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PLUMBING SPECIFICATION

1. GENERAL
A. BEFORE SUBMITTING BID, VISIT AND CAREFULLY EXAMINE SITE TO IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK OF THIS SECTION. NO EXTRA PAYMENT WILL BE ALLOWED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY EXPERIENCED OBSERVER.

B. PERFORM WORK AND PROVIDE MATERIAL AND EQUIPMENT FOR SYSTEMS SHOWN ON DRAWINGS AND AS SPECIFIED IN THIS SECTION. COMPLETELY COORDINATE WORK OF THIS SECTION WITH WORK OF OTHER SECTIONS AND PROVIDE COMPLETE AND FULLY FUNCTIONAL INSTALLATION. DRAWINGS AND SPECIFICATIONS FORM COMPLEMENTARY REQUIREMENTS; PROVIDE WORK SPECIFIED AND NOT SHOWN, AND WORK SHOWN AND NOT SPECIFIED AS THOUGH EXPRESSLY REQUIRED BY BOTH.

C. PERFORM WORK STRICTLY AS REQUIRED BY RULES, REGULATIONS, STANDARDS, CODES, ORDINANCES, AND LAWS OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES THAT HAVE LAWFUL JURISDICTION.

D. MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS LABORATORIES (UL), AND APPROVED BY ASME AND AGA FOR INTENDED SERVICE.
2. GUARANTEE
A. GUARANTEE WORK OF THIS SECTION IN WRITING FOR ONE YEAR FROM DATE OF OWNERS ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION. REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPTLY AND TO OWNER'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE WITHIN CONTRACT PRICE.

3. SCOPE OF WORK
A. PERFORM WORK AND PROVIDE MATERIAL AND EQUIPMENT AS SHOWN ON DRAWINGS AND AS SPECIFIED IN THIS SECTION OF SPECIFICATIONS. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS FROM AUTHORITIES THAT HAVE JURISDICTION AS REQUIRED TO PERFORM WORK IN ACCORDANCE WITH ALL LEGAL REQUIREMENTS AND WITH SPECIFICATIONS AND DRAWINGS.

B. NEW SCOPE OF WORK WORK SHALL INCLUDE BUT SHALL NOT TO BE LIMITED TO THE FOLLOWING:
– NEW HOT AND COLD SOFT WATER PIPING INCLUDING CONNECTIONS TO EXISTING SYSTEM
– NEW WASTE AND VENT PIPING INCLUDING CONNECTIONS TO EXISTING WASTE SYSTEM
– NEW INSULATIONS
– FINAL CONNECTIONS TO OWNER FURNISHED EQUIPMENT, ETC.

4. SUBMITTALS
A. PROVIDE PRODUCT DATA FOR EQUIPMENT SPECIFIED OR SHOWN ON DRAWINGS PREPARED BY MANUFACTURERS, SUPPLIERS AND VENDORS COMPRISING:
– TESTING REPORT.
– ALL CUT SHEETS OF THE FOLLOWING, BUT NOT LIMITED TO: FIXTURES, PIPE MATERIALS, ALL ASSOCIATED FITTINGS, INSULATION, HANGERS ETC.

5. PLUMBING FIXTURES AND TRIM
A. REFER TO ARCHITECTURAL AND PLUMBING DRAWINGS FOR QUANTITIES, LOCATIONS AND MOUNTING HEIGHTS OF FIXTURES PROVIDED UNDER THIS SECTION.
B. FIXTURE TRIM, TRAPS, FAUCETS, ESCUTCHEONS AND WASTE PIPES EXPOSED TO VIEW IN FINISHED SPACES SHALL BE I.P.S. BRASS WITH POLISHED CHROMIUM PLATING OVER NICKEL FINISH.
C. PRODUCT INSTALLATION SHALL ADHERE TO MANUFACTURER'S RECOMMENDATIONS.

5. PIPE IDENTIFICATION
A. PROVIDE COLOR–CODED PIPE IDENTIFICATION MARKERS ON PIPING INSTALLED UNDER THIS SECTION. PIPE MARKERS SHALL BE SNAP–ON LAMINATED PLASTIC PROTECTED BY CLEAR ACRYLIC COATING. PIPE MARKERS SHALL BE APPLIED AFTER ARCHITECTURAL PAINTING WHERE SUCH IS REQUIRED.

B. PROVIDE ARROW MARKER WITH EACH PIPE CONTENT MARKER TO INDICATE DIRECTION OF FLOW. IF FLOW CAN BE IN EITHER DIRECTION, USE DOUBLE–HEADED ARROW MARKER.

C. PROVIDE PIPE MARKERS AT INTERVALS NO LONGER THAN 20'

9. VALVE TAGS

A. UPON COMPLETION OF WORK, ATTACH ENGRAVED LAMINATED PLASTIC TAGS TO ALL VALVES AND INSTRUMENTATION. TAGS SHALL HAVE BLACK CHARACTERS ON WHITE FACE, CONSECUTIVELY NUMBERED AND PREFIXED WITH LETTER P FOR GENERAL VALVES.

B. TAGS SHALL BE AT LEAST 1.25" DIAMETER WITH NUMERALS AT LEAST 3/8" HIGH AND ATTACHED BY S HOOKS AND CHAINS.

6. INSULATION
A. INSULATION SHALL BE BY OWENS–CORNING, CERTAIN–TEED OR MANVILLE.
B. INSULATION, JACKETS AND ADHESIVES SHALL BE FLAME RETARDANT AND SHALL HAVE ASTM E–84 FIRE HAZARD RATINGS OF 25 FLAME SPREAD, 50 SMOKE DEVELOPED AND 50 FUEL CONTRIBUTED.
C. HOT WATER SUPPLY PIPING SHALL BE INSULATED WITH HEAVY DENSITY FIBERGLASS WITH SELF–SEALING LAP AND ALL SERVICE JACKET. FITTINGS AND VALVES SHALL BE INSULATED WITH TWO LAYERS BLANKET INSULATION WITH PVC COVERS. INSULATION SHALL BE RATED FOR MAXIMUM OPERATING TEMPERATURE OF 450° F. INSULATION THICKNESS SHALL BE 1".
D. COLD WATER SUPPLY PIPING, VALVES AND FITTINGS SHALL BE INSULATED AS SPECIFIED FOR HOT WATER SUPPLY PIPING. IN ADDITION, CONTINUOUS VAPOR BARRIER SHALL BE BE MAINTAINED. INSULATION THICKNESS SHALL BE 1".

7. PIPE MATERIALS
A.
SERVICE: ABOVE GROUND HOT AND COLD WATER PIPING.
PIPE MATERIAL; TYPE L SEAMLESS COPPER TUBING, CONFORMING TO ASTM B–88
FITTINGS; WROUGHT COPPER, SOLDER JOINTS. ASME B16.22
PIPE JOINT; ASTM B–32 SOLDER FILLED MATERIAL, ALLOY SB5 "95/5." ASTM B–813 LIQUID OR PASTE FLUX.
BALL VALVES; ALL BRONZE, 2 PIECE, FULL PORT, PTFE SEATS, SOLDER END CONNECTIONS, 600 PSIG WOG.

B.
SERVICE: ABOVE GROUND WASTE AND VENT (SAN, V)
PIPE MATERIAL; SERVICE WEIGHT CAST IRON NO–HUB PIPE CONFORMING TO CISPI 301
FITTINGS; CAST IRON DRAINAGE PATTERN OR WROUGHT COPPER DRAINAGE CISPI 301 OR TYPE M COPPER TUBING.
JOINTS; HEAVY DUTY CISPI APPROVED STAINLESS STEEL NO–HUB PATTERN, TO SUIT PIPE MATERIAL. COUPLING, NEOPRENE GASKET, 95/5 SOLDER FOR COPPER. STAINLESS STEEL CLAMPS SHALL BE EQUAL TO HUSKY SD400 OR CLAMP–ALL HI–TORQUE 125.

8. HANGERS, ANCHORS, CLAMPS AND INSERTS
A. PROVIDE ADJUSTABLE CLEVIS HANGERS FOR PIPING 2" & LARGER, AND CAST BRASS SPLIT–RING HINGED HANGERS FOR SMALLER PIPING. SUPPORT PIPING FROM BUILDING STRUCTURE TO MAINTAIN REQUIRED GRADE AND PITCH OF PIPE LINES, PREVENT VIBRATION, SECURE PIPING IN PLACE. SECURE HANGERS TO INSERTS WHERE PRACTICAL. HANGER RODS SHALL HAVE MACHINE THREADS.

B. HANGER RODS SHALL BE CONNECTED TO BEAM CLAMP, UL–APPROVED CONCRETE INSERTS OR PHILLIPS OR APPROVED EQUAL EXPANSION SHIELDS. RAMSET OR POWER DRIVEN INSERTS WILL NOT BE ALLOWED.

C. HANGER SPACING SHALL MEET REQUIREMENTS OF STATE AND LOCAL CODES.
9. SLEEVES AND PENETRATIONS
A. PIPE SLEEVES THROUGH FIRE–RATED CONSTRUCTION SHALL BE SCHEDULE 40 STEEL. SLEEVES THROUGH PARTITIONS AND NON–FIRE–RATED CONSTRUCTION SHALL BE 26 GAUGE GALVANIZED STEEL WITH LOCK LONGITUDINAL SEAMS. AS SPECIFIED IN THIS SECTION OF THE SPECIFICATIONS. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS
B. FIRE STOP PENETRATION SEALS IN FIRE–RATED CONSTRUCTION SHALL BE CERAMIC FIBRE, MINERAL FIBRE, OR SILICONE FOAM. PROVIDE MINERAL FIBRE BOARD, MATTING OR PUTTY INSTALL NEW ELECTRIC WATER HEATERS, ELECTRIC WATER COOLERS, KITCHEN SINKS, FOR DAMMING AND FORMING. FINISH SEALS FLUSH TO WALL SURFACE AND FILL GAPS WITH SILICONE ADHESIVE SEALANT CAULKING.
C. PACKING FOR SLEEVES THAT DO NOT REQUIRE MAINTENANCE OF FIRE RATING SHALL BE OAKUM, SILICATE FOAM, CERAMIC FIBRE OR MINERAL FIBRE WITH APPROVED SEALANT. PACK OR FOAM TO WITHIN ONE INCH OF BOTH WALL SURFACES. SEAL PENETRATION PACKING WITH APPROVED CAULKING AND PAINTABLE WATERPROOF MASTIC SURFACE FINISH OR SILICONE CAULKING.

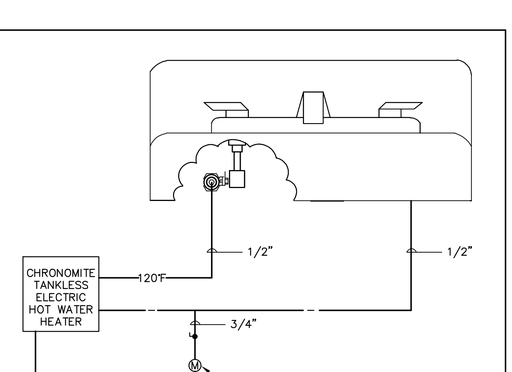
10. MATERIALS AND WORKMANSHIP
A. MAINTAIN MAXIMUM HEADROOM AT ALL TIMES. DO NOT RUN PIPES EXPOSED UNLESS SHOWN EXPOSED ON DRAWINGS. MATERIAL AND EQUIPMENT SHALL BE NEW AND INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDED BEST PRACTICE SO THAT COMPLETED INSTALLATION SHALL OPERATE SAFELY AND EFFICIENTLY.
11. CONTINUITY OF SERVICES
A. DO NOT INTERRUPT EXISTING SERVICES WITHOUT OWNER'S APPROVAL.
12. ACCESS

A. PROVIDE PROPER ACCESS TO EQUIPMENT AND VALVES THAT REQUIRE INSPECTION, REPLACEMENT OR REPAIR. ACCESS PANELS SHALL BE A MINIMUM OF 12" X 12".
13. TESTING
A. TEST AND ADJUST PLUMBING SYSTEMS AS REQUIRED BY ARCHITECT AND AUTHORITIES THAT HAVE JURISDICTION. PERFORM TESTS RECOMMENDED BY MANUFACTURERS OF MATERIALS AND EQUIPMENT.

B. TEST PLUMBING SYSTEMS UNDER PRESSURE AND HEADS SPECIFIED IN PLUMBING CODES.
13. CLEANING
A. CLEAN SYSTEMS THOROUGHLY BEFORE TESTING. FIXTURES, EQUIPMENT, PIPE, VALVES AND FITTINGS SHALL BE FREE OF GREASE, METAL CUTTINGS, DIRT AND OTHER FOREIGN MATERIAL.

B. REPAIR STOPPAGE, DISCOLORATION AND DAMAGE TO PARTS OF BUILDING, FINISH AND FURNISHINGS DUE TO FAILURE TO PROPERLY CLEAN PIPING SYSTEM.

14. REGULATORS REQUIREMENTS
A. STRICTLY COMPLY WITH APPLICABLE CODES, REGULATIONS AND REQUIREMENTS OF AUTHORITY HAVING JURISDICTION.
15. DISINFECTION OF WATER SYSTEMS
A. WATER PIPING SYSTEMS SHALL BE THOROUGHLY DISINFECTED WITH A SOLUTION CONTAINING NO LESS THAN 50 PARTS PER MILLION OF AVAILABLE CHLORINE. CHLORINATING MATERIALS SHALL BE EITHER LIQUID CHLORINE OR SODIUM HYPO CHLORITE SOLUTION, SHALL BE INTRODUCED INTO THE SYSTEM AND DRAWN TO ALL POINTS IN THE SYSTEM. DISINFECTION SOLUTION SHALL BE ALLOWED TO REMAIN IN SYSTEM FOR 24 HOURS, DURING THIS TIME, VALVES AND FAUCETS SHALL BE OPENED AND CLOSED SEVERAL TIMES. AFTER DISINFECTION, SOLUTION SHALL BE FLUSHED FROM THE SYSTEM WITH CLEAR WATER UNTIL RESIDUAL CHLORINE CONTENT IS NO GREATER THAN 0.2 PARTS PER MILLION.



1 INSTANT ELECTRIC HEATER NTS

ELECTRIC WATER HEATER SCHEDULE

SYMBOL	MANUFACTURER	MODEL	GPM	DEG RISE	NUMBER ELEMENTS	ELECTRICAL				TEMP SETTING	REMARKS
						KW	V	PH	HZ		
EWH–1	CHRONOMITE LABORATORIES INC	S–30L	1/2	57° F		4.16	208	1	60	120F	INSTANT FLOW TANKLESS ELECTRIC WATER HEATER

PLUMBING FIXTURE SCHEDULE

SYMBOL	FIXTURE				FITTING			TRAP	REMARKS
	MANUFACTURER	MODEL	TYPE	SIZE	MANUFACTURER	TYPE	SUPPLY		
SK–1	KOHLER	K–14301	UNDERCOUNTER 18 GAUGE STAINLESS STEEL SINK	11–1/2"X 5 1/2" DEPTH	KOHLER K–8761	5–1/2" GOOSENECK SWING SPOUT QUARTER–TURN WASHERLESS CERAMIC DISC VALVES	3/8" SUPPLIES McGUIRE #2165	1 1/2" C.P. CAST BRASS P–TRAP W/ CO McGUIRE #8912–C	SATIN BRONZE FINISH W/ BRUSHED BRONZE FAUCET

GENERAL LEGEND

ABBREVIATIONS

GENERAL	BV	BALL VALVE
	BLDG	BUILDING
	CFM	CUBIC FEET PER MINUTE
	CP–#	HOT WATER CIRCULATING PUMP #
	CTE	CONNECT TO EXISTING
	DN	DOWN
	DWG	DRAWING
	EWH	ELECTRIC WATER HEATER
	ETBR	EXISTING TO BE REMOVED
	ETR	EXISTING TO REMAIN
	GPM	GALLON PER MINUTE
	GWH	GAS WATER HEATER
	IN	INCHES
	IW	INDIRECT WASTE
	MV	MIXING VALVE
	NTS	NOT TO SCALE
	PC	PLUMBING CONTRACTOR
	PSI	POUNDS PER SQUARE INCH
	PRV	PRESSURE REDUCING VALVE
	PVB	PRESSURE VACUUM BREAKER
	RPBP	REDUCED PRESSURE BACKFLOW PREVENTOR
	TP	TRAP PRIMER
	WHA	WATER HAMMER ARRESTOR
	W/	WITH
INSTRUMENTS	FM	FLOW METER
	FS	FLOW SWITCH
	PI	PRESSURE INDICATOR
	RM	RESISTIVITY METER
	TI	TEMPERATURE INDICATOR
DRAINAGE	CO	CLEANOUT
	FCO	FLOOR CLEANOUT
	FD	FLOOR DRAIN
	FM	FORCE MAIN
	FS	FLOOR SINK
	IW	INDIRECT WASTE
	OED	OPEN END DRAIN
	RW	RAINWATER
	SAN	SANITARY
	V	VENT
	WCO	WALL CLEANOUT
	W	WASTE
	W & T	WASTE & TRAP
	W & V	WASTE & VENT
DOMESTIC FIXTURES	BT	BATHTUB
	DF	DRINKING FOUNTAIN
	EWC	ELECTRIC WATER COOLER
	HB	HOSE BIBB W/ VACUUM BREAKER
	JS	JANITOR SINK
	L	LAVATORY
	MSB	MOP SERVICE BASIN
	SH	SHOWER
	SK	SINK
	SS	SERVICE SINK
	U	URINAL
	WC	WATER CLOSET
	WH	WALL HYDRANT
DOMESTIC WATER	CW	COLD WATER (–)
	HW	HOT WATER (––)
	HWR	HOT WATER RETURN (–––)
	NPCW	NON–POTABLE COLD WATER (NP–)
	NPCW	NON–POTABLE COLD WATER (NP–)

SYMBOLS

GENERAL		CONNECT TO EXISTING
		CAP OR END OF PIPE
		DIRECTION OF FLOW
		DIRECTION OF SLOPE
		ETBR
		PIPE BREAK
		PIPE FITTING DOWN OR DROP
		PIPE FITTING TEE DOWN
		PIPE FITTING UP
		STRAINER
		UNION FITTING
		VACUUM RELIEF
		WALL HYDRANT
		WATER HAMMER ARRESTOR
DRAINAGE		CLEANOUT
		FLOOR OR GRADE CLEANOUT
		FLOOR DRAIN
		P TRAP
		ROOF DRAIN (PRIMARY)
VALVES		BALL VALVE
		BALANCING VALVE
		CHECK VALVE
		DIAPHRAGM VALVE (OPEN)
		GAS COCK
		GATE VALVE (OPEN)
		MIXING VALVE
		PRESSURE REDUCING VALVE
		SOLENOID VALVE

PIPE LINETYPES

	PIPE (EXISTING)
	PIPE (ABOVE GRADE)
	VENT PIPE (ABOVE GRADE)
	PIPE (BELOW GRADE)
	VENT PIPE (BELOW GRADE)

EQUIPMENT

MISCELLANEOUS		EMERGENCY EYEWASH
		EMERGENCY SHOWER
		RPBP OR RPZ
		CARTRIDGE FILTER

REFERENCE

REFERENCE	X / X–#	X: DETAIL DESIGNATION NUMBER X–#: DETAIL DESIGNATION DRAWING
		HANDICAPPED ACCESSIBLE (HC)

NOTE: DISREGARD ITEMS THAT DO NOT APPEAR ON DRAWINGS

GENERAL NOTES

1. THE PLUMBING SUBCONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ALL VALVES IN ACCESSIBLE LOCATIONS. ANY VALVES NOT LOCATED ABOVE AN ACCESSIBLE SUSPENDED CEILING OR APPROVED EXPOSED LOCATION SHALL BE PROVIDED WITH ACCESS PANELS.

2. THE PLUMBING DRAWINGS ARE DIAGRAMMATIC. THE PLUMBING SUBCONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF NEW PIPING INSTALLATION AND POINTS OF CONNECTIONS TO EXISTING. THEY SHALL FULLY COORDINATE THEIR WORK WITH THE EXISTING CONDITIONS ABOVE CEILING TO ENSURE PROPER PITCH AND ROUTING PRIOR TO INSTALLATION.

3. THE PLUMBING SUBCONTRACTOR SHALL COORDINATE WITH THE BUILDING MANAGER ANY AND ALL SHUTDOWN REQUIREMENTS THAT EFFECT THE BUILDING OR IT'S TENANTS. GIVE PROPER ADVANCED NOTICE, (72 HOURS), PRIOR TO THE SHUTTING DOWN OF ANY BUILDING SERVICE.

4. RESET, ADJUST, AND CORRECT ANY FIXTURE OR PIECE OF EQUIPMENT REQUIRING THE SAME DUE TO THE DRAINING DOWN OR INTERRUPTION OF SERVICES, INCLUDING BUT NOT NECESSARILY LIMITED TO RESETTING OF THE EXISTING FLUSH VALVES.

5. THE PLUMBING SUBCONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ALL PIPING SYSTEMS TO AVOID ROUTING THROUGH ELECTRICAL, COMPUTER, TELEPHONE, OR DATA ROOMS.

SEAL

WESTAR ARCHITECTS
WESTAR Architectural Group/Nevada, Inc
ARCHITECTURE • PLANNING • INTERIOR DESIGN
701 BRIDGER AVENUE SUITE 400 LAS VEGAS, NEVADA 89101
TELEPHONE: (702) 878-0000 FAX: (702) 878-8430
www.wagmarchitects.com

THE PALAZZO
LIDO CASINO RESORT, LLC
STEFANO CANTURI
PROJECT #07087
3325 LAS VEGAS BOULEVARD SOUTH
LAS VEGAS, NV 89109

NUMBER	REVISION DESCRIPTION	DATE

PROJECT NUMBER 07087 LEVEL 17
DRAWN BY: JM
CHECKED BY: HRG
ISSUE DATE 16 JULY 07
SCALE NTS

SHEET NUMBER P0.01
LEGENDS AND SCHEDULES

PERMIT SET