

three inches = one foot
one and one half inch = one foot
one inch = one foot
three-quarters inch = one foot
one-half inch = one foot
one-quarter inch = one foot
one-eighth inch = one foot

GENERAL STRUCTURAL NOTES

THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE DRAWINGS OF ALL OTHER DISCIPLINES AND THE SPECIFICATIONS. THE CONTRACTOR SHALL VERIFY THE REQUIREMENTS OF OTHER TRADES AS TO INSERTS, ANCHORS, SLEEVES, AND OTHER ITEMS TO BE PLACED OR SET IN THE STRUCTURAL WORK.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL SAFETY PRECAUTIONS AND REGULATIONS DURING THE WORK.

STRUCTURAL DESIGN CRITERIA
BUILDING CODE: INTERNATIONAL BUILDING CODE

FLOOR LIVE LOADS: OFFICE LOADING 50 POUNDS PER SQUARE FOOT
ROOF LIVE LOAD: 20 POUNDS PER SQUARE FOOT

WIND LOADS: BASIC WIND SPEED (3-SECOND GUST) V = 90 MPH
IMPORTANCE FACTOR, Iw = 1.0
WIND EXPOSURE = B
INTERNAL PRESSURE COEFFICIENT, GCp1 = +-0.18
COMPONENT AND CLADDING PRESSURES:
ALL WINDOWS AND DOORS SHALL BE RATED FOR 25 PSF.

SEISMIC LOADS: SITE CLASS : D (ASSUMED)
SEISMIC FORCE RESISTING SYSTEM:

ORDINARY PLAIN MASONRY SHEAR WALLS (R=1.5)
STEEL MOMENT FRAME (NOT SPECIFICALLY DETAILED FOR SEISMIC) (R= 3)

SEISMIC DESIGN CATEGORY : B
Sds : 0.23
Sd1 : 0.09
Cs : 0.154
V : 86.8 kips

SUBMITTALS

- AS A MINIMUM, THE FOLLOWING SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW:
- A. STONE MASONRY MORTAT MIX DESIGN (S)
 - B. CONCRETE MIX DESIGNS
 - C. STRUCTURAL STEEL SHOP DRAWINGS
 - D. REBAR SHOP DRAWINGS
 - E. STEEL CORD SYSTEM SUBMITTALS
 - F. EPOXY ANCHORAGE AND REPAIR SUBMITTALS
 - G. SOIL STABILIZATION AND ANCHORAGE SUBMITTALS

SPECIAL INSPECTIONS ARE REQUIRED FOR CONCRETE, MASONRY AND STRUCTURAL STEEL. SEE PROJECT SPECIFICATIONS FOR REQUIREMENTS IN ADDITION TO THOSE LISTED BELOW. THE WORK REQUIRING SPECIAL INSPECTIONS INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

- MATERIAL VERIFICATIONS OF HIGH-STRENGTH BOLTS, NUTS, WASHERS, STRUCTURAL STEEL AND WELD FILLER MATERIAL
- INSPECTION OF HIGH-STRENGTH BOLTING AND WELDING
- INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS
- INSPECTION OF REINFORCING STEEL WELDING, WHERE IT OCCURS
- DRILLING AND INSTALLATION OF PILE CAPS AND PIERS
- VERIFICATION AND INSPECTION OF CONCRETE MIX DESIGN, REINFORCING, EMBEDDED ITEMS, CONCRETE SAMPLES, AND CURING TECHNIQUES
- CONCRETE STRENGTH TESTS
- ALL STRUCTURAL STEEL WELDING, EXCEPT WHERE DONE IN THE SHOP OF AN APPROVED FABRICATOR
- REINFORCING STEEL (WHERE F'c IS GREATER THAN 2500 PSI OR REINFORCING IS WELDED)
- USE OF STRUCTURAL EPOXIES
- SOIL COMPACTION REQUIREMENTS
- ADHESIVE AND DRILLED-IN EXPANSION ANCHORS

SPECIAL INSPECTIONS PROCEDURES SHALL BE AS DEFINED IN CHAPTER 17 OF THE 2006 INTERNATIONAL BUILDING CODE. INSPECTIONS SHALL BE MADE BY THE MARYLAND HISTORIC TRUST OR DESIGNEE.

THE CONTRACTOR SHALL COORDINATE AND SCHEDULE THE WORK TO ALLOW FOR REQUIRED SPECIAL INSPECTIONS WITHOUT DELAYING THE PERFORMANCE OF THE WORK. A MINIMUM OF 48 HOURS ADVANCE NOTICE SHALL BE PROVIDED TO SPECIAL INSPECTORS BY THE CONTRACTOR.

STRUCTURAL OBSERVATION

STRUCTURAL OBSERVATION WILL BE PERFORMED BY THE MARYLAND HISTORIC TRUST OR DESIGNEE.

STRUCTURAL OBSERVATION IS THE VISUAL OBSERVATION OF THE ELEMENTS AND CONNECTIONS OF THE STRUCTURAL SYSTEM AT SIGNIFICANT CONSTRUCTION STAGES AND THE COMPLETED STRUCTURAL FOR GENERAL CONFORMANCE TO THE APPROVED PLANS AND SPECIFICATIONS. STRUCTURAL OBSERVATION DOES NOT WAIVE THE RESPONSIBILITY FOR THE INSPECTIONS REQUIRED OF THE BUILDING INSPECTOR.

THE CONTRACTOR SHALL COORDINATE AND CALL FOR A PRE-CONSTRUCTION MEETING BETWEEN THE ENGINEER OR ARCHITECT RESPONSIBLE FOR THE STRUCTURAL DESIGN, STRUCTURAL OBSERVER, CONTRACTOR, AFFECTED SUBCONTRACTORS, BUILDING AND DEPUTY INSPECTORS. THE PURPOSE OF THE MEETING SHALL BE TO IDENTIFY THE MAJOR STRUCTURAL ELEMENTS AND CONNECTIONS THAT AFFECT THE VERTICAL AND LATERAL LOAD SYSTEMS OF THE STRUCTURE AND TO REVIEW SCHEDULING OF THE REQUIRED OBSERVATIONS.

THE STRUCTURAL OBSERVER SHALL PERFORM SITE VISITS AT THOSE STEPS IN THE PROGRESS OF THE WORK THAT ALLOW FOR CORRECTION OF DEFICIENCIES WITHOUT SUBSTANTIAL EFFORT OR UNCOVERING OF THE WORK INVOLVED. AT A MINIMUM, THE FOLLOWING SIGNIFICANT CONSTRUCTION STAGES REQUIRE A SITE VISIT.

| STAGE OF CONSTRUCTION | ELEMENT TO BE OBSERVED |
|-----------------------|-----------------------------|
| FOUNDATION | REINFORCEMENT & ANCHORS |
| CONCRETE WALLS | REINFORCEMENT |
| STEEL ERECTION | COLUMN AND BEAM CONNECTIONS |
| STONE MASONRY | STEEL CORD INSTALLATION |
| CONCRETE MASONRY | REINFORCEMENT AND ANCHORS |
| WOOD ERECTION | LAYOUT AND CONNECTORS |

STRUCTURAL TESTING

THE CONTRACTOR SHALL INCLUDE THE FOLLOWING TESTS AT A MINIMUM IN HIS CONTRACT. COORDINATE WITH THE OWNER REPRESENTATIVE FOR THE SCHEDULING REQUIREMENTS OF TESTS.

A GEOTECHNICAL INVESTIGATION AND REPORT SHALL BE PROVIDED FOR THE PROJECT. THE REPORT SHALL PROVIDE INFORMATION ON THE SOIL BEARING CAPACITY, LATERAL EARTH PRESSURE CHARACTERISTICS, AS WELL AS NEEDED INFORMATION FOR THE OTHER SITE REQUIREMENTS.

THE ENDS OF ALL JOISTS AND BEAMS WILL BE EXPOSED DURING CONSTRUCTION. THE ENDS WILL THEN BE EXAMINED AND TESTED FOR DECAY AND INFESTATION. THE WOOD SHALL BE TESTED FOR MOISTURE AND DECAY. IN ADDITION, THE SECTION SHALL BE EXAMINED FOR LOSS OF SECTION, CRACKS AND CHECKS IN THE WOOD.

THE STEEL ANCHORS SHALL BE TESTED FOR TENSILE PULLOUT ON THE STONE WALL. A STRUCTURAL TEST PANEL SHALL BE CONSTRUCTED, AND A SUFFICIENT NUMBER OF SAMPLES TESTED. CONTACT A HILTI FIELD REPRESENTATIVE FOR MORE INFORMATION.

THE COMPRESSIVE STRENGTH OF THE MORTAR AND STONE ASSEMBLY SHALL ALSO BE TESTED. PROVIDE THE QUANTITY OF PANELS REQUIRED BY THE TESTING COMPANY, BUT NO LESS THAN TWO PANELS.

FOUNDATION NOTES

ALL FOOTINGS SHALL BEAR ON UNDISTURBED, FIRM NATURAL SOIL, OR COMPACTED FILL CAPABLE OF SUPPORTING A DESIGN BEARING PRESSURE OF 3,000 PSF. ALL FOUNDATION EXCAVATIONS SHALL BE EVALUATED BY THE GEOTECHNICAL ENGINEER/ TESTING AGENCY PRIOR TO POURING CONCRETE.

UNLESS OTHERWISE NOTED, PROVIDE THE FOLLOWING COVER FOR FOUNDATION REINFORCEMENT:

BOTTOM BARS & BARS IN CONCRETE CAST AGAINST EARTH: 3"
BARS THAT ARE EXPOSED TO WEATHER: #5 OR SMALLER 1 1/2"

ALL BARS SHALL BE LAPPED 40 X THE BAR DIAMETER AT SPLICE. PRIOR TO COMMENCING FOUNDATION WORK, COORDINATE WORK WITH UTILITIES.

FOUNDATION PREPARATION NOTES

THE FOUNDATION SHALL BE PREPPED AS PER THE GEOTECHNICAL ENGINEER, BUT NO LESS THAN THE FOLLOWING REQUIREMENTS.

REMOVE ALL ORGANICS, PAVEMENT, ROOTS, DEBRIS, AND OTHERWISE UNSUITABLE MATERIAL.

THE SURFACE OF THE EXPOSED SUBGRADE SHALL BE INSPECTED BY PROBING OR TESTING TO CHECK FOR POCKETS OF SOFT OR UNSUITABLE MATERIAL. EXCAVATE UNSUITABLE SOIL AS DIRECTED BY THE GEOTECHNICAL ENGINEER/ TESTING AGENCY.

FILL ALL EXCAVATED AREAS WITH APPROVED CONTROLLED FILL. PLACE IN 12" LOOSE LIFTS AND COMPACT TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557.

ALL CONTROLLED FILL MATERIAL SHALL BE A SELECT GRANULAR MATERIAL, FREE FROM ALL ORGANICS OR OTHERWISE DELETERIOUS MATERIAL WITH NOT MORE THAN 25% BY WEIGHT PASSING A NO. 200 SIEVE (CLASSIFIED AS SC, SM, SP OR BETTER IN ACCORDANCE WITH THE UNIFIED CLASSIFICATION SYSTEM) AND PLASTICITY INDEX NOT EXCEEDING 10%.

PROVIDE FIELD DENSITY TESTS FOR EACH 2,500 PSF OF BUILDUG AREA FOR EACH LIFT OF CONTROLLED FILL.

CAST-IN-PLACE CONCRETE NOTES:

CONCRETE MIXES SHALL BE DESIGNED PER ACI 301, USING PORTLAND CEMENT CONFORMING TO ASTM C-150 OR C-595, AGGREGATE CONFORMING TO ASTM C-33, AND ADMIXTURES CONFORMING TO ASTM C-494, C-1017, C818, AND C-260. CONCRETE SHALL BE READY MIXED IN ACCORDANCE WITH ASTM C-94.

ALL CONCRETE SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH, f'c OF 3,000 psi.

REINFORCING STEEL, INCLUDING HOOKS AND BENDS, SHALL BE DETAILED IN ACCORDANCE WITH ACI 315. ALL REINFORCING STEEL INDICATED AS BEING CONTINUOUS SHALL BE LAPPED WITH A TYPE 2 SPLICE UNLESS OTHERWISE NOTED.

BAR SUPPORTS SHALL BE PROVIDED FOR ALL REINFORCING STEEL TO ENSURE MINIMUM CONCRETE COVER. BAR SUPPORTS SHALL BE PLASTIC TIPPED OR STAINLESS STEEL.

CONCRETE EXPOSED TO WEATHER SHALL BE AIR ENTRAINED TO 5% (±1%) WITH AN ADMIXTURE THAT CONFORMS TO ASTM C-260.

SLAB ON GRADE NOTES

PROVIDE CONCRETE SLABS OVER 6 MIL POLYETHYLENE VAPOR BARRIER AND 4" OF POROUS FILL AS FOLLOWS: 4" SLAB REINFORCED WITH 6x6-W2.1xW2.1 WELDED WIRE FABRIC AND WITH 4,000 PSI MIX CONCRETE.

MAXIMUM SLUMP FOR CONCRETE SLABS WILL BE 5" WITH TYPE II CEMENT.

ALL WELDED WIRE FABRIC SHALL BE IN ACCORDANCE WITH ASTM A-185. LAP ADJOINING PIECES AT LEAST ONE FULL MESH. WELDED WIRE FABRIC SHALL BE ORDERED IN SHEETS, NOT ROLLS. WELDED WIRE FABRIC SHALL BE BLOCKED INTO POSITION WITH PRECAST CONCRETE BLOCKS HAVING THE SAME COMPRESSIVE STRENGTH OF THE SLAB.

SAW-CUT OR FORMED CONTROL JOINTS SHALL BE PROVIDED AT A MAXIMUM OF 15' ON CENTER.

THE ALTERNATE WIRES OF THE WELDED WIRE FABRIC MUST BE PRECUT AT THE SLAB CONTRACTION JOINT LOCATIONS TO CREATE A "WEAKENED PLANE".

THE USE OF POLYPROPYLENE FIBERS (IN LIEU OF WELDED WIRE FABRIC) IS PROHIBITED.

ALL POROUS FILL MATERIAL SHALL BE A CLEAN GRANULAR FILL MATERIAL WITH 100% PASSING THE 1½" SIEVE AND NO MORE THAN 5% PASSING THE NO. 4 SIEVE. POROUS FILL SHALL BE COMPACTED TO 98% MAX DRY DENSITY PER ASTM D-1557 MODIFIED PROCTOR METHOD.

SLAB JOINTS SHALL BE FILLED WITH A SEALANT PER THE MANUFACTURER RECOMMENDATIONS.

SLABS EXPOSED TO WEATHER SHALL BE AIR ENTRAINED TO 5% (±1%) WITH AN ADMIXTURE THAT CONFORMS TO ASTM C-260.

THE SLAB SHALL BE WET CURED BY KEEPING THE SLAB MOIST FOR A PERIOD OF SEVEN DAYS. ALTERNATIVELY, PROVIDE A WET-CURING SEALANT PER THE MANUFACTURERS RECOMMENDATIONS.

STONE MASONRY RE-WORK AND REPOINTING

ENSURE THAT SECTIONS OF WORK ARE LIMITED SUCH THAT THE WALL IS ABLE TO SUPPORT THE CONSTRUCTION LOADS. MONITOR THE VERTICAL ALIGNMENT OF THE WALLS DURING CONSTRUCTION. PROVIDE TEMPORARY BRACING AND SHORING OF WALLS AS REQUIRED TO STRENGTHEN THE WALL DURING THE REPAIRS. WHERE AREAS MUST BE RE-WORKED, THE SIZE AND DISTRIBUTION OF STONE SHALL MATCH THE EXISTING CONSTRUCTION.

THERE ARE CRACKED STONES ON THE BUILDING THAT REQUIRE REPAIR. THE CRACKED STONES SHALL BE INJECTED WITH AN APPROVED EPOXY RESIN. THE EPOXY SHALL EXTEND JUST SHY OF FLUSH WITH THE FACE OF THE STONE.

MORTAR

MORTAR USED FOR RE-POINTING SHALL BE TYPE 'O' MORTAR FOR ALL WORK DONE IN ALL AREA ABOVE GRADE AND NOT EXPOSED TO EARTH. MORTAR USED ON BASEMENT WALLS EXPOSED TO EARTH (BOTH SIDES) SHALL BE A TYPE 'N' MORTAR. THE MORTARS SHALL CONFORM TO THE ASTM C270 MORTAR STANDARD.

THE PROPORTIONS BY VOLUME FOR CEMENT, LIME, AND SAND SHALL BE AS FOLLOWS FOR THE TWO MORTAR TYPES;

| | PORTLAND CEMENT | LIME | SAND |
|-----------------|-----------------|------|------|
| TYPE 'N' MORTAR | 1 | 1 | 6 |
| TYPE 'O' MORTAR | 1 | 2 | 9 |

SAND USED IN THE MORTAR MIX SHALL BE FREE OF IMPURITIES SUCH AS SALTS AND CLAY. THE SAND SHALL BE GRADED TO THE PARTICLE SIZE DISTRIBUTION ACCORDING TO ASTM C144. SOME VARIATION MAY BE NECESSARY TO MEET THE REQUIRED TEXTURE OF THE ORIGINAL MORTAR. THE COLOR OF THE SAND MAY AFFECT THE FINAL MORTAR COLOR, AND WILL NEED APPROVAL OF THE OWNER'S REPRESENTATIVE.

PORTLAND CEMENT USED IN THE MORTAR SHALL CONFORM TO ASTM C 150, TYPE I. A WHITE NON-STAINING CEMENT SHOULD BE ASSUMED IN THE MIX DESIGN IN ORDER TO MEET THE COLOR REQUIREMENTS FOR THE MORTAR. THE CEMENT SHOULD NOT HAVE MORE THAN .6 PERCENT ALKALI.

WATER USED IN THE MORTAR SHALL BE CLEAN AND DRINKABLE, FREE FROM ACIDS, ALKALIS OR OTHER DISSOLVED ORGANIC MATERIALS.

CHEMICAL ADMIXTURES ARE NOT ALLOWED IN THE MORTAR MIX.

MORTAR PREPARATION

MORTAR COMPONENTS SHOULD BE MEASURED AND MIXED CAREFULLY. DRY INGREDIENTS SHALL BE MEASURED BY VOLUME AND THOROUGHLY MIXED BEFORE THE ADDITION OF WATER. SAND MUST BE ADDED I A DAMP, LOOSE CONDITION TO AVOID OVER SANDING. ADD HALF THE REQUIRED WATER, AND MIX FOR FIVE MINUTES. THE REMAINING WATER SHOULD THEN BE ADDED IN SMALL PORTIONS UNTIL THE REQUIRED CONSISTENCY IS MET. MORTAR SHALL BE USED WITHIN 30 MINUTES OF FINAL MIXING AND ADDING WATER IS NOT PERMITTED.

IF LIME PUTTY IS TO BE USED, THE CONTRACTOR SHALL INCLUDE THE MIX DESIGN AND MIX PROCEDURE IN THE SUBMITTALS. IF USED, LIME PUTTY SHALL BE PROTECTED FROM THE AIR IN SEALED CONTAINERS.

JOINT PREPARATION

THE OLD MORTAR SHALL BE REMOVED TO A DEPTH OF 2 TO 3 INCHES. ANY LOOSE OR DISINTEGRATED MORTAR THAT IS BEYOND THIS DEPTH SHALL ALSO BE REMOVED. MORTAR SHALL BE REMOVED WITH THE USE OF HAND CHISELS AND MASH HAMMERS. POWER TOOLS MAY BE APPROVED BY THE OWNER REPRESENTATIVE PROVIDED THAT THE USE OF SUCH TOOLS PROVES TO HAVE NO NEGATIVE EFFECT ON THE TEST PANELS. MORTAR SHALL BE REMOVED CLEANLY FROM THE MASONRY, LEAVING SQUARE CORNERS AT THE BACK OF THE CUT. THE JOINTS SHALL BE RINSED WITH A JET OF WATER TO REMOVE ALL LOOSE PARTICLES AND DUST.

FILLING THE JOINT

AT THE TIME OF FILLING, THE JOINTS SHOULD BE DAMP (NOT WET). A CONTINUAL MIST OF WATER MAY BE REQUIRED FOR SOME ABSORBENT STONE AREAS. FILL THE VOIDS AND JOINTS WITH MORTAR IN LAYERS OF 1/4 INCH. NEW LAYERS MAY BE APPLIED ONCE THE VOID REACHES THUMBPRINT HARDNESS. FILL THE JOINT UNTIL IT IS JUST SHY OF FLUSH WITH THE OUTER SURFACE OF THE STONE. FINAL TOOLING AND POINTING, IF ANY, SHALL BE AT THE DIRECTION OF THE OWNER REPRESENTATIVE.

CURING

THE RE-POINTED AREAS SHALL BE MISTED USING A HAND SPRAYER AFTER THE MORTAR REACHES THUMBPRINT HARDNESS. THE MISTING SHALL BE DONE EVERY ONE TO THREE HOURS DURING THE FIRST 48 HOURS AFTER THE RE-POINTING. COVER THE WALL WITH BURLAP FOR THREE DAYS.

SUBMITTALS

THE CONTRACTOR SHALL PROVIDE SUBMITTAL OF THE MIX DESIGN FOR EACH MORTAR TO BE USED. THE SUBMITTAL SHALL INCLUDE INFORMATION ON THE ORIGIN OF MATERIALS, AND CONFIRM THAT MATERIALS MEET THE SPECIFICATION.

THE CONTRACTOR SHALL HAVE FIVE YEARS EXPERIENCE WITH RE-POINTING HISTORIC MASONRY BUILDINGS.

VISUAL TEST PANELS:

MULTIPLE TEST PANELS SHALL BE PROVIDED TO ENSURE THAT THE MORTAR COLOR AND TEXTURE MEETS THE OWNERS REQUIREMENTS. THE TEST PANELS SHALL BE 5 FEET SQUARE. THE NUMBER AND LOCATION OF THE PANELS SHALL BE DIRECTED BY THE OWNER REPRESENTATIVE.

STRUCTURAL TEST PANEL

TWO 3 FOOT SQUARE STRUCTURAL TEST PANELS SHALL BE CONSTRUCTED TO TEST THE COMPRESSIVE STRENGTH OF THE ASSEMBLY, AS WELL AS THE ANCHORAGE SYSTEM. A COMPRESSIVE STRENGTH TEST SHALL BE DONE, AT THE CONTRACTOR'S EXPENSE AFTER 28 DAYS.

FINAL

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|--|--|--|--|------------------------------------|--|---|--|---|-----------------------------|-----------------------------------|---------------------------|
| | | | | Drawing Scale: AS NOTED | | Approved: Chief, Facilities and Engineering: | Drawing Title: STRUCTURAL NOTES | Project Title: RENOVATE MANSION HOUSE AND GRIST MILL VA MEDICAL CENTER | Date: 10/15/2012 | DEPARTMENT OF VETERANS AFFAIRS | |
| | | | | Drawing Start Date: 03/01/2012 | | Approved: Associate Chief for Maintenance And Operations, Perry Point: | | | Project No: 512A5-10-335 | | |
| | | | | Drawing Finish Date: 10/15/2012 | | | Approved: Associate Director for Operations: | Building No: 504 | Checked: AR | | Drawn: AR |
| | | | | Drawing Approved: JOE BANACH | | | Approved: Director, Medical Center: | Location: PERRY POINT MARYLAND | | | DRAWING NO: 504-SS1.01 |
| | | | | | | | | Dwg. 1 Of 10 | | | |



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