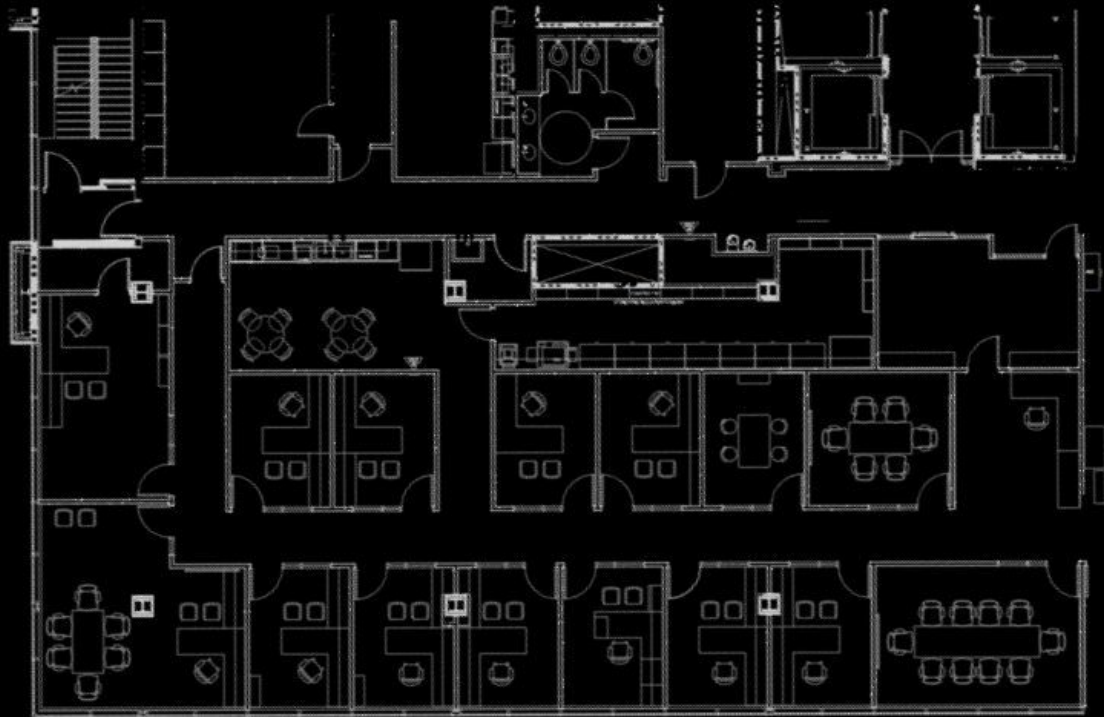


2019

# Project Design Guidelines



Engineering and  
Environmental Services



# Project Design Guidelines

## OVERVIEW

The Project Management Division of Durham County Engineering has assembled this set of Guidelines to help Designers and reviewers expedite project phase submittals and their reviews.

The project design phases described in this document reflect a typical new construction project subject to the formal bidding and contract process. Other project types have similar review requirements scaled to their specific Programs. This guide may be applied to both where applicable.

1. It is the Designer's responsibility to determine and show all work required to accurately bid and construct the project. The phrase "As Required" can be extremely problematic during bidding and construction when the Designer has not indicated the scope or work required.
2. Narrative descriptions in the project manual that require the bidder to visit the site and inspect the conditions are not substitutes for graphic drawings detailing the required work.
3. The Designer shall perform a thorough plan review and design team coordination of documents prior to each phase submittal. It is not the role of Durham County review staff to resolve errors and omissions in the Designer's work.
4. The design team shall include the Construction Manager and Durham County Project Manager on projects to be delivered by CM at Risk method. The CM & PM will attend design meetings and will be involved with decisions regarding the use of materials, constructability issues, schedule and cost estimating.
5. Durham County is committed to the use of North Carolina manufactured products whenever possible.
6. Durham County strives to be a responsible environmental leader and has implemented policies to reduce our environmental impact, such as the adoption of our High-Performance Buildings Policy. Duke Energy incentives are utilized whenever appropriate on County projects.
  - a. The use of recycled content paper in project manuals is strongly encouraged.
  - b. To reduce waste, print technical specifications sections on both sides of the paper and do not use "intentionally blank" pages.
  - c. The use of plastic binders and/or plastic cover sheets is discouraged.

## PROFESSIONAL SEALS

Professional seals identifying the Designer of Record shall be affixed to all drawings, specifications and other technical submissions at all design phase submittals. No signature or date is required over the seals until final bid documents are issued. Documents may be stamped as "Review Only", "Not for Construction", "Design Development" or any other statement accepted by the Designers' respective licensing boards. Do not stamp over the seal and obscure the name, license number, or state.

Durham County follows the NC Architect and Engineer licensing board rules.

## LEGISLATIVE REQUIREMENTS FOR THE DESIGN OF PUBLIC WORKS

1. GS133-1 states it is unlawful for Designers to specify products or materials in which they have a financial interest.
2. GS133-2 states it is unlawful for Designers of public work to employ or allow any manufacturer or representative to write, plan or draw any part thereof.

3. GS133-3 states that specifications shall be competitive by using performance specifications or specifying three or more brand names. Owner preferred alternates are allowed in limited circumstances that will provide cost savings, maintain or improve the functioning of any process or system affected by the preferred item or items. A justification for the preferred alternate must be available to the public, in writing, and explained in an open meeting prior to the Bid.

## **DRAWINGS**

1. Drawing sheets shall be an industry-standard size and be consistent throughout the set. Durham County prefers 24"x36" drawing sets whenever possible.
2. Drawings shall be edge bound and shall not exceed 1 inch in thickness. Large projects may require multiple volumes, with a table of contents for each set, and the volume number visible on the title block when plans are rolled.
3. The Project Manager will specify the required number of sets for each phase submittal. This is typically one full size and nine half-size sets of plans with a project manual for each but may vary by project.
4. Complete sets must be provided at each submittal or re-submittal. No single sheets or partial sets will be accepted, and all required deliverables must be received at one time.
5. All fonts, notes, schedules, and room names should be 1/8" minimum in height.
6. Drawing layers not pertinent to the specific plan should be turned off to facilitate readability on each sheet. Examples of unnecessary clutter include door numbers, furnishings or toilet fixtures shown on ceiling plans.

## **SPECIFICATIONS**

1. Architect/CM will be given Durham County standard front end documents by Durham County Purchasing Department. It is not necessary to include these documents in their entirety in DD Submittal Outline Specifications, but they must be included in the CD Submittal project manual.

## **ORIENTATION AND PRESENTATION**

1. All Site and Building plans shall have the same orientation on all drawings for all disciplines.
2. All Site and Building plans shall indicate true North and Plan North. A survey benchmark shall be provided on the site drawings, locating the building (X&Y) and its elevation.
3. Include column lines and designations on all plans, elevations, building sections, and wall sections for orientation and reference between disciplines.

## **COVER SHEET AND TITLE BLOCKS**

1. The Cover Sheet shall include the project name and address, Designer and Consultants, the Durham County project number, and a drawing index.
2. The current North Carolina State Building Code Summary Sheet, Appendix B, shall follow the cover sheet. This form is required by the North Carolina State Building Code to identify all code decisions and information for the project.
3. The drawing title block shall include the project name, address, and county project number.

## ARRANGEMENT OF DRAWINGS

The following drawing order is recommended but can be modified by the Designer to fit the specific project

1. Cover Sheet, Drawing Index, Vicinity and Location Maps
2. Building Code Summary, Appendix B
3. Life Safety Plans
4. Reprint of Test Reports such as UL Design
5. Civil "C" Series
6. Landscape "LS" Series
7. Architecture "A" Series
8. Structural "S" Series
9. Mechanical "M" Series
10. Plumbing "P" Series
11. Electrical "E" Series
12. Fire Protection "FP" Series
13. Other specialty drawings which may include:
  - a. Kitchen "K" Series
  - b. Theatre Lighting "TL" Series

Demolition drawings such as Arch Demo "AD" etc. should precede their respective discipline.

## Schematic Design Phase

### OVERVIEW

1. The Designer shall prepare Schematic Design drawings and documents illustrating the recommended implementation of the Program and project requirements. It is essential that consultants for site work, structural, mechanical, plumbing, electrical, and fire protection be involved in the early design process.
2. The Designer shall initiate a building preliminary code analysis identifying major code considerations including but not limited to occupancy group, construction type, building height, number of stories, floor area, and sprinkler protection.

### PROJECT SCOPE AND BUDGET

1. The Designer shall consult with Durham County to review the Program and establish or verify the project scope and budget requirements. A project may include documents required for presentations to other interested groups or stakeholders, public outreach, fundraising, phased construction, or CMAR involvement.
2. Durham County recommends the base bid scope be established at approximately 90% of the construction budget.
3. If Durham County has not prepared a Program or there has not been advanced planning, then Programming shall become the initial step of the schematic design phase. The Program shall

include the County's goal for energy conservation and energy use; sustainable design and construction and the application and suitability of these goals for the project.

4. A Facility Condition Assessment Report may be required on renovation projects to identify maintenance, code, and life safety improvement recommendations.
5. Testing for and abatement of hazardous materials such as asbestos and lead paint shall be contracted by Durham County prior to Bidding.

### **OWNER AND OTHER AGENCY REVIEWS**

1. The Project Manager will distribute the Schematic Design documents to the various County stakeholders for concurrent reviews. The stakeholders will return their review comments to the Project Manager, who deliver them to the Designer. Typical turnaround time for review comments is two weeks after receipt of the submittal package

### **PLAN CHECK**

The Designer is expected to perform thorough plan review and design team coordination prior to each submittal. It is not the role of Durham County review staff to resolve simple errors and omissions in the Designer's work.

### **Minimum Requirements for Schematic Design Submittal**

- A Statement of Probable Cost based upon gross area, volume or other appropriate units.
- The Designer and consultants shall confer jointly with the Project Manager on the most economical and appropriate location and orientation of the facility on the proposed site. This effort shall consider site conditions and the implications for various building systems. When determining the most effective building design and location, Energy Modeling required to meet the County's LEED goals, space requirements, functionality and special conditions should be considered.
- A current site survey is necessary when the scope involves site modifications. The Designer shall define the scope of the survey as appropriate to the project requirements. Durham County will contract with the surveyor for these services directly and will pay the costs from the project budget.
- The Designer shall initiate request for a basic soils investigation program when the scope of the project requires a structural and foundation design. Durham County shall contract a geotechnical engineering consultant and issue the formal report to the Designer. A copy shall be provided in the Design Development submittal. The Designer shall consider the report's recommendations during formulation of the project design, plans and specifications. A copy of the report shall also be included in the bid documents and noted as for the bidder's information only. Referencing the report's recommendations shall not substitute for properly evaluated and prepared specifications and plans by the Designer.
- A scaled site plan with north arrow, showing the location and size of the proposed facility in relation to existing real or assumed property lines, buildings, roads, walkways, parking and existing utility services shall be included. Early determination of the adequacy and availability of all existing utility services is important. The Designer shall review all available as-built drawings related to the project, which may or may not accurately reflect field conditions, and will be responsible for examining all existing conditions.
- Single line drawings of the proposed floor plan(s) that show the rooms and spaces, including mechanical and electrical rooms, service areas, etc. Rooms shall be identified

by name or use for consideration of code implications. Space allocations shall be compared with those specified in the Programming phase.

- Scaled proposed exterior building elevations to show massing and height.
- Scaled building sections to show relationship between floors.

### APPROVAL TO PROCEED

The Designer should secure approval of the Schematic Design submittal from the Project Manager before proceeding to the next phase.

### COMMISSIONING AUTHORITY

The Commissioning Authority shall review the Schematic Design package against the modeling assumptions and make written comments to the design team for incorporation into the project by the design team if the agent has been determined at this phase

## Combined Schematic and Design Development

### OVERVIEW

Combining Schematic Design and Design Development submittals is acceptable for specific project types with the approval of Durham County Engineering. Types of projects that could be considered for a combined SD/DD submittal include:

**Architecture:** Minor Renovations/upfit, Small Metal Buildings, Window Replacement, Roofing Repair/Replacement, Waterproofing, etc.

**Civil/Structure:** Sitework/Utility Infrastructure, Repair/Renovation of Structural Elements, Grading, Paving and on-grade parking.

**Mechanical:** Mechanical Equipment replacement, Fire Sprinkler Upgrade, Life safety Code Renovations, Mechanical Systems Upfit/Retrofit.

**Electrical:** Electrical Equipment Upgrades/Replacements, Fire Alarm Systems, Telecommunication Systems, Lighting Renovations, etc.

## Design Development Phase

### OVERVIEW

The Design development submittal is a further development of the Schematic Design submittal. Based on the approved Schematic Design submittal, the Designer shall prepare the Design Development documents, which shall include all basic Program elements, systems, and materials to be used in the project. The Designer and his consultants shall complete an analysis of various building orientations, materials, finishes, and PME system alternatives to meet the stated LEED certification goals. The Designer, in concert with County stakeholders (and CMAR if applicable) shall select the systems and materials that are the best value for the project over the life of the building.

### OWNER AND OTHER AGENCY REVIEWS

1. The Project Manager will distribute the Design Development submittal to the various County stakeholders for concurrent reviews. The stakeholders will return their review comments to the Project Manager, who deliver them to the Designer. Typical turnaround time for stakeholder review comments is two weeks after the Project Manager receives the submittal.

An Owner Review sit-down meeting will be scheduled with the County stakeholders and designers to discuss the project at this phase and answer any questions. Separate meetings with Durham County IS&T and General Services will be scheduled for input into systems and building security.

2. The Design Development phase submittal shall be reviewed and approved by Durham County prior to submission to any other regulatory agencies having jurisdiction, such as NC DHHS, NCDOT, etc.

## Minimum Requirements of Design Development Submittal

### DOCUMENTS

- A written response to Schematic Design review comments on the design firm's letterhead. The letter shall include the name of respondents for each discipline. The response must detail how and where the comments have been addressed.
- A Statement of Probable Cost using the CSI Master Format 2004 or later, with appropriate units of measure such as area, volume, linear feet, tons BTU/hour, etc. The Designer shall take into consideration the actual systems and materials proposed, and carefully consider the cost estimate at this phase and whether the project is within budget. Provide a complete budget tabulation summary showing the breakdown of total appropriated funds and line items from the design contract. Site work and utility services shall be shown as separate items. If the scope and budget are not aligned at this point, value engineering efforts must be undertaken.
- The soil investigation report, boring logs and all other reports or studies made for the project shall be considered by the Designer in his design, and included in this submittal
- A written description of the engineering rationale leading to the utilization of systems as shown on the drawings, where necessary to comply with LEED requirements.
- Outline specification with brief descriptions of building systems and materials in CSI Master Format 2004 or later should be used throughout by all design disciplines. Full specifications will not be reviewed at this phase.
- LEED Certification project checklist

### DRAWINGS

Drawings at the Design Development phase shall clearly show the locations of all rated walls. Plans shall include a north arrow, numeral scale, and graphic scale. Up/down direction of all stairs and ramps is required.

Discipline-specific drawing requirements for Design Development submittals include all requirements of Schematic Design drawings, and the following:

- Building Code Summary (Appendix B) to include all preliminary code information needed to support the proposed design including but not limited to occupancy group, construction type, building height, number of stories, floor area, and sprinkler protection.
- Life Safety Plans showing the occupancy group, area in square feet, and occupant load of each room or space, dead ends corridors, common paths of travel, travel distances, dimensions to show remoteness of exits, exit widths at each exit and stair, actual and allowable occupant load at each exit and stair, and doors equipped with panic hardware.
- Fire Resistance Construction Plans to show areas of fire rated floor assemblies, and the fire rated columns and beams required to support them.



## CIVIL DRAWINGS

- Civil plans showing proposed grading, benchmarks, site drainage and sedimentation control
- Utility infrastructure, roads, parking, adjacent structures
- Site data as furnished on previous submittals
- All plans shall include information relative to flood plain involvement of the project

## ARCHITECTURAL DRAWINGS

- Scaled Architectural Site Plan: Show adjacent structures, separation distances between structures and all real and assumed property lines, parking, accessible routes, and identify all building entrances/exits.
- Floor Plans at 1/8" or 1/4" scale: Show all fire rated wall construction. The plans shall clearly reflect the requirements of the building code analysis for the building type. Symbol legends pertinent to the symbols indicated on plans shall be included on each sheet
- Building Elevations at 1/8" or 1/16" scale: Show exterior finish materials, fenestrations, doorways, expansion joints, floor and roof level elevations.
- Building Sections at 1/8" or 1/4" scale: Taken at appropriate locations to show major vertical spaces, large volumes such as atriums, shafts, basement, and adjacent structures.
- Roof Plan at 1/8" or 1/4" scale: Include roof slope and roof drainage information and indicate all roof top or roof mounted equipment.
- Reflected Ceiling Plan at 1/8" or 1/4" scale: Indicate the location of all ceiling mounted fixtures, devices, equipment, and other ceiling appurtenances. Symbol legend describing each ceiling symbol shall be included on all ceiling sheets.
- Wall Sections at 3/4" or 1" scale: Show construction of the wall from foundation to roof, including floor construction. Label the spaces/rooms and indicate building grid line and floor elevations.
- Large-Scale Details at 1½" or 3" scale.
- Room Finish Schedule including basic materials proposed for the floors, walls and ceilings.
- Door Schedule including fire ratings, door types, frame types, glazing types, and hardware groups

## STRUCTURAL DRAWINGS At a minimum, structural drawings shall include:

- Identify allowable soil bearing pressures and live loads used in the design.
- Foundation plan showing the basic elements of the foundation
- Additional details and information delineating the size, type and probable depth of special foundations such as piles or caissons.
- Floor and roof framing plans showing size, spacing and type of primary members.
- Locations of shear walls and/or bracing
- Additional details and information describing the method of lateral load resistance.

**MECHANICAL DRAWINGS:** At a minimum, mechanical drawings shall include:

- Rated walls on all plans.
- Major HVAC equipment rooms
- Basic layout of the heating, ventilating and air conditioning distribution system
- A diagram of the temperature control systems
- Schematic diagram of air, hot water and/or steam, chilled water and condenser water systems
- Symbol legend describing the symbols used on that sheet

**PLUMBING DRAWINGS:** At a minimum, plumbing drawings shall include:

- General development of the plumbing system.
- Source of water supply and waste disposal termination
- Water distribution and waste collection plan diagrams, including fixtures.
- Symbol legend describing the symbols used on that sheet

**ELECTRICAL DRAWINGS:** At a minimum, electrical drawings shall include:

- Basic electrical service equipment and its location
- Electrical power distribution components
- Primary service switches
- Transformers
- Generators
- Main switchgear
- Motor control centers
- Locations of the electrical and telecommunication rooms.
- Single line diagrams of the power distribution systems including primary, secondary and emergency power.
- Diagrams for fire alarm, telecommunications, security and all other systems included in the electrical scope of work.
- An estimated load summary in KVA rating, the connected load, the demand load and the DF are required with this submittal.
- Electrical floor plans shall show the basic layout of the lighting, emergency lighting, power receptacles, smoke and heat detectors, data/telecommunications outlets or other systems in the project. The plans shall show location of all fire rated construction
- Symbol legend describing the symbols used on that sheet

**FIRE PROTECTION:** At a minimum, fire protection drawings shall clearly reflect compliance with NFPA 13, 13R, 14, 20, and 24, the NC State Fire Code, the NC State Building Code, and:

- Floor Plans at 1/8" or 1/4" scale.

- Location of all valves, mains, drains and FDC locations. *Plans must clearly indicate that the fire protection scope of work begins 12" above the finish floor.*
- Symbol legend describing the symbols used on that sheet

**SPRINKLER DESIGN DATA SUMMARY** shall include:

- Project name and address
- Total building height in feet
- Type of system
- Hazard classification
- Design data
- Design density
- Hose allowance
- Water supply information.
- Fire protection equipment locations with schedule, and electrical demands indicated.
- Piping schematic shall include all valves flow and tamper switch locations from point of city/county connection to further valve system.

**ENERGY CODE COMPLIANCE:** The Designer shall comply with the NC Energy Conservation Code.

**DESIGNER PLAN CHECK**

The Designer shall perform a thorough plan review and design team coordination prior to each submittal. It is not the role of Durham County review staff to resolve simple errors and omissions in the Designer's work.

**APPROVAL TO PROCEED**

The Designer should secure approval of the Design Development submittal from the Project Manager before proceeding to the next phase.

## Construction Documents Phase

**OVERVIEW**

The Construction Document submittal is a further development of the Design Development drawings and specifications. Based upon the approved Design Development submittal, the Designer shall prepare construction drawings and specifications setting forth all the work in detail and describing the work to be performed. This includes every aspect required to produce an accurate Bid and a smooth construction phase, and includes full descriptions and details of materials, products, finishes, workmanship, plumbing, mechanical, electrical, and fire protection systems; special equipment, site work and utility connections and services.

1. Complete Durham County front end documents, including bidding information, the Proposal, Contract, Bond Forms, General and Special Conditions of the Contract, and all other information, forms, and documents required to effectively bid the project and receive competitive bids, shall be provided.

2. Requirements for the Construction Document submittal include all requirements of the Design Development submittal, and any additional requirements of this section.

### **OWNER AND OTHER AGENCY REVIEWS**

The Project Manager will distribute the Construction Document submittal to the various County stakeholders for concurrent reviews. The stakeholders will return their review comments to the Project Manager, who deliver them to the Designer. Typical turnaround time for review comments is two weeks after the Project Manager receives the submittal package.

The Construction Document phase submittal shall be reviewed and approved by Durham County prior to submission to any other regulatory agencies having jurisdiction, such as NCDHHS or NCDOT.

### **DESIGN CALCULATIONS**

The Designer and his consultants shall retain design calculations for all systems, including roofing, structural, special foundations, and mechanical and electrical designs. Calculations shall be kept in a reproducible format and submitted to Durham County upon request.

### **Minimum Requirements of Construction Document Submittal**

- A written response to the Design Development review comments on the design firm's letterhead. The letter shall include the name of respondents for each discipline and must detail how and where the comments have been addressed.
- The Designer shall provide a Statement of Probable Cost using quantity take-offs of major sections within the Master Format Division. Overhead, profit, taxes, insurance, bonds, contractor's contingency, etc., shall be included. The final cost shall be escalated to the midpoint of anticipated construction time. The estimate must be prepared for all bid items and include alternates as a separate line item.
  - a. A summary shall be furnished that shows the current design contract total budget and line items for reserves, owner contingency, and design fee. The Designer is responsible for bringing the project within the construction budget as set forth in the design contract. It is essential that accurate and proper construction estimates be developed at this stage to avoid delays and added cost to the County resulting from bids that exceed the construction budget.
  - b. Durham County recommends that the base bid scope be established at 90% of the construction budget to permit flexibility and/or the ability to award a contract without value-engineering. An estimate that significantly exceeds the construction budget cannot be approved for bids unless scope is reduced.
- The Project Manual shall be 8½ x 11 format securely bound on the left side and contain all the required Durham County bidding and contract forms and documents. These documents are furnished by the Durham County Purchasing Division. The current version may be requested by emailing [purchasinggroup@dconc.gov](mailto:purchasinggroup@dconc.gov).

### **SINGLE VOLUME PROJECT MANUAL**

- Project Manual Cover – Project Name, Durham County Invitation for Bid Number, Designer and Consultant names and addresses, with Professional Seals affixed or included on sheets immediately following the cover
- Table of Contents

- Invitation for Bids
- Bid Schedule
- Newspaper Advertisement formatted and edited for the project.
- Instructions to Bidders
- Equal Employment Opportunity
- General Conditions of the Contract for Construction
- Special Conditions prepared by the Designer, formatted and edited specifically for the project
- Affidavit of Compliance (E-Verify)
- Bid Forms
- Special Notice
- Non-Collusion Affidavit
- Bid Bond/Power of Attorney
- Performance Bond
- Payment Bond
- Project Procedure Form
- M/WBE Forms
- Vendor Application/W-9 Form
- No Bid Reply Form
- Contract for Construction Between owner and Contractor - SAMPLE
- Technical Specifications
  1. In addition to the newspaper and web site advertisements, full information on the details and requirements for bidding the project shall be provided in a Notice to Bidders. The Durham County Bid documents contain the appropriate legal language and are not to be modified in any manner except by a Special Conditions section.
  2. Items to be edited by the Designer include:
  3. Identification of the project contract type being bid – Single Prime, Separate, etc.
  4. Instructions to Bidders and Special Conditions of the Contract
  5. The Designer and Project Manager shall establish a time of completion in consecutive calendar days from Notice to Proceed to Substantial Completion. For projects where completion dates are more important than the number of days allowed to complete the work, a critical completion date may be substituted for the number of calendar days allowed.
  6. Liquidated damages, where required, shall be estimated on a per day basis to cover any loss or damages to Durham County should there be delay in completion or occupancy of the project.
  7. Smoking is not permitted inside or within fifty feet of Durham County facilities.
  8. Review of Temporary Utilities: Clarify the responsibilities of each party during construction for renovation or addition projects.

9. Durham County may include a standard 'Project Requirements' section in specification "Division 01 General Requirements" for technical and procedural issues specific to the facility, such as parking, logistics, security, work periods, fencing, safety, code of conduct, etc. These are not conditions of the contract but are technical and procedural requirements.

#### Division 1 – General Requirements:

1. List and describe Alternates, keeping them simple and clearly identified in scope and details and limiting their use.
2. Durham County utilizes ADD alternates and not DEDUCT alternates for cost control.
3. Bid alternates may not be used as a means for price shopping.
4. Owner preferred Alternates were established by NC GS 133-3 in 2002. Durham County may bid an alternate for a preferred 'brand' of product under the conditions and procedures described in the statute.
5. Cash Allowances are not used in public work as there is no "competitive bidding" process as required by statute. Estimated quantity allowances are acceptable with a unit price solicitation on the Proposal Form. Base bid quantities should be carefully estimated to ensure project contingency is not critically depleted.
6. Allowance Exception: Brick products may be purchased using a set dollar allowance per 1000 brick provided in the bid documents. All other costs for labor and materials for masonry shall be included in the base bid.
7. Unit prices are not considered in determining the low bidder and may be negotiated with the low bidder if prices are out of line compared to other bids. The Designer shall estimate and provide a "quantity allowance" in the bid documents for the bidder to include in the base bid. The bid Proposal Form shall request a single unit price from the bidder that will be used to adjust the actual quantity or scope up or down.
8. Identify and explain all Owner supplied work or items to eliminate duplication and confusion during bidding.
9. Identify items to be salvaged and turned over to Durham County, and items to be removed, stored, and reinstalled in renovation projects.
10. Include line item for abatement and monitoring costs.

#### Technical Specifications:

1. Use CSI Master Format 2004 version or later, customized and tailored to the project.
2. The format for all specifications shall be narrative or "imperative". Short form or outline specifications are not acceptable for a Construction Document submittal. Specifications shall be complete and concise, in simple standard language known to the construction trades. Specification content shall relate only to the specific project requirements.
3. The division of responsibility between prime contracts, such as between food service equipment and plumbing, or electrical and mechanical, shall be carefully coordinated and noted.
4. Utilize reference standards such as UL, FM, NFPA, etc. Federal Specification (FS) or Military Specification (MS) are not appropriate for use in Durham County project specifications since the County and many contractors do not have those specifications.
  - a. Include the Abatement Testing Report in the final project manual.

## **MULTIPLE VOLUMES PROJECT MANUAL**

1. Project Manual Cover – Project Name, Durham County Invitation for Bid number, Volume number clearly shown, Designer and Consultant names and addresses, with Professional Seals affixed or included on sheets immediately following the cover
2. The Bid Forms and contractual documents may be included in the front of the first volume preceding the Technical Specifications, or as a separate volume. If Bid forms and documents are submitted as a separate volume, the cover requirements above apply.
3. A separate Table of Contents listing sections included in that volume must be provided for each volume.

## **PLAN CHECK**

The Designer shall perform a thorough plan review and coordination with the design team prior to each submittal. It is not the role of Durham County review staff to resolve simple errors and omissions in the Designer's work.

## **APPROVAL TO PROCEED**

The Designer should secure approval of the Construction Document submittal from the Project Manager before proceeding to the next phase.

## **Final Submittal for Bid**

### **OVERVIEW**

The Final Submittal is not intended to be another project review. The final submittal will verify the Designer's written responses to the Construction Document review comments, and that the required revisions have been made to the project documents.

1. Provide written responses to the Construction Documents review comments with this submittal. The Designer responses shall be written on the Design Firm's letterhead with all respondent's names, phone numbers and email addresses. Responses shall indicate the specific page/paragraph/sheet/detail where revisions occur in the specifications or drawings, and explanations to question(s) raised. If new sheets are added, previous sheets removed, or re-arrangement occurs within a sheet, clarify the change.
2. Evidence of approval from other review agencies having jurisdiction (such as NCDHHS or NCDOT) are required with this submittal.
3. If the Construction Document submittal was incomplete, the Designer's responses or the Final submittal may generate additional questions or comments. If the Final submittal shows noncompliance with previous CD review comments or has generated more comments, the submittal is not approved for bid and another submittal will be necessary.

## **Bid Phase**

### **OVERVIEW**

The Durham County Purchasing Division administers the Bid Phase of the project and issues the construction contract once a contractor has been selected.

## SETTING BID DATE

1. Upon approval from Durham County Engineering, the Purchasing Division, Project Manager, Designer, and CMAR if included, collectively determine the critical path Bid Phase dates.
2. The length of the Bid Phase varies but is typically not shorter than thirty calendar days. This phase includes newspaper and website advertisements of the Invitation for Bids, a Pre-Bid Conference which may include a site visit for renovation projects, a date by which all Bidder questions must be received in writing, a last day for issuing Addenda, and the Bid Date and location.

## ADDENDA

1. The Durham County Purchasing Division collects all Bidder questions in writing and forwards them to the Designer. Answers to Bidder questions will be provided in writing by the Designer in an Addendum and distributed to Bidders and plan rooms by the Purchasing Division for standard projects, or by the CMAR if applicable.
2. The Designer may send other Addenda to the Purchasing Division or the CMAR for distribution to Bidders and plan rooms if changes occur or clarifications are necessary.
3. The last date for issuance of any Addendum on any project is one week in advance of the Bid date.

## RECEIPT OF BIDS

1. Durham County Purchasing Division will conduct Bid Openings with the Designer present.
  - a. Bids may not be opened unless three were received by the appointed day and time.
  - b. If three bids were not received, the project may be re-bid. Bids may be opened if fewer than three are received on project re-bid dates.
2. If the Low Bid exceeds the Project Budget, the Designer and Durham County Project Manager (and/or CMAR) will engage the low-bid Contractor in value engineering efforts to arrive at an acceptable project scope and price.

## Construction Administration Phase Requirements

### MONTHLY CONSTRUCTION PROGRESS MEETINGS

The Designer shall establish and conduct a regularly scheduled monthly meeting to be held at the job site for all single and multi-prime projects. Under CM at Risk, the Construction Manager shall establish and conduct the regularly scheduled monthly meetings.

The Designer shall request that each prime contractor, or in the case of CM, each first tier subcontractor be represented by appropriately authorized project personnel. These representatives shall have authority to act on behalf of the contractor.

It shall be the purpose of these meetings to effect coordination, cooperation and assistance in maintaining progress of the project on schedule in order to complete the project within the contract time.

All in-house consultants and contract consultants whose design is under current active construction shall be present at the job site for the monthly meeting. The consultants shall be available to answer questions and resolve all problems within their discipline.

These meetings shall be open to subcontractors, material suppliers and any others who contribute to the progress of the project.



1. The format of these meetings shall include the following:
2. Review previous minutes of the meeting and resolve any corrections.
3. Work performed in the last 30 days.
4. Work to be performed in the next 30 days.
5. Request for Proposal Logs
6. Review Pending Change Orders
7. Review Request for Information
8. Review Status of Shop Drawings
9. Review Schedule Compliance
10. Percentages Complete to be reported by the Contractor(s) – (Actual Work Completed)
11. Discuss Construction/Coordination Issues
12. Special Inspection Reports – Deficiency Notices
13. Comments from Owner, Contractor(s), and Designers

The Designer shall prepare and submit to the Owner, minutes of the monthly meetings for all single and multi-prime projects. Under CM at Risk, the Construction Manager will prepare and submit minutes of the monthly meetings. These minutes shall include a roster of all participants and all documentation of all items relating to project status and progress.

#### **CERTIFICATION OF CONTRACTOR APPLICATIONS FOR PAYMENT**

The Designer shall insure that the Contractor has included all information required by Durham County prior to forwarding the Contractor's Application for Payment to the Project Manager for processing. In addition to five copies of the standard AIA G702 Application and Certification for Payment with Continuation Sheet and support documentation, Durham County requires that a total of two copies each of the following documents accompany the submittal each billing period:

1. Exhibit 1 - Partial Waiver of Lien
2. Appendix E - MWBE Documentation for Contract Payments
3. State of North Carolina State Sales and Use Tax Report\*

\*Note: this form is required regardless of whether any sales tax was paid during the billing period

The Designer shall insure that special necessary support documentation is included with the Application for Payment if the Contractor is requesting payment for stored materials. That documentation includes:

1. Written statement that the stored materials are housed in a bonded warehouse or other secure location
2. Photographic documentation showing that the materials have been wrapped in protective plastic to prevent damage or tampering, are clearly labeled as "PROPERTY OF DURHAM COUNTY," and are separate from any other materials being stored at the location.

## **Project Close-out Procedure and Record Document Requirements**

## OVERVIEW

The Designer shall provide the following project services toward completion of the project. Final payment will not be approved until all deliverables are received in good order. All items are expected to be delivered within sixty days of project acceptance.

1. The contractor shall provide training to Owner's representatives on the use and maintenance of equipment as specified by the Project Manager. This typically includes HVAC and MEP equipment and controls.
2. At project close-out the Designer shall provide the following documents to the Project Manager. All of the following items shall be updated to accurately reflect as-built conditions:

- A sealed, dated letter** from the Architect certifying the project.
- Final Report** that includes:
  - a) Title Sheet: Project Title & Address, County Project ID Number, Designer's Information, Date Submitted, Designer of Record Seal
  - b) Project Description:
  - c) Architectural: A complete description of the building interior and exterior, Square Footage Figures.
  - d) Structural: Describe type of foundation system, framing system, floor system, etc.
  - e) Plumbing: Describe the plumbing, the point of connection to sewer, the source of cold and hot water, storm drainage and sprinkler system.
  - f) HVAC: Describe the type of mechanical systems – steam, hot water, chilled water, forced air; method of distribution; building automation controls.
  - g) Electrical: Describe the electrical service system, power and lighting system, emergency system, fire alarm system.
  - h) Full, Accurate Cost Data: Break out each Contract, including Owner Costs, and show original Contract Fee, Change Orders/Amendments, and a Subtotal for each. Break out project cost per square foot.
  - i) Contractors List: include names and addresses of Contractors and Material Suppliers
  - j) Certificate of Completion By Designer of Record and Certificate of Compliance from each Consultant. Seals on all certificates shall be visible.
- One Archival Drawing Set**
  - a) This set shall be made up of loose sheets not bound.
  - b) This set includes ALL drawings and illustrations that describe any demolition and construction completed as part of the project.
  - c) The drawing set's Contents or Sheets list shall be updated to reflect the final drawing collection.
- One set of CAD Drawing Files** used to produce the printed drawings. CAD files do not require professional seals

- One **set of PDF files** of the record drawings. PDF's require professional seals.
  - One **Index of Drawings** in electronic format, with one line per record document sheet, giving the document sheet number, sheet name and corresponding electronic file name used to produce the record drawing.
  - Project Manual set including Addenda** in electronic format
  - Project Manual set including Addenda** in printed format
  - All O&M manuals, warranty certificates, and product cut sheets**
    - a) Printed materials shall include seal(s) and signature(s,) and follow the following standards unless specified otherwise above:
    - b) All materials should be imaged on acid-free, white, 18 to 30-pound white paper of bond or rag base with contrasting print.
    - c) Covers must be acid-free cover paper, card stock, art board or Mylar.
    - d) Plastic (polyvinyl) covers and/or comb binding are NOT permitted.
    - e) Document sets over 1 inch thick shall be split into multiple volumes.
3. The cover of each item, and each drawing sheet, shall include, as applicable:
- a) Phase indication or "Record Document" clearly visible.
  - b) Architect and/or engineer's name
  - c) Project name and County project number.
  - d) Architect and/or engineer's Seal and Signature. Note: PE must Seal and Sign Record drawings.
  - e) Revision history with revision dates.
  - f) A volume identifier, such as "Volume 1 of 3".
5. **Electronic documents** may be delivered on: Compact Disk, DVD or Flash Drive media and follow the standards below:
- a) **All electronic files shall be named according to their printed sheet name.**
  - b) File names shall not include space or punctuation characters other than hyphens, periods and underscores.
6. Text files shall be delivered in Rich Text Format, RTF, or Microsoft Word 2010 or later format.
- a) Acrobat PDFs are also acceptable for textual material as long as content is text searchable and selectable.
7. **Spreadsheets** shall be delivered in Comma Separated Values, CSV format or Microsoft Excel 2010 or later format.
8. **Drawing Files** shall be unlocked, editable, and compatible with AutoCAD release 2014.
- a) *Each CAD file shall be bound with no external references (XREFs) and purged of unreferenced objects and layers.*
  - b) Include any non-bindable attachments, custom fonts (SHX file) and the CTB file used in project.
  - c) Professional seals should not be included in the CAD files.

**Note:** Documents will be reviewed by the Project Manager for completeness and accuracy before being accepted. Documents that do not meet these requirements when received shall be corrected and resubmitted at the expense of the designer.

## **11-Month Warranty/Project Review**

The Designer shall attend a final walkthrough of the project with the Contractor (or CMAR) and Durham County Project Manager at approximately thirty days before the standard Contractor Warranty period ends. The General Contractor's subcontractors will test building systems to verify that they are functioning within specifications. Any deficiencies due to workmanship or general component failure will be noted. Deficiencies or damage caused by Owner occupancy are not the Contractor's responsibility and will not be included. The Designer shall issue a Final Punch List to the Contractor with all Warranty work required to be complete by the end of the twelve-month warranty date. Upon completion of Final Punch List items, the Designer shall issue a Letter of Project Completion to Durham County, certifying that all known deficiencies under warranty were corrected by the Contractor.

## **End of Project Design Guidelines**

*April 2019*