1) GENERAL INFORMATION

- A. GOVERNING BUILDING CODE: IBC-2018 "INTERNATIONAL BUILDING CODE"
- B. BUILDING RISK CATEGORY: THE NON-SHELTER BUILDING RISK CATEGORY ACCORDING TO IBC-2018 TABLE 1604.5 AND ASCE 7-16 TABLE 1.5-1 IS CATEGORY II.
- C. ELEVATIONS: REFERENCE FINISHED FLOOR ELEVATIONS OF 100'-0" EQUALS ACTUAL EXISTING FINISH FLOOR ELEVATION OF 1246.09'.
- D. CONTRACT DOCUMENTS:
- 1) THE CONTRACT DOCUMENTS CONSIST OF THE AGREEMENT BETWEEN THE OWNER AND CONTRACTOR, CONDITIONS OF THE CONTRACT, DRAWINGS, SPECIFICATIONS, ADDENDA ISSUED PRIOR TO EXECUTION OF THE CONTRACT, OTHER DOCUMENTS LISTED IN THE AGREEMENT AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT.
- 2) THE GENERAL CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND DISSEMINATING ALL CONTRACT DOCUMENTS AND LATEST ADDENDA TO ALL SUB-CONTRACTORS PRIOR TO DETAILING, FABRICATION, OR INSTALLATION OF WORK.
- 3) CORRELATION OF THE CONTRACT DOCUMENTS: THE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY ALL. IF CONFLICTING REQUIREMENTS ARE FOUND BETWEEN THE DRAWINGS, SPECIFICATIONS AND/OR THESE GENERAL NOTES, THE MORE STRINGENT AND HIGHEST COST REQUIREMENT SHALL CONTROL UNLESS DIRECTED OTHERWISE IN WRITING BY THE OWNER'S REPRESENTATIVE.
- 4) THE GENERAL CONTRACTOR SHALL COMPARE THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR DISCREPANCIES BETWEEN EACH SET, AND WITHIN EACH SET OF DRAWINGS, AND REPORT DISCREPANCIES, IF ANY, TO THE OWNER'S REPRESENTATIVE PRIOR TO THE DETAILING, FABRICATION, AND INSTALLATION OF AFFECTED WORK.
- 5) GENERAL CONTRACTOR SHALL COORDINATE SIZES AND LOCATIONS OF OPENINGS THROUGH FLOORS, ROOF, AND WALLS SHOWN ON ELECTRICAL, PLUMBING, AND FIRE SUPPRESSION SYSTEM DESIGN DOCUMENTS WITH ASSOCIATED SUBCONTRACTORS.
- 6) ALTHOUGH NOT NECESSARILY SPECIFICALLY REFERENCED IN THE CONTRACT DOCUMENTS, TYPICAL DETAILS AND GENERAL NOTES APPLY TO THE ENTIRE PROJECT WHEREVER CONDITIONS SIMILAR TO THOSE DETAILED OR NOTED EXIST.
- 7) THE USE OF ELECTRONIC FILES OR REPRODUCTION OF CONTRACT DOCUMENTS BY ANY TRADE OR MATERIAL SUPPLIER IN LIEU OF COMPLETELY INDEPENDENT PREPARATION OF SHOP DRAWINGS SIGNIFIES THE SUPPLIER'S CERTIFICATION THAT ALL INFORMATION SHOWN IN THE SHOP DRAWINGS IS CORRECT, AND ASSIGNS THEMSELVES TO RESPONSIBILITY FOR ANY JOB EXPENSE ARISING DUE TO ANY ERRORS OCCURRING THEREIN.
- FIELD MODIFICATIONS: CONTRACTOR OR SUBCONTRACTOR FIELD MODIFICATIONS TO THE STRUCTURE WITHOUT THE PRIOR WRITTEN CONSENT OF THE STRUCTURAL ENGINEER ARE EXPRESSLY PROHIBITED AND MAY REQUIRE SUBSEQUENT REMEDIATION DIRECTED BY THE STRUCTURAL ENGINEER AT CONTRACTOR'S EXPENSE.

2) NON-SHELTER DESIGN LOADS

- A. GOVERNING STANDARD FOR DESIGN LOADS: ASCE 7-16 "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES"
- B. DEAD LOAD: SELF WEIGHT OF MATERIALS, UNLESS NOTED OTHERWISE
- C. UNIFORM LIVE LOADS:
- D. CONCENTRATED LIVE LOADS:

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Ξ.	WI	ND LOADS:
	1)	RISK CATEGORY:II
	2)	EXPOSURE CATEGORY:C
	3)	ENCLOSURE CLASSIFICATIONENCLOSED
	4)	INTERNAL PRESSURE COEFFICIENT, GCPI:+/- 0.18
	5)	TOPOGRAPHIC FACTOR, KZT:1.0
	6)	DIRECTIONALITY FACTOR, KD:0.85
	7)	ULTIMATE DESIGN WIND SPEED, Vult:109 MPH
	8)	NOMINAL DESIGN WIND SPEED, Vasd:90 MPH
Ξ.	SN	DW_LOADS:
	1)	SNOW IMPORTANCE FACTOR, Is:1.0
	2)	GROUND SNOW LOAD, Pg:10 PSF
	3)	EXPOSURE OF ROOF:PARTIALLY EXPOSED
	4)	SURFACE ROUGHNESS CATEGORY:C

4)	
5)	EXPOSURE FACTOR, Ce:1.0
6)	THERMAL FACTOR, Ct:1.0
7)	ROOF SLOPE FACTOR, Cs:1.0
8)	CALCULATED FLAT ROOF SNOW LOAD, Pf:7.0 PSF
9)	MINIMUM FLAT ROOF SNOW LOAD. I*Pg:10 PSF

10) RAIN ON SNOW SURCHARGE LOAD:

G. RAIN LOADS:

- 3) DEPTH OF WATER ON THE UNDEFLECTED ROOF UP TO THE INLET OF THE SECONDARY DRAINAGE SYSTEM WHEN THE PRIMARY DRAINAGE SYSTEM IS BLOCKED (I.E., THE STATIC HEAD), ds.....4.0 INCHES
- 4) ADDITIONAL DEPTH OF WATER ON THE UNDEFLECTED ROOF ABOVE THE INLET OF THE SECONDARY DRAINAGE SYSTEM AT ITS DESIGN FLOW (I.E., THE HYDRAULIC HEAD), dh.....2.0 INCHES

H. SEISMIC DESIGN CRITERIA

1) RISK CATEGORY:II
2) SEISMIC IMPORTANCE FACTOR, Ie:1.00
3) SOIL SITE CLASSIFICATION:C (ASSUMED)
4) 0.2 SEC. MAPPED SPECTRAL ACCELERATION, Ss:
5) 1.0 SEC. MAPPED SPECTRAL ACCELERATION, S1:
6) SITE COEFFICIENT, 0.2 SEC. PERIOD, Fa:
7) SITE COEFFICIENT, 1.0 SEC. PERIOD, Fv:
8) 0.2 SEC. DESIGN SPECTRAL ACCELERATION, Sds:
9) 1.0 SEC. DESIGN SPECTRAL ACCELERATION, Sd1:
10) SEISMIC DESIGN CATEGORY:B
3) MATERIAL DESIGN VALUES

Α.	. CONCRETE (MIN COMPRESSIVE STRENGTH AT 28 DAYS, NORMAL WEIGHT U.N.O	.)
	1) FOUNDATIONS:	PSI
	2) WALLS:4,000	PSI
	3) SLABS-ON-GRADE4,000	PSI
	4) ELEVATED SLABS ON METAL DECK4,000	PSI
	5) ALL OTHER STRUCTURAL CONCRETE, U.N.O:4,000	PSI
Β.	CONCRETE REINFORCEMENT (MINIMUM YIELD STRENGTH)	
	1) ALL PLAIN AND DEFORMED BARS (ASTM A615, GRADE 60)FY = 60	KSI
	2) WELDED PLAIN WIRE REINFORCEMENT (ASTM A1064)FY = 65	KSI
	3) WELDED DEFORMED WIRE REINFORCEMENT (ASTM A1064)FY = 70	KSI

- C. STRUCTURAL STEEL (MINIMUM YIELD STRENGTH)
- 1) ALL WIDE FLANGE SHAPES (ASTM A992).....FY = 50 KSI 2) SQUARE AND RECTANGULAR HSS (ASTM A500, GRADE C).....FY = 50 KSI 3) ANCHOR RODS (ASTM F1554, GRADE 55, SUPPLEMENTARY REQUIREMENT S1, WELDABLE).....FY = 55 KSI

4) WELDABLE REINFORCING BARS (ASTM A706)FY = 60 KSI

- 4) DEFORMED BAR ANCHORS (AWS D1.1 TYPE C, ASTM A1064).....FY = 70 KSI 5) HEADED STUD ANCHORS (AWS D1.1 TYPE B, ASTM A29, GRADES 1010 THROUGH
- 1020).....FY = 51 KSI 6) ALL OTHER SHAPES AND PLATES UNLESS NOTED (ASTM A36)....FY = 36 KSI (FABRICATOR MAY OPTIONALLY USE ASTM A572-50 PLATE MATERIAL)
- D. COLD FORMED STEEL (MINIMUM YIELD STRENGTH)
- 1) COMPOSITE FLOOR DECK (ASTM A653, SS GRADE 40, G-60 GALVANIZED).....FY = 40 KSI
- 2) COLD FORMED METAL STUDS, 43 MIL AND LIGHTER (ASTM A1003/A, GRADE ST33H, G-60 GALVANIZED).....FY = 33 KSI
- 3) COLD FORMED METAL STUDS, 54 MIL AND HEAVIER (ASTM A1003/A, GRADE ST50H,
- 4) COLD FORMED METAL CLIPS (ASTM A653, SS GRADE 50,G-90
- GALVANIZED).....FY = 50 KSI

4) CONSTRUCTION LOADS AND STABILITY

- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL TEMPORARY CONSTRUCTION LOADS CAN BE SAFELY SUPPORTED BY THE STRUCTURE DURING CONSTRUCTION
- B. THE STRUCTURAL FRAMING SYSTEM AND FOUNDATIONS HAVE BEEN DESIGNED AS A COMPLETE STRUCTURAL SYSTEM FOR SUPPORT OF THE LOADS INDICATED IN THE CONSTRUCTION DOCUMENTS. THE STRUCTURE HAS NOT BEEN DESIGNED OR CHECKED FOR TEMPORARY CONSTRUCTION LOADS NOR HAS IT BEEN DESIGNED OR CHECKED FOR ADEQUACY OR STABILITY AS A PARTIALLY ERECTED STRUCTURE.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING THE ABILITY OF THE PARTIALLY COMPLETED OR FULLY COMPLETED STRUCTURE TO RESIST ALL CONSTRUCTION LOADS INCLUDING BUT ARE NOT NECESSARILY LIMITED TO MATERIAL STAGING, PERSONNEL, AND EQUIPMENT.
- D. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORES, GUYS, BRACES, AND OTHER SUPPORTS DURING CONSTRUCTION TO KEEP STRUCTURAL FRAMING COMPONENTS SECURE. PLUMB, AND IN ALIGNMENT AGAINST TEMPORARY CONSTRUCTION LOADS AND LOADS EQUAL IN INTENSITY TO DESIGN LOADS. THE TEMPORARY SUPPORTS SHALL BE SUFFICIENT TO SECURE THE PARTIALLY ERECTED STRUCTURE OR ANY PORTION THEREOF AGAINST LOADS THAT ARE LIKELY TO BE ENCOUNTERED DURING CONSTRUCTION, INCLUDING THOSE DUE TO WIND AND THOSE THAT RESULT FROM CONSTRUCTION OPERATIONS.
- E. THE CONTRACTOR SHALL NOT REMOVE TEMPORARY SUPPORTS UNTIL THE INSTALLATION OF ALL STRUCTURAL ELEMENTS IS COMPLETE AND HAS BEEN ACCEPTED AS COMPLETE BY THE ENGINEER. FOR THE PURPOSES OF THIS PARAGRAPH. "ALL STRUCTURAL ELEMENTS" INCLUDES, BUT IS NOT NECESSARILY LIMITED TO, THE FOLLOWING STRUCTURAL ELEMENTS 1) FOUNDATIONS
- 2) CAST-IN-PLACE CONCRETE COLUMNS, BEAMS WALLS AND ELEVATED SLABS 3) STRUCTURAL STEEL FRAMING WITH COMPLETED STEEL CONNECTIONS, INCLUDING
- PERMANENT VERTICAL AND/OR HORIZONTAL BRACING 4) FLOOR DECK
- 5) CONCRETE SLABS ON METAL DECK

5) EXISTING CONSTRUCTION

- A. ALL VERTICAL AND HORIZONTAL DIMENSIONS, FINISHED FLOOR AND ROOF ELEVATIONS, PLUMBNESS, AND DETAILS FOR THE EXISTING STRUCTURE SHALL BE VERIFIED IN THE FIELD PRIOR TO PROCEEDING WITH ANY DEMOLITION OR INSTALLATION OF NEW WORK.
- B. PRIOR TO DEMOLITION OR INSTALLATION OF NEW WORK, THE CONTRACTOR SHALL MAKE WRITTEN DOCUMENTATION IF UNFORESEEN CONDITIONS OCCUR IN THE EXISTING CONSTRUCTION. THESE UNFORESEEN CONDITIONS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR REVIEW AND A WRITTEN RESPONSE BEFORE PROCEEDING WITH THE WORK
- C. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL SHORING, PROPS, AND GUYS REQUIRED FOR THE TEMPORARY SUPPORT OF THE EXISTING STRUCTURE, UTILITIES, ETC. AS MAY BE NECESSARY TO SAFELY COMPLETE DEMOLITION OR NEW WORK.
- D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING EXISTING UTILITIES, BOTH CHARTED AND UNCHARTED BEFORE COMMENCING WITH ANY EXCAVATION OR DEMOLITION WORK. DEPTH OF CONCRETE SAW SHALL BE SET SO AS NOT TO CUT ANY LOCAL EMBEDDED OR UNDER-FLOOR PIPING OR WIRING WHICH IS TO REMAIN.
- E. ALL DRILLING, CUTTING, DEMOLITION OR OTHER MODIFICATIONS TO EXISTING CONSTRUCTION SHALL BE PERFORMED IN A MANNER THAT WILL NOT REDUCE THE STABILITY OR STRUCTURAL INTEGRITY OF THE EXISTING CONSTRUCTION. WHEN SAW CUTTING, SPECIAL CARE SHALL BE TAKEN TO NOT OVER CUT INTO AN EXISTING AREA OF STRUCTURE THAT WILL REMAIN.
- F. CORING FOR PIPING OR CONDUIT THROUGH EXISTING STRUCTURAL MEMBERS IS NOT ALLOWED UNLESS SPECIFICALLY SHOWN IN THE CONTRACT DOCUMENTS OR SPECIFICALLY ALLOWED BY THE STRUCTURAL ENGINEER IN WRITING.
- G. DAMAGE TO PORTIONS OF THE EXISTING STRUCTURE OR OTHER EXISTING BUILDING COMPONENTS CAUSED BY DEMOLITION OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE AND TO A LEVEL ACCEPTABLE TO THE OWNER'S REPRESENTATIVE.
- H. WHEN EXISTING FOUNDATIONS ARE TO BE DEMOLISHED. EXCAVATION DEPTHS EXCEEDING 4 FEET SHALL BE BACKFILLED WITH PROPERLY COMPACTED CRUSHED STONE OR FLOWABLE FILL TO WITHIN 4 FEET OF THE REQUIRED FINISHED BACKFILL ELEVATION. THE REMAINING DEPTH OF BACKFILL SHALL BE COMPLETED WITH PROPERLY COMPACTED STRUCTURAL FILL AS OUTLINED IN THE FOUNDATION NOTES.
- I. THE PROJECT AREA SHALL BE MAINTAINED AS CLEAN AS POSSIBLE WITH DUST BEING LIMITED AS MUCH AS PRACTICAL.

6) DEFERRED SUBMITTALS

- A. SOME STRUCTURAL AND/OR OTHER BUILDING ELEMENTS ARE DESIGNATED AS VENDOR-DESIGNED IN THE CONSTRUCTION DOCUMENTS. THESE ELEMENTS HAVE NOT BEEN INCLUDED IN THE BUILDING PERMIT ISSUED BY THE BUILDING OFFICIAL AND REQUIRE THEIR DESIGN BE SUBSTANTIATED BY DEFERRED SUBMITTALS.
- B. DEFERRED DESIGN SUBMITTALS ARE TO BE SUBMITTED TO THE OWNER'S REPRESENTATIVE AND SHALL INCLUDE BOTH SHOP DRAWINGS AND SIGNED AND SEALED CALCULATIONS PERFORMED BY AN ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED AND EXPERIENCED IN THE DESIGN OF THE SPECIFIC BUILDING ELEMENT BEING SUBMITTED. THE FOLLOWING ITEMS ARE CONSIDERED DEFERRED SUBMITTALS: 1) FORMWORK SHORING AND RESHORING
- 2) STRUCTURAL STEEL CONNECTIONS 3) ROOF MOUNTED EQUIPMENT AND ASSOCIATED ANCHORAGES
- 4) ANALYSIS OF CONCRETE SLABS FOR SUPPORT OF PROPOSED LIFT EQUIPMENT (FOR KFC FILE ONLY, WILL NOT BE REVIEWED AND RETURNED)
- 5) EXTERIOR WINDOW AND/OR CURTAIN WALL SYSTEMS 6) ERECTION BRACING AND STABILITY SEQUENCING AND CALCULATIONS
- C. DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE WHO SHALL REVIEW THEM AND FORWARD THEM TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND FOUND TO BE IN GENERAL CONFORMANCE TO THE DESIGN OF THE BUILDING.
- D. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY BOTH THE OWNER'S REPRESENTATIVE AND THE BUILDING OFFICIAL.
- E. ADDITIONAL ITEMS IMPACTING STRUCTURAL DESIGN, INCLUDING BUT NOT LIMITED TO, ELEVATORS AND MECHANICAL EQUIPMENT WEIGHTS, SHALL BE SUBMITTED TO OWNER'S REPRESENTATIVE FOR EVALUATION

7) FOUNDATION NOTES

A. GEOTECHNICAL REPORT: FOUNDATION BEARING PRESSURES ARE BASED UPON PRESUMPTIVE VALUES FOR NON-EXPANSIVE CLAY SOILS DEFINED IN TABLE 1806.2 OF IBC 2018. THE OWNER OR CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEER TO CONFIRM ON-SITE SOILS ARE SUITABLE FOR PROPOSED BEARING PER SECTION 1803.2 UNLESS AN EXCEPTION IS ALLOWED PER THE BUILDING OFFICIAL.

A. SITE SUB-GRADE PREPARATION:

- 1) STRIPPING: SITE PREPARATION FOR THE BUILDING PAD SHALL INCLUDE REMOVING ANY SOFT OR UNSUITABLE MATERIALS ENCOUNTERED DURING CONSTRUCTION. VEGETATION ROOTS, PAVEMENTS, UTILITIES, GRAVEL, EXISTING FOOTINGS, EXISTING SLABS AND ANY TOPSOIL WILL REQUIRE REMOVAL DURING INITIAL SITE STRIPPING. REMOVAL DEPTHS SHALL BE DETERMINED BY A GEOTECHNICAL ENGINEER.
- 2) PROOF-ROLLING: AFTER MAKING ANY REQUIRED CUTS, THE BUILDING PAD SHALL BE PROOF-ROLLED (UNDER OBSERVATION OF A GEOTECHNICAL ENGINEER) WITH A TWENTY FIVE (25) TON LOADED, TANDEM AXLE DUMP TRUCK TO LOCATE ANY SOFT OR UNSTABLE AREAS. THE PROOF-ROLLING SHALL BE PERFORMED WITH OVERLAPPING PASSES IN MUTUALLY PERPENDICULAR DIRECTIONS. SOILS IN AREAS WHERE RUTTING (DEFLECTIONS GREATER THAN 1 INCH) OR PUMPING OCCURS DURING PROOF-ROLLING SHALL BE OVER-EXCAVATED, MOISTURE CONDITIONED AND REPLACED WITH PROPERLY COMPACTED LOW VOLUME CHANGE SOILS AS DIRECTED BY A GEOTECHNICAL ENGINEER.
- 3) SCARIFICATION: AFTER STRIPPING, EXCAVATING AND PROOF-ROLLING, THE EXPOSED SOILS SHALL BE SCARIFIED TO A DEPTH OF 12 INCHES AND THEN ADJUSTED TO WITHIN 2% POINTS OF THE SOILS OPTIMUM VALUE PRIOR TO BEING COMPACTED TO AT LEAST 95 PERCENT OF THE SOILS MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST METHOD (ASTM D-698).
- 4) ACCEPTABLE FILL: STRUCTURAL FILL MATERIALS SHALL BE FREE OF ORGANIC OR OTHER DELETERIOUS MATTER AND BE A LOW VOLUME CHANGE SOIL OF COHESIVE MATERIALS HAVING A LIQUID LIMIT OF LESS THAN 35 AND A PLASTICITY INDEX BETWEEN 5 AND 15 WITH AT LEAST 60% PASSING THE #200 U.S. STANDARD SIEVE.
- 5) FILL PLACEMENT: AFTER IN-SITU SOIL PREPARATION AND INSPECTION IS COMPLETE, FILL PLACEMENT TO ESTABLISH SITE DESIGN GRADES MAY BEGIN. THE ZONE OF FILL COMPACTED TO MEET THESE CRITERIA SHALL EXTEND BEYOND THE BUILDING FOOTPRINT AT LEAST 1 FOOT LATERALLY FOR EACH FOOT OF FILL REQUIRED TO DEVELOP DESIGN GRADE. BUT UNDER NO CIRCUMSTANCE SHALL IT BE LESS THAN 5 FEET. THE FILL SHALL BE PLACED IN MAXIMUM LOOSE LIFTS OF 8 INCHES, ADJUSTED TO 1% POINT BELOW TO 2% POINTS ABOVE OF ITS OPTIMUM MOISTURE CONTENT AND COMPACTED TO 95 PERCENT OF THE SOIL'S STANDARD PROCTOR MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698.
- 6) FILL PLACEMENT TESTING: EACH LIFT OF COMPACTED FILL SHALL BE TESTED BY A GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF SUBSEQUENT LIFTS. FIELD DENSITY TESTS SHALL BE TAKEN AT A MINIMUM OF ONE PER EVERY 2500 SF, BUT AT LEAST TWO SETS OF DENSITY TESTS SHALL BE TAKEN FOR EACH LIFT.
- 7) SITE DRAINAGE: THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM THE AREAS OF EXCAVATION DURING CONSTRUCTION TO PREVENT PONDING UNDER FUTURE FLOOR SLABS AND FOOTINGS. THE CONTRACTOR SHALL PROVIDE POSITIVE CUTOFF IN UTILITY TRENCHES AS REQUIRED TO PREVENT WATER MIGRATION INTO AREAS OF EXCAVATIONS AND FUTURE FLOOR SLABS AND FOOTINGS.
- 8) MAINTENANCE OF SOIL MOISTURE: SOIL MOISTURE SHALL BE MAINTAINED UP UNTIL CONCRETE PLACEMENT TO PREVENT SHRINKAGE AND SUBSEQUENT POST-CONSTRUCTION SWELL OF SUBGRADE SOILS.

B. SHALLOW FOUNDATIONS:

1) FOOTING DESIGN PARAMETERS: THE PROPOSED BUILDING SHALL BE SUPPORTED ON CONVENTIONAL SHALLOW SPREAD FOOTINGS BASED ON THE FOLLOWING DESIGN PARAMETERS:

A) BEARING MATERIAL: NON-EXPANSIVE CLAY TYPE SOIL B) ALLOWABLE BEARING PRESSURE FOR FOOTINGS: 1,500PSF

- 2) OBSERVATION OF BEARING CONDITIONS: A GEOTECHNICAL ENGINEER REPRESENTATIVE SHALL OBSERVE THE FOUNDATION EXCAVATIONS PRIOR TO STEEL OR CONCRETE PLACEMENT TO DETERMINE IF THE FOUNDATION MATERIALS ARE CAPABLE OF SUPPORTING THE DESIGN LOADS AND ARE CONSISTENT WITH THE MATERIALS DISCUSSED ABOVE.
- 3) IMPROVEMENT OF BEARING CONDITIONS: SOFT OR LOOSE SOIL ZONES ENCOUNTERED AT THE BOTTOM OF THE FOOTING EXCAVATIONS SHALL BE REMOVED TO THE LEVEL OF STIFF OR DENSE SOIL AS DIRECTED BY THE GEOTECHNICAL ENGINEER. CAVITIES FORMED AS A RESULT OF EXCAVATION OF SOFT OR LOOSE SOIL ZONES SHALL BE BACKFILLED WITH ENGINEERED FILL, LEAN CONCRETE OR FLOWABLE FILL, AS DETERMINED BY THE GEOTECHNICAL ENGINEER. CARE SHALL BE TAKEN TO PREVENT WETTING OR DRYING OF THE BEARING MATERIALS DURING CONSTRUCTION. ANY EXTREMELY WET OR DRY MATERIAL, OR ANY LOOSE OR DISTURBED MATERIAL IN THE BOTTOM OF THE FOOTING EXCAVATIONS SHALL BE REMOVED PRIOR TO PLACING CONCRETE.
- 4) TRENCHED FOOTINGS: EARTH-FORMED TRENCHED FOOTINGS ARE PERMITTED, EXCEPT WHERE BRICK LEDGES OR EXPOSED SURFACES REQUIRE FORMING AND/OR WHERE SOIL SIDE WALLS SLOUGH INTO THE TRENCH. IN ORDER TO ACHIEVE 3" MINIMUM CONCRETE COVER OVER STEEL REINFORCING ON SIDEWALLS, EARTH FORMED TRENCHES SHALL BE A MINIMUM OF 2" WIDER THAN THE FORMED DIMENSIONS SHOWN IN ALL SECTIONS AND DETAILS.
- 5) PIPE PENETRATIONS: ALL HORIZONTAL PIPE OR SIMILAR PENETRATIONS OR SLEEVES THROUGH FOOTINGS SHALL PREFERABLY OCCUR WITHIN THE MIDDLE 1/3 OF THE FOOTING DEPTH AND SHALL HAVE A MAXIMUM OPENING DIAMETER OF ONE-FOURTH THE FOOTING DEPTH. AT PENETRATIONS, PROVIDE (4) #5 DIAGONAL BARS AT EACH FOOTING FACE (3" CLEAR BETWEEN BAR AND PENETRATION AND 3" CLEAR FROM FOOTING BEARING). IF PENETRATION MUST OCCUR NEAR THE BOTTOM OF FOOTING, REFER TYPICAL DETAILS FOR STANDARD DETAIL TO TRANSITION & THICKEN FOOTING TO ACCOMMODATE PENETRATION.

C. SLAB-ON-GRADE CONSTRUCTION

- 1) SLAB THICKNESS AND REINFORCING: SLABS-ON-GRADE SHALL BE 4" THICK CONCRETE REINFORCED WITH #3 BARS AT 15" ON CENTER EACH WAY. REINFORCING BARS SHALL BE PLACED 1%" CLEAR FROM TOP OF SLAB USING CHAIRS OR SLAB BOLSTERS COMPLYING WITH CRSI'S "MANUAL OF STANDARD PRACTICE".
- 2) SLAB SUBGRADE: IF EXPANSIVE SOILS, AS DEFINED IN SECTION 1805.3 OF IBC 2018, ARE FOUND ON SITE, THE FLOOR SLAB MAY NEED TO BE SUPPORTED ON A DEPTH OF PROPERLY COMPACTED ENGINEERED FILL AS OUTLINED IN THE SITE SUB-GRADE PREPARATION NOTES SHOWN ABOVE. THIS DEPTH (IF ANY) IS DEPENDENT UPON THE CHARACTERISTICS OF THE SOIL ON SITE AND SHALL BE DETERMINED FROM THE GEOTECHNICAL ENGINEER REPRESENTATIVE.
- 3) CONSTRUCTION MONITORING: CONSTRUCTION ACTIVITY MAY CAUSE DAMAGE AND DETERIORATION TO THE PREPARED SUBGRADE. A FIELD REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHALL OBSERVE THE FINAL SUBGRADE PRIOR TO PLACEMENT OF THE SLAB ON GRADE, PERFORM FURTHER TESTING AS NECESSARY, AND DETERMINE IF ANY REMEDIAL MEASURES ARE NECESSARY PRIOR TO SLAB PLACEMENT.
- 4) AGGREGATE BASE COURSE: A 4-INCH THICK, FREE-DRAINING AGGREGATE BASE COURSE SHALL BE PLACED BENEATH THE FLOOR SLAB TO ENHANCE DRAINAGE AND PROVIDE INCREASED SUBGRADE STRENGTH. AT THE TIME OF THE SLAB PLACEMENT. THE GRANULAR BASE SHALL BE MOIST, BUT FREE OF ANY STANDING OR SELF-DRAINING WATER. THE AGGREGATE BASE COURSE MATERIAL SHALL MEET THE FOLLOWING CRITERIA: A) 100 PERCENT SHALL PASS THE 11/2" SIEVE B) LESS THAN 5 PERCENT SHALL PASS THE #8 SIEVE C) PLASTICITY INDEX, PI, SHALL BE LESS THAN OR EQUAL TO 6

D) COMPACTED TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.

- 5) VAPOR RETARDER: A 15 MIL VAPOR RETARDER SHALL BE PLACED IMMEDIATELY SEALED TO PREVIOUSLY PLACED CONCRETE AS RECOMMENDED BY VAPOR RETARDER OR HOLES IN VAPOR RETARDER INCURRED DURING CONSTRUCTION.
- 6) MOIST CURING OF SLAB: SLABS-ON-GRADE SHALL BE WATER CURED FOR A MINIMUM OF 7 DAYS BY PONDING, SPRAYING, SPRINKLING OR BY USE OF SATURATED COVERINGS. CURING COMPOUNDS ARE EXPRESSLY PROHIBITED.
- 7) ISOLATION JOINTS: PROVIDE SLAB ISOLATION AROUND COLUMNS PENETRATING THE SLAB-ON-GRADE. PROVIDE 1/2 INCH PREMOLDED EXPANSION JOINT MATERIAL AROUND PERIMETER OF ISOLATION JOINTS. REFER TO TYPICAL DETAILS AND ADDITIONAL INFORMATION.
- 8) SLAB JOINTS: SLAB JOINTS SHALL BE PROVIDED AS SHOWN ON THE PLANS AND THE FOLLOWING JOINT TYPES ARE SHOWN ON THE DRAWINGS: A) CJ = CONSTRUCTION JOINT B) SJ = SAWED CONTRACTION JOINT

D. FOUNDATION MISCELLANEOUS

- 1) GROUNDWATER CONDITIONS: GROUNDWATER MAY BE ENCOUNTERED IN SOME OF THE BORINGS AT THE TIME OF DRILLING. ALSO, IT IS POSSIBLE THAT TRANSIENT LATER TIME DUE TO PERIODS OF HEAVY PRECIPITATION, LANDSCAPE WATERING, LEAKING WATER LINES, OR OTHER UNFORESEEN CAUSES. THE CONTRACTOR SHALL DETERMINE THE ACTUAL GROUNDWATER LEVELS AT TIME OF CONSTRUCTION. IF ENGINEER SHALL BE CONTACTED AND REQUESTED TO ASSESS THE POSSIBLE NEED FOR REMEDIAL MEASURES.
- 2) DRAINAGE CONSIDERATIONS DURING CONSTRUCTION: DUE TO ADVERSE EFFECT ON STRUCTURES, WATER SHALL NOT BE ALLOWED TO COLLECT IN THE FOUNDATION EXCAVATION OR ON PREPARED SUBGRADE OF THE CONSTRUCTION AREA EITHER DURING OR AFTER CONSTRUCTION. UNDERCUT OR EXCAVATED AREAS SHALL BE SLOPED TOWARD ONE CORNER TO FACILITATE REMOVAL OF ANY COLLECTED RAINWATER, OR POSITIVE RUNOFF SHALL BE PROVIDED. THE CONTRACTOR SHALL EXERCISE CARE IN CREATING DRAINAGE PATHS FOR WATER DURING THE CONSTRUCTION PHASE OF THE PROJECT. TO REDUCE INFILTRATION OF SURFACE POSITIVE DRAINAGE SHALL BE PROVIDED DURING ALL PHASES OF CONSTRUCTION.
- 3) FINAL SITE GRADING: PER SECTION 1804.4 OF IBC, THE GROUND IMMEDIATELY SLOPE OF NOT LESS THAN ONE UNIT VERTICAL IN 20 UNITS HORIZONTAL OF HORIZONTAL DISTANCE, A 5-PERECNT SLOPE SHALL BE PROVIDED TO AN SWALES USED FOR THIS PURPOSE SHALL BE SLOPED A MINIMUM OF 2-PERECNT WHERE LOCATED WITHIN 10 FEET OF THE BUILDING FOUNDATION. IMPERVIOUS SURFACES WITHIN 10 FEET OF THE BUILDING SHALL BE SLOPED A MINIMUM OF 2-PERCENT AWAY FROM THE BUILDING.
- 4) EXCAVATION AND TEMPORARY SLOPES: THE CONTRACTOR. DESIGNATED AS CFR PART 1926, IS SOLELY RESPONSIBLE FOR PLANNING AND IMPLEMENTING ALL SAFETY PROCEDURES DURING CONSTRUCTION. ALL EXCAVATION HEIGHT, SLOPE, AND DEPTH MUST ADHERE TO ALL SPECIFICATIONS OUTLINED IN LOCAL, STATE, THE CONTRACTOR'S, COMPLIANCE WITH THE APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS OR ANY OTHER APPLICABLE REGULATIONS.
- 5) TRENCH BACKFILL: ALL REQUIRED TRENCH BACKFILL SHALL BE ACCEPTABLE FILL TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698. SOME SETTLEMENT OF THE BACKFILL MAY BE EXPECTED AND ANY UTILITIES WITHIN THE TRENCHES SHALL BE CONSTRUCTED TO ADDITIONAL REQUIREMENTS.
- 6) CONSTRUCTION MONITORING: A GEOTECHNICAL ENGINEER SHALL BE RETAINED TO PROVIDE OBSERVATIONS AND TESTING OF SOILS EXPOSED DURING PROJECT CONSTRUCTION ACTIVITIES PERTAINING TO FARTHWORK AND OTHER RELATED ACTIVITIES SHALL ALSO BE OBSERVED BY THE GEOTECHNICAL ENGINEER AS OUTLINED ABOVE.

8) CONCRETE CONSTRUCTION NOTES

- A. GOVERNING CODES AND STANDARDS: IN ADDITION TO THE REQUIREMENTS OF THE GOVERNING INTERNATIONAL BUILDING CODE, ALL CONCRETE SHALL BE DETAILED. FABRICATED, AND ERECTED IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS AND AS SUPPLEMENTED BY THESE GENERAL NOTES AND THE PROJECT DRAWINGS AND SPECIFICATIONS.
- 1) ACI 117-10 "SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS"
- 2) ACI 301-10 "SPECIFICATIONS FOR STRUCTURAL CONCRETE"
- 3) ACI 318-14 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" 4) ACI 347-04 "GUIDE TO FORMWORK FOR CONCRETE"
- 5) ACI SP-66(04) "ACI DETAILING MANUAL"
- 6) AWS D1.4-2011 "STRUCTURAL WELDING CODE REINFORCING STEEL" 7) CRSI MSP-2018 "CRSI MANUAL OF STANDARD PRACTICE"

B. CONCRETE MIXTURES:

- 1) CEMENTITIOUS MATERIALS
- A) OPTION 1 ORDINARY PORTLAND CEMENT (OPC): ASTM C150 TYPE I OR II UNLESS SPECIFICALLY NOTED OTHERWISE
- SPECIFICALLY NOTED OTHERWISE
- 2) ALL CONCRETE MIXES SHALL BE COMPRISED OF NORMAL WEIGHT AGGREGATES CONFORMING TO ASTM C33, EXCEPT WHERE SPECIFICALLY INDICATED AS LIGHTWEIGHT, IN WHICH CASE AGGREGATES SHALL CONFORM TO ASTM C330.
- 3) MIXING WATER SHALL CONFORM TO ASTM C1062. MIXING WATER, INCLUDING THAT PORTION OF MIXING WATER CONTRIBUTED IN THE FORM OF FREE MOISTURE ON AGGREGATES, SHALL NOT CONTAIN DELETERIOUS AMOUNTS OF CHLORIDE IONS.
- 4) ADMIXTURES, IF USED, SHALL CONFORM TO THE FOLLOWING:
- B) PRODUCING FLOWING CONCRETE: ASTM C1017.
- C) AIR ENTRAINMENT: ASTM C260.
- E) MOISTURE VAPOR REDUCING ADMIXTURE, MVRA: ASTM C494

5) MIX DESIGNS SHALL BE PROPORTIONED BASED ON THE FOLLOWING MIX CHARACTERISTICS;

- A) FOUNDATIONS 1) FREEZING AND THAWING EXPOSURE CATEGORY (F): CLASS FO
- 2) SULFATE EXPOSURE CATEGORY (S): CLASS SO
- 3) WATER EXPOSURE CATEGORY (W): CLASS WO 4) CORROSION PROTECTION CATEGORY (C): CLASS C1

BELOW THE CONCRETE SLAB. VAPOR RETARDER SHALL BE SEALED AT ALL LAPS AND MANUFACTURER. BEFORE PLACING CONCRETE. PATCH AND SEAL ANY RIPS. TEARS

TYPICAL DETAILS AND AS DESCRIBED FURTHER IN THE SLAB-ON-GRADE SCHEDULE.

OVER-SATURATED GROUND CONDITIONS COULD DEVELOP AT SHALLOWER DEPTHS AT A GROUNDWATER ISSUES ARE ENCOUNTERED DURING CONSTRUCTION, THE GEOTECHNICAL

WATER AROUND THE PERIMETER OF THE BUILDING AND BENEATH THE FLOOR SLABS,

ADJACENT TO THE FOUNDATION SHALL BE SLOPED AWAY FROM THE BUILDING AT A (5-PERCENT SLOPE) FOR A MINIMUM DISTANCE OF 10 FEET PERPENDICULAR TO THE FACE OF THE WALL. IF PHYSICAL OBSTRUCTIONS OR LOT LINES PROHIBIT 10 FEET APPROVED ALTERNATIVE METHOD OF DIVERTING WATER AWAY FROM THE FOUNDATION

"RESPONSIBLE PERSON" IN OSHA CONSTRUCTION STANDARDS FOR EXCAVATIONS, 29 AND FEDERAL SAFETY REGULATIONS. THE STRUCTURAL ENGINEER DOES NOT ASSUME ANY RESPONSIBILITY FOR CONSTRUCTION SITE SAFETY OR ANY PARTY'S. INCLUDING

MATERIAL AS DEFINED ABOVE AND SHALL BE MECHANICALLY COMPACTED IN LAYERS

ALLOW THESE DIFFERENTIAL MOVEMENTS. REFER TO PROJECT SPECIFICATIONS FOR

CONSTRUCTION IN ORDER TO VERIFY THAT SOIL CONDITIONS ARE AS ANTICIPATED.

B) OPTION 2 - PORTLAND LIMESTONE CEMENT (PLC): ASTM C595 TYPE IL UNLESS

C) FLY ASH: ASTM C618 CLASS C OR F. THE MAXIMUM PERCENTAGE OF FLY ASH SHALL NOT EXCEED 25 PERCENT OF THE TOTAL CEMENTITIOUS MATERIAL.

A) WATER REDUCTION AND SETTING TIME MODIFICATION: ASTM C494.

D) INHIBITING CHLORIDE INDUCED CORROSION: ASTM C1582.



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KFC ENGINEERING

STRUCTURAL

SALAS O'BRIEN MECHANICAL / ELECTRICAL



CJC	
drawn by	

SEPTEMBER 2024

MOORE PUBLIC SCHOOLS BOARD OF EDUCATION MOORE. OKLAHOMA



DEMOLITION PACKAGE CHILD CARE FACILITY 201 N. EASTERN AVE

sheet no:

OWNERSHIP USE OF DOCUMENTS:



- 5) 28-DAY COMPRESSIVE STRENGTH: 3,500 PSI
- 6) MAXIMUM WATER/CEMENT RATIO: 0.55
- 7) MAXIMUM AGGREGATE SIZE: 1 1/2 INCHES
- 8) TARGET AIR CONTENT: 4.5 PERCENT PLUS OR MINUS 1.5 PERCENT 9) MAXIMUM WATER-SOLUBLE CHLORIDE ION CONTENT IN CONCRETE, PERCENT BY WEIGHT OF CEMENTITIOUS MATERIALS: 0.30
- B) WALLS
- 1) FREEZING AND THAWING EXPOSURE CATEGORY (F): CLASS F2
- 2) SULFATE EXPOSURE CATEGORY (S): CLASS SO 3) WATER EXPOSURE CATEGORY (W): CLASS WO
- 4) CORROSION PROTECTION CATEGORY (C): CLASS C1
- 5) 28-DAY COMPRESSIVE STRENGTH: 4,000 PSI
- 6) MAXIMUM WATER/CEMENT RATIO: 0.45 7) MAXIMUM AGGREGATE SIZE: 1 1/2 INCHES
- 8) TARGET AIR CONTENT: 5.5 PERCENT PLUS OR MINUS 1.5 PERCENT
- 9) MAXIMUM WATER-SOLUBLE CHLORIDE ION CONTENT IN CONCRETE, PERCENT BY WEIGHT OF CEMENTITIOUS MATERIALS: 0.30
- C) SLABS-ON-GRADE
- 1) FREEZING AND THAWING EXPOSURE CATEGORY (F): CLASS FO
- 2) SULFATE EXPOSURE CATEGORY (S): CLASS SO
- 3) WATER EXPOSURE CATEGORY (W): CLASS WO 4) CORROSION PROTECTION CATEGORY (C): CLASS CO
- 5) 28-DAY COMPRESSIVE STRENGTH: 4,000 PSI
- 6) MAXIMUM WATER/CEMENT RATIO: 0.45
- 7) MAXIMUM AGGREGATE SIZE: 1 1/2-INCHES
- 8) TARGET AIR CONTENT: DO NOT ALLOW AIR CONTENT OF TROWEL-FINISHED FLOORS TO EXCEED 3 PERCENT
- 9) MAXIMUM WATER-SOLUBLE CHLORIDE ION CONTENT IN CONCRETE, PERCENT BY WEIGHT OF CEMENTITIOUS MATERIALS: 1.00
- 10) MVRA REQUIRED IN ALL SLABS-ON-GRADE.
- D) ELEVATED SLABS ON METAL DECK
- 1) FREEZING AND THAWING EXPOSURE CATEGORY (F): CLASS FO
- 2) SULFATE EXPOSURE CATEGORY (S): CLASS SO 3) WATER EXPOSURE CATEGORY (W): CLASS WO
- 4) CORROSION PROTECTION CATEGORY (C): CLASS CO
- 5) 28-DAY COMPRESSIVE STRENGTH: 4,000 PSI
- 6) MAXIMUM WATER/CEMENT RATIO: 0.45 7) MAXIMUM AGGREGATE SIZE: 3/4-INCHES
- 8) TARGET AIR CONTENT: DO NOT ALLOW AIR CONTENT OF TROWEL-FINISHED FLOORS TO EXCEED 3 PERCENT
- 9) MAXIMUM WATER-SOLUBLE CHLORIDE ION CONTENT IN CONCRETE, PERCENT BY WEIGHT OF CEMENTITIOUS MATERIALS: 1.00
- 6) CONCRETE MIX PROPORTIONS SHALL BE ESTABLISHED IN ACCORDANCE WITH ARTICLE 4.2.3 OF ACI 301 SO THAT THE CONCRETE SATISFIES THE FOLLOWING THREE REQUIREMENTS:
- A) THE CONCRETE CAN BE PLACED READILY WITHOUT SEGREGATION INTO FORMS AND AROUND REINFORCEMENT UNDER ANTICIPATED PLACEMENT CONDITIONS. THE CONCRETE PRODUCER SHALL DETERMINE WHETHER ADMIXTURES ARE NECESSARY FOR WATER REDUCTION, SET TIME, OR SLUMP REQUIREMENTS
- B) THE CONCRETE SHALL MEET REQUIREMENTS FOR THE ASSIGNED EXPOSURE CLASSES OUTLINED HEREIN.
- C) THE CONCRETE SHALL CONFORM TO STRENGTH TEST REQUIREMENTS FOR STANDARD-CURED SPECIMENS.
- 7) DOCUMENTATION OF CONCRETE MIXTURE CHARACTERISTICS SHALL BE SUBMITTED FOR REVIEW BEFORE THE MIXTURE IS USED. EVIDENCE OF THE ABILITY OF THE PROPOSED MIXTURE TO COMPLY WITH THE CONCRETE MIXTURE REQUIREMENTS IN THE CONSTRUCTION DOCUMENTS SHALL BE INCLUDED IN THE SUBMITTAL. THE EVIDENCE SHALL BE BASED ON FIELD TEST RECORDS OR LABORATORY TRIAL BATCHES.
- C. CONCRETE REINFORCING:
- 1) ALL DETAILING, FABRICATION, AND PLACING OF REINFORCING STEEL, UNLESS OTHERWISE NOTED, SHALL FOLLOW ALL SECTIONS OF ACI MNL-66, ACI 318, AND THE CRSI MSP.
- 2) UNLESS OTHERWISE NOTED, LAP SPLICES OF DEFORMED REINFORCING BARS SHALL CONFORM TO ACI REQUIREMENTS FOR CLASS B TENSION SPLICES. REFER TO LAP LENGTH SCHEDULES FOR TYPICAL LAP REQUIREMENTS.
- 3) PLACEMENT OF WELDED WIRE REINFORCEMENT SHALL BE CONTINUOUS, SHALL NOT BE INTERRUPTED BY BEAMS AND GIRDERS, AND SHALL BE LAPPED A MINIMUM OF 8-INCHES UNLESS SHOWN OTHERWISE IN DETAILS.
- 4) PROVIDE CORNER BARS IN BOTH FACES OF ALL CONTINUOUS GRADE BEAMS, FOOTINGS AND WALLS. NUMBER, SIZE, AND SPACING OF CORNER BARS SHALL BE EQUAL TO NUMBER, SIZE AND SPACING OF HORIZONTAL REINFORCING WITH WHICH THEY LAP AND SHALL HAVE CLASS B TENSION LAP SPLICES IN EACH DIRECTION. REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
- 5) AT INTERSECTING FOUNDATIONS, EXTEND ALL HORIZONTAL REINFORCING OF THE INTERSECTING MEMBERS BEYOND THE POINT OF INTERSECTION TO THE OPPOSITE FACE. BEND TO A STANDARD 90 DEGREE HOOK OR PROVIDE BENT DOWELS OF EQUAL SIZE AND SPACING AND LAP AS REQUIRED FOR A CLASS B TENSION SPLICE (BUT NOT LESS THAN 12") IN EACH DIRECTION. REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
- 6) PROVIDE TIES COMPLYING WITH ACI 318 IN ALL CONCRETE COLUMNS AND PILASTERS. EVERY CORNER AND ALTERNATING LONGITUDINAL BAR SHALL HAVE A LATERAL SUPPORT PROVIDED BY THE CORNER OF A TIE WITH AN INCLUDED ANGLE ON NOT MORE THAN 135-DEGREES. NO UNSUPPORTED LONGITUDINAL BAR SHALL BE FARTHER THAN 6-IN. CLEAR ON EACH SIDE ALONG THE TIE FROM A LATERALLY SUPPORTED BAR.
- 7) CONCRETE COVER OVER STEEL REINFORCING FOR NON-PRESTRESSED CAST-IN-PLACE CONSTRUCTION SHALL CONFORM TO THE TABLE PROVIDED IN THE CONCRETE TYPICAL DETAILS SHEET.
- D. OPENINGS IN CONCRETE STRUCTURES:
- 1) ALL OPENINGS IN CONCRETE WALLS LARGER THAN 1'-0" IN SIZE SHALL HAVE A MINIMUM OF (2)#5 BARS PLACED AT ALL SIDES OF OPENING AND EXTENDED 2'-6" BEYOND EDGE OF OPENING. IN ADDITION, DIAGONAL CORNER BARS SHALL EXTEND 2'-6" EACH WAY BEYOND CORNER OF OPENING. REFER TYPICAL DETAILS FOR MORE INFORMATION.
- 2) THE SIZE AND LOCATION OF ALL FLOOR PITS, TRENCH DRAINS, AND OPENINGS FOR ALL DUCTS AND PIPES THROUGH WALLS, FLOORS, AND FOUNDATION WORK SHALL BE VERIFIED WITH THE MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL CONTRACTOR'S REQUIREMENTS PRIOR TO THE START OF ANY CONCRETE WORK.
- E. JOINTS IN CONCRETE CONSTRUCTION:
- 1) ELEVATED STRUCTURAL SLABS: CONSTRUCTION JOINTS IN ELEVATED STRUCTURAL SLABS SHALL BE LOCATED NEAR THE 1/3 POINTS OF THE CLEAR-SPAN AND SHALL HAVE A HORIZONTAL KEY. WHERE CONSTRUCTION JOINTS OCCUR. THE TOP SCHEDULED TOP REINFORCING STEEL SHALL EXTEND FOR THE FULL SPAN OF THAT BAY
- 2) CURING AT CONSTRUCTION JOINTS: CONCRETE POURS EITHER SIDE OF CONSTRUCTION JOINTS SHALL NOT BE CONCURRENT. CONCRETE SHALL BE ALLOWED TO CURE A MINIMUM OF 7 DAYS PRIOR TO PLACEMENT OF ADJACENT CONCRETE.
- F. FORMWORK FOR CAST-IN-PLACE CONCRETE:
- 1) THE DESIGN AND REMOVAL OF FORMWORK SHALL COMPLY WITH THE RECOMMENDATIONS OF ACI 347.

- 2) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, FABRICATION, INSTALLATION, AND REMOVAL OF FORMWORK. FORMWORK DESIGN SHALL CONSIDER THE FOLLOWING:
- A) METHOD OF CONCRETE PLACEMENT. B) RATE OF CONCRETE PLACEMENT.
- C) CONSTRUCTION LOADS, INCLUDING VERTICAL, HORIZONTAL AND IMPACT. D) AVOIDANCE OF DAMAGE TO PREVIOUSLY CONSTRUCTED MEMBERS.
- 3) FORMWORK FABRICATION AND INSTALLATION SHALL RESULT IN A FINAL STRUCTURE THAT CONFORMS TO SHAPES, LINES, AND DIMENSIONS OF THE MEMBERS AS REQUIRED BY THE CONSTRUCTION DOCUMENTS.
- 4) FORMWORK SHALL BE SUFFICIENTLY TIGHT TO INHIBIT LEAKAGE OF PASTE AND MORTAR
- 5) FORMWORK SHALL BE BRACED OR TIED TOGETHER TO MAINTAIN SAFETY, POSITION AND SHAPE.
- 6) REMOVAL OF FORMWORK
- A) BEFORE STARTING CONSTRUCTION, THE CONTRACTOR SHALL DEVELOP A PROCEDURE AND SCHEDULE FOR REMOVAL OF FORMWORK AND INSTALLATION OF RESHORES, AND SHALL CALCULATE THE LOADS TRANSFERRED TO THE STRUCTURE DURING THIS PROCESS.
- B) STRUCTURAL ANALYSIS AND CONCRETE STRENGTH REQUIREMENTS USED IN PLANNING AND IMPLEMENTING THE FORMWORK REMOVAL AND RESHORE INSTALLATION SHALL BE FURNISHED BY THE CONTRACTOR TO THE LICENSED DESIGN PROFESSIONAL AND TO THE BUILDING OFFICIAL
- C) NO CONSTRUCTION LOADS SHALL BE PLACED ON, NOR ANY FORMWORK REMOVED FROM, ANY PART OF THE STRUCTURE UNDER CONSTRUCTION EXCEPT WHEN THAT PORTION OF THE STRUCTURE IN COMBINATION WITH REMAINING FORMWORK HAS SUFFICIENT STRENGTH TO SUPPORT SAFELY ITS WEIGHT AND LOADS PLACED THEREON AND WITHOUT IMPAIRING SERVICEABILITY.
- D) SUFFICIENT STRENGTH SHALL BE DEMONSTRATED BY STRUCTURAL ANALYSIS CONSIDERING ANTICIPATED LOADS, STRENGTH OF FORMWORK, AND AN ESTIMATE OF IN-PLACE CONCRETE STRENGTH.
- E) THE ESTIMATE OF IN-PLACE CONCRETE STRENGTH SHALL BE BASED ON TESTS OF FIELD-CURED CYLINDERS OR ON OTHER PROCEDURES TO EVALUATE CONCRETE STRENGTH APPROVED BY THE LICENSED DESIGN PROFESSIONAL AND, WHEN REQUESTED, APPROVED BY THE BUILDING OFFICIAL.
- F) FORMWORK SHALL BE REMOVED IN SUCH A MANNER NOT TO IMPAIR SAFETY AND SERVICEABILITY OF THE STRUCTURE.
- G) CONCRETE EXPOSED BY FORMWORK REMOVAL SHALL HAVE SUFFICIENT STRENGTH NOT TO BE DAMAGED BY THE REMOVAL.
- H) FORMWORK SUPPORTS FOR POST-TENSIONED MEMBERS SHALL NOT BE REMOVED UNTIL SUFFICIENT POST-TENSIONING HAS BEEN APPLIED TO ENABLE POST-TENSIONED MEMBERS TO SUPPORT THEIR DEAD LOAD AND ANTICIPATED CONSTRUCTION LOADS.
- I) NO CONSTRUCTION LOADS EXCEEDING THE COMBINATION OF SUPERIMPOSED DEAD LOAD PLUS LIVE LOAD INCLUDING REDUCTION SHALL BE PLACED ON ANY UNSHORED PORTION OF THE STRUCTURE UNDER CONSTRUCTION, UNLESS ANALYSIS INDICATES ADEQUATE STRENGTH TO SUPPORT SUCH ADDITIONAL LOADS AND WITHOUT IMPAIRING SERVICEABILITY.
- G. CONCRETE MISCELLANEOUS:
- 1) WATERSTOPS AND WATERPROOFING: ALL CONSTRUCTION JOINTS (VERTICAL AND HORIZONTAL) IN BELOW-GRADE CONCRETE WALLS, TRENCHES AND PITS SHALL BE KEYED AND HAVE BENTONITE WATERSTOPS INSTALLED UNLESS NOTED OTHERWISE. ALL BELOW-GRADE CONCRETE WALLS, PITS AND TRENCHES SHALL BE WATERPROOFED AS SHOWN IN ARCHITECTURAL DRAWINGS, UNLESS NOTED OTHERWISE.
- 2) EQUIPMENT PADS: PROVIDE CONCRETE EQUIPMENT PADS OF SIZE REQUIRED FOR OUTPMENT FURNISHED SEE MECHANICAL PLUMBING FIRE PROTECTION AND ELECTRICAL DRAWINGS FOR NUMBER. SIZE. AND LOCATION OF SUCH PADS. UNLESS OTHERWISE SHOWN. MINIMUM PAD THICKNESS SHALL BE 4" AND SHALL EXTEND A MINIMUM OF 6" BEYOND THE FACE OF THE EQUIPMENT. MINIMUM REINFORCING SHALL BE #4 BARS AT 12" O.C. EACH WAY. TOOLED OR CHAMFERED EDGES SHALL BE PROVIDED AT ALL EQUIPMENT PADS. ANCHORAGE TO SUPPORTING SLAB SHALL BE MADE. REFER TO TYPICAL DETAILS.
- 3) CHAMFERED EDGES: UNLESS NOTED OTHERWISE ON ARCHITECTURAL DRAWINGS. PROVIDE 3/4" CHAMFER ON ALL EXPOSED CONCRETE EDGES.
- 4) SURFACE FINISH: ALL HORIZONTAL CONCRETE SURFACES SHALL HAVE A TROWELED FINISH UNLESS NOTED OTHERWISE IN ARCHITECTURAL DRAWINGS OR FLOORING SPECIFICATIONS. AT STAIR TREAD PLACEMENTS PROVIDE A FINE BROOM FINISH TRANSVERSE TO THE RISERS UNLESS NOTED OTHERWISE.
- 5) MOIST CURING OF SLABS: SLABS-ON-GRADE AND SLABS-ON-DECK SHALL BE WATER CURED FOR A MINIMUM OF 7 DAYS BY PONDING, SPRAYING, SPRINKLING OR BY USE OF SATURATED COVERINGS. CURING COMPOUNDS ARE EXPRESSLY PROHIBITED.
- 6) VAPOR EMISSION LIMITS: IT IS THE CONTRACTOR'S RESPONSIBILITY TO PLAN AND DETERMINE THE MEANS AND METHODS NECESSARY FOR LIMITING VAPOR EMISSIONS TO AN ACCEPTABLE RANGE AS REQUIRED BY FLOOR FINISH MANUFACTURERS.

9) POST-INSTALLED ANCHORS AND DOWELS

- A. GOVERNING CODES AND STANDARDS: IN ADDITION TO THE REQUIREMENTS OF THE GOVERNING INTERNATIONAL BUILDING CODE, ALL POST-INSTALLED ANCHORS AND DOWELS SHALL BE DETAILED, FABRICATED, AND INSTALLED IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS AND AS SUPPLEMENTED BY THESE GENERAL NOTES AND THE PROJECT DRAWINGS AND SPECIFICATIONS.
- 1) ACI 318-14 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE." 2) ACI 355.2-07 "QUALIFICATION OF POST-INSTALLED MECHANICAL ANCHORS IN
- CONCRETE. 3) ACI 355.4-11 "QUALIFICATION OF POST-INSTALLED ADHESIVE ANCHORS IN CONCRETE."
- B. QUALIFICATION REQUIREMENTS FOR INSTALLERS
- 1) CONTRACTOR SHALL REQUEST, SCHEDULE AND FACILITATE THE ANCHOR AND/OR ADHESIVE MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL THE MANUFACTURER'S SPECIFIED ANCHORING PRODUCTS. THE ENGINEER MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S ANCHOR INSTALLATION PERSONNEL ARE TRAINED PRIOR TO COMMENCEMENT OF ANCHOR INSTALLATION OPERATIONS.
- 2) INSTALLATION OF ADHESIVE ANCHORS HORIZONTALLY OR UPWARDLY INCLINED SHALL BE PERFORMED BY PERSONNEL CERTIFIED BY AN APPLICABLE CERTIFICATION PROGRAM. CERTIFICATION SHALL INCLUDE WRITTEN AND PERFORMANCE TESTS IN ACCORDANCE WITH THE ACI/CRSI ADHESIVE ANCHOR INSTALLER (AAI) CERTIFICATION PROGRAM, OR EQUIVALENT. WHEN APPLICABLE, SOME DOWN-HOLE INSTALLATIONS SHOWN ON DRAWINGS SUPPORTING SUSTAINED TENSION LOADS ARE DESIGNATED WITH A (CERT) AFTER THE ANCHOR CALLOUT AND SHALL ALSO REQUIRE INSTALLER CERTIFICATION AS OUTLINED ABOVE.
- C. QUALIFICATION REQUIREMENTS FOR PRODUCTS
- 1) POST-INSTALLED EXPANSION AND UNDERCUT ANCHORS SHALL MEET THE ASSESSMENT CRITERIA OF ACI 355.2.
- 2) POST-INSTALLED ADHESIVE ANCHORS SHALL MEET THE ASSESSMENT CRITERIA OF ACI 355.4.

D. APPROVED ANCHORING PRODUCTS: THE ANCHORING SYSTEMS SHOWN BELOW HAVE BEEN USED IN THE ANCHOR DESIGNS SHOWN IN THE CONSTRUCTION DOCUMENTS, SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE, AND INSTALLATION TEMPERATURE.

- 1) ANCHORAGE TO CONCRETE
- A) ADHESIVE ANCHORS (1) HILTI HIT-HY 200 SYSTEM WITH HILTI HIT-Z ROD OR HAS-E THREADED ROD [ICC ESR-3187]. (2) HILTI HIT-RE 500 V3 SYSTEM WITH HILTI HAS-E THREADED ROD [ICC
- ESR-3814]
- B) MEDIUM DUTY MECHANICAL ANCHORS: (1) HILTI KWIK HUS-EZ AND KWIK HUS-EZ I SCREW ANCHORS [ICC ESR-3027] (2) HILTI KWIK BOLT-TZ EXPANSION ANCHORS [ICC ESR-1917]. (3) HILTI KWIK BOLT 3 EXPANSION ANCHORS (UNCRACKED CONCRETE ONLY) [ICC ESR-2302]
- C) HEAVY DUTY MECHANICAL ANCHORS:
- (1) HILTI HDA UNDERCUT ANCHORS [ICC ESR-1546] (2) HILTI HSL-3 EXPANSION ANCHORS [ICC ESR-1545]
- 2) REBAR DOWELING INTO CONCRETE
- A) ADHESIVE ANCHORS (1) HILTI HIT-HY 200 SYSTEM WITH CONTINUOUSLY DEFORMED REBAR [ICC ESR-31871 (2) HILTI HIT-RE 500 V3 SYSTEM WITH CONTINUOUSLY DEFORMED REBAR [ICC
- 3) ANCHORAGE TO SOLID GROUTED MASONRY
- A) ADHESIVE ANCHORS

ESR-3814]

- (1) HILTI HIT-HY 270 MASONRY ADHESIVE ANCHORING SYSTEM WITH HILTI HAS-E CONTINUOUSLY THREADED ROD OR CONTINUOUSLY DEFORMED STEEL REBAR [ICC ESR-4143].
- B) MECHANICAL ANCHORS (1) HILTI KWIK BOLT-3 EXPANSION ANCHORS [ICC ESR-1385]
- 4) ANCHORAGE TO HOLLOW / MULTI-WYTHE MASONRY
- A) ADHESIVE ANCHORS:
- (1) HILTI HIT-HY 270 MASONRY ADHESIVE ANCHORING SYSTEM WITH HILTI HAS-E CONTINUOUSLY THREADED ROD OR CONTINUOUSLY DEFORMED STEEL REBAR [ICC ESR-4143].
- (2) THE APPROPRIATE SIZE SCREEN TUBE SHALL BE USED PER ADHESIVE MANUFACTURER'S RECOMMENDATION.
- E. PREPARATION PRIOR TO INSTALLATION
- 1) CURING OF BASE MATERIAL: DO NOT DRILL OR CORE HOLES INTO SUPPORTING CONCRETE OR MASONRY MATERIALS UNTIL THE CONCRETE, MORTAR AND/OR GROUT HAVE BEEN ADEQUATELY CURED TO ACHIEVE FULL DESIGN STRENGTH. IN NO CASE SHALL ANCHORS BE INSTALLED PRIOR TO THE CONCRETE HAVING AN AGE OF LESS THAN 21 DAYS.
- 2) TEMPERATURE OF BASE MATERIAL: THE CONCRETE TEMPERATURE AT THE TIME OF ADHESIVE ANCHOR INSTALLATION SHALL BE AT LEAST 50°F (10°C) UNLESS TESTING HAS BEEN CONDUCTED IN ACCORDANCE WITH RECOGNIZED CRITERIA TO VERIFY PERFORMANCE IN CONCRETE AT LOWER TEMPERATURES.
- 3) AVOIDANCE OF EMBEDDED ITEMS: PRIOR TO DRILLING OR CORING OPERATIONS, THE CONTRACTOR SHALL LOCATE AND MARK ALL POTENTIALLY CONFLICTING REINFORCING BARS. UTILITIES AND OTHER EMBEDDED ITEMS BY INDUCTION SCANNING. GROUND PENETRATING RADAR, X-RAY, OR OTHER APPROVED NON-DESTRUCTIVE METHOD. CONTRACTOR SHALL AVOID DRILLING OR CORING HOLES THAT MAY DAMAGE THESE EMBEDDED ITEMS. NOTIFY THE ENGINEER IF CONFLICTING EMBEDDED ITEMS DO NOT ALLOW INSTALLATION OF POST-INSTALLED ANCHORS IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND/OR APPROVED SHOP DRAWINGS.
- 4) CARTRIDGE STORAGE: ADHESIVE CARTRIDGES SHALL BE STORED UNDER CONDITIONS IN COMPLIANCE WITH MANUFACTURER RECOMMENDATIONS REGARDING TEMPERATURE. EXPOSURE TO SUNLIGHT, ETC. AND EVIDENCE OF COMPLIANCE SHALL BE MADE AVAILABLE UPON REQUEST. THE USE OF EXPIRED ADHESIVE, AS INDICATED BY THE EXPIRATION DATE ON THE CARTRIDGE, IS PROHIBITED.
- 5) INSTALLATION EQUIPMENT: THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT REQUIRED TO INSTALL THE EXPANSION AND/OR ADHESIVE ANCHOR INCLUDING, BUT NOT LIMITED TO, DRILLS, SETTING TOOLS, CLEAN-OUT BRUSHES, BLOWOUT BULBS, OIL-FREE COMPRESSED AIR, VACUUMS, WRENCHES, ETC.
- F. INSTALLATION
- 1) ALL DRILLING AND CORING EQUIPMENT AND ALL METHODS FOR INSTALLATION OF POST-INSTALLED ANCHORS AND DOWELS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII).
- 2) UNLESS OTHERWISE SPECIFIED, ANCHORS SHALL BE INSTALLED IN HOLES DRILLED WITH A ROTARY IMPACT HAMMER DRILL OR, WHERE NOT OTHERWISE PROSCRIBED, A ROCK DRILL. IN ALL CASES, THE BIT DIAMETER SHALL BE IN ACCORDANCE WITH THE MPII.
- 3) EMBEDMENT DEPTH AND MINIMUM ANCHOR PROJECTION OF THE ANCHOR ELEMENT FROM THE CONCRETE SURFACE SHALL BE AS SHOWN ON THE DRAWING OR DETAIL FOR THE PARTICULAR ANCHOR OR GROUP OF ANCHORS BEING INSTALLED.
- 4) ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGES OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS. ANCHOR SPACING AND EDGE DISTANCE VALUES SHALL NOT BE LESS THAN RECOMMENDED BY THE ANCHOR MANUFACTURER.
- 5) HOLES FOR POST-INSTALLED ANCHORS:
- A) UNLESS SPECIFICALLY SHOWN OTHERWISE, ALL HOLES SHALL BE INSTALLED PERPENDICULAR TO THE CONCRETE OR MASONRY SURFACE.
- B) ANCHOR HOLES SHALL BE THOROUGHLY CLEANED IN ACCORDANCE WITH THE PROCEDURES SPECIFIED IN THE MPII PRIOR TO ADHESIVE INJECTION. AT A MINIMUM, THIS SHALL CONSIST OF CLEANING WITH OIL-FREE AND MOISTURE-FREE COMPRESSED AIR, USING A NOZZLE EXTENDED TO THE BOTTOM HOLE: SUPPLEMENTED WITH A BRUSH OR OTHER TOOL CLEANING TO REMOVE ALL CONCRETE DUST AND LOOSE MATERIAL; AND FOLLOWED BY A SECOND COMPRESSED AIR CLEANING. THIS IS COMMONLY KNOWN AS BLOW-BRUSH-BLOW OR BBB. SOME ANCHOR MANUFACTURERS HAVE DEVELOPED VACUUM SYSTEMS THAT REPLACE THE TRADITIONAL BBB APPROACH.
- C) DRILLED AND CLEANED ANCHOR HOLES SHALL BE PROTECTED FROM CONTAMINATION AND WATER (E.G. RAIN) UNTIL THE ADHESIVE IS INSTALLED.

- D) A DRILLED ANCHOR HOLE SHALL BE RE-CLEANED JUST PRIOR TO ADHESIVE INJECTION IF, IN THE OPINION OF THE ENGINEER, INSPECTOR, OR OWNER'S REPRESENTATIVE, THE HOLE HAS BECOME CONTAMINATED AFTER INITIAL CLEANING.
- 6) INSTALLATION OF ADHESIVE ANCHORS:
- A) ADHESIVE ANCHORS WITH DIAMETER GREATER THAN 3/8-INCH INSTALLED IN ORIENTATIONS FROM HORIZONTAL TO VERTICAL SHALL EMPLOY A PISTON PLUG FOR THE ADHESIVE INJECTION.
- B) ADHESIVE SHALL BE INJECTED IN ACCORDANCE WITH THE MPII USING EQUIPMENT AND PROCEDURES AS SPECIFIED THEREIN FOR THE SPECIFIC CONDITIONS ASSOCIATED WITH THE INJECTION. THIS SHALL BE CLEARLY SPECIFIED IN THE MPII, IF NOT, ANOTHER PRODUCT SHALL BE PROPOSED FOR USF
- C) ANCHOR ELEMENTS TO BE INSTALLED IN THE ADHESIVE SHALL BE CLEAN, OIL-FREE, AND FREE OF LOOSE RUST, PAINT, OR OTHER COATINGS.
- D) THREADS ON THE PROJECTING PORTION OF THE ANCHOR ELEMENT SHALL BE PROTECTED FROM ADHESIVE CONTAMINATION.
- E) UNLESS SPECIFICALLY SHOWN OTHERWISE ON THE DRAWINGS, ANCHORS SHALL BE INSTALLED PERPENDICULAR TO THE CONCRETE SURFACE.
- F) INSTALLED ADHESIVE ANCHORS SHALL BE SECURELY FIXED IN-PLACE TO PREVENT DISPLACEMENT WHILE THE ADHESIVE CURES. ANCHORS DISPLACED BEFORE FULL ADHESIVE CURE SHALL BE CONSIDERED DAMAGED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
- 7) POST-INSTALLED ANCHORS AND DOWELS SHALL NOT BE BENT AFTER BEING INSTALLED UNLESS PERMITTED BY THE ENGINEER IN WRITING.
- G. SPECIAL INSPECTION REQUIREMENTS
- 1) CONTINUOUS INSPECTIONS: ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS SHALL BE CONTINUOUSLY INSPECTED DURING INSTALLATION BY A CERTIFIED INSPECTOR SPECIFICALLY APPROVED FOR THAT PURPOSE BY THE BUILDING OFFICIAL.
- 2) PERIODIC INSPECTIONS: PERIODIC SPECIAL INSPECTIONS SHALL BE PROVIDED FOR ALL OTHER POST-INSTALLED ANCHORS NOT INCLUDED IN THE CONTINUOUS INSPECTIONS REQUIRED ABOVE.
- 3) REPORTING REQUIREMENTS: THE SPECIAL INSPECTOR SHALL FURNISH A REPORT TO THE ENGINEER AND BUILDING OFFICIAL THAT THE WORK COVERED BY THE REPORT HAS BEEN PERFORMED AND THAT THE MATERIALS AND INSTALLATION PROCEDURES USED CONFORM WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII)
- 10) STEEL CONSTRUCTION NOTES
- A. GOVERNING CODES AND STANDARDS: IN ADDITION TO THE REQUIREMENTS OF THE GOVERNING INTERNATIONAL BUILDING CODE, ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND AS SUPPLEMENTED BY THESE GENERAL NOTES AND THE PROJECT DRAWINGS AND SPECIFICATIONS.
- 3) AISC 360-16 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS"
- 4) AWS D1.1-2015 "STRUCTURAL WELDING CODE STEEL"
- B. CONNECTIONS:
- 1) CONNECTIONS SHALL BE DESIGNED TO SUPPORT THE FACTORED END REACTIONS SHOWN ON THE DRAWINGS. WHERE END REACTIONS ARE NOT SHOWN OR OTHERWISE SPECIFIED. CONNECTIONS SHALL BE DESIGNED TO SUPPORT A FACTORED END SHEAR OF THE GREATER OF 10 KIPS OR 50% OF THE TOTAL FACTORED UNIFORM LOAD CAPACITY SHOWN IN THE MANUAL OF STEEL CONSTRUCTION FOR THE GIVEN SHAPE, SPAN AND THE SPECIFIED STEEL.
- 2) ALL CONNECTION PLATES, STIFFENERS AND BOLTS SHOWN ON THE DRAWINGS ARE SCHEMATIC ONLY. FABRICATOR SHALL DESIGN ALL CONNECTIONS, SPLICES, PLATES, GUSSET PLATES, STIFFENERS, BOLTS AND WELDS FOR FORCES INDICATED ON DRAWINGS IN ADDITION TO THE REQUIREMENTS OF THE AISC DESIGN SPECIFICATION (LRFD PROVISIONS). IN ALL CASES. A MINIMUM 3/8" PLATE AND A MINIMUM OF (2) 3/4" DIAMETER A325 BOLTS SHALL BE PROVIDED.
- 3) FULL-DEPTH STIFFENER PLATES IN COLUMNS OR BEAMS SHALL MATCH THE YIELD STRENGTH OF THE BASE MEMBER.
- C. STRUCTURAL BOLTS, ANCHOR RODS & BASE PLATES:
- 1) STEEL CONTRACTOR SHALL FURNISH ERECTION BOLTS AS REQUIRED FOR FIELD CONNECTIONS.
- 2) ALL BOLTS SHALL BE 3/4 IN. DIAMETER ASTM A325 WITH SUITABLE WASHERS AND NUTS UNLESS OTHERWISE SHOWN IN THE CONSTRUCTION DOCUMENTS OR APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.
- 3) ALL BOLTS SHALL BE TIGHTENED TO THE SNUG-TIGHTENED JOINT REQUIREMENTS OF RCSC-10 EXCEPT AT SLIP-CRITICAL JOINTS OR WHERE NOTED OTHERWISE IN CONSTRUCTION DOCUMENTS OR IN FABRICATOR'S CONNECTION DESIGN.
- 4) UNLESS OTHERWISE INDICATED IN THE DRAWINGS, ALL ANCHOR RODS SHALL CONFORM TO THE SPECIFIED MATERIAL GRADE SHALL BE A MINIMUM 3/4 INCH DIAMETER WITH A MINIMUM FOUNDATION EMBEDMENT AS INDICATED IN STRUCTURAL DETAILS. THE EMBEDDED END SHALL HAVE EITHER A STANDARD BOLT HEAD, A HEAVY HEX NUT WITH THE THREADS SPOILED ABOVE AND BELOW THE NUT, OR JAMMED DOUBLE NUTS.
- 5) PRIOR TO PLACING CONCRETE, STEEL PLATE TEMPLATES SHALL BE PROVIDED TO FACILITATE PLACEMENT OF ANCHOR RODS IN DETAILED PLAN POSITIONS AND ELEVATIONS.
- 6) BASE PLATES SHALL BE LEVELED WITH LEVELING NUTS AND OVERSIZED WASHER PLATES OR WITH SHIM PACKS AT THE ERECTOR'S OPTION.
- 7) AFTER FINAL BASE PLATE POSITIONING, ANCHOR ROD NUTS SHALL BE INSTALLED TO A SNUG-TIGHT CONDITION AND WASHER PLATES SHALL BE FIELD WELDED AS INDICATED IN THE CONSTRUCTION DOCUMENTS.
- D. STEEL FABRICATION & FINISH:
- 1) SHOP DRAWINGS SHALL BE SUBMITTED TO AND REVIEWED BY THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCING FABRICATION. ANY FABRICATION INITIATED PRIOR TO APPROVAL OF SHOP DRAWINGS WILL BE AT THE SOLE RISK OF THE FABRICATOR.
- 2) ALL SHOP AND FIELD WELDS SHALL BE MADE IN ACCORDANCE WITH AWS D1.1. ALL WELDING SHALL USE LOW HYDROGEN PROCESSES.
- 3) ALL BEAMS THAT ARE REQUIRED TO HAVE CAMBER SHALL BE FABRICATED WITH CAMBER UPWARD. BEAMS WITHOUT SPECIFIED CAMBER SHALL BE FABRICATED SUCH THAT AFTER ERECTION. ANY NATURAL CAMBER DUE TO ROLLING OR SHOP FABRICATION IS UPWARD.
- 4) CUTS, HOLES, COPING, ETC. REQUIRED FOR WORK OF OTHER TRADES SHALL BE SHOWN ON THE SHOP DRAWINGS AND MADE IN THE SHOP. CUTS OR BURNING OF HOLES IN STRUCTURAL STEEL MEMBERS IN THE FIELD WILL NOT BE PERMITTED.

1) AISC 303-16 "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" 2) AISC 341-16 "SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS"

5) RCSC-2014 "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS"



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- 5) THE FABRICATOR SHALL BE RESPONSIBLE FOR ALL ERECTION AIDS. ANY SUCH ERECTION AIDS SHALL BE REMOVED FROM THE COMPLETED STRUCTURE IF DIRECTED BY THE OWNER'S REPRESENTATIVE.
- 6) ALL EXTENSION BARS, RUN-OFF PLATES, AND BACKING BARS USED IN WELDED CONNECTIONS SHALL BE REMOVED AND THE JOINTS SHALL BE GROUND SMOOTH WHERE SUCH CONNECTION IS PERMANENTLY EXPOSED TO VIEW OR IS DESIGNATED AS ARCHITECTURALLY EXPOSED STRUCTURAL STEEL.
- 7) HEADED STUDS AND DEFORMED BAR ANCHORS
- A) ALL HEADED STUDS AND DEFORMED BAR ANCHORS SHALL BE INSTALLED USING AUTOMATIC END-WELDING EQUIPMENT RECOMMENDED BY THE STUD OR ANCHOR MANUFACTURER. MANUAL WELDING OF HEADED STUDS OR DEFORMED BAR ANCHORS WILL NOT BE ALLOWED.
- B) IF A VISUAL INSPECTION REVEALS ANY STUD THAT DOES NOT SHOW A FULL 360-DEGREE FLASH OR ANY STUD THAT HAS BEEN REPAIRED BY MANUAL WELDING, SUCH STUD SHALL BE BENT TO AN ANGLE APPROXIMATELY 15-DEGREES FROM ITS ORIGINAL AXIS. THE DIRECTION OF BENDING FOR STUDS WITH LESS THAN A 360-DEGREE FLASH SHALL BE OPPOSITE TO THE MISSING PORTION OF THE FLASH.
- C) HEADED STUDS AND DEFORMED BAR ANCHORS THAT HAVE SUCCESSFULLY PASSED THE BEND TEST WITHOUT SIGN OF FAILURE SHALL BE ACCEPTABLE FOR USE AND LEFT IN THE BENT POSITION UNLESS DIRECTED OTHERWISE BY THE ENGINEER. D) WELDED STUDS NOT CONFORMING TO THE REQUIREMENTS OF AWS D1.1 SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR. THE CONTRACTOR SHALL REVISE THE WELDING PROCEDURE AS NECESSARY TO ENSURE THAT SUBSEQUENT STUD
- 8) STEEL EMBEDMENTS IN CONCRETE:
- A) ALL STEEL COMPONENTS TO BE EMBEDDED IN CONCRETE SHALL HAVE COATINGS AS DEFINED IN THE TABLE BELOW.

COATINGS FOR STEEL EMBEDMENTS IN CONCRETE						
EXPOSURE	FIELD WELDING	FINISH				
EXTERIOR	EITHER	GALVANIZED				
	YES	UNPAINTED				
INTERIOR	NO	GALVANIZED				

WELDING WILL MEET AWS D1.1 REQUIREMENTS.

FOOTNOTES:

- ALL WELDING TO PREVIOUSLY GALVANIZED COMPONENTS WILL REQUIRE REMOVAL OF THE GALVANIZING WITH GRINDING FOR AT LEAST 3-INCHES FROM EITHER SIDE OF THE INTENDED WELD AND ON BOTH SIDES OF THE WORKPIECE.
- FIELD WELDED AREAS AND OTHER AREAS WITH REMOVAL OF, OR DAMAGE TO, THE GALVANIZED COATING SHALL HAVE THEIR COATING RESTORED IN ACCORDANCE TO ASTM A780, USING PAINT CONTAINING ZINC DUST OR SIMILAR PERMITTED PRODUCTS CAPABLE OF PROVIDING A MINIMUM ZINC-RICH COATING THICKNESS OF 2.0 MILS IN A SINGLE APPLICATION.
- B) IN ORDER TO REDUCE THE RISK OF HEAT-INDUCED CONCRETE SPALLING AT FIELD-WELDED EMBED PLATES:
- i) ALLOW SUPPORTING CONCRETE TO CURE FOR A MINIMUM OF 14-DAYS PRIOR TO FIELD WELDING.
- ii) PROVIDE THE WELD SIZE SHOWN IN DETAILS AND DO NOT OVER-WELD.
- 9) SHOP PRIMER
- A) ALL STEEL EXPOSED TO EXTERIOR WEATHER OR AN UNCONTROLLED ENVIRONMENT SHALL BE BLAST CLEANED AND PRIMED WITH A SUBMITTED AND APPROVED ZINC-RICH PRIMER.
- B) INTERIOR STEEL SHALL BE SHOP PRIMED WITH THE FABRICATORS STANDARD SHOP PRIMER. C) SHOP PRIMER SHALL NOT BE APPLIED TO THE FOLLOWING AREAS:
- i) SURFACES EMBEDDED IN CONCRETE OR MORTAR. EXTEND PRIMING OF PARTIALLY EMBEDDED MEMBERS TO A DEPTH OF 2 INCHES. ii) SURFACES TO BE FIELD WELDED.
- iii) SURFACES TO BE HIGH-STRENGTH BOLTED WITH SLIP-CRITICAL
- CONNECTIONS. iv) SURFACES TO RECEIVE SPRAYED FIRE-RESISTIVE MATERIALS.
- v) GALVANIZED SURFACES.
- E. STEEL MISCELLANEOUS:
- 1) ALL EDGE ANGLES SUPPORTING ROOF OR FLOOR DECK SHALL BE CONTINUOUS BUTT-SPLICE WELDED OVER SUPPORTS.
- 2) ALL ELEVATED MECHANICAL EQUIPMENT SHALL BE SUPPORTED BY STEEL FRAMING. IF SPECIFIC FRAMING SIZES ARE NOT PROVIDED ON THE FRAMING PLAN, REFER TYPICAL DETAILS FOR ROOF AND FLOOR OPENING FRAME DETAILS.
- 3) SUBSTITUTION OF POST-INSTALLED ANCHORS FOR EMBEDDED ANCHORS SHOWN ON THE DRAWINGS WILL NOT BE PERMITTED UNLESS SPECIFICALLY APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.
- 4) WHERE POST-INSTALLED ANCHORS ARE USED IN CONTINUOUS ANGLES, FABRICATE ANGLE WITH OPTIONAL HOLE LOCATIONS TO ALLOW REMEDIATION OF CASES WHERE ANCHORS FOUL WITH REBAR. AS AN EXAMPLE, FOR A CONTINUOUS ANGLE WITH ANCHORS AT 24" ON CENTER, PROVIDE HOLES AT 6" ON CENTER.
- 5) GALVANIZED LOOSE LEDGE ANGLES SHALL BE PROVIDED OVER ALL MASONRY VENEER OPENINGS OR RECESSES DEEPER THAN 1". LINTELS SHALL HAVE 1" OF BEARING AT EACH END FOR EVERY FOOT OF SPAN, WITH A MINIMUM OF 4" AND SIZED AS FOLLOWS UNLESS SHOWN OTHERWISE IN THE DRAWINGS. A) UP TO 4'-0".....L3-1/2 x 3-1/2 x 3/8 B) 4'-1" to 5'-0".....L4 x 3-1/2 x 3/8 (LLV)

2)	5'-1"	to	6'-6"	L5	х	3-1/2	х	3/8	(LLV)
))	6'-7"	to	8'-0"	L6	х	3-1/2	х	3/8	(LLV)

11) <u>METAL DECK NOT</u>ES

- A. GOVERNING CODES AND STANDARDS: IN ADDITION TO THE REQUIREMENTS OF THE GOVERNING INTERNATIONAL BUILDING CODE, ALL STEEL DECK AND ASSOCIATED MATERIALS SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE
- FOLLOWING STEEL DECK INSTITUTE (SDI) STANDARDS AND AS SUPPLEMENTED BY THESE GENERAL NOTES AND THE PROJECT DRAWINGS AND SPECIFICATIONS.
- 1) SDI NC-2017 "STANDARD FOR NONCOMPOSITE STEEL FLOOR DECK"
- 2) SDI RD-2017 "STANDARD FOR STEEL ROOF DECK"
- 3) SDI-C-2017 "STANDARD FOR COMPOSITE STEEL FLOOR DECK SLABS" 4) SDI-QA/QC-2017 "STANDARD FOR QUALITY CONTROL AND QUALITY ASSURANCE FOR INSTALLATION OF STEEL DECK"
- B. SHELTER COMPOSITE ROOF DECK:
- 1) COMPOSITE ROOF SYSTEM: COMPOSITE ROOF SYSTEM SHALL BE AS NOTED ON PLAN DRAWINGS AND AS SHOWN IN TYPICAL DETAILS.
- 2) BASIS OF DESIGN: VULCRAFT TYPE 3VLI COMPOSITE METAL DECK WITH THE CHARACTERISTICS AND STRUCTURAL PROPERTIES OUTLINED BELOW. COMPOSITE DECKS OF OTHER MANUFACTURERS ARE ACCEPTABLE IF THEY PROVIDE SIMILAR LOAD-CARRYING CAPACITY FOR THE DECK SPANS APPLICABLE TO THIS PROJECT. A) SDI DECK TYPE: COMPOSITE
- B) DEPTH: 2 IN.
- C) THICKNESS: 18 GAGE
- D) FINISH: GALVANIZED E) Ip = 0.559 IN4/FT
- F) In = 0.558 IN4/FT
- G) Sp = 0.495 IN3/FT

H) Sn = 0.504 IN3/FTI) Fy = 50 KSI

- J) SIDE LAPS: OVERLAPPED
- K) UNIT WEIGHT OF NORMAL WEIGHT CONCRETE FILL: 145 PCF
- 3) NON-COMPOSITE STRENGTH REQUIRED: THE COMPOSITE DECK SHALL BE CAPABLE OF SAFELY AND NON-COMPOSITELY SUPPORTING THE WET WEIGHT OF CONCRETE. INCLUDING AN ADDITIONAL CONCRETE PONDING WEIGHT OF 6 PSF DUE TO DEFLECTION OF DECK AND SUPPORTING STEEL FRAMING, PLUS TEMPORARY CONSTRUCTION LOADS WITHOUT REQUIRING SHORING. THE DECK SUPPLIER SHALL INFORM OWNER'S REPRESENTATIVE IF ANY PROJECT SPAN CONDITIONS DO NOT COMPLY WITH THIS REQUIREMENT AND SHALL RECOMMEND AREAS THAT MUST BE TEMPORARILY SHORED UNTIL CONCRETE HAS CURED FOR A MINIMUM OF 7 DAYS.
- 4) DECK ORIENTATION: COMPOSITE ROOF DECK SHALL BE PLACED WITH RIBS PERPENDICULAR TO SUPPORTING STEEL FRAMING EXCEPT AT SKEWED FRAMING MEMBERS.
- 5) SUPPORT FASTENERS: ENDS OF COMPOSITE METAL DECKING SHALL BE BUTTED AND CONNECTED TO SUPPORTS WITH MINIMUM 5/8" DIAMETER PUDDLE WELDS AT MAXIMUM 12" SPACING. (EACH SIDE OF BUTTED JOINT)
- 6) SIDE LAP FASTENERS: PROVIDE BUTTON PUNCHED SIDE LAPS 12" ON CENTER. SIDE LAP CONNECTIONS ARE DECK TO DECK CONNECTIONS.
- 7) MINIMUM BEARING LENGTH: MINIMUM EXTERIOR AND INTERIOR BEARING LENGTHS SHALL BE AS RECOMMENDED BY THE DECK MANUFACTURER FOR THE SPECIFIC DECK TYPE, GAGE AND SLAB THICKNESS USED.
- C. SUPPORTS FOR DECKING ARE DEFINED AS MEMBERS PROVIDING DIRECT TRANSVERSE SUPPORT AS WELL AS CONTINUOUS PARALLEL EDGE SUPPORT
- D. ALL DECKING SHALL BE PLACED WITH RIBS PERPENDICULAR TO SUPPORTING ROOF OR FLOOR MEMBERS AND SHALL SPAN A MINIMUM OF 3 SPANS UNLESS SHOWN OTHERWISE IN STRUCTURAL DRAWINGS.
- E. METAL DECKING SHALL NOT BE USED TO SUPPORT ANY HANGING LOADS INCLUDING, BUT NOT LIMITED TO, SUSPENDED MECHANICAL, ELECTRICAL, OR PLUMBING EQUIPMENT, CABLE TRAYS OR RACEWAYS, CEILING FINISHES OR CEILING FRAMING.
- F. ALL DECK OPENINGS GREATER THAN 2-IN. SHALL BE SUPPORTED BY AN ANGLE FRAME. IF SPECIFIC FRAMING SIZES ARE NOT PROVIDED ON THE FRAMING PLAN, REFER TYPICAL DETAILS FOR ROOF OPENING FRAME DETAIL.
- G. PROVIDE SHEET STEEL COLUMN CLOSURES, Z-CLOSURES, CELL CLOSURES, POUR STOPS AND GIRDER FILLERS OF SAME MATERIAL AND FINISH AS DECK WITH THICKNESS AND PROFILE RECOMMENDED IN SDI FLOOR DECK DESIGN MANUAL, SECOND EDITION (JUNE 2020). WELD TO SUPPORTING STRUCTURE ACCORDING TO SDI RECOMMENDATIONS AND AS CONCEPTUALLY SHOWN IN TYPICAL FLOOR DECK CLOSURE DETAILS.
- H. ALL ROOF DECK EDGES SHALL BE SUPPORTED WITH POUR STOPS OR BENT PLATES. IF BENT PLATES ARE NOT SHOWN IN THE STRUCTURAL DRAWINGS, PROVIDE GAGE METAL POUR STOPS COMPLYING WITH SDI FLOOR DECK DESIGN MANUAL, SECOND EDITION (JUNE 2020), SECTION 5, TABLE 11 AND AS SHOWN IN TYPICAL DETAILS.



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1. SHELTER GENERAL INFORMATION

- A. TYPE OF SHELTER: TORNADO
- B. SHELTER WIND DESIGN GUIDELINES: ICC/NSSA STANDARD FOR THE DESIGN AND CONSTRUCTION OF STORM SHELTERS - 2014 (ICC 500-2014).
- C. ROOF SYSTEMS HAVE BEEN SELECTED IN ACCORDANCE WITH DEBRIS IMPACT TESTING IN ACCORDANCE WITH ASTM E 1886 AT TEXAS TECH UNIVERSITY (REFER SUMMARY REPORT DATED JUNE 2003 PREPARED BY WIND SCIENCE AND ENGINEERING RESEARCH CENTER). REFER SECTION A1 4" THICK CONCRETE-#4 REBAR REINFORCEMENT 12 INCHES ON CENTER EACH WAY (TESTED FOR 162 MPH)-67 MPH REQUIRED.
- D. WALL SYSTEMS HAVE BEEN SELECTED IN ACCORDANCE WITH DEBRIS IMPACT TESTING IN ACCORDANCE WITH ASTM E 1886 AT TEXAS TECH UNIVERSITY (REFER SUMMARY REPORT DATED JUNE 2003 PREPARED BY WIND SCIENCE AND ENGINEERING RESEARCH CENTER). REFER SECTION A1 8" REINFORCED CONCRETE WALLS (TESTED FOR 135 MPH) - 100 MPH REQUIRED
- E. REFERENCE ELEVATION OF 100'-0" EQUALS DATUM FINISHED FLOOR ELEVATION OF 1246.09' FOR THE STORM SHELTER.
- F. BASED ON THE FLOOD INSURANCE RATE MAPS (FIRM) FOR CLEVELAND COUNTY (MAP NUMBER 40027C016ØJ) THE FINISHED FLOOR ELEVATIONS OF 1246.09' FOR THE STORM SHELTER IS GREATER THAN THE HIGHEST FLOOD ELEVATION OF 1239.0' WHICH HAS A 0.2-PERCENT ANNUAL CHANCE OF BEING EQUALED OR EXCEEDED IN ANY GIVEN YEAR. THE SHELTER IS NOT LOCATED IN AN AREA SUSCEPTIBLE TO FLOODING.
- G. REFER MECHANICAL DRAWINGS FOR LOCATIONS OF SHELTER VENTILATION.
- H. FURNISH LOOSE CONNECTION HARDWARE AND ANCHORAGE ITEMS TO BE EMBEDDED IN OR ATTACHED TO OTHER CONSTRUCTION BEFORE STARTING THAT WORK. PROVIDE LOCATIONS. SETTING DIAGRAMS, TEMPLATES, INSTRUCTIONS, AND DIRECTIONS, AS REQUIRED, FOR INSTALLATION.
- I. MISSILE CRITERIA (ICC-500 2014 TABLE 305.1.1)
- 1) 15-LB SAWN LUMBER 2x4 MISSILE 2) 100 MPH MISSILE SPEED FOR VERTICAL SURFACES
- 3) 67 MPH MISSILE SPEED FOR HORIZONTAL SURFACES
- J. AFFIXED OPENING PROTECTIVE DEVICES HAVE BEEN DESIGNED USING 1/4" STEEL PLATE SELECTED IN ACCORDANCE WITH DEBRIS IMPACT TESTING IN ACCORDANCE WITH ASTM E 1886 AT TEXAS TECH UNIVERSITY (REFER REPORT NUMBER 20131123C - PROTOCOL 4 TESTING PROVIDED ON AN 11 GAGE STEEL PANEL PERFORMED ON 12/13/2013 AND 01/10/2014).
- K. SHELTER DOORS AND WINDOWS SHALL BE RATED FOR A MINIMUM DESIGN PRESSURE OF 246 PSF AND HAVE BEEN TESTED TO MEET THE IMPACT CRITERIA LISTED ABOVE. MANUFACTURER SHALL SUBMIT TESTING REPORTS AND INSTALLATION DETAILS TO ARCHITECT/ENGINEER FOR APPROVAL. THIS INCLUDES ANCHORAGE TYPES AND MINIMUM SETBACK DIMENSIONS FROM CONCRETE FACE.
- L. DOOR UNDERCUT SHALL NOT EXCEED 3/4 INCH.
- M. JOINTS, GAPS OR VOIDS IN THE SHELTER ENVELOPE THAT OPEN INTO THE PROTECTED OCCUPANT AREA INCLUDING MASONRY JOINTS, EXPANSION JOINTS, OPENING JOINTS SHALL BE A MAXIMUM OF 3/8" UNLESS NOTED OTHERWISE.

2. SHELTER DESIGN LOADS

- A. DEAD LOAD: SELF WEIGHT OF MATERIALS, UNLESS NOTED OTHERWISE
- B. ROOF DEAD LOAD:
- 1) CONCRETE DECK (4" NW CONC. ON 2" COMP. 6" TOTAL)......63 PSF
- C. LIVE LOADS: 1) ROOF LIVE LOAD (SHELTER).....100 PSF
- D. SHELTER WIND PARAMETERS 2) IMPORTANCE FACTOR, Iw:.....1.0 3) EXPOSURE CATEGORY:.....C 4) INTERNAL PRESSURE COEFFICIENTS, PARTIALLY ENCLOSED, GCPI...+/-0.55 5) TOPOGRAPHIC FACTOR, KZT.....1.0 6) DIRECTIONALITY FACTOR, KD.....1.0
- E. EXTREME WIND PRESSURES-MAIN WIND FORCE RESISTING SYSTEM:

	1)	-GCPI
		A) WINDWARD WALL:167 PSF IN
		B) LEEWARD WALL:19 PSF OUT
		C) SIDE WALL:6 PSF OUT
	2)	+GCPI
		A) WINDWARD WALL:18 PSF IN
		B) LEEWARD WALL:
		C) SIDE WALL:156 PSF OUT
	3)	ROOF 0'-0" TO 12'-6" FROM LEADING EDGE:179 PSF OUT
	4)	ROOF 12'-6" TO 25'-0" FROM LEADING EDGE:132 PSF OUT
	5)	ROOF BEYOND 25'-0" FROM LEADING EDGE:109 PSF OUT
	6)	R00F:54 PSF IN
•	SN	OW LOADS:
	1)	GOVERNING CODE:ASCE 7-16
	2)	IMPORTANCE FACTOR, IS:
	3)	GROUND SNUW LUAD, Pg:
	4)	
	5)	IHERMAL FACTOR, Ct: 1.0 DODE SLODE FACTOR 0
	6)	RUUF SLOPE FACTOR, US:
	<i>(</i>)	CALCULATED FLAT ROOF SNOW LOAD, PT:
	8)	MINIMUM FLAT ROUF SNUW LUAD, 1° PT:
	9)	RAIN UN SNUW SURCHARGE LUAD (3/8 PER FI > W/SU):
	10)	DRIFT LUADS:ASUE 7-16
	SE	ISMIC DESIGN CRITERIA.
' .	1)	GOVERNING CODE: ASCE 7-16
	2)	I 25
	$\frac{2}{3}$	SOTI SITE CLASSIFICATION C
	4)	0.2 SEC MAPPED SPECTRAL ACCELERATION Ss 0.328
	5)	1 0 SEC MAPPED SPECTRAL ACCELERATION S1 0.083
	6)	SITE COEFFICIENT 0.2 SEC PERIOD Fa:
	7)	SITE COEFFICIENT, 1 0 SEC. PERIOD, FV:
	8)	0.2 SEC_DESIGN_SPECTRAL_ACCELERATION_Sds: 0.284
	9)	1.0 SEC DESIGN SPECTRAL ACCELERATION, Sd1 0.083
	10)	SEISMIC DESIGN CATEGORY:
	11)	SEISMIC PARAMETERS:
	•••	A) SETSMIC ENDRE DESISTING SVSTEM: ODDINADV DEINENDRED CONCRETE SHEAR

- A) SEISMIC FORCE RESISTING SYSTEM: ORDINARY REINFORCED CONCRETE SHEAR WALLS B) RESPONSE MODIFICATION COEFFICIENT, R:.....4.00 C) SYSTEM OVERSTRENGTH FACTOR, 0:.....2.50
- D) DEFLECTION AMPLIFICATION FACTOR, Cd:.....4.00
- E) ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE METHOD. F) SEISMIC RESPONSE COEFFICIENT, Cs:.....0.0888
- G) TOTAL LATERAL BASE SHEAR, V:.....27 KIPS

- 3. QUALITY ASSURANCE PLAN
- A. DETAILED REQUIREMENTS: PER ICC 500, SECTION 107.3.1, DETAILS CONTAINED WITHIN THESE DOCUMENTS EXEMPLIFY THE FOLLOWING CRITERIA.
- 1) ROOF CLADDING, SOFFITS AND ROOF FRAMING CONNECTIONS. A) COMPOSITE ROOF DECK ON STEEL BEAMS DETAILED REQUIREMENTS: 1. COMPOSITE DECK WELDED TO STEEL BEAMS.
 - 2. HEADED STUDS CONNECTED TO STEEL BEAMS (THROUGH DECK) OR TO GIRDERS.
 - 3. MINIMUM 4" CONCRETE THICKNESS OVER COMPOSITE METAL DECK. 4. REINFORCEMENT OF CONCRETE DECK WITH A MINIMUM OF #4 AT 12 INCHES ON
 - CENTER EACH WAY. 5. STEEL BEAM CONNECTIONS TO WALL WITH EMBED PLATE.
 - 6. STEEL BEAM CONNECTION TO BEAM SHEAR TAB PLATE.
 - 7. STEEL BEAM TO INTERIOR COLUMN CONNECTION.
- 2) WALL CONNECTIONS TO ROOF DIAPHRAGM AND FRAMING. A) DOWELS FROM CONCRETE WALL INTO SLAB. B) EMBED PLATES IN CAST-IN-PLACE WALLS TO DECK ANGLES.
- 3) ROOF DIAPHRAGM SYSTEM, INCLUDING CONNECTORS, DRAG STRUTS AND BOUNDARY ELEMENTS. A) CAST-IN-PLACE SLAB WITH MINIMUM #4 AT 12 INCHES ON CENTER AND MINIMUM
- CHORD STEEL OF 1 #5 BARS.
- AND SHEAR WALLS. A) ORDINARY REINFORCED CAST-IN-PLACE CONCRETE SHEAR WALLS
- 5) MAIN WIND FORCE RESISTING SYSTEM CONNECTIONS TO THE FOUNDATION. A) REINFORCING STEEL DOWELS. B) ANCHOR BOLTS.
- C) GROUT.
- 6) FABRICATION AND INSTALLATION OF COMPONENTS AND ASSEMBLIES OF THE SHELTER ENVELOPE REQUIRED TO MEET MISSILE IMPACT TEST REQUIREMENTS OF CHAPTER 3. A) REFER TO ITEMS 1.D, 1.E, AND 1.F INDICATED ABOVE. B) VERIFY DOOR TESTING AND ANCHORAGE REQUIREMENTS.
- C) VERIFY SHUTTER TESTING AND ANCHORAGE REQUIREMENTS. D) VERIFY OVERHEAD DOOR TESTING AND ANCHORAGE REQUIREMENTS.
- E) VERIFY LOUVER TESTING AND ANCHORAGE REQUIREMENTS.
- 7) WALL CLADDING AND WALL CLADDING CONNECTIONS.
- 8) CORROSION RESISTANCE OR PROTECTION OF EXPOSED METAL CONNECTORS PROVIDING LOAD PATH CONTINUITY.
- A) GALVANIZED EMBED PLATES. B) ALL WELDS TO GALVANIZED EMBED PLATES MUST BE PROPERLY PREPPED PRIOR TO WELDING, SLAG REMOVED, WELD CLEANED AND COLD GALVANIZING PAINT ADDED.
- 9) FOUNDATION DESIGN:
- A) SHALLOW CONT. AND SPREAD FOUNDATION SYSTEM WITH SLIDING AND PASSIVE RESISTANCE. B) SLAB-ON-GRADE NOT USED AS DIAPHRAGM AND SUBGRADE DRAG.

B. MAIN WINDFORCE-RESISTING SYSTEMS AND WIND-RESISTING COMPONENTS 1) SHALLOW CONT./SPREAD FOOTING

- 2) CONCRETE BEARING/SHEAR WALLS
- 3) COMPOSITE STEEL BEAMS
- 4) STEEL EMBEDS AND PERIMETER ANGLES
- 5) COMPOSITE METAL DECK REINFORCING STEEL
- 7) STEEL PROTECTION DEVICES
- 8) SHELTER ROOM DOORS, WINDOWS, AND LOUVERS.
- C. REQUIRED SPECIAL INSPECTIONS SHALL BE PROVIDED FOR CONSTRUCTION AND INSTALLATION OF MATERIALS AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION IN ACCORDANCE WITH THE APPLICABLE BUILDING CODE. TYPE AND FREQUENCY ARE IDENTIFIED ON S1.05.
- 1) ANCHORAGE OF ALL OPENING PROTECTIVE DEVICES (DOORS, WINDOWS, SHUTTERS LOUVERS, AND AFFIXED COWLINGS) SHALL BE CONTINUOUSLY OBSERVED BY A SPECIAL INSPECTOR.
- D. INSPECTION OF FABRICATORS: WHERE FABRICATION OF STRUCTURAL LOAD-BEARING AND DEBRIS-IMPACT-RESISTANT COMPONENTS AND ASSEMBLIES IS BEING PERFORMED ON THE PREMISES OF A FABRICATOR SHOP, SPECIAL INSPECTION OF THE FABRICATOR SHALL BE PROVIDED
- 1) EXCEPTION: PREFABRICATED STORM SHELTER COMPONENTS THAT HAVE BEEN INSPECTED AND LABELED BY AN APPROVED AGENCY MEETING THE REQUIREMENTS OF THE APPLICABLE BUILDING CODE.
- E. STRUCTURAL OBSERVATIONS: IN ADDITION TO THE REQUIREMENTS OF THE SPECIAL INSPECTOR, THE OWNER SHALL EMPLOY A LICENSED PROFESSIONAL STRUCTURAL ENGINEER TO INSPECT THE FOLLOWING ELEMENTS OF THE MAIN WIND FORCE RESISTING SYSTEM OF THE SHELTER TO VERIFY CONFORMANCE WITH THE CONTRACT DOCUMENTS AT SIGNIFICANT CONSTRUCTION STAGES AND AT THE COMPLETION OF THE STRUCTURAL SYSTEM. DEFICIENCIES SHALL BE REPORTED IN WRITING TO THE OWNER AND AHJ. AT THE CONCLUSION OF THE WORK, THE REGISTER DESIGN PROFESSIONAL SHALL SUBMIT TO THE AHJ A WRITTEN STATEMENT INDICATING SITE VISITS MADE AND IDENTIFYING ANY OUTSTANDING DEFICIENCIES THAT HAVE NOT BEEN RESOLVED. 1) FOUNDATIONS
- A) REBAR SIZE, SPACING AND LAP LENGTHS AND LOCATIONS 2) WALLS
- A) REBAR SIZE, SPACING, LAP LENGTHS
- B) EMBED SIZE AND LOCATIONS
- 3) R00F A) REBAR SIZE, SPACING, LAP LENGTHS
- B) PERIMETER AND OPENING DECK EDGE INSTALLATION
- C) METAL DECK SIZE AND ATTACHMENT D) HEADED STUD ANCHORS SIZE, SPACING, AND ATTACHMENT
- 4) D00RS A) VERIFY INSTALLATION OF EACH DOOR IS PER MANUFACTURER'S TESTED ASSEMBLY
- B) VERIFY ALL DOOR HARDWARE IS FULLY OPERATIONAL C) VERIFY DOORS HAVE PROPER LABELS INDICATING REQUIRED PRESSURE AND IMPACT RATING.
- 5) PROTECTION DEVICES A) VERIFY INSTALLATION OF EACH STEEL PLATE PROTECTION DEVICES IS PER
- CONTRACT DRAWINGS. B) VERIFY ALL OPENINGS REQUIRING PROTECTION HAVE PROTECTION DEVICE INSTALLED.
- F. CONTRACTOR RESPONSIBILITY: EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION, FABRICATION OR INSTALLATION OF A MAIN WIND FORCE-RESISTING SYSTEM OR ANY COMPONENT LISTED IN THE QUALITY ASSURANCE PLAN SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE AHJ, THE ARCHITECT/ENGINEER, AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT. CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL BE INCLUDED WITH THE FIRST SUBMITTAL/SHOP DRAWING. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL CONTAIN:
- 1) ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE QUALITY ASSURANCE PLAN. 2) ACKNOWLEDGEMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN COMPLIANCE WITH
- THE CONSTRUCTION DOCUMENTS.
- 3) PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION, THE METHOD AND FREQUENCY OF REPORTING AND THE DISTRIBUTION OF REPORTS.
- 4) IDENTIFICATION AND QUALIFICATIONS OF THE PERSON(S) EXERCISING SUCH CONTROL AND THEIR POSITION(S) IN THE ORGANIZATION

4) MAIN WIND FORCE RESISTING SYSTEMS INCLUDING BRACED FRAMES, MOMENT FRAMES

A) CAST-IN-PLACE - VERTICAL AND HORIZONTAL REINFORCING.

- G. PRE-CONSTRUCTION MEETING: TO BE HELD PRIOR TO STARTING CONSTRUCTION AN INCLUDE THE CONSTRUCTION MANAGER, DESIGN TEAM, SPECIAL INSPECTOR, STRUCTURAL OBSERVER. AND THE CONTRACTORS RESPONSIBLE FOR FABRICATION AND INSTALLATION OF THE MAIN WIND FORCE-RESISTING SYSTEM AND COMPONENTS. AT A MINIMUM THE
- MEETING SHALL CONSIST OF THE FOLLOWING ITEMS: 1) REVIEW THE CONSTRUCTION DOCUMENTS AND QUALITY ASSURANCE PLAN.
- 2) REVIEW THE CONTRACTORS STATEMENT OF RESPONSIBILITY. 3) REVIEW THE CONSTRUCTION SCHEDULE AND SEQUENCE OF REQUIRED SPECIAL
- INSPECTIONS. H. SHELTER PENETRATIONS: THE DESIGN TEAM, CONSTRUCTION MANAGER, MEP TRADES PRECAST PROVIDER, AND SPECIAL INSPECTOR SHALL MEET TO IDENTIFY ALL ITEMS
- PENETRATING THE PRECAST SHELTER ENVELOPE. THE METHOD OF INSTALLATION (FIELD CORING VS. FORMING) AND APPROPRIATE PROTECTION DETAILS SHALL BE REVIEWED FOR EACH INSTANCE.
- I. SHELTER SPECIAL INSPECTION 1) POST INSTALLED ANCHORAGE AT THE SHELTER IN CONCRETE SHALL BE CONTINUOUSLY INSPECTED 2) INSTALLATION OF SHELTER DOORS OR AFFIXED COWLINGS SHALL BE CONTINUOUSLY
- INSPECTED 3) WELDING OF SHELTER DOORS OR AFFIXED COWLINGS SHALL BE CONTINUOUSLY
- INSPECTED. 4) HEADED STUD ANCHORS AND THE QUALITY OF THEIR CONNECTION TO THE TOP OF
- BEAM FLANGES
- 5) COMPOSITE METAL DECK SIZE AND ATTACHMENT



POSITIVE PRESSURES ARE DIRECTED INWARD ON THE EXTERIOR SURFACE. NEGATIVE PRESSURES ARE DIRECTED OUTWARD ON THE EXTERIOR SURFACE.

EXTREME WIND COMPONENTS AND CLADDING LOADS											
BUILDING ELEMENT	SPAN (FT)	WIDTH (FT)	AREA (FT ²)	WIND PRESSURE ZONE 1 (PSF)	WIND PRESSURE ZONE 2 (PSF)	WIND PRESSURE ZONE 3 (PSF)	WIND PRESSURE ZONE 4+2 (PSF)	WIND PRESSURE ZONE 5+3 (PSF)	WIND PRESSURE ZONE 4 (PSF)	WIND PRESSURE ZONE 5 (PSF)	
14'-0 3/4" WALL	14.02	4.71	66						-192/180	-212/180	
12'-8" WALL	12.67	4.26	54						-194/181	-215/181	
WINDWARD + LEEWARD PARAPET	3.50	1.17	4				461	585			
ROOF BEAM	43.30	14.40	623	-197/102	-224/102	-224/102					
ROOF DECK	6.67	2.22	15	-209/114	- 307 / 114	- 425 / 114					
STORM DOOR	-	-	10						-209/197	-246/197	





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CIVII

KFC ENGINEERING

STRUCTURAL

SALAS O'BRIEN MECHANICAL / ELECTRICAL



CJC
drawn by
BWB
checked by
SEPTEMBER 2024

MOORE PUBLIC SCHOOLS BOARD OF EDUCATION MOORE, OKLAHOMA



DEMOLITION PACKAGE CHILD CARE FACILITY 201 N. EASTERN AVE

S103

sheet no:

OWNERSHIP USE OF DOCUMENTS:



BAR SIZE LAP #3 #4 #5 #6	P CLASS	LAP LENGTH f'c TOP	I (IN.) PER SI =3500 psi (1	PACING AND ON NORMAL WEIGH	COVER CASE			LENGTH	IS (IN.) PER	CONCRETE STE	RENGTH
BAR SIZE LAP #3 #4 #5 #6	CLASS	f'c TOP	:=3500 psi (N	NORMAL WEIGH	· · ··						
BAR SIZE LAP #3 #4 #5 #6	CLASS	TOP	B 4 B 6		11)			f'c	NORMAL WEIGH	IT)	
BAR SIZE LAP #3 #4 #5 #6	CLASS		RAK2	OTHER	BARS			TOP	BARS	OTHER	BARS
#3 #4 #5 #6	٨	CASE 1	CASE 2	CASE 1	CASE 2	BAR SIZE	LAP CLASS	CASE 1	CASE 2	CASE 1	CASE 2
#3 #4 #5 #6	~	22	32	17	25	#3	А	19	28	15	22
#4 #5 #6	В	28	42	22	32	#5	В	24	36	19	28
#5 #6	А	29	43	22	33	<i>#</i> 1	А	25	37	19	29
#5 #6	В	37	56	29	43	#+	В	32	48	25	37
#6	А	36	54	28	41	#5	А	31	47	24	36
#6	В	47	70	36	54	#5	В	40	60	31	47
#0	А	43	64	33	50	#6	А	37	56	29	43
	В	56	84	43	64	#0	В	48	72	37	56
#7 L	А	63	94	48	72	#7	А	54	81	42	63
#/	В	81	122	63	94		В	70	106	54	81
що	А	72	107	55	82	До	А	62	93	48	71
#0	В	93	139	72	107	#0	В	80	121	62	93
#0	А	81	121	62	93	#0	А	70	105	54	81
#9	В	105	157	81	121	#9	В	91	136	70	105
#10	А	91	136	70	105	#10	А	79	118	61	91
#10	В	118	177	91	136	#10	В	102	153	79	118
<i>Ш</i> 11	А	101	151	78	116	<i>#</i> 11	А	87	131	67	101
#''	В	131	196	101	151	#""	В	113	170	87	131
#14 N		4.0.4		07	170	#14	N /A	105	157	01	101
#18 N	N/A	121	181	93	139	<i>#</i> ' '	177 I	105	157	01	



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KFC ENGINEERING STRUCTURAL

SALAS O'BRIEN MECHANICAL / ELECTRICAL



CJC
drawn by
BWB
checked by
SEPTEMBER 2024
date

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DEMOLITION PACKAGE CHILD CARE FACILITY 201 N. EASTERN AVE.

sheet no:

S104

OWNERSHIP USE OF DOCUMENTS:





1. STATEMENT OF SPECIAL INSPECTIONS NOTES:

- A. THIS STATEMENT OF SPECIAL INSPECTIONS IS INCLUDED AS REQUIRED BY SECTIONS 1704.1 AND 1705 OF THE 2018 INTERNATIONAL BUILDING CODE.
- B. SPECIAL INSPECTIONS SHALL CONFORM TO CHAPTER 17 OF THE 2018 INTERNATIONAL BUILDING CODE AND AS SUMMARIZED HEREIN. GENERAL REQUIREMENTS ARE LISTED BELOW AND IN THE ATTACHED INSPECTION TABLES.
- C. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL SPECIAL INSPECTION REQUIREMENTS. IF CONFLICTING REQUIREMENTS ARE FOUND BETWEEN THIS STATEMENT OF SPECIAL INSPECTIONS AND THE PROJECT SPECIFICATIONS, THE MORE STRINGENT PROVISION SHALL CONTROL UNLESS DIRECTED OTHERWISE IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD.
- D. THE GENERAL CONTRACTOR SHALL EMPLOY ONE OR MORE SPECIAL INSPECTORS FOR THIS PROJECT. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR THE INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.
- E. THE SPECIAL INSPECTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING HIS OR HER COMPETENCE AND RELEVANT EXPERIENCE OR TRAINING. EXPERIENCE OR TRAINING SHALL BE CONSIDERED RELEVANT WHEN THE DOCUMENTED EXPERIENCE OR TRAINING IS RELATED IN COMPLEXITY TO THE SAME TYPE OF SPECIAL INSPECTION ACTIVITIES FOR PROJECTS OF SIMILAR COMPLEXITY AND MATERIAL QUALITIES.
- F. THE SPECIAL INSPECTOR SHALL PROVIDE CONTINUOUS OR PERIODIC INSPECTIONS AS SHOWN IN THE ATTACHED INSPECTION TABLES
- 1) CONTINUOUS INSPECTION: THE SPECIAL INSPECTOR SHALL BE PRESENT AT ALL PROCEDURAL EVENTS.
- 2) PERIODIC INSPECTION: THE SPECIAL INSPECTOR SHALL BE PRESENT AT THE START OF THE WORK AND PERIODIC INSPECTION IS MADE TO VERIFY PROGRESS OF WORK IS IN COMPLIANCE.
- G. INSPECTION OF FABRICATORS: WHERE FABRICATION OF STRUCTURAL LOADBEARING MEMBERS AND ASSEMBLIES IS BEING PERFORMED ON THE PREMISES OF A FABRICATOR'S SHOP, SPECIAL INSPECTION OF THE FABRICATED ITEMS SHALL BE REQUIRED BY SECTION 1704.2.5 OF THE 2018 INTERNATIONAL BUILDING CODE AND AS REQUIRED ELSEWHERE IN THE CODE.
- H. FABRICATOR APPROVAL: SPECIAL INSPECTIONS REQUIRED BY SECTION 1704 ARE NOT REQUIRED WHERE THE WORK IS DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION. APPROVAL SHALL BE BASED UPON REVIEW OF THE FABRICATOR'S WRITTEN PROCEDURAL AND QUALITY CONTROL MANUALS AND PERIODIC AUDITING OF FABRICATION PRACTICES BY AN APPROVED SPECIAL INSPECTION AGENCY. AT COMPLETION OF FABRICATION, THE APPROVED FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE TO THE BUILDING OFFICIAL STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
- I. REPORT REQUIREMENTS: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO THE COMPLETION OF THAT PHASE OF THE WORK. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS AND CORRECTION OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS SHALL BE SUBMITTED AT A POINT IN TIME AGREED UPON PRIOR TO THE START OF WORK BY THE APPLICANT AND THE BUILDING OFFICIAL.
- J. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING REASONABLE NOTICE TO THE SPECIAL INSPECTOR(S) REGARDING WHEN ELEMENTS OF THE PROJECT WILL BE READY FOR EFFICIENT IMPLEMENTATION OF SPECIAL INSPECTIONS.
- K. THE CONTRACTOR SHALL PROVIDE ACCESS TO THE LATEST VERSION OF ALL APPROVED PLANS AND SHOP DRAWINGS FOR THE SPECIAL INSPECTOR'S USE IN PERFORMING SPECIAL INSPECTIONS.
- L. CONTRACTOR SHALL GRANT ACCESS TO OWNER'S SPECIAL INSPECTOR AS IS REASONABLY NECESSARY FOR THE PROPER PERFORMANCE OF SPECIAL INSPECTIONS.
- M. SPECIAL INSPECTIONS DO NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY TO COMPLY WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONSTRUCTION MEANS AND METHODS AND JOBSITE SAFETY ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.

	F	REQUIRED VERIFICATION AND IN	SPECTION OF S	STEEL CONST	RUCTION
			FREQUENCY O		
	VE	RIFICATION AND INSPECTION	CONTINUOUS (inspect each joint/member)	PERIODIC (inspect random	REFERENCED STANDARD
1.	Materia	al verification of high-strength bolts, nuts an	d washers:	Jointamenibers	
	a.	Identification markings to conform to ASTM standards specified in the approved construction documents.	-	QC and QA	AISC 360, Section A3.3 and applicable ASTM material standards
	b.	Manufacturer's certifications available for fastener materials.	QA	QC	
	C.	Fasteners marked in accordance with ASTM requirements.	-	QC and QA	
	d.	Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane).	-	QC and QA	
	e.	Proper bolting procedure selected for joint detail.	-	QC and QA	AISC 360, Table N5 6-1
	f.	Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements.	-	QC and QA	
	g.	Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used.	QC	QA	
	h.	Proper storage provided for bolts, nuts, washers and other fastener components.	-	QC and QA	
2.	Inspec	tion of high-strength bolting:			
	 Fo pro pri wit 	r bolts requiring pretensioning, the special inspected ocedures; determine that all plies of connected r or to pretentioning and monitor the installation of h the RCSC Specification, progressing system r joints required to be tightened only to the spuce	ector shall observe the naterials have been of of bolts to verify that fa atically from the most	e preinstallation test drawn together and p asteners are pretens t rigid point to the fre	ing and calibration properly snugged sioned in accordance se edges.
	col	nnected materials have been drawn together an	id properly snugged.		
	a. Snu	ig-tight joints.	-	QC and QA	
	b. Pre turn or c inst	tensioned and slip-critical joints using h-of-nut with matchmarking, twist-off bolt lirect tension indicator methods of allation.	-	QC and QA	AISC 360, Section M2.5
	VERIFICATION AND INSPECTION Material verification of high-strength bolts, nut a. Identification markings to conform to ASTM standards specified in the approved construction documents. b. Manufacturer's certifications available for fastener materials. c. Fasteners marked in accordance with ASTM requirements. d. Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane). joint detail. Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements. g. Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used. h. Proper storage provided for bolts, nuts, washers and other fastener components. Inspection of high-strength bolting: Procentioning and monitor the installati with the RCSC Specification, progressing systemetric to pretentioning and monitor the installation. e. For joints required to be tightened only to the connected materials have been drawn together and the RCSC Specification progressing systemetric the installation. e. Pretensioned and slip-critical joints using turm-of-nut with matchmarking, twist-off bolt or installation. f. Portunt without matchmarking the approved construction documents. g. For structural steel, identification markings to conform to ASTM s	QC and QA	-		
	d. Fas plac are	tener assemblies, of suitable condition, ced in all holes and washers (if required) positioned as required.	-	QC and QA	AISC 360, Table N5.6-2
	e. Fas wre	tener component not turned by the nch prevented from rotating.	-	QC and QA	
	f. Doo con	cument acceptance or rejection of bolted nections.	QC and QA	-	AISC 360, Table N5.6-3
3.	Materia	al verification of structural steel and cold-for	med steel deck U.N	.0.:	
	a. For to c	structural steel, identification markings onform to AISC 360.	-	QC and QA	AISC 360, Section M1
	b. For con app	other steel, identification markings to form to ASTM standards specified in the roved construction documents.	-	QC and QA	Applicable ASTM material standards
4.	Inspec	tion prior to welding:			
	a. Veri mat the	fy identification markings of weld filler erials conform to AWS specification in approved construction documents.	-	QC and QA	AISC 360, Section A3 .5 and applicable AWS AS documents
	b. Wel avai	ding procedure specifications are lable.	QC and QA	-	
	c. Mar con	ufacturer certifications for welding sumables available.	QC and QA	-	
	 a. Identification markings to conform to ASTM standards specified in the approved construction documents. b. Manufacturer's certifications available for fastener materials. c. Fasteners marked in accordance with ASTM requirements. d. Proper fasteners selected for the point detail (grade, type, bolt length if threads are to be excluded from shear plane). e. Proper bolting procedure selected for joint detail. f. Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements. g. Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used. h. Proper storage provided for bolts, nuts, washers and other fastener components. Inspection of high-strength bolting: For bolts requiring pretensioning, the special in procedures; determine that all plies of connect prior to pretentioning and monitor the installative with the RCSC Specification, progressing syst For joints required to be tightened only to the sc connected materials have been drawn together a. Snug-tight joints. D. Pretensioned and slip-critical joints using trum-of-nut with matchmarking, twist-off bolt or direct tension indicator methods of installation. f. Pastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required. Fastener component nt turned by the wrench prevented from rotating. Document acceptance or rejection of bolted connections. Material verification of structural steel and cold a. For structural steel, identification markings to conform to ASIS 360. For other steel, identification markings to conform to ASIS 360. For other steel, identification markings to conform to ASIS 360. For other steel, identification mar	-	QC and QA	AISC 360, Table N5.4-1	
	VERIFICATION AND INSPECTION Material verification of high-strength bolts, nut: a. Identification markings to conform to ASTM standards specified in the approved construction documents. b. Manufacturer's certifications available for fastener materials. c. Fasteners marked in accordance with ASTM requirements. d. Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane). e. Proper bolting procedure selected for joint detail. f. Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements. g. Pre-installation personnel observed and documented for fastener assemblies and methods used. h. Proper storage provided for bolts, nuts, washers and other fastener components. Inspection of high-strength bolting: For joints required to be tightened only to the store onecoder materials have been drawn togethe asong-tight joints. b. Pretensional asilp-critical joints using turn-of-nut with matchmarking, wis-toff bolt or direct tension indicator methods of installation. c. Pretensioned and slip-critical joints using turn-of-nut with matchmarking, wis-toff bolt or direct tension indicator methods of installation. d. Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are pop		-	QC and QA	
	f. Con	figuration and finish of access holes	-	QC and QA	
	g. Che	ck welding equipment.	-	QC	

	REQUIRED VERIFICATION AND IN	SPECTION OF	STEEL CONS	TRUCTION	
VERIFICATION AND INSPECTION		FREQUENCY C	FREQUENCY OF INSPECTION		
		CONTINUOUS (inspect each joint/member)	PERIODIC (inspect random joint/members	REFERENCED STANDARD	
5. Inspe	ction of welding:				
a. A	ISC 360 requirements for welding structural stee	əl			
1)	Use of qualified welders	-	QC and QA		
2)	Packaging and exposure control and handling of welding consumables.	-	QC and QA		
3)	Welding over cracked tack welds	-	QC and QA		
4)	Environmental conditions including but not limited to precipitation, temperature and wind.	-	QC and QA	AISC 360, Table N5.4-2	
5)	Verify settings on equipment, travel speeds, elected materials, shielding gas type/floow rate, preheating interpass temperatures and proper position meets WPS standards.	-	QC and QA	During Welding	
6)	Verify welding techniques for interpass, final cleaning, profile limitations, and quality requirements.	-	QC and QA		
7)	Welds are cleaned and painted where required.	-	QC and QA		
8)	Verify size, length and locations of welds.	QC and QA	-		
9)	Visually verify welds for crack prohibition, weld/base-metal fusion, crater cross section, weld profiles, weld size, undercutting, and porosity.	QC and QA	-	AISC 360, Table N5.4-2 After Welding	
10)	Arc strikes, k-area cracks within 3" of weld, removal of backing, and repair activities as applicable.	QC and QA	-	Alter Weiding	
11)	Documentation of acceptance or rejection of welded joint or member.	QC and QA	-		
b. A	merican Welding Society requirements for struct	tural steel and cold-fo	ormed steel deck:		
1)	Complete and partial joint penetration groove welds.	x	-		
2)	Multipass fillet welds.	X	-		
3)	Single-pass fillet welds > 5/ 16"	X	-	AWS D1.1	
4)	Plug and slot welds.	x	-		
5)	Single-pass fillet welds ≤ 5/ 16"	-	x		
6)	Floor and roof deck welds.	-	x	AWS D1.3	
7)	Welded studs & deformed bar anchors (DBA's).	-	x	AWS D1.1	
8)	Welded sheet steel for cold-formed steel members	-	x	AWS D1.3	
9)	Welding of stairs & railing systems	-	X	AWS D1.1	
c. R	einforcing steel:				
1)	Verification of weldability of reinforcing steel other than ASTM A 706.	-	x		
2)	Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special structural walls of concrete and shear reinforcement.	x	-	AWS D1.4, ACI 318: Section 3.5.2	
3)	Shear reinforcement.	x	-		
4)	Other reinforcing steel.	-	X		
6. Inspe	ction of steel elements of composite constru	ction prior to concre	ete placement:		
a. P	lacement and installation of steel deck.	QC and QA	-	AISC 360,	
b. P	lacement and installation of steel HSA.	QC and QA	-	AISC 360,	
c. D s'	ocumentation of acceptance or rejection of teel elements.	QC and QA	-	AISC 360, Table N6.1	

R	EQUIRED SPECIAL INSPECTIO	TABLE 1705 DNS AND TEST	.3 IS OF CONCE	RETE CONSTR	UCTION	
	ТҮРЕ	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD	IBC REFERENCE	
Ins pre	pect reinforcement, including stressing tendon, and verify placement.	-	x	ACI 318 Ch. 20, 25.2, 25.3, 26.6.1- 26.6.3	1908.4	
Re	nforcing bar welding:					
a)	Verify weldability of reinforcing bars other than ASTM A706;	-	x	AWS D1.4		
b)	Inspect single-pass fillet welds, maximum 5/16"; and	-	x	ACI 318: 26.6.4	-	
c)	Inspect all other welds.	Х	-			
Ins	pect anchors cast in concrete.	-	Х	ACI 318:17.8.2	-	
Ins cor	pect anchors post-installed in hardened crete members.	-	-			
a)	Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	х	-	ACI 318: 17.8.2.4	-	
b)	Mechanical anchors and adhesive anchors not defined in 4.a.	-	х	ACI 318: 17.8.2		
Vei	ify use of required design mix.	-	x	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3	
Prie spe and tem	or to concrete placement, fabricate ecimens for strength tests, perform slump d air content tests, and determine the aperature of the concrete.	х	-	ASTM C 172 ASTM C 31 ACI 318: 26.5, 26.12	1908.10	
Ins for	pect concrete and shotcrete placement proper application techniques.	x	-	ACI 318: 26.5	1908.6, 1908.7, 1908.8	
Vei ten	ify maintenance of specified curing sperature and techniques.	-	Х	ACI 318: 26.5.3-26.5.5	1908.9	
Ins	pect prestressed concrete for:					
a)	Application of prestressing forces; and	x	-			
b)	Grouting of bonded prestressing tendons.	x	-	ACI 318: 26.10	-	
) Ins me	spect erection of precast concrete mbers.	-	х	ACI 318: Ch. 26.9	-	
) Ve stre cor forr	rify in-situ concrete strength, prior to essing of tendons in post-tensioned acrete and prior to removal of shores and ns from beams and structural slabs.	-	x	ACI 318: 26.11.2	-	
) Ins dim forr	spect formwork for shape, location and lensions of the concrete member being ned.	-	x	ACI 318: 26.11.1.2(b)	-	

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FOUNDATION PLAN NOTES:

- GENERAL NOTES.
- PRACTICE".



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1. FOUNDATION AND SLAB SUBGRADE SHALL BE PREPARED AS OUTLINED IN THE STRUCTURAL

2. REFERENCE ELEVATION OF 100'-0" EQUALS DATUM FINISHED FLOOR ELEVATION OF 1246.09' FEET FOR THE NEW AND EXISTING BUILDING.MATCH EXISTING ELEVATION.

3. EXCEPT WHERE SHOWN OTHERWISE, SLABS-ON-GRADE SHALL BE 4" THICK CONCRETE REINFORCED WITH #3 BARS AT 15" ON CENTER EACH WAY OVER A 15 MIL VAPOR RETARDER OVER A 4" AGGREGATE BASE COURSE. REINFORCING BARS SHALL BE PLACED 1%" CLEAR FROM TOP OF SLAB USING CHAIRS OR SLAB BOLSTERS COMPLYING WITH CRSI'S "MANUAL OF STANDARD

4. SLABS-ON-GRADE SHALL BE WATER CURED FOR A MINIMUM OF 7 DAYS BY PONDING, SPRAYING, SPRINKLING OR BY USE OF SATURATED COVERINGS. THE USE OF CURING COMPOUNDS FOR SLABS-ON-GRADE IS PROHIBITED.

5. SAWED JOINTS (SJ) AND REQUIRED CONSTRUCTION JOINTS (CJ) ARE SHOWN ON THE DRAWINGS. AT THE CONTRACTOR'S OPTION, ADDITIONAL CONSTRUCTION JOINTS MAY BE PLACED AT LOCATIONS INDICATED TO BE SAWED JOINTS.

6.// INDICATES (2)#4 BARSx4'-0" TO BE PLACED IN SLAB-ON-GRADE AT ALL RE-ENTRANT CORNERS. RE-ENTRANT CORNERS ARE DEFINED AS INTERIOR CORNERS WHERE JOINTS DO NOT OCCUR IN BOTH DIRECTIONS. SIMILAR BARS SHALL BE PLACED AT ANY DISCONTINUOUS ENDS OF SAWED JOINTS OR CONSTRUCTION JOINTS.

7. REFER MECHANICAL FOR FLOOR DRAIN (F.D.) INFORMATION.

FOUNDATION PLAN LEGEND:









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EXIST. FOOTING — TO REMAIN, TYP.

EXIST. COL. TO — BE DEMOLISHED, TYP.





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- DETAILS.

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SHELTER ROOF FRAMING PLAN NOTES: 1. ALL ELEVATIONS ARE REFERENCED FROM FINISHED FLOOR DATUM OF 100'-0". REFER GENERAL NOTES FOR ACTUAL ELEVATION.

2. [10] INDICATES THE NUMBER OF 3/4"øx5" HEADED STUDS THAT ARE REQUIRED. AT BEAMS, HEADED STUDS ARE UNIFORMLY SPACED ALONG BEAM LENGTH. AT GIRDERS, STUDS ARE UNIFORMLY SPACED BETWEEN INTERSECTING TRANSVERSE BEAMS. LENGTH OF STUD IS THE FINAL INSTALLED LENGTH AFTER WELDING. SELECT LENGTH OF STUD PRIOR TO WELDING BASED ON BURN THROUGH CONDITIONS, I.E., THROUGH METAL DECK OR DIRECTLY TO STEEL 3. AT COMPOSITE BEAMS, PLACE HEADED STUDS IN THE "STRONG" POSITION. REFER TYPICAL

4. PROVIDE GIRDER FILLERS TO PROVIDE AT LEAST A 6" HAUNCH DIMENSION AT GIRDERS. REFER TYPICAL DETAILS.

5. PROVIDE 16 GAGE SHEET METAL CLOSURES AT COLUMN TO BEAM OR GIRDER CONNECTIONS PRIOR TO CONCRETE PLACEMENT

6. PROVIDE [2]-#4x4'-0" DIAGONAL BARS AT ALL RE ENTRANT CORNERS. 7. ALL CONCRETE SLABS SHALL BE WET CURED FOR A MINIMUM OF 7 DAYS. USE OF SPRAY-ON OR ROLL-ON CURING COMPOUND IS PROHIBITED. 8. PROVIDE CONTINUOUS BUTT SPLICE WELDING IN FIELD AT DECK ANGLES.

9. FOR COLUMN SIZES, REFER TO FOUNDATION PLAN

10. ALL ROOF OPENINGS FOR MECHANICAL ROOF TOP UNITS ARE APPROXIMATELY LOCATED. EXACT SIZE AND LOCATIONS SHALL BE COORDINATED WITH THE SUCCESSFUL MECHANICAL CONTRACTOR. ALL ROOF/WALL OPENINGS SHALL BE SUPPORTED WITH TYPICAL ANGLE FRAME AND PENETRATION/SHROUD DETAILS.

a.EF = EXHAUST FAN b.RH = ROOF HOOD

11. DETAILING FOR CAST IN PLACE CONSTRUCTION ALLOWS FOR SHEAR WALLS AND COLUMNS TO BE PLACED VERTICALLY BEFORE PLACING ADDITIONAL FRAMING. THIS WILL REQUIRE TEMPORARY BRACING OF VERTICAL 10" WALLS UNTIL ROOF LEVELS ARE PLACED. COORDINATE BRACING OF WALLS WITH ARCHITECT IF BRACING TO EXPOSED STRUCTURE.

12. MECHANICAL OPENINGS SHALL NOT OCCUR WITHIN 24" OF EMBEDDED STUD ANCHORS.

3 SECTION S501 SCALE: 3/4"=1'-0"

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