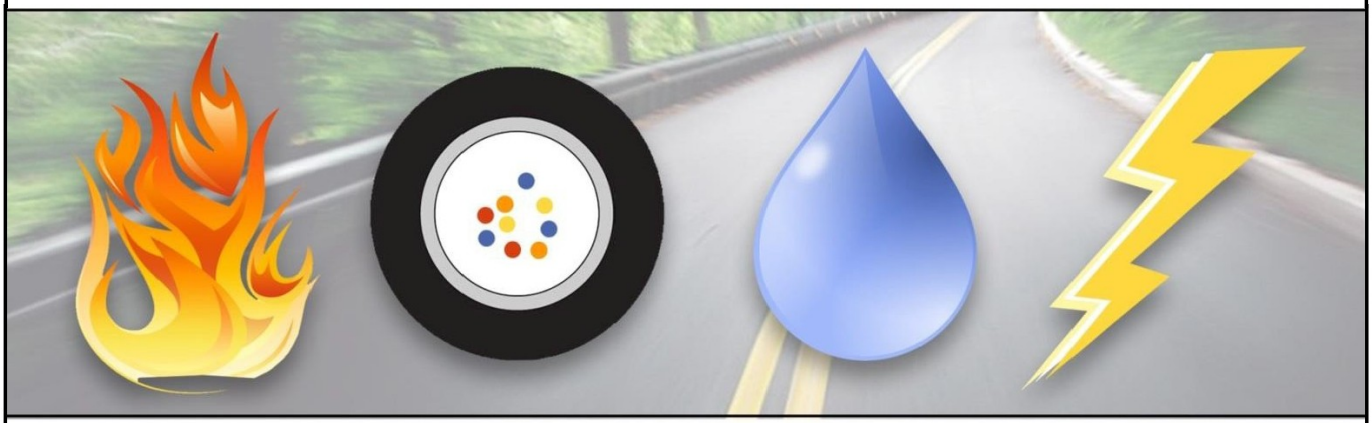
March 2019

UTILITIES ACCOMMODATION MANUAL



A Policy for Accommodating Utilities
on Highway Rights of Way

SCDOT
RIGHTS OF WAY

March 2019

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UTILITIES ACCOMMODATIONS MANUAL

A Policy for Accommodating Utilities
on Highway Rights of Way

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Chapter 1
APPLICATION

1.1 INTRODUCTION

The current Utilities Accommodation Manual (Policy) is established to regulate the location, manner, installation and adjustment of utility facilities on the State Highway System, and also the issuance of permits for such work, in the interest of safety and of protection, utilization, and future development of the highways. Due consideration is given to public service afforded by adequate and economical utility installations as authorized under Titles 57 and 58 of the Code of Laws of South Carolina. While this Policy controls matters concerning future location, manner and methods for the installation or adjustment and maintenance of utilities on highway right-of-way (ROW), it does not alter current regulations pertaining to authority for their installation nor determination of financial responsibilities for placement or adjustment of them. The portions of this Policy pertaining to highways on which there is full control of access conform with and supplement the American Association of State Highway and Transportation Officials Policy entitled "A Policy on the Accommodation of Utilities within Freeway Right-Of-Way" as copyrighted in 1989, and as subsequently modified:

1. No person shall enter upon the ROW of any State road to construct, alter or relocate any utility installation without prior written authorization by the South Carolina Department of Transportation (SCDOT or the Department) except as noted in this Policy. Where laws and orders of public authority, industry or governmental codes prescribe a higher degree of protection than provided by this policy, then the higher degree of protection should prevail.

2. Construction and maintenance operations shall be planned with full regard to safety and meet all applicable OSHA requirements and to keep traffic interference to an absolute minimum. Traffic controls shall conform to the Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways, latest edition. Construction shall comply with the current edition of the South Carolina Department of Transportation Standard Specifications for Highway Construction, latest edition unless otherwise specified herein.

3. On utility relocations or adjustments performed in conjunction with Department construction contracts, the utility companies should coordinate their design and construction activities to minimize conflicts or delays with their work and that of the road contractor. Early notice and coordination between the Department and affected utility organizations is essential and will be promoted. Coordination and cooperation between the utility and road contractor is of utmost importance in the efficient and orderly progress of activities and safety to the motorist.

4. The Department may, at its discretion, change this policy without notice to the utility companies in order to protect the Department's roadway and related facilities.

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1.2 UTILITY LOCATIONS

The Department's preferred location for all longitudinal utility installations within its ROWs is as close to the outside ROWs line as practical and to a minimum cover depth of thirty-six (36) inches from grade. The next option is between the ditch line and the ROW line with a minimum cover of thirty-six (36) inches.

Where longitudinal installations close to the outside ROW line are impractical upon application by the Utility Company, the Department may, at its discretion, allow installations within the designated shoulder area, but to a minimum cover depth of forty-two (42) inches from the top of asphalt.

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1.3 DEFINITION OF TERMS

Actual Crossing Operation: The phase of work authorized by the encroachment permit or Utility Agreement, when the casing or un-cased carrier is being placed within the physical limits prescribed to determine the required casing length as set forth in the Sections for underground installations.

Aerial Encroachment: Where the utility structure or sign extends over the designated right-of-way line. All aerial encroachments will require an encroachment permit from the Department.

Arterial Highway: A general term denoting a highway primarily for through traffic, usually on a continuous route.

Average Daily Traffic: The average 24-hour volume, being the total volume during a stated period divided by the number of days in that period. Unless otherwise stated, the period is a year. The term is commonly abbreviated as ADT.

Backfill: Replacement of suitable soil or material around and over a pipe.

Bedding: Installation of suitable soil or material to support a pipe.

Betterments: 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.

Bury (Cover): Depth to the top of pipe below the lowest point on the roadway cross-section or as otherwise designated.

Business Day: Monday through Friday excluding all Federal and State Holidays.

Cap: A rigid structural element sealing the end of a pipe.

Carrier: Pipe directly enclosing a transmitted fluid (liquid or gas).

Casing: A larger pipe enclosing a carrier.

Clear Roadside Policy: The policy employed by a highway authority to increase safety, improve traffic operation, and enhance the appearance of highways by designing, constructing, and maintaining highway roadsides as wide, flat and rounded as practical and as free as practical from physical obstructions above the ground such as trees, drainage structures, massive sign supports, utility poles, and other ground mounted obstructions as outlined in the Access and Roadside Management Standards (ARMS), latest edition.

Clear zone: The total roadside border area, starting at the edge of the traveled way, available for safe use by errant vehicles. This area may consist of a shoulder, a recoverable slope, a non-recoverable slope, and/or a clear run-out area. The desired width is dependent upon the traffic volumes and speeds and on the roadside geometry. All above ground utilities must be outside of the clear zone. If this is not feasible then the utility should consider the use of break-away poles, moving the pole to the inside of the curve, the installation of guardrail or other accepted methods.

Coating: Material applied to or wrapped around a pipe.

Compaction: Backfill is to be placed in six (6) inch layers or less with each layer being thoroughly and compacted to a density of 95 percent modified Proctor as determined by AASHTO Method T-99.

Communication Lines: Lines and associated equipment for the transmission of intelligence through the use of electrical signals and fiber optics.

Conduit or Duct: An enclosed tubular runway for protecting wires or cables.

Contaminate: To render unfit or to soil by the introduction of foreign or unwanted material.

Control of Access: The condition where the right of owners or occupants of abutting land or other persons to access, light, air, or view in connection with a highway is fully or partially controlled by public authority.

Control of Access, Full: The authority to control access is exercised to give preference to through traffic by providing access connections with selected pubic roads only by prohibiting crossings at grade or direct private driveway connections.

Control of Access, Partial: The authority to control access is exercised to give preference to through traffic to a degree that, in addition to access connections with selected public roads, there may be some crossings at grade and some private driveway connections.

Conventional Highway: A highway primarily for through traffic, usually on a continuous route, without access control.

Cost Estimate for Utility Agreements: A detailed explanation of the cost associated with the relocation project. At a minimum, the estimate should set forth the items of work to be performed, broken down by the estimated costs of direct labor, labor surcharges, overhead and indirect construction charges, detail list of materials and supplies, handling charges, transportation, equipment, right of way, preliminary engineering, construction engineering, legal, salvage credits, betterment credits and accrued depreciation credits.

Cradle: A rigid structural element below and supporting a pipe.

Department: South Carolina Department of Transportation (SCDOT).

Design Build: A process whereby the Department can contract with a firm to accomplish designing and building a transportation facility, under a single contract. The contract may include all rights-of-way and utility functions normally performed by the Department.

Designating: The process of using a surface geophysical method or methods to interpret the presence of a subsurface utility and to mark its approximate horizontal position on the ground surface. (Note: The word “locates” is often used to identify this process.)

Direct Burial: Installing a utility underground without encasement, by mechanical means.

Easement: Is a non-possessory interest one has in the property of another for a specific purpose.

Emergency: A situation or occurrence that develops suddenly and unexpectedly and demanding immediate action, that will affect a reduction in public safety, disruption of utility

service or damage to the Department right-of way. The emergency situation requires use of proper traffic control. The utility should notify the local Resident Maintenance Engineer as soon as possible after the emergency occurs.

Encasement: A methodology which serves one or two purposes. It may be a technique used to provide added protection for either a utility facility or the surrounding environment, by surrounding the utility facility with concrete or a conduit designed to resist potential impacts or loading.

Encroachment: Unauthorized use of highway right-of-way or easements for any purpose not approved by SCDOT by an encroachment permit as for signs, fences, buildings, etc.

Encroachment Permit: Authorized use of highway right-of-way for public utilities installations or easement as for signs, fences, buildings, etc.

Equal Material: Products that perform in an equivalent manner in similar circumstances for an intended application.

Expressway: A divided arterial highway for through traffic with full or partial control of access and generally with grade separations at major intersections.

Facility: Material property that is built installed or established by the utility to serve a particular purpose.

Flexible Pipe: A plastic, fiberglass, or metallic pipe having large ratio of diameter to wall thickness which can be deformed without undue stress.

Flowable Fill: Is a controlled low strength material that can be placed in a self -leveling consistency or in a less flowable state to reduce the fluid pressure exerted by the material. See Section 210 of the South Carolina Construction Manual for specifics on Flowable Fill.

Freeway: An expressway with full control of access.

Frontage Road: A local street or road auxiliary to and located on the side of an arterial highway for service to abutting property and adjacent areas and for control of access.

Gallery: An underpass for two or more pipelines.

Grounded: Electrically connected to earth or to some extended conducting body that serves instead of the earth whether the connection is intentional or accidental.

Grout: A cement mortar consisting of a slurry of fine sand or clay, as conditions govern.

Highway, Street or Road: A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

Horizontal Clearance: Lateral distance from the edge of traveled-way to a roadside object or feature.

Horizontal Directional Drilling (HDD): A steerable trenchless method of installing underground pipes, conduits and cables utilizing a cutting head and pressurized drilling mud along a prescribed bore path by using a surface launched drilling rig, with minimal impact on the

surrounding area. Directional drilling minimizes environmental disruption and is suitable for a variety of soil conditions and jobs including but not limited to road, landscape and river crossings.

Inspector: An authorized representative of the Department's Maintenance or Construction Office and the OMR assigned to make detailed inspections of materials and/or contract performance.

Jack and Bore: A semi-trenchless construction method used to make a crossing beneath highways, railroad tracks, and other challenging obstacles. The Jack and Bore method consists of a rotating cutting head and auger internal to a steel casing that is advanced hydraulically. The internal auger turns to remove soils while the hydraulics advance the casing. Typically an entrance and exit pit must be excavated in order to accommodate the auger and bore equipment.

Joint Use: When collocation occurs on or in a utility facility such as poles, ducts, or trenches, etc.

Jacket: Encasement by concrete poured around a pipe.

Low Volume Road: Is a facility lying outside of built-up areas of cities, towns, and communities, and it shall have a traffic volume less than 400 Average Automotive Daily Traffic as defined in the MUTCD, latest edition.

Lump Sum (Fixed Amount): The issuance of a Utility Agreement in the amount of $25,000 or less for the relocation of a utility company's facilities. No change orders are allowed on these agreements.

Major Highway: An arterial highway with intersections at grade and direct access to abutting property, and on which geometric design and traffic control measures are used to expedite the safe movement of through traffic.

Manhole, Hand Hole, Pull-Hole: An opening in an underground system by which access may be achieved for the purpose of making installations, inspections, repairs, connections and tests.

Maintenance of Traffic: The method by which traffic through a work zone will be handled.

Median: The portion of a divided highway separating the traveled ways for traffic in opposite directions.

MUTCD: Manual on Uniform Traffic Control Devices, latest edition.

No Cost Relocation: Where a utility occupies the rights-of-way by encroachment and are required to move their facilities due to highway construction or at the request of Department.

Non-toneable Material: A material that does not transfer (along its length) traceable signals by means of electromagnetic, magnetic, or elastic wave detection methods.

Normal: Crossing at a right angle (90 degrees).

One-Call: This term is applied to the clearing house designed to prevent damage and disruption of utility services. In South Carolina the one-call service is designated as Palmetto Utility Protection Service, Inc. (PUPS) now doing business as SC 811.

Oblique: Crossing at an acute angle which is generally not allowed on SCDOT roads.

Overfill: Backfill above a pipe.

Parkway: An arterial highway for noncommercial traffic, with full or partial control of access, and usually located within a park or a ribbon of park like developments.

Pavement Structures: The combination of sub-base, base course, binder and surface course placed on a sub-grade designed to carry the anticipated traffic for a specified design period.

Permit Application Package: Encroachment Permit Application and all supporting documentation.

Permittee: An individual, company, or governmental agency authorized to construct and maintain its facilities within right-of-way of South Carolina Department of Transportation; a consultant, developer or contractor performing the work for the utility is not the permittee, unless listed on the permit.

Pipe Ramming (Jacking): A non-steerable system of forming a bore by driving an open-ended casing using a percussive hammer from a pit and only displacing the wall thickness of the casing. The soil will remain in the casing until the bore has been completed and then may be removed by water, auguring, jet cutting or compressed air.

Placed Out of Service (Abandoned): Wording used when a utility is allowed to leave its facilities in place and within the Department's right-of-way after the facility is no longer active. This is allowed only by mutual agreement when immediate removal would cause greater disruption of the public's use of the facility than obstruction by allowing it to remain. Pipelines with a diameter 10 inches or greater will require a flowable fill to abandon in place when removal is not practical. Pipelines less than 10 inches can be abandoned in place; however, flowable fill maybe required depending on the circumstances. All asbestos cement pipelines to be abandoned should be filled with flowable fill.

Pipe: A tubular product made as a production item for sale as such. Cylinders formed from plate rolling during the course of fabrication.

Pole Attachment Agreement: A document that gives a utility company the right to occupy space on a pole owned by another utility company. The utility company occupying the space on the pole must provide to the Department a copy of the attachment agreement and a copy of the easement from the landowner to establish their prior rights or other documents that support their prior rights. If the attachment agreement includes confidential information, the Department will accept a redacted copy. However, the copy must show the section on easements. The legal document granting the easement must clearly show that it predates the Department's right-of-way acquisition.

Pothole: A pothole is similar to a Quality Level A Test Hole and may be excavated using similar techniques; however, a pothole is not certified by a licensed engineer or surveyor, such that pothole data used for design purposes must be assumed to have sufficient accuracy related to the project survey datum.

Pressure: A measurement of relative internal pressure in psig (pounds per square inch gauge).

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 right-of-way acquisition.

Private Utility: A utility that does not meet the requirements of a "Public Utility" as defined below.

Professional Engineer (P.E.): A term used for a registered or licensed engineer who is permitted to offer their professional services directly to the public.

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.

Relining: A process exclusive to the rehabilitation of the inside of pipes and conduits to prevent ground water seepage and to improve the structural integrity/performance of such systems.

Relocation: All work including the adjustment of utility projects either horizontally or vertically associated with a construction project or by utility encroachment when upgrading existing or installing new facilities.

Resident Construction Engineer: The local Department representative acting on the behalf of the Deputy Secretary of Engineering that is responsible for all construction activities on Interstates, primary and secondary roadways within a specific county.

Resident Maintenance Engineer: The local Department representative acting on the behalf of the Deputy Secretary of Engineering that is responsible for the maintenance activities on Interstates, primary and secondary roadways within a specific county.

Rights-of-Way (Right-of Way): A general term denoting land, property, or interest therein, usually in a strip acquired for or devoted to transportation purposes.

Rigid Pipe: A welded or bolted metallic pipe or reinforced, pre-stressed, pre-tensioned concrete pressure pipe designed for diametric deflection of less than 1.0 percent.

Roadside: A general term denoting the area adjoining the outer edge of the roadway. Extensive areas between the roadways of a divided highway may also be considered roadside.

Roadway: The portion of a highway, including shoulders, ditches for vehicular use. A divided highway has two or more roadways.

Routine Maintenance: The regular or normal care and upkeep of facilities.

Safety Rest Area: A roadside area with parking facilities separated from the roadway provided for motorists to stop and rest for short periods. It may include drinking water, toilets, tables and benches, telephones, information, and other facilities for travelers.

Scenic Overlook: A roadside area provided for motorist to stop their vehicles beyond the shoulder, primarily for viewing the scenery in safety.

Semi-Rigid Pipe: A large diameter concrete or metallic pipe designed to tolerate diametric deflection up to 3.0%.

Sidefill: Backfill alongside a pipe.

Slab, Floating: Slab between but not contacting pipe or pavement.

Sleeve: Short casing through pier or abutment of highway structure.

SCDOT: Acronym for the South Carolina Department of Transportation; also referred to as the Department herein.

Standard Specifications for Highway Construction: A text document that provides specifications under which South Carolina roads and bridges will be constructed, inspected and paid for (also referred to as the Standard Specification).

Standards: A standard, also referred to as criteria, is the Department's documented value or range of values, process, specification, or method to be employed, that is intended to be applicable for the majority of conditions and applications for which it is defined, and is based on cost effective and sound engineering judgment.

State Utility Engineer: The individual in charge of promulgating and developing the Department policy and procedures for Utility Accommodation on the Department right-of-way.

Subsurface Utility Engineering: A branch of engineering practice that 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 cost estimates and preparation of final document to contain all cost, original signed Utility Agreement, prior rights information, and relocation sketches.

Traffic Control Plan: Documentation of how a safe flow of traffic will be conducted through an area in which construction or maintenance activities are being performed. Documentation shall include defining all materials, traffic control devices and activities required to accomplish this task.

Traveled Way: The designated widths of roadway pavement, exclusive of shoulders, and marked bicycle lanes, marked to separate opposing traffic or vehicles traveling in the same direction. These lanes include through lanes, auxiliary lanes, turning lanes, passing and climbing lanes. They provide space for passenger cars, trucks, buses, recreational vehicles and in some cases bicycles.

Trenched: Installed in a narrow open excavation.

Trenchless: Installed without breaking ground or pavement surface, such as by jacking or boring, directional drilling among other approaches.

Utility Appurtenances: Any and all features or parts of a utility facility, above or below ground that are installed as a part of the facility, whether primary or secondary to its function.

Vent: Appurtenance to discharge gases and liquids from casings.

Walled: Partially encased by concrete poured alongside the pipe.

Watchman: Person on call to maintain traffic control devices.

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1.4 ACRONYMS

1. ADM. Assistant Design Manger
2. ARMS. Access and Roadside Management Standards
3. CADD. Computer Aided Drafting and Design
4. CFR. Code of Federal Regulation
5. DCE. District Construction Engineer
6. DEA. District Engineering Administrator
7. DFR. Design Field Review
8. DM. Design Manager
9. EPPS. Encroachment Permit Processing System
10. ESA. Environmentally Sensitive Area
11. FHWA. Federal Highway Administration
12. HDD. Horizontal Directional Drilling
13. LPA. Local Public Agency
14. MUTCD. Manual on Uniform Traffic Control Devices
15. NESC. National Electrical Safety Code
16. NPDES. National Pollutant Discharge Elimination System
17. OSHA. Occupation, Safety, and Health Administration
18. PDT. Project Development Team
19. PM. Program Manager
20. PS&E. Plans, Specifications, and Estimate
21. PUPS. Palmetto Utility Protection Service, Inc. (doing business as SC 811)
22. RCE. Resident Construction Engineer
23. RFQ. Request for Qualifications
24. RFP. Request for Proposal
25. RME. Resident Maintenance Engineer
26. ROW. Right-of-Way

27. SCDHEC. South Carolina Department of Health and Environmental Control

28. SCDOT. South Carolina Department of Transportation (the Department)

29. SOQ. Statement of Qualifications

30. SUE. Subsurface Utility Engineering

31. TCP. Traffic Control Plan

32. UCAR. Utility Conflict Analysis & Resolution

33. UCM. Utility Conflict Matrix

Chapter 2

Roles and Responsibilities

SOUTH CAROLINA UTILITES ACCOMMODATION MANUAL

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Chapter 2
ROLES AND RESPONSIBILITIES

The following summary briefly describes the roles and responsibilities of the Project Development Team members involved with Utility Accommodation and Coordination on SCDOT projects. It is critical to the success of these projects that team members involved in this process are committed to fulfilling their roles and responsibilities. The goal in the Utility Coordination Process is to develop an awareness and understanding of utility related issues at each phase of project development that will save money, time and unnecessary utility relocations on SCDOT projects. Each of the roles and responsibilities outlined in this chapter is key to the establishment of successful Utility Coordination, cooperation, communication and commitment vital to SCDOT project delivery. When consultants are utilized for Utility Coordination on projects, the roles and responsibilities of the Utility Coordinator, Program Manager (PM), Design Manager (DM) and Surveys would be assigned to the consultant team. However, the SCDOT Staff in these designations may have some oversight duties on consultant projects and provide technical assistance to the consultant team during the Utility Coordination process.

2.1 FEDERAL HIGHWAY ADMINISTRATION

Title 23 of the United States Code of Federal Regulation governs the Federal-Aid Highway Program. SCDOT is authorized under the Stewardship and Oversight Agreement between Federal Highway Administration (FHWA)-SC Division and the Department to carry out the federal aid transportation program. The agreement outlines the oversight and coordination for the federal-aid utility relocation program. The State Utility Engineer, also referred to as the Utility Engineer herein, will facilitate any required coordination with FHWA as outlined in the Stewardship and Oversight Agreement, the FHWA Projects of Division Interest (PoDI) List or Program Responsibility Matrix, and/or the FHWA PoDI Stewardship and Oversight plan as it relates to utility relocations.

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2.2 UTILITY ENGINEER

The State Utility Engineer or his designee assists in the review, approval, and administration of Utility Agreements for highway and bridge projects. The Utility Engineer is responsible for the following:

- Creates and conveys SCDOT Utility Accommodation policies on SCDOT projects.
- State Utility Engineer or designee to serve on the Project Development Teams for projects located within this region.
- Review utility inventory list for project and determine if corridor has major utility distribution/collector lines and provide information for project scoping.
- Issues Utility Introduction Letters to utility companies located on the project corridor after the project scoping meeting in order to notify utilities of the upcoming project and provide project contact information.
- Coordinate with Project Development Team (PDT) to make recommendations on Subsurface Utility Engineer (SUE) Quality Level for the project.
- Provide guidance to the Project Development Team on the determination of prior rights for utilities located on the project corridor.
- Provides guidance on preliminary utility relocation cost estimates for anticipated impacts for budget considerations.
- Provides direction to utility companies, Department staff, and Department consultants during the design, plans and specifications development, and construction of highway projects.
- Reviews preliminary right of way plans to ensure all needed information for Utility Coordination is included in the plans.
- Processes Utility Agreements with utility companies for relocation and/or adjustment to utilities in conjunction with highway projects for review in the assigned RPG.
- Reviews and provides recommendations to Department staff and utility companies on utility encroachments on Department's right of way.
- Assists the Utility Coordinator and Design Manager with the identification of potential utility conflicts and coordinates with other sections of the department (Program Management, Hydrology, Road Design, SUE, District staff, etc.) on recommended design changes for conflict avoidance solutions.
- Develop a Utility Coordination Schedule for the project and Conduct Utility Coordination meetings.
- Assists in the determination of whether utility relocation impacts should be included in the Department's environmental permits.
- In coordination with the Utility Coordinator, provides recommendations for in-contract utility relocations, coordinates with the utility companies and other sections of the department to implement. Reviews utility company construction plans and special provisions, and approves inclusion in highway contracts. Tracks construction bids for in-contract work, and notifies and receives post letting approval from utility companies as needed.
- Coordinates with SUE consultants regarding identification and location of utilities, as well as Utility Coordination consultants.
- Perform various duties such as preparing correspondence and reports, representing the SCDOT at various meetings regarding utility related issues.
- Final approval authority for all Project Utility Submittals and makes a recommendation to the PM on the Utility Certification.

- Distributes all final approved Utility Agreements and/or relocation sketches to the PM, Utility Companies, etc.
- Coordinates resolution of any outstanding issues with final deliverables with the Utility Company.
- Coordinates payments for utility relocation invoice.

2.3 UTILITY COORDINATOR

The district Utility Coordinator serves as the primary point of contact with the local Utility Companies. The coordinator is responsible for coordinating the relocation, modification or removal of utility facilities that are in conflict on SCDOT projects. The Utility Coordinator responsibilities are as follows:

- Prepares a Utility Coordination Plan for the Project that outlines the Utility Coordination Schedule and Strategy after project scoping
- Schedules the Utility Coordination meetings (coordinate location and issue invitations to the Project Development Team and Utility companies)
- Prepares the agenda, facilitates and records minutes for meetings
- Communicates the project timelines, deadlines and utility deliverable submittal requirements to the Utility companies
- Develops recommendations with the Project Development Team on the need for SUE investigations and Quality Levels
- Coordinates location and clearance requirements for all utility facilities with the project limits and transfers this information into the Utility Coordination Matrix.
- As required by a project's complexity and degree of utility impacts, coordinates and conducts individual meetings with affected utility companies to discuss the impact of the project on the utility. The PM, DM, Utility Engineer and District Construction Engineer (DCE) or designee should be included in these meetings.
- Attends and participate in Scoping Meeting and Design Field Review Meetings for projects to ensure that utility issues are addressed and documented.
- Invites Utility Companies as necessary to scoping meetings, design field reviews, and public information meetings for projects.
- Coordinates with Utility Companies to determine whether environmental permits will be required for the anticipated utility relocations. Secure permitting strategy and schedule for the utility and update in the Utility Coordination Matrix.
- Coordinates review of prior rights information for the Utility in cooperation with the Resident Construction Engineer (RCE) and Utility Engineer. Prior rights determination should be added to the Utility Conflict Matrix once completed.
- Secures all utility relocation plans, specifications, cost estimates, agreements, Encroachment Permits, certification letters, Work Plans, and Schedules from all utilities located within the project limits within the prescribed timeframe established for the project.
- Updates Utility Conflict Matrix with the anticipated deliverable, schedule for submission for each utility on the project.
- Coordinates review of utility relocation plans, agreements, letters and Encroachment Permits.
- Provide recommendation to the PM and Utility Engineer at the prescribed submission deadline as to whether all foreseeable utility conflicts are resolved and all deliverables have been completed with arrangements made for utility relocation work schedule.
- Attends Construction Pre-Bid and Pre-Construction conferences to communicate utility issues to the Design and Construction Team as needed to facilitate bidding and construction.

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2.4 PROGRAM MANAGER

The Program Manager (PM) is the project leader and will lead the Project Development Team throughout the project development process to completion. PM responsibilities in the accommodations and coordination of utilities on SCDOT projects include the following:

- Programs Project Funding and provides charge codes as necessary for the project to include Preliminary Engineering and utility funding.
- Establishes the Project Development Team and notifies the team of the project's scoping and initiation.
- Conducts the Project Scoping Meeting and establishes the final scope, purpose and need for the project.
- Coordinates with PDT to determine what additional utility information is required for the project and submits detailed requests for information to the Utility Coordinator for coordination with the Utility Companies.
- Coordinates with the PDT to determine whether advanced SUE consultant services are required and Quality Level desired.
- Issues SUE determination and justification memo to PDT for project.
- Establishes Project Budget and Schedule with coordination with the Utility Office for utility planning level estimates.
- Creates Project Utility Conflict Analysis Matrix and provides access to district Utility Coordinator for communication during the Utility Coordination.
- Coordinates with PDT to determine if outside consultant resources are necessary for Utility Coordination.
- Coordinates with PDT to identify potential utility conflicts on the project and includes this information in the Utility Coordination Matrix.
- Coordinates with PDT on Avoidance and Minimization of Utility conflicts through design during the project development.
- Coordinates with Utility Engineer and Utility Coordinator to establish the Utility Coordination Schedule
- Participates in Advance Utility Coordination meetings and Individual Utility Company meetings as necessary to facilitate resolution of potential conflicts.
- Coordinate with construction office for a constructability review of any anticipated Utility Relocation or Resolution Strategy on Project.
- Coordinate with Environmental Office to determine whether any utility relocation impacts would need to be included in the Department's environmental permits.
- Provide Utility Coordinator with Public Information Meeting and Public Hearing details and request that utility companies be invited to attend.
- Coordinate with Utility Coordinator and Utility Engineer to prepare the Utility and Railroad Certification for the project
- Ensure that all in-contract utility relocations packages and/or special provisions are included in the project proposal.
- Verify that Utility funding obligations and charge codes are established at least three months prior to construction letting or earlier if requested by Utility Engineer.
- Coordinate with Utility Engineer to ensure that all in-contract utility work has concurrence for award from the Utility Company.
- Coordinate with Financial Analyst to ensure that all financial agreements are appropriately scheduled for invoicing/payments.

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2.5 DESIGN MANAGER

The Design Manager (DM) or designee should be involved in the Utility Coordination Process and ensure that all utility conflict resolutions agreed upon during negotiations are incorporated in the project plans as necessary. The Design Manager or his/her designee shall be responsible for the following:

- Establish Utility Inventory for the project corridor in preparation of the Project Scoping Meeting utilizing the South Carolina on-call service (i.e. SC 811) and distribute list to PDT.
- Confirm Utility inventory in the field at the project scoping meeting.
- Submit design ticket to have utility locations marked prior to the scoping meeting (SC 811).
- Ensure the Geotechnical Engineer of Record has contacted SC 811 prior to commencing field services for both preliminary and final site explorations.
- Coordinate with PDT to determine whether consultant services will be needed to supplement the design for the project.
- Provide a recommendation to the PM on what consultant services will be needed including whether additional SUE information or consultant services are required
- Consider identifying utility locations for the survey crew to locate when preparing and submitting the survey request.
- Consider requesting that the Utility Coordinator invite specific utility companies with anticipated major impacts to the Design Field Review.
- If additional utility location information is necessary to determine whether impacts could be minimized through design, mark locations in the field at the Design Field Review (DFR) for the utility company to pothole and provide additional location information if agreed upon at the field review.
- Assist the PM and Utility Engineer in identifying potential utility impacts on the project.
- Coordinate with the Hydraulic Engineer to minimize utility impacts in the drainage design where feasible.
- Attend Advance Utility meetings and individual utility company meetings in order to provide design information and coordinate design changes where feasible to avoid or minimize conflicts.
- Review proposed Utility Coordination schedule and provide concurrence.
- Ensure that plans include Utility Information as appropriate for Right of Way and Construction.
- Provide plans, cross sections and design files for distribution to the Utility Companies.
- Attend Utility Coordination meetings, as necessary, to assist in resolution of utility conflicts.

Stage of Project Development	SUE/Utility Information Included
Project Scoping	811 Utility Inventory
Surveys	Visible Features Consider Utility 811 Design Ticket/Survey Consider Utility Manhole Depth Survey
Preliminary Plans	Utility Survey/Data Utility Inventory
Design Field Review	Consider Utility Company Pothole Request / Additional Survey
Preliminary Right of Way (ROW) Plans	SUE Utility Plan View Sheets Utility Inventory
Final ROW Plans	Final ROW Plans with Utility sheets Cross Section Exhibits / 3D Utility Models
Construction Plans	Final Construction Plans with Utility sheets In-Contract Utility Relocation Plans

Overview of Design Manager Roles and Responsibilities
Figure 2.5-A

2.6 DISTRICT RESIDENT CONSTRUCTION ENGINEER

The DCE or, as designated, the RCE should participate in the Utility Coordination process to ensure successful construction of the project by performing the following:

- Participate in the Project Scoping meeting and provide input into the initial utility inventory and coordination plan based on local knowledge.
- Review project plans as requested during the design of the project in order to provide input and guidance on utility related issues as well as constructability concerns.
- Assist the Utility Coordinator with Utility Coordination meetings as necessary to provide technical guidance resolution of conflicts, construction issues and relocation plans.
- Assist the Utility Coordinator/PDT in staking and surveying on the project as needed to coordinate gathering of utility location information and identification of potential conflicts in the field.
- Assist the Utility Coordinator as requested in the review of utility relocation plans and Encroachment Permits.
- Invites all Utility Companies located on project corridor to the Pre-construction conference for the project.
- Coordinate with Utility Companies and contractor to facilitate in-contract relocations and/or utility work being facilitated in a construction utility window provided by the Department.

District Resident Maintenance Engineer

- Participate in the Project Scoping meeting and provide input into the initial utility inventory and coordination plan based on local knowledge.
- Review project plans as requested during the design of the project in order to provide input and guidance on utility related issues as well as constructability concerns.
- Assist the Utility Coordinator as requested in the review of utility relocation plans and Encroachment Permits.
- Approve all Encroachment Permits associated with Construction Projects after all constructability reviews are complete and final alignment of utilities is confirmed.

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2.7 SURVEYS

The Surveys office assists the Project Development Team (PDT) in a number of ways during the project design to provide information, as needed, to facilitate Utility Coordination and Accommodation. The following is a list of services that the Surveys Office can provide upon request:

- Survey of Project limits to include visible utility features such as poles, manholes, valves, boxes, etc.
- Consultant SUE and Utility Coordination Services for Advanced Utility location information and coordination services.
- Survey of Above-Ground Utility markings as provided by the Utility Companies.
- Survey of manhole depths as needed in order to establish general location and depth of utilities.

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2.8 UTILITY COMPANY

Utility Companies form important partnerships with SCDOT in the construction and maintenance of transportation and utility infrastructure in SC. The Utility Coordination and Accommodation process on SC roads requires that Utility Companies communicate and provide information during project development in order to facilitate the avoidance, minimization and mitigation of Utility Conflicts. Utility Companies are also responsible for obtaining written approval from SCDOT prior to commencing with the construction, installation, relocation or adjustment of any utility facilities that occupy or are proposed to occupy existing or proposed SCDOT Rights of Way (ROWs) on active projects. SCDOT may approve these activities through the issuance of an Encroachment Permit or by written agreement. During the project development process, the SCDOT Utility Coordinator will provide notifications of project and meetings and invite Utility Companies to participate in the process. SCDOT requests that the Utility Company commit to the following roles and responsibilities in the project development process:

- Verify receipt of project information and requests for information.
- Attend Project meetings and Utility Coordination meetings.
- Provide Utility information, plans and records as requested in a timely manner.
- Provide assistance in locating Utility facilities on the project corridor as requested for inclusion in the project plans and/or utility conflict analysis exhibits.
- Cooperate with SUE and Utility Coordination Consultants and Department staff in the mapping of information and coordination of utilities.
- Upon notification of the project scoping and proposed project schedule, notify the Utility Coordinator immediately if there are resource planning and availability issues in regards to utility relocation funding obligations.
- Participate in the review and discussion of the conceptual alignments and design as it relates to potential utility conflicts.
- Participate in the development of resolution strategies in order to minimize conflicts.
- Provide realistic delivery schedules for the requested utility information.
- Notify the Utility Coordinator immediately of adjustments to the communicated utility delivery schedule and/or failure to meet the submission deadline.
- Participate in the Dispute Resolution Process in order to amicably resolve any disputes during project development.

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Chapter 3

Utility Communication and Coordination Procedures

SOUTH CAROLINA UTILITES ACCOMMODATION MANUAL

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Chapter 3
UTILITY COMMUNICATION AND COORDINATION PROCEDURES

3.1 GENERAL

Utility Coordination is a critical step in the project development process and should be initiated in the early phase of a projects' development. Identifying the impacts of a project on utility facilities plays a very important role in delivering the project on time and within budget. Chapter 3 outlines the coordination milestones to be completed in the Utility Accommodation and Coordination process on SCDOT projects. SCDOT's goal in this process is the establishment of successful Utility Coordination, Cooperation, Communication, and Commitment vital to SCDOT project delivery.

- Facilitate Advance Coordination for identification and resolution of ROW, 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

Early Utility Coordination is the key to establishing cooperation between SCDOT and the local Utilities. Identifying utility impacts early to ensure that consideration of utility issues and proper mitigation are addressed in the project development process. Early communication allows more time for avoidance or minimization of utility impacts and time for utilities to plan and prepare for unavoidable impacts. This chapter will provide guidance on the coordination activities that should be included at important milestones in the project including:

- Project Initiation & Scoping,
- Project Introduction Letters,
- Surveys,
- 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 & Award, and
- Project Construction.

SCDOT and the Utility Companies have a mutual obligation to coordinate projects in an effort to eliminate unnecessary costs to the public, recognizing that the tax payer is also the rate payer.

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3.2 PROJECT INITIATION AND SCOPING

Upon initial project programming, the PM and DM should coordinate to establish a list of utility owners/facilities that are potentially located with the project termini. The utilities can be confirmed in the field at the project scoping meeting. In order to maximize the efficiency of the scoping meeting, utilities should be marked in the field prior to the meeting if possible. If field verification is not possible, the PM should request that the Utility Coordinator contact the local Utility to obtain any existing utility plans or records. A Utility Conflict (UCM) Matrix should be created to track the utility coordination information throughout project development. The final scoping meeting notes should include the UCM that outlines the confirmed utility company information and general location.

The Utility Engineer should be consulted during the project initiation to review the utility inventory list and determine whether the corridor has any major utility distribution/collector lines or complex utility issues. The Utility Engineer should be able to provide the PM with guidance on planning level utility relocation cost estimates for anticipated impacts for early budget considerations. The PM and DM should consider whether any major utilities should be included in the project scoping meeting or met with individually during project scoping in order to gather additional information regarding their utility facilities on the corridor. The local Utility Coordinator and RCE should be involved with any meetings with Utility Companies on projects located within their regional management.

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3.3 PROJECT INTRODUCTION LETTERS

The Utility Engineer assigned to the project will issue a Project Introduction Letter to the Utility Companies located on the project corridor after the project scoping meeting in order to notify the utilities of the upcoming project and provide project contact information. If a consultant will be utilized on the project for SUE or Utility Coordination, then the Utility Company should be notified that this consultant may be contacting them on behalf of the Department.

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3.4 SURVEY

During the development and review of the survey and SUE request and design criteria, the PDT should meet to determine the appropriate level of survey and SUE required for the project and whether a SUE consultant is necessary. The DM's staff will prepare the survey and SUE recommendations and coordinate with team members in order to finalize the request based on recommendations. The SUE determination should be documented by the PM and provided to the project team. If SUE consultant services are necessary, the PM should coordinate the contract with the Surveys' office with assistance from the DM. More information on the determination of SUE necessary for a project is outlined in Chapter 4 of this policy. The PM and DM should also review the survey files upon receipt and update the Utility Conflict Matrix (UCM) with additional information provided on visual features such as manholes, poles, hydrants, pedestals, valves, etc. Utilize the information provided in order to estimate whether significant utility impacts are anticipated on the project. If necessary, additional survey information may be requested by the DM to determine the approximate depth and location of potentially impacted utilities.

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3.5 PROJECT REVIEW (AVOID IMPACTS)

3.5.1 Preliminary Design (30%)

As the preliminary design alignment and footprint are developed, the utility information provided in the previous steps should be reviewed by the PM, UC and DM to determine potential conflicts. Potential conflicts might be easily avoided or minimized while maintaining the purpose and need of the transportation project. The PM should coordinate with the DM to determine what additional information would be needed from the Utility to evaluate potential design changes that could be incorporated. The PM and DM should communicate or meet with the Utility owners in order to verify the location of their utilities and identify any solutions, concerns or suggestions for avoidance of potential conflicts. The use of SUE consultants could be utilized if necessary in order to obtain additional information if the utility is not able to verify the location and depth of their utility. Strategic review of the potential conflicts should help the project team determine the most appropriate locations for test holes. As an alternative to using a SUE consultant, the utility company may be willing to pothole the selected test hole locations and provide the requested information in cooperation with the Department. The Utility Company may also be willing to mark utility locations under an SC 811 design ticket and those locations could be surveyed by Department staff for general location information. In either case, the Utility Company should be asked to provide details regarding the existing utility such as size, material type, clearance requirements, potential construction activity restrictions, design duration, easement/ROW acquisition, and construction schedule. This information should be secured by the Utility Coordinator and detailed in the Utility Conflict and Analysis Resolution (UCAR).

The Utility Engineer and Utility Coordinator should be able to assist the PDT in the determination of prior rights at this stage of project development. This determination should be included in the UCAR matrix. The PDT should meet to review the UCAR matrix once all of the above information is secured in order to make some decisions about the final Utility Coordination Schedule and strategy.

Preliminary SUE information as available should be included in the preliminary plans to assist in identification of potential utility impacts. The Utility Engineer should review plans in order to determine whether all the necessary information is included for Advance Utility coordination and notify the Design Manager if additional information should be included in the plans.

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3.6 EARLY COORDINATION DURING DESIGN (MINIMIZE IMPACTS)

3.6.1 Design Field Review

Utilizing the utility information secured during the preliminary design, the designers should have previously made efforts to AVOID utility conflicts where reasonably possible. Utility information can also be used during drainage design to minimize the number of conflicts where feasible. Utilities with anticipated impacts should be included in the design field review to facilitate discussions regarding other potential minimization alternatives. Utility protections or reinforcement during construction should be considered as an alternative to relocations when possible. Advance Utility Coordination should be included at the DFR stage in order to minimize the utility conflicts in the design moving forward. The DM and PM may determine that it is necessary to meet with the Utility Company individually and/or review these issues with the Utility Company at the DFR. For unavoidable conflicts, Advance Coordination meetings should be conducted at this stage to initiate discussions with the Utility Companies on their relocation plans and concepts. A determination should also be made on whether any Utility Companies would like to include their utility relocations in SCDOT's construction contract. Environmental permitting should also be discussed with all Utility Companies that could potentially have relocations that would require permitting. In some cases, there may be opportunities to include this relocation work in the SCDOT permit as outlined in a later chapter. Both of these options should be considered and decided before establishing the final utility submittal schedule communicated with the Utility Companies.

3.6.2 Preliminary ROW Plans

Final SUE information should be reviewed at this stage of design and incorporated into the plans for final coordination of unavoidable utility conflicts. Additional coordination with Utility Companies may be necessary to identify the conflicts and determine whether any design adjustments are possible to avoid or minimize the conflict. Producing plan and profile exhibits depicting the location of existing utilities in relation to proposed construction work is vital to effective communication with Utility Companies. These exhibits should clearly show excavation and structures, including ground modifications, earthquake drains, silt fence posts, guardrail posts, footings for mechanically stabilized earth walls, piles, drainage pipes, boxes, etc. Any planned activities that would potentially impact the utility or the required utility clearance areas should be included for review and discussion.

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3.7 FINAL COORDINATION DURING ROW (MITIGATE)

3.7.1 ROW Plans/ Utility Coordination

At this stage of project development, the project team should have completed all Advance Utility Coordination tasks outlined above and made reasonable efforts to avoid and minimize the impacts to utilities on the project. The Utility Coordinator and PM should have a Utility Coordination plan that outlines the frequency and schedule of Utility Coordination meetings. During this phase of coordination, some minor design changes to eliminate conflicts may be possible but would be limited by ROW and environmental permit commitments. ROW plans should be reviewed with the ROW office in order to determine whether strategic staging of ROW acquisitions is necessary to ensure that ROW areas necessary for early utility relocations are accessible prior to construction. ROW staff may be able to prioritize the tracts in a manner that facilitates utility relocations and reduces potential delays.

3.7.2 Final Design

During this phase of project development, changes to the plans will not likely be possible and the focus of Utility Coordination will be to secure the final deliverables or to mitigate any utility conflicts. Utility relocation plans, agreements, no-cost letters, or no-conflict letters should be secured at least four months prior to the project bid opening. The deadline would be five months before the project bid opening for complex projects with a 60-day contractor advertisement. The Utility Coordinator and the RCE will review the utility relocation plans to determine whether the plans are reasonable within the project construction plan. The Utility Engineer is available to provide assistance in resolving relocation plan concerns. Once a utility relocation plan has been reviewed and found acceptable by the RCE, a recommendation for approval of the relocation plans and agreements will be forwarded to the Utility Engineer for final approval. Producing updated plan and profile exhibits depicting the location of existing utilities in relation to proposed construction work and all utility relocations is vital to effective communication with Utility Companies. These exhibits should clearly show excavation and structures, including ground modifications, earthquake drains, silt fence posts, guardrail posts, footings for mechanically stabilized earth walls, piles, drainage pipes, boxes, etc. Any planned activities that would potentially impact the utility or the required utility clearance areas should be included for review and discussion. Constructability of the utility relocations and the phasing and timing of relocations should be coordinated at these final coordination meetings. A determination on whether any utility windows or special provisions are necessary to accommodate the relocations at these meetings. At each Utility Coordination meeting, each Utility Company should provide the following information, at a minimum:

- Type of deliverable anticipated (relocation plan, no-cost letter, agreement, no-conflict letter, in-contract PS&E, etc.).
- Draft deliverable/concept for review and discussion at meeting.
- Date final deliverable will be submitted to SCDOT.
- Construction schedule for initiating relocation work on the site and anticipated duration of utility construction.
- Permits required, review status and anticipated date of permit approval.
- Anticipated lead time for manufacture or delivery of materials required for relocation work with anticipated order dates.

- Status of ROW or easement acquisition required for utility relocations outside of SCDOT ROW.
- Any accommodations requested (in-contract work, utility window in construction contract, special provisions, advance clearing, etc.).

3.8 REVIEW PLANS, SPECIFICATIONS AND ESTIMATE (PS&E) FINAL CONTRACT

All final/approved utility deliverables are required to be submitted at least five months prior to the construction bid opening to allow sufficient time for review and approval of the documents. For utility relocations that are being include in SCDOT's construction contract, these utility deliverables or PS&E must be submitted at least six months prior to the construction bid opening to allow for a constructability review of the PS&E. A Utility Certification must be issued prior to the final plans submittal to the letting preparation office. Failure to receive the utility deliverables/information on time will result in a project delay. The project will not be released for construction bid opening until the Utility Coordination is certified as complete.

In order to certify that Utility Coordination is complete, one of the following criteria must be met for the project:

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

Proper documentation includes one of the following for each Utility Company present within the project termini: 1) no-conflict letter, 2) no-cost letter and approved relocations plans, permits and schedule, 3) Utility Agreement and approved plans, permits, easement acquisition complete, and schedule, and 4) Utility Relocation PS&E Package with Agreement for SCDOT to include work within the highway construction contract.

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3.9 ADVERTISEMENT AND AWARD

Final utility window provisions and/or any special provisions in the SCDOT construction contract will be finalized at the time of the final utility deliverable submittal. SCDOT should prepare special provisions which would notify the contractor that utility relocation work was not completed prior to the project advertisement and would be occurring during the project construction. For utility relocations that were included in the highway construction contract, the proposal would include any specifications for the utility relocation work. There will be a separate bid worksheet for the utility relocation items outlined in the Utility relocation plans. After review of the construction project bids and preliminary decision to award, the utility company will be notified of the low bidder information and concurrence will be requested as outlined in the agreement.

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3.10 PROJECT CONSTRUCTION

Utility Companies and their contractors will be invited to the Pre-Construction conference and any construction progress meetings. The contractor may hold meetings with each Utility Company as needed in order to coordinate the utility relocation activities that have not yet been initiated or completed on the project site. Any conflicts that arise during the construction of the project in regards to coordination with Utility Companies will be elevated as necessary following the dispute resolution process outlined later in this chapter.

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3.11 UTILITY COORDINATION ON LPA PROJECTS

Local Public Agencies (LPA) responsible for developing federal-aid projects are required to administer all necessary Utility Coordination during the plan development. The LPA is required to document in the project records that they have verified that all necessary utility relocation work has been completed as required. This verification shall be in the form of a Utility Certification and provided to the Department for approval by the State Utility Engineer prior to obligation of construction funding and the Notice to Proceed for advertisement of the associated construction project. For those utility relocations that are not practicable in advance of the construction project, the certification shall state that all necessary arrangements have been made for relocation to be undertaken and completed as required for proper coordination with the contractor and incorporated into the physical construction schedule. The LPA shall ensure that the bid proposal includes an appropriate notification describing the extent of utility work that is to be underway concurrently with the construction project.

Failure to receive the utility deliverables/information on time will result in a project delay. The project will not be released for construction bid advertisement until the utility coordination is certified as complete.

In order to certify that Utility Coordination is complete, one of the following criterions must be met for the project:

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

Proper documentation includes one of the following documents for each utility company present within the project termini: 1) no-conflict letter, 2) no-cost letter and approved relocations plans, permits and schedule, 3) Utility Agreement and approved plans, permits, easement acquisition complete, and schedule, 4) Utility Relocation PS&E Package with Agreement for LPA/SCDOT to include work within the highway construction contract.

The LPA will be responsible for completing the utility certification forms. The LPA may need to coordinate with the SCDOT utility field coordinator in the process. Once the forms are completed, they must be submitted to SCDOT for concurrence by the State Utility Engineer for approval. Should the evaluation need an assessment of rail crossings to determine sufficiency of warning devices, etc. that review must be conducted by SCDOT as outlined in the instructions.

For federally reimbursable utility relocations, the Utility Agreement (between the Utility Company and SCDOT or LPA) shall be supported by relocation plans, itemized cost estimates, and prior rights documentation. The LPA must maintain sufficient source documentation to verify a utility relocation invoice is accurate and reasonable. Field records (i.e., daily diaries) need to be maintained to verify that utility relocation work was actually performed as required and determined to be acceptable. For agreements for projects having any phase of work funded

with federal-aid dollars entered into after January 1, 2014, the LPA must ensure the Utility Company meets the Buy America requirements specified in 23 USC 313. The Utility Company shall provide a definitive statement (mill test certification) pertaining to the origin of all products which are permanently incorporated into the project covered under Buy America requirements. The LPA shall require documentation showing the mill certification report and how it relates to the components being purchased. Non-compliance with the Buy America Provisions may jeopardize federal-aid eligibility of the entire project.

During construction, the RCE will attend, with the LPA's representative, utility and/or progress meetings in order to be informed of upcoming work.

3.12 UTILITY COORDINATION ON DESIGN-BUILD PROJECTS

3.12.1 Introduction

Design-build projects use accelerated schedules for project delivery, which may create a short window of time to address Utility Coordination and relocations. Utility Coordination and relocations take place concurrently with construction activities because design and construction are integrated. The SCDOT Design-Build Procurement Manual provides information and instructions to Department personnel that are involved in design-build projects. The Department typically uses the two-phase procurement process with the first phase involving a Request for Qualifications (RFQ) and the second phase involving a Request for Proposals (RFP). The following narrative describes Utility Coordination as it relates to the steps of the design-build procurement method outlined in the Design-Build Procurement Manual.

3.12.2 Project Selection

To determine if a project is a suitable candidate for design-build delivery, SCDOT will conduct a review of the project's key goals, attributes, and constraints, as well as an assessment of the project's development status and project risks. During the project selection process, it is important to include a desk-top review of existing utilities and to assess the complexity utility coordination and relocation activities. If there is a high potential for complex Utility Coordination and relocation activities, the project may not be a good candidate for design-build project delivery.

3.12.3 Project Development Activities

Typically, prior to the release of the RFQ, design-build projects will follow Sections 3.1 through 3.4 Of this policy. Portions of Section 3.5, herein, may be used as needed prior to release of the RFP. If SCDOT utilizes a consultant for design-build preparation, the consultant contract should include collection of SUE data and preparation of a preliminary utility report. At a minimum this preliminary utility report shall include an inventory of all identified utilities within the project limits, assessment of prior rights and potential impacts, planning level cost estimates, and information on existing SCDOT infrastructure. The preliminary utility report shall also include a determination of the feasibility of early utility relocation, and recommendations for including in-contract relocations. While preparing the preliminary utility report, the consultant will notify utility providers about the project.

If SCDOT does not utilize a consultant for design-build preparation, the Preconstruction Surveys Office may collect limited SUE data during the field surveys. The PM will notify utility providers about the project by providing the project description, the tentative schedule, a site location map, and a Google Earth site location file (.kmz file format).

If the Department decides that early utility relocations or in-contract relocations are appropriate for the project, prior to the RFP for Industry Review, the Utility Coordination should be carried out in accordance with Section 3.8, herein, for only the utility providers involved in the early relocations or in-contract relocations.

3.12.4 Pre-Advertisement Activities

If pre-advertisement activities that engage potential design-build teams are utilized, the PM should share the known utility information.

3.12.5 Request for Qualifications

If Utility Agreements are executed prior to the RFQ advertisement or if there are known "in-contract" utility relocations, the PM should include related information in the RFQ Scope of Work.

Once the RFQ is advertised to the public, potential design-build teams will be gathering information about the project and preparing Statements of Qualifications (SOQs). During this time, potential design-build teams may contact utility providers to ask questions about the project. SCDOT will receive and evaluate SOQs and will typically short-list three qualified design-build teams that will move forward to the RFP phase. SCDOT posts the short-listed teams on the design-build project webpage prior to advertising the RFP for Industry Review.

3.12.6 Request for Proposals

The RFP template will contain a draft of the RFP instructions including Utilities. If there are existing Utility Agreements, the PM will add additional language to provide instructions and assign risk. If Utility Coordination is required for a project, the associated project requirements are typically incorporated into the RFP as a separate Exhibit. The PM, with assistance from the Assistant Design Manager (ADM), is responsible for ensuring the necessity of this exhibit and developing any utility documents. Typically, the contractor will have the responsibility of coordinating the project construction and demolition activities with all Utilities that may be affected. The contractor will also be responsible for the cost of all utility relocation including temporary relocation costs. For those utilities that have prior rights SCDOT will be responsible for permanent relocation costs as defined by federal code. SCDOT shall have final determination of the utility's prior rights. The contractor is responsible for all costs associated with relocating utilities owned by SCDOT.

The Department will post necessary utility information on the design-build project webpage for the use of the short-listed teams.

Once the RFP for Industry Review is advertised, the short-listed design-build teams will begin to prepare Technical and Cost Proposals in response to the RFP. During this time, the short-listed design-build teams may contact utility providers to obtain information about the project. Upon receipt, SCDOT will evaluate the proposals and select a winning design-build team.

3.12.7 Post Bid Opening Activities

After the bid opening, the RCE should invite appropriate Utility providers to the Pre-Construction conference. The contractor shall comply with Sections 3.6 through 3.10 of this policy.

The contractor shall meet with the Department's Utilities Office within thirty days of the Notice to Proceed to gain a full understanding of what is required for each utility submittal.

The contractor shall be responsible for collecting and submitting to SCDOT the following from each utility company that is located within the project limits:

1. Relocation sketches including letter of "no cost" where the company does not have a prior right; and/or
2. Utility Agreements including documentation of prior rights, cost estimate and relocation plans where the company has a prior right; and/or

3. Encroachment Permits for all relocations regardless of prior rights; or
4. Letters of “no conflict” where the company’s facilities will not be impacted by the Project. Include location sketches on SCDOT plans confirming and certifying that facilities are not in conflict.

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3.13 DISPUTE RESOLUTION PROCESS

In the event that a dispute arises between the Department and the Utility that cannot be resolved through the normal process of communications; the following dispute resolution process should be followed in order to resolve the conflict:

Step 1: The Utility Coordinator and/or RCE shall provide a letter outlining the details of the dispute and the requested revision or compliance to the Utility Company. The Utility Company shall respond to this request within 10 business days. The response shall include justification for the disputed item or a proposed revision to comply with the items outlined in the letter. In some cases a meeting may be required to discuss the disputed items and an official response should be submitted within 10 business days after the meeting. If the dispute cannot be resolved within 20 business days from the original dispute letter, then the dispute shall escalate to the State Utility Engineer for further consideration.

Step 2: Upon notification of the dispute escalation to Step 2, the State Utility Engineer shall schedule a Utility review meeting. This meeting shall be held within 10 business days of the dispute escalation. Attendees of this meeting shall include at a minimum: the Utility representative, State Utility Engineer, RCE, Utility Coordinator, and PM. In this meeting, the attendees shall review the relocation plan, the construction and relocation scheduling and the items under dispute. From this meeting, a written conclusion/recommendation shall be issued to provide a course of action that will allow the project to move forward. The conclusion may be that the dispute would need to be escalated to the next step as provided below.

Step 3: Referral of the dispute to this level shall be directly to the level of management as indicated in the chart below shown on Figure 3.13-A. The next level of management will be informed of the issue and will be responsible to make a decision within the allotted time period as shown below. The Deputy Secretary for Engineering will review and make the final determination on unresolved issues. Should the Utility and the Deputy Secretary for Engineering be unable to resolve the issue, either party may request a resolution by the Dispute Resolution Board that shall hear the matter and reach a resolution to the dispute within 10 business days. By majority decision of the Board, this ten day time frame to reach a resolution may be amended.

SCDOT (Utility or ROW issues)	SCDOT (Construction Issues)	Utility Company	Work Days
Utility Engineer	District Engineering Administrator	Utility Representative/ Coordinator	2
↓	↓	↓	↓
Director of Rights of Way	Director of Construction	Utility Company Regional Manager	3
↓	↓	↓	↓
Deputy Secretary for Engineering	Deputy Secretary for Engineering	Utility Company Owner/President	5

Dispute Resolution Process
Figure 3.13-A

Chapter 4

Subsurface Utilities Engineering (SUE)

SOUTH CAROLINA UTILITES ACCOMMODATION MANUAL

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Chapter 4
SUBSURFACE UTILITIES ENGINEERING

4.1 INTRODUCTION

Appropriate use of Subsurface Utility Engineering (SUE) services to manage risks associated with existing utility facilities on SCDOT projects must be considered early in project development. The standard survey practice of accurately mapping the location and elevation of all above-ground surface utilities will be required for most projects. For other projects, where the location of underground utilities is considered critical to the design process, SUE consultant services shall be used. Identification of active, abandoned and unknown utilities can significantly minimize the risks on a transportation project. The decision on what level of SUE to include and whether or not to utilize SUE consultant services on a project should be documented with a detailed justification for the decision by the SCDOT Program Manager.

The proper and successful utilization of SUE can benefit both the Department and the Utility Companies. Early and accurate information will allow SCDOT to reduce costly utility relocations, decrease construction delays, enhance job site safety and encourage cooperation with utility companies on projects. The following items should be considered when making a determination for SUE mapping and investigation data:

- Project complexity warrants an accurate graphical location of overhead and underground utilities.
- Graphical utility information could be used during the design process to avoid conflicts with utilities where possible, and minimize impacts where conflicts cannot be avoided.
- Accurate determination of the positional location of easements and/or prior rights.
- Allows SCDOT to accurately identify potential conflicts prior to Utility Coordination meetings.
- Aids the Utility owners with their ability to accurately produce relocation sketches.
- Creation of an accurate compiled utility map for reviewing the positional interactions of multiple utilities.
- Accurately depicts existing utilities on construction plans which will avoid possible utility conflicts during construction due to field design changes.

SUE involves managing certain risks associated with the project and may include the following tasks:

- Utility mapping at appropriate quality levels,
- Production of Utility exhibits of potential Utility Conflicts,
- Utility Coordination,
- Utility Relocation design and coordination,
- Utility condition assessment,
- Communication of utility data to concerned parties,
- Development of Utility protection options as alternative to relocation,
- Utility relocation and cost estimates,
- Implementation of Utility Accommodations policies,
- Utility design,

- Utility Environmental Permitting, and
- Utility Reports & Final Submittal Reviews

4.2 SUE QUALITY LEVELS

SUE quality levels can be correlated to the levels of risk anticipated on the project. The quality level selected will dictate how much information is needed in order to accurately design and construct the project. There are four recognized quality levels of underground utility information as follows:

1. **QUALITY LEVEL D: EXISTING RECORDS RESEARCH** - Most basic level of information for utility locations; gathered from existing utility records or verbal recollections which may be unreliable. It may provide an overall "feel" for the congestion of utilities on the project but is highly limited in terms of accuracy and comprehensiveness. This level is typically used for preliminary project scoping and planning.

2. **QUALITY LEVEL C: SURFACE VISIBLE FEATURE SURVEY** - Most common level of utility information; 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. It is typically used for rural projects that do not have a significant number of utilities present.

3. **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.

4. **QUALITY LEVEL A: LOCATING THROUGH EXCAVATION -** This level is the highest level of accuracy and utilizes the full range of SUE services. This level provides information on the precise plan and profile mapping of underground utilities though the nondestructive exposure of underground utilities. The information provided will include type, size, condition, material and other characteristics of underground features.

The decision on what level of SUE to include and whether or not to utilize SUE consultant services on a project should be documented with a detailed justification for the decision by the SCDOT Program Manager. Determining the appropriate level of SUE quality and the means and methods of gathering this information should be discussed by the Program Manager (PM), Design Manager (DM), Utility Engineer, Utility Coordinator and District Construction Engineer (DCE) or Resident Construction Engineer (RCE). During the selection of the appropriate SUE quality level, the team should evaluate the additional costs of a higher quality level of SUE versus the potential costs associated with late design changes, project delays and contractor claims. The team will identify and apply appropriate techniques based on budgets and expectations. Alternative methods of locating utilities will be discussed later in this chapter and should be considered when working with projects that have very limited budgets.

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4.3 SUE IN PROJECT DEVELOPMENT PROCESS

SUE is an integral part of the Project Development Process and should be implemented at each milestone of the project initiating in the early stages of project planning. Utilizing the appropriate level of SUE in order to accurately and comprehensively identify, characterize and map overhead and underground utilities facilities is an integral component in the success of the utility coordination and project construction. SUE includes three major milestones of designating, locating and data management. When combined with traditional records research, coordination with utility companies, site surveys, and utility conflict analysis provides high quality information that can be used to avoid, minimize and mitigate utility conflicts during the project development process.

1. **PROJECT INITIATION & SCOPING**: Establish a list of utility owners/facilities that are potentially located with the project termini. The utilities can be visually confirmed in the field at the project scoping meeting. If field verification is not possible, the Utility should be contacted in order to obtain any existing utility plans or records. The final scoping meeting notes should include the Utility Conflict Matrix (UCM) that outlines the confirmed utility company information and general location.

2. **SURVEYS:** Document the appropriate level of SUE required for the project and whether a SUE consultant is necessary. Review the survey for visual features such as manholes, poles, hydrants, pedestals, valves, etc. Utilize the information provided in order to estimate whether significant utility impacts are anticipated on the project.

3. **PRELIMINARY DESIGN**: Data reviewed to identify the potential conflicts. Strategic review of the potential conflicts should help the project team determine the most appropriate locations for Quality Level A test holes. The utility company may be willing to visit the project and pothole those locations and provide the requested information in cooperation with the Department. The utility company may also be willing to mark utility locations under an SC 811 design ticket and those locations could be surveyed by Department staff for general location information. In any case, the Utility Companies should be asked to provide details in regards to the existing utility such as size, material type, clearance requirements, and potential construction activity restrictions.

4. **DESIGN FIELD REVIEW:** Confirm design and SUE data in the field in an effort to avoid and minimize conflicts as reasonably necessary. Utility protections or reinforcement during construction should be considered as an alternative to relocations when possible.

5. **PRELIMINARY ROW PLANS**: SUE data is incorporated into the plans for final determination of unavoidable utility conflicts. Producing plan and profile exhibits depicting the location of existing utilities in relation to proposed construction work is vital to effective communication with Utility Companies. These exhibits should clearly show excavation and structures, including ground modifications, silt fence posts, piles, drainage pipes, boxes, etc. Any planned activity that would potentially impact the utility or the required utility clearance areas should be included for review and discussion.

6. **ROW PLANS/UTILITY COORDINATION**: SUE data, conflict exhibits, UCM and Utility plan sheets should be used in utility coordination meetings to confirm all unavoidable conflicts. Any potential design adjustments at this point would be limited by ROW and permit commitments.

7. **FINAL DESIGN**: SUE data and Utility plan sheets used to mitigate any final utility conflicts. Utility relocation plans, permits, agreements, no-cost letters, or no-conflict letters are secured. Resolve any discrepancies with information shown on Utility sheets.

8. **PS&E / UTILITY CERTIFICATION**: All utility deliverables submitted; Utility Certification to be issued. Utility relocations can be added to Utility sheets for information only if desired.

9. **CONSTRUCTION:** Review information with utility companies and contractors at pre-construction meeting.

4.4 IMPLEMENTATION OF SUE INTO THE PLANS

The proper implementation of SUE into the project plans is critical to maximizing its usefulness in project development. It is critical to identify the utilities potentially located within the project termini prior to the project scoping meeting. SC811 will provide a list of utility companies identified as having facilities located within the project termini. Utilities should be verified in the field during the initial project scoping meeting. The survey package will also provide limited information on utility locations that can be used to identify potential major conflicts. All of this information can be reviewed to determine the level of SUE to be obtained for the project.

Project complexity and the potential conflict of existing utilities will determine the SUE Quality Levels needed. The table below gives suggested SUE Quality Levels relative to each phase of project development. The decision of what SUE Quality Levels are needed is an empirical process and can vary greatly from project to project. On small projects, where few subsurface utilities are present, and/or where information about subsurface utilities is believed to be generally accurate and comprehensive, SUE Quality Level D utility information could be used with a low degree of utility conflict risk. On larger, more complex projects, the higher degree of utility conflict risks could dictate a SUE Quality Level B utility investigation with SUE Quality Level A used to determine an accurate vertical location of specific utility conflict points. The level of information shown in the plan is outlined in the table below

Project Development Phase	% Design Complete	SUE Quality Level
Conceptual / Scoping	0-10%	D
Preliminary Plans	10-30%	C/B
ROW Plans	30-60%	A / Utility Conflict Matrix (UCM)
Final Design	60-70%	A
Construction Plans	70-90%	Final UCM / Deliverables

SUE Quality Level during the Project Development Process
Figure 4.5-A

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4.4 USING SUE FOR UTILITY COORDINATION

SUE provides high quality information that can be used to avoid, minimize and mitigate utility conflicts during the Utility Coordination for a project. Identification and mapping of potential utility conflicts in advance of coordination will vastly improve the communication efficiency with utility companies. The following demonstrates what level of SUE information should be utilized at each stage in the Project Development process:

Stage of Project	SUE information utilized	Additional Options	Utility Coordination Benefits
Project Scoping	811 Utility Inventory Utility Records Utility Conflict Matrix	Utility marked in field	Confirm Inventory Avoid Utility in alignment
Surveys	Visible Features Utility 811 Design Ticket	Survey Utility marked in field Pull manhole depths	Increase accuracy of Utility information
Preliminary Design	Utility Survey/Data Utility Conflict Matrix Jurisdictional Areas	Utility potholes in field	Minimize Utility conflicts with design adjustments Determine Permit Required
Design Field Review	Data reviewed in field	Invite Utility to DFR	Confirm conflicts Minimize Utility conflicts Utility relocation delivery
Preliminary ROW Plans	SUE Utility Sheets Utility Conflict Tables Permit Requirements	Plan & Profile Utility conflict Exhibits	Confirm conflicts Protection alternatives Minimize Utility conflicts Permitting Method
Final ROW Plans	Final ROW Plans with existing Utility Data/Survey Utility Conflict Matrix	Plan & Profile Utility conflict exhibits	Identify Final Conflicts Obtain Utility schedules
Final Design	Utility Conflict Matrix	Include Utility in permits Include Utility in contract Establish Utility window Utility Special Provisions	Final Utility packages Assistance to Utility Adherence to schedule
PS&E	Final Utility Relocation Plan: Relocation Plans, agreements, letters		Meet Schedule Utility Certification
Construction	Construction Plans with Utility Sheets	Utility relocations on Utility sheets	No construction delay increase job site safety

SUE Information during Project Stages
Figure 4.6-A

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4.5 ALTERNATIVE METHODS FOR LOCATING UTILITIES ON PROJECTS

For projects with limited budgets, hiring a SUE consultant may not always be within the project budget. Alternative lower cost methods may be utilized in order to increase the accuracy of information available to coordinate the utilities during project development. However, the amount of risk and complexity of the project must be considered when utilizing these alternative methods. These methods may be useful on projects with few utility facilities located within the project termini. These methods are less likely to be sufficient on complex projects with a large concentration of utilities. The costs for project delays and contractor claims should be considered when making the choice to use alternative methods rather than obligating a portion of preliminary engineering funds for more detailed SUE information.

Once utilities are identified prior to the scoping meeting utilizing the on-call service SC 811, the utilities should be verified in the field. Generally, at the scoping meeting, some initial potential major conflicts can be identified by determining which utilities on the project will most likely be impacted by the proposed project. Some of the following low cost efforts should be made in order to secure as much information as possible to utilize during the project development:

- After the scoping meeting, the PM should request that the Utility Coordinator contact all the utility companies present and request any utility plans or location information available.
- Submit a design ticket to SC 811 in order to request that all utility companies mark their facilities within the project termini.
- Coordinate with the SCDOT Survey Office to survey or locate (via GPS) the utility locations marked in the field.
- The utility locations can be generated into a CADD file that can be referenced into the project design for analysis.
- If depths are unknown for underground utilities, request that the Survey Office obtain depth elevations at the manholes on the project to establish an estimated depth.
- Meet with individual utility companies at the site and request that they pothole selected locations and provide depth information and confirm locations for potential conflict areas.

Alternative methods are not restricted to the above suggestions. The PM and DM should coordinate to determine the most logical method to obtain the information necessary for the Department to make design decision that will benefit the project and the utilities.

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Chapter 5

Insurance Requirements

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Chapter 5
Insurance Requirements

5.1 INSURANCE REQUIREMENTS

The permit applicant must obtain from a duly qualified insurance company or companies licensed to do business in South Carolina, comprehensive general liability insurance covering claims by Department and third parties for property damages and personal injury, including death, that may arise out of the applicant's work under the permit (whether performed by its own forces or its contractors or agent). This requirement may be satisfied through a self-insurance program for qualified permittees including local government entities. Government entities may also satisfy this requirement through their participation in the State Insurance Reserve Fund. Such insurance shall be issued on an occurrence-based, not claims made basis, and in at least the following amounts:

- Each Occurrence - $1,000,000
- General Aggregate - $2,000,000
- Completed Operations - $2,000,000

The Applicant shall provide, in a form acceptable to SCDOT, Certificate of Insurance showing SCDOT as a certificate holder and copies of the completed operations endorsements verifying that such insurance has been obtained. The Applicant can establish self-insurance.

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Chapter 6

Utility Accommodation Controls and Standards

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Chapter 6
UTILITY ACCOMMODATION CONTROLS AND STANDARDS

Utility facilities shall be located to minimize need for later adjustments to accommodate future highway improvements and to permit servicing such lines with minimum interference to highway traffic.

6.1 LOCATION OF UTILITY FACILITIES WITHIN SCDOT RIGHT OF WAY

- Longitudinal installations shall be located on uniform alignment as near as practicable between the ditch line and the ROW line so as to provide a safe environment for traffic operation and preserve space for future highway improvements or other utility installations. Where irregular shaped portions of the ROW extend beyond the normal ROW limits, variances in the locations from the ROW line shall be allowed as necessary to maintain a reasonable uniform alignment for longitudinal overhead and underground installations. If the installation is between the ditch-line and ROW line the utilities facilities must have a minimum cover depth of thirty-six (36) inches. If the installation is between the ditch line and the edge of pavement the utilities facilities must have a cover depth of forty-two (42) inches below the top of pavement (see Figure 6, Appendix B). Only public utility companies may occupy the Department ROW longitudinally along the roadway. Perpendicular crossings may be permitted to private companies or individuals. **Note** The use of Control Access ROW is an exception (see Section 6.11).

- To the extent feasible and practicable, utility line crossings of the highway shall cross on a line generally normal (90 degrees) to the highway alignment but in no case shall the angle of crossing be less than 75 degrees. Exceptions to this rule may be made as situations dictate based on practical considerations and good engineering practices. **Note** The use of Control Access ROW is an exception (see Section 6.11).

- The horizontal and vertical location of utility lines within the highway ROW limits shall conform to the clear roadside policies applicable for the system, type of highway, and specific conditions for the particular highway section involved. The location of above ground utility facilities shall be consistent with the clearances applicable to all roadside obstacles for the type of highway involved. The location of above ground utility facilities shall be consistent with the clear zones as stated in the AASHTO-Roadside Design Guide, latest edition and the Access and Roadside Management Standards, latest edition.

- In all cases, full consideration shall be given to measures reflecting sound engineering principles and economic factors necessary to preserve and protect the integrity and visual quality of the highway, its maintenance efficiency and the safety of highway traffic.

- The Deputy Secretary of Engineering or his designee must review the locations of all utility encroachments to ensure that the proposed utility installation will not interfere with existing or planned highway facilities or with highway maintenance and operation processes.

- Recognizing that utility location requirements may not always be practical and feasible in all situations, a variance may be considered under certain circumstances. If a utility seeks a variance, a formal written request must be submitted to the Utility Coordinator for consideration by the State Utility Engineer. The State Utility Engineer may include special conditions providing for expiration of the variance/waiver if in the future the grounds for the waiver no longer exist.

6.2 DESIGN OF UTILITY FACILITIES

- The Utility Company shall be responsible for the design of the utility facility to be installed within the highway ROW or attached to a highway structure. The Deputy Secretary of Engineering or his/her designee shall be responsible for review and approval of the Utility's proposal with respect to the location of the utility facilities to be installed and the manner of attachment. This design and approval process shall include the measures to be taken to preserve the safe and free flow of traffic, structural integrity of the roadway or highway structure, ease of highway maintenance, appearance of the highway, and the integrity of the utility facility.

- Utility installation on, over or under the ROW of State Highways and utility attachments to highway structures shall, as a minimum, meet the following requirements:

    - Electric power and communication facilities shall conform to the National Electric Safety Code, latest edition.

    - Water lines, gravity sewer and forced mains shall conform to South Carolina Department of Health and Environmental Control (SCDHEC) regulations.

    - Pressure pipelines shall conform with the currently applicable section of The Standard Code for Pressure Piping of the American National Standards Institute, latest edition; Title 49 CFR, Parts 191, 192 and 195, latest version; and applicable industry codes, including current issues of:

        - Power Piping,
        - Petroleum Refinery Piping,
        - Liquid Petroleum Transportation Piping Systems, and
        - Gas Transmission and Distribution Piping Systems.

- Liquid petroleum pipelines shall conform to the current applicable recommended practice of the American Petroleum Institute for pipeline crossings under railroads and highways.

- Any pipeline carrying hazardous material shall conform to the rules and regulations of the US Department of Transportation governing the transportation of such material.

- Ground mounted utility facilities shall be of a design compatible with the visual quality of the specific highway section being traversed (see Chapter 6.10).

- All utility installations on, over, or under highway ROW and attachments to highway structures shall be of durable material designed for a minimum service life of 30 years and relatively free from routine servicing and maintenance requiring physical disruption to the road surface. The utility installation shall conform to the Department's standard practices and design and the Department's seismic standards when determined to be necessary by the Deputy Secretary of Engineering.

- On new installations or adjustments of existing utility lines, provisions shall be made for known or planned expansion of the utility facilities, giving particular attention to those located underground or attached to highway structures. They must be planned so as to

minimize hazards and interference with highway traffic when additional overhead or underground lines are installed at some future date.

- Any necessary permits, including the accommodation of utilities on highway ROW and environmental controls shall be the responsibility of the Utility.

- Underground installations will be so designed that the facility can be located without disturbing the roadway structure. If the installation includes the use of “non-toneable” piping, conduit or direct bury lines, locater lines will be placed in conjunction with the utility line installation.

6.3 PIPELINES

6.3.1 Location and Alignment

- Locating buried pipelines within the Department ROWs should be thoroughly engineered and properly installed as they are integrated into and become an unseen part of the highway itself. The following are controls for the location and alignment of pipeline installations. The crossings shall be located as near normal (90 degrees) to the highway alignment as practical.

- Conditions which are generally unsuitable or undesirable for pipeline crossings must be avoided. These include locations such as in deep cuts; near footings of bridges and retaining walls; across at-grade intersections or ramp terminals; at cross drains where flow of water, drift, or stream bed load (sediment) may become obstructed; within basins of an underpass drained by a pump if the pipeline carries a liquid or liquefied gas; and in wet or rocky terrain where it will be difficult to attain minimum burial depth.

- The Department's preferred location for all longitudinal utility installations within its ROW is as close to the outside ROW line as practical and to a minimum cover depth of thirty-six (36) inches from grade. The next option is between the ditch line and the ROW line with a minimum cover of thirty-six (36) inches from grade. Where a location close to the outside ROW line is impractical, upon application by the utility company the Department may, at its discretion, allow installations within the designated shoulder area, but to a minimum cover depth of forty-two (42) inches from the top of asphalt.

- Longitudinal utility installations in the shoulder area when approved by the Department must maintain a minimum uniform distance of three (3) feet from the edge of pavement. Variances will be considered at the Department's discretion on a case-specific basis. In particular, many secondary roads and urban areas have narrow shoulders and no suitable ground on the back side of the ditch.

- Vertical and horizontal clearance between a pipeline and a structure or other highway or utility facilities must comply with the applicable industry standards for the corresponding facilities.

- The locations of all pipelines must be reviewed by the Deputy Secretary of Engineering or his designee to ensure that the proposed utility installation will not interfere with existing or planned highway facilities or with highway maintenance and operation processes.

- In connection with highway construction projects, the Department, at its discretion, can require the utility company to remove its pipelines due to risk of failure or damage based on material of construction (the Department will require that asbestos cement, clay and lead sealed joint pipes be removed), age, and depth unless the Department waives the removal because it will be detrimental to the roadway or for other appropriate reasons. In lieu of removal, all lines ten (10) inches or greater can be filled with flowable fill.

6.3.2 Cover

- The critical controls for cover (bury) on a pipeline crossing are the low points in the highway cross-section (see Figure 1 and Figure 1A, Appendix B). The top of the pipe shall not project into the pavement sub-base. Installations of cased or uncased carrier pipe under highways shall be installed with a minimum cover, as measured from the top of the pipe to the lowest point on the roadway cross-section as specified for each type of utility.

- On longitudinal installations the critical controls for cover are the depths of lateral drainage facilities, landscaping, buried utility lines, bridge structures, and highway maintenance operations.

- If the minimum bury as set forth cannot be obtained, the pipe shall be re-routed. When not practicable to re-route, it shall be protected by other approved methods. The top of the pipe must not project into the sub-base.

- Cover under pavement – four (4) feet minimum below the lowest point of the roadway cross-section for hazardous material; three feet six inches (3½ feet) below the lowest point of the roadway cross-section minimum for other lines unless the line is installed by horizontal drilling, then the depths outlined in Section 6.6.1 will apply.

- Cover under longitudinal surfaces – forty-two (42) inches minimum below the top of asphalt for all lines except where lines are installed between the ditch line and the rights-of-way line where the minimum depth is thirty-six (36) inches.

6.3.3 Methods of Protection

Encasement (see Figure 2, Appendix B) should be considered for the following highway crossing conditions:

- As an expediency in the insertion, removal, replacement, or maintenance of carrier pipe crossings of freeways, expressways, and other controlled access highways and at other locations where it is necessary in order to avoid open trenched constructions;

- As protection for carrier pipe from external loads or shock, either during or after construction of the highway or;

- As a means of conveying leaking fluids or gases away from the area directly beneath the traveled way to a point of venting at or near the ROW line.

Encasement shall be required for the following conditions:

- Jacked and bored installations of coated carrier pipes shall be encased. Exceptions may be made where assurance can be provided in writing against damage to the protective coating.

- Allied mechanical protection or other approved methods may be used in lieu of encasement to protect the pipe but will require justification in writing by the utility and approval by the Deputy Secretary of Engineering for Lines under freeways, expressways, and other controlled access highways.

- The Department at its discretion may require encasement of any pressurized carrier pipes or of any carriers transmitting dangerous and deleterious substance under any road.

- Encasement or allied mechanical protection shall be required for any pipeline (a) with less than minimum bury depth, (b) near footings of bridges or other highway structures or across unstable or subsiding ground, or (c) near other locations where there may be a hazard as deemed by the State Utility Engineer.

- Rigid encasement or suitable bridging shall be used where support of pavement would be impaired by depression of flexible carrier pipe (see Figure 3, Appendix B).

When crossing existing roadways, encasement or allied protection is required for all crossing under controlled access roadways and any crossing when transmitting under high pressure. Encasement may not be required for low-pressure hazardous material lines under low volume road and water or sewer lines under low volume roads.

6.3.4 Allied Mechanical Protection

For some conditions, pipeline crossings of the highway may be installed without encasement. The following controls are for providing allied mechanical protection to uncased pipeline crossings of the highway:

- On uncased construction, the carrier pipe shall conform to the material and design requirements of utility industry and governmental codes and specifications. In addition, the carrier pipe shall be designed to support the load of the highway plus superimposed loads thereon when the pipe is operated under all ranges of pressure from maximum internal to zero pressure. Such installations shall employ a higher factor of safety in the design, construction, and testing than would normally be required for cased construction.

- Suitable bridging, concrete slabs, or other appropriate measures shall be used to protect existing uncased pipelines which by reason of shallow bury cover or location make them vulnerable to damage from highway construction or maintenance operations (see Figure 3, Appendix B). Such existing lines may remain in place without further protective measures if they are of adequate depth and do not conflict with the highway construction or maintenance operations, provided both Department and utility officials are satisfied that the lines are, and will remain, structurally sound and operationally safe.

- Uncased crossing of welded steel pipelines carrying transmittants which are flammable, corrosive, expansive, energized or unstable, particularly if carried at high pressure or potential, may be permitted, provided additional protective measures are taken in lieu of encasement. Such measures would employ a higher factor of safety in the design, construction, and testing of the uncased carrier pipe, including such features as thicker wall pipe (a minimum of two incremental wall thicknesses greater than the design thickness as per Title 49, CFR 192 and 195), radiograph testing of welds, hydrostatic testing, coating and wrapping and cathodic protection.

6.3.5 Design

- Where encasements are deemed necessary, the casings shall be designed to support the load of the highway and superimposed loads placed thereon and, as a minimum, should equal the structural requirements for highway drainage facilities. Casings shall be composed of materials of satisfactory durability under conditions to which they are exposed.

- The casing pipe shall be sealed at the ends to prevent flowing water and debris from entering the annular space between the casing and the carrier. The installation shall include necessary appurtenances, such as vents and markers (see Figure 1, Appendix B).

- On conventional highways, as a minimum, the casing pipe shall extend to the shoulder break or six (6) feet beyond the edge of pavement on fill slopes, whichever is the greater; three (3) feet beyond the ditch line in cuts; and on curbed sections to the back of the sidewalk area. On freeways, expressways, and other controlled access highways, the encasement will be required to extend to the access control lines, to the outside of frontage roads, or a sufficient distance to allow for future highway improvements. Exceptions to the above defined encasement limits must be justified by the utility company and approved by the Deputy Secretary of Engineering or his designee.

6.3.6 Appurtenances

- Vents should be located at the high end of short casings and at both ends of casing longer than one hundred and fifty (150) feet unless the utility submits a request to alter this requirement and the request is approved by the Deputy Secretary of Engineering or his designee. Vent standpipes shall be located and constructed so as not to interfere with maintenance of the highway or to be concealed by vegetation; preferably they should be located at the ROW lines. In urban areas, vents should be located where they do not affect pedestrian traffic (see Figure 1, Appendix B).

- Markers which are readily identifiable and suitable shall be placed by the utility at the ROW line where it is crossed by pipelines carrying transmittants which are flammable, corrosive, expansive, energized, or unstable, particularly if carried at high pressure or potential, except where a vent will serve as a marker. Markers are also desirable for other pipelines (see Figure 1A, Appendix B).

- New manholes shall be designed and located in such a manner that will cause the least interference to other utilities and future highway expansion. Manholes should not be located in the pavement or shoulders of major highways, including urban highways. Exception may be made on streets at those locations where manholes are essential parts of existing lines that are permitted to remain in place under existing and proposed roadways. Manholes may be retained or installed within urban areas and efforts shall be made to minimize such installations and avoid their location at street intersections, in so far as practicable. However, manholes will not be allowed in the wheel path of a vehicle except where the Department agrees that an alternate location is impracticable. Manholes shall be designed and located in such a manner that will cause the least interference to other utilities and future highway expansion. During resurfacing projects

the utility shall adjust manholes, valve, boxes or telecommunication hand boxes (1/4-inch) to ensure a smooth surface upon completion of the project.

- Shut-off valves, preferably automatic, shall be installed in lines at or near ends of structures (bridges) and near unusual hazards, unless hazardous segments can be isolated by other sectionalizing devices within a reasonable distance. All locations shall be approved by the Deputy Secretary of Engineering or his designee.

6.3.7 Adjustments to Existing Pipelines

An existing pipeline shall be protected in such a manner as normally would be required for a new pipeline at the site (see Figure 3, Appendix B). If the existing pipeline is not considered adequate to support highway loads, it shall be replaced by stronger pipe, protected or relocated in a manner acceptable to the Department. An existing pipeline which lacks adequate cover for protection against vehicular live loads or highway construction operations may be protected by a floating slab in lieu of encasement if approved by the Department.

6.3.8 Drainage Easements

Where it is necessary for pipelines to cross Department drainage easements, outside of the roadway ROW, the same minimum depth of cover shall be maintained as required for crossing ditches inside of the ROW. In cases where soil conditions are such that erosion might occur or where it is not feasible to obtain specified depth, it shall be the responsibility of the utility owner to install retards, protective encasement, concrete slabs over the pipe, or take such other measures as necessary for safety and to protect the highway and the utility.

6.3.9 Specific Controls

Due to the nature of the transmittants, location and installation, specific control requirements may differ. Listed below are specific controls:

- Bury under pavement – four (4) feet minimum below the lowest point of the roadway cross-section for hazardous material; three and one-half (3½) feet minimum below the lowest point of the roadway cross-section for other lines depending on the boring technique.

- Bury under other surfaces – three (3) feet minimum for all lines between the ditch line and the rights-of-way line.

- Crossings of existing roadways will be un-trenched with the following exceptions:

- Hazardous materials – May be open cut on low volume secondary roads when justified in writing and approved by the Deputy Secretary of Engineering.

- Water – May be open cut on low volume secondary roads when justified in writing and approved by the Deputy Secretary of Engineering.

- Sewer – Gravity flow lines may be open cut, if approved, except on controlled access roadways. Sewer force mains may be open cut on low volume secondary roads when justified in writing and approved by the Deputy Secretary of Engineering.

- When crossing existing primary and controlled access roadways, encasement, allied protection or another approved method of protection is required when transmitting under high pressure. Encasement may not be required for low pressure hazardous material lines under low volume roads; and water or sewer lines under low volume roads.

6.4 OVERHEAD POWER AND COMMUNICATION LINES

6.4.1 General

- The type of construction, vertical clearance above pavement, and location of poles, guys, and related ground-mounted utility appurtenances along the roadside are factors of major importance to preserve a safe traffic environment, the appearance of the highway, and the efficiency and economy of highway maintenance. A critical requirement for locating poles, guys and related facilities along the roadside is the width of the border area (i.e., the space between the edge of the shoulder or curb line and the ROW line) and its availability and suitability for accommodating such facilities. Keeping this space as free as practical from obstacles above the ground enhances the safety, maintenance efficiency, and appearance of highways are enhanced by keeping this space as free as practical from obstacles above the ground. Where ground-mounted utility facilities are to occupy this space, they shall be placed at the ROW line except as provided for Section 6.3. The nature and extent of roadside development and the ruggedness of the terrain being traversed are controlling factors for locating poles, guys, and related facilities at the ROW line.

- In the interests of preserving safe roadsides, highway appearance, and efficiency and economy of highway maintenance operations, the following minimum controls shall be used for installations of overhead electric power and communication lines as specified in Section 6.2.

6.4.2 Location

- The minimum vertical clearance for overhead power and communication lines above the highway and the minimum lateral and vertical clearance from bridges shall be as required by the National Electric Safety Code or applicable South Carolina Public Service Commission Rules and Regulations.

- On and along conventional highways in rural areas, poles and related facilities shall be located at or as near as practical to the ROW line. As a minimum and where there is sufficient right of way, the poles shall be located outside the clear roadside area for the highway section involved. There is no single minimum dimension for the width of a clear roadside area but, where there is sufficient ROW, thirty (30) feet from the pavement edge, is considered a safe design feature. Poles shall be located so as not to interfere with highway drainage facilities or the maintenance thereof. Only one utility pole line will be permitted on each side of the roadway.

- If the installed facilities of the utility extend beyond their easement and aerial encroach upon the ROW the utility must obtain an Encroachment Permit for this installation.

- Where irregular shaped portions of the ROW extend beyond the normal ROW limits, variances in the location from the ROW line should be allowed as necessary to maintain a reasonable uniform alignment for longitudinal installations.

- In keeping with the nature and extent of roadside development along conventional highways in urban places, such facilities shall be located at or as near as practicable to the ROW line. Where there are curb and sidewalk sections, the utilities shall be located

behind the sidewalks or sidewalk areas. Where it proves impractical to place utilities behind the sidewalks, authorization must be obtained from the Department to place utilities in grass plot areas.

- The location of overhead utility installations on highways with narrow ROWs or on urban streets with closely abutting improvements are special cases which must be resolved in a manner consistent with the prevailing limitations and conditions. Before locating the utility at other than the ROW line, consideration shall be given to designs employing self-supporting, armless, single pole construction, with vertical alignment of wires or cables, or other techniques permitted by governmental or industry codes that are conducive to a safe traffic environment. Exception to these clearances may be made where poles and guys can be placed at locations behind guardrails, beyond deep drainage ditches or the toe or top of steep slopes, retaining walls, and other similar protected locations.

- Except in extreme cases and then only when specifically authorized, guy wires to ground anchors and stub poles must not be placed between a pole and the traveled way where they encroach upon the clear roadside area.

- Longitudinal installations of poles, guys, or other related facilities shall not be located in a highway median. On crossings of a highway, any such facilities shall not be located in a highway median within the clear zone width for each direction of travel. Poles and other appurtenances for highway lighting may be located in the median if of a breakaway type; but otherwise, only if other alternatives are determined to be impractical and provided suitable protection is afforded highway traffic.

6.4.3 Lighting

- Lighting systems for illuminating the ROW shall be approved by the Department under Encroachment Permit in accordance with the Access and Roadside Management Standards. Single lamp illumination over the ROW placed on existing poles will be permitted if installed and maintained by a governmental body or utility company; they are placed so as to meet vertical clearance requirements above the roadway; are mercury vapor, induction, LED, high pressure sodium type illumination or approved equal with a light diffusing globe refractor; and do not hinder the visibility of the motorists. Support poles for roadway illumination may be allowed where the need for same is properly documented, and provided traffic safety and roadway clearance requirements are met. Breakaway support poles are required if located within the clear zone roadside area.

6.5 UNDERGROUND ELECTRIC POWER AND COMMUNICATIONS LINES

6.5.1 General

There is wide variation in the techniques and practices for installing underground electric power and communication lines because of differences in such factors as water conditions, type of subsoil, facility congestion and others. Accepted methods for undergrounding such lines include: trenching for conduit or duct construction for uncased buried cable; plowing for direct burial of cable; jacking or pushing of pipe as conduit, especially for crossings of existing highways; and small boring without conduit on highway crossings where soil conditions permit. The following controls are for the installation of underground electric power and communication lines:

- Underground utility construction shall conform to all applicable codes, standards, and specifications.

- The minimum depth for cased and uncased construction shall conform to the following: on longitudinal installations the depth of bury shall adhere to (see Section 6.1). On crossing of highways, the minimum depth of bury shall be forty-two (42) inches below the lowest point of the roadway cross section unless mechanical protection is provided and depending upon the type of boring operation. Plowing through pavements, including paved driveways, is not permitted.

- Pedestals or other above ground utility appurtenances installed as part of buried cable plant shall be located at or near the ROW line, outside of the clear zone and highway maintenance operating area.

- All proposed locations and utility designs shall be reviewed by the Department to ensure that the proposed construction will not cause avoidable interference with existing or planned highway facilities or with highway operation or maintenance.

- On either cased or uncased installations, particularly on crossings of the highway, consideration shall be given for placing spare conduit or duct to accommodate known or planned expansion of underground lines.

- The controls previously outlined for electric power and communication line attachments to highway bridge structures shall be followed (see Section 6.1).

- The general controls previously outlined for pipelines as related to markers, installation, trenched and un-trenched construction, and adjustment shall be followed as applicable, on underground installations of electric power and communication lines.

6.5.2 Location and Alignment

- On longitudinal installations, locations should be parallel to the pavement at or adjacent to the ROW line (see Section 6.1) so as to minimize interference with highway drainage, the structural integrity of the traveled way, shoulders and embankment, the safe operation of the highway and maintenance of the ROW. When, however, it is not

feasible to install cables outside of the ditch line, the utility company must submit a request to install their facilities between the edge of pavement and the ditch-line. If the request is approved the facilities must be placed as far away from the edge of the pavement as is practicable but under no conditions can the distance between the edge of the pavement and the near edge of a ditch measure less than three (3) feet. Cable plowing will not be permitted in the shoulder of roadway fills over ten (10) feet in height. Trenches will be compacted as described in trenched construction (see Section 10.2).

- Crossing shall be located as near normal (90 degrees) to the highway alignment but in no case shall the angle of crossing be less than 75 degrees.

- Conditions that are generally unsuitable or undesirable for underground crossings shall be avoided. These include locations such as in deep cuts; near footings of bridges and retaining walls; across at grade intersections or ramp terminals; at cross drains where flow of water, drift, or stream bed load may be obstructed; within basins of an underpass drained by a pump; and in wet or rocky terrain where it will be difficult to attain minimum bury depth.

6.5.3 Cased and Uncased Construction

- Where it is acceptable to both the utility and the Department, underground crossings of the highway may be installed without protective conduit or duct. Normally such installations shall be limited to open trenched construction or to small bores for wire or cable facilities, where soil conditions permit installation by boring a hole about the same diameter as the cable and pulling the cable through. Open trench construction will not be allowed across completed pavements unless specifically authorized by the Deputy Secretary of Engineering.

- Where crossings of underground lines are encased in protective conduit or duct, the encasement shall comply with the requirements of Chapter 6.3, Pipelines. Where appropriate, the encasement shall extend to the access control lines, to the outside of frontage roads, or to an indicated line that allows for future widening of the highway. On conventional highways, the encasement shall extend six (6) feet beyond the edge of pavement or two (2) feet behind outer curb line.

- Consideration shall be given to encasement or other suitable protection for any wire or cable facilities (a) with less than minimum bury, (b) near the footings of bridges or other highway structures, or (c) near other locations where there may be a hazard.

- Where uncased bored installations are proposed by the utility, the utility shall be required to furnish information as to the controls and construction methods to be employed, before the proposed installations are considered by the Department. This is to ensure the necessary protection of the utility facility and the integrity and operation of the highway facility.

6.5.4 Adjustments to Existing Lines

- Existing lines with SCDOT approval may remain provided they do not interfere with construction and the owner can prove that lines are constructed of suitable material to

Withstand traffic loads and construction activities. Manholes will be located so as to minimize interference with traffic during necessary access to the line.

- If the relocations of utilities remain within the existing ROWs, the utility company must submit an Encroachment Permit along with the no-cost letter and relocation sketches. The Encroachment Permit must be approved by the appropriate Resident Maintenance Engineer (RME) before any relocation can begin even if the utility has received its relocation approval letter from the State Utility Engineer.

- If a Utility Company demonstrates proof of prior rights, they may request their facilities be relocated within the ROW and maintain their rights because of circumstances beyond their control. The Utility Company must submit an Encroachment Permit along with the Utility Agreement and all supporting documentation. If the Utility has provided evidence that it has tried but has been unable to locate on a private easement and show proof of circumstances beyond their control, they may request to relocate within the SCDOT ROW. If permission were granted, the Utility Company would maintain prior rights.

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6.6 TRENCHLESS INSTALLATIONS

6.6.1 Horizontal Directional Drilling (HDD)

Approval of the Encroachment Permit to perform horizontal directional drilling (HDD) does not implicate the Department in the safety of the installation or the operation of the installed pipe. To the extent required by law the utility company will indemnify the Department from any liability incurred due to the installation and operation of their pipe within the Department's right of way.

All lines will be categorized based upon the utility contained in the pipe. Details regarding utility pipe categories are provided in Figure 6.6-A.

Category	Carrier Pipe Contents
Pressurized Liquid	Water, Forced Sanitary Sewer, etc.
Gravity Flow Liquid	Sanitary Sewer, etc.
Pressurized Gas	Natural Gas, etc.
Telecommunications and Power	Electric, Phone, Cable, Fiber Optics, etc.

CATEGORIES FOR DIRECTIONAL DRILLED UTILITY PIPE
Figure 6.6-A

For the carrier pipes under pavement, and where directed below, install casing to extend to limits of the Department right of way or where approved by the State Utility Engineer. Parallel installations to the roadway do not require a casing. For parallel installation within the rights-of-way see (see Section 6.1). For new installations tying to existing lines the utility company can request a waiver to this depth requirement. Casing details are provided in Figure 6.6-B.

Category	Casing pipe is required when carrier pipe diameter is:
Pressurized Liquid	3-inch and larger
Gravity Flow Liquid	8-inch and larger
Pressurized Gas	8-inch and larger
Telecommunications and Power	Casing not required

CASING REQUIREMENTS FOR DIRECTIONAL DRILLED UTILITY PIPE
Figure 6.6-B

- Casing pipe is intended to serve as a conduit for carrier pipe to minimize the need for additional trenchless installations due to line replacement. Where possible, replace damaged pipe within the same casing as the original installation. In the event that original carrier pipe must be abandoned, remove carrier pipe from casing pipe and seal both ends of the casing pipe.

- Casing pipe may be the same material as the carrier pipe. Casings can be High Density Polyethylene Pipe, Fusible PVC, and Medium Density Polyethylene Pipe, steel or an approved equivalent. Casing pipe must be rated to carry the same internal and external pressures as the carrier pipe. When casing pipe is required, install vents in the casing pipe at the ROW limits or where approved by the Department.

- Only normal (90 degrees) crossings will be allowed. Any other type crossing will be evaluated on a case by case basis for non-controlled access roads only. Variances from this specification must be requested in writing to the State Utility Engineer for review and approval.

- Figure 6.6-C details the recommended minimum depths below the lowest point on the road cross-section. Greater depths may be required due to obstructions or site specific considerations. Service lines less than or equal to two (2) inches will not require the full engineering document as outlined for bores greater than two (2) inches.

Casing\Carrier Pipe Diameter	Minimum Cover
Greater than 2 inches up to 6 inches	4 feet
Greater than 6 inches up to 14 inches	10 feet
Greater than 14 inches up to 24 inches	15 feet
Greater than 24 inches up to 48 inches	25 feet

MINIMUM COVER FOR DIRECTIONAL DRILLED UTILITY PIPE
Figure 6.6-C

The permit application submittal must include at a minimum the following information:

- Utility owner and contractor name;

- Carrier pipe properties (material, diameter, wall thickness);

- Site layout plan, project schedule and company experience record;

- Location of entry and exit points, access pit locations, and equipment and pipe layout areas;

- Proposed drill path alignment (both horizontal and vertical) to include the lowest point of the roadway cross section;

- The location and clearances for all existing utility crossings, structures, the Department drainage systems, foundations, sign and guardrail posts at the site, etc. must be located vertically and horizontally by a method approved by the local RME. The Department recognizes that supplying this information too far in advance may not be accurate when the contractor begins the drilling operation; therefore, this information can be submitted to RME no later than 48 hours before the contractor begins the drilling operation;

- Depth of cover over the casing;
- Soil classification to a depth of five (5) feet below the proposed drill elevation. For depths up to six (6) feet the soil classification can be obtained from USGS maps. When geotechnical borings are used, provide soil boring plan and report;
- Theoretical amount of drilling fluid to be used during the drilling operation (calculation based on drilling diameter and number of pre-reams);
- Data sheet showing the actual amount of drilling fluid used during the drilling operation;
- Provide the source of the make-up water for the drilling fluids;
- Field-documented pH and hardness reading for the make-up water, drilling fluids on the data sheet each time new fluids are mixed;
- On systems that recycle drilling fluids, testing logs verifying that the drilling fluids are being maintained in accordance with the original mix or to demonstrate the reason for changing the drilling fluid mix during the completion of the pull;
- Carrier pipe diameter, length, material, wall thickness, method of jointing, and pipe ream diameter for proposed directional drill;
- Proposed and actual viscosity, density, and composition of drilling fluids whether they are bentonite or polymer based (based on soil analysis);
- Name of drilling fluids being used for drilling (company name), name of the field representative (drilling fluids manufacturer) that will provide the technical support, fluids testing and recommendations as needed during the drilling and pulling phase;
- Construction method including diameter of pilot hole, number and size of pre-reams;
- Drilling fluid pumping capacity in gallons per minute, and gallons per rod, pressures, and flow rates proposed and actual pumping rates (rates may change as soil conditions and soil types change);
- Show all ROW lines, controlled access lines, property lines and other utility ROW or easements
- Show all elevations including ground profile above proposed drill path, and profile of directional drilling path;
- Type and capacity of drilling machine to include the manufacturer, model number, thrust/pullback (in lbs.), maximum torque, drilling speed, drill pipe length, drilling distance and power source. If the information is not available when the Encroachment Permit is submitted the utility can submit the information after the contractor is selected but no later than 48 hours before the work begins;
- Type of tracking method/system, operation range and accuracy;
- Type and capacity of mud mixing system;

- A detailed plan for monitoring ground surface movement (settlement or heave) due to the drilling operation at the time of drilling and subsequent to the drilling operation being completed;

- Contingency plan for frac-out or drilling hole failure;

- Traffic control plan (TCP) when applicable;

- Field pressure test all carrier pipes installed to carry pressurized liquids in accordance with standard practices of the requesting permittee;

- Disposal plan for spent drilling fluids, i.e.: (land farming, landfill, etc.); and

- Confirmation that the drilling unit is equipped with an electrical strike safety package and a safety plan in the event of an electrical strike.

Upon completion of the permitted work supply accurate as built drawing within 60 days to the Deputy Secretary of Engineering, the as-built drawings must include the following information:

- Actual path alignment,
- Coordinate geometry of the utility,
- Latitude,
- Longitude,
- Elevation at each end,
- Rate of grade,
- Carrier pipe diameter,
- Casing pipe diameter,
- Depth of cover for the casing/carrier pipe,
- Actual length of installation,
- Bore hole diameter,
- Actual viscosity, density and composition of drilling fluid,
- Actual fluid pumping capacity,
- Pressure and flow rates, and
- Carrier pipe field pressure test results.

6.6.2 Jack and Bore or Microtunneling

This work consists of jacking a reinforced concrete pipe to serve as a carrier pipe in the locations designated in the plans or as specified by the Engineer. This procedure enables the installation of reinforced concrete pipes underground without the use of open-cut excavation and/or ground stabilization techniques. Ensure that this process minimizes surface disruption and allows the Engineer to consider the routing of pipe without the constraints imposed by a trench. SCDOT special provisions for trenchless pipe installations should be adhered to in the development of the construction specifications and shop drawings for this installation. Shop drawings and specifications must be submitted for review and approved by the Resident Construction Engineer prior to installation.

6.7 OUT OF SERVICE & DEACTIVATED UNDERGROUND UTILITIES

All facilities taken out of service and located either above ground or attached to a highway structure shall be removed before the Department begins demolition of the structure. If an underground facility will remain in its existing location after being placed out of service, prior approval from the SCDOT State Utility Engineer must be secured prior to abandonment. The Utility Company or owner of these out of service underground facilities must retain ownership, liability and also maintain a record of the facility. Should any out of service facility within the highway right of way interfere with the safety and operation of the highway or hinder construction or maintenance operations, or effect the structural integrity of the highway, the owner of the facility shall correct the deficiency in a manner prescribed by the Department which may include removal of the facility.

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6.8 IRRIGATION AND DRAINAGE PIPES, DITCHES AND CANALS

- Irrigation and drainage facilities installed across a highway ROW generally shall be designed and constructed in accordance with the Department's specifications for highway culverts. Ditches and canals that closely parallel the highway shall not be allowable. Appurtenances that would constitute a hazard to traffic shall not be allowable within the clear roadside area and preferably shall be located outside of the ROW.

- Where ditch rider roads are adjacent to ditches or canals that cross the highway, consideration shall be given to safety, traffic operations, and economic features when providing for the continuity of such roads. For example, the enlargement of drainage structures to accommodate the crossing of ditch rider roads would rarely be economically justified.

- These ditches or drainage structures will be constructed and maintained so as not to interfere with highway drainage, and will be done so at the expense of the permittee. The altering of existing highway drainage structures or ditches will be at the expense of the permittee. New and altered drainage on or across the rights-of-way will require approval of the Department, and property owners adjacent to and downstream from the drainage change. The Department will maintain altered ditches and structures only to the extent necessary to provide drainage as originally constructed for the highway. Any damage or liabilities resulting from this construction or installation by the permittee will be the responsibility of the permittee.

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6.9 INSTALLATIONS ON HIGHWAY STRUCTURES

- In some cases, attachment of utility facilities to highway structures, such as bridges, is a practical and necessary arrangement and may be permitted by an Encroachment Permit. However, attaching utility lines to a highway structure can materially affect the structure, the safe operation of traffic, the efficiency of maintenance and inspection, and the appearance. Therefore, where it is feasible and reasonable to locate utility lines elsewhere, attachments to bridge structures should be avoided. Attaching utilities on the inside of culverts will not be allowed.

- Where other locations for a utility line to span an obstruction prove to be difficult, present a danger to public, or interfere with traffic, consideration will be given for attaching the utility line to a bridge structure by a method acceptable to and approved by the Department. Since highway structure designs and site conditions vary, the adoption of a standard method to accommodate utility facilities is not feasible but the method employed should conform to logical engineering considerations for preserving the highway, its safe operation, maintenance, and appearance and shall conform with the Department's standard practices and design including the Department's seismic standards. For new construction the utility company or its representative shall coordinate with the bridge designer about the details and loadings for the requested utility attachment during the preliminary design of the structure. Should the utility attachment request be submitted late in the design process it may result in rejection due to the time constraints and additional expense to the Department of which no benefit is received. Also during the construction of new bridges, the Utility Company will review and approve shop drawings for the utility attachment and provide the necessary technical support and inspectors as a result of the attachment. Utility line(s) shall not be attached to the outside edge of the bridge where the structure crosses another highway or where aesthetics is a concern. The attachment shall be between the exterior beam and the first interior beam. Utilities are not permitted under the approach slabs. Utility line(s) may be attached to the outside edge of the bridge if the structure does not cross another highway or where aesthetics is not a concern, provided the weight of the attachment does not exceed 110 pounds per foot. Utility line(s) cannot hang below the bottom of the beams or below the bottom of the deck on flat slab bridges. Utility line(s) cannot be attached to the bottom of concrete flat slab. No field welding is allowed on steel beams and no field drilling is allowed on concrete beams or steel beams. For new construction, all attachments to concrete shall be made with threaded inserts that are cast into the concrete. For existing structures, attachments may be made using adhesive anchors that comply with the requirements of the Department. Attachment hardware shall be galvanized or stainless steel. For new construction, if the Department must increase the bridge capacity or extend elements such as bent caps to support a utility, the Utility Company must pay for the additional design and construction costs.

- The general controls for providing encasement, allied mechanical protection, and shut-off valves used should be followed for pipeline attachments to bridge structures (see Chapter 6.3)

- Where a pipeline attachment to a bridge is cased, the casing shall be effectively opened or vented at each end to prevent possible buildup of pressure and to detect leakage of fluids.

- Where a casing is not provided for a pipeline attachment to a bridge, additional protective measures shall be taken. Such measures shall employ a higher factor of safety in the design, construction, and testing of the pipeline than would normally be required for cased construction.

- Gas lines and electric power line installations on structures will not be considered. The attachment of sewer lines will be allowable if the Utility Company can prove the attachment is the most economical installation over directional drilling, jack and bore, or construction of a utility bridge, etc.

- Encroachment Permits shall include detailed plans, specifications and design calculations signed and sealed by a registered Professional Engineer (P.E.) in South Carolina indicating at a minimum the location, the weight per linear foot of the utility, any encasement proposed, its weight per linear foot, live loads, dead loads, wall thickness of the pipes, minimum and maximum operating pressures, etc. Details on the method of attachment to the bridge as well as location shall be provided. Placement of utilities on existing structures shall receive approval of the Bridge Maintenance Engineer prior to the approval of the Encroachment Permit and the Regional Production Engineer shall approve the installation of utilities on all new structures.

- All costs of installing and maintaining any utilities attached to the bridge structures shall be at the expense and effort of the Utility Company. Failure to maintain such utilities in an acceptable manner shall be grounds for revoking the Encroachment Permit and removal of the utility at the Utility Company’s expense. Any damages or adverse impacts to the structural integrity of the structure resulting from installation or maintenance of the utility will be corrected at the expense and effort of the Utility Company.

6.10 SCENIC ENHANCEMENT

- The type and size of utility facilities and the manner and extent to which they occur along or within highway ROWs can materially alter the scenic quality, appearance, and view of highway roadsides and adjacent areas. For these reasons additional controls are applicable in certain areas that have been acquired or set aside for their scenic quality. Such areas include scenic strips, overlooks, rest areas, recreation areas, the ROW of highways adjacent thereto, and the ROW of sections of highways which pass through public parks and historic sites.

- New underground utility installations may be permitted within such lands where they do not require extensive removal or alteration of trees or other natural features visible to the highway user or if they do not impair the visual quality of the lands being traversed.

- New aerial installations shall not be used at such locations where there is a feasible and prudent alternative to the use of such lands by the aerial facility. Where this is not the case, aerial facilities shall be considered only where:

    - Other locations are unusually difficult and unreasonably costly, or are more undesirable from the standpoint of visual quality,

    - Undergrounding is not technically feasible or is unreasonably costly, and

    - The proposed installation can be made at a location and will employ suitable designs and materials which give adequate attention to the visual qualities of the area being traversed.

- These controls shall also be followed in the location and design of utility installations that are needed for a highway purpose, such as for continuous highway lighting, or to serve a weigh station, rest or recreational area.

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6.11 CONTROLLED ACCESS HIGHWAYS

Utility facilities may not be installed within the controlled access highway ROW unless the Utility Company can demonstrate that there are no feasible alternatives and the proposed facility will not adversely affect the design safety and operation of the highway. The Utility must also provide planned locations for future access for utility facility maintenance operations. Access for utility facility maintenance should not interfere with the safety and operations of the controlled access highway.

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6.12 UTILITY TUNNELS AND BRIDGES

A utility tunnel or a bridge occasionally is provided for a pipeline crossing a freeway at a strategic location. Where it can be foreseen that several utility crossings will be needed, the cost of the tunnel (either a large casing or a box culvert) or of the bridge may be less than that for the alternative (i.e., several untrenched or separately encased pipelines). Where these conditions exist, adequate studies shall be performed by the Utilities to assess needs for future crossings and to converge their facilities to a joint-use single crossing.

- In a combined tunnel or bridge, provisions shall be made to isolate mutually hazardous transmittants, such as fuels and electric energy, by compartmentalizing or by auxiliary encasement of incompatible carriers.

- The utility-tunnel or utility-bridge structure shall conform to the Department's standard practices and design including the Department's seismic standards.

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Chapter 7

Real Estate Involvement in Utility Relocations

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Chapter 7
REAL ESTATE INVOLVEMENT IN UTILITY RELOCATIONS

When an existing utility facility is overtaken by land acquired for a state highway project and the utility must be relocated or accommodated in place, the Utility Company may be entitled to reimbursement for eligible costs. The Utility must provide documentation that it holds a property interest in the land occupied by its facilities. This interest may be in the form of an easement, fee simple title or in certain circumstances, a license, or other legal documentation. Whenever an existing utility ROW is to be occupied by the Department for highway purposes, thorough consideration should be given to the feasibility of joint highway use of that ROW as an alternative to unnecessary or costly relocations. In such cases, the joint highway use should be in compliance with the accommodations policies and the property interest to be acquired by the Department will be only to the extent adequate for the construction, safe operation and maintenance of the highway. If the utility elects to relocate their utility facilities to a newly secured utility easement, then the ROW costs may be eligible expenses to the project once prior rights status has been established for the utility.

7.1 DETERMINING PRIOR RIGHTS

Prior rights status exists when an existing utility facility has a compensable right to be located on the highway right of way. Prior rights occur in the following circumstances:

- The utility facility was constructed on private property through a recorded easement, or
- The utility facility was relocated or remained in an SCDOT ROW under a previous project, and at the time SCDOT agreed in writing to allow the utility to retain its prior rights status.

The Utility Company must provide documentation for review by the Department in order to establish their prior rights status for the project. Once prior rights status has been established, the Department and the Utility shall agree in writing as to the obligations and responsibilities of each party in a Utility Agreement. This agreement will outline the percentage of relocation work that is a reimbursable expense for the project.

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7.2 UTILITY EASEMENTS

If the Utility is relocating outside the project ROW, the Utility will be responsible for acquiring all necessary easements and/or property rights. If the Department is performing any of the utility relocation construction within the highway construction contract, then the Utility must delineate on their relocation plans where work will be performed outside of highway ROW and the extents of the easement or property rights secured for the project. On the cover page of the utility relocation plans, the disturbed areas within highway ROW should be quantified separately from the disturbed area within the utility easement and both should be noted on the plan cover. Documentation of the easement and/or property rights must be provided with submission of the Utility Relocation PS&E for in-contract relocation work. This documentation will be necessary to certify that the ROWs are clear for construction. A statement should be included on the utility relocation plans that conveys right of entry to the Department contractor for the purpose of constructing the utility facilities.

For Utilities that are securing their own easements outside of highway ROW and constructing the relocation work prior to the highway project, the Department will require regular updates on the progress of the utility relocation project in order to evaluate its impact on the highway project schedule.

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7.3 UTILITY SPECIAL PROVISIONS AND PERMITS

Once Utility Coordination is complete and each Utility has established a plan for the facilities located within the project termini, the Utility should provide any required special provisions for the project. In cases where the proposed highway construction will be conducted in proximity to the existing or relocated utility, the Utility should specify any applicable special precautions that should be followed to secure proper protection for the utility and construction workers. For utilities that were located in a utility easement that was secured as highway ROW for the project, additional license and/or right of entry requirements may be required. The easement interest is typically conveyed with the ROW property transfer unless the easement rights have been terminated. During Utility Coordination, the Utility Coordinator should inquire which applications and approvals are required by the Utility for highway construction work within the utility easement.

All Utilities shall be required to obtain an Encroachment Permit from the Department prior to using or occupying any part of the highway ROW. Encroachment Permit applications should be submitted with the proposed utility package. More information about encroachment permits is included in Chapter 13.

All other necessary permits, such as National Pollutant Discharge Elimination System (NPDES) and other environmental permits should be secured by the Utility Company prior to the deadline for the utility package submittal. For utility work that is being conducted prior to the highway construction project, coverage under the Department's permit is not an option. For utility work that is being conducted in-contract with the highway construction contract or within a designated utility relocation window within the highway contract, prior arrangements may be possible to allow some coverage of activities within the Departments' permits. However, requests for inclusion in permits must be made during the preliminary design of the project and an agreement secured with the Department for any work that the Department may perform on behalf of the Utility in order to secure permit coverage.

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Chapter 8

Environmental Permits

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Chapter 8
ENVIRONMENTAL PERMITS

When an existing utility facility is impacted by a highway improvement project, the Utility Company may be required to obtain environmental permits for proposed utility relocation work. Only impacts associated with SCDOT construction activities are authorized under environmental permits obtained by the Department. Construction activities performed by a Utility Company would not be covered under the Department unless specifically included in the permit application. Depending on the circumstances of the project, the Department may be able to assist the Utility Company in the environmental permitting process. In general, utility relocations located within the limits of a transportation improvement project may be included in the Department's environmental permitting package if certain conditions and stipulations are met. The Department and the Utility Company would enter into agreement during the early scoping stage of project development and the Utility Company would be required to provide the information to support a permit application prior to the permit application deadline. There are advantages to both the Department and the Utility Company if the environmental permitting can be combined to streamline the approval process and reduce the potential for project delays.

8.1 PERMIT COVERAGE

If desired, SCDOT permit applications may allow for utility relocation activities necessary for the construction of the project to be included in the environmental permit application. In order for the Department to include Utility relocations in their permit application, the Utility relocations must meet the following stipulations:

"…installation of utility lines (when those utility lines are being installed due to the improvement, expansion, or maintenance of existing linear transportation projects) and the associated excavation, backfill, or bedding for the utility lines, in all waters of the US, provided there is no change in pre-construction contours. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication. The term "utility line" does not include activities that drain a water of the US, such as drainage tile or french drains."

Additionally, the Utility Company must provide detailed information prior to the ROW phase of work for the project. The following information, at minimum, must be provided prior to the permit application deadline set by the Department:

- Approved Utility relocation plans and CADD design files.
- Construction Specifications to include means and methods for the utility relocation work.
- ROW or easement information for work outside of existing/proposed SCDOT ROW, including if necessary rights of entry for S contractors to perform relocation activities.
- Intentions for inclusion of utility relocation work within SCDOT construction contract or whether relocation work will be performed by utility in-house forces and/or contractors outside of SCDOT contracts within a utility relocation window.
- Signed agreement between SCDOT and the Utility Company for execution of utility relocation work within project limits and permit responsibilities.
- Prior rights documentation.

- Other permits required by the Utility for the proposed work, such as Department of Administration boring permissions for work within a navigable waterway (see http://www.admin.sc.gov/generalservices/easements).

If the Utility Company is interested in potentially being included in the Department's permit application, the Utility Company would need to notify the Department at the scoping meeting or Advance Utility Coordination meeting for the project. Once prior rights have been established, the Department and the Utility shall agree in writing as to the obligations and responsibilities of each party in a Utility Agreement and Memorandum of Agreement. The Utility Agreement and Memorandum of Agreement would specifically need to identify the party responsible for mitigation costs, compliance responsibilities, and costs associated with compliance.

If the Utility Company elects to secure environmental permits independently, then the company should provide the proposed schedule for completion of relocation plans, permit application submittals, and schedule for ROW and/or easement acquisitions for relocations outside of SCDOT ROW. When utility relocation work will be performed prior to the construction project or outside the project limits, the Utility Company may be required to obtain permits independently. The Utility Company will be responsible for providing proof of an obtained and valid permit prior to any work commencing inside of an SCDOT ROW. Upon written verification from SCDOT that all permits are valid, the Utility Company will be authorized to begin work within the Department's ROW.

8.2 CLEARING & GRUBBING

If the location of the proposed utility relocation with SCDOT Right of Way is in a location where advance clearing and grubbing by the Utility Company will cause undue hardship, the Utility Company may request assistance from the Department. The Department may be able to facilitate and advance clearing and grubbing contract for Utilities or allow a Utility Relocation Construction Window within the Department's construction contract in order 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 is responsible for securing all necessary state and federal permits for their proposed construction. Proof of a valid permit must be provided to SCDOT prior to any work conducted by the Utility Company in the SCDOT ROW. Upon issuance of the Encroachment Permit and verification of permits, the Utility Company will be authorized to begin any clearing or grubbing within the Department's ROW.

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8.3 ENVIRONMENTALLY SENSITIVE AREAS

Any Environmentally Sensitive Area (ESA) on the project will be delineated prior to and during construction with appropriate orange fencing. No work shall occur on a delineated or known ESA. If work is required in ESAs, this should be determined during the scoping and project development process prior to construction. If the Utility encounters an ESA that was not previously delineated or known, the Utility shall immediately cease operations and contact the DCE or RCE. The DCE or RCE will coordinate with the Environmental Services Compliance Office in order to make a determination and provide additional delineation as necessary on the project. The Utility should only resume operations as directed by the RCE and when all necessary federal, state, and/or local permit(s) are secured by the Utility.

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8.4 SEDIMENT & EROSION CONTROL

The Utility Company is responsible for following and implementing the requirements of the National Pollutant Discharge Elimination System (NPDES) permitting program under the Clean Water Act regarding control of soil, erosion, and sedimentation. The Utility Company should contact the SC Department of Health and Environmental Control (SCDHEC) or if the project is located in a coastal county, SCDHEC Office of Coastal and Resource Management (OCRM), and the local municipality in order to determine what requirements and permits are applicable to this type of utility relocation work. The utility shall secure all necessary permits required to perform their work if the utility relocation is being conducted outside of the Department's construction contract. For in-contract utility relocations, the Department 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 being conducted by the Department's contractor.

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8.5 PERMITS FOR BORING IN NAVIGABLE WATERS

For utility relocations that are planned in navigable waters of the State, the Utility Company is required to secure permit coverage for the proposed work. This permitting process would concern 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 (see http://www.admin.sc.gov/generalservices/easements).

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8.6 CONTAMINATED SOILS

Contaminated soils are sometimes encountered in new ROWs during construction as a result of past activities on the property. 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 SCDOT Environmental Services Office at this time.

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8.7 CLEANUP

Prior to acceptance of relocation work performed on the Department's ROW, the Utility Company shall restore all areas of disturbance and leave the ROW in an acceptable condition.

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Chapter 9

Preparation of Utility Relocation Plans

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Chapter 9
PREPARATION OF UTILITY RELOCATION PLANS

Once the Advance Utility Coordination for a highway project has been completed, there may be some unavoidable utility impacts on the project that will result in necessary utility relocation work. Once the Department initiates Right of Way Acquisition for the highway project, final ROW plans will be provided to the utility companies in order to initiate preparation of final utility relocation plans.

9.1 GENERAL

The Utility Company should review the plan information provided by the Department early in the project development in order to determine whether there are potential opportunities for avoiding or minimizing impacts to the utility facilities located on the project. If the Utility has unavoidable impacts to their facilities, then utility relocation plans should be prepared and submitted to the Department for review. If CADD files are available for the relocations, then those files should be submitted as well with the relocation package. The relocation plans will be submitted to the Utility Coordinator and reviewed by the RCE and/or DCE. The purpose of the technical review of the plans is to ensure that the completion of the proposed utility relocation is feasible relative to the execution of the highway construction project.

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9.2 RELOCATION PLAN STANDARDS

The following information, at a minimum, must be provided on utility relocation plans and sketches provided to the Department:

- Relocation of facilities should be shown on SCDOT plans or should reference SCDOT stationing that corresponds to the project plans.
- All existing, proposed, temporary, and "to be abandoned" locations must be shown. Provide a legend depicting the contrasting locations or notes to clearly identify the phases of relocations.
- Lateral offsets must be shown for both the existing and proposed utility lines (regardless of overhead or underground). Note on the plans the distance from one of the following: 1) edge of pavement; 2) centerline of the roadway (clarify whether from existing or new centerline if necessary); or 3) ROW line.
- Staging Plan or narrative of how the relocation work will be executed.
- Add notes to the plan sheet for any special circumstances that the road/bridge contractor needs to be aware of in order for your utility relocations to be completed. (i.e. require prior clearing and grubbing, or other special circumstances)
- For overhead facilities: Note which poles will be removed and which poles will remain. *If pole is to remain at its current location but will be replaced in order to bring the pole up to code, note the type, size and class the new pole.
- If overhead facilities cross the roadway or bridge structure, indicate overhead clearance requirements.
- For overhead lines that transition to underground (or underground to overhead), the plans should depict the point of transition along with lateral offsets for that section of underground lines.
- If the Utility is requesting that UG lines be allowed to remain in place near new drainage facilities; elevations/depths must be shown in order to identify conflicts with the new drainage. This information should be depicted on the cross section sheets if possible.
- A minimum of one full size (24-inch by 36-inch) color coded plan and one (11-inch by 17-inch) scanned color coded plan.
- Utility easements and/or right of way should be shown on the plans as proposed or existing.
- For in-contract relocation plans; disturbed areas should be quantified on the plan cover sheet and calculated for areas within the SCDOT ROW and for areas outside of SCDOT ROW and within utility easements.

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9.3 REVIEW OF PLANS

Once the proposed utility relocation plans are submitted, the Utility Coordinator and RCE will review the proposed plans to ensure that the proposed work is feasible relative to the proposed highway construction project. The Utility Company may elect to submit utility relocation plans at various stages of development in order to coordinate the proposed relocation work more effectively. The Utility should indicate whether the proposed relocation work will be performed by the Utility Company forces and/or contractors or whether they requested that the relocation work is included in the highway construction contract. If the Utility intends to execute relocation work independently within the highway Right of Way, then an encroachment permit application should be submitted with the proposed relocation plans. The Utility shall secure all necessary environmental permits required to perform their work if the utility relocation is being conducted outside of the Department's construction contract. For in-contract utility relocations, the Department will draft a proposed agreement to outline the roles and responsibilities for the utility relocation work being conducted by the Department's contractor. Once the RCE has reviewed the utility relocation plans and finds them acceptable, the plans will be forwarded to the Utility Engineer for final approval and acceptance.

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9.4 APPROVAL OF PLANS

Once the utility relocation plans are approved, the Department will notify the Utility Company and issue the encroachment permits if necessary. The Utility should provide the Department with the schedule for completion of rights of way, permitting and construction for the relocation work at each utility coordination meeting. The Department's Utility Coordinator should be notified immediately of any changes in the proposed utility relocation schedule as it may impact the highway construction project schedule. For in-contract utility relocation work, the final PS&E package for the utility relocation will be transmitted to the Project Manager for inclusion in the highway construction plans and proposal. An agreement will be provided to the Utility Company that outlines the roles and responsibilities for the execution of the utility relocation work as necessary.

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Chapter 10

Utility Construction Coordination

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Chapter 10
UTILITY CONSTRUCTION COORDINATION

10.1 GENERAL CONSIDERATIONS

10.1.1 Disturbed Areas

All land disturbing activities on ROW of the Department must be performed in a manner that erosion is controlled and sediment is retained on the site to the maximum extent feasible and storm water is managed in a manner such that neither any significant on-site nor off-site damage and/or problem is caused or increased.

- Construction plans for work to be performed on the Department ROW must include designs to manage storm water runoff and control erosion and sedimentation using state-of-the-art practices

- Prior to the start of construction, the permittee must submit in writing to the Engineer, for approval, his schedule for the accomplishment of temporary and permanent erosion and sediment control and storm water management for the work to be performed. This is not necessary for service connections.

- During construction, work must be scheduled and conducted in such a manner as to minimize soil erosion and control runoff, with particular attention to prevent contamination and depositing of sediment in adjacent streams, watercourses, lakes, ponds and other water impoundments or onto adjacent properties, and to prevent on-site and off-site damage from storm water runoff. Temporary and permanent measures to control erosion and sedimentation and manage storm water runoff must be carried out in conjunction with clearing, grubbing and other earthwork operations and throughout the life of the project. Temporary measures such as berms, dikes, slope drains, terraces, earth rolls, sedimentation basins and temporary seeding must be provided until permanent drainage facilities and erosion control features are completed and operative. Permanent devices or measures such as culvert pipes, terraces, gutters, bituminous curbs, permanent slope drains, riprap and permanent vegetation must be used and must be incorporated as soon as feasible.

- The permittee must periodically inspect work performed to insure that the necessary erosion control measures are implemented and are adequate for the needs of the site and affected off-site areas. Additional measures will be implemented in the event that the measures included in the plan are not sufficient to adequately control erosion and sedimentation and manage storm water runoff.

- It will be the responsibility of the permittee to maintain the disturbed areas until permanent erosion control measures are in effect and functioning satisfactorily.

10.1.2 Drainage

Care shall be taken in utility installations to avoid disturbing existing drainage facilities. Underground utility facilities shall be backfilled with pervious material and outlets provided for

entrapped water. Underdrains shall be provided where necessary. No jetting or puddling shall be permitted under the roadway.

10.1.3 Control of Traffic

Traffic controls for utility construction and maintenance operations shall conform to the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), latest edition. All construction and maintenance operations shall be planned with full regard to safety and to keep traffic interference to an absolute minimum. No open excavation within fifteen (15) feet of the travel lane is permitted unless the contractor is actively working on the site. The open excavation must be covered or install and maintain a temporary a concrete barrier wall whenever not actively engaged in work activities directly related to the excavation or not present at the site of the excavation (see Standard Specification For Highway Construction). On heavily traveled highways, construction operations interfering with traffic shall not be allowed during periods of peak traffic flow. Any such work must be planned so that closure of intersecting streets, road approaches, or other access points is held to a minimum.

- The utility firm or permittee shall provide, erect and maintain all necessary barricades, lights, danger signals, signs and other control devices, provide qualified flaggers and watchmen where necessary; shall take all necessary precautions for the protection of the work, the warning that work is under construction, and the safety of the public. Suitable advance warning signs shall be erected in advance where operations interfere with the use of the road by traffic. Lane closures (or partial closures) will not be permitted unless provided for in the permit. Where a lane (or a portion of a lane) is closed, traffic control devices and flaggers shall be used in accordance with the MUTCD. All barricades, signs and traffic control devices shall conform to the requirements of the MUTCD.

- When equipment is not in use on urban roadways with limited ROW and on rural roadways, store material and equipment not closer than fifteen (15) feet from the near edge of the adjacent travel lane when space is available. Whenever space is limited and the 15-foot clear distance is not available, store material and equipment at the greatest possible distance from the near edge of the travel lane and supplement the complete length of the storage area with portable plastic drums spaced at 5-foot intervals. On Interstate highways do not store material and equipment closer than thirty (30) feet from the near edge of the adjacent travel lane.

- The Department may suspend the work if traffic control devices are not used and maintained in accordance with these provisions.

- All contractors, sub-contractors, utility company employees and their sub-contractors performing work on the ROW must wear safety vest and hardhats as outlined in the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD).

10.1.4 Permanent Markers

Permanent markers identifying the horizontal and vertical locations of new underground utilities, both crossings and longitudinal installations, shall be placed, where appropriate, by the Utility

Company. Markers shall be installed in such a manner as to not interfere with highway maintenance operations, preferably at the ROW line.

10.1.5 Records

Records shall be maintained by the Utility owner that describe the utility, usage, size, configuration, material, location, height or depth, and any special features such as encasement. This information should be in a reproducible form and available to other utilities and highway agencies.

The Utility owner shall also submit to the local RME and the State Utility Engineer as-built drawings of all underground installations within the Department's ROW within sixty days (60) of completion of the permitted work. The Department, upon request, from the Utility Company may grant an extension.

10.1.6 Construction Identification of Utilities

When it is likely that construction or maintenance activities will involve underground utilities, provisions of the S. C. Code of Laws Title 58, Chapter 35 entitled "Underground Utility Damage Prevention Act" of 2011 shall be followed. The location of each underground utility shall be identified by the respective owners with stakes, paint or other temporary on the surface markings, color coded by utility type. It is the responsibility of the Utility Company or their contractor to remove any stakes or flags installed during the utility installation. The markings shall be in accordance with the American Public Works Association uniform color code system for making underground utility lines which is as follows:

- Red: Electric power lines, cables, or conduits and lighting cables – distribution and transmission, municipal electric systems.
- Yellow: Gas, oil, steam, petroleum or gaseous Materials pipelines - distribution and transmission, all pipelines carrying hazardous or dangerous materials including petroleum products, steam and compressed air or compressed gases.
- Orange: Communications lines including telephone and telegraph systems, police and fire communications, cable television.
- Blue: Potable water systems and slurry pipelines.
- Green: Storm and Sanitary Sewers.
- Purple: Radioactive material. Reclaimed water, irrigation and slurry lines.
- Pink: Temporary survey markings.
- White: Proposed excavation.

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10.2 CONSTRUCTION TECHNIQUES

10.2.1 Trenched Construction and Backfill

In trenched construction, bedding is the suitable soil or material which is prepared to support the pipe. Backfill is the material refilling the remainder of the trench which consists of suitable soil or roadway materials. Oftentimes, soils removed from the trench during excavation are not suitable for backfill soil. If the backfill soil is unsuitable, the RME can require the placement of flowable fill. From the highway viewpoint, the essential features for trench and backfill construction are: (a) restoration of the structural integrity of entrenched roadbed; (b) security of the pipe against deformation likely to cause leakage; (c) assurance against the trench becoming a drainage channel; and (d) assurance against drainage being blocked by the backfill. The integrity of the pavement structure, shoulders, and embankment slopes are of primary concern.

10.2.2 Controls for Trenched Construction

The trench shall be cut to adhere to the applicable Occupation, Safety, and Health Administration (OSHA) requirements. The vertical faces shall be shored to meet OSHA requirements, where necessary, and lateral and vertical support must be provided for all existing facilities and structures. Excavation methods shall follow the criteria outlined in Chapter 6. All fill soils and excavated soils shall be placed on the side of the trench away from the pavement. The pavement will be kept clean of mud, debris, etc.

- Bedding shall be provided for six (6) inches or ½ the diameter of the pipe whichever is less. Bedding shall consist of granular material free of lumps, clods, stones, and frozen material and prepared to provide the pipe with uniform support throughout its length. Unstable soils and rock ledges should be sub-excavated from the bedding zone and replaced by suitable material.

- For excavations under the roadway through shoulders: Backfilling of trenches is to be accomplished immediately after placement of the pipe. Trenches will not be left open during hours of darkness. Backfill is to be placed in six (6) inch layers or less with each layer being thoroughly compacted. Care should be exercised to thoroughly compact the material around and over the pipe. Each layer will be compacted to a density of 95 percent as determined by AASHTO Method T-99. All work shall be performed to the satisfaction of the Department. Trench soil (or a substitute suitable material used for backfill) must be capable of producing required compaction.

10.2.3 Pavement Cuts

Open cuts in the pavement will be authorized only with permission of the Department. Where pavement is to be cut, the work shall be done in clear weather when traffic is lightest. Materials and methods of compaction shall be adapted to achieve prompt restoration of traffic service. Signing and warning devices will be supplied by the utility company or its contractor and will be in compliance with the Manual on Uniform Traffic Control Devices (MUTCD). Traffic will be maintained at all times and lane closures will only be permitted after a TCP is approved. Driveways will be maintained so as to permit ingress and egress to properties adjacent to the roadway. Blocking or closing of a driveway will not be permissible without the approval of the

property owner. Restoration will be performed as shown on Figure 4 of Appendix B or as specified by the Department.

10.2.4 Pavement Repairs

- The entire affected surface of asphalt roadways will be overlaid one year after initial restoration of pavement on all longitudinal cuts or if three (3) or more perpendicular cuts are made within a 200-foot section of roadway. Unless the road is scheduled to be resurfaced or in urgent need of resurfacing, the Department will determine the need and extent of resurfacing requested by the permittee at the time of the encroachment permit application. The age and condition of the road surface and the Department's schedule for resurfacing will be considered; however, the safety of the traveling public is a priority. Initial restoration shall be maintained in good condition by the permittee for the period prior to resurfacing and repairs as necessary shall be made immediately upon discovery. The Department will inspect the initial repair to ensure it is in satisfactory condition prior to resurfacing. Where the pavement cut is not to be resurfaced, it will be maintained for two (2) years or until the cut is satisfactorily restored.

- Base and surfacing for asphalt driveway repairs shall consist of six (6) inches of stabilized aggregate base course and 150 pounds of asphalt concrete surface course unless otherwise specified by the local RME.

- Techniques that may be used for installing pipeline under a highway without disturbing the surface are indicated below:

    - **Driving:** A small pipe with a pilot shoe can be driven through compressible soils by a steady thrust, hammering, or vibrating. A casing or corrosion resistance carrier must be used.
    - **Coring:** A small casing without pilot shoe can be drilled into more difficult soil, which enters the pipe as it advances. The core is removed by sluicing during or after drilling.
    - **Boring:** Larger pipes can be jacked through oversize bores carved progressively ahead of the leading edge of the advancing pipe as spoil is mucked back through the pipe.

10.2.5 Controls

- Un-trenched construction shall be required as described in the section on Encasement and Allied protection**.** (See Chapter on Methods of Protection)

- Portal limits (temporary access points, bore pits, etc.) of pipeline crossings shall be established safely beyond the surfaced area of the highway so as to avoid impairing the roadway during installation of the pipeline. The near edge of portals shall be beyond the controlled access line on controlled access highways and no closer than five (5) feet on conventional highways. Adequate protection and warning devices will be provided while the portal is open. Bulk heading is required on any location nearer than five (5) feet or where the horizontal distance from the edge of pavement is less than the vertical

differences in elevation between the surfaced area of the highway and the pipeline. (See Figure 5)

10.2.6 Pipelines

Subject to safety regulations adopted by the State or the Federal Government, the following precautionary measures shall be used for pipeline installations:

- Pipeline installation permits shall specify the class of transmittants, the maximum working, test, or design pressures, and the design standards for the carrier.

- When it is anticipated that there will be a change in the class of transmittants or an increase in the maximum design pressure specified in the permit, the Utility shall be required to give the Department advance notice and obtain approval for such changes. The notice shall specify the applicable codes to be used.

10.2.7 Overhead Electric Power and Communications

- Except in extreme cases, and then only with specific authorization, longitudinal installations of overhead lines on the highway ROW shall be limited to single pole type construction.

- Unless not practical, joint use single pole construction shall be followed, as indicated in the National Electric Safety Code, latest edition, at locations where more than one utility or type of facility is involved. This is of particular significance at locations where ROW widths approach the minimum needed for safe operations or maintenance requirements or where separate installations may require extensive removal or alteration of trees.

10.2.8 Underground Electric Power and Communications

- Where it is acceptable to both the Utility and the Department, underground crossings of the highway may be installed with protective conduit. All installations under roadways shall be by the directional drilling method, jack and bore or another approved method. Open cuts will not be allowed on any state maintained highway.

- The protective conduit of duct bank shall comply with the technology used to install the conduit for example the jack and bore technology will require a steel casing and the directional drilling technology can use high and medium density polyethylene pipe or an approved equal. Where appropriate, the encasement shall extend to the access control lines, to the outside of the frontage roads, or to an indicated line that allows for future widening of the highway. On conventional highways, the encasement shall extend six (6) feet beyond the edge of pavement or two (2) feet behind the outer curb line. Vents will not be required for casing.

- Consideration shall be given to encasement or other suitable protection for any wire or cable facilities (a) with less than minimum bury, (b) near footings of bridges or other highway structures, or (c) near other locations where there may be a hazard.

- Where uncased bored installations are proposed by the Utility, the Utility shall be required to furnish information as to the controls and construction methods to be employed, before the proposed installations are considered by the Department. This is to ensure the necessary protections of the utility facility and the integrity and operation of the highway.

10.3 CONSTRUCTION NOTIFICATION AND COORDINATION

The Utility Coordinator for the project will continue to coordinate utilities during the construction phase to include assisting in facilitating coordination with the construction contractor and the Utility Companies and their contractors. Each Utility Company will be notified of the construction contract award and the name and contact information for the selected highway contractor. Utility Companies will be invited to the Pre-construction meeting and any additional coordination meetings between the Utility Companies and the contractor in order to work out construction schedules. The Utility Company is expected to have a representative in attendance at the Pre-construction conference. TCPs must be coordinated for utility work that will be performed during the highway construction. Prior to beginning any utility relocation operations, the utility company must notify the RCE. During construction, the RCE will document the utility relocation work and maintaining construction diaries to document for State reimbursed utility relocation work. If unanticipated utility facility adjustments are discovered during construction, the Utility Company will be notified immediately in order to coordinate a plan for conflict resolution.

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10.4 REVISED PLANS

All utility relocation work conducted within the SCDOT ROW shall be performed in accordance with the approved plans and specifications. If a utility relocation plan needs to be revised during construction or prior to construction, the utility owner should submit a revised work plan for review and approval. If the scope, nature and/or cost of the adjustment have changed significantly, an amendment to the Utility Agreement may be necessary. SCDOT approval must be obtained before proceeding with the revision. It is in the best interest of all parties to minimize plan revisions during construction as it may impact other utility relocations and cause project delays.

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10.5 CONSTRUCTION INSPECTION

In order to ensure proper installation and location of their proposed facilities, the Utility Company needs to inspect all relocation work necessitated by highway projects. The RCE is responsible for inspecting the work performed by the utility including any utility work performed in advance of construction. SCDOT Inspectors will monitor the material used, equipment used, and personnel working at the location in order to verify compliance for reimbursements. The inspectors will keep records showing the work verification.

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Chapter 11

Utility Agreements

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Chapter 11
Utility Agreements

11.1 GENERAL

Utility Agreements will be required for all construction projects where the Utility demonstrates they have prior rights. Should the Utility Company not have prior rights, they must complete and submit an encroachment permit for approval. Where the Utility has both prior rights and has poles encroaching on the ROW, a Utility Agreement and an Encroachment Permit will be required. The Department will reimburse the Utility for all cost associated for the in-kind relocations where the utility has prior rights as outlined in CFR 23 Section 645.

- The Utility will provide proof of prior rights in the form of a copy of easements, deed plat or other documentation supporting prior rights.

- The Utility does not have to supply the easement documentation for all landowners located on the project but must, as a minimum, supply documentation of at least one easement for land at the beginning and terminus of the project area as well two properties in the middle of the project area. However, if any pole is located within the existing ROWs, the Utility Company must supply the appropriate documentation establishing their prior right at these locations.

- In addition to the above, the Utility must provide prior rights information for each landowner on both sides of the roadway where the utility crosses the roadway.

- All prior rights information must have the legible execution date if the Utility is relying upon an express easement to establish prior rights.

- An original legible signed (with printed name) Utility Agreement (Form 3068-A) must be submitted electronically along with relocation sketches showing the Department station numbers, offsets, existing facilities, proposed facilities, a detailed estimate (Form 3068-B) with a detailed list of facilities to be removed and facilities to be installed.

- After the Utility Agreement is submitted and approved and work begins, if the Utility Company realizes a cost increase is required, the Utility must submit (in a timely manner) a letter explaining the increase and requesting approval by the Department. The Department, upon review and agreement, will issue a letter authorizing the increase to the Utility Agreement.

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11.2 BUY AMERICA REQUIREMENTS

MAP 21 – 23 USC 313 Buy America Guidelines for Utilities Compliance Requirements. The Federal Highway Administration (FHWA) and the South Carolina Department of Transportation after reviewing the Moving Ahead for Progress In the 21st Century Act (MAP 21) have concluded that utility companies with prior rights are required to ensure that steel items are manufactured in the United States. MAP 21 applies to SCDOT projects that utilize Federal Funds. Buy America now applies to all contracts, regardless of funding source, if Federal Funds are used to advance any portion of the project. For instance, If Federal Aid funds are used for Preliminary Engineering, Right-of-Way, or any construction contract, Buy America applies to all other contracts even if State or Locally funded. In addition, Buy America applies to all utility contracts/relocations that are eligible for Federal Aid funding. State or local funds cannot be used to relocate utilities to avoid Buy America.

- Further Information and guidance is available at the FHWA Buy America Construction Program Guide Web Page located at http://www.fhwadot.gov/construction/cqivbuyam.cfm

- Should any of the above requirements change the website will be updated accordingly. The Web Pages located https://www.scdot.org/business/business-landing.aspx

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11.3 BILLING AND PAYMENTS

All invoices must be submitted with detailed documentation backing up the expenditures. The invoice requires a certification stamp by the Utility Company stating that the charges are true and correct and all subcontractors have been paid and charges are in conformity with the Utility Agreement with a signature by the authorized representative of the company. The Utility Company must certify that all steel products are manufactured in the United States if appropriate.

- Progress payments are recommended; however, invoices must be greater than $2,500 except for the final invoice.

- The Utility Company can submit a lump sum agreement provided it does not exceed $25,000. All documentation outlined in Section 11.1 is still applicable.

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Chapter 12

Utility Relocation Work in Highway Contracts

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Chapter 12
UTILITY RELOCATION WORK IN HIGHWAY CONTRACTS

12.1 GENERAL

During the coordination of utilities on a highway construction project, a determination should be made whether any of the utility relocation work should be included within the Department's highway construction contract. Due to the nature of the utility conflict, there may be a mutual benefit to including the utility relocation work within the highway construction contract.

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12.2 AGREEMENTS

For proposed utility relocation work due to highway construction projects, the Department would typically have an agreement with the Utility Company for the proposed work. The type of agreement and/or letter required depends upon the type of utility relocation. The following types of agreements and/or letters apply to the situations described below:

- No-conflict Letter: For existing utility facilities located within the project termini that do not conflict with the proposed highway construction and the utility will remain in place as is.

- No-cost Letter: For existing utility facilities located within the project termini that will be in conflict and relocations will be planned but the utility does not have prior rights and all relocations will be performed by the Utility Company at no cost to the Department.

- Utility Agreement: For existing utility facilities located within the project termini that have confirmed prior rights and will be relocating in agreement with the Department to cover a designated percentage of the costs of the relocation.

- Participation Agreement: For existing utility facilities located within the project termini that would like to be included in-contract with the Department highway construction contract.

Proposed agreements and/or letters should be submitted to the Utility Coordinator for review and acceptance. These agreements and/or letters, if acceptable, will be forwarded to the Utility Engineer for final approval and execution. Final executed agreements/letters will be included in the project file as the official documentation for the Utility Certification on the project prior to construction funding obligations and approval to proceed to the construction phase of work on a highway project.

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12.3 UTILITY PLANS, SPECIFICATIONS AND ESTIMATES

The final approved utility relocation plans, specifications and estimates should be provided to the Utility Engineer for final approval. The final plans and specifications will be included in the Department's construction proposal and advertised for bidding. The sub-contractors bidding on the utility relocation work would receive the utility bid worksheet that would include the pay items specific to the utility relocation work. The estimate provided will be utilized to finalize agreements and internal engineer's estimate for the highway construction project for internal bid review. The utility coordinator will provide the submission deadlines for PS&E packages during the utility coordination for the project. Failure to submit the packages by the deadline would forfeit the Utility Company's ability to have their relocation work included in the highway construction contract.

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12.4 BID REVIEW AND AWARD CONCURRENCE

The Department will receive bids on the designated bid opening date and review all bid tabs for compliance with Department contract award criteria. If the Department determines that the project should be awarded, any in-contract Utility Companies will be notified of the decision to recommend the project for award. Typically the Department would like to secure concurrence for the award of the utility relocation work to the designated contractor as reflected in the bid tabulations. A letter of concurrence along with the utility relocation bid worksheet will be provided to the Utility Company for review and concurrence in accordance with the utility agreement.

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12.5 UTILITY RELOCATION WINDOWS IN CONSTRUCTION CONTRACTS

Due to the complexity and/or necessary construction staging of the utility relocation work, there may be a mutual benefit to including a utility relocation window within the Department's highway construction contract for this work. A utility window requires the contractor to perform the clearing, grubbing, moving and demolition items, and any required fence installations/relocation operations immediately after the Notice to Proceed (NTP) and then allow the Utility a period of time to relocate unhindered by the contractor's operations. The contractor maintains all erosion and sediment control measures on the project during this time. This option may be necessary in order to facilitate utility relocations that could be hindered or delayed by site conditions that impact access and/or clearance to relocate the utilities as planned. The decision to include a utility window should be coordinated with the PDT during the Utility Coordination. A special provision outlining the details of the proposed specification for temporary suspension for utility work should be drafted by the PM and provided to the RCE for review and approval. The PM will include the final special provision in the construction proposal for the project.

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Chapter 13

Encroachment Permits

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Section **Page**

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Chapter 13
ENCROACHMENT PERMITS

13.1 GENERAL

The Department must issue a permit before any utility is installed or any other work is performed on State ROW. This applies to both aerial, aerial encroachment and underground installations, except as noted in this policy. An Encroachment Permit Application should be initiated electronically through the "Encroachment Permit Processing System" (EPPS). This program is on the Department website (www.scdot.org). The RME must consult with the RCE to determine if any construction activities are planned on the roadway for which the encroachment permit will be issued.

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13.2 APPLICATION

- Utility Companies should establish an account in EPPS to facilitate the application process. Along with the application, appropriate drawings and sketches should be included to ensure clear concise communication of the planned encroachment. Electronic documents should be submitted in Adobe PDF or other acceptable formats.

- The application should contain, at minimum, a concise description of the work to be performed along with a plan view showing a north arrow, the pavement width, ditch line, the controlled access line if applicable, distance from the nearest intersecting road, the ROW lines and the location of the work to be performed as referenced to both the edge of the pavement, the ROW line and any drilling pit locations. The Utility shall remain responsible for all abandoned utility facilities. The abandoned facility must be capped at both ends. The Department may require the removal of abandoned utility facilities and restoration of the right of way, when necessary to (1) avoid interference with the operation, maintenance or reconstruction of the highway, or (2) comply with the legal obligation to remove such lines at the demand of a landowner with superior property rights to the Department's or Utility's easement.

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13.3 PROCESSING

All applications shall be submitted electronically through EPPS and processed in accordance with Engineering Directive #17. Once the application is approved by the Department, an Encroachment Permit Number will be assigned. The Applicant will be notified by e-mail and a copy of the approved Permit may be accessed through EPPS. The official documents will be retained electronically in EPPS.

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13.4 BLANKET PERMITS

- Service Connections – Utility providers may obtain permission to install routine service connections within the Department's ROW through the use of a blanket permit. The blanket permit process eliminates the need for individual permits for each location and should improve the efficiency of the process. However, some service connections may require an individual encroachment permit. The required provisions under the blanket permit can be reviewed in EPPS for additional clarification and direction.

- Traffic control – Utility providers may obtain permission to encroach upon the SCDOT right of way to set up traffic control to perform necessary repairs or routine maintenance by use of a blanket permit. The blanket permit process eliminates the need for individual permits for this type of operation and provides guidance regarding work zone traffic control. The required provisions under the blanket permit can be reviewed in EPPS for additional clarification and direction.

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13.5 MINI ANTENNA INSTALLATIONS

Unless the outfit making the request is a company regulated by the S.C. Public Service Commission, a pole or antenna cannot be positioned in an SCDOT ROW. If installing an antenna on an existing utility pole, the pole installation must meet all safety requirements without the installation of any protective barriers such as guardrails. It must not interfere with any present or future maintenance activities, nor may it be installed in front of any business (i.e., the pole must be installed on the property line). It must meet all local county and municipal zoning requirements (and provide documentation as such) and meet all sight distance requirements. An SCDOT Encroachment Permit must also be obtained.

If the antenna is to be installed on a pole owned by a public utility regulated by the S.C. Public Service Commission, the pole owner must have obtained an SCDOT Encroachment Permit for the pole installation. If the pole is a new installation that the antenna is being installed on, the pole must be for the primary use of the regulated utility. The wireless company owning the antenna must provide a Certificate of Public Convenience and Necessity issued by the S.C. Public Service Commission. If the antenna is to be installed at an SCDOT facility within the ROW (i.e., traffic signal poles), the wireless company must enter into a lease agreement with the Department and an Encroachment Permit and fee will be required. The State Utility Engineer should process all lease agreements. If the antenna is to be installed on a city-owned facility (i.e., signal or mast arm), the wireless company must obtain an Encroachment Permit from SCDOT and as a condition to the Permit, the wireless company must provide documented permission from the City or municipality for use of their facility.

13.6 ACTIVITIES NOT REQUIRING ENCROACHMENT PERMITS

13.6.1 Overhead Installation

A permit will not be required for aerial service connections only from an existing distribution line on Department ROW unless it is anticipated that there will be an interference with the normal flow of vehicular traffic on or along the highway or when replacing an existing pole on the Department's ROW. Any additional pole installations will require a permit.

13.6.2 Underground installation

An individual encroachment permit will be required for installation of an underground utility line on the Department's ROW. However, an individual encroachment permit may not be required for a service connection from a distribution line. See Section 13.4 for additional information regarding Blanket Permits for Service Connections.

13.6.3 Maintenance/Repair

- A permit will not be required for routine maintenance such as replacing existing poles cables, pedestals, marker, etc. unless such repairs will entail alterations of normal traffic flow or the maintenance activities require the relocation of the existing utility. If traffic will be impacted, the traffic control set up may be authorized under the Blanket Permit for Traffic Control. See Section 13.4 for additional information regarding Blanket Permits for Traffic Control.

- Emergency repairs to utility lines will not require an encroachment permit. However, if repairs will impact normal traffic flow, a permit authorizing the TCP will be required. If traffic will be impacted, the traffic control set up may be authorized under the Blanket Permit for Traffic Control. See Section 13.4 for additional information regarding Blanket Permits for Traffic Control.

- Any alterations to traffic flow or lane closures must be in accordance the MUTCD, latest edition.

- If the failure of a utility or emergency repairs cause damage to a transportation facility, the repair to the transportation facility must be documented on an Encroachment Permit. If the emergency dictates immediate work, the Encroachment Permit must be submitted within 48 hours of the repair and the Utility Company must notify the RME as soon as possible. If the repair occurs at night, the notification shall be the first thing the next morning.

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13.7 LIABILITY AND CONTROLS

To the extent required by law, the permittee agrees, and bind his heirs, successors and assigns, to assume any and all liability the Department might otherwise have in connection with accidents, injuries to persons, or damage to property (including the highway) that may be caused by the construction, maintenance, use of, as well as moving or removing of the encroachment. To the extent required by law, the permittee shall further agree to indemnify this Department and the Department's employees for any liability incurred, injury or damage sustained by reason of the past, present, or future existence of said encroachment.

- During the initial installation and construction or during any miscellaneous operations, the Applicant shall at all times maintain such flaggers, signs, lights, barricades and other safety devices as the Engineer may deem necessary to properly guide and protect traffic upon the highway, and to warn and safeguard the public against injury or damage. As a minimum, the permittee must comply with the MUTCD, latest edition. The permittee shall provide a watchman, as required, to maintain signs, lights, barricades and other safety devices during non-working hours, and shall provide the Department the telephone number and/or address of such watchman so that he/she may be contacted if needed or in the event of an emergency.

- The permittee shall conduct his operations so there will be minimum interference with, or interruption of traffic upon and along the highway. This applies to both the initial construction and continuing maintenance and operation of facilities. Except in emergencies, there shall not be a lane closure until a satisfactory plan for handling traffic has been approved by the Department. The Department reserves the right to prohibit any work that may interfere with traffic movement during time of peak traffic flow.

- The Department also reserves the right to inspect the work of the permittee to ensure compliance with the permit and to perform quality assurance inspections. If the Department finds that the repairs or disturbed area has deteriorated, the Department will give notice to the permittee and the permittee shall make necessary repairs within a period of time specified by the RME. Should the repairs not be made as requested, the Department will make or have made the necessary repairs to protect the roadway and/or users of said roadway. If the Department is required to incur expense to ensure compliance with the permit, the permittee shall be responsible for the expense.

- When requested in writing by the RME, the applicant or his contractor shall furnish, for the period of time required for the complete installation of the facilities authorized by the permit, including the repair and restoration of the highway facilities, and also during such future periods of time when operations are performed involving the repair, relocation or removal of said facilities authorized by the permit, a surety bond in the amount specified in the special provisions of the permit. The requirement for the bond and the amount of the bond shall be recommended by the District Engineering Administrator (DEA) and approved by the Deputy Secretary of Engineering. The bond shall be written by a Surety Company duly qualified and licensed to do business in the State of South Carolina. No work shall be commenced under the permit until the said bond has been submitted and approved by the Department. Form No. 739 contained in the Appendix D or another form satisfactory to the Engineer may be utilized where numerous permits are anticipated by one applicant, the engineer may allow a permittee to furnish a bond on an

ongoing basis to cover all permits issued to the permittee. The period bond shall be in an amount, not to exceed 115 percent of the anticipated work, recommended by the DEA.

Chapter 14

Utility Certifications

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Chapter 14
UTILITY CERTIFICATIONS

14.1 UTILITY CERTIFICATIONS

Utility Certifications are required to be completed prior to obligation of construction funding on a highway construction project. This is a requirement for all federally funded projects whether the project is being administered by SCDOT or a Local Public Agency. The Utility Certification should certify that the utility coordination on the project is complete and one of the three circumstances is certified for this project:

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

At the time of Utility Certification, all utility companies with facilities located within the project termini should have submitted appropriate documentation for their utility relocations. This documentation may include No-conflict Letters, No-cost Letters, Relocation Plans, Signed Utility Agreements and/or Signed Participation Agreements, and proposed relocation construction schedules.

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Appendix A

Statutes

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Appendix A

Statues and Regulations Relating to Accommodation of Utilities on Highway Rights of Way and Encroachments on Highway Rights of Way

Statutes, South Carolina Code of Laws (1976), as amended:

48-18-70(4). SCDOT must promulgate regulations for erosion and sediment reduction and storm water management on land and land disturbing activities under the jurisdiction of the Department.

57-5-810. Extent of construction and maintenance of State highways in municipalities; city utilities.

57-5-840. Alterations by municipality of State highway facilities and any use made by the city of the highway or highway rights of way for city utilities shall be subject to approval of the Department.

57-5-1080. Permit required to open private driveway or side-road entrance or exit to primary highway.

57-5-1090. Issuance or denial of permits; conditions; providing access or frontage roads.

57-5-1640. Contracts with railroad companies and property owners or lessees for constructing crossings and moving, clearing, rearranging or relocating public utilities.

57-7-50. Cutting trenches or laying pipes or tracks in State highways or bridges; permit required.

57-7-60. Excavating in highways not in State highway system; permit from county supervisor required.

57-7-70. Permit not required for municipality owning waterworks or sewage outside limits.

57-7-210. Unlawful to obstruct highways (to include rights of way).

58-7-10. Rights, powers and privileges of telegraph and telephone companies conferred on pipeline companies.

58-7-20. Rights, powers and privileges of telegraph and telephone companies conferred on water companies.

58-9-2020. Authorization to construct, maintain and operate telegraph or telephone company lines under, over, along and upon any of the highways or public roads of the State.

58-12-10. Installation of television cable over or beneath public lands, highways, roads or waters.

58-27-130. All the rights, powers and privileges conferred upon telegraph and telephone companies under 58-9-2020 are granted unto electric lighting and power companies.

Regulations, Code of Laws of South Carolina (1976), as amended:

R.63-380. Standard plan for erosion, sediment and storm water runoff control.

Federal Codes:

U.S. Department of Transportation, Federal Highway Administration. Code of Federal Regulations. Title 23, Part 645-Utilities. FHWA. Washington, D.C.

Appendix B
Pipelines

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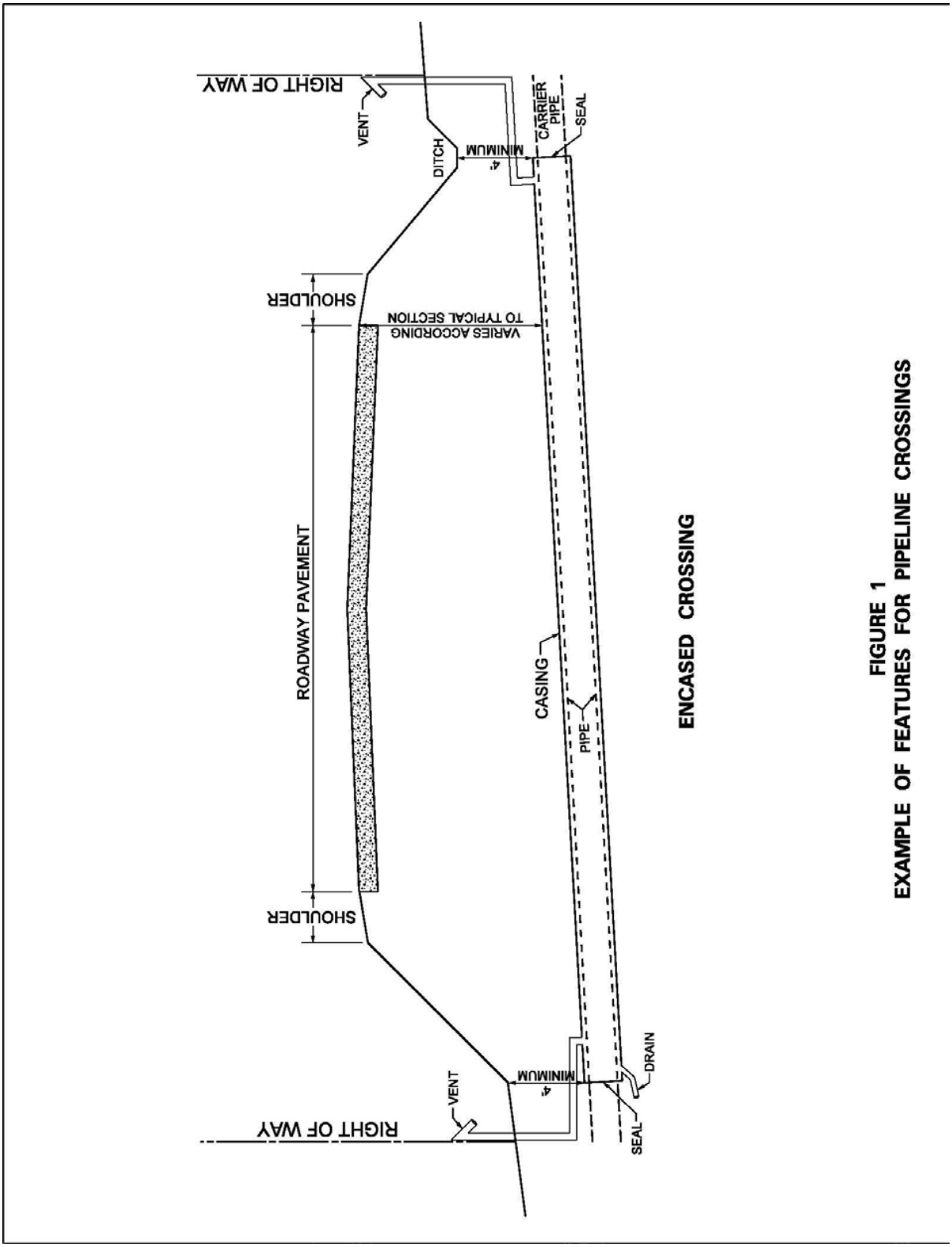
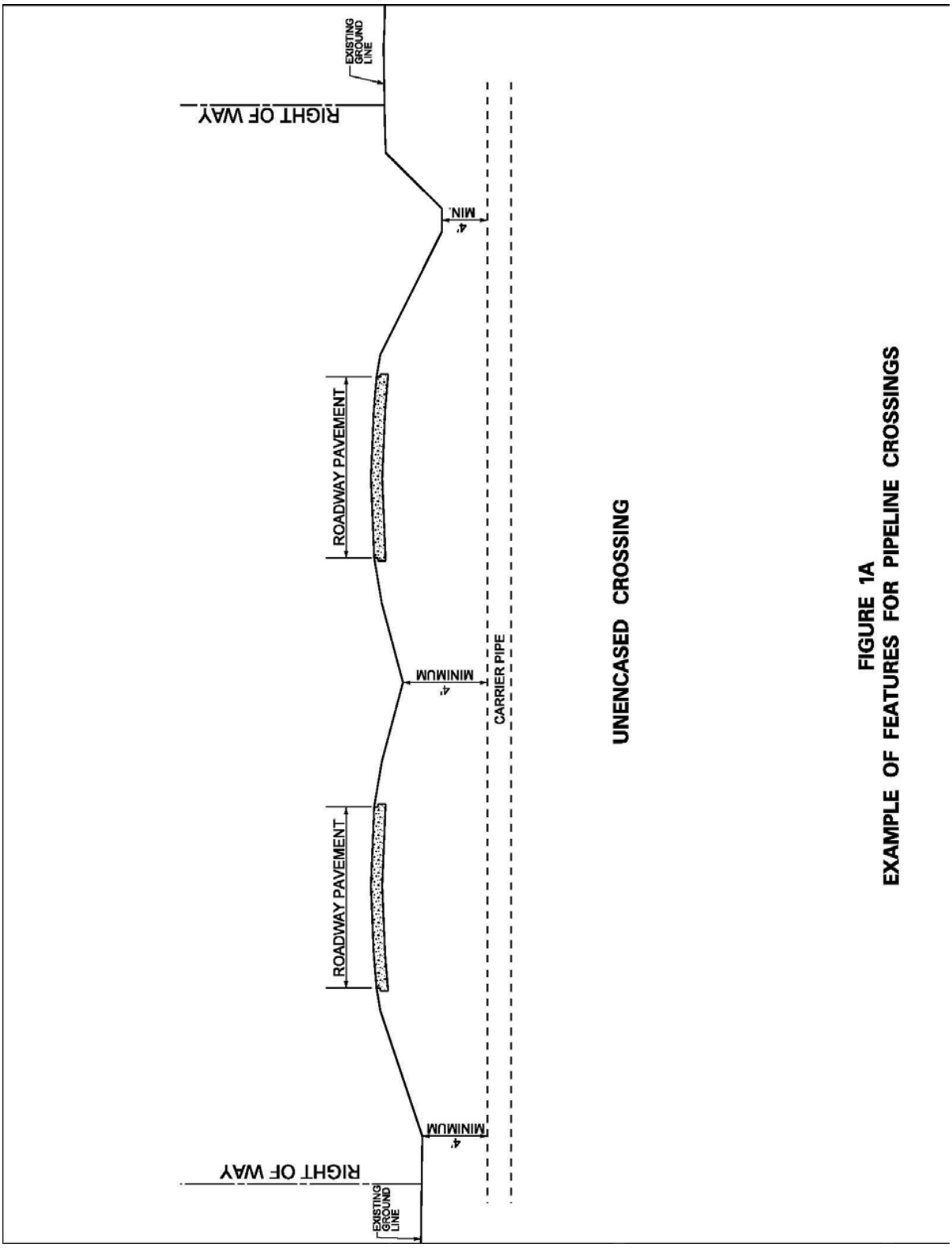
Appendix B: Pipelines

Figure 1 – Example of Features for Encased Pipeline Crossings



Appendix B: Pipelines

Figure 1A – Example of Features for Un-encased Pipeline Crossings



Appendix B: Pipelines

Figure 2 – Examples of Encasement and Allied Mechanical Protection

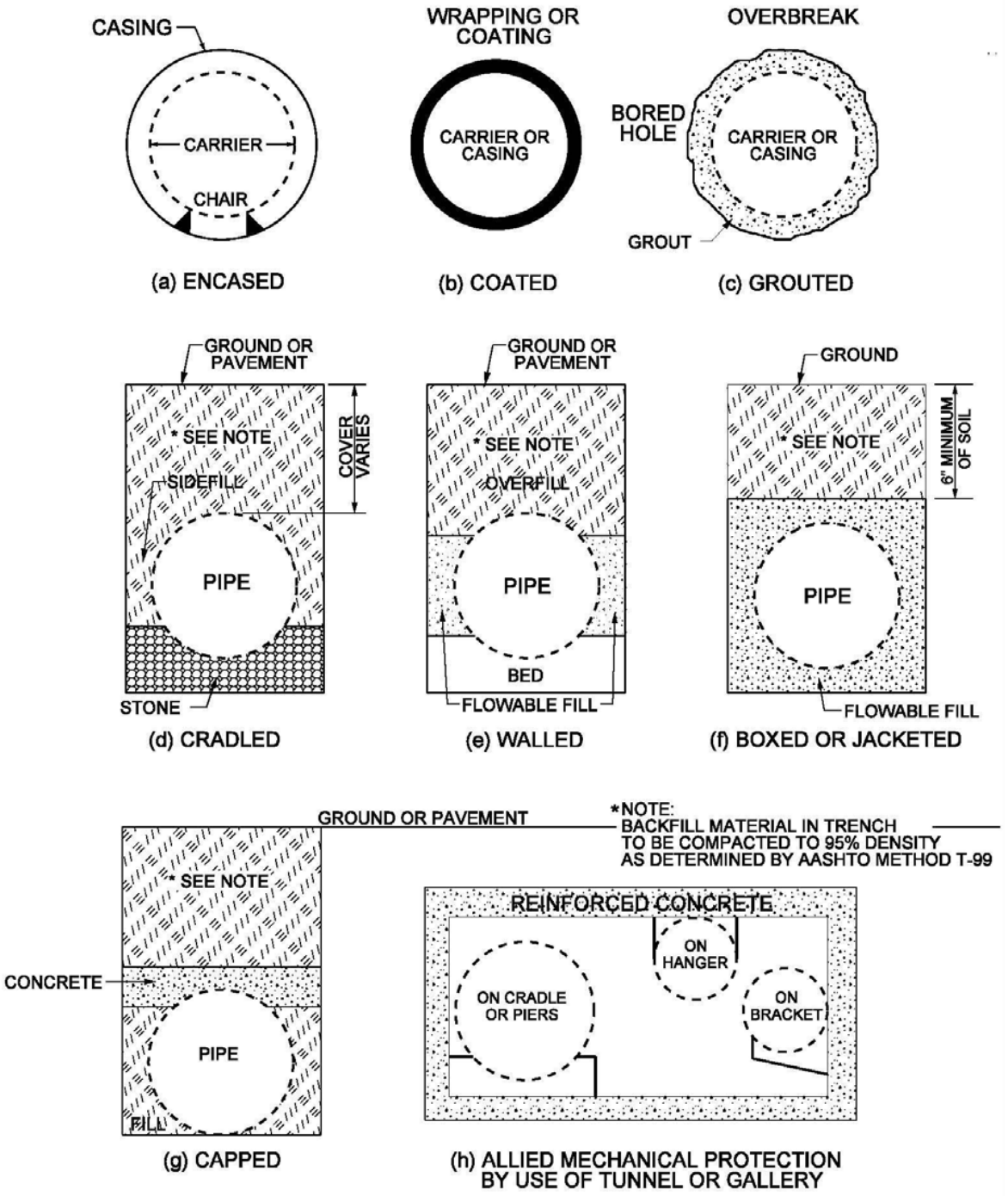


FIGURE 2
EXAMPLES OF ENCASEMENT AND ALLIED MECHANICAL PROTECTION

Appendix B: Pipelines

Figure 3 – Examples of Protection of Existing Pipelines

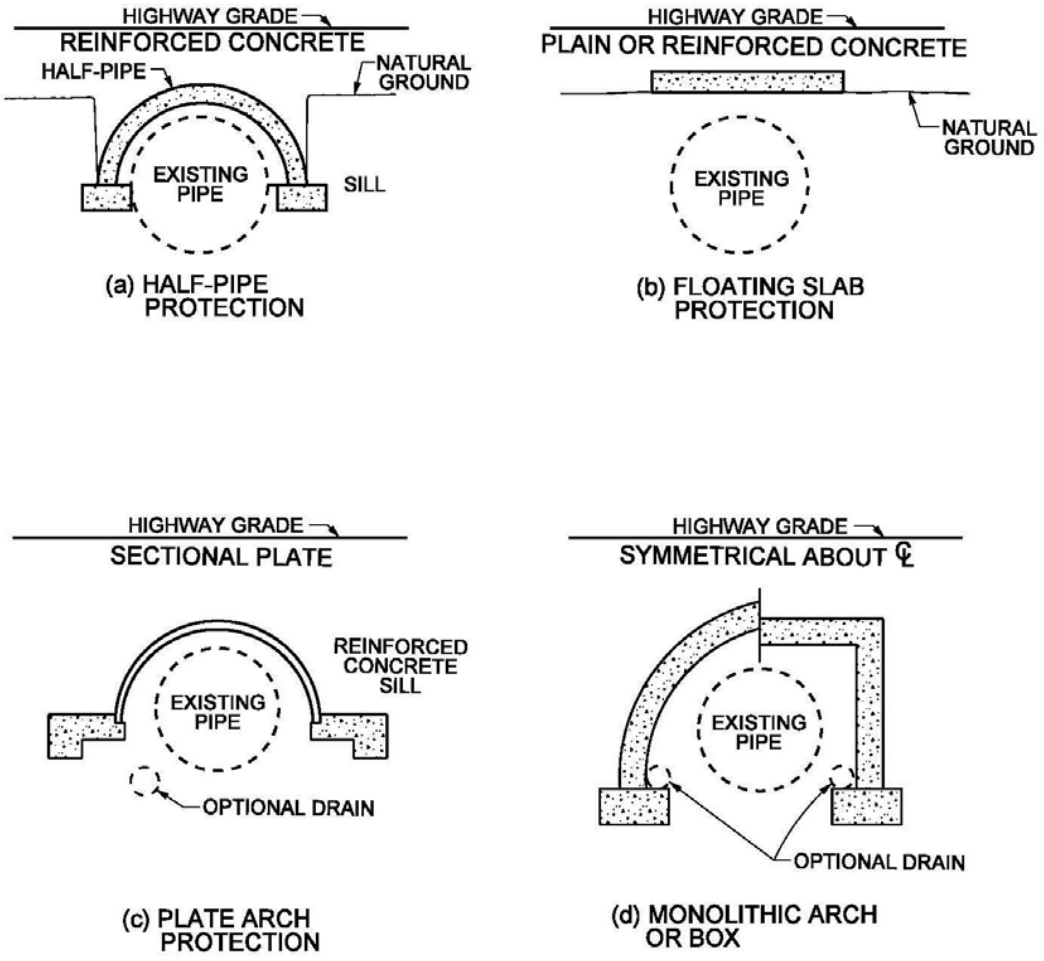


FIGURE 3
EXAMPLES OF PROTECTION OF EXISTING PIPELINES

Appendix B: Pipelines
Figure 4 – Pavement Repairs

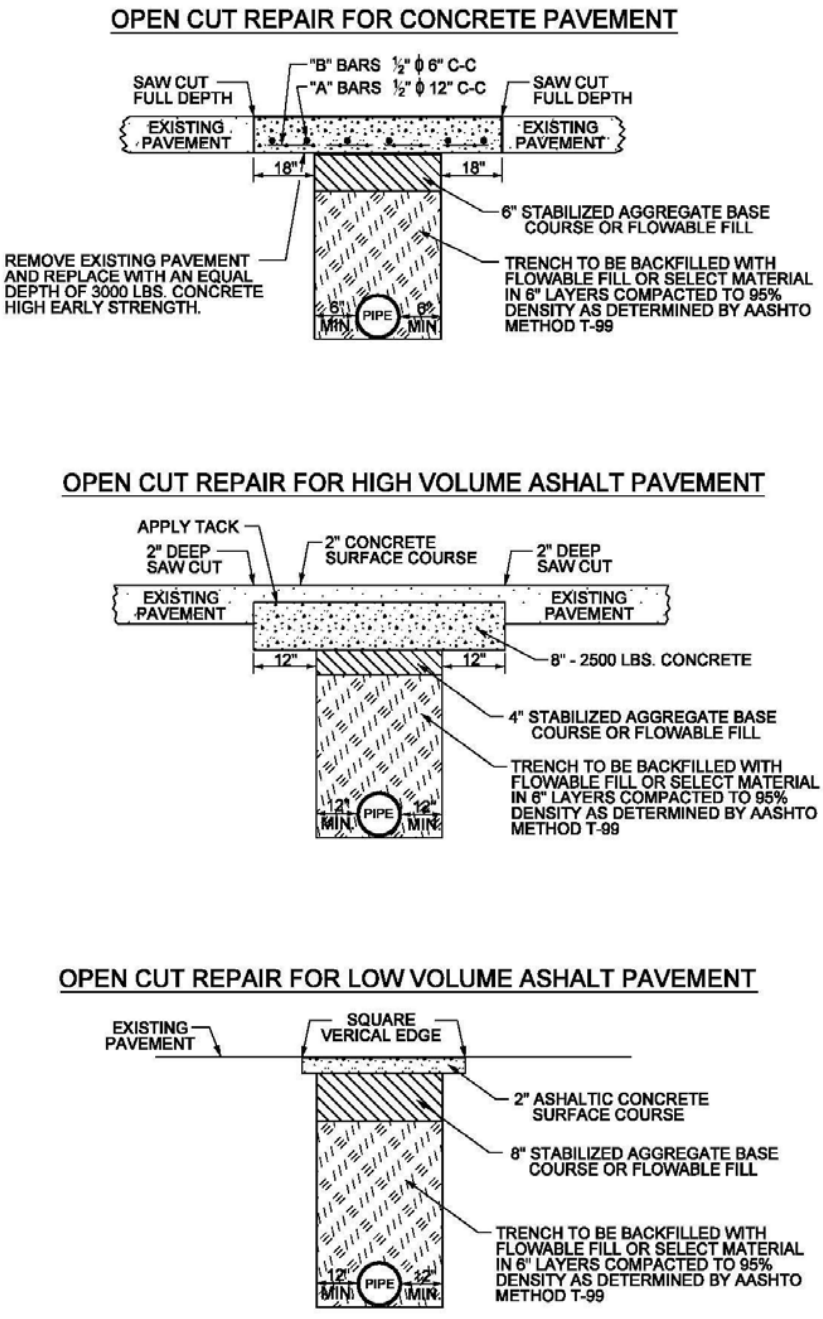


FIGURE 4
PAVEMENT REPAIRS

Appendix B: Pipelines

Figure 5 - Detail for Boring Pit Location

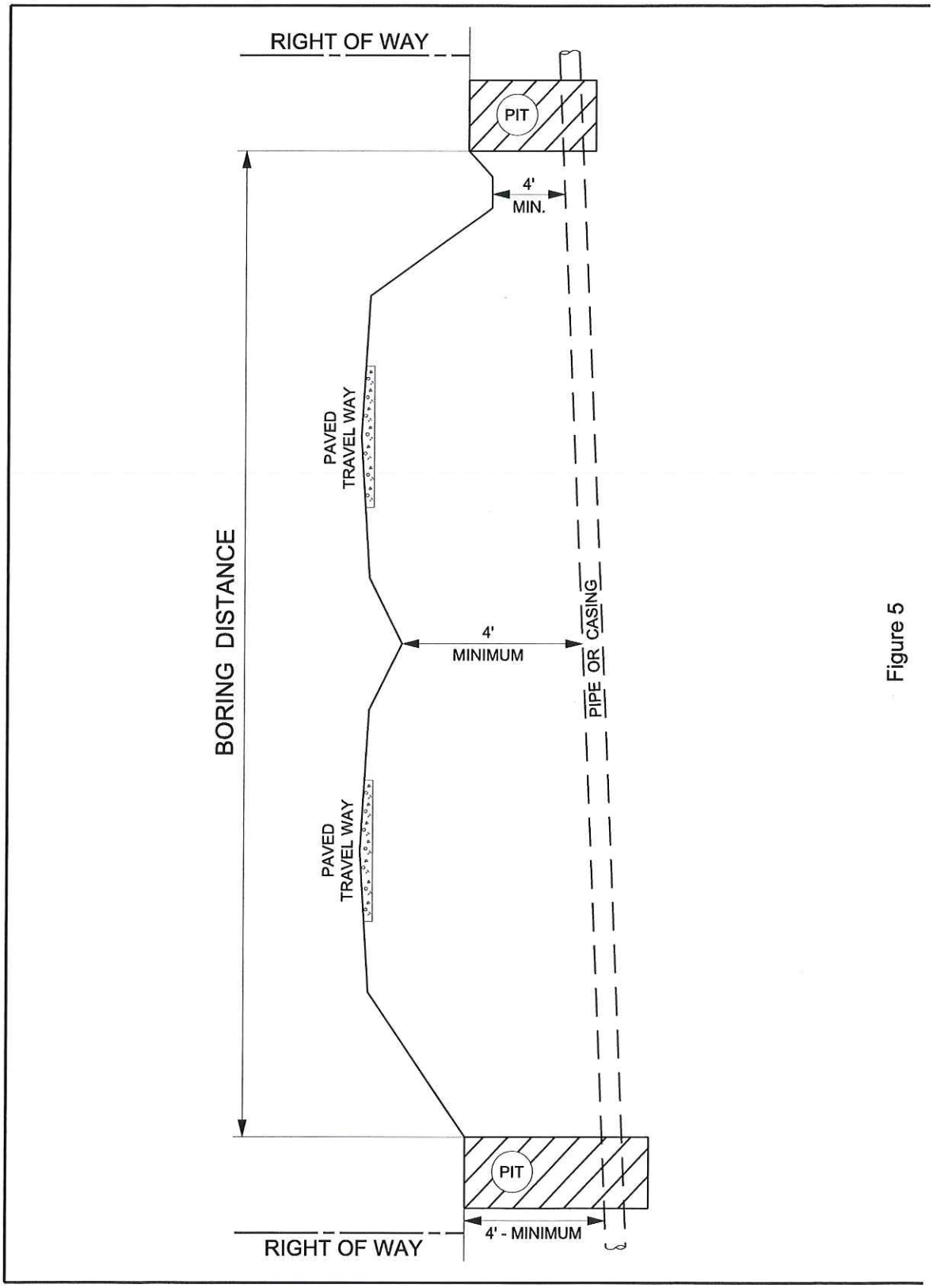


Figure 5

Appendix B: Pipelines

Figure 6 – Longitudinal Installation of Utilities in Roadway Shoulders

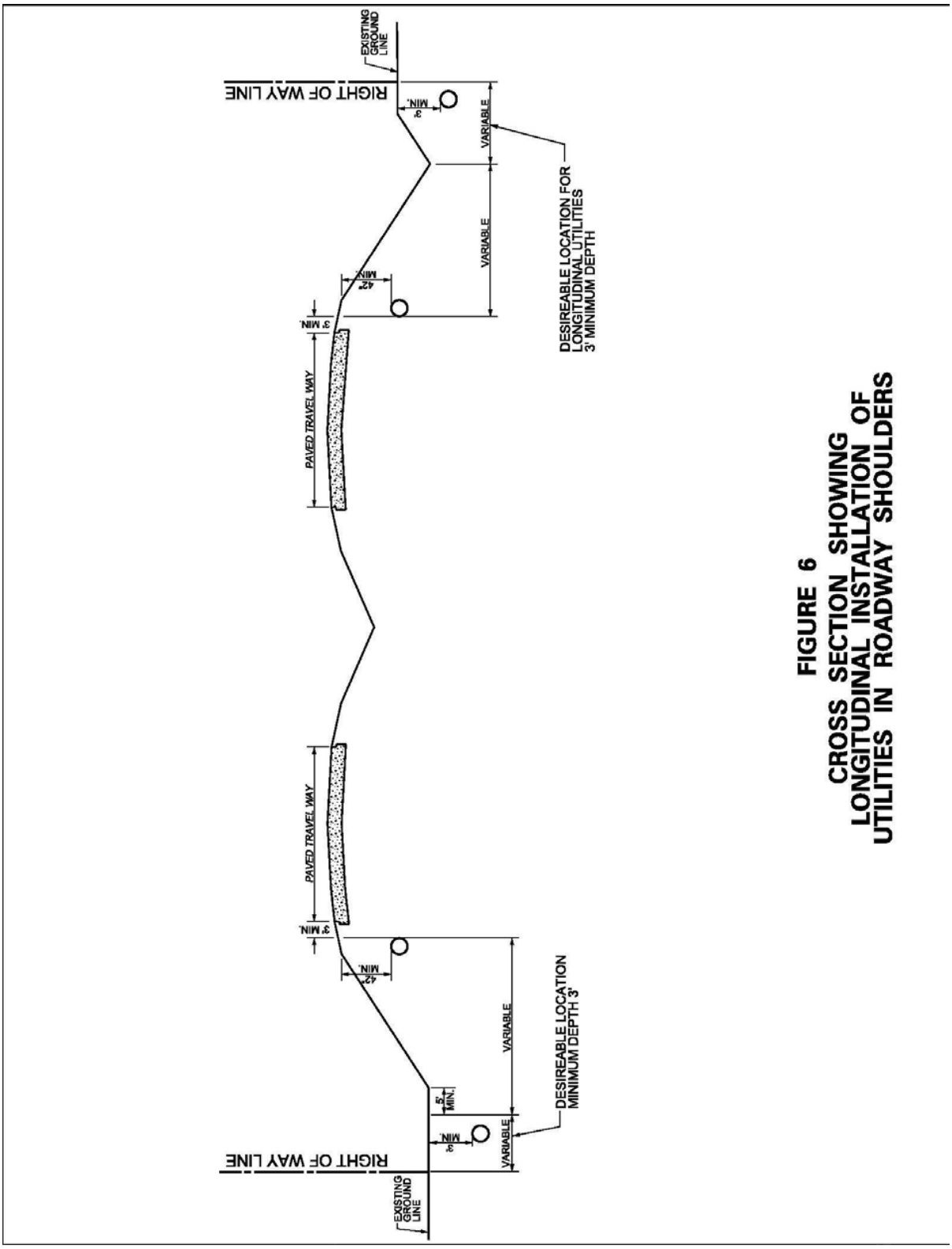
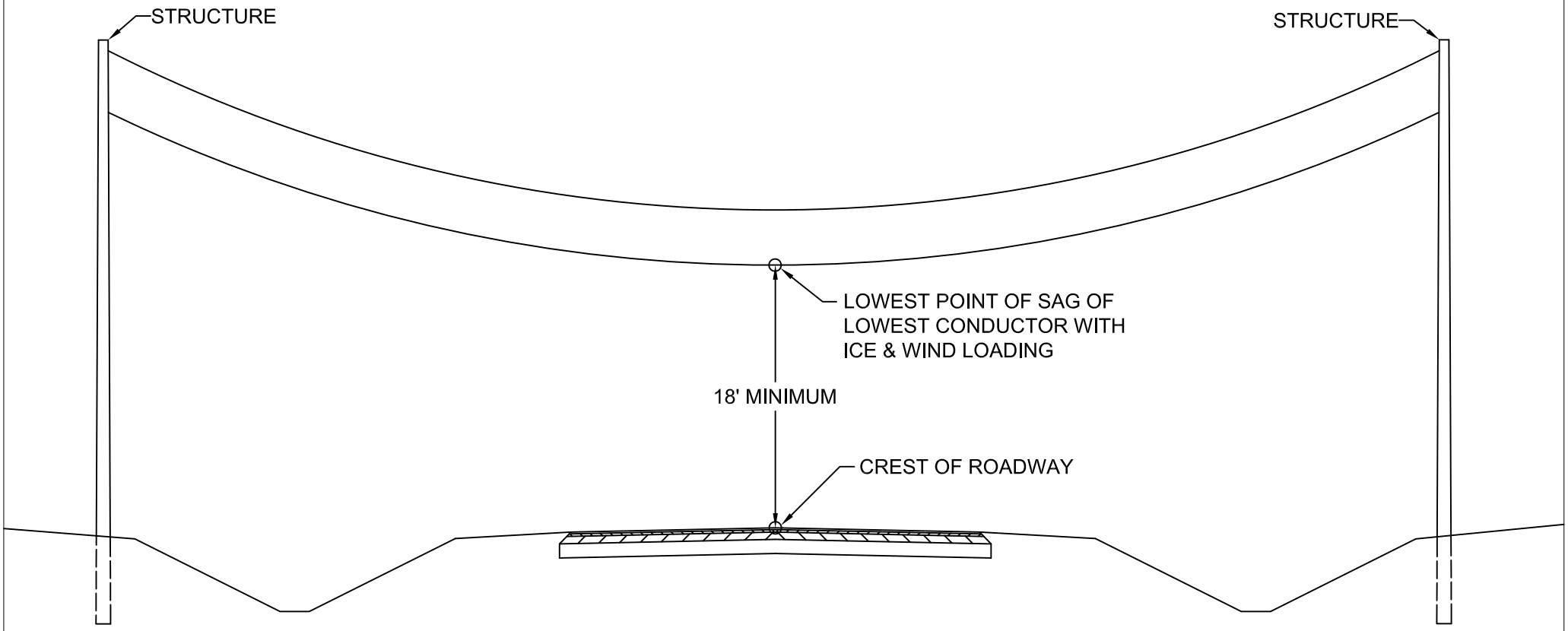


FIGURE 6
CROSS SECTION SHOWING
LONGITUDINAL INSTALLATION OF
UTILITIES IN ROADWAY SHOULDERS



AERIAL CROSSING DETAIL

Appendix C
References

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Appendix C

REFERENCES

1. *National Electrical Safety Code*, ANSI C2, Current edition (For sale by Institute of Electrical and Electronics Engineers, Inc., IEEE Service Center, 445 Hoes Lane, Piscataway, New Jersey 08854).

5. *United States Code of Laws*; Title 23 Code of Federal Regulations Part 645: Utilities (Federal Highway Administration).

6. *United States Code of Laws*; Title 23 Code of Federal Regulations Section 1518 amending U.S.C. 313 MAP 21 Buy America Guidelines.

7. *United States Code of Laws*; Title 49 Code of Federal Regulations Part 191: Transportation and Natural and Other Gas by Pipeline; Reports of Leaks (Office of Pipeline Safety).

8. *United States Code of Laws*; Title 49 Code of Federal Regulations part 192: Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards (Office of Pipeline Safety).

9. *United States Code of Laws*; Title 49 Code of Federal Regulations Part 195: Transportation of Liquids by Pipeline (Office of Pipeline Safety).

10. *Accommodation of Utility Plant within the Rights of Way of Urban Streets and Highways – State of the Art* (1974). Report FHWA-RD-75-8. Document No. PB245199 available from National Technical Information Service, Springfield, Virginia 22161.

11. *Accommodation of Utility Plant within the Rights of Way of Urban Streets and Highways – Manual of Improved Practice* (1974). Report FHWA-RD-75-9. Document No. PB245200/1 available from National Technical Information Service, Springfield, Virginia 22161.

12. *Manual on Uniform Traffic Control Devices*, ANSI D6.1 (Available from Superintendent of Documents, Government Printing Office, Washington, DC 20402).

13. *A Policy on the Accommodation of Utilities on Freeway Rights of Way* (1982), American Association of State Highway and Transportation Officials.

14. *A Guide for Accommodating Utilities within Highway Right-of-Way* (1981), American Association of State Highway and Transportation Officials.

15. *Guide for Selecting, Locating and Designing Traffic Barriers* (1977), American Association of State Highway and Transportation Officials.

16. Memorandum from Leland Colvin, PE; August 2, 2016 “Wireless Mini and Macro Antenna Installations in the Right of Way” Memorandum from Leland Colvin, PE; September 22, 2016 “Wireless Mini and Macro Antenna Installations in the Right of Way”.

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Appendix D
Utility Coordination Checklist

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Appendix D: Utility Coordination Checklist

South Carolina Department of Transportation

Final UT Submittal DUE DATE: _____

Utility Company Checklist

Utility Name: _____

PROJECT INFORMATION

Project Name: _____ County: _____

Termini/Location: _____ Project ID: _____

UTILITY COMPANY ROLES & RESPONSIBILITIES

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

PLANNING & DATA COLLECTION

☐ Provide Utility Information:

- Confirm Utility on Project Termini
- Utility Type
- Utility Size
- Utility Material
- General or Specific Location
- Vertical Clearance Requirements
- Horizontal Clearance Requirements
- Special Construction Considerations
- Shared Use Agreements/Arrangements
- Utility Property Interests
- Prior Rights Estimation/Determination
- Special Licensing Requirements for work in Utility Easements
- Potential Relocation Placement
- Utility ROW Phase Required if relocated?
- Utility Environmental Permit Required?
- Potential Utility Relocation Schedule
- Ballpark Utility Relocation Costs

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
- Mark Utility locations in field SC811
- Field Review Meeting to Pot Hole potential conflict locations for depths
- 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

Utility Environmental Permits:

☐ Required ☐ Not Required ☐ Include in SCDOT permit* *must meet deadlines provided

FINAL UTILITY COORDINATION

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

FINAL UTILITY DELIVERABLES CHECKLIST

☐ Final Utility Submittal, including:

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

In-Contract Relocations:
☐ No
☐ Yes

Encroachment Permits:
☐ No
☐ Yes

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:
☐ MOA with cost share outlined
☐ Utility Relocation Plans (must be 24 X 36) by Rainbow Chart
☐ 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.

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Appendix E
Utility Coordination Management Spreadsheet

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Appendix E: Utility Coordination Management Spreadsheet

Utility Conflict Management (UCM) Matrix

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

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

Scroll right to see attachments >>>

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

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

Field / Column	Description
Utility / Contact	*Name of Utility Owner and/or Point of Contact who has responsibility for the utility facility located within the project*
Utility Type	*Type of Utility Facilit, see drop down list*
Size & Material	*Size of Utility and/or material of utility facility, example 8" PVC*
General Location	*General description of the location of the utility facility on the termini of the project either using stations or milepoints*
Prior Rights Y/N	*Estimation or Determination of Prior Rights for the Utility Facility (Does Utility have an underlying property interest at location*
Utility Clearance Requirements/Constraints	*Description of any vertical or horizantal clearances required for the utility facility and/or constraints on location or relocation*
Utility Conflict Description	*Description of the potential utility conflict with proposed roadway and/or roadway appertenances or construction activities*
SUE Required Y/N	*Determination of whether additional SUE data collection is reccomended in order to get more precision on utility location*
Potential Resolution of Conflict	*Description of the potential resolution/solution (adjust design, protect, relocate)or the next step to resolve a utility conflict*

Utility Deliverables Outstanding/Action Items

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

SCDOT Final Approval Items:

Encroachment Permits	DATE Approved	Utility Agreements	DATE Approved

Utility Company Deliverables DUE date:

Utility Relocation Construction Timelines

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

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

**Set Dates per relocation contract.

Individual Utility Detailed Conflict Management Report

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

SOUTH CAROLINA UTILITIES ACCOMMODATION MANUAL

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Appendix F: Certification of Utility and Railroad Coordination for Federally Funded Projects

Certification of Utility and Railroad Coordination for Federally Funded Projects

Project ID Number: _____ Project ID Name: _____

Project Description (Road/MP Location: _____

_____

I. Utility Coordination/Relocation:

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

Comments:

Certified By: _____ Date: _____

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

II. Railroad Coordination:

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

Comments:

Certified By: _____ Date: _____

Project Manager

III. Railroad/Highway Crossings:

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

Comments:

Certified By: _____ Date: _____

Project Manager

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Appendix G
Forms

SOUTH CAROLINA UTILITIES ACCOMMODATION MANUAL

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Appendix G: Forms

Form 739: Performance Bond

Form 3068-B: Detailed Estimate of Direct Cost

SCDOT Form No. 739

Bond No. _____
(For Bonding Co. use only)

South Carolina
Department of Transportation

Performance Bond

Know all men by these presents:

That we, _____ (hereinafter called the Principal),
(Name of Permit Applicant or Agent for Applicant)

as Principal and the _____, a _____
(Name of Surety Company) (State Where Surety Was Incorporated)

corporation having its principal office and place of business at _____
(Home Office Address)

and local address at _____, and duly authorized to do
(Street City State)

business in the State of South Carolina (hereinafter called the Surety), as Surety, are held firmly bound unto the South Carolina Department of Transportation (SCDOT), as Obligee, (hereinafter called the Owner) in the sum of

_____ (Dollars) ($_____)
(Amount to be Furnished by SCDOT)

for the payment whereof, Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

Whereas, the Permit Applicant has submitted application to Owner for certain written permit form, which form is hereby referred to and made a part hereof as f ully and to the s ame extent as if copied at length herein. Said application form is dated _____ approximately. The purpose of this Bond is to guarantee that the Principal (as listed above) will
(Month Year)

comply with all stipulations, requirements and specifications of said permit number(s): _____,

which permit SCDOT is to approve and issue to _____ upon receipt of this Bond.
(Name of Permit Applicant Only)

The above permit is to authorize certain construction work as described therein within the right - of - way of _____, County at _____.
(State Highway, Road Name, Project, etc.) (Approx. Location)

Now, therefore, the condition of the foregoing obligation is such, that if the Principal shall well and truly perform and fulfill all the undertakings, convenants, terms, conditions and agreements of said permit and shall also well and truly perform and fulfill all the undertakings, convenants, terms, conditions and agreements of any and all duly authorized modifications of said permit that may hereafter be made, then this obligation shall be void; otherwise, it shall remain in full force. Principal must obtain a written release from Owner before this Bond may be voided or terminated or allowed to lapse.

If the Principal and/or Permit Applicant, if different, does any work on highway right-of-way prior to approval and issuance of the above described permit, this Bond is hereby extended to cover any removal or corrective action determined necessary by the Owner. If the permit is never issued and the Principal and/or Permit Applicant, if different, encroaches onto State right-of-way the Principal and Sutety are also obliged to take whatever action is deemed necessary by the Owner to correct such unauthorized encroachment.

The Surety's aggregate liability hereunder shall in no event exceed the amount set forth above.

No claim, suit or action shall be brought hereunder after the expiration of two (2) years following the date upon which the Principal is released from this Bond. If this limitation is made void by any law, controlling the construction hereof, such limitation shall be deemed to be amended to equal the minimum period of limitation permitted by such law.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators or successors of Owner.

Signed, sealed and dated this _____ day of _____, 20 _____.

Name and Address of Principal:

_____

_____

_____

Witness:

_____ By: _____

_____ Name of Surety:
(Attorney-in-Fact for Surety)

_____

By: _____ Phone Number: _____
(Attorney's Signature)

SCDOT Form 3068-B

DETAILED ESTIMATE OF DIRECT COST

File No. _____ F. A./State Project No. _____

PIN _____ Route/Road No. _____

	Percent	ESTIMATE
1. DETAIL OF PRELIMINARY ENGINEERING:		
A. Labor		
B. Equipment and Mileage		
C. Other expenses (meals, lodging, etc.)		
D. Overhead:		
F.O.A.B.		
Federal Unemployment		
State Unemployment		
Workman's Compensation		
Public Liability		
Hospital Insurance		
Retirement		
Paid Leave and Holidays		
Overhead Subtotal:		$ -
Detail of Preliminary EngineeringTotal:		$ -
2. LABOR:		
A. Temproary Installation		
B. Removal		
C. Permanent Installation		
D. Other expenses (meals, lodging, etc.)		
E. Overhead:	Percent	
F.O.A.B.		
Federal Unemployment		
State Unemployment		
Workman's Compensation		
Public Liability		
Hospital Insurance		
Retirement		
Paid Leave and Holidays		
Overhead Subtotal:		$ -
Labor Total:		$ -
3. MATERIALS: (Itemize major components or list units)		
A. Temproary Installation		
B. Permanent Installation		
C. Handling Costs		
Materials Total:		$ -

DETAILED ESTIMATE OF DIRECT COST

4. EQUIPMENT

A. Mileage and cost per mile (Hour)

Equipment Total: $ -

5. RIGHT OF WAY

A. Labor
B. Transportation
C. Acquisition
D. Other (Meals, Lodging, etc.)

Right of Way Total: $ -

LESS CREDITS:

1. Betterment (Show computations)
2. Extended Service Life (Show Computations)
3. Salvage:
   A. Materal recovered from:
      1. Permanent Facility
      2. Temporary Facility

Less Credits Total: $ -

NET COST OF ADJUSTMENT: $ -

NOTE: If estimate is made on the unit basis, attach separate listing showing unit, quantity, material cost, labor cost, and total for each unit. Show separate listing for temporary installation, removal and permanent installation. Labor on company records must be kept on daily basis showing hours worked and rates of pay.

Submit six copies with agreement.

LISTING OF CHANGES BY STATIONS:

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Appendix H

Sample Utility Coordination & SUE Utility Mapping Scope of Services

SOUTH CAROLINA UTILITIES ACCOMMODATION MANUAL

March 2019

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Appendix H

Sample Utility Coordination & SUE Utility Mapping Scope of Services

CONSULTANT shall perform the following Utility Coordination services:

The **CONSULTANT** shall have the responsibility of coordinating the Project development with all utilities that may be affected. All utility relocations shall be handled in accordance with the SCDOT's "A Policy for Accommodating Utilities on Highway Rights of Way" and the Code of Federal Regulations, Title 23, Chapter 1, Subchapter G, part 645, subparts A and B.

A. These services shall be performed by individuals skilled and experienced in utility coordination services.

B. The **CONSULTANT** shall assist **SCDOT** in the design of the Project to avoid conflicts with utilities where possible, and minimize impacts where conflicts cannot be avoided. This may include, but is not limited to, utilizing all available utility data, whether obtained from SUE services, as-builts, or provided by the SCDOT or some other source. The **CONSULTANT** shall be expected to determine all utility conflict points, including all work to properly analyze each conflict point, and make recommendations for resolution of the conflict where possible. The SCDOT will request a Utility Conflict Analysis and Remediation Spreadsheet from the **CONSULTANT** as a deliverable.*

C. The **CONSULTANT** shall prepare a Utility Coordination Plan and Schedule that outlines the anticipated utility coordination meeting schedule and coordination strategy.

D. The **CONSULTANT** shall initiate early coordination with all utility companies that are located within the Project limits. Coordination shall include, but shall not be limited to, contacting each utility company to advise the company of the proposed project, providing preliminary plans to the utility company, obtaining copies of as-built plans for the existing utility facilities (if available), identifying potential conflicts and determining the companies' requirements for the relocation of their facilities.*

E. The **CONSULTANT** should prepare utility conflict exhibits that demonstrate the cross sections of the project, including mark ups of any ground modifications, drainage structures, silt fence post installations, or other excavations that may impact an existing utility. The superimposed approximate location of the existing utilities should be color coded and marked on the cross sections in order to identify potential conflicts during coordination. **SCDOT** will provide any additional survey or SUE as requested by the consultant in order to produce the exhibits. The exhibits are not intended to be precise locations, but general locations for use in determining potential conflicts. The exhibits should be used by the consultant and utility company to determine where more information is required in order to determine conflicts. The **CONSULTANT** should make a request to the Utility Company to pothole identified locations for additional depth and location information before more advanced levels of SUE are requested.

F. The **CONSULTANT** shall provide the utility companies with design plans including cross sections, jurisdictional areas, and anticipated areas of ground modifications as soon as the plans have reached a level of completeness adequate to allow the companies to fully understand the Project impacts. The **CONSULTANT** should also

provide the potential conflict analysis and conflict exhibits to the utility if potential conflicts were identified by the **CONSULTANT**. These plans shall contain all available data that may be helpful to the utility in assessing the utility impact (stations and offsets, and etc.). The utility company may use the **SCDOT'**s design plans for preparing Relocation Sketches. If a party other than the utility company or its agent prepares Relocation Sketches, there shall be a concurrence box on the plans where the utility company signs and accepts the Relocation Sketches as shown.

G. The **CONSULTANT** shall coordinate and conduct a preliminary review meeting with the utility companies to assess and explain the impact of the Project to the companies. The **SCDOT'**s Project Manager (PM), Resident Construction Engineer (RCE), and Utilities Manager (or designee) shall be included in this meeting.*

H. The **CONSULTANT** shall research the prior rights of each utility company's facilities. If there is a dispute over prior rights with a utility, the **CONSULTANT** shall be responsible for resolving the dispute and making a recommendation to the SCDOT. The **CONSULTANT** shall meet with the **SCDOT'**s RCE to present the prior rights information gathered. This information must be sufficient for the RCE to certify the extent of the utility company's prior rights. The **SCDOT** shall have final approval authority as to the **CONSULTANT**'s determination of whether the utility company has prior rights.*

I. The CONSULTANT shall coordinate with the Utility companies to determine whether any potential relocation work would require environmental permits and work with the utility to determine the Utility Company's plan and schedule for securing environmental permits.

J. The **CONSULTANT** shall prepare and submit to the **SCDOT** a Preliminary Utility Report that includes a listing of all utility companies located within the project limits and a preliminary recommendation as to the extent of each company's prior rights. This report shall also include a preliminary assessment of the impact to each company as can best be determined at the time, as well as a determination of the feasibility of early utility relocations that may begin prior to the start of construction.*

K. The **CONSULTANT** shall make recommendations to **SCDOT** on potential utility relocation work that would be best accomplished within the **SCDOT** construction contract in order to best accomplish the staging of the construction activities. The CONSULTANT shall also make recommendations to **SCDOT** on whether a utility relocation window should be provided in the **SCDOT** construction contract in order to best facilitate the utility relocation construction work.

L. The **CONSULTANT** shall be responsible for collecting the following from each utility company that is located within the project limits:*

a. Relocation Sketches including letter of "no cost" where the company does not have a prior right;

b. Utility Agreements including cost estimate and relocation plans where the company has a prior right;

c. Letters of "no conflict" where the company's facilities will not be impacted by the Project; and,

d. Encroachment Permits issued by SCDOT for utilities encroachment onto SCDOT right-of-way.

e. Utility Company's schedule for construction of utility relocation work and anticipated date of initiation of physical relocation construction.

M. The **CONSULTANT** shall review all Relocation Sketches and Utility Agreements to ensure that relocations comply with the SCDOT's "A Policy for Accommodating Utilities on Highway Rights of Way" and 23CFR, Chapter 1, Subchapter G, part 645, subparts A and B. The **CONSULTANT** shall also ensure that there are no conflicts with the proposed highway improvements, and ensure that there are no conflicts between each of the utility company's relocation plans.

N. The **CONSULTANT** shall prepare and submit to the **SCDOT** a Final Utility Report no later than 120 days prior to the letting date (150 days if 60-day advertisement) that includes a listing of all the utilities located within the Project limits, an explanation of the Project impacts to each of the utilities, all prior rights supporting documentation, and a description of each utilities' relocation plans. As part of the report, the **CONSULTANT** shall assemble and submit to the **SCDOT** all Relocation Sketches, Utility Agreements, and Letters of "no conflict", as set forth in "8.9" above, for the Project. The **CONSULTANT** is expected to assemble the information included in the Utility Agreements and Relocation Sketches in a final and complete form and in such a manner that the SCDOT may approve the submittals with minimal review. Each Utility Agreement and Relocation Sketch submitted must be accompanied by a certification from the CONSULTANT stating that the proposed relocation will not conflict with the proposed highway improvement and will not conflict with another utility company's relocation plan. The report shall also contain the CONSULTANT's recommendation for approval of the Utility Agreements and Relocation Sketches and the **CONSULTANT's** recommendation that, from a utilities standpoint, the Project is ready to be let to contract.*

O. The **CONSULTANT** is expected to meet with the SCDOT's Utilities Office and Program Manager within forty-five (45) days of the Notice to Proceed to gain a full understanding of what is required with each submittal.*

P. The **CONSULTANT** shall prepare and maintain a compilation of all utility relocation plans on one set of the project plans. These plans (U sheets) will be used during the project development, and the final set may be included in the bid documentation for information only and will reference the actual relocation plans prepared by the utility.*

Q. The **CONSULTANT** will attend a utility kickoff meeting for each project once SCDOT gives approval for utility relocation.*

R. The **CONSULTANT** will conduct utility coordination meeting during the project design in order to facilitate confirmation and resolution of utility conflicts.*(assume monthly coordination meetings and 12 individual utility company meetings to discuss major conflict resolution).

S. The **CONSULTANT** will attend utility coordination meetings during construction to be available for questions (assume two per utility).*

T. The utility companies shall not begin their relocation work until authorized in writing by the **SCDOT**.

U. Utility Deliverables

a. Utility kickoff meetings

b. Preliminary Utility Report (2 draft copies plus pdf)

1. List of all utilities
2. Preliminary prior rights assessment
3. Preliminary utility impact assessment
4. Preliminary utility relocation costs
5. Recommendations for early relocations
6. Recommendations for in-contract relocations

c. Final Utility Report - Due date 120 days prior to Bid Letting (5 final & 1 original copies)

1. List of all utilities
2. Explanation of impacts to each utility including the Final Utility Conflict Analysis and Remediation Spreadsheet.
3. Prior rights documentation
4. Description of each utility relocation
5. All Utility Agreements, Relocation Sketches, and Letters of No Conflict
6. Certification that each relocation will not conflict with project or other utility relocations
7. Recommendation for approval of Utility Agreements and Relocation Sketches
8. In contract utility relocation PS&E packages (if necessary)
9. Utility special provisions
10. Recommendation that project is ready for letting with regard to utilities

d. Utility Sheets (U Sheets)

CONSULTANT shall perform the following SUE services:

- **Designating** services (**Quality Level B**) for underground utilities. For the purpose of this *Agreement*, "designate Quality Level B" shall be defined as indicating, by marking, the presence and approximate horizontal position of the subsurface utilities by the use of geophysical prospecting techniques. **SCDOT Exceptions: (1)** Direct buried conventional telecommunication lines 100-pair or larger, conventional telecommunication and CATV lines in conduit, all fiber optic utility mains, all gas mains, all water mains and all force main sanitary sewer lines will be investigated at (Quality Level B). **(2)** Direct buried conventional telecommunication lines less than 100-pair and direct buried coaxial CATV lines will be investigated at (Quality Level C). It is understood the size and material type of direct buried lines will be determined from available utility records and the inspection of accessible structures.

- **Surface Survey** services (**Quality Level C**) for underground utilities. For the purpose of this *Agreement*, "designate Quality Level C" shall be defined as correlating applicable utility records to surveyed surface features, taking into account the geometries and indications on the records of these surface features. This includes determining when records and features do not agree and resolving these discrepancies.

- **Existing Records** services (**Quality Level D**) for underground utilities. For the purpose of this *Agreement*, "designate Quality Level D" shall be defined as information derived from existing records or oral recollections.

- **Gravity Sewer Survey** services (**Gravity Sewer Manhole**) for underground utilities. For the purpose of this *Agreement*, "survey Gravity and Combination Sewer Manhole" shall be defined as the field survey of the rim and invert elevations determined at each manhole and tied to existing project control. Flow lines will be depicted as running straight between structures at QL-C unless record information or site conditions indicate otherwise. It is understood the size and material type of the flow lines will be determined from available utility records and the inspection of accessible structures. A manhole data sheet or equivalent report will be provided.

- **Designating** services (**Aerial Pole**) for above ground utilities. For the purpose of this *Agreement*, "designate Aerial Pole" shall be defined as the field survey designating of the utility pole and the attached aerial utilities being correlated from visual site inspection. Pole attributes will be included in the utility investigation and a pole data table will be provided.

- **Location** services (**Quality Level A**) of proposed drainage and/or roadway improvement conflicts with existing underground utilities as determined by the Utility Coordinator or the **SCDOT**. This includes obtaining a precise horizontal and vertical position of the existing utility line by excavating a test hole. The test holes shall be performed using vacuum excavation or comparable nondestructive equipment in a manner as to cause no damage to the utility line.

Task 1- Designating

- Provide all equipment, personnel and supplies necessary for the completion of **Quality Level B** information for approximately_____LF of underground utilities.

- Provide all equipment, personnel and supplies necessary for the completion of **Quality Level C** information for approximately LF of underground utilities.
- Provide all equipment, personnel and supplies necessary for the completion of **Quality Level D** information for approximately LF of underground utilities.
- Provide all equipment, personnel and supplies necessary for the accurate recording of information for approximately_____**Gravity Sewer Manhole** utilities.
- Provide all equipment, personnel and supplies necessary for the accurate recording of information for approximately **Aerial Pole** utilities.
- Conduct appropriate records and as-built plans research and investigate site conditions.
- Obtain all necessary permits from railroad, city, county, state or any other municipal jurisdictions to allow **CONSULTANT** personnel to work within the existing streets, roads and/or rights-of-way.
- Designate the approximate horizontal position of existing utilities by paint markings in accordance with the APWA Uniform Color Code scheme along the utility and at all bends in the line in order to establish the trend of the line.
- Service lines are excluded from this scope with the following exception:
    - Gas service lines 1" or greater to be designated up to the project limits or gas meter, whichever is encountered first.
    - Underground Telecommunication service lines, Power service lines and Water service lines 2" or greater servicing multi-family dwellings, industrial facilities, commercial buildings or health care facilities in which disturbance to the "service line" would have a negative financial and/or safety effect.
- Survey designating marks, which shall be referenced to project control provided by the surveyor of record.
- The **CONSULTANT** is completely responsible for the safety procedures and the safety of its employees. SCDOT Procedures and Guidelines for Work Zone Traffic Control Design and the USDOT Manual on Uniform Traffic Control Devices for Streets and Highways (Current Revision) should be used as references for appropriate work zone safety.

Task 2 - Location

- Provide all equipment, personnel and supplies necessary for the completion of **Quality Level A** information for an estimated_____test holes.
- Conduct appropriate records and as-built plans research and investigate site conditions.
- Obtain all necessary permits from railroad, city, county, state or any other municipal jurisdictions to allow **CONSULTANT** personnel to work within the existing streets, roads and/or rights-of-way.
- Perform electronic sweep of the proposed conflict and other procedures necessary to adequately "set-up" the test hole.
- Excavate test holes to expose the utility to be measured in such a manner that insures the safety of excavation for the **CONSULTANT's** employees and the general public as well as the integrity of the utility to be measured. In performing such excavations, the **CONSULTANT** shall comply with all applicable utility damage prevention laws. The **CONSULTANT** shall schedule and coordinate with the utility companies and their inspectors, as required, and shall be responsible for any damage to the utility during excavation.
- Provide data to the **SCDOT** concerning:
    a) The horizontal and vertical location of the top and/or bottom of the utility referenced to the project survey datum.
    b) The elevation of the existing grade over the utility at the test hole referenced to the project survey datum.

c) The outside diameter of the utility and configuration of non-encased, multi-conduit systems.
d) The utility structure material composition, when reasonably ascertainable.
e) The benchmarks and/or project survey data used to determine elevations.
f) The paving thickness and type, where applicable.
g) The general soil type and site conditions.
h) Such other pertinent information as is reasonable ascertainable from each test hole site.

- Provide permanent restoration of pavement within the limits of the original cut. When test holes are excavated in areas other than roadway pavement, these disturbed areas shall be restored as nearly as possible to the condition that existed prior to the excavation.
- The **CONSULTANT** is completely responsible for the safety procedures and the safety of its employees. **SCDOT** Procedures and Guidelines for Work Zone Traffic Control Design and the USDOT Manual on Uniform Traffic Control Devices for Streets and Highways (Current Revision) should be used as references for appropriate work zone safety.
- The **SCDOT** shall have final approval prior to performing the Quality Level A test holes.

In the performing of designating services under this *Agreement*, the **SCDOT** shall,

1. When requested, provide reasonable assistance to the **CONSULTANT** in obtaining plans showing the project limits, alignment, centerline, rights-of-way limits (existing and proposed), project controls and other data for selected projects.
2. Provide notification to key **SCDOT** District personnel concerning the upcoming SUE services to be provided by the **CONSULTANT**.
3. Provide **CONSULTANT** with a more detailed project limit in an electronic Microstation CADD format.

Specifications

Unless specifically stated otherwise, the Consultant shall adhere to the ASCE Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data (CI/ASCE 38-02).

SUE Deliverable Schedule

The **CONSULTANT** will provide **SCDOT** with the completed deliverables for the **Designating** data as detailed in this Scope of Services by **January 1, 2010**. Within **60** days of receiving the locations of the Quality Level A test holes, the **CONSULTANT** will provide **SCDOT** with the completed deliverables for the **Quality Level A Test Hole** data as detailed in this Scope of Services.

Deliverables

- Draft survey information using **SCDOT** CADD guidelines for Subsurface Utility Engineering (latest version).

- Hard copy and Digital files shall be delivered in the format and quantity specified in the **SCDOT CADD** guidelines for Subsurface Utility Engineering (latest version).

- Final review and seal of all appropriate work by a professional engineer and/or land surveyor licensed in South Carolina in responsible charge of the project.