

**CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF CODE ADMINISTRATION
NEW CONSTRUCTION DIVISION**

**SPECIAL INSPECTIONS
GUIDELINES & PROCEDURES**



Effective December 1, 2017

**BASED ON THE VIRGINIA UNIFORM
STATEWIDE BUILDING CODE**

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PREFACE

The *City of Alexandria Special Inspection Guidelines and Procedures* provides and coordinates the procedures for special inspections that are required by the Virginia Construction Code (VCC). These procedures and guidelines are applicable during the design, permitting and construction processes and contain pertinent information needed for successful application and completion of the special inspection requirements.

This document includes the following:

- The responsibilities of the Registered Design Professional responsible for the structural design;
- The role of each member of the building construction team, including: the Registered Design Professionals; Building Owner; General Contractors; Special Inspectors; and the Building Official;
- The experience and qualifications necessary to supervise and perform special inspections;
- Required special inspections, and;
- Administrative procedures

I. INTRODUCTION

The provisions for special inspections are intended to provide a higher degree of scrutiny for aspects of construction that, upon failure, would cause significant harm and damage. These aspects of construction, as detailed in the VCC, include soil suitability analysis, fabrication and installation of structural steel members, certain concrete and masonry construction, fabrication and installation of wood structural elements, pile and pier foundations, sprayed fire-resistant materials, wall panels and veneer systems, EIFS and smoke control systems.

The VCC requires experienced and qualified inspectors to inspect these special types of construction. The *City of Alexandria Special Inspection Guidelines and Procedures* has been implemented to clearly outline jurisdictional enforcement of the VCC special inspection requirements. This includes the standard for experience and qualifications necessary to adequately control the work being performed, duties of the special inspector, reporting requirements; as well as, jurisdictional oversight. It also specifies the type and manner of work, how it is to be performed and any supervision required. Furthermore, it clarifies the requirements for reporting the results and record keeping.

II. DEFINITIONS

Term definitions outlined below have been extracted from the VCC and expounded when appropriate. Where terms are not defined by this section, such terms shall have ordinarily accepted meanings such as the context implies.

Agents of Special Inspector (Agents). Qualified individuals or agencies working under the direction of the Special Inspectors who are providing the inspections and tests necessary to complete the special inspection process.

Approved. Refer to VCC §202

Approved Agency. Refer to VCC §1702.1

Approved Documents. Includes building construction documents as approved by the Building Official including all approved revisions; and also fabrication and erection documents as approved by the Building Official including all approved revisions.

Approved Fabricator. Refer to VCC §1702.1

Architect of Record (AR). The registered design professional (RDP) retained by the *Owner* to design or specify architectural construction in accordance with the VCC and whose signature and seal appears on the approved architectural construction documents.

Building. Refer to VCC §202

Building Official. Refer to VCC §202

Certificate of Compliance. A certificate stating that materials and products meet specified standards or that work was done in compliance with *approved construction documents*.

City. When used in this document shall refer to the City of Alexandria's Department of Code Administration. When approved, documents must bear a city approval stamp and be present at the construction site.

Construction Documents. Refer to VCC §202

Contractor. A general contractor licensed in the Commonwealth of Virginia (See Commonwealth of Virginia, Title 54.1)

Fabricated Item. Refer to VCC §1702.1

Fabrication and Erection Documents. All of the written, graphic and pictorial documents prepared or assembled after issuance of a building permit and in addition to the city approved construction documents, describing the design, location and physical characteristics of the building components or materials necessary for fabrication, assembly or erection of the elements of the project (e.g. concrete reinforcing shop drawings, steel fabrication and erection shop drawings, metal building fabrication and erection shop drawings)

Final Report of Special Inspections. A certification by the *Special Inspector* which shall indicate that all construction elements subject to special inspections as identified by the city's approved *Statement of Special Inspections (SSI)* for all materials or phases of construction have been inspected prior to concealment and in the special inspector's professional opinion and knowledge, the construction project complies with the city's approved *Construction Documents*.

Geotechnical Engineer of Record (GER). The RDP retained by the *Owner* to design or specify earthwork and foundations in accordance with the VCC and whose seal and signature appear on the city's approved geotechnical report.

Inspection. The continuous or periodic observation of work and the performance of tests for certain building or structural components to establish conformance with the city's approved documents as required by the VCC.

Inspection Certificate. Refer to VCC §1702.1

Inspection and Testing Agency. An established and recognized agency or agencies meeting the requirements of ASTM E 329 and accredited, retained by the *Owner*, independent of the contractors performing the work subject to special inspections, to perform special inspections and materials testing required by the VCC.

Occupancy Category. Refer to VCC §1602.1

Owner. Refer to VCC §202

Pre-engineered Structural Elements. Structural elements specified by the SER but which may be designed by a specialty RDP (e.g.- open web steel joists and joist girders, wood trusses, pre-cast concrete elements, prefabricated wood or metal buildings, tilt-up concrete panel reinforcement and lifting hardware)

Registered Design Professional in Responsible Charge. A registered design professional engaged by the owner to review and coordinate certain aspects of the project, as determined by the building official, for compatibility with the design of the building or structure, including submittal documents prepared by others, deferred submittal documents and phased submittal documents.

Primary Structural Frame. Refer to VCC §202

Registered Design Professional (RDP). Refer to VCC §202

Special Inspection. Refer to VCC §1702.1

Special Inspection: Yes (Y) required or Not (N) required.

Special Inspection - Continuous (C). Refer to VCC§1702.1

Special Inspection - Periodic (P). Refer to VCC §1702.1

Sprayed Fire-Resistant Materials. Refer to VCC §1702.1

Structural Observation. Refer to VCC §1702.1

Shall. This term indicates mandatory requirements.

Special Inspector (SI). Refer to VCC §1702.1

Statement of Special Inspections (SSI). The SSI is a statement prepared by an RDP and shall be approved by the appropriate RDP(s) of record and submitted by the permit applicant. The SSI includes the scope (schedule) of the special inspection services applicable to a construction project, and the RDP's and inspection and testing agencies that will provide those services. **The SSI is required, as a condition for permit issuance, in accordance with VCC and must be approved by the Building Official.**

Structural Engineer of Record (SER). The RDP retained by the Owner to design or specify structural documents in accordance with the VCC and whose signature and seal appear on the city's approved structural construction documents.

Structure. Refer to VCC §202

III. RESPONSIBILITIES

The **Building Official** is responsible for the issuance of the building permit and the certificate of occupancy. Prior to issuing the building permit, the **Building Official** will review and approve the **Construction Documents**, the **SSI** and the qualifications of the special inspectors (SI) and the agents. The **Building Official** shall review field reports of special inspections as directed by these guidelines and procedures. The **Building Official** may issue a stop work order if it is found that the

Special Inspector, laboratories or agents are not being utilized to perform required special inspections. The certificate of occupancy or final inspection shall be issued only after the *Building Official* has received and approved the ***Final Report of Special Inspections***.

The ***Contractor*** is responsible for the construction of the project in accordance with the approved *Construction Documents* and the VCC. In addition, the *Contractor* is responsible for controlling the quality of construction and for providing the SI and agents safe access to the elements that require inspection or testing. The *Contractor* shall coordinate construction related activities, including scheduling and timely notification of the need for *Special Inspections* and shall cooperate with the project's design professionals, including the SI and Agents. The *Contractor* shall make the site available for inspections as necessary and shall deliver samples for testing when needed. The *Contractor* shall respond promptly when informed of nonconforming work. The special inspection process does not relieve the *Contractor* of responsibility for quality control.

The ***Owner*** shall be responsible for the fees and costs related to the performance of special inspection services. The *Owner* or their authorized agent shall sign the *SSI*.

The ***Primary Registered Design Professional of Record (PRDP)*** shall be responsible for informing the *Owner* of the need to provide for special inspections and for assisting the *Owner* as may be needed to retain the services of an SI. A *PRDP* shall complete a *SSI* that shall include the Special Inspectors (SI) and Agent(s). The *PRDP* shall also review and act upon conditions noted in interim special inspection reports. The *PRDP* shall also be responsible for supplying the SI with the necessary copies of current *appropriate Construction Documents* and approved submittals, fabrication and erection documents, including those revisions and change orders affecting work to be inspected or tested.

The ***Special Inspector (SI)*** is responsible for performing, documenting, managing and coordinating the special inspections and the efforts of the various Agents. Individual Agents may be retained by the *Owner* or by the SI, but they are responsible to the SI. The Agents who are responsible for conducting inspections or tests shall be identified in the *SSI* that is submitted to the *Building Official*. The SI shall provide copies of inspection reports to the *PRDP*, *Owner*, *Contractor* and *Building Official*. All discrepancies shall be brought to the attention of the *Contractor* for correction. The SI shall report deviations from the approved *Construction Documents* to the appropriate *PRDP* for their resolution. Uncorrected work shall be reported to the *Building Official* and the appropriate *RDP of Record*.

The ***Structural Engineer of Record (SER)*** shall be responsible for identifying in the *Construction Documents* the specific structural special inspections to be performed for the project in order to meet the requirements of the VCC and any other requirements specified by the *SER*.

IV. WHEN SPECIAL INSPECTIONS ARE REQUIRED

Special inspections are required in accordance with VCC. The requirements for special inspections shall be determined prior to and are requisite for issuance of the building permit.

Special inspections are required for building components identified in the VCC when the design of these components are required to be performed by a professional engineer or architect. (See attached CHART A in Appendix B)

Special inspections are not required:

- For work of a minor nature or as warranted by conditions in the jurisdiction as approved by the building official.
- Unless otherwise required by the building official, for occupancies in Groups R-3, R-4 or R-5 and occupancies in Group U that are accessory to a residential occupancy.

- Special inspections are not required for building components unless the design involves the practice of professional engineering or architecture as defined by the laws of this Commonwealth and regulations governing the professional registration and certification of engineers and architects.

Note: Check the requirements for each component of a building or structure listed in VCC Chapter 17 to determine if the exceptions to the requirement for special inspections of that component are applicable.

V. COMPLETING THE STATEMENT OF SPECIAL INSPECTIONS (SSI)

A complete SSI shall be provided with the application for permit. A complete SSI will contain the following:

- The *Statement of Special Inspections* form shall be completed to include original signatures by the parties identified on the SSI to include:
 - The **Registered Design Professional in responsible charge (RDP)** is required to complete the statement and schedule. Although not required, typically this is accomplished by an RDP associated with the project design and understanding the critical elements. This can be the Structural Engineer of Record (SER), Special Inspector (SI) or any other RDP knowledgeable of the project that can execute the form. Their name is typed/printed on the line “Type or print name of the preparer of the Schedule.” The Virginia RDP seal and signature of the preparer is to be located above the printed name where indicated.
 - The **Applicant’s signature** is required if the person applying for the permit is different from the owner. This can be the owner’s authorized representative, an RDP authorized by the *Owner* or the appropriately licensed *Contractor* that will be performing the work. The *Applicant* provides a signature on the “Permit Applicant” signature line. If the applicant and *Owner* are the same and the *Owner* has signed on the “Owner’s Authorization” signature line, a separate signature is not required on this line.
 - The project **Owner’s authorization** is required as they are responsible for the fees and costs of the Special Inspector. By signing this form, they acknowledge that special inspections are required for the project and agree to notify the *Building Official* of any changes regarding the special inspection agents. The owner provides a signature on the “Owner’s Authorization” signature line.
 - The **Primary RDP of Record** for the design provides a signature on the “Primary RDP of Record” signature line. The Primary RDP of Record is usually the person with the most direct contact with the owner. Typically, this would be the primary design professional that coordinated the completion of the plans. By signing, the Primary RDP of Record is neither taking on a responsibility for the entire special inspection process nor approval of the special inspection team. The signature is an acknowledgement that special inspections are required on the job based on the design of his/her project, has advised the owner of their responsibility to provide and pay for special inspections, and has assured that special inspections are properly called for in the schedule for areas dictated by his/her design are incorporated.
 - The **Structural Engineer of Record** (if different from the Primary RDP of Record noted above) signs the SER line. The signature is an acknowledgement that the SER has reviewed the statement to ensure all required inspections dictated by his/her design are incorporated.
 - The company name of the **Special Inspector** is to be typed or printed on “*Special Inspector*” line. The RDP overseeing the implementation of special inspections for the project for the above-named company will place his/her signature in the “Special Inspector” signature line.

- The **Building Official** shall sign the form after all required original signatures have been executed, he/she is satisfied that the area(s) of special inspections have been properly identified and called for, and he/she is satisfied that the special inspection agents and testing laboratories are properly qualified and certified. The signature of the **Building Official** shall signify acceptance and approval of the Statement/Schedule of Special Inspections.
- The **Schedule of Special Inspections** shall be included with proper identification of elements requiring special inspections yes, continuous, periodic, or not required (Y, C, P, N), as well as the associated Agent(s) responsible for inspection and/or testing.
- **Agents** for special inspections shall be identified to include address, phone number and responsible party (e.g. Agent 1, Agent 2, Laboratory, etc.) Agent 1 shall always be the primary Special Inspector responsible for the coordination of the entire special inspections process.
- Proper documentation as to appropriate qualifications and certifications as discussed in Section 5.
- Changes to a **Special Inspector** or testing laboratory approved by the **Building Official** after a permit has been issued must be submitted in the form of a **new Statement and Schedule of Special Inspections**. This must be approved by the **Building Official** prior to resuming special inspections.

VI. SPECIAL INSPECTIONS MEETING

A Special Inspections Meeting will be conducted **prior to permit issuance**, unless work is of a minor nature and waived by the **Building Official**. The meeting is to be attended by the following individuals:

- Owner or owner's duly authorized representative
- Architect of Record (AR)
- Structural Engineer of Record (SER)
- Geo-tech Engineer of Record (GER)
- Special Inspector and his/her agents (SI)
- General Contractor (GC)
- Building Official (or his/her designee)

The purpose of the meeting should provide a forum to review and explain the following:

- Work to be reviewed as specified in the Schedule of Special Inspections
- Timely notification required by the Contractor to the SI, of when the work is ready for inspections
- Procedures to document, correct, re-inspect and complete non-compliance or deficiencies
- Identification of the RDP to resolve field deviations and non-compliant items or revisions
- The Special Inspector and his/her agents shall reference the APPROVED construction documents for compliance with work performed
- Discussion of the inspections and testing to be performed
- Special Inspections Reporting Means to the city and distribution of reports
- Final Report of Special Inspections shall be forwarded to the Building Official once all non-compliant issues have been corrected and tested
- Contact information of individuals involved with the project
- A report of meeting minutes shall indicate that the pre-construction meeting was conducted. The report shall indicate the date and location of the meeting, who attended, and a brief description of the items discussed. A copy of the report shall be distributed as required in Section 7

VII. SPECIAL INSPECTIONS REPORTS

The SI shall provide copies of inspection reports to the *SER, Owner, Contractor* and *Building Official*. The Special Inspector shall submit all reports to the Building Official through specified means identified in Appendix F. The SI shall report deviations from the approved *Construction Documents* to the appropriate RDP for their resolution before proceeding with the inspection of the deficient work. All inspection and test reports shall be submitted by means as specified by the *building official* within seven (7) working days of the inspection and/or test performed. In no case shall inspections be performed by the *Building Official* that would allow the concealment of work required to be inspected by the SI unless verification has been received that the special inspection has been successfully performed.

Special inspection and testing reports shall indicate that the specified work has been inspected and found to be in compliance with the approved construction documents unless deficiencies are noted. Reports containing deficiencies or non-compliant work shall describe the nature and specific location of the discrepancies.

At the completion of a project, all recorded non-compliant work shall be documented as having been corrected or approved by the RDP(s) of Record or other RDP(s) responsible for any review and approval of deviations or changes from the approved construction documents as appropriate.

Upon request of the *Building Official*, the SI shall submit a letter indicating completion of a specific area or phase of special inspections and testing for a particular construction discipline.

VIII. FINAL REPORT OF SPECIAL INSPECTIONS

Upon completion of all special inspections and testing specified on the SSI, the SI shall, after review and approval by the appropriate RDP(s), submit a *Final Report of Special Inspections*, which includes work covered under the Schedule of Special Inspections as required by VCC to the *Building Official* for review and approval. **The *Building Official* review and approval is required prior to final building inspection approval or issuance of a Certificate of Occupancy.**

IX. REFERENCED DOCUMENTS

- Virginia Construction Code (current approved edition)
- National Practice Guidelines for Special Inspections by CASE (Council of American Structural Engineers).
- ASTM E-329

REVISIONS TO THIS DOCUMENT (INCLUDING STATEMENT OF SPECIAL INSPECTIONS): Revisions to the format of this document may be made without notice by the city. Any unauthorized alterations to this document will not be accepted by the city.

APPENDIX A

STATEMENT OF SPECIAL INSPECTIONS (SSI)

BUILDING PERMIT NO. BLD _____ - _____

| PERMIT APPLICANT | PROJECT ADDRESS |
|-------------------------|------------------------|
| | |
| | |

| PRIMARY RDP OF RECORD | STRUCTURAL ENGINEER OF RECORD |
|------------------------------|--------------------------------------|
| | |
| | |

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the VCC. It includes a Schedule of Special Inspections applicable to this project as well as the name of the Special Inspector, and the identity of other testing laboratories or agencies intended to be retained for conducting these inspections or tests.

The Special Inspector shall keep records of all inspections, and shall furnish inspection reports to the Building Official, appropriate Registered Design Professional (RDP), Owner and Contractor. All discrepancies shall be brought to the immediate attention of the Contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and appropriate RDP(s). Interim reports shall be submitted to the Building Official, Owner, Contractor and the appropriate RDP(s) according to the *City of Alexandria Special Inspection Guidelines and Procedures*.

Jobsite safety is solely the responsibility of the contractor. Materials and activities to be inspected are not to include the contractor's equipment and methods used to erect or install the materials listed. **All fees/costs related to the performance of Special Inspections shall be the responsibility of the Owner. Additionally, the undersigned (RDP or SER) are only acknowledging that the items enumerated on the Schedule of Special Inspections are consistent with the required design elements, the applicable sections of the VCC and their area of expertise.**

REVIEW, AUTHORIZATION & ACCEPTANCE

Permit Applicant (If not Owner):

Statement of Special Inspections Prepared By:

Signature / date:

Printed Name: _____

Owner's Authorization (If other than Applicant):

Signature / date: _____

Printed Name: _____

**Primary RDP of Record:
(Review and Acceptance of Schedule)**

Virginia RDP Seal of SSI Preparer

Signature / date: _____

Printed Name: _____

Printed Name of the Preparer of the Schedule (on line above)

**SER of Record:
(Review and Acceptance of Schedule)**

Signature / date: _____

Printed Name: _____

Building Official's Acceptance:

Special Inspector:

Signature / Date: _____

Signature / date: _____

Printed Name: _____

Printed Name: _____

SI Company Name: _____

SCHEDULE OF SPECIAL INSPECTIONS

| STEEL CONSTRUCTION (other than structural) | | | | | | |
|--|-------------------|-----------------|-----------------|-------------------------------------|--------------|------------------|
| VERIFICATION AND INSPECTION | CONTINUOUS | PERIODIC | YES / NO | REFERENCED STANDARD | AGENT | COMPLETED |
| General 1705.2.2 | | | | | | |
| 1. Material verification of cold-formed steel deck: | | | | Applicable ASTM material standard | | |
| a. Identification markings to conform to ASTM standards specified in the approved construction documents. | - | X | | | | |
| b. Manufacturer's certified test reports. | - | X | | | | |
| 2. Inspection of welding: | | | | | | |
| a. Cold-formed steel deck: | | | | | | |
| 1) Floor and roof deck welds. | - | X | | AWS D1.3 | | |
| b. Reinforcing steel: | | | | | | |
| 1) Verification of weld ability of reinforcing steel other than ASTM A 706. | - | X | | AWS D1.4, ACI 318: Section 3.5.2 | | |
| 2) Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special structural walls of concrete and shear reinforcement. | X | - | | | | |
| 3) Shear reinforcement. | X | - | | | | |
| 4) Other reinforcing steel. | - | X | | | | |

For SI: 1 inch = 25.4 mm. a. Where applicable, see also Section 1705.11, Special inspections for seismic resistance.

| REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION | | | | | | |
|---|-------------------|-----------------|-----------------|--|--------------|------------------|
| VERIFICATION AND INSPECTION | CONTINUOUS | PERIODIC | YES / NO | REFERENCED STANDARD | AGENT | COMPLETED |
| General 1705.3 | | | | | | |
| 1. Inspection of reinforcing steel, including pre-stressing tendons, and placement. | - | X | | ACI 318: 3.5, 7.1-7.7, 1910.4 | | |
| 2. Inspection of reinforcing steel welding in accordance with Table 1705.2.2, Item 2b. | - | - | | AWS D1.4 ACI 318: 3.5.2 | | |
| 3. Inspection of anchors cast in concrete where allowable loads have been increased or where strength design is used. | - | X | | ACI 318: 8.1.3, 21.1.8 | | |
| 4. Inspection of anchors post-installed in hardened concrete members b. | - | X | | ACI 318: 3.8.6, 8.1.3, 21.1.8 | | |
| 5. Verifying use of required design mix. | - | X | | ACI 318: Ch. 4, 5.2-5.4 | | |
| 6. At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete. | X | - | | ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8 | | |
| 7. Inspection of concrete and shotcrete placement for proper application techniques. | X | - | | ACI 318: 5.9, 5.10 | | |
| 8. Inspection for maintenance of specified curing temperature and techniques. | - | X | | ACI 318: 5.11-5.13 | 1910.9 | |
| 9. Inspection of pre-stressed concrete: a. Application of pre-stressing forces. b. Grouting of bonded pre-stressing ten-dons in the seismic force-resisting system. | X | - | | ACI 318: 18.20, ACI 318: 18.18.4 | | |
| 10. Erection of precast concrete members. | - | X | | ACI 318: Ch. 16 | | |

| | | | | | | |
|---|---|---|--|----------------|--|--|
| 11. Verification of in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs. | - | X | | ACI 318: 6.2 | | |
| 12. Inspect formwork for shape, location and dimensions of the concrete member being formed, shoring and re-shoring. | - | X | | ACI 318: 6.1.1 | | |

| REQUIRED VERIFICATION AND INSPECTION OF SOILS | | | | | | |
|--|-------------------|-----------------|-----------------|----------------------------|--------------|------------------|
| VERIFICATION AND INSPECTION | CONTINUOUS | PERIODIC | YES / NO | REFERENCED STANDARD | AGENT | COMPLETED |
| General 1705.6 | - | X | | | | |
| 1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity. | - | X | | | | |
| 2. Verify excavations are extended to proper depth and have reached proper material. | - | X | | | | |
| 3. Perform classification and testing of compacted fill materials. | - | - | | | | |
| 4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill. | X | - | | | | |
| 5. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly. | - | X | | | | |

| | | | | | | |
|---|-------------------|-----------------|-----------------|----------------------------|--------------|------------------|
| 1705.7 Driven Deep Foundations | | | | | | |
| <i>Special inspections</i> shall be performed during installation and testing of driven deep foundation elements as required by Table 1705.7. The <i>approved</i> geotechnical report and the <i>construction documents</i> prepared by the <i>registered design professionals</i> , shall be used to determine compliance. | X | - | | | | |
| REQUIRED VERIFICATION AND INSPECTION OF DRIVEN DEEP FOUNDATION ELEMENTS | | | | | | |
| VERIFICATION AND INSPECTION | CONTINUOUS | PERIODIC | YES / NO | REFERENCED STANDARD | AGENT | COMPLETED |
| General 1705.7 | | | | | | |
| 1. Verify element materials, sizes and lengths comply with the requirements. | X | - | | | | |
| 2. Determine capacities of test elements and conduct additional load tests, as required. | X | - | | | | |
| 3. Observe driving operations and maintain complete and accurate records for each element | X | - | | | | |
| 4. Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element. | X | - | | | | |
| 5. For steel elements, perform additional inspections in accordance with Section 1705.2. | - | - | | | | |
| 6. For concrete elements and concrete-filled elements, perform additional inspections in accordance with Section 1705.3. | - | - | | | | |

| | | | | | | |
|--|---|---|--|--|--|--|
| 7. For specialty elements, perform additional inspections as determined by the registered design professional in responsible charge. | - | - | | | | |
|--|---|---|--|--|--|--|

| REQUIRED VERIFICATION AND INSPECTION OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS | | | | | | |
|---|-------------------|-----------------|-----------------|----------------------------|--------------|------------------|
| VERIFICATION AND INSPECTION | CONTINUOUS | PERIODIC | YES / NO | REFERENCED STANDARD | AGENT | COMPLETED |
| General 1705.8 | | | | | | |
| 1. Verify element materials, sizes and lengths comply with the requirements. | X | - | | | | |
| 2. Determine capacities of test elements and conduct additional load tests, as required. | X | - | | | | |
| 3. Observe driving operations and maintain complete and accurate records for each element. | X | - | | | | |
| 4. Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element. | X | - | | | | |
| 5. For steel elements, perform additional inspections in accordance with Section 1705.2 | - | - | | | | |
| 6. For concrete elements and concrete-filled elements, perform additional inspections in accordance with Section 1705.3. | - | - | | | | |
| 7. For specialty elements, perform additional inspections as determined by the registered design professional in responsible charge. | - | - | | | | |

The following *masonry tables* are from the 2009 VCC and are meant for “*reference purposes only*” (pages 17 – 19)

| LEVEL 1 REQUIRED VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION | | | | | | |
|---|---|---|--|--|--|--|
| 1. Compliance with required inspection provisions of the construction documents and the approved submittals shall be verified. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 1.5 | | |
| 2. Verification of f'm and f' AAC prior to construction except where specifically exempted by this code. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 1.4B | | |
| 3. Verification of slump flow and VSI as delivered to the site for self-consolidating grout. | X | - | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 1.5B.1.b.3 | | |
| 4. As masonry construction begins, the following shall be verified to ensure compliance: | | | | | | |
| a. Proportions of site-prepared mortar. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 2.6A | | |
| b. Construction of mortar joints. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 3.3B | | |
| c. Location of reinforcement, connectors, pre-stressing tendons and anchorages. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 3.4, 3.6A | | |
| d. Pre-stressing technique. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 3.6B | | |
| e. Grade and size of pre-stressing tendons and anchorages. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 2.4B, 2.4H | | |
| 5. During construction the inspection program shall verify: | | | | | | |
| a. Size and location of structural elements. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art.3.3F | | |
| b. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames or other construction. | - | X | | TMS 402/ACI 530/ASCE 5: Table 1704.5.1, Sec.1.2.2.(e),1.16.1 | | |
| c. Specified size, grade and type of reinforcement, anchor bolts, pre-stressing tendons and anchorages. | - | X | | TMS 402/ACI 530/ASCE 5: Sec. 1.15 TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 2.4, 3.4 | | |
| d. Welding of reinforcing bars. | X | - | | TMS 402/ACI 530. /ASCE 5: Sec. 2.1.9.7.2, 3.3.3.5(b) Table 1704.5.1 | | |

| | | | | | | |
|--|---|---|--|--|--|--|
| e. Preparation, construction and protection of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F). | - | X | | Sec. 2104.3, 2104.4 TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 1.8C,1.8D | | |
| f. Application and measurement of pre-stressing force. | X | - | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 3.6B | | |
| 6. Prior to grouting, the following shall be verified to ensure compliance: | | | | | | |
| a. Grout space is clean. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 3.2D | | |
| b. Placement of reinforcement and connectors, and pre-stressing tendons and anchorages. | - | X | | TMS 402/ACI 530/ASCE 5: Sec.1.13 TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 3.4 | | |
| c. Proportions of site-prepared grout and pre-stressing grout for bonded tendons. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 2.6B | | |
| d. Construction of mortar joints. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 3.3B | | |
| 7. Grout placement shall be verified to ensure compliance: | X | - | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 3.5 | | |
| a. Grouting of pre-stressing bonded tendons. | X | - | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 3.6C | | |
| 8. Preparation of any required grout specimens, mortar specimens and/or prism shall be observed. | - | X | | Sec.2105.2.2, 2105.3, TMS 602/ACI 530.1/ASCE 6: Table 1704.5.1, Art. 1.4 | | |
| LEVEL 2 REQUIRED VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION | | | | | | |
| 1. Compliance with required inspection provisions of the construction documents and the approved submittals. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.3, Art. 1.5 | | |
| 2. Verification of f_m and f_{AAC} prior to construction and for every 5,000 square feet during construction. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.3, Art. 1.4B | | |
| 3. Verification of proportions of materials in premixed or preblended mortar and grout as delivered to the site. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.3, Art. 1.5B | | |
| 4. Verification of slump flow and VSI as delivered to the site for self-consolidating grout. | X | - | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.3, Art. 1.5B.1.b.3 | | |

| | | | | | |
|--|---|---|--|---|--|
| 5. The following shall be verified to ensure compliance: | | | | | |
| a. Proportions of site-prepared mortar, grout and pre-stressing grout for bonded tendons. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.3, Art. 2.6A | |
| b. Placement of masonry units and construction of mortar joints. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.3, Art. 3.3B | |
| c. Placement of reinforcement, connectors and pre-stressing tendons and anchorages. | - | X | | TMS 402/ACI 530/ASCE 5: Sec.1.15 TMS 602/ACI 530.1/ASCE 6: Table 1704.5.3, Art. 3.4,3.6A | |
| d. Grout space prior to grout. | X | - | | TMS 602/ACI 530.1/ASCE 6: T 1704.5.3, Art. 3.2D | |
| e. Placement of grout. | X | - | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.3, Art. 3.5 | |
| f. Placement of pre-stressing grout. | X | - | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.3, Art. 3.6C | |
| g. Size and location of structural elements. | - | X | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.3, Art. 3.3F | |
| h. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames or other construction. | X | - | | TMS 402/ACI 530/ASCE 5: Table 1704.5.3, Sec. 1.2.2(e), 1.16.1 | |
| i. Specified size, grade and type of reinforcement, anchor bolts, pre-stressing tendons and anchorages. | - | X | | TMS 402/ACI 530/ASCE 5: Sec. 1,15 TMS 602/ACI 530.1/ASCE 5: Table 1704.5.3, Art. 2.4,3.4 | |
| j. Welding of reinforcing bars. | X | - | | TMS 402/ACI 530/ASCE 6: Sec.2.1.9.7.2,3.3.3.4 (b) Table 1704.5.3, Art. 1.5 | |
| k. Preparation, construction and protection of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F). | - | X | | Sec.2104.3,2104.4 TMS 602/ACI 530.1/ASCE 6: Table 1704.5.3, Art. 1.8C, 1.8D | |
| l. Application and measurement of pre-stressing force. | X | - | | TMS 602/ACI 530.1/ASCE 6: Table 1704.5.3, Art. 3.6B | |
| 6. Preparation of any required grout specimens and/or prisms shall be observed. | X | - | | Sec.2105.2.2, 21045.3 TMS 602/ACI 530.1/ASCE 6: Table 1704.5.3, Art. 1.4 | |

SCHEDULE OF SPECIAL INSPECTIONS, (cont.)

| REQUIRED VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION | | | | | | |
|---|---|---|--|---|--|--|
| 1. Masonry construction shall be inspected and verified in accordance with the following: | - | X | | TMS 402/ 1705.4, 1705.4.1. 1705.4.2 / ACI 530 | | |
| REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION | | | | | | |
| 1.Special Inspections for steel elements of buildings and structures shall be required per: | | X | | AISC 360-11 / 1705.2 | | |
| a. Identification markings to conform to ASTM standards specified in the approved construction documents. | - | X | | AISC 360, Section A3.3 and applicable ASTM material standards Table 1704.3 | | |
| b. Manufacturer's certificate of compliance required. | - | X | | | | |
| 2. Inspection of high-strength bolting: | | | | | | |
| a. Snug-tight joints. | - | X | | AISC 360, Section M2.5 Table 1704.3, 1704.3.3 | | |
| b. Pre-tensioned and slip-critical joints using turn-of-nut with match marking, twist-off bolt or direct tension indicator methods of installation. | - | X | | AISC 360, Section M2.5 Table 1704.3, 1704.3.3 | | |
| c. Pre-tensioned and slip-critical joints using turn-of-nut without match marking or calibrated wrench methods of installation. | X | - | | AISC 360, Section M2.5 Table 1704.3, 1704.3 | | |
| 3. Material verification of structural steel and cold-formed steel deck: | | | | | | |
| a. For structural steel, identification markings to conform to AISC 360. | - | X | | AISC 360, Section M5.5, Table 1704.3 | | |
| b. For other steel, identification markings to conform to ASTM standards specified in the approved construction documents. | - | X | | Applicable ASTM material standards, Table 1704.3 | | |
| c. Manufacturer's certified test reports. | - | X | | Table 1704.3 | | |

| | | | | | | |
|--|---|---|--|--|--|--|
| 4. Material verification of weld filler materials: | | | | | | |
| a. Identification markings to conform to AWS specification in the approved construction documents. | - | X | | AISC 360, Section A3.5 and applicable AWS A5 documents, Table 1704.3 | | |
| b. Manufacturer's certificate of compliance required. | - | X | | Table 1704.3 | | |
| 5. Inspection of welding: | | | | | | |
| a. Structural steel and cold-formed steel deck: | | | | | | |
| 1) Complete and partial joint penetration groove welds. | X | - | | AWS D1.1, Table 1704.3, 1704.3.1 | | |
| 2) Multi-pass fillet welds. | X | - | | AWS D1.1, Table 1704.3, 1704.3.1 | | |
| 3) Single-pass fillet welds >5/16 | X | - | | AWS D1.1, Table 1704.3, 1704.3.1 | | |
| 4) Plug and slot welds. | X | - | | AWS D1.1, Table 1704.3, 1704.3.1 | | |
| 5) Single-pass fillet welds < 5/16 | - | X | | AWS D1.1, Table 1704.3, 1704.3.1 | | |
| 6) Floor and roof deck welds. | X | - | | AWS D1.3, Table 1704.3 | | |
| b. Reinforcing steel: | | | | | | |
| 1) Verification of weld ability of reinforcing steel other than ASTM A 706. | - | X | | AWS D1.4 ACI 318: Section 3.5.2, Table 1704.3 | | |
| 2) Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special structural walls of concrete and shear reinforcement. | X | - | | AWS D1.4 ACI 318: Section 3.5.2, Table 1704.3 | | |
| 3) Shear reinforcement. | X | - | | AWS D1.4 ACI 318: Section 3.5.2, Table 1704.3 | | |
| 4) Other reinforcing steel. | - | X | | AWS D1.4 ACI 318: Section 3.5.2, Table 1704.3 | | |
| 6. Inspection of steel frame joint details for compliance: | | | | | | |
| a. Details such as bracing and stiffening | - | X | | Table 1704.3, 1704.3.2 | | |
| b. Member locations | - | X | | Table 1704.3, 1704.3.2 | | |
| c. Application of joint details at each connection | - | X | | Table 1704.3, 1704.3.2 | | |

INSPECTION & TESTING AGENTS

Permit No: _____

Date: _____

| LIST OF INSPECTION AGENTS | | | | |
|---|------|---------|---------|-----------------|
| Inspection Agent | Name | Company | Address | Telephone/Email |
| 1. Special Inspector (SI) | | | | |
| 2. Structural Engineer of Record | | | | |
| 3. Special Inspector (SI) - Smoke Control | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| LIST OF TESTING AGENTS | | | | |
|-------------------------------|------|---------|---------|-----------------|
| Agency | Name | Company | Address | Telephone/Email |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

FINAL REPORT OF SPECIAL INSPECTIONS

PERMIT NO: _____

DATE: _____

| PERMIT APPLICANT | PROJECT ADDRESS |
|------------------|-----------------|
| | |
| | |
| | |

| PRIMARY RDP OF RECORD | STRUCTURAL ENGINEER OF RECORD |
|-----------------------|-------------------------------|
| | |
| | |
| | |

To the best of my information, knowledge and belief, the special inspections required for this project, and itemized in the Statement of Special Inspections submitted for permit, have been completed.

Interim reports submitted prior to this final report, and numbered _____ to _____, form a basis for, and are to be considered an integral part of this final report.

All the outstanding nonconforming items (discrepancies) since the last interim report dated: _____, have been corrected.

Respectfully submitted,

Signature

Date

Type or Print Name (Special Inspector)

Seal of Special Inspector

Upon completion of all special inspections and testing, the SI shall submit a Final Report of Special Inspections to Building Official for review and approval. The Building Official review and approval is required prior to final building inspection approval or issuance of a Certificate of Occupancy.

APPENDIX B

A/E SEAL ON DRAWING

The purpose of these charts and notes is for quick reference to determine in accordance with §54.1 - 402 of the Code of Virginia if an architect's or engineer's (A/E) seal is required on documents for proposed construction.

CHART A - GENERAL DESIGN

A proposed structure which is classified within any of the categories marked "Yes" requires an A/E seal on the documents. Separate requirements apply as to when the electrical, plumbing or mechanical systems in such structures require an A/E seal (see Charts B and C).

| GROUP | BRIEF DESCRIPTION | AREA (SQ. FT.) | | | HEIGHT (STORIES) | |
|------------------|-----------------------------|----------------|-----------------|-------------|------------------|--------|
| | | 5,000 OR LESS | 5,001 TO 15,000 | OVER 15,000 | 3 OR LESS | OVER 3 |
| A ¹ | ASSEMBLY | YES | YES | YES | YES | YES |
| B | BUSINESS | - | YES | YES | - | YES |
| E | SCHOOLS & DAY CARE CENTERS | YES | YES | YES | YES | YES |
| F | FACTORY & INDUSTRIAL | - | - | YES | - | YES |
| H | HIGH HAZARD | YES | YES | YES | YES | YES |
| I | INSTITUTIONAL | YES | YES | YES | YES | YES |
| M | MERCANTILE | - | YES | YES | - | YES |
| R-1 | HOTEL, MOTEL & DORMITORY | YES | YES | YES | YES | YES |
| R-2 ⁷ | MULTI-FAMILY RESIDENTIAL | - | - | - | YES | YES |
| R-3 | 2 FAMILY ATTACHED | - | - | - | - | YES |
| R-4 | RESIDENTIAL ASSISTED LIVING | - | - | YES | - | YES |
| R-5 | 1 AND 2 FAMILY DWELLINGS | - | - | - | - | YES |
| S | STORAGE (NON_FARM) | - | - | YES | - | YES |
| U | UTILITY & MISCELLANEOUS | - | - | YES | - | YES |
| ALL | INTERIOR DESIGN | SEE NOTE #4 | | | | |

Notes: (Apply the following notes to all categories as applicable.)

- Churches are exempt if building does not exceed 5,000 square feet or three stories, and the occupant load does not exceed 100.
- A local building code official may require an A/E seal even if not required to do so by this chart.
- The law requires that, where an A/E seal is not present, the plans must be signed by the individual (not company) responsible for the design, including the individual's occupation and address.
- Additions, remodeling or interior design defined under § 54.1-400 of the Code of Virginia might not require an A/E seal. For construction, additions or remodeling resulting in a change in occupancy, occupancy load, modification to the structural system, change in access or egress or an increase in the fire hazard an A/E seal is required in accordance with § 54.1-400, although notes 1 and 2 still apply.
- Any unique design of structural elements for floors, walls, roofs or foundations requires an A/E seal, regardless of whether or not the remainder of the plans require such certification.
- Buildings, structures, or electrical and mechanical installations which are not otherwise exempted but which are of standard design, provided they bear the certification of a professional engineer or architect registered or licensed in another state, and provided that the design is adapted for the specific location and conformity with local codes, ordinances and regulations, and is so certified by a professional engineer or architect licensed in Virginia may not require an A/E seal.
- One exit and three stories or less Group R-2 buildings would normally be exempted from an A/E seal except where required by Note 2. Most all other three stories or less Group R-2 multi-family buildings are required by the building officials to have A/E seals for the construction documents.

APPENDIX C

CONCRETE FORMWORK: STRIPPING AND RE-SHORING

City Approval Required - Specifically, **city approval is required prior to removal** of concrete formwork and the installation of re- shoring. Requests for city approval shall be submitted in the form of **Stripping Letter Authorization Request** (refer to Requests for Removal of Formwork & Re-Shoring aka. "Stripping Letter" or **SLAR**)

Operations - Removal of formwork and installation of re-shores shall conform to the city-approved fabrication and erection documents (shop drawings) and shall not commence until the city approved stripping letter has been issued by the Building Official.

Requests for Removal of Formwork & Re-Shoring of Elevated Slabs (aka. Stripping Letter)

- a. **Preparation of stripping authorization request letter.** The **SI** shall initiate a stripping letter when concrete strengths have achieved the levels specified by the city approved documents, requesting approval for removal of formwork, and/or re-shoring operations. This letter shall contain the test results of the field-cured cylinders (and laboratory-cured cylinders when specified by the **SER**) molded for this purpose along with the stripping requirements stated in the city approved documents. The stripping letter shall contain the original seal and signature of the **SI**.

A **Stripping Letter Authorization Request** shall state concrete strengths and conditions meet or exceed the project design specifications and design stripping criteria, and *shall request approval* to remove formwork and/or shoring. In the event of a deficiency, the **SER's** recommendations shall be included. Stripping Letter Authorization Request shall also include the following:

- **"Design" data.** The project's requirements, including but not limited to the concrete mix design strength and concrete strength/time specifications for stripping, the formwork shoring, re-shoring or stripping design criteria established by the **RDP** responsible for formwork and shoring design and cold weather concreting methods.
- **"Actual" data.** The construction results attained for the particular stripping request, including but not limited to cold weather concreting temperature logs, concrete cylinder break tests, post- tensioning stressing records and formwork shoring/re-shoring data or calculations.

- b. **Approval of Stripping Letter Authorization Request.** The **city** approval of the stripping letter is required prior to formwork removal, stripping and re-shoring operations. Possession of this City-approved stripping letter does not in any way relieve the **GC** of responsibility to evaluate the removal of formwork and shoring to determine if it is safe and appropriate to do so. The **Stripping Letter Authorization Request** shall be reviewed and approved by the **SER** prior to submittal to the **city**.

Except for post-tensioned concrete construction, the **SER** may waive review of the stripping letter. Waiver of review constitutes **SER** approval of the stripping letter. The **SER** waiver of review shall be conveyed to the **city** in writing prior to commencement of concrete placement for the project.

Low-strength Concrete - When field-cured concrete strength test results do not meet formwork and shoring removal requirements, the **RDP** who designed concrete formwork and shoring may review any additional available information and make a recommendation to the **SER** and to the **city** to allow stripping to proceed or to postpone stripping until specified concrete strengths are attained. **SER** approval and **city approval** is required.

Elongation Records - When structural members to be stripped are of post-tensioned design, elongation records shall be approved by the **SER** and shall be attached to the stripping letter. In the event that tendons are broken, elongations do not meet project specifications, or other deficiencies occur, the **RDP** who designed the post-tensioned tendons shall address the case and make a recommendation, for review and approval by both the **SER** and **city**.

APPENDIX D

EARTH RETENTION SYSTEMS

The requirements of this chapter shall apply when construction includes earth retention systems elements as listed below.

All earth retention systems retaining 10 feet or more of unbalanced fill, and/or trenching operations deeper than 8 feet, whether permanent or temporary, including, but not limited to:

- Building foundation walls
- Retaining walls
- Soldier piles and lagging
- Soil nailing systems
- Sheet piling
- Braced shored walls
- Tied-back walls
- Slurry walls

CONSTRUCTION DOCUMENTS

Review and approval. The earth retention system construction documents shall be submitted for review and approval to the City prior to permit issuance. Construction documents for earth retention systems which are to become a permanent part of the final structure shall be reviewed and approved by the **SER**, including field inspection requirements, prior to submission to the **city**.

Preparation of construction documents. Earth retention system construction documents, including the related design calculations, shall be prepared, signed and sealed by a **RDP** experienced in the design of earth retention systems. In addition to structural design, the construction documents shall include the following:

- **Adjoining properties.** Recommendations for protecting adjoining properties, including existing public and private streets.
- **Slope protection.** Specification of responsibility for protecting all slopes in accordance with general practice, throughout the course of the project.
- **Dewatering.** Any requirements for dewatering of the excavation are specified or assumed in the earth retention system design.
- **Installation.** System installation criteria, including allowable inward movement, pile installation and tie-back criteria, and requirements for inspection and monitoring of the earth retention system construction and adjacent properties.

FABRICATION AND ERECTION DOCUMENTS

Review and approval. Prior to construction, the **GC** shall submit two sets of **SER**-approved fabrication and erection documents to the **city** for approval. After city review and approval, the city will return one set of approved fabrication and erection documents for use on the job site. City-approved documents shall be used by the **SI** to conduct special inspections during construction.

Preparation of fabrication and erection documents. The **RDP** responsible for the construction documents shall also prepare, sign and seal the fabrication and erection documents.

INSPECTIONS

Special inspections required. In problem soils areas, as defined by the City of Alexandria Soil Policy, the **GER** shall perform the special inspections of the earth retention system. In non-problem soils areas, the **GER** or the **SI** shall perform the special inspections. Earth retention systems shall have special inspections performed to determine compliance with city-approved construction documents and this SI-Procedures and Guidelines document, including the following:

- **Compaction.** Compaction process to determine that materials' quality and in-place density tests comply with the City-approved specifications and geotechnical notes and the requirements of the VCC.
- **Backfill, drainage and waterproofing.** Backfill, foundation drainage systems, and waterproofing during and following their placement for compliance with City-approved backfill, foundation drainage systems, and waterproofing specifications.

Inspection reports. Inspection reports shall be submitted to the appropriate **RDPs** of record and to the **City of Alexandria per the reporting requirements listed in APPENDIX F.**

Deviations. Deviations from the City-approved earth retention system construction documents shall be subject to approval by the appropriate **RDP** of record and the **city** prior to work continuing in the affected area. When the earth retention system is to become a permanent part of the final structure, deviations shall also be subject to approval by the **SER.**

COMPLETION OF EARTH RETENTION SYSTEM CONSTRUCTION

At the completion of the earth retention system construction, the *Special Inspector shall*, after review and approval by the appropriate **RDPs**, submit a *Final Report of Special Inspections* to the city, and shall indicate the date of completion and signature through the **SI's, Commonwealth of Virginia Seal.** When the earth retention system is to become a permanent part of the final structure, the **SER** shall review and approve the completion letter prior to submission to the city, with approval indicating that the system is acceptable as a structural element of the final structure.

APPENDIX E

TOWER CRANES

PROCEDURAL REQUIREMENTS

1. Prior to the placement of crane foundation, the **CRANE OWNER, CONTRACTOR OPERATING THE CRANE**, or the **GENERAL CONTRACTOR** shall submit the following information to the City of Alexandria, Department of Code Administration for review and approval:
 - a. Crane specifications including manufacturer's operating model number, hook height, boom length, overturn moment, and manufacturer's specification relative to overturn moment, slewing moment, vertical load (minimum and maximum), punching shear, shear per bolt group, uplift per bolt group, compression per corner and horizontal shear (minimum and maximum).
 - b. Plans showing structural calculations and design of crane foundations signed and sealed by a **PROFESSIONAL ENGINEER** registered in Virginia. Plans and calculations shall clearly indicate footing dimensions, required compressive strength of concrete, steel reinforcement, and allowable soil bearing pressure. The allowable soil bearing pressure shall be consistent with values shown the soil test report for the project prepared by the **GEOTECHNICAL ENGINEER OF RECORD**.
 - c. Concrete mix design indicating review and approval by the **PROFESSIONAL ENGINEER** responsible for design of crane foundations.
 - d. Plans, signed and sealed by a professional engineer registered in Virginia, showing the crane location, boom swing and method of support for cranes located within or supported by the structure. Such plans shall be reviewed and approved by the **STRUCTURAL ENGINEER OF RECORD**.
 - e. A copy of notification to FAA prior to erection.
2. **PRIOR TO ERECTION and USE OF THE CRANE**, the crane owner, contractor operating the crane, or the crane manufacturer, shall submit to the City of Alexandria, Department of Code Administration, certification of the crane inspection including:
 - a. Inspection reports addressing soil bearing capacity, foundation inspection reports, and concrete tests
 - b. Upon completion of the crane foundation, the **special inspections engineer of record shall** submit to the City, a report of special inspections for the crane foundation

INSPECTION AND TESTING PROCEDURES

1. **Inspection of soil and footing** shall be done by the SIER. A building permit is required prior to the installation of footing the inspection shall be performed and approved prior to crane installation.

2. **An electrical permit** shall be obtained and an inspection by the City of Alexandria, Department of Code Administration, shall be scheduled immediately upon completion of installation and shall be performed prior to use of the crane.

SAFETY RULES AND REGULATIONS

1. **Erection** - All cranes shall be erected and maintained in accordance with the manufacturer's recommendations. Erection shall be performed under the supervision of a person experienced in the erection of climbing tower cranes and traveling tower cranes. A copy of the Manufacturer's Manual on Erection and Operation shall be furnished to the operator and kept on the job. The crane shall not be erected before inspection of the crane base, tower sections, jib and counter jib for structural defects by the **CRANE MANUFACTURERE'S REPRESENTATIVE** or a **PROFESSIONAL ENGINEER**. Adequate guys or braces shall be used during erection to prevent collapse of the equipment. All guying and bracing shall conform to the manufacturer's recommendations.
 - a. The elevation at four points of the crane base shall be checked for settlement or other movement by the contractor at erection, at 30 days after the erection date and every 45 days thereafter. All data must be reported to the City of Alexandria, Department of Code Administration.
 - b. Cranes shall be equipped with load-limiting devices which shall be set for loads in accordance with the manufacturer's recommendations and sealed at the time of inspection. A record noting any reason for removing or breaking the seal shall be kept on the job site. Devices shall remain sealed during the operation of the crane.
 - c. Jibs and counter weights shall be erected and maintained so that no part shall strike any building, overhead wiring, or any other object while slewing in a 360 degrees radius unless otherwise recommended by the manufacturer. All signs shall be installed in accordance with the manufacturer's installation instructions.
 - d. The ballast at the foot of the tower and the ballast hung from the counterweight shall be designed, installed, and maintained so that it can neither move nor fall while the crane is in operation.
 - e. When the tower is erected within the building structure, the support, vertical shoring and bracing shall be approved by the **STRUCTURAL ENGINEER OF RECORD**.
 - f. All bolts shall be secured in accordance with manufacturer's project specifications, and shall be inspected 30 days after erection and every 200 working hour thereafter. Results of these inspections shall be sent to the City of Alexandria, Department of Code Administration.
 - g. Original manufacture parts and anchors stools must be used.
 - h. The climbing device (i.e., hydraulic jacks or wire rope system) shall be checked before each climb.
2. **Safety Devices** - All safety devices provided shall be maintained in operable condition at all times.
 - a. The trolley shall be equipped with an automatic breaking 50 M.P.H. or manufacturer's specification

- b. No loads shall be moved over public space unless precautions have been taken to alert pedestrians and vehicular traffic through the use of a flagman or barricades or unless overhead protection is erected over the public space. In any case, prior approval of the **Department of Transportation and Environmental Services is required**.
- c. An audible alarm shall be provided to warn of crane movement. The alarm shall be operated from the operator's station.
- d. A clearance of eight (8) feet shall be maintained between the bottom of the load and a deck or platform upon which men are working.
- e. No crane shall be raised to a new working level while construction personnel are working in the immediate area of the crane.
- f. The load line shall be kept in a substantially vertical position, always.
- g. The movement overload device shall be tested periodically in accordance with the manufacturer's specification. All other limit switches shall be checked at the time of erection, and malfunction of any of the above-mentioned shall be reported to the Crane Manufacturer or his Representative.
- h. Working condition is restricted to wind speeds up to 30 MPH, unless otherwise required by the crane manufacture. If wind speed is anticipated to exceed 30 MPH, the crane must be set for out of services operation and free to weathervane as recommended by the manufacture.

3. **Electrical Equipment** - All installations shall comply with Article 610 of the National Electrical Code (NEC).

- a. Operator's remote-control system shall be supplied by an isolating transformer.
- b. All electrical connections and fixtures exposed to weather shall be of a weatherproof type.
- c. All electric control panel doors shall be equipped with switches and shall be locked when crane is working. If any panel doors are opened while the crane is in operation, power to the motor shall shut off automatically.
- d. Provision shall be made to prevent the accidental reversing of all motors.
- e. Cranes shall be equipped with automatic braking devices to stop all motion except slewing, which shall be stopped by manual device, to permit control in the event of power failures.
- f. All electric motors shall be separately equipped with a current-overload-prevention device.
- g. All motors, controls, switches, etc., shall be grounded in accordance with applicable sections of the NEC. All flexible power cords or lays shall be in accordance with the applicable sections of the NEC. All exposed metal parts, including pendant controls, shall be effectively grounded in accordance with Article 610.61 of the NEC.

APPENDIX F

REPORTING PROCEDURES TO THE BUILDING OFFICIAL

PROCESS:

The following is the required process of submitting documents ensuring timely, accurate and complete submission of reports to the Department of Code Administration. Please refer to the instructions below for instructions on how to set up a user account with the City of Alexandria's Permit Center:

1. Go to <https://www.alexandriava.gov>
2. **Click on** "I want to..." in the top right corner:
3. Select **Building & Construction Permits** from the menu –
(This will take you to the Permit Center website):
4. **Half way** down the page, Click on the link for **Alexandria Online Permit Center**
5. If you're a first-time user, click **Register to use the Online Permit Center**
6. This will take you to the **My Alex Web Login** page where you can:
7. **Log in OR** at the bottom, **Click on** the **Need a new login account** link to create an account, which will take you to the **Register for a Login Account** page. You will see the same title across the top of the page. Enter details and create an account
8. After successfully logging in, click on the **Permit Information & Payments** link:
9. Here you can search for a case or **Type in a Case (Permit) Number**
10. Click on the **Upload Files** tab:
11. Click on **Browse** to select the file to upload:
12. Once selected, click the **Upload** button. You will see the words, **"FILE UPLOADED"**

NOTE: File is limited to **200 MB per file**. Please break submissions down to 200 MB or less.

This procedure will ensure that you have completed the steps necessary to begin uploading Special Inspection and/or Third-Party Inspection Reports directly into our data base, ensuring required reports are acted in a timely manner. If you are an approved Special Inspector or Third-Party Inspector, this is the process **you must use** for submitting reports moving forward, even if you are in the middle of a project.

If you have any questions, comments or concerns regarding this information, please contact the **Department of Code Administration** at (703)746-4200 or the **Special Projects Manager** at (703)746-4210