

## RESIDENTIAL BATHROOM REMODEL

Following is a list of the general requirements based on the 2022 California Residential Code (CRC), California Electrical Code (CEC), California Plumbing Code (CPC), California Mechanical Code (CMC), California Energy Code (CEnC), California Green Building Standards Codes (CGBSC).

### PLAN SUBMITTAL REQUIREMENTS

#### COVER SHEET

1. Project Information – address, # of bedroom and bathroom, total square footage
2. Scope of Work

#### FLOOR PLANS

1. Label all areas – bedroom, bathroom, living room, kitchen, garage, covered patio, etc.
2. Location of the project area (i.e. location of bathroom proposed to be remodeled)
3. Window and Door – provide finished height of the bottom glazing measured vertically from standing and walking surface in the bathroom proposed to be remodeled.
4. Lighting, Receptables, Switches, and Exhaust Fan - show type and location.
5. Provide Clearances and Dimensions at:
  - Toilet – provide min. side clearance of 15" from the centerline of the bowl and min. front clearance of 24" from the front edge of the bowl [CPC 402.5].
  - Lavatory – show a min. of 24" front clearance [CPC 402.5].
  - Bathtub and Shower Areas – shall have a minimum finished interior of 1,024 square inches and shall be capable of encompassing a 30-inch diameter circle. In addition, the bathtub and shower shall open to not less than 22" unobstructed opening for egress [CPC 408.5, 408.6].
  - Lighting and Outlet – show a written vertical and horizontal distances from the edge of the tub or shower area.
  - Exhaust Fan Duct termination clearance from property line and any openings into the buildings.
  - Plumbing Vent Clearance from property line, any openings into the buildings and air intakes.
6. Smoke Detectors and Carbon Monoxide – provide plans per *Smoke & Carbon Monoxide Affidavit*
7. Water Conserving Plumbing Fixture [Senate Bill 407] - provide plans and details that show how the dwelling until will comply. For alterations and improvements to residential properties, all noncompliant plumbing fixtures required to be replaced with water-conserving plumbing fixtures for an issuance of a certificate of final completion and occupancy for final permit approval by the local building division.

Type of Fixtures	Maximum Flow Requirements	Reference Codes
Kitchen Faucets	1.8 GPM at 60 psi	CPC 420.2.1
Lavatory Faucets	1.2 GPM at 60 psi	CPC 407.2
Single Showerhead	1.8 GPM at 80 psi	CPC 408.2.1
Multiple Showerheads	1.8 GPM at 80 psi (combined or*)	CPC 408.2.2
Water Closets	1.28 gallons per flush	CPC 411.2

\* The shower shall be designed to allow only one shower outlet to be in operation at a time.

GPM – gallon per minute

psi – pound force per square inch

## General Plumbing Requirements

### GENERAL PLUMBING

1. The hot water control shall be installed on the left side of lavatory faucet [CPC 417.5].
2. Minimum 12"x12" access panel is required when a slip joint p-trap waste & overflow is provided [CPC 402.10].
3. Plumbing vent termination on roof shall be not less than 10 feet from or not less than 3 feet above an openable window, door, opening, air intake, or vent shaft [CPC 906.1].
4. Piping Insulation [CPC 609.12.2, CEnC 120.3(a)3.B].
  - The first 8 feet of hot and cold outlet piping, including piping between a storage tank and a heat trap, for a nonrecirculating storage system [CEnC 120.3(a)3.B].
  - Hot Water Pipe Insulation Thickness – shall have a minimum wall thickness of not less than the diameter of the pipe for a pipe up to 2 inches in diameter and minimum 2 inches for a pipe of 2 inches or more in diameter [CPC 609.12.2].
  - Cold Water Pipe Insulation Thickness – shall have a minimum wall thickness of 0.75" for a pipe up to 1.5 inches and 1 inch for a pipe of 1.5 inches or more in diameter [CEnC Table 120.3-A]
  - Exception: piping that penetrates framing members shall not be required to have pipe insulation for the distances of the framing penetrations.
5. Insulation exposed during construction shall be insulated according to below requirements:

Single Family Standard Building Design [CEnC Table 150.1-A]			Climate Zone
			5
Roofs/ Ceilings	With air handlers or ducts	Below Roof Deck Insulation	NR
		Ceiling Insulation	R-30
		Radiant Barrier	REQ
	With no air handlers and ducts	Ceiling Insulation	R-30
		Radiant Barrier	REQ
Wall	Exterior		R-8
	Interior		NR
Floors	Raised		R-19
	Concrete Raised		R-0

### BATHTUB AND SHOWER AREAS

1. Surface shall be finished with a nonabsorbent surface (e.g., ceramic tile or fiberglass) over a moisture resistant underlayment (e.g., cement, fiber cement, or glass mat gypsum backer) extending to a height of not less than 6 feet above the drain inlet. [CRC 307.2, CRC 702.3.8].
2. Finished floor of the shower pan receptor shall slope uniformly from the sides toward the drain at not less than ¼ inch per foot but not more than ½ inch per foot [CPC 408.7].
3. Temperature shall be installed to deliver maximum mixed water settling of 120° F. Control valves shall be provided with individual control valves of the pressure balance, thermostatic, or combination pressure balance/thermostatic mixing valve type that provide scald and thermal shock protection for the rated flow rate of the installed showerhead.
4. Site built shower stalls shall be water tested before covering watertight materials or membrane [CPC 408.7.5].

### AREAS NOT SUBJECT TO DIRECT WATER EXPOSURE

Tile and backing water-resistant gypsum board (purple or green board) can be used as a tile backer board in areas that are not subject to direct exposure to water or high humidity [CRC 702.3.7]. Examples would be a wall behind a toilet or above a vanity countertop.

## **MECHANICAL REQUIREMENTS**

### **EXHAUST FAN**

1. Energy Star compliant exhaust fan controlled by a humidity control capable of adjustment between a relative humidity range of 50-80% required [CGBSC §4.506.1]
2. Exhaust must terminate to outside in an approved duct with a back draft damper.
3. Terminate the duct a minimum of 3 feet from the property line and any openings into the building and 10 feet from any forced air inlet.

## **ELECTRICAL AND ENERGY REQUIREMENTS**

### LIGHTS

1. All new lighting shall be high efficacy luminaires in accordance with Table 150.0-A. [CEnC 150.0(k)].
2. At least one light shall be controlled by a vacancy sensor with a readily accessible wall-mounted ON and OFF control [CEnC 150.0(k)2.A, CEnC 150.0(k)2.E].
3. All lights installed in bathroom tub or shower area shall be listed for damp areas or wet locations based on location placed within the tub or shower area. [CEC 410.10(A)].
4. Luminaires recessed into ceilings must meet all the additional requirements listed below:
  - Must contain light sources that are JA8-certified.
  - Must not contain screw-based lamps.
  - Must meet the performance requirements for air leakage, seal, and installation clearance.
5. Pendant light fixtures, track lights, and paddle fans shall not be installed lower than 8 ft above the flood-level rim of a tub, including the area 3 ft past the edge of the tub. [CEC 410.10(D)].

### RECEPTACLES

1. One or more 120-volt, 20-ampere branch circuit shall be provided to supply bathroom(s) receptacle outlet(s) required at the basin and any countertop and similar work surface. [CEC 210.11C3].
2. At least one receptacle outlet shall be installed within 3 ft of the outside edge of each basin. [CEC 210.52(D)].
3. Bathroom receptables shall be tamper resistant and have GFCI protection. [CEC 406.12, CEC 210.8(A)]
4. Receptables shall not be installed within a zone measured 3 feet horizontally and 8 feet vertically from the top of the bathtub rim or shower stall threshold. [CEC 406.9(C)]
5. Hydro Massage Tub - require an individual dedicated branch circuit and readily accessible GFCI. An access door is required and must be large enough to remove the motor and pump. Cord-connected equipment must have a receptacle facing the opening and be no more than one foot behind the access hatch. [CEC 680.71, CEC 680.73].

### SWITCHES

1. Integrated lighting with exhaust fans shall be controlled independently from the fans. [CEnC 150.0(k)2.G].
2. Switches shall not be installed within tubs or shower spaces unless installed as part of a listed tub or shower assembly. Receptacles shall not be installed within or directly over tub or shower spaces. [CEC 404.4C].

## FRAMING PENETRATIONS AND EXPOSURES DURING THE BATHROOM REMODEL PROJECT

1. Plumbing Penetrating Framing Members – plastic and copper or copper alloy piping penetrating framing members to within 1 inch of the exposed framing shall be protected by steel nail plates not less than No. 18 gauge (0.0478 inches) in thickness. The steel nail plate shall extend along the framing member not less than 1½ inches beyond the outside diameter of the pipe or tubing [CPC 312.9].
2. Wiring Penetrating Framing Members – where there is no objection because of weakening the building structure, in both exposed and concealed locations, cables or raceways shall be permitted to be laid in notches in wood studs, joists, rafters, or other wood members where the cable or raceway at those points is protected against nails or screws by a steel plate at least 1/16 thick, and appropriate length and width, installed to cover the area of the wiring. The steel plate shall be installed before the building finish is applied [CEC Article 300.4(2)].
3. Dry-Rot Damage – any framing member that is damaged by dry rot that affects the minimum required depth or width of the framing member shall be replaced. Engineering and calculations may be required based on the extent of damage or if sistering is proposed.
4. All accessible joints, penetrations, and other openings in the building envelope near the area of work shall be caulked, gasketed, weather stripped, or otherwise sealed to limit infiltration and exfiltration [CEnC 110.7].

## INSPECTION

A minimum of two of the following inspections are required for bathroom remodels as needed based on scope of work:

- **Required:** A rough framing, plumbing, mechanical, and electrical inspection should be scheduled after the framing is ready to cover, plumbing installed and under pressure or leak test, mechanical installed and vented to exterior of building, electrical wiring and boxes are installed but before any devices are connected.
- **Optional:** Shower pan test (*if installing a new shower pan*).
- **Optional:** Wet wall/gypsum board (*If installing a new tub or shower surround or in fire rated assemblies*).
- **Required:** The final inspection should be scheduled after all the work is completed and smoke/carbon monoxide alarms have been installed/verified per Smoke & CO Affidavit.