higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PLUMBING
NQF LEVEL 3

16 November 2022

This marking guideline consists of 7 pages.

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QUESTION 1: COLD-WATER SUPPLY

1.1 1.1.1 water meter
1.1.2 communication pipe
1.1.3 water-reticulation network
1.1.4 compression joint
(4 × 1) (4)

1.2 1.2.1 A water meter is an instrument used to provide information about the volume of water consumed. (2)

1.2.2
- A more constant pressure is maintained.
- Contamination of water is limited because dead legs, which creates stagnant water, are prevented.
- Strategically placed isolating valves allow smaller sections of the network to be isolated without affecting the rest of the network. (Any 2 × 2) (4)

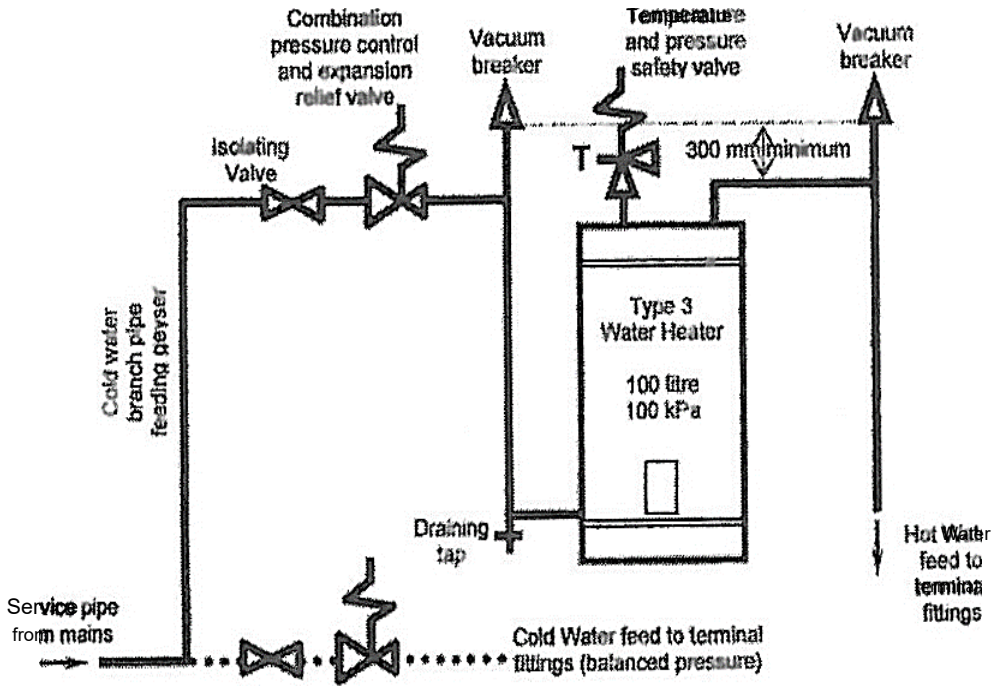
1.3
- Copper: Thread seal tape
- GMS: Hemp (2)

1.4 A capillary joint is a soldered joint using solder and flux whereas a compression joint uses a brass olive and a brass cap nut. (2 + 2) (4)

1.5 To stop or prevent solids or other strange objects from entering the water system causing blockages or polluting the components downstream (2)
[18]

QUESTION 2: HOT-WATER SUPPLY

2.1



(4 for correct drawing + 4 for labelling) (8)

2.2
- Hot water almost immediately available
- Small and compact and can be installed in small spaces
- Simple to install
- No major pipes or valves required
- Expansion pipe and water draw-off pipes are one common pipe
- No expansion pipes through the roof or eaves needed (Any 4 × 1) (4)

2.3
2.3.1 Blue
2.3.2 Black
2.3.3 Green

(3 × 1) (3)

2.4
- Reduces the incoming mains pressure to a pre-set pressure rating
- Maintains and controls this pressure when the system is not in use (4)

[19]

QUESTION 3: ABOVE-GROUND DRAINAGE SYSTEM

3.1 A drainage installation is the system conveying or discharging soil water and wastewater from a building to an underground drain. (2)

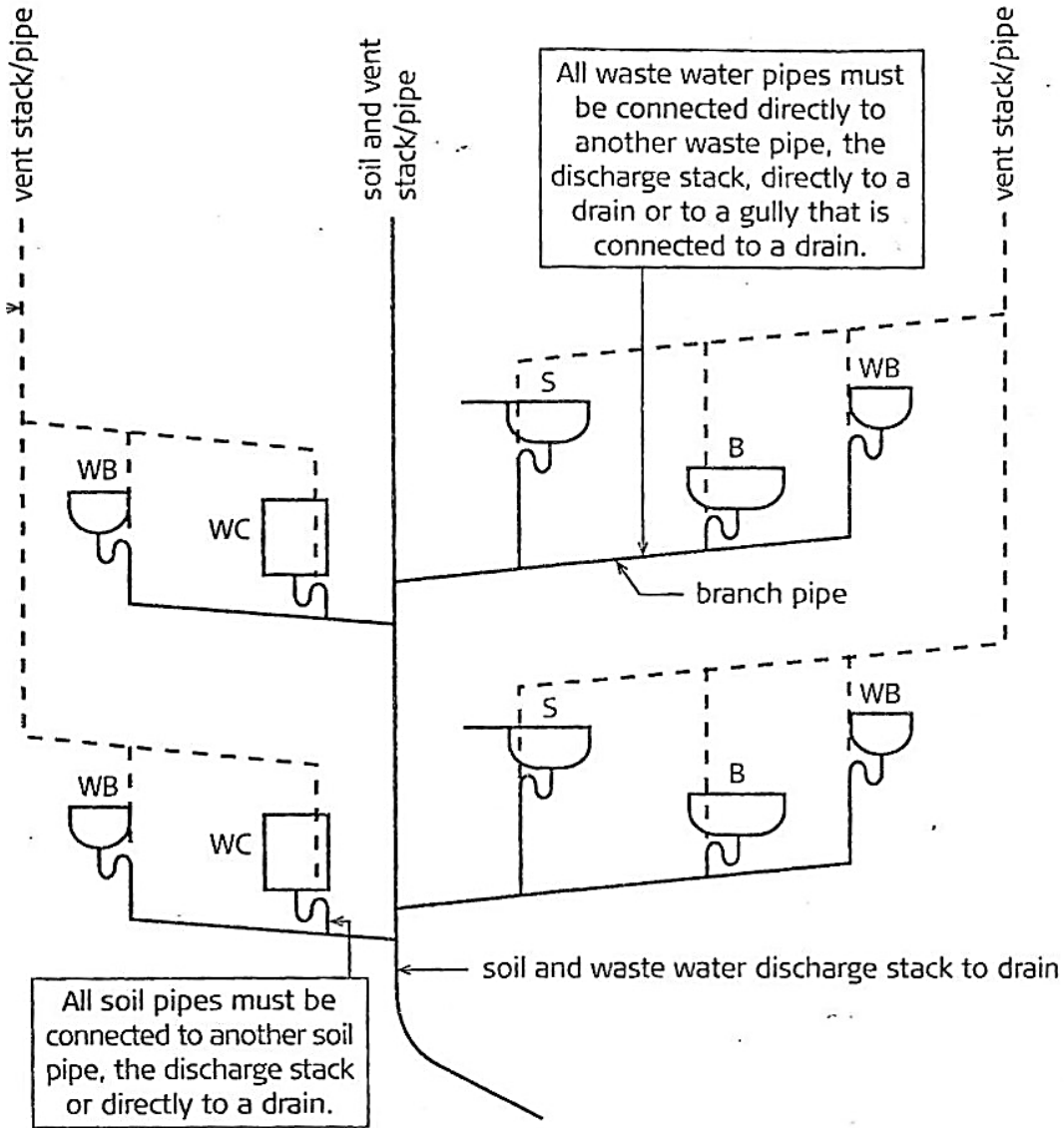
3.2
- Stainless steel neoprene rubber coupling joints used to join plain-ended cast-iron pipes and fittings
- Rigid Kwik Seal joint used on spigot and socket-ended cast-iron pipes (2)

3.3 3.3.1 In a one-pipe system soil water and wastewater from sanitary fixtures such as toilet pans, baths, kitchen sinks, etc. flow through either soil or waste pipes respectively into one common discharge pipe or stack.

3.3.2 In a two-pipe system there are two separate discharge pipes or stacks. One soil and vent pipe discharges soil water directly into the underground drain and one waste and vent pipe which first discharges wastewater into a gully and then into the underground drain.

(2 × 2) (4)

3.4



(6)

3.5
- Prevents smelly or foul air from entering through an insufficiently sealed water seal trap
- Keeps air pressure inside the drainpipes as close as possible to the atmospheric pressure (air pressure outside the pipes) (2)

[16]

QUESTION 4: SANITARY INSTALLATION

4.1 Impermeable materials are waterproof, not allowing liquids or gases to pass through. (2)

4.2
- Directly into a storage cistern installed above the water closet pan
- Directly into a water closet flush valve installed above the water closet pan

(2 × 2) (4)

4.3
- Soil-water fixtures should be made from waterproof and rustproof material with a smooth surface that can be easily cleaned.
- Soil-water fixtures are designed so that soil-water discharges through a water seal trap connected to a soil discharge pipe.
- All soil-water fixtures, except the bidet, are designed to receive and dispose of human waste.
- Soil-water fixtures may never discharge into a gully.
- The installation of soil-water fixtures must comply with the national standards and regulations. (Any 3 × 2) (6)

4.4
- Standard toilet flush valve
- Junior toilet flush valve (2)

[14]

QUESTION 5: RAINWATER SYSTEM

5.1
- GMS
- PVC
- Fibre cement
- uPVC (4)

5.2
- It has been impacted, modified and has ultraviolet stability.
- It's white colour is reflective and designed for high-impact performance and stability against harsh climate conditions.
- It is corrosion-resistant and therefore unaffected by coastal atmosphere and resistant to industrial pollution.
- It is lightweight for easy transportation and installation.
- Its excellent flow characteristics allow for low-maintenance and trouble-free performance. (Any 3 × 1) (3)

5.3
- Position a fascia bracket next to the socket end of the gutter.
- Piece a second fascia bracket in a similar position under the adjoining gutter at the socket end.
- Measure the distance between the two brackets to ensure they are evenly spread.
- If the brackets are further apart, place it evenly in the space.
- When securing gutter outlets and angles, use two fascia brackets and place one under each socket format of the fittings.
- Once the fascia brackets are all aligned and secured, remove the plumb bob and line.
- Fit the gutter and fittings into the fascia brackets. (Any 5 × 1) (5)

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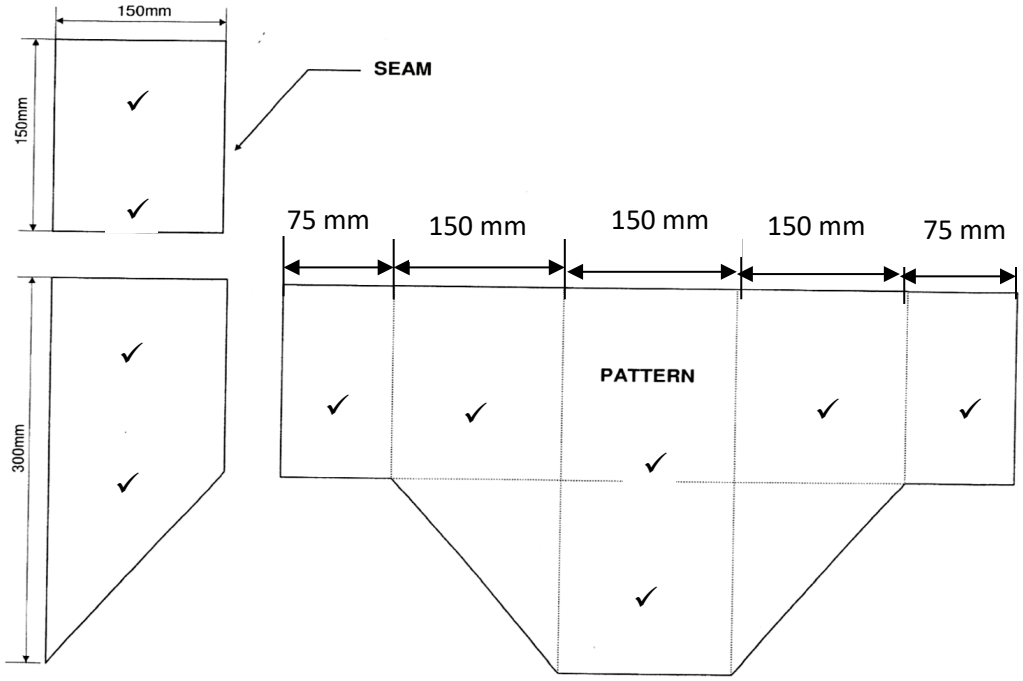
5.4 Firstly, measure, mark out and cut all gutters to the required lengths.✓ Then put the gutter together on a floor or a bench.✓ Do this by inserting the gutters and marking off the positions of the overlap joints that need to be made.✓ When joining two gutters together or where joining a gutter to a gutter component, insert one end of the gutter into the other gutter or component to make a joint.✓ Each joint must have an overlap of at least 100 mm.✓

(Any 4 × 1) (4)

5.5 GMS pipes are not resistant against the corrosive nature of the coastal air or atmospheric conditions. (2)

[18]

QUESTION 6: VENT-PIPE FLUSHING



[10]

QUESTION 7: TRENCHING, EXCAVATION AND TRENCH SUPPORT

7.1 To prevent possible dangers that may be caused by carelessness; trenches are not protected by the required safety rules/procedures and regulations (2)

7.2
- Read and interpret plans and drawings correctly.
- Interpret and understand abbreviations and symbols.
- Identify on-site soil conditions.
- Compensate with recommended types and methods of trench support.
- Identify different types of drain and sewer installation to be used in certain situations.
- Correctly measure, set out and mark out drain layout according to plans and drawings. (Any 3 × 1) (3)

[5]

TOTAL: 100

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