

**VENT SYSTEMS:**

1. Vent piping must be sized to allow gases to escape from the building and at the same time allow air to equalize the pressure in the system to protect the trap seal.

Standard traps typically have either 2" or 4" deep seals. The maximum pressure drop in the venting system should not exceed 1" W.G.. If the pressure drop in the system exceeds the water seal the trap will be siphoned allowing sewer gas to enter the building.

Plumbing codes tabulate maximum lengths for vent pipe diameters based on number of fixture units.

Horizontal vent piping restricts airflow and can allow water to enter the vent system and block airflow and should be minimized. Horizontal vents may be limited by code, Illinois does not allow horizontal vents longer than 20% of maximum vent length allowed for a given pipe size and fixture unit loading. All horizontal vents are to slope back to the sanitary piping.

To minimize possibility of water entering the vent system, horizontal vents should not be routed horizontally until the vent is 6" above the flood rim of the fixture. In the case of floor drains ~~the~~ it is impossible to be above the flood rim but the sanitary piping should be deep enough to allow the vent to be 6" above it. Horizontal vents below floors should be as short as possible.

No fixtures should be interconnected until the individual vents are 6" above the flood rim of the highest fixture connected to the common vent.

2. The vent must not be connected to the trap within two pipe diameters of the trap weir or a "Crown Vent" will result. When draining the pipe just down stream of the trap can be totally full of water. Locating the connection away from the trap allows the vent pipe to remain unobstructed and keep the trap from being siphoned.
3. "House Vent" required for every sewer pipe leaving the building.
4. Due to the large amount of water vapor present in gases escaping from the vent piping, frost can accumulate in cold weather block small vent pipes. Vent terminations should not be smaller than 4" in diameter.

Vents should terminate a minimum of 12" above the roof to eliminate the possibility that snow could cover the vent termination.

Locate vent terminations away from outside air intakes.

The vent termination should allow for the differential contraction between the roof and the piping system to reduce possibility of damage to roof.

5. Laboratory Table (Island Fixture) When no walls are adjacent to a counter and exposed piping is not allowed, standard venting methods are impossible to use. The venting configuration shown in drawing can be used In Illinois.

**VERIFY THIS WITH THE LOCAL PLUMBING INSPECTOR FOR LOCAL ACCEPTANCE.**

6. Combination Waste and Vent Systems are allowed for use when normal venting is not feasible. This is common for hub and floor drains on grade. Sanitary mains are oversized by two pipe diameters to allow gases to travel above the water level in the pipe. The length of the branch is limited based on the slope in the pipe to insure that the water level never completely fills the pipe.

**STAND PIPES AND OTHER PLUMBING FIXTURES THAT COULD DEVELOP SLUGS OF LIQUID SHOULD NOT BE CONNECTED TO COMBINATION WASTE AND VENT SYSTEMS. VENT EACH OF THESE ITEMS SEPARATELY TO PREVENT TRAP SIPHONAGE.**

7. Fixture Battery Venting (Loop Venting). Unlike sanitary piping each plumbing fixture does not require an individual vent connection. KJWW's standard is to vent each fixture separately but in cases were large numbers of plumbing fixtures are grouped in batteries Loop venting will reduce costs and is acceptable.

The loop vent is requires a connection on each end of the sanitary branch to the main vent. the sizing for the relief vent is based on pipe size and fixture count. Most codes limit the number of fixtures on each relief vent, in Illinois the maximum is eight water closets on a branch before additional relief vents are required.

8. Wet Vents are similar to Battery Vents in that they eliminate vent piping. Wet vents are only allowed for lavatory and water closet combinations and are not allowed to exceed 4 drainage fixture units with a minimum 2" vent pipe.

KJWW's standard is to vent each fixture separately but in residential construction or nursing homes with large numbers of toilet groups Wet Venting will reduce costs and is acceptable.

**WET VENTING IS NOT ALLOWED TO A BRANCH IN KENTUCKY AND WISCONSIN. ANY WET VENTS MUST BE INSTALLED ON A MAIN SANITARY PIPE.**

**Size and Developed Lengths of Plumbing Vents and Vent Stacks**  
**TABLE K Illinois Plumbing Code (1993)**

Size of Soil or Waste Stack	Fixture Units Connected	Diameter of Vent Required (Inches)											
		1-1/4	1-1/2	2	2-1/2	3	4	5	6	8			
		Maximum Length of Vent (Feet)											
1-1/4	2	30											
1-1/2	8	50	150										
1-1/2	10	30	100										
2	12	30	75	200									
2	20	26	50	150									
2-1/2	42		30	100	300								
3	10		30	100	200	600							
3	30			60	200	500							
3	60			50	60	400							
4	100			35	100	260	1000						
4	200			30	90	250	900						
4	500			20	70	180	700						
5	200				35	80	350	1000					
5	500				30	70	300	900					
5	1100				20	50	200	700					
6	350				25	50	200	400	1300				
6	620				15	30	125	300	1100				
6	960					24	100	250	1000				
6	1900					20	70	200	700				
8	600						50	150	500	1300			
8	1400						40	100	400	1200			
8	2200						30	80	350	1100			
9	3600						25	60	250	800			
10	1000							75	125	1000			
10	2500							50	100	500			
10	3800							30	80	350			
10	5600							25	60	250			

NOT  
PERMITTED

**Notes:**

No more than 20 percent of the maximum developed length may be installed in the horizontal position.

Vent piping serving floor drains shall be installed in such a manner as to minimize horizontal vent distances.

**Size and Developed Lengths of Vent Stacks and Stack Vents**  
**TABLE 82.31-2 Wisconsin Plumbing Code (1992)**

Diameter of Drain Stack or Vent Stack (inches)	Diameter of Vent Required (Inches)									
	1-1/4	1-1/2 <sup>a</sup>	2	3	4	5	6	8	10	12
	Maximum Length of Vent (Feet)									
1-1/2	50	150								
2		50	150							
3			50	400						
4			20	180	700					
5				50	200	700				
6				20	70	200	700			
8					25	60	250	800		
10						25	60	250	800	
12							25	100	300	900

**Notes:**

- a. Not more than 2 water closets or similar flush action type fixtures of four or more drainage fixture units.

**Size and Developed Lengths of Plumbing Vents**  
**TABLE 82.31-3 Wisconsin Plumbing Code (1992)**

Fixture Units Connected	Diameter of Vent Required (Inches)								
	1-1/4 <sup>a</sup>	1-1/2 <sup>b</sup>	2	3	4	5	6	8	10
	Maximum Length of Vent (Feet)								
2	50								
4	40	200							
8		150	250						
10		100	200						
24		50	150						
42		30	100	500					
72			50	400					
240			40	250					
500			20	180	700				
1100				50	200	700			
1900				20	70	200	700		
3600					25	60	250	800	
5600						25	60	250	800

**Notes:**

- a. No water closets permitted.
- b. Not more than 2 water closets or similar flush action type fixtures of four or more drainage fixture units.

**Size and Length of Plumbing Vents**  
**ADAPTED FROM TABLE 7-5 UNIFORM Plumbing Code (1994)**

	Maximum Fixture Units Connected	Diameter of Vent Required (Inches)									
		1-1/4	1-1/2	2	2-1/2	3	4	5	6	8	
		Maximum Length of Vent (Feet)									
1-1/4	1	45									
1-1/2	8	-	60								
2	24	-	-	120							
2-1/2	48		-	-	180						
3	84			-	-	212					
4	256				-	-	-	300			
5	600					-	-	-	390		
6	1380						-	-	-	510	
8	3600							-	-	-	750

**Notes:**

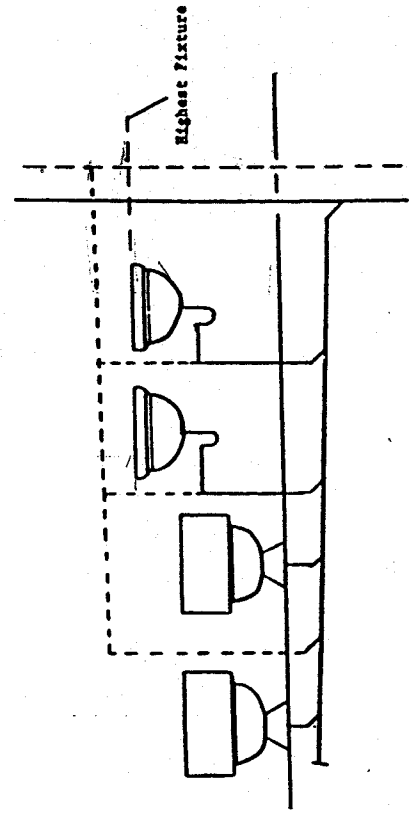
No more than 1/3 of the maximum developed length may be installed in the horizontal position. If vent pipe is increased one size then the maximum developed length requirement does not apply.

Vent piping serving floor drains shall be installed in such a manner as to minimize horizontal vent distances.

Section 890. Appendix K Illustrations for Subpart K

ILLUSTRATION H Height Above Fixtures

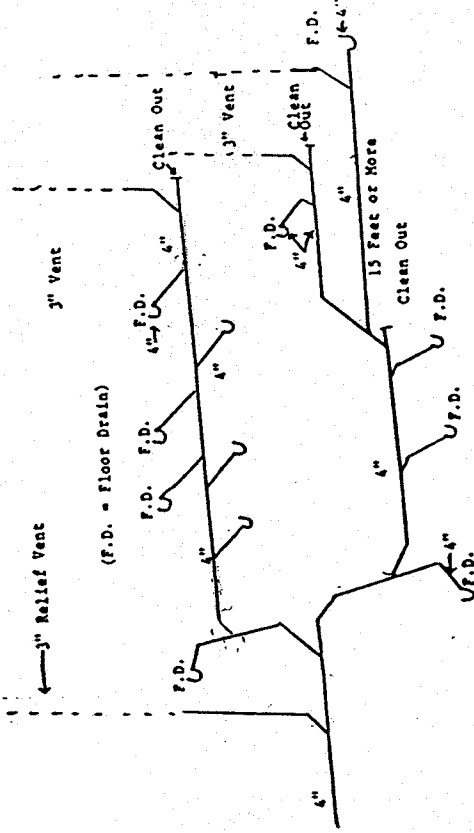
(Referenced in Section 890.1450(c))



Section 890-Appendix K Illustrations for Subpart K

ILLUSTRATION FF Combination Waste and Vent

(Referenced in Section 890.1590(a))



LCP's PP#1

October 27, 1997

**PLUMBING VENTS:**

All plumbing vents must rise to above the flood rim of the highest fixture before they connect together.

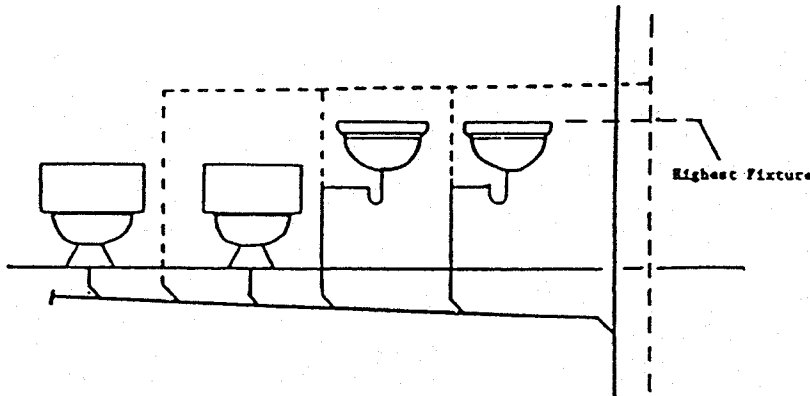
**ILLINOIS PLUMBING CODE SAYS:**

Section 890.1450 c) - Height Above Fixtures. The connection between a vent pipe and a vent stack or stack vent shall be made at least six (6) inches above the flood-level rim of the highest fixture served by the vent. Horizontal vent pipes forming branch vents or relief vents shall be at least six (6) inches above the flood-level rim of the highest fixture served. (See Appendix K: Illustration H.)

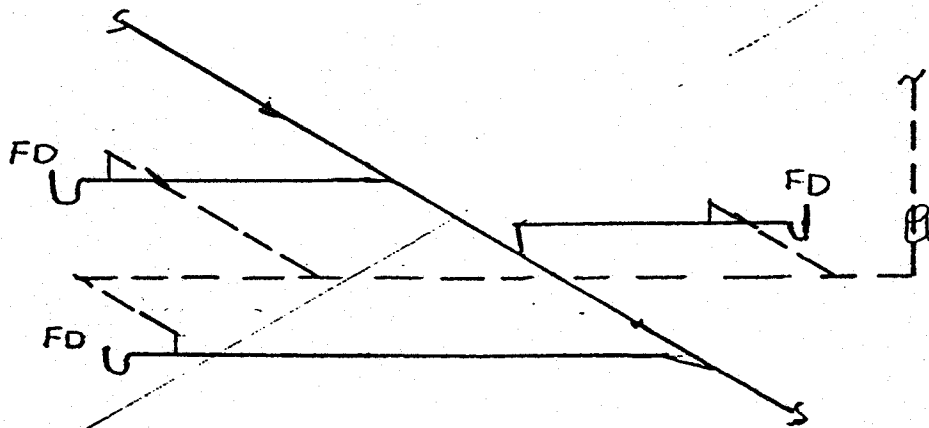
Section 890. Appendix K Illustrations for Subpart K

ILLUSTRATION H Height Above Fixtures

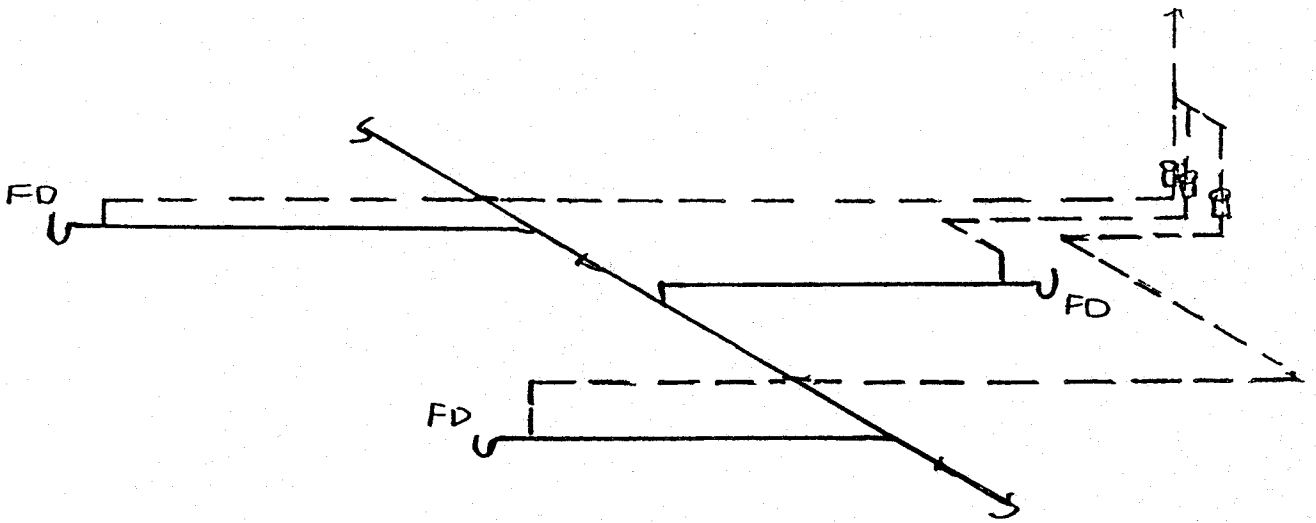
(Referenced in Section 890.1450(c))



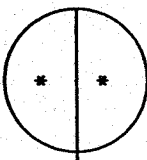
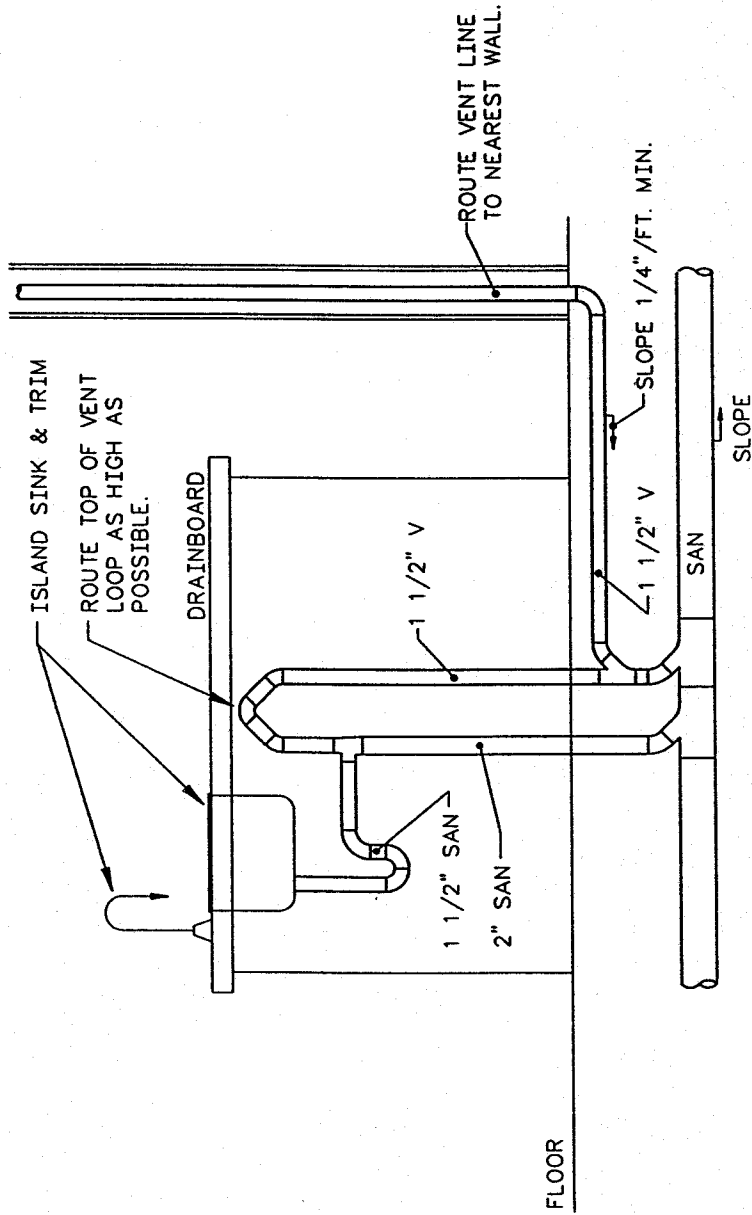




NO!!!



YES!!!



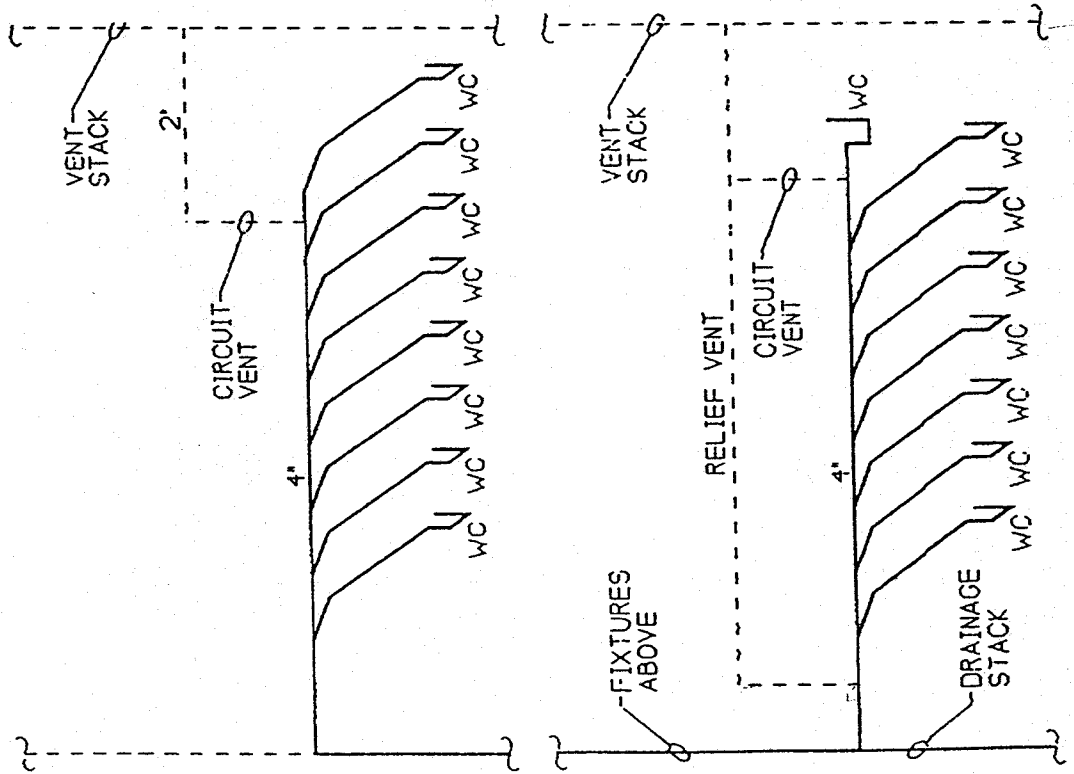
# ISLAND SINK VENT DETAIL

NO SCALE:

P/b/p-91  
15400

Section 890. Appendix K Illustrations for Subpart K  
ILLUSTRATION DD Circuit Vented Fixtures

(Referenced in Section 890.1520(f))



(K-41)

Section 890. Appendix A PLUMBING MATERIALS, EQUIPMENT, USE  
RESTRICTIONS AND APPLICABLE STANDARDS

TABLE L Horizontal Circuit and Loop Vent Sizing Table

Line	Soil or waste pipe diam. (in.)	Fix- ture Units (max. number)	Diameter of circuit or loop vent (in.)							
			1	1 1/2	2	2 1/2	3	4	5	
1	1 1/2	10	20							
2	2	12	15	40						
3	2	20	10	30						
4	3	10		20	40	100				
5	3	30		40	100					
6	3	60		16	80					
7	4	100		7	20	52	200			
8	4	200		6	18	50	180			
9	4	500		14	36	140				
10	5	200			16	70	200			
11	5	1,100			10	40	140			

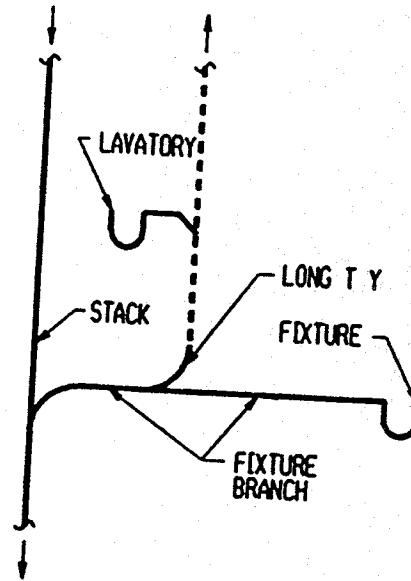
(Appendix A/Tables-37)

77 ILLINOIS ADMINISTRATIVE CODE, PART 890  
ILLINOIS PLUMBING CODE

Section 890.Appendix K Illustrations for Subpart K

ILLUSTRATION P Wet Vent

(Referenced in Section 890.1480(c))



(K-27)