



PLUMBING PLAN SUBMITTAL CHECKLIST

Checklist intended for Plumbing installation. **Note: All references comply with 2024 International Plumbing Code (IPC), 2024 International Building Code (IBC), 2024 International Residential Code (IRC), 2024 International Fuel Gas Code (IFGC), 2024 International Fire Code (IFC), 2024 International Energy Conservation Code (IECC), 2024 International Mechanical Code (IMC), Mesa Administrative Code, and National Fire Protection Association (NFPA) Standards including City of Mesa amendments.**

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Review Key

“M –” = City of Mesa Amendment

Administrative

- ☐ 1. Provide **detailed** project narrative.
- ☐ 2. Identify site address.
- ☐ 3. Provide vicinity map showing areas surrounding the site.
- ☐ 4. Provide project site plan.
- ☐ 5. The following appendices to the 2024 IPC are adopted by reference:
 - a. **Appendix C** - Structural Safety.
 - b. **Appendix E** - Sizing of Water Piping System.
- ☐ 6. **Note:** [IPC Sections 101.4 through 115.4](#) are deleted in their entirety. References to them shall comply with [Mesa Administrative Code](#) (Mesa City Code, Title 4, Chapter 1).

General

- ☐ 1. Sheets with Arizona professional registrant seals require legible seals and signatures. Additionally, the seal shall have the registrant’s license number and signature date.

Plumbing Facilities

- ☐ 1. Provide occupancy load or minimum plumbing fixtures. ([IPC Table 403.1](#); [IBC Table 2902.1](#))
 - a. Service sinks shall not be required for Groups B and M where occupant loads do not exceed 100 persons. ([M-IPC 403.1](#))
- ☐ 2. Urinal in assembly and educational occupancies shall not be substituted for more than 67% of required water closets.
 - a. 50% for all other occupancies. ([IPC 424.2](#))
- ☐ 3. Provide separate toilet facilities for each sex. ([IPC 403.2](#); [IBC 2902.2](#))
 - a. **Exception:** Small occupancies 25 or less. ([M-IPC 403.2](#))
- ☐ 4. Provide required accessible family or assisted-use toilet facilities in assembly and mercantile occupancies with 6 or more water closets. ([IBC 1109.2.1](#))

- ☐ 5. Access to toilet facilities shall not pass through kitchen, storage rooms or closets. (IPC 403.3.1)
- ☐ 6. Toilet rooms shall not open directly into room used for preparation of food for service to public. (IBC 2902.3.3; IPC 403.3.2)
- ☐ 7. Toilet facilities shall not be located more than: (IPC 403.3.3)
 - a. 500 feet in travel path.
 - b. 1-story above or below space requiring toilet facilities for occupancies other than malls.
- ☐ 8. Provide drinking fountains.
 - a. Drinking fountains shall be located within 500 feet of travel path. (IPC 403.5; IBC 2902.5)
 - b. **Exception:** Occupant loads of 50 or less. (IPC Table 403.1; M-IPC 410.2)
- ☐ 9. Provide toilet facility signage. (IPC 403.4)
- ☐ 10. Urinal partitions shall comply with IPC 405.3.5.
- ☐ 11. Provide soap dispensers at public lavatories. (IPC 419.6)
- ☐ 12. Provide low flow fixtures. (M-IPC 604.4)
- ☐ 13. Maximum flow rates and consumption for plumbing fixtures and fixture fittings shall comply with M-IPC Table 604.4:

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY
Lavatory, private	1.5 gpm at 60 psi
Lavatory, public (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi
Shower head ^{a, c}	2.0 gpm at 80 psi
Sink faucet	1.5 gpm at 60 psi
Urinal	0.5 gallon per flushing cycle
Water closet	1.28 gallons per flushing cycle

- ☐ 14. 2-inch minimum in diameter underground nonmetallic water piping shall be installed with insulated copper tracer wire or other approved conductor located adjacent to piping.
- Access shall be provided to tracer wire or tracer wire shall terminate above ground at each end of nonmetallic piping.
 - Tracer wire size shall be 14 AWG minimum and insulation type shall be suitable for direct burial. ([M-IRC P2603.6; P3001.4](#))
- ☐ 15. Maximum water consumption flow rates and quantities for all plumbing fixtures and fixture fittings shall comply with [M-IRC Table P2903.2](#):

TABLE P2903.2 MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FITTINGS ^b	
PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY ^b
Lavatory faucet	1.5 gpm at 60 psi
Shower head ^a	2.0 gpm at 80 psi
Sink faucet	1.8 gpm at 60 psi
Water closet	1.28 gallons per flushing cycle ^{c, d}

Civil / Site Plan

- ☐ 1. Water meter, water service, sewer, storm drainage pipe sizes and locations on civil sheets shall match plumbing plans.
- ☐ 2. Provide required grease or sand oil interceptors and locations.

Water Service / Distribution

- ☐ 1. Tubs, showers, and shampoo bowls installation shall comply with [IPC 412.3 through 412.10](#).
- ☐ 2. Water supplied to specialty plumbing fixtures (footbaths, pedicure baths, etc.) shall be limited to 120° F maximum by a water temperature-limiting device. ([IPC 423.3](#))
- ☒ 3. Temperature of tempered water to hand sinks, lavatories, emergency showers, and eyewash stations shall be 85° to 120° F. ([IPC 419.5](#))
- ☐ 4. Water heater installation or location elevation shall be 18 inches above ignition source. ([IPC 502.1.1](#))
- ☐ 5. Provide water heater safe pan and drain line. ([IPC 504.7.1; 504.7.2](#))

- ☐ 6. Provide water heater temperature and pressure (T&P) line termination. (IPC 504.6)
- ☐ 7. Provide dual water supplies for hospitals in Group I-2, Condition 2 occupancies. (IPC 609.2)
- ☐ 8. Show water sizing calculations and pipe sizing chart per engineers' calculations.
- ☐ 9. Provide required pressure reducing valve (PRV) for buildings with over 80 psi water pressure. (IPC 604.8)
- ☐ 10. Hot water recirculation or insulated line shall not exceed 50 feet. (IPC 607.2)
- ☐ 11. Provide hot water piping insulation. (IPC 607.5; IECC 404.4)
- ☐ 12. Provide thermal expansion control. (IPC 607.3)
- ☐ 13. Provide water heater combustion air. (IFGC 304)

Drainage

- ☐ 1. Trap sizing shall comply with minimum requirement. (IPC Table 709.1)
- ☐ 2. Waste or drainage sizing fixture unit shall comply with maximum requirement. (IPC Table 710.1(1); 710.1(2))
- ☐ 3. Trap arm lengths from vent shall comply with IPC Table 909.1.
- ☐ 4. Indirect waste shall comply with IPC 802.
- ☐ 5. Food Handling. (IPC 802)
 - a. Provide three compartment sinks.
 - b. Each well of a multiple compartment sink shall discharge independently to a waste receptor.
- ☐ 6. Show slope of sewer, building drains, and vents. (IPC Table 704.1)
- ☐ 7. Slope of grease waste lines shall be ¼-inch minimum. (IPC 704.1)
- ☐ 8. Provide cleanout locations, building drain and sewer junctions. (IPC 708)
- ☐ 9. Sewage pump shall not be discharged by gravity. (IPC 712)
- ☐ 10. Oil separator shall be installed at repair garages, car washing facilities, and factories with oily and flammable liquid waste. (IPC 1003.4)
- ☐ 11. Oil separator shall be installed at:
 - a. Repair garages with floor or trench drains.
 - b. Car washing facilities.
 - c. Factories where oily and flammable liquid wastes are produced.

d. Hydraulic elevator pits.

Exception: Oil separator not required in hydraulic elevator pits if equipped with approved alarm system. ([IPC 1003.4](#))

- ☐ 12. Grease or sand oil or lint interceptors shall be installed and vented properly. ([IPC 1003](#); [IPC 1003.9](#))
- ☐ 13. Corrosive waste shall have special waste or neutralization devices. ([IPC 803.1](#))
- ☐ 14. Wastewater temperature shall be more than 140° F. ([IPC 702.5](#))
- ☐ 15. Identify type of materials listed for sewer, soil, waste, and vent piping. ([IPC Table 702.1](#); [702.2](#); [702.3](#); [702.4](#))

Vents

- ☐ 1. Identify vent sizing and terminations. ([IPC 903](#); [905](#); [906](#))
- ☐ 2. Vents exceeding 40 feet in developed length shall increase by 1 nominal pipe size for entire developed length of vent pipe. ([IPC 906.2](#))
- ☐ 3. Identify permitted wet venting. ([IPC 912.1.1](#))
- ☐ 4. Circuit venting shall be 8 fixtures maximum. ([IPC 914](#))
- ☐ 5. Combination waste and vent system shall not serve fixtures other than floor drains, sinks, lavatories, and drinking fountains. ([IPC 915](#))

Backflow Prevention

- ☐ 1. Provide required backflow prevention at potential cross connections, kitchen equipment, carbonators, med equipment, dental vacuum pumps, etc. ([IPC 608](#))
 - a. Backflow devices shall be reviewed and approved before installation.
 - b. For more information, visit [backflow prevention](#) or contact (480) 644-6462 or backflow@mesaaz.gov.

Roof Drainage

- ☐ 1. Provide roof drain or scupper sizing calculations.
 - a. Equation 11-1 area of roof x 0.0104 x inches of rain = gpm for sizing purposes. ([IPC Table 1106.2.1](#))
- ☐ 2. Vertical walls shall comply with [IPC 1106.4](#).
- ☐ 3. Scupper openings shall comply with the following measurements: ([IPC 1106.5](#))



- a. Height: 4 inches minimum.
 - b. Width: Equal to or greater than circumference of a roof drain sized for the same roof area.
- ☐ 4. Provide separate endpoint discharge for primary and secondary roof drain systems. ([IPC 1108.2](#))
- ☐ 5. Drainage shall not flow over public walking surfaces. ([IBC 3201.4](#))

Medical Gasses/Vacuum

- ☐ 1. All plumbing requirements shall comply with [NFPA 99](#) and [IFC 5309](#)

Interceptors

- ☐ 1. Grease interceptors shall be reviewed and approved before installation.
 - a. For more information, visit [Industrial Pretreatment](#) or contact (480) 644-2484 or industrialpretreatment@mesaaz.gov.

Plumbing Fixture Count Samples

IPC TABLE 403.1

EXAMPLE: B occupancy / Occupant Load = 538

$538/2 = 269$ Male and 269 Female

Male – Water Closet Ratio 1 per 25 for first 50, and 1 per 50 for the remainder

$50 \times 1/25 = 2$ WC remainder is $269 - 50 = 219 \times 1/50 = 4.38$ WC + 2 WC = 6.38 WC rounded up to (7)

Female – Water Closet Ratio Same as Male so (7) water closets are required.

Male – Lavatory Ratio 1 per 40 for the first 80, and 1 per 80 for the remainder

$80 \times 1/40 = 2$ lavatories remainder is $269 - 80 = 189 \times 1/80 = 2.36$ lavatories + 2 = 4.36 rounded up to (5) Lavatories required

Female – Lavatory Ratio is the Same as Male so (5) Lavatories are required.

Drinking Fountain Ratio 1 per 100

$538 \times 1/100 = 5.38$ rounded up to (6) Drinking Fountains are required

Urinal Substitution A&E occupancies 67% all other occupancies 50 %

7 male water Closets required

$7 \times 50/100 = 3.5$ Urinals rounded down to (3) urinals can be substituted

Service Sink Ratio 1 per occupancy for B & M occupancy with occupant load of 15 or fewer no service sink required.

Roof Drain Sizing Sample

(IPC Table 1106.2)

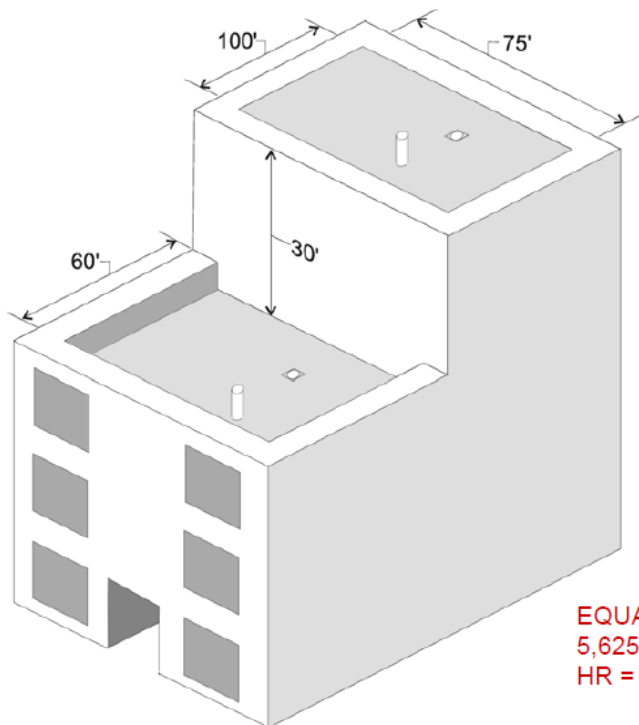
Area of roof x 0.0104 x inches of rain = gpm for sizing purposes

TABLE 1106.2
STORM DRAIN PIPE SIZING

PIPE SIZE (Inches)	CAPACITY (gpm)				
	VERTICAL DRAIN	SLOPE OF HORIZONTAL DRAIN			
		1/16 inch per foot	1/8 inch per foot	1/4 inch per foot	1/2 inch per foot
2	34	15	22	31	44
3	87	39	55	79	111
4	180	81	115	163	231
5	311	117	165	234	331
6	538	243	344	487	689
8	1,117	505	714	1,010	1,429
10	2,050	927	1,311	1,855	2,623
12	3,272	1,480	2,093	2,960	4,187
15	5,543	2,508	3,546	5,016	7,093

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m.

CIR
6.2
9.4
12.5
15.7
18.8
25.1
31.4
37.6
47.1



LOWER ROOF
PROJECTED ROOF AREA
 $60 \times 75 = 4,500$ sq.ft.

VERTICAL WALL AREA
 $\frac{30 \times 75}{2} = \frac{2,250}{2}$ sq.ft.
 $= 1,125$ sq.ft.

PROJECTED ROOF AREA USED
TO SIZE LOWER ROOF DRAINS
 $4,500 + 1,125 = 5,625$ sq.ft.

EQUATION

$5,625 \text{ sq ft} \times .0104 = 58.5 \text{ GPM} \times 6" \text{ Rainfall per HR} = (351 \text{ GPM})$

For SI: 1 foot = 304.8 mm, 1 square foot = 0.093 m²