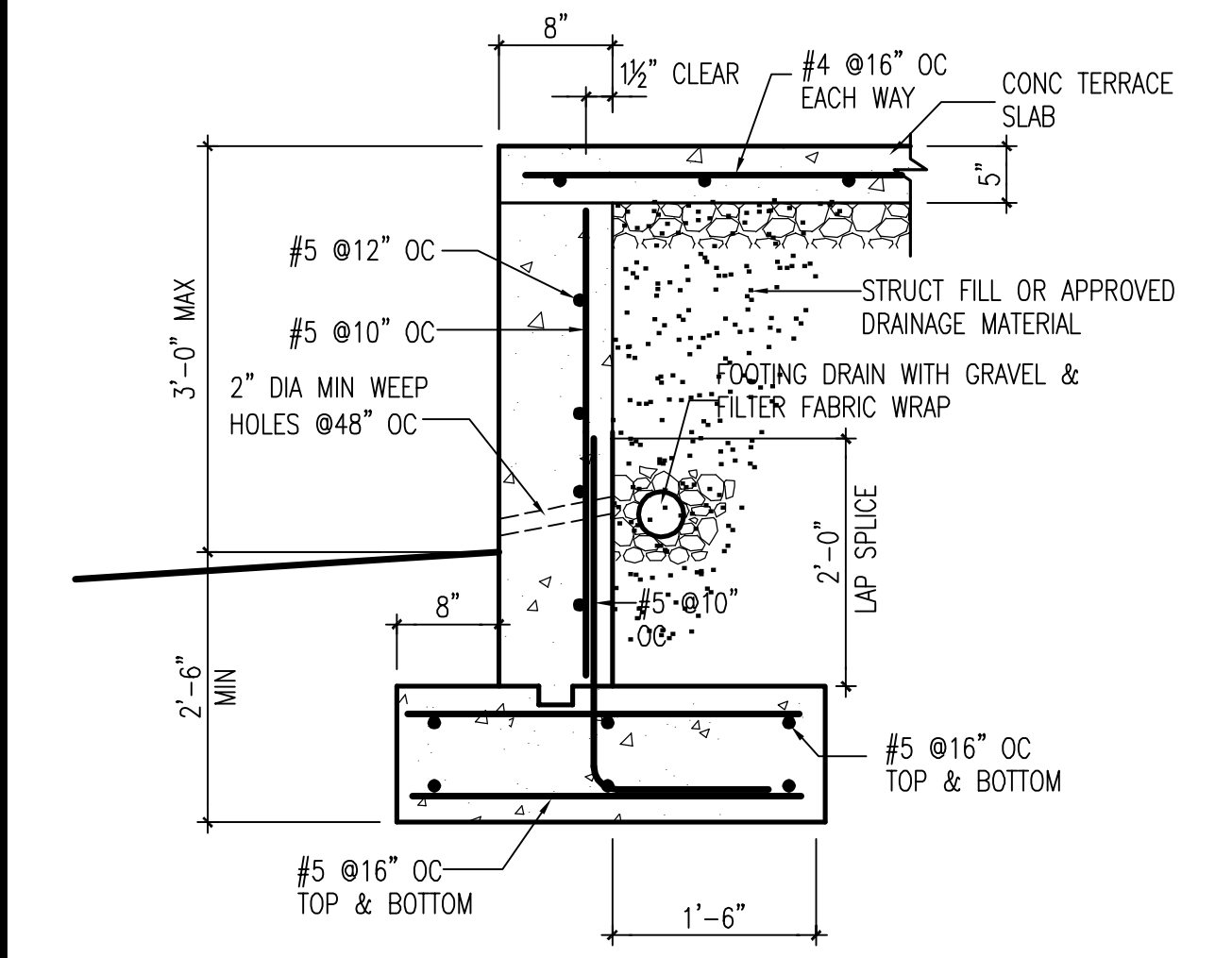
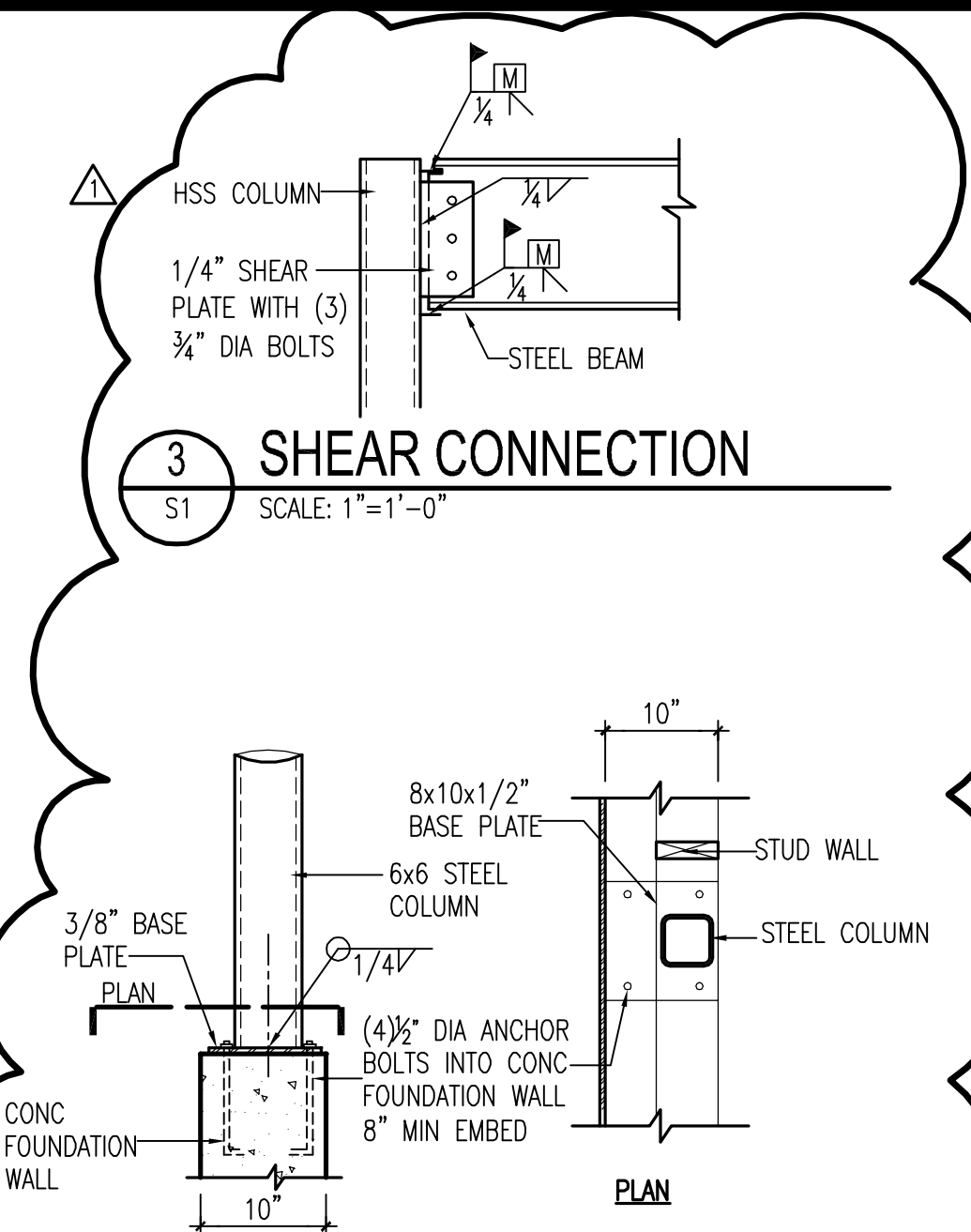


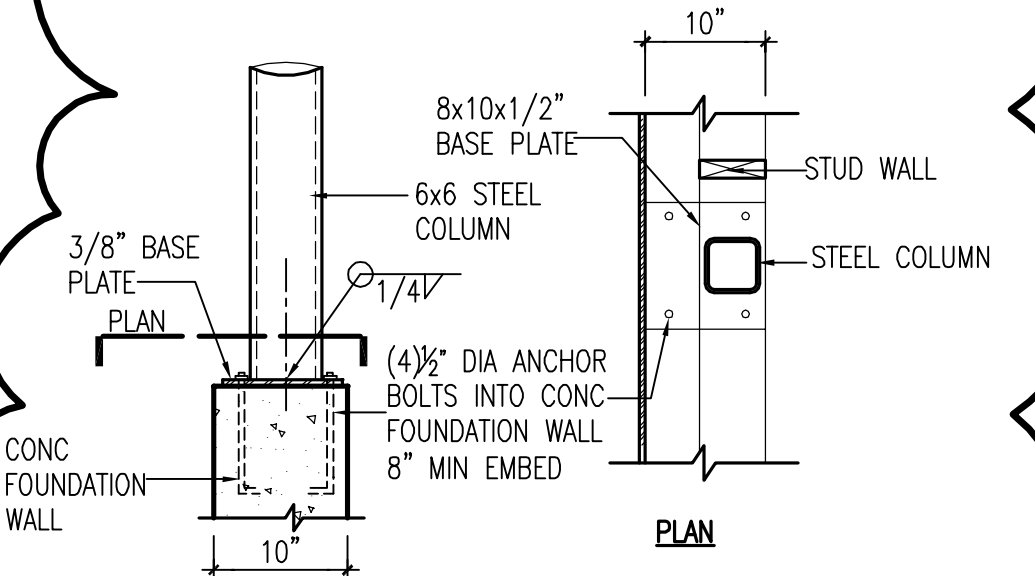
**1 CONCRETE STAIR DETAIL**  
S1 SCALE: 3/4"=1'-0"



**2 TERRACE RETAINING WALL**  
S1 SCALE: 3/4"=1'-0"



**3 SHEAR CONNECTION**  
S1 SCALE: 1"=1'-0"



**4 SHEAR CONNECTION**  
S1 SCALE: 3/4"=1'-0"

**STRUCTURAL NOTES**

- A. BUILDING CODE**  
1. INTERNATIONAL RESIDENTIAL CODE (IRC) 2012 EDITION AS AMENDED BY THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE.
- B. GENERAL REQUIREMENTS**  
1. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AS REQUIRED UNTIL ALL PERMANENT CONNECTIONS HAVE BEEN MADE. DIMENSIONS TAKE PRECEDENCE OVER SCALED DRAWINGS.  
2. REFER TO THE MANUFACTURER'S SPECIFICATIONS AND/OR RECOMMENDATIONS ALWAYS.  
3. DESIGN LOADS:  
FLOOR LIVE LOAD (NON-SLEEPING AREAS) = 40 PSF  
FLOOR LIVE LOAD (SLEEPING AREAS) = 30 PSF  
FLOOR DEAD LOAD = 10 PSF  
STAIR LOAD = 40 PSF  
SNOW LOAD = 30 PSF  
PRESUMED SOIL BEARING CAPACITY = 1500 PSF  
DESIGN WIND SPEED = 90 MPH  
LIVE LOAD DEFLECTION LIMIT = L/360  
TOTAL LOAD DEFLECTION LIMIT = L/240

- C. FASTENERS**  
1. ALL FASTENERS IN EXTERIOR APPLICATIONS SHALL BE HOT-DIPPED GALVANIZED.  
2. ANCHOR BOLTS SHALL BE S.R.E 1/2" DIAMETER PER ASTM A307.  
3. JOIST HANGERS SHALL BE USED TO SUPPORT ALL PURLINS, JOISTS, AND BEAMS NOT FRAMED OVER SUPPORTING MEMBERS UNLESS NOTED OTHERWISE.  
4. MACHINE BOLT AND CARRIAGE BOLT HOLES IN WOOD SHALL BE DRILLED 1/16" LARGER THAN DIAMETER OF THE BOLT.  
5. LAG SCREWS SHALL BE SQUARE HEAD, OF STRUCTURAL GRADE STEEL, AND SHALL BE PLACED WITH WASHERS UNDER THREAD.  
6. USE SIMPSON STRONG-DRIVE SDW TRUSS-PLY SCREWS FOR FASTENING BUILT-UP WOOD COLUMNS TOGETHER. FOLLOW SIMPSON TRUSS-PLY SCHEDULE FOR INSTALLATION NUMBER AND TYPE OF FASTENERS.

- D. CONCRETE**  
1. ALL CONCRETE TO HAVE MINIMUM COMPRESSIVE STRENGTH (f'c) = 3000 PSI IN 28 DAYS. EXTERIOR AND GARAGE SLABS SHALL HAVE A MINIMUM STRENGTH OF 3500 PSI. ALL CONCRETE TO BE POURED IN ACCORDANCE WITH ACI 301 SPECIFICATIONS. CONCRETE EXPOSED TO WEATHER TO BE POURED IN ACCORDANCE WITH ACI 301 SPECIFICATIONS. CONCRETE EXPOSED TO WEATHER TO BE POURED IN ACCORDANCE WITH C.R.S.I. STANDARDS. ALL REINFORCING STEEL TO MEET ASTM-A-615 GRADE 60. PLACING PLANS AND SHOP FABRICATION DETAILS SHALL BE IN ACCORDANCE WITH "THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES". FURNISH SUPPORT BARS AND ALL REQUIRED ACCESSORIES IN ACCORDANCE WITH C.R.S.I. STANDARDS. ALL REINFORCING TO BE SPLICED A MINIMUM OF 30 BAR DIAMETERS.

- E. MASONRY**  
1. BRICK VENEER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE "BUILDING CODE REQUIREMENTS FOR ENGINEERED BRICK MASONRY" BY THE BRICK INSTITUTE OF AMERICA, AND ACI 530-11 / 530.1-11 "BUILDING CODE REQUIREMENTS AND SPECIFICATION FOR MASONRY STRUCTURES".  
VENEER BRICK.....ASTM C216, GRADE SW  
MORTAR.....ASTM C270, TYPE S  
2. BRICK VENEER SHALL BE TIED TO WALL (WOOD STUDS) WITH WIRE ANCHORS. ANCHORS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION CONFORMING TO ASTM A-153 CLASS B2. SPACING OF ANCHORS SHALL BE 16" O.C. VERTICAL AND 24" O.C. HORIZONTAL.

- F. WOOD**  
1. ALL FRAMING LUMBER SHALL BE HEM-FIR, GRADE #2, OR SPRUCE-PINE-FIR, GRADE #1 / #2, OR BETTER, HAVING THE FOLLOWING MINIMUM PROPERTIES (BASED ON 2x12 MEMBERS):  
-BENDING STRESS "Fb" = 850 PSI FOR SINGLE MEMBER USE  
-HORIZONTAL SHEAR "Fv" = 135 PSI  
-COMPRESSION PERPENDICULAR TO GRAIN "Fc" = 405 PSI  
-COMPRESSION PARALLEL TO GRAIN "Fc11" = 1,150 PSI  
-MODULUS OF ELASTICITY "E" = 1,300,000 PSI  
NOTE: SPRUCE-PINE-FIR (SOUTH) IS NOT ACCEPTABLE. SPRUCE-PINE-FIR MUST BE GRADED BY NLGA.  
2. ALL EXPOSED EXTERIOR FRAMING AND FRAMING IN CONTACT WITH MASONRY OR CONCRETE SHALL BE PRESSURE-TREATED. LUMBER OR STRUCTURAL POSTS SHALL BE SOUTHERN YELLOW PINE, GRADE #2 OR BETTER, HAVING THE FOLLOWING MINIMUM PROPERTIES (BASED ON 2X12 LUMBER):  
-BENDING STRESS "Fb" = 975 PSI FOR SINGLE MEMBER USE  
-HORIZONTAL SHEAR "Fv" = 175 PSI  
-COMPRESSION PERPENDICULAR TO GRAIN "Fc" = 565 PSI  
-COMPRESSION PARALLEL TO GRAIN "Fc11" = 1,450 PSI  
-MODULUS OF ELASTICITY "E" = 1,600,000 PSI  
3. PLYWOOD LAMINATED VENEER LUMBER (LVL) BEAMS SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:  
-BENDING STRESS "Fb" = 2400 PSI  
-HORIZONTAL SHEAR "Fv" = 285 PSI  
-MODULUS OF ELASTICITY "E" = 1,900,000 PSI

4. ALL WALL STUDS SHALL BE SPF STUD GRADE OR BETTER, HAVING THE FOLLOWING MINIMUM PROPERTIES (BASED ON 2x6 MEMBERS):  
-COMPRESSION PARALLEL TO GRAIN "Fc11" = 725 PSI  
-BENDING STRESS "Fb" = 675 PSI FOR SINGLE USE MEMBERS  
-MODULUS OF ELASTICITY "E" = 1,200,000 PSI  
5. UNLESS NOTED OTHERWISE, FASTENING FOR STRUCTURAL MEMBERS SHALL FOLLOW INTERNATIONAL RESIDENTIAL CODE TABLE R602.3(1).

6. PREFABRICATED JOIST HANGERS, BEAM HANGERS, POST CAPS AND POST BASES SHALL BE SIZED AND ATTACHED PER MANUFACTURER'S RECOMMENDATION. FASTENERS AND CONNECTORS UTILIZED WITH PRESSURE-TREATED MEMBERS SHALL MEET G185 HOT-DIPPED GALVANIZING.  
7. PREFABRICATED STEEL HANGERS SHALL BE INSTALLED AS FOLLOWS:  
a. ALL JOISTS, RAFTERS, AND BEAMS FLUSH-SUPPORTED TO OTHER FRAMING SHALL HAVE PREFABRICATED JOIST/BEAM HANGERS.  
b. HANGERS SHALL BE SIZED IN ACCORDANCE WITH MANUFACTURER'S CATALOGUE FOR THE JOIST/BEAM TYPE, NUMBER OF PLIES, DEPTH, AND WIDTH.  
c. WHERE HANGER LOADS ARE NOTED ON THE DRAWINGS, HANGERS SHALL BE SIZED TO CARRY THE LOAD VALUE.  
d. PROVIDE SPECIAL SLOPED AND/OR SKEWED HANGERS FOR SLOPED AND SKEWED MEMBERS.  
8. ANCHOR BOLTS CONNECTING PRESSURE TREATED WOOD PLATES TO MASONRY OR CONCRETE SHALL BE HOT-DIPPED GALVANIZED OR STAINLESS STEEL.  
9. ALL FREESTANDING POSTS SHALL HAVE PREFAB POSTCAP AND BASE. POSTS WITHIN WALLS SHALL HAVE PREFAB CAP ATTACHED TO BEAM. POSTS BEARING ON MASONRY OR CONCRETE SHALL HAVE PREFAB BASE. STRUCTURAL ENGINEERS DURING CONSTRUCTION.

- G. SHEATHING**  
1. FLOOR SHEATHING SHALL BE 23/32 (3/4) INCH APA RATED STURD-I-FLOOR, TONGUE AND GROOVE, PLYWOOD. PANELS SHALL HAVE LONG DIMENSION ORIENTED ACROSS THREE OR MORE JOISTS AND SHALL BE FASTENED WITH CONSTRUCTION ADHESIVE AND 10d NAILS AT 6 INCHES ON CENTER AT PANEL EDGES AND AT 12 INCHES ON CENTER AT INTERMEDIATE SUPPORTS. UNLESS NOTED OTHERWISE, PANEL EDGES NEED NOT BE BLOCKED.  
2. EXTERIOR WALL SHEATHING SHALL BE 7/16 (1/2) INCH THICK APA RATED WOOD STRUCTURAL PANELS. FASTEN PANELS TO STUDS WITH 8d NAILS AT 6 INCHES ON CENTER AT PANEL EDGES AND AT 12 INCHES ON CENTER AT INTERMEDIATE SUPPORTS. UNLESS NOTED OTHERWISE, PANEL EDGES NEED NOT BE BLOCKED.  
3. ROOF SHEATHING SHALL BE 3/4 INCH APA RATED WOOD PANELS WITH SPAN RATING OF 24/0 OR BETTER. FASTEN PANELS TO FRAMING WITH 10d NAILS AT 6 INCHES ON CENTER AT PANEL EDGES AND 12 INCHES ON CENTER AT INTERMEDIATE SUPPORTS. ORIENT LONG DIMENSION OF PANELS ACROSS THREE OR MORE SUPPORTS. EDGES NEED NOT BE BLOCKED, UNLESS OTHERWISE NOTED.

- H. MISCELLANEOUS**  
A. ALL WOOD BLOCKING, NAILERS, ETC. SHALL BE ATTACHED TO STEEL OR CONCRETE FRAMING WITH POWER ACTUATED FASTENERS OR 1/2" DIAMETER BOLTS UNLESS NOTED OTHERWISE. FASTENERS SHALL BE SPACED AT 24" MAXIMUM O.C. FASTENERS SHALL HAVE A MINIMUM CAPACITY OF 100 POUNDS IN SHEAR AND PULLOUT UNLESS NOTED OTHERWISE.

WARNING: THE STRUCTURAL INTEGRITY OF THE BUILDING SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION ACCORDING TO PLANS AND SPECIFICATIONS. STRUCTURAL MEMBERS ARE NOT SELF-BRACING UNTIL PERMANENTLY AFFIXED TO THE STRUCTURE AS DIRECTED. THE STRUCTURAL ENGINEERS ASSUME NO LIABILITY FOR THE STRUCTURE DURING CONSTRUCTION UNLESS THE CONSTRUCTION METHOD AND BRACING ARE INCLUDED IN THE PLANS AND SPECIFICATIONS OR ARE SUPERVISED BY THE STRUCTURAL ENGINEERS DURING CONSTRUCTION.

**STEEL ANGLE BRICK LINTEL SCHEDULE**

SIZE (INCHES)	OPENING	1 STORY ABOVE	2 STORIES ABOVE
3 x 3 x 1/4	6'-0"	4'-6"	3'-0"
4 x 3 x 1/4	8'-0"	6'-0"	4'-6"
5 x 3 1/2 x 5/16	10'-0"	8'-0"	6'-0"
6 x 3 1/2 x 5/16	14'-0"	9'-6"	7'-0"
(2) 6 x 3 1/2 x 5/16	20'-0"	12'-0"	9'-6"

**FOOTING SCHEDULE**

- (F1) 2'-0" x 2'-0" x 1'-0" WITH (2)#4 EACH WAY
- (F2) 2'-6" x 2'-6" x 1'-0" WITH (2)#4 EACH WAY
- (F3) 2'-8" x 2'-8" x 1'-0" WITH (3)#4 EACH WAY
- (F4) 4'-8" x 4'-8" x 12" WITH #4 @8" OC EACH WAY
- (F5) 5'-0" x 5'-0" x 12" WITH #4 @8" OC EACH WAY
- (F6) 5'-0" x 5'-0" x 14" WITH #4 @8" OC EACH WAY

**Residence**

9031 Old Dominion Drive  
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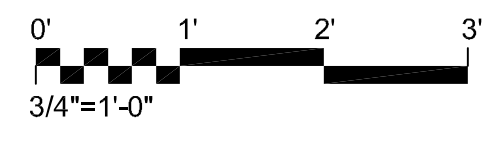
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graphic scales



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**Structural Notes & Foundation Details**