GENERAL: GOVERNING BUILDING CODE: 2006 VIRGINIA UNIFORM STATEWIDE BUILDING CODE (2006 INTERNATIONAL BUILDING CODE) UNIFORM FLOOR LIVE LOADS: WIND LOAD CRITERIA:

ALL FLOORS, EXCEPT AS NOTED 250 PSF ROOF LIVE LOAD (NON-REDUCIBLE) 20 PSF

BASIC WIND SPEED 90 MPH WIND IMPORTANCE FACTOR (IW) 1.15 WIND EXPOSURE CONDITION INTERNAL PRESSURE COEFFICIENT (GCPI) 0.18 BUILDING CATEGORY SNOW LOAD CRITERIA:

GROUND SNOW LOAD (PG) 25 PSF FLAT ROOF SNOW LOAD (PF) 20 PSF SNOW EXPOSURE FACTOR (CE) 1.0 SNOW IMPORTANCE FACTOR (IS) 1.1 SNOW THERMAL FACTOR (CT) 1.0

SEISMIC LOAD CRITERIA: SEISMIC IMPORTANCE FACTOR (IE) 1.25 SEISMIC OCCUPANCY CATEGORY III MAPPED SPECTRAL RESPONSE COEFFICIENT, (SS) MAPPED SPECTRAL RESPONSE COEFFICIENT, (S1) SITE CLASS (ASSUMED/PER GEOTECHNICAL REPORT) D SPECTRAL RESPONSE COEFFICIENT, (SDS) 0.267 SPECTRAL RESPONSE COEFFICIENT, (SD1) 0.112 SEISMIC DESIGN CATEGORY DESIGN BASE SHEAR SEISMIC RESPONSE COEFFICIENT, (CS) 0.11 RESPONSE MODIFICATION FACTOR (R) 3

SUBMIT SHOP DRAWINGS AND MATERIAL CERTIFICATIONS FOR REVIEW FOR THE FOLLOWING ITEMS. DO NOT FABRICATE MATERIALS UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND ALL EXCEPTIONS HAVE BEEN RESOLVED.

A. CONCRETE MIX DESIGNS, TESTS AND CERTIFICATES B. CONCRETE REINFORCING STEEL SHOP DRAWINGS C. MASONRY UNIT TESTS AND CERTIFICATES

D. MASONRY REINFORCING STEEL SHOP DRAWINGS E. MASONRY MORTAR AND GROUT MIX DESIGNS, TESTS AND CERTIFICATES

F. ROOF TRUSS SHOP DRAWINGS AND DESIGN CALCULATION BEARING THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER.

CONTRACT DRAWINGS SHALL NOT BE MARKED AND SUBMITTED AS SHOP DRAWINGS.

THE CONTRACTOR SHALL VERIFY ALL EXISTING FIELD CONDITIONS, DIMENSIONS, AND ELEVATIONS BEFORE PROCEEDING WITH CONSTRUCTION. THE CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES AND PROTECT FROM DAMAGE DURING EXCAVATION AND BACKFILLING OPERATIONS.

10. STRUCTURAL FRAMING SHALL BE TEMPORARILY BRACED UNTIL ERECTION IS COMPLETE AND PERMANENT CONNECTIONS AND BRACING MEMBERS ARE INSTALLED.

. ALL STRUCTURAL MATERIALS, COMPONENTS AND SYSTEMS SHALL BE TESTED AND INSPECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE BUILDING CODE. SUBMIT INSPECTION REPORTS FOR REVIEW BY THE A/E. CONTRACTOR SHALL PROVIDE TEST AND INSPECTION SERVICES BY A QUALIFIED TESTING AND INSPECTION FIRM.

FOUNDATIONS:

DESIGN SOIL BEARING CAPACITY: 2,000 PSF (ASSUMED).

. WHERE FOOTING OR SLAB ON GRADE IS TO BE PLACED ON FILL. ALL TOPSOIL, ROOTS TRASH AND OTHER EXTRANEOUS MATERIALS SHALL BE REMOVED AND REPLACED WITH SELECT FILL COMPACTED TO A MINIMUM OF 95% OF ITS MAXIMUM DENSITY AT ITS OPTIMUM MOISTURE CONTENT AS MEASURED BY THE TOP 12" SHALL BE COMPACTED TO A MINIMUM OF 98%. EACH LAYER OF FILL SHALL BE NO GREATER THAN 8" THICK AND SHALL BE COMPACTED AS SPECIFIED PRIOR TO PLACEMENT OF THE FOLLOWING LAYER.

". THE CONTRACTOR SHALL RETAIN AN INDEPENDENT TESTING AGENCY WITH A QUALIFIED GEOTECHNICAL ENGINEER LICENSED IN THE COMMONWEALTH OF VIRGINIA TO INSPECT AND APPROVE THE SUBGRADE INCLUDING FILL AND BACKFILL MATERIALS AND OPERATIONS. ALL FOUNDATION BEARING STRATA SHALL BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO ANY CONCRETE PLACEMENT. IF UNSUITABLE SOILS ARE ENCOUNTERED, THE GEOTECHNICAL ENGINEER AND THE A/E SHALL DETERMINE THE MEANS OF CORRECTIVE ACTION INCLUDING BUT. NOT LIMITED TO ITEMS 4 OR 5 BELOW.

4. FOOTING BEARING ELEVATIONS SHALL BE LOWERED WHERE REQUIRED TO OBTAIN THE DESIGN SOIL BEARING CAPACITY HEREIN SPECIFIED.

5. FOOTINGS MAY BE UNDERCUT AND BACKFILLED WITH COMPACTED STONE OR INCREASED IN THICKNESS AS REQUIRED.

6. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE WELL—BRACED SHORING AT EXCAVATIONS NEAR EXISTING BUILDINGS AND CONSTRUCTION TO PREVENT SETTLEMENT AND TO PREVENT CAVE—INS.

ALL SLABS ON GRADE SHALL BE PLACED 10 MIL POLYETHYLENE VAPOR BARRIER OVER 4" BASE OF WELL-COMPACTED GRAVEL. THE GRAVEL SHALL BE PLACED ON ORIGINAL SOIL OR ON COMPACTED EARTH FILL AS DESCRIBED ABOVE.

8. PLACE CONCRETE FOR SLAB ON GRADE IN CONTINUOUS STRIPS AND PROVIDE CRACK CONTROL JOINTS AT LOCATIONS A MAXIMUM SPACING OF 15 FEET ON CENTER, UNLESS OTHERWISE NOTED.

CONCRETE:

INDICATED.

. ALL CONCRETE SHALL BE 145 PCF NORMAL WEIGHT WITH A COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS:

2. ALL DETAILING, FABRICATION AND PROCEDURES OF CONCRETE PLACEMENT SHALL CONFORM WITH THE LATEST EDITIONS OF ACI 301 — "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS", ACI 315 — "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT", AND ACI 318 — "BUILDING CODE REQUIREMENTS FOR REINFORCED

REINFORCING BARS SHALL BE ROLLED FROM NEW BILLET STEEL CONFORMING WITH ASTM A615/A615M, GRADE 60, UNLESS OTHERWISE NOTED.

4. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 AND A82.

5. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR ALL REINFORCEMENT, UNLESS OTHERWISE NOTED: A. CONCRETE CAST AGAINST AND PERMANENTLY

EXPOSED TO EARTH B. CONCRETE EXPOSED TO EARTH OR WEATHER:

#6 THROUGH #18 BARS 2" #5 BAR AND SMALLER 1 1/2" C. CONCRETE NOT EXPOSED TO EARTH OR WEATHER: SLABS, WALLS, AND JOISTS 3/4" BEAMS AND COLUMNS 1 1/2"

6. ISOLATION JOINT MATERIAL SHALL BE 1/2" THICK, UNLESS OTHERWISE NOTED.

PROVIDE CORNER BARS AT ALL FOOTING STEPS AND CORNERS UNLESS OTHERWISE NOTED. BARS SHALL BE A MINIMUM OF 2'-6" LONG AND SHALL HAVE THE SAME SIZE AND SPACING AS THE HORIZONTAL REINFORCING.

8. LAP ALL REINFORCING SPLICES AT LEAST 48 BAR DIAMETERS (24" MINIMUM) UNLESS OTHERWISE NOTED.

WELDED WIRE FABRIC SHALL HAVE END LAPS OF ONE FULL MESH PLUS 2" BETWEEN CROSS WIRES AND EDGE LAPS OBTAINED BY OVERLAPPING LONGITUDINAL SELVAGE WIRES 2" AND WIRING ALL LAPS SECURELY TOGETHER. WELDED WIRE FABRIC SHALL EXTEND INTO SUPPORT BEAMS AND WALLS FOR ANCHORAGE UNLESS AN EXPANSION JOINT IS

10. ALL REINFORCING SHALL BE SECURELY WIRED TOGETHER IN FORMS AS CALLED FOR IN "PLACING REINFORCING BARS" BY CRSI.

STRUCTURAL STEEL:

1. STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS: STRUCTURAL SHAPES AND PLATES ASTM A992/A992M, GRADE 50 ANCHOR BOLTS ASTM A307 OR A36/A36M HIGH STRENGTH BOLTS ASTM A325

2. DESIGN, FABRICATION, ERECTION, AND WORKMANSHIP SHALL CONFORM TO THE "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN," AISC ASD, NINTH EDITION.

3. ALL SHOP AND FIELD WELDING SHALL BE EXECUTED BY WELDERS AND WELDING OPERATORS WHO HAVE BEEN PREVIOUSLY QUALIFIED BY TEST AS PRESCRIBED IN THE "CODE FOR WELDING IN BUILDING CONSTRUCTION". AWS D1.1. OF THE AMERICAN WELDING SOCIETY TO PERFORM THE TYPES OF WELDS REQUIRED ON THIS PROJECT.

4. ALL WELDING ELECTRODES SHALL BE E70XX SERIES.

5. SHOP PAINTING: ALL SURFACES SHALL BE PRIME PAINTED IN THE SHOP WITH AN APPROVED PRIMER COMPATIBLE WITH THE TOP COAT, PRIMER COAT SHALL HAVE A MINIMUM OF 2 MILS DRY FILM THICKNESS. SPOT PAINT ALL FIELD WELDS AND SERIOUS ABRASIONS TO THE SHOP COAT WITH PAINT COMPATIBLE WITH THE SHOP COAT, DO NOT PAINT STEEL SURFACES THAT ARE TO BE EMBEDDED IN CONCRETE OR MORTAR OR WHICH ARE TO RECEIVE SPRAYED-ON

6. ALL EXPOSED STEEL SHALL BE PAINTED.

7. FLOOR GRATING SHALL BE GALVANIZED STEEL, WELDED TYPE WITH 1 3/4" X 1/8" BEARING BARS AT 1 3/16" ON CENTER AND CROSS BARS AT 4" ON CENTER, UNLESS OTHERWISE NOTED. METAL GRATING SHALL BE GALVANIZED COATING IN ACCORDANCE WITH ASTM A123/A123M, G90.

CONCRETE / BRICK MASONRY:

1. ALL DETAILING, FABRICATION, AND PROCEDURES OF CONCRETE MASONRY SHALL CONFORM WITH THE LATEST EDITIONS OF ACI 530.1 — "SPECIFICATIONS FOR MASONRY STRUCTURES", AND ACI 530 — "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES"

2. CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C90, GRADE N-1 UNLESS OTHERWISE NOTED. COMPRESSIVE STRENGTH ON NET CROSS SECTIONAL AREA OF INDIVIDUAL MASONRY UNIT SHALL BE 1900 PSI. NET AREA COMPRESSIVE STRENGTH OF MASONRY (F'M) SHALL BE 1500 PSI.

3. MASONRY SHALL BE LAID IN ASTM C270, TYPE "S" MORTAR, UNLESS NOTED AND SHALL HAVE FULL MORTAR COVERAGE OF THE FACE SHELLS IN BOTH HORIZONTAL AND VERTICAL JOISTS.

4. GROUT FOR REINFORCED MASONRY SHALL CONFORM TO ASTM C476.

5. GROUT FOR REINFORCED MASONRY SHALL HAVE A COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS AND A SLUMP OF 8" TO 11".

6. MAXIMUM HEIGHT TO WHICH MASONRY SHALL BE LAID BEFORE FILLING IS 3 FEET FOR PEA GRAVEL CONCRETE AND 6 FEET FOR FINE GROUT.

7. PROVIDE CLEANOUT OPENINGS AT THE BOTTOM OF EACH GROUT LIFT. CLEANOUT OPENINGS SHALL BE PROVIDED AT EACH CELL TO BE FILLED WITH GROUT.

8. REINFORCING GRADE AND DETAILS SHALL BE THE SAME AS FOR CONCRETE. TIE IN POSITION AND PLACE CONCRETE AROUND REINFORCING DURING CONSTRUCTION OF MASONRY. DO NOT PUSH REINFORCING DOWN INTO PREVIOUSLY PLACED GROUT FILL. SET BOLT SIMILARLY.

9. HORIZONTAL BARS MAY BE SPLICED WITH A MINIMUM LAP OF 48 TIMES THE BAR DIAMETER, UNLESS OTHERWISE NOTED.

10. PROVIDE HORIZONTAL REINFORCING AT 16" ON VERTICAL CENTER AND IN JOINTS IMMEDIATELY ABOVE AND BELOW ALL OPENINGS. EXTEND REINFORCEMENT A MINIMUM OF 2'-0" BEYOND THE JAMB ON EACH SIDE OF AN OPENING. HORIZONTAL JOINT REINFORCING SHALL BE LAPPED A MINIMUM OF 8". JOINT REINFORCING SHALL STOP AT CONTROL JOINTS. HORIZONTAL REINFORCING SHALL BE GALVANIZED LADDER TYPE JOINT REINFORCEMENT WITH (2) 9 GAGE (W1.7) RODS AND 9 GAGE CROSS RODS, HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A153 - CLASS B-2.

11. SPLICED VERTICAL REINFORCING BARS SHALL OCCUPY THE SAME CELL. MINIMUM LAP SPLICE SHALL BE 24" FOR #3 AND #4 BARS AND 36" FOR #5 AND #6 BARS. SPLICED BARS SHALL BE TIED TOGETHER.

12. VERTICAL REINFORCEMENT IN WALLS SHALL BE SUPPORTED AND SECURED AGAINST DISPLACEMENT AT 4 FOOT MAXIMUM INTERVALS.

13. IN ADDITION TO VERTICAL REINFORCING DETAILED ON THE DRAWINGS, PROVIDE VERTICAL REINFORCING TO MATCH SIZE DETAILED AT THE FOLLOWING LOCATIONS:

a.CELLS EACH SIDE OF OPENINGS (SUCH AS DOORS, WINDOWS, ETC.) b.CELLS EACH SIDE OF CONTROL JOINTS.

c. CELL AT END OF A WALL.

d. AT INTERSECTIONS (CELL WITHIN 8" OF INTERSECTION). e.THREE BARS EACH CORNER (CORNER CELL AND ADJACENT CELLS IN EACH DIRECTION).

14. THE MASONRY CONTRACTOR SHALL PROVIDE AND PLACE SUCH SPECIAL UNITS AS MAY BE REQUIRED TO FORM ALL CORNERS. RETURNS. AND OFFSETS WHILE MAINTAINING THE PROPER BOND.

15. WHERE INTERIOR CONCRETE MASONRY PARTITIONS INTERSECT WITH OTHER INTERIOR PARTITIONS OR EXTERIOR WALLS, A MASONRY BOND, OR THE EQUIVALENT IN APPROVED METAL TIES, SHALL BE PROVIDED UNLESS NOTED OTHERWISE ON THE DRAWINGS.

16. FACE SHELL BEDDING SHALL BE USED WITH COMPLETE COVERAGE OF FACE SHELLS. FURROWING OF THE MORTAR SHALL NOT BE PERMITTED.

17. MORTAR JOINTS SHALL BE 3/8" THICK WITH FULL MORTAR COVERAGE ON VERTICAL AND HORIZONTAL FACE SHELLS.

18. PROVIDE BOND BEAMS AT MASONRY ELEVATIONS AS SHOWN ON THE DRAWINGS. BOND BEAMS SHALL HAVE TWO #5 BARS, CONTINUOUS, UNLESS OTHERWISE NOTED. BOND BEAMS SHALL BE CONTINUOUS AROUND THE PERIMETER OF THE BUILDING AND ALONG INTERIOR PARTITIONS, UNLESS OTHERWISE NOTED. BOND BEAM REINFORCING SHALL BE CONTINUOUS THROUGH CONTROL JOINTS. CUT IN OR RAKE OUT A VERTICAL JOINT MATCHING THE CONTROL JOINT AS REQUIRED.

19. LINTELS OVER ALL OPENINGS IN INTERIOR MASONRY PARTITIONS, NOT OTHERWISE DETAILED, SHALL BE OF PRECAST CONCRETE MASONRY WITH THICKNESS EQUAL TO THE WALL THICKNESS. DEPTH SHALL BE 8" FOR SPANS UP TO 6'-0" REINFORCED WITH ONE (1) #5 BAR FOR EACH 4" OF WALL THICKNESS.

WOOD FRAMING AND PLYWOOD:

1. ALL WOOD FRAMING SHALL BE KILN DRIED NO. 2 DENSE (OR BETTER) DIMENSION SOUTHERN YELLOW PINE CONFORMING TO SOUTHERN PINE INSPECTION BUREAU GRADING RULES, AND SHALL KILN DRIED TO 19% MAXIMUM MOISTURE CONTENT, UNLESS OTHERWISE NOTED.

2. PLYWOOD FOR SHEATHING SHALL CONFORM TO THE GRADING RULES OF U.S. PRODUCT STANDARD PS 1, LATEST EDITION, AND SHALL HAVE APPROPRIATE GRADE TRADE MARK OF AN AMERICAN PLYWOOD ASSOCIATION APPROVED AGENCY ON EACH PLYWOOD PANEL. SHEATHING SHALL BE APA STRUCTURAL I RATED, EXTERIOR GRADE, IN THICKNESS SHOWN ON DRAWINGS. SHEATHING SHALL BE APPLIED IN FULL SHEETS, OR AS SHOWN ON THE PLANS OR IN LARGEST PIECES FOR THE AREA BEING COVERED WITH A MINIMUM TWO SPAN CONTINUOUS CONDITION WITH LONGER FACTORY EDGE PERPENDICULAR TO THE FRAMING MEMBERS, WITH END JOINTS STAGGERED, AND SHEET ENDS BEARING ON FRAMING MEMBERS.

3. ALL NAILING FOR WOOD CONSTRUCTION SHALL BE IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE'S FASTENING SCHEDULE (TABLE 2304.9.1).

WOOD TRUSSES:

1. SUBMIT WOOD TRUSS DESIGN CALCULATIONS AND SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION. SHOP DRAWING FOR WOOD TRUSSES SHALL BEAR THE SEAL OF AN ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED AND SHALL BE APPROVED BY THE ENGINEER OR ARCHITECT BEFORE FABRICATION. SHOP DRAWINGS SHALL SHOW SPECIES AND MOISTURE CONTENT OF WOOD BEING USED. ALLOWABLE STRESSES SHALL CONFORM TO THE LATEST EDITION OF "NATIONAL" DESIGN SPECIFICATION FOR STRESS-GRADE LUMBER AND ITS FASTENING", AS RECOMMENDED BY THE NATIONAL FOREST PRODUCTS ASSOCIATION.

2. LUMBER IN TRUSSES SHALL BE GRADE MARKED, NO. 2 DIMENSION, KILN—DRIED SOUTHERN ONE, OR BETTER, UNLESS OTHERWISE INDICATED ON THE DETAILS EXCEPT TRUSS WEB MEMBERS MAY BE NO. 3, KILN-DRIED, GRADE MARKED, SOUTHERN PINE. MAXIMUM ALLOWABLE MOISTURE CONTENT =15%.

3. PROVIDE WASHERS BETWEEN ALL BOLT HEADS AND WOOD AND BETWEEN ALL NUTS AND WOOD.

4. MAXIMUM TRUSS SPACING = 2'-0" ON CENTER, UNLESS OTHERWISE NOTED.

5. CENTROIDAL LINES OF MEMBERS SHALL INTERSECT AT A POINT UNLESS OTHERWISE NOTED.

6. ENDS OF ALL COMPRESSION MEMBERS SHALL BE CUT TO FIT INTERSECTING MEMBERS FOR POSITIVE END BEARING.

7. TRUSS JOINT CONNECTIONS SHALL BE MADE USING GALVANIZED STEEL CONNECTOR PLATES, 20 GAGE MINIMUM THICKNESS. THE TRUSS JOINT CONNECTOR PLATES SHALL BE SIZED BY THE FABRICATOR USING THE TRUSS MEMBER FORCES RESULTING IN THE DESIGN LOADS SHOWN BELOW AND IN THE DESIGN CRITERIA.

8. THE LUMBER SPECIES, TRUSS OVERALL CONFIGURATION AND MINIMUM MEMBER SIZES AND TRADES SHALL NOT BE ALTERED OR REDUCED. MEMBER SPECIES, SIZE AND GRADES OF EQUAL OF GREATER STRENGTH ARE ACCEPTABLE.

9. THE CONTRACTOR SHALL PROVIDE ALL CONNECTION MATERIALS, CONNECTOR PLATES, FRAMING ANCHORS AND ACCESSORIES AS REQUIRED FOR THE SUPPORT OF THE WOOD TRUSSES AND WOOD FRAMING.

10. WOOD TRUSSES SHALL BE CAMBERED AS REQUIRED TO OFFSET THE FULL DEAD LOAD DEFLECTION.

11. WOOD TRUSSES SHALL BE DESIGNED BY THE MANUFACTURER FOR THE WIND AND SEISMIC LOADS INDICATED IN THE DESIGN CRITERIA ALONG WITH THE FULL TRUSS DEAD LOAD AND THE FOLLOWING SUPERIMPOSED GRAVITY LOADS: A. SUPERIMPOSED DEAD LOADS:

TOP CHORD 15 PSF BOTTOM CHORD 10 PSF B. LIVE LOADS:

TOP CHORD

20 PSF BOTTOM CHORD

20 PSF (CENTER 1/3 OF TRUSS LENGTH)

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11. CHAMFER EXPOSED EDGES OF CONCRETE 3/4" UNLESS OTHERWISE NOTED.

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