DIVISION 1: GENERAL REQUIREMENTS

BAI NO.: DIV1

01000 GENERAL REQUIREMENTS AND CODES:

1. Work shall comply with these structural specifications, notes, and drawings together with associated specifications, notes and drawings--collectively referred to as the Construction Documents. Where the construction documents do not give specific instruction, work shall be in accordance with accepted trade standards for good and workmanlike construction.

2. Work shall comply with the <u>2006 International Building / Residential Code</u> (IBC / IRC) as adopted and amended by the local city or county and any agencies having jurisdiction--collectively referred to as the Building Code.

3. Work shall comply with applicable federal laws, state statutes, local ordinances, and the regulations of agencies having jurisdiction. The Contractor shall assume full responsibility for complying with the construction safety orders and the general industrial safety orders of the State Division of Industrial Safety, the regulations of the Federal and State Occupational Safety and Health Administrations, and such other agencies governing the Contractor's acts. The Contractor shall be responsible for and hold harmless the Structural Engineer for any damages and penalties or both resulting from his failure to comply with said laws, statutes, ordinances, and regulations.

4. The design, adequacy and safety of erection bracing, shoring, temporary supports, etc. is the sole responsibility of the Contractor, and has not been considered by the Structural Engineer. The Contractor is responsible for the stability of the structure prior to the application of all shear walls, roof and floor diaphragms and finish materials. He shall provide the necessary bracing to provide stability prior to the application of the aforementioned materials. Observation visits to the site by the Structural Engineer or his designee shall not include inspection of the above items.

01100 ALTERNATIVES AND DISCREPANCIES:

1. No alternate methods of construction or substitutions shall be allowed without written approval of the Owner and Structural Engineer.

2. The Contractor shall verify all dimensions and conditions on the Construction Documents and at the site and shall notify the Architect and Structural Engineer of any discrepancies found prior to commencing work. The structural drawings take precedence over specifications. Detailed drawings and detailed specifications take precedence over general drawings and general specifications. Dimensions take precedence over scaled measurements.

01340 SHOP DRAWINGS

1. The Contractor shall submit to the Structural Engineer, and if required to the Building Official, shop drawings as noted in the SHOP DRAWINGS AND DEFERRED SUBMITTAL SCHEDULE. Prior to the submission, the Contractor shall check the drawings for conformance with the Construction Documents and so indicate on the drawings that he has done so.

2. Sufficient copies shall be submitted so as to allow the Structural Engineer to retain one copy.

3. Deviations from the design intent shall be clearly indicated as such by clouding them on the submittal or in another readily apparent manner.

4. Review made of the Shop Drawings shall not relieve the contractor from responsibility for compliance with the Construction Documents. The Shop Drawings will be reviewed for general conformance with the design concept of the project as indicated by the Construction Documents. Quantities or dimensions will not be reviewed. Processes, techniques of construction, safety procedures, or coordination of the work with that of any other trade will not be reviewed.

01410 TESTING AGENCIES:

1. The Owner shall retain the services of an independent Testing Agency (Testing Laboratory) as required elsewhere by these Construction Documents. The Testing Agency shall be approved by the Building Official.

2. Each Testing Agency shall furnish the results to the Special Inspector, the Building Official, Architect and Structural Engineer.

01420 SPECIAL (DEPUTY) INSPECTIONS:

1. The Owner shall retain the services of a Special Inspector (Registered Deputy Inspector), when such services are required, as noted in the INSPECTION AND OBSERVATION PROGRAM.

2. The Special Inspector shall have a valid Certificate of Registration or License issued by the Building Official. A current copy shall be submitted to the owner and structural engineer.

3. Each Special Inspector shall observe the work of the Contractor and the taking of test samples for conformance with the Construction Documents, and the applicable workmanship provisions of the Building Code. The Special Inspector shall furnish inspection reports to the Building Official, Architect and Structural Engineer as required by IBC Section 1704.1.2. All discrepancies in work shall be brought to the immediate attention of the Contractor for correction, then if uncorrected, to the Building Official, Architect and Structural Engineer. The Special Inspector shall submit progress reports, appropriate to the nature of the work, and a final signed report stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with these Construction Documents and the applicable workmanship provisions of the Building Code to the Building Official, Architect and Structural Engineer as required by IBC Section 1704.

4. Inspection of work by a Special Inspector shall not relieve the Contractor of any inspections by the Building Official. Work inspected by a Special Inspector but covered or concealed prior to inspections by the Building Official may be required to be exposed.

01430 SOILS INSPECTION:

1. The owner shall retain the services of the Soils Engineer, when such services are required, as noted in the INSPECTION AND OBSERVATION PROGRAM.

2. The Soils Engineer shall inspect and document, in accordance with the Soils Report, the work of the Contractor.

3. The Soils Engineer shall furnish inspection reports to the Building Official, Architect and Structural Engineer as to the conformance of the contractor's work with the soils report and building code.

DIVISION 2: SITE WORK AND FOUNDATIONS

BAI NO.: DIV2

02010 SUBSURFACE INVESTIGATION:

1. Foundation design is per soil report number 05-G-00038, by Alpha Geotechnical and Materials, Inc., located at Broadway Ave. and east of Ironwood, dated March 7, 2005, addendum 07-G-00063 dated March 9 2007. The soils report is hereby incorporated into these drawings. Recommendations made therein shall be complied with.

02380 POST-TENSIONED FOUNDATIONS:

1. The Contractor shall take all necessary measures to fully protect adjacent properties including but not limited to the requirements of IBC Section 3307.

2. All site and pad preparation, such as but not limited to, grading, compaction of the fill, pre-saturation, and concrete slab base preparation, shall be performed in accordance with the Soils Engineer's recommendations as indicated in the soils report and IBC Section 1805.

3. The bottoms of footing excavations shall be level, clean, and free of loose material or water when concrete is placed. Over excavation shall be filled with concrete as for the footings. Backfill shall not be placed until supporting foundations, walls and slab have attained sufficient strength to support lateral soil pressure.

4. No pipes and conduits shall extend under isolated column footings or under continuous wall footings unless specifically detailed or approved by the Architect and Structural Engineer and the Building Official.

5. Finish grade around the perimeter of the structure shall be such that rain and irrigation water drain away from the foundation as required by IBC Section 1803.3 and 1805.3.4 and the civil drawings.

6. The Contractor shall arrange for observation of the work by the Soils Engineer. Following are requirements of the Soils Engineer:

   a) All pad preparation and footing excavations shall be inspected and certified in compliance with the soils report by the Soils Engineer prior to placing of concrete or steel.

   b) Soil conditions, including compaction and moisture content, shall be inspected and certified in compliance with the soils report by the Soils Engineer prior to placing of concrete or steel.

   c) A Certificate of Compliance shall be submitted to the Building Official prior to his foundation inspection and to the Architect and Structural Engineer.

7. Placing of tendons and anchorage's shall be in accordance with the following:

   a) All tendons in one direction shall be placed first. Tendons in the orthogonal direction shall then overlay the first layer.

   b) Tendons shall be placed straight and true except to smoothly transition for offsets or around openings or obstructions. Smooth is defined by a curve having a radius no tighter than 8'-0".

   c) All tears in wrapping 12 inches or longer shall be repaired.

8. Placing of concrete shall be in accordance with the following:

   a) Concrete shall be placed in one continuous operation from one end of the structure to the other. Slabs shall be poured monolithically with the footings.

   b) Concrete shall be especially well consolidated about anchorages, both stressing ends, as well as dead ends.

9. Stressing jack shall have been calibrated by testing equipment traceable to N.I.S.T. The calibration certifcate shall be avalable during jacking of the tendons. Dial face shall be sufficiently large to allow clear readings. It shall also be incremented in units no larger than 100 pounds.

10. Tensioning of tendons shall be supervised by Factory-Trained personnel. Factory training shall be provided by the manufacturer of the post-tension anchors.

11. Stressing of tendons shall be in accordance with the following:

   a) Stressing end pocket formers shall be removed. Any debris or cement paste shall be removed from the face of the anchors.

   b) Grippers shall be hand installed.

   c) Strands shall be clearly marked so that elongation can be measured and recorded.

   d) Stressing shall not occur until concrete cyllinder tests indicate concrete has achieved strength of 2,500 PSI. Concrete strength results shall have resulted from tests perfomed according to ASTM C 39.

   e) Tendons shall be stressed to the elongation, △, indicated plus the seating loss. Total maximum jacking force shall not exceed 33,000 pounds.

   f) Stressing of tendons when noted on plan, shall consist of initially stressing such designated tendons to a force of 8000 lb at ± 2 days after concrete placement and then following up with final stressing.

   g) Double ended tendons are to be stressed at each end. Tendons exceeding 100 feet in lengths may need two-way stressing and double line ends shall be provided.

   h) After grippers have been set, measure final elongation's, △, it shall be within seven (7) percent, plus or minus, of specified elongation, △. Otherwise tendon shall be re-tensioned.

   i) Tensioning of tendons shall be continously inspected by a special inspector as specifed elsewhere in the construction documents. He shall submit a report to the Building Official prior to his inspection, and to the Architect and Structural Engineer. The report shall document actual tendon longation's and compare them with the specified elongations. It shall also record jack gauge pressure.

   j) Tendons extending from stressing end pockets shall be cut back 5/8"±1/4" from face of concrete. Cable ends and hardware shall be primed with Rust-Oleum Brand Primer, Rust-Oleum® Corporation, Vernon Hills, Illinois. Stressing end pockets shall be grouted solid.

DIVISION 3: CONCRETE

BAI NO.: DIV3

03240 REINFORCING STEEL FOR POST-TENSIONED FOUNDATIONS:

1. Stressing tendons for post tensioned work shall conform to ASTM A 416, <u>Steel Strand Uncoated Seven-wire Stress-Relieved for Prestressed Concrete</u>, grade 270 K. Mill certificates for reinforcing bars shall be submitted to the Building Official and Special Inspector prior to use, and to the Architect and Structural Engineer. Properties shall be:

   a) Diameter shall be 1/2 inch.
   b) Ultimate tensile strength shall be 270,000 PSI.
   c) Tensile area shall be 0.153 sq. inch.
   d) Modulus of Elasticity, E, shall be 28,500,000 PSI.

2. Steel Reinforcing Bars shall conform to ASTM A 615, <u>Deformed and Plain Billet Steel Bars for Reinforcing Steel</u>. Bars shall be grade 60 except that No. 3 & 4 bars may be grade 40. Bars shall be deformed. Mill certificates for reinforcing bars shall be submitted to the Building Official and Special Inspector prior to use, and to the Architect and Structural Engineer.

3. Wire fabric shall conform to ANSI/ASTM A 185, <u>Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.</u>

4. Anchor castings and wedges shall be The Sure-Lock Post-Tensioning Anchorage System as manufactured by Precision Screw Products Co., Inc., Grand Prairie Texas, (IBCO report no. ER-4597). Alternatives may be used only with specific approval of the Structural Engineer and only upon submittal of a listing of hardware to be subsituted.

5. Fabrication and placement of stressing tendons and reinforcing steel, shall be periodically inspected by a Special Inspector. Following are requirements of the Special Inspector:

   a) He shall verify the mill certificates.

   b) He shall verify that the material used are properly stored and prepared for use.

   c) He shall verify that construction details, procedures, and workmanship are in accordance with the Construction Documents and Building Code.

   d) He shall verify that stressing tendons, and reinforcement bar grade, size, placement, and splices are in accordance with the Construction Documents and Building Code.

   e) He shall verify that anchor bolts, straps and inserts are in accordance with the Construction Documents and Building Code.

   f) A Certificate of Inspection according to IBC Section 1704.1.2 shall be furnished by the Special Inspector to the Building Official prior to his inspection and to the Architect and Structural Engineer.

6. Tensioning of stressing tendons shall be continuously inspected by a Special Inspector. Following are requirements of the Special Inspector:

   a) He shall verify that post-tensioning equipment and procedures are in accordance with the Construction Documents and Building Code.

   b) A Certificate of Inspection according to IBC Section 1704.1.2 shall be furnished by the Special Inspector to the Building Official prior to his inspection and to the Architect and Structural Engineer.

03260 CONCRETE ACCESSORIES:

1. Anchor bolts, L-bolts, J-bolts, bars, and rods shall conform to ASTM A 307, <u>Carbon Steel Externally and Internally Threaded Standard Fasteners</u>. Threads may be cut into full size bar stock or may be rolled threads.

2. Shot-pins shall be one of the following. Installation shall be in accordance with the manufacturer's recommendations. Alternatives may be used only with specific approval of the Structural Engineer, and only upon submittal of a listing of hardware to be substituted.

   a) Hilti Company products, Tulsa, Oklahoma, (ICC reports nos. 1290 and 2388).

   b) ITW Ramset/Red Head products, Wood Dale, Illinois, (ICC reports nos. 1147 and 1639).

3. Expansion anchors (wedge anchors) shall be one of the following. Installation shall be in accordance with the manufacturer's recommendations. When noted on Construction Documents installation shall be inspected by a Special Inspector in accordance with Section 01410 of this specification. Alternatives may be used only with specific approval of the Structural Engineer, and only upon submittal of a listing of hardware to be substituted.

   a) Hilti Company products, Tulsa, Oklahoma, (ICC reports no. 4627).

   b) ITW Ramset/Red Head products, Wood Dale, Illinois, (ICC reports no. 1372).

   c) Simpson products, Dublin, California, (ICC reports no. 3631).

4. Concrete screw anchors (large diameter anchors) shall be one of the following. Installation shall be in accordance with the manufacturer's recommendations. When noted on Construction Documents installation shall be inspected by a Special Inspector in accordance with Section 01410 of this specification. Alternatives may be used only with specific approval of the Structural Engineer, and only upon submittal of a listing of hardware to be substituted.

   a) ITW Ramset/Red Head products, Wood Dale, Illinois, (ICC reports no. 5890).

   b) Simpson products, Dublin, California, (ICC reports no. 5794).

5. Adhesive anchors (chemical anchors) shall be one of the following. Installation shall be in accordance with the manufacturer's recommendations. When noted on Construction Documents installation shall be inspected by a Special Inspector in accordance with Section 01410 of this specification. Alternatives may be used only with specific approval of the Structural Engineer, and only upon submittal of a listing of hardware to be substituted.

   a) Hilti Company products, Tulsa, Oklahoma, Hilti "Re-500 Adhesive" (ICC reports no. 5369) or Hilti "Hy150 Adhesive" (ICC no. 5193).

   b) ITW Ramset/Red Head products, Wood Dale, Illinois, " C6 Adhesive" or "AT Adhesive".

   c) Simpson products, Dublin, California, "Set High Strength Epoxy Adhesive (ICC reports no. 5279) or "AT High Strength Acrylic Adhesive" (ICC Report no. pending).

6. Manufactured hardware shall be Simpson Company products, Brea, California, (ICC report nos. NER 393, NER 469± L.A. City report no. 24818). Alternatives may be used only with specific approval of the Structural Engineer, and only upon submittal of a listing of hardware to be substituted.

7. Steel field and shop-fabricated accessories shall comply with Section 05120 of this specification.

8. Institution of Adhesive Anchors shall be continuously inspected by a special inspector. Following are requirements of the Special Inspector: The inspector shall observe the work of the contractor during the installation of the Adhesive Anchors for conformance with the applicable ICBO Report, the manufacturer's recommendations, and the applicable workmanship provisions of the building code. The Special Inspector shall furnish inspection reports to the Building Official, Architect and Structural Engineer. All discrepancies in the work shall be brought to the immediate attention of the contractor for correction, then if un-corrected to the Building Official, Architect, and Structural Engineer The Special Inspector shall submit a final signed report stating whether the work requiring Special Inspection was to the best of inspector's knowledge, in conformance with the approved construction documents and the applicable workmanship provisions of the Building Code to the Building Official, Architect, and Structural Engineer. Inspection of work by a Special Inspector shall not relieve the contractor of any inspections by the Building Official.

03280 GROUTING AND SEALING POST-TENSIONED STRESSING END HOLES:

1. Grout shall be a stiff mix of two (2) parts cement with one (1) part sand.

03340 CONCRETE FOR POST-TENSIONED FOUNDATIONS:

1. Cement shall conform with ASTM C 150, <u>Portland Cement & Blended Hydraulic Cements</u>. Cement shall be type V except that type <u>II</u> cement may be used if a sulfate test of the soil is made as provided for in IBC section 1904.3.

2. Water shall be free from deleterious quantities of acids, alkalis, and organic materials. Sulfate (SO_4) in water shall not exceed 150 parts per million.

3. Aggregate shall conform with ASTM C 33, <u>Concrete Aggregates</u>. The nominal maximum size of course aggregate shall be not larger than any of the following:

   a) One fifth the narrowest dimension between the sides of the form.

   b) One third the depth of the slab.

   c) Three fourths the minimum clear spacing between individual bars or bundles of bars.

   d) 1 inch.

4. Admixtures containing calcium chlorides shall not be used.

5. Concrete used shall achieve a minimum strength as follows:

   a) The water to cement ratio shall be no greater than 0.45.

   b) Strength, slump. testing and inspection of the concrete shall be:

Concrete Strength Schedule:

Use	28 Day Strength	Maximum Slump	Special Inspector & Testing required
Foundations and Slab	3000 PSI	4 in.	Is Required.

Note: Post tension slabs have been designed for f'c = 2500 psi

6. The Contractor shall retain the services of a qualified licensed engineer to provide a Concrete Mix Design for each class of concrete in accordance with IBC Section 1905. The engineer shall sign and seal the mix designs.

7. Concrete shall be mixed and delivered in accordance with ASTM C-94, <u>Specification for Ready-Mixed Concrete.</u>

8. Testing of concrete is required:

   a) Concrete test cylinders shall be taken and tested in accordance with ASTM C 172, ASTM C 31, & ASTM C 39.

   b) Tests shall be made of two (2) cylinders from each batch of concrete sampled. Cylinder sets shall be sampled at a rate of not less than one (1) set per class of concrete placed per day, nor less than one set per 150 cu. yd. placed, nor less than one set per 5000 sq. ft. of slab area. Further no less than five (5) cylinder sets shall be made of each class of concrete or should the total number of batches for a given class of concrete be less than five (5), one (1) cylinder set shall be made for each batch placed. Test results shall be furnished to the Building Official, Architect, Special Inspector and Structural Engineer. Test results shall assure that the concrete cylinders achieve the minimum 28 day design strength specified.

9. Curing. Concrete shall be maintained above 50°F and in a continuously moist condition for at least seven (7) days after placement. A curing agent may be used.

10. Minimum concrete protection for reinforcing steel shall be as follows:

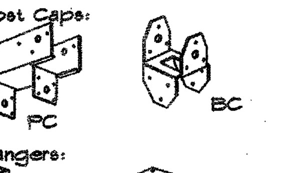
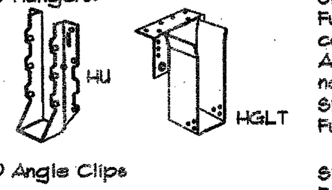
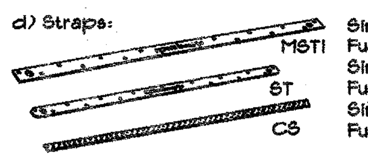
Reinforcing Bar Cover Schedule:

Condition	Clearance
Cast against and permanently exposed to earth.	3"
Cast against forms, exposed to earth or weather: #6 through #11 bars:	2"
#5 bars, and smaller. Stressing tendon.	1-1/2"

HARDWARE SCHEDULE:

© 11-28-00 BAI
BAI NO.: HARDSCH

1. As a minimum and if not specifically detailed or noted elsewhere and otherwise, the various hardware components of the structure shall be fastened together as follows: If fastening is not specified then the manufacturer's recommendations shall be followed.

Connector	Fasteners
a) Post Caps: 	Simpson PC, EPC, and BC series. Fully nail with 16d sinker or 16d short nails
b) Hangers: 	Simpson U, HU, HUS, AND HHUS series. Fully nail with 16d sinker or 16d short or 10d common nails in all round and slant nail holes. Additional nail triangular holes when "MAX" is noted on plan. Simpson GLS, HGLS, GLT and HGLT series Fully nails with simpson N54A nails.
c) Angle Clips	Simpson L and LS series. Fully nails with 10d common. Simpson A35, A35F and LTP4 series. Fully nails with 16d sinker or 16d short or 8d common nails or 8d joist hanger nails.
d) Straps: 	Simpson MSTI and LST series. Fully nails with 10d joist hanger nails. Simpson ST and MST series. Fully nails with 16d sinker or 16d short nails. Simpson CS and TS series. Fully nails with 16d sinker or 10d common nails.

UPLIFT ANCHOR SCHEDULE:

© 06-05-02 BAI
BAI NO.: UPLFTSCH

1. Uplift anchors shall be as follows:

Type	Uplift anchor location	Uplift anchor	Alternate uplift anchor
'A' ②	Roof or floor truss to top plate	Simpson H1 at every other truss	Simpson H2.5 at every truss
'B' ①	Stud to double top plate	Simpson H2.5 at every third stud	Simpson RSP4 at every third stud
'C' ①	Stud to sill plate	Simpson H2.5 at every third stud	Simpson RSP4 at every third stud
'D'	Floor to floor	Simpson CS20 w/ 4-8d nails into bottom of second floor stud and 4-8d nails into top of first floor stud @ 32" O.C.	Min. 3/8" A.P.A. rated shtg w/ 8d nails @ 4" o.c. into second floor wall sill plate & 8d nails @ 4" o.c. into btm. plate of first floor wall dbl. top plate
'E'	Stud to floor diaphragm	Simpson CS20 w/ 4-8d nails into bottom of second floor stud and 4-8d nails into beam or truss web below @ 32" O.C.	N/A
'F' ①	Solid or built-up post to sill plate	2-Simpson H2.5	2-Simpson RSP4

① Anchor not required if stud wall is sheathed with minimum 3/8" A.P.A. rated sheathing.

② Use (2) Simpson H2.5 at girder truss

3. Holdowns / Alternatives

   a) With Simpson LTT20B: Use 1/2" dia. Hilti Kwik Bolt II with min. 4-1/2" embedment or 1/2" dia. Simpson Wedge All with min. 4 1/2" embedment (ICBO# 4627, 3631)

   b) With Simpson HTT16: Use 5/8" dia. Hilti Kwik Bolt II with min. 6" embedment or 5/8" dia. Simpson Wedge All with min. 5 1/2" embedment (ICBO# 4627, 3631)

   c) Alternate to Simpson PAHD-42 is Simpson STHD-8

   d) Alternate to Simpson HPAHD-22 is Simpson STHD-10

INSPECTION AND OBSERVATION PROGRAM:

© R08-25-00 BAI
BAI NO.: INSPSCH

1. This inspection and observation program applies only to the structural drawings and specifications. The Contractor shall coordinate in a timely manner inspection and observation of the project.

2. The Building Official shall inspect the project in accordance with the building permit and the provisions of the Building Code.

Portion of work requiring inspection:	Individual or firm to perform inspection:	Duties of Building Inspector:
1. All structural aspects.	Building Inspector designated by the Building Official	Shall be in accordance with IBC Section 109-Inspections

3. The Soils Engineer shall inspect and document, in accordance with the Soils Report, the following. This itemization is not intended to supersede any requirements of the Soils Engineer or the Building Official but is intended to be supplementary thereto.

Portion of work requiring inspection:	Individual or firm to perform inspection:	Duties of Soils Engineer:
1. Any excavations and the placement of fill for construction of the building pad.	Individual or firm designated by the Soils Engineer	Shall be in accordance with the soils report.
2. Back fill of utility trenches.	Individual or firm designated by the Soils Engineer	Shall be in accordance with the soils report.
3. Footing excavations	Individual or firm designated by the Soils Engineer	Shall be in accordance with the soils report.

4. A Special Inspector (Registered Deputy Inspector) shall provide continuous inspection of the following portions of the work:

Portion of work requiring continuous inspection:	Individual or firm to perform inspection:	Duties of Special Inspector:
1. Test sampling of concrete	A qualified person who shall have demonstrated competence to the satisfaction of the Building Official	Shall be in accordance with specifications in Division 3
2. Tensioning or stressing of tendons in post-tensioned concrete	A qualified person who shall have demonstrated competence to the satisfaction of the Building Official	Shall be in accordance with specifications in Division 3

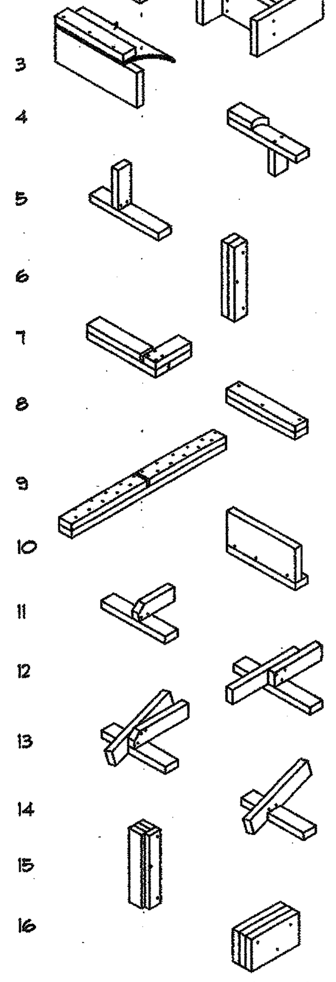
5. The Contractor shall coordinate, in a timely manner, a pre-construction meeting. The meeting shall include the Structural Engineer's designee providing periodic structural observation, the Contractor, appropriate subcontractors, Special inspectors and other interested parties. The purpose of the meeting is to identify and clarify essential structural elements and connections that affect the vertical and lateral systems and to review scheduling of the required structural observations.

6. Prior to the contractor calling the Building Official for any inspection of Foundation or Framing work, the Structural Observer shall have observed this work and given a written opinion of the findings to the Building Official.

NAILING SCHEDULE:

© R08-31-99 BAI
BAI NO.: NAILSCH

1. As a minimum and if not specifically detailed or noted elsewhere and otherwise, the various wood components of the structure shall be fastened together as follows:



Item	Description & Fastening
1	Joist to mud sill or upper top plate: (3) 8d common or 16d sinker or short, toe nails.
2	Blocking to joist: (3) 8d common or 16d sinker or short, toe nails or (2) 16d sinker or short face nail.
3	Sole (bottom) plate to joist or blocking: 16d common or short face nail at 16" o.c.
4	Lower top plate to stud: (2) 16d sinker or short face nail or (4) 8d common or 16d sinker or short toe nail.
5	Stud to sole bottom plate: (2) 16d sinker or short face nail or (4) 8d common or 16d sinker or short toe nail.
6	Double studs, or Built-up studs typical stitching: 16d sinker or short face nails at 24" o.c.
7	Top plates at intersection, face nail: (4) 16d sinker or short face nail
8	Top plates typical stitching: 16d sinker or short face nails at 16" o.c.
9	Upper top plates at laps: (8) 16d sinker or short face nail each side of butt joint
10	Rim joist to upper top plate or mud sill: 8d common or 16d sinker or short toe nails at 16" o.c.
11	Ceiling joist to plate, toe nail: (3) 8d common or 16d sinker or short toe nails
12	Ceiling joist, lap over walls and partition: (3) 16d sinker or short face nails
13	Ceiling joist, to parallel rafters: (3) 16d sinker or short face nails
14	Rafter to plate, toe nail: (3) 8d common or 16d sinker or short toe nails
15	Built up corner studs: 16d sinker or short face nails at 24" o.c.
16	Three piece built up girder and beam: 16d at 12" o.c. at top and at bottom. (3) 16d at each end

2. Note: With respect to the schedule, common, sinker, or box nails may be used. However, where nails are specifically noted on the plans, they shall be common nails.

SHOP DRAWING AND DEFERRED SUBMITTAL SCHEDULE:

BAI NO.: SHOPDRWG-AZ

1. This itemization applies only to the structural drawings. The following shop drawings shall be submitted by the Contractor to the Structural Engineer for review. Shop drawings will be accepted for review only after they have been checked by the Contractor for conformance with the plans & specifications and have been noted as such. The Structural Engineer will provide the Contractor with a letter indicating if the shop drawings demonstrate general conformance with the intent of the structural design. Those shop drawings noted as deferred submittals shall, upon the Structural Engineer's review and together with the Structural Engineer letter indicating general conformance, be submitted to the Building Official so that he may approve them for construction and make them a part of their official records.

Shop drawing title	Structural Engineer's review required:	Building Official's deferred submittal required:
1. Floor truss drawings.	general review required	approval is required.
2. Roof truss drawings.	general review required	approval is required.

2. Seals, stamps, or marks placed upon shop drawings by the Structural Engineer do not constitute approval of the work shown but only indicate information necessary to achieve general conformance with the intent of the structural design.

3. Shop drawings will not be reviewed by the Structural Engineer for quantities or dimensions.

4. Ten working days shall be allowed for the Structural Engineer to review submittals.

STRUCTURAL DESIGN CRITERIA:

BAI NO.: STRUCNOT

1. 2006 International Building / Residential Code

2. Roof live load: 16 PSF
   Floor live load: 40 PSF
   Exit live load: -
   Storage live load: -

3. 3 second gust wind speed 90 miles per hour exposure C

4. Seismic Design Category: B

5. The basis of foundation design is:

Thornthwaite Index	-
Edge Moisture Variation Distance, Em	
Center lift, (feet)	-
Edge lift, (feet)	-
Percent Clay	-
Clay type (assumed)	-
Depth to constant suction (feet)	-
Design soil suction (pF)	-
Moisture velocity (in/month)	-
Differential Swell Ym	
Center lift (inches)	-
Edge lift (inches)	-
Soil Bearing Capicity	1250 psf
Estimated Total Settlement (inches)	.25

ABBREVIATORS, STRUCTURAL:

BAI NO.: ABBREV

This listing applies only to the structural drawings.

Mark	Meaning	Mark	Meaning	Mark	Meaning
ɸ	Diameter	E/F	Each Face	M=L	Micro=Lam Beam
#	Pound/Number	EN	Edge Nail	NTS	Not To Scale
&	And	Eq	Equal	OC	On Center
/	Per	E/S	Each Side	OSB	Oriented Strand Board
@	At	E/W	Each Way	PC	Pipe Column, steel
±	Plus or Minus	Ft	Foot	PL	Property Line
AB	Anchor Bolt	Fnd	Foundation	PSF	Pounds per Sq. ft.
Alt	Alternate	Ft'g	Footing	PSI	Pounds per Sq. inch
BB	Billet Beam	Fl	Flush	PSL	Parallel Strand Lumber
Blk('g)	Block(ing)	FJ	Floor Joist	Ply	Plywood
BM	Beam	FOC	Face Of Concrete	RJ	Roof Joist
BN	Boundary Nail	FOM	Face Of Masonry	R=LII	Redi=Lam II
BOF	Bottom Of Footing	FOS	Face Of Stud	RR	Roof Rafter
Bott	Bottom	FOW	Face Of Wall	S	Standard I beam, steel
Br'g	Bearing	G=L	Gang=Lam	Sht'g	Sheathing
C	Channel, steel	Ga	Gauge	Sink	Sinker, nail
Cbr	Camber	Galv	Galvanized	Sq	Square
Cant	Cantilever	GLB	Glued Laminated Beam	SS	Select Structural
CJ	Ceiling Joist	GT	Girder Truss	Std	Standard
CFS	Cold Formed Steel	Hgr	Hanger	SW	Shear Wall
C.J.	Construction Joint	Hdr	Header	T&G	Tongue & Groove
℄	Center Line	Ht	Height	Thk	Thick
Comm	Common, nail	Hor	Horizontal	TOC	Top Of Concrete/Curb
Cont	Continuous	I-Jst	I-Joist	Tpl	Triple
d	Penny, nail	In	Inch	Trim	Trimmer, stud
Dbl	Double	KP	King Post	TS	Tube Steel
Det	Detail	KS	King Stud	Typ	Typical
DF	Douglas Fir	L	Angle, steel	UNO	Unless Noted Otherwise
DIA	Diameter	LVL	Laminated Veneer Lumber	Vert	Vertical
DJ	Deck Joist	M	Misc. I beam, steel	V=L	Versa lam
Do	Ditto, the same	MAX	Maximum	W	Wide flange I beam, steel
Dp	Deep	MB	Machine Bolt	W/	With
Dr	Drop	MC	Miscellaneous channel, steel	W/O	Without
DSS	Dense Select Structural	MIN	Minimum	Wd	Wide
E/E	Each End			X-	Extra strong

Note:
Refer to Cold Formed Steel notes for additional abbreviations.
Refer to Simpson Company product catalogue for hardware abbreviations.
Refer to Trus Joist Company product catalogue for fabricated joist abbreviations.

SYMBOLS, STRUCTURAL SCHEDULE:

BAI NO.: SYMBOLS

This listing applies only to the structural drawings.

Mark	Comment
(cloud) N	Change in drawing from previous issue.
N	Reference to structural calculations for the benefit of the Building Official.
# SHT / # SHT	Detail reference giving item and sheet number.
FRAME X # SHT	Framing elevation reference giving item and sheet number.
FRAMING	Floor Joists
FRAMING	Ceiling Joists
FRAMING	Roof Trusses
FRAMING	Roof Rafters
FRAMING	Deck Joist
FRAMING	Girder, girder truss, double joist, rafter, or truss of the same size as the surrounding framing unless noted otherwise.
FRAMING	Beam, header or built-up framing member.
FRAMING LENGTH N	Shear wall indication giving special framing when necessary and length if critical. Refer to shear wall schedule for complete information.
AB.'S @ N" OC	Spacing of anchor bolts.

Note:
Not all symbols used are defined here.
Refer to American Welding Society publications for weld symbols.

BORM
E N G I N E E R S

COSTA MESA • BEIJING • DENVER • LAS VEGAS • PHOENIX • TUCSON
PLEASANTON • ROSEVILLE • SACRAMENTO

PHOENIX OFFICE:
19820 North 7th Street, Suite 210
Phoenix, Arizona 85024
(623) 869-0607 Telephone
(623) 869-0609 Facsimile

CORPORATE OFFICE:
555 Anton Boulevard, Suite 850
Costa Mesa, California 92626
(714) 513-7500 Telephone
(714) 513-7555 Facsimile

E-Mail: webmail@borm.com
www.borm.com

COPYRIGHT 2007, BORM ASSOCIATES, INC.
ALL RIGHTS RESERVED

NOTICE:
THESE DRAWING AND SPECIFICATIONS AND THE IDEAS, DESIGNS, AND ARRANGEMENTS REPRESENTED THEREBY ARE AND SHALL REMAIN THE PROPERTY OF BORM ASSOCIATES INC. AND NO PART THEREOF SHALL BE COPIED, DISCLOSED TO OTHERS, OR USED IN CONNECTION WITH ANY OTHER WORK OR PROJECT OTHER THAN THE SPECIFIC PROJECT FOR WHICH THEY HAVE BEEN PREPARED AND DEVELOPED WITHOUT THE WRITTEN CONSENT OF BORM ASSOCIATES, INC. VISUAL CONTACT WITH THESE DRAWINGS OR SPECIFICATIONS SHALL CONSTITUTE CONCLUSIVE EVIDENCE OF THESE RESTRICTIONS.

WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS. CONTRACTORS SHALL VERIFY, AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB. THIS OFFICE MUST BE NOTIFIED OF VARIATIONS FROM THE DIMENSIONS AND CONDITIONS SHOWN BY THESE DRAWINGS.

REFER TO SN SHEETS FOR ALL NOTES AND SPECIFICATIONS

PROJECT:
Broadway at San Marcos

OWNER/DEVELOPER:
Liberty Homes

ARCHITECT/DESIGNER:
MDW Designs

SHEET:
STRUCTURAL NOTES & SPECIFICATIONS

REFERENCE DATE: 03-28-07

ISSUED FOR:
CLIENT DELIVERY 03-29-07

△
△
△
△
△
△
△
△
△
△

ENGINEER OF RECORD:

Registered Professional Engineer (Civil)
Certificate No. 35750
MICHAEL ERIC WILLIS
Date Signed 3-29-07
ARIZONA, U.S.A.

CONTACTS:
-For design questions regarding these plans and specifications contact the Project Manager:
Steve Danner
Telephone: (623) 869-0607 ext. 233
Facsimile: (623) 869-0609
Email: steved@borm.com
-For scheduling site observation and for field changes contact the Construction Administrator:
Alissa Engelby
Telephone: (623) 869-0607 ext. 232
Facsimile: (623) 869-0609
Email: alissae@borm.com

FILE NO: 12564
CAD NO. : 12564 SN
DRAWN BY : KER
ENGINEER : HI
SCALE : ¼" = 1'-0"

SHT NO. SN1