Method Statement for Installation & Leakage Testing of Drainage Piping

During transportation pipes must be handled with care. Do not drop or drag pipes especially on hard surfaces. This is particularly important where the pipe ends have been already prepared in the form of spigots (e.g. chamfered ends) and integral sockets, wherever possible the loading and unloading of pipes to be carried out manually by hand. When mechanical lifting equipment is to be used, no metallic slings, hooks or chains should be used in direct contact with the pipe. Ropes or web slings are preferred, as they will not damage the pipe wall.

Storage of Drainage Pipes onsite

Pipes should be stored on a flat dry level surface free from sharp projections, stones or other objects likely to cause point loading or pipe deformation. Timber supports spaced 1.5m apart along the pipe can be used to support the pipes. The width of the stack should not exceed 3m.

Pipes of different sizes should be stacked separately or where this is not possible, hose with larger diameters and/or thicker walls should be placed at the bottom of the stack. The height of the stack should never exceed 7 layers or maximum 2m high. If prolonged storage is needed (more than one month) or where the temperature exceeds 23^{o}C then the stack should not exceed 4 layers or maximum 1m high.

All pipes and fittings should be properly covered with tarpaulins to protect them from UV rays. The tarpaulins are to be fixed to the wooden supports, which allow a free passage of air around the pipes. Fittings will be stored in sheltered conditions in the boxes as supplied to protect them from weathering and accidental damage.

Above Ground Installation of drainage pipes

1. Ensure that the mating areas of spigot and socket are thoroughly clean and square
2. Install pipes with the appropriate hangers and clamps at every 1 meter of possible distance.
3. Set the pipes joints properly and use solvent cement for jointing.
4. Accurate axial alignment of the spigot prior to joining is important.
5. Complete the joint by applying leverage to the following socket and using a timber block to prevent damage.

Under Ground Installation of Drainage Pipes

Trench Formation The trench shall be excavated by a Hand/Back hoe Loader, after the area of excavation is identified, The formation of the trench must consist of stable, uniform and smooth soil devoid of irregularities for direct laying of pipes, Compaction for the full width of the pipe trench shall be to at least 95% Modified Proctor Density plus 300mm from each side and no wider than the pipe dia plus 600mm from each side, while the depth of the trench shall be150mm below the pipe invert level where a layer of 20Mpa. Concrete is laid with on average depth of 75 mm to maintain the 150mm below invert level of the pipe (wherever applicable).The excavated material shall be placed on one side of the trench leaving the other side clear for pipe handling, and the bed of the trench should be smoothened out evenly to provide a uniform support for the pipe. While excavating 2number of labours should be present with the excavating machine to avoid any damages that can occur while excavating to any of the underground services.

Method Statement for Installation of Drainage Pipes

1. Mark routing of pipe work according to approved shop drawing.
2. Install piping as per approved shop drawing.
3. All horizontal drainage piping shall be installed with2% slope unless otherwise indicated.
4. Install fittings for changes in direction and branch connections with appropriate branches, bends and long sweep bends.
5. Sanitary tees and short sweep ¼ bends may be used if change in direction of flow is from horizontal to vertical
6. Use long turn double Y-branch and 1/8 bend fittings if two fixtures are installed back to back or side by side with common drain pipe.
7. Do not change the direction of flow more than 90degrees.
8. Use the proper size of standard increasers and reducers if pipes of different sizes are connected.
9. Reducing the size of drainage piping in direction off low is prohibited.
10. Install encasement on underground piping according to ASTM A 674, AWWA C105/ A 21.5.
11. Connect Soil and waste piping to exterior sanitary sewerage piping. Use transition fittings to join dissimilar piping material.

Installation of Drainage Pipes in Raft Slab

1. After getting the all civil clearances (including foundation layout, levels, blinding, water proofing &steel fixing), prepare the pipe length required as the approved shop drawing for the laying through the steel fixture.

2. Make sure the pipe slope levels are as per the approved shop drawing otherwise as indicated.
3. Pipe to be tied properly as maintaining slope according to approval.
4. Follow necessary steps of installation sequences with leak testing as explained in technical specification and as per below procedure.
5. Prior to the concrete filling make sure all the installation has been tested for leakage and approved.

Drainage Pipe Installation & Jointing Works

1. Measure length of pipe required, making due allowance for any pipe fittings to be used and cut the pipe to the measured length making sure that the ends are cut square and all burs are cleaned.
2. The spigot and socket to be jointed should be carefully examined for any damage which could impair the jointing procedure.
3. The spigot insertion depth should be measured as the depth from the mouth to the shoulder of the socket.
4. The insertion depth should be marked on the spigot using marker.
5. The jointing system for drainage piping system is “Solvent weld”.
6. The mating areas of the spigot and the socket should be thoroughly cleaned using the pipe cleaner and a clean rag.
7. Using a brush apply an even layer solvent cement to the spigot and socket mating surfaces. The cement should be applied in a lengthwise direction and not with a circular motion. The cement should be applied simultaneously to the spigot and socket by two people.
8. Immediately following cement application ensure that the pipe is suitably anchored, and push the spigot home in the socket without turning the pipe. The spigot should be inserted with a steady, continuous motion and held in place for 20 seconds. Remove the surface cement from around the mouth of the socket.
9. Leave the joint undisturbed for five minutes and then handle with reasonable care.
10. Plug all open ends of the pipe work after finishing the work.

Leak Testing of Drainage Piping

1. The piping system to be tested shall be closed by plugging and blanking all openings in the system in an approved manner.
2. Suitable plugs are inserted at the lower end of the drain or sewer and at the head of any connections.
3. A suitable bend together with a vertical length of pipe is fitted at the head of the sewer or drain to provide the necessary test head. The system then filled with water.
4. Close openings in piping system and fill with water to point of overflow. The sewer or drain under test should be left filled with

water for at least 2 hours during which no level drop should be observed to ensure that all piping and joints are not leaked.

5. During the water test, precautions should be taken to prevent any movement of the drain or sewer.
6. All ends shall be kept plugged after completion of test to protect from debris.
7. After successful testing & Inspection of pipe work, covering of pipe work can proceed as per approved drawing details.

Back-filling After Pipe Installation Embedded in concrete:

1. Place the pipe in the containment with pipe support members
2. Maintain the slope properly (2%) or as shown on drawing

Buried in soil:

1. Back-filling shall take place immediately after the entire test has been approved by the client/consultant
2. Provide warning tapes or detectable warning tapes before final back filling.
3. The excavated material shall be used as backfilling material and back filling material shall be uniformly wet with water.
4. The backfilling shall be done in layers that do not exceed 300mm of well compacted layer which the compaction will be done by a plate compactor for the said layer, each layer of backfilling shall proceed after the approval for the compacted layer is given for the previous layer.

Steps of Installation for Rain Water Drainage

Below is given a step wise procedure for Rain Water Drainage Pipe Installation and method statement. This procedure can be applied on any kind of installation work i.e. any kind of building like school, hospital, mall, villa etc.

Install the piping as per the following sequence and instructions:

1. During the slab work necessary sleeves must be provided as per the approved drawings in order to do smooth rainwater piping installation works.
2. Before start of the work ensure the clearance from the civil contractor for the area, where the piping works to be carried out is obtained.
3. Remove the pipe sleeve provided for rain water outlet during the slab work.
4. Check the roof water proofing details.
5. Make sure the rainwater outlets are approved and of correct size.

6. Install the approved quality rain water outlet as per the specification and approved drawings.
7. Fix the supports/brackets in proper intervals as per the standard or as per drawing details, with approved supporting materials for vertical rain water Pipes
8. Install the vertical rain water drain pipes as per the approved drawings.
9. Check with plumb level for verticality of the pipes during& after installation.
10. Make all the supports rigid after confirming the plumb level.
11. Provide clean-outs at every change of direction and as per drawing.
12. In order to test the leakage close all openings and fill the pipe with water or smoke whatever is required by customer.
13. Inspect the joints for any visible leakage or use soap water.
14. If found any leakage repair it and retest the leakage.
15. Offer the work for inspection from client.