



## APPENDIX A | ROAD *AND DRAINAGE* CONSTRUCTION STANDARDS

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### ARTICLE A.1 GENERAL INFORMATION

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#### Sec. A.1.1 Abbreviations

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For the purpose of these regulations, abbreviations relating to streets and drainage are defined as follows:

- A. AASHTO – American Association of State Highway and Transportation Officials
- B. ADA – Americans with Disabilities Act
- C. ADAAG – Americans with Disabilities Act Accessibility Guidelines
- D. ASTM–American Society for Testing Materials
- E. CTC – County Transportation Committee
- F. CTC (SS) – the Charleston County Transportation Committee publication STANDARD SPECIFICATIONS FOR LOCAL GOVERNMENTS’ ROAD AND STREET CONSTRUCTION, latest edition.
- G. HOA –Homeowners’ Association
- H. MLW – Mean Low Water
- I. ~~MSL – Mean Sea Level (Elevation 0.0 as determined by the NGVD 29 datum)~~
- J. MUTCD – Manual on Uniform Traffic Control Devices
- K. ***NAVD 88 – North American Vertical Datum of 1988***
- L. ~~NGVD 29 – National Geodetic Vertical Datum of 1929~~
- M. SCDHEC/OCRM – South Carolina Department of Health and Environmental Control/Office of Ocean and Coastal Resource Management
- N. SCDOT – South Carolina Department of Transportation
- O. SCDOT (SS) – South Carolina Department of Transportation Standard Specifications for Highway Construction, latest edition
- P. USACOE – United States Army Corps of Engineer



## Sec. A.1.2 Definitions

For the purpose of these regulations, terms relating to streets and drainage are defined as follows:

- A. **BASE COURSE** – The layer or layers of specified or selected material of designated thickness or rate of application placed on a sub base or **S**ubgrade to comprise a component of the **P**avement **S**tructure to support the **P**avement or subsequent layer of construction.
- B. **BEST MANAGEMENT PRACTICES (BMPs)** - *Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to Surface Waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, or drainage from material storage areas. There are structural and non-structural, designed to be temporary or permanent BMPs, which are site specific and shall be labeled accordingly on the construction plans.*
- C. **BRIDGE** – A **S**tructure, including supports, erected over a depression or an obstruction; e.g., **W**ater, highway, or railway, and having a track or passageway for carrying traffic or other moving loads.
- D. **CAUSEWAY** – An earthen **S**tructure with at least one side adjacent to a depression, wetland, or marsh that supports a track or passageway for carrying traffic or other moving loads.
- E. **CUL-DE-SAC** – The radial turnaround area at the end of a dead-end **S**treet.
- F. **CULVERT** – Any **S**tructure which provides an opening under any **R**oadway or any other **S**tructure so named in the plans, excluding **B**ridges.
- G. **DESIGN PROFESSIONAL** – An individual or firm appropriately licensed and registered in the State of South Carolina.
- H. **DETENTION** – The temporary restriction of storm water that is released at a predetermined or controlled rate.
- I. **DEVELOPER** – The legal or beneficial owner of a **L**ot or of any land proposed for **D**evelopment; the holder of an option or contract to purchase; or any other **P**erson having an enforceable contractual interest in such land.
- J. **DRAINAGE EASEMENT** – The right of access of storm-water runoff from adjacent drainage basins into the drainage way within the defined **E**asement.
- K. **EARTH ROADS** – Those roads constructed of compacted earth material.
- L. **EASEMENT** – A privilege or right of use, access or enjoyment granted on, above, under, or across a particular tract of land by the landowner to another **P**erson or entity.
- M. **HOMEOWNERS' (OR PROPERTY OWNERS') ASSOCIATION** – A formally constituted, non-profit association or corporation made up of the **P**roperty **O**wners and/or residents of a defined area. The homeowners' or **P**roperty **O**wners' association may take responsibility for costs and up-keep of common open space or facilities, or enforce certain covenants and restrictions.
- N. **MAIN UTILITY LINES** – Those facilities, including piping, conduits, outlets, and other appurtenances necessary for the proper functioning of essential services to a **D**evelopment including water, electricity, gas, sanitary **S**ewer, storm **S**ewer, cable, communications, etc.
- ~~O. **MEAN SEA LEVEL** – Elevation 0.0 as determined by the NGVD 29 datum.~~
- P. **PAVED STREETS** – Those **S**trees for which the riding surface is constructed of a layer or layers of materials usually comprised of Portland cement concrete or asphaltic concrete.
- Q. **PAVEMENT** – The uppermost layer of material placed on the **S**treet usually as the wearing or riding surface. The term is used interchangeably with “surface course” or “surfacing” and will usually imply Portland cement concrete or asphaltic concrete.



- R. **PLAT** – A diagram drawn to an engineering scale showing all essential data pertaining to the boundaries and **S**ubdivision of a tract of land as determined by a professional land surveyor.
- S. **PUBLIC WORKS DIRECTOR** – The Director of the Department of Public Works for the County of Charleston or his authorized representative.
- T. **RESPONSIBLE ENTITY** – The unit of local government responsible under South Carolina law for the maintenance of the **R**oadway and/or drainage system; or, in the case of **private roads**, private roadways and/or drainage systems, the owner of the property upon which the **R**oadway and/or drainage system is located; or if existing, a homeowners’ association previously created to maintain the **R**oadway and/or drainage system.
- U. **RIGHT-OF-WAY** – Land that has been or is being dedicated for the construction and maintenance of a road or **S**treet. **R**ight-of-**W**ay may also be used to identify an area dedicated for use as part of a drainage system or **U**tility corridor.
- V. **ROADWAY** – The entire area between the outside limits of construction, including structures, slopes, ramps, intersections, utilities, side ditches, channels, waterways, etc., necessary for proper drainage. This term shall, in general, be considered synonymous with **S**treet or road.
- W. **ROCK ROADS** – Those roads in which the riding surface is constructed of a layer or layers of material usually comprised of compacted rock or other aggregate materials
- X. **STREET** – A vehicular way, which may also serve in part as a way for pedestrian traffic, whether called a **S**treet, highway, thoroughfare, parkway, throughway, road, avenue, boulevard, lane, place, **A**lley, mall, or other designation, including the entire area within the **R**ight-of-**W**ay.
- Y. **STUB STREET** – A **S**treet that intersects another local **S**treet and extends, usually one **L**ot deep, to the property line of the **D**evelopment or rear of the block being developed.
- Z. **SUBGRADE** – The top surface of a roadbed upon which the **R**oadway **S**tructure and shoulders are constructed.

### **Sec. A.1.3** ~~Introduction~~ *Purpose and Scope*

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~~This Appendix sets forth the requirements~~ standards provide specific information and design parameters **for** the construction of roads, ingress/egress **E**asements, and drainage facilities. ~~This document defines risks and responsibilities that are accepted by the responsible entity pertaining to the maintenance of the roads and drainage systems.~~

### **Sec. A.1.4** **Objective**

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The primary objective is to ensure that property being subdivided is provided with access and proper drainage.

### **Sec. A.1.5** **Scope**

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These regulations **requirements** apply **to all unincorporated properties in** ~~to all unincorporated properties in~~ of Charleston County.

### **Sec. A.1.6** **Property Access**

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It is the responsibility of the landowner/**D**eveloper to **ensure** ~~provide~~ accesses to properties ~~being subdivided~~ **are constructed pursuant to the requirements contained herein**. Access to those properties shall be maintained and either privately or publicly owned. The ownership and maintenance status of the access shall be indicated on all submitted plats.



### **Sec. A.1.7 Landowner/developer Responsibilities**

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The landowner/developer is responsible for selecting the type of access to be provided for their subdivision. The classification of access will determine the party responsible for maintenance and the County's associated responsibilities, if any.

### **Sec. A.1.85 Design Professional/Land Surveyor Responsibilities**

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The **D**esign **P**rofessional-of-record must be currently registered to practice in the State of South Carolina. The designs, and revisions made thereto, must either be prepared by, or under their direct supervision **of, the Design Professional-of-record** in accordance with the Code of Laws of South Carolina, 1976, Title 40, Chapter 22, and Rules of Professional Conduct, including any revisions made thereto. The designs shall be based on sound engineering judgment and these standard specifications.

### **Sec. A.1.96 Coordination w/With Other Reviewing Agencies**

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The **D**esign **P**rofessional-of-record shall provide **the following to the Public Works Director prior to the final approval of construction plans:**

- A.** **A** list of all regulatory permits required for the construction of all road and drainage systems **including** This list shall include the status of each permit **and the** along with corresponding application numbers and dates; **and**
- B.** The design professional of record shall provide to the Public Works Department **Copies** a copy of all approved permits, deemed essential by the Public Works Director. **to the Public Works Department prior to final approval of the construction plan to the Public Works Department, Such permits may include, but are not limited to, South Carolina Department of Transportation (SCDOT) encroachment permits, as applicable.**

### **Sec. A.1.710 Stormwater Management aAnd Sediment Control**

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All land disturb**ance**ing activities shall **comply** be in conform**ance** with the **current** Charleston County Stormwater **Program Permitting Standards and Procedures Manual in effect at the time of land Development or land disturbance application submittal** Management and Sediment Control Ordinance **as well as** and all state and/or federal regulations that may be applicable.

The design professional shall prepare appropriate sediment and erosion control designs and show sufficient data, including material lists, details, and time schedules, to ensure best management practices are followed. The developer shall be responsible for ensuring that the design professional's designs are constructed in a timely manner and properly maintained throughout the duration of the development's construction period. If sediment is carried downstream as a result of inadequate design, improper construction, or maintenance neglect, the developer shall ensure that the eroded soil is removed from the downstream properties and legally disposed.

### **Sec. A.1.811 Road Classifications**

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- A. PRIVATE ROADS** **Private roads shall include ingress/egress Easements and private Rights-of-Way** Any road dedicated to an individual or entity other than Charleston County. **with an Ingress/Egress Easement (Maximum of 10 Lots) or a right-of-way dedicated to a Homeowners' Association. The individual or entity to which the ingress/egress Easement or private Right-of-Way is dedicated shall** easement holder retains ownership and maintenance responsibility for access and drainage.
- B. Public roads shall include all roads accepted for ownership and maintenance by a public entity (SCDOT, County, or Municipality). The following are the minimum standards for Charleston County public roads. PUBLIC ROADS (Minimum Standards)**
  1. Non-Standard County Roads (Maximum of 10 Lots)
    - a. Surface: earth



- b. Minimal drainage
  - c. Travel way minimum width determined on a per road basis
  - d. Lot drainage is each owner's responsibility
2. Secondary Rural Road (Maximum of ~~four~~ **10** Lots)
    - a. Surface: earth
    - b. Minimal drainage (only roadside or sheet flow)
    - c. Travel way minimum width of 18' **feet**
    - d. Lot drainage is each owner's responsibility
  3. Primary Rural Road (**Maximum of four Lots**)
    - a. Surface: earth, rock, or **P**pavement
    - b. Minimal drainage with outfall (only for the **R**roadway)
    - c. Travel way minimum width of 20' **feet**
    - d. Lot drainage is each owner's responsibility
  4. Secondary County Road
    - a. Surface: rock or **P**pavement
    - b. Drainage plan required for property and **R**roadway system
    - c. Open ditch drainage system
    - d. Travel way minimum width of 22' **feet**
  5. Primary County Road
    - a. Surface: paved
    - b. Curb and gutter
    - c. Drainage plan required for property and **R**roadway system
    - d. Enclosed pipe with limited open ditch drainage system
    - e. Travel way minimum width of 24' **feet**

### **Sec. A.1.912 Applying Road Classifications**

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- A. PRIVATE ROAD ***The landowner/Developer shall be responsible for the design and functionality of any private road to be constructed, provided that all private roads shall meet the 20-foot clearance requirement as described in the International Fire Code.*** ~~The landowner/developer shall have the option to utilize any of the private road classifications for property subdivision regardless of region (see below)~~
- B. PUBLIC ROAD Roads that are to be constructed, dedicated, and accepted into the County maintenance system shall be constructed in accordance with one of the public road classification standards ***contained herein. Public county roads require County Council approval for acceptance of ownership and maintenance.*** The minimum required classification for the road ~~shall~~ ***would*** be determined by ***the Public Works Director based on*** its location within the unincorporated ~~area~~ ***portions*** of Charleston County. For road classification purposes, the unincorporated portions of Charleston County are divided into ***two areas by the Urban Growth Boundary (UGB), the Rural Area and the Urban/Suburban Area, the***



**location of which are described on Map 3.1.2, Growth Management Areas, of the Charleston County Comprehensive Plan (as amended).** ~~three regions.~~

- ~~● Rural Area: Areas within the County that have a zoning classification of NRM, RM, AG-15, AG-10, AG-8, AGR, and RR-3., AG-10, AG-15, RM, and NRM.~~
  - ~~● Transitional: Areas within the County that have a zoning classification of M-12, RR-3, and AG-8~~
  - ~~● Urban/Suburban Areas within the County that have a zoning classification of R-4, RSM, MHP, OR, OG, CN, CT, CR, CC, and I~~
1. Secondary Rural Roads **shall** ~~will~~ only be allowed **outside of the Urban Growth Boundary** in the **(Rural Area)** ~~rural region.~~
  2. Primary Rural Roads **shall** ~~will~~ be allowed **in outside of the UGB (Rural Area) and within the UGB** ~~rural region and within the transitional region~~ when **one of** the following conditions are met, **as determined by** ~~to the satisfaction of~~ the Public Works Director:
    - a. The proposed road is a **Ceul-de-Ssac** or future expansion is limited; or
    - b. The **L**lots being created are a minimum of **5five** acres in size or the **D**esign **P**rofessional demonstrates adequate **L**lot and **R**oadway drainage can be provided.
  3. Secondary County Roads **shall** ~~will~~ be allowed **outside of the UGB (Rural Area). They are allowed inside the UGB (Urban/Suburban Area)** ~~across the County regardless of area rural region and. They will also be allowed in the transitional region and urban/suburban region~~ when the following conditions are met, **to the satisfaction of as determined by** ~~the Public Works Director.:~~
    - a. The proposed road is a **Ceul-de-Ssac** or future expansion is limited; **or**
    - b. The **D**esign **P**rofessional demonstrates that stormwater Best Management Practices can be utilized to satisfactorily address water quality requirements in conjunction with an open drainage system; **and**
    - c. The **L**lots are of sufficient size to accommodate an open drainage system; **and**
    - d. The road system is an expansion to an existing open drainage system.
  4. Primary County Roads **shall** ~~will~~ be allowed **across the County, regardless of area.** ~~in all regions.~~
  5. **All proposed p**Public roads shall connect **to** ~~with~~ an existing **public road** ~~public roadway~~ that has been accepted by a public agency (county, municipality, or state). **Connection to** ~~Public roads shall not rely upon~~ a right-of-way that has only been dedicated, but not accepted into a public maintenance system, **shall be prohibited.**
  6. Streets within commercial and industrial **D**evelopments shall be designed as Primary County Standard Streets unless approved otherwise, in writing, by the Public Works Director.
  - ~~7. Non-standard County roads shall require County Council authorization.~~
  8. If a land **D**evelopment plan exceeds the a **Non-Sstandard County R**oad (maximum of 10 **L**lots), utilizing the maximum, construction shall be required to improve the **Non-Sstandard County R**oad to the required County standards, from its point of connection to an existing County standard or State public road.



<i>Street Classifications by Area</i>		
<i>Street Classification</i>	<i>Rural Area</i>	<i>Urban/Suburban Area</i>
<i>Primary Rural Road</i>	X	X [1]
<i>Secondary Rural Road</i>	X	
<i>Primary County Road</i>	X	X
<i>Secondary County Road</i>	X	X [1]
<i>[1] subject to conditions; see Sec. A.1.9.B, Public Roads</i>		

## ARTICLE A.2 PRIVATE ROAD STANDARDS

### Sec. A.2.1 General Information

A. **Introduction.** ~~INTRODUCTION~~ The private road standards provide the landowner/developer flexibility to determine the level of access and service provided to lots being created. The private road standards require the landowner/developer to be responsible for the extent and quality of property access and drainage. **Except as otherwise stated, the landowner/Developer is responsible for the establishment of standards for design and construction and maintenance of private road and drainage systems and for items such as access for emergency service vehicles, school buses, mail couriers, and coordination of Utilities. Public Note that public services to Lots utilizing private roads for access are not guaranteed by Charleston County.**

~~The private right-of-way shall be dedicated to a legally recognized or chartered entity. Private right-of-way shall not be dedicated to the public. Further, Charleston County is neither obligated nor responsible for private right-of-way maintenance.~~

B. **Landowner/Developer Responsibilities.** ~~LANDOWNER/DEVELOPER RESPONSIBILITIES~~ The landowner/Developer is responsible for determining the type of access to be provided **pursuant to the requirements contained herein**, for his subdivided property. ~~The landowner/developer shall be responsible for oversight and coordination of design and construction, and for obtaining required approvals or permits from the appropriate agencies.~~

1. The landowner/Developer is responsible for informing prospective ~~P~~property ~~O~~owners, whether solicited or unsolicited, of all conditions and responsibilities, or lack thereof, that have been placed on the property.
2. If **the** access or drainage connects with a County ~~R~~right-of-~~W~~way or ~~E~~asement, an encroachment permit shall be obtained prior to construction.

C. **Requirements.**

1. **Prior to issuance of Zoning Permits for land Development activities other than construction of ingress/egress Easements and private Rights-of-Way, installation of required Street Signs, Additions/renovations to existing Structures that are legally permitted, and new construction of Accessory Structures, all ingress/egress Easements and private Rights-of-Way shall be:**

- a. **Constructed in the location shown on the approved, recorded Plat;**



- b. *Constructed to comply with the International Fire Code, as adopted by County Council, from their point of connection to an existing publicly owned and maintained Right-of-Way to Lot(s) proposed for Development; and*
  - c. *Inspected pursuant to Sec. A.2.7, County Inspection, of this Ordinance.*
2. *The Directors of the Zoning and Planning Department may allow use of a portion of an ingress/egress Easement or private Right-of-Way that was constructed prior to July 18, 2017 that cannot comply with the width clearance requirements of the International Fire Code when: (1) the Director determines that moving it to a different location is not possible due to site constraints, property size, Grand Trees, wetlands, etc.; (2) the Applicant submits letters from the providers of emergency services for the Subject Properties stating they can access all properties utilizing the it; and (3) all future portions shall comply with the International Fire Code.*

**Sec. A.2.2 Ingress/Egress Easements ~~(maximum Of 10 Lots Road)~~**

**A. *When the total number of Lots utilizing an ingress/egress Easement for access exceeds four pursuant to a Subdivision Plat application submitted after (Date of adoption of this Ordinance), the landowner/Developer of the property being subdivided shall, at a minimum, be required to upgrade the existing ingress/egress Easement to comply with the Secondary County Road Standards contained Sec. A.3.4, Secondary County Road Standards, from its point of connection to a standard public road.***

**B. *Additional Landowner/Developer Responsibilities.*** ~~ADDITIONAL LANDOWNER/DEVELOPER RESPONSIBILITIES:~~ The location of proposed ingress/egress Easement(s) shall be clearly depicted and labeled on submitted ~~Plats or~~ **and** plans. ***All ingress/egress Easements shall be a minimum of 20 feet in width in accordance with ZLDR Sec. 8.7.3(D), Access.*** All ingress/egress Easements must comply with the applicable requirements of this Ordinance ~~including, but not limited to, the requirements contained in sub-sections a and b below.~~ The landowner/**D**eveloper shall secure the necessary licensed, professional personnel to prepare designs, obtain required approvals and permits, and oversee construction.

~~Prior to issuance of Zoning Permits for land development activities other than construction of ingress/egress easements and private rights of way, installation of required street signs, additions/renovations to existing structures that are legally permitted, and new construction of accessory structures, all ingress/egress easements shall be:~~

~~Constructed in the location shown on the approved, recorded plat; Constructed to comply with the International Fire Code, as adopted by County Council, from their point of connection to an existing publicly owned and maintained right of way to lot(s) proposed for development; and Inspected pursuant to Sec. A.2.7 of this Ordinance.~~

~~The Directors of the Zoning and Planning Department may allow use of a portion of an ingress/egress easement that was constructed prior to July 18, 2017 that cannot comply with the width clearance requirements of the International Fire Code when: (1) the Director determines that moving the ingress/egress easement to a different location is not possible due to site constraints, property size, Grand Trees, wetlands, etc.; (2) the applicant submits letters from the providers of emergency services for the subject properties stating they can access all properties utilizing the ingress/egress easement; and (3) all future portions of the ingress/egress easement comply with the International Fire Code.~~

**~~Sec. A.2.3 Private Right of way Dedicated To A With No Road Construction Required (maximum Of 10 Lots)~~**

~~ADDITIONAL LANDOWNER/DEVELOPER RESPONSIBILITIES:~~





All rights-of-way shall be clearly depicted on submitted plats/plans. The landowner/developer is responsible for determining the construction suitability and the accessibility of the defined right-of-way, provided, however, that all private rights-of-way must comply with the applicable requirements of this Ordinance, including, but not limited to, the requirements contained in sub-sections a and b below. The landowner/developer shall secure the necessary licensed, professional personnel to prepare designs, obtain required approvals and permits, and oversee construction.

- a. ~~Prior to issuance of Zoning Permits for land development activities other than construction of ingress/egress easements and private rights-of-way, installation of required street signs, additions/renovations to existing structures that are legally permitted, and new construction of accessory structures, all ingress/egress easements shall be:~~
  - i. ~~Constructed in the location shown on the approved, recorded plat;~~
  - ii. ~~Constructed to comply with the International Fire Code, as adopted by County Council, from their point of connection to an existing publicly owned and maintained right-of-way to lot(s) proposed for development; and~~
  - iii. ~~Inspected pursuant to Sec. A.2.7 of this Ordinance.~~
- b. ~~The Directors of the Zoning and Planning Department may allow use of a portion of an ingress/egress easement that was constructed prior to July 18, 2017 that cannot comply with the width clearance requirements of the International Fire Code when: (1) the Director determines that moving the ingress/egress easement to a different location is not possible due to site constraints, property size, Grand Trees, wetlands, etc.; (2) the applicant submits letters from the providers of emergency services for the subject properties stating they can access all properties utilizing the ingress/egress easement; and (3) all future portions of the ingress/egress easement comply with the International Fire Code.~~

#### **Sec. A.2.34 Private Rights-of-Way Constructed And Dedicated To A HOA**

- A. *Private Rights-of-Way serving five or more Lots must be dedicated to a Homeowners' Association. Private Rights-of-Way serving fewer than five Lots may be dedicated to an individual or entity other than a Homeowners' Association. Charleston County is neither obligated nor responsible for private Right-of-Way maintenance.***
- B. ADDITIONAL LANDOWNER/DEVELOPER RESPONSIBILITIES:** The landowner/~~D~~developer shall determine the location(~~s~~) and size of ~~Private R~~ights-of-~~W~~way to be provided. ***The Roadway and drainage system shall, at a minimum, be designed to comply with ~~to~~ the Secondary County Road Standards described in Article A.3.4, Secondary County Road Standards,*** and the standards for the design and construction of the roadway and drainage systems, provided that all private ~~R~~ights-of-~~W~~way comply with ***all other*** the applicable requirements of this Ordinance including, but not limited to, the requirements contained in sub-sections a and b below. The landowner/~~D~~developer shall secure the necessary licensed, professional personnel to prepare designs, obtain required approvals and permits, and oversee construction.

~~Prior to issuance of Zoning Permits for land development activities other than construction of ingress/egress easements and private rights-of-way, installation of required street signs, additions/renovations to existing structures that are legally permitted, and new construction of accessory structures, all private rights-of-way shall be:~~

~~Constructed in the location shown on the approved, recorded plat;~~

~~Constructed to comply with the International Fire Code, as adopted by County Council, from their point of connection to an existing publicly owned and maintained right-of-way to lot(s) proposed for development; and~~

~~Inspected pursuant to Sec. A.2.7 of this Ordinance.~~

~~The Directors of the Zoning and Planning Department may allow use of a portion of a private right-of-way that was constructed prior to July 18, 2017 that cannot comply with the width clearance requirements of the International Fire Code when:~~

~~(1) the Director determines that moving the private right-of-way to a different location is not possible due to site constraints, property size, Grand Trees, wetlands, etc.;~~



(2) the applicant submits letters from the providers of emergency services for the subject properties stating they can access all properties utilizing the private right-of-way and

(3) all future portions of the private right-of-way comply with the International Fire Code.

### **Sec. A.2.5 Design Professional Responsibility**

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The design professional of record must be currently registered to practice in the State of South Carolina.

### **Sec. A.2.64 Construction Plan Submission**

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Roadway and/or drainage construction plans, and subsequent plan revisions, shall be submitted to the *Zoning and Planning and Public Works Departments* prior to submittal of Zoning Permit applications for land *D*development activities other than *A*additions/renovations to existing *S*tructures that are legally permitted and new construction of *a*ccessory *S*tructures. Such plans shall be submitted to the *Zoning and Planning and Public Works Departments* prior to Zoning Permit applications for construction of ingress/egress *E*asements or private *R*ights-of-*W*ay and installation of required *S*treet *S*igns. The submission shall include *a digital set of plans, along with* three sets of the construction plans and specifications, and a copy of all required regulatory permits.

Once the Public Works Department approves the *R*oadway and/or drainage construction plans, *a digital set must be submitted for stamping, and then* the landowner/*D*eveloper may submit a Zoning Permit application(s) for construction of the ingress/egress *E*asement, private *R*ight-of-*W*ay, and/or drainage and installation of required *S*treet *S*igns. No other Zoning Permits (other than Zoning Permits for *A*additions/renovations to existing *S*tructures that are legally permitted and new construction of *a*ccessory *S*tructures) shall be issued for the property until the ingress/egress *E*asement, private *R*ight-of-*W*ay, and/or drainage, as well as the installation of required *S*treet *S*igns, have been inspected and approved by the Public Works Department pursuant to Sec. A.2.7, *County Inspection*, of this Ordinance.

### **Sec. A.2.57 County Inspection**

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All *R*oadway and drainage work shall be inspected by the Public Works Director for compliance with the approved construction plans, submitted plans, and specifications prior to the issuance of Zoning Permits for land *D*development activities, other than: construction of ingress/egress *E*asements or private *R*ights-of-*W*ay; installation of required *S*treet *S*igns; *A*additions/renovations to existing *S*tructures that are legally permitted; and new construction of *a*ccessory *S*tructures. The inspections will be performed to provide construction documentation; review ingress/egress *E*asements and private *R*ights-of-*W*ay construction according to the International Fire Code, as adopted by County Council; ensure that ingress/egress *E*asements, private *R*ights-of-*W*ay, and drainage, have been constructed in compliance with this Ordinance; and, if applicable, to ensure *S*treet *S*igns have been installed in the correct locations and are in compliance with applicable County ordinances.

After the required County inspection and approval, the landowner/*D*eveloper may submit Zoning Permit application(s) for subsequent land *D*development activities.

The landowner/*D*eveloper shall give the Public Works Director a one-week notice prior to beginning work at the site. After the initial notice, a 72-hour notice shall be given prior to beginning each operation (or continuing an operation when the work has been disrupted for more than one work-day).

### **Sec. A.2.68 Certification fFrom tThe Design Professional**

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The *D*esign *P*rofessional shall provide a written statement certifying that to the best of his *or her* knowledge, the road and drainage infrastructure has been constructed in accordance with the submitted plans.



## ARTICLE A.3 PUBLIC ROAD STANDARDS

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### Sec. A.3.1 General Information

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- A. ***The landowner/Developer responsibilities include:*** ~~LANDOWNER/DEVELOPER RESPONSIBILITY~~
1. ***Providing*** ~~The landowner/developer is responsible for providing the County complete R~~oadway and/or drainage system plans for the proposed ~~D~~development.
  2. ***Securing*** ~~The landowner/developer shall secure licensed, professional personnel to prepare designs acceptable to the County;~~
  3. ***Overseeing and coordinating*** ~~The landowner/developer shall oversee and coordinate the presentations, reviews, and revisions of the designs with the appropriate agencies, and obtain required approvals and permits;~~
  4. ***Providing*** ~~The landowner/developer shall provide field staking of the designs during the construction phase;~~
  5. ***Coordinating*** ~~The landowner/developer shall coordinate County~~ ***encroachment permit approval and subsequent inspections with the Public Works Department.***
  6. ***Once the improvements proposed for public Dedication are constructed, inspected, and approved by the County, the landowner/Developer shall provide as-built record drawings, record Plats, etc. to the Public Works Director prior to final County acceptance of publicly dedicated roads. As-built record drawings must comply with Section A.6.2, Survey As-Built Checklist and Instructions, and shall be submitted to the Public Works Department for review and approval. Once the as-built drawings are approved by the Public Works Department, the public Dedication request will be scheduled for a County Council Committee meeting for recommendation and subsequent County Council meeting for final determination. Final Plats that include public Dedications of roads and/or drainage will not be recorded until and unless County Council approves the dedication request(s) and all conditions of such approval are addressed prior to Final Plat recording.***

~~The landowner/developer shall provide required as-built records, record plats, etc.~~

~~The landowner/developer is responsible for providing competent construction personnel with appropriate equipment and skills to complete construction of the roadway and/or drainage systems in a manner acceptable to the County. The roadway and/or drainage systems must be constructed in accordance with approved plans, specifications, permits, codes, and any other documents referred to herein.~~

- B. ***Coordination with other Reviewing Agencies.*** ~~COORDINATION WITH OTHER REVIEWING AGENCIES~~ The ~~D~~esign ~~P~~rofessional of record shall provide a list of all regulatory permits required for the construction of all road and drainage systems. This list shall include the status of each permit along with corresponding application numbers and dates. The ~~D~~esign ~~P~~rofessional-of-record shall provide a copy of all approved permits, deemed essential by the Public Works Director, to the Public Works Department prior to final approval of the construction plans.
- C. ***Coordination with other Developments.*** ~~COORDINATION WITH OTHER DEVELOPMENTS~~ Prior to acceptance of a proposed system which is dependent upon a contiguous system within an adjacent development, the County must have previously accepted or simultaneously accept the contiguous system.
- D. ***Right-of-Way Width.*** ~~RIGHT-OF-WAY WIDTH~~ The minimum ~~R~~ight-of-~~W~~ay width for a ~~R~~oadway to be accepted into the County maintenance system is 50' ~~feet~~ unless otherwise approved by the Public Works Director.
- E. ***Pedestrian Ways within Publicly Dedicated Right-of-Way.*** ~~PEDESTRIAN WAYS WITHIN PUBLICLY DEDICATED RIGHT-OF-WAY~~ When pedestrian ways are provided within the publicly dedicated ~~R~~ight-of-~~W~~ay, they shall be constructed in accordance with Sec. A.4.1.C, ***ADA Requirements***, unless otherwise approved by the Public Works Director. For ~~R~~oadways with open roadside drainage systems, pedestrian ways shall be placed behind the swales or ditches. Additional ~~R~~ight-of-~~W~~ay may be required to accommodate proposed pedestrian ways.



- F. **Fee Schedule.** ~~FEE SCHEDULE~~ Filing fees as established by County Council shall be submitted with the construction plans. These fees are nonrefundable. Previously unapproved plans that are significantly altered in concept and resubmitted must be accompanied by the appropriate fees.
- G. **General Requirements for Construction Plan Approval.** ~~GENERAL REQUIREMENTS FOR CONSTRUCTION PLAN APPROVAL~~ When preliminary subdivision approval has been granted by the Charleston County Planning Commission, ~~t~~**The** design professionals shall prepare and submit one copy of ~~S~~**street plans and profiles, including typical sections, drainage data, etc., to the** ~~Zoning and Planning and~~ **Zoning and Planning and** Public Works Departments for review and approval prior to beginning construction of the ~~S~~**street and drainage systems. The designer's seal, signature, and South Carolina registration number shall be affixed to the plans and specifications.**

~~After reviewing the proposed documents for conformance with applicable County ordinances, the Public Works Director shall affix the appropriate stamp on the original drawing.~~ ~~The Public Works Department~~ **reserves the right to** requests an electronic **CAD or GIS** data file of the approved plans including layout, road/~~R~~**right-of-W**ay location, ~~D~~**rainage Easements, and other pertinent information that may be used to augment the County GIS** **to be submitted with the as-built documents.**

**Construction Drawings at a minimum shall include the following, if applicable as determined by the Directors of the Zoning and Planning and Public Works Departments:**

~~Include a copy of the approved preliminary plat.~~

- 1. Plans and profiles shall be prepared on 24" inch x 36" inch or 22" inch x 34" inch sheets, having a profile at the bottom and a plan view at the top, with both the plan and profile stationing oriented in the same direction.**
- 2. All elevations shall be referenced to the** ~~Mean Sea Level Datum for NGVD 29~~**NAVD 88.**
- 3. Scales shall be: vertical 1" inch = 2'-feet and horizontal 1" inch = 50'-feet or larger.**

**The following shall be shown in the plan view:**

- 1. Stations along the centerline of the proposed road with appropriate ties at intersecting Streets.**
- 2. The width of the Right-of-Way and names of proposed roads as approved by the Consolidated 9-1-1 Center (CDC), and names of existing roads.**
- 3. Alignment information, curve data with P.C., P.T., and P.I. angle points, as well as angles at intersections.**
- 4. Arrows indicating the direction of drainage flow within the Right-of-Way.**
- 5. Size, type, and location of Trees proposed to remain within the clearing limits of the road Right-of-Way.**
- 6. DHEC/OCRM Critical Line and USACOE jurisdictional wetland delineations which relate to the Right-of-Way or Easements.**
- 7. Existing and proposed drainage Structures and Drainage Easements along with Rights-of-Way and drainage way cross sections.**
- 8. Benchmarks with locations, descriptions, coordinates, datum, etc.**
- 9. Existing and proposed Utility lines and Utility Easements**
- 10. Road cross sections with sidewalks (when required)**
- 11. Details shall show sight distances, traffic control devices, design speeds for roads and other related information.**
- 12. Other general construction details required to define the scope of work.**



**Profiles shall show:**

1. **Existing Street centerline elevations showing all breaks in Grade, but in no case more than 100' feet apart. Profiles shall include existing streets to which ties are being made with elevations extending approximately 200' feet from the intersection.**
2. **Proposed Street centerline profile with centerline elevations every 50' feet on vertical curves and at 100' feet along tangents and at intersections.**
3. **Vertical curve data.**
4. **Proposed and existing storm drains, sanitary Sewers, water mains, pipe under drains, and cross line pipes.**
5. **Proposed Grades of all ditches and swales on or off site. Show existing Grades of incoming and outfall drainage ways for 200' feet upstream/downstream if no Grade changes are proposed. An overall drainage plan shall be submitted along with the plans and profiles and detail sheets.**
- ~~6. An overall drainage plan shall be submitted along with the plans and profiles and detailed sheets.~~
7. **The drainage plan sheet shall show the Street layout and the entire drainage system to be constructed or improved, along with the sizes and invert elevations of drainage pipes, the widths of proposed and existing Drainage Easements, the direction of drainage flow (using arrows), Detention ponds, outfall structures, Lot drainage, and existing canals, tidal streams, etc.**
8. **The drainage plan shall include pertinent drainage data such as drainage areas, runoff coefficients, times of concentration (with computations), runoff volumes, soils data, Detention pond routing, pond crest elevations, and other related information.**

**The following statements shall be included on the plans:**

1. **Statement to be placed by Design Professionals on road and drainage plans: "ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE CHARLESTON COUNTY ZONING AND LAND DEVELOPMENT REGULATIONS ORDINANCE."**
2. **Statement to be signed by the owner or the authorized agent of the owner: "I certify as an agent for or as a record owner, lessee, or record Easement holder, I have, or will have prior to undertaking the work the necessary approval or permission from all other Persons with a legal interest in said property to conduct the work proposed in the approved Subdivision construction plans."**

~~Prior to Final Plat approval, the landowner/developer shall furnish the Public Works Department with two sets of blueprints and one reproducible set of the approved stamped plans before initiating work.~~

~~Also, the landowner/developer shall furnish one (1) set of record drawing prints upon completion of the project.~~

~~When available, the Public Works Department requests an electronic data file of the approved plans including layout, road/right-of-way location, drainage easements, and other pertinent information that may be used to augment the County GIS. The landowner/developer is not responsible for ensuring that electronic data is compatible with the County's GIS system.~~

- H. **Expiration Date for County's Approval of Construction Plans.** ~~EXPIRATION DATE FOR COUNTY'S APPROVAL OF CONSTRUCTION PLANS~~ Construction plan and specification approvals have the same duration as the ~~P~~preliminary ~~P~~plat approval. Refer to Chapter 8, **Subdivision Regulations**, for approval duration information.
- I. **County Inspection.** ~~COUNTY INSPECTION~~ All work required by the County for the ~~D~~development being considered shall be inspected by the Public Works Director for compliance with the approved plans and specifications. The Public Works Director will make inspections when:



1. The Public Works Director has approved construction plans and specifications.
2. Sufficient notice is given. The landowner/~~D~~developer shall give a one-week notice *to the Public Works Director* prior to beginning work at the site. After the initial notice, a ~~24~~**72**-hour notice shall be given prior to beginning each operation (or continuing an operation when the work has been disrupted for more than one work-day).
3. A final project inspection shall be performed prior to scheduling *the request for* Council *consideration* ~~acceptance~~.

The Public Works Inspector shall have the authority to:

1. Certify that the construction and materials comply with the approved construction plans and these regulations;
  2. Certify that material quantities comply with the approved construction plans.
  3. Approve or reject materials and/or their installation in accordance with the approved construction plans, specifications, and these regulations; *and*
  4. Suspend work with the *approval* ~~concurrence~~ of the Public Works Director.
- J. **Site Cleanup and Finish Grading.** ~~SITE CLEANUP AND FINISH GRADING~~ Prior to ~~S~~street and drainage system acceptance, the ~~R~~ight-of-~~W~~ay and ~~D~~rainage ~~E~~asements shall be cleared of all construction trash and debris. Lots or other areas designated on the approved plans requiring fill or grading shall also be completed.
- K. **Maintenance Guarantees.** ~~MAINTENANCE GUARANTEES~~ Street and *stormwater* management/drainage systems that are to be dedicated to Charleston County for public *ownership and* maintenance shall be under warranty for all defects and failures ~~for a period~~ *as described in this Section* of two years. Prior to Final Plat approval, the ~~D~~developer shall provide written verification of financial responsibility for correction of defects and/or failures to systems to be dedicated to the County. The warranty (minimally established at ~~10~~**20** percent of the construction cost) shall be in an amount satisfactory to the Public Works Director and effective for a period of two years *from County Council's acceptance date, provided, however, that period may be extended at the Public Works Director's discretion* ~~from County Council's acceptance date~~. The financial warranty shall be in the form of a no-contest, irrevocable bank letter of credit, a performance and payment bond underwritten by an acceptable South Carolina licensed corporate surety, or a cashier's check. Payment is subject to County Attorney approval of the guarantee to determine that the interests of Charleston County are fully protected. If a cashier's check is utilized, then the opinion of counsel may be waived. The Public Works Department shall maintain surveillance over the system and provide written notification to the landowner/~~D~~developer if repair work is required during the warranty period. The Public Works Department shall identify defects not considered to be a public safety issue and notify the landowner/~~D~~developer of such defects. The landowner/~~D~~developer shall have 30 days to prepare and submit a schedule of corrective actions for approval by the Public Works Director. If defects are not satisfactorily repaired within the approved schedule, the Public Works Department will resolve the defects and bill the bonding company accordingly. The Public Works Department shall address public safety defects immediately. Subsequently, the bonding company will be billed for reimbursement.

**Sec. A.3.2 Secondary Rural Road Standards (~~maximum Of 10 Lots~~) (*Maximum of Four Lots*)**

- A. **General Design Requirements.** ~~GENERAL DESIGN REQUIREMENTS~~
1. *Required Right-Of-Way.* The minimum ~~R~~ight-of-~~W~~ay width is 50' *feet*.
  2. *Required Minimum Street Section.* Streets shall be constructed to minimum earth ~~S~~street standards and have a minimum travel way width of 18' *feet*.
  3. *Required Minimum Street Elevations.* The minimum ~~S~~street centerline elevation at finish ~~G~~grade shall be 6.5' *feet* ~~above Mean Sea Level~~ *NAVD 88*.
  4. *Required Minimum Profile Gradient.* The minimum ~~S~~street profile centerline gradient shall be 0.4% except for ~~C~~auseways where land areas adjacent to the road embankment are jurisdictional wetlands or ~~OCRM~~ *Critical a*Area.



5. **Street Centerline Minimum Curve Radius Criteria.** Street centerline curve radii shall meet AASHTO guidelines for the design speed limit.
6. Where streets are designed for **a speed limit lower** less than 30 mph speed limit, the **D**esign **P**rofessional shall provide supporting design data, including traffic control signage.
7. All roads shall be designed with a minimum road centerline radius of 125' **feet**.
8. Horizontal sight distances shall be considered in the design process.
9. Vertical curves shall have a minimum length of 100' **feet**.

B. **Roadway Drainage Design.** ROADWAY DRAINAGE DESIGN The **R**oadway drainage design must show, at a minimum, how the drainage is directed away from the travel way.

C. **Construction Plans and Specifications.** CONSTRUCTION PLANS AND SPECIFICATIONS The construction plans **and specifications** shall **be in compliance with the requirements of Section A.3.1.F, General Information.** ~~clearly show all work to be performed in plan view, profile, cross section, details, and specifications. Specifications providing written descriptions of the work, workmanship, appearance, materials, etc., and/or special provisions may either be shown on the drawings or presented in booklet form separate from the drawings. Specifications shall comply with the CTC (SS) or SCDOT (SS), unless otherwise directed by the Public Works Director.~~

The following standards shall be observed and the information listed below shall be provided in the design and preparation of plans, profiles, details, drainage plans, and written specifications for construction:

1. Include a copy of the approved preliminary plat.
2. Plans and profiles shall be prepared on 24" x 36" or 22" x 34" sheets, having a profile at the bottom and a plan view at the top, with both the plan and profile stationing oriented in the same direction.
3. All elevations shall be referenced to the Mean Sea Level Datum for NGVD 29.
4. Scales shall be: vertical 1" = 2' and horizontal 1" = 50' or larger.

The following shall be shown in the plan view:

1. Stations along the centerline of the proposed road with appropriate ties at intersecting streets.
2. The width of the right-of-way and names of proposed roads and existing roads.
3. Alignment information, curve data with P.C., P.T., and P.I. angle points, as well as angles at intersections.
4. Arrows indicating the direction of drainage flow within the right-of-way.
5. Size, type, and location of trees proposed to remain within the clearing limits of the road right-of-way.
6. DHEC/OCRM Critical Line and USACOE jurisdictional wetland delineations which relate to the right-of-way or easements.
7. Benchmarks with locations, descriptions, coordinates, datum, etc.
8. Details shall show sight distances, traffic control devices, design speeds for roads and other related information.
9. Other general construction details required to define the scope of work.

Profiles shall show:

1. Existing street centerline elevations showing all breaks in grade, but in no case more than 100' apart. Profiles shall include existing streets to which ties are being made with elevations extending approximately 200' from the intersection.
2. Proposed street centerline profile with centerline elevations every 50' on vertical curves and at 100' along tangents and at intersections.



~~3. Statement to be placed by design professionals on road and drainage plans: "ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE CHARLESTON COUNTY ZONING AND LAND DEVELOPMENT REGULATIONS."~~

~~4. Statement to be signed by the owner or the authorized agent of the owner: "I certify as an agent for or as a record owner, lessee, or record easement holder, I have, or will have prior to undertaking the work the necessary approval or permission from all other persons with a legal interest in said property to conduct the work proposed in the approved subdivision construction plans."~~

D. **Clearing and Grubbing.** ~~CLEARING AND GRUBBING~~ Except as otherwise stated herein, all Secondary Rural Road ~~R~~ights-of-~~W~~ay shall be cleared and grubbed for a minimum width of 40' ~~feet~~. Any/all ~~T~~ree canopies shall be pruned to a minimum height of ~~16.5~~ **15'** ~~feet~~. This work shall include the removal and disposal of all ~~T~~rees, stumps, brush, rubbish, roots, and other objectionable materials.

**Sec. A.3.3 Primary Rural Road Standards (Maximum of Four Lots)**

A. **General Design Requirements.** ~~GENERAL DESIGN REQUIREMENTS~~

1. **Required Right-Of-Way.** ~~The minimum R~~ight-of-~~W~~ay width is 50' ~~feet~~.
2. **Required Minimum Street Section.** ~~Streets shall have a minimum travel way width of 20' feet. The travel surface shall be at least equal to the type of surface with which it is being connected (Pavement, rock, or earth). If D~~development characteristics warrant, the Public Works Director can approve a reduction in the surface type. Written requests for a reduction in surface type shall be directed to the Public Works Director with an accompanying justification statement.
3. **Required Minimum Street Elevations.** ~~The minimum S~~street centerline elevation at finish ~~G~~rade shall be 6.5' ~~feet~~ ~~above Mean Sea Level~~ **NAVD 88**.
4. **Required Minimum Profile Gradient.** ~~The minimum S~~street profile centerline gradient shall be 0.4% except for ~~C~~auseways where land areas adjacent to the road embankment are jurisdictional wetlands or ~~OCRM~~ ~~C~~ritical ~~A~~reas.
5. **Street Centerline Minimum Curve Radius Criteria.** ~~Street centerline curve radii shall meet AASHTO guidelines for the design speed limit.~~
6. Where ~~S~~streets are designed for a **speed limit lower than** ~~less than a) 30 mph speed limit,~~ the ~~D~~esign ~~P~~rofessional shall provide supporting design data, including traffic control signage.
7. All roads shall be designed with a minimum road centerline radius of 125' ~~feet~~.
8. Horizontal sight distances shall be considered in the design process.
9. Vertical curves shall have a minimum length of 100' ~~feet~~.

B. **Roadway Drainage Design.** ~~ROADWAY DRAINAGE DESIGN~~ For ~~R~~oadways with open roadside swale ditches, the swale ditches shall be graded as shown on details in Art. A.6, **Standard Construction Details**. The drainage plan shall show how the ~~R~~oadway drainage will be conveyed to an outfall or wetland. Roadside swale drainage ditches and driveway pipes shall be designed for a ~~five~~ **(5-10)** year Average Return Frequency storm (minimum driveway pipe size shall be 15" ~~inches~~ in diameter). Cross drains, outfall ditches, and piped systems shall be designed ~~for a 10 year Average Return Frequency storm~~ **in accordance with the Charleston County Stormwater Program Permitting Standards and Procedures Manual**. Average Return Frequencies are defined in Sec. A.4.2.D, **Rainfall Determination**. Roadside ditch inverts shall parallel the finished road longitudinal gradient except as otherwise approved by the Public Works Director. Drainage shall not be carried in roadside ditches for a distance exceeding 700' ~~feet~~ (accumulated distance), except as otherwise approved by the Public Works Director.

C. **Construction Plans and Specifications.** ~~CONSTRUCTION PLANS AND SPECIFICATIONS~~ The construction plans **and specifications** shall **be in compliance with the requirements of Section A.3.1.F, General Information.** ~~clearly show all~~





work to be performed in plan view, profile, cross section, details, and specifications. Specifications providing written descriptions of the work, workmanship, appearance, materials, etc., and/or special provisions may either be shown on the drawings or presented in booklet form separate from the drawings. Specifications shall comply with the CTC (SS) or SCDOT (SS), unless otherwise directed by the Public Works Director.

The following standards shall be observed and the information listed below shall be provided in the design and preparation of plans, profiles, details, drainage plans, and written specifications for construction:

1. Include a copy of the approved preliminary plat.
2. Plans and profiles shall be prepared on 24" x 36" or 22" x 34" sheets, having a profile at the bottom and a plan view at the top, with both the plan and profile stationing oriented in the same direction.
3. All elevations shall be referenced to the Mean Sea Level Datum for NGVD 29.
4. Scales shall be: vertical 1" = 2' and horizontal 1" = 50' or larger.

The following shall be shown in the plan view:

1. Stations along the centerline of the proposed road with appropriate ties at intersecting streets.
2. The width of the right of way and names of proposed roads and existing roads.
3. Alignment information, curve data with P.C., P.T., and P.I. angle points, as well as angles at intersections.
4. Arrows indicating the direction of drainage flow within the right of way.
5. Size, type, and location of trees proposed to remain within a road right of way or drainage easement.
6. Existing and proposed drainage structures and drainage easements along with rights of way and drainage way cross sections.
7. DHEC/OCRM Critical Line and USACOE jurisdictional wetland delineations which relate to the right of way or easements.
8. Benchmarks with locations, descriptions, coordinates, datum, etc.
9. Details shall show pond outfall structures, sight distances, traffic control devices, design speeds for roads, and other related information.
10. Other general construction details required to define the scope of work.

Profiles shall show:

1. Existing street centerline elevations showing all breaks in grade, but in no case more than 100' apart. Profiles shall include existing streets to which ties are being made with elevations extending approximately 200' from intersections.
2. Proposed street centerline profile with centerline elevations every 50' on vertical curves and at every 100' along tangents and at intersections.
3. Vertical curve data.
4. Proposed and existing storm drains, sanitary sewers, water mains, pipe under drains, and cross line pipes.
5. Statement to be placed by design professionals on road and drainage plans: "ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE CHARLESTON COUNTY ZONING AND LAND DEVELOPMENT REGULATIONS."
6. Statement to be signed by the owner or the authorized agent of the owner: "I certify as an agent for or as a record owner, lessee, or record easement holder, I have, or will have prior to undertaking the work the necessary approval or permission from all other persons with a legal interest in said property to conduct the work proposed in the approved subdivision construction plans."



- D. **Clearing and Grubbing.** ~~CLEARING AND GRUBBING~~ Except as otherwise stated herein, all Primary Rural Road ~~R~~ights-of-~~W~~ay shall be cleared and grubbed for a minimum width of 50' ~~feet~~. Any/all ~~T~~ree canopies shall be pruned to a minimum height of ~~16.5 feet~~<sup>15'</sup>. This work shall include the removal and disposal of ~~T~~rees, stumps, brush, rubbish, roots, and other objectionable materials.
- E. **Clearing of Drainage Easements.** ~~CLEARING OF DRAINAGE EASEMENTS~~ The full width of all ~~D~~rainage ~~E~~asements shall be cleared of ~~T~~rees, ~~B~~uildings, ~~F~~ences, stumps, brush, logs, rubbish, roots, overhanging ~~T~~ree limbs, overhanging ~~U~~tility wires or cables, or any other item that may, in the judgment of the Public Works Director, interfere with the drainage facility or the maintenance of the facility. Existing obstacles may be left in place upon approval of the Public Works Director provided that all of the following criteria are met:
  1. ~~a~~) ~~T~~he drainage system or the obstacle cannot be easily relocated;
  2. ~~b~~) ~~A~~dequate and safe operational ~~E~~asement space for maintenance by mechanized equipment is provided;
  3. ~~c~~) ~~T~~he drainage way is not obstructed; and
  4. ~~d~~) ~~T~~he ~~D~~rainage ~~E~~asement width is increased to accommodate the obstructions.

**Sec. A.3.4 Secondary County Road Standards**

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- A. **General Design Requirements.** ~~GENERAL DESIGN REQUIREMENTS~~
  1. **Required Right-Of-Way.** ~~Required Right-Of-Way.~~ The minimum ~~R~~ight-of-~~W~~ay width is 50' ~~feet~~, however,; ~~t~~he road ~~R~~ight-of-~~W~~ay width **may be altered as approved by the Public Works Director**, but must be of sufficient width to provide for the following:
    - a. Drainage;
    - b. Pavement or rock travel way;
    - c. Shoulders;
    - d. Signage;
    - e. Trees; and
    - f. Utilities such as ~~S~~treet lights and overhead/underground ~~U~~tility lines (electric, telephone, cable TV, gas, water, and ~~S~~ewer).
  2. **Required Minimum Street Section.** ~~Required Minimum Street Section.~~ Streets shall have a minimum travel way width of 22' ~~feet~~. The travel surface shall be at least equal to the type of surface with which it is being connected (pavement or rock). If ~~D~~evelopment characteristics warrant, the Public Works Director can approve a reduction in the surface type. Written requests for a reduction in surface type shall be directed to the Public Works Director with an accompanying justification statement.
  3. **Required Minimum Street Elevations.** ~~Required Minimum Street Elevations.~~ The minimum ~~S~~treet centerline elevation at finish ~~G~~rade shall be 6.5' ~~feet~~ **NAVD88**~~above Mean Sea Level~~.
  4. **Required Minimum Profile Gradient.** ~~Required Minimum Profile Gradient.~~ The minimum ~~S~~treet profile centerline gradient shall be 0.4% except for ~~C~~auseways where land areas adjacent to the road embankment are jurisdictional wetlands or **OCRM** ~~C~~ritical ~~A~~reas.
  5. **Street Centerline Minimum Curve Radius Criteria.** ~~Street Centerline Minimum Curve Radius Criteria.~~ Street centerline curve radii shall meet AASHTO guidelines for the design speed limit.
  6. Where ~~S~~trees are designed for **speed limits lower than**~~less than a 30 mph speed limit~~, the ~~D~~esign ~~P~~rofessional shall provide supporting design data, including traffic control signage.
  7. All roads shall be designed with a minimum road centerline radius of 125' ~~feet~~.
  8. Horizontal sight distances shall be considered in the design process.



9. Vertical curves shall have a minimum length of 100' *feet*.

B. **General Requirements for Design of Drainage Systems.** GENERAL REQUIREMENTS FOR DESIGN OF DRAINAGE SYSTEMS The design of drainage facilities for a **D**evelopment must be done with consideration being given to the entire drainage basin. Provisions must be made to receive and manage runoff from upstream areas and to ensure that downstream areas are not adversely impacted by discharges or runoff. The current zoning of upstream properties and associated runoff factors representing that land use, assumed to be fully developed, shall be used in determining design runoff rates and quantities. It is not to be assumed that existing developed properties without stormwater **D**etention systems will have them in the future.

C. **Roadway Drainage Design.** ROADWAY DRAINAGE DESIGN For **R**oadways with open roadside swale ditches; the swale ditches shall be graded as shown on details in Art. A.6, **Standard Construction Details**. The drainage plan shall show the drainage basin areas contributing storm-water runoff to the roadside ditches. Roadside swale drainage ditches and driveway pipes shall be designed for a five (5) **10 year Average Return Frequency storm (minimum driveway pipe size shall be 15 inches in diameter)**. **Cross drains, outfall ditches and piped systems shall be designed for a 10-year Average Return Frequency storm in accordance with the Charleston County Stormwater Program Permitting Standards and Procedures Manual.** a five (5) year Average Return Frequency storm (minimum driveway pipe size shall be 15" in diameter). Cross drains, outfall ditches and piped systems shall be designed for a 10-year Average Return Frequency storm. Average Return Frequencies are defined in Sec. A.4.2.D, **Rainfall Determination**. The invert elevation of the roadside swale ditch shall be no less than 18" **inches** and no greater than 24" inches below the corresponding centerline **S**treet finish **G**rade elevation and longitudinal **G**rades shall be no less than 0.4% nominal **G**rade, unless otherwise approved by the Public Works Director. Roadside ditch inverts shall parallel the finish road longitudinal gradient except as approved by the Public Works Director. Drainage shall not be carried in roadside ditches for a distance exceeding 700' **feet** (accumulated distance) except as approved by the Public Works Director.

Outfall ditches to wetland areas shall be piped for a minimum length of 20' **feet** at their outfall ends, or an alternative means of defining wetlands' limits for maintenance identification purposes shall be submitted for consideration.

D. **Maintenance Plan.** MAINTENANCE PLAN When detention or retention **Best Management Practices (BMPs)** facilities are required by local or state agencies or proposed by the **D**esign **P**rofessional, a comprehensive storm water management system maintenance plan must be provided for approval by the Public Works Director. **in accordance with the Charleston County Stormwater Program Permitting Standards and Procedures Manual.** The maintenance plan shall address: frequency of maintenance, disposal of material, access to the facility, and other site specific data. The responsible entity shall acknowledge in writing their maintenance obligation and their assent to the maintenance plan. All storm water runoff and maintenance requirements described herein shall be applicable. be submitted for approval by the Public Works Director. The maintenance plan shall address: frequency of maintenance, disposal of material, access to the facility, and other site specific data. The responsible entity shall acknowledge in writing their maintenance obligation and their assent to the maintenance plan. All storm water runoff and maintenance requirements described herein shall be applicable.

Charleston County will maintain public detention facilities to ensure that public drainage systems function as designed (stage-storage capacity of the ponds remain adequate). Any facility not maintained by Charleston County shall be maintained by another responsible entity. Acceptable arrangements for proper and perpetual maintenance shall be presented to Charleston County at the time of the project's final construction inspection. Detention ponds, lakes, or impoundments which function as a conveyance of storm water downstream of the proposed development require dedicated drainage easements and maintenance shelves constructed along those systems in accordance with these regulations, unless otherwise approved by the Public Works Director.

E. **Construction Plans and Specifications.** CONSTRUCTION PLANS AND SPECIFICATIONS The construction plans **and specifications** shall **be in compliance with the requirements of Section A.3.1.F, General Information.** clearly show all work to be performed in plan view, profile, cross section, details, and specifications. Specifications providing written descriptions of the work, workmanship, appearance, materials, etc., and/or special provisions may either be shown on the



drawings or presented in booklet form separate from the drawings. Specifications shall comply with the CTC (SS) or the SCDOT (SS), unless otherwise directed by the Public Works Director.

F. The following standards shall be observed and the information listed below shall be provided in the design and preparation of plans, profiles, details, drainage plans, and written specifications for construction:

- ~~1. Include a copy of the approved preliminary plat.~~
- ~~2. Plans and profiles shall be prepared on 24" x 36" or 22" x 34" sheets, having a profile at the bottom and a plan view at the top, with both the plan and profile stationing oriented in the same direction.~~
- ~~3. All elevations shall be referenced to the NAVD88 or NGVD29.~~
- ~~4. Scales shall be: vertical 1" = 2' and horizontal 1" = 50' or larger.~~

The following shall be shown in the plan view:

- ~~1. Stations along the centerline of the proposed road with appropriate ties at intersecting streets.~~
- ~~2. The width of the right of way and names of the proposed roads and existing roads.~~
- ~~3. Alignment information, including curve data with P.C., P.T., and P.I. angle points, as well as angles at intersections.~~
- ~~4. Arrows indicating the direction of drainage flow within the right of way, along drainage ways, through lots, and at intersections.~~
- ~~5. Existing and proposed utility lines and utility easements.~~
- ~~6. Size, type, and location of trees proposed to remain within a road right of way or drainage easement.~~
- ~~7. Road cross sections with sidewalks (when required).~~
- ~~8. Existing and proposed drainage structures and drainage easements along with rights of way and drainage way cross sections.~~
- ~~9. DHEC/OCRM Critical Line and USACOE jurisdictional wetlands.~~
- ~~10. Details shall show pond outfall structures, sight distances, traffic control devices, design speeds for roads, and other related information.~~
- ~~11. Benchmarks with locations, descriptions, coordinates, and datum, etc.~~
- ~~12. Other general construction details required to define the scope of work.~~

Profiles shall show:

- ~~1. Existing street centerline elevations showing all breaks in grade, but in no case more than 100' apart. Profiles shall include existing streets to which ties are being made with elevations extending approximately 200' from intersections.~~
- ~~2. Proposed street centerline profile with centerline elevations every 50' on vertical curves and at every 100' along tangents and at intersections.~~
- ~~3. Vertical curve data.~~
- ~~4. Proposed and existing storm drains, sanitary sewers, water mains, pipe under drains, and cross line pipes.~~
- ~~5. Proposed grades of all ditches and swales on or off site. Show existing grades of incoming and outfall drainage ways for 200' upstream/downstream if no grade changes are proposed.~~
- ~~6. An overall drainage plan shall be submitted along with the plans and profiles and detail sheets.~~
- ~~7. The drainage plan sheet shall show the street layout and the entire drainage system to be constructed or improved along with the sizes and invert elevations of drainage pipes, the widths of proposed and existing drainage easements, the direction of drainage flow (using arrows), detention ponds, outfall structures, lot drainage, and existing canals, tidal streams, etc.~~



~~8. The drainage plan shall include pertinent drainage data such as drainage areas, runoff coefficients, times of concentration (with computations), runoff volumes, soils data, detention pond routing, pond crest elevations, and other related information.~~

~~9. Statement to be placed by design professionals on road and drainage plans: "ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE CHARLESTON COUNTY ZONING AND LAND DEVELOPMENT REGULATIONS."~~

~~10. Statement to be signed by the owner or the authorized agent of the owner: "I certify as an agent for or as a record owner, lessee, or record easement holder, I have, or will have prior to undertaking the work the necessary approval or permission from all other persons with a legal interest in said property to conduct the work proposed in the approved subdivision construction plans."~~

G. **Clearing and Grubbing.** CLEARING AND GRUBBING Except as otherwise stated herein, all Secondary County Road **R**ights-of-**W**ay shall be cleared and grubbed for the full width of the **R**ight-of-**W**ay. Any/all **T**ree canopies shall be pruned to a minimum height of **16.5**<sup>15</sup>**feet**. This work shall include the removal and disposal of all **T**rees, stumps, brush, rubbish, roots, and other objectionable materials.

H. **Clearing of Drainage Easements.** CLEARING OF DRAINAGE EASEMENTS The full width of all **D**rainage **E**asements shall be cleared of all **T**rees, **B**uildings, **F**ences, stumps, brush, logs, rubbish, roots, overhanging **T**ree limbs, overhanging **U**tility wires or cables, or any other item that may, in the judgment of the Public Works Director, interfere with the drainage facility or the maintenance of the facility. Existing obstacles may be left in place upon approval of the Public Works Director provided that all of the following criteria are met:

1. a) **T**he drainage system or the obstacle cannot be easily relocated;
2. b) **A**dequate and safe operational **E**asement space for maintenance by mechanized equipment is provided;
3. c) **T**he drainage way is not obstructed; and
4. d) **T**he **D**rainage **E**asement width is increased to accommodate the obstructions.

### Sec. A.3.5 Primary County Road Standards

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A. **General Design Requirements.** GENERAL DESIGN REQUIREMENTS

1. **Required Right-Of-Way.** The minimum **R**ight-of-**W**ay width is 50' **feet**; however, **the** ~~r~~, The road **R**ight-of-**W**ay must be of sufficient width to provide for the following:

- a. Drainage;
- b. Pavement and **C**urb and gutter;
- c. Shoulders;
- d. Trees;
- e. Signage;
- f. Sidewalks where installed (or required); and
- g. Utilities such as **S**treet lights and overhead/underground **U**tility lines (electric, telephone, cable TV, gas, water, and **S**ewer).

2. **Required Minimum Street Section.**

- a. Streets shall be constructed as **P**aved **S**trees and conform to details in Art. A.6, **Standard Construction Details**.
- b. Streets shall be constructed with **C**urb and gutter; and



c. Streets shall have a minimum travel way width of 24' **feet**.

3. **Required Minimum Street Elevations.** The minimum **S**street centerline elevation at finish **G**grade shall be 6.5' **feet** **NAVD88** ~~above Mean Sea Level~~.

4. **Required Minimum Profile Gradient.** The minimum **S**street profile centerline gradient shall be 0.4% except for **C**auseways where land areas adjacent to the road embankment are jurisdictional wetlands or critical areas. Additionally, for **S**streets using an asphalt gutter, a minimum centerline gradient of 0.5% is required.

5. **Street Centerline Minimum Curve Radius Criteria.** Street centerline curve radii shall meet AASHTO guidelines for the design speed limit.

6. Where streets are designed for **speed limits lower** less than 30 mph ~~speed limit~~, the **D**esign **P**rofessional shall provide supporting design data, including traffic control signage.

7. All roads shall be designed with a minimum road centerline radius of 125' **feet**.

8. Horizontal sight distances shall be considered in the design process.

9. Vertical curves shall have a minimum length of 100' **feet**.

B. **Type of Curb and Gutter.** ~~TYPE OF CURB AND GUTTER~~

1. **Concrete Curb and Gutter.** Either upright **C**urb and gutter or roll **C**urb and gutter may be used (see details in Art. A.6, **Standard Construction Details**). ~~The minimum width for the upright curb and gutter shall be 1" and 2' for roll curb and gutter. The maximum~~ if upright curb and gutter is utilized, driveway entrances for **S**ubdivision **L**ots shall be shown on the construction plans and constructed as part of the **D**evelopment. The distance between expansion joints unless specified otherwise herein, shall be in accordance with the CTC (SS) or the SCDOT (SS).

2. **Asphalt Curb and Gutter.** Asphalt **C**urb and gutter sections shall be submitted for approval. All work, materials, methods, and equipment, unless specified otherwise herein, shall be in accordance with the CTC (SS) or the SCDOT (SS).

C. **General Requirements for Design of Drainage Systems.** ~~GENERAL REQUIREMENTS FOR DESIGN OF DRAINAGE SYSTEMS~~

The design of drainage facilities for a **D**evelopment must be done with consideration being given to the entire drainage basin. Provisions must be made to receive and manage runoff from upstream areas and to ensure that downstream areas are not adversely impacted by discharges or runoff. The current zoning of upstream properties and associated runoff factors representing that land use, assumed to be fully developed, shall be used in determining design runoff rates and quantities. It is not to be assumed that existing developed properties without stormwater **D**etention systems will have them in the future. Also, drainage design requirements for the entire **D**evelopment shall conform to Sec. A.4.2, **Drainage Design**.

D. **Roadway Drainage Design.** ~~ROADWAY DRAINAGE DESIGN~~

Storm-water systems conveying flow to or from streets shall be piped unless otherwise approved by the Public Works Director. Curb inlet structures shall be located so that drainage shall not be carried in gutters for a distance exceeding 500' **feet** (accumulated distance). ~~The~~ ~~five (5)~~ **10** year Average Return Frequency storm shall not cause water to flow onto the road for a **spread** width greater than 5' **feet**. Culvert piping running longitudinally with the **S**street shall not be located under the **P**avement or **C**urb and gutter, nor shall it conflict with the normal location of under drains.

E. **Subsurface Drainage.** ~~SUBSURFACE DRAINAGE~~

1. Where pipe under drains are required, their centerline shall be located 2.5' **feet**, at a minimum, behind the back of the **C**urb and they shall be properly connected to a permanent drainage outlet, such as a catch basin, junction box, or a manhole.

2. Piped under drains shall conform to the under drain details in Art. A.6, **Standard Construction Details**. Under drain inverts shall be a minimum of 24" **inches** below the bottom of the **C**urb and above any static lake/pond elevation.



3. Suitable outlets for the pipe under drains shall be provided in the drainage system design.
4. Pipes under drains shall be installed at low points in the **G**grade on both sides of the **S**street for a minimum distance of 100' **feet** in each direction along the **S**street; except at locations where the design engineer can demonstrate to the satisfaction of the Public Works Director that the water table will not be within 24" **inches** of centerline **S**subgrade elevation.
5. Pipes under drains, where required, shall be installed before the **B**base **C**course is placed.
6. Pipes under drains shall be placed in other locations as determined by the **D**esign **P**rofessional or as required by the Public Works Director during construction.
7. Pipes under drains shall be properly laid on **G**grade and in accordance with these specifications and the CTC (SS) or the SCDOT (SS) and shall not be covered until they have been inspected and approved by the Charleston County Public Works Department.
8. Alternative under drain designs shall be presented to the Public Works Director for review and approval.

F. **Maintenance Plan.** ~~MAINTENANCE PLAN~~ **When Best Management Practices are required by local or state agencies or proposed by the Design Professional, a maintenance plan must be provided in accordance with the Charleston County Stormwater Program Permitting Standards and Procedures Manual.** ~~When detention or retention facilities are required by local or state agencies or proposed by the design professional, a comprehensive storm water management system maintenance plan must be submitted for approval by the Public Works Director. The maintenance plan shall address: frequency of maintenance, disposal of material, access to the facility, and other site specific data. The responsible entity shall acknowledge in writing their maintenance obligation and their assent to the maintenance plan. All storm water runoff and maintenance requirements described herein shall be applicable.~~

~~Charleston County will maintain public detention facilities to ensure that public drainage systems function as designed (stage storage capacity of the ponds remain adequate). Any facility not maintained by Charleston County shall be maintained by another responsible entity. Acceptable arrangements for proper and perpetual maintenance shall be presented to Charleston County at the time of the project's final construction inspection. Detention ponds, lakes, or impoundments which function as a conveyance of storm water downstream of the proposed development shall require dedicated drainage easements and maintenance shelves constructed along those systems in accordance with these regulations, unless otherwise approved by the Public Works Director.~~

G. **Construction Plans and Specifications.** ~~CONSTRUCTION PLANS AND SPECIFICATIONS~~ The construction plans **and specifications** shall **be in compliance with Sec. A.3.1.F, General Information.** ~~clearly show all work to be performed in plan view, profile, cross section, details, and specifications. Specifications providing written descriptions of the work, workmanship, appearance, materials, etc., and/or special provisions may either be shown on the drawings or presented in booklet form separate from the drawings. Specifications shall comply with the CTC (SS) or the SCDOT (SS), unless otherwise directed by the Public Works Director. The following standards shall be observed and the information listed below shall be provided in the design and preparation of plans, profiles, details, drainage plans, and written specifications for construction:~~

1. ~~Include a copy of the approved preliminary plat.~~
2. ~~Plans and profiles shall be prepared on 24" x 36" or 22" x 34" sheets, having a profile at the bottom and a plan view at the top, with both the plan and profile stationing oriented in the same direction.~~
3. ~~All elevations shall be referenced to the Mean Sea Level Datum for NGVD 29).~~
4. ~~Scales shall be: vertical 1" = 2' and horizontal 1" = 50' or larger.~~

~~The following must be shown in the plan view:~~

1. ~~names of the proposed roads and existing.~~
2. ~~Stations along the centerline of the proposed road with appropriate ties at intersecting streets.~~
3. ~~The width of the right of way and roads.~~



- ~~4. Alignment information, including curve data with P.C., P.T., and P.I. angle points, as well as angles at intersections.~~
- ~~5. Arrows indicating the direction of drainage flow within the right-of-way, along drainage ways, through lots, and at intersections.~~
- ~~6. Existing and proposed utility lines and utility easements.~~
- ~~7. Size, type, and location of trees proposed to remain within a road right-of-way or drainage easement.~~
- ~~8. Road cross sections with pedestrian paths (when required).~~
- ~~9. Existing and proposed drainage structures and drainage easements along with rights-of-way and drainage way cross sections.~~
- ~~10. DHEC/OCRM Critical Line and USACOE jurisdictional wetlands.~~
- ~~11. Benchmarks with locations, descriptions, coordinates, and datum, etc.~~
- ~~12. Details shall show pond outfall structures, sight distances, traffic control devices, design speeds for roads, and other related information.~~
- ~~13. Other general construction details required to define the scope of work.~~

Profiles shall show:

- ~~1. Existing street centerline elevations, showing all breaks in grade, but in no case more than 100' apart. Profiles shall include existing streets to which ties are being with elevations extending approximately 200' from intersections.~~
  - ~~2. Proposed street centerline profile with centerline elevations every 50' on vertical curves and at every 100' along tangents and at intersections.~~
  - ~~3. Vertical curve data.~~
  - ~~4. Proposed and existing storm drains, sanitary sewers, water mains, pipe under drains, and cross line pipes.~~
  - ~~5. Proposed grades of all ditches and swales on or off site. Show existing grades of incoming and outfall drainage ways for 200' upstream/downstream if no grade changes are proposed. An overall drainage plan shall be submitted along with the plans and profiles and detail sheets.~~
  - ~~6. An overall drainage plan shall be submitted along with the plans and profiles and detailed sheets.~~
  - ~~7. The drainage plan sheet shall show the street layout and the entire drainage system to be constructed or improved, along with the sizes and invert elevations of drainage pipes, the widths of proposed and existing drainage easements, the direction of drainage flow (using arrows), detention ponds, outfall structures, lot drainage, and existing canals, tidal streams, etc.~~
  - ~~8. The drainage plan shall include pertinent drainage data such as drainage areas, runoff coefficients, times of concentration (with computations), runoff volumes, soils data, detention pond routing, pond crest elevations, and other related information.~~
  - ~~1. Statement to be placed by design professionals on road and drainage plans: " ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE CHARLESTON COUNTY ZONING AND LAND DEVELOPMENT REGULATIONS."~~
  - ~~2. Statement to be signed by the owner or the authorized agent of the owner: "I certify as an agent for or as a record owner, lessee, or record easement holder, I have, or will have prior to undertaking the work the necessary approval or permission from all other persons with a legal interest in said property to conduct the work proposed in the approved subdivision construction plans."~~
- H. PIPING AND EASEMENTS Unless justification is provided, to the satisfaction of the Public Works Director, all **D**rainage **E**asements within the urban areas of the County shall be required to be piped except: a) swales with depths less than 24" having 5:1 side slopes and wholly contained within the easement, and b) canals (designed for a capacity exceeding that of





an equivalent 36" diameter pipe). *follow the Charleston County Stormwater Program Permitting Standards and Procedures Manual.*

- I. **Clearing and Grubbing.** ~~CLEARING AND GRUBBING~~ Except as otherwise stated herein, all Primary County Road ~~R~~ights-of-~~W~~ay shall be cleared and grubbed for the full width of the ~~R~~ight-of-~~W~~ay. Any/all ~~T~~ree canopies shall be pruned to a minimum height of ~~16.5~~15' ~~feet~~. This work shall include the removal and disposal of ~~T~~rees, stumps, brush, rubbish, roots, and other objectionable materials. For ~~S~~treets constructed with upright or roll ~~C~~urb and gutter, selected specimen ~~T~~rees may be permitted to remain within the ~~R~~ight-of-~~W~~ay when the following conditions are met:
  - 1. Trees are healthy, of aesthetic value, and are firmly rooted with the base of the ~~T~~ree being at or near the elevation of the ~~C~~urb or edge of pavement.
  - 2. The distance from the back of the ~~C~~urb to the nearest face of the ~~T~~ree is not less than 5' ~~feet~~.
  - 3. Additional ~~R~~ight-of-~~W~~ay is provided where necessary.
  - 4. Where under drains are required, the ~~T~~ree(s) shall be removed or the ~~R~~ight-of-~~W~~ay shall be relocated.
- J. **Clearing of Drainage Easements.** ~~CLEARING OF DRAINAGE EASEMENTS~~ The full width of all ~~D~~rainage ~~E~~asements shall be cleared of all ~~T~~rees, buildings, ~~F~~ences, stumps, brush, logs, rubbish, roots, overhanging ~~T~~ree limbs, overhanging ~~U~~tility wires or cables, or any other item that may, in the judgment of the Public Works Director, interfere with the drainage facility or the maintenance of the facility. Existing obstacles may be left in place upon approval of the Public Works Director provided that all of the following criteria are met:
  - 1. a) ~~T~~he drainage system or the obstacle cannot be easily relocated;
  - 2. b) ~~A~~dequate and safe operational ~~E~~asement space for maintenance by mechanized equipment is provided;
  - 3. c) ~~T~~he drainage way is not obstructed; and
  - 4. d) ~~T~~he ~~D~~rainage ~~E~~asement width is increased to accommodate the obstructions.

**Sec. A.3.6 Non-Standard County Road Standards**

*Applicable only to the Charleston County Public Works Department.*

- A. ~~GENERAL DESIGN REQUIREMENTS:~~
  - 1. ~~Required Right of Way:~~ The minimum ~~R~~ight of ~~W~~ay width shall be the width of the traveled way plus 5' ~~feet~~ on either side.
  - 2. ~~Required Minimum Road Section:~~ Roads are not constructed to minimum earth road standards.
  - 3. ~~Required Minimum Road Elevations:~~ The minimum road centerline elevation at finish grade shall be 6.5' ~~feet~~ above Mean Sea Level, if possible.
  - 4. ~~Required Minimum Profile Gradient:~~ N/A.
  - 5. ~~Road Centerline Minimum Curve Radius Criteria:~~ N/A.
- B. ~~ROADWAY DRAINAGE DESIGN:~~ The ~~R~~oadway drainage design must show, at a minimum, how the drainage is directed away from the travel way.
- C. ~~Construction Plans and Specifications:~~ N/A.



## ARTICLE A.4 DESIGN AND CONSTRUCTION REQUIREMENTS FOR ROADS CONSTRUCTED TO COUNTY STANDARDS

### Sec. A.4.1 Road Design

A. **Street Intersection Layout.** ~~STREET INTERSECTION LAYOUT~~ Street intersections shall not include more than four ~~S~~street approaches. Streets shall be designed to intersect at right angles whenever possible. Sight distance ~~E~~ easements shall be shown and dedicated on the record drawings of the development, and should reflect a triangular area as determined by details in Art. A.6, **Standard Construction Details**. Within this triangle, there shall be no sight-obscuring or partial sight-obscuring ~~W~~ wall, ~~F~~ fence, ~~S~~ sign, or full-grown foliage higher than 30' ~~inches~~ above the edge of pavement. In the case of ~~T~~ trees, there shall be no foliage lower than ~~16.5'~~ **15' feet** above the top of ~~C~~ curb grade when foliage is saturated with rain. Vertical measurement shall be made by the Public Works Director from the top of the nearest ~~C~~ curb or, if no ~~C~~ curb exists, from the edge of the nearest traveled ~~R~~ roadway finish-grade surface. Offsets of local ~~S~~ streets shall have a minimum of 125' ~~feet~~ between centerlines.

B. **Traffic Control and Street Name Signs.** ~~TRAFFIC CONTROL AND ROAD NAME SIGNS~~ All traffic control and road ~~Street~~ name ~~S~~ signs shall be installed at no cost to the County as part of the ~~D~~ development. The ~~D~~ design ~~P~~ professional shall show the location and type of signs to be installed on the construction plans and specifications. All traffic control signs shall conform to the requirements of the Manual on Uniform Traffic Control Devices for Streets and Highways. All road ~~Street~~ name ~~S~~ signs in proposed publicly maintained rights-of-ways should be constructed as indicated by details in Art. A.6, **Standard Construction Details**.

In the event a road ~~Street~~ name ~~S~~ sign is requested ~~on an approved~~ County ~~non-standard~~ road, approval must be obtained from the County Public Works Department. Details and color-coding are indicated in Article A.6, **Standard Construction Details**.

C. **ADA Requirements.** ~~ADA REQUIREMENTS~~ All pedestrian ways and ~~C~~ curb construction shall be in accordance with the latest edition of the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

D. **Specific Right-of-Way Information.** ~~SPECIFIC RIGHT-OF-WAY INFORMATION~~

1. **Causeways.** ~~AUSEWAYS~~ Streets to be constructed on ~~C~~ causeways shall meet all of the requirements contained within these specifications and the causeway shall also meet the following requirements:

- a. The minimum street centerline elevation at finish grade shall be 6.5' ~~feet NAVD 88~~ above Mean Sea Level.
- b. The minimum side slopes shall be 2:1, preferably 3:1 (Horizontal/vertical).
- c. The minimum top width of the ~~R~~ roadway shall be as defined by the road classification plus 6' ~~foot~~ wide shoulders (as measured from the edge of travel way to the face of the guide rail) if SCDOT standard guide rails are constructed. If no guide rails are constructed, 9' ~~foot~~ wide shoulders shall be required on each side of the travel way.
- d. The ~~D~~ developer shall provide copies of the approved permits or application ID numbers from all applicable regulatory agencies should expanding the ~~C~~ causeway roadbed beyond the toe of the original roadbed be required.

2. **Bridges.** ~~RIDGES~~ Bridges shall be designed in accordance with the AASHTO Standard Specifications for Highway Bridges, current edition and interims, as well as meet the following requirements:

- a. ~~Live Load:~~ HS 20-44 loading or an alternate military loading, whichever produces the greatest stress.
- b. The minimum travel way centerline elevation shall be 6.5' ~~feet above Mean Sea Level~~ **NAVD 88**.
- c. The minimum width of the ~~B~~ bridge shall be 24' ~~feet~~ clear ~~R~~ roadway width.
- d. The minimum clear width for all ~~B~~ bridges on ~~S~~ streets with ~~C~~ curved approaches should be the same as the ~~C~~ curb to ~~C~~ curb width of the approaches, but not less than 24' ~~feet~~ clear ~~R~~ roadway width.





F. **Road Surfaces Types.** ROAD SURFACES TYPES

1. **Earth Roads.** EARTH ROADS The County standard earth **R**oadway is identical in cross section to a County standard paved road except that roadbed stabilization may require that material be mixed into the existing soil material, as needed, to a depth of 6" **inches** to achieve suitable compaction. The crown shall be 6" **inches**. County Public Works' inspectors will determine whether the prepared **S**ubgrade material and earth road overlay soil are acceptable.
  - a. A suitable soil is required for a minimum depth of 18" **inches** to provide a street that will serve the traffic needs in extremely dry, normal, and in wet weather. Where necessary, a stabilizing type soil shall be added and properly mixed with the soil in place for a depth of not less than .6" **inches**.
  - b. Earth roads, when intersecting with an existing paved road, shall have a paved apron extending **20 feet** to the paved road's **R**ight-of-**W**ay and when intersecting with a rocked road, shall have a rocked apron extending to the rocked road's **R**ight-of-**W**ay.
2. **Rock Roads.** ROCK ROADS The County standard rock **R**oadway is also identical in cross section to a County standard paved road except that the **S**ubgrade is mixed with a 4" **inch** minimum aggregate base course worked into the top 2" **inches** of the existing **S**ubgrade, creating a 6" **inch** deep compacted rock surface, meeting the CTC (SS) or the SCDOT (SS). The road crown shall be a minimum of 6" **inches**. The rock material shall be Crusher-Run granite aggregate unless otherwise approved by the Public Works Director.
 

Rocked roads, when intersecting with an existing paved road, shall have a paved apron extending **20 feet** to the edge of the paved road's **R**ight-of-**W**ay.
3. **Paved Roads.** PAVED ROADS The County standard paved **R**oadway is shown in detail in Art. A.6, **Standard Construction Details**. The County standard asphalt pavement is a minimum 2" **inch** compacted hot plant mix asphaltic concrete meeting the CTC (SS) or the SCDOT (SS) type one, or equal. Asphaltic concrete material is to be placed on a minimum compacted **B**ase **C**ourse meeting the CTC (SS) or the SCDOT (SS), and an approved **S**ubgrade (see **P**avement design below).

G. **Pavement Design.** PAVEMENT DESIGN

1. **Pavement Base and Surface Courses.** PAVEMENT BASE AND SURFACE COURSES The **B**ase **C**ourse shall meet the CTC (SS) or the SCDOT (SS). The width of the **B**ase **C**ourse shall be 12" greater than the width of the surface course; i.e., 6" **inches** on each side of the **R**oadway. The compacted depth of the **B**ase **C**ourse shall be 6" **inches** or greater as approved by the Public Works Director. After the **B**ase **C**ourse has been properly blended, mixed, wetted, shaped, and compacted to the approved typical section and has been seasoned sufficiently and proof-rolled, the surface course shall be applied.
  - a. Proof-rolling shall be accomplished as described in the CTC (SS) or the SCDOT (SS) for the proof-rolling of the **S**ubgrade except that the minimum total weight of the testing vehicle shall be in the 30-35 ton range.
  - b. The surface course materials, placement, and protection shall meet the requirements of the SCDOT (SS) type C or equal. The compacted depth of the surface course shall be no less than 2" **inches** or greater as approved by the Public Works Director. Weather and seasonal restrictions to placement of the bituminous materials are described in the CTC (SS) or the SCDOT (SS).
2. **Pavement Section for Typical Residential Roadway.** PAVEMENT SECTION FOR TYPICAL RESIDENTIAL ROADWAY The County standard asphalt **P**avement section for use on residential **R**oadways is a minimum 2-**inch** "compacted hot plant mix asphaltic concrete meeting the CTC (SS) or the SCDOT (SS), type one or equal. This material is to be placed on a 6-**inch** "minimum compacted **B**ase **C**ourse and an approved **S**ubgrade. A prime coat meeting the CTC (SS) or the SCDOT (SS) is required when the **B**ase **C**ourse will not be paved within two weeks.

Roadways serving large residential areas or phased **S**ubdivisions may require **P**avement designs, exceeding the minimum requirements, as determined by the Public Works Director.



3. **Pavement Design for Commercial/Industrial Use Roadways.** ~~PAVEMENT DESIGN FOR COMMERCIAL/INDUSTRIAL USE ROADWAYS~~ The design engineer shall provide a **P**avement design for all **R**oadways that serve commercial and industrial uses. The design shall include at a minimum 2" **inches** of compacted hot plant mix asphaltic concrete meeting the CTC (SS) or the SCDOT (SS) type one, or equal, and a minimum 6" **inches** of compacted **B**ase **C**ourse meeting the CTC (SS) or the SCDOT (SS), with an approved **S**ubgrade. The **P**avement design shall include information on anticipated traffic counts, traffic loadings, and site-specific soils. Further, the Public Works Director may require other pertinent information. A site-specific geotechnical report prepared by a Geotechnical Engineer shall be provided to substantiate/justify the proposed design for the entire length of the **R**oadways to be constructed. A prime coat meeting the CTC (SS) or the SCDOT (SS) is required when the base course will not be paved within two weeks.
4. **Alternative Pavement Designs.** ~~ALTERNATIVE PAVEMENT DESIGNS~~ The County will consider alternative **P**avement materials designs. The **D**esign **P**rofessional should present appropriate design data including laboratory tests of foundation soils to substantiate/justify the proposal.

#### H. **Road Construction.** ~~ROAD CONSTRUCTION~~

1. **Soil Testing.** ~~SOIL TESTING~~ The Public Works Director will determine the quality of foundation soils by visual observations and adequate soil testing provided by the **D**esign **P**rofessional. Without such testing, the Public Works Director will utilize judgment and experience to determine the quality of the foundation material and shall require appropriate action including, but not limited to, undercutting or mucking and replacing the excavated material with suitable earth materials.
  - a. The soil-testing program shall be presented to, and approved by, the Public Works Director prior to the beginning of the testing. The testing program shall show the number and approximate locations of borings, sampling depths, and type of test to be made. Ample notice of testing schedules shall be given and a copy of all results, including recommendations, shall be provided upon completion of the tests.
  - b. The testing program may establish levels or degrees of testing. For example, the testing program may call for a minimum number of tests for determination of general soil classifications and water table data for preliminary site evaluation. For the design of **P**avement, the testing program shall include, but is not limited to, the determination of the maximum elevation of the groundwater table, the soil classification according to the Unified Soil Classification System (laboratory test determination), and the California Bearing Ratio (CBR) (laboratory test determination utilizing 96 hour saturation). Proctor testing for determination of optimum moisture and maximum **D**ensity using the modified Proctor-Test ASTM D 1557 Method A, and field moisture and **D**ensity tests may be required by the Public Works Director.
2. **Grading.** ~~GRADING~~ Streets shall be graded to the designed typical section in accordance with the approved plans and profiles. Grade stakes shall be set on centerlines at intervals of not more than 100' **feet** on tangent **G**rades and not more than 50' **feet** on vertical curves. Additional **G**rade stakes may be required to ensure that the final **G**rade matches the designed typical section in the profile.
  - a. Grading work, materials, methods, and equipment, unless approved otherwise, shall be in accordance with the requirements of the CTC (SS) or the SCDOT (SS).
  - b. No base or surfacing materials shall be placed before the **S**ubgrade is inspected and approved by the Public Works Director.
  - c. In general, soils classified lower than "SC," according to the Unified Soil Classification System, are not acceptable for the upper 24" **inches** of the subgrade.
  - d. The compacted **S**ubgrade shall be proof-rolled prior to placement of any base or surfacing materials. Testing shall be performed in the presence of the Public Works Director. The testing procedure shall consist of driving a loaded tandem truck (10 cubic yard minimum load capacity, 30-35 ton minimum total weight), or other equivalent vehicle (as determined by the Public Works Director) at slow-walking speed longitudinally along the



length of the **R**oadway test area. Any areas exhibiting pumping or breaking of the surface shall be stabilized or removed to appropriate depth and replaced with suitable material, re-**c**ompacted, and retested.

3. **Subgrade.** ~~SUBGRADE~~ Work shall consist of the construction and preparation of the **S**ubgrade that part of the **R**oadway intended to receive the **B**ase **C**ourse, **P**pavement, pedestrian way, **C**urb, **C**eurb and gutter, and/or shoulders.
  - a. Roads shall be **G**graded to the designed typical section in accordance with the approved plan and profile, and shall be free of roots, trash, and other unsuitable materials for a minimum depth of 24" **i**nches below the finished **S**ubgrade.
  - b. A suitable soil is required for a minimum depth of 18" **i**nches immediately below the **B**ase **C**ourse to provide a road that will serve the traffic needs in extremely dry, normal, and in wet weather. Where necessary, a stabilizing type soil shall be added and properly mixed with the soil in place for a depth of not less than 6" **i**nches.
  - c. When unstable material is encountered and it is necessary to perform mucking work, the **R**oadway shall be mucked for its entire width, ditch line to ditch line or extending 2' **f**eet beyond the backs of curbs; backfilled with a suitable, stable-type soil; and properly compacted. All objectionable loose rock or boulders shall be removed or broken off to a depth of not less than 24" **i**nches below the surface of the **S**ubgrade.
  - d. The **S**ubgrade is to be sufficiently wetted and shall be compacted for a width extending 2' **f**eet outside the edges of the proposed **P**pavement before the **B**ase **C**ourse is placed.
  - e. The **S**ubgrade, from a distance of 24" **i**nches outside the area to be occupied by the **P**pavement or **C**urb and gutter, shall be compacted to not less than 95**8** percent of maximum **D**ensity. The compaction shall be accomplished by using suitable construction procedures with the **S**ubgrade at optimum construction moisture content. Sprinkling to secure proper compaction may wet the **S**ubgrade. ASTM D 1557 Method A will determine maximum densities.
  - f. The **S**ubgrade shall be maintained in a smooth and compacted condition, free from ruts and depressions, and shall be adequately drained. In no case shall any base, surface course or **P**pavement be placed on a frozen, muddy, or unstable subgrade. Storing or stockpiling of materials directly on the **S**ubgrade will not be permitted except with the approval of the Public Works Director.
4. **Seeding and Mulching.** ~~SEEDING AND MULCHING~~ All unpaved areas within the **R**ight-of-**W**ay shall be seeded and mulched. The **D**eveloper shall be responsible for maintenance of such seeded and mulched areas as described in the CTC (SS) or the SCDOT (SS) until the **S**treet and/or drainage system is accepted into the County maintenance system.

## Sec. A.4.2 Drainage Design

- A. **Design Methods and Criteria.** ~~DESIGN METHODS AND CRITERIA~~ *Drainage designs shall be in accordance with the Charleston County Stormwater Program Permitting Standards and Procedures Manual.* ~~The design professional may use generally accepted design procedures to determine runoff quantities. The Modified Rational Method or the Modified Soil Conservation Service Method is typically used by the Charleston County Public Works Department to review submitted designs. The design professional shall submit data showing the drainage basin, the location of areas of differing imperviousness, the runoff factors for each zone of imperviousness, and the data for rainfall and time factors used in the determination of peak runoff rates. The design should consider seasonal high water table elevations. The design must take into consideration the channeled runoff. The design shall comply with water quality standards established by Federal, State, and Local regulations.~~
- B. **Approved Outfalls.** ~~APPROVED OUTFALLS~~ *Designs shall be in accordance with the Charleston County Stormwater Program Permitting Standards and Procedures Manual.*

All street and development drainage shall be discharged into either:

  - A tidal stream of adequate size;
  - A running stream with continuous flow (freshwater creek or river) of adequate size;
  - An existing drainage way (pipe, ditch, or canal) of adequate size for which there is an adequate easement, and which is maintained by Charleston County or another responsible public agency; or



A wetland or critical area capable of receiving the discharge without it negatively impacting any property adjacent thereto. The outlet or receiving area must be of sufficient size and grade, etc. to receive the anticipated quantity of runoff from each contributing drainage basin along the route of the outlet in addition to the anticipated increase in quantity of runoff from the subject development. Where the proposed outlet ends, or near the South Carolina DHEC-OCRM Critical Line, the construction plans shall clearly show that there is an outlet of adequate size and slope to the final point of discharge. The entire length of the outlet, except approved portions within the South Carolina DHEC-OCRM Critical Area, shall be constructed on dedicated drainage easements with cleared, stable maintenance shelves for continued maintenance of the drainage way. The entire development's outlet, from sources of collection of runoff to final point of discharge, shall be evaluated by the design professional and upgraded by the developer as deemed necessary by the Public Works Director at no cost to the County.

C. **Drainage and Other Work Involving Another Public Agency.** ~~DRAINAGE AND OTHER WORK INVOLVING ANOTHER PUBLIC AGENCY~~ When drainage is discharged into a drainage way maintained by, or intended for maintenance by, a public agency other than Charleston County Public Works, or if work is to be done within the road ~~Right-of-Way~~ of a public agency other than Charleston County, written approval must be obtained from that public agency. A copy of this approval must be furnished to the Public Works Director prior to ~~commencing work~~ **the issuance of County permit approval.**

D. **Rainfall Determination.** ~~RAINFALL DETERMINATION~~ **Rainfall shall be in accordance with the Charleston County Stormwater Program Permitting Standards and Procedures Manual.**

~~The peak runoff rates shall be determined based on the storm time/rainfall rate following a pattern Type-III Rainfall Hydrograph as defined in the Soil Conservation Service Manual TR-55.~~

~~The design recurrence interval shall be taken to be 10 years for the collector system within the subject development, 25 years for any channeled drainage flowing through the development, and 25 years for any primary outfall drainage way from the development.~~

~~Average Return Frequencies (24 hour) are defined as~~

~~1-year – 3.8 inches; 2-year – 4.6 inches, 5-year – 5.9 inches, 10-year – 7.0 inches, 25-year – 8.0 inches, 50-year – 8.9 inches, 100-year – 10.2 inches~~

~~Or as revised by the South Carolina State Climatology Office.~~

E. **Detention Pond Design Criteria.** ~~DETENTION POND DESIGN CRITERIA~~ **Detention Pond design shall be in accordance with the Charleston County Stormwater Program Permitting Standards and Procedures Manual.**

~~The peak release rate of storm water from all developments where detention is utilized shall not exceed the peak storm water runoff rate from the area in its pre-developed state for all intensities, up to and including the 25-year frequency storm.~~

~~The design professional shall provide information required to support the pond design shown. Calculations shall be signed and sealed by the design professional and shall include stage-storage volumes, areas, depths, summary information (to include pond crest information, outfall flow rates, and computer program information), etc. Pond design shall include the proposed static water level and the two-year, 10-year, and 25-year frequency storm crest elevations. These elevations shall be shown on the drainage plans, as well as the proposed 1' contour lines from the pond bottom to 1' above the 25-year frequency storm crest elevation.~~

~~Static water elevation in ponds shall not be less than 3' below the finished centerline elevation of the road in the general area and ponds shall not encroach on the road right-of-way at any time.~~

~~The design should provide outfall structures that are low maintenance in nature as approved by the Public Works Director.~~

~~The design shall provide an emergency spillway. The location, structure, invert elevations, and outlet of the emergency spillway shall be shown on the construction plans. The design shall address the 50-year and 100-year frequency storm flow rates through the emergency spillway to an approved outfall (drainage easements will be required for the emergency outfall route). Projected flood limits on downstream properties for these storm flow rates are also to be shown on the drainage plan.~~



All detention facilities that require public maintenance shall be provided with access for maintenance via a constructed 30' wide drainage right-of-way from the nearest road to the facility. Plans shall include a barrier structure at the primary road right-of-way to limit vehicular access. The detention facility or pond shall include a 20' wide cleared shelf with easement around the top perimeter of the facility for maintenance access.

For all publicly maintained detention facilities, a public drainage easement shall be dedicated over the entire facility, including the outfall and emergency spillway. For privately maintained detention facilities, a private drainage right-of-way must provide access to the pond, the pond's outfall, and all areas defined by the pond maintenance plan.

Dry ponds shall be designed with 3:1 (horizontal: vertical) side slopes and shall drain dry within 72 hours.

Retention or wet ponds shall be designed with 3:1 (horizontal: vertical) side slopes above the static water level and 2:1 (horizontal: vertical) side slopes below the static water level; shall have a minimum depth of 6'; and shall be stocked with mosquito larvae-eating fish. Charleston County Mosquito Control should be consulted regarding fish stocking information.

F. ***Infiltration/Exfiltration Drainage System.*** INFILTRATION/EXFILTRATION DRAINAGE SYSTEM ***Infiltration shall be in accordance with the Charleston County Stormwater Program Permitting Standards and Procedures Manual.***

~~Charleston County will discourage any drainage system that is dependent solely upon infiltration/exfiltration of storm water runoff for the proper functioning of the system.~~

~~Any such system shall be approved only by specific authority of the Public Works Director shall approve any such system.~~

~~Charleston County will not maintain or be responsible for any infiltration/exfiltration facilities. Any such facility shall be maintained by a responsible entity of, or for, the development, and arrangements for proper and perpetual maintenance shall be guaranteed to Charleston County prior to the approval of the development.~~

G. ***Additional Road Drainage Requirements.*** ADDITIONAL ROAD DRAINAGE REQUIREMENTS The Public Works Director will independently evaluate any storm drainage piping (other than cross-line pipes) designed to be placed at a depth or location such that the repair of that ~~C~~culvert would adversely impact the flow of vehicular traffic. Culvert piping crossing under the ~~S~~street shall be at an angle of not more than 30 degrees from the perpendicular of the ~~S~~street.

1. Pipeline discharge capacities shall exceed maximum peak runoff rates. Ponding or head pressure shall not be considered in pipeline size determination. Computations for all drainage way size determinations shall be provided to the Public Works Director. Drainage ways located laterally off of the ~~S~~street should be piped to the back ~~L~~lot ~~L~~line or for the first 150' ~~feet~~ from the ~~S~~street ~~R~~right-of-~~W~~way line, whichever comes first.
2. Where a drainage outlet pipe extends into a lake or other similar outlet, rip- rap shall be placed under and around the end joint or joints of pipe as needed and on slopes at the end of the pipe.
3. Minimum longitudinal slope shall be 0.4% except where specifically approved in writing by the Public Works Director.
4. Submerged piping or partially submerged piping shall not be used unless where specifically approved in writing by the Public Works Director. Submerged pipe systems shall require a means of accessing the submerged pipe for maintenance purposes.
5. Catch basins or junction boxes shall not be located within the radius portion of ~~S~~street intersections. No manhole covers or water valves will be located within the ~~C~~curb or gutter area or within the paved area of the ~~R~~roadway.
6. To allow for backfill and compaction operations, a 2' ~~foot~~ minimum horizontal clearance between pipelines or ~~S~~structures shall be provided. Reinforced concrete or rip rap of a material and gradation approved by the Public Works Director shall be placed at the ends of all ~~C~~culverts, bends, or junction points in drainage ways and/or other locations as determined by the Public Works Director (see details in Art. A.6, ***Standard Construction Details***).





- H. **Additional Drainageway Requirements.** ~~ADDITIONAL DRAINAGEWAY REQUIREMENTS~~ Where drainage is directed into an existing ditch, canal, or tidal stream by use of an open ditch or pipeline, the elevation at the bottom of the existing ditch, canal, or tidal stream at the point of entry, and approximately 100' **feet** upstream and downstream, shall be shown on the drainage plans. In addition, the elevation of the bottom of the inlet ditch or invert elevation of inlet pipe at the outlet end shall be shown along with the bottom width of the existing canal or tidal stream.
1. Where drainage ways are piped, catch basins shall be provided as required to appropriately receive and discharge incoming drainage. In no case shall the catch basins be more than 300' **feet** apart.
  2. Junction boxes with stubs shall be constructed at both ends of cross-line pipes for cross-ditches, at the outlet end of cross line pipes at outlet ditches, and at other locations as appropriate. Reinforced concrete pipes of the required sizes shall be used for all inlet and outlet stubs. Stub pipes of the required sizes shall be used to convey the **S**street ditch drainage into the junction boxes and the inlet invert of the stub shall normally be installed approximately 0.3' **feet** below the **S**street ditch **G**grade. Stub pipes shall be extended a minimum of 20' **feet** from the junction box to provide maintenance vehicle access to maintenance shelves along outfall ditches.
  3. For minor swale ditches of 1' **foot** depth or less **alongside** ~~along side~~ or **R**rear **L**ot **L**ines that only drain a small interior area and where **S**street drainage is not involved, a **D**rainage **E**asement not less than 15' **feet** in width may be utilized.
- I. **Drainage and Erosion Control Structures and Materials.** ~~DRAINAGE AND EROSION CONTROL STRUCTURES AND MATERIALS~~ All work, materials, methods, and equipment, unless otherwise specified herein, shall be in accordance with the requirements of the CTC (SS).
1. All concrete pipes shall conform to A.S.T.M. Specifications C-76, Class III, Wall B. Joints shall conform to A.S.T.M., C-443. Jointing materials shall be all-weather preformed joint sealant.
  - ~~2. Metal pipes shall be approved by the Public Works Director and shall be installed as per the recommendations of the manufacturer for their intended use. For metal piping subject to saltwater exposure, only approved aluminum piping may be used.~~
  3. Other piping materials **may** ~~shall~~ be considered. Specifications should be submitted to the Public Works Director along with the design data and construction plans showing the specific intended use. Materials and methods approved by the SCDOT will be considered upon submittal of SCDOT documentation and recommendations pertaining to the use of such materials.
  4. Ample cover shall be provided to properly protect pipelines during construction as well as for designed usage. Minimum allowable cover for pipe at **S**ubgrade shall be not less than 6" **inches** for paved areas, and 12" **inches** for unpaved areas and in no case less than that recommended by the manufacturer.
  5. Minimum cover for other materials and usages shall be considered at the time of submittal of construction plans to the Public Works Director.
  6. All **S**tructures shall be shown clearly on the construction plans with details to show all lines, **G**rades, elevations, joints, reinforcing, materials of construction, etc. All appropriate specification data shall be shown on the construction plans.
  7. Junction boxes, **C**urb inlets, outfall boxes, or any other enclosed drainage **S**tructure exceeding 4' **feet** 6" **inches** in depth shall be constructed with interior step fixtures.
  8. Precast concrete **S**tructures will be considered. Design and specification data should be submitted to the Public Works Director along with the design and construction plans showing the specific intended use.
  9. A performance bond guaranteeing restoration work must be posted with Charleston County and remain in effect for a period of two years from the date of acceptance of the restoration work (date of release by the Director of the Department of Public Works). This bond must be in a format approved by the County Attorney and in accordance with terms and conditions of Chapter 8, *Subdivision Regulations*.



J. **Open Channel Baffles.** ~~OPEN CHANNEL Baffles~~ Baffles of an approved design shall be constructed in open channels where the gradient is 0.70 percent or greater and shall be spaced as shown:

Gradient (percent)	Spacing (feet)
0.70 to 0.99	100 (Max.)
1.00 to 1.49	75 (Max.)
1.50 to 1.99	50 (Max.)
2.00 to 3.00*	50 (Max.)

\*Where the gradient is two percent or greater for an open channel, additional **E**asement width equal to the maximum depth of the channel shall be provided. For a gradient greater than three percent, the channel shall be piped unless otherwise approved by the Public Works Director.

K. **Easements for Storm Drainage Facilities.** ~~EASEMENTS FOR STORM DRAINAGE FACILITIES~~ Drainage **E**asements shall be provided for all drainage facilities intended to be included in the maintenance program of Charleston County. The **E**asement shall provide adequate space for access to the facility; adequate space for the operations involved in cleaning, repairing, reconstructing, material storage and dewatering, and hauling materials to or from the area; adequate space for turning and maneuvering of the equipment; and adequate space for the sloshing and splashing of the materials being handled.

1. The portions of the **E**asement intended for equipment operations shall have suitable foundations to support the maintenance equipment and shall be graded to drain the working area but not graded to slopes or elevations causing difficulty in the operation of the maintenance equipment. Maximum lateral **G**rade for areas in which draglines may be used in the maintenance operations shall be five percent.
2. Minimum drainage **E**asement widths shall be ~~no less than the following:~~ **in accordance with the most recent Charleston County Stormwater Program Permitting Standards and Procedure Manual.**

REQUIRED DRAINAGE EASEMENT WIDTHS FOR PIPED DRAINAGEWAYS		
PIPE SIZE (MAXIMUM)	MINIMUM DEPTH TO INVERT	WIDTH OF DRAINAGE EASEMENT
18" <del>≥ and ≤</del> 24"	5.0'	12' - 16'
24" <del>&lt; and ≤</del> 42"	5.0' - 7.0'	16' - 20'
42" <del>&lt; and ≤</del> 54"	7.0'	20' - 24'
54" <del>&lt; and ≤</del> 72"	7.0' - 9.0'	24' - 30'

~~For depths greater than shown, larger pipe sizes, or multiple lines of pipe, additional easement width, as required by the Public Works Director, shall be provided. Required drainage easement widths for open ditches shall be as shown on details in Art. A-6. The side slope of an open ditch shall not exceed 2:1, and, subject to soil stability, may be required to be flatter.~~



## ARTICLE A.5 ENCROACHMENTS

### Sec. A.5.1 Encroachments ~~a~~And Work ~~w~~Within Rights-of-~~W~~Way ~~a~~And Drainage Easements

- A. ~~INTRODUCTION~~ **Introduction.** This section is intended to provide a general guideline for the design and construction of structures that may be located within ~~R~~ights-of-~~W~~way or ~~D~~rainage ~~E~~asements that have been, or will be, accepted into the Charleston County maintenance system. No work shall be commenced until an encroachment permit for such work has been obtained from the Public Works Director. ***Violations shall be subject to the provisions contained in Chapter 11, Violations, of the ZLDR.***
- B. ~~ENCROACHMENT PERMITS—GENERAL~~ **Encroachment Permits—General.** Any permanent or temporary construction or placement of any ~~S~~tructure or object (~~S~~ign, ~~F~~fence, etc.) within a Charleston County ~~D~~rainage ~~E~~asement or road ~~R~~ight-of-~~W~~way must receive an encroachment permit from the Public Works Director prior to the beginning of work or emplacement of ~~S~~tructure or object. ***All work within publicly owned or maintained Rights-of-Way and/or Easements, must comply with the specifications listed in Article A.6, Standard Construction Details.***
1. The encroaching entity will submit all permit requests on the Charleston County APPLICATION FOR ENCROACHMENT PERMIT FORM for review. Application fees will be in accordance with current Charleston County User Fee schedules. Permits ***applications*** will be ***reviewed and issued comments***, approved, or denied by the Public Works Director within 30 days of receipt.
  2. If, in the opinion of Charleston County, the South Carolina Department of Transportation, or any other public agency, it should ever become necessary to relocate or remove the encroachment, or any part thereof, due to the improvement, relocation, or widening of the road, ~~S~~street, or drainage system, or for any other reason, such moving or removing will be done on demand of the Public Works Director at the expense of the permittee.
  3. ***The Public Works Director may require the removal of unpermitted encroachments (driveways, piping of any kind, physical Structures, etc.). The Landowner/Developer will be notified of the illegal encroachment by letter and will be given 30 days to remove the unpermitted encroachment or obtain a permit. Should the encroachment not be removed or permitted within this timeframe, Charleston County, or an agent of the County, will remove the encroachment at the expense of the Landowner/Developer.***
  4. ***Encroachment permits may be issued with a provision requiring Charleston County staff, or agents of the County, to inspect the installation of the encroaching Structure. Failure to notify Charleston County of installation will nullify the encroachment permit.***
  5. Adequate provisions shall be made for the protection of the traveling public at all times when performing work under an encroachment permit. During the progress of the work, all necessary detours, barricades, warning ~~S~~igns, and flagmen will be provided by, and at the expense of, the permittee to ensure safety.
  6. Restoration work shall be immediately accomplished to return the road and/or drainage system to prior condition or better. The liability of the permittee will not be released until all work is inspected and approved by the Public Works Director.
  7. ***Any proposed infrastructure encroachment into a public Easement which crosses a parcel boundary shall be accompanied with written permission from affected landowner(s).***
  8. ***Encroachments shall not cause increases to surface water elevation, either upstream or downstream of the encroachment, during the 100-year, 24-hour rain event. This is further described within the Charleston County Stormwater Program Permitting Standards and Procedures Manual.***
- C. ~~TYPES OF ENCROACHMENTS WITHIN PUBLIC RIGHTS-OF-WAY AND EASEMENTS~~ **Types of Encroachments within Public Rights-of-Way and Easements.**



1. **Driveway encroachment permit applications shall be designed in accordance with Art. A.6, Standard Construction Details. Residential driveway widths shall be limited to a minimum 12 feet and maximum 20 feet. Driveways shall not be located closer to the outside travel lane of an intersection than two times the driveway width plus 22 feet (2w + 22). Driveway aprons shall be at least equal to the type of surface with which it is being connected (Pavement, rock, or earth). The permittee may be required to provide as-built information for the driveway, and up to one driveway Culvert upstream and one driveway Culvert downstream.**
2. **The piping of open conveyances shall be sized appropriately to accommodate the drainage of upstream and downstream flow. A minimum of one, four foot by four foot junction box or inlet shall be required to accept Roadway sheet flow, though more may be required at the discretion of the Public Works Director. Request for piping of roadside ditches may be rejected, at the discretion of the Public Works Director, based on site conditions.**
3. **Sprinkler Systems. SPRINKLER SYSTEMS Water-sprinkling systems shall not be permitted ~~within the public Right-of-Way or Easement without an approved encroachment permit. Each application will be reviewed on a site specific basis by the Public Works Director.~~ *allowed* within the public Right-of-Way or Easement without an approved encroachment permit. Each application will be reviewed on a site specific basis by the Public Works Director.** ~~except as specified herein. Sprinkler systems may be placed along the right of way (immediately outside the right of way) with appropriate easements conveyed to the agency responsible for such system. Charleston County will not accept responsibility for any such system. At locations where water supply lines must cross the street right of way, such facilities shall be shown on the street construction plans and specifications. Such water supply lines shall be placed a minimum of 36" below the centerline street finish grade elevation and shall be placed in conduit. Sprinkler systems may be approved at island locations within the right of way. At such locations, the curb shall be upright curb (not roll curb and gutter). The sprinkler heads shall be in a protected location as approved by the Public Works Director. An appropriate water cutoff shall be provided in an underground box outside the street right of way. Under drain systems shall be placed within islands served by an irrigation system. Encroachment permits shall be required for all sprinkler systems within the right of way.~~
4. **The installation of physical Structures (including, but not limited to, Fences, Trees, Bridges, piping, landscaping beds, roads, driveways) shall require encroachment permits. Charleston County Public Works reserves the right to deny encroachment permit applications.**
5. **Landscaping and Planting. LANDSCAPING AND PLANTING Installation of landscaping and planting shall require encroachment permits. Each application will be reviewed on a site specific basis by the Public Works Director.** ~~Any proposed landscaping and planting within a proposed publicly maintained right of way should be shown on the construction plans along with a planting schedule. Plants that may inhibit maintenance or obstruct sight distances will not be permitted. Encroachment permits shall be required for all landscaping/planting within the right of way. Planting will not be accepted by Charleston County for maintenance; if a permanent maintenance plan is not submitted, for approval by the Public Works Director, planting will not be permitted.~~
6. **Subdivision Entrance Signs. SUBDIVISION ENTRANCE SIGNS Subdivision name signs at entrances to ~~D~~developments shall be in compliance with ~~Chapter 11~~ **Chapter 9, Development Standards**. Building permits must be obtained prior to installation of such entrance signs. Subdivision name ~~S~~signs will be located outside the road ~~R~~Right-of-~~W~~Way except those ~~S~~signs located within a ~~R~~Roadway median. All ~~S~~signs shall be located outside of the **horizontal sight easement distance**. Such ~~S~~signs, foundations for future ~~S~~signs, and conduit for electrification of ~~S~~signs shall be shown on the construction plans and an encroachment permit obtained prior to construction. Approval of the plans by the Public Works Director does not imply or guarantee the approval of other entities.**
7. **Utilities. UTILITIES The proposed concept for the location of all underground ~~U~~utility lines, including water, sanitary ~~S~~sewer, gas, electrical, telephone, or television cables, shall be shown utilizing typical ~~S~~street plans, cross sections, and profiles. Non-typical locations, such as areas around ~~T~~Trees, shall be shown in sufficient detail for review and approval. Utility lines shall be located so that they will not interfere with the proper functioning of the drainage system. For ~~S~~Streets where the ~~C~~curb and gutter section is used, underground ~~U~~utility main lines shall be a minimum of 5' **feet** behind the back of the ~~C~~curb. For ~~S~~Streets where the swale ditch section is used, ~~U~~utility main lines shall be installed not less than 15' **feet** from the centerline of the street and not less than 5' **feet** from the edge of the pavement.**
  - a. **Utility encroachments shall only be allowed within roads meeting the classifications of Secondary Rural Road, Primary Rural Road, Secondary County Road, and Primary County Road.**



- b. The minimum allowable cover over the top of the **U**tility encroachment or other apparatus shall be 36" **inches**. Deviations to the 36" **inches** cover requirement must be presented in the cross section format along with a written justification and submitted to the Public Works Director for approval.
- c. **Proposed Utilities and existing stormwater infrastructure must be vertically separated by a minimum of 36 inches. Deviations from this requirement must be presented in the cross section format along with a written justification and submitted to the Public Works Director for approval. Additional Utility protection, or notification, may be required.**
- d. No work on **U**tility lines within the limits of the proposed publicly- maintained **R**ights-of-**W**ay shall commence until the **S**treet plans showing the proposed locations of the **U**tility lines have been approved. In case any **U**tility location is not provided, the **D**eveloper shall be responsible for notifying the **U**tility that installation work within the proposed publicly- maintained **R**ight-of-**W**ay or **d**rainage **E**asement will require the approval of the Public Works Director.
- e. Unapproved **U**tility work within the **R**ight-of-**W**ay or **d**rainage **E**asement will result in an immediate supervision of inspections until such time as the **U**tility plans have been reviewed and approved by the Public Works Director.
- f. Ditches and trenches dug within the street **R**ight-of-**W**ay for **U**utilities and/or other purposes shall be properly backfilled **per Art. A.6, Standard Construction Details**. Backfill material shall be select material, mechanically compacted in 6-**inch**" layers **or flowable fill**. Backfill material shall be mixed or wetted as required by the Public Works Director. Backfill under areas to be paved or areas within 5' **feet** of pavement shall be compacted to no less than 95**8** percent of maximum **D**ensity. Remaining areas shall be compacted to 90 percent of maximum **D**ensity. ASTM D 1557 Method A will determine maximum densities.
- g. Where **U**utilities have been designed to be placed at a depth or location such that the repair of that **U**tility would adversely impact the flow of vehicular traffic, the **D**esign **P**rofessional shall either address such concerns to the satisfaction of the Public Works Director or redesign the **U**tility layout. **At Grade, or above Grade infrastructure, shall not be placed within travel way, or drainage path, unless specifically approved by the encroachment permit. The Landowner/Developer/Utility Provider may be required to obtain additional Right-of-Way, or Easement, to accommodate proposed utility.**
- h. Utilities crossing under the **S**treet shall be at an angle of not more than 30 degrees from the perpendicular to the street.
- i. The jetting or uncontrolled tunneling of **U**tility lines under a **P**aved **S**treet is not permitted. The cutting of the pavement is not permitted except under extreme circumstances and only as permitted by the Public Works Director.
- j. Where **U**utilities are designed to be placed at a depth or location such that the repair of that **U**tility would adversely impact the flow of vehicular traffic, the **D**esign **P**rofessional shall either address such concerns to the satisfaction of the Public Works Director or redesign the utility layout.
- k. Proposed **S**treet lighting facilities shall be shown on the **S**treet construction plans submitted to the Department of Public Works for approval. Street light poles shall be placed outside the **R**ight-of-**W**ay unless specifically approved by the Public Works Director.
- l. Fire hydrants shall be shown on the construction plans, located at the edge of the **R**ight-of-**W**ay within a few feet of the property corner of two adjoining **L**ots, or located as otherwise approved by the Public Works Director.
- m. When dry fire hydrants are required, permanent access shall be shown on the construction plans. Access design must provide adequate space and suitable surface materials for emergency vehicle maneuverability. The **D**esign **P**rofessional shall submit written approval of the design from the local fire service provider.
- n. The Public Works Director will only permit **U**utilities other than drainage facilities within **d**rainage **E**asements upon specific written authorization.



- o. Encroachments of storm drainage pipes greater than 15 inches will require outfall protection with side slope stabilization for the full width of the ditch, swale, or canal (top of bank to top of bank), and upstream and downstream of the encroachment for a minimum of 15 feet or greater in each direction, dependent on site conditions, and velocity of stormwater.*

D. **Zoning Permits.** ~~ZONING PERMITS~~ The Charleston County Zoning Administrator **The Public Works Director** will review encroachment permit applications for **S**igns ~~and~~ **S**tructures within public **R**ights-of-**W**ay for compliance with this **O**rdinance. No encroachment permits for **S**igns, other than traffic control **S**igns, will be issued without the written approval of the ~~Zoning Administrator~~ **Public Works Director. Issuance of Zoning Permit approval** ~~Approval by the Zoning Administrator~~ does not ensure approval by the Public Works Director.

E. **Restoration of Roads.** ~~RESTORATION OF ROADS~~ Restoration is intended to aid proper County road maintenance. Any entity performing work within a County **R**ight-of-**W**ay that will damage an existing road, drainage system, or **S**tructure must ensure that the systems will be returned to a condition equal to or better than that prior to proposed/current construction work.

1. Any **U**tility, public agency, or other entity or person performing work in a County **R**ight-of-**W**ay or **E**asement must obtain an encroachment permit prior to beginning any construction. The **A**pplicant shall furnish information on the encroachment permit application detailing all work. Details on restoration of all disturbed areas or **U**tilities will also be provided on the encroachment permit application.
2. Restoration work will return the road, drainage system, and any impacted **U**tilities to prior condition or better. The liability of the permittee will not be released until all work is inspected and approved by the Public Works Director.

## ARTICLE A.6 STANDARD CONSTRUCTION DETAILS

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### Sec. A.6.1 Introduction

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This section is intended to provide a guideline for the preparation of cross sections, construction details, and miscellaneous pictorial data required for the completion of the construction plans and specifications for road and drainage systems that are intended to be in the maintenance systems of the County, or in **D**evelopments that must be constructed to County standards. These detail drawings are representative of the minimum standards required by the County. However, the design engineer is responsible for the preparation of detail drawings showing clearly what is actually expected to be constructed on the ground.

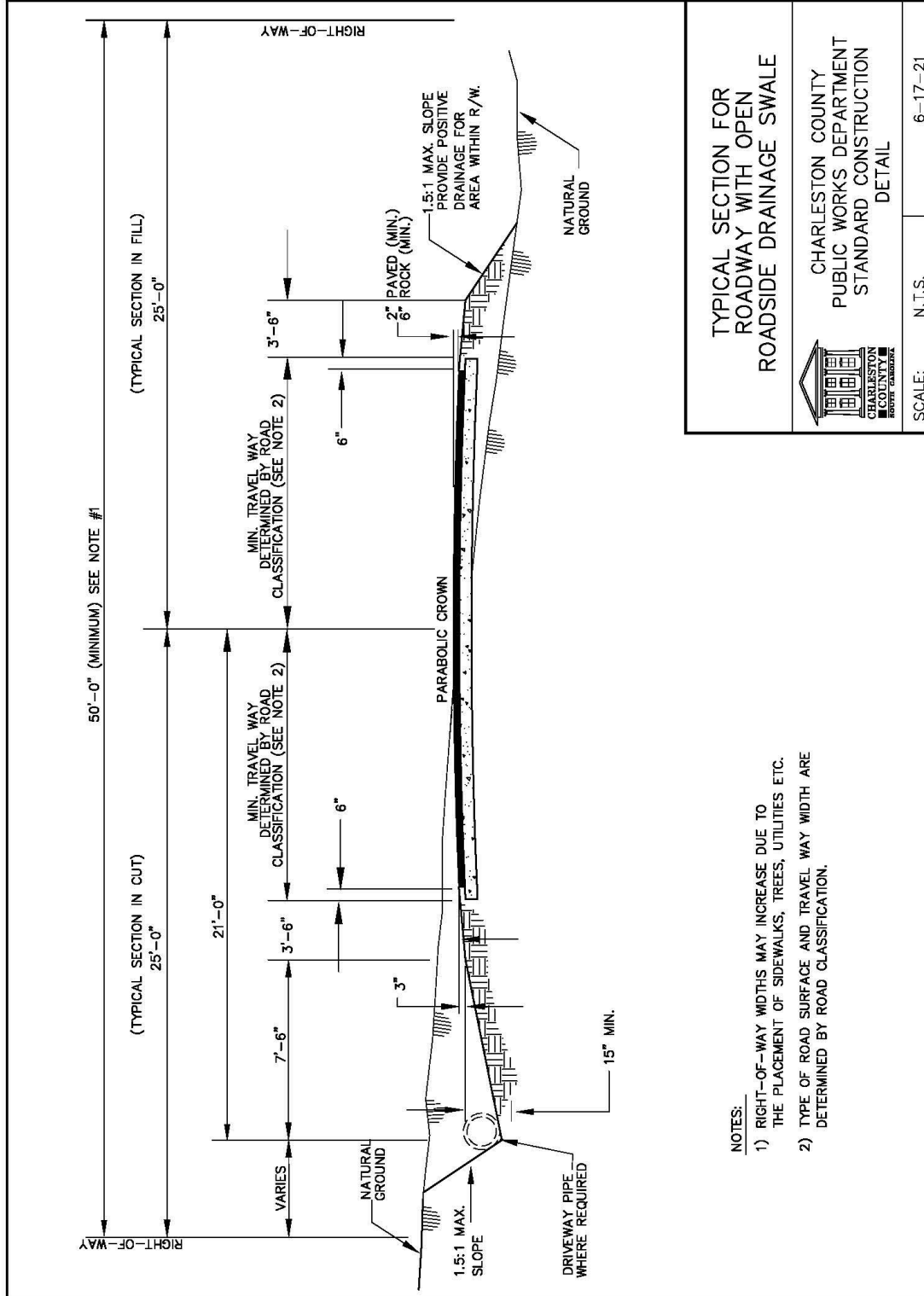
### Sec. A.6.2 Index ~~o~~ **f** Drawings

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- A.E.1** Typical section for **R**oadway with open roadside drainage swale
- A.E.2** Typical section for **R**oadway with concrete roll curb and gutter
- A.E.3** Typical section for **R**oadway with median island
- ~~Typical section for roadway with asphalt swale~~
- ~~Typical section for roadway with inverted crown~~
- A.E.4** Pavement cut for installation of **U**tilities
- A.E.5** Urban **S**treet typical **C**eul-de-**S**sac plan view
- A.E.6** Typical concrete driveway plan view and profile (**R**oadway with open ditches)
- A.E.7** Typical asphalt driveway plan view and profile (**R**oadway with open ditches)
- A.E.8** Typical section concrete **C**urb and gutter



- A.E.9** Concrete gutter at street intersection plan view
- A.E.10** Concrete gutter at **S**street intersection **standard construction** reinforcing details
- A.E.11** Typical sidewalk section with **C**curb and gutter  
~~Typical sidewalk section with roadside ditch~~
- A.E.12** Masonry curb inlet drainage structure detail
- A.E.13** Masonry junction box detail
- A.E.14** Grate type yard inlet detail
- A.E.15** Type Nine yard inlet detail  
~~Pre-cast concrete storm drainage manhole~~
- A.E.16** Typical section - trapezoidal ditch
- A.E.17** Typical section— swale type ditch
- A.E.18** Pipe outlet to ditch with concrete slab
- A.E.19** ~~Pipe outlet to ditch with riprap~~ **Typical rip-rap outfall protection detail**
- A.E.20** Rip-rap detail at end of pipe
- A.E.21** Rip-rap detail at intersection of ditches
- A.E.22** Rip-rap detail at bend in ditch
- A.E.23** Typical **S**street name **S**sign installation
- A.E.24** Horizontal sight distance detail
- A.E.25** **Standard Street name Sign and specifications**
- A.E.26** **As-Built Checklist**



**NOTES:**

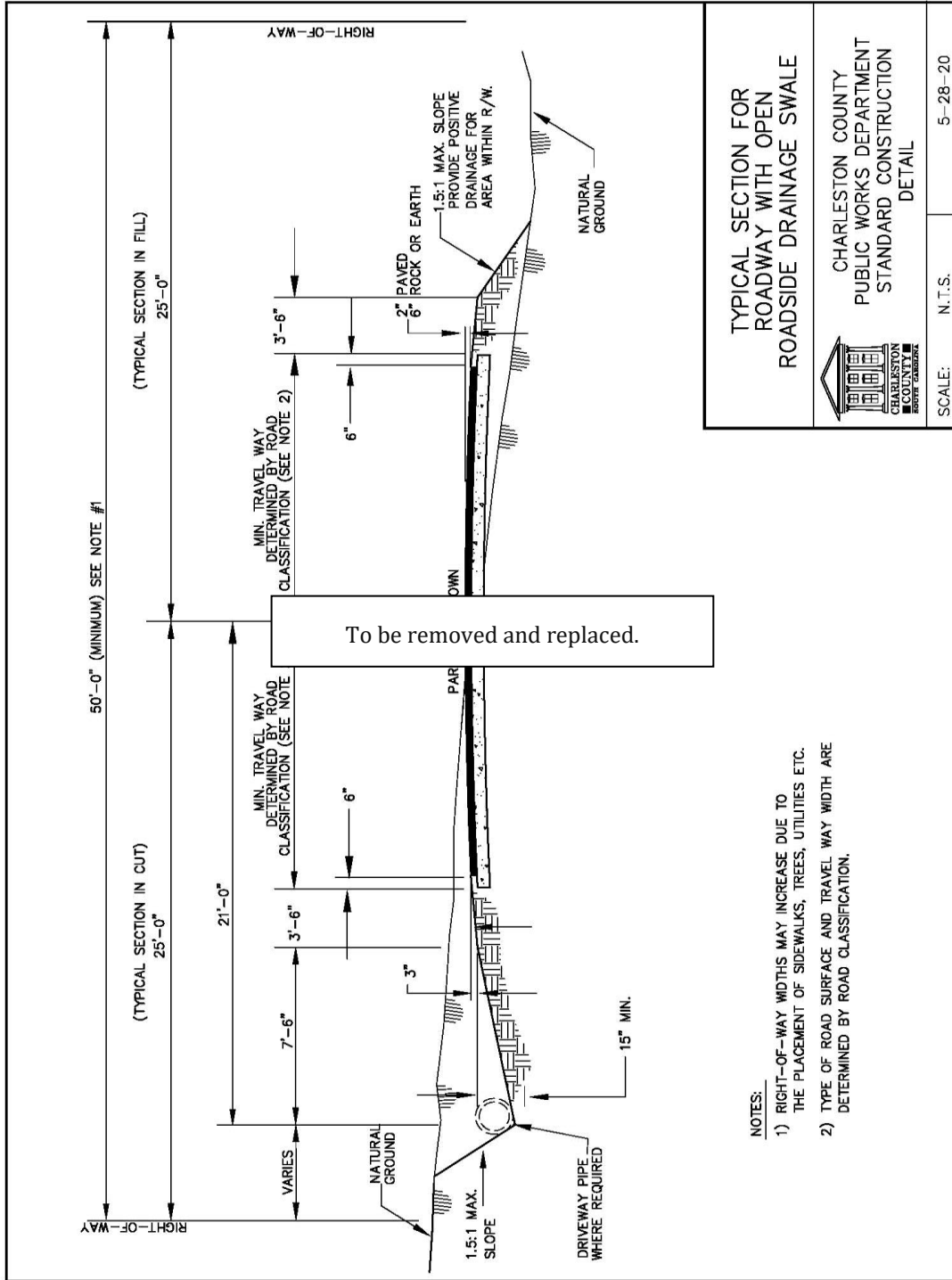
- 1) RIGHT-OF-WAY WIDTHS MAY INCREASE DUE TO THE PLACEMENT OF SIDEWALKS, TREES, UTILITIES ETC.
- 2) TYPE OF ROAD SURFACE AND TRAVEL WAY WIDTH ARE DETERMINED BY ROAD CLASSIFICATION.

**TYPICAL SECTION FOR  
ROADWAY WITH OPEN  
ROADSIDE DRAINAGE SWALE**

CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD CONSTRUCTION  
DETAIL

SCALE: N.T.S. 6-17-21





TYPICAL SECTION FOR  
ROADWAY WITH OPEN  
ROADSIDE DRAINAGE SWALE

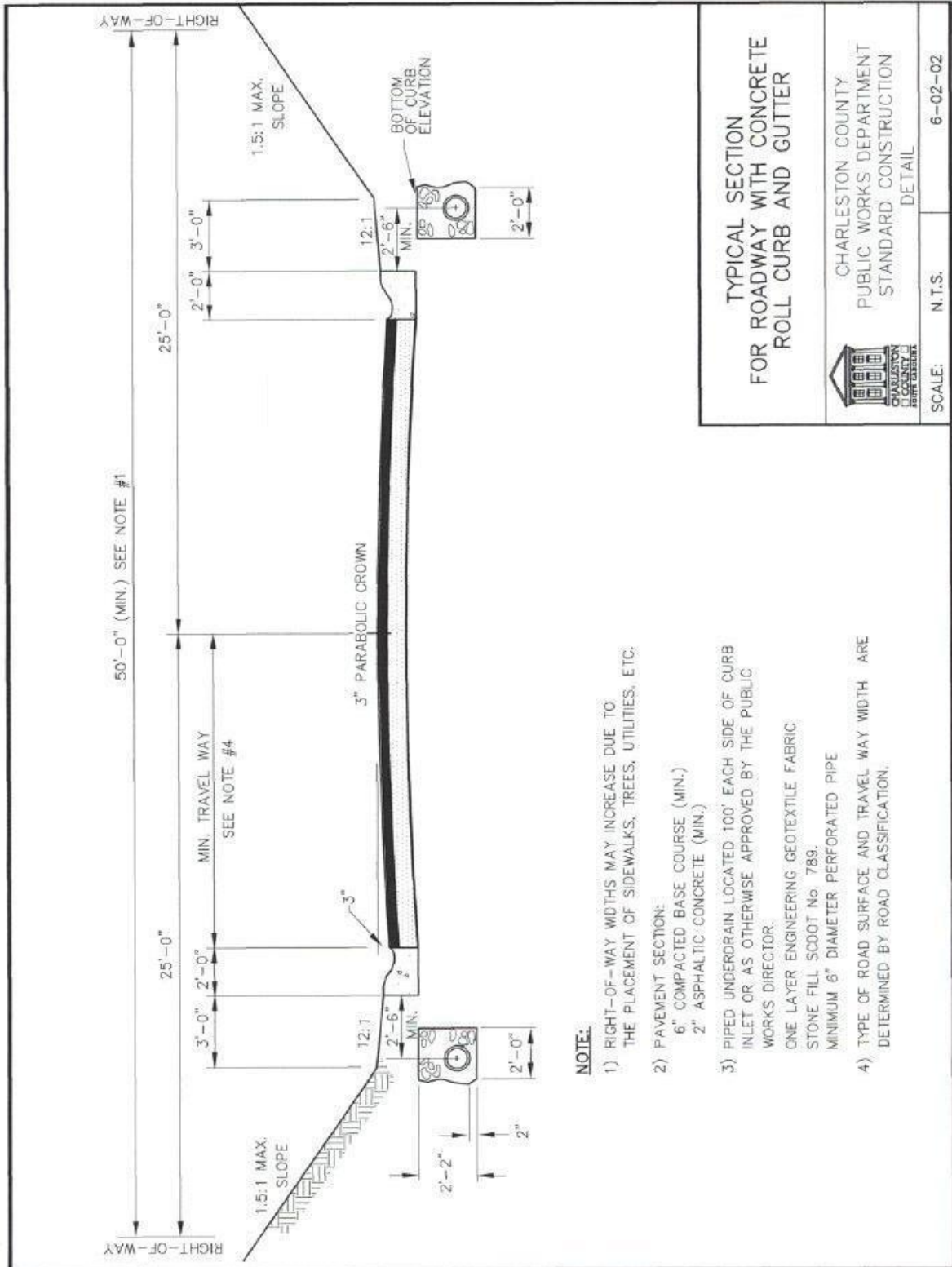


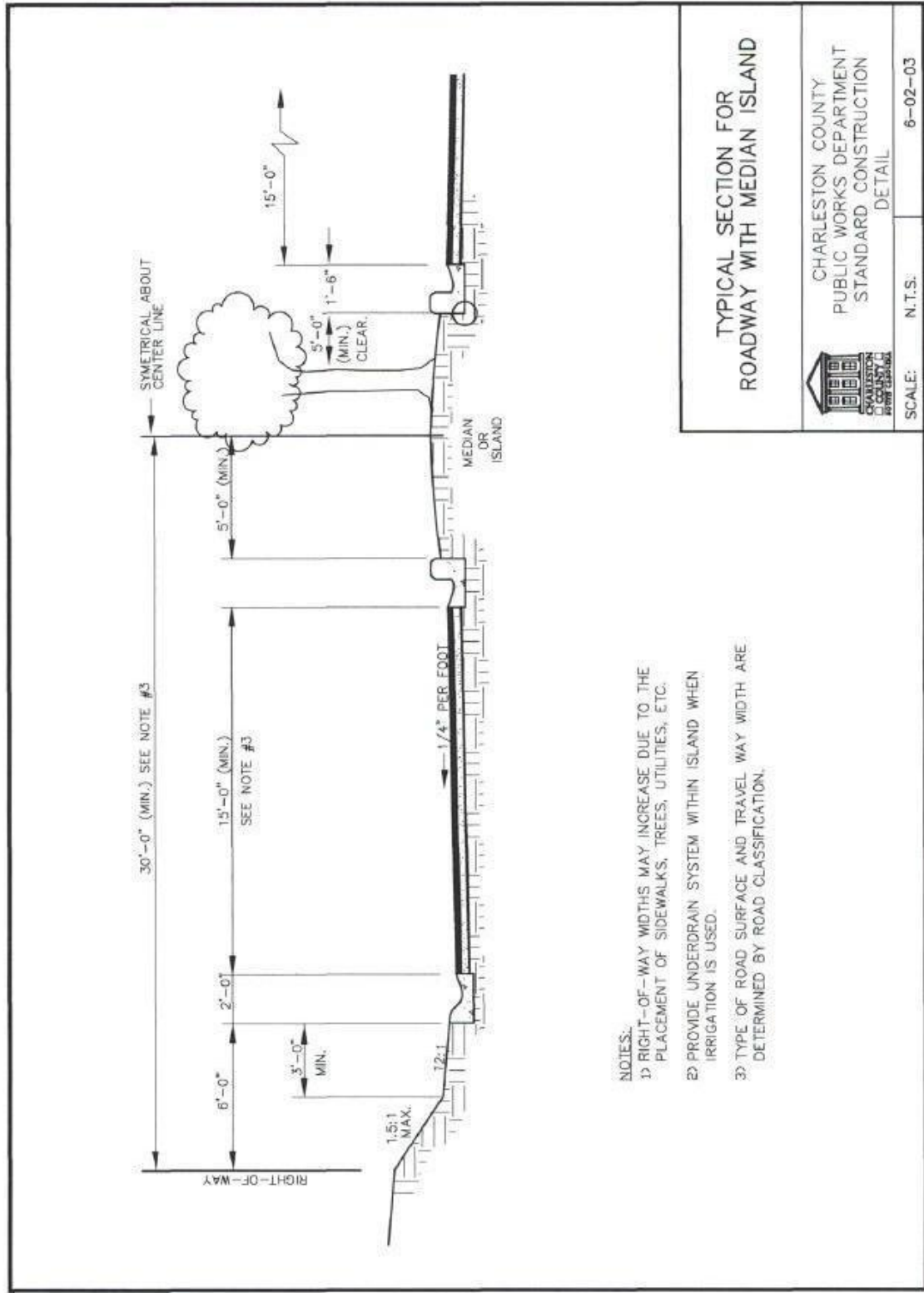
CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD CONSTRUCTION  
DETAIL

SCALE: N.T.S. 5-28-20

NOTES:

- 1) RIGHT-OF-WAY WIDTHS MAY INCREASE DUE TO THE PLACEMENT OF SIDEWALKS, TREES, UTILITIES ETC.
- 2) TYPE OF ROAD SURFACE AND TRAVEL WAY WIDTH ARE DETERMINED BY ROAD CLASSIFICATION.





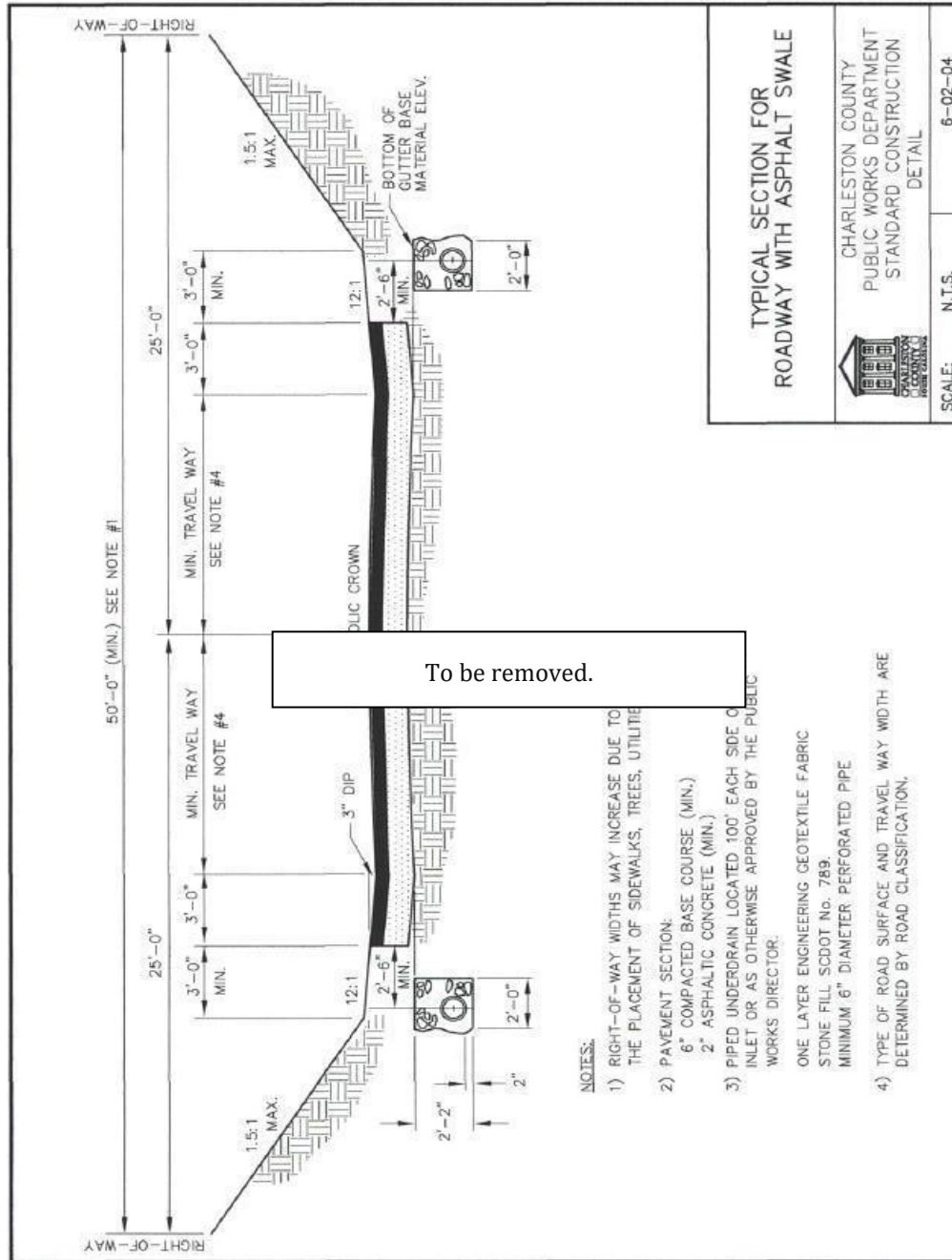
- NOTES:
- 1) RIGHT-OF-WAY WIDTHS MAY INCREASE DUE TO THE PLACEMENT OF SIDEWALKS, TREES, UTILITIES, ETC.
  - 2) PROVIDE UNDERDRAIN SYSTEM WITHIN ISLAND WHEN IRRIGATION IS USED.
  - 3) TYPE OF ROAD SURFACE AND TRAVEL WAY WIDTH ARE DETERMINED BY ROAD CLASSIFICATION.

TYPICAL SECTION FOR  
ROADWAY WITH MEDIAN ISLAND



CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD CONSTRUCTION  
DETAIL

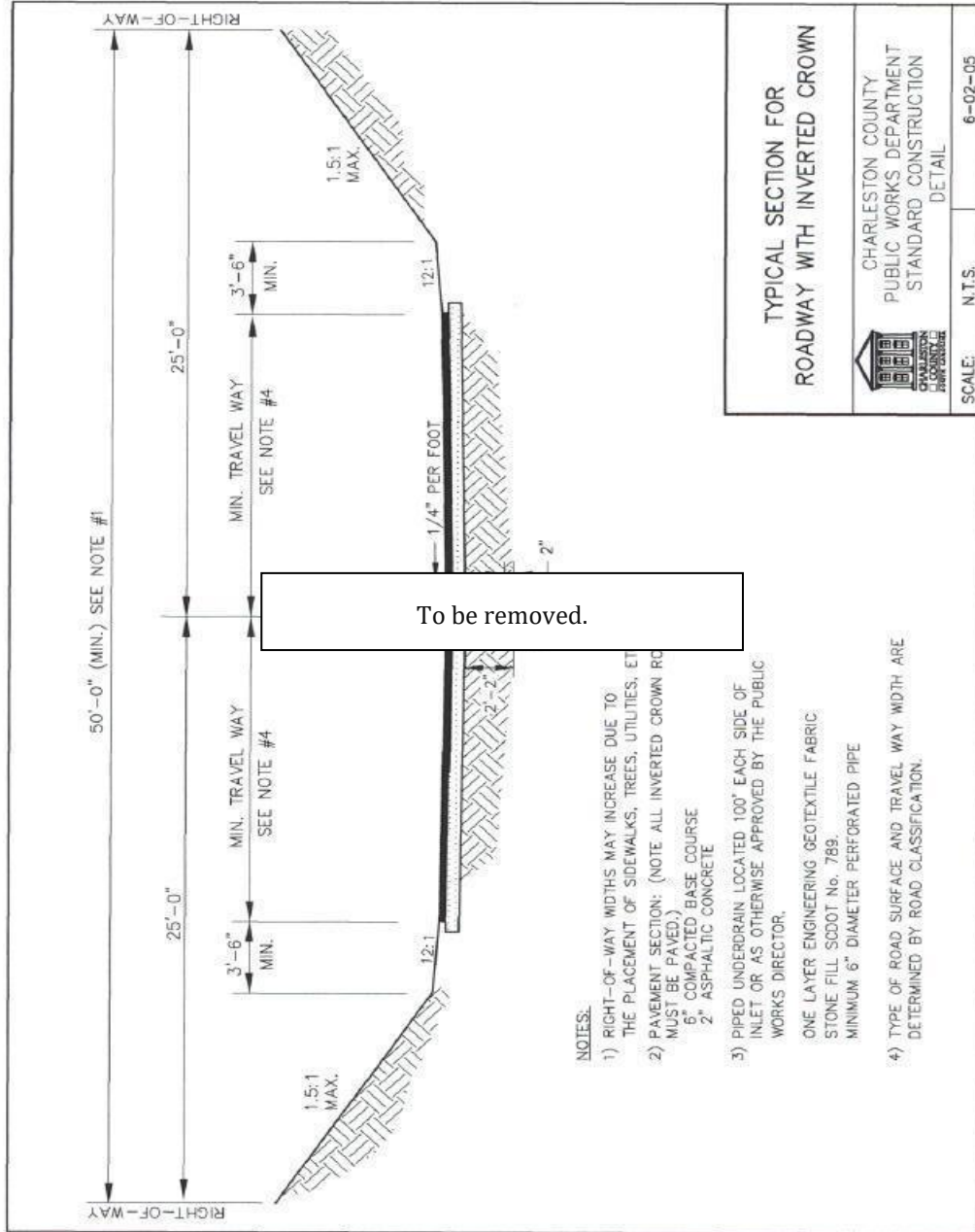
SCALE: N.T.S. 6-02-03



**TYPICAL SECTION FOR ROADWAY WITH ASPHALT SWALE**

CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD CONSTRUCTION  
DETAIL

SCALE: N.T.S. 6-02-04



**NOTES:**

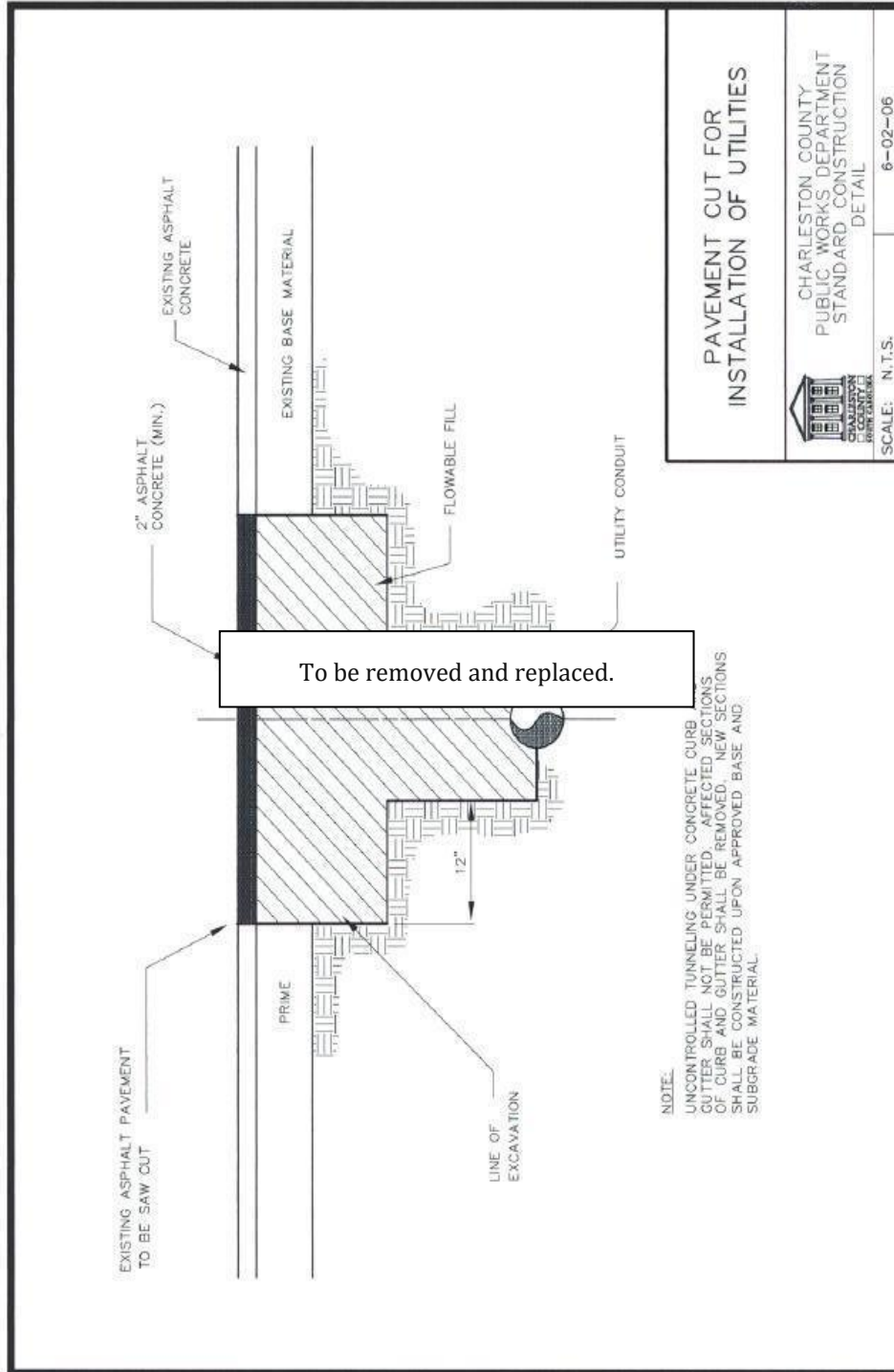
- 1) RIGHT-OF-WAY WIDTHS MAY INCREASE DUE TO THE PLACEMENT OF SIDEWALKS, TREES, UTILITIES, ETC.
- 2) PAVEMENT SECTION: (NOTE ALL INVERTED CROWN ROADS MUST BE PAVED.)  
 6" COMPACTED BASE COURSE  
 2" ASPHALTIC CONCRETE
- 3) PIPED UNDERDRAIN LOCATED 100" EACH SIDE OF INLET OR AS OTHERWISE APPROVED BY THE PUBLIC WORKS DIRECTOR.  
 ONE LAYER ENGINEERING GEOTEXTILE FABRIC  
 STONE FILL SCODOT No. 789.  
 MINIMUM 6" DIAMETER PERFORATED PIPE
- 4) TYPE OF ROAD SURFACE AND TRAVEL WAY WIDTH ARE DETERMINED BY ROAD CLASSIFICATION.

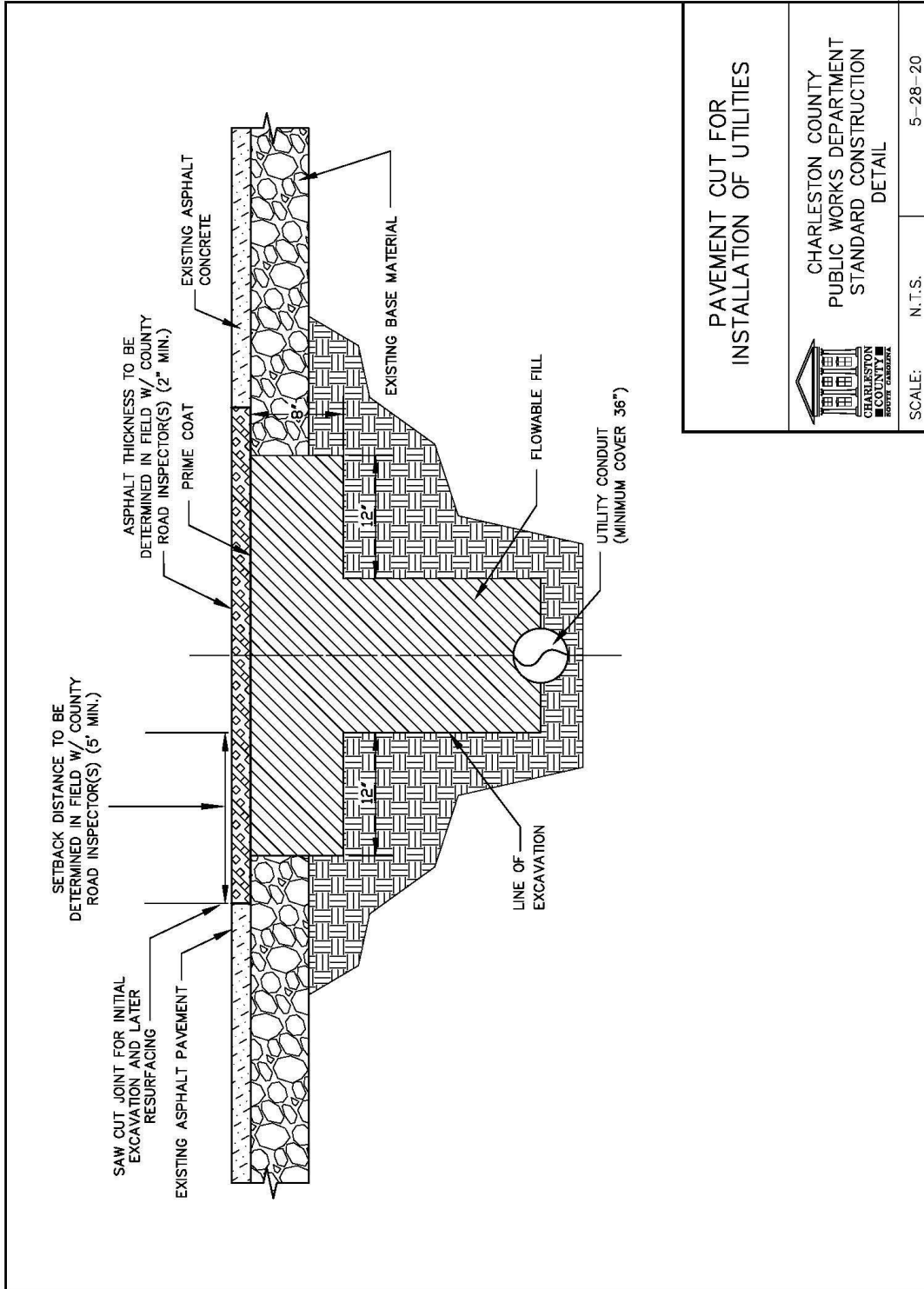
**TYPICAL SECTION FOR  
ROADWAY WITH INVERTED CROWN**




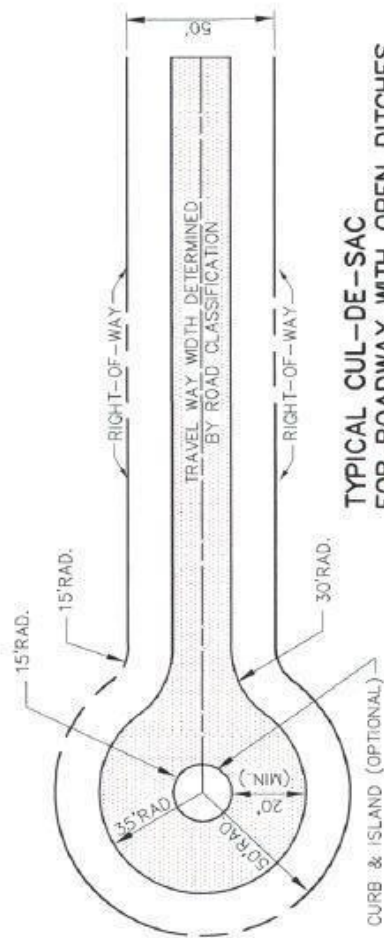
CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD CONSTRUCTION  
DETAIL

SCALE: N.T.S. 6-02-05

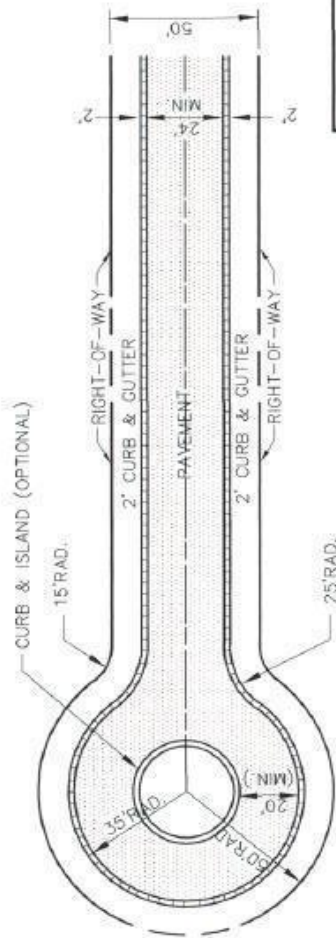




<b>PAVEMENT CUT FOR INSTALLATION OF UTILITIES</b>	
 CHARLESTON COUNTY PUBLIC WORKS DEPARTMENT STANDARD CONSTRUCTION DETAIL	
SCALE: N.T.S.	5-28-20



TYPICAL CUL-DE-SAC FOR ROADWAY WITH OPEN DITCHES



TYPICAL CUL-DE-SAC FOR ROADWAY WITH ROLL CURB AND GUTTER

URBAN STREET  
TYPICAL CUL-DE-SAC  
PLAN VIEW

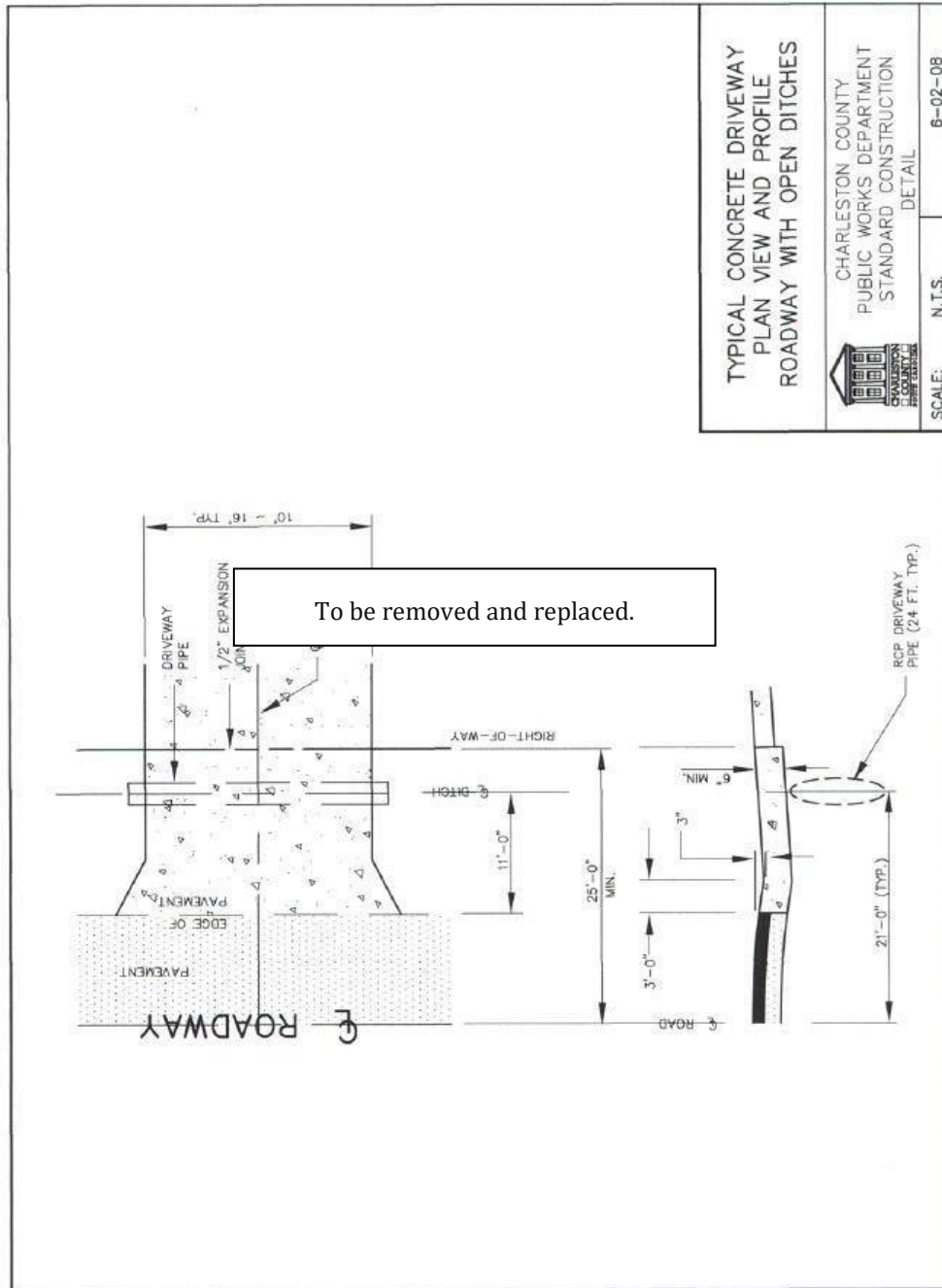


CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD CONSTRUCTION  
DETAIL

SCALE: N.T.S.

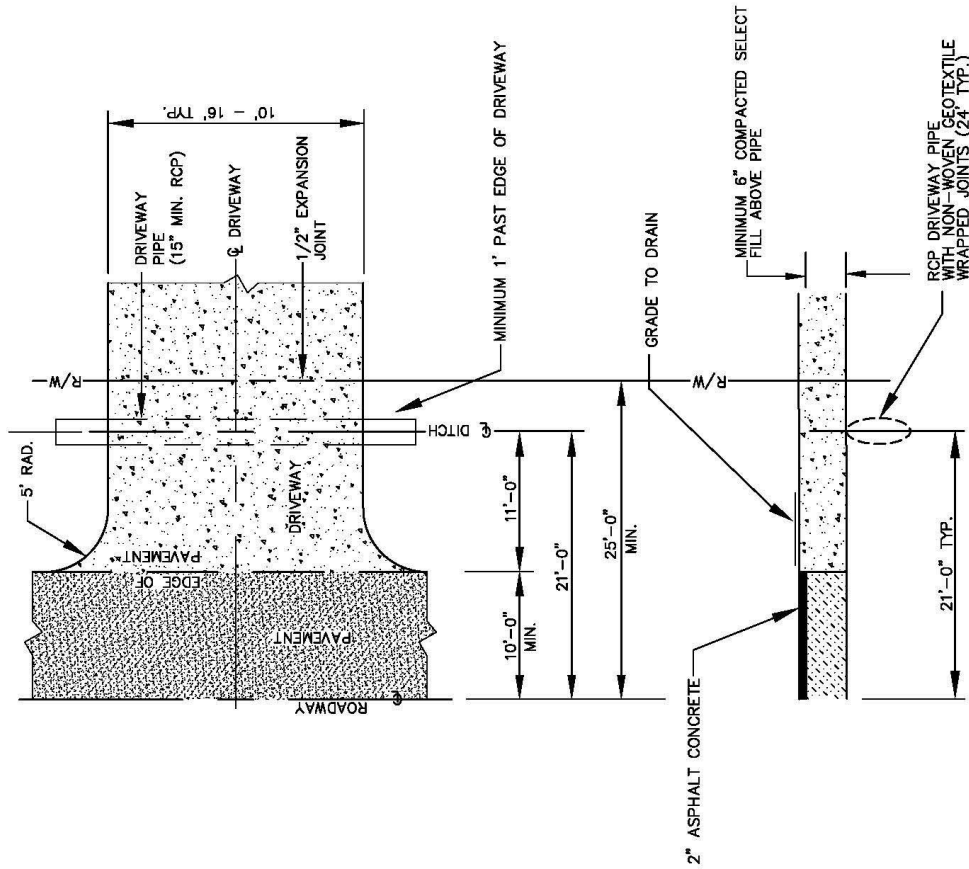
6-02-07







- NOTES:**
1. USE ONLY PIPE CLASSES III OR GREATER.
  2. USE PIPE AND JOINT MATERIAL FROM A MANUFACTURER COMBINATION SHOWN ON SCDDOT, "QUALIFIED PRODUCT LIST 69".
  3. REFER TO MOST RECENT SCDDOT STANDARDS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

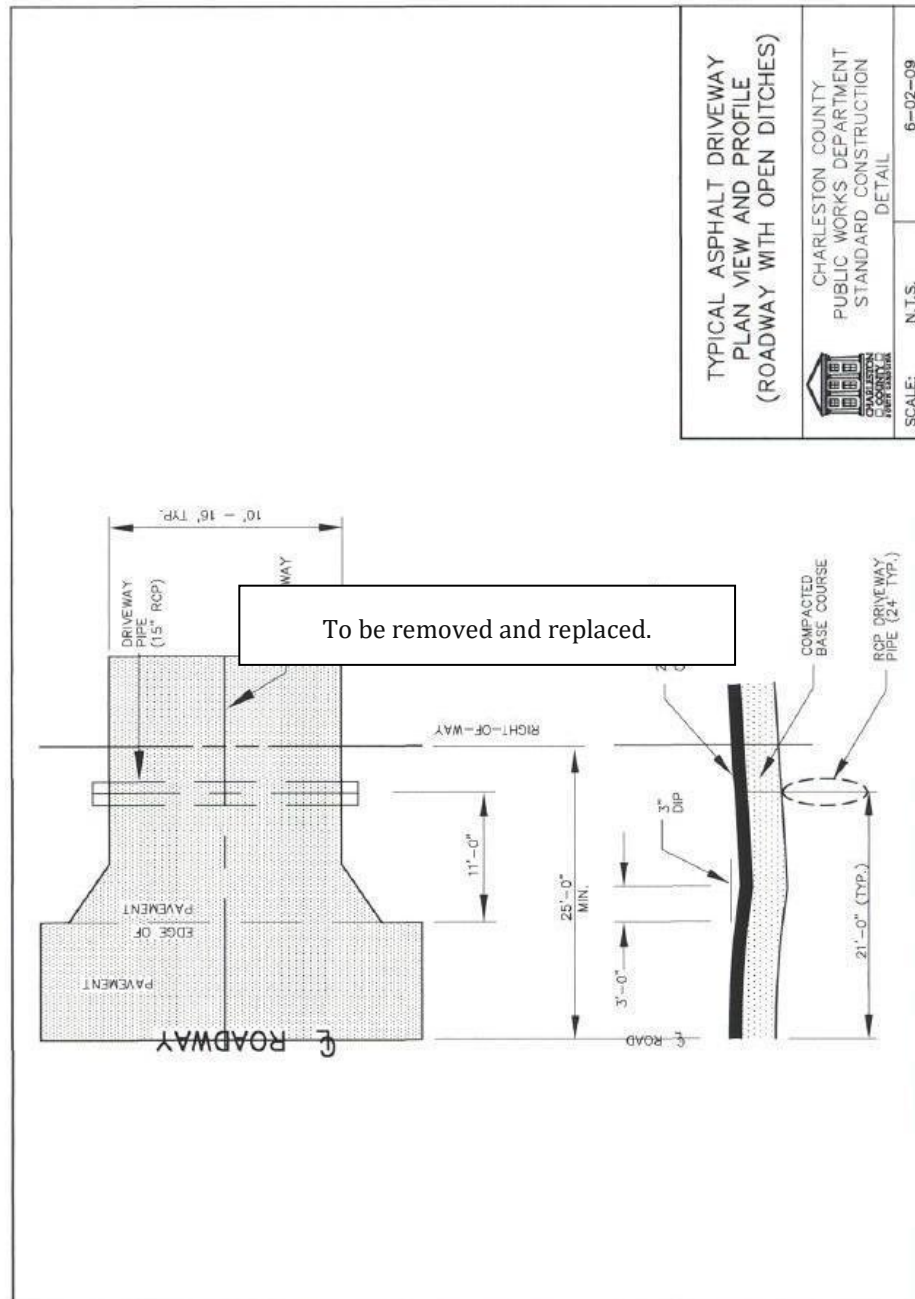


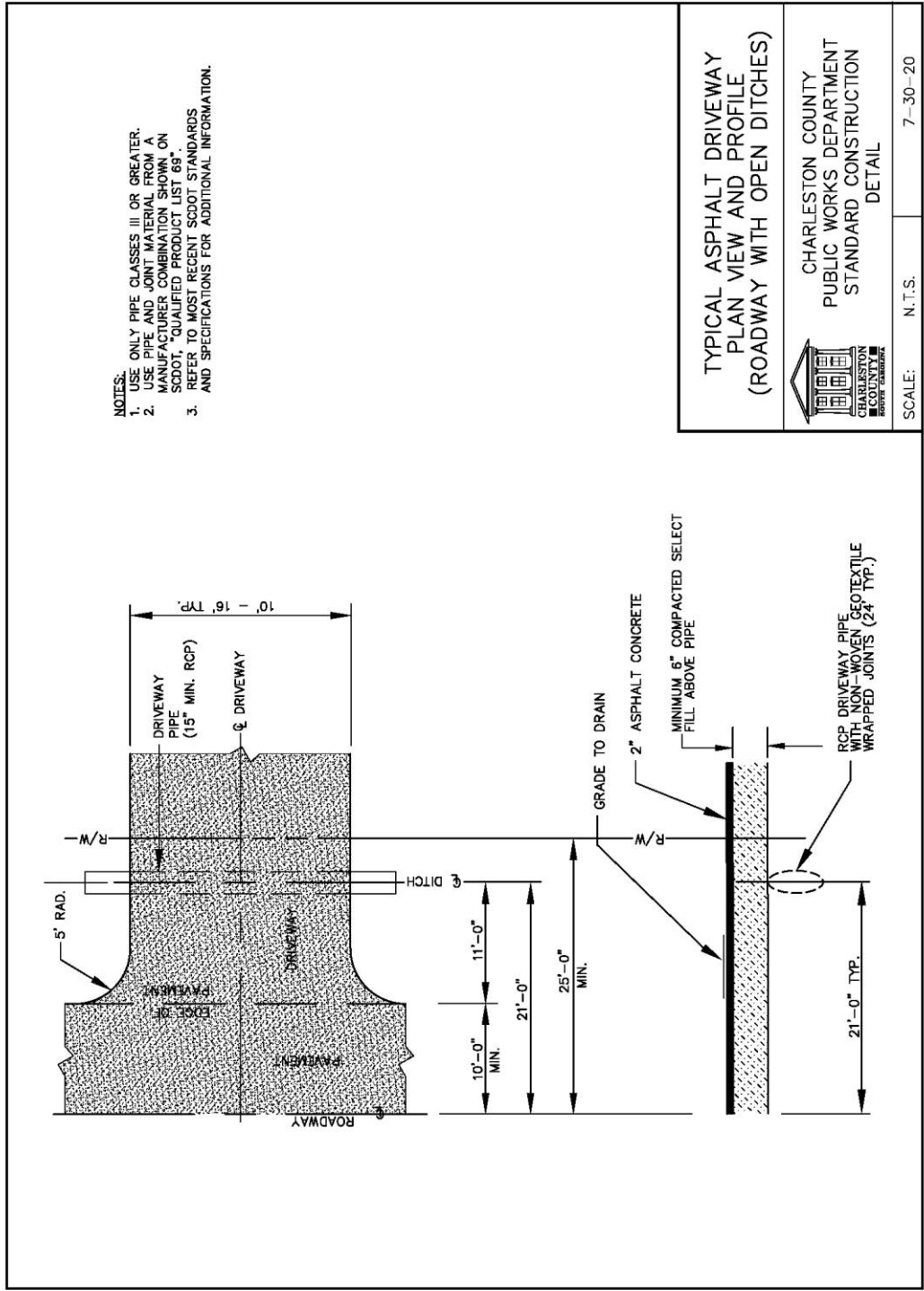
**TYPICAL CONCRETE DRIVEWAY  
PLAN VIEW AND PROFILE  
(ROADWAY WITH OPEN DITCHES)**

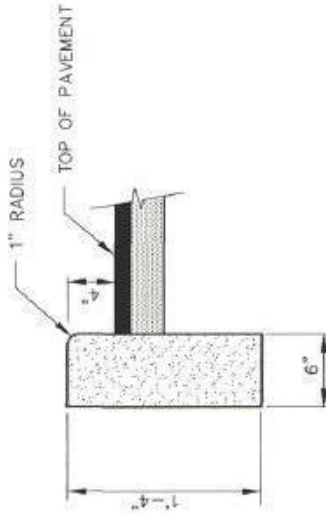


CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD CONSTRUCTION  
DETAIL

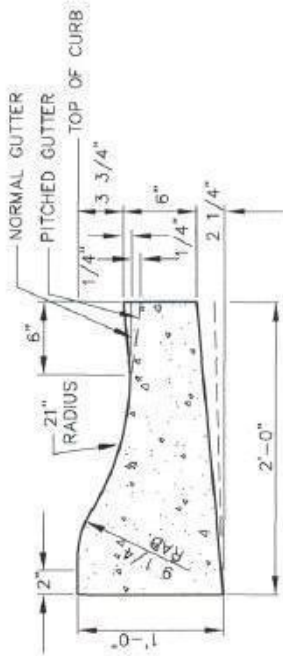
SCALE: N.T.S. 7-30-20





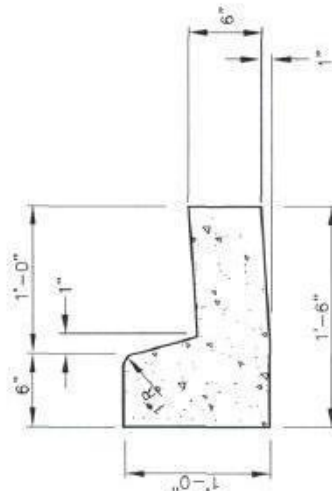


FOR USE ON ISLAND  
SECTIONS ONLY



NOTE:

10' MAXIMUM BETWEEN SCORE JOINTS.  
50' MAXIMUM BETWEEN EXPANSION JOINTS.

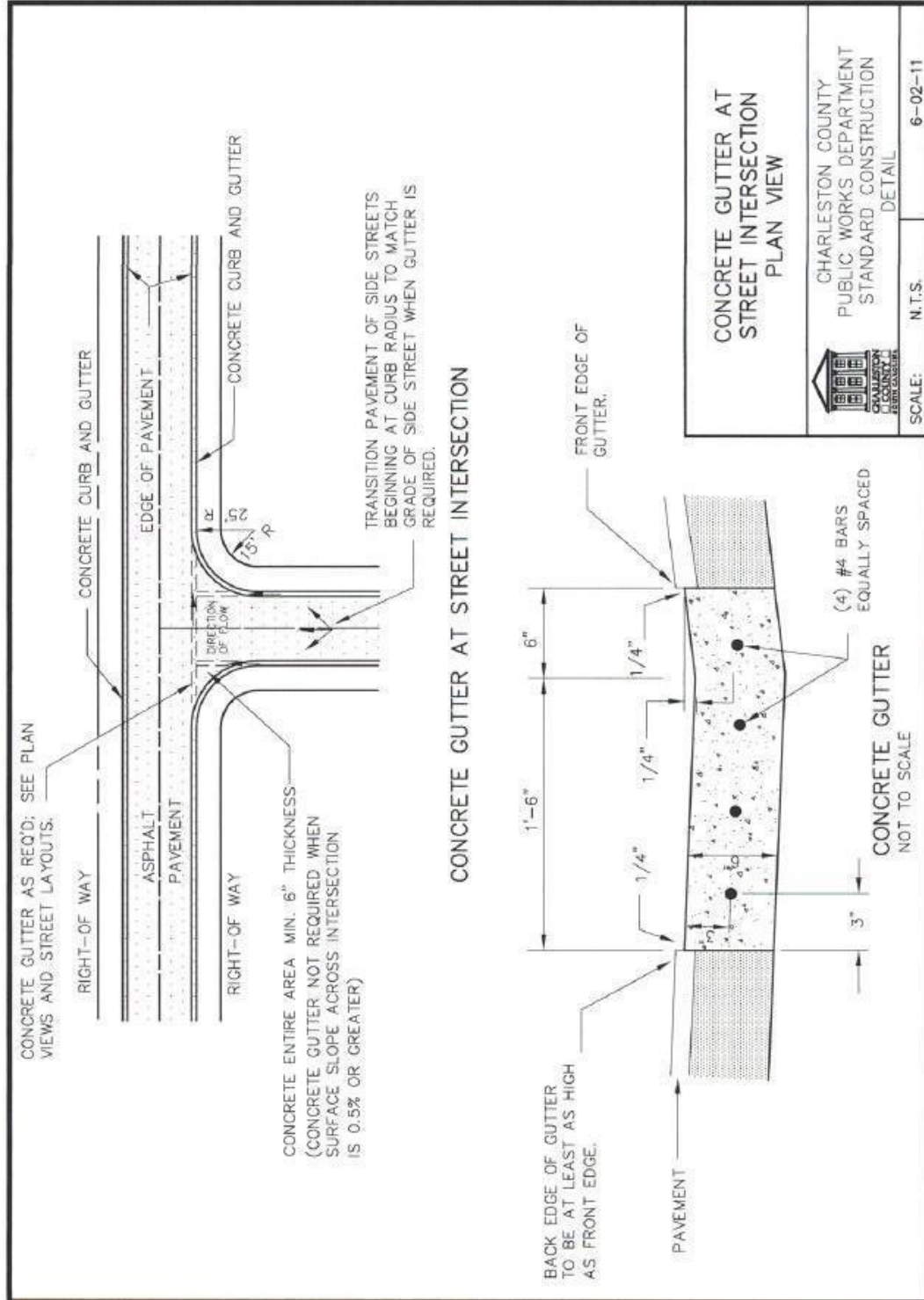


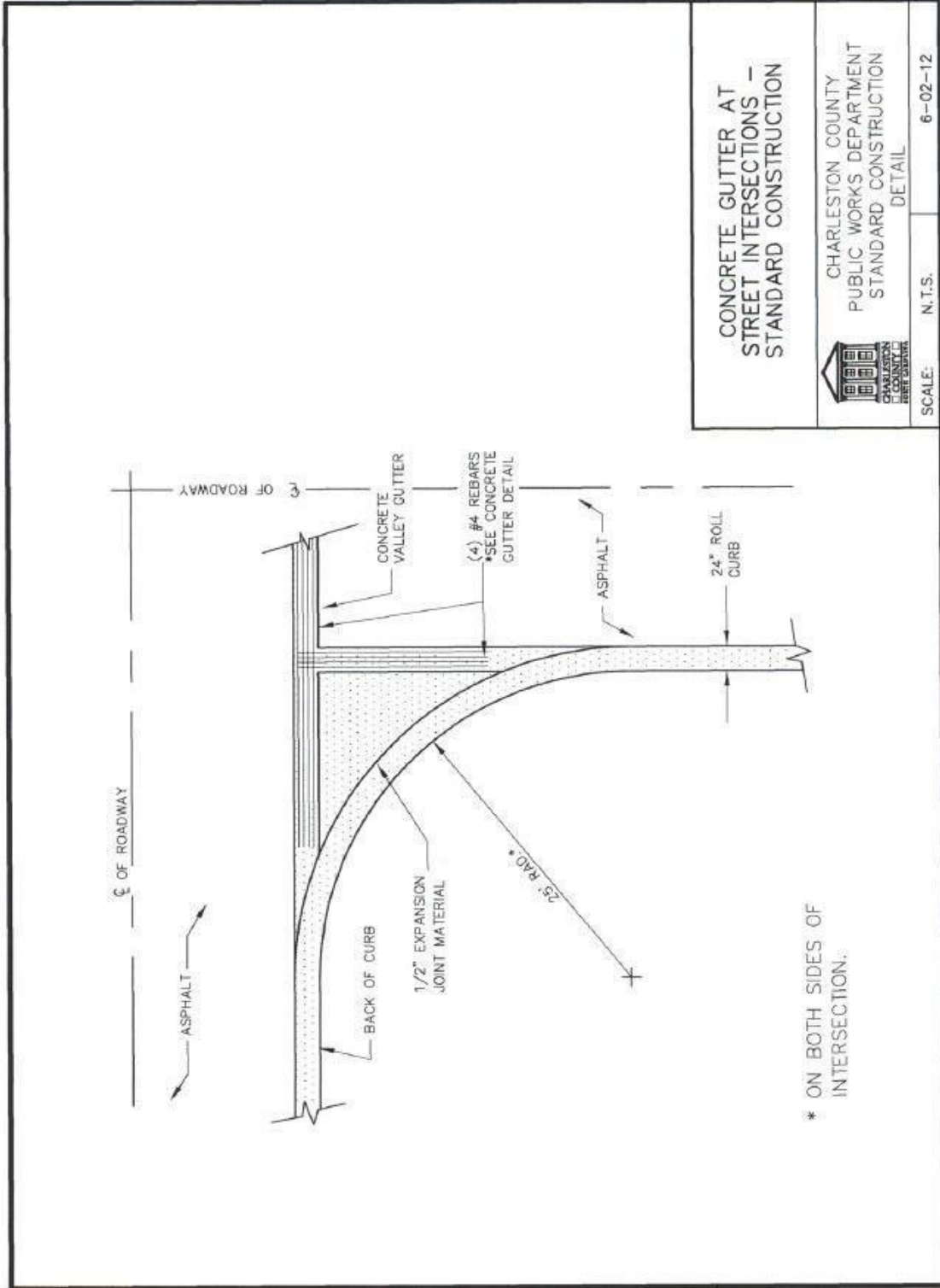
TYPICAL SECTION  
CURB AND GUTTER

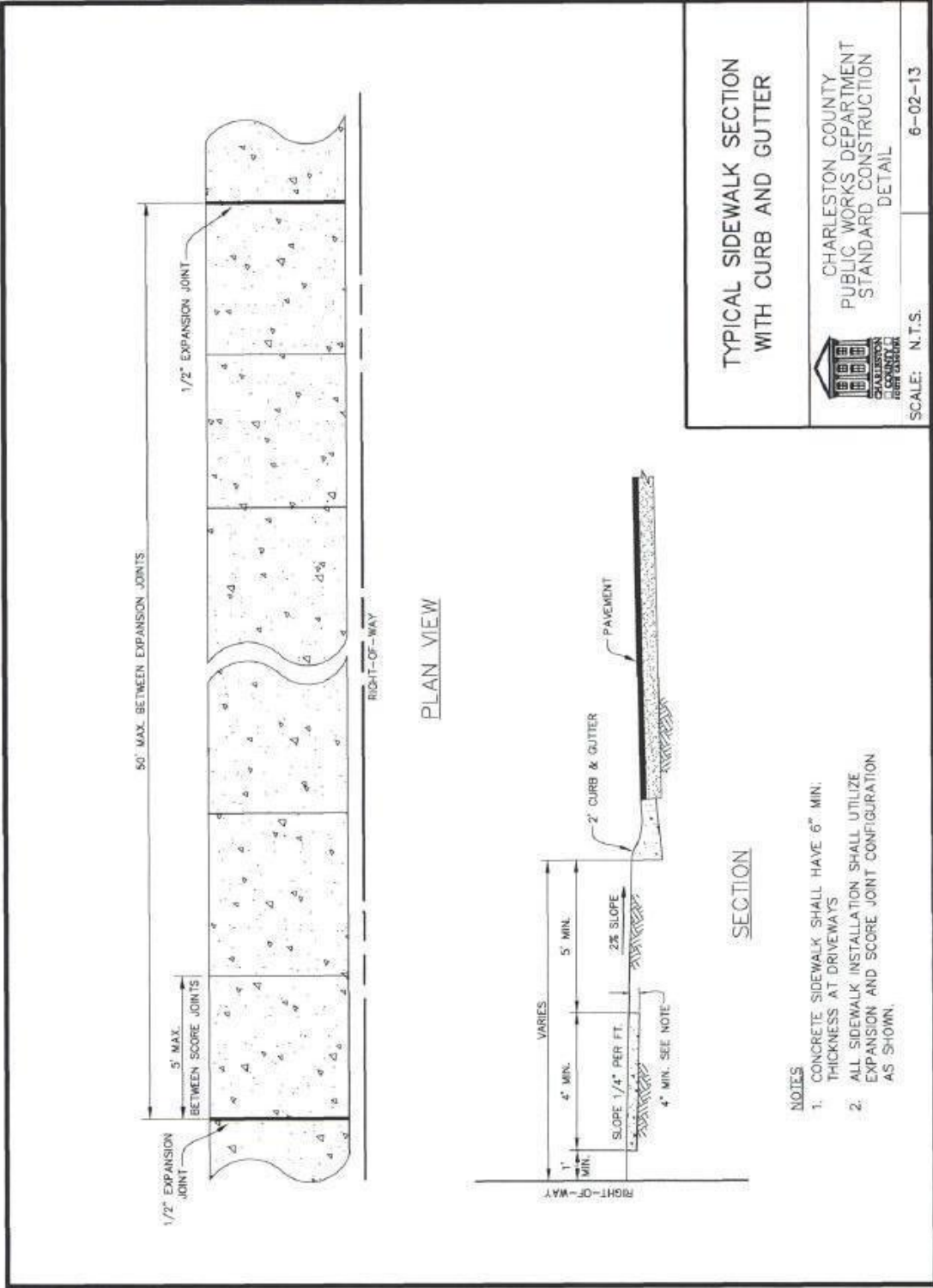


CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD CONSTRUCTION  
DETAIL

SCALE: N.T.S. 6-02-10







TYPICAL SIDEWALK SECTION WITH CURB AND GUTTER

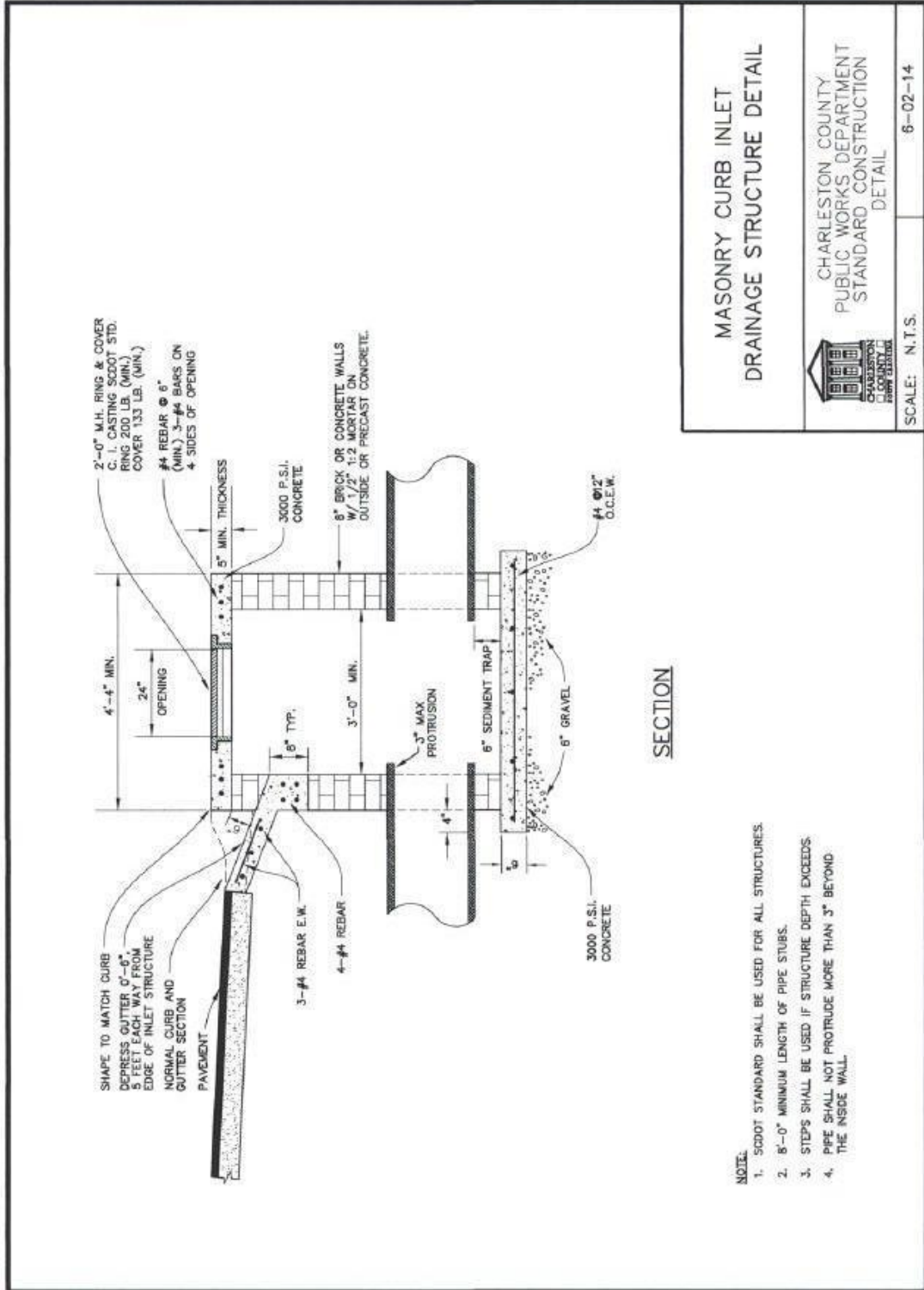
CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD CONSTRUCTION  
DETAIL



SCALE: N.T.S. 6-02-13

- NOTES
1. CONCRETE SIDEWALK SHALL HAVE 6" MIN. THICKNESS AT DRIVEWAYS
  2. ALL SIDEWALK INSTALLATION SHALL UTILIZE EXPANSION AND SCORE JOINT CONFIGURATION AS SHOWN.



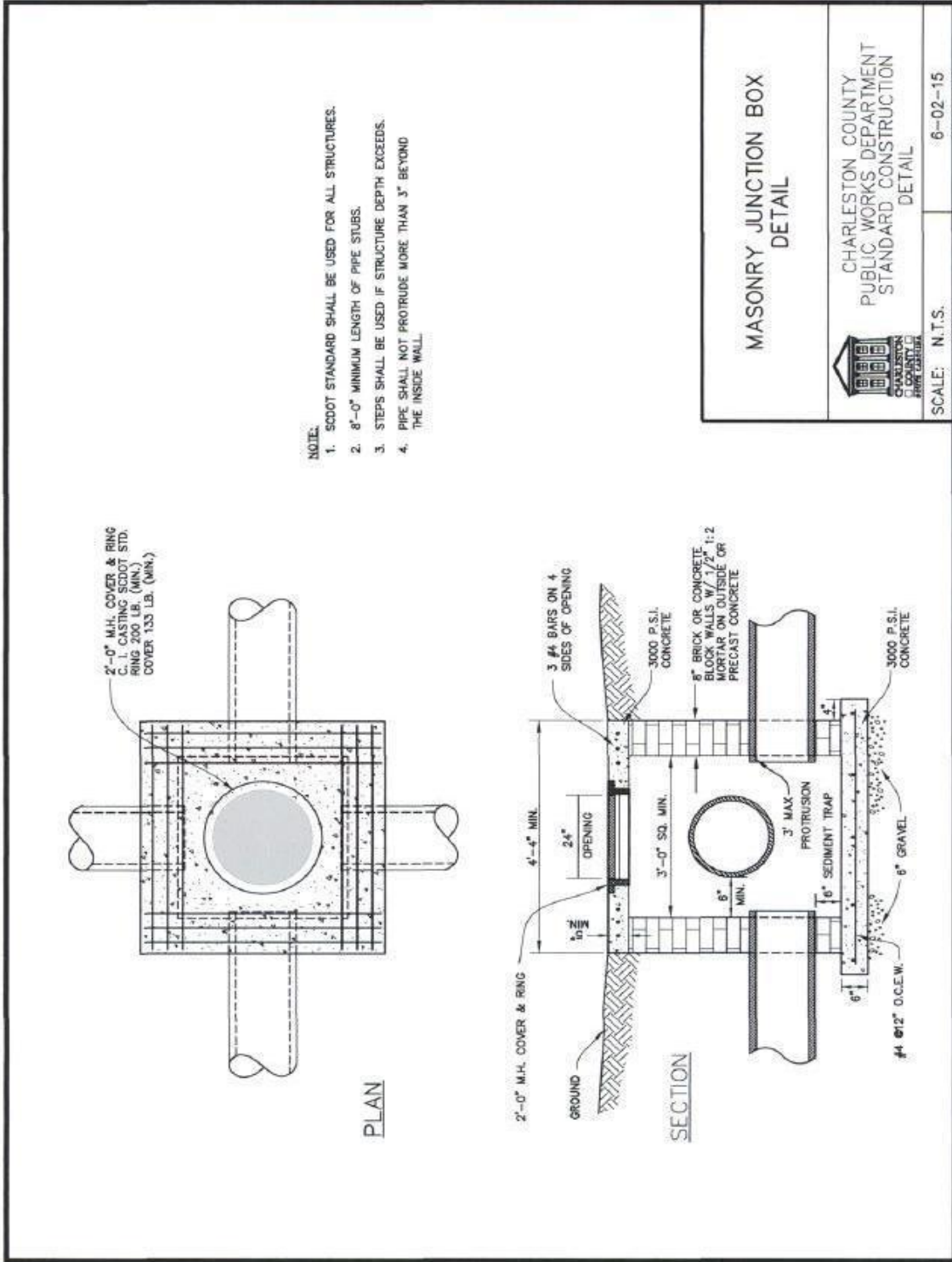


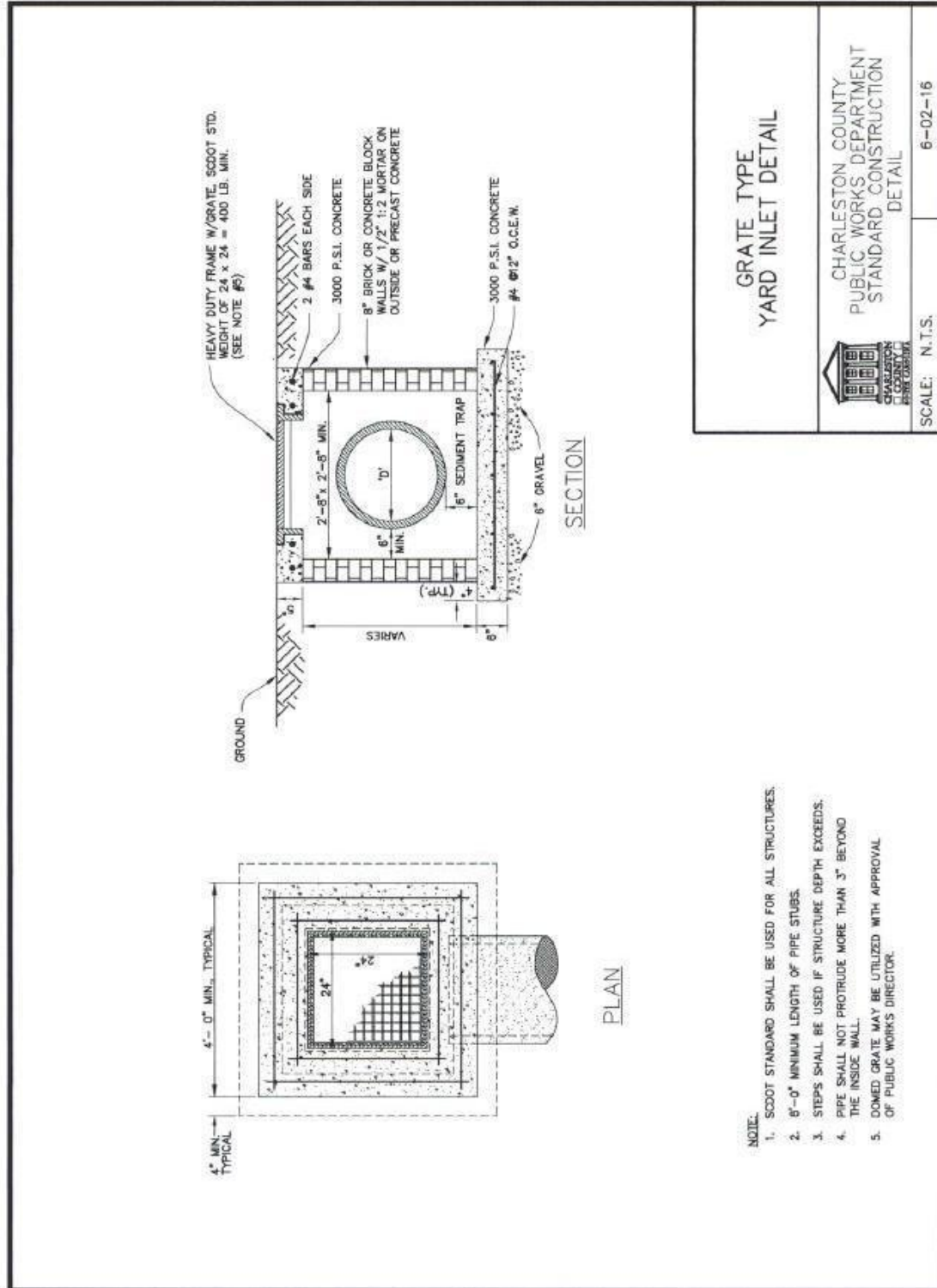
- NOTE:**
1. SODOT STANDARD SHALL BE USED FOR ALL STRUCTURES.
  2. 8'-0" MINIMUM LENGTH OF PIPE STUBS.
  3. STEPS SHALL BE USED IF STRUCTURE DEPTH EXCEEDS.
  4. PIPE SHALL NOT PROTRUDE MORE THAN 3" BEYOND THE INSIDE WALL.

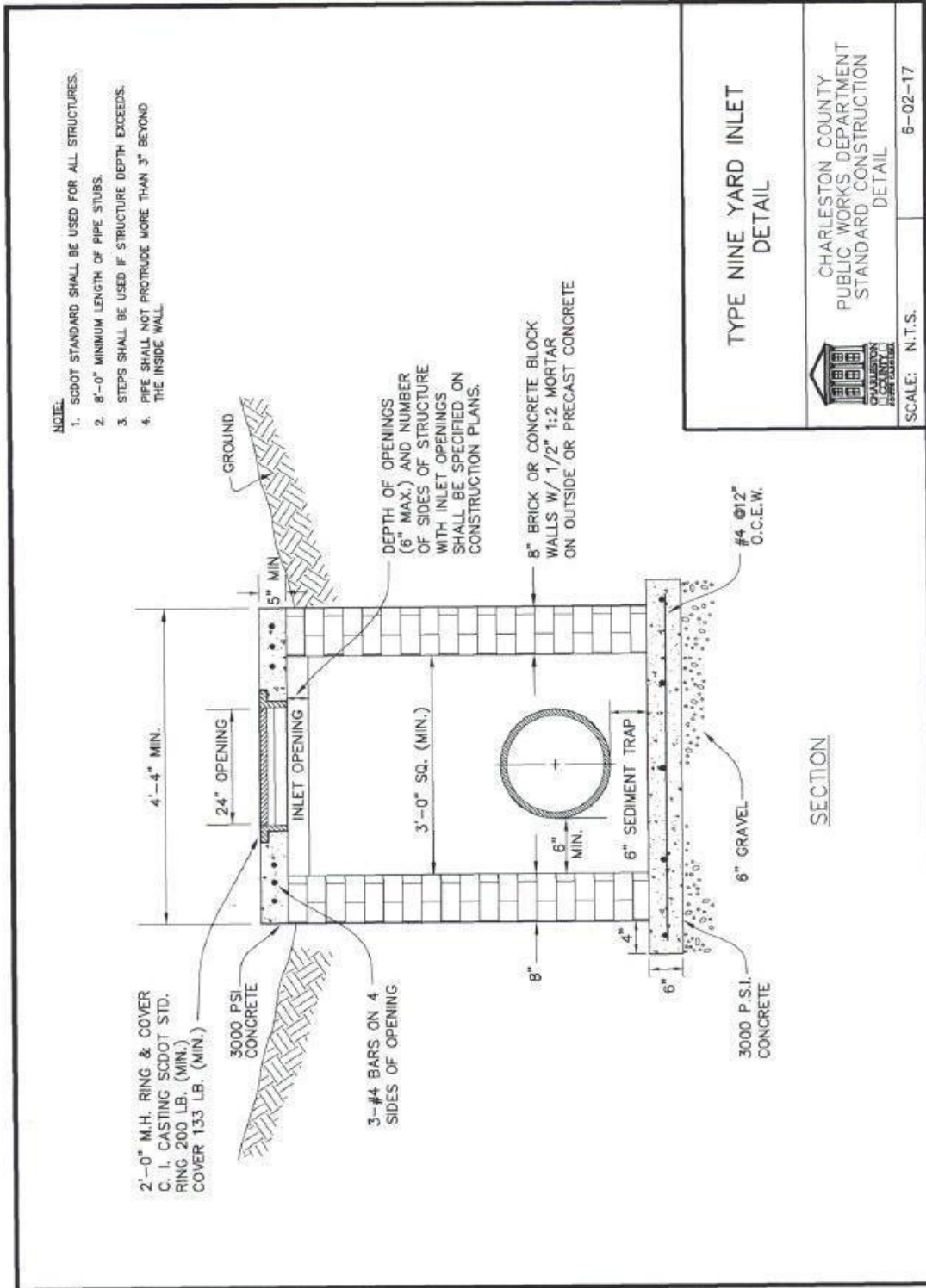
MASONRY CURB INLET  
DRAINAGE STRUCTURE DETAIL

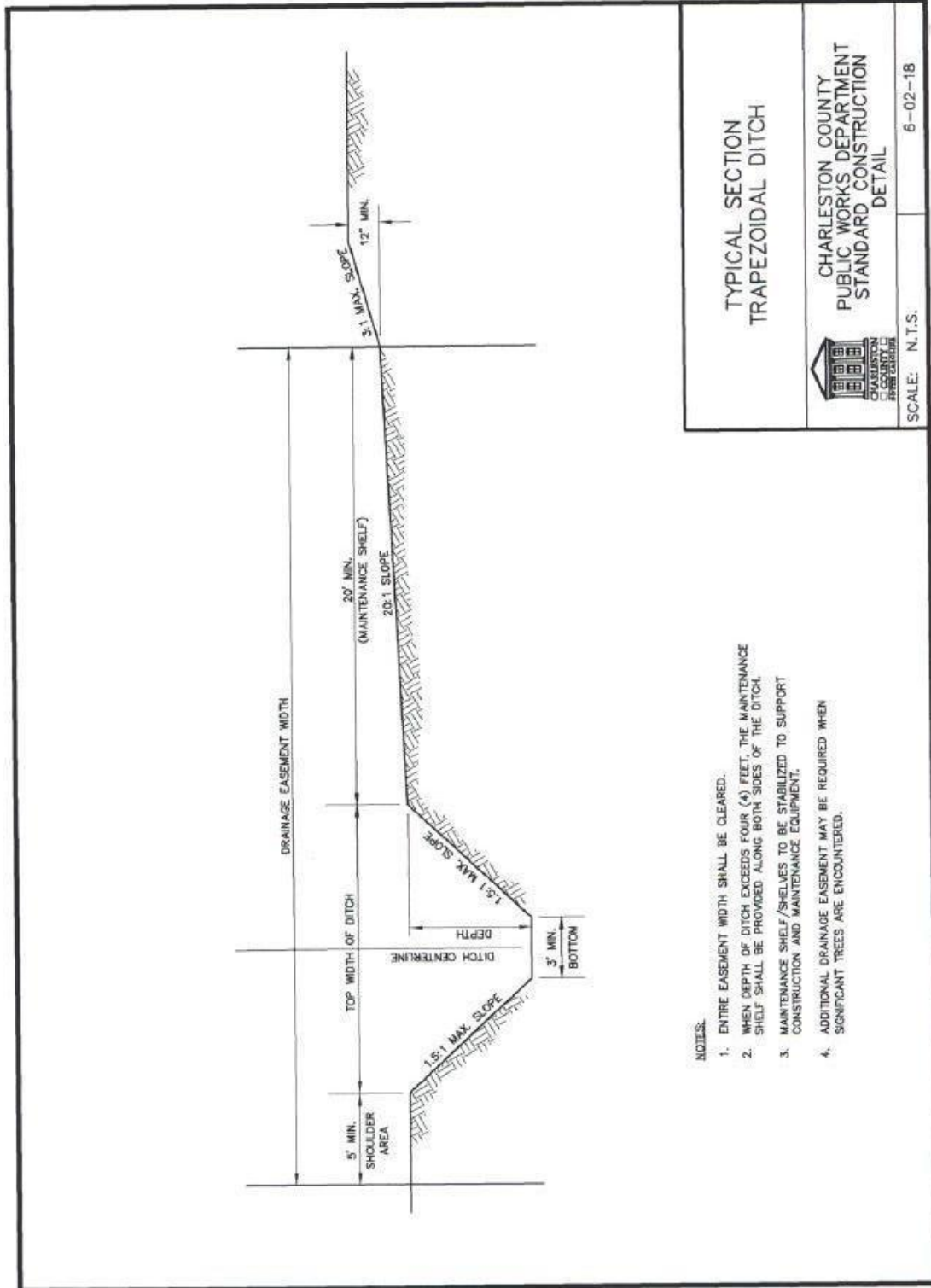


SCALE: N.T.S. 6-02-14









**NOTES:**

1. ENTIRE EASEMENT WIDTH SHALL BE CLEARED.
2. WHEN DEPTH OF DITCH EXCEEDS FOUR (4) FEET, THE MAINTENANCE SHELF SHALL BE PROVIDED ALONG BOTH SIDES OF THE DITCH.
3. MAINTENANCE SHELF/SHELVES TO BE STABILIZED TO SUPPORT CONSTRUCTION AND MAINTENANCE EQUIPMENT.
4. ADDITIONAL DRAINAGE EASEMENT MAY BE REQUIRED WHEN SIGNIFICANT TREES ARE ENCOUNTERED.

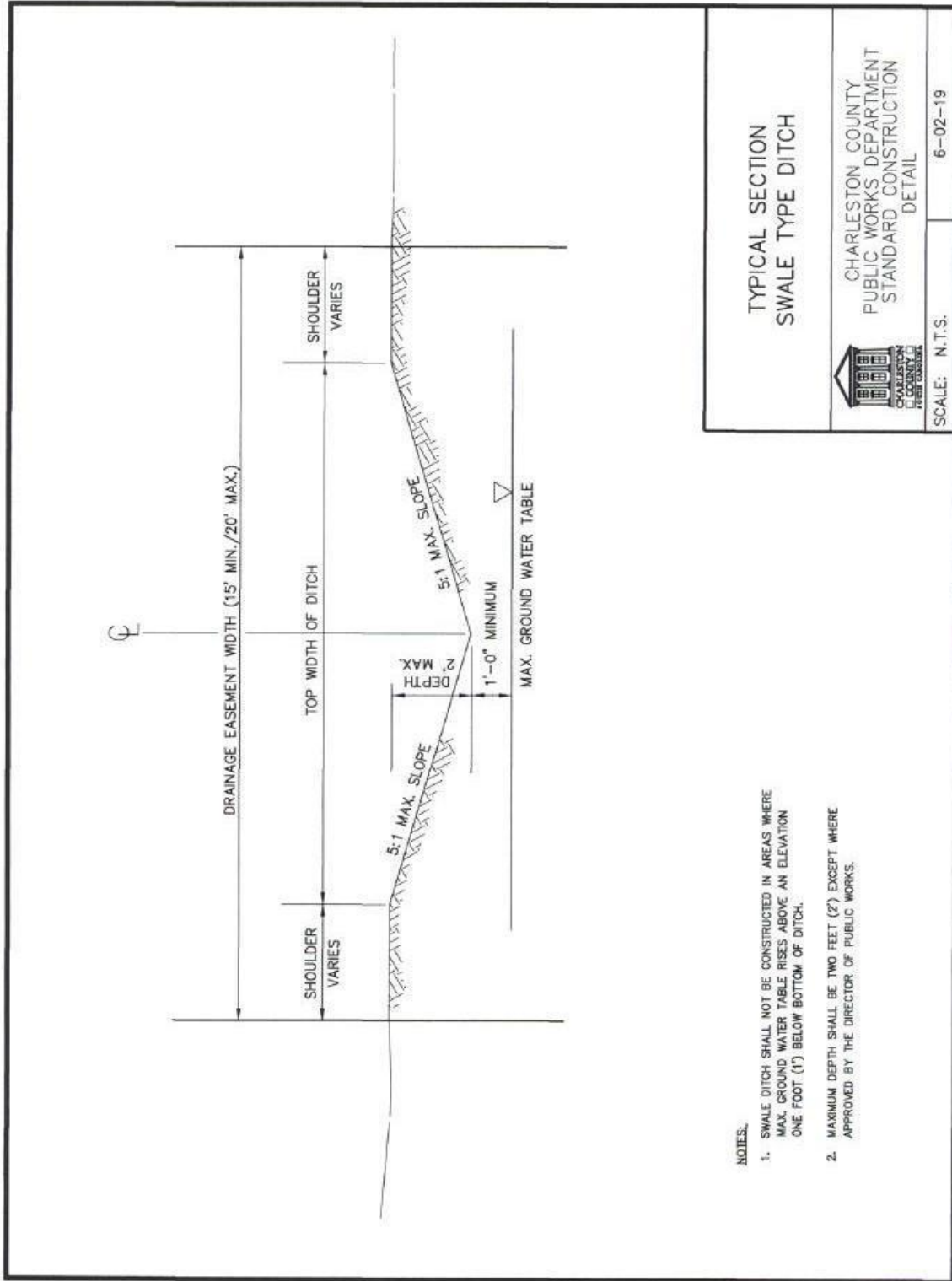
**TYPICAL SECTION  
TRAPEZOIDAL DITCH**



CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD CONSTRUCTION  
DETAIL

SCALE: N.T.S.

6-02-18



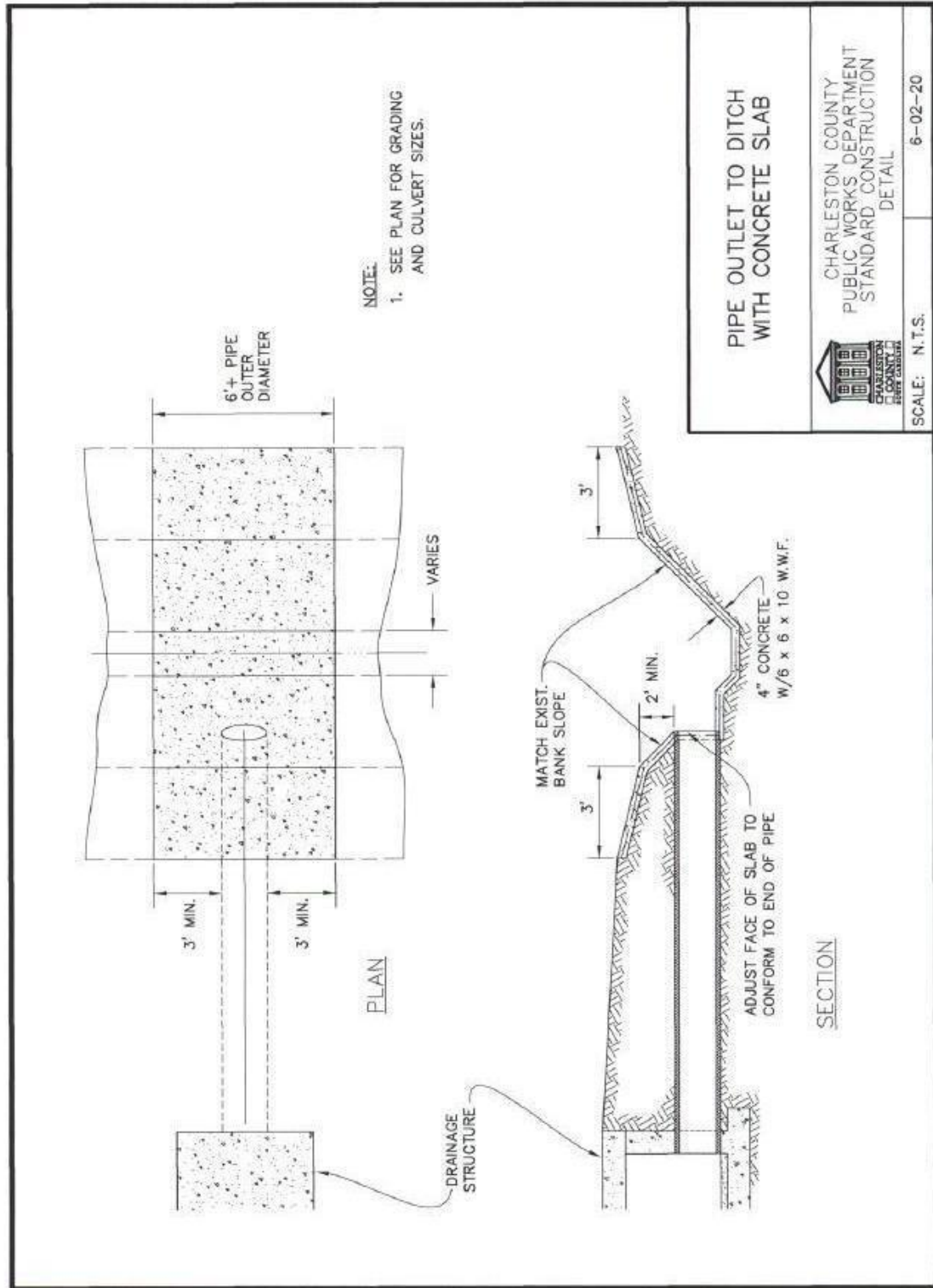
TYPICAL SECTION  
SWALE TYPE DITCH

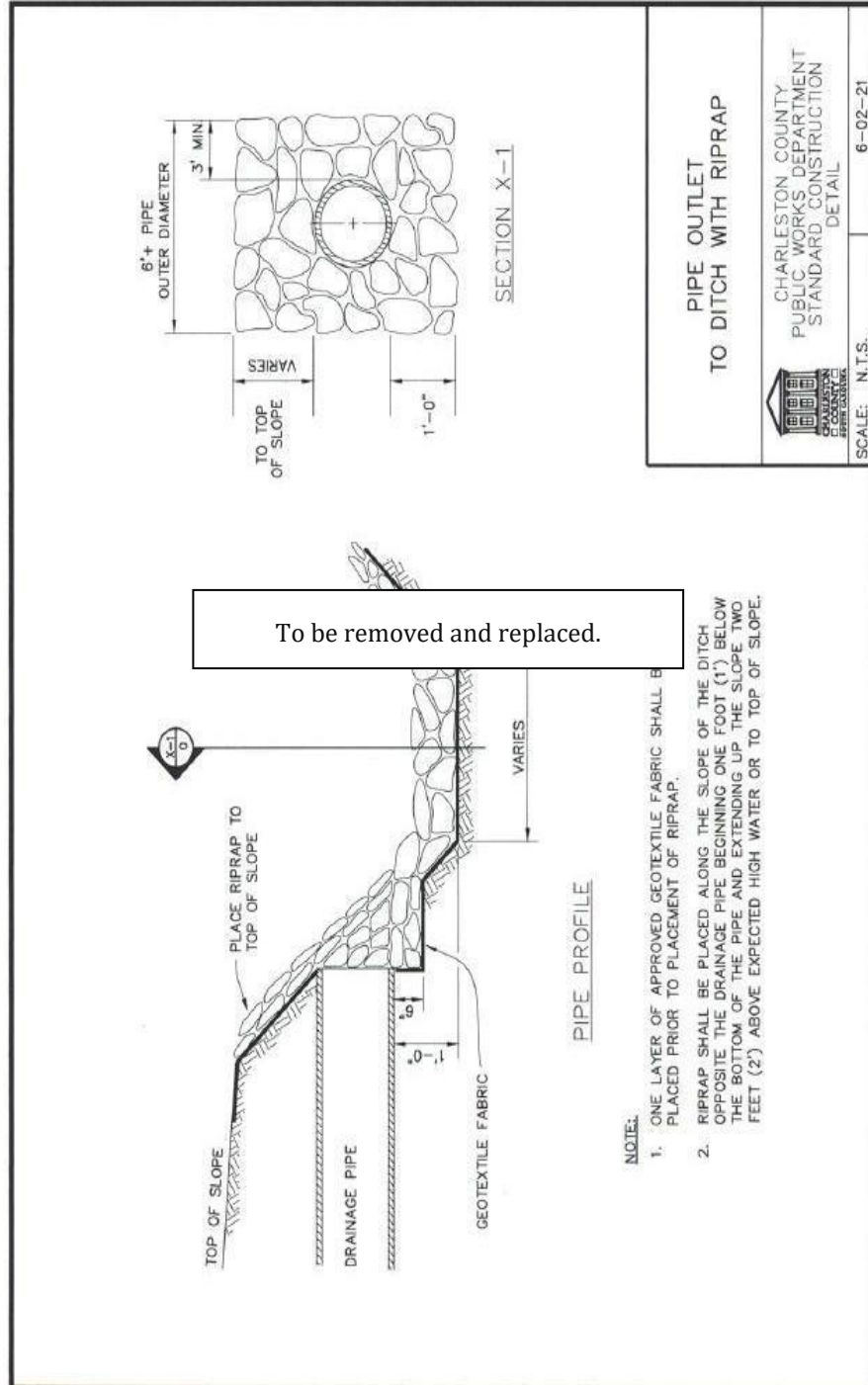


CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD CONSTRUCTION  
DETAIL

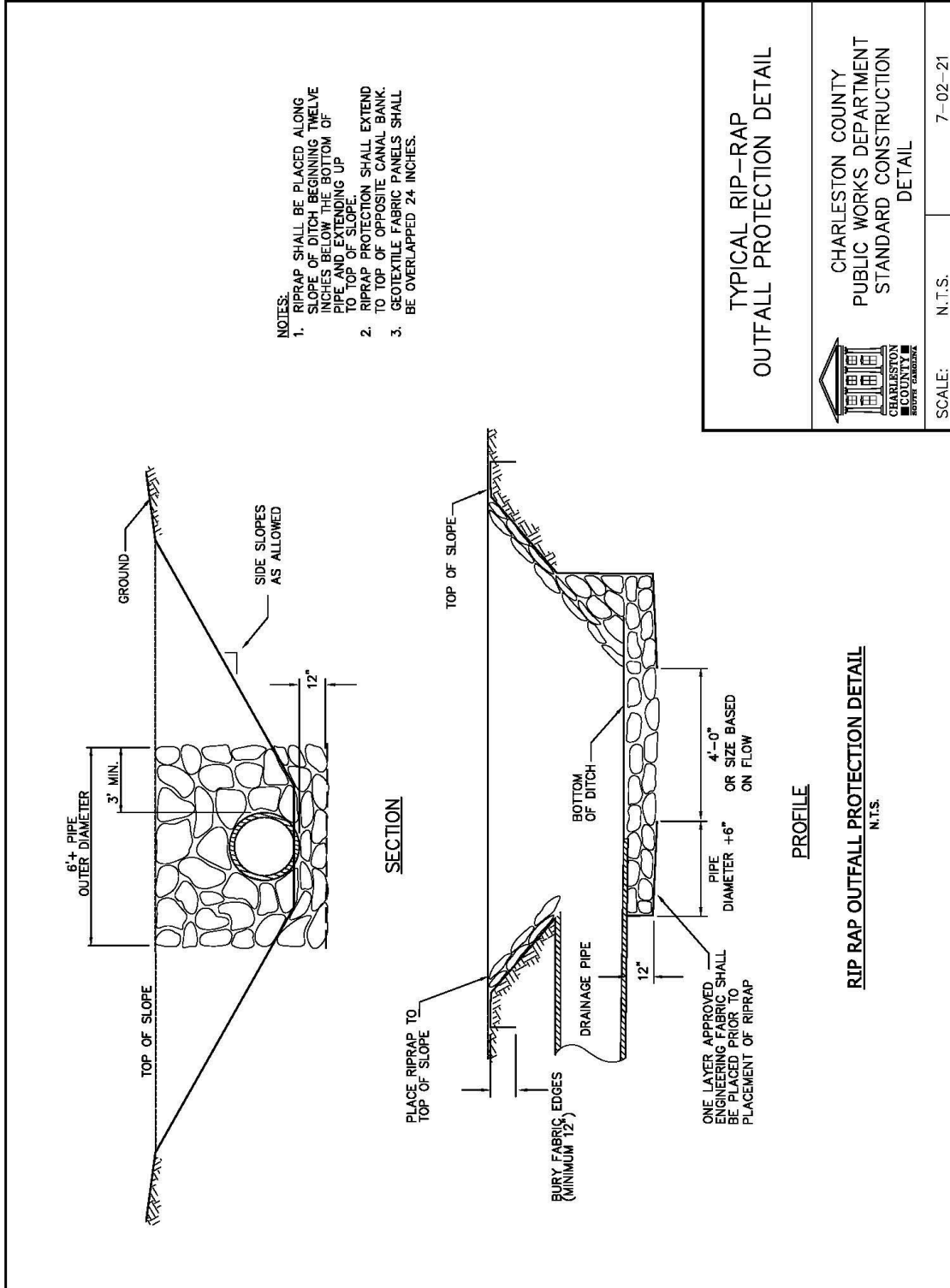
SCALE: N.T.S.

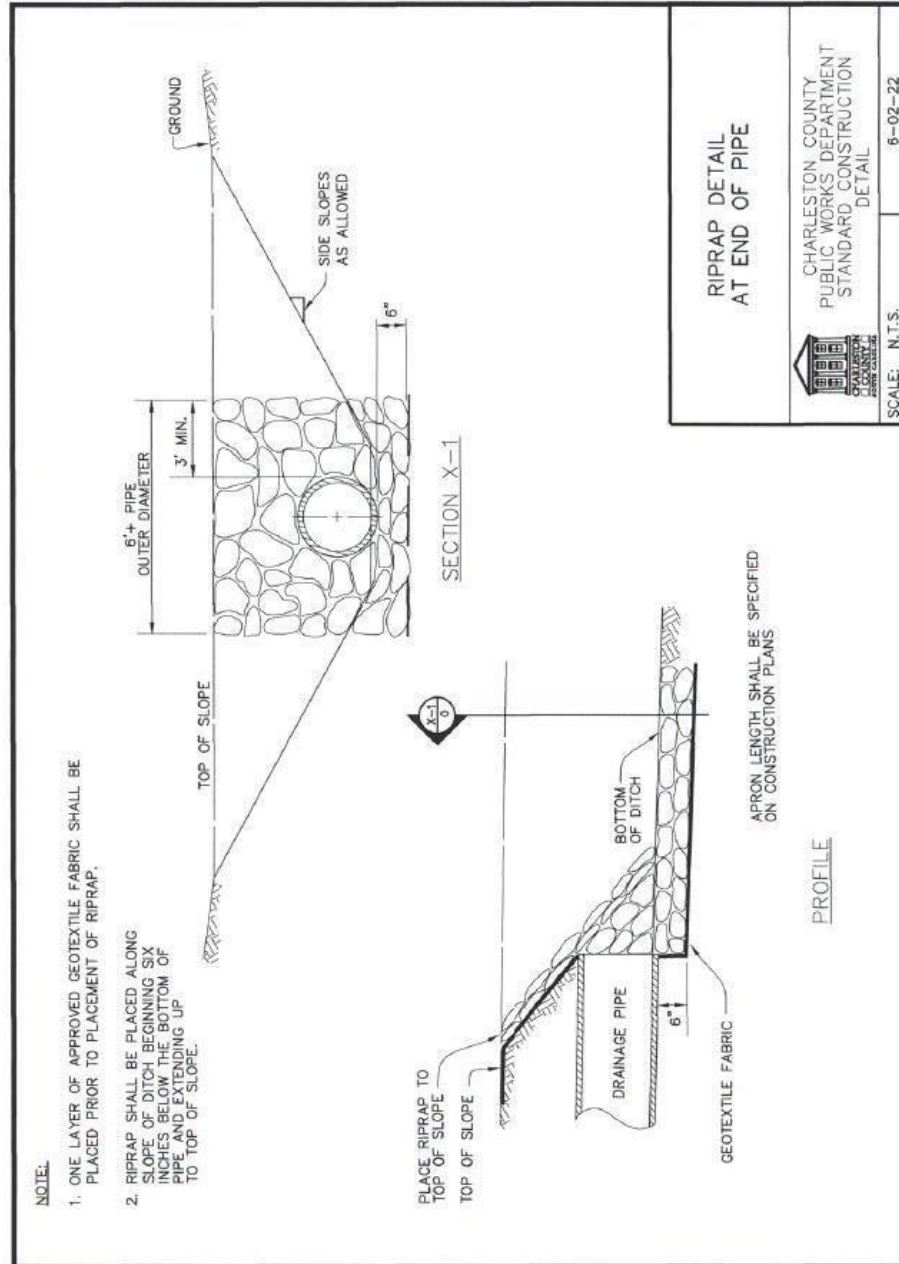
6-02-19

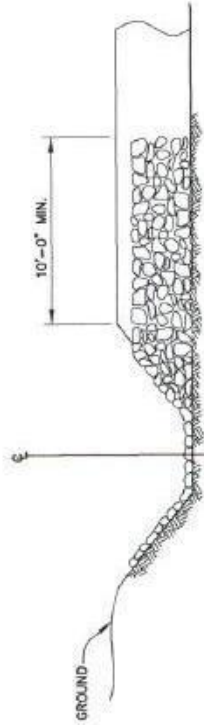








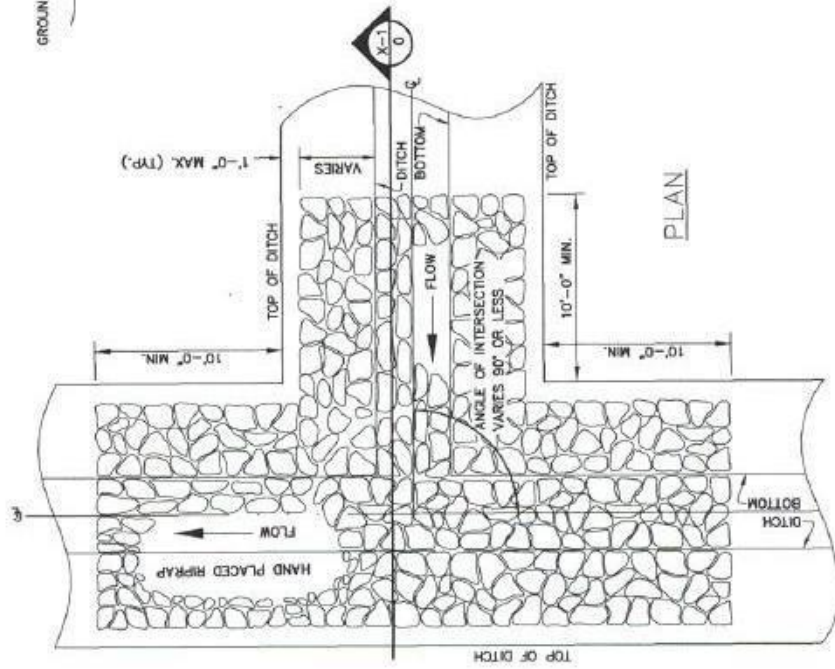




SECTION X-1

NOTES:

1. ONE LAYER OF APPROVED GEOTEXTILE FABRIC SHALL BE PLACED PRIOR TO PLACEMENT OF RIPRAP. TOE-IN FABRIC AT ALL EDGES. OVERLAP SEAMS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. RIPRAP SHALL BE PLACED IN ENTIRE DITCH INTERSECTION ALONG THE SLOPE. TWO FEET (2') ABOVE EXPECTED HIGH WATER OR TO THE TOP OF DITCH SLOPES EACH SIDE AND ON THE BOTTOM OF BOTH DITCHES AS SHOWN.



PLAN

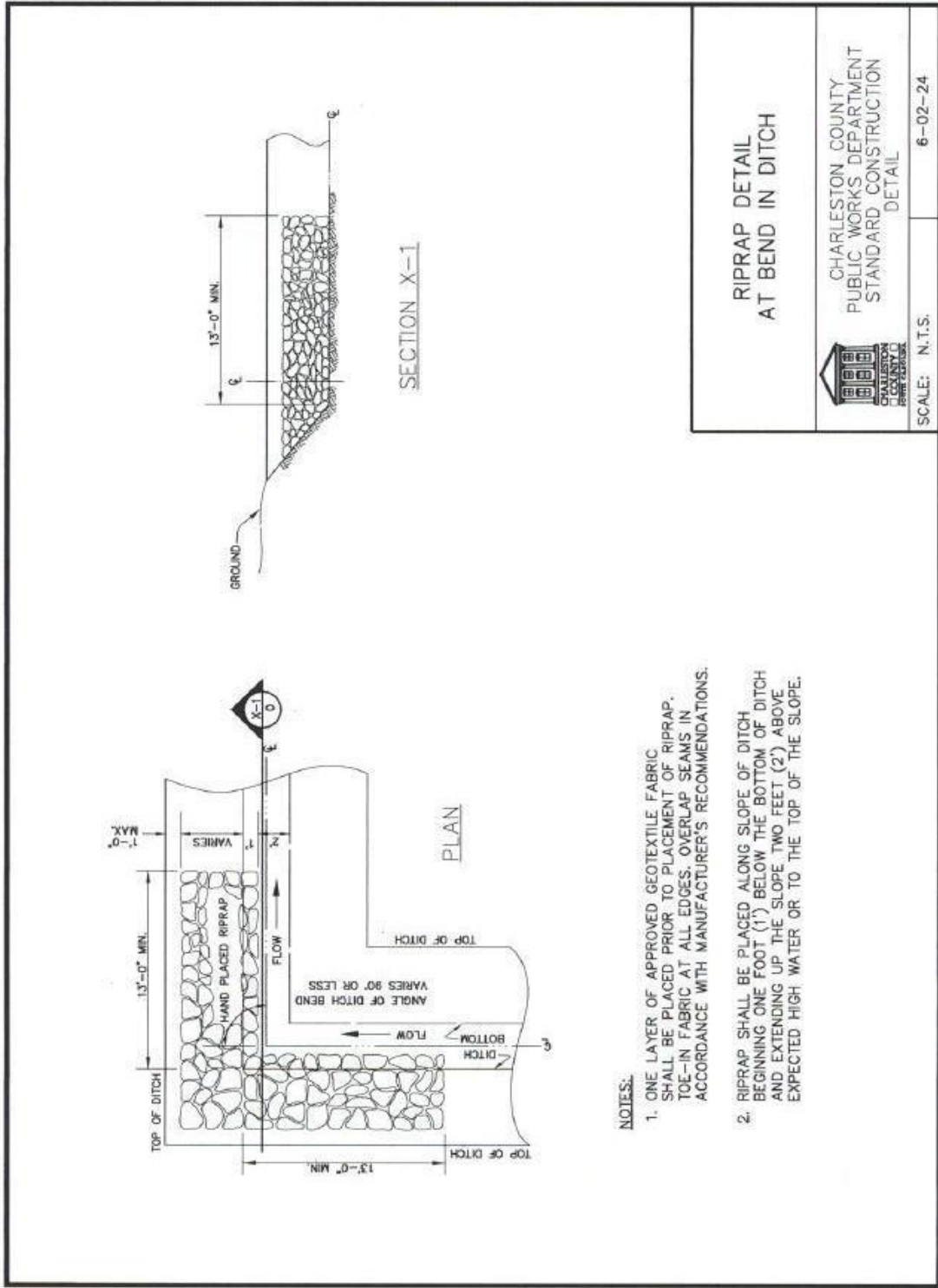
RIPRAP DETAIL  
AT INTERSECTION OF DITCHES



CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD CONSTRUCTION  
DETAIL

SCALE: N.T.S.

6-02-23



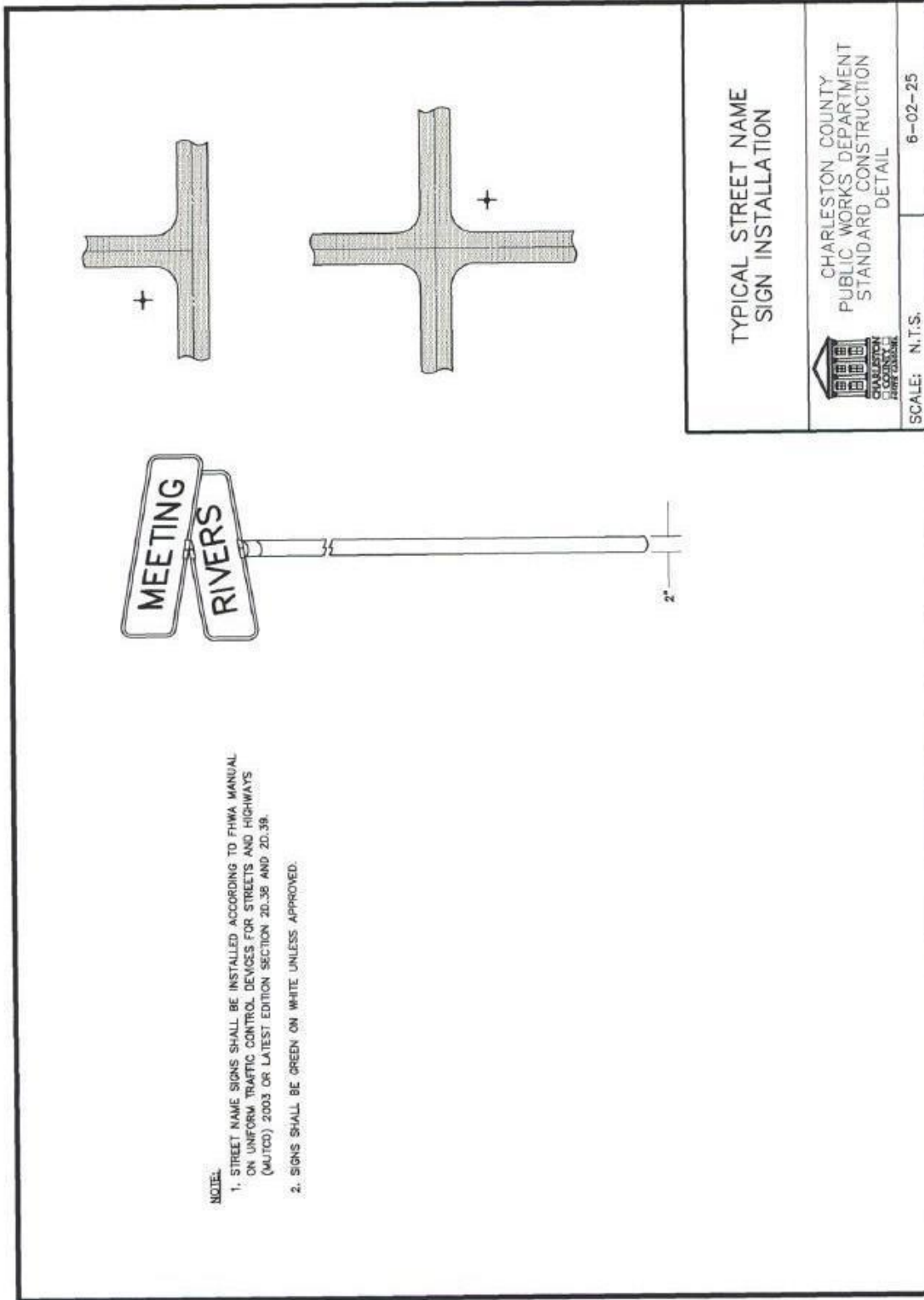
**NOTES:**

1. ONE LAYER OF APPROVED GEOTEXTILE FABRIC SHALL BE PLACED PRIOR TO PLACEMENT OF RIPRAP. TOE-IN FABRIC AT ALL EDGES. OVERLAP SEAMS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. RIPRAP SHALL BE PLACED ALONG SLOPE OF DITCH BEGINNING ONE FOOT (1') BELOW THE BOTTOM OF DITCH AND EXTENDING UP THE SLOPE TWO FEET (2') ABOVE EXPECTED HIGH WATER OR TO THE TOP OF THE SLOPE.

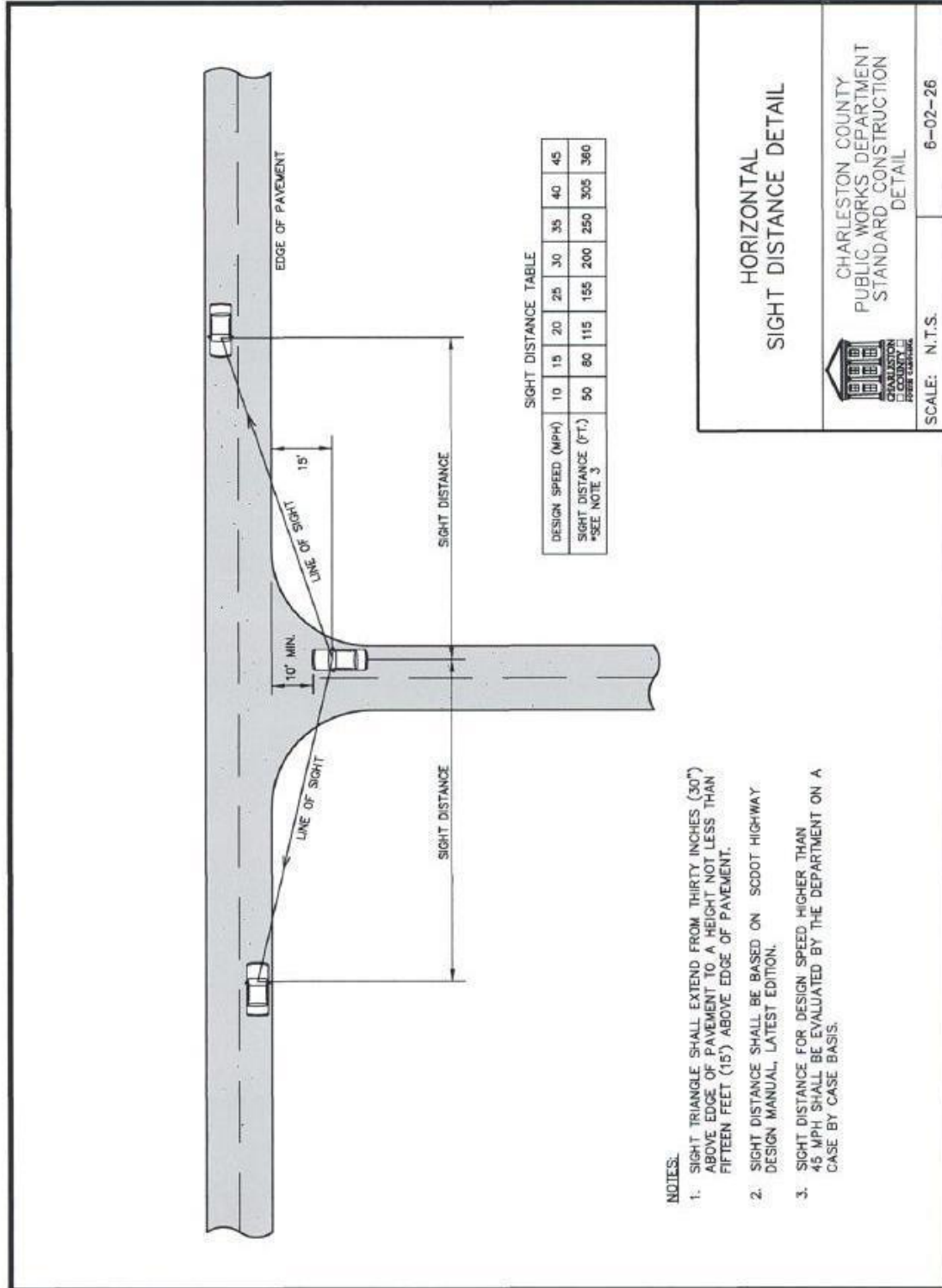
**RIPRAP DETAIL  
AT BEND IN DITCH**

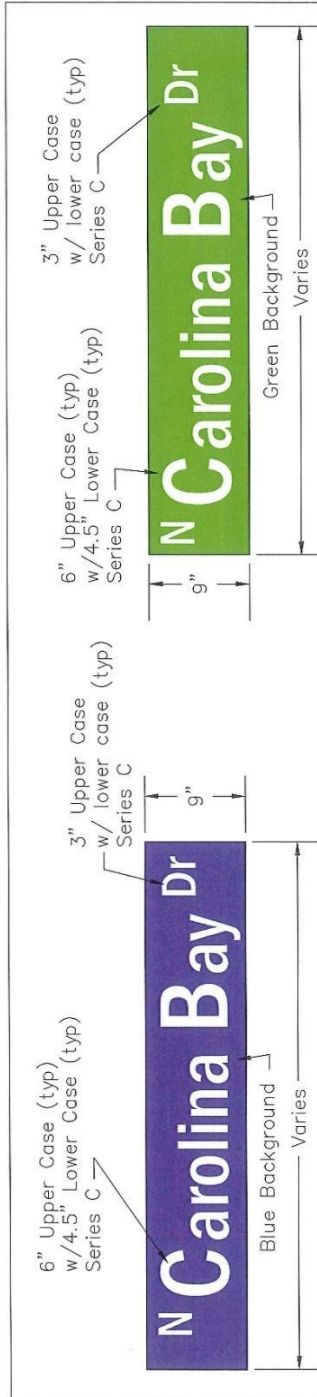
CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD CONSTRUCTION  
DETAIL

SCALE: N.T.S. 6-02-24



- NOTE:**
1. STREET NAME SIGNS SHALL BE INSTALLED ACCORDING TO FHWA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (MUTCD) 2003 OR LATEST EDITION SECTION 2D.38 AND 2D.39.
  2. SIGNS SHALL BE GREEN ON WHITE UNLESS APPROVED.





**STANDARD STREET NAME SIGN SPECIFICATIONS  
FOR PRIVATE AND PUBLIC ROADS WITH SPEED LIMITS 35 MPH OR LESS**

All signs shall meet the minimum standards found in the Manual on Uniform Traffic Control Devices (latest version)

Standard sign material and sizes:

Material — flat aluminum blanks, thickness .808 or Alpollic blanks, thickness 2mm

- Sizes —
- 9" x 24"
  - 9" x 30"
  - 9" x 36"
  - 9" x 42"
  - 9" x 48"

Coloring: White 3M HIP reflective sheeting #3930  
Green 3M ElectroCut Film #1177 (for Public Road Signs)  
Blue 3M ElectroCut Film #1175 (for Private Road Signs)

Lettering: Font — FHWA Standard Highway Sign Book (latest version) Highway Gothic Series "C" alphabet

Size — First letter will be 6 inch upper case followed by 4.5 inch lower case  
Prefix (N, S, E, W) and Suffix (St, Av, Ln, etc.) First letter will be 3 inch followed by 2.5 inch letters

Assembly: Letters cut out of green (for Public Roads) or blue (for Private Roads) 3M electrocut film which is overlaid on white 3M sheeting applied to aluminum blank and mounted on 2 inch square post with breakaway system (see detail). Dual name plates will be used for each street name to be mounted on the post.

Installation: See Flat Sheet Sign Mounting Detail

**NOTES:**

1. ALL SIGNAGE SHALL COMPLY WITH THE FHWA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, PART 2 (LATEST EDITION). IN ADDITION THE COUNTY REQUIRES A "BREAKAWAY" SIGN POST CONFIGURATION WHICH IS FACILITATED BY MOUNTING THE STREET NAME SIGN ON A 10"x2"x2" 14 GAUGE POST WITH A 30"x2.25"x2.5" 14 GAUGE ANCHOR AS SHOWN IN FIGURES 1 AND 2.
2. CHARLESTON COUNTY PUBLIC WORKS SHALL BE NOTIFIED ONCE STREET NAME SIGNS ARE INSTALLED TO ENSURE ALL REQUIREMENTS ARE MET.
3. PROPOSED STREET NAME SHALL BE KEPT TO MINIMUM SIZE SUCH THAT THEY CAN BE SUPPORTED BY A SIGNLE BREAK-AWAY POST IN ACCORDANCE WITH SCDOT STANDARD DRAWING & SPECIFICATIONS (LATEST EDITION).

**STANDARD STREET NAME  
SIGN SPECIFICATIONS**



CHARLESTON COUNTY  
PUBLIC WORKS DEPARTMENT  
STANDARD DETAIL

SCALE: N.T.S.

6-02-27



Charleston County Zoning and Planning Department  
 4045 Bridge View Drive  
 North Charleston, SC 29405  
 (p) 843-202-7200

**SURVEY AS-BUILT CHECKLIST AND INSTRUCTIONS**

As-built record drawings are required for all publicly dedicated roadway, and drainage plans. **Final plats seeking any Public dedication and acceptance of roads and/or subject infrastructure will not be approved, until as-built plans and all certifications are submitted, reviewed and approved by County Staff. In addition, staff recommendations for final approval to Council will also be held until submitted as-built plans have been reviewed and approved.** Use the following PROCESS and CHECKLIST in preparing as- built plans.

**PROCESS**

- 1. Submit all as-builts to the address below including:
  - 1 – As-Built plan set hardcopy (final)
  - 1- Digital copy
  - 1- Completed As-Built Checklist

*Submit hardcopies to:  
 Charleston County Zoning and Planning Department  
 4045 Bridge View Drive  
 North Charleston, SC 29405*

- 2. As – built Plans are reviewed by Planning and Public Works staff. Approval may require the following:
  - Inspection records of Proof rolls for streets
  - Final inspection approval of stormwater and transportation related infrastructure
  - Final inspection of water/sewer and water/sewer test with SCDHEC approvals to operate.

**AS-BUILT CHECKLIST**

**All entities that construct with the intent to publicly dedicate road and/or stormwater infrastructure must submit an as-built set of construction drawings as a part of the County's final inspection process.**

Record as-built drawings must be submitted prior to public acceptance of improvements, final plat recording or building certificate of occupancy. The following checklist must be attached to each set of as-builts submitted for approval. Each blank must be initialed by the applicant as being included on the as-builts or marked N/A if not applicable to the project. All plan sheets must be 24" X 36" sheets and be accompanied by a digital version. Lettering shall be bold, clear and a minimum of 1/8" in height. All applicable information listed below must be included on all as-built drawings.

**1 : AS-BUILT GENERAL INFORMATION:**

**A [ ]** Project Name: \_\_\_\_\_

**B [ ]** Project Address: \_\_\_\_\_

**C [ ]** Submitted by: \_\_\_\_\_ Phone: \_\_\_\_\_

**D [ ]** (Please check)  
 (1)  Hard Copies for Review Only [ ]  
 (2)  Digital copy [ ]

**E [ ]** Transmittal Date: \_\_\_\_\_

**F [ ]** **Note: Each sheet must include the Preparers' Seal that it is an As-Built drawing of the section that is shown.**

**G [ ]** When the County has accepted the plans (with signatures), provide the following items to the County for recordkeeping: One full sized paper set of plans with signatures, and Electronic files on a digital media, AutoCad files (version 2002 or later) or compatible of each sheet. If a CD-ROM is submitted it shall include the name of the project, the County's Planning Case Number, name of the engineering firm providing the CD, and (preferably) a paper insert with an index listing the contents of the CD.





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**2 : SITE DATA: Page # \_\_\_\_\_**

At the minimum, all as-builts shall provide the following information:

- A [ ]** Project area acreage
- B [ ]** Average lot size (If Applicable)
- C [ ]** Total number of lots (If Applicable)
- D [ ]** Total linear footage of infrastructure chart, Page # \_\_\_\_\_
- (1) [ ]** Streets (List individually in lengths)
- (2) [ ]** Sidewalks (Identify size and length)
- (3) [ ]** Number of fire hydrants
- (4) [ ]** Number of manholes
- (5) [ ]** Other (Any additional appurtenances)

**3 : GENERAL INFORMATION: Page # \_\_\_\_\_**

- A [ ]** Boundary of tract by courses and distance with references
- B [ ]** Tie two known points to S.C. State Plane grid coordinate system
- C [ ]** Vicinity map
- D [ ]** Scale of drawings and bar scale
- E [ ]** North arrow
- F [ ]** Location of benchmark with M.S.L. elevations
- G [ ]** Seal and signature of South Carolina registered P.E. or R.L.S. on each sheet that performed as-builts
- H [ ]** All easements identified and dimensioned
- I [ ]** horizontal locations and descriptions of any permanent structure encroachments or projections into easements
- J [ ]** Statement designating drawings are "as-built" on each sheet

**4 : STREETS and SIDEWALKS (Public Only): Page # \_\_\_\_\_**

- A [ ]** Horizontal alignment with radii, P.C.'s, and P.T.'s of all curves
- B [ ]** Vertical alignment with centerline grades, vertical curve lengths and station and elevation of all PVC's and PVT's and centerline profile.
- C [ ]** Dimensioned right of way, location of street widths and sidewalks
- D [ ]** Pavement section
- E [ ]** Typical cross section
- F [ ]** Types and materials shall be noted in the plan set

**5 : ROADSIDE DRAINAGE: Page # \_\_\_\_\_** *\*PLEASE NOTE - ADDITIONAL STORMWATER AS-BUILTS MAY BE REQUIRED PRIOR TO PROJECT CLOSE OUT. REFER TO THE CHARLESTON COUNTY STORMWATER MANUAL APPENDIX I FOR ADDITIONAL INFORMATION*

- A [ ]** Ditches, swales, pipes and drainage easements adjacent to the project shown.
- B [ ]** Any stormwater lines shall include the following information (at a minimum): pipe size, length of line, slope of line, type of pipe and distance from near property line.
- C [ ]** Display size and location of existing culverts, storm drains and other drainage features within the street or within the right-of-way of streets or roads adjoining the tract.
- D [ ]** Need to show type, size and location of stormwater best management practice(s).
- E [ ]** Permanent drainage easements shown and labeled for storm sewers and ditches outside of the streets where the system is maintained by the County or Private.
- F [ ]** Details of Stormwater management device agreements and any or private drainage easements shall be noted. (If Applicable)
- G [ ]** Need to show location of all drainage structures including type of structure (frame, grate, and box, and drop inlet). Need to show all elevation including top of structure and pipe(s).



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- H [ ] Need to show location of all drainage ditches. In addition, need to show typical drainage ditch section. (If Applicable)
- I [ ] Headwall or flared end dimensions and elevations need to be shown as well as the pipe invert.
- J [ ] Indication of direction of flow (flow arrows).

**6 : WATER SYSTEM: Page # \_\_\_\_\_**

- A [ ] Overall plan view of locations as located via PUPS (including all phases)
- B [ ] Water, sewer and general utility drawings may be shown on same sheet or separate.

**7 : SANITARY SEWER SYSTEM: Page # \_\_\_\_\_**

- A [ ] Overall Horizontal Locations as located via PUPS (including all phases)
- B [ ] Water, sewer and general utility drawings may be shown on same sheet or separate.

**8 : GENERAL UTILITY LOCATIONS: Page # \_\_\_\_\_**

- A [ ] Overall plan view of locations as located via PUPS to include overhead power (including all phases)
- B [ ] Water, sewer and general utility drawings may be shown on same sheet or separate.

<b>Road As-Built Reviewed Date</b>	_____
<b>County Representative</b>	_____
<b>Storm Water As-Built Reviewed Date</b>	_____
<b>County Representative</b>	_____