

## VII. DOCUMENTATION

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How well the documentation is prepared on a project directly reflects the roofing knowledge of the Designer and his interest in doing a good job. The Contractor sees this as well as the SCO reviewer. Clear, complete and well conceived documents result in faster reviews and fewer comments. The Contractor sees what is required (as well as seeing that the Designer knows what is required) and can feel assured of an accurate bid.

See Construction Manual Chapter 2 for complete description of review process and procedures.

See Construction Manual Section 112 for additional design and planning criteria.

### A. REVIEWS AND APPROVALS

Roofing project documents, regardless of dollar value, will always require review and approval by the Owner, the State Construction Office and the Department of Insurance at each stage of design. In addition, the Archives and History Division of Cultural Resources must review roofing projects involving properties on the National Register of Historic Places or Historic Districts.

Project review and approval by SCO is for: conformance with the Design contract and project funding, conformance with generally accepted design and construction standards, conformance with NC General Statutes relative to construction and contracting for State owned facilities, and conformance with this criteria where applicable. SCO reviews are not "office checks" and do not ensure the accuracy or the appropriateness of the drawings, materials or specifications.

### B. SUBMITTALS

#### 1. SCHEMATIC DESIGN

Projects involving a new building(s) would begin with the Schematic Design submittal which must include the basic building layout and a general description of the proposed building systems and materials. The

minimum roof system description may be low-slope or steep, wood or steel framed and roofing as membrane, metal or shingle. The appropriate roofing system is determined largely by the building basics of area, use, height and construction systems. These also determine code requirements which will influence system materials and attachment.

Roofing replacement projects may begin with the Design Development submittal which is sometimes referred to as a combined schematic/design development. The Designer uses the schematic time to investigate the existing system and its requirements and prepare "as built" drawings of the existing system.

## 2. DESIGN DEVELOPMENT

The Design Development submittal relative to roofing, whether new or re-roofing, should basically describe the complete system that is proposed. Specifications should be in outline form describing the complete system and its components. The drawings should be developed sufficiently to indicate proposed sloped drainage system, drains and a typical edge condition. The cost estimate may be based on unit costs of area.

Roofing replacement should include in addition a description of the existing roofing and its condition and the structural roof system and its condition. The non-destructive roof survey, if done, should be submitted. "As Built" drawings provided by Owner must be field verified for accuracy and changes.

## 3. CONSTRUCTION DOCUMENT

This submittal should be the complete documentation ready for bidding. The minimum criteria for this submittal is described in B, C, and D below. Cost estimates should be based on material quantity takeoffs and must be broken down into the major components of the roofing materials and process. A minimum breakdown would be the basic CSI Masterformat or AIA Masterspec system of 16 divisions.

#### 4. COST ESTIMATES

Cost estimates must be included with each submittal as outlined above. The cost estimate must also include a tabulated breakdown of total project funds as shown on the Design Contract. The Design contract does not clearly show the construction funds available. The total project funds includes the design fee and a contingency which must be deducted to determine the funds available for construction. The contingency is set by the design contract and is reserved for testing, changes and unforeseen conditions. It can not be used until after the construction contract is begun. The construction costs at bid must not exceed the construction funds available; therefore, the Designer should be as realistic as possible with estimating. Alternates are an acceptable method of controlling costs at bid time and are described below. The final cost estimate submittal and tabulation should also show a breakdown according to prime contract base bids and alternates as they would be recorded on the bid tabulation sheet.

#### C. CONTRACTUAL DOCUMENTS

State construction projects whose total contract value exceeds \$50,000 are considered "formal" contracts and must meet GS143 Art. 8 for bidding procedures and include all standard forms and documents. (Construction Manual Sections 109 and 110 and Chapter 3.)

Projects whose total contract value is less than \$100,000. may be bid as a single prime contract. Projects over \$100,000 require separate prime contracts for each contract that is \$10,000 or over.

Projects whose total contract value is under \$50,000. may be bid "informally". (Construction Manual 110.6) (See Appendix for Informal Contract Documents). Informal projects are reviewed the same as others, but a single submittal may be made with prior approval by OSC.

#### 1. NOTICE TO BIDDERS

The format for the Notice To Bidders is Section 302 of the Construction Manual. This should be "re-typed" by the Designer rather than "filled in" and all blanks should be complete except for the bid date.

The place to receive bids must be in a public facility reasonably accessible to bidders and of sufficient size to accommodate them. An address, building name, and room number or name must be stated. In many instances the place may have no "mailable" address and arrangements should be made with the Owner for the receipt of mailed and service delivered bids. It is still the bidders responsibility to have his bid at the proper place and prior to the bid closing but the Designer/Owner should establish a single address and person to receive these bids with as little confusion as possible. Include a statement that "Mailed and/or service delivered bids may be sent to:-----" and remind the bidder of his responsibility. If the mailable address is separate from the place to open bids then verify by messenger or phone that all bids are properly received and accounted for at the closing time.

The date should be on a Tuesday, Wednesday or Thursday and not the day before or after a Holiday. This is in agreement with the AGC and is due to difficulty in preparing and receiving quotes on other days.

The general contractor's license classification is determined by the type of work involved as well as monetary limits. A "Building" classification is appropriate if the prime contract involves building construction and the roofing is a subcontractor. If the work is primarily roofing then a sub-classification of Specialty "S-Roofing" is appropriate and the prime contract is directly with the roofing contractor. A single project could have both as separate primes if roofing work were separate from general construction, such as in renovation, or if scheduling of work was a factor. GS 87-10 covers monetary limits and classifications. Contact the General Contractors Licensing Board at 919-781-8771 for clarifications and rulings of appropriate license requirements

## 2. GENERAL CONDITIONS

The General Conditions of the Contract shall be Form OC-15, latest edition. The Instructions to Bidders is a part of this form. This office will provide all copies needed for insertion in bid documents or it may be photocopied for insertion by printer. Do not re-type the document into word processing files. Errors can be made and it slows the review process since we do not recognize the latest

standard form and cannot accept it as accurate. The Designer should review this document on every project to consider whether changes or additions are necessary.

### 3. SUPPLEMENTARY GENERAL CONDITIONS

A Supplementary General Conditions is always required to modify the OC-15 to a particular project. A Supplementary Instructions to Bidders may be included to clarify situations similar to the one in Art. 1 above on the Notice to Bidders. The General Conditions contain several references to the Supplementary General Conditions such as "See Supplementary General Conditions " or "if required by Supplementary General Conditions". Some specification formats include many of the Articles noted as part of Division 1-General Requirements rather than in the SGC. This is acceptable and preferred if the article is lengthy, but make reference in the SGC to the appropriate Division 1 section. The items usually found in the SGC are listed below.

- **Art.1 Definitions** - Define the Using Agency, Designer and consultants as appropriate. Name the Project Expediter here or in Art. 13.

Delete references to the State as Owner for community college projects. They are not State owned but locally owned and partially supported by the State. SCO reviews at the request of the Department of Community Colleges.

- **Art.5 Shop Drawings** - Indicate procedures and submittals required if different from General Conditions
- **Art.14 Construction Supervision** - Paragraph "e" has an "if required" for a land surveyor. Paragraph "f" requires that Project Expediter be named if 2 or more Prime contracts are involved. Select the contractor most appropriate for the duties involved.
- **Art.23 Time of Completion** - A time of completion and liquidated damages is always required. Time is the Designer's judgment influenced by complexity of work, time of year, market conditions, etc. Liquidated Damages must be effective but also realistic and justifiable. This is not a fine. Courts have ruled that only actual costs or damages incurred by Owner can be

collected. A \$100 minimum is suggested that would cover the Owner and Designer's time for paperwork and inspections caused by project overrun.

- **Art.31 - Requests for Payment** - Specify acceptable form and copies required. AIA G702/703 is normally submitted.
- **Art.38 - Use of Premises** - Some agencies and institutions have particular security, access and parking restrictions, and safety requirements that may need to be addressed.
- **Art.40 - Utilities, Structures and Signs** - Paragraph 40a needs consideration on renovation/re-roofing projects since many utilities are available and can be provided by Owner. Designer should consider with Owner what may be made available and indicate that connections and extensions must be by the Contractor and acceptable to the Owner.

Note that paragraphs h,i, and j are "if required by the Supplementary General Conditions". For roofing projects temporary toilet facilities will normally be required; a fully equipped field office may or may not be required depending on scope and duration of work. A job sign is not appropriate on short duration jobs of 30-60 days.

- **Art.42 - Guarantee** - Paragraph b refers to SGC for roofing guarantee. Insert the standard 2 year contractor's guarantee and the 10 year manufacturer's warranty. See VIII-Warranties.
- **Additional Articles** may be needed to define Alternates or Unit Prices.

#### 4. PROPOSAL FORM

The format for the Form of Proposal is Section 305 of the Construction Manual. The one combined form is provided for all prime bidders. Delete or add bidding sections as appropriate to the project. This form should be re-typed by the Designer and not "filled in". All blanks with information requested in parenthesis are to be completed, ready for bidding, at construction document submittal.

- **Name the Project Expediter and state the time for completion** in the spaces provided. (Community College projects must have the State of North



Carolina deleted as the contracting party, as they are locally owned.)

- Alternates should be listed and coded according to contract and a brief description given of work. Designer should indicate add or deduct when either is apparent. If it could go either way, then allow the bidder to select the appropriate one.
- Unit Prices should be described and the unit of measure indicated. Only one unit price blank is permitted per line item and it will be used to add or deduct from base bid amount.

## 5. ALTERNATES

Alternates are items of work that are added, deleted or modify the scope of work in the base bid and are bid separately from the base bid as an add, deduct or no change to the base bid. The number and size of alternates should be kept to a minimum. Additive alternates are preferred to deductive based on a theory that additive bids to a low base bid are more advantageous to the Owner than a deductive bid to a high base bid.

Alternates can be used as a cost control method to ensure that bids will be received within funds available without re-design and re-bidding or negotiations. A rule of thumb would be to set the probable base bid at 90% of the construction funds available and include add alternates that would total to 110% of funds available. A knowledgeable estimate should be within 10% of market bids. Do not put items that are essential to the intended scope or function of the project into alternates as cost controls. The roofing or elevators as an example, in a multistory building as cost control alternates would be pointless.

Alternates can be used to compare costs between different items or methods of construction including the cost difference for a proprietary system versus the 3 specified in the base bid.

When alternates are used they must be completely detailed on the Drawings and specified. Otherwise, if an alternate is accepted, there would be no contract documents.

## 6. UNIT COSTS

Unit costs are used to adjust the contract price for unknown quantities or variable conditions that are either above or below the amount estimated and included in the base bid. There must be a blank for price per unit measurement on the proposal form and there must be a realistic estimated amount stated for inclusion in the base bid. The stated unit price is used to adjust the base bid amount either up or down. In roofing replacement as an example, it is not unusual to uncover deteriorated decking or wood blocking after the old roofing is removed. As part of the investigation of existing conditions, the Designer should estimate as realistically as possible how much may be involved and include that in the base bid. If only a token amount is included without real investigation (or to achieve a base bid estimate within funds available) and the Contractor uncovers extensive deterioration, then the project might be stalled or stopped because added costs may exceed the contingency.

## D. SPECIFICATIONS

### 1. CSI FORMAT

The Construction Specifications Institute format of 16 Divisions must be used for any specifications. Certain articles that the State General Conditions OC-15 refers to as in the Supplementary General Conditions such as utilities, submittals, progress charts, etc. may be in Division 1 of the CSI format provided the Designer makes reference to that in the SGC with an appropriate article.

### 2. GENERAL STATUTE 133-3

**GS133-3 Specifications to carry competitive items; substitution of materials.** -- All architects, engineers, designers, or draftsmen, when designing or writing specifications for materials to be used in any city, county, or State work, shall specify in their plans at least three items of equal design or their equivalent design, which would be acceptable upon such works. Where it is impossible to specify three items due to the fact that there are not that many items in competition, then as many as are available shall be



specified. Substitutions of materials or equipment of equal or equivalent design shall be submitted to the architect or engineer for approval or disapproval before any such substitution may be made.

**GS133-4 Violation of Chapter made a misdemeanor.**

-- Any person, firm, or corporation violating the provisions of this Chapter shall be guilty of a misdemeanor and upon conviction, license to practice in this State shall be withdrawn for a period of one year and he shall be subject to a fine of not more than five hundred dollars (\$500.00).

### 3. REFERENCES

Ensure that referenced standards are the latest editions and are appropriate. (Meaning the Designer has a copy and knows what it says.) Avoid the use of Federal/Military specifications. [No one has copies (D.H.Hill Library) or understands what they say.]

Consider requiring that manufacturers provide letters that their materials are suitable and appropriate for the application and design proposed, preferably when you are preparing specifications. Advertisements and brochures are not always a good basis for design and specification.

### 4. ALTERNATES

Alternate bid roofing systems or components must be specified and detailed as completely as the base bid system. (If not properly detailed and specified, and the Alternate is accepted, it is possible to have a construction contract with literally no accurate documentation or drawings!)

### E. DRAWINGS

The drawings are a primary tool of communication that describe the scope of work and the intent of the Designer. The concept that "the less is shown the less liability I will incur." has proven to be a poor defense in claims hearings or courts.

## 1. COVER SHEET

Re-roofing projects as well as new building projects should have a cover sheet that provides vicinity map, site map with adjacent buildings, access, staging areas, heights above grade to roof, existing roof plan, project data, etc. as drawing scale permits. This sheet orients the bidder, agency reviewers and plan archives to the projects scope. Building data appropriate to project should be added per Construction Manual 112.1.

## 2. PLANS

New building projects should have a complete roof plan drawing that indicates the primary dimensions, drainage plan and all major roof penetrations such as fan curbs, hatches, skylights and mechanical equipment. Do not refer the contractor to the mechanical sheets for penetrations except for specific dimensions. The Designer should co-ordinate any roof top items to ensure there are no conflicts with the intended roofing design.

Re-roofing projects should indicate the same items as in new construction. Overall dimensions should be shown and if significant renovation is to occur, a separate existing conditions plan should be included. Provide data on the plan sheet about the existing system and deck materials. Indicate any existing slope and whether it is in the structure or insulation system.

## 3. DETAILS

Large scale details, 1-1/2" minimum, must be shown of each different edge condition and penetration of the roofing system. Each detail must be keyed to the plan. Details must be pertinent to the project construction and not "symbolic" details or manufacturer's standard details.

If an alternate system bid is requested, then complete detailing and specifications of that system is required in the bid documents where it differs from the proposed base bid system. Details must comply with requirements in the first paragraph above.

If a substitute system is requested by the bidder/contractor, the Designer shall require that

plans and details of the proposed system, where different from the specified system, be submitted for approval. Details must comply with requirements in the first paragraph.

## VIII. WARRANTY

The State has been receiving warranties on roofing systems and installation based on the two statements in Section A below. These are minimal statements at best and do not constitute a warranty nor adequately define the warranty to be submitted. The State usually receives the Standard CRSMCA form, or similar, for the Contractor's warranty and the Manufacturer's standard form for the ten year warranty. These documents go well beyond the statements below in defining the conditions of the warranty. These conditions, as would be expected, favor and protect the contractor much more so than the Owner.

The State has not yet had any significant problems in getting adequate responses from contractors or membrane manufacturers relative to roof leaks and roof warranty work. But with the number of roofs and the volume of roofing the State has, a more equitable warranty document is needed and being written. The following articles address the issues and conditions that will be a part of the proposed document. In the interim, the Designer should continue to include the statements in Section A in the SGC Article 42b.

### A. BASIC SCOPE AND COVERAGE

The Contractor shall warrant the materials and workmanship of the roofing system against leakage and against defects due to faulty materials, workmanship and contractor negligence for a period of two (2) years following acceptance of the project by the Owner.

The Roofing System Manufacturer shall inspect the installation and warrant the materials and workmanship of the roofing system against leakage for a minimum period of ten (10) years following acceptance of the project by the Owner.

### B. NATURE OF REMEDY

In the event of a leak the Contractor/Manufacturer shall repair the leak and repair any components of the warranted roofing system that is damaged or impaired by the leak. This includes recovery board, insulation, fasteners and gypsum board, etc. down to the roof deck.

### C. MONETARY LIMITS AND CONSEQUENTIAL DAMAGES

The minimum monetary limit on expenditures required to repair the roofing system shall be the Owner's original cost of materials and installation and the limit may be prorated over the warranty period.

### D. EXCLUSIONS

Exclusions are those events or conditions that result in roof leaks which may not be covered by the roofing warranty. These should be only events or conditions that are usually beyond the control of the roofing contractor/manufacturer and that result in failure of the roofing system to be leak free.

The following exclusions are acceptable in a warranty of the roofing system installed on State owned facilities:

- **Natural disasters** - Lightning, fire, tornadoes, earthquakes, hail, falling objects and winds in excess of 55 mph.
- **Negligence and abuse** or misuse by anyone other than the Contractor, vandalism, riots and war.
- **Structural failure** - an abnormal movement, settlement or displacement of the building structural system not provided for by an expansion joint. This does not include localized thermal movement of metal flashings, gravel stops, insulation, fasteners and other components of the roofing system itself.
- **Secondary moisture** entering the roof system from locations other than through the roof system, including moisture vapor from within the building.
- **Substances and chemical contaminants** that manufacturer considers damaging to the membrane and that were specifically listed in written form and presented to the Designer and Owner prior to installation.
- **Change in building usage** or environment that would significantly and adversely affect roofing system.
- **Alterations, additions or repairs** made upon, through or to the roof and the roofing system without prior written notification and approval of the Installer/Manufacturer.

#### E. NULL AND VOID PROVISIONS

Once the warranty is in effect, i.e. work complete with inspections and payment satisfactory, then there shall be no conditions that can make the warranty null and void in its entirety. An event or condition may be excluded from the warranty as described above for that particular occurrence or condition but can not be applied to the warranty in its entirety or affect the warranty period.



## IX. FIELD ADMINISTRATION

THIS SECTION "IN TYPING"

### A. PRE-CONSTRUCTION CONFERENCE

1. SUBSTITUTIONS
2. STAGING, PARKING, UTILITIES, ACCESS
3. ROOFING FOREMAN MUST ATTEND
4. CONTACT PERSONS
5. MAINTAIN BLDG AND HC ACCESS.

### B. INSPECTIONS

1. ROOF DECK CONDITION, BLOCKING, ETC.
2. FLOOD TEST

### C. UNIT COSTS

### D. CHANGE ORDERS

**E. CLOSE-OUT**

**1. SIGNED WARRANTY**

**2. REPAIR "KIT" AND INSTRUCTIONS**

## X. MAINTENANCE

### A. INSPECTION

#### 1. EVERY 6 MONTHS. - SPRING AND FALL

Routinely Inspect the roof and all of its components at least every 6 months, preferably in the spring and fall. This is before and after the roof undergoes its greatest temperature stress. (As well as being the most comfortable time for the inspector which results in a more thorough inspection.) The more often or routinely you inspect the roof the easier and quicker it is to spot any changes that could become problems.

#### 2. AFTER ANY ADVERSE WEATHER

Inspect the roofing after any adverse weather such as heavy rains, high winds, hail, lightning strikes, very hot or very cold temperatures. Check drains for debris and metal flashings for broken joints due to movement or wind.

#### 3. KEEP DATED RECORDS

Keep complete records of the roofing system and its maintenance. Note any repairs and alterations and by whom.

### B. REPAIRS AND ALTERATIONS

#### 1. NOTIFY THE WARRANTOR

Call the designated contact person on the warranty if any leaks are noted while the roof is under warranty. If the problem is serious, the Owner's personnel should limit any consequential damages as soon as possible whether warrantor has responded or not.

## 2. PATCH KIT FROM CONTRACTOR?

The Owner should maintain a "repair kit" on each type of roofing system under his care. This could be materials provided by the roofing installer or a list of approved products and methods of minor repair that the Owner's personnel can utilize.