

CHAPTER 13: DEVELOPMENT PLAN SPECIFICATIONS

SECTION 13.1: REQUIRED IMPROVEMENTS FOR ALL DEVELOPMENT PLANS

All development plans shall be required to install or provide the following improvements:

- Public Water Supply Distribution and Fire Hydrants
- Public Sewer
- Public Streets (paved) and other Public Rights-of-Way
- Easements - Chapter 7
- Sidewalks - Chapter 7
- Curb and Gutter - Chapter 7
- Street Lights - Chapter 7
- Underground Wiring
- Dedicated Open Space - Chapter 8
- Landscaping (Including Supplemental Tree Plantings) - Chapter 9

SECTION 13.2: Procedures for Traffic Impact Analysis (TIA)

When a TIA is required, it must be approved by the North Carolina Department of Transportation (NCDOT) prior to project review by either the Planning Board or the Town Board.

1. Responsibility for TIA – After a completed development application has been filed, and upon initial submittal of a site or sketch plan, the Planning Director or his/her designee shall determine the need for a TIA. If warranted, the **transportation consultant assigned by the Town** shall prepare the TIA. At the discretion of the North Carolina Department of Transportation (NCDOT) and the Town, a technical memorandum, in lieu of a full TIA report, may be allowed for some developments. If proposed street connections are not consistent with adopted plans, then an explanation or proposed alternative that is equal or better should be discussed in the study.
2. Minimum Thresholds for TIA's – A TIA shall be required for any site or sketch plan expected to generate traffic volumes that will incrementally impact the delay, level-of-service (LOS, and/or safety of the transportation system. The latest version of the Institute of Transportation Engineers (ITE) Trip Generation Manual shall be used to determine the expected gross traffic volumes a specific site and/or a specific use will generate. A TIA will be **required** to accompany a site/sketch plan when expected gross trip generation is **1000 total trips or more both entering and exiting the site in a 24-hour period, and/or 100 total trips both entering and exiting the site during either the AM or PM peak (prior to any trip reductions applied). The gross trip generation will be calculated by the Town based on information provided by the Developer and the final determination for requiring the TIA will be by the Planning Director.** The Planning Director or his/her designee may also determine the need for a TIA based on special circumstances associated with the development, and may determine that a TIA is still necessary even if the gross trips falls below this threshold. This may be due to the location, an intersection or thoroughfare nearby that is at or above capacity, or the nature of the use. The Planning Director or his/her designee may also require a TIA in any of the following scenarios:
 - a. Traffic generated from a non-residential development that could significantly impact adjacent residential neighborhoods.
 - b. Traffic operation problems for current and/or future years on nearby streets are expected to be significantly aggravated by traffic generated from the proposed new development.



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- c. Major and minor thoroughfares near the site are experiencing noticeable delays.
 - d. Traffic safety issues exist at the intersection or street that would serve the proposed new development.
 - e. The proposed land use differs significantly from the adopted Land Use Plan for the Town.
 - f. The internal street or access system is not anticipated to accommodate the expected traffic generation.
 - g. The proposed development project includes a drive through facility, or other uses such as schools that require significant on site circulation that may have an off-site impact to adjoining roads and/or intersections.
 - h. The amount and/or character of traffic is significantly different from a previously approved TIA, or more than 24 months have passed since completion of the previous TIA.
3. Scoping Meeting – A mandatory scoping meeting is required prior to beginning the TIA to discuss the requirements and strategies for a TIA specific to the site and the proposed development. This program shall be submitted by the Developer five or more business days prior to the scoping meeting and shall include a conceptual site plan showing proposed access points, proposed land use and densities, structure and parking envelopes. Planning staff, the **Town Engineer**, NCDOT district staff, the **transportation consultant assigned by the Town**, and the Developer are required to attend the mandatory scoping meeting. The Developer may invite members of his/her development team as needed.
4. Memorandum of Understanding (MOU) – An MOU shall be prepared by the **transportation consultant assigned by the Town** documenting the understood scope of the project. The MOU shall be signed by the Developer, the Planning Director, the **Town Engineer**, and the NCDOT District Engineer if access to a state road is involved before the consultant can begin work on the TIA. Failure by the Developer to provide accurate information or failure by the assigned transportation consultant to follow the MOU shall result in disapproval of the TIA. If significant changes are made to the scoping parameters documented in the MOU, a revised MOU will be required.
5. Fees – After the scoping meeting, **the transportation consultant assigned by the Town** shall submit a summary of consultant fees for preparing the TIA to the Planning Director. Per the MOU, the Developer shall agree to provide payment in full to the Town for preparation of the TIA so that the Town can release the work to the consultant. Any additional services incurred by the transportation consultant in addition to the MOU must be approved by Planning Director, and agreed to and paid for by the Developer, prior to performance of the additional work.
6. Transportation Mitigation Agreement (TMA) – Upon completion of the TIA, certain on or off-site transportation mitigation measures may be required as recommended by the TIA. If so, Planning staff shall prepare a Transportation Mitigation Agreement (TMA) which will summarize the following:
- a. Development plan
 - b. Phasing and timing of development (if applicable)
 - c. Site access and points of ingress/egress



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- d. On and off-site improvements required to adequately mitigate the project impacts to the Town's transportation system

The TMA must be signed by the Planning Director, the Town Engineer, and the NCDOT District or Division Engineer if the mitigation involves a state roadway. All required mitigation measures must be implemented prior to final Certificate of Occupancy (CO), or the Developer shall provide a cost estimate to Planning Staff for review, and provide a payment in lieu for said measures prior to CO.

7. TIA Outline and Contents – The outline and contents of what is required to be included in the TIA will be discussed at the scoping meeting and included in the Memorandum of Understanding (MOU). A detailed summary of the expected content and methodologies to be used in the TIA are discussed below.
 - a. Cover/Signature page – Includes the project name, location, name of the Developer, contact information for the Developer, and date of the study. The name, contact information, registration number, signature, and seal of a duly qualified and registered professional engineer in the State of North Carolina are also required to appear on this page.
 - b. Table of Contents – Includes a list of all section headings, figures, tables, and appendices included in the TIA report. Page numbers shall denote the location of all information, excluding appendices, in the TIA report.
 - c. Executive Summary – Includes a description of the study findings, a general description of the project scope, study horizon years, probable transportation impacts of the project, and mitigation measure recommendations. Technical publications, calculations, documentation, data reporting, and detailed design should not be included in this section.
 - d. Project Description – Includes a detailed description of the development, including the size of the parcel, development size, existing and proposed uses for the site, anticipated completion dates (including phasing). Should also include the square footage of each use and/or the number and size of dwelling units proposed, and should also include a map and copy of the site plan provided by the Developer.
 - e. Site Description – Includes a description of the project location within the Town and region, existing zoning and use (and proposed use if applicable), and key physical characteristics of the site, including general terrain and environmentally sensitive or protected areas.
 - f. Site Access – Includes a complete description of the ingress/egress of the site should be explained and depicted. It should include number of driveways, their locations, distances between driveways and intersections, access control (full-movement, leftover, right-in/right-out, etc.) types of driveways (two-way, one-way, etc.), traffic controls, etc. Internal streets (lanes, flow, and queuing), parking lots, sidewalks and bicycle lanes, and designated loading/unloading areas should also be described. Similar information for adjacent properties, including topographic grade relationship, should be provided to evaluate opportunities for internal connections. The design, number, and location of access points to collector and arterial



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roadways immediately adjacent to the site must be fully analyzed. The number of access points should be kept to a minimum and designed to be consistent with the type of roadway facility. Driveways serving the site from state roads should be designed in accordance with the NCDOT's Policy on Street and Driveway Access, and/or the Town or Mecklenburg County's standards, as applicable.

- g. Study Area – The limits of the study area shall be based on the location, size and extent of the proposed project, and an understanding of existing and future land uses and traffic conditions surrounding the site. The limits of the study area for the TIA shall be reviewed and approved by Planning Staff, the **Town Engineer**, and NCDOT staff at the mandatory scoping meeting. At a minimum, the study area should include all streets and signalized intersections within a 1-mile radius of the proposed site and/or where site traffic estimated for build-out of the project will constitute 5% or more of any signalized intersection approach during the peak hour. Unsignalized intersections between the required signalized intersections will be added to the scope as directed by the Town. To initially determine the impacts, the Town will maintain a database of recent peak-hour intersection turning-movement counts. The applicable intersection counts will be equated to current year baseline volumes. Based on the proposed development program submitted by the Developer, a preliminary trip generation analysis, distribution and assignment will be performed within the area surrounding the site and compared to the current year base volumes. Due to related impacts or current operational problems, town staff and/or NCDOT staff may require other intersections be included in the study area. A narrative describing the study area should identify the location of the proposed project in relation to the existing transportation system and list the specific study intersections and/or segments. Any unique transportation plans or policies applicable to the area (e.g., CATS bus service and future plans) should be mentioned. A site location map shall be provided and should identify natural features, major and minor roadways within the study area, study intersections, and a boundary of the site under consideration.
- h. Existing Conditions – Shall include a narrative and map that represents AM and PM peak hour turning movement volumes for all intersections within the study area. Traffic volumes shall be 15-minute interval weekday turning movement counts (Tuesday through Thursday) and no more than twelve months old. The required count timeframes are from 7:00-9:00 a.m. and 4:30-6:30 p.m.; however site-specific conditions may necessitate additional or different traffic counting hours and/or days depending on the development program and location within the Town (these unique circumstances will be determined and directed by the Town). For example, 12-hour turning movement counts shall be required to complete the analysis if a traffic signal warrant analysis is required as part of the TIA. Planning staff and the **Town's Engineer** will determine if additional peak hours or weekend analyses shall be included in the TIA at the mandatory scoping meeting. For example, if the development is nearby a school that significantly alters traffic volumes at times other than the peak hours described above, additional study hours will be required. Traffic volumes should also represent weeks that have no observed federal, state, or local holidays and periods of the year when local schools are in session. The source of existing traffic volume information should be explicitly stated (e.g., Town counts, new counts collected by the Developer, NCDOT counts, etc.). If previous counts were obtained, only counts collected within the one year of the Scoping Meeting will be deemed acceptable. Summary sheets for existing turning movement counts should be included in the appendix of the TIA report. A



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separate narrative and map shall be prepared to describe the characteristics of surrounding major roadways, including functional classification, number of lanes, posted speed limit, existing average daily traffic volumes, typical cross section, intersection control, and lineal distance between major roadways. Field notes for the existing conditions investigation may be included in the appendix of the TIA report.

- i. Future Year Background Conditions – The number of phases will determine the build out scenario of a particular development. Unless otherwise approved by the Planning staff and the Town Engineer, future year conditions for a single phase development shall be analyzed for the year the development is expected to be at full occupancy (build-out year) and five years after the build-out year (build-out + 5). For multiple phases, the scenarios should be completed in order, with any improvements specified by development included in the subsequent build scenarios, including five years after the full build-out year (build-out + 5). Specific analysis periods to include in the study shall depend greatly upon the development program, proposed project phasing plan, and significant improvements programmed for the transportation system. The committed development and transportation projects to be included in the base Future Year Conditions for the transportation system within the study area shall be determined during the scoping meeting. Transportation improvements assumed in the base future year conditions analysis may include those with an expected completion date concurrent with that of the development and funded through either by the Town of Cornelius, State of North Carolina Transportation Improvement Program, or indicated as a required condition of approval from another nearby development application. Only projects approved by the Planning Staff at the scoping meeting may be included in the analysis as future existing infrastructure. Those improvements committed by other projects must be clearly identified in the report as approved offsite development road improvements. Adjacent development traffic information used in the development of the base future year condition should be included in the appendix of the TIA report. Unfunded, planned infrastructure projects may be mentioned but the description should specifically identify that these projects are not included in the base condition. Future year background traffic volumes shall be forecasted using historical growth rate information, regional models, and/or TIA reports for development approved by the Town but not yet built. A narrative and map shall be prepared that presents turning movement volumes for each peak hour for all intersections identified within the study area. Future year base volumes, other development volumes, and site traffic volumes should be clearly separated, and combined in the map.
- j. Trip Generation – Base trip generation for the proposed land use(s) should be calculated using data published in the latest version of the Institute of Transportation Engineers' (ITE) Trip Generation Manual. Data limitations, data age, choice of peak hour or adjacent street traffic, choice of independent variable, and choice of average rate versus equation shall be discussed at the mandatory scoping meeting. Local trip generation rates may be acceptable if appropriate validation is provided by the Developer to support them. Any deviation from ITE trip generation rates shall be discussed in the mandatory scoping meeting and documented in the MOU if approved by Planning staff, the Town Engineer, and NCDOT. The NCDOT Municipal School Transportation Assistance (MSTA) calculator should be used to calculate projected trip generations for school sites.



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- Internal Capture – Base trip generation may be reduced by rate of internal capture when two or more land uses are proposed using methodology recommended in the most current Trip Generation Handbook published by the Institute of Transportation Engineers. Reductions greater than 10% in any peak hour require consultation and acceptance by the Planning staff, the Town Engineer and NCDOT. The internal capture reduction should be applied before pass-by trips are calculated.
 - Pass-by Trips – Pass-by trips are those made as intermediate trips between an origin and primary destination (i.e., home to work, home to shopping, etc.). However, pass-by trips are not diverted from another roadway. Base trip generation may be reduced by rate of pass-by capture using methodology recommended in the most current Trip Generation Handbook published by the Institute of Transportation Engineers. Pass-by trips associated with the development program may not exceed 10% of the existing volume reported for the adjacent public street network. This network shall include the streets that provide primary access to/from the site. For example, a site access drive that connects to a low-volume local street, which its primary access is to a major collector road, the traffic on the major collector shall be used as the adjacent street for pass-by calculation purposes. Evaluation of diverted trips may apply depending on the specifics of each site. A trip generation table shall summarize all trip generation calculations for the project.
- k. Trip Distribution – External trip distribution shall be determined on a project-by-project basis using one of several sources of information available to transportation and land planning professionals. Potential sources for determining project trip distribution may include the regional travel demand model, market analysis, existing traffic patterns, or professional judgment. At the Town’s direction, multiple trip distributions may be required for differing land use types. Regardless of methodology, the procedures followed and logic for estimating trip distribution percentages must be well-documented in the TIA. Trip distribution percentages proposed for the surrounding transportation network should be discussed during the scoping meeting and shall be approved by Planning staff, the Town Engineer, and NCDOT before proceeding with the TIA. A map showing the percentage of site traffic on each street included in the study area should be included in the TIA.
- l. Trip Assignment – Project traffic shall be distributed to the surrounding transportation system based on the site’s trip generation estimates and trip distribution percentages. Future year build-out traffic forecasts (i.e., future year background traffic plus project traffic) shall be presented in both tabular and graphic formats for AM and PM peak hour conditions at all intersections included in the study area. If the project will be built in phases, traffic assignments shall be reported for each phase. Pass-by traffic shall be included at the driveways and access points for evaluating driveway volumes. Multiple assignment analyses may be required if the traffic control at the access drives varies (i.e., right-in/right-out vs. stop controlled vs. signalized).
- m. Capacity Analysis – Level of Service (LOS) is the primary measurement for impacts to the transportation system, and is defined by the most current edition of the Highway Capacity Manual. Unless otherwise noted, Synchro LOS and delay shall be reported for signalized intersections and approaches. Unsignalized minor street approach LOS and delay shall be



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reported according to HCM analysis, as reported by Synchro. LOS for existing signalized intersections shall be determined using existing signal timing plans provided by either the Town or NCDOT. Existing signal timing plans should be included in the appendix of the TIA report. If a traffic signal is part of a coordinated system, it must be analyzed as such under all conditions. Other standard practices and default input values for evaluating signalized intersections should be consistent with the most recent guidelines published by the NCDOT, Traffic Engineering and Safety Systems Branch, Congestion Management Unit (“Capacity Analysis Guidelines”). Planning staff and the Town Engineer may also require safety, traffic simulation, gap and/or other analyses appropriate for evaluating a development application. Additional analyses and/or traffic capacity or simulation tools (such as VISSIM) required for the TIA shall be identified during the scoping meeting. Capacity analyses shall be conducted to determine levels of service in each peak hour for all intersections, and their approaches, identified for study using methodologies contained in the most current edition of the Highway Capacity Manual. Capacity calculations should be included for the existing and all future year scenarios, as described in Section 7.i. Impacts from the proposed project shall be measured by comparing the Future year build year and the Future year no-build year conditions. Requirements for mitigation are described in Section 7.q. All TIA reports submitted to the Town shall use SYNCHRO, SimTraffic or VISSIM Software, for signalized and unsignalized intersections, or Sidra Software, for roundabouts, consistent with policies released by the NCDOT. A narrative, table, and map shall be prepared that summarizes the methodology and measured conditions at the intersections reported in level of service (LOS A – F), intersection and approach signal delay for signalized intersections, approach delay for unsignalized intersections, and 95th percentile queue lengths for all movements. Capacity analysis worksheets and auxiliary turn lane warrants for unsignalized intersections should be included in the appendix of the TIA report.

- n. Queuing Analysis – 95th percentile and simulation analysis of future year queues shall be consistent with NCDOT’s Traffic Engineering and Safety Systems Branch, Congestion Management Unit current practices and published Capacity Analysis Guidelines. Turn lanes for unsignalized driveways serving the site shall be identified using volume thresholds published in the NCDOT’s Policy on Street and Driveway Access to North Carolina Highways (see Warrant for Left- and Right-Turn Lanes Nomograph, pg. 80). Recommendations for left and right turn lanes serving the site shall be designed to meet future year capacity needs identified in the TIA report. For projects that include drive-through facilities, pick-up/drop-off areas or entrance gates, a queuing analysis may be required by the Town to ensure that vehicle stacking will not adversely impact the public transportation system. The queuing analysis must be performed using accepted transportation engineering procedures approved by the Town. This analysis shall be required for all drive-through facilities. If a TIA is required for a new school site, the consultant must model the internal circulation and ingress/egress of the site using a “dummy signal” in the SYNCHRO software as prescribed by NCDOT Municipal School Transportation Assistance (MSTA) department.
- o. Collision Analysis – A summary of crash data (type, number, and severity) for the most recent 3-year period at each study location is required. Traffic Engineering Accident Analysis System reports will be provided by the Town and/or NCDOT and should be included in the appendix of the TIA report. For locations with prevalent crash types and/or frequency, a discussion shall be included describing factors that may be contributing to the incidents. At a minimum, the



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proposed development features shall not contribute to factors potentially involved in collision rates. If contributing factors are identified, recommendations to eliminate or mitigate these features shall be included.

- p. Traffic Signal Warrants – Town staff and NCDOT may consider potential signal locations at the scoping meeting. However, traffic flow progression is of paramount importance when considering a new traffic signal location. A new traffic signal should not cause an undesirable delay to the surrounding transportation system. Installation of a traffic signal at a new location shall be based on the application of warrants criteria contained in the most current edition of the Manual on Uniform Traffic Control Devices (MUTCD) and engineering judgment. Traffic signal warrants should be included in the appendix of the TIA report. Additionally, spacing of traffic signals within the Town must adhere to NCDOT requirements. Pedestrian movements must be considered in the evaluation and adequate pedestrian clearance provided in the signal cycle split assumptions. If a signal warrant analysis is recommended in the TIA, the Town and/or NCDOT may decide to defer a signal warrant analysis until after the development has opened in order to use actual turning movement counts at an intersection. The TIA recommendations must clearly state that this analysis shall occur at a specified date following the opening of the development. The Developer must issue a bond or letter of credit in the name of the Town for the estimated cost of the signal warrant analysis and resulting signal prior to final approval of the TIA. The cost shall be established based on an engineer’s estimate provided by the engineer of record for the Developer, however final approval of the dollar amount rests with the Town.
- q. Mitigation Measure Recommendations – This section shall provide a description of the study’s findings regarding impacts of the proposed project on the existing and proposed transportation system and describe the location, nature, and extent of all mitigation measures recommended to the Developer to improve and/or maintain the future background year no-build level of service (LOS) conditions through phasing and build-out of the project. This mitigation will be based on the build-out year scenario. The Developer is only required to mitigate transportation deficiencies for their development and not unacceptable background conditions or other deficiencies caused by offsite development within the defined study area. The following LOS table (Table 1), using the most recent Level of Service methodology, shall be used when determining the adequacy of intersection/approach within the applicable impact areas of town:

| ZONING DISTRICT | LOS Threshold |
|------------------|---------------|
| RP, GR, NR | C |
| NMX, VC, HC, WMX | D |
| BC, IC, CO | D |
| TC, TRD-O, TND | E |

Where an intersection/approach is located within more than one zoning district, the less restrictive LOS shall apply to the entire intersection or approach for purposes of complying with this ordinance. Where an intersection is included in the study, but not listed in Table 1, LOS D will be LOS designation requiring mitigation.



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A narrative and table shall be prepared that summarizes the methodology and measured conditions at the intersections reported in level of service (LOS A–F) and seconds of stop delay for the intersection and approach.

If the existing level of service (intersection or approach) is inadequate (i.e., "D", "E" or "F" dependent on the governing zoning district shown in the table above), or the existing plus the background growth (not including the site) causes an inadequate level of service, then the developer will be expected to mitigate only the traffic to be generated by the proposed project. Town staff and NCDOT will review the recommendations in the final version of the TIA and will have the ultimate determination in the scope of the required mitigation measures.

For multi-phase developments, the capacity analyses scenarios shall address the phasing of improvements for each phase of development. The build-out + 5 scenario will only require the analysis of five years beyond the full build-out year.

A narrative and map shall also be prepared that describes and illustrates recommended mitigations, by phase if necessary, for maintaining the integrity of the transportation system.

- r. Compliance with Adopted Transportation Plans – All TIA reports must include a statement of compliance with plans, programs, and policies adopted by the Town of Cornelius for maintaining a safe and efficient multi-modal transportation system.

SECTION 13.3: CONFORMANCE WITH ADOPTED PLANS

- A. Street and Thoroughfare Plans: Where a proposed development plan includes any part of a street or thoroughfare which has been designated as such in official plans adopted by the North Carolina Department of Transportation (Statewide Transportation Improvement Program (STIP)), or the Charlotte Regional Transportation Planning Organization (Comprehensive Transportation Plan (CTP), Metropolitan Transportation Plan (MTP)), or any Town of Cornelius Plan or Program (i.e., Centennial Transportation Plan, Bond Programs, etc.), a right-of-way shall be platted in the location shown on the plan in accordance with any adopted plan, as well as Chapter 7 of this Code.

As a condition of approval, the developer shall be required to construct the proposed street or thoroughfare within the borders of the development in accordance with the adopted standards or plans for such construction. In instances where such a street is scheduled for construction by the Town or the North Carolina Department of Transportation, the developer may make a payment in lieu of construction equal to the developer's pro-rata share of the costs associated with the project (design, right-of-way, construction, etc.). Major thoroughfare and highway construction are exempt from this requirement.

- B. If the total residential development size exceeds 200 acres or 500 housing units, the developer shall reserve adequate (minimum of 18 usable acres) prominent sites for the location of schools. Sites reserved for schools may include up to one-half (½) of their total area towards the open space dedication requirement.



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SECTION 13.4: SKETCH PLAN REQUIREMENTS

The sketch plan shall show in simple sketch form the proposed layout of streets, lots, buildings, public open spaces and other features in relation to existing conditions. It shall also include the following information:

- A. The existing topographic conditions of the property.
- B. The boundary lines of the property being subdivided.
- C. Water courses on the land to be subdivided.
- D. The location, names, and right-of-way width of any existing streets on or within 300' of the land to be subdivided.
- E. The location of all flood hazard areas, watershed district boundaries, and any other environmentally significant areas.
- F. Illustrative elevations for any buildings proposed.
- G. Location of significant vegetation on the site.

SECTION 13.5: DEVELOPMENT PLAN REQUIREMENTS

The development plan for Major Site Plans, Conditional Zoning Plans, Major Subdivisions, Special Use Permits, Vested Rights, and Master Plans shall be submitted at a scale no smaller than 1" = 100'. Plans shall be submitted electronically, compatible with current Planning Department standards.

The development plan must be drawn to the following specifications and must contain or be accompanied by the information listed below. No processing or review of a development plan will proceed without all of the following information:

- A. The boundary, as determined by survey, of the area to be developed with all bearings and distances shown and the location within the area, or contiguous to it, of any existing streets, railroad lines, water courses, easements or other significant features of the tract.
- B. Scale denoted both graphically and numerically with north arrow and declination.
- C. A vicinity map at a scale no smaller than 1" = 1,200' showing the location of the development with respect to adjacent streets and properties.
- D. The location of proposed buildings, parking and loading areas, streets, alleys, easements, lots, parks or other open spaces, reservations (i.e. school sites), property lines and building setback lines with street dimensions, tentative lot dimensions, the location of any building restriction areas (i.e. flood hazard areas, watershed protection districts, and/or jurisdictional wetlands) and any other environmentally-significant areas noted on the Lake Norman Shoreline Management Plan. Site calculations shall include total acreage of tract, acreage in parks and other non-



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residential uses, total number and acreage of parcels, the total number of housing units, area of all mixed use and non-residential buildings and gross project density per acre.

- E. Illustrative plans denoting site, landscape, and buildings, as well as 3-D renderings and building elevations from all sides of the development.
- F. All necessary engineering calculations required for compliance with the watershed protection requirements per Chapter 11.
- G. The proposed name of the development, street names, the owner's name and address, the names of adjoining subdivisions or property owners, the name of the township, county and state in which the development is located, the date of plan preparation and the zoning classification of the tract to be developed and of adjoining properties.
- H. Typical cross-sections of proposed streets. Where a proposed street is an extension of an existing street, the profile of the street shall include 300' of the existing roadway, with a cross section of the existing street. Where a proposed street within the development abuts a tract of land that adjoins the development and where said street may be expected to extend into said adjoining tract of land, the profile shall be extended to include 300' of the said adjoining tract.
- I. A timetable for estimated project completion for each phase proposed.
- J. Original contours at intervals of not greater than five feet (5') for the entire area to be developed (two feet is preferred) and extending into adjoining property for a distance of 300' at all points where street rights-of-way connect to the adjoining property and 50' at all other points of common project boundaries. Mecklenburg County aerial photography may be used to satisfy this requirement.

In addition to the above required information, the following additional information may be required by the Planning Director or designee, Planning Board, or Town Board on a discretionary site-specific basis:

- K. Environmental Impact Statement, pursuant to Chapter 113A of the North Carolina General Statutes, if the development exceeds two (2) acres in area and if the Planning Board deems it necessary due to the nature of the land or peculiarities in the proposed design.
- L. Development Permit and Certification application with supporting documentation as required by the Cornelius Flood Damage Prevention Ordinance.
- M. All proposed common access water-related structures (i.e. boat launches and community piers) shall be forwarded to the Lake Norman Marine Commission and Duke Energy for written comments prior to administrative approval.
- N. Written comments from Duke Energy detailing any potential impacts on environmentally significant areas noted in the Lake Norman Shoreline Management Plan.



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SECTION 13.6: CONSTRUCTION DOCUMENT REQUIREMENTS

The Construction Documents for Minor Site Plans, Major Site Plans, Conditional Zoning Plans, Special Use Permits, Major Subdivisions, Vested Rights, and Master Plans shall be submitted in accordance with the specifications of this Section except where specifically noted. Construction Documents shall constitute the complete submittal requirements for Site Plans and Preliminary Plats required prior to construction.

Plans shall be submitted electronically, compatible with current Planning Department standards. Construction drawings must be drawn to the following specifications and must contain or be accompanied by the applicable information listed below. No processing or review of Construction Documents will proceed without all of the following information:

- A. The boundary, as determined by survey, of the area to be developed with all bearings and distances shown and the location within the area, or contiguous to it, of any existing streets, railroad lines, water courses, easements or other significant features of the tract.
- B. Scale denoted both graphically and numerically with north arrow and declination.
- C. A vicinity map showing the location of the development with respect to adjacent streets and properties.
- D. Existing topography and finish grading with contours drawn at two foot (2') intervals. The Zoning Administrator, at his discretion, may permit the use of County topographic data in five foot (5') intervals on a site-specific basis. This requirement may be waived for developments smaller than one (1) acre or where it is determined that there is insufficient topographic change to warrant such information.
- E. The proposed name of the development, street names, the owner's name and address, signature of the owner or owner's duly authorized agent, the name of the surveyor, the names of adjoining subdivisions or property owners, the name of the township, county, and state in which the development is located, the date of preparation, and the zoning classification of the tract to be developed and of adjoining properties.
- F. A statement from Charlotte Water regarding the availability of adequate water and sewer capacity for the proposed development.
- G. Environmental Survey in accordance with Section 9.3.3, Environmental Survey.
- H. Landscape plan in accordance with Section 9.4, Landscape Requirements, and lighting plan and in accordance with Section 7.5, Exterior Lighting.
- I. The plans for utility layouts, including sanitary sewers, storm sewers, and water lines, illustrating connections to existing systems. All water supply systems and sewage collection systems noted on the construction documents shall conform to current Charlotte Water standards. All storm drainage systems shall conform to Mecklenburg County Land Development Standards Manual.



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- J. The location and size of all utility lines, easements, and rights-of-way including water, sewer, storm sewer, natural gas, and electric.
- K. The location of proposed buildings, parking and loading areas, streets, alleys, easements, lots, parks or other open spaces, reservations (i.e. school sites), property lines and building setback lines with street dimensions, lot dimensions, the location of any building restriction areas (i.e. flood hazard areas, watershed protection districts, and/or jurisdictional wetlands), and any other environmentally-significant areas noted on the Lake Norman Shoreline Management Plan.
- L. Site calculations shall include total acreage of tract, acreage in parks and other non-residential uses, total number and acreage of parcels, the total number of housing units, area of all mixed-use and non-residential buildings, and gross project density per acre.
- M. The location and dimensions of off-street parking and loading spaces, and walkways indicating the type of surfacing, size, angle of stalls, width of aisles and a specific schedule showing the number of parking spaces provided.
- N. The location and dimensions of proposed recreation areas, open space and required amenities and improvements including the calculated area of all required open space dedications in accordance with Chapter 8, Open Space.
- O. The location and dimensions of any sidewalks, curb and gutters to be installed along public street frontages, alleys, and other required street improvements designated in Chapter 7, Streets, Parking & Lighting, or the Mecklenburg County Land Development Standards Manual.
- P. Typical cross sections of proposed streets showing rights-of-way, pavement widths, grades and design engineering data for all corners and curves. Where a proposed street is an extension of an existing street the profile of the street shall include 300' of the existing roadway, with a cross section of the existing street. Where a proposed street within the subdivision abuts a tract of land that adjoins the subdivision and where said street may be expected to extend into said adjoining tract of land, the profile shall be extended to include 300' of the said adjoining tract.
- Q. The location of any existing or proposed demolition landfills in the site. Such sites shall not be used for building.
- R. A copy of the full soil erosion and sedimentation permit application including forms, plans and calculations to be submitted to Mecklenburg County Land Use and Environmental Services Agency and a copy of the approval letter prior to site plan or preliminary plat approval.
- S. Final proposed elevations of all non-single-family residential buildings proposed for construction as part of this site plan approval. Subsequent buildings within the development may be handled as separate site plans. Such elevations shall include all facades visible from public streets.
- T. A timetable for estimated project completion for each phase covered by the development plan.
- U. Certificate of Survey and Accuracy as shown in Section 13.8.K.1.



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In addition to the above required information, the following additional information may be necessary for unique sites:

- V. Where a proposed water and sewer system does not contemplate the use of facilities owned and operated by Charlotte Water, the proposed facility plans as approved by the appropriate agency shall be submitted with the construction documents.
- W. Where public or community water supply and/or sewerage systems are not available or to be provided, a written statement from the Mecklenburg County Health Department shall be submitted with the construction documents indicating that each lot has adequate land area and soil conditions suitable to accommodate the proposed methods of water supply and sewage disposal.
- X. Development Permit and Certification application with supporting documentation as required by the Cornelius Flood Damage Prevention Ordinance.
- Y. All proposed common access water-related structures (i.e. boat launches and community piers) shall be reviewed by the Lake Norman Marine Commission and Duke Energy for written comments prior to approval.
- Z. Written comments from Duke Energy detailing any potential impacts on environmentally significant areas noted in the Lake Norman Shoreline Management Plan.

SECTION 13.7: EASEMENTS

Easements shall be provided on all construction documents as follows:

- A. Utility Easements: Easements for underground or above ground utilities shall be provided for and centered along rear or side lot lines and shall be a minimum of 10' in width. Easements for water lines, sanitary sewers and storm drains shall be centered on the pipe and a minimum of 20' in width.
- B. Drainage Easements: Where a development is traversed by a stream or drainage way, an easement shall be provided conforming with the lines of such stream and of sufficient width as shall be adequate to maintain the overall integrity of the drainage area and provide for its periodic maintenance.
- C. Public Access Easements: Public Access Easements shall be provided for sidewalks, trails, greenways and other pedestrian and bicycle facilities that provide connections other than within public rights-of-way.

SECTION 13.8: FINAL PLAT REQUIREMENTS

The final plat shall be prepared by a registered land surveyor, licensed to practice in the State of North Carolina and must be drawn to a scale no smaller than 1" = 100', and shall meet the requirements of the Mecklenburg County Register of Deeds Office. The final plat shall constitute all portions of the preliminary plat site, which the subdivider proposes to record, and develop at the time.



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- Final Submittal for Signatures: 3 sets (mylar)
- Following Approval and Recordation: 1 original mylar plat returned to the Town

No final plat shall be approved unless and until the subdivider has installed in the platted area all improvements required by this ordinance or has posted improvement guarantees in accordance with Section 12.14, Improvement Guarantees. The final plat shall contain the following:

- A. The exact boundary of the tract of land being subdivided showing clearly the disposition of all portions of the tract.
- B. Scale denoted both graphically and numerically with north arrow and declination.
- C. A vicinity map showing the location of the subdivision with respect to adjacent streets and properties.
- D. As built drawings and plans of all water, sewer, and storm drainage system facilities, illustrating their layouts and connections to existing systems. Such plans shall show all easements and rights-of-way, to demonstrate that the facilities are properly placed and the locations of all fire hydrants, blow-off valves, manholes, pumps, force mains, and gate valves are indicated. This information shall not be placed on the final plat but must be submitted at the time of request for final plat approval or release of any surety for required improvements, whichever comes later.
- E. Sufficient data to determine readily and reproduce accurately on the ground the location, bearing, and length of every street, alley line, lot line, building line, easement line, and setback line. All dimensions shall be measured to the nearest one-hundredth of a foot and all angles to the nearest second.
- F. The lines and names of all streets, alley lines, lot lines, lot and block numbers, lot addresses, building setback lines, easements, reservations, on-site demolition landfills and areas dedicated to public purpose with notes stating their purposes. All lots subject to flooding shall be noted with the following statement:

"Any construction or use within the areas delineated as floodway are subject to the restrictions imposed by the Cornelius Flood Damage Prevention Ordinance."
- G. The accurate locations and descriptions of all monuments, markers, and control points.
- H. Underground and aerial utility easements shall be shown.
- I. The name of the township in which the subdivision/development is located, the name of the subdivision/development, the name of the owner, the name, registration number, and seal of the registered surveyor under whose supervision the plat was prepared, and the date of the plat.
- J. Submittal of payment in lieu of dedicated open space (if applicable).
- K. All the following certifications must appear on the Final Plat:



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1. **Certificate of Survey.** I, _____, certify that this plat was drawn under my supervision from an actual survey made under my supervision (deed description recorded in Book ____, page ____, etc.) (other); that the boundaries not surveyed are clearly indicated as drawn from information found in Book ____, page ____; that the ratio of precision as calculated is 1: ____; that this plat was prepared in accordance with G.S. 47 30 as amended. Witness my original signature, registration number and seal this ____ day of ____, A.D., ____.

Seal or Stamp

Surveyor
Registration Number

2. **Certificate of Ownership and Dedication.** I hereby certify that I am the owner of the property shown and described herein, which is located in the jurisdiction of the Town of Cornelius and that I hereby adopt this plan with my free consent, establish minimum building setback lines, preserve and protect all significant trees over 18 inches diameter in the tree and root protection area, plant supplementary trees if required, and dedicate all streets, alleys, walks, parks, and other sites and easements, to public or private uses as noted. Once streets have been accepted by the Town or the State, street trees shall be maintained and cared for by the property owner adjacent to the tree, except in subdivisions where the property owners association provides maintenance and care. Prior to street acceptance, the developer shall be responsible for ensuring maintenance and care. Maintenance shall include replacement and trimming as necessary. Furthermore, I hereby dedicate all sanitary sewer, storm sewer, and water lines that are located in public utility easements or rights-of-way to the Town of Cornelius and Charlotte Water.

Date

Owner(s)

3. **Certificate of Approval of the Design and Installation of Streets, Utilities, and Other Required Improvements.** I hereby certify that all streets, utilities, and other required improvements have been installed in an acceptable manner and according to Town Specifications and Standards or that guarantees of the installation of the required improvements in an amount and manner satisfactory to the Town of Cornelius has been received.

Date

County Engineer, Mecklenburg County

4. **4a. Certificate of Approval for Recording.** I hereby certify that the subdivision plat shown hereon has been found to comply with the Land Development Code for Cornelius, North Carolina, and that this plat has been approved by the Town of Cornelius for recording in the Office of the Register of Deeds of Mecklenburg County. I further certify that the Board of Commissioners only accepts the dedication of the public parks shown thereon, if such parks are located within the corporate limits of Cornelius, but assumes no responsibility to open or



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maintain the same until, in the opinion of the Board of Commissioners, it is in the public interest to do so.

_____ Date

_____ Planning Director, Cornelius, North Carolina

OR

(The following certificate shall appear on all plats which do not meet the definition of subdivision as defined in this Ordinance, but which need approval from the Town for recording at the Mecklenburg County Register of Deeds Office. This Certificate is to be used in lieu of the above.)

4b. Certificate of Approval for Recording. I hereby certify that the subdivision plat shown hereon is exempt from the subdivision provisions of the Cornelius Land Development Code, and is therefore exempt from its provisions. The plat has been found to comply with the zoning regulations of the Cornelius Land Development Code, and has been approved by the Town of Cornelius for recording in the Office of the Register of Deeds of Mecklenburg County.

_____ Date

_____ Planning Director, Cornelius, North Carolina

The following Certificate shall be placed on the final plat only when the proposed subdivision is not to be connected to publicly owned and operated water supply and sewage disposal systems.

5. **Certification of Approval of Water Supply and Sewage Disposal Systems.** I hereby certify that the water supply and sewage systems installed or proposed for installation in _____ Subdivision meet necessary public health requirements and are hereby approved.

_____ Date

_____ County Health Officer or Authorized Representative

All plats approved in the Town of Cornelius' jurisdiction must have one of the following Watershed Certificates on the final plat:

6. **6a. Certificate of Approval for Recording.** This property is located within a Public Water Supply Watershed. Development restrictions may apply. I certify that the plat shown hereon complies with the Watershed Protection Ordinance and is approved by the Town of Cornelius for recording at the Mecklenburg County Register of Deeds Office.

_____ Date

_____ Watershed Administrator, Town of Cornelius



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OR

6b. Certificate of Approval for Recording. I certify that this plat is not within a designated Public Water Supply Watershed.

Date

Watershed Administrator, Town of Cornelius

OR

6c. Certificate of Approval for Recording. I certify that this plat is within a designated Public Water Supply Watershed, and that the owner and developer have submitted plans and obtained permits for construction prior to the effective date of the Ordinance, and are exempt from its provisions.

Date

Watershed Administrator, Town of Cornelius

7. **Review Officer Certification.** State of North Carolina, County of Mecklenburg I, _____, Review Officer of Mecklenburg County, certify that the map or plat to which this certification is affixed meets all the statutory requirements for recording.

Date

Review Officer

8. **North Carolina Department of Transportation Certification.**
Division of Highways

Proposed Subdivision Road
Construction Standards Certification

APPROVED: _____
District Engineer

DATE: _____

L. This certification is to appear on all Built-Up Area (BUA) averaging plats:

Built-Upon-Area Transfer Plat

This plat represents a transfer of built-upon-area through preservation of a dedicated, undisturbed natural area for properties within the jurisdiction of the Town of Cornelius. The resulting action may or may not create tracts of land that are compliant with the Cornelius Land Development Code (LDC). This parcel is subject to the LDC built-upon area averaging standards: Any change to the development proposal affecting the approved built-upon-area allowance requires amendment to the existing Built-Upon Area Averaging Certificate and approval by the



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Cornelius Watershed Review Board. The Planning Director reserves the right to make periodic site inspections to ensure compliance with these conditions.

Date

Planning Director, Town of Cornelius

SECTION 13.9: PLACEMENT OF MONUMENTS

Unless otherwise specified by this ordinance, the Manual of Practice for Land Surveying, as adopted by the NC State Board of Registration for Professional Engineers and Land Surveyors under provisions of Chapter 89 of the General Statutes of North Carolina, shall apply when conducting surveys of subdivision; in order to determine the accuracy for surveys and placement of monuments, control corners, markers, and property corner ties; to determine the location, design, and material of monuments, markers, control corners, and property corner ties; and to determine other standards and procedures governing the practice of land surveying for subdivisions.

In addition, for the purpose of identification and protection of survey corners and monuments, each corner or monument within the subdivision shall have a disk attached to a ferrous rod or placed in concrete that shall be stamped to identify that point as a property corner and or control point. All monuments shall be set flush with or just below ground level and shall be made of durable materials. In addition, ferrous materials will be present in sufficient mass either in the monument or in close proximity to the monument to allow for detection by electronic metal detection devices.



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