PLUMBING PERMITS

A GUIDE FOR HOME OWNERS

January 2011

OUR GOAL

Is to ensure that buildings in Niagara Falls are constructed safely & in accordance with best interests of the owner, the occupants and the community**.**

ASK US!!!

We are approachable and anxious to be of service. Describe your project to us and we'll outline the permit requirements for you - together we can assure a quality building project.

Building & Inspection Services
City Hall (Main Floor)
4310 Queen Street, Niagara Falls
(905) 356-7521 ext. 4344 or 4213

INSTALLATION OF PLUMBING

A GUIDE FOR HOMEOWNERS

THE PLUMBING SYSTEM

The plumbing system in a dwelling comprises four basic elements as follows:

1. **The water supply and distribution system**

   This system is composed of the water pipes which transport fresh water from the source of supply and conveys it to the fixtures nd appliances and in the case of hot water, from the water heater to the fixtures and appliances. The source of supply may be the municipal system or a private well or cistern etc.

2. **The drainage system**

   This system consists of the drain and sewer pipes which convey waste fluids from the fixtures to a place of disposal which may be the municipal sewer system, or a septic tank or holding tank, etc.

3. **The venting system**

   This system consists of pipes which terminate in open air above the roof connected to the drainage system and which introduces air into the drainage system.

4. **The fixtures and appliances**

   These consist of the sinks, wash basins, water closets (toilets), laundry tubs, water heaters, washing machines, etc. All fixtures are required to be vented and equipped with a trap which provides a water seal in the drain and thus prevents the emission of sewer gases.

THE CODE

The installation of plumbing is regulated by Part 7 of the Ontario Building Code and the Building Permit By-law of the City of Niagara Falls.

The Code is administered and enforced locally by the Director of Building and By-law Services of the City of Niagara Falls. This includes response to enquiries, processing of applications, issuance of permits and inspection of plumbing installations.

Before any plumbing work commences an application for a permit should be made and a permit obtained. It is the responsibility of the property owner and any person performing plumbing installations to ascertain whether or not a permit is required and to ensure that the work is inspected at the appropriate stages.

A permit is required for the following work:

a) The installation of plumbing in a new building.

b) The installation of new plumbing in an existing building.

c) The alteration of existing plumbing.

d) The repair of existing plumbing except for the repair of existing fixtures, leaks or blockages.

e) The replacement of existing plumbing except for the replacement of existing fixtures or existing water heater.

A ***plumbing permit*** can only be issued to a qualified, licenced plumber except where the owner or occupier of a residence is performing the work, at or in that residence for his/her own use.

To obtain a permit an application, duly completed, should be presented to Building and By-law Services at City Hall. The application should be accompanied by a floor plan of the dwelling showing the location of the fixtures to be installed and schematic or sectional drawing showing the proposed drainage and venting layout. (A schematic drawing and a sectional drawing of a typical residential plumbing system is attached hereto).

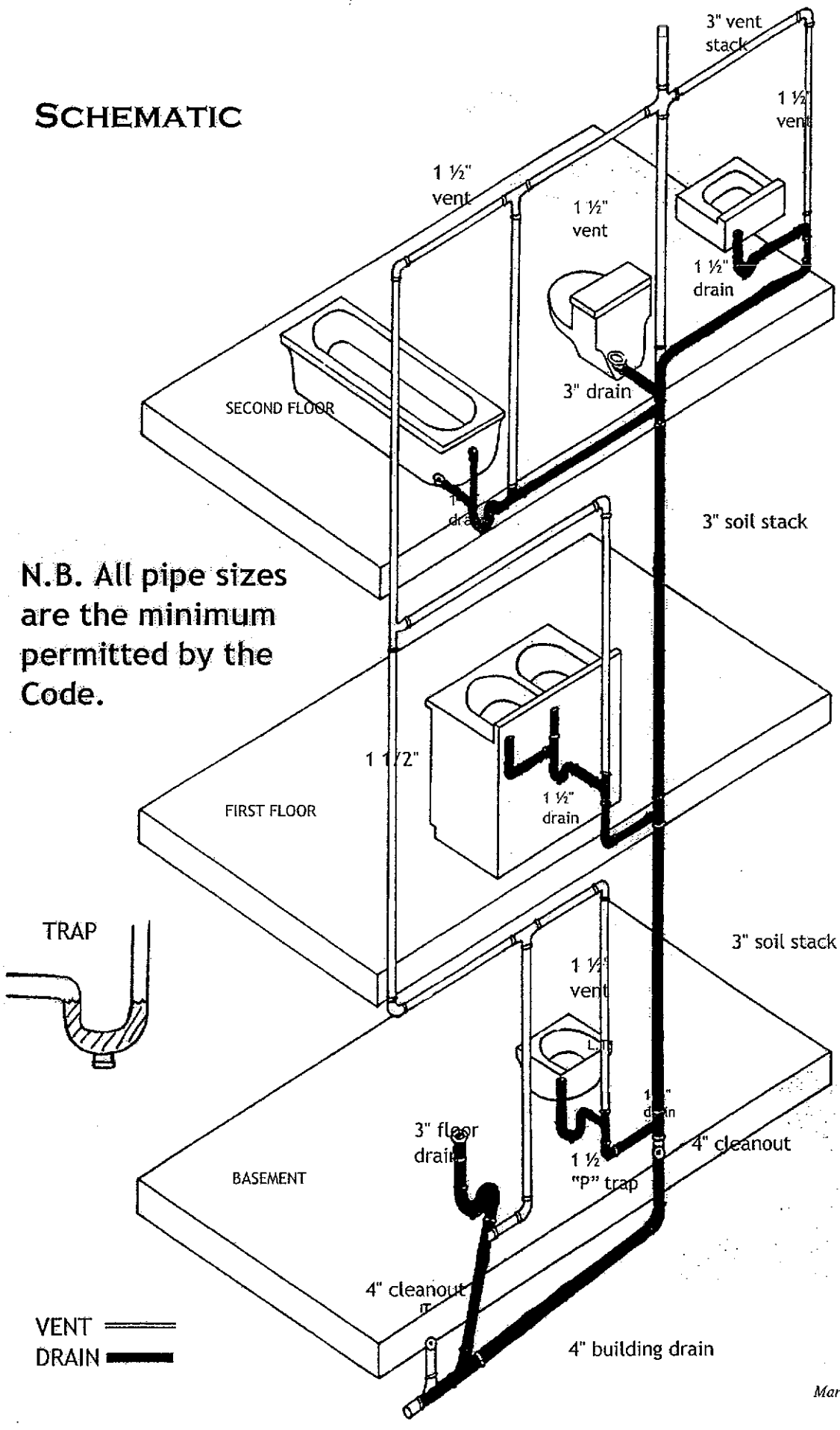
Some of the more common terms used in plumbing and defined in the code are as follows:

Building Drain	the horizontal pipe at the lowest pint in the building (generally under the basement floor) which receives the discharge from the other drainage piping.
Clean out	a fitting access in a drainage pipe for cleaning and inspection provided with an air-tight cover.
Drainage piping	all piping which conveys sanitary waste and liquid to a building drain.
Fixture	a receptacle that receives water etc and which discharges into drainage piping.
Horizontal	departing from the true horizontal by not more than 45 degrees.
Potable water	water fit for human consumption.
Stack	a vertical drain, waste or vent pipe that serves one or more fixtures.
Trap	a fitting or device that provides a liquid seal to prevent the emission of sewer gas without affecting the flow of waste water.
Vent	a pipe that is installed to provide a flow of air, to or from drainage piping, and which terminates an open air at the vent stack.

NB All of the above are represented on the attached schematic drawing.

TYPICAL RESIDENTIAL PLUMBING SYSTEM

SCHEMATIC



March 2001

The minimum size of piping, in general, which is required to serve a specific fixture of appliance is as follows:

1. **Water Pipes**

   The minimum size of water service pipe entering a dwelling from the exterior is required to be ¾" diameter. The ¾ diameter should be maintained towards the water heater until the first takeoff or branch and thereafter it can be reduced to ½" diameter. The hot and cold water distribution system requires a minimum diameter of ½".

2. **Drainage pipes**

   The minimum size of pipe serving the various fixtures is as follows:

Description	**Minimum Diameter (inches)**
Building drain	4
Floor drain	3
Bath tub	1 ½
Bidet	1 ¼
Dish washer	1 ½
Laundry tub	1 ½
Wash basin	1 ½
Shower stall	1 ½
Sink (kitchen)	1 ½
Water closet (toilet)	3

3. **Vent pipes**

Main Vent stack (through roof)	3 inches minimum diameter

All other vent pipes in a dwelling are generally required to be a minimum diameter of either 1 ½" or 1 ¼" as shown on the attached schematic dwelling.

Materials

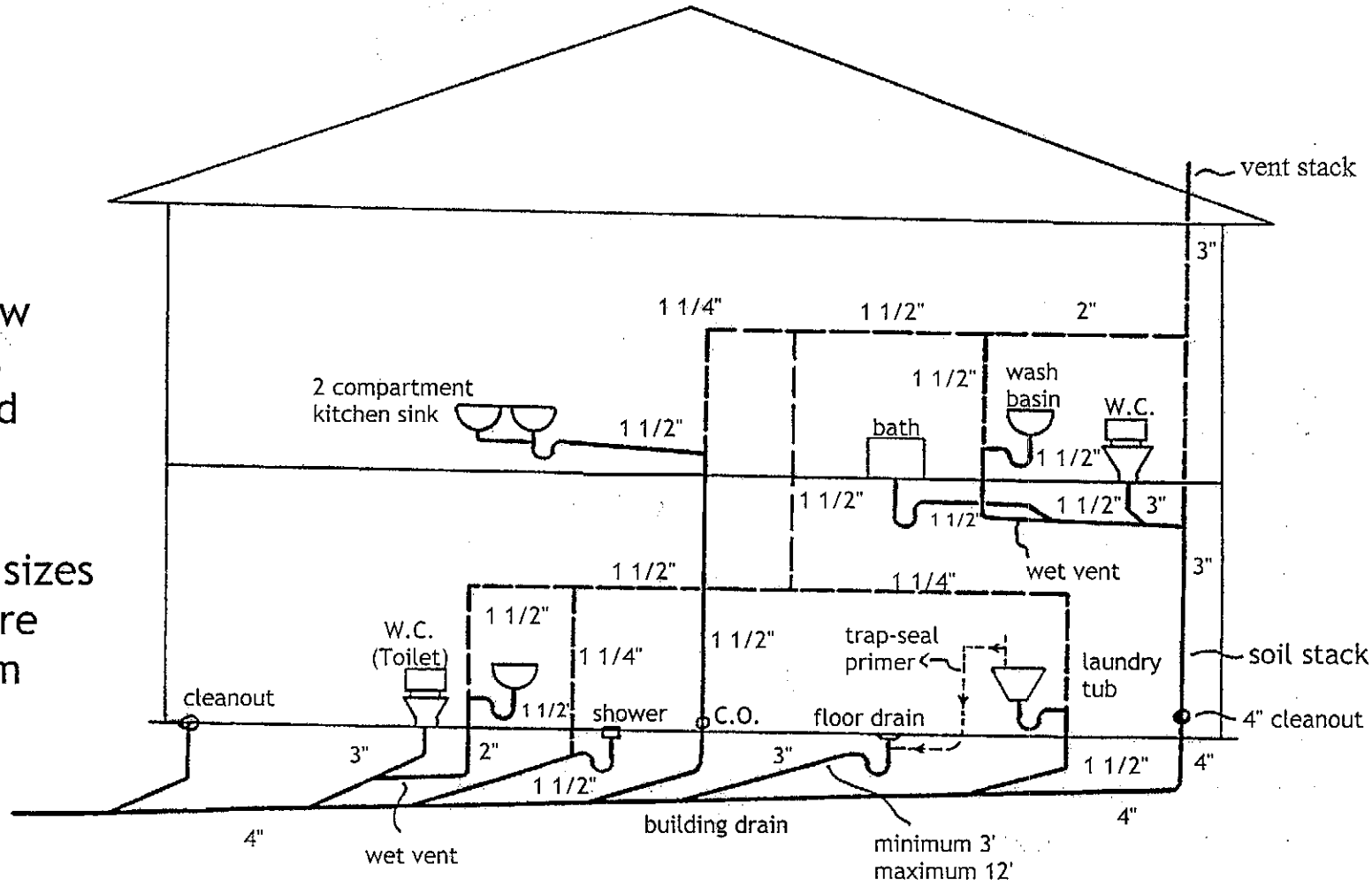
The most commonly used materials in plumbing in a dwelling are copper water pipes, ABS plastic drainage and vent pipes above ground, and PVC plastic drainage pipes below ground. However, a wide variety of other materials as listed in the Code can be used.

It should be noted that all materials, fixtures and appliances in a plumbing system are required to meet prescribed standards, e.g. certified by the Canadian Standards Association or other accredited testing agency, as applicable. The installation of any element of a plumbing system which does not meet the required standard would not be accepted when the work is inspected.

TYPICAL RESIDENTIAL PLUMBING LAYOUT
CROSS - SECTIO N

Low-flow fixtures required

All pipe sizes shown are minimum



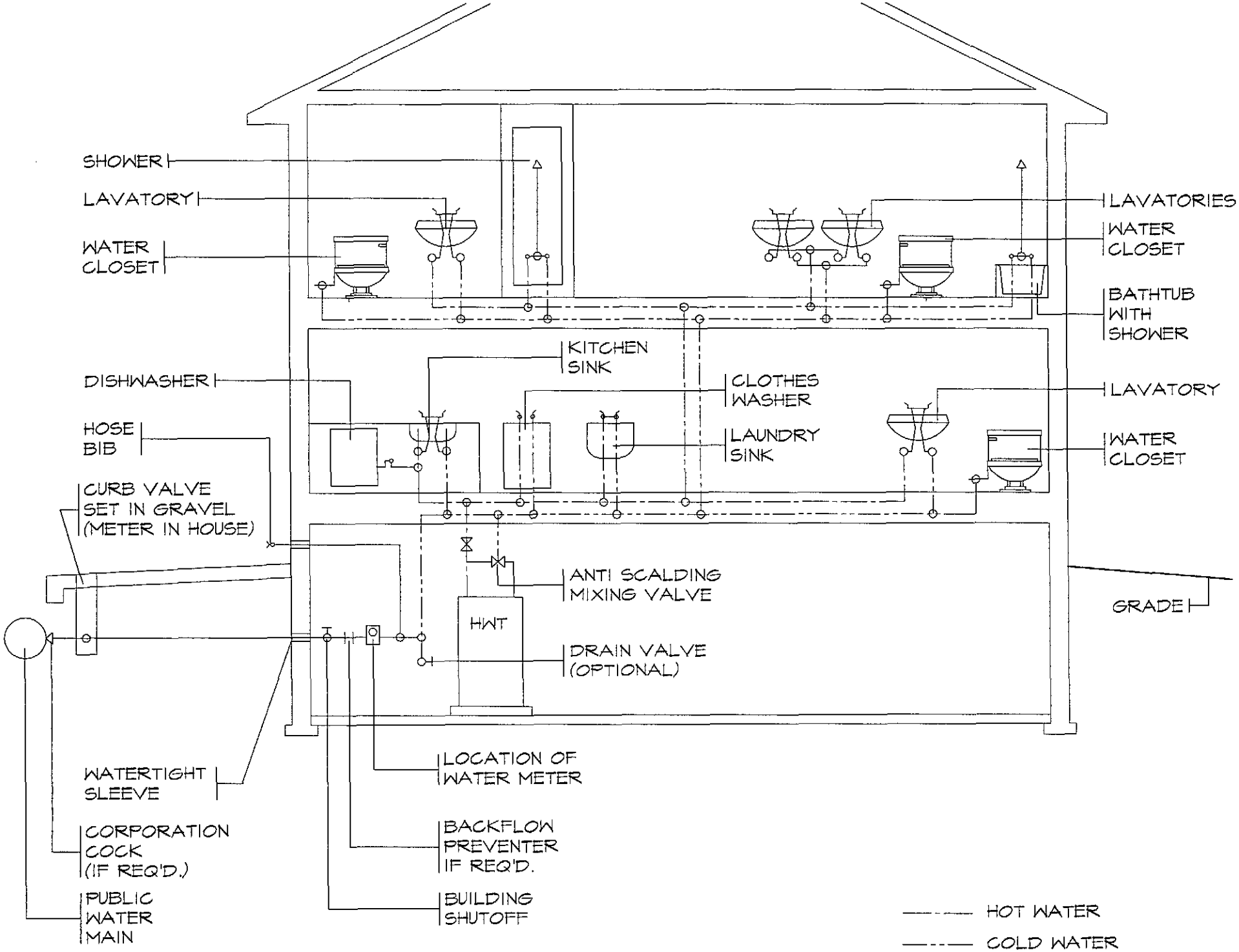
Maximum length of a vent from a fixture - 5 feet

NOT TO SCALE

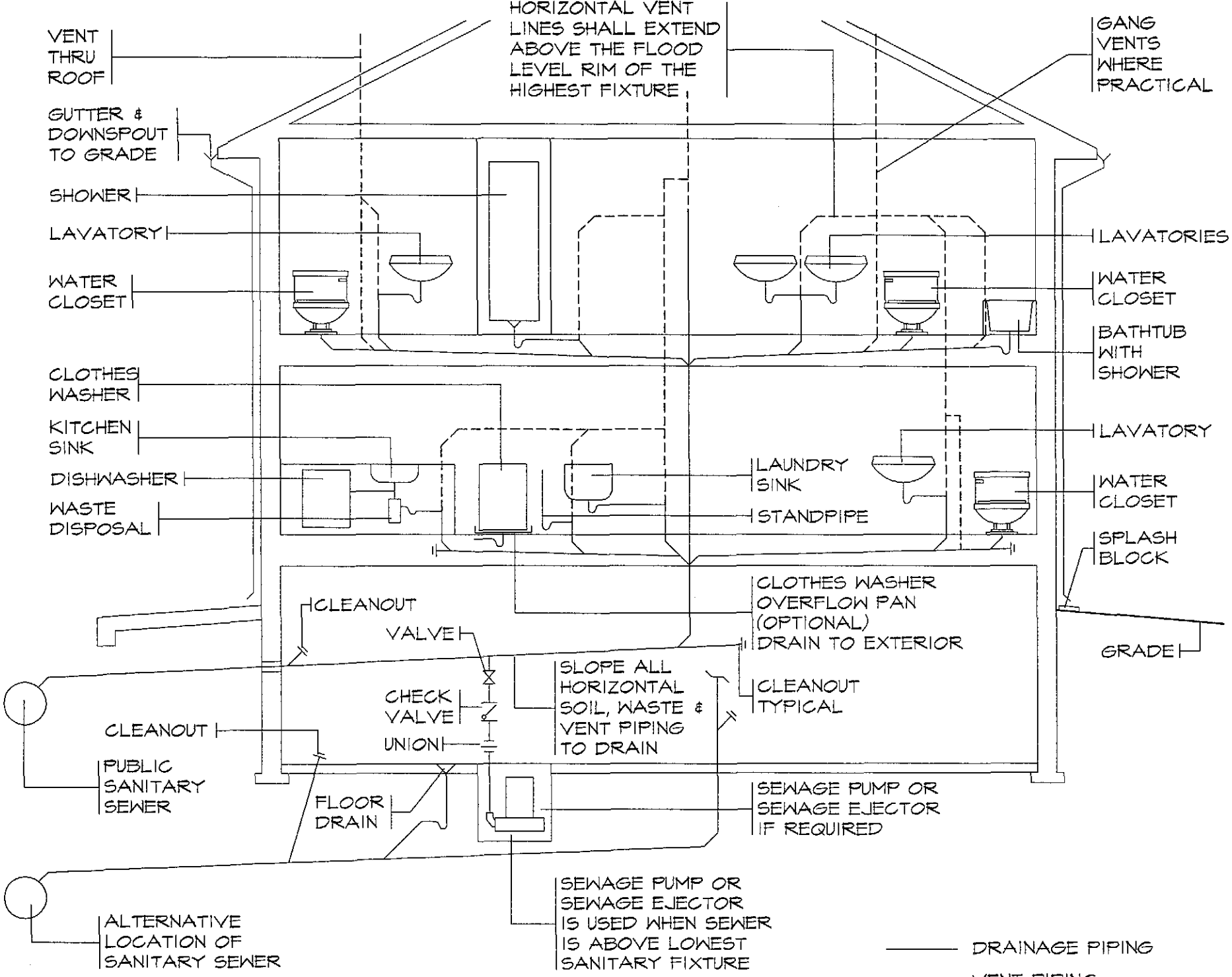
VENT — — —

DRAIN ▬▬▬

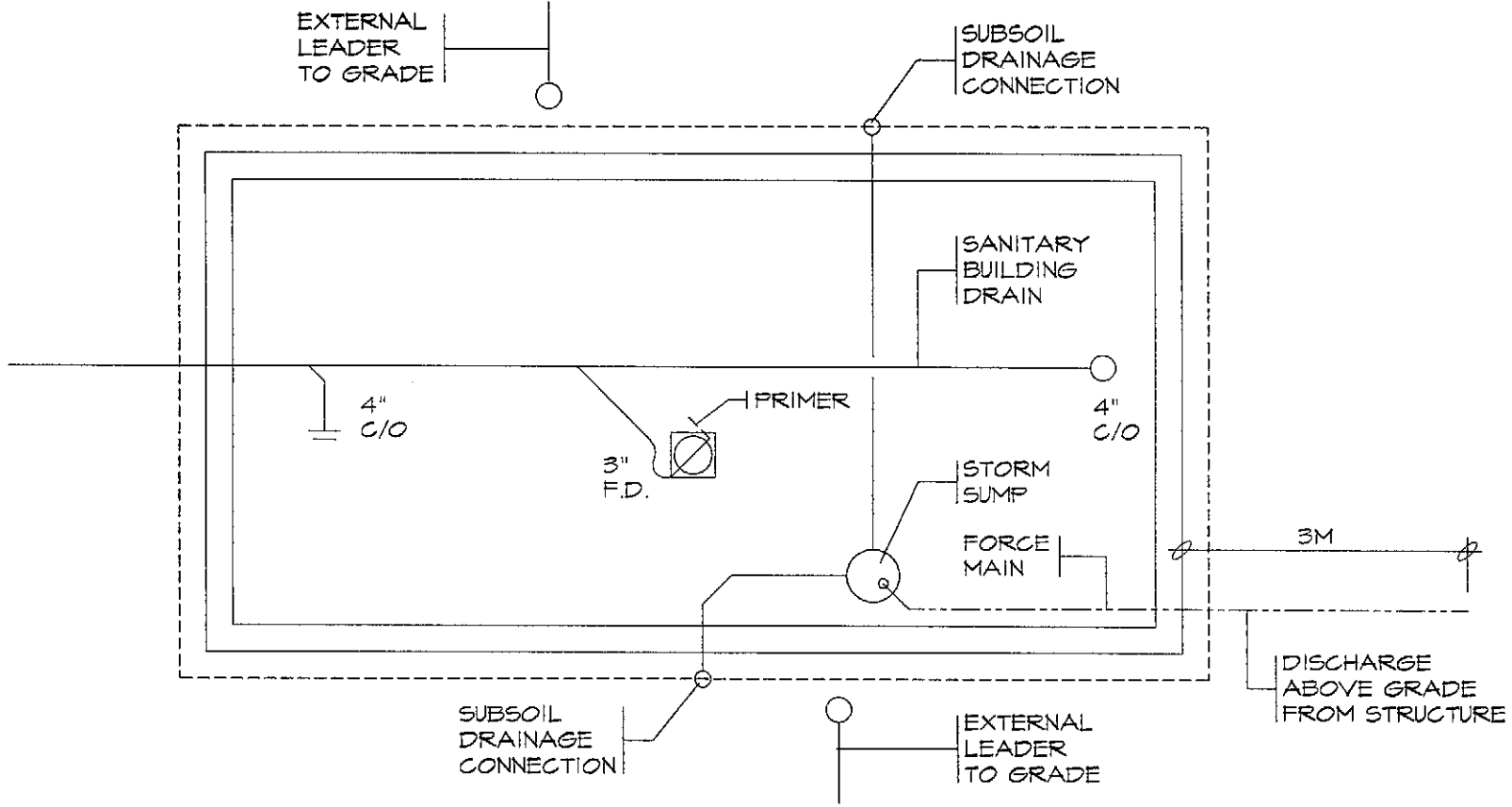
MARCH 2001



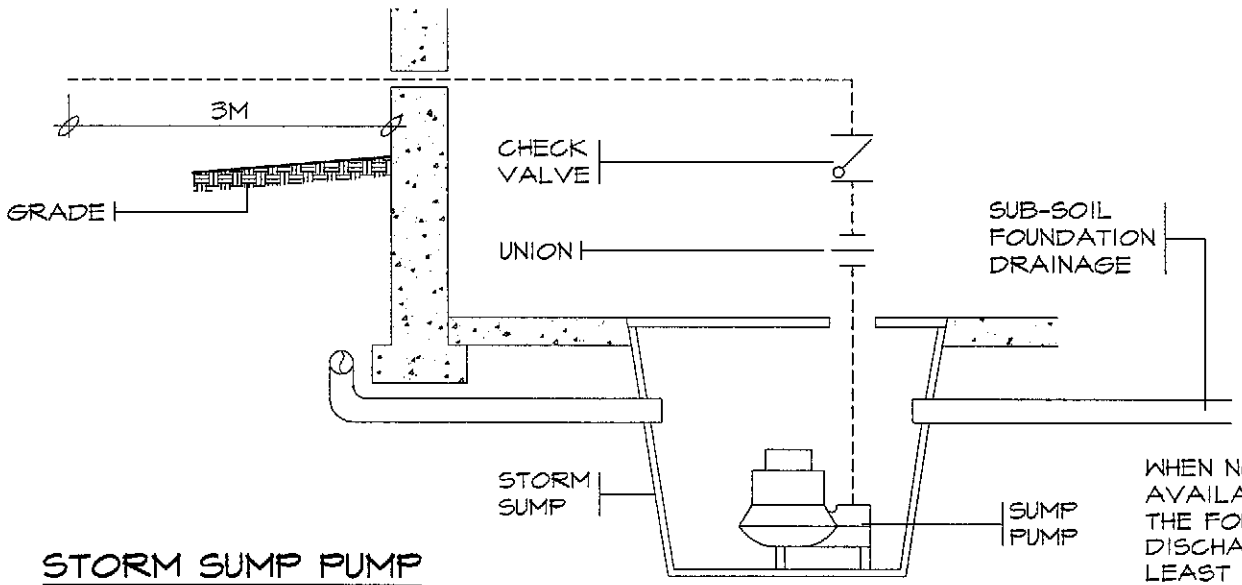
WATER SUPPLY PIPING



DRAINAGE & VENTING

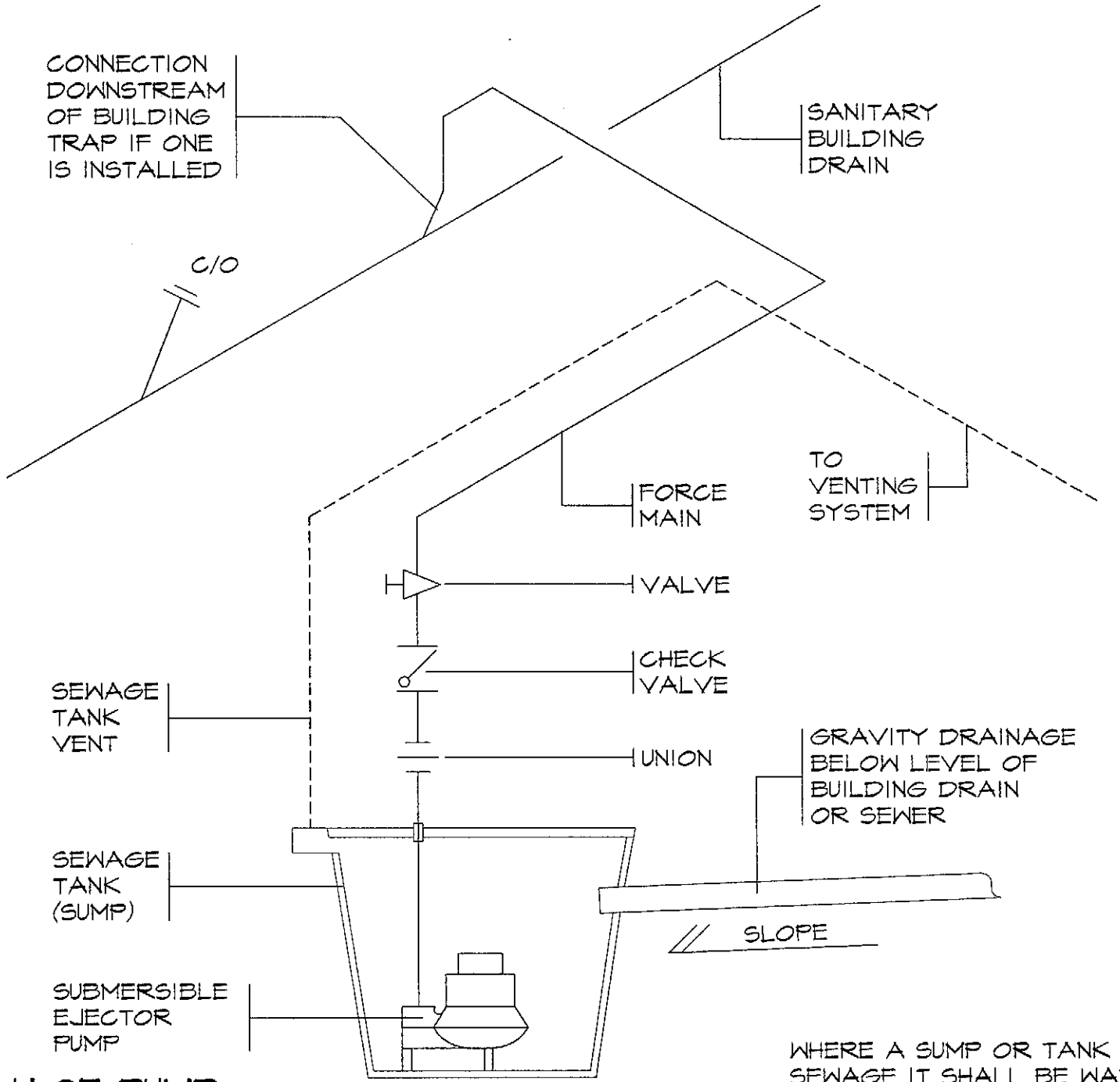


DISCHARGING SUBSOIL DRAINAGE ABOVE GRADE - SEPARATE SYSTEM



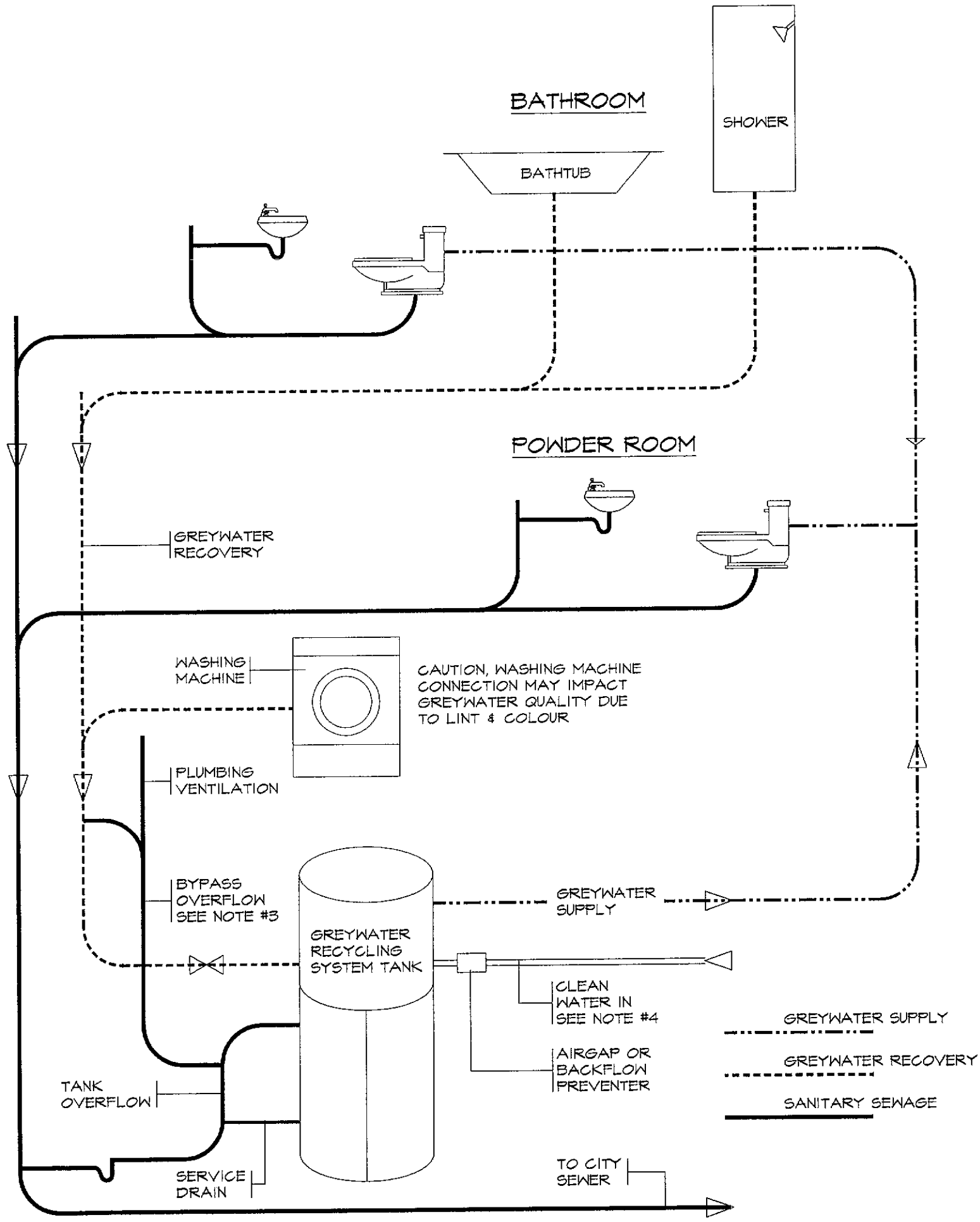
STORM SUMP PUMP

WHEN NO STORM DRAIN IS AVAILABLE OR IT IS NOT ALLOWED, THE FOUNDATION DRAINAGE MUST DISCHARGE ABOVE GRADE AT LEAST 3M FROM THE BUILDING AND MUST NOT CREATE A HAZARD



SANITARY SEWAGE PUMP

WHERE A SUMP OR TANK RECEIVES SEWAGE IT SHALL BE WATER TIGHT, AIR TIGHT AND SHALL BE VENTED.


BATHROOM
SHOWER
BATHTUB
POWDER ROOM
GREYWATER
RECOVERY
WASHING
MACHINE
CAUTION, WASHING MACHINE
CONNECTION MAY IMPACT
GREYWATER QUALITY DUE
TO LINT & COLOUR
PLUMBING
VENTILATION
BYPASS
OVERFLOW
SEE NOTE #3
GREYWATER
SUPPLY
GREYWATER
RECYCLING
SYSTEM TANK
CLEAN
WATER IN
SEE NOTE #4
AIRGAP OR
BACKFLOW
PREVENTER
TANK
OVERFLOW
SERVICE
DRAIN
TO CITY
SEWER
GREYWATER SUPPLY
GREYWATER RECOVERY
SANITARY SEWAGE

NOTES:

1. THE BUILDING CODE PERMITS TOILETS, URINALS AND TRAP SEALS TO BE SUPPLIED BY RECYCLING GREYWATER RATHER THAN BY THE POTABLE WATER SUPPLY SYSTEM. GREYWATER IS THE DISCHARGE FROM FIXTURES OTHER THAN TOILETS, URINALS, BIDETS OR OTHER SANITARY UNITS.
2. THE GREYWATER SYSTEM MUST BE COMPLETELY SEPARATED FROM THE SANITARY DRAINAGE SYSTEM USING INDEPENDENT GREYWATER SUPPLY AND DRAINAGE PIPING, AS SHOWN ON THE SCHEMATIC DIAGRAM. ALL CONNECTED FIXTURES MUST BE CONNECTED AND VENTED ACCORDING TO THE BUILDING CODE.
3. AN OVERFLOW PIPE CONNECTED TO A SANITARY DRAIN MUST BE INSTALLED FROM THE GREYWATER SUPPLY TANK WHICH INCORPORATES AN AIR GAP OR CHECK VALVE TO PREVENT CONTAMINATION IN THE EVENT OF A SANITARY SEWAGE BACKUP.
4. BACKUP POTABLE WATER SUPPLY TO THE GREYWATER SUPPLY TANK IS REQUIRED TO MAINTAIN SUPPLY IN THE EVENT CONNECTED FIXTURE DEMAND EXCEEDS THE TANK SUPPLY CAPACITY. THE POTABLE WATER SUPPLY PIPE MUST BE PROTECTED WITH AN AIR GAP OR TESTABLE REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTOR.
5. A NON-POTABLE WATER SYSTEM SHALL NOT BE CONNECTED TO A POTABLE WATER SYSTEM
6. NON-POTABLE WATER SUPPLY PIPING SHALL BE IDENTIFIED BY MARKINGS THAT ARE PERMANENT, DISTINCT AND EASILY RECOGNIZED.
7. AN OUTLET FROM A NON-POTABLE WATER SYSTEM SHALL NOT BE LOCATED WHERE IT CAN DISCHARGE INTO A SINK OR LAVATORY, A FIXTURE INTO WHICH AN OUTLET FROM A POTABLE WATER SYSTEM IS DISCHARGED OR A FIXTURE THAT IS USED FOR A PURPOSE RELATED TO THE PREPARATION, HANDLING OR DISPENSING OF FOOD, DRINK OR PRODUCTS THAT ARE INTENDED FOR HUMAN CONSUMPTION.

1. MATERIALS AND EQUIPMENT

- A 'T' FITTING SHALL NOT BE USED IN A DRAINAGE SYSTEM EXCEPT TO CONNECT A VENT PIPE.
- A CROSS FITTING SHALL NOT BE USED IN A DRAINAGE SYSTEM.
- NO 'Y', DOUBLE 'TY', DOUBLE 'T' OR DOUBLE WASTE FITTING SHALL BE INSTALLED IN A NOMINALLY HORIZONTAL SOIL OR WASTE PIPE.

2. DRAINAGE SYSTEM

- EVERY SANITARY DRAINAGE SYSTEM AND STORM DRAINAGE SYSTEM SHALL BE PROVIDED WITH CLEANOUTS THAT WILL PERMIT CLEANING OF THE ENTIRE SYSTEM.
- A CLEANOUT FITTING SHALL BE PROVIDED ON THE UPSTREAM SIDE AND DIRECTLY OVER EVERY RUNNING TRAP. HORIZONTAL SOIL OR WASTE PIPE.
- WHERE THERE IS A CHANGE OF DIRECTION GREATER THAN 45 DEGREES IN A SANITARY BUILDING DRAIN OR SANITARY BUILDING SEWER, A CLEANOUT SHALL BE INSTALLED AT EACH CHANGE IN DIRECTION.
- EVERY SANITARY BUILDING DRAIN OR STORM BUILDING DRAIN SHALL BE PROVIDED WITH A CLEANOUT FITTING THAT IS LOCATED AS CLOSE AS PRACTICAL TO THE PLACE WHERE THE DRAIN LEAVES THE BUILDING.
- EVERY SOIL OR WASTE STACK SHALL BE PROVIDED WITH A CLEANOUT FITTING AT THE BOTTOM OF THE STACK.
- A CLEANOUT SHALL BE INSTALLED ON A FIXTURE DRAIN SERVING A KITCHEN SINK.
- WHEN GRAVITY DRAINAGE TO A SANITARY DRAINAGE SYSTEM IS POSSIBLE, A FLOOR DRAIN SHALL BE INSTALLED IN A BASEMENT, FORMING PART OF A DWELLING UNIT.
- SANITARY UNITS, BATHTUBS AND SHOWER BATHS SHALL NOT BE INSTALLED ADJACENT TO WALL AND FLOOR SURFACES THAT ARE PERVIOUS TO WATER.
- EVERY FIXTURE SHALL BE PROTECTED BY A SEPARATE TRAP.
- PROVISION SHALL BE MADE FOR MAINTAINING THE TRAP SEAL OF A FLOOR DRAIN BY THE USE OF A TRAP SEAL PRIMER.
- EVERY DRAINAGE PIPE THAT HAS A SIZE OF 3 INCHES (75mm) OR LESS, AND EVERY FIXTURE DRAIN SHALL HAVE A DOWNWARD SLOPE IN THE DIRECTION OF FLOW OF AT LEAST 1 IN 50 (1/4 INCH PER FOOT).
- WHERE IT IS NOT POSSIBLE TO COMPLY WITH 1 IN 50 SLOPE A LESSER SLOPE MAY BE USED IF IT WILL PROVIDE A GRAVITY FLOW OF NOT LESS THAN 0.60M PER SECOND.
- EVERY SANITARY BUILDING DRAIN AND EVERY SANITARY BUILDING SEWER SHALL BE AT LEAST 4 INCHES IN SIZE.
- EVERY STORM BUILDING DRAIN AND EVERY STORM BUILDING SEWER SHALL BE AT LEAST 4 INCHES IN SIZE.
- INDIRECT CONNECTIONS OR ANY TRAP THAT MAY OVERFLOW SHALL NOT BE LOCATED IN A CRAWL SPACE OR ANY OTHER UNFREQUENTED AREA.
- THERE SHALL BE NO UNUSED OPEN ENDS IN A DRAINAGE SYSTEM AND DEAD ENDS SHALL BE SO GRADED THAT WATER WILL NOT COLLECT IN THEM.
- ONLY PIPING THAT IS TOO LOW TO DRAIN INTO A BUILDING SEWER BY GRAVITY SHALL BE DRAINED TO A SUMP OR RECEIVING TANK.
- WHERE THE SUMP OR TANK RECEIVES SANITARY SEWAGE IT SHALL BE WATER AND AIR-TIGHT AND SHALL BE VENTED.
- THE DISCHARGE PIPE FROM EVERY PUMPED SANITARY SEWAGE PUMP SHALL BE EQUIPPED WITH A UNION, A CHECK VALVE AND A SHUT-OFF VALVE INSTALLED IN THAT SEQUENCE IN THE DIRECTION OF DISCHARGE.
- A SUBSOIL DRAINAGE PIPE THAT DRAINS INTO A SANITARY DRAINAGE SYSTEM THAT IS SUBJECT TO SURCHARGE SHALL BE CONNECTED IN SUCH A MANNER THAT SEWAGE CANNOT BACK UP INTO THE SUBSOIL DRAINAGE PIPE.
- THE DEVELOPED LENGTH OF EVERY FIXTURE OUTLET PIPE SHALL NOT EXCEED 1200mm.
- WHERE CLOTHES WASHERS DO NOT DRAIN TO A LAUNDRY TRAY, THE TRAP INLET SHALL BE FITTED WITH A VERTICAL STANDPIPE THAT IS NOT LESS THAN 600mm LONG MEASURED FROM THE TRAP WEIR AND THE TOP OF THE STANDPIPE SHALL TERMINATE ABOVE THE FLOOD LEVEL RIM OF THE CLOTHES WASHER IT SERVES.

3. VENTING SYSTEM

- EVERY TRAP SHALL BE VENTED.
- EVERY SANITARY BUILDING DRAIN SHALL TERMINATE AT ITS UPSTREAM END IN A STACK OF AT LEAST 3 INCHES IN SIZE.
- A STACK SHALL BE A SOIL STACK IF ONE IS AVAILABLE AND MAY BE A VENT STACK OR WASTE STACK THAT PROVIDES AT LEAST 3 INCHES STACK VENT AND THAT GOES TO OPEN AIR ABOVE THE ROOF, EITHER DIRECTLY OR THROUGH A HEADER.
- EVERY SUMP OR TANK THAT RECEIVES SANITARY SEWAGE SHALL BE PROVIDED WITH A VENT PIPE THAT IS CONNECTED TO THE TOP OF THE SUMP OR TANK.
- THE MINIMUM SIZE OF THE VENT PIPE FOR A SANITARY SEWAGE PUMP OR TANK, OR DILUTION TANK SHALL BE ONE SIZE SMALLER THAN THE SIZE OF THE LARGEST BRANCH OR FIXTURE DRAIN DRAINING TO THE SUMP OR TANK.
- AIR ADMITTANCE VALVES SHALL ONY BE USED IN BUILDINGS UNDERGOING RENOVATION AND INSTALLATIONS WHERE CONNECTION TO A VENT MAY NOT BE PRACTICAL.
- INSTALLED AIR ADMITTANCE VALVES SHALL BE ACCESSABLE AND LOCATED IN A SPACE THAT ALLOWS AIR TO ENTER THE VALVE.

4. POTABLE WATER

- EVERY POTABLE WATER SYSTEM SHALL BE CAPABLE OF WITHSTANDING WITHOUT LEAKAGE A WATER PRESSURE THAT IS AT LEAST 1000 kPa (145 PSI) FOR AT LEAST 1 HOUR OR WITHSTANDING FOR AT LEAST 2 HOURS WITHOUT A DROP IN PRESSURE, AN AIR PRESSURE THAT IS AT LEAST 700 kPa (102 PSI).
- EVERY FIXTURE SUPPLIED WITH SEPARATE HOT AND COLD WATER CONTROLS SHALL HAVE THE HOT WATER CONTROL ON THE LEFT AND THE COLD ON THE RIGHT.
- A BUILDING CONTROL VALVE SHALL BE PROVIDED ON EVERY WATER SERVICE PIPE AT THE LOCATION WHERE THE WATER SERVICE PIPE ENTERS THE BUILDING.
- EVERY WATER CLOSET SHALL BE PROVIDED WITH A SHUT-OFF VALVE ON ITS WATER SUPPLY PIPE.
- EVERY WATER PIPE THAT SUPPLIES A HOT WATER TANK, PRESSURE VESSEL, PLUMBING APPLIANCE OR WATER USING DEVICE SHALL BE PROVIDED WITH A SHUT OFF VALVE LOCATED CLOSE TO THE TANK, PRESSURE VESSEL, PLUMBING APPLIANCE OR WATER USING DEVICE.
- EVERY PIPE THAT PASSES THROUGH AN EXTERIOR WALL TO SUPPLY WATER TO THE EXTERIOR OF THE BUILDING SHALL BE PROVIDED WITH A FROST-PROOF HYDRANT WITH A SEPARATE SHUT-OFF VALVE OR A STOP-AND-WASTE COCK LOCATED INSIDE THE BUILDING AND CLOSE TO THE WALL.
- WHERE A HOSE BIB IS INSTALLED OUTSIDE A BUILDING, INSIDE A GARAGE OR WHERE THERE IS AN IDENTIFIABLE RISK OF CONTAMINATION, THE POTABLE WATER SYSTEM SHALL BE PROTECTED AGAINST BACKFLOW BY A BACKFLOW PREVENTER.
- NO WATER SYSTEM BETWEEN THE POINT OF CONNECTION WITH THE WATER SERVICE PIPE OR THE WATER METER AND THE FIRST BRANCH THAT SUPPLIES A WATER HEATER SHALL BE LESS THAN 3/4 INCH IN SIZE.
- EVERY WATER SERVICE PIPE SHALL NOT BE LESS THAN 3/4 INCH IN TRADE SIZE.
- A CHECK VALVE SHALL BE INSTALLED AT THE BUILDING END OF THE WATER SERVICE PIPE WHERE THE PIPE IS MADE OF PLASTIC THAT IS SUITABLE FOR COLD WATER USE ONLY.
- PROTECTION AGAINST THERMAL EXPANSION SHALL BE REQUIRED WHEN A CHECK VALVE, A BACKFLOW PREVENTER OR A PRESSURE REDUCING VALVE IS REQUIRED.

5. HOT WATER TEMPERATURE CONTROL

- SHOWER VALVES SHALL BE PRESSURE BALANCED OR THERMOSTATIC MIXING VALVES. A PRESSURE BALANCED OR THERMOSTATIC MIXING VALVE SHALL NOT BE REQUIRED FOR SHOWERS WHERE THE HOT WATER SUPPLY FOR SHOWERS, ARE CONTROLLED BY A MASTER THERMOSTATIC MIXING VALVE. PRESSURE BALANCED OR THERMOSTATIC MIXING VALVES SHALL BE DESIGNED SUCH THAT THE OUTLET TEMPERATURE DOES NOT EXCEED 49°C (120°F).

INSPECTION

All plumbing for which a permit has been issued is required to be inspected. No plumbing should be covered or concealed until it has been inspected and no plumbing system should be put into use until it has been inspected and the use authorized.

LOW FLOW FIXTURES

Water efficient water closets (toilets) shower heads and faucets are now required to be installed in accordance with Section 7.6.4 of the Code.

METRES

A metre is now required to be installed in every dwelling. In the case of a new dwelling, a metre is required to be installed prior to occupancy.

SUMMARY

If you require any further information about installation of plumbing or wish to obtain a permit or a copy of Part 7 of the Code please contact Building and By-law Services in City Hall, 4310 Queen Street, Niagara Falls, Ontario (Telephone 905 356-7521, Ext. 4344 or 4213).

The information in this pamphlet is a brief summary of the comprehensive stipulations of Part 7 of the Code and is intended only to give the reader an overview of the many requirements therein. For accurate reference please refer to the appropriate provisions of Part 7 of the Code and/.or the Building Permit By-law.