

STRUCTURAL SPECIFICATIONS

DESIGN CRITERIA
 CBC Edition - 2010
 Site Classification: D Seismic Design Category: D
 Wind Loading - Exposure C, 85 MPH

Roof Loading:
 20 PSF Live Load w/ Code Allowable Reductions
 20 PSF Dead Load (incl. Self Wt.) to Girders

GENERAL NOTES

- No changes are to be made on these plans without the knowledge and consent of the Engineer. Substitution/change requests must be submitted in writing for review.
- The general contractor shall notify the architect/engineer immediately of any discrepancies found within the contract documents.
- Dimensions as indicated are the dimensions for construction. Do not scale the prints. Dimensions controlled by existing conditions shall be verified at the site by the contractor.
- The general contractor shall be responsible for all shoring and bracing during construction and erection to support loads to which the structure may be subjected during the construction process.
- No framing of any type is to be concealed prior to inspection by governing agencies.
- Conventional details shall apply where no special detail or call-out is shown. Clarifications will be furnished upon request.
- These drawings and specifications are intended to comply with the codes, ordinances, rule and regulations governing this project. The contractor shall give notice if it appears that modification or change would produce results more in compliance with such requirements.
- Shop Drawings, when required, shall be submitted for review only after the contractor has reviewed and approved them to be in conformance with the contract documents. Deviations may result in rejection of the shop drawings. All approvals must be in writing, and all necessary approvals must be obtained prior to fabrication and/or delivery of products to the job site.
- Special Deputy Inspectors must call in, or report to the Building Department to verify license certification at least 24 hours prior to performing required Special Inspections at the job site. Copies of all inspection reports shall be sent to the Building Department, this office, and others as required.

FOUNDATIONS

- The Soil Report in its entirety shall be included as a part of the bid documents. Refer to the Soil Report for site grading, compaction and re-compaction requirements.

SOIL ENGINEER OF RECORD

LCG INLAND
 41531 DATE STREET
 MURRETTA, CA 92562
 (562) 799-9469
 April 11, 2007
 Project No. 103190-10

Allowable Bearing Value: 2000 PSF - Cont. Ftg. at 12" Deep
 2000 PSF - Pad Ftg. at 12" Deep

Seismic Design Parameters

S _s	: 1.293
S ₁	: 0.470
Site Class	: D
F _a	: 1.0
F _v	: 1.5
W _{ps}	: 1.29
W _{pi}	: 0.71
S _{ps}	: 0.86
S _{pi}	: 0.47

Liquefaction Potential: Very Low
 Expansion Index: Very Low

- Excavate for foundations to the specified depths and widths shown on the plans. Do not excavate footings to lower elevations.
- The contractor shall be responsible for shoring as necessary to support cut or fill during excavation and construction.
- Fill and back-fill material shall be approved by the project Soil Engineer. Filling and back-filling shall be inspected and approved by the project Soil Engineer. SEE DETAIL 2/S-11
- The project Soil Engineer shall approve all foundation excavations prior to pouring concrete. Excavations shall be free of water and loose debris during pouring of concrete.
- All foundation reinforcing shall be held in place by mechanical means prior to and during pouring of concrete.

REINFORCING STEEL

- Reinforcing steel shall conform to ASTM A-615, Grade 60, unless otherwise noted. All reinforcing shall be from identified stock with mill analysis supplied. #4 or smaller dowels shall conform to ASTM A-615, grade 40. Bends shall be made cold. REFER TO DETAIL 1/S-1.1
- Dowels shall be provided at pour and construction joints, and shall be the same size and spacing as the reinforcing shown for the subsequent construction, unless noted otherwise.
- Welded wire fabric shall conform to ASTM A-185 and A-497. Use welded wire fabric only where specified on the plans. Welded wire fabric substitutions for standard reinforcing must be approved in writing by the engineer.
- All continuous bars or dowels of #3 thru #6 in size shall lap 40 bar diameters in concrete and masonry, unless otherwise noted. For bars larger than #6, see plans for splice details. Wire mesh shall lap a minimum of 12 inches.
- All reinforcing steel laps or splices shall be as indicated on the plans. Where lap or splice locations are not specified, laps or splices shall be staggered.
- Reinforcing bars shall be clean of rust, grease or other material likely to impair bonding.
- Reinforcing steel shall have the following minimum cover:

Concrete Cast Against Earth.....	3"
Slab on Grade.....	Center
Cast-in-Place Walls.....	2"
No. 5 and Smaller.....	1-1/2"
No. 6 and Larger.....	2"
Pre-cast Wall Panels.....	3/4"

- Welding of reinforcing steel shall conform to "Structural Welding Code - Reinforcing Steel", AWS D1. The mill analysis shall include the carbon equivalence to establish weldability. No welding shall be done at the bend in a bar. Welding of cross bars (Lack Welding) shall not be permitted except as directed by the engineer.
- Field welded reinforcing steel shall conform to ASTM A-706, Grade 60. Welding shall be performed by Building Department approved Certified Welders, using E70XX electrodes. All field welding shall be continuously inspected by a Registered Deputy Inspector.

CONCRETE (SPECIAL INSPECTION NOT REQUIRED)

All concrete construction shall comply with the latest adopted edition of the ACI Code, the California Building Code. The following notes are provided as a guide to all requirements.

MATERIALS

- Portland Cement shall conform to ASTM C-150, "Specification for Portland Cement".
- Portland Blast-Furnace Slag Cement or Portland Pozzolan Cement shall conform to ASTM C-595, "Specification for Blended Hydraulic Cements".
- Cement Type shall be ASTM C-150 Type II, unless noted otherwise. Type V cement shall be used if the soil sulphate content exceeds the maximum allowed for Type II. Refer to the Soil Report.
- Admixtures shall not be used without the written consent of the engineer.
- Mixing water for concrete shall conform to ASTM C-94.
- Aggregates for normal weight concrete shall conform to ASTM C-33, "Specification for Concrete Aggregates".
- Aggregates for lightweight concrete shall conform to ASTM C-330, "Specification for Lightweight Aggregates for Structural Concrete".

PROPORTIONING

- All concrete shall be of the specified quality, capable of being placed without excessive segregation, and developing all characteristics required by the contract documents.
- Strength requirements shall be based on 28-day compressive strength, unless specified otherwise. The strength requirements for each portion of the project shall be as follows:
 Non-Structural Flatwork..... 2,500 PSI
 Slab on Grade..... 2,500 PSI
 Foundation..... 2,500 PSI
 Conc. Aprons..... 2,500 PSI
- Concrete shall have a maximum slump of 4 inches if the method of consolidation is by vibration, 5 inches if not by vibration.
- The nominal maximum size of the aggregate shall not be more than 1/5 of the narrowest dimension between forms, 1/3 of the depth of slabs, nor 3/4 of the minimum clear spacing between reinforcing bars.
- The proportions of concrete ingredients shall be such as to produce a mixture which will work readily into the corners and angles of the forms and around reinforcement by the methods of placing and consolidation used on the job, but without permitting the materials to segregate, or excessive free water to collect on the surface.
- All reinforcing steel, wire mesh, anchor bolts, hold-down anchors, and other inserts shall be secured in position and inspected prior to placing concrete.
- Concrete floor slabs shall be cured as required for as crack free and curl free finish as possible. The method of curing shall be selected by the Contractor, and submitted in writing to the Owner for approval prior to pouring concrete.

STRUCTURAL STEEL

- All structural steel shall conform to the requirements of the ASTM, and shall be fabricated in conformance with AISC Practice and Specifications for Buildings.
- All structural steel shapes, plates and bars shall conform to ASTM A-36, 36 ksi. Steel Beams to be ASTM A-572, 50 ksi.
- Tube Steel shall conform to ASTM A-500, Grade B (46 ksi). Pipe Columns shall conform to ASTM A-53, Grade B.
- Unless noted otherwise, all shop and field bolted connections shall be in accordance with using unfinished American Standard Regular Bolts conforming to ASTM A-307.
- No holes other than those specifically detailed shall be allowed thru structural steel members. No cutting or burning of structural steel will be permitted without prior written consent of the engineer.
- Structural steel Shop Drawings shall be reviewed and approved by the engineer prior to fabrication. Required corrections to the Shop Drawings shall be resubmitted for review and final approval.
- Welding shall conform to the latest edition of the Welding Code AWS D1.1. Use approved electrodes conforming to ASTM A-233.
- Welding shall be performed by Building Department Approved, Certified Welders.
- All Shop Welding shall be done by an approved fabricator who shall provide a certificate of compliance to the Bldg. Dept.
- All field welding shall be continuously inspected by a Registered Deputy Inspector. Field Inspection Reports shall be filed with this office, the Building Department, and the Owner.
- Shop painting and surface preparation shall be in accordance with the provisions of the Code of Standard Practice, latest edition of the AISC.
- Unless specifically excluded, all steel work shall be properly prepared, wire brushed, and shop painted one prime coat.
- Steel work which will be concealed by interior building finishes, or in contact with concrete, need not be painted.

STRUCTURAL GLUED LAMINATED TIMBER

PART I - GENERAL

1.1 SUMMARY

- Structural glued laminated (glulam) timber is defined to include wood members fabricated from 1-inch or 2-inch nominal thickness lumber, face-to-face to depth of four or more laminations.
 - Provide connectors, anchors and accessories necessary to interconnect and secure glulam members to building structures.
- The types of structural glued laminated units specified include the following:
 - Straight beams, including girders and purlins, and cambered members.
- SUBMITTALS**
- Product data including specifications and installation instructions covering lumber, adhesives, fabrication processes, preservative treatment, accessories, and protection.
 - Submit certification including glued laminated timbers comply with requirements of ANSI/AITC A190.1.
- Shop drawings showing full dimensions of each member and layout of entire structural system. Show large-scale details of connection, connectors, and other accessories. Indicate species and laminating combination, adhesive type, and other variables in required Work.

1.3 QUALITY ASSURANCE

- Standards: Comply with ANSI/AITC A190.1, "Structural Glued Laminated Timber."
- Manufacturer Qualifications: Provide factory-glued structural units, produced by an AITS-licensed firm qualified to apply the AITC Quality Inspected Mark.
- Factory-mark each piece of glued laminated structural units with AITC Quality Work.
 - Place AITC mark on timber surfaces which will not be exposed in completed Work.
- Engineer Qualifications: A professional engineer who is legally authorized to practice in jurisdiction where project is located and experienced in providing engineering service towards the installation and successful in-service performance of glulam units similar to this Project in material, design and extent.

1.4 DELIVERY, STORAGE, AND HANDLING

- General: Comply with provisions of AITC 111, "Recommended Practice for Protection of Structural Glued Laminated Timber During Transit, Storage, and Erection.

PART II - PRODUCTION

2.1 STRUCTURAL GLUED LAMINATED UNITS

- Lumber: Comply with ANSI/AITC A190.1 and applicable Lumber association standards cited therein for grades required to achieve glulam requirements for design values, appearance, fabrication laminations, and species.
- Stress Values for Beams & Purlins: Provide glued laminated members, size as shown on drawings, with laminating combinations that meet or exceed following stress values for normal loading duration and dry condition use:
 - Bending (F_b), 2400 psi.
 - Cantilevered beams shall be 24-F V8 -DFDF.
 - Simple span beams may be 24-F V4 DF.
 - Horizontal shear (F_v), 94 psi.
 - Compression perpendicular to grain (F_c-tension face), 218 psi.
 - Compression perpendicular to grain (F_c-compression face), 385 psi.
 - Modulus of Elasticity (E), 1,600,000 psi.
- Lumber Species: Douglas Fir-Larch.
- Adhesive: ANSI/AITC A190.1, wet-use type.

- Connectors, Anchors, and Accessories: Provide fabricated steel (ASTM A 36) shapes, plates, and bars, welded into assemblies of types and sizes indicated. Provide steel bolts (ASTM A 307), lag bolts, nails, and other standard fasteners as required for installation.
 - Finish: Finish fabricated assemblies with rust-inhibitive primer.
 - Exterior/Wet-Use Finish: Where wet-use glulam work is indicated, finish fabricated assemblies with hot-dip zinc coating (ASTM A 153), including bolts and other fasteners.

2.2 FABRICATION

- General: Comply with ANSI/AITC A190.1 in providing units indicated; where dimensions are not completely documented, provide manufacturer's standard size and shapes required to fulfill indicated performances.
 - Shop-fabricate for connections and connecting hardware to greatest extent feasible, including drilling of bolt holes.
- Appearance Grade: Provide industrial appearance grade units.
- Camber: The required camber for fabricating each member is shown on drawings, and may be either circular or parabolic, at manufacturer's option.
- FACTORY-APPLIED PROTECTION**

- General: Before shipping or exposing to outdoor conditions, bundle-wrap or individually wrap with manufacturer's standard opaque, durable, water-resistant, plastic coated paper covering with water-resistant seams.

PART III - ERECTION

- INSTALLATION**
- General: Install miscellaneous steel connectors, anchors, and accessories.
 - Plan and execute erection procedures so that close fit and neat appearance of joints and structure as a whole will not be impaired. When hoisting members into place, use padded or nonmarking slings, and protect corners with blocking.
 - Adequately brace members as they are placed to maintain safe position until full stability is provided.
 - Cutting: Avoid cutting glulam members during erection. Except for fastener drilling and other minor cutting, coats with end sealer.
 - Where treated members must be cut during erection, apply a heavy brush coat of the same preservative treatment, complying AWWA Standards.
 - Handle and temporarily support members to prevent visible surface damage.
 - Do not remove wrapping on individually wrapped members until it will serve no useful purpose, including protection from weather, soiling and damage from work of other trades.
 - Repair damaged surfaces and finishes after completing erection and removing wrappings, or replace damaged members as directed where damage is beyond acceptable repair.

LUMBER

- Horizontal Framing Lumber: 2 x to be No. 1 DF, 4 x to be No. 1 DF; 6 x or larger to be Struc. No. 1 DF unless noted
- All vertical framing lumber shall be construction grade DF
- No structural member shall be cut without the knowledge and consent of the Engineer.
- Roof/Floor Sheathing - See Framing Plans for requirements. All sheathing shall conform to CBC Standards.
- Nailing shall conform to minimums of CBC Chapter 23, latest edition.
- All nails to be 10d nails, 9 gage, 2-1/8" long, 5/16" head. All nailing to be inspected before covering.
- Nailing requirement Example: 10d @ 4:6:12 - 4" O.C. Boundary, cont. panel edges & as noted - 6" O.C. Plywood Panel Edges & Across Glu-Lams - 12" O.C. Field Nailing
- Edges of openings through roof shall be nailed per boundary requirements, U.N.O.
- Boundary nailing shall occur at Building Perimeter and all continuous panel edges.
- Edge nailing shall occur at all other panel edges and along all Girders, even across field.
- Field nailing shall occur in field when not over a Girder.
- All tops of columns and walls shall be adequately braced

TRUSS FRAMING @ ROOF (SSI OR EQUAL)

SCOPE: This work includes the complete furnishings and installation of all SSI joist as shown on the drawings, herein specified and necessary to complete the work.

PART I - MATERIALS:

- The plywood SSI's are to be factory manufactured with structural grade plywood. Machine stress rated lumber flanges and utilizing waterproof type glue; such as the SSI joist manufactured by STANDARD STRUCTURES.
- The plywood webs are to be an APA Structural 1 CD exterior grade with face veneers installed with grain running in the vertical direction of the joist and butt jointed to form a continuous web member. The web shall be pressure formed and fit into a groove in the center of the wide face of the flange members so as to form a pressured glue joint at that junction.

PART II - DESIGN:

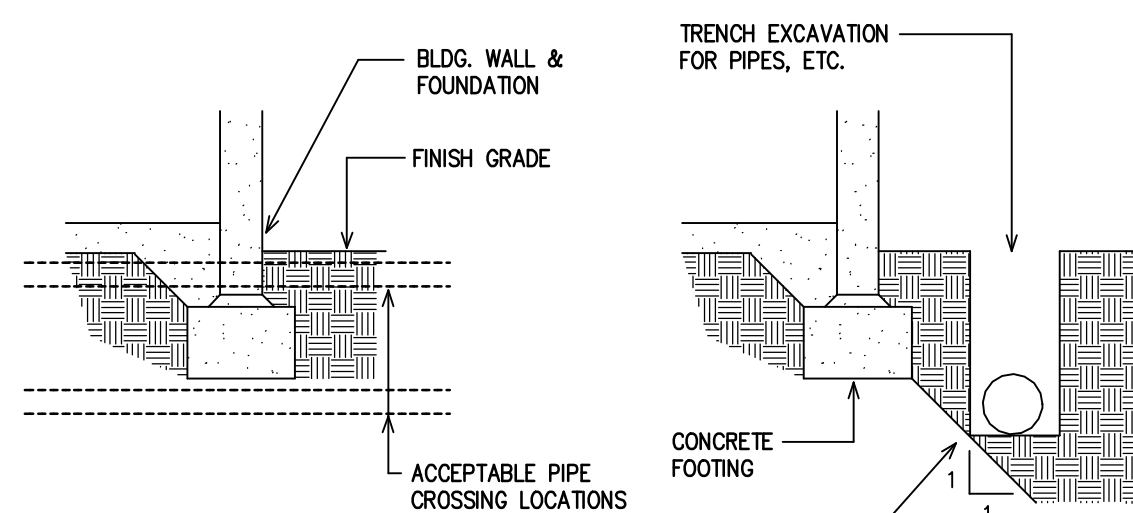
- The SSI joist shall be sized and detailed to fit the dimensions and loads indicated on the plans. All designs shall be in accordance with allowable values and section properties assigned and approved by the building code. Verification of design of the SSI Joist by complete calculations is available upon request.

16 PSF Dead Load
 20 PSF Roof Live Load
- DRAWINGS:** Drawings showing layout and detail necessary for determining fit and placement in the building are to be provide by the manufacturer.

- FABRICATION:** The SSI joist shall be manufactured in a plant approved for fabrication by the Building Dept., and under the supervision of a third party inspection agency.

PART III - ERECTION AND INSTALLATION:

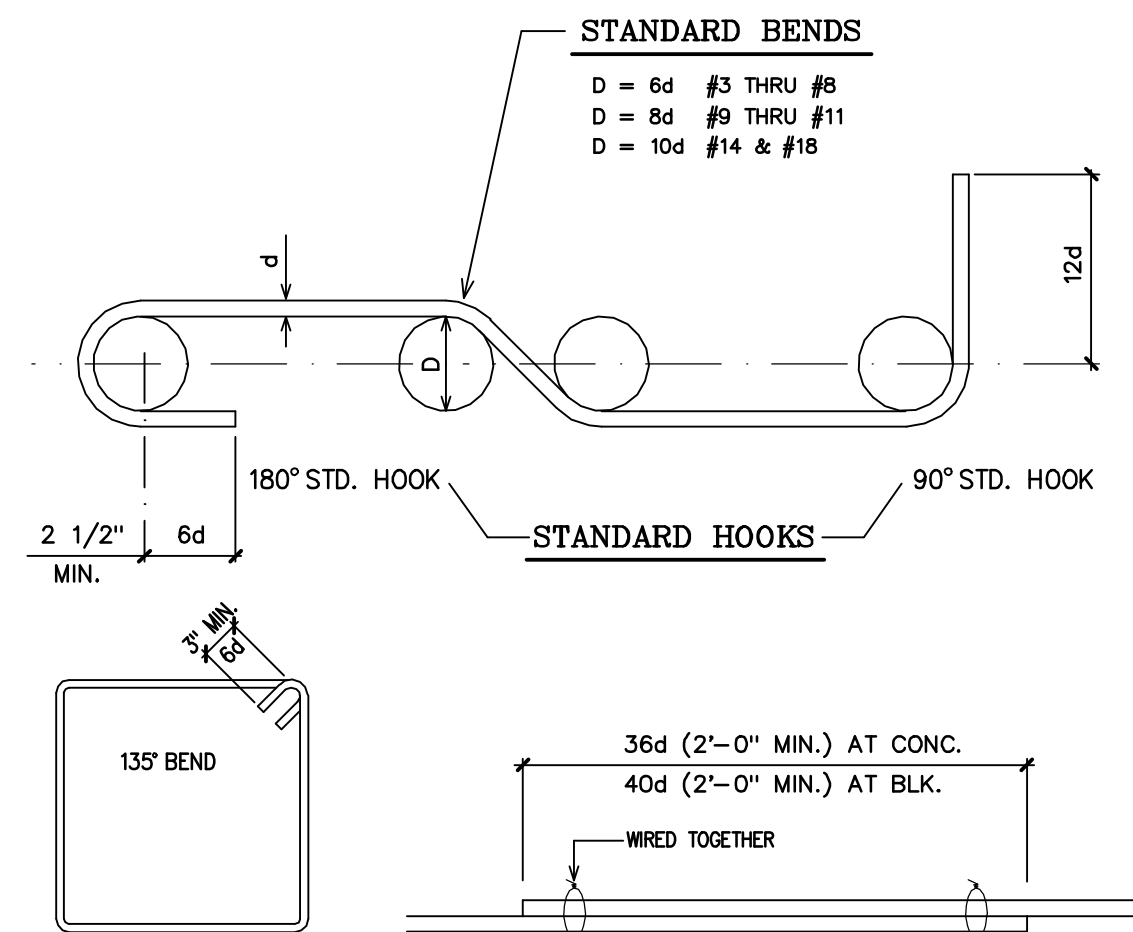
- The SSI series joist stored in a vertical position and protected by the weather. They shall be handled with care so they are not damaged.
- The SSI's are to be erected and installed in accordance with the plans, any SSI JOIST drawings and installation Suggestions. Temporary construction loads which cause member stresses beyond design limits are not permitted. Erection bracing in addition to specified bridging is to be provided to keep the SSI's straight and plumb as required to assure adequate lateral support for the individual SSI's and the entire system until the sheathing material has been supplied. The contractor will give notification prior to enclosing the SSI's to provide opportunity for inspection.



NOTE: ALL TRENCHES TO BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE SOIL REPORT & CITY REQUIREMENTS.

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PIPES / TRENCHES AT FOUNDATIONS 1



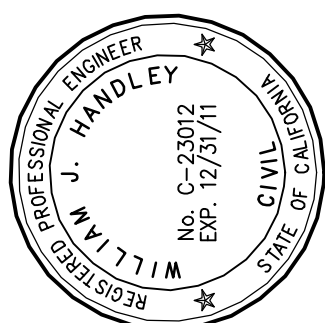
TYPICAL CLOSED TIE w/ SEISMIC HOOK

TYPICAL LAP SPLICE

REINF. SPLICES, HOOKS, TIES & BENDS 2

NO.	REVISION	BY	DATE

HANDLEY ENGINEERING
 130 EL CAMINO REAL SUITE 200
 TUSTIN, CA 92780
 (714) 669-1141



NEW PROFESSIONAL OFFICE FOR:
JAMES HOCH, D.D.S.
 32246 CLINTON KEITH ROAD, WILDOMAR, CA 92595

DATE:	11/28/11
JOB NO:	11-23
DRAWN:	WJH
CHECKED:	WJH
SCALE:	NONE
SHEET	

S-1.1
 OF SHEETS

STRUCTURAL OBSERVATION IS NOT REQUIRED

DEFERRED SUBMITTALS :

- ROOF STRUCTURE : GLU-LAM BEAMS & I-JOISTS
- FIRE SPRINKLER SHOP DRAWINGS