HYDROLOGY L21/D19 WALGREEN'S

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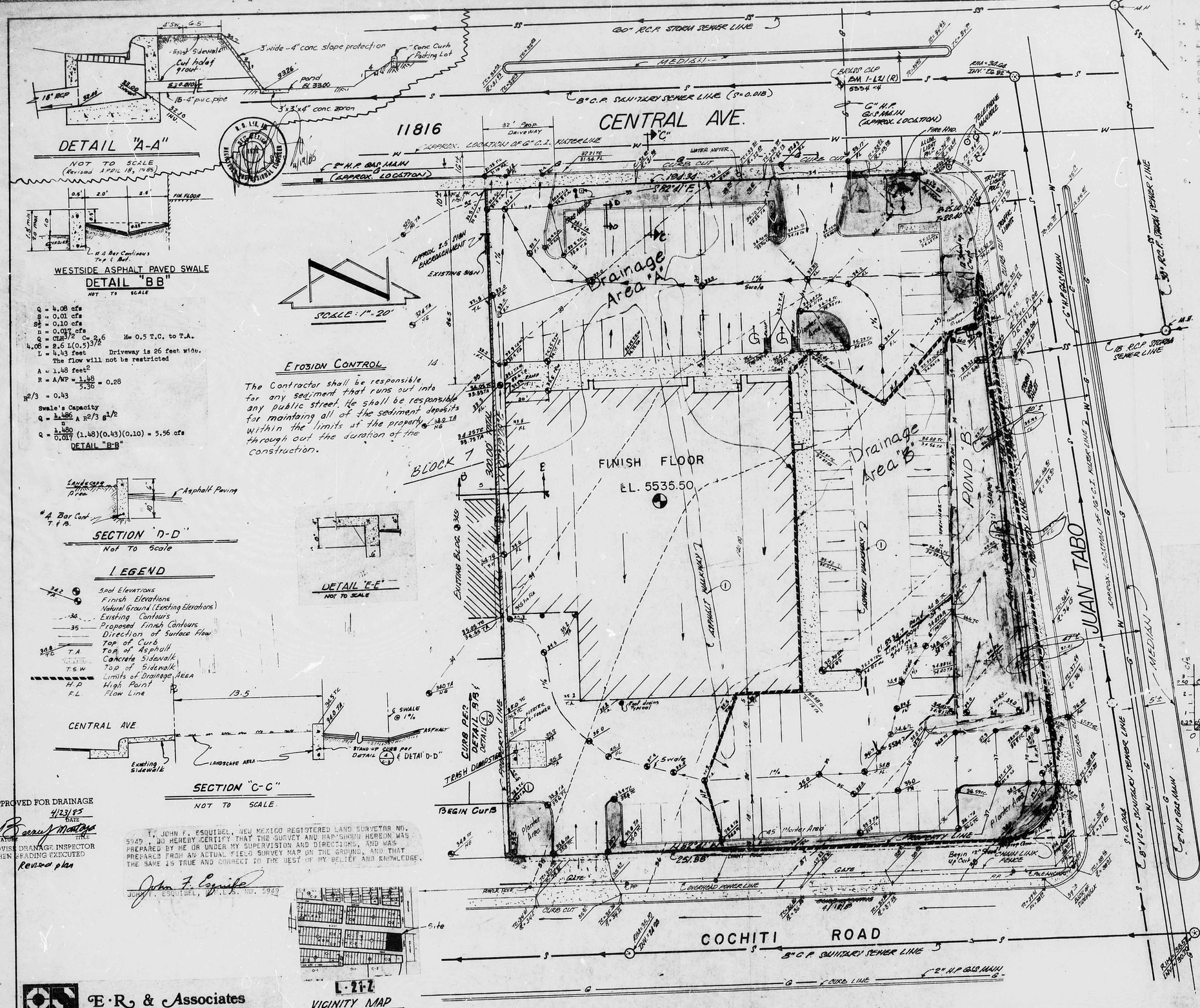
WALGREEN'S

1 PLAN



DRAINAGE NOTES AND CALCULATIONS

1. LEGAL DESCRIPTIONS: LOT 16A OF BLOCK 7 OF EAST CENTRAL BUSINESS ADDITION, FORMERLY LOTS 15 THRU 22 INCLUSIVE, Recorded September 11, 1984
2. ZONING: C-1 L -21 X
3. SOIL TYPE: AS PER THE USDA SOIL CONSERVATION REPORT ON SOILS OF BERNALILLO COUNTY THIS IS DEFINED AS A SANDY LOAM OF THE HYDROLOGIC GROUP B. HENCE, THE C VALUE AS PER THE D.P.M. FOR USE IN THE RATIONAL EQUATION = 0.34.
4. OFF-SITE FLOWS: THERE ARE NO OFF-SITE FLOWS AFFECTING THIS SITE.
5. UNDEVELOPED CONDITIONS: THE SITE IS 100% UNDEVELOPED AND SLOPES TO THE NORTHWEST IN SHEET FLOW MODE. THE PARCEL'S TOTAL AREA IS EQUAL TO 69,942.0 SQ. FT. THEREFORE THERE IS A TOTAL CONTRIBUTING AREA EQUAL TO 69,942.0 SQ. FT. (1.60 ACRES). THE TOTAL FLOW AMOUNT USING THE 2.52" (DPM VALUE, AND I = P (6.84)$^{-0.51}$ = 5.33 in/hr. (Tc = 10 min.)
Q_{100} = CIA = (0.34) (5.33) (1.60) = 2.90 cfs. Q_{10} = 0.657 Q_{100} = 1.90 cfs.
UNDEVELOPED
THIS WILL BE SPLIT ACCORDING TO AREA (A&B)
6. DEVELOPED DRAINAGE MANAGEMENT PLAN: ACCORDING TO THE PRE-DESIGN MEETING ON FEBRUARY 8, 1983 WITH THE HYDROLOGIST AT THE CITY ENGINEER'S OFFICE (HYDROLOGY SECTION), THE SITE WILL REQUIRE A DETENTION POND WITH A CONTROLLED RELEASE.

THE SITE HAS BEEN DIVIDED INTO TWO (2) DRAINAGE AREAS, A & B. DRAINAGE AREA "AA" (44,342 SQ. FT. (1.02 ACRES) CONSISTS OF THE WEST HALF OF THE DEVELOPED AREA, WHILE AREA "BB" 25,600 SQ.FT. (0.58 ACRES) IS THE EAST HALF OF THE DEVELOPED AREA. EACH OF THESE TWO AREAS CONTAIN SOME LANDSCAPED AREAS AND RUNOFF FOR EACH RESPECTIVE AREA SHALL BE COMPUTED ACCORDINGLY. THE AMOUNT OF RUNOFF DETAINED WILL BE RELEASED THROUGH A 4" PVC PIPE FOR AREA "B" ONLY. AREA "A" WILL BE ALLOWED AS FREE DISCHARGE INTO CENTRAL AVE.
THE CONTROLLED RELEASE WILL NOT EXCEED THE 0.5 cfs PER ACRE FLOW RATE FOR THE DEVELOPED AREA:

5 year rainfall = 0.541 (100 years rain). P₆ = 5 year = 0.541 (2.26)
1.19 cfs

AREA "AA"
A = 44,342 SQ. FT. = 1.02 ACRES
t_c = 10 min. P = 1.19
I = (P₆) (6.84) $t_c^{-0.51}$ = (1.19) (6.84) (10)$^{-0.51}$ = 3.52 in/hr.
Q_{100} = CIA = (0.34) (3.52) (1.02) = 0.87 cfs

PEAK FLOW RATE INTO CENTRAL AVE.

ROOF AND PAVEMENT AREA	= 38822 S.F.
LANDSCAPE AREA	= 5520 S.F.
TOTAL DRAINAGE AREA CONTRIBUTING TO POND	= 44342 S.F.
COMPOSITE "C" FACTOR	= (0.9)(38822)+(0.6)(5520) / 44,342 = 38252 / 44,342 = 0.86

"C" = 0.86
I = 5.33
A = 1.02
Q peak = CIA = FREE DISCHARGE INTO CENTRAL AVE.
Q peak = 0.86(5.33)(1.02) = 4.67 cfs
peak Q_{100} = 4.67 cfs
peak Q_{10} = 0.657(4.67) = 3.07 cfs

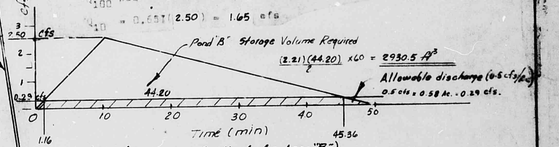
Spillway Calculations (Free discharge over 26' Driveway)
Q = CLH³/² H = 0.5' T.C. to T.A., C = 2.6
Q = (2.6)(26.0)(0.5)³/² = 42.6 cfs free discharge of 4.08 cfs will not be restricted

AREA "B"
A = 25,600.0 S.F. = 0.58 Ac C = 0.34 I = 2.52 in/hr. (See above)
Q_{100} = CIA = (0.34) (2.52) (0.58) = 0.50 cfs

PEAK FLOW RATE INTO POND (ONSITE)

ROOF AND PAVEMENT AREA	= 18200.0 S.F.
LANDSCAPE AREA	= 7400.0 S.F.
TOTAL DRAINAGE AREA CONTRIBUTING TO POND	= 25,600.0 S.F.
COMPOSITE "C" FACTOR	= (0.9)(18,200.0)+0.6(7,400) / 25,600 = 0.81

C = 0.81 I = 5.33 A = 0.58 Ac.
Q_{100} peak = CIA = (0.81)(5.33)(0.58 Ac) = 2.50 cfs
Q_{10} = 0.657(2.50) = 1.65 cfs



NOTE: (Emergency Spillway for Area "B") The detention's pond spillway will be at Elev. 5535.0 and then free discharge into Central Ave. This would occur only if the 4" drain pipe is plugged.

POND VOLUME CALCULATIONS

POND "B": Surface area @ Elev. 34.00 = 4152 sq.ft.
Surface area @ Elev. 34.00 = 2410 sq. ft.
Avg. area 4152 + 2410 = (Avg. depth 0.8 ft.) = 2765 ft.³
ponding Required from Hydrograph is equal to 2930.5 ft³

Revised 10/26/84 per City new requirements
Revised 4/16/85 New Layout & drainage Calculation

Revised 10/30/84 per City new requirements - letter of 10/30/84

APPROVED FOR DRAINAGE
4/23/85
DATE
SIGNATURE TITLE
ADVISE DRAINAGE INSPECTOR WHEN GRADING EXECUTED
Revised plan

I, JOHN F. ESQUIBEL, NEW MEXICO REGISTERED LAND SURVEYOR NO. 5949, DO HEREBY CERTIFY THAT THE SURVEY AND MAP SHOWN HEREON WAS PREPARED BY ME OR UNDER MY SUPERVISION AND DIRECTIONS, AND WAS PREPARED FROM AN ACTUAL FIELD SURVEY MAP ON THE GROUND, AND THAT THE SAME IS TRUE AND CORRECT TO THE BEST OF MY BELIEF AND KNOWLEDGE.
JOHN F. ESQUIBEL, N.M.L.S. NO. 5949

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ALBUQUERQUE, NEW MEXICO 87110 (505) 266-8791

GRADING AND DRAINAGE PLAN FOR WALGREENS

EAST CENTRAL BUSINESS ADDITION
ALBUQUERQUE, NEW MEXICO
NOVEMBER 1982
~~REVISED OCTOBER 26 1984~~
UPDATED PLAN 4-18-85

RECEIVED APR 19 1985 HYDROLOGY SECTION

L21/Δ19