URBAN HYDROLOGY FOR SMALL WATERSHEDS (TR-55)
PEAK DISCHARGE WORKSHEET
FOR CHAPTER 4 (APPENDICES D & E)

Project Cañas Optical By K. Hill Date 5-27-97
Checked ____ Date ____

Steps Peak Discharge Computations for up to 3 Storms: Type II, Duration 24 hours.

1. Data: Watershed Condition = Future (present or future).
Drainage Area (DA) = 8.0 acres. Ave. Watershed Slope (S) = 0.3 %.
600 x 500

2. Runoff Curve Number (CN)

Hydrologic Soil Group (Appendix B)	Land Use Description Include Treatment, Practice & Condition (Table 2-2)	CN (Table 2-2) (3)	% or Area (acres) (4)	Product (3)x(4) (5)
D	Industrial	93	50	4650
D	Pasture or Range Land	89	50	4450
	Totals =		100	9100

CN (weighted) = total col. (5) / total col. (4) [9100 / 100] = 91 ; use CN = 91

	1st Storm	2nd Storm	3rd Storm	
3. Rainfall Frequency (F)	10	25	100	yrs.
Rainfall Depth (P)	5.5	6.2	8.0	inches
4. Runoff Depth (Q) Use P, CN, and Table 2-1.	4.47	5.15	6.93	inches
5. Basic Peak Discharge (q) Use S, DA, CN, and Figure D-2. For graph labeled: ☐ Flat (S = less than 3%) ☐ Moderate (S = 3% to 7.9%) (check one) ☐ Steep (S = 8% & greater)	x 9.2			cfs/inch of Q
*6. Watershed Slope Factor Use S, DA, and Table E-1.	x .69			
7. Peak Discharge (q_p) where q_p = Steps #4 x 5 x 6	= 28.4	32.7	44.0	cfs

See Steps 8 to 13 for adjustments that may be applicable.

TR-55, CHAPTER 4 (APPENDICES D & E), PEAK DISCHARGE WORKSHEET (CONT.)

Steps Peak Discharge Computations with Adjustments

8. Data: Obtain if Adjustments are Applicable
Ponding and Swampy areas (PND) = — acres, ____ % of DA
Impervious Area (IMP) = 2.9 acres, 36 % of DA
Total Hydraulic Length (HL) = 800 feet
Hydraulic Length Modified (HLM) = 470 feet, 59 % of HL

	1st Storm	2nd Storm	3rd Storm	
Rainfall Frequency (F) from Step 3	10	25	100	yrs.
Peak Discharge (q_p) from Step 7	28.4	32.7	44.0	cfs
	X	X	X	
*9. Ponding and Swampy Area Peak Factor Use % PND, F, and Tables E-2, 3 or 4, Location in) ☐ at Design Point (E-2) Watershed: ☐ Center or Spreadout (E-3) (check one) ☐ Upper Reaches (E-4)	—	—	—	
*10. Watershed Shape Peak Factor Use HL with Figure E-1 and read; Equiv. Drainage Area (EDA) = ____ acres. Use Figure D-2 graph from Step 5, CN, and EDA for; Equiv. Peak/inch Runoff (q_e) = ____ cfs/in. Factor = [q_e / q from Step 5] x [DA / EDA]	X —			
Factor = [ ] x [ ] =	X			
*11. Impervious Area Peak Factor Use % IMP, CN and Figure 4-1.	X 1.08			
*12. Hydraulic Length Modified Peak Factor Use % HLM, CN and Figure 4-2.	X 1.16			
13. Adjusted Peak Discharge (q_p) q_p = q_p (from Step 7) x Steps #9 x 10 x 11 x 12	= 35.3	40.6	54.6	cfs

* If the adjustment is not applicable, enter a Factor of 1.0

URBAN HYDROLOGY FOR SMALL WATERSHEDS (TR-55)
PEAK DISCHARGE WORKSHEET
FOR CHAPTER 4 (APPENDICES D & E)

Project Cañas Optical By K. Hill Date 5-27-97
Checked ____ Date ____

Steps Peak Discharge Computations for up to 3 Storms: Type II, Duration 24 hours.

1. Data: Watershed Condition = Present (present or future).
Drainage Area (DA) = 12.5 acres. Ave. Watershed Slope (S) = 0.3 %.

2. Runoff Curve Number (CN)

Hydrologic Soil Group (Appendix B)	Land Use Description Include Treatment, Practice & Condition (Table 2-2)	CN (Table 2-2) (3)	% or Area (acres) (4)	Product (3)x(4) (5)
D	Pasture or Range Land			89
	Totals =			

CN (weighted) = total col. (5) / total col. (4) [ ] = ____ ; use CN = 89

	1st Storm	2nd Storm	3rd Storm	
3. Rainfall Frequency (F)	10	25	100	yrs.
Rainfall Depth (P)	5.5	6.2	8.0	inches
4. Runoff Depth (Q) Use P, CN, and Table 2-1.	4.26	4.93	6.69	inches
5. Basic Peak Discharge (q) Use S, DA, CN, and Figure D-2. For graph labeled: ☑ Flat (S = less than 3%) ☐ Moderate (S = 3% to 7.9%) (check one) ☐ Steep (S = 8% & greater)	x 12			cfs/inch of Q
*6. Watershed Slope Factor Use S, DA, and Table E-1.	x .69			
7. Peak Discharge (q_p) where q_p = Steps #4 x 5 x 6	= 35.3	40.8	55.2	cfs

See Steps 8 to 13 for adjustments that may be applicable.

TR-55, CHAPTER 4 (APPENDICES D & E), PEAK DISCHARGE WORKSHEET (CONT.)

Steps Peak Discharge Computations with Adjustments

8. Data: Obtain if Adjustments are Applicable
Ponding and Swampy areas (PND) = — acres, ____ % of DA
Impervious Area (IMP) = — acres, ____ % of DA
Total Hydraulic Length (HL) = 1120 feet
Hydraulic Length Modified (HLM) = 220 feet, 20 % of HL

	1st Storm	2nd Storm	3rd Storm	
Rainfall Frequency (F) from Step 3	10	25	100	yrs.
Peak Discharge (q_p) from Step 7	35.3	40.8	55.2	cfs
	X	X	X	
*9. Ponding and Swampy Area Peak Factor Use % PND, F, and Tables E-2, 3 or 4, Location in) ☐ at Design Point (E-2) Watershed: ☐ Center or Spreadout (E-3) (check one) ☐ Upper Reaches (E-4)	—	—	—	
*10. Watershed Shape Peak Factor Use HL with Figure E-1 and read; Equiv. Drainage Area (EDA) = 13 acres. Use Figure D-2 graph from Step 5, CN, and EDA for; Equiv. Peak/inch Runoff (q_e) = ____ cfs/in. Factor = [q_e / q from Step 5] x [DA / EDA]	X —			
Factor = [ ] x [ ] =	X			
*11. Impervious Area Peak Factor Use % IMP, CN and Figure 4-1.	X —			
*12. Hydraulic Length Modified Peak Factor Use % HLM, CN and Figure 4-2.	X 1.06			
13. Adjusted Peak Discharge (q_p) q_p = q_p (from Step 7) x Steps #9 x 10 x 11 x 12	= 37.4	43.2	58.5	cfs

* If the adjustment is not applicable, enter a Factor of 1.0

BIG LAKE ADDITION
ZONING: G MOBILE HOME

UNPLATTED
ZONING: "E" LIGHT COMMERCIAL

ROYAL INDUSTRIAL ADDITION
ZONING: "E" LIGHT COMMERCIAL

N 88°56'30" E
1525.45'

NW cor. SE 1/4
Sec 11-28-1W

LAKE

Water Surface

high bank

All of Lot 3 Drainage to Lake

LOT 3
BLOCK (1)
ZONING: "E" LIGHT INDUSTRIAL

1478.71'

35' BLDG. SETBACK

933'
N 90°00' W

37TH STREET SOUTH

COMPLETE ACCESS CONTROL

GRADE NORTH HALF OF LOTS 1 AND 2 TO DRAIN TO LAKE

LOT 1

LOT 2

UTILITY EASEMENT

YORK

BAEHR

"OATVILLE"

EXCEPTION TO PLAT
ZONING: "E" LIGHT INDUSTRIAL

YOUNG

SABIN

COMPLETE ACCESS CONTROL

GRADE SOUTH HALF OF LOTS 1 AND 2 TO DRAIN TO MAC ARTHUR ROAD

35' BLDG. SETBACK

290'

290'

576.06'

POE

1559.06'
N 90°00' E

℄ MAC ARTHUR RD.

ACCESS CONTROL EXCEPT FOR 1 OPENING

MO PAC. R.R. R/W

S 0°06'42" E
2639.61'

N 0°28' W
2611.71'

1" = 100'

VICINITY MAP
NO SCALE

CRISS OPTICAL

OATVILLE

MacARTHUR RD.

B.M. = ELEV. 1289.15 - 60d in H.L.P. 90' West & 4' South of SW cor. SE 1/4, Sec. 11-28-1W

SW cor. SE 1/4
Sec 11-28-1W

DRAINAGE TO MAC ARTHUR	
PRESENT	FUTURE
DA = 13.3 Ac.	DA = 8.0 Ac.
Q_{100} = 58.5 cfs.	Q_{100} = 54.6 cfs.

22"x36" CMP @ 2.43% = 29 cfs
HW = 87.6 TW = 84.0

DRAINAGE PLAN &
PRELIMINARY PLAT

CRISS OPTICAL ADDITION

TO SEDGWICK COUNTY, KANSAS
DATE: MAY 27, 1992

OWNER: CRISS OPTICAL MFG. CO., INC.

ENGINEER: POE & ASSOCIATES OF KANSAS