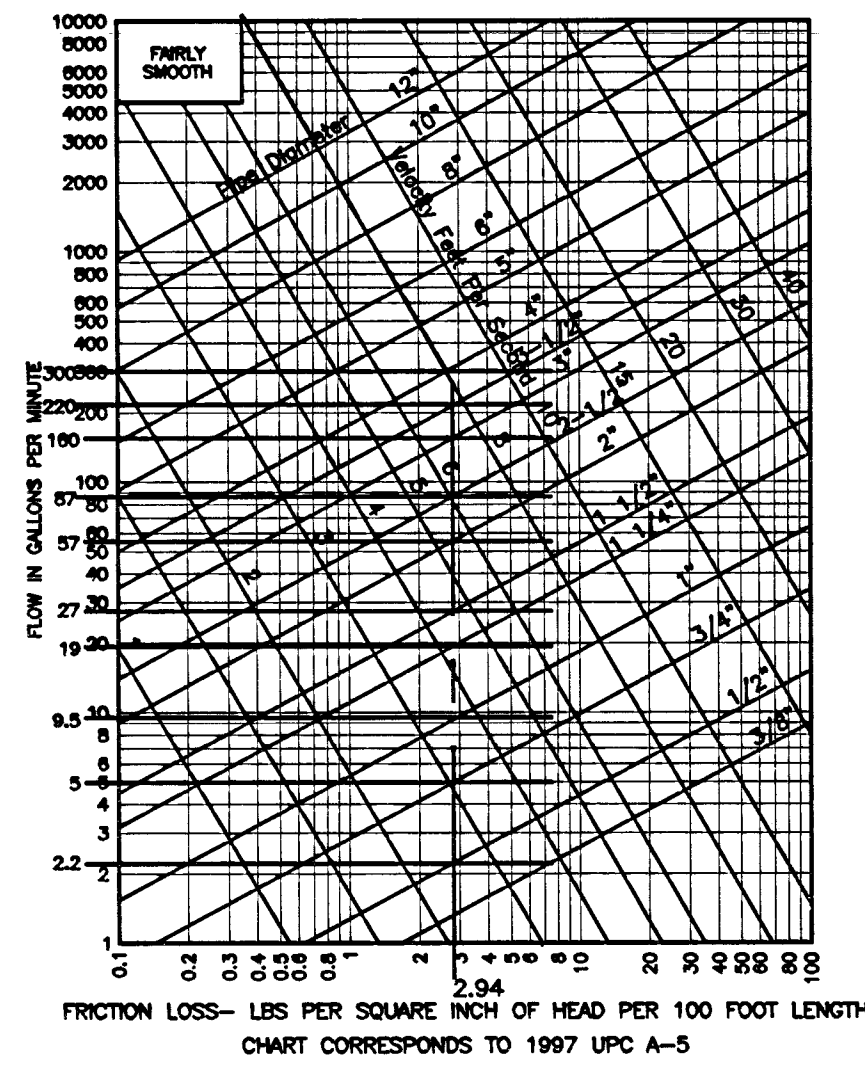


BUILDING K WATER PIPING CALCULATION



2000 UPC APPENDIX A, CHART A-5 FAIRLY SMOOTH

STATIC HEAD (S.H.) = 15 FT. x 0.43 = 6.45 PSI
 AVAILABLE PSI = 80 SERVICE PRESS. - (6.45 S.H. + 25 REQ'D PRESS. + 23.55 RESIDUAL PSI)
 DEVELOPED LONGEST RUN = 640 FT.
 25% FITTING LENGTH = 160 FT.
 TOTAL EQUIVALENT LENGTH (TEL) = 800 FT.
 ALLOWABLE FRICTION LOSS/100 FT. = (100/TEL) x (RESIDUAL PSI) = 23.55 PSI / 800 FT. x 100 = 2.94 PSI

PIPE SIZE	MAX FLOW (GPM)	FLUSH TANK F.U.	FLUSH VALVE F.U.	VELOCITY FPS
1/2"	2.2	3	-	-
3/4"	5	6	-	-
1"	9.5	13	-	-
1-1/4"	19	28	-	-
1-1/2"	27	40	10	-
2"	57	100	66	-
2-1/2"	87	315	186	-
3"	160	692	631	-
3-1/2"	220	1091	1091	-
4"	300	1755	1755	-

FIXTURE UNIT COUNT CALCULATION

FIXTURE	PRIVATE		PUBLIC		COUNT	CW 100%	CW 75%	HW 75%	SS
	IND	3/4"	GEN	HEAVY					
WATER CLOSET	IV	5.0	5.0	5.0	30	400	-	-	-
WATER CLOSET	FT	2.5	2.5	2.5	4.0	-	-	-	-
URINAL	-	-	4.0	5.0	10	50	-	-	-
LAVATORY	-	1.0	0.5	1.0	20	-	19.5	19.5	-
SHOWER	-	2.0	2.0	-	12	-	18	18	-
SERVICE SINK	-	-	3.0	-	5	-	11.25	11.25	-
ENCL/OF	-	-	0.5	0.75	7	5.25	-	-	-
SINK	-	1.0	1.0	2.0	11	-	6.75	6.75	-
CLOTHES WASHER	-	4.0	2.5	4.0	2	-	8	8	-
HOSE BIB	-	2.5	2.5	2.5	1	2.5	-	-	-
HOSE BIB EX ADD	-	1.0	1.0	1.0	27	27	-	-	-
KITCHEN EQUIPMENT LOAD	-	-	-	30	1	10	30	30	-
TOTALS						494.75	91.5	91.5	
METER SIZE	2" METER WITH 4" WATER MAIN				TOTAL	185 GPM		596.25 TOTAL CW FU 91.5 TOTAL HW FU	

GENERAL NOTES

- ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITION OF THE APPLICABLE INTERNATIONAL BUILDING, UNIFORM MECHANICAL, AND UNIFORM PLUMBING CODES, AND FEDERAL, STATE, AND LOCAL REGULATIONS. MATERIALS AND EQUIPMENT SHALL BE NEW, AND ALL WORK SHALL BE GUARANTEED AGAINST ANY DEFECTS IN EQUIPMENT, MATERIAL, OR WORKMANSHIP FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE BY OWNER.
- THE SCOPE OF WORK INCLUDES ALL LABOR, MATERIAL, EQUIPMENT, SUPERVISION, AND ANY OTHER INCIDENTAL ITEMS OR SERVICES NECESSARY FOR THE COMPLETE INSTALLATION AND PROPER OPERATION OF ALL MECHANICAL AND PLUMBING SYSTEMS.
- THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACQUISITION AND PAYMENT OF ALL FEES, PERMITS, AND INSPECTIONS REQUIRED.
- DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF EQUIPMENT AND ROUTING OF PIPING AND DUCTWORK AND SHALL NOT BE SCALED. CONTRACTOR SHALL EXAMINE ALL DRAWINGS AND COORDINATE EXACT ARRANGEMENT AND ROUTING WITH ALL OTHER TRADES AND THE OWNER. CONTRACTOR SHALL MAKE REASONABLE ADJUSTMENTS, OFFSETS, TRANSITIONS, AND MODIFICATIONS FOR THE PROPER INSTALLATION AND OPERATION OF MATERIALS AND EQUIPMENT, AND TO PREVENT CONFLICT WITH OTHER TRADES. CONTRACTOR SHALL BE RESPONSIBLE FOR WORKING CONDITIONS AND SHALL MAINTAIN SAFE WORKING CONDITIONS AND USE SAFE METHODS.
- CONTRACTOR SHALL EXAMINE, VERIFY, AND CONFIRM ALL EXISTING FIELD CONDITIONS PRIOR TO SUBMITTING THE BID. WHERE DISCREPANCIES EXIST, THEY SHALL BE NOTED AND ACCOUNTED FOR IN THE BID PRICE.
- PRIOR TO THE PURCHASE, FABRICATION, OR INSTALLATION OF ANY MATERIAL OR EQUIPMENT, THE CONTRACTOR SHALL SUBMIT COPIES OF SHOP DRAWINGS AS REQUIRED IN SPECIFICATIONS, AND CATALOG DATA FOR ALL EQUIPMENT, MATERIAL, AND DEVICES REQUIRED PER CONTRACT REQUIREMENTS FOR REVIEW BY THE ENGINEER. CONTRACTOR SHALL CHECK AND VERIFY ALL SIZES, DIMENSIONS, VOLTAGES, AND CONDITIONS. SHOP DRAWINGS SHALL BE COORDINATED WITH ALL ARCHITECTURAL, STRUCTURAL, ELECTRICAL, AND OTHER BUILDING ELEMENTS. ANY DEVIATIONS OR PROBLEM SHALL BE TRANSMITTED TO THE ARCHITECT FOR ENGINEERS RESOLUTION. PROVIDE PROPER CLEARANCE AND ACCESS FOR INSPECTION AND MAINTENANCE.
- SEAL ALL WALL AND ROOF PENETRATIONS WEATHER TIGHT. PROVIDE ACCESS PANELS IN CEILING AND WALLS FOR ACCESS TO VALVES, EQUIPMENT AND DUCT CLEAN OUTS.
- THE CONTRACTOR SHALL CONTINUOUSLY MAINTAIN AS-BUILT DRAWINGS AS THE WORK PROGRESSES. UPON THE COMPLETION OF CONSTRUCTION, THE MECHANICAL CONTRACTOR SHALL SUBMIT THREE SETS OF AS-BUILT DOCUMENTS ACCURATELY SHOWING THE MATERIALS AND EQUIPMENT AS INSTALLED. SUBMIT THREE SETS OF OPERATION AND MAINTENANCE MANUALS KEYED TO EQUIPMENT LABELING FOR ALL EQUIPMENT.
- ALL EQUIPMENT AND SYSTEMS SHALL BE ADJUSTED, BALANCED, AND TESTED TO PROVIDE PROPER OPERATION. EXPLAIN TO THE OWNER'S REPRESENTATIVE ALL PROCEDURES NECESSARY TO OPERATE AND MAINTAIN ALL EQUIPMENT AND SYSTEMS.

PLUMBING NOTES

- ALL MATERIAL, FIXTURES, AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF THE UNIFORM PLUMBING CODE. ALL PIPING SHALL BE AS SCHEDULED EXCEPT WHERE OTHERWISE INDICATED.
- CONTRACTOR SHALL DETERMINE EXISTING SIZE, INVERT, LOCATION, AND ADEQUACY OF UTILITIES, INCLUDING METER LOCATION AND POINTS OF CONNECTION PRIOR TO BEGINNING WORK.
- TRENCHING, BACK FILL, AND CONCRETE WORK ASSOCIATED WITH PLUMBING SHALL BE PROVIDED IN A WORKMAN LIKE MANNER AND IN ACCORDANCE WITH THE APPLICABLE SPECIFICATIONS.
- ALL PIPING IN FINISHED AREAS SHALL BE CONCEALED. ALL EXPOSED PIPING SHALL BE ROUTED HIGH AND TIGHT TO THE WALL. CLEAN OUTS SHALL NOT OCCUR UNDER OR BEHIND ANY CASES OR FIXTURES.
- SLOPE ALL WASTE LINES AND STORM DRAINS AT 1/4" PER FOOT. 1/8" PER FOOT MAY BE INSTALLED IF DEPTH CAN NOT BE MAINTAINED DUE TO EXISTING SEWER INVERT AND APPROVED BY CODE. ROUTE LINES AWAY FROM FOOTINGS OR AS DIRECTED BY THE STRUCTURAL ENGINEER.
- LOCATE FLOOR DRAINS AND FLOOR SINKS PER DIMENSIONAL DRAWING. PROVIDE TRAP PRIMERS ON ALL INFREQUENTLY USED DRAINS AS REQUIRED BY CODE.
- ALL FLOOR SINKS UNDER EQUIPMENT SHALL BE HALF EXPOSED AND READILY ACCESSIBLE FOR INSPECTION AND CLEANING. INSTALL FLOOR SINKS FLUSH WITH THE FINISHED FLOOR.
- VENTS FROM FIXTURES WITH OVERFLOW RIM AT FLOOR LEVEL SHALL RISE 6" ABOVE FLOOR BEFORE COLLECTING TOGETHER. VENT THROUGH ROOF SHALL BE FLASHED AND COUNTER FLASHED.
- HANGER RODS AND DEVICES SHALL BE USED FOR ALL PIPING. PROVIDE HANGERS SIZED TO FIT INSULATION WITH GALVANIZED SADDLE AS REQUIRED. MAKE SHIFT DEVICES SHALL NOT BE ACCEPTABLE. SPACE HANGERS TO COMPLY WITH THE APPLICABLE SECTION OF THE UNIFORM PLUMBING CODE.
- INSULATE HOT WATER AND CIRCULATION PIPING WITH 1" PRE FORMED FIBERGLASS INSULATION WITH VAPOR BARRIER. INSULATE TAILPIPE, TRAP, AND WATER LINES UNDER LAVATORIES REQUIRED FOR THE HANDICAPPED.
- PROVIDE REDUCED PRESSURE BACK FLOW PROTECTION DEVICES AT SODA DISPENSERS AND OTHER EQUIPMENT AS REQUIRED BY CODE.
- DOMESTIC WATER PIPING SHALL BE DISINFECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE STATE ADMINISTRATIVE CODE. PROVIDE CERTIFICATION CONFIRMING TESTING AND COMPLIANCE TO THE OWNER.
- NATURAL GAS LINES SHALL BE BLOWN CLEAN OF DEBRIS WITH COMPRESSED AIR PRIOR TO FINAL CONNECTION TO EQUIPMENT.

DRAWING INDEX

NUMBER	DRAWING TITLE	PERMIT SET 03.18.05	PLANS CHECK 04.29.05	REVISIONS 05.31.05	REVISIONS 07.01.05
P1.00	PLUMBING INDEX, LEGEND, AND NOTES	•	•	•	•
P1.01	PLUMBING SCHEDULES	•	•	•	•
P1.02	PLUMBING SITE PLAN AND DIAGRAMS	•	•	•	•
P2.01	FLOOR PLAN - AREA A	•	•	•	•
P2.02	FLOOR PLAN - AREA B	•	•	•	•
P2.03	FLOOR PLAN - AREA C	•	•	•	•
P2.04	FLOOR PLAN - AREA D	•	•	•	•
P2.05	FLOOR PLAN - AREA E	•	•	•	•
P2.06	FLOOR PLAN - AREA F	•	•	•	•
P2.07	FLOOR PLAN - AREA G	•	•	•	•
P3.01	ROOF PLAN	•	•	•	•
P4.01	ENLARGED PLUMBING PLANS	•	•	•	•
P4.02	ENLARGED PLUMBING PLANS	•	•	•	•
P4.03	ENLARGED KITCHEN PLUMBING PLANS	•	•	•	•

LEGEND

ABBREVIATION	SYMBOL	DESCRIPTION
AP		ACCESS PANEL
D		DRAIN PIPING
CW		COLD WATER PIPING
HW, HWC		HOT AND HOT WATER CIRCULATING PIPING
SS		SANITARY SEWER PIPING
FCO, WCO, COTG		FLOOR CLEANOUT, WALL CLEANOUT AND CLEANOUT TO GRADE.
V, VTR		VENT PIPING AND VENT THRU ROOF
		ELBOW DOWN, TEE UP, TEE DOWN, ELBOW UP
G, MPG		LOW PRESSURE AND MEDIUM PRESSURE GAS PIPING
		UNION
		GATE OR BALL VALVE, VALVE IN RISE
		GAS COCK, PRESSURE REGULATOR VALVE
		WORK NOTE, REVISION NOTE, DEMOLITION NOTE, POINT OF CONNECTION
E, R, N, RE:	(E), (R), (N), (RE):	EXISTING, RELOCATED, NEW AND REFERENCE
		SECTION "A" ON SHEET "M4.0"
		DETAIL "1" ON SHEET "P3.0"
		MECHANICAL EQUIPMENT CALL OUT
		PLUMBING FIXTURE CALL OUT
		FIXTURE DRAIN/LEADER SIZE IF APPLICABLE

PLUMBING MATERIALS SCHEDULE

SYSTEM	LOCATION	SIZE	MATERIAL	JOINTS	FITTINGS
SOIL, WASTE, VENT	BELOW GRADE	ALL	SCHEDULE 40 PVC OR ABS	SOLVENT WELD	MATCH PIPE
SOIL, WASTE, VENT	ABOVE GRADE	ALL	CAST IRON	NO HUB	MATCH PIPE
DOMESTIC WATER	ABOVE GRADE	ALL	COPPER TYPE "L"	LEAD-FREE	WROUGHT COPPER
DOMESTIC WATER	BELOW GRADE	ALL	COPPER TYPE "K"	SILVER BRAZED	WROUGHT COPPER
G, MPG	ABOVE GRADE	ALL	SCHED 40 BLACK STEEL	THREADED	MALLEABLE IRON