010001 - GENERAL STRUCTURAL:

1. CONSTRUCTION SHALL CONFORM TO THE 2021 VIRGINIA UNIFORM STATEWIDE BUILDING CODE. WHERE OTHER STANDARDS, SPECIFICATIONS, OR CODES ARE REFERENCED IN THE CONSTRUCTION DOCUMENTS, THE EDITION REFERENCED BY THE GOVERNING BUILDING CODE SHALL APPLY UNLESS OTHERWISE NOTED.
2. MATERIAL TESTS AND INSPECTIONS ARE REQUIRED PER CHAPTER 17 OF THE BUILDING CODE. REFER TO THE PROJECT SCHEDULE OF SPECIAL INSPECTIONS FOR REQUIRED TESTS AND INSPECTIONS.
3. WHERE SEPARATE PROJECT SPECIFICATIONS ARE NOT PROVIDED, THESE GENERAL NOTES SHALL SERVE AS PROJECT SPECIFICATIONS. WHERE SEPARATE PROJECT SPECIFICATIONS ARE PROVIDED, THESE GENERAL NOTES SHALL SUPPLEMENT THE PROJECT SPECIFICATIONS. IN THE EVENT OF A DISCREPANCY BETWEEN DRAWINGS AND SPECIFICATIONS, THE STRICTEST REQUIREMENT SHALL GOVERN. THE ENGINEER OF RECORD SHALL BE NOTIFIED OF DISCREPANCIES PRIOR TO PROCEEDING WITH THE AFFECTED WORK.
4. VERIFY ACTUAL DIMENSIONS, ELEVATIONS, AND CONDITIONS IN THE FIELD AND REPORT ANY DISCREPANCIES PRIOR TO PROCEEDING WITH WORK OR ORDERING MATERIAL WHICH COULD BE AFFECTED BY EXISTING CONDITIONS.
5. STRUCTURAL DRAWINGS INDICATE TYPICAL AND CERTAIN SPECIFIC CONDITIONS ONLY. SUBMITTED SHOP DRAWINGS SHALL DETAIL ALL CONDITIONS IN ACCORDANCE WITH SPECIFIED STANDARDS AND THE SPECIFIC REQUIREMENTS OF THIS PROJECT AS INDICATED ON THE DRAWINGS.
6. DETAILS LABELED "TYPICAL" MAY BE REFERENCED AT LOCATION THEY ARE APPLICABLE.
7. COORDINATE THE STRUCTURAL CONTRACT DOCUMENTS WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, CIVIL AND ALL OTHER CONSULTANTS. NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER OF RECORD IN WRITING OF ANY CONFLICT AND/OR OMISSION. WHERE A CONFLICT OCCURS, THE STRICTEST REQUIREMENT SHALL GOVERN UNLESS OTHERWISE DECIDED BY THE DESIGN TEAM.
8. COORDINATE AND VERIFY FLOOR AND ROOF OPENING SIZES AND LOCATIONS SHOWN WITH ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS. FOR ADDITIONAL OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS REFER TO THE ARCHITECTURAL AND MECHANICAL DRAWINGS. OBTAIN WRITTEN APPROVAL OF ADDITIONAL OPENINGS LARGER THAN 12 " x 12" FROM THE STRUCTURAL ENGINEER OF RECORD.
9. MODIFICATIONS TO STRUCTURAL COMPONENTS AND INSTALLATION OF PENETRATIONS THROUGH STRUCTURAL MEMBERS ARE NOT PERMITTED WITHOUT PRIOR APPROVAL OF EOR.
10. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER BUILDING IS COMPLETED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCING TO ENSURE SAFETY OF THE BUILDING AND ITS COMPONENTS DURING ERECTION.
11. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, ADEQUACY AND SAFETY OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS AND ALL OTHER MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES OF CONSTRUCTION.
12. STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, SEQUENCES, AND SAFETY. THE ENGINEER DOES NOT HAVE CONTROL OR CHARGE OF, AND SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK; FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTOR, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK; OR FOR THE FAILURE OF ANY OF THE AFOREMENTIONED PARTIES TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
13. COORDINATE THE BUILDING ORIENTATION WITH THE ARCHITECTURAL DRAWINGS.
14. COMPLETE SHOP DRAWINGS FOR CONSTRUCTION OF EACH BUILDING COMPONENT NOT DESIGNED BY THE DESIGN TEAM OF RECORD AND NOT SPECIFIED ON THE PROJECT CONSTRUCTION DOCUMENTS SHALL BE SEALED AND SIGNED BY A PROFESSIONAL ENGINEER IN THE STATE WHERE THE PROJECT IS LOCATED AND SHALL BE MADE AVAILABLE AT THE JOB SITE. REFER TO SECTION 013301 SUBMITTALS FOR DELEGATED DESIGN COMPONENTS.
15. ALL STRUCTURES REQUIRE PERIODIC MAINTENANCE TO REACH THEIR INTENDED LIFESPAN AND TO ENSURE STRUCTURAL INTEGRITY FROM EXPOSURE TO THE ENVIRONMENT. A PLANNED PROGRAM OF MAINTENANCE SHALL BE ESTABLISHED BY THE OWNER. THIS PROGRAM SHALL INCLUDE ITEMS SUCH AS, BUT NOT LIMITED TO, PAINTING OF STRUCTURAL STEEL, PROTECTIVE COATINGS FOR CONCRETE, SEALANTS, CAULKED JOINTS, EXPANSION JOINTS, CONTROL JOINTS, SPALLING AND CRACKS IN CONCRETE, AND CLEANING OF EXPOSED STRUCTURAL STEEL ELEMENTS EXPOSED TO CORROSIVE ENVIRONMENTS OR CHEMICALS.
16. NO PROVISIONS HAVE BEEN MADE FOR FUTURE VERTICAL OR HORIZONTAL BUILDING EXPANSION EXCEPT THOSE SHOWN ON STRUCTURAL DRAWINGS.
17. THE USE OF REPRODUCTIONS OF THESE CONTRACT DOCUMENTS OR ELECTRONIC FILE VERSIONS THEREOF BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR, OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS IS PROHIBITED UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE EOR.
18. DO NOT SCALE OFF OF DRAWINGS. ASK ARCHITECT FOR DIMENSIONS NOT SHOWN.

010002 - DESIGN LOADS:

1.	RISK CATEGORY	= II
2.	SUPERIMPOSED DEAD LOADS:	
	• COLLATERAL	= 5 PSF
3.	LIVE LOADS:	UNIFORM CONCENTRATED
	• ROOF	= 20 PSF = 2,000 LB AT ANY POINT ON PRIMARY FRAME
	• FLOOR SLAB ON GRADE	= 250 PSF (SEE S101 FOR VEHICLE LOADS)
4.	WIND DESIGN DATA (PER ASCEHAZARDTOOL.ORG):	
	• ULTIMATE WIND SPEED, V_{ULT}	= 108 MPH (3 SEC. GUST)
	• NOMINAL WIND SPEED, V_{ASD}	= 83.7 MPH (3 SEC. GUST)
	• WIND EXPOSURE	= C
	• INTERNAL PRESSURE COEFFICIENT	= ±0.55 (PARTIALLY ENCLOSED)
	• COMPONENTS AND CLADDING PRESSURES	= SEE TABLES ON SHEET S001
5.	ROOF SNOW LOADING:	
	• GROUND SNOW LOAD, Pg	= 46 PSF
	• FLAT-ROOF SNOW LOAD, Pf	= 32 PSF
	• RAIN ON SNOW, Ps + RAIN	= 0.0 PSF
	• SNOW EXPOSURE FACTOR, Ce	= 0.9
	• SNOW LOAD IMPORTANCE FACTOR, Is	= 1.0
	• THERMAL FACTOR, Ct	= 1.1
6.	SEISMIC DESIGN DATA (PER ASCEHAZARDTOOL.ORG):	
	• SEISMIC IMPORTANCE FACTOR, Ie	= 1.0
	• SITE CLASS	= CD
	• MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS	
	◦ SHORT PERIOD, Ss	= 0.29g
	◦ 1-SEC. PERIOD, S1	= 0.076g
	• SPECTRAL RESPONSE COEFFICIENTS	
	◦ SHORT PERIOD, SDS	= 0.21g
	◦ 1-SEC. PERIOD, SD1	= 0.09g
	• SEISMIC DESIGN CATEGORY	= B
	• BASIC SEISMIC FORCE RESISTING SYSTEM	= STRUCTURAL STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
	• RESPONSE MODIFICATION COEFFICIENT, R	= 3.0
	• OVERSTRENGTH FACTOR, Ωo	= 3.0
	• DEFLECTION AMPLIFICATION FACTOR, Cd	= 3
	• SEISMIC RESPONSE COEFFICIENT, Cs	= 0.071
	• DESIGN BASE SHEAR	= 5.3 KIPS
	• ANALYSIS PROCEDURE USED	= EQUIVALENT LATERAL FORCE
7.	FLOOD DESIGN DATA:	
	• FLOOD HAZARD ZONE DESIGNATION	= X
8.	ROOF RAIN LOAD:	
	• RAIN INTENSITY	= 2.62 (IN/HR) 60-MIN DURATION; 4.98 (IN/HR) 15-MIN DURATION

013300 - SUBMITTALS:

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS THAT ADEQUATELY DEPICT THE STRUCTURAL ELEMENTS AND CONNECTIONS SHOWN IN THE CONTRACT DOCUMENTS. STRUCTURAL DRAWINGS INDICATE TYPICAL AND CERTAIN CONDITIONS ONLY. SHOP DRAWINGS SHALL DETAIL ALL CONDITIONS IN ACCORDANCE WITH SPECIFIED STANDARDS AND SPECIFIC REQUIREMENTS OF THIS PROJECT.
2. REVIEW OF SUBMITTALS AND SHOP DRAWINGS BY THE ARCHITECT/ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. CONTRACTOR REMAINS SOLELY RESPONSIBLE FOR ERRORS AND OMISSIONS ASSOCIATED WITH THE PREPARATIONS OF SHOP DRAWINGS AS THEY PERTAIN TO MEMBER SIZES, DETAILS AND DIMENSIONS SPECIFIED IN THE CONTRACT DOCUMENTS.
3. SHOP DRAWINGS WILL BE REVIEWED FOR GENERAL COMPLIANCE WITH THE DESIGN INTENT OF THE CONTRACT DOCUMENTS ONLY. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF QUANTITIES, LENGTHS, ELEVATIONS, DIMENSIONS, ETC.
4. SHOP DRAWING SUBMITTALS SHALL BE SUBMITTED ELECTRONICALLY. SHOP DRAWINGS SHALL BE REVIEWED AND STAMPED BY THE CONTRACTOR PRIOR TO SUBMITTAL TO THE ARCHITECT/ENGINEER. DRAWINGS SUBMITTED WITHOUT REVIEW WILL BE RETURNED UNCHECKED.
5. THE CONTRACT DOCUMENTS SHALL GOVERN OVER THE SHOP DRAWINGS UNLESS OTHERWISE SPECIFIED IN WRITING BY THE ENGINEER OF RECORD.
6. THE USE OR REPRODUCTION OF THESE CONTRACT DRAWINGS OR ANY PART OF THEM BY CONTRACTOR IN LIEU OF PREPARATION OF SHOP DRAWINGS WILL BE REJECTED UNCHECKED.
7. CHANGES AND ADDITIONS MADE ON RE-SUBMITTALS SHALL BE CLEARLY FLAGGED AND NOTED. THE PURPOSE OF RE-SUBMITTALS SHALL BE CLEARLY NOTED ON THE LETTER OF TRANSMITTAL. ARCHITECT/ENGINEER OF RECORD REVIEW WILL BE LIMITED TO THOSE ITEMS CAUSING THE RE-SUBMITTAL. CONTRACTOR IS RESPONSIBLE FOR THE COSTS CAUSED BY MULTIPLE RE-SUBMITTALS (MORE THAN ONE PER SHOP DRAWING) AT ARCHITECT/ENGINEER CURRENT HOURLY RATES.
8. CONTRACTOR SHALL ALLOW UP TO 10 BUSINESS DAYS FOR ENGINEER REVIEW AND RESPONSE.
9. THE FOLLOWING SHOP DRAWINGS SHALL BE SUBMITTED PRIOR TO CONSTRUCTION:
   - CONCRETE PRODUCT DATA
   - CONCRETE MIX DESIGN
   - CONCRETE REINFORCING
   - COLD FORM STEEL FRAMING
   - MECHANICAL ANCHORS
   - CHEMICAL ANCHORS

013301 - SUBMITTALS FOR DELEGATED DESIGN COMPONENTS :

1. EMPLOY OR RETAIN A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF WHICH THE PROJECT IS LOCATED TO DESIGN THE FOLLOWING STRUCTURAL SYSTEMS AND COMPONENTS, INCLUDING BUT NOT LIMITED TO:
   - PRE-ENGINEERED METAL BUILDINGS
   - OTHER SYSTEMS NOT SHOWN IN THE STRUCTURAL DRAWINGS
2. THE COMPONENT ENGINEER IS RESPONSIBLE FOR CODE CONFORMANCE AND ENSURING DESIGN MEETS ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS.
3. SHOP DRAWINGS SUBMITTED FOR DELEGATED DESIGN COMPONENTS SHALL MEET THE REQUIREMENTS SET FORTH IN SECTION "013300 - SUBMITTALS" IN ADDITION TO REQUIREMENTS SET FORTH WITHIN THIS SECTION.
4. SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED FOR ALL DELEGATED DESIGN COMPONENTS. SUBMITTALS SHALL CLEARLY IDENTIFY THE SPECIFIC PROJECT AND APPLICABLE CODES, LIST THE DESIGN CRITERIA AND SHOW ALL DETAILS AND PLANS NECESSARY FOR PROPER FABRICATION AND INSTALLATION. CALCULATIONS AND SHOP DRAWINGS SHALL IDENTIFY SPECIFIC PRODUCT UTILIZED. GENERIC PRODUCTS WILL NOT BE ACCEPTED.
5. SHOP DRAWINGS AND CALCULATIONS REQUIRE THE SEAL, DATE AND SIGNATURE OF THE COMPONENT ENGINEER.
6. SHOP DRAWING SUBMITTALS FOR DELEGATED DESIGN COMPONENTS SHALL BE REVIEWED BY THE COMPONENT ENGINEER PRIOR TO SUBMITTAL. IF THE SHOP DRAWINGS ARE NOT SIGNED AND SEALED BY THE COMPONENT ENGINEER, THEN PROVIDE A SIGNED LETTER OR A NOTE ON SHOP DRAWING SUBMITTAL, WRITTEN AND SIGNED BY THE COMPONENT ENGINEER INDICATING THAT THE SHOP DRAWINGS ARE IN CONFORMANCE WITH THE CALCULATIONS. ALL CALCULATIONS SHALL BE SIGNED AND SEALED BY COMPONENT ENGINEER, NO EXCEPTIONS WILL BE ALLOWED.
7. CATALOG INFORMATION ON STANDARD PRODUCTS THAT HAVE ICC-ES REPORT NUMBERS DO NOT REQUIRE THE SEAL OF A DELEGATED ENGINEER.
8. DRAWINGS PREPARED SOLELY TO SERVE AS A GUIDE FOR FABRICATION AND INSTALLATION (SUCH AS ERECTION DRAWINGS) AND REQUIRING NO ENGINEERING, DO NOT REQUIRE THE SEAL OF A DELEGATED ENGINEER.
9. REVIEW BY THE ENGINEER OF RECORD WILL BE LIMITED TO VERIFYING THE FOLLOWING INFORMATION:
   A. THAT THE SPECIFIED SUBMITTALS HAVE BEEN SIGNED AND SEALED BY THE DELEGATED SPECIALTY ENGINEER.
   B. THE DELEGATED SPECIALTY ENGINEER DEMONSTRATES AN UNDERSTANDING OF THE DESIGN INTENT AND HAS USED THE SPECIFIED STRUCTURAL DESIGN CRITERIA.
   C. THE CONFIGURATION SET FORTH IN THE STRUCTURAL SUBMITTALS IS CONSISTENT WITH THE CONTRACT DOCUMENTS.
   D. DETAILED REVIEW OF SIGNED AND SEALED CALCULATIONS, DIMENSIONS, OR QUANTITIES WILL NOT BE PERFORMED.
10. SUBMITTALS NOT MEETING THE CRITERIA LISTED IN THIS SECTION WILL BE REJECTED. BENNETT & PLESS, INC WILL NOT BE RESPONSIBLE FOR DELAYS CAUSED BY REJECTED SUBMITTALS.

014333 - SPECIAL INSPECTIONS :

1. SPECIAL INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING CODE. THESE INSPECTIONS ARE IN ADDITION TO THE INSPECTIONS SPECIFIED IN SECTION 110 OF THE BUILDING CODE.
2. THE OWNER SHALL RETAIN THE SERVICES OF A SPECIAL INSPECTION AGENCY PRIOR TO THE START OF CONSTRUCTION. THE SPECIAL INSPECTION AGENCY SHALL BE INDEPENDENT OF THE CONTRACTOR AND REPORT DIRECTLY TO THE BUILDING OFFICIAL, OWNER, AND DESIGNER OF RECORD. THE SPECIAL INSPECTOR(S) SHALL BE QUALIFIED IN ACCORDANCE WITH THE BUILDING CODE.
3. SCOPE OF SPECIAL INSPECTIONS SHALL BE AS NOTED IN THE SCHEDULE OF SPECIAL INSPECTIONS.
4. THE CONTRACTOR SHALL:
   A. COORDINATE AND COOPERATE WITH THE SPECIAL INSPECTOR FOR REQUIRED INSPECTIONS.
   B. PROVIDE SPECIAL INSPECTOR(S) WITH CURRENT CONSTRUCTION SCHEDULE.
   C. PROVIDE SPECIAL INSPECTOR(S) WITH ALL CONTRACT DOCUMENTS, INCLUDING REVISIONS, AMENDMENTS, ETC.
   D. PROVIDE SAFE ACCESS TO WORK REQUIRING INSPECTION.
   E. NOTIFY THE SPECIAL INSPECTOR(S) SUFFICIENTLY IN ADVANCE OF OPERATIONS TO ALLOW FOR PERSONNEL ASSIGNMENT AND SCHEDULING.
   F. SECURE AND DELIVER TO SPECIAL INSPECTOR(S) ALL REQUIRED SUBMITTALS AND MATERIAL SAMPLES FOR TESTING.
5. THE SPECIAL INSPECTOR(S) SHALL:
   A. REVIEW AND BE FAMILIAR WITH THE CONTRACT DOCUMENTS FOR ALL AREAS DEFINED IN THE SCHEDULE OF SPECIAL INSPECTIONS.
   B. VERIFY THAT THE CONSTRUCTION FOLLOWS THE INTENT OF THE CONTRACT DOCUMENTS, BUILDING CODE, AND PERMIT SUCH THAT PUBLIC SAFETY IS UPHELD.
   C. CONSULT WITH THE DESIGN PROFESSIONALS FOR QUESTIONS, CLARIFICATIONS, ETC.
   D. ATTEND PRECONSTRUCTION AND CONSTRUCTION MEETINGS AS NECESSARY TO UNDERSTAND CONTRACT DOCUMENTS AS RELATED TO SCOPE OF SPECIAL INSPECTIONS AND COORDINATE WITH CONTRACTOR.
   E. NOTIFY THE CONTRACTOR OF THEIR PRESENCE AND RESPONSIBILITIES AT THE JOB SITE.
   F. PERFORM ALL WORK AS DEFINED IN THE SCHEDULE OF SPECIAL INSPECTIONS INCLUDING REVIEW OF APPLICABLE SUBMITTALS.
   G. REPORT NONCONFORMING ITEMS TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.
   H. PREPARE AND SUBMIT DAILY AND INTERIM REPORTS THAT INCLUDE DESCRIPTION/LOCATION OF THE SPECIAL INSPECTIONS AND TESTS PERFORMED, INDICATION OF NONCONFORMING ITEMS AND THEIR RESOLUTION, LISTING OF UNRESOLVED ITEMS AND PARTIES NOTIFIED, AND ITEMIZATION OF ANY CHANGES AUTHORIZED BY THE DESIGN PROFESSIONAL.
   I. PREPARE AND SUBMIT DISCREPANCY REPORTS FOR EACH NONCONFORMING ITEM INCLUDING DESCRIPTION AND EXACT LOCATION, REFERENCE TO APPLICABLE DRAWINGS AND/OR SPECIFICATIONS, AND RESOLUTION OR CORRECTIVE ACTION TAKEN.
   J. INITIAL AND DATE THE "AGENT" BOX IN THE SCHEDULE OF SPECIAL INSPECTIONS AS THE INSPECTION AND TESTING ACTIVITIES ARE COMPLETED.
   K. PREPARE AND SUBMIT A FINAL REPORT IN ACCORDANCE WITH THE BUILDING CODE TO BE AVAILABLE AT THE TIME THE BUILDING IS APPROVED FOR OCCUPANCY.

003132 - FOUNDATIONS:

1. THE DESIGN OF FOUNDATIONS, RETAINING WALLS AND SLABS-ON-GRADE IS BASED ON THE FOLLOWING GEOTECHNICAL REPORT. REFER TO FULL REPORT FOR ADDITIONAL SITE PREPARATION AND FOUNDATION INSTALLATION INFORMATION.
   - REPORT NUMBER: 62E-0082
   - PREPARED BY: ROEHLING ROBERTSON (F&R)
   - TITLED: REPORT OF SUBSURFACE EXPLORATION AND GEOTECHNICAL ENGINEERING SERVICES
   - DATED: 17 AUGUST 2026
2. SHALLOW FOUNDATIONS DESIGNED BASED ON AN ALLOWABLE BEARING PRESSURE OF 2,000 PSF.
3. SLABS ON GRADE ARE DESIGNED BASED ON A MODULUS OF SUBGRADE REACTION OF 50 PCI AND SHALL BE PLACED OVER A 15 MIL VAPOR RETARDER AND A 4" LAYER OF COMPACTED DENSE AGGREGATE.
4. AFTER EXCAVATION, IF THE CONDITION OF THE SOILS DO NOT MEET THE RECORDED DESIGN CRITERIA STATED IN THE GEOTECHNICAL REPORT, NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER OF RECORD SO THAT THE FOUNDATIONS MAY BE REDESIGNED IF NECESSARY.
5. THE GEOTECHNICAL ENGINEER MUST VERIFY THE CONDITION AND/OR ADEQUACY OF ALL SUB-GRADES, FILLS AND BACKFILLS PRIOR TO THE PLACEMENT OF FOUNDATIONS, FOOTINGS, SLABS, WALLS, ETC.
6. COORDINATE TOP OF FOOTING ELEVATIONS WITH THE REQUIREMENTS OF OTHER TRADES (PLUMBING, ELECTRICAL, ETC.).
7. BOTTOM OF ALL EXTERIOR FOUNDATIONS SHALL BE A MINIMUM OF 3'-0" BELOW GRADE, UNO.
8. CONSTRUCT COLUMN FOOTINGS AND WALL FOOTINGS MONOLITHICALLY WITH TOPS OF ADJACENT FOOTINGS AT THE SAME ELEVATION.
9. SIDES OF FOUNDATIONS MUST BE FORMED UNLESS CONDITIONS PERMIT EARTH FORMING. FOUNDATIONS PLACED AGAINST THE EARTH REQUIRE THE FOLLOWING PRECAUTIONS: SLOPE SIDES OF EXCAVATIONS AS APPROVED BY THE GEOTECHNICAL ENGINEER AND CLEAN UP SLOUGHING BEFORE AND DURING CONCRETE PLACEMENT. ALL EXPOSED TURNED DOWN SLAB EDGES MUST BE FORMED.
10. WHERE FOUNDATION STEPS ARE NECESSARY, SLOPE NO STEEPER THAN ONE VERTICAL TO TWO HORIZONTAL. FOUNDATION STEPS SHOWN ON IN GENERAL ON FOUNDATION PLANS BASED ON GRADING PLANS. ANY ADDITIONAL STEPS REQUIRED TO MAINTAIN FOUNDATION FROST DEPTH, TO AVOID UNDERGROUND UTILITIES, OR AVOID UNDERMINING EXISTING FOUNDATION TO BE COORDINATED BY THE CONTRACTOR AT NO ADDITIONAL COST.
11. COORDINATE UNDERFLOOR DRAIN REQUIREMENTS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND THE REQUIREMENTS OF THE GEOTECHNICAL ENGINEER.
12. UNLESS OTHERWISE NOTED, ALL FOOTINGS AND PILASTERS SHALL BE CENTERED UNDER SUPPORTED MEMBERS.
13. NO FOUNDATIONS SHALL BE PLACED IN WATER OR ON FROZEN GROUND.
14. SHORT UTILITY CONSTRUCTION BE PERFORMED AFTER INITIAL EARTHWORK OPERATIONS. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ACHIEVING 95% COMPACTION IN ALL TRENCH BACKFILL.
15. FOLLOW THE RECOMMENDATIONS LISTED IN THE GEOTECHNICAL REPORT FOR SITE PREPARATION WORK. AT A MINIMUM SITE PREPARATION WORK SHALL INCLUDE:
   A. STRIPPING AND GRUBBING OF THE BUILDING FOOTPRINT PLUS A MARGIN OF 5 FEET AROUND THE BUILDING, REMOVING ALL ORGANIC MATERIALS, ABANDONED UTILITIES, AND DRAIN FIELDS. REPLACE WITH CLEAN STRUCTURAL FILL AT THE DIRECTION OF THE GEOTECHNICAL ENGINEER.
   B. PRIOR TO PLACEMENT OF STRUCTURAL FILL, PROOF ROLL SITE TO LOCATE ANY UNFORESEEN SOFT AREAS THAT MUST BE REMOVED.
   C. PLACE ALL STRUCTURAL FILL IN 6" MAXIMUM (LOOSE) LIFTS AT MOISTURE CONTENTS AS DESCRIBED IN THE GEOTECHNICAL REPORT. COMPACT ALL FILL WITHIN 10'-0 " OF THE BUILDING LIMIT TO 95% STANDARD PROCTOR.
   D. TEST FIELD DENSITY AS DESCRIBED IN THE GEOTECHNICAL REPORT TO VERIFY ADEQUATE COMPACTION AND DESIGN BEARING PRESSURE.
   E. DEWATERING MAY BE REQUIRED TO ACHIEVE THE REQUIRED COMPACTION VALUES, AND IF USED, SHOULD DRAW DOWN THE WATER LEVEL TO AT LEAST 2 FEET BELOW THE BOTTOM OF THE EXCAVATION.

032000 - CONCRETE REINFORCING :

1. UNO, CONCRETE REINFORCEMENT SHALL BE ASTM A615 GRADE 60 DEFORMED BARS, FREE FROM OIL, SCALE, AND RUST.
2. ALL REINFORCING STEEL THAT WILL BE WELDED SHALL MEET THE REQUIREMENTS OF ASTM A706 GRADE 60 DEFORMED BARS.
3. DETAIL CONCRETE REINFORCEMENT ACCORDING TO ACI MNL-66 DETAILING MANUAL. SUBMIT SHOP DRAWINGS FOR APPROVAL, SHOWING ALL FABRICATION DIMENSIONS AND LOCATIONS FOR PLACING CONCRETE REINFORCING AND ACCESSORIES. DO NOT BEGIN FABRICATION UNTIL SHOP DRAWINGS ARE COMPLETED AND REVIEWED BY THE STRUCTURAL EOR. UNLESS SPECIFICALLY APPROVED OTHERWISE, DETAIL ALL CONCRETE WALLS AND BEAMS IN ELEVATION.
4. PROVIDE WELDED WIRE REINFORCEMENT (MWSH) IN FLAT SHEETS (ROLLS NOT PERMITTED) CONFORMING TO ASTM A1064. LAP WWR A MINIMUM OF ONE SQUARE + 2" AT EACH SPLICE (6" MIN). INSTALL WWR ON BRICKS OR BOLSTERS AT MID-DEPTH OF SLAB UNO. SPACING OF SUPPORT SHALL BE ADEQUATE TO PREVENT SHIFTING OF WWR DURING CONSTRUCTION AND NOT EXCEED 24" OC.
5. FIBER REINFORCING MAY BE SUBSTITUTED FOR WWR IN SLABS-ON-GRADE AS INDICATED ON SHEET S101.
6. UNO, PROVIDE THE FOLLOWING CONCRETE COVER ON ALL REINFORCING STEEL:
   - CONCRETE AGAINST EARTH (NOT FORMED): 3 "
   - FORMED CONCRETE EXPOSED TO EARTH OR WEATHER:
     - #5 BARS AND SMALLER: 1 1/2"
7. REINFORCING, INCLUDING DOWELS, SHALL BE SECURELY TIED AND CAST WITH THE LOWER MEMBER. PLACING REINFORCING AFTER CONCRETE HAS BEEN PLACED IS NOT PERMITTED.
8. FIELD BENDING OF REINFORCING PARTIALLY EMBEDDED IN CONCRETE IS NOT ALLOWED UNLESS SPECIFICALLY NOTED IN THE STRUCTURAL DOCUMENTS OR APPROVED BY STRUCTURAL ENGINEER.
9. PROVIDE DOWELS FROM THE FOUNDATION WHICH ARE THE SAME GRADE, SIZE AND SPACING AS VERTICAL WALL OR COLUMN REINFORCING UNO.
10. TIE ALL REINFORCING STEEL AND EMBEDDED ITEMS SECURELY IN PLACE PRIOR TO PLACING CONCRETE. PROVIDE SUFFICIENT SUPPORTS TO MAINTAIN THE POSITION OF THE REINFORCEMENT WITHIN SPECIFIED TOLERANCES DURING ALL CONSTRUCTION ACTIVITIES.
11. PROVIDE CORNER BARS AT ALL CORNERS AND INTERSECTIONS OF ALL FOOTINGS, BEAMS AND WALLS.
12. HOOKS WHERE SHOWN ON BARS SHALL BE ACI STANDARD 90° OR 180° HOOKS AS SHOWN, UNO. HOOKS OF TIES OR STIRRUPS SHALL BE ACI STANDARD 90° OR 135° HOOKS AS SHOWN, UNO.
13. PROVIDE CONTINUOUS REINFORCEMENT WHEREVER POSSIBLE. SPLICE REINFORCING BARS ONLY AS SHOWN OR APPROVED. STAGGER SPLICES WHERE POSSIBLE. USE CLASS "B" TENSION SPLICES UNO, INCLUDING DOWELS. SPLICE BOTTOM BARS OVER SUPPORTS AND TOP BARS AT CENTER OF SPAN.
14. THE PLACEMENT OF ALL REINFORCING STEEL MUST BE REVIEWED BY A CERTIFIED INSPECTOR.

033000 - CAST-IN-PLACE CONCRETE :

1. PROVIDE REINFORCED CAST-IN-PLACE CONCRETE CONFORMING TO THE FOLLOWING STANDARDS:
   - ACI 301, SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS, LATEST EDITION
   - ACI 318, BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, LATEST EDITION
   - ACI 302.1R, GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION, LATEST EDITION
   - ACI 360R, DESIGN OF SLABS-ON-GROUND, LATEST EDITION
2. FULLY DOCUMENT AND SUBMIT FOR REVIEW THE PROPOSED MATERIALS AND MIX DESIGN FOR ALL CONCRETE PRIOR TO USE. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE REQUIRED DESIGN STRENGTH. ALL CONCRETE TEST DATA MUST BE AVAILABLE AT THE JOB SITE. MIX SHALL MEET THE REQUIREMENTS OF ASTM C33 FOR COARSE AGGREGATE. CONCRETE DESIGN MIX SUBMITTALS SHALL INCLUDE TESTED, STATISTICAL BACK-UP DATA PER ACI 318 CHAPTER 5.
3. PROVIDE APPROVED CONCRETE MIX DESIGN TO ACHIEVE A DESIGN STRENGTH (F'C) AT DAY INDICATED AND PERFORMANCE SPECIFICATIONS AS FOLLOWS:

CONCRETE MEMBER	F'C @ DAY	WEIGHT	EXPOSURE	MAX SIZE OF AGGREGATE
FOOTINGS, GRADE BEAMS	3000 PSI @ 28	NORMAL	F0, S0, W1, C1	1"
EXTERIOR WALLS/PIERS EXPOSED TO WEATHER	4500 PSI @ 28	NORMAL	F2, S0, W1, C1	3/4"
INTERIOR SLAB-ON-GRADE	4000 PSI @ 28	NORMAL	F0, S0, W0, C0	1 1/2"
EXTERIOR SLAB-ON-GRADE	4500 PSI @ 28	NORMAL	F2, S0, W1, C1	3/4"

4. ADDITIONALLY, CONCRETE MIX DESIGNS SHALL MEET THE FOLLOWING CRITERIA:
   A. NORMAL WEIGHT CONCRETE SHALL HAVE A MAXIMUM UNIT WEIGHT OF 145 LB/FT ³.
   B. MAXIMUM WATER/CEMENT RATIOS SHALL CONFORM TO ACI 318 TABLE 19.3.2.1.
   C. TARGET AIR CONTENT SHALL CONFORM TO ACI 318 TABLE 19.3.3.1.
   D. CEMENTITIOUS MATERIALS SHALL CONFORM TO THE SPECIFICATIONS OF ACI 318 TABLE 26.4.1.1.1(A).
   E. MAXIMUM LIMITS OF CEMENTITIOUS MATERIALS SHALL CONFORM TO ACI 318 TABLE 26.4.2.2(B).
   F. THE USE OF CALCIUM CHLORIDE, CHLORIDE IONS, OR OTHER SALTS IS NOT PERMITTED.
   G. CONTRACTOR COORDINATE WITH CONCRETE SUPPLIER TO ENSURE MIX DESIGNS PROVIDE APPROPRIATE WORKABILITY AND CURING TIMES FOR PROPER PLACEMENT, FINISHING, AND CURING.
   H. MIX DESIGNS FOR EXPOSED CONCRETE SLABS SHALL NOT INCLUDE FLY ASH.
   I. CONCRETE MIX DESIGN SHOP DRAWINGS SHALL INCLUDE THE DESCRIPTION OF WHERE EACH CONCRETE MIX SHALL BE LOCATED IN STRUCTURE.
5. CONCRETE SHALL COMPLY WITH THE REQUIREMENTS OF ASTM STANDARD C94 FOR MEASURING, MIXING, TRANSPORTING, ETC. CONCRETE TICKETS SHALL BE TIME STAMPED WHEN CONCRETE IS BATCHED.
6. NON-STRUCTURAL EMBEDMENTS (CONDUIT, PIPES, SLEEVES, ETC) WITHIN WALLS, BEAMS OR SLABS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER AND ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. ALL EMBEDMENTS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH ACI 318 AND THE FOLLOWING:
   A. ALUM

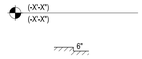
STRUCTURAL LEGEND

GENERAL PLAN SYMBOLS



ELEVATION MARK

FOUNDATION PLAN SYMBOLS

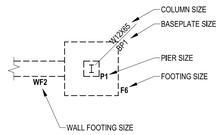


FOOTING STEP

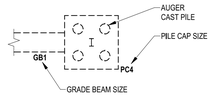
SLAB STEP

SLOPE DIRECTION

SLAB ON GRADE SYM (SOG)

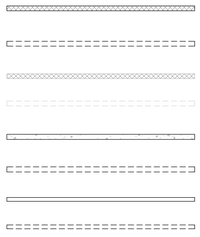


TYPICAL FOUNDATION PLAN ELEMENTS



TYPICAL FOUNDATION PLAN ELEMENTS

WALL TYPES



MASONRY STRUCTURAL WALL

MASONRY STRUCTURAL WALL BELOW

MASONRY PARTITION WALL

MASONRY PARTITION WALL BELOW

CONCRETE WALL

CONCRETE WALL BELOW

STUD WALL

STUD WALL BELOW

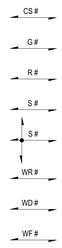
CONCRETE FRAMING PLAN SYMBOLS



TENDON DRAPE ELEVATION

STUD RAIL MARK

ELEVATED FLOOR AND ROOF SPAN SYMBOLS



COMPOSITE SLAB SPAN SYMBOL (CS)

GRATING SPAN SYMBOL (G)

ROOF DECK SPAN SYMBOL (R)

ONE-WAY CONC SLAB SPAN SYMBOL (S)

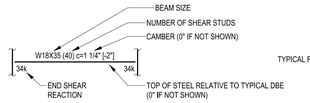
TWO-WAY CONC SLAB SPAN SYMBOL (S)

WOOD ROOF SPAN SYMBOL (WR)

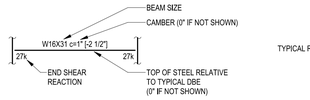
WOOD DECK SPAN SYMBOL (WD)

WOOD FLOOR SPAN SYMBOL (WF)

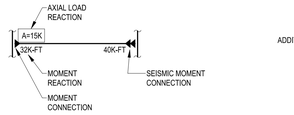
STEEL FRAMING PLAN SYMBOLS



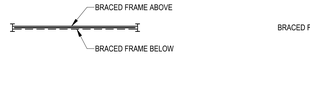
TYPICAL FLOOR BEAM DESIGNATIONS



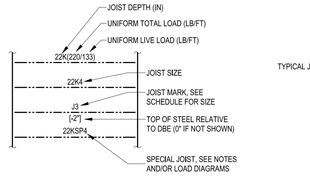
TYPICAL ROOF BEAM DESIGNATIONS



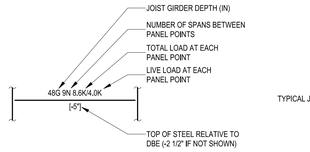
ADDITIONAL BEAM REACTION DESIGNATIONS



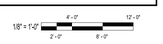
BRACED FRAME DESIGNATION



TYPICAL JOIST DESIGNATIONS



TYPICAL JOIST GIRDER DESIGNATIONS



STRUCTURAL ABBREVIATIONS

&	AND
@	AT
X°	DEGREE
Ø	DIAMETER
#	NUMBER/POUND
ACI	AMERICAN CONCRETE INSTITUTE
ADDL	ADDITIONAL
AESS	ARCHITECTURAL EXPOSED STRUCTURAL STEEL
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
ALT	ALTERNATE
ANC	ANCHOR
APPROX	APPROXIMATE
APC	ARCHITECTURAL PRECAST VENEER
AR	ANCHOR ROD
ARCH	ARCHITECT/ARCHITECTURAL
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASD	ALLOWABLE STRESS DESIGN
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWPA	AMERICAN WOOD PROTECTION ASSOCIATION
AWS	AMERICAN WELDING SOCIETY
B/	BOTTOM OF
BB	BOND BEAM
B/B	BACK TO BACK
BCX	BOTTOM CHORD EXTENSION
BL	BUILDING LINE
BLDG	BUILDING
BLK	BLOCK
BM	BEAM
BOT	BOTTOM
BP	BASE PLATE / BEARING PLATE
BRG	BEARING
BRK	BRICK
BSMT	BASEMENT
BTWN	BETWEEN
CANT	CANTILEVER
CC	CLEAR COVER
CFMF	COLD-FORMED METAL FRAMING
CFS	COLD-FORMED STEEL
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONNX	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
CNR	CORNER
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
CWI	CERTIFIED WELDING INSPECTOR
DBA	DEFORMED BAR ANCHOR
DBE	DECK BEARING ELEVATION
DBL	DOUBLE
DEMO	DEMOLITION
DIA	DIAMETER
DIAG	DIAGONAL
DIAPH	DIAPHRAGM
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DT	DOUBLE TEE - PRECAST
DTL	DETAIL
DWL	DOWEL
DWG	DRAWING
EA	EACH
EE	EACH END
EF	EACH FACE
EJ	EXPANSION JOINT
ELEV	ELEVATION
EMBED	EMBEDMENT/EMBEDDED
EPCT	EPOXY COATED
EOD	EDGE OF DECK
EOR	ENGINEER OF RECORD
EOS	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
ESS	EXCAVATION SHORING SYSTEM
ESR	EVALUATION SERVICES REPORT
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F/	FACE OF
FAS	FASTENER
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FINISH FLOOR
FFE	FINISH FLOOR ELEVATION
FIN	FINISH
FLR	FLOOR
FS	FAR SIDE
FT	FOOT OR FEET
FTG	FOOTING
FUT	FUTURE
FV	FIELD VERIFY
GA	GAGE
GALV	GALVANIZED
GB	GRADE BEAM
GC	GENERAL CONTRACTOR
GEN	GENERAL
GL	GIRDLINE
GN	GENERAL NOTE
GR	GRADE
GS	GRIND SMOOTH
HCA	HEADED CONCRETE ANCHOR
HC	HOLLOW CORE
HDG	HOT DIPPED GALVANIZED
HI	HIGH
HK	HOOK
HORIZ	HORIZONTAL
HSS	HOLLOW STRUCTURAL STEEL
HT	HEIGHT
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IN	INCH
INT	INTERIOR
INV	INVERT/INVERTED
ISF	INSIDE FACE
JBE	JOIST BEARING ELEVATION
JST	JOIST
JT	JOINT
K	KIP (THOUSAND POUNDS)
KSI	KIPS PER SQUARE INCH
KSF	KIPS PER SQUARE FOOT
LAT	LATERAL
LBS	POUNDS
LF	LATERAL FRAME
LFT	LINEAR FOOT
LG	LONG
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LO	LOW
LRFD	LOAD RESISTANCE FACTOR DESIGN
LHS	LONG HORIZONTAL SLOT
LSH	LONG SIDE HORIZONTAL
LSL	LAMINATED STRAND LUMBER
LSV	LONG SIDE VERTICAL
LVL	LAMINATED VENEER LUMBER
LVS	LONG VERTICAL SLOT
MANUF	MANUFACTURER
MAS	MASONRY
MAX	MAXIMUM
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL, PLUMBING
MEZZ	MEZZANINE
MID	MIDDLE
MILS	THOUSANDTH OF AN INCH
MIN	MINIMUM
MISC	MISCELLANEOUS
ML	MASONRY LINTEL
MO	MASONRY OPENING
MOM	MOMENT
MTL	METAL
MW	MASONRY WALL
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NOM	NOMINAL
NS	NEAR SIDE
NTS	NOT TO SCALE
OAE	OR APPROVED EQUAL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OPPOSITE HAND
O\O	OUT TO OUT
OPNG	OPENING
OPP	OPPOSITE
OSF	OUTSIDE FACE
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PAF	POWDER ACTUATED FASTENERS
PC	PRECAST
PCF	POUNDS PER CUBIC FOOT
PED	PEDESTAL
PEMB	PRE-ENGINEERED METAL BUILDING
PERP	PERPENDICULAR
PL	PLATE
PLF	POUNDS PER LINEAR FOOT
PLYWD	PLYWOOD
PREFAB	PREFABRICATED
PROJ	PROJECTION
PSF	POUND PER SQUARE FOOT
PSI	POUND PER SQUARE INCH
PSL	PARALLEL STRAND LUMBER
PT	POINT
RAD	RADIUS
RD	ROOF DRAIN
REBAR	REINFORCING BAR
REF	REFERENCE
REINF	REINFORCING/REINFORCED
REQD	REQUIRED
REQT	REQUIREMENT
RTU	ROOF TOP UNIT
RXN	REACTION
SCHED	SCHEDULE
SECT	SECTION
SHT	SHEET/SHEATHING
SIM	SIMILAR
SJ	SAWN JOINT
SJI	STEEL JOIST INSTITUTE
SL	SLOPE
SOG	SLAB ON GRADE
SPA	SPACES/SPACING
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STIFF	STIFFENER
STL	STEEL
STRUC	STRUCTURAL
SUSP	SUSPENDED
SW	SHEAR WALL
SYM	SYMMETRICAL
T/	TOP OF
T&B	TOP AND BOTTOM
T&G	TONGUE & GROOVE
TCX	TOP CHORD EXTENSION
TD	TURN DOWN
TESS	TEMPORARY EXCAVATION SHORING SYSTEM
THK	THICK/THICKNESS
THD	THREAD
TMS	THE MASONRY SOCIETY
TR	TREAD
TS	TUBE STEEL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UNSCHED	UNSCHEDULED
UT	UTILITIES
VBF	VERTICAL BRACED FRAME
VERT	VERTICAL
VIF	VERIFY IN FIELD
VX	HORIZONTAL SHEAR FORCE
VY	VERTICAL SHEAR FORCE
W/	WITH
WD	WOOD
WF	WIDE FLANGE
W/O	WITHOUT
WP	WORK POINT
WT	WEIGHT
WT	WATER TABLE
WWR	WELDED WIRE REINFORCEMENT
WS	WATERSTOP
XB	X-BRACING

VIRGINIA TECH NON-CAPITAL CONSTRUCTION

FORESTRY RESEARCH OPERATIONS CENTER

140 INVENTIVE LANE
BLACKSBURG, VA 24061

VT PROJECT CODE W0# 26-819490

DESIGNER

213 SOUTH JEFFERSON, SUITE 1011
ROANOKE, VIRGINIA 24011
540-982-0800

CONSULTANT

BENNETT & PLESS STRUCTURAL ENGINEERS

111 SHERLAKE LANE, SUITE 200
KNOXVILLE, TENNESSEE 37922
865-539-8227

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PROFESSIONAL SEAL



Craig M Favor

UBO CONFORMANCE

SUBMITTAL

10/23/2026

ISSUED FOR CONSTRUCTION

REVISIONS

KEY PLAN

SHEET

STRUCTURAL LEGEND AND ABBREVIATIONS

S002

DESIGN: CMF
DRAWN: MBM
REVIEW: CMF

CN 11053

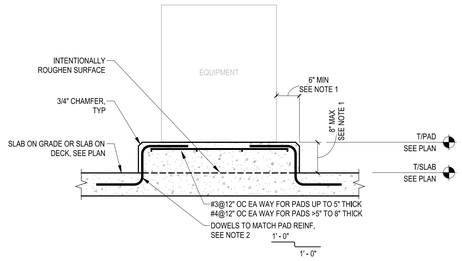
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SPREAD FOOTING SCHEDULE				
Type Mark	FOUNDATION SIZE (WIDTH x THICKNESS)	BOTTOM REINFORCING	TOP REINFORCING	REMARKS
F3	3' - 0" x 3' - 0"x1' - 0"	(3)#5 EW	(3)#5 EW	
F5	5' - 0" x 5' - 0"x1' - 0"	(5)#5 EW	(5)#5 EW	
F7	7' - 0" x 7' - 0"x1' - 6"	(9)#5 EW	(9)#5 EW	

FOUNDATION PLAN NOTES:
1. FOR GENERAL NOTES, ABBREVIATIONS, AND STRUCTURAL LEGEND, SEE SHEET S001 AND S002.
2. LEVEL 1 TOP OF SLAB REFERENCE ELEVATION = 0'-0", UNO, SEE CIVIL DRAWINGS FOR TRUE ELEVATION.
3. "SOG1" INDICATES 7 1/2" THICK CONCRETE SLAB ON GRADE REINFORCED W/TWO (2) LAYERS OF 6x6-W4.0xW4.0 WWR OR 'TUFSTRAND SF' MACRO FIBER POLY REINFORCING BY EUCLID CHEMICAL OR APPROVED EQUIVALENT AT 3.0 LB PER CUBIC YARD DOSAGE RATE ON VAPOR RETARDER ON PREPARED SUBGRADE PER GEOTECH REPORT.

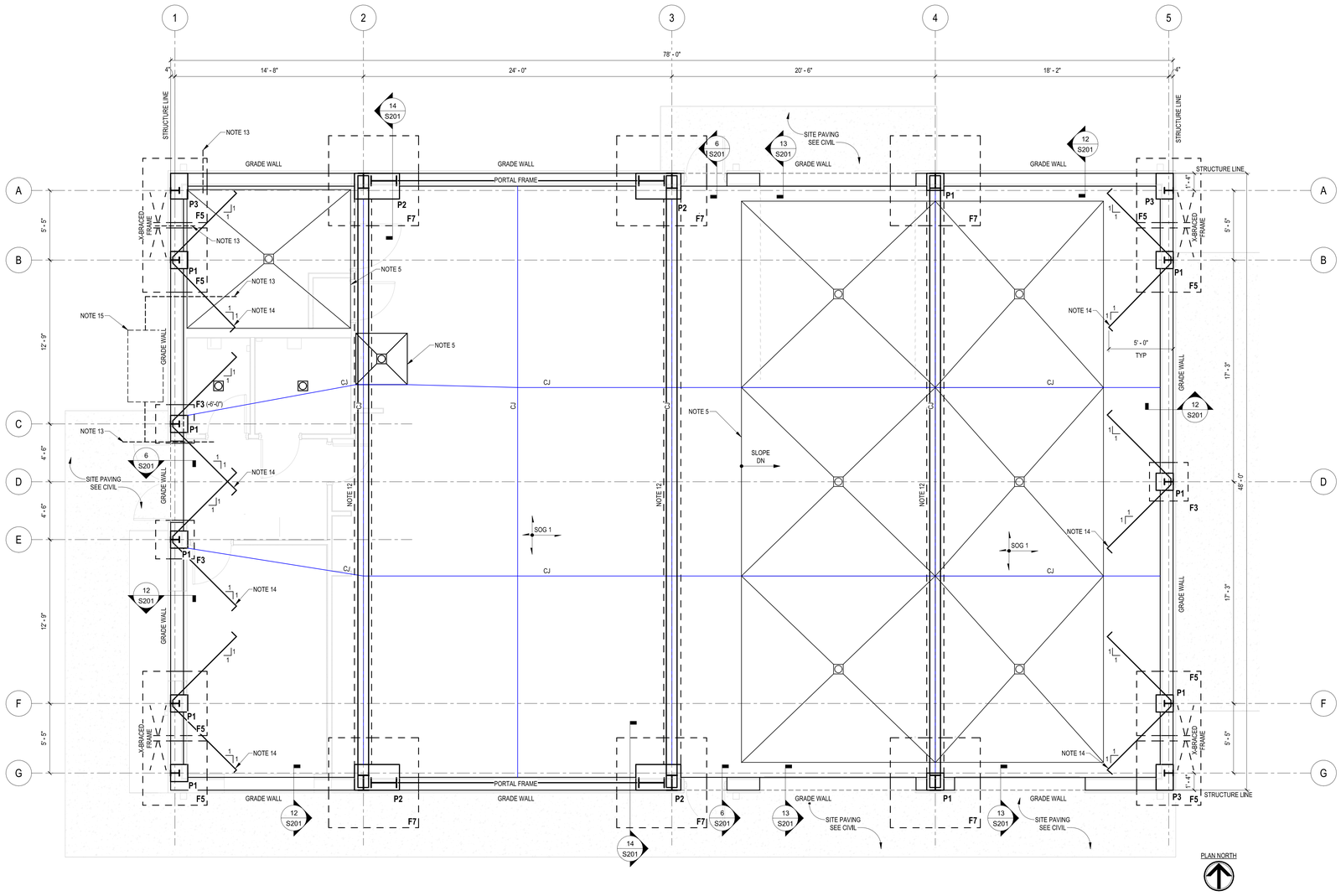
   "SOG2" INDICATES 6" THICK CONCRETE SLAB ON GRADE REINFORCED W/6x6-W2.9xW2.9 WWR OR 'TUFSTRAND SF' MACRO FIBER POLY REINFORCING BY EUCLID CHEMICAL OR APPROVED EQUIVALENT AT 3.0 LB PER CUBIC YARD DOSAGE RATE ON PREPARED SUBGRADE PER GEOTECH REPORT.

4. PROVIDE CONTROL JOINTS IN SLAB-ON-GRADE AT EACH COLUMN GRID AND AT **20'-6"** OC MAX AT 7 1/2" THICK SLABS AND **18'-0"** AT 6" THICK SLABS. SEE GENERAL NOTES AND TYPICAL SLAB-ON-GRADE DETAILS FOR ADDITIONAL REQUIREMENTS.
5. SEE ARCHITECTURAL AND/OR MEP DRAWINGS FOR LOCATIONS OF DRAINS AND SLOPES.
6. (-X'-X") INDICATES TOP OF FOUNDATION ELEVATION RELATIVE TO REFERENCE ELEVATION. UNLESS NOTED OTHERWISE, ALL SPREAD FOOTINGS SHALL HAVE TOP OF CONCRETE = (-) **2'-6"**.
7. UNLESS NOTED OTHERWISE, WHERE CONCRETE FOUNDATION ELEMENTS OVERLAP, REINFORCING SPECIFIED IN EACH ELEMENT SHALL BE CONTINUOUS THROUGH THE OVERLAPPING PORTION.
8. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
9. FOR TYPICAL FOUNDATION DETAILS INCLUDING SLAB REINFORCING AT RE-ENTRANT CORNERS, SEE SHEET S201.
10. "F#" INDICATES FOOTING MARK. SEE FOOTING SCHEDULE.
11. "P#" INDICATES PIER MARK, SEE PIER SCHEDULE.
12. 16" WIDE x 12" THICK CONRETE TIE BEAM REINFORCED W/2#5 HORIZONTAL, WRAP AROUND EXTERIOR FACE OF OUTERMOST COLUMN ANCHOR BOLTS. SEE 14 / S201
13. UNDERGROUND UTILITY LINE LOCATED UNDER GRADE WALL OR ABOVE WALL. COORDINATE WITH MEP UTILITIES.
14. #5 HAIRPIN WITH 90-DEG HOOKED END, WRAP AROUND OUTERMOST COLUMN ANCHOR BOLTS, CENTER IN DEPTH OF SLAB.
15. BELOW GRADE OIL INTERCEPTOR TANK. COORDINATE INSTALLATION WITH FOOTING CONSTRUCTION SEQUENCING.
16. "GRADE WALL" INDICATES 12"Wx42"D CAST-IN-PLACE CONCRETE GRADE WALL. SEE SECTION 12/S201.
17. SLAB ON GRADE IS DESIGNED TO SUPPORT THE FOLLOWING VEHICLE WEIGHTS:
    A. 9,610# TOYOTA FORKLIFT
    B. 15,932# JOHN DEERE 450G DOZER
    C. 42,000# THREE-AXLE GMC TOPKICK TANDEM FLATBED TRUCK (LOADED WEIGHT)

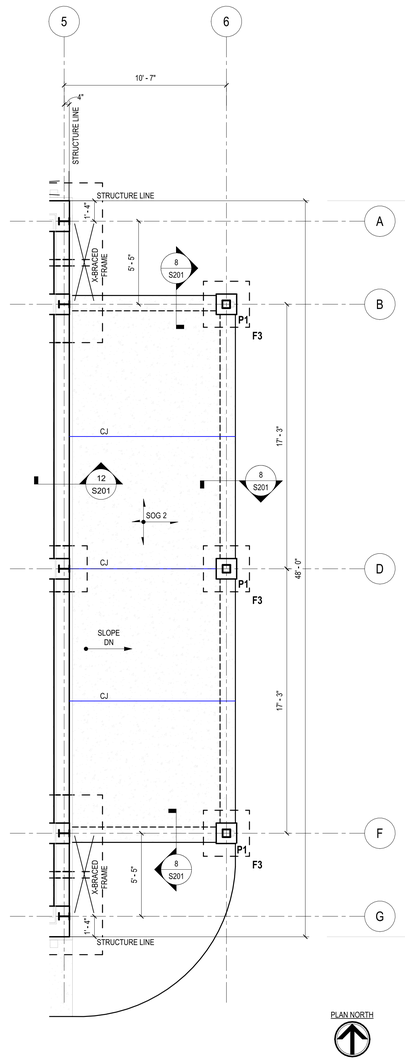


NOTES:
1. CONTRACTOR COORDINATE EQUIPMENT PAD SIZE WITH PURCHASED EQUIPMENT AND REQUIRED CONNECTIONS. CONTRACTOR PROVIDE CONNECTIONS TO PAD PER EQUIPMENT VENDOR.
2. AT CONTRACTOR OPTION, DOWELS MAY BE POST-INSTALLED INTO SLAB. FOR POST-INSTALLED CONDITION, DRILL AND SET VERTICAL PORTION OF DOWEL INTO ADHESIVE WITH 4" EMBED INTO SLAB ON GRADE OR 3" EMBED INTO SLAB ON DECK. HORIZONTAL PORTION OF DOWEL MAY BE OMITTED FROM BASE SLAB FOR POST-INSTALLED CONDITION.

3 / S101 TYPICAL HOUSEKEEPING PAD
SCALE: 3/4" = 1'-0"
B&P# [FDN1110]



1 / S101 FOUNDATION PLAN (BASE BID)
SCALE: 1/4" = 1'-0"



2 / S101 ADDITIVE BID ITEM 1 FOUNDATION PLAN
SCALE: 1/4" = 1'-0"

1/4" = 1'-0" 2'-0" 6'-0" 1'-0" 4'-0"
3/4" = 1'-0" 8" 2'-0" 4" 1'-4"

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BENNETT & PLESS STRUCTURAL ENGINEERS

111 SHERLAKE LANE, SUITE 200
KNOXVILLE, TENNESSEE 37922
865-539-8227

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COMMONWEALTH OF VIRGINIA
CRAIG M. FAVOR
Lic. No. 39775
PROFESSIONAL ENGINEER
Craig M Favor
Digitally signed by Craig M Favor
DN: C=US, E=cfavor@bennettpless.com, O=Bennett & Pless, Inc., CN=Craig M Favor, 0.9.2342.19200300.100.1.1=cfavor, 2.16.840.1.113730.3.1.241=VA, 2.5.4.5=0000001A0B4F19AA2D000E01FE, 2.5.4.42=Craig M, 2.5.4.4=Favor
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10/23/2026
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REVISIONS

KEY PLAN

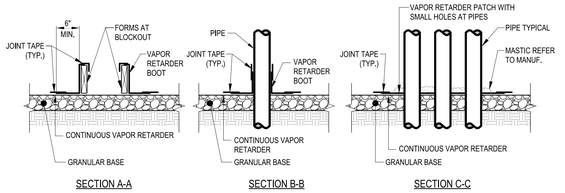
SHEET
FOUNDATION PLAN AND ADDITIVE BID ITEM 1 FOUNDATION PLAN

S101

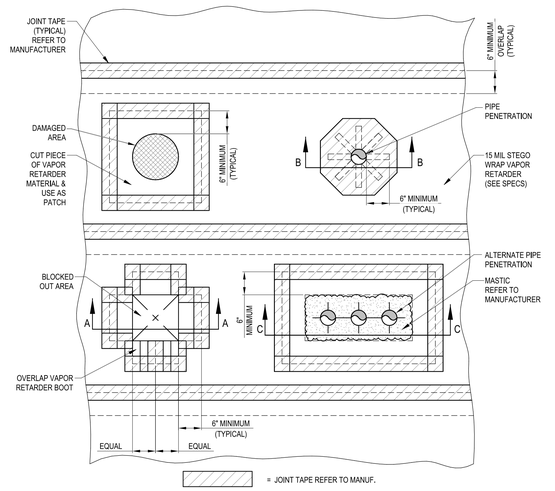
DESIGN: CMF
DRAWN: MBM
REVIEW: CMF

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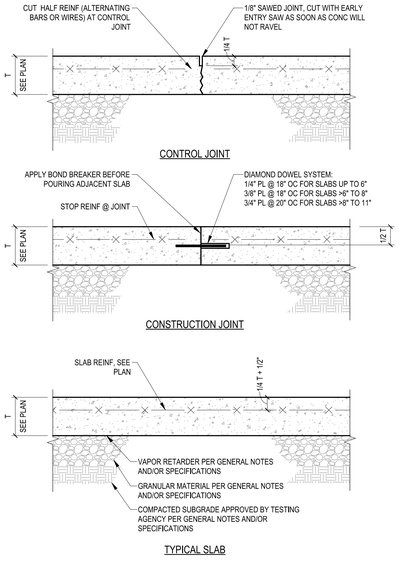
SECTION A-A SECTION B-B SECTION C-C



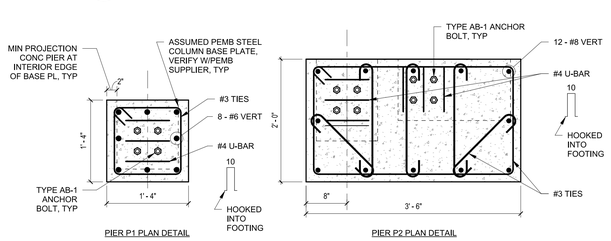
1 S201 TYPICAL VAPOR RETARDER PENETRATION AND REPAIR DETAIL
SCALE: 3/4" = 1'-0"

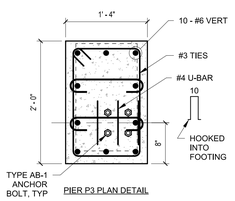
COLD WEATHER CRITERIA:
THE PREDICTED MINIMUM TEMPERATURE FOR THE SECOND NIGHT AFTER THE POUR MUST BE AT LEAST 33° F. NEW SLAB TO BE COVERED WITH THERMAL BLANKETS WHEN TEMPERATURE IS 35° F. OR LESS

SUPERINTENDENT NOTE:
SEE FOUNDATION PLAN FOR LOCATION OF CONTROL JOINTS. CONTROL JOINTS TO OCCUR ON (OR STRADDLING) COLUMN LINES WITH INTERMEDIATE JOINTS LOCATED BETWEEN COLUMN LINES AS INDICATED



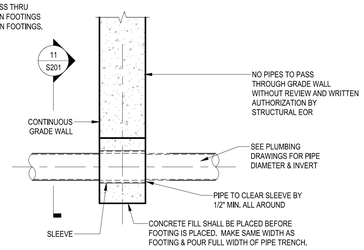
2 S201 TYP SLAB-ON-GRADE JOINT DETAILS
SCALE: 1 1/2" = 1'-0"



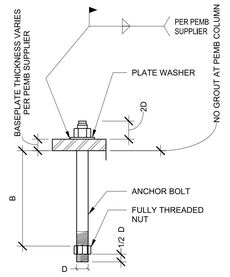


9 S201 CONCRETE PIER PLAN DETAILS
SCALE: 1" = 1'-0"

NOTE:
NO PIPE SHALL PASS THRU COLUMNS, COLUMN FOOTINGS OR UNDER COLUMN FOOTINGS.



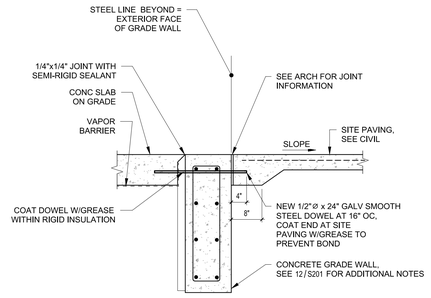
3 S201 TYP PIPE BELOW CONTINUOUS GRADE WALL SECTION
SCALE: 3/4" = 1'-0"



TYPE	D	B	PLATE WASHER	HOLE IN BASE PLATE
AB-1	**	16"	PL1/4x2x0'-2"	**

** = PER PEMB SUPPLIER.

5 S201 ANCHOR BOLT DETAIL AND SCHED.
SCALE: 3" = 1'-0"

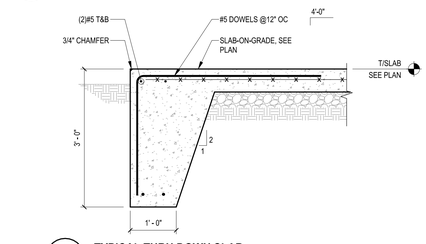


6 S201 TYPICAL SECTION AT PERSONNEL DOOR OPENING
SCALE: 3/4" = 1'-0"

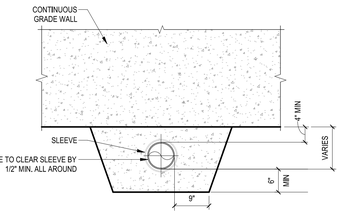
CONCRETE PIER SCHEDULE				
MARK	PIER SIZE	VERT BARS	TIES	REMARKS
P1	1'- 4" x 1'- 4"	(8)#6	#3 TIES@10"	3-#4 VERTICAL U-BARS AT 4" OC CENTER ON ANCHOR BOLTS
P2	2' - 0" x 3' - 6"	(12)#8	#3 TIES@10"	6-#4 VERTICAL U-BARS AT 4" OC CENTER ON ANCHOR BOLTS
P3	2' - 0" x 1' - 4"	(10)#6	#3 TIES@10"	3-#4 VERTICAL U-BARS AT 4" OC CENTER ON ANCHOR BOLTS

NOTES:
1. LENGTH OF VERTICAL LEG AT #4 U-BAR VARIES BASED ON PIER HEIGHT.

7 S201 CONCRETE PIER SCHEDULE
SCALE: 3/4" = 1'-0"

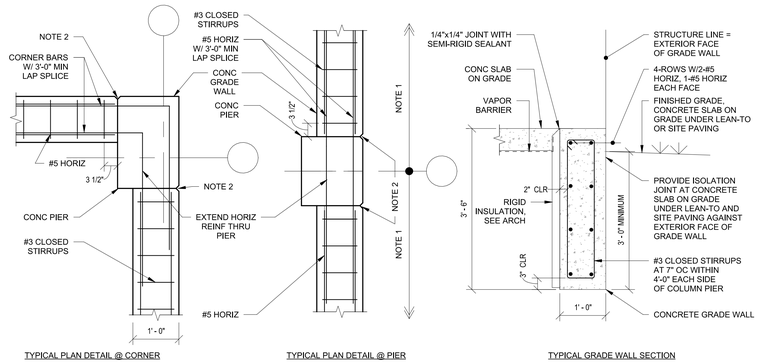


8 S201 TYPICAL TURN DOWN SLAB
SCALE: 3/4" = 1'-0"
B&P# [FDN1131]

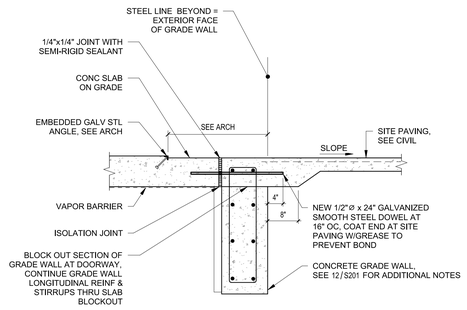


11 S201 TYP PIPE BELOW CONTINUOUS GRADE WALL DETAIL
SCALE: 3/4" = 1'-0"

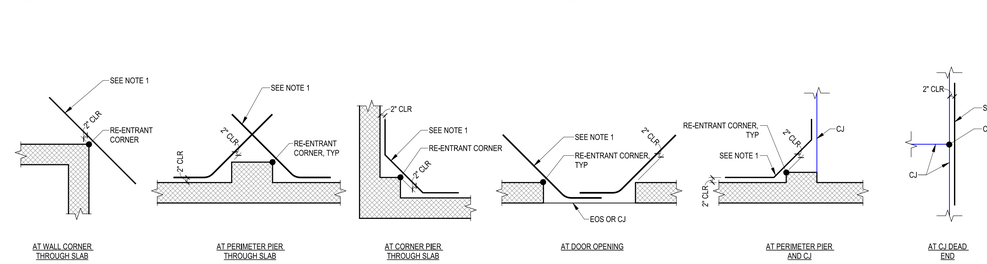
12/S201 NOTES :
1. #3 CLOSED STIRRUPS @ 7" OC WITHIN 4'-0" EACH SIDE OF COLUMN & 12" OC REMAINING LENGTH BETWEEN COLUMNS.
2. GRADE WALL CONTROL JOINT W/CHAMFER STRIP AT EACH EDGE OF PIER, FULL DEPTH OF GRADE WALL WITH HAND TOOLED JOINT AT TOP OF WALL. FILL HORIZONTAL JOINTS WITH SEMI-RIGID SEALANT. FILL VERTICAL JOINTS AT EXTERIOR FACE OF WALL WITH POLYURETHANE SEALANT, EUCOLASTIC 1NS, OR EQUIVALENT, PER MANUFACTURER'S WRITTEN INSTRUCTIONS.



12 S201 TYPICAL GRADE WALL SECTION AND DETAILS
SCALE: 3/4" = 1'-0"

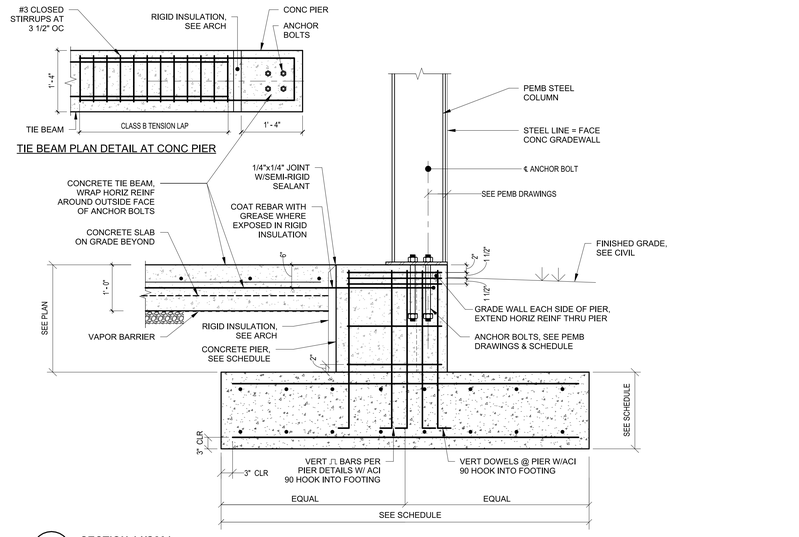


13 S201 TYPICAL SECTION AT OVERHEAD DOOR OPENING
SCALE: 3/4" = 1'-0"

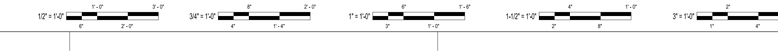


NOTES:
1. REINF SHALL CONSIST OF (1)#4 X 4'-0" LONG FOR SLABS UP TO 6" AND (2)#4 X 4'-0" LONG FOR SLABS GREATER THAN 6". BARS SHALL BE CENTERED ON RE-ENTRANT CORNERS OR CONTROL JOINT DEAD ENDS AND SHALL BE BENT AS REQUIRED TO MAINTAIN CLEAR SPACING SHOWN. BARS SHALL BE PLACED WITH 1" CLEAR TO TOP OF SLAB.
2. DETAIL SHOWS TYPICAL CONDITIONS THAT CREATE RE-ENTRANT CORNERS. CONTRACTOR SHALL IDENTIFY AND COORDINATE SIMILAR CONDITIONS WHERE RE-ENTRANT CORNERS ARE CREATED BY SLAB DEPRESSIONS, EQUIPMENT PADS, PITS, ETC.
3. BARS SHALL NOT BE PLACED ACROSS CONTROL JOINTS.

10 S201 TYPICAL SLAB REINFORCING AT RE-ENTRANT CORNERS AND DEAD ENDS
SCALE: 1/2" = 1'-0"
B&P# [FDN1123]



14 S201 SECTION 14/S201
SCALE: 3/4" = 1'-0"



VIRGINIA TECH NON-CAPITAL CONSTRUCTION

FORESTRY RESEARCH OPERATIONS CENTER

140 INVENTIVE LANE
BLACKSBURG, VA 24061

VT PROJECT CODE W0# 26-819490

DESIGNER

213 SOUTH JEFFERSON, SUITE 1011
ROANOKE, VIRGINIA 24011
540-982-0800

CONSULTANT

BENNETT & PLESS STRUCTURAL ENGINEERS

111 SHERLAKE LANE, SUITE 200
KNOXVILLE, TENNESSEE 37922
865-539-8227

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PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
CRAIG M. FAVOR
Lic. No. 39775
PROFESSIONAL ENGINEER
Craig M Favor

UBO CONFORMANCE

SUBMITTAL
10/23/2026
ISSUED FOR CONSTRUCTION

REVISIONS

KEY PLAN

SHEET
FOUNDATION SECTIONS AND DETAILS

S201

DESIGN: CMF
DRAWN: MBM
REVIEW: CMF

CN 11053

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