

DRAINAGE

BUILDING DRAINAGE REQUIREMENTS Drainage Notes: sewers, sumps & water service

EFFECTIVE FEBRUARY 2014

note: drainage permit required to call for a damproof inspection



BUILDING DRAINAGE REQUIREMENTS

1. ROOF DRAINS/DECK DRAINS (INTERIOR)

- All roof and deck drains within the perimeter of the building shall be **APPROVED** units, clearly marked with the manufacturer's name i.e. "Menzies", "Canada Metal", etc. Shop-made unidentifiable drains are not acceptable.
- Roof and decks must be framed to drain away from the building and/or curbs and into the required drains. See building inspector for details.
- Make allowance for expansion and contraction by providing either an "O" ring connection or a combination of a flexible coupling and expansion joint as close to the roof as practical.
- Permit, water test, inspection, and anti-sweat jacket required.
- Sizing to **B.C. Plumbing Code 2012** (Minimum 2")
- Where a roof or deck drain passes through the interior of a building it shall be run in DWV-weight pipe, following plumbing code rules, and provisions shall be made for insulating each leader to prevent condensation damage. Insulation is to be inspected by the plumbing inspector after the piping has been approved.
- All roof and deck drains must drain to the storm system **not** to the drain tile, sidewalk, deck, driveway, etc.
- Emergency overflow drain required for each roof/deck area. Minimum 2" diameter, and the overflow cannot connect to the primary drain.

2. FLOOR DRAINS

- When a hot water tank is located on a concrete floor, a minimum 3" trapped floor drain shall be provided near the tank, preferably connected to the storm system.
- A minimum 4" trapped floor drain shall be provided for each crawl space area subject to flooding, this drain must be connected to the storm system.
- Sanitary floor drains require priming, see sketch for acceptable solutions.
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3. DRAIN TILE

a) Installation and Material

- Drainage permit required. This permit must be in place to call a damp proofing inspection.
- Acceptable material; rigid perforated plastic sewer pipe.
- All piping to be graded back to the sump minimum 1/16"/ft. (1/2%)
- All joints to be primed and glued (purple primer, grey glue).
- Directional fittings shall be used.
- No dead ends permitted; if a line must be ended it must terminate with a 4" clean out at finished grade.
- Pipe to be installed with holes down into 3" of drain rock and 8" of clean drain rock on top and sides.
- DWV-weight pipe shall be used to cross under a driveway where there will be less than 18" of cover over it (pipe can be drilled).
- All piping must be firmly and continuously supported at the time of inspection.
- Pipe shall be laid on drain rock, undisturbed soil, concrete footing, or bedrock.
- **TOP OF PIPE TO BE EXPOSED FOR FIRST INSPECTION**

b) Layout Guide

- Ends of tile lines are to enter the storm sump separately and no dead ends are permitted anywhere in the system.
- All drain tile lines and branches are to be installed so that the top of the pipe is lower than the bottom of the slab that it is serving.
- Ts and Ys in the system must be arranged in such a way that all parts of the drainage system are accessible to a sewer cleaning machine cable.



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- The ideal situation would be a single line of drain tile starting at the sump, completely circling the foundation and terminating back in the sump. However, many houses are designed with multiple levels and crawl space areas making additional branches necessary to protect each level.
 - When you have read this guideline should you have any additional questions regarding storm drainage, please call your plumbing inspector.
- c) Exterior Roof Drains**
- Exterior roof drains shall be run in PVC sewer pipe.
 - All piping to be graded at 1/8"/ft. (1%).
 - Piping shall be continuously supported on drain rock, or hung on 3/4" galvanized straps at 4 ft. O.C.
 - All piping shall be primed and glued (purple primer, grey glue).
 - Use Ys. And 45s, not Ts and 90s
- d) Storm Water Sump**
- A concrete sump shall be provided for each drain tile system. The sump is to be placed within 6 ft. of the building unless previous approval has been granted by the plumbing inspector.
 - Each end of drain tile pipe to enter the sump separately to facilitate the cleaning of drain tile.
 - See drawing #P-1 for details and sizing requirements.
 - For large driveways an additional drain may be required at or near the property line. (To be determined by our Engineering Department.)



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DRIVEWAY CATCH BASIN

- A minimum 18" inside diameter catch basin shall be provided for each driveway that does not drain to a street or lane. All "trench drains" shall drain to a catch basin.
- Size the outlet to the **BC Plumbing Code 2012** (4" pipe will handle most driveways).
- See drawing #P-2 for details.
- Drain to sump or storm piping (not drain tile).

4. STORM AND SANITARY SEWERS

- Piping to run as directly as possible.
- Clean-outs to be provided every 85 ft. and shall be extended to final grade. Additional clean outs required for changes in direction greater than 45°. Clean-outs in a driveway are to be protected with a metal "road box".
- Pipe shall be laid straight; maximum curve that will be permitted is 2" per length out of alignment.
- Only approved pipe, fittings, connections, and glue shall be used.
- Piping is to be firmly and continuously bedded at the time of inspection.
- Lightwall or "sewer grade" piping is to be bedded in sand or pea gravel. After inspection an additional 12" of bedding material shall be hand placed on pipe and compacted before machine filling. (See 6A for additional requirement for lightwall pipe).
- Minimum 2 ft. of cover required for light wall sewer pipe.



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TESTING REQUIREMENTS FOR SEWERS

a) Light Wall Sewer Pipe

- Provide test Ys at Municipal connections.
- Plug off Ys with mechanical test plugs.
- Water test to 5 ft. above grade at upstream end (storm and sanitary).
- Inspection.
- Back fill trench to final grade.
- Second inspection—if water test is holding at second inspection, plugs may be removed, clean out fittings installed in test Ys, and back-fill completed.

b) Heavy Wall 500 Series D.W.V. Weight Pipe

- Remove and discard factory installed plugs in inspection chambers.
- 5 ft. head test required on sanitary sewer only.
- Inspection with pipe in trench.
- If inspection passes, remove test plug, install clean out fitting in test “Y” and back fill trench.

5. STORM SEWER TERMINATION

- Every storm drainage system shall drain to a storm sewer, a drainage ditch, a stream, to the ocean (indirectly), or a dry well. Note: dry well approval must be obtained from the authority having jurisdiction before installation and an engineered design is required, complete with B-1, B-2 and C-B
- **THERE ARE NO COMBINED SEWERS IN WEST VANCOUVER**
- Where a storm sewer is terminated in a ditch or stream, a minimum of 5 ft. of DWV-weight pipe shall be installed on the downstream end to prevent breakage.
- Where gravity flow is not possible a duplex pump system must be installed. The pump shall be sized and specified by a Professional Engineer. Only the



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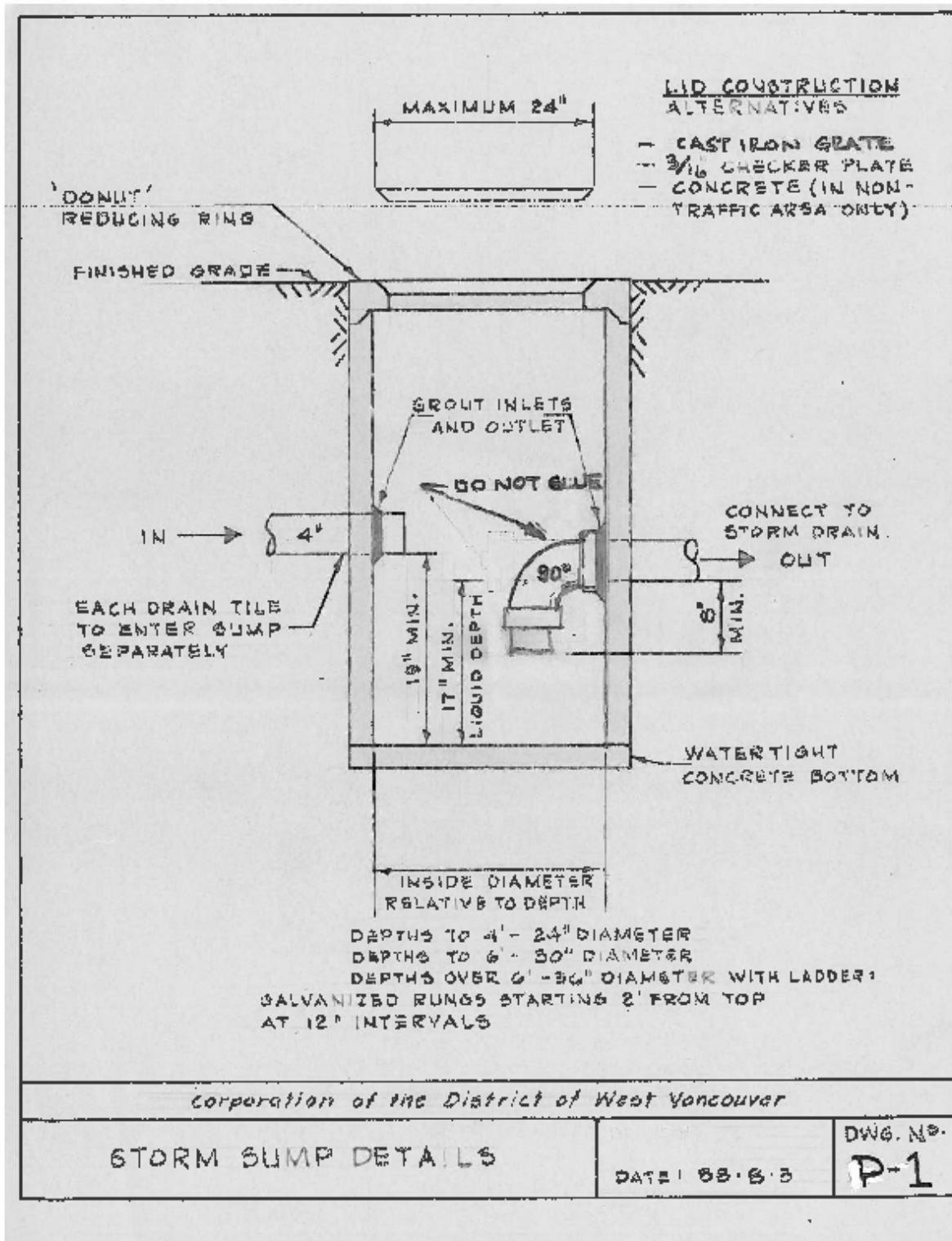
portion of piping that cannot drain by gravity may be pumped. The discharge pipe must be pressure pipe and installed below frost level. An alarm panel must also be installed.

6. WATER SERVICE PIPE

- Minimum size service for a single family dwelling is ¾" ID for up to 21 fixture units (poly or pex).
- All dwellings with automatic fire sprinklers will have a much larger water service, the size of which must be determined by the design engineer, minimum 1 ½".
- Minimum cover permitted for water service pipe is 24" this includes under a carport or unheated garage slab.
- Water service pipe to be sleeved in 75# utility sleeving or bedded in sand or dirt containing no rocks or abrasive material (Big "O" flexible pipe is also an acceptable sleeving material).
- Water service piping running through crushed rock either inside or outside the building must be sleeved.
- No petroleum based products such as damp proofing spray, and tar-based caulking compound are to come in contact with a plastic water service. Replacement of the pipe will be required if this happens.
- If you are planning to install an irrigation system, install and cap a tee at this time as it is very difficult to tap into a large diameter water service once it has been backfilled.

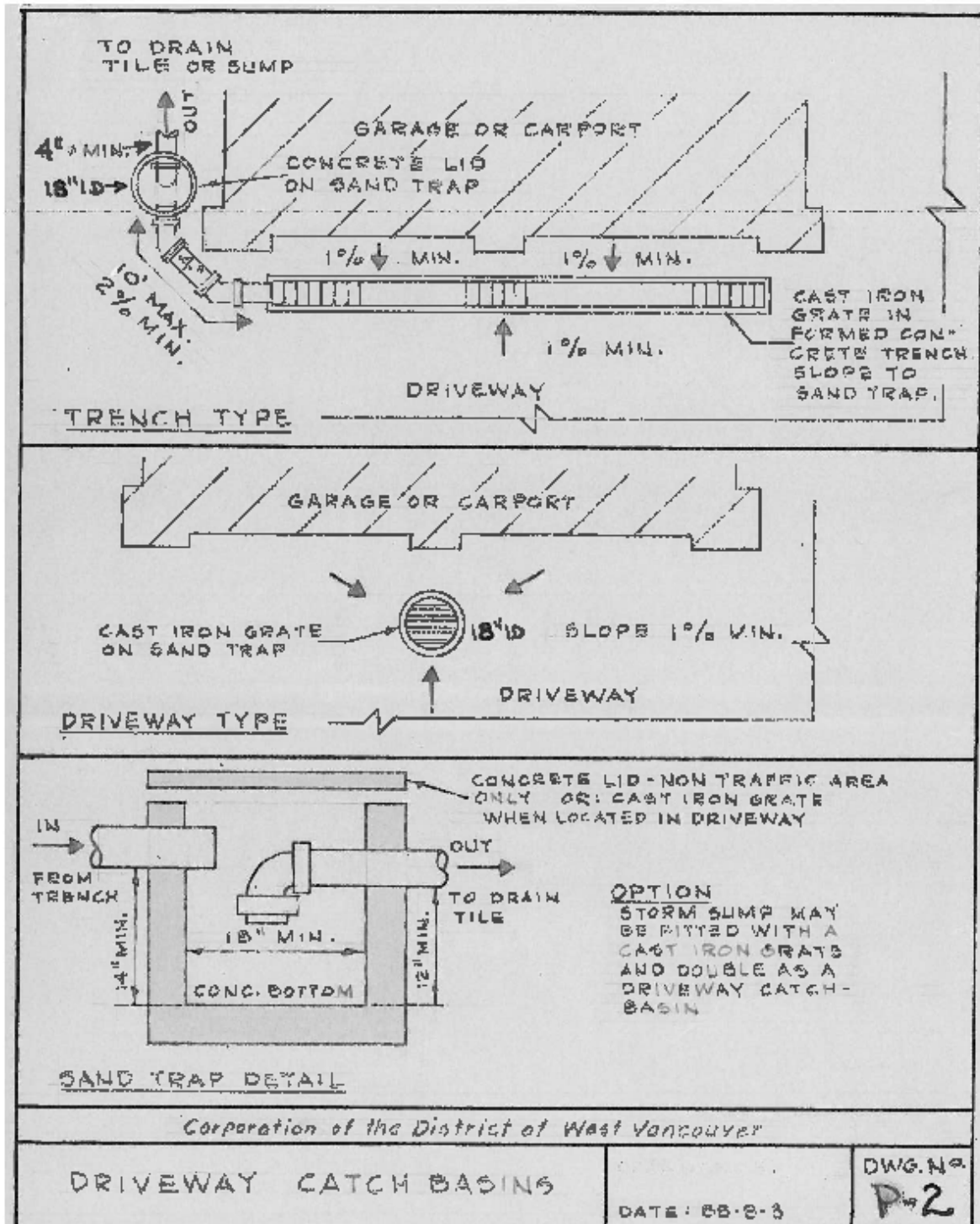


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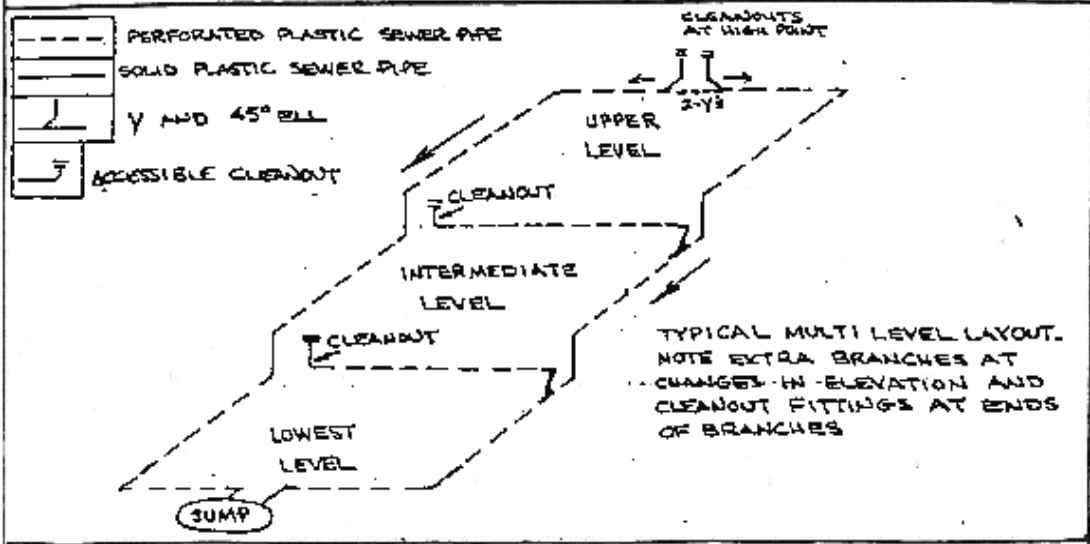
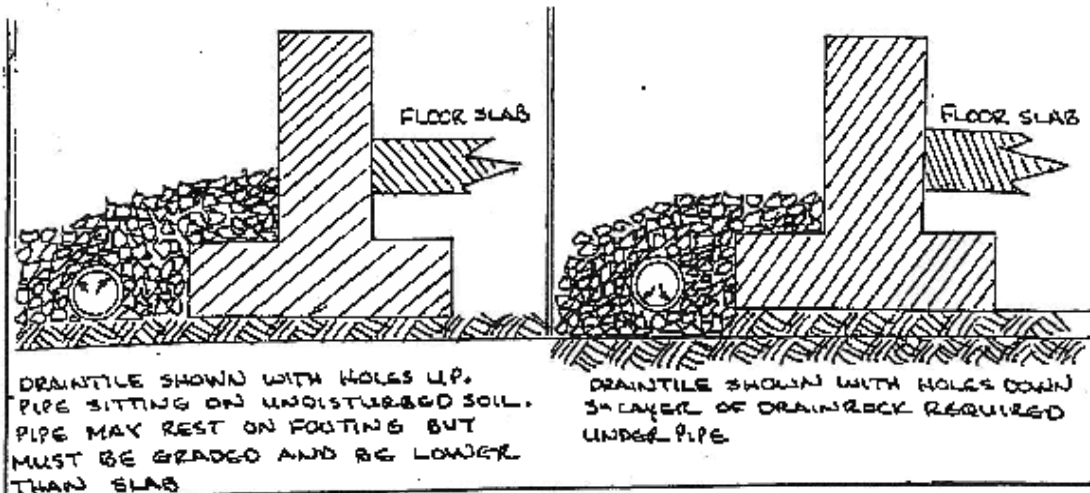


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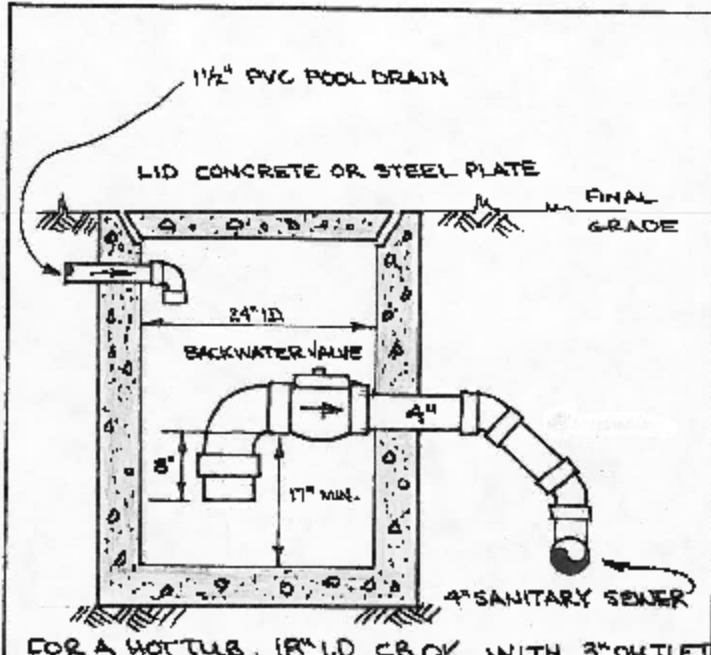


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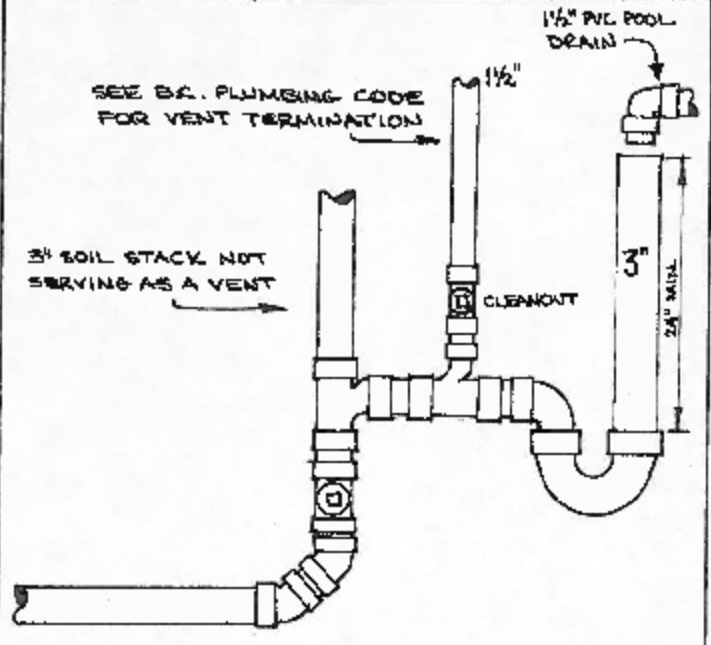




BUILDING DRAINAGE REQUIREMENTS



FOR A HOT TUB, 18" I.D. CROK WITH 3" OUTLET



SWIMMING POOL AND HOT TUB INSTALLATION

1. Drainage from a swimming pool or a hot tub to be connected to an approved concrete sump, complete with a minimum 3" backwater valve and a minimum 3" branch line to the sanitary sewer.
2. Outside deck drains to be connected to storm drainage system.
3. Provide an approved backflow preventer on a hose bibb used to fill a pool or hot tub at an elevation not less than 3' above the flood level rim.
4. Water lost required on sanitary pump, branch line, and connection to existing sanitary sewer.
5. Back flow preventer to be installed and impinged with sanitary pump.
6. Isolation swimming pool or hot tub may be connected to a trapped 3" sanitary standpipe with a minimum 1 1/2" vent.

