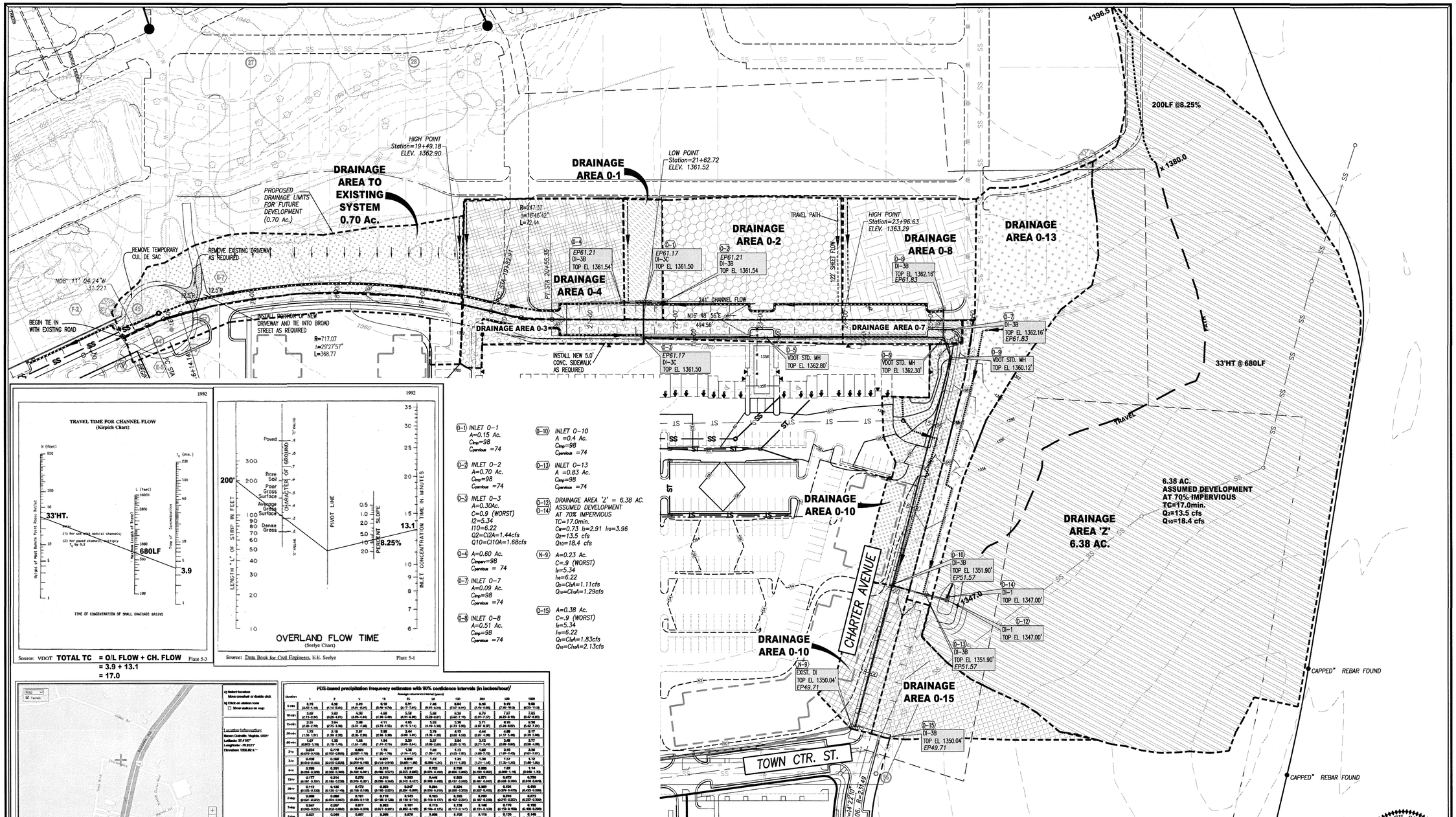


Source: VDOT **TOTAL TC = O/L FLOW + CH. FLOW**
= 3.9 + 13.1
= 17.0

Plate 5-3

Source: Data Book for Civil Engineers, E.E. Seelye — Plate 5-1

(0-1) INLET 0-1
A=0.15 Ac.
C_{imp}=98
$C_{pervious}$ =74

(0-2) INLET 0-2
A=0.70 Ac.
C_{imp}=98
$C_{pervious}$ =74

(0-3) INLET 0-3
A=0.30Ac.
C=0.9 (WORST)
I2=5.34
I10=6.22
Q2=CI2A=1.44cfs
Q10=CI10A=1.68cfs

(0-4) A=0.60 Ac.
$C_{impervious}$=98
$C_{pervious}$ = 74

(0-7) INLET 0-7
A=0.09 Ac.
C_{imp}=98
$C_{pervious}$ =74

(0-8) INLET 0-8
A=0.51 Ac.
C_{imp}=98
$C_{pervious}$ =74

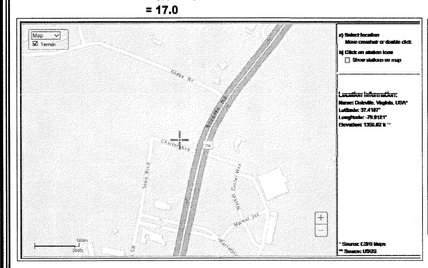
(0-10) INLET 0-10
A =0.4 Ac.
C_{imp}=98
$C_{pervious}$ =74

(0-13) INLET 0-13
A =0.83 Ac.
C_{imp}=98
$C_{pervious}$ =74

(0-12)
(0-14) DRAINAGE AREA 'Z' = 6.38 AC.
ASSUMED DEVELOPMENT AT 70% IMPERVIOUS
TC=17.0min.
C_W=0.73 I_2=2.91 I_{10}=3.96
Q_2=13.5 cfs
Q_{10}=18.4 cfs

(N-9) A=0.23 Ac.
C=.9 (WORST)
I_2=5.34
I_{10}=6.22
Q_2=CiA=1.11cfs
Q_{10}=CiA=1.29cfs

(0-15) A=0.38 Ac.
(WORST)
I_2=5.34
I_{10}=6.22
Q_2=CiA=1.83cfs
Q_{10}=CiA=2.13cfs



PDS-based precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Average recurrence interval (years)

Duration	1	2	5	10	25	50	100	200	500	1000
5-min	3.72 (3.42-4.05)	4.18 (3.83-4.55)	4.91 (4.51-5.34)	5.48 (5.03-5.96)	6.31 (5.77-7.00)	7.00 (6.41-8.00)	7.64 (7.00-8.94)	8.36 (7.66-10.0)	9.19 (7.86-12.0)	9.88 (8.26-13.8)
10-min	2.62 (2.73-3.26)	3.22 (3.00-3.81)	3.92 (3.69-4.64)	4.52 (4.26-5.49)	5.38 (4.91-6.85)	6.06 (5.42-7.70)	6.70 (5.91-8.72)	7.37 (6.50-9.78)	8.17 (6.97-11.0)	7.83 (6.47-9.85)
15-min	2.31 (2.26-2.78)	2.84 (2.75-3.38)	3.48 (3.37-4.06)	4.01 (3.78-4.75)	4.65 (4.19-5.74)	5.13 (4.46-6.58)	5.56 (4.73-7.58)	6.11 (5.07-8.37)	6.78 (5.38-9.87)	6.36 (5.42-7.90)
30-min	1.72 (1.55-1.91)	2.18 (1.96-2.42)	2.61 (2.36-2.93)	2.92 (2.66-3.29)	3.44 (3.08-3.91)	3.79 (3.42-4.34)	4.12 (3.62-4.84)	4.44 (3.87-5.48)	4.88 (4.07-6.46)	5.17 (4.26-7.48)
60-min	1.07 (0.957-1.18)	1.35 (1.19-1.49)	1.68 (1.49-1.85)	1.94 (1.71-2.13)	2.29 (2.00-2.61)	2.57 (2.22-2.93)	2.84 (2.40-3.31)	3.12 (2.71-3.69)	3.48 (2.89-4.60)	3.77 (3.20-5.28)
2-hr	0.634 (0.565-0.705)	0.778 (0.700-0.865)	0.985 (0.887-1.10)	1.15 (1.05-1.28)	1.38 (1.24-1.57)	1.59 (1.39-1.87)	1.73 (1.55-1.97)	1.92 (1.68-2.19)	2.16 (1.87-2.49)	2.36 (2.01-2.87)
3-hr	0.458 (0.408-0.509)	0.562 (0.510-0.625)	0.713 (0.639-0.795)	0.831 (0.739-0.928)	0.999 (0.887-1.13)	1.17 (1.02-1.35)	1.31 (1.11-1.58)	1.46 (1.21-1.84)	1.67 (1.30-2.23)	1.82 (1.40-1.95)
6-hr	0.288 (0.256-0.320)	0.351 (0.313-0.389)	0.442 (0.392-0.491)	0.515 (0.455-0.571)	0.617 (0.545-0.684)	0.703 (0.620-0.780)	0.785 (0.690-0.870)	0.885 (0.778-0.980)	1.02 (0.889-1.18)	1.14 (0.988-1.32)
12-hr	0.177 (0.157-0.197)	0.214 (0.191-0.238)	0.270 (0.240-0.301)	0.316 (0.278-0.352)	0.383 (0.337-0.427)	0.440 (0.386-0.490)	0.493 (0.432-0.550)	0.571 (0.497-0.640)	0.672 (0.583-0.790)	0.759 (0.658-0.876)
24-hr	0.112 (0.105-0.124)	0.136 (0.125-0.149)	0.172 (0.158-0.189)	0.203 (0.185-0.223)	0.247 (0.224-0.269)	0.284 (0.255-0.310)	0.324 (0.285-0.353)	0.369 (0.320-0.403)	0.434 (0.374-0.476)	0.490 (0.422-0.539)
2-day	0.068 (0.061-0.073)	0.082 (0.074-0.087)	0.101 (0.091-0.110)	0.118 (0.105-0.128)	0.143 (0.128-0.155)	0.163 (0.145-0.177)	0.185 (0.162-0.201)	0.209 (0.181-0.229)	0.244 (0.207-0.267)	0.273 (0.227-0.305)
3-day	0.047 (0.043-0.051)	0.057 (0.052-0.063)	0.071 (0.064-0.078)	0.083 (0.077-0.091)	0.101 (0.092-0.109)	0.115 (0.105-0.125)	0.130 (0.117-0.141)	0.146 (0.131-0.159)	0.170 (0.151-0.188)	0.190 (0.165-0.209)
4-day	0.037 (0.034-0.040)	0.045 (0.042-0.049)	0.057 (0.051-0.061)	0.066 (0.060-0.071)	0.079 (0.073-0.085)	0.090 (0.083-0.096)	0.102 (0.093-0.111)	0.115 (0.103-0.124)	0.133 (0.118-0.146)	0.149 (0.130-0.163)

INTENSITY INTERPOLATED 17.0MIN TC = I_2=2.91 I_{10}=3.96

$C_{impervious}$ =	0.90	
$C_{pervious}$ =	0.33	
I_2 =	2.91	
I_{10} =	3.96	(Based on Total TC=17.0 min.)

Structure	$A_{impervious}$	$A_{pervious}$	A_{total}	$C_{weighted}$	Q_2	Q_{10}
Prop. Inlets	4.46	1.91	6.37	0.73	13.5	18.4

DRAINAGE AREA 'Z' CALCULATIONS

COMMONWEALTH OF VIRGINIA
MICHAEL W. LYNCH
Lic. No. 027276
2/7/18
PROFESSIONAL ENGINEER

ENGINEERING CONCEPTS, INC.
94 GREEENFIELD STREET
DALEVILLE, VIRGINIA 24083
540.473.1253

Drawn ECI	OVERALL DRAINAGE MAP & CALCULATIONS	SCALE: 1" = 50'	
Designed ECI	BROAD ST. & CHARTER AVE. EXTENSIONS	DATE: FEB. 7, 2018	
Checked ECI	DALEVILLE TOWN CENTER	PROJECT: 17056	
Approved ECI	BOTETOURT COUNTY, VIRGINIA	C08	