

STRUCTURAL NOTES

These notes shall govern unless noted otherwise on the drawings. Refer to written specifications for further requirements and amplification of these notes.

BUILDING CODE

Design fabrication & construction IBC 2003 with ASCE 7-02

DESIGN LOADS

Gravity - Superimposed Dead Loads: ROOF Membrane & Rigid Insulation 4.0 PSF 3" x 20ga type N roof deck 3.0 PSF 2B LH Joists @ 10'-0" O.C. 3.0 PSF Primary framing (X-Hall) 13.0 PSF MEP, ceiling, etc 5.0 PSF Rigging (X-Hall only) 20.0 PSF

Gravity - Superimposed Live Loads: Floor - Office 50 PSF Floor - parking 300 PSF Floor - X-Hall 300 PSF Stairs/Corridor 100 PSF Mechanical room floor 125 PSF

Gravity - Snow Loads: Snow Importance Factor 1.10 Ground Snow Load (Pg) 36 PSF Roof Snow Load (Pf) 30 PSF (Min. uniform load) Drift as calculated per ASCE 7-02

Wind Loads: Main Wind-Force Resisting System (MWFRS) Fastest Mile Wind Speed 70 MPH 3 Second Gust Wind Speed 85 MPH Importance Factor (Iw) 1.15 Exposure Category B Internal Pressure Coefficient +/- .18 Design Wind Pressure Per calculations Roof Uplift (Net) 10 psf

SEISMIC LOADS

Structural design requirements per IBC 2003: Seismic Importance Factor (Ie) 1.25 Spectral Response Acceleration (Sa) 0.315 Spectral Response Acceleration (S1) 0.092 Site Class for Soil Profile A Seismic Use Group III Seismic Design Category B Spectral Response Coefficient (Sds) 0.17 Spectral Response Coefficient (Sd1) 0.05 Design Base Shear 3270 kips Analysis Procedure Equivalent Force Basic Seismic-Force-Resisting System: Above X-Hall Floor Cantilevered Column System Response Modification Coefficient (R) 2.5 System Overstrength Factor 2 Deflection Amplification Factor 2.5

REMODEL WORK

Contractor shall verify all existing conditions and inform Engineer of any differences prior to and during any demolition work. No removal or alteration of the existing structures will be allowed until the Engineer (or his field representative) has reviewed: Sequence of work Method of shoring Extent and method of demolition Saw cut existing concrete and masonry walls at least 1' deep around all openings prior to removal. Over cutting not allowed.

CONCRETE

Concrete Mix Requirements Per ACI 301-XX, section 1.6 w/test submittals to Engineer/Architect or use chart below.

Table with 5 columns: Type, Use, 28 Day Strength (PSI), Max. Aggregate Size (inches), Slump (inches), % Air. Rows include A (Slewwork & Footings), B (Exposed to Weather), C (Lean Concrete), D (Stair pan topping), E (Columns), F (All Others), G (Truck Parking Topping Slab), H (Interior Slab on Grade), J (Drilled Piers).

CONCRETE MIX PROPORTIONS

Per ACI 301, Section 4.1

CONCRETE MIX PROPORTIONS

Conduits embedded within slab, wall or beam. (conduits to be 1/4 x member thickness placed between rebar mats Spacing greater than where double mats occur.) 4 x conduit diameter.

CONCRETE MIX PROPORTIONS

Concrete Mix Proportions Per ACI 301, Section 4.1

REINFORCING

Deformed Bars ASTM A615 Grade 60 Weldable Bars ASTM A706 Tie Wire Double annealed 16 GA. iron wire Field Bends Cold bend bars noted on drawings to radius as per CRSI. Bend bars 1 time only.

Concrete Cover Cast against earth 3" Formed surfaces exposed to earth or weather 1 1/2" #5 or smaller 2" #6 or larger Not exposed to earth or weather 3/4" #11 or smaller

WALL TRIM BARS

May be omitted when the opening dimensions are less than the rebar spacing. For openings less than 12" x 12" relocate interrupted rebar along one side of the opening and add an identical bar on the other side.

SHOP DRAWINGS

Wall elevations are required for all walls on 24"x36" sht. min. and drawn to 1/8" min. scale. Show all openings larger than 12" in any dimension.

WELDING

ASTM A706 Subject to approval of Architect/Engineer

WELDERS

ASTM A615 Not allowed

WELDERS

AWS D1.4 prequalified for all sizes & positions required.

BAR SUPPORTS

In contact with earth Precast concrete blocks 4000 PSI strength @ 2'-0" o.c. max. wire tied to alternating bar intersections.

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EXISTING CONDITIONS

- 1. DISCREPANCIES: VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AND CONTACT THE ENGINEER OF RECORD IF ANY DISCREPANCIES ARE FOUND BEFORE PROCEEDING. NO REMOVAL OR ALTERATION OF THE EXISTING STRUCTURE WILL BE ALLOWED UNTIL THE ENGINEER (OR HIS REPRESENTATIVE) HAS REVIEWED SEQUENCE OF WORK, METHOD OF SHORING, AND EXTENT & METHOD OF DEMOLITION.

CONCRETE MASONRY UNITS

Specification ASTM C90-93 Unit weight Grade N Type I 115 pcf min. Compressive Strength at 28 Days Individual Units 1900 psi (net area) Mortar Type S (field test) [1800 psi] 2000 psi Design Strength (Unit Strength Method) per IBC 2105.2.2) Fm = 1500 psi

BRACING OF WALLS

All walls U.N.O. Extend to struct. above Non-load Bearing walls Show 'NLB' on drawings

ANCHORS

Adhesive Anchors Install in fully grouted cells Embedded Anchors* Install in fully grouted cells Expansion Anchors Install in fully grouted cells Screw Anchors Install in fully grouted cells

GROUT POURS

5'-0" High max Mechanically vibrate twice per ACI 530.1 article 3.5

CONDUITS

Embedded in CMU 1 1/2" clear from all parallel reinforcing

CMU WALLS NOT DIMENSIONED ON PLANS

STRUCTURAL STEEL

DESIGN GUIDE

AISC Manual of Steel Construction Load & Resistance Factor Design Third Edition or ASD Ninth Edition

MATERIALS

Wide Flange Shapes ASTM A992 fy=50KSI Bars, Plates, Shapes ASTM A36 fy=36KSI Tubes ASTM A500 GR B fy=46KSI Pipe ASTM A53 Type E fy=35KSI Bolts A325, load indicating bolts ANS D1.1 Anchor bolts A36 or A307 w/ washer Per Steel Joist Institute specs Steel Joist A36 w/washer ea. connection A307 (snug tight)

FABRICATION

Bolted Shear Connections N-Bearing 3/4" dia bolts U.N.O. Place hardened washers between nuts & slotted holes. All Welders Mfr. inspection cert. Open web steel joists & girders Steel Joist Institute Standard Specification & Current NER Report.

WELDS

E70XX UNO (T=40 not allowed)

WELDERS

AWS D1.1 prequalified for all sizes & positions required.

PLACEMENT

Tube Steel Place seam to non-visible side Field Bolted or Welded Connections Complete Connection before releasing Crane cable

WELDS

E70XX UNO (T=40 not allowed)

WELDERS

AWS D1.1 prequalified for all sizes & positions required.

PLACEMENT

Tube Steel Place seam to non-visible side Field Bolted or Welded Connections Complete Connection before releasing Crane cable

REPETITIVE FASTENERS

Place not more than 6" from the end of member

POWDER DRIVEN FASTENERS

In Concrete- 4" min. o.c. 3" edge distance In Steel- 1 1/2" min. o.c. 1 1/2" edge distance

CONCRETE SCREWS

3" min. o.c. 2 1/2" min. edge distance

GRIDS

Unless noted otherwise, Aligned beams, columns, walls & foundations shall have a common centerline (Grid)

CHAMFER

3/8" on all exposed conc. edges

REQUEST FOR SPECIFIC APPROVAL

Flag on shop drawing 'Architect Approve'

SHOP DRAWINGS

Construction shall not occur until approved shop drawings are on site.

SPECIAL INSPECTION

Table with 4 columns: Material, Inspection Type, Visual Inspection (1), Non-Continuous, Continuous, Test. Rows include Concrete, Welding, High Strength Bolting, CMU Non-continuous special inspection, Pier Foundations, Fireproofing Struct. Steel.

(1) Visual Inspection: Non-Continuous = Percent of product inspected after installation. Continuous = Percent of product inspected during installation.

(2) Weld Testing: Ultrasonic or radiographic

(3) Procedure Verification of First 5%

(4) Certification letter required

(5) Site mixed - conform to UBC Table 2109.3.2. Preblended - certification letter required

(6) 3 lab tests before construction 3 field tests per 5000 s.f. during construction

(7) Testing per 03300 surface finish

SUBMITTALS TO SPECIAL INSPECTOR

Certificate Welding Structural steel ANS D1.1 Prequalification Light gage steel ANS D1.3 Prequalification Reinforcing ANS D1.4 Prequalification All Welders NABO Certified

BOLTING

High strength Mfr. inspection cert. Mfr. letter of cert.

ADHESIVE ANCHORS

Epoxy adhesive Mfr. installation instructions

CONCRETE

Trip tickets All materials, water/cement ratio in each truck

SLAB ON GRADE

In place W/C Ratio (Submit to Struct. Engineer)

INSPECTOR TO REVIEW SUBMITTALS BEFORE INSTALLATION BEGINS.

Inspector must inspect job from approved & stamped design & shop drawings, including all clarifications, both written & in drawing form.

DRAWING NOTES

Penetration of beams, joists or columns Not allowed unless approved by the architect or noted on the structural drawings

Mechanical equipment and housekeeping pads For location and sizes see Division #15 & #16

Openings Not all openings are shown on structural plans, coord. all drawings

Repetitive Fasteners Place not more than 6" from the end of member

Powder Driven Fasteners- 0.177" x 1 1/4" lg. U.N.O. In Concrete- 4" min. o.c. 3" edge distance In Steel- 1 1/2" min. o.c. 1 1/2" edge distance

Concrete Screws- 1/4" x 1 1/4" lg. U.N.O. 3" min. o.c. 2 1/2" min. edge distance

Grids Unless noted otherwise, Aligned beams, columns, walls & foundations shall have a common centerline (Grid)

Chamfer 3/8" on all exposed conc. edges

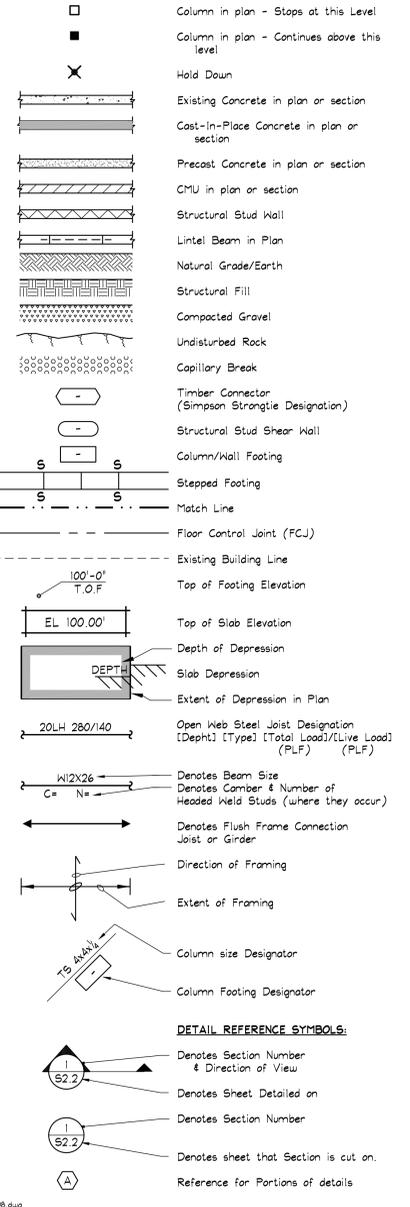
Request for specific approval Flag on shop drawing 'Architect Approve'

Shop drawings Construction shall not occur until approved shop drawings are on site.

ABBREVIATIONS

Table with 3 columns: Abbreviation, Description, Symbol. Rows include AB (Anchor Bolt), ADD (Additional), ADH (Adhesive), AEES (Structurally Exposed), AFF (Above Finished Floor), ALT (Alternate), ARCH (Architect), ATR (All Threaded Rebar), ANS (American Welding Society), BCX (Bottom Chord Extension), BTM (Between), BLDG (Building), BM (Beam), BOT (Bottom), BOD (Bottom of Deck), BP (Butt Pinch Bearing), C (Comber), C-GROUT (Coarse Grout), CFP (Polyfibre (See Specs)), CIP (Cast In Place), CJ (Construction Joint), CJP (Complete Joint Penetration), CLR (Clear Line), CMU (Concrete Masonry Unit), CONC (Concrete), CONN (Connection), CONT (Continuous), CTR (Centered), DBA (Deformed Bar Anchor), DET (Detail), DIA (Diameter), DIM (Dimension), DO (Deep), DWG (Drawing, Drawings), DWL (Dowel, Dowels), EA (Each Face), EW (Each Way), EL (Elevation), ELEV (Elevator), EXP (Expansion), EXIST (Existing), EXT (Exterior), FAB (Fabricate), FB (Flat Bar), FCJ (Floor Control Joint), FDN (Foundation), F-GROUT (Fine Grout), FIN (Finish), FLG (Flange), FLI (Ferrule Loop Insert), FLR (Floor), FOC (Face of Concrete), FOM (Face of Masonry), FOS (Face of Stud), FRC (Flanged Rebar Coupler), FS (Far Side), FT (Feet), FTG (Footing), GA (Gage), GALV (Galvanized), GLB (Glue Laminated Beam), GR (Grade), GNB (Gypsum Wallboard), HCS (Hollow Core Slab), HORIZ (Horizontal), HSB (High Strength Bolt), HT (Height), ICMU (Insulated CMU), IFM (Inside Face), IJ (Isolation Joint), INFO (Information), INT (Interior), JST (Joist), JT, JTS (Joint, Joints), LIB (Load Indicator Bolt), LGT (Longitudinal), LLV (Long Leg Vertical), LLV (Long Leg Vertical), LNDG (Landing), LSH (Long Slotted Hole), LSL (Laminated Stud Lumber), LVL (Laminated Veneer Lumber), MAT (Material), MAX (Maximum), MB (Machine Bolt (A-307)), MCR (Modified Chloroprene Rubber), MEZZ (Mezzanine), MFR (Manufacturer), MLB (Microlam Beam), MIN (Minimum), MO (Masonry Opening), N-GROUT (Non Shrink Grout), NIC (Not In Contract), NLB (Non Load Bearing), NOM (Nominal), NS (Near Side), NTS (Not To Scale), OC (On Center), OF (Outside Face), OH (Overlaid Hole), OPG (Opening), OPP (Opposite), PC (Precast Concrete), PDC (Power Driven Fastener), PFW (Partial Height Wall), PLYWD (Plywood), PSF (Prestressed), PTFE (Perfluoroethylene), PVC (Poly Vinyl Chloride), R (Radius), RC (Reinforced Concrete), REIN (Reinforcing), REQ'D (Required), RETG (Retaining), RFR (Random Fiber Reinforced), RTU (Elastomeric ROOF TOP UNIT), SEC (Security), SCH (Schedule), SECT (Section), SHEATH (Sheathing), SIM (Similar), SPA (Spacing), SQ # (Square), STD (Standard), STGD (Staggered), STL (Steel), STRUCT (Structural), SYM (Symmetrical), SLO (Slab-On-Grade), SSS (Stainless Steel), SSH (Short Slotted Hole), T & B (Top and Bottom), TCX (Top Chord Extension), THD (Thread, Threaded), TOC (Top of Concrete), TOP (Top of Footing), TOP (Top of Parapet), TOS (Top of Steel), TRG (Toping), TRA (Threaded Rod in Adhesive anchor), TRANS (Transverse), TYP (Typical), UBC (Uniform Building Code), UNL (Unless Noted Otherwise), VERT, V (Vertical), VMS (Vertical Movement System), W/ (With), WP (Weld Point), WS (Weld Stud), WNF (Welded Wire Fabric), WCJ (Wall Control Joint), X-STR (Extra Strong), XX-STR (Double Extra Strong)

LEGEND



DEFERRED SUBMITTAL LIST

STRUCTURAL

Table with 2 columns: Item Number, Description. Rows include 01400 SPECIAL INSPECTION, 03200 CONCRETE & MASONRY REINFORCING, 03300 CONCRETE MIX DESIGN, 03450 PRECAST CONCRETE, 03600 GROUT, 04065 MASONRY MORTAR AND GROUT, 04820 CONCRETE MASONRY UNITS, 04813 MASONRY VENEER TIES, 05120 STRUCTURAL STEEL, 05210 STEEL JOISTS, 05311 STEEL COMPOSITE DECK, 05312 STEEL ROOF DECK, 05500 METAL FABRICATIONS, 05510 METAL STAIRS, 05520 METAL HANDRAILS AND RAILINGS

FOUNDATIONS

Bearing Foundations Allowable net bearing pressure: Rock 40 ksf Soil 1.5 ksf Maximum slope between adjacent footings: 1 Horizontal to 1 Vertical in rock Basis of design: Geotechnical Report prepared by: Geo Engineers Dated September 25, 2002

PIER FOUNDATIONS

Minimum pier diameter: 3 feet Minimum penetration into weathered rock: to sound hard basalt Allowable pier capacity: 40 ksf in end bearing

LIGHT GAGE STEEL

Design & Fabrication AISI Specification for Cold Rolled Steel

STRUCTURAL METAL STUDS

Yield Strength fy=33ksi galvanized (Structural walls are those shown on structural drawings and include exterior walls, loadbearing walls, shear walls, fascias, soffits, and interior non-bearing walls as shown)

SCREWS

#12-24 TEK U.N.O. #10 Where designated to be #10-24.

ROOF DECK

ASTM A653 galvanized

COMPOSITE DECK

ASTM A653 galvanized

WELDERS

AWS D1.3, prequalified for all sizes & positions required.

WELDS

E60 xx (SMAW)

TYPICAL EXTERIOR WALL STUDS

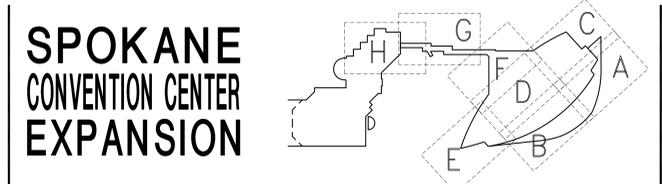
800S162-43 @ 16" O.C. max vert. span = 18'-0" u.n.o.

TYPICAL INTERIOR WALL STUDS

600S162-33 @ 16" O.C. max vert. span = 26'-0" for over 26'-0" use exterior stud size and spacing. Span height is based on full sheathing each face of stud.

INTÉGRUS ARCHITECTURE 10 SOUTH CEDAR STREET SPOKANE WASHINGTON 99204 509.838.8681 FAX 838.2194 LMN ARCHITECTS 801 SECOND AVENUE SUITE 501 SEATTLE WASHINGTON 98104 206.682.3460 FAX 343.9388

CONSTRUCTION SET (REVISED-BID PACKAGE 6) SPOKANE CONVENTION CENTER EXPANSION



REVISIONS table with columns: NO., DATE, BY, DESCRIPTION. Rows include 10-20-04 BP-4 ADDENDUM #1, 10-28-04 BP-4 ADDENDUM #2, 11-04-04 BP-4 ADDENDUM #3, 01-21-05 BP-4 CLARIFICATION DWG, 3-07-05 BP-5, 4-15-05 CCD 025

DESIGNED: MA, DRAWN: JDC, CHECKED: JDC, DATE: 4-15-05, CADD FILE: 150S_0-01, JOB NUMBER: 20150.00, TITLE: STRUCTURAL GENERAL NOTES, S0.1