STRUCTURAL DESIGN CRITERIA

PER 2012 INTERNATIONAL BUILDING CODE (IBC):

1. SEISMIC DESIGN - RENVONATED AREA IS CONNECTING TO EXISTING BUILDING.
2. FLOOR DEAD LOAD:
   6 1/2" CONCRETE SLAB - 71 PSF
   SUPERIMPOSED - 23 PSF
3. FLOOR LIVE LOAD - 100 PSF (UN-REDUCIBLE)

GENERAL NOTES

1. A FOUNDATION FOR THIS STRUCTURE HAS BEEN DESIGNED BASED UPON THE RECOMMENDATIONS OF THE SOIL AND FOUNDATION INVESTIGATION FOR THIS SITE BY PSI, Inc. OF MEMPHIS, TN (PH-901-365-1802) (PROJECT NO: 0502-1503) DATE MAY 30, 2017. THE FOOTINGS ARE SIZED BASED ON AN ALLOWABLE BEARING CAPACITY OF 1,500 PSF PROVIDED FOOTINGS REST ON MEDIUM DENSE SANDS OR PROPERLY PLACED AND COMPACTED FILL. TO IMPROVE SOILS BY DENSIFICATION OR BY UNDERCUT AND REPLACEMENT WITH LEAN CONCRETE OR ENGINEERED FILL.
2. THE PREPARATION OF THE SUBGRADE INCLUDING ALL PROOF-ROLLING AND UNDERCUTTING AND THE SELECTION, PLACEMENT, COMPACTION AND TESTING OF ALL FILL MATERIAL SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE SOILS REPORT FOR THIS PROJECT.
3. THE GENERAL CONTRACTOR SHALL VERIFY THE SITE CONDITIONS INCLUDING UNDERGROUND UTILITIES BEFORE STARTING WORK AND SHALL NOTIFY THE STRUCTURAL ENGINEER OF RECORD OF ANY CONDITIONS ENCOUNTERED CONTRADICTORY TO THOSE SHOWN ON THE STRUCTURAL CONTRACT DOCUMENTS. CONTRACTOR MUST MAKE EVERY EFFORT TO VERIFY EXISTING SITE CONDITIONS AND PROTECT EXISTING UTILITIES. THIS INCLUDES BUT IS NOT LIMITED; TO PROPER SITE INVESTIGATION, REFERENCING AND REQUESTING DRAWINGS, GPR SCANNING, AND TAKING CAUTION WHILE PERFORMING WORK. UTILITY INTERRUPTIONS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE GENERAL CONTRACTOR SHALL COORDINATE THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING WORK WITH THE STRUCTURAL CONTRACT DOCUMENTS AND SHALL REPORT ANY SUSPECTED DISCREPANCIES OR OMISSIONS TO THE ARCHITECT IMMEDIATELY.
5. THE STRUCTURAL CONTRACT DOCUMENTS DO NOT INCLUDE SHOP DRAWINGS, VENDOR DRAWINGS, NOR ANY MATERIAL PREPARED AND SUBMITTED BY THE CONTRACTOR OR SUBCONTRACTORS.
6. REFERENCE TO STANDARD SPECIFICATIONS OF ANY TECHNICAL SOCIETY, ORGANIZATION OR ASSOCIATION OR TO CODES OF LOCAL OR STATE AUTHORITIES SHALL MEAN THE LATEST STANDARD, CODE, SPECIFICATION OR TENTATIVE SPECIFICATION ADOPTED AND PUBLISHED AT THE DATE OF TAKING BIDS UNLESS SPECIFICALLY STATED OTHERWISE.
7. SEE ARCHITECTURAL DRAWINGS FOR EXACT THICKNESS AND NUMBER OF LAYERS OF INTERIOR AND EXTERIOR SHEATHING, INSULATION, FLASHING, EXTERIOR FINISHES, WINDOW WALL SYSTEMS, ROOFING, EXPANSION JOINT COVERS, ETC. STRUCTURAL DRAWINGS DO NOT NECESSARILY DEPICT EXACT CONDITIONS OF NON-STRUCTURAL ELEMENTS.
8. FOR DIMENSIONS NOT SHOWN ON THE STRUCTURAL CONTRACT DOCUMENTS, SEE THE ARCHITECTURAL DRAWINGS.
9. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY BRACING AND/OR SHORING OF THE STRUCTURE DURING CONSTRUCTION. THE STRUCTURE IS NOT STABLE UNTIL ALL ELEMENTS ARE CONNECTED IN PLACE. THE DESIGN ADEQUACY AND SAFETY OF ERECTION BRACING, FORMWORK, SHORING, TEMPORARY SUPPORTS, ETC. AND THE MEANS, METHODS, TECHNIQUES AND SEQUENCE OF CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR TO SUBMIT STAMPED AND SIGNED TEMPORARY BRACING DRAWINGS AND CALCULATIONS FOR REVIEW PRIOR TO ANY DEMOLITION/REMOVAL OF STRUCTURAL ELEMENTS.
10. THE CONTRACTOR SHALL REVIEW THE STRUCTURAL DRAWINGS FOR SECTIONS AND DETAILS THAT ARE LABELED AS "TYPICAL" AND ARE NOT NECESSARILY REFERENCED ON THE STRUCTURAL PLANS WHERE THEY APPLY.
11. THE GENERAL CONTRACTOR SHALL VERIFY THE FLOOR AND ROOF MOUNTED MECHANICAL EQUIPMENT WEIGHTS, LOCATIONS AND REQUIRED OPENING SIZES WITH ARCHITECTURAL AND MECHANICAL DRAWINGS BEFORE THE PREPARATION OF SHOP DRAWINGS HAS BEGUN.

SPECIAL INSPECTIONS

REFER TO IBC INTERNATIONAL BUILDING CODE
FOR SPECIAL INSPECTION GUIDELINES

1. THIS SECTION INCLUDES ADMINISTRATIVE AND PROCEDURAL REQUIREMENTS NECESSARY FOR COMPLIANCE WITH THE INTERNATIONAL BUILDING CODE, CHAPTER 17, STRUCTURAL TESTS AND SPECIAL INSPECTIONS.
2. STRUCTURAL TESTING AND SPECIAL INSPECTION SERVICES ARE REQUIRED TO VERIFY COMPLIANCE WITH REQUIREMENTS SPECIFIED OR INDICATED. THESE SERVICES DO NOT RELIEVE CONTRACTOR OF RESPONSIBILITY FOR COMPLIANCE WITH OTHER CONSTRUCTION DOCUMENT REQUIREMENTS.
   a.) SPECIFIC QUALITY-ASSURANCE AND -CONTROL REQUIREMENTS FOR INDIVIDUAL CONSTRUCTION ACTIVITIES ARE SPECIFIED IN THE SECTIONS THAT SPECIFY THOSE ACTIVITIES. REQUIREMENTS IN THOSE SECTIONS MAY ALSO COVER PRODUCTION OF STANDARD PRODUCTS.
   b.) SPECIFIED TESTS, INSPECTIONS, AND RELATED ACTIONS DO NOT LIMIT CONTRACTOR'S OTHER QUALITY - ASSURANCE AND -CONTROL PROCEDURES THAT FACILITATE COMPLIANCE WITH THE CONSTRUCTION DOCUMENT REQUIREMENTS.
   c.) REQUIREMENTS FOR CONTRACTOR TO PROVIDE QUALITY-ASSURANCE AND -CONTROL SERVICES REQUIRED BY ENGINEER, OWNER, OR AUTHORITIES HAVING JURISDICTION ARE NOT LIMITED BY PROVISIONS OF THIS SECTION.
3. THE OWNER WILL ENGAGE ONE OR MORE QUALIFIED SPECIAL INSPECTORS AND/OR TESTING AGENCIES TO CONDUCT STRUCTURAL TESTS AND SPECIAL INSPECTIONS SPECIFIED IN THE SPECIFICATION AND RELATED SECTIONS AND AS MAYBE SPECIFIED IN OTHER DIVISIONS OF THESE SPECIFICATIONS.

LT GAUGE METAL FRAMING NOTES

1. ALL LIGHT GAUGE METAL FRAMING INCLUDING, BUT NOT LIMITED TO, STUD WALLS, FASCIAS, SOFFITS, AND CEILINGS SHALL BE DESIGNED AND DETAILED BY THE LIGHT GAUGE METAL SUPPLIER'S ENGINEER. SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW.
2. THE LIGHT GAUGE METAL SUPPLIER'S ENGINEER'S DESIGN AND DETAIL SHALL INCLUDE THE FOLLOWING:
   A. THE SIZE, LOCATION, AND FASTENING OF BRIDGING.
   B. THE FASTENING OF THE BOTTOM TRACK TO THE STRUCTURE.
   C. THE SIZE AND TYPE OF VERTICAL SLIDE CLIPS.
   D. THE SIZE AND TYPE OF VERTICAL DEFLECTION TOP TRACKS.
   E. THE SIZE AND FASTENING OF HEADERS AT ALL OPENINGS.
   F. ALL SCREWED AND WELDED CONNECTIONS.
3. ALL LOAD BEARING AND EXTERIOR STUD WALLS SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS:
   A. 18 GAUGE
   B. FLANGE WIDTH = 1 5/8"
   C. FLANGE RETURN = 1/2"
4. AT LOCATIONS WHERE LIGHT GAUGE METAL STUDS ARE SHOWN NOTCHED AROUND BOTTOM FLANGES OF BEAM, LIGHT GAUGE STUD SUPPLIER SHALL DEVISE A STRENGTHENING DETAIL TO ASSURE THAT THE STUD WORKS WITH THE NOTCH.

STEEL FRAMING NOTES

1. ALL STRUCTURAL STEEL HSS SQUARE/RECT SECTIONS SHALL BE ASTM A500, GRADE B (Fy = 46 ksi). ALL STRUCTURAL STEEL WIDE FLANGE SHALL BE ASTM A992, GRADE 50. CHANNEL SHAPES AND ALL ALL OTHER MISCELLANEOUS STEEL SHALL BE ASTM A36 OR A572. ALL STEEL PIPE SHALL BE ASTM A53 GR. B (Fy = 35 ksi). ALL STRUCTURAL STEEL HSS ROUND MEMBERS SHALL BE ASTM A500, GRADE B (Fy = 42 ksi). ALL EXPOSED STEEL SHALL BE HOT-DIPPED GALVANIZED.
2. ALL STRUCTURAL BOLTS CONNECTING STRUCTURAL STEEL SHALL BE ASTM A325 TYPE 1 WITH THREADS ALLOWED IN THE SHEAR PLANE, EXCEPT ANCHOR BOLTS SHALL BE ASTM A307 OR A449 AS NOTED.
3. WELD ELECTRODES SHALL BE E70XX.
4. ALL CONNECTIONS SHALL BE DESIGNED AND DETAILED BY THE STEEL FABRICATOR'S ENGINEER UNLESS EXPLICITLY DETAILED ON THE STRUCTURAL CONTRACT DOCUMENTS. FOR COMPOSITE BEAMS, UNFACTORED REACTIONS FOR THE CONNECTION DESIGN ARE GIVEN ON THE STRUCTURAL CONTRACT DOCUMENTS. IF A COMPOSITE BEAM REACTION IS NOT SHOWN ON THE STRUCTURAL CONTRACT DOCUMENTS, THE STEEL FABRICATOR SHALL CONTACT THE ENGINEER OF RECORD, AND THE REACTION WILL BE PROVIDED. FOR NON-COMPOSITE BEAMS, UNFACTORED REACTIONS ARE GIVEN. FOR NON-COMPOSITE BEAM REACTIONS NOT GIVEN, CONNECTIONS SHALL BE DESIGNED TO SUPPORT 70% OF THE TOTAL UNIFORMS LOAD CAPACITY SHOWN IN THE "ALLOWABLE UNIFORM LOAD TABLES" IN PART 2 OF THE AISC STEEL CONSTRUCTION MANUAL, 9th EDITION, FOR THE GIVEN BEAM SIZE, SPAN, AND GRADE OF STEEL SPECIFIED.
5. AT HSS BEAM CONNECTIONS TO WIDE FLANGE OR HSS COLUMNS, WELD ALL AROUND WITH A COMBINATION OF 3/16" FILLET AND FLARE BEVEL GROOVE WELDS, UNLESS NOTED OTHERWISE.
6. SUBMIT STEEL SHOP DRAWINGS FOR REVIEW.

REINFORCED CONCRETE MASONRY UNIT NOTES

1. MINIMUM NET AREA COMPRESSIVE STRENGTH OF MASONRY f'm = 1500 PSI.
2. CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C90 TYPE 1 LIGHT WEIGHT, EXCEPT USE NORMAL WEIGHT BLOCK FOR ALL WORK BELOW GRADE AND RETAINING WALLS.
3. MORTAR SHALL BE TYPE M BELOW GRADE & TYPE S ABOVE GRADE, ASTM C207.
4. GROUT SHALL CONFORM TO ASTM C476, FINE GROUT, AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
5. MASONRY FILL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
6. SUBMIT CMU SHOP DRAWINGS FOR REVIEW BY ARCHITECT/ ENGINEER OF RECORD, INCLUDING REINFORCING AND CONTROL JOINTS LOCATIONS.
7. PROVIDE ADEQUATE TEMPORARY SUPPORT OF LINTELS UNTIL GROUT/ CONCRETE HAS REACHED THE SPECIFIED 28-DAY COMPRESSIVE STRENGTH.
8. PROVIDE TEMPORARY LATERAL BRACING FOR ALL MASONRY WALLS UNTIL PERMANENT LATERAL SUPPORT IS COMPLETED.
9. HORIZONTAL REINFORCING SHALL BE TRUSS TYPE ASTM A82, 9 GAUGE MINIMUM, GALVANIZED.
10. LAPS OR SPLICES OF REINFORCING BARS IN CMU WALLS SHALL BE THE GREATER OF 30" OR 48 BAR DIAMETERS, UNLESS DETAILED OR NOTED OTHERWISE.

CAST-IN-PLACE CONCRETE NOTES

1. CONCRETE DESIGN AND DETAILING SHALL CONFORM TO THE REQUIREMENTS OF ACI 318 AND ACI 301, LATEST EDITIONS.
2. MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:

   CONTINUOUS FOOTINGS, SPREAD FOOTINGS, GRADE BEAMS. . . . . 4000 PSI
   SLAB-ON-GRADE. . . . . 3000 PSI
   EXTERIOR AIR-ENTRAINED SLAB-ON-GRADE . . . . 4000 PSI
   FOUNDATION WALLS. . . . . 4000 PSI
   CONC PEDESTAL/PILASTERS . . . . 4000 PSI
   ELEVATED SLABS . . . . .4000 PSI

3. ALL REINFORCING STEEL SHALL BE ASTM A615 GRADE 60. SEE LAP SCHEDULE, UNLESS NOTED OR DETAILED OTHERWISE.
4. CONTRACTOR SHALL PROVIDE REINFORCING SHOP DRAWINGS WHICH ADEQUATELY DEPICT THE REINFORCING BAR SIZES AND PLACEMENT. A WRITTEN DESCRIPTION OF REINFORCEMENT WITHOUT ADEQUATE SECTIONS, ELEVATIONS, AND DETAILS IS NOT ACCEPTABLE.
5. SUBMIT WRITTEN REPORTS OF EACH PROPOSED MIX DESIGN FOR EACH CLASS OF CONCRETE WITH CONCRETE CYLINDER TEST RESULTS AT LEAST 15 DAYS PRIOR TO START OF WORK.
6. ALL CONCRETE THAT WILL BE EXPOSED TO THE WEATHER SHALL HAVE 5.5% AIR ENTRAINMENT.

LAP SPLICE SCHEDULE

(UNLESS NOTED OR DETAILED OTHERWISE)

BAR SIZE	f 'c = 5000		f 'c = 4000		f 'c = 3000	
	TOP BARS*	OTHER BARS	TOP BARS*	OTHER BARS	TOP BARS*	OTHER BARS
#11	101"	78"	113"	87"	131"	101"
#10	91"	70"	102"	79"	118"	91"
#9	81"	63"	91"	70"	105"	81"
#8	72"	55"	80"	62"	93"	72"
#7	63"	49"	70"	54"	81"	63"
#6	43"	33"	48"	37"	56"	43"
#5	36"	28"	40"	31"	47"	36"
#4	29"	22"	32"	25"	37"	29"

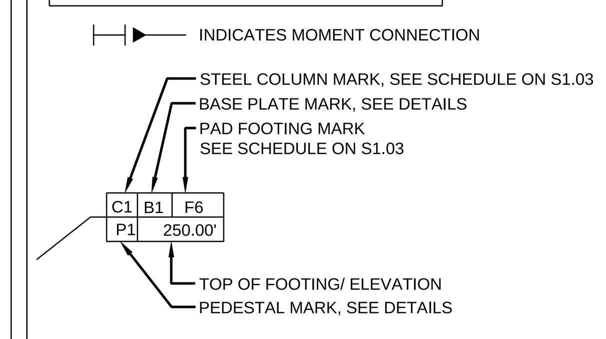
* TOP BAR LAP SPLICE ONLY APPLIES TO GRADE BEAMS.

CONCRETE SLAB NOTES

1. FLOOR CONSTRUCTION SHALL CONSIST OF A 6 1/2" NORMAL WEIGHT CONCRETE SLAB REINFORCED w/ 6X6-W2.9xW2.9 WWF ON 2VLI x 20GA GALVANIZED COMPOSITE DECK w/ THE FOLLOWING MINIMUM PROPERTIES:
   Ip = 0.409 IN^4/FT
   In = 0.406 IN^4/FT
   Sp = 0.341 IN^3/FT
   Sn = 0.346 IN^3/FT
   Fy = 50 KSI
2. WELD COMPOSITE DECK TO STEEL BREAM SUPPORTS WITH 5/8"Ø PUDDLE WELDS IN A 36/4 PATTERN. FASTEN SIDE LAP SEAMS WITH TWO (2) WELDS EACH SPAN. WELD LONG PANEL EDGES TO SUPPORTS WITH 5/8"Ø PUDDLE WELDS @ 1'-0" O.C.
3. THE FOLLOWING ITEMS ARE **NOT** ALLOWED IN THE 6 1/2" CONCRETE SLAB UNLESS APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD:
   A. NO SLOPES ARE ALLOWED IN THE CONCRETE SLAB UNLESS INDICATED ON THE STRUCTURAL CONTRACT DOCUMENTS.
   B. NO EMBEDDED CONDUIT OR OTHER ITEMS.
   C. NO OPENINGS OR VERTICAL PENETRATIONS LARGER THAN 6 INCHES IN DIAMETER UNLESS INDICATED ON THE STRUCTURAL CONTRACT DOCUMENTS.
   D. CONTRACTOR TO ENSURE THAT PENETRATIONS ARE COORDINATED WITH THE MECHANICAL AND ELECTRICAL DRAWINGS.
4. ANY PROPOSED CONSTRUCTION JOINTS IN THE 6 1/2" CONCRETE SLAB OTHER THAN THOSE SHOWN ON THE STRUCTURAL CONTRACT DOCUMENTS MUST BE LOCATED AS FOLLOWS:
   A. IF PARALLEL TO FLOOR BEAMS, LOCATE AT MID-POINT BETWEEN BEAMS.
   B. IF PARALLEL TO GIRDERS, LOCATE AT MID-POINT BETWEEN GIRDERS.

   THE CONTRACTOR SHALL SUBMIT PLANS SHOWING PROPOSED JOINT LOCATIONS TO THE ARCHITECT FOR REVIEW BY THE STRUCTURAL ENGINEER OF RECORD BEFORE PLACING CONCRETE.

STRUCTURAL LEGEND



UNISTRUT NOTES

1. UNISTRUT SUPPORT SYSTEM IS DESIGNED AND PROVIDED BY UNISTRUT SUPPLIER.
2. STAMPED AND SIGNED SHOP DRAWINGS AND CALCULATIONS MUST BE SUBMITTED FOR REVIEW TO ARCHITECT AND STRUCTURAL ENGINEER OF RECORD.
3. CONTRACTOR TO COORDINATE BETWEEN STRUCTURAL DRAWINGS AND UNISTRUT DRAWINGS AND REPORT ANY SUSPECTED DISCREPANCIES OR OMISSIONS TO THE ARCHITECT AND STRUCTURAL ENGINEER IMMEDIATELY.

EXISTING CONDITIONS NOTES

ALL NEW STRUCTURAL STEEL ADJACENT TO EXISTING WALLS AND BEAMS NEEDS TO BE FIELD VERIFIED PRIOR TO SHOP DRAWINGS SUBMITTAL AND FABRICATION. WHILE EXISTING LOCATIONS OF EXISTING WALLS AND BEAMS HAVE BEEN DETERMINED AS BEST AS POSSIBLE, ACTUAL LOCATION RELATIVE TO THE THE NEW BUILDING MAY VARY ACCORDING FIELD CONDITIONS AND MUST BE VERIFIED PRIOR TO CONSTRUCTION. ACTUAL FIELD CONDITIONS MUST TAKE PRECEDENT OVER PLAN DIMENSIONS.

Revisions: | Date

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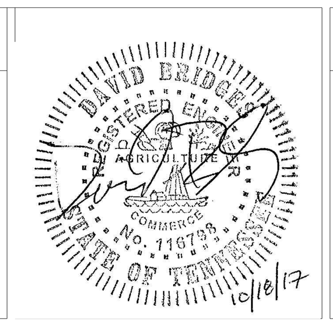

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Drawing Title: GENERAL NOTES - STRUCTURAL

Approved: Project Director
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VAPAHCS PLANNING AND ENGINEERING

Project Title: RENOVATE PHYSICAL MEDICINE AND REHABILITATION POOL AREA

Location: MEMPHIS TN

Date: 10/18/17 | Checked: DKB | Drawn: LEB

Project Number: 614-16-112

Building Number: -

Drawing Number: S0.01

Dwg. 1 of 1

Office of Construction and Facilities Management

VA FORM 08-6231