- THE FOLLOWING DOCUMENTS ARE THE PROPERTY OF TYNDALL ENGINEERING & DESIGN, P.A. FOR USE SOLELY FOR THIS PROJECT AND SHALL NOT BE REPRODUCED, COPIED, OR USED FOR OTHER PURPOSES WITHOUT WRITTEN PERMISSION FROM TYNDALL ENGINEERING & DESIGN, P.A.
- THE DESIGN PROFESSIONAL WHOSE SEAL APPEARS ON THESE DRAWINGS IS THE STRUCTURAL ENGINEER OF RECORD(SER) FOR THIS PROJECT. THE SER BEARS THE RESPONSIBILITY FOR THE PRIMARY STRUCTURAL ELEMENTS AND THE PERFORMANCE OF THIS STRUCTURE. NO OTHER PARTY MAY REVISE, ALTER, OR DELETE THESE CONSTRUCTION DOCUMENTS WITHOUT WRITTEN PERMISSION FROM TYNDALL ENGINEERING & DESIGN, P.A. OR THE SER. FOR THE PURPOSES OF THESE CONSTRUCTION DOCUMENTS THE SER AND TYNDALL ENGINEERING & DESIGN, P.A. SHALL BE CONSIDERED THE SAME ENTITY.
- THIS STRUCTURE IS ONLY STABLE IN ITS COMPLETED FORM. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TEMPORARY BRACING DURING CONSTRUCTION TO STABILIZE THE STRUCTURE. TEMPORARY SHORING AND BRACING METHODS ARE NOT THE RESPONSIBILITY OF TYNDALL ENGINEERING & DESIGN, P.A. AND ARE BEYOND THE SCOPE OF THESE DRAWINGS.
- . THE SER IS NOT RESPONSIBLE FOR CONSTRUCTION SEQUENCES, METHODS, OR TECHNIQUES IN CONNECTION WITH THE CONSTRUCTION OF THIS STRUCTURE. THE SER WILL NOT BE HELD RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CONFORM TO THE CONSTRUCTION DOCUMENTS, SHOULD ANY
- . ANY STRUCTURAL ELEMENTS OR DETAILS NOT FULLY DEVELOPED ON THE CONSTRUCTION DRAWINGS SHALL BE COMPLETED UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. THESE SHOP DRAWINGS SHALL BE SUBMITTED TO TYNDALL ENGINEERING & DESIGN, P.A. FOR REVIEW BEFORE ANY CONSTRUCTION BEGINS. SEE THE "SUBMITTALS" SECTION OF THESE SPECIFICATIONS.
- 6. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH AND COORDINATED WITH THE ARCHITECTURAL, MECHANICAL, PLUMBING, ELECTRICAL, AND CIVIL DRAWINGS. THIS COORDINATION IS NOT THE RESPONSIBILITY OF THE SER. SHOULD ANY DISCREPANCIES BECOME APPARENT THE CONTRACTOR SHALL NOTIFY TYNDALL ENGINEERING & DESIGN, P.A. BEFORE ANY CONSTRUCTION BEGINS.
- VERIFICATION OF ASSUMED FIELD CONDITIONS IS NOT THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER OF RECORD. THE CONTRACTOR SHALL VERIFY THE FIELD CONDITIONS FOR ACCURACY AND REPORT ANY DISCREPANCIES TO TYNDALL ENGINEERING & DESIGN, P.A. BEFORE CONSTRUCTION BEGINS.
- 3. THE STRUCTURAL ENGINEER OF RECORD IS NOT RESPONSIBLE FOR ANY SECONDARY STRUCTURAL ELEMENTS OR NON-STRUCTURAL ELEMENTS, EXCEPT FOR THE ELEMENTS SPECIFICALLY NOTED ON THE STRUCTURAL DRAWINGS.
- THIS STRUCTURE AND ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE SECTIONS OF THE INTERNATIONAL BUILDING CODE AND ANY LOCAL LAWS WHERE THE STRUCTURE IS TO BE CONSTRUCTED.

SCOPE OF STRUCTURAL ENGINEERING SERVICES

TYNDALL ENGINEERING & DESIGN, P.A. HAS PERFORMED THE STRUCTURAL DESIGN AND PREPARED THE STRUCTURAL WORKING DRAWINGS FOR THIS PROJECT. "CONSTRUCTION REVIEW" SERVICES ARE NOT ALSO A PART OF OUR CONTRACT.

PORTIONS OF THE STRUCTURAL DESIGN (AS NOTED ON THE DRAWINGS) ARE THE RESPONSIBILITY OF THE MATERIAL SUPPLIERS.

- THE SER IS RESPONSIBLE FOR THE DESIGN OF THE PRIMARY STRUCTURAL SYSTEM, EXCEPT FOR THE COMPONENTS NOTED ABOVE. THE STRUCTURAL ENGINEER IS NOT RESPONSIBLE FOR ANY SECONDARY STRUCTURAL AND NON-STRUCTURAL SYSTEMS NOT SHOWN ON THE STRUCTURAL PLANS.
- THE SER HAS NOT DONE A SUBSURFACE INVESTIGATION. THE FOUNDATION DESIGN IS BASED UPON AN ASSUMED ALLOWABLE BEARING PRESSURE AS SHOWN IN THE "FOUNDATION" STRUCTURAL NOTES. THIS ALLOWABLE BEARING PRESSURE MUST BE VERIFIED BY THE CONTRACTOR OR OWNER. IF PROBLEMS ARE ENCOUNTERED, A SOILS ENGINEER SHALL BE RETAINED TO EVALUATE THE CONDITIONS AND RECOMMEND THE APPROPRIATE FOUNDATION SYSTEM.
- THE SER IS NOT RESPONSIBLE FOR, AND WILL NOT HAVE CONTROL OF, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, OR FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE CONSTRUCTION WORK; NOR WILL THE SER BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE CONSTRUCTION WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- FIELD MEASUREMENTS AND THE VERIFICATION OF FIELD DIMENSIONS ARE NOT PART OF TYNDALL ENGINEERING & DESIGN, P.A.'S RESPONSIBILITY. THE CONTRACTOR MUST CHECK ALL (ASSUMED) EXISTING CONDITIONS SHOWN ON THESE DRAWINGS FOR ACCURACY AND NOTIFY THE STRUCTURAL ENGINEER OF ANY
- THE SER HAS ANALYZED THE NEW STRUCTURAL SLAB CONSTRUCTION FOR CONCENTRATED LOADS DUE TO VEHICLES. THE SLAB IS DESIGNED FOR UNIFORM LOADING AS NOTED IN THE "DESIGN LOADS" PORTION OF THE STRUCTURAL NOTES AND CONCENTRATED LOADS IN ACCORDANCE WITH REQUIREMENTS OF THE BUILDING
- THE SER HAS NOT DESIGNED THE STRUCTURE TO SUPPORT DYNAMIC LOADS FROM VIBRATING MACHINERY OR EQUIPMENT. ALL VIBRATING EQUIPMENT AND MACHINERY MUST BE ISOLATED FROM THE STRUCTURE.
- THE SER HAS NOT PREFORMED AN ANALYSIS OF THE EXISTING BUILDING STRUCTURE ADJACENT TO THE NEW STRUCTURE. THE NEW BUILDING IS DESIGNED AS AN INDEPENDENT SELF-SUPPORTING STRUCTURE.

- SHOP DRAWINGS AND SUBMITTALS SHALL BE SUBMITTED TO TYNDALL ENGINEERING & DESIGN, P.A. FOR REVIEW BEFORE ANY CONSTRUCTION BEGINS. THESE SUBMITTALS WILL BE REVIEWED FOR OVERALL COMPLIANCE AS IT RELATES TO THE STRUCTURAL DESIGN OF THIS PROJECT. VERIFICATION OF THE SHOP DRAWINGS FOR DIMENSIONS, OR FOR ACTUAL FIELD CONDITIONS IS NOT THE RESPONSIBILITY OF TYNDALL ENGINEER & DESIGN, P.A.
- ALLOW ENOUGH TIME FOR SUBMITTAL REVIEW, INCLUDING TIME FOR RESUBMITTALS. TIME FOR REVIEW SHALL COMMENCE UPON TYNDALL ENGINEERING & DESIGN'S RECEIPT OF SUBMITTAL. ALLOW 15 DAYS FOR INITIAL REVIEW OF EACH SUBMITTAL AND 15 DAYS FOR REVIEW OF EACH RESUBMITTAL.
- CONTRACTOR SHALL HIGHLIGHT, ENCIRCLE, OR OTHERWISE SPECIFICALLY IDENTIFY DEVIATIONS FROM THE CONTRACT DOCUMENTS ON SUBMITTALS.
- CONTRACTOR SHALL REVIEW EACH SUBMITTAL AND CHECK FOR COORDINATION WITH OTHER TRADES AND FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. NOTE CORRECTIONS AND FIELD DIMENSIONS. MARK WITH APPROVAL STAMP BEFORE SUBMITTING TO TYNDALL ENGINEERING & DESIGN, P.A. STAMP SHALL INCLUDE NAME OF REVIEWER, DATE OF CONTRACTOR'S APPROVAL, AND STATEMENT CERTIFYING THAT SUBMITTAL HAS BEEN REVIEWED, CHECKED, AND APPROVED FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS.
- WHERE PROFESSIONAL DESIGN SERVICE OR CERTIFICATIONS BY A DESIGN PROFESSIONAL ARE SPECIFICALLY REQUIRED OF THE CONTRACTOR BY THE CONTRACT DOCUMENTS, PROVIDE PRODUCTS AND SYSTEMS COMPLYING WITH SPECIFIC PERFORMANCE AND DESIGN CRITERIA INDICATED. IN ADDITION, SUBMIT COPIES OF A STATEMENT, SIGNED AND SEALED BY THE RESPONSIBLE DESIGN PROFESSIONAL, FOR EACH PRODUCT AND SYSTEM SPECIFICALLY ASSIGNED TO THE CONTRACTOR TO BE DESIGNED OR CERTIFIED BY A DESIGN PROFESSIONAL.
- . REVIEW OF SHOP DRAWINGS BY THE ENGINEER IS LIMITED TO COMPLIANCE OF THE COMPLETED STRUCTURE WITH THE DESIGN CONCEPT AND INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS, QUANTITIES, PERFORMANCE, SAFETY, COORDINATION WITH OTHER WORKS, AND ALL OTHER REQUIREMENTS OF THE CONTRACT DOCUMENTS. REVIEW DOES NOT AUTHORIZE CHANGES TO THE CONTRACT.
- PROVIDE THE FOLLOWING SUBMITTALS FOR THIS PROJECT:
 - i. IN ADDITION TO THE FOLLOWING, COMPLY WITH REQUIREMENTS IN ACI 301
 - ii. PRODUCT DATA FOR EACH TYPE OF PRODUCT INDICATED iii. DESIGN MIXTURES FOR EACH CONCRETE MIXTURE
 - iv. REBAR SHOP DRAWINGS

a. CAST-IN-PLACE CONCRETE

v. SHOP DRAWINGS FOR THE DESIGN, ERECTION, AND REMOVAL OF FORMWORK, SHORES AND RESHORES PREPARED BY OR UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER. SHOP DRAWINGS, INCLUDING STRUCTURAL ANALYSIS DATA, SIGNED AND SEALED BY THE QUALIFIED PROFESSIONAL ENGINEER RESPONSIBLE FOR THEIR PREPARATION. COMPLY WITH REQUIREMENTS IN "ACI MANUAL OF CONCRETE PRACTICE".

- b. STRUCTURAL STEFL
 - i. PRODUCT DATA FOR EACH TYPE OF PRODUCT INDICATED
 - ii. SHOP DRAWINGS: SHOW FABRICATION OF STRUCTURAL STEEL COMPONENTS iii. WELDING CERTIFICATES
 - c. UNIT MASONRY ASSEMBLIES
 - i. PRODUCT DATA FOR EACH TYPE OF PRODUCT INDICATED
 - d. COLD-FORMED METAL FRAMING
 - i. PRODUCT DATA FOR EACH TYPE OF COLD-FORMED METAL FRAMING PRODUCT AND ACCESSORY
 - ii. SHOP DRAWINGS FOR TRUSSES PREPARED BY OR UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER. SHOW FABRICATION AND INSTALLATION DETAILS FOR TRUSSES. INCLUDING LOCATION, PITCH, SPAN, CAMBER, CONFIGURATION, SPACING, AND SPLICE DETAILS AND BEARING DETAILS FOR EACH TYPE OF TRUSS REQUIRED. ALSO, INDICATE LOCATIONS OF PERMANENT BRACING REQUIRED TO PREVENT BUCKLING OF INDIVIDUAL TRUSS MEMBERS DUE TO DESIGN LOADS.
 - iii. PRODUCT DATA FOR EACH TYPE OF PRODUCT INDICATED.

- 1. THE SCOPE OF SERVICES FOR THIS PROJECT PROVIDED BY TYNDALL ENGINEERING & DESIGN, P.A. BEGINS FROM THE BOTTOM OF THE FOUNDATION ELEMENTS. SUBSURFACE INVESTIGATIONS ARE BEYOND THE SCOPE OF THE STRUCTURAL SERVICES PROVIDED. THE FOUNDATION SYSTEM SHOWN ON THESE DRAWINGS ARE BASED UPON THE ASSUMED SOIL PROPERTIES LISTED BELOW. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR, OWNER OR OWNER'S AGENT TO CONTACT TYNDALL ENGINEERING & DESIGN, P.A. IF ANY ADVERSE SOIL CONDITIONS ARE ENCOUNTERED DURING CONSTRUCTION. VERIFICATION OF THIS ASSUMED VALUE IS ALSO THE RESPONSIBILITY OF THE CONTRACTOR, OWNER OR
 - a. ALLOWABLE SOIL BEARING PRESSURE 2000 PSF 100 PCI b. SUB GRADE MODULUS (k) 0.30 c. ULTIMATE FRICTION COEFFICIENT BETWEEN CONCRETE FOUNDATIONS AND SOIL 120 PCF d. UNIT WEIGHT OF SOIL e. AT REST EARTH PRESSURE, Ko 60 PSF/FT
- 2. THE BOTTOM OF ALL FOOTINGS SHALL EXTEND BELOW THE FROST LINE FOR THE REGION IN WHICH THE STRUCTURE IS TO BE CONSTRUCTED. HOWEVER, THE TOP OF FOOTING SHALL BE A MINIMUM OF 12" BELOW
- 3. EXCAVATE TO INDICATED ELEVATIONS AND DIMENSIONS WITHIN A TOLERANCE OF +/- 1". IF APPLICABLE EXTEND EXCAVATIONS A SUFFICIENT DISTANCE FROM STRUCTURES FOR PLACING AND REMOVING CONCRETE FORMWORK, FOR INSTALLING SERVICES AND OTHER CONSTRUCTION, AND FOR INSPECTIONS DO NOT DISTURB BOTTOM OF EXCAVATION. EXCAVATE BY HAND TO FINAL GRADE JUST BEFORE PLACING CONCRETE REINFORCEMENT. TRIM BOTTOMS TO REQUIRED LINES AND GRADES TO LEAVE SOLID BASE TO
- 4. ANY FILL SHALL BE PLACED UNDER THE DIRECTION OR RECOMMENDATION OF A LICENSED PROFESSIONAL ENGINEER USING SUITABLE SOILS OR ENGINEERED FILL. PLOW, SCARIFY, BENCH, OR BREAK UP SLOPED SURFACES STEEPER THAN 1 VERTICAL TO 4 HORIZONTAL SO FILL MATERIAL WILL BOND WITH EXISTING MATERIAL. PLACE BACKFILL AND FILL SOIL MATERIALS IN LAYERS NOT MORE THAN 8" IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT, AND NOT MORE THAN 4" IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND-OPERATED TAMPERS. COMPACT SOIL MATERIALS TO NOT LESS THAN 95% OF MAXIMUM DRY UNIT WEIGHT ACCORDING TO ASTM D698, UNLESS A HIGHER PERCENTAGE IS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. UNDER SLABS-ON-GRADE AND STEPS, SCARIFY AND RECOMPACT TOP 12" OF EXISTING SUBGRADE AND EACH LAYER OF BACKFILL OR FILL SOIL AT 98%.
- 5. IT IS STRONGLY RECOMMENDED THAT A QUALIFIED INDEPENDENT GEOTECHNICAL ENGINEERING TESTING AGENCY INSPECT AND TEST SUBGRADES AND EACH FILL OR BACKFILL LAYER, AND AT FOOTING SUBGRADES PERFORM TESTING TO VERIFY DESIGN BEARING CAPACITIES.
- 6. EXCAVATION FOR FOOTINGS SHALL BE LINED TEMPORARILY WITH A 6 MIL POLYETHYLENE IF PLACEMENT OF CONCRETE DOES NOT OCCUR WITHIN 24 HOURS OF EXCAVATION.
- 7. CONCRETE SHALL NOT BE POURED AGAINST ANY SUB GRADE CONTAINING WATER, ICE, FROST, OR LOOSE
- CONCRETE FLOOR AND SLABS
- REQUIREMENTS NOTED IN THIS SECTION APPLY TO CONCRETE SLABS ON GRADE AND ELEVATED FLOOR SLABS. REFER TO THE CONCRETE SECTION OF THESE SPECIFICATIONS FOR FURTHER REQUIREMENTS.
- 2. CONCRETE SLABS ON GRADE SHALL BE CONSTRUCTED IN ACCORDANCE WITH ACI 302.1R-04 "GUIDE FOR
- CONCRETE FLOOR AND SLAB CONSTRUCTION". 3. SLABS ON GRADE DEPEND ON THE INTEGRITY OF BOTH THE SLAB AND FILL SOIL SUPPORT. PROVIDE SATISFACTORY SOIL MATERIALS UNDER SLABS ON GRADE ACCORDING TO GEOTECHNICAL ENGINEER'S WRITTEN RECOMMENDATIONS. PROOF-ROLL SUBGRADE BELOW THE BUILDING SLABS WITH HEAVY
- 4. COMPACT SOIL MATERIALS AND SUBGRADE TO NOT LESS THAN 98% OF MAXIMUM DRY UNIT WEIGHT. UNLESS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER.

PNEUMATIC-TIRED EQUIPMENT TO IDENTIFY SOFT POCKETS AND AREAS OF EXCESS YIELDING.

- 5. PROVIDE PLASTIC VAPOR RETARDER OVER THE SUBGRADE OR SUBBASE BUT UNDER THE BASE COURSE (GRANULAR FILL). VAPOR RETARDER SHALL CONFORM TO ASTM E1745, CLASS C, OR POLYETHYLENE SHEET, ASTM D4397, NOT LESS THAN 6 MILS THICK. VAPOR RETARDER MAY BE OMITTED ONLY WHEN STATED IN THE GEOTECHNICAL ENGINEER'S WRITTEN INSTRUCTIONS.
- 6. PROVIDE A MINIMUM OF 4" OF GRANULAR FILL DIRECTLY UNDER SLABS ON GRADE. FILL SHALL CONSIST OF A CLEAN MIXTURE OF CRUSHED STONE OR CRUSHED OR UNCRUSHED GRAVEL PER ASTM D448, SIZE 57, WITH 100% PASSING A 1-1/2" SIEVE AND 0% TO 5% PASSING A #8 SIEVE.
- 7. REINFORCE CONCRETE SLABS ON GRADE WITH WELDED WIRE FABRIC REINFORCEMENT (FABRIC) AS INDICATED. WELDED WIRE REINFORCEMENT SHALL BE SUPPLIED IN FLAT SHEETS AND INSTALLED IN LONGEST PRACTICAL LENGTHS ON BAR SUPPORTS SPACED TO MINIMIZE SAGGING. LAP EDGES AND ENDS OF ADJOINING SHEETS FOR AT LEAST ONE MESH SPACING. OFFSET LAPS OF ADJOINING SHEET WIDTHS TO PREVENT CONTINUOUS LAPS IN EITHER DIRECTION. LACE OVERLAPS WITH WIRE TIES AND DO NOT EXTEND REINFORCEMENT THROUGH JOINTS.
- 8. DEPOSIT AND CONSOLIDATE CONCRETE FOR FLOORS AND SLABS IN A CONTINUOUS OPERATION, WITHIN LIMITS OF CONSTRUCTION JOINTS, UNITL PLACEMENT OF A PANEL OR SECTION IS COMPLETE AND AS FOLLOWS:
 - a. CONSOLIDATE CONCRETE DURING PLACEMENT OPERATIONS SO CONCRETE IS THOROUGHLY
 - WORKED AROUND REINFORCEMENT AND OTHER EMBEDDED ITEMS AND INTO CORNERS. b. MAINTAIN REINFORCEMENT IN POSITION ON CHAIRS DURING CONCRETE PLACEMENT.
 - c. SCREED SLAB SURFACES UNIFORMLY TO DRAINS WHERE REQUIRED.
 - d. SLOPE SURFACES UNIFORMLY TO DRAINS WHERE REQUIRED.
 - e. BEGIN INITIAL FLOATING USING BULL FLOATS OR DARBIES TO FORM A UNIFORM AND OPEN-TEXTURED SURFACE PLANE, BEFORE EXCESS BLEEDWATER APPEARS ON THE SURFACE. DO NOT FURTHER DISTURB SLAB SURFACES BEFORE STARTING FINISHING OPERATIONS.
- 9. APPLY A TROWEL FINISH TO CONCRETE SLAB ON GRADE SURFACES UNLESS OTHERWISE NOTED. VERIFY THIS FINISH WITH THE ARCHITECTURAL REQUIREMENTS BEFORE CONSTRUCTION. AFTER APPLYING FLOAT FINISH, APPLY FIRST TROWELING AND CONSOLIDATE CONCRETE BY HAND OR POWER-DRIVEN TROWEL. CONTINUE TROWELING PASSES AND RESTRAIGHTEN UNTIL SURFACE IS FREE OF TROWEL MARKS AND UNIFORM IN TEXTURE AND APPEARANCE. GRIND SMOOTH ANY SURFACE DEFECTS THAT WOULD TELEGRAPH THROUGH APPLIED COATING OR FLOOR COVERINGS.
- 10. FORM WEAKENED-PLANE CONTRACTION JOINTS, SECTIONING CONCRETE INTO AREAS AS INDICATED BUT NOT MORE THAN 20'-0 O.C. CONSTRUCT CONTRACTION JOINTS FOR A DEPTH EQUAL TO AT LEAST ONE-FOURTH OF CONCRETE THICKNESS. FORM CONTRACTION JOINTS WITH POWER SAWS EQUIPPED WITH SHATTERPROOF ABRASIVE OR DIAMOND-RIMMED BLADES WITHIN 4 TO 12 HOURS AFTER THE SLAB HAS BEEN FINISHED. CUT 1/8" WIDE JOINTS INTO CONCRETE WHEN CUTTING ACTION WILL NOT TEAR, ABRADE, OR OTHERWISE DAMAGE SURFACE AND BEFORE CONCRETE DEVELOPS RANDOM CONTRACTION CRACKS.
- 11. CURE CONCRETE SLABS ON GRADE FOR AT LEAST SEVEN DAYS BY ONE OF THE FOLLOWING METHODS: MOISTURE CURING, MOISTURE-RETAINING-COVER CURING, APPLICATION OF A CURING COMPOUND, OR BY APPLICATION OF A CURING AND SEALING COMPOUND.
- 12. THE CONCRETE SLAB ON GRADE HAS BEEN DESIGNED USING A SUBGRADE MODULUS OF K=100 pci AND A DESIGN LOADING AS NOTED IN THE "DESIGN LOADS" SECTION OF THESE SPECIFICATIONS. THE SER IS NOT RESPONSIBLE FOR DIFFERENTIAL SETTLEMENT, SLAB CRACKING, OR OTHER FUTURE DEFECTS RESULTING FROM UNREPORTED CONDITIONS MITIGATING THE ABOVE ASSUMPTIONS.

UNIT MASONRY ASSEMBLIES

- CONCRETE MASONRY UNITS (CMU) SHALL BE ERECTED AS LOAD BEARING CONCRETE MASONRY. COMPLY WITH ACI 530.1 "SPECIFICATIONS FOR MASONRY STRUCTURES" FOR MATERIALS, METHODS, WORKMANSHIP
- 2. PROVIDE CONCRETE MASONRY UNIT ASSEMBLIES (CMUS) AS INDICATED ON THE DRAWINGS THAT DEVELOPS
- A MINIMUM NET-AREA COMPRESSIVE STRENGTH (F'M) OF 1500 PSI AT 28 DAYS AND AS FOLLOWS: a. CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C90 WITH A MINIMUM AVERAGE NET-AREA
- COMPRESSIVE STRENGTH OF 1900 PSI. b. WEIGHT CLASSIFICATION: NORMAL WEIGHT, UNLESS OTHERWISE NOTED.
- c. SIZE: MANUFACTURED TO DIMENSIONS 3/8" LESS THAN NOMINAL DIMENSIONS.
- 3. BRICK MASONRY ON THIS PROJECT IS A NON-STRUCTURAL VENEER. REFER TO ARCHITECTURAL PLAN AND SPECS FOR ALL MASONRY VENEER REQUIREMENTS, INCLUDING BUT NOT LIMITED TO, FLASHING REQUIREMENTS, COURSING, COBBLING REQUIREMENTS, EXPANSION/CONTROL JOINT REQUIREMENTS AND SPACING AND WEEP LOCATION AND SPACING.
- 4. PROVIDE MORTAR AND GROUT MATERIALS AS INDICATED ON THE DRAWINGS AND CONFORMING TO THE REQUIREMENTS LISTED BELOW. ALL CELLS CONTAINING REINFORCEMENT, CELLS BELOW GRADE, AND ANY LOCATIONS NOTED ON THE DRAWINGS SHALL BE GROUTED SOLID. DO NOT USE ADMIXTURES, INCLUDING AIR-ENTRAINING AGENTS, ACCELERATORS, RETARDERS, WATER-REPELLENT AGENTS, ANTIFREEZE COMPOUNDS, OR OTHER ADMIXTURES UNLESS OTHERWISE NOTED. DO NOT USE CALCIUM CHLORIDE IN
- a. MORTAR FOR MASONRY ASSEMBLIES SHALL BE TYPE S, CONFORMING TO ASTM C270 b. GROUT FOR UNIT MASONRY SHALL BE FINE GROUT CONFORMING TO ASTM C476 AND HAVE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2000 PSI. GROUT SHALL HAVE SLUMP OF 8 TO 11
- 5. LAY HOLLOW CONCRETE MASONRY UNITS IN A BOND PATTERN COMPLYING WITH THE ARCHITECTURAL DRAWINGS AND AS FOLLOWS:

DIMENSIONS OF GROUT SPACES AND POUR HEIGHT.

- a. WITH FACE SHELLS FULLY BEDDED IN MORTAR AND WITH HEAD JOINTS OF DEPTH EQUAL TO BED
- b. WITH WEBS FULLY BEDDED IN MORTAR IN ALL COURSES OF PIERS, COLUMNS, AND PILASTERS. c. WITH WEBS FULLY BEDDED IN MORTAR IN GROUTED MASONRY, INCLUDING STARTING COURSE ON

INCHES AS MEASURED ACCORDING TO ASTM C143. COMPLY WITH TABLE 1.15.1 IN ACI 530.1 FOR

- d. WITH ENTIRE UNITS, INCLUDING AREAS UNDER CELLS, FULLY BEDDED IN MORTAR AT STARTING COURSE ON FOOTINGS WHERE CELLS ARE NOT GROUTED.
- 6. LAY SOLID MASONRY UNITS WITH COMPLETELY FILLED BED AND HEAD JOINTS; BUTTER ENDS WITH SUFFICIENT MORTAR TO FILL HEAD JOINTS AND SHOVE INTO PLACE. DO NOT DEEPLY FURROW BED JOINTS OR SLUSH HEAD JOINTS.
- 7. PROVIDE VERTICAL REINFORCING AS NOTED PER THE CMU WALL REINFORCING SCHEDULE AND PER THE REQUIREMENTS BELOW. PROVIDE MATCHING DOWELS INTO THE FOOTING OR FOUNDATION CONSTRUCTION. PROVIDE TWO ADDITIONAL BARS AND DOWELS UNDER POINT LOADS, LINTELS AND BEAMS WHICH HAVE A REACTION EXCEEDING 10 KIPS, WHETHER OR NOT NOTED ON THE FRAMING PLANS.
 - a. ALL REBAR SHALL BE UNCOATED STEEL REINFORCING BARS: ASTM A615, GRADE 60
 - b. REINFORCING STEEL SHALL BE PLACED IN COMPLIANCE WITH ACI 530.1. c. GROUT ALL CELLS CONTAINING REINFORCEMENT AND DO NOT PLACE GROUT UNTIL THE ENTIRE HEIGHT OF MASONRY TO BE GROUTED HAS ATTAINED ENOUGH STRENGTH TO RESIST GROUT
 - PRESSURE. LIMIT HEIGHT OF VERTICAL GROUT POURS TO NOT MORE THAN 60 INCHES. d. PROVIDE AN OPEN BOTTOM BOND BEAM REINFORCED WITH 2 NO. 5 CONTINUOUS BARS AT THE FOLLOWING LOCATIONS AND AS NOTED ON THE DRAWINGS:
 - AT THE TOP OF ALL WALL ELEVATIONS ii. AT ALL JOIST AND FRAMING BEARING ELEVATIONS
- iii. EQUALLY SPACED BETWEEN LATERAL SUPPORTS OR AT 10'-0" O.C. MAXIMUM VERTICALLY, IF THE DISTANCE BETWEEN LATERAL SUPPORTS EXCEEDS 10'-0".
- 8. PROVIDE MASONRY JOINT REINFORCING AT 16" O.C. VERTICALLY, IN ADDITION TO CONTINUOUS REINFORCEMENT, AND NOT MORE THAN 8" ABOVE AND BELOW OPENINGS IN MASONRY WALLS AND EXTENDING 12" BEYOND SAID OPENING. INTERRUPT JOINT REINFORCEMENT AT CONTROL AND EXPANSION JOINTS, UNLESS OTHERWISE INDICATED. CUT AND BEND REINFORCING UNITS AS DIRECTED BY MANUFACTURER FOR CONTINUITY AT CORNERS, RETURNS, OFFSETS, COLUMN FIREPROOFING, PIPE ENCLOSURES, AND OTHER SPECIAL CONDITIONS, JOINT REINFORCING SHALL CONSIST OF HOT-DIPPED GALVANIZED. CARBON STEEL CONFORMING TO ASTM A951 AND PER REQUIREMENTS BELOW
 - a. JOINT REINFORCEMENT FOR SINGLE WYTHE WALLS SHALL CONSIST OF EITHER LADDER OR TRUSS TYPE WITH A SINGLE PAIR OF SIDE RODS. SIDE AND CROSS RODS SHALL BE W1.7 DIAMETER. b. JOINT REINFORCEMENT FOR MULTIWYTHE WALLS SHALL CONSIST OF TAB TYPE, EITHER LADDER OR TRUSS DESIGN, WITH 1 SIDE ROD AT EACH FACE SHELL OF BACKING WYTHE AND WITH

LEAST 5/8-INCH COVER ON OUTSIDE FACE. SIDE AND CROSS RODS SHALL BE W1.7 DIAMETER.

RECTANGULAR TABS SIZED TO EXTEND AT LEAST HALFWAY THROUGH FACING WYTHE BUT WITH AT

- 9. PROVIDE MISCELLANEOUS ANCHORS AS INDICATED AND COMPLY WITH THE FOLLOWING:
 - a. ANCHOR BOLTS: HEADED OR L-SHAPED STEEL BOLTS COMPLYING WITH ASTM A307, GRADE A; WITH ASTM A563 HEX NUTS AND, WHERE INDICATED, FLAT WASHERS; HOT-DIPPED GALVANIZED TO
 - COMPLY WITH ASTM A153, CLASS C. b. POST INSTALLED ANCHORS: PROVIDE CHEMICAL ANCHORS. WITH CAPABILITY TO SUSTAIN. WITHOUT FAILURE, A LOAD EQUAL TO SIX TIMES THE LOAD IMPOSED WHEN INSTALLED IN SOLID OR GROUTED UNIT MASONRY AND EQUAL TO FOUR TIMES THE LOAD IMPOSED WHEN INSTALLED IN
- 10. PROVIDE STEEL, MASONRY, AND CONCRETE LINTELS AS NOTED ON THE LINTEL SCHEDULE.
- 11. PROVIDE CONTROL AND EXPANSION JOINTS AS NOTED ON THE ARCHITECTURAL DRAWINGS, BUT NOT GREATER THAN 20'-0" O.C. INSTALL CONTROL AND EXPANSION JOINT MATERIALS IN UNIT MASONRY AS MASONRY PROGRESSES. DO NOT ALLOW MATERIALS TO SPAN CONTROL AND EXPANSION JOINTS WITHOUT PROVISION TO ALLOW FOR IN-PLANE WALL OR PARTITION MOVEMENT.
- 12. DURING CONSTRUCTION, COVER TOPS OF WALLS, PROJECTIONS, AND SILLS WITH WATERPROOF SHEETING AT THE END OF EACH DAY'S WORK. COVER PARTIALLY COMPLETED MASONRY WHEN CONSTRUCTION IS NOT
- 13. DO NOT APPLY UNIFORM FLOOR OR ROOF LOADS FOR AT LEAST 12 HOURS AND CONCENTRATED LOADS FOR AT LEAST 3 DAYS AFTER BUILDING MASONRY WALLS OR COLUMNS.
- 14. DO NOT USE FROZEN MATERIALS OR MATERIALS MIXED OR COATED WITH ICE OR FROST. DO NOT BUILD ON FROZEN SUBSTRATES. REMOVE AND REPLACE UNIT MASONRY DAMAGED BY FROST OR FREEZING CONDITIONS. COMPLY WITH COLD-WEATHER CONSTRUCTION REQUIREMENTS CONTAINED IN ACI 530.1.
- 15. COMPLY WITH HOT-WEATHER CONSTRUCTION REQUIREMENTS CONTAINED IN ACI 530.1.

- 1. CONCRETE SHALL BE PROPORTIONED, MIXED, PLACED, AND TESTED IN ACCORDANCE WITH THE ACI MANUAL OF CONCRETE PRACTICE INCLUDING BUT NOT LIMITED TO ACI 318-02 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" AND ACI 301-05 "SPECIFICATIONS FOR STRUCTURAL CONCRETE." COMPLY WITH ACI 117-90 "SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION
- STEEL REINFORCEMENT SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS:
 - a. REINFORCING BARS ASTM A615, GRADE 60, DEFORMED b. PLAIN-STEEL WIRE ASTM A82, AS DRAWN c. EPOXY COATED BARS ASTM A775 d. PLAIN-STEEL WELDED WIRE REINFORCEMENT ASTM A185, FLAT SHEETS ONLY
- 3. CONCRETE DENOTED AS "LIGHTWEIGHT CONCRETE" ON THESE DESIGN DOCUMENTS SHALL HAVE A UNIT WEIGHT OF 115 PCF. CONCRETE NOT SPECIFICALLY NOTED AS "LIGHTWEIGHT" SHALL HAVE A UNIT WEIGHT OF 145 PCF. CONCRETE MATERIALS SHALL COMPLY WITH THE FOLLOWING:
 - a. PORTLAND CEMENT
 - ASTM C150, TYPE I OR II ASTM C618, CLASS F c. BLENDED HYDRAULIC CEMENT ASTM C595, TYPE I POZZOLAN-MODIFIED PORTLAND
 - d. NORMAL-WEIGHT AGGREGATE e. LIGHTWEIGHT AGGREGATE

f. WATER POTABLE

- ASTM C33, GRADED, 12" NOMINAL MAXIMUM AGGREGATE SIZE ASTM C330, GRADED, $\frac{3}{4}$ " NOMINAL MAXIMUM AGGREGATE SIZE

- 4. NO ADMIXTURES SHALL BE ADDED TO ANY STRUCTURAL CONCRETE WITHOUT THE EXPRESS WRITTEN PERMISSION OF TYNDALL ENGINEERING & DESIGN, P.A. ALL PROPOSED ADMIXTURES SHALL BE SUBMITTED TO TYNDALL ENGINEERING & DESIGN, P.A. FOR APPROVAL. THE ADMIXTURE MUST BE CERTIFIED BY THE MANUFACTURER THAT IT IS COMPARABLE TO OTHER ADMIXTURES AND DOES NOT CONTRIBUTE TO WATER-SOLUBLE CHLORIDE IONS EXCEEDING THOSE PERMITTED IN HARDENED CONCRETE. DO NOT USE
- 5. NORMAL-WEIGHT CONCRETE MIXTURES SHALL HAVE THE FOLLOWING PROPERTIES

CALCIUM CHLORIDE OR ANY ADMIXTURE CONTAINING CALCIUM CHLORIDE.

COMP.	WATER-	MIMIMUM	WAXIWUW		
	ELEMENT	STRENGTH @ 28 DAYS	CEMENT RATIO	SLUMP <u>LIMIT</u>	AIR CONTENT
	a. FOOTINGSb. RETAINING WALLSc. SLABS-ON-GRADE	3000 PSI 3000 PSI 3000 PSI	0.45 0.45 0.45	4" 4" 4"	0.0% 4.5% 0.0%

- NOTE: IT IS RECOMMENDED THAT INTERIOR SLABS BE GIVEN A SMOOTH, DENSE, HARD-TROWELED FINISH NOT CONTAINING ENTRAINED AIR SINCE BLISTERING OR DELAMINATION MAY OCCUR. IF SLAB WILL BE EXPOSED TO DEICING OR OTHER AGGRESSIVE CHEMICALS, CONTACT TYNDALL ENGINEERING & DESIGN, P.A. FOR PROPER AIR ENTRAINMENT REQUIREMENTS.
- 6. LIGHTWEIGHT CONCRETE MIXTURES SHALL HAVE THE FOLLOWING PROPERTIES:

ELEMENT	MINIMUM COMP. STRENGTH @ 28 DAYS	MAXIMUM WATER- CEMENT RATIO	SLUMP LIMIT	AIR CONTENT	
a. ELEVATED SLABS,	3000 PSI	0.63	5"	0.0%	

- 7. COMPLY WITH THE MINIMUM CONCRETE COVER FOR REINFORCEMENT AS FOLLOWS:
 - a. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
 - b. CONCRETE EXPOSED TO EARTH OR WEATHER i. No. 5 BARS AND SMALLER 1-1/2"

AND SPIRALS FOR BEAMS OR COLUMNS

ii. No. 6 BARS AND LARGER 2"

OVER DECKING

- c. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND
- i. SLABS, WALLS, JOISTS, No. 11 BARS AND SMALLER 3/4" ii. SLABS, WALLS, JOISTS, No. 14 AND No. 18 BARS 1-1/2" iii. PRIMARY REINFORCEMENT. TIES. STIRRUPS.
- 8. SPLICE REINFORCEMENT AS DETAILED OR AUTHORIZED BY TYNDALL ENGINEERING & DESIGN, P.A. MAKE BARS CONTINUOUS AROUND CORNERS. SPLICES SHALL BE MADE BY CONTACT TENSION LAP SPLICES, UNLESS OTHERWISE NOTED.
- 9. PLACING SLEEVES THROUGH CONCRETE ELEMENTS IS NOT PERMITTED UNLESS SHOWN ON THE DESIGN DOCUMENTS, ON APPROVED SLEEVE SHOP DRAWINGS, OR AS AUTHORIZED BY TYNDALL ENGINEERING & 10. LOCATE CONSTRUCTION JOINTS FOR MILD-REINFORCED ELEVATED CONCRETE WITHIN THE MIDDLE THIRD
- OF THE SPANS OF SLABS, BEAMS, AND GIRDERS. INDICATE PROPOSED CONSTRUCTION JOINT LOCATIONS ON REINFORCING STEEL SHOP DRAWINGS. LOCATE CONSTRUCTION JOINTS NOT FARTHER THAN 60 FEET APART IN ANY DIRECTION IN WALLS, SLABS, OR BEAMS. OFFSET JOINTS IN GIRDERS A MINIMUM DISTANCE OF TWO TIMES THE WIDTH OF INTERSECTING BEAMS. MAKE STOPS IN CONCRETE PLACEMENT WITH VERTICAL BULKHEADS AND HORIZONTAL KEYS, UNLESS OTHERWISE SHOWN. SUBMIT SHOP DRAWINGS INDICATING PROPOSED JOINT LOCATIONS AND REINFORCING STEEL TO BE PLACED IN THE SLAB. ANY STOP IN CONCRETE WORK MUST BE MADE WITH VERTICAL BULKHEADS, UNLESS OTHERWISE SHOWN.
- 11. COMPLY WITH ACI 301 FOR MEASURING, BATCHING, MIXING, TRANSPORTING, AND PLACING CONCRETE, BEFORE TEST SAMPLING AND PLACING CONCRETE. WATER MAY BE ADDED AT THE PROJECT SITE, SUBJECT
- 12. SEE ARCHITECTURAL DRAWINGS FOR FINISHING REQUIREMENTS OF FORMED CONCRETE SURFACES. FOR UNFORMED SURFACES, COMPLY WITH ACI 302.1R FOR SCREEDING, RESTRAIGHTENING, AND FINISHING OPERATIONS UNLESS OTHERWISE NOTED ON THE ARCHITECTURAL DRAWINGS.
- METHODS: MOISTURE CURING, MOISTURE-RETAINING-COVER CURING, APPLICATION OF A CURING COMPOUND, OR BY APPLICATION OF A CURING AND SEALING COMPOUND.

13. CURE FORMED AND UNFORMED CONCRETE FOR AT LEAST SEVEN DAYS BY ONE OF THE FOLLOWING

14. ENGAGE A QUALIFIED INDEPENDENT TESTING AGENCY TO SAMPLE MATERIALS, PERFORM TESTS, AND SUBMIT REPORTS DURING CONCRETE PLACEMENT ACCORDING TO ACI 301 AND IRC BUILDING CODE.

STRUCTURAL STEEL

- 1. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE FOLLOWING
- STANDARDS AND THE LATEST EDITIONS OF SAID STANDARDS: a. AISC'S "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"
- b. AISC 'S "SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS" AND "SUPPLEMENT NO.2", IF THE RESPONSE MODIFICATION FACTOR IS GREATER THAN 3.0
- c. AISC'S "LOAD AND RESISTANCE FACTORED DESIGN SPECIFICATION FOR STRUCTURAL STEEL
- BUILDINGS"
- d. AISC'S "SPECIFICATION FOR THE DESIGN OF STEEL HOLLOW STRUCTURAL SECTIONS" e. RCSC'S "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS"
- f. AWS'S STRUCTURAL WELDING CODE AWS D1.1 2. STEEL FABRICATORS FOR THIS PROJECT SHALL PARTICIPATE IN THE AISC QUALITY CERTIFICATION PROGRAM AND HAVE A MINIMUM DESIGNATION OF SBD. STEEL INSTALLERS FOR THIS PROJECT SHALL PARTICIPATE IN THE AISC QUALITY CERTIFICATION PROGRAM AND HAVE A MINIMUM DESIGNATION OF CSE.
- ALL PERSONNEL PERFORMING WELDING ON THIS PROJECT SHALL CONFORM TO THE QUALITY PROCEDURES ACCORDING TO AWS D1.1 "STRUCTURAL WELDING CODE - STEEL". ALL STRUCTURAL STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING:
- ASTM A992 a. WIDE FLANGE SHAPES b. CHANNELS, ANGLES, M-SHAPES, S-SHAPES ASTM A36 c. PLATE AND BAR ASTM A36 d. COROSION-RESISTING STRUCTURAL STEEL ASTM A588 e. COLD-FORMED HOLLOW STRUCTURAL SECTIONS ASTM A500, GRADE B f. STEEL PIPE ASTM A53 CLASS E70XX g. WELDING ELECTRODES
- 4. UNLESS OTHERWISE NOTED ON THE DESIGN DOCUMENTS, APPLY A ONE-COAT NON-ASPHALTIC PRIMER COMPLYING WITH SSPC-PS GUIDE 7.00 "PAINTING SYSTEM GUIDE 7.00: GUIDE FOR SELECTING ONE-COAT SHOP PAINTING SYSTEMS", TO PROVIDE A DRY FILM THICKNESS OF NOT LESS THAN 1.5 MILS TO ALL STEEL SURFACES NOT EXPOSED TO WEATHER EXCEPT THE FOLLOWNG:
 - a. SURFACES EMBEDDED IN CONCRETE OR MORTAR. EXTEND PRIMING OF PARTIALLY EMBEDDED
 - MEMBERS TO A DEPTH OF 2".
 - b. SURFACES TO BE FIELD WELDED. c. SURFACES TO BE HIGH-STRENGTH BOLTED WITH SLIP-CRITICAL CONNECTIONS.
 - d. SURFACES TO RECEIVE SPRAYED-ON FIRE RESISTIVE MATERIALS.

e. GALVANIZED SURFACES.

- 5. APPLY A ZINC COATING BY THE HOT-DIPPED PROCESS ACCORDING TO ASTM A123 TO LOOSE ANGLE LINTELS. RELIEVING ANGLES (SHELF ANGLES) AND ALL STEEL EXPOSED TO WEATHER. FILL VENT HOLES AND GRIND SMOOTH AFTER GALVANIZING AS REQUIRED. REPAIR DAMAGED GALVANIZING COATINGS WITH GALVANIZED REPAIR PAINT ACCORIND TO ASTM A780 AND MANUFACTURER'S WRITTEN INSTRUCTIONS.
- 6. BOLTS, CONNECTORS, AND ANCHORS SHALL CONFORM TO THE FOLLWONG:
- a. ASTM A325 BOLTED CONNECTIONS:
- i. ASTM A325, TYPE 1 HEAVY HEX NUT STEEL STRUCTURAL BOLTS
- ii. ASTM A563 HEAVY HEX CARBON-STEEL NUTS iii. ASTM F436 HARDENED CARBON-STEEL WASHERS
- THE FINISH FOR THESE BOLTED CONNECTIONS SHALL BE PLAIN UNLESS CONNECTING HOT-DIPPED GALVANIZED MATERIALS AND THEN SHALL HAVE A HOT-DIPPED ZINC COATING CONFORMING TO ASTM A153.
- b. ASTM A490 BOLTED CONNECTIONS:
- i. ASTM A490, TYPE 1 HEAVY HEX NUT STEEL STRUCTURAL BOLTS ii. ASTM A563 HEAVY HEX CARBON-STEEL NUTS
- iii. ASTM F436 HARDENED CARBON-STEEL WASHERS
 - THE FINISH FOR THESE BOLTED CONNECTIONS SHALL BE PLAIN.

- c. ANCHOR RODS: ASTM F1554, GRADE 36
- i. NUTS: ASTM A563
- ii. PLATE WASHERS: 3/8" MINIMUM THICKNESS, ASTM A36 CARBON STEEL
- d. THREADED RODS: ASTM A307, GRADE A
- i. NUTS: ASTM A563
- ii. WASHERS: ASTM A36 iii. FINISH: PLAIN
- e. <u>CLEVISES AND TURNBUCKLES</u>: ASTM A108, GRADE 1035, COLD-FINISHED CARBON STEEL
- f. EYE BOLTS AND NUTS: ASTM A108, GRADE 1030, COLD-FINISHED CARBON STEEL
- 7. SELECT AND COMPLETE STEEL TO STEEL CONNECTIONS USING FULL-DEPTH CONNECTION AS INDICATED IN AISC'S "MANUAL OF STEEL CONSTRUCTION, 13TH EDITION"
- 8. IN BOLTED CONNECTIONS, PROVIDE HIGH STRENGTH BOLTS, NUTS, AND WASHERS IN BOLTED STEEL CONNECTIONS AND INSTALL CONNECTORS ACCORDING TO RCSC'S "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS". CUT, DRILL, OR PUNCH BOLT HOLES PERPENDICULAR TO METAL SURFACES. EITHER ASTM A325 OR A490 BOLTS MAY BE USED FOR SNUG TIGHTENED CONNECTIONS. ALL CONNECTIONS EXCEPT LISTED BELOW SHALL BE SNUG TIGHTENED:
 - a. JOINTS THAT UTILIZE OVERSIZED HOLES
 - b. JOINTS THAT CONNECT BRACING MEMBERS FOR LATERAL RESISTING SYSTEM c. JOINTS THAT UTILIZE SLOTTED HOLES EXCEPT THOSE WITH APPLIED LOAD APPROXIMATELY NORMAL TO THE DIRECTION OF THE LONG DIMENSION OF THE SLOT.
- 9. IN WELDED CONNECTIONS, COMPLY WITH AWS D1.1 FOR WELDING PROCEDURE SPECIFICATIONS, TOLERANCES, APPEARANCE, AND QUALITY OF WELDS AND FOR METHODS USED IN CORRECTING WELDING WORK. COMPLY WITH AISC MINIMUM WELDING REQUIREMENTS.
- 10. SHEAR CONNECTORS (SHEAR STUDS) SHALL BE OF THE HEIGHT AND DIAMETER AS NOTED ON THE COMPOSITE FLOOR DECK DETAIL ON THESE DRAWINGS. CONNECTORS SHALL BE ASTM A108, GRADE 1015 THROUGH 1020, HEADED STUD, COLD-FINISHED CARBON STEEL; AWS D1.1, TYPE B. SPACE CONNECTORS UNIFORMLY ON EACH SIDE OF THE BEAM MIDSPAN IN THE PORTION OF THE DECK RIB CLOSEST TO THE NEAREST END OF THE BEAM, UNLESS OTHERWISE NOTED. IN ADDITION TO THE TESTING AND INSPECTIONS LISTED BELOW, TEST AND INSPECT FIELD WELDED SHEAR CONNECTORS ACCORDING TO REQUIREMENTS IN AWS D1.1 FOR STUD WELDING AND AS FOLLOWS:
 - a. PERFORM BEND TESTS IF VISUAL INSPECTIONS REVEAL EITHER A LESS THAN CONTINUOUS 360
- DEGREES FLASH OR WELDING REPAIRS TO ANY SHEAR CONNECTOR.
- b. CONDUCT TESTS ON ADDITIONAL SHEAR CONNECTORS IF WELD FRACTURE OCCURS ON SHEAR CONNECTORS ALREADY TESTED, ACCORDING TO REQUIREMENTS IN AWS D1.1. c. CORRECT DEFICIENCIES IN WORK THAT TEST REPORTS AND INSPECTIONS INDICATE SHEAR
- 11. BASE AND BEARING PLATES WHICH ARE SUPPORTED OVER CONCRETE OR MASONRY SHALL BE PLACED OVER 2" OF GROUT WITH A TOLERANCE OF +/- 2" UNLESS OTHERWISE NOTED. CLEAN CONCRETE AND MASONRY SURFACES OF BOND REDUCING MATERIAL AND ROUGHEN SURFACES. SET PLATES FOR STRUCTURAL MEMBERS ON WEDGES, SHIMS, OR SETTING NUTS AS REQUIRED. TIGHTEN ANCHOR RODS AFTER MEMBER IS POSITIONED AND PLUMBED. DO NOT REMOVE WEDGES, BUT IF PROTRUDING, CUT OFF FLUSH WITH BASE PLATE. PROMPTLY PACK GROUT SOLIDLY BETWEEN BEARING SURFACES SO NO VOIDS REMAIN. GROUT SHALL CONFORM TO ASTM C1107, FACTORY-PACKAGED, NONMETALLIC AGGREGATE GROUT, NONCORROSIVE, NON STAINING, MIXED WITH WATER TO CONSISTENCY SUITABLE FOR

CONNECTORS NOT IN COMPLIANCE WITH THESE DOCUMENTS.

12. FURNISH ANCHORAGE ITEMS EMBEDDED OR ATTACHED TO OTHER CONSTRUCTION BY USE OF SETTING DIAGRAMS AND TEMPLATES. DO NOT FLOAT-IN THESE ITEMS.

APPLICATIONS. GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI.

- 13. ACCURATELY FINISH ENDS OF COLUMNS AND OTHER MEMBERS TRANSMITTING BEARING LOADS.
- 14. PROVIDE TEMPORARY SHORES, GUYS, BRACES, AND OTHER SUPPORTS DURING ERECTION TO KEEP STRUCTURAL STEEL SECURE, PLUMB, AND IN ALIGNMENT AGAINST TEMPORARY CONSTRUCTION LOADS AND LOADS EQUAL IN INTENSITY TO DESIGN LOADS. ALSO, PROVIDE TEMPORARY SUPPORTS IN STEEL TO STEEL CONNECTIONS AND ALL OTHER LOCATIONS PER OSHA REQUIREMENTS.
- 15. MAINTAIN ERECTION TOLERANCES OF STRUCTURAL STEEL WITHIN AISC'S "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".
- 16. ONLY SPLICE MEMBERS WHERE INDICATED ON THE DESIGN DOCUMENTS.
- 17. ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTION AGENCY TO INSPECT FIELD WELDS AND HIGH-STRENGTH BOLTED CONNECTIONS. SHOP-BOLTED CONNECTIONS SHALL BE INSPECTED ACCORDING TO RCSC'S "SPECIFICATION FOR STRUCTURAL JOINTS USING ASSTM A325 OR A490 BOLTS". FIELD WELDS SHALL BE VISUALLY INSPECTED ACCORDING TO AWS D1.1, EXCEPT FULL PENETRATION WELDS SHALL ALSO

BE INSPECTED PER ULTRASONIC INSPECTION PER ASTM E164.

AWPA-P5.

WITH 19% MAXIMUM MOISTURE CONTENT.

- WOOD FRAMING 1. ALL ROUGH CARPENTRY SHALL CONFORM TO THE REQUIREMENTS OF THE "NATIONAL DESIGN SPECIFICATIONS FOR WOOD CONSTRUCTION," 2012 EDITION BY THE NATIONAL FOREST PRODUCTS ASSOCIATION. WOOD FRAMING SHALL BE CONNECTED AS SPECIFIED IN THE INTERNATIONAL BUILDING CODE
- TABLE 2304.9.1, UNLESS NOTED OTHERWISE ON STRUCTURAL DRAWINGS. 2. ALL FRAMING LUMBER INCLUDING STUDS, PLATES, LINTELS, JOISTS, RAFTERS AND BEAMS SHALL BE SPF #2
- 3. ALL LUMBER, BLOCKING, FURRING AND OTHER WOOD IN CONTACT WITH CONCRETE, MASONRY, THE GROUND OR EXPOSED TO THE WEATHER SHALL BE PRESSURE TREATED WITH WATER-BORNE PRESERVATIVES IN ACCORDANCE WITH THE AMERICAN WOOD PRESERVERS' INSTITUTE STANDARD
- 4. ALL STEEL FASTENERS IN TREATED WOOD SHALL BE OF HOT-DIPPED ZINC GALVANIZED STEEL (G185) OR STAINLESS STEEL.
- 5. ALL WOOD I-JOIST. TJW JOISTS AND MICRO-LAM VENEER LUMBER SHALL BE EQUAL TO PRODUCT MANUFACTURED BY TRUSJOIST, A WEYERHAEUSER BUSINESS.
- PROVIDE STUD BLOCKING AT ALL SHEATHING JOINTS. 7. STRUCTURAL FLOOR SHEATHING SHALL BE 3/4" TONGUE AND GROOVE APA RATED SHEATHING (32/16, EXPOSURE 1) GLUED AND NAILED TO WOOD FLOOR WITH 8d NAILS AT 6" o.c. AT PANEL EDGES AND 12" o.c. AT

6. STRUCTURAL WALL SHEATHING SHALL BE 1/2" APA RATED SHEATHING (32/16, EXPOSURE 1) NAILED TO

VERT. WOOD SUPPORTS WITH 8d NAILS AT 6" o.c. AT PANEL EDGES AND 12" o.c. AT INTERMEDIATE SUPPORTS.

- 8. STRUCTURAL ROOF SHEATHING SHALL BE 1/2" APA RATED SHEATHING (32/16, EXPOSURE 1) NAILED TO WOOD TRUSSES WITH 8d NAILS AT 6" o.c. AT PANEL EDGES AND 12" o.c. AT INTERMEDIATE SUPPORTS, UNLESS NOTED OTHERWISE ON STRUCTURAL DRAWINGS. PROVIDE (1) PANEL SHEATHING CLIP AT MIDSPAN
- 9. SECURE MULTIPLE SOLID SAWN LUMBER MEMBERS TOGETHER WITH (2) 10d NAILS AT 12" O.C. PER PLY.

INTERMEDIATE SUPPORTS, UNLESS NOTED OTHERWISE ON STRUCTURAL DRAWINGS.

SECURE MULTIPLE LVL BEAM MEMBERS TOGETHER WITH (2) 12d NAILS AT 6" o.c. PER PLY. 10. WALL AND ROOF CLADDING VALUES: WALL CLADDING SHALL BE DESIGNED FOR 24.1 POUNDS PER SQUARE FOOT (LBS/SQFT) OR GREATER POSITIVE AND NEGATIVE PRESSURE.

**MEAN ROOF HEIGHT 30'-0" OR LESS 11. PROVIDE CONTINUOUS SHEATHING WHERE APPLICABLE.

45.5 LBS/SQFT FOR ROOF PITCHES 0/12 TO 2.25/12

34.8 LBS/SQFT FOR ROOF PITCHES 2.25/12 TO 7/12

21.0 LBS/SQFT FOR ROOF PITCHES 7/12 TO 12/12

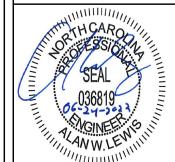
ROOF VALUES BOTH POSITIVE AND NEGATIVE SHALL BE AS FOLLOWS:

OF ALL UNSUPPORTED PANEL EDGES.

12. INTERIOR WALL SHEATHING SHALL BE 1/2" GYPSUM BOARD (GB) SECURE w/ 5d COOLER NAILS OR EQUAL SPACED @ 7" O.C. AT PANEL EDGES, INCLUDING TOP AND BOTTOM PLATES & 7" O.C AT INTERMEDIATE SUPPORTS

cedures or safety precaution. Any deviations or discrepancies on plans ar o be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure do so will void Tyndall Engineering & Desig lease review these documents carefully Tyndall Engineering & Design, P.A. will interpret that all dimensions,

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2201-010105 06/24/2022 **Engineered By:**

DWG. Checked By: PAT

SEE PLAN

AWL

REVISIONS Date: Remarks

Sheet Number

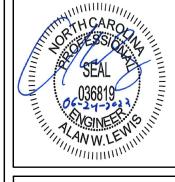
ABBREVIATIONS						
	DI LIC OD MINIJO	GA	GAUGE			
+/-	PLUS OR MINUS					
@ &	AT AND	GALV HD	GALVANIZED HEADED			
	DIAMETER	HI	HIGH			
Ø	- :: ····- · - · ·	HORIZ	HORIZONTAL			
AB ACI	ANCHOR BOLTS AMERICAN CONCRETE INSTITUTE	HSS	HOLLOW STRUCTURAL SYSTEM			
ADDL	ADDITIONAL	INT	INTERIOR			
AFF	ABOVE FINISHED FLOOR	JT	JOINT			
AISC	AMER. INSTITUTE OF STEEL CONSTRUCTION					
AISI	AMER. IRON & STEEL INSTITUTE	K	KIP(S)			
ALT	ALTERNATE	KB KSI	KNEE BRACE			
ARCH	ARCHITECTURAL/ARCHITECT'S	LB	KIPS PER SQ. INCH LONG BAR			
ASTM	AMER. SOCIETY FOR TESTING & WELDING	LBS	POUNDS			
ASTIVI	AMERICAN WELDING SOCIETY	LLH	LONG LEG HORIZONTAL			
		LLV	LONG LEG VERTICAL			
B/ OR BOT	BOTTOM CHORD EXTENSION	LO	LOW			
BCX	BOTTOM CHORD EXTENSION	LOC	LOCATION			
BFF	BELOW FINISHED FLOOR	LWC	LIGHT WEIGHT CONCRETE			
BLDG	BUILDING	MAX	MAXIMUM			
BM	BEAM BOTTOM OF STEEL	MC	MOMENT CONNECTION			
BOS BRG	BOTTOM OF STEEL BEARING	MECH	MECHANICAI			
		MFR	MANUFACTURER			
BTWN MECH	BETWEEN MECHANICAL	MID	MIDDLE			
MECH		MIN	MINIMUM			
CANT	CANTILEVER BEAM	MISC	MISCELLANEOUS			
CJ CL	CONTROL JOINT CENTERLINE	MOW	MIDDLE OF WALL			
	CLEAR	MP	MASONRY PILASTER			
CLR CMU	· · ·	No OR #	NUMBER			
COL	CONCRETE MASONRY UNIT COLUMN	NS	NEAR SIDE			
CONC	CONCRETE	NTS	NOT TO SCALE			
CONN	CONNECTION	NWC	NORMAL WEIGHT CONCRETE			
CONST JT	CONSTRUCTION	OC	ON CENTER			
CONT	CONTINUOUS	OPNG	OPENING			
CONTR	CONTRACTOR	OPP	OPPOSITE HAND			
CTRD	CENTERED	PAF	POWDER ACTUATED FASTENER			
		PED	PEDESTAL			
d DBA	NAILS (PENNY) DEFORMED BAR ANCHOR	P	PLATE			
DEFL	DEFLECTION	PL	POINT LOAD			
		PSF	POUNDS PER SQUARE FOOT			
DEPR DET	DEPRESSION / DEPRESSED	PSI	POUNDS PER SQUARE INCH			
DIAG	DETAIL DIAGONAL	PT	PRESSURE TREATED			
DIM	DIMENSION	REF	REFERENCE			
DIST	DISTANCE	REINF	REINFORCING			
DJ	DOUBLE JOIST	REQ'D	REQUIRED			
		SB	SHORT BAR			
DWG (S)	DRAWING (S)	SC	STUD COLUMNS			
DWL (S)	DOWEL (S)	SCHD	SCHEDULE			
EA	EACH END	SIM	SIMILAR			
EE EF	EACH END	SOG	SLAB ON GRADE			
	EACH FACE	SPEC (S)	SPECIFICATION (S)			
EJ ELEV	EXPANSION JOINT	SQ SQ	SQUARE			
ELEV	ELEVATION EMPERATION	STD	STANDARD			
EMBED	EMBEDDED / EMBEDMENT	STIFF	STIFFENER			
ENGR	ENGINEER EDGE OF PEOK	STIRR	STIRRUP (S)			
EOD	EDGE OF DECK	STL	STEEL			
EOS	EDGE OF SLAB	STR	STRUCTURAL			
EQ	EQUAL	T/	TOP			
EQUIP	EQUIPMENT	TCX	TOP CHORD EXTENSION			
EW	EACH WAY	TOC	TOP CHORD EXTENSION TOP OF CONCRETE			
EXIST	EXISTING	TOS	TOP OF CONCRETE TOP OF STEEL			
EXP	EXPANSION	TOW	TOP OF STEEL TOP OF WALL			
EXT	EXTERIOR	TYP	TYPICAL			
FDN	FOUNDATION	UNO	UNLESS NOTED OTHERWISE			
FFE	FINISHED FLOOR ELEVATION	VERT	VERTICAL			
FOM	FACE OF MASONRY	VERT	VERTICAL VERIFY IN FIELD			
FOW	FACE OF WALL					
FS	FAR SIDE	W/ WWF	WITH WELDED WIRE FABRIC			
FTG	FOOTING	VVVVF	WELDED WINE FADRIC			

FILENAME: 2:_RESIDENTIAL ENG\2022 STRUCTURAL PROJECTS\2201—010105 — CAROLINA DIESEL TRUCK — CAROLINA DIESEL TRUCK ADDITION\CAD_FILES\2201—0101056.DWG SAVED BY: ALAN LEWIS LAST PLOT DATE:6/24/2022 1:07 PM

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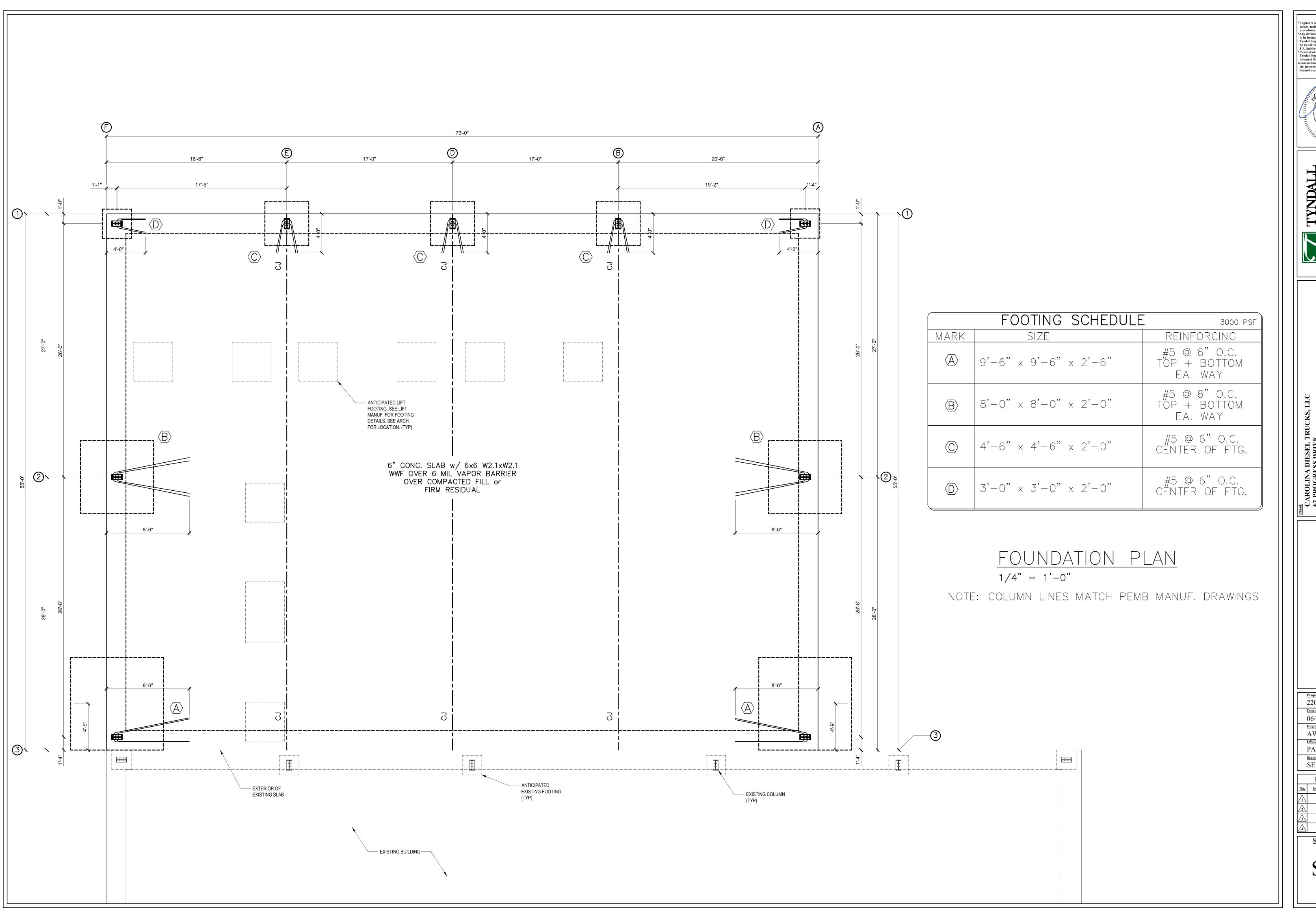
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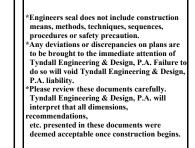
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328

CAROLINA DIESEL TRUCKS, LLC
62 PROGRESS DRIVE
FUQUAY-VARINA, NC 27528

ADDITION

-OUNDATION PLAN

Project #:

2201-010105

Date:

06/24/2022

Engineered By:
AWL

DWG. Checked By:
PAT

Scale:
SEE PLAN

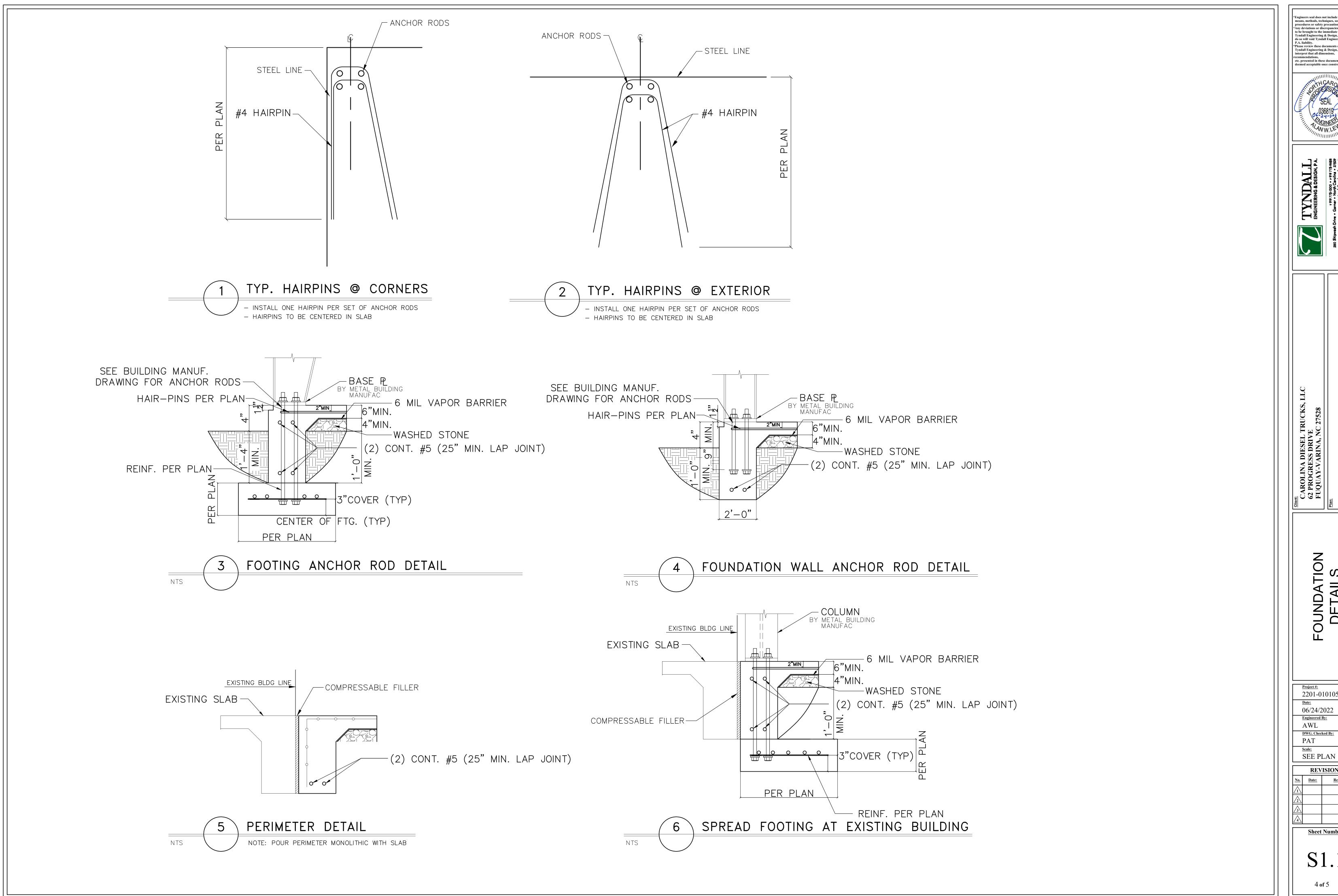
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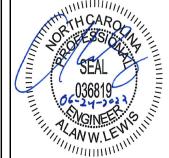
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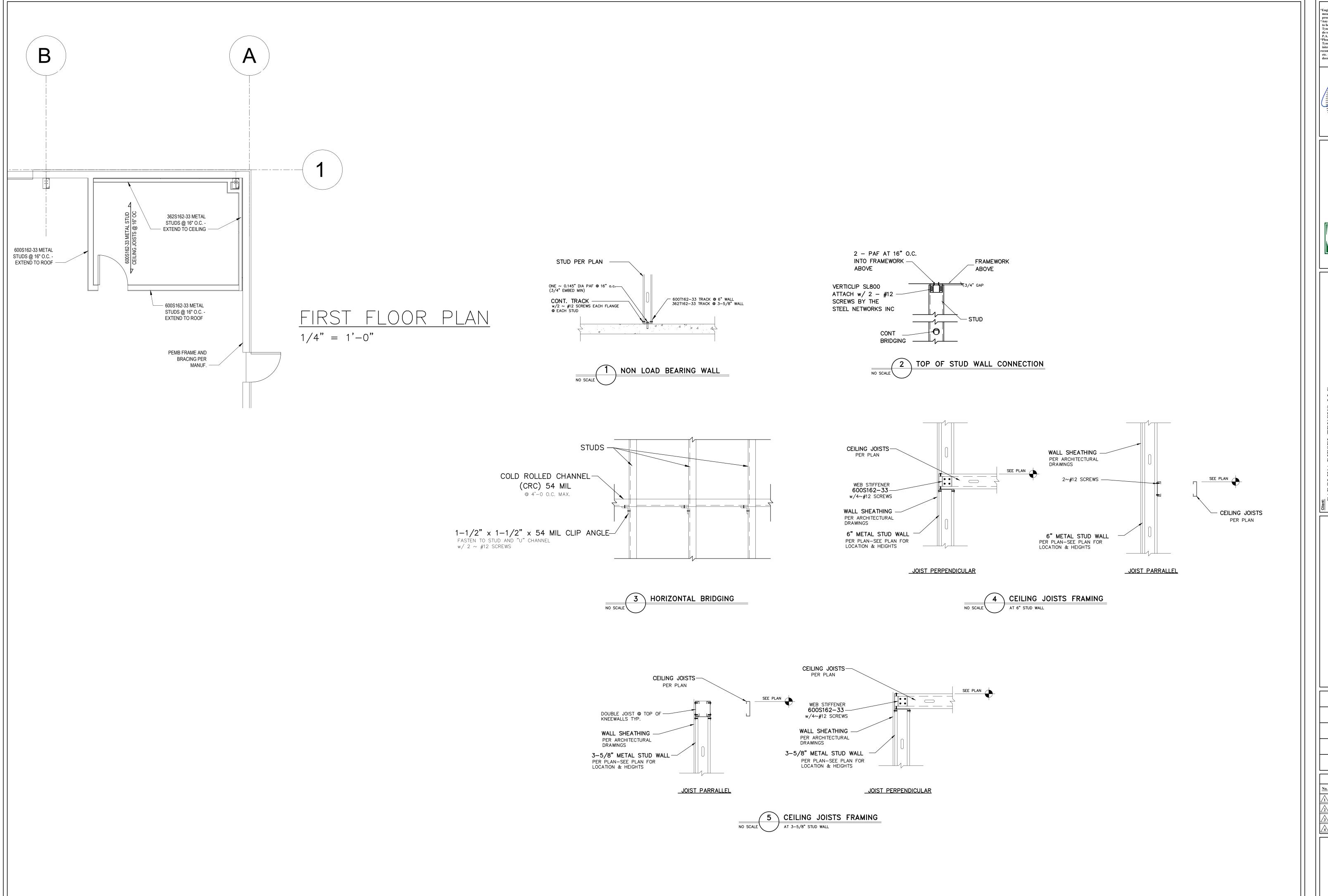
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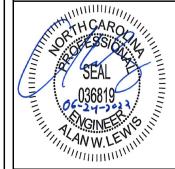
4 of 5



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*Any deviations or discrepancies on plans are to be brought to the immediate attention of Tyndall Engineering & Design, P.A. Failure to do so will void Tyndall Engineering & Design, P.A. liability.

*Please review these documents carefully. Tyndall Engineering & Design, P.A. will interpret that all dimensions, recommendations, recommendations, etc. presented in these documents were deemed acceptable once construction beg



CAROLINA DIESEL TRUCKS, LLC 62 PROGRESS DRIVE FUQUAY-VARINA, NC 27528

FIRST FLOOR PI AND DETAILS

2201-010105 06/24/2022 Engineered By: AWL DWG. Checked By:

PAT SEE PLAN

REVISIONS No. Date:

Sheet Number

S2.0

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