Frequently Asked Questions Concerning Special Inspections

American Council of Engineering Companies of NC (ACEC/NC)
State Construction Office
University Systems
Special Inspections Task Force

Contacts: Bert Neily, PE: herbert.neily@ncmail.net
Valoree Eikinas, PE: veikinas@stewart-eng.com
Steve Criscenzo, PE: sjcriscenzo@mactec.com

Pre Design Phase

1. Question: **What projects are subject to the requirements of Chapter 17, Section 1704, "Special Inspections"?**
Answer: ▫ *All Capital Improvement Projects reviewed by the SCO, except as explicitly noted below, fall under the requirements of Section 1704.*
▫ *Included are Community College projects valued at more than $300,000. While these projects are reviewed and inspected by local building officials, SCO is the statutory "Building Official" for those projects and requires Special Inspections for them.*
▫ *Exempt: Community College projects valued at less than $300,000.*
▫ *Exempt: During Design Development Review phase, SCO attempts to identify projects on which SCO will waive Special Inspections. If a waiver is granted, this is verified in writing via a review comment. Such projects are generally of limited structural complexity.*
▫ *Under Other Jurisdiction: General Statute 116-31.11 charges The University of North Carolina with developing procedures to perform the duties of the Department of Administration and State Construction Office under G.S. 133-1.1(d) and G.S. 143-341(3) for projects valued at two million dollars and less. The University of North Carolina will require Section 1704 special inspections and will follow State Construction Office criteria in determining projects where special inspections will be waived, delegating special inspections discretion to the individual campuses in accordance with criteria established by the Board of Governors for management of capital projects costing two million dollars and less.*
▫ *Under Other Jurisdiction: UNC-Hospital and ECU Medical School projects.*

2. Question: **What about Section 1705 "Quality Assurance for Seismic Resistance" and Section 1706 "Quality Assurance for Wind Requirements"?**
Answer: ▫ *These Sections are applicable, respectively, whenever a project falls within Seismic Design Category C (or worse) and/or within the triggering wind velocity & wind Exposure Category combinations.*
▫ *These Sections are mandatory, as applicable, on all projects, public or private. The Section 1704.1 "discretion", granted to the Building Official, does not apply to Sections 1705 & 1706.*

3. Question: **What are the methods of procurement for special inspection services?**
Answer: ▫ *Special Inspections services may be part of the Designer's basic services as defined in the project Design Contract.*
▫*Special Inspections may be performed by a qualified firm contracted independently by the Owner.*

4. Question: **What is required from the Owner during the Pre Design Phase?**
Answer: ▫ *The Owner shall be aware of the necessity to provide Special Inspections and shall reserve funds within the project budget to cover the Special Inspection requirements.*
▫*The Owner should indicate its preferred method of procuring special inspections when soliciting letters-of-interest for design services.*

5. Question: **What is required from the Architect during the Pre Design Phase?**
Answer: ▫Inquire regarding the Owner's preference for procurement of special inspections services.
▫*If special inspections will be performed under the Designer's contract, ensure that the proposal, for the Design Contract, specifically includes services for the performance of all special inspection activities. These services shall be separately identified in the proposal.*

▫*If special inspections will be performed under the Designer's contract, identify the entity who will serve as the Special Inspector (SI).*

6. Question: **Is it desirable for the Engineer of Record to provide Special Inspection services? Will it be required? What if the Engineer of Record does not want to provide the Special Inspection services?**

Answer:
- *The Structural Engineer of Record (SER) may serve as Special Inspector (SI), however it is not required.*
- *The Architect may serve as the SI.*
- *If the Architect and Structural Engineer of Record (SER) are not willing or able to serve in that role, the Prime Designer may add a suitably qualified consultant to the design team. The design team members may change only with explicit approval of the Owner.*
- *The Owner may elect to independently engage a qualified firm to perform the special inspections.*

7. Question: **Can an entity other than the Engineer of Record be the designated Special Inspector?**

Answer:
- *Yes. That entity must be a suitably qualified member of the design team.*

8. Question: **Can the same firm provide special inspection services (as a consultant to the Prime Designer) and materials testing services (as the Owner's ITL)?**

Answer:
- *Yes. The same firm may be under contract with both the Prime Designer and the Owner. That firm's scope-of-services must be clearly defined to avoid overlap and conflict.*

9. Question: **Are there minimum qualifications (certifications) for the Special Inspector and technicians working on the project? (concrete, soil, steel, fireproofing…)**

Answer:
- *Currently there are no minimum qualifications for Special Inspections stated in the NCSBC.*
- *See Chapter 5 of the SCO Special Inspections Guidelines for minimum qualifications.*

Design Phase

10. Question: **What is required from the Architect during the design phase?**

Answer:
- *Communicate to owner the need to provide Special Inspections.*
- *Possess basic understanding of Chapter 17 and its impact on overall design and construction administration activities.*

11. Question: **What is required from the Structural Engineer of Record during the design phase?**

Answer:
- *Communication with Architect/Prime Designer, during establishment of design fee proposal, to ensure that overall design fee reflects SI tasks of the Structural Engineer of Record (SER).*
- *Preparation of the Statement of Special Inspections.*
- *Preparation of the Quality Assurance plans as needed.*
- *Coordination of specification & drawing requirements with the Statement of Special Inspections.*
- *See Special Inspections Checklist on SCO website:*
http://interscope2.doa.state.nc.us/Guidelines/Special_inspect/TOC_Special.htm

12. Question: **Should the Statement of Special Inspections be included in the Contract Documents?**

Answer:
- *Yes, it should be included in the contract drawings or specifications at the Construction Document submittal.*

13. Question: **What format should the Statement of Special Inspections be in?**

Answer:
- *A specific format is not required. The CASE format is acceptable. A format is available on the SCO website:*
http://interscope2.doa.state.nc.us/Guidelines/Special_inspect/TOC_Special.htm

14. Question: **Should the Seismic and Wind Quality Assurance Plans (if required) be included in the Contract Documents? If so, in what format?**

Answer:
- *Yes, the Quality Assurance Plans must be included in the contract documents, drawings and/or specifications. No specific format is required. If a Quality Assurance plan is required, an "Acknowledgement of Contractor's Responsibility" form should be included in the specifications, Division 1. A format for the Acknowledgement of Contractor's Responsibility is posted on the SCO website.*
http://interscope2.doa.state.nc.us/Guidelines/Special_inspect/TOC_Special.htm

15. Question: **What is required from the MEP Engineers during the design phase?**

Answer:
- *Communicate to SER the inclusion of a smoke control system in the project scope, if appropriate.*
- *For Seismic Design Categories C, D, E or F, various MEP systems need to be included in the Quality Assurance Plans for Seismic Resistance. See Section 1705.*

▫ *For Seismic Design Categories C, D, E or F, mechanical and electrical components requires specific special inspections as outlined in Section 1707.7.*
▫ *Include in specifications the structural testing requirements for mechanical and electrical equipment seismic system components and their mounting systems as outlined in Section 1708.5.*

Pre-Construction Phase

16. Question: **What is required from the owner during the Pre-Construction Phase?**
Answer: ▫ *The Owner shall solicit proposals, from ITL's, for construction testing services.*
▫ *The Owner shall confer with the Designer to ensure that the scope of construction testing services is sufficient to facilitate the Special Inspections of the project.*
▫ *If the special inspections are not part of the Designer's contract, the Owner must engage an independent firm to perform special inspections.*

17. Question: **What are the requirements to be an "approved" fabricator?**
Answer: ▫ *AISC, PCI, etc. – a nationally recognized industry certification program.*

18. Question: **Can the contractor use "un-approved" fabricators?**
Answer: ▫ *Yes, but only if the Contract Documents permit this. Additional costs of in-plant inspections should be considered by the Designer when deciding whether or not to require a certified fabricator.*

Construction Phase

19. Question: **If the Engineer of Record is the special inspector, how are services and site visits required under the SCO manual coordinated and differentiated with those required under Chapter 17 of the NC Building Code? Overlap?**
Answer: ▫ *The SER is required to provide construction administration services as contracted under the design contract and per the State Construction Manual. These include periodic inspections of the structural steel framing and visual inspections of the bolted and single pass fillet welded connections. Field reports shall be completed for all site visits, and submitted to the architect and included in the monthly report submitted by the Special Inspector.*
▫ *It is the responsibility of the SER/Special Inspector to assure that there is no duplication of services and/or fees associated with the CA and Special Inspections.*

20. Question: **If the Engineer of Record is not the Special Inspector, how are site observation responsibilities split and how should information be distributed? Who has the final authority? (Or, how do we keep deficiencies from falling through the cracks?)**
Answer: ▫ *The SER is required to provide construction administration services as contracted under the design contract and per the State Construction Manual. These include periodic inspections of the structural steel framing and visual inspections of the bolted and single pass fillet welded connections. Field reports shall be completed for all site visits, and submitted to the architect and the Special Inspector.*
▫ *The Special Inspector, as a member of the Design Team, shall provide all inspections outlined in the scope as defined in the Statement of Special Inspections, except those performed by the SER. The Special Inspector shall provide all field reports to the SER in the monthly report. There shall be no duplication of inspections.*
▫ *The Q&A below addresses deficiencies. The Designer is the sole judge of the ultimate acceptability of any apparent deficiency.*

21. Question: **How do the responsibilities of the material testing agency (ITL) relate to those of the Special Inspector?**
Answer: ▫ *This may vary. The ITL may be an Agent of the SI, under contract with the SI; the ITL may be under contract directly with the Owner.*
▫ *A reporting matrix for ITL reports must be established by the owner and shared with the construction team prior to the start of construction.*
▫ *The ITL provides tests as outlined in the contract specifications. The scope of tests has not been affected by Section 1704 requirements.*

22. Question: **What are the responsibilities of the Contractor related to Special Inspections?**
Answer: ▫ *Timely notification to SI for each portion of work requiring inspection (the current SCO General Conditions directly address this in Article 13.c.).*
▫ *If Quality Assurance plans for Seismic or Wind are required, Contractor has responsibilities as outlined in those plans and Sections 1705 and 1706.*

23. Question: **What are the responsibilities of the Special Inspector (SI) for the documentation and correction of observed deficiencies? (Chain of command, right to stop work, owner interface…)**

Answer:
- *This varies with the level of deficiency; simple deficiencies are indisputable items such as quantities of reinforcing bars in place while complex deficiencies require engineering judgment for resolution.*
- *For simple deficiencies, the SI immediately informs the Contractor of the deficiency. The Contractor must correct the deficiency in the presence of the SI. The SI makes a record of the deficiency and a record of the corrective actions taken.*
- *For complex deficiencies, the SI immediately informs the Contractor, the remainder of the Design Team, and the Owner of the complex deficiency. The Designer is the sole judge of the ultimate acceptability of any apparent deficiency. The Contractor must either stop work until the Designer has rendered judgment or, if the Contractor proceeds regardless, the Contractor will be responsible for complete removal and replacement (and any related forensic costs) of any apparent deficiency that is ultimately judged unacceptable by the Designer. The SI must be present during the remedial actions. Upon completion of any remedial actions, the SI notifies the Designer and the Owner that the work is ready for reevaluation.*
- *For all deficiencies, all SI costs incurred after identification of the initial deficiency are paid for by the Contractor at the conclusion of the project via deductive change order.*

24. Question: **Who is responsible for scheduling personnel to meet special inspection requirements?**

Answer:
- *The Special Inspection process shall be administered by the SI, who may perform all of the required Special Inspections or may retain the services of other qualified Agents of the Special Inspector (Agents) to conduct particular inspections and tests. The SI is responsible for managing and coordinating the efforts of the various Agents.*

25. Question: **How is the term "continuous inspection" interpreted by NC-SCO?**

Answer:

Steel

- *Steel Table 1704.3, Item 2: This item is well addressed by referenced Section 1704.3.3.*
- *Steel Table 1704.3, Item 5: 100% of cited welds are to be inspected. A single inspector may observe (handling of electrodes, general welding practices, etc.) multiple welders, provided that the inspector can move freely from one welding site to another on a regular and timely basis during each workday. Testing (ultrasonic testing, etc.) shall be performed at the frequency prescribed in the project specifications.*

Concrete

- *Concrete Table 1704.4, Item 3: 100% of cited bolts shall be observed before placement of concrete. During placement of concrete, a single inspector may monitor concrete placement at several locations if the inspector can move freely from one placement site to another on a regular and timely basis during each workday.*
- *Concrete Table 1704.4, Item 5: Perform slump, air content, and temperature tests whenever strength test specimens are taken (at whatever frequency required by the contract documents). If ITL personnel, preparing the strength test specimens, meet the related qualification requirements of the SCO Special Inspections Guidelines, then the slump, air content, and temperature tests may be performed by the ITL without observation by the SI.*
- *Concrete Table 1704.4, Item 6: During placement of concrete or shotcrete, a single inspector may monitor concrete placement at several locations if the inspector can move freely from one placement site to another on a regular and timely basis during each workday.*
- *Concrete Table 1704.4, Item 8: Inspector must view tensioning of 100% prestressing tendons. The inspector must view grouting of 100% prestressing tendons that are part of the seismic force resisting system.*

Masonry Level 1

- *Masonry Level 1 Table 1704.5.1, Item 2d: 100% of cited welds are to be inspected. A single inspector may observe (handling of electrodes, general welding practices, etc.) multiple welders, provided that the inspector can move freely from one welding site to another on a regular and timely basis during each workday. Testing (ultrasonic testing, etc.) shall be performed at the frequency prescribed in the project specifications.*
- *Masonry Level 1 Table 1704.5.1, Item4: During placement of grout, a single inspector may monitor grout placement at several locations if the inspector can move freely from one placement site to another on a regular and timely basis during each workday. Placement of non-structural grout, such as ordinary core fill below grade in foundation walls, may be inspected periodically.*
- *Masonry Level 1 Table 1704.5.1, Item5: Observe preparation of 100% of specimens and/or prisms whenever such specimens and/or prisms are prepared (at whatever frequency required by the contract documents). If ITL personnel, preparing the specimens and/or prisms, meet the related qualification requirements of the SCO Special Inspections Guidelines, then oversight by the SI is not required.*

Masonry Level 2

- *Masonry Level 2 Table 1704.5.2, Item1d: Inspect 100% of grout spaces prior to placement of grout. Grout spaces that do not contain reinforcing, such as ordinary core fill below grade in foundation walls, may be inspected periodically.*
- *Masonry Level 2 Table 1704.5.2, Item 1e: During placement of grout, a single inspector may monitor grout*

placement at several locations if the inspector can move freely from one placement site to another on a regular and timely basis during each workday. Placement of non-structural grout, such as ordinary core fill below grade in foundation walls, may be inspected periodically.
▫ *Masonry Level 2 Table 1704.5.2, Item 2b: 100% of structural anchorages shall be inspected.*
▫ *Masonry Level 2 Table 1704.5.2, Item 2d: 100% of cited welds are to be inspected. A single inspector may observe (handling of electrodes, general welding practices, etc.) multiple welders, provided that the inspector can move freely from one welding site to another on a regular and timely basis during each workday. Testing (ultrasonic testing, etc.) shall be performed at the frequency prescribed in the project specifications.*
▫ *Masonry Level 2 Table 1704.5.2, Item 3: Observe preparation of 100% of specimens and/or prisms whenever such specimens and/or prisms are prepared (at whatever frequency required by the contract documents). If ITL personnel, preparing the specimens and/or prisms, meet the related qualification requirements of the SCO Special Inspections Guidelines, then oversight by the SI is not required.*

26. Question: **How is the term "periodic" interpreted?**
Answer: ▫ *Periodic is determined by the SI. The SI must inspect regularly to ensure the construction materials and methods are in conformance with contract documents. Periodic observations must be sufficient for the SI to issue the final report.*
▫ *The SER shall provide periodic inspections as outlined in the State Construction Manual, a minimum of once per week.*

27. Question: **If a special inspector is not present for required observation, can the work continue?**
Answer: ▫ *If the work is subject to continuous inspection, the answer is No.*

28. Question: **What is the required frequency of SI report submittal to the SCO (Code Section 1704.1.2)?**
Answer: ▫ *Monthly, presented to the SCO Project Monitor at the Monthly Construction Meeting.*

29. Question: **What is to be done with the Special Inspections paper work after the project is complete**?
Answer: ▫ *For the present, the owner should maintain paper work sufficient to meet post-construction and O&M requirements of the project. The SCO is in the process of defining additional criteria related to retention of Special Inspections documents.*