What is an I.D.F. curve?

Intensity-Duration-Frequency Curves are statistical descriptions of the expected rainfall intensity for a given duration and storm frequency.

![Figure 19: Intensity-Duration-Frequency](image-url)
What is a Rainfall Curve?

It is the measure of rainfall depth as it varies throughout the storm.

Storm Behavior: Duration – depth – Intensity behavior
A rainfall curve (Figure 20) gives information on:

1. Storm duration (2.5 hours)
2. Storm depth (3.1 inches)
3. Storm Intensity (slope; max 6 iph)
4. Hydrograph time to peak
\[ T_p = T_{EL} + L_{ag} \]
\( T_p \) = time to peak on hydrograph
\( T_{EL} \) = End of long intense segment
\( L_{ag} \) = Drainage lag
\[ = 0.6 \cdot T_c \]
For example, Fig. 20 and \( T_c = 1 \) hr.
\( T_p = 0.7 + 0.6 (1) = 1.3 \)
From Figure 26, \( T_p = 1.35 \)

5. Hydrograph shape
Steep rainfall curve results in higher peak discharge; flat curve yields lower peak.

6. Hydrograph volume: for SCS like method, depth not shape affect volume of runoff

SCS Rainfall Distributions

![Figure 27: SCS 24-hour Rainfall Distributions](image)

Needed for several site designs. To create a design storm, multiply the Y axis of the curve by the 24-hour rainfall depth.

Center Peaking Distribution

Highest intensity at center of curve. These distributions are symmetrical in appearance. Example: type II SCS curve.
Other examples are those created using single IDF curves for one frequency.
Statistical distribution

Figure 34: Rainfall Curves Created from I-D-F

Figure 35: Statistical Distributions