

# PLANS SUBMITTAL REQUIREMENTS for commercial projects



Prepared by Mecklenburg County  
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700 North Tryon Street  
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The Commercial Projects Plan Summary has been developed to give you a clear understanding of the minimum requirements for submitting your project plans for review and to receive permits. This summary is divided into two categories: FULL/ADDITION (New Structure) and TENANT-UPFIT/ALTERATION/ RENOVATION. Each category lists the necessary information that shall be provided from the designer(s) for the project by construction discipline. Including all of the minimum information that is applicable to your project will allow the plan examiners to efficiently review your submission and provide written comments.



**Please Note: If you omit information that is indicated as necessary, your plans will be returned without review and your project may be delayed.**

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This document has been edited by the Department to reflect current processes.  
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For the latest updates look us up at:  
[www.meckpermit.com](http://www.meckpermit.com)

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## ***HOW THE SYSTEM WORKS***

### **GENERAL DESCRIPTION**

All commercial construction, including industrial, institutional, condos, apartments, sports facilities, and school construction within Mecklenburg County including Charlotte and the incorporated towns of Cornelius, Huntersville, Matthews, Pineville, Mint Hill, and Davidson, shall use these procedures and requirements. The office location is at 700 North Tryon Street, Charlotte, North Carolina 28202. See [www.meckpermit.com](http://www.meckpermit.com) for plan review options.

**NOTE: The towns of DAVIDSON and CORNELIUS perform their own zoning approval. Huntersville does its own for all new zoning ordinance projects. Customers shall have their Building Permit application forms signed off by the specific town's administrator prior to the plans being submitted for review. Davidson: (704) 892-5131; Cornelius: (704) 892-6031; Huntersville: (704) 875-6541.**

The commercial plan review division provides plan review and permitting services for all commercial projects in Mecklenburg County. There are several options available for projects that require plan review.

**OnSchedule Review** - The primary plan review system is called OnSchedule review. OnSchedule review is an appointment-based, plan review system that allows customers to know when their projects will be reviewed. It is necessary for the customer to submit an OnSchedule application to obtain a plan review appointment. Once the plans have been submitted through the gatekeeper for review, the review takes place the next business day. If the plans are disapproved, they are returned to the customer for revisions and resubmittal. If the plans are approved, a permit will be issued. Please see the OnSchedule Review section below for additional information.

**Express Review** - Another option for plan review is the Express Review program. This is an optional review process that requires all drawings to be sealed. The sealholders of record must be present at the time of review. There is an hourly plan review fee in addition to the regular permitting fees. It is necessary for the customer to submit an Express Review application to obtain an Express Review plan review appointment. Once the appointment has been established, the design team (sealholders of record) will meet at the Mecklenburg County Code Enforcement offices for the plan review. The project leader/contact person will be responsible for ensuring all required sealholders are present, the required number of sets are provided and all applicable paperwork is completed. The plans are reviewed for code compliance. Minor redlines are allowed to be made by the appropriate sealholder and, if the drawings are approved and all outside agencies have given necessary approvals, a permit will be issued within 48 hours. If drawings are unable to be approved at the time of the meeting, resubmittals will be made through the OnSchedule process. Please see the Express Review section below for additional information.

**Commercial Technical Answer Center** - Small projects may consider the Commercial Technical Answer Center (CTAC) review process. This process primarily accepts upfits, renovations and alterations of Business and Mercantile occupancies. The size of the project, based on square footage is flexible from 2500 – 7500 square feet. Office/Warehouse projects are allowed in the system under certain conditions. Call CTAC or visit their project types listed on [www.meckpermit.com](http://www.meckpermit.com) to verify current project types. This review process can typically be turned around in 5-7 business days. Requirements for submittal are two sets of drawings that

include an Appendix B, a completed Building Permit application (with all applicable contractor information provided), and an Address Verification form. These projects are submitted through the Gatekeeper. Please see the Commercial Technical Answer Center (CTAC) section below for additional review.

The CTAC area also answers general code questions by phone 704-336-3829 x 4 or in person, at our offices, 700 N Tryon Street 1<sup>st</sup> Floor.

**Sub-Permits** - Stand-alone permits may be issued for minor work on a case-by-case basis. Commercial SubPermits are handled through the Commercial Technical Assistance Center (CTAC). Customers are required to come in person to our offices at 700 N Tryon Street, 1st Floor. The appropriate sub-permit application must be completed and signed and accompanied by a completed and signed address verification form. If the sub-permit is for work being performed on a project under construction, please bring a copy of the approved drawings in order to verify the work being permitted. If the work being requested on the sub-permit application requires drawings, the customer will be notified and the customer will need to submit drawings for review, either through OnSchedule Review or CTAC review.

**Revision to Approved Plans** - When a permit has been issued for project construction and changes are required in the approved design before the project is completed, revisions to approved plans must be submitted. The plans will be reviewed through the same process as they originally were (ie, if they went through OnSchedule or Express review, submit an OnSchedule application and follow those requirements. If they went through CTAC review, submit through CTAC. Upon plan submittal, submit the approved field drawings (or copies that affect the Code with the examiner's sign off) and only those sheets that have been revised. Revisions must be clouded and revised dates modified. The number of sets of drawings varies depending on the number of reviewers affected. Your Coordinator will inform you of the required number of sets. If it is a CTAC review, the number of sets will be two. The drawings shall be 18" x 24" minimum. If the changes are approved, the field set will be revised to reflect the approved changes and released for construction. **There is a charge for this service.** The charge for the review is \$125.00 per hour, per trade.

**Preliminary Review** - A preliminary review meeting may be performed before the actual design is submitted for permitting. Potential code problem areas for the project being submitted for review/permitting should be identified by the designer. A preliminary review shall be performed for phased construction to determine the required phases and their associated design/drawings submittal requirements, submittal scheduling, and handling of code concerns for the actual review/permitting and the development of a Project Permit Master Plan for maga-projects. For projects utilizing phase construction, there should be an entry meeting prior to each submittal, and an exit meeting at the conclusion of the review cycle. The meetings are scheduled in advance and are held on Tuesdays and Thursdays between the hours of 2:00 p.m. and 5:00 p.m. Call an OnSchedule Coordinator for an appointment at (704) 336-3837, ext. 1.

**Professional Certification** – This is an option that allows professionals, qualified by the department as the designers of record to certify compliance, to hold a 90% preliminary review and receive a conditional permit as outlined in the Professional Certification Program document.

**Independent Contractor Review** - This option allows for contracting with department-approved third parties on specific qualified projects. Please contact Patrick Granson, Core Process

Manager of Commercial Plan Review and Permitting, for additional information on this process at 704-432-0081.

## OnSchedule Review

OnSchedule Plan review is the plan review option that gives customers the ability to control their permitting and construction schedule. With OnSchedule Plan Review, customers will know exactly when a review will be performed and how long it will take.

The vast majority of projects too large or complex for CTAC Review will be channeled through the OnSchedule Plan Review program. Conducted by a team of reviewers, most OnSchedule Plan Reviews will entail no more than eight hours of review time in each trade. The most crucial step in the process is the assigning of the required review time.

### A Step-by-Step Process

#### Step 1

Submit an OnSchedule application with an Address Verification Form. The Address Verification Form must have the customer portion completed and signed upon submittal. OnSchedule applications are available as a PDF from [www.meckpermit.com](http://www.meckpermit.com). The Plans Examiners will determine the length of review time needed. If you have questions, you may call one of the **OnSchedule Coordinators at 704-336-3837, ext. 1**

#### Step 2

##### **Review Slot notification:**

If the submitted data is **sufficient**, the OnSchedule Coordinator will call the contact person with notification of the review slot and the number of drawings needed for the review.

If the submitted data is **insufficient** to enable the Plans Examiner to assign a review time, the coordinator will call the contact person and will recommend a Preliminary Review or request additional information.

- Schedule a preliminary review with applicable plan reviewers.

#### Step 3

##### **Gatekeeping:**

All documents for OnSchedule Review must successfully pass through gatekeeping and into the OnSchedule Coordinator's hands by noon the working day before the date of scheduled review. Prior to entering the system, all projects will be screened by the Gatekeeper for adequacy of plans submittal requirement compliance. Complete projects will be forwarded to a coordinator. Incomplete projects will not be accepted into the system and will be returned to the customer. The customer is expected to wait during the gatekeeping process of the project. Any project "dropped off" will be returned without being gated (this does not apply to Fed Ex, UPS or DHL). All plans entering the system shall be complete and bound in appropriate sets (minimum 18" x 24"), **not to exceed 40 lbs. per volume**. Please note the Architect or lead Designer will be our point of contact. **Please sign in so that you are processed when it is your turn for your project.**

**NOTE: Drawings that are submitted that state NOT FOR CONSTRUCTION or FOR PLAN REVIEW ONLY will be returned WITHOUT ANY PLAN REVIEW FOR CODE COMPLIANCE. Drawings submitted for review shall be finalized design drawings ready “FOR CONSTRUCTION.”**

On Schedule reviews: Failure to gate the documents by at least one business day (by noon) before the review begins will result in charges of \$125.00 per hour, per trade. You must change a scheduled review at least five business days prior to scheduled date or risk paying the fee if we cannot fill the time slotted for review with other bookings.

**For Charlotte-Mecklenburg Projects, The Following Are Required:**

1. A completed building permit application with its valid address verification form. The permit shall be complete with all contractors’ license numbers, designated costs, and permit type, etc. NOTE: for multiple buildings or tenants there shall be a permit for every tenant and every building. You must complete the PROJECT SUBMITTAL form that applies to the type of permit you are requesting. You shall have a completed address verification form from Mapping/GIS (call Addressing at 704 336-6175 for requests) before entering the process. The gatekeeper will ask for the completed and signed address verification form before the plans for the projects are accepted into the system for review.
2. When your project is accepted, an entry a fee of 25% of the permit costs may be charged.
3. Construction documents with complete Building Code Summary (Appendix B) and the site and landscape plans. (Site, zoning, architectural documents, structural, fire protection, utilities-fire, plumbing, mechanical, and electrical plans.) The number of sets of construction documents shall be as advised by the Coordinator at the time the project is booked for review.
4. If the address is in the City of Charlotte or its ETJ, **an additional six sets of site plans are required for City Engineering** in order to determine site improvements required for this project. City Engineering will notify the customer of the applicable requirements.
5. If the project is one that requires review by the Department of Insurance (DOI), and the Office of the State Fire Marshal (OSFM), their approval shall be received before the permit(s) will be issued. Typical OSFM project review includes buildings over 10,000 sq. ft. owned by City or County governments.
6. Institutional projects will require the customer to obtain a review by the Department of Facilities Services (DFS). A separate set of construction documents must be submitted directly to DFS by the customer.

There are two gatekeeping options available.

**1. Pre-gatekeep:**

Arrange a meeting with gatekeeping staff before the scheduled review. We encourage early gatekeeping to ensure your documents are ready. Call **704-353-0522** to schedule a pre-gatekeeping meeting.

**2. Gatekeeping on Submission:**

Submit the plans and required paperwork with the gatekeeper within five business days before your scheduled review. The Gatekeeper routes them to the OnSchedule Coordinator assigned to your project.

*Customers should note it is critical to successfully complete gatekeeping before noon the working day before your schedule review.*

## Step 4

The project coordinator assigns the project tracking number once the plans are in house. The project contact representative is informed of this number by automated email when the coordinator enters the project into the system. The coordinator assigns the reviews and/or holds required projects to be cleared before any permit(s) may be issued. The project number is required to track your project. The project number must be provided when inquiring about your project. The required plans examiners perform the plan review. A computer-generated notification is forwarded to the examiner's work plate in the order received. After reviewing the drawings for code compliance, the examiner will enter results in the computer. The customers may review comments and project status online. For disapproved projects, the Land Development System will email comments to the lead Designers as each discipline closes. For project status, contact your coordinator or by Internet at [www.meckpermit.com](http://www.meckpermit.com).

### **Plans are Approved:**

When all reviews are completed (approved or disapproved), the Land Development System notifies the coordinator, who then notifies the project's contact person that the documents are ready to be picked up. A permit will be issued within 48 hours, subject to completion of the permit application and outside agency approval. Once your project is approved and the permit is ready to be released, you will be required to pay all associated fees from the permitting process or charge it to your account before the permit will be released. The department's permitting software provides the minimum construction cost (based on ICC standards), which is used to verify the minimum permit cost. The drawings are sent to the Commercial Permit counter to hold for customer pick up. When you pick up the drawings, they are logged out to you and released to your custody.

Please recognize that although we interact with some outside agencies; we have **no control** over other agencies' work scheduling or requirements. Plans are sent to City Engineering daily. It is the customer's responsibility to provide submittals and obtain their approvals before a permit will be issued from the OSFM, the Health Department, and others, if required.

Contractors must be bonded to work in Mecklenburg County.

Construction documents shall be picked up within five days of notification.

*If no response is received the submitted project shall be discarded(recycled).*

### **Plans are not Approved:**

When a project fails in any trade, it is the customer's responsibility to have the drawings corrected and resubmitted for plan review. It is highly recommend that you submit the re-review form for an appointment, immediately after you are notified to pick up documents. If there are any questions about the code or interpretations, contact the plan examiner(s) who reviewed the drawings. They will discuss the needs and evaluate options, if you propose them. They will not recommend design changes; they will only review your proposed design for code compliance, not for design quality.

When resubmitting drawings, ALL revised sheets shall be submitted at the same time. Return all sets of the original drawings with the revised drawings. Re-submittals shall be accompanied by written responses to all Plan Review comments. Revisions on plans **shall be clouded and dated.** To return the drawings for re-review, sign in with the Gatekeeper Staff. The Gatekeeper will screen the revisions for re-submittal requirement compliance. Completed revisions will be given to the coordinators for entry into the Land Development system and distribution of work. Incomplete re-submittals will be returned to the customer. If your project exceeds two reviews,

you will need to pay a re-review fee of \$125.00 per hour, per discipline. Additionally, if a sheet(s) are significantly revised or reissued in total after the first review, the same re-review fee of \$125.00 will be charged as above.

Your assigned coordinator is your representative within the system and is your contact for all issues relating to your project status. The Gatekeepers will screen all submittals and re-submittals before entry into the system. If you have questions on code needs or interpretations, contact the plan examiner(s) assigned to your project.

## **Express Plan Review**

Express Plan Review is an optional review process that presents an opportunity for individuals to have their plans reviewed by Plan Examiners in person. This program boasts a high success rate and it is typical for a Building Permit to be issued within 48 hours of the review if all of the criteria is met.

The requirements for Express Plan Review differ from the regular system in a few ways. The major differences are:

- All plans must be sealed by a NC Licensed Architect/Engineer
- All design professionals must be present at the time of the scheduled appointment
- There is a fee of \$800.00/hr for interior work, \$950.00/hr for exterior work. This is in addition to standard permitting and review fees.

Please refer to the Express Plan Review document for the complete details on this program. You may also contact the Express Review Coordinator at 704-336-4963.

## **CTAC Review**

Small projects will be channeled through Commercial Technical Assistance Center (CTAC).

### **A Step-by-Step Process**

#### **Step 1**

- Submit project to Gatekeeper. You will need to submit the following:
- 2 sets of drawings with a completed Appendix B
- 1 completed Building Permit application(with contractor/sub-contractors/cost of construction)
- 1 address verification form

#### **Step 2**

Once project is accepted, the review is performed on a first-in, first out basis.

#### **Step 3**

CTAC review is typically a 5-day review process and approved projects will be issued permits at the time of approval, subject to permit application completion.

Disapproved projects will be returned with comments summarizing the defects.

## **Project Types**

The following project list indicates projects generally thought to be eligible for Commercial Walk-Through Review (CTAC Review). Note: Customers should confirm eligibility for CTAC review in advance. Those project which CTAC cannot review will be referred to the On-Schedule Plan Review system. The Gatekeeper will make the final decision/determination of specific project eligibility.

- Handicapped Ramps
- Deck Additions
- Interior Upfits, Business and Merchantile occupancy, 2500 sf and less(May go to 5000 or 7500 square feet depending on CTAC workload)
- Business and Merchantile renovations of areas up to 2500 sf
- Small additions, up to 400 sf\*
- Accessory buildings up to 400 sf\*
- Bathroom additions and renovations up to 1000 sf\*
- Minor fire/smoke repairs and minor structural fire repair\*
- Special events and amusements (tents, haunted houses, NCAA events, golf events, NASCAR events, NBA events, NFL events)
- Interior pre-fabricated offices (modular petitioning)
- Canopies
- Co-locations on communication towers
- Grease interceptors
- Oil/water separators
- Adding new plumbing, electrical, and mechanical (less than 5000 sf)
- Pedestrian bridges not connected to buildings
- Parking lots
- Façade changes\*
- Hood replacements
- Above ground tanks
- Pools (only if part of a pre-approved project by Zoning)
- Office/Warehouse with an office area up to 5000 square feet and warehouse area unlimited with no work being performed in the warehouse area

\*Projects within the following Zoning Districts are not eligible for the Walk-Through Process: Historic Landmark, Historic District, MUDD, UMDD, PED, TOD, & UR.

The Walk-Through Process (CTAC Review) will not review projects that are:

- Change of occupancies/use
- Assembly occupancy
- Medical offices
- Daycare
- Hazardous occupancies and equipment
- Factory/industrial occupancies
- Dry cleaners using hazardous materials
- Live/Work Units
- High Piled Storage (Over 10')

## Definitions:

- Full -** A project from the site work through the completion of work required for tenant occupancy.
- Upfit -** The first upfit to a virgin shell space. Must provide a copy of the approved shell drawings for the entire building.
- Alteration -** The modifying of space(s) to create more or less tenant space(s).
- Addition -** An existing building that is added on to for more space, more tenants etc.
- Renovation -** The reworking of previously occupied space, but the space and use remain the same.
- Change of Use -** The changing of classification of a building or space within a building and requires the building to meet the requirements of all current codes for the new use.
- Mega-Project -** Mega projects are those identified as unusually large or complex in nature. Some examples would be High Rise, Large Schools, Malls, Large Mix Use Project, Airports, Stadiums, Waste Water Treatment Plants, and Arenas. A project may also be determined to be a mega by the plans examiners upon examination of an OnSchedule Plans Submittal Form. This can be based on the Square Footage of an unlimited size building or special requirements that are addressed in Chapter 5 of the North Carolina Building Code. Some examples would be Atriums, Special Amusement Events and Air Craft hangers.

## Phased Construction:

- Phased Construction -** Very Large projects are allowed to be broken into smaller pieces to assist design and construction needs. Breaking down a project into small logical construction/permit phases allows construction while finalizing the design requirements. The designer is proceeding at his/her own risk. If previous phases do not meet code for the final design, the project may require extensive reconstruction and modification to complete the work to meet the final design code requirements. The phases are footing/foundation, structural frame, shell, and shell with core. Phased construction **requires an additional fee** beyond standard full construction cost fee(s). Each additional phase will require a separate fee. A preliminary review is required to determine phases, information required, and timetables. **Entry and exit reviews may be required on extremely large projects by the plans examiners.**

Some projects, considered mega-projects, will require a Project Permit Master Plan. A Master Plan packet will be forwarded to the established contact and should be considered prior to the preliminary meeting. Designers are expected to discuss a Master Plan template at the

preliminary review meeting. A signed Master Plan must be in place before the OnSchedule Coordinator will schedule review time for the shell/core portion of phased construction. This Master Plan will then be utilized to establish a hierarchy of individual permits which will dictate when Certificates of Occupancy will be issued for portions of the project. More information about the Project Permit Master Plan program can be found on [www.meckpermit.com](http://www.meckpermit.com).

**Footing/Foundation:** The following is a **general** definition of a footing/foundation of a building as defined by Mecklenburg County Code Enforcement. The definition consists of 4 parts: Building, Electrical, Mechanical and Plumbing.

**Note:**

1. This document explains the type/amount of work allowed for phased construction. It does not change the submittal requirements necessary for permitted work that is explained in the Plan Submittal Requirements Document, which also applies to all phased construction. This information begins on page 20.
2. Permit and plan must agree in scope.
3. **NO TENANT RELATED WORK IS ALLOWED WITH THIS PERMIT.**
4. **Documents/Plans will not be accepted for review that exceed the minimum phase design requirements listed below.**

**Building:**

The footing/foundation of a building includes the following:

- Footings
- Foundation
- Slab (as desired by the customer)

**Electrical:**

1. Footing/Foundation: Permit Options: No Work/No Permit/No Inspections, Footing/Foundation/Slab: Permit Options: Empty Conduits that are underground and/or in slab only will be permitted. The footing/foundation/slab permit DOES NOT include subsequent floors, only the lowest slab conduits and ground grid. The conduits are installed entirely at the risk of the designer and contractor.
2. Empty Conduits in decks: If above the lowest slab conduit is desired show type, size, and location. Permitting is required for each floor individually. The conduits are installed entirely at the risk of the designer and contractor.

**Mechanical:**

**NO HVAC EQUIPMENT, FLUES OR GAS PIPING ABOVE GRADE WILL BE ALLOWED.**

*The Mechanical Plans Reviewer or Mechanical Chief may allow exceptions on a case by case basis.*

**Plumbing:**

Plumbing is limited to the building drain and associated piping below the concrete slab. **NO PIPING EQUIPMENT OR FIXTURES ABOVE THE SLAB ALLOWED.**

NOTE: The Plumbing Plans Reviewer **does not** review for fixture counts at this phase. Fixture counts are reviewed during upfit review where the type of occupancy is known. Dotted in fixtures and piping (future or anticipated) shown on the shell drawings shall not be reviewed for code compliance.

*The Plumbing Plans Reviewer or Plumbing Chief may allow exceptions on a case by case basis.*

**Structural Frame:** The following is a **general** definition of a structural frame of a building as defined by Mecklenburg County Code Enforcement. The definition consists of 4 parts: Building, Electrical, Mechanical and Plumbing.

**Note:**

1. This document explains the type/amount of work allowed for phased construction. It does not change the submittal requirements necessary for permitted work that is explained in the Plan Submittal Requirements Document, which also applies to all phased construction. This information begins on page 20.
2. Permit and plan must agree in scope.
3. **NO TENANT RELATED WORK IS ALLOWED WITH THIS PERMIT.**
4. **Documents/Plans will not be accepted for review that exceed the minimum phase design requirements listed below.**

**Building:**

The structural frame of a building includes the following:

- Footings
- Foundation
- Structural frame including any fireproofing relating to structure.
- Slab (as desired by the customer)

**Electrical:**

1. Footing/Foundation: Permit Options: No Work/No Permit/No Inspections, Footing/Foundation/Slab: Permit Options: Empty Conduits that are underground and/or in slab only will be permitted. The footing/foundation/slab permit DOES NOT include subsequent floors, only the lowest slab conduits and ground grid. The conduits are installed entirely at the risk of the designer and contractor.
2. Empty Conduits in decks: If above the lowest slab conduit is desired, you must show type, size, location. Permitting is required for each floor individually. The conduits are installed entirely at the risk of the designer and contractor.
3. Structural Frame: Empty conduit in poured structural frame is allowed. Permitting is required for each floor individually. The conduits are installed entirely at the risk of the designer and contractor.

**Mechanical:**

**NO HVAC EQUIPMENT, FLUES OR GAS PIPING ABOVE GRADE WILL BE ALLOWED.**

*The Mechanical Plans Reviewer or Mechanical Chief may allow exceptions on a case by case basis.*

## **Plumbing:**

Plumbing is limited to the building drain and associated piping below the concrete slab. **NO PIPING EQUIPMENT OR FIXTURES ABOVE THE SLAB ALLOWED.**

NOTE: The Plumbing Plans Reviewer **does not** review for fixture counts at this phase. Fixture counts are reviewed during upfit review where the type of occupancy is known. Dotted in fixtures and piping (future or anticipated) shown on the shell drawings shall not be reviewed for code compliance.

*The Plumbing Plans Reviewer or Plumbing Chief may allow exceptions on a case by case basis.*

**Shell:** The following is a **general** definition of a shell of a building as defined by the Mecklenburg County Code Enforcement Chiefs. The definition consists of 4 parts: Building, Electrical, Mechanical and Plumbing.

## **Note:**

1. This document explains the type/amount of work allowed for phased construction. It does not change the submittal requirements necessary for permitted work that is explained in the Plan Submittal Requirements Document, which also applies to all phased construction. This information begins on page 20.
2. Permit and plan must agree in scope.
3. If a sprinkler system is installed during the winter months, a heating system may be installed to prevent freezing pipes. The Electrical and /or Mechanical Plan Reviewer or the Electrical/Mechanical Chief may allow for this exception on a case by case basis.
4. **NO TENANT RELATED WORK IS ALLOWED WITH THIS PERMIT.**
5. **Documents/Plans will not be accepted for review that exceed the minimum phase design requirements listed below.**
6. For mega-projects requiring a Master Plan, no shell or shell/core review times will be scheduled prior to the submission of a signed Master Plan Agreement.

## **Building:**

The shell of a building includes the following:

- Footings
- Foundation
- Structural frame including any fireproofing relating to structure.
- Floor slab/deck
- Exterior insulation
- Exterior walls including all exterior windows and doors
- Roof

## **Electrical:**

1. Footing/Foundation: Permit Options: No Work/No Permit/No Inspections, Footing/Foundation/Slab: Permit Options: Empty Conduits that are underground and/or in slab only will be permitted. The footing/foundation/slab permit DOES NOT include subsequent floors, only the lowest slab conduits and ground grid. The conduits are installed entirely at the risk of the designer and contractor.

2. Empty Conduits in decks: If above the lowest slab conduit is desired, you must show type, size, location. Permitting is required for each floor individually. The conduits are installed entirely at the risk of the designer and contractor.
3. Structural Frame: Empty conduit in poured structural frame is allowed. Permitting is required for each floor individually. The conduits are installed entirely at the risk of the designer and contractor.
4. House panel (located on the exterior or exterior access only electrical room) to supply the exterior lights, receptacles and required loads (i.e. fire alarm, fire pump, and accessories).

### **Mechanical:**

(See Mechanical Code Interpretation dated July 1, 1997)

**NO HVAC EQUIPMENT, FLUES OR GAS PIPING ABOVE GRADE WILL BE ALLOWED.**

*The Mechanical Plans Reviewer or Mechanical Chief may allow exceptions on a case by case basis.*

### **Plumbing:**

(See Plumbing Code Interpretation dated March 19, 2001)

Plumbing is limited to the building drain and associated piping below the concrete slab, a water distribution MAIN with associated service valves, a building sewer, a building water service, and roof drains/scuppers. **NO PIPING EQUIPMENT OR FIXTURES ABOVE THE SLAB ALLOWED.**

#### NOTE:

1. A pressure reducing valve (PVR) may be required if the pressure exceeds 80 psi.
2. The Plumbing Plans Reviewer **does not** review for fixture counts at this phase. Fixture counts are reviewed during upfit review where the type of occupancy is known. Dotted in fixtures and piping (future or anticipated) shown on the shell drawings shall not be reviewed for code compliance.

*The Plumbing Plans Reviewer or Plumbing Chief may allow exceptions on a case-by-case basis.*

### **Fire:**

At the shell phase CFD requires full compliance with the NC State Fire Code and referenced standards.

**Shell with Core:** The following is a **general** definition of a shell of a building with a core, as defined by the Mecklenburg County Code Enforcement Chiefs. The definition consists of four parts: Building, Electrical, Mechanical and Plumbing.

Definition of a "CORE": The common areas that are used by all the building tenants and visitors. The common areas consist of, but are not limited to, the following:

1. Stairs
2. Elevators
3. Bathrooms
4. Corridors
5. Electrical Room

During a preliminary plan review meeting, the extent of the Building Shell with a Core shall be defined with the appropriate Plan Reviewers. To set up a Preliminary Plan Review meeting please call an OnSchedule Coordinator at 704-336-3837.

For mega-projects requiring a Master Plan, no shell or shell/core review times will be scheduled prior to the submission of a signed Master Plan Agreement.

**NOTE:**

1. This document explains the type/amount of work allowed for phased construction. It does not change the submittal requirements necessary for permitted work. That is explained in the Plan Submittal Requirements Document, which also applies to all phased construction. This information begins on page 20.
2. Permit and plan must agree in scope.
3. **NO TENANT RELATED WORK IS ALLOWED WITH THIS PERMIT.**
4. **Documents/Plans will not be accepted for review that exceed the minimum phase design requirements listed below.**

**Building:**

The shell with a core of a building includes the following:

- Footings
- Foundation
- Structural frame, including any fireproofing relating to structure.
- Floor slab/deck
- Exterior insulation
- Exterior walls, including all exterior windows and doors
- Roof
- Bathrooms relating to the use by all the building tenants
- Elevators and Elevator shaft(s)
- Exit stairs and stair shaft(s)

**Electrical:**

1. Footing/Foundation: Permit Options: No Work/No Permit/No Inspections, Footing/Foundation/Slab: Permit Options: Empty Conduits that are underground and/or in slab only will be permitted. The footing/foundation/slab permit DOES NOT include subsequent floors, only the lowest slab conduits and ground grid. The conduits are installed entirely at the risk of the designer and contractor.
2. Empty Conduits in decks: If as above, the lowest slab conduit is desired, you must show type, size, location. Permitting is required for each floor individually. The conduits are installed entirely at the risk of the designer and contractor.
3. Structural Frame: Empty conduit in poured structural frame is allowed. Permitting is required for each floor individually. The conduits are installed entirely at the risk of the designer and contractor.
4. House panel (located on the exterior or exterior access only electrical room) to supply the exterior lights, receptacles and required loads (i.e. fire alarm, fire pump, and accessories).
5. The service to the building, core feeders, core panels, core lighting, core receptacles, core equipment, and core HVAC.

## **Mechanical:**

(See Mechanical Code Interpretation dated March 4,2000, updated on March 4, 2004)

Core Facilities (Def.): A space that contains adequate plumbing fixtures for the floor, is directly accessible through direct openings or corridors from all tenant spaces, and is fully handicapped accessible.

*The Mechanical Plans Reviewer or Mechanical Chief may allow exceptions on a case-by-case basis.*

### **Multi-Story (Central HVAC)**

Mechanical systems shall consist of the supply/return duct, HVAC equipment, gas piping, bathroom exhaust, and water heater flue installed within and limited to the Core space and may include major trunk duct system to tenant spaces. It shall not include branch duct systems to diffusers within tenant spaces.

### **Single-Story:**

Mechanical systems are limited to the supply/return duct, HVAC equipment, gas piping, bathroom exhaust, and water heater flue installed within and limited to the CORE space. No HVAC EQUIPMENT, FLUES, OR GAS PIPING ABOVE GRADE designed to serve any space(s) other than the Core will be allowed.

### **Exception:**

1. *Buildings utilizing a central HVAC system may stub trunk duct into future tenant space(s) and duct SHALL terminate at the VAV box or cap for future tenant upfit work/permit.*
2. *Where there is the need to provide a shell structure with a conditioned corridor and/or elevator(s) and without core restrooms (provided within tenant spaces), the designer shall designate the submittal "Shell with Core, NO RESTROOMS."*

## **Plumbing:**

(See Plumbing Code Interpretation dated March 4, 2000, updated on March 24, 2004)

Plumbing is limited to the building drain and associated piping below the concrete slab (CORE ONLY), a water distribution MAIN (above or below the slab) with associated service valves (only), a building sewer, a building water service, and roof drains/scuppers. It also includes DRY/WET upfit stacks and DWV or water distribution piping installed within and limited to the CORE space. NO piping (except Dry/Wet stacks), equipment or piping above the slab, located outside the core space, serving the tenant space is allowed.

*The Plumbing Plans Reviewer or Plumbing Chief may allow exceptions on a case-by-case basis.*

*Exception: Where there is the need to provide a shell structure with a conditioned corridor and/or elevator(s) and without core restrooms (provided within the tenant space), the designer shall designate the submittal "Shell with Core, NO RESTROOMS."*

## **Fire:**

At the shell/core phase, CFD requires full compliance with the NC State Fire Code and referenced standards.

## Fire Alarm and Fire Sprinkler Submittals:

This is a separate path for Fire Sprinkler, Standpipe and Alarm shop drawings. Shop drawings are required by the Charlotte Fire Department to be submitted within 90 days of permit issuance.

## Special Inspections:

Please refer to [www.meck-si.com](http://www.meck-si.com) for comprehensive information relating to projects that require special inspections per Chapter 17 of NCSBC.

## North Carolina Rehabilitation Code:

Please refer to [www.ncrehabcode.com](http://www.ncrehabcode.com) for comprehensive information relating to projects designed under the Rehabilitation Code.

## ENERGY CODE REQUIREMENTS

### When Required:

**New Construction:** Compliance with the Energy Code is required on any new construction project receiving its building permit after 7/1/96.

**Renovation:** Compliance with the Energy Code is required on renovation of any building that received its original building permit after 7/1/96. Compliance is not required on any other renovation except for the electrical work. Where the existing luminaries are simply relocated and refurbished, no electrical compliance is required. Where the luminaries are replaced with new luminaries, all the new luminaries must comply with the applicable use requirements of the Energy Code.

**Upfit:** Compliance with the Energy Code is required on an upfit if the building shell received its original building permit after 7/1/96. Compliance is not required on other upfits except for the electrical work. Where the existing luminaries are simply relocated and refurbished, no compliance is required. Where the luminaries are replaced with new luminaries, all new luminaries must comply with the requirements of the Energy Code.

### General Requirements

New construction shall meet the requirements of the Energy Code, except for those buildings or portions of buildings intended primarily for manufacturing or industrial processing (See Energy Code for specific exceptions, electrical not exempted.) Shell buildings are exempt from thermal envelope provisions until a permit application is submitted for heating and/or cooling system. Additions shall comply with the requirements for new construction if the new assemblies, systems or equipment can independently satisfy the Energy Code without requiring modifications to existing components that remain in place.

### Architectural Documents

Demonstrate compliance with the thermal envelope provisions of the Energy Code by one of these methods:

1. **Prescriptive** – Provide a complete description of each assembly listed in the Building Code Summary and certify compliance by the responsible designer.
2. **Performance** - Provide a summary sheet from the ASHRAE/IESNA 90.1 computer program and certify compliance by the responsible designer

## **Mechanical**

Demonstrate compliance with the building mechanical systems and equipment provisions of the Energy Code by one of these methods:

1. **Prescriptive** – Provide complete description of design conditions and equipment efficiencies listed in the Building Code Summary and certify compliance by the responsible designer.
2. **Performance** - Provide summary sheet from the ASHRAE/IESNA 90.1 computer program and certify compliance by the responsible designer.

## **Electrical**

Demonstrate compliance with the electrical power and lighting provisions of the Energy Code by one of these methods:

1. **Prescriptive** – Provide complete description of lighting and equipment motor schedules listed in the Building Code Summary and certify compliance by the responsible designer.
2. **Performance** - Provide summary sheet from the ASHRAE/IESNA 90.1 computer program and certify compliance by the responsible designer.

## **Energy Code General Requirements For Existing Buildings**

Alteration, repair, or rehabilitation may be made to existing buildings without requiring the entire building to comply with the requirements of the Energy Code, provided you meet the minimum standards of the code under which the building was built. Portions of renovation shall comply with the requirements for new construction if the new assemblies, systems or equipment can independently satisfy the Energy Code without requiring modifications to existing components that remain in place.

## **DEMOLITION**

Demolition Permits must be obtained prior to the demolition of any existing building or structure located in the City, Towns or County. The Code Enforcement Department issues demolition Permits. Prior to the issuance of the permit, approval must be obtained from the Mecklenburg County Health Department and the Department of Environmental Protection (MCDEP). You will have to submit a NESHAP (National Emission Standard for Hazardous Air Pollutants) notification form to MCDEP in order to obtain its approval. The form must be submitted at least ten days before any demolition begins.

## **RENOVATION PROJECTS WITH THE REMOVAL OF ASBESTOS**

You are required to submit a NESHAP notification form to Mecklenburg County Department of Environmental Protection for any renovation project in which the removal of asbestos is necessary. This form must be submitted at least ten working days prior to the start of any asbestos removal.

**FYI**

You may purchase the *Necessary Codes* by calling either:

**International Code Council** OR  
900 Montclair Road  
Birmingham, AL 35213  
(800) 786-4452

**Office of the State Fire Marshall OSFM**  
[www.ncdoi.com/OSFM/](http://www.ncdoi.com/OSFM/)  
Code Council Section  
322 Chapanoke Road  
Raleigh, NC 27611  
(919) 661-5880

## ***COMMERCIAL CONSTRUCTION – Full Permit and additions***

### **FULL PERMIT AND ADDITIONS**

The following checklist is to be used for the review of all new (FULL AND ADDITION) commercial construction projects. **Construction documents shall be complete relative to the requirements listed below when submitted for permit review. Incomplete drawings will be returned without a review.** Construction changes after a permit is issued require re-review of the drawings with the proposed changes. This may void the original permit with a new permit issued only after the design changes are approved and may be subject to additional fees based on the additional work. The drawing submittal requirements, as listed below, are divided into **General Requirements, Site, Architectural, Structural, Plumbing, Mechanical, Electrical and Fire Protection. Drawings are expected to be one of the standard scales.**

**Note: The information is required for each respective discipline; however, in most cases, it need not be within the disciplines drawings nor repeated within the disciplines drawings, if the information exists within the drawing set.**

#### **General Requirements**

- \_\_\_ a. A Building permit application shall be completed in its **entirety** and shall accompany each submittal for review (minimum one (1) permit per building). This includes designating contractors, costs and the specific use of the property. Permit applications will NOT be accepted until complete.
- \_\_\_ b. New buildings and additions **shall be accompanied by an address verification form issued by GIS.** All documents shall be dated and signed by the designer. Professional seals, when required, shall appear on all sheets and be signed and dated by the designer. Note: wet seals are not required on our copies. The originals must be sealed and signed before printing.
- \_\_\_ c. Submit copies for each discipline, along with two additional copies, to office and field of all project drawings (minimum size 18" x 24") drawn to scale in U.S. Units must have sufficient detail to fully indicate the nature and scope of work to be permitted. Drawings that are not legible or have text that is too small to read will be returned without review.
- \_\_\_ d. For projects involving new construction or additions within the City of Charlotte, you must submit six additional site plans with applicable driveway permits.
- \_\_\_ e. Building Code Summary (Appendix B) shall be reproduced on the drawings (first or second sheet) with all applicable sections completely filled out, including the Energy Code calculations/data. The Electrical and Mechanical portions may be on their respective design documents. Building Code Summary shall be sealed if other sheets of the plan are sealed. Special inspection: provide scope of special inspection for the code summary appendix.
- \_\_\_ f. All documents and specifications shall contain information (in the form of notes or otherwise) on the technical properties of building materials to be used, when such properties are essential to show compliance with technical building codes.
- \_\_\_ g. For new construction project located within the City of Charlotte, street addresses shall be posted in accordance with Chapter 19 of the City Code.

## ***COMMERCIAL CONSTRUCTION – Full Permit and additions (cont...)***

### **Reference Documents**

When previously approved documents (Drawings and/or Specifications) are referenced from your submittal documents, you shall provide approved field set for review information. Field set may be original or reproduction; however, it shall bear plan review stamp and signatures of examiners.

**When doing the first upfit in a shell building, provide a copy of the original approved shell drawings.**

### **Site and Zoning Plans (Refer To General Requirements)**

**Note: The information is required for each respective discipline; however, in most cases it need not be within the discipline’s drawings nor repeated within the discipline’s drawings if the information exists within the drawing set.**

- \_\_\_ a. Site plans shall be prepared to scale, with legend, north arrow, and vicinity map. All drawings shall be sealed, signed, and dated, by the project designer.
- \_\_\_ b. Show the correct street address, parcel number, and zoning on the site plans.
- \_\_\_ c. Show and identify all property lines and rights-of-way, with distance from property lines and adjacent buildings on site plans.
- \_\_\_ d. Show handicapped parking spaces and signage per NCSBC Vol. 1-C and on site plan
- \_\_\_ e. Show handicapped curb cuts and access ways to the building
- \_\_\_ f. Show all existing and proposed driveway entrances.
- \_\_\_ g. Identify adjacent land uses and zoning.
- \_\_\_ h. Show all easements, flood ways, and required buffers
- \_\_\_ i. Show existing and proposed utilities (with backflow preventers) to serve the site.
- \_\_\_ j. Show existing and proposed grades.
- \_\_\_ k. Identify all borrow and spoil areas.
- \_\_\_ l. Show details, sections, and elevations needed for construction.
- \_\_\_ m. Provide approved conditional district plans before the project can be reviewed.
- \_\_\_ n. Show all buffer and screening landscaping, including plant locations, sizes and species.
- \_\_\_ o. Show all required parking and loading spaces and calculations.

***The City of Charlotte Zoning Ordinance can be accessed via the Internet at:***  
<http://www.charmeck.org/Departments/Planning/Home.htm>

### **Engineering Land Development Commercial Requirements**

The Land Development Review consists of the following requirements:

#### **Erosion Control/Grading**

Erosion control plan is required for sites with land disturbances over one acre.

#### **Drainage and Detention**

Drainage review and approval is required for 20,000 square feet of impervious surface or if drainage systems connect into public drainage systems.

## **COMMERCIAL CONSTRUCTION – Full Permit and additions (cont...)**

### **SITE AND ZONING PLANS cont....**

#### **Floodway Requirements ([www.stormwaterservices.com](http://www.stormwaterservices.com))**

- \_\_\_ a. If project involves land activities within a FEMA regulated floodplain, you must provide a Floodlands Development Permit Application, which must be approved by Mecklenburg County Storm Water Services before a grading permit may be issued.
- \_\_\_ b. If project is located within a 100 + 1 or FEMA floodplain, show required floor elevations.
- \_\_\_ c. Optionally, for a FEMA regulated floodplain, applicant may show provisions for flood-proofing the building.
- \_\_\_ d. An Elevation Certificate or Flood-proofing Certificate must be submitted and approved by Mecklenburg County Stormwater Services before occupancy can be granted.
- \_\_\_ e. Mechanical equipment must be installed a minimum of one foot above the FLUM (Floodplain Land Use and Management) 100 year flood elevations (refer to Floodplain Regulations, Article 5, Section 20, Paragraph 5).

#### **Swim Buffer Guidelines**

##### **Landscape Plan Requirements (City Of Charlotte Only)**

- \_\_\_ a. Landscape plans (in City of Charlotte projects). Tree planting landscape plans are required for projects within the City of Charlotte. (See Chapter 21 of City Code for details of Charlotte Tree Ordinance.)

#### **Driveway**

A Street and Driveway Access Permit is required when a new street or commercial driveway is being connected to an existing public street, an existing commercial driveway is being modified, or the use of the property has changed.

- \_\_\_ a. Building permits will not be approved until the City or County has approved the driveway permit.
- \_\_\_ b. The designer is required to show on the driveway permit plans the plan view and profile for the roadway for a distance of ten times the speed limit (in feet) in both directions. Cross-sections on fifty-foot intervals are required for the distance of the road improvements.
- \_\_\_ c. The surveyor is responsible for accurately portraying the road right-of-way on the plans. The right-of-way must be researched and a true representation given of the land rights as recorded in the Deed of Registrar Office. When in doubt or when ambiguous documentation exists, the road right-of-way should be assumed to be ditch-line to ditch-line.
- \_\_\_ d. For projects outside the City of Charlotte jurisdiction and when additional right-of-way and construction easements are needed to complete the driveway improvements, the affected land owners must agree in writing before the County will approve the driveway permit. If the developer is unsuccessful in negotiating with the affected owners for the land, the County may condemn the land for the necessary improvements. If all other requirements have been met, the County will approve the driveway permit when the developer provides funds to the County for the condemnation process to begin. In the event that the developer cannot obtain the additional right-of-way and the County chooses not to condemn, the County will approve a variance in access and/or roadway design standards.

## **COMMERCIAL CONSTRUCTION – Full Permit and additions (cont...)**

### **ARCHITECTURAL PLANS (Refer to General Requirements)**

**Note: The information is required for each respective discipline; however, in most cases it need not be within the discipline’s drawings nor repeated within the discipline’s drawings if the information exists within the drawing set.**

- a. Show architectural floor plans of each floor. Indicate and reproduce the approved tested hourly rating, number and location of all rated members and assemblies (i.e. walls, columns, beams, floor and ceiling, and ceiling and roof fire-rated design assemblies). Show all fire-rated walls (both existing and new) with their ratings if not shown elsewhere. Drawings submitted without required fire-rated walls shown will be rejected. Residential buildings must show sound transmission requirements per Chapter 12 NCSBC.
- b. Show the square footage of each floor on the corresponding floor plans.
- c. Identify the names and uses of each room.
- d. Indicate door schedule(s) that define the applicable rated doors, frames, and hardware.
- e. All glass schedules.
- f. Show elevations with dimensions defining overall building height, floor-to-floor heights, or heights to ridge and eave as applicable to the type of building construction proposed.
- g. Provide basement percentage below grade calculations.
- h. Indicate roof slopes, drainage system and sized through-wall scuppers, if applicable to the project. (See examples in Plumbing ITEM K.)
- i. Show fixed seating for assembly occupancy to allow determination of occupancy posting.
- j. Show wall sections with proposed material sizes, construction, and fire-rated assemblies.
- k. Show proposed plumbing fixtures and privacy screens on the plans.
- l. If masonry construction is proposed, include the following information:
  - Type of brick ties and spacing of weep holes
  - Control joints
  - Placement of wall flashing, reinforcement per ACI 530.
- m. If appropriate for the proposed occupancy, show the extent of the hazardous locations and submit complete data on the type and the amount of materials stored, processed, manufactured, or used in the manufacturing of products in this facility. And, indicate if such materials are corrosive, poisonous, under pressure, in a liquid or gaseous state, radioactive or have other relevant properties. (Ref. NCSBC Sec. 414 (or NCSBC 2006 equivalent) and NFPA 30.) Provide Material Safety Data Sheets. See fire protection requirements.
- n. Show the floor slab vapor barrier.
- o. Show Foundation water proofing, if applicable
- p. For pre-engineered metal buildings see department policy and indicate choice of either option A or option B and provide the required information, submit the manufacturer’s letter of engineering certification, a sealed foundation plan, complete architectural plans, and the Metal Building Plans, if required. The Metal Building Plans, if required, shall state model number, size, column reactions, and design loads for the building. The foundation plans, when required by General Statutes, shall be designed by a registered architect or engineer and show the size and reinforcement of footings or turndown slab. Specify reinforcing and anchor bolt layout and sizes for the building.

## **COMMERCIAL CONSTRUCTION – Full Permit and additions (cont...)**

### **ARCHITECTURAL PLANS cont...**

- \_\_\_ q. All penetrations of fire rated construction must be per manufacturer details. The details shall meet or exceed the rating of construction being penetrated and shall be provided to the inspector in the field. The penetration details shall be exactly as tested by an approved testing laboratory or agency, and they shall include their system numbers. New penetrations of existing fire rated walls and assemblies shall be shown with appropriate designs.
- \_\_\_ r. All fabric awnings or canopies shall be accompanied by a letter of certification of fire resistance from the manufacturer. Fabric awnings and canopies shall meet ground snow loads of Chapter 12 and be constructed to support all live and dead loads according to Chapter 16 North Carolina State Building Code (or NCSBS 2006 equivalent).
- \_\_\_ s. Show Penthouse drawings.
- \_\_\_ t. Provide on the drawings the calculations for the means of egress widths for the entire floor occupancy load and the existing capacity of all exits, including all stairs, doors, corridors, and ramped exits. (See Chapter 10 of the NC State Building Code - or NCSBC 2006 equivalent).
- \_\_\_ u. Show attic ventilation louvers and vent sizes.

### **STRUCTURAL PLANS (Refer to General Requirements)**

**Note: The information is required for each respective discipline; however, in most cases it need not be within the discipline's drawings nor repeated within the discipline's drawings, if the information exists within the drawing set.**

- \_\_\_ a. Show foundation plans showing the proposed slab elevations and types of foundation (i.e. mat foundation, caissons, spread footings, etc.).
- \_\_\_ b. Provide preliminary soil analysis data done by a Registered Engineering Testing Company, if required.
- \_\_\_ c. Indicate dimensions of foundations.
- \_\_\_ d. Show type, size, and location of piling and pile caps for pile foundation.
- \_\_\_ e. Indicate Grade Beam sizes.
- \_\_\_ f. Indicate a footing schedule defining footing sizes and the required reinforcing.
- \_\_\_ g. Show the established footing depth below grade.
- \_\_\_ h. Indicate the thickness of the floor slab, size of reinforcing, slab elevations, and type and details of foundations.
- \_\_\_ i. Indicate location, size, and amount of reinforcing steel.
- \_\_\_ j. Show foundation corner reinforcing bars and minimum overlapping (as applicable to project structure).
- \_\_\_ k. Provide strength of concrete according to design and soil reports.
- \_\_\_ l. Show beams, joists, girders, rafters, and/or truss layouts and details of connections, structural steel stud gage, and gauge size, connections.
- \_\_\_ m. Indicate the sizes and species of all members and their respective design strength.
- \_\_\_ n. Show all columns, girders, joists, purlins, beams, and base plates. For wood construction show all headers.
- \_\_\_ o. Provide a complete lintel schedule.
- \_\_\_ p. Indicate the type of anchoring for steel bearing directly on masonry.

## **COMMERCIAL CONSTRUCTION – Full Permit and additions (cont...)**

### **STRUCTURAL PLANS cont...**

- \_\_\_ q. Indicate design dead and live, wind, snow, seismic loads for floors areas, roofs, balconies, porches, breezeways, corridors, stairs, mezzanines, and platforms. Show concentrated loads, i.e. file rooms, machinery and forklift areas, if greater than those shown on the Code Summary Sheet. Identify shear walls, bracing, strapping fastening, reinforcement, and any special anchoring required.
- \_\_\_ r. Indicate on roof framing plan where concentrated loads (mechanical equipment, cranes, etc.) may be placed.
- \_\_\_ s. Indicate on foundation and framing plans the location and lateral load resisting system. (Show walls, braced frames, moment connections, etc.)

### **FIRE PROTECTION (Sprinklers) (Refer to General Requirements)**

**Note: The information is required for each respective discipline; however, in most cases it need not be within the discipline's drawings nor repeated within the discipline's drawings, if the information exists within the drawing set.**

- \_\_\_ a. Complete a sprinkler design criteria and include it on the first plan of the sprinkler drawings.
- \_\_\_ b. Show floor plans for each floor with sprinkler piping layout, pipe sizes, pipe hanger details, piping materials, doors, walls and room identities.
- \_\_\_ c. Show ceiling plans with sprinkler head(s) layout, walls, soffits, openings, doors, dimensions and room identities.
- \_\_\_ d. Verify system design by providing hydraulic calculations, along with providing the following:
  - \_\_\_ Hydrant test within past 12 months
  - \_\_\_ 10 percent safety margin
  - \_\_\_ Type of backflow preventer or reduced pressure zone showing equivalent foot loss.
  - \_\_\_ Fire pump summary.
- \_\_\_ e. Note the type of Sprinkler System used (13, 13R, ESFR, 231, or OTHER).
- \_\_\_ f. For Residential Occupancy, i.e. Apartments, Condos, show sprinkler head location at breezeways, if applicable.
- \_\_\_ g. Indicate the approved 3<sup>rd</sup> party testing agency (ie. UL, FM, etc.), their test # and hourly ratings of all new and/or affected rated members and assemblies (i.e. columns, beams, floor/ceiling, and ceiling/roof fire-rated design assemblies). Show all new and/or affected fire-rated walls with their ratings, if not shown elsewhere.
- \_\_\_ h. All penetrations of fire-rated construction must be per manufacturer details. The details shall meet or exceed ratings of construction being penetrated and shall be provided to the inspector in the field. Penetration details shall be exactly as tested by an approved testing laboratory or agency and shall include their system numbers. New penetrations of existing fire-rated walls and assemblies shall be shown with appropriate designs.
- \_\_\_ i. Commodity class and height of any storage.
- \_\_\_ j. MSDS Sheets on any Hazardous Materials.
- \_\_\_ k. Where special Temperature-rated or high temperature sprinklers are required, show sprinkler type(s) per area, office size, cut sheets with K-factor, water requirements, spray pattern, coverage, and other pertinent data.
- \_\_\_ l. Provide seismic information on Appendix B.

## **COMMERCIAL CONSTRUCTION – Full Permit and additions (cont...)**

### **FIRE PROTECTION (Fire Alarm) (Refer to General Requirements)**

**Note: The information is required for each respective discipline; however, in most cases it need not be within the discipline’s drawings nor repeated within the discipline’s drawings, if the information exists within the drawing set.**

- a. A floorplan.
- b. Locations of alarm-initiating and notification appliances.
- c. Alarm control and trouble signaling equipment.
- d. Annunciation.
- e. Power connection.
- f. Details of ceiling height and construction.
- g. The interface of fire safety control functions.

Provide a Fire alarm riser showing connection to a UL approved central station. Show tamper switches on both OS and Y valves of backflow prevention device, unless shown elsewhere.

#### **Alarm Drawing Submittal Process for Unlinked Installations**

Alarm installations and upgrades to existing buildings that are not a part of or linked to any other Construction permit and that involve the installation of over ten devices (including panel), shall be submitted to the CTAC review process of Mecklenburg County Code Enforcement.

### **SITE UTILITIES (Fire Protection) (Refer To General Requirements)**

**Note: The information is required for each respective discipline; however, in most cases it need not be within the discipline’s drawings nor repeated within the discipline’s drawings, if the information exists within the drawing set.**

- a. A site plan shall be provided with Fire Department connection and all hydrants shown.
- b. Show the size of city main.
- c. Identify test hydrants and give flow, and pressure data for each.
- d. Show the circulating or dead-end main and the distance to circulating main, if it is the dead-end.
- e. Indicate the Valve type and size. Valve types include:
  - Control valves
  - Fire Department connection check valve
- f. Show size, type, and depth of underground piping (from city main to the inside of the building). Provide:
  - Underground piping connection detail
  - Detail of stub-up for hydrant
  - Blocking
  - Rodding and rod size
  - Clearance (12" or 18" minimum from wall)
- g. Show backflow prevention devices on fire lines and if installed above ground, how heated to 40°F.
- h. Indicate the distance and location of all fire hydrants. Allowed distances are:
  - 200 feet maximum from Fire Department connection
  - 750 feet to the most remote point of the building as the truck travels
- i. Indicate any other water supply (i.e. wells, tanks, etc.) where applicable.

## **COMMERCIAL CONSTRUCTION – Full Permit and additions (cont...)**

### **SYSTEM CALCULATIONS (Fire Protection) (Refer to General Requirements)**

**Note: The information is required for each respective discipline; however, in most cases it need not be within the discipline’s drawings nor repeated within the discipline’s drawings, if the information exists within the drawing set.**

Hydraulically calculated and pipe schedule fire systems should be designed with a ten percent safety margin for all new buildings and additions to existing buildings. Calculations for hydraulic systems should include:

- a. Flow and pressure at each flowing sprinkler head
- b. Flow diagram for a grid system.

### **FIRE PROTECTION PLANS (Additions Only)**

**Note: The information is required for each discipline; however, normally it need not be within the discipline nor repeated within the discipline(s) drawings, if the information exists somewhere in the drawing set.**

- a. A sprinkler design criteria shall be completed and included on the first plan of the sprinkler drawings.
- b. Show floor plans for each floor with sprinkler piping layout, pipe sizes, pipe hanger details, piping materials, doors, walls, and room names and numbers, if not shown elsewhere.
- c. Show ceiling plans with sprinkler head(s) layout, walls, soffits, openings, doors, dimensions, and room name and numbers, if not shown elsewhere.
- d. Verify system design by providing hydraulic calculations along with the following information
  - Provide hydrant test within past 12 months
  - Ten percent safety margins
  - Type of backflow preventer or reduced pressure zone showing equivalent foot loss.
  - Fire pump summary.
- e. Show the type of Sprinkler System used 13, 13R, ESFR, 231, or OTHER
- f. For Residential Occupancy (Apartments, Condos), show sprinkler head location at breezeways, if applicable.
- g. Indicate the UL/FM # hourly rating of all rated members and assemblies, i.e. columns, beams, floor and ceiling and ceiling and roof fire-rated design assemblies. Show all fire-rated walls (both existing and new) with their ratings, if not showed elsewhere. Plans submitted without fire-rated walls shown will be rejected.
- h. All penetrations of fire-rated construction must be per manufacturer details. The details shall meet or exceed ratings of construction being penetrated and shall be provided to the inspector in the field. Penetration details shall be exactly as tested by an approved testing laboratory or agency and shall include their system numbers. New penetrations of existing fire-rated walls and assemblies shall be shown with appropriate designs.
- i. Show a fire alarm riser showing connection to a UL approved central station. Show tampers on both OS and Y valves of backflow prevention device where not shown elsewhere.
- j. Show commodity class and height of any storage.
- k. Show MSDS sheets on any hazardous materials.

## **COMMERCIAL CONSTRUCTION – Full Permit and additions (cont...)**

### **FIRE PROTECTION PLANS (Additions Only) cont...**

- l. Where special temperature-rated or high temperature sprinklers are required, provide the sprinkler type(s) per area, orifice size, cut sheets with K-factor, water requirements, spray pattern, coverage, and other data.
- m. The Charlotte Fire Department requires fire sprinkler, standpipe, and alarm shop drawings to be submitted within 90 days of permit issuance.
- n. Provide seismic information on Appendix B.

### **UTILITIES SITE PLAN (Additions Only) (Refer to General Requirements)**

**Note: The information is required for each discipline; however, normally it need not be within the discipline nor repeated within the discipline('s) drawings, if the information exists somewhere in the drawing set.**

- a. A site plan shall be provided with Fire Department connection and all hydrants shown.
- b. Show the size of city main.
- c. Identify test hydrants and give flow and pressure data for each.
- d. Show the circulating or dead-end main and the distance to circulating main, if it is the dead-end.
- e. Indicate the Valve type and size. Valve types include:
  - Control valves
  - Fire Department connection check valve
- f. Indicate the size, type, and depth of underground piping (from the city main to the inside of the building). Provide:
  - Underground piping connection
  - Detail of stub-up
  - Blocking
  - Rodding and rod size
  - Clearance (12" or 18" minimum from wall)
- g. Show backflow prevention devices on fire lines and, if installed above ground, how heated to 40 degrees F.
- h. Indicate the distance and location of all fire hydrants. Allowed distances are:
  - 200 feet maximum from Fire Department connection
  - 750 feet to the most remote point of the building as the truck travels
- i. Indicate any other water supply (i.e. wells, tanks, etc.), where applicable.

### **SYSTEM CALCULATIONS (Additions Only) (Refer to General Requirements)**

**Note: The information is required for each discipline; however, normally it need not be within the discipline nor repeated within the discipline('s) drawings, if the information exists somewhere in the drawing set.**

Hydraulically calculated and pipe schedule systems should be designed with a ten percent safety margin for all new buildings and additions to existing buildings. Calculations for hydraulic systems should include:

- a. Flow and pressure at each flowing sprinkler head
- b. Flow diagram for a grid system.

## **COMMERCIAL CONSTRUCTION – Full Permit and additions (cont...)**

### **PLUMBING PLANS (Refer to General Requirements)**

**Note: The information is required for each respective discipline; however, in most cases it need not be within the discipline's drawings nor repeated within the disciplines, if the information exists within the drawing set (except as noted).**

- \_\_\_ a. Show a Site Utilities Plan if not provided with the Civil Drawings.
  - \_\_\_ 1. Show the domestic water, fire, and irrigation services.
  - \_\_\_ 2. Show the location of the water meters, backflow protection type, and location.
  - \_\_\_ 3. Show the Sanitary Sewer service from building to CMUD or to other approved system.
- \_\_\_ b. Show interceptors as applicable to project and size by flow rate. (i. e. grease, oil, lint, acid, and sand).
- \_\_\_ c. Provide plumbing plan layouts for each floor. These shall show the water distribution drain-waste-vent piping, details, notes, legends, and schedules necessary to define the system being installed.
- \_\_\_ d. Show the location of all major components required for a complete system.
- \_\_\_ e. Provide fixture and equipment schedule showing fixture number and detailed descriptions of hot water, cold water, waste and vent connection sizes, and other pertinent data.
- \_\_\_ f. Identify all fixtures on floor plans and in riser diagrams with the plumbing fixture schedule number.
- \_\_\_ g. Show the Supply and Waste/Vent piping on the floor plans. All pipe sizes shall be clearly shown. In congested areas, isometrics shall be required (i.e. restaurants, grocery stores).
- \_\_\_ h. On buildings two stories and above, provide isometric diagrams and/or schematic riser diagrams for Supply and Waste/Vent piping and identify them by number (e.g. R1, R2, etc.). Show where all riser base terminations connect to the building drain, along with all interconnecting piping on each floor plan. All pipe sizes shall be clearly defined.
- \_\_\_ i. Show the water, sanitary drain-waste-vent piping, and storm leaders/drains. Indicate sizes and materials for above/below grade.
- \_\_\_ j. Show slope of horizontal sanitary and storm drains  $>$  or  $=$  3" diameter, if different than 1/8" per foot.
- \_\_\_ k. Indicate roof drains and emergency roof drains/scuppers with the areas they impact. (Note: Emergency = Secondary = Overflow.) See "Roof Drainage Examples" below:
  - Roof Drain - 6" RD (16880 SF)
  - Emergency Roof Drain - 6" ERD (8180 SF)
  - Parapet Wall Scupper - 8" x 5" WS (4000 SF)
  - Emergency Scupper - 8" x 7" ES (4200 SF)
- \_\_\_ l. Show toilet room layouts at sufficient scale for dimensions and details to be ascertained.
- \_\_\_ m. Show drinking fountain locations.
- \_\_\_ n. All penetrations of fire-rated construction must be per manufacturer details. The details shall meet or exceed rating of construction being penetrated and shall be provided to the inspector in the field. The penetration details shall be exactly as tested by an approved testing laboratory or agency, and they shall include their system numbers.
- \_\_\_ o. Room names and numbers for each floor should be on a floorplan for each level.
- \_\_\_ p. Provide minimum facilities calculations on the plan sheet with the building information from the Code Summary Sheet.

## **COMMERCIAL CONSTRUCTION – Full Permit and additions (cont...)**

### **Plumbing Plans (cont...)**

**Column line notation, if provided on the Architectural/Structural plans, shall be indicated on the plumbing plans.**

### **MECHANICAL PLANS (Refer to General Requirements)**

**Note: The information is required for each respective discipline; however, in most cases it need not be within the discipline’s drawings nor repeated within the disciplines, if the information exists within the drawing set (except as noted below).**

- \_\_\_ a. Show code-required wall louvers, penetrations, and fans.
- \_\_\_ b. Indicate roof-mounted equipment locations.
- \_\_\_ c. Show all mechanical equipment, piping, ductwork (above/below slab) on the mechanical floor and/or roof plan.
- \_\_\_ d. Provide mechanical plans for each floor and the roof. These shall show the ductwork layouts, schedules, notes, legends, piping schematics, and details necessary to define the system being installed.
- \_\_\_ e. Indicate air distribution devices showing cfm for supply, return, and exhaust devices.
- \_\_\_ f. Indicate the location of all equipment components required for a complete system.
- \_\_\_ g. Show the smoke ventilation of Atriums and pressurization of High Rise stairwells, as defined in NCSBC.
- \_\_\_ h. Show condensation drains, primary and secondary, from the unit to the point of discharge
- \_\_\_ I. Indicate toilet exhaust requirements.
- \_\_\_ j. Show mechanical room layouts at sufficient scale for dimensions and details to be ascertained.
- \_\_\_ k. Show the size of duct runs.
- \_\_\_ l. Indicate controls for fan shutdown: emergency manual and automatic smoke detection.
- \_\_\_ m. Show the location of all UL 555 certified fire dampers, ceiling radiation dampers, smoke dampers, and fire doors.
- \_\_\_ n. Show all fire-rated and smoke-rated walls (both existing and new) with their ratings on the mechanical plans.
- \_\_\_ o. All penetrations of fire-rated construction must be per manufacturer details.
- \_\_\_ p. Room names and numbers for each floor should be on a floor plan for each level.
- \_\_\_ q. Provide outside air ventilation rate per ASHRAE 62 – 2004.
- \_\_\_ r. Column line notations, if provided on the architectural/structural plans, shall be identified on the mechanical plans.
- \_\_\_ s. Provide gas piping layout on the floor plan for each floor. If it is a multi story building, all gas piping shall be shown per floor. Floor plans and risers if multi-floor shall be provided. Include pipe sizes, wc, and material. Provide a schedule of connected equipment, total BTUH demand, total equivalent length, and most remote gas appliance.

### **ELECTRICAL PLANS (Refer to General Requirements)**

- \_\_\_ a. Provide panel schedules with circuit and feeder loading, overcurrent protection, and (NEC 220) load summary(s) for all new and/or affected panels and services (loading has to be evaluated by highest phase); include fault current data, short circuit ratings, and fault current protection co-ordination.
- \_\_\_ b. Provide a single line riser diagram showing all new and/or affected services, feeders, wire sizes and insulation types, and conduit sizes and types.

## COMMERCIAL CONSTRUCTION – Full Permit and additions (cont...)

### ELECTRICAL PLANS cont...

- \_\_\_ c. Indicate number of services and their physical locations; clearly indicate mains and characteristics.
- \_\_\_ d. Indicate the grounding electrode conductor size with new and/or affected services and transformers; where necessary provide details or notes on methods.
- \_\_\_ e. Show physical locations of all new and/or affected panels and switchgear (indicate front).
- \_\_\_ f. Indicate receptacle plans with circuitry.
- \_\_\_ g. Indicate lighting plans with circuitry.
- \_\_\_ h. Show electrical plans for each affected floor and roof.
- \_\_\_ i. Show wiring method(s), conduit sizes and types, termination temperature (60°, 75°, 90°) requirements, conductor sizes, and insulation types.
- \_\_\_ j. Indicate the design and or operation for any of the following applicable life safety systems: emergency generators, smoke evacuation, shaft pressurization and relief, smoke detection, egress and emergency lighting, and fire alarm.
- \_\_\_ k. Indicate how special needs, such as classified (hazardous), corrosive and patient care, are treated. Provide detailed plan of classified areas, the classifications, and how complied with (i. e. hangers, waste treatment and collection, per NFPA 820), flammable dusts, gases or liquids, spray booths, vehicle servicing and parking, etc.).
- \_\_\_ l. Indicate all HVAC nameplate data. Indicate all major appliance and/or equipment (any use besides cord and plug connected to general use receptacle), and nameplate data (i. e. voltage, phasing, HP, KVA, FLA, RLA, etc.).
- \_\_\_ m. Indicate all motor horse power ratings, if not supplied elsewhere.
- \_\_\_ n. Indicate the approved 3<sup>rd</sup> party testing agency (i.e. UL, FM, etc.), their test # and hourly ratings of all new and/or affected rated members and assemblies (i.e. columns, beams, floor/ceiling, and ceiling/roof fire-rated design assemblies). Show all new and/or affected fire-rated walls with their ratings, if not shown elsewhere.
- \_\_\_ o. All penetrations of fire-rated construction must be per manufacturer details. The details shall meet or exceed ratings of construction being penetrated and shall be provided to the inspector in the field. Penetration details shall be exactly as tested by an approved testing laboratory or agency and shall include their system numbers. New penetrations of existing fire-rated walls and assemblies shall be shown with appropriate designs.
- \_\_\_ p. Provide all applicable NCSBC, Energy Code compliance data on the Building Code Summary sheet or on the electrical plans.
- \_\_\_ q. All submittals must include LISTING and LABELING STATEMENT. Example: *All electrical materials, devices, appliances, and equipment shall be label-listed by a North Carolina approved third party testing agency.* If another statement is used, it shall have equivalent content to the above example.

**BE SURE THAT EVERYTHING YOU PROVIDE IS APPLICABLE TO THE DESCRIPTION OF YOUR JOB. THE INTENT FOR THE REVIEW IS THAT THE SUBMITTAL IS A COMPLETE WORKING PLAN, SO THAT ALL CODE REQUIREMENTS CAN BE EXAMINED**

## ***COMMERCIAL CONSTRUCTION – Full Permit and additions (cont...)***

### **CHARLOTTE-MECKLENBURG UTILITIES (CMUD)**

#### **Backflow Prevention Questionnaire**

A Backflow Prevention Questionnaire shall be submitted with payment of water connection fee. The information on this questionnaire will help in deciding the hazard classification of your facility. In the event that the information provided is inaccurate or undergoes changes, the hazard classification and the type of backflow prevention assembly required may be revised. When no information is provided, the location will be classified as a high hazard. If you have any questions, please contact the Backflow Prevention Section at (704) 336-2997. Keep a copy for your records. Refer to <http://backflow.charmeck.org> for all relevant forms.

#### **DEMOLITION**

Demolition Permits must be obtained prior to the demolition of any existing building or structure located in the City, Towns, or County. The Code Enforcement Department issues demolition Permits. Prior to the issuance of the permit, approval must be obtained from the Mecklenburg County Health Department and the Department of Environmental Protection (MCDEP). You will have to submit a NESHAP (National Emission Standard for Hazardous Air Pollutants) notification form to MCDEP in order to obtain its approval. The form must be submitted at least ten days before any demolition begins.

**NOTE: For existing buildings, the designer must choose to use either Volume IX (Existing Buildings Code) or the NCSBC 2002 equivalent. The designer shall indicate the choice on the Building Code Summary Sheet and provide an alternate code compliance summary, if applicable. It is recommended that a Preliminary Code Review be conducted with the Department on these projects.**

The following checklist is to be used for all commercial tenant upfits, alteration, and renovation as applicable to your project. Work Permitted consists of renovation, modification, or completion of existing space in a building or structure. This work may involve removal of existing interiors and/or the installation of new interior work, such as lighting, heating/cooling equipment and distribution, wall (rated and non-rated), toilets, corridors, exit ways, and other common or special built-in furnishings required by the tenant.

The drawings submitted shall include as a minimum:

What is existing and how will this tenant modify it or stay within the original design intent. **Drawings shall be complete and relative to the requirements listed below when submitted for review/permit. Incomplete drawings will be returned without a review.** Major revisions, which require a re-review after permit issuance, may cause the permit to be nullified and require resubmittal and be subject to additional fees. The requirements are divided into **General Requirements, Site, Architectural, Structural, Plumbing, Mechanical, Electrical, and Fire Protection.**

**Note: The information is required for each discipline; however, normally it need not be within a discipline's drawings nor repeated within the discipline's drawings, if the information exists elsewhere in the drawing set.**

## ***COMMERCIAL CONSTRUCTION – Upfit, Alteration, or Renovation***

### **COMMERCIAL UPFIT, ALTERATION, OR RENOVATION:**

#### **GENERAL REQUIREMENTS**

- \_\_\_ a. A building permit application shall be completed in its entirety and shall accompany each submittal for review. This includes designating contractor's costs and the specific use of the property. Permit applications will NOT be accepted until complete.
- \_\_\_ b. All project drawings shall be (Minimum size is 18" x 24") drawn to scale in U.S. Units must have sufficient detail to fully indicate the nature and scope of work to be performed. Drawings that are not legible will be returned without review.
- \_\_\_ c. All drawings shall be dated and signed by the designer. Professional seals, when required, shall appear on all sheets and be signed and dated by the designer.
- \_\_\_ d. Building Code Summary shall be reproduced on the drawings (first or second sheet) with all applicable sections completely filled, out including the Energy Code calculations/data. The Electrical and Mechanical portions may be on their respective design documents.
- \_\_\_ e. If the work involves only a portion of a building, a key plan shall be provided showing the entire building with the area of new construction highlighted.
- \_\_\_ f. All drawings and specifications shall contain information (in the form of notes or otherwise) on the properties of the building materials to be used, where such properties are essential to show compliance with technical building codes.
- \_\_\_ g. All penetrations of fire-rated construction must be per manufacturer details. The details shall meet or exceed ratings of construction being penetrated and shall be provided to the inspector in the field. Penetration details shall be exactly as tested by an approved testing laboratory or agency and shall include their system numbers. New penetrations of existing fire-rated walls and assemblies shall be shown with appropriate designs.
- \_\_\_ h. Drawings shall be complete when submitted for plan review/permitting. Incomplete drawings will be returned without a review. Revisions that require a re-review are handled as revisions to approved drawings and will be subject to additional fees.
- \_\_\_ i. Show location of concentrated loads and total loads.

#### **Referenced Documents**

When previously approved documents (drawings and/or specifications) are referenced from your submittal documents, you must provide an approved field set for review information. The field set may be an original or a reproduction; however, it must bear the plan review stamp and signatures of examiners.

#### **SITE AND ZONING PLANS (Refer to General Requirements)**

*The City of Charlotte Zoning Ordinance can be accessed via the Internet at:*  
<http://www.charmeck.org/Departments/Planning/Home.htm>

## **COMMERCIAL CONSTRUCTION – Upfit, Alteration, or Renovation (cont...)**

### **ARCHITECTURAL (Drawings and Specifications) (Refer to General Requirements)**

**Note: The information is required for each discipline; however, normally it need not be within a discipline’s drawings nor repeated within the discipline’s drawings, if the information exists elsewhere in the drawing set.**

- \_\_\_ a. Show architectural floor plans for each floor, indicating the location and ratings of all **fire-rated walls**.
- \_\_\_ b. Demolition plans shall identify all work areas and identify all existing equipment, materials, etc.
- \_\_\_ c. Show the access to all new HVAC equipment.
- \_\_\_ d. Show the name and use of each room.
- \_\_\_ e. Show a door schedule that defines the applicable rated doors, frames, and hardware.
- \_\_\_ f. If the building has more than one tenant, indicate the occupancy use and hourly-rating separating tenants.
- \_\_\_ g. Indicate the UL/FM # hourly rating of all rated members and assemblies, i.e. columns, beams, floor and ceiling, and ceiling and roof fire-rated design assemblies. Show all fire-rated walls (both existing and new) with their ratings, if not shown elsewhere. Drawings submitted without fire-rated walls shown will be rejected.
- \_\_\_ h. All penetrations of fire-rated construction must be per manufacturer details. The details shall meet or exceed ratings of construction being penetrated and shall be provided to the inspector in the field. Penetration details shall be exactly as tested by an approved testing laboratory or agency and shall include their system numbers. New penetrations of existing fire-rated walls and assemblies shall be shown with appropriate designs.
- \_\_\_ i. Show all hazards and the extent of their area and classifications.
- \_\_\_ j. Indicate on roof framing plan where concentrated loads (mechanical equipment, cranes, etc.) may be placed.

### **FIRE PROTECTION PLANS (Upfit, Alteration, Renovation, and Remodel only)**

**Note: The information is required for each discipline; however, normally it need not be within a discipline’s drawings nor repeated within the discipline’s drawings, if the information exists elsewhere in the drawing set.**

- \_\_\_ a. Show ceiling plans with sprinkler heads’ layout, walls, soffits, openings, doors, dimensions, and room names and numbers, if not shown elsewhere.
- \_\_\_ b. Show a completed sprinkler design data sheet on the first sheet of the sprinkler drawings.
- \_\_\_ c. Indicate the UL/FM # hourly rating of all rated members and assemblies, i.e. columns, beams, floor and ceiling, and ceiling and roof fire-rated design assemblies. Show all fire-rated walls (both existing and new) with their ratings, if not shown elsewhere. Drawings submitted without fire-rated walls shown will be rejected.
- \_\_\_ d. All penetrations of fire-rated construction must be per manufacturer details. The details shall meet or exceed ratings of construction being penetrated and shall be provided to the inspector in the field. Penetration details shall be exactly as tested by an approved testing laboratory or agency and shall include their system numbers. New penetrations of existing fire-rated walls and assemblies shall be shown with appropriate designs.

## ***COMMERCIAL CONSTRUCTION – Upfit, Alteration, or Renovation (cont...)***

- \_\_\_ e. Provide fire alarm riser diagram showing connection to UL approved central station. Show tamper switches on both OS and Y valves of backflow prevention device unless shown elsewhere.
- \_\_\_ f. If the renovation or upfit requires more than twenty (20) additional sprinkler heads, provide the hydraulic calculations and sprinkler drawings.

### **FIRE PROTECTION (Fire Alarm) (Refer to General Requirements)**

**Note:** The information is required for each respective discipline; however, in most cases it need not be within the discipline's drawings nor repeated within the discipline's drawings, if the information exists within the drawing set.

- \_\_\_ a. A floorplan.
- \_\_\_ b. Locations of alarm-initiating and notification appliances.
- \_\_\_ c. Alarm control and trouble signaling equipment.
- \_\_\_ d. Annunciation.
- \_\_\_ e. Power connection.
- \_\_\_ f. Details of ceiling height and construction.
- \_\_\_ g. The interface of fire safety control functions.

Provide a Fire alarm riser showing connection to a UL approved central station. Show tamper switches on both OS and Y valves of backflow prevention device, unless shown elsewhere.

### **Alarm Drawing Submittal Process for Unlinked Installations**

Alarm installations and upgrades to existing buildings that are not a part of or linked to any other Construction permit and involve the installation of over ten devices (including panel), shall be submitted to the CTAC review process of Mecklenburg County Code Enforcement.

### **SYSTEM CALCULATIONS (Only required for new and more than 20 heads added)**

**Note:** The information is required for each discipline; however, normally it need not be within the discipline nor repeated within the discipline's drawings, if the information exists somewhere in the drawing set.

Hydraulically calculated and pipe schedule systems should be designed with a ten percent safety margin for all new buildings and additions to existing buildings. Calculations for hydraulic systems should include:

- \_\_\_ a. Flow and pressure at each flowing sprinkler head
- \_\_\_ b. Flow diagrams for a grid system.
- \_\_\_ c. The Charlotte Fire Department requires fire sprinkler, standpipe, and alarm shop drawings be submitted within 90 days of permit issuance.

## ***COMMERCIAL CONSTRUCTION – Upfit, Alteration, or Renovation (cont...)***

### **PLUMBING PLANS (Refer to General Requirements)**

**Note: The information is required for each respective discipline; however, in most cases it need not be within the discipline’s drawings nor repeated within the discipline, if the information exists within the drawing set (except as noted below).**

- \_\_\_ a. Show and identify type of backflow preventers required.
- \_\_\_ b. Show interceptors as applicable to project
- \_\_\_ c. Provide plumbing plan layouts for each floor. These shall show the water supply, drain-waste-vent piping, fixture schedule, details, notes, legends, and other schedules necessary to define the system being installed.
- \_\_\_ d. Show the location of all major components required for a complete system (i.e. water heater, boiler, etc.).
- \_\_\_ e. Provide fixture and equipment schedule showing fixture number, description, hot water, cold water, waste and vent connection sizes, and other pertinent data.
- \_\_\_ f. Identify all fixtures on floor plans and in riser diagrams with the plumbing fixture schedule number.
- \_\_\_ g. On single-story buildings (with no basement plumbing), Supply and Waste/Vent piping may be shown on the floor plans. All pipe sizes shall be clearly shown. In congested areas, where in the opinion of the plans examiner, the plans are not clearly delineated, isometrics may be needed (i.e. restaurant).
- \_\_\_ h. On buildings two stories and above, provide isometric diagrams and/or schematic riser diagrams for Supply and Waste/Vent piping and identify them by number (e.g. R1, R2, etc.). Show where all the riser base terminations connect to the building drain along with all interconnecting piping on each floor plan. All pipe sizes shall be clearly defined.
- \_\_\_ i. Show the water and sanitary drain-waste-vent piping. Indicate sizes and materials for above/below grade.
- \_\_\_ j. Show all new and existing fixtures that are being used to meet the minimum fixture count for the space. Identify which are for men and women and which meet handicapped requirements per the latest edition in force at the time of review. Designer is responsible for providing all existing plans that show toilets that affect the minimum fixture count.
- \_\_\_ k. Show connection points to existing water and sewer/vent piping. Show sizes of existing lines.
- \_\_\_ l. Show toilet room layouts at sufficient scale for dimensions and details to be ascertained.
- \_\_\_ m. Show drinking fountain locations.
- \_\_\_ n. All penetrations of fire rated construction must be per manufacturer details. The details shall meet or exceed ratings of construction being penetrated and shall be provided to the inspector in the field. Penetration details shall be exactly as tested by an approved testing laboratory or agency and shall include their system numbers. New penetrations of existing fire-rated walls and assemblies shall be shown with appropriate designs.
- \_\_\_ o. Room names and numbers for each floor should be on a floor plan for each level.

### **MECHANICAL PLANS (Refer to General Requirements)**

**Note: The information is required for each respective discipline; however, in most cases it need not be within the discipline’s drawings nor repeated within the discipline, if the information exists within the drawing set (except as noted below).**

- \_\_\_ a. Show code-required wall louvers, penetrations, and fans.
- \_\_\_ b. Indicate roof-mounted equipment curbs.

**COMMERCIAL CONSTRUCTION – Upfit, Alteration, or Renovation (cont...)**  
**MECHANICAL PLANS(cont)...**

- \_\_\_ c. Show all new mechanical equipment, piping, and ductwork (above/below slab).
- \_\_\_ d. Provide mechanical plans for each floor and the roof, where new work is being done. These shall show the ductwork layouts, schedules, notes, legends, piping schematics, and details as necessary to define the system being installed.
- \_\_\_ e. Indicate air distribution devices showing CFM for supply, return, and exhaust devices.
- \_\_\_ f. Indicate the location of all new and existing equipment components required for a complete system.
- \_\_\_ g. Demolition plans that identify all work areas and existing equipment, materials, etc. to be demolished.
- \_\_\_ h. Show condensation drainage for any new equipment. Primary and secondary drains (if provided) shall be shown from point of origin to termination.
- \_\_\_ i. Indicate toilet exhaust requirements.
- \_\_\_ j. Show mechanical room layouts at sufficient scale for dimensions and details to be ascertained.
- \_\_\_ k. Show the size of all new duct runs and transition sizes to existing ductwork. Identify any existing ductwork being utilized.
- \_\_\_ l. Indicate controls for fan shutdown: emergency manual and automatic smoke detection.
- \_\_\_ m. Show the location of all UL 555 certified fire dampers, ceiling radiation dampers, smoke dampers, and fire doors. Provide typical details.
- \_\_\_ n. Show all fire-rated and smoke-rated walls (both existing and new) with their ratings on the mechanical plans.
- \_\_\_ o. All penetrations of fire-rated construction must be per manufacturer details.
- \_\_\_ p. Room names and numbers for each floor must be on the floor plan for each level
- \_\_\_ q. Provide gas piping layout. Show connections to the existing system (if applicable). Provide pipe sizes, w.c., and material. Provide schedule of connected equipment (new and existing), total BTUH demand, total equivalent length, and most remote gas appliance.

**ELECTRICAL (Tenant upfit, alteration, or renovation) (Refer to General Requirements)**

- \_\_\_ a. Provide panel schedules with circuit and feeder loading, overcurrent protection, and (NEC 220) load summary(s) for all new and/or affected panels and services (loading has to be evaluated by highest phase); include fault current data, short circuit ratings and fault current protection co-ordination.
- \_\_\_ b. Provide a single line riser diagram showing all new and/or affected services, feeders, wire sizes and insulation types, and conduit sizes and types.
- \_\_\_ c. Indicate number of services and their physical locations; clearly indicate mains and characteristics.
- \_\_\_ d. Indicate the grounding electrode conductor size with new and/or affected services and transformers; where necessary provide details or notes on methods.
- \_\_\_ e. Show physical locations of all new and/or affected panels and switchgear (indicate front).
- \_\_\_ f. Indicate receptacle plans with circuitry.
- \_\_\_ g. Indicate lighting plans with circuitry.
- \_\_\_ h. Show electrical plans for each affected floor and roof.

**COMMERCIAL CONSTRUCTION – Upfit, Alteration, or Renovation (cont...)**

**ELECTRICAL PLANS(cont)...**

- \_\_\_ i. Show wiring method(s), conduit sizes and types, termination temperature (60, 75, 90 degrees) requirements, conductor sizes, and insulation types.
- \_\_\_ j. Indicate the design and or operation for any of the following applicable life safety systems: emergency generators, smoke evacuation, shaft pressurization and relief, smoke detection, egress and emergency lighting, and fire alarm.
- \_\_\_ k. Indicate how special needs, such as classified (hazardous), corrosive, and patient care, are treated. Provide detailed plan of classified areas, the classifications, and how you complied with them (i.e. hangers, waste treatment and collection, per NFPA 820), flammable dusts, gases or liquids, spray booths, vehicle servicing and parking, etc.).
- \_\_\_ l. Indicate all HVAC nameplate data. Indicate all major appliance and/or equipment (any use besides cord and plug connected to general use receptacle) and nameplate data (i. e. voltage, phasing, HP, KVA, FLA, RLA, etc.).
- \_\_\_ m. Indicate all motor horse power ratings, if not supplied elsewhere.
- \_\_\_ n. Indicate the approved 3<sup>rd</sup> party testing agency (i.e. UL, FM, etc.), their test # and hourly ratings of all new and/or affected rated members and assemblies (i.e. columns, beams, floor/ceiling, and ceiling/roof fire-rated design assemblies). Show all new and/or affected fire-rated walls with their ratings if not shown elsewhere.
- \_\_\_ o. All penetrations of fire-rated construction to be per manufacturer details. The details shall meet or exceed ratings of construction being penetrated and shall be provided to the inspector in the field. Penetration details shall be exactly as tested by an approved testing laboratory or agency and shall include their system numbers. New penetrations of existing fire-rated walls and assemblies shall be shown with appropriate designs.
- \_\_\_ p. Provide all applicable NCSBC, Energy Code compliance data on the Building Code Summary sheet or on the electrical plans.
- \_\_\_ q. All submittals must include LISTING and LABELING STATEMENT. Example: All electrical materials, devices, appliances, and equipment shall be label-listed by a North Carolina approved third party testing agency. If another statement is used, it shall have equivalent content to the above example.
- \_\_\_ r. Show intended building use(s) and existing characteristics, if not shown elsewhere.
- \_\_\_ s. Show all modifications to existing or planned tenant space, if not shown elsewhere.

**PROVIDE ALL DETAILS THAT ARE APPLICABLE TO DESCRIBE YOUR JOB. THE INTENT OF THE REVIEW IS FOR THE SUBMITTAL TO BE A COMPLETE WORKING PLAN, SO THAT ALL CODE REQUIREMENTS CAN BE EXAMINED.**