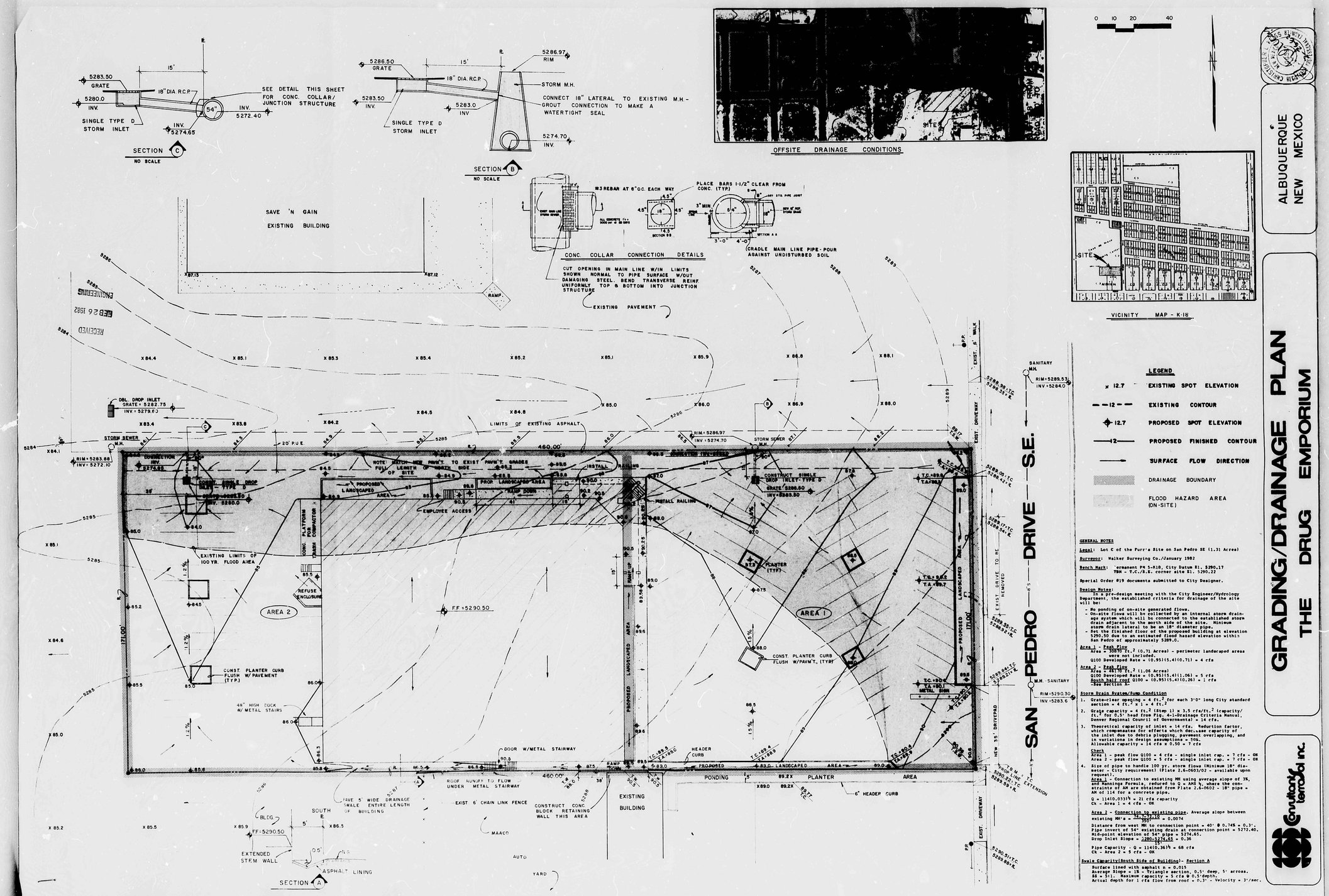
HYDROLOGY K18/D10 1 PLAN

K18/D10

1 Plan

CITY OF ALBUQUERQUE


SECTION C
NO SCALE
5283.50 GRATE
5280.0 INV.
18" DIA. R.C.P.
54"
INV. 5272.40
INV. 5274.65
SINGLE TYPE D STORM INLET
SEE DETAIL THIS SHEET FOR CONC. COLLAR/ JUNCTION STRUCTURE
SECTION B
NO SCALE
5286.50 GRATE
5283.50 INV.
5283.0 INV
5286.97 RIM
STORM M.H.
5274.70 INV.
CONNECT 18" LATERAL TO EXISTING M.H. - GROUT CONNECTION TO MAKE A WATERTIGHT SEAL
CONC. COLLAR CONNECTION DETAILS
#3 REBAR AT 6" O.C. EACH WAY
PLACE BARS 1-1/2" CLEAR FROM CONC. (TYP)
CRADLE MAIN LINE PIPE - POUR AGAINST UNDISTURBED SOIL
CUT OPENING IN MAIN LINE W/IN LIMITS SHOWN NORMAL TO PIPE SURFACE W/OUT DAMAGING STEEL. BEND TRANSVERSE REINF. UNIFORMLY TOP & BOTTOM INTO JUNCTION STRUCTURE
EXISTING PAVEMENT
SAVE 'N GAIN
EXISTING BUILDING
RAMP
OFFSITE DRAINAGE CONDITIONS
SITE
VICINITY MAP - K-18
0 10 20 40
ALBUQUERQUE NEW MEXICO
GRADING/DRAINAGE PLAN
THE DRUG EMPORIUM
SAN PEDRO DRIVE S.E.
LEGEND
x 12.7 EXISTING SPOT ELEVATION
12 EXISTING CONTOUR
12.7 PROPOSED SPOT ELEVATION
12 PROPOSED FINISHED CONTOUR
SURFACE FLOW DIRECTION
DRAINAGE BOUNDARY
FLOOD HAZARD AREA (ON-SITE)
GENERAL NOTES
Legal: Lot C of the Furr's Site on San Pedro SE (1.31 Acres)
Surveyor: Walker Surveying Co./January 1982
Bench Mark: permanent PN 5-K18, City Datum El. 5290.17
TBM - T.C./S.E. corner site El. 5290.22
Special Order #19 documents submitted to City Designer.
Design Notes:
In a pre-design meeting with the City Engineer/Hydrology Department, the established criteria for drainage of the site will be:
- No ponding of on-site generated flows.
- On-site flows will be collected by an internal storm drainage system which will be connected to the established storm drain adjacent to the north side of the site. Minimum storm drain lateral to be an 18" diameter pipe.
- Set the finished floor of the proposed building at elevation 5290.50 due to an estimated flood hazard elevation within San Pedro of approximately 5289.0.
Area 1 - Peak Flow
Area = 30870 ft.² (0.71 Acres) - perimeter landscaped areas were not included.
Q100 Developed Rate = (0.95)(5.4)(0.71) = 4 cfs
Area 2 - Peak Flow
Area = 47870 ft.² (1.06 Acres)
Q100 Developed Rate = (0.95)(5.4)(1.06) = 5 cfs
South half roof Q100 = (0.95)(5.4)(0.26) = 1 cfs
-See Section A-
Storm Drain System/Sump Condition
1. Grate-clear opening = 4 ft.² for each 3'0" long City standard section - 4 ft.² x 1 = 4 ft.²
2. Grate capacity = 4 ft.² (Step 1) x 3.5 cfs/ft.² (capacity/ft.² for 0.5' head from Fig. 4-1-Drainage Criteria Manual, Denver Regional Council of Governments) = 14 cfs.
3. Theoretical capacity of inlet = 14 cfs. Reduction factor, which compensates for effects which decrease capacity of the inlet due to debris plugging, pavement overlapping, and in variations in design assumptions = 50%.
Allowable capacity = 14 cfs x 0.50 = 7 cfs
Check
Area 1 - peak flow Q100 = 4 cfs - single inlet cap. = 7 cfs - OK
Area 2 - peak flow Q100 = 5 cfs - single inlet cap. = 7 cfs - OK
4. Size of pipe to handle 100 yr. storm flows (Minimum 18" diameter - City requirement) (Plate 2.6-0603/02 - available upon request).
Area 1 - Connection to existing MH using average slope of 3%, and Mannings Formula, reduced to Q = AM h, where the constraints of AM are obtained from Plate 2.6-0602 - 18" pipe = AM of 114 for a concrete pipe.
Q = 114(0.03)½ = 21 cfs capacity
Ck - Area 1 = 4 cfs - OK
Area 2 - Connection to existing pipe. Average slope between existing MH's = 74.5 - 73.0 / 200 = 0.0074
Distance from west MH to connection point = 40' @ 0.74% = 0.3'.
Pipe invert of 54" existing drain at connection point = 5272.40.
Mid-point elevation of 54" pipe = 5274.65.
Drop Inlet Slope = 5280-5274.65 / 15 = 0.36
Pipe Capacity = Q = 114(0.36)½ = 68 cfs
Ck - Area 2 = 5 cfs - OK
Swale Capacity(South Side of Building) - Section A
Surface lined with asphalt n = 0.015
Average Slope = 1% - Triangle section, 0.5' deep, 5' across.
AS = 2.5'. Maximum capacity = 5 cfs @ 0.5'-depth.
Actual depth for 1 cfs flow from roof = 0.3' - Velocity = 3'/sec.
Gruttaty Lemond inc.
THIS PLAN SHOT TWICE ONCE ON LIGHT AND ONCE ON DARK.
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THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT
D 24
C 20
B 16
A 12
CITY OF ALBUQUERQUE
C
D