## Policy Manual – Table of Contents

### I. General

<table>
<thead>
<tr>
<th>Section</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Overview</td>
<td>1</td>
</tr>
<tr>
<td>B. Utility Accommodation Policy Purpose</td>
<td>1</td>
</tr>
<tr>
<td>C. Delegation of Authority</td>
<td>2</td>
</tr>
<tr>
<td>D. Source Documents</td>
<td>2</td>
</tr>
<tr>
<td>E. Application</td>
<td>4</td>
</tr>
<tr>
<td>F. Support Documents</td>
<td>4</td>
</tr>
<tr>
<td>G. Utility Maintenance Activities</td>
<td>5</td>
</tr>
<tr>
<td>H. Emergency Work</td>
<td>5</td>
</tr>
<tr>
<td>I. Erosion / Sediment Control</td>
<td>5</td>
</tr>
<tr>
<td>J. Median Installations</td>
<td>5</td>
</tr>
<tr>
<td>K. Work near Adjacent Transportation Facilities</td>
<td>5</td>
</tr>
<tr>
<td>L. Utility Acquisitions</td>
<td>6</td>
</tr>
<tr>
<td>M. North Carolina 811</td>
<td>6</td>
</tr>
<tr>
<td>N. Utility Facilities Not Permitted within the NCDOT Right-of-Way</td>
<td>6</td>
</tr>
<tr>
<td>O. Disputes</td>
<td>6</td>
</tr>
<tr>
<td>P. Exceptions</td>
<td>6</td>
</tr>
<tr>
<td>Q. Corrective Measures</td>
<td>7</td>
</tr>
<tr>
<td>R. Enforcement</td>
<td>7</td>
</tr>
</tbody>
</table>

### II. Above-Ground Facilities

<table>
<thead>
<tr>
<th>Section</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. General</td>
<td>8</td>
</tr>
<tr>
<td>B. Above-Ground Objects</td>
<td>8</td>
</tr>
</tbody>
</table>
C. Clear Zone
D. Longitudinal Placement / Horizontal Offset
E. Vertical Clearances
F. Maintenance
G. Lighting
H. Other

III. Underground Facilities
A. General
B. Location and Alignment
C. Minimum Depth
D. Casing Requirements
E. Appurtenances
F. Out-of-Service or Deactivated Lines
G. Underground Plant Protection

IV. Pipelines
A. General
B. Location and Alignment
C. Encasement
D. Corrosion Control

V. Traffic Control
A. General
B. Approval
C. Maintenance of Traffic
VI. **Restoration / Remediation**

A. **General**

B. **Roadway**

C. **Landscaping**

D. **Turf**

E. **Sidewalks / Multi-Use Paths / Pedestrian Ways**

VII. **Vegetation Control**

A. **General**

B. **Trees / Brush / Shrubs**

C. **Chemical Control of Vegetation**

VIII. **Freeways**

A. **General**

B. **Locations**

C. **Longitudinal Installations**

D. **Vertical clearances**

E. **Crossings**

F. **Utility Access for Constructing / Servicing Facilities**

G. **Major Valley Crossing**

H. **Vehicular Tunnels**

I. **Irrigation Ditches and Water Canals**

J. **Alteration of Controlled Access Right-of-Way**
## IX. Adjustment / Relocation of Facilities

<table>
<thead>
<tr>
<th>Section</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. General</td>
<td>26</td>
</tr>
<tr>
<td>B. Compensation for Relocation</td>
<td>26</td>
</tr>
<tr>
<td>C. Non-NCDOT Highway Improvement Projects</td>
<td>27</td>
</tr>
<tr>
<td>D. Work to Optimize Location of Relocated Facilities</td>
<td>27</td>
</tr>
<tr>
<td>E. Minimize Impacts to Utility Facilities and Encourage Retention</td>
<td>27</td>
</tr>
<tr>
<td>F. Requirement of Utility Agreements</td>
<td>28</td>
</tr>
<tr>
<td>G. Non-Responsive Utility</td>
<td>28</td>
</tr>
<tr>
<td>H. Failure to Comply</td>
<td>28</td>
</tr>
<tr>
<td>I. Requirement of Service Connections</td>
<td>28</td>
</tr>
</tbody>
</table>

## X. Utilities on or near Highway Structures

<table>
<thead>
<tr>
<th>Section</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. General</td>
<td>28</td>
</tr>
<tr>
<td>B. Justification (applies to all structures)</td>
<td>29</td>
</tr>
<tr>
<td>C. Attachment to Bridges</td>
<td>29</td>
</tr>
<tr>
<td>D. Attachment to Culverts and Piping</td>
<td>30</td>
</tr>
<tr>
<td>E. Walls</td>
<td>30</td>
</tr>
<tr>
<td>F. Utilities in Proximity of Highway Structures</td>
<td>31</td>
</tr>
</tbody>
</table>

## XI. Acronyms and Terms

<table>
<thead>
<tr>
<th>Section</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Acronyms</td>
<td>31</td>
</tr>
<tr>
<td>B. Terms</td>
<td>32</td>
</tr>
</tbody>
</table>
I. General

A. Overview

The North Carolina Department of Transportation (NCDOT), in the public interest, is responsible for maintaining the right-of-way of highways under its jurisdiction, as necessary, to preserve the integrity, visual quality, operational safety, and function of the highway facility.

The NCDOT has various degrees of authority to manage the accommodation of utilities on highway right-of-ways, and the utility owners also have various degrees of authority to install and maintain their lines and facilities on the right-of-way of public roads and streets. Since the location and installation of these utility facilities may impact the highway right-of-way, it is necessary that these installations conform to sound engineering principles and related requirements and be authorized by NCDOT.

The demand for usage of NCDOT highway right-of-ways has continued to increase over time. The presence of a utility within the right-of-way may significantly impact proposed highway construction if its facilities have to be relocated. The following policies were established in an effort to regulate highway right-of-way usage. These policies specify the conditions under which existing, proposed, adjusted, or relocated utilities may be accommodated. Although the NCDOT strives to accommodate utility facilities whenever possible, the authorized use and occupancy of highway right-of-way for non-highway purposes is subordinate to the primary interests and safety of the traveling public. In addition, NCDOT encourages the collaboration, cooperation and joint use between various utilities to be placed within the highway right-of-way.

The NCDOT uses the regulations of the Federal Highway Administration (FHWA) under 23 CFR 645B for the accommodation of utilities within all NCDOT rights of way except as otherwise noted in these policies.

B. Utility Accommodation Policy Purpose

1. This policy prescribes regulation and accommodation requirements for utility facilities along, across, or on highway right-of-way under the jurisdiction of the NCDOT.

2. This policy applies to all public and private utilities, as well as to all existing utility facilities relocated, replaced, retained, or adjusted, and to new utility facilities installed on NCDOT right-of-way, including those needed for highway purposes (such as for lighting, rest areas, or weigh stations).
3. Private utilities serve a select and limited group and do not directly or indirectly serve the general public. As such, when a private utility requests a lateral or longitudinal installation within the public right-of-way these encroachment requests will be handled on a case-by-case basis.

C. **Delegation of Authority**

1. The State Utilities Manager, under the direction of the State Chief Engineer, will oversee the management, interpretation, execution, agreements, processes, and procedures for accomplishing this policy. The State Utilities Manager will be responsible for obtaining concurrence on utility issues, where required by FHWA policy, from the Federal Highway Administration.

2. The NCDOT Utilities Unit reserves the right to develop, publish and maintain a set of manuals for use in accomplishing policy. The manuals will provide guidance:
   
   a. On engineering of utility accommodations with respect to the preservation of the highway,
   
   b. On the processes for obtaining permission to encroach on the NCDOT right-of-way,
   
   c. On the processes for coordinating highway improvements and maintenance with utility facilities.

D. **Source Documents**

The requirements in this policy and manual regarding the accommodation of utilities were developed in accordance with the following:

1. 23 U.S.C. (United States Code, Title 23)
   
   a. *Section 103 – National Highway System*
   
   b. *Section 111 – Agreements relating to use of and access to rights-of-way – Interstate System*
   
   c. *Section 123 - Relocation of utility facilities*
   
   d. *Section 109 (l) (1) - Pertaining to accommodation of utilities*

2. 23 CFR (Code of Federal Regulations, Title 23)
   
   a. *Part 645, Subpart A - Utilities Relocations, Adjustments, and Reimbursement*
   
   b. *Part 645, Subpart B - Accommodation of Utilities*
3. North Carolina General Statutes (G.S.)
   b. Chapter 62 – 182.1 – Access to Dedicated Public Right-of-Way
   c. Chapter 95 – Article 19A – Overhead High Voltage Line Safety Act
   d. Chapter 136 – 18 – Powers of Department of Transportation
   e. Chapter 136 – 19.5 – Utility Right-of-Way Agreements (G.S. referring to Permanent Utility Easements)
   f. Chapter 136 – 27 – Connection of Highways with Improved Streets; Pipelines and Conduits; Cost
   g. Chapter 136 – 27.1 – Relocation of Water and Sewer Lines of Municipalities and Nonprofit Water and Sewer Corporations or Associations
   h. Chapter 136 – 27.2 – Relocation of County-Owned Natural Gas Lines Located on Department of Transportation Right-of-Way
   i. Chapter 136 – 27.3 – Relocation of Municipalities’ Utilities by Department; Repayment by Municipalities
   j. Chapter 136 – 93 – Openings, Structures, Pipes, Trees, and Issuance of Permits
   k. Chapter 136 – 93.1 – Express Permit Review Program
   l. Chapter 136 – 102.6 – Compliance of Subdivision Streets with Minimum Standards of the Board of Transportation Required of Developers
   m. Chapter 153A – 241 – Closing Public Roads or Easements
   n. Chapter 189 – 201 – Supersurface Uses

4. American Association of State Highway and Transportation Officials (AASHTO)
   b. A Policy on the Accommodation of Utilities Within Freeway Right of Way
   c. Roadside Design Guide
   d. A Policy on Geometric Design of Highways and Streets

5. NCDOT Standard Specifications for Roads and Structures

a. Sub-Chapter 2B – Highway Planning
b. Sub-Chapter 2C – Secondary Roads
c. Sub-Chapter 2E – Miscellaneous Operations

E. Application

1. This policy shall apply to utility facility owners and operators, as well as to contractors working for these entities, including but not limited to electric power, water, sanitary sewers, gas, communications, chemical, oil, petroleum products, steam, irrigation, and similar facilities.

2. This policy shall apply to utility facilities located below ground, at the surface or above ground, either singularly or in combination.

3. A utility must have a fully executed encroachment agreement before beginning work within the right-of-way under the NCDOT’s jurisdiction. At the discretion of the Division Engineer and the State Utilities Manager, performance and indemnity bonds may be required from the encroachment agreement applicant. Refer to the Utility Encroachment Manual for submission requirements and process.

F. Support Documents

Separate living documents will be developed, published, and maintained by the NCDOT Utilities Unit as a means for accomplishing this policy. The State Utilities Manager shall oversee these documents. Currently, there will be three documents published as manuals for:

1. Utilities Engineering: Since utility encroachments on the NCDOT right-of-way directly and indirectly affect the public safety on public highways, the engineering manual will detail processes and criteria for the justification, design, installation, maintenance and decommissioning of utility facilities. The engineering manual will differentiate when a utility action can be accomplished under standardized engineering drawings and specifications or when a site specific design by a North Carolina licensed Professional Engineer is required.

2. Utilities Coordination: This manual will detail the processes, procedures, documentation requirements, and roles for coordinating highway improvements or maintenance with utility facilities.

3. Utilities Encroachments: This manual will detail the processes, procedures, document requirements, and roles for a utility to obtain permission to occupy the NCDOT right-of-way and easements.
G. Utility Maintenance Activities

Utilities within the NCDOT right-of-way have a right and obligation to maintain their facilities. The NCDOT must be notified by the utility owner prior to beginning any maintenance work activity on NCDOT right-of-way. The utility owner shall be responsible for safe and efficient traffic control, refer to Section V – Traffic Control for requirements.

Additional requirements are placed on access to utility facilities within controlled access right-of-way. Refer to Section VIII – Freeways for additional information.

H. Emergency Work

Situations that could affect public safety disrupt utility service, or damage the NCDOT right-of-way may develop suddenly and unexpectedly, and demand immediate action. In those situations, the utility shall proceed immediately with all necessary actions. When emergency repairs become necessary, written permission will not be necessary before beginning the needed repairs. The utility shall be responsible for safe and efficient traffic control and shall notify the NCDOT of all actions as soon as practical.

I. Erosion / Sediment Control

Before beginning any utility work, the utility is responsible for following and complying with all local, state, and federal requirements regarding control of soil, erosion, and sedimentation. Refer to Section VI - Restoration / Remediation regarding erosion / sediment control.

J. Median Installations

1. New utility installations shall not be allowed longitudinally within the median area, except for irrigation or other utilities serving the highway or highways that are not full or limited control of access facilities when impractical to locate elsewhere.

2. Existing utilities may be allowed to remain longitudinal within the median area of a highway right-of-way when impractical to relocate.

K. Work near Adjacent Transportation Facilities

When a utility owner is working in the vicinity of adjacent transportation facilities, which include but are not limited to airports, railroads, and ports, the utility shall be aware that the encroachment agreement requirements in these areas may be more restrictive, and the NCDOT is not obligated to represent or include the requirements.
L. **Utility Acquisitions**

One of the key objectives of the utility accommodation process is to maintain accurate records of the type, capacity, location, and ownership of each utility located within the NCDOT right-of-way. Ownership changes have an effect on sureties, agreements, and data management / administration. When a utility undergoes a transfer of ownership or changes the name in which it will operate, the NCDOT must be notified as soon as practical.

M. **North Carolina 811**

The utility owner, or contractor as appropriate, shall notify the North Carolina 811 before any excavation or demolition activities in accordance with G.S. 87– Article 8 – Underground Damage Prevention (87-115 Underground Utility Safety and Damage Prevention Act or the most current applicable legislation). This shall not relieve the utility owner from its obligation to notify the NCDOT as required by the encroachment agreement or by this policy manual.

N. **Utility Facilities Not Permitted within the NCDOT Right-of-Way**

Certain utility appurtenances and facilities will not permitted within NCDOT highway right-of-way. For a complete list of prohibited appurtenances and facilities refer to the Utility Encroachment Manual.

O. **Disputes**

Utility owners may appeal a denied accommodation request or document a disagreement with the accommodation policy only by submitting in writing the reasons why the accommodation should be granted.

Appeals shall be submitted in writing at the District level. If the dispute cannot be resolved at the District level, it can be elevated to the Division level by the utility.

If the utility is not satisfied with the appeal decision, it may submit a written request through the original appeal channels for a review by the State Utility Manager or review panel. The State Utility Manager’s decision is final.

P. **Exceptions**

1. **General** – Exceptions to this policy may be allowed if the utility owner can demonstrate that extreme hardships or unusual conditions provide justification and where alternative measures can be provided to fulfill the intent of this policy.

2. **Exceptions process** - Requests for exceptions must include an evaluation of the direct and indirect design, environmental mitigation, safety, and economic effects that would result from the exception, plus any other pertinent information. Exceptions shall be:
a. Requested by an authorized utility representative to the District
b. Recommended for approval by the NCDOT district
c. Recommended for approval by the NCDOT division
d. Reviewed and receive FHWA concurrence (if required)
e. Approved by the State Utility Manager

Q. **Corrective Measures**

When the NCDOT determines that an existing utility facility is a potential hazard or poses an unacceptable risk to the highway user, the department shall initiate, in consultation with the affected utility, corrective measures to provide for a safer highway environment.

The corrective measures may include changes to the utility or highway facilities and will be prioritized to achieve the maximum safety benefit in the most cost effective manner. Corrective measures must be a joint effort between the utility and the NCDOT in identifying the problem areas and helping establish schedules for corrective measures. The schedule should take into consideration, wherever possible, both utility and NCDOT planned activities, upgrades, and replacements to create an orderly and effective process for safety improvements.

R. **Enforcement**

1. General – The NCDOT shall enforce this policy as provided by all cited federal rules / regulations and state statutes. Establishing good working relationships with utility owners based on coordination, cooperation, and communication helps facilitate this effort.

2. Enforcement may include, but is not limited to, the following:

   a. Suspension of utility field work
   b. Requesting law enforcement to have utility workers vacate the right-of-way
   c. Requiring the utility to pay the NCDOT restoration costs when the utility has begun work without an encroachment agreement
   d. Future encroachment agreements potentially suspended until past non-compliance is resolved
II. Above-Ground Facilities

A. General

The type of construction, vertical clearance above pavement, and location of above-ground utility facilities along the roadside are factors of major importance to preserve a safe traffic environment, the appearance of the highways, and the efficiency and economy of highway maintenance. As a result, it is important to keep the clear zone as free as practical from fixed objects such as poles, cabinets, and related facilities. Such facilities should be placed as far as practical from the traveled way and beyond the clear zone.

The nature and extent of roadside development and the nature of the terrain being traversed are recognized as controlling factors for locating poles, guys, and other facilities close to the right-of-way lines.

The NCDOT has adopted the general location recommendations from AASHTO and FHWA regarding the placement of above-ground utility facilities within state controlled right-of-way.

B. Above-Ground Objects

1. The NCDOT defines an above-ground utility as any part of the facility that extends above the existing ground level by $\geq 4$ inches.

2. In accordance with AASHTO recommendations, any above-ground utility object protruding $>4$ inches above the ground line that resides in the clear zone should meet breakaway criteria or be shielded by a traffic barrier approved by the NCDOT.

C. Clear Zone

1. AASHTO uses the term “clear zone” to designate the unobstructed, traversable area provided beyond the edge of the traveled way for the recovery of errant vehicles. Simply stated, it is an unobstructed, relatively flat area beyond the edge of the traveled way that allows a driver to stop safely or regain control of a vehicle that leaves the traveled way.

2. The NCDOT Roadway Design Manual defines the NCDOT clear zone requirements (Section 1-4L – Vehicle Recovery Areas).

D. Longitudinal Placement / Horizontal Offset

1. On and along roadways with shoulder sections, poles and other above-ground facilities shall be located as near as practical to the right-of-way line and outside the clear zone for the highway section involved.
2. In keeping with the nature and extent of roadside development alongside highways in urban areas, above-ground facilities should be located outside of the clear zone and as near as practical to the right-of-way. Where there are curbed sections, the utilities shall be located as far as practical behind the face of outer curbs, at the right-of-way line, and, where feasible, behind the sidewalks and in compliance with the ADA.

3. Above-ground utilities on urban streets with closely abutting improvements are special cases that must be resolved in a manner consistent with the prevailing limitations and conditions. Refer to the Utility Engineering Manual for details.

4. Exceptions to these offsets may be made where poles and guys can be placed at locations behind guardrails, beyond deep drainage ditches, or beyond the top of steep slopes and retaining walls, and other similar protected locations.

5. Supports for longitudinal installations shall be limited to a single pole line construction on each side of the right-of-way.

6. Where irregular shaped portions of the right-of-way extend beyond or do not reach the normal right-of-way limits, variances in the location of poles should be allowed to maintain a reasonably uniform alignment for longitudinal installations. Such installations will reduce the need for guys and anchors between poles and the roadway.

7. Utility guy wires to ground anchors and push braces should be located outside the clear zone.

8. Above-ground utilities shall not interfere with highway drainage facilities and their maintenance.

9. The positioning of any new or replacement above-ground installation that would obstruct a portion of the line of sight of a highway or commercial driveway, with a width of more than eighteen (18) inches, shall not be permitted.

10. Locating poles in potential target locations, such as beyond lane drops, sections where the pavement narrows and tee intersections, should be avoided.

11. The NCDOT will not grant encroachment agreements covering the installation of poles erected solely for the purpose of cable television lines. Attachment to existing utility poles is encouraged; once permission is secured from the utility pole owner, an encroachment agreement can be submitted.

12. The angle of crossing for above-ground utility crossings should be as close to perpendicular to the highway alignment as practical.

E. Vertical Clearances

1. The NCDOT minimum vertical clearances for above-ground utility facilities will be as follows:
a. Crossing a Roadway – 18 feet

b. Wires Longitudinal/ Parallel to Roadway – 16 feet

c. Crossing Freeway – 24 feet

d. Crossing an over-height and / or over-weight route – 24 feet

2. OSHA – Published clearances are required to maintain safe distance from electric facilities when operating a crane or derrick. Refer to OSHA (29 CFR, Part 1926, Subpart CC – Cranes and Derricks in Construction) or the Utility Engineering Manual for clearance values.

3. National Electrical Safety Code (NESC) – Current NCDOT vertical roadway clearances meet or exceed published values for electric distribution and communication facilities. Electric transmission facilities must adhere to current NESC clearance requirements.

F. Maintenance

1. General Conditions – All utilities installed within the highway right-of-way shall be maintained in good condition both operationally and visually. Utility facilities requiring routine maintenance or inspection shall be placed to minimize impacts to the right-of-way and the traveling public.

2. Maintenance Requirements – All maintenance work elements will require NCDOT notification; refer to the Utility Encroachment Manual for clarification of maintenance work items and notification requirements.

3. Traffic Control – Refer to Section V – Traffic Control of this manual for traffic control requirements when utility maintenance work is performed within the right-of-way.

G. Lighting

1. General – The NCDOT may approve lighting systems for illuminating the right-of-way and / or security/decorative lighting under an encroachment agreement.

2. Single lamp illumination over the right-of-way placed on existing poles is the preferred method.

3. Placement – Separate support poles for roadway illumination may be allowed where the need is properly documented and where traffic safety and roadway clearance requirements are met.

4. Refer to the Utility Engineering Manual for lighting design standards and criteria.
H. Other

1. Any above-ground facility proposed within the NCDOT right-of-way must be approved through an encroachment agreement before installation. The following list, which is not all inclusive, offers some examples of above-ground non-utility facilities that require prior approval for installation:

   a. Private Bridges
      (1) Pedestrian Structure Crossing
      (2) Golf Cart / Motor Vehicle Structure Crossing

   b. Transit Stop Structures

   c. Roadside Art (Refer to NCDOT Art Policy)

   d. Canopies

III. Underground Facilities

A. General

Placement of underground facilities varies from site to site due to the different types of geographical features, either natural or manmade. The location and placement of these facilities are of major importance to preserve a safe traffic environment, the appearance of the highway, and the efficiency and economy of highway maintenance and reconstruction.

1. Underground utility construction shall conform to all applicable federal, state and local codes, standards, and specifications.

2. Excavated material shall not be stored on the pavement. Excavated material may be temporarily placed outside of the clear zone. Such temporary placement should not impede drainage of the roadway or access to and from the roadway. Refer to the Utility Encroachment Manual for further guidance.

3. Any concrete foundations or slabs required for a cabinet, pedestal, or other appurtenance shall not protrude more than 4 inches above the surrounding ground surface.

4. 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 the underground system.
5. The utility shall place service connection points at or beyond the right-of-way line to prevent the utility’s customers from entering the NCDOT right-of-way to make a connection.

6. All underground facilities shall be designed and installed to support existing and future traffic loads.

7. All facilities shall be of durable materials and designed to be free from routine maintenance. Inspection points or maintenance locations should be located in areas that will not cause disruption to traffic.

8. Open cutting of pavement on any state-maintained roadway is highly discouraged.

9. Longitudinal locations of utilities under pavement should be avoided. Where impracticable the utility owner shall provide justification for accommodation under pavement.

B. Location and Alignment

1. General – The utility shall minimize the adverse effects on pavement, base, other transportation facilities, or other utility facilities.

2. On longitudinal installations, locations should be located on a uniform alignment at or adjacent to the right-of-way line 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 right-of-way.

3. Utility crossings of the highway are preferred to be as near perpendicular (90 degrees) to the highway alignment as practical.

4. Conditions that are generally unsuitable or undesirable for underground crossings shall be avoided. These include deep cuts, situations that require construction within existing highway fill slopes and/or underneath cut slope protection, and locations such as:
   a. Near footings of bridges and retaining walls;
   b. Across at grade intersections or ramp terminals;
   c. At cross drains where flow of water, drift, or stream bed load may be obstructed;
   d. Within basins of an underpass drained by a pump; and
   e. In wet or rocky terrain where it will be difficult to attain a minimum depth of cover.

C. Minimum Depth

Refer to the Utility Engineering Manual for depth criteria and all other design and clearance requirements.
D. **Casing Requirements**

1. General – Casings for utilities are not required except when the carrier is of an insufficient external load rating or when required for support during installation.

2. A utility may install a casing for convenience of future access to its facilities; however, the NCDOT does not warrant that future access will be available and has no obligation to extend or replace such casings.

3. Where there is a risk of groundwater movement through a casing, a suitable seal shall be provided.

4. Sealed casings may be vented. Vents may be located at both ends of the casing. Vents should be located outside of the clear zone, in a location to avoid damage to the highway facilities due to discharge, and in areas that will not inhibit the maintenance of the highway right-of-way.

5. Casings shall be designed to support the load of the highway and superimposed loads and, at a minimum, should equal the structural requirements for highway drainage pipe. Casings shall be composed of materials of satisfactory durability for the conditions under which they may be exposed. Refer to the [Utility Engineering Manual](#) for design criteria.

E. **Appurtenances**

1. As part of the underground system, an above-ground appurtenance that extends more than 4 inches above the ground should be located outside of the clear zone or be of the breakaway type.

2. Cabinets, pedestals, vents, fire hydrants, and any other above-ground utility appurtenances installed as part of the underground system shall be located at or near the right-of-way line, outside of the clear zone, and not interfere with ADA requirements.

3. Metering stations, regulator station, pressure reducers, lift stations, pad-mounted transformers, pad-mounted switchgear, sprinkler pits, etc., shall not be located within the highway right-of-way. Meters shall be located on the same side of the highway as the customer being served.

4. Manholes, hand holes, or other access structures should be located in such a manner that will cause the least interference to traffic operations when considering the initial construction as well as future access needs.

5. All vaults, manholes, or other structures within the clear zone of the highway shall be designed to carry traffic loads.
F. Out-of-Service or Deactivated Lines

1. Placing facility out-of-service – The utility owner shall not leave an out-of-service or deactivated underground facility in place that does any of the following:
   
a. *Compromise the safety of any transportation facility user during construction or maintenance operations.*

b. *Prevent other utilities from being placed in the area when alternatives are unavailable.*

c. *Create a maintenance condition that would be disruptive to the transportation facility.*

2. Leaving out-of-service line in place – The NCDOT expects all out-of-service utilities to remain out-of-service and may require the utility to be removed at any time in the future. When leaving an out-of-service or deactivated utility in place, the utility shall do the following:

   a. *Maintain records of the utility's location, size, and type of material.*

   b. *Furnish such records to the NCDOT upon request.*

   c. *Show such utilities on all utility work / relocation plans when required by the NCDOT.*

3. Returning facility to service – The utility shall obtain a new encroachment agreement to return an out-of-service utility to active service. This requirement does not apply if the service is temporarily restored for an emergency or for an NCDOT construction need. With the exception of a construction need, the NCDOT does not accept financial responsibility to adjust or relocate an inactive, out-of-service, or abandoned facility.

G. Underground Plant Protection

1. General – The utility shall make all new or replaced underground utilities within the right-of-way detectable without excavation using techniques available to the industry.

2. Markers / witness posts – When used, markers / witness posts shall be constructed of a durable weatherproof material, located outside of the clear zone, and include the following:

   a. *Name of owner*

   b. *Contents of facility*

   c. *Emergency contact number*
IV. Pipelines

A. General

1. This policy applies to those pipelines covered by 49 CFR, Parts 190 – 199; Transportation of natural and other gas by pipeline, hazardous liquids, or carbon dioxide.

2. Natural gas lines that are classified as distribution facilities are permitted longitudinally within the highway right-of-way. Transmission pipeline facilities are strongly discouraged longitudinally within the right-of-way.

B. Location and Alignment

1. The NCDOT must review locations of all pipelines to ensure that the proposed utility installation will not interfere with existing or planned highway facilities or with highway maintenance and operation processes.

2. Crossings should be located as near perpendicular (90 degrees) to the highway alignment.

3. Markers that are readily identifiable and suitable (by industry standards) shall be placed by the utility at the right-of-way line where the pipeline crosses it. Facility owner, type of material transported, and emergency contact number should be easily read on the marker.

C. Encasement

1. Any proposed pipeline crossing a highway right-of-way must be approved before starting construction. Refer to the Utility Encroachment Manual and Utility Engineering Manual for all submittal and design criteria.

2. Each casing used on a transmission line or main under a highway must comply with the following:

   a. The casing must be designed to withstand superimposed loads.

   b. If there is a possibility of water entering the casing, the ends must be sealed.

   c. If vents are installed on a casing, the vents must be protected from weather to prevent water from entering the casing.

D. Corrosion Control

1. General: Because of the inherent danger a failure to pipeline facilities may cause, extra steps are taken to ensure that these facilities are maintained and protected against potential failures.

2. External corrosion control examples:
a. Protective coating
b. Cathodic protection
c. Monitoring
d. Electrical isolation

3. An entity operating within the highway right-of-way that causes any damage to or exposure of the systems that are mentioned above must report the damage or exposure immediately to the facility owner.

V. Traffic Control

A. General

The party or parties requesting approval to conduct work within the NCDOT maintained right-of-way shall take, provide, and maintain all necessary precautions to prevent injury or damage to persons and property potentially affected by operations.

They shall employ traffic control measures that are in accordance with the prevailing federal, state, local, and NCDOT policies, standards, and procedures. These policies, standards, and procedures include, but are not limited to the following:

1. Manual on Uniform Traffic Control Devices (MUTCD) – North Carolina has adopted the MUTCD to provide basic principles and guidelines for traffic control device design, application, installation, and maintenance. North Carolina uses the MUTCD as a minimum requirement where higher supplemental standards specific to North Carolina are not established. Use fundamental principles and best practices of MUTCD (Part 6, Temporary Traffic Control).

2. NCDOT Maintenance / Utility Traffic Control Guidelines – This document enhances the fundamental principles and best practices established in MUTCD Part 6, Temporary Traffic Control, incorporating NCDOT-specific standards and details. It also covers important safety knowledge for a wide range of work zone job responsibilities.

B. Approval

1. Receipt of an approved encroachment agreement constitutes permission to install traffic control for the work relative to that encroachment agreement, unless otherwise stipulated by the NCDOT.

2. Review and approval of a traffic control plan may be required as a condition of encroachment approval. Refer to the Utility Encroachment Manual for additional information.
C. Maintenance of Traffic

1. All lane and road closures shall comply with the NCDOT Maintenance / Utility Traffic Control Guidelines and MUTCD where applicable.

2. Detours:
   a. **NCDOT must review and approve the corresponding detour route before granting permission to close a road.**
   b. **The utility shall reimburse the NCDOT for any costs incurred in developing, improving, signing, marking, and maintaining a detour route.**

D. Deficiencies

1. General - Once the traffic control has been installed and before work begins, the contractor should observe traffic flow and movements. If problems occur or are anticipated, the contractor shall make appropriate changes to the traffic control measures before work begins.

2. Enforcement - If at any time NCDOT personnel find a traffic control operation to be unsafe, insufficient, and/or incorrect, the NCDOT has the right to stop work until traffic control issues have been properly addressed. In this event, the NCDOT is not liable for any penalties, financial or otherwise, incurred by the contractor as a result of this delay in work.

VI. Restoration / Remediation

A. General

The utility must restore or remediate all areas that are disturbed by construction of utilities to meet minimum requirements in accordance with the prevailing guidelines, policies, standards, and procedures adopted by the NCDOT, including, but not limited, to the NCDOT Roadway Design Manual and the AASHTO Roadside Design Guide. The party or parties requesting approval to conduct work within the NCDOT maintained right of way shall take, provide, and maintain all necessary precautions to prevent injury or damage to persons and property affected by operations.

B. Roadway

All pavement cuts, including asphalt, concrete, and decorative pavers, shall be repaired or patched in accordance to the NCDOT Roadway Design Manual (Part One, Chapter 1-3, Pavement).
C. **Landscaping**

1. **General** - To protect the public investment in highways, the NCDOT uses grass and legume cover to prevent roadside erosion and shrubs, trees, and wildflower plantings to reduce mowing areas and improve roadside aesthetics. In the event that plants require relocation or removal for utility construction, reconstruction, maintenance, or safety, encroachment agreement applicants will immediately after notification by the NCDOT, complete such removal or relocation, entirely at their expense.

2. **Trees and Shrubs** - The encroachment agreement applicant shall follow the [NCDOT Guidelines for Planting within Highway Right-of-Way](#).

D. **Turf**

1. **General** – After completing construction or land-disturbing activities, all disturbed areas must be stabilized to prevent future erosion. Establishing good vegetative cover helps protect soil from the impact of rain and reduces the erosive forces of runoff.

2. **Seeding and Mulching** – Encroachment agreement applicants shall follow the [NCDOT Best Practices for Construction and Maintenance Activities](#) (Chapter 5.6 Ground Stabilization).

E. **Sidewalks / Multi-Use Paths / Pedestrian Ways**

Partial or full excavation sections must be temporarily backfilled with compacted suitable backfill. The permanent repair shall be a full section replacement with like material (asphalt, concrete, etc.) and be a joint-to-joint replacement (for concrete) in accordance with ADA requirements.

VII. **Vegetation Control**

A. **General:**

Good vegetation control provides maintenance practices for vegetation that will encourage economically the protection, environmental compatibility, operation, stability, continuance, aesthetics, and safety of the right-of-way.

The NCDOT embraces this goal and practices vegetation control to provide a clear safety zone; to improve sight distance at curves and intersections; to increase overall safety; to ensure adequate drainage; to reduce and control erosion; to maintain or improve the appearance of the roadside; to protect desirable native vegetation, signs, markers, guardrails, and other appurtenances; to eliminate or control noxious weeds and brush; to reduce maintenance costs where possible; and otherwise to enhance the roadside.

To achieve these same objectives, utilities will be required to use vegetation control that does not detract from the natural beauty of the roadside or cause an abrupt change in the roadside vegetation conditions.
1. The NCDOT cooperates with the U.S. Fish and Wildlife Service to minimize vegetation control impacts for endangered or threatened wildlife and plants. Utilities on NCDOT right-of-way will be required to operate in the same manner.

2. Many native wild flower species in North Carolina are beautiful and enhance the aesthetic quality of the roadside. The NCDOT delays mowing in the spring and fall and limits areas treated with chemicals to encourage the development of many of these native wild flower species. Utilities are expected to comply with NCDOT policies in the treatment and preservation of wild flowers.

B. Trees / Brush / Shrubs

1. General - The limited pruning of trees or other large vegetation on highway right-of-way for utility lines is an acceptable practice when it is used to ensure and maintain safe operation of facilities.

2. Except in the process of an authorized construction, maintenance, or safety project, the utility shall not cut down trees unless:
   
   a. The trees pose a potential danger to persons or property; or
   
   b. The NCDOT approves the cutting down of the tree.

3. No ornamental trees may be cut or removed without prior approval, and in certain situations, the NCDOT may require that ornamental trees or shrubs be carefully dug and replanted or replaced by new plants.

4. When the NCDOT gives permission for cutting, trimming, digging, bulldozing or discing, or other removal or alteration of trees, shrubs, or other vegetation on highway right-of-way for the purposes of construction and maintenance by an encroaching party, it shall be subject to the following standard requirements:

   a. The permission applies only to the interest of the NCDOT in the vegetation and is not to be construed as freeing the encroaching party from liability to the adjacent property owner(s).

   b. All cutting shall be done as close to flush with the ground as is practical. Under exceptional conditions, such as very large diameter trees, or swamp growth such as cypress, flush cuts may not be practical. The burden of proof for leaving high stumps will rest with the encroaching party.

   c. Trimming of specimen trees on highway right-of-way shall be done in accordance with generally accepted tree surgery practice, and any trimming necessary to leave the tree with a good balanced appearance must be done in addition to the minimum trimming needed for line clearance. Climbing irons or spurs must not be used on any specimen tree.
d. If wood chipping machines are used for brush disposal, the mulch may be left on the right-of-way provided it is scattered uniformly and not piled or windrowed. No mulch shall be placed in an area that is susceptible to be washed into streams, drainage structures, or onto adjacent properties. Mulched material shall not be spread on grassed areas.

e. If bulldozers, discs, or similar equipment are used for clearing, all debris shall be removed from the highway right-of-way and out of view unless otherwise stated in the encroachment agreement. There shall be no blocking of highway drainage due to the operation, and the ground surface shall be left in a smooth and uniform condition.

f. Removal or alteration of vegetation for above-ground utility facilities is limited to a normal width of clearance for the size and type of utility line involved. Proposed encroachments requiring a wide clearing area will be considered only on the basis of:

   (1) Removing only danger trees,
   
   (2) Retaining large, sound, strong-trunked trees,
   
   (3) Trimming such large sound trees only for wire clearance instead of complete side trimming, or

   (4) Additional justification from the utility.

5. Under some circumstances, the granting of permission as it relates to overhead utility facilities will be conditioned on the preservation of such shrubs and low-growing trees within the clearing area. The NCDOT will determine the need and extent of such preservation for specific locations.

6. When excavating for underground utility installation or maintenance is done near trees, the minimum, but necessary cutting of tree roots shall be done in accordance with generally accepted tree surgery practice. The tunneling under and retention of principal support roots may be required when considered necessary according to the location, size, and quality of the tree involved.

7. Waste / debris removal – The work site must be left in an acceptable condition on a daily basis with the proper removal of all waste and debris. When completed, the work site must be clean of all litter and debris created by the utility and, if a mowable area, acceptable for mowing by conventional mowing equipment. All trees and/or vegetation that is cut must be removed from the site or mulched.

8. Replacement of a damaged tree – Refer to Section VI - Restoration / Remediation.
C. Chemical Control of Vegetation

1. General – When the use of herbicides is permitted for control of vegetation beneath utility lines, liability for damage to adjacent property shall rest entirely with the utility.

2. The use of herbicides is permissible only if they are applied as a part of a scheduled program to eliminate undesirable brushy growth, so that the initial overall browning of vegetation on any given area will not recur, but will be followed only by periodic but consistent selective or spot treatment until undesirable brushy growth has been replaced by low-growing ground cover that will not cause a maintenance problem.

3. Herbicide applications that kill grass or other herbaceous vegetation indiscriminately will not be permitted.

4. Stump treatment following original clearing for utility construction and basal sprays following the initial overall herbicide treatment for utility maintenance shall have preferential use to the extent that they are feasible according to the latest technical requirements.

5. Vegetation shall be sprayed or otherwise treated with herbicides while in its first growing season after cutting, or before it has reached the average height of six (6) feet unless there are exceptional conditions existing in a particular and limited area of rapid plant growth. In that case, dead plant material above the height limit shall be removed after the completion of chemical treatment.

6. No application of herbicides that are harmful to existing grass, legumes, vines, or other low-growing ground cover plants shall be used:
   a. On highway cut slopes or fill slopes where such vegetation has been planted or has become established naturally;
   b. On highway shoulders between the highway surfacing and the ditch line; or
   c. On other areas where it is obvious that mowing is done as a part of the regular highway maintenance.

7. Where specific plants have been selected and preserved, they shall be protected against damage by the herbicide treatment of other vegetation.

8. Careless or excess herbicide application will not be tolerated, and special precaution must be taken to avoid pollution of streams and ponds.
VIII. Freeways

A. General

Freeways are highways with full control of access; including the highways on the Interstate system. They are intended to provide for high levels of safety and efficiency in the movement of large volumes of traffic at high speeds. Utilities will not be allowed accommodation within Freeway right-of-way except as specified below.

The following policy applies to all utility installations on, over, or under a freeway right-of-way.

This policy does not apply to utilities that service highway facilities required solely for operating the freeway.

B. Locations

1. The NCDOT maintains a list of all existing freeway locations NCDOT Strategic Highway Corridors.

2. The NCDOT reserves the right to add locations as existing highways are changed to freeway / interstate standards. Long-range planning is conducted to review and approve Strategic Highway Corridor (SHC) feasibility studies.

C. Longitudinal Installations

1. New utilities shall not be permitted longitudinally within the control of access right-of-way of a freeway, except when all of the special circumstances are met and under strictly controlled conditions. When permitted by NCDOT, such installations must be located as close to the right-of-way as possible.

2. Existing utilities may remain in place within a new control of access when an existing highway is changed to a freeway and all of the special circumstances (except 3d) are met.

3. A utility owner must demonstrate the following special circumstances for longitudinal installations to the NCDOT’s satisfaction:

   a. The accommodation will not adversely affect the safety, design, construction, traffic operations, maintenance, or stability of the freeway.

   b. Alternative locations are not available or are cost prohibitive, from the standpoint of providing efficient utility services.

   c. The utility will not interfere with or impair the present use or future expansion of the freeway.
d. The location of the utility outside of the right-of-way would result in the loss of productive agriculture land, or loss of productivity of agricultural land, if any. In this case, the utility must provide information on the direct and indirect environmental and economic effects, which will be evaluated and considered by the NCDOT pursuant to Title 23, U.S.C. Section 109 (l)(1).

e. The utility facilities will not be constructed or maintained by direct access from any freeway roadway or connecting ramp of the freeway facility, except for attachments to structures over major valley crossings.

4. When a longitudinal installation is allowed under the above special circumstances, the following criteria are required.

   a. The utility shall be located as close to the right-of-way line as possible.

   b. Access for construction shall not require closure of a travel lane.

   c. Service taps or other connections will only be allowed at freeway interchanges.

   d. In no case will utilities that transport a hazardous material be allowed in vehicular tunnels.

D. Vertical clearances

The utility owner shall provide at least twenty-four (24) feet of vertical clearance for above-ground facilities crossing any controlled access roadway. For additional requirements, refer to Section II – Above-Ground Facilities; Item E.

E. Crossings

1. New utility installations and adjustments or relocations of existing utilities may be permitted to cross a freeway.

2. Crossing shall be generally perpendicular to the freeway alignment and preferably be located under the freeway.

3. Installation and maintenance shall be made without access from the freeway roadway or ramps.

4. Installation and maintenance may be accessed from a crossroad or street that crosses over or under a freeway.

5. Above-ground facility

   a. Above-ground utility lines crossing a freeway shall be adjusted to locate supporting poles / structures outside the control of access line.

   b. In no case shall the supporting poles / structures be placed within the clear zone.
6. Under special circumstances and in accordance with 3, 4, and 5 above, intermediate supporting poles, manholes, and service access points may be placed in medians that have sufficient width (refer to the Utility Engineering Manual for applicable values) to provide the clear zone from the edges of both existing and future traveled ways.

7. Under special circumstances, a restricted access locked gate along the freeway control of access fence may be used to meet periodic service access needs.

8. Underground facility
   a. Utilities crossing a freeway underground shall be of durable materials and installed to virtually preclude any necessity for disturbing the roadway for maintenance or expansion operations. Refer to the Utility Engineering Manual for design and material criteria.
   b. The underground installation shall be constructed using a trenchless technology. Open trench installation is not permitted, except in those projects where the NCDOT will have the freeway roughly graded at the utility crossing site, and the installation occurs before pavement placement.
   c. Casing, if provided, should extend to the controlled access line of the roadway, but in all cases shall extend to a point outside the clear zone of the freeway. Refer to Utility Engineering Manual for design criteria.

9. Manholes and other points of access for emergency (non-routine service to utility facilities) may be located within the controlled access limits but not within pavement. The top is to be buried a minimum of one foot below ground.

F. Utility Access for Constructing / Servicing Facilities

1. General – Utility facilities shall be located and designed in such a manner that they can be constructed and/or serviced without direct access from the controlled access through traffic or connecting ramp roadways.

2. Access to a utility along or across a freeway should be limited to access via:
   a. Frontage roads where provided,
   b. Nearby or adjacent public roads and streets, or
   c. Trails along or near the highway right-of-way line, connecting only to an intersecting road.

3. Direct access to a utility facility is highly discouraged but may be permitted when alternate locations and means of access are not available or are impractical, as long as this access does not adversely affect safety or traffic operations or damage any facility.
4. The NCDOT has the authority to control access to all highways under its jurisdiction. Any utility that plans to access its facilities for non-emergency maintenance from the controlled access through lanes or ramp roadways must have written permission from the NCDOT before beginning any work. Refer to the Utility Encroachment Manual for the request process and requirements.

G. Major Valley Crossing

1. General – Where a freeway crosses a major valley or river on an existing structure, any utility carried by the structure at the time the highway route is improved may continue to be carried only under the following conditions: when relocation of the utility would be cost prohibitive, when the utility can be serviced without significant interference with road users, and when approved by the NCDOT.

2. Expansion of a utility carried by an existing structure across a major valley or river may be permitted. Refer to Section X – Utilities on or near Highway Structures, the Utility Engineering Manual, and the Utility Encroachment Manual for design criteria and request process.

3. New utility installations will not be permitted on a structure across a major valley or river at or after the time the highway route is approved, except for special cases that the NCDOT will handle on an individual case-by-case basis.

4. For security purposes, gas, oil, sewer, or other hazardous utility facilities should not be allowed on structures identified as most critical by the NCDOT.

H. Vehicular Tunnels

1. Utilities shall not be permitted to occupy vehicular tunnels on freeways at new locations except in extreme cases. Under no circumstances shall a utility facility that transports a hazardous material be allowed to occupy a vehicular tunnel.

2. When a utility facility occupies space in an existing vehicular tunnel that is converted to a freeway, relocation of the utility facility may not be required. Utilities that have not previously occupied an existing vehicular tunnel that is incorporated into a freeway will not be permitted except in extreme cases.

I. Irrigation Ditches and Water Canals

1. Except for necessary crossings and extreme cases, irrigation ditches and water canals should be excluded from the controlled access right-of-way of freeways.

2. Existing parallel canals should be avoided in the initial location of the freeway.
3. Servicing or patrolling these facilities should be from outside of the controlled access lines. Ditch-walkers or ditch-riders shall not be permitted to indiscriminately cross the freeway / interstate at grade. Under appropriate traffic control arrangements, special ditch cleaning equipment may be permitted to cross the freeway at grade in extreme cases.

J. Alteration of Controlled Access Right-of-Way

1. General – This policy shall apply to the alteration of controlled access right-of-way by any person, or persons, other than NCDOT personnel. It covers any clearing, grading, drainage change, extension of drainage structures, or other physical alteration of the controlled access right-of-way.
   
   a. 0 – 1,000 cubic yards of cut or fill may be approved by the Division
   
   b. > 1,000 cubic yards shall be approved by the Central Office

2. Requests will be made to the Division and forwarded for necessary reviews and approvals. Please refer to the Utility Engineering Manual and Utility Encroachment Manual for the required engineering criteria and encroachment agreement process; fees may apply.

3. Trees and shrubs removed by these types of alterations shall be replaced as specified by the NCDOT. Section VII – Vegetation Control; Item B includes requirements for other plantings and selective pruning on highway right-of-way.

IX. Adjustment / Relocation of Facilities

A. General

The NCDOT reserves the right to require the utility to remove, repair, adjust, or relocate any utility facility installed within the right-of-way of a road that the NCDOT has undertaken to improve, or intends to improve. This requirement will begin when, in the opinion of the NCDOT, the facility constitutes an obstruction or interferes with the use or safe operation of the roadway by the traveling public or will interfere with roadway construction or maintenance.

All utilities utilizing the right of way shall follow the NCDOT relocation procedures, as outlined in the Utility Coordination Manual, so as not to adversely affect the NCDOT construction work program or the contractor’s construction schedule for the project.

B. Compensation for Relocation

The utility is financially responsible for the adjustment or relocation of facilities in conflict with a highway improvement when such utility facilities are located within the existing right-of-way of a state system highway, except as provided for in G.S 136 - 27.1 and G.S. 136 - 27.2.
The NCDOT shall assume the financial responsibility for the non-betterment costs of adjusting or relocating utilities when the conflicting utility facilities are occupying a valid utility right-of-way or easement. A valid utility right-of-way or easement for the purposes of this policy is one in which the utility owner has a compensable interest. Under these conditions, the NCDOT has the authority to require the utility owner to relocate when the NCDOT and/or utility owner determine that the existing utility will interfere with the construction of the roadway project or jeopardize safety to the contractor or traveling public.

C. Non-NCDOT Highway Improvement Projects

For non-NCDOT highway improvement projects, the developer necessitating these improvements will be financially responsible for the adjustment and/or relocation of conflicting utilities. In the event that NCDOT is participating or has a vested interest in the project, NCDOT reserves the right to invoke the requirements of the encroachment agreement, making the utility owner financially responsible for the their own adjustment or relocation. When the highway improvements are performed by another government agency, NCDOT may invoke the requirements of the encroachment agreement as well.

D. Work to Optimize Location of Relocated Facilities

In the event it becomes necessary to require the utility to relocate its facilities, and these facilities must remain in service during these relocation efforts, and provided other suitable space is available, the NCDOT may specify a new location in the right-of-way to which the facilities may be moved.

An existing utility facility within the right-of-way that does not need to be relocated due to the highway construction will not be required to relocate for another utility’s facility relocation. If there is not sufficient right-of-way to accommodate the relocated facilities, the utility may be required to place its facilities outside of the right-of-way.

E. Minimize Impacts to Utility Facilities and Encourage Retention

There are various kinds of utility facilities that share or affect the highway project right-of-way; each one exists because it serves the same public as the highway project serves. It is that service to the public that justifies the presence of those facilities within the highway right-of-way and the close coordination efforts needed between the NCDOT and utility owner during the project development phases.

It is the policy of the NCDOT to accommodate existing utility facilities and attempt to minimize the impacts to these facilities, whenever practical. Experience has shown, the earlier in the design process that the utility facility and its potential impacts are considered, the smaller the costs are for their resolution. In addition, eliminating or minimizing conflicts helps shorten utility relocation schedules. AASHTO has deemed this a best practice, and the FHWA recommends it as part of its Program Guide for Utility Adjustments and Accommodation on Federal-Aid Highway Projects.
F. Requirement of Utility Agreements

No utility facility shall cross or otherwise occupy rights-of-way of any road on the state system without written permission of the NCDOT per G.S. 136 – 93.

An agreement between the NCDOT and the utility owner will be required for any utility occupying highway right-of-way. Generally, this requirement will be met through a reimbursement agreement or an encroachment agreement.

G. Non-Responsive Utility

The Utility Coordination Manual details the design and construction coordination process for the NCDOT. A utility will be deemed as non-responsive if notifications have been made by the NCDOT and reasonable time given for the utility to respond and relocate as needed and either no information is given or data / schedule commitments have not been met. After determining non-responsiveness, the NCDOT will send written notification to the utility owner.

H. Failure to Comply

In those cases where no agreement can be reached, the utility has been identified as non-responsive, or in cases where the utility refuses to relocate or refuses to claim ownership, the NCDOT Board of Transportation, shall issue an order on the authority of G.S. 136 - 18(10) requiring the necessary adjustments.

If the utility does not comply with the order, the NCDOT shall consider the utility facilities placed out of service and subject to removal in whole or part for the construction of the highway improvement. The NCDOT may remove the utility facilities by inclusion in the highway improvement contract. After completing the work, the owner of the utility shall be invoiced for the work performed. If the invoice is not paid, the NCDOT shall refer the matter to the Office of the Attorney General for further action.

I. Requirement of Service Connections

All service lines and connections within the control of access will only provide services to NCDOT facilities. A utility will not be allowed to provide service to public or private entities from any service tap located within the control of access.

X. Utilities on or near Highway Structures

A. General

1. Highway structures are bridges (both vehicular and pedestrian), culverts, drainage piping, walls (both noise and earth retaining), and wing walls.
2. Utility facilities attached to or in proximity of a highway structure can materially affect the structure, the safe operation of traffic, the efficiency of maintenance and reconstruction, and the appearance. Feasible and reasonable actions are to be taken to locate utility facilities elsewhere. The NCDOT highly discourages attachments to structures. However, it is recognized that the installation of utility facilities on or near a structure sometimes is the most practical solution and may be permitted when justified and where found to be in the public interest.

B. Justification (applies to all structures)

1. A detailed engineering report shall be provided that clearly demonstrates all of the following:
   a. Significant economic and environmental savings will occur by locating the utility on or near the structure.
   b. Installation and maintenance will not significantly impact traffic operations of the highway.
   c. The aesthetics of the utility will not detract from the current conditions of the area.
   d. The utility facilities are safe for public exposure.
   e. The highway structure is adequately rated to support the additional load and to accommodate the utility facility without compromise of highway features, including ease of bridge inspection and maintenance.

2. The proposed utility facility:
   a. Shall not hamper structure maintenance
   b. Shall not degrade the integrity of the structure
   c. Shall be removable without requiring a replacement facility
   d. Shall be removable without causing damage to the structure

C. Attachment to Bridges

1. Over railroads and waterways – The utility facility should be attached between beams or girders. If attachment between beams or girders is unreasonable, attachment to the overhang may be permitted.

2. Grade separation – On structures that carry one highway route over another, the utility facility shall be attached in the exterior or interior bays and not in the overhang.

3. Placement
a. **Vertical** – Utility facilities attached to the bridge shall maintain a vertical clearance such that the lowest part does not extend below the bottom of any beam or girder at any point.

b. **Longitudinal** – Only longitudinal utility attachments to bridges will be allowed; transverse attachments to the superstructure will not be permitted.

4. Attachment to beams is not allowed.

   a. Generally, the utility should be on a straight alignment. Curved alignments and bends require detailed designs demonstrating that live loads are not transmitted to the structure.

D. **Attachment to Culverts and Piping**

1. **Box Culverts** - Utilities will only be allowed inside reinforced concrete box culverts with a minimum vertical and horizontal opening of 60 inches:

   a. When the hydraulic capacity will not be lowered below the 100-year flood capacity.

   b. Where no detrimental effects to the natural environment will occur.

   c. When there is adequate room for maintenance and inspection of the culvert.

   d. Where crossing transversely above the 25-year flood water surface elevation.

2. **Piping** - Utilities will only be allowed within drainage pipe:

   a. Where crossing transversely above the 10-year flood water surface.

   b. Inside of a reinforced concrete interference box that allows access for inspection and maintenance.

E. **Walls**

1. Attachment to the face of a wall will only be allowed when included in the original construction of the wall. Retrofit attachments are not allowed.

2. Attachment to the top will be allowed on culvert wing walls only.

3. Passing through walls:

   a. No forces can be applied perpendicular to the face of the wall.

   b. Openings shall be sealed to prevent water movement.
F.  Utilities in Proximity of Highway Structures

1. Underground Utility

   a. Vertical and horizontal clearances between the utility facility and structure must be sufficient to permit safe operation and maintenance of both the utility facility and highway structure and future reconstruction of the highway structure.

   b. Underground installations may be placed longitudinal or transversely to footings, piles, or piers.

   c. Installation must take into account that the movement of the earth/soil surrounding the foundation (or substructure) may have negative impacts to the stability of the structure as a whole.

   d. Blasting may be permitted in the proximity of an existing structure under the supervision of qualified personnel. The utility owner must provide adequate protection of the structure.

   e. The utility shall not adversely affect the drainage character of the area in the proximity of the structure.

2. Above-Ground Utility

   a. Adequate space should be given for the safe operation and maintenance of both the highway structure and utility facility.

   b. Designs should facilitate future reconstruction and/or emergency work that may occur on the highway structure.

   c. Installations may be longitudinally adjacent to or transversely over or under the structure. Angled (oblique) crossings are strongly discouraged.

   d. All vertical clearance requirements must be met for facilities both over and under structures. NESC and OSHA clearances must be met for both final disposition and construction, respectively. Refer to the Utility Engineering Manual for these reference values.

XI. Acronyms and Terms

A. Acronyms

   AASHTO – American Association of State Highway and Transportation Officials

   ADA – Americans with Disabilities Act

   BOT – Board of Transportation
B. **Terms**

**Abandoned Facility** – An underground facility that is no longer in service and is physically disconnected from a portion of the operating facility that is in use or still carries service. The utility retains ownership and responsibility for the facilities unless otherwise negotiated with the NCDOT.

**Betterment** – Any upgrading of the utility facility being relocated made solely for the benefit of, and at the election of, the utility and not attributable to the highway construction.

**Carrier** – A pipe directly enclosing a transmitted fluid (liquid, gas, or slurry). Also includes an electric or communication cable, wire, or line.

**Casing** – A larger pipe, conduit, or duct enclosing a carrier.

**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 width of the clear zone depends on the traffic volumes, speeds, and roadside geometry. For additional information see AASHTO Roadside Design Guide.

**Coating** – Material applied to or wrapped around a pipe.

**Communication** – The aggregate of equipment, such as telephones, facsimile equipment, conduits, cables, fiber optic cables, and other electronic equipment, used for various modes of transmission, such as light, digital data, audio signals, and image and video signals.
**Controlled Access Highway** – A highway with access controlled by the public authority having jurisdiction over the highway, street, or roadway.

**Full Control of Access:** Connections to a facility provided only via ramps and interchanges. All cross-streets are grade separated. No private driveway connections allowed. A control of access fence is placed along the entire length of the facility.

**Limited Control of Access:** Connections to a facility provided only via ramps at interchanges (major crossings) and at-grade intersections (minor crossings and service roads). No private driveway connections allowed. A control of access fence is placed along the entire length of the facility, except at intersections.

**District** – A management region defined by the NCDOT.

**Division** – A management region defined by the NCDOT.

**Duct** – An enclosed tubular casing for protecting wires, lines, or cables, often flexible or semi-rigid.

**Easement** – A right, other than the acquisition of title, acquired to use or control property for a designated purpose.

**Emergency** – A sudden or unforeseen occurrence involving a clear or imminent danger to life, health, property; interruption of utility services; or repairs to transportation facilities that require immediate attention.

**Encasement** – Structural element surrounding a carrier.

**Encroachment** – Use of highway right-of-way for non-highway purposes.

**Erosion Control** – Practices used to minimize soil loss and the discharge of turbid runoff.

**Exception** – Utility installations, adjustments, and relocations that are not in accordance with this manual.

**Freeway** – A highway with full control of access. An Interstate highway is a Freeway.

**Highway** – A right-of-way corridor that contains or is to contain a roadway. Generally the highway is right-of-way line to right-of-way line inclusive of easements.

**Horizontal Clearance** – The lateral distance from the edge of traveled way to the roadside object or feature.

**Median** – The portion of a divided highway separating the traveled ways for traffic in opposite directions.
Out-of-Service Facility – An underground facility that is no longer in use. An out-of-service facility may still be connected to a portion of the operating facility that is in use or still carries service. The utility owner retains ownership along with maintenance, records, and designation responsibilities of such a facility.

Private Utilities – Facilities that are privately owned and convey or transmit commodities that are devoted exclusively for private use and do not directly or indirectly serve the general public.

Public Utilities – Utility facilities that directly or indirectly serve the general public by conveying a product, power, or communication from the utility to a customer and include utility-type facilities that are owned by or dedicated to a governmental agency for its own use.

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

Roadside – 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 – Portion of a highway, including shoulders, for vehicular use. A divided highway has two or more roadways.

Shrub – A woody plant smaller than a tree usually having multiple permanent stems branching from or near the ground.

Specimen Trees – A notable and valued tree in consideration of species, size, condition, age, longevity, durability, crown development, function, visual quality, and public or private prominence.

Traffic Control Plan – Documentation of how a safe flow of traffic will be conducted through an area in which utility work is being performed.

Utility – Any privately, publicly, or cooperatively owned line, facility, or system for producing, transmitting, or distributing communications, cable television, power, electricity, light, heat, gas, oil products, water, steam, waste, storm water not connected with highway drainage, and other similar services and commodities, including river gages, fire and police signals, and street lighting systems, which directly or indirectly serve the public.

Vegetation – All woody and herbaceous plants either naturally occurring or planted.

Vent – An appurtenance to discharge gaseous or liquid contaminants from casings.