

GENERAL NOTES (cont.)

Concrete (cont.)

Submittals

- 1. Product data: Submit data for proprietary materials and items including admixtures, patching compounds, waterstops, joint systems, curing compounds, finish materials, and others as requested by architect/engineer.
2. Certification: Upon engineer's request, provide admixture manufacturer's written certification that chloride ion content complies with specified requirements.
3. Shop drawings/Reinforcement: See ACI 301, Section 3.1. Detailing shall conform to the ACI Detailing Manual.
4. Shop drawing submittals shall consist of 3 prints of each drawing for the Structural Engineer, 1 print for the Architect and a minimum of 1 print for the General Contractor.
5. Mix design: Submit mix designs for each concrete mix for the project per Chapter 5 of ACI 318. Mix designs shall include all back up material with compressive strength breaks based on field experience or breaks from a trial mix per Chapter 5.

Quality Assurance

- 1. Mold and cure four - 6"x12" cylinders or five - 4"x8" cylinders in accordance with ASTM C31 for each composite sample. Test one cylinder at 7 days, two - 6"x12" cylinders or three - 4"x8" cylinders at 28 days, and retain one cylinder for 56-day test if required. Two - 6"x12" cylinders or three - 4"x8" cylinders constitute a strength test. Acceptance of structure will be based on three consecutive 28-day strength tests.
2. Obtain at least one composite sample set of cylinders for each 100 cubic yards or fraction thereof of each concrete mixture placed in any one day.
3. Air Content
A. Determine air content of concrete for each strength test by either the pressure method (ASTM C231) or the volumetric method (ASTM C173). The "Chase" air indicator shall not be used.
B. A minimum of one air content test shall be made in the morning and one in the afternoon. Air content tests shall be made on all concrete whether the concrete is designated as air-entrained or not.
C. Additional air content tests, for concrete specified as air-entrained, shall be made when any of the following conditions occur:
- A change in appearance or consistency of concrete.
- Possible reduction of air content due to time delays of truck and/or hot weather.
- When air temperature is over 80°F, check each truckload.
4. Slump test: Perform slump test on each truckload of concrete.
5. Inform engineer immediately of any slump and/or air content tests that do not meet these specifications. If strength, durability or aesthetics of the structure would be impaired, that concrete shall not be used.
6. Concrete test reports shall contain the following information: Concrete supplier, quantity of concrete represented, location of samples taken, design strength requirement at 28 days, list of all materials and admixtures used with quantity and brand or source, actual slump, actual air content, air temperature, concrete temperature, weather, cylinder weight as received, date molded, number of days on job site, date tested, test results for 7 and 28 days, and any other information necessary to evaluate test results.
7. Send one copy of reports on all required laboratory testing directly to the structural engineer, two copies to the architect, one copy to the contractor and one copy to the concrete supplier. A copy of all test reports shall be in the engineer's office within a maximum of five (5) working days from date of test or inspection.
8. Acceptance of structure: If 28-day test results do not meet requirements, the engineer shall have the right to order a change in mix proportions for remaining portions of structure. The engineer may require core tests to be made at contractor's expense. Any such testing shall be done by an independent testing agency acceptable to the engineer.

Structural Steel

- 1. Detailing, fabrication, and erection shall conform to the latest AISC specification as referenced in the applicable building code.
Structural Steel: (Plate, Angles) ASTM A36 uno
HSS: (tubular shapes) ASTM A500 grade B (Fy=46ksi)
All anchor rods shall be ASTM F1554 grade 36, uno.
All structural steel not to receive spray fire-proofing shall be primed white or light gray; asphaltic paints are not acceptable.
All column base plates shall have a minimum of four anchor rods.
Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
2. Connections shown on these drawings are generally schematic. They are intended to define the spatial relationship of the framed members and show a feasible method of making the connection. Any connection that is not shown or is not completely detailed on the structural drawings shall be designed by a registered professional engineer, retained by the fabricator. Details and connections may be designed to conform to AISC Steel Construction Manual, as referenced per applicable building code. Completely detailed means the following information is shown on the shop detail drawings:
A. All plate dimensions and grade.
B. All weld sizes, lengths, pitches and returns.
C. All hole sizes and spacings.
D. Number and type of bolts where bolts are shown but no number is given, the connection has not been completely detailed.
E. Where partial information is given, it shall be the minimum requirement for connection.
F. Method of design.
3. Details and connections completely detailed in the contract drawings may not be altered without written approval by the engineer. Where approved, altered connections shall be completely detailed by the fabricator's engineer clearly on the shop drawings.
4. Alterations of schematic connection details may impact architectural concept and shall not be made without prior written approval of the engineer.
5. Minimum connection plate thickness shall be 3/8", unless otherwise indicated on the contract drawings.
6. Unless otherwise noted, all connections at HSS sections shall be designed and detailed in accordance with the AISC "Hollow Structural Sections Connection Manual" Edition.
7. All welding shall be done using E-70xx electrodes in accordance with the latest AWS specifications.
8. Work these drawings with architectural drawings for nailer holes and structural clearances.
9. Splicing of structural members where not detailed on the drawings is prohibited without prior approval of the structural engineer.
10. Cuts, holes, coping, etc. required for work of other trades shall be shown on the shop drawings and made in the shop. Cuts or burning of holes in structural steel members in the field will not be permitted, unless specifically approved in each case by the structural engineer.
11. All HSS shapes (square, rectangular, etc.) are to have a 1/4" cap plate at all exposed ends. Cap plates to be seal welded all around, uno. Provide 3/8"O deep holes in the center of the plate.
12. All weld sizes not shown in details herein shall be the minimum required size based on thickness of thicker part as per AISC thirteenth edition, tables J2.3 & J2.4. exception: at member splices welds or bolts shall develop full strength of the member or components being connected.
13. All around welds indicated herein shall be discontinuous at the flange tips of open sections.
14. Any alteration made by the detailer on the structural steel shop drawings to schematic or completely detailed connections shown on the contract drawings must be clearly identified by clouding or by direct note on the shop drawing by the detailer prior to submission to the engineer.

Structural Steel (cont.)

- 15. Any member sizes shown on the plans, and currently listed in the AISC Steel Construction Manual latest edition, which are not currently available must be brought to the architect and structural engineers attention prior to award of steel contract. No claim for additional cost will be accepted after the award, for member/built up member substitutions for these sizes.
16. All supplemental steel required for roof units and roof openings over 12"x12" to be supplied by structural steel fabricator and be coordinated by general contractor with the joist fabricator, mechanical drawings and mechanical equipment supplier.
17. Hot dip galvanize per ASTM A123 after fabrication the following structural steel members:
A. Shelf angle supporting masonry.
B. Lintels supporting single wythe exterior masonry wall.
C. Items identified on the architectural and structural drawings. All steel permanently exposed to weather shall be hot dipped galvanized unless specified otherwise on the architectural drawings. For members shown to be galvanized all connection material shall also be galvanized.
18. Level and plumb individual members of structure within specified AISC tolerances. For beams which support steel joists, maintain such tolerances as will assure specified minimum joist bearing. Tolerances shall not be accumulative. Temperature correction shall be applied so that the structure will be plumb and will have clearances specified at 70°F.
Submittals
1. Submit shop drawings prepared under supervision of a registered structural engineer, including complete details and schedules for fabrication and assembly of structural steel members, procedures and diagrams. Include details of cuts, connections, camber, holes, and other pertinent data.
2. Indicate welds by standard AWS symbols and show size, length, and type of each weld. Provide setting drawings, templates and directions for installation of anchor bolts and other anchorages to be installed by others. Provide calculations used for designing connections.
3. Submit calculations stamped and signed by an engineer registered in the state where project is located for all moment connections not completely detailed (flexible and fully restrained).
4. Shop drawings shall indicate the date of the structural drawings that were used to prepare the shop drawings.
5. Shop drawing submittals shall consist of 3 prints of each drawing for the Structural Engineer, 1 print for the Architect and a minimum of 1 print for the General Contractor.

Quality Assurance

- 1. Test reports: submit copies of reports of tests conducted on shop and field bolted and welded connections. Include data on types of tests conducted and test results.
2. An independent testing and inspection agency shall be engaged to inspect high-strength bolted connections and welded connections and to perform tests and prepare test reports. Testing agency shall conduct and interpret tests and state in each report whether test specimens comply with requirements, noting any deviations therefrom.
3. Correct deficiencies in structural steel work which inspection and laboratory test reports have indicated to be not in compliance with requirements. Perform additional tests, at contractor's expense, as may be necessary to reconfirm any noncompliance of original work, and as may be necessary to show compliance of corrected work.
4. Field bolted connections: inspect in accordance with AISC specifications. Check at least one bolt on every connection. Non-slip critical bolts tightened to a snug fit condition only require a visual inspection. Slip critical bolts require a turn of the nut or calibrated wrench method inspection.
5. Shop and field welding: inspect and test during fabrication and/or erection of structural steel. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies. Perform visual inspection of all welds, and perform ultrasonic tests of full penetration welds in accordance with ASTM E 164.

Wood Framing

- 1. Detail, fabricate and erect structural wood in accordance with the national design specifications for wood construction as referenced in the applicable building code, the project specifications, and these drawings.
2. All stress-grade lumber to be spruce, pine, fir, no. 1mo. 2. Stress-grade lumber for joists, beams, bearing wall studs and columns shall develop working stresses of not less than:
A. 875 psi in bending, Fb
B. 1,150 psi in compression parallel with grain, Fc
C. 135 psi in horizontal shear, Fv
D. E=1,400,000 psi
3. Laminated veneer lumber (LVL) for joists, beams and columns shall develop working stresses of not less than:
A. 2,900 psi in bending, Fb, up to 12" depth. For other depths multiply Fb by (d/12)
B. 2,635 psi in compression parallel to grain, Fc
C. 285 psi in horizontal shear, Fv
D. E=2,000,000 psi
4. Maximum moisture content for all structural members shall not exceed 19%.
5. At beam ends and end of beams, provide wood joist with one stud for each nominal two inches of beam width.
6. Connections shall be designed and fastened in accordance with the schedules within the governing codes and specifications identified (uno).
7. No structural member shall be cut or notched unless specifically shown, noted, or approved by the engineer.
8. All sill plates shall be preservative treated wood.
9. All wood exposed to earth, weather, moisture, etc. that would be subject to decay shall be preservative treated.
10. All connectors and fasteners in contact with chemically treated lumber such as Fire treated, preservative treated etc. shall be galvanized or stainless steel as follows:
A. All fasteners and anchors shall be hot dipped galvanized per ASTM A153, (uno)
B. All connectors shall be galvanized per ASTM 653 grade G185 or hot dipped galvanized per ASTM 123 (uno)
C. For treated lumber containing ammonia, such as ACZA, retention levels for ACO above 0.40 or exposure to ocean salts, large bodies of water, fires, fertilizers, etc. connectors, fasteners and anchors shall be stainless steel type 304 or 316.
13. Framing hangers, caps, hold downs, bases, anchors, connections, etc., shall be as manufactured by "Simpson Company".
14. Provide joist bridging in conformance with national design specification.
15. At wall locations where multiple studs are required to support vertical loads, a continuous load path shall be provided to support those loads through the structure inclusive of the floor system to the foundations. This may be accomplished through the use of rim joists, squash blocks or other appropriate means based on location and detailing considerations.
16. All temporary and permanent bridging and blocking shall be provided in accordance with the building code requirements, and as shown on the contract drawings.

Wood Framing (cont.)

- 17. Construction manager or general contractor shall coordinate with subcontractors to account for vertical shrinkage of the wood structure. This shall include but not be limited to plumbing, mechanical, facade construction etc. An estimated shrinkage of 3/8" may occur for each level of construction. Shrinkage at each level is cumulative for determining the overall building shrinkage (i.e. number of levels x 3/8" = overall building shrinkage). This calculation is based upon 19% maximum moisture content in the wood framing during construction. Contractor shall protect wood framing from absorbing and retaining additional moisture during construction. Flexible connections and/or oversized holes may be required for plumbing and mechanical penetrations to account for shrinkage movement.
Wood Roof Trusses
1. All truss design shall conform to the applicable building code.
2. See Plan Notes for design load requirements.
3. Submit truss design drawings and calculations stamped by an engineer registered in the appropriate jurisdiction of the project to the structural engineer for review prior to truss fabrication.
4. Truss quantities, spacing and profiles shown are a schematic representation only. Actual layout and design shall be by truss supplier.
5. Temporary and permanent bridging of wood roof and floor trusses shall be provided in accordance with the Truss Plate Institute, Inc. publication, "HIB-91, Bracing Wood Trusses Commentary and Recommendations". Temporary bridging shall be furnished as required to maintain truss stability, spacing, and to prevent buckling during erection. The following minimum permanent bridging shall be provided:
A. Bottom chord bridging: Continuous horizontal 2x4 @ 8'-0" o.c. for roof and floor trusses. Provide horizontal diagonal bridging at 45 degree angle between bridging lines at ends of building and at 20'-0" intervals throughout.
B. Web members bridging: Continuous horizontal bridging at 12'-0" o.c. for roof trusses and 8'-0" o.c. for floor trusses. Provide vertical diagonal bridging at 45 degree angle at ends of building and at 20'-0" intervals throughout.
6. All temporary and permanent bridging and blocking shall be provided in accordance with the building code requirements, and as shown on the contract drawings.
7. All connectors and fasteners in contact with chemically treated lumber such as Fire treated, preservative treated etc. shall be galvanized or stainless steel as follows:
A. All fasteners and anchors shall be hot dipped galvanized per ASTM A153, (uno)
B. All connectors shall be galvanized per ASTM 653 grade G185 or hot dipped galvanized per ASTM 123 (uno)
C. For treated lumber containing ammonia, such as ACZA, retention levels for ACO above 0.40 or exposure to ocean salts, large bodies of water, fires, fertilizers, etc. connectors, fasteners and anchors shall be stainless steel type 304 or 316.

Submittals

- 1. Shop drawings: submit shop drawings showing species, sizes and stress grades of lumber to be used, pitch span, camber, configuration and spacing for each type of truss required; type, size, material, fastener design value, and location of metal connector plates, field bearings and anchorage details, and calculations for truss design. Shop drawings and calculations shall be signed and stamped by a structural engineer licensed to practice in state where project is located.
2. To the extent engineering design considerations are indicated on the fabricator's responsibility, submit design analysis and test reports indicating loading, section modulus, assumed allowable stress, stress diagrams and calculations, and similar information needed for design and to ensure that trusses comply with requirements.

Special Inspection

- 1. Special inspection is to be provided in addition to the inspections conducted by the department of building safety and shall not be construed to relieve the owner or his authorized agent from requesting the periodic and called inspections required by the applicable building code. Owner shall engage and pay for a qualified testing agency to perform special inspections.

Required Special Inspections

- 1. In addition to the regular inspections, the following items will also require special inspection in accordance with the applicable building code.
A. Soils compliance prior to foundation inspection (compacting fill, special grading)
B. Structural concrete over 2,500 psi
C. Structural steel fabrication
D. Field welding
E. Fabricated structural wood elements
2. Special inspector shall meet the qualifications as stated in the applicable building code and shall perform the duties and responsibilities as outlined in the applicable building code. The special inspector shall provide written documentation to the building official demonstrating his or her competence and relevant experience or training. Experience or training shall be considered relevant when the documented experience or training is related in complexity to the same type of special inspection activities for projects of similar complexity and material qualities. These qualifications in addition to qualifications specified in others sections of the applicable building code.
3. Special inspection shall meet the requirements of the applicable building code. Special inspector(s) shall be hired by the owner to perform the required special inspections. The names of the firms who are to perform the special inspections shall be forwarded to the building official for approval. The special inspector(s) shall complete and submit all forms required by the building department having jurisdiction.
4. Access for special inspection: The construction work for which special inspection is required shall remain accessible and exposed for special inspection purposes through completion of the required special inspections.
5. The special inspector(s) shall:
A. Observe the work assigned for performance to the approved drawing and specifications.
B. Furnish inspection reports to the engineer of record and building department. Discrepancies shall be brought to the immediate attention of the contractor for correction, then, if not corrected to the engineer and the building department.
C. Submit to the engineer of record and the building department a signed final report stating that the work was in conformance with the approved drawings and specifications and the applicable building code provisions of the applicable building code.
6. Special Inspection Notes:
Continuous special inspection is always required during the performance of the work unless specifically noted below.
A. Where fabrication of structural load-bearing members and assemblies is being performed on the premises of a fabricator's shop, continuous special inspection is required during the performance of the work except as allowed in the applicable building code and unless specifically noted below.
C. It is the responsibility of the contractor to provide the special inspector(s) with advance notice, no less than one working day, of the initiation of any work required to have special inspections. All work performed without required special inspection will be subject to removal.
7. Types of work requiring special inspections are:
A. Structural steel elements of buildings and structures as required by AISC 360 as referenced in the applicable building code, see Table 1.
1. Exceptions include:
a. Special inspection of steel fabrication process shall not be required where the fabricator does not perform any welding, thermal cutting or heating operation of any kind as part of the fabrication process. In such cases, the fabricator shall be required to submit a detailed procedure for material control that demonstrates the fabricator's ability to maintain suitable records and procedures such that, at any time during the fabrication process, the material specification, and grade for the main stress-carrying elements are capable of being determined. Mill test reports shall be identifiable to the main stress-carrying elements required by the approved construction documents.
B. Concrete construction as required by applicable building code and Table 4. Exceptions are as follows:
1. Isolated spread concrete footings of buildings three stories or less above grade plane that are fully supported on earth or rock.
2. Continuous concrete footings supporting walls of buildings three stories or less above grade plane that are fully supported on earth or rock where the footings support walls of light-frame construction.
3. Nonstructural concrete slabs supported directly on the ground, including prestressed slab on grade where the effective prestress in a concrete is least than 150 psi (1.03 MPa).
4. Concrete patios, driveways and sidewalks, on grade.
C. Special inspection for existing site soil conditions, during site preparation and fill placement, to ensure load-bearing requirements in compliance with applicable building code and Table 7 except as allowed in applicable building code.
D. Fabricated items: where fabrication of structural, load-bearing or lateral load-resisting members or assemblies is being conducted on the premises of a fabricator's shop, special inspection of the fabricated items shall be performed during fabrication.
1. Exceptions include:
a. Special inspections during fabrication are not required where the fabricator maintains approved detailed fabrication and quality control procedures that provide a basis for control of the workmanship and the fabricator's ability to conform to approved construction documents and the applicable building code. Approval shall be based upon review of fabrication and quality control procedures and periodic inspection of fabrication practices by the building official.
b. Special inspections during fabrication are not required where the work is done on the premises of a fabricator registered and approved to perform such work without special inspection. Approval shall be based upon review of the fabricator's written procedural and quality control manuals and periodic auditing of fabrication practices by an approved agency. At completion of fabrication, the approved fabricator shall submit a certificate of compliance to the owner or the owner's authorized agent for submittal to the building official.



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Table with 2 columns: Field, Value. PROJECT NO.: DRAWN BY: TBA CHECKED BY: TBA ISSUED DATE: 03/24/17

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Rise and Shine Prototype

IHOP

GENERAL NOTES & SPECIFICATIONS

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