

# **UTILITY TESTING**

**Arizona**

**Department of Fire, Building  
and Life Safety**

**Office of Manufactured Housing**



# HUD Standards

## **Title 24 CFR parts**

- **3280 – Manufactured Home Construction and Safety Act**
- **3285 - Model Manufactured Home Installation Standards**
- **3286 – Manufactured Home Installation Program**

## **Water system**

- **3285.603(e)(1)**
  - **3280.612(a)**
- 

# HUD Standards

## Drainage system

- 3285.604(d)
- 3280.612(b)(1)(2)(3), (c),(d)

## Fuel supply system

- 3285.605(c)
- 3280.705(k)(8)

## Electric

- 3285.702(f)(1)
- 3280.810(b)(1),(2),(3)

## Smoke alarms

- 3285.703
- 3280.208(f)

# Required Tests

## Gas system test

- High pressure test
- Low pressure test

## Water and sewer system test

- Fixture operational test
- Water system test
- Drain, waste and vent test (dwv)

## Electrical test

- Continuity test
- Electrical fixture operational test
- Polarity test
- Smoke alarm operational test

# Water System Test

## 3280.612(a)

- All water piping in the water distribution system shall be subjected to a pressure test
- Test shall be made by subjecting the system to air or water at 100 psi for 15 minutes without loss of pressure
- For air pressure test, by-pass the water heater to avoid damage
- Be sure to shut off the supply at the meter or at the tie in, to avoid pumping air back into the system



**100 lb air test for 15 minutes**



**Bypass W/H on 100 lb air test**

# Fixture Test

## Plug all fixture drains

- Sinks, lavatories, tubs and commode tanks and bowl

## Fill fixtures with water

- Sinks, lavatories & tubs – 3 inches
- Shower pans – 2 inches
- Commode tank – operational level



**Fill sinks with minimum 3" of water for fixture test**

# Fixture Test

## Empty each fixture

- **When two fixtures are on the same trap, drain simultaneously**
- **Verify that all the connections are not leaking or draining slow**

# Drain, Waste & Vent Flood Test

**Plug system to prevent water from draining to septic or sewer**

- **Use appropriate plug at a clean out where installer ties into existing septic or sewer**
- **You may want to insert the plug prior to draining the fixtures to conserve water.**



**Test ball inserted into the clean out for flood level test**



Test ball or plug

# Drain Waste & Vent

## **Fill with water at the washer stand pipe**

- **When water rises above tubs and shower pans insert drain plug to prevent overflow**
- **Continue filling system until level rises to commode rim**
- **Verify that all trapped air is released from the system**
- **Let stand for 15 minutes**



**Fill with water to rim of bowl for flood level test**

# Flood Test

## Check for leaks

- Check complete system for leaks
- Check underbelly for hidden leaks

## Drain system

- Remove sewer line plug and check sewer or septic connection tie in

# Gas System Test

## High pressure test.

- Before appliances are connected, piping systems shall stand a pressure of at least six inches mercury or three psi gauge for a period of not less than 15 minutes without showing any drop in pressure.
- Pressure shall be measured with a mercury manometer or slope gauge calibrated so as to be read in increments of not greater than one-tenth pound, or an equivalent device.
- The source of normal operating pressure shall be isolated before the pressure tests are made.
- Before a test is begun, the temperature of the ambient air and of the piping shall be approximately the same, and constant air temperature be maintained throughout the test.



3 lb high pressure gas test



**1/10<sup>th</sup> lb gauge minimum 3 lb's for 10 minutes**

# Low Pressure Test

## Reconnect the appliances

- After appliances are connected, the piping system shall be pressurized to not less than 10 inches or more than 14 inches water column
- Or use an ounce gauge and pressurize at 6 to 8oz
- The appliance connections should be tested for leakage with soapy water or bubble solution



**Low pressure test gauge between 6 to 8 oz**



**Bubble solution for leak testing**



**Checking for leaks on flex line**

# Electrical System Test

## Operational test

- **Make sure all light switches are in the off position**
- **Use a receptacle tester at each receptacle to ensure the polarity is correct and that the receptacle is grounded**
- **Check both outlets in each receptacle to ensure the tab has not been removed**
- **On GFCI receptacles, push the test button on the tester to ensure the interrupter trips the switch**
- **Test switched receptacles with the switch in the on and off position**



**Operational test on receptacle**

# Operational Test

## 240v receptacles

- Use a voltage tester to verify that the “hot” side of each 240v outlet measures a nominal 120v of the correct polarity



**Receptacle tester GFCI type outlets**



**240 Volt operational test for dryer**

# Electrical Test

## Testing light fixtures

- **Test for polarity and grounding**
- **You can use a voltage tester or you can use the receptacle tester along with a adaptor**
- **When using the adaptor you must also have a ground wire attached to the receptacle tester**



**Light Fixture Test with Adaptor**

# Smoke Detector Operational Test

## Testing with AC power on

- Remove all batteries from smoke detectors
  - Push the “PUSH TO TEST” button on the alarm and hold until the alarm sounds
  - Once the alarm begins to sound release the button and confirm that each alarm in the home is sounding to ensure interconnection of the alarms
  - Repeat this procedure on each alarm throughout home
- 



**Testing a smoke detector**

# Smoke Alarm Test

## Testing with AC power off

- Replace the batteries in the smoke detectors
- Make sure the power is off
- Push the “PUSH TO TEST” button on the smoke detector to ensure the detectors alarm sounds
- Repeat on all detectors in home

**Questions?**



# Department of Fire, Building and Life Safety

## Office of Manufactured Housing

**1110 West Washington, Suite 100**  
**Phoenix, AZ 85007-2935**

**Phone (602) 364-1003**  
**FAX (602) 364-1063**  
**[www.dfbls.az.gov](http://www.dfbls.az.gov)**

