HYDROLOGY J11/D9 1 of 2 5 PLANS

311/D9

5 PLANS

FILE COPY

Submitted 11/10/87

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

November 19, 1987

Steve Marsico
5140 Lomas De Atrisco, NW
Albuquerque, New Mexico 87105

RE: DRAINAGE REQUIREMENTS FOR THE REPLATTING OF BLOCK 17, PALISADES SUBDIVISION (J-11/D9A) DRB-87-0740

Dear Mr. Marsico:

You have indicated to the Design Review Board that you wish to replat Block 17 of the Palisades Subdivision to include the West 35 feet of Lot 15 as part of Lot 14, and the East 25 feet of Lot 15 as part of Lot 16.

To satisfy the drainage requirements, please add a note to the new plat similar to the following:

> "NOTE: Grading and Drainage of all lots must be in accordance with the current grading and drainage plan on file in the City Hydrology Office."

If I can be of further assistance, or if you have any questions, please call me at 768-2650.

Cordially,

Stuart Reeder

G. Stuart Reeder, P.E.
C.E./Hydrology Section

GSR/bsj

xc: Drainage File #J-11/D9

Milligan Realty, Inc.
3730 Coors, NW • Albuquerque, New Mexico 87120 • Phone 831-0900

December 26, 1984

Mr. Bruce Blaine
Winton Homes
5169 Loma De Atrisco
Albuquerque, New Mexico 87105

Attached is a copy of the correspondence I mailed to you on December 14, 1984.

At that time I failed to send it to you by registered mail with a return receipt. I need this receipt in order to properly document my files.

Thank you,

Pat Milligan
Pat Milligan

J11-D9

Copy to: Winton Homes, El Paso
✓ City Engineer/Hydrology

Milligan Realty, Inc.
3730 Coors, NW • Albuquerque, New Mexico 87120 • Phone 831-0900

December 14, 1984

RECEIVED
DEC 17 1984
CITY ENGINEER

Winton Homes Inc.
7145 Western Skies
El Paso, Texas 79913

Attn: Bruce Blaine

J11-D 9a

Gentlemen:

By my letter of November 5, 1984, I notified you of my intentions to terminate our contract for purchase of residential lots in the Palisades Addition because of non-compliance. The thirty day period has now passed and the purpose of this letter is to remind you of the requirements by the City to construct site improvements in accordance with the Grading/Drainage report on file with the City Engineers/Hydrology, City of Albuquerque. I am referring specifically to the two lots you purchased during the existence of the contract. Copies of above correspondence enclosed for your ready reference.

Sincerely,

Pat Milligan

Pat Milligan

GJ

cc-City Engineer/Hydrology, City of Albuquerque

Milligan Realty, Inc.

3730 Coors, NW • Albuquerque, New Mexico 87120 • Phone 831-0900

November 5, 1984

Winton Homes, Inc.
7145 Western Skies
El Paso, Texas 79913

Attn: Bruce Blaine

Gentlemen:

This is in reference to our 'Contract For Purchase & Sale of Residential Lots & Option Agreement' signed on April 10, 1984 (Palisades Addition).

I have become increasingly concerned over the manner in which the execution of the subject contract is evolving.

Specifically, I am concerned with (1) the completion of the purchase of the initial three (3) lots as per Article I of the contract; (2) Your failure to exercise the option to purchase one (1) additional lot per month per Article II (2.03); & (3), compliance with grading/drainage requirements by the City Engineer/Hydrology, City of Albuquerque.

As you know, the Contract calls for you to have initially purchased and closed three (3) lots on or before May 20, 1984. You purchased one (1) lot which closed on May 7, 1984, leaving you in default on that part of the contract. Article II (2.03) requires you to exercise the option to additionally purchase an average of one (1) lot per month of the remaining lots. To date you have picked up one (1) lot under this option which closed on September 27, 1984. I see no indication of an effort by you to comply with this requirement, leaving me unsure of the future of this contract and you in default.

Further, the lot that you purchased and developed is not in accord with the approved grading/drainage plan on file with the City Engineer/Hydrology. You agreed to comply with those requirements by your letter dated May 1, 1984.

Given these situations, I feel that I must now act to remove myself from this untenable position.

Therefore, in accordance with article II 2.04 (B) and Article IV of the contract, I hereby notify you that I wish to terminate the contract effective thirty (30) days from the date of this letter.

The termination of this contract is no way relieves you from compliance with the Grading/Drainage requirements on the two lots you have purchased.

I regret having to take this action, but under the circumstances, I feel it is the prudent thing to do.

Bruce B. Blair
11-6-84

Sincerely yours,

Pat Milligan
Pat Milligan Builder, Inc.

City of Albuquerque

May 12, 1983

Mrs. John Lujan
4909 Regina Circle NW
Albuquerque, NM 87105

REF: Palisades Addition J11-D9

Dear Mrs. Lujan:

The problem that you mention in your complaint filed with our office on April 25, 1983 is one of many that our office has received in that area.

According to the historical runoff a total of 44.0 cfs previously entered the subdivision as indicated by the drainage report provided by the Engineers, Murray-McCormick, Inc. The upstream development has reduced and improved the situation by lowering the 100 year storm runoff from the historical 44.0 cfs to a mere 4.0 cfs (reduced by a factor of 10).

The City does not have maintenance jurisdiction over the retaining walls, the maintenance and liability falls solely on the property owners and the above mentioned design Engineer. If the design that was provided by the Engineer is not functioning properly, it is the responsibility of the property owner and the design Engineer to correct the situation.

The City does not have the legal right to enter and maintain the retaining wall or slopes. The individual property owners are responsible for the maintenance of the structures and slopes. Any damages you feel are a result of this lack of maintenance is basically between you and your neighbor. I would suggest contacting the abutting owner and inform him of the problem. In the event that you do not obtain satisfaction on your situation, I would suggest that legal action may be necessary if their cooperation is not obtained.

If you have any questions concerning this matter, do not hesitate to call me at 766-7644.

Sincerely,

Bernie J Montoya

Bernie J. Montoya
Hydrologic Engineering Tech.

mrk

MUNICIPAL DEVELOPMENT DEPARTMENT

Richard S. Heller, P.E., City Engineer
LaMonte J. Urban, P.L.S., Chief City Surveyor

ENGINEERING DIVISION

123 Central Avenue N.W.
Albuquerque, New Mexico 87102
Telephone (505) 766-5040

To DR. J11-D9

CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE November 10, 1982 REF. NO._____

TO: Cynthia Alderete, Address Verification Clerk, City Engineers Office
Ruth Marquez, Plans Distribution Clerk, Code Administration Division

FROM: Charles W. Volz, Chief Building Official, Code Admin. Div. CWV

SUBJECT: PALISADES SUBDIVISION - LOTS JJ-PP

In accordance with the request (attached) of Mr. Charles M. Easterling, Principal Assistant/City Engineer, I am requesting that Ms. Alderete notify Ms. Marquez each time an applicant establishes an address for a building permit in the subject subdivision lots. Ms. Marquez is to then contact Mr. Fred Aguirre or Mr. Bernie Montoya as per Mr. Easterling's request.

Thank you for your assistance and cooperation in this matter.

CWV/TR/cc

cc: Fred Aguirre, Hydrology Department
Bernie Montoya, Hydrology Department
Bryan Burnett, Hydrology Department

Attachment

CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE November 5, 1982 REF. NO._____

TO: Charles Volz, Chief Building Official/Code Administration

FROM: Charles M. Easterling, Principal Assistant/City Engineer CME

SUBJECT: PALISADES SUBDIVISION - LOTS JJ-PP

On November 2, 1982, the DRB approved the subdivision plat for "The Palisades - Lots JJ thru PP in Block 4" (see enclosure). Because of the steep terrain in the area, the Hydrology Section has imposed some rather extensive requirements for retaining walls and drain systems for each lot. We are also requiring that a Professional Engineer certify the improvements once they are completed (see circled statement).

In order to insure that development in this area proceeds as planned, I am requesting that Mr. Fred Aguirre or Mr. Bernie Montoya of this office be contacted each time a building permit is requested for a subdivision lot. If you have any questions concerning this matter, please call Mr. Brian Burnett @ 7467.

Thank you for your cooperation.

CME/BGB/tsl

cc: Mr. Fred Aguirre, Hydrology Dept.
Mr. Bernie Montoya, Hydrology Dept.
Mr. Tom Isaacson, Isaacson & Arfman, PA

JACK M. CLIFFORD & COMPANY
2201 SAN PEDRO DRIVE NE
TWO SAN PEDRO PARK, SUITE 201
ALBUQUERQUE, NEW MEXICO 87110
PHONE (505) 884-5573

November 5, 1982

HAND DELIVERED

Development Review Board Committee
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

Dear Sir:

Jack M. Clifford & Co. wishes to thank the Development Review Board for informally addressing the issue of access through Clifford Industrial Park (D.R.B. 164) on October 26, 1982. We also wish to make the following statements in regard to this issue:

1. Jack M. Clifford & Co. agrees with the recommendation of the D.R.B. to cul-de-sac Washington Place, NE if the lands lying west of Clifford Industrial Park should be used for purposes other than industrial.

2. Jack M. Clifford & Co. will not be held responsible for acquiring the consent of A.M.A.F.C.A. for the use of their lands for the future access. This will have to be the responsibility of the beneficiary of the access road.

3. Jack M. Clifford & Co. will not be responsible for the costs of any improvements to the access road on A.M.A.F.C.A.'s lands, other than the drainage improvements already being designed in conjunction with our project.

4. Jack M. Clifford & Co. is willing to grant a 48' wide right-of-way to the City of Albuquerque between Lots 54 and 55 and provide for construction of a dip section-crossing at the intersection of the drainage easement and access road on Jack M. Clifford & Co.'s lands only. There is to be the understanding that, should these lands be used for purposes other than industrial uses or the city finds this right-of-way unnecessary, the 48' right-of-way will revert back, in total, to the existing lot owners.

5. If the use of the lands in question has not been decided prior to the construction of Phase Two of Clifford Industrial Park, which contains both Lots 54 and 55, the 48' right-of-way will then revert back to the land owners.

Sincerely,

Robert L. Kastning

Robert L. Kastning

RLK:ls

CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE November 5, 1982 REF. NO._____

TO: Charles Volz, Chief Building Official/Code Administration

FROM: Charles M. Easterling, Principal Assistant/City Engineer CME

SUBJECT: PALISADES SUBDIVISION - LOTS JJ-PP

On November 2, 1982, the DRB approved the subdivision plat for "The Palisades - Lots JJ thru PP in Block 4" (see enclosure). Because of the steep terrain in the area, the Hydrology Section has imposed some rather extensive requirements for retaining walls and drain systems for each lot. We are also requiring that a Professional Engineer certify the improvements once they are completed (see circled statement).

In order to insure that development in this area proceeds as planned, I am requesting that Mr. Fred Aguirre or Mr. Bernie Montoya of this office be contacted each time a building permit is requested for a subdivision lot. If you have any questions concerning this matter, please call Mr. Brian Burnett @ 7467.

Thank you for your cooperation.

CME/BGB/tsl

cc: Mr. Fred Aguirre, Hydrology Dept.
Mr. Bernie Montoya, Hydrology Dept.
Mr. Tom Isaacson, Isaacson & Arfman, PA

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

J11 - D9a

October 7, 1982

Mr. Tom Isaacson
Isaacson & Arfman Consult. Engr.
128 Monroe N.E.
Albuquerque, N.M. 87108

RE: PALISADES SUBDIVISION JJ-VV

Dear Tom:

The drainage plan as indicated in your submittal of September 29, 1982 is hereby approved.

We will keep you informed of any work in the area. Again, thanks for your cooperation on this project. It's a pleasure working with you and Fred.

Very truly yours,

Brian G. Burnett

Brian G. Burnett
Civil Engineer/Hydrology

BGB/tsl

Isaacson &
Arfman, P.A.

Consulting Engineering
Associates

RECEIVED
OCT 01 1982
CITY ENGINEER

September 29, 1982

Mr. Bryan Burnett
Civil Engineer/Hydrology
Municipal Development Department
Engineering Division
City of Albuquerque
P.O. Box 1293
Albuquerque, N.M. 87103

RE: Palisades Subdivision, Lots JJ-VV

Dear Bryan:

I have revised the drainage plan and grading drawings to include a detail of the drainage line outlets into the curb and gutter. This detail is as discussed during our telephone conversation of 9/23/82.

I feel the plan has now been completed and request your approval of same. Enclosed are two sets of prints of the plan for your files.

Very truly yours,

Tom Isaacson

Thomas O. Isaacson, P.E.

Enc.
TOI/naf

128 Monroe, NE • Albuquerque, NM 87108 • (505) 268-8828

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 14, 1982

Mr. Tom Isaacson
Isaacson & Arfman, PA
128 Monroe N.E.
Albuquerque, N.M. 87108

RE: YOUR LETTER OF AUGUST 30, 1982-PALISADES SUBDIVISION, LOTS JJ-VV, BLK. 4

Dear Tom:

I have reviewed the contents of the referenced letter and forward the following comments:

a. The maximum pipe diameter that can be placed through the curb is 4". The drainage plan shows an outlet pipe size of 6". It appears that the drainage system would operate with a 4" pipe.

b. I concur with the plat wording regarding compliance with the approved plan and certification of the improvements. We will probably have Code Enforcement notify us when a building permit is issued so that we know work is taking place in the area.

Thank you for your help in these matters. If you have any questions, please call.

Very truly yours,

Brian G. Burnett

Brian G. Burnett
Civil Engineer/Hydrology

BGB/tsl

Isaacson &
Arfman, P.A.

Consulting Engineering
Associates

RECEIVED
SEP 09 1982
CITY ENGINEER

August 30, 1982

Mr. Brian Burnett
City Engineer/Hydrology
P.O. Box 1293
Albuquerque, N.M. 87103

RE: Palisades Subdivision, Lots JJ-VV, Block 4

Dear Brian:

Enclosed is a detail showing the proposed curb outlet for the drain pipes for the referenced subdivision. We will place this detail on the Grading/Drainage Plan.

In regards to the implementation of the grading & drainage plan we suggest that:

1. the proposed Summary Plat of the subdivision contain a statement obligating the lot owners, and subsequent owners, to construct site improvements in accordance with the Grading/Drainage report on file with the City Engineer/ Hydrology, City of Albuquerque.

2. the owner agree and be required to apprise all subsequent owners of this requirement by so stating in sales agreements executed for the sale.

3. the owner agree to and be required to place this requirement on the Deed Restrictions for the Lots.

A suggested statement might be:

"The owner of lands herein subdivided hereby agrees to develop the lots in accordance with the approved Grading/Drainage Plan on file with the City Engineer/Hydrology including the phasing schedule contained in that Plan. Construction of these improvements are also required to be certified by a New Mexico Registered Civil Engineer and the Certification delivered to the City Engineer/Hydrology.

128 Monroe, NE • Albuquerque, NM 87108 • (505) 268-8828

The owner further agrees to pass on these requirements to any subsequent lot owners.

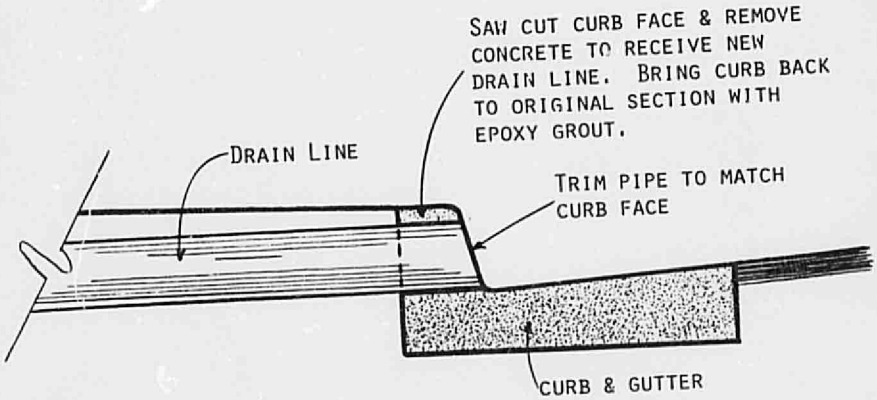
Very truly yours,

Tom Isaacson

Thomas O. Isaacson

Enc.
TOI/naf

DETAIL #560



Drain Line Outlet at Curb

scale: 1"=1'-0"

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 17, 1982

Mr. Thomas Isaacson
Isaacson & Arfman, P.A.
128 Monroe N.E.
Albuquerque, N.M. 87108

RE: DRAINAGE FOR THE PALISADES SUBDIVISION, LOTS JJ-VV, BLOCK 4

Dear Tom:

In regards to our recent phone conversation concerning the referen d project, this letter will serve as formal notification that this office concurs with the proposed drainage plan. We would, however, appreciate a detail outlining how the PVC drain pipe will discharge into the street.

We are currently formulating a plan to insure that the necessary drainage facilities are constructed in conjunction with the building of each home. If you have any suggestions on how this can be accomplished, please give me a call.

Thank you for your cooperation and help throughout the work on this project.

Very truly yours,

Brian G. Burnett
Civil Engineer/Hydrology

BGB/tsl

ISAACSON & ARFMAN, P.A.
CONSULTING ENGINEERING ASSOCIATES
128 MONROE N.E. • ALBUQUERQUE, NEW MEXICO • PHONE-268-8828

August 9, 1982

RECEIVED
AUG 10 1982
ENGINEERING

Mr. Chuck Easterling
City Drainage Engineer
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

ATTENTION: Brian Burnett

RE: The Palisades Subdivision, Replat of Lots JJ-VV, Block 4

Gentlemen:

We are resubmitting a revised grading plan for the referenced subdivision in response to your comments in your letter of May 24, 1982. This plan is submitted as a basis for a drainage report for that portion of the subdivision.

The revised plan now contains a "Sheet 2" which was not previously submitted and consequently is new information for your review. Sheet 2 contains a "Phasing Schedule" which defines the scope of the work necessary should the Developer (or subsequent owners) construct the subdivision one lot at a time or several lots at a time. The Schedule refers to various retaining walls and drain lines which are "keyed" on Sheet 1 of the plan.

In your letter of May 24, 1982 you asked that surface drainage from high to low lots be considered. We have studied this alternative and believe it to be viable but prefer the underground drain line system presented. However, we have included a detail for the drain line inlet which contains a provision for surface drainage overflow in event of drain line malfunction.

Sheet 2 also contains a sketch showing proposed drainage easement locations to be shown on the Summary Plat proposed for this subdivision. We have included this since our firm is not preparing the plat.

Your May 25th letter questioned the possibility of off-site runoff from lots on the other side of La Bajada Ct. We have studied this situation and feel it is quite unlikely. There is no concentrated flow from this area. We expect only sheet flow to occur. Assuming that an area 50 feet wide and 100 feet deep would concentrate we estimate the peak Q would be 0.6 cfs. We feel this flow would not jump both a crowned street and a front yard with positive slopes and flood the street side lots.

Enclosed is a copy of a topography map showing the terrain of the lots on the west side of La Bajada Ct.

Your approval of this plan for drainage report requirements is requested.

Very truly yours,

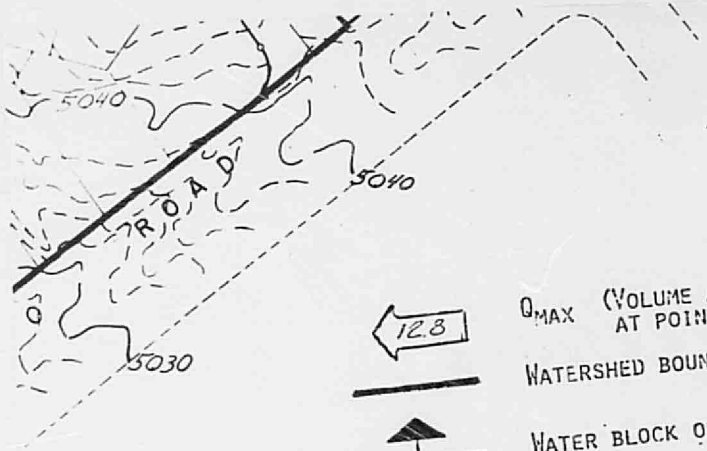
ISAACSON & ARFMAN, P.A.

Tom Isaacson

Thomas O. Isaacson
President

TOI/cvi

cc: Pat Milligan



LEGEND

12.8 Q_{MAX} (VOLUME AND DIRECTION OF FLOW FOR DEVELOPED RUNOFF AT POINT INDICATED IN C.F.S.)

WATERSHED BOUNDARY.

WATER BLOCK OR SUMMIT.

RECEIVED
AUG 10 1982
ENGINEERING

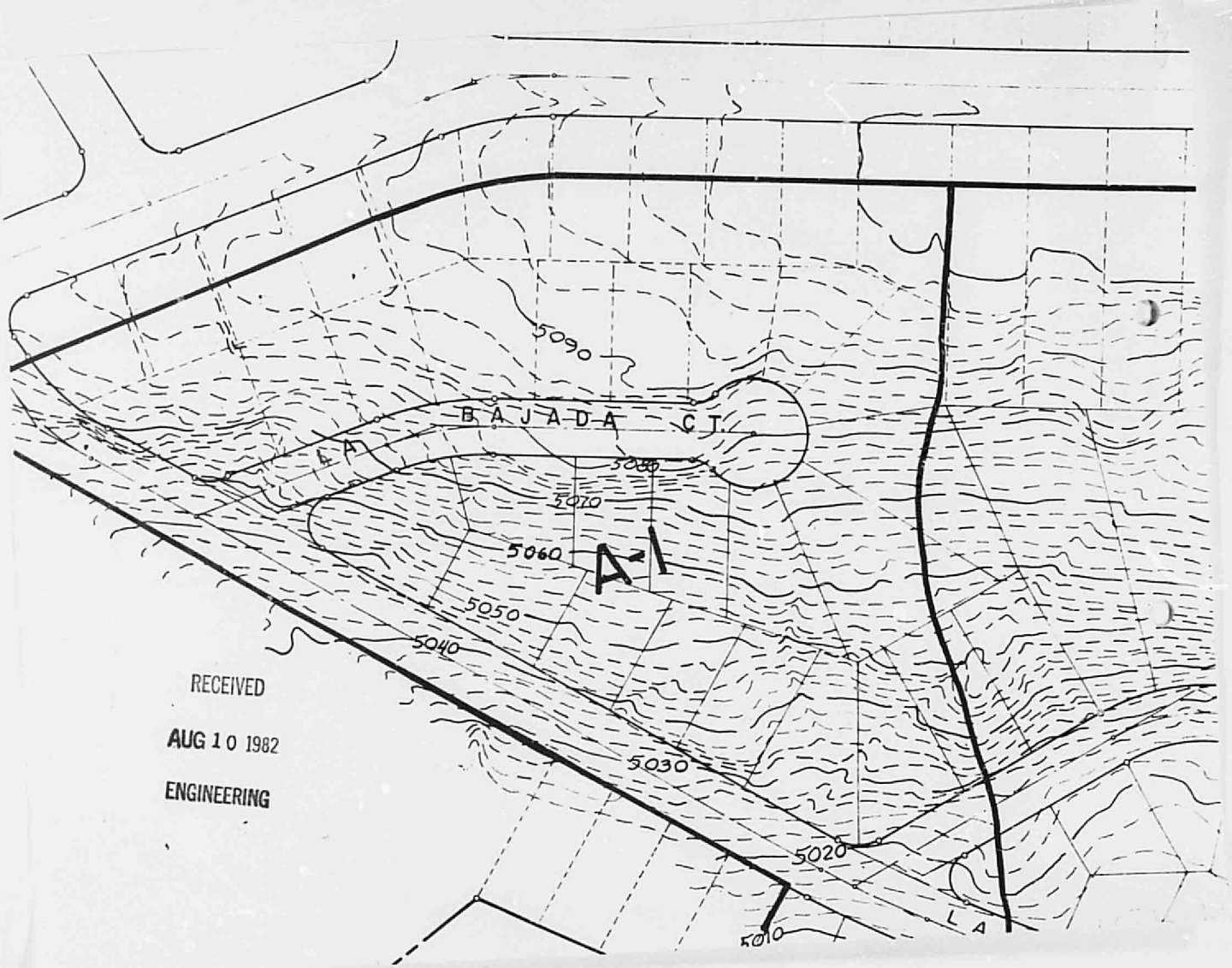
0 50 100 150 200

SCALE IN FEET
1" = 100'

FIGURE NO. 1

THE PALISADES UNDEVELOPED FLOW CHARACTERISTICS

MURRAY-McCORMICK, INC.
ENVIRONMENTAL DESIGN
ENGINEERING·PLANNING·SURVEYING
2601 WYOMING BLVD. N.E. SUITE F/ALBUQUERQUE, NEW MEXICO 87110/505-292-1936



RECEIVED
AUG 10 1982
ENGINEERING

City of · Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

J11 - D9a

May 24, 1982

Mr. Tom Isaacson
Isaacson & Arfman
2727 San Pedro Dr. N.E.
Albuquerque, N.M. 87110

RE: THE PALISADES SUBDIVISION GRADING PLAN

Dear Tom:

The following comments are in reference to your recent submittal regarding site grading for Lots JJ thru VV in Blk. 4, Palisades Subdivision:

1. Chuck Easterling made the suggestion that runoff from the upper lots adjacent to La Bajada Ct. be directed through the lots fronting La Bajada by means of surface swales as opposed to a drain system. One problem with this, however, is that runoff may collect next to the retaining walls if the grading is altered slightly once the homes are constructed. We request that both options of surface and subsurface drainage be investigated. The type of collection system for the subsurface drain should also be identified and detailed. I have enclosed a portion from the soils investigation for the subdivision which may help in determining the feasibility of each method.

2. Does any offsite runoff cross La Bajada Ct. onto the lots?

3. I have enclosed for your review some correspondence and grading plan information regarding other parts of the subdivision. This may prove helpful in your design.

If you have any questions concerning these matters, please call.

Very truly yours,

Brian G. Burnett
Civil Engineer/Hydrology

BGB/tsl

Enclosures

ISAACSON
& ARFMAN, P.A.
CONSULTING ENGINEERING ASSOCIATES

2727 SAN PEDRO N.E. SUITE 114A
ALBUQUERQUE, NEW MEXICO 87110
TELEPHONE - 883-2800

March 22, 1982

Mr. Chuck Easterling
City Drainage Engineer
City of Albuquerque
Box 1293
Albuquerque, New Mexico 87103

Re: Palisades Replat of JJ - VV, Block 4

Dear Mr. Easterling:

I enclose 2 copies of a grading plan for the referenced project as basis for a drainage report for that project. Your review is requested.

The drainage report is prepared in conjuction with a proposed summary plat for the property. Presently the property consists of 13 lots (Lots JJ-VV). The proposed replat would yield 16 lots through creating 3 new lots. Lot H-H, which is shown on the grading plan, is not a part of the replat but is included since it is also owned by the developer, Pat Milligan.

The grading plan has been prepared in response to your request made during our preliminary meeting of September 14, 1981.

There is no change to the streets already previously platted. All streets have been constructed with the exception of La Bajada which is only partially constructed. La Bajada presently has curb and gutter installed on both sides on the street but is unpaved.

Your approval of this plan for drainage report purposes is requested.

Very truly yours,

Thomas O. Isaacson

TOI/cvi

cc: Pat Milligan

RECEIVED
MAR 25 1982
ENGINEERING

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DRAINAGE REPORT INFORMATION SHEET

PROJECT TITLE Palisades Subdivision, Replat of Lots JJ through VV, Block 4

ZONE ATLAS PAGE NO. J-11-D.19 CITY ADDRESS

LEGAL ADDRESS As above

ENGINEERING FIRM Isaacson & Arfman, P.A. CONTACT Tom Isaacson

ADDRESS 2727 San Pedro N.E., Suite 114 PHONE 883-2800

OWNER Pat Milligan Construction CONTACT Pat Milligan

ADDRESS 2730 Coors Blvd. N.W. PHONE 831-0900

ARCHITECT/SURVEYOR Frank Benavidez CONTACT Frank Benavidez

ADDRESS 3200 Richmond Drive N.E. PHONE 884-1623

DATE SUBMITTED March 22, 1982

BY T. Isaacson

For more info - reference folder #J11-D9

RECEIVED MAR 25 1982 ENGINEERING

T. T. Burnett Engineering, Inc.
Consulting Engineers
4055 MONTGOMERY BLVD. N.E., SUITE A
ALBUQUERQUE, NEW MEXICO 87109

TELEPHONE
(505) 883-3093

November 13, 1980

RECEIVED
NOV 13 1980
CITY ENGINEER

Mr. Richard Heller, City Engineer
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico

Attn: Mr. Bruno Conegliano

Dear Sir:

Submitted herewith is a copy of a revised grading plan for Atrisco Village, Unit J.T. and a revised grading plan for The Palisades, Block 17. Both grading plans are based on as-built surveys, and alterations are a result of drivewway grade requirements or drainage requirements. Both grading plans as revised meet or exceed the drainage requirements.

As indicated on the grading plan for Atrisco Village, Unit J.T., it is requested that we be allowed to excavate approximately ten feet wide along the north boundary of Block "A". It is our understanding that the City intends to use this dirt for fill in the park area east of Delgado Drive. We would stockpile the excavated earth immediately north of the excavation, as indicated on the grading plan. Also shown in this area is anticipated future grading by the City.

Very truly yours,

Jean J. Bordenave

Jean J. Bordenave
President

Excavation along north side of Blodk "A"

APPROVED:_____
City Engineer

cc: Mr. Ernest Russo, FHA

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 25, 1980

Mr. Jim Leyman
Meurer, Serafini & Meurer, Inc.
2601 Wyoming Blvd. N.E.
Albuquerque, New Mexico 87112

RE: PALISADES - U.S. HOMES SUBDIVISION f.G

Dear Mr. Leyman:

The grading for the referenced subdivision will be approved contingent to the following:

A. Stability analysis against possible failure circles such as those shown on the attached profile sheet (with the assumption of ponding on top of the wall).

B. Insurance by U.S. Homes, with proper notation on the construction plans, that no retaining and privacy wall combinations will exceed the maximum height of 8 ft. (per Zoning Ordinance).

C. No grading or undercutting will be performed on a strip of land, 15 ft. in width, along the Western boundary line of a portion of Block 4 (your sheet 1 of 1).

Very truly yours,

Richard S. Heller
City Engineer

RSH/BC/tsl

Attachments

Top of Pad - EL 50.50
Top of Wall - EL
Thru Lots 3 & 18
Thru Lots 2 & 19

0690039

FOX Consulting Engineers and Geologists

F.M. FOX & ASSOCIATES, INC.
3412 BRYN MAWR DRIVE, N.E.
ALBUQUERQUE, NEW MEXICO 87107
(505) 345-3681 — FMFOX

September 17, 1980

U.S. Homes
2600 S. Loop West
#650
Houston, Texas 77054

Attn: Ms. B.J. Sanders

Subject: Retaining Wall, Block 17, Palisades Subdivision, Albuquerque, New Mexico

Gentlemen:

Background information on design of the subject wall, as provided by Meurer, Serafini & Meurer, Inc., indicates that the wall was designed for an active soil pressure of 35 psf, a soil bearing capacity of 1000 psf, and a coefficient of sliding friction along the base of the footing of 0.4. These values are appropriate for the soils on the site; however, the natural soils are generally not free-draining and therefore, it will be important to prevent build up of hydrostatic pressure in order to insure stability of the wall.

We recommend that the wall be backfilled with a free-draining gravel material for a minimum horizontal width of 1 foot. This material should

extend from footing elevation to within 18 inches of final ground surface. In addition, this gravel should be designed to filter the adjacent silty sand to prevent piping failure.

As an alternate, vertical drains could be installed at intervals along the wall with products such as "Enka Drain" or "Alidrain". These drains would be placed for the full height of the wall and lead to a horizontal drain at footing elevation. However, because of scheduling and availability constraints, it is probable that the gravel alternate outlined above is most desireable.

If you have any questions, or if we may be of further service, do not hesitate to contact us.

Sincerely,

F.M. Fox & Associates of the Southwest, Inc.

CHARLES M. MILLER
STATE OF NEW MEXICO
No. 6018
REGISTERED PROFESSIONAL ENGINEER

Charles M. Miller, P.E.
Principal Geotechnical Engineer

CMM/lkm

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 8, 1980

J11-D9

Mr. Jim Leyman
Meurer, Serafini & Meurer, Inc.
2601 Wyoming Blvd. N.E.
Albuquerque, New Mexico 87112

RE: PROPOSED GRADING AND DRAINAGE PLAN FOR PALISADES ADDITION

Dear Mr. Leyman:

I have reviewed the grading plan for the referenced development and I find that the City cannot accept the proposal submitted. A soil investigation will have to be supplied showing that the proposed grading is consistent with the nature of soils on the site and that no damages will result to adjacent properties from the implementation of the plan. In particular, I am concerned with the undercutting by 10 feet, of the toe of the slope behind lots 93 and 94; such undercutting may destabilize the slope, which will become steeper than the natural angle of repose of the materials in place.

The grading adjacent and to the South of lot 95, appears to exceed the recommended 2 to 1 side slopes. On lots 84 to 89, a cross section normal to the slope reveals that it is impossible to provide the 8 ft. wide berm, as recommended on the retaining wall detail. Therefore, I request that a Soil Engineer verify the stability of the double wall construction and certify to the City that your proposal will not adversely affect the properties to the North.

I also have questions regarding the stability of the retaining walls to be built between the lots fronting on Lomas de Atrisco Dr. and Bajada Rd. because of the ponds provided in the back yards.

Lots 2 and 3 in Block 17 have no back yard whatsoever, just the 2 to 1 sloping ground, which is impossible to grass and maintain. The same conditions are found on lots 78 and 79 in Block 4.

According to the proposed grading in several instances, water from one lot will be conveyed to the next lot (as it appears to happen between lots 1 and 2 in Block 17). This condition is usually a cause of disputes between adjacent property owners.

The grading of lot 1 Block 17, is likely to result in erosion and conveyance of sediment over the sidewalk and on to the street. Further, the plans do not show how the grading of lots 78 and 79 in Block 4 is made consistent with the existing or proposed conditions on the first lot to the north, fronting on La Subida Dr.

Finally, the plans are on a scale which is too small, to verify the feasibility of the proposal or understand how the walls will be constructed. (for instance, how will the wall between lots 1 and 19, block 17, be built?)

Please reconsider your grading scheme and contact Mr. R. S. Heller for further review and approval.

Very truly yours,

Bruno Conegliano
Asst. City Engineer, Hydrology

BC/tsl

cc- Richard Heller

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 7, 1980

Mr. Mike Griego
Federal Housing Administration
625 Truman SE
Albuquerque, New Mexico 87110

J 11-09

Reference: Palisades Subdivision

Dear Mr. Griego:

This letter is written on behalf of U.S. Homes Corporation, to advise you that approval of the platting of the Palisades Subdivision was prior to the establishment of any requirement by the City or by AMAFCA for drainage studies.

Therefore, the City felt that it could not retroactively impose a requirement on an existing subdivision.

Very truly yours,

Richard S. Heller

Richard S. Heller
City Engineer

lc
xc: Richard Leonard
Tom Ekenberg

MUNICIPAL DEVELOPMENT DEPARTMENT
Richard S. Heller, P.E., City Engineer ENGINEERING DIVISION Telephone (505) 766-7467

US·Home®
U.S. HOME CORPORATION
ALBUQUERQUE REGION
7711 ZUNI ROAD, SE
ALBUQUERQUE, NM 87108
PHONE - (505) 265-8319

February 21, 1980

J11-D9

Mr. Bruno Conegliano
City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103

Re: Acceptance of drainage report in Palisades Subdivision

Dear Mr. Conegliano:

This letter constitutes a request for the City of Albuquerque to submit a letter to the Federal Housing Administration in reference to the drainage ordinance that was not in effect when Palisades Subdivision was platted. Since Palisades Subdivision was platted before the ordinance went into effect, this would eliminate any need for certification of the drainage report.

RECEIVED
FEB 22 1980
CITY ENGINEER

Please forward a letter regarding the above information to:

Mr. Mike Greigo
Federal Housing Administration
625 Truman N.E.
Albuquerque, New Mexico 87110

Your expediency is greatly appreciated.

Sincerely,
U.S. HOME CORPORATION

Thomas Ekenberg

Thomas Ekenberg,
Vice-President, Construction

TE:ny

cc: M. Greigo, FHA

BEST BRAND HOMES

7711 ZUNI ROAD, SE
ALBUQUERQUE, NEW MEXICO 87108

JESSE B. EDGAR
GENERAL MANAGER
265-8319

March 12, 1979

RECEIVED
MAR 13 1979
CITY ENGINEERS

City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

ATTN: Mr. Bruno Conegliano

Dear Bruno:

This is in response to your letter of March 5, a copy of which I am forwarding to Jim Pond of Kent Nowlin Construction Co.

It is our intention to provide four feet high 6" block walls around each property in the Palisades sub-division on which we will be building houses. Although the grading plan does not show any retaining walls around the property at lot 4, block 15, if it is determined at time of final grading that retaining walls are required, such will be installed. If it is not feasible to drain the properties behind lot 15 to the street, then of course ponding will be provided on the individual lots involved. The grading plan indicates lots behind lot 15 draining to the street and I feel sure the as graded condition of these lots will allow drainage per the grading plan.

We will issue instructions when building on lots adjacent to lot 15 that all workmen use every caution consistent with building next to an existing property.

Sincerely,

Jesse B. Edgar

Jesse B. Edgar
Best Brand Homes, Inc.

JBE/cq

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
David Rusk

March 5, 1979

J11-D9

Mr. Jesse Edgar, President
Best Brand Homes
505 San Pedro Dr. S.E.
Albuquerque, New Mexico 87108

Dear Mr. Edgar

Today, Mr. Heller and myself have had a meeting with Mr. McComas owner of Lot 4, Block 15, The Palisades Subdivision. A few months ago I had occasion of talking with you on the same subject. It seems that some abrasive conversation occurred between the mentioned gentleman and the contractor's foreman. As a consequence, ill feelings have become entrenched and I would like to assist in resolving this unpleasant situation. The concerns of Mr. McComas are with two issues namely loss of privacy and conveyance of runoff to his lot. I had previously received your assistance in directing the contractor to construct temporary berms around the property to protect it during construction.

I know that the site grading plan indicates that all the site flows will be diverted to the streets, but the gentleman feels that this positive drainage is not possible so I have asked Mr. Carl Tebbens to accompany me and perform an inspection of the site and see if remedial measures are in order. Purpose of this letter to you is basically to inquire if garden walls will, as I anticipated, be constructed around the lots surrounding the one owned by Mr. McComas. If this were the case, I am sure that his fears will be allayed on both counts. Please advise on this point so that I may reassure this gentleman and the unpleasant situation resolved.

Your assistance and cooperation on these matters will be appreciated.

Very truly yours,

Bruno Conegliano
Assistant City Engineer-Hydrology

BC/fs

cc - Dick Heller
Rich Leonard
Drainage File

CITY OF ALBUQUERQUE, NEW MEXICO

CITY ENGINEER'S OFFICE

MEMORANDUM - June 22, 1978

TO: V.M. Kimmick, City Engineer
FROM: Bruno Conegliano, Asst. City Engineer-Hydrology B.C.

RE: Councilman Patrick J. Baca

I was contacted last Friday, 6/16/78 by the owner of the property at 1102 Atrisco N.W. and was made aware of the problem he was having with the construction of subdivision "The Palisades". I got in contact with Mr. Jim Pond of Kent Nowlin Construction Co. contractor for the developer, "Best Brand Homes and I was informed that Mr. Jess Edgar would have retaining walls built around the presently occupied lots. In the meantime, as a protective measure, Mr. Pond agreed to construct some temporary berms to prevent the runoff from washing the dirt into said occupied lots. A field inspection revealed that up to yesterday nothing had been done. So today I contacted Mr. Pond again who assured me that the protective berm would be in place before the end of today. I will keep you informed on any further development.

BC/gm

cc; James C. Jaramillo, Chief Administrative Officer
Rip Orr, Public Works Department
Q.R. Kielich, Assistant City Engineer

J11-D9

CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE

REF. NO._____

TO: V. M. Kimmick, City Engineer

FROM: Patrick J. Baca, Councillor, District No. 1 Patrick J. Baca

SUBJECT: CONSTRUCTION AT 1109 ATRISCO, N.W.

I had staff contact you regarding construction underway at the above given address on May 31, 1978 in hopes that an apparent problem regarding drainage could be handled in an expeditious fashion.

To date very little has been done by your office to help remedy the situation, although numerous requests have been made. I was informed on Friday that the contractor, Kent Knowlin Construction, Inc. was contacted and that some temporary construction control erosion steps were to be taken. The constituent has just informed me that no action has been taken and that he is considering legal action.

While, I understand that the grade-level of the land may be causing the problem it is important to show that the City is acting in good faith and alleviating at least part of the problem.

Would you please take the appropriate action to get the contractor to act in accordance with the agreement. An inspector should be sent to the site if necessary.

I would appreciate your cooperation in this matter.

Bruno, See me. E.

PJB/tb

cc: James C. Jaramillo, Chief Administrative Officer
Rip Orr, Public Works Department
Bruno Conegliano, Assistant City Engineer
Q.R. Kielich, Assistant City Engineer

CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE

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TO: V. M. Kimmick, City Engineer

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Would you please take the appropriate action to get the contractor to act in accordance with the agreement. An inspector should be sent to the site if necessary.

I would appreciate your cooperation in this matter.

PJB/tb

cc: James C. Jaramillo, Chief Administrative Officer
Rip Orr, Public Works Department
Bruno Conegliano, Assistant City Engineer
Q.R. Kielich, Assistant City Engineer

MAY 1 1978

BEST BRAND HOMES

7711 ZUNI ROAD, SE
ALBUQUERQUE, NEW MEXICO 87108

JESSE B. EDGAR
GENERAL MANAGER
265-8319

Bruce — please file with drainage study. Need to get design and get started. Jim

April 28, 1978

City of Albuquerque
Public Works Department
City Hall
Albuquerque, New Mexico

Attention: Mr. H. R. Orr Jr.
Acting Director

Dear Mr. Orr:

This letter constitutes our commitment and agreement to be responsible for payment to the City our proportionate share of the costs of the storm sewer extension from Bajada Rd. N. W. to the Rio Grande River.

When at such time as it is deemed necessary that this storm sewer be installed and the costs of same have been determined and approved we will provide for this payment to be made upon proper notification to us of the amount due and a copy of the cost estimate.

Sincerely,

Jesse B. Edgar

Jesse B. Edgar
General Manager & Vice President
BEST BRAND HOMES, INC.

JBE/cl

MEURER, SERAFINI AND MEURER, INC.
CONSULTING ENGINEERS • SURVEYORS • PLANNERS
2601 WYOMING BLVD., N.E., SUITE F • ALBUQUERQUE, NEW MEXICO 87110 • (505) 292-1936

Copy in Palisades file

January 26, 1978

J11-09

Mr. V. M. Kimmick, City Engineer
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

RECEIVED
JAN 25 1978
CITY ENGINEERS

Re: Palisades Subdivision

Dear Mr. Kimmick:

At a meeting with you, Bruno Conegliano, Jesse Edgar, and myself on November 22, 1977, it was decided that the drainage study for the above referenced project would stand approved as submitted following a commitment by Best Brand Homes to contribute their fair share of the cost of a storm drain system to remove offsite flows that run onto Palisades. The cost of this storm drain system was to be compiled by our firm based on offsite flows that were to be computed by the City. This flow computation was promised to us in two to three weeks from the date of the above meeting. It has now been two months since that meeting.

Our client would appreciate the City submitting the information as soon as possible.

If this is not possible, we might suggest that the City authorize final approval of the drainage report and plan, so our client can obtain his building permits. This would not change anything, since the information the City needs to supply us affects future storm drainage plans rather than the plans for current construction.

If we can be of further assistance, please do not hesitate to call.

Very truly yours,

MEURER, SERAFINI AND MEURER, INC.

Ricardo Goncalves

Ricardo J. Goncalves, P.E.

RJG:dw

MEMO from V. M. Kimmick

To Bruno Date 1-26-78 Time

See attached memo from MSM dated Jan. 26, 1978.

When can you provide info.

Jim

☑ Reply ☐ Initial and return ☐ See me

CITY OF ALBUQUERQUE, NEW MEXICO
PUBLIC WORKS DEPARTMENT

RECEIVED
AUG 24 1977
CITY ENGINEERS

MEMORANDUM -- August 23, 1977

TO: Mr. Frank A. Kleinhenz, Chief Administrative Officer

FROM: H. R. Orr, Jr., Acting Director of Public Works HRO

SUBJECT: FLOODING AND STORM DRAINAGE PROBLEM
PALISADES AND GLENRIO NW
MEMORANDUM FROM COUNCILLOR BACA DATED JULY 26, 1977

As we earlier described to you the subject intersection has a small storm sewer line. Water Rescources Department has checked the line and reported that it is clean and not obstructed. By copy of this memo, we are asking the City Engineer to investigate the area and the line, and recommend a durable solution as requested by Councillor Baca. Please be aware that this intersection is within the area of the West Mesa Drainage Study being conducted by Bovay Engineers, Inc. Preliminary results of that study are expected by August 31, 1977.

Bruno —

HRO:rs
cc: Mr. V. M. Kimmick

Genge/Murray-McCormick
2601 Wyoming Blvd., N.E. Suite F
Albuquerque, N.M. 87110/505 292-1936
Engineering · Surveying · Planning
Tucson · Phoenix · Denver · Pueblo

August 11, 1977

MS 8-11-77 You will love the runoff coef.

Mr. V. M. Kimmick, City Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103

Re: Review of The Palisades Subdivision Engineering Plans

Gentlemen:

Submitted herewith are three (3) sets of the drainage study for the above subdivision. We anticipate that in accordance with present review procedures, your Division's review and any requested revisions will be available August 23, 1977.

As our client, Best Brand Homes wishes to proceed with the improvement of this subdivision, your early review and approval would be appreciated.

Very truly yours,

GENGE/MURRAY-McCORMICK, INC.

Ricardo Goncalves

Ricardo Goncalves, P.E.

Encls.

cc: Best Brand Homes

2014/4378

CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

7.K

INTER-OFFICE CORRESPONDENCE July 26, 1977 REF. NO._____

TO: Frank A. Kleinhenz, Chief Administrative Officer

FROM: Patrick J. Baca, Councillor, District No. 1 P.B.

SUBJECT: FLOODING - STORM DRAINAGE PROBLEM AT PALISADES AND GLENRIO N.W.

Recent rains have caused flooding in the residential area near Palisades and Glenrio N. W. This problem has occurred several times and remains constant due to periodic rainfall. The problem appears to stem from malfunctioning storm sewer drains. To prevent further property damage, a permanent solution is necessary. I wish to request an examination of the storm sewer storm drainage situation in the above area, with a look toward finding a durable solution to a persistent and severe problem for the people of the area.

Thank you for your attention to this matter.

PJB:RF/ma
cc: V. Kimmick, City Engineer
Bennie Sandoval

R. Orr

~~Pete please check~~

THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT

July 8, 1975

Mr. Louis W. Gross
Leverton-Denney Engineers, Inc.
5643 Paradise Blvd., N.W.
Albuquerque, New Mexico 87114

Dear Mr. Gross:

Enclosed is an executed copy of license issued to the City of Albuquerque for the installation and maintenance of a 30-inch steel pipe storm sewer crossing and outfall to the river.

Please be sure to notify the Albuquerque Division Manager, Ely Gutierrez, prior to any construction activities.

Sincerely yours,

Robert S. Nanninga
General Manager
MIDDLE RIO GRANDE CONSERVANCY DISTRICT

RSN/rr

Enclosure

cc: Ely Gutierrez,
Albuquerque Division Manager

Note: For Exhibits See Drawer 0-2

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7-298
(9-46)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

Project Middle Rio Grande Branch Albuquerque State New Mexico

LICENSE FOR ERECTION AND MAINTENANCE
OF STRUCTURES

---

1. Pursuant to authority given by the Commissioner of the Bureau of Reclamation, thereunto duly authorized by the Secretary of the Interior, the undersigned hereby accepts a license to ~~erect and~~ install and maintain a 30-inch steel pipe storm sewer crossing and outfall to river

in connection with the Middle Rio Grande Project, Bureau of Reclamation, constructed pursuant to the act of Congress approved June 17, 1902 (32 Stat., 388), and acts amendatory thereof or supplementary thereto, at ~~xxxxxx~~ Station 7+05± on Atrisco Heading, Sec. 14, T. 10 N., R. 2 E., Map 39, Atrisco Heading R/W

upon the terms and conditions hereinafter set forth:

2. The licensee shall be liable for any and all damages to the property of the United States, or of any third party or parties, by reason of the exercise of the privileges conferred by this license.

3. This license shall continue so long as in the opinion of the licensor it is considered to be expedient and not detrimental to the public interest, and shall be revocable by said officer upon ten days' written notice to the licensee. Upon such revocation the aforesaid structure or structures and all accessories shall be removed without delay at the expense of the licensee, City of Albuquerque, Post Office Box 1293, Albuquerque, New Mexico, 87103.

4. The aforesaid structure or structures shall be so erected as not to obstruct in any manner the flow of water in the canals, laterals, or drain ditches of the United States, or to interfere in any manner whatsoever with the construction, operation, and maintenance of any part of the Project.

5. In the erection of the aforesaid structure or structures the following specifications and conditions must be complied with:

a. To prevent errors in installation and prior to any activities, licensee shall notify Albuquerque Division Manager, Ely Gutierrez, 243-6796.

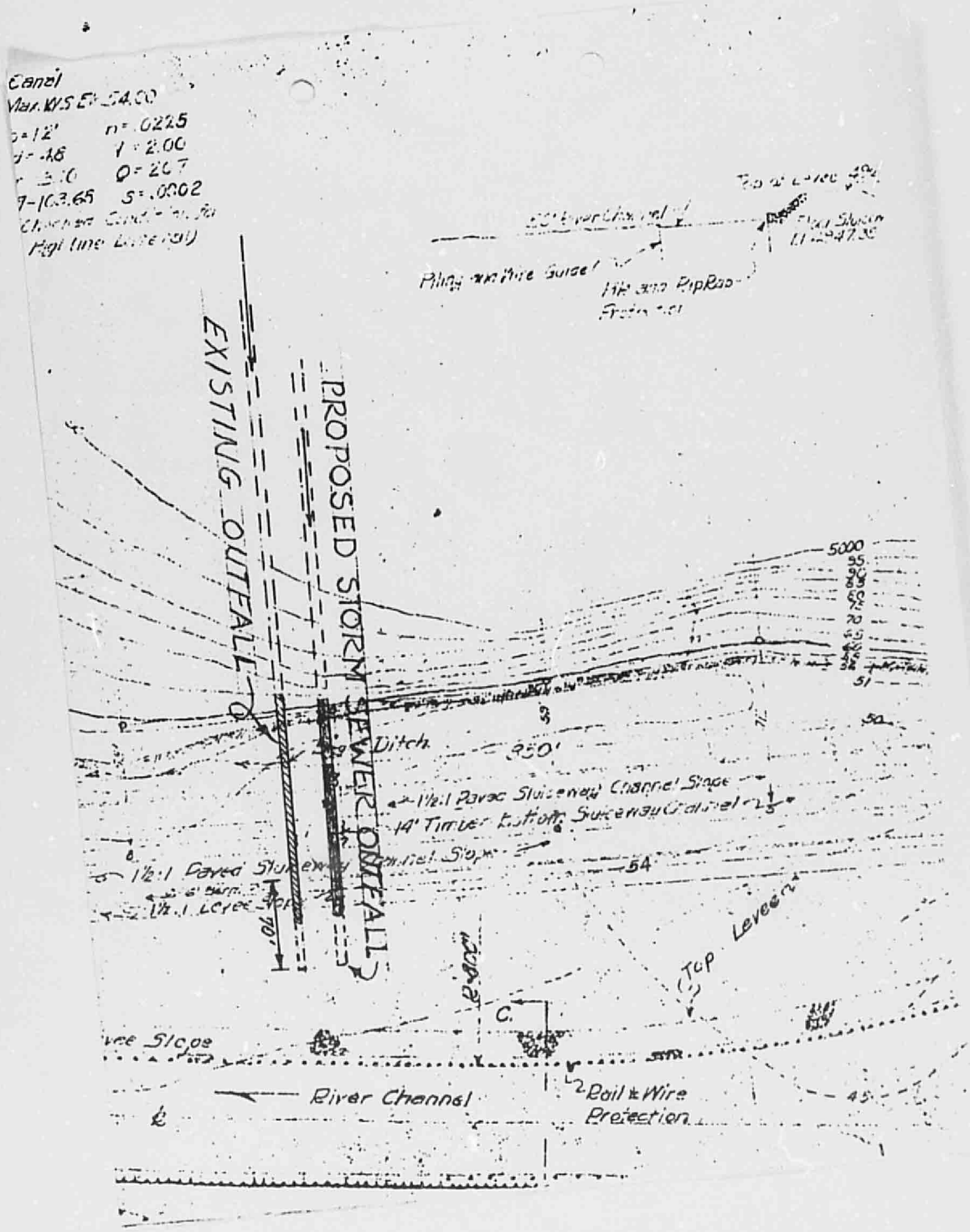
b. Removal, relocation or protection of this installation necessitated by operation or maintenance at this point shall be the responsibility of the licensee.

c. Installation shall be in accordance with attached drawings and shall be subject to inspection and acceptance by MRGCD.

d. Licensee during the term of this license shall take every precaution to protect the public.

6. Covenant against Contingent Fees. Licensee warrants that no person or agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial agencies maintained by the licensee for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to annul this contract without liability or in its discretion to require the licensee to pay, in addition to the contract price or consideration, the full amount of such commission, percentage, brokerage, or contingent fee.

THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT



THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT

7. Equal Opportunity Clause. The following provisions as set out in Section 202 of Executive Order No. 11246, dated September 24, 1965, as amended shall be applicable to this license.

"During the period of this license the licensee hereinafter referred to as the contractor, agrees as follows:

'(1) The contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

'(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

'(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

'(4) The contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

'(5) The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

'(6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

'(7) The contractor will include the provisions of Paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, That in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.'"

Dated at Albuquerque, New Mexico

this 19th day of June, 1975

O. R. Kielich
O. R. Kielich
Acting City Engineer

Approved: [illegible]
General Manager, MRGCD

Approved JUL 8 1975, 19__
R. W. Radcliffe
Bureau of Reclamation

Date: [illegible] 1975

DRAINAGE REPORT

FOR

THE PALISADES
ALBUQUERQUE, NEW MEXICO

MURRAY-McCORMICK, INC.
ENVIRONMENTAL DESIGN
ECOSYSTEMS ANALYSIS · PLANNING · LAND SURVEYS · ENGINEERING

2601 WYOMING BLVD., NE. SUITE F / ALBUQUERQUE, N.M. 87110 / 505-292-1936

DRAINAGE REPORT

FOR

THE PALISADES
ALBUQUERQUE, NEW MEXICO

Prepared By

Genge/Murray-McCormick, Inc.
2601 Wyoming Boulevard N. E.
Albuquerque, New Mexico 87110
(505) 292-1936

April 1977

DRAINAGE REPORT

THE PALISADES
ALBUQUERQUE, NEW MEXICO

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ESTIMATED RUNOFF DEVELOPFD STATE	3
EXPLANATION OF RESULTS	5
HISTORIC RUNOFF	6
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APPENDIX

Appendix 1	Composite Runoff Coefficient
Appendix 2	Runoff Computations
Appendix 3	Frequency Factor
Figure I	Historic Drainage Conditions
Figure II	Developed Drainage Conditions
Figure III	Typical Lot Drainage
Figure IV	Intensity Duration Frequency Curves
Figure V	Time of Concentration of Small Drainage Basins
Figure VI	Street Velocities

DRAINAGE REPORT

THE PALISADES

PURPOSE AND SCOPE

Best Brand Homes is currently developing lands located in the western metropolitan Albuquerque area known as The Palisades. The Palisades is a single family subdivision containing 125 lots.

The purpose of this report is to present a plan for controlling surface runoff from the said subdivision in a manner acceptable to the Albuquerque Metropolitan Arroyo Flood Control Authority and the Albuquerque City Engineer's office.

SITE LOCATION AND TOPOGRAPHY

The Palisades is located in the Town of Atrisco Grant, within the area bounded on the north by Interstate 40, on the east by Atrisco Drive, on the west by Coors Blvd., and on the south by Central Avenue. The surrounding terrain is generally improved land on all sides.

The soil of the site is generally comprised of SM sand and silt. The natural ground slopes from northwest to southeast at an average of 10%.

The development is situated on an extremely steep hillside beneath the rim of a plateau. Drainage above the rim flows away from the development except for a 73 acre portion which contributes flow to the development at the southwest end. A small amount of drainage will come from the backs of lots adjacent to the northwest end of the development.

DESIGN CRITERIA

In analyzing the storm runoff, the Rational Formula, $Q = CIA\ C_f$ is used.[1]

Where:

Q = Runoff quantity in cubic feet/second.

A = Contributing area in acres.

C_f = Frequency factor for Rational Formula.

I = Intensity in inches/hour for a duration equal to the time of accumulation (duration) measured in minutes and obtained from Figure IV, Intensity Duration Frequency Curves, Albuquerque Area 1961. (Note: Where a Time of Concentration [Tc] is less than ten minutes from Figure III, the intensity value derived from a Tc of ten minutes is employed.)

C = Runoff Coefficient (No Units). This coefficient represents the integrated effects of infiltration, detention storage, evaporation, retention, flow routing, and interception which all affect the time distribution and peak rate of runoff.

ESTIMATED RUNOFF UNDEVELOPED STATE

Drainage within the boundary of the site is in the form of sheet flow exiting the site at the south and east boundaries. Also, there are offsite flows from the north which pass onto, then off of the southwest corner of the development.

---

1. See Bibliography, Item (2), Paragraph 3.7 - Appendix-3

The total runoff in the undeveloped site forms the basis for comparison with the flow in the developed state. See Table I for a listing of undeveloped runoff.

TABLE I

Runoff in Undeveloped State

Drainage Basin	Elev. Diff.	Length of Flow	Tc (Min.)	I 100 yr. In./Hr.	C[2]	Area (Ac)	Q (cfs)
A-1	94	1020	26	3.71	.375	9.27	12.92
A-2	104	1020	26	3.71	.375	10.86	15.10
A-3	110	900	26	3.71	.375	6.02	8.38
A-4	70	430	26	3.71	.375	2.86	3.97
A-5	80	680	26	3.71	.375	3.04	4.23
A-6	90	1240	26	3.71	.375	27.35	38.03
TOTAL							82.63

ESTIMATED RUNOFF DEVELOPED STATE

As development occurs, the area of impervious surfaces increases and thereby the amount of runoff usually increases. In order to offset this increase, onsite restrictions of flows must be incorporated into the development. While this can take different forms, the usual solution for this type of development is to utilize on-lot ponding. Due to the steepness of the terrain; however, it will not be feasible to pond any lots and thereby detain any of the runoff, nor will it be necessary as the developed runoff in this case is less than the historic. The reason for this is contained in the section entitled "Explanation of Results."

2. See Appendix-1

The runoff coefficient for various surfaces is as follows:

Streets, Walks and Drives	C = 0.80
Roofs	C = 0.80
Lawns, Sandy Soil (Average 2 to 7% slope)	C = 0.12

TABLE 2

Runoff in Developed State

Drainage Basin	Area Acres	$\overline{C}$[3].	$A*\overline{c}$	Tc (Min.)	I 100 yr. (in./hr.)	Q (cfs)
OFFSITE						
OS-1	56.52*	0.5	28.26*	51.5	2.47	69.8
ONSITE						
A-1	7.0	.48	31.62	21.62	4.05	13.62
A-2	12.16	.48	37.46	25.04	3.77	22.01
A-3	7.07	.48	40.85	18.47	4.34	14.74
A-4	7.67	.48	44.53	17.65	4.43	16.30
A-5	1.58	.48	45.28	23.76	3.87	2.94
OS-1 - A-5	92	.48	45.28	72.94	1.93	87.38
A-6	3.69	.48	1.77	12.65	5.02	8.89
OS-1 - A-6			47.05	72.94	1.93	90.81
A-7	1.03	.48	.49	16.5	4.55	2.25
OS-1 - A-7			47.54	72.94	1.93	91.75
A-8	5.21	.48	2.51	20.18	4.18	10.49
OS-1 - A-8			50.05	72.94	1.93	96.59
A-9	4.16	.48	2.0	11.5	5.17	10.35
OS-1 - A-9			52.05	72.94	1.93	100.45
TOTAL DEVELOPED FLOW (Including Offsite)						100.45

*Equivalent Areas (See explanation and calculations in Appendix-2)

3. See Appendix-1

EXPLANATION OF RESULTS

Offsite Runoff

The only offsite flows that drain onto the site come from the plateau to the west of the property, and from the backs of lots adjoining the western boundary of the property. The back lot runoff was calculated as a part of the onsite runoff.

An area on the plateau of approximately 72.2 acres drains into the intersection of La Bajada Road and Yucca Drive. The 100-year storm for this area would normally create 89.3 cfs of runoff to concentrate at this intersection. An existing storm sewer drains the upper plateau from Coors to Atrisco Road. The main collector for this sewer runs down Bluewater Road then down the proposed alignment for La Bajada, across Atrisco Road, and into the Rio Grande. From Yucca Drive to the Rio Grande, this collector consists of a parallel 36" and 42" line. Although a storm sewer line exists in La Bajada Road, no provisions could be made to discharge any flow from The Palisades into it due to the lack of any additional capacity in the line.

Since the portion of this storm sewer that drains the 72.2 acre area has a calculated capacity of 19.5 cfs, the surface runoff arriving at the project site will be reduced to 69.8 cfs. The time of concentration is 51.5, yielding an intensity of 2.47 in./hr. The division of the actual surface runoff by the intensity equals an equivalent "A x C" of 28.26. This figure is used in the calculations shown in Appendix 2.

In the undeveloped state, this 69.8 cfs just passes over the southwest corner of the property, draining into Pat Hurley Park; it will not be considered as contributing to the project site.

In the developed state, however, La Bajada Road will intercept the offsite flow and carry it entirely through the project, exiting on Atrisco Road.

The 100-year storm runoff calculations for the project in the developed state were based on a starting time of concentration of 51.5 min., corresponding to the time when the peak flow from OS-1 runs onto the project.

HISTORIC RUNOFF

Runoff from the project in the undeveloped state is generally in sheet flow and can be divided loosely into six drainage areas. Due to steepness of the terrain, and the undiverted path of the runoff the times of concentration are low, 26 minutes, resulting in a total historic drainage for the area of 82.63 cfs.

DEVELOPED RUNOFF

Runoff in the developed state varies drastically from that in the historic state in that most of the runoff is channelized in the streets. The streets, effectively, intercept the direct downward path of the runoff, diverting the water into a longer path. With over half the area draining into La Bajada, which runs parallel to the contours at the base of the slope, the effect is to create a much longer time of concentration in comparison to the historic

time of concentration. When added to the offsite time of concentration, the total time at the runoff exit point in Atrisco is 72.94 minutes. As a result, the total 100-year flood runoff from the developed site is 100.45 cfs, considering the offsite area. The 100-year runoff for just the project site is 69.46 cfs, which is less than the historic runoff. The highest quantity of flow leaving the site at any given time will be the 100.45 cfs runoff as it flows down La Bajada Road into Atrisco Road.

RECOMMENDATIONS

The following recommendations are made to enable the developer of this site and the local government to complete this project within the design criteria:

1. Runoff from Area OS-1 will enter the site at the intersection of La Bajada Road and Yucca, flow in La Bajada Road, and discharge from the site at the intersection of La Bajada and Atrisco Roads. La Bajada will have the capacity to carry both the offsite and onsite flows.

2. Runoff from the back lots of adjacent property will enter the site in sheet flow along the high west side of the developed site, flow through the site, and exit at Atrisco and La Bajada Roads.

3. Runoffs from Areas A-1 - A-8 will be carried by the onsite streets, discharging into Atrisco Road. Atrisco Road will have adequate capacity to carry these flows.

4. Flows from Area A-9 will sheet onto adjacent property.

SUMMARY

The subject property, due to its steep terrain will not be able to have any ponded lots. All developed flows, then, will have to be carried by the streets for eventual discharge into Atrisco Road and then into the Rio Grande. Ponded lots will not be necessary, however, since the developed runoff will not exceed the historic runoff.

The offsite runoff from OSA-1 will be diverted from its historic path into Hurley Park to La Bajada Road. It should be noted that this results from the construction of La Bajada Road.

In conclusion, the development of this site should have a beneficial effect on the drainage characteristics of the area, and the site can be developed without harm to life or property.

Respectfully submitted,

Prepared by:

Ricardo J. Goncalves

Reviewed by:

Carl A. Tebbens
N.M.P.E. No. 6309

HYDROLOGY J11/D9 2 of 2 5 PLANS

APPENDIX

APPENDIX-1

Development of Composite Runoff Coefficients

Developed Area

Total Lot Area = 44.88 Ac.

Total No. Lots = 125

Average Area Per Lot = .359 Ac. = 15,639 ft^2

Total length lot frontage = 10,800 ft.

Average lot front = 86'

Since grades for all lots are too steep, do not consider ponded lots.

Area of pervious and impervious portions of lots:

Impervious:

Streets and Walk Area = 24x86	=	2064 $ft.^2$
Drive = 15x31	=	465 $ft.^2$
Roof Area = 50x55	=	2750 $ft.^2$
Back Yard Pad = 10x10	=	100 $ft.^2$
Total		5379 $ft.^2$

Pervious:

Total Area =	15,639 $ft.^2$
Roof + Drive + Pad	-3,315 $ft.^2$
Total	12,324 $ft.^2$

Percent Impervious Area = 5379/5379 + 12,324

= 30.4%

Percent Pervious Area = 12,324/5379 + 12,324

= 69.6%

Runoff Coefficient for Impervious Area = .80

Runoff Coefficient for Pervious Area = .20

Combined Runoff Coefficient = (30.4% x .80) + (69.6% x .20)

= .38

Composite Runoff Coefficient = .38 x 1.25 - .48

APPENDIX-2

DIVISION
ATION
NO.
IGN STORM ___ YR. RECURRENCE INTERVAL
OR STORM ___ YR.
MPUTATIONS BY ___ DATE ___

100 YR
DEVELOPED RUNOFF

RUNOFF COMPUTATIONS
(Rational Method)

(PROJECT SITE ONLY)

PAGE ___ OF ___

Area esignation	A (Acres)	c	c	c̄ = (c×c_f)	A·c̄	ΣA·c̄	tc (min)	I (in/hr)	Q = (ΣA·c̄)×I cfs	Street capacity cfs	Flow in Pipe cfs	Pipe Dia. in.	Slope %	Length ft.	VEL V fps	Δt (min)	
A1	7.0	.38	1.25	.48	3.36	3.36	21.62	4.05	13.62								
A2	12.16	.38	1.25	.48	5.83	9.19	26.41	3.68	33.78							4.79	
A3	7.07	.38	1.25	.48	3.39	12.58	34.39	3.18	40.03							7.98	
A4	7.67	.38	1.25	.48	3.68	16.26	36.41	3.08	50.04							2.02	
A5	1.58	.38	1.25	.48	0.76	17.02	39.61	2.92	49.78							3.2	
A6	3.60	.38	1.25	.48	1.77	1.77	39.61	2.92	5.17								
A7	1.03	.38	1.25	.48	.49	.49	39.61	2.92	1.43								
A8	5.21	.38	1.25	.48	2.51	2.51	39.61	2.92	7.33								
A9	4.16	.38	1.25	.48	2.0	2.0	39.61	2.92	5.84								
ΣA1-A9						23.79	39.61	2.92	69.46								

SUBDIVISION PALISADES
LOCATION WEST ALBUQUERQUE
JOB NO. 9990282
DESIGN STORM 100 YR. RECURRENCE INTERVAL
MAJOR STORM 100 YR.
COMPUTATIONS BY RTG DATE 4/27/77

100 YR
DEVELOPED RUNOFF

RUNOFF COMPUTATIONS
(Rational Method)

(INCLUDING OFFSITE)

PAGE 1 OF 2

Area Designation	A (Acres)	c	c_f	$\bar{c}$ = (c x c_f	A·$\bar{c}$	ΣA·$\bar{c}$	tc (min)	I (in/hr)	Q = (ΣA·$\bar{c}$) x I cfs	Street capacity cfs	Flow in Pipe cfs	Pipe Dia. in.	Slope %	Length ft.	VEL V fps	at * (min)
OS-1					28.26	28.26	51.5	2.47	69.8							
A1	2.0	.38	1.25	0.48	3.36	31.62	54.95	2.36	74.74	204						3.45
A2	12.16	.38	1.25	0.48	5.83	37.46	59.74	2.23	83.54	159						6.79
A3	7.07	.38	1.25	.48	3.39	40.85	67.72	2.04	83.34	159						7.98
A4	7.67	.38	1.25	.48	3.64	44.53	69.74	1.99	88.83	159						2.02
A5	1.58	.38	1.25	.48	0.76	45.28	72.74	1.93	87.37	159						3.2
A6	3.60	.38	1.25	.48	1.77	1.77	72.74	1.93	3.42							
A7	1.03	.38	1.25	.48	.49	.49	72.74	1.93	0.95							
A8	5.21	.38	1.25	.48	2.51	2.51	72.74	1.93	4.83							
A9	4.16	.38	1.25	.48	2.0	2.0	72.74	1.93	3.86							

SUBDIVISION PALISADES
LOCATION WEST ALB.
JOB NO. 9000282
DESIGN STORM 100 YR. RECURRENCE INTERVAL
MAJOR STORM 100 YR.
COMPUTATIONS BY RJG DATE 4/27/77

RUNOFF COMPUTATIONS
(Rational Method)

Area Designation	A (Acres)	c	c_f	$\bar{c}$ = (c x c_f)	A·$\bar{c}$	ΣA·$\bar{c}$	tc (min)	I (in/hr)	Q = (ΣA·$\bar{c}$) x i cfs	Street capacity cfs	Flow in Pipe cfs	Pipe Dia. in.	Slope %	Length ft.	VEL V fps	Δt (min)	
E051-A9						52.05	72.96	1.93	100.43								

RUNOFF COMPUTATIONS

Sheet No. _____

Project: PALISADES

Drainage Area No. A-1

Area = 7.0 acres

Maximum Overland Flow: L = _____ S = _____

Maximum Channel Flow:

Channel No. 1 L = 480' S = 7.0

Channel No. 2 L = 350 S = 5.29

Channel No. 3 L = 150 S = 3.43

Accumulation Time

Overland Flow or Inlet Time: _____ min.

Channel No. 1 Flow:

Velocity = 5.25 ft/sec; Time = $\frac{480}{5.25 \times 60}$ = 1.52 min.

Channel No. 2 Flow:

Velocity = 4.6 ft/sec; Time = $\frac{350}{4.6 \times 60}$ = 1.27 min.

Channel No. 3 Flow:

Velocity = 3.8 ft/sec; Time = $\frac{150}{3.8 \times 60}$ = .66 min.

Total Accumulation Time: T = 3.45 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date: _____

Comp. by: _____

Checked by: _____

RUNOFF COMPUTATIONS

Sheet No. _____

Project: PALISADES

Drainage Area No. A2

Area = 12.16 acres

Maximum Overland Flow: L = _____ S = _____

Maximum Channel Flow:

Channel No. 1 L = 200 S = 3.43

Channel No. 2 L = 330 S = 0.5

Channel No. 3 L = _____ S = _____

Accumulation Time

Overland Flow or Inlet Time: _____ min.

Channel No. 1 Flow:

Velocity = 3.8 ft/sec; Time = $\frac{200}{3.8 \times 60}$ = 0.87 min.

Channel No. 2 Flow:

Velocity = 1.4 ft/sec; Time = $\frac{330}{1.4 \times 60}$ = 3.92 min.

Channel No. 3 Flow:

Velocity = _____ ft/sec; Time = $\frac{____}{____ \times 60}$ = _____ min.

Total Accumulation Time: T = 4.79 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date: _____

Comp. by: _____

Checked by: _____

RUNOFF COMPUTATIONS

Sheet No._____

Project:_____

Drainage Area No. A3

Area = 7.07 acres

Maximum Overland Flow: L = _____ S = _____

Maximum Channel Flow:

Channel No. 1 L = 670 S = 0.5

Channel No. 2 L = _____ S = _____

Channel No. 3 L = _____ S = _____

Accumulation Time

Overland Flow or Inlet Time: _____ min.

Channel No. 1 Flow:

Velocity = 1.1 ft/sec; Time = $\frac{670}{1.1 \times 60}$ = 7.98 min.

Channel No. 2 Flow:

Velocity = _____ ft/sec; Time = $\frac{\quad}{\times 60}$ = _____ min.

Channel No. 3 Flow:

Velocity = _____ ft/sec; Time = $\frac{\quad}{\times 60}$ = _____ min.

Total Accumulation Time: T = 7.98 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date:_____

Comp. by:_____

Checked by:_____

RUNOFF COMPUTATIONS

Sheet No. _____

Project: _____

Drainage Area No. D4

Area = _____ acres

Maximum Overland Flow: L = _____ S = _____

Maximum Channel Flow:

Channel No. 1 L = 170 S = 0.5

Channel No. 2 L = _____ S = _____

Channel No. 3 L = _____ S = _____

Accumulation Time

Overland Flow or Inlet Time: _____ min.

Channel No. 1 Flow:

Velocity = 1.4 ft/sec; Time = $\frac{170}{1.4 \times 60}$ = 2.02 min.

Channel No. 2 Flow:

Velocity = _____ ft/sec; Time = $\frac{\quad}{\quad \times 60}$ = _____ min.

Channel No. 3 Flow:

Velocity = _____ ft/sec; Time = $\frac{\quad}{\quad \times 60}$ = _____ min.

Total Accumulation Time: T = 2.02 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date: _____

Comp. by: _____

Checked by: _____

RUNOFF COMPUTATIONS

Sheet No. _____

Project: _____

Drainage Area No. A5

Area = _____ acres

Maximum Overland Flow: L = _____ S = _____

Maximum Channel Flow:

Channel No. 1 L = 270 S = 0.5

Channel No. 2 L = _____ S = _____

Channel No. 3 L = _____ S = _____

Accumulation Time

Overland Flow or Inlet Time: _____ min.

Channel No. 1 Flow:

Velocity = 1.1 ft/sec; Time = $\frac{270}{1.1 \times 60}$ = 3.2 min.

Channel No. 2 Flow:

Velocity = _____ ft/sec; Time = $\frac{\quad}{\times 60}$ = _____ min.

Channel No. 3 Flow:

Velocity = _____ ft/sec; Time = $\frac{\quad}{\times 60}$ = _____ min.

Total Accumulation Time: T = 3.2 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date: _____

Comp. by: _____

Checked by: _____

SUBDIVISION
LOCATION
JOB NO.
DESIGN STORM ____ YR. RECURRENCE INTERVAL
MAJOR STORM ____ YR.
COMPUTATIONS BY ____ DATE ____

100 YR
DEVELOPED FLOWS (NON-CONTRIBUTORY MAXIMUM FLOW IN EACH AREA)

RUNOFF COMPUTATIONS
(Rational Method)

PAGE ____ OF ____

Area Designation	A (Acres)	c	c_f	$\bar{c}$ = (c x c_f)	A·$\bar{c}$	ΣA·$\bar{c}$	tc (min)	I (in/hr)	Q = (ΣA·$\bar{c}$) x I cfs	Street capacity cfs	Flow in Pipe cfs	Pipe Dia. in.	Slope %	Length ft.	VEL V fps	∆t (min)	
A I	7.0	.38	1.25	.48	3.36	3.36	21.62	4.05	13.62								
A II	12.16	.38	1.25	.48	5.83	5.83	25.04	3.77	22.01								
A III	7.07	.38	1.25	.48	3.39	3.39	18.47	4.34	14.72								
A IV	7.67	.38	1.25	.48	3.68	3.68	17.65	4.43	16.30								
A V	1.58	.38	1.25	.48	0.76	0.76	23.76	3.87	2.94								
A VI	3.69	.38	1.25	.48	1.77	1.77	12.65	5.02	8.89								
A VII	1.03	.38	1.25	.48	.49	.49	16.5	4.55	2.25								
A VIII	5.21	.38	1.25	.48	2.51	2.51	20.18	4.18	10.49								
A IX	4.16	.38	1.25	.48	2.0	2.0	11.5	5.17	10.35								

RUNOFF COMPUTATIONS

Sheet No. 1

Project: PALISADES

Drainage Area No. A1

Area = 7.0 acres

Maximum Overland Flow: L = ~~210'~~ 400 S = 7.6 %

Maximum Channel Flow:

Channel No. 1 L = 200 S = 2.17

Channel No. 2 L = 350 S = 5.52

Channel No. 3 L = 180 S = 7.0

Accumulation Time No 4 L = 350 S = 5.25

No. 5 L = 150 S = 3.43

Overland Flow or Inlet Time: 17 min.

Channel No. 1 Flow:

Velocity = 3 ft/sec; Time = $\frac{200}{3 \times 60}$ = 1.11 min.

Channel No. 2 Flow:

Velocity = 5.75 ft/sec; Time = $\frac{550}{5.75 \times 60}$ = 1.01 min.

Channel No. 3 5.25 ft/sec .57

Channel No. 4 Flow: 4.6 1.27

Channel No. 5. 3.8

Velocity = ____ ft/sec; Time = $\frac{\quad}{\times 60}$ = .66 min.

Total Accumulation Time: T = 27.62 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date: _____

Comp. by: _____

Checked by: _____

Qmax

RUNOFF COMPUTATIONS

Sheet No. _____

Project: _____

Drainage Area No. DII

Area = 12.16 acres

Maximum Overland Flow: L = 500 S = .15 %

Maximum Channel Flow:

Channel No. 1 L = 220 S = 2.27

Channel No. 2 L = 480 S = 2.04

Channel No. 3 L = 200 S = 3.43

Channel No. 4 L = 330 S = 10.5

Accumulation Time

Overland Flow or Inlet Time: 16.5 min.

Channel No. 1 Flow:

Velocity = 3.0 ft/sec; Time = $\frac{220}{3 \times 60}$ = 1.22 min.

Channel No. 2 Flow:

Velocity = 2.9 ft/sec; Time = $\frac{480}{2.9 \times 60}$ = 2.53 min.

Channel No. 3 Flow:

Velocity = 3.8 ft/sec; Time = $\frac{200}{3.8 \times 60}$ = .87 min.

Channel 4. 3.92

Total Accumulation Time: T = 25.04 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date: _____

Comp. by: _____

Checked by: _____

Over

RUNOFF COMPUTATIONS

Sheet No. _____

Project: _____

Drainage Area No. A3

Area = 7.07 acres

Maximum Overland Flow: L = 420 S = 13.33%

Maximum Channel Flow:

Channel No. 1 L = 200 S = 6.7%

Channel No. 2 L = 150 S = 2.0%

Channel No. 3 L = 160 S = 12%

Accumulation Time

Overland Flow or Inlet Time: 16.5 min.

Channel No. 1 Flow:

Velocity = 5 ft/sec; Time = $\frac{200}{5 \times 60}$ = .67 min.

Channel No. 2 Flow:

Velocity = 2.75 ft/sec; Time = $\frac{150}{2.75 \times 60}$ = .91 min.

Channel No. 3 Flow:

Velocity = 6.75 ft/sec; Time = $\frac{160}{6.75 \times 60}$ = .40 min.

Total Accumulation Time: T = 18.47 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date: _____

Comp. by: _____

Checked by: _____

Query

RUNOFF COMPUTATIONS

Sheet No. _____

Project: _____

Drainage Area No. AE

Area = 7.67 acres

Maximum Overland Flow: L = 340 S = 11.70 %

Maximum Channel Flow:

Channel No. 1 L = 170 S = 6 %

Channel No. 2 L = 200 S = 2.6 %

Channel No. 3 L = 410 S = 11 %

Accumulation Time

Overland Flow or Inlet Time: 15 min.

Channel No. 1 Flow:

Velocity = 5 ft/sec; Time = $\frac{170}{5 \times 60}$ = .47 min.

Channel No. 2 Flow:

Velocity = 2.9 ft/sec; Time = $\frac{200}{2.9 \times 60}$ = 1.14 min.

Channel No. 3 Flow:

Velocity = 6.6 ft/sec; Time = $\frac{410}{6.6 \times 60}$ = 1.04 min.

Total Accumulation Time: T = 17.65 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date: _____

Comp. by: _____

Checked by: _____

Qmax

RUNOFF COMPUTATIONS

Sheet No. _____

Project: _____

Drainage Area No. AV

Area = 1.58 acres

Maximum Overland Flow: L = 400 S = 5%

Maximum Channel Flow:

Channel No. 1 L = 240 S = 0.5%

Channel No. 2 L = _____ S = _____

Channel No. 3 L = _____ S = _____

Accumulation Time

Overland Flow or Inlet Time: 19 min.

Channel No. 1 Flow:

Velocity = 1.4 ft/sec; Time = $\frac{400}{1.4 \times 60}$ = 4.76 min.

Channel No. 2 Flow:

Velocity = _____ ft/sec; Time = $\frac{\quad}{\times 60}$ = _____ min.

Channel No. 3 Flow:

Velocity = _____ ft/sec; Time = $\frac{\quad}{\times 60}$ = _____ min.

Total Accumulation Time: T = 23.76 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date: _____

Comp. by: _____

Checked by: _____

Q mey

RUNOFF COMPUTATIONS

Sheet No. _____

Project: _____

Drainage Area No. AVI

Area = 2.69 acres

Maximum Overland Flow: L = 220 S = 18.63%

Maximum Channel Flow:

Channel No. 1 L = 400 S = 8.0

Channel No. 2 L = _____ S = _____

Channel No. 3 L = _____ S = _____

Accumulation Time

Overland Flow or Inlet Time: 11.5 min.

Channel No. 1 Flow:

Velocity = 5.8 ft/sec; Time = $\frac{400}{5.8 \times 60}$ = 1.15 min.

Channel No. 2 Flow:

Velocity = _____ ft/sec; Time = $\frac{\quad}{\times 60}$ = _____ min.

Channel No. 3 Flow:

Velocity = _____ ft/sec; Time = $\frac{\quad}{\times 60}$ = _____ min.

Total Accumulation Time: T = 12.65 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date: _____

Comp. by: _____

Checked by: _____

Quay

RUNOFF COMPUTATIONS

Sheet No._____

Project:_____

Drainage Area No. A VII

Area = 1.03 acres

Maximum Overland Flow: L = 320 S = 5.62 %

Maximum Channel Flow:

Channel No. 1 L = _____ S = _____

Channel No. 2 L = _____ S = _____

Channel No. 3 L = _____ S = _____

Accumulation Time

Overland Flow or Inlet Time: 16.5 min.

Channel No. 1 Flow:

Velocity = _____ ft/sec; Time = _____ X 60 = _____ min.

Channel No. 2 Flow:

Velocity = _____ ft/sec; Time = _____ X 60 = _____ min.

Channel No. 3 Flow:

Velocity = _____ ft/sec; Time = _____ X 60 = _____ min.

Total Accumulation Time: T = 16.5 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date:_____

Comp. by:_____

Checked by:_____

Quex

RUNOFF COMPUTATIONS

Sheet No._____

Project:_____

Drainage Area No. ΔVIII

Area = 5.21 acres

Maximum Overland Flow: L = 350 ft S = 12.57%

Maximum Channel Flow:

Channel No. 1 L = 160 S = 2.0%

Channel No. 2 L = 350 S = 0.53%

Channel No. 3 L = 180 S = 6.7%

Accumulation Time

Overland Flow or Inlet Time: 15 min.

Channel No. 1 Flow:

Velocity = 2.8 ft/sec; Time = $\frac{160}{2.8 \times 60}$ = .75 min.

Channel No. 2 Flow:

Velocity = 1.6 ft/sec; Time = $\frac{350}{1.6 \times 60}$ = 3.64 min.

Channel No. 3 Flow:

Velocity = 5.1 ft/sec; Time = $\frac{180}{5.1 \times 60}$ = .58 min.

Total Accumulation Time: T = 20.18 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date:_____

Comp. by:_____

Checked by:_____

Qmax

RUNOFF COMPUTATIONS

Sheet No._____

Project:_____

Drainage Area No. A1X

Area = 4.16 acres

Maximum Overland Flow: L = 160 S = 10.0%

Maximum Channel Flow:

Channel No. 1 L = _____ S = _____

Channel No. 2 L = _____ S = _____

Channel No. 3 L = _____ S = _____

Accumulation Time

Overland Flow or Inlet Time: 11.5 min.

Channel No. 1 Flow:

Velocity = _____ ft/sec; Time = _____ / X 60 = _____ min.

Channel No. 2 Flow:

Velocity = _____ ft/sec; Time = _____ / X 60 = _____ min.

Channel No. 3 Flow:

Velocity = _____ ft/sec; Time = _____ / X 60 = _____ min.

Total Accumulation Time: T = 11.5 min.

I = _____ = _____ = _____

Q = CIA = ( ) ( ) ( ) = _____ c.f.s.

Date:_____

Comp. by:_____

Checked by:_____

Qmax

SUBDIVISION
LOCATION
JOB NO.
DESIGN STORM ____ YR. RECURRENCE INTERVAL
MAJOR STORM ____ YR.
COMPUTATIONS BY ____ DATE ____

Historic Flows (Based on) Fig G.

RUNOFF COMPUTATIONS
(Rational Method)

PAGE ____ OF ____

Area Designation	A (Acres)	c	c_f	$\bar{c}$ = (c x c_f)	A·$\bar{c}$	ΣA·$\bar{c}$	tc (min)	I (in/hr)	Q = (ΣA·$\bar{c}$) x I cfs	Street capacity cfs	Flow in Pipe cfs	Pipe Dia. in.	Slope %	Length ft.	VEL V fps	at (min)	
AI	9.27	.30	1.25	.375	3.48	3.48	26	3.71	12.92								
AIII	10.86				4.07	4.07	26	3.71	15.10								
AIII	6.02				2.26	2.26	26	3.71	8.38								
AIV	2.86				1.07	1.07	26	3.71	3.97								
AV	3.06				1.14	1.14	26	3.71	4.23								
AVI	27.35	.30	1.25	.375	10.25	10.25	26	3.71	38.03								
Sum.									82.63								

By_____ Date_____ PROJECT THE PALISADES sheet No.____of____

Checked By____ Date_____ OFFSITE FLOWS Job No._____

THE ONLY OFFSITE FLOWS COMING ONTO THE SITE ARE FROM THE BACKLOTS ON THE WEST, AND FROM ONTOP THE RIDGE TO THE WEST. IT APPEARS OFFSITE FLOW FROM RIDGE WILL CONCENTRATE AT THE INTERSECTION OF BAYADA DR. THE BACKLOTS FLOWS WERE CONSIDERED AS A PORTION OF THE DEVELOPED ONSITE FLOWS.

AN AREA OF 72.23 ACRES DRAINS FROM THE RIDGE ONTO THE PROPERTY. WITHOUT CONSIDERING STORM SEWERS, A 100-YR STORM WILL CAUSE 89.3 CFS TO FLOW FROM THIS AREA. IT SEEMS LOGICAL THEN TO DETERMINE THE CAPACITY OF THE SEWER DRAINING THIS AREA TO DETERMINE OVERLAND 100-YR. CONTRIBUTION. THIS SITE IS OSI

OVERLAND FLOW = 89.3 CFS.

15" SEWER DRAINS AREA INTO 60" SEWER COMING FROM ~~OFFSITE~~ OUTSIDE OSI.

CAPACITY OF SEWER INTO OSI:

GRADE = .020

CAPACITY = 390 cfs

CAPACITY OF 15" AT 58TH & BLUE RIDGE

GRADE = .3% (ASSUMED)

CAPACITY = 3.5 CFS

CAPACITY OF 15" IN PLANO CT:

By_____ Date_____ PROJECT_____ sheet No.____of____

Checked By____ Date____ _____ Job No._____

GRADE: .3% (ASSUMED)
CAPACITY = 3.5 CFS

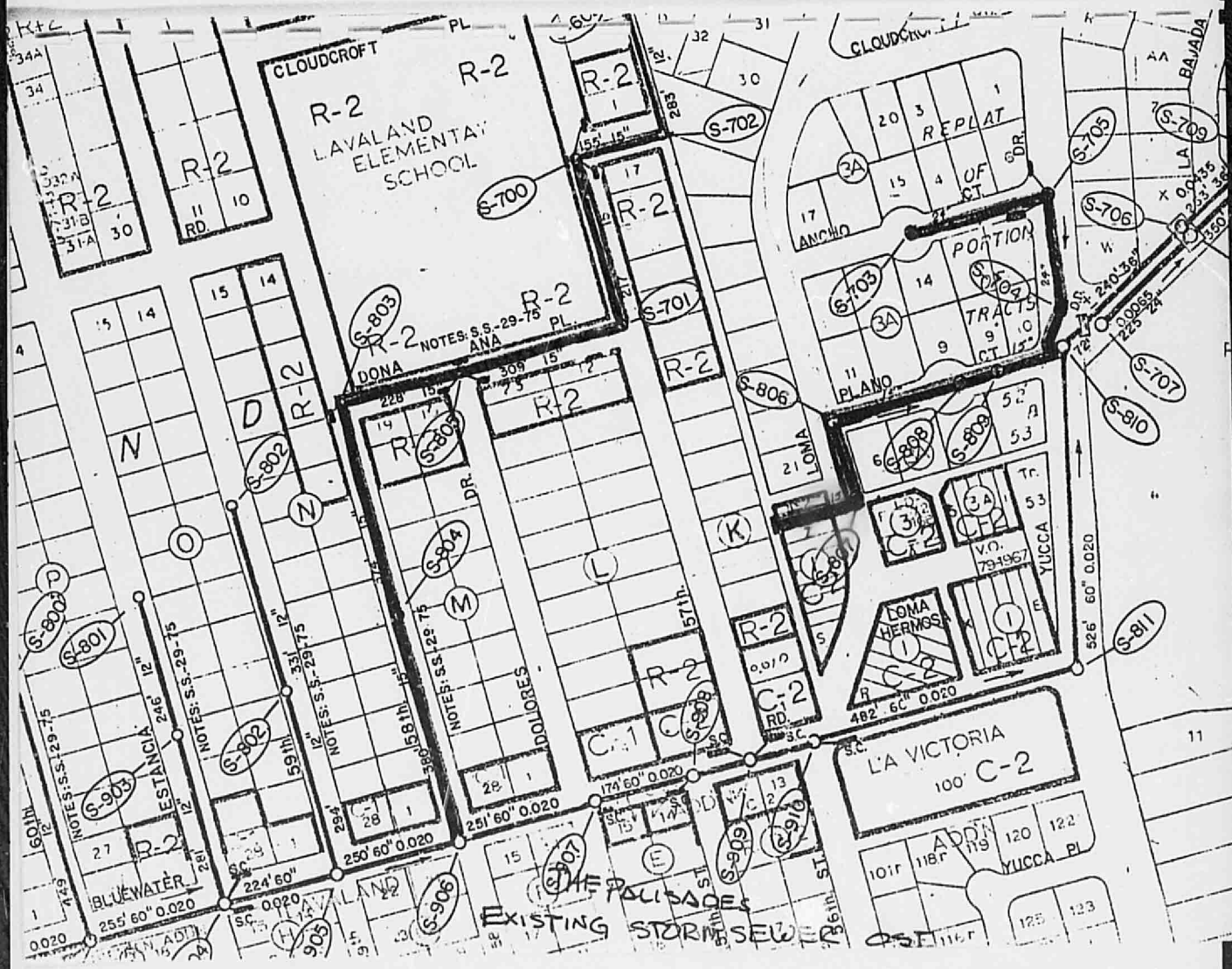
CAPACITY OF 24" IN PALISADES DR.
GRADE = .3% (ASSUMED)
CAPACITY = 12.5 cfs

TOTAL CAPACITY OF SEWERS IN OSI = 19.5

EXCESS SURFACE DRAINAGE =
89.3 - 19.5 = 69.8 cfs.

CONVERT 69.8 cfs into AN EQUIVALENT AREA FOR USE ON RUNOFF CHART

$Q/I = 69.8/2.47 = 28.26 = A \cdot \bar{C}$ for $T_c = 51.5$


CLOUDCROFT
R-2
LAVALAND ELEMENTARY SCHOOL
S-700
S-702
S-701
S-803
S-804
S-805
S-806
S-808
S-809
S-801
S-802
S-807
S-810
S-811
S-705
S-706
S-707
S-709
REPLAT OF PORTION TRACTS
ANCHO
PLANO
LOMA
DONA ANA
DOLORES
ESTANCIA
BLUEWATER
YUCCA
LOMA HERMOSA
LA VICTORIA
C-2
CF2
NOTES: S.S.-29-75
EXISTING STORM SEWER
THE PALISADES

RUNOFF COMPUTATIONS

Sheet No. 1

Project: Best Bland Homes

Drainage Area No. O.S.1

Area = 72.23 acres

Maximum Overland Flow: L = 140' S = 0.036

Maximum Channel Flow:

Channel No. 1 L = 3400 S = 0.0053

Channel No. 2 L = 2700 S = 0.0058

Channel No. 3 L = _____ S = _____

Accumulation Time

Overland Flow or Inlet Time: 13.5 min.

Channel No. 1 Flow:

Velocity = 1.5 ft/sec; Time = $\frac{3400}{1.5 \times 60}$ = 38 min.

Channel No. 2 Flow:

Velocity = 1.5 ft/sec; Time = $\frac{2700}{1.5 \times 60}$ = 30 min.

Channel No. 3 Flow:

Velocity = _____ ft/sec; Time = $\frac{\quad}{\times 60}$ = _____ min.

Total Accumulation Time: T = 51.5 min.

$I = \frac{189}{t+25} = \frac{189}{51.5+25} = 2.47$

Q = CIA = (0.5) (2.47) (72.23) = 89.2 c.f.s.

Date: 1/24/77

Comp. by: Subhas Shah

Checked by: _____

FIGURE 5

FLOW FOR CIRCULAR PIPE FLOWING FULL
BASED ON MANNING'S EQUATION n=0.013

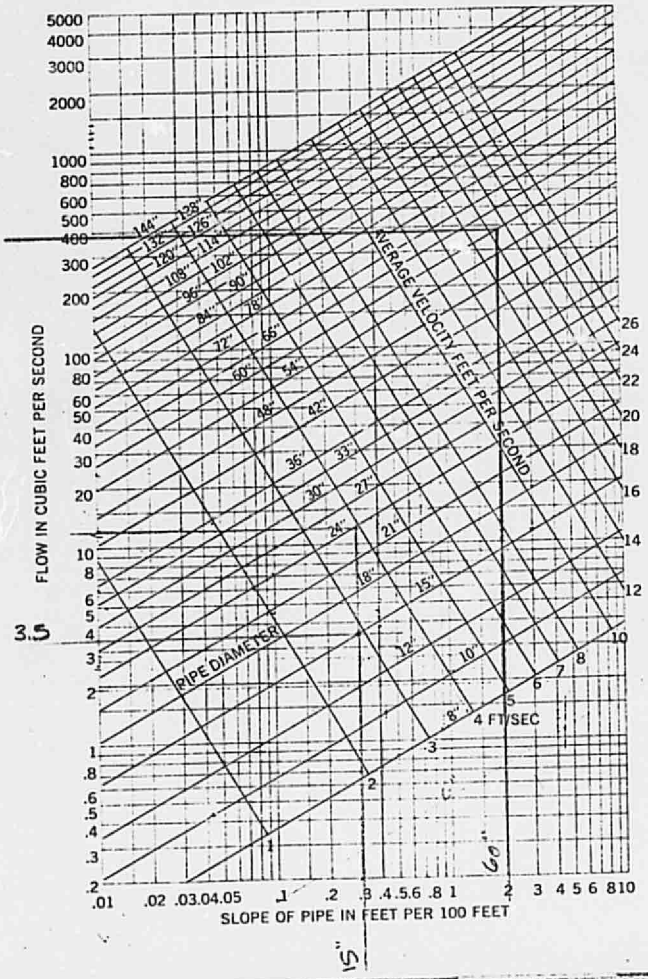
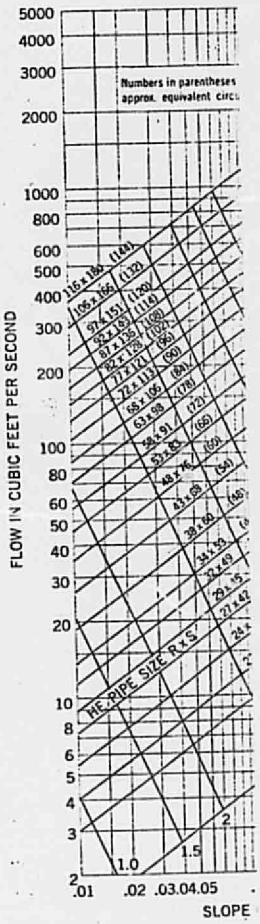


FIGURE 6

FLOW FOR HORIZO
BASED ON



Historic Runoff
T_c Calcs.

A1 L = 1020'
S = 9.2 %
ΔEL = 94'
T_c = 24 min.

A2 L = 1020
S = 10.2 %
T_c = 23 min

A3 L = 900'
S = 12.22 %
T_c 22 min

A4 L = 430'
S = 16.27 %
T_c = 15.5 min

A5 L = 680'
S = 11.76 %
T_c = 20.0 min

A6 L = 1240'
S = 7.25 %
T_c = 26 min

26 min is greatest time - use for entire area

APPENDIX-3

3.6 Continued

TABLE 3-2 (8)

RATIONAL METHOD RUNOFF COEFFICIENTS FOR COMPOSITE ANALYSIS

Character of Surface	Runoff Coefficients
Streets:	
Asphaltic	0.70 to 0.95
Concrete	0.80 to 0.95
Drives and Walks	0.75 to 0.85
Roofs	0.75 to 0.95
Lawns, Sandy Soil:	
Flat, 2%	0.05 to 0.10
Average, 2 to 7%	0.10 to 0.15
Steep, 7%	0.15 to 0.20
Lawns, Heavy Soil:	
Flat, 2%	0.15 to 0.20
Average, 2 to 7%	0.20 to 0.25
Steep, 7%	0.25 to 0.35

The coefficients in these two tabulations are applicable for storms of 5-year to 10-year frequencies. Less frequent higher-intensity storms will require modification of the coefficient because infiltration and other losses have a proportionally smaller effect on runoff, as given in the following section.

3.7 Adjustment for Infrequent Storms

The adjustment of the Rational Method for use with major storms can be made by multiplying the right side of the Rational Formula by a frequency factor C_f, which is used to account for antecedent precipitation conditions. The Rational Formula now becomes:

$$Q = CIAC_f \qquad (3\text{-}2)$$

The following table of C_f values can be used. The product of C times C_f should not exceed 1.0.

3.7 Continued

TABLE 3-3

FREQUENCY FACTORS FOR RATIONAL FORMULA

Recurrence Interval (years)	C_f
2 to 10	1.0
25	1.1
50	1.2
100	1.25

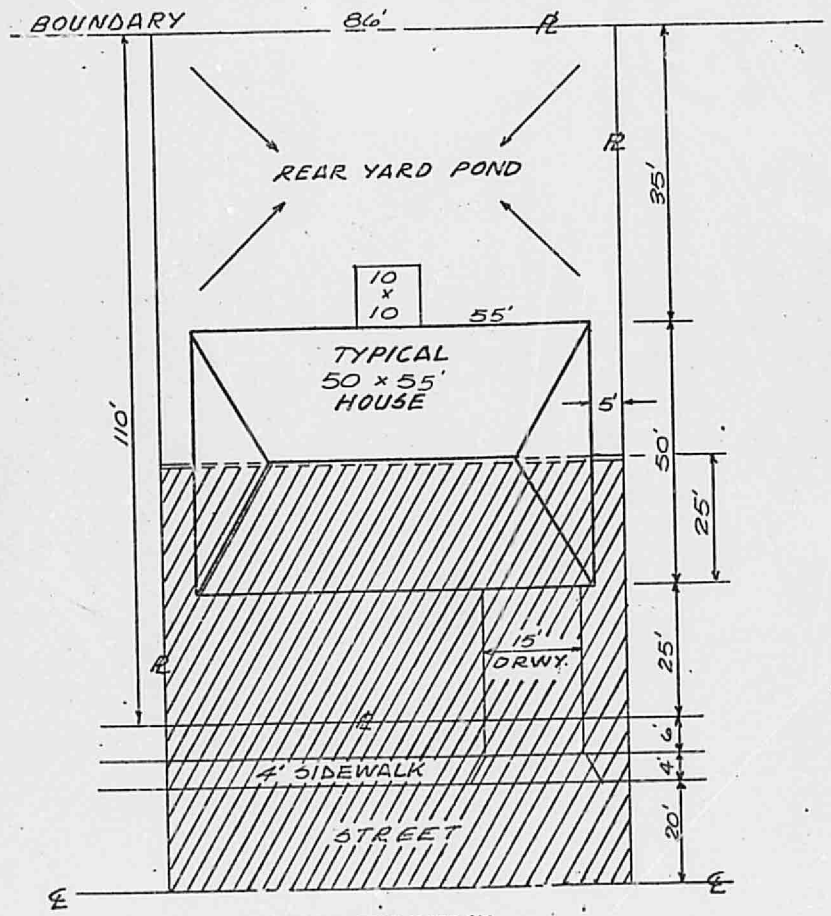


FIGURE ...
TYPICAL LOT DRAINAGE

FIGURE III

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JOB NO. _____ DATE _____
PROJECT _____
SCALE _____

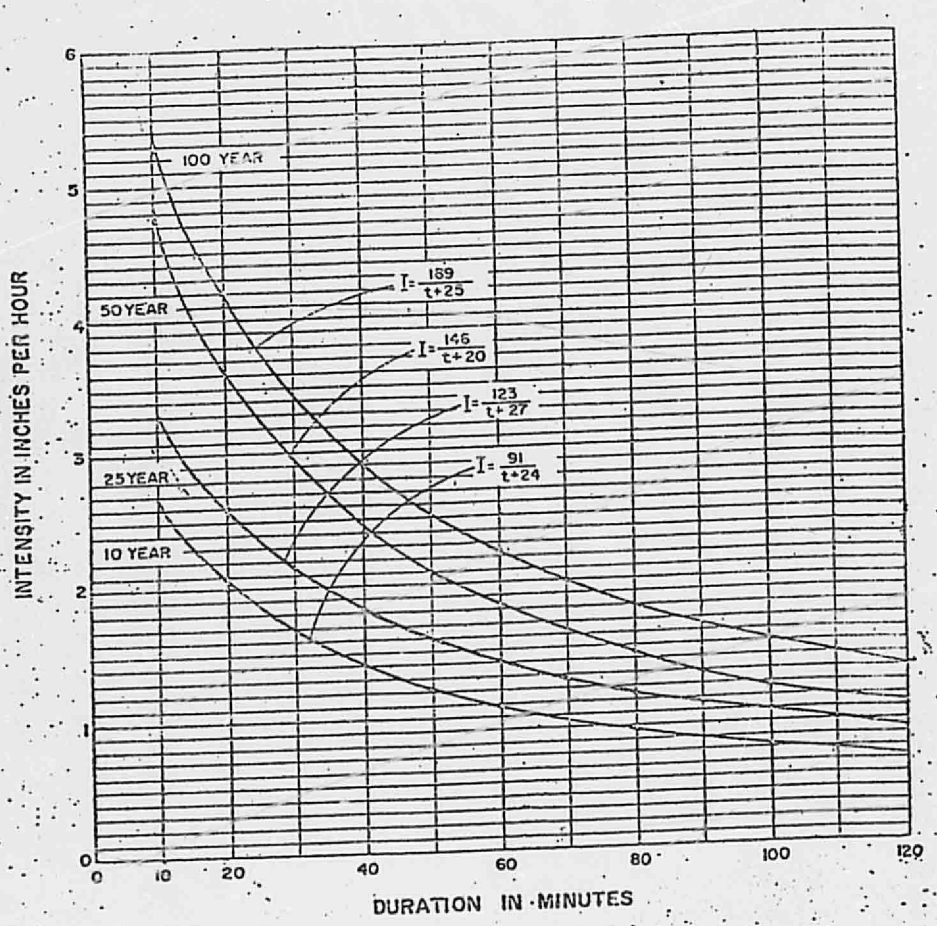

FIGURE IV

MASTER PLAN OF DRAINAGE
CITY OF ALBUQUERQUE - NEW MEXICO
AND ENVIRONS

INTENSITY DURATION
FREQUENCY CURVES

(ALBUQUERQUE AREA - 1961)

GORDON HERKENHOFF & ASSOC
CONSULTING ENGINEERS

CHART
1

FIG. G-INTENSITY EXPECTATION FOR ONE-HOUR RAINFALL.*

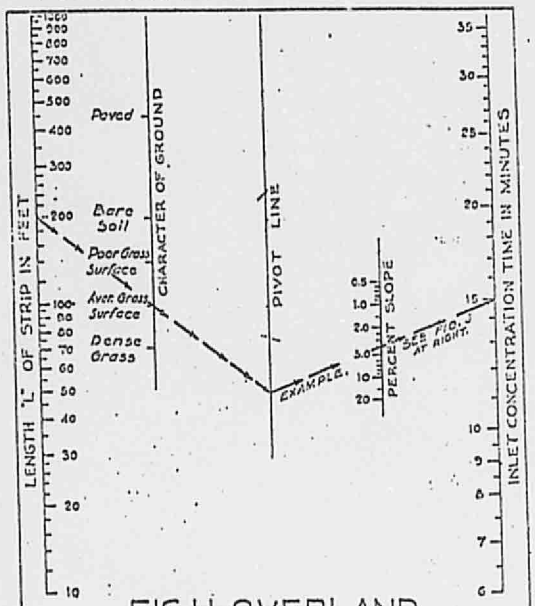

FIG. H-OVERLAND FLOW TIME.

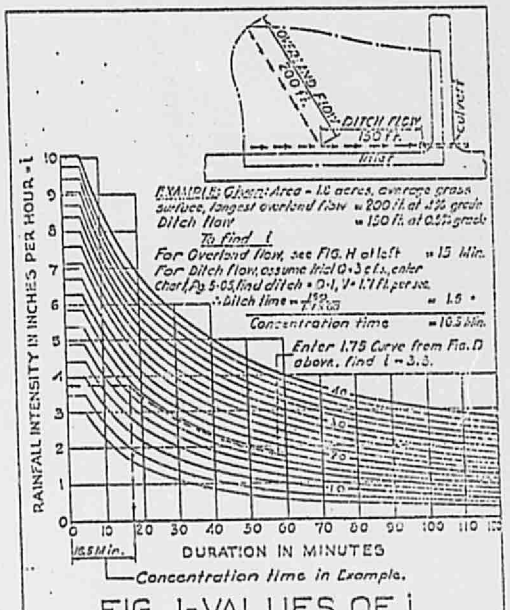

FIG. J-VALUES OF i
RAINFALL INTENSITY-DURATION.†

*Reproduced from Miscellaneous Publication No. 204, U.S. Dept. of Agriculture, by David L. Yarnell.
†Adapted from Engineering Manual of the War Department; Part VIII, Chap. I, Dec. '45.

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JOB NO. _____ DATE _____
PROJECT _____
SCALE _____

FIGURE V

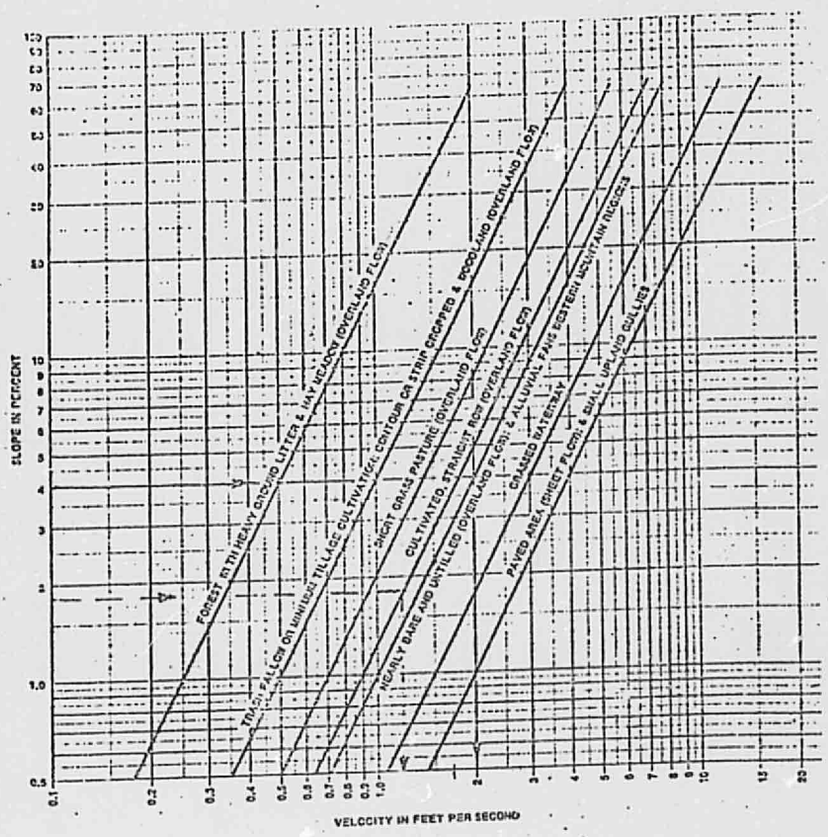

Figure VI -Velocities for upland method of estimating T_c

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(1) Herkenhoff, Gordon & Associates, "Master Plan of Drainage City of Albuquerque, New Mexico and Environs, 1963". Albuquerque; Gordon Herkenhoff & Associates, Consulting Engineers.

(2) Wright-McLaughlin Engineers, "Urban Storm Drainage Criteria Manual, Volume 1", Denver, Colorado: Wright-McLaughlin Engineers, 1969.

(3) U.S. Department of Commerce, "Technical Paper, No. 40, Rainfall Frequency Atlas of the United States", Washington, D.C., U.S. Government Printing Office, 1963.