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2.01 General

All construction shall conform to the requirements and dimensions on the approved construction plans, Town Standard Details, the Code of the Town of Apex, or as stated in these Specifications. Any conflicting requirements or lack of information shall be brought to the attention of the TOWN prior to construction.

2.02 Abbreviations & Definitions

a. Abbreviations:

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| AASHTO | - American Association of State Highway Transportation Officials |
| ANSI | - American National Standard Institute |
| ASTM | - American Society for Testing & Materials |
| AWWA | - American Water Works Association |
| DPW | - Director of Public Works & Utilities of the Town of Apex |
| NCDOT | - North Carolina Department of Transportation |
| NPDES | - National Pollutant Discharge Elimination System |
| OSHA | - Occupational Safety and Health Administration |

b. Definitions:

Where the word "ENGINEER" is used in these Specifications, it shall be the Town Engineer.

Where the words "DIRECTOR OF PUBLIC WORKS AND UTILITIES" (DPW) or "INSPECTOR" is used in these Specifications, it shall be the Director of Public Works & Utilities of the Town of Apex or an assistant or other duly authorized representative of the Apex Construction Management Department.

Where the word "TOWN" is used in these Specifications, it shall be the Town of Apex, North Carolina or an authorized representative.

Where the word "DEVELOPER" or "CONTRACTOR" is used in these Specifications, it shall be the developer of the project, or his authorized contractor performing work on the site. For purposes of these Specifications, these words are to be considered synonymous.

Where the words "PROJECT ENGINEER" are used in these Specifications, they shall mean the design engineer retained by the developer, and the person responsible for the preparation of the final construction drawings.

2.03 Earthwork

a. General:

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

b. Tree Protection:

Tree protection shown on the construction plans approved by the TOWN shall be installed and inspected prior to earthwork within the area shown on the plans for protection. The protection fencing shall also be inspected on a regular basis. In the event that the tree protection fencing is not properly maintained or is in violation, the TOWN may issue a Notice of Violation, Stop Work Order, and/or assess a penalty which shall remain in effect until such time as the fencing is restored and agreements to replace damaged trees and/or vegetation have been resolved.

c. Rock Excavation - by Blasting:

- 1) Permit - Where rock must be removed by blasting, a written permit must first be obtained from the Apex Construction Management Department.
- 2) Hours of Blasting - Blasting for rock removal shall be conducted only Monday through Friday between the hours of 8:00 AM to 5:00 PM.

d. Removal of Unstable Material:

Where unstable and/or organic material ("muck") is encountered in trenches or in roadways, the material shall be completely removed and replaced with suitable material and thoroughly compacted.

e. Placement of Fill:

Fill material for roadway embankments shall be free from stones greater than 4 inches in size, construction debris, frozen, organic and/or other unstable material. Fill material

placed in roadway embankments shall be placed in lifts of 8 inches or less, and compacted to a density of not less than 95% of maximum dry density as measured by the Standard Proctor Method. The 95% requirement shall apply for that portion of the roadway measured from the back of curb and extending outward on a slope of 1 to 1, measured perpendicular to the centerline. The remaining fill shall be compacted to a density of not less than 90% of maximum dry density as measured by the Standard Proctor Method.

Attention is called to Section 3 of this document for the inspection and testing requirements.

f. Compaction Tests:

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

Backfilling of all trenches within the street right-of-way shall be thoroughly compacted to provide a minimum of 95% of the maximum density as determined by the Standard Proctor Method.

All backfilling of trenches outside the street right-of-way shall be compacted to provide a minimum of 90% of the maximum density as determined by the Standard Proctor Method.

2.04 Safety

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

The CONTRACTOR shall be responsible for the entire site and the necessary protection as required by the TOWN and by laws or ordinances governing such conditions. He/She shall be responsible for any damage to TOWN property, or that of others, by the CONTRACTOR, his/her employees, subcontractors or their employees, and shall correct and/or repair such damages to the satisfaction of the Town of Apex and/or other affected parties. He/She shall be responsible for and pay for any such claims against the TOWN.

The TOWN shall not be responsible for making the CONTRACTOR adhere to the Occupational Safety and Health Administration (OSHA) regulations or standards. However, the TOWN may report suspected violations of unsafe practices to the appropriate enforcement agency.

2.05 Work Within Right-of-Way of State Maintained Roads

a. General:

No construction shall be initiated within the right-of-way of roads that are maintained by the NCDOT without the prior approval of the NCDOT. The NCDOT approval shall be evidenced by an appropriate Encroachment Agreement and/or Driveway Permit, as applicable.

A copy of the approved Encroachment Agreement and/or Driveway Permit shall be in the contractor's possession at the job site at all times that work is being performed.

The Contractor shall notify the NCDOT District Office and shall post any required Indemnity Bond prior to beginning work in the NCDOT right-of-way.

b. Utility Construction:

The installation of public utilities within NCDOT right-of-way shall be accomplished in accordance with the Policies & Procedures for Accommodating Utilities on Highway Rights-of-Way, latest revision, as published by the NCDOT, Division of Highway, or those of the Town, whichever, in the opinion of the ENGINEER is more stringent.

c. Roadway Improvements - Pavement Widening, Curb & Gutter, and Storm Drainage:

All improvements along existing NCDOT roadways, including pavement widening, curb and gutter, and storm drainage improvements, shall be accomplished in strict accordance with the Standard Specifications for Roads and Structures latest edition, as published by the NCDOT. The NCDOT specification shall supersede the construction specifications of the TOWN. The CONTRACTOR shall call for all inspections as required by the NCDOT District Office.

2.06 Maintenance of Traffic

Existing public streets or highways shall be kept open to traffic at all times by the CONTRACTOR unless permission to close the streets, or portions thereof, is granted by the ENGINEER. The Town of Apex Police Department must also be contacted by the CONTRACTOR a minimum of 24 hours before any streets are fully or partially closed. Proper and sufficient barricades, lights, signing, and other protective devices shall be required to be installed when deemed necessary by the Police Department or ENGINEER.

2.07 Concrete

Concrete shall be only plant-mixed, transit-mixed, or mobile-mixed concrete conforming to ASTM C33 for aggregates and to ASTM C94 for ready-mixed concrete. Any concrete

poured that has a slump over 4 inches as per ASTM C143, or has a batched time of more than 90 minutes, will be considered unacceptable. Periodic samples may be required at the expense of the owner to determine the strength of the material. Concrete shall not be deposited on frozen subgrade. Concrete shall not be poured when the air temperature is falling and below 40° degrees F, and/or the predicted low temperature for the succeeding 24-hour period is less than 32° degrees F. All concrete when placed in the forms shall have a temperature of between 50° and 90° degrees F and shall be maintained at a temperature of not less than 50° degrees F for at least 72 hours for normal concrete and 24 hours for high-early strength concrete, or for as much time as is necessary to insure proper rate of curing and designed compressive strength.

Concrete shall be air entrained at 5% ($\pm 1\%$). Retarders and accelerators shall be used only upon approval of the ENGINEER.

2.08 Asphalt

Asphalt and tack coat shall be applied only when the surface to be treated is sufficiently dry and the atmospheric temperature in the shade away from artificial heat is 40° degrees F or above for plant mix and 50° degrees F or above for bituminous surface treatment (final lift). Asphalt shall not be applied when the weather is foggy or rainy. The PROJECT ENGINEER is responsible for seeing that these conditions exist prior to the application of tack coat or asphalt.

2.09 Electrical Power Service

a. General:

The Town of Apex will provide electrical service to projects within the Town's ETJ, in accordance with North Carolina General Statute 160A. Electrical service facilities shall be designed, constructed and maintained by the TOWN, with the developer paying fees as may be prescribed in accordance with TOWN policy. These fees may include but are not limited to an aid-in-contribution of construction, pole relocation, and other reasonable and customary charges. The Town of Apex reserves the right to not install electrical service on any right of way, easement, or lot that has not been properly graded in accordance with these specifications.

b. Easements for Town Electric Power:

Where electrical distribution facilities are required to cross private property, the DEVELOPER shall provide easements as follows:

Underground Primary Lines - 20-foot easement

Overhead Primary Lines - 40-foot easement. Easements shall be shown on the final plat

for the project

NOTE: All easements shall be shown and properly labeled on the final plat.

c. Service Connections - Special Requirements:

Electrical service connections to service pedestals or transformers shall be made in strict accordance with Detail 2.01.

2.10 Grease Traps/Interceptors

All establishments engaged in the preparation of food shall install a grease trap. The grease trap shall be located outside the building and shall intercept all kitchen wastes, floor drains, and car wash drains. Domestic waste from toilets and lavatories shall not be directed to the grease trap. The Town of Apex Code Enforcement Officer shall approve the design and construction of all grease traps as per N.C. State Building Code.

2.11 Dumpsters - Installation Requirements

All dumpsters shall be placed on a reinforced concrete pad conforming to the requirements shown on Detail 2.02 and screened in accordance with the Apex Planning Department requirements.

2.12 Notification Prior to Beginning Work

The DEVELOPER or responsible contractor shall notify the TOWN not less than 24 hours prior to the commencement of any new construction activity. No new work shall commence without approval of the TOWN.

2.13 Materials

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

It is the intent of this Specification to provide materials and construction methods of high standard and quality and to provide materials free from defects in workmanship and product. Equal material not specified may be used provided documentation and samples are furnished to the ENGINEER not less than 14 days before their delivery to the construction site. The ENGINEER will issue written approval or disapproval of the alternate materials. Current Specifications and/or the latest revisions shall apply in all cases where materials are described.

2.14 Inspections

The presence of a TOWN employee at the work site shall not lessen the CONTRACTOR'S responsibility for conforming to the approved construction plans and/or specifications. Should the ENGINEER or INSPECTOR accept materials, or work that does not conform with the approved plans or specifications, whether from lack of discovery or for any other reason, it shall in no way prevent later rejection or corrections to materials or work when discovered.

The CONTRACTOR shall have no claim for losses suffered due to any necessary removals or repairs resulting from the unsatisfactory work. Any work that has been covered without the INSPECTOR'S approval, shall at the INSPECTOR'S request, be uncovered and be made available for inspection at the CONTRACTOR'S expense. After regular working hours or weekend work shall comply with the TOWN'S specifications and shall include only such work that does not require continuous observation by an INSPECTOR.

2.15 Utility Easements - Special Provisions

Access for the purpose of construction inspection shall be provided to the Town of Apex or designated representatives. All off-street water, sewer mains, and power lines, etc. to be operated and maintained by the TOWN shall be located in a public easement.

Private easements for water and sewer service lines are not permitted.

2.16 Water for Construction

The Town of Apex does not provide free or otherwise unmetered water for use on any construction project. CONTRACTORS or construction personnel shall not take water from hydrants, blow-offs, water meter boxes, etc. CONTRACTORS desiring to use TOWN water for construction purposes shall apply to the DPW for water service and shall pay for the water service in accordance with the Town of Apex policies and requirements.

Bulk water for construction or other water requirements may be obtained at the Apex Public Works Department located at 105 Upchurch Street. Bulk water for construction may also be obtained from a fire hydrant using a Town approved meter with back flow preventer. Bulk water rates will be billed per load of water obtained. Bulk water rate is the current TOWN Outside Water Rate.

2.17 Street Lights

The Town of Apex will provide 1 street light at each intersection and 1 streetlight near the midpoint of each block or approximately every 300 feet in a residential area. The TOWN shall provide 1 streetlight at the midpoint of any cul-de-sac greater than 200 feet in length in

residential areas. Additional public street lighting is provided only in areas where needed for public safety, such as major intersections, the downtown area, and in cases of clearly defined need.

2.18 Guarantee

The DEVELOPER shall provide a guarantee as per Town of Apex Unified Development Ordinance, on workmanship and materials for a period of 1 year after the date of acceptance by the Town of Apex. Any defects observed within the 1 year guarantee period shall be repaired and/or replaced to the Town's satisfaction and the cost of such repairs shall be borne by the developer. The guarantee shall apply to street construction, sidewalks, water lines and appurtenances, sanitary sewers, storm sewers (including ditches, drainage channels, and appurtenances, etc.), pumping stations, force mains and appurtenances.