VALVE SCHEDULE / 32° F TO 150° F SERVICE TEMPERATURE

BALL VALVES - 4 INCH AND SMALLER FULL PORT 600# WOG

MANUFACTURER	THREADED	SOLDER		
CONBRACO (APOLLO)	70-100	70-200		
CRANE	9302	9322		
GRINNELL	3700	3700 SJ		
RED-WHITE	5044 F.	5094 F.		
STOCKHAM	S216-BR-RT	S216-BR-RS		
WATTS	B-6000	B-6001		

"X" MEANS NOT AVAILABLE

BUTTERFLY VALVES - 4 INCH AND LARGER 175 PSI MAX.

MANUFACTURER	WAFER	LUG		
KEYSTONE	AR-1	AR-2		
BRAY	30-119	31-119		
CENTERLINE	200-W	200-L		

FOR COPPER GRV'D. CONNECTIONS, USE VICTAULIC SERIES 608 300 PSI MAX.

SWING CHECK VALVES - 2 INCH AND SMALLER

MANUFACTURER	CLASS 125 THREADED	CLASS 125 SOLDER	CLASS 150 THREADED	CLASS 150 SOLDER
CRANE	37	1342	137	X
GRINNELL	3300	3300SJ	3320	X
HAMMOND	IB940	IB941	IB946	IB945
MILWAUKEE	509	1509	510	1510
STOCKHAM	B-319	B-309	B-321	X

FOR GROOVED CONNECTIONS, USE VICTAULIC SERIES 712

SWING CHECK VALVES - 2 1/2 INCH AND LARGER - FLANGED

MANUFACTURER	CLASS 125	CLASS 250		
CRANE	373			
GRINNELL	X			
HAMMOND	IR1124			
MILWAUKEE	F-2974			
STOCKHAM	G-931			

FOR GROOVED CONNECTIONS, USE VICTAULIC SERIES 712

"X" MEANS NOT AVAILABLE

PLUMBING MATERIALS SPECIFICATION

TYPE of MATERIAL	SIZE	SUSPEN. DRAINS & STACKS	SUSPEN. VENTS & STACKS	SUSPEN. STORM DRAINS & DOWNSPOUTS	SUSPEN. DOM. WTR. DISTRIB. TO 150#	BURIED DOM. WTR. DISTRIB. 151#-400#	BURIED FIRE PROT. SERVICE	BURIED BLDG. SEWER	BURIED BLDG. DRAINS	BURIED STORM	SUB-SOIL DRAINAGE
CAST IRON SOIL PIPE & FITTINGS ASTM A74	2"-15" dia.										
CAULKED JOINTS w\ LEAD & OAKUM FS QQ-C-40		•	•	•			•	•			
PUSH-ON JOINTS w\ ASTM C564 GASKETS							•	•			
GALV. STL. PIPE ASTM A53 & DRAINAGE FITTINGS											
CUT-GROOVED COUPLINGS & FTTGS.	2"-24" dia.			•							
THREADED CAST IRON ASTM B16.12	1 1/2"-2 1/2" dia.	•	•								
COPPER PIPE HARD DRAWN TYPE M ASTM B88 w\											
CAST ASTM B16.23 or WROT ASTM B16.29											
COPPER SOLDER JOINT DRAINAGE FITTINGS	1 1/2"-2 1/2" dia.	•	•								
COPPER PIPE HARD DRAWN TYPE M ASTM B88	1 1/2"-2 1/2" dia.				•						
CAST IRON HOT HUB PIPE AND FITTINGS ASTM A888-07a	2 1/2" AND LARGER	•	•	•							
VITRIFIED CLAY PIPE & FITTINGS ASTM C700 w\											
COMPRESSION GASKET JOINTS ASTM C425	6"-24" dia.										
REINFORCED CONCRETE PIPE ASTM C76 w\											
RUBBER GASKET JOINTS ASTM C443	14"-54" dia.							•			
DUCTILE IRON PIPE & FITTINGS AWWA C151											
CEMENT LINED AWWA A21.4, w\ PUSH-ON or											
MECHANICAL JOINTS AWWA A21.11	3"-24" dia.				•	•					
GALV. STL. PIPE ASTM A53 Sch.40 w\ GALV. 125#											
THREADED MALLEABLE IRON FITTINGS ANSI B16.3	to 2 1/2" dia.				•						
FLANGED CAST IRON FITTINGS ANSI B16.1	3"-12" dia.				•						
COPPER PIPE HARD DRAWN TYPE L ASTM B88 w\											
CAST ASTM B16.18 or WROT ASTM B16.22											
COPPER SOLDER JOINT PRESSURE FITTINGS	to 2 1/2" dia.				•						
ROLL-GROOVED COPPER FITTINGS & COPPER											
PLATED DUCTILE IRON COUPLINGS	3"-6" dia.				•						
T-DRILL EXTRUDED CONNECTIONS	1 1/2"-6" dia.				•						
GALV. STL. PIPE ASTM A53 Sch.40 w\ GALV. 250#											
THREADED MALLEABLE IRON FITTINGS ANSI B16.3	to 2 1/2" dia.					•					
FLANGED CAST IRON FITTINGS ANSI B16.1	3"-12" dia.					•					
PREFORATED SCHEDULE 40 PVC	4"-8" dia.								•		
POLYVINYL CHLORIDE (PVC) PLASTIC PIPE (TYPE DWV PIPE).		•	•	•				•	•		
ASTM F 891	6"-12" dia.										
POLYVINYL CHLORIDE (PVC) PLASTIC FITTINGS		•	•	•				•	•		
ASTM D 2464											

FIXTURE ROUGH-IN PIPE SIZES

FIXTURE	TAG	RISER AND AIR CHAMBER FOR FIXTURE HW	RISER AND AIR CHAMBER FOR FIXTURE CW	FIXTURE NIPPLE (VALVE INLET) HW	FIXTURE NIPPLE (VALVE INLET) CW	CODE REQUIREMENTS WASTE	CODE REQUIREMENTS VENT	ELEC.	MFG.	FLOW RATE	MODEL SEE SPEC	REMARKS
WATER CLOSET	WC-1	–	1 1/4"	–	1"	4"	2"	120V	SEE SPEC.	1.28 GPF		WALL HUNG, ELONGATED BOWL, OPEN FRONT SEAT, NO COVER HEAVY DUTY CHAIR CARRIER SENSOR TYPE FLUSH VALVE, HARD WIRED TO TRNSFORMER
WATER CLOSET (ADA)	WC-2	–	1 1/4"	–	1"	4"	2"	120V	SEE SPEC.	1.28 GPF		WALL HUNG, ELONGATED BOWL, OPEN FRONT SEAT, NO COVER HEAVY DUTY CHAIR CARRIER, SENSOR TYPE FLUSH VALVE, HARD WIRED TO TRANSFORMER
WATER CLOSET/LAV	W/L	3/4"	1 1/4"	1/2"	1/2"	4"	2"	–	WILLOUGHBY		ECF-3696	ADA COMPLIANT ACCESS. FLUSH VALVE, FLUSH BUTTON, CYTOF SENSOR, LOCATE OUTSIDE ROOM. ECF-3696 (L OR R) ON-BPH-PM2-PBH-OV-TW4-LF-RTH
LAVATORY	LAV-1	3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	–	SEE SPEC.	0.5 GPF		ELECTRONIC FAUCET AND SOAP DISPENSOR H&C MIXING FAUCET
URINAL	UR-1	–	1"	–	3/4"	2"	1 1/2"	120V	SEE SPEC.	0.125 GPF		WALL HUNG, HEAVY DUTY CARIER, SENSOR TYPE FLUSH VALVE HARD WIRED TO TRANSFORMER
URINAL (ADA)	UR-2	–	1"	–	3/4"	2"	1 1/2"	120V	SEE SPEC.	0.125 GPF		WALL HUNG, HEAVY DUTY CARIER, SENSOR TYPE FLUSH VALVE HARD WIRED TO TRANSFORMER
SINK	SK-1	3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	–	SEE SPEC.	1.1 GPM		
SINK		3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	–	SEE SPEC.	1.1 GPM		
SINK	SK-2	3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	–	SEE SPEC.	1.1 GPM		
DRINKING FOUNTAIN	DF-1	–	3/4"	–	1/2"	2"	1 1/2"	–	SEE SPEC.			
JANITOR'S MOP BASIN	JMB	3/4"	3/4"	1/2"	1/2"	3"	2"	–	SEE SPEC.	1.1 GPM		
HOSE BIBB	HB	–	1"	–	3/4"	–	–	–	–		–	WITH CODE REQ'D. BACKFLOW PREVENTER
TRAP PRIMER	TP	–	1/2"	–	–	–	–	–	PRECISION PLUMBING PRODUCTS		MODEL P1 or P2	RUN 1/2" COLD WATER TO EACH FLOOR DRAINS INCLUDE DISTRIBUTION UNITS AS REQUIRED.
EMER. SHOWER / EYEWASH (ADA)	ES/EW	2"	1 1/2"	1 1/4"	1 1/4"	2"	2"	–				
SHOWER	SH	3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	–	SEE SPEC.	1.5 GPM		

DOMESTIC WATER HEATER SCHEDULE

HEATER TAG	SERVICE	LOCATION	STORAGE CAPACITY	ELECTRICAL PUMP	ELECTRICAL ELEMENT KW	ELECTRICAL BURNER	ELECTRICAL BLOWER	ELECTRICAL VOLTS	ELECTRICAL PHASE	GAS BTU/HR INPUT	RECOVERY RATE AT 100 DEG. F TEMP. RISE	STORED WATER TEMP. F.	BASIS OF DESIGN	MODEL NO.	COMMONS
WH-1	DOMESTIC WATER HEATING	3RD FLOOR MECHANICAL ROOM	100	–						250,000	294	140	LAARS	LUHE-100T-250E-3N(A)	99.1% EFFICIENT
WH-2			100	–						250,000	294			LUHE-100T-250E-3N(A)	

PUMP SCHEDULE

	SERVICE	LOCATION	SYSTEM GPM	TOTAL DYNAMIC HEAD	PUMP GPM	MOTOR DATA HP	MOTOR DATA VOLTS	MOTOR DATA PH	MOTOR DATA RPM	MANUFACTURER & MODEL	REMARKS
HP-1	HOUSE PUMP	GROUND FLOOR	145	92	73	5	460	3	3450	SYNCROFLO 55TA354V-VFD	TRIPLEX BOOSTER SYSTEM U.L./C-U.L. SYSTEM FLOW 145 GPM BOOST PRESSURE 40 PSIG INCLUDING A SUCTION PRESSURE OF 38 PSIG MIN.
				92	73	5	460	3	3450		
				92	37	3	460	3	3450		
RP-1	120° HOT WATER RECIRCULATING PUMP	THIRD FLOOR	6	31		1/6	115		3300	B&G PL-36	IN-LINE
PP-1	ELEVATOR PIT PUMP	GROUND FLOOR	34	20	–	1/2	208	1		ZOELLER PUMP CO, 4282	SUBMERSIBLE, SUMP PUMP SEE DETAIL #11 ON DWG. P402 W/ OIL MINDER ON EMERGENCY POWER
SP-1	DUPLEX SUBMERSIBLE SUMP PUMP	GROUND FLOOR	800	30	800	10	460	3	1750	FTI FTI150DLF67.54	DUPLEX SUBMERSIBLE SUMP PUMP DUPLEX VARIABLE-SPEED CONTROL SYSTEM TO RESPOND TO THE FLOW CHANGES. PROVIDE SUBMERSIBLE TRANSMITTER. EMERGENCY POWER

(OTHER ACCEPTABLE MANUFACTURES ARE BELL AND GOSSETT,METROPOLITAN AND CANARIIS)

MIXING VALVE SCHEDULE

TAG	LOCATION	SERVICE	IN HOT	IN COLD	MIXED OUT	GPM MIN.	GPM MAX	COMMENTS	BASIS OF DESIGN
TMV	SINK	LAV	120	40	110	0.1	0.5	PARRALEL PIPED	SYMMONS 5-110-CK

GREASE INTERCEPTOR SCHEDULE

TAG NO.	SERVICE	LOCATION	MANUFACTURER & MODEL #	REMARKS
GI 1	GREASE INTERCEPTOR	GROUND FLOOR	J.R. SMITH MODEL # 8050 50 GPM FLOW, 100 LB. GREASE CAPACITY	

DRAIN SCHEDULE

TAG	SERVICE	DESCRIPTION	JR SMITH NO.	ACCEPTABLE MANUFACTURES
FD-1	FINISHED AREA FLOOR DRAIN	NICKLE BRONZE VANDAL PROOF TOP	2010	WADE OR ZURN
FD-2	MECHANICAL ROOMS	FLOOR SINK W/ 1/2" GRATE	2270	WADE OR ZURN
FD-3		RECESSED GRATE		
RD-1	ROOF DRAIN	CAST IRON WITH FLASHING CLAMP & CAST IRON DOME	1015-ARC	WADE OR ZURN
RD-2	ROOF DRAIN	CAST IRON WITH FLASHING CLAMP, CAST IRON DOME & INTERNAL DAM	–	WADE OR ZURN
RD-3	ROOF DRAIN			
TD	TRENCH DRAIN		TRENCH 9818 GRATE 9812-CI	POLYDRAIN
FS		FLOOR SINK		
FD-4	ELEVATOR DRAIN	CAST IRON WITH FLASHING CLAMP	1520	WADE OR ZURN

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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

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ENGINEER CERTIFICATION
I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	RFP 017	9.24.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 1	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: RDJ
DRAWN BY: HV
DESIGNED BY: SA

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
PLUMBING SCHEDULES

SHEET NUMBER
P501

BID PACKAGE 2A
ADDENDUM 2