GENERAL STRUCTURAL NOTES

1. THE GENERAL STRUCTURAL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS AND SPECIFICATIONS. SHOULD CONFLICTS EXIST BETWEEN THE DRAWINGS AND SPECIFICATIONS AND THE GENERAL STRUCTURAL NOTES, THE STRICTEST PROVISION SHALL GOVERN. WHERE A DETAIL IS SHOWN FOR ONE CONDITION, IT SHALL APPLY FOR ALL LIKE OR SIMILAR CONDITIONS EVEN THOUGH NOT SPECIFICALLY REFERENCED ON THE DRAWINGS.

2. GOVERNING CODE: BOCA NATIONAL BUILDING CODE/1990.

3. DESIGN LIVE LOADS: AS SHOWN ON THE STRUCTURAL PLAN AND AS FOLLOWS:

A. LIVE LOADS (POST IN A CONSPICUOUS LOCATION):
- ASSEMBLY AREAS . . . . 100 PSF
- DAYROOMS . . . . 100 PSF
- STAIRS . . . . 100 PSF
- CORRIDORS . . . . 100 PSF
- ROOFS (INCLUDING SNOW) . . . . 30 PSF + DRIFTS
- CELLS . . . . 40 PSF
- STORAGE . . . . 125 PSF
- MECHANICAL FAN/ELECTRICAL ROOMS . . . . 125 PSF
- ALL OTHER AREAS . . . . 100 PSF
- MAXIMUM CONCENTRATED LOAD @ 2000 LBS. IN A SPACE 2'-6" x 2'-6".

B. SUPERIMPOSED DEAD LOADS:
- ROOFING . . . . 7 PSF
- INSULATION . . . . 3 PSF
- MECHANICAL + ELECTRICAL . . . . 5 PSF
- CEILING . . . . 5 PSF
- SPRINKLER . . . . 2 PSF
- PIPING OVER MECHANICAL ROOMS . . . . 50 PSF
- PARTITIONS (NON-MASONRY) . . . . 20 PSF
- PARTITIONS (MASONRY) . . . . 60 PSF

C. BASIC WIND VELOCITY . . . . 70 MPH, EXPOSURE C

D. SEISMIC ZONE 1

4. FOUNDATION DESIGN IS BASED ON A REPORT PREPARED BY THE H.C. NUTTING CO., DATED MAY 31, 1991. SAFE SOIL BEARING DESIGN VALUE SHALL BE 2000 PSF OR 4000 PSF AT AREAS OF SPREAD FOOTINGS AS SHOWN ON THE DRAWINGS. CAISSON DESIGN BEARING VALUE REQUIRED IS EITHER 40,000 PSF OR 80,000 PSF AS SHOWN ON THE DRAWINGS. ACTUAL BEARING CAPACITY SHALL BE VERIFIED IN THE FIELD BY A PROFESSIONAL ENGINEER SPECIALIZING IN SOILS ENGINEERING. WRITTEN REPORTS OF FINDINGS SHALL BE SUBMITTED TO THE ARCHITECT. ALL FOOTINGS SHALL BEAR ON ORIGINAL, UNDISTURBED SOIL OR ENGINEERED FILL UNLESS OTHERWISE SPECIFICALLY SHOWN ON THE DRAWINGS. COLUMN FOOTINGS AND ADJOINING WALL FOOTINGS SHALL BE CAST MONOLITHIC WITH TOPS OF ADJACENT FOOTINGS AT THE SAME ELEVATION. SEE TYPICAL STEPPED FOOTING DETAIL FOR CHANGE OF BEARING ELEVATION REQUIREMENTS. NO PIPING OR CONDUIT SHALL BE ALLOWED TO PASS WITHIN A 45 DEGREE PLANE OF INFLUENCE BELOW AND AWAY FROM COLUMN FOOTINGS.

5. THE CONTRACTOR SHALL COORDINATE STRUCTURAL WORK WITH ALL OTHER DISCIPLINES INVOLVED IN THE PROJECT, LOCATING THICKENED SLABS, SLOPES, DRAINS, BOLT SETTING, PIPES, CONDUIT, SLEEVES, ETC. BEFORE COMMENCING THE WORK. THE LOCATION AND SIZE OF SLEEVES OR OPENINGS IN STRUCTURAL MEMBERS SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER. ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING WITH THE WORK AFFECTED.
   A. SEE ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR SIZE AND LOCATION OF DRIPS, CHAMFERS, SLEEVES, ANCHORS, INSERTS AND OPENINGS REQUIRED.

   B. MECHANICAL FRAMING LOADS, OPENINGS, AND STRUCTURE IN ANY WAY RELATED TO MECHANICAL REQUIREMENTS ARE SHOWN FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL OBTAIN APPROVAL OF MECHANICAL AND OTHER TRADES BEFORE PROCEEDING WITH SUCH PORTION OF THE WORK. EXCESS COST RELATED TO VARIATION IN MECHANICAL REQUIREMENTS TO BE BORNE BY MECHANICAL CONTRACTOR. REVISIONS TO THE STRUCTURE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE STRUCTURAL ENGINEER.

   C. OPENINGS FOR TOWER CRANES (IF USED) SHALL BE SUBJECT TO APPROVAL OF THE ARCHITECT. IF REDESIGN IS REQUIRED, IT SHALL BE AT THE CONTRACTOR'S EXPENSE.

   D. ELEVATOR SHAFT AND SUPPORT BEAMS HAVE BEEN DESIGNED AND DETAILED BASED ON THE RECOMMENDATIONS OF THE ELEVATOR CONSULTANT. ONCE AN ELEVATOR SUBCONTRACTOR IS SELECTED, THE CRITERIA FOR THE CHOSEN SYSTEM SHALL BE VERIFIED WITH THE DESIGN REPRESENTED IN THESE DRAWINGS. MODIFICATIONS TO THE STRUCTURE REQUIRED TO ACCOMMODATE THE SELECTED ELEVATORS SHALL BE THE RESPONSIBILITY OF THE ELEVATOR SUB-CONTRACTOR, AND SHALL BE AT NO ADDITIONAL COST TO THE OWNER. THE ELEVATOR SUB-CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONNECTION OF THE MACHINE BEAMS AND/OR SECONDARY BEAMS TO THE STRUCTURE. SHOP DRAWINGS FOR THE ELEVATORS SHOWING CONNECTION DETAILS, LOCATION AND MAGNITUDE OF LOADS TO BE APPLIED TO THE STRUCTURE SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW BY THE STRUCTURAL ENGINEER.

6. THE CONTRACTOR SHALL NOT SCALE FEATURES SHOWN ON THE CONTRACT DRAWINGS FOR THE PURPOSE OF ESTABLISHING CORRECT DIMENSIONS. THE CONTRACTOR SHALL OBTAIN NECESSARY DIMENSIONS NOT SHOWN ON THE CONTRACT DRAWINGS FROM THE ARCHITECT THROUGH COORDINATION EFFORTS AND/OR THROUGH THE SHOP DRAWINGS REVIEW PROCESS.

7. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS, OR TIE DOWNS WHICH MIGHT BE NECESSARY. SUCH MATERIAL SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER COMPLETION OF THE PROJECT.

8. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION.

9. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITION RELATING TO EXISTING CONSTRUCTION AND EXISTING SERVICE ON THE SITE.

REINFORCED CONCRETE

1. SPECIFICATIONS AND STANDARDS:
UNLESS SPECIFICALLY SHOWN OTHERWISE, ALL CONCRETE WORK, DETAILING, FABRICATION AND PLACING OF BARS AND CONCRETE SHALL BE GOVERNED BY THE LATEST REVISIONS OF:
   A. ACI 301, ACI 315, AND ACI 318.
   B. CRSI RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS.
   C. ACI 306 AND ACI 305 FOR WINTER AND HOT WEATHER CONCRETING, RESPECTIVELY.
   CONTRACTOR SHALL AT ALL TIMES HAVE A COPY OF THE RELEVANT SPECIFICATIONS QUOTED ABOVE ON THE SITE AND HIS SUPERVISORY PERSONNEL SHALL BE THOROUGHLY FAMILIAR WITH THE CONTENTS THEREOF.

2. CONTINGENCIES: ← PROVIDE THIS QUANTITY OF CONTINGENCY REINF. IN THE SITE DEVELOPMENT PHASE II AND FOUNDATIONS CONTRACT
   A. PROVIDE 2 TONS OF REINFORCING BARS TO BE USED AS DIRECTED BY THE ARCHITECT.
   B. PROVIDE LEAN CONCRETE UNDER FOUNDATIONS FOR ACCIDENTAL OVEREXCAVATION, SOFT SPOTS.
   C. PROVIDE 3 TONS OF REINFORCING BARS TO BE USED AS DIRECTED BY THE ARCH. IN THIS CONTRACT

3. CONCRETE REQUIREMENTS BY LOCATION IN JOB:

LOCATION	F'C	SPECIAL REQUIREMENTS
FOOTINGS, CAISSONS, GRADE BMS, AND INTERIOR CONCRETE NOT OTHERWISE NOTED	3000 PSI	MINIMUM 5.5 BAGS CEMENT/YD. FOR CAISSON CONCRETE.
EXTERIOR CONCRETE	4000 PSI	5% ±1% AIR CONTENT
PIERS, WALLS, COLUMNS, STRUCTURAL SLABS, BEAMS, PAN JOISTS, STAIRS, SHEAR WALLS, CONCRETE LINTELS	4000 PSI	
COLUMNS DESIGNATED IN SCHEDULE	5000 PSI	
STAIR PAN FILL, CONCRETE OVER PRECAST	3000 PSI	3/8" MAX. AGGREGATE
EARTH FILL	1500 PSI	NO TESTS

SUBMIT CONCRETE MIXES FOR APPROVAL IN ACCORDANCE WITH ACI 301 BEFORE PLACING ANY CONCRETE.

4. REINFORCING REQUIREMENTS:
   A. BARS - ASTM A615, A616, A617 - GRADE 60.
   B. WELDED WIRE FABRIC: ASTM A185.

5. FOOTINGS:
   A. DOWELS IN FOOTINGS TO MATCH VERTICAL WALL, COLUMN OR PIER REINFORCING.
   B. BEND ALL BARS 24 DIAMETERS AROUND CORNERS OF FOOTINGS. BARS AT THE INSIDE FACE OF THE CORNER SHALL BE CONTINUED ACROSS TO THE OUTSIDE AND THEN BENT.

6. SLABS, JOIST AND BEAMS:
   A. IF NO OTHER REINFORCING IS SHOWN IN A STRUCTURAL SLAB OR SLAB OVER JOIST PROVIDE 4 X 12 -W2.9 X W1.4 AT MID-THICKNESS OF SLAB. PLACE HEAVIER WIRES PERPENDICULAR TO JOIST OR SUPPORTING MEMBERS. EXTEND FABRIC ACROSS OR 6" INTO ALL SUPPORTS.
   B. IF NO OTHER REINFORCING IS SHOWN IN A SLAB ON GRADE, PROVIDE 6X6-W1.4 X W1.4 AT MID-THICKNESS OF SLAB.
   C. SLABS ON GROUND "POUR" LENGTH, BETWEEN CONSTRUCTION JOINTS, SHALL BE LIMITED TO 120 FEET. SEE PLANS FOR CONSTRUCTION JOINT DETAILS. INTERMEDIATE SAWED JOINTS FOR CRACK CONTROL JOINTS MUST BE CUT WITHIN 8 HOURS OF CONCRETE PLACEMENT. SEE PLANS FOR TYPICAL CONTROL JOINT DETAILS. SEE CIVIL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR EXTERIOR SLAB WORK AND JOINTING. HORIZONTAL RUNS OF CONDUIT AND PIPE SHALL NOT BE PLACED IN SLABS ON GROUND, PLACE IN SUB-GRADE.
   D. IF REINFORCING IS SHOWN ONE WAY ONLY IN A STRUCTURAL SLAB, PROVIDE TEMPERATURE BARS IN THE OTHER DIRECTION AS FOLLOWS:

THICKNESS NOT EXCEEDING	MINIMUM TEMPERATURE BARS
6"	#4 @ 18"
7"	#4 @ 16"
8"	#4 @ 14"
9"	#5 @ 18"

   E. WHERE A SUPPORTING BEAM OR WALL RUNS PARALLEL TO THE MAIN REINFORCING OF A SLAB PROVIDE #3 @ 12" TOP BARS EXTENDING 6 TIMES THE SLAB THICKNESS INTO THE SLAB ON EITHER SIDE. IF THE SLAB IS DISCONTINUOUS, AT THE SUPPORT CARRY BARS TO THE OUTSIDE OF THE SUPPORT AND BEND 6" INTO THE SUPPORT.
   F. PROVIDE 2-#4 TOP BARS FOR TIE-SPACERS IN BEAMS WHERE NO OTHER TOP STEEL IS REQUIRED.
   G. DISTRIBUTION RIBS FOR PAN JOISTS SHALL BE 4" WIDE WITH 1-#4T&B. NUMBER OF RIBS REQUIRED FOR SPANS LESS THAN 20 FT. - NONE; 20 TO 30 FT. - 1; OVER 30 FT. - 2, OR AS SHOWN ON DRAWINGS.

7. WALLS, COLUMNS AND PIERS:
   A. UNLESS SHOWN OTHERWISE, PROVIDE THE FOLLOWING WALL REINFORCING:

WALL THICKNESS	HORIZONTAL STEEL	VERTICAL STEEL
8 INCHES	#4 @ 12"	#4 @ 18"
10 INCHES	#4 @ 10"	#4 @ 16"
12 INCHES	#4 @ 16" E.F.	#4 @ 13" E.F.

   B. PROVIDE 2-#5 BARS AROUND ALL WALL OPENINGS, EXTENDING 2 FEET BEYOND OPENING IN EVERY DIRECTION.
   C. STAGGER SPLICES IN WALLS SO THAT NO MORE THAN 1/3 OF THE REINFORCING IS SPLICED IN ANY GIVEN CROSS-SECTION. STAGGER SPLICES 40 DIAMETERS.
   D. WHERE OFF-SET SPLICES ARE USED IN THE COLUMN STEEL PLACE 3 SETS OF COLUMN TIES AT 2" C/C IMMEDIATELY BELOW AND ABOVE FLOOR.
   E. IN WALL CONSTRUCTION, PROVIDE KEYED CONTRACTION JOINTS ONE THIRD WALL THICKNESS, NOMINAL 2" DEEP AT A MAXIMUM OF 30'-0" C/C. USE WATERSTOPS AT ALL WALL JOINTS BELOW GRADE AND OTHERWISE SHOWN.
   F. WHERE INDICATED ON THE PLANS PROVIDE KEYED EXPANSION JOINTS WITH 1" COMPRESSIBLE FILLER AND A WATERSTOP.
   G. PROVIDE CLASS C TENSION LAP SPLICES FOR HORIZONTAL AND VERTICAL WALL REINFORCING UNLESS NOTED ON DRAWINGS.
   H. CONCRETE WALLS SHALL BE CAST MONOLITHIC WITH ADJOINING COLUMNS UNLESS SPECIFICALLY NOTED OTHERWISE. PROVIDE STEEL SLEEVES AT LEAST 1 INCH LARGER IN DIAMETER THAN PIPE PLUS INSULATION THROUGH WALLS AT PIPE AND CONDUIT PENETRATIONS.

8. SPLICES:
   A. NO SPLICES IN BEAM, JOIST, OR SLAB STEEL UNLESS SPECIFICALLY SHOWN OTHERWISE.
   B. COMPRESSION SPLICES: LAP 30 DIAMETERS.
   C. TENSION SPLICES, WHEN PERMITTED. LAP IN ACCORDANCE WITH ACI CODE.
   D. LAP WELDED WIRE FABRIC 1 SPACE + 2" AT ALL EDGES AND ENDS OF SHEET.

9. OPENINGS:
   A. OPENINGS SHOWN ARE FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL RECONCILE THEIR EXACT SIZE AND LOCATION WITH MECHANICAL AND OTHER REQUIREMENTS BEFORE PROCEEDING WITH HIS WORK.
   B. IF ANY OPENING NOT SHOWN ON THE PLAN IS REQUIRED, APPROVAL MUST BE SECURED FROM THE STRUCTURAL ENGINEER BEFORE PROCEEDING WITH WORK.

10. MISCELLANEOUS:
   A. CONSTRUCTION JOINTS PERMITTED ONLY WHERE SHOWN OR AS APPROVED BY THE STRUCTURAL ENGINEER.
   B. BACKFILL AGAINST WALLS SHALL BE DEPOSITED EVENLY AGAINST BOTH SIDES OF THE WALL UNTIL THE LOWER FINAL GRADE IS REACHED. BACKFILL SHALL NOT BE PLACED AGAINST WALLS DEPENDENT UPON TOP AND BOTTOM SLABS FOR SUPPORT UNLESS BRACED OR UNTIL SUCH SLABS HAVE BEEN IN PLACE A MINIMUM OF THREE DAYS; EXCEPTION, FOUNDATION WALLS WITH SLAB ON GROUND AT THE TOP OF THE WALL SHALL BE BRACED UNTIL SUPPORTING SLABS ARE IN PLACE A MINIMUM OF THREE DAYS. WALLS ARE NOT DESIGNED AS CANTILEVER RETAINING WALLS UNLESS SPECIFICALLY NOTED.

11. THE CONTRACTOR SHALL PREPARE AND SUBMIT FOR REVIEW, DRAWINGS SHOWING LOCATIONS OF ALL PROPOSED CONCRETE CONSTRUCTION JOINTS (WALLS, FLOORS AND ROOFS), INCLUDING THOSE SHOWN ON THE CONTRACT DRAWINGS.

12. SHOP DRAWINGS SHALL BE DEVELOPED BY THE CONTRACTOR FOR THE FABRICATION, INSTALLATION AND CONSTRUCTION OF ALL STRUCTURAL ELEMENTS. ALL SHOP DRAWINGS USED BY THE CONTRACTOR OR HIS SUBCONTRACTORS FOR THE FABRICATION AND INSTALLATION OF STRUCTURAL ELEMENTS AND THEIR COMPONENTS SHALL BE REVIEWED BY THE ARCHITECT AND APPROPRIATE RELEASE OBTAINED PRIOR TO COMMENCEMENT OR RELEVANT FABRICATION AND INSTALLATION.

13. REINFORCING STEEL SHOP DRAWINGS:
   A. BEAM, SLAB AND JOIST DIAGRAMS SHALL BE SHOWN IN THE SAME FORM AS SHOWN ON THE CONTRACT DRAWINGS.
   B. ALL REINFORCED CONCRETE WALLS SHALL BE DETAILED IN ELEVATION.
   C. PLANS SHALL BE AT MINIMUM 1/8" = 1'-0" SCALE.

STRUCTURAL MASONRY

1. SPECIFICATIONS AND STANDARDS: UNLESS SPECIFICALLY SHOWN OTHERWISE, DESIGN, FABRICATION AND CONSTRUCTION SHALL BE GOVERNED BY THE FOLLOWING:
   A. MASONRY MATERIALS AND INSTALLATION SHALL COMPLY WITH REQUIREMENTS OF ACI 530.1-88/ASCE 6-88.

2. MASONRY MATERIALS:
   A. HOLLOW LOAD BEARING BLOCK - ASTM C90 GR. N1.
   B. SOLID LOAD BEARING BLOCK - ASTM C145 GR. N1.
   C. CONCRETE BRICK - ASTM C55 GRADE N1.
   D. CLAY BUILDING BRICK - ASTM C216 GRADE SW.

3. MORTAR:
   A. LOAD BEARING WALLS - ASTM C270 TYPE N.
   B. NON-LOAD BEARING WALLS - ASTM C270 TYPE N.
   C. ALL MASONRY BELOW GRADE - ASTM C270 TYPE M.
   D. GROUT FOR UNIT MASONRY SHALL COMPLY WITH ASTM C476, 2500 PSI MINIMUM COMPRESSIVE STRENGTH AFTER 28 DAYS.

4. MASONRY REINFORCEMENT:
   A. HORIZONTAL JOINT REINFORCEMENT: 9 GA DEFORMED WIRE, TRUSS TYPE REINFORCEMENT.
      1. IN EVERY SECOND BLOCK COURSE, FULL HEIGHT, AND WHERE SHOWN ON DRAWINGS.
      2. IN FIRST BED JOINT ABOVE AND BELOW OPENINGS EXTENDING 24" BEYOND OPENING.
      3. LAP REINFORCEMENT A FULL WIDTH AT CORNERS AND INTERSECTIONS.
   B. BOND BEAMS:
      1. REINFORCED BOND BEAMS SHALL BE CONTINUOUS AT ALL CORNERS. USE CORNER BARS SAME SIZE AND NUMBER AS BOND BEAM, 2'-0" EACH LEG. STAGGER HORIZONTAL LAPS IN BOND BEAMS.
      2. AT ALL BOND BEAM INTERSECTIONS USE 1-#4 BAR, 2'-0" EACH LEG.
      3. ALL BOND BEAM AND JOINT REINFORCING SHALL BE DISCONTINUOUS AT CONTROL AND EXPANSION JOINTS.
   C. BEARING POINTS:
      A. PROVIDE 3 COURSES X 24" WIDE SOLID OR GROUTED SOLID MASONRY AT BEAM BEARING POINTS.
      B. PROVIDE 2 COURSES X 16" WIDE SOLID OR GROUTED SOLID MASONRY AT JOIST AND LINTEL BEARING POINTS.
   D. REINFORCED MASONRY:
      1. INSTALL REINFORCING BARS IN SIZES SHOWN ON DRAWINGS ACCURATELY IN LOCATIONS SHOWN.
      2. LAP ALL BARS 48 BAR DIAMETERS, MINIMUM 24".
      3. GROUT CORES OF ALL C.M.U. CONTAINING REINFORCING. GROUT CORES ONLY WHERE SPECIFICALLY NOTED.

5. MISCELLANEOUS:
   A. GROUT SOLID ALL CORES OF C.M.U. SECURITY WALLS.
   B. VERTICAL REINFORCEMENT IN SECURITY WALLS, SHALL BE AS SHOWN ON THE ARCHITECTURAL SECURITY PLAN REQUIREMENTS. IN THE EVENT OR CONFLICT THE MOST SEVERE CONDITION SHALL GOVERN.
   C. NO CALCIUM CHLORIDE OR MATERIALS CONTAINING CALCIUM CHLORIDE WILL BE PERMITTED IN MORTAR OR GROUT.
   D. CONCRETE OR C.M.U. LINTELS FOR LOAD BEARING WALLS ARE SCHEDULED AND/OR DETAILED. SEE DETAILS FOR LINTELS FOR NON-LOAD BEARING WALLS AND PARTITIONS.
   E. WHERE NON-LOADBEARING PARTITIONS EXTEND TO THE FLOOR OR ROOF ABOVE AND FRAMING MEMBERS CROSS PARTITIONS, 2 INCH CLEARANCE SHALL BE PROVIDED AT ALL POINTS BETWEEN PARTITION AND MEMBER. THE 2 INCH CLEARANCE SHALL BE SEALED WITH FIRE RESISTIVE MATERIAL. -SEE DETAIL.
   F. PROVIDE LINTELS OVER DUCT AND GRILL OPENINGS THROUGH C.M.U. WALLS. SUCH OPENINGS SHALL NOT BE LOCATED WITHIN THREE VERTICAL COURSES BELOW BEAM OR JOIST BEARING WITHOUT SPECIAL LOADBEARING LINTEL.

STRUCTURAL STEEL

1. SPECIFICATIONS AND STANDARDS:
UNLESS SPECIFICALLY SHOWN OTHERWISE, DESIGN, FABRICATION AND ERECTION SHALL BE GOVERNED BY THE LATEST REVISIONS OF:
   A. AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS.
   B. AISC CODE OF STANDARD PRACTICE.
   C. AWS STANDARD WELDING SYMBOLS.
   D. STRUCTURAL WELDING CODE AWS D1.1-85 OF THE AMERICAN WELDING SOCIETY.
   E. SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS.
   WELDING SHALL BE PERFORMED ONLY BY OPERATORS QUALIFIED BY THE AWS STANDARD QUALIFICATION PROCEDURE TO PERFORM THE PARTICULAR TYPE OF WORK REQUIRED.

2. TESTING:
   A. WELDS: NON-DESTRUCTIVE TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY ON ALL CRITICAL WELDS AND ON 20-25% OF NONCRITICAL WELDS. INADEQUATE WELDS SHALL BE STRENGTHENED OR CUT OUT AND REPLACED AS DIRECTED.
   B. STRUCTURAL STEEL: PROVIDE MILL REPORTS FOR PROPERLY IDENTIFIED MATERIALS ON REQUEST.
   C. A325 BOLTS: PROVIDE BOLT INSPECTION AS DETAILED IN PARAGRAPH 9 OF SPECIFICATIONS FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS.

3. MATERIALS:
   A. SHAPES AND PLATES: ASTM A36.
   B. STRUCTURAL PIPES: ASTM A53 GR B, A501.
   C. STRUCTURAL TUBES: ASTM A500 GR B, Fy = 46 KSI.
   D. WELDING ELECTRODES: AWS A5.1 or A5.5 SERIES E70.
   E. BOLTS: ASTM A307, A325.
   F. PAINT AND PROTECTION:
      1. PRIME COAT, TOUCH UP AFTER ERECTION.
      2. MEMBERS TO BE ENCASED IN CONCRETE OR SPRAY-ON FIRE PROOFING: NO PAINT.
      3. MEMBERS EXPOSED TO WEATHER IN FINISHED STRUCTURE: GALVANIZED AFTER FABRICATION.
   G. HEADED CONCRETE ANCHORS SHALL BE NELSON OR KSM HEADED CONCRETE ANCHORS (OR APPROVED EQUAL), AND SHALL CONFORM TO ASTM A-108. ANCHORS SHALL BE AUTOMATICALLY END WELDED WITH SUITABLE STUD WELDING EQUIPMENT IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER.
   H. LINTELS: UNLESS SHOWN OTHERWISE, PROVIDE 1 ANGLE FOR EACH 4" WALL THICKNESS AS FOLLOWS:

L 3½ X 3½ X ¼	NOT MORE THAN 3'-6"
L 4 X 3½ X ¼	3'-7" TO 5'-0"
L 5 X 3½ X 5/16"	5'-1" TO 8'-0"
L 6 X 3½ X 5/16"	8'-1" TO 10'-0"
W8 X 15 w/¼" BOTTOM PLATE	10'-1" TO 12'-6"

   WHERE A STEEL SECTION PLUS A PLATE IS SPECIFIED, EXTEND THE PLATE THE LENGTH OF BEARING EACH SIDE OF THE MASONRY OPENING. MINIMUM BEARING EACH SIDE OF MASONRY OPENING 8" UNLESS OTHERWISE SPECIFIED.

4. CONNECTION REQUIREMENTS:
   A. DESIGN CONNECTIONS FOR VERTICAL REACTIONS SHOWN ON DRAWINGS OR FOR FULL CAPACITY OF MEMBER WHERE NO REACTION IS SHOWN, OR 12 KIPS MINIMUM.
   B. DESIGN MOMENT BEAM CONNECTIONS FOR VALUES SHOWN OR FOR FULL MOMENT CAPACITY OF MEMBER.
   C. OBTAIN APPROVAL FROM STRUCTURAL ENGINEER FOR TYPES OF CONNECTION BEFORE FABRICATION.
   D. BOLTS IN TENSION CONNECTIONS, BRACING CONNECTIONS, MOMENT CONNECTIONS, OR OTHER CONNECTIONS NOTED ON THE DRAWINGS AND CONSIDERED TO BE SLIP-CRITICAL BOLTS SHALL BE TIGHTENED BY THE TURN-OF-NUT METHOD OR SHALL UTILIZE LOAD INDICATOR TYPE BOLTS INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER. SUCH CONNECTION BOLTS SHALL HAVE A HARDENED WASHER PLACED UNDER THE ELEMENT TO BE TIGHTENED. ALL OTHER BOLTS SHALL BE DESIGNED AS BEARING TYPE BOLTS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE "SNUG-TIGHT" CONDITION.
   E. PROVIDE ERECTION BOLTS AT FIELD WELDED CONNECTIONS.
   F. WHERE REACTIONS ARE SUBJECT TO ECCENTRICITY, SUCH ECCENTRICITY SHALL BE TAKEN INTO ACCOUNT WHEN DETAILING THE CONNECTION.

5. MISCELLANEOUS REQUIREMENTS:
   A. PROVIDE HOLES FOR OTHERS. IF SECTION IS WEAKENED BY MORE THAN 15% BY AN OPENING NOT SHOWN ON THE DRAWINGS, OBTAIN PRIOR APPROVAL.
   B. STEEL SUPPORTING OR CONNECTING TO MECHANICAL OR OTHER EQUIPMENT IS SHOWN FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL RECONCILE EXACT SIZE AND LOCATION WITH MECHANICAL AND OTHER REQUIREMENTS BEFORE PROCEEDING WITH HIS WORK.
   C. GROUT UNDER BEARING PLATES TO BE NON-SHRINKING TYPE (EMBECO OR EQUIVALENT).
   D. STEEL BELOW GRADE TO BE PROTECTED BY A MINIMUM OF 3" OF CONCRETE OR 4" OF MASONRY.
   E. PROVIDE ¼" THICK SETTING PLATES FOR ALL BEAMS BEARING ON MASONRY OR CONCRETE WHICH DO NOT REQUIRE A BEARING PLATE.
   F. PROVIDE HEAVY WASHER AT ALL ANCHOR BOLTS.
   G. PROVIDE ANGLE SUPPORTS FOR ALL METAL DECK RIBS AT COLUMNS WHEN COLUMN SIZE PREVENTS RIB FROM CONTINUING TO BEAM WHICH IS SUPPORTING DECK AT COLUMN LINE.
   H. COLUMN BASES ARE DESIGNED AS "PINNED-ENDS" AND SHALL NOT BE RELIED ON FOR ERECTION STABILITY.

STEEL JOISTS

1. UNLESS SPECIFICALLY SHOWN OTHERWISE STEEL JOIST DESIGN, MANUFACTURE, AND ERECTION SHALL BE AS GOVERNED BY THE STANDARD SPECIFICATIONS, LOAD TABLES & WEIGHT TABLES FOR STEEL JOISTS ADOPTED BY THE STEEL JOIST INSTITUTE.

2. STEEL JOISTS OF THE SAME DEPTH AND CHORD DESIGNATION SHALL HAVE MEMBER SIZES OF UNIFORM CONSISTENCY. USE OF MULTIPLE ANGLE OR MEMBER SIZES TO PROVIDE THE SAME EQUIVALENT CHORD AREA IS STRICTLY PROHIBITED AND WILL BE CAUSE FOR REJECTION.

3. TYPE OF JOIST TO BE K. OR LH AS SHOWN ON DRAWINGS.

4. PAINT ALL JOISTS WITH MANUFACTURERS STANDARD SHOP PRIMER EXCEPT THAT BLACK ASPHALT NOT PERMITTED.

5. PROVIDE ADDITIONAL WEB MEMBERS AS REQUIRED AT CONCENTRATED LOADS NOTED ON DRAWINGS WHICH DO NOT OCCUR AT A PANEL POINT.

6. ANCHOR ALL BRIDGING TO INTERSECTING WALLS AND BEAMS UNLESS OTHERWISE SHOWN. PROVIDE CROSS BRIDGING AS SHOWN ON DRAWINGS.

7. CONNECTIONS TO SUPPORTING STRUCTURE:
   A. WELD JOIST SEATS TO STEEL SUPPORTING SURFACES WITH - 1" of 3/16" FILLET WELD EACH SIDE FOR SHORT SPAN JOIST, 2" OF ¼" FILLET WELD EACH SIDE FOR LONG SPAN JOIST.
   B. BOLT JOIST SEATS TO STEEL SUPPORTING SURFACES WITH - 2-½" Ø BOLTS FOR SHORT SPAN JOIST. 2-3/4" Ø BOLTS FOR LONG SPAN JOIST BOLT JOIST AT, OR NEAREST TO, COLUMN.
   C. ANCHOR ROOF JOIST TO SUPPORTING MASONRY WALLS WITH - 2-½" Ø ANCHOR BOLTS X 12" W/3" HOOK GROUTED SOLID FOR SHORT SPAN JOIST 2-3/4" Ø ANCHOR BOLTS X 18" W/3" HOOK GROUTED SOLID FOR LONG SPAN JOIST.
   D. EXTEND BOTTOM CHORD OF JOIST IN LINE WITH COLUMNS AND WELD TO COLUMN OR CLIP ANGLE.

8. PROVIDE MATCHING HEIGHT SEATS ON SHORT SPAN JOIST WHICH HAVE COMMON BEARING WITH LONG SPAN JOIST.

9. ADJACENT JOISTS OF THE SAME DEPTH ARE TO HAVE WEB MEMBERS IN LINE TO PERMIT PASSAGE OF MECHANICAL DUCTS.

10. HORIZONTAL TOP AND BOTTOM BRIDGING MAY BE USED INSTEAD OF DIAGONAL BRIDGING ON LONG SPAN JOIST WHERE REQUIRED FOR PASSAGE OF MECHANICAL DUCTS. NO MORE THAN TWO ADJACENT SPACES MAY HAVE HORIZONTAL BRIDGING.

LIGHTGAGE METAL FRAMING

1. SPECIFICATIONS AND STANDARDS:
   A. ALL STRUCTURAL PROPERTIES OF LIGHTGAGE METAL FRAMING SHALL BE COMPUTED IN ACCORDANCE WITH AISI "SPECIFICATIONS FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS" AND SHALL BE PUBLISHED IN THE MANUFACTURERS CATALOG.
   B. WELDING SHALL BE PERFORMED ONLY BY QUALIFIED OPERATORS USING PROPER EQUIPMENT FOR THE PARTICULAR TYPE OF WORK REQUIRED.
   C. AWS STANDARD WELDING SYMBOL.
   D. AWS D1.3 SPECIFICATION FOR WELDING SHEET STEEL IN STRUCTURES.

2. MATERIALS:
   A. STRUCTURAL FRAMING MEMBERS 16 GAGE AND HEAVIER: PAINTED, ASTM A570, GRADE E Fy = 50,000 PSI. GALVANIZED, ASTM A446, GRADE D, Fy = 50,000 PSI.
   B. STRUCTURAL FRAMING MEMBERS 18 GAGE AND LIGHTER: PAINTED, ASTM A611, GRADE C, Fy = 33,000 PSI. GALVANIZED, ASTM A446, GRADE A, Fy = 33,000 PSI.
   C. ALL TRACK AND BRIDGING MATERIALS, Fy = 33,000 PSI MIN.
   D. ALL FRAMING MEMBERS SHALL BE GIVEN A COAT OF RUST RESISTANT PAINT OR BE GALVANIZED.
   E. WELDING ELECTRODES: AWS A5.1, A5.5 OR A5.18 SERIES E60.

3. CONNECTIONS:
   A. CUT ALL FRAMING COMPONENTS TO FIT SQUARELY AGAINST ABUTTING MEMBERS AND HOLD FIRMLY IN POSITION UNTIL PROPERLY FASTENED.
   B. ALL PANELS SHALL BE SQUARE AND BRACED AGAINST RACKING.
   C. WIRE TYING OF STRUCTURAL FRAMING COMPONENTS IS NOT PERMITTED.

4. ERECTION:
   A. ATTACH TRACK SECURELY TO THE FLOOR AND OVERHEAD STRUCTURE.
   B. SEAT STUDS SQUARELY TO THE FLOOR AND OVERHEAD TRACK AND ATTACH SECURELY.
   C. SPLICES IN STRUCTURAL FRAMING MEMBERS ARE NOT PERMITTED WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER.
   D. DO NOT ALLOW AXIAL LOADS TO STUDS UNTIL ALL BRIDGING, CONNECTIONS, AND ATTACHMENT OF COLLATERAL MATERIALS ARE COMPLETE.
   E. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION OF BRIDGING AND SHEATHING.

PRE-ENGINEERED METAL BUILDING

1. PRE-ENGINEERED METAL BUILDING MEMBERS SHALL BE DESIGNED TO THE BOCA NATIONAL BUILDING CODE/1990 AND THE FOLLOWING SPECIFIC CRITERIA:
   (1) LIVE LOAD (INCL SNOW) . . . . 30 PSF
   (2) SUPERIMPOSED DEAD LOAD (ROOFING, INSULATION, INTERIOR SUSPENDED LOADS) . . . . 16 PSF
   (3) NET UPLIFT . . . . 12 PSF
   (4) BASIC WIND VELOCITY - 70 MPH, EXPOSURE C
   (5) LIMIT LATERAL DEFLECTIONS OF THE BUILDING FRAME TO H/400, WHERE H EQUALS THE DESIGN BUILDING OR EAVE HEIGHT IN INCHES.

2. COLUMN BASES FOR THE BUILDING SHALL BE DESIGNED AS "PINNED END".

3. SUBMIT, FOR REVIEW, COMPLETE SHOP AND ERECTION DRAWINGS AND CALCULATIONS BEARING THE SEAL (STAMP) OF A PROFESSIONAL ENGINEER, STRUCTURAL, CURRENTLY REGISTERED IN THE STATE OF WEST VIRGINIA.

4. COLUMNS SHALL BE "I BEAM" SHAPE CONSISTING OF PARALLEL FLANGE COLUMNS WITH 12" DEPTH.

NOTES:
FOR STRUCTURAL WORK INCLUDED IN THE SITE DEVELOPMENT PHASE II AND FOUNDATIONS CONTRACT SEE THE SPECIFICATIONS AND DRAWING NO. S3.4, SECTION 1/S3.4 AND NOTES.

FOR STRUCTURAL WORK INCLUDED IN THIS CONTRACT SEE THE SPECIFICATIONS AND DRAWING NO. S3.4, SECTION 1/S3.4 AND NOTES.

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SEAL
JAMES E. NEBRASKA REGISTERED No. 10145 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER
STATE OF WEST VIRGINIA H.G. JOHE 380 REGISTERED ARCHITECT

REVISIONS

RECORD DRAWING 9-5-95

MOUNT OLIVE CORRECTIONAL COMPLEX

WEST VIRGINIA REGIONAL JAIL & CORRECTIONAL FACILITY AUTHORITY

KEY PLAN

DRAWING TITLE
GENERAL NOTES & TYPICAL DETAILS

DATE
DECEMBER 9, 1991

DRAWING NO.
SO.1