

Order Plans

### PLUMBING MATERIALS AND NOTES

**DOMESTIC WATER PIPING:**

- DOMESTIC WATER PIPING AND JOINTS **BELOW GRADE**  
**PIPE 2 1/2" AND SMALLER:**  
 A. PROVIDE TYPE "K" SOFT ANNEALED SEAMLESS COPPER TUBING (ASTM B 88) WITH NO JOINTS BELOW FLOOR (SLABS).
- DOMESTIC WATER PIPING AND JOINTS **ABOVE GRADE**  
**PIPE 2" AND SMALLER:**  
 A. TYPE "L" HARD DRAWN SEAMLESS COPPER TUBING (ASTM B 88) AND CAST COPPER ALLOY FITTINGS (ASME B16.18) WITH LEAD FREE 95-5 TIN/SILVER SOLDER JOINTS (ASTM B 32)  
 B. CPVC PIPE (ASTM D2846/D2846M) AND FITTINGS; SOLVENT WELD JOINTS WITH ASTM F493 SOLVENT CEMENT.  
 C. CROSSLINKED POLYETHYLENE (PEX) TUBING (ASTM F876/F877) WITH COLD EXPANSION FITTINGS (ASTM F1960).
- STERILIZE THE DOMESTIC WATER SYSTEM IN ACCORDANCE WITH THE AMERICAN WATER WORKS ASSOCIATION'S SPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.
- INSULATE DOMESTIC WATER PIPING ABOVE GRADE (EXCEPT EXPOSED CONNECTIONS TO PLUMBING FIXTURES) WITH GLASS FIBER INSULATION HAVING A VAPOR BARRIER AND JACKET. PIPE INSULATION SHALL HAVE A CONDUCTIVITY NOT EXCEEDING 0.27 BTUH x SQ. FT. FOLLOW SCHEDULE BELOW:  

SERVICE TYPE	PIPE SIZES	INSULATION THICKNESS
DOMESTIC HOT WATER & CIRCULATION	1/2" - 1 1/4"	1"
DOMESTIC COLD WATER	1/2" - 1 1/4"	1/2"
DOMESTIC COLD WATER	1 1/2" - 4"	1"
- DOMESTIC WATER PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES ARE REQUIRED TO MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ASTM E84 (NFPA 255) METHOD AND SHALL BE PLENUM RATED. PROVIDE PVC JACKET FOR EXPOSED PIPING IN MECHANICAL ROOMS.
- PROVIDE TWO-PIECE, BRONZE OR BRASS BODY, FULL PORT, 600 PSI WOG, BALL TYPE SHUT-OFF VALVES WITH BLOW-OUT PROOF STEMS AND ADJUSTABLE PACKING GLANDS. VALVES SHALL BE LEAD FREE PER NSF 61, ANNEX G REQUIREMENTS. INSTALL VALVES IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.
- PROTECT COPPER PIPING AGAINST CONTACT WITH DISSIMILAR METALS. ALL HANGERS, SUPPORTS, ANCHORS AND CLIPS SHALL BE COPPER OR COPPER PLATED. WHERE COPPER PIPING IS CARRIED ON TRAPEZE HANGERS WITH OTHER PIPING, PROVIDE A PERMANENT ELECTROLYTIC ISOLATION MATERIAL TO PREVENT CONTACT WITH DISSIMILAR OTHER METALS.
- PROTECT COPPER PIPING AGAINST CONTACT WITH ALL MASONRY. WHERE COPPER IS SLEEVED THROUGH MASONRY, PROVIDE COPPER OR RED BRASS SLEEVES. WHERE COPPER MUST BE CONCEALED IN OR AGAINST MASONRY PARTITIONS, PROVIDE A HEAVY COATING OF ASPHALTIC ENAMEL ON THE COPPER PIPING AND 15# ASPHALT SATURATED FELT BETWEEN THE PIPING AND THE MASONRY PARTITION.
- DOMESTIC WATER PIPING SHALL BE SLOPED FOR DRAINAGE WITH DRAIN VALVES INSTALLED AT LOW POINTS.

**SANITARY WASTE / VENT / GREASE WASTE PIPING:**

- PIPING **BELOW GRADE:**  
 A. SERVICE WEIGHT CAST IRON HUB AND SPIGOT PIPE (ASTM A 74) WITH COMPRESSION JOINTS (CSPI HSN) AND NEOPRENE GASKETS (ASTM C 584)
- PIPING **ABOVE GRADE:**  
 A. SERVICE WEIGHT CAST IRON NO-HUB PIPE AND FITTINGS (CSPI 301) WITH NEOPRENE GASKET AND STAINLESS STEEL CLAMP JOINTS (CSPI 310)  
 B. SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855)  
 C. FOAM CORE PIPE IS NOT APPROVED.
- SLOPE SANITARY WASTE PIPING AT 1/4" PER FOOT MINIMUM FOR PIPING 2 1/4" AND SMALLER AND 1/8" PER FOOT MINIMUM FOR PIPING 3" AND LARGER UNLESS NOTED OTHERWISE. IF EXISTING CONDITIONS ALLOW, SLOPE ALL KITCHEN WASTE PIPING AT 1/4" PER FOOT.
- PROVIDE CLEAN-OUTS AT EVERY TURN IN PIPING IN EXCESS OF 45° AND NO FURTHER THAN 100'-0" APART IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING, FINISHED MATERIALS AND AT THE BASE OF A STORM DRAIN RISER.
- PROVIDE FLOOR CLEANOUTS WITH TOPS DESIGNED TO MATCH SPECIFIC FLOOR FINISHES SUCH AS CARPET, TILE, ETC. YARD CLEANOUTS SHALL BE PROVIDED IN AN 18"x18"x6" CONCRETE PAD.
- WHERE WASTE PIPING IS EXPOSED IN REST ROOM AREAS, PROVIDE CHROME PLATED BRASS PIPING, REMOVABLE P-TRAPS, MATCHING STOPS AND ESCUTCHEONS IN ALL LAVATORY AREAS.

**NATURAL GAS PIPING:**

- NATURAL GAS PIPING AND FITTINGS **ABOVE GRADE:** SCHEDULE 40 BLACK STEEL PIPING, TYPE S, SEAMLESS, GRADE B (ASTM A 53) AND 150 PSI MALLEABLE BLACK IRON FITTINGS, TYPE 32510, (ASTM B 16.3) OR FORGED STEEL WELDING PIPE FITTINGS (ASTM A234). PROVIDE THREADED JOINTS FOR PIPE 2" AND SMALLER. PROVIDE WELDED JOINTS (ASME B31.9) FOR PIPE 2" AND LARGER.
- SPACE GAS PIPING HANGER ROOSTERS 0" ON CENTER MAXIMUM AND SPACE TRANSVERSE BRACING 20'-0" ON CENTER MAXIMUM. TRANSVERSE BRACING FOR ONE SECTION MAY ACT AS LONGITUDINAL BRACING FOR THE PIPE SECTION CONNECTED TO IT IF THE BRACING IS INSTALLED WITHIN 24" OF THE ELBOW OR TEE. COORDINATE HANGER LOCATIONS WITH STRUCTURAL DRAWING DETAILS.
- PROVIDE A.G.A. CERTIFIED SHUT-OFF VALVE, MINIMUM 125 PSI RATED, NON-LUBRICATED PLUG TYPE WITH BRONZE BODY AND BRONZE PLUG, STOPNERS AND REGULATORS (AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER) FOR ALL EQUIPMENT CONNECTED TO THE NATURAL GAS SYSTEM.
- GAS PRESSURE REGULATORS SHALL COMPLY WITH ANSI Z21.80. PRESSURE REGULATOR SHALL MAINTAIN OPERATING PRESSURE SETTING DOWNSTREAM AND NOT EXCEED 150 PERCENT OF DESIGN PRESSURE. SHUT-OFF OVERPRESSURE PROTECTION DEVICE SHALL BE FACTORY MOUNTED ON REGULATOR. WHEN USING VENTLESS REGULATORS, MOUNT REGULATOR IN A HORIZONTAL UPRIGHT POSITION. IF VENTED TYPE REGULATORS ARE USED, INSTALL VENT PIPING (FULLY VENTED OPEN) FROM GAS PRESSURE REGULATORS TO OUTDOORS AND TERMINATE IN WEATHER-PROOF BOX.
- PAINT ALL GAS PIPING WITH 2 COATS OF YELLOW ENAMEL PAINT APPLIED WITH A BRUSH (2 THICKNESS MINIMUM). STENCIL "GAS" ON PIPE AT 12'-0" CENTERS FOR ALL LOW PRESSURE PIPING (0.5 PSI). STENCIL "2-PSI GAS" ON PIPE AT 6'-0" CENTERS FOR 2 PSI GAS PIPING.

### PLUMBING GENERAL NOTES

**GENERAL REQUIREMENTS:**

- PLUMBING WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE NORTH CAROLINA PLUMBING CODE AND WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
- SCOPE: PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL PLUMBING SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE CODES.
- PERMITS: APPLY AND PAY FOR ALL NECESSARY PERMITS, FEES AND INSPECTIONS REQUIRED BY ANY PUBLIC AUTHORITY HAVING JURISDICTION. ACREAGE CHARGES, FACILITIES CHARGES AND BOND PROPERTY ASSESSMENTS ARE NOT TO BE CONSTRUED TO BE A PART OF THIS CONTRACT.
- WARRANTY: PROVIDE A ONE YEAR WARRANTY, FROM THE DATE OF ACCEPTANCE OF WORK BY THE OWNER, FOR ALL PLUMBING MATERIALS AND EQUIPMENT.
- COORDINATE ALL PLUMBING PIPING LOCATIONS, ROUGH-IN LOCATIONS AND EQUIPMENT LOCATIONS WITH OTHER TRADES TO AVOID CONFLICTS AND INTERFERENCES. FINAL PIPING AND EQUIPMENT LOCATIONS SHALL BE A CODE COMPLIANT INSTALLATION FOR ALL TRADES.
- FIELD VERIFY PROPER OPERATION OF EXISTING SYSTEMS BEFORE STARTING CONSTRUCTION. NOTIFY THE ARCHITECT / ENGINEER OF RECORD OF ANY PROBLEMS OR DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND EXISTING CONDITIONS AND/OR ANY POTENTIAL PROBLEMS OBSERVED BEFORE CONTINUING WORK IN THE EFFECTED AREAS.
- WHERE DISCREPANCIES ARE FOUND IN THE DRAWINGS AND SPECIFICATIONS THE MORE STRINGENT SHALL APPLY. CONTACT ENGINEER FOR CLARIFICATION.
- ALL PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
- ALL VALVES, BACKFLOW PREVENTERS, BOOSTER PUMPS, ETC. SERVING THE DOMESTIC WATER SYSTEM SHALL MEET LEAD FREE STANDARDS PER ANSI/NSF 372 AND NSF 61, ANNEX G.
- CUT WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF PLUMBING WORK. ALL CUTTING SHALL BE HELD TO A MINIMUM. PATCH AND FINISH SURFACES TO MATCH ADJOINING SURFACES.
- PLUMBING PLANS SHALL NOT BE SCALED. REFERENCE THE ARCHITECTURAL PLANS FOR ALL LOCATIONS OF PLUMBING FIXTURES, WALLS, DOORS, WINDOWS, ETC.
- PLUMBING PIPING AND SPECIALTIES SHALL BE LOCATED CONCEALED IN WALLS, PARTITIONS OR ABOVE CEILINGS UNLESS NOTED OTHERWISE. PLUMBING PIPING IN EXPOSED AREAS SHALL BE TIGHT TO UNDERSIDE OF STRUCTURE. PROVIDE ACCESS DOORS FOR CONCEALED SPECIALTIES.
- PLUMBING PIPING, VENTS, ETC. EXTENDING THROUGH EXTERIOR WALLS AND/OR THE DECK SHALL BE FLASHED AND COUNTER FLASHED IN A WATERPROOF MANNER. COORDINATE FLASHING WITH THE GENERAL CONTRACTOR.
- DO NOT INSTALL PLUMBING PIPING IN AREAS SUBJECT TO FREEZING TEMPERATURES. INSTALL PLUMBING PIPING SHOWN IN EXTERIOR WALLS ON THE CONDITIONED SIDE OF THE WALL INSULATION.
- PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
- ATTACH HANGERS TO STRUCTURE, HANGERS SHALL NOT ATTACH TO THE DECK.
- PROVIDE ACCESS DOORS FOR VALVES, WATER HAMMER ARRESTORS, STOP PRIMERS, ETC. CONCEALED IN MASONRY WALLS, GYPBOARD WALLS AND/OR CEILINGS THAT WILL REQUIRE MAINTENANCE ACCESS.
- PLUMBING SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO:  
 PLUMBING FIXTURES AND EQUIPMENT, FIRE STOPPING, SEISMIC BRACING, PIPE IDENTIFICATION, DOMESTIC WATER SYSTEM, SANITARY WASTE AND VENT SYSTEM, NATURAL GAS SYSTEM.

**PLUMBING FIXTURES AND EQUIPMENT:**

- PROVIDE COMPLETE PLUMBING FIXTURES AND EQUIPMENT. INCLUDE SUPPLIES, STOPS, VALVES, FAUCETS, DRAIN TRAPS, TAIL PIPES, ESCUTCHEONS, ETC.
- PLUMBING FIXTURES AND EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS AND INSTALLATION INSTRUCTIONS.
- THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SUBSTITUTIONS TO SPECIFIED PLUMBING FIXTURES AND EQUIPMENT INCLUDING BUT NOT LIMITED TO; PROVIDING MAINTENANCE CLEARANCE, PIPING, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BRASS ALTERATIONS, ETC. AND ANY MODIFICATIONS TO ASSOCIATED MECHANICAL, ELECTRICAL OR PLUMBING SYSTEMS REQUIRED BY THE EQUIPMENT'S INSTALLATION INSTRUCTIONS. ALL COSTS ASSOCIATED WITH SUBSTITUTIONS SHALL BE INCLUDED IN THE ORIGINAL BASE BID.

**FIRE STOPPING:**

- FIRE STOP ALL PENETRATIONS, BY PIPING OR CONDUITS, OF FIRE RATED WALLS, FLOORS AND PARTITIONS. PROVIDE A DEVICE(S) OR SYSTEM(S) WHICH HAS BEEN TESTED AND LISTED AS COMPLYING WITH ASTM E-814 AND INSTALL IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING. PROVIDE A DEVICE(S) OR SYSTEM(S) WITH AN "F" RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED. REFER TO ARCHITECTURAL PLANS FOR WALL AND FLOOR TYPES.

**SEISMIC BRACING:**

- IN AREAS WHERE SEISMIC CONSTRUCTION IS REQUIRED, PROPERLY SUPPORT AND BRACE VERTICALLY AND HORIZONTALLY ALL PIPING, APPARATUS, EQUIPMENT, ETC. IN ACCORDANCE WITH APPLICABLE CODES TO PREVENT EXCESSIVE MOVEMENT DURING SEISMIC CONDITIONS.

**PIPE IDENTIFICATION:**

- PIPE IDENTIFICATION SHALL MATCH THE FACILITY'S EXISTING STANDARD. IF NO STANDARD EXISTS, THEN THE PIPE IDENTIFICATION SHALL BE IN ACCORDANCE WITH ANSI A13.1.
- PROVIDE PIPING LABELS FOR ALL PLUMBING PIPING. PIPING LABELS SHALL BE ACRYLIC FACED, WRAP-AROUND TYPE. EACH LABEL SHALL INDICATE THE PIPING CONTENTS, DIRECTION OF FLOW AND SHALL BEAR THE MANUFACTURER'S STANDARD COLOR FOR THE SERVICE INDICATED.

### SHOCK ARRESTOR TABLE

DRAWING SYMBOL	FIXTURE UNITS	PDI WH201 STANDARD DESIGNATION	ARRESTOR SIZE	APPROVED MANUFACTURERS
SA-A	1-11	A	1/2"	SIoux CHIEF WATTS PPP INC.
SA-B	12-32	B	3/4"	
SA-C	33-80	C	1"	
SA-D	61-113	D	1 1/4"	REMARKS
SA-E	114-154	E	1 1/2"	INSTALL SHOCK ARRESTORS PER PDI WH201 GUIDELINES
SA-F	155-330	F	2"	

### PLUMBING DRAWING INDEX

SHT. NO.	SHEET NAME	SCALE
P001	PLUMBING LEGEND, SPECIFICATIONS, AND NOTES	---
P002	PLUMBING SCHEDULES	---
P003	PLUMBING DETAILS	---
P101	WASTE AND VENT FLOOR PLAN - PLUMBING	1/4" = 1'-0"
P201	WATER SUPPLY FLOOR PLAN - PLUMBING	1/4" = 1'-0"
P301	NATURAL GAS FLOOR PLAN - PLUMBING	1/4" = 1'-0"

### PLUMBING LEGEND

NEW PIPING	ABBR.	DESCRIPTION
---	CW	COLD WATER PIPING
---	HW	HOT WATER PIPING
---	HWR	HOT WATER RETURN PIPING
---FW---	FW	FILTERED COLD WATER
---	W	SANITARY WASTE PIPING
---	V	SANITARY VENT PIPING
---	G	NATURAL GAS PIPING
---GW---	GW	GREASE LADEN WASTE PIPING
---SD---	SD	STORM DRAIN PIPING - ABV. CEILING
---	D	DRAIN
---	-	ELBOW DOWN
---	-	ELBOW UP
---	-	PIPE CONTINUES
---	-	PIPE CAP
---	-	BALL VALVE
---	CV	CHECK VALVE
---	BV	BALANCE VALVE / SHOOT SETTER
---	-	WAS COCK
---	PRV	PRESSURE REDUCING/REGULATING VALVE
---	-	SOFTEND VALVE
---	RPZ	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
---	-	IN-LINE PUMP
---	-	DIRECTION OF FLOW
---	-	PIPE REDUCER
---	FCO	FLOOR CLEAN OUT
---	WCO	WALL CLEAN OUT
---	YCO	YARD CLEAN OUT
---	FD	FLOOR DRAIN
---	FS	FLOOR SINK
---	HB	HOSE BIBB/WALL HYDRANT
---	SA	SHOCK ARRESTOR - SUFFIX INDICATES PDI SIZE
---	-	THERMOMETER
---	-	PRESSURE GAUGE
---	TP	TRAP PRIMER

### ADDITIONAL ABBREVIATIONS

ABV	ABOVE FINISHED FLOOR	LAV	LAVATORY
AFF	ABOVE FINISHED FLOOR	MBH	1,000 BTUH
AFG	ABOVE FINISHED GRADE	MFG	MANUFACTURER
BAS	BUILDING AUTOMATION SYSTEM	MH	MOUNTING HEIGHT
BE	BELOW	PH	PHASE
BFT	BELOW FINISHED FLOOR	PSI	POUNDS PER SQUARE INCH
BTUH	BRITISH THERMAL UNIT / HOUR	SF	SQUARE FEET
CFH	CUBIC FEET PER HOUR	SFU	SUPPLY FIXTURE UNITS
CLG	CEILING	T&P	TEMPERATURE AND PRESSURE
CONT	CONTINUATION	TYP	TYPICAL
DN	DOWN	VB	VACUUM BREAKER
(E)	EXISTING	WV	WALL VALVE
FFE	FINISHED FLOOR ELEVATION	VTR	VENT THRU ROOF
FL	FLOOR	WC	WATER COLUMN
FR	FROM	EC	ELECTRICAL CONTRACTOR
FU	FIXTURE UNITS	FSEC	FOOD SERVICE EQUIP. CONTRACTOR
FW	FILTERED WATER	GC	GENERAL CONTRACTOR
GPF	GALLONS PER FLUSH	MC	MECHANICAL CONTRACTOR
GPM	GALLONS PER MINUTE	PC	PLUMBING CONTRACTOR
INV	INVERT ELEVATION		
IW	INDIRECT WASTE		

### 2012 NORTH CAROLINA ENERGY CONSERVATION CODE COMMERCIAL ENERGY EFFICIENCY - PLUMBING SUMMARY

**501.1 METHOD OF COMPLIANCE**

2012 NCECC CHAPTER 5  COMCHECK PROVIDED (2012 NCECC)

ASHRAE 90.1-2010 PRESCRIPTIVE  COMCHECK PROVIDED (90.1-2010)

ASHRAE 90.1-2010 PERFORMANCE  ENERGY MODELING DATA PROVIDED

**501.2 APPLICATION COMPLIANCE**

506.2.1 EFFICIENT MECH EQUIPMENT  506.2.4 HI EFFICIENCY DOMESTIC HW

506.2.2 REDUCED LTG DENSITY  506.2.5 ONSITE RENEWABLE ENERGY

506.2.3 ENERGY RECOVERY SYSTEMS  506.2.6 DAYLIGHTING CONTROLS

**504.2 SERVICE WATER-HEATING EQUIPMENT PERFORMANCE EFFICIENCY**

SYSTEM DESCRIPTION - INSTANTANEOUS GAS WATER HEATER, 199,999 BTU/H

INSTANTANEOUS WATER HEATERS, GAS:

SIZE CATEGORY (> 50 MBH < 200 MBH): 199,999 BTU/H

SUBCATEGORY (≥ 4,000 BTU/H/GAL AND < 2 GAL): 199,999 BTU/H/GAL AND 0 GALLON

MINIMUM ENERGY FACTOR REQUIRED: 0.62 - 0.0019 X 0 = 0.62

ENERGY FACTOR OF SPECIFIED HEATER(S): 0.92

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8/04/17

**COOK OUT**  
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HK DATE DESCRIPTION  
REVISIONS

**PLUMBING LEGEND, SPECIFICATIONS, AND NOTES**

DATE 08-04-17  
DRAWN BY IRG  
CHECK BY DAR  
JOB NO. 17-0001-000  
SHEET

**P001**

1 OF 7