### DAY 1 Course Agenda

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

### DAY 2 Course Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM – 8:30 AM</td>
<td>Utility Data Collection / SUE</td>
</tr>
<tr>
<td></td>
<td><strong>Utility Investigations / SUE</strong></td>
</tr>
<tr>
<td>8:30 AM - 8:45 AM</td>
<td>How to Read Utility Sheets</td>
</tr>
<tr>
<td>8:45 AM - 9:30 AM</td>
<td>Selection of Test Hole Locations / Examples</td>
</tr>
<tr>
<td>9:30 AM– 9:45 AM</td>
<td><strong>Morning Break</strong></td>
</tr>
<tr>
<td>9:45 AM – 10:30 AM</td>
<td>Hands-On Activity for SUE decisions</td>
</tr>
<tr>
<td>10:30 AM – 11:00 AM</td>
<td>Presentation of Group Decisions / Discussion</td>
</tr>
<tr>
<td>11:00 PM – 11:30 AM</td>
<td>Environmental Permitting &amp; Utility Relocations</td>
</tr>
<tr>
<td>11:30 AM – 12:00 PM</td>
<td>Constructability Reviews in Utility Coordination</td>
</tr>
<tr>
<td>12:00 PM– 1:00 PM</td>
<td><strong>Lunch Break</strong></td>
</tr>
<tr>
<td>1:00 PM – 1:30 PM</td>
<td>Utility Certifications</td>
</tr>
<tr>
<td>1:30 PM - 2:15PM</td>
<td>Hands-On Utility Conflict Management</td>
</tr>
<tr>
<td>2:15PM– 2:30PM</td>
<td><strong>Afternoon break</strong></td>
</tr>
<tr>
<td>2:30 PM–3:30 PM</td>
<td>Presentation of Group Decisions / Discussion</td>
</tr>
<tr>
<td>3:30 PM - 4:00 PM</td>
<td><strong>Wrap Up</strong></td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS

COURSE OVERVIEW ........................................................................................................... 5

UTILITY CONFLICT CONCEPTS ......................................................................................... 7
  SCDOT Project Development Process ........................................................................ 24
  Utility Coordination Process ...................................................................................... 25
  Utility Company Process ............................................................................................. 36

UTILITY ACCOMMODATIONS POLICY .............................................................................. 46
  Prior Rights ................................................................................................................ 59
  Risks & Opportunities ................................................................................................. 62
  Lessons Learned .......................................................................................................... 64

UTILITY CONFLICT IDENTIFICATION & MANAGEMENT ................................................. 66
  Identification of Utility Conflicts ................................................................................ 66
  Utility Coordination BMPs .......................................................................................... 70
  Utility Coordination Tools .......................................................................................... 73
    Utility Conflict Management Matrix ..................................................................... 74
    Utility Company Checklist ...................................................................................... 78
    Cross Section Exhibits ........................................................................................... 79
    When to Utilize Tools in the Process ....................................................................... 81

UTILITY COORDINATION PLANS & REPORTS ................................................................. 86
  Preliminary Utility Reports ......................................................................................... 87
  Utility Coordination Strategy ...................................................................................... 88
  Final Utility Reports .................................................................................................. 89
  Using Consultants for Utility Coordination ................................................................ 91

UTILITY DATA COLLECTION - SUE ............................................................................... 95
  Utility Investigations .................................................................................................. 96
  SUE Quality Levels ................................................................................................... 98
  How to Read Utility Sheets ....................................................................................... 108
  Selection of Test Holes ............................................................................................. 111

ENVIRONMENTAL PERMITTING & UTILITY RELOCATIONS ......................................... 117

CONSTRUCTABILITY REVIEWS ....................................................................................... 129

UTILITY CERTIFICATIONS ............................................................................................... 136

UTILITY QUICK REFERENCE HANDBOOKS ................................................................ 142

UTILITY EXERCISES ....................................................................................................... 157
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

Early 2016: Formation of SCDOT Utility Committee

Late 2016: SCDOT Awarded SHRP2 Grant for R15B Utility Coordination

Early 2017: SHRP2 Identifying and Managing Utility Conflicts Workshop

Mid 2017: SCDOT development of Utility Coordination Training Materials

Now: SCDOT Training and Final Manual Revisions

SHRP2

R15B Research Findings
SHRP2 R15B Products

Product 1: Compact, standalone UCM
- Low number of data items
- Spreadsheet (MS Excel)

Product 3: One-day UCM training course

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
Course Overview

Day 1

8:30 AM - 9:00 AM  Introductions and Course Overview
9:00 AM - 10:15 AM  Utility Conflict Concepts
10:15 AM - 10:30 AM  Morning Break
10:30 AM - 11:15 AM  SCDOT Project Development Process Overview
11:15 AM - 12:00 PM  Utility Coordination Process Overview
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
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

Course Overview

Day 2

8:30 AM - 9:30 AM  Utility Data Collection / SUE
9:30 AM - 9:45 AM  How to Read Utility Sheets
9:45 AM - 10:15 AM  Selection of Test Hole Locations / Examples
10:15 AM - 10:30 AM  Morning Break
10:30 AM - 11:15 AM  Hands-On Activity for SUE decisions
11:15 AM - 12:00 PM  Presentation of Group Decisions / Discussion
12:00 PM - 1:00 PM  Lunch Break
1:00 PM - 2:00 PM  Environmental Permitting & Utility Relocations
2:00 PM - 2:20 PM  Constructability Reviews in Utility Coordination
2:20 PM - 2:45 PM  Utility Certifications
2:45 PM - 3:00 PM  Afternoon Break
3:00 PM - 3:30 PM  Hands-On Utility Conflict Management
3:30 PM - 4:00 PM  Presentation of Group Decisions / Discussion
4:00 PM - 4:30 PM  Wrap Up
Training Objectives

Utility Coordination in the Project Delivery Process

Early Utility Coordination Practices & BMPs

Using Utility Conflict Management Matrices

Communication Tools & Conflict Resolution Strategies

Improve Communication with Utility Partners

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
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**

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!*
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
- 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

Plan View

Profile View

Grading cut section
Right of Way Line
Field approach fill
Drainage pipe
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

Planned 42” storm sewer main trunk line, type “B” drop inlets

Redesigned 42” storm sewer main trunk line, type “S” drop inlets
Redesign of Storm Sewer Main

Type B
(main trunk under curb & gutter)

Type S
(main trunk under sidewalk)

42” storm sewer

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

Approximate centerline of planned drainage ditch

Recommended Redesign

Electric cabinet and cables

Grading cut section

Vertical wall

Profile View
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
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!
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

Current Project Development Process

Where does Utility Coordination occur?
Utility Coordination Process

Overview

What Is Utility Coordination?
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
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

<table>
<thead>
<tr>
<th>Planning and Programming</th>
<th>Preliminary Design</th>
<th>Highway Design</th>
<th>Letting</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>30%</strong></td>
<td></td>
<td><strong>60%</strong></td>
<td></td>
<td><strong>90%</strong></td>
</tr>
<tr>
<td>Conduct preliminary utility investigations for avoidance</td>
<td></td>
<td>Conduct detailed utility investigations for avoidance and minimization of conflicts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordinate utility relocation or engineering with utilities &amp; DOT</td>
<td></td>
<td>Prepare and execute utility agreements including right-of-way plans</td>
<td></td>
<td>Utility Certification</td>
</tr>
<tr>
<td>Monitor utility relocations and reimburse utility owners</td>
<td></td>
<td>Utility Relocation &amp; Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility Project Coordination &amp; Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Award, Monitor, &amp; Final Mitigation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>30%</strong></td>
<td></td>
<td><strong>60%</strong></td>
<td></td>
<td><strong>90%</strong></td>
</tr>
</tbody>
</table>
Utility Coordination Process Quick Reference Diagram

1. **PROJECT INITIATION AND SCOPE**
   - Develop list of Utility Owners and Critical Utilities (PSC P11)
   - Project Scoping Meeting (PMO)
   - Generation/Coordination Matrix

2. **PROJECT INTRODUCTION**
   - Request Utility Records

3. **SURVEY / SUE**
   - Site Investigation SUE Decision Diagram: Request Utility Records

4. **PROJECT REVIEW**
   - Alternatives Analysis
   - Environmental Design (EAD)
   - Preliminary Utility Installation Coordination Discussion

5. **EARLY COORDINATION DURING DESIGN PHASE (AT6)**
   - Design, Field Review (PFRC)
   - Environmental Permitting
   - Project Utility Interface

6. **FINAL COORDINATION DURING NEW EB6 (MITIGATE IMPACTS)**
   - EOH Plans and Utility Coordination
   - Notify Utility company of proposed relocation with sufficient plans to design their relocation/adjustment

7. **PLANS SPECIFICATIONS & ESTIMATES FINAL CONTRACT REVIEW**
   - Utility overhead due to 6 months Prior to Bid Opening, if utilities are included in SCDOT contract
   - Utility utilities are reviewed prior to the final plans submitted
   - Utility Interface Information
   - Utility Special Provisions

8. **PUBLIC NOTICE AND ADVERTISING**
   - Include detailed drawings, specifications, schedules, cost estimates, and a list of minimum 3 contractors
   - Utility companies have used in the past
   - Environmental Impact Statement

9. **PROJECT CONSTRUCTION**
   - Contractor must submit bid documents to utilities for approval to proceed with construction
   - Submit utility companies and their contractors to pre-bid conference and regular utility progress meetings

---

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)**
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

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

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

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
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

Utility Company Process Quick Reference Diagram

1. PROJECT INITIATION AND SCOPE
   - SCDDOT notifies utility company of project
   - Convene with SCDDOT
   - Design Team to name project

2. RESOURCE AcQUIEST
   - Design Staff Assignment
   - Design Coordination Plan

3. PRIOR RIGHT RESEARCH
   - Conduct Research on utilities

4. SURVEY INCL.
   - Survey utility rights of way
   - 6-8 weeks
   - 3-5 months

5. UTILITY RELOCATION DESIGN
   - Develop utility relocation plan
   - Depending on complexity

6. ENVIRONMENTAL PERMITTING
   - Depending on impacts

7. ROBOT TECHNICAL REVIEW OF UTILITY RIGHTS OF WAY PLAN
   - 15-30 days

8. SUBMISSION OF FINAL RELOCATION PLANS & UTILITY RIGHTS OF WAY PLAN TO SCDDOT FOR APPROVAL
   - 30 days

9. RIGHT OF WAY RELOCATION (IF NEEDED) - Prepping for active utility projects
   - 3-5 months

10. MANUFACTURE / CONTRACT FOR MATERIALS
    - 2-6 weeks

11. CONSTRUCTION WORK ORDER
    - Define scope to include data for utility relocation
    - 3-6 weeks

12. NOTIFY ROBOT OF UTILITY REROUTE
    - Notify utility relocation

13. CONSTRUCTION OF UTILITY REROUTE
    - Construction on utility type and complexity
    - Typically 60-90 days

14. UTILITY RELOCATION 
    - 1 week to 4 weeks

15. ATTENDS SCDDOT PROJECT PRE-CONSTRUCTION CONFERENCE
    - Hosts SCDDOT and contractor of utility relocation
    - Mark near utility relocations in as needed by SCDDOT

16. PROJECT CONSTRUCTION
    - SCDDOT
    - Hosts regular SCDDOT and contract
    - Meetings for updates on
    - Contractors' status
    - Weekly updates on
    - Utility relocations

**Project Initiation & Scoping**

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

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

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

3–12 months

Environmental Permitting

• Depending on impacts

3–12 months
SCDOT Technical Review of Utility Relocation Plans

- 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

- 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_

<table>
<thead>
<tr>
<th>Step</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>3 – 12 months</td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>Step</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>2 – 8 months</td>
</tr>
</tbody>
</table>
**Construction Work Order**

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

6 – 8 weeks

**Notify SCDOT of Utility Relocation Construction Initiation**

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

Overlapping
Construction of Utility Relocation

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

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

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

Project Construction

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

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

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
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
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

Changes in 2017 Manual

Overview of New Chapters added to the Manual
### TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Application</td>
</tr>
<tr>
<td>02</td>
<td>Roles and Responsibilities <strong>NEW!!!</strong></td>
</tr>
<tr>
<td>03</td>
<td>Utility Communication &amp; Coordination Procedures <strong>NEW!!!</strong></td>
</tr>
<tr>
<td>04</td>
<td>SUE <strong>NEW!!!</strong></td>
</tr>
<tr>
<td>05</td>
<td>Insurance Requirements</td>
</tr>
<tr>
<td>06</td>
<td>Utility Accommodation Controls &amp; Standards</td>
</tr>
<tr>
<td>07</td>
<td>Real Estate Involvement in Utility Relocations <strong>NEW!!!</strong></td>
</tr>
<tr>
<td>08</td>
<td>Environmental Permits <strong>NEW!!!</strong></td>
</tr>
<tr>
<td>09</td>
<td>Preparation of Utility Relocation Plans <strong>NEW!!!</strong></td>
</tr>
<tr>
<td>10</td>
<td>Utility Construction Coordination</td>
</tr>
<tr>
<td>11</td>
<td>Utility Agreements</td>
</tr>
<tr>
<td>12</td>
<td>Utility Relocation Work in Highway Contracts <strong>NEW!!!</strong></td>
</tr>
<tr>
<td>13</td>
<td>Encroachment Permits</td>
</tr>
<tr>
<td>14</td>
<td>Utility Certifications <strong>NEW!!!</strong></td>
</tr>
</tbody>
</table>
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)
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

What’s the plan?
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

MADe IN U.S.A.
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

#### Meetings
- **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

#### Constraints
- Establish utility company constraints **EARLY**
- Reduce the constraints to a minimum distance acceptable to all parties
- Document constraints
- Discuss constraints during constructability reviews

#### Scheduling
- 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

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
Utility Conflict Identification and Management

Identification of Utility Conflicts

AGENDA

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

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!*
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

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
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

Best Practices Quick Reference

First Steps
- Project Introduction Letter to Utilities
- Communicate early, effectively, and often
- Identify utility 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/benefit
  - 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
- Constructability reviews throughout 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 areas
- Drainage/ecosystem
- Overhead obstructions
- Ground modifications
- 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
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

Utility Coordination Tools
UCM Spreadsheet & Utility Coordination Checklists
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

Utility Conflict Management Matrix Components:
Utility Coordination Milestone Checklist

- 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*
Utility Conflict Management Matrix Components:

**UCM Matrix Summary Sheet**

- 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 - Analysis of Conflict Resolution Alternatives**

- 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.*

---

<table>
<thead>
<tr>
<th>Utility Conflict Management (UCM) - Analysis of Utility Conflict Resolution Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Example</td>
</tr>
</tbody>
</table>
Utility Conflict Management Matrix Components:
Utility Deliverables Outstanding/Action Items Worksheet

- 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

- 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**

- 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 at 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.
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.

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

SCDOT Utility Coordination Process: Stage 1

<table>
<thead>
<tr>
<th>PLANNING AND PROGRAMMING</th>
<th>PRELIMINARY DESIGN</th>
<th>HIGHWAY DESIGN 30%</th>
<th>60%</th>
<th>90%</th>
<th>LETTING</th>
<th>CONSTRUCTION</th>
</tr>
</thead>
</table>
| Utility Coordination Checklist | Conduct preliminary utility investigations for Avoidance | Conduct detailed utility investigations for Avoidance and Minimization of Conflicts | Coordinate utility relocation plans, finalize utility agreements | Monitor utility relocations and reimburse utility owners | Utility Relocation & Construction | Utility Project Coordination & Management
| 30% 60% 90% | 30% 60% 90% | 30% 60% 90% | 30% 60% 90% | 30% 60% 90% | 30% 60% 90% | 30% 60% 90% | 30% 60% 90% |

UCM 1
SCDOT Utility Coordination Process: Stage 4

SCDOT Utility Coordination Process: Stage 5
SCDOT Utility Coordination Process: Stage 6

**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
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?
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

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)
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
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**.
**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?
Utility Data Collection / SUE

Utility Investigations and Mapping

Topics Covered in this session

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

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.
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).


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.”
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

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.

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
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

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)
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

Example of Energy Tunnel Record Drawings on South Main Street
Field Surveyed Energy Tunnel showing discrepancy with record drawings

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).
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
How to Read Utility Sheets
SUE Legend and Notes Sheet

How to read Utility Sheets
Title & Reference Sheet
How to Read Utility Sheets

SUE Planimetry Sheet

How to Read Utility Sheets

Utility & Pole Data Sheet
Selection of Test Hole Locations
Example Project: Intersection Improvement (Firetower Road)

Selection of Test Hole Locations
GIS map from City
Selection of Test Hole Locations
SUE Quality Level B

QLB data superimposed onto aerial photograph
Selection of Test Hole Locations.
Proposed Storm Drainage Locations

Selection of Test Hole Locations
SUE QLB referenced to Design Drawing
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

How to Read a Test Hole Report

<table>
<thead>
<tr>
<th>TEST HOLE CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>REQUESTED</td>
</tr>
<tr>
<td>TEL</td>
</tr>
<tr>
<td>SIZE</td>
</tr>
<tr>
<td>16”</td>
</tr>
<tr>
<td>FOUND</td>
</tr>
<tr>
<td>TEL</td>
</tr>
<tr>
<td>SIZE</td>
</tr>
<tr>
<td>16”</td>
</tr>
</tbody>
</table>

PIPE OD IN INCHES
UTILITY IN TEST HOLE AGREES WITH REQUEST
YES | NO
IF NO, EXPLAIN

GENERAL CONDITIONS

UTILITY | GOOD | FAIR | POOR | COLOR |
PAVEMENT | GOOD | FAIR | NA | THICKNESS |
SOIL | NORMAL | HARD | WET | MOIST | DRY | ROCKY |
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?
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
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

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)

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
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**

1. Environmental Studies and Final ROW Plans
2. Submit Joint Permit Application to USACE and SCDHEC
3. 30-Day Public Notice
4. Agency Review and Coordination
5. Permit Issuance; Mitigation Plan Implementation

**SCDOT General Permit**

1. Environmental Studies and Final ROW Plans
2. Submit Pre-Construction Notification to USACE and SCDHEC
3. Agency Review and Coordination
4. Permit Issuance; Mitigation Plan Implementation

Impact Threshold = Varies
### 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.**

---

#### Section 401/404 - SCDOT General Permit


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

Utility Company obtains Permits

1. Utility provides SCDOT with permitting schedule
2. Utility obtains their own environmental permits
3. Utility provides proof of valid permit for SCDOT review
4. Work cannot begin until SCDOT encroachment permit and No Cost Relocation Letters are issued
Utility Permitting Process

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

Impact Threshold = ½ Acre of Waters of the US

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

Utility Considerations in ROW
Contact and Coordination
Early and Often
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
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)

<table>
<thead>
<tr>
<th>Planning and Programming</th>
<th>Preliminary Design</th>
<th>Highway Design</th>
<th>Letting</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct preliminary utility investigations for Avoidance</td>
<td>Conduct detailed utility investigations for Avoidance and Minimization of Conflicts</td>
<td>Coordinate utility relocation, design &amp; coordination with utilities &amp; DOT</td>
<td>Prepare and execute utility agreements including final relocation plans</td>
<td>Utility Certification</td>
</tr>
</tbody>
</table>
Utility & Railroad Certifications
Requirements

Certification that Utility & Railroad Coordination is COMPLETE

Implemented October 2016
No Certification = No Letting

<table>
<thead>
<tr>
<th>Certification of Utility and Railroad Coordination for Federally Funded Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project ID Number:</td>
</tr>
<tr>
<td>Project Description/Route/Location:</td>
</tr>
<tr>
<td>I. Utility Coordination/Permitting:</td>
</tr>
<tr>
<td>☐ Utility coordination/permitting is required for this highway project (utility conflicts)</td>
</tr>
<tr>
<td>☐ Utility coordination/permitting has been completed and properly documented</td>
</tr>
</tbody>
</table>

Utility coordination has been determined to be non-finite, to complete the required utility coordination in advance of this highway project, utility interests shall be carried out concurrently with the highway project and/or appropriate notification has been included in the highway contract proposal comments: |
| Certified by: | Date: |

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: |

III. Railroad/Highway Crossovers: |
| ☐ 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 not provided for by the right-of-way and grade |

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

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
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**
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?
Wrap Up

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

Were there any topics that you felt were not 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!
### 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
- **Constructability** reviews throughout the design process
- **Relocation** staging (who goes in first and where)

### Review
- **Review** Traffic Control Plans
- **Review** Traffic Signal Plans
- **Review** Lighting Plans
- **Review** Landscaping Plans
- **Review** temporary work-a-rounds
- **Review** drainage/excavation
- **Review** overhead crane areas
- **Review** ground modifications
- **Review** fill and cut sections for utility installations
- **Review** OSHA areas
- **Review** 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
<table>
<thead>
<tr>
<th>#</th>
<th>Task</th>
<th>Responsible Party</th>
<th>Target Date</th>
<th>Complete</th>
<th>Date Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Project Programmed in P2S</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pull Utility Inventory from SC 811 / Desktop Google Earth scoping of Utilities</td>
<td>DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Submit Design Ticket with SC811 to mark Utilities in the field for Scoping Meeting</td>
<td>DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Initial Field Scoping Meeting / Coordinate SUE determination w/ DM, UC &amp; RCE</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Verify Utilities in the Field - Add to Scope</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Consult with State Utility Engineer to identify major/complex utility issues</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Set Up Utility Coordination Plan and/or Consultant Scope</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Set up Initial Utility Conflict Management Spreadsheet (UCM) on Projectwise</td>
<td>DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Request that UC request Major Utility Plans and/or Records</td>
<td>DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Prepare SUE Determination Memo &amp; Establish Planning Level Utility Budget</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Prepare and Distribute Project Scope, Schedule &amp; Budget</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>State Utility Engineer sends all Utility Companies a Project Introduction letter (assign Point of Contact/UC/Consultant/PM)</td>
<td>State Utility Engineer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Submit SUE and Survey Request to Surveys (determine if special requests for survey gas markers or man hole depths should be included)</td>
<td>DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Review Survey &amp; SUE files; Update UCM</td>
<td>DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Request additional information from Utility Company through UC, if necessary</td>
<td>DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Coordinate with State Utility Engineer for Estimated Costs of Utility Impacts</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Provide preliminary utility impacts/costs in the NEPA Alternatives Analysis</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Consider UT impacts in the Alternatives Analysis; AVOID impacts if possible</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Review Preliminary Plans with DM for Potential Conflicts &amp; Update UCM</td>
<td>PM/DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Design Field Review (DFR); consider UC inviting major utilities with impacts</td>
<td>PM/DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Explore protective alternatives. Determine whether any utility work would impact/involve environmental permits.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Coordinate with ESU 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)</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>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.)</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>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.</td>
<td>UC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Update UCM and Utility Coordination Plan. Determine if any utility companies will be included in construction contract work and/or permits.</td>
<td>PM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>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.</td>
<td>DM</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>UC</td>
<td></td>
</tr>
</tbody>
</table>

29 Secure all final utility deliverables at least 150 days prior to LET date.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>UC</td>
<td></td>
</tr>
</tbody>
</table>

30 Coordinate review of final relocation plans, agreements & permits.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>UC</td>
<td></td>
</tr>
</tbody>
</table>

31 Submit final packages to State Utility Engineer for Final Review & Approval.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>UC</td>
<td></td>
</tr>
</tbody>
</table>

32 Coordinate with **PM** for recommendation and preparation of Utility & Railroad Certification.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>State Utility Engineer</td>
<td></td>
</tr>
</tbody>
</table>

33 Utility Ready to Construct. Utility Certification Signed.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>State Utility Engineer</td>
<td></td>
</tr>
</tbody>
</table>

*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
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)

<table>
<thead>
<tr>
<th>UT located in Project Termini:</th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
<th>Vertical Clearance for Utility:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utility Type:</td>
<td></td>
<td></td>
<td></td>
<td>Horizontal Clearance Req’d:</td>
</tr>
<tr>
<td>General Utility Location:</td>
<td></td>
<td></td>
<td></td>
<td>Potential Relocation Placement:</td>
</tr>
<tr>
<td>Utility Material:</td>
<td></td>
<td></td>
<td></td>
<td>UT ROW Phase Req’d:</td>
</tr>
<tr>
<td>UT Material:</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Utility Size:</td>
<td></td>
<td></td>
<td></td>
<td>Environmental Permit Req’d:</td>
</tr>
<tr>
<td>Prior Rights:</td>
<td>Yes</td>
<td>No</td>
<td>Unknown</td>
<td>Ballpark Relocation Costs:</td>
</tr>
<tr>
<td>Utility Conflicts with Project:</td>
<td>Yes</td>
<td>No</td>
<td>Unknown</td>
<td>Relocation Schedule (include design, ROW, Permit &amp; CON):</td>
</tr>
</tbody>
</table>

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:
  - 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
   
   Duration: 1-2 weeks

2. RESOURCE STRATEGY
   - Design Staff Assignment or
   - Design Consultant Procurement
   
   Duration: 6-8 weeks

3. PRIOR RIGHTS RESEARCH
   
   Duration: 3-12 months

4. SURVEY/SUE
   
   Duration: 3-12 months

5. UTILITY RELOCATION DESIGN
   - Depending on complexity of design
   
   Duration: 15 - 30 days

6. ENVIRONMENTAL PERMITTING
   - Depending on impacts
   
   Duration: 30 days

7. SCDOT TECHNICAL REVIEW OF UTILITY RELOCATION PLANS
   - Encroachment Permit Application included for relocations proposed within SCDOT ROW
   
   Duration: 3-12 months

8. SUBMITTAL OF FINAL RELOCATION PLANS & UTILITY AGREEMENTS TO SCDOT FOR APPROVAL
   
   Duration: 3-12 months

9. RIGHT OF WAY ACQUISITION (IF NECESSARY)
   - Depending on number of tracts
   
   Duration: 6-8 weeks

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
    
    Duration: 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
    
    Duration: 1 week to 2 years

12. NOTIFY SCDOT OF UTILITY RELOCATION CONSTRUCTION INITIATION
    
    Duration: 15 - 30 days

13. CONSTRUCTION OF UTILITY RELOCATION
    - Depending on utility type and complexity of utility relocation
    
    Duration: 30 days

14. INSPECT UTILITY RELOCATION FOR COMPLIANCE & SUBMIT REIMBURSEMENT
    - Notify SCDOT of change orders as they occur
    
    Duration: 3-12 months

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.
    
    Duration: 6-8 weeks

16. PROJECT CONSTRUCTION
    - SC 811 Ticket
    - Attend Regular SCDOT Project Progress Meetings as necessary during construction while utility relocations are ongoing.
    
    Duration: 3-12 months
<table>
<thead>
<tr>
<th>Step</th>
<th>Process</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td><strong>PROJECT INITIATION AND SCOPING</strong></td>
<td>• Develop List of Utility Owners and Facilities (Contact SC 811) • Project Scoping Meeting (Field) • Establish Utility Coordination Matrix</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td><strong>PROJECT INTRODUCTION LETTER</strong></td>
<td></td>
</tr>
<tr>
<td><strong>3</strong></td>
<td><strong>SURVEY / SUE</strong></td>
<td>• See Associated SUE Decision Diagram • Request Utility Records</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td><strong>PROJECT REVIEW (AVOID IMPACTS)</strong></td>
<td>• Alternatives Analysis • Preliminary Design (30%) • Preliminary Utility Installation/Constructability Discussion</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td><strong>EARLY COORDINATION DURING DESIGN (MINIMIZE IMPACTS)</strong></td>
<td>• Design Field Review (Field) • Environmental Permitting • Preliminary ROW plans • Utility Installation/Constructability Review</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td><strong>FINAL COORDINATION DURING ROW (MITIGATE IMPACTS)</strong></td>
<td>• 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</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td><strong>PLANS SPECIFICATIONS &amp; ESTIMATES FINAL CONTRACT REVIEW</strong></td>
<td>• 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</td>
</tr>
<tr>
<td><strong>8</strong></td>
<td><strong>ADVERTISEMENT AND AWARD</strong></td>
<td>• 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)</td>
</tr>
<tr>
<td><strong>9</strong></td>
<td><strong>PROJECT CONSTRUCTION</strong></td>
<td>• 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.</td>
</tr>
</tbody>
</table>
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 recalls 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 Excavating
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:

<table>
<thead>
<tr>
<th>Project Development Phase</th>
<th>% Design Complete</th>
<th>SUE Quality Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conceptual/Scoping</td>
<td>0-10%</td>
<td>D or SC811 Survey</td>
</tr>
<tr>
<td>Preliminary Plans</td>
<td>10-30%</td>
<td>C/B/A</td>
</tr>
<tr>
<td>ROW Plans</td>
<td>30-60%</td>
<td>A</td>
</tr>
<tr>
<td>Final Design</td>
<td>60-70%</td>
<td>A</td>
</tr>
<tr>
<td>Construction Plans</td>
<td>70-90%</td>
<td>A</td>
</tr>
</tbody>
</table>
Using SUE for Utility Coordination
The following demonstrates what level of SUE information should be utilized at each stage in the Project Development Process:

<table>
<thead>
<tr>
<th>Stage of Project</th>
<th>SUE Information Utilized</th>
<th>Additional Option</th>
<th>Utility Coordination Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Initiation &amp; Scoping</td>
<td>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.</td>
<td>811 Utility Inventory Utility Records Utility Conflict Matrix Utilities marked in field</td>
<td>Confirm Inventory Avoid – Consider Utilities in alternative alignment analysis</td>
</tr>
<tr>
<td>Surveys</td>
<td>Document SUE recommendations and initiate SUE consultant contracts. Utilize the Survey and SUE information to estimate whether significant utility impacts are anticipated.</td>
<td>Visible Features Utility 811 Design Ticket Survey Utilities marked in field Pull manhole depths and connectivity</td>
<td>Increase accuracy of Utilities information</td>
</tr>
<tr>
<td>Preliminary Design</td>
<td>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.</td>
<td>Utility Survey/Data Utility Conflict Matrix Jurisdictional Areas Utilities pot holes in field SUE consultant test hole data</td>
<td>Minimize Utilities conflicts with design adjustments Determine Environmental Permit Requirement</td>
</tr>
<tr>
<td>Design Field Review</td>
<td>Review conflicts in the field and explore any further design alterations or utility protections/reinforcements to AVOID or MINIMIZE conflicts.</td>
<td>Data reviewed in field</td>
<td>Invite Utilities to DFR Confirm conflicts Minimize Utilities conflicts Utilities relocation delivery</td>
</tr>
<tr>
<td>Preliminary ROW Plans</td>
<td>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.</td>
<td>SUE Utilities Sheets Utility Conflict Tables Environmental Permit Requirements Plan &amp; Profile Utilities conflict Exhibits Include Utilities in permits</td>
<td>Confirm conflicts Protection alternatives Minimize Utilities conflicts Permitting Method Constructability/ Installation Review</td>
</tr>
<tr>
<td>Final Design</td>
<td>Utility plan sheets (U-Sheets) incorporated into final plans. MITIGATE any final conflicts, review and finalize utility deliverables (plans, permits, agreements, letter, PS&amp;E, etc.).</td>
<td>Utility Conflict Matrix</td>
<td>Include Utilities in contract Establish Utilities window Utilities Special Provisions Final Utilities packages Assistance to Utilities Adherence to schedule Final Constructability/ Installation Review</td>
</tr>
<tr>
<td>PS&amp;E</td>
<td>All utility deliverables submitted; Utility Certification to be issued. Utility relocations can be added to U-sheets for information only if desired.</td>
<td>Final Utilities Relocation Plan: Relocation Plans, agreements, letters</td>
<td>Meet Schedule Utility Certification</td>
</tr>
<tr>
<td>Construction</td>
<td>Review information with utility companies and contractors at pre-construction meeting.</td>
<td>Construction Plans with Utility Sheets Utilities relocations on Utilities sheets</td>
<td>No construction delay Increase job site safety</td>
</tr>
<tr>
<td>Field / Column</td>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility / Contact</td>
<td>Name of Utility Owner and/or Point of Contact who has responsibility for the utility facility located within the project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility Type</td>
<td>Type of Utility Facility, see drop down list</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size &amp; Material</td>
<td>Size of Utility and/or material of utility facility, example 8&quot; PVC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Location</td>
<td>General description of the location of the utility facility on the termini of the project either using stations or milepoints</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior Rights Y/N</td>
<td>Estimation of Determination of Prior Rights for the Utility Facility (Does Utility have an underlying property interest at location)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility Clearance Requirements/Constraints</td>
<td>Description of any vertical or horizontal clearances required for the utility facility and/or constraints on location or relocation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility Conflict Description</td>
<td>Description of the potential utility conflict with proposed roadway and/or roadway appurtenances or construction activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUE Required Y/N</td>
<td>Determination of whether additional SUE data collection is recommended in order to get more precision on utility location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential Resolution of Conflict</td>
<td>Description of the potential resolution/solution (adjust design, protect, relocate) for the next step to resolve a utility conflict</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deliverable</td>
<td>The type of utility documentation that will be required as a deliverable in order to confirm the utility coordination resolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anticipated Submittal Date</td>
<td>Anticipated submittal date of the utility documentation deliverable as indicated by the Utility Owner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relocation Work Schedule</td>
<td>Estimated date of proposed utility relocation work to occur including utility relocation work initiation date and duration of utility construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USACE Permit Required Y/N</td>
<td>Determination of whether a USACE permit for impact to wetlands will be required for the utility construction activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROW Phase Required Y/N</td>
<td>Determination of whether a ROW phase of work would be required for the Utility to secure property on which to relocate their Utility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Contract Work Y/N</td>
<td>Determination of whether the utility owner would like to include the proposed Utility Relocation work in SCDOT’s construction contract</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility Window Required Y/N</td>
<td>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)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Provision Required Y/N</td>
<td>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</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Utility Conflict Management (UCM) Matrix**

**PROJECT ID:** P039168

<table>
<thead>
<tr>
<th>COUNTY:</th>
</tr>
</thead>
</table>

**Project Name:**

**Description:**

**Route/Highway:**

**811 Ticket Submitted:**

**Scroll right to see attachments >>**

**Project Name:**

**Date Update:**

**DUE date:**

**USACE DUE date:**

**Anticipated Submittal Date:**

**Deliverable:**

**Potential Resolution of Conflict:**

**Resolution Status Notes:**
<table>
<thead>
<tr>
<th>Location</th>
<th>POTENTIAL CONFLICT LOCATION</th>
<th>OFFSET</th>
<th>CONFLICTS</th>
<th>UTILITY</th>
<th>Conflict Description</th>
<th>Resolution/Action</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Determined</td>
<td>Unresolved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Utility Conflict Management (UCM) - Analysis of Utility Conflict Resolution Alternatives

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>Utility Owner</th>
<th>Relocation Plans</th>
<th>Utility Agreements &amp; Documentation</th>
<th>Buy America Certifications</th>
<th>SCDOT Encroachment Permit</th>
<th>Utility Easement Encroachment Permits</th>
<th>UTILITY PACKAGE COMPLETE</th>
<th>Construction Start</th>
<th>Duration</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SCDOT Final Approval Items:

<table>
<thead>
<tr>
<th>Encroachment Permits</th>
<th>DATE Approved</th>
<th>Utility Agreements</th>
<th>DATE Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Utility Company Deliverables DUE date: [Blank]
Utility Relocation Construction Timelines

<table>
<thead>
<tr>
<th>Utility Owner</th>
<th>Lead Time</th>
<th>Total Duration</th>
<th>Total Time</th>
<th>Predecessor Utility (if applicable)</th>
<th>Notification Date</th>
<th>Start Date</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 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.