

CHALET ENTRANCE
Spirit Mountain Recreation Area



*9500 Spirit Mountain Place
Duluth Minnesota 55810*

project
manual
bid and agreement
documents
specifications
schedules/details

#1011
Chalet Entrance
Spirit Mountain Recreation Area

CERTIFICATIONS

ARCHITECT:

I hereby certify that this plan,
specification, or report was prepared by
me or under my direct supervision, and
that I am a duly Licensed Architect
under the laws of the State of Minnesota.


Randall M. Blomquist

date 12-4-10 reg.no. 14189

STRUCTURAL ENGINEER:

I hereby certify that this plan,
specification, or report was prepared by
me or under my direct supervision, and that
I am a duly Licensed Professional Engineer
under the laws of the State of Minnesota.



date 12/20/10 reg.no. 46116

PROPOSAL FORM

1011

PROJECT:

CHALET ENTRANCE ADDITION
Spirit Mountain Recreation Area
9500 Spirit Mountain Place
Duluth, Minnesota 55810

NOTICE TO CONTRACTORS:

*Sealed bids for the Spirit Mountain Ski Chalet Entrance Addition will be received from d
Contractors by Spirit Mountain Ski Area at the Ski Area Administration Office:*

ARCHITECT:

DESIGN ALTERNATIVE
3791 Alder Avenue
Hermantown, Minnesota 55810
E-mail (*designaltern@aol.com*)
Phone 218-729-9772 Fax 218-729-9772

BID OPENING DATE AND TIME:

*Thursday, January 27, 2011 @ 2:00 p.m Local Time
(fax proposal form to the architect at 218-729-9772)*

PROJECT DESCRIPTION:

*The project consists of constructing a new entry vestibule addition to the Eagles Nest
/Bear Paw chalets as defined in this document and on attached drawings A1-21 & E1-3.*

TYPE OF BID:

One Proposal for entire project is required.

BY INVITATION OF:

*Denny Monson, Director of Operations
Spirit Mountain Recreation Area
Duluth, Minnesota*

CONDITIONS:

AIA 201, General Conditions, latest edition are adopted by reference.

- (1) Owner may reject any or all proposals for any reason.*
- (2) Contractor shall provide necessary construction permits if required.*
- (3) The owner will maintain use of the existing building, entries and bridges throughout construction of the new addition.*
- (4) Bidder is responsible for cleanup, removal and disposal of all demolition debris and his own trash. Provide dumpster and locate as directed by owner.*
- (5) Clean all surfaces at project completion, including new window glazing.*
- (6) Full payment for Work defined and agreed to in this Proposal will be paid to the Bidder within thirty (30) days after final inspection and acceptance by owner and Architect. Bidder will be required to furnish to the Owner, complete, signed Labor and Material Lien Waivers including subcontractors and suppliers prior to issuing final payment.*
- (7) Contractor shall begin work on site Monday April 4, 2011 and shall complete all work no later than Friday June 3, 2011. Work shall occur Monday – Thursday 7 AM to 6 PM, Friday to 4 PM and no work will be permitted on weekends.*

(8) Bidder shall carry the following minimum insurance coverages:

- Workman's Compensation as required by Minnesota State Statute.
- Comprehensive General Liability, including Contractors Liability, Contingent Liability, Contractual Liability, Completed Operations and Products Liability; all on the occurrence basis with Personal Injury Coverage and broad form Property Damage, including Personal Injury sustained by any person, as a result of an offense directly or indirectly related to the employment of such a person.
- Personal Injury

| | |
|-----------------|--------------|
| Each person | \$500,000.00 |
| Each occurrence | \$500,000.00 |
- Property Damage

| | |
|-------------------------|----------------|
| Each accident/aggregate | \$1,000,000.00 |
|-------------------------|----------------|
- Comprehensive Auto Liability Bodily Injury

| | |
|-----------------|--------------|
| Each person | \$500,000.00 |
| Each occurrence | \$500,000.00 |
- The owner will maintain property insurance and extend their coverage to include "All Risk" insurance for physical loss or damage during the course of this project.

(9) Bidder is responsible for damages from causes under his control; repair if required at Bidder's expense.

(10) Bidder shall provide necessary temporary utilities to complete all the work.

(11) Bidder is responsible for necessary demolition and surface preparation required to complete installation of all project components.

(12) Contractor shall maintain "Daily Weather Seal" of the work area throughout construction to insure weather tight condition of the existing building at all times. Contractor shall immediately restore weather seal should rain develop during the work day and at the end of each work day.

(13) All Work shall comply with State, Local Codes and OSHA requirements. Worker tie-offs, ladder tie-offs, eye protection and hard hats will be required at all times.

(14) Bid price shall include State and Local sales tax.

(15) Contractor shall provide window, door and roof shingle manufacturers standard material warranty to the owner prior to beginning work.

All work performed by the contractor and materials installed shall be warranted against defects, failure and leaking for a period of twelve (12) months from the date of final payment. Should any leak occur or material fail during this period the contractor shall repair said item and restore any damage at no cost to the owner.

(16) Bidder shall visit the site to confirm all conditions affecting work and material quantities prior to submitting bid.

(17) The owner will perform the following work outside of the construction contract.

- a. Demolition of existing entry bridges and doors.
- b. Wall modifications where existing entry doors are removed.
- c. Sodding and planting materials
- d. Painting of interior wall and ceiling surfaces and trim.

BASIC BID FOR:

The Undersigned hereby proposes to furnish all labor, material, equipment, taxes, insurance, transportation and means necessary and incidental to complete all work as described above in accordance with the Contract Documents issued to Bidders, all as prepared by DESIGN ALTERNATIVE, for consideration of the following amount:

Bidder agrees to perform all work for the sum of Dollars \$ _____

SIGNATURES:

Name of Firm _____

Address _____

City / State _____

By _____

Phone No. _____ Fax: _____

E-mail Address: _____

ACCEPTANCE:

Upon Owner's signature and date of occurrence, this Proposal becomes the Contract between Owner and Contractor. Contract includes; Proposal Form and Technical Specifications as prepared by DESIGN ALTERNATIVE.

_____ date _____
Owner Signature

END OF PROPOSAL

December 13, 2010

#1011 Chalet Entrance Addition
Spirit Mountain Recreation Area
Duluth, MN

General Construction Products

Sitework:

1. Bituminous Paving 3" thick MnDot 2360 with ½" aggregate max.
2. Aggregate Base Class V MnDot 2211
3. Sand Backfill MnDot 3149.2
4. Topsoil 4" thick MnDot 3877

Concrete:

1. Reinforcing bars ASTM A-615 Grade 60
2. Welded Wire Fabric ASTM A-185 6" spacing
3. Cast in place concrete ASTM C-150 type 1, 4000 PSI aggregate size
 - a. 1" footings
 - b. ¾" sidewalks and steps
 - c. 3/8" Topping slab and bond beams
4. Exterior concrete 4 1/2% Air entrained
5. Exterior concrete cure & seal salt resistant ASTM C-309 Type 1
6. Exterior Concrete Joint sealant self leveling polyurethane
7. Precast Concrete floor plank 100 PSF 8" hollow core with grout
8. Vestibule topping slab concrete stamp, Matcrete MB-145 Bavarian Castle Stone Blue.
9. Topping slab color, Matcrete dustone color hardener with dustone antique release agent. Submit color samples for selection.
10. Vestibule topping slab sealer, Matcrete Diamond Lacquer sealer.

Masonry:

1. Concrete block ASTM C-90 Grade N Type 1 1500 PSI
2. Horizontal reinforcing truss type 9 ga. wire 16" OC
3. Mortar ASTM C-270 type M 2500 PSI
4. Cultured Stone Aspen dressed field Stone CSV-2040 with corner pieces
5. Cultured Stone sealer Silane based breather sealer 2 coats

Steel:

1. Steel columns and plates ASTM A6-77 and A36-75 shop fabricated and primed
2. Steel Decking 1 1/2" Galvanized Type C 24 ga with end closures
3. Exterior handrails 1 1/2" dia. schedule 40 galvanized pipe welded and ground smooth

Carpentry:

1. Interior Plywood 5/8" T 1-11 Breckenridge with grooves 4" OC
2. Interior Trim RSC rough sawn cedar
3. Exterior composite siding, Certain Teed color max prefinished fiber cement cedar 8" vertical rib siding with galvanized colored fasteners. Submit color samples for selection.
4. Vapor/air barrier 6 mil flame retardant poly
5. Exterior wind/weather barrier Tyvac
6. Wall sheathing 1/2" CDX plywood
7. Roof Sheathing 3/4" Plywood Tongue and groove

Exterior Finishes:

1. Shingles GAF timberline ultra lifetime 40 yr Pewter Gray Blend
2. Ice and Water shield GAF weather watch with slip guard
3. Ridge vent Cobra with shingle cap
4. Prefinished Metal Wrap/cladding UnaClad 24 ga. Steel with Kynar 500 finish with matching colored fasteners
 - a. MC1 - Cityscape SR
 - b. MC2- Matte Black SR
 - c. MC3- Regal Blue
 - d. MC4- Charcoal Gray SR
5. Metal Vented Soffit panels Gentek Deluxe Quad 4 color Dover Gray
6. Exterior caulking/sealant one part polyurethane Sonolastic NP 1

Exterior Windows:

1. DeSCo #3250 Thermal Break fixed aluminum windows with dark bronze anodized finish, 2" frame profile and fixed 1" clear Low E insulating glass ¼" panes.
2. Foam insulate gap between window unit and rough opening\
3. Provide aluminum sill flashing to match window frame
4. Wrap entire window opening with water barrier and lap over exterior. Seal corner joints Carlisle CCW-705

Exterior Doors: (A1-2, B1-2, C1-2 & D1-2)

1. EFCO Corporation #302 Thermastile Heavy Duty Swing Entrance Thermal Break aluminum doors with Series 403-1 (TS) Thermal Break 2 1/4" X 4 ½" aluminum frame with transom. Custom shop painted color on doors and frames to match Sherwin Williams Color SW2307 Red Barn
2. Glaze doors and transom with 1" Tempered clear Low E insulating glass, ¼" panes
3. Door sizes to be 38" wide and 84" high
4. Exterior Doors A1-2 & B1-2 Hardware
 - a. Weather stripping by Alum door supplier
 - b. Sweep Reese 967 D
 - c. Threshold Reese 5282A 5" wide
 - d. Von Duprin EL 99L Electronic Concealed Vertical rod Exit devise with glass shims
 - e. Power transfer
 - f. Exterior lever handle
 - g. Lock Cylinder master key to existing
 - h. Closer with 90 degree hold open
 - i. 4 ea. Heavy Duty NRP BB Stainless Steel Butts
 - j. SS Kick plate
 - k. Overhead Stop

5. Interior Vestibule Doors C1-2 & D1-2 Hardware

- a. Weather stripping by Alum. Door supplier
- b. Sweep Reese 967 D
- c. Threshold Reese S282A 5" wide
- d. Push bar full door width across glass
- e. Pull bar and plate EFCO Ultraline
- f. Closer with 90 degree hold open
- g. 4 ea heavy duty BB Butts
- h. SS Kick plate
- i. Wall stop

BUILDING CODE

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE BUILDING CODE. THE PUBLICATIONS LISTED BELOW ARE THE GOVERNING CODES AND STANDARDS AND ARE REFERENCED BY THEIR BASIC DESIGNATION. IN THE CASE OF CONFLICTING REQUIREMENTS, THE BUILDING CODE SHALL GOVERN.

APPLICABLE CODES AND STANDARDS

| | |
|---------------|---|
| BUILDING CODE | INTERNATIONAL BUILDING CODE (IBC), 2006 EDITION, INCLUDING THE STATE OF MINNESOTA BUILDING CODE AMENDMENTS |
| ACI 318 | AMERICAN CONCRETE INSTITUTE, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"2005 EDITION |
| ACI 503 | AMERICAN CONCRETE INSTITUTE, "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES", 2005 EDITION |
| AISC | AMERICAN INSTITUTE OF STEEL CONSTRUCTION, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", 2004 EDITION |
| ASCE 7 | AMERICAN SOCIETY OF CIVIL ENGINEERS, "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES", 2005 EDITION |
| ASTM | AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM INTERNATIONAL) |
| AWS A2.4 | AMERICAN WELDING SOCIETY, "SYMBOLS FOR WELDING AND NONDESTRUCTIVE TESTING", 1998 EDITION |
| AWS D1.1 | AMERICAN WELDING SOCIETY, "STRUCTURAL WELDING CODE - STEEL," 2006 EDITION |
| NDS | NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION, 2005 EDITION |
| ICC | INTERNATIONAL CODE COUNCIL, INTERNATIONAL CODE COUNCIL - EVALUATION SERVICES (ICC-ES) |

STRUCTURAL DESIGN DATA

LOAD COMBINATIONS

LOAD COMBINATIONS ARE IN ACCORDANCE WITH SECTION 1605 OF THE BUILDING CODE.

LIVE LOADS

LIVE LOADS SHALL BE IN ACCORDANCE WITH THE BUILDING CODE (SECTION 1607.

EXIT COORRIDOR 100 PSF

SNOW LOADS

SNOW LOADING AND SNOW DRIFT LOADING SHALL BE IN ACCORDANCE WITH THE BUILDING CODE (SECTION 1608).

GROUND SNOW LOAD: $P_g = 60$ PSF

IMPORTANCE FACTOR: $I_s = 1.0$

SNOW EXPOSURE FACTOR: $C_e = 1.0$

THERMAL FACTOR: $C_t = 1.0$

FLAT-ROOF SNOW LOAD: $P_f = 42$ PSF

WIND LOADS

WIND PRESSURE SHALL BE IN ACCORDANCE WITH THE BUILDING CODE (SECTION 1609).

BASIC WIND SPEED (3-SECOND GUST): $V = 90$ MPH

EXPOSURE: C

IMPORTANCE FACTOR: $I_w = 1.0$

ENCLOSURE CLASSIFICATION: ENCLOSED

INTERNAL PRESSURE COEFFICIENT: $G_{Cpi} = 0.18$

CONCRETE

1. MIXING, BATCHING, TRANSPORTING, PLACING, AND CURING OF ALL CONCRETE, AND SELECTION OF CONCRETE MATERIALS, SHALL CONFORM TO ACI 301, "SPECIFICATION FOR STRUCTURAL CONCRETE FOR BUILDINGS," EXCEPT AS NOTED BELOW. PROPORTIONS OF AGGREGATE TO CEMENTITIOUS PASTE SHALL BE SUCH AS TO PRODUCE A DENSE, WORKABLE MIX THAT CAN BE PLACED WITHOUT SEGREGATION OR EXCESS FREE SURFACE WATER.
2. ALL CONCRETE USED IN HORIZONTAL SURFACES EXPOSED TO THE WEATHER SHALL CONTAIN AN ACCEPTABLE ADMIXTURE TO PRODUCE AIR-ENTRAINED CONCRETE WITH TOTAL AIR CONTENT, AS NOTED IN THE CONCRETE MIX SPECIFICATION TABLE. TOLERANCE FOR AIR CONTENT SHALL BE +/-1 PERCENT. AIR CONTENT SHALL BE MEASURED AT THE DISCHARGE OF THE TRUCK. IF CONCRETE IS PUMPED, AIR CONTENT SHALL BE MEASURED AT THE DISCHARGE END OF THE PUMP LINE. TESTS FOR AIR CONTENT SHALL MEET ASTM C172 REQUIREMENTS.
3. MIX DESIGNS LISTED BELOW SHALL BE SUBMITTED TO THE ARCHITECT AND APPROVED PRIOR TO USE. SUBMITTALS SHALL INCLUDE TEST DATA THAT CONFIRMS THE STRENGTH OF EACH MIX PER ACI 318 CHAPTER 5. SELECTION OF CONCRETE MIX PROPORTIONS SHALL BE IN ACCORDANCE WITH ACI 301. MIX PROPORTIONS SHALL MEET OR EXCEED THE REQUIREMENTS LISTED BELOW FOR THE LOCATIONS NOTED. THE MORE STRINGENT OF THE REQUIREMENTS LISTED SHALL GOVERN.
4. MAXIMUM SIZE OF AGGREGATE SHALL BE AS LISTED BELOW. MAXIMUM FLY ASH AS A PERCENTAGE OF TOTAL WEIGHT OF CEMENTITIOUS MATERIAL SHALL BE 30 PERCENT. FLY ASH SHALL BE CLASS C OR F, MEETING ASTM C618 REQUIREMENTS. WATER/CEMENT RATIO SHALL BE BASED ON TOTAL CEMENTITIOUS MATERIAL, INCLUDING FLY ASH AND OTHER POZZOLANIC MATERIALS.
5. THE CONTRACTOR SHALL DETERMINE SLUMP. EACH CONCRETE MIX SUBMITTED SHALL HAVE THE SLUMP SPECIFIED. SLUMP SHALL BE MEASURED AT THE DISCHARGE OF THE TRUCK. IF CONCRETE IS PUMPED, SLUMP SHALL BE MEASURED AT THE DISCHARGE END OF THE PUMP LINE. SLUMPS SHALL BE WITHIN +1 INCH AND - 2 INCHES OF THE SPECIFIED SLUMP.
6. THE USE OF SUPER PLASTICIZERS AND WATER REDUCERS IS ALLOWED, BUT NOT REQUIRED. ALL ADMIXTURES SHALL BE CHLORIDE FREE UNLESS OTHERWISE APPROVED BY THE ENGINEER.

CONCRETE MIX SPECIFICATION TABLE

| LOCATION | f'c MIN (PSI) | TEST AGE (DAYS) | MAX W/C RATIO | AIR CONTENT PERCENT | MAX AGGREGATE SIZE |
|--|---------------------|-----------------------|---------------------|---------------------------|--------------------------|
| MISCELLANEOUS CONCRETE, CURBS, SIDEWALKS | 4,000 | 28 | 0.50 | 4.5 | 3/4" |
| EXTERIOR EXPOSED SLABS ON GRADE | 4,000 | 28 | 0.45 | 4.5 | 3/4" |
| INTERIOR SLABS | 4,000 | 28 | 0.50 | - | 3/8" |
| CONCRETE WALLS, COLUMNS, SPREAD FOOTINGS | 4,000 | 28 | 0.44 | - | 1" |

REINFORCING STEEL

1. ALL REINFORCING SHALL BE NEW BILLET STOCK ASTM A615, GRADE 60, UNLESS NOTED OTHERWISE. BARS SHALL BE SECURELY TIED IN PLACE WITH #16 DOUBLE-ANNEALED IRON WIRE. BARS SHALL BE SUPPORTED ON ACCEPTABLE CHAIRS. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING OF REINFORCED CONCRETE STRUCTURES." CONTRACTOR SHALL COORDINATE REINFORCING STEEL PLACEMENT DETAILS AND PROVIDE TEMPLATES FOR PLACING STEEL IN CONGESTED AREAS AS NECESSARY. SHOP DRAWINGS (INCLUDING PLACING PLANS AND ELEVATIONS) SHALL BE SUBMITTED TO, AND REVIEWED BY, THE ARCHITECT/ENGINEER BEFORE STARTING FABRICATION.
2. NO REINFORCING BARS SHALL BE SPLICED BY WELDING. AT THE CONTRACTOR'S OPTION, MECHANICAL BUTT SPLICING USING AN EXOTHERMIC WELDING PROCESS AND HIGH-STRENGTH SLEEVES OR MECHANICAL CONNECTION SPLICING MAY BE USED, PROVIDED THAT THE MECHANICAL SPLICES SHALL HAVE A CURRENT ICC-ES REPORT DEMONSTRATING THAT THE PRODUCT CAN ACHIEVE A MINIMUM TENSILE STRENGTH OF 125 PERCENT OF THE SPECIFIED YIELD STRENGTH OF THE BAR. SPLICE DEVICES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. REINFORCING BARS SHALL BE LAP SPLICED FOR TENSION (LSB) UNLESS NOTED OTHERWISE ON THE DRAWINGS. #14 AND #18 BARS SHALL BE SPLICED USING MECHANICAL COUPLINGS TO SPLICED BARS REGARDLESS OF SIZE. ACCEPTABLE COUPLINGS ARE LENTON REINFORCING STEEL COUPLERS (ICC-ES ER-3967). #14 AND #18 BARS SHALL NOT BE LAP SPLICED.
3. WELDING OR TACK WELDING OF REINFORCING BARS TO OTHER BARS OR TO PLATES, ANGLES, ETC, IS PROHIBITED, EXCEPT WHERE SPECIFICALLY APPROVED BY THE ENGINEER. WHERE WELDING IS APPROVED, IT SHALL BE DONE BY AWS CERTIFIED WELDERS USING E9018 OR APPROVED ELECTRODES. WELDING PROCEDURES SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.4.
4. MINIMUM CAST-IN-PLACE CONCRETE COVER OVER REINFORCING STEEL, UNLESS NOTED OTHERWISE, SHALL BE AS FOLLOWS:
 - A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:
ALL SIZES: 3 INCHES
 - B. CONCRETE EXPOSED TO EARTH OR WEATHER:
#5 BAR OR SMALLER: 1 1/2 INCHES
#6 BAR OR LARGER: 2 INCHES

C. OTHER CONCRETE:

WALLS - INTERIOR FACE:

#14 AND #18 BARS: 1 1/2 INCHES
#11 BARS AND SMALLER: 3/4 INCH

SLABS:

#14 AND #18 BARS: 1 1/2 INCHES
#11 BARS AND SMALLER: 3/4 INCH

BEAMS AND COLUMNS - TIES, STIRRUPS, SPIRALS:

INTERIOR FRAMES: 1 1/2 INCHES
EXTERIOR FRAMES: 2 INCHES

WELDED WIRE FABRIC

1. WELDED WIRE FABRIC (WWF) SHALL BE ELECTRICALLY WELDED AND CONFORM TO ASTM A185.
2. AN 8-INCH MINIMUM LAP SHALL BE PROVIDED FOR SIDE AND END LAPS.
3. WELDED WIRE FABRIC SHALL BE SUPPORTED ON APPROVED CHAIRS.

PRECAST CONCRETE

1. DESIGN OF ALL PRECAST ELEMENTS AND SYSTEMS SHALL BE GOVERNED BY "PCI DESIGN HANDBOOK" - SIXTH EDITION AND ACI 318-05.
2. ALL PRECAST CONCRETE UNITS SHALL BE DESIGNED TO SUPPORT THE SUPERIMPOSED LOADS AS INDICATED ON THE CONTRACT DRAWINGS FOR THE INDICATED SPAN CONDITIONS. DESIGN SHALL BE UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF THIS PROJECT.
3. PRECAST, PRESTRESSED MEMBERS HAVE BEEN INDICATED ON THE DRAWINGS BY GENERAL SIZE AND DEPTH. THE STRUCTURAL ANALYSIS AND DESIGN OF THESE ITEMS, AS WELL AS LIFTING DEVICES FOR ALL PRESTRESSED CONCRETE MEMBERS, SHALL BE PERFORMED BY THE MANUFACTURER OF THE PRESTRESSED MATERIALS.
4. DESIGN CALCULATIONS SHALL BE SUBMITTED WITH THE SHOP DRAWINGS FOR ALL PRECAST, PRESTRESSED UNITS. CALCULATIONS SHALL BE CERTIFIED BY A PROFESSIONAL ENGINEER.
5. THE PRECAST MANUFACTURING PLANT SHALL BE CERTIFIED BY THE PRECAST/PRESTRESSED CONCRETE INSTITUTE PRIOR TO THE START OF ANY PRODUCTION.
6. ALL PRECAST CONCRETE UNITS SHALL HAVE REACHED THEIR DESIGN STRENGTH PRIOR TO SHIPMENT TO THE SITE.
7. PRECAST UNITS SHALL BE ERECTED SIMULTANEOUSLY ON EACH SIDE OF ALL SUPPORTING BEAMS OR WALLS. THE BEAMS SHALL BE BRACED TO PREVENT ROTATION UNTIL THE PRECAST UNITS ARE TOTALLY ERECTED.
8. PRECAST CONCRETE FABRICATOR TO SHOW ALL FIELD ANCHORAGE REQUIREMENTS, INCLUDING FIELD WELDING, ON SHOP DRAWINGS.
9. ALL PRECAST CONCRETE CONNECTIONS (PLATES, ANGLES, ETC) SHALL BE GALVANIZED STEEL. REMOVE GALVANIZING WHERE FIELD WELDING IS REQUIRED, AND PAINT FIELD WELDS WITH ONE COAT OF "GALVACON" OR APPROVED EQUAL.
10. SEE ARCHITECTURAL DRAWINGS AND DETAILS FOR ALL NON-STRUCTURAL TOPPING OR LIGHTWEIGHT CONCRETE LEVELING FILL OVER PRECAST CONCRETE UNITS.
11. PRESTRESSED FABRICATOR SHALL BE RESPONSIBLE FOR ALL OPENINGS THROUGH PRESTRESSED UNITS LARGER THAN 8" SQUARE OR 8" IN DIAMETER. ALL OTHER OPENINGS (LESS THAN 8") SHALL BE CUT BY THE TRADE REQUIRING THEM AND THE LOCATION SHALL BE APPROVED BY THE PRECAST SUPPLIER. VERIFY SIZE, NUMBER

AND LOCATION OF ALL OPENINGS WITH MECHANICAL, ELECTRICAL AND ARCHITECTURAL PLANS AND ALL CONTRACTORS.

12. ALL HEADERS AT OPENINGS THROUGH PRECAST UNITS SHALL BE PROVIDED BY PRECAST SUPPLIER. PRECAST UNITS ADJACENT TO OPENINGS SHALL BE DESIGNED FOR ADDITIONAL LOAD AT EACH HEADER LOCATION.
13. PROVIDE INSERTS AND ANCHORS IN PRECAST CONCRETE UNITS FOR SUPPORT OF MECHANICAL AND ELECTRICAL EQUIPMENT, ARCHITECTURAL ITEMS AND STRUCTURAL MEMBERS. SEE PLANS FOR LOCATION OF INSERTS AND ANCHORS. VERIFY LOCATION WITH ARCHITECT.
14. A BONDING AGENT IS REQUIRED WHEN CONCRETE TOPPING IS SHOWN ON DRAWINGS AS STRUCTURAL. BONDING AGENT BETWEEN GROUTED PLANK AND STRUCTURAL TOPPING SHALL BE ONE PART CEMENT 1.5 PARTS FINE SAND PASSING #8 SIEVE AND SUFFICIENT WATER TO ACHIEVE CONSISTENCY OF THICK PAINT & APPLIED PER ACI 302 SECTION 8.7.2.
15. CONTRACTOR SHALL PROVIDE WEEP HOLES IN THE CORES OF PRECAST PLANK AS REQUIRED IN ORDER TO NOT ALLOW WATER BUILD-UP IN THE CORES DURING CONSTRUCTION.
16. THE DESIGN OF ALL MEMBERS AND ELEMENTS SHOWN ON THE DRAWINGS IS FOR THE IN-PLACE COMPLETED BUILDING. ALL LOADING CRITERIA AND VERIFICATION OF DESIGN FOR LOADING SUCH AS STRIPPING, HANDLING, TRANSPORTATION AND ERECTION ARE THE SOLE RESPONSIBILITY OF THE PRECAST SUPPLIER.
17. ALL TEMPORARY SHORING PROVIDED BY THE PRECAST SUPPLIER SHALL BE DESIGNED, CERTIFIED AND COORDINATED WITH OTHER TRADES. THE DESIGN MUST INCLUDE TEMPORARY CONSTRUCTION LOADS AND BUILDING LIVE LOADS CAUSED BY THE DECKING BEING PLACED. THE TEMPORARY SHORING IS TO INCLUDE THE DESIGN AND SHOP DRAWING APPROVAL OF THE CONNECTION OF TEMPORARY SHORES TO THE OTHER ELEMENTS EVEN IF THE CONNECTION IS TO BE PROVIDED BY A COORDINATED TRADE SUCH AS STRUCTURAL STEEL OR CONCRETE SUPPLIER.

SLEEVES

1. EXCEPT AS DETAILED ON STRUCTURAL DRAWINGS, NO CONCRETE FOOTINGS, BEAMS, OR GIRDERS SHALL BE SLEEVED FOR PIPING OR DUCTS, UNLESS APPROVED BY THE ENGINEER.

ANCHORAGE TO HARDENED CONCRETE

1. ANCHORAGE TO HARDENED CONCRETE SHALL INCLUDE MECHANICAL AND ADHESIVE ANCHORS OF SIZE, NUMBER, AND SPACING AS SHOWN ON THE DRAWINGS.
2. HOLES SHALL BE DRILLED AND CLEANED AND ANCHORS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTRUCTIONS AND AN APPROVED ICC-ES REPORT.
3. INSPECTION AND TESTING SHALL BE PROVIDED IN ACCORDANCE WITH THE GENERAL NOTES AND THE APPROVED IDD-ES REPORT.
4. WHERE A SPECIFIC TYPE OF ANCHORAGE IS SPECIFIED ON THE DRAWINGS, SUBSTITUTION FOR A DIFFERENT TYPE OF ANCHORAGE (INCLUDING SUBSTITUTING FOR CAST-IN-PLACE ANCHORAGE) SHALL NOT BE PERMITTED WITHOUT PRIOR WRITTEN APPROVAL.

MECHANICAL ANCHORS

1. ACCEPTABLE MECHANICAL ANCHORS SHALL BE AS FOLLOWS: HILTI "KWIK BOLT TZ" CARBON AND STAINLESS STEEL EXPANSION ANCHOR (ICC-ES ESR-1917), SIMPSON STRONG-TIE "STRONG-BOLT" WEDGE ANCHOR (ICC-ES ESR-1771), OR APPROVED ALTERNATIVE WITH A CURRENT ICC-ES REPORT INDICATING THAT THE ANCHOR IS PERMITTED FOR RESISTING THE APPLIED LOADS IN CRACKED CONCRETE.

2. UNLESS NOTED OTHERWISE ON THE DRAWINGS, MINIMUM EFFECTIVE ANCHOR EMBEDMENT DEPTH SHALL BE 6.5 ANCHOR DIAMETERS, MINIMUM DISTANCE TO THE NEAREST CONCRETE EDGE SHALL BE 12 ANCHOR DIAMETERS, AND MINIMUM ANCHOR SPACING SHALL BE 8 ANCHOR DIAMETERS.
3. STAINLESS STEEL ANCHORS SHALL BE USED AT ALL EXTERIOR LOCATIONS AND WHERE SPECIFICALLY INDICATED ON THE DRAWINGS.
4. NO STEEL REINFORCEMENT SHALL BE CUT TO INSTALL ANCHORS.
5. DEFECTIVE OR ABANDONED HOLES SHALL BE FILLED WITH NON-SHRINK GROUT OR AN INJECTABLE ADHESIVE MATCHING THE ADJACENT CONCRETE COMPRESSIVE STRENGTH. NOTIFY THE STRUCTURAL ENGINEERS OF DEFECTIVE OR ABANDONED HOLES IN WALLS AND COLUMNS. THESE ELEMENTS MAY REQUIRE NON-SHRINK GROUT WITH A COMPRESSIVE MODULUS OF ELASTICITY MATCHING THAT OF THE ADJACENT CONCRETE.

ADHESIVE ANCHORS

1. ACCEPTABLE ADHESIVE (EPOXY) ANCHORS SHALL BE AS FOLLOWS: HILTI "HIT-RE 500-SD" ADHESIVE ANCHOR (ICC-ES ESR-2322), SIMPSON STRONG-TIE "SET-XP" ADHESIVE ANCHOR (ICC-ES ESR-2508), OR APPROVED ALTERNATIVE WITH A CURRENT ICC-ES REPORT INDICATING THAT THE ANCHOR IS PERMITTED FOR RESISTING THE APPLIED LOADS IN CRACKED CONCRETE. UNLESS NOTED OTHERWISE, ANCHORS SHALL BE ASTM A36 THREADED ROD OR ASTM A615, GRADE 60 REINFORCING STEEL DOWELS.
2. UNLESS NOTED OTHERWISE ON THE DRAWINGS, MINIMUM EFFECTIVE ANCHOR EMBEDMENT DEPTH SHALL BE 6.5 ANCHOR DIAMETERS, AND MINIMUM ANCHOR SPACING SHALL BE 6 ANCHOR DIAMETERS.
3. HOLES SHALL BE DRILLED WITH ROTARY IMPACT HAMMER OR EQUIVALENT METHOD TO PRODUCE A HOLE WITH A ROUGH INSIDE SURFACE. CORE DRILLING HOLES IS NOT PERMITTED.
4. NO REINFORCING SHALL BE CUT TO INSTALL ADHESIVE ANCHORS.
5. THE TWO-PART ADHESIVE SHALL BE MIXED, APPLIED, AND CURED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS IN THE ICC-ES REPORT. ALL PLACEMENT AND CURING SHALL BE CONDUCTED WITH CONCRETE AND AIR TEMPERATURES ABOVE 50 DEGREES FAHRENHEIT. ADHESIVE SHALL BE APPLIED ONLY TO CLEAN, DRY CONCRETE. POSITIVE PROTECTION SHALL BE PROVIDED SO THAT ANCHORS ARE NOT DISTURBED DURING THE CURING PERIOD.
6. DEFECTIVE OR ABANDONED HOLES SHALL BE FILLED WITH NON-SHRINK GROUT OR AN INJECTABLE ADHESIVE MATCHING THE ADJACENT CONCRETE COMPRESSIVE STRENGTHS. NOTIFY THE STRUCTURAL ENGINEER OF DEFECTIVE OR ABANDONED HOLES IN WALLS AND COLUMNS. THESE ELEMENTS MAY REQUIRE NON-SHRINK GROUT WITH A COMPRESSIVE MODULUS OF ELASTICITY MATCHING THAT OF THE ADJACENT CONCRETE.

NONSHRINK GROUT FOR BASE PLATES, SLEEVES, AND EMBEDDED STEEL

1. GROUT SHALL BE AN APPROVED NONSHRINK CEMENTITIOUS GROUT CONTAINING NATURAL AGGREGATES DELIVERED TO THE JOB SITE IN FACTORY PREPACKAGED CONTAINERS REQUIRING ONLY THE ADDITION OF WATER.
2. THE MINIMUM 28-DAY COMPRESSIVE STRENGTH SHALL BE AT LEAST 1,000 PSI HIGHER THAN THE SUPPORTING CONCRETE STRENGTH, UNLESS NOTED OTHERWISE.
3. GROUT SHALL BE MIXED, APPLIED, AND CURED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS. FOR GROUTING UNDER BASE PLATES, GROUT SHALL BE PROPORTIONED AS A FLOWABLE MIX. WHEN A FLOWABLE MIX DOES NOT PROVIDE THE REQUIRED STRENGTH OR WHEN A MINIMUM STRENGTH OF 10,000 PSI IS REQUIRED, AN EPOXY GROUT SHALL BE USED.

STRUCTURAL STEEL

ALL STEEL SHALL CONFORM TO THE FOLLOWING:

ALL ANGLES UNLESS NOTED ASTM A36, Fy=36 KSI
OTHERWISE

SQUARE OR RECTANGULAR ASTM A500, GRADE B,
STRUCTURAL TUBE (HSS) Fy=46 KSI

PLATE MATERIAL ASTM A36, Fy=36 KSI

1. GENERAL NOTES FOR STEEL CONNECTIONS SHALL APPLY TO ALL STEEL CONNECTIONS UNLESS NOTED OTHERWISE.
2. ALL WORK SHALL BE IN ACCORDANCE WITH THE AISC SPECIFICATION. SHOP DRAWINGS SHALL BE SUBMITTED AND REVIEWED BY THE ARCHITECT/ENGINEER BEFORE COMMENCING FABRICATION. ALL STEEL ANCHORS AND TIES AND OTHER MEMBERS EMBEDDED IN CONCRETE OR MASONRY SHALL BE LEFT UNPAINTED. DIMENSIONAL TOLERANCE FOR BUILT-UP MEMBERS SHALL BE PER AWS D1.1.
3. MINIMUM CONNECTIONS SHALL BE A TWO-BOLT CONNECTION USING 7/8 INCH DIAMETER A325 BOLTS IN SINGLE SHEAR. ALL ASTM A307 BOLTS SHALL BE PROVIDED WITH LOCK WASHERS UNDER NUTS OR SELF-LOCKING NUTS. ALL BOLT HOLES SHALL BE STANDARD SIZE UNLESS NOTED OTHERWISE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE SELECTION OF OPTIONAL DETAILS SHOWN ON THE DRAWINGS.
5. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ALL ERECTION AIDS THAT INCLUDE, BUT ARE NOT LIMITED TO, ERECTION ANGLES, LIFT HOLES, AND OTHER AIDS.

STRUCTURAL STEEL WELDING

1. STRUCTURAL STEEL SHOP DRAWINGS SHALL SHOW ALL WELDING WITH AWS A2.4 SYMBOLS.
2. ALL WELDING SHALL BE DONE BY AWS CERTIFIED WELDERS AND IN ACCORDANCE WITH AWS D1.1. WELDS SHOWN ON THE DRAWINGS ARE THE MINIMUM SIZES. INCREASE WELD SIZE TO AWS MINIMUM SIZES, BASED ON PLATE THICKNESS. THE MINIMUM WELD SIZE SHALL BE 3/16 INCH.
3. FIELD WELDING SYMBOLS HAVE NOT NECESSARILY BEEN INDICATED ON THE DRAWINGS. WHERE SHOWN, PROPER FIELD WELDING PER AWS D1.1 SHALL BE USED. WHERE NO FIELD WELDING SYMBOLS ARE SHOWN, IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE USE OF SHOP AND FIELD WELDS.
4. ALL PARTIAL PENETRATION GROOVE WELD SIZES SHOWN ON THE DRAWINGS REFER TO EFFECTIVE THROAT THICKNESS.
5. ALL WELDS SHALL BE MADE USING LOW HYDROGEN ELECTRODES WITH MINIMUM TENSILE STRENGTH PER AWS D1.1 (MINIMUM 70 KSI). LOW HYDROGEN SMAW ELECTRODES SHALL BE USED WITHIN 4 HOURS OF OPENING THEIR HERMETICALLY SEALED CONTAINERS, OR SHALL BE REDRIED PER AWS D1.1, SECTION 4.5. ELECTRODES SHALL BE REDRIED NO MORE THAN ONE TIME, AND ELECTRODES THAT HAVE BEEN WET SHALL NOT BE USED.
6. ALL WELDING SHALL BE PERFORMED IN STRICT ADHERENCE TO A WRITTEN WELDING PROCEDURE SPECIFICATION (WPS) PER AWS D1.1. ALL WELDING PARAMETERS SHALL BE WITHIN THE ELECTRODE MANUFACTURER'S RECOMMENDATIONS. WELDING PROCEDURES SHALL BE SUBMITTED TO THE OWNER'S TESTING AGENCY FOR REVIEW BEFORE STARTING FABRICATION OR ERECTION. COPIES OF THE WPS SHALL BE ON SITE AND AVAILABLE TO ALL WELDERS AND THE SPECIAL INSPECTOR.

ANCHOR RODS

1. ANCHOR RODS SHALL BE ASTM F1554 GRADE 36 WITH CLASS 1A THREADS, UNLESS NOTED OTHERWISE.
2. FURNISH ANCHOR RODS PREFABRICATED WITH MATCHING DOUBLE HEAVY HEX NUTS JAMMED AT THE END EMBEDDED IN CONCRETE. FURNISH HARDENED PLATE WASHERS, LOCK WASHERS, AND MATCHING HEAVY HEX NUTS FOR SECURING THE BASE PLATE TO THE ANCHOR RODS.
3. HOOKED ANCHOR RODS SHALL NOT BE USED EXCEPT WHERE NOTED.
4. A RIGID STEEL TEMPLATE SHALL BE USED TO LOCATE ANCHOR RODS WHILE PLACING CONCRETE.
5. ANCHOR RODS SHALL HAVE SUFFICIENT LENGTH TO PROVIDE THE MINIMUM EMBEDMENT SHOWN ON THE DRAWINGS, MEASURED FROM THE FACE OF THE CONCRETE TO THE NEAR FACE OF THE DOUBLE NUT, WITH ADEQUATE EXTENSION AS REQUIRED TO RECEIVE THE BASE PLATE WITH FULL THREAD PROJECTION FOR NUT INSTALLATION.
6. ANCHOR ROD INSTALLATION SHALL BE COORDINATED WITH REINFORCING AND FORMWORK.
7. LEVELING NUTS SHALL NOT BE USED EXCEPT AFTER EVALUATION BY THE CONTRACTOR'S ERECTION ENGINEER.
8. AFTER BASE INSTALLATION, ANCHOR ROD NUTS SHALL BE INSTALLED TO A SNUG-TIGHT CONDITION.
9. NO HEATING OR BENDING OF THE ANCHOR RODS IS PERMITTED.
10. HOLES IN THE BASE MATERIAL SHALL NOT BE ENLARGED BY BURNING.

WOOD FRAMING LUMBER

1. FRAMING LUMBER SHALL BE KILN DRIED OR MC-15, AND GRADED AND MARKED IN CONFORMANCE WITH WEST COAST LUMBER INSPECTION BUREAU STANDARD GRADING RULES FOR WEST COAST LUMBER NO. 16, LATEST EDITION. FURNISH TO THE FOLLOWING MINIMUM STANDARDS:

| | |
|--|---|
| 2x JOISTS AND BUILT-UP MEMBERS | DOUGLAS FIR-LARCH NO. 2 OR SOUTHERN PINE NO. 2 |
| 3x AND 4x BEAMS AND POSTS | DOUGLAS FIR-LARCH NO. 2 |
| 6x AND LARGER BEAMS AND STRINGERS | DOUGLAS FIR-LARCH NO. 1 |
| 6x AND LARGER POSTS AND TIMBERS | DOUGLAS FIR-LARCH NO. 1 |
| STUDS, PLATES AND MISCELLANEOUS LIGHT FRAMING | SPRUCE-PINE-FIR NO. 2 OR BETTER |
| TOP AND BOTTOM PLATES AT BEARING WALLS | DOUGLAS FIR-LARCH CONSTRUCTION GRADE |
| BOLTED STUDS, LEDGERS AND PLATES | DOUGLAS FIR-LARCH STANDARD GRADE |

GLUED-LAMINATED FRAMING LUMBER (GL)

1. GLUE-LAMINATED MEMBERS SHALL BE FABRICATED IN CONFORMANCE WITH ANSI-AITC A190.1 AND ASTM D3737. EACH MEMBER SHALL BEAR AN AITC IDENTIFICATION MARK AND SHALL BE ACCOMPANIED BY AN AITC CERTIFICATE OF CONFORMANCE.

2. ALL SIMPLE SPAN BEAMS SHALL BE DOUGLAS FIR COMBINATION 24F-V4, Fb = 2,400 PSI, Fv = 240 PSI.
3. ALL BEAMS CONTINUOUS OVER SUPPORTS AND CANTILEVER BEAMS SHALL BE DOUGLAS FIR COMBINATION 24F-V8, Fb = 2,400 PSI, Fv = 240 PSI.
4. CAMBER ALL GLULAM ROOF BEAMS TO A 3,500-FOOT RADIUS UNLESS NOTED OTHERWISE ON THE PLANS.

PLYWOOD

1. PLYWOOD SHEATHING SHALL BE GRADE C-D EXTERIOR GLUE OR STRUCTURAL II. EXTERIOR GLUE SHALL BE IN CONFORMANCE WITH THE BUILDING CODE, UNITED STATES VOLUNTARY PRODUCT STANDARDS PS-1 AND PS-2.
2. ORIENTED STRAND BOARD OF EQUIVALENT THICKNESS, EXPOSURE RATING, AND PANEL INDEX MAY BE USED IN LIEU OF PLYWOOD.

ROOF SHEATHING

1. PROVIDE 3/4"-INCH CDX PLYWOOD, INDEX 32/16, UNBLOCKED, LAID UP WITH FACE GRAIN PERPENDICULAR TO FRAMING BELOW. STAGGER PANEL END JOINTS,

THE FOLLOWING MINIMUM NAILING UNLESS NOTED OTHERWISE ON PLANS:

8d AT 6 INCHES ON CENTER ALL SUPPORTED PANEL EDGES,
 DIAPHRAGM BOUNDARIES AND
 OVER EXTERIOR WALLS AND
 SHEAR WALLS

8d AT 12 INCHES ON CENTER FIELD NAILING

TREATED WOOD

1. ALL WOOD PLATES, LEDGERS AND BLOCKING IN DIRECT CONTACT WITH CONCRETE OR MASONRY SHALL BE PRESSURE-TREATED WITH AN AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA) APPROVED PRESERVATIVE. ALTERNATIVELY PER IBC SECTION 2304.11, FOR SOME EXCEPTIONS, IMPERVIOUS MOISTURE BARRIERS MAY BE PROVIDED BETWEEN UNTREATED MEMBERS AND CONCRETE OR MASONRY.
2. ALL METAL FASTENERS IN CONTACT WITH TREATED WOOD SHALL BE GALVANIZED OR STAINLESS STEEL. WHEN USING GALVANIZED FASTENERS, THE CONTRACTOR SHALL COORDINATE THE GALVANIZATION PROCESS WITH THE CHEMICAL COMPOSITION OF THE WOOD TREATMENT.

TIMBER CONNECTORS

1. TIMBER CONNECTORS CALLED OUT BY LETTERS AND NUMBERS SHALL BE BY SIMPSON STRONG-TIE COMPANY, INC, AS SPECIFIED IN THE LATEST EDITION OF THEIR CATALOG. EQUIVALENT DEVICES BY OTHER MANUFACTURERS MAY BE SUBSTITUTED, PROVIDED THEY HAVE CURRENT ICC-ES EVALUATION REPORTS DEMONSTRATING THAT THE PRODUCTS HAVE EQUAL OR GREATER LOAD CAPACITIES. PROVIDE NUMBER AND SIZE OF FASTENERS AS SPECIFIED BY MANUFACTURER.
2. CONNECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED SPECIFICATIONS. WHERE CONNECTOR STRAPS CONNECT TWO MEMBERS, PLACE ONE-HALF OF THE NAILS OR BOLTS IN EACH MEMBER.

3. ALL BOLTS IN WOOD MEMBERS SHALL CONFORM TO ASTM A307. PROVIDE WASHERS UNDER THE HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS BEARING ON WOOD.
4. ALL NAILS SHALL BE COMMON, UNLESS NOTED OTHERWISE.
5. ALL SHIMS SHALL BE SEASONED AND DRIED AND THE SAME GRADE (MINIMUM) AS MEMBERS CONNECTED.
6. ALL SINGLE JOISTS, DOUBLE JOISTS AND TRIPLE JOISTS SHALL BE CONNECTED TO FLUSH BEAMS WITH "U" SERIES JOIST HANGERS, UNLESS NOTED OTHERWISE

WOOD FRAMING DETAILS

THE FOLLOWING APPLY UNLESS OTHERWISE SHOWN ON THE PLANS.

1. AT JOIST AREAS: PROVIDE CROSS-BRIDGING AT 8'-0" ON CENTER MAXIMUM. PROVIDE SOLID BLOCKING OR CONTINUOUS RIM AT ALL BEARING POINTS. PROVIDE SOLID BLOCKING UNDER ALL BEARING WALLS ABOVE.
2. PROVIDE DOUBLE JOIST UNDER ALL PARALLEL PARTITIONS THAT EXTEND OVER MORE THAN HALF THE JOIST LENGTH. PROVIDE DOUBLE JOISTS EACH SIDE OF ALL OPENINGS IN FLOORS AND ROOFS UNLESS DETAILED OTHERWISE. COORDINATE SIZE AND LOCATION OF ALL OPENINGS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
3. PROVIDE TWO 2x10 HEADERS OVER AND DOUBLE STUDS EACH SIDE OF ALL OPENINGS IN STUD BEARING WALLS UNLESS NOTED OTHERWISE.
4. PROVIDE SOLID BLOCKING AT FLOORS FOR WOOD COLUMNS AND MULTIPLE STUD POSTS TO PASS THROUGH.
5. PROVIDE CONTINUOUS SOLID BLOCKING AT MID-HEIGHT OF ALL STUD WALLS OVER 10'-0" IN HEIGHT.
6. ALL STUD WALLS UNLESS NOTED OTHERWISE SHALL BE 2x4 AT 16 INCHES ON CENTER AT INTERIOR WALLS AND 2x6 AT 16 INCHES ON CENTER AT EXTERIOR WALLS.
7. USE FULL-LENGTH STUDS (BALLOON FRAME) ON EXTERIOR WALLS AT STAIRWAYS AND AT VAULTED CEILINGS.
8. PLYWOOD WALL SHEATHING SHALL HAVE SOLID BLOCKING AT ALL EDGES. PROVIDE THE FOLLOWING MINIMUM NAILING UNLESS NOTED OTHERWISE ON PLANS:
 - 8d AT 6 INCHES ON CENTER AT SHEET EDGES
 - 8d AT 12 INCHES ON CENTER AT INTERMEDIATE BEARING POINTS
9. ALL WOOD STUD WALLS SHALL HAVE LOWER WOOD PLATE ATTACHED TO WOOD FRAMING BELOW WITH 16d NAILS AT 6 INCHES ON CENTER STAGGERED OR BOLTED TO CONCRETE WITH 5/8-INCH-DIAMETER ANCHOR BOLTS AT 6'-0" ON CENTER UNLESS NOTED OTHERWISE ON THE PLANS. ALL ANCHOR BOLTS SHALL HAVE 2x2x3/16-INCH PLATE WASHERS AND A MINIMUM EMBEDMENT OF 7 INCHES IN CONCRETE.

MASONRY

1. CONSTRUCTION SHALL MEET THE REQUIREMENTS OF THE BUILDING CODE.
2. ALL HOLLOW CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C90, NORMAL WEIGHT. MINIMUM REQUIRED BLOCK COMPRESSIVE STRENGTH IS 1,900 PSI.
3. ALL CELLS CONTAINING REINFORCEMENT SHALL BE FILLED SOLID WITH CONCRETE GROUT.
4. GROUT MIX SHALL CONTAIN PORTLAND CEMENT ONLY, AGGREGATE, AND A GROUT-ENHANCING SHRINKAGE-COMPENSATING ADDITIVE. MAXIMUM SIZE OF AGGREGATE SHALL BE 3/8 INCH. SLUMP SHALL BE 8 TO 11 INCHES. WATER-REDUCING ADMIXTURES MAY BE USED. MINIMUM GROUT COMPRESSIVE STRENGTH BASED ON 28-DAY TESTS SHALL BE 2,000 PSI AND GREATER THAN OR EQUAL TO THE SPECIFIED MINIMUM DESIGN STRENGTH.

5. GROUT SHALL BE VIBRATED WHILE PLACING TO ENSURE THAT CELLS ARE COMPLETELY FILLED.
6. SUBMIT GROUT MIXES TO ARCHITECT FOR REVIEW BEFORE COMMENCING MASONRY CONSTRUCTION.
7. ALL UNITS SHALL BE LAID IN RUNNING BOND USING TYPE S MORTAR WITH HEAD JOINTS.
8. MASONRY MINIMUM DESIGN STRENGTH IS $f'_m = 1,500$ PSI.
9. REQUIRED MORTAR PROPORTIONS BY VOLUME:

| <u>TYPE</u> | <u>PORTLAND CEMENT</u> | <u>HYDRATED LIME</u> | <u>AGGREGATE MEASURED IN A DAMP, LOOSE CONDITION</u> |
|-------------|----------------------------|--------------------------|---|
| S | 1 | OVER 1/4 TO 1/2 | NOT LESS THAN 2 1/4 AND NOT MORE THAN 3 TIMES THE SUM OF THE VOLUMES OF THE CEMENT |

FOUNDATIONS

1. COLUMN DOWELS SHALL BE INSTALLED WITH A TEMPLATE TO HOLD BARS IN THE PROPER POSITION AND SHALL BE PLACED WITH A TOLERANCE OF +/- 1/4 INCH.
2. SPREAD FOOTINGS:
 - a. DESIGN SOIL BEARING PRESSURE = 2,000 PSF.
 - b. ALL FOOTINGS SHALL BEAR ON UNDISTURBED SOIL AND SHALL BE LOWERED TO FIRM BEARING IF SUITABLE SOIL IS NOT FOUND AT ELEVATIONS DETERMINED BY TOP OF FOOTING ELEVATION AND FOOTING DEPTH.
 - c. REFER TO THE GEOTECHNICAL REPORT FOR SOIL CONDITIONS.

STRUCTURAL FILL

1. ALL FILL PLACED TO SUPPORT SLABS ON GRADE, BEHIND PERMANENT WALLS, AND AROUND ALL DRAINS SHALL CONSIST OF WELL GRADED, GRANULAR MATERIAL PER THE SPECIFICATIONS.
2. SOILS FOR STRUCTURAL FILL SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER.
3. STRUCTURAL FILL SHALL BE PLACED ON SOUND NATIVE MATERIAL.
4. PROOF-ROLL CUT AREAS WHICH PROVIDE SUPPORT FOR PERMANENT STRUCTURES.
5. AREAS WHICH ARE EXCESSIVELY YIELDING, AS DETERMINED BY THE CONTINUOUS OBSERVATION OF THE GEOTECHNICAL ENGINEER, SHALL BE OVEREXCAVATED AND REPLACED WITH STRUCTURAL FILL.
6. STRUCTURAL FILL SHALL BE PLACED PER THE SPECIFICATION.

SEQUENCING CONSTRUCTION AND LATERAL STABILITY

1. THE STRUCTURAL COMPONENTS BY THEMSELVES ARE A NON-SELF-SUPPORTING STRUCTURE. LATERAL FORCES DUE TO WIND, EARTHQUAKE, OR SOIL ARE CARRIED BY THE ROOF AND FLOOR DIAPHRAGMS TO THE LATERAL SYSTEM. CERTAIN ELEMENTS SHOWN ON THE STRUCTURAL DRAWINGS.
2. IF, DUE TO SEQUENCING OF CONSTRUCTION, THESE STABILITY ELEMENTS ARE NOT IN PLACE, THE CONTRACTOR SHALL RETAIN A STRUCTURAL ENGINEER LICENSED TO PERFORM THE WORK IN THE JURISDICTION WHERE THE PROJECT IS LOCATED, WHO SHALL INVESTIGATE WHERE TEMPORARY SHORING/BRACING IS REQUIRED, AND SHALL DESIGN THIS TEMPORARY SHORING/BRACING. THE CONTRACTOR SHALL PROVIDE THIS SHORING/BRACING UNTIL THE REQUIRED STRUCTURAL ELEMENTS AND THEIR CONNECTIONS HAVE BEEN INSTALLED AND REACH THEIR FINAL DESIGN STRENGTHS.

EXISTING STRUCTURE

1. EXISTING STRUCTURAL DIMENSIONS AND MEMBER SIZES ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION. THE CONTRACTOR SHALL VERIFY THE ACTUAL CONFIGURATION OF EXISTING CONSTRUCTION AND THE CONDITION OF THE STRUCTURE BEFORE BEGINNING WORK.
2. ANY DISCREPANCIES OF UNSOUND CONDITIONS SHALL BE REPORTED TO THE ARCHITECT FOR RESOLUTION BEFORE BEGINNING WORK.
3. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS, EMBEDMENTS, AND OPENINGS NOT SHOWN.
4. TEMPORARY SHORING AND BRACING MAY BE NECESSARY IN ORDER TO PERFORM THE NECESSARY STRUCTURAL MODIFICATIONS TO THE EXISTING STRUCTURE SHOWN ON THE STRUCTURAL AND ARCHITECTURAL PLANS AND DETAILS. THE CONTRACTOR MUST RETAIN A STRUCTURAL ENGINEER LICENSED TO PERFORM THE WORK IN THE JURISDICTION WHERE THE PROJECT IS LOCATED, WHO SHALL INVESTIGATE WHERE THIS TEMPORARY SHORING/BRACING IS REQUIRED AND SHALL DESIGN THIS TEMPORARY SHORING/BRACING.

DEFERRED STRUCTURAL SUBMITTALS

1. SOME STRUCTURAL SYSTEMS ARE DEFINED AS VENDOR-DESIGNED COMPONENTS PER THE STRUCTURAL DOCUMENTS. THESE ELEMENTS OF THE DESIGN ARE DEFERRED SUBMITTAL COMPONENTS AND HAVE NOT BEEN PERMITTED UNDER THE BASE BUILDING APPLICATION. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT THE STAMPED COMPONENT SYSTEM DOCUMENTS TO THE BUILDING OFFICIAL FOR APPROVAL.
2. DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE ARCHITECT, WHO SHALL REVIEW THEM FOR GENERAL CONFORMANCE TO THE DESIGN OF THE BUILDING. THE CONTRACTOR SHALL SUBMIT THESE REVIEWED DEFERRED SUBMITTAL DOCUMENTS TO THE BUILDING OFFICIAL. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THE DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.
3. THE FOLLOWING LIST INCLUDES THE ITEMS THAT ARE DEFINED AS DEFERRED STRUCTURAL SUBMITTAL COMPONENTS. REFER TO THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND CIVIL DRAWINGS FOR ADDITIONAL DEFERRED SUBMITTAL COMPONENTS.
4. DEFERRED STRUCTURAL SUBMITTAL COMPONENTS:
 - a. PRECAST FLOOR PLANKS

MISCELLANEOUS

1. REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL, CIVIL, ELEVATOR, OR OTHER SPECIALTY ENGINEERING DRAWINGS FOR DIMENSIONS NOT SHOWN, INCLUDING BUT NOT LIMITED TO: SIZE AND LOCATION OF CURBS, EQUIPMENT HOUSEKEEPING PADS, WALL AND FLOOR OPENINGS, BLOCKOUTS, FLOOR DEPRESSIONS, SUMPS, DRAINS, ANCHOR BOLTS, EMBEDDED ITEMS, ARCHITECTURAL TREATMENT, ETC. THE CONTRACTOR SHALL VERIFY DIMENSIONS AND RESOLVE DISCREPANCIES OR CONFLICTS PRIOR TO CONSTRUCTION.
2. WHERE SECTIONS ARE INDICATED ON THE PLAN BY A NUMBER AND A DRAWING NUMBER THUS, 1/S5.01, THE INDICATED SECTION (1) IS SHOWN ON STRUCTURAL DRAWING S5.01.

SPECIAL INSPECTION

1. THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION AND TESTING PER IBC SECTION 1704.
2. THIS WORK SHALL BE PERFORMED BY A SPECIAL INSPECTOR CERTIFIED BY THE GOVERNING BUILDING OFFICIAL TO PERFORM THE TYPES OF INSPECTIONS AND TESTS SPECIFIED.
3. THE FREQUENCY OF INSPECTIONS AND TESTING SHALL BE AS OUTLINED IN THE IBC TABLE ITEMS LISTED BELOW.
4. DEFICIENCIES SHALL BE REPORTED DAILY TO THE CONTRACTOR.
5. SUMMARY REPORTS SHALL BE DISTRIBUTED WEEKLY TO THE OWNER, ARCHITECT, CONTRACTOR, BUILDING OFFICIAL, AND STRUCTURAL ENGINEER.
6. SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR SPECIAL INSPECTION AND TESTING.

| <u>ITEM</u> | <u>DESCRIPTION (REFER TO IBC SECTION 1704)</u> | <u>IBC TABLE REQUIREMENTS</u> |
|---|--|--|
| CONCRETE | CONCRETE THAT IS PART OF THE STRUCTURE | TABLE 1704.4, ITEMS 4, 5, 6, 7, 9, AND 10 |
| BOLTS INSTALLED IN CONCRETE | ANCHOR BOLTS, HEADED STUDS (EXCEPT AT BEAM-TO-DECK INSTALLATION) | TABLE 1704.4, ITEM 3 |
| REINFORCING STEEL | A. PLACEMENT OF REINFORCING STEEL | TABLE 1704.4, ITEM 1 |
| STRUCTURAL STEEL AND WELDING | A. STRUCTURAL STEEL THAT IS PART OF THE STRUCTURE B. WELDING OF MEMBERS OR CONNECTIONS C. WELDING OF REINFORCING STEEL | TABLE 1704.3, ITEM 3 TABLE 1704.3, ITEM 4 AND 5 TABLE 1704.4, ITEM 2 |
| STRUCTURAL MASONRY | ALL MASONRY | TABLE 1704.5.1 |
| SPECIAL GRADING, EXCAVATION AND FILLING | A. FOUNDATION EXCAVATIONS AND BEARING STRATA B. BACKFILL BEHIND STRUCTURAL WALLS OR | TABLE 1704.7 |

SUPPORTING SLAB-ON-GRADE

SPECIAL CASES

- A. DRILLED-IN CONCRETE ANCHORS:
PERIODIC SPECIAL INSPECTION SHALL INCLUDE VISUAL OBSERVATION OF DRILLED HOLE SPACINGS, EDGE DISTANCES, AND TENSION TESTING OF 5 PERCENT OF ANCHORS SHOWN ON STRUCTURAL DRAWINGS. TEST LOAD SHOULD BE 2 TIMES THE MANUFACTURER'S ALLOWABLE LOAD OF THE ANCHOR IN TENSION
- B. EPOXY OR CEMENT GROUTED DOWELS OR ANCHORS:
OBSERVE DRILLED HOLES AFTER CLEANING AND OBSERVE INSTALLATION OF GROUT AND ANCHORS

SHOP DRAWINGS

1. SHOP DRAWINGS FOR THE FOLLOWING ITEMS SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION:
 - a. REINFORCING STEEL
 - b. STRUCTURAL STEEL
 - c. GLUE LAMINATED MEMBERS
2. THE CONTRACTOR SHALL SUBMIT CONCRETE WALL ELEVATION DRAWINGS OF AT LEAST 1/8" = 1'-0" SCALE INDICATING LOCATIONS OF CONNECTION EMBEDMENTS AND WALL OPENINGS FOR REVIEW PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE WITH REINFORCEMENT DRAWINGS.
3. DIMENSIONS AND QUANTITIES ARE NOT REVIEWED BY THE ENGINEER OF RECORD; THEREFORE, THEY SHALL BE VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL REVIEW AND STAMP DRAWINGS PRIOR TO REVIEW BY THE ENGINEER OF RECORD. CONTRACTOR SHALL REVIEW DRAWINGS FOR CONFORMANCE WITH THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATIONS OF CONSTRUCTION, AND ALL SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO. SUBMITTALS SHALL INCLUDE ONE REPRODUCIBLE AND ONE COPY; REPRODUCIBLE WILL BE MARKED AND RETURNED.
4. SHOP DRAWING SUBMITTALS PROCESSED BY THE ENGINEER ARE NOT CHANGE ORDERS. THE PURPOSE OF SHOP DRAWING SUBMITTALS BY THE CONTRACTOR IS TO DEMONSTRATE TO THE ENGINEER THAT THE CONTRACTOR UNDERSTANDS THE DESIGN CONCEPT, BY INDICATING WHICH MATERIAL IS INTENDED TO BE FURNISHED AND INSTALLED, AND BY DETAILING THE INTENDED FABRICATION AND INSTALLATION METHODS. IF DEVIATIONS, DISCREPANCIES, OR CONFLICTS BETWEEN SHOP DRAWINGS SUBMITTALS AND THE CONTRACT DOCUMENTS ARE DISCOVERED EITHER PRIOR TO OR AFTER SHOP DRAWING SUBMITTALS ARE PROCESSED BY THE ENGINEER, THE DESIGN DRAWINGS AND SPECIFICATIONS SHALL CONTROL AND SHALL BE FOLLOWED.
5. SHOP DRAWINGS FOR DEFERRED SUBMITTALS THAT ARE DEFINED AS DESIGN-BUILD COMPONENTS IN THE CONSTRUCTION DOCUMENTS SHALL INCLUDE THE DESIGNING PROFESSIONAL ENGINEER'S STAMP FOR THE JURISDICTION WHERE THE PROJECT IS LOCATED AND SHALL BE APPROVED BY THE COMPONENT DESIGNER PRIOR TO CURSORY REVIEW BY THE ENGINEER OF RECORD FOR LOADS IMPOSED ON THE BASIC STRUCTURE. THE COMPONENT DESIGNER IS RESPONSIBLE FOR CODE CONFORMANCE AND ALL NECESSARY CONNECTIONS NOT SPECIFICALLY CALLED OUT ON ARCHITECTURAL OR STRUCTURAL DRAWINGS. SHOP DRAWINGS SHALL INDICATE MAGNITUDE AND DIRECTION OF ALL LOADS IMPOSED ON BASIC STRUCTURE. DESIGN CALCULATIONS SHALL BE INCLUDED IN THE SUBMITTAL.

ELECTRICAL NOTES:

GENERAL NOTES:

1. Furnish all engineering, design, labor material and equipment necessary to complete the installation of electrical systems as described below and shown on the drawings.
2. Demolition of existing systems required to complete the work shall be included.
3. Cutting and patching required to install new systems will be the responsibility of this contractor.
4. Engineering and sizing of electrical circuits and power service requirements shall be the responsibility of this contractor. Power system shall be designed to balance load.
5. Permits for electrical work shall be provided by the contractor.
6. All electrical work shall comply with governing codes.
7. Include all material necessary to complete electrical systems and make operational. Coordinate activation requirements with mechanical contractor and include all components necessary to allow operation.
8. Provide temporary power and lighting as required to allow completion of work by all trades.
9. Power conduit shall be concealed where possible.

Future Automatic Door Power:

1. Provide junction box, $\frac{3}{4}$ " conduit and wire for future automatic door operators and push button systems at each door location.
2. Cover junction boxes with stainless steel weatherproof cover plates.

November 18, 2010

#1011 Chalet Entry
Spirit Mountain Ski Area
Duluth, MN 55810

CODE NARRATIVE 2006 IBC

Owner:

Spirit Mountain Recreation Area
9500 Spirit Mountain Place
Duluth, MN 55810

Architect:

Design Alternative
3791 Alder Avenue
Hermantown, MN 55810
218-729-9772

Property:

Zoning Classification: RR1 Rural Residential

Building Statistics:

| | |
|------------------------|--------------------------------------|
| Occupancy: | A2 Banquet Hall / Restaurant |
| Height: | Two Story 50 ft (60 ft max. allowed) |
| Construction Type: | Vb not fire rated |
| Fire Sprinkler System: | required > 5000 sf |

| | |
|--------------------------|----------------------------|
| Basic Allowable Area: | 6000 SF per floor |
| Frontage Increase: | 4,500 SF 75% |
| Fire Sprinkler Increase: | 18,000 SF 300% |
| Added Story increase: | 28,500 SF per floor |
| Maximum Allowable Area: | 57,000 SF |
| Total Building Area: | 47,639 SF (gross area) |

| | |
|----------------|-----------|
| Basement | 19,607 sf |
| First Floor | 19,907 sf |
| Vest. Addition | 384 sf |
| Second Floor | 7,741 sf |

Occupant Load:

| | |
|---------------------------|------------------------------|
| Basement Business use | 19,607sf / 100 = 197 people |
| First Floor Assembly use | 19,907sf / 15 = 1,327 people |
| Second Floor Assembly use | 7,741sf / 15 = 516 people |
| Total | 2,040 people |

| | |
|--------------------------|----------------|
| Required Exits | 4 |
| Travel Distance to exits | 250 FT maximum |

Fire Resistive Requirements:

| Building Element | Rating (Hours) | Assembly Designation |
|-------------------------|----------------|----------------------|
| Exterior Bearing Walls | NR | (no rating) |
| Exterior Wall Openings | NR | |
| Stair / Enclosure Walls | 1 hr | |
| Mechanical Room Walls | NR | |
| Structural Frame | NR | |
| Columns | NR | |
| Beams | NR | |
| Floor | NR | |
| Roof Deck | NR | |