility locations; gathered from existing utility records or verbal recollections which may be unreliable. It may provide an overall "feel" for the congestion of utilities on the project but is highly limited in terms of accuracy and comprehensiveness. This level is typically used for preliminary project scoping and planning. (Accuracy is uncertain)

QUALITY LEVEL C:

Surface Visible Feature Survey
Involves the surveying of visible utility facilities (manholes, valve boxes, pedestals, poles, etc.) and then correlating this information with existing utility records. Sometimes many underground utilities are omitted or erroneously plotted with this level. (Typical horizontal accuracy can range from 1' to uncertain)

QUALITY LEVEL B:

Designating
This level is the application of appropriate geophysical methods to determine the existence and horizontal position of virtually all utilities within the project limits. This utility information is surveyed to the project control. This level increases the accuracy of information and assists in capturing abandoned and unrecorded facilities. This level of information can be utilized by designers to AVOID or MINIMIZE utility conflicts. (Typical horizontal accuracy can range from 1' to 2')

QUALITY LEVEL A:

Locating through Excavation
This level is the highest level of accuracy and utilizes the full range of SUE services. This level provides information on the precise plan and profile mapping of underground utilities though the nondestructive exposure of underground utilities. The information provided will include type, size, condition, material and other characteristics of underground features. (ASCE 38-02 typical vertical accuracy is 0.05' and typical horizontal accuracy is 0.3')

Implementation of SUE into the Plan

The level of information to be shown in the plans is outlined below:

Project Development Phase	% Design Complete	SUE Quality Level
Conceptual/Scoping	0-10%	D or SC811 Survey
Preliminary Plans	10-30%	C/B/A
ROW Plans	30-60%	A
Final Design	60-70%	A
Construction Plans	70-90%	A

SUBSURFACE UTILITIES ENGINEERING (SUE) DECISION DIAGRAM

Using SUE for Utility Coordination

The following demonstrates what level of SUE information should be utilized at each stage in the Project Development Process:

Stage of Project		SUE Information Utilized	Additional Option	Utility Coordination Benefits
Project Initiation & Scoping	Establish Utility Inventory for project and confirm general locations at the field scoping meeting. Contact utility to obtain utility plans and/or records. Set up initial Utility Conflict Matrix.	• 811 Utility Inventory • Utility Records • Utility Conflict Matrix	• Utilities marked in field	• Confirm Inventory • Avoid – Consider Utilities in alternative alignment analysis
Surveys	Document SUE recommendations and initiate SUE consultant contracts. Utilize the Survey and SUE information to estimate whether significant utility impacts are anticipated.	• Visible Features • Utility 811 Design Ticket	• Survey Utilities marked in field • Pull manhole depths and connectivity	• Increase accuracy of Utilities information
Preliminary Design	Strategic review of potential conflicts with preliminary design, select test hole locations. Utilize SUE consultant or Utility Company request for test hole information and utility details.	• Utility Survey/Data • Utility Conflict Matrix • Jurisdictional Areas	• Utilities pot holes in field • SUE consultant test hole data	• Minimize Utilities conflicts with design adjustments • Determine Environmental Permit Requirement
Design Field Review	Review conflicts in the field and explore any further design alterations or utility protections/reinforcements to AVOID or MINIMIZE conflicts.	• Data reviewed in field	• Invite Utilities to DFR	• Confirm conflicts • Minimize Utilities conflicts • Utilities relocation delivery
Preliminary ROW Plans	SUE data utilized for drainage design and incorporated into plans for determination of unavoidable conflicts. Utilize cross section exhibits for discussion of potential relocations and any tracts requiring ROW acquisition priority.	• SUE Utilities Sheets • Utility Conflict Tables • Environmental Permit Requirements	• Plan & Profile Utilities conflict Exhibits • Include Utilities in permits	• Confirm conflicts • Protection alternatives • Minimize Utilities conflicts • Permitting Method • Constructability/ Installation Review
Final Design	Utility plan sheets (U-Sheets) incorporated into final plans. MITIGATE any final conflicts, review and finalize utility deliverables (plans, permits, agreements, letter, PS&E, etc..).	• Utility Conflict Matrix	• Include Utilities in contract • Establish Utilities window • Utilities Special Provisions	• Final Utilities packages • Assistance to Utilities • Adherence to schedule • Final Constructability/ Installation Review
PS&E	All utility deliverables submitted; Utility Certification to be issued. Utility relocations can be added to U-sheets for information only if desired.	• Final Utilities Relocation Plan: • Relocation Plans, agreements, letters		• Meet Schedule • Utility Certification
Construction	Review information with utility companies and contractors at pre-construction meeting.	• Construction Plans with Utility Sheets	• Utilities relocations on Utilities sheets	• No construction delay • Increase job site safety

Utility Conflict Management (UCM) Matrix

PROJECT ID: **P039168**
Project Name:
Description:
Route/Highway:
811 Ticket Submitted:

COUNTY:
Developed By:
Date Last Update:
UT Deliverable DUE date:
USACE Permit DUE date:

Scroll right to see attachments >>>

**due date for utility relocation alignment & construction methods for those utility relocations being included in SCDOTs Permits*

Utility / Contact	Utility Type	Size & Material	General Location	Prior Rights Y/N	Utility Clearance Requirements / Constraints	Utility Conflict Description	SUE Req'd Y/N	Potential Resolution of Conflict	Deliverable	Anticipated Submittal Date	Relocation Work Schedule	USACE Permit Req'd Y/N	ROW Phase Req'd Y/N	In Contract Work Y/N	Utility Window Req'd Y/N	Special Provision Req'd Y/N	Resolution Status Notes

Field / Column	Description
Utility / Contact	*Name of Utility Owner and/or Point of Contact who has responsibility for the utility facility located within the project*
Utility Type	*Type of Utility Facilit, see drop down list*
Size & Material	*Size of Utility and/or material of utility facility, example 8" PVC*
General Location	*General description of the location of the utility facility on the termini of the project either using stations or milepoints*
Prior Rights Y/N	*Estimation or Determination of Prior Rights for the Utility Facility (Does Utility have an underlying property interest at location*
Utility Clearance Requirements/Constraints	*Description of any vertical or horizantal clearances required for the utility facility and/or constraints on location or relocation*
Utility Conflict Description	*Description of the potential utility conflict with proposed roadway and/or roadway appertenances or construction activities*
SUE Required Y/N	*Determination of whether additional SUE data collection is reccomended in order to get more precision on utility location*
Potential Resolution of Conflict	*Description of the potential resolution/solution (adjust design, protect, relocate)or the next step to resolve a utility conflict*
Deliverable	*The type of utility documentation that will be required as a deliverable in order to confirm the utility coordination resolution*
Anticipated Submittal Date	*Anticipated submittal date of the utility documentation deliverable as indicated by the Utility Owner*
Relocation Work Schedule	*Estimated date of proposed utility relocation work to occur including utility relocation work initiation date and duration of utility construction*
USACE Permit Required Y/N	*Determination of whether a USACE permit for impact to wetlands will be required for the utility construction activities*
ROW Phase Required Y/N	*Determination of whether a ROW phase of work would be required for the Utility to secure property on which to relocate their utility*
In Contract Work Y/N	*Determination of whether the utility owner would like to include the proposed Utility Relocation work in SCDOT's construction contract*
Utility Window Required Y/N	*Determination of whether the utility owner would like to have SCDOT include a Utility Window in the SCDOT construction contract (Note requested time frame in the notes section)*
Special Provision Required Y/N	*Determination of whether the utility owner has provided or requested a special provision relating to the utility facility construction needs to be outlined in the proposal*

Individual Utility Detailed Conflict Management Report

POTENTIAL CONFLICT LOCATION						OFFSET		CONFLICTS		UTILITY				Conflict Description	Resolution/Action	REQUIREMENTS	
Location	Start Station	End Station	Plan Sheet Reference	Utility Investigation Level Needed	Test Hole #	Distance (feet)	Side	Roadway Item in Conflict	Utility Item in Conflict	Invert Elevation	Top of Pipe	Depth (ft)	Side	GREEN - No Conflict BLACK - Borderline within 1 ft RED - Confirmed Conflict	BLUE - Adjust Drainage Design ORANGE - Utility Line Adjust/Protect - Utility Line Relocate/Replace	Soft Dig = A	Remarks
														Not Determined	Unresolved		
														Not Determined	Unresolved		
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Utility Conflict Management (UCM) - Analysis of Utility Conflict Resolution Alternatives

Utility Conflict ID	Alternative Number	Alternative Description	Alternative Advantages	Alternative Disadvantages	Impact on Project Delivery Time (Months)	Engineering Cost (Utility)	ROW Cost (Utility)	Direct Cost (Utility)	Engineering Cost (DOT)	Direct Cost (DOT)	Other Costs	Total Cost (Utility)	Total Cost (SCDOT)	Feasibility	Decision

Column	Description
Utility Conflict ID	*Identification for the conflicts as identified for this utility within this resolution analysis*
Alternative Number	*Utility Conflict resolution alternative identification number*
Alternative Description	*Description of the utility conflict resolution alternative*
Alternative Advantages	*Potential advantages associated with the utility conflict resolution alternative*
Alternative Disadvantages	*Potential disadvantages associated with the utility conflict resolution alternative*
Impact on Project Delivery Time (months)	*Total potential impact of the utility conflict resolution alternative on project delivery time*
Engineering Cost (Utility)	*Estimated engineering cost to the utility owner if the utility conflict resolution alternative is selected*
Direct Cost (Utility)	*Estimated direct cost to the utility owner if the utility conflict resolution alternative is selected*
Engineering Cost (SCDOT)	*Estimated engineering cost to the DOT if the utility conflict resolution alternative is selected*
Direct Cost (SCDOT)	*Estimated direct cost to the DOT if the utility conflict resolution alternative is selected*
Other Costs	*Other costs if the utility conflict resolution alternative is selected*
Total Costs	*Sum of all estimated costs*
Feasibility	*Indicator if the utility conflict resolution alternative is feasible or not.*
Decision	*Indicator of the status of the utility conflict resolution alternative, see drop down list.*

Utility Deliverables Outstanding/Action Items

Utility Owner	Relocation Plans	Utility Agreements & Documentation	Buy America Certifications	SCDOT Encroachment Permit	Utility Easement Encroachment Permits	UTILITY PACKAGE COMPLETE	Construction Start	Duration	Comments

SCDOT Final Approval Items:

Encroachment Permits	DATE Approved	Utility Agreements	DATE Approved

Utility Company Deliverables DUE date:

Utility Relocation Construction Timelines

Utility Owner	Lead Time	Total Duration	Total Time	Predecessor Utility (if applicable)	Notification Date	Start Date	Completion Date

* Utility is dependent on another relocation to be completed before they can initiate relocation; other utility identified in the Predecessor Column.

**Set Dates per relocation contract.