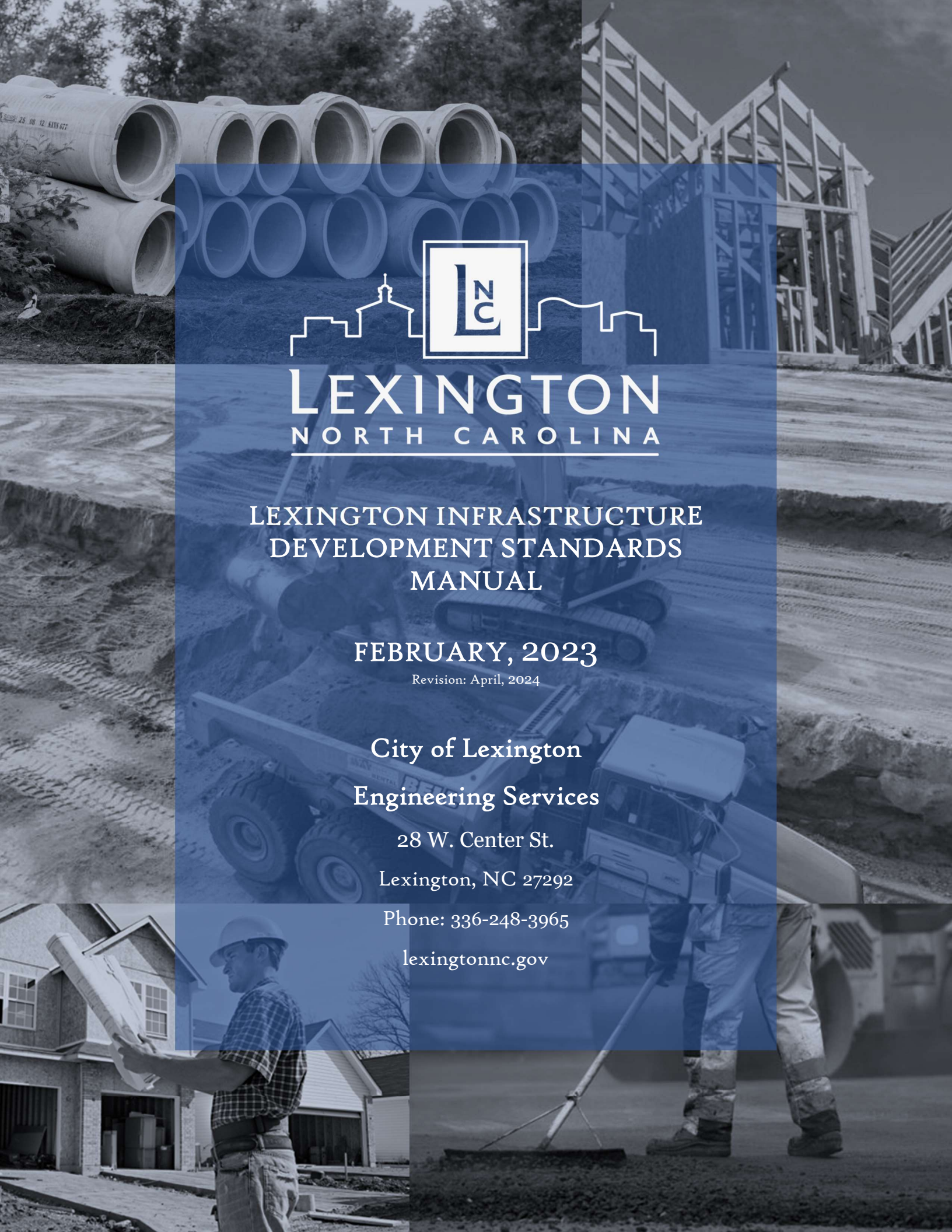

LEXINGTON
NORTH CAROLINA

LEXINGTON INFRASTRUCTURE DEVELOPMENT STANDARDS MANUAL

FEBRUARY, 2023

Revision: April, 2024

City of Lexington

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PREFACE

This document is a guide for the preparation of submitted plans and documents for infrastructure development projects and other land development projects within the City of Lexington. In addition to using this manual, the design engineer should use sound engineering judgement in the design of each individual site.

Lexington Public Services will use these general standards as well as sound engineering principles to review the detailed engineering drawings. All engineers are encouraged to take these standards into consideration in the preliminary layout of infrastructure (streets, storm drainage, etc.) so changes can be held to a minimum when the detailed construction drawings are reviewed.

The Lexington Infrastructure Development Standards apply to all developments within the City of Lexington and should be used in conjunction with the latest version of the NCDOT Roadway Standard Drawings, NCDOT Standard Specifications for Roads and Structures, and Lexington's Water and Sewer Standards.

The Lexington Infrastructure Development Standards Manual and all standards referenced herein were adopted by reference as part of the City of Lexington Unified Development Ordinance by City Council on February 13th, 2023.

A REVISION TO THIS DOCUMENT WAS ISSUED: MAY, 2024

Periodic updates occur to this manual and its appendices. For the latest versions, please contact EngineeringServices@LexingtonNC.gov

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COMMON DEFINTITIONS AND ABBREVIATIONS

DEFINITIONS

Best Management Practices (BMPs) and Stormwater Control Measures (SCMs) – Are structural or non-structural management-based measures used singularly or in combination to reduce nonpoint source inputs to receiving waters in order to achieve water quality protection goals.

Bond – A type of surety that guarantees payment and/or performance and insures against a financial lose.

Performance Bond – A bond in which the surety company has an obligation to the City for any additional cost to complete a given project due to the developer's or owner's failure to properly complete the bonded work. A Letter of Credit from an FDIC insured bank, with a branch in North Carolina, or cash deposit may serve as a performance bond when bonding infrastructure improvements for the City of Lexington.

Cash Bond – Performance surety in which cash is deposited with the City of Lexington and held in lieu of a performance bond until the bonded work is completed.

Crown Elevation – The elevation associated with the top of the inside of a pipe.

Borrow – Fill material (soil), which is required for on-site construction and is obtained from off-site locations.

Certificate of Occupancy – A permit issued by the Community Development Department, setting forth that a building or structure, complies with the Building Code, its use complies with the zoning ordinance, and that the same may be used for the purposes stated therein.

Certificate of Compliance – A certificate of compliance is issued following the completion of construction as part of the Floodplain Development Permit process. A certificate of compliance is required prior to the issuance of a Certificate of Occupancy for buildings, projects, etc. that require floodplain development permitting.

Certificate of No-Rise – A certificate issued by a NC professional engineer upon determining that increase in elevation will occur to the base flood elevation (BFE) as a result of the proposed development or construction activities.

Contractor – Individual or firm under contract with another to perform an agreed upon task.

Cross Drainage – Storm water drainage flow under a roadway though a culvert.

Curb Ramp – Access for pedestrian traffic at intersections of roadways, driveways, or other pedestrian ways.

NCDEQ – The North Carolina Department of Environmental Quality. A state agency responsible for the regulations and/or issuing permits for the areas of Air Quality, Coastal Management,

Energy, Mineral and Land Resources, Environmental Education and Public Affairs, Marine Fisheries, Mitigation Services, Waste Management, Water Infrastructure, and Water Resources

EAL Pavement Schedule – A pavement schedule based on an 18-Kip Equal Axle Load.

Easement – A grant of one or more of the property rights for a specific purpose by the property owner to, or for the use by, the public, a corporation, or other entity. All easements shall be platted and recorded by the Davidson County Register of Deeds.

Access Easement – A permanent easement, which grants the right to the public or specified party to access and/or cross private property.

Permanent Drainage Easement (PDE) – A permanent easement, which grants the right of water drainage to pass in open channels or subterranean systems. The presence of a PDE does not obligate the City to maintain any storm drainage pipes, structures, or open channels within the easement.

Storm Drainage Easement (SDE) – A permanent easement, which grants the right of water drainage to pass in open channels or subterranean systems. The presence of an SDE does obligate the City to maintain any storm drainage pipes, structures, or open channels within the easement.

Drainage Maintenance and Utility Easement (DMUE) – A permanent easement, which grants to the City the right to conduct inspections and/or maintenance to pipes and infrastructure in and around BMPs and SCMs. The presence of a DMUE does not obligate the City to maintain any storm water devices, pipes, or open channels within the easement.

Pedestrian Access Easement – A permanent easement dedicated to the public to facilitate pedestrian access to adjacent streets and properties.

Sidewalk Easement – A permanent easement, which grants the right for a public sidewalk to be placed and maintained thereon.

Sight Easement – A permanent easement, which grants the City, the right to maintain an unobstructed view across properties primarily located at street intersections, driveways, and sharp horizontal curves in the roadway. (The same does not obligate the City to maintain such).

Slope Easement – A permanent easement, which restricts the degree of slope on property and upon which slope cannot be increased.

Temporary Construction Easement – A temporary easement, which grants the right for the City, NCDOT or other public utility provider to encroach upon the temporary construction easement while making improvements to public infrastructure and/or public utilities.

Public Utility Easement – A permanent easement, which grants to the City and 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, communication lines, natural gas lines, and cable television systems.

Public Sanitary Sewer Easement – A permanent easement, which grants to the City and other the right to install and thereafter maintain any and all sanitary sewer infrastructure including but not limited to sewer gravity mains, force mains, pumpstations, and services.

Private Utility Easement – A permanent easement, which grants the right to install and maintain a privately owned utility across private property. A Private Utility Easement can be granted to an individual, a utility company, a property owners' association or to owners of a specified parcel of land.

Elevation Certificate – A certificate obtained from a NC professional land surveyor stating the elevation of the finished floor elevation of the new or renovated structure. Elevation certificates are required as part of the floodplain development permitting process

(Professional) Engineer – A person licensed to practice engineering by the North Carolina Board of Examiners for Engineers and Surveyors.

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

Erosion Control – The implementation and installation of devices intended to slow prevent or direct the erosion and sedimentation of a site during the construction process.

Fee "In Lieu of Infrastructure Improvements" – A non-refundable payment to the City to compensate for needed and/or required infrastructure improvements that may be used in the future by the City to make such infrastructure improvements adjacent to the subject development.

Formal Street Parking – Parallel or angle parking which is adjacent to and contiguous with the travel way of the street and anticipated to occur on a frequent basis.

Grade, Finished – The final elevation of the ground surface after development.

Grading – The moving of earth in a deliberate manner, usually done to match a construction plan. There are two (2) types of grading, rough and fine. Rough grading is changing the overall characteristics of a site to a general state of similarity to the construction plans. Fine grading is done for a specific purpose such as roads, driveways, sidewalks, house pads, ditches, ponds, etc.

Groundcover – Any natural vegetative growth, masonry, paving, riprap or other material, which renders the soil surface stable against accelerated erosion. Informal Street Side Parking – Parallel parking on a street where parking is anticipated to be on an occasional basis.

Inspector – The Chief Construction Inspector, Construction Inspector, or other representative duly authorized by the City of Lexington to inspect public and private infrastructure improvements.

Invert Elevation – The elevation associated with the bottom of the inside of a pipe.

Letter of "No Practicable Alternative" – A letter stating that there are no practicable alternatives to the proposed design or construction activity and outlines the reasons why and details any hardships that were/are not self inflicted.

Major Field Changes – Any change that would not otherwise be considered a minor field change. Major Field Changes will, at the discretion of the City Engineer, require additional review by the City of Lexington TRC and potentially other regulatory agencies.

Minor Field Changes – Changes, necessary because of field encountered conditions which, in nature do not:

a) Materially impact the performance or integrity of the facility, nor the intent of the project;
b) Adversely impact the liability of the Engineer of Record nor the integrity or intent of his/her design; nor,
c) Violate the Standard Specifications

Plans – The approved plans, profiles, standard details, supplemental plans, and working drawings, which show the location, dimensions, and details of the work to be performed.

Plat – A map of a surveyed parcel of land which is intended to be, or has been, recorded in the office of the Register of Deeds.

Preliminary Plat – A map indicating the proposed layout of a subdivision or site showing lots, streets, easements, and other requirements of subdivision regulations.

Final Plat – The final map of all or a portion of a subdivision or site, showing the boundaries and location of lots, streets, easements, and all other requirements of subdivision regulations. Shows acceptance by the signing party for maintenance.

Preliminary Site Plan – Is a part of the initial design phase in preparing the construction documents. Typically, the preliminary plans are schematics and design development drawings that allow the City of Lexington and the architect or engineer to interact before the design is developed, helping to ensure a mutual understanding of the design objectives, limitations, and budget.

Right of Entry – A temporary agreement between a property owner or tenant and the City of Lexington that allows the City to access to the property perform minor maintenance and/or repairs to infrastructure. A right of entry may also be obtained for a small area outside of an existing easement or right-of-way that will be impacted by infrastructure maintenance or repairs.

Site Plan – A development plan required by virtue of the provisions of this manual as a condition for the issuance of a permit for development. The site plan requirements will be more specific based on the development request (or the review request).

Sketch Plan – A rough sketch map of a proposed subdivision or site, showing streets, lots, and any other information of sufficient accuracy to be used for discussion by owner, developer and/or staff, of the street system and the proposed development pattern.

Special Flood Hazard Area – The area designated by the Flood Insurance Rate Map (FIRM) as the 1% annual chance zone. Area expected to be inundated with floodwaters at a 1% per year probability.

Stabilizing Vegetation – Any vegetation that protects the soil against erosion.

Standard Specifications – A general term referring to all provisions and requirements contained herein entitled " Design and Construction Specifications" and any subsequent addendums or revision thereto.

Watershed and Stormwater Administrative Manual – A manual that contains guidelines for stormwater management principles, methods, and practices and a compilation of the Watershed/Stormwater permit requirements, submission schedules, fee schedules, ordinances and other information for meeting regulations pertinent to obtaining a Watershed/Stormwater permit in the City of Lexington jurisdictional area.

Street – A vehicular travel-way, which provides a means of access and travel. The term street may include road, avenue, place, way, drive, lane, avenue, boulevard, parkway, highway, and any facility principally designed for vehicular traffic.

Private Drive – A vehicular travel way, centered within a public access easement, which serves parking lots for two (2) or more principal buildings in a multi-family housing development or other non-single-family residential development. An individual entity or property owners' association shall maintain private drives. Street side parking spaces, (parallel and angle), is allowed on private drives. Parallel and angle parking spaces shall be designed per the UDO and shall not protrude into the primary travel way.

Private Street – A vehicular travel way, centered within a common area strip, permitted in developments where mandatory property owners' associations exist. Private streets shall undergo the same approval process and meet the same design and construction standards as public streets. Private streets are not encouraged; however, may be permitted for unique situations, such as, gated communities. Private Street parking and Public Street parking shall be the same standards.

Public Street – A vehicular travel way within a dedicated and recorded public right-of-way.

Rim Elevation – The elevation assigned to the center of the cover or grate of a manhole, drop inlet or yard inlet, and the midpoint of the grate or throat along the edge of pavement for curb inlets.

Stub Street – A street which runs to a property line of adjacent property and is intended to continue into adjacent property at such time as the adjacent property is developed.

Minor Subdivision – A subdivision that is not considered exempt according to Section 7 of the Lexington Unified Development Ordinance, but also does not require the dedication of additional rights-of-way or extension of water or sewer mains. In addition, a minor subdivision does not create more than 10 lots.

Subgrade – That portion of the roadbed prepared as a foundation for the pavement structure. Typically made up of soil or combination of soil and stone and is directly beneath the road base.

Substantially Completed – Work has progressed to the point that, in the opinion of the Public Services Director, it is sufficiently completed in accordance with the approved plans and specifications that the improved area can be utilized for its intended purposes.

Substantial Progress – Steps are being taken to further the project overall (e.g. documents are being submitted to the City or outside agency, commencement and continuation of construction, etc.)

Surety –A guarantee against loss or damage from one's failure to perform and a physical or financial guarantee for the fulfillment of an obligation. Performance Sureties may be in the form of Standby Letters of Credit, Performance Bonds, and Cash.

Surveyor – A person licensed to practice surveying in the North Carolina Board of Examiners for Engineers and Surveyors.

Tactile Strip/Pad or Truncated Domes – A pad or strip usually made of plastic, concrete, or other similar material used for warning pedestrians, especially the visually impaired, of an upcoming conflict with traffic, usually at intersections and driveways and usually installed in curb ramps.

Traditional Neighborhood Development (TND) – A compact mixed use development project that includes a range of housing types, a network of well-connected streets, alleys and blocks, public spaces, and amenities such as stores, schools, and places of worship within walking distance of residences or is within walking distance to those land uses. TND projects incorporate many different high quality architectural styles and site plan design elements to create an enhanced livable neighborhood(s).

Traffic Impact Analysis/Study (TIA/TIS) – An in-depth study and report performed by a transportation engineer that analyzes the impacts that a development may have on the surrounding roads and intersections. The report should make recommendations based on the findings of the analysis.

Traffic Operations Analysis (TOA) – Performed to analyze the operational characteristics of traffic for a proposed development. The analysis should include such things as turning movements, intersection sight distance, horizontal and vertical sight distances, stopping sight distance. The turning movements should be based on the largest, most turn-restrictive vehicle expected to enter, exit, or maneuver the site.

Trip Generation Report – A report demonstrating and evaluating the number of trips per day and peak flow rates to and from a proposed development. The report should make recommendations for left and right turning lanes for traffic entering and exiting a proposed development.

Unified Development Ordinance (UDO) – The compilation of regulations that affect land use, including the Zoning Ordinance, the Environmental Ordinance, and the Subdivision Ordinance/Regulations.

Utilities – Facilities of an agency which provide the general public with electricity, gas, oil, water, sanitary sewer, communications, or rail transportation.

Wetlands – Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and, under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas as delineated by the US Army Corp of Engineers or certified professional in the field of environmental engineering as approved by the US Army Corp of Engineers.

Working Day – Monday through Friday exclusive of City holidays and City Hall closing due to weather.

ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ABC	Aggregate Base Course
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic Count
AIA	American Institute of Architects
AICP	American Institute of Certified Planners
ANSI	American National Standards Institute
APWA	American Public Works Association
ASPH	Asphalt
ASTM	American Society of Testing and Materials
AWWA	American Water Works Association
BOC	Back of Curb
BOW	Bottom of Wall
BC-BC	Back of Curb to Back of Curb
BFE	Base Flood Elevation
BFP	Backflow Preventor
BMP	Best Management Practice
BST	Bituminous Surface Treatment
BUA	Built Upon Area

CATV	Cable Television
CAP	Corrugated Aluminized Pipe
CASP	Corrugated Aluminized Steel Pipe
CB	Catch Basin
COL	City of Lexington
CR	Curb Ramp (see also HCR)
CFS	Cubic Feet per Second
C&G	Curb and Gutter
CI	Combination Curb Inlet
CIP	Cast Iron Pipe
CL	Centerline
CLOMR	Conditional Letter of Map Revision
CMP	Corrugated Metal Pipe
co	Sanitary Sewer Cleanout (Drawings)
CO	Certificate of Occupancy
CONC	Concrete
CPP	Corrugated Plastic Pipe
DCI	Double Combination Curb Inlet
DI	Drop Inlet
DIP	Ductile Iron Pipe
DMUE	Drainage Maintenance and Utility Easement
DW	Driveway
EGL	Energy Grade Line
ELEV	Elevation
EOP	Edge of Pavement
EX or EXIST	Existing
FF	Face to Face
FEMA	Federal Emergency Management Agency

FES	Flared End Section
FO	Fiber Optic Line/Cable
FP	Floodplain
FW	Floodway
G	Gas
GV	Gas Valve
HCR	Handicap Ramp (see also CR)
HD	Heavy Duty
HYD	Hydrant
HDPE	High Density Polyethylene Pipe
HGL	Hydraulic Grade Line
HMAC	Hot-Mix Asphaltic Concrete
HP	High-Performance Polypropylene Pipe
HW	Headwall
ID	Internal Diameter
INV	Invert Elevation of a pipe
INV IN	Invert of a pipe entering a structure
INV OUT	Invert of a pipe exiting a structure
JB	Junction Box
LD	Light Duty
LIDS	Lexington Infrastructure Development Standards
LOMR	Letter of Map Revision
LP	Light Pole
MH	Manhole (can be prefixed with SD or SS)
MSL	Mean Sea Level
MUTCD	Manual on Uniform Traffic Control Devices
NCDEQ	North Carolina Department of Environmental Quality
NCDOT	North Carolina Department of Transportation

NEC	National Electric Code
O/C	Measurement from center to center
OCB	Offset Catch Basin
OD	Outside Diameter
OTCI	Open Throat Curb Inlet
OVH	Overhead
OHE or OVHE	Overhead Electric (Line)
PA	Professional Architect
P.C.	Point of Curvature
PCCP	Portland Cement Concrete Pavement
PDE	Permanent/Private Drainage Easement
PE	Professional Engineer (Licensed in North Carolina)
PED	Pedestal
PH	Phone
PIN	Property/Parcel Identification Number
P.I.	Point of Intersection
P/L	Property Line
PLA	Professional Landscape Architect
PLS	Professional Land Surveyor (Licensed in North Carolina)
PP	Power Pole
ppm	parts per million
PR or PROP	Proposed
PROWAG	Public Rights-of-Way Accessibility Guidelines
psi	pounds per square inch
P.T.	Point of Tangency
PUE	Public Utility Easement
PVC	Polyvinyl Chloride Pipe
PVMT	Pavement

QMS	Quality Management System
R/W or ROW	Right of Way
RCP	Reinforced Concrete Pipe
RJ	Restrained Joint
RLA	Registered Landscape Architect (Licensed in North Carolina)
SCM	Stormwater Control Measure
SD	Storm Drainage
SDE	Storm Drainage Easement
SHWT	Seasonal High-Water Table
SFHA	Special Flood Hazard Area (aka 100yr Floodplain)
SS	Sanitary Sewer
SSE	Sanitary Sewer Easement
STD	Standard
STYI	Slab-top Yard Inlet
SUE	Sidewalk and Utility Easement
SWE	Sidewalk Easement
TBC	Top Back of Curb
TIA	Traffic Impact Analysis
TOA	Traffic Operations Analysis
TOC	Top of Curb
TOW	Top of Wall
TCE	Temporary Construction Easement
TP or TPF	Tree Protection Fence
TST	Temporary Sediment Trap
UDO	Unified Development Ordinance
USACE	United States Army Corps of Engineers
VCP	Vitrified Clay Pipe
WL	Water Line

WM	Water Meter
YH	Yard Hydrant
YI	Yard Inlet

SECTION 1 – ROADWAYS

1.1 General Notes

All work and materials shall conform to the latest edition of the North Carolina Department of Transportation Standard Specifications for Roads and Structures unless otherwise specified in this manual.

All asphalt cuts shall be made with a saw when preparing street surfaces for patching or widening strips.

Paper joints shall be used to seal the ends of an asphalt pour so that future extensions can be made without causing rough joints.

When placing asphalt against existing surfaces, a straight edge shall be used to prevent "humping" at that location.

Stone shall be primed if paving is not complete within seven days following stone base approval.

Surfaces shall be tacked when asphalt is being placed over existing asphalt streets or adjoining concrete, storm drain and sanitary sewer structures.

In rolling and hilly terrains, sweeping of the stone base and/or application of a tack coat may be required near intersections. These requirements will be established by the City Inspector based on field conditions.

ALL concrete used for streets, curb and gutter, sidewalks, and drainage structures, etc. shall have a minimum compressive strength of 3000 PSI at 28 days. This requirement shall be provided regardless of any lesser compressive strength specified in the North Carolina Department of Transportation Standard Specifications for Roads and Structures. The contractor shall prepare concrete test cylinders in accordance with Section 1000 of the North Carolina Department of Transportation Standard Specifications for Roads and Structures at the direction of the project inspector. See Section 7 of this manual for construction inspection requirements and procedures.

All concrete shall be cured with 100% Resin Base, white pigmented curing compound which meets ASTM Specifications C309, Type 1, applied at a uniform rate at one (1) gallon to 400 square feet within 24 hours of placement of the concrete.

All curb and gutter shall be backfilled with soil approved by the Inspector within 48 hours after construction to prevent erosion.

All backfill shall be non-plastic in nature, free from roots, vegetative matter, waste, construction material or other objectionable material. Said material shall be capable of being compacted by mechanical means and the material shall have no tendency to flow or behave in a plastic manner under the tamping blows or proof rolling.

Materials deemed by the Inspector as unsuitable for backfill purposes shall be removed and replaced with select backfill material.

The contractor shall maintain two-way traffic at all times when working within existing streets. The contractor shall place and maintain signs, danger lights, and barricades and furnish watchmen or flagmen to direct traffic. Work in the right-of-way of State System Streets may require additional traffic control provisions.

The contractor shall do what is necessary to control erosion and prevent sedimentation damage to all adjacent properties and streams in accordance with the appropriate North Carolina Department of Environmental Quality (NCDEQ) standard.

1.2 Construction Standards

1.2.1 Grading

Proposed street rights-of-way shall be graded, at a minimum, to their full width in all cases.

Fill embankments shall be formed of suitable material placed in successive layers not to exceed eight (8) inches in depth for the full width of the cross section, including the width of the slope area. No stumps, trees, brush, rubbish, or other unsuitable materials or substances shall be placed in the embankment. Each successive eight (8) inch layer shall be thoroughly compacted with a sheepsfoot roller, 10-ton power roller, pneumatic-tired roller, or other methods approved by the City Engineer or designee. Embankments over and around all pipe culverts shall be select material, placed and thoroughly tamped and compacted as directed by the City Engineer or designee.

1.2.2 Roadway Base

All roadways shall be constructed with a base course as described on the appropriate Lexington Infrastructure Developments Standard Detail Drawing.

The material for stone base course shall conform to the requirements of Section 1010, Aggregate for Non-Asphalt Flexible Type Base, and Section 520, Aggregate Base course of the North Carolina Department of Transportation Standard Specifications for Roads and Structures

The stone base shall be compacted to 100% of the maximum density obtainable with the Modified Proctor Test (AASHTO T180) by rolling with ring or tamping roller or with a pneumatic tired roller with a minimum weight of ten tons. When completed, the base course shall be smooth, hard, dense, unyielding, and well bonded.

A bituminous concrete base course, as specified on the Standard Detail Drawing may be substituted in lieu of a stone base course. Asphalt base course will only be allowed within widening strips less than five (5) feet in width.

1.2.3 Roadway Intermediate and Surface Courses

All public roadways shall be constructed with an intermediate and surface course as described on the appropriate City of Lexington Infrastructure Development Standards Detail Drawing.

Plant mixed asphalt shall conform in all respects to Section 610 of the North Carolina Department of Transportation Standard Specifications for Roads and Structures.

The final (1) one inch lift of asphalt surface course for Residential Subdivision Streets shall be withheld until a minimum of (100%) one-hundred percent of the Development is occupied (occupied means a certificate of occupancy has been issued) or at least (1) one year has lapsed from the application of the intermediate course layer (All documentation to be provided by the developer and approved by the City Inspector). All known base failures shall be repaired prior to application of the final one inch lift of asphalt surface course.

All deficiencies or failures of the sidewalk, curb and gutter, utilities, storm drainage, etc. must be repaired prior to application of the final lift of asphalt.

The City inspector shall be given a twenty-four (24) hour notification to inspect the intermediate course deficiencies. All deficiency repairs are to be monitored by a City Inspector and accepted prior to application of final layer.

City inspectors shall be notified prior to using recycled plant mixes.

Failure to meet the above requirements may result in the delay or prevention of street acceptance by the City of Lexington or NCDOT.

1.2.4 Curb and Gutter, Sidewalks, Ramps, and Driveways

For all curb and gutter replacement and in some new curb and gutter installation, the asphalt shall be sawcut at least 1 foot into the roadway measured from the proposed lip of the curb. The cut shall be parallel with and shall follow the entire length of the proposed curb. The 1 foot of asphalt shall be removed and replaced so that the edge of the pavement sits flush with existing asphalt as well as the proposed curb. A larger width of asphalt replacement may be required by the City Engineer or designee based on site conditions. Curb replacements shall begin and end at an existing joint.

For City projects only: On LIDS #1201, 1202, 1204, 1205, 1206, and 1207, the curb and gutter across the front of the driveway shall be measured and paid for separately under Curb and Gutter (either 2’-0” valley gutter, vertical curb, or standard 2’-6” curb and gutter as specified on the details). The curb and gutter is to be measured per linear foot along the surface of the top of the curb. The concrete driveway apron is to be measured per square yard.

Where sidewalks and pedestrian routes within street crossings (including marked and unmarked crosswalks) are provided, they must be constructed so they are accessible to all potential users, including those with disabilities.

The July 26, 2011 "Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way" was written by the US Access Board and is also known as the Public Right-of-Way Accessibility Guidelines or PROWAG. PROWAG provides more specific information than the existing Americans with disabilities Act Accessibilities Guidelines (ADAAG) for transportation facilities within the right-of-way including pedestrian access routes, signals, and parking facilities. The PROWAG requirements have been officially adopted by the Department of Justice and should be followed in all cases where ADAAG regulations were previously applied.

Buildings and other structures not covered by PROWAG must comply with the applicable requirements of the ADAAG.

Sidewalks shall be constructed of not less than 3500 P.S.I. concrete and shall be four (4) inches thick, constructed on an adequately graded base, except where a sidewalk crosses a residential and commercial driveway it shall be six (6) inches thick and eight (8) inches thick for industrial driveways. Subgrade shall be compacted to 95% of the maximum density obtainable with the Standard Proctor Test. The surface of the sidewalk shall be steel trowel and light broom finished and cured with an acceptable curing compound. Tooled joints shall be provided at intervals of not less than five (5) feet and expansion joints at intervals of not more than forty-five (45) feet.

Table 1-1: Example Sidewalk Construction Dimensions

SIDEWALK WIDTH (ft)	RISE (in)	CROSS-SLOPE (%)
4	3/4	1.56
5	1	1.67
6	1-1/8	1.56
8	1-1/2	1.56

Planting strip adjacent to sidewalk shall be graded to ¼ inch per foot (min.) up to 1 ¼ inch per foot (max.), except where excessive natural grades make this requirement impractical. In such cases, the City Engineer may authorize a suitable grade.

Approval of sidewalk construction plans must be obtained as part of the plan review process. Except in unusual circumstances, sidewalk must be located a minimum of five (5) feet from the back of the curb or at the back of the right-of-way. A recorded public sidewalk easement is required for all public sidewalk located outside public right-of-way; the width shall be equal to the distance from the right-of-way line to the back of the sidewalk plus two feet or to the face of building, whichever is less. The sidewalk

easement must be recorded with the Davidson County Register of Deeds prior to issuance of a certificate of occupancy for the corresponding building(s).

Refer to the MUTCD (latest edition) and the Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) for construction zone pedestrian routes and signalization and controls for actuators. Curb ramps shall be designed and constructed in accordance with the Americans with Disabilities Act (ADA).

1.2.5 Utility Cuts in the Roadway

Cuts in the roadway for utility, maintenance, installation, and tapping shall be saw-cut in straight lines and rectangular in nature with cuts parallel and perpendicular to the roadway. The size of the cut shall be kept as small as possible while still allowing for adequate access to the utility.

Care shall be taken to not damage the cut edges of the pavement prior to the patch installation. If any damage caused by equipment during the repair, the patch shall be expanded to incorporate the damaged section.

Open cuts taking place within a previous patch shall replace the entire existing patch.

The width of the trench shall be 3 feet (1'-6" on either side of the pipe) plus the nominal diameter of the utility pipe. The asphalt patch repair should span 2 feet of full-depth asphalt on either side of the trench and total width of the patch should be 7 feet minimum.

Backfill sequence and asphalt section shall be in accordance with LIDS #1024.

Asphalt patches shall follow the longitudinal and cross slope of and sit flush with the existing roadway. Patches shall be tested for uniformity on a 4' span and should be within 1/4" of tolerance.

Milling may be used in lieu of full-depth repair at the discretion of the City Engineer or designee.

1.3 Street Design

1.3.1 Horizontal Design

The horizontal design of streets shall conform to the latest edition of the NCDOT Roadway Design Manual unless otherwise specified in this manual. Stopping sight distance, passing sight distance, decision sight distance and all other sight distances related to the horizontal design of streets shall be in accordance with the latest version of AASHTO's *A Policy on Geometric Design of Highways and Streets* (Green Book).

The arrangements of streets shall make provisions for the continuation of existing streets and utilities in adjoining subdivisions. When a new subdivision adjoins undeveloped land, or the subdivision is to be built in sections, streets, including stubs, and

accompanying utilities shall be constructed to the property lines of the undeveloped land. The street and utility extensions must be designed and constructed in a manner that will not cause hardship to owners of adjoining property when they attempt to develop their land and provide convenient access and utility services to it.

If a street cannot be constructed to the property line due to minor cuts and fills which would be necessary on the adjacent property, the City Engineer may determine that the last fifteen (15) feet of roadway need not be constructed.

Table 1-2: Horizontal Design Criteria

	ALL LOCAL STREETS (Except Industrial)		LOCAL INDUSTRIAL AND COLLECTOR STREETS	
	Level/Rolling (0-15% grades)	Hilly (+15% grades)	Level/Rolling (0-15% grades)	Hilly (+15% grades)
Design Speed (mph)	25	20	30	25
Minimum Centerline Radius (ft) Public Street Private Street	 150 50	 90 50	 250 150	 175 150
Min. Tangent between Horizontal Curves (ft)	50	50	100	100

Horizontal Design criteria are listed in Table 1-2. Usage of the Hilly Terrain classification criteria is NOT permitted without approval from the City Engineer or designee and should be requested as early as feasibly possible in the design process.

Compound horizontal curves with the same direction of curvature shall have the radius of the flatter circular arc no more than one and one half (1-1/2) times the radius of the sharper circular arc. Reverse curves with no tangent between them are not permitted.

Any streets that are multi-lane (divided or undivided) will require special design review by the City Engineer or designee.

Radii smaller than the minimum shown in Table 1-2 may be considered, but only in cases with horizontal or topographic constraints with adequate superelevation and signage, and only if approved by the City Engineer or designee.

Turn lanes shall have a minimum width of 12 feet and be incorporated when required by traffic considerations. Turn lane tapers shall be at least 15:1 for posted speeds of 45 mph or greater. The minimum turn lane taper allowed for streets posted less than 45 mph is 8:1. Symmetrical reverse curve tapers are recommended for non-thoroughfare streets.

Storage lengths for the turn lanes shall conform to NCDOT and AASHTO standards. Taper length shall be calculated using the following formulas:

$$L = WS \qquad \text{(posted speed} \geq 45\text{mph)}$$

$$L = \frac{WS^2}{60} \qquad \text{(posted speed} < 45\text{mph)}$$

Where,

L = Taper Length (ft)

S = Posted Speed (mph)

W = Lateral Offset (ft)

1.3.2 Vertical Design

The vertical design of streets shall conform to the latest edition of the NCDOT Roadway Design Manual unless otherwise specified in this manual. Stopping sight distance, passing sight distance, sight distance at undercrossings and all other sight distances related to the vertical design of streets shall be in accordance with the latest version of the AASHTO Green Book.

Usage of the Hilly Terrain classification criteria is NOT permitted without approval from the City Engineer or designee and typically should be requested at the Sketch Plan Submittal.

Generally, the proposed roadway grade and vertical alignment shall be established with respect to the natural grade and undulations of the site to avoid excessive earthwork and removal of existing vegetation.

The K-value in Table 1-3 represents the minimum rate of vertical curvature for minimum sight distance. Provisions of adequate stopping sight distance may require use of larger K values than the minimums listed below.

Table 1-3: Vertical Design Criteria

	ALL LOCAL STREETS (Except Industrial)		LOCAL INDUSTRIAL AND COLLECTOR STREETS	
	Level/Rolling (0-15% grades)	Hilly (+15% grades)	Level/Rolling (0-15% grades)	Hilly (+15% grades)
Design Speed (mph)	25	20	30	25
Maximum Grade (%)	10	12	8	10
K-Value (Crest/Sag) K-Value (Stop Condition)	20/20 9	15/20 5	28/35 14	20/20 9

A minimum grade of 1% shall be used for all vertical tangents and a minimum of 0.5% is permitted at crest and sag conditions.

1.3.3 Intersections

Maximum street grades at intersections are as follows:

STOP or YEILD Condition – Street grade is 2% maximum through the crosswalk areas (marked or unmarked). Outside of the crosswalk areas, the vertical alignment is 5% maximum within 100 feet of an intersection. For Hilly Terrain, 100 feet is preferable; however, a minimum of 40 feet may be approved at the discretion of the City Engineer or designee.

THROUGH MOVEMENT Condition – Vertical Alignment is 5% maximum through the crosswalk areas (marked or unmarked). Where feasible, it is recommended that the maximum grade of a through-movement street also be 2% maximum through the crosswalk areas. For areas outside of the crosswalk areas, refer to the maximum grade in Table 1-3.

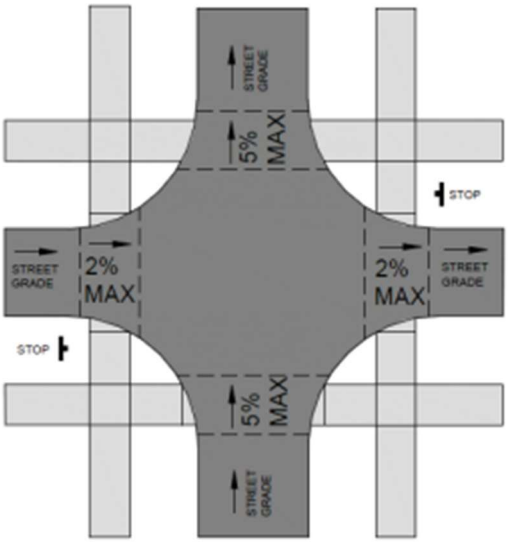

Figure 1-1: Crossing Grades at Intersections

For midblock pedestrian street crossings, the cross slope of the street crossing is allowed to equal the street grade. Midblock crossings must have pedestrian signs with push button initiated flashing lights installed for both directions of vehicular travel unless otherwise approved by the City Engineer or designee. Midblock crossings on a thoroughfare may require a signalized crossing.

Streets shall intersect at right angles wherever possible; however, the minimum angle of intersection is 75 degrees for local streets and 80 degrees for collectors.

Proposed street intersections must utilize a traditional 3-way or 4-way intersection. A 2-way intersection utilizing a “bulb” or cul-de-sac will not be allowed and instead must either meet the horizontal design criteria herein for horizontal curves or utilize the aforementioned traditional intersection types.

Minimum separation of intersections are as follows:

125 feet along local streets

200 feet along collector street

NCDOT minimum along thoroughfares

500 feet for signalized intersections on all city street classifications

Intersection offsets/separations from a thoroughfare, at signalized intersections, or at intersections that may become signalized in the future may need to be greater that these minimums and will be determined by the City Engineer on a case-by-case basis.

Two intersection approach sight triangles must be preserved at each public or private street intersection with another public street, or at a signalized driveway connection to a public street. These triangles measure 35' x 35', measured along the intersection of the rights-of-way, or 50' x 50' measured from the midpoint of the curb return along the face of curb. The more restrictive of the two sight triangles shall be shown. These sight triangles shall be preserved and reserved at all intersections as described above and are required to be shown on all applicable plans. Smaller sight triangles, to allow drivers to see pedestrians on sidewalks, measure 10' x 10' and are required at all driveways regardless of type or intersecting street classification. They are oriented similarly to the 35' x 35' triangles.

The NCDOT imposes a sight triangle, measuring 10' x 70' in size along the intersecting rights-of-way, with the 70-foot dimension along the cross street. This sight triangle must be shown at all connections to a state-maintained roadway, regardless of street or driveway classification or dimension, and is located on each side of the approaching street or driveway.

No object that impedes sight distance between a height of 30 and 72 inches above the ground surface, subject to the exceptions established in this section, shall be located within any of these three sight triangles.

Objects that may be required within sight distance areas, such as fire hydrants, utility poles, and traffic control devices, shall be located so that they minimize visual obstruction. Other objects 12 inches in diameter and smaller (including tree trunks and sign posts) may be allowed within sight distance areas if located individually or in combination so as not to substantially restrict the driver's view. The City Engineer shall determine what objects, if any, are allowed within sight-distance triangles.

These sight triangles provide drivers the ability to perceive an upcoming intersection, see if there is any conflicting traffic, and take evasive action if necessary. These sight triangles are for approaches to intersections and are separate entities from departure sight triangles ("intersection sight distance"). Departure sight triangles or intersection sight distance shall be in accordance with the latest version of the AASHTO Green Book.

Minimum curb and right of way radii are defined in Table 1-4. The minimum curb radius applies to the curb at the pavement edge. If no curb is used, the minimum radii apply to the edge of pavement. The City Engineer will determine the collector classification.

Table 1-4: Minimum Curb and R/W Radii

From/To	R/Local	R/Sub-Collector	R/Collector	C/Local	C/Collector	Industrial
R/Local	20					
R/Sub-Collector	20	15				
R/Collector	20	15	15			
C/Local	25	25	20	20		
C/Collector	25	20	15	25	15	
Industrial	30	20	20	30	30	50

R = Residential

C = Commercial

1.3.4 Curb and Gutter, Sidewalks, Ramps, and Driveways

Curb and gutter shall be used whenever possible in lieu of open conveyance of storm water runoff and the width and type of curb used shall not hinder use of the roadway.

2'-0" valley gutter is not permitted to be used without prior approval from the City Engineer or designee. 1'-6" curb and gutter is only permitted for use on private streets and parking lots.

Sidewalk widths shall be a minimum of five (5) feet unless otherwise specified. Where necessary, a 5' x 5' sidewalk is required at least every 200' as required by PROWAG for a passing zone unless otherwise provided by residential driveways, intersecting sidewalk, etc. The sidewalk shall have a desired lateral slope of 2.00% (1/4 inch per foot) maximum.

Running slope of all ramps shall be up to 8.33% (1 inch per foot) maximum. Ramp length is not required to exceed 15' regardless of the resulting slope, which shall be uniform for the length of the ramp. Curb ramps are required where sidewalks intersect curbing at any street intersection and at driveway connections at signalized intersections (LIDS #1208) as well as intersections on ditch-type streets.

Tactile warning surfaces (aka truncated domes) shall be installed at all accessible ramps in the public right-of-way and shall be replaceable as described by LIDS #1022 and black in color. Installation of warning surfaces shall follow the manufacturer's instructions and guidelines.

Where pedestrian routes are contained within a street or right-of-way, the grade of pedestrian access routes shall not exceed the general grade established for the adjacent street or highway.

All driveways along a proposed curb and gutter street shall have the portion of the driveway within the right-of-way be designed to drain to the street unless otherwise approved by the City Engineer or designee. Driveway connections on existing curb and gutter streets must have, at minimum, the first 10ft of the driveway drain to the street with a minimum rise of 6 inches before the remainder of the driveway can slope away from the street. All driveways shall conform to LIDS #1201 thru #1209. The maximum breakover (or difference in grade) of all driveways is 8%. Maximum and minimum driveway grades shall be 20% and 0.5% respectively.

All driveways on ditch-type streets shall have either a flared end section or an endwall as the end treatment for the driveway culvert on both the upstream and downstream ends unless otherwise approved by the City Engineer or designee. The end treatment shall not be less than 4 feet from the edge of the driveway

Driveways connecting to city streets shall not be permitted to enter directly into an intersection. Driveways shall be at least one full right-of-way width (of the intersecting street, adjacent to the driveway connection) or 50 feet from the intersection, whichever is greater, measured from the midpoint of the intersection along the centerline of the street.

All driveways shall be located such that the flared portion of the driveway at the street does not encroach on any adjacent properties.

Driveway connections shall intersect streets at right angles wherever possible but shall not, in any case, be less than 45 degrees. Where the driveway is not perpendicular to the roadway and has sidewalk, the joints of the sidewalk must remain uniform throughout the crossing and may not be parallel with the driveway in any case.

Shared driveways must conform to LIDS#1210. Shared driveways on NCDOT roads must follow NCDOT standards when stricter than city standards. No more than two residential dwellings will be permitted to utilize a shared driveway without other internal parking onsite.

For driveway side yard setbacks and build-to lines, see the Table of Setbacks and Build-To Lines in the City of Lexington Unified Development Ordinance, Section 4.

1.3.5 On-Street Parking

On-street parking shall conform to LIDS #5007 & 5008.

On street parking or a pull-off area (with adequate storage) shall be provided for all cluster mailbox units (CMUs) in all subdivisions unless otherwise approved by the City Engineer or designee.

1.3.6 Guardrail

Guardrail shall be installed in accordance with NCDOT standards when determined to be necessary by the standard(s) themselves or by the City Engineer or designee.

1.3.7 Street Terminations and Turnarounds

All street terminations must provide an area for turnaround adequate for the single-unit-vehicle with the longest length that is expected to regularly use the street (ie garbage truck, fire truck, delivery truck, etc.). A cul-de-sac or other turnaround is required on all dead-end streets longer than 150 feet in length but may be required for shorter length streets by the City Engineer or designee. The length of a dead-end street shall be minimum 75 feet and maximum 500 feet measured from the outside edge of the traveled way of the intersecting street to the paved terminus of the street or turnaround.

Streets that are stubbed for future development connections shall provide adequate signage and barricades as defined in LIDS #5005 and 5006.

Hammerhead turnarounds are not permitted for streets proposing direct driveway access in the turnaround area. Hammerheads may only be used in residential areas for stub streets that terminate at the property line or for streets that are longer than 50 feet and no driveways access the perpendicular portion of the hammerhead. Temporary turnarounds may only be used on stub streets longer than 50 feet in length. Cul-de-sacs, hammerheads, and temporary turnarounds shall be in accordance with LIDS #1301-1304.

Driveways may not be installed on the end of an existing or proposed dead-end street that does not have a turnaround. Proposed developments that have a stubbed street for future connection by an adjacent property must provide a “negative access easement” which prohibits the connection of driveways.

1.3.8 Street Extensions

All street extensions shall have the final 20 feet of existing asphalt milled at 2” depth and overlapped with the final course of asphalt of the extension.

All street extensions shall meet current City standards for widths and pavement sections regardless of the existing street width and pavement section unless otherwise approved by the City Engineer or designee. For extensions of existing streets where the existing width does not match the standard width, the street shall be tapered at 20:1 until the standard width is achieved unless otherwise approved by the City Engineer or designee.

All street extensions must use a similar cross-section to the existing street (e.g. curb and gutter, ditches, sidewalk, etc.). A modified City standard street cross-section may be approved for areas with limited right-of-way width(s) for the purpose of conforming with the surrounding streets.

1.4 Required Improvements to Existing Public Streets

1.4.1 General Notes

Dedication of additional rights-of-way, widening, or other improvements to existing public streets upon which the property fronts or which provide access to new subdivisions may be required of the developer or property owner.

1.4.2 Resurfacing

The City Engineer or designee may require the resurfacing of an existing City street only where the proposed development extends from the end of the existing street. The City may also require the resurfacing of a portion of existing street that is being widened or having lanes added as part of Section 1.4.3 and 1.4.4.

Resurfacing shall be done by milling 2-3" and repaving with S9.5B or by full depth reconstruction following the pavement section for the classification of the existing road.

1.4.3 Turn Lanes

Turn lanes shall have a minimum width of 12 feet and be incorporated when required by traffic considerations. Turn lane tapers shall be at least 15:1 for posted speeds of 45 mph or greater. The minimum turn lane taper allowed for streets posted less than 45 mph is 8:1. Symmetrical reverse curve tapers are recommended for non-thoroughfare streets.

Storage lengths for the turn lanes shall conform to NCDOT and AASHTO standards. Taper lengths shall be determined by the formulas in Section 1.3.1 of this Manual.

Turn lanes may be required based on the information provided in a traffic study as required by Section 7 of the Lexington UDO and Section 5 of this manual.

1.4.4 Roadway Widening

Existing streets may require widening for several reasons which include, but are not limited to, the existing street does not meet current city standards, the existing street is too narrow for the type or amount of traffic proposed, the existing street does not have enough lanes to accommodate the amount of proposed traffic, or the existing road is being widened for the addition of a turn lane. The widening of NCDOT maintained roads must meet the required NCDOT specifications.

SECTION 2 – LANDSCAPE MANAGEMENT

2.1 General Notes

Existing trees shall be preserved whenever possible. Clearing or grubbing is prohibited without the issuance of a Land Disturbance Permit.

Refer to Section 4 of the City of Lexington Unified Development Ordinance, for required undisturbed landscape buffer, street trees, and parking lot planting requirements. Refer to Section 9 of the Lexington UDO for approved plant species classified by the defined matured height.

Tree protection fence shall be installed along all required undisturbed areas including tree save areas, undisturbed vegetative buffers, etc. For tree protection fence requirements at watercourse buffers see Section 3.3.2 of this manual. Trimming of overhanging limbs and roots near such areas shall be avoided and approval from the Public Services Director or designee is required prior to trimming. If approved, roots and limbs shall be clean-cut and only limbs and roots with prior approval shall be trimmed. Trimming of limbs and roots required for utility maintenance or installation shall also be avoided and shall be done in a clean-cut manner.

The disturbance of a previously designated undisturbed vegetated area could result in fines and/or the required replanting of the area at the cost of the builder, developer, or property owner.

Street trees as defined in the Lexington UDO Section 9 shall be installed along the street with maximum mature-height classifications outlined in Table 2-1 of this manual.

Table 2-1: Street Tree Requirements for Individual Street Sections

	Max Tree Class (Small, Medium, or Large)			
LIDS #	Residential w/ No Driveways	Residential w/ Driveways	Commercial/ Office	Industrial
1101A	Medium	Medium	N/A	N/A
1101B	Medium	Medium	N/A	N/A
1102	Large	Large	Large	Large
1103	Medium	Medium	N/A	N/A
1104	Large	Large	N/A	N/A
1105	N/A	N/A	Small	N/A
1106	N/A	N/A	N/A	Medium
1107A	Medium	N/A	Large	Large
1107B	Medium	N/A	Medium	Medium
1108	Varies	Varies	N/A	N/A
1109	Small	Small	Medium	Medium

Street trees for the purpose of this manual are trees planted within the public right-of-way or on private property along the street. Street trees referred to in this manual are separate from the plantings required in parking areas and on individual lots as part of the building code.

Street tree spacing for all streets shall be 60 feet for all classifications of trees. The planting of any trees or shrubs within the intersection sight triangles outlined in Section 1.3.1, of this manual, is prohibited.

Planting of large maturing trees are not permitted to be planted within 20 feet of a storm drainage pipe or structure, or a sanitary sewer pipe or structure. Medium and Small maturing trees are not permitted within 15 feet and 10 feet respectively of the aforementioned pipes and structures.

Contact the Engineering Services or Business and Community Development Departments with questions regarding planting requirements for development.

SECTION 3 – STORMWATER

3.1 Storm Drainage

3.1.1 General Notes

All work and materials shall conform to the latest edition of the NCDOT Standard Specifications unless otherwise specified in this manual. ALL concrete used for drainage structures shall have a minimum compressive strength of 3500 PSI at 28 days. This requirement shall be provided regardless of any lesser compressive strength specified in the North Carolina Department of Transportation Standard Specifications for Roads and Structures.

Construct non-NCDOT Roadway Standard Drawing endwalls of reinforced concrete or as approved by the City Engineer or designee.

All pipes shall be laid with the bell or groove up-grade and the joint entirely interlocking.

For all pipes, wrap geotextile (NCDOT Section 1056 - Type 2) around all pipe joints. Extend geotextile at least 12 inches beyond each side of the joint or band. Secure geotextile against the outside of the pipe by methods approved by the Storm Water Administrator.

All pipes in storm drainage structures shall be cut or set flush with the inside wall of the structure. All outgoing pipes shall sit flush with or slightly below the top of the bottom slab to ensure the structure will not retain water.

All storm drainage structures over three (3) feet and six (6) inches in height must have steps in accordance with standard details set forth in this manual.

The interior surfaces of all storm drainage structures shall be pointed up and smoothed to an acceptable standard using mortar mixed to manufacturer's specifications.

A pipe collar meeting NCDOT standards or standard junction structure is required where pipes from two manufacturers or materials are tied together. Pipes should be on the same grade and alignment and have the same internal diameter where a pipe collar is specified.

For new construction, all pipe segments being joined together, must be the same material from the same manufacturer, and have the same internal diameter. A junction structure shall be used when joining pipes that are not "like-kind" in new construction.

All frames, grates, rings, covers, etc., must conform to the standards set forth in this manual. Manhole covers shall have a minimum of two and a maximum of six 1" diameter vent holes.

All inlet structures within the public right-of-way shall be slab-top with access via manhole cover or grate and shall be constructer per LIDS #3010, 3011, 3012 and #3015. Combination style inlets with frame, grate and hood are not permitted for proposed

infrastructure on City-maintained streets unless otherwise approved by the Stormwater Administrator or designee. Grated drop inlets are not permitted in the public right-of-way unless approved by the Stormwater Administrator or designee.

For proposed development that is determined to impact a public storm drainage system, either directly or indirectly, it shall be the responsibility of the owner, developer, or engineer to ensure that any additional flow introduced to the public system does not exceed the capacity of the system or its inlets. Calculations and analysis of the public system demonstrating the effects of the additional flow may be requested by the City. If determined by the analysis that the system will exceed capacity as a result of the additional flow, improvements to the public system at the cost of the owner or developer may be required. The City may withhold approval of the development's design plans, calculations and/or permits until such improvements are incorporated and approved.

3.1.2 Design Criteria

Section 3.1.2 contains an overview of the minimum design requirements of storm drainage pipe systems, culverts, inlets, etc. Storm drainage infrastructure within NCDOT right-of-way shall be designed per NCDOT standard.

All public and private storm drainage pipe systems shall be designed using the 10-yr storm event. Pipe systems shall be designed at 7/8 maximum capacity and no structure shall be allowed to surcharge during a 10-yr storm event. Roadway culverts shall be designed using the 25-yr storm event for inlet and pipe capacity. Structures in the sag condition of a roadway that intercept a roadway culvert shall not be allowed to surcharge during a 25-yr storm event. Pipes and systems in the floodplain shall be designed for a 100-yr storm event.

Roadside ditches shall be a minimum of 18 inches deep and shall provide the capacity designed for a 10-yr storm with 6-inches of freeboard. For subdivision streets ditch flow for the 25-yr storm shall not encroach onto the pavement. For thoroughfare streets ditch flow for the 50-yr storm shall not encroach onto the pavement.

Storm pipes shall have a minimum diameter of fifteen (15) inches (eighteen (18) inches minimum on cross drains and culverts) unless otherwise approved by the City Engineer or designee.

The minimum intersection angle of incoming and outgoing pipes through a structure shall be ninety (90) degrees regardless of size or material. The minimum angle of intersection of incoming pipes within the same vertical plane shall be seventy-two (72) degrees regardless of size or material. Incoming and outgoing pipes should not be installed in the corner of the structure unless otherwise approved by the City Engineer or designee.

Minimum and maximum cover requirements of NCDOT Standard Drawing 300.01 shall be followed unless otherwise specified in this manual. No storm pipe is permitted to have less than two (2) feet of cover, except for Class IV Reinforced Concrete Pipe, which is

not permitted to have less than of eighteen (18) inches of cover. Storm pipe design that exceeds these criteria may be approved at the discretion of the City Engineer or designee.

Where storm pipes cross over utilities, a minimum of two (2) feet of separation must be maintained. Proposed storm drainage structures must maintain five (5) feet of horizontal separation from a sanitary sewer pipe or waterline unless otherwise approved. For storm crossings where storm crosses under sanitary sewer or water refer to the Lexington Sewer and Water Design Manual. All other instances where storm drainage pipes cross a utility, two (2) feet separation must be maintained unless otherwise approved by the City Engineer or designee.

Storm drainage piping shall be placed in a straight alignment at uniform grade. No changes in alignment (horizontal or vertical) or slope will be allowed except at catch basins, manholes, or other junctions that provide appropriate access. No inaccessible or "blind" structures are permitted. The maximum length between structures shall be 300 linear feet for pipes thirty-six (36) inches or less and 500 linear feet for pipes greater than thirty-six (36) inches

The minimum allowable slope is 0.50 percent or the slope which will produce a velocity of 2.5 feet per second when the storm drainage system is flowing full, whichever is greater. The maximum allowable pipe slope shall be 10.00 percent without a special design by a structural engineer for pipes with slopes greater than allowable.

Incoming pipes shall match the crown elevation of the outgoing pipe whenever possible with the minimum drop through a storm drainage structure being 0.10 feet.

Maximum inner pipe velocity shall not exceed 20 feet per second and maximum discharge velocity shall not exceed 10 feet per second. Energy dissipators may be used at the outlet if necessary to achieve less than the maximum outlet velocity. For approved energy dissipators, refer to LIDS #3019 and LIDS #3021 as well as Chapter 6.40 and 6.41 of the NCDEQ Erosion and Sediment Control Planning and Design Manual. Other methods of energy dissipation may be approved at the discretion of the City Engineer or designee.

Gutter spread calculations shall use a rainfall intensity of 4 inches per hour. Maximum allowable spread shall be equal to half the travel lane width. When using standard combination inlets with a frame, grate, and hood, a reduction factor of 0.67 must be applied to the capacity of the inlet for clogging of the inlet due to leaves, sticks, trash and other debris.

3.1.3 Permissible Materials

Pipes and structures within NCDOT right-of-way shall conform to NCDOT standards and requirements.

3.1.3.1 – Structures and End Treatments

All storm drainage structures shall be constructed of masonry or concrete block, or precast concrete. Waffle-wall structures are not permitted. Non-standard structures must have engineered drawings sealed and signed by an NC licensed PE that shall be submitted to the City Engineer for approval.

Headwalls (with or without wings) and endwalls shall be masonry or concrete block, or reinforced concrete. Flared end sections shall be precast concrete. Plastic and metal material end treatments are not permitted. Non-standard walls must have engineered drawings sealed and signed by an NC licensed PE that shall be submitted to the City Engineer for approval.

3.1.3.2 – Reinforced Concrete Pipe (RCP)

RCP may be used in all storm drainage applications. The minimum length of RCP permitted for use shall be eight (8) feet. Concrete pipe used within the street right-of-way shall be a minimum of Class III Reinforced Concrete Pipe. Installation of Class IV or higher concrete pipe shall be identified on the construction drawings as well as the as-built plans and the City inspector shall be given documentation and notification of this information prior to construction. All concrete shall be at least 3500 psi.

Joints shall consist of one of the following and should be specified by the Engineer for each respective project as applicable:

a) Preformed joint sealant, which conforms to ASTM C 990 Section 6.2 “Butyl Rubber Sealant” and NCDOT 1032-6.F. Joints utilizing preformed joint sealant shall be used in combination with Type 2 filtration geotextile wrap around all RCP pipe joints.

b) Rubber (elastomeric) gasket seals in accordance with ASTM C 443, which are in compliance with ASTM C 1619, Class C (unless otherwise required to exceed this specification, as specified by the engineer). Joints shall be produced with single offset spigot or with a confined O-ring groove. Rubber Gaskets may be pre-lubricated profile, profile rubber gaskets, or O-ring. Rubber gasket installation shall be per manufacturer’s recommendations. Where rubber gaskets meeting this section are specified, no filtration geotextile wrap is required around the joints for RCP. Pipes directly upstream from an outfall that will be completely submerged during a 10-year storm event shall have O-ring joint gaskets.

Fill lift holes with a manufactured soil tight lift hole plug or as approved by the manufacturer. Provide the manufacturers approved method for filling lift holes upon request by the City.

3.1.3.3 – High-density Polyethylene Pipe (HDPE)

The use of HDPE is not permitted in applications that would subject the pipe to runoff from streets, parking lots or any other area where motorized vehicular traffic is common unless approved by the Stormwater Administrator. HDPE is not permitted in any public rights-of-way, easement, or property.

The Product used shall be corrugated exterior/smooth interior pipe (Type S), conforming to the requirements of AASHTO Specification M294 (latest edition) for Corrugated Polyethylene Pipe.

Bell and spigot joints shall be required on all pipes. Bells shall cover at least two full corrugations on each section of pipe. The bell and spigot joint shall have an O-ring gasket meeting ASTM F477 with the gasket factory installed, placed on the spigot end of the pipe. Pipe joints shall meet all requirements of AASHTO M294.

All HDPE pipe installed must be inspected and approved by the City's Inspector prior to any backfill being placed. The City inspector must be present during the backfilling operation as well.

The minimum length of HDPE pipe permitted for use shall be four (4) feet. HDPE flared end sections are not allowed.

3.1.3.4 – Polypropylene Pipe (PP/HP)

12 thru 60 inch (300 to 1500 mm) shall be watertight according to the requirements of ASTM D3212. Spigots shall have gaskets meeting the requirements of ASTM F477. Gasket shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during joint assembly.

12 thru 60 inch (300 to 1500 mm) diameters shall have an exterior bell wrap installed by the manufacturer.

All PP pipe must be inspected by a third party. The installation of the pipe must be certified by the designing engineer for compliance with the plans and City standards.

All PP pipe must have a rubber boot installed when connected with a structure of any different material.

All PP pipe bedding shall be washed or unwashed 67 Stone and shall follow the manufacturer's specifications for thickness based on pipe size.

The minimum length of PP pipe permitted for use shall be four (4) feet. HP flared end sections are not allowed.

PP pipe is not permitted in locations that would subject the pipe to runoff from streets, parking lots or any other area where motorized vehicular traffic is common unless approved by the Stormwater Administrator.

3.1.4 Easements

All proposed permanent storm drainage pipes and ditches outside of the public right-of-way shall have a Permanent Drainage Easement (PDE) of width defined in LIDS #3026. Additional width may be required by the City Engineer in some cases.

PDE shall terminate at the public right-of-way and at any Drainage Maintenance Utility Easement (DMUE). PDE shall extend up or downstream exactly half the width of the required easement from the center (for drainage structures) or from the furthest point up or down stream (for end treatments) of the last or first structure outside of the right of way. For culverts and inlets with large end treatments, the PDE shall encompass the entire structure. All permanent outlet or inlet protections, such as rip rap aprons or plunge pools, shall be within the PDE.

No other utilities or underground infrastructure are permitted in the PDE with the exception of necessary crossings, which shall be done as close to 90 degrees as possible. Likewise, no proposed storm drainage infrastructure shall be installed within any other utility easement or right of way, except for necessary crossings.

Sanitary sewer easements that overlap storm drainage or permanent drainage easements shall comply with LIDS #3025.

No permanent structures are permitted to reside or be installed/constructed within the PDE. Examples of items NOT permitted include sheds, pools, dwellings, garages, carports (with permanent foundations), stone or masonry walls, decks, etc. Examples of items that ARE permitted within the PDE include, fences (wood, vinyl, aluminum or chain-link), sidewalks, driveways, hardscape patios, carports (with non-permanent foundations), etc.

3.1.5 Backfill

Provide and install backfill per NCDOT standards or manufacturer specifications unless otherwise specified in Section 3.1.3 of this manual. Layers shall not exceed six (8) inches loose and each layer shall be compacted thoroughly.

All backfill shall be non-plastic in nature, free from roots, vegetative matter, waste, construction material or other objectionable material. Said material shall be capable of being compacted by mechanical means and the material shall have no tendency to flow or behave in a plastic manner under the tamping blows or proof rolling.

Materials deemed by the City Inspector as unsuitable for backfill purposes shall be removed and replaced with select backfill material.

HP/PP pipe installed under roadways shall be backfilled with washed #67 stone or excavatable flowable fill up to 1 foot above the top of the pipe. Plastic material pipes outside the right-of-way shall follow the manufacturer's specifications for backfill material. Mechanical compaction shall not take place until there is at least two (2) feet of

cover over HP/PP or HDPE pipes regardless of the installation location and backfill material.

Backfilling of trenches shall be accomplished immediately after the pipe is laid. Do not operate heavy equipment over any pipe culvert until the pipe culvert has been properly backfilled, covered and compacted with at least two (2) feet of suitable material.

Compaction requirements shall be attained using mechanical compaction methods. Each layer of backfill shall be placed loose and thoroughly compacted in place.

Under no circumstances shall water be permitted to rise in un-backfilled trenches after the pipe has been placed.

3.2 Stormwater Control Measures

3.2.1 General Notes

Stormwater Control Measures shall be designed, constructed, and maintained in accordance with requirements set forth by the North Carolina Department of Environmental Quality (NCDEQ) Stormwater Design Manual.

All proposed built-upon-area which includes, buildings, roads, sidewalks, parking areas (including gravel), and all other impervious surfaces shall be treated for quantity and quality to the extent practicable.

The City may accept up to 5.00% of the proposed built-upon-area (BUA) to go untreated, assuming there is no practicable alternative. The engineer or developer shall submit a letter of no practicable alternative at the time of plan submittal explaining the reason for the bypassing BUA not being treated by the site's SCMs.

The City may approve, on a case-by-case basis, a BUA trade-off, in which a development may propose BUA that bypasses the SCM(s) only if the SCM(s) are proposing to treat existing, off-site BUA. The area of proposed BUA bypassing the SCM(s) shall be equal to the area of existing, off-site BUA being treated. The proposed BUA being bypassed must share the same natural conveyance as the SCM(s) treating the existing, off-site BUA. The existing off-site BUA may not include any BUA within a public right-of-way for the purposes of a trade-off.

For the purposes of BUA calculations and SCM design, gravel driveways and parking lots shall be treated as impervious, unless otherwise approved by the Stormwater Administrator.

Pipes that discharge directly into any SCM that are calculated to be fully submerged during a 10yr storm event, shall have O-ring joints for the entire length of full submersion. Any pipes discharging into an SCM that holds a permanent pool shall be less than half full at the permanent pool elevation.

3.2.2 Design Criteria

SCMs shall be designed in a manner that does not increase flow at the exact point of discharge of the SCM. Therefore, it is recommended that the SCM be placed or discharge into a natural drainage path and that the natural drainage of the site be imitated in the proposed grading/drainage.

For the purpose of designing SCMs, the assumed BUA per residential lot shall be 3,000 square feet minimum. For lots proposing more than 3,000 square feet of BUA, 500 square feet shall be added to each lot estimate for conservatism and probable future expansion. The Stormwater Administrator may, at their discretion, require the use of a larger area of assumed BUA per lot based on the proposed lot sizes and/or home builder products.

SCM outlets discharging within 20 feet an undisturbed buffer or property line, shall have a maximum outlet velocity of 5 feet per second; otherwise, an energy dissipator, such as a level spreader may be required.

For all infiltration SCMs, a geotechnical report showing the elevation of the Seasonal High-Water Table (SHWT) at the location of the sand media is required to be submitted as part of the submittal process outlined in Section 5 of this manual. More than one boring may be required based on the area of the sand filter. See Table 3-1 for the required number of borings. The borings shall be done in the highest point, in elevation, of the existing ground in the area of the proposed sand media.

Table 3-1: Number of Test Pits Required for Infiltration SCMs

Area of the Sand Filter Media (sf)	Number of Test Pits Required
< 2,000	1
2,000 – 20,000	2
> 20,000	1 per 10,000sf

The maximum area permitted to drain to a Sand Filter is 5 acres, as recommended by NCDEQ. Therefore, it is recommended that pervious area be drained away from the SCM to limit the area draining to the sand filter pond.

The minimum separation of the SHWT and the bottom of the filter media of a filtration type SCM shall meet the NCDEQ minimum design criteria and requirements. The City of Lexington does not recognize a sand filter that uses any liner or combination of liners as a closed bottom. All liners are to be treated as semi-permeable. The City will permit the use of acceptable liners as a separator between the sand media and the SHWT when the filter is within 2 feet of the SHWT elevation, as approved by NCDEQ. The City will not approve sand filter ponds with sand media within 1 foot of the SHWT.

3.2.3 Bonds and Performance Surety

Refer to the Lexington Code of Ordinances for requirements regarding bonds and performance surety.

3.2.4 Easements

All SCMs are required to have a Drainage Maintenance and Utility Easement (DMUE) surrounding the entirety of the facility including all outlet pipes and structures. The DMUE shall be fifteen (15) feet measured from the toe of the dam on the downstream side and from the top of the dam on the upstream side. No utility overhead or underground is permitted to be within the limits of the DMUE surrounding the SCM.

All SCMs shall have a twenty (20) foot width DMUE access easement that starts at the public right-of-way. PDE may not be used as an access easement to the SCM. For areas where PDE is in the location of the access path, the DMUE shall coexist with the PDE and be shown on all plats. Overhead utilities are not permitted in the access area however, underground utilities will be allowed within the access area of the DMUE provided that they do not violate other easement regulations in this manual or the City of Lexington Code of Ordinances.

3.2.5 Maintenance

All SCMs will be required to have an Operations and Maintenance (O&M) Agreement between the owner of the property on which the SCM resides and the City of Lexington. All maintenance shall be done in a way that does not hinder the performance of the SCM and does not alter the original design. All SCM maintenance shall be done on a regular basis by the party specified on the O&M Agreement.

In order to draw down a pond with permanent pool for maintenance, the shear gate may be opened. This will draw down the pond to an elevation specified by the designing engineer. Should a pump be utilized, the pump shall be installed on a floating skimmer to draw down from the top of the pool. The discharge shall be pumped into a “dirt bag” or approved equal for sediment catchment in order to prevent downstream sedimentation.

3.2.6 Permissible Materials

All materials specified in section 3.1.3 shall be permitted unless specifically excluded by this section for use in all SCMs and in addition Corrugated Aluminum Alloy Pipe (CAAP) and Corrugated Aluminum Pipe (CAP) shall also be permitted for use in SCMs. All other metal or metallic pipe shall not be permitted for use within the City of Lexington.

HDPE and HP/PP shall not be permitted for use as an outlet control structure or riser of any SCM.

All backfill materials shall be as specified by the manufacturer or shall be select material. Washed or unwashed stone shall not be permitted for use as backfill material for the

outlet pipe of any above-ground SCM or for any pipe protruding through the dam of any above-ground SCM.

3.3 Environmental

3.3.1 General Notes

All graded creek banks and slopes shall be at a maximum of two (2) feet horizontal to one (1) foot vertical (2:1) and not to exceed 10 feet horizontally without terracing. On a case-by-case basis, slopes may exceed this requirement if they are designed and sealed by a Professional Geotechnical Engineer and approved by the City Engineer or designee.

3.3.2 Streams and Wetlands

All watercourses shall have a fifty (50) foot undisturbed vegetative buffer along both sides as outlined in Chapter 15, Article 3 of the City of Lexington Code of Ordinances. All stream buffers shall be measured from the top of the bank. The top of the bank on both sides of the watercourse shall be surveyed and staked by a licensed surveyor, and also clearly shown and labeled on all development plans. See Section 5 of this manual for all plan requirements.

If grading, clearing, heavy equipment operation or any other land disturbing activities are expected within fifteen (15) of a watercourse buffer, tree protection fencing shall be installed along the buffer or at the limit of disturbance.

All development restrictions and prohibitions within watercourse buffers are as defined in the City of Lexington Code of Ordinances, Chapter 15, Article 3, Section 3.2 and Section 3.3.

Disturbance of a wetland area is strictly prohibited unless approved by the U.S. Army Corps of Engineers (USACE). Wetland boundaries shall be surveyed and staked by a licensed surveyor, and also clearly shown and labeled on all development plans.

The USACE and NCDEQ regulate wetlands and waters of the United States through the 404 Corps Permit and 401 State Water Quality Certification process. The City encourages the protection and enhancement of wetlands and surface waters to promote improved water quality and water quantity management, as well as fish and wildlife biota and habitat preservation, and other benefits to local comprehensive watershed management. Site designers/developers are responsible for obtaining all applicable Local, State, and Federal permits/certifications/approvals as necessary for proposed site development activities and submitting a copy of the applicable permits to the Stormwater Administrator as requested

For additional guidance on stream and wetland requirements and regulations, contact the Stormwater Administrator, Zack MacKenzie, at ZCMacKenzie@lexingtonnc.gov.

3.3.3 Floodplains

No permanent structures and no fill material shall be permitted in the 100-year floodplain (aka 1% chance zone or Special Flood Hazard Area). For any floodplain disturbance, a Floodplain Development Permit must be submitted and approved prior to beginning work. See Section 2 of the City of Lexington Unified Development Ordinance for guidance on the Floodplain Development Permits. See Chapter 9, Article 1, Division 4 and Chapter 15 of the City of Lexington Code of Ordinances for more guidance on floodplain requirements and restrictions.

All proposed development shall have the 100-year Floodplain and Base Flood Elevation(s) (BFE) surveyed by a licensed surveyor and also clearly shown and labeled on all plans and plats. See Section 5 of this manual for all plan and plat requirements.

For additional guidance on floodplain requirements and regulations, contact the Floodplain Administrator, Tyler Kemo, at TBKemo@LexingtonNC.gov.

SECTION 4 – EROSION CONTROL

4.1 General Notes

Erosion control for proposed site development shall follow the regulations and requirements set forth by the North Carolina Department of Environmental Quality. Development with disturbed area that is one (1) acre or greater is required to apply for and receive an NCG01 or NCG25 Sedimentation and Erosion Control Permit from NCDEQ . This permit shall be presented upon request from the Public Services Director or designee prior to the issuance of a Land Disturbance Permit.

The City will inspect and enforce erosion control measures for sites with disturbance under one (1) acre. NCDEQ will perform inspections and enforce erosion control measures on sites with disturbance of one (1) acre or more.

All development shall take necessary steps to prevent soil erosion as well as sediment discharge onto adjacent properties and into creeks, streams, and wetlands.

Silt fence will be required at the toe of all slopes along the limits of disturbance for all sites unless otherwise approved by the Public Services Engineer. Silt fence outlets shall be installed at all low points in the silt fence. Silt fence shall be installed wherever appropriate to prevent sediment leaving a site or lot and entering the public right-of-way, storm drainage system or watercourse.

All slopes and ditches shall be lined with adequate erosion control matting designed and installed according to North American Green (NAG). All ditch and slope matting reports shall be a part of the calculations package submitted to the City as defined by Section 5.3 of this manual.

Rock check dams, compost socks or natural fiber wattles will be required in all temporary and permanent diversion ditches during all stages of the construction process and shall only be removed when the site has reached an approved level of stability or when the temporary ditch itself is being removed. Natural fiber wattles shall only be used in ditches with less than 2.50% slopes. All check dams, socks, and wattles shall be installed perpendicular to centerline of the channel.

Table 4-1: Compost Sock Spacing

	Spacing Between Socks (Feet)	
Channel Slope (%)	8-inch Diameter Sock	12-inch Diameter Sock
1	67	100
2	33	50
3	22	33
4	17	25
5	13	20

Rock check dams shall be spaced so that the crest of the downstream dam is at the same elevation as the toe of the dam directly upstream. For spacing of compost socks see Table 4-1. Natural fiber wattles shall have a maximum spacing of 50 feet.

Dewatering of excavations and trenches with the use of a pump shall be done using a floating skimmer wherever possible. Dewatering using pumps without a skimmer shall be done using a “dirt bag” or approved equivalent. If possible, all trenches and excavations shall be covered prior to any rainfall to limit the dewatering necessary. Water pumped out of an excavation or trench shall not be allowed to flow directly into a storm drainage system or any watercourse.

All stockpiles and spoils shall be covered prior to rainfall to limit erosion and sedimentation. Silt fence may also be used to surround the piles of material(s) to limit erosion and sedimentation.

SECTION 5 – DEVELOPMENT SUBMITTALS AND REVIEW

5.1 General Notes

All development plans, construction documents, calculations packages, and other supporting documentation shall be submitted via the City of Lexington Build Lexington Portal (https://cityview.lexingtonnc.gov/CityViewPortal/). All plans and calculations must be reviewed and approved by the appropriate departments or individuals of the Technical Review Committee (TRC) as outlined in Section 5.3 of this manual before any construction can begin.

All development applications, forms, permits, and other documents related to land development are located in Appendix B and Appendix C of this manual.

All plans shall be submitted in .pdf format, be "to scale" using an engineering scale (e.g. 1:10 or 1" = 10'), and must have a north arrow and scale bar associated with the plan view and/or profile view.

All plans shall be minimum 24 inch by 36 inch (ARCH D) in size and all information being portrayed on each sheet must be legible at an appropriate scale defined in Section 5.2 of this manual. Labels and notes should not overlap other pertinent information on the plans and all labels should be arranged and formatted so that they are legible.

All construction documents and civil plans must be sealed, dated, and signed by a licensed professional registered with the State of North Carolina. Licensed professionals often include Professional Engineers, Registered Landscape Architects, Professional Architects, Registered Land Surveyors, etc. Seals must be applied in a scanned or electronic format acceptable per NCBEES regulations 21 NCAC 56.1103. All stormwater (storm drainage and SCM), erosion control, sanitary sewer and water distribution system calculations submitted to the city must be sealed, dated, and signed by a Professional Civil Engineer or other registered professional deemed acceptable for the scope of work. Plans and calculations missing an applicable seal, date, and signature will promptly be returned to the applicant and will not be reviewed until corrected. Plans submitted for review may be denoted as "Not for Construction" or "For Review Only" or some combination thereof, but must still contain a seal, signature and date, as outlined above.

Plans denoted as "preliminary" will be accepted for pre-submittal review only and the review will be based solely on the amount of information provided. In addition, city will only allow one (1) preliminary review per project before being required to submit for a full review. Calculations will not be reviewed during the preliminary stage. The preliminary plans should be submitted via email to TRC@lexingtonnc.gov and it must be made clear upon submittal that the plans are preliminary. Following the submittal of the preliminary plans, the applicant must schedule a TRC pre-submittal meeting, no less than one week from the submittal date, to discuss any potential issues/comments from City staff at that point. The preliminary review process should be utilized to reduce or

eliminate project-altering comments during the first submittal and hopefully reduce the overall number of review cycles.

All scanned documents must be legible, to-scale, and must not be skewed, shifted, cut-off, wrinkled, creased, or folded. Scanned documents failing to meet the aforementioned requirements will be returned to the applicant and will not be reviewed or approved. For readability, the City of Lexington recommends that all documents not be scanned, but instead be left fully digital. For plans and calculations requiring a professional seal, the City recommends that they be sealed and signed electronically in a format acceptable per NCBEES regulation.

Review and permit fees must be paid using the online City View portal at the time of submission or at the time of permit issuance, depending on the application type. The review and permit fee schedules can be found in Appendix B and Appendix C respectively.

The review of permits and plans by the City shall be done in a timely manner as to not prolong the development or construction process. Approximate times for review periods are defined in Table 5-1 below. The times specified in the table may vary depending on the complexity, size, and/or quality of the project or plans. The time for each review will not begin until the City has received all relevant documents and payments.

Table 5-1: Approximate Review Time

Review Type	Approx. Review Time (business days)
Initial Review of Submitted Plans	15
Review of Resubmitted/Corrected Plans	15
Approval of Completed and Correct Plan	5
Revision to Approved Plan (RTAP)	10
Development and Environmental Permits	10

The applicant may request an expedited review process at the time of submittal. Expedited review will be half the time defined in Table 5-1 and will incur exactly double the cost of the applicable fee. The City reserves the right to deny expedited review dependent upon the workload of staff at the time of submittal and the size or complexity of the project.

All plans sent back for corrections must list the corrections and revision number in the revision block in the title block on all of the applicable sheets. The revision block should show a description of the revision (e.g. “Revised per City of Lexington Comments”), the date the correction was made or the seal date on the resubmitted plans, and the initials or name of the person(s) who performed the corrections.

All plans that have been returned for correction by the City with comments shall expire if a revised plan is not submitted back to the City within 120 days from the date of the

return of corrections. Resubmittal of expired plans will require a new application and process; and plans submitted after the expiration shall be subject to all current City standards, regulations, and applicable fees.

5.2 Plan Submittals

5.2.1 Construction Document Requirements

Construction documents will be required to be submitted for all non-exempt residential subdivisions, multifamily residential, commercial, and industrial developments. The construction documents submitted will be subject the requirements of this subsection. For all minor residential subdivision plan requirements refer to Section 5.2.3 of this manual.

The number and type of sheets required to be submitted to the City as a part of the civil construction drawings will be project dependent but should have all applicable sheets listed in Table 5-2. All members of the TRC reserve the right to request any prevalent information be added to plans or any excessive information be removed, additional sheets be added, or the scale of the sheet(s) be increased for legibility. They may also request that a single sheet be separated into multiple.

Required typical information that is required to be shown on each sheet is listed in the Notes column of Table 5-2; however, the list is not all inclusive and the engineer shall use their best judgement when determining the pertinent information to show on each sheet. More information may be required to be shown by the TRC if deemed necessary or appropriate.

All plan requirements shall remain the same for developments proposing all private streets, all public streets, or any combination thereof.

A turning movement plan may be required at the discretion of the City Engineer or the Fire Marshall to ensure that traffic and emergency services can operate and move adequately throughout the development.

Additional plan sets or individual sheets will be required for all proposed stream crossings, pumpstations, road widening, intersection reconfigurations, flood studies, etc.

Table 5-2: Construction Drawing Requirements

Sheet Name	Maximum Scale (1”= X’)	Notes
Cover Sheet	No Maximum	Scale shall be that so the entirety of the site fits in the confines of cover sheet.
TRC Summary Sheet	N/A	
Existing Conditions/ Demolition Plan (Can be combined or separated)	No Maximum	Should include a survey sealed and signed by a licensed surveyor

Site Plan	50	Show all lot dimensions, setbacks, and sizes Show all easements, sight triangles, roadway alignments and stations with radii and PC and PT labeled
Erosion Control (Initial/Intermediate/Final)	50	Show all grading, temporary ditches, stock pile locations in the respective phase All grading shown in each phase should tie-out to existing grade
Grading Plan	50	Show lot pad elevations and/or finished floor elevations Show lot grading and all grading tie-outs No erosion control should be shown
Storm Drainage Profiles	50	Show all utility crossings and label separation Label all structures with rim and invert elevations Label all pipes with size, length, material, and slope All profiles shall begin and end at a structure
Storm Drainage Pipe and Structure Tables/Schedules	N/A	For structures, provide all rim elevations, inverts (with to/from structure), and structure depth For pipes, provide size, length, material, inverts, and minimum cover
Storm Drainage Area Map	100	Label time of concentration, runoff coefficient, and area for each catchment
SCM Drainage Area Map (Pre/Post Development)	No Maximum	Show time of concentration and flow path, modified curve number, and are for each catchment
SCM Enlargement Plan and Profile	30	Show plan and profile of the SCM(s). Provide emergency spillway detail and add design certification
Roadway Plan and Profiles	40	Show storm, sewer, and water main in plan and profile, and should be labeled appropriately with existing and proposed elevations Alignment shown shall match the alignment shown on the Site Plan Profiles that are too long to fit on a single sheet shall be divided using matchlines and shall have the station of the matchline labeled on all applicable sheets.

Utility Plan	50	Show all water mains and services, sanitary sewer mains and services, and gas mains. Label size, material, and length of waterline and appurtenances Label size, material, and length of sewer and gas mains
Sewer Profiles	50	Show all utility and storm drainage crossings and label separation. Label all structures with rim and invert elevations Label all pipes with size, length, material, and slope All profiles shall begin and end at a structure
Landscaping Plan	50	Show all easements. Ensure there are no landscaping conflicts with storm, water, sewer, and any utility services
Standard Details	N/A	Provide all necessary and applicable City, NCDOT, NCDEQ, Manufacturer, custom, etc. standard details

For "overall" plans, such as an overall site plan or an overall grading plan, there shall be no maximum scale as long as they are succeeded by enlarged plans with maximum scale from Table 5-2 and are separated with match lines. Road profiles that are too long to fit in the width of one sheet shall also have match-lines and a label for the exact station of the match-line. Storm drainage and sanitary sewer profiles too long to fit in the width of one sheet shall have the match-line at the nearest structure.

5.2.2 Additional Plan Submittals

In addition to the construction drawings, developments may require additional plans to be submitted prior to approval of the construction drawings and/or permits for relevant information pertinent to the design of the site. Additional plans may include Architectural Plans, Mechanical, Electrical and Plumbing (MEP) Plans, Structural Engineering Plans, etc.

5.2.3 Minor Residential Subdivision Plans

Minor Subdivisions shall be defined as a subdivision resulting in less than 10 lots and where no new roads or rights-of-way are being proposed. All subdivisions that are "high-density" as defined in the City of Lexington Code of Ordinances Chapter 15, shall be subject to the requirements of Section 5.2.1 of this manual regardless of if the subdivision is considered to be "minor."

The number of sheets and information required to be shown on the plans will depend on the complexity of the design and the site requirements. Required sheets and typical information (information listed is "as applicable" and is not all inclusive) on each sheet to be submitted for a minor subdivision are outlined in Table 5-3 as well as the maximum scale for each sheet. The minimum scale for all sheets shall be 1"=20'. All members of the TRC reserve the right to request any related information be added to plans or any excessive information be removed, additional sheets be added, or the scale of the sheet(s) be reduced for legibility.

Table 5-3: Plan Requirements for Minor Residential Subdivisions

Sheet	Maximum Scale (1"= X')	Typical Information to be Shown
Existing Conditions/Demolition Plan (A survey may be substituted for the Exist. Cond. Plan)	100	- Existing property lines - Existing buildings - Existing pavement, driveways, sidewalk, etc. - Existing topography - Streams, wetlands, and floodplains - Adjacent properties and owners - Existing rights-of-way - Existing Stormwater infrastructure - Existing utilities - Existing easements
Site Plan	50	- Proposed building footprints - Driveways and parking areas - All impervious areas - All landscape and undisturbed buffers - Dumpster pads - Existing and proposed lot lines - Proposed utilities and service lines - Proposed easements
Grading Plan	50	- Most/All information from Site Plan - Lot pad elevation - Proposed contours
Erosion Control Plan (can be combined with Grading Plan)	50	- Construction entrance location - Erosion control measures required by Section 4 of this manual or by NCDEQ

All minor subdivision sites must be surveyed by a licensed surveyor, and sealed and signed, and show all relevant information including topography, physical features, utilities, easements, buffers, etc.

A vicinity map must be located either on a cover sheet or the site plan.

The City, TRC, or the City's Appointee reserves the right to require the re-platting of a property, recorded by the Davidson County Register of Deeds, if the previous plat omitted crucial information, or if the development of the property will require new rights-of-way, easements, or buffers.

5.3 Calculations Submittal Requirements

5.3.1 General Notes

All subdivisions, commercial sites, industrial sites, and some residential sites will be required to submit a calculations package. The required package contents and analyses may vary site to site and project to project based on the existing and proposed site conditions as well as nearby and onsite infrastructure.

All projects shall use spreadsheets or a modeling software for all necessary calculations. Engineers may use their own spreadsheet if the City does not have one that is applicable, but the spreadsheet must be submitted to the City.

5.3.2 Erosion Control

Erosion control calculations shall be submitted for all skimmer and sediment basins, temporary ditches, and slope drains.

Erosion control matting calculations shall be submitted for all ditches (temporary and permanent) and slopes using the North American Green Erosion Control Materials Design Software or other similar software. The appropriate matting shall be clearly labeled on the erosion control plan(s).

Outlet protection sizing calculations for rip rap aprons, plunge pools, and energy dissipators shall be submitted for all pipe system and SCM outlets. All outlet protections shall be shown "to scale" on all grading and relevant erosion control plans.

5.3.3 Storm Drainage

Storm drainage calculations will be required for all proposed pipe systems, inlets, and culverts. Calculations shall include but not be limited to hydraulic grade line (HGL), velocity, pipe capacity, inlet capacity for pipe inlets, culverts and drop/yard inlets, gutter spread, time of concentration (for times greater than 5 minutes), ditch capacity, etc.

A drainage area map showing area to each inlet, time of concentration, and runoff coefficient shall be included as part of the construction plan set or calculations package.

For proposed connections to an existing system, at a minimum, the pipe and structure directly up and down stream shall be analyzed for capacity and HGL. For connections to a public system the City may require that up to 500 linear feet of the downstream system be analyzed per Lexington Code of Ordinances Chapter 12, Section 7.

For systems modeled in Hydraflow Storm Sewers, a ".STM" must be provided along with the DOT report for review. All storm systems shall be modeled using the ".IDF" file or the rainfall intensity data found on the City's website.

5.3.4 Stormwater Management

The required stormwater management calculations for all SCMs are defined on the Stormwater Management Permit Application found in Appendix C of this manual.

Weighted curve number calculations are required to be submitted when using the SCS method.

Time of concentration calculations shall be provided for pre- and post-development conditions.

5.3.5 Sanitary Sewer

For gravity sanitary sewer, velocity calculations shall be submitted wherever the minimum or maximum slopes are used. Daily peak flow calculations shall also be submitted for all extensions of City owned sewer.

5.4 Traffic Studies

5.4.1 General Notes

A traffic impact analysis report will be required for any residential development that creates 30 units or more. All commercial and industrial development will require the submission of a trip generation report and may require a traffic impact analysis at the discretion of the City Engineer or designee.

Traffic studies shall be subject to the "common plan of development" as defined in the City of Lexington UDO. Once development of one or more properties have cumulatively crossed the minimum threshold for requiring a traffic study, every property developed thereafter may require a new traffic study based on the cumulative number of units proposed up the point of plan submittal.

The Engineering Services and Business and Community Development Departments shall review all submitted traffic studies to determine if improvements to existing roads and/or intersections, or additional roadway features are required for proposed streets and/or intersections.

5.5 Technical Review Committee

5.5.1 General Notes

The Technical Review Committee (TRC) is comprised of review members from several departments of the City with the Clerk of the TRC as the head.

Approval is required by the Clerk of the TRC for all development plans regardless of the scope of the development project and the involved city departments before the project can be considered "approved for construction."

For all questions about the requirements and specifications in Section 5 of this manual, contact the City Engineer using the contact information listed in Table 5-5.

One member from each of the departments represented in the TRC must be invited to all pre-construction meetings and shall attend at their discretion.

The names and contact information for the TRC members are listed in Table 5-5. A full directory of City departments and staff can be found on the City's website.

Table 5-5: TRC Members and Contact Information

Member Title	Member Name	Contact Information
Clerk of the TRC City Engineer Floodplain Administrator	Tyler Kemo, PE	TBKemo@lexingtonnc.gov
Public Services Engineering	Laura Vanhoy, EI	LLVanhoy@lexingtonnc.gov
Stormwater Administrator	Zack MacKenzie	ZCMacKenzie@lexingtonnc.gov
Electrical Engineering Technician	Andrew Kivett	AKivett@electricities.org
Natural Gas Engineering Technician	Justin Lollis	JMLollis@lexingtonnc.gov
Fire Marshall	Laura Ryggs	LRRyggs@lexingtonnc.gov
Business and Community Development Planning Manager	Josh Monk	JTMonk@lexingtonnc.gov
Business and Community Development Planners	Trey Cleaton, AICP Rebecca Hart	PSCleaton@lexingtonnc.gov REHart@lexington.gov
Public Services Director	Mike Horney	JMHorney@lexingtonnc.gov
Business and Community Development Director	Tammy Absher, AICP	TVAbsher@lexingtonnc.gov

5.5.2 Comments, Corrections, and Redline Documents

The City of Lexington TRC will issue comments, corrections and/or redline documents, should they be deemed necessary. All TRC members shall issue comments and request corrections for any plans/projects that are out of compliance with local, state or federal standards and regulations. TRC members may also request corrections based on their technical expertise with construction or maintenance practices, or based on the general public's health, safety, and welfare.

Comments issued by the TRC on any plan shall be addressed in their entirety. Comments that the applicant wishes to have reconsidered will be handled at the staff level between the applicant and the TRC member or appropriate department prior to being elevated appropriately.

All codes and regulations that are not able to be waived by City staff must be taken before the appropriate board outlined in the City of Lexington Code of Ordinances and Unified Development Ordinance to request an appeal, variance, or modification.

The engineer and/or applicant may not request the review of plans or documents outside of the standard review process. Doing so may create confusion and conflicting comments among City staff. City staff may be contacted in reference to comments made on previously submitted documents or during the preliminary plan phase to clarify comments, or standards and regulations.

5.6 Revision to Approved Plan

A Revision to Approved Plan (RTAP) is defined as a change to the original approved construction documents. Often, changes to a plan may seem relatively minor, but could have major implications and in some instances, could be the difference between the success or failure of a project.

Changes to the plan(s) can be driven by unforeseen field conditions and technical infeasibilities, value engineering, or owner changes. Examples of such changes include but are not limited to changing the location or elevation of infrastructure, adding or removing infrastructure, changes in sizing of infrastructure, buildings or lots, adding or subtracting lots, changes to parking configurations, changes in driveway size or location, and changes to planted areas.

An RTAP will be require for any and all Major Field Changes as defined the definitions section of this manual.

Any and all RTAPs shall be approved by the City TRC before the revisions can be incorporated into the construction of the site/subdivision. Changes made to infrastructure that require calculations, will require the redesign and resubmittal of calculations for all changed infrastructure.

The City of Lexington may require that a portion of or all construction cease or be delayed until the RTAP has been processed, reviewed, and approved by the TRC.

5.7 Shop Drawings and Materials Submittals

Shop Drawings and materials shall be submitted to the TRC for review and must be approved prior to beginning construction. It is recommended that the developer/engineer submit all materials for approval prior to being ordered to prevent issues during construction.

The City may request additional items be submitted depending on the project; however, the typical shop drawings and materials submittals that will be required are as follows:

a) Storm Drainage
- All precast concrete structures and pipes (including flared end sections)
- High-Performance Polypropylene Pipe
- Non-standard cast-in-place concrete structures
- Frame and grates
- Manhole ring and cover

b) Water Distribution
- All appurtenances and fittings
- Hydrants
- Ductile Iron Pipe (including restrained joint)
- Air-release valves and manholes
- Meter boxes
- Backflow preventers and related vaults/boxes
- Tracer wire
- Encasement pipe and spacers
- Tapping sleeve and valves

c) Gravity Sanitary Sewer
- PVC pipe
- Ductile Iron Pipe (including restrained joint)
- Manholes (precast sections, ring and cover, slab/base, sealant, etc)
- Encasement pipe and spacers
- Cleanout (stack, hub, cap, fittings, etc.)
- Tracer wire
- Aerial crossings
- Manhole vent stack
- Manhole steps
- Inside drop hardware
- Flexible manhole connector
- Monitoring equipment (as required)
- Fittings (including sleeves and adapters)

- Stainless Steel manhole ring insert

d) Pressure Sanitary Sewer
- Ductile Iron Pipe (including restrained joint)
- Manholes (precast sections, ring and cover, slab, etc)
- Air-Vac release valves and manholes
- Encasement pipe and spacers
- Aerial crossings
- Tapping sleeve and valves
- Line stops and insertions valves
- All Fittings and Appurtenances
- Valves and boxes
- Tracer wire

e) Pumpstations:
- Pumps
- Electrical panel and controls
- Hoist/crane
- Wet/dry well
- Access hatch and hardware
- Trash basket
- Generator and transfer switch
- Monitoring and data recording hardware
- Pipes and fittings
- Fence and gates
- Backflow preventer and related boxes/vaults
- Valves and check valves
- Building/structure for enclosed station

5.8 As-built/Record Drawings

As-built or record drawings will be required for all sites and subdivisions subjected to TRC review and approval during the development design process. The number of drawings and required information will be determined by the complexity and scope of the site or subdivision.

As-built elevations, sizes, spacing, slopes, etc. shall be shown on the drawings per a survey performed by a licensed surveyor.

As-built drawings must be certified by the engineer of record prior to the submission and/or acceptance by the City of Lexington. As-builts must be submitted in both .pdf and .dwg format to the City Engineer.

As-builts that show infrastructure data being outside of an acceptable margin of error may be required to be corrected in the field and/or be analyzed by the engineer of record to show that constructed infrastructure meets the design requirements and/or intent.

Storm Drainage Systems

As-built drawings shall be submitted to the city for all stormwater and drainage infrastructure. The drawing must show elevations of the rims and inverts, structure types, and pipe sizes, materials, and slopes. As-built drawings may also be required for swales or ditches at the discretion of the City Engineer.

Stormwater Control Measures

All SCMs must be surveyed by a licensed surveyor to show pond sizing and elevations of the bottom of the pond, top of dam, spillway, littoral shelves, berms as well as all other pertinent elevations and sizes related to the pond itself and any outlet structures and pipes.

Utilities

As-builts shall be submitted for sanitary sewer and water for all pipes, fittings, structures, hydrants, service lines, cleanouts, and meters.

Drawings must show location, size, slope, material, and all pertinent elevations including but not limited to rim elevations, invert elevations, drop elevations, and elevations of cleanouts and meters.

Critical pipe clearances shall be labeled on either the plan, profile, or both.

All easements and rights-of-way utilized for sewer and water shall be shown on the as-built drawings per the preliminary plat.

5.9 Development Permits

The following development permits must be submitted and approved prior to performing the work that they regulate. Failure to get a required permit or the violation of the conditions of the permit(s) are subject to enforcement as defined by Section 2 of the City of Lexington Unified Development Ordinance.

Driveway Permit

A driveway permit will be required to be submitted and approved prior to any modification, removal or installation of driveways connecting to a City street. For driveways connecting to NCDOT roads, contact NCDOT Division 9, District 1.

A driveway permit may only be requested for work involving a driveway and does not negate the need for any other permit, including Right-of-Way permits or agreements.

Right-of-Way Encroachment Permit

A right-of-way encroachment permit is required for any and all work performed in the City's public right-of-way, a public easement, or on City owned property. This permit does not eliminate the need for any other permit.

An approved permit is only valid for work specified on the permit. For additional work outside of scope of the work previously approved, a new permit must be acquired.

For work within an NCDOT right of way, contact NCDOT Division 9, District 1.

Land Disturbance Permit

A land disturbance permit must be obtained before any land disturbing activities cumulatively totaling an area of 4000 square feet or greater. Land disturbing activities requiring a permit include but are not limited to: the removal of vegetation of caliper size 4 inches or larger, grading, grubbing, filling, excavating, and changing ground surface materials.

An approved land disturbance permit does not allow the disturbance of any areas within a protected watercourse buffer, floodplain, or wetland.

Watercourse Buffer Disturbance Permit

A watercourse buffer permit is required for all land disturbing activities within the buffer regardless of size or scope. Disturbance within a watercourse buffer shall be viewed and treated as a last resort alternative and a letter of "no practicable alternative" must be included with the permit outlining the necessity of the disturbance. Refer to Chapter 15, Article 3 of the Lexington Code of Ordinances for all watercourse buffer regulations.

Stormwater Management Permit

A stormwater management permit is required to be submitted with all plans that propose one or more SCM on the site.

Floodplain Development Permit

A floodplain development permit is required prior to any development activities located within special flood hazard areas. Reference Chapter 9, Division 4 of the City of Lexington Code of Ordinances for all floodplain development permit requirements.

5.10 Preliminary and Final Plat Requirements

Preliminary plats are not required; however, the City of Lexington recommends the developer or engineer submit a preliminary plat for review to prevent any delays during the final plat process.

Final plats will be required per NCGS 160D and all plats submitted to the City shall be pursuant to NCGS 47-30.

All environmentally restrictive elements must be shown on the final plat (e.g. buffers, floodplain, ponds, watercourses, etc.)

All final plats must contain the signature of the UDO Administrator and the City Engineer.

Final plats showing permanent drainage easements must contain the following note:

"Permanent Drainage Easements (PDE) are to be maintained by the individual property owner or homeowners association. Pipe systems, structures and/or channels located within the easement are the maintenance responsibility of the private property owner or the homeowners association. The city will neither maintain the grounds nor remove any obstructions in that area. The purpose of the permanent drainage easement is to provide stormwater conveyance and any permanent structure and/or obstruction to stormwater flow is prohibited."

New subdivision plats that dedicate public rights-of-way or public easements must contain the following note:

"The City of Lexington accepts all streets, sidewalks, utilities, storm drainage, etc. within a public and/or publicly maintained right-of-way or easement for maintenance upon issuance of a letter of acceptance. The developer and/or Home Owners Association is responsible for maintenance of all streets, sidewalks, utilities, storm drainage etc. until a letter of acceptance has been issued."

SECTION 6 – SANITARY SEWER AND WATER DISTRIBUTION

6.1 General Notes

All proposed sanitary sewer and water distribution system extensions that connect to the City of Lexington's infrastructure shall be designed and constructed in accordance to the City of Lexington Sanitary Sewer and Water Distribution Design Manual. Extensions to systems that are not owned or maintained by the City of Lexington (e.g. Davidson Water Inc.) shall follow the guidelines and specifications of the systems' owner(s).

This section outlines the critical sewer and water minimum design criteria. See the City of Lexington Sewer and Water Design Manual for the full design/construction requirements.

For permissible materials and approved materials list for sewer and water mains, services, fittings, etc. refer to the Sewer and Water Design Manual and its Appendix.

For all construction activities involving existing mains the engineer, contractor, or developer must submit a construction sequence for any demolition, relocation, flow restriction, or modification to a portion of the existing sanitary sewer or water distribution systems.

6.2 Sanitary Sewer

6.2.1 General Notes

For inspection and testing requirements refer to the Sewer and Water Design Manual and its Appendix. For all required inspection and testing forms refer to Appendix D of the LIDS Manual.

For pumpstation design and other requirements refer to Sections 3.9-3.12 of the Sewer and Water Design Manual.

6.2.2 Gravity Sewer

6.2.2.1 – Size, Slope, and Capacity

Public gravity mains shall be a minimum of 8-inch diameter. Private gravity mains shall be minimum 6-inch diameter. All gravity sewer mains shall be designed and sized to serve the ultimate tributary build-out of the drainage basin.

Sewer mains within the public right of way shall range from 3 to 8 feet of depth to the top of the installed pipe, standard depth.

Flow rates for single-family residential development will be 75gpd per bedroom and shall assume 4 bedroom units unless otherwise demonstrated by the engineer or developer.

Sanitary sewers shall be sized based on the Manning's Equation with Manning's roughness coefficient "n" = 0.011 or greater. Pipe diameter sizes used in the calculation of Manning's Equation shall be nominal pipe sizes. Sanitary sewers shall be designed to carry the average daily flow at no more than ½ full and projected peak flow at no more than 2/3 full. The minimum velocity for sanitary sewer lines shall be 2 fps. The ratio of peak to average daily flow shall be 3.0.

For minimum slopes of gravity sewer, see Table 3-2 in the Sewer and Water Design Manual. The Maximum slope for gravity sewer mains is 10 percent or slope that achieves maximum velocity of 15ft/s, whichever is lesser.

The engineer shall submit velocity calculations for all sewers at minimum or maximum pipe grades and as requested by the City. All transitions in pipe diameter, pipe material, pipe separations, grade changes and all angular deflection changes shall occur only at manholes.

6.2.2.2 – Location, Easements, and Utility Crossings

All public sanitary sewer must be located within a public right-of-way or a public utility easement. Public Sanitary Sewer Easements (PSSE) must have minimum width of 25ft. Minimum easement widths will increase with depth and size.

Easements across sloped areas shall be graded uniformly across the slope to no steeper than 20% longitudinal grade. Cross slopes shall not exceed 10% grade.

Sewer mains 10 or more feet deep to the top of the pipe shall be ductile iron (uniform pipe material required from manhole to manhole). The maximum depth of sewer within City roadways shall be 12 feet.

Sanitary sewer must cross other utilities, including storm drainage, at as close to 90 degrees as possible, but in no cases shall be permitted to be less than 75 degrees. Vertical separation requirements between sanitary sewer (gravity and pressurized) and other utilities is as follows when sewer crosses:

Over water mains - 24 inches minimum for PVC sewer mains or 18 inches minimum when both pipes are water main quality DIP

Under water mains - 18 inches minimum

Under or Over storm drainage - 18 inches minimum or 12 inches minimum at critical crossings may be approved with DIP sewer main

Under or Over other sanitary sewer mains - 12 inches minimum and both shall be DIP

Under or Over any other utilities - 12 inches minimum

Horizontal separation requirements between sanitary sewer (gravity and pressurized) and other utilities is as follows when sewer is parallel to:

Water mains – 10 feet minimum

Other pipelines & utilities - separation shall be maintained such that excavation of the lower utility shall not compromise the upper utility with a slope of 1:1; however in no case shall separation be less than 5 feet

Storm drains or other utilities will not be permitted to be installed within a public sanitary sewer easement except at crossings and in no case will other utilities structures and/or appurtenances be permitted to reside within PSSE.

6.2.3 Manholes

Sanitary Sewer manholes must be minimum 4ft diameter. See Table 3-7 in the Sewer and Water Design Manual for the full minimum manhole size requirements.

Manholes must be spaced so that the maximum length of sewer main from manhole to manhole is 375 feet.

When manholes are installed in the roadway, they shall be located either in the center of the road or the center of the travel lane.

The minimum drop from invert in to the manhole outlet is 0.20 feet. A minimum drop of 0.25-ft is required for a change of alignment greater than 45-degrees.

Maximum deflection angle through manholes for 8 to 10 inch diameter pipe is 90 degrees and for 12 to 20 inch diameter pipe is 75 degrees.

Free falls of wastewater flow into the manhole from incoming sewer mains shall not be allowed. In some instances, drops not exceeding 24-inches may be acceptable. Manholes with greater than 24in drop must utilize an inside drop.

Upstream slope changes shall be used whenever possible to avoid the need for drop manholes. If drop manholes are necessary, they shall be constructed with an inside drop connection within a minimum 5-ft. diameter manhole. Outside drop manholes shall only be allowed when unalterable site conditions prevent preferred installations. Drops shall be constructed in accordance with the City's Standard Details.

Manholes shall not be obstructed from view or access. It is illegal to bury or obstruct access to manholes.

Manholes shall be restricted to less than 40 inches in height at the cover/rim.

All watertight manholes shall be constructed with a flat top and a vent pipe installed in slab.

When connecting a new sewer main to an existing main where an existing manhole not readily accessible, the connection shall be established with a "Doghouse" type of manhole inserted over the existing main. Refer to City Standard Details.

Manhole covers shall be elevated as follows:

Roadways: Manholes installed in roadways and road shoulders shall be installed with the cover flush with the top of pavement or finished grade.

Outside of Roadways: Manholes installed outside of roadways shall be elevated at least 18 inches above the surface grade unless otherwise noted.

Wooded Outfalls: All manholes installed in wooded, forested or brushy areas shall be elevated at least 18 inches above the surface elevation.

Well Maintained Areas: All manholes installed in well maintained areas, such as yards, sidewalks or otherwise inside an improved right-of-way shall be installed flush with the finished surface.

Manholes installed within the floodplain (1% chance zone) and flood prone areas shall have rim elevations a minimum of 2 feet above the base flood elevation (BFE), or 2 feet above the estimated BFE approved by the City where no BFE has been established on the Flood Insurance Rate Map.

6.2.4 Service Connections

Service connections to the main lines shall be perpendicular to the main line and shall extend to the edge of the right of way or easement line.

Cleanouts are required on all services. Clean outs shall be located at the right of way line or edge of easement. All cleanouts shall extend to finished grade with a four (4) inch ferrule and three (3) inch brass plug. Sewer cleanouts shall not be installed in paved areas. Refer to Standard Detail 6003.

All 6-inch or larger service connections must be into a manhole.

4-inch lines shall have a minimum slope of 1.0-ft/100 feet and 6-inch lines shall have a minimum slope of 0.60-ft/100 feet.

6.2.5 Force Mains

6.2.5.1 – Size, Flow, and Capacity

Force main systems shall be of adequate sizing and design to effectively convey the ultimate peak flows as applied by the connected pump station to the discharge point.

Force main minimum design velocity shall not be less than 2-ft per second throughout the length of the force main. As a design preference, force main systems when operating at higher flows shall reach velocities of 3 to 5 ft/s to resuspend any settled solids.

6.2.5.2 – Location, Easements, and Crossings

Force mains shall be installed with a minimum cover of 4 feet measured from the top of the pipe to the finished grade.

When wastewater force mains are constructed adjacent to gravity sewer mains or for construction of parallel wastewater force mains, the minimum horizontal clearance shall be at minimum 7-ft from pipe edge to pipe edge when the depth of installation is 8-ft or less.

For depths greater than 8 feet, pipelines and other linear utilities shall be located with a minimum horizontal separation distance such that excavation of the lower utility shall not compromise the upper utility with a slope of 1:1 (horizontal to vertical separation ratio). In no case shall storm drains or other utilities be installed parallel to public sewer mains within a public sanitary sewer easement.

Vertical separations of force main/utility crossings shall follow the requirements of gravity sewer outlined in Section 6.2.2.2.

The force main route shall be such that the number of high points requiring combination air valves is minimized to the extent possible. Combination Air Valves rated for use with raw wastewater shall be installed at all the high points, runs exceeding 3000-ft on all force mains. A high point shall be determined as any location where the vertical separation between the adjacent low point and high point in the force main is greater than or equal to 10 vertical feet.

Sewer force mains shall not discharge directly into existing gravity sewer lines. Sewer force mains shall discharge into a receiver manhole that has been epoxy coated

6.2.5.3 – Stream Crossings

Steel encasement and restrained joint ductile iron pipe shall be required. The top of the force main shall be at least three feet below the stream bed. Refer to Standard Details.

Sewer force mains shall not be installed under any part of water impoundments, including temporary impoundments such as skimmer basins and sediment traps.

The following minimum horizontal separations shall be maintained:

a) 100 feet from any private or public water supply source, including wells, WS-1 waters or Class I or Class II impounded reservoirs used as a source of drinking water (except as noted below)

b) 50 feet from wetlands and any waters (from normal high water) classified WS-II, WS-III, B, SA, ORW, HQW or SB (except as noted below)

c) 20 feet from other streams, lakes, or impoundments (except as noted below)

d) With approval directly from PERCS, the following separations may be acceptable (water main/pressure class standards are implemented):

- Zero horizontal separation/intersections at streams with encased pipe crossings

- 25 feet from private wells
- 50 feet from public water wells
- Appurtenances located outside 100ft radius of wells

6.3 Water Distribution

6.3.1 General Notes

All utility extension permits must be obtained and an authorization to construct granted by NC Public Water Supply Section and the City of Lexington prior to all water system construction.

A second connection shall be made to the City's distribution system for any development proposing 30 or more residences (or 30 or more service connections), and as required by the City Engineer or City Fire Marshal due to anticipated water quality and/or hydraulic deficiencies indicated by the City's water model.

For fire protection systems and hydrant requirements refer to Section 4 of the Sewer and Water Design Manual.

Ductile iron pipe shall be installed in accordance with the requirements of AWWA C600 and the Ductile Iron Pipe Handbook published by the Ductile Iron Pipe Research Association. Materials shall be handled with mechanical equipment or in such a manner to always protect them from damage. At no time shall pipe and fittings be dropped or pushed into ditches. Refer to Section 4.1.3 of the Sewer and Water Design Manual for additional information and requirements.

6.3.2 Location and Utility Crossings

All public water mains shall be located under pavement within City street rights-of-way, within roadway shoulders inside NCDOT rights-of-way, or in dedicated public utilities easements.

Water mains must have minimum 36 inches of cover as designed and constructed.

Vertical separation requirements between water mains and other utilities is as follows when water crosses:

Under sewer mains - 24 inches minimum for PVC sewer mains or 18 inches minimum when both pipes are water main quality DIP

Over sewer mains - 18 inches minimum

Under or Over storm drainage - 12 inches minimum

Under or Over other water mains - 12 inches minimum

Under or Over any other utilities - 12 inches minimum

Horizontal separation requirements between water mains and other utilities is as follows when water is parallel to:

Sanitary sewer mains and storm drainage – 10 feet minimum

Other pipelines & utilities - separation shall be maintained such that excavation of the lower utility shall not compromise the upper utility with a slope of 1:1; however in no case shall separation be less than 5 feet

Alternatives to minimum pipe separations may only be allowed by the City on a case-by-case basis where existing pipelines, grades, and structures are outside of City and/or developer control. Reduced separations or other modifications shall not be approved for new development areas unless no alternatives exist. In no case shall pipe separations, pipe materials, and pipeline design diverge from the restrictions set forth by NC DEQ.

6.3.3 Easements

Public utility easements shall have a minimum width of 25 feet. City utility and pipeline easements shall contain only City utilities unless otherwise approved by way of formal encroachment agreement with the City.

No permanent structures, equipment, retaining walls, embankments, impoundments, or other elements that would inhibit maintenance operations shall be constructed within a City utility and/or pipeline easement. Fences may be allowed across easements provided that appropriate access gates have been City-approved and are properly installed to allow utility maintenance. Fill or cut slopes greater than 4:1 are not allowed to extend into easements.

6.3.4 Sizing

Major transmission lines shall be sized as directed by the City. Six (6) inch mains may be used on a case-by-case basis only when the Water Resources Operator in Responsible Charge has determined that the proposed improvements and existing distribution network supports using six (6) inch mains. If fire hydrants are not required on a main, up to 400 linear feet of two (2) inch water main may be permitted on residential cul-de-sacs. Where the existing network is lacking connectivity, lines shall be upsized to provide adequate fire flow as directed by the City Engineer or City Fire Marshall.

6.3.5 Fire Protection and Hydrants

All fire hydrants shall be installed on a minimum 6-inch public water line. Only one fire hydrant may be installed when the line is served by a 6-inch tap and is not looped to another main. There shall be at least one fire hydrant at each street intersection.

The maximum distance between hydrants, measured along street centerlines, shall be 500 feet. When residential intersections are less than 700 feet apart, a hydrant is not required

between the intersections. Additional fire hydrants may be required for specific development projects. Any deviation from this section must be approved by the City Fire Marshal.

The minimum acceptable flow for fire hydrants is 1000-gpm at minimum 20-psi residual in residential areas and 1500-gpm at minimum 20-psi residual in other districts, or as specified by the City Fire Marshal for a specific location. Designers shall be required to provide water system hydraulic calculations incorporating current fire flow testing results from hydrants in the vicinity of water main extension to verify the adequacy of the design.

Fire flow testing must be scheduled in advance with the City for the City personnel to operate system and hydrant valves for the designer or the designer's representative conducting the fire flow tests. The designer shall be charged for services according to the City's current Schedule of Fees.

6.4 Backflow Prevention

6.4.1 General Notes

For backflow prevention requirements refer to Section 5 of the Sewer and Water Design Manual.

SECTION 7 – CONSTRUCTION INSPECTION AND TESTING

7.1 General Notes

The general contractor shall communicate all schedules with the City's inspector as early as feasibly possible. The City inspector must be present whenever infrastructure installation requires a mandatory inspection as specified on the plans or as specified in this manual. The City may require the uncovering and/or the reinstallation of infrastructure or materials that were installed without the required inspection and/or supervision. The inspector shall perform random inspections at any point throughout the construction process and the contractor nor the developer shall prohibit the inspector from inspecting any infrastructure on-site.

All jobsites and construction activities shall comply with the guidelines and regulations set forth by OSHA. The inspector shall notify the contractors' "competent person" of any unsafe conditions or practices. All safety concerns shall be reported to OSHA by the City of Lexington.

All material testing supplies shall be furnished by the contractor. All materials testing shall be performed by an independent testing lab at no cost to the City of Lexington. All materials testing reports shall be submitted to the Engineering Department (EngineeringServices@LexingtonNC.gov). All materials failing to meet the required standards and specifications shall be removed and replaced by the contractor.

All trenches in the street right-of-way shall be backfilled with suitable or specified material immediately after the pipe is laid. The fill around all pipes shall be placed in layers not to exceed eight (8) inches and each layer shall be compacted thoroughly. For backfill of storm drainage see Backfill in Section 3.1.5 and for Stormwater Control Measures see Section 3.2.6 of this Manual.

Under no circumstances shall water be permitted to rise in un-backfilled trenches after the pipe has been placed. No trenching activities shall begin, nor continue during precipitation. At the onset of precipitation, open trenches must be backfilled immediately to achieve adequate compaction, or the trench and backfill material shall be covered immediately. Backfill material that has been exposed to any precipitation shall be deemed unsuitable and will be denied for use unless it is allowed to dry fully and is approved by the City's Inspector. Any water that has risen in the trench shall be pumped out and the trench shall dry fully before any backfill material is permitted to be placed.

Should any pumping, rutting or other sign of unsuitable material during the backfilling of the pipe trench occur, all backfilling activities should cease immediately, and all unsuitable materials shall be replaced with select material by the contractor.

It is recommended that the contractor have all excavated material assessed by a Professional Geotechnical Engineer prior to re-use. The City Inspector reserves the right to request that any excavated material, that appears to be unsuitable, be evaluated by a

Geotechnical Engineer, at no cost to the City, prior to re-use; otherwise any material that appears to be unsuitable may be rejected by the inspector.

The City's inspector will, at all times, ensure that the site conforms to the approved drawings. Any deviations from the approved drawings will be reported to the contractor, the developer, and the City Engineer immediately. At the discretion of the City Engineer, a stop work order may be issued for non-conformance to the approved plans. Upon receiving a stop work order, either the site must be brought into compliance with the approved plans, or the designing engineer must submit revised drawings through the RTAP process outlined in Section 5 of this manual prior to continuation of construction.

Table 7-1: Inspector Contact Information

Infrastructure Type	Inspector Name	Contact Information
Roadway, Sidewalk, Storm Drainage, Driveway, Preconstruction, Sewer, Water	Brandon Tate	BSTate@lexingtonnc.gov 336-615-2623
Stormwater Pond/Device	Zack MacKenzie	ZCMacKenzie@lexingtonnc.gov
Erosion Control	Jalen Hairston	Jalen.hairston@deq.nc.gov

7.2 Pre-Construction

A pre-construction conference is required to be scheduled by the developer or general contractor prior to any land disturbing activities. All agencies with jurisdiction over a site/project must be notified of the conference at least 48 hours in advance and be given an opportunity to attend. Agencies can include but are not limited to the City of Lexington, NCDOT, NCDEQ, USACE, and Davidson Water Inc.

The City Inspector may request that additional meetings be held throughout the construction process at specified phases of construction to ensure that all standards, specifications, and regulations are understood by all parties.

7.3 Site and Roadway

7.3.1 Grading and Compaction

The City's inspector shall determine the sites general compliance with the grading plan and check all slopes steeper than 4:1 to determine if any stability or additional erosion control measures are necessary.

The inspector shall ensure that all roadway grades and alignments meet City standards as well as conform to the construction drawings.

The number and frequency of compaction testing locations shall be determined by the City. Site areas in cut condition shall have the in-situ soil tested to ensure the density requirements are met.

All subgrade shall be compacted to 100% of the maximum density obtainable with the Standard Proctor Test to a depth of eight (8) inches, and a density of 95% Standard Proctor for depths greater than eight (8) inches. All tests shall be performed by developer at no cost to the City.

The roadway subgrade shall be inspected for rutting, pumping, settling, etc. through a proof roll. The proof roll shall be performed according to Section 260 of the latest version of the NCDOT Standard Specifications.

All areas deemed by the inspector as failing, must be corrected and proof rolled again prior to installing the roadway base.

Compaction requirements shall be attained by the use of mechanical compaction methods. Each eight (8) inch layer of backfill shall be placed loose and thoroughly compacted into place.

7.3.2 Roadway Base

All roadway base and subgrade for private and public streets shall be required to have the compaction tested in locations specified by the City's Inspector and shall be performed by and independent testing lab, at no cost to the City. Upon completion of the report, it shall be submitted to the inspector for review and any non-compliance shall be corrected prior to any paving activities.

The base course of the roadway shall be inspected to ensure proper thickness has been achieved and conforms to the specified pavement section on the construction documents. The base course shall be proof rolled and have a final inspection prior to any paving activities.

The roadway base shall be inspected for rutting, pumping, settling, etc. through a proof roll. The proof roll shall be performed according to Section 260 of the latest version of the NCDOT Standard Specifications.

All areas deemed by the inspector as failing, must be corrected and proof rolled again prior to paving.

7.3.3 Roadway Paving

The final lift of surface course shall not be paved until the development or current phase of the development has reached 100% occupancy (meaning certificates of occupancy have been issued) or 1 year has elapsed since the application of the intermediate course, whichever is sooner.

All roadways will be inspected for proper drainage, slopes, material and air temperature, thickness, uniformity, evenness, cut edge protection, plant mix design, patch boundary limits, etc.

Hot-mix asphalt concrete (HMAC) will be inspected for tack coverage, longitudinal and transverse joint overlapping, and proof rolling, along with the other inspections previously specified and any other inspections deemed necessary by the City's inspector. The contractor shall follow the procedure for core sampling defined in Section 609 of the NCDOT Standard Specifications for Roads and Structures as well as the NCDOT Hot Mix Asphalt Quality Management System.

Portland cement concrete pavement (PCCP) will be specifically inspected for reinforcement size and spacing, finishing along with the inspections previously specified and any other inspections deemed necessary by the City's inspector. PCCP shall have the same testing requirements as all other concrete infrastructure as defined in Section 7.3.4 of this manual.

A canvas cover or other suitable cover shall be required for transporting plant mix asphalt during cool weather when the following conditions are present:

a. Air temperature is below 60 degrees Fahrenheit.

b. Length of haul from plant to job is greater than five (5) miles.

c. Other occasions at the Inspector's discretion when a combination of factors indicates that material should be covered in order to assure proper placement temperature.

Concrete or asphalt shall not be placed until the air temperature measured at the location of the paving operation is at 35 degrees Fahrenheit and rising by 10:00 a.m. Paving operations should be suspended when the air temperature is 40 degrees Fahrenheit and descending. The contractor shall protect freshly placed concrete or asphalt in accordance with Sections 600 (Asphalt Bases and Pavements), and 700-8 (Concrete Pavements and Shoulders) of the North Carolina Department of Transportation Standard Specifications for inclement weather conditions (extreme cold/hot, rain, etc.).

7.3.4 Concrete Infrastructure

ALL concrete used for curb and gutter, driveways, sidewalks, and handicap ramps shall have a minimum compressive strength of 3500 PSI at 28 days. This requirement shall be provided regardless of any lesser compressive strength specified in the North Carolina Department of Transportation Standard Specifications for Roads and Structures. The contractor shall prepare concrete test cylinders in accordance with Section 1000 of the North Carolina Department of Transportation Standard Specifications for Roads and Structures at the direction of the project inspector.

Cylinders shall be prepared using the first delivery of the day and at every 40 cubic yards poured during any single concrete activity. For curb and gutter, cylinders must be prepared using the first batch of the day and every 500ft thereafter.

It shall be the responsibility of the contractor to protect the cylinders until such time as they are transported for testing. Testing for projects shall be performed by an independent testing lab, at no cost to the City. The contractor shall provide equipment and perform tests on concrete for a maximum slump and air content as defined in Section 1000 of the North Carolina Department of Transportation Standard Specifications for Roads and Structures. Materials failing to meet specifications shall be removed and replaced by the contractor.

Concrete specifications for all non-standard concrete walls and structures shall be provided by a licensed structural engineer. Concrete for cast-in-place infrastructure shall be tested in the same manner as previously specified.

All excess concrete on the front edge (lip) of gutter shall be removed when curb and gutter is poured with a machine. Straight forms shall not be used for forming curb and gutter in curves.

All driveways poured prior to the application of the final lift of asphalt shall be left high by the same thickness of the final lift of asphalt.

Concrete shall not be placed until the air temperature measured at the location of the paving operation is at 35 degrees Fahrenheit and rising by 10:00 a.m. Concrete operations should be suspended when the air temperature is 40 degrees Fahrenheit and descending. The contractor shall protect freshly placed concrete in accordance with Sections 420 (Concrete Structures) of the North Carolina Department of Transportation Standard Specifications when the air temperature is at or below 35 degrees Fahrenheit and the concrete has not obtained an age of 72 hours.

7.3.5 Erosion Control

All erosion control measures, though under the enforcement of NCDEQ, will be inspected by the City's inspector for compliance and conformity with the construction drawings. The City's inspector shall request additional erosion control measures be installed if there is evidence of sediment leaving the site or evidence of erosion.

The inspector shall inspect silt-fence outlets and sediment ponds/traps and request that the contractor remove excess sediment to ensure adequate performance.

The City of Lexington shall report all non-compliance to NCDEQ upon the unwillingness of the contractor to conform to the construction drawings or control the erosion and sedimentation of the site.

7.4 Stormwater

7.4.1 Storm Drainage Systems

The City Inspector shall inspect all storm drainage system materials prior to being installed. The City's Inspector shall reject any materials that do not conform to the plans or are damaged, and it shall be the responsibility of the contractor to remove and replace any unsatisfactory materials.

Upon installation of all storm drainage infrastructure, including roadway culverts, the contractor shall schedule a CCTV pipe/structure inspection to be performed by a third-party at no cost to the City of Lexington. All CCTV inspections shall conform to the NAASCO-PACP Standards. The City's inspector shall be notified 48 hours prior to the video taking place and will attend at their discretion. All videos shall be reviewed by a third-party NAASCO-PACP certified inspector. Once all videos have been inspected and certified, the report shall be submitted to the Engineering Department at EngineeringServices@LexingtonNC.gov.

All materials found to be inadequate through the CCTV inspection process, shall be replaced or re-installed by the contractor and reinspected.

7.4.2 Stormwater Control Measures

The City of Lexington Stormwater Administrator, or designee, shall inspect all SCMs to ensure proper construction and compliance with the construction drawings.

SCMs that were designed to hold a permanent pool shall do so at the specified elevation on the plans. Ponds that do not retain water at the correct elevation shall be investigated by the contractor or engineer to determine the cause and a report of findings shall be submitted to the inspector. The SCM shall not be accepted nor shall the bond be released until such investigation and reporting has been completed.

7.5 Sanitary Sewer and Water Distribution

7.5.1 General Notes

Sanitary sewer and water distribution systems shall be inspected by the City of Lexington for consistency with the construction documents as well as compliance with local and state standards and specifications. For all materials and infrastructure testing requirements, refer to the City of Lexington Sewer and Water Design Manual.

Upon installation of all sanitary Sewer infrastructure, including roadway culverts, the contractor shall schedule a CCTV pipe/structure inspection to be performed by a third-party at no cost to the City of Lexington. All CCTV inspections shall conform to the NAASCO-PACP Standards. The City's inspector shall be notified 48 hours prior to the

video taking place and will attend at their discretion. All videos shall be reviewed by a third-party NAASCO-PACP certified inspector. Once all videos have been inspected and certified, the report shall be submitted to the Engineering Department at EngineeringServices@LexingtonNC.gov.

All materials found to be inadequate through the CCTV inspection process, shall be replaced or re-installed by the contractor and reinspected.

7.6 Post-Construction

7.6.1 Final Inspection and Close-Out

Upon completion of the infrastructure and before the final acceptance by the City of Lexington, the contractor shall schedule a final inspection with the City's inspector and the City Engineer or designee.

Following a successful final inspection and walkthrough of all infrastructure in a given phase of development, the warranty period will begin and will be enforced and regulated per Section 7 of the City of Lexington UDO as well as Section 7.6.2 of this manual.

7.6.2 Warranty Inspections

During the one-year warranty period defined in Section 7 of the City of Lexington Unified Development Ordinance, the City may perform routine inspections to ensure the performance of the infrastructure is maintained.

The City of Lexington Engineering Department will schedule a walkthrough of the site with the developer, contractor and/or engineer at or around 8-months from the date of final inspection to address any concerns at that point. This will ensure that adequate time and notice is given to address any inadequacies.