



COMMERCIAL CONSTRUCTION POLICIES AND INSPECTION PROCEDURES

Phone: 919-249-3418
Fax: 919-249-3407

Office Hours: 8:00 AM to 5:00 PM

Building/Construction Working Hours: **7:00 AM to 8:30 PM**

- 1) **Permit/Plan Review – N.C. State Building Code**
Refer to the Commercial Plan Review Checklist.
- 2) **Inspection Requests**
Inspection requests are made at the Permit Center of the Inspection Department in the Town Hall Building at 73 Hunter Street, or via the Inspection Request Line at 249-3388. It is the responsibility of the superintendent or building contractor to coordinate and ensure work is **complete** and **ready** for inspection. Only inspection requests from the contractor or designated representatives will be scheduled. Inspections requested prior to **2 p.m.** will be scheduled for inspection the next day. Inspection requests called in after **2 p.m.** will be scheduled for the day after. All inspections that are scheduled should be **ready** for an inspection at **8:00 a.m.** on the scheduled date. **All** cancelled inspections shall be cancelled via the inspection request line **prior to 8:00 a.m.** on the scheduled date.
- 3) **Inspections: NOTE** – Inspections listed on the permit card may not be applicable to all projects and there may be an instance where an inspection is needed that is not listed on the card. See page 5 for examples of “other inspections” requiring permits and inspections.
- 4) **Safety**: In order for the Town inspection representatives to perform their duties all safety elements and devices shall be in place in accordance with State and Federal standards. Areas of concern include, but are not limited to: trench protection, **temporary guardrails and handrails**, and ladder safety.

REQUIRED INSPECTIONS:

TEMPORARY BOARD

(Duke Energy & Town of Apex)

- Permit posted.
- Temporary Board in place, braced in (2) directions; maintain required working clearances in front of panel with meter ring on site if required.
- For **Progress Energy power**, line side wiring is not required to be installed.
- For **Town of Apex power**, trench in service laterals from the temporary board to the pedestal or transformer. Refer to Town of Apex specification standard 2.01 Trenches are to be a minimum of 24” deep and left open for inspection. Temporary boards are to be located approximately 3’ to the side, and 6” in front of the transformer or pedestal. A sufficient amount of free wire must be left to make up connections in the pedestal or transformer. (Approximately 3’ of free wire is sufficient for make up to a pedestal or installations on

right side of a transformer. At least 5’ of free wire is required to make up installations on the left side of a transformer, because the wire terminals are on the right side of the transformer vault.) For alternate locations contact the Town of Apex electrical inspector.

STORM DRAIN UNDERGROUND

A storm drainage system is piping that carries rainwater, surface water, condensate, cooling water or similar liquid wastes to the point of disposal. (Includes all storm drainage on private property)

Permit posted.

- Pipe material must be meet NC Plumbing Code chapter 11 criteria.
- Pipe laid in approved bedding material.
- Do not cover until approved in writing by the **plumbing inspector**.

STORM DRAIN FINAL

- Permit posted.
- All piping installed and the finish surface complete.
- Provide as-built drawings as required by the inspector.

INITIAL WATER METER INSPECTION

- Permit posted.
- Hose bibb with insulated pipe installed to a height of 24" above grade.
- Pipe must be rigid metal or supported to a braced post or equivalent.
- Minimum backflow protection of double check valve in place.

MONO SLAB/FOOTING INSPECTION

- Plumbing and electrical under slab inspected and approved prior to slab prep.
- Permit posted, approved building plans on site.
- Fill material in place (if applicable per plans).
- Footings excavated to stable soil, 12" minimum below grade and as specified by the design (cleared of all roots, stumps, loose earth, etc.).
- Forms in place (as noted on plans and a minimum of 8" above finished grade).
- Thickened footings in place.
- Perimeter insulation in place.
- Vapor barrier in place (no tears, edges lapped 6" minimum).
- Slab reinforcement in place on chair supports.
- Perimeter anchor bolts supported in place.
- If reinforcing steel is utilized in the footing then a 20' length of #4 bar must be turned up out of the footing at a length long enough to extend through the foundation for use as a grounding connection as required by NEC 250.52 **(It shall terminate at an accessible location)**

FOOTING INSPECTION

- Permit posted, approved building plans on site.
- Construction driveway in place.
- Trench and pier footings excavated to stable soil per engineer plans or a minimum 12" below grade; cleared of all roots, stumps, loose earth, etc.
- Grade markers in place (treated wood or metal).
- Bulk heads in place at step downs.
- Interior of foundation scraped and any organic material removed.
- All reinforcing steel in place (if required).
- Engineer sealed soils report required of filled lots and when the design specification for soil exceeds 2000 psf.
- If reinforcing steel is utilized in the footing then a 20' length of #4 bar must be turned up out of the footing at a length long enough to extend through the foundation for use as a grounding connection as required by NEC 250.52 **(It shall terminate at an accessible location)**.

PLUMBING UNDER SLAB INSPECTION

- Permit posted and approved plans on site.
- All PVC drain lines must be bedded on fine granular material for full length of pipe (PVC DWV pipe ASTM-F891 to be bedded with aggregate not to exceed 1/2" for angular stone).
- 10' head water test in place or 5 PSI air test.
- Stub up for water closet to be 4", or if 3" the pipe is to be wrapped at the slab level so that the outside collar on the closet flange can be installed without having to break the concrete around the pipe.
- **All plumbing lines** through the slab are to be **sleeved and/or wrapped** with 0.025" tick material.
- Building drain sleeved and sealed through the foundation wall, footing, or slab.
- Back water valve in place where required.

ELECTRICAL UNDER SLAB

- Permit posted and approved plans on site.
- All conduits installed per approved plans and properly bedded and secured in place.

SHEAR WALL & BRACE PANEL INSPECTION

- Permit posted, approved building plans on site.
- All bracing, blocking, anchors, and nailing patterns complete per design drawings.

SLAB INSPECTION (NON-MONOLITHIC SLAB)

- Permit posted, approved building plans on site.
- Plumbing and electrical under slab inspected and approved prior to slab inspection.
- Slab area prepared (report from soils engineer may be required for underlying soils).
- Perimeter insulation in place.
- Vapor barrier in place (no tears, edges lapped 6" minimum).
- Thickened footings in place.
- Slab reinforcement in place.

FOUNDATION INSPECTION

- Permit posted and approved plans on site.
- Foundation walls and piers in place. Mortar joints within allowable tolerances.
- Tops of footings cleaned off around perimeter walls on interior and exterior sides.
- Foundation bolts in place.
- Block cells prepped and reinforcing steel in place (if applicable).
- Styrofoam insulation installed, if applicable.

- **Note:** Inspection of steel reinforcement in forms may be required depending on design of concrete or grouted walls. Steel reinforcement and grout fill inspections may be done by third party agency when approved by the Building Official.

WATERPROOFING

- Permit posted; manufacturer's installation instructions on site.
- Foundation inspection passed.
- Drain tile, gravel and filter membrane installed.

DUMPSTER PAD

- Permit posted and approved plans on site.
- Dumpster pads shall be constructed in accordance with Town of Apex Standard Detail 2.02.
- All forms shall be in place for inspection.

EIFS INSPECTION

- Permit posted and approved plans on site.
- Manufacturer's installation instructions on site.
- Sheathing properly nailed.
- Approved vapor barrier properly installed.

ELECTRICAL UNDERGROUND

- Permit posted and approved plans on site.
- All conduits installed in trenches per approved plans and at proper depths as specified in the NEC Table 300.5.

DRIVEWAY

- Permit posted.
- Driveways shall be constructed in accordance with Town of Apex Standard Detail 3.07.
- All forms shall be in place for an inspection, including utility strip and sidewalk forms.
- Soil and debris shall be cleared from the curb 5' outside each curb cut.
- Curb cuts shall be smooth and free of cavities and protrusions.
- Sub grade shall be dry and compacted.
- An NCDOT encroachment agreement is required for all driveways constructed on state owned roads.
- Within the driveway approach, all broken gutter sections shall be removed and replaced maintaining 5' minimum between joints.

IRRIGATION

- Installed in accordance with Town of Apex Standard details 620.1 and 620.3.
- Permit posted and approved plans on site.
- Water service trenches open from the meter or tee to the RPZ valve. **Backflow shall be lead free type.**
- RPZ valve installed and braced on each side of RPZ with rebar or (other metal rod) and clamped to piping.
- Provide unions for removal of RPZ and protective enclosure on site or provide listed enclosure per ASSE 1060 with electric power for heat source.
- Rain sensor installed.
- Provide RPZ test report to Town of Apex Public Works Department.

FIRE RATED WALL

- Permit and approved plans on site.
- All applicable rough-in and insulation inspections completed and approved.
- All fire rated gypsum board fastened to studs per U.L. listed assembly on approved plans. Screw pattern inspected and approved prior to mudding and taping or covering by 2nd layer of gypsum board (if applicable).
- Gypsum board must be tight to floor and roof decking, outside walls, and around all beams.
- For I-beams exceeding 24" in width, vertical studs must be installed at beams to maintain screw pattern of UL assemblies.
- Fire rating integrity must be maintained with approved sleeves or intumescent collars around pipes penetrating walls.

FIRE RATED CEILING

- Permit and approved plans on site.
- All applicable rough-in and insulation inspections completed and approved.
- All fire rated gypsum board fastened to ceiling joists or roof trusses per UL listed assembly on approved plans. Screw pattern inspected and approved prior to mudding and taping or covering by 2nd layer of gypsum board (if applicable).
- Gypsum board shall be cut tight to all intersecting walls, columns, and beams.
- Fire rating integrity must be maintained with approved sleeves or intumescent collars around pipes penetrating ceiling.

INSULATION

- Permit posted and approved plans on site.
- Rough-in inspections completed and approved.
- Insulation installed per Energy Summary Sheet.
- Insulation properly installed in all areas that will be concealed by finish materials.
- **FSK type insulation** (foil backed) installed where vapor barriers are not in substantial contact with approved wall, ceiling, or floor material.

WATER AND SEWER INSPECTION

- Permit posted and approved plans on site.
- Water service line is to be installed completely from the connection to the meter yoke through the foundation/footing at a minimum depth of 12" below adjacent grade level.
- The sewer service line is to be installed completely from the point of connection provided by the utility through the footing/foundation wall of the building. The drain line through the footing (or foundation) is to be sleeved and sealed with a flexible mastic sealant at the time of this inspection. All PVC drain lines must be bedded on fine granular material for the full length of pipe (PVC DWV pipe ASTM-F891 to be bedded with aggregate not to exceed ½" for angular stone).
- Identifying ASTM numbers on the pipe are to be visible.
- Building sewer to have a minimum of 3" of cover.

ROUGH-IN INSPECTION

- Permit posted, approved building and plot plans on site.
- A) **Framing**: Completed as approved on the structural plan; including a "dried-in" building with roof flashing in place, all necessary structural components, beams, columns, etc. properly bolted and secured in place per approved plans. All corner and wall bracing completed with windows and exterior doors, etc. installed, such that, upon completion of the rough-in inspection, no further framing is required before interior or exterior finish materials are installed.
- B) **Plumbing**: All water supply and drain lines installed and tests for leakage in place; building drain run to exterior of building. Pipes properly supported; holes through plates fire stopped; water lines insulated (in unheated areas); and back water valves installed (where necessary). RPZ valves installed and supported per manufacturer and approved plans. Water test on at 105 psi, sewer test on with 10' static head.
- C) **Mechanical**: All duct work in place with all seams and joints properly sealed. Gas piping installed and under appropriate tests; refrigerant and condensate piping installed. All fire stopping around pipes completed.
- D) **Electrical**: Appliance, lighting, and receptacle wiring and boxes in place and grounded. Electrical panels installed with homeruns pulled into the panels. All cables and conduits properly secured and protected with fire stopping at plates.

ALL TRADE ABOVE CEILING

- Permit posted and approved plans on site.
- A) **Building**: Ceiling grid properly supported free from wires, cables, or other objects lying on grid. All walls above ceiling grid sheet rocked to the top plate of wall or fire stopped at the ceiling line between stud cavities. All penetrations properly sealed in fire rated walls.

- B) **Plumbing**: All water supply, drain and vent pipes completed and properly supported. Main vent run through roof and sealed. Water heater and drain pan installed, properly supported with the pan drain properly terminated. Water lines insulated (unheated areas). All other plumbing completed above ceiling. All penetrations sealed.
- C) **Mechanical**: All duct work installed, sealed and insulated, with all flexible ducts connected to supply or return grilles. Condensate and refrigeration lines installed and supported; all gas piping installed, supported, and labeled; all fire and smoke dampers installed (if applicable); all vents installed and properly terminated to the outside of the building. All penetrations sealed.
- D) **Electrical**: All conduits and boxes properly supported with covers on boxes; lights, fans, etc. supported and connected. All cables properly installed and supported. All penetrations sealed.

CONDITIONAL ELECTRICAL / MECHANICAL

- These are **optional** inspections that shall be **approved** before the final inspection. The building shall be energized and the electrical circuits utilized to help complete the final inspection.
- Complete the Application for Conditional Electrical/Mechanical Service.
- Contractors, subcontractors and property owners must sign the conditional power/mechanical request form.
- All panels must remain locked or the door to the electrical room must be locked, with keys available to the electrician and job superintendent only. If panels are not of the lockable type or not in an electrical room, a temporary enclosure shall be installed with a lockable door.

FIRE SUPPRESSION TEST

- Fire extinguishing equipment installed as designed and as required by the NC Mechanical Code section 509.
- Tests must be witnessed by the Fire Marshal or the Mechanical Code Official.
- Provide certification for the Ansul system (NFPA 17).

FIRE MAIN FLUSH TEST

- All underground fire main feeds are required to be flushed and GPM tested prior to connecting to the sprinkler piping.
- Schedule the test with the **Apex Fire Marshal** at 249-1032 or with the **Building Official** at 249-3388.
- Test and flush must be witnessed by the Fire Marshal or the Building Official.
- Make arrangements with the **Public Works Department** (249-3427) to **pay** for water used in testing.

FIRE SPRINKLER / STANDPIPE

- All sprinkler and standpipe installations must conform to NFPA 13 or 13 R as appropriate with 200 psi test pressure in place at the time of the rough-in inspection. RPZ valves installed and supported per manufacturer and approved plans.
- Provide certification for underground piping (NFPA 24) by the time of the final inspection.
- Provide certification for the sprinkler system (NFPA 13/13R) by the time of the final inspection.
- Provide certification for stand pipe installations (NFPA 14) by the time of the final inspection.
- Provide certification for alarm systems (NFPA 72) by the time of the final inspection.

FIRE INSPECTION FINAL

- A final fire inspection is required prior to issuance of a Certificate of Occupancy.
- Contact the Fire Marshal at 249-1032 to schedule the fire inspection.

LANDSCAPING/APPEARANCE FINAL

- A landscaping/appearance final inspection is required prior to the issuance of a Certificate of Occupancy.
- Contact the Planning Department (249-3333 / 3335) to schedule the landscaping/appearance final.

UTILITY/ SITE FINAL

- A utility/site final inspection is required prior to the issuance of a Certificate of Occupancy.
- Contact the Engineering Department (249-3386/3378) to schedule a utility/site final. Allow 48 hours' notice for this inspection.
- Approved bonds shall be delivered to the Engineering Division prior to scheduling a utility/site final inspection.
- Engineering inspection fees shall be paid prior to scheduling a utility final inspection.

SEDIMENTATION/EROSION CONTROL

- A sedimentation/erosion control final inspection is required prior to the issuance of a Certificate of Occupancy.
- Contact the Erosion Control Officer (249-3397) to schedule a sedimentation/erosion control final.

BUILDING FINAL INSPECTION

- All outstanding fees (including impact fees and re-inspection fees) must be paid **prior to scheduling** a final inspection.
- Permit posted; approved building and plot plans on site; all relevant inspections signed off on the permit card (including: **fire; soil and erosion control; utility; and landscaping final inspections**).
- All building components completed including: mechanical, electrical, and plumbing systems; handicap accessibility requirements; applicable Town of Apex Code of Ordinances requirements; and all other building and technical code requirements as specified by NC State Building Codes.

OTHER INSPECTIONS

1. Underground tanks (tank and piping inspections by the fire inspector; electrical inspections by the electrical inspector).
2. Interceptors – grease/oil/sand.
3. Swimming pool (electrical inspections).
4. Lift stations (plumbing and electrical inspections).
5. Signs (requires a separate permit).
6. Paint spray booths (mechanical, electrical, building, and fire inspections).
7. Retaining wall (requires a separate permit).
8. Special inspections for components requiring approval prior to rough-in inspection and/or concealment including grouting, bolting, welding, bond beams block columns, etc. Special inspections may be done by a third party agency when prior written approval by the Building Official has been authorized.

Commercial Projects Checklist for Certificate of Occupancy

- All bonds required by Engineering, Planning, or Public Works have been secured
- All fees paid (impact fees, transportation fees, capacity fees, re-inspection fees)
- The following inspections must be scheduled by the contractor. A Certificate of Occupancy **will not** be granted until approval is gained from each of the four (4) parties listed below.
 - Sedimentation/Erosion Control Final Inspection** – Public Works Dept. (249-3397)
 - Utilities/Site Final Inspection** – Construction Management Dept. (249-3386 / 3378)
 - Landscaping/Appearance Final Inspection** – Planning Dept. (249-3333 / 3335)
 - Fire Final Inspection** – Fire Marshal (249-3388)
- Welding Certification (NC Building Code 1704.1, 1704.3.1)
- Bolting Certification (for A325 high strength bolts, NC Building Code 1704.1, 1704.3.3)
- Building erection certification from the design engineer or special inspector (NC Building Code 1704.3)
- P.E. or Architect affidavit for safe floor load rating group S, F, & I (NC Building Code 102.2, 102.3)
- RPZ certification
- Certification for sprinkler system (NFPA 13)
- Certification for fire protection underground piping (NFPA 24)
- Certification for fire alarm system (NFPA 72)
- Certification for Ansul system (NFPA 17)
- Specifications of flame & smoke ratings of floors, wall, ceiling coverings
- Certification of pressure vessels (NC Department of Labor)
- Certification of boilers (NC Department of Labor)
- Certification for elevators (NC Department of Labor)
- Final approval from Wake County Environmental Services (well, septic tank)
- Flood Hazard certification (FEMA and calculated flood hazard areas)