

be the weighted average of the respective values shown in Table A-1 based on the percentage of each surface area to the total area.

Table A-2 shows the values of C that may be used in equation A-1 for certain composite areas in lieu of computing a composite value by the above method.

## 2. Tributary Area, A

The tributary area for each point of computation shall be based on actual field reconnaissance or use of appropriately scaled maps that clearly depict the drainage boundaries.

All of the area that will contribute runoff to the drainage system shall be considered, regardless of the limits of the particular development under construction.

## 3. Critical Flow Time

The critical flow time is that time which results in the maximum flow rate for a given point in a drainage system. Maximum flow occurs when the product of the intensity, runoff coefficient and contributing area corresponding to the flow time is maximum.

The time required for water to flow from the most hydraulically remote point in the tributary area to the point in question is called the time of concentration. Using the intensity corresponding to this time and the entire drainage area in the Rational Method usually results in the maximum flow rate for the point.

The time of concentration to the first inlet of the drainage system is the sum of the overland travel time (from Figure A-1) and the gutter flow time. If the overland travel time is less than the minimum time shown in Table A-2, the value shown in the table shall be used. Determine time of travel for street gutter flow from Figure A-2, using one foot per second as a minimum.

When any part of the storm waters is conveyed to the point in question by pipes or open channels, the flow time in these conveyances shall be added to the inlet time to compute the total flow time. In complex drainage situations more than one computation may be required in order to determine the combination of contributing area and flow time which results in the maximum flow rate.

## 4. Rainfall Intensity, I

After determining the critical flow time, the Intensity Duration curves on Figure A-3 shall be used to determine the rainfall intensity for that time. The applicability of the curves in Figure A-3 has not been verified for areas outside the Critical Area.

ENGINEERING DEPARTMENT

CITY OF MERCED, CALIF

# STORM DRAIN DESIGN

## SD-14

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