GENERAL NOTES

1. "STRUCTURAL ENGINEER" IN THESE NOTES REFERS TO TGRWA, PLLC, THE STRUCTURAL ENGINEER OF RECORD.
2. "SPECIALTY ENGINEER" IN THESE NOTES REFERS TO AN ENGINEER LICENSED OR REGISTERED TO PRACTICE STRUCTURAL ENGINEERING IN THE STATE IN WHICH THE PROJECT IS LOCATED.
3. STRUCTURAL DRAWINGS ARE TO BE COORDINATED AND USED IN CONJUNCTION WITH THE ARCHITECTURAL, CIVIL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS. SEE MECHANICAL DRAWINGS FOR EQUIPMENT PADS, BASES, SUPPORTS, AND DUCT PENETRATIONS.
4. TGRWA, PLLC. SHALL NOT BE RESPONSIBLE FOR, NOR HAVE CONTROL OR CHARGE OF CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES FOR THE SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THIS PROJECT, AND SHALL NOT BE RESPONSIBLE FOR CONTRACTOR'S FAILURE TO CARRY OUT HIS WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
5. TGRWA, PLLC. SHALL NOT BE RESPONSIBLE FOR, NOR HAVE CONTROL OVER, THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS, ANY OF THEIR AGENTS, OR EMPLOYEES, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR ALL TEMPORARY SHORING AND BRACING REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT. ALL SHORING AND BRACING MEMBERS AND CONNECTIONS SHALL BE OF SUFFICIENT STRENGTH TO SUPPORT THE IMPOSED LOADS. TEMPORARY MEMBERS AND CONNECTIONS SHALL NOT BE REMOVED UNTIL PERMANENT MEMBERS ARE IN PLACE AND FINAL CONNECTIONS ARE MADE.
7. CONTRACTOR SHALL VERIFY IN FIELD ALL DIMENSIONS, ELEVATIONS AND MEMBER SIZES AS SHOWN ON THE CONTRACT DRAWINGS FOR THE EXISTING CONSTRUCTION, PRIOR TO THE DETAILING OR FABRICATION OF ANY NEW STRUCTURAL ELEMENT. CONTRACTOR SHALL DOCUMENT ANY CONSTRUCTION-RELATED DISCREPANCIES. CONTRACTOR SHALL FURNISH THE ABOVE INFORMATION IN THE FORM OF DETAILED SKETCHES TO THE STRUCTURAL ENGINEER FOR REVIEW (28) CALENDAR DAYS PRIOR TO THE SCHEDULED START OF ANY DETAILING OR FABRICATION.
8. THE CONTRACTOR SHALL PROVIDE ALL MEASURES AND PRECAUTIONS NECESSARY TO PREVENT DAMAGE AND SETTLEMENT OF EXISTING OR NEW CONSTRUCTION INSIDE OR OUTSIDE THE PROJECT LIMITS DURING EXCAVATION AND FOUNDATION CONSTRUCTION. ANY DAMAGE TO NEW OR EXISTING CONSTRUCTION INSIDE OR OUTSIDE OF THE PROJECT LIMITS, CAUSED BY CONSTRUCTION TECHNIQUES IS THE RESPONSIBILITY OF THE CONTRACTOR.
9. NO FIELD MODIFICATIONS TO ANY STRUCTURAL COMPONENTS SHALL BE MADE WITHOUT PRIOR APPROVAL BY THE STRUCTURAL ENGINEER. THIS INCLUDES, BUT IS NOT LIMITED TO REVISIONS DUE TO MISLOCATION, MISFIT, OR ANY OTHER CONSTRUCTION ERRORS.
10. NO OPENING SHALL BE PLACED IN ANY STRUCTURAL MEMBER (OTHER THAN AS INDICATED ON APPROVED SHOP DRAWINGS) UNTIL THE LOCATION HAS BEEN APPROVED BY THE STRUCTURAL ENGINEER.
11. PROVIDE SLEEVE LAYOUTS FOR ALL PENETRATIONS THROUGH STRUCTURAL MEMBERS (ALL TRADES ARE INCLUDED). LAYOUTS ARE TO BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
12. SUPPORT ALL ROOF MOUNTED EQUIPMENT OR EQUIPMENT SUSPENDED FROM FLOORS OR THE ROOF ONLY ON/FROM BEAMS DESIGNATED FOR SUCH PURPOSE. IF NO SUPPORT HAS BEEN DESIGNATED, OR IF A QUESTION ARISES, NOTIFY STRUCTURAL ENGINEER PRIOR TO ERECTION OF EQUIPMENT.
13. ALL DETAILS, SECTIONS, AND NOTES ON THE DRAWINGS ARE INTENDED TO BE TYPICAL FOR SIMILAR SITUATIONS ELSEWHERE, UNLESS OTHERWISE NOTED. FOR DETAILS AND DIMENSIONS NOT INDICATED ON THE STRUCTURAL DRAWINGS, SEE THE ARCHITECTURAL DRAWINGS.
14. MATERIALS AND EQUIPMENT SHALL BE STORED AND TRANSPORTED IN A MANNER SO AS NOT TO EXCEED THE ALLOWABLE FLOOR OR ROOF LOADING INDICATED IN THE "SCHEDULE OF BUILDING DESIGN LOADS" ON THE CONSTRUCTION DOCUMENTS OR THE ALLOWABLE CAPACITY OF THE CONSTRUCTED MEMBER, WHICHEVER IS SMALLER.
15. ALL MEMBERS SHOWN ON FRAMING PLANS BETWEEN COLUMN LINES/GRID LINES SHALL BE EQUALLY SPACED, UNLESS NOTED OTHERWISE.

SHOP DRAWINGS

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL.
2. ALL SHOP DRAWING SUBMITTALS SHALL BE AS DESCRIBED IN THE PROJECT SPECIFICATIONS OR IN THESE NOTES IF THERE IS NO PROJECT SPECIFICATION.
3. SHOP DRAWINGS AND RELATED MATERIALS PREPARED BY SUPPLIERS AND SUBCONTRACTORS SHALL BE REVIEWED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO THE ARCHITECT/STRUCTURAL ENGINEER. THE GENERAL CONTRACTOR SHALL REVIEW ALL SUBMISSIONS FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS, MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATION OF CONSTRUCTION, TECHNICAL CONTENT, COORDINATION OF TRADES, DIMENSIONAL ACCURACY, SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL APPROVE AND SO STAMP EACH SUBMISSION BEFORE SUBMITTING TO THE ARCHITECT/STRUCTURAL ENGINEER.
4. THE STRUCTURAL DRAWINGS SHALL NOT BE USED AS THE BACKGROUNDS FOR THE PRODUCTION OF ANY SHOP DRAWINGS THAT ARE SUBMITTED FOR REVIEW.
5. ANY DEVIATIONS FROM THE STRUCTURAL DRAWINGS OR SPECIFICATIONS SHALL BE NOTED AND BUBBLED ON THE SHOP DRAWINGS THAT ARE SUBMITTED FOR APPROVAL.
6. FOR SHOP DRAWINGS TO BE RESUBMITTED TO THE STRUCTURAL ENGINEER FOR A SUBSEQUENT REVIEW, ALL CHANGES SHALL BE NOTED AND BUBBLED.

STRUCTURAL SYSTEM

1. THE GRAVITY LOADS RESISTING SYSTEM CONSISTS OF CONCRETE SLABS-ON-METAL DECK SUPPORTED BY STEEL BEAMS, GIRDERS, AND COLUMNS SUPPORTED BY STRAIGHT SHAFT DRILLED PIERS.
2. THE LATERAL LOAD RESISTING SYSTEM CONSISTS OF CONCRETE SLABS-ON-METAL DECK FLOOR DIAPHRAGMS SUPPORTED BY STEEL CONCENTRICALLY BRACED FRAMES SUPPORTED BY STRAIGHT SHAFT DRILLED PIERS.

FOUNDATIONS

1. FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INVESTIGATION REPORT PERFORMED BY GOODWYN MILLS CAWOOD (GMC) DATED 12/19/2025. CONTRACTOR SHALL FOLLOW ALL REQUIREMENTS SPECIFIED IN THIS REPORT.
2. FOUNDATION STRUCTURE IS BASED ON THE USE OF STRAIGHT SHAFT DRILLED PIERS APPLYING A MAXIMUM BEARING PRESSURE OF 15,000 POUNDS PER SQUARE FOOT TO THE SHALE BEARING STRATUM AND APPLYING A MAXIMUM SKIN FRICTION PRESSURE OF 2,000 POUNDS PER SQUARE FOOT TO THE 5'-0" MINIMUM EMBEDMENT DEPTH INTO THE SHALE BEARING STRATUM. THE SKIN FRICTION CAPACITY IS LIMITED TO 20% OF THE TOTAL DESIGN CAPACITY. TO RESIST UPLIFT LOADS, A MAXIMUM SKIN FRICTION PRESSURE OF 2,000 POUNDS PER SQUARE FOOT CAN BE APPLIED WITHIN THE 5'-0" EMBEDMENT DEPTH INTO THE SHALE BEARING STRATUM, A MAXIMUM SKIN FRICTION PRESSURE OF 250 POUNDS PER SQUARE FOOT CAN BE USED FROM THE TOP OF THE SHALE BEARING STRATUM TO 5'-0" BELOW THE TOP OF THE DRILLED PIER.
3. ALL ENGINEERED FILL IS TO BE COMPACTED TO ACHIEVE THIS BEARING PRESSURE AS VERIFIED BY FIELD TESTING BY THE OWNER'S TESTING AGENCY. IF FIELD CONDITIONS DO NOT PROVIDE THIS MINIMUM VALUE, THE STRUCTURAL ENGINEER AND ARCHITECT SHOULD BE NOTIFIED IMMEDIATELY.
4. PER THE ABOVE REFERENCED REPORT, SLABS-ON-GRADE PREPARED PER THE GEOTECHNICAL RECOMMENDATIONS ARE DESIGNED USING A MODULUS OF SUBGRADE REACTION VALUE (k) OF 175 PCI.
5. FOOTINGS EXPOSED TO FROST SHALL BE PLACED SUCH THAT THE BOTTOM OF FOOTING IS AT LEAST AT THE FROST ELEVATION OF 18" BELOW GRADE.
6. PER THE ABOVE REFERENCED REPORT, THE LATERAL EARTH PRESSURE IS AS FOLLOWS:
   - A. ACTIVE EARTH PRESSURE - 36 PSF/FOOT (SM/SC), 34 PSF/FOOT (SP/SW), 23 PSF/FOOT (GW/GP)
   - B. STATIC EARTH PRESSURE - 54 PSF/FOOT (SM/SC), 52 PSF/FOOT (SP/SW), 36 PSF/FOOT (GW/GP)
   - C. PASSIVE EARTH PRESSURE - 373 PSF/FOOT (SM/SC), 424 PSF/FOOT (SP/SW), 400 PSF/FOOT (GW/GP)
7. SHOULD UNSUITABLE BEARING CONDITIONS BE ENCOUNTERED DURING EXCAVATION, NOTIFY THE STRUCTURAL ENGINEER AND ARCHITECT BEFORE CONTINUING WITH CONSTRUCTION.
8. THE CONCRETE FOR EACH ISOLATED FOOTING SHALL BE PLACED IN ONE (1) CONTINUOUS POUR.
9. ALL INTERIOR SLABS-ON-GRADE SHALL BE PLACED OVER AN EXTREME LOW PERMEANCE VAPOR BARRIER, 15 MIL MINIMUM THICKNESS, OVER A BASE/SUBBASE AS SPECIFIED BY THE GEOTECHNICAL ENGINEER FOR THE PROJECT. EXISTING SUBBASE WILL BE COMPACTED IN PLACE OR WILL BE CUT OUT AND REPLACED WITH AN ENGINEERED FILL AS SPECIFIED BY THE OWNER'S GEOTECHNICAL ENGINEER.
10. DO NOT BACKFILL AGAINST BASEMENT WALLS UNTIL THE PERMANENT BELOW GRADE LATERAL BRACING SYSTEM AND THE FIRST FLOOR FRAMING AND SLAB ABOVE THE BASEMENT IS IN PLACE AND THE CONCRETE HAS ATTAINED FULL DESIGN STRENGTH.
11. THE CONTRACTOR MUST PROVIDE SURFACE DRAINAGE AND PUMPS TO PROTECT ALL EXCAVATION FROM FLOODING. FLOODING OF ANY EXCAVATION AFTER APPROVAL OF THE SUBGRADE WILL BE CAUSE FOR CONCRETE RE-PREPARATION AND RE-APPROVAL OF THE SUBGRADE.
12. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MEASURES TO PREVENT ANY WATER, FROST OR ICE FROM PENETRATING ANY FOOTING OR SLAB SUBGRADE BEFORE AND AFTER PLACING OF CONCRETE AND UNTIL SUCH SUBGRADES ARE FULLY PROTECTED BY THE PERMANENT BUILDING STRUCTURE.
13. THE CONTRACTOR SHALL REVIEW ALL EXISTING SITE CONDITIONS AND THE SUBSURFACE SOILS EXPLORATION REPORT AND ESTABLISH SPECIFIC "CONSTRUCTION PROCEDURES AND SEQUENCES" FOR THE EXCAVATION, COMPACTION, FILL AND INSTALLATION OF THE NEW BUILDING FOUNDATION. SUBMIT THESE FOR REVIEW TO THE OWNER'S GEOTECHNICAL ENGINEER, STRUCTURAL ENGINEER AND ARCHITECT.
14. THE CONTRACTOR'S PROCEDURES AND SEQUENCING FOR FOUNDATION INSTALLATION SHALL PREVENT SETTLEMENT OF ADJACENT CONSTRUCTION. THE CONTRACTOR SHALL HAVE SOLE RESPONSIBILITY FOR ALL REMEDIAL WORK RESULTING FROM SUCH SETTLEMENT.
15. RECORDS OF ANY EXISTING SUBGRADE INTERFERENCES OTHER THAN THOSE INTERFERENCES SHOWN OR INDICATED ON THE CONSTRUCTION DOCUMENTS, ARE NOT CURRENTLY AVAILABLE. DURING EXCAVATION WORK, INTERFERENCES MAY BE DISCOVERED. CONTRACTOR SHALL DOCUMENT CONSTRUCTION - RELATED DIMENSIONS OF ALL INTERFERENCES. CONTRACTOR TO FURNISH THE ABOVE INFORMATION IN THE FORM OF DETAILED SKETCHES TO THE STRUCTURAL ENGINEER AND ARCHITECT FOR REVIEW.
16. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE FOUNDATION TESTING AND INSPECTION REQUIREMENTS.

DRILLED PIER FOUNDATIONS

1. THE CONTRACTOR SHALL REVIEW ALL EXISTING SITE CONDITIONS AND THE GEOTECHNICAL INVESTIGATION REPORT, AND ESTABLISH SPECIFIC CONSTRUCTION PROCEDURES AND SEQUENCES FOR THE INSTALLATION OF THE CAISSONS BEFORE PROCEEDING. THESE PROCEDURES AND SEQUENCES SHALL BE SUBMITTED FOR REVIEW TO THE OWNER'S GEOTECHNICAL ENGINEER, STRUCTURAL ENGINEER AND ARCHITECT.
2. THE CONTRACTOR'S PROCEDURES AND SEQUENCING FOR CAISSON INSTALLATION SHALL PREVENT SETTLEMENT OF ADJACENT CONSTRUCTION. THE CONTRACTOR SHALL HAVE SOLE RESPONSIBILITY FOR ALL REMEDIAL WORK RESULTING FROM SUCH SETTLEMENT.
3. THE CONTRACTOR SHALL SUBMIT, FOR REVIEW, CHECKED SHOP DRAWINGS FOR ALL STEEL LINERS AND REINFORCING MATERIALS.
4. NO CONCRETE SHALL BE PLACED INTO A CAISSON CONTAINING FREE WATER WITHOUT PRIOR REVIEW AND APPROVAL BY THE OWNER'S GEOTECHNICAL ENGINEER.
5. ALL CAISSON CONCRETE SHALL CONTAIN 20% FLY ASH.
6. CAISSON CONCRETE SHALL BE PLACED USING A HOPPER AND CHUTE PIPE AT THE TOP OF THE CAISSON EXCAVATION TO DIRECT THE FLOW OF CONCRETE TO THE BOTTOM OF THE CAISSON WITHOUT THE CONCRETE MATERIALS REBOUNDING OFF THE STEEL LINERS AND/OR REBAR CAGE.
7. CAISSON CONCRETE SHALL BE PLACED FULL LENGTH IN ONE CONTINUOUS POUR WITHOUT CONSTRUCTION JOINTS.
8. THE CONTRACTOR SHALL REMOVE ALL DEBRIS AND LAITANCE MATERIAL FROM THE TOP OF EACH CAISSON AND VERIFY THE TOP OF CONCRETE ELEVATION PRIOR TO PLACEMENT OF ADDITIONAL CONSTRUCTION.
9. AFTER COMPLETION OF EACH CAISSON THE CONTRACTOR IS TO SURVEY THE ACTUAL CENTERLINE LOCATION NOTING ANY OUT-OF-TOLERANCE CAISSONS. THE SURVEY IS TO BE SUBMITTED TO THE OWNER'S GEOTECHNICAL ENGINEER, STRUCTURAL ENGINEER AND ARCHITECT.
10. ANY SPLICING OF VERTICAL REINFORCING STEEL BARS SHALL BE DONE WITH MECHANICAL COUPLERS CAPABLE OF DEVELOPING 125% OF THE YIELD STRENGTH OF THE REINFORCING STEEL BEING SPLICED.
11. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE CAISSON TESTING AND INSPECTION REQUIREMENTS.

STRUCTURAL CONCRETE

1. CONCRETE MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN CONCRETE INSTITUTE PUBLICATIONS:
   - A. ACI 301 - "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS"
   - B. ACI 302 - "RECOMMENDED PRACTICE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION"
   - C. ACI 304 - "RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE"
   - D. ACI 311 - "ACI MANUAL OF CONCRETE INSPECTION"
   - E. ACI 315 - "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT"
   - F. ACI 318 - "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"
   - G. ACI 347 - "RECOMMENDED PRACTICE FOR CONCRETE FORMWORK"
2. PROVIDE CONCRETE TO OBTAIN THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS:

MINIMUM COMPRESSIVE STRENGTH AT (28) DAYS		
CONCRETE MEMBER	STRENGTH (f'c)	NORMAL WEIGHT / LIGHTWEIGHT
DRILLED PIERS	4000 PSI	NORMAL WEIGHT
PILE CAPS	4000 PSI	NORMAL WEIGHT
PIERS	4000 PSI	NORMAL WEIGHT
GRADE BEAMS	4000 PSI	NORMAL WEIGHT
FOUNDATION WALLS	4000 PSI	NORMAL WEIGHT
SLAB-ON-GRADE	4000 PSI	NORMAL WEIGHT
ELEVATED SLAB-ON-STEEL DECK	4000 PSI	NORMAL WEIGHT
EXTERIOR MAT SLABS	4000 PSI	NORMAL WEIGHT
INTERIOR TOPPING SLABS	4000 PSI	NORMAL WEIGHT
PAN STAIRS AND LANDINGS	4000 PSI	NORMAL WEIGHT

3. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL CONCRETE MIX DESIGN REQUIREMENTS.
4. EXTERIOR FLATWORK, STAIRS, RAMPS, ETC. SHALL HAVE A WATER/CEMENT RATIO < 0.45.
5. LABORATORY TEST REPORTS OR MATERIAL CERTIFICATES FOR CONCRETE MATERIALS AND MIX DESIGN TEST DATA, IN CONFORMANCE WITH ACI STANDARDS, SHALL BE SUBMITTED FOR REVIEW FOR EACH TYPE OF CONCRETE TO BE USED. EACH SUBMITTED MIX DESIGN SHALL IDENTIFY THE APPLICATION FOR WHICH THE MIX WILL BE USED.
6. ALL CONCRETE SHALL BE NORMAL WEIGHT UNLESS NOTED OTHERWISE.
7. ALL LIGHTWEIGHT CONCRETE SHALL HAVE A DENSITY OF 115 PCF +/- 3 PCF UNLESS NOTED OTHERWISE.
8. ALL CONCRETE ELEMENTS SUBJECT TO FREEZING AND THAWING DURING CONSTRUCTION OR OVER THE SERVICE LIFE OF THE STRUCTURE SHALL CONTAIN AN AIR ENTRAINMENT ADMIXTURE AS SPECIFIED IN ACI-318, LATEST EDITION.
9. NO CALCIUM CHLORIDE SHALL BE USED IN ANY CONCRETE.
10. THE CONTRACTOR SHALL SUBMIT CHECKED, DETAILED REINFORCEMENT SHOP DRAWINGS SHOWING THE LOCATIONS AND DETAILING OF ALL FOOTINGS, WALLS, PIERS, BEAMS, COLUMNS, SLABS, CONSTRUCTION JOINTS, CONTROL JOINTS, ETC. PRIOR TO FABRICATION. DETAILS SHALL INCLUDE STEEL SIZES, LAPS, SPACING AND PLACEMENT.
11. THE MINIMUM CONCRETE COVER FOR CAST-IN-PLACE (NON-PRESTRESSED) CONCRETE SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
    - A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH...... 3"
    - B. CONCRETE EXPOSED TO EARTH OR WEATHER:
      - 1. NO. 6 THROUGH NO. 18 BARS.. 2"
      - 2. NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER.................................... 1 1/2"
    - C. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
      - 1. SLABS, WALLS, JOISTS:
        NO. 14 AND NO. 18 BARS.. 1 1/2"
        NO. 11 BAR AND SMALLER .... 3/4"
      - 2. BEAMS, COLUMNS:
        PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS........................ 1 1/2"
      - 3. SHELLS, FOLDED PLATE MEMBERS:
        NO. 6 THROUGH NO. 18 BARS.. 2"
        NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER....................................1 1/2"
12. PROVIDE ADEQUATE BOLSTERS, HI-CHAIRS, SUPPORT BARS, ETC., TO MAINTAIN SPECIFIED CLEARANCES FOR THE ENTIRE LENGTH OF ALL REINFORCING BARS. PROVIDE CONTINUOUS #4 SPACER BARS IN WALLS AND SLABS TO SUPPORT DOWELS.
13. PROVIDE PLASTIC TIPPED ACCESSORIES FOR REINFORCEMENT AT ALL FACES OF EXPOSED CONCRETE, INTERIOR OR EXTERIOR.
14. ALL FIELD BENDING OF REINFORCEMENT SHALL BE DONE COLD. HEATING OF BARS WILL NOT BE PERMITTED.
15. ALL CONSTRUCTION JOINTS, EXCLUDING SLAB-ON-GRADE CONSTRUCTION JOINTS, SHALL BE WIRE BRUSHED, CLEANED, MOISTENED AND A CONCRETE SLURRY APPLIED IMMEDIATELY PRIOR TO PLACING NEW CONCRETE.
16. CONTROL AND CONSTRUCTION JOINTS IN NON-STRUCTURAL SLABS-ON-GRADE SHALL BE PROVIDED AS SHOWN ON DRAWINGS AND DETAILS. CONTROL JOINTS SHALL BE SPACED AT A MAXIMUM OF 15'-0" ON CENTER IN ANY DIRECTION. SAWED CONTROL JOINTS SHALL BE OF THE SOFT-CUT TYPE, 0.25 TIMES THE SLAB THICKNESS DEEP, AND CUT AS SOON AS POSSIBLE WITHOUT DISLODGING THE COARSE AGGREGATE AS PART OF THE FINISHING OPERATION. CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS INDICATING ALL CONTROL JOINTS FOR ALL SLAB-ON-GRADE CONSTRUCTION FOR REVIEW PRIOR TO CONSTRUCTING ALL SLABS-ON-GRADE.
17. CONCRETE FOR SLAB-ON-GRADE CONSTRUCTION SHALL USE A DESIGN MIX THAT INCORPORATES 1-1/2" MAXIMUM SIZE AGGREGATE, WELL GRADED AND TYPE 1 CEMENT. THE MIX SHALL CONTAIN NO ADMIXTURES THAT EXACERBATE SHRINKAGE.
18. AT EXPOSED CONCRETE ELEMENTS, SEE ARCHITECTURAL DRAWINGS AND/OR PROJECT SPECIFICATIONS FOR TYPE OF CONCRETE FINISHING REQUIRED.
19. AT ALL EXPOSED TO VIEW CONCRETE ELEMENTS (I.E. BEAMS, GIRDERS, COLUMNS, TOP OF RETAINING WALLS. ETC.), PROVIDE 3/4" CHAMFER AT EDGES.
20. IF STRUCTURAL CONCRETE MEMBERS (STRUCTURED SLABS, BEAMS AND GIRDERS) ARE NOT CONSTRUCTED IN ONE CONTINUOUS POUR THE VERTICAL CONSTRUCTION JOINT BETWEEN POURS SHALL BE PLACED WITHIN THE MIDDLE FIFTH OF THE MEMBER SPAN AND CONTINUOUSLY KEYED. THE MEMBER SHALL BE SHORED UNTIL THE CONCRETE HAS ATTAINED THE MINIMUM 28-DAY STRENGTH. SEE TYPICAL CONSTRUCTION JOINT DETAILS. ALTERNATE CONSTRUCTION JOINT LOCATIONS MUST BE REVIEWED BY THE STRUCTURAL ENGINEER. NO HORIZONTAL CONSTRUCTION JOINTS WILL BE PERMITTED IN SLABS AND BEAMS UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS.
21. PITCH ALL SLABS TO DRAINS WHERE DRAINS ARE INDICATED ON CONTRACT DRAWINGS.
22. ADDITIONAL BARS SHALL BE PROVIDED AT ALL OPENINGS IN SLABS-ON-GRADE AND CONCRETE WALLS. AT ALL OPENINGS, PROVIDE MINIMUM OF (2) - #4 BARS AT EACH SIDE EXTENDING 2'-0" BEYOND EACH SIDE OF OPENING.
23. PROVIDE ADDITIONAL CORNER BARS TO MATCH HORIZONTAL BARS AT ALL WALL CORNERS AND INTERSECTIONS.
24. AT SLABS-ON-GRADE PROVIDE ADDITIONAL REINFORCING AT RE-ENTRANT CORNERS. PROVIDE MINIMUM OF (2) - #4 BARS, 4'-0" LONG CENTERED ABOUT CORNER.
25. NO ALUMINUM OF ANY TYPE SHALL BE ALLOWED IN THE CONCRETE WORK, UNLESS COATED TO PREVENT ALUMINUM CONCRETE REACTION.
26. IN NO CASE SHALL EMBEDDED CONDUIT BE PLACED ABOVE REINFORCING IN SLAB-ON-GRADE CONSTRUCTION. MINIMUM SPACING OF ADJACENT CONDUITS SHALL BE 3 TIMES THE DIAMETER OR WIDTH OF THE LARGEST CONDUIT. MAXIMUM OUTSIDE DIAMETER OF EMBEDDED CONDUIT SHALL BE NO LARGER THAN ONE-THIRD OF THE SLAB THICKNESS.
27. IN ELEVATED STRUCTURAL SLABS, NO CONDUITS SHALL BE PLACED CLOSER TO A COLUMN FACE THAN TWELVE INCHES.
28. ELECTRICAL CONDUITS AND PLUMBING PIPES IN ELEVATED STRUCTURAL SLABS SHALL BE PLACED BETWEEN THE TOP AND BOTTOM LAYERS OF REINFORCEMENT AND SHALL NOT HAVE AN OUTSIDE DIAMETER GREATER THAN ONE-THIRD THE SLAB THICKNESS. CROSSOVERS OF CONDUITS AND/OR PIPES SHALL NOT BE PERMITTED. THE CENTER-TO-CENTER DISTANCE BETWEEN CONDUITS AND/OR PLUMBING PIPES SHALL NOT BE LESS THAN 3 TIMES THE LARGEST CONDUIT OR PIPE DIAMETER OR WIDTH.
29. UNLESS OTHERWISE NOTED ON THE DRAWINGS, SLEEVES FOR PIPES AND CONDUITS PENETRATING GRADE BEAMS AND CONCRETE WALLS SHALL BE STEEL PIPE SLEEVES OF NOMINAL DIAMETER 2 INCHES LARGER THAN THE NOMINAL SIZE OF THE PIPE PENETRATING THE STRUCTURAL MEMBER. THE THICKNESS OF THE SLEEVE SHALL CONFORM TO SCHEDULE 40 BUT NEED NOT BE MORE THAN 3/8 INCH. ALL SUCH SLEEVE LOCATIONS SHALL BE REVIEWED BY THE STRUCTURAL ENGINEER AND ARCHITECT PRIOR TO INSTALLATION.
30. PROVIDE WATERSTOPS AT ALL CONSTRUCTION JOINTS LOCATED BELOW GRADE AS SHOWN ON THE DRAWINGS.
31. CONCRETE SLAB OPENINGS SHOWN ON STRUCTURAL DRAWINGS ARE TO BE CONFIRMED WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS PRIOR TO CONSTRUCTION. ALL SLAB OPENINGS ARE TO SIZED AND LOCATED ON REBAR SHOP DRAWING SUBMITTALS FOR CONFIRMATION WITH STRUCTURAL DRAWINGS. SHOULD ANY OPENING LOCATION OR DIMENSION CHANGE FROM LOCATIONS AND DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE STRUCTURAL ENGINEER AND ARCHITECT PRIOR TO PROCEEDING. ANY NECESSARY DESIGN REVISIONS WILL BE ISSUED BY THE STRUCTURAL ENGINEER.
32. SLABS AND BEAMS SHALL BE CAMBERED TO COMPENSATE FOR CONSTRUCTION LOADS AND ANY DEFLECTION OF THE SHORING/FORMWORK SYSTEM. THIS CAMBER SHALL BE IN ADDITION TO ANY CAMBER SHOWN ON THE STRUCTURAL DRAWINGS.
33. WHERE SLABS ARE TO BE CAMBERED, THE CONSTRUCTED THICKNESS SHALL BE CONSTANT THROUGHOUT THE SPAN AS SHOWN ON THE STRUCTURAL DRAWINGS.
34. REFER TO THE SPECIFICATION FOR FLOOR FLATNESS AND FLOOR LEVELNESS REQUIREMENTS.
35. NO CONSTRUCTION SHALL BE MADE WITHOUT REINFORCEMENT. UNLESS OTHERWISE NOTED, THE FOLLOWING PERCENTAGE OF THE GROSS CROSS SECTIONAL AREA SHALL BE PROVIDED AS MINIMUM REINFORCEMENT:
    - A. SLABS: TOP & BOTTOM....................0.20%
    - B. BEAMS: TOP & BOTTOM...................0.33%
      STIRRUPS..#3@D" (D=MEMBER DEPTH)
    - C. COLUMNS: VERTICAL........................1.00%
      TIES..#3@10"
    - D. WALLS: VERTICAL.............................0.12% (#5's)
      HORIZONTAL.....................................0.20% (#5's)
    - E. FOOTINGS: HORIZONTAL.................0.18% (#5's)
36. ALL REINFORCING STEEL SHALL BE HIGH STRENGTH NEW BILLET STEEL, CONFORMING TO ASTM A615 GRADE 60 UNLESS NOTED OTHERWISE.
37. ALL BAR DETAILING AND ACCESSORIES TO BE FURNISHED SHALL CONFORM TO TYPICAL DETAILS IN THE ACI STANDARD 315 DETAILING MANUAL LATEST EDITION, EXCEPT AS OTHERWISE SHOWN, NOTED, OR SPECIFIED.
38. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185. ALL WELDED WIRE FABRIC SHALL BE LAPPED TWO PANELS AT EDGES AND ENDS, AND TIED SECURELY. AT EXTERIOR SLABS PROVIDE EPOXY COATED WELDED WIRE FABRIC CONFORMING TO ASTM A884, CLASS A.
39. DETAILING AND ACCESSORIES SHALL CONFORM TO THE ACI DETAILING MANUAL AND TO THE CRSI MANUAL OF STANDARD PRACTICE. LATEST EDITIONS, UNLESS OTHERWISE NOTED BELOW, ON THE DRAWINGS, OR IN THE SPECIFICATIONS.
40. ALL HOOKS SHALL BE "STANDARD" HOOKS AS PER ACI 318, UNLESS NOTED OTHERWISE.

40. THE MINIMUM LENGTH OF ALL LAP SPLICES NOT DIMENSIONED ON THE DRAWINGS SHALL BE AS FOLLOWS:

BAR SIZE	f'c	SLAB/BEAM		WALL		COLUMN VERTICAL
		TOP	OTHER	VERT	HORIZ	
#3	4000	25"	19"	19"	25"	-
	5000	22"	17"	17"	22"	
	6000	20"	16"	16"	20"	
#4	4000	33"	25"	25"	33"	-
	5000	29"	23"	23"	29"	
	6000	27"	21"	21"	27"	
#5	4000	41"	31"	31"	41"	19"
	5000	36"	28"	28"	36"	
	6000	33"	26"	26"	33"	
#6	4000	49"	37"	37"	49"	23"
	5000	44"	34"	34"	44"	
	6000	40"	31"	31"	40"	
#7	4000	71"	54"	54"	71"	27"
	5000	63"	49"	49"	63"	
	6000	58"	45"	45"	58"	
#8	4000	81"	62"	62"	81"	30"
	5000	72"	56"	56"	72"	
	6000	66"	51"	51"	66"	
#9	4000	91"	70"	70"	91"	34"
	5000	81"	63"	63"	81"	
	6000	74"	57"	57"	74"	
#10	4000	102"	79"	79"	102"	39"
	5000	92"	71"	71"	92"	
	6000	84"	64"	64"	84"	
#11	4000	114"	87"	87"	114"	43"
	5000	102"	78"	78"	102"	
	6000	93"	71"	71"	93"	

NOTES:
- A. THE ABOVE TABLE IS BASED ON THE CLEAR SPACING OF BARS BEING NOT LESS THAN 2x THE MAXIMUM BAR DIAMETER AND THE CLEAR COVER OF BARS BEING NOT LESS THAN ONE BAR DIAMETER. MULTIPLY THE LENGTH BY 1.5 FOR ALL OTHER CASES.
- B. TOP BARS ARE HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE SPLICE.
- C. FOR EPOXY COATED BARS, MULTIPLY THE LENGTHS SHOWN IN THE TABLE ABOVE BY 1.5.
- D. LENGTHS ARE BASED ON NORMAL WEIGHT CONCRETE. FOR LIGHTWEIGHT CONCRETE, MULTIPLY THE LENGTHS SHOWN IN THE TABLE ABOVE BY 1.3.
- E. WHERE BARS OF DIFFERENT SIZE ARE TO BE SPLICED, THE LENGTH SHALL BE THAT REQUIRED FOR THE LARGER BAR.
- F. LENGTHS SHALL BE SPECIFICALLY DIMENSIONED AT ALL LOCATIONS ON THE SHOP DRAWINGS.
- G. FOR CONCRETE STRENGTH BETWEEN LISTED VALUES, USE LENGTH OF THE NEXT LOWER CONCRETE STRENGTH LISTED VALUE.
- H. FOR CONCRETE STRENGTHS EXCEEDING 6000 PSI, USE THE LENGTH FOR 6000 PSI CONCRETE STRENGTH.
- I. THE ABOVE TABLE UTILIZES "CLASS B" SPLICES.

41. MECHANICAL COUPLERS MAY BE USED IN LIEU OF LAP SPLICES. MECHANICAL COUPLERS MUST BE CAPABLE OF SUSTAINING 125% OF THE BAR CAPACITY.
42. CONTINUOUS TOP AND BOTTOM BARS, OTHER THAN IN FOOTINGS, WHEN SHOWN IN CROSS SECTION ONLY, SHALL BE LAPPED AS FOLLOWS:
    - A. TOP BARS AT MID SPANS.
    - B. BOTTOM BARS CENTERED OVER SUPPORTS.
43. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE CONCRETE TESTING AND INSPECTION REQUIREMENTS.

POST-INSTALLED ANCHORS

1. WHERE EPOXY SYSTEM IS INDICATED ON THE PLANS OR DETAILS, USE HILTI HIT-HY 200 V3 ADHESIVE IN CONCRETE AND SOLID GROUTED MASONRY UNLESS NOTED OTHERWISE. THE CONTRACTOR MAY SUBMIT SUBSTITUTE EPOXY SYSTEMS FOR APPROVAL PROVIDED THEY MEET OR EXCEED THE CAPACITY OF HILTI HIT-HY 200 V3 ADHESIVE.
2. DRILL HOLES TO EPOXY MANUFACTURER'S RECOMMENDED SIZE. CLEAN HOLES WITH A CIRCULAR WIRE OR NYLON BRUSH AND BLOW OUT WITH COMPRESSED AIR.
3. WHERE MECHANICAL EXPANSION ANCHORS ARE INDICATED ON THE PLANS OR DETAILS, USE HILTI KWIK BOLT TZ2 ANCHORS IN CONCRETE UNLESS NOTED OTHERWISE. THE CONTRACTOR MAY SUBMIT SUBSTITUTE EXPANSION ANCHOR SYSTEMS FOR APPROVAL PROVIDED THEY MEET OR EXCEED THE CAPACITY OF HILTI KWIK BOLT TZ2 ANCHORS.
4. POST-INSTALLED ANCHORS MUST BE INSTALLED USING THE SPACING AND EDGE DISTANCES GIVEN ON THE PLANS OR DETAILS. IF FIELD CONDITIONS DICTATE THAT THE ANCHOR SPACING OR EDGE DISTANCES BE MODIFIED, THE CONTRACTOR SHALL SUBMIT A FIELD SKETCH TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO MAKING ANY MODIFICATIONS.
5. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE POST-INSTALLED ANCHORS TESTING AND INSPECTION REQUIREMENTS.

STRUCTURAL STEEL

1. FURNISH STRUCTURAL STEEL IN ACCORDANCE WITH AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS AND AISC CODE OF STANDARD PRACTICE, LATEST EDITIONS.
2. THE STEEL FABRICATOR/ERECTOR SHALL VERIFY IN FIELD ALL DIMENSIONS, ELEVATIONS AND MEMBER SIZES AS SHOWN ON THE CONTRACT DRAWINGS FOR THE EXISTING CONSTRUCTION, PRIOR TO THE DETAILING OR FABRICATION OF ANY NEW STRUCTURAL ELEMENT. THE STEEL FABRICATOR/ERECTOR SHALL DOCUMENT ANY CONSTRUCTION RELATED DISCREPANCIES. THE STEEL FABRICATOR/ERECTOR SHALL FURNISH THE ABOVE INFORMATION IN THE FORM OF DETAILED SKETCHES TO THE STRUCTURAL ENGINEER FOR REVIEW. THERE SHALL BE RESOLUTION TO THE NOTED DISCREPANCIES PRIOR TO FABRICATION OF ANY NEW STRUCTURAL ELEMENTS.
3. STRUCTURAL STEEL MATERIAL SHALL BE AS INDICATED BELOW UNO:

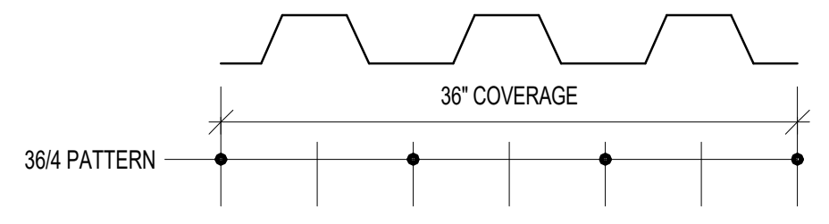
STRUCTURAL SHAPES	ASTM SPECIFICATION
WIDE FLANGES.......................................	A992
CHANNELS..	A992 OR A572 GRADE 50
ANGLES..	A572 GRADE 50
STEEL PIPE..	A53, GRADE B
ROUND HSS...	A500, GRADE C
SQUARE & RECTANGULAR HSS............	A500, GRADE C
PLATES...	A572 GRADE 50
THREADED RODS....................................	A36
ANCHOR BOLT ASSEMBLIES..................	F1554, GRADE 36 (UNO)

4. ALL STRUCTURAL STEEL FRAMEWORK INCLUDED IN THESE DOCUMENTS ARE CLASSIFIED AS NON-SELF-SUPPORTING. ALL CONNECTIONS SPECIFIED HEREIN ARE BASED ON LOADING CONDITIONS OF THE FULLY COMPLETED STRUCTURE IN ITS ENTIRETY INCLUDING THE FUNCTIONS OF THE COLUMN BASE PLATES AND ANCHOR BOLTS. INSTABILITIES CAN BE EXPECTED DURING THE ERECTION PROCESS DUE TO LACK OF INSTALLED ROOF, FLOOR, WALL AND SLAB DIAPHRAGMS AS WELL AS STEEL BRACING, CONNECTION RIGIDITIES AND OTHER SUCH STABILIZING ELEMENTS. THE GENERAL CONTRACTOR SHALL IDENTIFY THE SEQUENCE AND SCHEDULING OF CONSTRUCTION ITEMS AND COORDINATE THE ACTIVITIES OF ALL TRADES INCLUDING THE STEEL FABRICATOR AND ERECTOR. THE ERECTOR SHALL SUBMIT AN ERECTION PLAN AND A TEMPORARY BRACING SCHEME TO THE CONTRACTOR AND OWNER WHICH IS FOR RECORD PURPOSES ONLY. THIS SUBMITTAL WILL NOT BE REVIEWED AND IS NOT A DESIGN FUNCTION OF THE STRUCTURAL ENGINEER.
5. THE FABRICATOR/ERECTOR SHALL SUBMIT TO THE STRUCTURAL ENGINEER AND ARCHITECT FOR REVIEW, ENGINEERED AND CHECKED DRAWINGS SHOWING FABRICATION DETAILS, FIELD ASSEMBLY DETAILS AND ERECTION DIAGRAMS FOR ALL STRUCTURAL STEEL ELEMENTS.
6. ALL BEAMS AND JOISTS SHALL BE FABRICATED WITH THE NATURAL CAMBER UP. PROVIDE FABRICATED CAMBERS AS INDICATED ON THE DRAWINGS.
7. AFTER FABRICATION, ALL STEEL SHALL BE CLEANED OF ALL RUST, LOOSE MILL SCALE, AND OTHER FOREIGN MATERIALS. STEEL SHALL BE PRIMED AND PAINTED AS OUTLINED IN THE ARCHITECTURAL DRAWINGS AND/OR PROJECT SPECIFICATIONS. STEEL TO RECEIVE SPRAY-ON FIREPROOFING SHALL NOT BE PRIMED OR PAINTED.
8. WELDING SHALL BE PERFORMED WITH E70XX LOW HYDROGEN ELECTRODES. ALL WELDING SHALL BE PERFORMED BY CERTIFIED/QUALIFIED WELDERS AND SHALL CONFORM TO THE AWS D1.1, "STRUCTURAL WELDING CODE - STEEL," LATEST EDITION.
9. MINIMUM FILLET WELD SIZE SHALL COMPLY WITH THE AISC SPECIFICATION REQUIREMENTS, BUT SHALL NOT BE LESS THAN 3/16 INCH UNLESS NOTED OTHERWISE.
10. ALL BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF "AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS," LATEST EDITION. ALL BOLT HOLES SHALL BE "SHORT SLOTTED", UNLESS NOTED OTHERWISE.
11. ALL STEEL BEAM AND GIRDER CONNECTIONS SHALL BE SIMPLE SHEAR CONNECTIONS UTILIZING HIGH STRENGTH BOLTS IN BEARING-TYPE CONNECTIONS WITH THREADS EXCLUDED FROM THE SHEAR PLANE UNLESS NOTED OTHERWISE. BOLTS ARE TO BE TIGHTENED TO THE "SNUG TIGHT" CONDITION UNLESS NOTED AS "SLIP CRITICAL". BOLTS DESIGNATED AS "SLIP CRITICAL" ARE TO BE TIGHTENED PER THE ABOVE MENTIONED BOLT SPECIFICATION.
12. BOLTED CONNECTIONS SHALL USE A MINIMUM OF (2) 3/4"Ø BOLTS UNLESS NOTED OTHERWISE.
13. PROVIDE CONNECTIONS AS DETAILED ON THE DESIGN DRAWINGS. ALTERNATE CONNECTION DESIGNS MAY BE SUBMITTED BY THE CONTRACTOR. THE ALTERNATE DESIGNS MUST BE PROPERLY ENGINEERED AND SUBMITTED WITH CALCULATIONS SIGNED AND SEALED BY A SPECIALTY ENGINEER. THE DESIGN BY THE SPECIALTY ENGINEER AND THE REVIEW BY THE STRUCTURAL ENGINEER OF ANY ALTERNATE CONNECTIONS WILL BE AT THE CONTRACTOR'S EXPENSE.
14. AT COMPOSITE BEAM CONSTRUCTION PROVIDE 3/4" Ø HEADED SHEAR STUDS UNIFORMLY SPACED AT 1'-0" ON CENTER MAXIMUM ON ALL BEAMS UNLESS NOTED OTHERWISE.
15. THERE SHALL BE NO FIELD CUTTING OF STRUCTURAL STEEL MEMBERS FOR THE WORK OF OTHER TRADES WITHOUT THE PRIOR APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.
16. STEEL WORK SHALL SLOPE IN ACCORDANCE WITH ELEVATIONS GIVEN ON STRUCTURAL DRAWINGS.
17. REFER TO ARCHITECTURAL DRAWINGS FOR MISCELLANEOUS STEEL NOT SHOWN ON STRUCTURAL DRAWINGS.
18. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE STRUCTURAL STEEL TESTING AND INSPECTION REQUIREMENTS.

COMPOSITE STEEL FLOOR DECK

1. FURNISH COMPOSITE STEEL FLOOR DECK IN ACCORDANCE WITH THE STEEL DECK INSTITUTE STANDARD FOR COMPOSITE STEEL FLOOR DECK - SLABS, LATEST EDITION.
2. FLOOR DECK SECTION PROPERTIES SHALL BE COMPUTED IN ACCORDANCE WITH AISI "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS."
3. COMPOSITE STEEL FLOOR DECK SHALL HAVE THE FOLLOWING MINIMUM YIELD STRENGTH:
   - A. 40 KSI FOR 16 GAGE DECK
   - B. 50 KSI FOR 18 GAGE DECK TO 22 GAGE DECK
4. ALL COMPOSITE STEEL FLOOR DECK SHALL BE FORMED FROM SHEET STEEL CORRESPONDING TO THE REQUIREMENTS OF ASTM A653 WITH A MINIMUM G90 ZINC COATING.
5. FLOOR DECKING SHALL TYPICALLY BE CONTINUOUS OVER A MINIMUM OF THREE (3) SPANS. WHERE A THREE (3) SPAN CONDITION IS NOT POSSIBLE, THE FLOOR DECK SHALL BE SHORED, OR THE FLOOR DECK SUPPLIER'S SPECIALTY ENGINEER SHALL VERIFY THE ADEQUACY OF FLOOR DECK TO ACCOMMODATE THE SPAN CONDITIONS, OR THE FLOOR DECK SUPPLIER'S SPECIALTY ENGINEER SHALL RESIZE THE FLOOR DECK TO ACCOMMODATE THE SPAN CONDITIONS WITHOUT SHORING.
6. GENERAL CONTRACTOR SHALL SUBMIT FLOOR DECK ALLOWABLE LOAD DATA AND FLOOR DECK SHOP DRAWINGS SHOWING DECK LAYOUT AND ALL EDGE CONDITION DIMENSIONS PRIOR TO CONSTRUCTION.
7. WELD FLOOR DECK TO SUPPORTING MEMBERS WITH NOMINAL 5/8" ARC PUDDLE WELDS OR EQUIVALENT AT BEARING LOCATIONS USING A 36/4 PATTERN FOR THE FLOOR DECK. SEE FASTENER LAYOUT DIAGRAMS BELOW.

2" AND 3" COMPOSITE STEEL FLOOR DECK

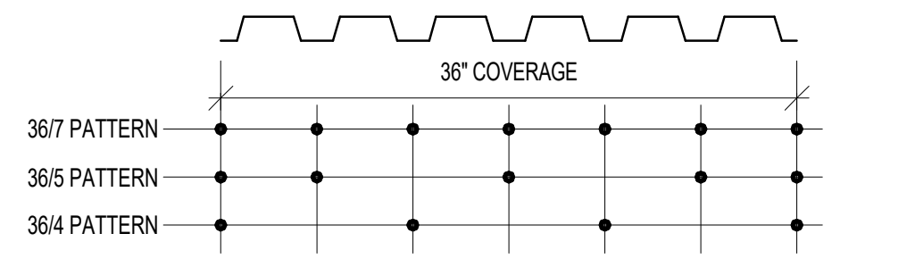


8. WELD FLOOR DECK TO SUPPORTING MEMBERS ALONG EDGES PARALLEL TO DECK SPAN AT 12" ON CENTER.
9. SCREW SIDE LAPS OF FLOOR DECK WITH #10 TEK SCREWS AT 12" ON CENTER.
10. WELDING OF FLOOR DECK SHALL BE PERFORMED BY CERTIFIED/QUALIFIED WELDERS AND SHALL CONFORM TO THE AWS D1.3, "STRUCTURAL WELDING CODE - SHEET STEEL," LATEST EDITION.
11. CONCRETE CONTAINING CHLORIDE SALTS OR OTHER DELETERIOUS MATERIAL IS NOT TO BE USED ON COMPOSITE STEEL FLOOR DECK.
12. THE CONCRETE SLAB-ON-METAL DECK CONSTRUCTION SHALL NOT BE BLOCKED OUT PRIOR TO CONSTRUCTION OR CUT AFTER CONSTRUCTION IN ANY WAY UNLESS SPECIFICALLY OUTLINED ON THE STRUCTURAL DRAWINGS.
13. IN NO CASE SHALL EMBEDDED CONDUIT BE PLACED ABOVE THE WELDED WIRE FABRIC REINFORCING IN SLAB-ON-METAL DECK CONSTRUCTION. MINIMUM SPACING OF ADJACENT CONDUITS SHALL BE 3X THE DIAMETER OF THE LARGEST CONDUIT. MAXIMUM OUTSIDE DIAMETER OF EMBEDDED CONDUIT SHALL BE NO LARGER THAN ONE-THIRD OF THE SLAB THICKNESS FROM THE TOP OF THE METAL DECK.
14. IN NO CASE SHALL EMBEDDED CONDUIT BE "CROSSED-OVER" WITHIN THE SLAB IN SLAB-ON-METAL DECK CONSTRUCTION.
15. PROVIDE AS REQUIRED POUR STOPS, COLUMN CLOSURES, END CLOSURES, COVER PLATES AND GIRDER FILLERS AT ALL SLAB OPENINGS, SLAB EDGES, AND DECK ENDS UNLESS NOTED OTHERWISE.
16. CONTRACTOR TO PROVIDE SUPPLEMENTAL STEEL FRAMING AT OPENINGS AS REQUIRED FOR SUPPORT OF THE FLOOR DECK. ALL OPENINGS SHALL BE COORDINATED WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
17. THE COMPOSITE STEEL FLOOR DECK HAS BEEN DESIGNED TO ACCOMMODATE 20 PSF OF UNIFORM CONSTRUCTION LIVE LOAD.
18. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE COMPOSITE STEEL FLOOR DECK TESTING AND INSPECTION REQUIREMENTS.

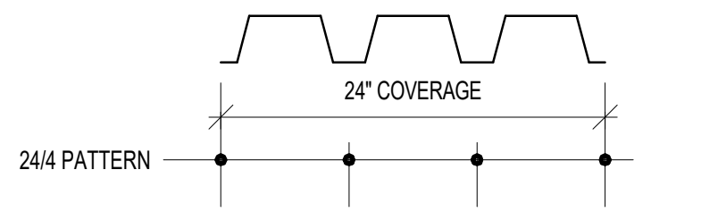
STEEL ROOF DECK

1. FURNISH STEEL ROOF DECK IN ACCORDANCE WITH THE STEEL DECK INSTITUTE STANDARD FOR STEEL ROOF DECK, LATEST EDITION.
2. ROOF DECK SECTION PROPERTIES SHALL BE COMPUTED IN ACCORDANCE WITH AISI "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS."
3. STEEL ROOF DECK SHALL HAVE A MINIMUM YIELD STRENGTH OF 50 KSI.
4. ALL STEEL ROOF DECK SHALL BE FORMED FROM SHEET STEEL CORRESPONDING TO THE REQUIREMENTS OF ASTM A653, WITH A MINIMUM G90 ZINC COATING.
5. ROOF DECKING SHALL TYPICALLY BE CONTINUOUS OVER A MINIMUM OF THREE (3) SPANS. WHERE A THREE (3) SPAN CONDITION IS NOT POSSIBLE, THE ROOF DECK SUPPLIER'S SPECIALTY ENGINEER SHALL VERIFY THE ADEQUACY OF THE ROOF DECK TO ACCOMMODATE THE SPAN CONDITIONS OR THE ROOF DECK SUPPLIER'S SPECIALTY ENGINEER SHALL RESIZE THE ROOF DECK TO ACCOMMODATE THE SPAN CONDITIONS.
6. GENERAL CONTRACTOR SHALL SUBMIT ROOF DECK ALLOWABLE LOAD DATA AND ROOF DECK SHOP DRAWINGS SHOWING DECK LAYOUT AND ALL EDGE CONDITION DIMENSIONS PRIOR TO CONSTRUCTION.
7. WELD ROOF DECK TO SUPPORTING MEMBERS WITH NOMINAL 5/8" ARC PUDDLE WELDS OR EQUIVALENT AT BEARING LOCATIONS USING A 36/7 PATTERN FOR THE ROOF DECK. SEE FASTENER LAYOUT DIAGRAMS BELOW.

1 1/2" STEEL ROOF DECK



3" STEEL ROOF DECK



8. WELD DECK TO SUPPORTING MEMBERS ALONG EDGES PARALLEL TO DECK SPAN AT 12" ON CENTER.
9. SCREW SIDE LAPS OF ROOF DECK WITH NO. 10 TEK SCREWS AT 12" ON CENTER.
10. WELDING OF ROOF DECK SHALL BE PERFORMED BY CERTIFIED/QUALIFIED WELDERS AND SHALL CONFORM TO THE AWS D1.3, "STRUCTURAL WELDING CODE - SHEET STEEL," LATEST EDITION.
11. NO ATTACHMENTS MAY BE MADE TO THE ROOF DECK.
12. PROVIDE AS REQUIRED BENT EDGE PLATES, RIDGE PLATES, VALLEY PLATES, FLAT PLATES AT CHANGE OF DECK DIRECTION AND SUMP PANS.
13. CONTRACTOR TO PROVIDE SUPPLEMENTAL FRAMING AT OPENINGS AS REQUIRED FOR SUPPORT OF THE ROOF DECK. ALL OPENINGS SHALL BE COORDINATED WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
14. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE STEEL ROOF DECK TESTING AND INSPECTION REQUIREMENTS.

M/E/P/FP EQUIPMENT SUPPORTS

1. HANGERS AND SUPPORTS FOR HVAC PIPING, EQUIPMENT, CONDUIT, FIRE PROTECTION PIPING, DUCTWORK, CABLE BUS AND TRAY, ETC. WHICH IS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR'S SPECIALTY ENGINEER. REFER TO THE PROJECT SPECIFICATIONS.
2. SUBMIT SIGNED AND SEALED SHOP DRAWINGS AND CALCULATIONS FOR ALL SUPPORT TO THE ARCHITECT, ENGINEER AND OWNER FOR REVIEW

GEOFOAM FILL (RIGID INSULATION)

1. MATERIAL SHALL BE RIGID, CELLULAR EXPANDED POLYSTYRENE (EPS) GEOFOAM FILL MEETING ASTM D6817 WITH THE FOLLOWING PROPERTIES:
   - A. EPS29 DENSITY OF 1.80 LBS./CU. FT
   - B. COMPRESSIVE STRENGTH OF 10.9 PSI AT 1% DEFORMATION
   - C. FLAME-SPREAD INDEX NOT EXCEEDING 7.5
   - D. SMOKE DEVELOPED INDEX NOT EXCEEDING 450 WHEN TESTED AT MINIMUM THICKNESS OF 4 INCHES IN ACCORDANCE WITH ASTM E84
2. GEOFOAM SHALL BE PROVIDED WITH FACTORY TREATED TERMITE RESISTANCE.
3. GEOFOAM BLOCKS SHALL BE STANDARD SIZE 4 FT WIDE X 8 FT LONG.
4. CONTRACTOR SHALL SUBMIT MATERIAL CERTIFICATES INDICATED COMPLIANCE WITH SPECIFIED PERFORMANCE CHARACTERISTICS AND PHYSICAL PROPERTIES.
5. G60 GALVANIZED STEEL LATERAL STABILITY PLATES SHALL BE INSTALLED BETWEEN GEOFOAM LAYERS. THE PLATES SHALL BE 20 GAUGE 4"x4" TWO-SIDED 0.60" MULTI-BARBED TYPE PLATES CAPABLE OF PIERCING BOTH LAYERS OF GEOFOAM. A MINIMUM OF TWO PLATES FOR EACH 4 FT x 8 FT SECTION OF GEOFOAM BLOCKS SHALL BE PROVIDED.
6. GEOFOAM SHALL BE PROVIDED AND INSTALLED TO COMPLY WITH MANUFACTURER REQUIREMENTS AND WITH ASTM D7180.
7. ORIENT SUCCESSIVE LAYERS OF BLOCKS AT 90 DEGREES TO PREVIOUS LAYER. OFFSET BLOCK JOINTS BETWEEN LAYERS. BLOCKS SHALL BE PLACED TIGHTLY TO BE IN FULL CONTACT WITH THE SUPPORTING BASE MATERIAL.
8. SUBMIT SHOP DRAWINGS SHOWING GEOFOAM AND STABILITY PLATE LAYOUT.
9. PROVIDE MINIMUM 10-YEAR WARRANTY COVERING LONG-TERM PHYSICAL PROPERTY OF GEOFOAM.
10. GEOFOAM BLOCKS SHALL BE LABELED WITH A LABEL OF AN APPROVED AGENCY SHOWING THE MANUFACTURER'S NAME, PRODUCT LISTING, PRODUCT IDENTIFICATION AND INFORMATION SUFFICIENT TO DETERMINE THAT THE END USE COMPLIES WITH THE CODE REQUIREMENTS.

COLD FORMED STEEL FRAMING (DELEGATED DESIGN)

1. DESIGN, DETAIL, AND FURNISH COLD FORMED STEEL FRAMING IN ACCORDANCE WITH AMERICAN IRON AND STEEL INSTITUTE, "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS," LATEST EDITION.
2. ALL COLD FORMED STEEL FRAMING MEMBERS, MEMBER CONNECTIONS TO EACH OTHER AND MEMBER CONNECTIONS TO THE BASE BUILDING STRUCTURAL MEMBERS SHALL BE DESIGNED AND DETAILED BY THE COLD FORMED STEEL FRAMING CONTRACTOR'S SPECIALTY ENGINEER. SHOP DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY THE SPECIALTY ENGINEER SHALL BE SUBMITTED FOR REVIEW.
3. COLD FORMED STEEL FRAMING EXAMPLE MEMBER DESIGNATION IS AS SUCH:
   - A. 600S200-54:
     - 1. 600 = 6" WEB DEPTH
     - 2. S = STUD SECTION
     - 3. 200 = 2" FLANGE WIDTH
     - 4. 54 = 54 MILS = 16 GAUGE
4. ALL FRAMING SHALL BE FORMED FROM SHEET STEEL CORRESPONDING TO THE REQUIREMENTS OF ASTM A1003, STRUCTURAL GRADE, TYPE H WITH MINIMUM G60 ZINC COATING AND MINIMUM YIELD STRENGTH OF 50 KSI, UNLESS NOTED OTHERWISE.
5. ALL FRAMING SHALL BE MINIMUM 54 MILS GAUGE, UNLESS NOTED OTHERWISE.
6. ALL STUD SECTIONS SHALL BE PUNCHED WITH STANDARD HOLES WITH STIFFENED FLANGES. ALL TRACK SECTIONS SHALL BE UNPUNCHED WITH UNSTIFFENED FLANGES.
7. FASTENING OF COMPONENTS SHALL BE WITH SELF DRILLING SCREWS OR WELDING. SCREWS AND WELDING SHALL BE SUFFICIENT SIZE TO ENSURE THE STRENGTH OF THE CONNECTION. WIRE TYING OF COMPONENTS SHALL NOT BE PERMITTED. ALL WELDS SHALL BE TOUCHED-UP WITH A ZINC RICH PAINT MEETING ASTM A780.
8. ALL WELDING SHALL BE PERFORMED BY QUALIFIED WELDERS AND SHALL CONFORM TO THE AWS D1.3, "STRUCTURAL WELDING CODE - SHEET STEEL," LATEST EDITION.
9. CONNECTIONS OF ALL COLD FORMED STEEL FRAMING TO COLD FORMED STEEL FRAMING SHALL BE WITH MINIMUM OF (2) #10 SELF TAPPING SHEET METAL SCREWS WITH LOW PROFILE HEAD, UNLESS NOTED OTHERWISE.
10. CONNECTIONS OF ALL COLD FORMED STEEL FRAMING TO STRUCTURAL STEEL FRAMING SHALL BE WITH MINIMUM OF (2) 0.145"Ø POWDER-ACTUATED FASTENING PINS, UNLESS NOTED OTHERWISE.
11. CONTRACTOR SHALL SUBMIT COLD FORMED STEEL FRAMING SHOP DRAWINGS TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO COMMENCING CONSTRUCTION. SHOP DRAWINGS SHALL SHOW LAYOUT, SPACING, SIZES, THICKNESS, AND TYPES OF COLD FORMED STEEL FRAMING, FASTENING AND ANCHORAGE DETAILS, REINFORCING CHANNELS, OPENING FRAMING, SUPPLEMENTAL FRAMING, STRAPPING, BRACING, BRIDGING, SPLICES, AND ACCESSORIES. PROVIDE ADDITIONAL INFORMATION WITH SHOP DRAWING SUBMITTAL AS INDICATED IN PROJECT SPECIFICATIONS.
12. STRUCTURAL CALCULATIONS PREPARED BY THE COLD FORMED STEEL FRAMING CONTRACTOR'S SPECIALTY ENGINEER FOR THE DESIGN OF ALL COLD FORMED STEEL FRAMING MEMBERS AND CONNECTIONS FOR BOTH LATERAL AND GRAVITY LOADING CONDITIONS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW. THESE CALCULATIONS SHALL INDICATE THE DIMENSIONED LOCATIONS IN THE FORM OF DETAILED PLAN DRAWINGS, DETAILS OF THE CONNECTIONS, AND LOAD MAGNITUDES AND DIRECTIONS FOR EACH UNFACTORED LOAD CASE FOR ALL LOADS IMPOSED ON THE SUPPORTING BASE BUILDING STRUCTURAL SYSTEM.
13. PROVIDE COLD FORMED STEEL FRAMING CAPABLE OF WITHSTANDING DESIGN LOADS WITHIN LIMITS AND UNDER CONDITIONS INDICATED FOR THE FOLLOWING STRUCTURAL PERFORMANCE REQUIREMENTS:
    - A. DESIGN LOADS AS FOLLOWS:
      - 1. DEAD LOADS: WEIGHTS OF MATERIALS AND CONSTRUCTION.
      - 2. LIVE LOADS: AS INDICATED ON DRAWINGS.
      - 3. WIND LOADS: AS INDICATED ON DRAWINGS.
      - 4. SEISMIC LOADS: AS INDICATED ON DRAWINGS.
      - 5. OTHER LOADS: AS INDICATED ON DRAWINGS.
    - B. HORIZONTAL DEFLECTION LIMITS FOR WALLS AS FOLLOWS:
      - 1. WALL FRAMING AT LOCATIONS WHERE MASONRY VENEER IS TO BE LATERALLY SUPPORTED: L/600 OF THE WALL HEIGHT OR 0.30 INCH, WHICHEVER IS SMALLER, UNDER COMPONENT SERVICE LEVEL WIND OR SEISMIC LOADS.
      - 2. WALL FRAMING AT LOCATIONS WHERE OTHER THAN MASONRY VENEER IS TO BE LATERALLY SUPPORTED: L/360 OF THE WALL HEIGHT OR 1.0 INCH, WHICHEVER IS SMALLER, UNDER COMPONENT SERVICE LEVEL WIND OR SEISMIC LOADS.
    - C. VERTICAL DEFLECTION LIMITS FOR FLOORS AND ROOFS AS FOLLOWS:
      - 1. FLOOR FRAMING: L/480 OR 0.3 INCH, WHICHEVER IS SMALLER, UNDER DEAD LOADS; L/360 OR 0.4 INCH, WHICHEVER IS SMALLER, UNDER LIVE LOADS; AND L/240 OR 0.6 INCH, WHICHEVER IS SMALLER, UNDER DEAD PLUS LIVE LOADS.
      - 2. ROOF FRAMING: L/480 OR 0.3 INCH, WHICHEVER IS SMALLER, UNDER DEAD LOADS; L/360 OR 0.4 INCH, WHICHEVER IS SMALLER, UNDER LIVE LOADS; AND L/240 OR 0.6 INCH, WHICHEVER IS SMALLER, UNDER DEAD PLUS LIVE LOADS.
    - D. DESIGN FRAMING SYSTEMS TO PROVIDE FOR MOVEMENT OF FRAMING MEMBERS WITHOUT DAMAGE OR OVERSTRESSING, SHEATHING FAILURE, CONNECTION FAILURE, UNDUE STRAIN ON FASTENERS AND ANCHORS, OR OTHER DETRIMENTAL EFFECTS WHEN SUBJECT TO A MAXIMUM AMBIENT TEMPERATURE CHANGE OF 120 DEGREES FAHRENHEIT.
    - E. DESIGN FRAMING SYSTEM TO MAINTAIN CLEARANCES AT OPENINGS, TO ALLOW FOR CONSTRUCTION TOLERANCES, AND TO ACCOMMODATE FLOOR AND ROOF FRAMING LIVE LOAD DEFLECTION OF PRIMARY BUILDING STRUCTURE AS FOLLOWS:
      - 1. UPWARD AND DOWNWARD MOVEMENT OF 1.0 INCH.
14. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE COLD FORMED STEEL FRAMING TESTING AND INSPECTION REQUIREMENTS.

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serverfarm
CORGAN
TGRWA
STRUCTURAL ENGINEERS
kW Mission Critical Engineering
Member of WSP
ENGINEERING PLUS
Kimley»Horn

○	ISSUES	
1		
2	12/12/2025	SCHEMATIC DESIGN
3	12/17/2025	STEEL MILL ORDER
4	01/23/2026	DESIGN DEVELOPMENT
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△ REVISIONS

NOT FOR CONSTRUCTION

This document is incomplete and may not be used for regulatory approval, permit or construction.
Date of issue:
01/23/2026

SF - ARK01
DESIGN DEVELOPMENT
CLARKSVILLE, AR 72830

STRUCTURAL NOTES

JOB 25131
SHEET

S00-01

1/22/2026 4:20:19 PM S00-01 STRUCTURAL NOTES