

File

MEMO



TO: Steve Lackey
 Design Chief Engineer
 City Hall - Seventh Floor
 455 N. Main
 Wichita, Kansas 67202

PROJECT NO. 30-79478-1120

PROJECT: Northwest Village

COPIES TO:

ATTN:

DATE: July 11, 1980

Paul Johnston ✓
 Louise Olivarez
 Dick Linn
 Gary Wiley

FROM: Kristen Hart

REFERENCE: Drainage Concept and supportive
 calculations

PLEASE ADVISE IMMEDIATELY OF ANY MISCONCEPTIONS OR OMISSIONS YOU BELIEVE TO BE CONTAINED HEREIN.

Enclosed is the Drainage Concept for Northwest Village, Northeast corner of 13th and Tyler. We anticipate filing the Preliminary Plat with MAPD on July 25, 1980 for hearing by the MAPC Subdivision Committee on August 7, 1980. Should any additional information be required in your review of the plan, please contact Dick Linn or myself.

Received

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Project North West Village

Item Culvert Capacity - 100-yr Discharge

Capacity of Box Culvert at 13th

T.O.C. - 1350.8
 EL - 1343.2

^{7x5' box}
 D=5 NB=7

Headwater Depth - 1349.8 - 1343.2 = 6.6'

H_w/D = 6.6/5 = 1.32'

Q/NB = 45 (from nomograph)

Q = (45)(7) = 315 cfs

Q₁₀₀ from Drainage Area

Area 1 (North of property line)

D.A. - 18.4 acres
 COR - residential - 0.5
 LSE - 1020'
 SLSB - 0.30%

$$T_{OC} = \frac{1.8 (1.1 - 0.5) (1020)^{0.5}}{(0.30)^{0.955}} = 51.5 \text{ min}$$

$$I_{NT_{100}} = 100.0 (52)^{-0.77} = 4.4 \text{ in/hr}$$

$$Q_{100} = 0.5 (18.4) (4.0) \approx 41 \text{ cfs from area 1}$$

Area 2 (Residential - apartment area of plot)

D.A. = 24.7 acres
 COR - apartments - 0.6
 LSE - 1250'
 SLSB - 0.48%

$$T_{OC} = \frac{1.8 (0.5) (1250)^{0.5}}{(0.48)^{0.955}} = 40.63$$



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Project Northwest Village

Item 100-Yr Discharge

$$INT_{100} = 100.0 (41)^{0.79} = 5.32 \text{ in/hr}$$

$$Q_{100} = 0.4 (24.7) (5.3) = 78.8 \text{ cfs from area 2}$$

Area 3 (concessional area of plat)

D.A. - 18.7 acres

COR - 0.8

LSB - 950'

SLSB - 1.0%

$$TDC = \frac{1.3 (11-0.8) (950)^{0.5}}{(1.0)^{0.533}} = 16.66 \text{ min}$$

$$INT_{100} = 25.3 (16.6)^{0.39} = 8.6 \text{ in/hr}$$

$$Q_{100} = (0.8) (18.7) (8.6) = 129 \text{ cfs from area 3}$$

$$Q_{100} \text{ total} = 41 + 79 + 129 = 250 \text{ cfs}$$

250 < 315 therefore the 13" culvert on 13th will pass all the 100 year discharge from this drainage area.