

**GENERAL NOTES**

**DESIGN DATA:**  
 a.) Applicable Code: 2007 Kentucky Building Code Revised 2011  
 b.) Design Loads ASCE 7-05

**1. Roof Loads:**

Roofing	1 psf
Insulation	1 psf
Roof Deck	2 psf
Joists	2 psf
Girders	3 psf
Columns	1 psf
Sprinklers	3 psf
Mechanical/Electrical	5 psf
Live Loads (0-200 square feet)	20 psf
Live Loads (200-600 square feet)	1.2-0.001A1 psf
Live Loads (> 600 square feet)	12 psf

**2. Elevated Floor Loads:**

Slab/Deck	43 psf
Joists	2 psf
Girders	3 psf
Columns	1 psf
Partitions (Offices Only)	0.12/48g
Mechanical/Electrical	5 psf
Sprinklers	3 psf
Gelling	1 psf
Live Load Offices	60 psf
Live Load Other	125 psf

**3. Wind Loads:**

Basic Wind Speed	90 mph
Wind Importance Factor (iw) IBC	1.00
Wind Importance Factor (iw) FMG	1.15
Building Occupancy Category	II
Wind Exposure Class	C
Internal Pressure Coefficient (Cp1)	+0.18
Field	-0.25 psf
Corner	-0.31 psf
Roof	-0.25 psf
Edge	-0.42 psf
Corner	-0.63 psf

**4. Seismic:**

Seismic Importance Factor (Ie)	1.0
Seismic Use Group	2
Mapped Spectral Response Accelerations S <sub>s</sub>	0.320g
S <sub>1</sub>	0.12/48g
Spectral Response Coefficients	
S <sub>rs</sub>	0.3294g
S <sub>rs1</sub>	0.1905g
Site Class	D
Seismic Design Category	C
Basic Seismic-Force-Resisting System	OSCBF & OSMF
Design Base Shear	0.110 x Dead Load
Seismic Response Coefficient (Cs)	0.110
Response Modification Factor (R)	5
Analysis Procedure	Equivalent Lateral Force

**5. Roof Snow:**

Ground Snow Load (Pg)	15 psf
Flat Roof Snow Load (P <sub>f</sub> )	15 psf
Snow Exposure Factor (C <sub>e</sub> )	0.9
Snow Load Importance Factor (I <sub>s</sub> )	1.0
Thermal Factor (C <sub>t</sub> )	1.0

**6. Rain Loads:**

Water Depth	7 in
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**Note:**  
 The water depth is defined as the depth of water above the roof surface at the location of the primary roof drain. Increased water depth resulting from member deflection has been considered in the structural design.

The responsibility for establishing the height and capacity of the overflow drains or edge of roof water are the responsibility of the architect and/or mechanical engineer.

**SOIL PROPERTIES:**

a.) Geotechnical Data:  
 Soil Properties were established in "Report of Geotechnical Services" "Proposed Uflex Project" "Elizabethtown, Kentucky"

**PREPARED BY:**  
 Consulting Services Incorporated of Kentucky  
 250 Gold Rush Road - Suite 6  
 Lexington, Kentucky 40503

**CS Project No. 1565**  
**DATED:** June 14, 2011

**b.) Bearing Capacity:**

Shallow Foundations on RAP (Deep Fill) (CL's 1-15)	5,000 psf
Shallow Foundations on Soil (Intermediate Fill) (CL's 16-22)	3,500 psf
Shallow Foundations on Soil (Cut) (CL's 28-37)	3,500 psf

**c.) Modulus of Subgrade Reaction (K)** 100 psi/in

**CONCRETE:**

a.) Concrete at interior slabs on grade shall have a minimum compressive strength of 3,500 psi at 28 days unless noted. All other concrete shall have a minimum compressive strength of 3,500 psi at 28 days unless noted.

b.) Design and construction shall conform to the "Building Code Requirements for Structural Concrete - ACI 318-05 - Strength Design Method" and details shall conform to the "Manual of Standard Practice for Detailing Reinforced Concrete Structures" both the latest editions by the American Concrete Institute unless otherwise shown or specified.

c.) Concrete subject to freezing and thawing shall have maximum water-cement (W/C) ratio of 0.50

**REINFORCING STEEL:**

a.) All reinforcing steel to be ASTM A615 Grade 60.
b.) All reinforcing steel shall conform with CRSI Standards.
c.) Reinforcing steel shall have development lengths and splice lengths as shown in the following tables unless otherwise shown on the drawings.

Bar Size	3,000 psi Concrete		4,000 psi Concrete	
	Development Length (inches)	Splice Length (inches)	Development Length (inches)	Splice Length (inches)
3	12	17	12	16
4	12	17	12	16
5	13	18	13	17
6	14	19	14	18
7	15	20	15	19
8	16	21	16	20
9	17	22	17	21
10	18	23	18	22
11	19	24	19	23
12	20	25	20	24

**\* Note:** These lengths apply only to reinforcing steel with a normal weight concrete & a cover of 1 1/2" or greater.

**\* Note:** When the reinforcement is located within 12" of the bottom of a member, the development & splice lengths can be divided by 1.30.

d.) All bars in concrete walls shall return a full splice lengths as defined in the table above at corners and junctures of walls.

e.) All bars in masonry walls shall return 48 bar diameters at corners and junctures of walls.

f.) Reinforcing steel in masonry walls shall lap 48 bar diameters at all splices, unless otherwise shown on the drawings.

g.) Unless otherwise shown the clear cover for reinforcing bars shall be:  
 1) Walls exposed to ground or weather: 2"  
 2) Walls and footings placed on the ground without forms: 3"  
 3) Beams, columns, and piers: 2"

h.) Results for all concrete compressive tests shall be available on the jobsite for review by the inspector.

**MASONRY:**

a.) Concrete masonry units shall be hollow load bearing units ASTM C-90 Grade N-1 with a net strength of 2,000 psi and f'm of 1,500 psi.

b.) Mortar shall comply with ASTM C-270 Type M or S.

c.) Truss type masonry joint reinforcement shall be installed in all masonry walls at a minimum spacing of 16 inches center to center. Use prefabricated L's and T's at corners and intersections. Lap reinforcement a minimum of 12 inches.

d.) All concrete fill placed in cells shall be 2,500 psi pea gravel concrete. Maximum height of placement is 4'-0". Fill must be consolidated by mechanical vibration.

e.) Provide minimum reinforcing (per ACI 530)  
 #4 Vertical at - each side of opening wall intersections (continuous) end of wall (continuous)  
 #4 Horizontal at - bottom and top of opening joint end deck bearing (continuous) bottom of wall (continuous)

**STRUCTURAL STEEL:**

a.) All wide flange structural steel to be ASTM A992, grade 50. All other structural steel, plates and bars to be ASTM A36, unless noted otherwise, Bolts A325.

b.) Design and construction shall conform to the "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings" of the AISC unless otherwise shown or specified.

c.) Connections - Unless otherwise detailed shall be standard connections using 3/4" diameter fasteners made in accordance with the latest edition of Steel Construction Manual of the American Institute of Steel Construction. Unless otherwise detailed all bolted connections shall contain pre-tensioned bolts.

d.) Bolted connections shall be assembled and inspected in accordance with RCSC-2004 (Specification for Structural Joints using ASTM A325 or ASTM A490 Bolts).

e.) All bolted connections are to be pre-tensioned unless noted otherwise.

f.) All welded connections shall satisfy the requirements of AWS D1.1/D1.1M and shall be made with low hydrogen E70X electrodes.

g.) All structural steel tubing to be ASTM A500, grade B.

h.) Light Gage Cold-Formed Channel Girders: Fy 57.0 ksi, Fu 67.7 ksi.

**JOIST AND GIRDERS:**

a.) The design, fabrication, and erection of joists and joist girders shall conform to the Standard Specifications of the Steel Joist Institute.

b.) All joist seats to have an allowable rollover capacity of 1,650 lbs.

c.) Additional loads shown on joists and joist girders in addition to dead and live loads, joist manufacturer to size joists and joist girders to carry additional loads.

d.) Joist seats to be welded to supports as specified below (unless otherwise noted on drawings):  
 "K" series joists: (2) 1/8" fillet welds 2" long.  
 "L" series joists: (2) 1/4" fillet welds 2" long.

**ROOF DECK:**

a.) Roof deck shall meet the requirements of ASTM A1008 Grade 80 (painted), or ASTM A431 Grade "C" (painted), or ASTM A953 Grade 80 (galvanized).

**GENERAL:**

a.) All high strength bolted connections are to contain pre-tensioned bolts unless noted. Connections of joists to joist girders and joist girders to columns do not require pre-tensioned bolts and need only be snug tight.

b.) The use of Alternate Design Fasteners is required. Use the type that shears the spined end to indicate adequate tightness. Each fastener shall be tightened until the spined end shears off. Fasteners with spined ends intact are not acceptable.

c.) All bolts must be manufactured in North America.

d.) All bolts must be installed. No empty bolt holes are permitted unless directed by the design engineer.

e.) All high strength bolts (A325 and A490) require hardened washers under the turned element.

f.) Bolt tightening verification is required through the use of a Skidmore direct tension-indicating device. This verification must be accomplished prior to tensing the bolts in the building. This verification must be performed by the same persons as those who will tension the bolts in the structure.

g.) A bazzooka level furnished by the erector will be required at the jobsite to be utilized by the erector in the verification that columns are plumb. The level is to be made available to the special steel inspector.

h.) The enlarging of holes or modification of members is permitted only with the documented direction of the design engineer.

i.) Burning to create new holes or enlarge existing holes is not permitted.

j.) All X-bracing must be straight.

k.) Temporary bracing of the building is required. Temporary bracing to remain in place until all permanent bracing and roof deck is installed and all connections are completed including roof deck fastening. The bracing sizes and locations are the responsibility of the erector.

l.) Fastening of steel roof deck shall provide resistance to design wind loads through diaphragm action and shall conform with Steel Roof Deck Institute Design Manual including side lap fastening.

m.) The structure has been designed to meet the deflection criteria specified in "Serviceability Design Considerations for Low-Rise Buildings" published by American Institute of Steel Construction, Inc.

n.) All structural welded joints shall conform to the provisions of AWS D1.1 Structural Welding Code by the American Welding Society.

o.) Check mechanical and electrical drawings for exact location and size of openings for equipment.

**SPECIAL INSPECTIONS:**

a.) Engaging the Special Inspectors  
 The owner or architect must engage special inspectors to perform special inspections must be submitted to the structural engineer for consideration.

b.) Steel Fabricator  
 The steel fabricator shall maintain written procedural and quality control manuals. The steel fabricator must be engaged with an approved special inspection agency that is performing periodic audits of the steel fabricator's operations. Upon completion of the fabrication, the fabricator must submit a "certificate of compliance" to the building official stating that the work was performed in accordance with approved construction documents.

c.) Special Steel Inspector  
 The special steel inspector must be a AWS D1.1 Certified Welding Inspector (CWI) and a ASNT TC1A Level Two Certified Technician.

d.) Submittal of Field Welding Information  
 The steel erector must submit the welding materials, welding procedures, and welder qualifications to the special inspector for his approval. This approval must be made prior to any steel erection.

e.) Periodic Inspection of Field Welds  
 The special steel inspector must provide periodic inspection of:  
 • 10% of all field welds.  
 • First 10% of all metal deck welds.  
 • 10% of all field welds of cold formed steel members.  
 • 10% of all field welds of stain and handrails.

f.) Should any welds, other than deck welds, be found to be inadequate, then 100% of all similar welds must be inspected at the expense of the subcontractor. Inadequate deck welds shall be corrected and reported to the structural engineer prior to covering the welds to determine additional testing requirements. Periodic inspections shall be visual inspections unless noted on drawings or specifications.

g.) Continuous Inspection of Field Welds  
 The special inspector must be present and provide continuous inspection of:  
 • All fillet welds exceeding 5/16" size  
 • All multi-pass fillet welds  
 • All complete and partial penetration welds

h.) High Strength Bolts (A325 or A490)  
 The erector shall provide a "tension measuring device" (skidmore) and schedule the bolting technique verification with the special inspector. The special inspector shall observe the pre-installation testing and calibration procedures. The erector shall use the turn-of-the-nut method with "matchmarking" techniques, direct tension indicator washers, or alternate design fasteners to tension the bolts. During this pre-installation testing, the steel inspector shall obtain calibrated torque wrench values for later inspection.

i.) The special inspector must utilize a calibrated torque wrench to inspect the following:  
 • All multi-pass fillet welds  
 • 10% of all bolted connections (all bolts).

j.) Concrete Inspector Requirements  
 The special concrete inspector must be an ACI Level 1 technician.

k.) Concrete Foundations  
 The special concrete inspector shall inspect all foundations. This inspection shall include:  
 • confirmation of adequate soil condition  
 • verification of the use of the design mix  
 • sample fresh concrete as indicated in the specifications

l.) Slabs on Grade  
 The special concrete inspector shall inspect all slabs on grade. This inspection shall include:  
 • verification of adequate soil condition by observation of proof rolling  
 • verification of the use of the design mix  
 • sample fresh concrete as indicated in the specifications

m.) Elevated Slabs on Non-Composite Deck  
 The special concrete inspector shall inspect all elevated slabs on non-composite deck. This inspection shall include:  
 • sample fresh concrete as indicated in the specifications  
 • verification of the use of the design mix  
 • inspection of curing techniques & temperature control techniques

n.) Contractor's Statement of Responsibility  
 The contractors responsible for any work requiring special inspection shall submit a written statement to the prime design professional for submittal to the code officials:  
 • acknowledging the awareness of special requirements  
 • acknowledging that control will be exercised to obtain conformance with construction documents  
 • defining procedures for exercising control  
 • identifying the persons exercising control and stating their qualifications

o.) Structural Observations  
 A professional engineer employed by Freeland Harris Consulting Engineers shall visit the project during the construction to confirm general compliance with the design intent.

**STRUCTURAL DRAWING LIST**

NO.	DESCRIPTION	DATE	BY	CHKD.
1	STRUCTURAL GENERAL NOTES	07-20-11	EFH	EFH
2	OVERALL SHELL FOUNDATION PLAN	07-20-11	EFH	EFH
3	OVERALL SHELL FOUNDATION PLAN	07-20-11	EFH	EFH
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**CRANE RAIL ERECTION TOLERANCE**

THE RUNWAY RAILS SHALL BE STRAIGHT, PARALLEL, LEVEL AND AT THE SAME ELEVATION. THE DISTANCE, CENTER TO CENTER, AND THE ELEVATION SHALL BE WITHIN THE TOLERANCES NOTED ABOVE. RAIL SEPARATION AT JOINT SHALL NOT EXCEED 1/16 INCH.

ITEM	FIGURE	OVERALL TOLERANCE	MAXIMUM RATE OF CHANGE
CRANE SPAN (L)		L ≤ 50' A=3/16" L > 50' ≤ 100' A=1/4" L > 100' A=3/8"	1/4" IN 20'
STRAIGHTNESS (B)		B=3/8"	1/4" IN 20'
ELEVATION (C)		C=3/8"	1/4" IN 20'
RAIL-TO-RAIL ELEVATION (D)		L ≤ 50' D=±3/16" L > 50' ≤ 100' D=±1/4" L > 100' D=±3/8"	1/4" IN 20'

**FOOTING SCHEDULE**

MARK	SIZE	REINFORCING	REMARKS
(4.0)	4'-0" x 4'-0" x 16"	(5) #5 BARS EACH WAY	56 K
(5.0)	5'-6" x 5'-6" x 16"	(6) #6 BARS EACH WAY	105 K
(6.0)	6'-0" x 6'-0" x 16"	(7) #6 BARS EACH WAY	145 K
(7.0)	8'-0" x 8'-0" x 18"	(9) #6 BARS EACH WAY	200 K
(8.0)</			