

STRUCTURAL NOTES:

GENERAL

1. STRUCTURAL NOTES ARE NOT INTENDED TO REPLACE SPECIFICATIONS. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. FOR INCONSISTENCIES STANDARD PRACTICE, THE STRICTER REQUIREMENT SHALL APPLY, AND THE ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH THE AFFECTED PORTION OF THE WORK.
2. STRUCTURAL CONSTRUCTION DOCUMENTS SHALL BE USED WITH OTHER CONSTRUCTION DOCUMENTS, INCLUDING ARCHITECTURAL, MEP, AND SITE DOCUMENTS. COORDINATE WITH THESE DOCUMENTS FOR LOCATIONS AND DIMENSIONS OF OPENINGS, CHASES, INSERTS, REGLES, SLEEVES, DEPRESSIONS, ETC., NOT INDICATED ON THE STRUCTURAL DOCUMENTS. ALL DIMENSIONS AND CONDITIONS, EXISTING OR NEW, SHALL BE FIELD VERIFIED. THE ENGINEER SHALL BE NOTIFIED OF DISCREPANCIES PRIOR TO PROCEEDING WITH THE AFFECTED PORTION OF WORK.
3. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AFTER THE BUILDING IS COMPLETE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCE TO ENSURE STABILITY AND SAFETY DURING CONSTRUCTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF SHEETING, SHORING, TEMPORARY BRACING, GUYS, AND TIEDOWNS. THE CONTRACTOR SHALL PROVIDE SHORING AND BRACING NECESSARY TO PROTECT EXISTING AND ADJACENT STRUCTURES.
4. SECTIONS AND DETAILS SHOWN ON ANY STRUCTURAL DOCUMENTS SHALL BE CONSIDERED TYPICAL FOR SIMILAR CONDITIONS THAT DO NOT HAVE A SPECIFIC SECTION INDICATED, AND SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
5. APPLICABLE FEDERAL, STATE AND MUNICIPAL REGULATIONS SHALL BE FOLLOWED, INCLUDING THE FEDERAL DEPARTMENT OF LABOR OSHA.
6. THE CONTRACTOR IS RESPONSIBLE FOR LIMITING THE AMOUNT OF CONSTRUCTION LOAD IMPOSED ON THE STRUCTURE. CONSTRUCTION LOADS SHALL NOT EXCEED THE SPECIFIED DESIGN LIVE LOADS. CONCRETE SLABS AND TOPPINGS SHALL NOT BE LOADED UNTIL THE CONCRETE HAS REACHED AT LEAST 75% OF THE SPECIFIED DESIGN COMPRESSIVE STRENGTH.
7. THE CONTRACTOR'S CONSTRUCTION SEQUENCES SHALL ALLOW FOR THE EFFECTS OF THERMAL MOVEMENTS DURING THE CONSTRUCTION PERIOD, PRIOR TO THE BUILDING BEING ENCLOSED AND TEMPERATURE CONTROLLED. NEGATIVE EFFECTS OF SUCH THERMAL MOVEMENTS, SUCH AS MATERIAL CRACKING, FROST HEAVE, ETC., SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
8. IN THE ABSENCE OF SPECIFIC INSTRUCTIONS TO THE CONTRARY IN THE CONTRACT DOCUMENTS, THE TRADE PRACTICES THAT ARE DEFINED IN ANY CODE OF STANDARD PRACTICE SHALL GOVERN.
9. DO NOT SCALE DRAWINGS TO DETERMINE DIMENSIONS, LOCATIONS, OR SIZES OF ANY ELEMENT.

STRUCTURAL DESIGN CRITERIA

1. DESIGN LOADS ARE IN ACCORDANCE WITH THE 2018 EDITION OF THE INTERNATIONAL BUILDING CODE (IBC) INCLUDING LOCAL CODES, WHERE APPLICABLE, AND THE FOLLOWING STANDARDS REFERENCED IN IBC 2018:
ACI 318 - BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
ACI 530 - BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES
ACI 530.1 - SPECIFICATIONS FOR MASONRY STRUCTURES
AF&PA NDS - NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION
AISC 360 - SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
ASCE 7 - MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
2. IBC BUILDING OCCUPANCY CATEGORY: II
3. DEAD LOADS ARE AS FOLLOWS:
ROOF DEAD LOAD 25 PSF
4. LIVE LOADS ARE AS FOLLOWS. LIVE LOAD REDUCTIONS HAVE BEEN TAKEN WHERE APPLICABLE, UNO.
ROOF LIVE LOAD 20 PSF
5. SNOW LOADING IS BASED ON THE FOLLOWING. DRIFTING AND SLIDING SNOW LOADS HAVE BEEN CONSIDERED WHERE APPROPRIATE:
RAIN ON SNOW SURCHARGE NA (Pg > 20 PSF)
GROUND SNOW LOAD, Pg 35 PSF
FLAT ROOF SNOW LOAD 24.5 PSF
SNOW EXPOSURE FACTOR, Ce 1.0
SNOW THERMAL FACTOR, Ct 1.0
SNOW LOAD IMPORTANCE FACTOR, I 1.0
DESIGN SNOW LOAD 30 PSF
6. WIND LOADING IS BASED ON THE FOLLOWING:
BASIC WIND SPEED (3 SEC GUST) 111 MPH
EXPOSURE CATEGORY C
BUILDING CATEGORY: SIMPLE DIAPHRAGM, LOW-RISE, ENCLOSED, RIGID
INTERNAL PRESSURE COEFF. ±0.18

	10 5F	20 5F	50 5F	100 5F
WALLS	27.2, -29.5	26, -28.2	24.3, -26.6	23.1, -25.5
WALL CORNERS	27.2, -36.4	26, -34.0	24.3, -30.7	23.1, -28.2
ROOF ZONE 1 (0 TO 7)	11.1, -43.3	10.4, -40.5	9.5, -36.7	8.8, -33.8
ROOF ZONE 2 (0 TO 7)	11.1, -57.1	10.4, -53.5	9.5, -48.6	8.8, -44.9
ROOF ZONE 3 (0 TO 7)	11.1, -77.8	10.4, -70.5	9.5, -60.8	8.8, -53.5

1. SEISMIC LOADING IS BASED ON THE FOLLOWING:
SEISMIC IMPORTANCE FACTOR 1.0
SEISMIC SITE CLASS D
SPECTRAL RESPONSE COEFF. (Sa) 0.106g
SPECTRAL RESPONSE COEFF. (S1) 0.041g
SPECTRAL RESPONSE COEFF. (S2s) 0.113g
SPECTRAL RESPONSE COEFF. (S2l) 0.065g
LONG PERIOD TRANSITION (Tl) 6
SEISMIC DESIGN CATEGORY A
ANALYSIS PROCEDURE EQUIVALENT LATERAL FORCE
BASIC STRUCTURAL SYSTEM BEARING WALL
SEISMIC FORCE RESISTING SYSTEM INTERMEDIATE REINF. MASONRY SHEARWALLS
7. DESIGN REACTIONS AND SUPPORT DETAILS FOR ELEVATOR, ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING EQUIPMENT ARE BASED UPON AVAILABLE MANUFACTURER INFORMATION. SUPPORT CONDITIONS MAY NEED TO BE REVISED BASED UPON ACTUAL SUPPLIED EQUIPMENT AND SUPPORT DETAILS
8. STEEL JOISTS SHALL BE DESIGNED FOR A NET UPLIFT LOAD OF 15 PSF.

IBC SPECIAL INSPECTIONS

1. STRUCTURAL TESTS AND SPECIAL INSPECTIONS ARE REQUIRED BY THE INTERNATIONAL BUILDING CODE AND SHALL BE PERFORMED ON THIS PROJECT IN ACCORDANCE WITH REQUIREMENTS OF IBC CHAPTER 17, "STRUCTURAL TESTS AND SPECIAL INSPECTIONS."
2. AS REQUIRED BY IBC, THE STRUCTURAL TESTS AND SPECIAL INSPECTIONS SHALL BE PERFORMED BY AN INDEPENDENT, APPROVED AGENCY, EMPLOYED BY THE OWNER.
3. COPIES OF ALL REPORTS DOCUMENTING THE SPECIAL INSPECTIONS AND TESTS PERFORMED BY THE INSPECTING AGENCY SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD (BAKER, INGRAM & ASSOCIATES).
4. SPECIAL INSPECTIONS SHALL INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
FABRICATOR INSPECTION: WHERE FABRICATION OF LOAD-BEARING MEMBERS AND ASSEMBLIES (SUCH AS STRUCTURAL STEEL, LIGHT-GAGE STEEL TRUSSES, ETC.) IS PERFORMED ON THE PREMISES OF A FABRICATOR'S SHOP, SPECIAL INSPECTION SHALL BE PROVIDED TO VERIFY FABRICATION AND QUALITY CONTROL PROCEDURES, IN ACCORDANCE WITH IBC SECTION 1704.2.5.
CONCRETE CONSTRUCTION: SPECIAL INSPECTIONS AND VERIFICATIONS SHALL CONFORM TO IBC SECTION 1705.3 AND TABLE 1705.3 "REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION."
MASONRY CONSTRUCTION: SPECIAL INSPECTIONS AND EVALUATION SHALL CONFORM TO IBC SECTION 1705.4.
STEEL CONSTRUCTION: SPECIAL INSPECTIONS SHALL CONFORM TO IBC SECTION 1705.2, AISC 360-10, SDI QA/QC AND TABLE 1705.2.3 "REQUIRED SPECIAL INSPECTIONS OF OPEN-WEB STEEL JOISTS AND JOIST GRIDERS. STEEL CONSTRUCTION INCLUDES STRUCTURAL STEEL, STEEL JOISTS, STEEL FLOOR, ROOF DECK, AND COLD-FORMED STEEL FRAMING.
SOILS: SPECIAL INSPECTIONS AND EVALUATION SHALL CONFORM TO IBC SECTION 1705.6 AND TABLE 1705.6 "REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOIL."

TYPICAL DETAILS

1. TYPICAL DETAILS APPLY AT ALL APPROPRIATE LOCATIONS.
2. TYPICAL DETAILS ARE GENERALLY NOT CUT ON THE PLANS.
3. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL TYPICAL DETAIL APPLICATIONS.

SUBMITTALS

1. THE APPLICABLE CONTRACTOR SHALL SUBMIT THE FOLLOWING FOR APPROVAL:
CONCRETE MIX DESIGNS FOR EACH STRENGTH INDICATED
CONCRETE REINFORCING SHOP DRAWINGS, INCLUDING ELEVATIONS OF ALL WALLS
STRUCTURAL STEEL SHOP DRAWINGS
MASONRY REINFORCING SHOP DRAWINGS, INCLUDING ELEVATIONS OF ALL WALLS
MASONRY GROUT AND MORTAR MIX DESIGNS
PRODUCT DATA & MILL TEST FOR EACH APPLICABLE PRODUCT
STEEL JOIST SHOP DRAWINGS
METAL DECK SHOP DRAWINGS
COLD FORMED FRAMING SHOP DRAWINGS & CALCULATIONS W/ P.E. SEAL

FOUNDATIONS

1. FOUNDATIONS HAVE BEEN DESIGNED BASED ON A PRESUMPTIVE BEARING CAPACITY OF 2 KSF. PRESUMPTIVE BEARING CAPACITY SHALL BE VERIFIED PRIOR TO PLACING FOUNDATIONS.
2. SPREAD FOOTINGS SHALL BEAR ON UNDISTURBED SOIL OR COMPACTED STRUCTURAL FILL HAVING A MINIMUM SAFE BEARING CAPACITY OF 2 KSF.
3. THE BOTTOMS OF EXTERIOR FOOTINGS SHALL BE 48" MINIMUM BELOW FINISH GRADE. EDGES OF FOOTINGS SHALL NOT BE PLACED AT A GREATER THAN 1 (VERTICAL) TO 2 (HORIZONTAL) SLOPE WITH RESPECT TO ANY ADJACENT FOOTING OR EXCAVATION.
5. ADJACENT COLUMN FOOTINGS THAT ABUT SHALL BE SEPARATED BY A PAPER JOINT.
6. FOUNDATION CONCRETE SHALL BE NORMAL WEIGHT HAVING A MINIMUM 28 DAY DESIGN COMPRESSIVE STRENGTH AS FOLLOWS:
SPREAD FOOTINGS 3000 PSI
WALLS & PIERS 4000 PSI
SLAB-ON-GRADE (INTERIOR) 3500 PSI
SLAB-ON-GRADE (EXTERIOR) 5000 PSI (0.40 W/C MAX.)
7. PROVIDE AIR-ENTRAIMENT IN ALL CONCRETE EXPOSED TO FREEZE-THAW CONDITIONS DURING THE CONSTRUCTION PRIOR AND/OR IN THE COMPLETED STRUCTURE.

FOUNDATION SUBGRADE PREPARATION REQUIREMENTS

1. A GEOTECHNICAL ENGINEER, LICENSED IN THE JURISDICTION WHERE THE PROJECT IS LOCATED, SHALL OBSERVE, REVIEW, AND APPROVE ALL WORK RELATED TO EXCAVATION, BACKFILL, COMPACTION, SUBGRADE AND SUBBASE PREPARATION AND MATERIAL SELECTION.
2. THE BUILDING SITE SHALL BE STRIPPED OF ANY TOPSOIL, ORGANIC MATTER, VEGETATION, FILL MATERIALS, AND OTHERWISE UNSUITABLE OR SOFT SUBGRADE MATERIALS.
3. UNSUITABLE MATERIALS SHALL BE EXCAVATED DOWN TO RESIDUAL SOIL ELEVATIONS.
4. SOIL BEARING ELEVATIONS SHALL BE VERIFIED BY THE GEOTECHNICAL ENGINEER PRIOR TO BACKFILLING EXCAVATIONS OR CONSTRUCTING FOUNDATIONS.
5. WHERE ROCK IS ENCOUNTERED WITHIN 12 INCHES OF FOUNDATION BEARING ELEVATION (SUBGRADE SHALL BE PROBED TO DETERMINE THIS), UNDERCUT ROCK BY 12 INCHES MIN. BELOW BEARING ELEVATION AND REPLACE WITH COMPACTED STRUCTURAL FILL.
6. AT SLAB-ON-GRADE AREAS, FOLLOWING STRIPPING, THE SUBGRADES SHALL BE PROFFROLLED WITH A LOADED TANDEN AXLE DUMP TRUCK OR TEN-TON ROLLER UNDER OBSERVATION OF THE GEOTECHNICAL ENGINEER. AREAS WHICH EXHIBIT EXCESSIVE PUMPING OR WEAVING, AS DETERMINED BY THE GEOTECHNICAL ENGINEER, SHALL BE REMOVED AND REPLACED WITH NEW COMPACTED STRUCTURAL FILL.
7. COMPACTED FILL SHALL BE USED TO RAISE EXISTING GRADES TO THE PROPOSED NEW ELEVATION WHERE REQUIRED.
8. UNDER-SLAB DRAINS, CONSISTING OF A 4 INCH WASHED GRAVEL OR CRUSHED STONE DRAINAGE LAYER (CORRESPONDING TO FA DOT 2B), SHALL BE USED BENEATH THE CONCRETE SLAB-ON-GRADE.

CONCRETE SLABS ON GRADE

1. GEOTECHNICAL ENGINEER SHALL OBSERVE AND APPROVE SUBGRADE BEFORE CONCRETE PLACEMENT.
2. DO NOT PLACE CONCRETE SLABS ON FROZEN GROUND.
3. CONTROL JOINTS ARE REQUIRED IN CONCRETE SLABS-ON-GRADE. REFER TO PLANS AND TYPICAL DETAILS FOR THE JOINT CONSTRUCTION, LOCATIONS, AND SPACING REQUIREMENTS.
4. PROVIDE (2) #4 X 4'-0" LONG BARS DIAGONALLY AT ALL RE-ENTRANT CORNERS.
5. COORDINATE LOCATION AND DIMENSIONS OF RECESSED SLABS.

CONCRETE REINFORCING

1. REINFORCED CONCRETE CONSTRUCTION SHALL CONFORM TO ACI 318.
2. CONCRETE REINFORCING SHALL CONFORM TO THE FOLLOWING DESIGNATIONS:
DEFORMED BARS ASTM A615, GRADE 60
DEFORMED BARS (WELDABLE) ASTM A706
WELDED WIRE FABRIC ASTM A1064
3. LAP DEFORMED BARS 40 DIA., U.N.O. PROVIDE CORNER AND L BARS AT CORNERS AND INTERSECTIONS. REINFORCING INDICATED AS CONTINUOUS SHALL BE LAPPED. HOOKS SHALL BE STANDARD HOOKS, U.N.O. LAP WELDED WIRE FABRIC SUCH THAT THE OVERLAP OF THE OUTERMOST CROSS-WIRES OF EACH ADJOINING SHEET IS NOT LESS THAN THE SPACING OF THE CROSS-WIRES PLUS TWO IN., U.N.O.
4. PROVIDE CONTINUOUS REINFORCEMENT WHEREVER POSSIBLE; SPLICE ONLY AS SHOWN OR APPROVED. STAGGER SPLICES WHERE POSSIBLE. USE TENSION SPLICE CLASS "B" U.N.O. DOWELS SHALL MATCH THE SIZE AND SPACING OF THE SPECIFIED REINFORCEMENT AND SHALL BE LAPPED WITH TENSION SPLICES.
5. CONCRETE PROTECTION FOR REINFORCEMENT:
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 THROUGH #18 BARS 2 IN.
#5 BAR OR SMALLER 1½ IN.
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
SLABS, WALLS, JOISTS:
#14 AND #18 BARS 1½"
#11 AND SMALLER ¾"
BEAMS, COLUMNS, PIERS: 1½"
6. REINFORCING FOR SLABS ON GRADE, WHERE NOT OTHERWISE SPECIFIED, SHALL BE AS FOLLOWS:
REINFORCING BARS: SEE FOUNDATION AND TYPICAL DETAILS. AT SLAB BLOCKOUT AND RE-ENTRANT CORNERS, PROVIDE 2#4 X 4'-0" DIAGONALS.
WIRE MESH: 6X6 W2.9XW2.9 WWF. REINFORCING SHALL BE SUPPORTED PRIOR TO THE POUR AT MID-DEPTH OF SLAB.
SYNTHETIC FIBER: FIBRILLATED POLYPROPYLENE, IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. REINFORCING FOR CONCRETE TOPPING, WHERE NOT OTHERWISE SPECIFIED, SHALL BE AS FOLLOWS:
REINFORCING BARS: SEE FRAMING AND TYPICAL DETAILS. AT OPENINGS AND RE-ENTRANT CORNERS, PROVIDE 2#4 X 4'-0" DIAGONALS.
WIRE MESH: 6X6 W2.9XW2.9 WWF. REINFORCING SHALL BE SUPPORTED 1" BELOW THE TOP OF SLAB PRIOR TO THE POUR.
8. DETAILING OF CONCRETE REINFORCING AND ACCESSORIES SHALL CONFORM TO ACI DETAILING MANUAL MN-66, AND WITH ACI 315, MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCING CONCRETE STRUCTURES.

CONCRETE MASONRY

1. CONCRETE MASONRY CONSTRUCTION SHALL CONFORM TO ACI 530 AND 530.1.
2. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE MASONRY, Fm SHALL BE 1500 PSI. (MIN. NET AREA COMPRESSIVE STRENGTH OF UNIT = 1900 PSI.)
3. CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C80.
4. CONCRETE MASONRY REINFORCING SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
5. DEFORMED BAR ANCHORS (DBA) SHALL CONFORM TO ASTM A496,. DBA SHALL BE WELDED BY AUTOMATIC EQUIPMENT.
6. GROUT SHALL CONFORM TO THE PROPORTIONAL REQUIREMENTS OF ASTM C476. PROVIDE FINE AND COARSE GROUTS APPROPRIATE FOR THE SIZE OF VOID SPACE BEING FILLED. GROUT SHALL HAVE A MINIMUM SLUMP OF 8 INCHES ACHIEVED THROUGH SUFFICIENT WATER CONTENT . WATER REDUCING AND OTHER ADMIXTURES ARE NOT PERMITTED IN GROUT.
7. GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.
8. MORTAR SHALL CONFORM TO ASTM C270, TYPE M OR S, PCL OR MORTAR CEMENT. THE USE OF MASONRY CEMENT IS NOT PERMITTED.
9. REINFORCING VOIDS, AND NON-REINFORCING VOIDS SPECIFIED TO BE GROUTED, IN CONCRETE MASONRY SHALL BE FILLED SOLID WITH GROUT IN 5 FT. MAXIMUM LIFTS. STOP POURS 1 1/2 INCHES BELOW THE BED JOINT TO FORM A KEY AT POUR JOINTS.
10. REINFORCED BARS SHALL BE TIED TO DOWELS AND HELD IN THE PROPER POSITION BY MECHANICAL BAR POSITIONERS DESIGNED FOR THAT PURPOSE.
1.1. REINFORCING SHALL NOT BE PLUNGED INTO WET GROUT.
1.2. LAP UNCOATED, DEFORMED BARS 48 BAR DIAMETERS. INCREASE SPECIFIED LAP LENGTHS 50% FOR EPOXY COATED BARS.
1.3. CONCRETE MASONRY SHALL BE LAID IN RUNNING BOND, UNO. PLASTERS SHALL BE BONDED, UNO.
14. LOAD BEARING CMU SHALL HAVE FULL MORTAR BED JOINTS.
15. PROVIDE LADDER-TYPE HORIZONTAL JOINT REINFORCEMENT AS FOLLOWS:
TYPICAL: 16 IN. O.C. MAX, UNO.
AT BELOW GRADE WALLS: PROVIDE AT 8' O.C
AT PARAPETS: PROVIDE AT 8' O.C
AT WALL OPENINGS: PROVIDE ADD'L REINF. NOT MORE THAN 8 IN. ABOVE AND BELOW OPENING. TERMINATE 2 FT. BEYOND OPENING.

PROVIDE CONTINUITY AT INTERSECTIONS AND CORNERS USING PREFABRICATED T-SHAPED AND L-SHAPED UNITS, AND LAP ALL CONSECUTIVE SECTIONS OF TRUSS TYPE REINFORCING A MINIMUM OF 8 INCHES.			
16. PROVIDE VERTICAL CONTROL JOINTS IN WALLS AT 24 FT. O.C MAX, U.N.O.			
17. THE TOPS OF ALL NON-LOAD BEARING CMU WALL SHALL BE BRACED ACCORDING TO SPECIFIC SECTIONS AND/OR TYPICAL DETAILS.			
18. PROVIDE BOND BEAMS FOR WALL THICKNESS AND HEIGHTS AS FOLLOWS: BOND BEAM UNITS SHALL BE OPEN CELL UNITS THAT PERMIT VERTICAL REINFORCING TO PASS THROUGH.			
6" CMU:	UP TO 12 FT.:	1#5	
	UP TO 16 FT.:	1#6	
8" CMU:	UP TO 16 FT.:	2#5	
	UP TO 24 FT.:	2#6	
10" & 12" CMU	UP TO 12 FT.:	2#5	
	UP TO 24 FT.:	2#6	
	UP TO 32 FT.:	2#7	
	UP TO 12 FT.:	3#5	
14" & 16" CMU	UP TO 24 FT.:	3#6	
	UP TO 32 FT.:	3#7	

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING DESIGNATIONS:
STRUCTURAL STEEL WF SHAPES ASTM A992
OTHER STRUCTURAL STEEL SHAPES ASTM A36, UNO
STEEL BARS, ANGLES AND PLATES ASTM A36, UNO
STIFF PLATES IN MOMENT CONNECTIONS ASTM A572, UNO
SQUARE & RECTANGULAR HSS ASTM A500, GRADE C
STRUCTURAL STEEL DESIGN IS AND SHALL BE BASED UPON AISC'S ASD METHOD.
2. ROOF SHALL BE MINIMUM 3/4 IN. DIA. AND SHALL CONFORM TO THE FOLLOWING DESIGNATIONS, UNO:
HIGH STRENGTH BOLTS ASTM A3125
ANCHOR RODS ASTM F1554, GRADE 36
4. BOLTED CONN SHALL CONFORM TO RCSC'S "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS".
5. WELDING, WELDING ELECTRODES, AND FLUXES SHALL CONFORM TO AWS D1.1 "STRUCTURAL WELDING CODE - STEEL". ELECTRODES SHALL HAVE A MINIMUM TENSILE STRENGTH OF 70 KSI.
6. GROUT UNDER STEEL COLUMNS OR POST BASEPLATES SHALL BE NON-METALLIC, SHRINKAGE RESISTANT GROUT CONFORMING TO ASTM C1107 AND HAVING A MINIMUM DESIGN COMPRESSIVE STRENGTH OF 5000 PSI. GROUT UNDER STEEL BEAM BEARING PLATES IN CONCRETE OR MASONRY WALLS SHALL CONFORM TO ASTM C476.
7. HIGH STRENGTH BOLTED CONNECTIONS SHALL BE TIGHTENED TO THE SNUG-TIGHT CONDITION, UNO.
8. HIGH STRENGTH BOLTS IN CONNECTIONS USED FOR KICKERS, BRACING MEMBERS OR MOMENT CONNECTIONS THAT ARE FABRICATED WITH SLOTTED HOLES SHALL BE SLIP-CRITICAL. IF STANDARD HOLES ARE USED, BOLTS SHALL BE FULLY PRE-TENSIONED.
9. MINIMUM CAPACITY OF BEAM SHEAR CONNECTIONS: DESIGN CONNECTIONS USING THE "MAXIMUM TOTAL UNIFORM LOAD" TABLES IN THE AISC MANUAL. FOR NON-COMPOSITE BEAMS THE CONNECTION CAPACITY SHALL BE AT LEAST 50% OF THE MAXIMUM UNIFORM LOAD CAPACITY, UNO. REACTIONS NOTED ON DRAWINGS ARE BASED ON ASD.
10. PROVIDE FULL DEPTH CONNECTIONS AT ALL BEAM OR GIRDER TO COLUMN CONNECTIONS.
1.1. PROVIDE COLUMN CAP PLATES AS FOLLOWS, UNO:
FOR DECK BEARING: 1/4" THICK (PROVIDE WHERE BEAMS DO NOT FRAME INTO BOTH SIDES OF COLUMN)
FOR JOIST BEARING: 1/2" THICK AT K-SERIES JOISTS
3/4" THICK AT LH & DLH JOISTS
1" THICK AT JOIST GRIDERS
FOR BEAM BEARING: SEE TYPICAL DETAILS, 3/4" MIN.
FOR MOMENT CONNECTIONS: SEE TYPICAL DETAILS
PROVIDE COLUMN CAP PLATES AT ALL HSS COLUMNS
12. ALL EXTERIOR EXPOSED STRUCTRAL STEEL SHALL BE HOT-DIPPED GALVANIZED.

STEEL JOISTS

1. STEEL JOISTS AND BRIDGING SHALL CONFORM TO SJI'S STANDARD SPECIFICATIONS" FOR K, KCS, VS, LH, DLH, AND SLH SERIES JOISTS AND SJI'S "RECOMMENDED CODE OF STANDARD PRACTICE FOR STEEL JOISTS AND JOIST GRIDERS".
2. PROVIDE AND ANCHOR BRIDGING LINES ACCORDING TO SJI SPECIFICATIONS. BRIDGING INDICATED ON DRAWINGS IS SCHEMATIC, AND MAY NOT REFLECT THE SJI REQUIRED MINIMUM NUMBER OF LINES.
3. JOIST TO COLUMN CONNECTIONS SHALL HAVE BOTTOM CHORD EXTENSIONS. BOTTOM CHORD EXTENSIONS SHALL HAVE POSITIVE ATTACHMENT TO SUPPORT BY BOLTING OR BY WELDING. BOTTOM CHORD EXTENSIONS SHALL BE CONNECTED ONLY AFTER ALL DEAD LOADS ARE APPLIED.
4. K-SERIES JOIST EXTENSIONS SHALL BE TYPE R-1, UNO.
5. PROVIDE JOIST CAMBER ACCORDING TO SJI SPECIFICATION, UNO.
6. REFER TO STRUCTURAL DESIGN CRITERIA FOR NET UPLIFT LOADING REQUIREMENTS FOR ROOF JOISTS AND JOIST GRIDERS. PROVIDE ADDITIONAL WIND UPLIFT BRIDGING LINES AT MEMBER ENDS.
7. MECHVELOC/PLUMB CONFLICTS WITH JOIST BRIDGING: ALL HORIZONTAL & DIAGONAL BRIDGING SHALL BE INSTALLED AND ANCHORED ACCORDING TO SJI REQUIREMENTS. AFTER DECK IS INSTALLED, BRIDGING MAY BE RE-WORKED AS FOLLOWS TO ACCOMMODATE INSTALLATION OF DUCTS, PIPING, CONDUIT, ETC.:
DIAGONAL BRIDGING MAY BE REPLACED WITH HORIZONTAL BRIDGING IN NON-ADJACENT JOIST BAYS. DO NOT REMOVE DIAGONAL BRIDGING IN MORE THAN ONE LOCATION AT A TIME BEFORE REINSTALLING HORIZONTAL BRIDGING.
B. HORIZONTAL BRIDGING MAY BE REMOVED ONLY IN NON-ADJACENT JOIST BAYS. DIAGONAL BRIDGING MUST BE INSTALLED IN BOTH ADJACENT JOIST BAYS, ALIGNED WITH THE LOCATIONS OF HORIZONTAL BRIDGING THAT IS TO BE REMOVED. DO NOT REMOVE HORIZONTAL BRIDGING BEFORE INSTALLING NEW DIAGONAL BRIDGING IN ADJACENT JOIST BAYS.
IF THE ABOVE LIMITATIONS CANNOT BE MET, THE JOIST MANUFACTURER SHALL BE CONTACTED FOR DIRECTION.

METAL DECKING

1. METAL DECKING SHALL CONFORM TO THE FOLLOWING DESIGNATIONS:
ROOF DECK ASTM A653, GRADE 33
2. METAL DECK SHALL CONFORM TO AISI'S "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS", TO SDI'S "DESIGN MANUAL FOR FLOOR AND ROOF DECKS", AND TO SDI'S "MANUAL OF CONSTRUCTION WITH STEEL DECK".
3. WELDING SHALL CONFORM TO AWS D1.3-98 "STRUCTURAL WELDING CODE - SHEET STEEL".
4. PROVIDE WELDING WASHERS FOR DECK LIGHTER THAN 22 GAGE.
5. SPECIFIED ROOF DECK HAS BEEN DESIGNED TO BE CONTINUOUS OVER 3 SPANS MINIMUM. FOR ONE OR TWO SPAN CONDITIONS, PROVIDE HEAVIER GAGE DECK AS REQUIRED TO SUPPORT APPLICABLE LOADS.
6. FASTEN ROOF DECK PANELS TO SUPPORTING STEEL MEMBERS WITH 5/8" DIA PUDDLE WELDS AT 12" O.C. (36/4 PATTERN), UNO. FASTEN TO PERIMETER STEEL MEMBERS AT 12" O.C., UNO. MECHANICAL FASTENING METHODS ARE PERMITTED IN LIEU OF WELDING. CONTRACTOR SHALL PROVIDE SUBMITTAL TO INDICATE SPECIFIC FASTENING SYSTEM AND DATA TO INDICATE THAT MECHANICAL FASTENERS MEET OR EXCEED THE DIAPHRAGM CAPACITY ACHIEVED BY THE WELDING PATTERN DESCRIBED ABOVE, OR OTHER SPECIFIC REQUIREMENTS INDICATED.
7. MECHANICALLY FASTEN ROOF DECK SIDE LAP'S WITH SELF DRILLING NO. 10 SCREWS AT MIDSPAN OR 36" (MAX) O.C., UNO.

COLD FORMED STEEL FRAMING

1. ALL COLD FORMED STEEL FRAMING INDICATED ON THE DRAWINGS IS FOR DESIGN INTENT ONLY. THE COLD-FORMED FRAMING SUBCONTRACTOR SHALL RETAIN THE SERVICES OF A LICENSED PROFESSIONAL ENGINEER TO DESIGN ALL COLD FORMED FRAMING IN ACCORDANCE WITH THE SPECIFIED DESIGN CRITERIA. SIGNED AND SEALED SHOP DRAWINGS SHALL BE SUBMITTED. INDICATED COLD-FORMED FRAMING SIZES AND GAGES ARE MINIMUMS, AND SHALL NOT BE REDUCED WITHOUT APPROVAL OF THE ARCHITECT/ENGINEER. COLD-FORMED SUB-CONTRACTOR SHALL AT HIS EXPENSE DURING BIDDING PERFORM SUFFICIENT PRELIMINARY ENGINEERING TO PRICE A JOB WITH ALL REQUIRED FRAMING SIZES, GAUGES, SPACINGS, FRAME OPENINGS, ACCESSORIES, ETC.
2. THE DESIGN OF COLD FORMED STEEL FRAMING SHALL CONFORM TO AISI'S "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS".
3. COLD FORMED STEEL FRAMING SHALL CONFORM TO ASTM C955 AND C1007, AND TO THE FOLLOWING:
12, 14 AND 16 GAGE STUDS ASTM A653, SW, GRADE 50, CLASS I
18 AND 20 GAGE STUDS ASTM A653, C2, GRADE 33
TRACK AND BRIDGING ASTM A653, CW, GRADE 33
4. WELDING SHALL CONFORM TO AWS D1.3 - 18, "STRUCTURAL WELDING CODE - SHEET STEEL".
5. COLD FORMED STEEL FRAMING PROPERTIES SHALL CONFORM TO MARINOWARE OR EQUIVALENT.
6. PROVIDE BRIDGING AND BRACING AS SPECIFIED BY MANUFACTURER OR AS REQUIRED BY DESIGN.
7. THE EXTENT OF WORK FOR COLD-FORMED FRAMING IS DETAILED ON THE ARCHITECTURAL DRAWINGS AND PARTIALLY ON THE STRUCTURAL DRAWINGS. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT / ENGINEER.
8. PROVIDE COLD-FORMED ACCESSORIES AS REQUIRED FOR A COMPLETE FRAMING SYSTEM, INCLUDING BUT NOT LIMITED TO, TRACKS, BLOCKING, CLIP ANGLES, SLIDE CLIPS, SHOES, RUNNERS, REINFORCEMENTS, COLD-FORMED TO COLD-FORMED FASTENERS, AND WELDS, AND COLD-FORMED TO STRUCTURE FASTENERS AND WELDS.

MECHANICAL ROOFTOP EQPT CURBS, OPENINGS & ROOF ACCESS

1. PROVIDE FRAMING FOR ALL ROOFTOP EQUIPMENT CURBS AND OPENINGS, AND ROOF ACCESS, IN NEW AND EXISTING CONSTRUCTION ACCORDING TO TYPICAL DETAILS, UNO.
2. COORDINATE SIZES AND LOCATIONS OF CURBS AND OPENINGS WITH MECHANICAL DRAWINGS AND MECHANICAL CONTRACTOR AND ROOF ACCESS OPENINGS WITH ARCHITECTURAL DRAWINGS. CURBS AND OPENINGS SHALL BE CENTERED BETWEEN AND ACROSS NEW AND EXISTING ROOF MEMBERS.
3. ALL ROOF JOISTS AND TRUSSES (NEW AND EXISTING) SHALL BE REINFORCED FOR OFF-PANEL POINTS LOADS ACCORDING TO TYPICAL DETAIL.
4. RE-USE EXISTING OPENINGS WHERE POSSIBLE.

MECHANICAL UNIT, DUCTWORK, AND PIPE SUPPORT FROM JOISTS

1. THE FOLLOWING CRITERIA SHALL BE FOLLOWED FOR HANGING NEW MECHANICAL UNITS, DUCTWORK, AND PIPING (MECHANICAL AND PLUMBING) ON STEEL JOISTS IN NEW AND EXISTING CONSTRUCTION:
A. SUPPORTS FOR MECHANICAL UNITS AND DUCTWORK SHALL BE PROVIDED SUCH THAT HANGER LOADS ARE LIMITED TO 250 LBS., WITH A MAXIMUM OF 2 HANGERS PER JOIST
B. SUPPORTS FOR MULTIPLE RUNS OF PIPING 4" TO 6" IN DIAMETER SHALL BE STAGGERED SUCH THAT ONE JOIST SUPPORTS NO MORE THAN TWO PIPES. SPACING OF PIPE SUPPORTS SHALL BE ACCORDING TO INDUSTRY STANDARDS, BUT NO MORE THAN 8 FT. O/C.
C. SUPPORTS FOR MULTIPLE RUNS OF PIPING 8" TO 10" IN DIAMETER SHALL BE STAGGERED SUCH THAT ONE JOIST SUPPORTS NO MORE THAN ONE PIPE. SPACING OF PIPE SUPPORTS SHALL BE ACCORDING TO INDUSTRY STANDARDS, BUT NO MORE THAN 6 FT. O/C.
D. FOR PIPING LARGER THAN 10" IN DIAMETER, OR FOR CASES WHERE THE ABOVE CRITERIA CANNOT BE MET, SUPPLEMENTARY FRAMING SHALL BE PROVIDED TO SUPPORT THE PIPES ON NEW OR EXISTING STEEL GRIDERS AND BEARING WALLS.
2. MECHANICAL UNIT AND PIPING SUPPORTS SHALL NOT OCCUR ON THE SAME JOISTS.
3. IN NO CASE SHALL THE TOTAL WEIGHT SUPPORTED BY A SINGLE JOIST EXCEED 500 LBS UNLESS THE JOIST IS SPECIFICALLY NOTED AND DESIGNED FOR HIGHER LOADS.
4. ALL SUPPOT POINTS SHALL BE LOCALLY REINFORCED ACCORDING TO TYPICAL DETAIL.

DRILLED ANCHORS

1. EXPANSION ANCHORS SHALL BE (UNO):
HILTI KWIK BOLT TZ OR EQUIVALENT
3/4" DIAMETER
SUFFICIENT LENGTH TO PROVIDE 6 INCH MINIMUM EMBEDMENT
2. CHEMICAL ADHESIVE ANCHORS SHALL BE (UNO):
HILTI HIT HY200 OR HILTI HIT HY270 AS APPLICABLE, OR EQUIVALENT
3/4" DIAMETER
SUFFICIENT LENGTH TO PROVIDE 6 INCH MINIMUM EMBEDMENT
3. GROUT CMU COURSES AT ANCHORS FOR 8" MIN ABOVE AND BELOW ANCHOR LINES
4. ANCHORS IN EXTERIOR APPLICATIONS SHALL BE HOT-DIPPED GALVANIZED.



NEW FIELDHOUSE FOR THE
MIDD - WEST SCHOOL DISTRICT
MIDDLEBURG, PA

REVISIONS
NO. DATE DESCRIPTION
DATE
3.7.2024
AS NOTED

PROJECT NO.
2018-02

BID SET APRIL 15, 2024

STRUCTURAL
NOTES
S1.1