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Project North West Village

Item Culvert Capacity - 100-yr Discharge

Capacity of Box Culvert at 134

T.O.C. - 1350.8' 7x5' box  
 H - 1343.2' D=5 NB=7

Headwater Depth - 1349.8 - 1343.2 = 6.6'

H/D = 6.6/5 = 1.32'

Q/NB = 45 (from Nomograph)

Q = (45)(7) = 315 cfs

Q<sub>100</sub> from Drainage Area

Area 1 (North of property line)

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

$$TOC = \frac{1.8 (1.1 - 0.5) (1020)^{0.5}}{(0.30)^{0.355}} = 51.5 \text{ min}$$

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

$$Q_{100} = 0.5 (18.4) (4.2) \approx 41 \text{ cfs from area 1}$$

Area 2 (Residential - apartment area of plot)

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

$$TOC = \frac{1.8 (0.5) (1250)^{0.5}}{(0.48)^{0.22}} = 40.63$$



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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 (Commercial Area of plot)

D.A. - 18.7 acres

COR - 0.8

LSB - 950'

SLSB - 1.0%

$$TDC = \frac{1.3 (11-0.8) (950)^{0.5}}{(1.0)^{0.233}} = 16.64 \text{ min}$$

$$INT_{100} = 25.8 (16.6)^{-0.29} = 8.6 \text{ in/hr}$$

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

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

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