

PLUMBING FIXTURE SPECIFICATIONS AND CONNECTION SCHEDULE								
MARK	FIXTURE	TYPE	MATERIAL	PIPE SIZES				SPECIFICATIONS
				SAN	VENT	CW	HW	
WC-1	WATER CLOSET	FLOOR MOUNTED FLUSH VALVE STANDARD HEIGHT	VITREOUS CHINA	4"	2"	1"	-	FIXTURE: AMERICAN STANDARD MADERA FLOWISE MODEL 3481.001.020, WHITE, UNIVERSAL FLUSH, ELONGATED BOWL, SIPHON JET FLUSH ACTION, 1-1/2" TOP SPUD, EVERCLEAN SURFACE. FLUSH VALVE: SLOAN ROYAL MODEL 111-1.28, EXPOSED DIAPHRAGM TYPE WITH METAL OSCILLATING NON-HOLD-OPEN HANDLE, 1.28 GALLONS PER FLUSH. SEAT: BEMIS MODEL 315550CT EXTRA HEAVY WEIGHT, SOLID PLASTIC, OPEN FRONT, ELONGATED, LESS COVER, STAINLESS STEEL SELF-SUSTAINING CHECK HINGES, STA-TITE FASTENING SYSTEM, ANTIMICROBIAL.
WC-2	WATER CLOSET	FLOOR MOUNTED FLUSH VALVE ADA HEIGHT	VITREOUS CHINA	4"	2"	1"	-	FIXTURE: AMERICAN STANDARD MADERA FLOWISE MODEL 3481.001.020, WHITE, UNIVERSAL FLUSH, ELONGATED BOWL, SIPHON JET FLUSH ACTION, 1-1/2" TOP SPUD, EVERCLEAN SURFACE. FLUSH VALVE: SLOAN ROYAL MODEL 111-1.28, EXPOSED DIAPHRAGM TYPE WITH METAL OSCILLATING NON-HOLD-OPEN HANDLE, 1.28 GALLONS PER FLUSH. SEAT: BEMIS MODEL 315550CT EXTRA HEAVY WEIGHT, SOLID PLASTIC, OPEN FRONT, ELONGATED, LESS COVER, STAINLESS STEEL SELF-SUSTAINING CHECK HINGES, STA-TITE FASTENING SYSTEM, ANTIMICROBIAL.
U-1	URINAL	WALL HUNG FLUSH VALVE STANDARD HEIGHT	VITREOUS CHINA	2"	2"	3/4"	-	FIXTURE: AMERICAN STANDARD WASHBROOK FLOWISE MODEL 6590.001.020, WHITE, UNIVERSAL FLUSH, WASHOUT FLUSHING ACTION, 3/4" TOP SPUD. FLUSH VALVE: SLOAN ROYAL MODEL 198-0.5, EXPOSED DIAPHRAGM TYPE WITH METAL OSCILLATING NON-HOLD-OPEN HANDLE, 0.5 GALLONS PER FLUSH. CARRIER: ZURN Z1222 SERIES WALL URINAL SUPPORT SYSTEM WITH TOP AND BOTTOM SUPPORT PLATES.
U-2	URINAL	WALL HUNG FLUSH VALVE ADA HEIGHT	VITREOUS CHINA	2"	2"	3/4"	-	FIXTURE: AMERICAN STANDARD WASHBROOK FLOWISE MODEL 6590.001.020, WHITE, UNIVERSAL FLUSH, WASHOUT FLUSHING ACTION, 3/4" TOP SPUD, MOUNT AT ADA HEIGHT. FLUSH VALVE: SLOAN ROYAL MODEL 198-0.5, EXPOSED DIAPHRAGM TYPE WITH METAL OSCILLATING NON-HOLD-OPEN HANDLE, 0.5 GALLONS PER FLUSH. CARRIER: ZURN Z1222 SERIES WALL URINAL SUPPORT SYSTEM WITH TOP AND BOTTOM SUPPORT PLATES.
L-1	LAVATORY	WALL HUNG ADA HEIGHT	VITREOUS CHINA	1-1/2"	1-1/2"	1/2"	1/2"	FIXTURE: AMERICAN STANDARD LUCERNE MODEL 0036.421.020, WHITE, 20" X 16" FRONT OVERFLOW, SELF-DRAINING DECK WITH SPLASH SHIELDS, FAUCET/LEDGE WITH SINGLE CENTER FAUCET HOLE. FAUCET: AMERICAN STANDARD PARADIGM SELECTRONIC MODEL 7025.305.295, BRUSHED NICKEL FINISH, BATTERY POWERED ELECTRONIC, WITH 0.5 GPM VANDAL-RESISTANT LAMINAR SPRAY, ABOVE-DECK MIXING, SMARTHERM ASSE 1070 THERMOSTATIC TEMPERATURE LIMITER SET AT 110° F. DRAIN: MCGUIRE MODEL 165A, POLISHED CHROME PLATED CAST BRASS OPEN GRID DRAIN, WITH 1-1/4" X 6" 17 GAUGE CHROME PLATED BRASS TAILPIECE. TRAP: MCGUIRE MODEL 8000, 1-1/4" X 1-1/2" 17 GAUGE CHROME PLATED CAST BRASS P-TRAP, WITH CLEANOUT PLUG. SUPPLIES: MCGUIRE MODEL LF2165, CHROME PLATED BRASS ANGLE SUPPLY STOPS WITH BRASS STEMS, WHEEL HANDLES, 1/2" IPS INLETS, 3/8" COMPRESSION OUTLETS, 12" CHROME PLATED FLEXIBLE SUPPLY RISERS. CARRIER: ZURN Z1211 SERIES CONCEALED ARM SYSTEM FOR WALL LAVATORIES. INCLUDE TRUBORO LAV GUARD MODEL #102 EZ UNDERBANK PIPING COVERS, WITH P-TRAP COVER, AND TWO ANGLE VALVE AND SUPPLY COVERS.
EW-C-1	ELECTRIC WATER COOLER	WALL MOUNTED DUAL HEIGHT	STAINLESS STEEL	1-1/2"	1-1/2"	1/2"	-	FIXTURE: ELKAY MODEL LZSTL8WSSK, BOTTLE FILLING STATION, BARRIER-FREE, SELF-CONTAINED, 8.0 GPM, EASY-TOUCH CONTROLS ON FRONT AND SIDES, ONE PIECE STAINLESS STEEL TOPS WITH INTEGRAL DRAINS, FLEXIBLE BUBBLERS, STAINLESS STEEL LOWER SPOUS, WATER FILTER WITH LED FILTER MONITOR. TRAP: MCGUIRE MODEL 80120C, 1-1/2" X 1-1/2" 17 GAUGE CHROME PLATED CAST BRASS P-TRAP. SUPPLY: MCGUIRE MODEL LFS111, POLISHED CHROME PLATED CAST BRASS WHEEL HANDLE STRAIGHT STOP, 1/2" IPS INLET, 3/8" COMPRESSION OUTLET.
S-1	SINK	UNDERMOUNT SINGLE BOWL ADA COMPLIANT	STAINLESS STEEL	1-1/2"	1-1/2"	1/2"	1/2"	FIXTURE: ELKAY LUSTERTONE MODEL ELU44211555, 23-1/2" X 18-1/4" X 5-3/8" DEEP, 18 GAUGE TYPE 304 STAINLESS STEEL, SELF-RIMMING, SOUND DEPENDENT, REAR CENTER DRAIN. FAUCET: AMERICAN STANDARD MONTERREY MODEL 6114.380.002, POLISHED CHROME PLATED CAST BRASS, SINGLE CONTROL WITH REMOVE VALVE, METAL LEVER HANDLE, 8" GOOSENECK SWIVEL SPOUT, LESS SPRAY. DRAIN: ELKAY MODEL LK315, TYPE 304 STAINLESS STEEL DRAIN, WITH REMOVABLE BASKET STRAINER, 1-1/2" X 4" CHROME PLATED BRASS TAILPIECE. TRAP: MCGUIRE MODEL 80120C, 1-1/2" X 1-1/2" 17 GAUGE CHROME PLATED CAST BRASS P-TRAP. SUPPLIES: MCGUIRE MODEL LF2165, CHROME PLATED BRASS ANGLE SUPPLY STOPS WITH BRASS STEMS, WHEEL HANDLES, 1/2" IPS INLETS, 3/8" COMPRESSION OUTLETS, 12" CHROME PLATED FLEXIBLE SUPPLY RISERS. INCLUDE TRUBORO LAV GUARD MODEL #102 EZ UNDERBANK PIPING COVERS, WITH P-TRAP COVER, AND TWO ANGLE VALVE AND SUPPLY COVERS.
MB-1	MOP BASIN	24" X 24"	TERRAZZO	3"	2"	1/2"	1/2"	FIXTURE: FIAT MODEL TS8300, 12" DEEP WITH 6" DROP FRONT, STAINLESS STEEL CAPS ON ALL CURBS, STAINLESS STEEL FACTORY INSTALLED DRAIN BODIES WITH FLAT STAINLESS STEEL STRAINER. FAUCET: TAS BRASS MODEL B-0665-BSTR, 6" WALL MOUNT MIXING FAUCET, ROUGH CHROME FINISH, WITH INTEGRAL SUPPLY STOPS, SPRING CHECKS, LEVER HANDLES, CAST BRASS SPOUT WITH INTEGRAL VACUUM BREAKER, TOP BRACE, PAL HOOK, AND 3/4" HOSE THREAD OUTLET. ADDITIONAL EQUIPMENT: PROVIDE MOP BUCKET MODEL #322A HOSE AND BRACKET, AND MODEL MSG2424 STAINLESS STEEL WALL GUARD PANELS.
ESH-1	EMERGENCY EYEWASH/SHOWER	COMBINATION UNIT	GALVANIZED STEEL	FD	-	1"	1"	FIXTURE: GUARDIAN MODEL G1590P SAFETY STATION WITH EYE/FACE WASH, COATED GALVANIZED STEEL PIPING, 10" ABS SHOWERHEAD, CHROME PLATED BRASS STAY-OPEN SHOWER VALVE WITH STAINLESS STEEL PULL ROD, CHROME PLATED BRASS EYE/FACE WASH WITH DUST COVERS AND ABS BOWL, CHROME PLATED BRASS STAY-OPEN EYEWASH VALVE WITH PUSH HANDLE. MIXING VALVE: GUARDIAN MODEL G3800LF THERMOSTATIC MIXING VALVE, SET AT MINIMUM 60° F OUTLET TEMPERATURE.

PLUMBING EQUIPMENT SCHEDULE			
MARK	EQUIPMENT	MANUFACTURER & MODEL NO.	SPECIFICATIONS
FD-1	FLOOR DRAIN	ZURN ZN149B-P	CAST IRON BODY, MEMBRANE CLAMP, ADJUSTABLE COLLAR, 6" DIAMETER TYPE B POLISHED NICKEL BRONZE STRAINER, 1/2" TRAP PRIMER CONNECTION.
FD-2	FLOOR DRAIN	ZURN Z550-Y-P	6" DIAMETER MEDIUM DUTY SLOTTED TOP, CAST IRON BODY, COMBINATION MEMBRANE FLASHING CLAMP AND FRAME, SEDIMENT BUCKET, 1/2" TRAP PRIMER CONNECTION.
FCO	FLOOR CLEAN OUT	ZURN ZN1400-BP	ADJUSTABLE, COATED CAST IRON BODY, ROUND SCORIATED NICKEL BRONZE TOP, BRONZE PLUG.
WCO	WALL CLEAN OUT	ZURN Z1446-BP	CAST IRON NO-HUB CLEANOUT TEE, WITH ROUND STAINLESS STEEL WALL ACCESS COVER, BRONZE PLUG, SECURING SCREW.
FWH	FREEZELESS WALL HYDRANT	PRIER MODEL C-634N	ENCASED, ANTI-SIPHON, CAST BRASS HYDRANT, SATIN NICKEL FINISH, 3/4" INLET, 3/4" HOSE THREAD OUTLET, LOOSE KEY OPERATION, SELF DRAINING, WITH INTEGRAL VACUUM BREAKER/BACKFLOW PREVENTER. INCLUDE PRIER MODEL C-634K1 SATIN NICKEL HYDRANT BOX, WITH HINGED COVER AND OPERATING KEY LOCK.
IMB	ICE MAKER OUTLET BOX	GUY GRAY MODEL MB1HA0B	RECESSED, WHITE POWDER COATED METAL BOX, WITH LEAD FREE BRASS QUARTER TURN HAMMER ARRESTER VALVE.
DWH	DOMESTIC WATER HEATER	AO SMITH MODEL DRE-120-12	COMMERCIAL ELECTRIC, 119 GALLON CAPACITY, 12 KW INPUT, 480V-3 PHASE, 61 GPM AT 80° F TEMPERATURE RISE, GLASS-LINED STEEL TANK, WITH SURFACE MOUNTED THERMOSTATS, FACTORY INSTALLED TAP RELIEF VALVE AND DRAIN VALVE.
EXT	EXPANSION TANK	AMTROL THERM-X-TROL MODEL ST-12-C	ASME CONSTRUCTION, STEEL TANK WITH FIXED DIAPHRAGM, STAINLESS STEEL SYSTEM CONNECTION, 55 PSI PRECHARGE, 150 PSI WORKING PRESSURE, 6 G GALLONS.
HWCP	HOT WATER CIRCULATING PUMP	BELL & GOSSETT MODEL MBF-65LW	HORIZONTAL IN-LINE, SYSTEM LUBRICATED, LEAD FREE BRONZE BODY, 39 WATTS-115 V-60 HZ, 0.5 GPM @ 3' HEAD.
BAV	BALANCING VALVE	BELL & GOSSETT CIRCUIT SETTER PLUS	CALIBRATED BALANCING UNIT WITH POSITIVE SHUT-OFF, LEAD FREE BRASS CONSTRUCTION, EPDM O-RINGS, TWO PRESSURE AND TEMPERATURE MEASURING POINTS, NPT OR SWEAT CONNECTIONS.

### WATER HAMMER ARRESTER SCHEDULE

PDI SIZE	FIXTURE UNIT	MODEL
A	1 - 11	SIoux CHIEF 652-AS
B	12 - 32	SIoux CHIEF 653-BS
C	33 - 60	SIoux CHIEF 654-CS
D	61 - 113	SIoux CHIEF 655-DS
E	114 - 154	SIoux CHIEF 656-ES
F	155 - 330	SIoux CHIEF 657-FS

WATER HAMMER ARRESTERS SHALL BE SEAMLESS, PISTON-TYPE, SIZED AND INSTALLED IN ACCORDANCE WITH PDI-WH201. INSTALL WATER HAMMER ARRESTERS ON ALL WATER MAINS AND BRANCHES. AIR CHAMBERS WILL NOT BE PERMITTED.

### PLUMBING LEGEND

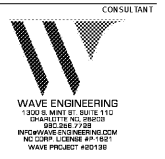
PIPING	
---	DOMESTIC COLD WATER PIPING (CW)
---	DOMESTIC HOT WATER PIPING (HW)
---	DOMESTIC HOT WATER RETURN PIPING (HWR)
---	SANITARY PIPING (SAN)
---	STORM PIPING
---	VENT PIPING (V)
SYMBOLS	
○	BALANCING VALVE
○	BALL VALVE, FULLY OPEN
○	CHROME VALVE
○	FLOOR CLEANOUT (FCO)
○	FLOOR DRAIN (FD)
○	PIPE END
○	PIPE UP
○	PRESSURE GAUGE
○	ROOF DRAIN (RD)
○	STRAINER
○	T&P RELIEF VALVE
○	THERMOMETER
○	UNION
○	WALL CLEANOUT (WCO)
ABBREVIATIONS	
ABV	ABOVE
AFF	ABOVE FINISHED FLOOR
AHAP	AS HIGH AS POSSIBLE
BLW	BELOW
CLG	CEILING
CONN	CONNECT OR CONNECTION
CONT	CONTINUATION
DN	DOWN
E.C.	ELECTRICAL CONTRACTOR
FLR	FLOOR
G.C.	GENERAL CONTRACTOR
IE, INV ELEV	INVERT ELEVATION
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
RWC	RAINWATER CONDUCTOR
SF, SQ FT	SQUARE FOOT
T&P	TEMPERATURE AND PRESSURE
TYP	TYPICAL
VR	VENT THROUGH ROOF
W	WASTE

### PLUMBING GENERAL NOTES

- GENERAL REQUIREMENTS:**
- GENERAL AND SPECIAL CONDITIONS: GENERAL AND SPECIAL CONDITIONS ARE HEREBY MADE AN INTEGRAL PART OF THIS DIVISION OF THE SPECIFICATIONS INsofar AS SAME ARE APPLICABLE TO THE WORK UNDER THIS DIVISION AND UNLESS OTHERWISE SPECIFIED.
  - SCOPE: PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL SYSTEMS IN THIS SECTION OF WORK.
  - CODE COMPLIANCE: ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION, BUILDING DEPARTMENTS, AND DEPARTMENT OF HEALTH. APPLICABLE NATIONAL, STATE, AND LOCAL CODES, LAWS, AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK SHALL BE INCORPORATED INTO AND MADE A PART OF THESE CONTRACT DOCUMENTS AND SPECIFICATIONS. THE CONTRACTOR IS TO NOTIFY THE ARCHITECT/ENGINEER OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE CODES, LAWS, OR REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH A VIOLATION SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE AND AT NO EXPENSE TO THE OWNER.
  - PERMITS: APPLY FOR AND PAY FOR ALL NECESSARY PERMITS, FEES, AND INSPECTIONS REQUIRED BY ANY PUBLIC AUTHORITY HAVING JURISDICTION.
  - WARRANTY: PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT UNDER THIS SECTION OF THE SPECIFICATIONS WITH A ONE YEAR WARRANTY FROM THE DATE OF ACCEPTANCE OF WORK BY THE OWNER.
  - RECORD DRAWINGS: CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD OF ALL AS-BUILT CONDITIONS DURING CONSTRUCTION AND TURN OVER ONE COPY EACH TO THE OWNER AND THE ARCHITECT AT THE COMPLETION.
  - OPERATING MANUALS: CONTRACTOR SHALL FURNISH TO THE OWNER 3 SETS OF OPERATING AND MAINTENANCE MANUALS FOR ALL MAJOR PIECES OF EQUIPMENT.
  - COORDINATION: VERIFY ALL ROOM-IN-LOCATIONS AND COORDINATE PIPING AND EQUIPMENT LOCATIONS WITH WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS TO AVOID CONFLICTS. CONTRACTOR MUST COORDINATE WITH OTHER TRADES FOR ALL STRUCTURES, PIPING, CONDUIT, DUCTWORK, LIGHTING, ETC TO PROPERLY BE INSTALLED. ANY CONFLICTS SHALL BE RESOLVED AT THE EXPENSE TO THE OWNER.
  - SUBMITTALS: AS A MINIMUM, THE CONTRACTOR SHALL PROVIDE SUBMITTALS FOR ALL ITEMS SCHEDULED ON THE DRAWINGS, UNLESS DIRECTED OTHERWISE.
  - SUBSTITUTIONS: THE PRODUCTS SCHEDULED ON THE DRAWINGS ARE THE BASIS OF DESIGN. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL SUBSTITUTIONS MADE WITHOUT PRIOR WRITTEN APPROVAL MEET THE LISTING SPECIFICATIONS AND FIT WITHIN THE COMPLETION.
  - PROVIDE CONCRETE HOUSE KEYS FOR PADS FOR PLUMBING EQUIPMENT ON FLOORS, UNLESS OTHERWISE NOTED. PADS SHALL BE A MINIMUM OF 18" HIGH AND A MINIMUM OF 6" LARGER THAN EQUIPMENT BASES ON ALL SIDES. CHAMFER ALL EDGES.
  - LABEL ALL PLUMBING PIPING WITH ADDRESS, PIPE LABEL INDICATING SERVICE AND DIRECTION OF FLOW. PIPE LABELS SHALL BE LOCATED IN ALL BRANCH CONNECTIONS, NEAR ALL FLOOR AND WALL TAKE OFF POINTS, AND AT MAXIMUM INTERVALS OF 20' ALONG EACH RUN.
  - PLUMBING SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO:
    - PLUMBING FIXTURES AND EQUIPMENT
    - FIRE STOPPING
    - DOMESTIC WATER SYSTEM
    - SANITARY WASTE AND VENT SYSTEM
- FINISHES:**
- FURNISH AND INSTALL COMPLETE FIXTURES AND INCLUDE SUPPLIES, STOPS, VALVES, FAUCETS, TRAPS, TAILPIECES, ESCUTCHEONS, ETC. EXPOSED COPPER OR BRASS MATERIALS SHALL BE CHROME PLATED.
  - SEAL ALL EDGES OF PLUMBING FIXTURES IN CONTACT WITH FLOORS, WALLS, OR COUNTERTOPS USING SANITARY-TYPE, ONE-PART, MILDEW RESISTANT SILICONE SEALANT. MATCH SEALANT COLOR TO FIXTURE COLOR.
  - PROVIDE PERMANENTLY ATTACHED VACUUM BREAKERS FOR ALL FIXTURES/FAUCETS TO WHICH HOSES MAY BE CONNECTED.
  - REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHTS OF PLUMBING FIXTURES.
- FIRE STOPPING:**
- FIRE STOP ALL PENETRATIONS, BY PIPING OR CONDUITS, OF FIRE RATED WALLS, FLOORS, AND PARTITIONS. PROVIDE DEVICES (OR SYSTEMS) WHICH HAS BEEN TESTED AND LISTED AS COMPLYING WITH ASTM E-814 AND INSTALL IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING. PROVIDE DEVICES (OR SYSTEMS) WITH AN "F" RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED.
- DOMESTIC WATER PIPING:**
- FURNISH AND INSTALL A COMPLETE SYSTEM OF DOMESTIC HOT AND COLD WATER SUPPLIES TO ALL FIXTURES AND/OR EQUIPMENT REQUIRING DOMESTIC WATER SUPPLIES.
  - DOMESTIC WATER PIPING BELOW GROUND: ASTM B 88 TYPE "K" SOFT COPPER TUBE WITH WROT COPPER FITTINGS, AND BRAZED OR PRESSURE-SEALED JOINTS.
  - DOMESTIC WATER PIPING ABOVE GROUND: ASTM B 88 TYPE "L" HARD COPPER TUBE WITH WROT COPPER FITTINGS, AND SOLDERED OR PRESSURE-SEALED JOINTS.
  - CLEANING: CAP AND SUBJECT WATER PIPING TO STATIC WATER PRESSURE OF 100 PSI OR 50 PSI ABOVE OPERATING PRESSURE, WHICHEVER IS GREATER, WITHOUT EXCEEDING THE PRESSURE RATING OF THE MATERIALS. MAINTAIN PRESSURE FOR NOT LESS THAN 15 MINUTES.
  - CLEANING: CLEAN AND DISINFECT NEW PIPING AND EXISTING PIPING THAT HAS BEEN ALTERED IN ACCORDANCE WITH THE AMERICAN WATER WORKS ASSOCIATION'S SPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.
  - INSULATE DOMESTIC WATER PIPING ABOVE GROUND (EXCEPT EXPOSED CONNECTIONS TO PLUMBING FIXTURES) WITH 1" THICKNESS ENGINEERED POLYMER FOAM INSULATION, OR MINERAL-FIBER PREFORMED PIPE INSULATION WITH FACTORY-APPLIED ASJ.
  - DOMESTIC WATER PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS, AND ADHESIVES SHALL NOT EXCEED A FLAME SPREAD RATING OF 25 AND A SMOKE DEVELOPED RATING OF 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
  - ALL PIPE INSULATION SHALL RUN CONTINUOUSLY THROUGH FLOORS, WALLS, AND PARTITIONS.
  - DO NOT INSTALL DOMESTIC WATER PIPING IN AREAS SUBJECT TO FREEZING TEMPERATURES. INSTALL DOMESTIC WATER PIPING IN EXTERIOR WALLS ON THE CONDITIONED SIDE OF THE WALL INSULATION.
  - SHUT-OFF VALVES SHALL BE TWO-PIECE, BRONZE, FULL PORT, BALL TYPE, MANUFACTURED BY APOLLO OR NIBCO. PROVIDE SHUT-OFF VALVES WHERE INDICATED ON THE DRAWINGS. INSTALL VALVES IN A LOCATION THAT PERMITS ACCESS FOR SERVICE AND OPERATION WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS. PROVIDE ACCESS DOORS IF REQUIRED.
  - PROVIDE A PRESSURE REDUCING VALVE WITH STRAINER AT THE SERVICE ENTRANCE TO THE BUILDING IF THE INCOMING WATER PRESSURE EXCEEDS 80 PSI.
  - PROVIDE CHECK VALVES IN THE HOT AND COLD WATER SUPPLY PIPING TO MOP BASIN FAUCET, UNLESS FAUCET HAS INTEGRAL CHECK VALVES.
  - PROTECT COPPER PIPING AGAINST CONTACT WITH DISSIMILAR METALS. ALL HANGERS, SUPPORTS, ANCHORS, AND CLIPS SHALL BE COPPER OR COPPER-PLATED.
- SANITARY WASTE AND VENT PIPING:**
- FURNISH AND INSTALL COMPLETE SYSTEMS OF SANITARY WASTE AND VENT PIPING FROM ALL PLUMBING FIXTURES AND/OR EQUIPMENT REQUIRING WASTE AND VENT CONNECTIONS. ALL WASTE AND VENT PIPING SHALL BE CONCEALED IN THE BUILDING CONSTRUCTION WHERE POSSIBLE.
  - SANITARY WASTE AND VENT PIPING BELOW GROUND: ASTM A 74 SERVICE WEIGHT, HUB AND SPIGOT, CAST IRON SOIL PIPE AND FITTINGS, AND GASKETED JOINTS. ALL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE, AND LISTED BY NSF INTERNATIONAL.
  - SANITARY WASTE AND VENT PIPING ABOVE GROUND: ASTM A 888 AND CISPI 301, HUBLESS, CAST IRON SOIL PIPE AND FITTINGS, AND HEAVY DUTY SHIELDED, STAINLESS STEEL COUPLINGS. ALL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE, AND LISTED BY NSF INTERNATIONAL.
  - IF PERMITTED BY LOCAL CODES, ASTM D 2665 SCHEDULE 40 SOLID WALL PVC PIPE WITH ASTM D 3311 SCHEDULE 40 SOCKET-TYPE FITTINGS MAY BE USED FOR SANITARY WASTE AND VENT PIPING ABOVE AND BELOW GROUND. PVC PIPING INSTALLED IN RETURN AIR PLENUMS MUST BE PROTECTED WITH 3M FIRE BARRIER PLENUM WRAP 5A+, OR SIMILAR PRODUCT. ALL BURIED PVC PIPE SHALL BE INSTALLED PER ASTM D 2321.
  - TESTING: CLOSE OPENINGS IN PIPING SYSTEM AND FILL WITH WATER TO POINT OF OVERFLOW, BUT NOT LESS THAN 10-FOOT HEAD OF WATER. MAINTAIN PRESSURE FOR NOT LESS THAN 15 MINUTES.
  - INVERT ELEVATIONS SHALL BE ESTABLISHED AND VERIFIED BEFORE STORM PIPING IS INSTALLED IN ORDER THAT PROPER SLOPES WILL BE MAINTAINED. SLOPE STORM DRAIN PIPING AT 1/8" PER FOOT MINIMUM.
  - WHERE SANITARY PIPING IS EXPOSED IN TOILET ROOMS, PROVIDE CHROME-PLATED BRASS PIPING WITH MOUNTING STOPS AND ESCUTCHEONS. PROVIDE REMOVABLE TRAPS WITH INTEGRAL CLEANOUTS FOR ALL LAVATORIES AND SINKS.
  - INSTALL CLEANOUTS IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS. CLEANOUT PLUGS SHALL BE INSTALLED IN ACCORDANCE WITH PLUMBING CODE REQUIREMENTS. PROVIDE CLEANOUTS IN HORIZONTAL PIPING NOT MORE THAN 100 FEET APART, AT THE BASE OF ALL RAINWATER CONDUCTORS, AND FOR EVERY FOUR 45° CHANGES LOCATED IN SERIES (A LONG SWEEP IS EQUIVALENT TO TWO 45° BENDS).
  - DO NOT CONNECT HORIZONTAL BRANCHES WITHIN 10 PIPE DIAMETERS DOWNSTREAM OF THE BASE OF ANY SANITARY STACK.
  - ALL INDIRECT WASTE PIPING SHALL DISCHARGE THROUGH AN AIR GAP INTO AN APPROVED WASTE RECEPTOR. THE AIR GAP BETWEEN THE INDIRECT WASTE PIPE AND THE FLOOR LEVEL RIM OF THE WASTE RECEPTOR SHALL BE A MINIMUM OF TWICE THE EFFECTIVE OPENING OF THE INDIRECT WASTE PIPE.
- WATER HAMMER ARRESTER REQUIREMENTS:**
- PROVIDE WATER HAMMER ARRESTERS CONFORMING TO PDI-WH201 OR ASSE 1010. INSTALL PER MANUFACTURER'S SPECIFICATIONS, WHERE QUICK CLOSING VALVES ARE UTILIZED. A QUICK CLOSING VALVE IS A VALVE OR FAUCET THAT CLOSURES AUTOMATICALLY WHEN RELEASED, OR THAT IS CONTROLLED BY MECHANICAL MEANS FOR FAST-ACTION CLOSING. REFER TO WATER HAMMER ARRESTER SCHEDULE.
  - AS A MINIMUM, PROVIDE ONE WATER HAMMER ARRESTER FOR EACH BRANCH LINE TO EACH TOILET ROOM LESS THAN 20' IN LENGTH. LOCATED BETWEEN THE LAST TWO FIXTURES SERVED. FOR BRANCH LINES GREATER THAN 20' IN LENGTH, A SECOND WATER HAMMER ARRESTER IS REQUIRED.
- STORM DRAIN PIPING:**
- WORK INCLUDES ROOF DRAINS AND PIPING TO A POINT 5'-0" OUTSIDE OF THE BUILDING, AND OVERFLOW DRAINS AND PIPING TO WALL MOUNTED DISCHARGE NOZZLES. ALL PIPING SHALL BE CONCEALED IN THE BUILDING CONSTRUCTION WHERE POSSIBLE.
  - INVERT ELEVATIONS SHALL BE ESTABLISHED AND VERIFIED BEFORE STORM PIPING IS INSTALLED IN ORDER THAT PROPER SLOPES WILL BE MAINTAINED. SLOPE STORM DRAIN PIPING AT 1/8" PER FOOT MINIMUM.
  - STORM DRAIN PIPING BELOW GROUND: ASTM A 74 SERVICE WEIGHT, HUB AND SPIGOT, CAST IRON SOIL PIPE AND FITTINGS, AND GASKETED JOINTS. ALL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE, AND LISTED BY NSF INTERNATIONAL.
  - STORM DRAIN PIPING ABOVE GROUND: ASTM A 888 AND CISPI 301, HUBLESS, CAST IRON SOIL PIPE AND FITTINGS, AND HEAVY DUTY SHIELDED, STAINLESS STEEL COUPLINGS. ALL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE, AND LISTED BY NSF INTERNATIONAL.
  - IF PERMITTED BY LOCAL CODES, ASTM D 2665 SCHEDULE 40 SOLID WALL PVC PIPE WITH ASTM D 3311 SCHEDULE 40 SOCKET-TYPE FITTINGS MAY BE USED FOR STORM DRAIN PIPING ABOVE AND BELOW GROUND. PVC PIPING INSTALLED IN RETURN AIR PLENUMS MUST BE PROTECTED WITH 3M FIRE BARRIER PLENUM WRAP 5A+, OR SIMILAR PRODUCT. ALL BURIED PVC PIPE SHALL BE INSTALLED PER ASTM D 2321.
  - TESTING: CLOSE OPENINGS IN PIPING SYSTEM AND FILL WITH WATER TO POINT OF OVERFLOW, BUT NOT LESS THAN 10-FOOT HEAD OF WATER. MAINTAIN PRESSURE FOR NOT LESS THAN 15 MINUTES.
  - INSULATE STORM DRAIN PIPING ABOVE GROUND AND ROOF DRAIN BODIES WITH 1" THICKNESS ENGINEERED POLYMER FOAM INSULATION, OR MINERAL-FIBER PREFORMED PIPE INSULATION WITH FACTORY-APPLIED ASJ. THIS INCLUDES THE PRIMARY AND OVERFLOW STORM DRAIN SYSTEMS.
  - STORM DRAIN PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS, AND ADHESIVES SHALL NOT EXCEED A FLAME SPREAD RATING OF 25 AND A SMOKE DEVELOPED RATING OF 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
  - INSTALL CLEANOUTS IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS. CLEANOUT PLUGS SHALL BE INSTALLED IN ACCORDANCE WITH PLUMBING CODE REQUIREMENTS. PROVIDE CLEANOUTS IN HORIZONTAL PIPING NOT MORE THAN 100 FEET APART, AT THE BASE OF ALL RAINWATER CONDUCTORS, AND FOR EVERY FOUR 45° CHANGES LOCATED IN SERIES (A LONG SWEEP IS EQUIVALENT TO TWO 45° BENDS).



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La Vergne, TN

PROJECT NUMBER 1992  
**ISSUE DATE**

FOR PERMIT 09.30.20

**DRAWING DATA**  
DRAWN BY: MJS  
CHECKED BY: MJS

**SHEET TITLE**  
**PLUMBING**  
**NOTES AND**  
**SCHEDULES**

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SHEET NUMBER

P-0.1