4082 OH-132 BATAVIA, OH 45103 06/14/2024

## ISSUED FOR PERMIT AND BIDDING

**GENERAL** 

G-001 COVER SHEET

C-100 SITE CIVIL CONTEXT PLANS

**DRAWING INDEX** 

#### STRUCTURAL

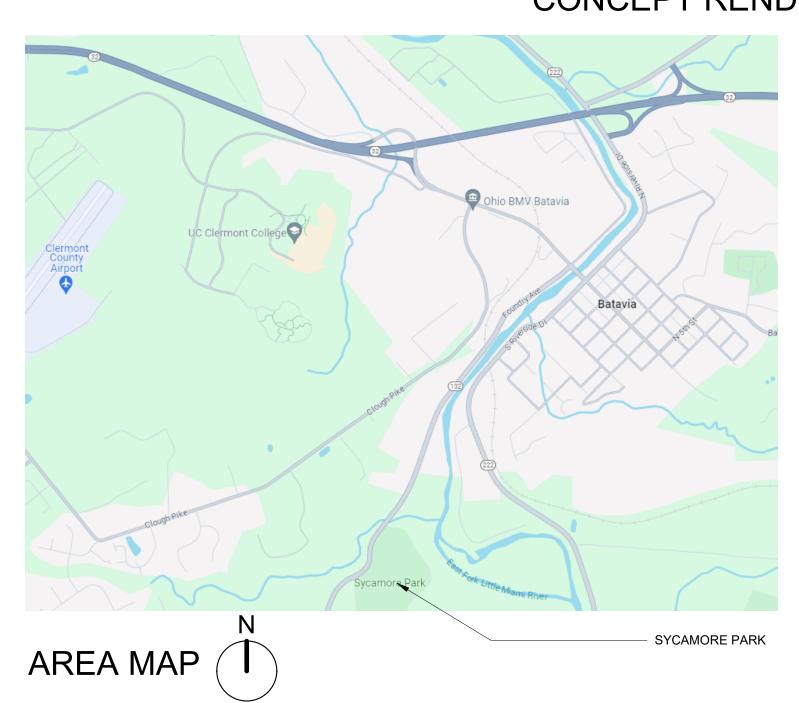
FRAMING DETAILS & SECTIONS

#### ARCHITECTURE

**GENERAL NOTES AND ABBREVIATIONS** 



CONCEPT RENDERING





VICINITY MAP

### PROJECT DESCRIPTION

THE SCOPE OF THE PROJECT INVOLVES A NEW DECK STRUCTURE AT CLERMONT PARK DISTRICT'S SYCAMORE PARK.

#### **CODE SUMMARY**

STRUCTURE HEIGHT AND STORIES
THE HIGHEST POINT OF THE DECK STRUCTURE IS APPROXIMATELY 8'-0"

BUILDING AREA ALLOWABLE AREA

VB, A-5 OCCUPANCY = UL ACTUAL AREA: AREA OF THE DECK = 1,275 SF

1,275 SF / 5 NSF/PERSON = 255 OCCUPANTS 1,275 SF/15 NSF/PERSON = 85 OCCUPANTS

# emersion **DESIGN**

#### emersion DESIGN LLC

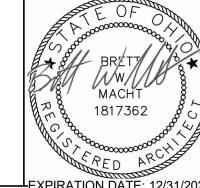
310 CULVERT STREET, SUITE 100 CINCINNATI, OHIO 45202 emersiondesign.com

**ARCADIS** 

23 TRIANGLE OFFICE PARK #2300 CINCINNATI, OH 45246 513 942 3141 arcadis.com/en-us

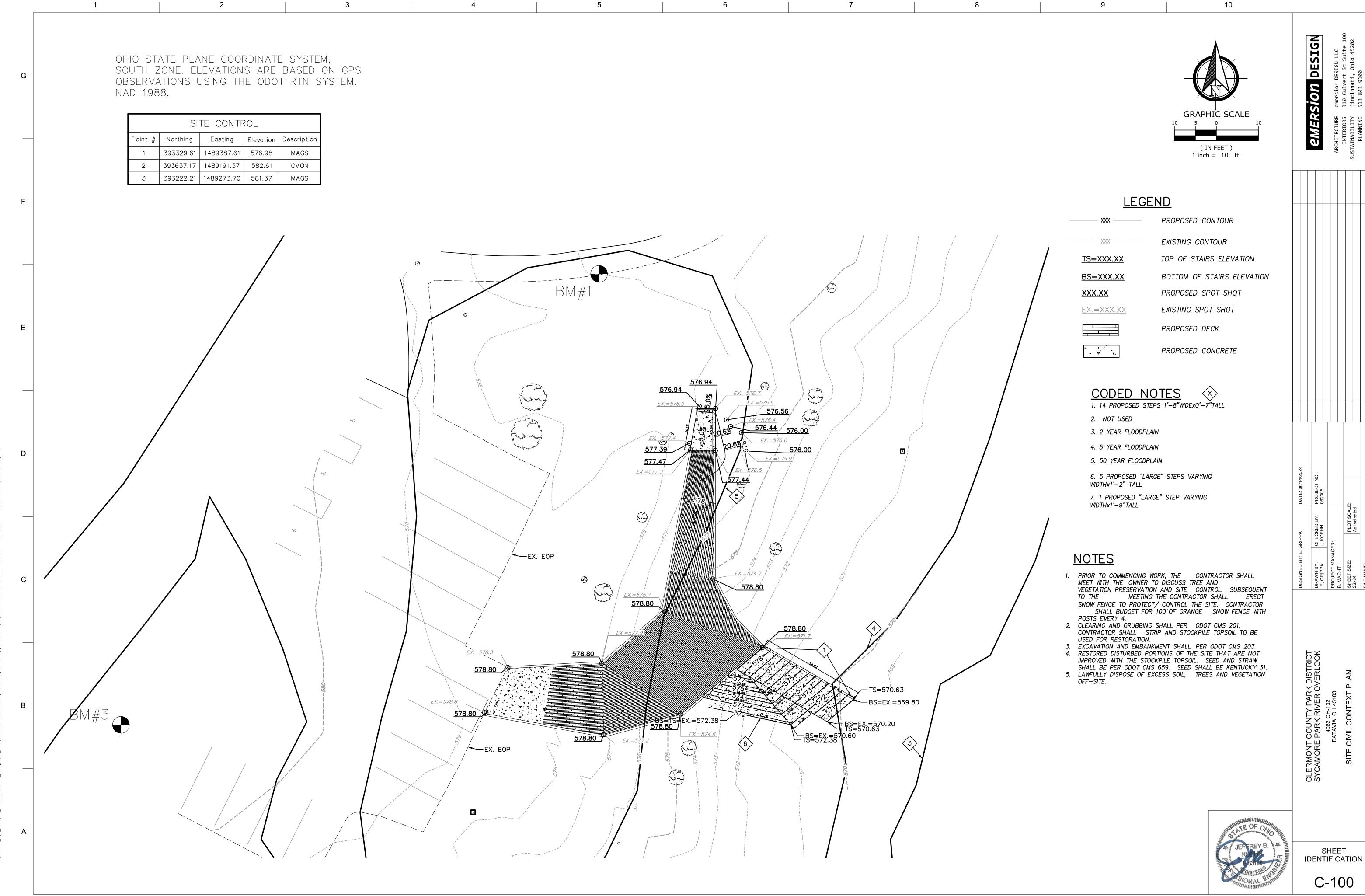


STRUCTURAL ENGINEER SCHAEFER 537 E PETE ROSE WAY #400 CINCINNATI, OH 45202 513 542 3300 schaefer-inc.com



SHEET **IDENTIFICATION** 

G-001



THIS DOCUMENT IS THE PRODUCT AND EXCLUSIVE PROPERTY OF SCHAEFER. NEITHER THE DOCUMENT NOR THE INFORMATION IT CONTAINS MAY BE COPIED OR USED FOR OTHER THAN THE SPECIFIC PURPOSE FOR WHICH IT WAS PREPARED. WITHOUT THE WRITTEN CONSENT OF SCHAEFER.

COPIES OF PUBLICATIONS REFERENCED IN THESE GENERAL STRUCTURAL NOTES ARE AVAILABLE FOR REVIEW AT SCHAEFER. CONTRACTORS UNFAMILIAR WITH THESE PUBLICATIONS MUST REVIEW THEM PRIOR TO CONSTRUCTION.

5 1/2 PSF

3 1/2 PSF

#### **GOVERNING CODE**

2024 OHIO BUILDING CODE (REFERENCES IBC 2021 & ASCE 7-16).

#### <u>DESIGN LOADS</u>

- DECK LOAD A. TREX DECKING
- B. JOIST FRAMING LOAD C. MISCELLANEOUS TOTAL DEAD LOAD ON JOISTS D. BEAM FRAMING DEAD LOAD
- E. TOTAL ON BEAMS LIVE LOAD
- SNOW LOAD,  $I_sP_g = 20 PSF$ GROUND SNOW,  $P_g = 20 PSF$ SNOW LOAD IMPORTANCE FACTOR, Is = 1.0 SNOW EXPOSURE FACTOR, Ce = 0.9
- 2. WIND LOAD (PER ASCE 7):
- A. BASIC DESIGN WIND SPEED, V= 106 MPH

SNOW LOAD THERMAL FACTOR,  $C_t = 1.2$ 

MINIMUM SNOW LOAD, P<sub>m</sub> = 20 PSF

- . ALLOWABLE STRESS DESIGN WIND SPEED, V<sub>ASD</sub> = 83 MPH C. RISK CATEGORY = II
- D. WIND EXPOSURE = B (ALL WIND DIRECTIONS)
- E. INTERNAL PRESSURE COEFFICIENT, GCpi = 0.00
- SEISMIC LOAD
- A. SEISMIC RISK CATEGORY
- . SEISMIC IMPORTANCE FACTOR, Ie C. MAPPED SPECTRAL RESPONSE ACCELERATION FACTOR AT SHORT PERIOD, Ss
- D. MAPPED SPECTRAL RESPONSE ACCELERATION FACTOR AT 1 SECOND PERIOD, S<sub>1</sub> SITE CLASS
- DESIGN SPECTRAL RESPONSE ACCELERATION FACTOR AT SHORT PERIODS, SDS = 0.126G. DESIGN SPECTRAL RESPONSE ACCELERATION
- FACTOR AT 1 SECOND PERIOD, S<sub>D1</sub> = 0.075H. SEISMIC DESIGN CATEGORY BASIC SEISMIC FORCE RESISTING SYSTEM = ORDINARY REINFORCED CONCRETE
- SHEAR WALLS RESPONSE MODIFICATION COEFFICIENT, R = 3
- C. SEISMIC RESPONSE COEFFICIENT, CS = 0.042. ANALYSIS PROCEDURE USED = ELFP
- 4. SPECIAL LOADS:
- A. HANDRAILS AND GUARDRAILS:
- TOP RAIL: 200 POUND CONCENTRATED LOAD AT ANY POINT IN ANY DIRECTION OR 50 PLF UNIFORM LOAD APPLIED IN ANY DIRECTION.
- ii. INTERMEDIATE RAILS, BALUSTERS, AND PANEL FILLERS: HORIZONTALLY APPLIED NORMAL LOAD OF 50 POUNDS ON AN AREA NOT TO EXCEED 1 SQUARE FT., INCLUDING OPENINGS AND SPACE BETWEEN RAILS.

#### CONSTRUCTION AND SAFETY

- CONTRACTOR SHALL BRACE ENTIRE STRUCTURE AS REQUIRED TO MAINTAIN STABILITY UNTIL COMPLETE AND FUNCTIONING AS THE DESIGNED UNIT.
- 2. ENGINEER SHALL NOT BE RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OF CONSTRUCTION SELECTED BY CONTRACTOR.
- THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS. WHEN ON SITE, THE ENGINEER IS RESPONSIBLE FOR HIS/HER OWN SAFETY BUT HAS NO RESPONSIBILITY FOR THE SAFETY OF OTHER PERSONNEL OR SAFETY CONDITIONS AT THE SITE.
- ANCHOR RODS AND FOUNDATION DOWELS SHALL NOT BE REPAIRED, REPLACED OR FIELD-MODIFIED WITHOUT THE WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.

#### LATERAL LOAD RESISTING SYSTEM

- 1. THE LATERAL LOAD RESISTING SYSTEM CONSISTS OF THE FOLLOWING ELEMENTS:
- A. ORDINARY REINFORCED CONCRETE SHEAR WALLS THROUGHOUT

#### **FOUNDATIONS**

- FOUNDATION DESIGN IS BASED UPON RECOMMENDATIONS DESCRIBED IN THE GEOTECHNICAL ENGINEER'S REPORT BY TERRACON, DATED JULY 28, 2023. THE GEOTECHNICAL ENGINEER'S REPORT IS AVAILABLE UPON REQUEST.
- A. ALL FOOTINGS SHALL BEAR ON LEVEL (WITHIN 1 IN 12) UNDISTURBED SOIL OR APPROVED ENGINEERED FILL. FOUNDATIONS HAVE BEEN DESIGNED FOR A MAXIMUM ALLOWABLE SOIL BEARING PRESSURE OF 4000 PSF BELOW STRIP FOOTINGS AND 4000 PSF BELOW ISOLATED COLUMN FOOTINGS.
- 2. CONTRACTOR SHALL CONTACT UTILITY COMPANIES FOR LOCATING UNDERGROUND SERVICES AND IS RESPONSIBLE FOR THEIR PROTECTION AND SUPPORT.
- FILL MATERIALS: ALL FILL MATERIALS SHALL BE APPROVED BY A GEOTECHNICAL ENGINEER, INCLUDING THE SUITABILITY OF ALL EXCAVATED ON-SITE SOILS FOR RE-USE. MATERIAL SHALL NOT BE PLACED ON FROZEN GROUND.
- A. CONTROLLED LOW STRENGTH MATERIAL (CLSM): SELF LEVELING AND SELF COMPACTING CEMENTITIOUS MATERIAL WITH AN UNCONFINED COMPRESSIVE STRENGTH BETWEEN 50 PSI AND 150 PSI.
- B. WELL GRADED GRANULAR MATERIAL: WELL GRADED MIXTURE OF CRUSHED GRAVEL, CRUSHED STONE, AND SAND PER ASTM D294 WITH AT LEAST 95 PERCENT PASSING A 1 ½" SIEVE AND NOT MORE THAN 50 PERCENT PASSING A NO. 200 SIEVE.

- C. FREE DRAINING GRANULAR FILL: NARROWLY GRADED MIXTURE OF CRUSHED STONE PER ASTM D448 WITH COARSE AGGREGATE GRADING SIZE 67 WITH 100 PERCENT PASSING A 1 INCH SIEVE AND NO MORE THAN 5 PERCENT PASSING A NO. 4 SIEVE.
- D. IMPERVIOUS FILL: LEAN CLAYEY GRAVEL AND SAND MIXTURE CAPABLE OF COMPACTING TO A DENSE STATE.
- 4. FOUNDATION ELEVATIONS SHOWN ARE FOR BIDDING PURPOSES AND MAY VARY TO SUIT SUB-SURFACE SOIL CONDITION. ELEVATION AND BEARING STRATA SHALL BE APPROVED BY A GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE. PROVIDE ENGINEERED FILL OR CLSM UNDER FOUNDATIONS AT SOFT SPOTS AND FOR EXTENDING EXCAVATION TO ADEQUATE BEARING MATERIAL. INSTALL FOUNDATIONS AT DESIGNED ELEVATIONS
- FROST DEPTH IS 30 INCHES BELOW GRADE. BOTTOM OF FOOTINGS, MAT FOUNDATIONS AND GRADE BEAMS THAT ARE NOT PART OF AN INSULATED FROST PROTECTED FOUNDATION SYSTEM AND ARE NOT WITHIN CONDITIONED SPACE MUST BE BELOW SPECIFIED MINIMUM FROST DEPTH AS MEASURED FROM EXTERIOR GRADE. MAINTAIN SPECIFIED T/FDN ELEVATIONS AND THICKEN FOOTING OR PLACE ON CLSM AS REQUIRED.
- 6. FOUNDATIONS MAY BE PLACED WITHOUT SIDE FORMS IF EXCAVATED WALLS STAND APPROXIMATELY VERTICAL
- 7. BACKFILL AGAINST WALLS:
  - A. INTERIOR FACE OF BASEMENT WALLS OR SHALLOW FOUNDATIONS WALLS:
  - CLSM OR IMPERVIOUS FILL (COMPACTED IN 6" LIFTS TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY AND WITHIN +/- 3% OPTIMUM MOISTURE CONTENT). OR
  - ii. WELL GRADED GRANULAR MATERIAL (COMPACTED IN 6" LIFTS TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY AND WITHIN +/- 2% OPTIMUM MOISTURE CONTENT); AT THE BOTTOM OF THE GRANULAR BACKFILL PLACE A 4" DIAMETER PERFORATED FOUNDATION DRAIN PIPE. PROVIDE A POSITIVE SLOPE TO DAYLIGHT OR TO SUMP
- B. EXTERIOR FACE OF SHALLOW FOUNDATION WALLS:
  - CLSM OR IMPERVIOUS FILL (COMPACTED IN 6" LIFTS TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY AND WITHIN +/- 3% OPTIMUM MOISTURE CONTENT). OR
- ii. WELL GRADED GRANULAR MATERIAL (COMPACTED IN 6" LIFTS TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY AND WITHIN +/- 2% OPTIMUM MOISTURE CONTENT); AT THE BOTTOM OF THE GRANULAR BACKFILL PLACE A 4" DIAMETER PERFORATED FOUNDATION DRAIN PIPE. PROVIDE A POSITIVE SLOPE TO DAYLIGHT OR TO SUMP
- EXTERIOR FACE OF BASEMENT WALLS OR RETAINED SIDE OF CANTILEVERED RETAINING
- i. MINIMUM 3 FT WIDE ZONE OF FREE DRAINING GRANULAR FILL (COMPACTED TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY AND WITHIN +/- 2% OPTIMUM MOISTURE CONTENT) UP TO WITHIN 24 INCHES OF THE FINISHED GRADE. TOP 24" OF BACKFILL SHALI BE COMPACTED CLAYEY MATERIAL. AT THE BOTTOM OF THE GRANULAR MATERIAL, PLACE A 4" DIAMETER PERFORATED FOUNDATION DRAIN PIPE WITH POSITIVE DRAINAGE TO SUMP OR TO DAYLIGHT.
- 8. ENGINEERED FILL BENEATH FOOTINGS: MINIMUM COMPACTION 98% STANDARD PROCTOR MAXIMUM DRY DENSITY WITHIN +/- 3% OPTIMUM MOISTURE CONTENT.
- 9. FILL AT UTILITY TRENCHES BELOW FOOTINGS, EXCAVATED PRIOR TO FOOTING CONSTRUCTION.
- BACKFILL TRENCHES UNDER FOOTINGS AND WITHIN 18 INCHES OF BOTTOM OF FOOTINGS WITH CLSM TO THE BOTTOM OF FOOTING ELEVATION.
- B. BACKFILL TRENCHES EXCAVATED UNDER FOOTINGS AND MORE THAN 18 INCHES BELOW BOTTOM OF FOOTINGS WITH CLSM OR OTHER FILL MATERIAL APPROVED BY GEOTECHNICAL
- 10. FILL AT UTILITY TRENCHES BELOW FOOTINGS, EXCAVATED AFTER FOOTING CONSTRUCTION.
- A. BACKFILL TRENCHES EXCAVATED UNDER EXISTING FOOTINGS WITH CLSM TO THE BOTTOM OF FOOTING ELEVATION.
- 11. SEAL UTILITY TRENCH AT THE EXTERIOR FOUNDATION WALL BY USING A COMPACTED IMPERVIOUS FILL OR CLSM TO CREATE A DAM TO PREVENT ENTRY OF WATER.
- 12. FINISHED GRADE SHALL SLOPE AWAY FROM THE PERIMETER FOUNDATION
- 13. UTILITY TRENCHES PARALLEL TO FOOTINGS AND WITH PIPES BELOW THE BOTTOM OF FOOTING ELEVATION MUST BE LOCATED SO THAT THE SLOPE BETWEEN THE PIPE INVERT ELEVATION AND THE NEAREST BOTTOM CORNER OF THE FOOTING IS A MINIMUM OF 2 HORIZONTAL TO 1 VERTICAL.

#### CAST-IN-PLACE CONCRETE (03-30-00)

- 1. CONCRETE MIXTURES: REFER TO CONCRETE MIXTURE REQUIREMENTS TABLE FOR CONCRETE MIX INFORMATION.
- 2. CONCRETE MATERIALS:
  - A. CEMENTITIOUS MATERIALS
  - PORTLAND CEMENT: ASTM C150, TYPE II.
  - BLENDED HYDRAULIC CEMENT: ASTM C595, TYPE IL, PORTLAND LIMESTONE CEMENT iii. FLY ASH: ASTM C618, CLASS F OR C. FLY ASH SHALL NOT EXCEED 25% OF TOTAL
  - CEMENTITIOUS CONTENT BY MASS.
  - iv. GROUND GRANULATED BLAST FURNACE SLAG: ASTM C989, GRADE 100 OR 120. COMBINATION SLAG AND FLY ASH SHALL NOT EXCEED 50% OF TOTAL CEMENTITIOUS CONTENT BY MASS.
- B. AGGREGATES:
- NORMAL WEIGHT AGGREGATES: ASTM C33, COARSE GRADED.
- C. ADMIXTURES: ADMIXTURES CONTAINING CHLORIDE ARE NOT PERMITTED IN REINFORCED CONCRETE OR CONCRETE CONTAINING METALS.
- WATER REDUCING ADMIXTURE: ASTM C494. PLASTICIZING ADMIXTURE: ASTM C1017. AIR ENTRAINING ADMIXTURE: ASTM C260.
- D. WATER: ASTM C94 AND POTABLE
- 3. DETAILING REQUIREMENTS
  - A. FINISH OF CONCRETE HANDICAP RAMPS TO CONFORM WITH THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA).
- B. CONTRACTION JOINTS IN SLABS ON GROUND SHALL NOT EXCEED A LENGTH TO WIDTH RATIO OF 1.5:1. SEE PLAN FOR MAXIMUM JOINT SPACING.
- C. CONSTRUCTION JOINTS IN SLABS ON GROUND MAY BE LOCATED AT ANY CONTRACTION JOINT LOCATION. SEE DRAWINGS FOR TYPICAL DETAILS.
- D. PROVIDE 3/4" CHAMFER AT CORNERS OF EXPOSED CONCRETE.
- PROVIDE CONTRACTION/CONSTRUCTION JOINTS IN CONCRETE WALLS AT A MAXIMUM SPACING OF TWICE THE HEIGHT OF THE WALL ABOVE THE TOP OF FOOTING. MAXIMUM JOINT SPACING SHALL NOT EXCEED 24 FT. CONTRACTION JOINTS SHALL HAVE A 1-1/2" DEEP BY 3/4" WIDE TAPERED REVEAL EACH SIDE OF THE WALL. AT CONTRACTION JOINTS, EVERY OTHER HORIZONTAL BAR SHALL BE CUT BACK 1-1/2" FROM THE CONTRACTION JOINT. CONSTRUCTION JOINTS SHALL BE FORMED SIMILAR TO CONTRACTION JOINTS. AT CONSTRUCTION JOINTS, ALL HORIZONTAL STEEL SHALL BE DISCONTINUOUS AND A DOWEL BAR OF SIZE AND SPACING TO MATCH THE HORIZONTAL REINFORCING SHALL BE EMBEDDED A MINIMUM OF 40 BAR DIAMETERS EACH SIDE OF THE CONSTRUCTION JOINT. SEE ARCHITECTURAL DRAWINGS FOR ARCHITECTURAL JOINT TREATMENT.

- F. CONDUITS AND PIPES OF ALUMINUM SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE UNLESS EFFECTIVELY COATED TO PREVENT ALUMINUM-CONCRETE REACTION OR ELECTROLYTIC ACTION BETWEEN ALUMINUM AND STEEL.
- 4. CONCRETE PLACEMENT
- A. DO NOT BACKFILL AGAINST RETAINING WALLS UNTIL CONCRETE STRENGTH HAS REACHED 0.75 f'c AND A MINIMUM OF 7 DAYS.
- B. ROUGHENED SURFACES, WHERE INDICATED, SHALL EITHER BE
- i. ROUGHENED TO A FULL AMPLITUDE OF APPROXIMATELY 1/4" AND BE CLEAN AND FREE OF
- FORMED BY EXPANDED METAL LEAVE-IN-PLACE MESH. SUBMIT PRODUCT INFORMATION FOR APPROVAL.

#### 5. PERFORMANCE

- A. CONCRETE WORK IN COLD WEATHER SHALL CONFORM TO ALL REQUIREMENTS OF ACI 306.1-90 "STANDARD SPECIFICATION FOR COLD WEATHER CONCRETING" AND ACI 306R-16 "GUIDE TO COLD WEATHER CONCRETING".
- B. CONCRETE WORK IN HOT WEATHER SHALL CONFORM TO ALL REQUIREMENTS OF ACI 305.1-14 "SPECIFICATION FOR HOT WEATHER CONCRETING" AND ACI 305R-10 "GUIDE TO HOT WEATHER CONCRETING". THE AIR TEMPERATURE, RELATIVE HUMIDITY, CONCRETE TEMPERATURE, AND WIND SPEED SHALL BE ENTERED INTO NOMOGRAPH FIGURE 4.2 IN ACI 305R-10 TO DETERMINE IF PRECAUTIONS AGAINST PLASTIC SHRINKAGE ARE REQUIRED.
- C. TOLERANCES: CONFORM TO ACI 117-10
- D. EXTERIOR SLAB FINISHING AND CURING:
- FINISH: LIGHT BROOM FINISH CURING: UV RESISTANT ACRYLIC "CURE AND SEAL" LIQUID MEMBRANE FORMING CURING COMPOUND (ASTM C1315, TYPE 1, CLASS A).
- SUBMITTALS:
- A. CONSTRUCTION JOINT LAYOUT
- B. CONCRETE MIX DESIGNS: CONCRETE MIX DESIGNS INCLUDING PRODUCT DATA FOR ALL CONSTITUENTS AND ADMIXTURES SHALL BE SUBMITTED FOR EACH TYPE OF CONCRETE TO THE STRUCTURAL ENGINEER FOR APPROVAL IN ACCORDANCE WITH ACI 301-16 FIELD TEST DATA OR TRIAL MIXTURES. SUBMITTAL DATA MUST INCLUDE FIELD TEST DATA FROM AT LEAST 10 TESTS OR A THREE POINT CURVE GENERATED USING TRIAL MIXTURES.
- C. PRODUCT DATA FOR CURING MATERIALS
- 7. QUALITY ASSURANCE
- A. CONCRETE WORK AND TESTING, AS PERFORMED BY "QUALIFIED FIELD TESTING TECHNICIANS" AND "QUALIFIED LABORATORY TECHNICIANS", SHALL CONFORM TO ALL REQUIREMENTS OF ACI 301-16, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS", EXCEPT AS MODIFIED BY THE SUPPLEMENTAL REQUIREMENTS ABOVE. REPORTS FROM TESTS REQUIRED BY SECTION 1.6 OF ACI 301-16 SHALL BE SUBMITTED TO STRUCTURAL ENGINEER, ARCHITECT, OWNER, CONTRACTOR, CONCRETE SUPPLIER, AND BUILDING OFFICIAL.

#### **CONCRETE REINFORCING (03-20-00)**

- MATERIALS
- A. DEFORMED BARS: ASTM A615, OR ASTM A706, GRADE 60. ASTM A706 DEFORMED BARS ARE REQUIRED FOR ALL WELDED REINFORCING BARS.
- B. WELDED WIRE REINFORCEMENT: ASTM A1064, FLAT SHEETS ONLY.
- 2. REINFORCING DEVELOPMENT AND LAP SPLICES (UNLESS OTHERWISE NOTED)
- A. WELDED WIRE REINFORCEMENT: LAP WELDED WIRE REINFORCEMENT MINIMUM 1 FULL SPACE
- B. SEE REINFORCING BAR DEVELOPMENT TABLES FOR REQUIRED DEVELOPMENT AND LAP SPLICE LENGTHS.

#### 3. PERFORMANCE

- A. COMPLY WITH CRSI'S "MANUAL OF STANDARD PRACTICE" FOR PLACING AND SUPPORTING REINFORCEMENT.
- B. REINFORCING BARS SHALL HAVE CLEAR COVER AS INDICATED ON THE DRAWINGS. WHERE NOT INDICATED, PROVIDE MINIMUM CLEAR COVER PER ACI-318.
- C. REINFORCING BARS SHALL BE FREE OF DIRT AND FORM RELEASE AGENTS.

#### 4. SUBMITTALS

A. SHOP DRAWINGS FOR REINFORCING STEEL (COMPLY WITH ACI SP-066):

#### WOOD - ROUGH CARPENTRY (06-10-00)

CONNECTION.

- WOOD FRAMING MATERIALS:
  - A. DIMENSION FRAMING LUMBER (EXTERIOR APPLICATIONS): AWPA USE CATEGORY UC3B FOR ABOVE GROUND EXTERIOR FRAMING, AWPA USE CATEGORY UC4A FOR GROUND CONTACT: 2x4 AND DEEPER: NO. 1 GRADE OR BETTER PRESERVATIVE TREATED SOUTHERN PINE. 4x4: NO. 1 GRADE OR BETTER PRESERVATIVE TREATED SOUTHERN PINE.
- 6x6: NO. 2 GRADE OR BETTER PRESERVATIVE TREATED SOUTHERN PINE.

#### 2. ANCHORS AND FASTENERS:

- A. ANCHOR RODS: ASTM F594 STAINLESS STEEL THREADED RODS w/ ASTM F594 STAINLESS STEEL NUTS, AND ASTM A240 STAINLESS STEEL WASHERS, TYPE 304 OR 316 OR ASTM F1554, GRADE 36 ANCHOR RODS WITH NUTS AND WASHERS, HOT DIP GALVANIZED PER ASTM F2329 OR ASTM A153 (TYPICAL). STAINLESS STEEL OR HOT DIP GALVANIZED ANCHORS ARE NOT REQUIRED FOR INTERIOR APPLICATIONS USING BORATE PRESERAVTIVE TREATMENT ONLY.
- B. BOLTS: ASTM A307, GRADE A (TYPICAL). FOR EXTERIOR APPLICATIONS, PRESERVATIVE TREATED OR FIRE-RETARDANT TREATÉD MATERIALS, HOT DIP GALVANIZE PER ASTM F2329 OR i. PROVIDE STANDARD CUT WASHER BETWEEN BOTH HEAD AND NUT TO WOOD

- C. NAILS: ASTM F1667. FOR EXTERIOR APPLICATIONS, PRESERVATIVE TREATED OR FIRE-RETARDANT TREATED MATERIALS, HOT DIP GALVANIZE PER ASTM F2329 OR ASTM A 153. WHERE PENNYWEIGHTS ARE INDICATED, CONTRACTOR SHALL CONFIRM NAIL SIZES INDICATED ON DRAWINGS AND NOTES MEET THE FOLLOWING DIAMETER AND LENGTH REQUIREMENTS. PNEUMATIC GUN NAILS SHALL MEET THESE DIAMETER AND LENGTH REGARDLESS OF THE NAIL SIZE INDICATED BY THE MANUFACTURER:
- 8d = 0.131" DIA, 2 ½" LG. 10d = 0.148" DIA, 3" LG.

SCHEDULE", IN REFERENCED BUILDING CODE.

- iii. 16d = 0.162" DIA, 3 ½" LG.
- D. WOOD SCREWS:
- #8= 0.164" DIA #10= 0.19" DIA. iii. #12= 0.216" DIA
- E. LAG SCREWS: PROVIDE STANDARD WASHER BETWEEN HEAD TO WOOD CONNECTION.
  - PREBORE HOLES PRIOR TO INSTALLATION.

SPECIFIED AND PROPER NAIL SIZE UNLESS NOTED OTHERWISE.

4. ALL CONNECTION HARDWARE SPECIFIED ON THE STRUCTURAL DRAWINGS SHALL BE MANUFACTURED BY THE SIMPSON STRONG-TIE COMPANY, SHALL BE FASTENED AS SPECIFIED IN THE SIMPSON PRODUCT AND INSTRUCTION MANUAL, AND ARE BASED ON THEIR CATALOG PUBLISHED CAPACITIES. ALL CONNECTORS SHALL BE INSTALLED USING THE MAXIMUM NAILING

3. UNLESS NOTED OTHERWISE, CONNECTIONS SHALL BE MADE PER TABLE 2304.10.1 "FASTENING

- A. EXTERIOR APPLICATIONS, PRESERVATIVE TREATED, OR FIRE RETARDANT TREATED MATERIALS: ZMAX (G185), OR HOT DIPPED GALVANIZED, OR STAINLESS STEEL TYPE 304 OR TYPE 316 WHERE INDICATED. G60 AND G90 COATED PRODUCTS ARE NOT PERMITTED. ONLY USE GALVANIZED FASTENERS WITH ZMAX AND HOT DIP GALVANIZED CONNECTORS. ONLY USE STAINLESS STEEL FASTENERS WITH STAINLESS STEEL CONNECTORS.
- 5. NOTCHES IN FLOOR JOISTS AND ROOF RAFTERS SHALL NOT BE LOCATED IN THE MIDDLE ONE-THIRD OF THE SPAN. DEPTH OF NOTCHES IN THE TOP OR BOTTOM OF THE MEMBER ARE NOT TO EXCEED ONE-SIXTH OF THE MEMBER DEPTH, AND LENGTH SHALL NOT EXCEED ONE-THIRD OF MEMBER DEPTH. HOLES SHALL NOT BE BORED LARGER THAN ONE-THIRD OF THE MEMBER DEPTH, OR WITHIN TWO INCHES OF THE TOP OR BOTTOM OF THE MEMBER, OR WITHIN TWO FEET OF BEARING. NO HOLES OR NOTCHES ARE ALLOWED IN BEAMS UNLESS APPROVED BY ENGINEER.
- ALL MULTIPLE HEADERS AND BEAMS WITH DEPTH LESS THAN 14 INCHES SHALL BE FASTENED TOGETHER WITH MINIMUM (3) ROWS OF 0.148"Ø x3" LONG NAILS AT 12" O.C., STAGGERED ON OPPOSITE SIDES. FOR DEPTHS EQUAL TO OR GREATER THAN 14 INCHES, FASTEN TOGETHER WITH (4) ROWS OF 0.148" Ø x3" LONG NAILS AT 12"O.C. FOR FOUR OR MORE PLY BEAMS, THRU-BOLT WITH 1/2" DIAMETER BOLTS AT 12" O.C. STAGGERED TOP AND BOTTOM. ALL SIDE LOADED BEAMS SHALL BE THRU-BOLTED.

#### POST INSTALLED ANCHORS

- 1. INSTALLATION: INSTALL ANCHORS PER EVALUATION REPORT AND MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII).
- 2. CONNECTIONS TO EXISTING REINFORCED CONCRETE OR MASONRY: PRIOR TO DRILLING, VERIFY LOCATIONS OF EXISTING REINFORCING BARS USING A REBAR DETECTOR. NOTIFY ENGINEER PRIOR TO INSTALLATION IF ANCHOR LOCATIONS CONFLICT WITH EXISTING REINFORCING BARS. DO NOT DRILL THROUGH REINFORCING BARS.
- 3. TESTING AND INSPECTION: REFER TO EVALUATION REPORTS FOR ADDITIONAL TESTING AND INSPECTION REQUIREMENTS.
- 4. SUBSTITUTIONS: SUBSTITUTIONS COMPLYING WITH SPECIFIED ACCEPTANCE CRITERIA MAY BE CONSIDERED. SUBMIT EVALUATION REPORT DEMONSTRATING COMPLIANCE WITH GOVERNING CODE AND SPECIFIED ACCEPTANCE CRITERIA PRIOR TO INSTALLATION.
- 5. ADHESIVE ANCHORS:
- A. ANCHOR RODS: ASTM F1554, GRADE 36 UNLESS NOTED OTHERWISE. SIZE AND EMBEDMENT AS INDICATED ON DRAWINGS.
- B. ADHESIVE IN CONCRETE: SIMPSON STRONG-TIE "AT-XP" (EVALUATION REPORT: IAPMO UES ER-263). SUBSTITUTES COMPLYING WITH ACCEPTANCE CRITERIA ICC-ES AC308 AND ACI 355.4 FOR USE IN CRACKED CONCRETE MAY BE CONSIDERED.
- C. VERIFY THAT THE SHELF LIFE OF THE ADHESIVE HAS NOT BEEN EXCEEDED ON THE DATE OF INSTALLATION.
- 6. EXPANSION ANCHORS:
- A. ANCHORAGE TO CONCRETE: SIMPSON STRONG-TIE "STRONG-BOLT 2" 316 STAINLESS STEEL (EVALUATION REPORT: ICC-ES ESR-3037). SUBSTITUTES COMPLYING WITH ACCEPTANCE

#### 7. SCREW ANCHORS

A. ANCHORAGE TO CONCRETE: SIMPSON STRONG-TIE "STAINLESS STEEL TITEN HD" (EVALUATION REPORT: IAPMO UES ER-493). SUBSTITUTES COMPLYING WITH ACCEPTANCE CRITERIA ICC-ES AC193 AND ACI 355.2 FOR USE IN CRACKED CONCRETE MAY BE CONSIDERED.

CRITERIA ICC-ES AC193 AND ACI 355.2 FOR USE IN CRACKED CONCRETE MAY BE CONSIDERED.

#### SPECIAL INSPECTIONS

- 1. SPECIAL INSPECTIONS ARE REQUIRED BY SECTION 1704 OF THE REFERENCED BUILDING CODE. THE INTENT OF SPECIAL INSPECTIONS IS TO VERIFY THE COMPLIANCE OF MATERIALS. INSTALLATION, FABRICATION, ERECTION AND/OR PLACEMENT OF COMPONENTS WITH THE COMPLETED SET OF CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS. IT IS THE RESPONSIBILITY OF ALL PARTIES INVOLVED TO BECOME FAMILIAR WITH THE SPECIAL INSPECTION REQUIREMENTS SET FORTH IN CHAPTER 17 OF THE REFERENCED BUILDING CODE. SPECIAL INSPECTIONS SHALL BE PROVIDED BY THE OWNER OR THE OWNER'S AGENT AND SHALL NOT BE CONSIDERED IN THE SCOPE OF WORK OF THE CONTRACTOR.
- A. THE FOLLOWING SCHEDULE OF SPECIAL INSPECTIONS FOR STRUCTURAL WORK HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 106.1 AND 1704 OF THE REFERENCED BUILDING CODE. SEE OTHERS FOR SPECIAL INSPECTION REQUIREMENTS FOR NON-STRUCTURAL WORK. THE SPECIAL INSPECTOR(S) SHALL COORDINATE WITH THE OWNER, CONTRACTORS, AND DESIGN PROFESSIONALS AND SCHEDULE ALL INSPECTIONS ACCORDINGLY.



CONSENT OF SCHAEFER Schaefer Proiect Number: 23-1076



**IDENTIFICATION** 

SHEET

IGN St Ohj

두질 분요

	SCHEDULE OF SPECIAL	_ INSPI	ECTION	SERV	ICES - 1705.6 SOILS			
			Extent		Agency	_		
Item	Sub Item / Scope	Cont. Periodic		N/A	Qualifications	Comments		
1. Bearing Materials	Verify materials below shallow foundations are adequate to achieve the design bearing capacity.		X		Testing Agency Under supervision of Licensed Geotechnical Engineer			
2. Excavations	Verify excavations are extended to proper depth and have reached proper material		X		Testing Agency Under supervision of Licensed Geotechnical Engineer			
3. Fill Classification	Perform classification and testing of compacted fill materials		X		Testing Agency Under supervision of Licensed Geotechnical Engineer			
4. Placement and Fill Compaction	During fill placement, verify use of proper materials and procedure in accordance with the provisions of the approved geotechnical report. Verify densities and lift thicknesses during placement and compaction of compacted fill	X			Testing Agency Under supervision of Licensed Geotechnical Engineer			
5. Subgrade	Prior to placement of compacted fill, inspect subgrade and verify that the site has been prepared properly		Х		Testing Agency Under supervision of Licensed Geotechnical Engineer			

ABBREVIATIONS								
NAME	DESCRIPTION							
AFF =	ABOVE FINISHED FLOOR ELEVATION							
ARCH =	ARCHITECT							
B/ =	BOTTOM OF							
BLDG =	BUILDING							
BOT =	ВОТТОМ							
BRG =	BEARING							
CFS =	COLD-FORMED STEEL							
CJ =	CONTRACTION JOINT							
CJP =	COMPLETE JOINT PENETRATION							
CL =	CENTER LINE							
CLR =	CLEAR							
CLSM =	CONTROLLED LOW STRENGTH MATERIAL							
CMU =	CONCRETE MASONRY UNIT							
COL =	COLUMN							
CONC =	CONCRETE							
CONT =	CONTINUOUS							
DEG or ° =	DEGREE							
DIA or ø =	DIAMETER							
EA =	EACH							
EF =	EACH FACE							
EL =	ELEVATION							
EMB =	EMBEDMENT							
EOD =	EDGE OF DECK							
EOS =	EDGE OF SLAB							
EQ =	EQUAL							
EXIST =	EXISTING							
EXP =	EXPANSION							
FDN =	FOUNDATION							
FS =	FAR SIDE							
FTG =	FOOTING							
GA =	GAGE							
GALV =	GALVANIZED							
GT =	GIRDER TRUSS							
HORIZ =	HORIZONTAL							
JST BRG =	JOIST BEARING							
Ld =	TENSION DEVELOPMENT LENGTH OF							
	REINFORCING BAR IN CONCRETE							
Ld-CMU =	TENSION DEVELOPMENT LENGTH OF							
	REINFORCING BAR IN GROUTED CMU							
Ldc =	COMPRESSION DEVELOPMENT LENGTH OF							
	REINFORCING BAR IN CONCRETE							
LDH =	LONG DIMENSION HORIZONTAL							
Ldh =	HOOKED BAR TENSION DEVELOPMENT							
	LENGTH OF REINFORCING BAR IN CONCRETE							

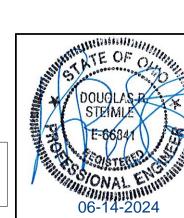
	ABBREVIATIONS
NAME	DESCRIPTION
LDV =	LONG DIMENSION VERTICAL
LLH =	LONG LEG HORIZONTAL
LLV =	LONG LEG VERTICAL
Ls =	LAP SPLICE LENGTH OF REINFORCING BAR IN CONCRETE
Ls-CMU =	LAP SPLICE LENGTH OF REINFORCING BAR IN GROUTED CMU
Lsc =	COMPRESSION LAP SPLICE LENGTH OF REINFORCING BAR IN CONCRETE
LSL =	LAMINATED STRAND LUMBER
LVL =	LAMINATED VENEER LUMBER
MCJ =	MASONRY CONTROL JOINT
MFR =	MANUFACTURER
NS =	NEAR SIDE
oc =	ON CENTER
OPNG =	OPENING
OPP =	OPPOSITE
P/T =	POST-TENSION
PAF =	POWER-ACTUATED FASTENER
PE =	PRE-ENGINEERED
PEMB =	PRE-ENGINEERED METAL BUILDING
PJP =	PARTIAL JOINT PENETRATION
PL =	PLATE
PSL =	PARALLEL STRAND LUMBER
PT =	PRESSURE TREATED
RD =	ROOF DRAIN
REINF =	REINFORCING
RTU =	ROOF TOP UNIT
SDS =	SELF DRILLING SCREWS
SIM =	SIMILAR
SL =	STEP LEDGE
SOMD =	SLAB ON METAL DECK
SPA =	SPACE or SPACES
SRD =	SECONDARY ROOF DRAIN
STIFF =	STIFFENER
STL =	STEEL
STW =	STEP TOP OF WALL
T/ =	TOP OF
UNO =	UNLESS NOTED OTHERWISE
VB =	VERTICAL BRACING
VERT =	VERTICAL
VIF =	VERIFY IN FIELD
w/ -	\\/\TL

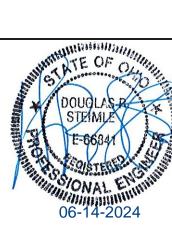
WITH WP = WORK POINT

SYMBOL LEGEND										
SYMBOL	DESCRIPTION	REFERENCE								
n	COLUMN LINE DESIGNATION									
$\langle n \rangle$	FOOTING MARK	SHEET S-101								
Kn	KEYNOTE MARK									
<b>\rightarrow</b>	ELEVATION INDICATION									
Dn	DECK MARK	SHEET S-101								
	STEP T/FTG	SHEET S-101								

S	CHEDULE OF SPECIAL INSPECTION SE	RVICE	S - 170	<u>5.3 CC</u>	NCRETE COL	NSTRUCTION		
Item	Sub Item / Scope		Extent		Agency Qualifications	Comments		
In-Plant Special Inspections (Precast Concrete)	Fabrication and implementation procedures: In addition to special inspections provided on site, provide special inspections indicated below on the premises of fabricator's shop. Verify that the fabricator maintains detailed fabrication and quality control procedures.	Cont. Periodic		N/A X	As Noted Below	Special inspections on the premises of the fabricator's shop are not required provided the fabricator is an Approved Fabricator is accordance with section 1704.2.5.1.  Fabricator is required to submit documentation/certification that they are Approved Fabricator.		
1. Reinforcing steel	a. Mild Reinforcing Steel: Inspect size, spacing, cover, positioning and grade of reinforcing steel: Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters. Verify welded wire fabric is supported per construction documents. Reference ACI 318: 20, 25.2, 25.3, 26.6-1-26.6-3, and IBC 1908.4.		X		Testing Agency			
	b. Prestress Steel: Inspect size, spacing, cover, and position of prestressing tendons:		X		Testing Agency			
2. Welding of Reinforcing Steel	a. Verify weldability of reinforcing bars other than ASTM A706.  Reference ACI 318: 26.6.4 and AWS D1.4		X		Testing Agency			
	b. Inspect single pass fillet welds, maximum 5/16"		X		Testing Agency AWS - Certified Welding Inspector			
	c. Inspect all other welds	X			Testing Agency AWS - Certified Welding Inspector			
3. Cast in Place Anchor Rods	Inspect size, position and embedment of cast in place bolts and anchor rods. Inspect concrete placement and consolidation around anchors. Reference ACI 318: 17.8.2		X		Testing Agency			
4. Post Installed Anchors (Anchors installed in Hardened Concrete)	a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. Inspect type and size of anchor, concrete type and compressive strength, hole cleaning procedures, anchor embedment, anchor spacing and edge distances, and tightening torque (where applicable). Reference ACI 318: 17.8.2.4	X			Testing Agency	Reference evaluation report (identified in project general notes) for additional inspection scope required by manufacturer.		
	b. Mechanical anchors and adhesive anchors not defined in 4.a. Inspect type and size of anchor, concrete type and compressive strength, hole cleaning procedures, anchor embedment, anchor spacing and edge distances, and tightening torque (where applicable). Reference ACI 318: 17.8.2		X		Testing Agency			
5. Mix Design	Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.		X		Testing Agency			
6. Sampling and Testing of Concrete	At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests as required by construction documents, and determine the temperature of concrete. Reference ASTM C 172, ASTM C31, ACI 318, 26.4.3, 26.4.4	X			Testing Agency			
7. Concrete and Shotcrete Placement	Inspect concrete and shotcrete placement for proper application techniques. Reference ACI 318: 26.5 and IBC 1908.6, 1908.7, and 1908.8. Verify that concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated.	X			Testing Agency			
8. Curing and Protection	Inspect for maintenance of specified curing temperature and techniques. Inspect cold weather and hot weather protection procedures as applicable. Reference ACI 318: 26.5.3-26.5.5		X		Testing Agency			
9. Prestressed (Post-tensioned) Concrete	a. Application of Prestressing Forces: Inspect placement, stressing, grouting and protection of post-tensioning tendons. Verify that tendons are correctly positioned, supported, tied and wrapped. Record tendon elongations. Reference ACI 318: 26.10.2			X	Testing Agency			
	b. Grouting of Bonded Prestressing Tendons in the Seismic-Force Resisting System: Reference ACI 318: 26.10.1			X	Testing Agency			
10. Precast Concrete Erection	Inspect erection of precast concrete including member configuration, connections, welding and grouting. Reference ACI 318: Ch 26.9			X	Testing Agency			
11. Precas tConcrete Diaphragms	For precast concrete diaphragm connections or reinforcement at joints classified as moderate or high deformability elements (MDE or HDE) in structures assigned to Seismic Design Category C, D, E or F, inspect such connections and reinforcement in the field for: (a) installation of the embedded parts			X	Testing Agency			
	(b) Completion of the continuity of reinforcement across joints.			X	Testing Agency			
12. Precast Concrete Diaphragms	(c) Completion of connections in the field.  Inspect erection tolerances of precast concrete diaphragm connections for compliance with ACI 550.5			X	Testing Agency			
pagi110				Х				
13. Verification of In-Situ Concrete Strength	Verify concrete strength prior to the removal of shores and forms from beams and structural slabs and prior to the stressing of tendons in post-tensioned concrete. Reference ACI 318: 26.10.2 & 26.11.11.2		X		Testing Agency			

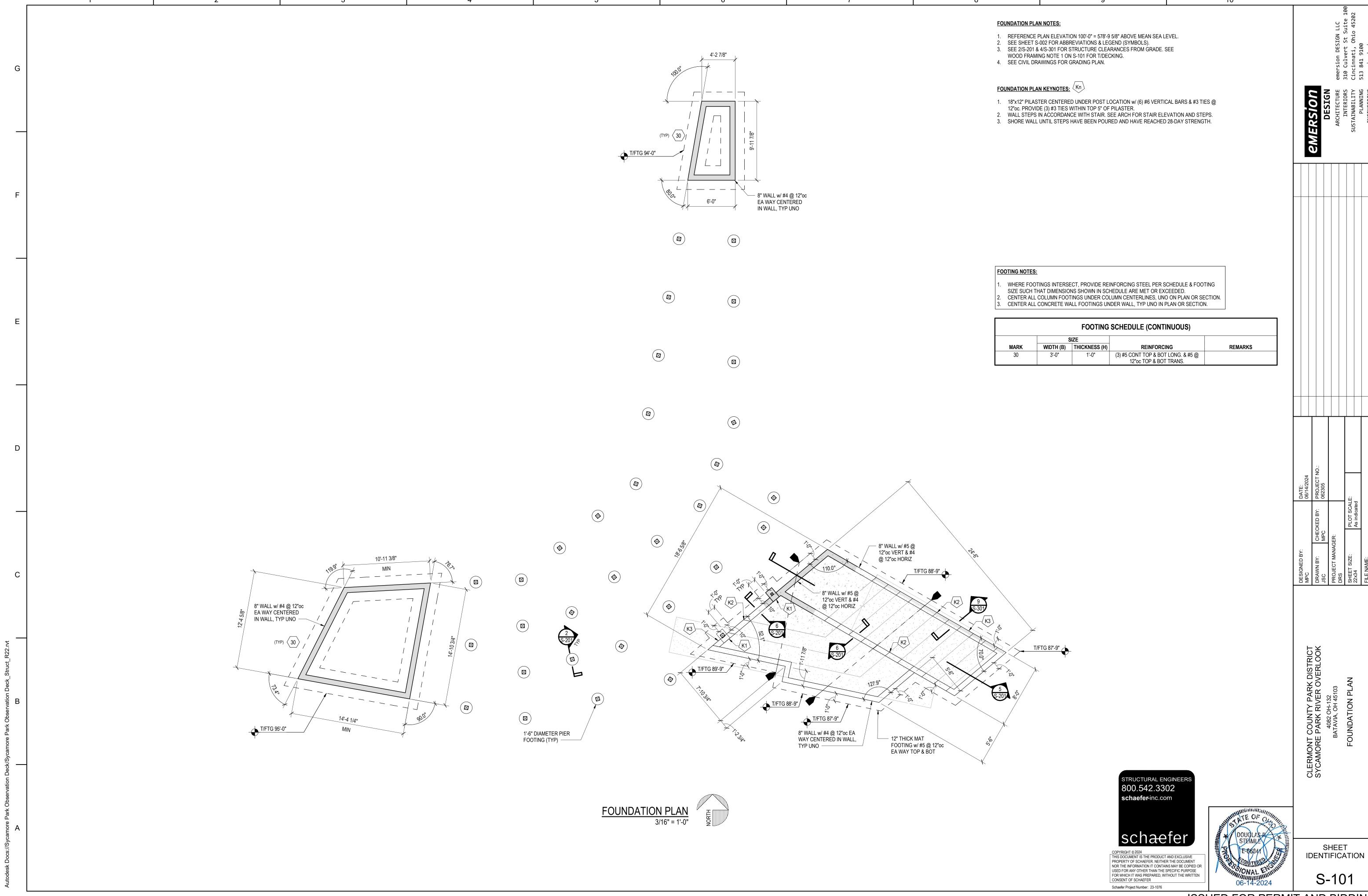


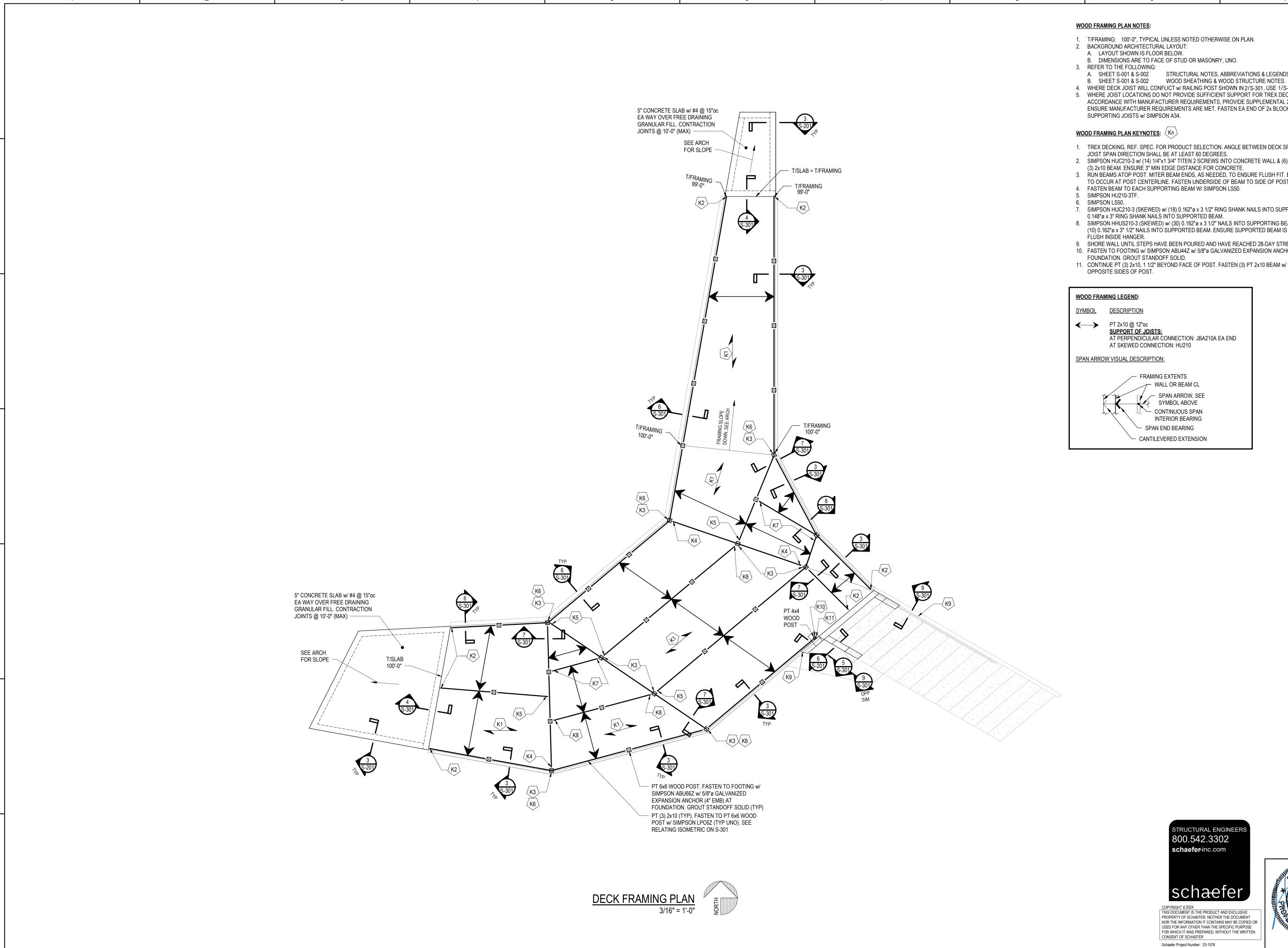




SHEET IDENTIFICATION S-002

CLERMONT COUNTY PARK DISTRICT SYCAMORE PARK RIVER OVERLOOK 4082 OH-132 BATAVIA, OH 45103 SPECIAL INSPECTIONS





1. T/FRAMING: 100'-0", TYPICAL UNLESS NOTED OTHERWISE ON PLAN.

B. DIMENSIONS ARE TO FACE OF STUD OR MASONRY, UNO.

A. SHEET S-001 & S-002 STRUCTURAL NOTES, ABBREVIATIONS & LEGENDS (SYMBOLS).

4. WHERE DECK JOIST WILL CONFLICT w/ RAILING POST SHOWN IN 2/S-301, USE 1/S-301 INSTEAD. 5. WHERE JOIST LOCATIONS DO NOT PROVIDE SUFFICIENT SUPPORT FOR TREX DECKING IN ACCORDANCE WITH MANUFACTURER REQUIREMENTS, PROVIDE SUPPLEMENTAL 2x BLOCKING TO

ENSURE MANUFACTURER REQUIREMENTS ARE MET. FASTEN EA END OF 2x BLOCKING TO SUPPORTING JOISTS w/ SIMPSON A34.

1. TREX DECKING, REF. SPEC. FOR PRODUCT SELECTION. ANGLE BETWEEN DECK SPAN DIRECTION AND JOIST SPAN DIRECTION SHALL BE AT LEAST 60 DEGREES.

2. SIMPSON HUC210-3 w/ (14) 1/4"x1 3/4" TITEN 2 SCREWS INTO CONCRETE WALL & (6) 0.148"x3" NAILS INTO (3) 2x10 BEAM. ENSURE 3" MIN EDGE DISTANCE FOR CONCRETE.

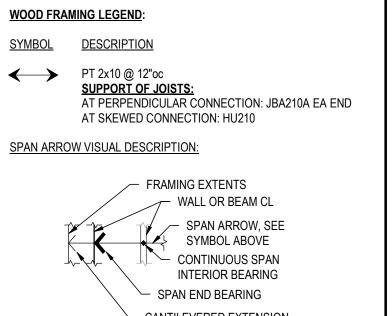
3. RÚN BEAMS ATOP POST. MITER BEAM ENDS, AS NEEDED, TO ENSURE FLUSH FIT. BEAM INTERSECTION TO OCCUR AT POST CENTERLINE. FASTEN UNDERSIDE OF BEAM TO SIDE OF POST w/ SIMPSON A35.

SIMPSON HUC210-3 (SKEWED) w/ (18) 0.162"ø x 3 1/2" RING SHANK NAILS INTO SUPPORTING BEAMS & (10)

8. SIMPSON HHUS210-3 (SKEWED) w/ (30) 0.162"ø x 3 1/2" NAILS INTO SUPPORTING BEAMS & (10) 0.162" ø x 3" 1/2" NAILS INTO SUPPORTED BEAM. ENSURE SUPPORTED BEAM IS BEVEL CUT & SITS

9. SHORE WALL UNTIL STEPS HAVE BEEN POURED AND HAVE REACHED 28-DAY STRENGTH. 10. FASTEN TO FOOTING w/ SIMPSON ABU44Z w/ 5/8"ø GALVANIZED EXPANSION ANCHOR (4" EMB) AT

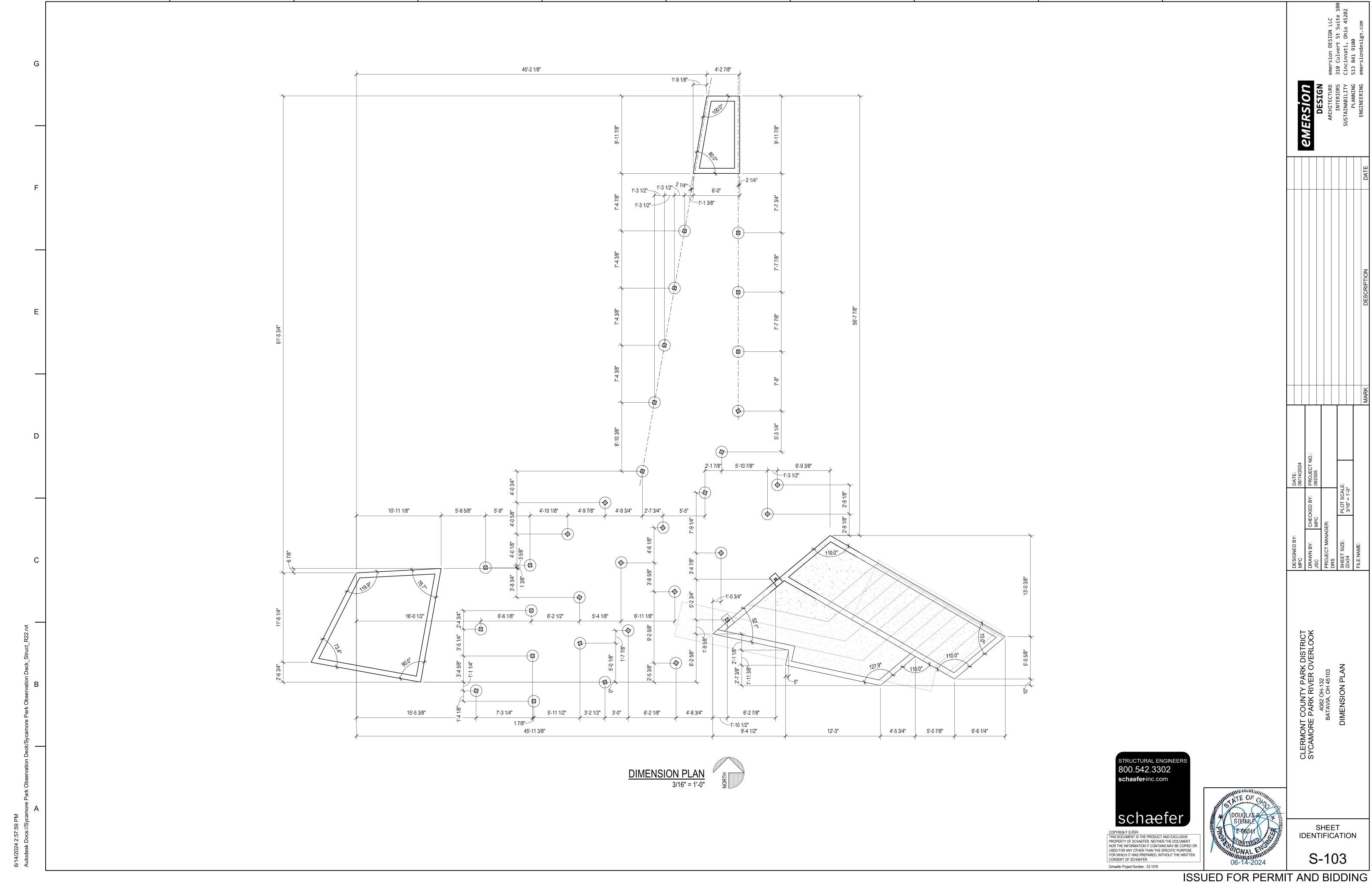
11. CONTINUE PT (3) 2x10, 1 1/2" BEYOND FACE OF POST. FASTEN (3) PT 2x10 BEAM w/ SIMPSON A34 ON

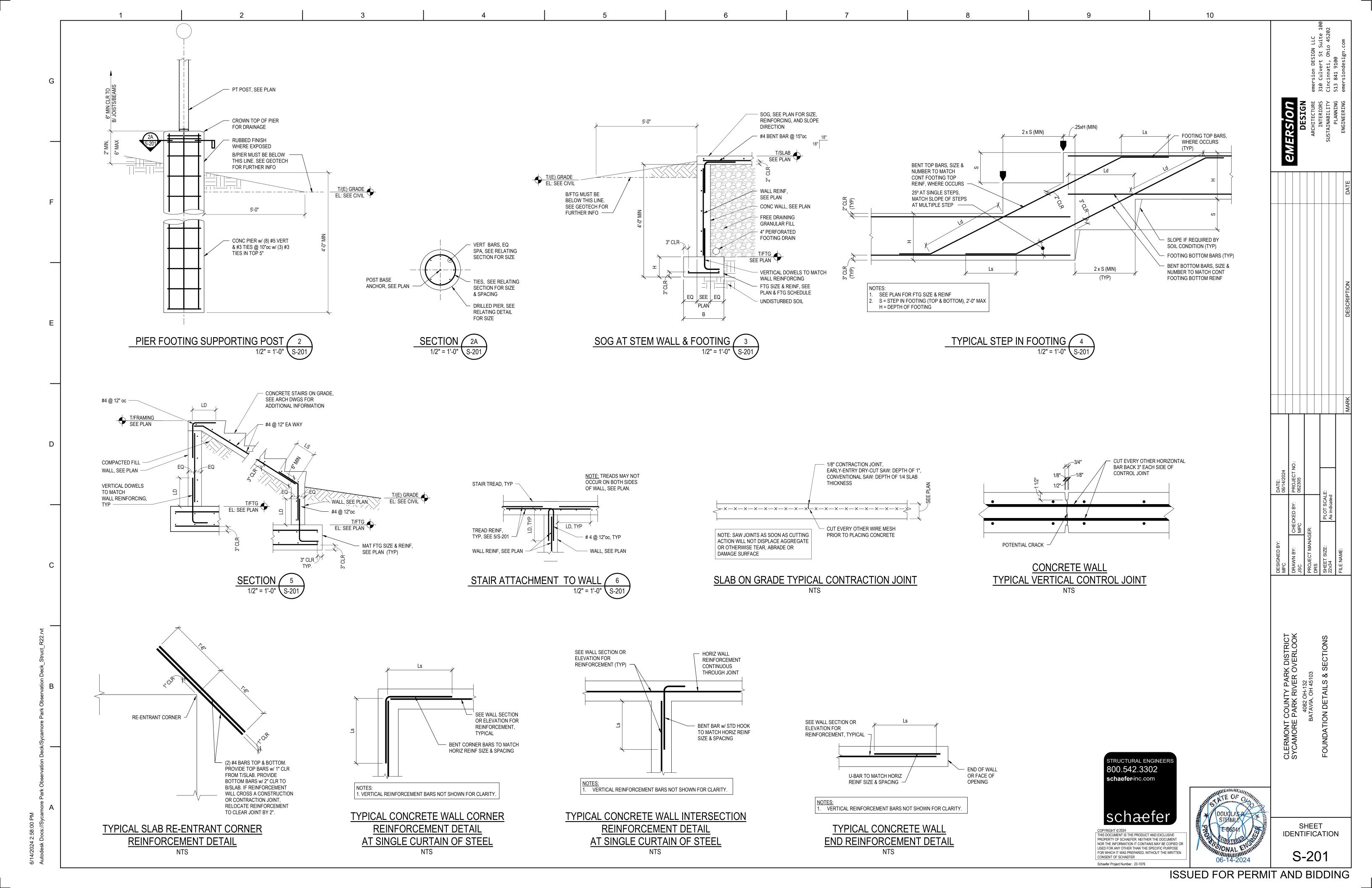


STRUCTURAL ENGINEERS 800.542.3302 **schaefer**-inc.com COPYRIGHT © 2024

THIS DOCUMENT IS THE PRODUCT AND EXCLUSIVE PROPERTY OF SCHAEFER. NEITHER THE DOCUMENT NOR THE INFORMATION IT CONTAINS MAY BE COPIED OR USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE

SHEET **IDENTIFICATION** S-102





i. FOR LIGHTWEIGHT CONCRETE: MULTIPLY Ld, Ls, Ldh BY 1.33

FOR BARS THAT DO NOT MEET THE CLEAR COVER OR CLEAR SPACING

i. FOR LIGHTWEIGHT CONCRETE: MULTIPLY Ld, Ls, Ldh BY 1.33

C. CLEAR COVER GREATER THAN db

D. MIN 2\*db CLEAR SPACING BETWEEN BARS

FOR BARS THAT DO NOT MEET THE CLEAR COVER OR CLEAR SPACING INDICATED:

#6 AND SMALLER: Ld = 66 BAR DIAMETERS; Ls = 86 BAR DIAMETERS #7 AND LARGER: Ld = 83 BAR DIAMETERS; Ls = 107 BAR DIAMETERS FOR TOP BARS MULTIPLY BY 1.3

MINIMUM Ld AND Ls = 12"

D. MIN 2\*db CLEAR SPACING BETWEEN BARS FOR BARS THAT DO NOT MEET THE CLEAR COVER OR CLEAR SPACING

i. FOR LIGHTWEIGHT CONCRETE: MULTIPLY Ld, Ls, Ldh BY 1.33

C. CLEAR COVER GREATER THAN db

MINIMUM Ld AND Ls = 12"

FOR TOP BARS MULTIPLY BY 1.3

INDICATED: #6 AND SMALLER: Ld = 66 BAR DIAMETERS; Ls = 86 BAR DIAMETERS #7 AND LARGER: Ld = 83 BAR DIAMETERS; Ls = 107 BAR DIAMETERS

INDICATED: #6 AND SMALLER: Ld = 54 BAR DIAMETERS; Ls = 70 BAR DIAMETERS #7 AND LARGER: Ld = 68 BAR DIAMETERS; Ls = 88 BAR DIAMETERS FOR TOP BARS MULTIPLY BY 1.3 MINIMUM Ld AND Ls = 12"

D. 4" MIN CLEAR SPACING BETWEEN BARS

C. 2" MIN CLEAR COVER

i. FOR LIGHTWEIGHT CONCRETE: MULTIPLY Ld, Ls, Ldh BY 1.33

C. CLEAR COVER GREATER THAN db D. MIN 2\*db CLEAR SPACING BETWEEN BARS

MINIMUM Ld AND Ls = 12"

FOR BARS THAT DO NOT MEET THE CLEAR COVER OR CLEAR SPACING INDICATED:

#6 AND SMALLER: Ld = 54 BAR DIAMETERS; Ls = 70 BAR DIAMETERS #7 AND LARGER: Ld = 68 BAR DIAMETERS; Ls = 88 BAR DIAMETERS FOR TOP BARS MULTIPLY BY 1.3

i. FOR LIGHTWEIGHT CONCRETE: MULTIPLY Ld, Ls, Ldh BY 1.33

10

IGN LLC St Suite Ohio 4520

emer 310 Cinc 513

C. CLEAR COVER GREATER THAN db

D. MIN 2\*db CLEAR SPACING BETWEEN BARS

FOR BARS THAT DO NOT MEET THE CLEAR COVER OR CLEAR SPACING

#7 AND LARGER: Ld = 83 BAR DIAMETERS; Ls = 107 BAR DIAMETERS

#6 AND SMALLER: Ld = 66 BAR DIAMETERS; Ls = 86 BAR DIAMETERS

FOR TOP BARS MULTIPLY BY 1.3 MINIMUM Ld AND Ls = 12"

**LAP AND DEVELOPMENT TABLE NOTES & DEFINITIONS:** 

A. TOP BARS = HORIZ BARS WITH MORE THAN 12" OF CONCRETE CAST BELOW THE BARS

B. db = BAR DIAMETER

C. s = CENTER-TO-CENTER BAR SPACING

D. Ath = TOTAL AREA OF TIES OR STIRRUPS CONFINING HOOKED BARS

E. Ahs = TOTAL AREA OF HOOKED BARS BEING DEVELOPED

F. WHERE BARS OF DIFFERENT SIZES ARE SPLICED, LS FOR THE LARGER BAR SHALL BE USED

G. ALL TENSION SPLICES SHALL BE CLASS B, UNLESS NOTED OTHERWISE

H. Ldh VALUES FOR #11 BARS AND SMALLER MAY BE REDUCED AS FOLLOWS (PER ACI 318-19)

i. MULTIPLY BY 0.625 FOR (1) OR (2)

(1) Ath  $\geq$  0.40Ahs

(2) s ≥ 6db

MULTIPLY BY 0.80 FOR (3) OR (4)

(3) HOOK TERMINATES IN COLUMN CORE & SIDE COVER NORMAL TO PLANE OF HOOK.

(4) SIDE COVER NORMAL TO PLANE OF HOOK ≥ 6db

iii. Ldh SHALL NOT BE LESS THAN THE LARGER OF 8db OR 6" WITH REDUCTIONS APPLIED

CONCRETE MIXTURE REQUIREMENTS											
CONCRETE CLASS	DESCRIPTION	E) F	KPOSUF S	RE CLA	SS C	MINIMUM fc AT 28 DAYS (PSI)	MAXIMUM w/c RATIO	AIR CONTENT	MINIMUM CEMENTITIOUS MATERIAL (LB/CY)		REMARKS
А	FOOTINGS AND GRADE BEAMS	F0	S0	W0	C0	3000					
В	FOUNDATION WALLS	F2	S0	W0	C1	4500	0.45	6% ±1.5%			
С	EXTERIOR RETAINING WALLS	F2	S0	W0	C1	4500	0.45	6% ±1.5%			
D	DRILLED PIERS	F0	S0	W0	C0	3000			-	1	
Е	EXTERIOR SLABS-ON-GROUND MILD EXPOSURE					4000		6% ±1.5%	540	2	

CONCRETE MIXTURE NOTES:

A. PROVIDE MIX DESIGNS IN ACCORDANCE WITH ACI 301-16 FOR SPECIFIED EXPOSURE CLASS AND AGGREGATE.

B. NOMINAL MAX AGGREGATE SIZE = 3/4" UNLESS OTHERWISE NOTED

C. ALL CONCRETE SHALL BE NORMAL WEIGHT UNLESS OTHERWISE NOTED

CONCRETE MIXTURE REMARKS:

1. NOMINAL MAX AGGREGATE SIZE: 1 1/2"

2. ODOT 451

STRUCTURAL ENGINEER 800.542.3302 |schaefei COPYRIGHT © 2024
THIS DOCUMENT IS THE PRODUCT AND EXCLUSIVE PROPERTY OF SCHAEFER. NEITHER THE DOCUMENT NOR THE INFORMATION IT CONTAINS MAY BE COPIED OF

USED FOR ANY OTHER THAN THE SPECIFIC PURPOSE FOR WHICH IT WAS PREPARED, WITHOUT THE WRITTEN

CONSENT OF SCHAEFER Schaefer Project Number: 23-1076

SHEET **IDENTIFICATION** S-221

