HYDROLOGY H17/D10 3 PLANS

H17/D10

3 PLANS

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

H17 - D10

March 9, 1982

Mr. Jeff Mortensen
Tom Mann & Associates
811 Dallas N.E.
Albuquerque, N.M. 87110

RE: PURVIS WAREHOUSE COMPLEX REVISED DRAINAGE PLAN

Dear Jeff:

This office approves of the changes indicated in the plans dated 2/26/82.

Very truly yours,

Brian G. Burnett
Civil Engineer/Hydrology

BGB/tsl

MUNICIPAL DEVELOPMENT DEPARTMENT

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

811 DALLAS, N.E. • ALBUQUERQUE • NEW MEXICO • 87110 • 505-265-5611

Tom Mann Associates, Inc.
Engineers

10283
April 27, 1982

Mr. Bernie Montoya
Engineering/Hydrology Division
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

Re: Drainage Certification at
Towner and Jefferson

Dear Bernie:

On April 26, 1982, I visited the site of the subject project. During this visit, I conducted a visual inspection of the construction of the proposed improvements. These improvements appear to have been constructed in substantial compliance with the drainage plan dated February 26, 1982.

This certification applies only to the improvements (paving, ponds, etc.) which have been built on private property. Those drainage improvements, such as sidewalk culverts, are the responsibility of the MDD Inspection Section. It is my understanding that Mr. Bill Kearney is currently involved in the inspection of those facilities. Because of this, in an attempt to avoid duplication of effort, I have not commented on the storm drainage facilities constructed within public right-of-way.

If you have any questions or comments concerning this information, do not hesitate to call. Hopefully, this information will enable you to evaluate this project, and ultimately issue a green tag so that the owner can obtain a Certificate of Occupancy.

Sincerely,

TOM MANN & ASSOCIATES, INC.

Jeffrey G. Mortensen
Project Engineer

JGM:bb
xc: Pat Purvis
Chuck Dodgen

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

H17 - D10

March 9, 1982

Mr. Jeff Mortensen
Tom Mann & Associates
811 Dallas N.E.
Albuquerque, N.M. 87110

RE: PURVIS WAREHOUSE COMPLEX REVISED DRAINAGE PLAN

Dear Jeff:

This office approves of the changes indicated in the plans dated 2/26/82.

Very truly yours,

Brian G. Burnett
Civil Engineer/Hydrology

BGB/tsl

Tom Mann Associates, Inc.
Engineers
811 DALLAS, N.E. • ALBUQUERQUE • NEW MEXICO • 87110 • 505-265-5611

10282
February 26, 1982

#17-010

RECEIVED
FEB 26 1982
ENGINEERING

Mr. Brian G. Burnett
Engineering/Hydrology Division
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

Re: Purvis Warehouse Complex
Revised Drainage Plan

Dear Brian:

Transmitted herewith for your review are two (2) copies of the subject project. Building 1 is currently under construction, and the owner wishes to continue development without delay. Because of this, your prompt attention to the review of this revised plan will be greatly appreciated.

As you can see from the logo on the plan, we have prepared this plan in conjunction with the Burns/Peters Group. Mr. Chuck Dodgen is their representative for this project.

If you have any questions or comments concerning this information, do not hesitate to call.

Sincerely,

TOM MANN & ASSOCIATES, INC.

Jeffrey G. Mortensen
Project Engineer

JGM:bb
xc: Chuck Dodgen w/enc.

8000 Pennsylvania Circle NE Albuquerque, New Mexico 87110 Telephone 505•265 3645

THE BURNS•PETERS GROUP

the burns peters group
Architects & Planners

August 19, 1981

Brian Burnett
Civil Engineer/Hydrology
City Engineers Office
P.O. Box 1291
Albuquerque, New Mexico 87103

Re: Purvis Warehouse Complex
2531 Jefferson, N.E.
Project No: 81-12

Dear Brian:

Enclosed please find a letter from Charles Bacchus, concerning the footing protection at the above referenced project.

I believe this should satisfy your requirements for a more detailed description of the moisture intrusion protection.

If you should have any questions, please do not hesitate to call me.

Sincerely,

Jack C. Boyle

Jack C. Boyle
THE BURNS/PETERS GROUP

JCB/mf

RECEIVED
AUG 24 1981
CITY ENGINEER

William L. Burns, AIA • Ronald L. Peters, AIA • Donald F. Fleucher, AIA • Jack R. Alley, AIA • Ronald K. Hill

Bacchus Consulting Engineering
STRUCTURAL ENGINEERS

6001 Marble Avenue NE
Suite One
Albuquerque, New Mexico 87110
505-265-3501

August 18, 1981

The Burns/Peters Group, Architects
8000 Pennsylvania Circle, NE
Albuquerque, New Mexico 87110

Attention: Jack Boyle

Subject: Protection of Foundation Bearing Soils
Purvis Warehouse Complex
Towner and Jefferson Streets, NE
Albuquerque, New Mexico

Gentlemen:

The soils underlying the site in question are very susceptible to settlement if their moisture content is increased. It is therefore essential that special measures be taken to prevent water from penetrating under the foundation. This is a major reason for the overexcavation and recompaction of the soil beneath the structure.

Of particular concern are the planting/drainage areas where more than usual moisture is to be expected. Where these areas are adjacent to footings, a vapor barrier has been specified (see detail 9/C3) to help prevent infiltration of water to the bearing stratum.

In order for this detail to be effective, the following is essential:

1) The soil beneath the vapor barrier must be compacted to not less than the value specified (95% of modified Proctor density).

2) The vapor barrier must be installed without any breaks. If splices are necessary, the joints must be overlapped and sealed as required to provide moisture resistance at least equal to the vapor barrier between splices. Any rips, punctures and/or tears must be treated in a similar manner.

3) When the soil above the vapor barrier is placed and any planting done, all measures necessary shall be taken to prevent any penetration of the vapor barrier. If the barrier is punctured in any way, the puncture must be repaired as required to completely restore the integrity of the vapor barrier.

If the above procedures are followed, the soil beneath the footings will be satisfactorily protected except in the case of extraordinary

continued

Bacchus Consulting Engineering
STRUCTURAL ENGINEERS

conditions such as the presence of several feet of water over the site for a prolonged period.

If you have any questions regarding this matter, please call on us.

Sincerely,

Bacchus Consulting Engineering,

Charles Bacchus

Charles Bacchus, PE

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

H17-D10

July 28, 1981

Mr. Jeffrey Mortensen
Tom Mann & Associates
811 Dallas N.E.
Albuquerque, New Mexico

Re: PURVIS WAREHOUSE DRAINAGE PLAN

Dear Jeff:

The referenced drainage report is hereby approved. This approval is based on your reply dated July 20, 1981 and the pond detail supplied by Mr. Jack Boyle of Burns/Peters Group.

Very truly yours,

Brian G. Burnett

Brian G. Burnett
Civil Engineer/Hydrology

BGB/fs
7878A

811 DALLAS, N.E. • ALBUQUERQUE • NEW MEXICO • 87110 • 505-265-5611

Tom Mann Associates, Inc.
Engineers

1-028
July 20, 1981

Mr. Brian Burnett
Hydrology Division
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

Re: Purvis Warehouse Drainage Report

Dear Brian:

Transmitted herewith are two (2) prints of the existing topography and existing drainage information for the subject project. As you can see, the majority of the site and the contributing basin discharge onto Prospect Avenue N.E. The historic flow for this basin is calculated as 5.4 cfs. This is approximately 2 cfs greater than that which will be discharged onto Prospect Avenue in the developed state. This should answer your question raised in your letter dated July 14, 1981.

In response to your other comment appearing in your letter dated July 14, 1981, it is the responsibility of Mr. Jack Boyle of the Burns/Peters Group to provide the appropriate details for the planters to be used as ponds. I had previously discussed with Mr. Boyle the potential problems associated with ponding next to the proposed structures. At that time Mr. Boyle stated that he would detail a suitable scheme for lining the planters so that landscaping could be provided, yet water be kept away from the foundations. For further detail on the planter/ponds please contact Mr. Boyle at 265-3645.

Your prompt attention to the continued review and approval of this project will be greatly appreciated. If you have any further questions or comments, do not hesitate to call.

Sincerely,

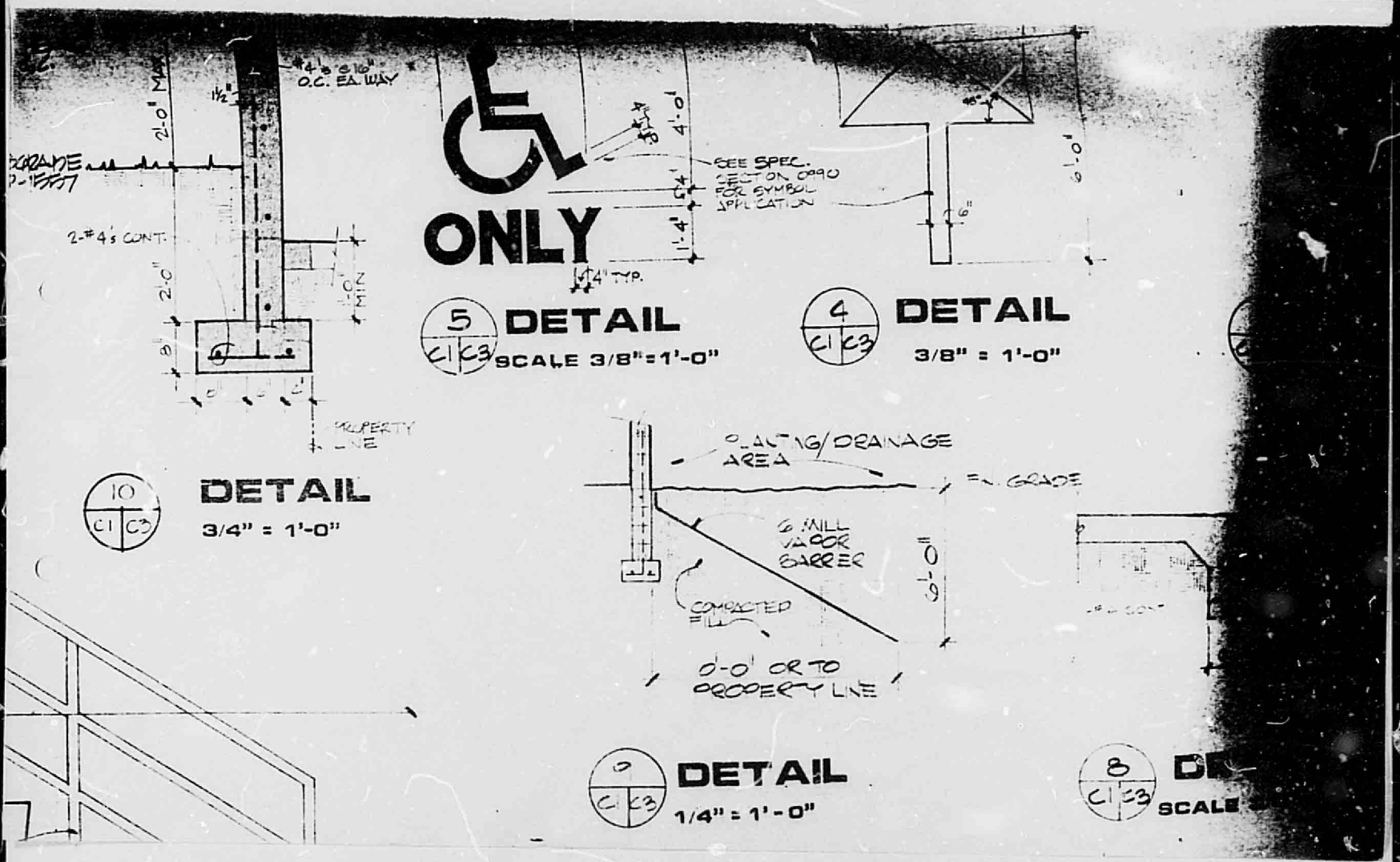
TOM MANN & ASSOCIATES, INC.

Jeffrey G. Mortensen
Project Engineer

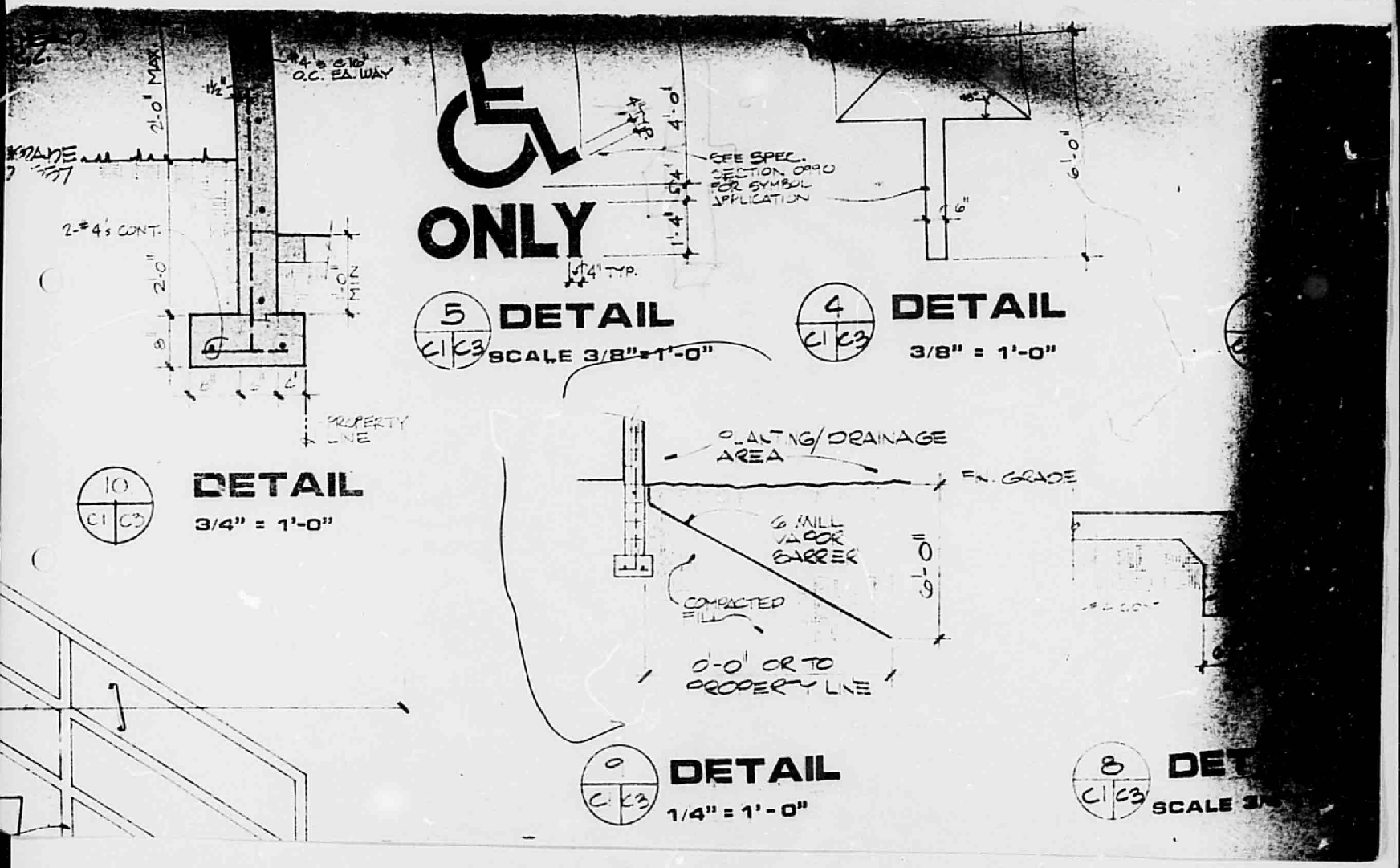
xc: Jack Boyle

Charlie Brachers

Letter to earth and footing Contractor


#4's @ 16" O.C. EA. WAY
21-0" MAX
1½"
GRADE
2-#4's CONT.
2'-0"
PROPERTY LINE
ONLY
4'-0"
SEE SPEC. SECTION 0990 FOR SYMBOL APPLICATION
1'-4"
4" TYP.
6'-0"
6"
5 C1 C3 DETAIL
SCALE 3/8"=1'-0"
4 C1 C3 DETAIL
3/8" = 1'-0"
10 C1 C3 DETAIL
3/4" = 1'-0"
PLANTING/DRAINAGE AREA
FIN. GRADE
6 MILL VAPOR BARRIER
COMPACTED FILL
6'-0"
0'-0" OR TO PROPERTY LINE
0 C1 C3 DETAIL
1/4" = 1'-0"
8 C1 C3
SCALE

- Ask Uncle about Purvis ponds


#4 @ 18" O.C. EA. WAY
21'-0" MAX
1½"
GRADE
2-#4's CONT.
2'-0"
PROPERTY LINE
ONLY
4'-0"
SEE SPEC. SECTION 0990 FOR SYMBOL APPLICATION
1'-4"
4" TYP.
6'-0"
6"
5 C1 C3 DETAIL
SCALE 3/8"=1'-0"
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3/8" = 1'-0"
10 C1 C3 DETAIL
3/4" = 1'-0"
PLANTING/DRAINAGE AREA
FIN. GRADE
6 MILL VAPOR BARRIER
COMPACTED FILL
0'-0" OR TO PROPERTY LINE
9 C1 C3 DETAIL
1/4" = 1'-0"
8 C1 C3 DET
SCALE 3/

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

July 14, 1981

Mr. Jeff Mortensen
Tom Mann & Associates
811 Dallas N.E.
Albuquerque, New Mexico 87110

RE: PURVIS WAREHOUSE DRAINAGE REPORT

Dear Jeff:

Your submittal of June 3, 1981, of a grading and drainage plan for Purvis Warehouse has resulted in the following comments:

1. A major concern results from the proposed ponds adjacent to the structure. As you indicated, the site is located on an old sanitary landfill and settlement of the structure is a possibility. Charles Easterling, Principal Assistant City Engineer/Hydrology, has indicated that ponding next to the structure is acceptable provided that provisions are made to line each pond. I am still awaiting detail C3 which depicts the proposed scheme for each pond.

2. A statement needs to be made verifying that the developed flow rate of 3.42 cfs is not greater than the quantity now entering Prospect Avenue.

Compliance with the above and incorporation of the necessary details for our review will allow prompt release of this project.

Very truly yours,

Brian D. Burnett

Brian Burnett
Civil Engineer/Hydrology

BB/fs

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

July 14, 1981

Mr. Jeff Mortenson
Tom Mann & Associates
811 Dallas N.E.
Albuquerque, N.M. 87110

RE: PURVIS WAREHOUSE DRAINAGE REPORT

Dear Jeff:

Your submittal of June 3, 1981, of a grading and drainage plan for Purvis Warehouse has resulted in the following comments:

1. A major concern results from the proposed ponds adjacent to the structure. As you indicated, the site is located on an old sanitary landfill and settlement of the structure is a possibility. Charles Easterling, Principal Assistant City Engineer/Hydrology, has indicated that ponding next to the structure is acceptable provided that provisions are made to line each pond. I am still awaiting detail C3 which depicts the proposed scheme for each pond.

2. A statement needs to be made verifying that the developed flow rate of 3.42 cfs is not greater than the quantity now entering Prospect Avenue.

3. The driveway referenced on Page 8 (Basin 4) is not indicated on the Grading and Drainage Plan.

Compliance with the above and incorporation of the necessary details for our review will allow prompt release of this project.

Very truly yours,

Brian Burnett
Civil Engineer/Hydrology

BB/tsl

Goldberg - Mann & Associates, Inc.
Engineers - Planners
811 Dallas St., N.E. Albuquerque, New Mexico 87110 (505) 265-5611

May 29, 1981 1-028

Mr. Charles M. Easterling
City Engineer/Hydrology
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

RECEIVED
JUN 03 1981
CITY ENGINEER

Re: Purvis Warehouse Complex
Drainage Plan

Dear Chuck:

Transmitted herewith for your review are two (2) copies of the subject drainage plan. Also transmitted at this time are two (2) copies of the drainage report for the Warehouse Complex.

Please review and comment at your earliest convenience. If you have any questions or comments, do not hesitate to call.

Sincerely,

GOLDBERG-MANN & ASSOCIATES, INC.

Jeffrey G. Mortensen
Project Engineer

JGM:bb
xc: Jack Boyle, Burns/Peters

811 DALLAS, N.E. • ALBUQUERQUE • NEW MEXICO • 87110 • 505-265-5611

Tom Mann Associates, Inc.
Engineers

1-028
July 9, 1981

Mr. Brian Burnett
Engineering/Hydrology Division
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

Re: Purvis Warehouse Complex

Dear Brian:

Transmitted herewith to supplement your review of the subject project are two (2) copies of the grading and drainage plan on which paved and unpaved areas have been delineated and two (2) copies of Sheet C-3. I believe that these items will enable you to fully review the drainage for the subject project.

As I mentioned in our meeting held July 7, 1981, the majority of the details appearing on Sheet C-3 have been prepared by Mr. Jack Boyle with Burns and Peters. The typical outlet plan, Section A and Section B, appearing on Sheet C-3 have been prepared by Tom Mann and Associates. Any comments pertaining to these items should be directed to me. Comments regarding the other details or sections should be directed to Mr. Boyle.

If you have any further questions or comments concerning this project, do not hesitate to call.

Sincerely,

TOM MANN & ASSOCIATES, INC.

Jeffrey G. Mortensen
Project Engineer

JGM:bb
xc: Jack Boyle

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

June 9, 1981

RE: HYDROLOGY FORMS AND PROCEDURES

TO: Engineers, Architects, Developers

The following enclosures are submitted to you for your use and comments. The checklists are in draft form but are currently being used internally in the Drainage Section to facilitate their review work. Modifications will be made to these forms based on our experiences and your comments. The forms in their final format will become official on July 1, 1981 at which time distribution will be made. There are no new requirements being put forth on these forms.

I am further contemplating requiring that drainage concepts and criteria approved in the drainage report be certified by a registered professional engineer as being substantially met upon completion of the construction phase of those projects requiring drainage reports and involving 1.0 acres or more.

Your comments on these matters will be greatly appreciated.

Richard S. Heller
City Engineer

CME/RSH/tsl

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

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

HYDROLOGY SECTION PROJ. NO._____ DATE:_____

PLANNING DIVISION NO._____

CONFERENCE RECAP

SUBJECT:_____

	WHO	REPRESENTING
ATTENDANCE:		

FINDINGS:_____

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED:_____ SIGNED:_____

TITLE:_____ TITLE:_____

DATE:_____ DATE:_____

DRAINAGE REPORT CHECKLIST

DATE _____ ZONE ATLAS PAGE NO. _____

PROJECT TITLE (ADDRESS) _____

SUBDIVISION _____ LOT _____ BLOCK _____

ENGINEER _____ CONTACT _____

ADDRESS _____ PHONE _____

OWNER _____ CONTACT _____

ADDRESS _____ PHONE _____

ARCHITECT/SURVEYOR _____ CONTACT _____

ADDRESS _____ PHONE _____

GENERAL:

YES	NO	NA	
	✓		Professional Engineer's stamp signature and dated.
✓			North arrow and standard engineering scales used.
	✓		Planning and zoning action history.

OFF-SITE FLOWS:

YES	NO	NA	
	✓		Delineation of off-site contributing watersheds on SCS Bernalillo County Soil Survey Maps.
	✓		Delineation of off-site contributing watersheds on City of Albuquerque Ortho-Topo Area Maps (Scale 1"=500' or 1"=300').
	✓		Quantification of off-site rates of flow caused by contributing watersheds for the 10 and 100 year storm frequency.
	✓		Off-site flow velocities and depths determined and locations indicated.
✓			Discussion of any other local conditions that affect site drainage.
✓			Delineation of site and contributing off-site watersheds on pertinent Flood Hazard Boundary Map.
	✓		Adequate treatment of offsite flows.

ON-SITE FLOWS:

YES	NO	NA	
✓			Calculations showing on-site developed and undeveloped flow volumes and rates.
✓			On-site flow velocities and depths determined and locations indicated.
✓			Pond volume calculations.
✓			Positive discharge of ponds with required rate and outlet calculations.
		✓	Pond emergency spillway calculations.
		✓	Pond safety protection (fencing for pond depths greater than 18".)
		✓	Pond landscaping provisions and commitments.
		✓	Pond maintenance provisions and commitments.
	✓		Soils investigation report for ponding within 15' of any structure.

PLAN DRAWINGS:

YES	NO	NA	
			Adequate grading plan provided (See Grading Plan Checklist).
✓			Vicinity map with Zone Atlas designation.
✓			Indication of all easements and right-of-ways on, or adjacent to, the site with dimensions and purpose shown.

YES	NO	N/A	
✓			Internal contributory drainage areas, including roof areas, outlined on the plan.
✓	✓		Direction and location of roof drainage including canales, gutters, and downspouts.
			Flow lines defined by arrows and spot elevations.
			Details of ponds, swales, rundowns, curb cuts, water blocks, and all other significant drainage structures with contours, cross-sections and spot elevations when appropriate. ALL CROSS-SECTIONS MUST BE DRAWN TO STANDARD ENGINEERING SCALE. (Note: All proposed construction within the public way must be approved by the Assistant City Engineer/Design).
		✓	Standard City drivepad with elevation shown.
		✓	Standard City curb cut.

COMMENTS _____

_____

_____

_____

_____

BY: _____

APPROVED BY: _____ DATE _____

GRADING PLAN CHECKLIST

DATE _____ ZONE ATLAS PAGE NO. _____

PROJECT TITLE (ADDRESS) _____

SUBDIVISION _____ LOT _____ BLOCK _____

ENGINEER _____ CONTACT _____

ADDRESS _____ PHONE _____

ARCHITECT/SURVEYOR _____ CONTACT _____

ADDRESS _____ PHONE _____

YES	NO	NA	ITEM
✓			Vicinity map with zone atlas page and legal description (or plat).
	✓		Reference bench mark description.
✓			Drawn to standard engineering scale (1"=10' for sites less than one acre: 1" = 20' for sites less than five acres: 1" = 50' for sites greater than 5 acres).
✓			Ground elevation on the site based on mean sea level datum as established by the U.S. Coast and Geodetic Survey (North American Datum 1929).
	✓		Existing contours extending a minimum of 10 feet beyond the property line.
✓			Proposed contours at one foot intervals and proposed spot elevations at key points.
✓			Finish building floor elevation(s) with mean sea level designation.
✓			Notes defining property line, asphalt, sidewalks, planting areas, ponding areas, and all other areas whose definition would increase clarity.
		✓	Slopes (cut or fill) with height of less than 18", 2:1 minimum. Slopes with height greater than 18", 3:1 minimum.
✓	✓		Elevation of property line at least 0.33 ft. above top of curb.
		✓	Retaining wall required when a vertical grade change greater than 18" is anticipated.
		✓	Proposed street and alley grades if property abuts a dedicated unpaved street or alley. These grades are available, at no charge, from the City Engineer's Office. An advance request will expedite your project. (Note: At present there is a 3 month wait to have the City Engineer supply grades. However, to expedite the plans, the City Engineer may accept grades provided by an engineer).

COMMENTS _____

BY _____

IN HOUSE STATUS OF
DRAINAGE REPORTS

ZONE ATLAS PAGE NO. _____

PROJECT TITLE (ADDRESS) _____

SUBDIVISION _____ LOT _____ BLOCK _____

ENGINEER _____ CONTACT _____

ADDRESS _____ PHONE _____

OWNER _____ CONTACT _____

ADDRESS _____ PHONE _____

ARCHITECT/SURVEYOR _____ CONTACT _____

ADDRESS _____ PHONE _____

ITEM	YES	NO	NA	BY	DATE	REMARKS
Zone Atlas page logged and map colored						
Pre-Design Conference						
Drainage Report:						
Review initiated						
Review completed						
Correspondence:						
Approval letter sent						

COMMENTS _____

BY _____

Justification for Items
Listed on Grading Plan And
Drainage Report Checklists

Drainage Report Checklist:

General:

	Document
Professional Stamp	80-15;Sec-4F or 6A
North arrows & scales	SO; Sec-A2
Planning - Zoning Action History	SO; Sec-21A5,i

Off-Site Flows:

Watershed boundaries on Bernalillo County Soil Survey Maps	SO: Sec-21B 80-15:Sec-7B
Quantification of off-site flow rates	80-15;Sec-4F
Determination of off-site depths and velocities	80-15;Sec-4F
Other local conditions affecting site drainage	80-15:Sec-7B SO:Sec-21A5,f
Pertinent FHB Map	SO:Sec-21B
Adequate treatment of off-site flows	80-15;Sec-4F

On-Site Flows:

Calculations for developed & undeveloped	80-15:Sec-4F
Determination of velocities	80-15:Sec-4F
Pond volume calculations	80-15:Sec-4B
Site discharge of ponds &Spillway calculations	80-15:Sec-4B
Safety protection for ponds	80-15;Sec-7B
Pond provisions & commitments	So;Sec-21B

Plan Drawings:

Vicinity Map	So:Sec-21A6
Grading Plan (See grading plan checklist)	
Indication of all easements and ROW	So;Sec-21A5,b&c
Outlined internal contributory drainage areas	So:Sec-21B 80-15:Sec-7B

Roof drainage	SO;Sec-21B 80-15;Sec-7B
Flow lines defined by arrows	SO;Sec-21B 80-15;Sec-7B
Details of ponds, swales,etc.	SO;Sec-21B 80-15;Sec-7B
Standard City drivepad and curb cuts	SO;Sec-21B

Grading Plan Checklist

Vicinity Map & Legal Description	SO;Sec-21A6
Reference benchmark description	SO;Sec-21A3
Ground elevation etc.	SO;Sec-21A5,e 80-15;Sec-7A
Existing contours 10 feet beyond property line	SO;Sec-21A5,e-1 80-15;Sec-7A
Proposed elevations	SO;Sec-21A11 80-15;Sec-7A
Finish floor elevations	SO;Sec-21A11 80-15;Sec-7A
Notes defining asphalt,sidewalks,etc.	80-15;Sec-7A SO;Sec-21A5,d&g
Slopes(cut or fill) etc.	80-15;Sec-5
Retaining wall required when vertical grade change greater than 18" is anticipated	80-15;Sec-7A
Elevation of property line at least 0.33 feet above top of curb	SO;Sec-21B

SO - City of Albuquerque Subdivision Ordinance
80-15 - AMAFCA Resolution 80-15

Purvis Warehouse Complex
H17-010
B Burnett
1.6.81

Site sets on landfill

✓1. How will offsite flow enter Basin 3.

✓2. Swale and ponds for Basins 1 and 2 to be asphalt? (Ponding 15' from structure?)

✓3. Flow capacity of swale? No need.

✓4 Page 8 - "Basin 4 will generate a 100 year, developed flow of 1.13 cfs and discharge through a driveway opening to Prospect Avenue. Basin 2 & 3 also discharges to Prospect (2 cfs). Is flow of 3.42 greater than undeveloped flowrate now entering Prospect?

Also, driveway is not shown.

5. Entire Site Computations:

I do not believe that it is valid to simply check that Qdeveloped is less than Qundeveloped when

outflow is occuring at different points. Each outflow point must be evaluated for a Q developed and Q undeveloped.

6. Basin 1 & 2 calculations

Why is rectangular outlet chosen one place and a circular orifice another?

7. General comments

a. Good use of checklists and Master Drainage Study

b. Page 7 - 2nd paragraph - This sheet flow enters either Jefferson St. or Prospect Avenue. These amounts should be verified (See Comment #4 and #5).

c. Planter/Pond? It would have been nice to see detail (Sheet) C-3.

RECEIVED
JUN 03 1981
CITY ENGINEER

DRAINAGE REPORT for the PURVIS WAREHOUSE COMPLEX

MAY 29 1981

Tom Mann Associates, Inc.
811 DALLAS, N.E. • ALBUQUERQUE • NEW MEXICO • 87110
ENGINEERS

DRAINAGE REPORT

FOR

PURVIS WAREHOUSE COMPLEX,

JEFFERSON STREET NE AND TOWNER AVENUE NE

MAY, 1981

PREPARED FOR: THE BURNS PETERS GROUP

PREPARED BY: TOM MANN & ASSOCIATES, INC.

811 DALLAS NE

ALBUQUERQUE, NEW MEXICO 87110

REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
NO. 3772
Thomas T. Mann, Jr.

TABLE OF CONTENTS

PURPOSE AND SCOPE

LOCATION AND DESCRIPTION OF PROJECT SITE

DESIGN CRITERIA

EXISTING DRAINAGE CONDITIONS

PROPOSED DRAINAGE CONDITIONS

CONCLUSIONS

CALCULATIONS

LIST OF FIGURES

FIGURE 1. INTENSITY DURATION FREQUENCY CURVES

FIGURE 2. ALBUQUERQUE MASTER DRAINAGE STUDY
INVENTORY OF EXISTING STORM SEWERS
AREA 3

PURPOSE AND SCOPE

The purpose of this drainage plan is to establish the criteria for controlling surface runoff from the Purvis Warehouse Complex in a manner which complies with the City of Albuquerque "1979 Interim Drainage Guidelines". The plan determines the runoff resulting from a 100-year frequency storm falling within the site and contributing basins under existing and developed conditions. This plan also demonstrates that the proposed project will be protected from storm runoff and that the construction of this project will not increase the flooding potential of the adjacent properties.

LOCATION AND DESCRIPTION

The Purvis Warehouse Complex is located on the southwest corner of Towner Avenue, NE and Jefferson Street, NE in the City of Albuquerque. The Vicinity Map shown on the Grading and Drainage Plan graphically depicts the location of the site. This site lies within the "Southeast Heights" as defined in the Master Drainage Plan.

The site is approximately 2.2 acres in size. The natural topography slopes from north to south from 2 to 5 percent.

DESIGN CRITERIA

In analyzing the storm runoff, the Rational Formula, $Q = CIA$ is used, where

Q = Runoff quantity in cubic feet/second.

A = Contributing area in acres.

I = Intensity in inches/hour for a duration equal in minutes and obtained from Figure 1, Intensity Duration Frequency Curves, Albuquerque Area 1961. (Note: Where a Time of Concentration (Tc) is less than ten minutes, the intensity value derived from a Tc of ten (10) 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. Values of 0.40 and 0.95 have been selected for pervious and impervious surfaces respectively.

In routing the storm runoff through a positive discharge pond, each basin is analyzed as a changing rate orifice retention basin where

$Q_{Allow} = Q_5$ = Allowable discharge rate for runoff in cfs.*

Q_o = Maximum outflow per acre imperviousness, cfs/acre.

T = Storage time, beginning the instant storage begins until the peak storage is attained, minutes.

V_s = Maximum volume of water stored in the retention basin per acre imperviousness, cf/acre.

V_T = Maximum volume of water stored in the retention basin, cf.

* The allowable discharge rate exceeds Q_5 for Basins 1 and 2.

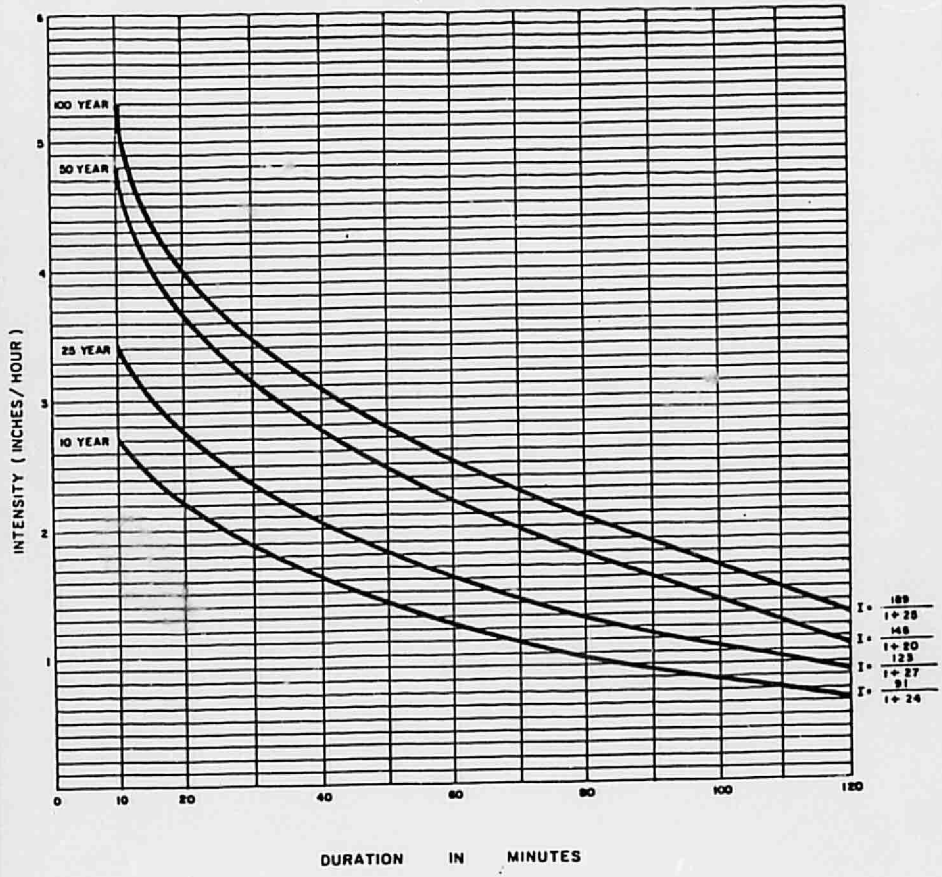

FIGURE 1

INTENSITY DURATION FREQUENCY CURVES

AREA 3

ALBUQUERQUE MASTER DRAINAGE STUDY
INVENTORY OF EXISTING STORM SEWERS

CALIFORNIA STREET STORM SEWER SYSTEM (CONT.) SYS. #337

Location	From	To	Pipe Size (in)	Type of Pipe	Length (ft)	Slope (ft/ft)	Flow Velocity (ft./sec.)	Existing Capacity (cfs)	Total 10-Year Discharge (cfs)	Total 100-Year Discharge (cfs)	Map No.	Comments
JEFFERSON STREET	S-501 50' S. OF MENAUL BLVD.	S-503 100' S. OF MENAUL BLVD.	60"	RCP	44'	.0134	13.3	261	67	156	H-17	SLOPE FROM SURV INFORMATION
JEFFERSON STREET	S-503 100' S. OF MENAUL BLVD.	S-505 411' S. OF MENAUL BLVD.	60"	RCP	311'	.019	15.8	311	67	156	H-17	SLOPE FROM SURV INFORMATION
JEFFERSON STREET	S-505 411' S. OF MENAUL BLVD.	S-609 556' S. OF MENAUL BLVD.	66"	RCP	145'	.0050	9.5	225	67	156	H-17	
JEFFERSON STREET	S-609 556' S. OF MENAUL BLVD.	S-611 PROSPECT AVENUE	66"	RCP	200'	.0066	9.0	236	67	157	H-17	
PROSPECT AVENUE	S-610 30' W. OF JEFFERSON STREET	S-611 JEFFERSON STREET	24"	RCP	30'	.019	8.6	27	4	10	H-17	SLOPE FROM SURV INFORMATION
SAN MATEO BLVD.	S-703 205' S. OF PROSPECT AVENUE	S-626 241' S. OF PROSPECT AVENUE	42"	RCP	54'	.019	12.5	120	38	77	H-17	SLOPE FROM AS-B 10.0 TO APPROXI INFORMATION
SAN MATEO BLVD.	S-626 241' S. OF PROSPECT AVENUE	S-625 40' S. OF PROSPECT AVENUE	42"	RCP	201'	.019	12.5	120	38	77	H-17	SLOPE FROM AS-B 10.0 TO APPROXI INFORMATION
SAN MATEO BLVD.	S-625 40' S. OF PROSPECT AVENUE	S-624 PROSPECT AVENUE	42"	RCP	40'	.021	13.1	126	38	77	H-17	SLOPE ASSUMED
PROSPECT AVENUE	S-624 SAN MATEO BLVD.	S-623 201' W. OF SAN MATEO BLVD.	42"	RCP	201'	.021	13.1	126	38	77	H-17	SLOPE AVERAGED SURVEY INFORMAT
PROSPECT AVENUE	S-623 201' W. OF SAN MATEO BLVD.	S-622 345' W. OF SAN MATEO BLVD.	42"	RCP	144'	.021	13.1	126	42	88	H-17	SLOPE AVERAGED SURVEY INFORMAT
PROSPECT AVENUE	S-622 345' W. OF SAN MATEO BLVD.	S-621 503' W. OF SAN MATEO BLVD.	42"	RCP	158'	.021	13.1	126	47	101	H-17	SLOPE AVERAGED SURVEY INFORMAT
PROSPECT AVENUE	S-621 503' W. OF SAN MATEO BLVD.	S-619 QUINCY STREET	42"	RCP	160'	.021	13.1	126	52	114	H-17	SLOPE AVERAGED SURVEY INFORMAT
QUINCY STREET	S-620 50' N. OF PROSPECT AVENUE	S-619 PROSPECT AVENUE	24"	RCP	50'	.048	13.7	43	8	20	H-17	SLOPE FROM SURV INFORMATION
PROSPECT AVENUE	S-619 QUINCY STREET	S-618 50' W. OF QUINCY STREET	42"	RCP	50'	.024	14.0	135	54	118	H-17	SLOPE AVERAGED SURVEY INFORMAT
PROSPECT AVENUE	S-618 50' W. OF QUINCY STREET	S-617 311' W. OF QUINCY STREET	42"	RCP	261'	.024	14.0	135	62	138	H-17	SLOPE AVERAGED SURVEY INFORMAT
PROSPECT AVENUE	S-617 311' W. OF QUINCY STREET	S-616 543' W. OF QUINCY STREET	42"	RCP	232'	.024	14.0	135	69	157	H-17	SLOPE AVERAGED SURVEY INFORMAT

FIGURE 2

The criteria for the development of the changing rate orifice retention basin equation are as follows:

1. Pond volumes are equal to or greater than the 100-year storm volume for the developed state.

2. All ponds will be positively discharged at a rate equivalent to the runoff generated by a five-year storm in the undeveloped state, unless otherwise noted.

The equations have been derived as follows:

$Q = CiA$ (Rational Formula)

Let $C = 1$

$A = 1$ Acre

$i = i_{100} = \frac{189}{T+25}$ (Herkenhoff)

$Q_n = Ci_nA = \frac{189}{T+25}$

$V_n = Q_nT(60^{sec/min}) = \frac{11,340\ T}{T+25}$

$V_s = V_n - V_o$

$V_o = 40\ Q_oT$

$V_s = \frac{11,340\ T}{T+25} - 40\ Q_oT$

$Q_o = \frac{Q_{allow}}{A_BC_B}$

where A_B = area of the basin under consideration

C_B = runoff coefficient for the basin under consideration

$$\frac{dV_s}{dT} = \frac{(T+25)(11,340)-(11,340\ T)(1)}{(T+25)^2} - 40\ Q_o$$

$$= \frac{283,500}{T^2+50T+625} - 40\ Q_o = 0$$

or $$\frac{283,500}{T^2+50T+625} = 40\ Q_o$$

Then, $$T^2+50T+625 - \frac{283,500}{40\ Q_o} = 0$$

By the quadratic equation,

$$T = \frac{-50 \pm \sqrt{(50)^2 - 4(1)(625 - \frac{7087.5}{Q_o})}}{2(1)}$$

$$T = -25 \pm \sqrt{\frac{7,087.5}{Q_o}}$$

$$V_T = V_s(A_B)(C_B)$$

EXISTING DRAINAGE CONDITIONS

The site is currently undeveloped. The adjoining sites are developed to some extent. The surrounding streets (Jefferson Street, Towner Avenue and Prospect Avenue) are improved streets with asphaltic concrete paving and standard curb and gutter. An existing 66-inch RCP storm drain (System #337) is adjacent to the site and located in Jefferson Street.

The topography of the site slopes from north to south. All runoff generated on the site flows, as described above, as sheet flow. This sheet flow enters either Jefferson Street or Prospect Avenue and is conveyed in the streets from whence it outfalls into the Embudo Diversion Channel. The 100-year, undeveloped flow for the site is 4.8 cfs. An additional 0.70 cfs originates offsite, yet flows across the project site and onto Prospect Avenue.

The Flood Hazard Map is contained on the Grading and Drainage Plan. It is demonstrated by this figure that the project site do not lie within a flood hazard zone or a flood plain. In addition, there are no existing drainage easements on the property.

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PROPOSED DRAINAGE CONDITIONS

The proposed grading and drainage plan is included at the back of this report. This plan shows (1) drainage Basins 1, 2, 3 and 4, (2) existing contours at 1'-0" intervals, (3) proposed grades shown by spot elevations and contours, and (4) continuity between proposed and existing elevations.

The site has been divided into Basins for quantitative analysis. The runoff from Basin 1 discharges directly offsite at a rate of 3.1 cfs to a downstream stormwater facility. In this case, the 100-year, developed flow is routed through a pond with a controlled outlet onto Jefferson Street, NE. The runoff will be conveyed south along the west side of Jefferson Street to an existing double 'C' catch basin shown on the plan. The maximum rate of outflow from the pond has been established as the 100-year, developed flow. The runoff from Basin 4 also discharges directly offsite. Basin 4 will generate a 100-year, developed flow of 1.13 cfs which will discharge through a driveway opening to Prospect Avenue, NE. Supporting calculations follow.

The runoff from Basin 2 is routed through a positive discharge pond. The Q_5 (Undeveloped) value is 1.52 cfs. The maximum rate of outflow has been regulated at 2 cfs, slightly greater than the Q_5 (Undeveloped) value. This alteration has been made to create harmony between the grading plan and the required volume of ponding for a positive discharge pond. Supporting calculations appear in a later section. The calculations demonstrate that the pond has been designed to contain a

volume of water in excess of that required for a 100-year storm as determined for the developed state. The controlled outflow of runoff will be discharged onto Prospect Avenue, NE from whence it will be conveyed in the street to the west.

Basin 3 includes a portion of the site as well as a contributing offsite area. This basin drains into a positive discharge pond from which the runoff will discharge at a controlled rate onto Prospect Avenue, NE from whence it will flow to the west in the street. Supporting calculations appear later in this report.

The total direct discharge resulting from the implementation of the drainage scheme described above is 6.52 cfs. The total discharge for the site for the undeveloped, 100-year storm is 5.5 cfs. The proposed drainage plan only increases the peak runoff for the site by 1 cfs. Of the 6.52 cfs discharging directly from the site, 3.1 cfs is routed into an existing storm drainage system (#337) which, as shown by Figure 2, is presently flowing at a "less than capacity" level. The capacity of the system is 236 cfs. The actual flow rate is 157 cfs (100-year storm) which leaves an additional capacity for 79 cfs. Hence, the system (#337) is capable of handling the 3.1 cfs. Also, the existing double 'C' catch basin which can accept approximately 10 cfs if properly maintained, should be able to accept the 3.1 cfs. That direct discharge which is

not intercepted, however, is only 3.42 cfs. The 100-year, undeveloped flow for the same area is 4.2 cfs, hence the overland runoff from the site has not been increased by the proposed grading and drainage plan.

CONCLUSIONS

1. Erosion will not result from the proposed improvements.

2. There are no existing drainage easements on the site.

3. The rate of runoff discharged from the site has not been increased when compared to the undeveloped state.

4. Runoff from the site found to be in excess of that generated by a 100-year storm for the undeveloped state will be routed into positive discharge ponds or directed into available downstream storm drainage facilities.

5. The proposed improvements will not increase the flooding potential of adjacent properties.

6. The proposed improvements will be protected from storm runoff.

7. The site does not lie within a designated Flood Hazard Zone as demonstrated by the Flood Hazard Map appearing on the Grading and Drainage Plan.

BASIN 1

Roof area = 16,850 sf (C = 0.95)
Paved area = 7410 sf (C = 0.95)
Planter area = 2010 sf (C = 0.40)

Total area = 26,270 sf = 0.60 Ac ±

$$C = \frac{16,850 + 7410}{26,270}(0.95) + \frac{2010}{26,270}(0.40) = \underline{\underline{0.91}}$$

Because Basin 1 discharges upstream from an existing stormwater facility (i.e. catch basin), $Q_{Allow} = Q_{100,Developed}$, $i = 5.4$ in/hr, and $C_{Basin} = C_{Developed} = 0.91$.

$Q_{100,Developed} = 0.91(5.4)(0.60) = 2.95$ cfs

Q_o = 5.4 cfs/Ac
T = 11 min
V_s = 1089 cf/Ac
V_T = 595 cf

Area of planter available for ponding = 1580 sf

Avg. depth of pond $= \frac{595}{1580} = 0.4'$

$v_{jet} = C_v\sqrt{2gh} = 3.1$ fps

where $C_v = 0.61$ fps
$g = 32.2$ ft/sec²
$h = 0.4'$

$Q = vA \therefore A_{req'd} = \frac{Q}{v} = \frac{2.95}{3.10} = \underline{\underline{0.95}}$ sf

$A = b(h)$ where $A = 0.95$ sf & $h = 0.6'$

$b = \frac{A}{h} = 1.58'$, Let $b = 1.6'$

Construct rectangular outlet 0.6' x 1.6'.

A more than adequate volume of ponding has been provided. 570 cf can be contained @ elev. 5164.14. The top-of-wall elev. is 5165.5.

BASIN 1 (CONT.)

Pond volume = 1935 cf.

Elev	A (sf)	Vol (cf)	Σ Vol (cf)
63.5	0		
		7.8	7.8
63.6	156		
		347.2	355
64.0	1580		
		221	576
64.14	1580		

(Average end area method)

BASIN 2

Roof & paved area = 54,000 sf (C = 0.95)
Pervious area = 4800 sf (C = 0.40)

Total area 58,800 sf = 1.35 Ac ±

$$C = \frac{54{,}000}{58{,}800}(0.95) + \frac{4800}{58{,}800}(0.40) = \underline{\underline{0.91}}$$

Let Q_{Allow} = 2 cfs

Then Q_o = 1.63 cfs/Ac
T = 41 min
V_s = 4377 cf/Ac
V_T = 5377 cf

A volume of ponding exceeding 5377 cf can be obtained if Basin 2 floods to elevation 5162 (feet). Ponding will hence take place in the planter/pond as well as on the paved surface.

BASIN 2 (CONT.)

Pond volume = 5870 cf

Elev	Area (sf)	Vol (cf)	Σ Vol (cf)
60.6	0		
		510	510
61.2	1700		
		885	1395
61.5	4200		
		4475	5870
62.0	13,700		

Weir analysis, $Q = 3.33\, L\, H^{3/2}$,

$Q = Q_{100} = 0.91(5.4)(1.35) = 6.63$ cfs

$H = 6'' = 0.5'$ (curb height)

$L = \dfrac{Q}{3.33\, H^{3/2}} = 5.63'$

Let $L = 6'$

Construct 2 - 3'-0" wide curb cuts @ 10' O.C. (10' O.C spacing will keep motor vehicles out).

$V_{jet} = C_v \sqrt{2gh} = 6.84$ fps

where $C_v = 0.72$

$g = 32.2$ ft/sec^2

$h = 62 - 60.6 = 1.4'$

$Q = vA$ & $A = \frac{\pi d^2}{4}$, then $d = \sqrt{\frac{4}{\pi}\left(\frac{Q}{v}\right)}$

$d = 0.61'$ Let $d = 8''$

Construct 8" drain outlet.

BASIN 3 :

a. Onsite

Area (pervious) = 2200 sf (C = 0.40)

$Q_{100} = 0.40(5.4)\left(\frac{2200}{43,560}\right)$

b. Offsite

Impervious area = 3500 sf (C = 0.95)

Pervious area = 5600 sf (C = 0.40)

Total area = 9100 sf = 0.21 Ac±

$C = \frac{3500}{9100}(0.95) + \frac{5600}{9100}(0.40) = \underline{\underline{0.61}}$

$Q_{100} = 0.61(5.4)(0.21) = 0.70$ cfs ±

c. Entire Basin

Impervious area = 3500 sf (C = 0.95)

Pervious area = 2200 + 5600 = 7800 sf (C = 0.40)

Total area = 11,300 sf = 0.26 Ac±

$C = \frac{3500}{11,300}(0.95) + \frac{7800}{11,300}(0.40) = \underline{\underline{0.57}}$

$Q_{Allow} = Q_5 = 0.40(2.82)(0.26) = 0.29$ cfs

Then Q_o = 1.98 cfs/Ac
T = 35 min.
V_s = 3845 cf/Ac
V_T = 570 cf

Pond volume = 589 cf < 570 cf

Pond volumes have been determined by the average end area method.

Elev	Area (sf)	Vol (cf)	ΣVol (cf)
58.55	0	209	209
59.0	930	380	589
59.4	970		

$V_{jet} = C_v \sqrt{2gh} = 4.5$ fps

where $C_v = 0.61$ (Cameron Handbook)

$g = 32.2$ ft/sec^2

$h = 59.4 - 58.55 = 0.85'$

$$d = \sqrt{\left(\frac{4}{\pi}\right)\left(\frac{Q}{v}\right)} = 0.29' \simeq 4''$$

Let $d = 4''$.

Construct 4" drain outlet.

BASIN 4 :

Area of Basin = 9470 sf ≃ 0.22 Act

C = 0.95 (All impervious)

$Q_{100} = 0.95(5.4)(0.22) = 1.13$ cfs

This basin discharges 1.13 cfs directly offsite during a 100-yr storm.

ENTIRE SITE

Area (total) = 96,740 sf = 2.22 Ac±

Q_{100}, Undeveloped = 0.40(5.4)(2.22) = 4.8 cfs

Area (total) - Area of Basin 1 = 96,740 - 26,270
= 70,470 sf = 1.62 Ac±

Q_{100}, Undeveloped = 0.40(5.4)(1.62) = 3.5 cfs

Q_{100}, offsite = 0.70 cfs

The Q_{100}, Existing for Basins 2, 3 & 4 = $Q_{Allow.}$

Q_{Allow} = 3.5 + 0.70 = 4.20 cfs

Q_{100}, Direct = 2 + 0.29 + 1.13 = 3.42 cfs

The direct discharge (100-yr) from Basins 2, 3 & 4 is less than that discharging from those Basins under existing conditions. Basin 1 discharges directly to an existing stormwater drainage facility.

SYSTEM # 337 (Refer to Fig. 2)

S-600 TO S-611

66" RCP @ S = 0.0066

Q capacity = 236 cfs

Q actual = 157 (100 year)

ΔQ = 79 cfs