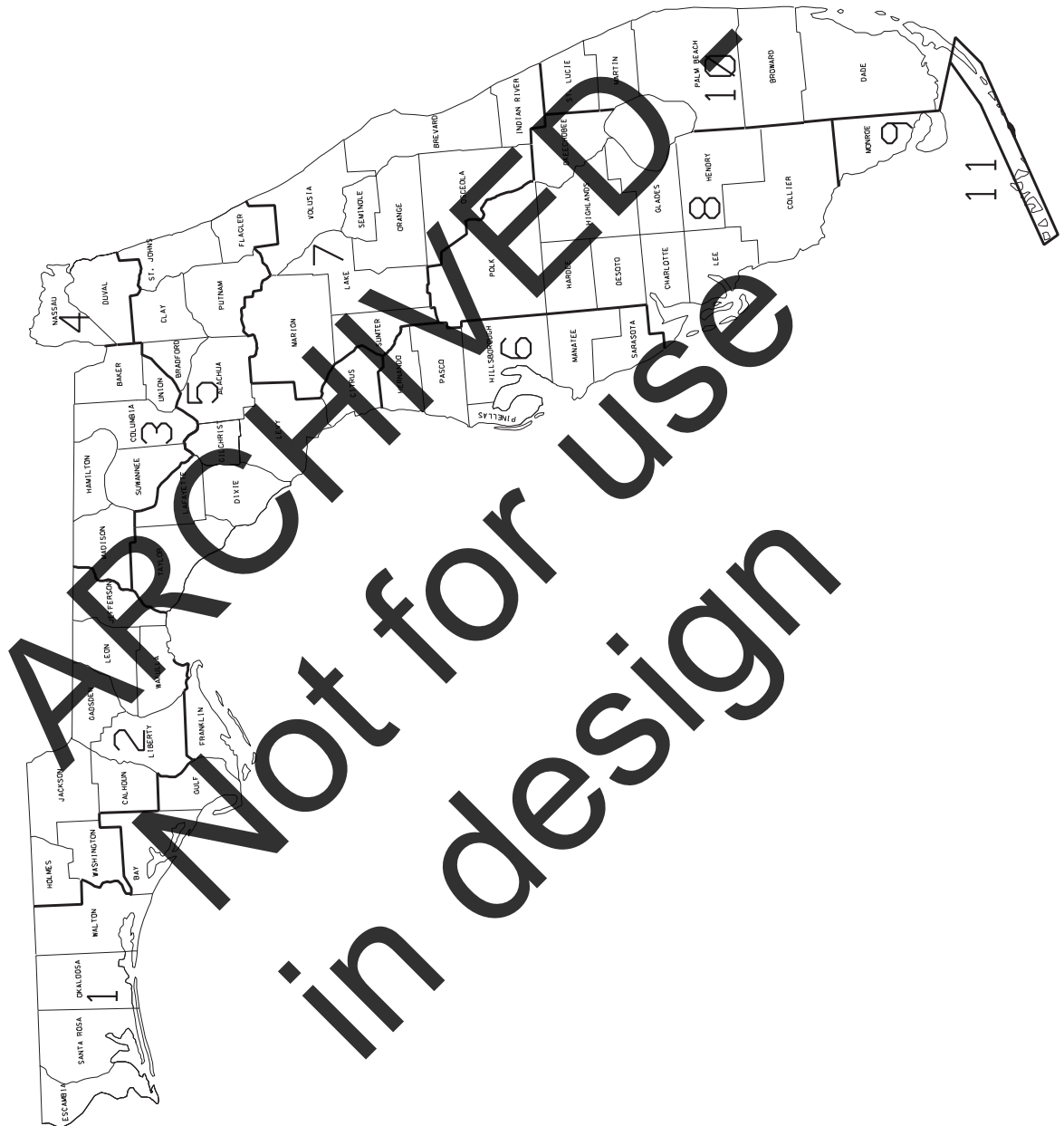
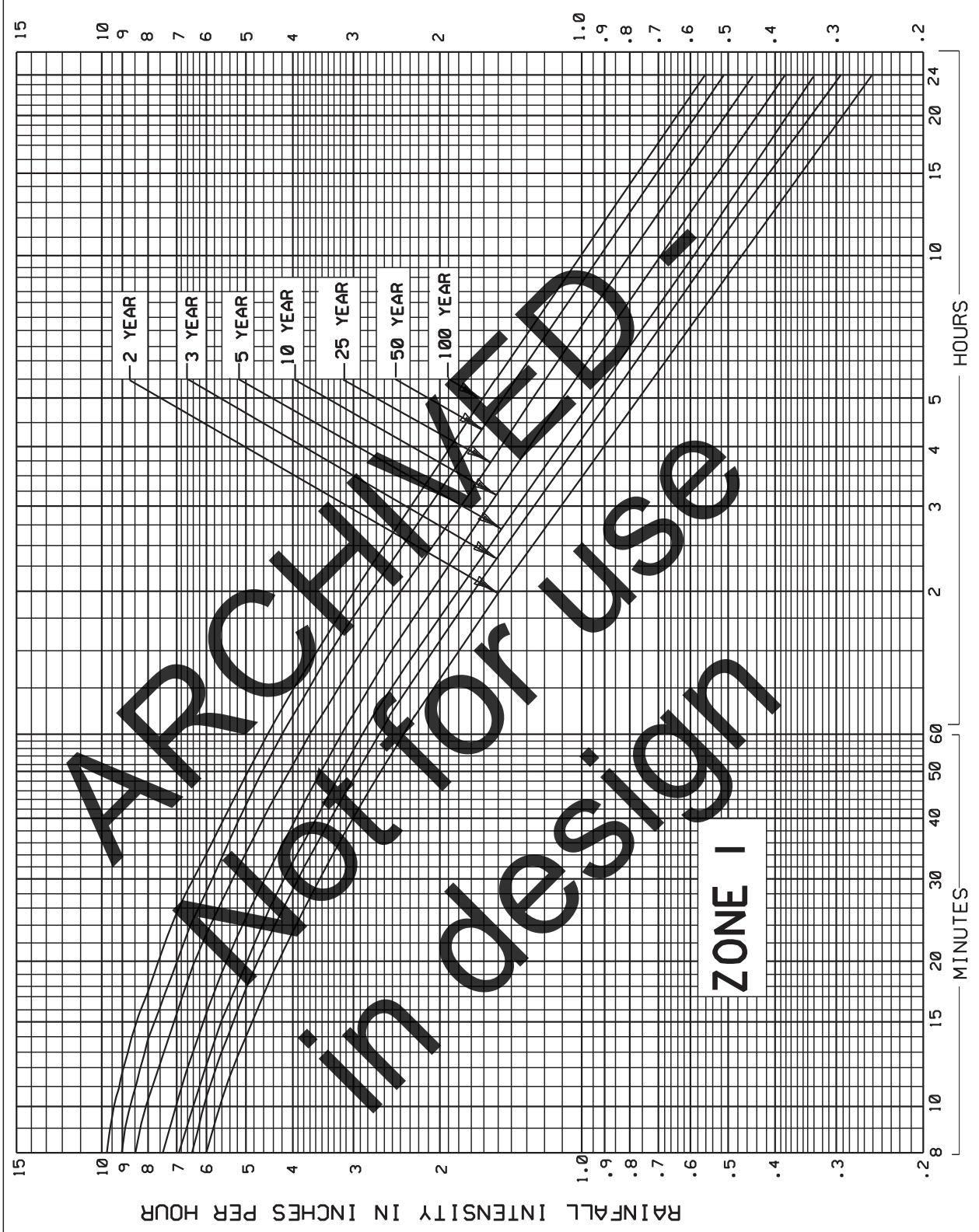


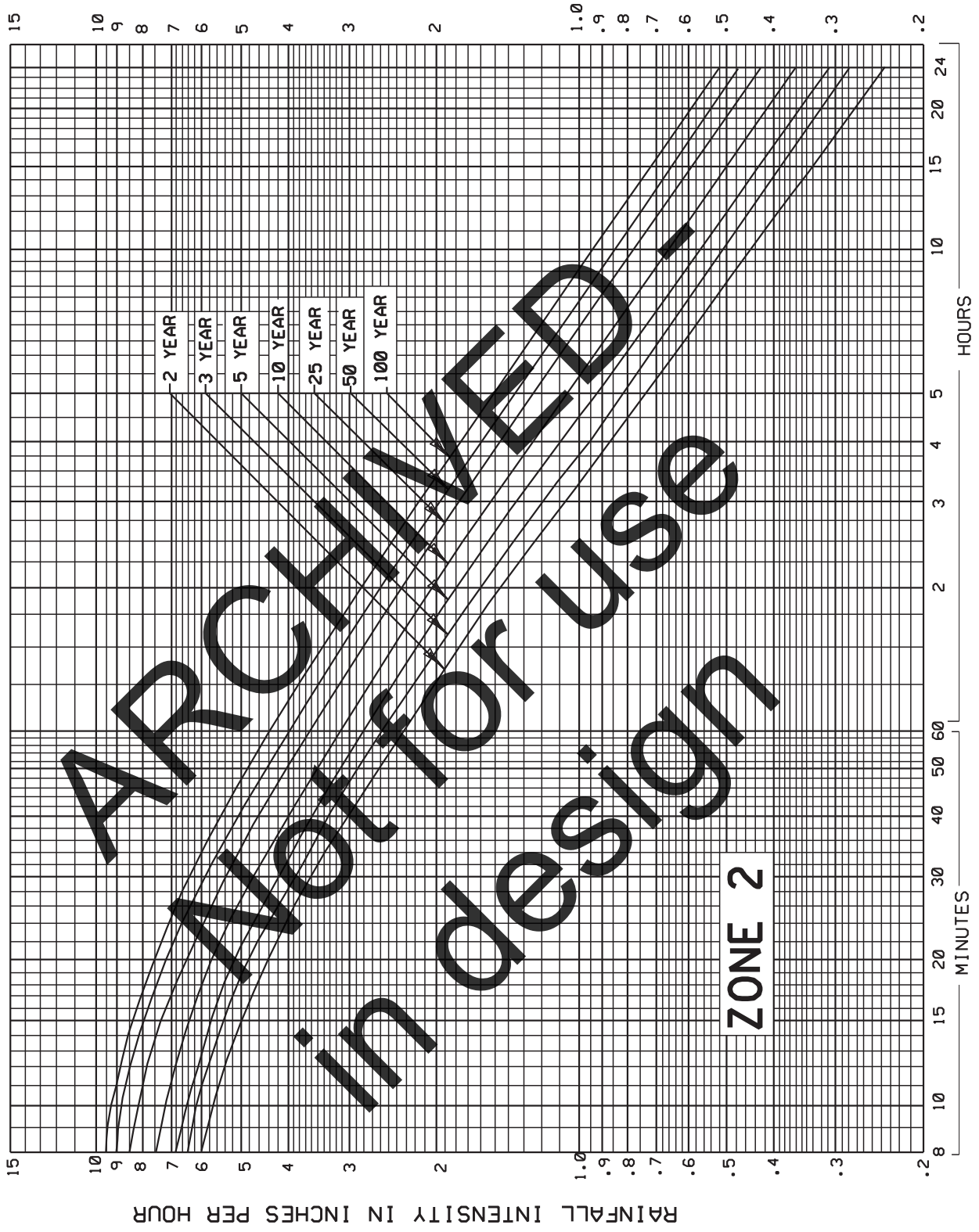
IDF Curves

ZONES FOR PRECIPITATION IDF CURVES DEVELOPED BY THE DEPARTMENT

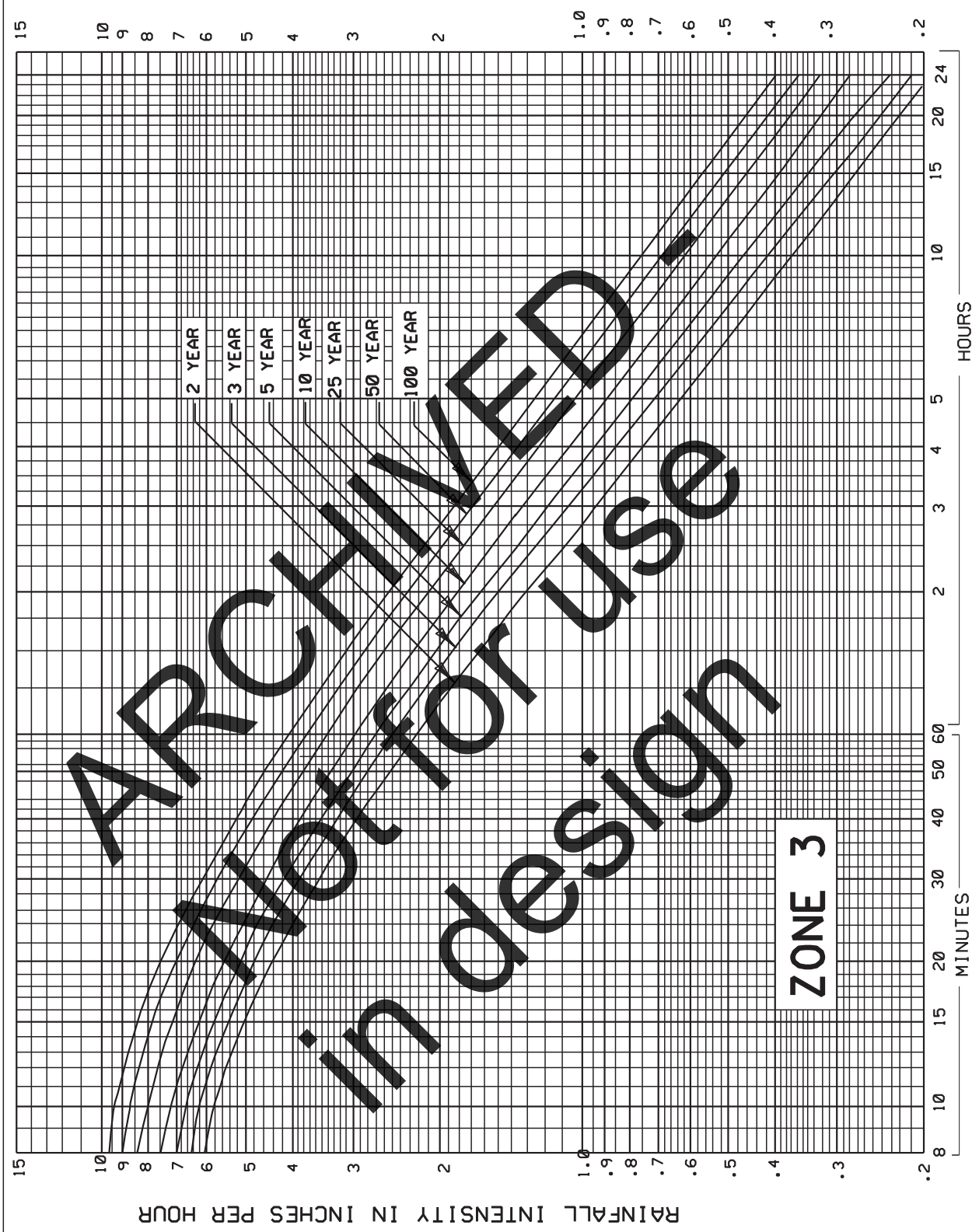




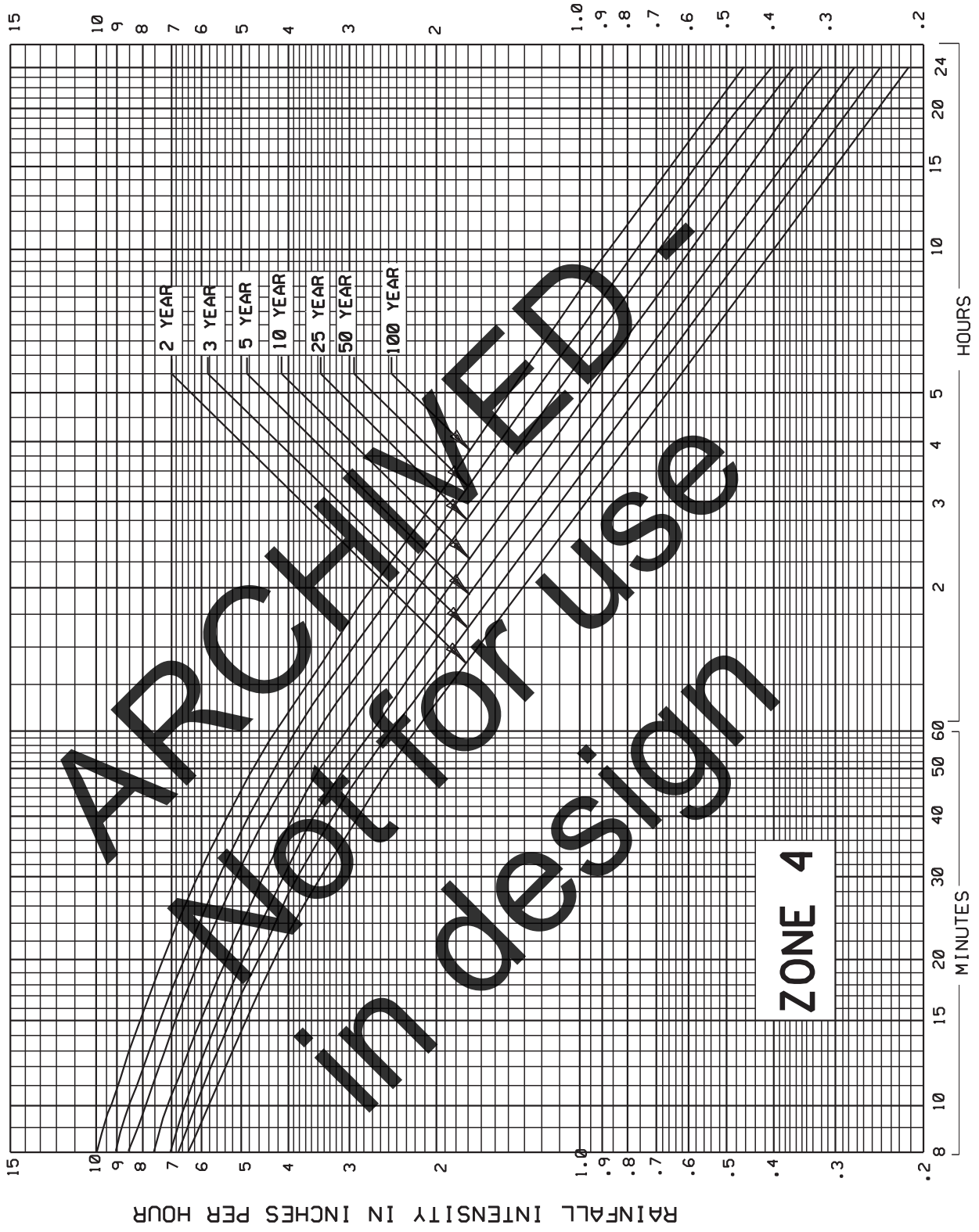
RAINFALL INTENSITY-DURATION-FREQUENCY CURVES
 ZONE 1



RAINFALL INTENSITY-DURATION-FREQUENCY CURVES
 ZONE 2



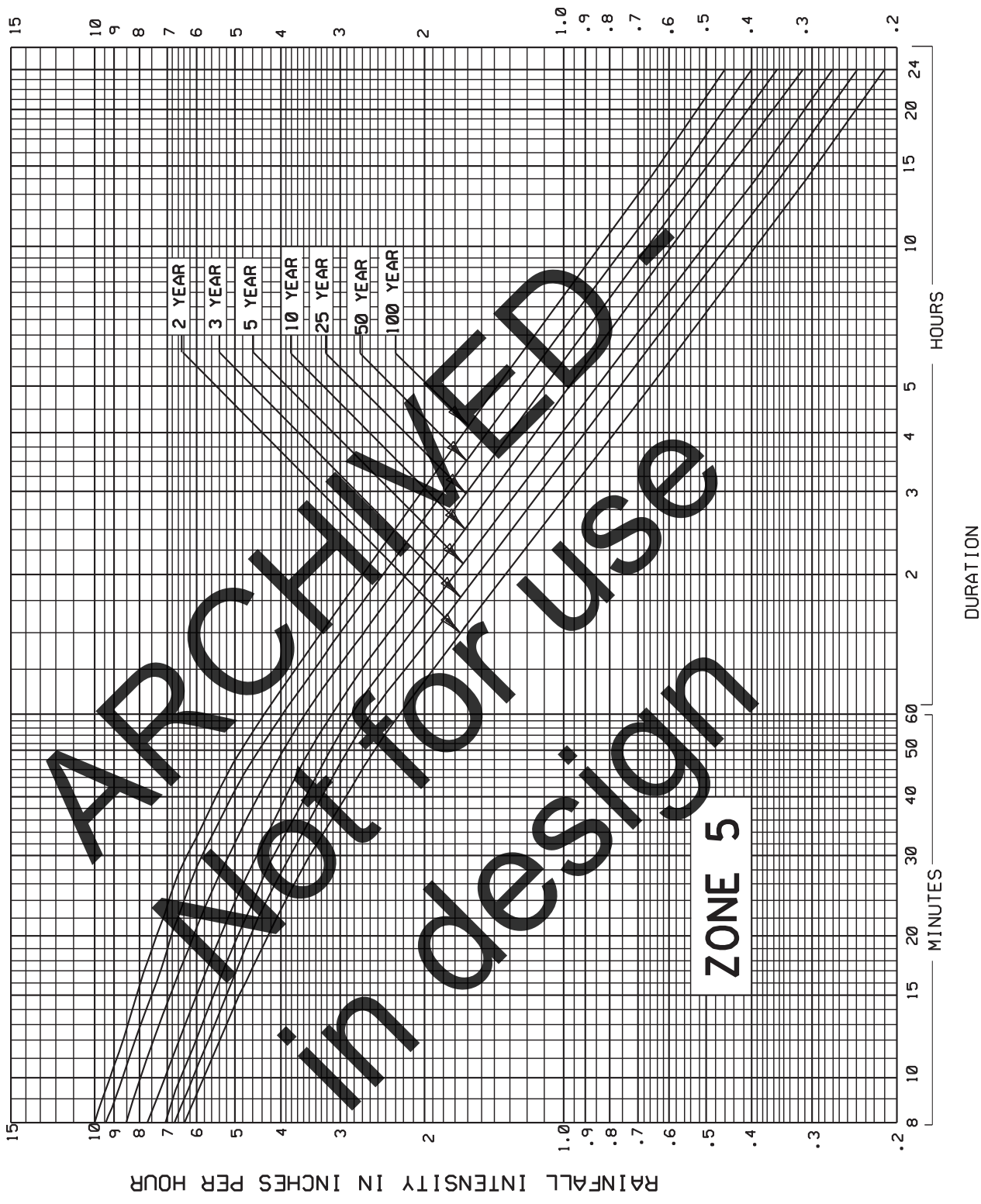
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 ZONE 3



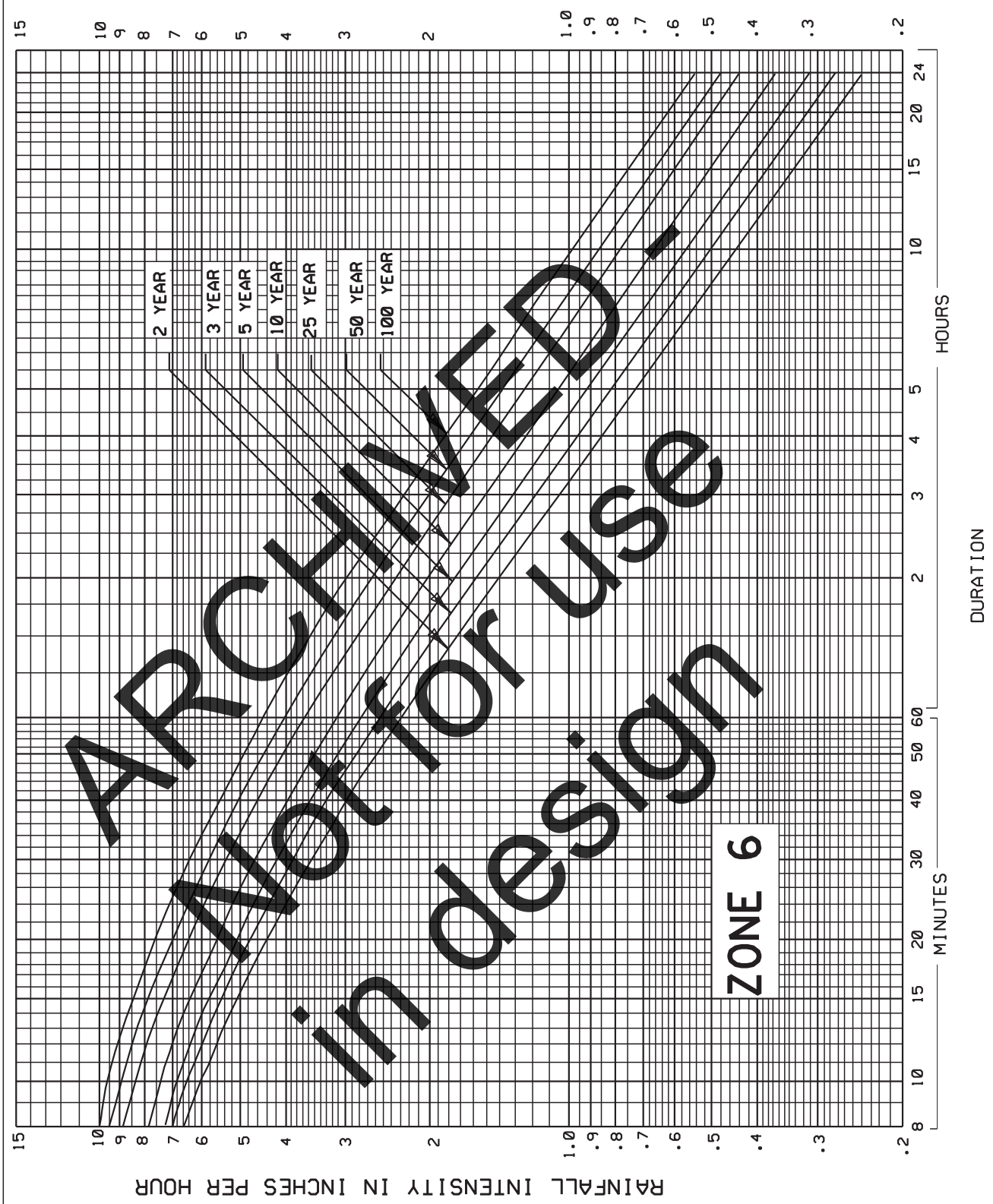
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ZONE 4

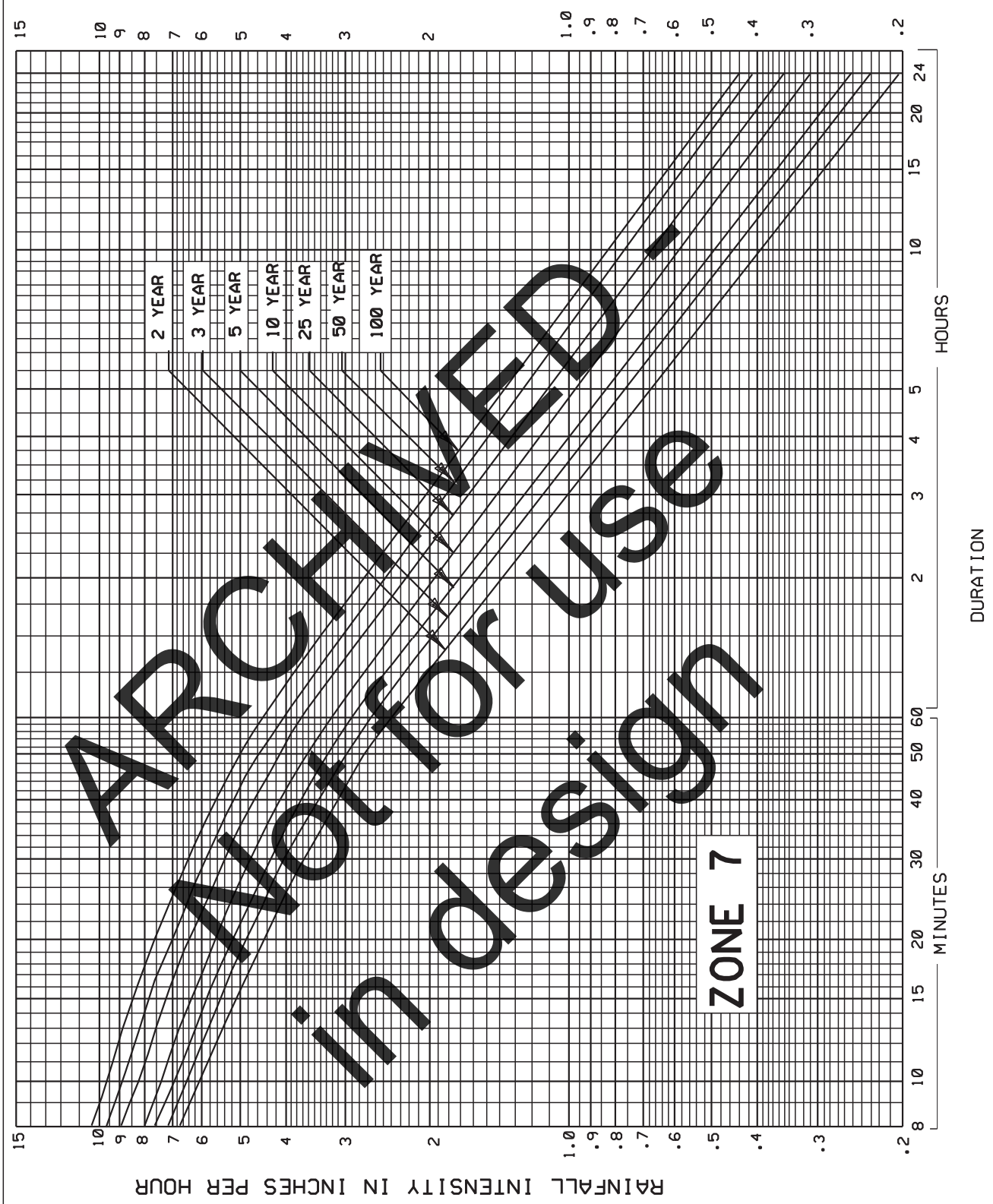
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ZONE 4



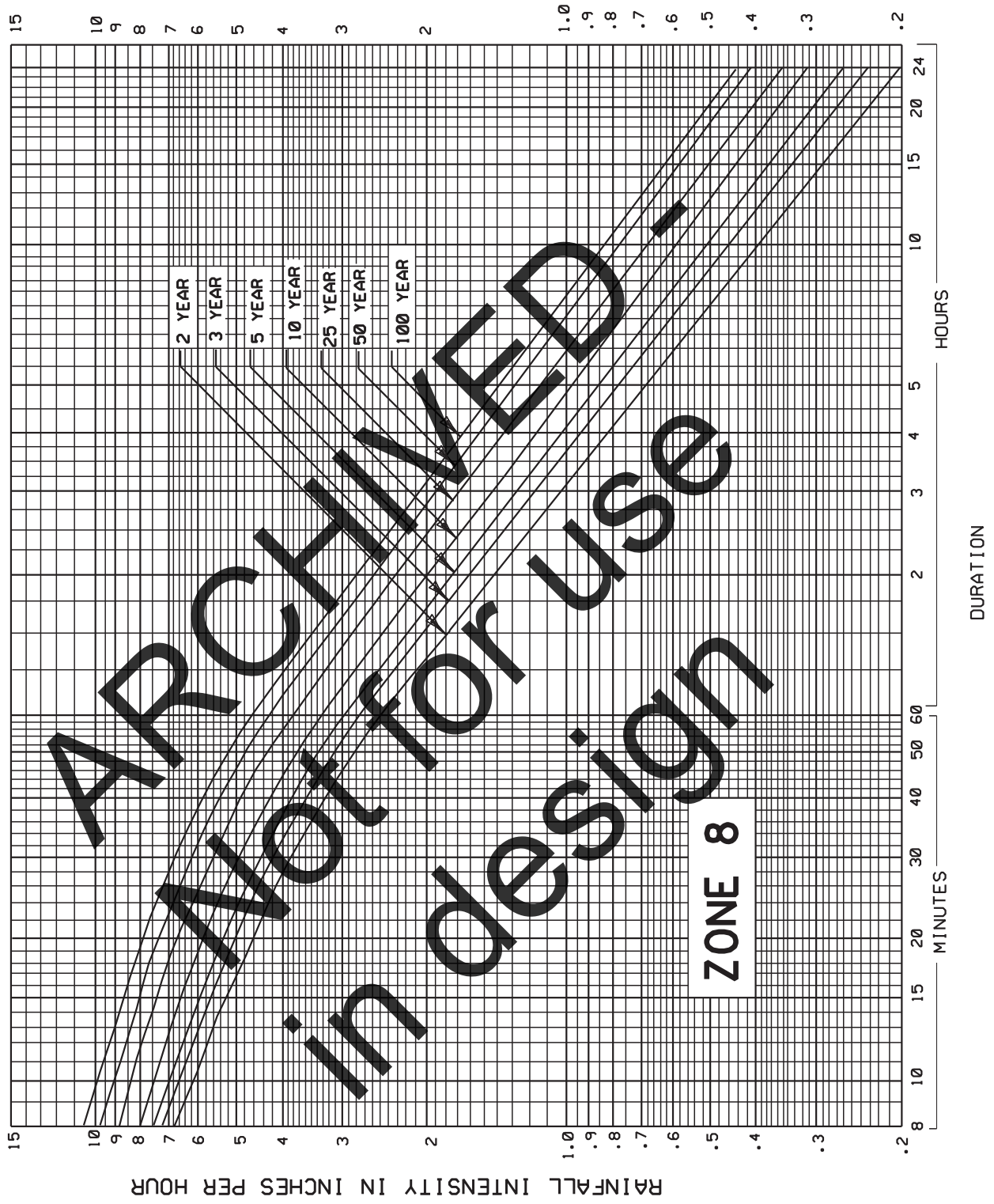
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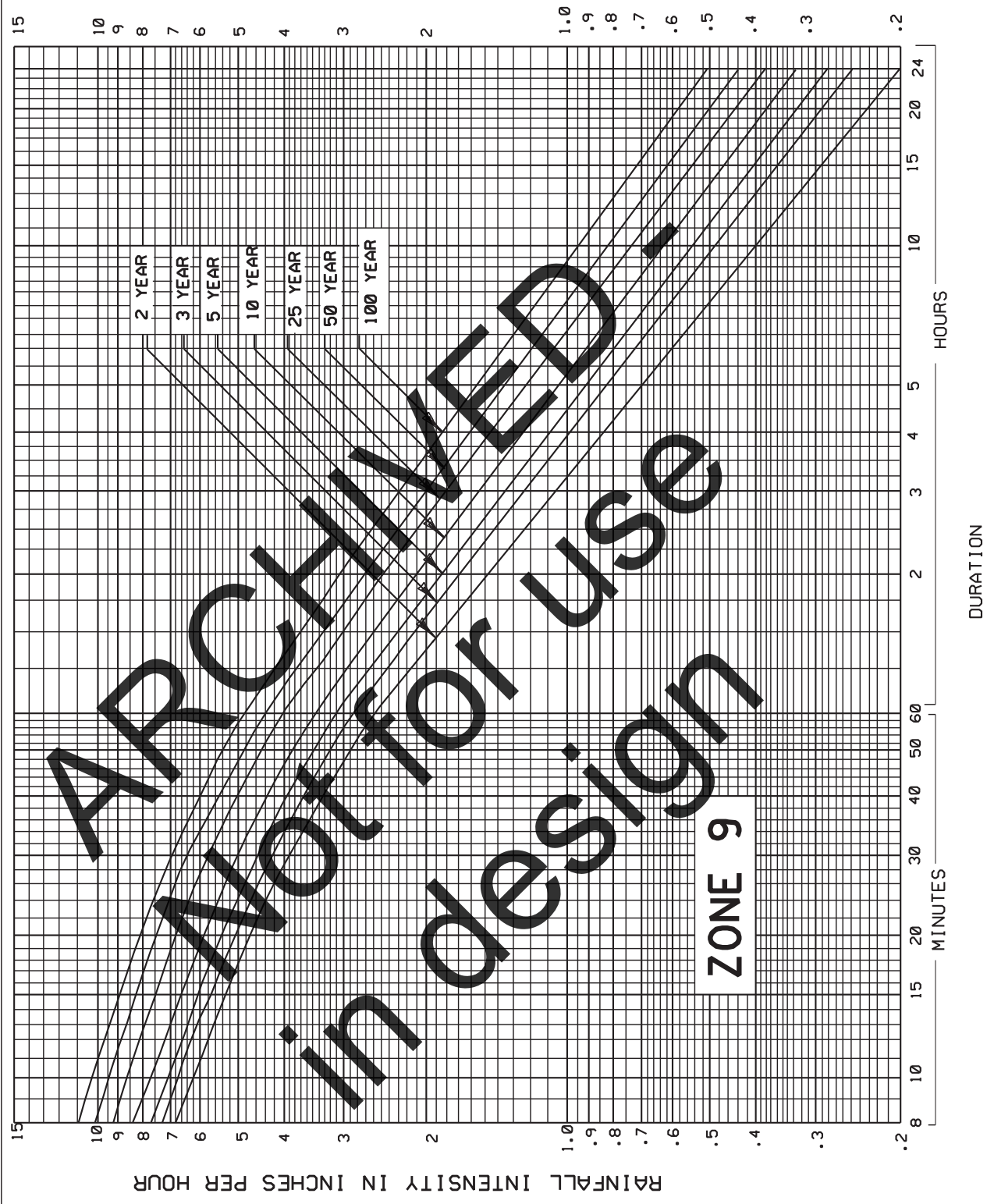
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ZONE 6



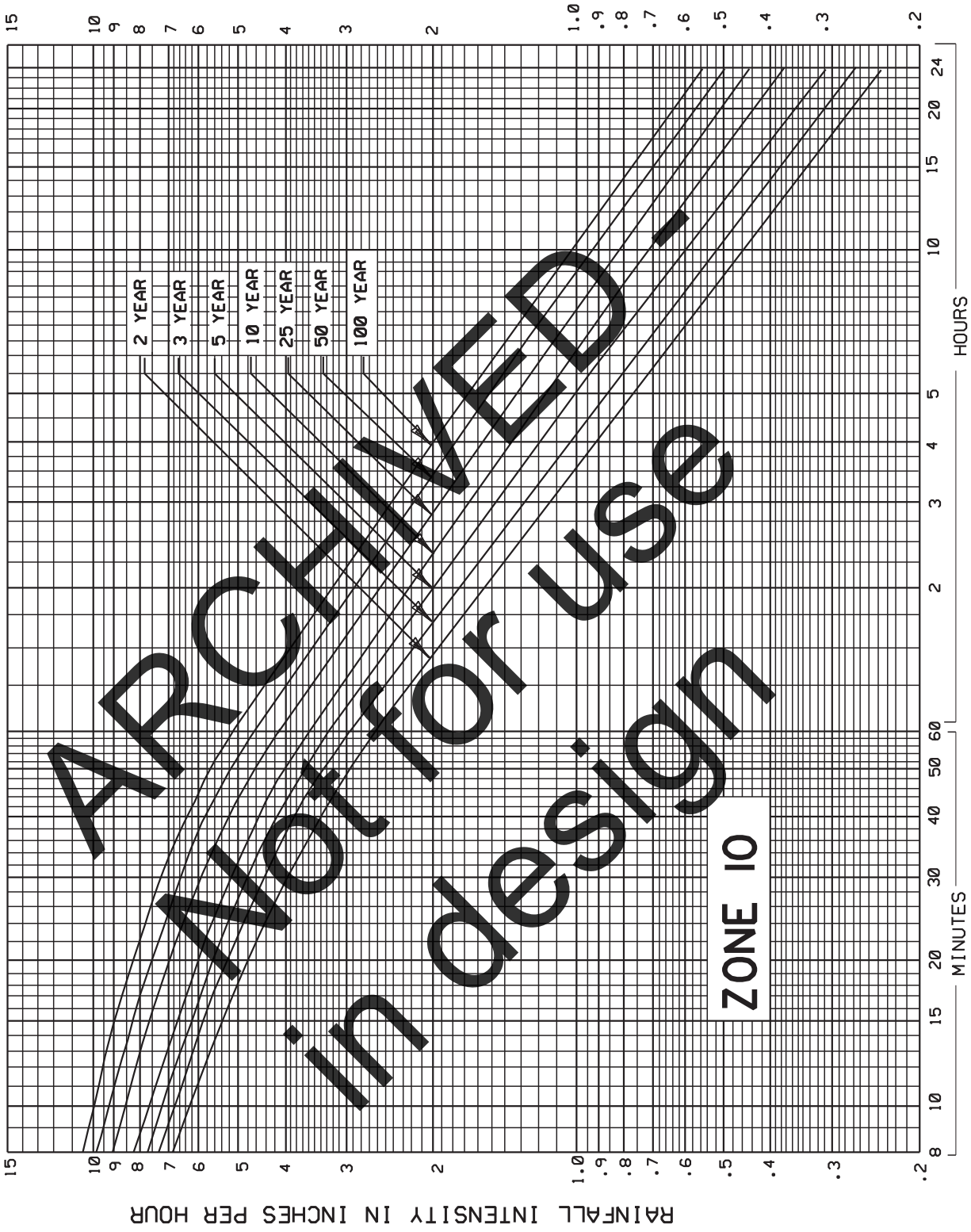
RAINFALL INTENSITY-DURATION-FREQUENCY CURVES
 ZONE 7



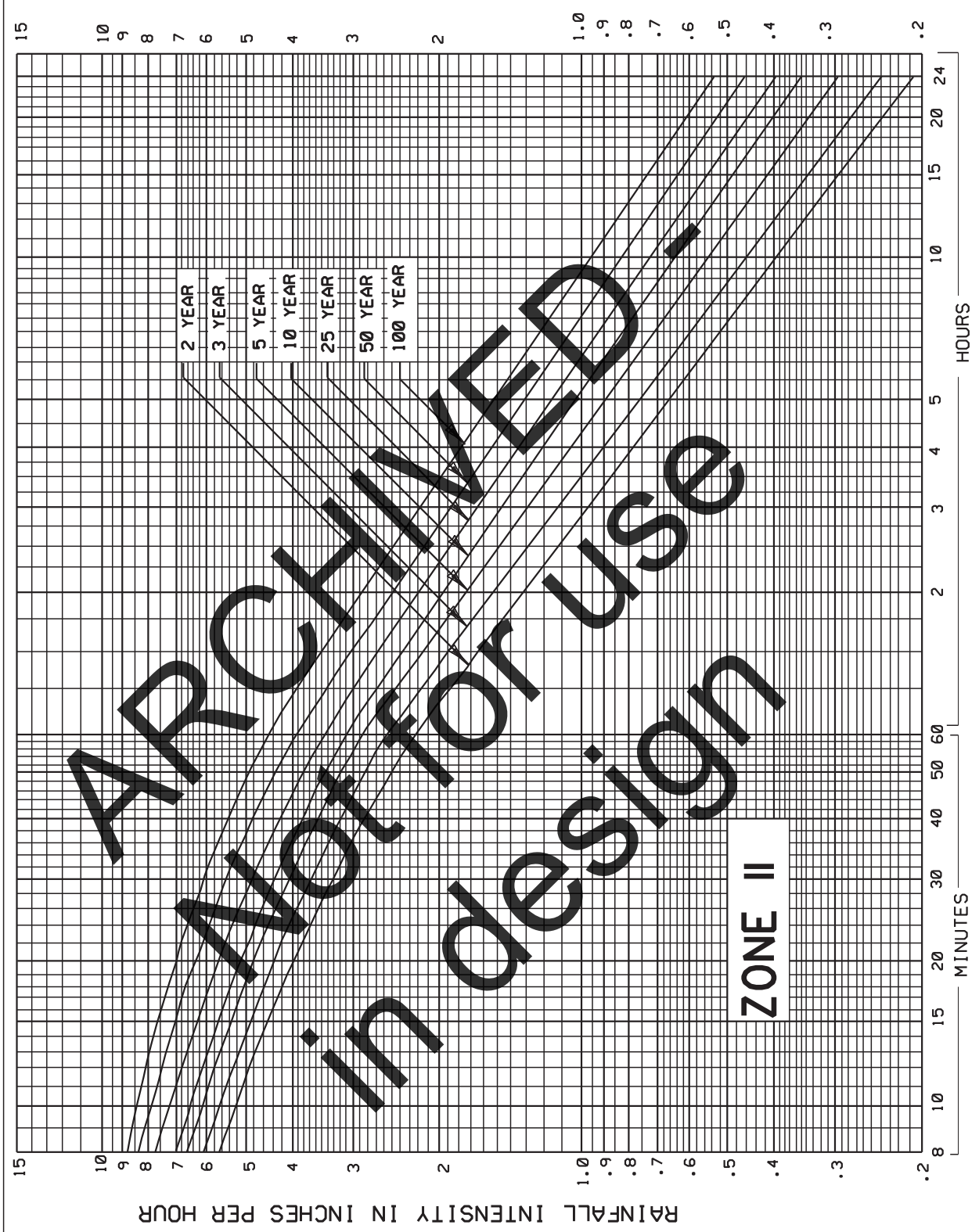
RAINFALL INTENSITY-DURATION-FREQUENCY CURVES
ZONE 8



RAINFALL INTENSITY-DURATION-FREQUENCY CURVES
 ZONE 9



RAINFALL INTENSITY-DURATION-FREQUENCY CURVES
 ZONE 10



RAINFALL INTENSITY-DURATION-FREQUENCY CURVES
 ZONE 11

Department Intensity Duration Frequency (IDF) Regression Equation Constants and Coefficients

(Page 1 of 3)

<u>Rainfall Zone</u>	<u>Storm Frequency in Years</u>	<u>Polynomial Coefficients for a Third Degree Polynomial</u>			
		<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
1	2	11.0983	-2.47240	0.00711	0.01886
1	3	11.97845	-2.67930	0.02444	0.01812
1	5	11.82413	-2.28931	-0.07735	0.02535
1	10	12.01819	-1.91394	-0.20146	0.03519
1	25	13.48736	-1.84775	-0.32753	0.04818
1	50	13.12334	-1.04283	-0.52846	0.06176
2	2	10.57745	-2.10106	-0.08181	0.02557
2	3	10.89437	-1.82103	-0.19244	0.03537
2	5	10.85901	-1.50267	-0.27902	0.04121
2	10	12.30743	-1.94991	-0.22855	0.03903
2	25	12.81040	-1.40033	-0.43207	0.05602
2	50	14.17099	-1.56750	-0.47317	0.06168
3	2	11.87566	-2.78202	0.02345	0.02058
3	3	11.40436	-2.01001	-0.18000	0.03550
3	5	11.42451	-1.65788	-0.29070	0.04438
3	10	11.51866	-1.25713	-0.41757	0.05430
3	25	11.30909	-0.90052	-0.70475	0.07704
3	50	12.16856	-0.12834	-0.82217	0.08822
4	2	12.75384	-3.55763	0.21171	0.00678
4	3	12.36825	-2.82718	0.00820	0.02248
4	5	11.81456	-2.18321	-0.14397	0.03283
4	10	12.54028	-2.13586	-0.20440	0.03866
4	25	12.76532	-1.45996	-0.42819	0.05666
4	50	14.56743	-2.19263	-0.30685	0.04897
5	2	12.89666	-3.55805	0.21227	0.00619
5	3	12.49905	-2.90429	0.04609	0.01794
5	5	12.28117	-2.34803	-0.11099	0.02995
5	10	13.68290	-2.93192	-0.00385	0.02241
5	25	12.69696	-1.22300	-0.49561	0.06173
5	50	13.36862	-0.83912	-0.66880	0.07724

Polynomial Coefficients
for a Third Degree Polynomial

<u>Rainfall Zone</u>	<u>Storm Frequency in Years</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
6	2	14.09519	-4.17207	0.31773	0.00029
6	3	14.98331	-4.44963	0.35683	-0.00224
6	5	14.54762	-3.89935	0.22564	0.00674
6	10	14.35385	-3.10140	-0.01003	0.02525
6	25	16.15961	-3.48135	-0.00160	0.02677
6	50	15.67671	-2.52635	-0.26055	0.04609
7	2	12.10821	-2.79255	0.02002	0.02053
7	3	12.43360	-2.56458	-0.06903	0.02787
7	5	12.51872	-2.17764	-0.19805	0.03849
7	10	12.49556	-1.67116	-0.34901	0.05017
7	25	12.92209	-1.11084	-0.55019	0.06666
7	50	13.29550	-0.70482	-0.70152	0.07933
8	2	11.51282	-2.10568	-0.16578	0.03515
8	3	11.13440	-1.44999	-0.34027	0.04808
8	5	11.41155	-1.34465	-0.38409	0.05149
8	10	11.54908	-0.89694	-0.53000	0.06319
8	25	10.92111	0.51710	-0.93480	0.09473
8	50	11.58787	0.73605	-1.04111	0.10384
9	2	11.08062	-1.66022	-0.28464	0.04453
9	3	11.54667	-1.49353	-0.35960	0.05071
9	5	11.76664	-1.38391	-0.39880	0.05352
9	10	12.08400	-1.00328	-0.53661	0.06491
9	25	12.38592	-0.27352	-0.77352	0.08370
9	50	14.16172	-0.73486	-0.75377	0.08518
10	2	11.33384	-1.86569	-0.22813	0.04005
10	3	11.32916	-1.38557	-0.36672	0.05012
10	5	11.19083	-0.93165	-0.48526	0.05836
10	10	10.84265	-0.18976	-0.69575	0.07495
10	25	11.83969	0.09353	-0.84451	0.08783
10	50	11.59208	1.00204	-1.10384	0.10762

Polynomial Coefficients
for a Third Degree Polynomial

<u>Rainfall</u> <u>Zone</u>	<u>Storm Frequency</u> <u>in Years</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
11	2	10.09256	-2.25031	0.01661	0.01544
11	3	9.30810	-1.21587	-0.25504	0.03590
11	5	9.02699	-0.47796	-0.46784	0.05263
11	10	10.23814	-1.23242	-0.27724	0.03685
11	25	11.60811	-1.61200	-0.25239	0.03706
11	50	9.94772	-0.31312	-0.73271	0.07222

$$I = A + BX + CX^2 + DX^3$$

$$X = \log_e (\text{time in minutes})$$

These equations were derived from the rainfall curves and are not exact representations thereof. Appropriate values for X are 8 to 180 minutes.

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Example Application of Department IDF Regression Equations

EXAMPLE

Zone 6 - 50 years

$$I = A + BX + CX^2 + DX^3$$

$X = \log_e$ (time in minutes)

$$I = 15.67671 - 2.52635X - 0.26055X^2 + 0.04609X^3$$

<u>Time</u>	<u>I (curve)</u>	<u>I (calculated)</u>
8 min	9.4	9.7
10 min	8.9	9.0
20 min	7.2	7.0
30 min	5.9	5.9
40 min	5.1	5.1
50 min	4.5	4.6
60 min	4.1	4.1
2 hr	2.67	2.7
3 hr	2.02	2.0
4 hr	1.65	1.59*
5 hr	1.40	1.34*
10 hr	0.87	0.92*
15 hr	0.65	0.94*
20 hr	0.54	1.09*
24 hr	0.47	1.25*

* These values are provided for comparison purposes only, since the regression equations are not valid beyond a 3-hour period.
