

SANITARY SEWER AND DRAINAGE PLAN

SHADYBROOK COMMERCIAL ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

DRAINAGE CALCULATION METHODS

Runoff from all areas calculated by the Rational Method ($Q = C \times I \times A$), using values for C and I from City of Wichita drainage criteria. Time of concentration assumed to be 5 minutes for each parcel.

All parcels assumed to be 15 % pervious, 85 % impervious area.

Pervious C5 = .85, C100 = .93
 Impervious C5 = .35, C100 = .65

DRAINAGE CALCULATIONS - PARCEL 1

North part: D.A. = 0.24 Acres
 $Q_{100} = 0.89 \times 10.32 \times 0.24 = 2.2$ cfs
 Drain to 21st Street through driveway

South part: D.A. = 0.75 Acres
 $Q_5 = 0.78 \times 6.53 \times 0.75 = 3.8$ cfs
 $Q_{100} = 0.89 \times 10.32 \times 0.75 = 6.9$ cfs
 Drain to Shadybrook through driveway.

INLETS @ N CURB SHADYBROOK, E OF CARMEN
 D.A. = 1.50 Acres (2 - 5' inlets)
 $Q_5 = .78 \times 4.56 \times 1.5 = 5.34$ cfs
 $Q_{100} = .89 \times 7.37 \times 1.5 = 9.84$ cfs
 Q_5 intercepted = 2.34 cfs; bypass = 3.00 cfs

DRAINAGE CALCULATIONS - PARCEL 2

North part: D.A. = 0.18 Acres
 $Q_{100} = 0.89 \times 10.32 \times 0.18 = 1.7$ cfs
 Drain to 21st Street through driveway

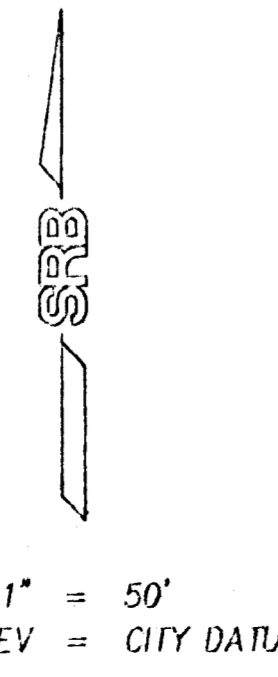
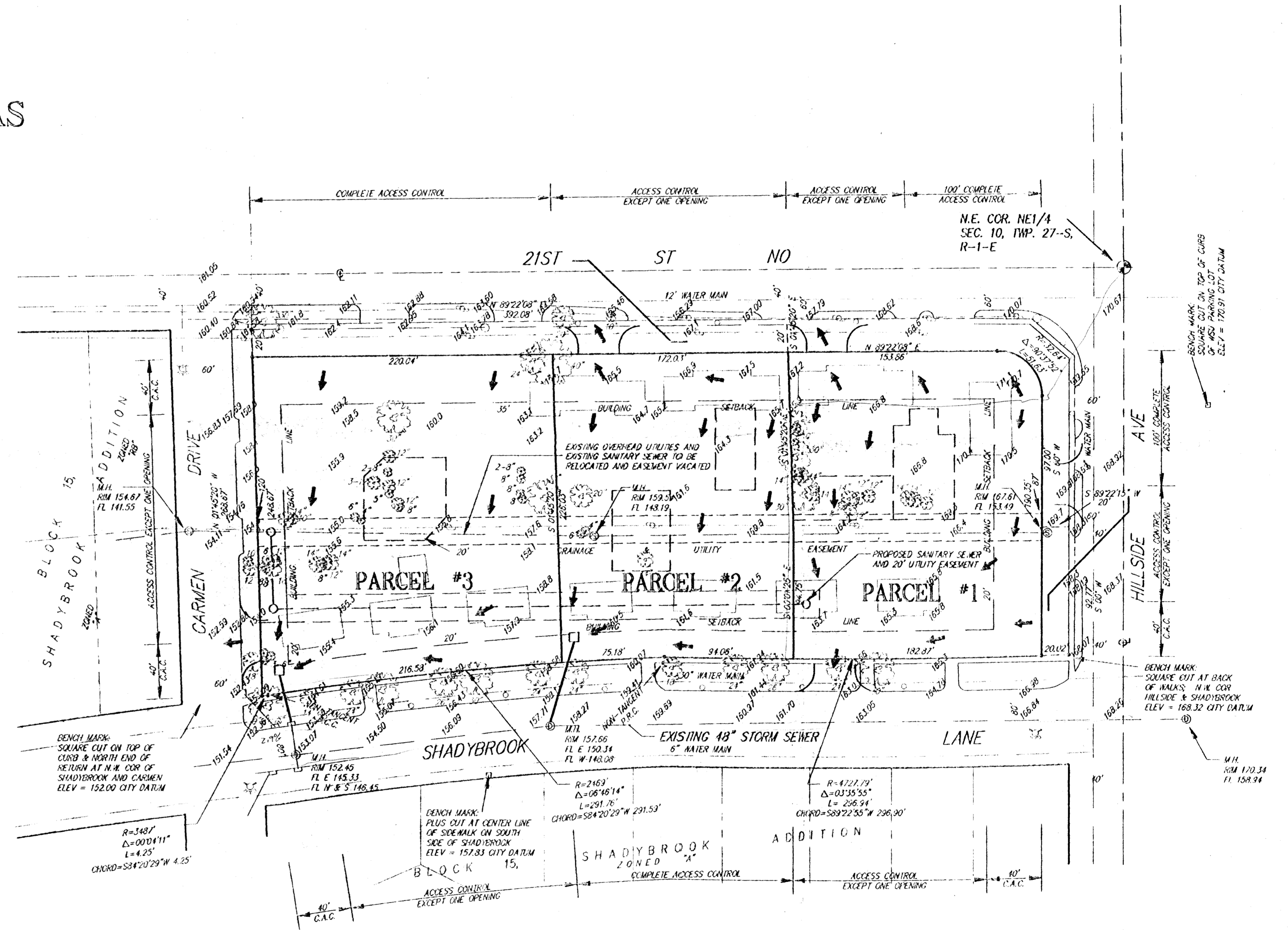
South part: D.A. = 0.70 Acres
 $Q_{100} = 0.89 \times 10.32 \times 0.70 = 6.4$ cfs
 Drain to proposed inlet at sw corner

INLET CALCULATIONS:
 Use 2' x 2' Inlet (1.28 s.f. opening)
 $Q_{in} = 0.6 \times A (2gh)^{1/2}$, $h = 1.2'$
 Inlet capacity = 6.8 cfs; use 15" pipe.

DRAINAGE CALCULATIONS - PARCEL 3

D.A. = 1.19 Acres
 $Q_5 = 0.78 \times 6.53 \times 1.19 = 6.1$ cfs
 $Q_{100} = 0.89 \times 10.32 \times 1.19 = 10.9$ cfs
 Drain to proposed inlet at sw corner and through driveway to Carmen.

INLET CALCULATIONS:
 Use 2' x 2' Inlet (1.28 s.f. opening)
 $Q_{in} = 0.6 \times A (2gh)^{1/2}$, $h = 0.8'$
 Inlet capacity = 5.5 cfs; use 15" pipe.
 Overflow through driveway.



BENCH MARK:
 SQUARE CUT ON TOP OF CURB & NORTH END OF RETURN AT N.W. COR. OF SHADYBROOK AND CARMEN
 ELEV = 152.00 CITY DATUM

BENCH MARK:
 SQUARE CUT AT BACK OF WALSH'S N.W. COR. HILLSIDE & SHADYBROOK
 ELEV = 168.32 CITY DATUM

LATL DISTE 55 42

