

## General Specification Notes

### Scope

The intent of the Specifications and the Drawings is to provide a complete and fully operational plumbing system. The Contractor shall furnish all labor, material, and equipment related to the installation of the plumbing work.

### Site Examination

The Contractor shall thoroughly examine all areas where fixtures, equipment, and piping will be installed and will report any condition that, in his opinion, prevents the proper installation of the plumbing work.

### Standards

Equipment and materials shall conform with the appropriate provisions of CSA, U.L.C., ASME, ASTM, UL, NEMA, ANSI, ASHRAE, NFPA, as applicable to each individual unit or assembly.

### Codes

All work shall be performed in strict accordance with all applicable provincial and local codes and ordinances. In case of conflict between the drawings and specifications and the codes and ordinances, the highest standard shall apply. The Contractor shall satisfy code requirements as a minimum standard without any extra cost to Starbucks.

### Permits and Fees

The Contractor shall procure and pay for all permits, fees, and inspections necessary to complete the plumbing work.

### Warranty

The Contractor shall unconditionally warrant all work to be free of defects in material and workmanship for a period of one year from the date of final acceptance by Starbucks and will repair or replace any defective work promptly and without charge and restore any other existing work damaged in the course of repairing defective materials and workmanship.

### LEED

All work, materials and equipment shall meet LEED requirements & code. In case of conflict, the higher Standard shall apply.

## General Plumbing Notes

- Plumbing Contractor shall coordinate with the General Contractor to patch and repair all existing walls, floors, ceilings or other surfaces identified to remain that may become damaged during the course of work.
- Exposed/surface mounted piping is only allowed in the bar area under counter tops, where it does not obstruct cabinets/devices and where approved by Starbucks Construction Manager. If routed through cabinets, it shall be routed to maximize storage space and be protected from damage.
- Drawings are diagrammatic and indicate general intent or arrangement of systems. Furnish and install all components needed whether indicated or not to provide a complete and operating system.
- Contractor to verify all dimensions, including clearances required by other trades, and notify Starbucks Construction Manager of any discrepancies prior to proceeding with the work. All dimensions are to the face of the finished surface unless noted otherwise. All dimensions to be taken from actual building dimensions.
- The plumbing contractor shall coordinate plumbing work with other trades. The architectural drawings shall take precedence over all other drawings. See architectural drawings for fixtures in casework and plumbing details.
- All piping and/or plumbing devices shall be supported from structure (not from HVAC ducts or other pipes/conduits).

## Plumbing Symbol Legend

	S or W	Sanitary or Waste Piping
	V	Vent Piping
	GW	Grease Waste
	CD	Condensate Drain
	CW	Cold Water Piping
	HW	Hot Water Piping
	CWF	Cold Water Filtered
	TW	Tempered Water
	RD	Refrigerant Discharge Piping
	RS	Refrigerant Suction Piping
	BV	Ball Valve
	GV	Gate Valve
	CH, V	Check Valve
	RV	Relief Valve
	HB	Hose Bibb
	WCO	Wall Cleanout
	FD	Floor Drain (Square)
	FD	Floor Drain (Round)
	HD	Hub Drain
	FS	Floor Sink (Square)
	FS	Floor Sink (Round)
	WM	Water Meter
	POC	Connect to Existing

Existing piping shown in a lighter shade.

## Piping

### Soil, Waste, and Vent Piping

Soil, Waste, and Vent piping 10" (254mm) and smaller shall be service weight, hubless, cast iron pipe, and fittings with neoprene gasket and stainless steel shield and clamp. Provide hub and spool, service weight cast iron soil pipe and fittings below grade where required by local codes. Schedule 40 ABS or PVC pipe and fittings with solvent weld may be substituted for soil, waste, and vent piping above and below grade if allowed by local authority. Adhesives shall not exceed a VOC content of 510 g/L for PVC and 325 g/L for ABS. All horizontal runs shall drain at a grade of 1/4" per foot (21mm per meter) where possible but in no case less than 1/8" per foot (10mm per meter) where allowed & sized per AHJ and Code.

Coordinate with local authorities for drainage requirements for equipment designated with indirect waste to floor sinks. Provide piped drain (P-trap and vent) to sanitary if required by local jurisdiction.

### Domestic Water Piping

Domestic water piping 2 1/2" (64mm) and smaller shall be copper tube with wrought copper sweat fittings joined with non-lead, non-antimony solder. Provide type "L" copper tube above grade and type "K" below grade.

### Condensate Drainage Piping

The Plumbing Contractor shall provide condensate drains for air handling units and Starbucks equipment (refer to schedule). Condensate drainage piping shall be type "M" copper tubing with wrought copper sweat fittings joined with 50/50 solder.

### Natural Gas Piping

Gas piping shall be Schedule 40, seamless, black steel pipe. Provide piping support blocking on roof, compatible with roofing system.

### Hangers and Supports

The Plumbing Contractor shall furnish all pipe supports required for equipment and material. All horizontal runs of piping shall be supported by pipe hangers installed as required by local codes. Additional supports shall be provided where required to prevent sagging. Hangers and pipe attachments to be factory fabricated with galvanized coatings; non-metallic coated for hangers in direct contact with copper tubing.

### Connections

Install unions adjacent to each valve and at final connection to each piece of equipment. Install dielectric couplings to connect piping materials of dissimilar metals. Screw joint steel piping up to and including 1-1/2" (38mm) for gas piping. Use non-lead, non-antimony solder for soldering domestic water copper pipe.

### Cleanouts

Provide floor and wall cleanouts as indicated on the drawings or where required by code in all soil, waste, and drain lines. In areas with ceramic tile or carpeted flooring, provide cleanouts with square, adjustable, nickel bronze top. In areas with resilient (vinyl) flooring, provide cleanouts with square, adjustable, nickel bronze top with tile recess. Cleanouts shall be same size as pipe except that cleanouts larger than 4" will not be required. Where cleanouts occur in walls of finished areas, they shall be concealed behind chrome plated access covers.

### Installation

Install piping free of sags and bends. Provide bracket standoffs from mounting surfaces sufficient to allow 1" (25mm) of cleaning space all around piping, including any added piping insulation. Install fittings for changes in direction and branch connections. Install sleeves for pipes passing through concrete and masonry walls, gypsum board partitions, concrete floor and roof slabs. Seal pipe penetrations through rated construction with fire stopping sealant material per Code requirements. Underground water and sewer lines shall be laid in separate trenches with a minimum horizontal spacing as required by code, excavated to the proper depth and graded to produce the required fall.

### Testing

All pipes shall be tested by an approved method before they are backfilled or concealed. After testing is complete, the Plumbing Contractor shall disinfect the potable water system as required by local authority. Test water purity according to local requirements and submit certified test results to engineer for review and approval.

## Insulation

### Water Piping

Provide thermal insulation on all hot and cold water, and horizontal waste piping in ceiling spaces, and on all cold water piping in casework and bar areas. Use self sealing closed cell foam or jacketed fiberglass insulation with manufacturer approved adhesives, sealers, and coatings. All materials used shall not exceed 25 for flame spread index, 50 for fuel contributed or 50 for smoke developed index. Unless otherwise required by the local authority or energy codes, the minimum insulation levels shall be as follows.

Pipe Size (diameter)	Insulation Thickness
Less than or equal to 1 1/2" (38mm)	1" (24mm)
2" (51mm) or greater	1 1/2" (38mm)

(Insulation Value = k value not exceeding 0.027 BTU per inch\*112\*1')

### Safety Covers

Install specified no scald safety covers with insulated foam liner and tamper proof strap as furnished by Starbucks at all exposed piping.

### Ice Bin Drain

Insulate ice bin drain lines with 1/2" (13mm) thick, self sealing, sectional, closed cell foam.

### HVAC Piping

Insulate refrigerant suction piping and cooling coil condensate piping with 3/4" (19mm) thick, self sealing, closed cell foam. Insulate HVAC hot and chilled water piping systems and low pressure steam and condensate piping with 1 1/2" (38mm) thick, heavy duty, self sealing, jacketed fiberglass. Install thicker insulation where required by Code.

### Rain Conductors

Insulate rain water conductors which pass through occupied areas with 1/2" (13mm) thick fiberglass.

## Valves

### General

Plumbing Contractor to provide valves where indicated on plans and as necessary for proper system operation and component isolation. Install valves for each fixture and item of equipment. Provide braided stainless steel hose (unless otherwise noted) between valve and equipment in accordance with manufacturer's specifications. Locate shut-off valves adjacent to equipment for easy access such that valves can be reached without moving equipment. Shut off valves to be ball type. Valves shall be listed/approved for use per Authorities Having Jurisdiction (AHJ) and code requirements.

### Valves

Provide valves for working pressure in water piping of 125 PSI or greater. Unless noted otherwise valves shall meet the following minimum requirements:

Valve Type	Description
Check Valve (up to 2" (51mm))	Brass, horiz. swing, Y-pattern, renewable seat/disc
Ball valve (up to 3" (76mm))	Brass, full port, quarter turn
Gate Valve (up to 3" (76mm))	Brass, non-rising stem, solid wedge
Temperature and Pressure Relief Valve	Rated for potable water heating storage vessel with safety certification per AHJ
Water Hammer Arrestor	Pre-charged, sealed chamber
Backflow Preventer (whole-house)	Double check valve assembly with union ball valves and safety certification per AHJ
Backflow Preventer (single device)	Double check valve assembly with safety certification per AHJ
Vacuum Relief Valve	Brass body and stainless steel internals
Pressure Reducing Valve	Brass, 25 to 75 psi reduce pressure range and upstream/downstream pressure gauges
Trap Seal Primer	Bronze, pressure based automatic priming

### Supply Water Service

If water pressure supplied to store is greater than and 65 PSI, then provide a pressure regulator in main supply to reduce water pressure. Provide backflow prevention on water service if required by local codes.

### Thermostatic Mixing Valve

Provide a single Thermostatic Mixing Valve (TMV) located at hot water tank and set for 110" (or as required by AHJ) to serve hand sinks. Mixing valve to be installed per Manufacturer's requirements with check valves at supply inlets.

## Plumbing Fixtures

### Water Heater

Size water heater per Starbucks standard and per Authorities Having Jurisdiction (AHJ), whichever is more stringent. Provide a glass-lined, energy efficient, gas fired (or electric equivalent) water heater. Provide installation complete with fittings as shown in the drawings. Set hot water temperature at 120°F or as required by AHJ.

### Water Filtration

Starbucks water filtration vendor will provide filtration system. Contractor shall confirm with Starbucks Construction Manager whether vendor or Plumbing Contractor is to install filtration system. Provide and coordinate installation complete with all piping, fittings, and equipment as indicated on the drawings.

### Connections

The Plumbing Contractor shall make all final connections to equipment including required material such as piping, valves, filters, traps, checks valves, vacuum breakers, and flexible and rigid tubing.

### Schedules

Refer to schedules on drawings (Plumbing & Arch. Schedules) for a description of listed items and furnish any and all plumbing fixtures listed as "GC". Any discrepancies about who is to provide plumbing fixtures in the schedule shall be brought to Starbucks attention for clarification. Install all fixtures listed regardless of who supplies.

DESIGN ID	COUNT	DESCRIPTION	RESP.	COMMENTS
EQUIPMENT				
10746	1	BREWER DUAL SOFT HEAT	WH	
11070	1	DISHWASHER SANITIZER	WH	ENERGY STAR COMPLIANT
11851	1	BREWER CLOVER	VD	
12694	2	ESPRESSO MACHINE MASTRENA	WH	
ICE				
10344	1	ICE - BIN DROP IN 95LB	VD	ELKAY
10475	1	ICE - MACHINE 1109LB AIR COOLED SIDE VENT	VD	MILE HIGH
10527	2	ICE - BIN DROP IN 45LB	WH	
10880	1	ICE - BIN 1000LB	VD	MILE HIGH

## Abbreviations

3PL	Third Party Logistics
AFF	Above Finished Floor
AHJ	Authorities Having Jurisdiction
APPROX	Approximate
BLDG	Building
CLG	Ceiling
CONST	Construction
CW	Domestic Cold Water
CXA	Commissioning Agent
DEG	Degrees
DTL	Detail
DN	Down
DWG(S)	Drawing(s)
EA	Each
ELC	Electrical Contractor
EM	Emergency
(E) or (EX)	Existing
EXT	Exterior
FD	Floor Drain
FS	Floor Sink
F&I	Furnish & Install
FL	Floor
FR	Foot/Foot
FCO	Floor Cleanout
GC	General Contractor
GFCl	Ground Fault Circuit Interrupter
GW	Grease Waste
HR	Hour
HVAC	Heating, Ventilation, and Air Conditioning
HW	Hot Water
HS	HandSink
HWS	Hot Water Supply
HWR	Hot Water Return
LV	Landlord
LV	Low Voltage
MAX	Maximum
MECH	Mechanical
MC	Mechanical Contractor
MDP	Main Distribution Panel
MEP	Mechanical, Electrical, and Plumbing
MFG	Manufacturer
MIN	Minimum
MS	Mop Sink
NL	Nightlight
NTS	Not to Scale
PC	Plumbing Contractor
PS	Prep Sink
POC	Point of Connection
PM	Project Manager
REF	Reference
REQ(D)	Required(d)
RWC	Tempered Hot Water
SHT	Sheet
SPEC(S)	Specification(s)
SF	Square Feet
SST	Stainless Steel
TEL	Telephone
TEMP	Temporary
TYP	Typical
TMV	Temperature Mixing Valve
TW	Tempered Hot Water
UNO	Unless Noted Otherwise
V	Vent
W	Sanitary Waste
WH	Water Heater
WP	Weather Proof
WCO	Wall Cleanout

## LEED System Commissioning

### Contractor Responsibilities for Building Commissioning

Contractor shall provide support and work as specified, needed and required to conduct and facilitate Starbucks staff building commissioning efforts. This work will be comprised of three distinct efforts: 1) support Starbucks Commissioning Agent (CXA) during installation verification and correct disclosed deficiencies; 2) perform testing, adjusting, balancing and system start-up and support functional performance testing by Starbucks CXA; 3) correct deficiencies disclosed by functional performance testing and submit reports. Contractor shall perform and provide the following:

A. Systems subject to commissioning may include, but are not limited to, domestic hot water generation; HVAC systems, rooftop units, exhaust fans, HVAC controls, lighting controls, air curtains, built-in refrigeration equipment, and renewable energy systems.

B. Contractor shall include commissioning activities in project schedule and show intervals for performance of work for which contractor is responsible and intervals for work performed by Starbucks CXA. Contractor shall show resources for performing all work related to commissioning activities on a line item in the schedule of values.

C. Contractor shall install equipment in accordance with the manufacturer's requirements and all contract documents. Ensure that all equipment is installed totally complete, and accessible to Starbucks CXA for installation verification and functional performance testing prior to the scheduled start of installation verification.

D. Installation verification shall be performed by Starbucks CXA. Contractor shall support Starbucks CXA installation verification efforts as necessary. Provide all access and equipment necessary for Starbucks staff to verify that the equipment is installed correctly.

E. Contractor shall be readily available during installation verification to correct any deficiencies or defects disclosed by the installation verification process. Corrections shall be made in a timely manner without disruption of the construction schedule.

F. All HVAC, exhaust fan, and air curtain equipment shall be tested, adjusted and balanced by the contractor's testing, adjusting and balance agent (see testing, adjusting and balancing) after the system is verified to be complete and correct by Starbucks CXA, in accordance with the requirements of these documents. All HVAC control systems shall be tested to ensure that control devices, components, equipment and systems are calibrated, adjusted and operate in accordance with these plans and specifications. Sequences of operation shall be tested to ensure that they operate in accordance with the contract requirements. Deliverables: preliminary, written testing and air balance report conforming to the requirements specified herein, documenting the information specified, etc. to the Starbucks CXA immediately upon completion of the work.

G. Contractor shall inform Starbucks CXA when equipment is ready for functional performance testing. All equipment shall be ready for performance testing prior to starting testing. Contractor shall operate equipment for Starbucks CXA and verify by demonstration the correct operation of equipment, response of sensors, and proper execution of HVAC control and lighting sequences, including but not limited to, air movement, temperature, sound, and control response. Provide any security access, hardware, software, or other support as needed for the Starbucks CXA to efficiently witness and document all equipment testing. Starbucks CXA will record the equipment operation and response to testing sequences and prepare a list of any deficiencies disclosed by the functional performance tests for correction by the contractor. Equipment includes, but is not limited to, air handling units, rooftop and split type, condensing units, exhaust fans, lighting controls, etc. Deliverables: provide completed copies of all start up reports, filled out on the manufacturers' forms, to the Starbucks CXA.

H. Contractor is responsible for correcting any issues or deficiencies disclosed during the functional performance testing process. Corrections should be made in a timely manner without disruption to the system and construction schedule.

J. Contractor shall be readily available for any re-testing of equipment deemed necessary by Starbucks CXA during installation verification and functional performance testing. Contractor is responsible for correcting any issues or deficiencies found in the system during any and all re-testing. Corrections should be made in a timely manner without disruption to the system and construction schedule. Deliverables: final balance report, deficiencies list noting corrective actions performed by contractor in response to installation verification and functional performance test results.

K. Construction and post construction testing: additional testing may be required by LEED and other processes that may occur out of sequence with commissioning service. Contractor shall conduct, document, support and schedule this testing as directed by Starbucks CXA.

DESIGN ID	COUNT	DESCRIPTION	RESP.	COMMENTS
PLUMBING FIXTURE SCHEDULE - "P"				
X0024	1	GREASE TRAP	GC	SEE SHEET P-112 FOR SPECIFICATION
10309	4	DRAIN - FLOOR SINK WITH HALF GRATE SQUARE - 12IN 305MM	WH	Jay R. Smith Model #3001-12 or equal
X0099	4	DRAIN - 6" FLOOR DRAIN	WH	Wade Model #1100STD6 or Equal.
FAUCET				
10152	1	FAUCET - DOUBLE LABORATORY WITH BENT RISER SPOUT	WH	
10153	1	FAUCET - WATER TOWER - 12IN 305MM	WH	
10215	2	FAUCET - DOUBLE LABORATORY WITH SWING SPOUT	WH	
10447	1	FAUCET - PRE RINSE SPRAYER WALL MOUNTED	WH	1.2 GPM VALVE
10597	1	FAUCET - SINGLE HANDLE	WH	FC' MODEL, 0.5 GPM AERATOR
10804	1	FAUCET - PRE RINSE SWING SPOUT	WH	
10874	1	FAUCET - HOT WATER DISPENSER GOOSENECK	WH	
10922	1	FAUCET - MOP SINK WALL MOUNTED	WH	
10943	1	FAUCET - SINGLE LABORATORY WITH SWING SPOUT	WH	
11003	1	FAUCET - DIPPERWELL	WH	
FILTER				
13076	1	FILTER - PREFILTRATION SYSTEM	WH	PENTAIR WATER SYSTEM - CONFIG 1
13080	1	FILTER - HEAD QUAD	WH	PENTAIR WATER SYSTEM - CONFIG 1
13081	4	FILTER - CARBON FILTER CARTRIDGE	WH	PENTAIR WATER SYSTEM - CONFIG 1
13149	1	FILTER - PRESSURE GAUGE	WH	PENTAIR WATER SYSTEM - CONFIG 1
OTHER				
11109	1	WATER HEATER 50GAL 190L ELECTRIC	GC	AO SMITH Model #DEL-50 or Equal, 54 GPH Recovery @ 90 Degree Rise, Set Water Heater to 120 Deg. Max. Energy Factor = .98 12 KW 3 PH 277 / 480V
SINK				
10505	1	SINK - RINSE DROP IN - 27X20IN 685X510MM	WH	
10549	1	SINK - WORK DROP IN SST - 12X20IN 305X510MM	WH	
10581	1	SINK - HAND WALL MOUNTED SST	WH	INTEGRAL FAUCET WITH 0.5 GPM AERATOR
10995	1	SINK - MOP - 24X24IN 610X610MM	WH	
12807	1	SINK - UTENSIL RINSE WITH GRATE SST - LH - 14X20IN 355X510MM	VD	ELKAY
13264	1	SINK - 3 COMP WORK SST - 93IN 2350MM	VD	ELKAY

DESIGN ID	COUNT	DESCRIPTION	RESP.	COMMENTS
CASEWORK SCHEDULE - "C"				
COUNTERTOP				
11915	1	COUNTERTOP - HAND SINK STAINLESS - 15IN 380MM	VD	



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