PUBLIC WORKS/HYDROLOGY

F18/D19

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F18/D19

25×10

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C.A. (PAT) COONCE & ASSOC.
ENVIRONMENTAL, WATER RESOURCES, & SANITARY CONSULTING ENGINEERS

12324 PINERIDGE, N.E.
ALBUQUERQUE, N.M. 87112

PHONE (505) 296-1089

AECD, OCT 4 1978
JK

OCTOBER 3, 1978

CITY OF ALBUQUERQUE
P.O. BOX 1293
ALBUQUERQUE, NEW MEXICO 87103

ATTENTION: MR. BRUNO CONEGLIANO, AMAFCA ENGINEER

SUBJECT: DRAINAGE STUDY FOR WHISPERWOOD ADDITION

DEAR BRUNO,

ENCLOSED FOR YOUR INFORMATION AND COMMENT IS THE PRELIMINARY DRAINAGE PLAN FOR THE WHISPERWOOD ADDITION. IF YOU CONCUR ON THIS DRAINAGE REPORT I WILL GET A PLAN AND PROFILE PREPARED FOR THE IMPROVEMENTS TO THE ELENA GALLEGOS GRANT LINE DITCH FROM THE END OF THE EXISTING LINE EASTWARD TO SAN PEDRO AVENUE N.E.

IF YOU HAVE ANY QUESTIONS PLEASE CALL.

YOURS TRULY,

C.A. COONCE

C.A. COONCE

CAC:PAH

ENCLOSURE

25×10

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C.A. (FAT) COONCE & ASSOC.
ENVIRONMENTAL, WATER RESOURCES, & SANITARY CONSULTING ENGINEERS

12324 PINERIDGE, N.E.
ALBUQUERQUE, N.M. 87112

PHONE (505) 296-1089

DRAINAGE REPORT

Whisperwood Addition to the City of Albuquerque, New Mexico

Prepared For:

Ralph K. Hicks & Assoc. Inc.
8510 Chamber Pl. N.E.
Albuquerque, New Mexico 87111

Prepared By:

C. A. Coonce & Assoc.
12324 Pineridge N.E.
Albuquerque, New Mexico 87111

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GENERAL:

This report is a Hydrologic Study of drainage affecting the Whisperwood Subdivision to the City of Albuquerque, New Mexico. The platted lots are bounded by the Elena Gallegos Grant Line Channel on the North; San Pedro Village Units 1 and 2 on the South; San Pedro Avenue N.E. on the East; and a city alley which is between this subdivision and Del Norte High School on the West. The alley is presently unpaved. The site is currently vacant with no improvements, except for temporary fencing, or buildings on the lots.

UNALTERED DRAINAGE:

The drainage area (on site) consists of 67 R-T lots being 10,4865 acres in size. The terrain slopes from the South-east to the Northwest at an average slope of 2.2%. The drainage exits by way of the Elena Gallegos Grant Line Channel. The site has been partially graded during the initial subdivision activity and during various construction activities which have taken place in the surrounding area. The grading that has been done does not cause any concern for building footings nor change old drainage patterns. The site is a city infill project and there is no un-developed land in the immediate vicinity, i.e. Montgomery and San Pedro.

There is no offsite drainage onto or accross this site. This drainage plan does not propose to change this condition. Drainage from San Pedro, adjacent to this property, drains Northward into the Elena Gallegos Grant Line Channel. The property to the South drains into San Pedro and Montgomery Streets.

25×10

This site is in a zone of 2.4 inches of rainfall in 6 hours for the 100 year maximum volume rainfall, assuming a run-off coefficient of 0.35, results in 31,975 $ft.^3$ of run-off in the unaltered state.

The average slope of 2.2% and a distance of 1075 ft. gives an overland flow of 1.6 ft/sec and a time of concentration of 11.2 min. This is based on the sparsely vegetated condition of this site. Using $I = \frac{189}{Tc^{+25}}$ for the maximum intensity rainfall results in a maximum intensity of 5.2 in/hr and a maximum Q of 19.2 cfs for this unaltered site.

ALTERED DRAINAGE

The recommended drainage plan is to drain the front yards to the planned streets and into the Elena Gallegos Grant Line Channel, via a concrete lined channel, and to pond the rear lots.

TABLE OF ALTERED AREAS

Buildings	179,900 ft^2
Driveways	33,500 "
Streets	51,039 "
Sidewalks	12,280 "
Landscaped	180,073 "

assumed coefficients of run-off for altered state:

$C_{landscaped} = 0.25$
$C_{impervious} = 0.90$ (Infiltration and depression storage)

Using the C's above the altered C is 0.64. This is a differential C of 0.29.

The rational formula with C= 0.29 and 2.4 inches gives a ponding volume of 26,494 cubic feet needed to keep the total maximum run-off the same as it is now. This is an average pond volume of 395 ft^3 or 14.6 cu. yds.

In the altered state, the street slope is 1.3%. Using the overland flow method, the flow rate is 2.3 ft/sec., This gives a time of concentration of 9 minutes. The maximum intensity 100 year storm use $I = \frac{189}{t_c+25}$ is 5.5 in/hr. Using ½ of the drainage (front lot area) and the maximum intensity storm, the maximum flow rate is 18.9 cfs. This is approximately the same as before alteration which is 19.2 cfs.

The division of flow between Whisperwood and Katson is 12.7 cfs for Katson and 6.2 cfs for Whisperwood. The maximum depth of flow would be 3.6" at the curb for Katson Avenue.

DRAINAGE STRUCTURES:

The city drawings ss-15-76, sheet 6 of 14 and ss-15-17 sheet 14 of 14 show the Elena Gallegos Grant Line Channel paved to the East edge of the city alley at the property line of this site. However on site inspection shows that the paving stops 5 ft. West of the Del Norte High Scholl, city alley property line which is 25 feet short of the city drawings. In order to control erosion it is proposed that 45 feet of channel paving (see enclosed drawing) be constructed. The proposed channel paving cross-section and slope are the same as the channel in existence.

The channel from the juncture of Katson Avenue N.E. and Whisperwood Place N.E. to the juncture of the city alley and the Elena Gallegos Grant Line Channel is to be in accordance with City Standard Details P-19 type A and one 8" block high. This channel can carry approx. 100 cfs and needs to carry 18.9cfs.

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ELENA GALLEGOS GRANT LINE DITCH:

A STUDY OF THE CITY TOPOGRAPHIC MAPS AND PERSONAL INSPECTION BY THIS WRITER OF THE SURROUNDING AREA PROVIDES THE BASIS FOR ESTIMATING THE CURRENT CONDITION OF THE AREA DRAINAGE. THE SHADED AREA IN FIGURE 1 IS THE AREA WHICH DRAINS INTO THE ELENA GALLEGOS GRANT LINE DITCH. THIS AREA BEGINS ON THE WEST, DOWNSTREAM, SIDE OF SAN PEDRO N.E. AND CONTINUES EASTERLY TO THE EASTERN EXTREMITY OF THE DRAINAGE AREA. THIS AREA IS COMPLETELY DEVELOPED OR IS IN THE PROCESS OF BEING DEVELOPED. THE DRAINAGE AREA IS COMPUTED TO BE 56.33 ACRES OR APPROXIMATELY 60 ACRES. THE FURTHEST REACH FROM THIS POINT IS 4415 FEET AND THE ELEVATION CHANGE IS 105 FEET. THIS GIVES A FALL SLOPE OF 2.4%. ASSUMING SHEET FLOW DOWN STREETS UNTIL IT REACHES THIS POINT, THE VELOCITY IS 2.75 FEET PER SECOND. THIS GIVES A TIME OF CONCENTRATION OF C = 26.75 AND A MAXIMUM INTENSITY OF 100 YEAR RAINFALL OF 3.65 INCHES PER HOUR FROM $I = 189/(25 + T_c)$. USING A COEFFICIENT OF RUNOFF OR 0.50 FOR THE DEVELOPED AREA, A RAINFALL INTENSITY OF 3.65 INCHES PER HOUR, AND AN AREA OF 60 ACRES, THE RUNOFF AT THE WEST SIDE OF SAN PEDRO N.E. IS 110 CFS.

FIGURE 2 IS A SKETCH OF THE CURRENT CONDITIONS OF THE ELENA GALLEGOS GRANT LINE DITCH IN THE REACH FROM THE EASTERN EDGE OF THE CONCRETE LINED PORTION TO THE OUTLET AT SAN PEDRO. THE SAN PEDRO OUTLET BOX STRUCTURE IS 6 FEET WIDE BY 5 FEET DEEP AND IS FILLED BY SAND AND GRAVEL TO WITHIN 1.8 FEET OF THE TOP. ASSUMING A SLOPE OF 2% THE MAXIMUM FLOW WHICH THIS CULVERT CAN PERMIT 106 CUBIC FEET PER SECOND. THIS IS MARGINAL WHEN THE MAXIMUM "Q" IS ESTIMATED AT 110 CFS.

DOWNSTREAM FROM SAN PEDRO N.E. THE CHANNEL FLOW LINE DIVIDES SOUTHWARD 8 FEET FROM THE EASEMENT CENTERLINE. THE MAXIMUM "Q", THAT THE CROSS SECTION AT STATION 7 + 00 COULD CARRY AND STAY WITHIN THE EASEMENT, CENTERLINE ± 15 FEET, IS 90 CFS.

THE CHANNEL WILL HAVE TO BE REALIGNED TO THE EASEMENT CENTERLINE AND DEEPENED TO A SLOPE ON A STRAIGHT LINE FROM THE FLOOR OF THE SAN PEDRO CULVERT OUTLET TO THE FLOOR OF THE CONCRETE LINED CHANNEL ON THE WEST END, INSIDE THE DEL NORTE HIGH SCHOOL PROPERTY LINE.

USING CUT OFF WALLS OF THE SAME CROSS SECTION AS THE ONE PLANNED AT THE END OF THE CONCRETE LINE DITCH, AND AN H OF 0.025 FOR A NATURAL CHANNEL IN GOOD CONDITION, THE CARRYING CAPACITY OF THE CHANNEL WOULD BE 810 CFS. THIS TYPE OF CHANNEL STABILIZATION IS BEING USED IN THE CHANNEL IMMEDIATELY EAST OF THE PROPERTY AND APPEARS TO BE FUNCTIONING WELL.

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Recommendation:

1. The implementation of the plan outlined in this report will comply with Drainage Resolution 72-2 and will result in no added hazard to downstream property.

2. The city of Albuquerque should be responsible for the cost of the 25 foot section of the Elena Gallegos Grant Line Channel.

3. The Subdivider be responsible for the cost of the 20 foot section of the Elena Gallegos Grant Line Channel and the drainage easement structure from the subdivision.

4. THE SUBDIVIDER INSTALL AT HIS EXPENSE APPROXIMATELY 10 CUTOFF WALL ON 100 FOOT CENTERS WITH AN APPROXIMATE DROP OF 2 FEET AT EACH CUTOFF WALL.

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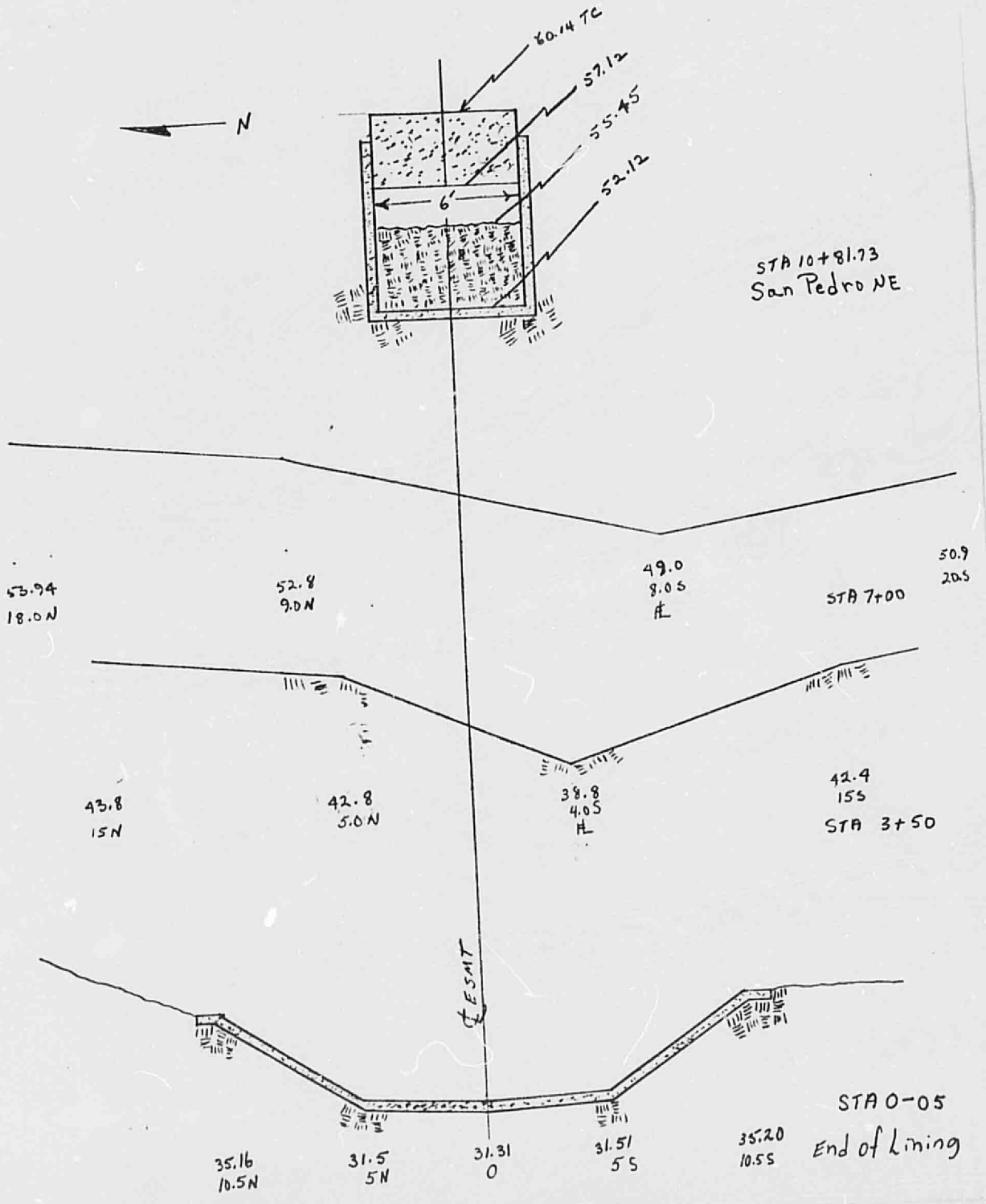
HELENA GALLEGOS GRANT LINE DITCH



25×10

9/12/78
HWRD
SW SURVEY DRAINAGE STUDY

UNIT 1 WHISPERWOOD

R. HICKS

(2)

TP#3 = ~~54.70~~ 43.19

TP4 = TBM = 5835.16

43.11	43.8	42.8	~~42.7~~	~~38.8~~	42.4	43.4	45.1 3+50
50N	15N	50N	0	4.0 S	15.5	27.5 S	50 N
Top	℄	Top		℄	NG	Top	NG
PAVE		BANK				BANK	

3+50

TP 2 = 49.82

TP 5 43.39

TP 6 51.07

53.67	53.91	52.80	49.0	51.3	51.6	7+00
50 N	18.0	7.0 N	8.0 S	22.5 S	50 S	
Top	Top	Top	℄	Top	NG	
PAVE	CURB & G.T. NG	BANK	NG	BANK		

7+00

TP# 1 54.90

BRASS CAP = 57.72

BRASS CAP RECORD 52 58.73
ERROR = -.01

℄ EGMT

NO. 447

TELEDYNE

9/12/78
HWRD
SW SURVEY DRAINAGE STUDY

UNIT 1, WHISPERWOOD
ALBUQUERQUE NM
R. HICKS & ASSOC

(1)

Top View

6' SLAT FENCE

N

TBM 35.16

0+00

10' CHANNEL

NO. 447

TELEDYNE

N

TBM 35.16

℄ EGMT

31.15
50 S
NG

39.2	35.20	35.19	31.51	31.31	31.50	35.16	36.5	36.20
35.0 S.	30.5	10.5 S	5.5		5	10.5	14.5	50 N
NG	NG	Top	℄		N.	N.	N.	NG
Top	TOC	CONC	Top		℄	Top	NG	
BANK			CONC			CONC	FENCE	
						TBM	LINE	

0+00

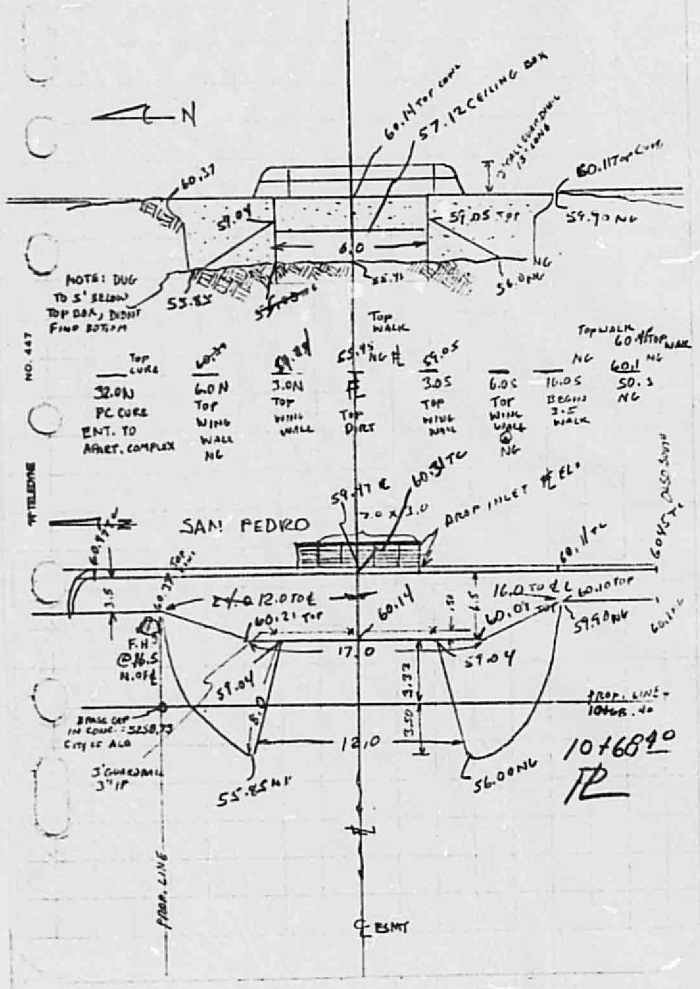
25X

9/12/78
HW RD
SW SURVEY

UNIT 1 WHISPERWOOD
ALB NM

R. HICKS & ASSOC

(3)



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CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

REF. NO. F18-D19

INTER-OFFICE CORRESPONDENCE

August 5, 1981

TO: Charles Veitz, Chief Building Official, Code Administration

FROM: C. D. Sheppard, Principle Assistant City Engineer

SUBJECT: WITHHOLDING ISSUANCE OF BUILDING PERMITS FOR WHISPERWOOD UNIT II SUBDIVISION

The developers of the Whisperwood Unit II Subdivision have failed to provide the required drainage channel improvements which are part of the grading scheme for this subdivision. Since failure to provide such drainage improvements creates conditions hazardous to the improvements to be placed on the properties within the subdivision, the City Engineer's Office requests upon the advice of the Assistant City Attorney, Malcolm de Vesty, that building permits not be issued for any further improvements within this subdivision. Specifically, it is requested that building permits not be issued for any of the following addresses until further notice from the City Engineer and the City Attorney's Office:

6145 Katson Avenue N. E.
6141 Katson Avenue N. E.
6137 Katson Avenue N. E.
6129 Katson Avenue N. E.
6133 Katson Avenue N. E.
6125 Katson Avenue N. E.
6121 Katson Avenue N. E.
6117 Katson Avenue N. E.
6113 Katson Avenue N. E.
6109 Katson Avenue N. E.
6105 Katson Avenue N. E.
6101 Katson Avenue N. E.
6041 Katson Avenue N. E.
6037 Katson Avenue N. E.
6033 Katson Avenue N. E.
6029 Katson Avenue N. E.
6025 Katson Avenue N. E.
6021 Katson Avenue N. E.
6017 Katson Avenue N. E.
6013 Katson Avenue N. E.
6009 Katson Avenue N. E.
6005 Katson Avenue N. E.
6001 Katson Avenue N. E.
6000 Katson Avenue N. E.
6008 Katson Avenue N. E.
6014 Katson Avenue N. E.
6018 Katson Avenue N. E.
6022 Katson Avenue N. E.

25×10

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6026 Katson Avenue N. E.
6030 Katson Avenue N. E.
6034 Katson Avenue N. E.
6038 Katson Avenue N. E.
6042 Katson Avenue N. E.
6100 Katson Avenue N. E.
6104 Katson Avenue N. E.
6108 Katson Avenue N. E.
6112 Katson Avenue N. E.
6116 Katson Avenue N. E.
6120 Katson Avenue N. E.
6124 Katson Avenue N. E.
6128 Katson Avenue N. E.
6132 Katson Avenue N. E.
6136 Katson Avenue N. E.
6140 Katson Avenue N. E.
6144 Katson Avenue N. E.
4229 Whisperwood Place N.E.
4225 Whisperwood Place N.E.
4221 Whisperwood Place N.E.
4217 Whisperwood Place N.E.
4213 Whisperwood Place N.E.
4209 Whisperwood Place N.E.
4205 Whisperwood Place N.E.
4201 Whisperwood Place N.E.
6000 Whisperwood Court N.E.
6004 Whisperwood Court N.E.
6008 Whisperwood Court N.E.
6012 Whisperwood Court N.E.
6016 Whisperwood Court N.E.
6020 Whisperwood Court N.E.
6024 Whisperwood Court N.E.
6028 Whisperwood Court N.E.
6005 Whisperwood Court N.E.
6011 Whisperwood Court N.E.
6015 Whisperwood Court N.E.
6019 Whisperwood Court N.E.
6023 Whisperwood Court N.E.
6027 Whisperwood Court N.E.

Your cooperation in this matter is sincerely appreciated.

CDS:gc
7892A
cc R. Heller
C. M. Easterling
Malcolm de Vesty

25×

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FILE COPY

F18/D19

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

August 10, 1987

S.J. Moore
6026 Katson, NE
Albuquerque, New Mexico 87109

RE: WHISPERWOOD SUBDIVISION

Dear Mr. Moore:

Enclosed you will find a copy of the approved drainage plan on file. If any changes took place to the approved plan, it was not with our concurrence. If you have any further communication with the developer, please have them call me at 768-2650.

If I can be of further assistance, please feel free to call me at 768-2650.

Cordially,

Bernie J. Montoya

Bernie J. Montoya, C.E.
Engineering Assistant

Enclosure

BJM/bsj

PUBLIC WORKS DEPARTMENT

Walter Nickerson, P.E., City Engineer

ENGINEERING GROUP

Telephone (505) 768-2500

AN EQUAL OPPORTUNITY EMPLOYER

25×10

0000 0000 1660

PLANS/PLATS ON FILE

FILE DESC: F18/D19

PLANS/PLATS 2

25×10

0000 0000 1661

25x10

HYDROLOGY F18/D15 NONE

F 18- D 15

No Plans

ENGINEER'S DRAINAGE REPORT

SAN PEDRO VILLAGE APARTMENTS UNIT 4

NEAR SAN PEDRO AND MONTGOMERY NE

ALBUQUERQUE, NEW MEXICO

APPROVED FOR DRAINAGE

24 Jan 74

J Kielich ACE

SIGNATURE TITLE

CONTINGENCIES

WILSON & COMPANY

ALBUQUERQUE, NEW MEXICO

17 JANUARY 1974

ENGINEER'S DRAINAGE REPORT

SAN PEDRO VILLAGE APARTMENTS UNIT 4

NEAR SAN PEDRO AND MONTGOMERY NE

PURPOSE: The purpose of this report is to analyze the amount of run-off entering the study area and the carrying capacities of the existing and proposed streets, ditches, and drainage structures. A 100 year design rainfall was used to determine the quantity of run-off flow.

CLIMATOLOGICAL INFORMATION: The City of Albuquerque has adopted a drainage master plan which gives the following formula for calculating the intensity of rainfall that is probable for a 100-year storm:

$$i_{100} = \frac{100}{t_c + 25}$$

i_{100} = rainfall in inches per hour

t_c = time of concentration in minutes

RUN-OFF CALCULATION: The Rational Method was used to calculate the run-off from the study area. The Rational formula is as follows:

$Q = CiA$

Q = Quantity of run-off in cubic feet per second

C = Coefficient of run-off expressed in a ration of rainfall to run-off

i = Rainfall expressed in inches per hour

A = Drainage area expressed in acres

The value for the coefficient C was varied from 0.70 for individual residential areas to 0.90 for high density development areas such as apartments and shopping centers.

DISCUSSION: There are no drainage areas entering the site of the proposed improvement in the form of sheet flow. There is a drainage area that crosses along the north side of the site as a drainage ditch. Two other drainage areas are shown and discussed as a point of interest.

Area A-1 has a drainage area of 52 acres. This drainage enters at the northeast corner of the site thru a 6 foot x 5 foot reinforced concrete box culvert. The calculated design flow at this point is 152 cfs. The capacity of the 6 foot x 5 foot RCBC flowing full is 200 cfs.

Area A-2 has a drainage area of 12 acres. This drainage discharges into the ditch along the north side of the project site. The calculated design flow at the northwest corner of the site is 202 cfs.

Drainage Areas A-3 and A-4 discharge into a grass waterway along the east boundary of the golf course and then into a ditch along the south side of the golf course. The design flow leaving the point of juncture is 640 cfs.

The project site contains 10.2 acres. The north 7.9 acres drain to the northwest corner into the drainage ditch. The south 2.3 acres sheet flows into existing driveways and is discharged into Montgomery Boulevard.

The proposed driveways will have an inverted crown and will have a minimum width of 25 feet and a minimum slope of 0.01 ft./ft. The calculated design flow is 34 cfs. The minimum capacity of the driveway is 149 cfs.

The ditch along the north side of the site is to be paved with concrete. The proposed section will have vertical walls with a 10 foot bottom width. The City has requested the 10 foot width so they can remove sand and silt with their maintenance equipment. The drainage ditch should be fenced on both sides for the protection of the public. The paved ditch should be constructed from the 6 foot x 5 foot RCBC on San Pedro to the existing concrete ditch lining at the northwest corner of the property. The slope of the ditch would be 0.0194 ft./ft. A 10 foot wide concrete ditch flowing 2 feet deep would be carrying 340 cfs. The required capacity is 202 cfs. Considering the topography the probable minimum height of wall would be four feet.

The grassed areas within the project will be depressed as much as possible to retain rainfall run-off on the site. Also the use of planters and tree wells as infiltration wells will be considered.

COMP. RFS

CK

DATE 17 Jan 74

WILSON & COMPANY ENGINEERS & ARCHITECTS BOX 228 SALINA KANSAS

LOC. ALBUQUERQUE FILE 73-524

PROJ. San Pedro Village #4 SHEET 1

SUBJ. Drainage OF 2

Drainage Area A-1 A=52 Acres FLOW @ NE COR. SITE

Rational Method Q=CiA

C= coef. of runoff = 0.70

i= intensity of rainfall inches/hr

$i_{100} = \frac{189}{t_c+25}$ City drainage manual

t_c = 20min

$i_{100} = \frac{189}{20+25} = \frac{189}{45} = 4.2$ inches/hr

C= 0.70

Q_{100} = CiA = .70 x 4.2 x 52 = 152 cfs.

Drainage Area A-1 Plus A-2 FLOW @ NW COR. SITE

C= .75 t_c= 20 min A_1+A_2 = 64 Ac.

Q_{100} = CiA = .75 x 4.2 x 64 = 202 cfs.

Drainage Area A-1 + A-2 + A-3 + A4 FLOW @ SE COR. GOLF COURSE

C=.70 t_c= 20m $A_1+A_2+A_3+A_4$ = 218 Ac

Q_{100} = CiA = .70 x 4.2 x 218 = 640 cfs.

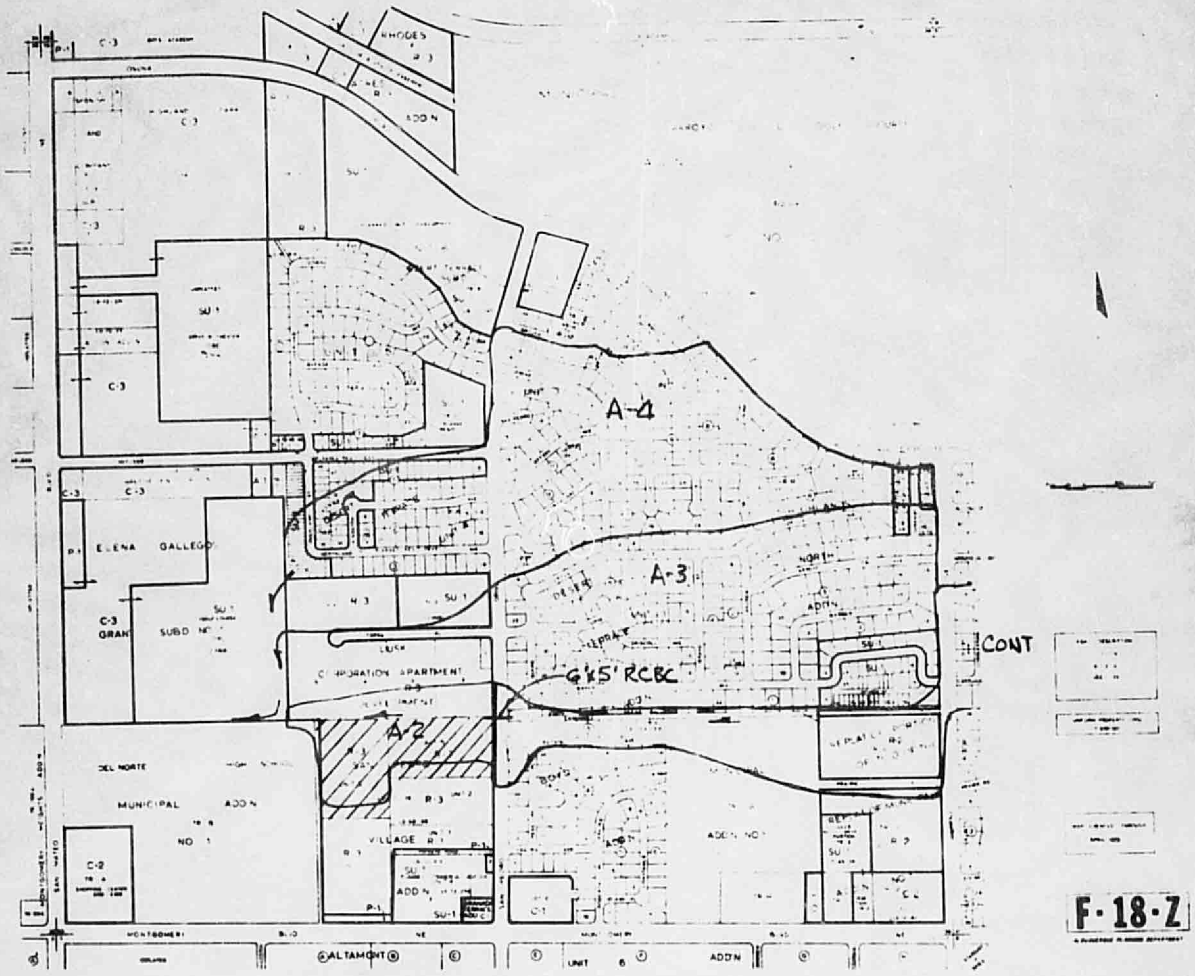
ON SITE DRAINAGE DISCHARGING INTO DITCH @ NW CORNER OF SITE

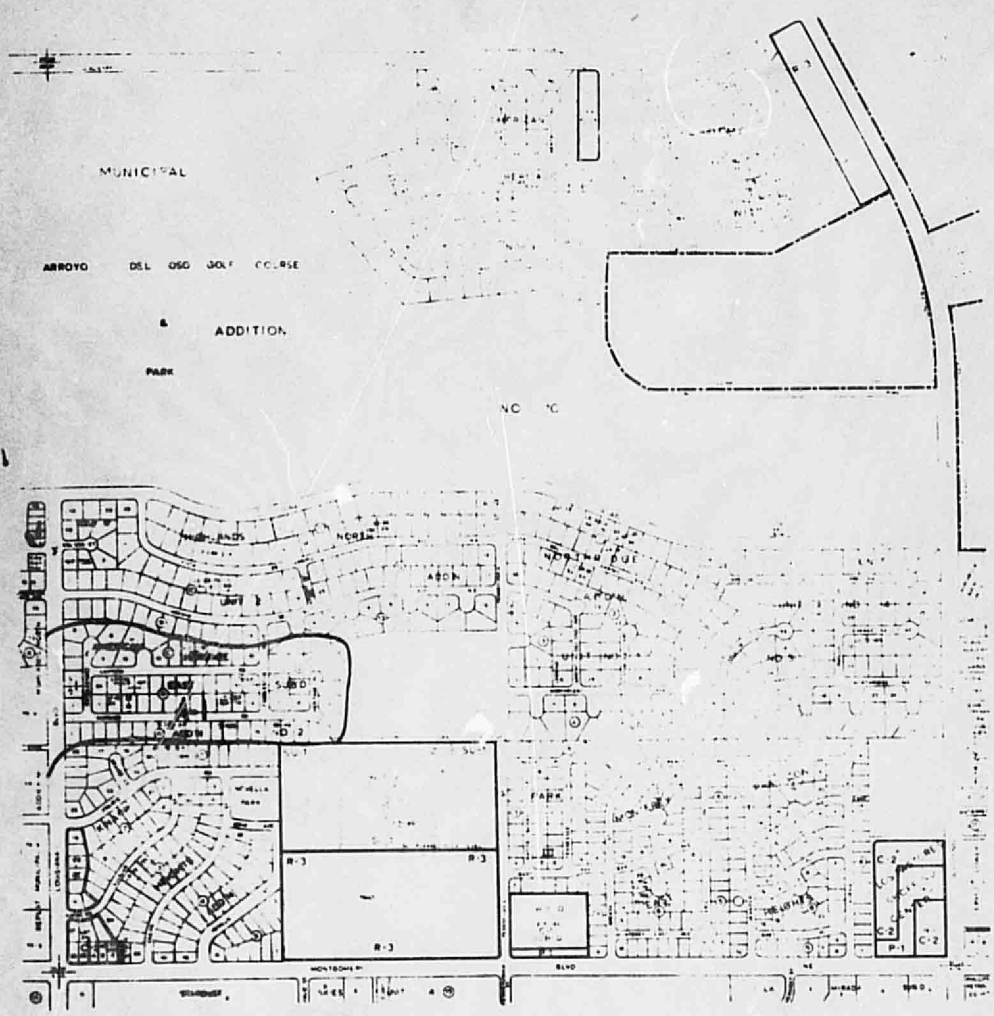
A= 79 Acres t_c= 15min C .90

$i = \frac{189}{t_c+25} = \frac{189}{15+25} = \frac{189}{40} = 4.72$

Q_{100} CiA = .90 x 4.72 x 7.9 = 33.6 cfs.

W.C.& COMPANY FORM 1-65


RHODES
ADD'N
C-3
SU-1
ELENA GALLEGO
C-3
GRANT
SUBD NO
CORPORATION APARTMENT
A-4
A-3
A-2
6'x5' RCBC
CONT
DEL NORTE
MUNICIPAL
ADD'N
NO 1
VILLAGE
C-2
ADD'N
ALTAMONT
UNIT 6
ADD'N
F-18-Z


MUNICIPAL
ARROYO DEL OSO GOLF COURSE
ADDITION
PARK
R-3
R-3
R-3
C-2
C-2
C-2
P-1

F-19-Z

0 3 5 2