

ROOF DRAIN SIZING

Roof Area "A" Physical Data			
Roof Area (ft²):	A.	1204.37	
Are vertical surfaces draining onto roof (Y/N)?:			
Front Parapet Area (SF):	B.	22.45	
Rear Parapet Area (SF):	C.	161.13	
Side Parapet Area (SF):	C.1	49.95	
Parapet Area (ft) (BxCx0.5):	D.	116.77	
Towers or other large vertical area (not parapet) (Y/N):			
Tower 1 Drainage Front Area (SF):	E.1	0.00	
Tower 1 Side Drainage Area (SF):	F.1	0.00	
Tower 1 Vertical Area (ft) (E1xF1x0.5):	G.1	0.00	
Tower 2 Drainage Front Area (SF):	E.2	0.00	
Tower 2 Side Drainage Area (SF):	F.2	0.00	
Tower 2 Vertical Area (ft) (E2xF2x0.5):	G.2	0.00	
Vertical Area Requirement (ft) (D+G1+G2):	H.	116.77	
Total Developed Area (ft²) (A+H):	J.	1321.14	
Table Lookup Data			
Rainfall Rate (in/hr):		4.10	4.10
Area Correction Factor:		0.98	0.98
VERTICAL CONDUCTORS			
Number of Vertical Conductors:	K.	2	2
Vertical conductor Size (in):		4	4
Calc. Area/Vertical Conductor (ft²) (J/K):	L.	5	0
Maximum Area per Conductor (ft²):		4488	4488
Result:		OK	OK
HORIZONTAL CONDUCTORS			
Large Rainfall Correction Factor:		4.10	4.10
Horizontal conductor Size (in):		4	4
Conductor Slope (% - 1,2,4):		3	0
Calc. Area/Horizontal Conductor (ft²) (=L):		5	0
Maximum Area per Conductor (ft²):		7380	7380
Result:		OK	OK

Roof Area "B" Physical Data			
Roof Area (ft²):	A.	48.95	
Are vertical surfaces draining onto roof (Y/N)?:			
Front Parapet Area (SF):	B.	11.14	
Rear Parapet Area (SF):	C.	23.35	
Side Parapet Area (SF):	C.1	9.52	
Parapet Area (ft) (BxCx0.5):	D.	25.01	
Towers or other large vertical area (not parapet) (Y/N):			
Tower 1 Drainage Front Area (SF):	E.1	0.00	
Tower 1 Side Drainage Area (SF):	F.1	0.00	
Tower 1 Vertical Area (ft) (E1xF1x0.5):	G.1	0.00	
Tower 2 Drainage Front Area (SF):	E.2	0.00	
Tower 2 Side Drainage Area (SF):	F.2	0.00	
Tower 2 Vertical Area (ft) (E2xF2x0.5):	G.2	0.00	
Vertical Area Requirement (ft) (D+G1+G2):	H.	25.01	
Total Developed Area (ft²) (A+H):	J.	73.96	
Table Lookup Data			
Rainfall Rate (in/hr):		4.10	4.10
Area Correction Factor:		0.98	0.98
VERTICAL CONDUCTORS			
Number of Vertical Conductors:	K.	1	1
Vertical conductor Size (in):		4	4
Calc. Area/Vertical Conductor (ft²) (J/K):	L.	5	0
Maximum Area per Conductor (ft²):		4488	4488
Result:		OK	OK
HORIZONTAL CONDUCTORS			
Large Rainfall Correction Factor:		4.10	4.10
Horizontal conductor Size (in):		4	4
Conductor Slope (% - 1,2,4):		3	0
Calc. Area/Horizontal Conductor (ft²) (=L):		5	0
Maximum Area per Conductor (ft²):		7380	7380
Result:		OK	OK

Roof Area "C" Physical Data			
Roof Area (ft²):	A.	1110.24	
Are vertical surfaces draining onto roof (Y/N)?:			
Front Parapet Area (SF):	B.	138.68	
Rear Parapet Area (SF):	C.	13	
Side Parapet Area (SF):	C.1	114.5	
Parapet Area (ft) (BxCx0.5):	D.	196.00	
Towers or other large vertical area (not parapet) (Y/N):			
Tower 1 Drainage Front Area (SF):	E.1	0.00	
Tower 1 Side Drainage Area (SF):	F.1	0.00	
Tower 1 Vertical Area (ft) (E1xF1x0.5):	G.1	0.00	
Tower 2 Drainage Front Area (SF):	E.2	0.00	
Tower 2 Side Drainage Area (SF):	F.2	0.00	
Tower 2 Vertical Area (ft) (E2xF2x0.5):	G.2	0.00	
Vertical Area Requirement (ft) (D+G1+G2):	H.	196.00	
Total Developed Area (ft²) (A+H):	J.	1306.24	
Table Lookup Data			
Rainfall Rate (in/hr):		4.10	4.10
Area Correction Factor:		0.98	0.98
VERTICAL CONDUCTORS			
Number of Vertical Conductors:	K.	2	2
Vertical conductor Size (in):		4	4
Calc. Area/Vertical Conductor (ft²) (J/K):	L.	5	0
Maximum Area per Conductor (ft²):		4488	4488
Result:		OK	OK
HORIZONTAL CONDUCTORS			
Large Rainfall Correction Factor:		4.10	4.10
Horizontal conductor Size (in):		4	4
Conductor Slope (% - 1,2,4):		3	0
Calc. Area/Horizontal Conductor (ft²) (=L):		5	0
Maximum Area per Conductor (ft²):		7380	7380
Result:		OK	OK

GAS DEMAND AND NOTES

DEMAND (MBH)	
ITEM	IND. DEMAND
RTU-1	200.00
RTU-2	200.00
<b>SUBTOTAL HEATING</b>	
400.00	
TENANT SUPPLIED WH	76.00
<b>SUBTOTAL WTR. HTR.</b>	
76.00	
<b>TOTAL DEMAND</b>	
476.00	
<b>MOST REMOTE FIXTURE DIST. (FT.)</b>	100'
<b>BUILDING GAS MAIN SIZE</b>	1"

NOTES:

- ALL VALVES SHALL BE SAME SIZE AS PIPING SERVED (MIN.).
- ALL GAS PIPE SIZES BASED ON NATURAL GAS: 2.0 PSI (MAX.), 1.0 PSI PRESSURE DROP @ 0.6 SPECIFIC GRAVITY. P.C. SHALL VERIFY THAT GAS SYSTEM PRESSURE DOES NOT EXCEED ALLOWABLE LIMITS OF GAS UTILIZATION EQUIPMENT. P.C. SHALL SELECT AND PROVIDE INDIVIDUAL PRESSURE REGULATORS FOR APPLIANCES TO REDUCE PRESSURE FROM 2.0 PSI TO THE REQUIRED UTILIZATION PRESSURE OF EQUIPMENT UNLESS NOTED OTHERWISE. (SEE NAMEPLATE DATA). REGULATORS (MAXITROL SERIES 325) SHALL BE USED FOR ALL EQUIPMENT AND INSTALLED IN A HORIZONTAL POSITION. REGULATORS INSTALLED INSIDE BUILDING ARE TO BE PROVIDED WITH VENT LIMITING DEVICES (MAXITROL SERIES 12A39) OR APPROVED EQUAL.
- SEE SHEET P111 FOR GAS PIPING PLAN.
- P.C. SHALL INSTALL FLEXIBLE GAS HOSE WITH QUICK DISCONNECTS (PROVIDED BY FEC) BETWEEN GAS PIPING AND APPLIANCES. FLEXIBLE HOSE SHALL BE SAME SIZE AS BRANCH PIPE.
- CONTRACTOR SHALL RUN FULL DIAMETER PIPE FROM GAS METER. ANY REDUCTION IN SIZE WILL NOT BE ACCEPTABLE.
- TOTAL DEVELOPED LENGTH OF PIPING SYSTEM: 100 FEET.

PLUMBING FIXTURE SCHEDULE

- MARK
- CCO EXTERIOR CLEANOUT  
A. SIOUX CHEF #078-20/40/60 WITH COUNTER SUNK BRASS INSERT INSTALLED IN AN END OF LINE HUB/TWO-WAY HUB.
- HB-1 EXTERIOR WALL HYDRANT  
A. ARROWHEAD BRASS 468  
B. ANTI-SIPHON, FROST FREE HYDRANT LOOSE KEY VERSION.

PLUMBING GENERAL NOTES

- ALL WORK SHALL BE PERFORMED BY A LICENSED CONTRACTOR. CONTRACTOR SHALL INSTALL SYSTEMS, EQUIPMENT & COMPONENTS IN ACCORDANCE WITH MINIMUM REQUIREMENTS SHOWN IN THESE PLANS. ANY DEVIATION FROM THE DESIGN PLANS SHALL ONLY BE PERMITTED IF APPROVED BY THE OWNER REPRESENTATIVE OR DESIGN ENGINEER. ALL WORK SHALL MEET OR EXCEED THE MINIMUM REQUIREMENTS OF ALL APPLICABLE CODES AND STANDARDS. HOWEVER, ANY DEVIATION FROM THE DESIGN PLANS IMPLIED BY LOCAL CODES THAT SUGGESTS INSTALLATION OF LESS THAN THE REQUIREMENTS SPECIFIED IN THESE DESIGN PLANS SHALL NOT BE ALLOWED WITHOUT APPROVAL BY THE OWNER REPRESENTATIVE OR THE DESIGN ENGINEER.
- IT WILL BE THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR TO INSURE THAT ITEMS TO BE FURNISHED UNDER PLUMBING CONTRACT WILL FIT THE SPACE AVAILABLE. PLUMBING CONTRACTOR SHALL MAKE NECESSARY FIELD MEASUREMENTS TO ASCERTAIN SPACE REQUIREMENTS, INCLUDING THOSE FOR CONNECTIONS AND SHALL FURNISH AND INSTALL SUCH SIZES AND SHAPES OF EQUIPMENT THAT ARE THE TRUE INTENT OF THE DRAWINGS AND SPECIFICATIONS.
- PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR WATER, VENT, AND WASTE SYSTEM TESTS, PER LOCAL CODE REQUIREMENTS. ALL HVAC AND EXHAUST SYSTEMS MUST BE RUNNING WHILE THESE WASTE/VENT TESTS ARE BEING PERFORMED. A CERTIFICATE WILL BE REQUIRED FROM THE PLUMBING CONTRACTOR CERTIFYING COMPLIANCE AND ACCEPTANCE OF THESE TESTS.
- INSTALL ALL PLUMBING FIXTURES TO BE FULLY ACCESSIBLE TO INDIVIDUALS WITH DISABILITIES IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT OF 1990. FIXTURES AND THEIR INSTALLATION SHALL ALSO COMPLY WITH AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) PUBLICATION A117.1 - PROVIDING ACCESSIBILITY AND USABILITY FOR PHYSICALLY HANDICAPPED PEOPLE AND/OR GOVERNING CODES. PLUMBING FIXTURES, EQUIPMENT, TRIM, & FITTINGS SHALL COMPLY WITH LOCAL, STATE, AND FEDERAL REGULATIONS AND CODES, INCLUDING, BUT NOT LIMITED TO, WATER AND ENERGY CONSERVATION CODES.
- THE SCHEDULED AND/OR SPECIFIED PLUMBING FIXTURES AND EQUIPMENT SHALL MEET THE MINIMUM CRITERIA AND SHALL BE THE BASIS FOR THE CONTRACTOR'S BASE BID. THE SCHEDULED AND/OR SPECIFIED FIXTURES OR EQUIPMENT DO NOT COMPLY WITH GOVERNING CODES OR REGULATIONS. IN ALL INSTANCES, THE CONTRACTOR SHALL PROVIDE AN ALTERNATE BID FOR COMPLYING FIXTURES, EQUIPMENT, TRIM, OR FITTINGS. THE ABSENCE OF AN ALTERNATE BID SHALL BE CONSTRUED TO MEAN THAT THE CONTRACTOR'S SUBMITTALS COVERS ALL COSTS NECESSARY TO MEET ALL REGULATIONS & CODES.
- GENERAL CONTRACTOR SHALL PROVIDE AND FINISH ALL WALLS, FLOORS, AND ROOF WITH EACH CONTRACTOR BE RESPONSIBLE FOR VERT FIT LOCATION AND FINISH OF ALL OPENINGS REQUIRED UNDER HIS CONTRACT, UNLESS NOTED OTHERWISE ON THE PLANS.
- PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FINAL CONNECTIONS TO KITCHEN EQUIPMENT THAT REQUIRES A FLEXIBLE GAS CONNECTION, ALONG WITH ALL PIPE, VALVES, WATER HAMMER ARRESTORS, PRESSURE REGULATORS, ETC., REQUIRED FOR A COMPLETE INSTALLATION. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR APPROVED FLOOR PLAN AND DIMENSIONS. DO NOT SCALE FLOOR PLANS.
- DEVIATIONS FROM SPECIFIED PLUMBING FIXTURES AND LISTED IN FIXTURE SCHEDULE SHALL OBTAIN PRIOR APPROVAL FROM THE OWNER'S REPRESENTATIVE/LEUO.
- PLUMBING CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL PRIME CONTRACTORS PRIOR TO INSTALLATION OF HIS WORK.
- MECHANICAL DUCTWORK SHALL HAVE RIGHT-OF-WAY OVER ALL PLUMBING PIPES AND ELECTRICAL CONDUITS.
- PLUMBING CONTRACTOR SHALL COORDINATE WITH EQUIPMENT SHEETS.
- INSTALLATION
- ALL PLUMBING LINES ARE TO BE RECESSED WITHIN THE WALL CAVITIES UNLESS SPECIFICALLY NOTED OTHERWISE ON PLANS.
- ALL PLUMBING FIXTURES SHALL BE NEATLY CAULKED WITH SILICONE COMPOUND WHERE FIXTURE MEETS WALL.
- ALL PIPES PASSING THROUGH FLOOR SLAB OR WALLS SHALL BE INSTALLED WITH FOAM RUBBER INSULATION.
- PLUMBING CONTRACTOR SHALL FURNISH AND INSTALL A BACKFLOW PREVENTER OR VACUUM BREAKER AT ALL FIXTURE CONNECTIONS AND AS REQUIRED BY LOCAL CODES AT ANY POINT WHERE THERE IS DANGER OF NON-POTABLE WATER COMING IN CONTACT WITH THE POTABLE WATER SYSTEM OR ANY DANGER OF BACK-FLOW. COORDINATE WITH LOCAL INSPECTOR.
- WHERE TUBING PASSES BEHIND STUCCO, PLASTER OR AREAS WHERE STAPLES ARE USED, IT SHALL BE PROTECTED BY CONTINUOUS SLEEVE OR APPROVED SHIELD THAT IS TWICE THE DIAMETER OF THE TUBING BEING PROTECTED.
- PLUMBING CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR APPROVED FLOOR PLAN AND DIMENSIONS. DO NOT SCALE PLUMBING DRAWINGS.
- DRY PIPING
- INSTALL ALL THREADED CLEANOUT PLUGS WITH PIPE DOPE TO ALLOW EASY REMOVAL IN THE FUTURE.
- ALL INDIRECT WASTE LINES SHALL HAVE A MINIMUM OF 2" AIR GAP OR TWICE THE EFFECTIVE DRAIN DIAMETER (WHICH EVER IS LARGER) WHERE IT TERMINATES AT THE RECEPTOR.
- ALL HUB/FLOOR/TRENCH DRAINS AND FLOOR SINKS SHALL BE PROVIDED WITH DEEP SEAL TRAPS.
- SET TOP RIM OF ALL IN-FLOOR FIXTURES (DRAINS, FLOOR SINKS, CLEAN-OUTS, ETC.) FLUSH WITH FINISHED FLOOR UNLESS DRAWINGS EXPLICITLY SPECIFY OTHERWISE.
- CLEANOUTS LOCATED IN TRAFFIC-BEARING AREAS SHALL BE INSTALLED WITH A VEHICLE TRAFFIC BEARING BOX. THE BOX SHALL BE SET IN CONCRETE SLAB, EXTENDING AT LEAST 12" FROM THE PERIMETER OF THE CLEANOUT. THE SLAB SHALL BE NOT LESS THAN 6" THICK. THE CONCRETE SHALL BE NOT LESS THAN 2,500 PSI.
- WATER PIPING
- PLUMBING CONTRACTOR SHALL INSTALL SHOCK ABSORBERS/WATER HAMMER ARRESTORS TO MEET ALL STATE AND LOCAL CODE REQUIREMENTS.
- PLUMBING CONTRACTOR SHALL INSTALL WATER SUPPLY PIPES SO THAT NO PIPE JOINTS ARE UNDER FLOOR SLAB- ALL JOINTS WILL BE ABOVE THE FLOOR IN ACCESSIBLE WALLS.
- ALL NEW HOT AND COLD WATER PIPING IN WALLS, ABOVE CEILINGS, AND EXPOSED SHALL BE INSULATED WITH AN INSULATION HAVING A MAXIMUM K FACTOR OF 0.27, THICK CLOSED CELL PLASTIC TYPE INSULATION SIMILAR TO JOHNS-MANVILLE "AEROTUBE", INSULATE FITTINGS CONTINUOUSLY, BUT DO NOT INSULATE VALVE BODIES, NOR FIXTURE SUPPLIES.
  - LONGITUDINAL SEAMS SHALL BE SEALED.
  - LATERAL SEAMS (BUTT JOINTS) SHALL BE SEALED ON COLD WATER PIPES ONLY.
  - THICKNESS SHALL BE 1/2" FOR COLD WATER PIPES UP TO 1-1/4" AND 1" FOR COLD WATER PIPES 1-1/2" AND GREATER.
  - THICKNESS SHALL BE 1" MIN. FOR ALL HOT WATER PIPES.
- P.C. SHALL INSTALL ALL DOMESTIC HOT AND COLD WATER PIPING LOCATED IN EXTERIOR WALLS AND CEILING ON HEATED SIDE OF THE INSULATION.
- P.C. SHALL CLOSELY COORDINATE PIPING INSTALLATION WITH GENERAL CONTRACTOR AND VERIFY NO BUILDING INSULATION IS COMPROMISED IN EXTERIOR WALLS.
- HOT AND COLD WATER PIPING ABOVE GROUND SHALL BE TYPE "L" HARD DRAWN COPPER TUBING ASSEMBLED WITH WROUGHT SWEAT FITTINGS. BRANCH PIPING MAY BE CROSS-LINKED POLYETHYLENE (PEX-8) TUBING AND ASTM F-1960 COLD EXPANSION FITTINGS. ALL WATER PIPING BELOW GRADE OR BELOW CONCRETE SLAB SHALL BE TYPE "K" COPPER TUBING. JOINTS IN COPPER TUBING SHALL BE WITH SILVER SOLDER SIMILAR OR EQUAL TO SL-PHOS.
- ALL VALVES SHALL BE SAME SIZE AS PIPING SERVED (MIN.).
- GAS PIPING
- PLUMBING CONTRACTOR SHALL SUPPLY AND INSTALL GAS PIPING AS SHOWN ON PLANS. ALL GAS PIPING SHALL COMPLY WITH LOCAL CODES. PLUMBING CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO ALL GAS EQUIPMENT. INSTALL REGULATORS AT EQUIPMENT WHERE REQUIRED BY MANUFACTURER OR CUTS SUPPLIED BY FURNISHING CONTRACTOR.

LEGEND

LINE TYPE	
	WASTE PIPING
	VENT PIPING
	COLD WATER PIPING
	HOT WATER PIPING (110')
	GAS PIPING

SYMBOLS

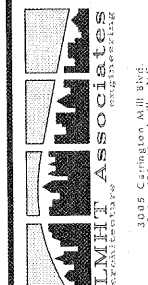
	PLUG CLEAN OUT
	WALL CLEANOUT
	GATE VALVE
	CHECK VALVE
	HOSE BIBB
	VENT THROUGH ROOF
	GAS COCK AND UNION
	GAS METER

ABBREVIATIONS

PLUMBING CONTRACTOR	PC
GENERAL CONTRACTOR	GC
OWNER/FRANCHISEE	O/F
HOSE BIBB	HB
TRAP PRIMER	TP
ROOF TOP EQUIPMENT (HVAC)	RTU
WATER HAMMER ARRESTOR	WHA
MIXING VALVE	MV
BACKFLOW PREVENTER	BFP
EXHAUST FAN	EF
EXISTING	EX
NORMALLY OPEN	NO
NORMALLY CLOSED	NC
NOT TO SCALE	NTS
ON CENTER	OC
OUT SIDE DIA.	OD
INSIDE DIA.	ID
MSP SINK	MS
TYPICAL	TYP
WATER CLOSET	WC
LAVATORY	LAV
WATER HEATER	WH
HOSE BIBB	HB
DRAINAGE FIXTURE UNIT	DFU
CLEANOUT	CO

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PROJECT: STARBUCKS SHELL BUILDING  
350 BLOWING ROCK BOULEVARD  
LENOIR, NC 28645  
DRAWING: PLUMBING NOTES, LEGEND AND SCHEDULES

Revisions

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