PLUMBING SPECIFICATIONS

- A. CODES, REGULATIONS AND STANDARD INSTALLATIONS ARE TO COMPLY WITH THE LATEST EDITION OF THE NORTH CAROLINA BUILDING AND PLUMBING CODES AND ALL OTHER APPLICABLE LOCAL AND NATIONAL CODES AND ORDINANCES. IN CASE OF CONFLICT BETWEEN THE CODE AND THE DRAWINGS AND SPECIFICATIONS OR BETWEEN VARIOUS CODES, THEN THE MOST RESTRICTIVE SHALL TAKE PRECEDENT.
- FEES AND PERMITS: PROVIDE ALL LICENSES, FEES, PERMITS, HEALTH DEPARTMENT FEES, INSURANCE, ETC., REQUIRED FOR EXECUTION OF THIS WORK. THE CONTRACT DRAWINGS ARE SCHEMATIC ONLY AND ARE NOT INTENDED TO SHOW ALL FITTINGS, BOLTS, CONNECTIONS, OFFSETS, ETC., UNLESS SPECIFICALLY DIMENSIONED. THE PLUMBING CONTRACTOR SHALL FOLLOW THE DRAWING AS CLOSELY AS POSSIBLE; HOWEVER, NECESSARY ADJUSTMENTS SHALL BE MADE AS REQUIRED TO CONFORM TO STRUCTURAL CONDITIONS, WORK OF OTHER CONTRACTORS AND THE INTENT OF THE DRAWINGS WITHOUT ADDITIONAL COST TO THE
- OWNER. THE DRAWINGS SHALL NOT BE SCALED, SECURE DIMENSIONS FROM ARCHITECTURAL DRAWINGS FOR FIXTURE LOCATIONS. D. THE PLUMBING CONTRACTOR SHALL PROVIDE ALL MATERIALS, PERFORM ALL, WORK AND TEST AND PAY ALL FEES NECESSARY TO MAKE THE PLUMBING SYSTEM OPERABLE AND READY FOR USE BY THE OWNER.
- . GUARANTEE: ALL NEW EQUIPMENT, NEW MATERIALS AND INSTALLATION SHALL BE GUARANTEED TO BE FREE OF DEFECTS FOR A PERIOD OF ONE (1) YEAR AFTER FINAL ACCEPTANCE OF WORK OR IN ACCORDANCE WITH THE MANUFACTURER'S
- PLUMBING CONTRACTORS SHALL BE RESPONSIBLE FOR HIS OWN CLEAN UP AND REMOVAL OF SCRAP FROM JOB SITE. PLUMBING CONTRACTOR SHALL MAINTAIN A CLEAN AND SAFE WORK AREA. G. IN CASE OF ANY CONFLICT BETWEEN INFORMATION FOUND IN THE PLANS, OR IN THE SPECIFICATIONS, THE MOST RESTRICTIVE INTERPRETATION SHALL TAKE PRECEDENT
- H. THE PLUMBING DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE THE DESIGN FOR ROOF GUTTER SYSTEMS OR ROOF DRAIN SYSTEMS I. ALL PLUMBING COMPONENTS SHALL BE INSTALLED, SUPPORTED, AND RESTRAINED IN ACCORDANCE WITH THE NORTH CAROLINA BUILDING CODE REQUIREMENTS FOR SEISMIC DESIGN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RETAIN A PROFESSIONAL ENGINEER COMPETENT IN THIS FIELD FOR THIS DESIGN. FOR ONE POSSIBLE SOURCE FOR THIS SERVICE CONTACT SEISMIC CONTROL AND ISOLATIONS, INC. PHONE: 910 799-5204. ALL REQUIRED INSPECTIONS FOR THESE
- DESIGNS SHALL, BE PERFORMED BY APPROVED INSPECTORS AND AGENCIES PROVIDED BY OWNER OR OWNER'S AGENT. J. ALL ROOF MOUNTED MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENTS SHALL BE INSTALLED, SUPPORTED, AND RESTRAINED IN ACCORDANCE WITH THE NORTH CAROLINA BUILDING CODE REQUIREMENTS FOR WIND DESIGN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RETAIN A PROFESSIONAL ENGINEER COMPETENT IN THIS FIELD FOR THIS DESIGN, FOR ONE POSSIBLE SOURCE FOR THIS SERVICE, CONTACT SEISMIC CONTROL AND ISOLATION, INC. PHONE:
- 910-799-5204, ALL REQUIRED INSPECTIONS FOR THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED INSPECTORS AND AGENCIES HIRED BY THE OWNER OR OWNER'S AGENT AS REQUIRED BY THE BUILDING CODE.

K. THE ENGINEER IS NOT RESPONSIBLE FOR JOB SITE SAFETY

WORK SHALL INCLUDE BUT IS NOT LIMITED TO:

- A. PROVIDE FIXTURES AND INSTALL AND CONNECT WASTE AND WATER PIPE AS SHOWN ON DRAWINGS.
- B. ROUTE WASTE AND WATER TO TIE INTO EXISTING WASTE AND WATER LINES INSIDE BUILDING.
- D. PERFORM REQUIRED DEMOLITION AS IND!CATED ON DRAWINGS AND/OR IN THESE SPECIFICATIONS.

1503 MATERIALS

SPACING FOR COPPER PIPE SHALL BE AS FOLLOWS:

- 1" & SMALLER 6'-0" O.C. 1-1/4" & 1-1/2" 8'-0" O.C.
- 3" & LARGER 10'-0" O.C.

10'-0" O.C.

12'-0" O.C.

- SPACING FOR CARBON STEEL AND CAST IRON PIPE SHALL BE AS FOLLOWS:
- 1-1/2" & 2" 2-1/2", 3" & 4"
- SPACING FOR PVC PIPE SHALL BE AS FOLLOWS:
- 1-1/2" & SMALLER 2'-0" O.C.
- 3'-0" O.C. 5'-0" O.C.
- 4. SPACING FOR CPVC PIPE SHALL BE AS FOLLOWS:
- 1" & SMALLER 3'-0" O.C. 4'-0" O.C. 1-1/4 TO 2"
- HANGER FOR HORIZONTAL PIPING SHALL BE THE CLEVIS TYPE.
- HANGERS FOR BARE COPPER PIPING SHALL BE COPPER PLATED. HANGER FOR INSULATED PIPING SHALL EXTEND AROUND THE INSULATION, PROVIDE 16 GAUGE GALVANIZED STEEL INSULATION
- PROTECTION SADDLES 12" LONG AT EACH HANGER ON ALL INSULATED LINES AND HARD INSULATION INSERTS AT SADDLES.
- A HANGER SHALL BE FASTENED BY MEANS OF THREADED RODS TO BUILDING STRUCTURE. ALE HANGERS SHALL PERMIT ADEQUATE
- ADJUSTMENT AFTER ERECTION WHILE STILL SUPPORTING THE LOAD.
- 9. A HANGER SHALL BE PROVIDED WITHIN ONE FOOT OF EACH BEND IN HORIZONTAL PIPING. 10. SUPPORT MATERIAL SHALL BE PROPERLY CHOSEN TO AVOID ATMOSPHERIC CORROSION AND TO AVOID GALVANIC CORROSION DUE TO

CONTACT OF SUPPORT AND ADJACENT MATERIALS.

- C. HOT AND COLD WATER PIPES BEGINNING 5' FROM BUILDING WALL: PIPE SHALL BETYPE L COPPER TUBING ABOVE GRADE AND TYPE K BELOW GRADE
- FITTINGS SHALL BE MADE USING SOLDER AS PER THE N.C. PLUMBING CODE FOR POTABLE WATER.

- D. ACCEPTABLE ALTERNATE:

- CPVC IS AN ACCEPTABLE ALTERNATE FOR ALL WATER PIPING. ITEM P UNDER EXECUTION SHALL BE COMPLETELY MET. IN PARTICULAR, THE CONTRACTOR MUST BE CERTIFIED BY THE MANUFACTURER FOR CPVC INSTALLATION AND A MANUFACTURER'S REPRESENTATIVE MUST VIEW THE COMPLETED PROJECT AND WRITE A LETTER INDICATING PROPER INSTALLATION PRACTICES WERE FOLLOWED.
- PIPE AND FITTINGS SHALL BE CPVC. FLOWGUARD GOLD OR EQUAL FOR 2"Ø AND BELOW. CORZAN OR EQUAL FOR ABOVE 2"Ø.
- FITTINGS SHALL BE MADE AS PER MANUFACTURER'S INSTRUCTIONS AND AS PER THE N.C. PŁUMBING CODE FOR POTABLE WATER.
- E. VENT AND WASTE PIPE WASTE AND VENT PIPE SHALL BE SCH 40 PVC-DWV AS PER ASTM 2665 D WITH SOLVENT WELD JOINTS EXCEPT AS NOTED BELOW, PVC SHALL NOT BE USED IN A RETURN AIR PLENUM, FOR RETURN AIR PLENUMS CAST IRON SHALL BE USED. TRANSITION FROM PVC TO CAST IRON SHALL BE MADE WITH CODE APPROVED TRANSITION FITTINGS DESIGNED EXPRESSLY FOR THAT PURPOSE. ALL FITTINGS SHALL BE SANITARY DRAINAGE PATTERN.
- WATER GATE VALVES SHALL BE OF BRASS CONSTRUCTION WITH SOLDER JOINT FITTINGS.

2. ALL VALVES SHALL BE AS PER PLUMBING CODE.

- G. INSULATION:
- WATER PIPING IN UNCONDITIONED UTILITY ROOM, ATTIC SPACE OR INSTALLED OUTSIDE BUILDING INSULATION SHALL BE INSULATED WITH 2" THICK FIBERGLASS WITH VAPOR BARRIER JACKET. UT&LITY ROOM INSULATION SHALL ALSO HAVE A PVC JACKET, STAPLED AND
- 2. EXPOSED HOT AND COLD WATER LINES AND WASTE LINES UNDER HANDICAP LAVATORIES AND SINKS SHALL BE INSULATED WITH FULLY MOLDED, TRUEBRO, HANDI-LAV GUARD INSULATION KIT.
- UNDERGROUND LINES BELOW FROST LINE SHALL NOT BE INSULATED.
- 4. ALL OTHER WATER PIPING SHALL BE INSULATED AS FOLLOWS: H. COLD WATER PIPING SHALL HAVE 1/2" ARMAFLEX.
- HOT WATER PIPING SHALL HAVE 1" ARMAFLEX ON FIRST 8' OF PIPE FROM WATER HEATER AND 1/2" ARMAFLEX IN ALL OTHER PLACES.
- J. CLEANOUTS: INTERIOR CLEANOUTS SHALL BE CAST IRON BODE WITH BRONZII: O R NICKALOY TOPS, JOSAM O R EQUAL.
- WALL CLEANOUTS SHALL BE INSTALLED BEHIND STAINLESS STEEL COVERPLATES.
- K. VENTS SHALL PENETRATE ROOF WITH FLEXIBLE BOOTS WITH FLASHING FLANGE.

- A. ALL HOLES THROUGH WALLS, FLOORS AND CEILINGS ARE TO BE DRILLED, NOT BROKEN. ROUND ALL SHARP EDGES TO DRILLED HOLES.
- LINES ARE NOT TO BE COVERED UNTIL INSPECTED BY THE ARCHITECT. WRAP COPPER PIPE WITH DUCT TAPE WHERE IT PENETRATES THE FLOOR.
- D. DO NOT MAKE A WATER LINE JOINT UNDER THE SLAB.
- . A WATER HAMMER ARRESTOR SHALL BE INSTALLED AT FIXTURES THAT HAVE QUICK CLOSING VALVES WHEN MATELLIC PIPE IS INSTALLED. WATER HAMMER ARRESTORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS. WATER HAMMER ARRESTORS SHALL COMPLY WITH ASSE 1010.
- WASTE PIPES PASSING UNDER OR THROUGH FOUNDATIONS OR THROUGH LOAD BEARING SECTIONS OF A WALL SHALL BE ROUTED THROUGH D.I. SLEEVES AT LEAST TWO PIPE SIZES LARGER THAN THE WASTE PIPE.
- PROVIDE SUFFICIENT HANGERS, SUPPORTS, CLAMPS, CLIPS, INSERTS AND MAINTAINING DEVICES TO SUPPORT ALL PIPING AS PER GOOD PIPING PRACTICE AND TO MAINTAIN PROPER DRAINAGE. INSTALL ALL EQUIPMENT AS PER MANUFACTURER'S INSTRUCTIONS AND PERTINENT RECOMMENDATIONS.
- INSTALL UNDERGROUND PIPE AS PER MANUFACTURER'S RECOMMENDATIONS, TRENCH SHALL BE CLEAR OF ALL ROCKS AND OTHER ABRASIVE MATERIALS. TRENCH BOTTOM SHALL BE COMPACTED AND FULLY SUPPORT PIPE, FILL DIRT TO 6" ABOVE
- TOP OF PIPE TO BE CLEAN AND FREE OF ABRASIVE MATERIALS. FOLLOW! ALL MANUFACTURERS' RECOMMENDATIONS FOR PIPE BEDDING GIVEN SOIL CONDITIONS. PLUMBING CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR TO ASSURE THAT ALL PIPE INTERFERENCES (FOUNDATIONS, CABLES, OTHER PIPING, ETC.) ARE AVOIDED BY UNDERGROUND PLUMBING. K. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT PLUMBING WALLS ARE CONSTRUCTED TO ALLOW INSTALLATION OF FIXTURE CARRIERS. PLUMBING CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR PRIOR TO WALL
- CONTRACTOR SHALL SUPPLY AND INSTALL FIXTURE HANGER AS REQUIRED FOR PROPER INSTALLATION.
- M. WATER PIPE ROUTING THROUGH STUDS SHALL BE PROTECTED BY METAL STUD GUARDS. N. INSTALL ALL WATER PIPING INSIDE OF BUILDING INSULATION IF POSSIBLE, WATER PIPING INSTALLED IN ATTIC SPACE MUST BE UNDER BATT INSULATION. IF BLOWN INSULATION IS USED IN ATTIC SPACE WATER PIPE SHALL BE INSULATED AS IF IT
- WERE IN AN UNCONDITIONED SPACE.
- D. VENT TERMINALS SHALL NOT BE LOCATED WITHIN 10' OF ANY AIR INTAKE OPENING.
- P. INSTALLATION OF CPVC WATER PIPE SHALL BE STRICTLY AS PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. INSTALLER SHALL HAVE ATTENDED MANUFACTURER'S TRAINING AND BE MANUFACTURER CERTIFIED. ALL PIPE EXPANSION PROVISIONS SHALL BE ADDED TO WATER PIPING LAYOUT AS RECOMMENDED BY MANUFACTURER. (FLOWGUARD AND CORZAN CONTACT: JOSHUA STOKES, PHONE 704.460.1694.) Q. ALL PIPING SHALL BE LABELED WITH PLASTIC LABELS INDICATING PIPE TYPE (I.E. GAS, COLD WATER, HOT WATER, ETC.) AND DIRECTION OF FLOW. PLACE LABELS ON 25' CENTERS.

- A. THE HOT AND COLD WATER PIPING SHALL HOLD A HYDROSTATIC TEST PRESSURE OF 100 PSI FOR A PERIOD OF AT LEAST 1-1/2 HOURS. ANY JOINT TO LEAK UNDER TEST SHALL BE BROKEN, REMADE AND RETESTED. ANY EXISTING WATER LINES
- WHICH ARE TIED TO BY NEW LINES SHALL MEET THE FOLLOWING: VERIFY EXISTING LINES TIE PROPERLY TO EXISTING WATER SYSTEM
- VERIFY EXISTING WATER LINES ARE IN GOOD CONDITION AND FREE FROM LEAKS.
- ANY REUSED EXISTING PIPE SHALL BE REPLACED AS NEEDED TO PROVIDE A PROPERLY OPERATING WATER SYSTEM. B. ALL WASTE PIPING SHALL BE TESTED BY FILLING THE LINES TO OVERFLOWING. ANY JOINT FOUND TO LEAK UNDER TEST SHALL BE BROKEN, REMADE AND RETESTED. ALSO FOR EXISTING WASTE LINES WHICH ARE TIED TO BY NEW LINES THE
- VERIFY EXISTING LINES THE PROPERLY TO EXISTING WASTE SYSTEM
- VERIFY EXISTING WASTE LINES ARE IN GOOD CONDITION AND FREE FROM LEAKS. ANY REUSED EXISTING PIPE SHALL BE REPLACED AS NEEDED TO PROVIDE A PROPERLY OPERATING WASTE SYSTEM.

1506 CHLORINATION

WATER PIPE SHALL BE CHLORINATED TO 50 PPM RESIDUAL CHLORINE AFTER TWENTY-FOUR HOURS AND TO THE SATISFACTION OF THE LOCAL HEALTH DEPARTMENT OR BUILDING INSPECTION DEPARTMENT.

ALL MATERIALS AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE SHOWN OR SPECIFIED AND SHALL BE OF THE VERY BEST QUALITY AS SPECIFIED. REQUESTS TO SUBSTITUTE OTHER MATERIALS OR PRODUCTS FOR THOSE SPECIFIED SHALL BE SENT IN WRITING TO THE OWNER. REQUESTS SHALL BE ACCOMPANIED BY ENGINEERING DATA, SPECIFICATION SHEETS, ETC., AS NECESSARY TO FULLY

APPROVAL OF EQUIPMENT WILL NOT RELIEVE THE CONTRACTOR OF NONCOMPLIANCE WITH THE SPECIFICATIONS EVEN IF SUCH APPROVAL IS MADE IN WRITING, UNLESS THE ENGINEER IS CALLED TO THE NONCONFORMING FEATURES BY LETTER

IDENTIFY AND APPRAISE THE PRODUCTS.

ACCOMPANYING THE SUBMITTAL DATA.

1508 PLACING IN SERVICE UPON COMPLETION OF THE ENTIRE SYSTEM, THE PLUMBING CONTRACTOR SHALL FLUSH ALL LINES TO INSURE PROPER FLOWS. ALL FIXTURES SHALL BE LEFT CLEAN.

THE PLUMBING CONTRACTOR SHALL DEMONSTRATE THE PROPER FUNCTION OF THE ENTIRE SYSTEM. THE PLUMBING CONTRACTOR SHALL ACQUAINT THE OWNER'S REPRESENTATIVE WITH THE PROPER OPERATION OF THE PLUMBING SYSTEM.

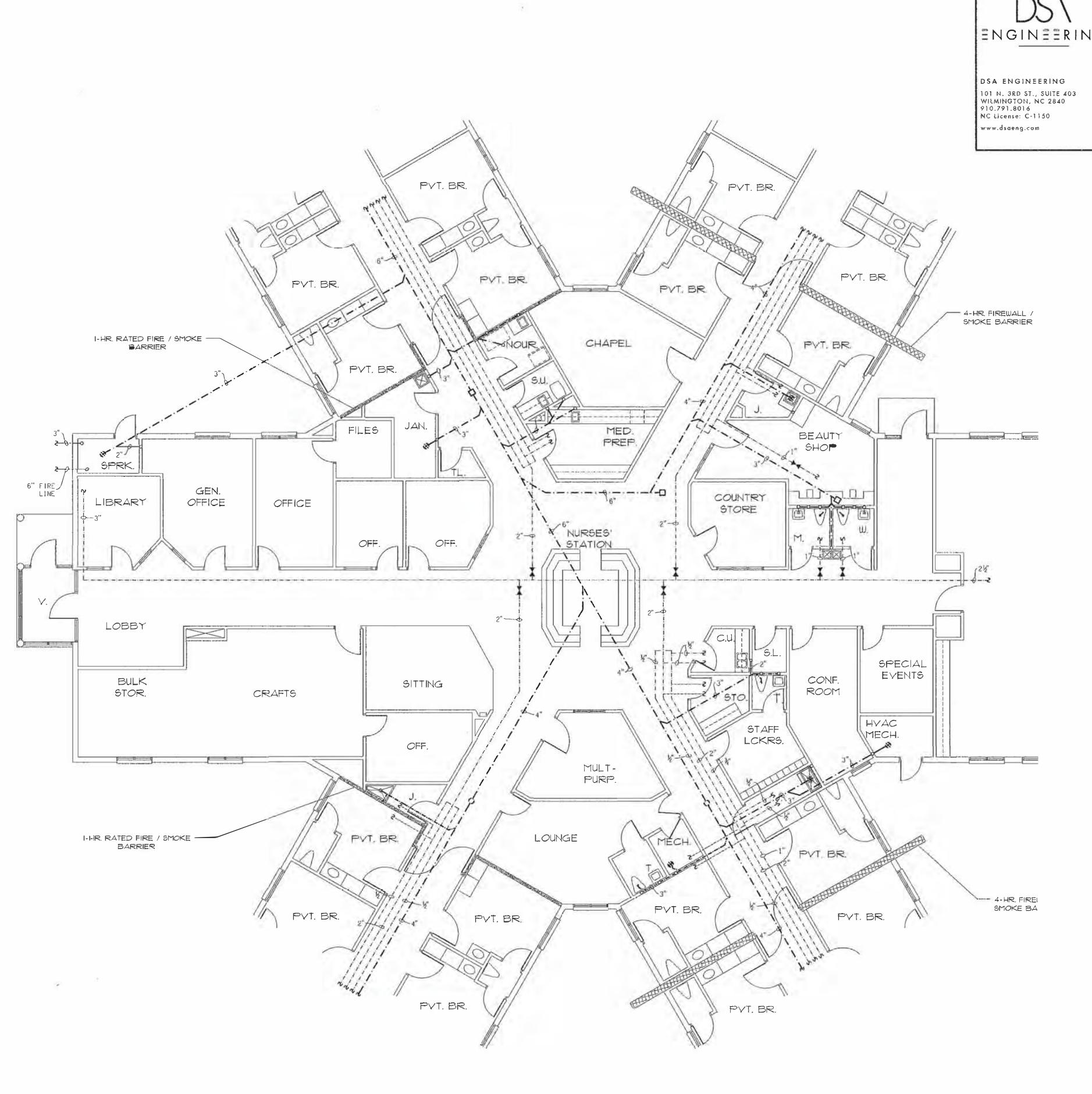
ALL BIDDERS ON THIS WORK SHALL VISIT THE SITE AND THOROUGHLY FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS BEFORE SUBMITTING THEIR BIDS. NO ALLOWANCE WILL BE MADE FOR LACK OF KNOWLEDGE OF EXISTING CONDITIONS.

AS SOON AS POSSIBLE (AND NOT MORE THAN 30 DAYS) AFTER THE CONTRACT IS SIGNED, THE CONTRACTOR SHALL SUBMIT FIVE (5) COPIES OF THE SHOP DRAWINGS COVERING FIXTURES, AND ANY SPECIAL EQUIPMENT WHICH HE INTENDS TO USE. FOUR (4) COPIES OF THIS DATA WILL BE RETURNED BY THE ENGINEER WHO WILL INDICATE APPROVAL OR OTHERWISE.

1511 FIRE RATED WALLS, FLOORS & CEILINGS CONTRACTOR SHALL DETERMINE LOCATION OF ALL FIRE AND SMOKE RATED WALLS, FLOORS AND CEILINGS FROM ARCHITECTURAL DRAWINGS. PIPING PENETRATIONS OF FIRE RATED ASSEMBLIES SHALL BE AS REQUIRED BY N.C. BUILDING CODE, WITH APPROVED AND APPROPRIATELY RATED UL FIRESTOP SYSTEMS AT ALL PENETRATIONS. ALL FIRESTOP SYSTEMS SHALL BE APPROVED FOR THEIR APPLICATION BY LOCAL INSPECTION AUTHORITIES PRIOR TO FIELD INSTALLATION.

THE CONTRACTOR SHALL PROVIDE ALL REQUIRED PLUMBING DEMOLITION. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TESTING FOR ASBESTOS, LEAD BASED PAINT OR OTHER HAZARDOUS MATERIALS IN ITEMS TO BE DEMOLISHED. IF SUCH MATERIALS ARE FOUND, CONTRACTOR SHALL HAVE HAZARDOUS MATERIALS ABATED AS PER LOCAL, STATE AND FEDERAL REGULATIONS BY A CONTRACTOR CERTIFIED AND LICENSED FOR THIS WORK. ALL DEMOLITION AND DISPOSAL SHALL BE AS PER ALL PERTINENT LOCAL, STATE AND FEDERAL REGULATIONS. CONTRACTOR SHALL PRESENT OWNER WITH WORK PLAN AND DISPOSAL PLAN FOR ALL HAZARDOUS MATERIALS AND SUBSTANCES.

THE CONTRACTOR SHALL DELIVER TO THE OWNER ALL ITEMS THE OWNER WISHES TO RETAIN. ALL OTHER EQUIPMENT AND DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE REMOVED FROM THE SITE.



A Partial Plumbing Plan - Existing Center Core
SCALE: 1/8" = 1'-0"

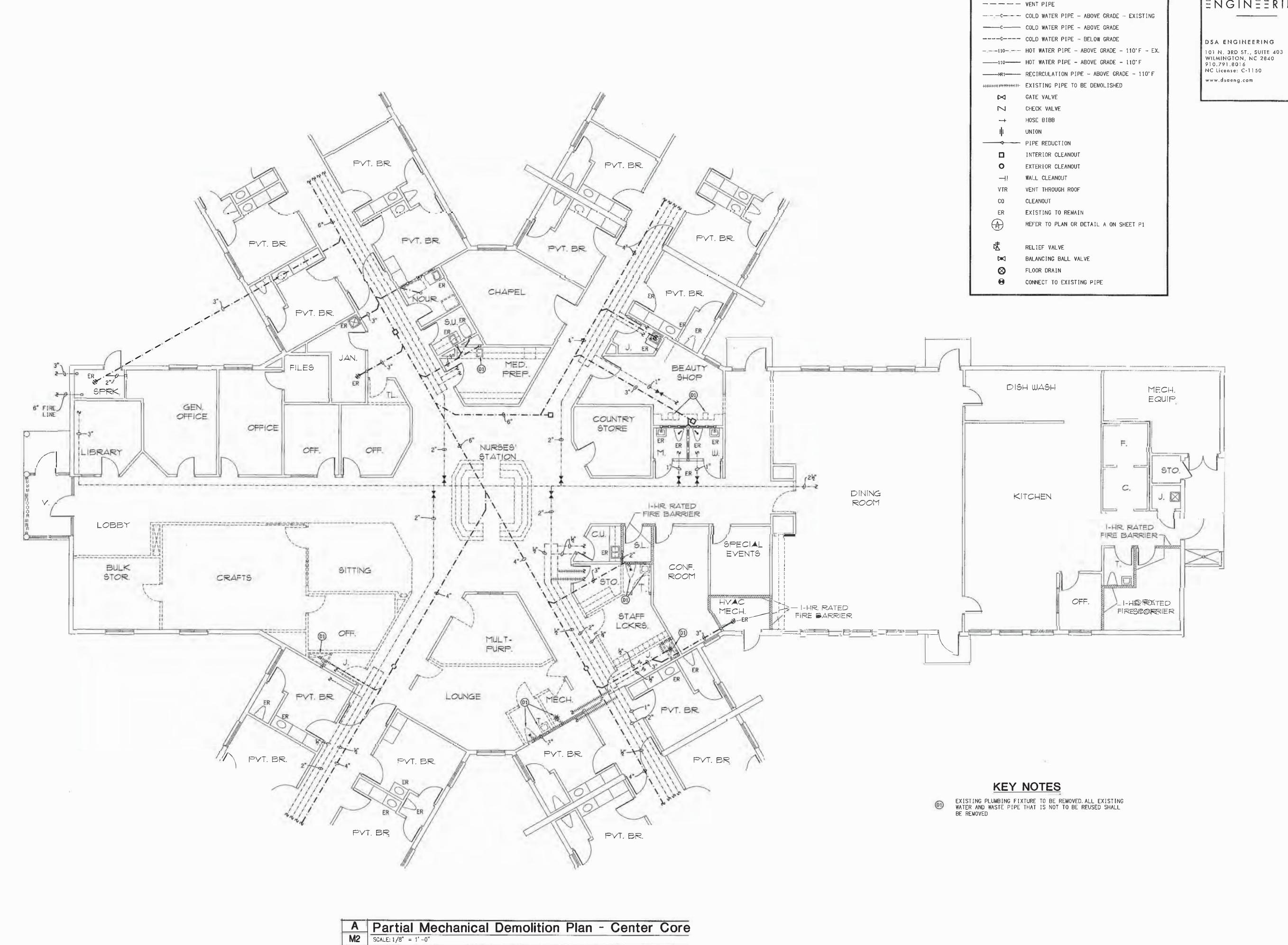
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LEGEND

---- WASTE PIPE - EXISTING

--- VENT PIPE - EXISTING

WASTE PIPE

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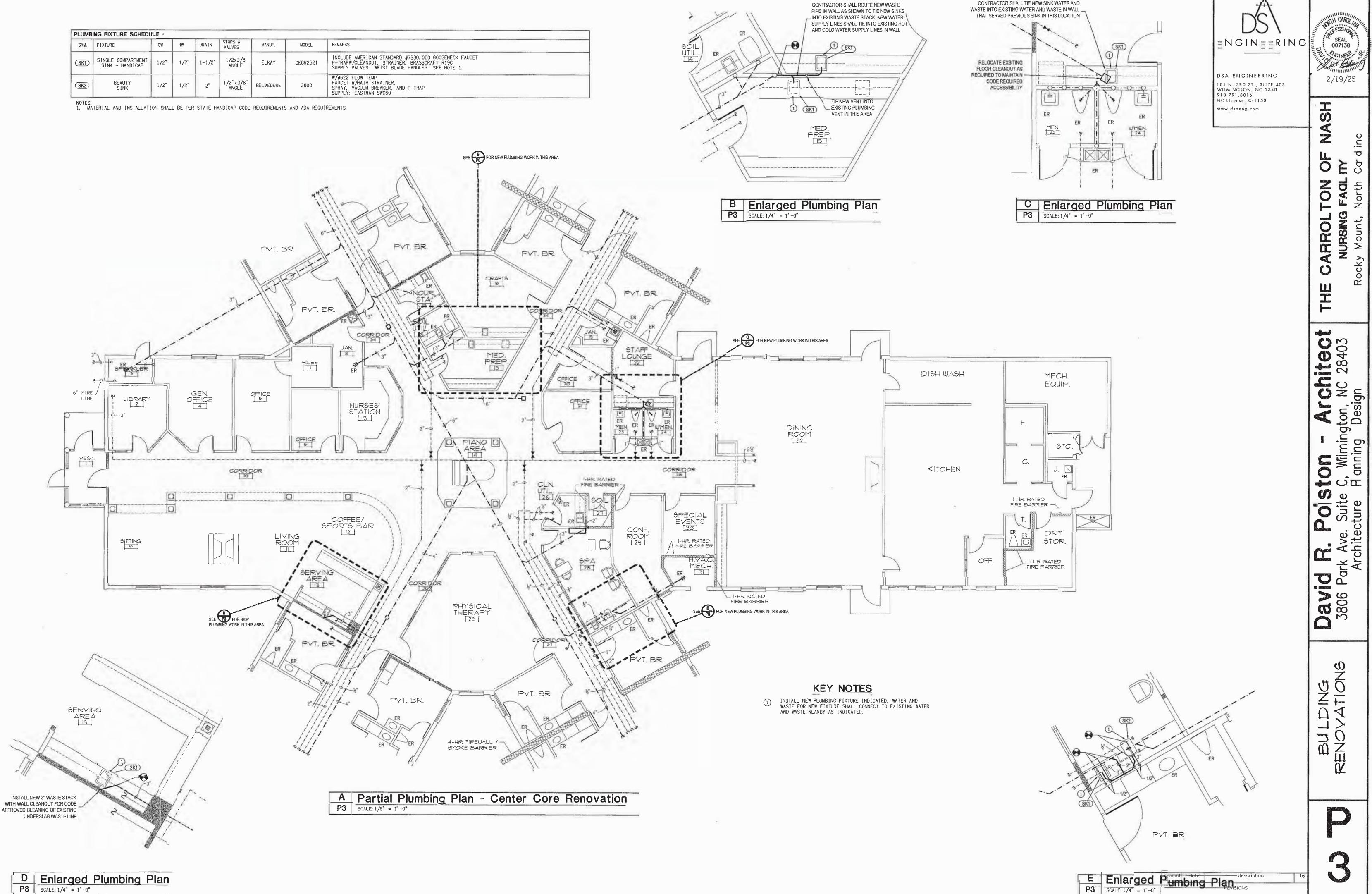
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P3 SCALE: 1/4" = 1'-0" Plan REVISIONS