

CAST-IN-PLACE CONCRETE continued (03300)

- All reinforcing bars, anchor bolts, dowels, and other concrete inserts shall be well secured in position prior to placing concrete. Wet setting shall not be permitted.
- Provide sleeves for plumbing and electrical openings in concrete before placing. Do not cut any reinforcing which may conflict. Coring in concrete is not permitted. Notify the structural engineer in advance of conditions not shown on the drawings.
- Curing compound used on concrete that is to receive a resilient tile finish shall be approved by the tile manufacturer before use.
- Concrete slabs shall be cured by keeping continuously wet for 7 days. Forms for concrete walls shall be left in place for 7 days, or the walls may be stripped after 3 days and then covered with burlap which shall be kept wet for an additional 7 days. Curing compounds shall not be permitted.
- No stakes, steel or wood, will be permitted in any concrete pour. Suspend forms from above the pour.
- A curing compound approved by the structural engineer shall be used on concrete floor topping slabs to protect wood framing from water exposure.

A. STRUCTURAL TEST AND INSPECTION PROGRAM

- This section applies to the structural portions of the project requiring special inspection. The special inspector's duties are described in CBC 1701.3 and CBC 1701.5. Copies of test results and final reports shall be furnished to ABS Consulting, in addition to other normal distributions, within two days of the test or inspection.
- All tests and inspections shall be performed by an independent testing and inspection agency employed by the owner or agent of the owner and not the contractor, per CBC Section 106.3.5. Job site visits by the structural engineer do not constitute a special inspection.
- The contractor shall be responsible for providing the test and inspection firm with a construction schedule to facilitate the proper coordination of work.

Note: Foundation inspections listed are provided by an inspector designated by others

| 4. Portions of work requiring special inspection: | | YES | NO | N/A |
|---|---|-----|----|-----|
| Foundation | A. Compacted fill, grading, and excavations | | X | |
| | A. Continuous inspection and test cylinders for structural concrete except foundation concrete of 2,500 psi or less | X | | |
| Concrete | B. Continuous inspection for slab-on-grade concrete | X | | |
| | C. Test cylinders for slab-on-grade concrete | X | | |
| Reinf. Steel | A. Placing of reinforcing | X | | |
| | B. Sampling and testing steel (Mill reports and identification of steel) | X | | |
| Welding | A. All structural welding (includes decking and welding studs). Except welding in approved shops per CBC 1701.7 | X | | |
| | C. Expansion/adhesive anchors in concrete or masonry | X | | |
| Bolting | D. Anchor bolts or embeds in concrete (installation and concrete placement) | X | | |
| | A. Sampling and testing of masonry units | | | X |
| Masonry | B. Masonry prism testing | | | X |
| | C. Continuous inspection | | | X |
| Structural Steel | D. Mortar testing | | | X |
| | A. Mill reports and identification of steel (affidavit of compliance) | X | | |
| Plywood sheathing diaphragm nailing | Inspection of sheathing placement and nail spacing, Wall Penetration | X | | |
| | Approved fabricators: (Must submit certificate of compliance) for all offsite fabrication such as structural steel glu-joints precast concrete, etc. | X | | |
| Structural observation | Structural observation required. The owner shall employ an engineer approved by ABS Consulting to perform structural observation as defined in CBC 220 and 1702. (Also see structural observation notes on these drawings). | X | | |

REINFORCING STEEL continued (03200)

- All reinforcing steel, dowels, anchor bolts, etc. shall be well secured in place prior to placing concrete or grout. Contractor shall use template to insure accurate placement of anchor bolts, dowels, etc.
- Welding of reinforcing bars shall conform to AWS D1.4 as incorporated in CBC Standard 19-1. E70XX electrodes shall be used in welding grade 40 rebar. E80XX electrodes shall be used in welding grade 60 rebar. Reinforcement shall not be welded until a chemical analysis sufficient to determine the carbon equivalent is performed. The carbon equivalent of reinforcing steel bars shall be calculated from the chemical composition as shown in the mill test report. If mill test reports are not available, a chemical analysis shall be made of bars representative of the bars to be welded. The carbon equivalent (C.E.) shall not exceed 0.55 as calculated per CBC Standard 19-1. A copy of the mill test report shall be sent to the structural engineer's office prior to placement of reinforcing steel in concrete members. Special inspection is required for all field welding.
- All reinforcing steel to be welded shall be ASTM A 706.
- A. Vertical bars in concrete walls with 1 curtain of steel shall be accurately positioned at the center of the wall, unless otherwise noted on details.
 B. Vertical bars in masonry walls shall be accurately positioned at the center of the wall and be tied in position top and bottom and at intervals not exceeding 192 bar diameters, unless otherwise noted on details.

CAST-IN-PLACE CONCRETE (03300)

- Cement shall be low Alkali and shall conform to ASTM C 150, V.
- Aggregates for normal weight concrete shall conform to ASTM C 33. Suppliers of aggregate shall provide evidence that aggregate is free of deleterious reactivity.
- Aggregates for light weight concrete shall conform to ASTM C 330, and shall be expanded shale - pumice shall not be used. Suppliers of aggregate shall provide evidence that aggregate is free of deleterious reactivity.
- Ready-mix concrete shall be mixed and delivered in accordance with ASTM C 94.
- Concrete work shall conform to all requirements of ACI 301, "Specifications for Structural Concrete for Buildings", except as modified by these notes.
- Where not otherwise indicated on the drawings, provide concrete in accordance with the following table:

| USE | air dry wt. | | f'c (psi) | slump (in.) | aggregate (in.) | water cementitious ratio (5) |
|----------------|-------------|-------------|-----------|-------------|-----------------|------------------------------|
| | normal (1) | lt. wt. (2) | | | | |
| FOOTINGS | * | | 3,000 | 4 | 1 1/2 | 0.45 |
| GRADE BEAMS | * | | 3,000 | 4 | 1 1/2 | 0.55 |
| SLABS ON GRADE | * | | 3,000 | 4 | 1 | 0.45 |

- (concrete table footnotes):
 (1) Air dry weight shall not exceed 150 pounds per cubic foot
 (2) Air dry weight shall not exceed 110 pounds per cubic foot
 (3) Super-Plasticizers, if used, shall be added at the site. Concrete with Super-plasticizers designed into the mix shall arrive at the site without the super-plasticizer. If slumps are verified, then have the super-plasticizer added to attain specified slump.
 (4) Maximum aggregate size shall not be more than 1/3 thickness of concrete components component.
 (5) Maximum water-cementitious materials ratio by weight
- To insure that the concrete will obtain the specified compressive strength, the concrete mix shall be designed to exceed the specified compressive force f'c by 500 psi.
 - Concrete mixes shall be designed by a qualified testing laboratory and reviewed by the structural engineer prior to use. Concrete mix design shall bear a wet seal and signature of a registered civil engineer employed by the qualified testing laboratory prior to submittal to structural engineer for review. The concrete mix design shall state the source of the aggregates and shall include an affidavit that the aggregate is not expansive or otherwise chemically detrimental.
 - Admixtures may be used with prior approval of the engineer. Admixtures shall comply with ASTM A 494 and be of a type that increases the workability of the concrete. But shall not be considered to reduce the specified minimum cement content (Calcium chloride shall not be used)
 - Material admixture shall conform to ASTM C618, class F (no class C permitted); fly ash Pozzolan; loss on ignition, No more than 4 percent. Weight of fly ash shall be between 20% and 25% of weight of concrete.
 - No conduit placed in a concrete slab shall have an outside diameter greater than 1/4 the thickness of the slab. Conduit shall be embedded in a slab that is less than 3-1/2" thick. Except for local offsets, minimum clear distance between conduits shall be 6".
 - All phases of work pertaining to the concrete construction shall conform to the "Building Code Requirements for Reinforced Concrete" (ACI 318, latest approved edition), with modifications as noted on the drawings or specifications.
 - Drypack under baseplates, sill plates, and where otherwise noted on drawings shall consist of 1 part portland cement and 2-1/2 parts of fine aggregate conforming to ASTM C 33, with enough water to form a ball when squeezed in the hand. The space between two surfaces requiring drypack shall be packed with the drypack material by tamping or ramming with a bar or rod until the voids are completely filled. Non-shrink grout may be used in lieu of drypack.
 - Clearance
 - Preserve clearance between bars of not less than the nominal diameter of the bars.
 - In no case shall the clear distance be less than 1 inch or less than 1-1/3 times the maximum size of aggregate, whichever is greater.
 - Minimum clear distances between reinforcing steel and face of concrete are as follows, unless noted otherwise: (See special details for #14 and #18 bars).
 - Concrete deposited against earth: _____ 3"
 - Concrete surface (formed) exposed to earth or weather: _____ 2"
 #6 through #11 bars: _____ 1 1/2"
 #5 bar and smaller: _____ 1 1/2"
 - Concrete not exposed to earth or weather:
 - Slabs, walls, joists: _____ 1 1/2"
 #8 through #11 bars: _____ 1 1/2"
 #5 bar and smaller: _____ 0-3/4"
 - Beams, columns: _____ 1 1/2"
 Primary reinforcement, ties, stirrups, spirals: _____ 1 1/2"
 - Place temperature reinforcing for slabs on grade at 1-1/2 inches clear from top of surface.

FOUNDATION (01050)

- Foundation design information:
 See Geotechnical Investigation Report by:
 Owen Geotech
 Date: October 24, 1997
- Foundations material: 1,500 pcf. All footings on recompacted native soil or compacted fill per the Geotechnical report with 1/2 increase for seismic or wind loads. Bottom of building footings shall be at least 3 feet below the lowest adjacent finish grade.
- Founding of footings and slabs on firm undisturbed natural soils or approved compacted soils
- Soil pressures:
 Soil bearing: 1,500 pcf
 Coefficient of friction: 0.35
 Passive pressure: 250 pcf
 Cantilever active (level): 80 pcf
 Cantilever active (slope): 80 pcf
- Geotechnical (soil) engineer shall verify in writing to the engineer that construction at the site complies with all of the recommendations and conclusions of their report.
- All soil site work shall be done under the direct observation of the geotechnical engineer, and in accordance with geotechnical investigation report recommendations.
- The finish excavation for foundations shall be neat and true to line with all loose material removed.
- Foundation excavations shall be kept free of loose material and standing water, and shall be checked and approved by a qualified geotechnical engineer prior to the placement of any concrete. Contractor shall notify geotechnical engineer when inspection of excavation is ready. Geotechnical engineer shall submit Letter of Compliance to owner.
- The testing lab shall submit compaction reports for all fill to the engineer prior to requesting foundation inspection. All loose soils and fill dirt, including backfill behind retaining walls, shall be compacted to at least 90% of maximum density obtainable by the ASTM Designation D 1557-70 method of compaction unless noted otherwise on the drawings or specifications.
- Backfill for all retaining walls shall be pervious material and shall not be placed until masonry or concrete retaining members have been in place a minimum of 14 days and have obtained 100% of the design strength.
- Provide temporary shoring for all walls retaining earth, prior to backfilling, unless otherwise noted.
- Temporary shoring for all retaining walls requiring permanent structural support at the top of the wall shall remain in place until such supports are installed. In the case of concrete supports, the shoring shall remain in place a minimum of 7 days after concrete placement.
- Contractor shall provide for dewatering of excavations from either surface water, ground water or seepage.
- Contractor shall provide for design and installation of all earth bracing, sheetpiling and shoring required to safely retain earth banks.
- All excavations shall be properly backfilled. Contractor shall brace or protect all building and pit walls below grade from lateral loads until attached floors are completely in place and have attained full strength. Contractor shall provide for design, permits and installation of such bracing.
- Footings shall be placed on firm, undisturbed or compacted soil, shown on drawings. Should soil encountered at these depths not be approved by the geotechnical engineer, footing elevations will be altered by Change Order.
- Footing backfill and utility trench backfill within building area shall be mechanically compacted in layers, to the approval of the geotechnical engineer. Flooding will not be permitted.
- All abandoned footings, utilities, etc., that interfere with new construction shall be removed. Notify the architect prior to removal.
- New footings must extend into undisturbed soils unless otherwise noted.
- All required backfill shall be mechanically compacted in layers not more than eight inches in thickness, to at least 90% of maximum density obtainable by the ASTM Designation D 1557-70 method of compaction. Flooding will not be permitted. The excavated soils may be used for backfill; however, cobbles larger than four inches in diameter shall be omitted from the backfill to minimize possible damage to the walls and any waterproofing. All backfill and compaction shall be done under the supervision of the geotechnical engineer who shall make as many tests as required to insure the above.
- All backfill of any kind whatsoever, including mechanical, plumbing, electrical, etc., shall be compacted, inspected and tested as above. Caution shall be exercised while backfilling against walls or over pipes so as not to damage the wall or pipe.

REINFORCING STEEL (03200)

- Bar reinforcement shall be ASTM A 706, Grade 60. All reinforcing shall be from identified stock with mill analysis.
- Welded wire fabric shall conform to ASTM A 185.
- Lap Splices of reinforcing bars in concrete shall be Class B, as defined in ACI 318 (latest edition), or 2'-0" minimum.
- Reinforcing detailing, bending, and placing shall be in accordance with the Concrete Reinforcing Steel Institute "Manual of Standard Practice", latest edition, and ACI Detailing Manual 315 (latest edition).
- Dowels between footings and walls shall be of the same grade, size, and spacing as vertical wall reinforcing, unless otherwise noted on details.
- Furnish #3 spacer ties at approximately 2'-6" on center in all beams and footings to secure reinforcing in place unless otherwise noted.
- The anchorage for tied columns shall consist of a minimum 135% hook with a 10 bar diameter or minimum 6" extension. See typical ties and stirrups detail.
- All reinforcing bar bends shall be made cold. No #5 or larger bars shall be rebent without approval from structural engineer.
- Minimum lap of welded wire fabric shall be 6" or one full mesh, whichever is greater.
- Splices in adjacent horizontal wall reinforcement shall be staggered 4'-0" minimum unless otherwise noted.

GENERAL continued (01010)

- ABS Consulting shall not have control over or charge of and shall not be responsible in any way for construction means, methods, techniques, sequences or procedures, or for safety or safety precautions and programs in connection with any construction activities, since these are solely the Contractor's responsibility under the Contract for Construction.
- ABS Consulting shall not be responsible for the Contractor's schedule or failures to carry out any construction activities in accordance with the Contract Documents. ABS Consulting shall not have control over or charge of omissions of the Contractor, subcontractors, or any agents, or employees, or any other persons performing portions of any construction activities.
- Conditions shown of existing construction reflect information shown on original construction drawings. The contractor shall notify the structural engineer if conditions encountered are different than indicated. The structural engineer is not responsible for field conditions which are not reflected on the existing drawings. The engineer shall not be responsible for the adequacy or condition of the existing structure to adhere to code design levels.
- Contractor shall coordinate with the Owner's requirements for construction schedule, access to the site, contractor's field office and utility hookups, use of utility services during construction, location of temporary storage of construction materials and removed items, hours of allowable construction, restrictions on construction activities, etc. prior to beginning construction.
 - Construction shall be carried on in a well organized fashion that does not adversely affect normal operations in the building without prior written authorization from the Owner.
 - After the contract is awarded, the contractor shall develop, by a date specified by the Owner, a construction schedule indicating the order and interdependence of construction activities necessary to complete the work and the sequence in which each activity is to be accomplished.
 - Contractor shall attend a preconstruction meeting and periodic project meetings as directed by the Owner.
 - Contractor shall not disconnect any fire alarm, fire alarm pull box, emergency light, electrical panel, electrical conduit, pipe, HVAC duct, etc. which would result in any disruption to life, security or emergency systems, ventilation systems, etc. without first notifying the Owner in writing and obtaining approval. Contractor shall transfer services to new electrical panels, transformers, etc. prior to disconnection from existing panels, transformers, etc. If required by the Owner to maintain continuous operation.
 - Dust control shall be performed on a continuing basis as the work proceeds and whenever a dust nuisance or hazard occurs. Contractor shall provide dust barriers constructed of materials acceptable to the Owner and dust control measures (e.g., sprinkling) as directed by the Owner.
 - Contractor shall maintain noise levels within the limits and times directed by the Owner.
 - Contractor shall take all precautions necessary to prevent fires caused by welding. These precautions shall include, but not be limited to, containing sparks in the immediate area surrounding welding, posting one or more persons (as required for adequate coverage for firewatch during welding, etc.) and all other requirements imposed by the Owner. Contractor shall construct barriers as required to protect existing adjacent items from damage (and to screen welding operations from view if directed by the Owner). Contractor shall adequately ventilate areas where welding is taking place as required.
 - Contractor shall see that all his vehicles and stationary piston engine powered equipment are equipped with well-maintained emission control systems in conformity with Federal, State and local regulations. Transfer and storage systems shall be constructed and operated to minimize escape of vapors and particulates and shall comply in this regard with regulations of the State of California. The contractor shall operate engine powered equipment inside the building only with written approval of the Owner and shall ventilate the building as required by the Owner.
 - Contractor shall store construction materials, removed items, etc. in areas designated by the Owner. Materials shall be stored in such a manner as to prevent damage, soiling, weathering, etc.
- It shall be the responsibility of the contractor to locate all existing utilities, whether shown hereon or not and protect them from damage. The contractor shall determine the location of utility services, existing footings, etc., in areas where new foundations (if any) are to be constructed prior to beginning any excavation. The contractor shall be responsible for relocating, as necessary, any and all utilities that may interfere with the installation of the details as shown. The extent of relocation (necessary both to access areas requiring retrofit and to install retrofits) of utilities which are visible (including those above ceilings) or which are accurately shown on the original Arch., Mech., Elect., etc. drawings shall be determined by the contractor during the pre-bid walkthrough. The cost of any and all such relocations shall be included in the fixed price cost to perform the work. Costs to relocate utilities which are not visible or are not accurately shown on original Arch., Mech., Elect., etc. drawings will be treated as extras. The contractor shall bear all expense of repair or replacement of utilities damaged in connection with the prosecution of this work.
- Contractor shall perform periodic and final cleaning of work areas. Occupied areas shall be kept in a condition suitable for use by the Owner. Unoccupied areas shall be cleaned during the construction to keep work areas free from accumulations of waste materials and rubbish. Contractor shall clean spillage, overspray, heavy collection of dust in occupied areas, and those items which may present a hazard immediately. Final cleaning shall be performed at the completion of the work to return areas to a condition suitable for use by the Owner. Contractor shall comply with all Federal, State and local codes, ordinances, regulations and anti-pollution laws. Contractor shall use appropriate cleaning materials. Contractor shall provide on-site containers for collection of waste materials and shall remove waste materials from the site periodically and dispose of at legal disposal areas away from the site.
- Contractor shall maintain record documents (e.g., drawings, addenda, change orders, reviewed shop drawings, field test records, etc.) at the site as directed by the Owner. The contractor shall maintain an accurate record of changes in the contract documents, and shall transfer the recorded changes to a set of reproducible record documents upon completion of the work.
- Contractor shall estimate special inspection costs in the bid. Owner shall employ and pay a special inspector.
- Welders shall be certified by AWS.
- All exits must remain operational during construction. If there is a temporary closure of exits, special approval of the building department and the fire department must be obtained by the contractor.

DESIGN CRITERIA (01005)

- All work shall conform to the standards of the following code:
 California Building Code - 2001 Edition
 and any other regulating agencies which have authority over any portion of the work and those codes and standards listed in the contract documents.
- Design Live Loads:

| Area | Design Live Load | Remarks |
|---------------|------------------|-----------|
| Roof (Flat) | 20 pcf | Reducible |
| Roof (Sloped) | 16 pcf | Reducible |
- Partition Load = 20 psf for vertical loads and 10 psf for lateral forces
- Design Importance Factor Wind = 1.0; Seismic = 1.0
- Wind Pressure Based on 80 mph, Exposure D
- Design lateral forces (all buildings):
 Seismic base shear coefficient
 Where Z = 0.40 (Zone 4)
 I = 1.00
 Cv = 0.4
 R = 5.5
 W = Dead Load
 N_s = 1.0
 N₂ = 1.0
 C_s = 0.4
 Soils type S_g
 Seismic Source B
 $V = \frac{2.5(C_s)}{R} W = 0.182 W$ (CBC 1630.2.1 EQ. 30-5)
 WORKING STRESS:
 $W = 0.182/1.4 = 0.13W$
 (THIS VALUE WAS USED IN CALCULATIONS)

GENERAL (01010)

- The contractor shall verify all dimensions, elevations and site conditions before starting work, and the engineer/architect shall be notified, in writing, immediately of any discrepancies or inconsistencies. In no case shall dimensions be scaled from plans, sections, or details on these drawings. These notes shall be considered as part of the written specifications.
- All omissions and conflicts between the various elements of the working drawings and/or specifications shall be brought to the attention of the engineer before proceeding with any work so involved.
- Resolve any conflicts on the drawings with the engineer before proceeding with construction. Structural drawings shall be coordinated with the architectural, mechanical, electrical and civil drawings.
- Work not particularly shown or specified shall be some as similar parts that are shown or specified, or as directed. Where on any drawings a portion of the work is drawn out and remainder is indicated in outline, the drawn out parts shall apply also to all other like portions of the work.
- Details labeled as "Typical" and notes and details on the structural drawings indicate method of work, and are intended to be used where they apply. Unless the condition is specifically detailed or referenced, use typical details shown on sheets S1.1 through S1.4
- Notes and details on drawings shall take precedence over "General Notes" and typical details.
- It shall be the responsibility of the contractor to locate all existing utilities whether shown hereon or not, and to protect them from damage. The contractor shall bear all expense of repair or replacement in conjunction with the prosecution of this work.
- No pipes, ducts, sleeves, chases, openings, notches, holes, pockets, etc., shall be placed in slabs, decks, joists, beams, girders, or walls unless specifically shown or noted, nor shall any structural member be cut for pipes, ducts, etc., unless otherwise noted. Contractor shall obtain prior written approval for installation of any additional pipes, ducts, etc. Notify the structural engineer when drawings by others show openings, pockets, etc., not shown on the structural drawings, but which are located in structural members. No existing rebar shall be cut during installation of retrofits unless approved by the engineer.
- Contractor agrees that he/she shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that the contractor shall defend, indemnify and hold the owner and engineer harmless from any and all liability, real or alleged, in connection with the performance of work on this project, including but not limited to liability arising from the negligence of the owner or the engineer.
- The contract structural drawings and specifications represent the finished structure. They do not indicate the method of construction. The contractor shall provide all measures necessary to protect the structure during construction. Such measures shall include, but not be limited to: bracing, shoring for loads due to construction equipment, temporary structures, and partially completed work, etc. Observation visits to the site by the structural engineer shall not include inspection of the above items.
- Specifications, codes and standards noted in the contract documents shall be of the latest approved issue, including supplements, unless otherwise noted. Material specifications are ASTM latest edition unless noted otherwise.
- Contractor shall investigate site during clearing and earthwork operations for field excavations or buried structures such as cesspools, cisterns, foundations, etc. If any such structures are found, structural engineer shall be notified immediately.
- Construction materials shall be spread out if placed on framed floor or roof. Load shall not exceed the design live load per square foot. Provide adequate shoring and/or bracing where structure has not attained the design strength or where overload is anticipated.
- See mechanical, plumbing and electrical drawings for the following:
 A. Pipe runs, sleeves, hangers, trenches, wall, roof and floor openings, etc., not shown or noted.
 B. Electrical conduit runs, boxes, outlets in walls and slabs.
 C. Anchorage and bracing for electrical, mechanical or plumbing equipment.
 D. Anchor bolts for motor mounts.
 E. Size and location of machine and equipment bases.
- See architectural drawings for the following:
 A. Size and location of all door and window openings.
 B. Size and location of all non-bearing partitions.
 C. Size and location of all concrete curbs, floor drains, slopes, depressed areas, changes in level, chamfers, grooves, inserts, etc.
 D. Size and location of all floor and roof openings.
 E. Stair framing and details.
 F. Dimensions. Columns are located at the centerline of the walls.
 G. Roof Elevations and heights.

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GENERAL NOTES

| | |
|---------|--------|
| DRAWN | DW |
| CHECKED | SR |
| DATE | |
| SCALE | |
| JOB NO. | 200341 |
| SHEET | |