

STANDARD SPECIFICATIONS & DETAILS MANUAL



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TOWN OF WENDELL
Standard Specifications and Construction Details Manual
Table of Contents

SECTION 1 – PRELIMINARY CONSIDERATION & INSTRUCTIONS	1
1.01 General	1
SECTION 2 – GENERAL PROVISIONS	2
2.01 General	2
2.02 Abbreviations & Definitions	2
2.03 Insurance Requirements	3
2.04 Erosion & Sedimentation Control	3
2.05 Earthwork	6
2.06 Safety	7
2.07 Maintenance of Traffic	8
2.08 Concrete	8
2.09 Installation of Utilities Not Furnished by the Town	8
2.10 Dig-Once Communication Conduit	9
2.11 Public Water and Sewer	9
2.12 Materials	9
SECTION 3 – STREETS	11
3.01 General	11
3.02 Design	11
3.03 Construction Requirements	14
3.04 Inspection	15
3.05 Pavement Markings and Signage	17
3.06 Private Irrigation Systems	19
3.07 Mailboxes	20
3.08 Street Lights	20
3.09 Sidewalks	20
SECTION 4 – CURB & GUTTER, GREENWAYS, DRIVEWAYS, SIDEWALKS, AND PARKING AREAS	21
4.01 Materials	21
4.02 Dimensions	22
4.03 Construction Methods	23
4.04 Pedestrian Crossings	24
4.05 Inspection	24
SECTION 5 – STORM DRAINAGE	25
5.01 Design	25
5.02 Pipe Materials	27
5.03 Materials – Storm Drainage Structures	27

TOWN OF WENDELL
Standard Specifications and Construction Details Manual
Table of Contents

5.04	Miscellaneous Materials.....	30
5.05	Constructions Methods.....	30
SECTION 6 – RECREATION FACILITIES.....		33
6.01	General.....	33
6.02	Design.....	33
GLOSSARY OF TERMS.....		36
APPENDIX A – GRAVEL PARKING PAD STANDARDS.....		59
APPENDIX B – CONSTRUCTION CHECKLIST.....		60

LIST OF STANDARD DETAILS

1. Major Thoroughfare, 6-Lane Divided Section
2. Major Thoroughfare, 4-Lane Divided Section
3. Minor Thoroughfare, 4-Lane Divided Section
4. Minor Thoroughfare, 3-Lane Undivided Section
5. Major Collector, 3-Lane Undivided Section
6. Major Collector, 2-Lane Divided Section
7. Minor Collector, 2-Lane Undivided Section
8. Industrial Road, 2-Lane Undivided Section
9. Main Street and Residential Main Street Sections
10. Local Street and Rural Road Sections
11. Commercial and Residential Alley Sections
12. Typical Street Sections (with ROW & Pavement Dimensions)
13. Curb and Gutter
14. Driveway Turnout
15. Accessible Ramp
16. Utility Service Locations
17. Storm Structure Inside Dimensions
18. Drop Inlet
19. Drop Inlet Casting
20. Step
21. Endwall
22. Ditch Section
23. Storm Sewer Crossing
24. Dig-Once Conduit Configuration

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

SECTION 1 - PRELIMINARY CONSIDERATIONS & INSTRUCTIONS

1.01 General

The Standard Specifications as contained herein are to be utilized as minimum standards for all development (non-residential, residential and/or subdivisions) and utility construction projects within the jurisdiction of the Town of Wendell or connecting to the Town's utility system. All development projects shall also comply with the Town of Wendell ***Unified Development Ordinance*** of 2016, or latest version.

The purpose of these Specifications is to present standards for typical conditions encountered. All projects which include construction of public facilities, such as storm drainage facilities or streets, require that the design services be performed by, or under the direct supervision of, a Professional Engineer, a Professional Land Surveyor, or a Professional Landscape Architect licensed to practice in the State of North Carolina, or as approved by the Town of Wendell. The existence of these Standard Specifications and Construction Details does in no way relieve the Professional Engineer, Professional Land Surveyor, or the Professional Landscape Architect of the responsibility to correctly adapt these standards to the actual site conditions encountered on a specific project. The Professional Engineer, Professional Land Surveyor, or the Professional Landscape Architect must review the applicable portions of these specifications and determine that these minimum standards will function correctly for the project. There may be circumstances whereby the engineer, surveyor, or landscape architect may wish to increase pipe strength classification, bedding requirements, reinforcing, depth of stone base, depth of asphalt, etc. In such situations where changes or modifications are proposed, the Town of Wendell shall be consulted prior to completion of final design and plan submittal. This will serve to help ensure that the plan review time is minimized. Such approval shall be clearly indicated at one location on the construction drawings and labeled "Exceptions to the Standard Specifications of the Town of Wendell."

Projects shall be constructed in accordance with the Standard Specifications in effect at the time the project receives final approval by the Town of Wendell for construction. The project contractor shall have at least one complete set of approved plans and these Standard Specifications at the job site at all times that work is being performed.

The Town of Wendell will periodically update these Specifications. Updates will be made available on the Town's website. The Town will also periodically consolidate the changes and republish the document in its entirety.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

SECTION 2 - GENERAL PROVISIONS

2.01 General

All construction shall conform to the requirements and dimensions on the approved construction plans, Town Standard Details, City of Raleigh Standard Details, and the Town of Wendell ***Unified Development Ordinance*** (UDO).

2.02 Abbreviations & Definitions

a. Abbreviations:

AASHTO	- American Association of State Highway Transportation Officials
ADT	- Average Daily Travel
ANSI	- American National Standard Institute
ASTM	- American Society for Testing & Materials
AWWA	- American Water Works Association
CFS	- Cubic Feet per Second
MUTCD	- Manual of Uniform Traffic Control Devices
NCDOT	- North Carolina Department of Transportation
OSHA	- Occupational Safety and health Administration
CBR	- California Bearing Ratio
PSI	- Pounds Per Square Inch

b. Definitions:

Where the word "Engineer" is used in these Specifications, it shall be the Town Engineer of Wendell, the Town's Consulting Engineer as designated by the Town Manager, or an assistant or other representative duly authorized by the Town Manager.

Where the words "Town Representative" are used in these Specifications, it shall be the Director of Public Works of the Town of Wendell or an assistant or other duly authorized representative of the Town of Wendell, North Carolina.

Where the word "Town" is used in these Specifications, it shall be the Town of Wendell, North Carolina.

Where the word "Developer" or "Contractor" is used in these Specifications, it shall be the developer of the project or his authorized contractor performing work on the site. For purposes of these Specifications, these words are to be considered synonymous. All Contractors performing construction or installation of public facilities shall be properly licensed for the work by the State of North Carolina. Prior to commencing work, the Contractor shall submit proof of licensure. The Contractor shall also submit information including mailing and street address for the firm, ownership information, telephone numbers for contact during regular business hours and emergency telephone numbers for contact during nights, weekends and holidays during a pre-construction meeting with representatives of the Town of Wendell.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

Where the words "Project Engineer" are used in these Specifications, they shall mean the design engineer, land surveyor, or landscape architect retained by the developer, and the person responsible for the preparation of the final construction drawings.

2.03 Insurance Requirements

If work is to be performed within any Town street right-of-way or on Town owned property, the Developer/Contractor shall submit a certificate of insurance to the Town stating that coverage is in effect during the project duration. The limits of coverage shall be no less than \$3 million for general liability (bodily injury and property damage) plus \$2 million for automobile liability (bodily injury and property damage).

2.04 Erosion & Sedimentation Control

a. General Requirements:

Temporary and permanent erosion control measures shall be provided in accordance with the erosion and sedimentation control plan permitted by the Erosion, Flood and Stormwater Division of the Wake County Environmental Services Department. The permitted Erosion and Sedimentation Control Plan shall be kept on site by the Contractor at all times that work is being performed.

All permanent erosion and sedimentation control measures shall be incorporated into the work at the earliest practicable time, and in no case shall an area remain denuded for more than 21 working days. Temporary erosion and sedimentation control measures shall be coordinated with permanent erosion and sedimentation control measures and all other work on the project to ensure economical, effective and continuous erosion and sedimentation control throughout the construction and post construction period and to minimize siltation of streams, lakes, reservoirs, and other water impoundments, ground surfaces, roadways, or other property.

b. Seeding & Mulching:

Seeding and mulching shall be carried out immediately behind construction in accordance with the following specifications:

SEEDING SPECIFICATIONS			
SHOULDERS, SIDE DITCHES, SLOPES (MAX. 3:1)			
SEEDING PERIOD	TYPE	APPLICATION RATE	
		Per Acre	Per 1000 SF
Aug 15 - Nov 1	Tall Fescue	300#	7#
Nov 1 - Mar 1	Tall Fescue <u>and</u>	300#	7#
	Abruzzi Rye	25#	0.6#
Mar 1 - Apr 15	Tall Fescue	300#	7#
Apr 15 - Jun 30	Hulled Common Bermudagrass	25#	0.6#
Jul 1 - Aug 15	Tall Fescue <u>and</u>	120#	2.8#
	*Browntop Millet	35#	0.8#

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

	*or Sorghum-Sudan Hybrids	30#	0.7#
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SEEDING SPECIFICATIONS SLOPES (3:1 TO 2:1)			
SEEDING PERIOD	TYPE	APPLICATION RATE	
		Per Acre	Per 1000 SF
Mar 1 - Jun 1	Sericea Lespedeza (scarified)	50#	1.2#
	<u>and</u>		
(Mar 1- Apr 15)	<u>ADD</u> Tall Fescue	120#	2.8#
(Mar 1- Jun 30)	<u>OR ADD</u> Weeping Love grass	10#	0.2#
(Mar 1- Jun 30)	<u>OR ADD</u> Hulled Common Bermudagrass	25#	0.6#
Jun 1 - Sep 1	*Tall Fescue <u>and</u>	120#	2.8#
	*Browntop Millet	35#	0.8#
	* <u>or</u> Sorghum-Sudan Hybrids	30#	0.7#
Sep 1 - Mar 1	Sericea Lespedeza (unhulled, unscarified)	70#	1.6#
	<u>and</u> Tall Fescue	120#	2.8#
(Nov 1-Mar 1)	<u>ADD</u> Abruzzi Rye	25#	0.6#

* Temporary - Reseed according to optimum season for desired permanent vegetation. Do not allow temporary cover to grow to more than 12 inches in height before mowing, otherwise fescue may be shaded out.

Consult Wake Soil & Water Conservation District or North Carolina Division of Soil & Water Conservation for additional information concerning other alternatives for vegetation of denuded areas. The above vegetation rates are those that do well under local conditions; other seeding rate combinations are possible.

SEEDBED PREPARATION

- (1) Chisel compacted areas and spread topsoil 3 inches deep over adverse soil conditions, if available.
- (2) Rip the entire area to 6-inch depth.
- (3) Remove all loose rock, roots and other obstructions leaving surface reasonably smooth and uniform.
- (4) Apply agricultural lime, fertilizer and superphosphate uniformly and mix with soil (see below*).
- (5) Continue tillage until a well-pulverized, firm, reasonably uniform seedbed is prepared 4 to 6 inches deep.
- (6) Seed on a freshly prepared seedbed and cover seed lightly with seeding equipment or cultipack after seeding.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

- (7) Mulch immediately after seeding and anchor mulch.
- (8) Inspect all seeded areas and make necessary repairs or reseedings within the planting season, if possible. If stand should be over 60 percent damaged, re-establish following original lime, fertilizer and seeding rates.
- (9) Consult Wake Soil & Water Conservation District on maintenance treatment and fertilization after permanent cover is established.

*Apply:	Agricultural Limestone	- 2 tons/acre (3 tons/acres in clay soils)
	Fertilizer	- 1,000 lb/acre - 10-10-10
	Superphosphate	- 500 lb/acre – 20 percent analysis
	Mulch	- 2 tons/acre - small grain straw
	Anchor	- Asphalt Emulsion @ 300 gals/acre

c. Construction Entrances:

Gravel construction entrance pads shall be constructed at each point of construction access to each property. The gravel pads shall be maintained in such a manner as to prevent the deposition of mud and debris onto existing public roadways adjacent to the site. Gravel pads shall be constructed in accordance with the latest adopted Wake County Erosion and Sedimentation Control Ordinance and published standard detail for Temporary Construction Entrance/Exits.

Effective February 1, 2006, all single-lot construction sites, regardless of size, is required to install silt fencing along the perimeter of the lot. Inspectors will not approve the initial footing inspection for a single lot unless the silt fence and construction pads are properly installed.

Special Note: It shall be the developer's responsibility to see that the construction entrance pads are properly maintained so that mud is not tracked onto adjacent streets. In the event that the gravel construction entrances are not properly maintained, or are otherwise ineffective, **the Town Representative may issue a Stop Work Order** or any other equitable remedy provided by the Town of Wendell ***Unified Development Ordinance*** or NC General Statutes. The Stop Work Order, which shall remain in effect until such time as the pads are restored and replenished and until any resulting mud and debris, has been removed from the adjacent streets by the Contractor.

d. Clearing Limits:

All clearing limits shall be clearly identified and staked prior to any construction. The Town shall be given 24-hour notice prior to beginning clearing operations.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

2.05 Earthwork

a. General:

Earthwork shall be defined as the removal of soil (including rock) from its natural location and depositing of such material into the proper fill areas as indicated on the plan.

b. Rock Excavation - by Blasting:

- (1) Permit - Where rock must be removed by blasting, a written permit must first be obtained from the Town of Wendell Public Works Department a minimum of 24 hours before any explosive materials or blasting agents are used within the corporate limits of the Town of Wendell and its extra-territorial jurisdiction (ETJ). A certificate of insurance, as outlined in paragraph 2.03, must be submitted to the Town prior to any blasting operations regardless of the location of the blasting.
- (2) Hours of Blasting - Blasting for rock removal shall be conducted only Monday through Friday during normal business hours, 8 am to 4 pm.
- (3) Blasting Procedures - Blasting for trench rock may be initiated only after the permitting requirements prescribed in (1) above of this Section have been complied with. The Contractor is also reminded of the work hour limitations for blasting, as also established in (2) above of this Section.

Blasting Procedures shall conform to all applicable local, state, and federal laws and ordinances. The Contractor shall take all necessary precautions to protect life and property, including the use of an approved blasting mat where there exists the danger of throwing rock or overburden. The Contractor shall keep explosive materials which are needed on the job site in specially constructed boxes provided with locks. These boxes shall be painted red and plainly identified as to their contents. After working hours, the boxes containing explosive material shall be removed from the job site.

Failure to comply with this specification shall be grounds for suspension of blasting operations until full compliance is made. No blasting shall be allowed unless a galvanometer is employed to check cap circuits. Where blasting takes place within 500 feet of a utility, structure, or property which could be damaged by vibration, concussion, or falling rock, the Contractor shall be required to keep a blasting log containing the following information for each and every shot:

1. Date of shot
2. Time of shot
3. Foreman's name
4. Number and depth of holes
5. Approximate depth of overburden
6. Amount and type of explosive used in each hole
7. Type of caps used (instant or delay)
8. The weather

This blasting log shall be made available to the Town Representative upon request and shall be kept in an orderly manner. Compliance by the Contractor with these specifications does in no way relieve him of legal liabilities relative to blasting operations.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

The Town Representative reserves the right to require removal of rock by means other than blasting where any utility, residence, structure, etc. is either too close to, or so situated with respect to the blasting hazardous.

c. Removal of Unstable Material:

Where soft and yielding material, boulders, loose stone, organic material or any other unsuitable material in the sub-grade which will not compact readily is encountered in trenches or in roadways, the material shall be completely removed and replaced with suitable, thoroughly compacted material without cost to the Town of Wendell.

d. Placement of Fill:

Fill material for roadway embankments shall be free from stones greater than 4 inches in size, construction material debris, frozen material, organic matter or other unstable material. Fill material placed in roadway embankments shall be placed in uncompacted lifts of eight 8 inches or less and compacted to a density of not less than 95 percent of maximum dry density as measured by AASHTO T-99. The compaction requirement shall be increased to 100 percent in the uppermost 12 inches of subgrade. These compaction requirements shall apply for that portion of the roadway measured from the back of curb and extending on a slope of 1:1 to the no cut/no fill line. Outside these limits soil may be compacted to a density of not less than 90 percent of maximum dry density as measured by AASHTO T-99.

In cut sections, the uppermost 12 inches of subgrade shall be scarified and recompacted to not less than 100 percent of maximum dry density as measured by AASHTO T-99.

Attention is called to Section 3.04 for the inspection and testing requirements.

e. Compaction Tests:

During roadway construction, the Town Representative shall require the developer or Contractor to provide compaction tests to demonstrate compliance with the compaction requirements outlined herein. Such tests may be required at any time that the Town Representative believes the compaction to be less than the required density.

All compaction testing shall be performed by a certified testing laboratory. The cost of such testing shall be borne by the developer.

2.06 Safety

The Contractor shall provide for and maintain safety measures necessary for the protection of all persons on the work, to include; and shall fully comply with all laws, regulations and building code requirements to prevent accident or injury to persons on or about the location of the work, including all applicable provisions of OSHA regulations. The Contractor shall protect all trees and shrubs designated to remain in the vicinity of the operations and barricade all walks, roads and areas to keep the public away from the construction. All trenches, excavations or other hazards in the vicinity of the work shall be made safe, well barricaded and properly lighted at night.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

The Contractor shall be responsible for the entire site and the necessary protection as required by the Town and by laws or ordinances governing such conditions. The Contractor shall be responsible for any damage to property caused by the Contractor, his employees, subcontractors or their employees and shall correct and/or repair such damages to the satisfaction of the Town of Wendell and/or other affected parties. The Contractor shall be responsible for and pay for any such claims against the Town.

2.07 Maintenance of Traffic

Existing public streets or highways shall be kept open to traffic at all times by the Contractor unless permission to close the streets, or portions thereof, is granted by the Town Representative. When allowed to close any street, the Contractor shall contact the Town of Wendell Public Works Department, and Wendell Police Department a minimum of 24 hours before fully or partially closing any street. Proper and sufficient barricades, lights, signage and other protective devices shall be installed by the Contractor when deemed necessary by the Public Works Department or the Town Representative. All traffic control measures shall comply with the MUTCD standards and guidelines for Work Zone Traffic Control. Failure to comply will result in issuance of a Stop Work Order.

2.08 Concrete

Concrete shall be only plant-mixed or transit-mixed concrete conforming to ASTM C33 for aggregates and to ASTM C94 for ready-mixed concrete. Any concrete poured that has a slump more than 4 inches as per ASTM C143, or has a batched time of more than 90 minutes, will be considered unacceptable and shall not be incorporated into the work. Concrete shall not be deposited on frozen subgrade. Concrete shall not be poured when the air temperature is falling and below 40° F and the predicted low temperature for the succeeding 24-hour period is less than 32° F. All concrete when placed in the forms shall have a temperature of between 50° and 90° F and shall be maintained at a temperature of not less than 50° F for at least 72 hours for normal concrete and 48 hours for high-early strength concrete or for as much time as is necessary to secure proper rate of curing and designed compressive strength.

Concrete shall be air entrained at 5 percent, \pm 1 percent. Air-entraining admixtures, added to the concrete mix shall conform to ASTM Specification C260. Air-entraining cements shall meet ASTM Specifications C175 and C595. Retarders and accelerators shall be used only upon approval of the Town Representative.

2.09 Installation of Utilities Not Furnished by the Town

The Developer shall arrange for the installation of all utilities that are not furnished by the Town or the City of Raleigh following approval by the Town and/or CORPUD. This shall include electric service, telephone service, and, where available, cable television and natural gas. Restoration of Town or NCDOT right-of-way disturbed by installation of these types of utilities shall be the responsibility of the Developer. All utility installations shall be designed and installed in a manner to prevent the open cutting of public paved areas.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

2.10 Dig-Once Communication Conduit

In order to provide communication infrastructure in conjunction with utility and excavation projects, the Town of Wendell requires that multiple conduits be installed on a shelf with other utilities and/or parallel with roads in developments where no other utilities are installed. The final alignments are subject to review and approval by the Town staff. The conduits shall be installed in accordance with the following specifications:

1. Install three 2-inch conduits, minimum Schedule 40 PVC or HDPE SDR 11, each with orange, yellow, and blue striping for easy identification of conduits in and between vaults during access and repair.
2. Composite vaults with dimensions of 30" W x 48" L x 36" D shall be placed in the sidewalk or available green space with the Town right-of-way, as close to the curb and gutter as possible.
3. The vaults shall be placed at intervals of 600 feet or less with vaults located at intersections wherever possible.
4. Conduits shall be installed with sweeping bends with a minimum radius of 36-inches to allow cable to be pulled without exceeding pull-tension thresholds when placing high-count fiber cables (e.g. 864-count).
5. Conduits shall be placed in the same trench on a shelf above and with minimum horizontal offset to minimize installation costs.

A detail of Typical Configuration for Dig-Once Conduit is included with the Standard Details in this document.

2.11 Public Water and Sewer Systems

Installation of public water and/or sewer systems shall conform to the City of Raleigh Code of Ordinances, as amended, pertaining to water, sewer and reuse utilities consistent with the City of Raleigh and the Town of Wendell's utility system merger dated October 2, 2006.

Placement and design of fire hydrants shall be in accordance with the City of Raleigh handbook and/or the Town of Wendell Fire Department standards pursuant to the City of Raleigh and the Town of Wendell's utility system merger dated October 2, 2006. Fire hydrants shall be painted yellow per the Town of Wendell's standard.

2.12 Materials

All materials incorporated in work to be accepted by the Town of Wendell for operation and maintenance shall be new, first-quality material installed in accordance with the manufacturer's instructions or these Specifications, whichever, in the opinion of the Town Representative, is more stringent or applicable.

It is the intent of this Specification to provide materials and construction methods of high standard and quality and to provide materials free from defects in workmanship and product. Substitute materials not specified may be used provided documentation (shop drawings) and samples are furnished to the Town not less than 14 days before their scheduled delivery to the construction site. A sufficient number of copies shall be submitted such that the Town may retain three copies. The Town will issue written

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

approval, or disapproval, of the alternate materials. The Town shall assume no responsibility for disapproving the substitute material. Current Specifications and/or the latest revisions shall apply in all cases where materials are described by these Specifications.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

SECTION 3 - STREETS

3.01 General

Unless otherwise provided herein, all materials and street construction methods shall conform to the applicable requirements as outlined in the *Standard Specifications for Roads & Structures*, latest edition, as published by NCDOT. The following substitutions shall be read into the aforementioned specifications:

- "State" or "Commission" shall be replaced by "Town of Wendell".
- "Resident Engineer" shall be replaced by "Town Representative" or their authorized representative.
- "Sampling and Testing by Commission" shall be replaced by the words "sampling and testing by the Town or its duly authorized testing agent."
- "Inspection by Commission" shall be replaced by "inspection by Town or its duly authorized representative."
- All streets (private and public) shall be designed and constructed to Town and AASHTO Standards unless the NCDOT Standards are applicable. The NCDOT Standards shall be applicable on all existing state roads, extensions of existing state roads, or roads expected to be maintained by the state. Private streets may be permitted for non-residential and multi-family uses.

3.02 Design

a. General:

Street design is based primarily on criteria dictated by the street classification, design speed, surrounding terrain, and traffic volumes.

Streets are classified according to the nature of the uses they serve and mode of travel (non-motorized and motorized) they accommodate. Streets are networked to provide a balance between access and mobility.

All streets shall conform to the standards set forth in the applicable sections of the Wendell *Unified Development Ordinance* and shall be designed and located in proper relation to existing streets and surrounding environment. Street design should be consistent with topography and preserve developed properties and community values.

All streets shall be networked to provide safe and efficient access to properties. No property shall be landlocked or excessively removed from the street facilities. Streets shall be classified as follows:

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

1. Local Streets

The local street serves a small-scale, low-speed street. Local Streets provide frontage for medium-to-low density residential buildings such as detached homes and duplexes. A local street is urban in character, with raised or rolled curbs, closed drainage, sidewalks, occasional parallel parking, and trees in continuous strips.

A. Minor Local Streets

- Alleys

The residential alley is a narrow route behind neighborhood streets providing rear access to residential buildings. Residential alleys also serve as areas for underground utilities. Alleys shall be constructed with standard concrete driveway ramps at entrances to streets.

The commercial alley is a narrow access route servicing the rear building (typically nonresidential or multi-family uses). Commercial Alleys are used by trucks and must accommodate dumpsters. They are usually paved to the edges, with center drainage via an internal crown, no center line, and concrete driveway ramps. Reference section 9.3H of the UDO.

- Cul-de-sac

Cul-de-sacs serve either abutting residential or nonresidential land use and terminate by a vehicular turnaround. Reference section 9.7 of the UDO.

B. Major Local Streets

- Residential Main Street

A residential main street serves as a small-scale, low-speed street. Residential main streets provide frontage for high-density residential buildings such as apartment buildings and row houses. A residential main street is urban in character, with raised curbs, closed drainage, sidewalks, parallel parking, trees in continuous planting strips, and buildings aligned on short setbacks.

- Main Street

A main street serves as a small-scale, low-speed street. Main streets provide frontage for high-density buildings, apartment buildings, and townhouses. A main street is urban in character, with raise curbs, closed drainage, wide sidewalks, parallel parking, trees in plantings strips or tree wells and buildings aligned on short setbacks.

- Rural Road

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

Rural road cross-sections are appropriated in areas where the rural character of the land and the surrounding uses is intended to be preserved. These roads shall be characterized by curbless, ribbon-asphalt with grass swales for drainage and no required sidewalks, although multi-use paths on one side of the roadway may be required. This cross-section may only be allowed in neighborhoods when lots are greater than 15,000 square feet.

2. Collector Streets

Collector streets provide a balance between land access and mobility within residential, office neighborhoods and commercial areas. These are streets which penetrate various land use classifications. They typically serve as a link between local streets and arterial streets.

- A collector street shall be provided when traffic volumes, access volume conditions, or intersecting street linkages dictate, or as required by the adopted Arterial and Collector Street Plan. *See the Town of Wendell **Unified Development Ordinance** for collector street criteria.*

3. Arterial Streets (Avenue/Boulevard/Parkway)

Arterial streets provide a high degree of mobility and limited access. This street type serves as a primary traffic artery of the urban area, serving the major centers of activity and carrying traffic between such centers at moderate speeds. Arterial streets must meet the design criteria set forth in AASHTO's "A Policy on the Geometric Design of Highways and Streets".

Intersection sight distances and ensuing sight triangles shall be in accordance with the **Unified Development Ordinance**. When any part of any sight triangle falls outside the right-of-way of either street, a sight triangle easement shall preserve the sight distances. Such sight triangle easements shall be shown on the final plat for the subdivision. Plant materials placed inside the sight triangle shall be in accordance with the **Unified Development Ordinance**.

b. Soils Evaluation & Pavement Design :

Pavement design for all new streets shall be based upon subgrade soil conditions, a 20-year (minimum) design life and projected traffic loadings (ADT and percent trucks). Approved pavement design methods include those most current as proposed by NCDOT, AASHTO and the Asphalt Institute. All streets to be maintained by the NCDOT must receive approval of the pavement design from the NCDOT prior to placement of curb and gutter or pavement material. Additionally, all streets to be maintained by the NCDOT shall meet the construction, inspection, testing, certification and record keeping requirements of the NCDOT.

The pavement design and subgrade soils evaluation procedure shall include the following as a minimum:

- (1) Perform standard penetration test (SPT) borings to a depth of 5 feet below design subgrade, or, in the case of fill sections, to a depth of 5 feet below existing ground. The standard penetration test borings shall be obtained along the centerline of all roadways at intervals not greater than 300 feet.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

- (2) Perform classification tests of representative SPT soil samples.
- (3) Obtain bag samples of prevalent soils and perform moisture-density tests.
- (4) Select a soil type for pavement design - usually a weaker soil among those expected to be present at subgrade level. Re-mold a sample and perform a California Bearing Ratio (CBR) using soaked values at 0.1 inch as outlined in ASTM D1833.
- (5) Prepare pavement design calculations based on the soaked CBR values and typical traffic loading as prescribed for the category of the affected street.
- (6) The pavement design and traffic analysis for traffic loading shall be prepared by a Professional Engineer licensed to practice in the State of North Carolina and submitted to the Town in duplicate copies in a report format prior to placing of any curb and gutter or crushed aggregate base course.

Soils testing work shall be performed by a qualified geotechnical engineering firm. The pavement designs shall be performed by a qualified professional engineer using standard methods developed by NCDOT, AASHTO, The Asphalt Institute, or other similar methods approved by the Engineer.

The final pavement thickness shall be the calculated, but in no case, shall the thickness be less than that required by NCDOT for streets to be maintained by the State.

3.03 Construction Requirements

a. General:

All roadway subgrade, storm sewer and utility construction shall be inspected and approved by the Town Representative prior to placement of the base course materials.

All streets shall be cleared and graded for the full width of the right-of-way section being improved.

b. Placement of Aggregate Base Course:

Aggregate base course shall be placed and compacted in strict conformance with the standard requirements of NCDOT. Each layer shall be compacted to a density equal to at least 100 percent of that obtained by compacting a sample of the material or the nuclear target density as determined by AASHTO Method T-180 as modified by NCDOT. Collector and Arterial streets shall have a thickness of no less than 8 inches and shall conform to the standard requirements of NCDOT. The aggregate base course shall consist of crushed stone or crushed gravel. Before any material is used, approval shall be obtained as to the source of material and samples shall be furnished before placing any material.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

c. Prime Coat:

Prime coat shall consist of 0.2 to 0.6 gallons per square yard of medium curing asphalt. Prime coat shall consist of asphalt grade RC-30 meeting the latest AASHTO specifications for that grade.

d. Placement of Bituminous Surface Course:

For local streets, the Superpave bituminous surface course pavements shall be in accordance with Type S 9.5A with a total thickness of not less than 2½ inches. The bituminous surface course material shall be placed in two lifts, each in strict conformance with the requirements of NCDOT. The second lift shall be 1¼ inch nominal thickness, and its placement shall be delayed during the period of initial residential construction activity until such time as its placement is approved by the Town Representative.

For collector streets requiring a combination of Type I 19.0B and Type S 9.5B, the Town will require the asphalt intermediate course (I19.0B) to be installed in a single lift of 2½ inches and the asphalt surface course (S9.5B) in a single lift of 1½ inches. The asphalt surface course shall be delayed during the period of initial residential construction activity until such time as its placement is approved by the Town Representative. All asphalt shall be installed in strict conformance with the requirements of NCDOT.

For arterial streets requiring a combination of Type I 19.0B and Type S 9.5B, the Town may require the asphalt intermediate course to be initially sealed with a 1½ inch layer of the asphalt surface course followed by placement of the final asphalt surface course layer at a later date. Asphalt pavement thickness shall conform to the requirements of NCDOT. Geotechnical reports and traffic volumes may be required.

The contractor shall provide temporary drains through the concrete gutter at all low points to allow the first layer of asphalt to drain and eliminate ponding at the low points. Prior to placing the final layer of surface course, the initial course shall be thoroughly cleaned and repaired. Bituminous tack shall be applied prior to surfacing to assure bond between layers, along gutters and around castings.

The Town may require a cash bond be posted for the construction cost of the final lift of asphalt to ensure the road construction will be completed and not leave the residents with a partially constructed road should the project be delayed or change ownership.

3.04 Inspection and Acceptance

a. Proof-Rolling:

Street embankments and cut areas shall be graded and compacted as described in Section 2 of these Specifications. After all utilities and storm sewers have been installed, the subgrade shall be fine graded and restored to required grade, and then proof-rolled, utilizing a fully loaded tandem axle truck having a gross weight not less than 40,000 pounds and with the tires inflated to not less than 70 psi.

Should any "pumping" or displacement be observed during the proof-rolling, the defective area(s) shall be excavated to a depth no less than 18 inches below subgrade and backfilled with suitable material, thoroughly compacted in not less than 8 inch lifts of uncompacted fill. If deemed appropriate by a

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

geotechnical engineer, geotextile fabric may be utilized below the base course material in lieu of additional excavation. The geotextile shall be installed in strict accordance to the manufacturer's recommendations with respect to overlap, depth of cover, etc. Prior to installing geotextile fabric, a copy of the manufacturer's literature shall be submitted to the Town along with the geotechnical engineer's recommendations. The locations of geotextile fabric shall be indicated on the Record Drawings. Proof-rolling shall be repeated until there is no evidence of "pumping" or displacement.

b. Compaction Testing - Subgrade:

Upon completion of the proof-rolling, the Developer/Contractor shall furnish to the Town Representative a report from a certified soils testing laboratory. The report shall present the results of a Proctor analysis demonstrating that the subgrade compaction is acceptable in accordance with standard requirements of NCDOT. The subgrade shall then be inspected by the Town Representative, and upon its acceptance and approval, the stone base course may be placed. However, no stone base may be placed prior to backfilling behind the curb.

One field density (compaction) test shall be required for each 3,000 square yards of street surface and for each lift of fill material placed into the roadway embankment.

The cost of laboratory testing of subgrade compaction shall be borne by the Developer/ Contractor.

c. Intermediate Course & Surface Course Inspection Requirements:

Prior to placement of bituminous surface course material, a Proctor analysis shall be furnished on the Aggregate Base Course placed in the roadway. The report shall be prepared by a certified testing laboratory and shall evidence compliance with the compaction requirements. Quarry tickets shall also be presented to the Town Representative to enable a check for yield at the specified final thickness. The base material shall then be inspected by the Town Representative, and upon acceptance and approval, the bituminous surface course may be placed. Bituminous intermediate course material shall be placed and compacted in accordance with NCDOT requirements. Copies of delivery tickets shall be furnished to the Town Representative to enable a check for yield at the specified final thickness.

The frequency and number of intermediate course field density tests shall be in accordance with requirements of NCDOT or as may otherwise be directed by the Town Representative or the Engineer.

Should there be a question as to the final thickness of Aggregate Base Course, bituminous intermediate course or bituminous surface course the Town Representative reserves the right to require the Developer/ Contractor to provide random corings by an independent testing laboratory to demonstrate actual thickness of base, intermediate and surface courses. Core samples shall be taken by a certified testing laboratory, and the results shall be presented to the Town Representative. Should the corings reveal insufficient thickness, the Contractor shall provide additional surface course as may be required or shall furnish other remedial measures as may be acceptable to the Town Representative.

The cost of compaction testing and coring work shall be borne by the Developer.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

d. Acceptance

The final lift of bituminous surface course is to be delayed until such time as its placement is approved by the Town Representative in order to allow for initial residential construction activity to conclude and not damage the road surface. Unless otherwise approved by the Town Board as part of a Conditional District, Planned Unit Development, or Development Agreement, the final lift shall be installed after 70% of the lots have received certificates of occupancy. If future phases of development are proposed, installation of the final lift can be delayed further as approved by the Town Representative. Following the installation of the final surface course, a final inspection by Town staff shall be conducted and a punch list generated of items required to be repaired. Final acceptance shall be subject to satisfactory correction of any defects in the facilities and provisions to the Town of as-built plans.

3.05 Pavement Marking & Signage

All streets require traffic signs. For streets to be maintained by the Town, the Town will install standard street name signs at all intersections, traffic control signs, signals and markings in accordance with Town standards. Prior to the installation of such devices, the Developer/Contractor shall pay to the Town costs for purchasing the signs, mounting posts, and marking materials and installations. For streets to be maintained by the NCDOT, the Developer/Contractor shall be responsible for installing such facilities in accordance with the NCDOT standards and specifications.

When required, striping on public streets constructed with development will be as follows:

- Stop Bars and Crosswalks - all streets
- Continuous Centerline Striping - double yellow line on collector and arterial streets.
- Parking Stalls – where applicable (on-street).

a. Pavement Markings:

All pavement markings including traffic control, stop bars, fire lanes and crosswalks shall be made with reflectorized thermoplastic striping with a minimum thickness in accordance with NCDOT Standard Specifications for Roads & Structures. All markings shall be 120 mils thick with the exception of symbols which shall be 90 mils thick. Parking stall striping in a private parking lot is exempt from use of thermoplastics. The thermoplastic striping type of marking material shall be applied by fusing to the pavement surface by application of heat. Materials shall comply fully with the requirements set forth in Section 1087 of the ***Standard Specifications for Roads & Structures***, latest edition, as published by NCDOT. Application of markings shall conform to the applicable requirements set forth in Section 1205 of the ***Standard Specifications for Roads & Structures***, latest edition, as published by NCDOT for permanent marking.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

b. Street Identification Signs:

Street identification signs shall identify all streets at each intersection. Such sign blades shall be constructed of aluminum sheets, 6-inch high, 0.063-inch-thick and length as needed to have a 2-inch margin before and after the lettering. The background shall be reflectorized green meeting the requirements set forth in Section 1092 the ***Standard Specifications for Roads & Structures***, latest edition, as published by NCDOT. Street name lettering shall be white, upper case, block letters 4 inches in height. Street classification (i.e. street, avenue, etc.) shall be white, upper case block lettering, 2 inches in height. Street signs shall be mounted at a nominal height of 8 feet above grade. Signs shall comply with the Town of Wendell Standard.

c. Regulatory Signs:

Regulatory signs shall meet the requirements of the ***Manual on Uniform Traffic Control Devices*** and any modifications thereto established by NCDOT. Materials shall meet the requirements set forth in Sections 1092 and 1093 of the ***Standard Specifications for Roads & Structures***, latest edition, as published by NCDOT. The location and types of regulatory signs shall be indicated on the construction drawings.

d. Sign Posts:

All signs shall be mounted in accordance with the Town of Wendell standard post:

- Street Identification Signs – Round Post, black color, and in cases where post and sign will be placed in an existing neighborhood, it shall match the existing scheme.
 - MUTCD Standard: The only acceptable alternative background colors (to green) for Street Name (D3-1 or D3-1a) signs shall be blue, brown, or white. Regardless of whether green, blue or brown is used as the background color for Street Name (D3-1 or D3-1a) signs, the legend (and border, if used) shall be white. For Street Name signs that use a white background, the legend (and border, if used) shall be black.
 - Any street color other than green must be approved by the Zoning Administration.
- Regulatory Signs – U-Channel Post, galvanized steel.

e. Building/House Identification:

All buildings and houses shall have unique addresses suitable for identification for emergency services and the address shall be clearly displayed so as to be identified from the road. Addresses shall be displayed as follows:

- Official address number must be displayed on the front of the building or at the entrance to the building which is most clearly visible from the street during both day and night.
- Buildings more than seventy-five (75') feet from the street shall have the numbers displayed at the end of the driveway or easement nearest the road which provides access to the building.
- Numbers for single-family dwellings shall be at least three (3") inches in height and shall be posted and maintained so as to be legible from the road.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

- Numbers for multiple dwelling units and non-residential buildings shall be at least six (6") inches in height and shall be placed on the front of the building facing the road or on the end of the building nearest the road.
- Numbers must be of contrasting color to the background. Ensure numbers are reflective or near a light.
- Mobile home lots shall have sequential address numbers throughout the park. Each lot will have a separate address number assigned. The address number of each lot must be clearly displayed on the lot so as to be legible from the road rather than mounted on the mobile home unit.

3.06 Private Irrigation Systems

Private irrigation systems proposed to be located within existing or proposed Town right-of-way shall be reviewed, and a permit to encroach upon Town right-of-way shall be issued by the Town prior to installation. The following requirements or features must be indicated on the construction drawings:

- (1) All irrigation systems shall be equipped with an approved RPZ-type backflow preventer located in a freeze-proof enclosure and meeting the requirements of the City of Raleigh Public Utilities Department.
- (2) All backflow preventers, control boxes, and other above ground devices shall be located outside of Town right-of-way. Only flush-type sprinkler heads and buried piping and control wiring may be located within the Town right-of-way. No sprinkler heads or other devices shall be installed within 5 feet of curbs or edges of pavement.
- (3) Within the Town right-of-way, all control wiring shall be in PVC electrical conduit and installed with no less than 18 inches of cover, unless greater cover is required by the applicable electrical codes.
- (4) All irrigation piping crossing beneath Town streets shall be encased in steel or ductile iron casing pipe, extending no less than 3 feet beyond curbs or edges of pavement with no less than 18 inches of cover.
- (5) Sprinkler heads shall be located and adjusted so that the spray pattern does not enter the right-of-way or create a visual obstruction within sight triangles.
- (6) The owner of the irrigation system shall be fully responsible for operation, maintenance and repair of the system. The owner of the irrigation system shall also be responsible for any damage to Town streets, sidewalks, landscaping or utilities resulting from failure of or repair to the irrigation system. The Town shall not be responsible for damage of any kind to private irrigation systems or components located within Town right-of-way for any reason.
- (7) RPZ type backflow preventer to be inspected at owners expense every 3-year period.
- (8) The owner of the irrigation system shall maintain accurate as-built information regarding the system and shall be responsible for providing this information to the Town or any other public entity. Ownership and contact information of the irrigation system shall be provided to the Town's Director

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

of Public Works and permanently posted on the backflow preventer enclosure, visible to the roadway.

In the event that the Town's Director of Public Works deems that the owner of the irrigation system developer failed to properly install, operate or maintain a private irrigation system within Town right-of-way, the Director will immediately revoke permission for the encroachment upon Town right-of-way. Upon revocation of permission to encroach upon Town right-of-way, water service to the irrigation system will be terminated without further notice.

3.07 Mailboxes

Mailboxes located within Town right-of-way or in common open space areas for the purpose of receiving delivery from the US Postal Service shall conform to the requirements set forth by the US Postal Service. Cluster box units (CBUs) are to be provided for new developments in locations verified and approved by the Postal Service and the Town. CBUs are to be installed on concrete pads poured behind the sidewalk facing the sidewalk or in landscape strips between the curb and the sidewalk facing the sidewalk. The Town shall reserve the right to review CBU location with respect to sight triangle, and require relocation accordingly.

3.08 Street Lights

Street lights are required for new streets in accordance with *Town of Wendell Unified Development Ordinance*. Duke Energy typically provides the design which is subject to approval by the Town. Street lights shall be LED fixtures. Refer to the Town's Street Light Policy for further details.

3.09 Sidewalks

Sidewalks in all common areas shall be installed prior to approval of final plats. All infrastructure in streets including remaining sidewalks within the phase of development are to be installed prior to application for street acceptance by the Town or as approved by the Zoning Administrator.

Subgrade under the sidewalk should be free from organic matter or plastic clays. Areas of fill material shall be compacted to 95% Standard Proctor using NCDOT Class III borrow material or better. Remove any topsoil prior to placing fill material.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

SECTION 4 - CURB & GUTTER, GREENWAYS, DRIVEWAYS, SIDEWALKS, AND PARKING AREAS

4.01 Materials

a. Concrete:

Concrete for curb and gutter, driveways, parking areas or sidewalks shall be Portland cement concrete having a 28-day strength of 3000 psi when tested in accordance with ASTM C39. Detailed specifications for concrete shall conform to the specifications contained in Section 2.08.

b. Cement:

Cement used shall be a standard brand of Portland Cement or high-early strength Portland Cement conforming to the requirements of AASHTO Specification M-85.

c. Bituminous Concrete (Asphalt):

Asphalt for greenways shall meet the requirements as set forth in Section 610 of NCDOT Specifications for Type S 9.5A.

d. Residential Parking Areas

Parking for single family residences shall be on prepared surfaces only. Prepared surfaces include concrete, asphalt, brick, gravel, or other similar materials, but shall not include landscaped areas of dirt. Parking areas must be properly prepared and maintained in accordance with this Section and the Town of Wendell Unified Development Ordinance. No more than 25 percent of the yard or the width or two parking spaces (20 feet), whichever is less, may be used for motor vehicle parking. This provision shall apply to all existing development, with the exception of driveways, and all new development within the corporate limits. New homes are required to have paved driveways, connecting to a public street or private alley. However, if the driveway would be greater than 50 feet in length to connect to a public street or alley, a paved parking pad with a gravel driveway is allowable provided a paved driveway apron of 50 feet in length is installed.

Gravel parking areas shall be constructed in accordance with the following requirements:

- **Width:** Parking pads designed to accommodate a single vehicle shall be a minimum of 10 feet in width. Those designed to accommodate two vehicles side-by-side shall be a minimum of 20 feet in width.
- **Length:** Parking pads shall be a minimum of 18 feet in length.
- **Subgrade:** Parking pad subgrades shall be prepared in accordance of Section 4.03 (a).
- **Surface:** All parking pads shall be constructed with a minimum of 4 inches of gravel. The bottom 3 inches shall consist of an aggregate base course (ABC). The top surface shall consist of processed gravel or stone. The parking pad area shall be excavated to match the grade of the yard.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

- **Location:** Unless constructed within an existing dirt or gravel driveway, gravel parking pads shall not be located within 5 feet of any property line.

See Appendix A for suggested construction sequence.

e. Unpaved Commercial Parking Areas

Unpaved parking for commercial parking areas is allowed for overflow parking only, as permitted by the Town as part of an approved development plan (the Town would have to approve what could be considered ('overflow parking') and shall consist of a 6-inch deep crushed aggregate base course layer. See Section 10-9 of the UDO.

f. Joint Fillers:

Joint fillers shall be a non-extruding joint material conforming to ASTM D1751.

4.02 Dimensions

The standard width for sidewalks shall be five (5') feet except where sidewalk is directly adjacent to the curb and gutter in which case the standard width shall be six (6') feet. In certain cases, the Town may require additional width where recommended by staff. The minimum thickness of a sidewalk shall be 4 inches, except at driveway crossings where the sidewalk shall be 6 inches thick. Sidewalks shall have a uniform slope perpendicular to the curb of ¼ inch per foot toward the curb. The utility strip between the sidewalk and the back of curb shall be sloped ½ inch per foot toward the roadway. Where street trees are required a subgrade of soil aggregate mixture will be required by the Town.

Curb and gutter shall be standard 30-inch combination curb and gutter. Standard median curb (18-inch) may be used on entrance islands and medians.

The Town Engineer shall have the right to recommend either traditional or rolled type curb and gutter if, in the engineer's opinion, development without such curb and gutter would be detrimental to the Town. In such cases where the engineer recommends either traditional or rolled type curb and gutter, the final decision on which curb and gutter shall rest with the Town Board. Rolled type curb and gutter shall be allowed only on local streets or cul-de-sacs, or in instances where development occurs in critical conservation watershed areas or as deemed appropriate by the Town Engineer. Traditional style curb and gutter will be used on all other roads requiring curb and gutter.

The standard width for greenways shall be ten (10') feet. In certain cases, the Town may require additional width where recommended by staff. The minimum thickness of a greenway shall be two (2") inches of Superpave Type SF9.5A asphalt over six (6") inches of aggregate base course underlined with geotextile fabric on a 100% compacted subgrade. Greenways shall have a maximum uniform cross slope of 2% with two (2') foot wide shoulders on each side. Proper allowances shall be made for drainage including a grassed swale on the uphill side of the greenway directing runoff to culverts crossing under the trail to prevent concentrated flow on top of the surface.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

4.03 Construction Methods

a. Subgrade:

The subgrade shall be brought to the lines, grades, and typical cross-sections shown on the plans or as required by the permit. The subgrade shall be properly shaped and thoroughly compacted so that it conforms to the lines and yielding condition before any base course or curbs and gutters are placed thereon. If the subgrade does not contain sufficient moisture for compaction, it shall be wetted to optimum moisture content. All submerged roots, stumps, or other degradable matter encountered in the preparation of the subgrade shall be removed.

Any subgrade or portion of the subgrade inaccessible to rolling operations shall be thoroughly compacted with hand or mechanical tamps.

The subgrade for roads and driveways shall be stable and thoroughly compacted as specified in paragraph 2.05 (d) (e) and tested in accordance with paragraph 3.04.

b. Forms:

Forms shall be set and maintained true to the required lines, grades, and cross sectional dimensions as shown in the Construction Details and on the Drawings. Forms shall be constructed with material of such strength and with such rigidity to prevent deflection between supports. Straight forms shall be within a tolerance of $\frac{1}{2}$ inch in 10 feet from a true line horizontally or vertically. Forms shall be thoroughly cleaned of all dirt, mortar and foreign material before being used. All inside form surfaces shall be thoroughly coated with commercial quality form oil before placing concrete.

Curbing forms or "string line" guides shall be carefully placed to assure that the curbing will be constructed to accurate grades and without creating any depressions or "bird baths". Curved sections shall be placed such that the radii are smooth and continuous and without abrupt bends.

c. Expansion, Contraction and Control Joints:

Contraction and control joints shall be cut to a depth equal to at least $\frac{1}{3}$ of the total concrete thickness. Contraction or control joint spacing shall be 10 feet maximum for curbing and driveway aprons. Expansion joints for curbing shall be no more than 50 feet on centers, with the joint material extending the full depth of the concrete with the top of the filler $\frac{1}{2}$ inch below the finished surface. Expansion and contraction joints shall be spaced such that no final curb section shall be less than 5 feet long (including repair sections). Expansion joints shall be placed adjacent to all rigid objects including buildings, sidewalks, steps, etc. Expansion joints for sidewalks shall be spaced no greater than 50 feet apart. Sidewalks shall be finished to grade and cross-section with a float, troweled smooth and finished with a broom. Contraction joints shall be no less than $\frac{1}{8}$ inch in width, to a depth equal to at least $\frac{1}{3}$ of the total slab thickness and cut at intervals equal to the width of sidewalk.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

d. Driveway Aprons:

Where driveway aprons are to be installed in an existing curb, the entire curb and gutter section shall be removed. Saw cutting and removing the curbing, leaving the existing gutter in place, may be allowed on a case-by-case basis. Contraction, control and expansion joints shall be located as previously specified. The flow line of the gutter shall be maintained across driveway aprons.

e. Execution:

Concrete in curb and gutter work shall be properly placed and cured. Curing shall be by impervious membrane cover or approved curing compound. Any sections of curb and gutter with excessive honeycombing or other type voids shall be removed and replaced, as directed by the Town representatives.

4.04 Pedestrian Crossings

Pedestrian crossings, curb cuts and ramps shall be provided at all intersections in accordance with NCGS 136-44.14.

4.05 Inspection

No concrete shall be placed until the forms and subgrades have been inspected and authorized by the Town Representative. Offset or reference points shall be maintained in place to assure proper placement of the forms by the Town Representative. Where machine extruded curbing is used, the "string line" shall be inspected by the Town Representative. A minimum of 24-hour's notice shall be given for inspections.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

SECTION 5 - STORM DRAINAGE

5.01 Design

Storm drainage facilities shall be designed in accordance with the goals and guidelines set forth in the **Unified Development Ordinance**. The goal shall be to collect and dispose of stormwater generated upon or passing through the project location. The determination of the quantities of water that must be accommodated will be based upon peak flows from storms having the following return frequency:

<u>Drainage Structure</u>	<u>Storm Event - Return Frequency</u>
Curb Inlets & Gutters	10-year storm
Storm Sewer Collector	10-year storm
Detention Facility	100-year Emergency Spillway
Cross Street Drainage	100-year storm
Roadways in Floodplain	100-year storm*
BMP Devices	UDO & NCDEQ Stormwater Best Management Practices

* Roadways in floodplain areas shall withstand the 100-year storm without over-topping or sustaining damage. The roadway embankments shall be fully protected from flows that may occur during a 100-year event.

Prediction of the peak flow rates resulting from a rainfall event shall be calculated using the procedure in the SCS TR-55, the Rational Method, or other calculation procedures acceptable to the Town Representative. The size of storm water conduits shall be determined by utilizing the standard energy equation for inlet control or outlet control and/or headwater nomographs as published by various federal agencies such as Federal Highway Administration - HEC-5, HEC-RAS, Soil Conservation Service, etc. Calculations shall include analyses of pre- and post-development run off rates from the project for the 1-year, 24-hour storm event. All calculations shall be performed under the responsible charge of an appropriately licensed design professional and sealed by that professional. Storm drainage facilities shall be designed in a manner to comply with the standards as outlined in the **UDO** to assure minimal impact to upstream and downstream properties.

The minimum pipe size to be used within any public right-of-way shall be 15-inch diameter. All public storm drainage facilities shall be installed in dedicated street rights-of-way (i.e. pipe inlets and outlets shall be within street rights-of-way or dedicated easement). If a property owner/developer desires to extend storm drainage piping to eliminate open channels on private property, such pipes shall be installed within a stormwater easement and maintained at the adjacent property owner's or owners' expense. A manhole or junction box shall be provided at the public right-of-way boundary. Minimum widths of storm drainage easements shall be the greater of 1) the width as dictated by the appropriate following configurations listed below; or 2) the width necessary to contain the predicted 100-year water elevation plus 3 feet in depth:

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

- 20 feet for single pipes up to and including 36 inches nominal diameter or open channels up to 36 inches in top width.
- 20 feet plus the maximum conduit (outside diameter at the barrel) or channel width (in feet) for single pipes or channels larger than 36 inches wide.
- 10 feet from the edge line of the outside conduits where multiple, parallel pipes are installed.

Erosion and sedimentation control measures shall be so designed to provide control from the calculated peak rates from a 10-year frequency storm. Discharge from drainage systems shall not be of such a velocity as to cause damages after leaving the pipe. At pipe outlets, flared end sections or head walls shall be provided with rip-rap aprons designed to reduce velocity and dissipate energy so that downstream damage does not occur. A Sedimentation and Erosion Control Plan approved by Wake County (or other agency having jurisdiction) shall be in place prior to any land disturbing activity.

Catch basins, yard inlets, manholes or structures shall be installed at each deflection of line or grade. No "blind" junction boxes shall be permitted. The minimum cover for reinforced concrete pipe shall be 2 feet from finish subgrade to the top of pipe under roadways and 1 foot under a non-roadway area. See Diagram D1.

Stormwater shall not be allowed to flow across streets. Drainage shall be provided to intercept flow in the radius of an intersection, or the design of the street shall indicate a continuous grade around the radius to allow the flow to continue down the intersecting street. Water shall be picked up before the spread into the street exceeds 8 feet from the face of the curb. The inlets shall be spaced using a maximum capacity of 5 CFS per single curb inlet. No curb inlet shall be installed in the curb radius of any intersection.

Ends of all storm drains and culverts shall have headwalls, endwalls, or flared end sections, and other velocity dissipation treatment subject to the approval of the Town.

Outfall channels shall be protected against erosion by rip-rap, concrete lining, or other means subject to the approval of the Town. For channel side slopes steeper than 3:1, concrete or rip-rap shall be mandatory for side slope stabilization.

Detention ponds and other BMP devices shall reference and adhere to standards set forth by NCDEQ in *Stormwater Best Management Practices* and Section 6 of the Town of Wendell ***Unified Development Ordinance***. Additional requirements by the Town include a maximum of 3:1 slopes on all sides of ponds, unless exempted by the Town Representative. All BMPs are to be located on private property for single lots or in common open space in developments owned by an owner's association. The operation and maintenance shall be the responsibility of the private property owner, not the Town. Additionally, all BMPs shall be located within an access and maintenance easement to allow the Town to periodically inspect the BMP. Should maintenance be required, the Town or its designated Agent will notify the owner's association of the need and provide a time frame during which the necessary action must be completed. Should the required maintenance not be performed, the Town or its designated Agent may elect to hire a contractor to perform the work and assess the owner's association the costs.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

5.02 Pipe Materials

a. General:

All storm sewer pipes to be installed in projects within the public street rights-of-way belonging (or to be dedicated) to the Town of Wendell shall be reinforced concrete pipe (RCP) conforming to the specifications presented herein. Corrugated Steel Pipe (CSP) may be permitted only in very large installations where RCP is not readily available or in special cases where CSP arch pipe must be used because of limited fill heights. In these special cases, the applicant's plan submittal must contain a formal request to use any materials other than RCP and accompanied by complete background data to justify its use. Approval to use any materials other than RCP may only be granted by the Town Manager upon the recommendation of the Town Representative and/or Town Engineer.

b. Reinforced Concrete Pipe (RCP):

RCP shall be as per AASHTO M-170 and ASTM C76, Table III or TABLE IV with a minimum 15-inch diameter. Strength class shall be minimum Class III for use under and adjacent to streets and roads. All RCP shall be top quality material; no seconds or lesser quality pipe shall be used. Joints shall be sealed with a plastic cement putty meeting Federal Specification SS-S-00210 such as "Ram-Nek or a butyl rubber sealant."

c. Coated Corrugated Steel Pipe (CSP) and Pipe Arch:

Coated corrugated steel pipe and pipe arch, where permitted, shall conform to AASHTO M36 with pipe ends having no less than two round corrugations on each end. Bands for pipe connection shall be corrugated, also with a minimum of two corrugations for each pipe.

Gauge thickness shall be one gauge heavier than that established in Tables 5-5 and 5-6 of the **Roadway Design Manual**, as published by the NCDOT. Corrugated steel pipe and pipe arch shall be fully bituminous coated, with paved invert per AASHTO M190, or the pipe may be Aluminized, Type 2 material conforming to AASHTO M36 and AASHTO M274.

Where CSP or CSP arch is permitted, the manufacturer of the pipe or pipe arch shall furnish a notarized affidavit certifying as to conformance with the applicable AASHTO and NCDOT specifications, and certifying that the gauge thickness conforms to these Specifications.

5.03 Materials - Storm Drainage Structures

a. General:

All structures including manholes, curb inlets, catch basins, yard inlets, junction boxes, etc., shall be constructed of clay brick masonry units, concrete brick masonry units, or precast concrete (waffle boxes are not acceptable). Ends of all terminal storm drains and culverts shall have headwalls, endwalls, or flared end sections and other velocity dissipation treatments subject to the approval of the Town. Endwalls and headwalls shall be constructed of clay brick masonry units, concrete brick masonry units, precast or structural cast-in-place concrete. Outfall channels shall be protected against erosion by rip-rap, concrete

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

lining, or other means subject to the approval of the Town. For channel side slopes steeper than 3:1, concrete or rip-rap shall be mandatory for side slope stabilization.

b. Clay Brick Masonry Units:

Clay brick shall be solid, rough, sound clay brick conforming to ASTM C32, Grade MS.

c. Concrete Brick Masonry Units:

Concrete brick masonry units shall be solid concrete brick, meeting ASTM Specification C55, Grade A, or equal, free from cracks and defects that would impair their strength or usefulness.

d. Precast Concrete Structures:

Precast Concrete Catch Basins and Manholes shall consist of precast reinforced concrete sections a conical or flat top section, as required and a base section. Precast catch basin and manhole sections shall be manufactured in accordance with ASTM Designation C478. The minimum compressive strength of the concrete for all sections shall be 4000 psi. The maximum allowable absorption of the concrete shall not exceed 8 percent of the dry weight. Metal reinforcing shall consist of intermediate grade deformed steel bars in accordance with ASTM specifications A185 and A305. Structures shall have joints sealed with a pre-formed plastic gasket per Federal Specifications SS-S-00210.

e. Concrete Manhole Blocks:

Concrete Manhole blocks shall be units meeting the requirements of ASTM Specification C139. Masonry units shall consist of barrel and cone block 6 inches thick, 7 ½ inches high and not over 15 ½ inches long. Barrel block shall be cast to a radius which will result in approximately 12 units to the course for a 4-foot diameter manhole, and proportionally thereto for manholes of a greater diameter than 4 feet. Cone block shall be cast to produce a reduction of 6 inches in a diameter per course. All units shall have a vertical groove at the ends.

f. Mortar:

Mortar shall be proportioned as shown below for either Mix No. 1 or Mix No. 2. All proportions are by volume. Water shall be added only in the amount required to make a workable mixture.

MIX NO. 1:	1 part Portland Cement ¼ part Hydrated Lime 3¾ parts Mortar Sand (maximum)
MIX NO. 2:	1 part Portland Cement 1 part Masonry Cement 6 parts Mortar Sand (maximum)

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

Portland cement shall be ASTM C150, Type 1. Hydrated lime shall conform to ASTM C207, Type S. Masonry cement shall meet the requirements of ASTM C91, Type II. Mortar sand shall be standard size 4S, per requirements of the NC DOT.

g. Castings:

- (1) General - All castings shall be of one of the manufacturers specified. If the Developer/ Contractor desires to use a casting of another manufacturer, samples of the casting(s) shall be provided to the Town Representative for review and approval. In addition to samples, the names of other users of the castings shall be furnished along with names and telephone numbers of persons whom the Town Representative may contact for an evaluation of the casting.

All castings shall meet the requirements of ASTM A48, Grade 30 iron. They shall be clear of blow holes, and holes, cracks, or other defects, properly finished and bituminous coated while hot.

- (2) Curb Inlet Grate, Frame & Hood - Curb inlets shall be of the grate, frame and hood type conforming to NCDOT 840.03, Type E, F and G, based on flow direction. Castings shall be Type V-4066 (2-5) as manufactured by Vulcan Foundry Company, Southern Foundry SF-102 + SF-103 (C,E,F, or G) or US Foundry #5181. Grates with slots parallel to the curb are not permitted.
- (3) Grates & Frames - Cast iron grates and frames for yard inlets shall conform to NCDOT 840.16 and be of the size indicated on the approved plans. Grates and frames shall be Vulcan V-4870, Southern Foundry SF-131, US Foundry 4130+6230; or their equivalent with comparable features for other larger size openings as may be required.
- (4) Manhole Rings & Cover - Cast iron manhole rings and covers shall conform to NCDOT 840.54, with the words "STORM SEWER" cast on the cover. Covers shall have four 1-inch perforations. Manhole castings shall be machined to provide a continuous bearing around the full periphery of the frame. Rings and covers that provide imperfect seating will be rejected. Covers shall be Vulcan V-1384, Southern Foundry SF-101 or US Foundry 669-KL.

h. Masonry Cement:

Masonry cement shall be of best grade, conforming to ASTM Specifications C91, Type II, of a brand approved by the Engineer. It shall be newly manufactured, well housed, and kept dry and protected at all times.

i. Portland Cement Concrete:

Portland cement concrete used for storm drainage structures, endwalls, etc. shall conform to the technical requirements presented in paragraph 2.08 of these Specifications, and shall have a minimum compressive strength of 3000 psi at 28 days. Primary structures, such as box culverts, may require concrete having a compressive strength greater than 3000 psi and may require the submission of mix designs and testing of the concrete by an independent laboratory. These special requirements may be imposed by the Town Representative for all such structures where recommended by Engineer. Additional cost, if any, associated with the special requirements shall be borne by the Contractor/Developer.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

j. Reinforcing Steel:

Reinforcing steel shall be new billet steel conforming to ASTM A615, Grade 60, deformed.

5.04 Miscellaneous Materials

a. Riprap:

Rip-rap shall be Class I as defined by the N.C. Department of Transportation, ranging in size from 6 inch to 10 inch in diameter and weighting from 5 pounds to 200 pounds with at least 30 percent of the rip-rap weighting at least 60 lbs.

b. Steps:

Steps shall be constructed using ½ inch diameter reinforcing steel encapsulated in polypropylene material. Steps shall be designed and installed to accommodate a vertical load of not less than 400 pounds and a horizontal pullout load of at least 1,000 pounds. Steps shall have a clear width of 12 inches.

c. Crushed Stone

Crushed stone for pipe and drainage structure foundations shall conform to ASTM C33, Size #57, Graded 1-1/2 inch to 1 inch.

5.05 Construction Methods

a. Trenching & Bedding for Storm Sewers:

The trench shall be excavated to the line and grade indicated on the drawings. The trench bottom shall provide a firm and uniform support for the pipe. Where bell and spigot type pipe is used, recesses shall be excavated to receive the pipe bell.

Where the foundation is found to be of poor supporting value, the pipe foundation shall be conditioned by undercutting the unacceptable material to the required depth as directed by the

Town Representative and backfilling with stone or other approved material. Where necessary, surface water shall be temporarily diverted in order to maintain the pipe foundation in a dry condition. The flow of water from such temporary diversions shall be directed into suitable erosion control devices.

b. Pipe Laying:

Concrete pipe culverts shall be laid carefully with bells or grooves up grade and ends fully and closely joined. Joints of concrete pipe shall be made with O-ring gasket or with plastic gasket material as specified. Joints shall be made in accordance with manufacturer's recommendations. Pipe which is not true to alignment, or which shows any settlement after laying, shall be taken up and re-laid.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

Corrugated steel pipe and pipe arch shall be laid similar to reinforced concrete pipe. Joints shall be of steel bands supplied by pipe manufacturer and installed according to manufacturer's instructions.

c. Backfilling:

The storm sewer trench shall be backfilled with approved material free from large stones or clods in 6-inch layers, loose measurement, and compacted to 95 percent of maximum dry density (AASHTO T-99), where the trench is within an area to be paved, or where the trench is immediately behind the curb. In streets, the compaction requirement shall be increased to 100 percent of maximum dry density within 12 inches of subgrade. The backfilling shall be done on both sides of the pipe simultaneously to prevent displacement of the pipe. The backfill materials shall be moistened when necessary in the opinion of the Town Representative to obtain maximum compaction. Water settling or puddling shall not be permitted. Backfill in trenches not within the limits to be paved may be compacted in 12-inch layers after backfill is 1 foot above the top of the pipe.

All trash, forms, debris, etc., shall be cleared from around all pipes and structures before backfilling. Backfilling around structures shall be done symmetrically and thoroughly compacted in 6-inch layers with mechanical tampers to the specified density.

d. Masonry Structures:

Excavations shall be made to the required depth, and the foundation on which the brick masonry is to be laid shall be approved by the Town Representative. The brick shall be laid so that they will be thoroughly bonded into the mortar by means of the "shove-joint" method. Buttered or plastered joints will not be permitted. The headers and stretchers shall be so arranged as to thoroughly bond the mass. Brickwork shall be of alternate headers and stretchers with consecutive courses breaking joint. All mortar joints shall be at least 3/8 inches in thickness. The joints shall be completely filled with mortar. No spalls or bats shall be used except for shaping around irregular openings or when unavoidable to finish out a course. Competent masons shall be employed on the work, and all details of construction shall be in accordance with approved practice and to the satisfaction of the Town Representative.

Steps as shown on the plans shall be placed in all catch basins and inlets when they are greater than 3 feet 6 inches in depth. The steps shall be set in the masonry as the work is built up, thoroughly bonded, and accurately spaced and aligned. Steps shall be set at 12 inches on center and project at least 5 inches from the face of the wall.

Inverts in the structures shall be shaped to form a smooth and regular surface free from sharp or jagged edges. They shall be sloped adequately to prevent sedimentation.

The castings shall be set in full mortar beds. All castings when set shall conform to the finish grade shown on the Drawings.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

e. Concrete Construction:

The forming, placing, finishing and curing of Portland cement concrete shall be performed in strict accordance with all applicable requirements as contained in the ***Standard Specifications for Road & Structures***, latest edition, as published by the NCDOT.

f. Installation of Precast Concrete Structures:

Precast concrete catch basins, manholes, junction boxes, etc. shall be installed level and plumb and upon a firm, dry foundation, approved by the Town Representative. Structures shall be backfilled with suitable materials, symmetrically placed and thoroughly compacted so as to prevent displacement and deter settlement. Castings shall be set in full mortar beds to the required finished grade.

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

SECTION 6 – RECREATION FACILITIES

6.01 General

All open spaces shall comply with the requirements in the Town of Wendell ***Unified Development Ordinance*** (UDO), or as stated in these Specifications. The open space requirements shall be met with a combination of active and passive open spaces in accordance with locations, types, and guidelines found in the UDO.

Passive/improved open space shall be installed at the time of final platting of the phase of the development pertaining to that portion of open space. Active open space shall be installed and constructed at the time that one-third of the lots of the phase of development are issued certificates of occupancy pertaining to that portion of active open space.

6.02 Design

At the time of preliminary plan/site plan and construction drawings, all proposed active recreation must be approved by the Town of Wendell's Parks and Recreation Director.

Playgrounds shall be designed in accordance with standards set forth by the U.S. Consumer Products Safety Commission in the Handbook for Public Safety and American Society for Testing and Materials. A plan prepared by a commercial playground company with specifications on all pieces of equipment shall be submitted with the construction drawings for the proposed development. An average of \$400/lot shall be used in determining an estimated cost and appropriate size of playground equipment for each development.

Standards for Recreation Facilities shall be as follows:

BASKETBALL COURT

- Court size – 74ft x 42ft (Middle School)
- Foul line – 15ft
- 3-point line – 19.9ft
- Surface – 4-inch asphalt or concrete
- 6 inches of stone for drainage
- Commercial grade goals (example Mega Slam - \$2,500)
- Lighting - To be lighted at 50 foot-candles measured to center court and 30 foot-candles measured at the ends of the court.

TENNIS COURT

- Play area – 36ft x 78ft
- Total area – 60ft x 120ft
- Surface – 3-inch asphalt
- 6 inches of stone for drainage

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

- Acrylic surface paint with sand
- Lighting - To be lighted at 50 foot-candles measured at the net and 30 foot-candles measured at the baseline.

BASEBALL FIELD

- Infield
 - 6 inches of stone for drainage
 - 6 inches of surface mix – 60% sand, 40% clay, 10% silt (if possible)
 - 1.5% grade from the pitching mound out
- Bermuda Grass
- Lighting – If lighting is desired, ninety-foot baseball fields are recommended to be lighted to a level of 50 foot-candles in the infield and 30 foot-candles in the outfield. All other baseball and softball facilities are recommended to be lighted to 30 foot-candles maintained in the infield and 20 foot-candles maintained in the outfield.

MULTI-PURPOSE FIELD (Soccer, Football, Lacrosse, Field Hockey)

- 2% crown
- Bermuda Grass
- Lighting – If lighting is desired, it is to be lighted at 30 foot-candles throughout the whole field.

BEACH VOLLEYBALL

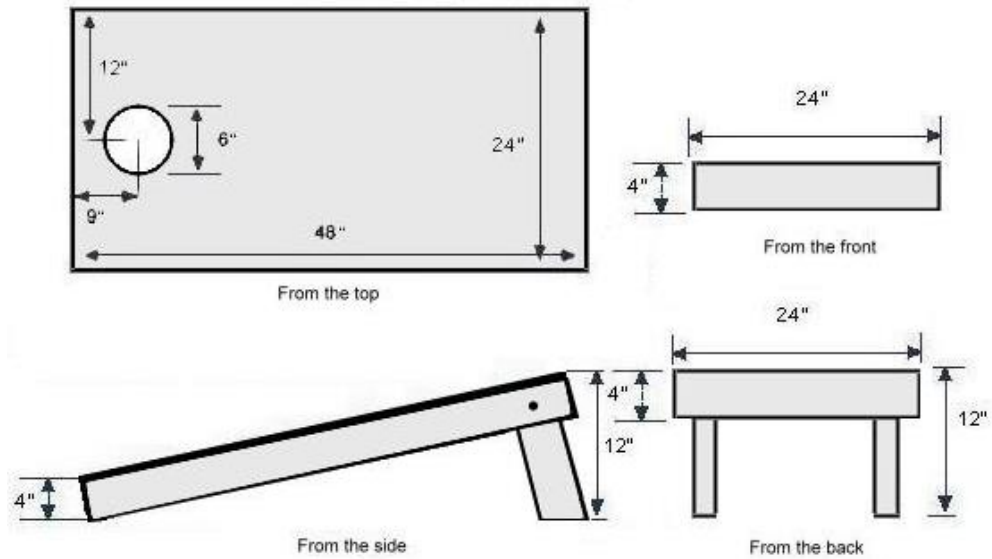
- Play area – 52ft 6 in x 26ft 3 in
- 16-inch sand depth
- Net height - 7ft 11 5/8 in

COURT GAMES

- Shuffleboard
 - Play area - Minimum 52ft x 10ft
 - Surface – 3 inches of concrete.
 - Shuffleboard wax is recommended on a regular basis.
- Bocce
 - Play area – 100ft x 13ft
 - Remove 3-5 inches of grass/topsoil
 - Frame the entire playing surface with 2x6 pressure treated lumber
 - Surface materials recommended are; artificial turf, sand, or crushed stone
- Horseshoe Pit
 - Play area – 48ft x 6ft
 - Stakes to be 40ft apart
 - Pit 48in x 36in (sand)
 - Backboards to be 4ft behind the stakes and 3ft long

STANDARD SPECIFICATIONS & CONSTRUCTION DETAILS MANUAL

- Cornhole
 - Concrete boards with the following dimensions:



- Board holes – 33ft apart

GLOSSARY

Intent

For the purpose of interpreting this Ordinance Standard Specifications and Details Manual, certain words, concepts, and ideas are defined herein. Except as defined herein, all other words used in this Ordinance Manual shall have their everyday meaning as determined by their dictionary definition.

Interpretation

- A. Words used in the present tense include the future tense.
- B. Words used in the singular number include the plural, and words used in the plural number include the singular.
- C. Any word denoting gender includes the female and the male.
- D. The word “person” includes a firm, association, organization, partnership, corporation, trust and company as well as an individual.
- E. The word “lot” includes the word “plot” or “parcel” or “tract”.
- F. The word “shall” is always mandatory and not merely directory.
- G. The word “structure” shall include the word “building.”

Definitions

AASHTO: American Association of State Highway Transportation Officials.

AASHTO – T-99: A standardized soil test to determine maximum dry density and optimum moisture.

Access Road: A public or private one-way or two-way road for ingress and/or egress. Such access roads may be of various types, including frontage roads, rear access roads, roads with cul-de-sacs, and dead-end roads. This definition includes secondary roads but does not include driveways.

Accessory Building: See Building, Accessory

Accessory Facility or Structure: An accessory facility or structure serving or being used in conjunction with Wireless Telecommunications Facilities, including but not limited to, utility or transmission equipment storage sheds or cabinets.

Administrator: The person, officer, or official and his authorized representative, whom the Town Board has designated as their agent for the administration of these regulations. S/he may provide the enforcement of the Manual by means of the withholding of building permits and occupancy permits and by instituting injunction, mandamus, or other appropriate action or such violation, or to prevent the occupancy of the building, structure, or land.

ADT: Average Daily Travel.

GLOSSARY

Aggregate Base: Crushed rock used as a sub-base layer of an asphalt roadway or as a base course for cement pads and foundations, and as backfill material for underground pipelines and other underground utilities.

Agriculture: These establishments grow crops, raise animals, harvest timber, and harvest fish and other animals from a farm, ranch, or their natural habitats. They may be described as farms, ranches, dairies, greenhouses, nurseries, orchards, or hatcheries. A farm, as an establishment, may be one or more tracts of land, which may be owned, leased, or rented by the farm operator. Farms may hire employees for a variety of tasks in the production process. Subcategories in this dimension differentiate establishments involved in production versus those that support agricultural production. For agricultural research establishments administering programs for regulating and conserving land, mineral, wildlife, and forest use, apply the relevant institutional or research and development categories. (LBCS F9000 and S8000)

Alley or Alleyway: A strip of land, owned publicly or privately, set aside primarily for vehicular service access to the back or side of properties otherwise abutting on a street.

Alter: To make any structural changes in the supporting or load bearing members of a building such as walls, columns, beams, girders, or floor joists.

Amortization: The process by which nonconforming uses and structures shall be discontinued or made to conform to requirements of the UDO at the end of a specified period of time.

Antenna: A system of electrical conductors that transmit or receive electromagnetic waves or radio frequency signals. Such waves shall include, but not be limited to radio, television, cellular, paging, personal Telecommunications services (PCS), and microwave Telecommunications.

Apartment Building: a multiple-unit building with dwelling units arranged either vertically or horizontally. Units may be for rent or sale.

Arcades: A series of arches, either supported by columns, piers, or pillars, either freestanding or attached to a wall to form a gallery or for decorative purposes.

ASTM: American Society for Testing & Materials.

ASTM C94: Standard Specification for Ready Mixed Concrete.

ASTM C143: Standard Test Method for Slump of Hydraulic-Cement Concrete.

ASTM D1833: Standard Test Method for Odor of Petroleum Wax.

Banner: A sign of lightweight fabric or similar material that is mounted to a pole or a building at one or more edges. National flags, state or municipal flags or the official flag of an institution or business shall not be considered banners.

Bay Window: A window assembly whose maximum horizontal projection is not more than two feet from the plane of an exterior wall and is elevated above the floor level of the home.

Bedroom: A room designated as a sleeping room or bedroom on the building plans.

GLOSSARY

Berm: A mound of material, the purpose of which is to divert the flow of runoff water and/or to act as a visual and sound buffer to nearby properties.

Best Management Practices (BMP): A structural or nonstructural management based practice used singularly or in combination to reduce nonpoint source inputs to receiving waters in order to achieve water quality protection goals.

BMP, Structural: A physical device designed to trap, settle out, or filter pollutants from stormwater runoff; to alter or reduce stormwater runoff velocity, amount, timing, or other characteristics; to approximate the pre-development hydrology on a developed site; or to achieve any combination of these goals. Structural BMP includes physical practices such as constructed wetlands, vegetative practices, filter strips, grassed swales, and other methods installed or created on real property. “Structural BMP” is synonymous with “structural practice”, “stormwater control facility,” “stormwater control practice,” “stormwater treatment practice,” “stormwater management practice,” “stormwater control measures,” “structural stormwater treatment systems,” and similar terms used in the UDO.

Bioretention: A water quality practice that utilizes landscaping and soils to treat stormwater runoff by collecting it in shallow depressions and filtering it through a planting soil media.

Board of Commissioners: Board of Commissioners of the Town of Wendell, North Carolina.

Bona Fide Farm: Land primarily used for the production, and activities relating or incidental to the production of crops, fruits, vegetables, ornamental and flowering plants, dairy products, livestock, poultry, and all other forms of agriculture products having domestic or foreign markets. A bona fide farm use also includes the accessory uses and buildings necessary incidental to such agricultural production (such as packing, treating, or storing of the products). A bona fide farm use does not include forestry, the retail sale of products, farm serving uses, or commercial agricultural services (such as veterinary services, landscape contracting, and crop services or animal services for the production of other farms).

Brownfields: Vacant or underused industrial or commercial properties where contamination, or at least the threat of contamination, has hindered development.

Buffer: An area of natural or planted vegetation through which stormwater runoff flows in a diffuse manner so that the runoff does not become channelized and which provides for infiltration of the runoff and filtering of pollutants. The buffer is measured landward from the normal pool elevation of impounded structures and from the bank of each side of streams or rivers.

Buffer Yard: A landscaped area intended to give spatial separation between incompatible land uses.

Buildable Area: The portion of a lot remaining after required yard setbacks has been provided.

Building: Building. Any structure having a roof supported by columns or by walls, and intended for shelter, housing, or enclosure of persons, animals, or property. The connection of two buildings by means of an open porch, breezeway, passageway, carport, or other such open structure, with or without a roof, shall not be deemed to make them one building.

GLOSSARY

Building Height: The vertical distance measured from the average elevation of the finished grade to the topmost section of the roof.

Building Permit: A permit issued by the Administrator when a proposal to use or occupy a lot or structure, or to erect, install, or alter a structure, building, sign, or lot fully meets the requirements of this chapter. This permit must be obtained before any work is initiated on the proposed use.

Building, accessory: A building subordinate to the main building on a lot and used for purposes customarily incidental to the main or principal building and located on the same lot therewith.

Building, principal: A building in which is conducted the main or principal use of the lot on which said building is situated.

Built-Up Area: That portion of a development project that is covered by impervious or partially impervious surface including, but not limited to, buildings; pavement and gravel areas such as roads, parking lots, and paths; and recreation facilities such as tennis courts. "Built-Up Area" does not include a wooden slatted deck, the water area of a swimming pool, or pervious or partially pervious paving material to the extent that the paving material absorbs water or allows water to infiltrate through the paving material.

Caliper: A standard trunk diameter measurement for nursery grown trees taken 6 inches above the ground for up to and including 4-inch Caliper size, and 12 inches above the ground for larger sizes.

Canopy Tree: A species of tree, which normally grows to a mature height of 40 feet or more with a minimum mature crown width of 30 feet.

Catch Basin: An inlet to the storm drain system that typically includes a grate or curb inlet where stormwater enters.

CBR: California Bearing Ratio.

Cemetery: A parcel of land used for internment of the dead in the ground or in mausoleums.

Centerline Radius: This is the imaginary line segment or bend from the centerline of one road to where another intersects. The centerline radius may be increased or decreased based on a number of factors including, but not limited to, terrain, speed limit and the size of vehicles the road is designed to accommodate.

Certificate of Occupancy: A certificate issued by the Administrator or his designated representative certifying that all structures, their land uses, and land restrictions conform to all the requirements of the Wendell Unified Development Ordinance. This certificate is issued prior to occupying any structure or use for which a zoning permit is issued.

CFS: Cubic Feet per Second.

Child/Adult Day Care Center: An individual, agency, or organization providing supervision or care on a regular basis for children or adults who are not related by blood or marriage to, and who are not the legal wards or foster children of, the supervising adults; and who are not residents in the center;

GLOSSARY

designed and approved to accommodate more than eight children or adults at a time based on State regulations; not an accessory to residential use.

Collector Street/Road: Collectors are designed to provide a greater balance between mobility and land access within residential, commercial, and industrial areas. The makeup of a collector facility is largely dependent upon the density, size, and type of abutting developments. Emphasizing balance between mobility and access, a collector facility is designed to better accommodate bicycle and pedestrian activity while still serving the needs of the motoring public.

Collector Street Plan: A plan of collector roads and streets.

Co-location: The use of the same Telecommunications Tower or structure to carry two or more Antennae for the provision of wireless services by two or more persons or entities.

Commercial Building: a building that encompasses a commercial business.

Commercial Vehicle, Oversized: Oversized commercial vehicles shall include any vehicle (except pick-up trucks) or trailer that bears a commercial license plate; and,

1. Has more than 2 axles or 4 tires; or
2. Is designed to carry more than 15 passengers, including the driver; or
3. Weighs more than 10,000 pounds with or without load; or
4. Requires hazardous materials placards; or
5. Is more than 9 feet in height; or
6. Is more than 22 feet in length

This definition includes, but is not limited to semi-trailers, tow trucks, buses, limousines, tractors, construction equipment, delivery vans, or similar vehicles.

Concentrated flow: Drainage concentrated in ditches or pipes, as opposed to spread out.

CORPUD: City of Raleigh Public Utilities Department

Critical Root Zone (CRZ): A circular region measured outward from a tree trunk representing the essential area of the roots that must be maintained in order for the tree's survival. The critical root zone is one foot of radial distance for every inch of tree DBH, with a minimum of 8 feet.

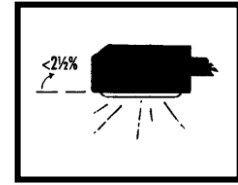
Cul-De-Sac: See Street, cul-de-sac

Curb Cut: A lowered or cut-away curb for purposes of ingress or egress to property abutting a public street.

Curb Inlet: A belowground box structure with an opening at street level used to assist in stormwater drainage of the street surface area.

GLOSSARY

Cutoff Fixture: A fixture light distribution where no more than 2.5 percent of a lamp's light intensity is emitted at or above a horizontal plane drawn through the bottom of the fixture and no more than 10 percent of the lamp's light intensity is emitted at an angle 10 degrees below that horizontal plane, at all lateral angles around the fixture.



DBH: Diameter-at-breast-height is the tree trunk diameter measured in inches at a height of 4.5 feet above the ground.

Dedication: A gift, by the owner, of a right to use land for a specified purpose or purposes. Because a transfer of property rights is entailed, dedication must be made by a written instrument, and is completed with an acceptance.

Design Manual: The stormwater design manual approved for use in Phase II jurisdictions by The North Carolina Department of Environment and Natural Resources (NCDENR) developed by the Town of Wendell and certified by this jurisdiction and approved by The Division of Water Quality of NCDENR as at least as stringent as the stormwater design manual approved for use in Phase II jurisdictions by NCDENR for the proper implementation of the requirements of the federal Phase II stormwater program. All references herein to the Design Manual are to the latest published edition or revision.

Developer: For purposes of these Specifications the term Developer is synonymous with the term Contractor. Developer refers to both the developer of the project or his authorized contractor performing work on the site. All Contractors performing construction or installation of public facilities shall be properly licensed for the work by the State of North Carolina. Prior to commencing work, the Contractor shall submit proof of licensure. The Contractor shall also submit information including mailing and street address for the firm, ownership information, tele-phone numbers for contact during regular business hours and emergency telephone numbers for contact during nights, weekends and holidays during a pre-construction meeting with representatives of the Town of Wendell.

Development: Any land disturbing activity which adds to or changes the amount of impervious or partially pervious cover on a land area or which otherwise decreases the infiltration of precipitation into the soil, other than rebuilding activity that does not qualify as redevelopment.

Direct Light: Light emitted directly from the lamp, off the reflector or reflector diffuser, or through the refractor or diffuser lens, of a luminaire.

Directional Fixture: An assembly that holds the lamp along with any globe, shade, or other covering surrounding the lamp that may be adjusted to concentrate or throw light in a specific direction.

Discharging Landfill: A facility with liners, monitoring equipment and other measures to detect and/or prevent leachate from entering the environment and in which the leachate is treated on-site and discharged to a receiving stream.

Drainageway: Any natural or manmade channel or drainage structure that carries surface runoff from precipitation.

GLOSSARY

Drip Line: A vertical line extending from the outermost edge of the tree canopy or shrub branch to the ground.

Driveway: A private way beginning at the property line of a lot abutting a public road, private road, easement or private right-of-way, giving access from that public road, recorded easement, recorded private road, or private right-of-way, and leading to a building, use, or structure on that lot.

Driveway Apron: an access constructed across a public right-of-way between the street and the property line.

Dwelling: A building designed, arranged, or used for permanent living quarters for one or more persons.

Dwelling-Duplex: A two-unit building that is divided horizontally or vertically, and each unit has a separate entrance from the outside or through a common vestibule. Buildings are typically under one ownership. (LBCS F 1100 and S1121)

Dwelling-Multifamily: A dwelling unit that is part of a structure containing more than one unit. Each unit has a separate entrance from the outside or through a common vestibule. Multi-family dwellings may include triplexes, or fourplexes (buildings under one ownership with two to four dwelling units in the same structure), as well as townhouses (a type of structure that has at least three or more separate dwelling units divided vertically, and each unit has separate entrances to a front and rear yard), and apartments. (LBCS S1121 and S1140)

Dwelling-Secondary: A dwelling unit either detached or attached, such as a garage apartment or cottage, designed for occupancy by one or two persons, not exceeding 750 square feet of gross floor space and located on a lot with an existing single-family dwelling. Said units shall not exceed one per lot.

Dwelling-Single Family: A free standing building designed for and/or occupied by one household. These residences may be individually owned as residences or residences owned by rental or management companies. Also, includes factory-built, modular housing units that comply with NC State Building Code. (LBCS F1100 and S1100)

Dwelling Unit: A building, or portion thereof providing complete living quarters for one or more persons.

Easement: A grant by the property owner for use by the public, a corporation, or person(s) of a strip of land for specified purpose.

Easement, access: An easement which grants the right to cross property.

Easement, conservation: A restriction placed on a piece of property to protect the resources (natural or man-made) associated with the parcel. The easement is either voluntarily sold or donated by the landowner, and constitutes a legally binding agreement that prohibits certain types of development (residential or commercial) from taking place on the land.

Easement, drainage: An easement which recognizes and documents the presence of a drainageway, guarantees the passage of stormwater runoff, and may grant the right to maintain, relocate, or in such other manner utilize the easement for the improvement of drainage and stormwater flow.

GLOSSARY

Easement, utility: An easement which grants to the Town of Wendell or other utility providers the right to install and thereafter maintain any and all utilities including, but not limited to, water lines, sewer lines, storm sewer lines, electrical power lines, telephone lines, natural gas lines, and community antenna television systems.

EIFS: (Exterior insulation finishing systems) a type of building product that provides exterior walls with an insulated finished surface and waterproofing in an integrated composite material system.

Engineer: Town Engineer of Wendell, the Town's Consulting Engineer as designated by the Town Manager, or an assistant or other representative duly authorized by the Town Manager.

Engineering Drawings: Plans, profiles, and associated documentation of all proposed street, drainage, water and sewer improvements, prepared in accordance with the Uniform Construction Standards Manual.

Erosion: The wearing away of land surface by the action of wind, water, gravity, or any combination thereof.

Evergreen: Those plants that retain foliage throughout the year.

Evergreen Screen: A plant growing to over 20 feet in height at maturity that retains foliage year-round that is planted to provide a dense vegetative screen for purposes of visual mitigation between zoning districts.

Existing Development: Those projects that are built or those projects that at a minimum have established a vested right under North Carolina zoning law as of the effective date of the UDO based on at least one of the following criteria:

- (a) Substantial expenditures of resources (time, labor, money) based on a good faith reliance upon having received a valid local government approval to proceed with the project, or
- (b) Having an outstanding valid building permit as authorized by the General Statutes (G.S. 160A-385.1), or
- (c) Having expended substantial resources (time, labor, money) and having an approved site specific or phased development plan as authorized by the General Statutes (G.S. 160A-385.1).

Extraterritorial Jurisdiction (ETJ): That land lying beyond the municipal limits of the Town of Wendell and within the extraterritorial jurisdiction boundary as delineated on the official zoning map of the Town of Wendell in accordance with G.S. 160A-360. The authority is granted to a locality to exercise zoning powers for a specified distance outside its boundaries. It is intended to protect activities on the edge of communities from being encroached on by incompatible adjacent activities.

Fixture: The assembly that houses the lamp or lamps and can include all or some of the following parts: a housing, a mounting bracket or pole socket, a lamp holder, a ballast, a reflector or mirror, and/or a refractor or lens.

GLOSSARY

Flag Lot: See “Lot, pipestem”

Flood Fringe: The land area located between the floodway and maximum elevation subject to inundation by the base flood.

Flood, base: The flood having a 1 percent chance of being equaled or exceeded in any given year.

Flood Lamp: A form of lighting designed to direct its output in a specific direction with a reflector formed from the glass envelope of the lamp itself. Such lamps are so designated by the manufacturers and are typically used in residential outdoor area lighting.

Flood or Spot Light: Any light fixture or lamp that incorporates a reflector or a refractor to concentrate the light output into a directed beam in a particular direction.

Floodplain: The relatively flat area or low land adjacent to the channel of a federally designated watercourse which has been or may be covered by floodwater during a base flood event.

Floodway: The channel of a federally designated watercourse and the adjacent land area that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than 1-foot.

Foot-candle (FC): A unit of illuminance amounting to 1 lumen per square foot.

Foot-candle Grid: A graphical representation of points placed onto a grid or layout where each point identifies the amount of illuminance (light) in foot-candles or lux (1/10 of a foot-candle). The spacing between points can vary depending on the size of the area to be lighted. For many typical outdoor layouts, a 10' x 10' spacing grid layout is used. Larger areas may utilize a 15' or 20' grid spacing. This type layout can also indicate luminance or reflected light instead of illuminance.

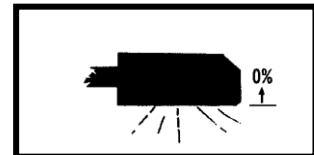
Free Standing Tower: A Tower that is not supported by guy wires and ground anchors or other means of attached or external support.

Frontage: All the property abutting on one side of a street between two intersecting streets measured along the street line. “Frontage along a public street” requires means of direct access by the public.

Frontage Road: A frontage road is a local street or road that is parallel to a full or partial access controlled facility and functions to provide access to adjacent land.

Fueling Station: Pumps and associated storage tanks and/or mechanical equipment where fuels, oils for motor vehicles are dispensed, sold, or offered for sale.

Full Cutoff Fixture: A fixture for light distribution where no light intensity is emitted at or above a horizontal plane drawn through the bottom of the fixture and no more than 10 percent of the lamp's light intensity is emitted at an angle 10 degrees below that horizontal plane, at all lateral angles around the fixture.



Gas Station: Establishment that primarily retails automotive fuels. These establishments may further provide services such as automotive repair, automotive oils, and/or replacement parts and accessories.

GLOSSARY

Gas stations include structures that are specialized for selling gasoline with storage tanks, often underground or hidden. The sale of food and other items as well as car washes shall be incidental to the gas station.

Glare: Light emitting from a luminaire with intensity great enough to reduce a viewer's ability to see, and in extreme cases causing momentary blindness.

Greenway: Public open space featuring paths and trails of various kinds, based on natural corridors usually along rivers and streams and ridgelines as well as canals, abandoned railbeds or other public rights-of-ways, which are owned and maintained by the Town and have been designated on an officially adopted greenway or open space plan.

Ground Cover: A prostrate plant growing less than two (2') feet in height at maturity that is grown for ornamental purposes. Ground covers are used as an alternative to grasses. On slopes, ground covers control erosion while eliminating the maintenance of mowing on hillsides. Many ground covers survive in poor soils, shade and other adverse conditions.

Handicapped Person: As used in family care definition, a person with a temporary or permanent physical, emotional, or mental disability including but not limited to mental retardation, cerebral palsy, epilepsy, autism, hearing and sight impairments, emotional disturbances and orthopedic impairments but not including mentally ill persons who are dangerous to others as defined in G.S. 122C-3(11)(b).

Hazardous Material: Any substance listed as such in: SARA section 302, Extremely Hazardous Substances, CERCLA Hazardous Substances, or Section 311 of CWA (oil and hazardous substances).

HEC-5: Simulation of Flood Control and Conservation Systems, a program designed to simulate the sequential operation of a reservoir-channel system with a branched network configuration.

HEC-RAS: Hydrologic Engineering Centers River Analysis System.

High-Density Project: Any project that exceeds the low-density threshold for dwelling units per acre and built-upon area.

House: a dwelling for single-family occupancy or other limited uses.

Hydrated Lime: a dry powder manufactured by treating quicklime with sufficient water to satisfy its chemical affinity for water, thereby converting the oxides to hydroxides.

IESNA: Illuminating Engineering Society of North America, a non-profit professional organization of lighting specialists that has established recommended design standards for various lighting applications.

Impervious Surface: Improvements including street pavement, driveways, gravel areas, buildings, and other structures which cover the soil surface and prevent infiltration of water into the soil.

Incidental Sign: A sign, generally informational, that has a purpose secondary to the use of the lot on which it is located, such as "no parking," "loading only," "telephone," and other similar directives.

Indirect Light: Direct light that has been reflected or has scattered off other surfaces.

GLOSSARY

Injunction: A court order that orders a party to do or refrain from doing a certain act (or acts) as opposed to a money judgment.

Internal Refractive Lens: A glass or plastic lens installed between the lamp and the sections of the outer fixture globe or enclosure. Refractive refers to the redirection (bending) of the light as it goes through the lens, softening and spreading the light being distributed from the light source thereby reducing direct glare.

Isolux Lighting Plan: A demonstration or topographic of light distribution over a given area.

Junction Box: A container for electrical connections usually intended to conceal them from sight and deter tampering.

Lamp: The component of a luminaire that produces the actual light (bulb).

Land Disturbing Activity: Any use of the land by any person(s) in residential, industrial, educational, institutional, or commercial development, highway or road construction or maintenance, that results in a change in natural cover or topography that may cause or contribute to sedimentation.

Landfill: A facility for the disposal of solid waste on land in a sanitary manner in accordance with Chapter 130A Article 9 of the N.C. General Statutes. For the purpose of this document, this term does not include composting facilities.

Landlocked Property: A parcel that has no frontage on a public right-of-way.

Landscaping: Changing, rearranging, or adding to the original vegetation or scenery of a piece of land to produce an aesthetic effect appropriate for the use to which the land is put. It may include reshaping the land by moving the earth, as well as preserving the original vegetation or adding vegetation.

Light Spillage: The shining of light produced by a luminaire beyond the boundaries of the property on which it is located and desired as measured at the border.

Live-Work Unit: An attached residential building type with small commercial enterprises on the ground floor and a residential unit above or behind with a common tenant in both spaces (no dual occupancy is permitted).

Lot: A portion of a subdivision or any other parcel of land intended as a unit for transfer of ownership or for development or both. The word "lot" includes the word "plot" or "parcel."

- (a) Double-frontage lot: A lot of the same depth as the width of a block containing two tiers of lots and which is accessible from both streets upon which it fronts.
- (b) Single-tier lot: A lot which backs upon limited access highway, a railroad, a physical barrier, or a nonresidential use and to which access from the rear is usually prohibited.
- (c) Corner lot: A lot which has continuous frontage at two intersecting streets.
- (d) Pipe stem lot (also known as flag lot or panhandle lot): A lot which contains a relatively narrow strip that provides street access.

GLOSSARY

Lot of Record: A lot which is a part of a subdivision, a plat of which has been recorded in the office of the register of deeds of Wake County or a lot described by metes and bounds, the description of which has been so recorded.

Lot, infill: The development of new housing or other buildings on vacant sites in a built-up area.

Lot Width: The distance between side lot lines measured at the building line.

Low-Density Project: A project that has no more than two dwelling units per acre or 24 percent built-upon area (BUA) for all residential and non-residential development.

Lumen: A unit of luminous flux. The total quantity of light emitted from a light source. One foot-candle is one lumen per square foot. For the purposes of this document, the lumen-output values shall be the Initial lumen output ratings of a lamp.

Luminaire: A complete lighting unit consisting of a lamp or lamps together with the parts designed to distribute the light, to position and protect the lamps and to connect the lamps to the power supply.

Maintained Footcandle: Luminance of lighting fixtures adjusted for a maintenance factor accounting for dirt build-up and lamp output depreciation. The maintenance factor used in the design process to account for this depreciation cannot be lower than 0.72 for high-pressure sodium and 0.64 for metal halide and mercury vapor.

Major Subdivision: Generally, subdivision that include more than five lots. Other items may trigger a parcel's classification as a major subdivision such as: public street dedication, new streets, whether public or private, to provide access to interior lots or parcels; the extension of public water or sewer or the creation of new drainage easements; future street connectivity concerns; and any non-residential use.

Manufactured Housing: A dwelling unit, other than a modular home, fabricated in an off-site manufacturing facility for installation or assembly on the building site, which is at least eight feet in width and at least 32 feet in length, which bears a seal certifying that it was built to the standard adopted pursuant to the "National Manufactured Housing Construction and Safety Standards Act of 1974", 42 U.S.C. Sec 5401 et seq., which is placed upon a permanent foundation which meets the installation and foundation requirements adopted by the N.C. Commissioner of Insurance, but which is not constructed or equipped with a permanent hitch or other device allowing it to be moved other than for the purpose of moving to a permanent site, and which does not have permanently attached to its body or frame any wheels or axles (LBCS S1150).

Manufactured Home Neighborhood: A subdivision of land that permits double-wide manufactured houses that are aligned on the lots in a manner similar to site built homes with their front doors facing the streets.

Manufactured Home Park: The location of two or more manufactured homes on a parcel of land shall constitute a manufactured home park.

GLOSSARY

Map for Recordation: A plat that depicts existing property where the act of subdivision is not involved.

Marquee: A structure which is constructed and framed in steel or other durable material, extended permanently over the ground, sidewalk, or walkway, and of sufficient strength and design to carry superimposed sign structures.

Mechanical Equipment: HVAC, utility cabinets, or other equipment related to the mechanical operation of a building.

Mechanical Penthouse: story of a building dedicated to mechanical and electronics equipment.

Mezzanine: a low story between two other stories of greater height in a building.

Mini-Warehouses: A building containing separate enclosed storage spaces of varying sizes leased or rented on an individual basis.

Minor Subdivision: subdivisions that include five lots or less; does not involve any public street dedication, does not require any new street, whether public or private, to provide access to interior lots or parcels; does not involve the extension of public water or sewer or the creation of new drainage easements; does not adversely affect the development of the remainder of the property or the adjoining property and would not block future street connectivity; and is for residential use only.

Mixed-Use Building: a multi-story small scale structure that can accommodate a variety of uses.

Modular Home: A dwelling unit constructed in accordance with the standards set forth in the North Carolina State Building Code and composed of components substantially assembled in a manufacturing plant and transported to the building site for final assembly on a permanent foundation.

Mortar Sand: An aggregate for use in masonry mortar consisting of natural or manufactured sand.

Multi-Use Path: A pathway usually intended for the use of bicycles, pedestrians and other non-motorized means of conveyance. Usually 8-12 feet of a paved surface or a surface graded with a material suitable for the types of users.

MUTCD: Manual of Uniform Traffic Control Devices.

NCDOT: North Carolina Department of Transportation.

Nonconforming: A lot, structure, sign, or use of land or structure, which is now prohibited under the terms of the UDO but was lawful at the date on which it was established or became lawful at some later date. Nonconforming lots, signs, use of land or structures in place at the time of adoption of the UDO are grandfathered; however, any changes to the nonconforming lot, structure, sign or use of land or structure, shall comply with the UDO under the terms of Chapter 13.

Nonconforming Lot: A lot of record that does not conform to the dimensional requirements of the zoning district in which it is located. The nonconformity may result from adoption of the UDO or any subsequent amendment.

GLOSSARY

Nonconforming Structure: A structure that does not conform to dimensional, elevation, location, or other requirements of the UDO. The nonconformity may result from adoption of the UDO or any subsequent amendment.

Non-Cutoff Fixture: A fixture light distribution where there is no light intensity limitation in the zone above the maximum distribution of light intensity.

Non-Residential: All uses which are neither single-family nor multi-family. For the purposes of watershed or flood protection: All development other than residential development, agriculture and silviculture.

Official Maps or Plans: Any maps or plans officially adopted by the Board of Commissioners as a guide for the development of the town and surrounding area.

One-Hundred-Year Storm: The level of flood water expected to be equaled or exceeded every 100 years on average. More accurately referred to as the 1% annual probability flood, since it is a flood that has a 1% chance of being equaled or exceeded in any single year.

One-year, 24-hour Storm: The surface runoff resulting from a 24-hour rainfall of an intensity expected to be equaled or exceeded, on average, once in 12 months and within a duration of 24 hours.

Open Space: Undeveloped or predominantly undeveloped land which has value for one or more of the following purposes: park and recreation, conservation of land and other natural resources, and/or historic and scenic purposes.

OSHA: Occupational Safety and health Administration.

Outdoor Advertising Signs: A free-standing sign located outdoors that directs attention to a business, commodity, service or entertainment conducted, sold, manufactured or offered either on the same premises as the sign or at a different location.

Outdoor Display Area: Commercial establishments that rely on outdoor sales and display areas including but not limited to heavy equipment sales, recreational vehicle sales, automobile sales, manufactured home displays, and sales of building materials.

Outdoor Lighting: The nighttime illumination of an outdoor area or object by any man-made device located outdoors that produces light by any means.

Outparcel: A parcel of land designated on an approved commercial development site plan or determined as such by the Administrator. An outparcel shall be secondary in nature to the primary commercial development. It shall contain a single building and be independent of the total development in that its driveways, walkways, landscaping, and lighting are unique to the building on the site.

Owner: The legal or beneficial owner of land, including but not limited to a mortgagee or vendee in possession, receiver, executor, trustee, or long-term or commercial lessee, or any other person or entity holding proprietary rights in the property or having legal power of management and control of the property. "Owner" shall include long-term commercial tenants; management entities, such as those charged with or engaged in the management of properties for profit; and every person or entity having

GLOSSARY

joint ownership of the property. A secured lender not in possession of the property does not constitute an owner, unless the secured lender is included within the meaning of “owner” under another description in this definition, such as a management entity.

Parcel: A lot, or contiguous group of lots in single ownership or under single control, and usually considered a unit for purposes of development.

Park and Ride Spaces: A parking lot/spaces designated for drivers to leave their cars and use mass transit facilities beginning, terminating, or stopping within immediate walking distance of the park and ride facility.

Parking Lot (Primary Use): A stand-alone parking lot that is available for public or private use, but that is not an accessory to another use.

Parking Space: The storage space for one automobile plus the necessary access space.

Parking Structure (Primary Use): A stand-alone parking structure (deck) that is available for public or private use, but that is not an accessory to another primary use.

Personal Wireless Facility: See definition for Wireless Telecommunications Facilities.

Planning Board: The Town of Wendell Planning Board.

Planting Area: The area prepared for the purpose of accommodating the planting of trees, shrubs, and groundcovers.

Portland Cement: The most common type of cement in general use around the world.

Porch: An open-air room appended to a building with floor and roof but no walls on the sides facing public frontage.

Preliminary Plat: A draft plat of a proposed subdivision, used to determine if the proposed development is in general conformance with town standards and ordinances.

Principal Building or Principal Use: The principal purpose for which a lot or the main building thereon is designed, arranged, or intended, and for which it is or may be used, occupied, or maintained.

Project Engineer: The design engineer, land surveyor, or landscape architect retained by the developer, and the person responsible for the preparation of the final construction drawings.

Protected area: The area adjoining and upstream of the critical area in a WS-IV water supply in which protection measures are required. The boundaries of the protected areas are defined as extending 5 miles upstream and draining to water supply reservoirs (measured from the normal pool elevation) to the ridge line of the watershed (whichever comes first); or 10 miles upstream and draining to the intake located directly in the stream or river (run-of-the-river), or to the ridge line of the watershed (whichever comes first).

PSI: Pounds per Square Inch.

GLOSSARY

Public Realm: Those areas within a community to which the public has open access, such as public streets, sidewalks, building facades, lighting, etc. which fosters social interaction, community activity and connectivity among those aspects of urban development.

Recreational Vehicle: A vehicle or portable structure which can be towed, hauled, or driven and is primarily designed as temporary living accommodation for recreational, camping, and travel use. A recreational vehicle shall not be considered as a dwelling unit.

Redevelopment: Any rebuilding activity other than a rebuilding activity that results in no net increase in built upon area and provides equal or greater stormwater control than the previous development.

Required Yard Area: That space between the required yard setback lines and the lot lines from which the required yard setbacks are measured.

Residential Development: Buildings for residence such as attached and detached single-family dwellings, apartment complexes, condominiums, townhouses, cottages, etc. and their associated outbuildings such as garages, storage buildings, gazebos, etc. and customary home occupations.

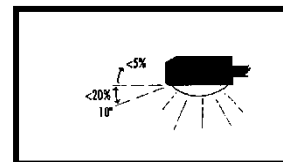
Rezoning: An amendment to or a change in the zoning ordinance. Rezonings can take three forms: (1) a comprehensive revision or modification of the zoning text and map; (2) a text change in zone requirements; and (3) a change in the map, i.e., the zoning designation of a particular parcel or parcels. Rezonings, like enactment of the original ordinance, are legislative acts that cannot be delegated to administrative officials. According to state law, planning boards make recommendations and Board of Commissioners approve or deny rezonings.

Right-of-way: See "Street right-of-way"

Sediment: Solid particulate matter, both mineral and organic, that has been or is being transported by water, air, gravity, or ice from its site of origin.

Sedimentation: The process by which sediment resulting from accelerated erosion has been or is being transported off the site of the land-disturbing activity or into a lake or natural water course.

Semi-Cutoff Fixture: A fixture light distribution where no more than 5 percent of a lamp's light intensity is emitted at or above a horizontal plane drawn through the bottom of the fixture and no more than 20 percent of the lamp's light intensity is emitted at an angle 10 degrees below that horizontal plane, at all lateral angles around the fixture.



Semi-Opaque: Partially opaque or partially impenetrable to sight.

Setback: A line parallel to the property line in front of which no structure shall be erected.

Shrub: An upright plant planted for ornamental or screening purposes.

Sight Triangle: A triangular area formed by the intersection of the projected street lines (right-of-way lines) and a straight line connecting points on said street lines.

GLOSSARY

Sign: Any form of publicity or advertising which is visible from any public way, directing attention to an individual, business, commodity, service, activity, or product, by means of words, lettering, parts of letters, figures, numerals, phrases, sentences, emblems, devices, trade names or trademarks, or other pictorial matter designed to convey such information and displayed by means of paint, bills, posters, panels, or other devices erected on an open framework, or attached or otherwise applied to stakes, posts, poles, trees, buildings, or other structures or supports.

Sign, Awning: A sign, which is painted, stitched, sewn, or stained onto the exterior of an awning.

Sign, Canopy: A sign which is suspended from, attached to, supported from, applied to, or forms part of a canopy. Also known as a canopy-suspended sign.

Sign, Conforming: A sign which is in compliance with all the provisions of the UDO.

Sign, Construction: A single sign giving the name or names of building owners, architects, engineers, and/or lending institutions and principal contractors responsible for construction on the site where the sign is placed, together with other appropriate information included thereon.

Sign, Direct (or internal) illumination: A light source which is enclosed within the sign and viewed through a translucent panel. Luminous tubing (neon lights) is one kind of direct illumination.

Sign, Directional: A sign containing only the name and address of a facility and information pertaining to the direction of the facility.

Sign, Indirect (or external) illumination: A light source which is placed outside of or away from the sign in a manner to illuminate the sign.

Sign, Information: Any on-premise sign containing no other message, copy, announcement, or decoration other than instruction or direction to the public. Such signs include, but are not limited to, the following: the identification of rest rooms, public telephones, walkways, entrance and exit drives, freight entrances, and traffic direction.

Sign, Monument: Any sign, other than a pole sign, which is attached directly to the ground by means of one or more upright pillars, braces or posts and not attached to any other structure.

Sign, Nonconforming: A sign erected before the effective date of the UDO which is not in compliance with one or more of the provisions contained herein.

Sign, Obsolete: A sign identifying a business establishment no longer in existence, products no longer being sold, services no longer being rendered, or events which have already occurred or a sign advertising a business, product, or service still in existence by which is no longer in operation or available at the location where the sign is located.

Sign, Off-Premise: Any sign or structure, pictorial or otherwise, regardless of size or shape, which directs attention to a business, commodity, attraction, profession, service, or entertainment conducted, offered, sold, manufactured, existing, or provided at a location other than on the premises where the sign is located or to which it is affixed.

GLOSSARY

Sign, On-Premise: Any sign or structure, pictorial or otherwise, regardless of size or shape, which directs attention to a business, commodity, attraction, profession, service, or entertainment conducted, offered, sold, manufactured, existing, or provided at a location on the premises where the sign is located or to which it is affixed.

Sign, Pole: A sign more than 10 feet but not more than 20 feet in height which is attached directly to the ground by one or more upright supports.

Sign, Real estate sign: A sign located on the premises and offering the premises for sale, rent, lease or development.

Sign, Roof sign: A sign erected, constructed, placed, or maintained upon the roof of any building.

Sign, Special Event: A sign of a business or organization which is not part of its normal activities. Such a sign shall be limited to a business “grand opening” or “going-out-of-business sale,” as well as fund-raising membership drives or events of civic, philanthropic, educational, or religious organizations.

Sign, Temporary Sign: A sign which is permitted for a limited period of time.

Sign, Wall Sign: A sign erected parallel to the facade of any building to which it is attached, and supported throughout its entire length by the building face.

Sign Face: The part of the sign that is or can be used to identify, advertise, or communicate information, or is used for visual representation which attracts the attention of the public for any purpose. Sign face includes any background material, panel, trim, color, and direct or self-illumination used that differentiates that sign from the building, structure, backdrop, surface, or object upon which or against which it is placed. The sign structure shall not be included as a portion of the sign face provided that no identifying/advertising message, symbol, or any of the aforementioned sign face criteria are displayed on or designed as part of the sign structure, whether structurally necessary or not.

Signage, Aggregate: The total surface area of all signs located on a particular tract not counting incidental signs. For double-sided signs, the area of one side will only count toward calculating the total.

Site Plan: A diagram to scale showing the development plans for a project.

Specimen Tree: Any healthy, existing tree over 18 inches in caliper measured at DBH, (excluding Sweet Gum, Catalpa, Wild Cherry, Wild Elm, Princess, Hackberry, and Tree-of-Heaven trees) found in a field or open grown condition, or along the edge of a forest stand or tree stand and displaying the root zone, canopy, and structure characteristic of the particular species.

Stoop: A small stair, landing, or ramp connecting a building entrance to the sidewalk.

Storage-Storage Yard: The storage of various materials outside of a structure, as a principal use.

Storage-Warehouse, Indoor Storage: Facilities for the storage of furniture, household goods, or other commercial goods of any nature. Includes cold storage. Does not include warehouse, storage, or mini-storage facilities offered for rent or lease to the general public; warehouse facilities primarily used for wholesaling and distribution; or terminal facilities for handling freight.

GLOSSARY

Storm Drainage Facilities: The system of inlets, conduits, channels, ditches, and appurtenances which serve to collect and convey stormwater through and from a given drainage area.

Stormwater Runoff: The direct runoff of water resulting from precipitation in any form.

Story: a horizontal section of a building, having one continuous or practically continuous floor.

Stream: A watercourse that collects surface runoff.

Street: A dedicated and accepted public right-of-way for vehicular traffic which affords the principal means of access to abutting properties.

Street, cul-de-sac: A short local street having one end open to traffic and the other end permanently terminated by a vehicular turnaround.

Street, local: A street whose primary function is to provide access to abutting properties.

Street, private: A vehicular travelway not dedicated or offered for dedication as a public street but resembling a cul-de-sac or a local street and providing the principal means of access to abutting properties or buildings.

Street, public: A dedicated and accepted public right-of-way for vehicular traffic. In the town limits, a public street shall be maintained by the Town of Wendell or the state Department of Transportation. Alleys are specifically excluded.

Street Frontage: The length of property of a single lot abutting a public right-of-way or private street.

Street Right-of-Way: A strip of land whose legal title has been offered for public access and is occupied or intended to be occupied by a travelway and is also available, with the consent of the appropriate governmental agency, for installation and maintenance of traffic control devices, regulatory and information signs, water lines, sanitary sewer lines, storm sewer lines, gas lines, power lines, and communication lines.

Street Tree: A tree planted along the street, typically in the right-of-way in a planting strip or tree well.

Street Yard: A Planting Area parallel to a public street designed to provide continuity of vegetation along the right-of-way and to soften the impact of development by providing a pleasing view from the road.

Structural BMP: See BMP, structural.

Structure: Anything constructed or erected, the use of which requires more or less permanent location on the ground or which is attached to something having more or less permanent location on the ground.

Structure, accessory: A detached, subordinate structure, the use of which is customarily incidental to that of the principal structure and which is located on the same lot as the principal structure.

Structure, historic (State or National Register): Any structure that is: (1) listed individually in the National Register of Historic Places (a listing maintained by the U. S. Department of Interior) or preliminarily determined by the Secretary of Interior as meeting the requirements for individual listing on the National Register; (2) certified or preliminarily determined by the Secretary of Interior as

GLOSSARY

contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; (3) individually listed on a state inventory of historic places; (4) individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified (a) by an approved state program as determined by the Secretary of Interior, or (b) directly by the Secretary of Interior in states without approved programs.

Structure, principal: The primary structure on a lot.

Subdivision: A “subdivision” shall include all divisions of a tract or parcel of land into two or more lots, building sites, or other divisions for the purposes of sale or building development (whether immediate or future) and shall include all division of land involving the dedication of a new street or a change in existing streets.

Subgrade: The native material (i.e. soil) on which the foundation of a road is laid.

Substantial Progress: For the purposes of determining whether sufficient progress has been made on an approved plan, one or more of the following construction activities toward the completion of a site or subdivision plan shall occur: obtaining a grading permit and conducting grading activity on a continuous basis and not discontinued for more than 30 calendar days; or installation and approval of on-site infrastructure; or obtaining a building permit for the construction and approval of a building foundation. “Substantial progress” for purposes of determining whether an approved plan is null and void is not necessarily the same as “substantial expenditures” used for determining vested rights pursuant to applicable law.

Surety: A pledge or formal promise made to secure against loss, damage, or default; a security.

Technical Review Committee (TRC): A group of Town staff and other reviewing agencies who review and approve Site Plans and Preliminary Plats.

Telecommunications: The transmission and reception of audio, video, data and other information by wire, radio frequency, light and other electronic or electromagnetic systems.

Telecommunications Structure: A structure used in the provision of services described in the definition of Wireless Telecommunications Facilities.

Telecommunications Tower. *See definition for Wireless Telecommunications Facilities.*

Thoroughfare Plan: A plan adopted by the Board of Commissioners for the development of existing and proposed major streets that will adequately serve the future travel needs of an area in an efficient and cost-effective manner.

Thoroughfare Street, major: Major thoroughfares consist of interstate, other freeway, expressway, or parkway links, and major streets that provide for the expeditious movement of high volumes of traffic within and through urban areas.

Thoroughfare Street, minor: Minor thoroughfares collect traffic from local and other non-thoroughfare streets and carry it to the major thoroughfare system. Minor thoroughfares may be used to supplement

GLOSSARY

the major thoroughfare system by facilitating movement of moderate volumes of traffic within and through urban areas and may also serve abutting property.

Town: The Town of Wendell, North Carolina.

Town Board: The Town Board of Commissioners, Wendell, North Carolina.

Town Representative: As referred to in the Standard Specifications and Details Manual, The Director of Public Works of the Town of Wendell or an assistant or other duly authorized representative of the Town of Wendell, will be named as the town representative.

Toxic Substance: Any substance or combination of substances (including disease causing agents), which after discharge and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, has the potential to cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions or suppression in reproduction or growth) or physical deformities in such organisms or their off spring or other adverse health effects.

TR-55 (SCS): United States Department of Agriculture Technical Release 55 incorporating procedures of Soil Conservation Service.

Transit Station-Passenger: Facilities for ground passenger transit systems using multiple modes of transport over regular routes and on regular schedules within the town or that operated over long distances between metropolitan areas (LBCS F4120 and S3900).

Travel trailer (camping trailer): A vehicular, portable structure, built on a chassis, designed to be used as a temporary dwelling for travel, recreational and vacation uses and being of any length or width, provided its gross weight does not exceed 4,500 pounds, or being of any weight, provided its overall length does not exceed 29 feet.

Tree Save Area: Conservation area where trees are to be preserved from grading or future development.

Tree Wells: Openings within large sidewalks where trees are planted; provides aeration for tree roots and is typically covered with a metal grate to protect the soil/roots from being compacted.

Understory Tree: A species of tree, which normally grows to a mature height of 15 feet to 35 feet.

Utilities: Publicly or privately owned facilities or systems for the distribution of gas, electricity, steam, or water, the collection, treatment and disposal of sewage or refuse; the transmission of communications; of similar functions necessary for the provision of public services. Radio transmission facilities for use by ham radio operators or two-way radio facilities for business or governmental communications shall be deemed accessory uses and not utilities, provided no transmitter or antenna tower exceed 180 ft in height. Utilities are divided into three classes:

Class 1 Transmission and collection lines (above and below ground) including electrical, natural, gas, waste water collection, and water distribution lines; pumping stations, lift stations, and telephone switching facilities (up to 200 sq. ft).

GLOSSARY

Class 2 Elevated water storage tanks; package treatment plants, telephone switching facilities (over 200 sq. ft), substations, or other similar facilities in conjunction with telephone, electric, steam, and water facilities.

Class 3 Generation, production, or treatment facilities such as power plants, water and sewage plants, and landfills.

Variance: A permission to develop or use property granted by the Watershed Review Board relaxing or waiving a water supply watershed management requirement adopted by the Environmental Management Commission that is incorporated into the UDO.

Watershed: The entire land area contributing surface drainage to a specific point (e.g. the water supply intake).

Wetlands: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, under normal conditions, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wide-body Refractive Globe: A translucent lamp enclosure used with some outdoor fixtures to provide a decorative look. "Wide-body" refers to a wider than average size globe (greater than 15.75 inches in diameter). "Refractive" refers to the redirection (bending) of the light as it goes through the lens, rendering the light fixture more effective. Wide-body refractive globes are intended to soften and spread the light being distributed from the light source thereby reducing direct glare.

Wireless Telecommunication Facility: Equipment constructed in accordance with Section 332(c)(7) of the federal Communications Act at a single location by a private business user, governmental user, or commercial wireless service provider to transmit, receive, or relay electromagnetic signals (including microwave). Such facility includes antennas or antenna arrays, wireless telecommunication towers, support structures, transmitters, receivers, base stations, combiners, amplifiers, repeaters, filters, or other electronic equipment; together with all associated cabling, wiring, equipment enclosures, and other improvements.

Stealth: Equipment that is unobtrusive in its appearance such as the co-location on existing tower facilities; and the placement of equipment on flagpoles, buildings, silos, water tanks, pole signs, lighting standards, steeples, billboards and electric transmission towers.

Tower: The construction of new free-standing facilities or facilities that extend more than 20 feet above the normal height of the building or structure on which they are placed. The following shall not be included in this definition:

- Amateur radio facilities with antennas mounted on supporting structures less than 100 feet in height;
- Residential antennas for receiving television or AM/FM radio broadcasts;
- Residential satellite dishes; or, commercial or industrial satellite dishes that are less than 20 feet in height.

GLOSSARY

Yard: A space on the same lot with a principal building open, unoccupied and unobstructed by buildings or structures from ground to sky except where encroachments and accessory buildings are expressly permitted.

Yard, front: An open, unoccupied space on the same lot with a principal building, extended the full width of the lot, and situated between the street and that front line of the building, projected to the side lines of the lot.

Yard, rear: An open, unoccupied space on the same lot with a principal building, extending the full width of the lot and situated between the rear line of the lot and the rear line of the building projected to the side lines of the lot.

Yard, side: An open, unoccupied space on the same lot with a principal building, situated between the building and the side lot line and extending from the rear line of the front yard to the front line of the rear yard.

Yard Inlet: an inlet that is neither a curb nor a grate inlet.

Zero Lot Line: A development approach in which a building is sited on one or more lot lines with no yard. Conceivably, three of the four sides of the building could be on the lot lines. The intent is to allow more flexibility in site design and to increase the amount of usable open space on the lot. Virtually all zoning ordinances retain yard requirements; where zero lot line developments have been permitted, they have been handled through group development procedures, or other devised which allow for site plan review. The few ordinances which specifically authorize the zero-lot line approach do so as an exception to prevailing regulations and under clearly defined circumstances.

Zoning: A police power measure, enacted primarily by general purpose units of local government, in which the community is divided into districts or zones within which permitted and special uses are established as are regulations governing lot size, building bulk, placement, and other development standards. Requirements vary from district to district. The zoning ordinance consists of two parts: a text and a map. For the most part, this conventional definition of zoning still applies, but recent innovations in special (or conditional) use districts and overlay districts have begun to blur some of the ordinance's neatness and clarity.

Zoning Districts: A section of a town designated in the zoning ordinance text and (usually) delineated on the zoning map, in which requirements for the use of land and building and development standards are prescribed.

Zoning Map: The map delineating the boundaries of districts which, along with the zoning text, comprises the zoning ordinance.

Gravel Parking Pad Standards

- A. All gravel parking pads shall be constructed in accordance with the standards provided below.
- B. **Width**: Parking pads designed to accommodate a single vehicle shall be a minimum of 10 feet in width. Those designed to accommodate two vehicles side-by-side shall be a minimum of 20 feet in width.
- C. **Length**: Parking pads shall be a minimum of 18 feet in length.
- D. **Surface**: All parking pads shall be constructed with a minimum of 6 inches of gravel. The bottom 3 inches shall consist of bank run gravel. The top 3 inches shall consist of processed gravel or stone. The parking pad area shall be excavated to match the grade of the yard.
- E. **Location**: Unless constructed within an existing dirt or gravel driveway, gravel parking pads shall not be located within 5 feet of any property line.

Steps

Follow these steps to build a gravel driveway:

1. Measure the length and width of the parking pad area. You'll need to multiply the values by each other to know the size of the parking pad in square feet.
2. Multiply the depth of the parking pad (6 inches = 0.5 ft) by the size of the parking pad in square feet to determine the size of the parking pad in cubic feet.
3. Multiply the value in cubic feet by 1.5 to determine how many tons of gravel you need to fill in the parking pad.
4. Dig out the soil on the parking pad area to 6 inches in depth. Make sure that the ground is completely solid. You may want to dig extra inches of soil on soft spots until you hit a stable, solid point on the ground. Pack the ground in using a stamping plate.
5. Lay some clay or loose soil on the newly-dug surface. Make sure to pack the material tightly with a stamping plate to prevent erosion.
6. Mix some sand with the gravel to keep the driveway surface level. It's much easier to work with gravel mixed with sand than to use pure gravel.
7. Lay 3 inches of bank run gravel over the foundation of the parking pad as evenly as possible. After the gravel has been laid out, you need to level the material with a rake or a shovel. Lay 3 additional inches of processed gravel or stone evenly across the parking pad and level the material once more.
8. Test the parking pad to see if it will hold up to the weight of your car.

**Town of Wendell
Construction Checklist
(follow NCDOT Specifications where applicable)**

Roadway

- Pavement limits
- Pavement thickness
- Compaction – test per NCDOT Standard Specifications
- Cracks/Broken pavement
- Sidewalk/Multi-use path (for residential, installation along common areas and outer perimeter prior to final plat; individual lots will install them prior to CO for building permit)
- Greenway trails (if required)

Curb and Gutter

- Expansion/control joints
- No cracks/broken concrete

Storm Pipes

- Mandrel test/Pressure test
- Proper size/material

Storm Structures

- No cracks/broken/spalling concrete
- Underdrain size (if applicable)
- Paved bottom channels (if applicable)
- Frame/grate/covers seated properly

Signage

- Proper sign/size
- Proper location
- Proper height

Pavement Markings

- Proper location/type
- Proper application

Water/Sewer Utilities – City of Raleigh Public Utilities Department Inspections/Specifications

Landscaping

- Proper type/size
- Proper location
- Proper height

Final Punch List

- Final Punch List will be generated during a walk-through by Wendell staff/engineer
- All items on punch list must be addressed to the satisfaction of staff/engineer before final acceptance.
-

As-Builts

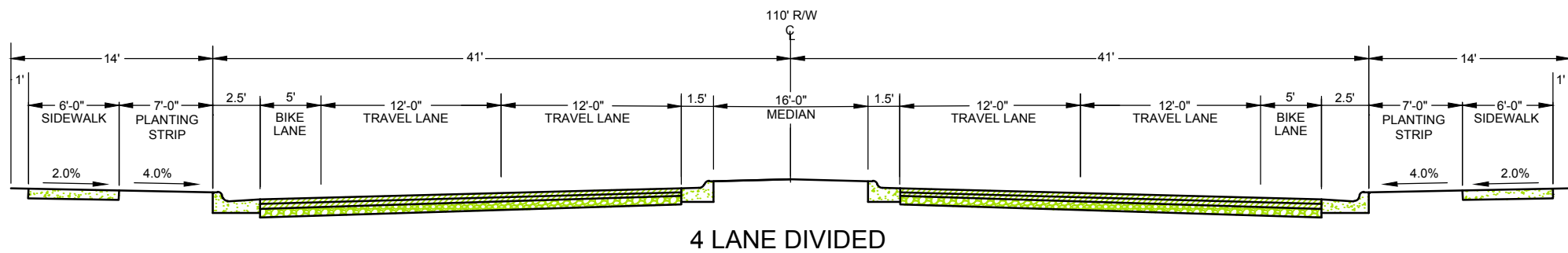
- As-Builts shall be provided before warranty period and prior to Wendell taking over maintenance of public improvements.
-

Testing/Inspections

(Hired by Developer or pay Town's Third Party Engineer; if developer choses their own team for inspection, the reports will be checked by the Town's Engineer)

- Site grading and erosion control inspection per plan
- Closed system drainage inspection if applicable (pipe placement inspections, density testing on back fill around pipes during installation; video inspection after construction is complete)
- Curb and gutter placement inspections if applicable (concrete testing)
- Subgrade inspections (proof roll and density testing)
- Stone base placement if applicable (laydown inspection, thickness and density verification)
- Asphalt base, intermediate, and surface testing (laydown inspection, thickness and density verification)
- Final punch-list inspection and repair inspections prior to roadway acceptance
- Warranty review inspection if applicable

STANDARD DETAILS



REVISIONS

DATE	DESCRIPTION

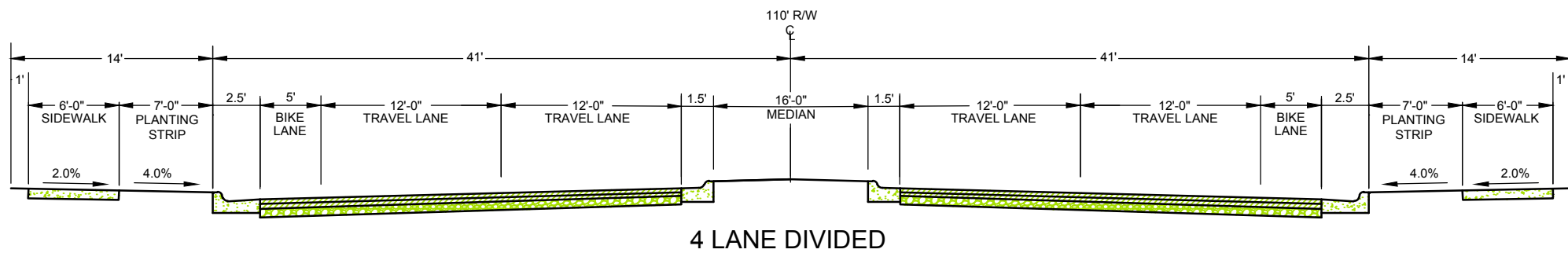
TOWN OF



Effective Date: 7/23/2018
Standard Details
Supersede Date: N/A

Policy Number: 120

MAJOR THOROUGHFARE, 4 LANE DIVIDED



REVISIONS

DATE	DESCRIPTION

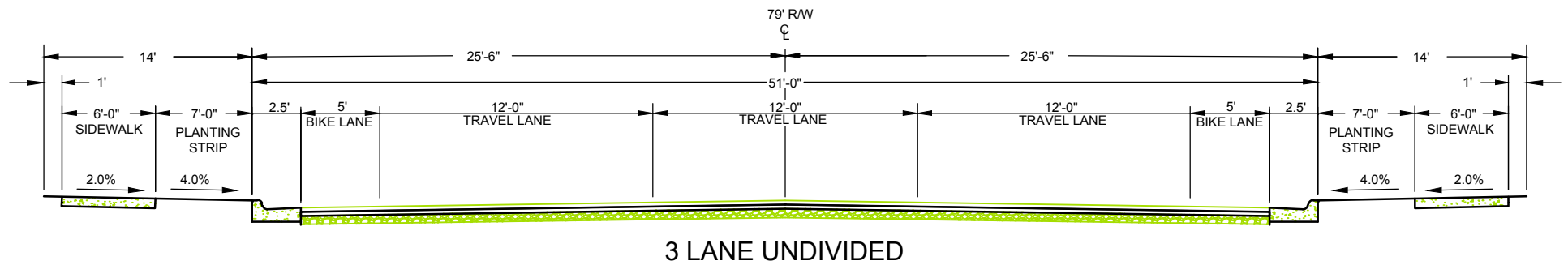
TOWN OF



Effective Date: 7/23/2018
Standard Details
Supersede Date: N/A

Policy Number: 120

MINOR THOROUGHFARE, 4 LANE DIVIDED



REVISIONS

DATE	DESCRIPTION

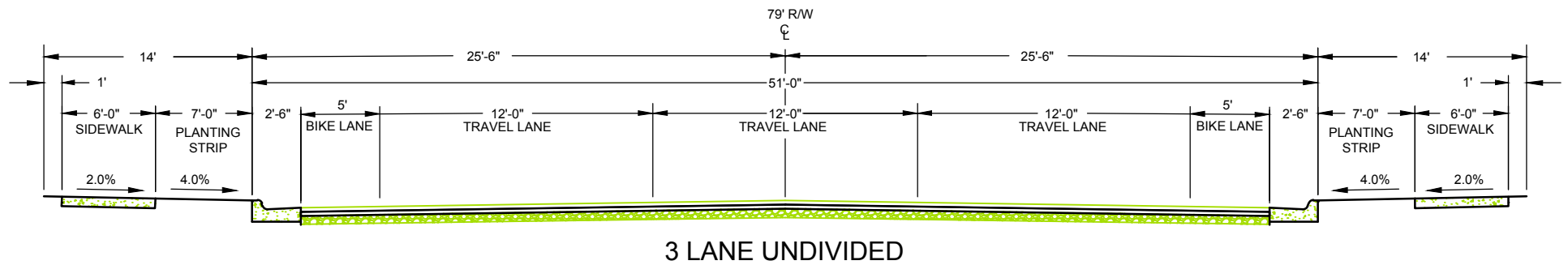
TOWN OF



Effective Date: 7/23/2018
Standard Details
Supersede Date: N/A

Policy Number: 120

MINOR THOROUGHFARE, 3 LANE UNDIVIDED



REVISIONS

DATE	DESCRIPTION

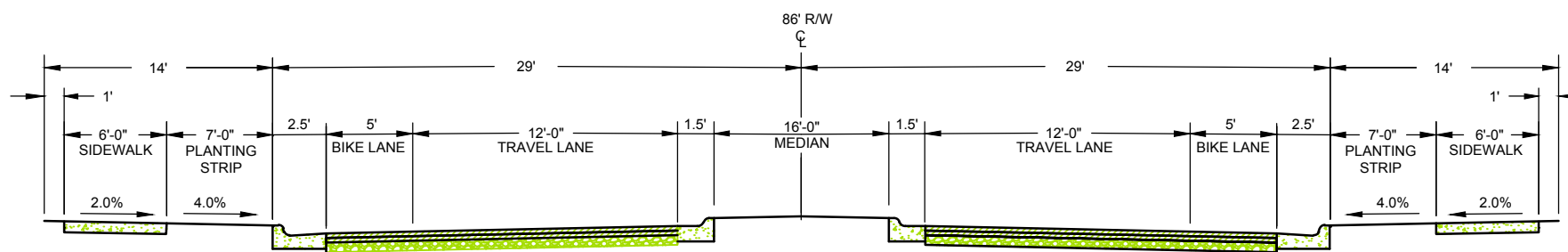
TOWN OF



Effective Date: 7/23/2018
 Standard Details
 Supersede Date: N/A

Policy Number: 120

MAJOR COLLECTOR, 3 LANE UNDIVIDED



2 LANE DIVIDED

REVISIONS

DATE	DESCRIPTION

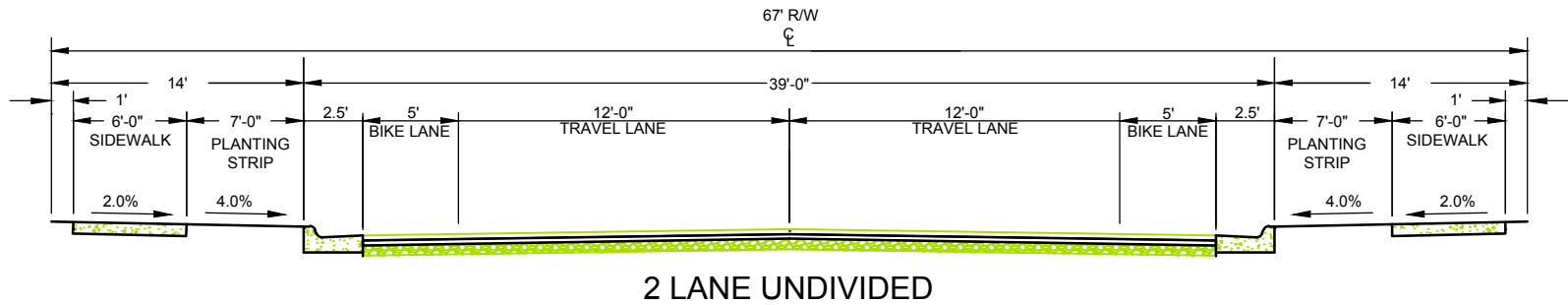
TOWN OF



Effective Date: 7/23/2018
Standard Details
Supersede Date: N/A

Policy Number: 120

MAJOR COLLECTOR, 2 LANE DIVIDED



REVISIONS

DATE	DESCRIPTION

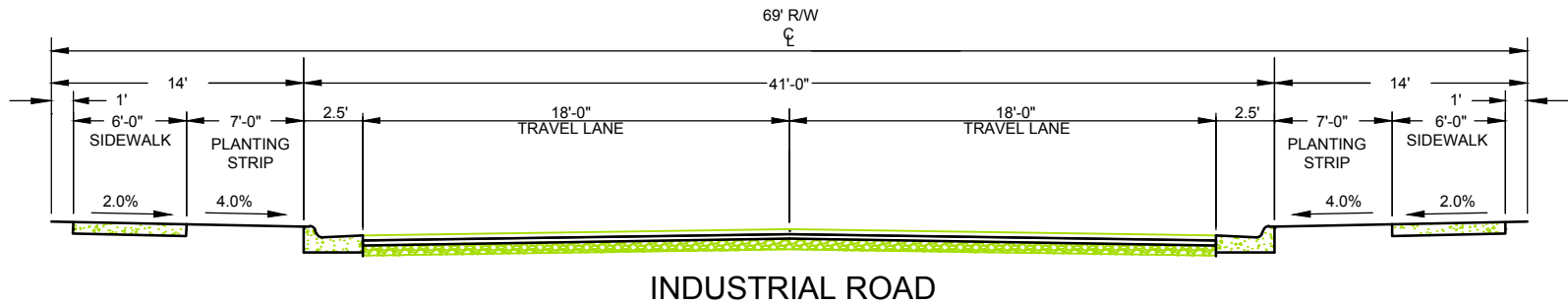
TOWN OF



Effective Date: 7/23/2018
 Standard Details
 Supersede Date: N/A

Policy Number: 120

MINOR COLLECTOR, 2 LANE UNDIVIDED



REVISIONS

DATE	DESCRIPTION

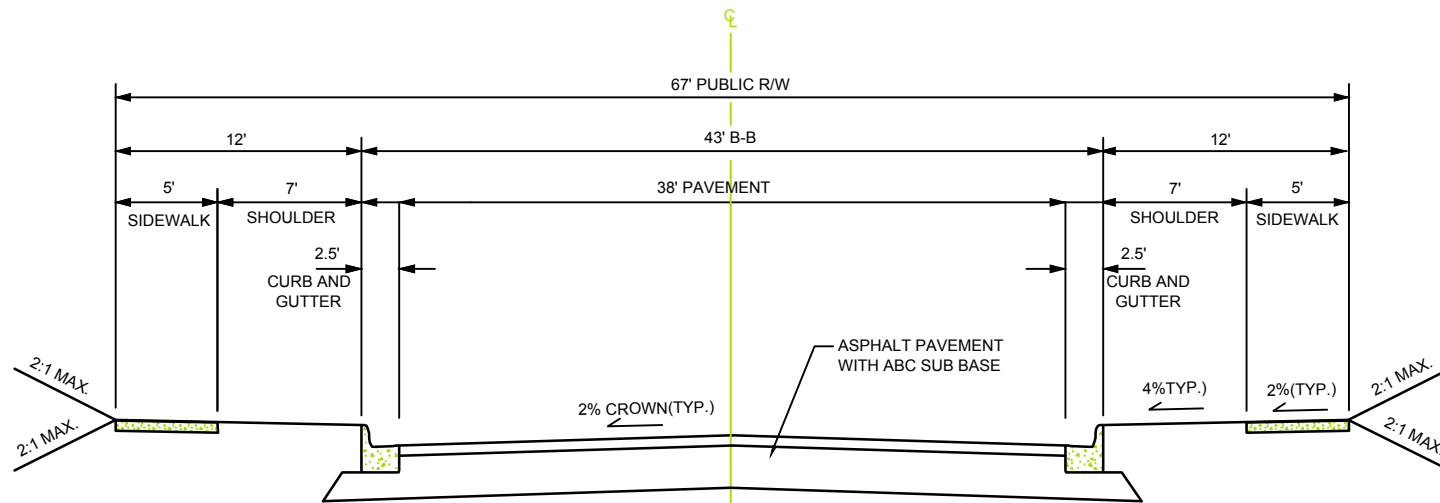
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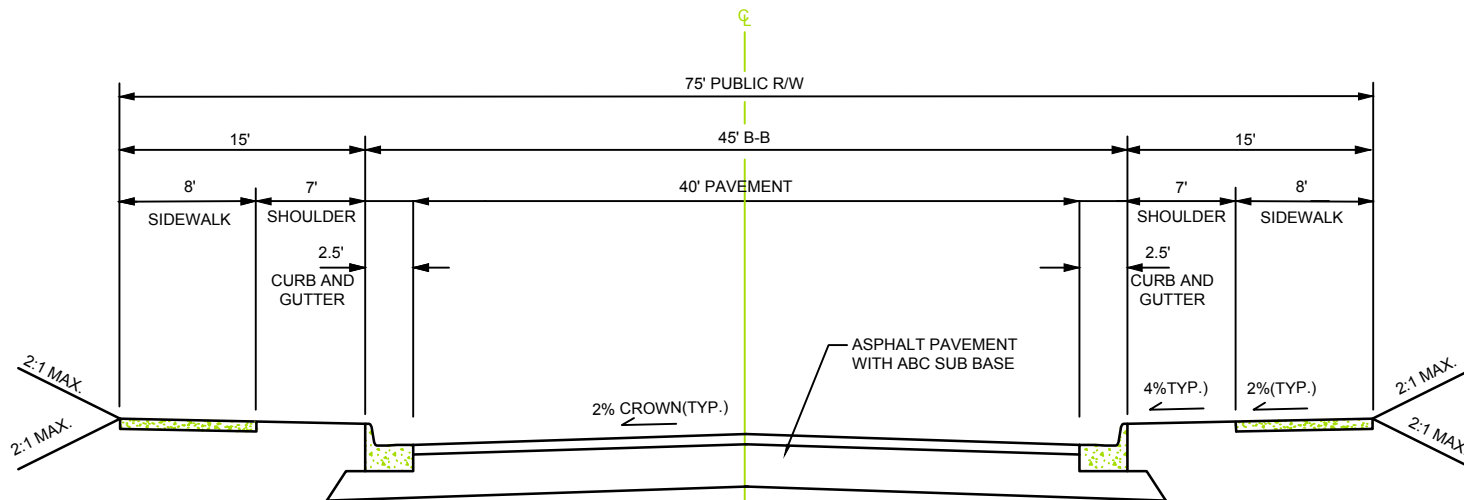
Effective Date: 7/23/2018
 Standard Details
 Supersede Date: N/A

Policy Number: 120

INDUSTRIAL ROAD, 2 LANE UNDIVIDED



RESIDENTIAL MAIN STREET TYPICAL SECTION



MAIN STREET TYPICAL SECTION

REVISIONS

DATE	DESCRIPTION

TOWN OF



Effective Date: 7/23/2018
Standard Details
Supersede Date: N/A

Policy Number: 120

RESIDENTIAL MAIN STREET & MAIN STREET TYPICAL SECTION



REVISIONS

DATE	DESCRIPTION

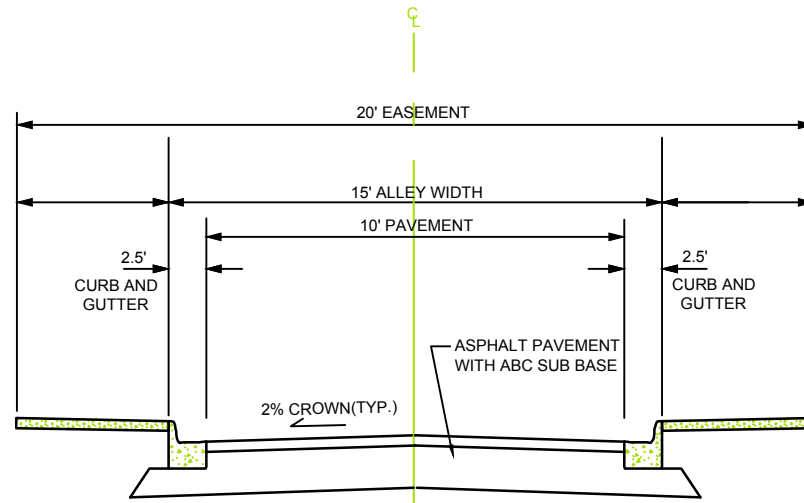
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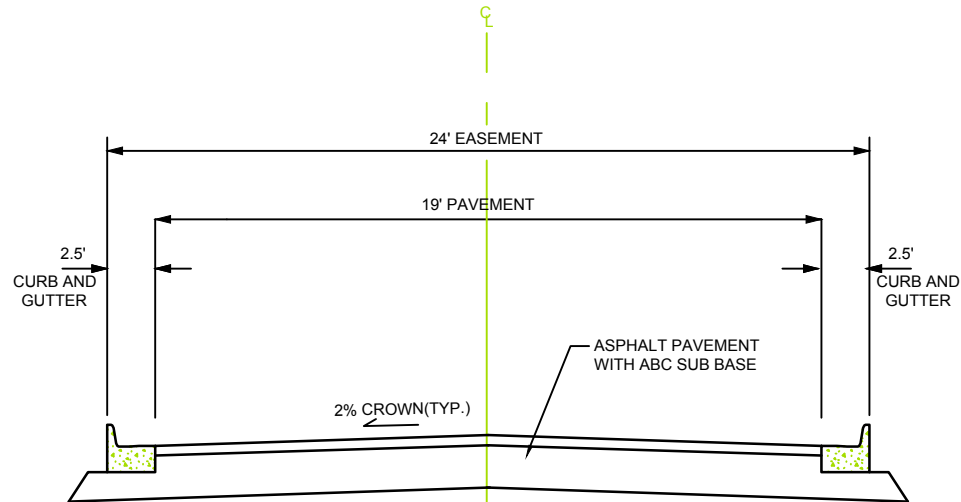
Effective Date: 7/23/2018
Supersede Date: N/A

Policy Number: 120

LOCAL STREET AND RURAL ROAD TYPICAL SECTION



RESIDENTIAL ALLEY TYPICAL SECTION



COMMERCIAL ALLEY TYPICAL SECTION

REVISIONS

DATE	DESCRIPTION

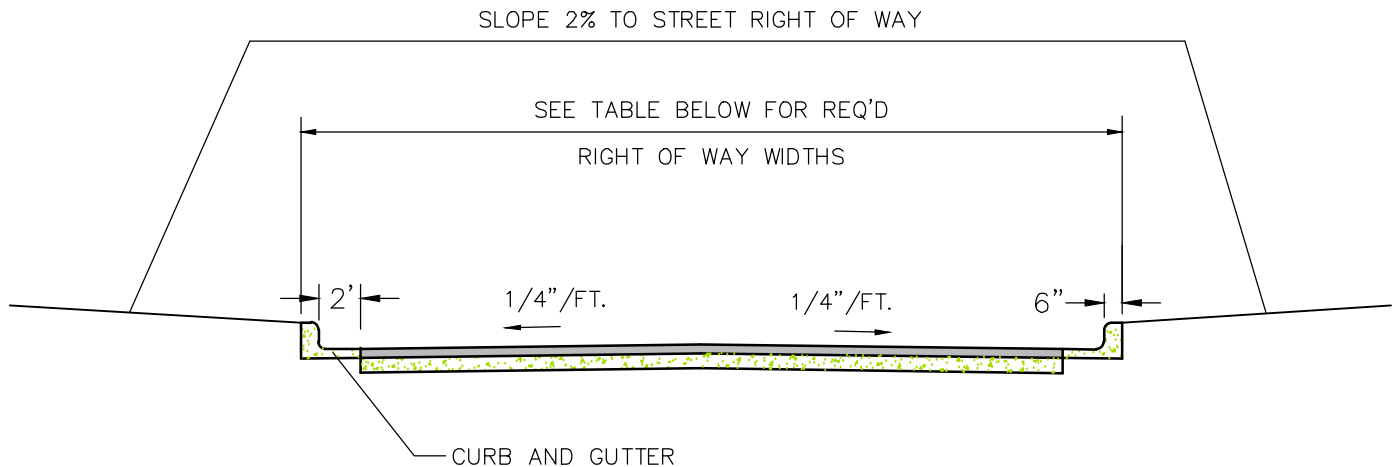
TOWN OF



Effective Date: 7/23/2018
 Standard Details
 Supersede Date: N/A

Policy Number: 120

RESIDENTIAL ALLEY & COMMERCIAL ALLEY TYPICAL SECTION



STREET SECTION

NOTES:

1. ALL STREETS SHALL HAVE CURB & GUTTER.
2. NORMAL CROWN SHALL BE 1/4" PER FOOT
UNLESS OTHERWISE DIRECTED BY TOWN
ENGINEER.
3. GRADES SHALL NOT EXCEED 10%.

STREET CLASSIFICATION	MINIMUM R/W WIDTH	MIN. PAVEMENT WIDTH(B TO B)	PAVEMENT REQUIRED
MAJOR THOROUGHFARE, 6-LANE DIVIDED	134 FT	(2) 45 FT	10" ABC, 4" I-19.0B, 3" S-9.5B
MAJOR THOROUGHFARE, 4-LANE DIVIDED	110 FT	(2) 33 FT	10" ABC, 4" I-19.0B, 3" S-9.5B
MINOR THOROUGHFARE, 4-LANE DIVIDED	110 FT	(2) 33 FT	10" ABC, 4" I-19.0B, 3" S-9.5B
MINOR THOROUGHFARE, 3-LANE UNDIVIDED	79 FT	51 FT	10" ABC, 4" I-19.0B, 3" S-9.5B
MAJOR COLLECTOR, 3-LANE UNDIVIDED	79 FT	51 FT	8" ABC, 3" I-19.0B, 2" S-9.5B
MAJOR COLLECTOR, 2-LANE DIVIDED	86 FT	(2) 21 FT	8" ABC, 3" I-19.0B, 2" S-9.5B
MINOR COLLECTOR, 2-LANE UNDIVIDED	67 FT	39 FT	8" ABC, 3" I-19.0B, 2" S-9.5B
INDUSTRIAL ROAD	69 FT	41 FT	10" ABC, 3" I-19.0B, 2" S-9.5B
MAIN STREET	75 FT	45 FT	6" ABC, 3" I-19.0B, 2" S-9.5B
RESIDENTIAL STREET	67 FT	43 FT	6" ABC, 3" I-19.0B, 2" S-9.5B
RURAL ROAD	60 FT	20 FT (E-E)	6" ABC, 3" I-19.0B, 2" S-9.5B
LOCAL STREET	52 FT	27 FT	6" ABC, 3" I-19.0B, 2" S-9.5B
COMMERCIAL ALLEY	24 FT	24 FT	6" ABC, 3" I-19.0B, 2" S-9.5B
RESIDENTIAL ALLEY	20 FT	15 FT	6" ABC, 3" I-19.0B, 2" S-9.5B

REVISIONS

DATE	DESCRIPTION

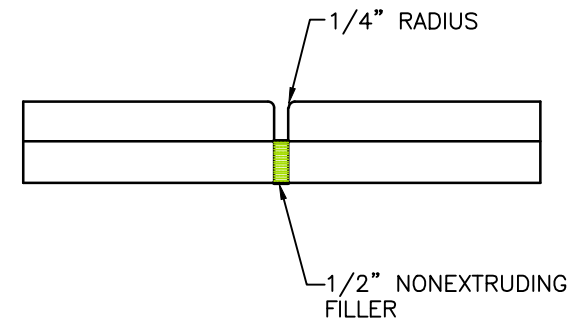
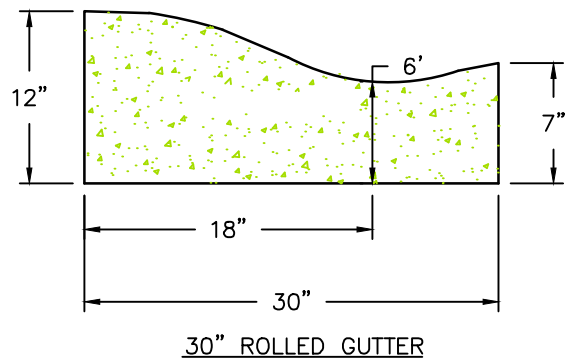
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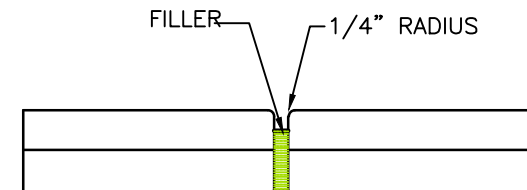
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Supersede Date: N/A

Policy Number: 120

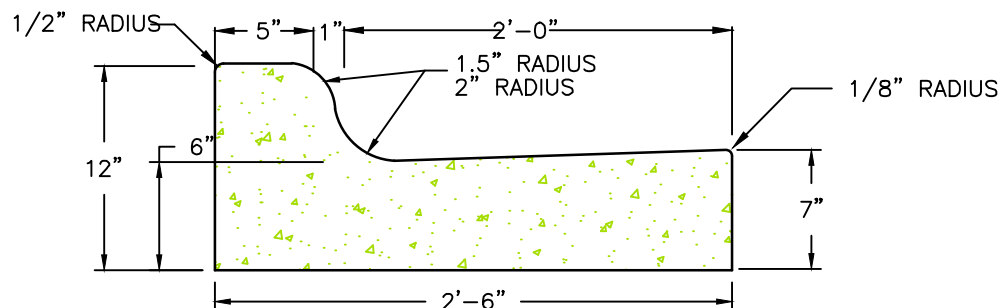
TYPICAL STREET SECTION



TYPE "A"



TYPE "B"



STANDARD 2'-6" CURB AND GUTTER

NOTES:

1. USE OF STRAIGHT SECTIONS ON CURVES WILL NOT BE PERMITTED, CURVED SECTIONS OF CURB AND GUTTER MUST CONFORM TO INDICATED RADIUS.
2. CONSTRUCT TYPE "A" JOINT MAX. 80' APART.
3. CONSTRUCT TYPE "B" JOINT MAX. 10' APART.

REVISIONS

DATE	DESCRIPTION

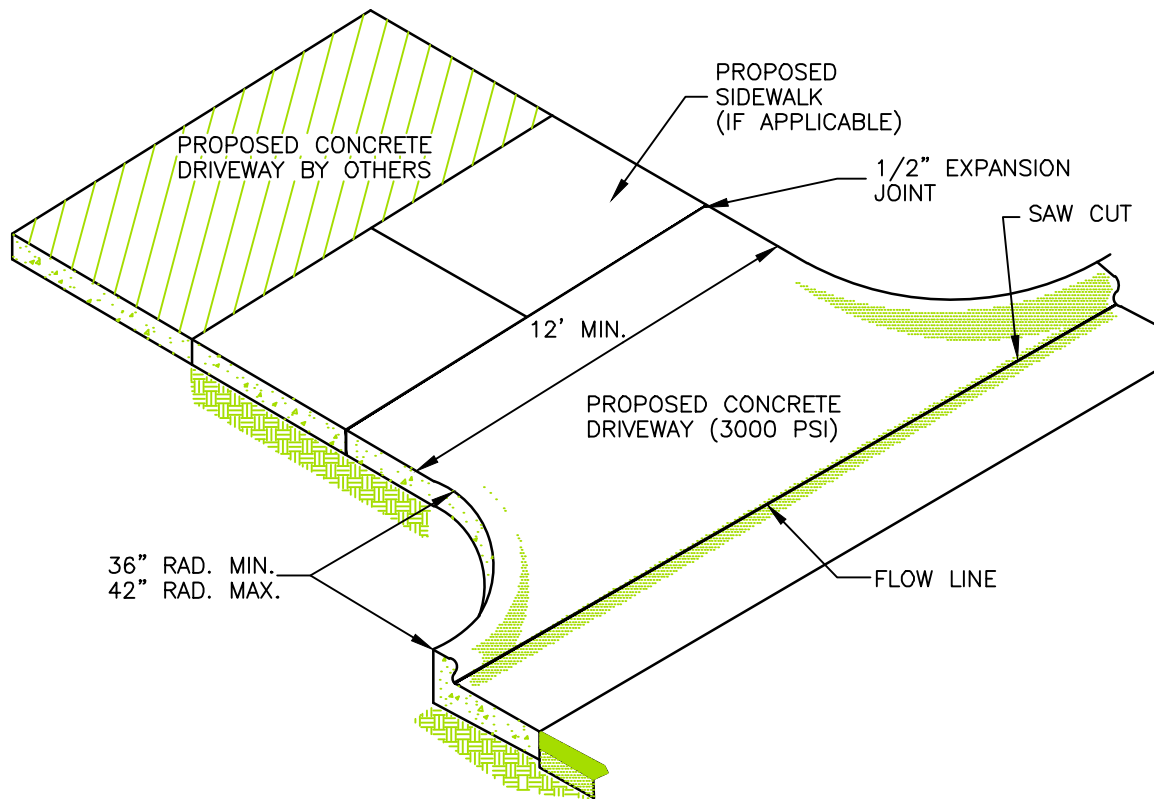
TOWN OF



Effective Date: 7/23/2018
Standard Details
Supersede Date: N/A

Policy Number: 120

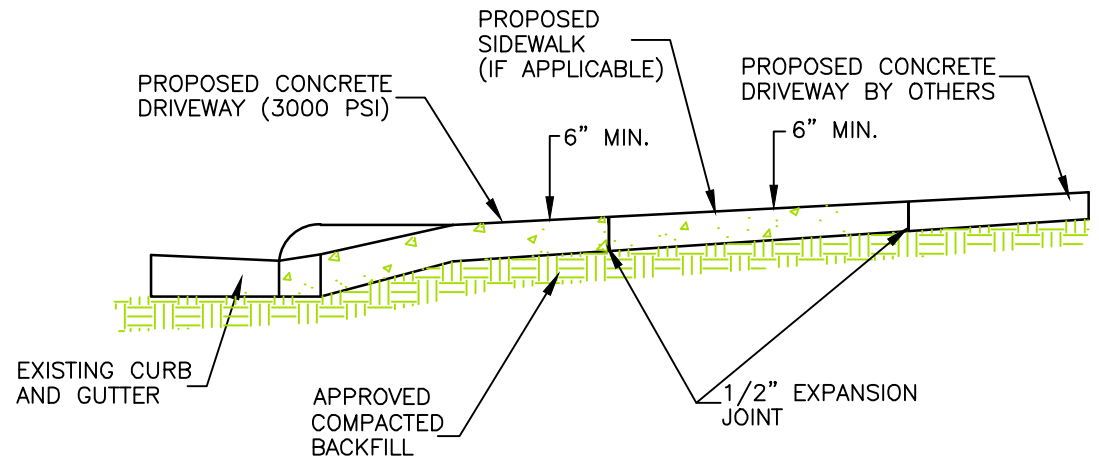
CURB AND GUTTER



ISOMETRIC VIEW

NOTE TO CONTRACTOR:

RESIDENTIAL DRIVEWAYS TO BE 12' IN WIDTH UNLESS WRITTEN VARIANCE IS GRANTED BY TOWN ENGINEER.



TYPICAL SECTION

REVISIONS

DATE	DESCRIPTION

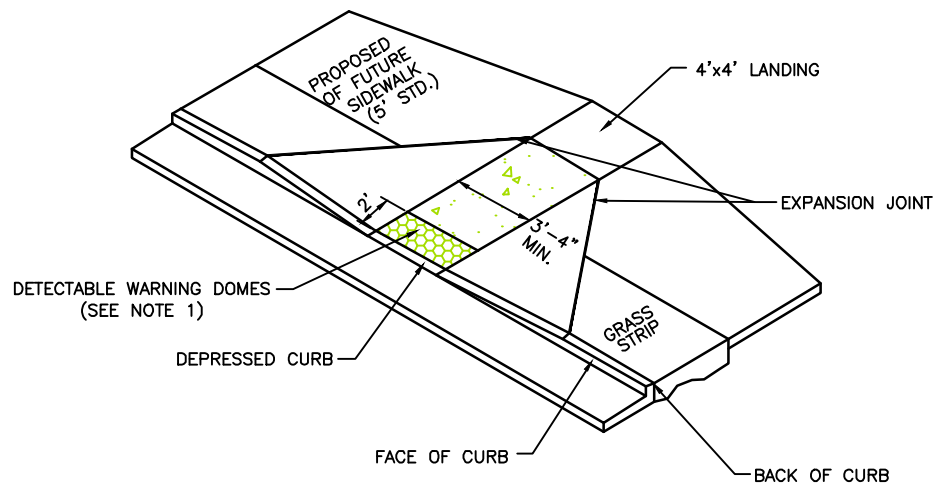
TOWN OF



Effective Date: 7/23/2018
Standard Details
Supersede Date: N/A

Policy Number: 120

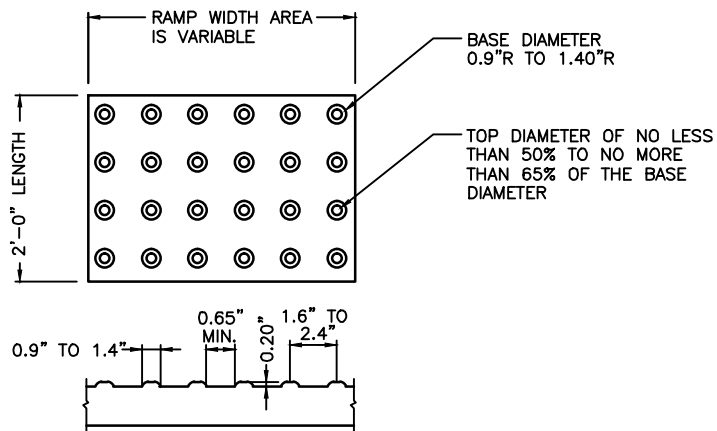
STANDARD RESIDENTIAL DRIVEWAY TURNOUT



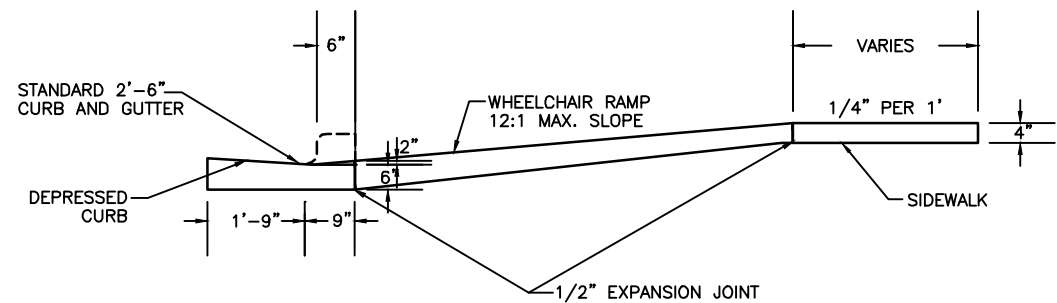
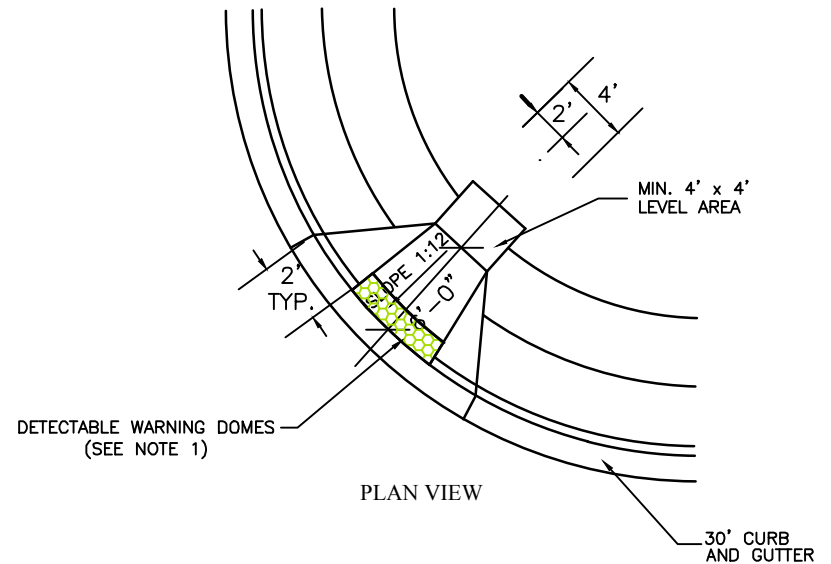
ISOMETRIC VIEW

NOTES:

1. DETECTABLE WARNING DOMES WILL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
2. DETECTABLE WARNING DOMES WILL CONTRAST VISIBILITY WITH ADJOINING SURFACE. EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



DETECTABLE WARNING DOMES



SECTION

REVISIONS

DATE	DESCRIPTION

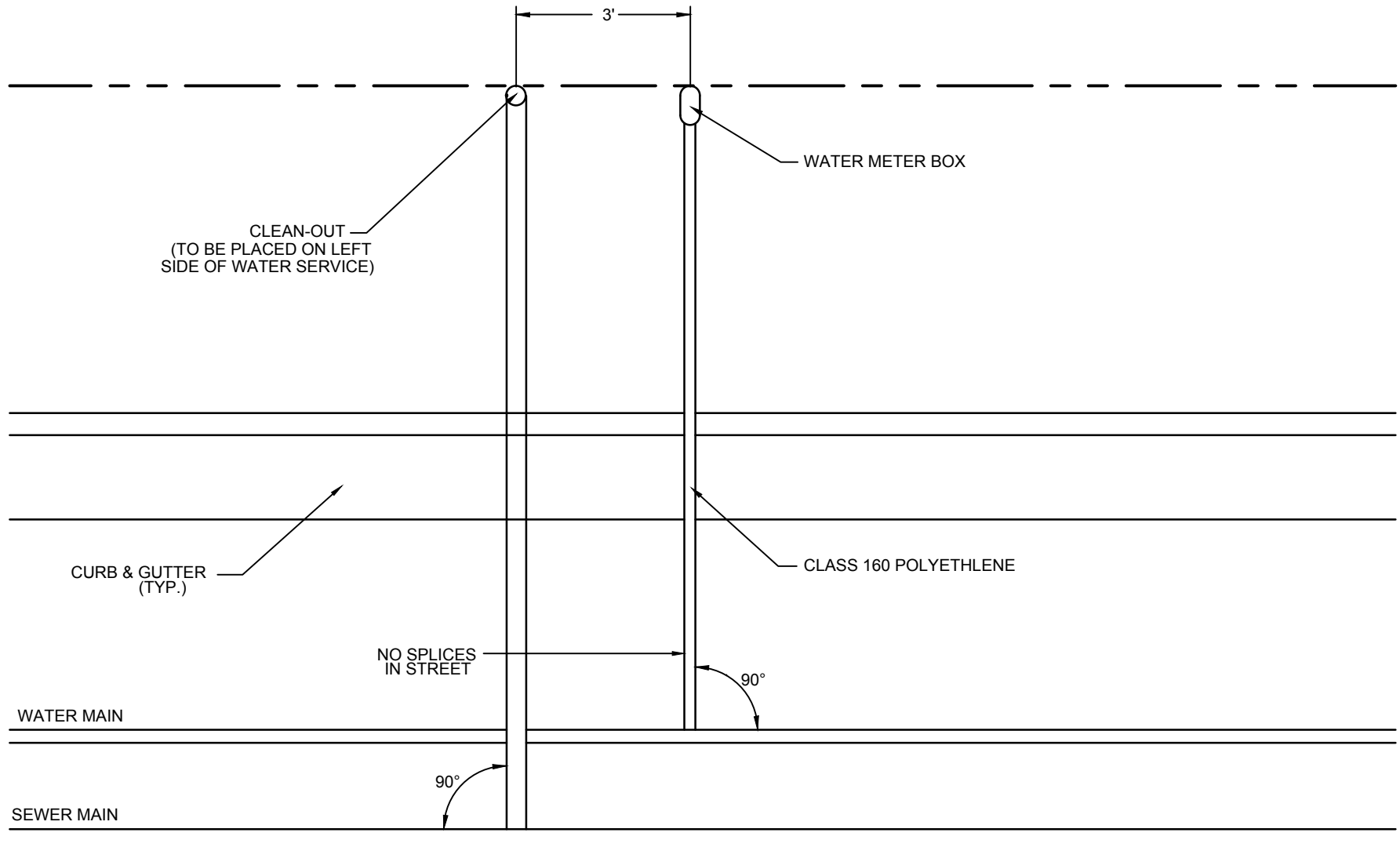
TOWN OF



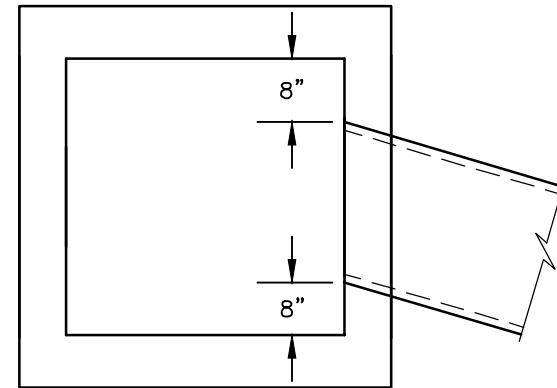
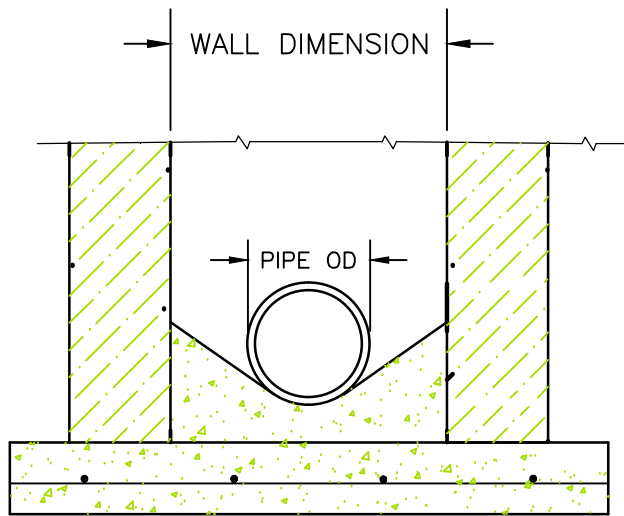
Effective Date: 7/23/2018
STANDARD DETAILS
Supersede Date: N/A

Policy Number: 120

STANDARD WHEELCHAIR RAMP




REVISIONS	
DATE	DESCRIPTION



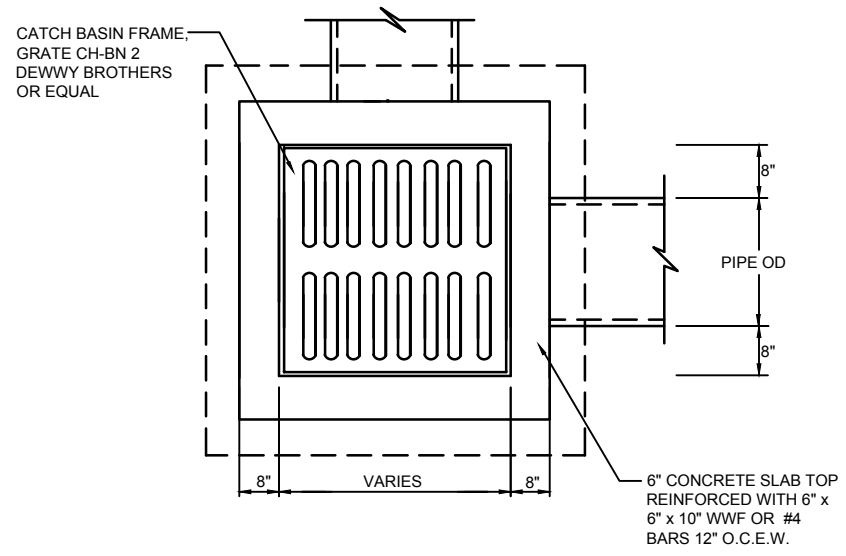
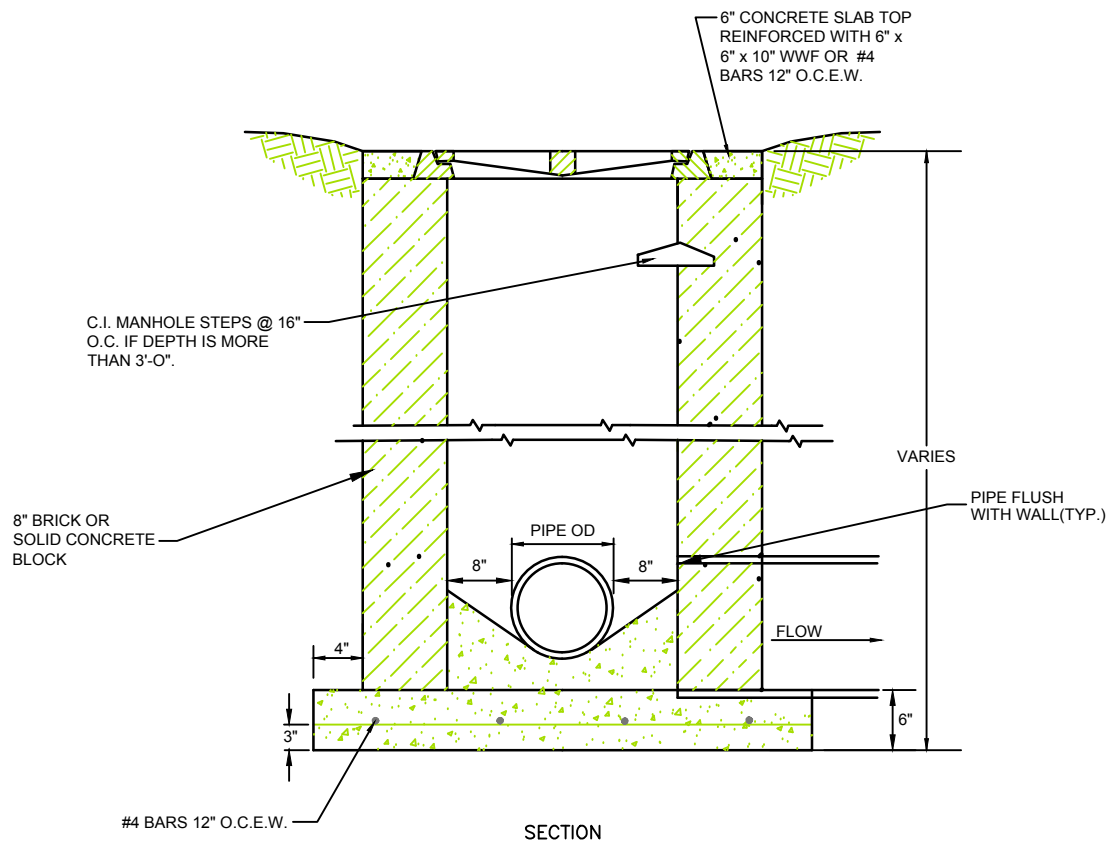
PIPE DIAMETER	MINIMUM WALL DIMENSION
15"	3'-0"
18"	3'-3"
24"	3'-10"
30"	4'-5"
36"	5'-1"
42"	5'-8"
48"	6'-4"
54"	6'-10"
60"	7'-6"


NOTE: THE ABOVE DIMENSIONS ARE APPLICABLE ONLY FOR PIPE INSTALLED AT RIGHT ANGLES TO BOX. FOR PIPES ENTERING AT AN ANGLE, THE INSIDE DIMENSION OF THE WALL SHALL BE THE DISTANCE ACROSS THE PIPE (OUTSIDE TO OUTSIDE) PLUS 8" ON EACH SIDE. SEE SKETCH ABOVE.

REVISIONS	
DATE	DESCRIPTION

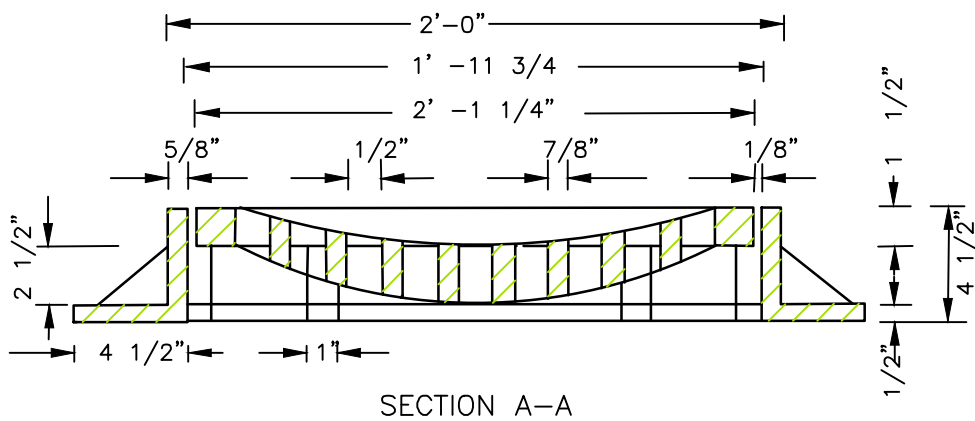
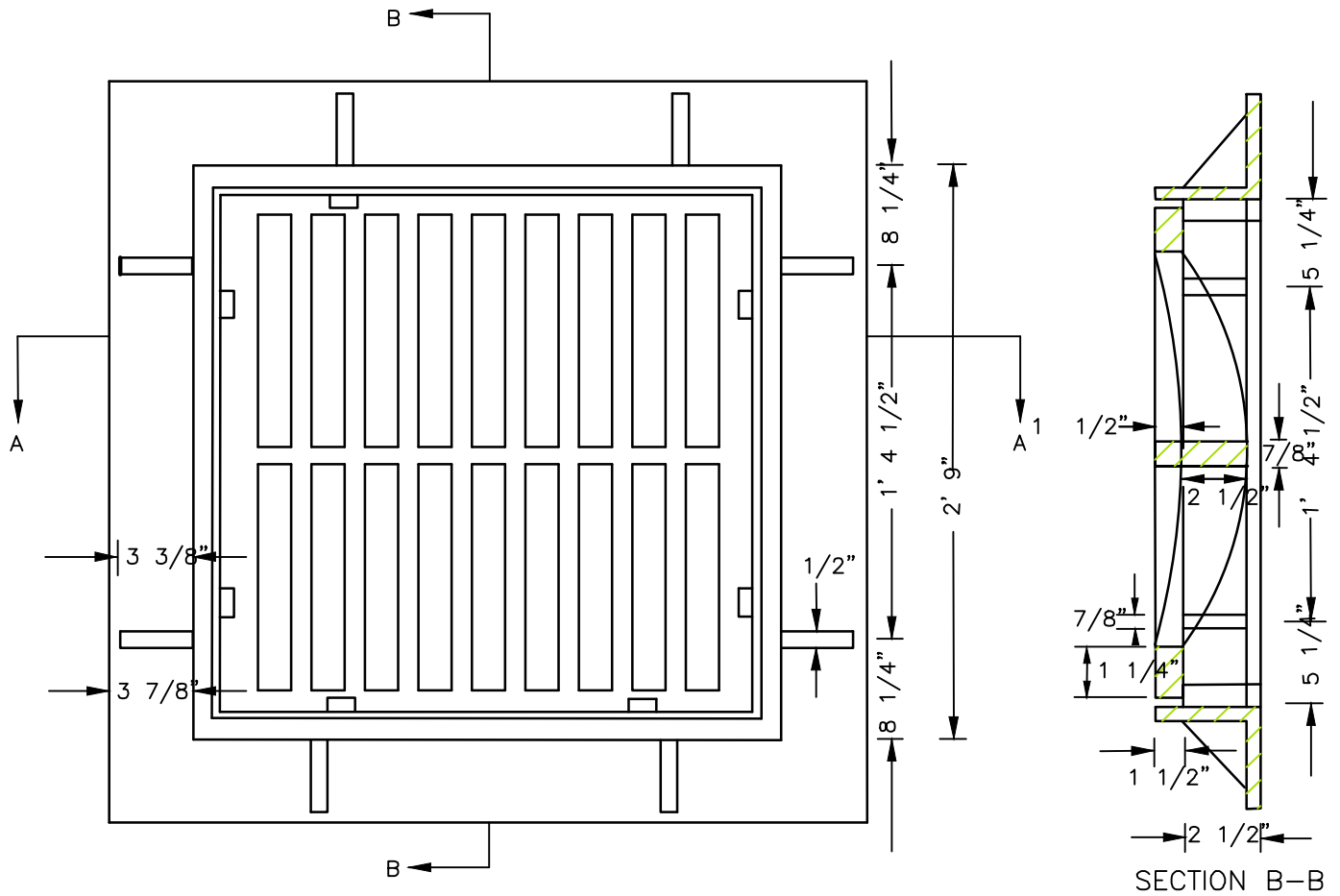
TOWN OF

 Effective Date: 7/23/2018
 Standard Details
 Supersede Date: N/A

INSIDE DIMENSIONS FOR CATCH BASINS, JUNCTION BOXES AND DROP INLETS



REVISIONS	
DATE	DESCRIPTION
TOWN OF  WENDELL Effective Date: 7/23/2018 Standard Details Supersede Date: N/A Policy Number: 120	

DROP INLET DETAIL



REVISIONS

DATE	DESCRIPTION

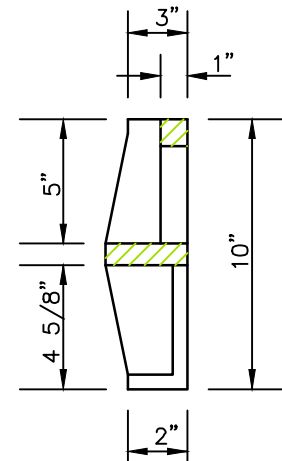
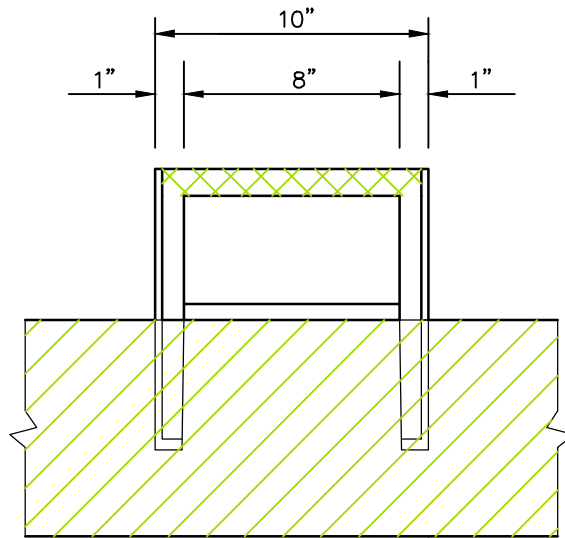
TOWN OF



Effective Date: 7/23/2018
Standard Details
Supersede Date: N/A

Policy Number: 120

STANDARD 24" x 24" DROP INLET CASTING



REVISIONS

DATE	DESCRIPTION

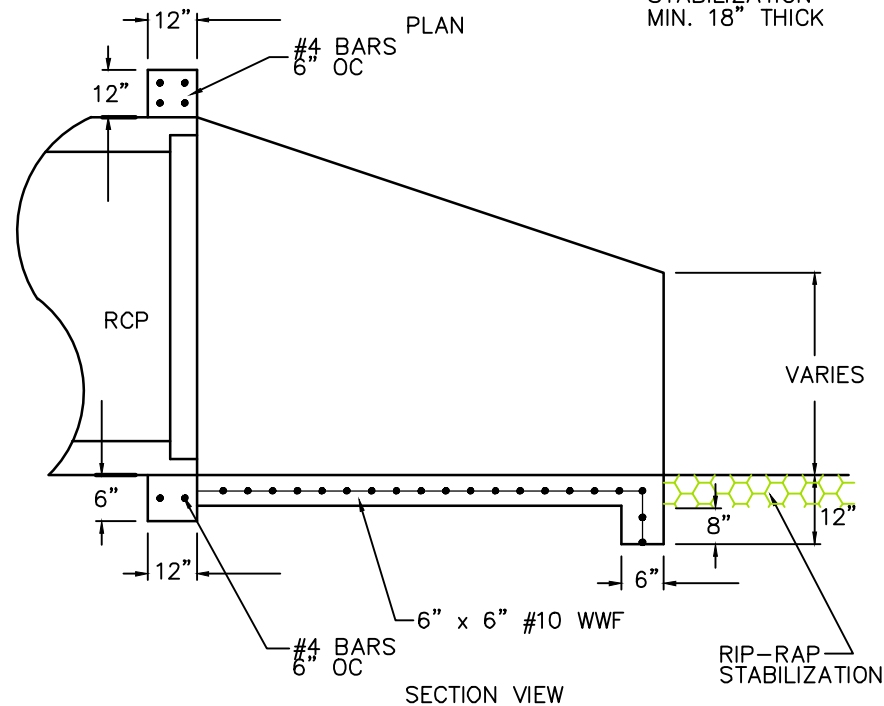
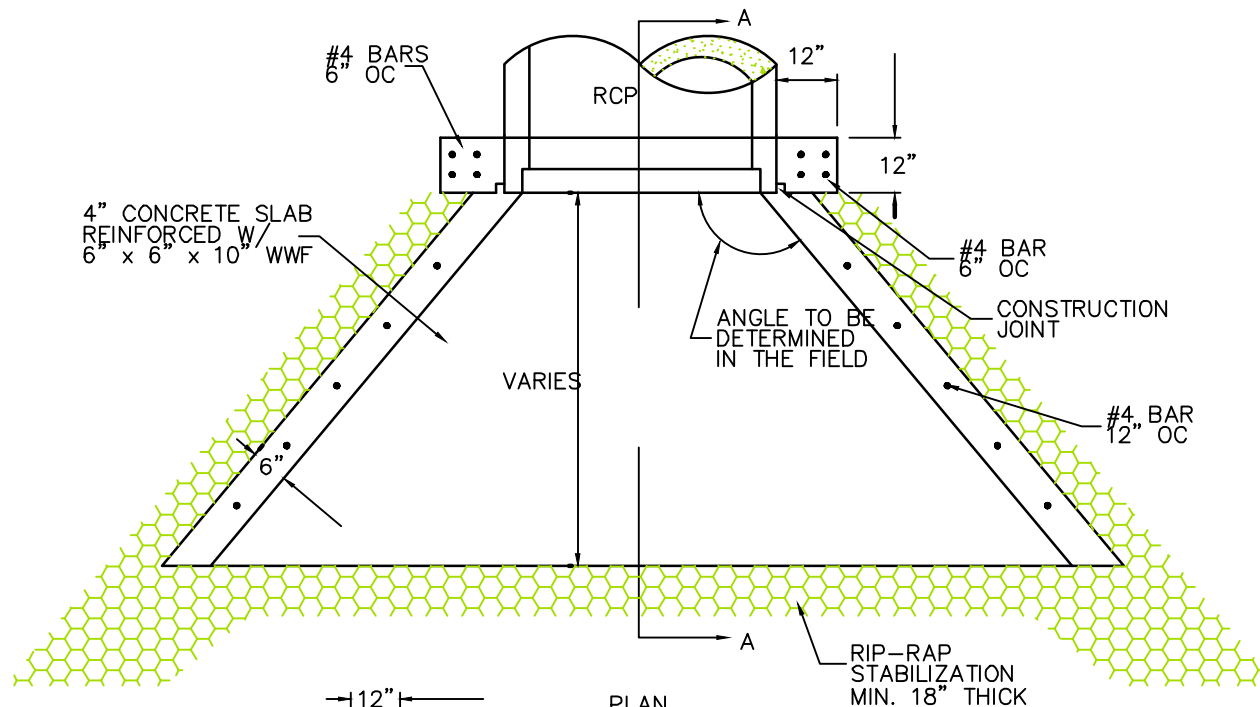
TOWN OF



Effective Date: 7/23/2018
 Standard Details
 Supersede Date: N/A

Policy Number: 120

CAST IRON BLOCK BASIN STEP DETAIL



NOTE: FOR SOME INSTALLATIONS PREFABRICATED FLARED END SECTIONS MAY BE ALLOWED IN LIEU OF A HEADWALL, SUBJECT TO THE APPROVAL OF THE TOWN.

REVISIONS

DATE	DESCRIPTION

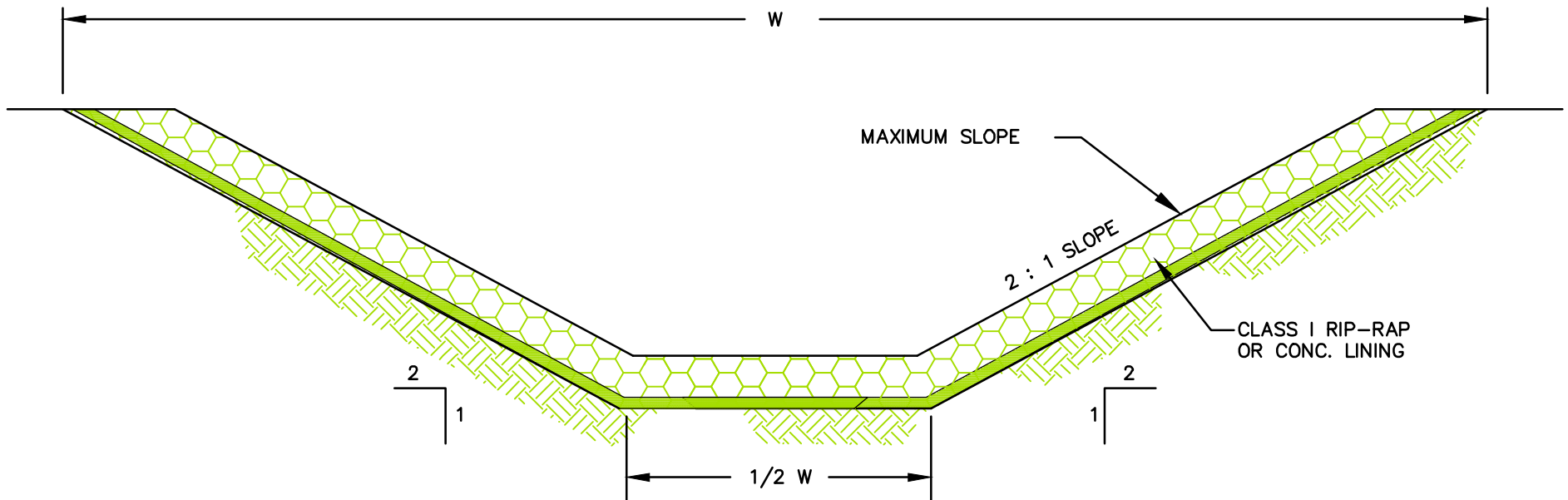
TOWN OF



Effective Date: 7/23/2018
Standard Details
Supersede Date: N/A

Policy Number: 120

STORMDRAIN FLARED ENDS



NOTE: MAXIMUM 3:1 SLOPE PREFERRED

REVISIONS

DATE	DESCRIPTION

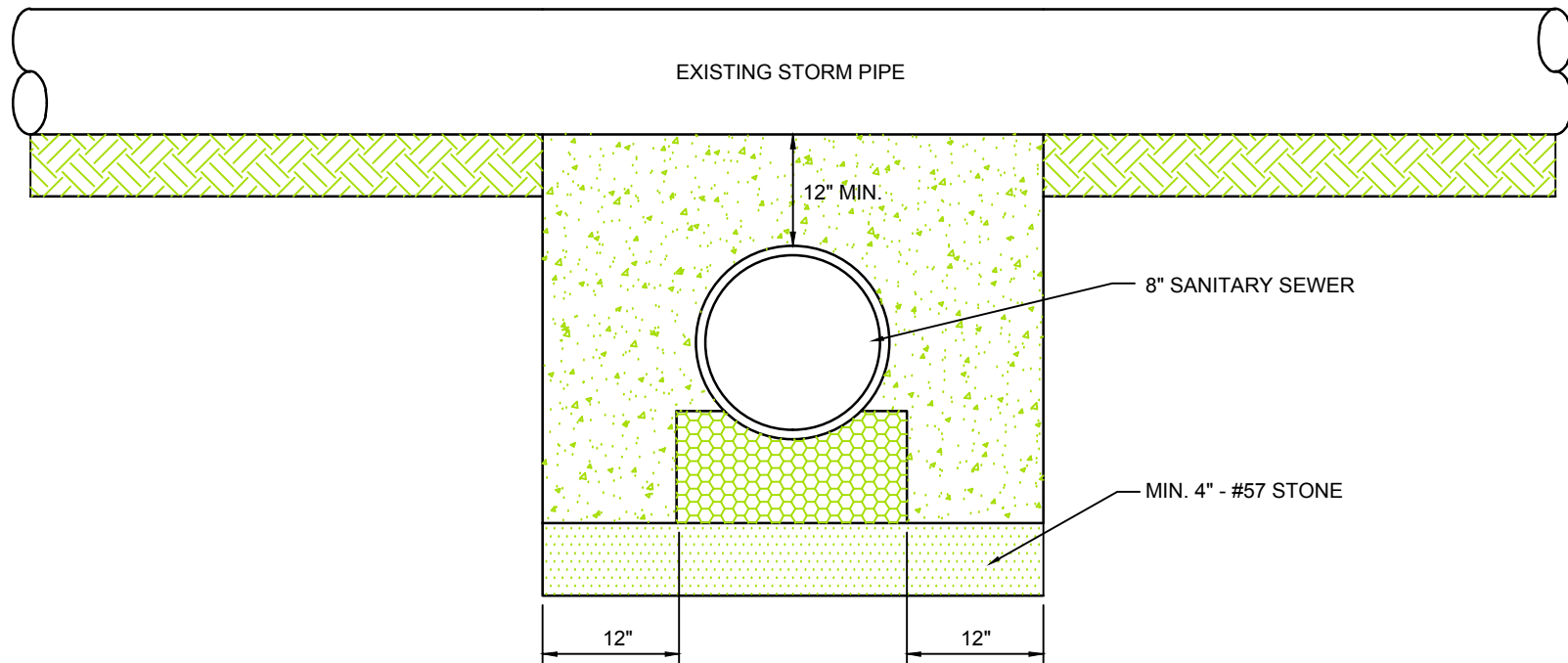
TOWN OF



Effective Date: 7/23/2018
 Standard Details
 Supersede Date: N/A

Policy Number: 120

DITCH SECTION DETAIL



REVISIONS

DATE	DESCRIPTION

TOWN OF

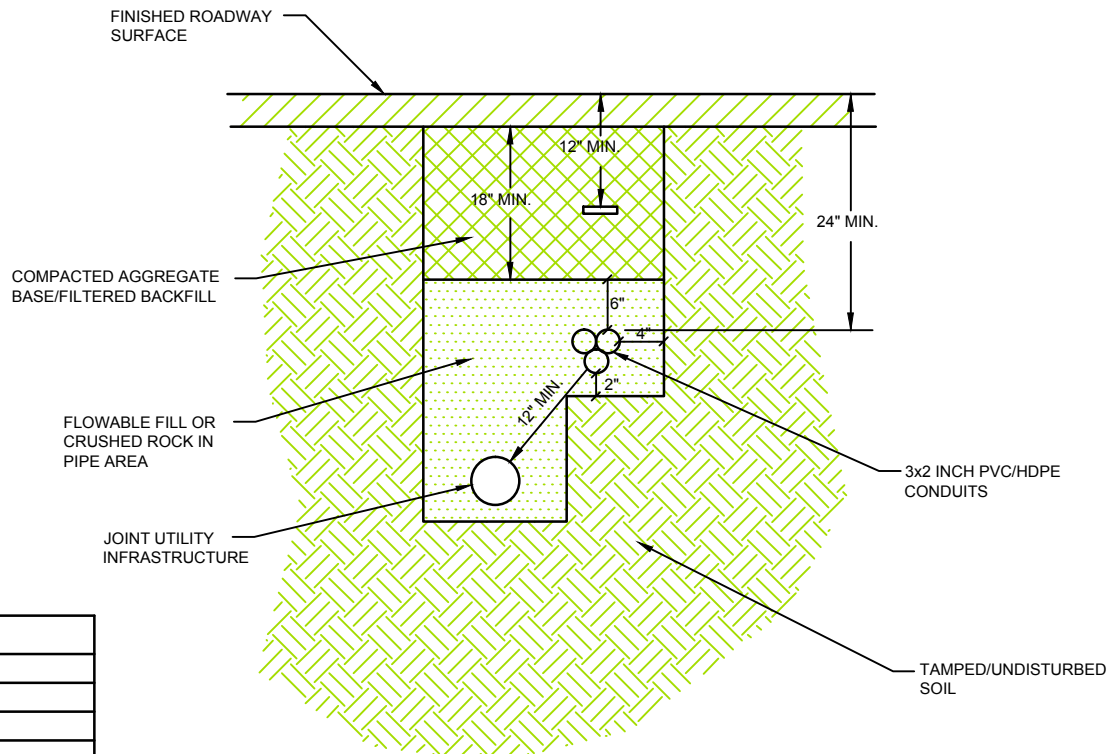
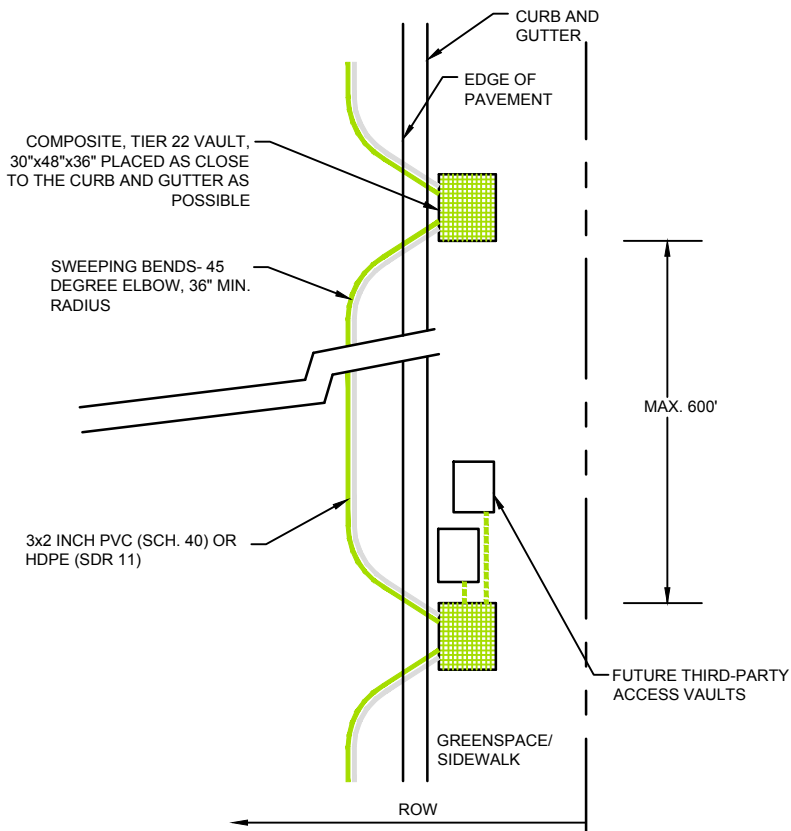


Effective Date: 7/23/2018
 Standard Details
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STORM SEWER CROSSING DETAIL

1. TOWN COMMUNICATIONS CONDUIT SHALL CONSIST OF THREE (3) 2 INCH PVC, SCH. 40 OR HDPE (SDR 11) ROLL DUCT, WITH PRE-INSTALLED MULE TAPE. EACH CONDUIT SHALL BE STRIPED ORANGE, YELLOW, AND BLUE FOR EASY IDENTIFICATION.
2. ALL CONDUIT COUPLERS AND FITTINGS SHALL BE INSTALLED TO BE WATER-TIGHT. CONDUITS SHALL BE SEALED WITH AN ENDCAP OR BLANK DUCT PLUG UPON INSTALLATION.
3. AN ELECTRICAL GROUND ROD SHALL BE INSTALLED IN ALL VAULTS. GROUND RODS SHALL BE COMPRISED OF 13-MIL COPPER CLAD STEEL, 5/8 INCH DIAMETER, 8 FOOT LENGTH.
4. A 10 AWG INSULATED TRACER WIRE SHALL BE INSTALLED IN ONE CONDUIT IN EACH CONDUIT BANK. TRACER WIRES SHALL BE ELECTRICALLY BONDED TO THE GROUND ROD IN EACH VAULT USING A SUITABLE CLAMP.
5. VAULTS SHALL BE OF COMPOSITE, STRAIGHT-WALLED CONSTRUCTION, UL-LISTED TO ANSI 77-2010 AND TIER 22 LOAD-RATED. HANDHOLES SHALL HAVE EXTERNAL DIMENSION OF APPROXIMATELY 30"x48"x36"(WxLxD).
6. VAULTS SHALL BE PLACED IN THE TOWN RIGHT-OF-WAY IMMEDIATELY OUTSIDE OF THE PAVED SURFACE/VEHICULAR TRAFFIC LANES, AS CLOSE TO THE CURB/GUTTER AS POSSIBLE.
7. VAULTS SHALL BE PLACED AT ROADWAY INTERSECTIONS, SPACED A MAXIMUM OF 600 FEET. ADJACENT VAULTS SHALL BE SEPARATED BY NO MORE THAN TWO ROADWAY CROSSINGS.
8. CONDUIT SHALL BE PLACED WITH A MINIMUM OF 24-INCHES OF COVER BELOW GRADE.
9. CONDUIT SHALL BE PLACED WITH SWEEPING BENDS FROM THE ROADWAY TO EACH HANDHOLE LOCATION. IF USING RIGID PVC, BENDS SHALL UTILIZE 45 DEGREE ELBOWS WITH A 36 INCH MINIMUM BEND RADIUS.
10. CONDUIT SHALL ENTER VAULTS FROM THE SIDEWALL THROUGH OPENINGS CREATED PER MANUFACTURER INSTRUCTIONS TO RETAIN THE ASSOCIATED LOAD RATING. CONDUITS SHALL PROTRUDE BEYOND THE INTERIOR WALL OF THE VAULT BY A MINIMUM OF 1 INCH AND NO MORE THAN 3 INCHES.
11. TRENCH BACKFILL IN THE PIPE AREA SHALL BE FLOWABLE FILL OR 1/4" - D CRUSHED ROCK.
12. TRENCH BACKFILL WITHIN 18 INCHES OF GRADE SHALL BE CLASS 2 AGGREGATE BASE PLACED IN 6 INCH LIFTS AND COMPACTED TO 95 PERCENT MAXIMUM DRY DENSITY PER ASTM D-1557 OR AASHTO T-180.
13. TOWN COMMUNICATIONS CONDUIT SHALL MAINTAIN 12 INCHES OF CLEARANCE RADIIALLY FROM OTHER UTILITIES, UNLESS OTHERWISE AGREED UPON BY THE TOWN AND THE APPLICABLE UTILITY OWNER.



DATE	DESCRIPTION
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WENDELL

Effective Date: 7/23/2018
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DIG-ONCE CONDUIT TRENCH