

GENERAL CONSTRUCTION SPECIFICATION

1. 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.
2. 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.
3. 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.
4. 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 NON-COMPLIANCE OCCUR.

5. 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.
7. 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.
8. 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.
9. 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.

10. THE STRUCTURAL ENGINEER OF RECORD IS RESPONSIBLE FOR ANY SECONDARY STRUCTURAL ELEMENTS OR NON-STRUCTURAL ELEMENTS, EXCEPT FOR THE ELEMENTS SPECIFICALLY NOTED ON THE STRUCTURAL DRAWINGS.

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 ASSUMED 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 DISCREPANCIES.

THE SER HAS NOT DESIGNED THE NEW STRUCTURAL SLAB CONSTRUCTION FOR CONCENTRATED LOADS DUE TO VEHICLES AS LAYERS IS DESIGNED FOR UNIFORM LOADS AS NOTED IN THE 'DESIGN LOADS' PORTION OF THE STRUCTURAL NOTES AND CONCENTRATED LOADS IN ACCORDANCE WITH REQUIREMENTS OF THE BUILDING CODE.

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 PERFORMED AN ANALYSIS OF THE EXISTING BUILDING STRUCTURE ADJACENT TO THE NEW STRUCTURE. THE NEW BUILDING IS DESIGNED AS AN INDEPENDENT SELF-SUPPORTING STRUCTURE.

SUBMITTALS

1. 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.
2. 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.
3. CONTRACTOR SHALL HIGHLIGHT, ENCIRCLE, OR OTHERWISE SPECIFICALLY IDENTIFY DEVIATIONS FROM THE CONTRACT DOCUMENTS ON SUBMITTALS.
4. 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.
5. 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.
6. 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.
7. PROVIDE THE FOLLOWING SUBMITTALS FOR THIS PROJECT:
  - a. CAST-IN-PLACE CONCRETE
  - 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
  - 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 STEEL
  - 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
  - ii. COLD-FORMED METAL FRAMING
  - d. PRODUCT DATA FOR EACH TYPE OF COLD-FORMED METAL FRAMING PRODUCT AND ACCESSORY INDICATED
  - iii. 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 TENSION LOADS.
  - iv. PRODUCT DATA FOR EACH TYPE OF PRODUCT INDICATED.

FOUNDATIONS

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 OWNER'S AGENT.
  - a. ALLOWABLE SOIL BEARING PRESSURE: 2000 PSF
  - b. SUB GRADE MODULUS (k): 100 PCI
  - c. ULTIMATE FRICTION COEFFICIENT BETWEEN CONCRETE FOUNDATIONS AND SOIL: 0.30
  - d. UNIT WEIGHT OF SOIL: 120 PCF
  - e. AT REST EARTH PRESSURE, K<sub>0</sub>: 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 GRADE.
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 RECEIVE OTHER WORK.
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 DEVICES. 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 MATERIAL.

8. EXCAVATION FOR FOOTINGS SHALL BE LINED TEMPORARILY WITH A 6 MIL POLYETHYLENE IF PLACEMENT OF CONCRETE DOES NOT OCCUR WITHIN 24 HOURS OF EXCAVATION.
9. CONCRETE SHALL NOT BE POURED AGAINST ANY SUB GRADE CONTAINING WATER, ICE, FROST, OR LOOSE MATERIAL.

10. CONCRETE FLOOR AND SLABS
  1. 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. PROFILE SOILS SUBGRADE BELOW THE BUILDING SLABS WITH HEAVY PNEUMATIC-TIRED EQUIPMENT TO IDENTIFY SOFT POCKETS AND AREAS OF EXCESS YIELDING.
  4. COMPACT SOIL MATERIALS AND SUBGRADE TO NOT LESS THAN 98% OF MAXIMUM DRY UNIT WEIGHT, UNLESS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
  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, UNLESS 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. SLOPE SLAB SURFACES UNIFORMLY TO DRAINS WHERE REQUIRED.
    - d. SLOPE SURFACES UNIFORMLY TO DRAINS WHERE REQUIRED.
    - e. BEGIN INITIAL FLATTING USING BULL FLATS 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 JOINTS. SURFACES 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. CONSTRUCTION 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, ABRAD, 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 psi 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

1. 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 AND ERECTION TOLERANCES.
2. PROVIDE CONCRETE MASONRY UNIT ASSEMBLIES (CMUS) AS INDICATED ON THE DRAWINGS THAT DEVELOPS A MINIMUM NET-AREA COMPRESSIVE STRENGTH (F<sub>m</sub>) 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 MORTAR OR GROUT.
  - 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 3000 PSI. GROUT SHALL HAVE SLUMP OF 8 TO 11 INCHES AS MEASURED ACCORDING TO ASTM C445. GROUT SHALL COMPLY WITH TABLE 1.15.1 IN ACI 530.1 FOR DIMENSIONS OF GROUT SPACES AND POUR HEIGHT.
5. LAY HOLLOW CONCRETE MASONRY UNITS IN A BOND PATTERN COMPLYING WITH THE ARCHITECTURAL DRAWINGS AND AS FOLLOWS:
  - a. WITH FACE SHELLS FULLY BEDDED IN MORTAR AND WITH HEAD JOINTS OF DEPTH EQUAL TO BED JOINTS.
  - 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 FOOTINGS.
  - 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 LISTED BELOW. PROVIDE MATCHING DOVELS INTO THE FOOTING OR FOUNDATION CONSTRUCTION PROVIDING TWO ADDITIONAL BARS AND DOVELS UNDER POINT LOADS, LINTELS AND BEAMS WHICH HAVE A REACTION EXCEEDING 10 KIIPS, 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. LIFT 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:
    - i. 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 SAND OPENING; INTERRUPT JOINT REINFORCING AT CONTROL AND EXPANSION JOINTS, UNLESS OTHERWISE INDICATED. CUT AND BEND REINFORCING UNITS AS DIRECTED BY MANUFACTURER FOR CONTINUITY AT CORNERS, RETURNS, OFFSETS, COLUMN FRIEPPROOFING, 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 MULTI-WYTHE WALLS SHALL CONSIST OF TAB TYPE, EITHER LADDER OR TRUSS DESIGN, WITH 1 SIDE ROD AT EACH FACE SHELL OF BACKING WYTHE AND WITH RECTANGULAR TABS SIZED TO EXTEND AT LEAST HALFWAY THROUGH FACING WYTHE BUT WITH AT LEAST 5/8-INCH COVER ON OUTSIDE FACE. SIDE AND CROSS RODS SHALL BE W1.7 DIAMETER.
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 CONCRETE.
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 IN PROGRESS.
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.

COMP.	WATER- ELEMENT	MINIMUM		MAXIMUM	
		STRENGTH @ 28 DAYS	CEMENT RATIO	SLUMP LIMIT	AIR CONTENT
a.	FOOTINGS	3000 PSI	0.45	4"	0.0%
b.	RETAINING WALLS	3000 PSI	0.45	4"	4.5%
c.	SLABS-ON-GRADE	3000 PSI	0.45	4"	0.0%

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

16. 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"
    - ii. NO. 6 BARS AND LARGER: 2"
  - 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, AND SPIRALS FOR BEAMS OR COLUMNS.
17. 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.
18. 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 & DESIGN, P.A.
19. 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 REINFORCEMENT STEEL TO BE PLACED IN THE SLAB. ANY STOP IN CONCRETE WORK MUST BE MADE WITH VERTICAL BULKHEADS, UNLESS OTHERWISE SHOWN.
20. 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 TO LIMITATIONS OF ACI 301.
21. 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.
22. CURE FORMED AND UNFORMED CONCRETE 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.
23. 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.

24. 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"
    - ii. NO. 6 BARS AND LARGER: 2"
  - 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, AND SPIRALS FOR BEAMS OR COLUMNS.

25. 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.
26. 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 & DESIGN, P.A.
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31. 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.

32. 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"
    - ii. NO. 6 BARS AND LARGER: 2"
  - 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, AND SPIRALS FOR BEAMS OR COLUMNS.

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34. 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 & DESIGN, P.A.
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  - b. CONCRETE EXPOSED TO EARTH OR WEATHER:
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    - ii. NO. 6 BARS AND LARGER: 2"
  - 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, AND SPIRALS FOR BEAMS OR COLUMNS.

41. 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.
42. 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 & DESIGN, P.A.
43. 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 REINFORCEMENT STEEL TO BE PLACED IN THE SLAB. ANY STOP IN CONCRETE WORK MUST BE MADE WITH VERTICAL BULKHEADS, UNLESS OTHERWISE SHOWN.
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48. COMPLY WITH THE MINIMUM CONCRETE COVER FOR REINFORCEMENT AS FOLLOWS:
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  - b. CONCRETE EXPOSED TO EARTH OR WEATHER:
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    - ii. NO. 6 BARS AND LARGER: 2"
  - 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, AND SPIRALS FOR BEAMS OR COLUMNS.

49. 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 CALCIUM CHLORIDE OR ANY ADMIXTURE CONTAINING CALCIUM CHLORIDE.
50. NORMAL-WEIGHT CONCRETE MIXTURES SHALL HAVE THE FOLLOWING PROPERTIES:

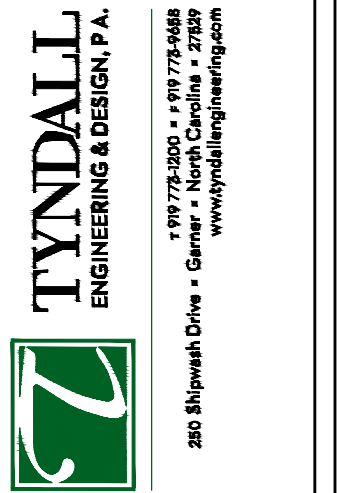
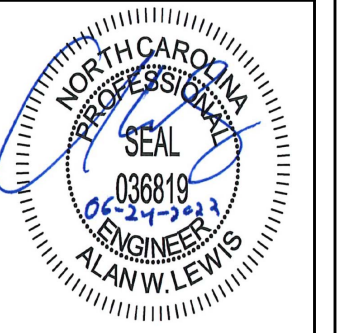
COMP.	WATER-
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DESIGN LOADS	
1. BUILDING CODES	
a. NORTH CAROLINA BUILDING CODE 2018 EDITION	
b. MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES, ASCE 7-10	
2. ROOF DEAD LOAD 3 PSF	
3. ROOF LIVE LOAD 20 PSF	
4. ROOF SNOW LOAD	
a. FLAT-ROOF SNOW LOAD, P <sub>f</sub>	15 PSF
b. SNOW EXPOSURE FACTOR, C <sub>e</sub>	0.9
c. SNOW IMPORTANCE FACTOR, I <sub>s</sub>	1.0
d. THERMAL FACTOR, C <sub>t</sub>	1.0
5. FLOOR DEAD LOAD	
a. TYPICAL FLOOR	15 PSF
6. FLOOR LIVE LOADS	
a. SLAB-ON-GRADE	250 PSF
b. OFFICES	50 PSF
c. LOBBIES AND FIRST FLOOR CORRIDORS	100 PSF
d. CORRIDORS ABOVE FIRST FLOOR	80 PSF
7. WIND LOADS/DATA	
a. BASIC WIND SPEED (3 SECOND GUST)	115 MPH
b. RISK CATEGORY	II
c. EXPOSURE	B
d. INTERNAL PRESSURE COEFFICIENT, G <sub>cpi</sub>	+/-0.18
e. TOPOGRAPHY FACTOR, K <sub>zt</sub>	1.00
f. APPLIED DIRECTIONALITY FACTOR, K <sub>d</sub>	0.85
g. WIND BASE SHEAR	
W <sub>x</sub>	38.7 KIPS
W <sub>y</sub>	51.3 KIPS
8. SEISMIC LOADS/DATA	
a. ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE
b. SITE CLASS	D
c. SEISMIC IMPORTANCE FACTOR I <sub>e</sub>	1.0
f. SITE COEFFICIENT, F <sub>a</sub>	1.6
g. SITE COEFFICIENT, F <sub>v</sub>	2.4
h. SPECTRAL RESPONSE COEFFICIENT, S <sub>ds</sub>	0.137
i. SPECTRAL RESPONSE COEFFICIENT, S <sub>d1</sub>	0.102
BASIC STRUCTURAL SYSTEM	STEEL ORDINARY MOMENT FRAMES
j. RESPONSE MODIFICATION FACTOR, R	3.5
k. SEISMIC RESPONSE COEFFICIENT, C <sub>s</sub>	0.039
q. SEISMIC BASE SHEARS	
S <sub>x</sub>	1.5 KIPS
S <sub>y</sub>	1.5 KIPS

### ABBREVIATIONS

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

\*Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precautions.  
 Any deviations or discrepancies on plans are to be brought to the immediate attention of Tyn dall Engineering & Design, P.A. Failure to do so will void Tyn dall Engineering & Design, P.A. liability.  
 \*Please review these documents carefully. Tyn dall Engineering & Design, P.A. will interpret that all dimensions, recommendations, etc. presented in these documents were deemed acceptable once construction begins.



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

Sheet: ADDITION

### NOTES

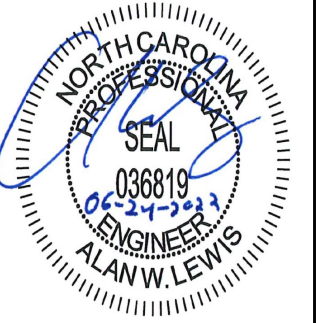
Project #: 2201-010105  
 Date: 06/24/2022  
 Engineered By: AWL  
 DWG. Checked By: PAT  
 Scale: SEE PLAN

REVISIONS		
No.	Date:	Remarks
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Sheet Number

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\*Engineers and designers are not responsible for construction methods, materials, techniques, sequences, procedures or safety precautions.  
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**TYNDALL**  
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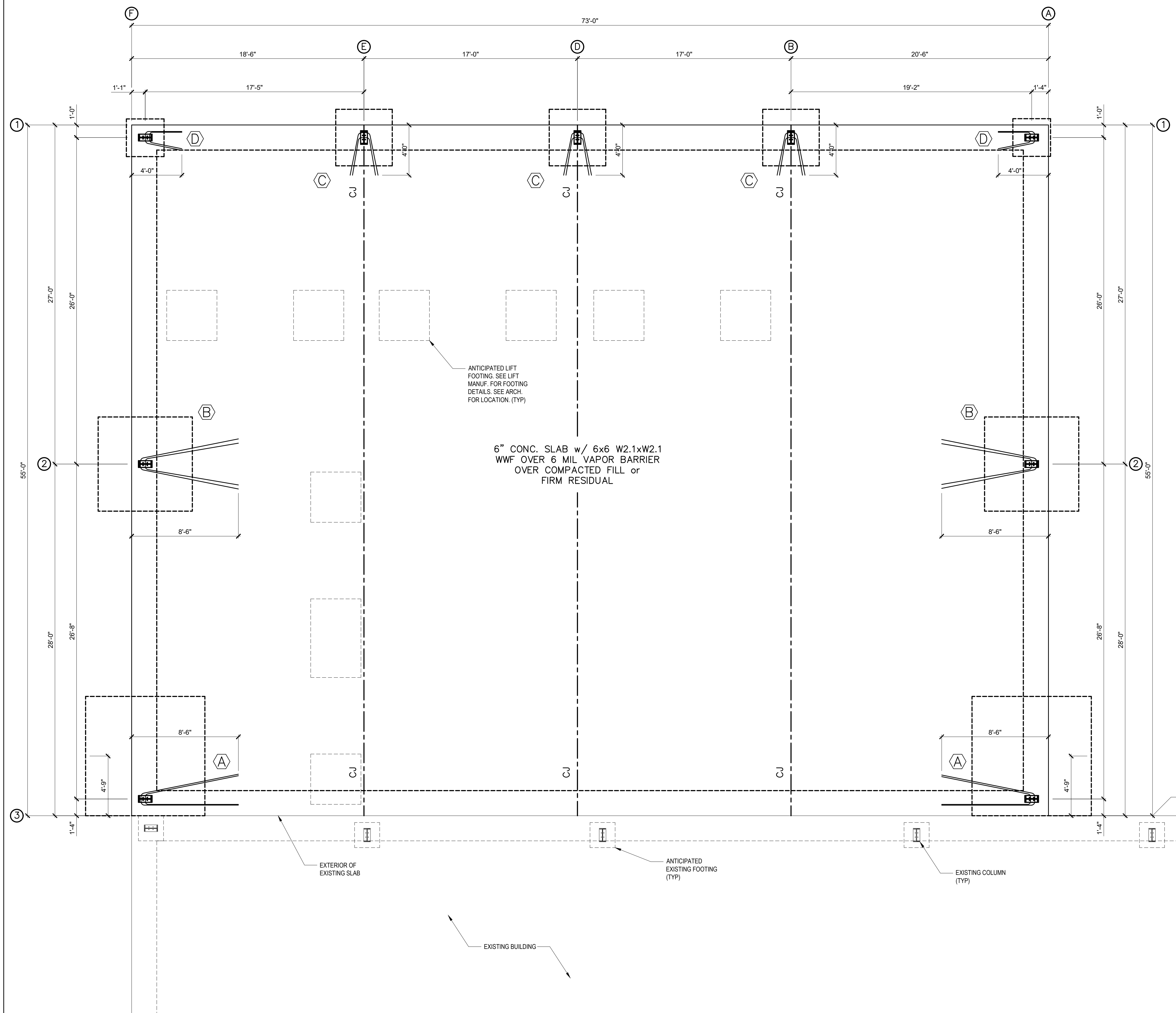
Client: CAROLINA DIESEL TRUCKS, LLC  
 62 PROGRESS DRIVE  
 FUQUAY-VARINA, NC 27528  
 Project: ADDITION

# FOUNDATION PLAN

Project #: 2201-010105  
 Date: 06/24/2022  
 Engineered By: AWL  
 DWG. Checked By: PAT  
 Scale: SEE PLAN

REVISIONS		
No.	Date	Remarks

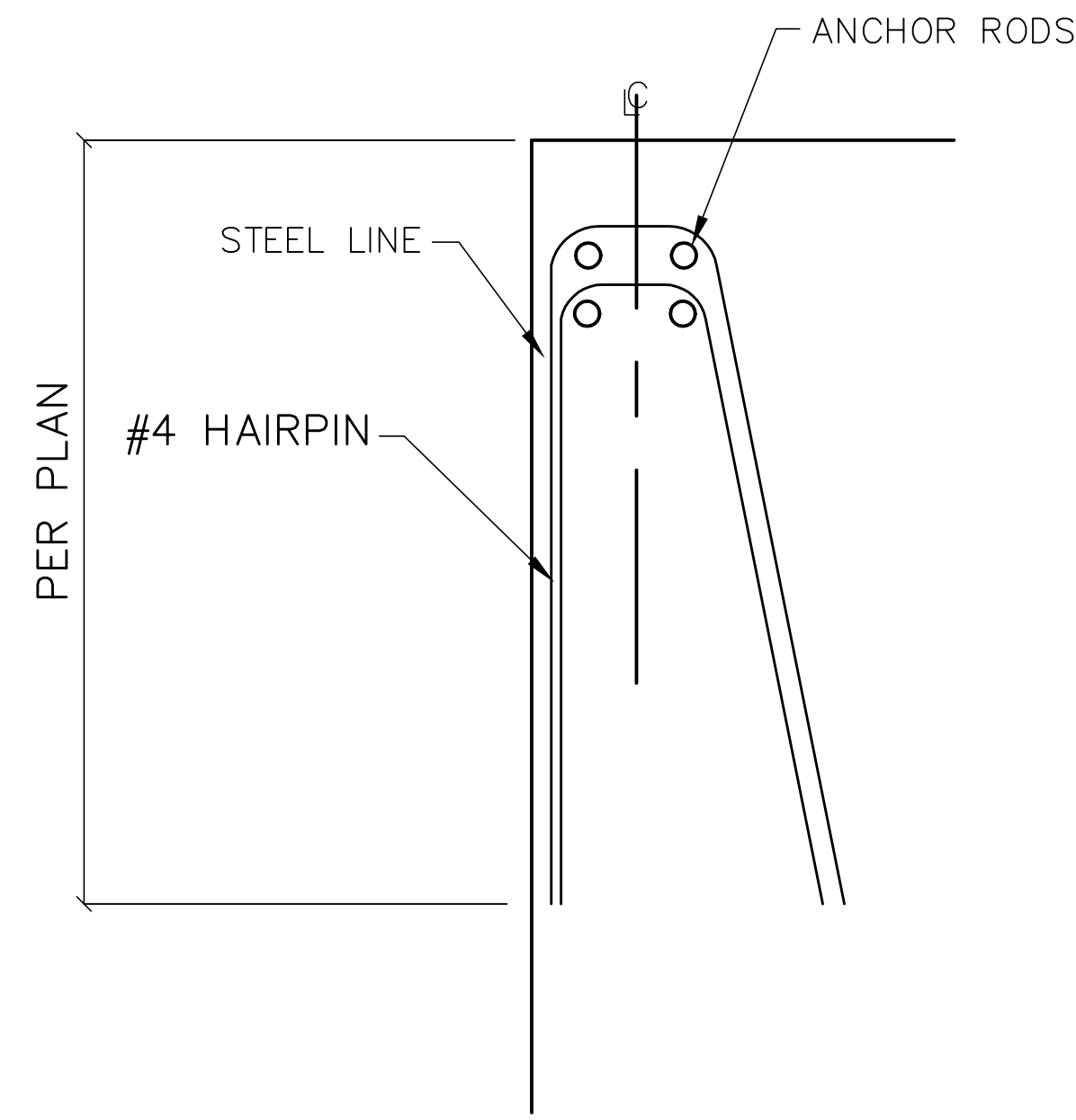
Sheet Number  
**S1.0**  
 3 of 5



FOOTING SCHEDULE			3000 PSF
MARK	SIZE	REINFORCING	
A	9'-6" x 9'-6" x 2'-6"	#5 @ 6" O.C. TOP + BOTTOM EA. WAY	
B	8'-0" x 8'-0" x 2'-0"	#5 @ 6" O.C. TOP + BOTTOM EA. WAY	
C	4'-6" x 4'-6" x 2'-0"	#5 @ 6" O.C. CENTER OF FTG.	
D	3'-0" x 3'-0" x 2'-0"	#5 @ 6" O.C. CENTER OF FTG.	

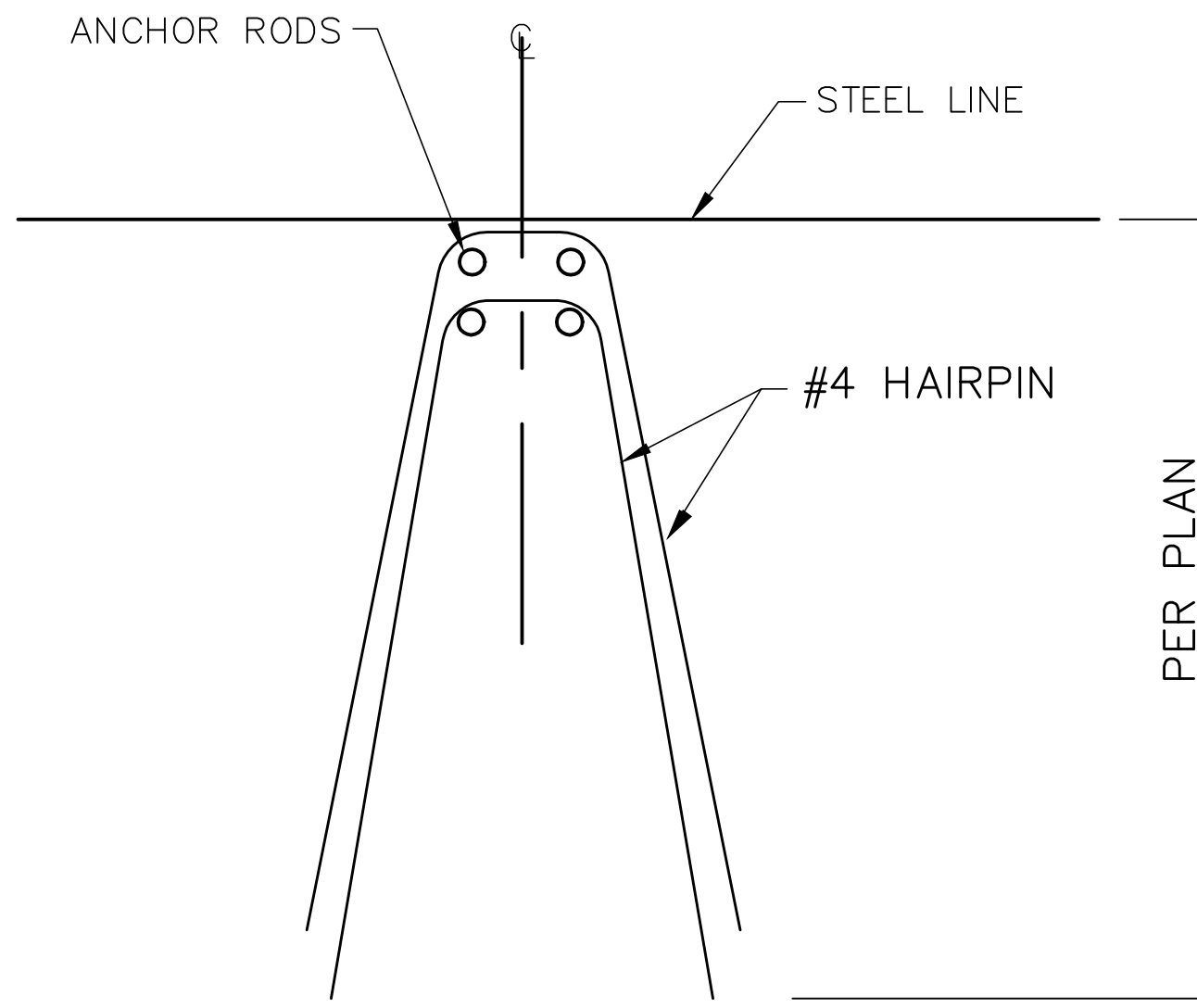
**FOUNDATION PLAN**  
 1/4" = 1'-0"  
 NOTE: COLUMN LINES MATCH PEMB MANUF. DRAWINGS

FILENAME: Z:\RESIDENTIAL ENR\2022 STRUCTURAL PROJECTS\2201-010105 - CAROLINA DIESEL TRUCK ADDITION\CAD FILES\2201-010105.DWG SWID BY: ALAN LEWIS LAST PLOT DATE: 6/24/2022 1:07 PM



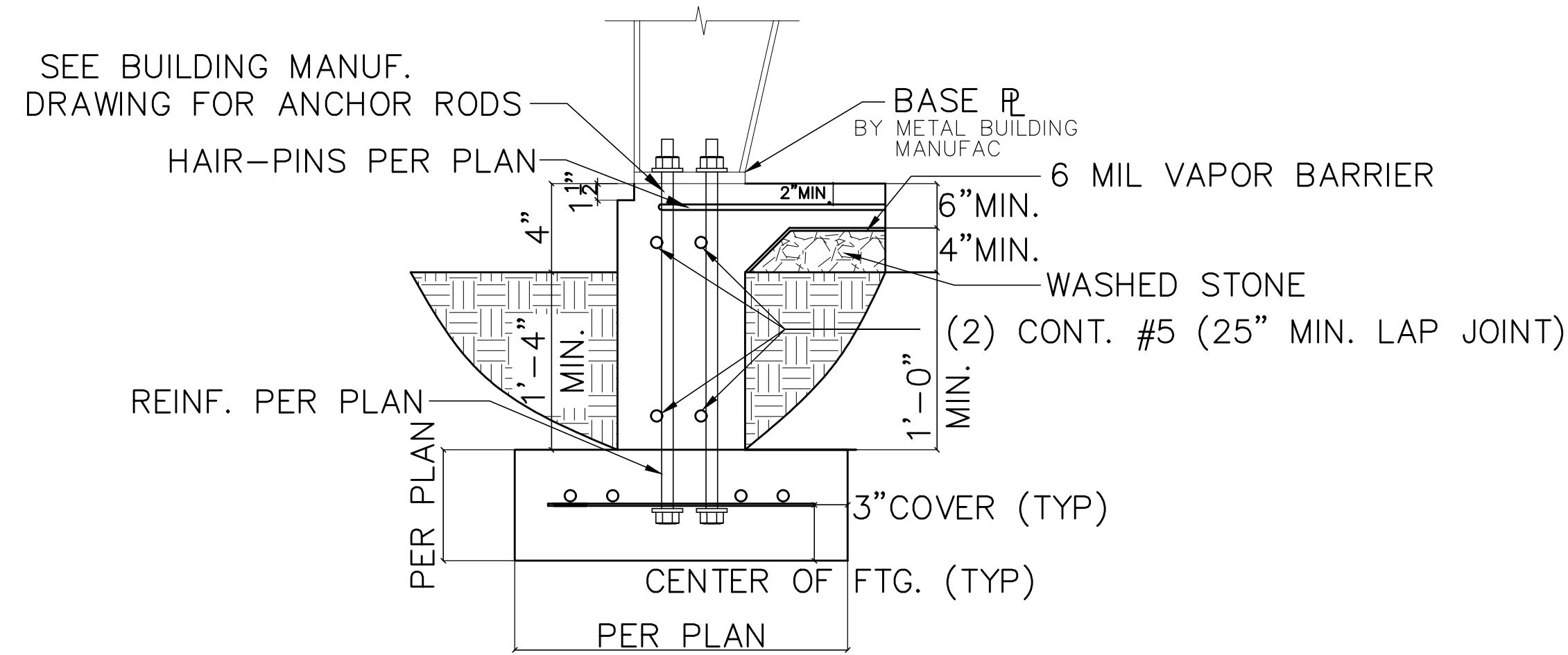
**1 TYP. HAIRPINS @ CORNERS**

- INSTALL ONE HAIRPIN PER SET OF ANCHOR RODS
- HAIRPINS TO BE CENTERED IN SLAB



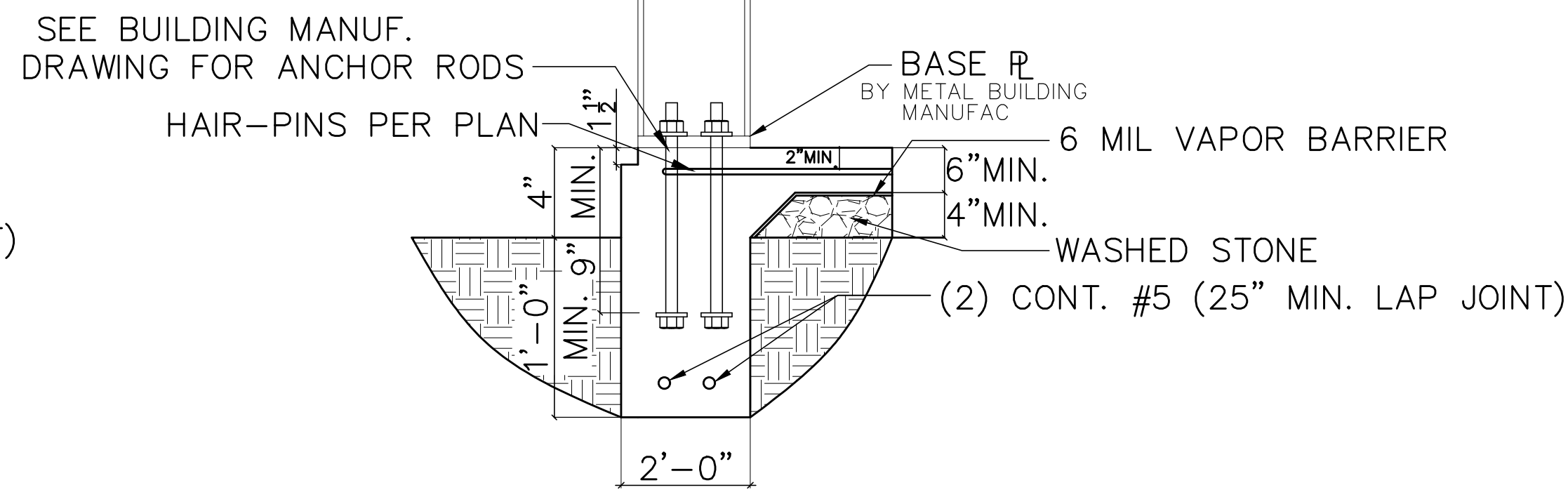
**2 TYP. HAIRPINS @ EXTERIOR**

- INSTALL ONE HAIRPIN PER SET OF ANCHOR RODS
- HAIRPINS TO BE CENTERED IN SLAB



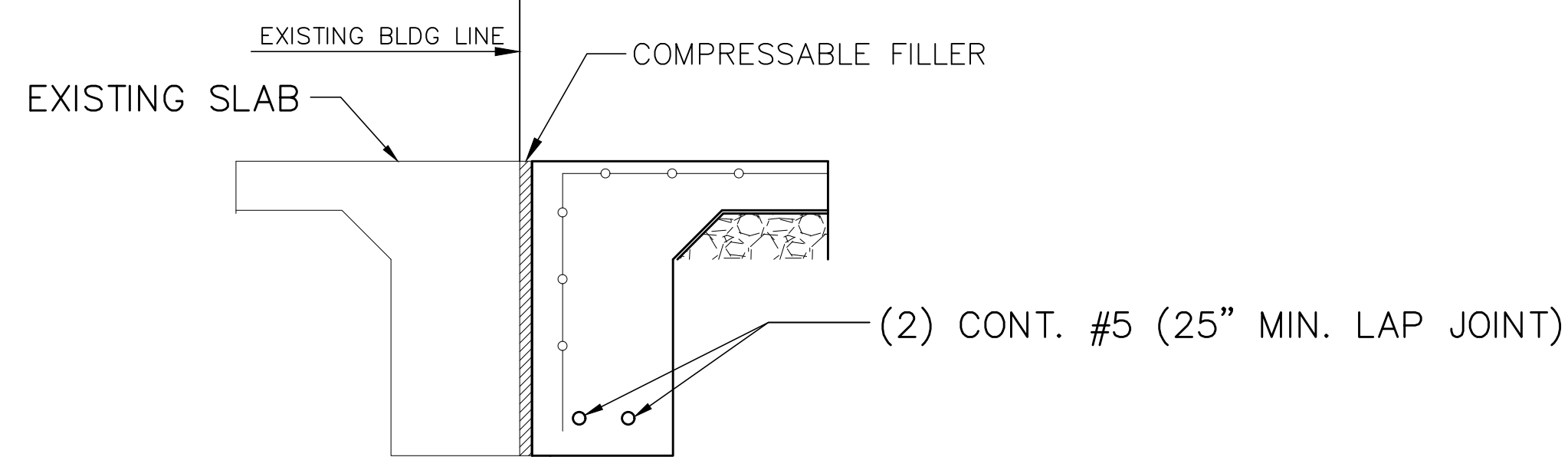
**3 FOOTING ANCHOR ROD DETAIL**

NTS



**4 FOUNDATION WALL ANCHOR ROD DETAIL**

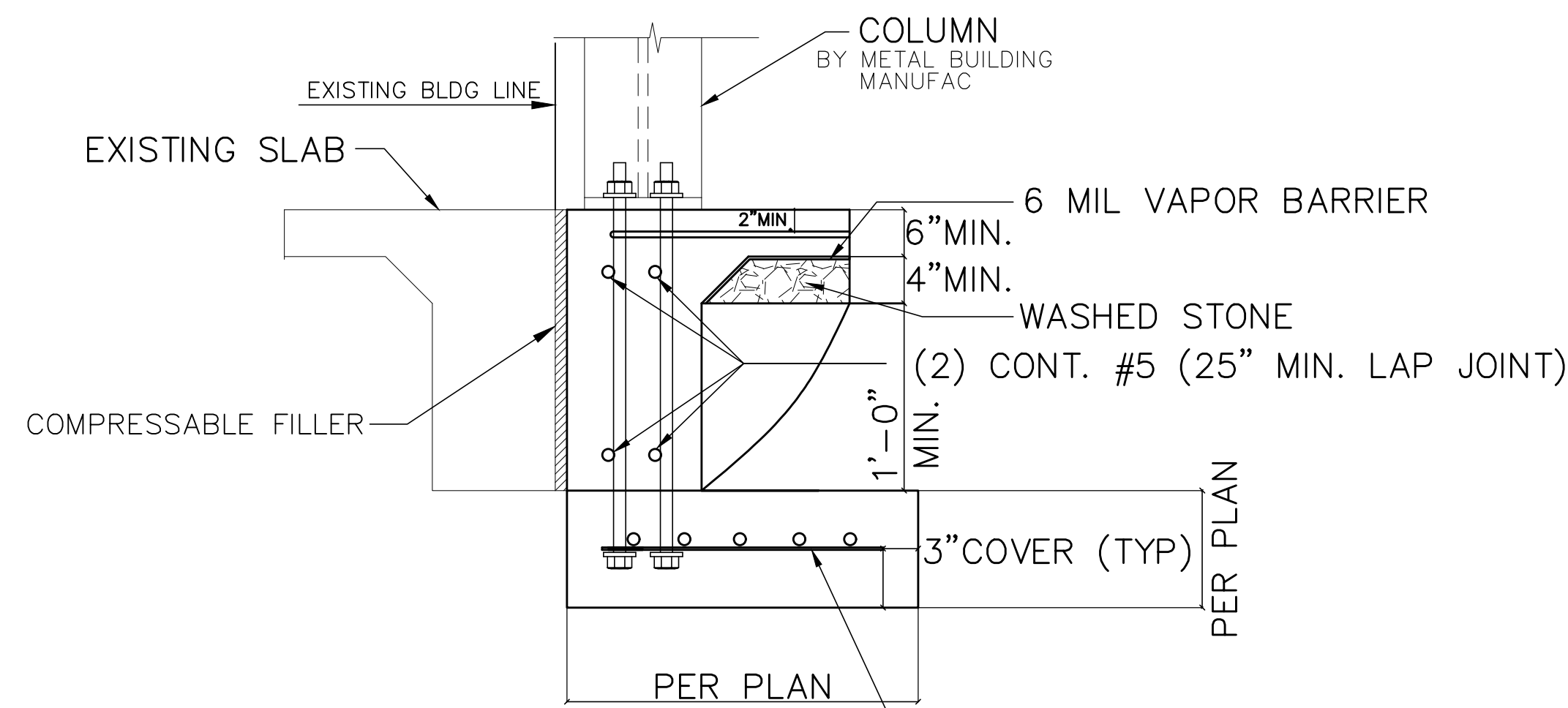
NTS



**5 PERIMETER DETAIL**

NTS

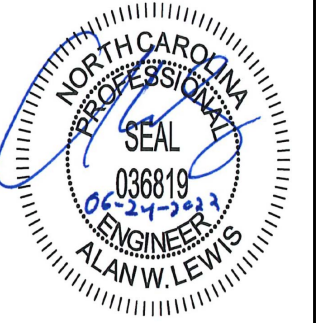
NOTE: POUR PERIMETER MONOLITHIC WITH SLAB



**6 SPREAD FOOTING AT EXISTING BUILDING**

NTS

\*Engineers seal does not include construction means, methods, techniques, sequences, procedures or safety precautions. 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, etc. presented in these documents were deemed acceptable once construction begins.



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Client: CAROLINA DIESEL TRUCKS, LLC  
62 PROGRESS DRIVE  
FUQUAY-VARINA, NC 27528  
File: ADDITION

**FOUNDATION DETAILS**

Project #: 2201-010105  
Date: 06/24/2022  
Engineered by: AWL  
DWG. Checked By: PAT  
Scale: SEE PLAN

REVISIONS		
No.	Date	Remarks

Sheet Number

**S1.1**

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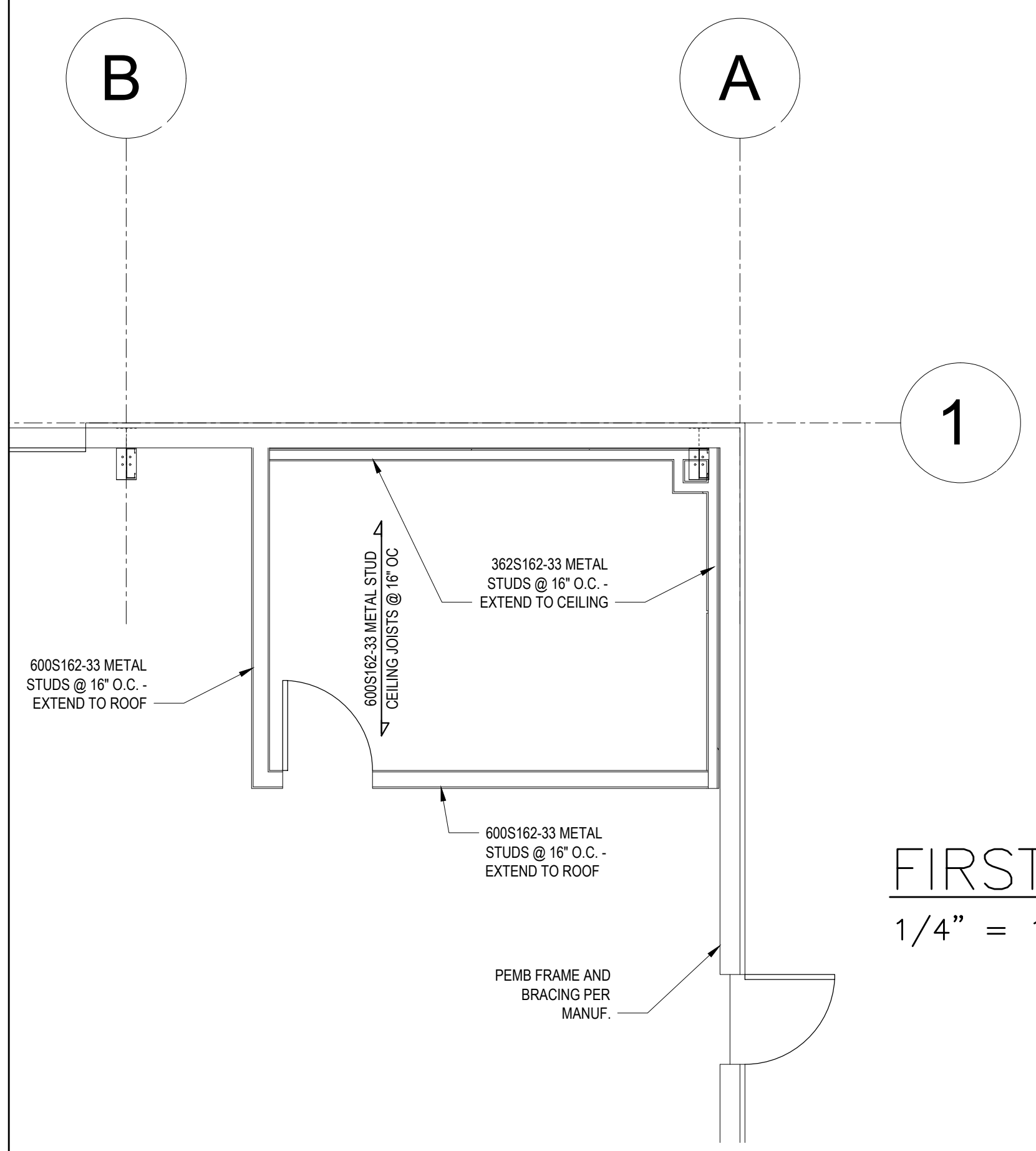
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62 PROGRESS DRIVE  
FUQUAY-VARINA, NC 27528  
Project: ADDITION

# FIRST FLOOR PLAN AND DETAILS

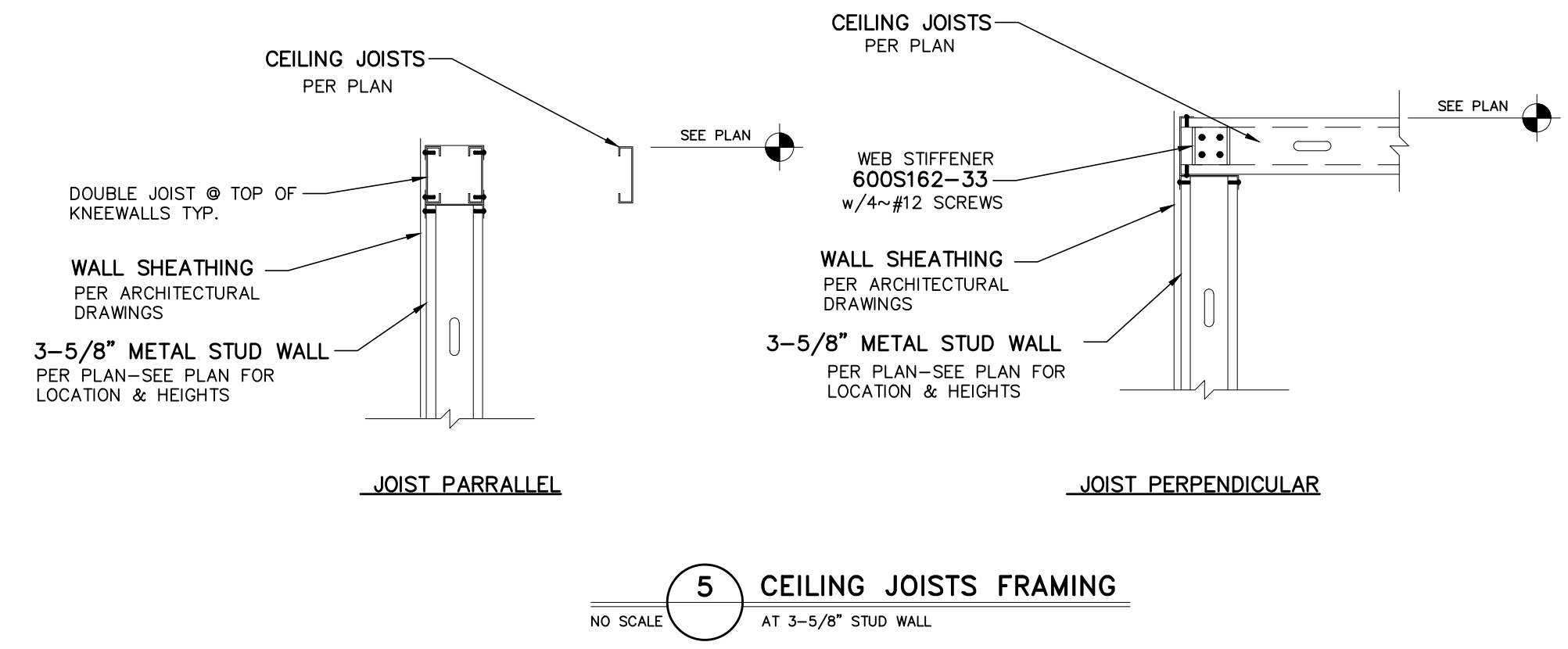
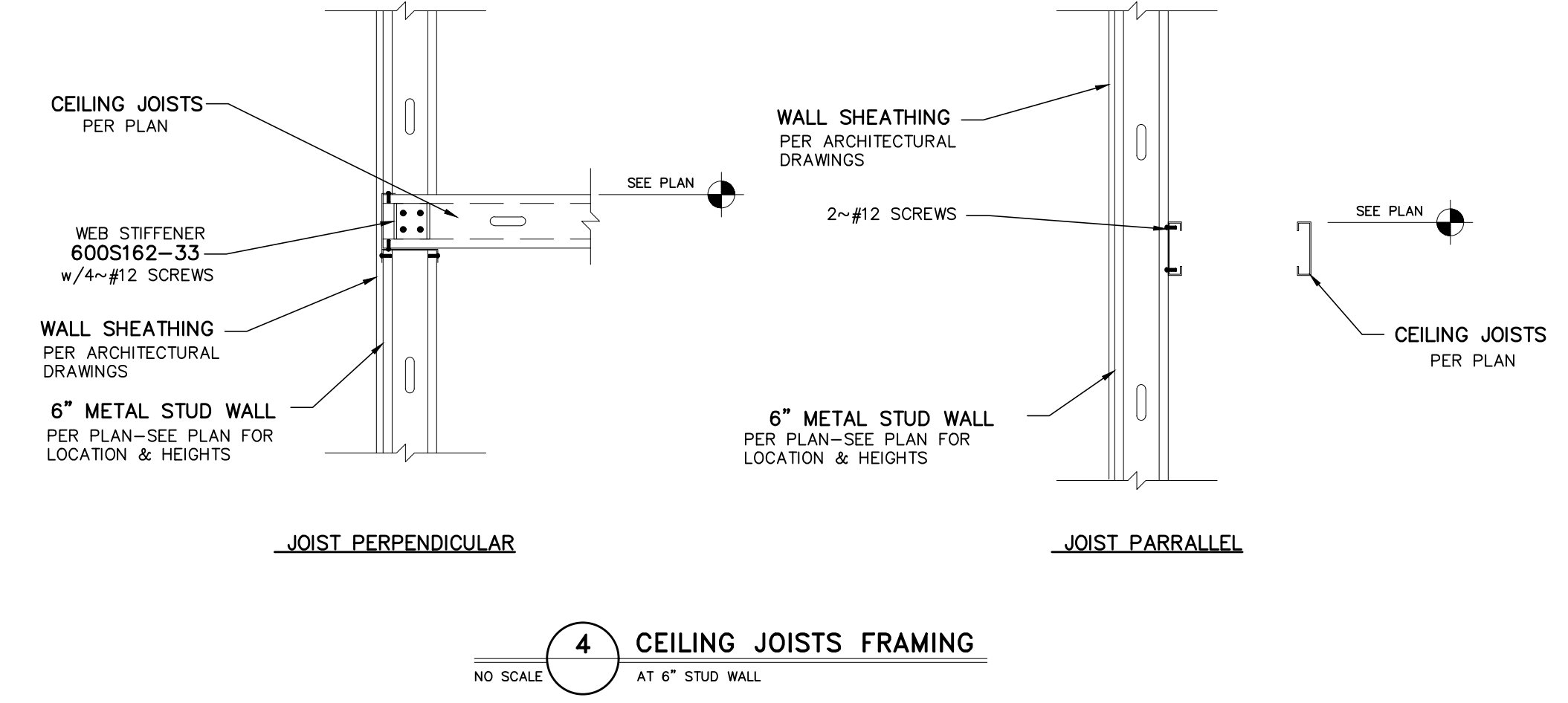
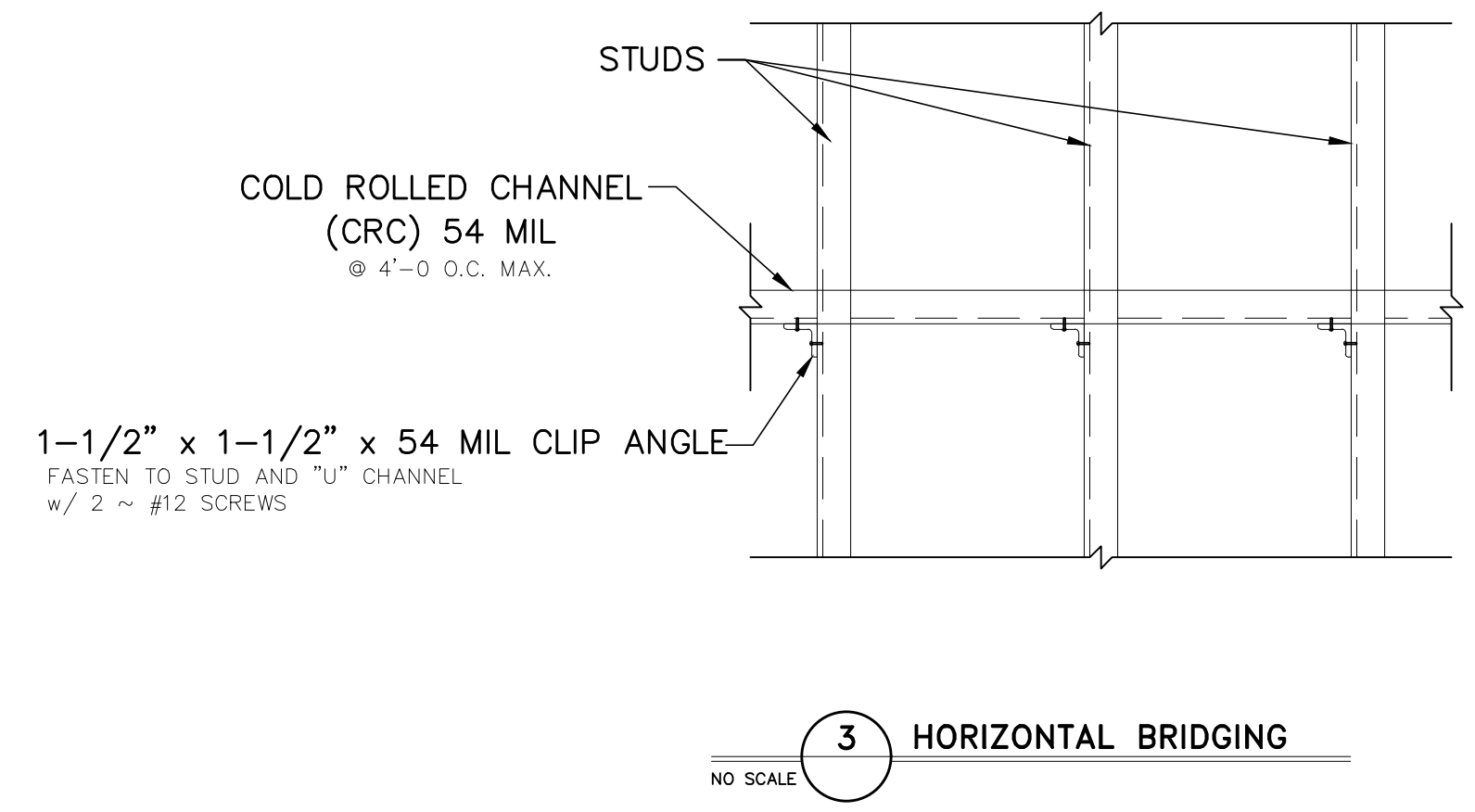
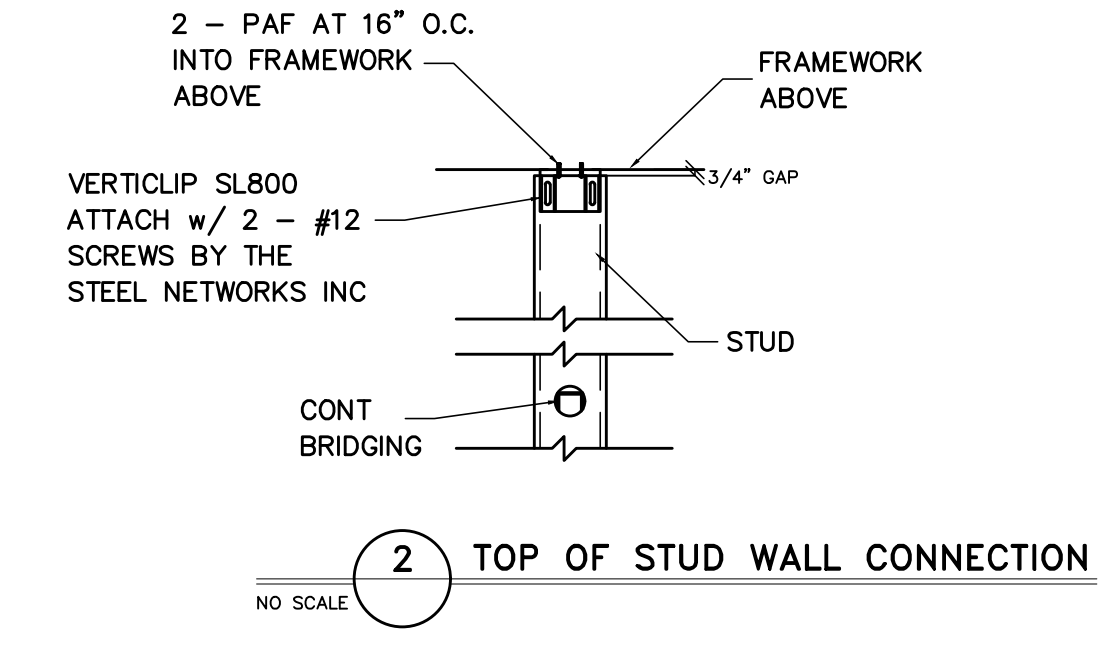
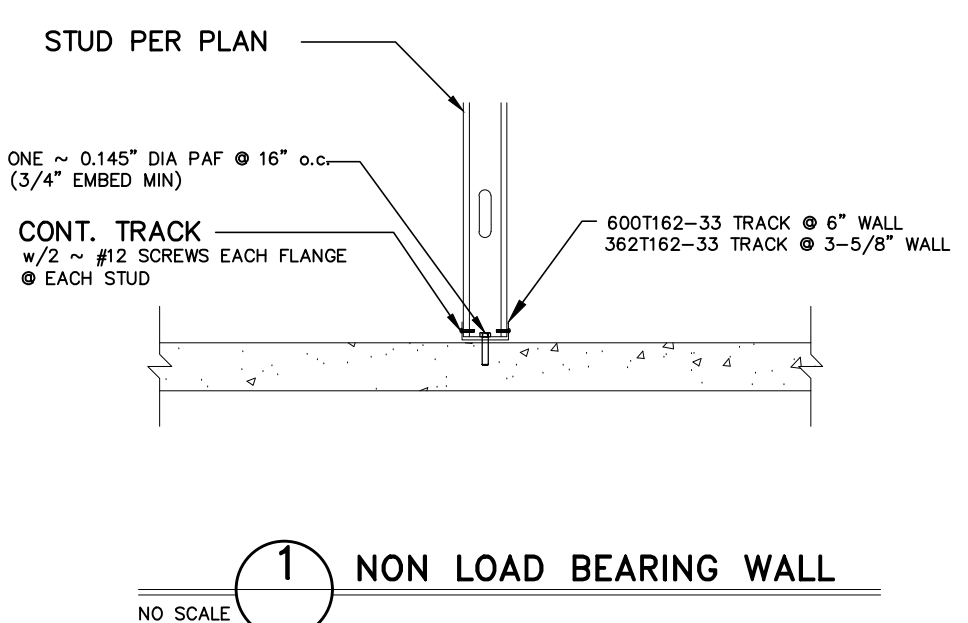
Project #: 2201-010105  
Date: 06/24/2022  
Engineered by: AWL  
DWG. Checked By: PAT  
Scale: SEE PLAN

REVISIONS		
No.	Date	Remarks

Sheet Number  
**S2.0**  
5 of 5



**FIRST FLOOR PLAN**  
1/4" = 1'-0"



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