During inspection of building works, it has been observed that the Roof Terrace of existing buildings as well as newly constructed buildings is not being finished with proper slope, proper location and fixing of rainwater pipe, providing Khurra at the inlet of rainwater pipe, inside slope on the top of the parapet etc. These are very essential and important items and therefore the following guidelines are provided to follow in the field.

1. The top of the roof terrace should be provided with slope of 1 in 50 to drain the rainwater.
2. The location of rainwater pipes should be decided keeping in view the location of doors and windows and in such way that one rainwater pipe of dia 100 mm discharges the rainwater of roof area of 40 sqm. approximately. The spacing of the rainwater pipes can be taken as 6m. Approximately.
3. The top of coping provided on parapet should be provided inside slope towards roof terrace.
4. The Khurra of size 40 cm x 40 cm should be laid in cement concrete finished with 12mm cement mortar (1:3) at the inlet of each rainwater pipe.
5. The down take pipe should be provided with shoe and it should be 15cm above plinth protection.

To explain above guidelines, the copies of 3 sketches are enclosed herewith for ready references.

The field Engineers are directed to ensure the compliance of the above guidelines while finishing the Roof Terrace and fixing rainwater pipes.

Chief Engineer & Addl. Secy

Copy to following:
1. The Addl. Chief Engineer PWD Zone         (All)
2. The Superintending Engineer PWD Circle   (All)
3. The Ex. En. PWD Dn.                      (All)

It is also requested to bring the above guidelines under the notice to all Asstt. Engineers under your control.

Chief Engineer & Addl. Secy.
Problem No. 6: Water not going smoothly through rainwater pipes on the roof and staying around the mouth of the pipe.

**Causes**

(i) Khurra not provided near the rain water pipe.
(ii) Strainer not provided.

**Remedies**

(i) Provide khurra near the mouth of rain water pipe as shown below (Fig. 110)
(ii) Strainer should be provided having at least \(1/4\) to 2 times the area of rainwater pipes.
Remedy
(1) Reduce spacing of J-hook bolts i.e. increase the number of J-hook bolts.
(2) Tighten all nuts properly ensuring that every bolt has G.I. and
bitumen washer below the nut.
(3) If regular wind storms come in an area, it is better to put a
continuous M.S. called "wind tie" strip running across A.C. sheets and
in the line of bolts over which nuts can be tightened.

Problem No. 4: Plinth protection getting broken where rainwater pipe from roof throws the water.

Causes
Water from rainwater pipe hits the plinth protection vertically. Due
to the continuous hitting with increased pressure of water, plinth protection
gets damaged locally at that place.

Remedy
Provide shoe at the end of rainwater pipe as shown in fig. 106 so
that water doesn't hit the plinth protection vertically.

Problem No. 5: Water staying on the roof here and there.

Cause
Slope over the roof for drainage of water not properly provided.

Remedy
Roof drainage is a very important aspect in the building. For proper
roof drainage roof should be divided in few portions (if roof is big) and
then each portion should be sloped towards the corresponding rain
water pipe by creating proper ridges at various places. In actual
execution correct slopes and ridges as planned should be achieved
through water level and marking 'thias' before casting the concrete.
The following diagrams show a typical arrangement for drainage of
drain pipes (Fig. 107 to 109)

Example 1: Drainage of a rectangular roof.