

Quality Assurance Plan

Quality Assurance for Seismic Resistance

Seismic Design Category *C*
 Quality Assurance Plan Required (Y/N) *No*

Description of seismic force resisting system and designated seismic systems:

Structure is braced using light frame shear walls at wood framed areas and masonry / concrete shear walls at the parking garage area. Shear walls occur in each orthogonal direction and are located as indicated on Structural Framing Drawings S4.0 to S4.3. Loads are distributed to shear walls by the floor sheathing diaphragms at wood framed areas and by the composite slab at the garage area.

Inspections and tests for the seismic resisting components are as indicated within the attached schedule and summarized as follows:

- 1. Test compaction of foundation backfill adjacent to shearwalls.*
- 2. Visually inspect reinforcement and test concrete at concrete shear walls.*
- 3. Visually Inspect reinforcement and test masonry at masonry shear walls.*
- 4. Visually inspect shear studs, structural steel member sizes and bolting at garage floor system.*
- 5. Visually inspect floor sheathing fastener spacing and sheathing edge support at wood framed floor sheathing diaphragms.*
- 6. Visually inspect shear wall fastener spacing and sheathing edge support at wood framed shear walls.*
- 7. Visually inspect hold- down anchors at wood framed shear walls.*

Quality Assurance for Wind Requirements

Basic Wind Speed (3 second gust) *100 mph*
 Wind Exposure Category *C*
 Quality Assurance Plan Required (Y/N) *No*

Description of wind force resisting system and designated wind resisting components:

Structure is braced using light frame shear walls at wood framed areas and masonry / concrete shear walls at the parking garage area. Shear walls occur in each orthogonal direction and are located as indicated on Structural Framing Drawings S4.0 to S4.3. Loads are distributed to shear walls by the floor sheathing diaphragms at wood framed areas and by the composite slab at the garage area.

Inspections and tests for the wind resisting components are as indicated within the attached schedule and summarized as follows:

- 1. Test compaction of foundation backfill adjacent to shearwalls.*
- 2. Visually inspect reinforcement and test concrete at concrete shear walls.*
- 3. Visually Inspect reinforcement and test masonry at masonry shear walls.*
- 4. Visually inspect shear studs, structural steel member sizes and bolting at garage floor system.*
- 5. Visually inspect floor sheathing fastener spacing and sheathing edge support at wood framed floor sheathing diaphragms.*
- 6. Visually inspect shear wall fastener spacing and sheathing edge support at wood framed shear walls.*
- 7. Visually inspect hold- down anchors at wood framed shear walls.*

Qualifications of Inspectors and Testing Technicians

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Agency Number* on the Schedule.

PE/SE	Structural Engineer – a licensed SE or PE specializing in the design of building structures
PE/GE	Geotechnical Engineer – a licensed PE specializing in soil mechanics and foundations
EIT	Engineer-In-Training – a graduate engineer who has passed the Fundamentals of Engineering examination

American Concrete Institute (ACI) Certification

ACI-CFTT	Concrete Field Testing Technician – Grade 1
ACI-CCI	Concrete Construction Inspector
ACI-LTT	Laboratory Testing Technician – Grade 1&2
ACI-STT	Strength Testing Technician

American Welding Society (AWS) Certification

AWS-CWI	Certified Welding Inspector
AWS – ACWI	Associate Certified Welding Inspector
AWS/AISC-SSI	Certified Structural Steel Inspector

American Society of Non-Destructive Testing (ASNT) Certification

ASNT	Non-Destructive Testing Technician – Level II or III.
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International Code Council (ICC) Certification

ICC-SMSI	Structural Masonry Special Inspector
ICC-SWSI	Structural Steel and Welding Special Inspector
ICC-SFSI	Spray-Applied Fireproofing Special Inspector
ICC-PCSI	Prestressed Concrete Special Inspector
ICC-RCSI	Reinforced Concrete Special Inspector

National Institute for Certification in Engineering Technologies (NICET)

NICET-CT	Concrete Technician – Levels I, II, III & IV
NICET-ST	Soils Technician - Levels I, II, III & IV
NICET-GET	Geotechnical Engineering Technician - Levels I, II, III & IV

Soils and Foundations

Note: Where "periodic inspections" are performed and deficient items are located, additional inspections shall be performed so that extent of deficient areas can be determined and corrected.

Item	Agency # (Qualif.)	Scope
1. Shallow Foundations	Agency #2 (PE/GE or Qualified Technician supervised by PE/GE)	<p><i>Inspect soils below footings for adequate bearing capacity and consistency with geotechnical report.</i></p> <p><i>Inspect removal of unsuitable material and preparation of subgrade prior to placement of controlled fill</i></p>
2. Structural Fill	Agency #2 (PE/GE or Qualified Technician supervised by PE/GE)	<p><i>Verify material properties of crushed stone and structural fill adjacent to foundations and below footings</i></p> <p><i>Inspect placement, lift thickness and compaction of structural fill.</i></p> <p><i>Test density of each lift of fill by nuclear methods (ASTM D2922). Perform sieve tests (ASTM D422 & D1140) and modified Proctor tests (ASTM D1557 adjacent to foundations and below footings.</i></p> <p><i>Verify extent and slope of fill placement.</i></p>

Cast-in-Place Concrete

Note: Where "periodic inspections" are performed and deficient items are located, additional inspections shall be performed so that extent of deficient areas can be determined and corrected.

Item	Agency # (Qualif.)	Scope
1. (a) Mix Design – Before Construction (b) Reinforcement Submittal	Agency #1 (PE/SE)	Review cement certificate of compliance as part of mix design submittal review. Review steel reinforcement submittal
2. Concrete Mix – During Construction	Agency #2 (ACI-CCI)	Review concrete batch tickets and verify compliance with approved mix design. Verify that water added at the site does not exceed that allowed by the mix design.
3. Reinforcement Installation	Agency #2 (ACI- CCI)	Inspect size, spacing, cover, positioning and grade of all reinforcing steel, including dowels for masonry walls. Reinforcement shall conform to stamped structural drawings in addition to what is indicated on reinforcement shop drawings. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters
4. Formwork	Agency #2 (ACI- CCI)	Inspect formwork dimensions for compliance with foundation drawings. Verify that formwork does not contain debris or ice. Verify foundation wall control joint bondouts conform to G2/S3.0
5. Anchor Rods & Anchor Bolts	Agency #2 (ACI- CCI)	Inspect size, positioning and embedment of anchor rods/bolts Inspect concrete placement and consolidation around anchors.
6. Concrete Placement	Agency #2 (ACI- CCI)	Inspect placement of concrete. Verify that concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated.
7. Sampling and Testing of Concrete	Agency #2 (ACI- CFTT)	Test concrete compressive strength (ASTM C31 & C39), slump (ASTM C143), air-content (ASTM C231 or C173) and temperature (ASTM C1064).
8. Curing and Protection	Agency #2 (ACI- CCI)	Inspect curing, cold weather protection and hot weather protection procedures.
9. Beam Pockets (F1/S5.2)	Agency #2 (ACI- CCI)	Inspect formwork, bolt layout and reinforcement per detail F1/S5.2 for beam pockets.

Structural Masonry

Note: Where "periodic inspections" are performed and deficient items are located, additional inspections shall be performed so that extent of deficient areas can be determined and corrected.

Item	Agency # (Qualif.)	Scope
1. (a) Grout Mix Design – Before Construction (b) Reinforcement Submittal	Agency #1 (PE/SE)	Review cement certificate of compliance as part of mix design submittal review. Review steel reinforcement submittal
2. Grout Mix – During Construction	Agency #2 (ACI- CFTT)	Review grout batch tickets and verify compliance with approved mix design. Verify that water added at the site does not exceed that allowed by the mix design.
3. Reinforcement Installation	Agency #2 (ACI- CCI)	Inspect reinforcing steel including both wire joint reinforcement and also deformed bar reinforcement. Inspect lap splices and dowels at wall intersections. Inspect size, spacing, positioning and grade of reinforcing steel. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar lap splices. Verify that bars are adequately tied.
4. Concrete Block	Agency #2 (ACI- CCI)	Inspect masonry cores to be sure that hardened mortar does not block cells to be grouted. Verify inspection ports at bottom of vertically grouted cells Perform at least one prism test early in masonry installation to verify concrete block strength
5. Mortar	Agency #2 (ACI- CFTT)	Inspect field preparation of mortar including mortar components, mixing procedures and water content Inspect mortar installation procedure
6. Anchor Bolts	Agency #2 (ACI- CCI)	Inspect size, positioning and embedment of anchor rods/bolts
7. Grout Placement	Agency #2 (ACI- CFTT)	Inspect placement of grout. Verify that grout conveyance and depositing avoids segregation or contamination. Verify that grout is properly consolidated. Inspect concrete placement and consolidation around anchors.
7. Sampling and Testing of Grout	Agency #2 (ACI-LTT)	Test grout compressive strength, slump, air-content, and temperature
8. Curing and Protection	Agency #2 (ACI- CCI)	Inspect curing, cold weather protection and hot weather protection procedures.
9. Grout all cores solid where masonry is below grade	Agency #2 (ACI- CCI)	Periodic inspections

Structural Steel

Note: Where "periodic inspections" are performed and deficient items are located, additional inspections shall be performed so that extent of deficient areas can be determined and corrected.

Item	Agency # (Qualif.)	Scope
1. Fabricator Certification/ Quality Control Procedures	Agency #3 (AWS-CWI)	Review shop fabrication and quality control procedures unless fabricator is an AISC certified plant. Review fabricator's written procedures and quality control manuals.
2. Steel Material Certification	Agency #1 (PE/SE)	Review certificates of compliance as part of structural steel submittal.
3. Leveling Plates below columns	Agency #3 (AWS-ACWI)	Verify that Leveling plates have been grouted as specified prior to placing beams or columns
4. Anchor Rods and Bolts	Agency #3 (AWS-ACWI)	Verify that washers are in place as specified and that nuts are tight at all anchor bolts.
5. Structural Steel components	Agency #3 (AWS-ACWI)	Verify beams and columns have been placed at correct locations based on identification markings and beam depth (or column depth) dimensions.
6. Bolting	Agency #3 (AWS-ACWI)	Inspect high strength bolt material markings for correct bolt type, diameter, storage in lubricated containers and installation / tightening of high-strength bolt. Verify that splines have separated from tension control bolts. Periodically verify proper tightening sequence.
8. Welding	Agency #3 (AWS-CWI)	Visually inspect 100% of field welds at structural steel members Periodically inspect storage of welding rods, pre-heat, post-heat and surface preparation between passes. Field fillet welds larger than 5/16" shall be continuously inspected during weld placement.
8. Metal Deck	Agency #3 (AWS-CWI)	Periodic weld inspection and side-lap fastening of composite floor deck. Periodic testing of welds.
9. Composite Shear Connector Studs Welded to beams	Agency #3 (AWS-CWI)	Periodic inspection and testing of steel studs on composite beams: <ul style="list-style-type: none"> • Stud quantity • Stud diameter and length • Welding of studs

Rough Carpentry

Note: Where "periodic inspections" are performed and deficient items are located, additional inspections shall be performed so that extent of deficient areas can be determined and corrected.

Item	Agency # (Qualif.)	Scope
1. Column Sizes and Built-up column requirements	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>
2. Column Bearing – solid blocking at floor cavities and anchorage at column bases	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>
3. Stud size, spacing, alignment with truss centerlines, grade	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>
4. Beam sizes	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>
5. Simpson Hangers- gap distance at hangers, nails (diameter, quantity), ZMAX finish at PT members,	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>
6. Porch Framing Details	Agency #1 (PE/SE)	<i>Periodic Structural Observation</i>
7. Shear wall Details <ul style="list-style-type: none"> • Hold-Down Anchors • Sheathing thickness • Fastener Size / Spacing • Framing @ Sheathing Edges • Stud Spacing • Sheathing material 	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>
8. Floor Diaphragm Details <ul style="list-style-type: none"> • Sheathing thickness • Fastener Size / Spacing • Framing @ Sheathing Edges • Diaphragm Chords 	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>
9. Floor & Roof Truss Details <ul style="list-style-type: none"> • Strong-backs • Banding • End Reinforcement • Cantilevers 	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>

Rough Carpentry (cont.)

Note: Where "periodic inspections" are performed and deficient items are located, additional inspections shall be performed so that extent of deficient areas can be determined and corrected.

10. Stair Framing Details <ul style="list-style-type: none">• Stringer / Landing Framing• Connections	<i>Agency #1 (PE/SE)</i>	<i>Periodic Structural Observations</i>
11. Lintels <ul style="list-style-type: none">• Lintel Sizes• Framing @ Jambs	<i>Agency #1 (PE/SE)</i>	<i>Periodic Structural Observations</i>
12. Misc. Framing Details	<i>Agency #1 (PE/SE)</i>	<i>Periodic Structural Observations</i>