

GENERAL

1. THESE GENERAL NOTES ARE NOT INTENDED TO REPLACE SPECIFICATIONS. SEE SPECIFICATIONS FOR REQUIREMENTS IN ADDITION TO GENERAL NOTES.
2. THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, AND, EXCEPT WHERE SPECIFICALLY SHOWN, DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, AND SEQUENCE. ALL APPLICABLE SAFETY REGULATIONS TO BE FOLLOWED STRICTLY.
3. THE STRUCTURE HAS BEEN DESIGNED TO RESIST DESIGN LOADS ONLY AS A COMPLETED STRUCTURE. APPLICATIONS OF CONSTRUCTION LOADS TO THE PARTIALLY COMPLETED STRUCTURE SHALL BE CONSIDERED BY THE CONTRACTOR AND SO INCLUDED IN THE DESIGN OF SHORING, BRACING, FORMWORK, AND ANY OTHER SUPPORTING ELEMENTS PROVIDED FOR CONSTRUCTION OF THE STRUCTURE. DURING ERECTION AND UNTIL ALL PERMANENT CONNECTIONS ARE MADE, THE CONTRACTOR MUST PROVIDE TEMPORARY BRACING FOR THE STRUCTURE IN ALL DIRECTIONS.
4. THE GENERAL CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND GRADE CONDITIONS (BOTH NEW AND EXISTING), REPORTING ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO ORDERING MATERIALS OR PROCEEDING WITH ANY PHASE OF THE WORK.
5. THE CONTRACTOR SHALL COMPARE STRUCTURAL SECTIONS WITH ARCHITECTURAL SECTIONS AND REPORT ANY DISCREPANCY TO THE ARCHITECT PRIOR TO FABRICATION OR INSTALLATION OF STRUCTURAL MEMBERS.
6. DO NOT SCALE DIMENSIONS FROM DRAWINGS. THE CONTRACTOR SHALL REQUEST, FROM THE ARCHITECT, NECESSARY DIMENSIONS NOT SHOWN ON THE DRAWINGS.
7. IF ANY BIDDER IS IN DOUBT AS TO THE INTENT OF THE PLANS OR SPECIFICATIONS, THEY SHALL REQUEST AN INTERPRETATION FROM THE ARCHITECT IN WRITING AT LEAST TEN (10) DAYS PRIOR TO THE SCHEDULED BID DATE.
8. PRINCIPAL OPENINGS IN THE STRUCTURE ARE SHOWN ON THESE DRAWINGS. THE GENERAL CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR REQUIRED OPENINGS AS THEY SHALL BE PROVIDED FOR WHETHER SHOWN ON THESE DRAWINGS OR NOT. GENERAL CONTRACTOR SHALL VERIFY SIZE AND LOCATION OF ALL OPENINGS WITH ALL SUB-CONTRACTORS PRIOR TO CONSTRUCTION.
9. SEE ARCHITECTURAL DRAWINGS FOR FLOOR ELEVATIONS, FLOOR SLOPES, AND THE LOCATION OF DEPRESSED FLOOR AREAS.
10. WHERE A CONFLICT BETWEEN DRAWINGS AND SPECIFICATIONS OCCURS THE MORE STRINGENT REQUIREMENT SHALL APPLY.
11. WHERE A DETAIL IS SHOWN FOR ONE CONDITION, IT SHALL APPLY FOR ALL LIKE OR SIMILAR CONDITIONS EVEN THOUGH NOT SPECIFICALLY REFERENCED ON THE DRAWINGS.
12. SEVERAL ITEMS NOTED HEREIN AND IN THE SPECIFICATIONS REQUIRE THE CONTRACTOR TO ENGAGE A PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED, TO PROVIDE DESIGN AND/OR DETAILING OF STRUCTURAL ELEMENTS. SEE INDIVIDUAL GENERAL NOTE AND SPECIFICATION SECTIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS. THESE DELEGATED DESIGN ELEMENTS INCLUDE, BUT ARE NOT LIMITED TO:
- A. ARCHITECTURAL PRECAST CONCRETE
  - B. STRUCTURAL STEEL (CONNECTIONS)
  - C. STEEL STAIRS AND RAILINGS
  - D. NON-LOAD BEARING COLD-FORMED STEEL
13. THIS PROJECT REQUIRES SPECIAL INSPECTIONS AS DESCRIBED IN SECTION 1704 OF THE NORTH CAROLINA STATE BUILDING CODE. SEE STATEMENT OF SPECIAL INSPECTIONS FOR REQUIRED INSPECTIONS. CONTRACTOR SHALL COORDINATE WITH SPECIAL INSPECTOR ALL WORK REQUIRING SPECIAL INSPECTIONS AND TESTING.

DESIGN CRITERIA

1. APPLICABLE CODES:
- A. 2018 NORTH CAROLINA STATE BUILDING CODE (2015 INTERNATIONAL BUILDING CODE WITH REVISIONS)
  - B. MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES (ASCE/SEI 7-10)
  - C. BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-14)
  - D. BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 530/530.1-13)
  - E. SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (AISC 360-10)
  - F. NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (ANSI/AWC NDS-2015)
2. LIVE LOADS
- |                       | UNIFORM (PSF) | CONCENTRATED (LB) |
|-----------------------|---------------|-------------------|
| RIGGING FOR STAGE     | TBD           | TBD               |
| ASCENSARY AREAS       | 100           | NA                |
| MECHANICAL            | 150           | NA                |
| PUBLIC AREAS, LOBBIES | 20            | 2,000             |
| ROOF                  | 10            | 300               |
| STAGE FLOOR           | 150           | NA                |
| STAIRS                | 100           | 300               |
| STORAGE               | 125           | NA                |
3. RISK CATEGORY
- |    |
|----|
| II |
|----|
4. SNOW LOAD:
- GROUND SNOW LOAD  $P_g = 10 \text{ PSF}$
- IMPORTANCE FACTOR  $I_s = 1$
- SNOW EXPOSURE FACTOR  $C_e = 0.9$
- THERMAL FACTOR  $C_t = 1.2$
- FLAT ROOF SNOW ROOF LOAD  $P_f = 11 \text{ PSF}$  (PLUS 5 PSF RAIN-ON-SNOW SURCHARGE)
- WIND LOAD:
- BASIC DESIGN WIND VELOCITY  $V = 145 \text{ MPH}$
- EXPOSURE CATEGORY

BACK OF HOUSE BUILDING (PHASE 3)

$$V_x = 25k$$
$$V_y = 134k$$
$$\pm 0.18$$

INTERNAL PRESSURE COEFFICIENTS COMPONENTS AND CLADDING - ALL BUILDING COMPONENTS AND CLADDING ENGINEERED BY THE COMPONENT MANUFACTURER ARE TO BE DESIGNED BY THE MANUFACTURER'S ENGINEER FOR WIND LOADS DETERMINED PER THE NORTH CAROLINA STATE BUILDING CODE FOR THE BASIC DESIGN WIND VELOCITY, IMPORTANCE FACTOR, AND EXPOSURE LISTED ABOVE.

6. SEISMIC LOAD (2008 USGS SEISMIC DESIGN MAPS):
- DESIGN METHOD - EQUIVALENT LATERAL FORCE PROCEDURE
- |           |         |
|-----------|---------|
| $S_s$     | 22.0 %g |
| $S_d$     | 9.2 %g  |
| $S_{d5}$  | 23.5 %g |
| $S_{d1}$  | 14.8 %g |
| $I_e = 1$ |         |
| $C = 1$   |         |
7. FUTURE LOADS: UNLESS SPECIFICALLY NOTED, THERE ARE NO PROVISIONS MADE FOR FUTURE FLOORS, ROOFS, OR OTHER LOADS.

NONSTRUCTURAL COMPONENT ANCHORAGE - ALL ARCHITECTURAL, ELECTRICAL, MECHANICAL, AND PLUMBING COMPONENTS ARE TO BE ATTACHED AS REQUIRED BY ASCE 7 CHAPTER 13. "SEISMIC DESIGN REQUIREMENTS FOR NONSTRUCTURAL COMPONENTS". EACH INDIVIDUAL CONTRACTOR RESPONSIBLE FOR THE COMPONENT MUST PROVIDE PROJECT SPECIFIC DESIGN AND DOCUMENTATION PREPARED BY AN ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA. CHAPTER 13 DEFINES THE FORCE REQUIRED TO SUPPORT THE COMPONENT FOR THE ANCHORAGE AND BRACING. THE COST OF PREPARING THIS INFORMATION AND DESIGN SHALL BE INCLUDED IN EACH CONTRACTOR'S BID THAT IS PROVIDING THE COMPONENT

FOUNDATIONS

1. FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INVESTIGATION REPORT BY STEWART DATED 06/04/2018 (STEWART PROJECT #C17135.05) AS WELL AS GEOTECHNICAL APPENDIX #3 DATED 09/07/2018 (TIMBER PILE FOUNDATIONS) AND APPENDIX #4 DATED 10/31/2018 (CIP RETAINING WALL FOUNDATIONS).
2. THE BACK OF HOUSE IS TO BE BUILT ON TIMBER PILES PER GEOTECHNICAL RECOMMENDATIONS.
3. THE SUBGRADE AND UNDERLOOK FILL SHALL BE PREPARED TO A POINT THAT EXTENDS 3'-0" MINIMUM BEYOND THE LIMITS OF THE FOUNDATION.
4. MINIMUM SUBGRADE PREPARATION REQUIREMENTS ARE AS FOLLOWS: COMPACT ALL FILL UNDER BUILDING TO 95% MAXIMUM DENSITY AS DETERMINED BY ASTM D698. PLACE IN LAYERS OF 8" MAXIMUM LOOSE THICKNESS. VERIFY FIELD DENSITY, ASTM D1556, WITH AT LEAST ONE TEST PER 2,000 SQUARE FEET PER LAYER. SEE SPECIFICATIONS FOR OTHER TESTING REQUIREMENTS.
5. UTILITY LINES SHALL NOT BE PLACED THROUGH OR BELOW FOUNDATIONS WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER. CONTRACTOR SHALL SUBMIT DETAILED DRAWINGS OF ALL SUCH CONDITIONS PRIOR TO CONSTRUCTION.
6. SUBSURFACE CONTRACTOR TO DESIGN AND INSTALL SHEET PILE SHORING SYSTEM ON NORTH SIDE OF WALL TO ALLOW FOR MAINTENANCE EXCAVATION OF CPWPA'S GRAVITY SEWER INSIDE PUMP STATION.

CONCRETE / REINFORCING STEEL

1. CONCRETE COMPRESSIVE STRENGTH IN 28 DAYS:
- |                                     |                          |
|-------------------------------------|--------------------------|
| COLUMNS, BASEMENT WALLS, SITE WALLS | 4,500 PSI, NORMAL WEIGHT |
| SLAB ON GRADE                       | 4,500 PSI, NORMAL WEIGHT |
| MAIS/PILECAPS, GRADE BEAMS          | 4,500 PSI, NORMAL WEIGHT |
2. REINFORCING:
- TYPICAL - ASTM A615, GRADE 60
- REINFORCING TO BE WELDED - ASTM A706
- DEFORMED BAR ANCHORS - ASTM A 496
- WELDED WIRE FABRIC - ASTM A1064 (FLAT SHEETS ONLY)
3. GROUT UNDER BASE PLATES TO BE HIGH STRENGTH (5,000 PSI), NON-SHRINK.
4. REFER TO THE DRAWINGS FOR REINFORCING LAP REQUIREMENTS. WHERE LAP SPLICES ARE NOT SHOWN, LAP PER ACI 318 OR CRSI STANDARDS.
5. LAP WELDED WIRE FABRIC SHEETS 8" MINIMUM.
6. CLEAR COVER FROM FACE OF CONCRETE:
- |  |   |
|--|---|
| CAST IN PLACE CONCRETE (MEASURE TO OUTERMOST REINFORCING) - CONCRETE CAST AGAINST AND EXPOSED TO EARTH | 3" - 3"   |
| CONCRETE EXPOSED TO EARTH/WEATHER  | 2" FOR #6 BARS AND LARGER 1 1/2" ELSE                           |
| CONCRETE AT BOTTOM OF STRUCTURAL SLAB  | 1 1/2" ELSE   |
| CONCRETE NOT EXPOSED TO EARTH/WEATHER  | 3/4" FOR SLABS AND WALLS 1 1/2" FOR BEAMS AND COLUMNS (TO TIES) |
7. WHERE SCHEDULED BARS ARE NOT PRESENT, PROVIDE CONTINUOUS #5 TOP AND BOTTOM BARS TO SUPPORT STIRRUPS AS REQUIRED FOR THE LENGTH OF THE STRIPUP BEARING ON ALL BEAMS.
8. WALL FOOTING REINFORCING SHALL BE CONTINUOUS THROUGH ADJACENT COLUMN FOOTINGS.
9. PROVIDE VERTICAL DOVETAIL SLOTS AT 24"OC WITH TIES AT 16"OC VERTICALLY IN ALL CONCRETE WALLS BACKING-UP MASONRY VENER.
10. BAR SUPPORTS FOR CONCRETE EXPOSED TO VIEW SHALL HAVE PLASTIC COATED LEGS OR BE HOT DIP GALVANIZED AFTER FABRICATION.
11. MECHANICAL AND ELECTRICAL CONDUIT IN SLABS ON GRADE AND ELEVATED SLABS SHALL RUN UNDER TOP LAYER OF SLAB REINFORCING. PROVIDE A MINIMUM OF 1-1/2" CLEAR BETWEEN CONDUITS AND BETWEEN REINFORCING AND ADJACENT CONDUITS PARALLEL TO REINFORCING. IF MAXIMUM SIZE OF CONDUIT EXCEEDS ONE THIRD OF THE SLAB DEPTH, ADDITIONAL FRAMING OR REINFORCING MAY BE NECESSARY AT ENGINEER'S DISCRETION.
12. MECHANICAL AND ELECTRICAL CONDUIT IN ELEVATED SLABS ON METAL DECK IS NOT ALLOWED UNLESS SPECIFICALLY REVIEWED AND APPROVED BY THE STRUCTURAL ENGINEER PRIOR TO PLACEMENT.
13. HEADED CONCRETE ANCHORS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A108, GRADES 1010, 1015, 1017, OR 1020. STUDS SHALL BE AUTOMATICALLY END WELDED IN THE SHOP OR FIELD IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
14. EMBED PLATES MUST BE SET IN THE FORM BEFORE POURING CONCRETE, NOT PLACED INTO TOP OF WET CONCRETE. THE CONTRACTOR SHALL CONTACT THE ARCHITECT PRIOR TO PLACING EMBED PLATES FOR ANY EMBED PLATES LEFT OUT OF CONCRETE POURS.
15. FOR SLABS ON GRADE, SLAB AND FOOTING REINFORCING SHALL BE HELD IN PLACE BY BAR SUPPORTS WITH SAND PLATES, OR PRECAST CONCRETE BAR SUPPORTS AS DESCRIBED IN CHAPTER 3 OF THE CRSI MANUAL OF STANDARD PRACTICE. BAR SUPPORTS SHALL BE SPACED AT A MAXIMUM OF 4'-0"OC BOTH WAYS. ROCKS, CMU, OR CLAY BRICK WILL NOT BE USED AS SUPPORTS.
16. THE CONTRACTOR SHALL ASSURE CONCRETE OVERAGES IN ELEVATED DECK POURS DUE TO MEMBER AND DECK DEFLECTIONS. UNLESS SHOWN ON PLANS, BEAMS ARE NOT CAMBERED. CONCRETE OVERAGES MAY BE CALCULATED BY THE CONTRACTOR FOR BEAM DEFLECTIONS EQUALING 1/300 INCLUDING ADDITIONAL DEFLECTIONS DUE TO PONDING AND DECK DEFLECTIONS PER SDI.
17. REBAR SHALL NOT BE HEATED WITH A TORCH IN THE FIELD.
18. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER PER ENOUGH ADVANCE (48 HOURS) OF EACH CONCRETE POUR TO ALLOW AMPLE TIME TO CHECK THE LAYOUT OF THE STEEL BEFORE THE BEGINNING OF THE ACTUAL POUR, BUT NOT PRIOR TO 90% OF THE STEEL HAVING BEEN PLACED.

CONCRETE CONSTRUCTION JOINTS

1. CONTRACTOR SHALL PROVIDE NECESSARY CONSTRUCTION JOINTS IN MONOLITHIC CONCRETE POURS SO THAT THE QUALITY OF PLACEMENT AND FINISH MEETS THE REQUIREMENTS OF PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL SUBMIT A PLAN SHOWING THE LOCATION OF ALL CONSTRUCTION JOINTS TO THE STRUCTURAL ENGINEER FOR APPROVAL.
2. THERE SHALL BE NO HORIZONTAL CONSTRUCTION JOINTS IN CONCRETE POURS. ALL VERTICAL CONSTRUCTION JOINTS IN SLABS AND BEAMS SHALL BE MADE WITH BULKHEADS. ADDITIONAL REINFORCING AT CONSTRUCTION JOINTS SHALL BE AS SPECIFIED BY THE STRUCTURAL ENGINEER. SEE TYPICAL CONSTRUCTION JOINT DETAILS.

ARCHITECTURAL PRECAST CONCRETE

1. PRECAST CONCRETE DESIGN AND FABRICATION SHALL CONFORM TO THE REFERENCED EDITION OF BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318) AND "ARCHITECTURAL PRECAST CONCRETE" (MNL-122-07) BY THE PRECAST/PRESTRESSED CONCRETE INSTITUTE. THE DESIGN SHALL BE PERFORMED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED. DESIGN CALCULATIONS, STAMPED BY THE REGISTERED ENGINEER, SHALL BE SUBMITTED FOR REVIEW OF THE ENGINEER UPON REQUEST.
2. THE DESIGN AND DETAILING OF ALL ARCHITECTURAL PRECAST CONCRETE AND ITS CONNECTIONS SHALL BE THE RESPONSIBILITY OF THE PRECAST FABRICATOR. THIS SHALL INCLUDE ALL BOLTS, PLATES, BRACES, REINFORCING, WELD SIZES, AND ANY EMBEDDED ITEMS IN BOTH PRECAST AND THE STRUCTURAL FRAME FOR ALL CONNECTIONS BETWEEN THE PRECAST AND THE SUPPORT FRAME. ALL CONNECTIONS SHOWN ON THE DRAWINGS ARE CONCEPTUAL IN NATURE AND FOR BIDDING PURPOSES ONLY.
3. ALL PRECAST MEMBERS SHALL HAVE AT LEAST TWO CONNECTIONS PER MEMBER. MAXIMUM SPACING OF CONNECTIONS SHALL BE 36'-0". ALL EXPOSED CONNECTIONS SHALL BE HOT-DIP GALVANIZED OR STAINLESS STEEL. ADDITIONAL REINFORCING SHALL BE ADDED TO PRECAST MEMBERS AS REQUIRED FOR ERECTION STRESSES AS WELL AS STRESSES INDUCED BY THE CONNECTIONS.
4. DESIGN MODIFICATIONS MAY BE MADE ONLY AS NECESSARY TO MEET FIELD CONDITIONS AND TO ENSURE PROPER FITTING OF THE WORK, AND ONLY AS ACCEPTABLE TO THE ENGINEER. MAINTAIN GENERAL DESIGN CONCEPT SHOWN WITHOUT INCREASING OR DECREASING SIZES OF MEMBERS OR ALTERING PROFILES AND ALIGNMENT SHOWN.

STRUCTURAL MASONRY

1. ALL MASONRY DESIGN AND CONSTRUCTION SHALL CONFORM TO THE REFERENCED EDITION OF THE BUILDING CODE REQUIREMENTS/SPECIFICATIONS FOR MASONRY STRUCTURES (ACI 530/530.1).
2. LOAD BEARING MASONRY WALLS, PILASTERS, PIERS, RETAINING WALLS, FOUNDATION WALLS AND ANY OTHER MASONRY SO DESIGNATED ON DRAWINGS IS CONSIDERED HERE TO BE STRUCTURAL MASONRY.
3. REQUIRED COMPRESSIVE STRENGTH OF MASONRY UNITS:
- SOLID CLAY UNITS - 6,200 PSI
- CONCRETE UNITS - 2,000 PSI ON NET AREA
4. CONCRETE MASONRY UNITS (CMU) SHALL BE LIGHT WEIGHT (105 PCF) CONFORMING TO ASTM C90. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR UNIT SIZE, FACE, COLOR, JOINTING, ETC.
5. MORTAR SHALL BE TYPE S, ASTM C270.
6. GROUT FOR REINFORCED MASONRY SHALL BE FINE GROUT, ASTM C476. MINIMUM 28-DAY COMPRESSIVE STRENGTH SHALL BE 2,000 PSI.
7. MINIMUM 28-DAY COMPRESSIVE STRENGTH (f'm) OF THE MASONRY WALLS SHALL BE 2,000 PSI. MASONRY STRENGTH WILL BE DETERMINED BY THE UNIT STRENGTH METHOD OR THE PRISM TEST METHOD AS DESCRIBED BY ACI 530.
8. REINFORCING:
- TYPICAL - ASTM A615, GRADE 60
- ALL REINFORCING TO BE WELDABLE - ASTM A706
9. REFER TO THE DRAWINGS FOR REINFORCING LAP TYPICAL DETAIL AND SCHEDULE REQUIREMENTS. WHERE LAP SPLICES ARE NOT SHOWN, LAP 72 BAR DIAMETERS.
10. MAXIMUM HEIGHT TO WHICH MASONRY SHALL BE LAID BEFORE GROUTING IS 5 FEET ABOVE CONSTRUCTION SURFACE OR PREVIOUSLY GROUTED MASONRY. IF GROUT POUR HEIGHT EXCEEDS 5 FEET, THEN "HIGH LIFT" GROUTING PROCEDURE MUST BE FOLLOWED. PROVIDE CLEANOUT OPENINGS AT THE BOTTOM OF EACH GROUT LIFT. CLEANOUT OPENINGS SHALL BE PROVIDED AT EACH CELL TO BE FILLED WITH GROUT.
11. ALL GROUT PLACED OVER 12" IN HEIGHT SHALL BE MECHANICALLY CONSOLIDATED DURING GROUTING. GROUT SHALL BE RECONSOLIDATED BY MECHANICAL VIBRATION AFTER INITIAL WATER LOSS AND SETTLEMENT HAS OCCURRED.
12. MAXIMUM GROUT LIFT (GROUT POURED IN ONE CONTINUOUS OPERATION) IS 5 FEET. THIS LIMIT ALSO APPLIES TO "HIGH LIFT" GROUTING.
13. REINFORCE MASONRY WHERE SHOWN ON STRUCTURAL DRAWINGS. THE REINFORCING IN POSITION AND PLACE GROUT AROUND REINFORCING. DO NOT PUSH REINFORCING DOWN INTO PREVIOUSLY PLACED GROUT FILL SET BOLTS SIMILARLY.
14. TIE MASONRY WYTHES WITH HORIZONTAL REINFORCING AS SPECIFIED.
15. PROVIDE VERTICAL BARS, SIZE MATCHING WALL REINFORCING, AT ALL CORNERS, ENDS OF WALLS, EACH SIDE OF CONTROL JOINTS AND EACH SIDE OF WALL OPENINGS. TIE EACH BAR TO THE FOUNDATION WITH A MATCHING DOWEL.
16. ALL CORNERS AND INTERSECTIONS OF STRUCTURAL MASONRY WALLS SHALL BE CONSTRUCTED BY INTERLOCKING COURSES.
17. ALL LIMITS TO BEAR 8" MINIMUM EACH SIDE OF OPENING, UNLESS NOTED OTHERWISE.
18. GROUT ALL MASONRY WALLS AND CAVITY BELOW GRADE SOLID. GROUT ALL WALLS ABOVE GRADE AT THE REINFORCED CELLS (MINIMUM) OR AS INDICATED IN SPECIFIC SECTIONS.
19. ONE 3/4" (MAXIMUM) VERTICAL CONDUIT ALLOWED IN ANY REINFORCED CELL PROVIDED 1" CLEAR IS MAINTAINED BETWEEN REINFORCING AND CONDUIT. NO OTHER VERTICAL OR HORIZONTAL CONDUITS, PIPES, OR SLEEVES SHALL BE LOCATED IN REINFORCED CELLS UNLESS OTHERWISE APPROVED BY THE STRUCTURAL ENGINEER. CONTRACTOR SHALL COORDINATE LAYOUT TO AVOID REINFORCED CELLS.

STRUCTURAL STEEL

1. STRUCTURAL STEEL:
- WIDE FLANGE SHAPES (W SECTIONS) - ASTM A992, GRADE 50 (F<sub>y</sub>=50 KSI)
- CHANNELS, ANGLES, RODS, AND BARS - A36 (F<sub>y</sub>=36 KSI)
- PLATES - ASTM A572, GRADE 50 (F<sub>y</sub>=50 KSI)
- SQUARE AND RECTANGULAR TUBES - ASTM A500, GRADE B (F<sub>y</sub>=46 KSI)
- PIPES - ASTM A53, GRADE B (F<sub>y</sub>=35 KSI)
2. ANCHOR BOLTS AND THREADED RODS SHALL CONFORM TO ASTM F1554, GRADE 36.
3. DESIGN, FABRICATION AND ERECTION SHALL BE AS PER SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (AISC 360-05).
4. BEAM SIMPLE SHEAR AND BRACED FRAME CONNECTIONS NOT DETAILED ON STRUCTURAL DRAWINGS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER RETAINED BY THE STEEL SUPPLIER AND REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED. THE CONNECTIONS FOR NON-COMPOSITE BEAMS SHALL BE DESIGNED FOR REACTIONS SHOWN ON DRAWINGS OR FOR REACTIONS DETERMINED BY USING THE ALLOWABLE UNIFORM LOAD AS TABULATED IN PART 3 OF THE AISC STEEL CONSTRUCTION MANUAL FOR THE SECTION, SPAN AND STRENGTH OF STEEL SPECIFIED. CONNECTIONS SHALL BE MADE WITH ASTM A325 3/4"Ø BOLTS (MINIMUM), TIGHTENED TO A SNUG-TIGHT CONDITION PER AISC REQUIREMENTS.
5. THE CONNECTIONS FOR COMPOSITE BEAMS SHALL BE DESIGNED FOR REACTIONS SHOWN ON THE DRAWINGS. ALL LOADS ARE ENVELOPE ALLOWABLE COMBINATIONS. SUBMIT RFI FOR ALL LOADS NOT SHOWN ON DRAWINGS.
6. REACTIONS MAY BE OMITTED ON PLANS FOR CLARITY. REACTIONS CAN BE PROVIDED ONCE A CONTRACT IS AWARDED. NOTIFY ENGINEER OR REQUEST.
7. THE CONNECTION ENGINEER SHALL SUBMIT A SIGNED AND SEALED LETTER STATING THEY HAVE REVIEWED THE STEEL SHOP DRAWINGS AND THE CONNECTIONS ARE CONSISTENT WITH THEIR CALCULATIONS AND INTENT.
8. WHERE STEEL MEMBERS ARE WELDED AND NO SIZE IS SPECIFIED, PROVIDE FULL LENGTH FILLET WELDS BOTH SIDES OF MEMBER. WELD SIZES SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:
- | MEMBER THICKNESS | WELD SIZE |
|------------------|-----------|
| 3/16"            | 3/16"     |
| 1/4"             | 3/16"     |
| 5/16"            | 3/16"     |
| 3/8"             | 1/4"      |
| 7/16"            | 1/4"      |
| 1/2"             | 5/16"     |
| 9/16"            | 3/8"      |
| 5/8"             | 7/16"     |
9. SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE ENGINEER AS TO LOCATION AND TYPE OF SPLICE TO BE MADE. ANY MEMBER HAVING A SPLICE NOT SHOWN AND DETAILED ON SHOP DRAWINGS WILL BE REJECTED.
10. ALL WELDING SHALL CONFORM TO THE AMERICAN WELDING SOCIETY CODE. USE E70 SERIES ELECTRODES FOR ALL STRUCTURAL STEEL WELDS.
11. SEE THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL ITEMS REQUIRED TO BE HOT-DIP GALVANIZED AFTER FABRICATION.
12. STRUCTURAL STEEL SHALL BE PUNCHED FOR WOOD BLOCKING, NAILERS, CLIPS AND TIES IN ACCORDANCE WITH ARCHITECTURAL/STRUCTURAL DETAILS.
13. ULTRASONIC INSPECTION BY THE TESTING LABORATORY SHALL BE PROVIDED FOR ALL WELDS CALLED FOR ON THE STRUCTURAL DRAWINGS OR SHOP DRAWINGS AS FULL PENETRATION WELDS.
14. ALL STEEL EXPOSED TO VIEW SHALL BE CLASSIFIED AS ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) AS DEFINED BY THE AISC CODE OF STANDARD PRACTICE AND SHALL BE TREATED AS SUCH.
15. PRIOR TO COMMENCEMENT OF SHOP DRAWING DEVELOPMENT, CONTRACTOR SHALL CONDUCT MEETING WITH ARCHITECT, ENGINEER, AND FABRICATOR TO DISCUSS CONNECTION DETAILS AND AESS REQUIREMENTS.
16. ALL STEEL FOR THIS PROJECT SHALL BE AESS AND PAINTED. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.

STEEL STAIRS AND RAILINGS

1. STEEL STAIRS AND LANDINGS AND ALL CONNECTIONS SHALL BE DESIGNED BY THE SUPPLIER FOR A LIVE LOAD OF 100 PSF. TREADS SHALL BE DESIGNED FOR A 300 POUND POINT LOAD DISTRIBUTED OVER 4 SQUARE INCHES. ALL STAIR SHOP DRAWINGS SHALL BEAR THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED. CALCULATIONS SHALL BE SUBMITTED FOR REVIEW WITH THE STAIR SHOP DRAWINGS.
2. ALL RAILINGS (STEEL OR OTHERWISE) AND THEIR CONNECTIONS SHALL BE DESIGNED FOR A LATERAL LOAD OF 50 PLF APPLIED TO THE TOP OF THE RAIL OR A 200 POUND LOAD AT ANY POINT IN ANY DIRECTION, WHICHEVER PROVIDES THE DESIGN. ALL RAILING SHOP DRAWINGS SHALL BEAR THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED. CALCULATIONS SHALL BE SUBMITTED FOR REVIEW WITH THE RAILING SHOP DRAWINGS.

NON-LOAD BEARING COLD ROLLED STEEL (METAL STUDS)

1. ALL METAL STUDS, HEADERS, AND ACCESSORIES SHALL BE MADE OF THE MINIMUM TYPE, SIZE, GAUGE, AND SPACING SHOWN ON DRAWINGS.
2. ALL STRUCTURAL MEMBERS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE AMERICAN IRON AND STEEL INSTITUTE, "NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS" (S100-07 & S200-07).
3. ALL THE COLD FORMED MEMBERS OF THIS PROJECT ARE SINGLE MANUFACTURERS; ONLY MANUFACTURERS WHO ARE MEMBERS OF THE STEEL STUD MANUFACTURERS ASSOCIATION (SSMA) OR THE STEEL FRAMING INDUSTRY ASSOCIATION (SFI) WILL BE ACCEPTED. THE INSTALLATION SHALL COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS.
4. MINIMUM YIELD STRENGTH (F<sub>y</sub>) FOR STUDS IS 33 KSI FOR 18 GA (43 MILS) AND 20 GA (33 MILS) MATERIALS, AND 50 KSI FOR 12 GA (97 MILS), 14 GA (68 MILS), AND 16 GA (54 MILS) MATERIALS.
5. SUBMIT SHOP DRAWINGS FOR ALL LOAD BEARING COLD FORMED METAL FRAMING. SHOP DRAWINGS SHALL INDICATE PLACING OF ALL FRAMING MEMBERS SHOWING TYPE, SIZE, GAUGE, NUMBER, LOCATION AND SPACING. THEY SHALL ALSO INDICATE SUPPLEMENTAL STRAPPING, BRACING, SPLICES, BRIDGING, ACCESSORIES AND DETAILS REQUIRED FOR PROPER INSTALLATION.
6. SHOP DRAWINGS SHALL SHOW SIZE AND LENGTH OF WELDS FOR ALL WELDED CONNECTIONS AND TYPE, SIZE AND NUMBER OF SCREWS FOR ALL SCREWED CONNECTIONS. SUBMIT MANUFACTURER'S DATA GIVING STRENGTH VALUES FOR SCREWS USED.
7. ALL STUDS, TRACK, BRIDGING AND ACCESSORIES SHALL BE FORMED FROM STEEL HAVING A G-60 GALVANIZED COATING MEETING THE REQUIREMENTS OF ASTM A653 AND C955. ALL ACCESSORIES SHALL BE FORMED FROM STRUCTURAL QUALITY STEEL WITH MINIMUM YIELD STRENGTH OF 50 KSI.
8. A MINIMUM LENGTH 10" OF UNPINCHED STEEL IS REQUIRED AT BOTH ENDS OF STUDS. NO PUNCHING HOLES OF ANY SIZE IS PERMITTED IN THESE 10". NO CUTTING OF THE STUD FLANGE IS PERMITTED.
9. BOTH STUD FLANGES SHALL BE ATTACHED TO THE TOP AND BOTTOM TRACK WITH (2) #10 SCREWS EACH SIDE.
10. SPLICES IN STUDS SHALL NOT BE PERMITTED UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS.
11. MULTIPLE STUD "JOINT" SHOTS SHALL BE WELDED TOGETHER IN GROUPS OF AT LEAST TWO STUDS WITH 2" WELD TOP AND BOTTOM AND 1" WELD AT 24"OC BOTH SIDES IN BETWEEN.
12. TRACK SPLICES WITHIN A PANEL/WALL MUST BE SECURELY ANCHORED TO A COMMON ELEMENT (IE. STUD OR HEADER), OR BUTT-WELDED TOGETHER, OR SPLICED WITH STUD MATERIAL SECURELY FASTENED TO TRACK ON BOTH SIDES OF SPLICE.
13. LATERAL BRIDGING SHALL BE USED TO RESIST TORSIONAL FORCES IN THE LOAD-BEARING STUDS. BRIDGING SHALL BE 2 1/2"-18 GA (43 MILS) FLAT STRAPS, SCREW ATTACHED TO BOTH FLANGES OF EACH STUD WITH SOLID BLOCKING REQUIRED AT 8"OC (MAX) AND ADJACENT TO EACH OPENING. BLOCKING MAY BE MADE FROM MATCHING GAUGE STUDS ATTACHED WITH 16 GA (54 MILS) CLIP ANGLES WITH (2) #10 SCREWS INTO EACH FLANGE.
14. ACCEPTABLE BRIDGING ALTERNATE IS COLD ROLLED CHANNELS 1 1/2" CRC CHANNEL IN 3 5/8" OR 4" STUDS AND 2 1/2" CRC IN 6" STUDS WELDED TO THE OUTER EDGE OF PUNCHOUTS WITH 1/4" MINIMUM WELD.
15. BRIDGING IS TO BE PLACED AT NO MORE THAN 4'-0"OC VERTICALLY.
16. INSTALL DOUBLE STUDS AT EVERY INTERRUPTION (IE. PLUMBING CHASES).
17. MINIMUM TRACK FASTENINGS SHALL BE 6.0 177" DIAMETER POWDER ACTUATED FASTENERS (PAFS) SPACED 16"OC FOR WALLS (UNO), WITH 1 1/2" MINIMUM PENETRATION INTO CONCRETE.
18. VOIDS BENEATH TRACK SHALL NOT BE PERMITTED. CONTRACTOR SHALL PROVIDE A LEVEL SLAB (WITHIN ACI 117 TOLERANCES, REFERENCE CONCRETE NOTES). WHERE UNEVENNESS OF SUPPORTING FLOOR PREVENTS CONTINUOUS SOLID BEARING, PANEL OR TRACK SHALL BE LEVELED BY PLACING MORTAR OR GROUT BENEATH TRACK.
19. VERTICAL DEFLECTION CLIPS ARE REQUIRED TO BE CAPABLE OF ACCOMMODATING UPWARD AND DOWNWARD VERTICAL DISPLACEMENT OF THE STRUCTURE THROUGH POSITIVE MECHANICAL ATTACHMENT TO STUD WEB. MECHANICAL ATTACHMENT TO STRUCTURE AND SCREW ATTACHMENT TO STUD WEB USING STEP-BUSHINGS TO PERMIT FRICTIONLESS VERTICAL MOVEMENT. CONNECTORS TO BE TESTED IN ACCORDANCE TO ICC A621.
20. HEADERS SHALL BE CONSTRUCTED OF UNPINCHED STUDS. SHEAR SHALL BE TRANSFERRED BY FULL BEARING ON JACK STUDS OR BY SHEAR PLATES. SHEAR PLATES SHALL BE 16 GA (54 MILS) MINIMUM.
21. REFER TO ARCHITECTURAL PLANS FOR NON-LOAD BEARING WALLS.

ADHESIVE AND MECHANICAL POST-INSTALLED ANCHORS

1. ANCHOR BOLTS, REINFORCING STEEL, THREADED RODS, STAIR HANDRAILS, AND OTHER EMBEDDED STEEL ITEMS SHALL BE SET INTO HARDENED CONCRETE WITH ADHESIVE OR MECHANICAL POST-INSTALLED ANCHOR ONLY WHERE DETAILED ON THE DRAWINGS OR WHERE APPROVED BY THE ENGINEER.
2. PRE-APPROVED MANUFACTURERS ARE HILTI, SIMPSON STRONG-TIE, AND DEWALT. WHERE DETAILS INDICATE SPECIFIC ADHESIVE OR MECHANICAL POST-INSTALLED ANCHORS, IT IS ACCEPTABLE AT THE CONTRACTOR'S OPTION TO SUBMIT AN ALTERNATE SIMILAR PRODUCT PROVIDED BY A DIFFERENT MANUFACTURER AS LONG AS THE MANUFACTURER'S DATA PROVIDES EQUIVALENT LOAD CAPACITY TO THE ANCHOR SPECIFIED.
3. MANUFACTURER'S DATA FOR ALL ADHESIVE AND MECHANICAL POST-INSTALLED ANCHORS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION. SUBMITTALS FOR ADHESIVE ANCHOR PRODUCTS SHALL INCLUDE ICC-ES EVALUATION REPORTS. STRICTLY FOLLOW THE MANUFACTURER'S SPECIFICATIONS AND INSTALLATION INSTRUCTIONS. HEED ALL LABEL WARNINGS. INSTALL IN ACCORDANCE WITH APPLICABLE SAFETY LAWS.
4. ALL HOLES SHALL BE DRILLED WITH A DIAMETER NO LARGER THAN 1/8" GREATER THAN THE DIAMETER OF THE STEEL MEMBER BEING INSTALLED.
5. ALL HOLES SHALL BE CLEANED WITH COMPRESSED AIR AND SHALL BE DRY PRIOR TO INSTALLATION OF ADHESIVE. HOLES SHALL BE FREE OF ALL DELETERIOUS MATERIAL SUCH AS LAITANCE, DUST, DIRT, AND OIL.
6. CONTRACTOR PERFORMING ADHESIVE WORK SHALL BE AN APPROVED CONTRACTOR BY THE MANUFACTURER FURNISHING THE ADHESIVE MATERIALS, AND SHALL HAVE NO LESS THAN FIVE YEARS EXPERIENCE IN THE VARIOUS TYPES OF ADHESIVE RELATED WORK REQUIRED IN THIS PROJECT. A CERTIFICATION FROM THE MANUFACTURER ATTESTING TO THE TRAINING SHALL BE SUBMITTED TO THE ENGINEER/ARCHITECT ALONG WITH THE PROPOSAL TO DO THE WORK.

REPRODUCTION

1. THE USE OF REPRODUCTIONS OF THESE CONTRACT DRAWINGS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR, OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS SIGNIFIES HIS ACCEPTANCE OF ALL INFORMATION SHOWN HEREIN AS CORRECT, AND OBLIGATES HIMSELF TO ANY JOB EXPENSE, REAL OR IMPLIED, ARISING DUE TO ANY ERRORS THAT MAY OCCUR HERE ON.

SYMBOL LEGEND		
SYMBOL	MEANING	REFERENCE
<No>	TOP OF MAT, FOOTING, GRADE BEAM, PILE CAP, OR DRILLED PIER.	---
<No>   <No>	STEP IN TOP OF FOOTING ELEVATION.	---
[No]	DEPRESSED OR RAISED SLAB ELEVATION.	---
	SLOPED / STEPPED SLAB.	---
[No]	TOP OF WALL OR PEDESTAL.	---
F#	SPREAD FOOTING TYPE.	---
P#	CONCRETE PEDESTAL TYPE.	---
PC#	PILE CAP TYPE.	---
GB# W#D	CONCRETE GRADE BEAM TYPE. "W" INDICATES BEAM WIDTH AND "D" INDICATES BEAM DEPTH (IN INCHES).	---
	SPOT ELEVATION.	---
D1	SPAN DIRECTION OF METAL ROOF DECK. CONSTRUCTION SHALL BE 1 1/2"-20GA METAL ROOF DECK.	---
D2	SPAN DIRECTION OF METAL ROOF DECK. CONSTRUCTION SHALL BE 3"-18GA METAL ROOF DECK.	---
S1	SPAN DIRECTION OF COMPOSITE SLAB. CONSTRUCTION SHALL BE 3 1/4" LIGHT WEIGHT CONCRETE ON 2"-20GA COMPOSITE METAL DECK (5 1/4" TOTAL THICKNESS).	---
S2	SPAN DIRECTION OF COMPOSITE SLAB. CONSTRUCTION SHALL BE 4 1/4" LIGHT WEIGHT CONCRETE ON 2"-20GA COMPOSITE METAL DECK (6 1/4" TOTAL THICKNESS).	---
(No)   (+No)	TOP OF STEEL/JOIST BEARING ELEVATION   TOP OF STEEL ABOVE STEEL/JOIST BEARING ELEVATION.	---
V#	STEEL BEAM DESIGN END HORIZONTAL SHEAR REACTION (IN KIPS).	---
H#	STEEL BEAM DESIGN END VERTICAL SHEAR REACTION (IN KIPS).	---
A#	STEEL BEAM DESIGN END AXIAL REACTION (IN KIPS). LOAD SHALL BE REVERSIBLE (TENSION OR COMPRESSION).	---
M#	STEEL BEAM DESIGN END MOMENT REACTION (IN KIP-FEET). LOAD SHALL BE REVERSIBLE, UNO.	---
T#	STEEL BEAM DESIGN END TORSION REACTION (IN KIP-FEET). LOAD SHALL BE REVERSIBLE, UNO.	---
CB# W#D	CONCRETE BEAM TYPE. "W" INDICATES BEAM WIDTH AND "D" INDICATES BEAM DEPTH (IN INCHES).	---
CI# W#D	CONCRETE JOIST TYPE. "W" INDICATES NOMINAL JOIST WIDTH AND "D" INDICATES JOIST DEPTH (IN INCHES).	---
PT# W#D	POST-TENSIONED CONCRETE BEAM TYPE. "W" INDICATES BEAM WIDTH AND "D" INDICATES BEAM DEPTH (IN INCHES).	---
[SR#]	STUD RAIL REINFORCING TYPE.	---
MP#	MASONRY PILASTER TYPE.	---
ML#	MASONRY LINTEL TYPE.	---
BP#	STEEL BEARING PLATE TYPE.	---
C#	WOOD COLUMN TYPE: ALL COLUMNS ARE TO BE EXTENDED TO THE FOUNDATION LEVEL WHETHER SHOWN OR NOT.	---
H#	WOOD HEADER TYPE.	---
	MOMENT CONNECTION	---
[VF#]	VERTICAL FRAME TYPE.	---
CSW#	CONCRETE SHEAR WALL TYPE.	---
MSW#	MASONRY SHEAR WALL TYPE.	---
SSW#	METAL STUD SHEAR WALL TYPE.	---
WSW#	WOOD SHEAR WALL TYPE.	---

NOTE: NOT ALL ITEMS IN SCHEDULE ABOVE ARE USED IN THIS PROJECT

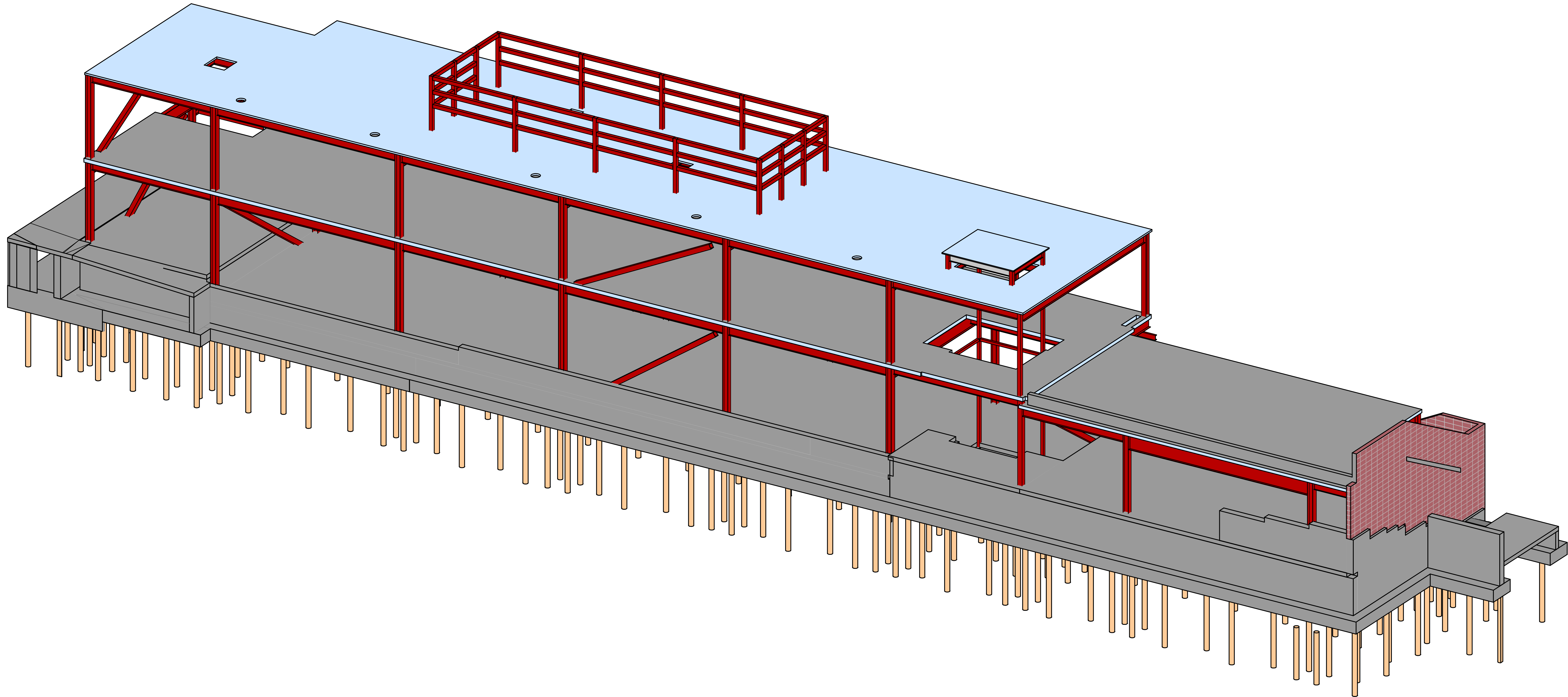
ABBREVIATION LIST

AT	AND
Ø	DIAMETER
AB	ANCHOR BOLTS
ACI	AMERICAN CONCRETE INSTITUTE
ADDL	ADDITIONAL
ADH	ADHESIVE
AFF	ABOVE FINISHED FLOOR
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
ALT	ALTERNATE
ARCH	ARCHITECTS' / ARCHITECTURAL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWW	AMERICAN WELDING SOCIETY
By or BOT	BOTTOM
BCX	BOTTOM CHORD EXTENSION
BFF	BELOW FINISHED FLOOR
BUDG	BUDGET
BM	BEAM
BOS	BOTTOM OF STEEL
BRT	BEARING
BETWN	BETWEEN
CANT	CANTILEVER
CJ	CONTROL JOINT
CL	CENTERLINE
CLAR	CLARIFY
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST JT	CONSTRUCTION JOINT
CONT	CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
CTRD	CENTERED
d	NAILS (PENNY)
DBA	DEFORMED BAR ANCHOR
DEFL	DEFLECTION
DEPR	DEPRESSION / DEPRESSED
DET	DETAIL
DIAG	DIAGONAL
DIM	DIMENSION
DIST	DISTANCE
DWG(S)	DRAWING(S)
DWL(S)	DOWEL(S)
EA	EACH
EE	EACH END
EF	EACH FACE
EJ	EXPANSION JOINT
ELEV	ELEVATION
EMBED	EMBEDDED / EMBEDMENT
ENGR	ENGINEER
EOD	EDGE OF DECK
EOS	EDGE OF SLAB
EQU	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FDN	FOUNDATION
FFE	FINISHED FLOOR ELEVATION
FDM	FACE OF MASONRY
FW	FACE OF WALL
FS	FAR SIDE
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
HD	HEADED
HI	HIGH
HORIZ	HORIZONTAL
HSS	HOLLOW STRUCTURAL SECTION
INT	INTERIOR
JT	JOINT
K	KIPS
KB	KNEE BRACE
KSJ	KIPS PER SQUARE INCH
LB	LONG BAR
LBS	POUNDS
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LO	LOW
LOC	LOCATION
LSH	LONG SIDE HORIZONTAL
LSV	LONG SIDE VERTICAL
LWC	LIGHT WEIGHT CONCRETE
MAX	MAXIMUM
MC	MOMENT CONNECTION
MECH	MECHANICAL
MFR	MANUFACTURER
MID	MIDDLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MOW	MIDDLE OF WALL
MP	MASONRY PILASTER
No or #	NUMBER
NS	NEAR SIDE
NTS	NOT TO SCALE
NWC	NOMINAL WEIGHT CONCRETE
OC	ON CENTER
OPNG	OPENING
OPP	OPPOSITE HAND
PAC	POWER ACTUATED FASTENER
PEDEST	PEDESTAL
PED	PLATE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
P-T	POST-TENSIONING
REF	REFERENCE
REINF	REINFORCING
REQD	REQUIRED
SB	SHORT BAR
SCHD	SCHEDULE
SIM	SIMILAR
SOG	SLAB ON GRADE
SPEC(S)	SPECIFICATION(S)
SQ	SQUARE
STD	STANDARD
STIFF	STIFFENER
STIRR	STIRRUP(S)
STL	STEEL
STR	STRUCTURAL
T/	TOP
TCX	TOP CHORD EXTENSION
TOS	TOP CHORD CONCRETE
TOT	TOP OF FOOTING
TOS	TOP OF STEEL
TOW	TOP OF WALL
TYP	TYPICAL
UNL	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VERF	VERIFY IN FIELD
W/	WITH
WWF	WELDED WIRE FABRIC
WP	WORK POINT



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PROJECT INFORMATION

NORTH  
WATERFRONT  
PARK  
10 COWAN STREET  
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON  
Community Services Department  
PO Box 1810, Wilmington, NC 28402  
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Acoustic/Theater/AV = AT  
OAP.P.C.  
77 Water Street, New York NY 10015  
www.arup.com

Civil Engineering = C  
Structural Engineering = S  
Geotechnical Engineering = G  
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Environmental Engineering = EE  
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CLARK IRRIGATION DESIGN & CONSULTING, INC  
PO Box 650, Lenoir, GA 30553  
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Plumbing Engineering = P  
Fire Protection = FP  
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Water Fountain Design = WF  
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6500 Carlson Drive, Eden Prairie, MN 55346  
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Lighting Design = EL  
TILLOTSON DESIGN ASSOCIATES  
40 North Street, Room 703, New York NY 10013  
www.tillotsondesign.com

SEAL/SIGNATURE



ISSUE/REVISIONS

Firm License #C-1051

NO.	DESCRIPTION	DATE
1	30% CONSTRUCTION DOCUMENTS P3/P4	06/07/2019
2	60% CONSTRUCTION DOCUMENTS P3	07/26/2019
3	95% CONSTRUCTION DOCUMENTS P3 & P4	12/04/2019

KEY MAP

SHEET INFORMATION

Project No.: NWP 1701  
Drawn By: DJ, TM  
Checked By: JF  
Date: 12/04/2019  
Scale:

SHEET TITLE

3D VIEW - STAGE  
BUILDING

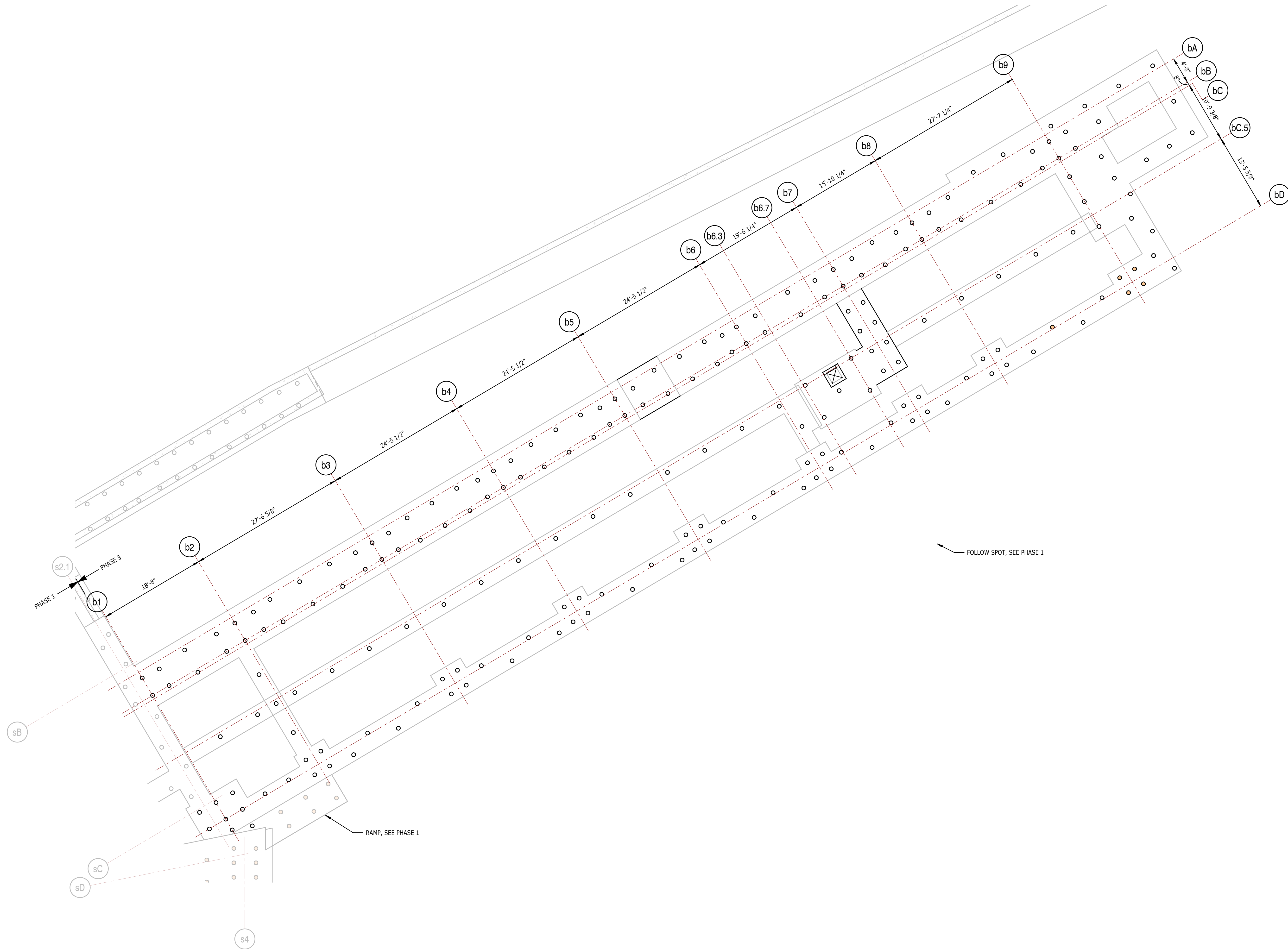
STRUCTURAL

SHEET NO.

S-011 - P3



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**1**  
S-120  
**PILE LAYOUT PLAN - STAGE BUILDING**  
1/8" = 1'-0"  
NOTES:  
1. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOLS, SEE S-010.  
2. FOR CONSTRUCTION SEQUENCE NOTES AND COLUMN/BRACE CONFLICT WITH WALL SEE DETAIL 10/S-312  
3. PROVIDE #8@12" O.C. TOP AND BOTTOM EACH WAY FOR ALL 20" DEEP FOOTINGS U.N.O.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

PROJECT INFORMATION

# NORTH WATERFRONT PARK

10 COWAN STREET  
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON

Community Services Department  
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Landscaping Architecture = L  
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Structural Engineering = S  
Geotechnical Engineering = G  
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Plumbing Engineering = P

Fire Protection = FP  
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Marine Structural Engineering = SM  
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Water Fountain Design = WF  
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Lighting Design = EL  
**TILLOTSON DESIGN ASSOCIATES**  
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SEAL/SIGNATURE

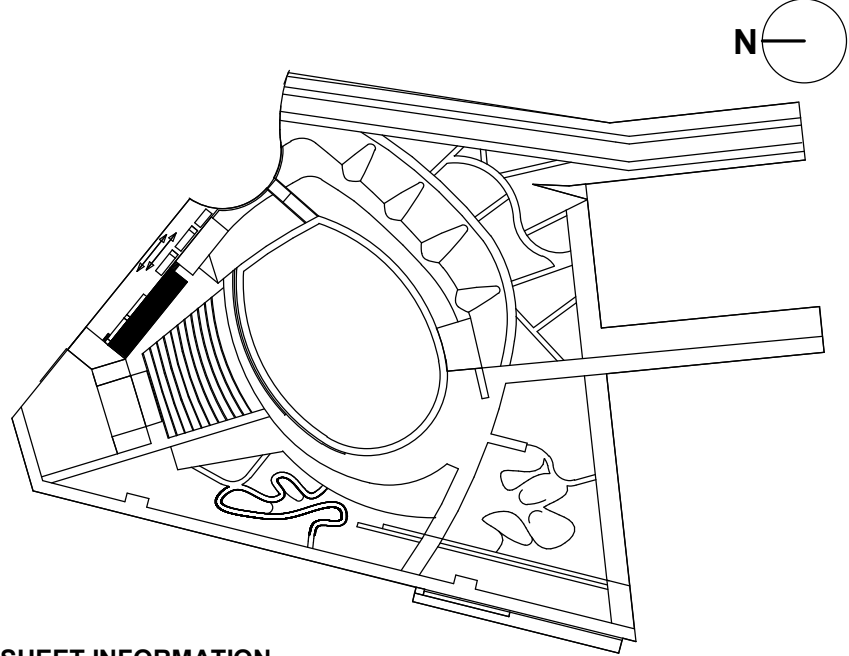


ISSUE/REVISIONS

Firm License #C-1051

NO.	DESCRIPTION	DATE
1	30% CONSTRUCTION DOCUMENTS P3/P4	06/07/2019
2	60% CONSTRUCTION DOCUMENTS P3	07/26/2019
3	95% CONSTRUCTION DOCUMENTS P3 & P4	12/04/2019

KEY MAP



SHEET INFORMATION

Project No.: NWP 1701

Drawn By: DJ, TM

Checked By: JF

Date: 12/04/2019

Scale: As indicated

SHEET TITLE

## PILE LAYOUT PLAN - STAGE BUILDING

### STRUCTURAL

SHEET NO.

# S-120 - P3



**NORTH  
WATERFRONT  
PARK**  
10 COWAN STREET  
WILMINGTON, NORTH CAROL

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**SAGE & COOMBE ARCHITECTS**  
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[www.sageandcoombe.com](http://www.sageandcoombe.com)

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**OAP.P.C.**  
 77 Water Street, New York NY 10015  
[www.arup.com](http://www.arup.com)

Environmental Engineering = EE  
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[www.sandec.com](http://www.sandec.com)  
**EAGLE RESOURCES**  
 PO Box 11189, Southport, NC 28461  
[www.eagleresources.com](http://www.eagleresources.com)

Soil Design = LS  
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Marine Structural Engineering = SM  
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[www.andrewengineers.com](http://www.andrewengineers.com)

Lighting Design = EL  
**TILLOTSON DESIGN ASSOCIATES**  
 40 Worth Street, Room 703, New York NY 10013  
[www.tillotsondesign.com](http://www.tillotsondesign.com)

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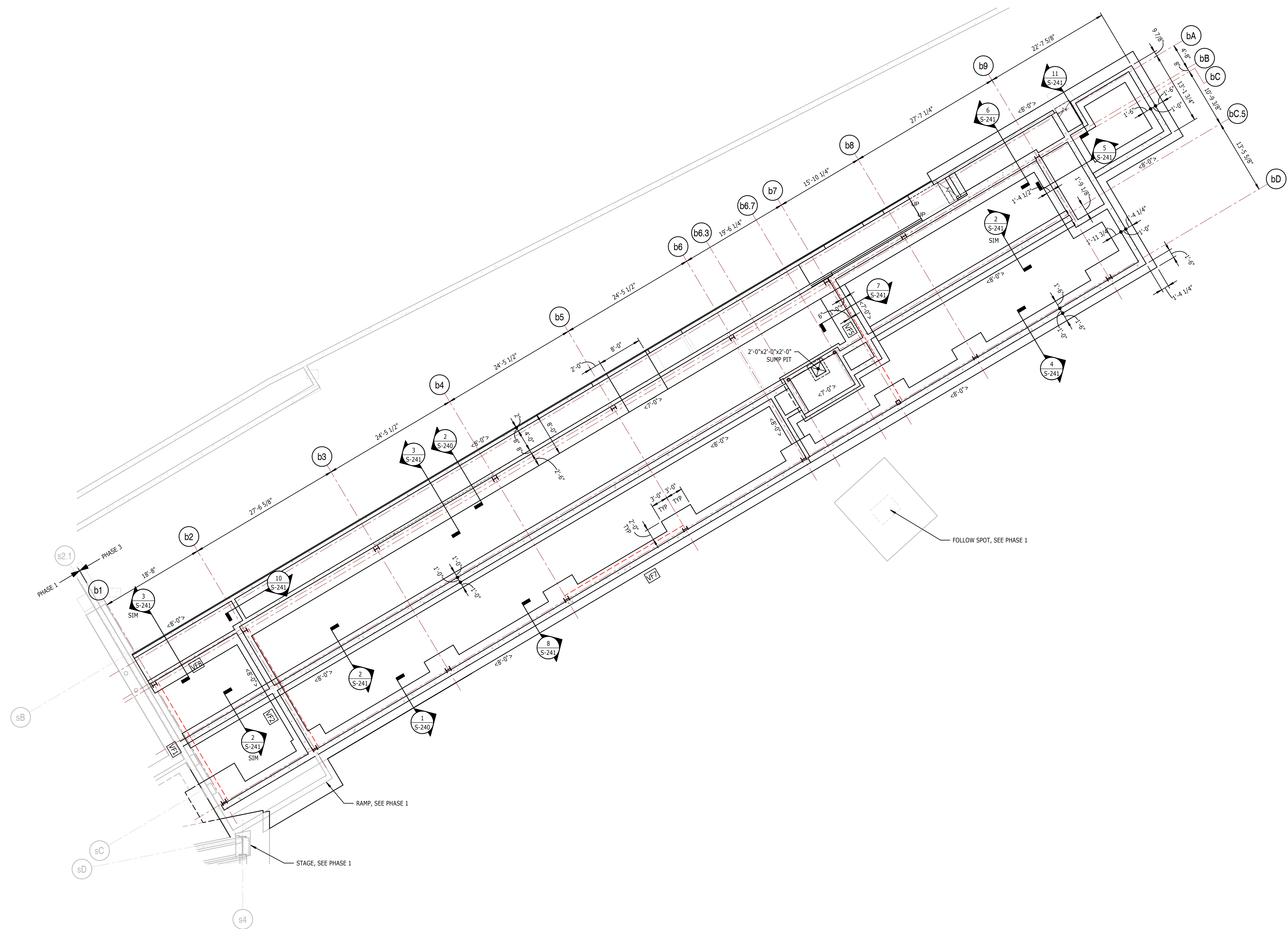
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Project No.: NWP 1701  
 Drawn By: DJ, TM  
 Checked By: JF  
 Date: 12/04/2019  
 Scale: As indicated

## FOUNDATION PLAN - STAGE BUILDING

**SHEET NO.**

**S-121 - P3**



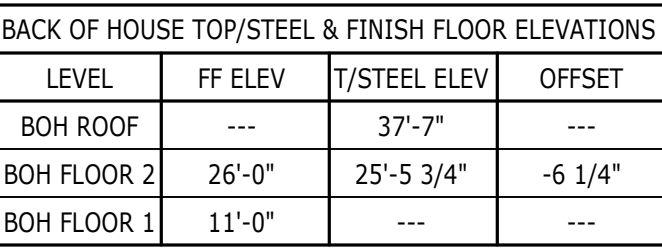
1 FOUNDATION PLAN - STAGE BUILDING

1/8" = 1'-0"

NOTES:

1. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOLS, SEE S-010.
2. FOR CONSTRUCTION SEQUENCE NOTES AND COLUMN/BRACE CONFLICT WITH WALL SEE DETAIL 10/S-312
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**S-122 - P3**

BACK OF HOUSE TOP/STEEL & FINISH FLOOR ELEVATIONS			
LEVEL	FF ELEV	T/STEEL ELEV	OFFSET
BOH ROOF	---	37'-7"	---
BOH FLOOR 2	26'-0"	25'-5 3/4"	-6 1/4"
BOH FLOOR 1	11'-0"	---	---



**Installation**

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PO Box 693, Lavonia, GA 30553  
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**Pool Design – LS LANDIS, PLLC**  
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**Electrical Engineering = E**  
**Plumbing Engineering = P**  
**Fire Protection = FP**  
**CHEATHAM & ASSOCIATES, PA**  
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[www.cheathamco.com](http://www.cheathamco.com)

**Marine Structural Engineering = SM**  
**ANDREW CONSULTING ENGINEERS**  
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[www.andrewengineers.com](http://www.andrewengineers.com)

**Water Fountain Design = WF**  
**COMMERCIAL AQUATIC ENGINEERING**  
6500 Carlson Drive, Eden Prairie, MN 55346  
[www.fountaindesigns.com](http://www.fountaindesigns.com)

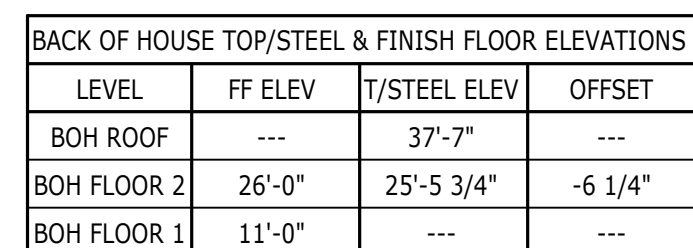
**Lighting Design = EL**  
**TILLOTSON DESIGN ASSOCIATES**  
40 North Street, Room 702, New York NY 10013  
[www.tiltsondesign.com](http://www.tiltsondesign.com)

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SHEET TITLE

**SHEET NO.** \_\_\_\_\_

**S-123 - P3**





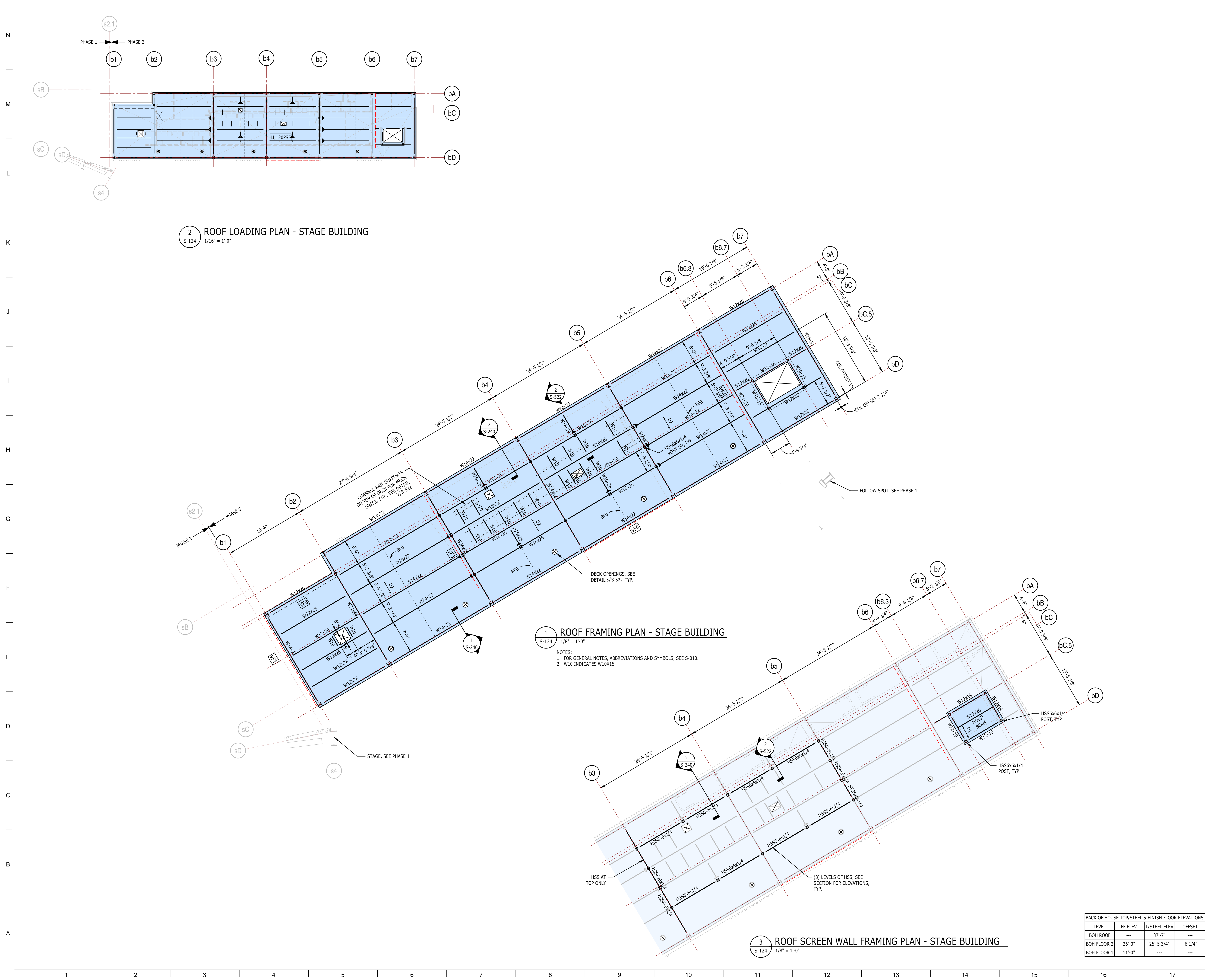
**NORTH  
WATERFRONT  
PARK**  
10 COWAN STREET  
WILMINGTON, NORTH CAROLINA

[illegible]

SHEET TITLE

## SHEET NO. \_\_\_\_\_

**S-124 - P3**





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G

F

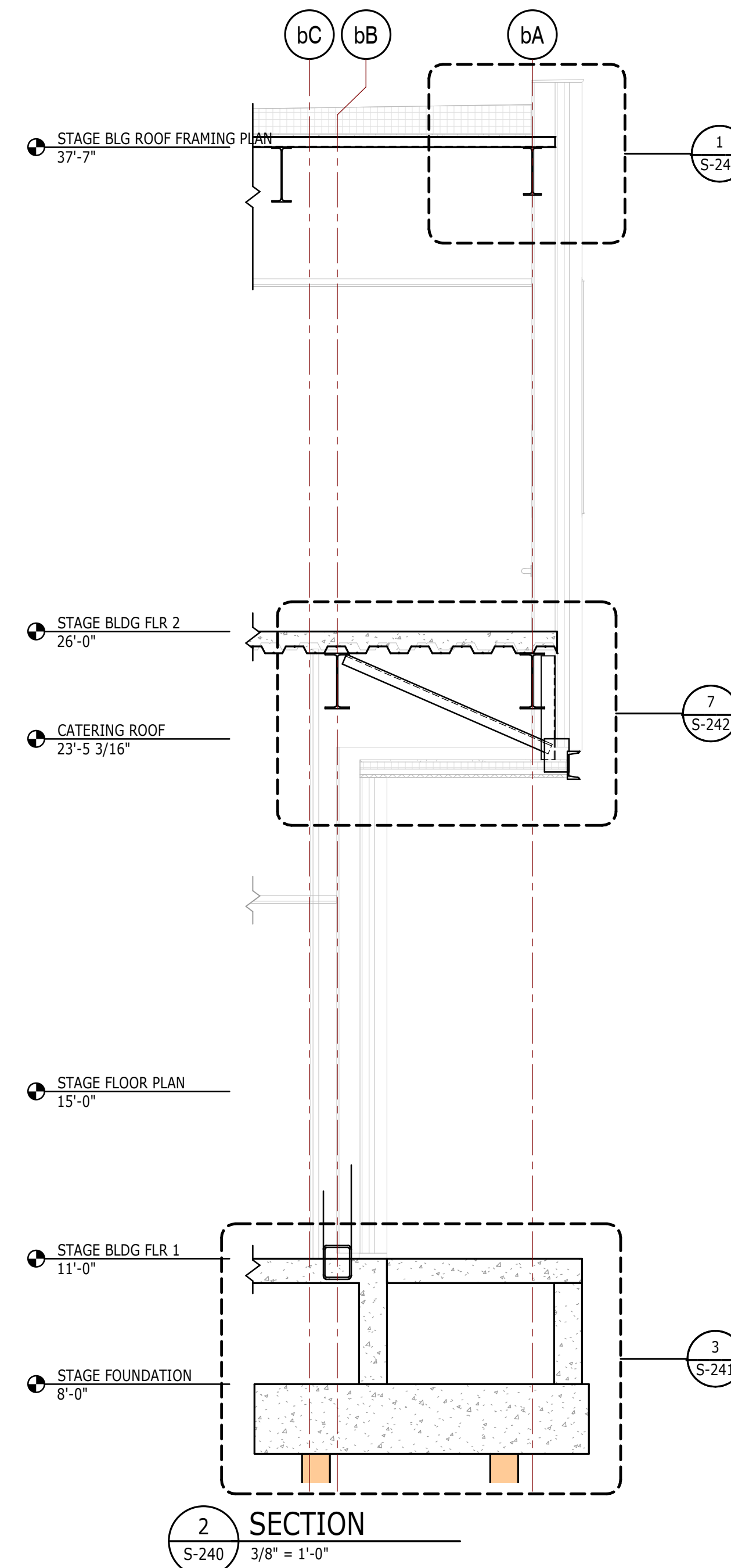
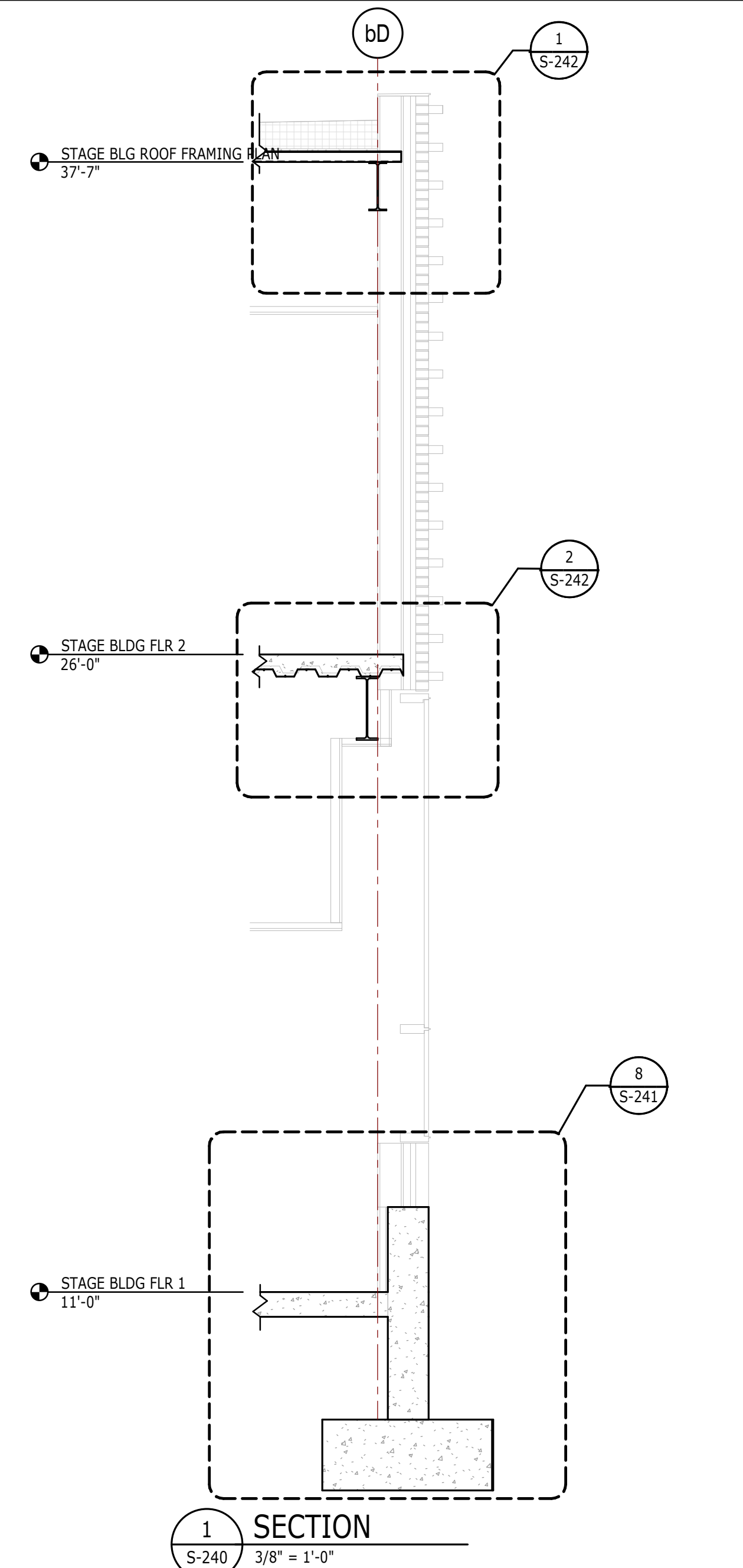
E

D

C

B

A



# NORTH WATERFRONT PARK

Lighting Design = EL  
**TILLOTSON DESIGN ASSOCIATES**  
 40 Worth Street, Room 703, New York NY 10013  
[www.tillotsondesign.com](http://www.tillotsondesign.com)

SEAL/SIGNATURE



Firm License #C-105

[illegible]

## KEY MAP

Project No : NWP 1701

Drawn By: DJ TM

Checked By: JH

Date: 12/04/2019

Scale:  $3/8" = 1'-0"$

**SHEET TITLE**

## SECTIONS AND DETAILS - STAGE BUILDING

## STRUCTURAL

SHEET NO.

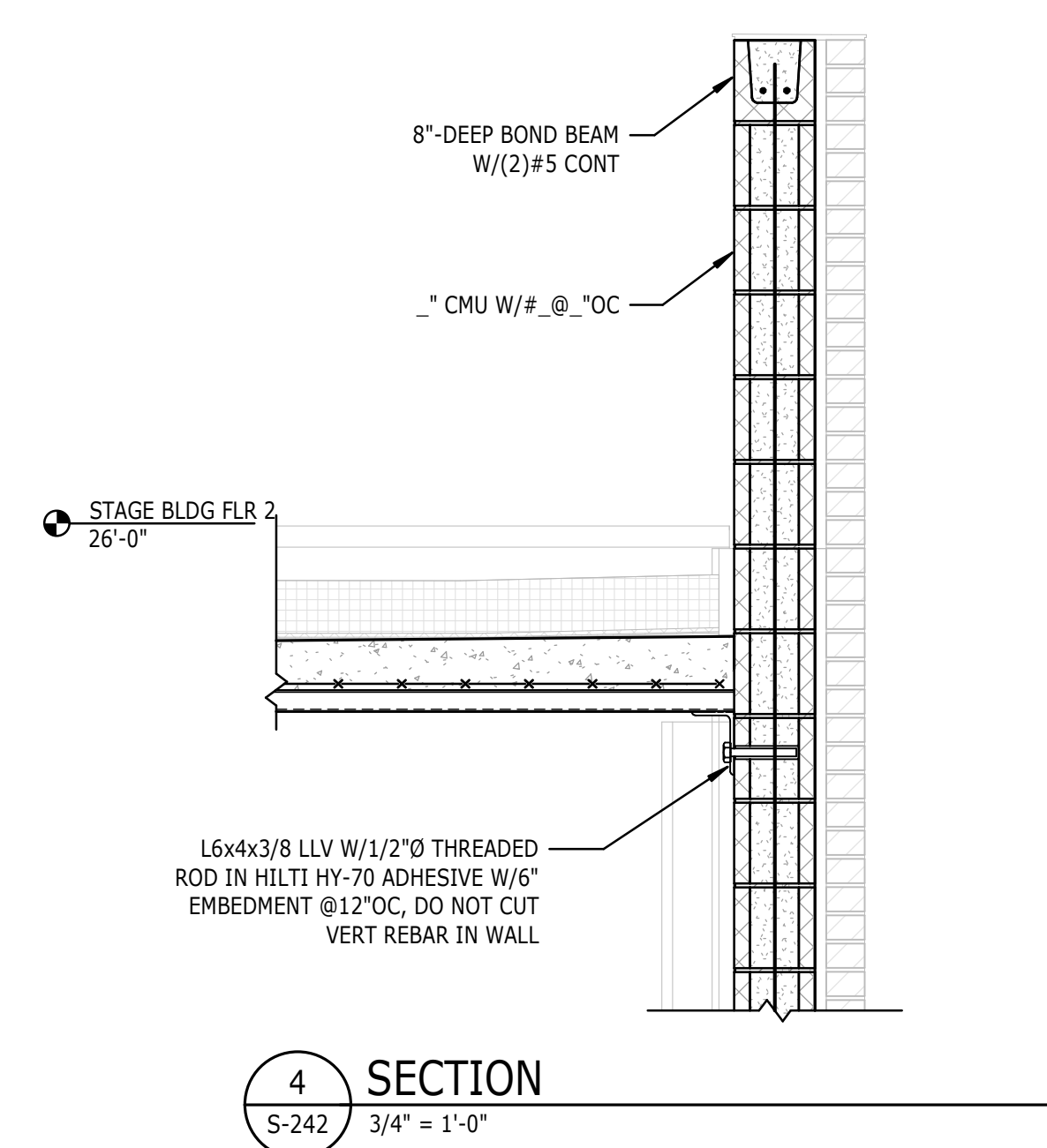
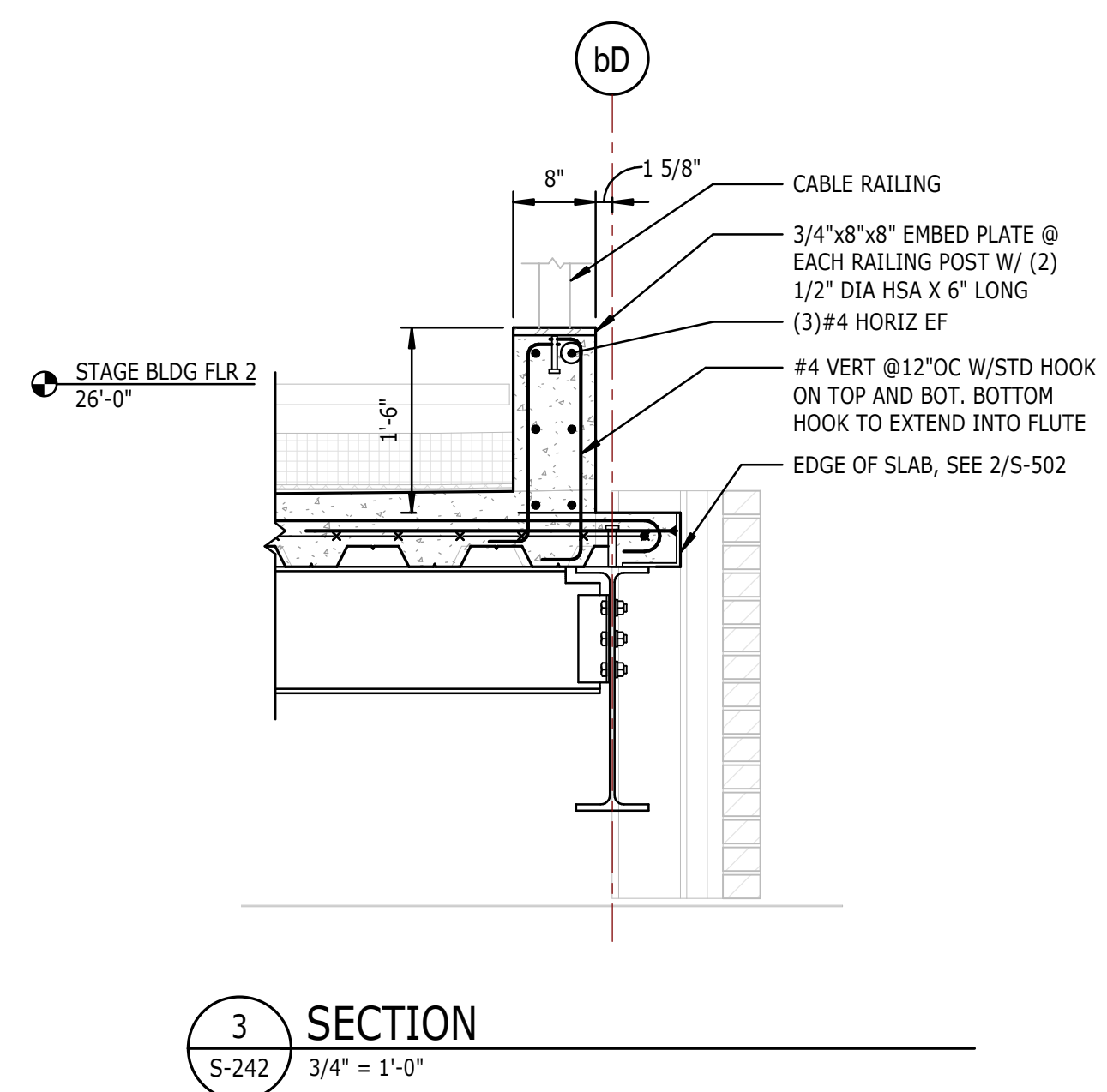
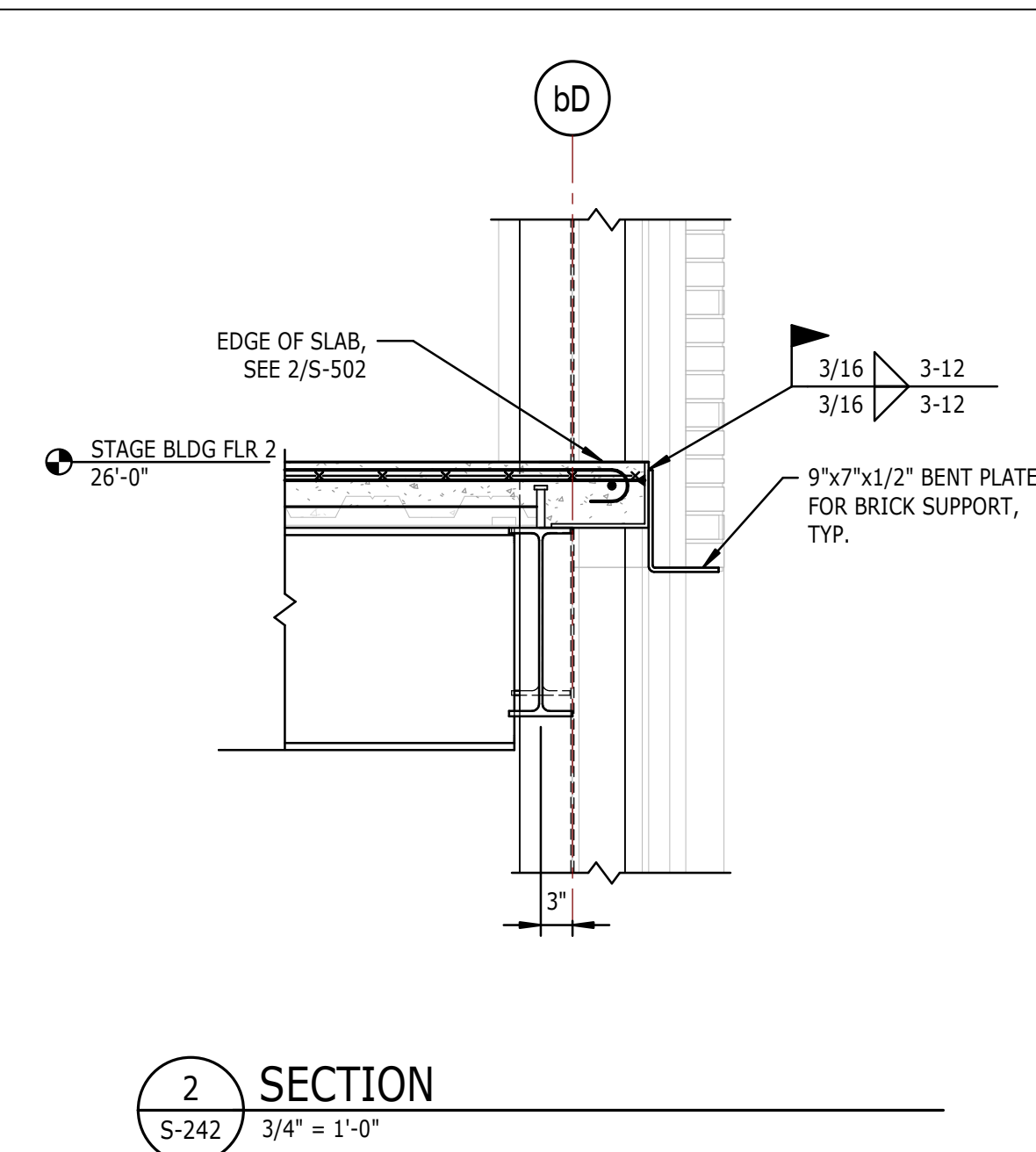
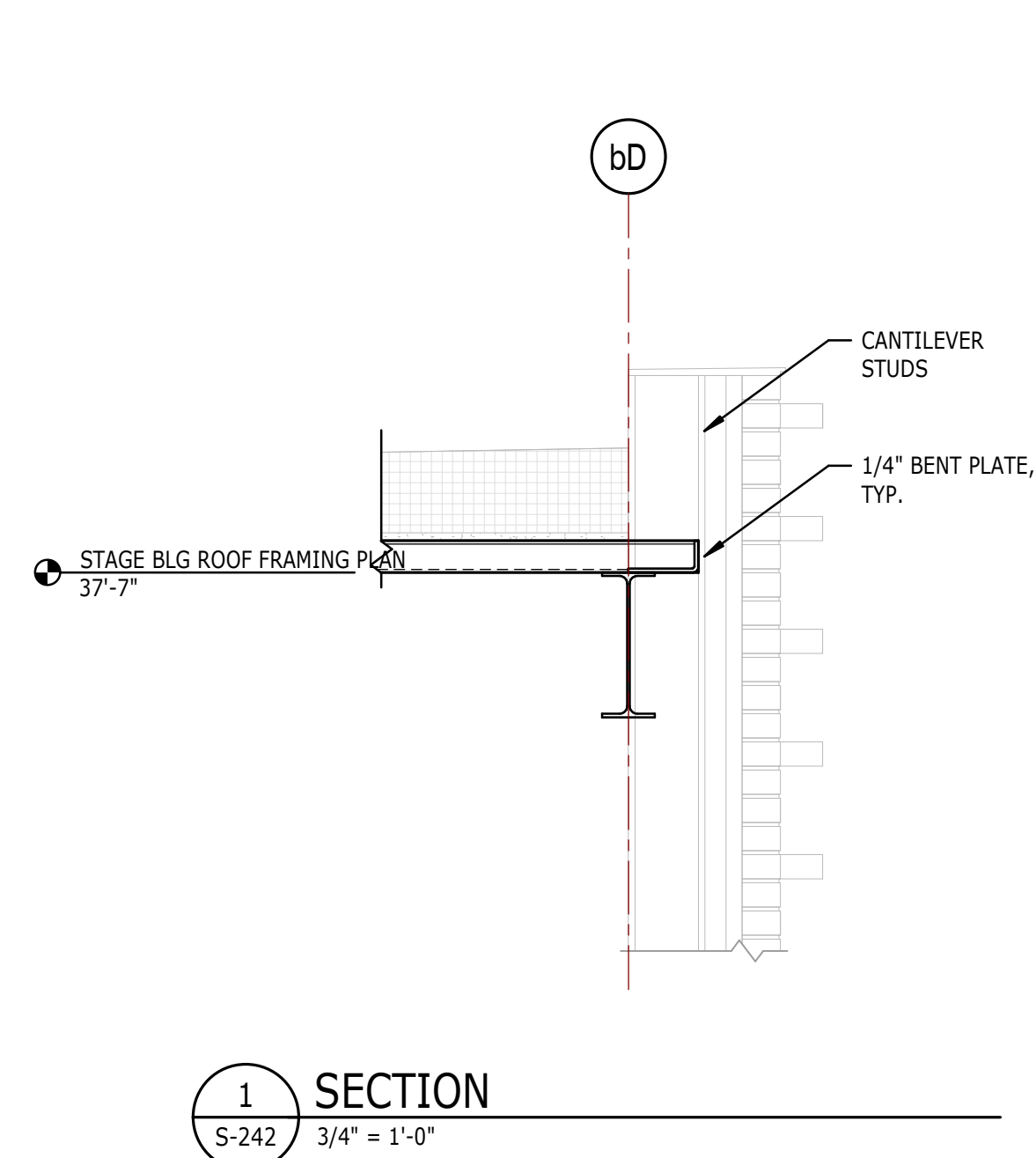
**S-240 - P3**







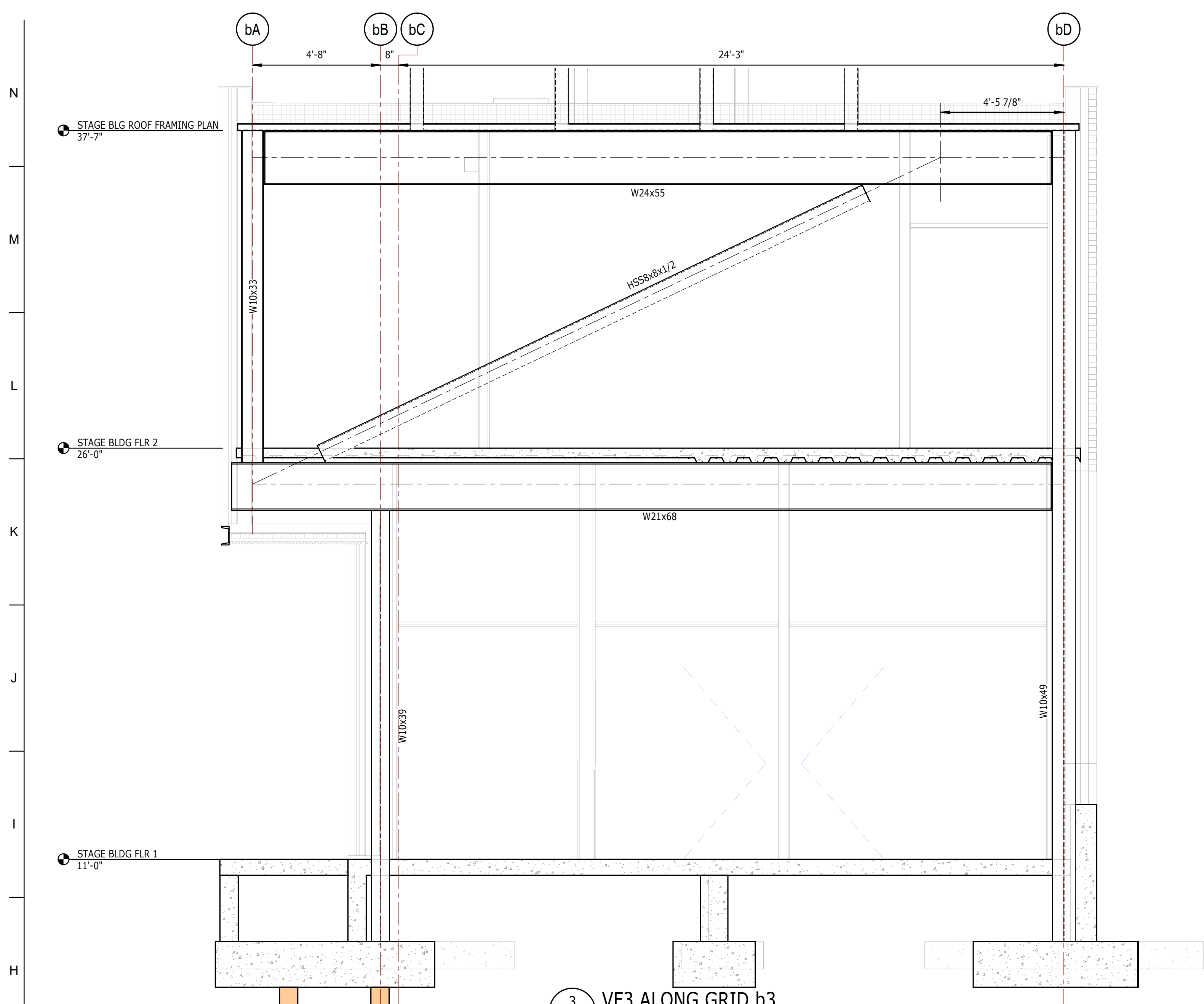
A



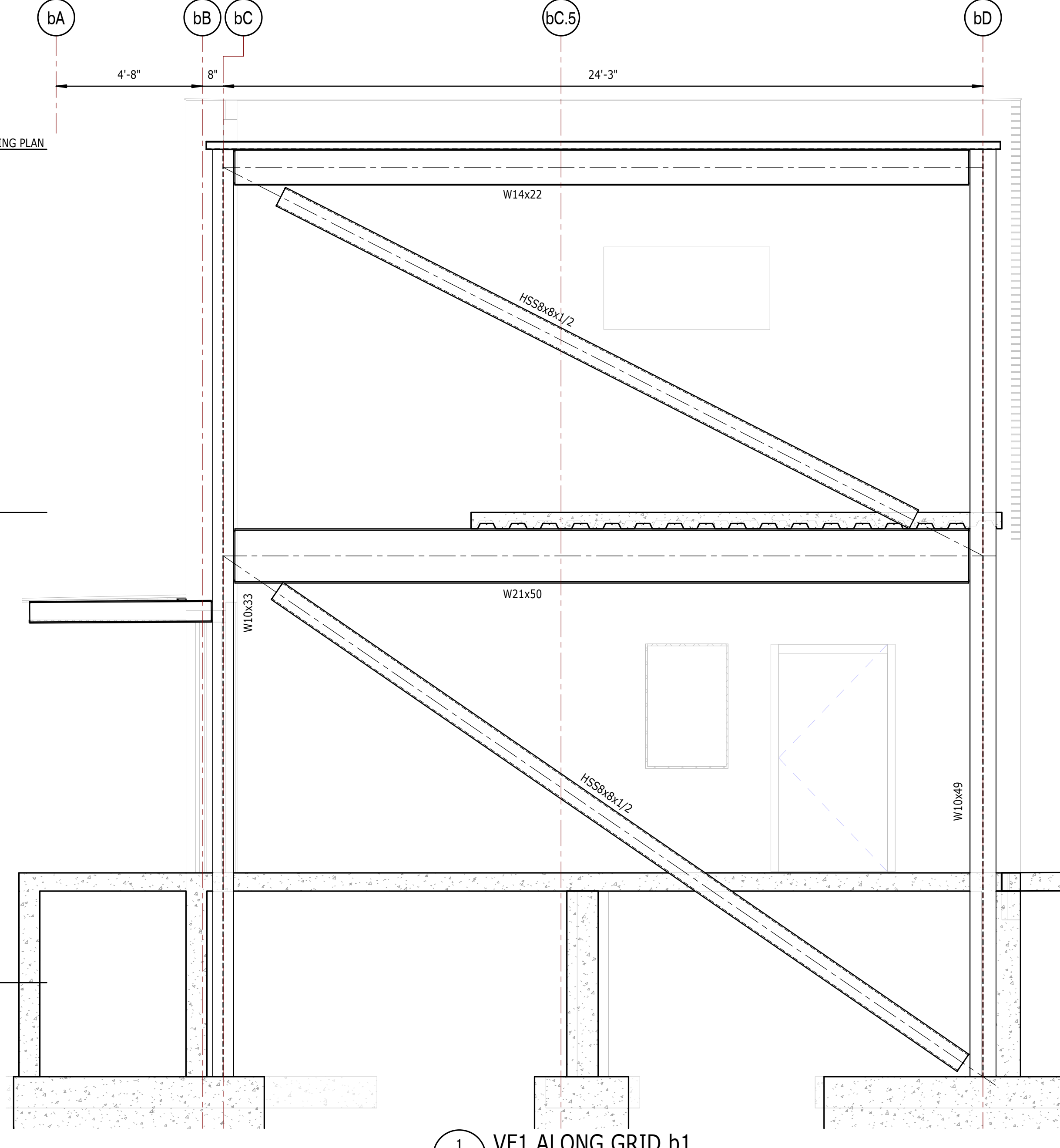
Lighting Design = EL  
**TILLOTSON DESIGN ASSOCIATES**  
 40 Worth Street, Room 703, New York NY 10013  
[www.tillotsondesign.com](http://www.tillotsondesign.com)

**S-242 - P3**

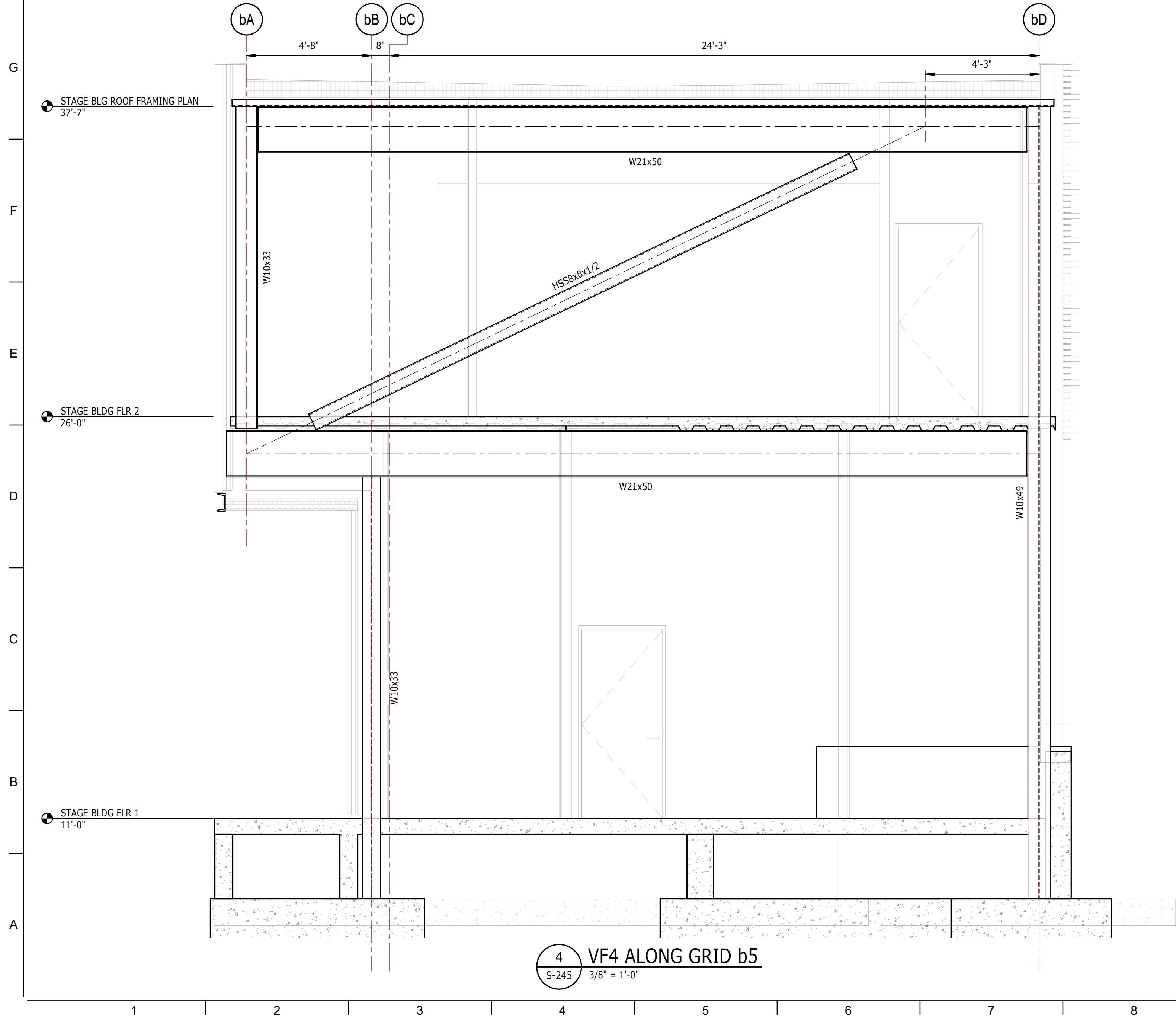




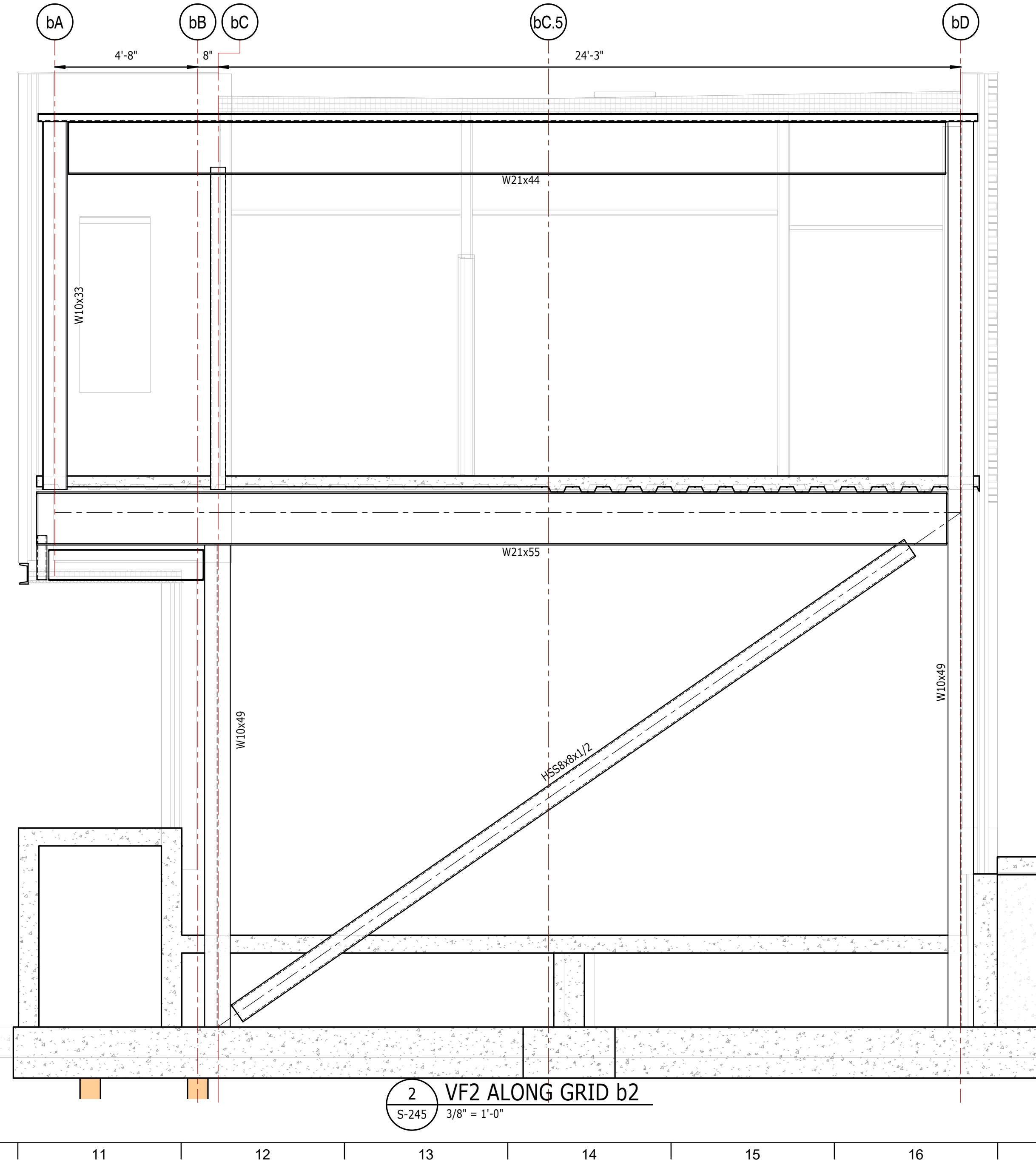
3 VF3 ALONG GRID b3  
S-245 3/8" = 1'-0"



1 VF1 ALONG GRID b1  
S-245 3/8" = 1'-0"



4 VF4 ALONG GRID b5  
S-245 3/8" = 1'-0"



2 VF2 ALONG GRID b2  
S-245 3/8" = 1'-0"

PROJECT INFORMATION

# NORTH WATERFRONT PARK

10 COWAN STREET  
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON  
Community Services Department  
PO Box 1810, Wilmington, NC 28402  
HARGREAVES JONES  
Landscape Architecture = L  
180 Varick Street, Suite 204, New York, NY 10014  
www.hargreavesjonesla.com

Architecture = A  
SAGE & COOMBE ARCHITECTS  
12-16 Veslly St, 5th Floor, New York, NY 10013  
www.sageandcoombe.com  
Acoustic/Theater/AV = AT  
OAP.P.C.  
77 Water Street, New York NY 10015  
www.arup.com

Civil Engineering = C  
Structural Engineering = S  
Geotechnical Engineering = G  
STEWART  
223 S. West St., Suite 1100, Raleigh, NC 27603  
www.stewartinc.com

Environmental Engineering = EE  
SOIL & ENVIRONMENTAL CONSULTANTS, PA  
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615  
www.sandec.com  
EAGLE RESOURCES  
PO Box 11189, Southport, NC 28461  
www.eagleresources.com

Irrigation = I  
CLARK IRRIGATION DESIGN & CONSULTING, INC  
PO Box 650, Lavonia, GA 30553  
www.clarkirrigationdesign.com

Soil Design = LS  
LANDIS, PLLC  
3908 Bentley Brook Dr. Raleigh, NC 27612  
www.landispllc.com

Mechanical Engineering = M  
Electrical Engineering = E  
Plumbing Engineering = P

Fire Protection = FP  
CHEATHAM & ASSOCIATES, PA  
3412 Enterprise Drive, Wilmington NC 28405  
www.cheathampa.com

Marine Structural Engineering = SM  
ANDREW CONSULTING ENGINEERS  
3511 Peachtree Avenue, Suite 300, Wilmington, NC 28403  
www.andrewengineers.com

Water Fountain Design = WF  
COMMERCIAL AQUATIC ENGINEERING  
6500 Carlson Drive, Eden Prairie, MN 55346  
www.fountaindesigns.com

Lighting Design = EL  
TILLOTSON DESIGN ASSOCIATES  
40 Worth Street, Room 703, New York NY 10013  
www.tillotsondesign.com

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ISSUE/REVISIONS

Firm License #C-1051

NO.	DESCRIPTION	DATE
1	30% CONSTRUCTION DOCUMENTS P3/P4	06/07/2019
2	60% CONSTRUCTION DOCUMENTS P3	07/26/2019
3	95% CONSTRUCTION DOCUMENTS P3 & P4	12/04/2019

KEY MAP

SHEET INFORMATION

Project No.: NWP 1701  
Drawn By: DJ, TM  
Checked By: JF  
Date: 12/04/2019  
Scale: 3/8" = 1'-0"

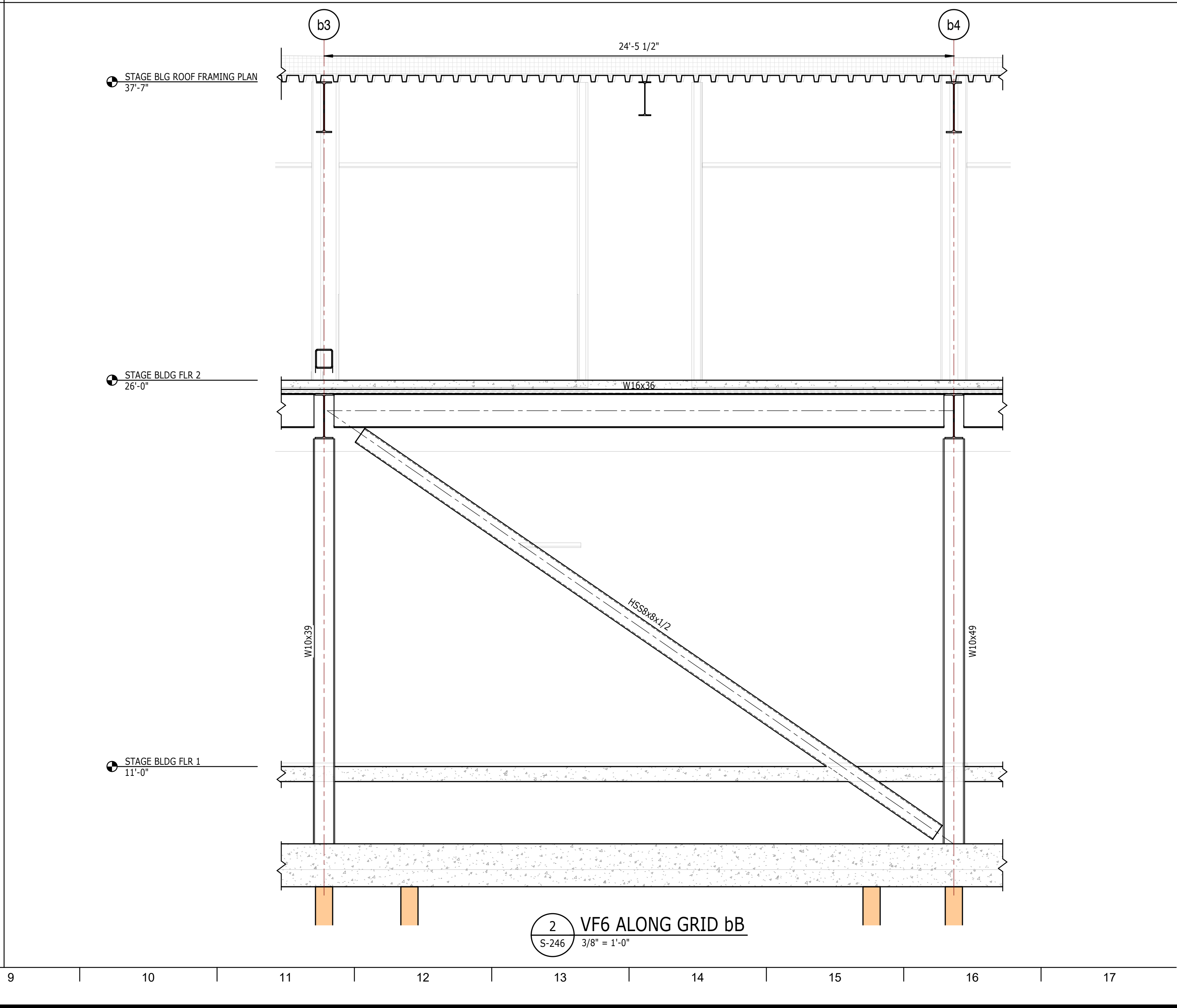
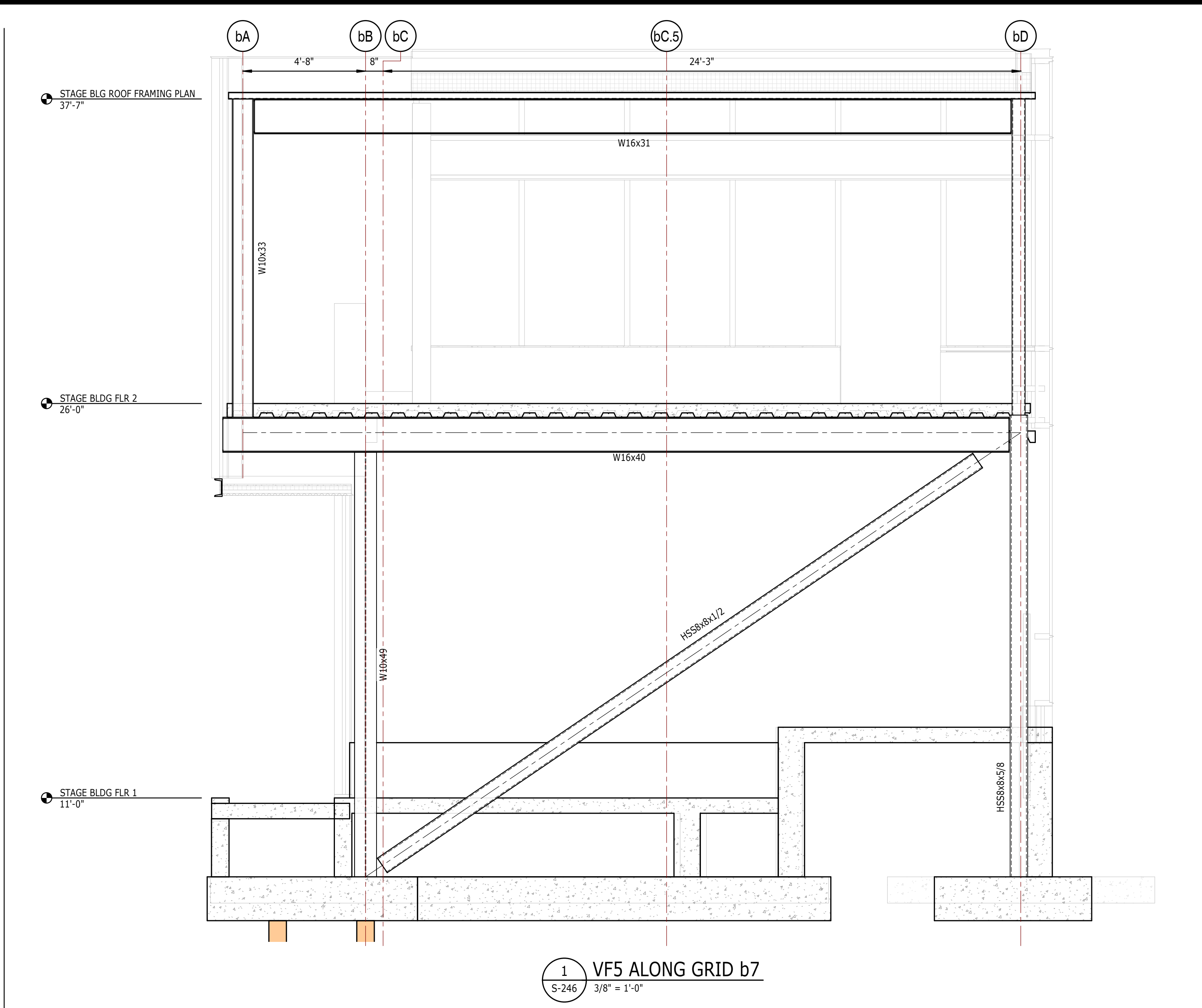
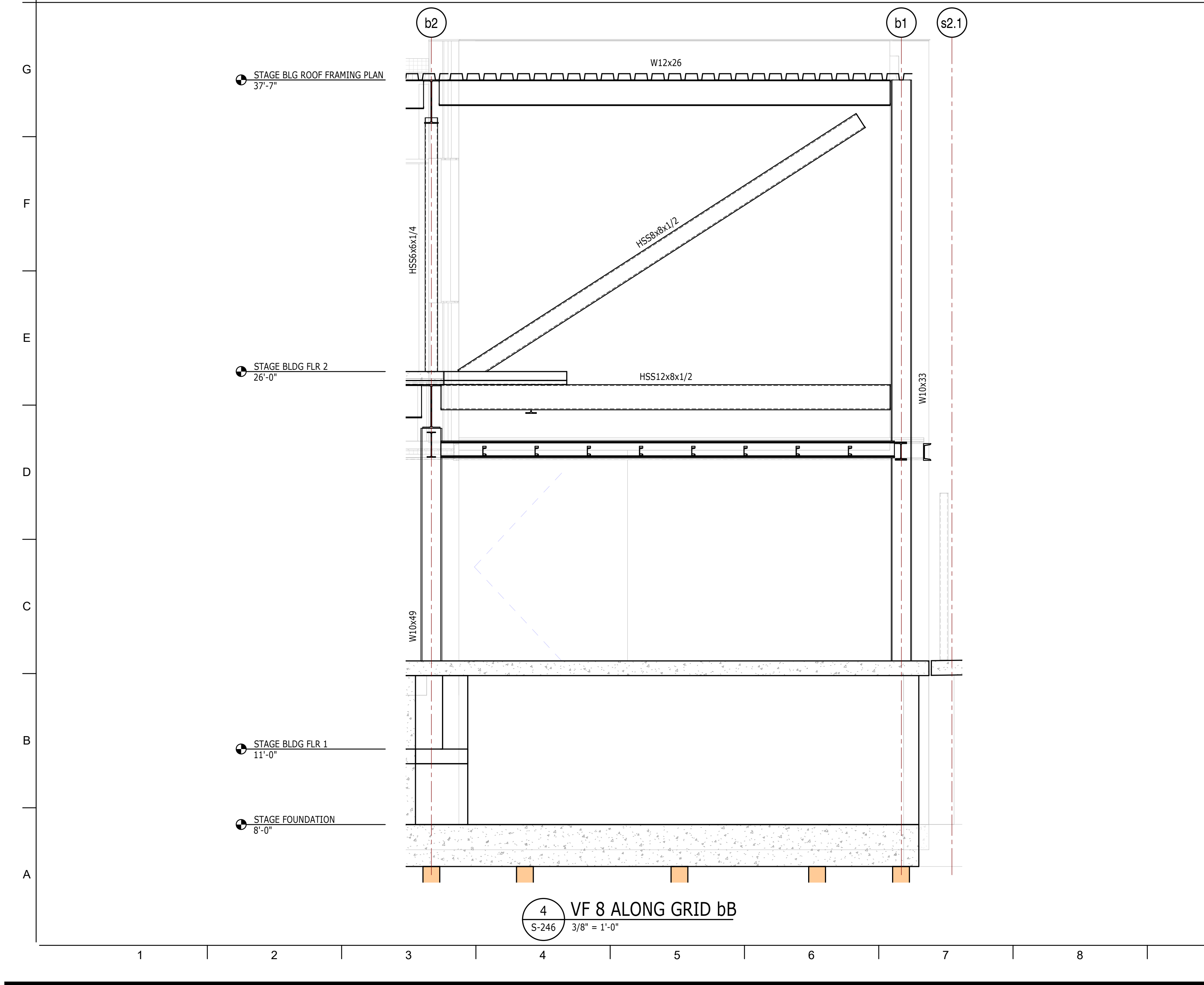
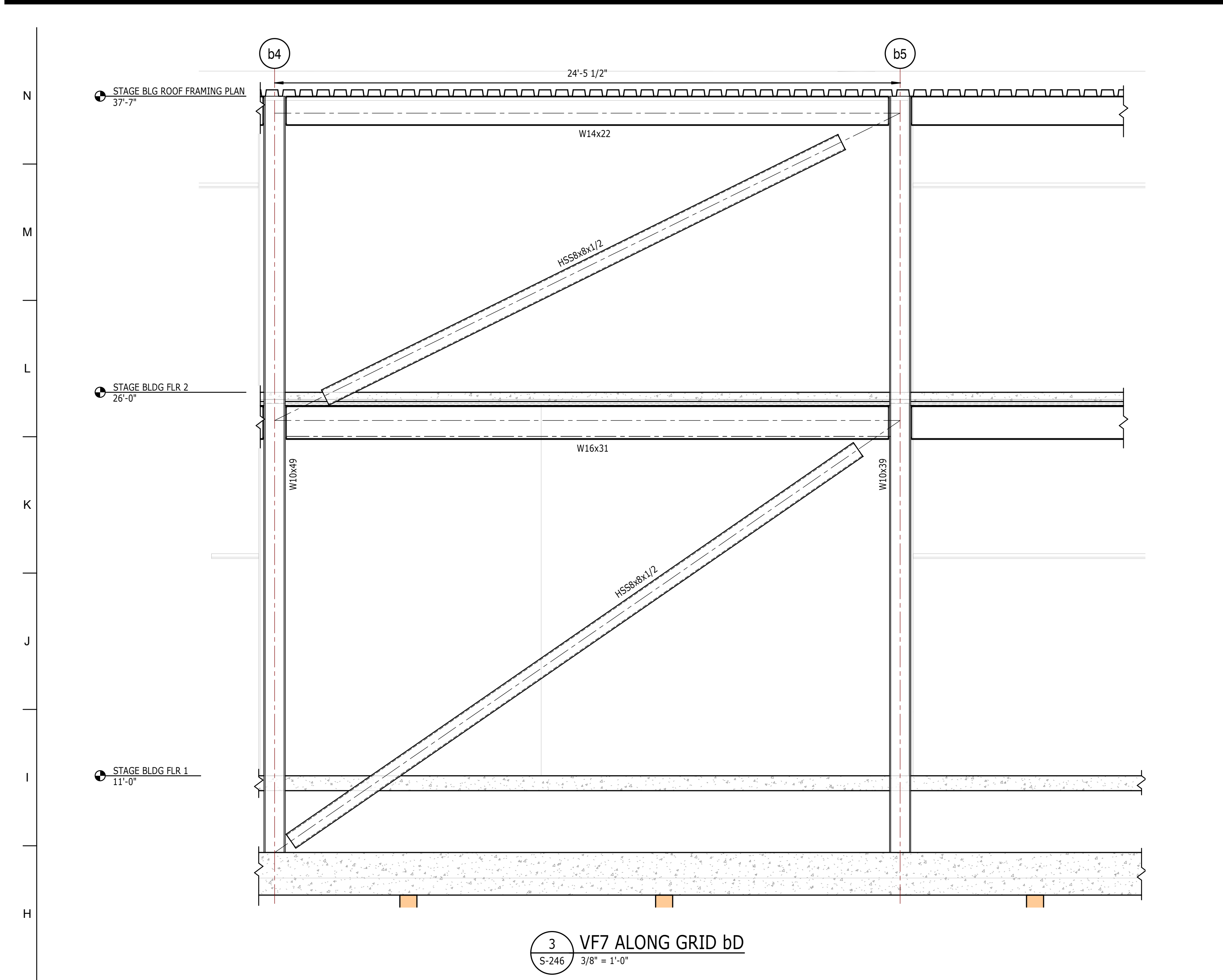
SHEET TITLE

## VERTICAL FRAME ELEVATIONS - STAGE BUILDING STRUCTURAL

SHEET NO.

S-245 - P3





PROJECT INFORMATION

**NORTH WATERFRONT PARK**  
10 COWAN STREET  
WILMINGTON, NORTH CAROLINA

CITY OF WILMINGTON  
Community Services Department  
PO Box 1810, Wilmington, NC 28402  
Landscape Architecture = L  
HARGREAVES JONES  
180 Varick Street, Suite 204, New York, NY 10014  
www.hargreavesjonesla.com

Architecture = A  
SAGE & COOMBE ARCHITECTS  
12-16 Veslly St, 5th Floor, New York, NY 10013  
www.sageandcoombe.com

Acoustic/Theater/AV = AT  
OAP.P.C.  
77 Water Street, New York NY 10015  
www.arup.com

Civil Engineering = C  
Structural Engineering = S  
Geotechnical Engineering = G  
STEWART  
223 S. West St., Suite 1100, Raleigh, NC 27603  
www.stewartinc.com

Environmental Engineering = EE  
SOIL & ENVIRONMENTAL CONSULTANTS, PA  
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615  
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EAGLE RESOURCES  
PO Box 11189, Southport, NC 28461  
www.eagleresources.com

Irrigation = I  
CLARK IRRIGATION DESIGN & CONSULTING, INC  
PO Box 650, Lavonia, GA 30553  
www.clarkirrigationdesign.com

Soil Design = LS  
LANDIS, PLLC  
3908 Bentley Brook Dr. Raleigh, NC 27612  
www.landispllc.com

Mechanical Engineering = M  
Electrical Engineering = E  
Plumbing Engineering = P

Fire Protection = FP  
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3412 Enterprise Drive, Wilmington NC 28405  
www.cheathampa.com

Marine Structural Engineering = SM  
ANDREW CONSULTING ENGINEERS  
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www.andrewengineers.com

Water Fountain Design = WF  
COMMERCIAL AQUATIC ENGINEERING  
6500 Carlson Drive, Eden Prairie, MN 55346  
www.fountaindesigns.com

Lighting Design = EL  
TILLOTSON DESIGN ASSOCIATES  
40 Worth Street, Room 703, New York NY 10013  
www.tillotsondesign.com

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ISSUE/REVISIONS

Firm License #C-1051

NO.	DESCRIPTION	DATE
1	30% CONSTRUCTION DOCUMENTS P3/P4	06/07/2019
2	60% CONSTRUCTION DOCUMENTS P3	07/26/2019
3	95% CONSTRUCTION DOCUMENTS P3 & P4	12/04/2019

KEY MAP

SHEET INFORMATION

Project No.: NWP 1701  
Drawn By: DJ, TM  
Checked By: JF  
Date: 12/04/2019  
Scale: 3/8" = 1'-0"

SHEET TITLE

**VERTICAL FRAME  
ELEVATIONS- STAGE  
BUILDING  
STRUCTURAL**

SHEET NO.

**S-246 - P3**



**NORTH  
WATERFRONT  
PARK**  
10 COWAN STREET  
WILMINGTON, NORTH CAROLINA

Architecture = A  
**SAGE & COOMBE ARCHITECTS**  
 12-16 Vestry St, 5th Floor, New York, NY 10013  
[www.sageandcoombe.com](http://www.sageandcoombe.com)

Civil Engineering = C  
Structural Engineering = S

Environmental Engineering = EE  
SOIL & ENVIRONMENTAL CONSULTANTS, PA

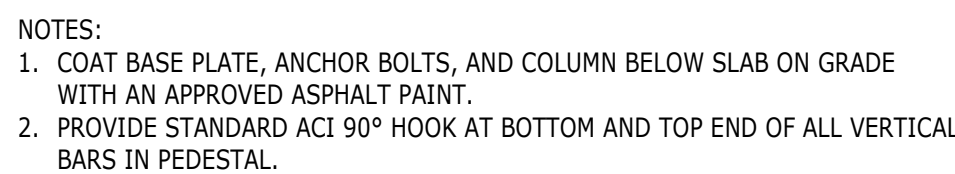
Irrigation= I  
**CLARK IRRIGATION DESIGN & CONSULTING, INC**  
 PO Box 693, Lavonia, GA 30553  
[www.clarkirrigationdesign.com](http://www.clarkirrigationdesign.com)

Mechanical Engineering = M  
Electrical Engineering = E

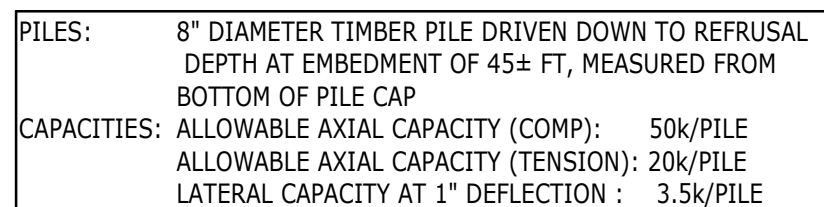
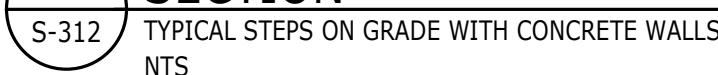
CHEATHAM & ASSOCIATES, P.A.  
3412 Enterprise Drive, Wilmington NC 28405  
www.cheatham.com

Water Fountain Design = WF  
**COMMERCIAL AQUATIC ENGINEERING**  
 6500 Carlson Drive, Eden Prairie, MN 5534  
[www.fountaindesigns.com](http://www.fountaindesigns.com)

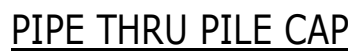
Lighting Design = EL  
**TILLOTSON DESIGN ASSOCIATES**  
 40 Worth Street, Room 703, New York NY 10013  
[www.tillotsondesign.com](http://www.tillotsondesign.com)



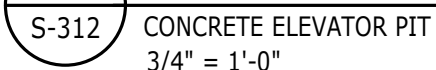
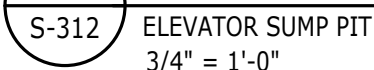
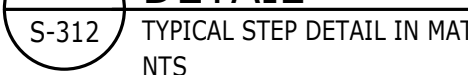
S-312 TYPICAL SPREAD FOOTING AT STEEL COLUMN WITH PEDESTAL AT LOADING DOCK  
NTS



S-312 TYP TIMBER PILE IN FTG DETAL AT BACK OF HOUSE  
NTS



S-312 TYPICAL UTILITY BELOW FOOTING  
NTS



**CONSTRUCTION SEQUENCE NOTE:**  
POUR STRUCTURAL SLAB ON GRADE AFTER STEEL HAS BEEN PLACED. CONTACTOR MAY PLACE WALLS AND BACKFILL SOIL BEFORE PLACING STEEL IF  
LEAVEOUTS AND SHORING ARE PROVIDED. ALL STEEL TO BE COVERED IN APPROVED ASPHALT PAINT AND ENCASED IN CONCRETE BELOW GRADE

(S-312)  $3/4'' = 1'-0''$

## Firm License #C-105

[illegible]

## KEY MAP

## SHEET INFORMATION

Date: 12/04/2019

**SHEET TITLE**


## FOUNDATION DETAILS - STAGE BUILDING

## STRUCTURAL

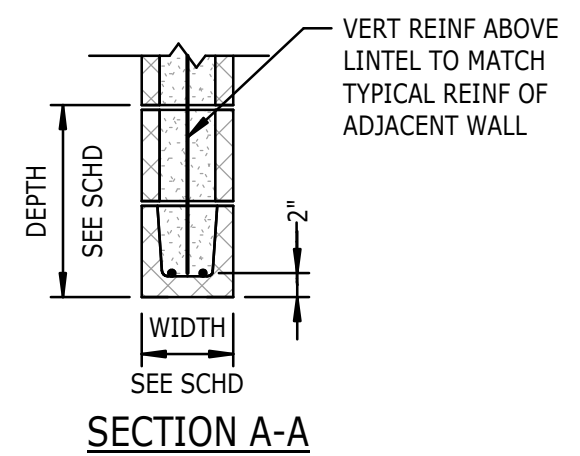
**SHEET NO**

**S-312 - P3**

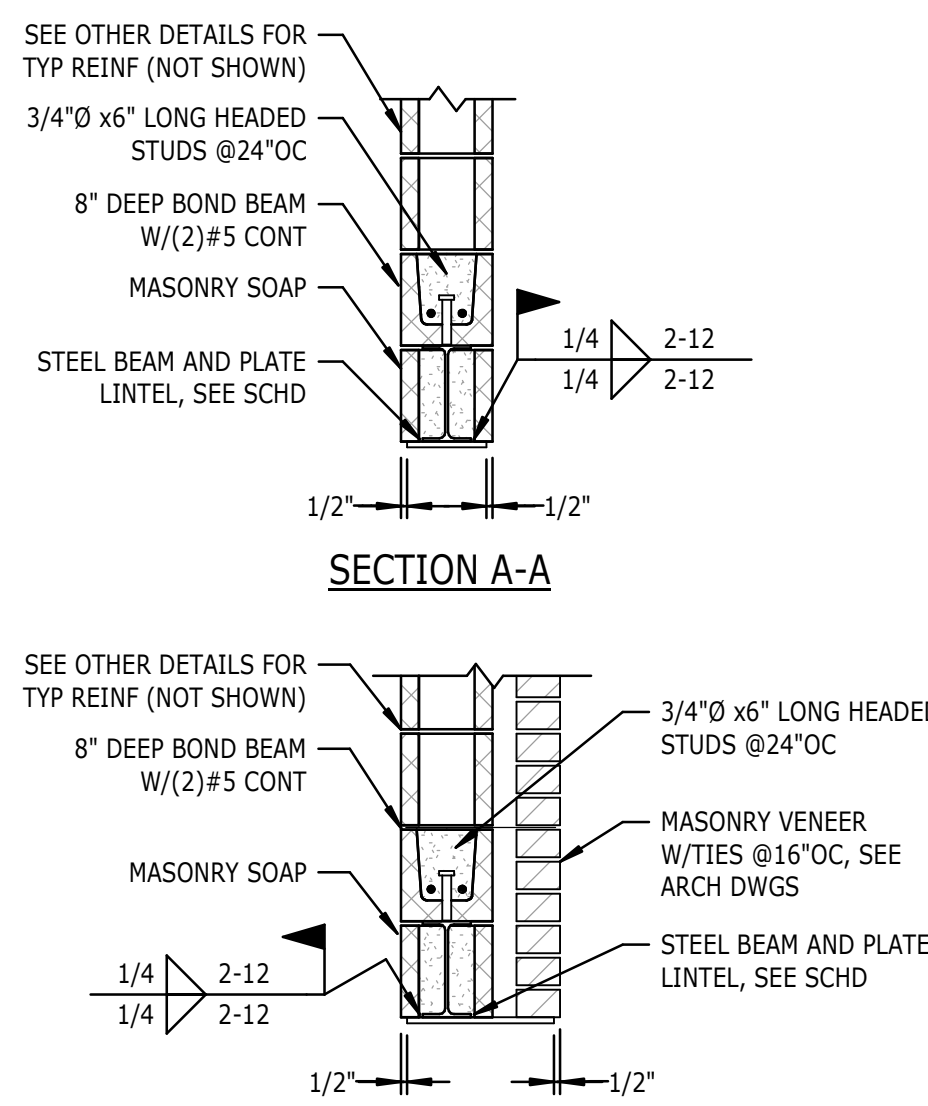
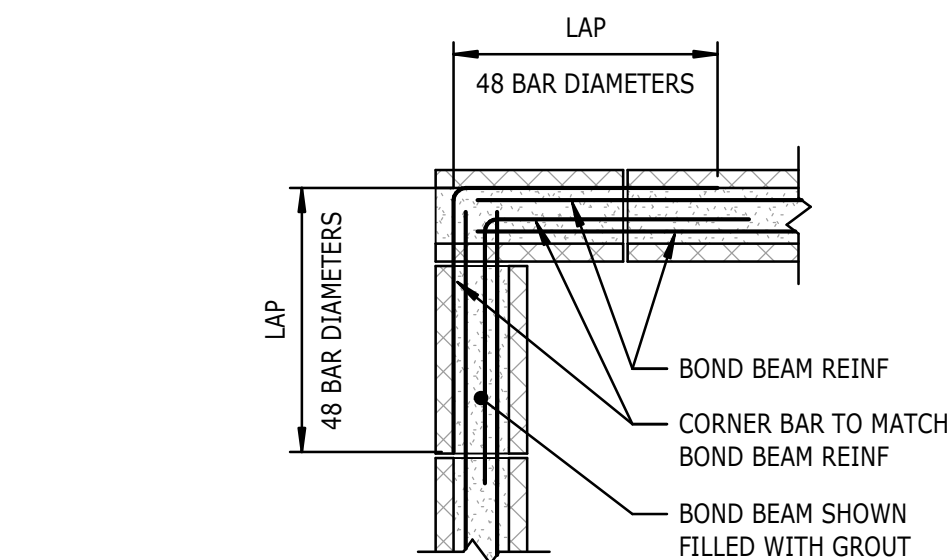


PROJECT INFORMATION		
<div>NORTH WATERFRONT PARK</div> <div>10 COWAN STREET WILMINGTON, NORTH CAROLINA</div>		
<div>CITY OF WILMINGTON</div> <div>Community Services Department PO Box 1810, Wilmington, NC 28402</div> <div>Landscape Architecture = L <b>HARGREAVES JONES</b> 180 Varick Street, Suite 204, New York, NY 10014 www.hargreavesjonesllc.com</div> <div>Architecture = A <b>SAGE &amp; COOMBE ARCHITECTS</b> 12-18 Vestry St., 5th Floor, New York, NY 10013 www.sageandcoombe.com</div> <div>Acoustic/Theater/AV = AT <b>O.A.P.P.C.</b> 77 Water Street, New York, NY 10015 www.oappc.com</div> <div>Civil Engineering = C Structural Engineering = S Geotechnical Engineering = G <b>STEWART</b> 223 S. West St., Suite 1100, Raleigh, NC 27603 www.stewartinc.com</div> <div>Environmental Engineering = EE <b>SOIL &amp; ENVIRONMENTAL CONSULTANTS, PA</b> 8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615 www.sandec.com</div> <div>EAGLE RESOURCES PO Box 11189, Southport, NC 28461 www.eagleresources.com</div> <div>Irrigation = I <b>CLARK IRRIGATION DESIGN &amp; CONSULTING, INC</b> PO Box 693, Lavonia, GA 30553 www.clarkirrigationdesign.com</div> <div>Soil Design = LS <b>LANDIS, PLLC</b> 3908 Bentley Brook Dr. Raleigh, NC 27612 www.landispllc.com</div> <div>Mechanical Engineering = M Electrical Engineering = E Plumbing Engineering = P Fire Protection = FP <b>CHEATHAM &amp; ASSOCIATES, PA</b> 3412 Enterprise Drive, Wilmington NC 28405 www.cheathampa.com</div> <div>Marine Structural Engineering = SM <b>ANDREW CONSULTING ENGINEERS</b> 3811 Peachtree Avenue, Suite 300, Wilmington, NC 28403 www.andrewengineers.com</div> <div>Water Fountain Design = VF <b>COMMERCIAL AQUATIC ENGINEERING</b> 6500 Carlson Drive, Eden Prairie, MN 55346 www.fountaindesigns.com</div> <div>Lighting Design = EL <b>TILOTONSON DESIGN ASSOCIATES</b> 40 Worth Street, Room 703, New York NY 10013 www.tilotsondesign.com</div>		
SEAL/SIGNATURE		
<div></div>		
ISSUE/REVISIONS <span style="float:right;">Firm License #C-105</span>		
NO.	DESCRIPTION	DATE
1	30% CONSTRUCTION DOCUMENTS P3/P4	06/07/2019
2	60% CONSTRUCTION DOCUMENTS P3	07/26/2019
3	95% CONSTRUCTION DOCUMENTS P3 & P4	12/04/2019
KEY MAP		
SHEET INFORMATION		
Project No.: NWP 1701		
Drawn By: DJ, TM		
Checked By: JF		
Date:	12/04/2019	
Scale:	As indicated	
SHEET TITLE		
<div>CONCRETE DETAILS - STAGE BUILDING</div> <div>STRUCTURAL</div>		
SHEET NO.		
S-322 - P3		

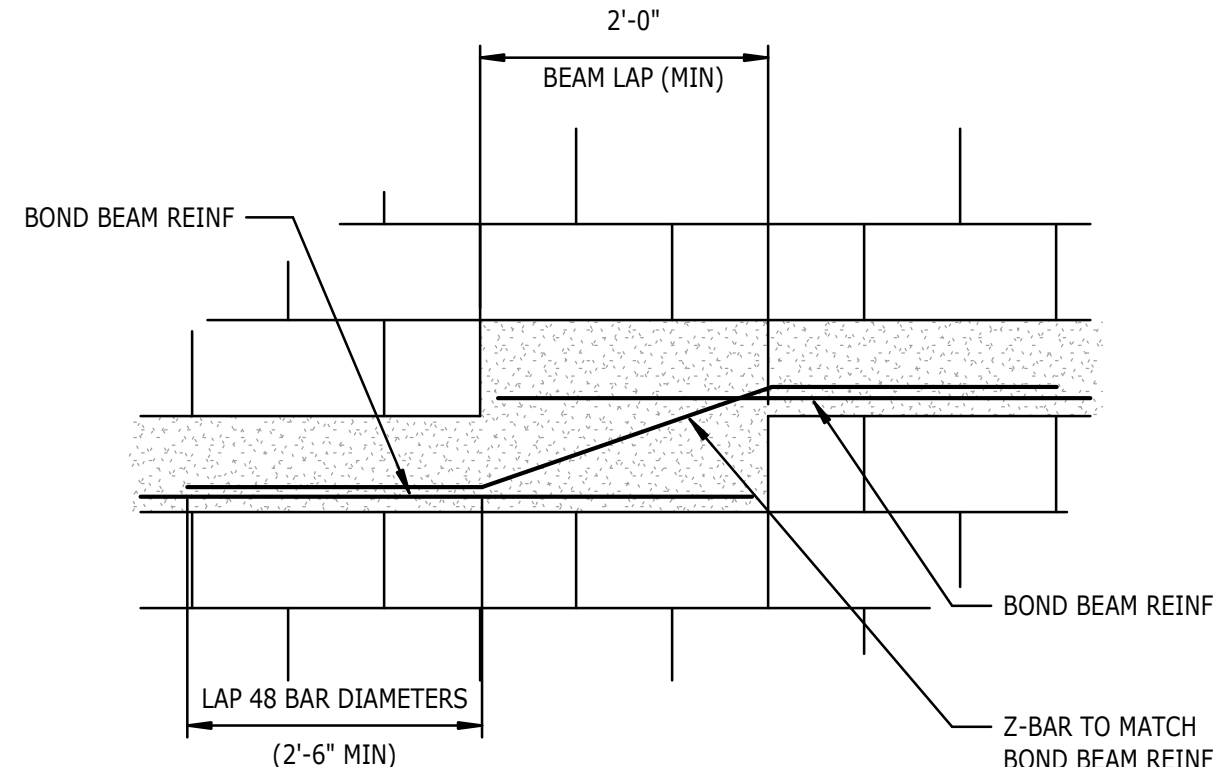




NTS  
NOTES:  
1. TYPICAL WALL REINFORCING AND CONTROL JOINT REINFORCING NOT SHOWN FOR CLARITY.

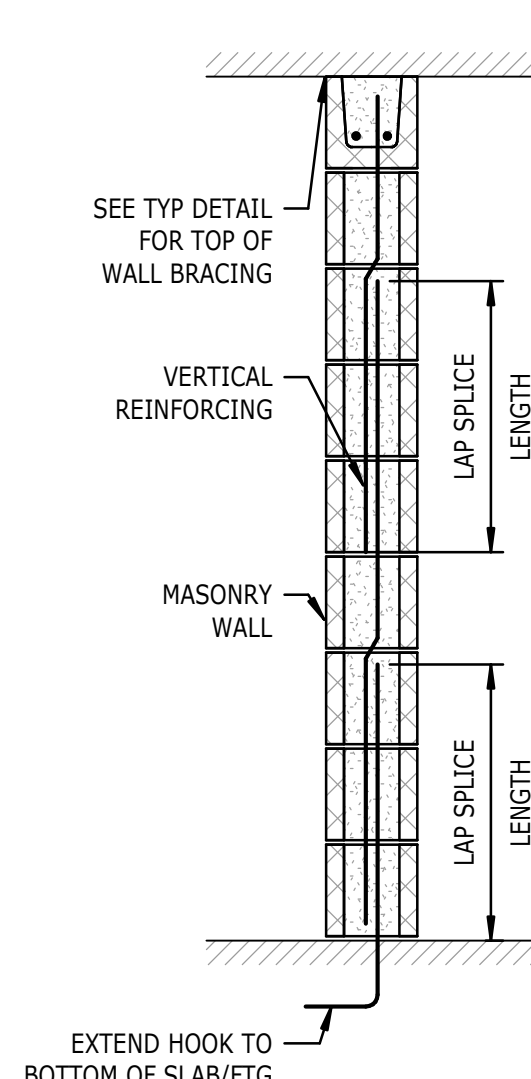
STEEL BEAM LINTEL AND JAMB CONSTRUCTION  
NTS

## NTS

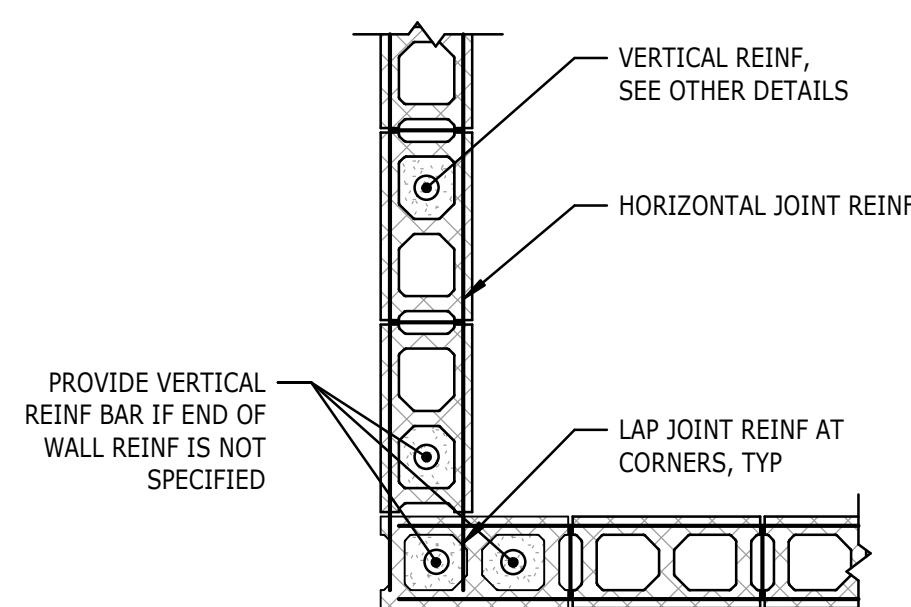


S-401 TYPICAL STEP IN CMU BOND BEAM  
NTS

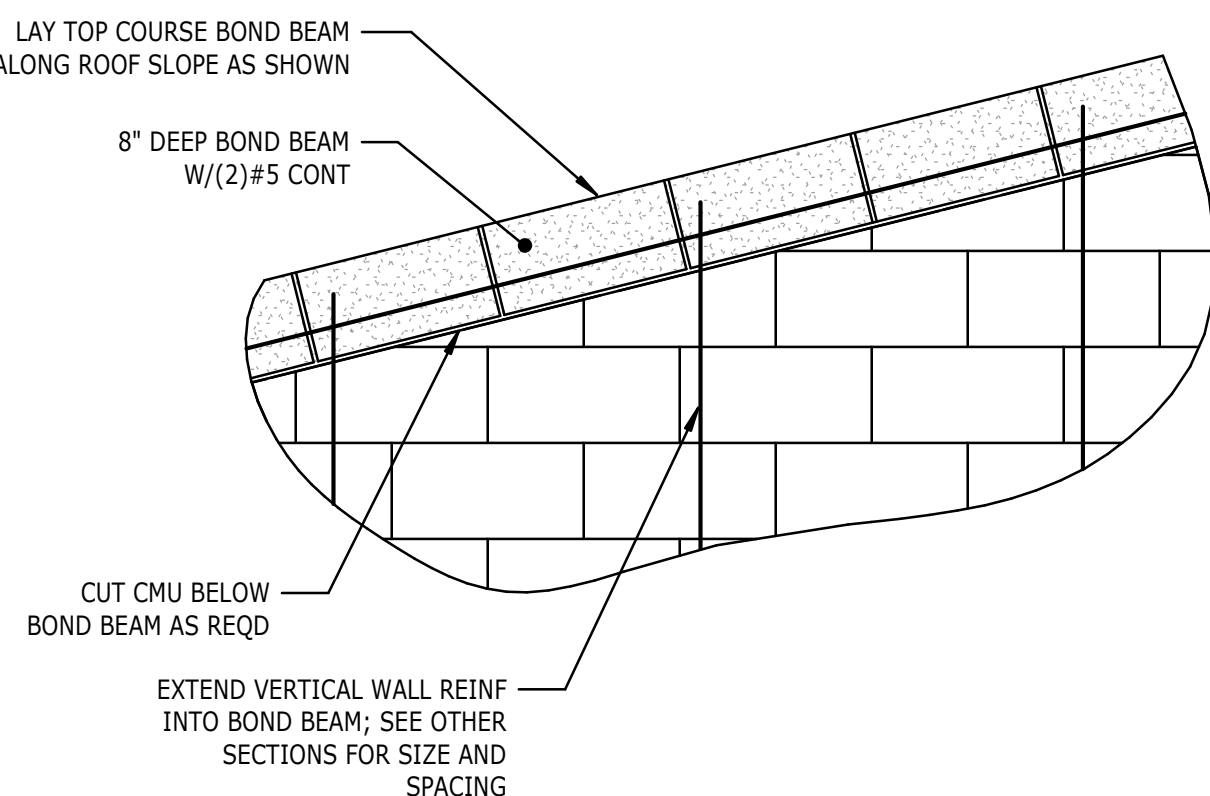
MINIMUM SPLICE AND EMBEDMENT LENGTH SCHEDULE	
BAR SIZE	LAP SPLICE
#3	18"
#4	24"
#5	30"
#6	36"
#7	42"
#8	48"



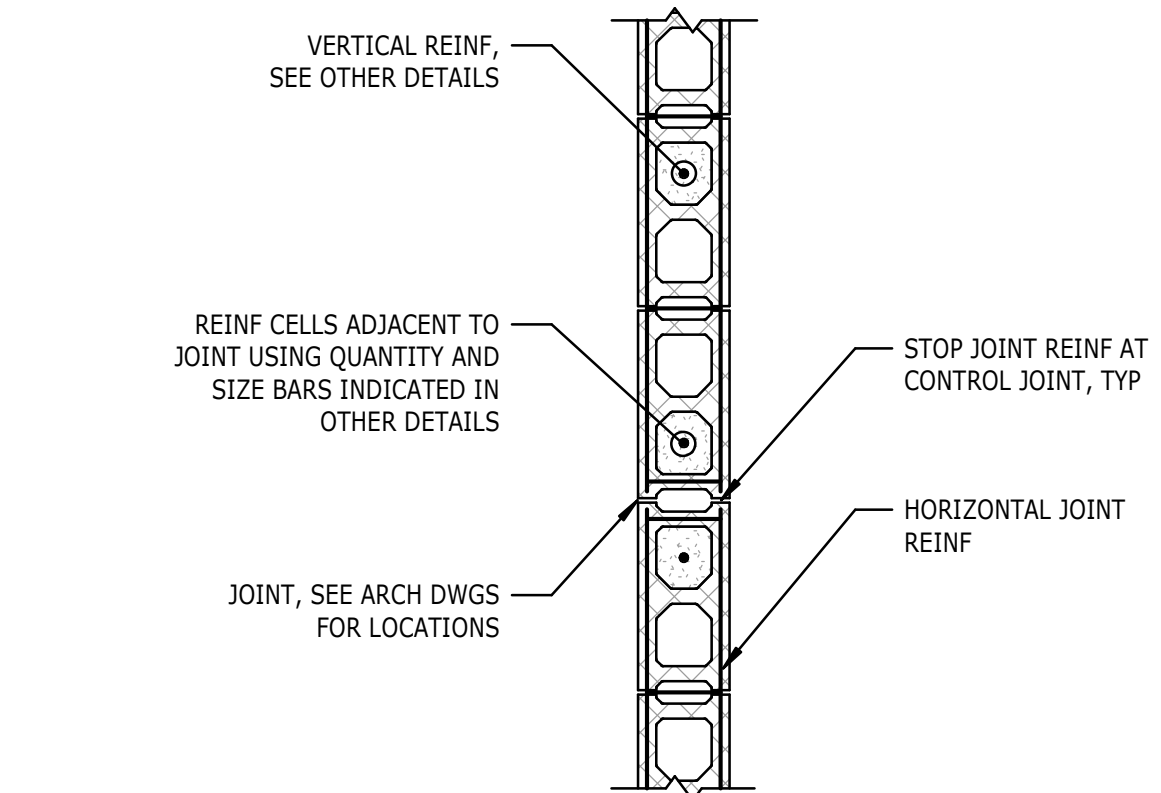
## NTS



NTS  
NOTES:  
1. PROVIDE DOWELS TO FOUNDATION MATCHING SIZE OF VERTICAL REINFORCING TYPICAL. SEE GENERAL NOTES OR MINIMUM SPLICE AND EMBEDMENT LENGTH SCHEDULE FOR LAP REQUIREMENTS.

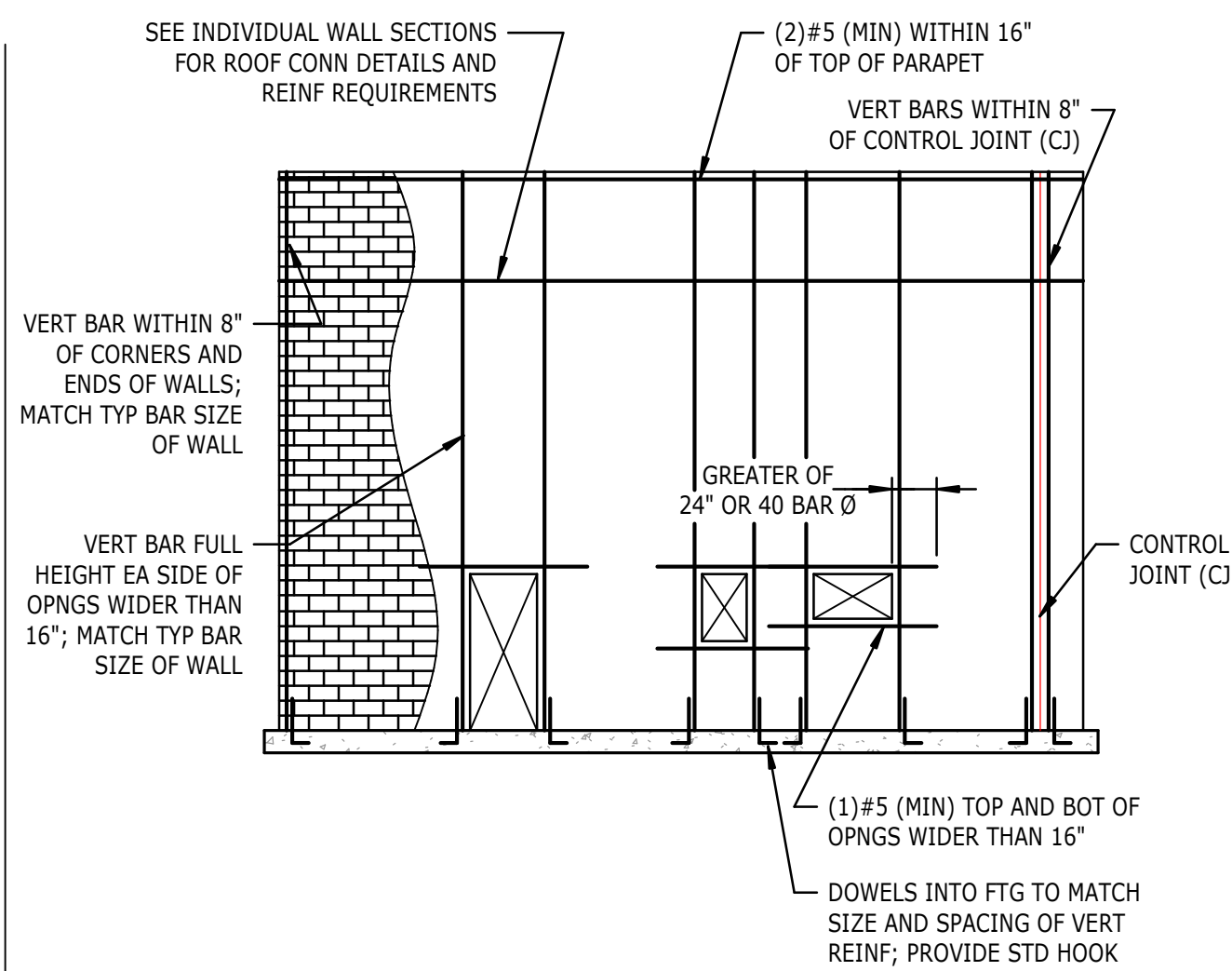


## NTS



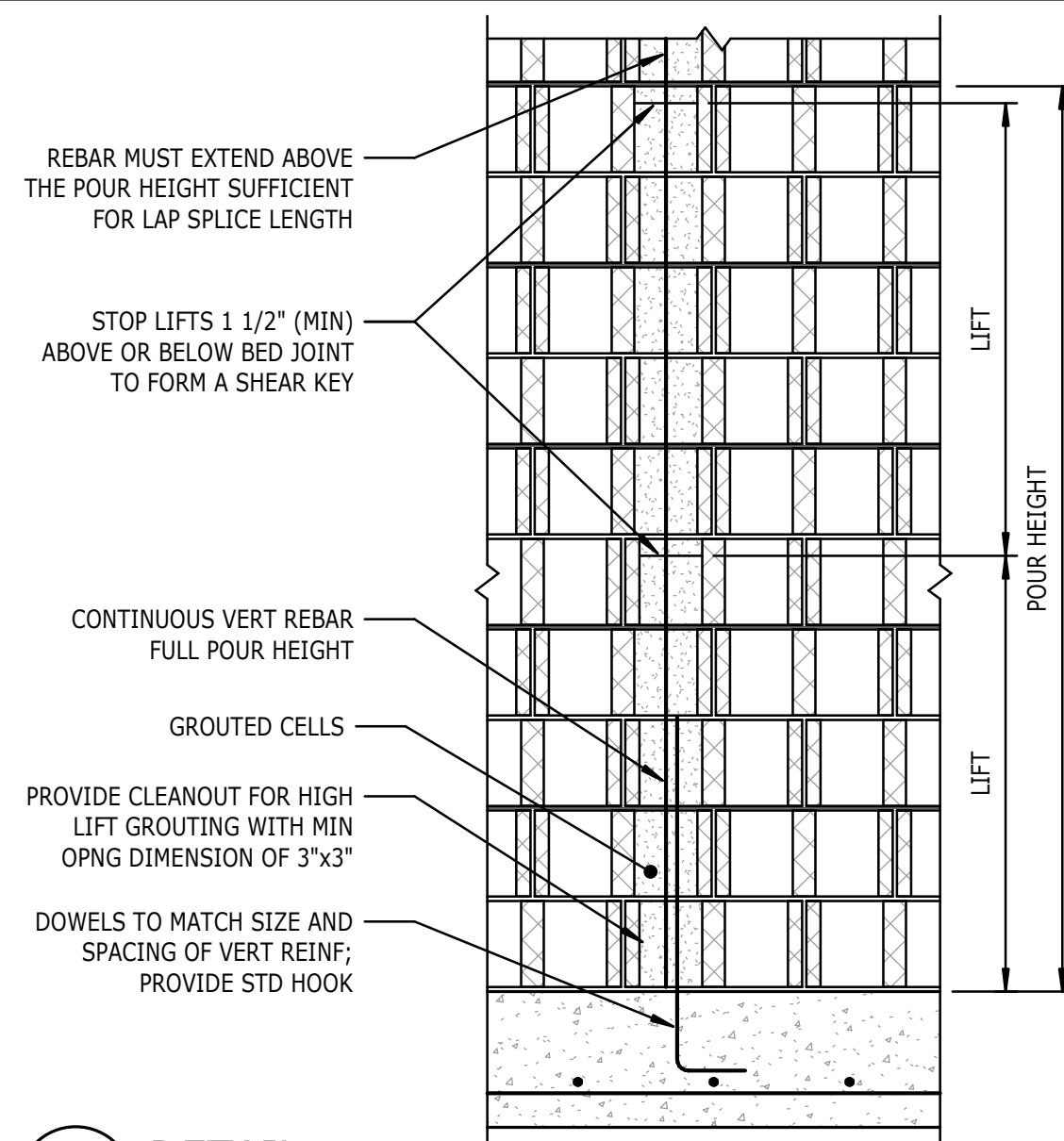
NTS  
NOTES:

1. PROVIDE DOWELS TO FOUNDATION MATCHING SIZE OF VERTICAL REINFORCING, TYPICAL. SEE GENERAL NOTES OR MINIMUM SPLICE AND EMBEDMENT LENGTH SCHEDULE FOR LAP REQUIREMENTS.
2. ALL CONTROL JOINT LOCATIONS SHALL BE COORDINATED WITH THE ARCHITECTURAL DRAWINGS AND HAVE A RECOMMENDED MAXIMUM SPACING OF 25 FEET.



## NTS

- NOTES:
1. REINFORCING SHOWN IS A MINIMUM REQUIREMENT. INDIVIDUAL WALL SECTION REINFORCING REQUIREMENTS (SUCH AS NUMBER OR SIZE OF BARS) SHALL TAKE PRECEDENCE OVER THE REQUIREMENTS SHOWN HEREIN. SEE INDIVIDUAL WALL SECTIONS AND SCHEDULES FOR VERTICAL REINFORCING REQUIREMENTS.
  2. ALL DISCONTINUOUS REINFORCEMENT SHALL BE LAPPED PER MINIMUM SPLICE AND EMBEDMENT LENGTH SCHEDULE.
  3. VERTICAL STEEL MUST BE SECURED IN PLACE BEFORE THE BLOCKS ARE LAID. ALL VERTICAL REINFORCEMENT SHALL BE CONTINUOUS THROUGH MANOYLS LATEL AND DEAD BEAMS, UNDO.
  4. AT JOINTS WHEREIN STEEL BEAM LINTELS ARE PROVIDED, REINFORCE THE JAMB CELL TO THE BEARING ELEVATION OF THE LINTEL, AND REINFORCE THE NEXT ADJACENT CELL PAST THE END OF THE BEAM FULL HEIGHT AS SHOWN IN THIS DETAIL.
  5. DETAIL DOES NOT APPLY TO INTERIOR NON-LOAD BEARING PARTITION WALLS.
  6. PROVIDE MINIMUM (2) LEGS OF W1.1 HORIZONTAL JOINT REINFORCEMENT @16"OC VERTICALLY.



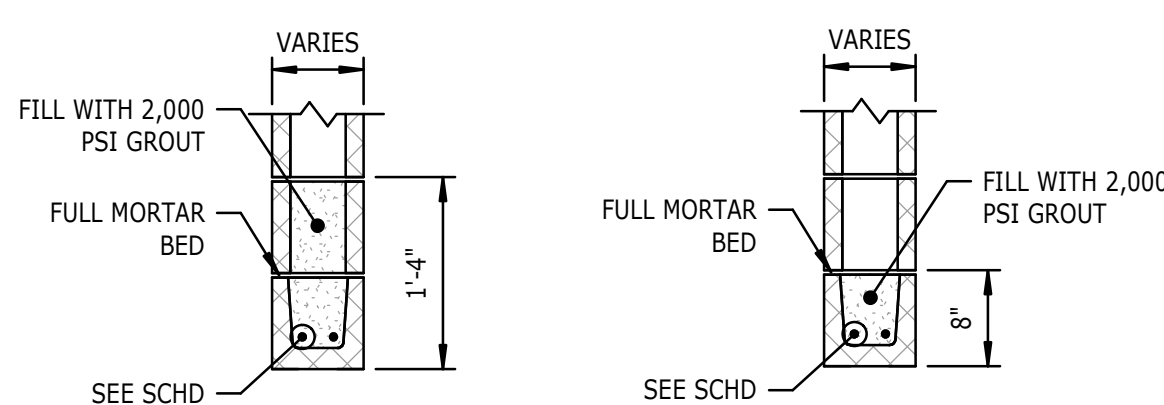
**GENERAL GROUTING REQUIREMENTS:**

- ALL REINFORCED CELLS SHALL BE GROUTED SOLID.
- REINFORCING BARS SHALL BE IN PROPER POSITION PRIOR TO PLACEMENT OF GROUT, NOT PUSHED DOWN INTO PREVIOUSLY PLACED GROUT. SAME REQUIREMENT APPLIES FOR EMBEDDED BOLTS AND FASTENERS.
- GROUTER BEDDING UNDER THE FIRST COURSE OF BLOCK CELLS TO BE GROUTED SHALL PERMIT GROUT TO COME INTO DIRECT CONTACT WITH FOUNDATION.
- PLACE MORTAR ON CROSS WEBS ADJACENT TO ALL GROUTED CELLS.
- MORTAR THAT PROJECTS MORE THAN 1/2" INTO CELLS THAT ARE TO BE GROUTED SHALL BE REMOVED.
- GROUTED CELLS SHALL BE MECHANICALLY VIBRATED DURING PLACEMENT OF GROUT. TEN MINUTES AFTER PLACING GROUT, EACH GROUTED CELL SHALL BE RECONSOLIDATED WITH A VIBRATOR.
- METAL LATH SHALL BE PLACED UNDER ALL BOND BEAMS IN ORDER TO CONTAIN GROUT. FEL OR OTHER BOND BREAKING MATERIAL IS NOT PERMITTED. AS AN ALTERNATIVE TO THIS, U-SHAPED LINTEL GROUTING OR HIGH FLOW BOND BEAMS.
- FOR LOW LIFT GROUTING OR USED FOR BOND BEAMS.
- CONTRACTOR'S OPTION.

- LOW LIFT GROUTING PROCEDURE:
1. LAY WALL TO MAXIMUM OF 5'-0".
  2. CLEAN MORTAR AND OTHER DEBRIS FROM CELLS TO BE GROUTED.
  3. PLACE REINFORCING BARS IN PROPER POSITION.
  4. PLACE GROUT UP TO LIFT HEIGHT AND VIBRATE.

- #### HIGH LIFT GROUTING PROCEDURE:
1. CLEANOUT OPENINGS SHALL BE PROVIDED IN THE FACE SHELLS OF THE BOTTOM COURSE OF ALL CELLS TO BE GROUTED. OPENINGS SHALL BE LARGE ENOUGH TO ALLOW REMOVAL OF DEBRIS.
  2. LAY WALL TO MAXIMUM FOUR FEET HEIGHT AND CLEAN DEBRIS FROM OPENINGS. PLACE REINFORCING BARS IN PROPER POSITION.
  3. CLEAN MORTAR AND OTHER DEBRIS FROM CELLS TO BE GROUTED.
  4. MASONRY SHALL CURE A MINIMUM OF 4 HOURS PRIOR TO GROUTING.
  5. PLACE GROUT TO THE FOLLOWING HEIGHTS: MAXIMUM LIFT HEIGHT IS 5'-0"; MAXIMUM POUR RATE IS 12'-0" LIFT PER HOUR. COORDINATE WITH THE STRUCTURAL ENGINEER.
  6. AFTER THE LIFT IS POURED, VIBRATE TO ELIMINATE ALL AIR Voids. WAIT BETWEEN 3 AND 5 MINUTES, THEN RECONSOLIDATE BY VIBRATING AGAIN. CONTINUE THIS PROCEDURE FOR FULL HEIGHT OF GROUT. RECONSOLIDATE THE PRIOR LIFT BY EXTENDING THE VIBRATOR THROUGH THE NEXT LIFT INTO THE PREVIOUS LIFT.
  7. GROUT SLUMP MUST BE MAINTAINED BETWEEN 10 AND 11 INCHES FOR HIGH LIFT GROUTING.

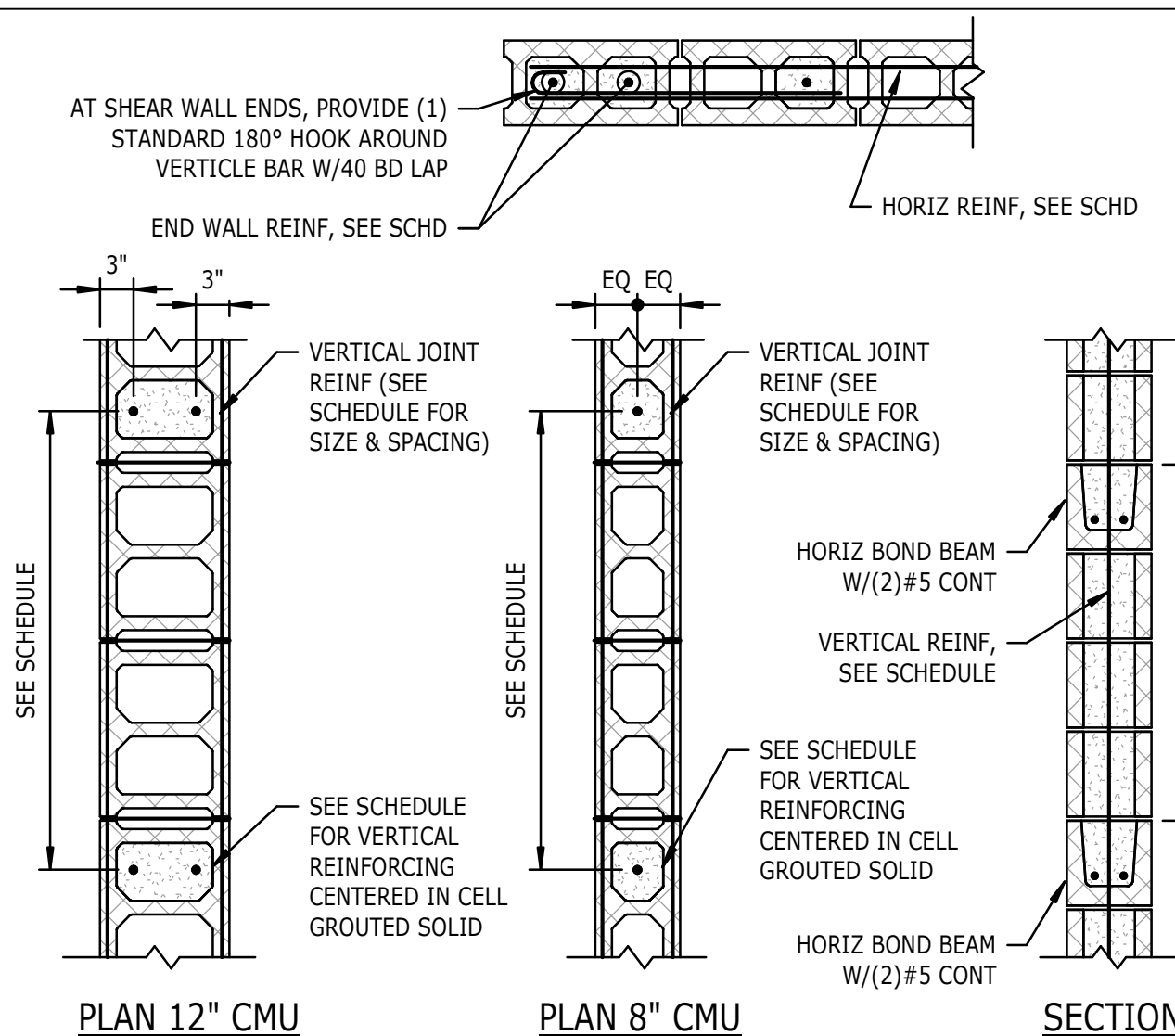
LINTEL SIZE OPENING	4"x8"	6"x8"	6"x16"	8"x8"	8"x16"	12"x8"	12"x16"
3'-4"	(1)#3	(1)#3	NA	(1)#3	NA	(2)#4	NA
4'-0"	(1)#3	(1)#4	NA	(2)#3	NA	(2)#4	NA
4'-8"	(1)#4	(1)#4	NA	(2)#4	NA	(2)#4	NA
5'-4"	(1)#4	(2)#4	NA	(2)#4	NA	(2)#5	NA
6'-0"	(1)#5	(2)#4	(1)#4	(2)#4	(2)#4	(2)#5	(2)#4
6'-8"	NA	NA	(1)#5	NA	(2)#4	NA	(2)#4
7'-4"	NA	NA	(1)#5	NA	(2)#4	NA	(2)#5
8'-0"	NA	NA	(1)#6	NA	(2)#4	NA	(2)#5
8'-8"	NA	NA	(1)#6	NA	(2)#5	NA	(2)#6
9'-4"	NA	NA	(1)#7	NA	(2)#5	NA	(2)#6



NTS

NOTES:

1. THIS SCHEDULE APPLIES TO OPENINGS IN ALL NON-LOAD BEARING WALLS AND PARTITIONS.
2. SEE ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATIONS OF OPENINGS.
3. PROVIDE 8" OF BEARING AT EACH END OF ALL OPENINGS.
4. DO NOT PLACE CONTROL JOINT IN CMU LINTEL OR WITHIN 8" OF JAMB.



## NTS



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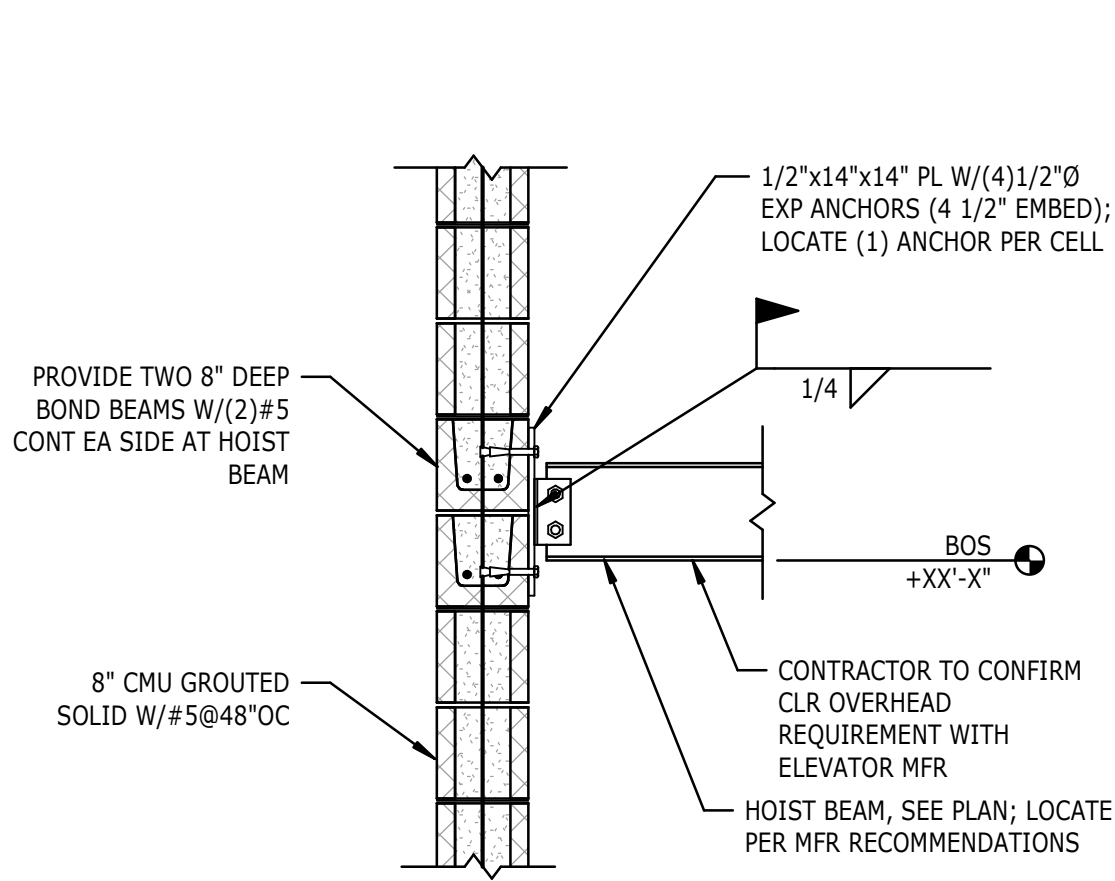
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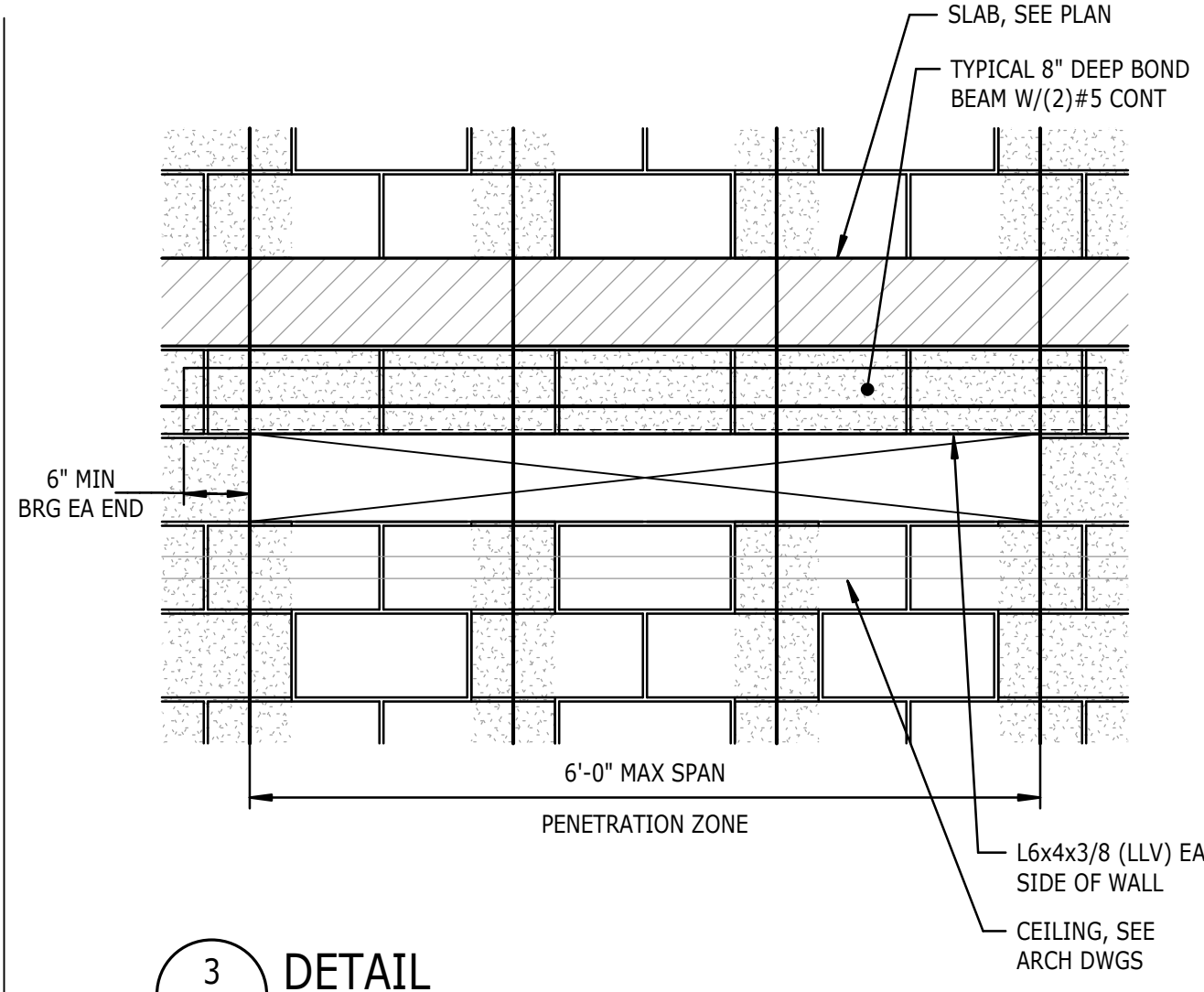
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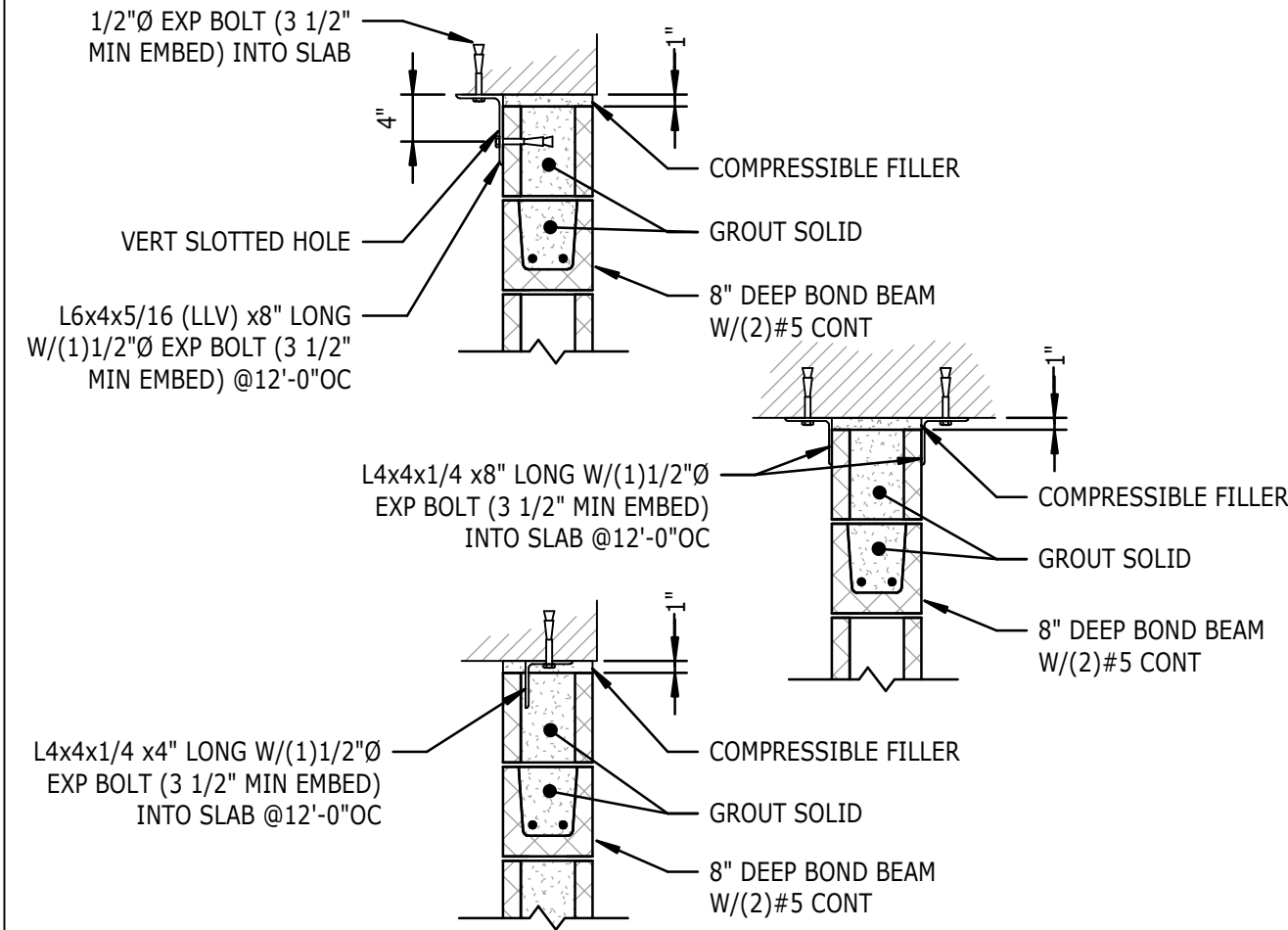
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6  
S-402  
DETAIL  
HOIST BEAM  
NTS

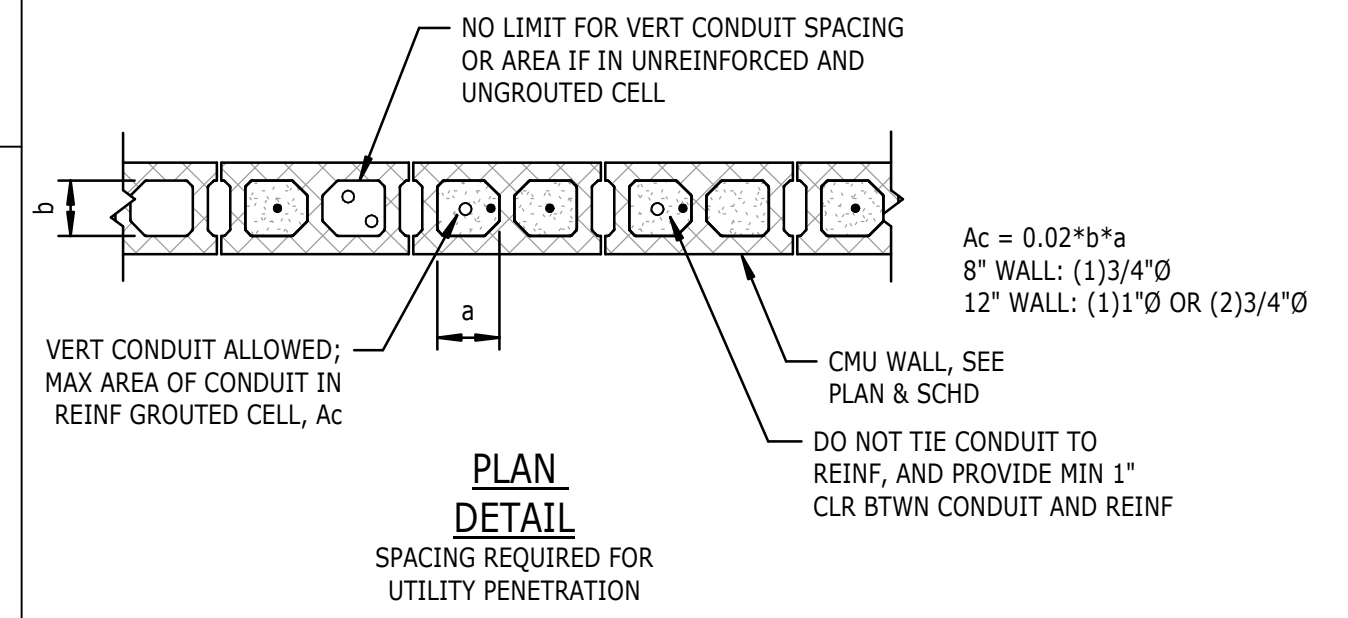
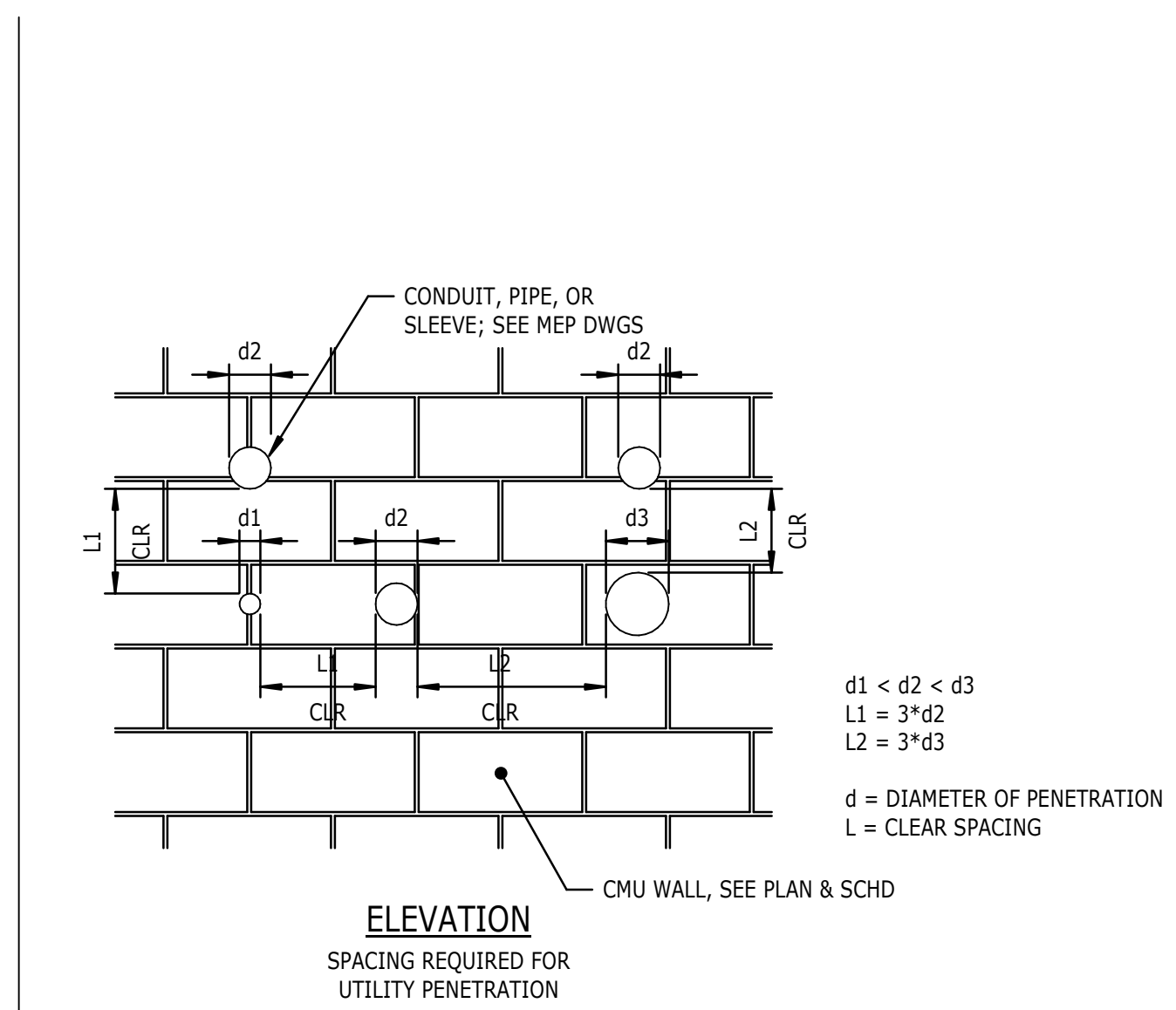


3  
S-402  
DETAIL  
MEP PENETRATIONS IN LOAD BEARING CMU WALL  
NTS  
NOTES:  
1. REFER TO MEP DRAWINGS FOR ALL OPENING SIZES AND LOCATIONS.  
2. CONTRACTOR TO PROVIDE STEEL DOUBLE ANGLE LINTEL AS SHOWN HEREIN WHERE REQUIRED FOR MEP COORDINATION WITH CEILING ELEVATION (SEE ARCHITECTURAL DRAWINGS) AND FOR OPENINGS WIDER THAN 4'-4" (NOT TO EXCEED 6'-0").

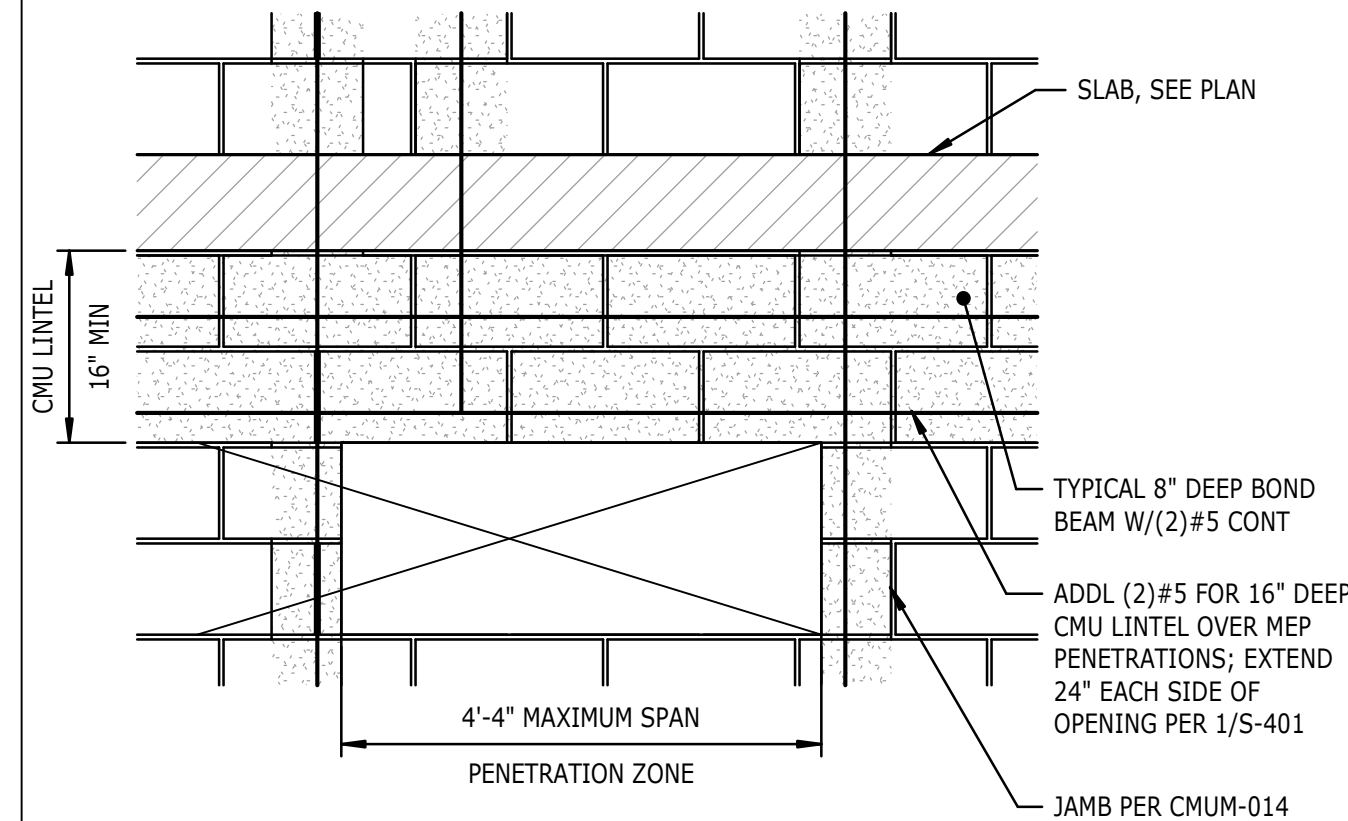


ALTERNATE DETAIL FOR USE  
WHERE CMU WALL CONNECTION  
IS EXPOSED TO VIEW

4  
S-402  
DETAIL  
TYPICAL INTERIOR PARTITION BRACING  
NTS  
NOTES:  
1. THIS DETAIL APPLIES WHERE THE DISTANCE BETWEEN INTERSECTING WALLS EXCEEDS 24'-0" FOR 8" CMU OR LARGER, 18'-0" FOR 6" CMU, OR 12'-0" FOR 4" CMU.



1  
S-402  
DETAIL  
CONDUIT PENETRATIONS IN CMU WALL  
NTS  
NOTES:  
1. REFER TO MEP DRAWINGS FOR ALL TELECOM, CONDUIT, AND PIPES 8"Ø AND SMALLER. CONTRACTOR TO FOLLOW DETAIL SPACING REQUIREMENTS FOR LAYOUT. IF SPACING CANNOT BE MAINTAINED, PENETRATIONS MUST BE GROUPED BELOW CMU LINTEL. SEE ADDITIONAL TYPICAL DETAILS.  
2. CONDUITS SHALL NOT PENETRATE BOND BEAMS NOR LINTELS.  
3. PIPES WITH LIQUID, GAS, OR VAPORS HIGHER THAN 150°F ARE NOT PERMITTED VERTICALLY WITHIN WALLS.  
4. PIPES WITH PRESSURE IN EXCESS OF 55 PSI ARE NOT PERMITTED VERTICALLY WITHIN WALLS.  
5. PIPES WITH WATER OR LIQUID SUBJECT TO FREEZING ARE NOT PERMITTED VERTICALLY WITHIN WALLS.



2  
S-402  
DETAIL  
MEP PENETRATIONS IN LOAD BEARING CMU WALL  
NTS  
NOTES:  
1. REFER TO MEP DRAWINGS FOR ALL OPENING SIZES AND LOCATIONS.  
2. CONTRACTOR TO COORDINATE ALL OPENINGS SMALLER THAN 8"x8" (OR 8"Ø) PER CMUM-023. IF SPACING CANNOT BE MAINTAINED, PENETRATIONS MUST BE GROUPED BELOW CMU LINTEL SHOWN HEREIN.  
3. OPENINGS OR GROUPED PENETRATIONS LESS THAN 1'-10" WIDE CAN BE LOCATED BELOW THE TYPICAL 8" BOND BEAM SHOWN HEREIN. PROVIDE REINFORCEMENT WITHIN 16" OF OPENING ON ALL SIDES PER CMUM-014 AND MAINTAIN 24" MINIMUM BETWEEN OPENINGS.  
4. OPENINGS OR GROUPED PENETRATIONS 1'-10" TO 4'-4" WIDE SHALL FOLLOW THIS DETAIL. PROVIDE REINFORCEMENT WITHIN 16" OF OPENING ON ALL SIDES PER CMUM-014 AND MAINTAIN 24" MINIMUM BETWEEN OPENINGS.  
5. CONTRACTOR TO VERIFY LINTEL DEPTH AND MAXIMUM OPENING HEIGHT WITH CEILING ELEVATION (SEE ARCHITECTURAL DRAWINGS). WHERE CMU LINTEL DEPTH CANNOT BE MAINTAINED, PROVIDE STEEL DOUBLE ANGLE LINTEL PER CMUM-025.

PROJECT INFORMATION

# NORTH WATERFRONT PARK

10 COWAN STREET  
WILMINGTON, NORTH CAROLINA

**CITY OF WILMINGTON**  
Community Services Department  
PO Box 1810, Wilmington, NC 28402

**LANDSCAPE ARCHITECTURE = L**  
**HARGREAVES JONES**  
180 Varick Street, Suite 204, New York, NY 10014  
www.hargreavesjonesla.com

**ARCHITECTURE = A**  
**SAGE & COOMBE ARCHITECTS**  
12-16 Veslly St, 5th Floor, New York, NY 10013  
www.sageandcoombe.com

**ACOUSTIC/THEATER/AV = AT**  
**OAP.P.C.**  
77 Water Street, New York NY 10015  
www.arup.com

**CIVIL ENGINEERING = C**  
**STRUCTURAL ENGINEERING = S**  
**GEOTECHNICAL ENGINEERING = G**  
**STEWART**  
223 S. West St., Suite 1100, Raleigh, NC 27603  
www.stewartinc.com

**ENVIRONMENTAL ENGINEERING = EE**  
**SOIL & ENVIRONMENTAL CONSULTANTS, PA**  
8412 Falls of Neuse Road, Suite 104, Raleigh, NC 27615  
www.sandec.com

**EAGLE RESOURCES**  
PO Box 11189, Southport, NC 28461  
www.eagleresources.com

**IRRIGATION = I**  
**CLARK IRRIGATION DESIGN & CONSULTING, INC**  
PO Box 650, Lenoir, GA 30553  
www.clarkirrigationdesign.com

**SOIL DESIGN = LS**  
**LANDIS, PLLC**  
3908 Bentley Brook Dr. Raleigh, NC 27612  
www.landispllc.com

**MECHANICAL ENGINEERING = M**  
**ELECTRICAL ENGINEERING = E**  
**PLUMBING ENGINEERING = P**  
**FIRE PROTECTION = FP**  
**CHEATHAM & ASSOCIATES, PA**  
3412 Enterprise Drive, Wilmington NC 28405  
www.cheathampa.com

**MARINE STRUCTURAL ENGINEERING = SM**  
**ANDREW CONSULTING ENGINEERS**  
3511 Peachtree Avenue, Suite 300, Wilmington, NC 28403  
www.andrewengineers.com

**WATER FOUNTAIN DESIGN = WF**  
**COMMERCIAL AQUATIC ENGINEERING**  
6500 Carlson Drive, Eden Prairie, MN 55346  
www.fountaindesigns.com

**LIGHTING DESIGN = EL**  
**TILLOTSON DESIGN ASSOCIATES**  
40 Worth Street, Room 703, New York NY 10013  
www.tillotsondesign.com

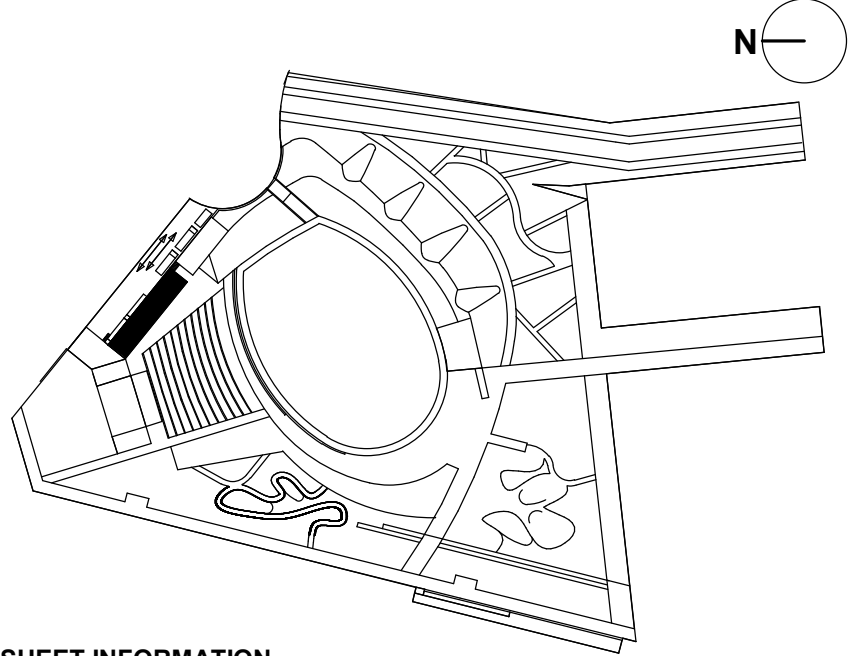
SEAL/SIGNATURE



ISSUE/REVISIONS Firm License #C-1051

NO.	DESCRIPTION	DATE
1	95% CONSTRUCTION DOCUMENTS P3 & P4	12/04/2019

KEY MAP



**SHEET INFORMATION**  
Project No.: NWP 1701  
Drawn By: DJ, TM  
Checked By: JF  
Date: 12/04/2019  
Scale: 3/4" = 1'-0"

SHEET TITLE

**CMU DETAILS - STAGE BUILDING**

**STRUCTURAL**

SHEET NO.

**S-402 - P3**















