HYDROLOGY K13/D15 2 PLANS

K13/D15

2 PLANS

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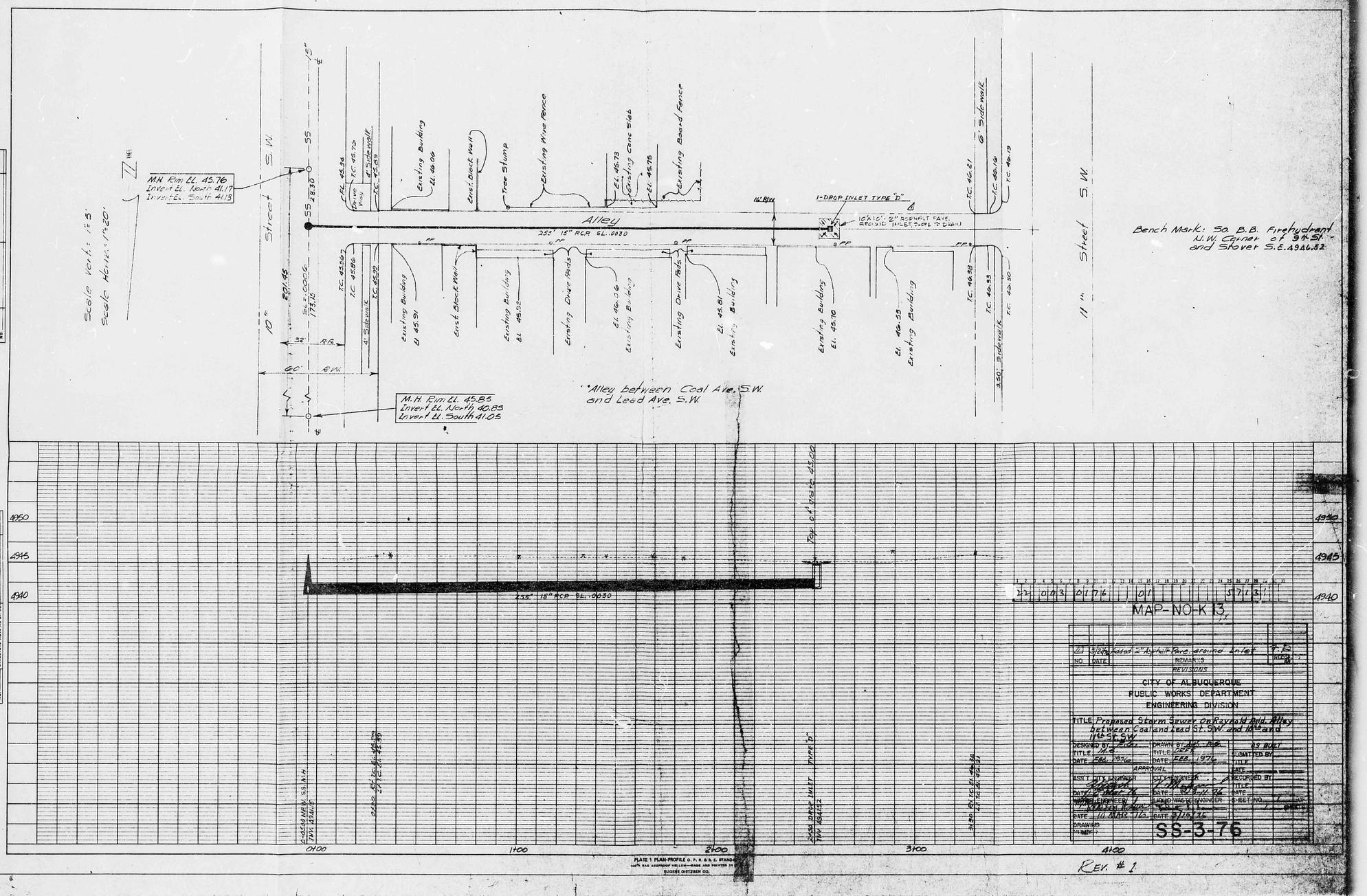

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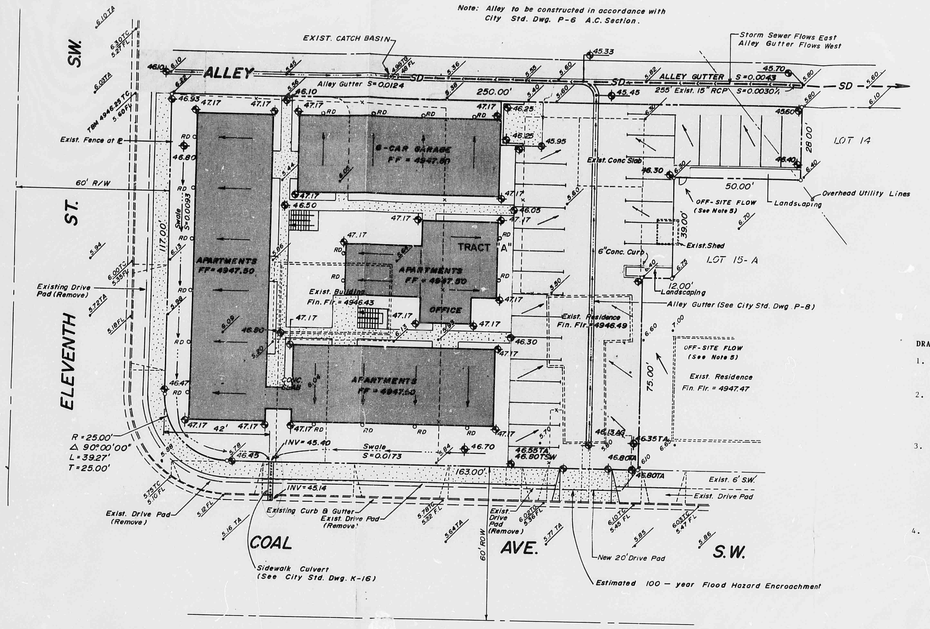


GRADING AND DRAINAGE PLAN

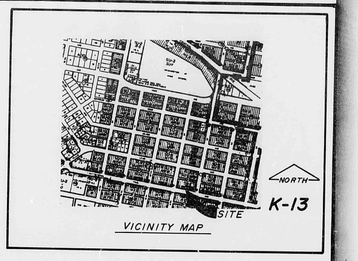
NORTH

SCALE 1" = 20'

LEGEND:

DESCRIPTION	EXISTING	NEW
FLOW DIRECTION		
CONTOUR	N/A	N/A
SPOT ELEVATION		
PROPERTY LINE		
ROOF DRAIN		
BUILDINGS		
ASPHALT PAVING		
CONCRETE		

TC = TOP CURB
TA = TOP ASPHALT
FL = FLOW LINE
AG = ALLEY GUTTER



DRAINAGE COMMENTS:

1. THE SITE IS ADJACENT TO A FLOOD HAZARD AREA. THEREFORE, FLOOD PROOFING IS REQUIRED. FINISHED FLOOR ELEVATIONS ARE SET 2 FEET ABOVE GUTTER FLOWLINE.

2. MOST OF THE SITE DRAINAGE IS DIRECTED TO THE EXISTING CATCH BASIN IN THE ALLEY. THIS CATCH BASIN IS DRAINED BY A 15" RCP. A 72" STORM SEWER IS LESS THAN TWO BLOCKS AWAY AT TENTH STREET AND IRON AVENUE. THEREFORE, DOWNSTREAM CAPACITY IS ADEQUATE.

3. THE BUILDINGS WILL DRAIN TO THE OUTSIDE AND THE BUILDING RUNOFF WILL BE DISCHARGED BY GUTTERS AND DOWNSPOUTS. SOME OF THE BUILDINGS WILL DISCHARGE INTO THE LAWN WHERE THERE IS ADEQUATE SLOPE TO MOVE THE WATER AWAY FROM THE BUILDINGS BY SHEET FLOW. SOME OF THE BUILDINGS WILL DISCHARGE INTO THE PARKING LOT AND ALLEY. A SMALL PART OF THE CENTER BUILDING WILL DISCHARGE INTO THE INTERIOR COURT YARD. THIS WILL BE ABSORBED BY LANDSCAPING OR OVERFLOW THE SIDEWALK INTO THE PARKING LOT.

4. ALLEY GRADES ARE ESTABLISHED BY EXISTING DEVELOPMENT ON BOTH SIDES OF THE ALLEY AND BY THE EXISTING CATCH BASIN. NEW PAVING WILL MEET EXISTING GRADES AT THE PROPERTY LINES AS CLOSELY AS POSSIBLE.

CONSTRUCTION NOTES:

1. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE AT 765-1234 FOR LOCATION OF EXISTING UTILITIES.

2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL POTENTIAL OBSTRUCTIONS; SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.

3. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, RULES, AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.

4. ALL CONSTRUCTION WITHIN CITY RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.

GENERAL NOTES:

1. PLAT OF SURVEY AND TOPOGRAPHIC MAP UPON WHICH THIS PLAN IS BASED WAS PREPARED BY HALL SURVEYING COMPANY.

2. NUMBER 5 REBAR SET AT ALL PROPERTY CORNERS UNLESS OTHERWISE INDICATED.

3. FOR DIMENSIONS OF BUILDINGS AND PARKING LOTS, SEE SITE PLAN.

4. SETBACK OF NEW SIDEWALK TO MATCH EXISTING.

5. ALL AREAS AROUND AND BETWEEN BUILDINGS ARE TO BE LANDSCAPED. SEE SITE PLAN.

DRAINAGE CALCULATIONS

I. REFERENCES:

A. City of Albuquerque Development Process Manual (DPM) Volume 2, Design Criter'a, Chapter 22, Drainage, Flood Control and Erosion Control.

B. Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, United States Department of Agriculture, Soil Conservation Service.

C. Floodway Map, Panel No. 28 of 50, Federal Emergency Management Agency.

II. GENERAL INFORMATION:

A. Soil Type (Ref.B., Sheet No. 30) Soil type is either Bs or Bt, Brazito, Hydrologic Soil Group A.

B. Imperviousness:

Type of Surface	Existing Area Sq.Ft.	Existing Area Acres	Proposed Area Sq.Ft.	Proposed Area Acres
Building roof				
Concrete Surfaces				
Asphalt Surfaces				
Landscaping				
Undeveloped surface				
Site total				
Percent impervious				

C. "C" Factor (See Ref. A., Plate 22.2 C-1)
1. Undeveloped "C" Factor = 0.41
2. Developed "C" Factor = 0.73

D. Rainfall, 100-year, 6-hour, R_6: (See Ref.A., Plate 22.2 D-1) $R_6 = 2.25$

E. Time of Concentration, T_c: Use the minimum time of Concentration of 10 minutes.

F. Rainfall Intensity, I: (See Ref. A, Plate 22.2 D-2)

$I = R_6 \times 6.84 \times T_c^{-0.51} = 2.25 \times 6.84 \times (10)^{-0.51}$

$I = 4.76$ In/Hr

III. PEAK DISCHARGE:

A. Existing Conditions. (Use the Rational Equation.)

$Q_{100} = 0.41 \times 4.76 \times 0.65 = 1.27$ cfs

$Q_{10} = 0.657 \times 1.27 = 0.83$

B. Developed Conditions.

$Q_{100} = 0.73 \times 4.76 \times 0.65 = 2.26$ cfs

$Q_{10} = 0.657 \times 2.26 = 1.48$ cfs

LEGAL DESCRIPTION:

TRACT LETTERED "A" IN BLOCK NUMBERED THIRTY-THREE (33) OF THE RAYNOLDS ADDITION, ALBUQUERQUE, NEW MEXICO, AS THE SAME IS SHOWN AND DESIGNATED ON THE PLAT OF TRACT "A", BLOCK 33 OF SAID ADDITION, FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO.

BENCH MARK:

ELEVATIONS ARE REFERENCED TO ALBUQUERQUE CITY SURVEY MONUMENT 3-K13, LOCATED AT THE EAST-SOUTHEAST CURB RETURN OF THE INTERSECTION OF ATLANTIC AVENUE AND BARELAS STREET, ELEV. = 4945.006

REVISED DRAINAGE CALCULATIONS

1. OFF-SITE FLOW:

Only an estimate is possible. The area is very flat and City topo map does not have sufficient elevation to verify flow directions. Therefore, it is estimated as follows:

A. Area east of site, 120' x 60' = 7200 sf = 0.17 acre
$Q = 0.73 \times 4.65 \times 0.17 = 0.58$ cfs

B. Area north of alley, 160 x 60 = 9600 sf = 0.22 acre
$Q = 0.73 \times 4.65 \times 0.22 = 0.74$ cfs
Total off-site flow = 1.32 cfs (Conservative)

2. Calculation of Downstream Capacity:

A. Existing drop inlet grate. Use Orifice Equation. Assume depth of water standing above grate is 3" (0.25') Each slot is 7/8" x 3.8" Ave. = 5.08 Sq.In. = 0.035 Sq.Ft. (This was determined from field measurements. There are a total of 96 openings.
$Q_{opening} = CA(2gh)^{1/2} = 0.6 \times 0.035(2 \times 32.2 \times 0.25)^{1/2}$
$Q_{opening} = 0.08$ c s
$Q_{total} = 0.08 \times 96 = 7.68 > (2.26 + 1.32)$
Even if half the grate is clogged it will still have adequate capacity for all on-site and off-site flow.

B. Capacity of 15-inch RCP Storm Sewer in Alley - Use Sewer Pipe Calculator for all on-site and off-site S = 0.0030 ft/ft n = 0.013 Parts Full = 0.95
Q = 3.8 cfs > 3.58 cfs Therefore, the storm sewer has adequate capacity.

EROSION CONTROL MEASURES:

THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR MANAGEMENT OF STORM RUNOFF DURING CONSTRUCTION. HE SHALL INSURE THAT THE FOLLOWING MEASURES ARE TAKEN:

1. ADJACENT PROPERTY SHALL BE PROTECTED AT ALL TIMES BY THE CONSTRUCTION OF BERMS, DIKES, SWALES, PONDS AND OTHER TEMPORARY GRADING AS REQUIRED TO PREVENT STORM RUNOFF FROM LEAVING THE SITE AND ENTERING SAID PROPERTY.

2. ADJACENT PUBLIC RIGHTS-OF-WAY SHALL BE PROTECTED AT ALL TIMES FROM STORM WATER RUNOFF FROM THE SITE. NO SEDIMENT BEARING WATER SHALL BE PERMITTED TO ENTER PUBLIC STREETS OR STORM SEWERS.

3. THE CONTRACTOR SHALL IMMEDIATELY AND THOROUGHLY REMOVE ANY AND ALL SEDIMENT WITHIN PUBLIC STREETS THAT HAS BEEN ERODED FROM THE SITE.

REVISED JUNE 18, 1985

FRANK D. LOVEZ
N.M. REGISTERED PROFESSIONAL ENGINEER
5-9-1985
ENGINEER'S SEAL

GRADING & DRAINAGE PLAN

28-UNIT APARTMENT COMPLEX FOR DON KEITH & ASSOCIATES

N.E. CORNER OF ELEVENTH STREET & COAL AVENUE, S.E.

ALBUQUERQUE, NEW MEXICO

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