

GENERAL

1. These drawings apply to 2175 Green Street, San Francisco, CA, Voluntary Partial Seismic Retrofit Foundation & Substructure. Construction shall conform to the San Francisco Building Code, with reference to the 2010 California Building Code. Construction shall also comply with the recommendations of Lawrence B. Karp, G.E. contained in the report "Voluntary Partial Seismic Retrofit Foundation & Substructure" of April 27, 2011.
2. Existing and new dimensions and grades shown on the drawings are approximate. Do not scale any dimensions from these drawings. The Contractor shall verify the actual existing conditions and inform the Engineer of Record if actual conditions differ from the assumed existing conditions shown on the structural drawings.
3. Shoring and bracing of the existing and new structure will be necessary during the construction of this project. Shoring and bracing of the soil, and the existing and new structures, shall be installed where necessary to adequately support the imposed vertical and lateral loads, and shall be maintained until the new structure can support the anticipated loads. The Contractor, and not any Engineer or Architect, shall be responsible for all means, methods, techniques and sequences of construction. The Contractor shall also be solely responsible for all safety programs and procedures during construction.
4. This project requires excavations adjacent to, and to elevations below the base of, existing foundations. These excavations, and any others closer than a 1:1 slope (45 degree angle) to the bottom edge of existing, new or temporary foundations, shall be considered to undermine such foundations. Adequate shoring and underpinning (such as chemical grouting or concrete piers) shall be installed before excavation work.
5. Any openings, holes, cuts or discontinuities not shown on the structural drawings and extending into or through structural elements (such as wood framing, sheathing, concrete) require the prior approval of the Engineer of Record, and may require special structural detailing.
6. The Contractor shall follow all instructions, recommendations and safety precautions provided by the manufacturer or supplier of any material or product called out in these specifications or drawings.
7. The Contractor shall hold a preconstruction meeting with the Owner and Engineer of Record to discuss the Contractor's plans to accomplish the work described in the construction documents. As the work proceeds, the Contractor is encouraged to contact the Engineer of Record if any questions arise regarding the interpretation of the structural construction documents.
8. The Contractor shall notify the Engineer of Record three days in advance of any construction review. The following construction reviews are Structural Observations as defined in SFBC §1702.1 and are required per SFBC §1710.2 and SFBC §1710.3:
 - A. Placement of concrete reinforcing steel. The review should take place with sufficient time in advance of the concrete placement to make any changes required by the Engineer of Record.
 - B. Holes drilled to receive epoxied anchors. The review should take place prior to placement of epoxy.

SPECIAL INSPECTIONS

The Owner shall employ, and the Contractor shall coordinate, one or more special inspectors who shall provide inspections during construction on the following types of work, as well as any further inspections required by the Building Official or called for in the Statement of Special Inspections:

- A. Hand-dug piers and grade beam excavations, by the Engineer of Record;

- B. Concrete compressive strength (see Concrete Note 1), by testing laboratory;

All testing laboratories or inspection agencies shall be approved by the Engineer of Record and retained by the Owner. Written reports shall be sent to the Contractor, Engineer of Record, Owner and Building Official.

CONCRETE

1. Concrete work shall conform to the requirements of ACI 301, "Specifications for Structural Concrete for Buildings," as modified below. Concrete shall attain a minimum compressive strength at 28 days of 2,500 psi. Cement shall be Type II, and shall conform to ASTM C150 and ASTM C595. Flyash may be substituted for up to 50% of the cement in the mix. Slump of concrete without workability admixtures shall not exceed 4 inches, and the water/cementitious material ratio by weight shall not exceed 45%. Acid soluble chloride content of the concrete shall not exceed 0.2 percent of cement weight, per ASTM C1152. Admixtures and plasticizers for workability shall be used in order to achieve the specified water/cementitious material ratio, rather than additional cement. Contractor shall submit mix design to the Engineer of Record for review. Because excess water reduces concrete strength and durability, adding water at the site is strongly discouraged and shall not exceed one gallon per cubic yard. The Contractor shall schedule a testing laboratory's visits to the site. Sampling and testing shall be in accordance with ASTM C31, ASTM C39, ASTM C172, and ASTM C143. Slump tests and cylinder samples shall be taken where the concrete is to be placed, after any pumping or transit operations. A minimum of one set of three cylinders shall be taken and tested for each concrete pour.
2. Concrete aggregate shall conform to ASTM C33. Aggregate shall be free of alkali reactivity. Coarse aggregate nominal size shall not exceed 3/4".
3. Reinforcing steel shall be new, deformed bars, Grade 60, identified by a third longitudinal rib or the number "60". Reinforcing steel shall conform to ASTM A615 (nonweldable), or ASTM A706 (weldable).
4. Reinforcing steel and all bolts and other embedments shall be securely tied and held in place with 16 gauge annealed wire, or concrete or steel chairs and spacers prior to placing concrete, to maintain critical clearances and dimensions. Splices and intersections shall be wired with 16 gauge annealed wire unless noted otherwise. Concrete cover over reinforcing shall be a minimum of 3 inches where concrete is cast against earth, 1.5 inches where the concrete is exposed to weather or backfilled earth (2 inches for No. 6 or larger bars), and three-quarters of an inch elsewhere, unless otherwise noted on the drawings. Embed anchor bolt hooks a minimum of 7 inches.
5. Reinforcing steel shall not be welded unless specifically called for on the structural drawings. Welded reinforcing steel shall conform to ASTM A706, and welding procedures shall conform to the American Welding Society "Structural Welding Code" (AWS D1.4). Table 5.2, specifying minimum preheat and interpass temperatures, must be strictly followed.
6. Epoxy grout for dowels and bolts shall be applied with proprietary dispensing guns equipped with mixing nozzles. Anchor bolts through mudsills shall be bonded to both the concrete and wood. Glass-encapsulated adhesives shall not be used. The following epoxy systems may be used:
 - A. Simpson Epoxy-Tie SET-XP (available from Simpson Strong Tie, 5656 W. Las Positas Blvd., Pleasanton, CA 94588, ph: (800) 925-5099).
7. Dowel and bolt holes in concrete shall be dry and cleared of all debris and dust before epoxy grouting. The hole diameter shall be 1/8" greater than the dowel or bolt diameter unless otherwise required by the epoxy manufacturer. Embedment depths unless otherwise noted on the drawings shall be ten bar or bolt diameters. Epoxy shall be applied from the back of the hole forward in order to avoid air pockets.

8. A surface bonding agent shall be used between previously poured hardened concrete and new concrete, and at construction joints. Bonding agent shall be applied immediately before the new concrete pour, and shall be wet or tacky during the pour. The following surface bonding agents may be used:
 - A. Rezi-Weld 1000 Multi-Purpose Construction Epoxy as manufactured by W.R. Meadows, P.O. Box 338, Hampshire, IL 60140, ph: (800) 342-5976, local representative in Benicia, ph: (707) 745-6666 (available from Muller Construction Supply, 555 South 12TH Street, Richmond, CA 94802, ph: (510) 307-9971, and Westside Concrete Materials, 1544 Stanley Blvd., Pleasanton, CA 94566, ph: (925) 462-5050);
 - B. BurkEpoxy MV as manufactured by Edoco, 4226 Kansas Ave., Kansas City, KS 66106; ph: (877) 416-3439 (available from White Cap, 1140 Beecher Street, San Leandro, CA 94577, ph: (510) 729-6464).

Other surface bonding agents may be used if approved in advance by the Structural Engineer.

9. The structural adequacy of the design and construction of all shoring and concrete formwork is the responsibility of the Contractor. All concrete formwork shall comply with ACI Standard 347R, "Recommended Practice for Concrete Formwork." Unless otherwise noted on the drawings, soil cuts capable of safely holding a vertical slope may be used as forms if a 3" clearance is maintained between earth and reinforcing.
10. Concrete placement and consolidation shall conform to ACI 304 and ACI 309. The inner surfaces of all forms and conveying equipment shall be clean and free of all foreign materials. Concrete shall be placed using trunks or tremies as required to prevent segregation of aggregates. Do not drop concrete from a height of 3 feet or higher. Concrete shall be deposited continuously, or in layers only if no hardening occurs that might cause the formation of seams or planes of weakness. Concrete which has partially hardened or has been contaminated by foreign materials shall not be deposited. All concrete shall be consolidated by mechanical vibration, spading, rodding or forking so that the concrete is thoroughly worked around the reinforcement, around embedded items, and into corners of forms, eliminating all air or stone pockets which may cause honey-combing, pitting, or planes of weakness.
11. Control joints, where shown on the plans, shall be tooled into fresh concrete to one quarter of the slab thickness. Alternatively, 1-1/2 inch plastic zip strips (available from Don Hoban Company, 3403 Santa Rosa Ave., Santa Rosa, Ca, 95407, (800) 734-4283) may be set in fresh concrete. Saw cut joints in hardened concrete are not acceptable.
12. Construction joints: Construction joints cut vertically shall be roughened, exposing clean aggregate to 1/4" depth, solidly embedded in mortar matrix. Construction joints cut horizontally shall include a shear key. Construction joints shall be coated with epoxy bonding agent. Before epoxying and subsequent pours, construction joints shall be cleaned and free of debris.
13. Slab concrete shall be wet-cured with wet burlap, plastic sheeting, or a double application of an approved curing membrane. Curing shall commence as soon as possible after finishing the slab, and shall continue for 7 days.
14. Forms may be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations. No permanent building loads shall be placed on new concrete until two-thirds of the design strength has been reached.

