

GENERAL NOTES

A. BUILDING AND DESIGN CODES:

1. THE STRUCTURE IS DESIGNED IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE (IBC), AND THE 2021 ARKANSAS BUILDING CODE.
2. AMERICAN SOCIETY OF CIVIL ENGINEERS, ASCE 7-16, WITH SUPPLEMENT 1, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.
3. AMERICAN INSTITUTE OF STEEL CONSTRUCTION, SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS, ANSIAISC 360-16.
4. AMERICAN CONCRETE INSTITUTE, ACI 318-19, BUILDING CODE REQUIREMENTS AND COMMENTARY FOR STRUCTURAL CONCRETE.
5. CONCRETE REINFORCING STEEL INSTITUTE, CRSI MANUAL OF STANDARD PRACTICE, 29TH EDITION.
6. AMERICAN WELDING SOCIETY, AWS D1.1:2020 STRUCTURAL WELDING CODE-STEEL, AMERICAN WELDING CODE, AWS D1.4-2018 STEEL REINFORCING BARS.
7. AMERICAN IRON AND STEEL INSTITUTE, AISI S100-16, WITH 02/2020 SUPPLEMENT, NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS.
8. METAL BUILDING MANUFACTURERS ASSOCIATION (MBMA) SEISMIC DESIGN GUIDE FOR METAL BUILDING SYSTEMS, 2019.
9. METAL BUILDING SYSTEMS MANUAL (MBMA), 2018.

B. DESIGN LOADS:

1. RISK CATEGORY: III
2. LIVE LOADS:

	UNIFORM LOAD
a. ROOF LIVE LOAD	20 PSF
b. SLAB ON GROUND	
- MANUFACTURING & STORAGE	125 PSF UNIFORMLY DISTRIBUTED OR 2000 LB CONCENTRATED
- VEHICULAR DRIVEWAYS	250 PSF UNIFORMLY DISTRIBUTED OR 8000 LB CONCENTRATED
- X-RAY VAULT	SELF WEIGHT OF SHIELDING WALLS AND EQUIPMENT
- FORKLIFTS	8000 LB CAPACITY FORKLIFT
c. ELEVATED PLATFORMS	60 PSF
3. SUPERIMPOSED ROOF DEAD LOADS:

a. STANDING SEAM ROOF PANELS AND INSULATION SUPPORTED BY PEMB	SELF WEIGHT
b. COLLATERAL LOAD	10 PSF
4. WIND LOADS:

a. WIND SPEED	
- BASIC WIND SPEED (3 SECOND GUST) :	111 MPH
- ALLOWABLE STRESS DESIGN WIND SPEED:	86 MPH
b. EXPOSURE - C	
c. INTERNAL PRESSURE COEFFICIENT - C _{pi} = + 0.18 ("PARTIALLY OPEN" OR "ENCLOSED" UNLESS DETERMINED OTHERWISE BY PEMB MANUFACTURER)	
d. DESIGN COMPONENTS & CLADDING AS WELL AS CLADDING SUPPORT MEMBERS (GIRTS, STUDS, MULLIONS, JOISTS, PURLINS, ETC.), THAT ARE NOT PART OF THE MWFRS, USING ASCE 7-16 CHAPTER 30 WIND PRESSURES.	
e. DESIGN CLADDING USING:	
1. ASCE 7-16 CHAPTER 30 WIND PRESSURES.	
2. F.M. GLOBAL LOSS PREVENTION DATA SHEET 1-28.	
f. F.M. GLOBAL WIND DESIGN PARAMETERS:	
1. DESIGN WIND SPEED (3 SECOND GUST), 90 MPH	
2. EXPOSURE CATEGORY - C	
3. WIND IMPORTANCE FACTOR: 1.15 (REGARDLESS OF RISK CATEGORY)	
4. FACTOR OF SAFETY: 2	
5. ENCLOSURE CLASSIFICATION: TO BE DETERMINED BY PEMB MANUFACTURER	
5. SNOW LOADS:

a. GROUND SNOW LOAD (P _g)	= 10 PSF
b. IMPORTANCE FACTOR - I _s	= 1.1
c. EXPOSURE - C _e	= 1.1 (SHELTERED- EXPOSURE C)
d. THERMAL FACTOR - C _t	= 1.0 (HEATED SPACES)
e. FROST PENETRATION DEPTH	= 12 INCHES (FOR UNHEATED SPACE)
f. DESIGN SNOW LOAD	= 11 PSF (WHEN DRIFT IS NOT INCLUDED)
g. BALANCED SNOW LOAD	= 8.5 PSF (WHEN DRIFT IS INCLUDED)
6. SEISMIC LOADS:

a. SEISMIC IMPORTANCE FACTOR - I _e = 1.25	
b. MAPPED SPECTRAL RESPONSE ACCELERATIONS - S _s = 0.189, S ₁ = 0.098	
c. SITE CLASS - D	
d. SPECTRAL RESPONSE COEFFICIENT - S _d = 0.201, S _{d1} = 0.157	
e. SEISMIC DESIGN CATEGORY - C	
f. BASIC FORCE RESISTING SYSTEMS: STEEL SYSTEM NOT SPECIFICALLY DETAILED FOR SEISMIC	
g. RESPONSE MODIFICATION FACTOR - R = 3.0	
h. DEFLECTION AMPLIFICATION FACTOR - Δ _m = 3.0	
i. OVERSTRENGTH FACTOR - Ω ₀ = 3.0	
j. ANALYSIS PROCEDURE - EQUIVALENT LATERAL FORCE PROCEDURE	
k. SEISMIC BASE SHEAR COEFFICIENT - C _b = 0.04	
l. SEISMIC WEIGHT = ROOF WEIGHT AND ROOF TRIBUTARY WEIGHT FOR THE ADJOINING WALLS	
7. CRANE LOAD: 10 TON BRIDGE CRANE

a. CRANE HOOK HEIGHT: 35'	
b. MAX WHEEL LOAD W/O IMPACT: 17500 lb	
c. MAX BUMPER FORCE: BY CRANE SUPPLIER	
d. WHEEL SPACING: 12'	
e. CRANE WEIGHT WITH HOISTS: 22750 lb	
f. TOTAL LATERAL FORCE: TBD BY CRANE SUPPLIER	
g. TOTAL LONGITUDINAL FORCE: TBD BY CRANE SUPPLIER	
8. NON-STRUCTURAL COMPONENTS (ASCE 7-16 CHAPTER 13)

a. I _s = 1.5 (COMPONENT TO FUNCTION FOR LIFE-SAFETY PURPOSES AFTER EARTHQUAKE)	
b. INTERIOR NONSTRUCTURAL WALLS:	R _w = 1 Δ _w = 2.5 Q = 2
c. ACCESS FLOORS:	R _w = 1 Δ _w = 2.5 Q = 2
d. CABINETS:	R _w = 1 Δ _w = 2.5 Q = 2
e. ELECTRICAL CONDUITS AND CABLE TRAYS:	R _w = 2.5 Δ _w = 6 Q = 2
f. DUCTWORK:	R _w = 2.5 Δ _w = 6 Q = 2

NON-STRUCTURAL COMPONENTS CONFORMING WITH SECTION 13.1.4 OF ASCE 7-16 ARE EXEMPT.

D. GENERAL REQUIREMENTS:

1. SPECIFICATIONS ARE PART OF THE CONSTRUCTION DOCUMENTS AND MUST BE USED IN CONJUNCTION WITH THE DRAWINGS.
2. VERIFY EXISTING CONDITIONS AND DIMENSIONS PRIOR TO BEGINNING WORK OR FABRICATING MATERIALS. NOTIFY ENGINEER/ARCHITECT OF DISCREPANCIES BEFORE PROCEEDING WITH ANY PHASE OF WORK.
3. VERIFY THE LOCATION OF CHASES, INSERTS, OPENINGS, SLEEVES, FINISHES, DEPRESSIONS, PADS, AND WALL PENETRATIONS.
4. DO NOT SCALE DRAWINGS FOR THE PURPOSE OF ESTABLISHING DIMENSIONS.
5. DETAILS LABELED "TYPICAL DETAILS" ON DRAWINGS APPLY TO SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILD. SUCH DETAILS APPLY WHETHER OR NOT DETAILS ARE REFERENCED AT EACH LOCATION. NOTIFY ENGINEER/ARCHITECT OF CONFLICTS REGARDING APPLICABILITY OF "TYPICAL DETAILS".
6. DO NOT LOAD THE SLAB ON GRADE OR SUPPORTED SLAB WITH ERECTION CRANES OR ERECTION EQUIPMENT. THE SLABS HAVE NOT BEEN DESIGNED FOR CRANE LOADS AND WILL REQUIRE AN INCREASE IN THICKNESS AND/OR REINFORCEMENT. OBTAIN ENGINEER/ARCHITECT APPROVAL ON PROPOSED CRANE SUPPORT PLAN FOR SLABS PRIOR TO COMMENCING WORK.
7. DO NOT STORE OR STACK CONSTRUCTION MATERIALS ON POURED OR ERECTED FLOORS/ROOFS IN EXCESS OF 80 PERCENT OF LIVE LOAD. GENERAL CONTRACTOR WILL ENSURE THAT SUB-CONTRACTORS ARE INFORMED OF LOADING RESTRICTIONS. AVOID IMPACT WHEN PLACING MATERIALS ON POURED OR ERECTED FLOORS OR ROOF.
8. THE CONTRACT STRUCTURAL DOCUMENTS REPRESENT THE FINISHED STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION. PROVIDE MEASURES REQUIRED TO PROTECT THE STRUCTURE, WORKMEN, AND OTHER PERSONS DURING CONSTRUCTION; INCLUDING BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR THE BUILDING, FORMS AND SCAFFOLDING, SHORING OF RETAINING WALLS AND OTHER TEMPORARY SUPPORTS AS REQUIRED.
9. PRINCIPAL OPENINGS THROUGH THE FRAMING ARE SHOWN ON DRAWINGS. EXAMINE THE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR THE REQUIRED OPENINGS AND PROVIDE FOR REQUIRED OPENINGS WHETHER SHOWN ON THE STRUCTURAL DRAWINGS OR NOT. VERIFY SIZE AND LOCATION OF OPENINGS WITH THE MECHANICAL CONTRACTOR. DEVIATIONS FROM THE OPENINGS SHOWN ON THE STRUCTURAL DRAWINGS MUST BE APPROVED PRIOR TO IMPLEMENTING THE CHANGES.

PRE-ENGINEERED METAL BUILDING NOTES

- DESIGN AND FABRICATE THE BUILDING ACCORDING TO THE CONTRACT SPECIFICATIONS, IBC, AISC, MBMA, AND AISI LATEST SPECIFICATIONS. INTERNATIONAL ACCREDITATION SERVICE (IAS) AC472 ACCREDITATION IS REQUIRED OF THE METAL BUILDING SYSTEM MANUFACTURER AND A CERTIFICATE TO VERIFY COMPLIANCE MUST BE SUBMITTED WITH THE DESIGN ANALYSIS. THE DIMENSIONAL TOLERANCES OBTAINED IN THE AWS CODE UNDER WORKMANSHIP AND THE TOLERANCES APPLICABLE TO HOT ROLLED STEEL UNDER THE AISI "STANDARD MILL PRACTICE" SECTION MUST BE REQUIRED IN THE FABRICATION OF THE STEEL BUILDING FRAMES.
- DESIGN THE BUILDING FRAME TO LIMIT THE LATERAL DEFLECTION/DRIFT TO THE MOST STRINGENT REQUIREMENTS AS INDICATED PER THE CODE/SPECIFICATIONS/DRAWINGS.
- SUBMIT A COMPLETE DESIGN ANALYSIS SHOWING CALCULATIONS FOR THE RIGID FRAMES, GIRTS, PURLINS, AND X-BRACING FOR GRAVITY, WIND, AND SEISMIC LOADS AND A LAYOUT OF ANCHOR BOLTS CRANE RUNWAY BEAM AND ITS CONNECTIONS TO THE STRUCTURE INCLUDING THE SUPPORTING CORBELS AND OTHER EMBEDDED ITEMS FOR APPROVAL WITH ALL THE MAIN MEMBERS, TYPICAL CONNECTIONS (SHOWING BOLT HOLES AND WELDS) AND ERECTION DRAWINGS.
- DESIGN THE BUILDING TO SUPPORT MECHANICAL EQUIPMENT INCLUDING HEATERS, AND SPRINKLERS. LOAD COMBINATIONS AND DESIGN STRESSES MUST COMPLY WITH AISC SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS AND THE BUILDING CODE.
- SUBMIT STRUCTURAL DESIGN DATA/CALCULATIONS INCLUDING COLUMN/FRAME REACTIONS IN BOTH ASD & LRFD LOAD COMBINATIONS FOR REVIEW AND APPROVAL.
- DESIGN AND FABRICATE THE PRE-ENGINEERED METAL BUILDING TO MEET THE MINIMUM DESIGN CRITERIA NOTED ON THE DRAWINGS AND SPECIFICATIONS.
- DESIGN THE STRUCTURE FOR A ROOF COLLATERAL DEAD LOAD OF 10 PSF MINIMUM.
- DESIGN THE ROOF WIND LOAD AS PER DESIGN LOADS IN GENERAL NOTES. CONSIDER MAJOR DOORWAYS (i.e. OVERHEAD DOORS, ETC.) TO BE OPEN SO THAT PARTIALLY ENCLOSED BUILDING CONDITIONS MUST BE INVESTIGATED.
- DEFLECTION AND DRIFT CRITERIA FOR THE INDICATED DESIGN LOADS, DO NOT EXCEED THE DEFLECTIONS INDICATED BELOW:

a. BUILDING HORIZONTAL DRIFT (CALCULATE BUILDING DRIFT FOR FULL SERVICE LEVEL WIND LOAD (50-YEAR MRI) WITHOUT ANY REDUCTION: HEIGHT/240 (METAL CLAD BUILDINGS), HEIGHT/240 (METAL CLAD BUILDINGS WITH SHEET ROCK ON THE INSIDE) AND HEIGHT/400 FOR FRAMES SUPPORTING CRANES. DRIFT DUE TO ULTIMATE LEVEL SEISMIC LOADS SHALL NOT EXCEED HEIGHT /400.	
b. ROOF MEMBER VERTICAL DEFLECTION DUE TO LIVE LOAD: SPAN/240.	
c. WALL SUPPORT/VERT DEFLECTION: SPAN/240 FOR METAL CLAD BUILDINGS, SPAN/240 FOR BUILDINGS WITH SHEET ROCK ATTACHED ON THE INSIDE, SPAN/80 FOR GLASS CLADDING.	
d. METAL WALL PANEL HORIZONTAL DEFLECTION DUE TO WIND: SPAN/180.	
e. CRANE RUNWAY BEAM VERTICAL DEFLECTION: SPAN/60 FOR CLASS A, B AND C CRANES, SPAN/800 CLASS D CRANES OR AS REQUIRED BY CRANE SUPPLIER, WHICHEVER IS MORE STRINGENT.	
f. CRANE RUNWAY BEAMS HORIZONTAL DEFLECTION: SPAN/400 FOR ALL CLASSES OR AS REQUIRED BY CRANE SUPPLIER, WHICHEVER IS MORE STRINGENT.	
g. THE ABOVE CALCULATIONS WILL BE MADE BY USING THE PEMB FRAME MEMBERS, PURLINS OR GIRTS ALONG WITHOUT CONTRIBUTION FROM SECONDARY ELEMENTS AND ASSUMING PINNED CONNECTIONS FOR COLUMN BASES.	
h. DESIGN SECONDARY-FRAMING SYSTEM TO ACCOMMODATE DEFLECTION OF PRIMARY FRAMING AND CONSTRUCTION TOLERANCES, AND TO MAINTAIN CLEARANCES AT OPENINGS.	
- DESIGN THE PEMB FRAMES COVERING THE CASTING BAY TO SUPPORT A BRIDGE CRANE AS SHOWN ON DRAWINGS. THE OVERALL TOLERANCE OF THESE FRAMES, INCLUDING THE CRANE RUNWAY GIRDERS MUST MEET THE CRANE TOLERANCE REQUIREMENT.
- DESIGN THE BUILDING TO MEET THE F.M. GLOBAL PROPERTY LOSS PREVENTION DATA SHEET.

CONCRETE NOTES

- PROVIDE CONCRETE AS SHOWN BELOW. PROVIDE BATCH MIXING, TRANSPORTATION, PLACING AND CURING OF CONCRETE IN ACCORDANCE WITH RECOMMENDATIONS OF ACI 301, ACI 308, ACI 318 AND ASTM C94. USE TYPE I PORTLAND CEMENT UNLESS OTHERWISE NOTED. PROVIDE ADMIXTURES FOR AND SPECIAL REQUIREMENTS AS SPECIFIED.

1. NORMAL WEIGHT (150 PCF), F _{ci} = 4,500 PSI CONCRETE AT 28 DAYS	
a. CONCRETE GRADE SUPPORTED SLABS AND GRADE BEAMS	
b. FOOTINGS	
c. CONCRETE NOT SPECIFICALLY COVERED	
2. UNO. CONCRETE SLABS ON GRADE SHALL BE FINISHED "CLASS 5, INDUSTRIAL" AND CONFORM TO FLOOR FLATNESS (F ₁ + 45) AND LEVELNESS (F ₁ + 30) PER ACI 302.1R-15.	
3. FLOOR CRITERIA FOR AUTONOMOUS GUIDED VEHICLES (AGV)	
a. MAXIMUM FLOOR SLOPE	1 DEGREE (1.7%)
b. MAXIMUM FLOOR OBSTACLE HEIGHT:	0.63"
c. MAXIMUM FLOOR GAP	0.63"
- UNLESS SPECIFIED BELOW, CONCRETE MUST REACH THE FOLLOWING PERCENTAGES OF ITS 28 DAY COMPRESSIVE STRENGTH (F_c) BEFORE FORMS MAY BE REMOVED:

1. FORMWORK FOR FOOTINGS AND SLAB TURNDOWN 65 PERCENT	
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- PROVIDE CONCRETE MIXES DESIGNED BY A QUALIFIED TESTING LABORATORY FOR REVIEW AND APPROVAL BY THE DOR.
- PROVIDE CONSTRUCTION AND CONTROL JOINTS AS INDICATED ON DRAWINGS. HORIZONTAL CONSTRUCTION JOINTS ARE NOT ALLOWED UNLESS SPECIFICALLY NOTED OR APPROVED BY DOR. NOTIFY DOR OF PROPOSED CONSTRUCTION JOINT OR CONTROL JOINT LOCATIONS WHICH ARE DIFFERENT OR IN ADDITION TO JOINTS INDICATED ON DRAWINGS. PROVIDE 10,000-SQUARE FOOT MAXIMUM AREA OF CONCRETE PLACEMENT IN THE SLAB BETWEEN CONSTRUCTION JOINTS. PROVIDE 75-FOOT MAXIMUM SPACING OF CONSTRUCTION JOINTS IN GRADE BEAMS. PROVIDE GRADE BEAM CONSTRUCTION JOINTS IN MIDDLE 1/3 OF THE SPAN. WHEN A BEAM INTERSECTS A GIRDER WITHIN THE MIDDLE 1/3 OF THE GIRDER'S SPAN, OFFSET THE JOINT IN THE GIRDER A DISTANCE EQUAL TO TWICE THE WIDTH OF THE BEAM.
- CHAMFER EXPOSED EDGES 3/4 INCH UNLESS OTHERWISE NOTED.
- ENSURE CONSTRUCTION JOINTS ARE CLEAN PRIOR TO POURING NEW CONCRETE.
- REFERENCE THE APPROPRIATE DISCIPLINE'S DRAWINGS FOR SUB SLAB PIPING, FLOOR DRAINS, AND SLAB AND WALL PENETRATIONS.
- PROVIDE ADEQUATE STRUCTURAL FRAMING AS APPROVED BY DOR FOR MECHANICAL OPENINGS THROUGH THE SLABS, WALLS, AND FLOOR DECK. OPENINGS WILL NOT BE PERMITTED THROUGH BEAMS UNLESS SPECIFICALLY DETAILED.
- FOR PIPE INSTALLED HORIZONTALLY WITHIN SLAB, PROVIDE MAXIMUM OUTSIDE DIAMETER OF 30 PERCENT OF THE SLAB THICKNESS. PLACE CONDUIT OR PIPE BETWEEN THE TOP AND BOTTOM LAYERS OF REINFORCEMENT WITHIN THE CENTER THIRD OF THE SLAB. DO NOT SPACE CONDUITS OR PIPES CLOSER THAN THREE DIAMETERS OR WIDTHS ON CENTER.

FOUNDATION NOTES

- REFER TO THE EARTHWORK SPECIFICATIONS FOR GENERAL REQUIREMENTS OF EARTHWORK, EXCAVATION, SUBGRADE PREPARATION, FILL AND COMPACTION, WATERPROOFING AND OTHER PERTINENT REQUIREMENTS AND INFORMATION.
- FOUNDATION DESIGN IS BASED UPON THE SOILS EXPLORATION REPORT NO. LR220082 OF SUBSURFACE EXPLORATION AND GEOTECHNICAL ANALYSIS AND EVALUATION PREPARED BY BUILDING AND EARTH, OCTOBER 26, 2023 INCLUDING THE LR220082-AERQET ROCKEYDINE EXPANSION AREA 2-GMLRS REPORT REPORT ADDENDUM.
- FOUNDATIONS ARE DESIGNED FOR AN ALLOWABLE NET BEARING PRESSURE OF 2,500 PSF.
- GROUND IMPROVEMENT IS NEEDED UNDER THE X-RAY VAULT PAD- AND POSSIBLY UNDER THE FIRE WALL FOUNDATION- TO CONTROL SETTLEMENT UNDER THE SLAB ON GROUND TO ALLOW FLAT SURFACE IN THE AUTOMATION SPACE. THE FLOOR LIMITS ARE AS FOLLOWS:

- MAXIMUM FLOOR SLOPE	: 1.7%
- MAXIMUM OBSTACLE HEIGHT:	0.63"
- MAXIMUM FLOOR GAP	: 0.63"

GROUND IMPROVEMENT CAN BE DONE USING GROUND SCREWS OR RAMMED AGGREGATE PIERS OR ANY OTHER APPROVED ALTERNATE. DETAILS ON SHEET S-501 ARE FOR THE RAMMED AGGREGATE PIER EXAMPLE.
- PROTECT PIPES AND CONDUITS RUNNING THRU WALLS AND SLABS WITH 1/2 INCH EXPANSION MATERIAL. LOWER CONTINUOUS FOOTINGS AND GRADE BEAMS PERPENDICULAR TO PIPE RUNS, TO ALLOW PIPES TO PASS ABOVE THE FOOTINGS OR THOUGH THE GRADE BEAMS. ALTERNATIVELY, PROVIDE A CONCRETE JACKET IF PIPES ARE LOW ENOUGH TO BE PLACED BELOW THE FOOTINGS AND GRADE BEAMS. LOWER FOOTINGS AND GRADE BEAMS PARALLEL TO PIPE RUNS TO AVOID SURCHARGE ONTO ADJACENT TRENCH EXCAVATIONS.
- MAINTAIN SUBGRADE AND FILL MOISTURE CONTENT UNTIL FOUNDATIONS ARE PLACED.
- ARRANGE FOR CONTRACTOR'S INDEPENDENT TESTING AGENCY TO MONITOR CUT AND FILL OPERATIONS, AND PERFORM FIELD DENSITY AND MOISTURE CONTENT TESTS TO VERIFY COMPACTION AND APPROVE FOOTING SUBGRADE PRIOR TO PLACING CONCRETE.
- DO NOT PLACE FOOTINGS OR SLABS AGAINST SUBGRADE CONTAINING FREE WATER, FROST, OR ICE.
- MAINTAIN PROPER SITE DRAINAGE DURING CONSTRUCTION TO ENSURE SURFACE RUNOFF AWAY FROM STRUCTURES AND TO PREVENT FLOODING OF SURFACE RUNOFF NEAR THE STRUCTURES.
- KEEP OPEN EXCAVATIONS AROUND BUILDING DRY. BACKFILL AGAINST FOUNDATIONS AND GRADE BEAMS AS SOON AS PRACTICAL. PUMP WATER OUT OF OPEN EXCAVATIONS IF FLOODING PRIOR TO BACKFILLING.
- RETAINING WALLS ARE DESIGNED FOR EQUIVALENT FLUID UNIT WEIGHTS OF 40 AND 360 LBS PER CUBIC FOOT FOR ACTIVE AND PASSIVE PRESSURES, RESPECTIVELY.
- FORM SIDES OF BEAMS AND FOOTINGS STRAIGHT AND TO SPECIFIED DIMENSIONS. EARTH FORMS WILL NOT BE PERMITTED.
- REFER TO CIVIL DRAWINGS FOR LIMITS OF EXCAVATIONS.
- DRAINAGE: PROVIDE POSITIVE DRAINAGE DURING CONSTRUCTION AND MAINTAIN THROUGHOUT THE LIFE OF THE STRUCTURE. INFILTRATION OF WATER INTO UTILITY OR FOUNDATION EXCAVATIONS MUST BE PREVENTED DURING CONSTRUCTION. PLANTERS OR OTHER SURFACE FEATURES THAT COULD RETAIN WATER ADJACENT TO THE STRUCTURE MUST NOT BE CONSTRUCTED.
- CAPILLARY BARRIER: WHERE INDICATED ON PLANS, PROVIDE A CAPILLARY BARRIER CONSISTING OF FREE-DRAINING FILL SUCH AS PEA GRAVEL OR 3/4" TO 1" CLEAN PEA-GRADED GRAVEL.
- FOUNDATION SHOWN ON THE DRAWINGS ARE PRELIMINARY. FINAL FOUNDATION DESIGN WILL BE PERFORMED ONCE THE COLUMN REACTIONS AND ANCHOR ROD LAYOUTS FROM THE PEMB DESIGN ARE RECEIVED.

COLD FORMED METAL FRAMING

- COLD FORMED METAL FRAMING IS A DELEGATED DESIGN ITEM FOR WHICH SHOP DRAWINGS AND CALCULATIONS MUST BE PROVIDED BY THE CONTRACTOR. SHOP DRAWINGS MUST INDICATE THE TYPE, SIZE GAUGE AND SPACING FOR ALL STUDS AND ACCESSORIES. INDICATIVE DESIGNS ARE AS FOLLOWS:
 1. EXTERIOR WALL FRAMING:

a. TYPICAL WALL STUD: 6" DEPTH, 1 5/8 FLANGE, 16 GAUGE AT 16" ON CENTER.	
b. WINDOW FRAMES (UP TO 15 FT WIDE AND 7 FT TALL, SEE ARCH ELEVATIONS)	
b.1 HEADERS: 4-STUD BOX, 6" DEPTH, 3" FLANGE, 12 GAUGE, CONNECTORS AT 12" MAX SPACING	
b.2 SILL: 2-STUD BOX, 6" DEPTH, 2" FLANGE, 12 GAUGE, CONNECTORS AT 12" MAX SPACING	
b.3 JAMBS: 4-STUD BOX, 6" DEPTH, 2" FLANGE, 12 GAUGE, CONNECTORS AT 12" MAX SPACING	
 2. DESIGN STRUCTURAL MEMBERS IN ACCORDANCE WITH AMERICAN IRON AND STEEL INSTITUTE (AISI) "SPECIFICATION FOR DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS", LATEST EDITION.
 3. DESIGN OF COLD-FORMED STUDS, RUNNERS, BLOCKING AND JOISTS DESIGNATIONS MUST BE IN ACCORDANCE WITH THE MANUFACTURING CATALOG, LATEST EDITION.
 4. FORM FRAMING MEMBERS FROM CORROSION RESISTANT STEEL CORRESPONDING TO THE REQUIREMENTS OF ASTM A653 WITH A MINIMUM YIELD OF 33KSI.
 5. PLACE COLD-FORMED STEEL STUD WALL BRIDGING EVEN HORIZONTALLY WITH A MAXIMUM VERTICAL SPACING OF 4 FEET UNLESS OTHERWISE NOTED. AS AN OPTION, CONTINUOUS COLD-FORMED CHANNELS MAY BE POSITIONED THROUGH THE STUD PUNCH OUTS AS BRIDGING PROVIDED THE CHANNEL IS PROPERLY FASTENED TO EACH STUD.
 6. PRIOR TO FABRICATION OF FRAMING, SUBMIT FABRICATION AND ERECTION DRAWINGS TO THE CONTRACTING OFFICER FOR REVIEW.
 7. INSTALL AXIALLY-LOADED STUDS IN A MANNER WHICH WILL ASSURE THAT THEIR ENDS ARE POSITIONED AGAINST THE INSIDE OF THE RUNNER WEB PRIOR TO FASTENING.
 8. FASTEN COMPONENTS WITH SELF-DRILLING SCREWS OR WELDING. PROVIDE SCREWS OF SUFFICIENT SIZE TO ENSURE THE STRENGTH OF THE CONNECTION. WIRE TYING OF COMPONENTS IS NOT PERMITTED. TOUCH UP ALL WELDS WITH A ZINC-RICH PAINT.
 9. WELDING OF COLD-FORMED STUDS AND JOISTS MAY BE PERFORMED USING A MINIMUM 3/16" AWS TYPE 6013 WELDING ROD.
 10. SECURELY ANCHOR RUNNERS TO THE SUPPORTING STRUCTURE. PROVIDE COMPLETE, UNIFORM AND LEVEL BEARING SUPPORT FOR THE BOTTOM RUNNER.
 11. SECURELY ANCHOR ABUTTING LENGTHS OF RUNNER TO A COMMON STRUCTURAL ELEMENT, BUTT-WELDED OR SPLICED.
 12. PLUMB, ALIGN AND SECURELY ATTACH STUDS TO THE FLANGES OF BOTH UPPER AND LOWER RUNNERS. SPLICES IN STUDS ARE NOT PERMITTED.
 13. PROVIDE HEADERS AND SUPPORTING STUDS FOR FRAMING OF WALL OPENINGS.
 14. SEE SPECIFICATION SECTION 05 40 00 FOR ADDITIONAL REQUIREMENTS.

REINFORCING STEEL NOTES

- PROVIDE DETAILING, FABRICATION, AND INSTALLATION OF REINFORCING AND ACCESSORIES IN ACCORDANCE WITH ACI 315 AND ACI 318.
- PROVIDE NEW BILLET STEEL REINFORCING BARS IN ACCORDANCE WITH ASTM A615, GRADE 60.
- PROVIDE ANCHOR RODS CONFORMING TO THE STANDARDS OF ASTM F1554 GRADE 55 WELDABLE UNLESS OTHERWISE NOTED.
- COORDINATE PLACEMENT OF CAST-IN-PLACE EMBEDS AND ANCHOR RODS. SET ANCHOR RODS WITH A TEMPLATE. SECURELY ATTACH EMBED ITEMS TO FORMWORK OR REINFORCING.
- PROVIDE CLASS "B" REINFORCEMENT SPLICES FOR CONTINUOUS REINFORCEMENT. PROVIDE STANDARD 90-DEGREE HOOKS IN ACCORDANCE WITH ACI 318, UNLESS OTHERWISE NOTED. STAGGER SPLICES UNLESS SPECIFICALLY NOTED.
- MAINTAIN THE FOLLOWING CONCRETE COVERAGE FOR REINFORCING STEEL UNLESS OTHERWISE NOTED:

1. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH - 3 INCHES	
2. CONCRETE EXPOSED TO EARTH OR WEATHER	
a. NO. 6 AND LARGER - 2 INCHES	
b. NO. 5 AND SMALLER - 1-1/2 INCHES	
3. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND:	
a. SLABS AND WALLS	
• NO. 11 AND SMALLER - 3/4 INCHES	
b. BEAMS, COLUMNS, PEDESTALS AND TENSION TIES - 1-1/2 INCHES	
- DO NOT WELD OR BEND REINFORCEMENT IN THE FIELD UNLESS SPECIFICALLY SHOWN OR APPROVED BY DOR.
- WHEN SPECIFICALLY APPROVED, PROVIDE WELDED REINFORCEMENT IN ACCORDANCE WITH ASTM A706. USE LOW HYDROGEN ELECTRODES FOR WELDING OF REINFORCEMENT IN CONFORMANCE WITH "WELDING REINFORCEMENT STEEL, METAL INSERTS AND CONNECTIONS IN REINFORCED CONCRETE CONSTRUCTION", AMERICAN WELDING SOCIETY, AWS D1.4.
- WHERE REQUIRED, PROVIDE DOWELS TO MATCH SIZE AND SPACING OF MAIN REINFORCING.
- PROVIDE CONTINUOUS HORIZONTAL WALL REINFORCEMENT WITH 90-DEGREE BENDS AND EXTENSIONS AT CORNERS AND INTERSECTIONS AS SHOWN ON TYPICAL BAR PLACING DETAILS.
- PROVIDE BAR SUPPORT ACCESSORIES IN ACCORDANCE WITH THE LATEST ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES. SUPPORT BEAM REINFORCING ON BEAM BOLSTERS SPACED NOT MORE THAN 4 FEET ON CENTER.
- PROVIDE BAR SUPPORTS WITH PLASTIC COATED LEGS OR HOT DIP GALVANIZING AFTER FABRICATION FOR CONCRETE EXPOSED TO VIEW. PROVIDE STAINLESS STEEL BAR SUPPORTS FOR CONCRETE TO RECEIVE A SANDBLAST FINISH.

STRUCTURAL TESTS AND INSPECTIONS

1. SEE SHEETS S-004 THROUGH S-012 FOR SPECIAL INSPECTION NOTES, SCHEDULES AND STATEMENTS

DELEGATED DESIGN ITEMS

- THE CONTRACTOR MUST EMPLOY OR RETAIN A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF ARKANSAS TO DESIGN AND DETAIL DELEGATED DESIGN ITEMS TO MEET THE PERFORMANCE AND DESIGN CRITERIA ESTABLISHED AS PART OF THE BASE BUILDING STRUCTURE INDICATED IN THE CONTRACT DOCUMENTS INCLUDING BUT NOT LIMITED TO:

1. PRE-ENGINEERED METAL BUILDING (PEMB)	
2. METAL STAIRS ASSEMBLY AND THEIR CONNECTIONS TO THE BUILDING STRUCTURE.	
3. CURTAIN WALL FRAMING AND FITTINGS TO STEEL STRUCTURE.	
4. EMERGENCY SLIDES, EMERGENCY PLATFORMS AND THEIR CONNECTIONS TO THE STRUCTURE AND FOUNDATION.	
5. EQUIPMENT CONNECTIONS TO THE STRUCTURE.	
6. COLD-FORMED METAL FRAMING AND THEIR CONNECTIONS.	
7. SUPPORT FRAMING/SEISMIC BRACING OF NON-STRUCTURAL COMPONENTS.	
8. GROUND IMPROVEMENT REQUIRED UNDER FIRE WALL AND UNDER X-RAY VAULT PAD.	
9. TEMPORARY BRACING AND SHORING	
10. WALL AND ROOF PANELS	
11. ROOF-TOP FALL ARREST SYSTEM	
- MECHANICAL EQUIPMENT CURBS AND CONNECTIONS TO SUPPORTING FRAMING, INCLUDING BRACING AND ANCHORAGE TO RESIST APPLICABLE LATERAL LOADS.

1. ROOF TOP EQUIPMENT CURBS, ROOF TOP MECHANICAL EQUIPMENT, EQUIPMENT TIE DOWNS, AND CONNECTIONS OF EQUIPMENT TO BUILDING STRUCTURE FOR WIND RESISTANCE MUST BE DESIGNED AND ENGINEERED BY A REGISTERED SPECIALTY ENGINEER RETAINED BY THE MECHANICAL EQUIPMENT SUPPLIER. SIGNED AND SEALED DRAWING AND CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER/ARCHITECT FOR REVIEW AND APPROVAL. THE EQUIPMENT MANUFACTURER MUST PROVIDE THE ATTACHMENT OF THE UNIT TO THE STRUCTURE AND SUBMIT TO THE ENGINEER/ARCHITECT THE LOADS, LOCATIONS, AND METHODS OF ATTACHMENT. THE STRUCTURAL ENGINEER WILL MAKE PROVISIONS IN THE DESIGN OF THE BUILDING STRUCTURE TO ACCOMMODATE THE LOADS AND ATTACHMENTS SUBMITTED BY THE MANUFACTURER.	
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- THE FOLLOWING ITEMS ARE CONSIDERED DELEGATED DESIGNS FOR WHICH PRODUCT DATA SHEETS AND DESIGN DRAWINGS OR SHOP DRAWINGS (IF APPLICABLE) MUST BE SUBMITTED FOR ENGINEER/ARCHITECT REVIEW AND APPROVAL PRIOR TO FABRICATION OF THESE ITEMS. THESE SUBMITTALS MUST BE REVIEWED IN FULL BY THE CONTRACTOR PRIOR TO SENDING TO THE ENGINEER/ARCHITECT. BASE THE DESIGN ON THE REQUIREMENTS OF CODES AS LISTED IN THE GENERAL NOTES. THESE DELEGATED DESIGNS INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING ITEMS, UNLESS NOTED OTHERWISE IN THE DESIGN DOCUMENTS:

1. UNISTRUT AND ASSOCIATED EQUIPMENT SUPPORTS FOR MEP SYSTEMS, INCLUDING, BUT NOT LIMITED TO, PIPING, CONDUITS, AND CABLE TRAYS, WHETHER INDICATED ON THE DRAWINGS OR NOT.	
2. FIELD-ENGINEERED DETAILS DEVELOPED BY THE CONTRACTOR THAT DIFFER FROM OR ADD TO THE STRUCTURAL DRAWINGS MUST BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF ARKANSAS AND SUBMITTED FOR A/E REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.	
3. THE USE OF REPRODUCTIONS OR PHOTOCOPIES OF THE CONTRACT DRAWINGS TO CREATE DELEGATED DESIGNS IS NOT PERMITTED.	

STRUCTURAL STEEL

- STRUCTURAL STEEL
 - GENERAL
 1. MATERIALS MUST CONFORM TO THE FOLLOWING UNLESS NOTED OTHERWISE.

a. WALLS & VERT CHANNELS (C & MC) SHAPES	: ASTM A992 GRADE 50
2. ANGLES, L'S AND HP SHAPES	: ASTM A572 GRADE 50
3. PLATES 4" THICKNESS AND LESS	: ASTM A572 GRADE 50
4. PLATES, THICKNESS GREATER THAN 4"	: ASTM A58
5. PIPES	: ASTM A53, TYPE E OR S, GRADE B
6. STEEL TUBES	: ASTM A500, GRADE C, PHYSICS
7. BOLTS	: ASTM F1554 GRADE 55
8. ANCHOR RODS	: ASTM A36
9. THREADED ROD	: ASTM A36
10. HEADED SHEAR STUDS	: ASTM A108, GRADES 1015 THROUGH 1020, F _u =65KSI, AWS D1.1 TYPE B
11. STAINLESS STEEL: TYPE 304, 316 OR D319 NON-MAGNETIC, CHROMIUM-NICKEL, LOW-CARBON AUSTENITIC ALLOYS.	
12. ELECTRODES: E70XX FOR 33KSI STEEL AND SMAW PROCESS OR ITS EQUIVALENT, MATCHING WELD METAL FOR OTHER STEEL GRADES AND/OR PROCESSES.	
 2. ALL STEEL MEMBERS SUPPORTING WORK BY OTHER TRADES (INCLUDING, BUT NOT LIMITED TO, LINTELS, WALL SUPPORTS, CURB ANCHORS, AND SIMILAR SUPPORTING MEMBERS) MUST BE ADJUSTABLE ITEMS. DETAIL AND FABRICATE THESE MEMBERS TO PROVIDE ADJUSTABLE CONNECTIONS TO THE SUPPORTING STRUCTURAL STEEL FRAME. THE STEEL MEMBERS' TOTAL ADJUSTABILITY MUST BE AS REQUIRED TO PROVIDE PROPER ALIGNMENT AND TOLERANCES AS SPECIFIED IN THE SPECIFICATIONS OF OTHER TRADES AND MUST INCLUDE TOLERANCES OF THE STRUCTURAL STEEL. COORDINATE REQUIRED ADJUSTABILITY AND MEANS OF PROVIDING ADJUSTABILITY WITH FABRICATOR AND OTHER TRADES.
 3. GALVANIZE ALL STEEL EXPOSED TO ENVIRONMENTAL/WEATHER CONDITIONS.
 4. GALVANIZE ALL STEEL EXPOSED TO ENVIRONMENTAL/WEATHER CONDITIONS.
 5. BOLTS CONNECTIONS AND SPLICES
 6. DETAIL STEEL BEAM CONNECTIONS AS SIMPLE SPAN BEAMS, UNLESS NOTED OTHERWISE.
 7. DESIGN AND DETAIL ALL BEAM CONNECTIONS FOR THE MAXIMUM OF THE FACTORED LOAD REACTIONS IN KIPS (K) INDICATED ON THE PLANS OR PER THE TABLE BELOW. PROVIDE THE MINIMUM NUMBER OF BOLTS LISTED BELOW IN EACH CONNECTED PART. FOR REACTIONS NOT INDICATED ON THE PLANS, PROVIDE A SHEAR CONNECTION WITH THE MINIMUM CAPACITY AND MINIMUM NUMBER OF BOLTS LISTED BELOW. THE MINIMUM NUMBER OF BOLTS LISTED BELOW FOR THE CORRESPONDING BEAM SIZES MUST BE APPLICABLE TO ALL FRAMING CONDITIONS UNLESS OFFSET ELEVATION REQUIREMENTS NECESSITATE MODIFIED CONNECTION DETAILS.

NOMINAL BEAM SIZE (IN 1 VERTICAL ROW)	MINIMUM NUMBER OF BOLTS (LRFD)	MINIMUM CONNECTION CAPACITY
a. W6	2 BOLTS IN 1 HORIZONTAL ROW	8 KIPS
b. W8 & W10	2 BOLTS	13 KIPS
c. W12 & W14	3 BOLTS	26 KIPS
d. W16	4 BOLTS	41 KIPS
e. W18	5 BOLTS	58 KIPS
f. W21	6 BOLTS	73 KIPS
g. W24 & W27	8 BOLTS	90 KIPS
h. W30	8 BOLTS	105 KIPS
 8. DESIGN ALL BOLTED CONNECTIONS AS SNUG-TIGHT BEARING CONNECTIONS WITH THREADS INCLUDED IN THE SHEAR PLANE, UNLESS NOTED OTHERWISE.
 9. INSTALL ALL BOLTED CONNECTIONS DESIGNATED AS PRE-TENSIONED OR SLIP-CRITICAL (FRICTION) WITH LOAD INDICATOR WASHERS OR TWIST OFF TYPE TENSION CONTROL BOLTS.
 10. ALL BOLTS IN MOMENT CONNECTIONS MUST BE SLIP-CRITICAL (FRICTION).
 11. ALL BOLTS IN HANGER CONNECTIONS MUST BE PRE-TENSIONED.
 12. ALL STUDS FOR COMPOSITE BEAMS MUST BE 3/4" DIAMETER X 3-1/2" MINIMUM LONG AND EXTEND AT LEAST 1 1/2" MINIMUM ABOVE THE TOP OF DECK AFTER WELDING AND PROVIDE 1/4" INCH COVER FROM TOP OF SLAB AND TOP OF DECK AFTER STUD.
 13. ANCHOR RODS IN CONCRETE MUST HAVE AN EMBEDMENT DEPTH IN CONCRETE EQUAL TO 12 TIMES THE DIAMETER OF THE BOLT UNLESS NOTED OTHERWISE.
 14. CUT BEAMS INDICATED AS "KINKED" ON PLAN AS REQUIRED TO FOLLOW THE ROOF SLOPES AND FULL PENETRATION WELDED TOGETHER. PROVIDE 1/4 INCH STIFFENER AT CUT PLANE EACH SIDE OF BEAM WEB AT SPLICE.
 - WELDS
 1. ALL WELDING MUST BE IN ACCORDANCE WITH LATEST AWS AND AISC SPECIFICATIONS.
 2. ALL WELDS MUST BE MADE BY WELDERS CERTIFIED ACCORDING TO AWS PROCEDURES.
 3. ERECTION
 1. FABRICATE AND ERECT ALL STRUCTURAL STEEL IN ACCORDANCE WITH LATEST AISC SPECIFICATIONS.
 4. DESIGN
 1. ALL STEEL BEAMS AND LINTELS BEARING ON MASONRY MUST HAVE 8" MINIMUM BEARING UNLESS NOTED OTHERWISE.
 5. STEEL LINTELS
 1. LOOSE LINTELS FOR MASONRY AT ALL OPENINGS MUST BE THE FOLLOWING UNLESS NOTED OTHERWISE, ONE ANGLE PER 4" WYTHE OF MASONRY WITH 4" MINIMUM BEARING EACH END.

• L3-1/2 X 3-1/2 X 5/16 FOR SPANS LESS THAN 5'-0"	
• L3-1/2 X 5/16 LV FOR SPANS BETWEEN 5'-0" & 7'-11"	
• L6 X 3-1/2 X 5/16 LV FOR SPANS BETWEEN 8'-0" & 9'-11"	
• L7 X 4 X 3/8 LV FOR SPANS BETWEEN 10'-0" & 12'-11"	

FOR 8" MASONRY WYTHES, USE L5X5X5/16 FOR EACH WYTHE, UP TO 5'-0" OPENING SIZES, AND L5X5X3/8 UP TO 8'-0" OPENING SIZES.
 2. BOLT ALL DOUBLE ANGLE LINTELS BACK TO BACK AT 32" O.C. MAXIMUM SPACING, WITH 5/8" DIAMETER A307 BOLTS, A MINIMUM OF TWO BOLTS PER SPAN.
 3. AT WIDE FLANGE BEAM SECTIONS WITH CONTINUOUS PLATES (TYPICALLY 5/16"), THE PLATE WIDTH MUST BE 1" LESS THAN THE NOMINAL MASONRY WALL WIDTH, WITH 8" MINIMUM BEARING, WHERE LESS THAN 1'-0" OF MASONRY EXISTS AT THE END OF THE BEAM ADJACENT TO A COLUMN, WALL, OR OTHER VERTICAL MEMBER. EXTEND THE BEAM AND PROVIDE A CONNECTION TO THE COLUMN OR WALL.
| d. AT VENEER CAVITY WALLS, THE EXTERIOR ANGLE MUST HAVE A HORIZONTAL LEG WIDTH (B" TYPICAL) SIZED TO EXTEND FROM THE REAR OF THE CAVITY TO WITHIN 8" (A") OF THE EXTERIOR FACE OF THE VENEER. | |
| e. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR OPENING SIZES AND LOCATIONS. | |
| f. HOT-DIP GALVANIZE ALL EXTERIOR STEEL ACCORDING TO ASTM A123. TOUCH-UP DAM |