STRUCTURAL QUALITY CONTROL

ITEM	SPECIFICATION SECTION	TESTING LAB		COMMENTS
		PAID BY	NAME	
EARTHWORK	02200	G.C.	GRUBBS, HOSKYN, BARTON, AND WYATT	
RAMMED AGGREGATE (GEOPIER) PIERS	02375	G.C.	GRUBBS, HOSKYN, BARTON, AND WYATT	
CAST IN PLACE CONCRETE	03300	G.C.		
PLANT PRECAST STRUCTURAL CONCRETE	03410	G.C.		
STRUCTURAL STEEL	05120	G.C.		
STEEL DECKING ROOF	05310	G.C.		
ROUGH CARPENTRY		G.C.		

NOTE: THE GENERAL CONTRACTOR IS TO SUBMIT THE NAMES, QUALIFICATIONS, AND OTHER INFORMATION REGARDING INSPECTION AND TESTING LABS AS PER JOB SPECIFICATION SECTION (QUALITY CONTROL) TO ARCHITECT/ENGINEER FOR APPROVAL BEFORE ANY CONSTRUCTION RELATED ACTIVITIES ARE STARTED.

ABBREVIATIONS

(NOTE: NOT ALL ABBREVIATIONS USED)

ADJ	ADJACENT	EXP.	EXPANSION	O.C.	ON CENTER
A.F.F.	ABOVE FINISHED FLOOR	F.D.	FOUNDATION DRAIN	'	PLATE
APPROX.	APPROXIMATELY	FDN	FOUNDATION	PSI	POUNDS PER SQUARE INCH
ARCH.	ARCHITECTURAL	GA.	GAGE	REINF.	REINFORCEMENT
BLDG.	BUILDING	GALV.	GALVANIZED	REQ'D.	REQUIRED
BM.	BEAM	HCP	HIGH CHAIRS WITH PLATES	SECT.	SECTION
BOT.	BOTTOM	HORIZ.	HORIZONTAL	SHT.	SHEET
C	CHANNEL	JT.	JOINT	SIM.	SIMILAR
~	CENTER LINE	K	KIPS	SPA.	SPACING
CLR.	CLEAR	KCJ	KEYED CONTROL JOINT	STD.	STANDARD
COL.	COLUMN	KSF	KIPS PER SQUARE FOOT	T.F.	TOP OF FOOTING
CONC.	CONCRETE	L_d	TENSION DEVELOPMENT LENGTH OF BAR	T.O.S.	TOP OF STEEL
CONN.	CONNECTION			HSS	HOLLOW STRUCTURAL SHAPE
CONT.	CONTINUOUS	LLH	LONG LEG HORIZONTAL	TYP.	TYPICAL
DBA	DEFORMED BAR ANCHOR	LLV	LONG LEG VERTICAL	U.N.	UNLESS NOTED
DIM.	DIMENSION	LT.	LIGHT	VERT.	VERTICAL
EA.	EACH	MATL.	MATERIAL	W/	WITH
EL.	ELEVATION	MAX.	MAXIMUM	WT.	WEIGHT
E.O.S.	EDGE OF SLAB	MIN.	MINIMUM		
E.W.	EACH WAY	N.T.S.	NOT TO SCALE		

SYMBOLS

L	ANGLE	I	DIAMETER	<	LESS THAN	X/SY.Y	SECTION "X" ON SHEET "SY.Y"
@	AT	#	NUMBER	>	GREATER THAN		

DESIGN CRITERIA & PARAMETERS

BUILDING CODE:.....2000 INTERNATIONAL BUILDING CODE
GRAVITY LOADS:.....(REFERENCE: 2000 INTERNATIONAL BUILDING CODE)
LIVE LOADS:
FLOORS: TYPICAL.....80 PSF (REDUCIBLE)
BALCONY.....100 PSF
STAIRS.....100 PSF
MECHANICAL.....150 PSF
SIDEWALK.....250 PSF <1>
ROOF:
MINIMUM (NOT REDUCED FOR TRIBUTARY AREA).....20 PSF
SNOW LOAD (ASCE 7–98):
GROUND SNOW LOAD.....Pg = 10 PSF
DEAD LOADS:
FLOORS:
TYPICAL FLOOR U.N.O. (INCLUDING 20 PSF FOR PARTITIONS)....95 PSF
ROOF: WOOD DECK ..... 30 PSF
LATERAL LOADS:
WIND.....(REFERENCE: ASCE 7–98)
BASIC WIND SPEED.....90 MPH–EXPOSURE C
SEISMIC:.....(REFERENCE: 2000 INTERNATIONAL BUILDING CODE)
M.C.E. GROUND MOTION OF 0.2 SEC SPECTRAL ACCELERATION Ss=0.463
M.C.E. GROUND MOTION OF 1.0 SEC SPECTRAL ACCELERATION S1=0.176
SEISMIC HAZARD EXPOSURE GROUP.....GROUP I
SEISMIC DESIGN CATEGORY.....C
BASIC STRUCTURAL SYSTEM.....BUILDING FRAME SYSTEM
SEISMIC SITE SOIL CLASS.....C
SEISMIC RESISTING SYSTEM.....REINFORCED CONC. SHEAR WALLS
RESPONSE MODIFICATION FACTOR.....R = 4.5
DEFLECTION AMPLIFICATION FACTOR.....Cd = 2.5
ANALYSIS PROCEDURE.....MODAL RESPONSE SPECTRA ANALYSIS
BUILDING IS DESIGNED IN COMPLIANCE WITH THE SEISMIC CONSIDERATIONS FOR ZONE ONE (1) IN ACT 1100, 1991 <1>

STRUCTURAL DESIGN APPROACH:

LATERAL STABILITY FOR THE BUILDING IS PROVIDED BY THE FLOOR STRUCTURE ACTING AS DIAPHRAGMS SPANNING BETWEEN REINFORCED CONCRETE SHEAR WALLS.

EACH ROOF PRECAST COLUMN PROVIDE GRAVITY AND LATERAL SUPPORT TO BUILDING ROOF STRUCTURE

STAIR ROOF DECK ACTS AS A DIAPHRAGM SPANNING BETWEEN MOMENT FRAMES INDEPENDENT OF BUILDING STRUCTURE.

FOUNDATIONS CONSIST OF TYP. COMPOSITE SPREAD FOOTINGS EXCEPT BASEMENT FOOTINGS ON REGULAR SPREAD FOOTINGS.

A. STABILITY DURING CONSTRUCTION, SHORING, AND TEMPORARY STRUCTURES:

1. PERMANENT STABILITY OF THE BUILDING AND COMPONENTS IS NOT PROVIDED UNTIL ALL THE STRUCTURAL ELEMENTS ARE INSTALLED AS SHOWN ON THE CONTRACT DRAWINGS; THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING STABILITY TO ALL NON–SELF SUPPORTING ELEMENTS AND SAFETY TO ALL WORKERS, ANIMALS AND PROPERTY DURING CONSTRUCTION AND UNTIL ALL PERMANENT BRACING ELEMENTS ARE INSTALLED.
2. WHERE SHORING AND/OR TEMPORARY STRUCTURES ARE REQUIRED IN ORDER TO SATISFY THE CONTRACT REQUIREMENTS; THE CONTRACTOR IS TO DESIGN & BUILD THE TEMPORARY STRUCTURES WITHOUT EXTRA COST TO THE CONTRACT. THE DESIGN SHALL BE DONE BY A REGISTERED PROFESSIONAL ENGINEER.
3. BRACING USED TO STABILIZE THE BUILDING DURING THE ERECTION PROCESS SHALL BE DESIGNED BY THE CONTRACTOR SO TO NOT TWIST OR DISTORT MEMBERS. SPECIFICALLY, IF CABLES ARE USED THEY SHALL BE ATTACHED TO THE CENTER OF THE COLUMN AND NOT WRAPPED AROUND THE COLUMN IN A MANNER THAT WILL TWIST THE COLUMN.
4. THE TEMPORARY BRACING USED TO STABILIZE THE BUILDING DURING THE ERECTION PHASE SHALL BE DESIGNED BY THE CONTRACTOR FOR LOADS AS REQUIRED BY THE APPLICABLE CODES. THE DESIGN OF THE BRACING SHALL TAKE TAKE INTO ACCOUNT ADDITIONAL FORCES DUE TO THERMAL CONTRACTION AND EXPANSION OF THE BUILDING FRAME AND BRACES.
5. THE ANCHOR BOLTS FOR STEEL COLUMNS ARE NOT DESIGNED TO STABILIZE STRUCTURE BY PROVIDING FIXITY OF THE COLUMN BASE DURING ERECTION OF THE STEEL. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR STABILITY DURING THE ERECTION PHASE AND UNTIL ALL GRAVITY AND LATERAL LOAD RESISTING ELEMENTS ARE IN PLACE AND WELDING AND/OR BOLTING INSPECTION IS COMPLETE.
6. SEE NOTE D.5 BELOW <2>

B. MISCELLANEOUS:

1. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH DRAWINGS RELATING TO OTHER TRADES. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND COORDINATING DIMENSIONS, CLEARANCES, OPENINGS, PIPE SLEEVES, CURBS, ETC. WITH THE WORK OF OTHER TRADES.
2. PRINCIPAL OPENINGS THROUGH THE FRAMING ARE SHOWN ON THESE DRAWINGS. THE GENERAL CONTRACTOR SHALL EXAMINE THE DRAWINGS FOR REQUIRED OPENINGS AND SHALL PROVIDE FOR ALL OPENINGS WHETHER SHOWN ON THESE DRAWINGS OR NOT, AND SHALL VERIFY SIZE AND LOCATION OF ALL OPENINGS WITH ALL SUB–CONTRACTORS. NOMINAL PIPE SLEEVES THROUGH THE DECK WILL NOT REQUIRE FRAMING UNLESS THE OPENING EXCEEDS 10" IN DIAMETER.
3. LOADINGS FOR MECHANICAL ROOMS ARE BASED ON THE WEIGHTS OF ASSUMED EQUIPMENT AS INDICATED ON THE MECHANICAL DRAWINGS (INCLUDING THE WEIGHT OF CONCRETE PADS, WHERE INDICATED). ANY CHANGES IN TYPE, SIZE, OR NUMBER OF PIECES OF EQUIPMENT SHALL BE REPORTED TO THE ARCHITECT/ENGINEER FOR VERIFICATION OF THE ADEQUACY OF SUPPORTING MEMBERS PRIOR TO THE PLACEMENT OF SUCH EQUIPMENT.
4. THE CONTRACTOR SHALL INSURE THAT ALL CONSTRUCTION LOADS DO NOT EXCEED THE DESIGN LIVE LOADS INDICATED ON THE STRUCTURAL DRAWINGS AND THAT THESE LOADS ARE NOT PUT ON THE STRUCTURAL MEMBERS PRIOR TO THE TIME THAT THE CONCRETE REACHES THE FULL DESIGN STRENGTH AND ALL FRAMING MEMBERS AND THEIR CONNECTIONS ARE IN PLACE.
5. THE CONTRACTOR SHALL PROVIDE SIGNS AT MECHANICAL ROOMS POSTED IN A CONSPICUOUS LOCATION INDICATING THE FLOOR LIVE LOAD CAPACITY AS STATED IN THE DESIGN CRITERIA SECTION OF THIS DRAWING. THE SIGNS SHALL CONFORM TO THE REQUIREMENTS OF THE BUILDING CODE AND THE BUILDING INSPECTOR. SEE SPECIFICATIONS FOR GENERAL SIGN REQUIREMENTS.
6. DESIGN OF CRANE OPENINGS IN THE STRUCTURE IS THE RESPONSIBILITY OF THE CONTRACTOR. DESIGN DOCUMENTS SHALL BEAR THE SEAL OF A REGISTERED PE AND ALL CALCULATIONS SHALL BE SUBMITTED FOR REVIEW BY THE ARCHITECT/ENGINEER. REVIEW DOES NOT IMPLY ACCEPTANCE OF RESPONSIBILITY FOR DESIGN ADEQUACY.

C. FOOTINGS & EARTHWORK:

1. FOUNDATION DESIGN IS BASED ON SOIL INVESTIGATION AND REPORT BY GRUBBS HOSKYN BARTON & WYATT/ LITTLE ROCK, AR.
2. POSITIVE SURFACE DRAINAGE SHOULD BE ESTABLISHED AT THE START OF WORK, BE MAINTAINED DURING CONSTRUCTION TO PREVENT SURFACE WATER PONDING. FOUNDATION OR SUBGRADE SOILS BECOME SATURATED SHALL BE EXCAVATED TO SUITABLE SOILS.
3. CONTRACTOR TO PROVIDE FOR DE–WATERING OF EXCAVATIONS FROM EITHER SURFACE WATER, GROUND WATER OR SEEPAGE. SOME SURFACE AND GROUND WATER IS ANTICIPATED IN EXCAVATIONS, AND THEY SHALL BE DE–WATERED BEFORE POURING CONCRETE.
4. CONTRACTOR SHALL PROVIDE AND INSTALL ALL CRIBBING, SHEATHING AND SHORING REQUIRED TO SAFELY RETAIN THE EARTH BANKS. SHORING AND BRACING OF TRENCHES SHALL MEET THE REQUIREMENTS OF OSHA. <1>
5. NO BACKFILLING SHALL BE DONE AGAINST FOUNDATION WALLS AND GRADE BEAMS UNTIL CONCRETE HAS ATTAINED ITS 28 DAYS STRENGTH AND AT BASEMENT WALLS UNTIL FIRST FLOOR CONCRETE HAS ATTAINED ITS 7 DAYS STRENGTH
6. IN NO CASE SHALL BULLDOZERS OR OTHER HEAVY EQUIPMENT BE PERMITTED CLOSER THAN 10'–0" FROM ANY FOUNDATION WALL.
7. SEE SHEET S002 FOR PLAN SHOWING LOCATIONS OF UNDERCUTS AND ADDITIONAL NOTES

D. GEOPIERS:

1. FOOTING SHALL BE FOUND ON SOIL IMPROVED BY GEOPIER METHOD TO PROVIDE A NET ALLOWABLE PRESSURE OF 5ksf OR 7ksf AT LOCATIONS INDICATED ON FOUNDATION DRAWINGS.
2. GEOPIERS SHALL BE DESIGNED TO PROVIDE A MAXIMUM TOTAL SETTLEMENT OF 1.0 INCH UNDER THE LOADS INDICATED ON THE FOUNDATION DRAWINGS.
3. ADDITIONAL GEOPIERS SHALL BE PROVIDED WHERE SHOWN ON THE FOUNDATION DRAWINGS.
4. GEOPIERS MUST BE BACKFILLED WITH CLASS 7 AGGREGATE BASE OR CEMENT TREATED BASE.
5. AFTER GEOPIERS IN PLACE, ALL UNDERGROUND HOLES AND VOIDS MUST BE CASED (OR EQUAL) DURING DRILLING & PERMANENTLY TO PREVENT THE REDUCTION OF ADJACENT GEOPIERS BEARING & OTHER CAPACITIES. <2>

E. CONCRETE AND REINFORCING STEEL:

1. ALL REINFORCING SHALL BE A–615 GRADE 60 STEEL.
2. ALL REINFORCING SHALL BE SECURELY HELD IN PLACE WHILE PLACING CONCRETE. IF REQUIRED, ADDITIONAL BARS OR STIRRUPS SHALL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT FOR ALL BARS.
3. ALL REINFORCING BARS SHALL BE LAPPED 60 BAR DIAMETERS – 24" MIN. U.N.O. LAP GRADE BEAM AND WALL TOP REINFORCEMENT AT CENTER OF SPAN. LAP GRADE BEAM AND WALL BOTTOM REINFORCEMENT AT SUPPORT. TERMINATE CONTINUOUS BARS AT NON CONTINUOUS END WITH STANDARD HOOKS.
4. CONCRETE COVER FOR REINFORCING STEEL SHALL BE 1" FOR SLABS AND WALLS. ALL CONCRETE EXPOSED TO WEATHER OR EARTH SHALL HAVE CONCRETE COVER OF 2" FOR BARS LARGER THAN #5, 1–1/2" FOR #5 BARS OR SMALLER, AND 3" FOR ALL CONCRETE PLACED AGAINST EARTH, U.N.O. TOLERANCES SHALL BE AS PER ACI–318.
5. HORIZONTAL CONSTRUCTION JOINTS SHALL BE PERMITTED ONLY WHERE SHOWN ON THE STRUCTURAL DRAWINGS. HORIZONTAL OR NEAR HORIZONTAL JOINTS SHALL BE PREPARED BY ROUGHENING THE SURFACE IN AN APPROVED MANNER SO THAT THE AGGREGATE IS EXPOSED UNIFORMLY, LEAVING NO LAITANCE, LOOSENED PARTICLES OR DAMAGED CONCRETE.
6. PIPES OR CONDUITS PLACED IN FOUNDATION AND SLABS SHALL NOT BE SPACED CLOSER THAN 3 DIAMETERS ON CENTERS. PIPES AND CONDUITS PLACED IN SLAB SHALL NOT HAVE AN OUTSIDE DIAMETER LARGER THAN 1/3 OF SLAB THICKNESS. ALUMINUM CONDUITS SHALL NOT BE PLACED IN CONCRETE.
7. PROVIDE CORNER BARS IN ALL CONCRETE MEMBERS AND AT INTERSECTIONS. MATCH SIZE AND SPACING OF HORIZONTAL BARS IN THOSE CONCRETE MEMBERS.
8. REINFORCING BARS SHALL NOT BE WELDED, UNLESS SPECIFICALLY NOTED ON THE DRAWING AS BEING WELDED. WELDED REINF. SHALL CONFORM TO ASTM A706.
9. ALL LAPS IN WELDED WIRE FABRIC SHALL BE ONE MESH PLUS TWO INCHES AT SPLICES.
10. PROVIDE STANDARD BAR CHAIRS AND SPACERS AT MAXIMUM 3'–0" CENTERS OR CLOSER AS REQUIRED FOR ALL SLABS AND BEAMS ABOVE GRADE.
11. COARSE AGGREGATE FOR CONCRETE SHALL NOT CONTAIN LIGNITE, STEEL, OR OTHER MATERIALS THAT MAY BE DETRIMENTAL TO THE CONCRETE.
12. MAXIMUM TOLERANCE FOR SLAB EDGES IS 1/2" +/– EXCEPT WHERE TIGHTER TOLERANCE IS REQUIRED FOR ARCHITECTURAL REASONS.
13. CONCRETE POURED WHEN AIR TEMPERATURES EXCEEDING 90 DEGREES F ARE EXPECTED SHALL BE CURED BY MOIST CURING METHODS INCLUDING COVERING WITH PLASTIC OR BURLAP AND KEPT MOIST FOR 7 DAYS MINIMUM. CONCRETE POURED DURING OTHER CONDITIONS SHALL BE CURED USING ONE OF THE APPLICABLE METHODS NOTED IN THE SPECIFICATIONS.
14. ALL WELDED WIRE FABRIC WITH WIRE LARGER THAN W2.0 SHALL BE PROVIDED IN SHEETS, ROLLS ARE NOT ACCEPTABLE. WELDED WIRE FABRIC WITH W2.0 AND SMALLER BARS MAY BE PROVIDED IN ROLLS OR SHEETS.
15. CONCRETE STRENGTH AT 28 DAYS:

ITEM	MINIMUM STRENGTH	AIR ENTRAINING	WATER REDUCING ADMIX REQ'D
REINFORCED FOOTING	3.0 KSI	NONE	WRA
REINFORCED WALLS, GRADE BEAMS AND COLUMN	4.0 KSI	5% AIR	WRA
INTERIOR SLAB ON GRADE	3.0 KSI	NONE	WRA
TYPICAL FLOOR SLAB (U.N.O.) ON STEEL DECK	3.0 KSI	NONE	WRA
WALKWAY	3.0 KSI	5% AIR	WRA
PRECAST COLUMN, PLANK	5.0 KSI	5% AIR	WRA

WRA – INDICATES WATER REDUCING ADMIXTURE <1>

16. PROVIDE FLEXIBLE PIPE OR OTHER METHOD TO POUR CONCRETE INSIDE HOLLOW STEEL COLUMN TO PREVENT DROPPING CONCRETE MORE THAN 6'–0". <3>

STRUCTURAL GENERAL NOTES

F. METAL DECKING, ROOF AND FLOORS, ETC.:

1. STEEL DECK:
FLOOR DECK SHALL BE 2" & 3" GALVANIZED COMPOSITE STEEL DECK. SEE DRAWINGS FOR GAUGES. SEE SPECIFICATIONS FOR ANCHORAGE AND INSTALLATION.
2. CONTRACTOR SHALL PROVIDE SUPPORT FOR METAL DECK AROUND COLUMNS, SCREED PLATES AROUND THE OPENINGS, AND EDGE SLAB.
3. SUSPENDED CEILINGS, LIGHT FIXTURES, DUCTS, OR OTHER UTILITIES SHALL NOT BE SUPPORTED BY THE STEEL ROOF DECK.

G. MASONRY WALLS:

1. CONCRETE BLOCK SHALL CONFORM TO ASTM C–90, LIGHTWEIGHT TYPE I, MOISTURE CONTROLLED UNITS. ASSUMED DESIGN ULTIMATE COMPRESSIVE STRENGTH: f'm = 1,500 PSI.
2. MORTAR SHALL CONFORM TO ASTM C–270 TYPE S.
3. THE CONTRACTOR SHALL NOT PLACE LOADS ON BOND BEAMS OR MASONRY CELLS FILLED WITH GROUT UNTIL THE GROUT HAS CURED FOR A MINIMUM OF 3 DAYS.
4. FILL ALL BOND BEAMS AND MASONRY CELLS CONTAINING VERTICAL BARS (AS SHOWN ON CONTRACTOR'S SHOP DRAWINGS) WITH COARSE GROUT AS NOTED IN JOB SPECIFICATIONS. GROUT SLUMP SHALL BE IN THE RANGE OF 9" TO 11". GROUT SHALL BE CONSOLIDATED IN THE CELLS BY USE OF A MECHANICAL VIBRATOR. GROUT COMPRESSIVE MINIMUM STRENGTH AT 28 DAYS SHALL BE 2500 PSI.
5. CONTRACTOR SHALL PROTECT MASONRY STORED ON THE JOBSITE AND CONCRETE MASONRY WALLS UNDER CONSTRUCTION FROM RAIN AND OTHER FORMS OF MOISTURE.
6. PIPES, CONDUIT, AND OTHER ITEMS SHALL NOT BE PLACED IN MASONRY CELLS WITH VERTICAL OR HORIZONTAL REINFORCING.

H. STRUCTURAL STEEL:

1. THE DESIGN OF STRUCTURAL STEEL IS BASED ON THE AISC MANUAL OF STEEL CONSTRUCTION LOAD & RESISTANCE FACTOR DESIGN – 2ND EDITION.
2. ALL BEAMS AND GIRDERS SHALL CONFORM TO ASTM A992 OR A572 GRADE 50, Fy = 50 KSI. ALL PLATES SHALL CONFORM TO ASTM A–36 U.N.O., FY = 36 KSI, ALL MISCELLANEOUS STEEL SHALL BE ASTM A–36, FY = 36 KSI.
3. ALL COLUMNS SHALL CONFORM TO ASTM A992 OR A572 GRADE 50, FY = 50 KSI.
4. ALL TUBE MEMBERS SHALL CONFORM TO ASTM A–500 GRADE B, FY = 46 KSI.
5. ALL BOLTED CONNECTIONS FOR STRUCTURAL STEEL SHALL BE WITH 3/4" DIAMETER A325–SC LOAD INDICATOR BOLTS (SHOP AND FIELD), UNLESS NOTED OTHERWISE.
6. COLUMN ANCHOR BOLTS SHALL CONFORM TO ASTM A36 AND SHALL HAVE TWO HEAVY HEX NUTS EACH END UNLESS NOTED OTHERWISE. PLACE & SECURE ANCHOR BOLTS IN FOUNDATION MEMBER BEFORE CONCRETE IS POURED. DO NOT WAIT UNTIL CONCRETE IS POURED AND PLACE ANCHOR BOLTS IN WET CONCRETE.
7. CONNECTION DETAILING:
   a. DESIGN CONNECTIONS AS FOLLOWS:
      1) STEEL BEAM–TO–GIRDER CONNECTIONS SHALL BE TYPE SHOWN ON S501 AND SHALL BE DESIGNED FOR NUMBER OF BOLTS TO SUPPORT REACTIONS INDICATED.
      2) STEEL BEAM–TO–PRECAST CONCRETE COLUMN CONNECTIONS SHALL BE TYPE SHOWN ON S500
   b. STEEL BEAM TO COLUMN CONNECCTIONS SHALL BE BASED: USE MAXIMUM NUMBER OF BOLTS ALLOWED FOR GIVEN SECTION AS SHOWN ON 7/S501 OR ON UNIFORM LOAD CAPACITY SHOWN IN AISC "TABLE FOR ALLOWABLE LOADS ON BEAMS".
   c. FOR CONNECTION DESIGN OF COMPOSITE BEAMS, THE REACTION EQUAL TO ONE–HALF THE UNIFORM LOAD CAPACITY AS GIVEN IN THE AISC MANUAL (2nd EDITION – LOAD AND RESISTANCE FACTOR DESIGN) FOR NON–COMPOSITE BEAMS IS TO BE MULTIPLIED BY THE FOLLOWING FACTORS TO DETERMINE THE REQUIRED SHEAR CAPACITY OF THE COMPOSITE BEAM CONNECTIONS (UNLESS NOTED OTHERWISE ON THE DRAWINGS).

W8	2.75	W21	1.75
W10	2.55	W24	1.70
W12	2.35	W27	1.55
W14	2.00	W30	1.50
W16	1.90	W33	1.45
W18	1.85	W36	1.40

   d. CANTILEVERED BEAM CONNECTIONS SHALL DEVELOP CAPACITY OF THE BEAM BOTH IN SHEAR AND MOMENT.
   e. CONNECTION OF SECONDARY MEMBER (UNLESS SHOWN OTHERWISE) IN TENSION OR COMPRESSION SHALL DEVELOP CAPACITY OF MEMBER IN TENSION.
8. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS IN ACCORDANCE WITH AWS SPECIFICATIONS LATEST EDITIONS. WELDING SHALL BE INSPECTED AND TESTED AS NOTED IN THE SPECIFICATIONS. WELDING INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELDING INSPECTOR.
9. ALL WELDING ELECTRODES SHALL CONFORM TO AWS A5.1 GRADE E–70. BARE ELECTRODES AND GRANULAR FLUX SHALL CONFORM TO AWS A5.17, F–70, AWS FLUX CLASSIFICATION.
10. STRUCTURAL STEEL CONTRACTOR IS RESPONSIBLE FOR VERIFYING AND COORDINATING ALL DIMENSIONS AND ELEVATIONS SHOWN ON STRUCTURAL DRAWINGS WITH ARCHITECTURAL DRAWINGS. IN CASE OF CONFLICTS, THE ARCHITECT/ENGINEER IS TO BE NOTIFIED AND WILL PROVIDE THE CONTRACTOR WITH CORRECT ELEVATIONS AND DIMENSIONS FOR WHICH THE CONTRACTOR IS RESPONSIBLE TO INCORPORATE ON THE ERECTION DRAWINGS AT NO EXTRA COST.
11. SPLICING OF STRUCTURAL STEEL MEMBERS WHERE NOT DETAILED IS PROHIBITED WITHOUT PRIOR APPROVAL. IF APPROVED, THE CONTRACTOR SHALL HAVE THE CONNECTION TESTED BY ULTRASONIC TESTING METHOD BY AN INDEPENDENT TESTING LAB.
12. FINAL BOLTING OR WELDING SHALL NOT BE PERFORMED UNTIL THE STRUCTURE HAS BEEN PROPERLY ALIGNED.
13. THE MINIMUM PLATE THICKNESS SHALL BE 1/4", THE MINIMUM BOLT DIAMETER SHALL BE 3/4", THE MINIMUM WELD SHALL HAVE A 1/4" THICK THROAT CONTINUOUS AND THE MINIMUM CONNECTION SHALL BE THREE BOLTS, U.N.O.
14. NO CHANGE IN SIZE OR POSITION OF THE STRUCTURAL ELEMENTS SHALL BE MADE: HOLES, SLOTS, CUTS, ETC., ARE NOT PERMITTED THROUGH ANY MEMBER UNLESS THEY ARE DETAILED ON THE APPROVED SHOP DRAWINGS.
15. ALL STEEL NOT REQUIRED TO BE SHOP PAINTED (SEE SPECIFICATIONS) SHALL BE CLEANED OF OIL, GREASE, DIRT, RUST, LOOSE MILL SCALE, ETC. AND ALL OTHER FOREIGN MATERIALS.
16. ALL 24" OUTSIDE DIAMETER ROUND HOLLOW TUBE COLUMNS SHALL CONFORM TO ASTM A252 GRADE 3 WITH MINIMUM 0.438 INCH WALL THICKNESS AND FY = 45KSI. <3>

I. HEADED STUD NOTES:

1. SHEAR CONNECTORS USED IN COMPOSITE CONSTRUCTION SHALL BE 3/4" DIAMETER HEADED STUDS AUTOMATICALLY END WELDED IN THE FIELD THROUGH THE METAL DECK TO STEEL BEAMS ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS AND AS PER DETAIL.
2. SHEAR CONNECTORS USED IN COMPOSITE CONSTRUCTION SHALL BE PLACED EVENLY BETWEEN BEAM END SUPPORTS (OR POINTS OF INFLECTION, IF INDICATED), UNLESS NOTED OTHERWISE ON THESE DRAWINGS AND WITH THE FOLLOWING EXCEPTIONS:
   a. WHERE TWO BEAMS FRAME INTO A GIRDER, ONE–HALF OF THE TOTAL SHEAR CONNECTORS SHOWN SHALL BE SPACED EVENLY BETWEEN THE END OF THE GIRDER AND THE BEAM. PROVIDE ADDITIONAL SHEAR CONNECTORS AT 36" O.C. MAXIMUM BETWEEN BEAMS.
   b. WHERE MORE THAN TWO BEAMS FRAME INTO A GIRDER, ONE–HALF OF TOTAL SHEAR CONNECTORS SHOWN SHALL BE UNIFORMLY SPACED AS DETAILED ON STRUCTURAL DRAWINGS.
3. ALL STEEL BEAMS AND GIRDERS SHALL HAVE A MINIMUM NUMBER OF STUD SHEAR CONNECTORS PER DETAIL 1D/S500
4. IF THERE ARE MORE STUDS THAN DECK RIBS, PLACE THE ADDITIONAL STUDS (IN EXCESS OF ONE) TWO PER RIB, STARTING AT THE TWO ENDS OF THE BEAM
5. IF THERE ARE MORE DECK RIBS THAN STUDS, PLACE ONE STUD IN EVERY OTHER RIB AND PLACE REMAINING STUDS IN EMPTY RIBS, STARTING AT THE TWO ENDS OF THE BEAM (OR INFLECTION POINTS).
6. REMOVE CERAMIC FERRULES FROM STUD AND DECK BEFORE PLACING CONCRETE.
7. STUD WELDING MAY REPLACE STEEL DECK WELDING WHERE STUDS ARE LOCATED LESS THAN OR EQUAL TO 16" ON CENTER. CONTRACTOR SHALL ADEQUATELY FASTEN DECK TO SUPPORTING STRUCTURE AS REQUIRED FOR CONSTRUCTION CONDITIONS UNTIL STUDS ARE WELDED TO THE STEEL BEAMS AND GIRDERS.

J. WATERPROOFING SYSTEM <1>

1. USE VOLTEX DS GEOTEXTILE WS ALL LOCATIONS UNDER SLAB. <2>
2. NOT USED
3. USE HYDROBAR AT JOINT BETWEEN FOUNDATION SPREAD FOOTINGS AND WALLS
4. USE WATERSTOP RX AT ALL "COLD" CONSTRUCTION JOINTS.
5. SMEAR MASTIC OVER OUTSIDE FACE OF COLD JOINTS
6. USE VOLTEX GEOTEXTILE WS AT BASEMENT AND FOUNDATION WALLS <2>
7. SEE SECTIONS FOR CLARIFICATIONS.

CERTIFICATE OF AUTHORIZATION CROMWELL ENGINEERS #55 ARKANSAS ENGINEER

ARKANSAS REGISTERED PROFESSIONAL ENGINEER 10/17/03

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McCLELLAND ENGINEERS

LANDSCAPE ARCHITECT:
LARSON BURNS SMITH

STRUCTURAL ENGINEER:
CROMWELL ENGINEERS INC.

MECH., ELEC., PLUMB. ENGINEER:
CROMWELL ENGINEERS INC.

SUSTAINABLE CONSULTANT:
BNIM / ELEMENTS

GLOBAL VILLAGE CONSULTANT
CAMBRIDGE SEVEN ASSOCIATES

INTERIOR DESIGNER:
POLK STANLEY YEARY

GENERAL CONTRACTOR:
CDI

GENERAL NOTES:

NOTES:

ISSUE DATE:
NOVEMBER 17, 2003
STRUCTURAL/FOUNDATION
PACKAGE #4

REVISIONS:

#	DATE	DESCRIPTION
1	12/11/2003	ADDENDUM 2
2	01/19/2004	PACKAGE 4 - ADDM. 04
3	03/17/2004	PACKAGE 4 - ADDM. 06

HEIFER INTERNATIONAL CENTER OFFICE BUILDING

LITTLE ROCK, ARKANSAS

PSY PROJECT NUMBER:
431C

CONTENTS:
STRUCT. QUALITY CONTROL AND GENERAL NOTES

SHEET NUMBER:
S001