

REQUIRED QUALITY ASSURANCE PROTOCOL FOR MASONRY CONSTRUCTION

| MINIMUM VERIFICATION REQUIREMENTS | | | | | |
|---|---|------------------------------------|---------|--------------------------------|---|
| Minimum Verification | REQUIRED FOR QUALITY ASSURANCE ^(a) | | | REFERENCE FOR CRITERIA | |
| | Level 1 | Level 2 | Level 3 | | |
| Prior to construction, verification of compliance of submittals. | R | R | R | | TMS 602 Art. 1.5 |
| Prior to construction verification of f_m and f_{AAC} except where specifically exempted by the Code. | NR | R | R | | Art. 1.4 B |
| During construction, verification of Slump flow and Visual Stability Index (VSI) when self-consolidating grout is delivered to the project site. | NR | R | R | | Art. 1.5 & 1.6.3 |
| During construction, verification of f_m and f_{AAC} for every 5,000 sq. ft (465 sq. m). | NR | NR | R | | Art. 1.4 B |
| During construction verification of proportions of materials as delivered to the project site for premixed or preblended mortar, prestressing grout, and grout other than self-consolidation grout. | NR | NR | R | | Art. 1.4 B |
| MINIMUM SPECIAL INSPECTION | | | | | |
| Inspection Task | FREQUENCY ^(b) | | | REFERENCE FOR CRITERIA | |
| | Level 1 | Level 2 | Level 3 | TMS 402 | TMS 602 |
| 1. As masonry construction begins, verify that the following are in compliance: | | | | | |
| a. Proportions of site-prepared mortar | NR | P | P | | Art. 2.1, 2.6 A & 2.6 C |
| b. Grade and size of prestressing tendons and anchorages | NR | P | P | | Art. 2.4B & 2.4 H |
| c. Grade, type and size of reinforcement, connectors, anchor bolts, and prestressing tendons and anchorages | NR | P | P | | Art. 3.4 & 3.6 A |
| d. Prestressing technique | NR | P | P | | Art. 3.6 B |
| e. Properties of thin-bed mortar for AAC masonry | NR | C ^(c) /P ^(d) | C | | Art. 2.1 C.1 |
| f. Sample panel construction | NR | P | C | | Art. 1.6 D |
| 2. Prior to grouting, verify that the following are in compliance: | | | | | |
| a. Grout space | NR | P | C | | Art. 3.2 D & 3.2 F |
| b. Placement of prestressing tendons and anchorages | NR | P | C | Sec. 10.8 & 10.9 | Art. 2.4 & 3.6 |
| c. Placement of reinforcement, connectors, and anchor bolts | NR | P | C | Sec. 6.1, 6.3.1, 6.3.6 & 6.3.7 | Art. 3.2 E & 3.4 |
| d. Proportions of site-prepared grout and prestressing grout for bonded tendons | NR | P | P | | Art. 2.6 B & 2.4 G.1.b |
| 3. Verify compliance of the following during construction: | | | | | |
| a. Materials and procedures with the approved submittals | NR | P | P | | Art. 1.5 |
| b. Placement of masonry units and mortar joint construction | NR | P | P | | Art. 3.3 B |
| c. Size and location of structural members | NR | P | P | | Art. 3.3 F |
| d. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction | NR | P | C | Sec. 1.2.1 (e), 6.2.1 & 6.3.1 | Art. 1.8 C & 1.8 D |
| e. Welding reinforcement | NR | C | C | Sec. 6.1.6.1.2 | |
| f. Preparation, construction, and protection of masonry during cold weather (temperature below 40°F(4.4°C)) or hot weather (temperature above 90°F(32.2°C)) | NR | P | P | | Art. 3.6 B |
| g. Application and measurement of prestressing force | NR | C | C | | Art. 3.5 & 3.6 C |
| h. Placement of grout and prestressing grout for bonded tendons is in compliance | NR | C | C | | Art. 1.4 B.2.a.3, 1.4 B.2.b.3, 1.4 B.2.c.3, 1.4 B.3 & 1.4 B.4 |
| i. Placement of AAC masonry units and construction of thin-bed mortar joints | NR | C ^(c) /P ^(d) | C | | |
| 4. Observe preparation of grout specimens, mortar specimens, and/or prisms | | | | | |

- (a) R = Required, NR = Not Required
- (b) Frequency refers to the frequency of inspection, which may be continuous during the task listed or periodically during the listed task, as defined in the table. NR = Not Required, P = Periodic, C = Continuous
- (c) Required for the first 5000 square feet (465 square meters) of AAC masonry
- (d) Required after the first 5000 square feet (465 square meters) of AAC masonry

REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS

| TYPE | FREQUENCY |
|--|------------|
| 1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity. | Periodic |
| 2. Verify excavations are extended to proper depth and have reached proper material. | Periodic |
| 3. Perform classification and testing of compacted fill materials. | Periodic |
| 4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill. | Continuous |
| 5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly. | Periodic |

Special Inspection Additional Requirements:

- Additional items that need special inspection, in the opinion of the building official, shall be inspected.
- Coordination of Special Inspections with construction of the inspected items shall be the responsibility of the contractor.
- If Special Inspection is waived by the Authority having Jurisdiction, the general contractor shall provide the designer of record with a copy of the written exemption for each item that has been waived.
- The building official may perform inspections in addition to and/or concurrently with the Special Inspection's outlined in the tables.
- The general contractor is responsible for implementing a quality control program. The quality control program is in addition to the Special Inspection requirements and must meet or exceed those responsibilities required as part of the contract drawings and specifications.

REQUIRED SPECIAL INSPECTIONS AND TESTS OF STRUCTURAL STEEL FOR WELDING PROCESS

| Inspection Tasks Prior to Welding | QUALITY CONTROL | QUALITY ASSURANCE |
|---|-----------------|-------------------|
| Welding procedure specifications (WPSs) available | P | P |
| Manufacturer certifications for welding consumables available | P | P |
| Material identification (type/grade) | O | O |
| Welder identification system ¹ | O | O |
| Fit-up of groove welds (including joint geometry) | | |
| • Joint preparation | | |
| • Dimensions (alignment, root opening, root face, bevel) | O | O |
| • Cleanliness (condition of steel surfaces) | | |
| • Tacking (tack weld quality and location) | | |
| • Backing type and fit (if applicable) | | |
| Configuration and finish of access holes | O | O |
| Fit-up of fillet welds | | |
| • Dimensions (alignment, gaps at root) | O | O |
| • Cleanliness (condition of steel surfaces) | | |
| • Tacking (tack weld quality and location) | | |
| Check welding equipment | O | -- |
| Inspection Tasks During Welding | QUALITY CONTROL | QUALITY ASSURANCE |
| Use of qualified welders | O | O |
| Control and handling of welding consumables | | |
| • Packaging | O | O |
| • Exposure Control | | |
| No welding over cracked tack welds | O | O |
| Environmental conditions | | |
| • Wind speed within limits | O | O |
| • Precipitation and temperature | | |
| WPS followed | | |
| • Settings on welding equipment | | |
| • Travel speed | | |
| • Selected welding materials | O | O |
| • Shielding gas type/flow rate | | |
| • Preheat applied | | |
| • Interpass temperature maintained (min/max) | | |
| • Proper position (F, V, H, OH) | | |
| Welding Techniques | | |
| • Interpass and final cleaning | O | O |
| • Each pass within profile limitations | | |
| • Each pass meets quality requirements | | |
| Inspection Tasks After Welding | QUALITY CONTROL | QUALITY ASSURANCE |
| Welds cleaned | O | O |
| Size, length and location of welds | P | P |
| Welds meet visual acceptance criteria | | |
| • Crack prohibition | | |
| • Weld/base-metal fusion | P | P |
| • Crater cross section | | |
| • Weld profiles | | |
| • Weld size | | |
| • Undercut | | |
| • Porosity | | |
| Arc strikes | P | P |
| k-area ² | P | P |
| Backing removed and weld tabs removed (if required) | P | P |
| Repair activities | P | P |
| Document acceptance or rejection of welded joint or member | P | P |

- Quality Control - Requirements on the part of the steel fabricator and erector.
- Quality Assurance - Requirements on the part of the project owner's representative.
- P Perform these tasks for each weld joint or member.
- O Observe these items on a random basis. Operations need not be delayed pending these inspections
- 1 The fabricator or erector, as applicable, shall maintain a system by which a welder who has welded a joint or member can be identified. Stamps, if used, shall be the low-stress type.
- 2 When welding of doubler plates, continuity plates or stiffeners has been performed in the k-area, visually inspect the web k-area for cracks within 3 inches (75 mm) of the weld.

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

| TYPE | FREQUENCY | REFERENCED STANDARD | IBC REFERENCE |
|--|------------|---|--------------------------------|
| 1. Inspect reinforcement, including prestressing tendons, and verify placement. | Periodic | ACI 318 Ch. 20, 25.2, 25.3, 26.6.1-26.6.3 | 1908.4 |
| 2. Reinforcing bar welding: | | | |
| a. Verify weldability of reinforcing bars other than ASTM A706 | Periodic | AWS D1.4 | |
| b. Inspect single-pass fillet welds, maximum 5/16"; and | Periodic | ACI 318: 26.6.4 | |
| c. Inspect all other welds. | Continuous | | |
| 3. Inspect anchors cast in concrete. | Periodic | ACI 318: 17.8.2 | |
| 4. Inspection of anchors post installed in hardened concrete members: ³ | | | |
| a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. | Continuous | ACI 318: 17.8.2.4 | |
| b. Mechanical anchors and adhesive anchors not defined in 4.a. | Periodic | ACI 318: 17.8.2 | |
| 5. Verify use of required design mix. | Periodic | ACI318: Ch. 19, 26.4.3, 26.4.4 | 1904.1, 1904.2, 1908.2, 1908.3 |
| 6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete. | Continuous | ASTM C172, ASTM C31, ACI 318: 26.5, 26.12 | 1908.10 |
| 7. Inspection of concrete and shotcrete placement for proper application techniques. | Continuous | ACI 318: 26.5 | 1908.6, 1908.7, 1908.8 |
| 8. Verify maintenance of specified curing temperature and techniques. | Periodic | ACI 318: 26.5.3-26.5.5 | 1908.9 |
| 9. Inspection of prestressed concrete for: | | | |
| a. Application of prestressing forces; and | Continuous | ACI 318: 26.10 | |
| b. Grouting of bonded prestressing tendons. | Continuous | ACI 318: 26.10 | |
| 10. Inspect erection of precast concrete members. | Periodic | ACI 318: Ch. 26.9 | |
| 11. Verify 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. | Periodic | ACI 318: 26.11.2 | |
| 12. Inspect formwork for shape, location and dimensions of the concrete member being formed. | Periodic | ACI 318: 26.11.1.2(b) | |

- (a) Where applicable, see Section 1705.12, Special inspections for seismic resistance.
- (b) Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 17.8.2 in ACI 318, or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work.

REQUIRED SPECIAL INSPECTIONS AND TESTS OF STRUCTURAL STEEL FOR BOLTING PROCESS

| Inspection Tasks Prior to Bolting | QUALITY CONTROL | QUALITY ASSURANCE |
|--|-----------------|-------------------|
| Manufacturer certifications available for fastener materials | O | P |
| Fasteners marked in accordance with ASTM requirements | O | O |
| Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane) | O | O |
| Proper bolting procedure selected for joint detail | O | O |
| Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements | O | O |
| Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used | P | O |
| Proper storage provided for bolts, nuts, washers and other components | O | O |
| Inspection Tasks During Bolting | QUALITY CONTROL | QUALITY ASSURANCE |
| Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required | O | O |
| Joint brought to the snug-tight condition prior to the pretensioning operation | O | O |
| Fastener component not turned by the wrench prevented from rotating | O | O |
| Fasteners are pretensioned in accordance with the RCSC Specification, progressing systematically from the most rigid point toward the free edges | O | O |
| Inspection Tasks After Bolting | QUALITY CONTROL | QUALITY ASSURANCE |
| Document acceptance or rejection of bolted connections | P | P |

- Quality Control - Requirements on the part of the steel fabricator and erector.
- Quality Assurance - Requirements on the part of the project owner's representative.
- P Perform these tasks for each weld joint or member.
- O Observe these items on a random basis. Operations need not be delayed pending these inspections



SOUTH LAKES SPORTS PARK WICHITA, KS

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| Issue: | | |
| 100% PLANS | | 10/18/23 |
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| JOB NO. | 220008-003 | |
| DATE | 18 OCTOBER 2023 | |
| PM | NLS | |
| DESIGNED BY | RST | |
| DRAWN BY | RST | |
| CHECKED BY | WAG | |

IBC INSPECTION TABLES

S003