City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 5, 2001

John A. Andrews, P.E.
The Larkin Group, Inc.
8500 Menaul Blvd NE Suite A-440
Albuquerque, New Mexico 87112

RE: **Grading and Drainage Certification**
Premier Distributing Co. Warehouse Addition -(4321 Yale NE) (G15/D7A)
Engineer's Stamp dated 6/30//2000
Engineers Certification dated 4/3/2001

Dear Mr. Andrews:

Based upon the information provided in your Engineers Certification submittal dated 4/3/2001, the above referenced site is approved for Permanent Certificate of Occupancy.

If I can be of further assistance, please contact me at 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Senior Civil Engineer
Hydrology Section, PWD

C: Vickie Chavez, COA
Teresa Martin,COA
file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

DRAINAGE INFORMATION SHEET

PROJECT TITLE: **Premier Distributing Co. Warehouse Addition 2000** ZONE ATLAS/DRNG.FILE #: G-15-D7A

DRB #: _____ **EPC #:** _____ WORK ORDER # _____

LEGAL DESCRIPTION: _____

CITY ADDRESS: 4321 Yale Boulevard NE

ENGINEERING FIRM: The Larkin Group, NM, Inc. CONTACT: John Andrews

ADDRESS: 8500 Menaul Blvd. NE Suite A-440, Albuquerque, NM 87112 PHONE: 275-7500

OWNER: Premier Distributing Company, Inc. CONTACT: _____

ADDRESS: 4321 Yale Blvd. NE PHONE: _____

ARCHITECT: KGA Archtitects CONTACT: Kevin Georges

ADDRESS: 127A Jefferson St NE, Albuquerque, NM PHONE: 255-4975

SURVEYOR: The Larkin Group, Inc. CONTACT: Gayle Jewell

ADDRESS: 8500 Menaul Blvd. NE Suite A-440, Albuquerque, NM 87112 PHONE: 275-7500

CONTRACTOR: Klinger Constructors CONTACT: Ray Smith

ADDRESS: 8701 Washington NE, Albuquerque, NM 87113 PHONE: 822-9990

TYPE OF SUBMITTAL:

_____DRAINAGE REPORT

_____DRAINAGE PLAN

_____CONCEPTUAL GRADING & DRAINAGE PLAN

_____GRADING PLAN

_____EROSION CONTROL PLAN

___X___ENGINEER'S CERTIFICATION

_____OTHER

_____

PRE-DESIGN MEETING:

___X___YES

_____NO

_____COPY PROVIDED

RECEIVED
APR 03 2001
HYDROLOGY SECTION

CHECK TYPE OF APPROVAL SOUGHT:

_____SKETCH PLAT APPROVAL

_____PRELIMINARY PLAT APPROVAL

_____S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

_____S. DEV. PLAN FOR SUBDIVISION APPROVAL

_____SECTOR PLAN APPROVAL

_____FINAL PLAT APPROVAL

_____FOUNDATION PERMIT APPROVAL

_____BUILDING PERMIT APPROVAL

___X___CERTIFICATE OF OCCUPANCY APPROVAL

_____GRADING PERMIT APPROVAL

_____PAVING PERMIT APPROVAL

_____S.A.D. DRAINAGE REPORT

DRAINAGE REQUIREMENTS

OTHER _____ (SPECIFY)

DATE SUBMITTED: **04/03/2001**

BY: **Paul J. Gonzales, The Larkin Group, NM, Inc.**

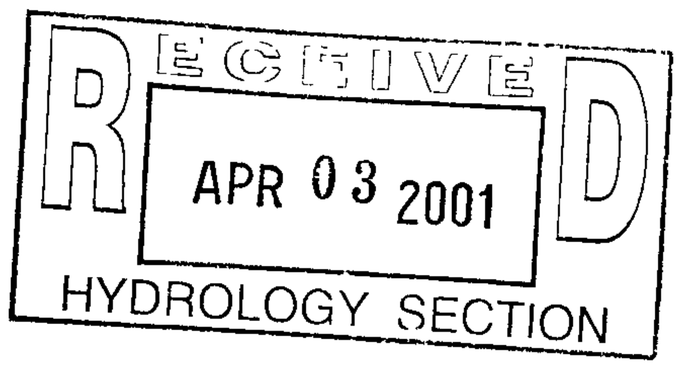
THE LARKIN GROUP INC

CONSULTING ENGINEERS AND SURVEYORS

8500 Menaul Boulevard NE, Suite A-440
Albuquerque, New Mexico 87112
Phone: 505-275-7500
Fax: 505-275-0748
e-mail: albmail@larkin-grp.com

April 3, 2001

Mr. John Murray
Hydrology Division
Public Works Department
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103



Subject: **Premier Distributing Company**
Drainage Plan – G-15/D7A

Dear Mr. Murray:

Transmitted herewith is the As-Built Drainage Plan for subject Drainage Plan which I have certified for the Certificate of Occupancy.

Your early review and sign off on the C.O. is appreciated.

Very truly yours,

The Larkin Group, Inc.

John A. Andrews, P.E.
Principal

JAA:vlt

Enclosure:

cc: Ray Smith, Klinger Constructors, Inc.

K \AL2K-0015 KLINGER- Premier Distrubuting Bldg Addition\TransLtr.As-Built Drainage Plan.doc

City of Albuquerque

July 21, 2000

John A. Andrews, P.E.
AAR - The Larkin Group
8500 Menaul Blvd. NE
Suite A-440
Albuquerque, NM 87112

Attn: Paul Gonzales

RE: PREMIER DISTRIBUTING CO. WAREHOUSE ADDITION - 2000(G15-D7A.). DRAINAGE REPORT, GRADING AND DRAINAGE PLAN FOR BUILDING PERMIT AND GRADING PERMIT APPROVALS. ENGINEER'S STAMP DATED JUNE 30, 2000.

Dear Mr. Andrews:

Based upon the information provided on your July 3, 2000 submittal , the above referenced project is approved for both Building and Grading Permits, Note that Building Permit approval covers Grading and Foundation.

Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology,

Prior to Certificate of Occupany approval, an Engineer's Certification per the DPM will be required.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: Whitney Reierson
File

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Premier Distributing Co. Warehouse Addition 2000 ZONE ATLAS/DRNG.FILE #: G-15 / D007A

DRB #: _____ **EPC #:** _____ WORK ORDER # _____

LEGAL DESCRIPTION: _____

CITY ADDRESS: 4321 Yale Boulevard NE

ENGINEERING FIRM: The Larkin Group, Inc. CONTACT: Paul Gonzales

ADDRESS: 8500 Menaul Blvd. NE Suite A-440, Albuquerque, NM 87112 PHONE: 275-7500

OWNER: Premier Distributing Company, Inc. CONTACT: _____

ADDRESS: 4321 Yale Blvd. NE PHONE: _____

ARCHITECT: KGA Archtitects CONTACT: Kevin Georges

ADDRESS: 127A Jefferson St NE, Albuquerque, NM PHONE: 255-4975

SURVEYOR: The Larkin Group, Inc. CONTACT: Gayle Jewell

ADDRESS: 8500 Menaul Blvd. NE Suite A-440, Albuquerque 87112 PHONE: 275-7500

CONTRACTOR: Klinger Constructors CONTACT: Ray Smith

ADDRESS: 8701 Washington NE, Albuquerque, NM 87113 PHONE: 822-9990

TYPE OF SUBMITTAL:

___X___ DRAINAGE REPORT

___X___ DRAINAGE PLAN

_____ CONCEPTUAL GRADING & DRAINAGE PLAN

____X____ GRADING PLAN

_____ EROSION CONTROL PLAN

_____ ENGINEER'S CERTIFICATION

_____ OTHER

_____

PRE-DESIGN MEETING:

____X____ YES

_____ NO

___X___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

_____ SKETCH PLAT APPROVAL

_____ PRELIMINARY PLAT APPROVAL

_____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

_____ S. DEV. PLAN FOR SUBDIVISION APPROVAL

_____ SECTOR PLAN APPROVAL

_____ FINAL PLAT APPROVAL

_____ FOUNDATION PERMIT APPROVAL

___X___ BUILDING PERMIT APPROVAL

_____ CERTIFICATE OF OCCUPANCY APPROVAL

___X___ GRADING PERMIT APPROVAL

_____ PAVING PERMIT APPROVAL

_____ S.A.D. DRAINAGE REPORT

DRAINAGE REQUIREMENTS

OTHER _____ (SPECIFY)

DATE SUBMITTED: 7/3/00

BY: Paul J. Gonzales, The Larkin Group

RECEIVED
JUL 03 2000
HYDROLOGY SECTION

k:\AI2k-0015\ drain-info-sht.doc

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
DEVELOPMENT SERVICE / HYDROLOGY SECTION

CONFERENCE RECAP

DRAINAGE FILE/ZONE ATLAS PAGE NO. *G-15/D7A* **DATE:** *5/19/00*
PLANNING DIVISION NO'S: EPC: N.A **ZONING:** *M-2* **DRB:**
SUBJECT: *Priemere Distributing*
STREET ADDRESS (IF KNOWN):
SUBDIVISION NAME: *Tract A-1, Nance – IR*

APPROVAL REQUESTED: *Building Permit*

ATTENDANCE: *Fred J. Aguirre-City Engineer*
John Andrews, Paul Gonzales

FINDINGS:

- Updated drainage report will be required for proposed building permit approval, vacation approval, DRC approval and approval of the pond reduction.
- The allowable discharge will be in accordance with SAD 216
- The proposed storm drain connection to the SAD storm drain will require a Work Order
- Easement width requirements will be per Chapter 22, section 6 of the DPM
- Include copies of the on-site and off-site easements with the drainage submittal
- Vacation of platted easements will be in accordance with the City's Subdivision Ordinance.
- Recorded paper easements can be released by the City Engineer.
- Provide a coordination plan for the connection to the SAD storm drain in Carmony Rd.

THE UNDERSIGNED AGREES THAT THE ABOVE FINDINGS ARE SUMMARIZED ACCURATELY AND ARE SUBJECT TO CHANGE IF FURTHER INVESTIGATION REVEALS THAT THEY ARE NOT REASONABLE OR THAT THEY ARE BASED ON INACCURATE INFORMATION.

SIGNED: *Fred J. Aguirre* **SIGNED:**
TITLE : *City Engineer* **TITLE :**

****NOTE** PLEASE PROVIDE A COPY OF THIS RECAP WITH YOUR DRAINAGE SUBMITTAL.**

RECEIVED
JUL 06 2006
HYDROLOGY SECTION

STORM SEWER EASEMENT — PARALLEL TO RAILROAD TRACK

85 9-1013

EASEMENT GRANT

EASEMENT GRANT made this 15th day of OCTOBER, 1985, from JOHN R. NANCE, Trustee, grantor (hereinafter referred to as "Owner"), to YALE ROAD REALTY, a New Mexico general partnership, its heirs, successors and assigns forever, grantee (hereinafter referred to as "Grantee").

1. Consideration and Description. In consideration of the purchase and acquisition by Grantee of a certain tract of land, being a portion of Lot 1, Section 4, Township 10 North, Range 3 East, N.M.P.M., Albuquerque, New Mexico, Owner hereby grants, sells and conveys to Grantee, its successors and assigns, with warranty covenants, an easement and a right-of-way for the purposes of laying, constructing, operating, inspecting, maintaining, repairing, and replacing the storm sewer line for the conveyance of storm drainage waters on, in, and over lands owned by the Owner (the "Premises"), described hereafter. The easement, hereinafter referred to as the "storm sewer easement" is more particularly described on Exhibit "A", attached hereto and made a part hereof.

2. Term of Easement. The rights granted herein shall be possessed and enjoyed by the Grantee, his

successors and assigns, so long as the storm sewer line and appurtenances constructed pursuant hereto shall be used, maintained and operated by the Grantee, his successors or assigns.

3. Ingress, Egress, and Maintenance. The Grantee, his employees, contractors, or representatives, shall have the permanent right of ingress and egress to and from the storm sewer easement for the purposes of laying, constructing, operating, inspecting, maintaining, repairing, and replacing the storm sewer line, which right of ingress and egress shall be exercised after prior written notice to Owner. Such ingress and egress shall be limited to such easement and to existing public roads, if any, on the Premises. All activities of the Grantee on the Premises shall be limited to the storm sewer easement except as otherwise provided in a written instrument to which Owner and Grantee are parties.

4. Improvements by Owner. The Owner shall have the right to place along, across, and over the storm sewer easement as many roads, streets, sidewalks, passageways, electric light and power lines, water lines, sewer lines, gas lines, telephone poles and telephone lines, and other utilities as Owner may desire, provided that said installations shall not interfere with the storm sewer line or its appurtenances. If any utility line is placed parallel to such storm sewer easement, such line shall not be placed directly over any storm sewer line.

5. Rights and Restrictions of Owner. Owner shall have the right to full use and enjoyment of the Premises except for such use as may unreasonably interfere with the exercise by the Grantee of the rights granted herein. Owner shall not construct or permit to be constructed any house, structure, or obstruction on or over or interfering with the construction, maintenance, or other operation of any storm sewer line or appurtenance constructed pursuant to this instrument. Owner shall have the right to deposit storm waters into the storm sewer, so long as such additional storm drainage waters do not exceed to capacity of the storm sewer.

6. Maintenance of Storm Sewer. Grantee shall be solely responsible for the maintenance of the storm sewer until such time, if any, that Owner commences use of the storm sewer by depositing storm drainage waters into the storm sewer then Owner and Grantee shall share equally in the cost of maintenance of the storm sewer from the point of entry of such water to the southern boundary of Grantee's property and any restoration required by the following paragraph as a result of such maintenance.

7. Restoration of Premises. After the installation of the storm sewer line, (subject to the provisions of the preceding paragraph) the Grantee, his employees, representatives, or contractors shall remove all equipment and other property placed on the Premises by or for the Grantee, fill and level all ditches, ruts, and

depressions caused by construction or removal operations, and remove all debris resulting therefrom. The Grantee will generally restore the surface of the Premises as near to its original condition as may be possible with the exception of any obstructions to the use of the storm sewer easement, all within a reasonable time after the installation of such storm sewer line or the abandonment or expiration of this easement.

8. Other Acts. Owner agrees to execute all such instruments and take all such other action as shall be necessary to carry out the intent and purposes of this Easement Grant.

9. Covenant of Ownership. Owner convenants that he is the owner of the Premises and has the right, title, and capacity to grant the storm sewer easement granted herein.

10. Effect Upon Subsequent Parties. This Easement Grant shall be binding upon the heirs, legal representatives, successors and assigns of the parties hereto.

11. Grantee agrees to indemnify Owner and save Owner harmless from any and all liabilities which may result from Grantee's construction and use of this sewer easement.

IN WITNESS WHEREOF, the Owner has executed this Easement Grant.

JOHN R. NANCE, Trustee

STATE OF NEW MEXICO)
) ss.
COUNTY OF DONA ANA)

The foregoing instrument was subscribed, sworn to and acknowledged before me this 1st day of OCTOBER, 1985, by JOHN R. NANCE, Trustee.

Notary Public

My Commission Expires:

March 25, 1989

860

DESCRIPTION

A CERTAIN TRACT OF LAND SITUATE WITHIN LOT ONE (1), SECTION 4, TOWNSHIP 10 NORTH, RANGE 3 EAST, N.M.P.M., AND WITHIN TRACTS 106-C, 105-D, AND THE EASTERLY PORTION OF TRACT 1 AS SHOWN ON THE MIDDLE RIO GRANDE CONSERVANCY DISTRICT MAP NO. 33, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEASTERLY CORNER OF THE TRACT HEREIN DESCRIBED, FROM WHENCE THE CLOSING CORNER OF SECTION 4, TOWNSHIP 10 NORTH, RANGE 3 EAST, N.M.P.M., ON THE EAST BOUNDARY OF THE TOWN OF ALBUQUERQUE GRANT BEARS N 01°35'42" W, 606.30 FEET DISTANCE; THENCE, FROM SAID POINT OF BEGINNING,
S 01°30'09" E, 25.00 FEET; THENCE,
S 88°29'51" W, 108.66 FEET TO A POINT OF CURVE; THENCE,
SOUTHWESTERLY, 346.82 FEET ALONG THE ARC OF A CURVE BEARING TO THE LEFT HAVING A RADIUS OF 463.51 FEET AND A CHORD BEARING S 67°03'43" W, 338.78 FEET TO A POINT OF TANGENCY; THENCE,
S 45°37'36" W, 58.43 FEET TO A POINT OF CURVE; THENCE,
SOUTHWESTERLY, 63.02 FEET ALONG THE ARC OF A CURVE BEARING TO THE LEFT HAVING A RADIUS OF 488.42 FEET AND A CHORD BEARING S 41°55'48" W, 62.98 FEET TO A POINT ON CURVE ON THE NORTH RIGHT-OF-WAY LINE OF CARMONY ROAD NE; THENCE,
N 74°30'39" W, 26.99 FEET ALONG THE NORTH RIGHT-OF-WAY LINE OF CARMONY ROAD NE TO THE NORTHWESTERLY CORNER OF THE TRACT HEREIN DESCRIBED, A POINT ON CURVE; THENCE,
NORTHEASTERLY, 76.69 FEET ALONG THE ARC OF A CURVE BEARING TO THE RIGHT HAVING A RADIUS OF 513.42 FEET AND A CHORD BEARING N 41°20'52" E, 76.61 FEET TO A POINT OF TANGENCY; THENCE,
N 45°37'36" E, 58.43 FEET TO A POINT OF CURVE; THENCE,
NORTHEASTERLY, 365.52 FEET ALONG THE ARC OF A CURVE BEARING TO THE RIGHT HAVING A RADIUS OF 408.51 FEET AND A CHORD BEARING N 67°03'44" E, 357.05 FEET TO A POINT OF TANGENCY; THENCE,
N 88°29'51" E, 108.66 FEET TO THE POINT OF BEGINNING OF THE TRACT HEREIN DESCRIBED, CONTAINING 0.3404 ACRES, MORE OR LESS.

STATE OF NEW MEXICO
COUNTY OF BERNALILLO

FILED IN MY OFFICE
JUL 7 10 58 A '53
[illegible]

EXHIBIT "A"

OFFICIAL NOTICE

CITY OF ALBUQUERQUE
PLANNING DEPARTMENT
LAND DEVELOPMENT COORDINATION DIVISION

2. **Project #1000547**
00420-00000-00692 (VPE)

The Larkin Group Inc., agents for Yale Road Realty, request Vacation (voiding) of Temporary Public Drainage Easement for Tract A, Land of J.R. Nance, Lot 1, Section 4, T10N, R3E, NMPM, zoned M-2 (City) and located on Yale Blvd NE between Carmony Rd NE and Joan Hill Pl NE containing approximately 9.02 acres. [REF: SP-86-60] (G-15)

At the June 21, 2000, Development Review Board meeting, the Vacation as shown on Exhibit B in the Planning file was approved subject to the Findings and Conditions of the Subdivision Ordinance as follows:

FINDINGS:

1. The public welfare is in no way served by retaining the rights-of-way and/or easements.
2. There is no convincing evidence that any substantial property right is being abridged against the will of the owner of the right.

CONDITIONS:

1. Final disposition shall be through the City Real Estate Office.
2. The vacated property shall be shown on a replat approved by the Development Review Board and the approved replat shall be filed for record with the Bernalillo County Clerk's Office within one year.
3. Affected utility companies shall acknowledge the vacation by their signatures on the replat.

If you wish to appeal this decision, you must do so by July 6, 2000, in the manner described below. A nonrefundable fee of $135 is required at the time the appeal is filed.

Appeal is to the Environmental Planning Commission. Any person aggrieved with any determination of the Development Review Board may file an appeal on the Planning Division form, to the Planning Division, within 15 days of the Development Review Board's decision. The date the determination in question is issued is not included in the 15-day period for filing an appeal; If the fifteenth day falls on a Saturday, Sunday or holiday as listed in the Merit System Ordinance, the next working day is considered as the deadline for filing the appeal. Such appeal shall be heard within 60 days of its filing.

You will receive notice if any other person files an appeal. Successful applicants are reminded that other requirements of the City must be complied with, even after approval of the referenced application(s).

Please note that the vacation of all plats, rights-of-way, and easements are void after one year from the final appeal date referenced above if all conditions are not met (The effective date of Development Review Board approval is the hearing date plus the 15-day appeal period.) (REF: Chapter 14 Article 14 Part 7-2 (E)(3)(6) Revised Ordinance.)

Claire Senova
DRB Administrative Assistant
Cc: Yale Road Realty, P.O. Box 25806, 87125
The Larkin Group Inc., 8500 Menaul Blvd NE, Suite A440, 87112
Loren Hines, Property Management, Legal Dept./4th Flr, City/County Bldg.
Terri Martin, Public Works Department, 2nd Floor, Plaza del Sol Bldg.
File

RECEIVED
The Larkin Group, Inc.
DATE JUN 2 9 2000
JOB NO.
COMMENTS
FILE ☐

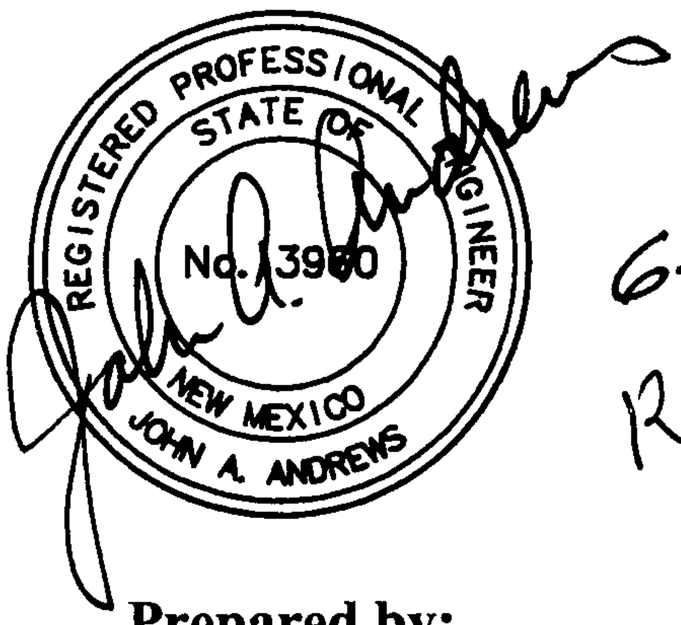
[redacted]

THE LARKIN GROUP INC

Premier Distributing Company, Inc.

DRAINAGE ANALYSIS
FOR
PREMIER DISTRIBUTING COMPANY
WAREHOUSE ADDITION - 2000

June 30, 2000



6-30-2000
Rev 7/31/00

Prepared by:

THE LARKIN GROUP
CONSULTING ENGINEERS AND SURVEYORS

8500 Menaul Boulevard NE, Suite A-440
Albuquerque, New Mexico 87112

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	Federal Emergency Management Agency, Flood Insurance Rate Map, No. 35001C0138	22

ENCLOSURES

Sheet C-1 – Premier Distributing Co. Removal Plan and Site Layout Plan

Sheet C-2 – Premier Distributing Co. Grading Plan

Sheet C-3 – Premier Distributing Co. Grading and Drainage Details

Sheet C-4 – Premier Distributing Co. Storm Drain Plan and Profile

Sheet D-1 – Premier Distributing Co. Drainage Plan

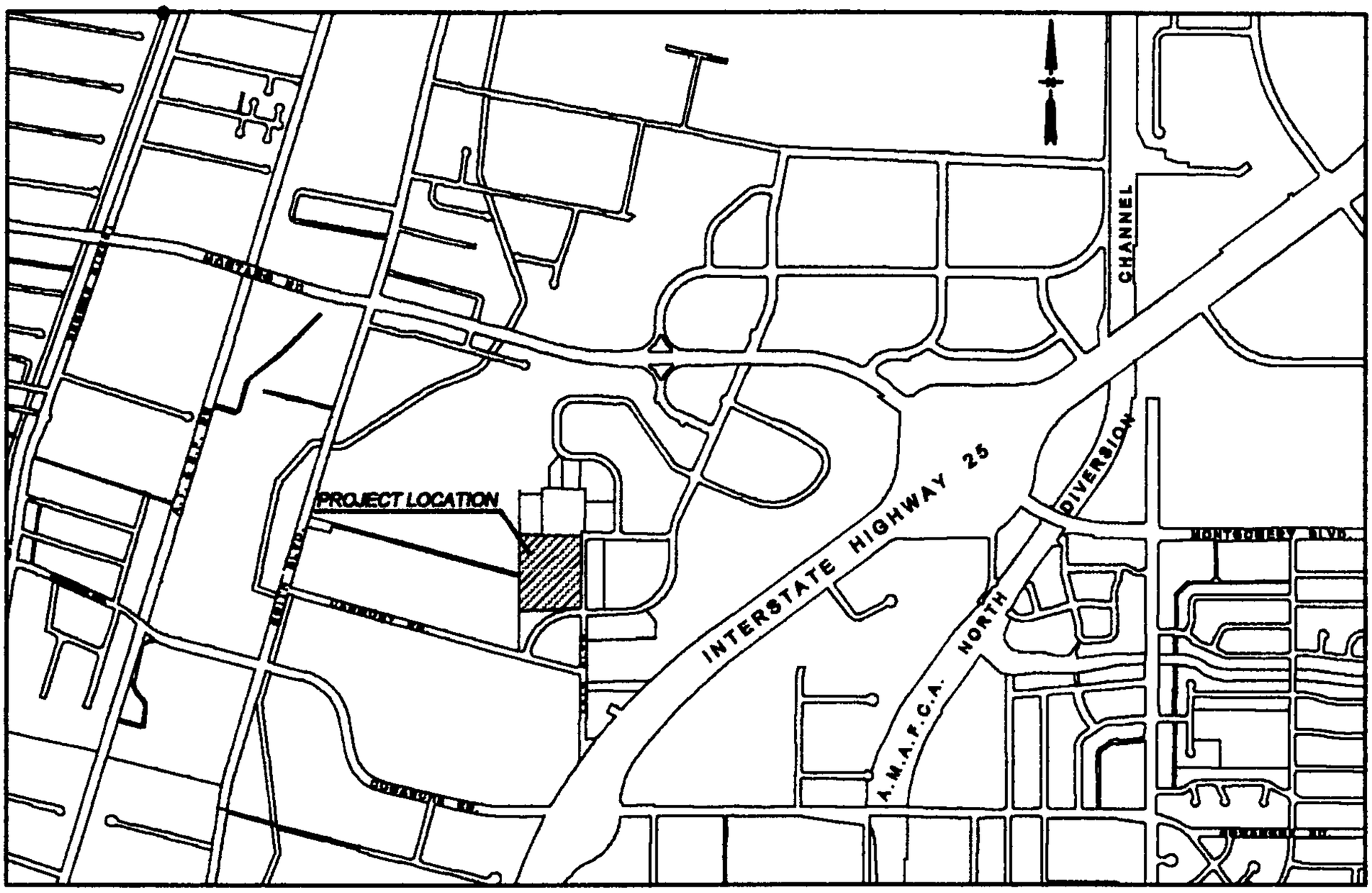
Section I

INTRODUCTION

The existing Premier Distributing Company office and warehouse is located on 9 developed acres. Premier Distributing Company is proposing to construct additional warehouse space on previously developed land. The 9 acre lot is located at 4321 Yale Boulevard in the far Northeast corner of Section 4, Township 10 North, Range 3 East. The tract is also within the municipal limits and northeast quadrant of the City of Albuquerque, New Mexico and is zoned M-2. The lot is platted as Tract A of subdivision plat for land of J.R. Nance, Albuquerque, New Mexico, Lot 1. (See Location Map, **Figure 1**, Zone Atlas Map G-15.) The site is not within a Federal Emergency Management Agency designated floodplain (See FEMA FIRM Map No. 35001C0138, enclosed).

The type of development proposed is an addition to the existing warehouse space, elimination of the existing southern stormwater retention basin and redesign of the northern stormwater retention basin. The northern retention basin is redesigned as a combination surface and subsurface stormwater detention basin. The site will discharge stormwater runoff to the soon to be completed SAD BC 83-1 and SAD 216 storm drain system. This report provides a drainage plan for the proposed site improvements and deletion of the stormwater retention basins.

Guidelines for this analysis are based upon Section 22.2, Hydrology, of the Development Process Manual (DPM), Design Criteria for the City of Albuquerque, New Mexico, July 1997.



ZONE ATLAS MAP G-15
SCALE: 1"=2000'

PREMIER DISTRIBUTING CO, INC.

PREMIER DISTRIBUTING CO, INC.
ALBUQUERQUE, NEW MEXICO

LOCATION MAP

THE LARKIN GROUP

FILE No.	DRAWN BY	CHECKED BY	DATE	
2K-0015	PJG	JA	JUNE 2000	FIGURE 1

Section II

EXISTING CONDITIONS

A. GENERAL

Premier's 9-acre lot is bounded by Yale Boulevard on the east, an undeveloped lot on the south, a developed lot on the west and New Mexican Kennels on the North. The land use zoning designation for the site is M-2. Under current conditions, all of the stormwater generated from a 1-percent chance storm event flows toward constructed stormwater retention basins in the northwest and southwest corners of the lot and is retained on-site. Drainage analyses for previous developments were prepared by Andrews, Asbury and Robert, Inc. in 1985, 1992 and 1995. The site does not receive any significant off-site stormwater runoff. A small area (0.3 acres) of the New Mexican Kennels lot generates a peak flow of 0.9 cubic feet per second for a 6-hour duration, 100-year event (A, A, & R, August 1992). This area is included in the sub-basin B-2 (See **Sheet D-1**, enclosed).

B. ON-SITE GENERATED RUNOFF

Premier's lot is completely developed and its land treatment is mostly impervious, consisting of parking lots and building. Currently, the entire 9-acre site drains to two on-site retention ponds at the southwest and northwest corners of the lot. The retention ponds are designed to hold the runoff volume generated by a 24-hour, 100-year storm event. The entire site produces a peak flow of 39.7 cubic feet per second and a volume of 1.4752 acre-feet from a 6-hour, 100-year storm event.

III

DEVELOPED CONDITIONS

A. Proposed Improvements to Premier Distributing Company, Inc. Site

Premier Distributing Company plans to construct additional warehouse space connected to its existing warehouse. The additional warehouse space will encroach on the existing southwest retention basin. Therefore the southwest retention basin will need to be eliminated. The additional impervious area created by the warehouse addition is insignificant, as the addition will be built over an existing asphalt parking lot area. Premier will also reclaim the northwest retention basin as a combination parking lot area and detention basin.

The site is located in the Hahn Arroyo drainage basin and will soon have a positive storm drainage outlet. The outlet is in the process of being constructed under the City of Albuquerque's SAD 216 and Bernalillo County's SAD BC 83-1 storm drainage improvements. The design storm event used for the evaluation of the Premier Distributing storm drain system is the same as used for the SAD storm drain system, 6-hour duration and 100-year event. The Drainage Analysis for the SAD BC 83-1 and SAD 216 project limits the maximum peak runoff from the Premier Distributing site to 30.6 cubic feet per second (A, A & R, 1992).

Construction timing of the Premier Distributing Company Warehouse Addition with Site Improvements will be coordinated with the contractor constructing the Special Assessment District project.

With the positive storm drain outlet and capacity in place, Premier Distributing will eliminate the southwest stormwater retention basin. The northwest retention basin will be reconstructed as a stormwater detention basin. Stormwater is to be detained above and below ground. Currently, the Premier site has more impervious area, Land Treatment D, than the SAD Drainage Analysis anticipated. The drainage calculations in Section IV of this report indicate a design storm peak discharge of 39.7 cubic feet per second from the entire 9-acre Premier tract. This is an excess of 9.1 cubic feet per second. The drainage plan provides for detaining the excess peak runoff in the northwest detention basin. The outlet of the detention basin will be controlled so as the site will not exceed the 30.6 cfs limiting peak flow.

A small watershed hydrograph, calculated and plotted for the site in accordance with the City of Albuquerque DPM Section 22.2, indicates that approximately 9100 cubic feet of runoff must be detained in the northwest detention basin. This volume will be detained in 48-inch and a 42-inch aluminized corrugated metal pipes buried below the proposed parking lot and on the surface of the parking lot. The designed detention basin will hold 9170 cubic feet.

The Drainage Plan, **Sheet D-1**, and the Storm Drain Plan and Profile, **Sheet C-4**, show the Premier Site will discharge to an existing 18-inch diameter reinforced concrete pipe (RCP) and a new 24-inch diameter RCP storm drain pipe will be installed parallel to the existing 18-inch pipe. This outlet will connect to the soon to be completed storm drain system in Carmony Road. The full flow capacity, 33.1 cubic feet per second, of the parallel storm drain lines is roughly equivalent to the peak runoff

limitation, 30.6 cfs, of the SAD Drainage Analysis. Therefore, the storm drain outfall lines will have the required capacity to pass the peak flow without pressurized operation.

IV

Drainage Analysis Calculations

THE LARKIN GROUP INC CONSULTING ENGINEERS AND SURVEYORS
8500 Menaul Boulevard NE, Suite A-440
Albuquerque, New Mexico 87112
Phone: 505-275-7500
Fax: 505-275-0748
e-mail: albmail@larkin-grp.com

Date 6/27/2000 Page 1/7
Client PREMIER DISTRIBUTING
Job No. AL2K-0015
Job Title WAREHOUSE ADDITION
Made By PJG
Chkd. By

HYDROLOGY
DRAINAGE CALCULATIONS

DRAINAGE BASINS B-1, B-2 AND B-3

BASIN ID.	AREA (AC)	LAND TREATMENTS (ACRE) A	B	C	D
B-1	0.36	0.0072	0.036	0.0	0.3171
B-2	2.40	0.0	0.120	0.072	2.2080
B-3	0.43	0.0	0.0215	0.0129	0.3956
	Σ = 3.19	Σ = 0.0072	0.1775	0.0849	2.9207

PEAK FLOW, 100-YR / 6-HR PRECIPITATION EVENT

B-1 : $Q_p = 0.0072\,ac\,(1.56\ ^{CFS}/_{AC}) + 0.036\,(2.28) + 0.3171\,(4.70) = 1.6$ CFS
B-2 : $Q_p = 0.120\,(2.28) + 0.072\,(3.14) + 2.208\,(4.70) = 10.9$ CFS
B-3 : $Q_p = 0.0215\,(2.28) + 0.0129\,(3.14) + 0.3956\,(4.70) = 1.9$ CFS
Σ = 14.4 CFS

WEIGHTED EXCESS PRECIPITATION, E_w:

$$E_w = \frac{0.0072(0.53) + 0.1775(0.78) + 0.0849(1.13) + 2.9207(2.12)}{3.1903}$$

E_w = 2.01 INCHES

6-HOUR RUNOFF VOLUME, $\forall_6$: BASIN B

$\forall_6 = 2.01\,IN\left(\frac{1\,FT}{12\,IN}\right)(3.1903) = 0.5344$ AC-FT

$\forall_6 = 0.5344$ AC-FT $\left(\frac{43560\ CU\,FT}{1\ AC\cdot FT}\right) = 23278.$ CU FT

THE LARKIN GROUP INC CONSULTING ENGINEERS AND SURVEYORS
8500 Menaul Boulevard NE, Suite A-440
Albuquerque, New Mexico 87112
Phone: 505-275-7500
Fax: 505-275-0748
e-mail: albmail@larkin-grp.com

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DRAINAGE CALCULATIONS

DRAINAGE BASINS C-1, C-2 AND C-3

BASIN ID	AREA (AC)	LAND TREATMENTS (ACRE) A	B	C	D
C-1	0.140	0.0028	0.0140	0.0	0.1232
C-2	0.5212	0.0	0.0104	0.0	0.5108
C-3	0.0638	0.0	0.0	0.0	0.0638
$\sum$ =	0.7250	0.0028	0.0244	0.0	0.6978

PEAK FLOW, 100-YR/6-HOUR PRECIPITATION EVENT, Q_p:

C-1: $Q_p = 0.0028\,AC\left(1.56\frac{CFS}{AC}\right) + 0.014(2.28) + 0.1232(4.70) = 0.6$ CFS
C-2: $Q_p = 0.0104(2.28) + 0.5108(4.70) = 2.4$ CFS
C-3: $Q_p = 0.0638(4.70) = 0.3$ CFS
$\sum = 3.3$ CFS

WEIGHTED EXCESS PRECIPITATION, E_w:

$$E_w = \frac{0.0028(0.53) + 0.0244(0.78) + 0.6978(2.12)}{0.7250}$$

$E_w = 2.07$ INCHES

6-HOUR RUNOFF VOLUME, $\forall_6$: BASIN C

$\forall_6 = 2.07\ IN\left(\frac{1\ FT}{12\ INCH}\right) 0.7250\,AC = 0.1251$ AC.FT

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DRAINAGE CALCULATIONS

DRAINAGE BASINS A-3 THRU A-10

BASIN ID	AREA (AC)	LAND TREATMENTS (AC) A	B	C	D
A-3	0.32	0.0	0.032	0.0	0.288
A-4	0.81	0.0	0.0	0.0	0.81
A-5	0.21	0.0	0.0	0.0	0.21
A-6	0.48	0.0	0.0	0.48	0.0
A-7	0.44	0.0	0.0	0.0	0.44
A-8	2.42	0.0	0.0	0.0	2.42
A-9	0.07	0.0	0.0	0.0	0.07
A-10	0.11	0.0	0.0	0.0	0.11
	$\Sigma = 4.87$	$\Sigma = 0.0$	0.032	0.48	4.358

WEIGHTED EXCESS PRECIPITATION, E_w:

$$E_w = \frac{0.032(0.78) + 0.48(1.13) + 4.358(2.12)}{4.87}$$

$E_w = 2.01$ INCHES

6-HOUR RUNOFF VOLUME, $\forall_6$: BASIN A

$$\forall_6 = 2.01 \text{ IN } \left(\frac{1 \text{ FT}}{12 \text{ IN}}\right)(4.87 \text{ AC}) = 0.8157 \text{ AC·FT}$$

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DRAINAGE CALCULATIONS

DRAINAGE BASINS A-3 THROUGH A-10

PEAK FLOW, 100-YR/ 6-HOUR PRECIPITATION EVENT

A-3: $Q_p = 0.032(2.28\ ^{CFS}/_{AC}) + 0288\ (4.7\ ^{CFS}/_{AC}) = 1.4$ CFS

A-4: $Q_p = 0.81\ AC\ (4.70\ ^{CFS}/_{AC}) = 3.8$ CFS

A-5: $Q_p = 0.21\ AC\ (4.70\ ^{CFS}/_{AC}) = 1.0$ CFS

A-6: $Q_p = 0.48\ AC\ (3.14\ ^{CFS}/_{AC}) = 1.5$ CFS

A-7: $Q_p = 0.44\ AC\ (4.70\ ^{CFS}/_{AC}) = 2.1$ CFS

A-8: $Q_p = 2.42\ AC\ (4.70\ ^{CFS}/_{AC}) = 11.4$ CFS

A-9: $Q_p = 0.07\ AC\ (4.70\ ^{CFS}/_{AC}) = 0.3$ CFS

A-10: $Q_p = 0.11\ AC\ (4.70\ ^{CFS}/_{AC}) = 0.5$ CFS

$\Sigma = 22.0$ CFS

TOTAL PEAK FLOW BASINS A, B & C

$Q_{P_T} = 22.0$ CFS + 14.4 CFS + 3.3 CFS = 39.7 CFS

$Q_{P_{T_{6\text{-HR ALLOWED}}}} = 30.6$ CFS $\Rightarrow$ SAD BC 83-1
SAD 216 DRAINAGE REPORT

EXCESS PEAK FLOW, Q_{P_E}

$Q_{P_E} = Q_{P_T} - Q_{P_{T_{6\text{-HOUR ALLOWED}}}} = 39.7$ CFS $- 30.6 =$ 9.1 CFS

THE LARKIN GROUP INC
CONSULTING ENGINEERS AND SURVEYORS
8500 Menaul Boulevard NE, Suite A-440
Albuquerque, New Mexico 87112
Phone: 505-275-7500
Fax: 505-275-0748
e-mail: albmail@larkin-grp.com

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SMALL WATERSHED HYDROGRAPH

HYDROGRAPH REPRESENTS RUNOFF OF BASINS A, B & C

$$t_s = (2.107 \times E_w \times {}^{A_T}/_{Q_P}) - (0.25 \times \frac{A_D}{A_T})$$

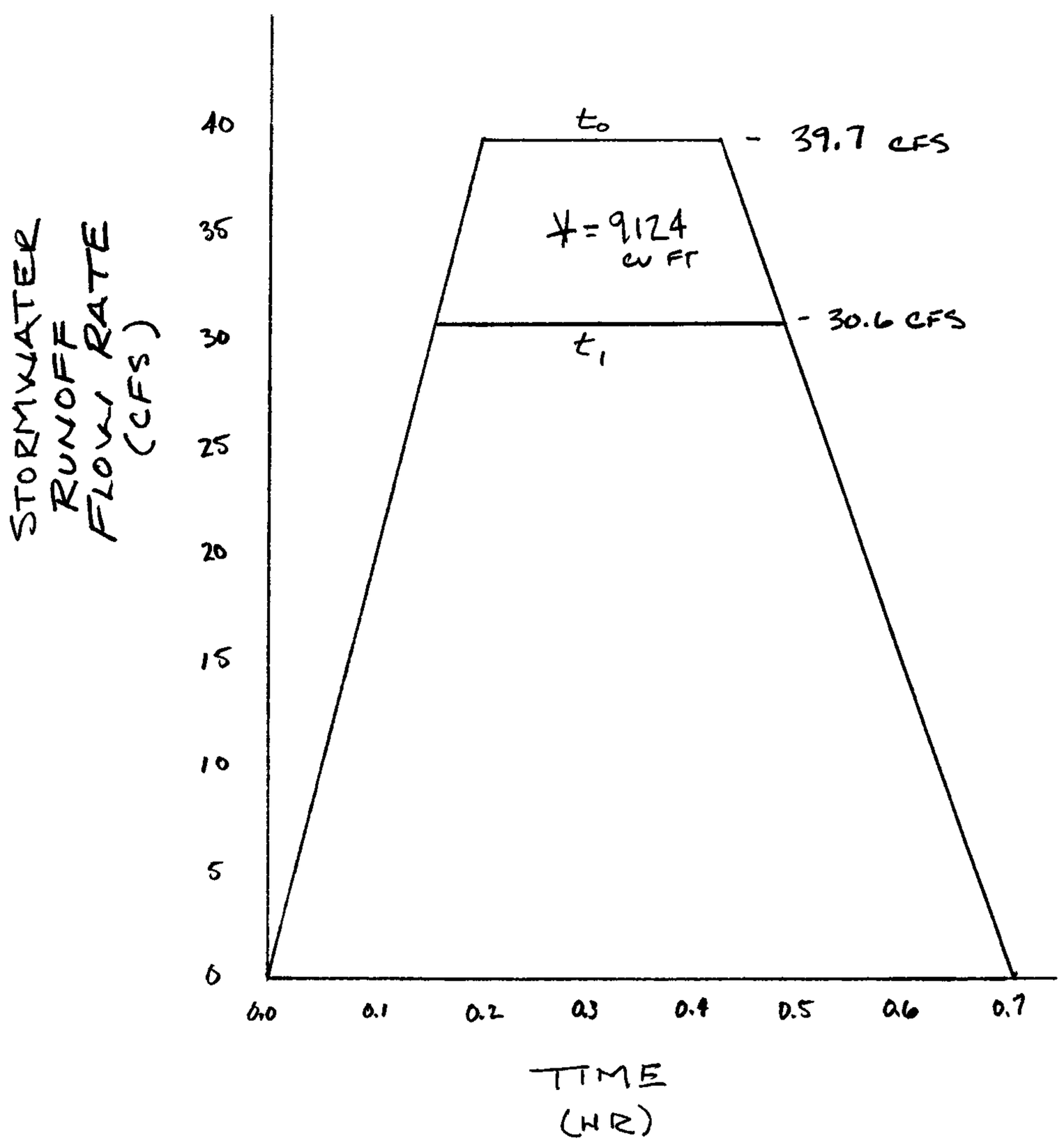
$$t_p = (0.7 \times t_c) + ((1.6 - ({}^{A_D}/_{A_T}))/12)$$

$A_D = 7.976$ AC
$A_T = 8.784$ AC
$Q_P = 39.7$ CFS
$E_w = 2.02$ IN
$t_c = 0.2$ HR

$$t_B = (2.107 \times 2.02 \times \frac{8.784}{39.7}) - (0.25 \times \frac{7.976}{8.784}) = 0.71 \text{ HR}$$

$$t_p = (0.7 \times 0.2) + ((1.6 - \frac{7.976}{8.784}))/12) = 0.20 \text{ HR}$$

$t_o = 0.227$ HR
$t_1 = 0.33$ HR



$Q_{PMAX} = 30.6$ CFS

$Q_{P_E} = 9.1$ CFS

$$\forall = 9.1 \left(\frac{t_o + t_1}{2}\right)\left(\frac{3600\,S}{1\,HR}\right)$$

STORAGE REQUIRED
$\forall$ = 9124 CU FT

$\forall = 0.2095$ AC·FT

THE LARKIN GROUP INC CONSULTING ENGINEERS AND SURVEYORS
8500 Menaul Boulevard NE, Suite A-440
Albuquerque, New Mexico 87112
Phone: 505-275-7500
Fax: 505-275-0748
e-mail: albmail@larkin-grp.com

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DETENTION STORAGE CALCULATIONS

VOLUME OF STORAGE ABOVE AND BELOW PAVEMENT PROVIDED

BELOW PAVEMENT STORAGE (PIPE)

48" DIA. PIPE: AREA = $\frac{\pi}{4} d^2 = \frac{\pi}{4}(4')^2 = 12.566$ SQ FT
LENGTH = 140 LINEAR FEET
VOLUME: 12.566 x 140 = 1759 CU FT

42" DIA. PIPE: AREA = $\frac{\pi}{4}(3.5')^2 = 9.621$ SQ FT
LENGTH = 140 LINEAR FEET
VOLUME: 9.621 x 140 = 1347 CU FT

48" RISER (DS): AREA = 12.566 SQ FT
DEPTH = 34.82 - 29.20 = 5.62 FT
VOLUME: 12.566 x 5.62 = 70.62 CU FT

48" DIA RISER (US): AREA = 12.566 SQ F
DEPTH = 34.82 - 29.62 = 5.20 FT
VOLUME = 5.20 x 12.566 = 65.34 CU FT

42" DIA RISER (DS): AREA = 9.621 SQ FT
DEPTH = 34.82 - 29.30 = 5.52 FT
VOLUME = 9.621 x 5.52 = 53.11 CU FT

42" DIA RISER (US): AREA = 9.621 SQ FT
DEPTH = 34.82 - 29.72 = 5.10 FT
VOLUME = 9.621 x 5.10 = 49.10 CU FT

24" DIA PIPE: AREA = $\frac{\pi}{4}(2)^2 = 3.141$ SQ FT
LENGTH = 12.0 FT
VOLUME = 37.70 CU FT

TYPE "D" INLET: AREA = 6.04 SQ FT; VOLUME = 6.04 x 5.32
DEPTH = 5.32' = 32.13 CU FT

STORAGE BELOW PAVEMENT
TOTAL = 3414 CU FT

THE LARKIN GROUP INC CONSULTING ENGINEERS AND SURVEYORS
8500 Menaul Boulevard NE, Suite A-440
Albuquerque, New Mexico 87112
Phone: 505-275-7500
Fax: 505-275-0748
e-mail: albmail@larkin-grp.com

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DETENTION STORAGE CALCULATIONS

ABOVE PAVEMENT STORAGE

ELEVATION	AREA (SQ FT)	ΔELEV	INCREMENTAL VOLUME (CU FT)	TOTAL VOLUME (CU FT)
33.74	0			0
		0.64	1866	
34.38	5831			1866
		0.44	3890	
34.82	11850			5756

TOTAL STORAGE PROVIDED = 3414 + 5756 = 9170 CU FT

VOLUME REQUIRED = 9124 CU FT

$S_T = 9170 > 9124 = S_R$ ✓ OK

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HYDRAULICS

CONTROL PEAK RATE OF FLOW FROM SITE TO 30.6 CFS

DRAINAGE BASIN A → FREE DISCHARGE, Q_p = 22.0 CFS
DRAINAGE BASIN C → FREE DISCHARGE, Q_p = 3.3 CFS

$Q_{P_{A\&C}}$ 25.3 CFS

LIMIT PEAK FLOW FROM DRAINAGE BASIN B

$$Q_{P_{B_{LIMIT}}} = Q_{P_{ALLOW}} - Q_{P_{A\&C}} = 30.6 - 25.3 = 5.3 \text{ CFS} = Q_{P_{B_{LIMIT}}}$$

Q_{P_B} = 14.4 CFS = BASIN B PEAK DISCHARGE

ORIFICE PLATE DIMENSION CALCULATIONS

HW_{ELEV} = 34.82 INVERT OF ORIFICE = 29.20

AVAILABLE HW DEPTH = 34.82 - 29.20 = 5.62 FEET

ORIFICE FLOW EQUATION $Q = CA\sqrt{2gh}$

C = 0.6 Q = 5.3 CFS
g = 32.2 FT/S²
h = 5.62'

$$A = \frac{Q}{C\sqrt{2gh}} = \frac{5.3}{0.6\sqrt{2(32.2)(5.62)}} = 0.46 \text{ FT}^2$$

IF ORIFICE OPENING IS 10" WIDE,

$0.46 \text{ FT}^2 = (10''/12'') \times l$
$l = 0.55 \text{ FT} = 6\ 5/8''$

THE LARKIN GROUP INC CONSULTING ENGINEERS AND SURVEYORS
8500 Menaul Boulevard NE, Suite A-440
Albuquerque, New Mexico 87112
Phone: 505-275-7500
Fax: 505-275-0748
e-mail: albmail@larkin-grp.com

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CATCH BASIN CALCULATIONS

TYPE "D" INLET, SINGLE GRATE

COA STD GRATE:

FREE OPEN AREA = 4.56 SQ FT

WEIR PERIMETER = 10.5 FT

WEIR FLOW CAPACITY $Q = 3.3P(h)^{1.5}$ (NEENAH)

$Q = 3.3(10.5)(1.08)^{1.5}$ $h = 34.82 - 33.74 = 1.08'$

$Q = 38.9$ CFS

ORIFICE FLOW CAPACITY: $Q = 0.6A\sqrt{2gh}$ (NEENAH)

$Q = 0.6(4.56)\sqrt{2(32.2)1.08} = 22.8$ CFS

REDUCT. CAPACITY 15% DUE TO CLOGGING

$Q = 22.8(.85) = 19.4$ CFS ← USE THIS CAPACITY

Q_P FROM BASINS B-1, B-2, B-3 = 14.4 CFS

$Q_P = 14.4 < 19.4 = Q_{CAP}$ ✓ OK

THE LARKIN GROUP INC
CONSULTING ENGINEERS AND SURVEYORS
8500 Menaul Boulevard NE, Suite A-440
Albuquerque, New Mexico 87112
Phone: 505-275-7500
Fax: 505-275-0748
e-mail: albmail@larkin-grp.com

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CATCH BASIN CALCULATIONS

TYPE "A" INLET, SINGLE GRATE, DOUBLE THROAT

DEPTH OF FLOW = 0.54 FT (SEE SHEET 4/6)

GRATE CAPACITY USING PLATTE 22.3, D-5

$Q_G = 7.0$ CFS

THROAT CAPACITY, (WEIR EQUATION)
INLET IS AT TOPOGRAPHICAL LOW POINT

$Q_T = 3.3\,L\,(H)^{1.5}$ $L = 9.83'$ $H = 0.54$

$Q_T = 12.9$ CFS

TOTAL CAPACITY = $7.0 + 12.9 = 19.9$ CFS

Q_P (BASIN A-8) = 11.4 CFS

$Q_P = 11.4 < 19.9\,CFS = Q_{CAPACITY}$ ✓ OK

Type "A" Inlet, Single Grate, Double Throat
Worksheet for Gutter Section

Project Description	
Worksheet	Gutter Section - 1
Type	Gutter Section
Solve For	Spread

Input Data		
Slope	0.006000	ft/ft
Discharge	13.50	cfs
Gutter Width	2.00	ft
Gutter Cross Slope	0.062500	ft/ft
Road Cross Slope	0.060000	ft/ft
Mannings Coefficient	0.013	

Results		
Spread	9.79	ft
Flow Area	2.9	ft²
Depth	0.59	ft
Gutter Depression	0.1	in
Velocity	4.68	ft/s

Notes: Inlet is at topographical low point.

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Premier Distributing SD Outfall Line
Worksheet for Circular Channel

Project Description	
Worksheet	24" Diameter RCP
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Capacity

Input Data		
Mannings Coefficient	0.013	
Slope	0.010000	ft/ft
Diameter	24	in

Results		
Depth	2.00	ft
Discharge	22.62	cfs
Flow Area	3.1	ft²
Wetted Perimeter	6.28	ft
Top Width	0.00	ft
Critical Depth	1.69	ft
Percent Full	100.0	%
Critical Slope	0.009461	ft/ft
Velocity	7.20	ft/s
Velocity Head	0.81	ft
Specific Energy	2.81	ft
Froude Number	0.00	
Maximum Discharg	24.33	cfs
Discharge Full	22.62	cfs
Slope Full	0.010000	ft/ft
Flow Type	N/A	

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Premier Distributing SD Outfall Line
Worksheet for Circular Channel

Project Description	
Worksheet	18" Diameter RCP
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Full Flow Capacity

Input Data		
Mannings Coefficient	0.013	
Slope	0.010000	ft/ft
Diameter	18	in

Results		
Depth	1.50	ft
Discharge	10.50	cfs
Flow Area	1.8	ft²
Wetted Perimeter	4.71	ft
Top Width	0.00	ft
Critical Depth	1.25	ft
Percent Full	100.0	%
Critical Slope	0.009774	ft/ft
Velocity	5.94	ft/s
Velocity Head	0.55	ft
Specific Energy	2.05	ft
Froude Number	0.00	
Maximum Discharg	11.30	cfs
Discharge Full	10.50	cfs
Slope Full	0.010000	ft/ft
Flow Type	N/A	

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V

REFERENCES

1. Revised Drainage Report, Premier Distributing Company, Warehouse and Office Addition, September 12, 1995, Andrews, Asbury and Robert, Inc.

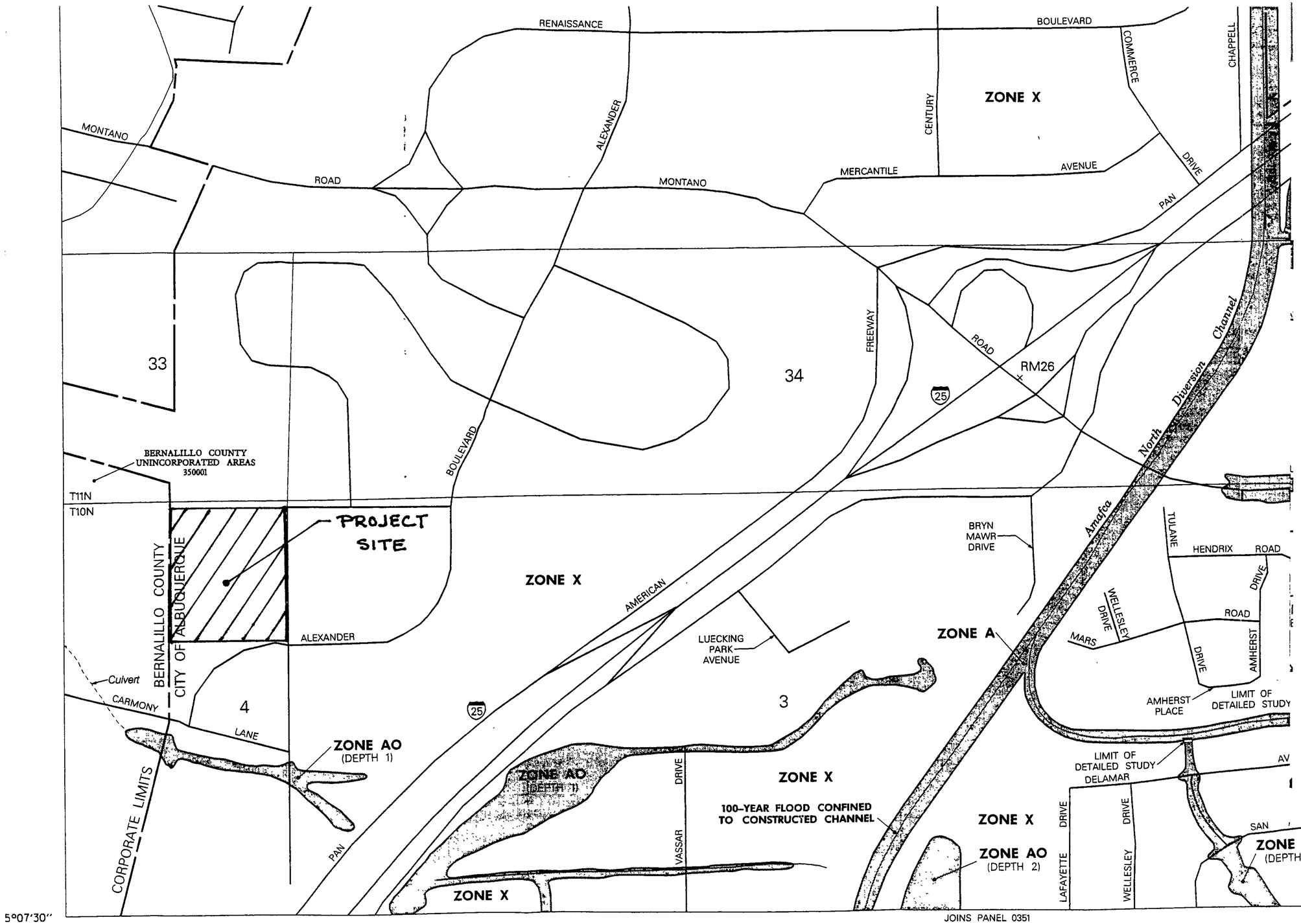
2. Drainage Report, Premier Distributing Company, Warehouse Addition, August 1992, Andrews Asbury and Robert, Inc.

3. Drainage Report, Premier Distributing Company, June 1985, Andrews Asbury and Robert, Inc.

4. Drainage Analysis, County of Bernalillo Special Assessment District BC 83-1 and City of Albuquerque Special Assessment District 216, Andrews, Asbury and Robert Inc, March 1992.

5. Section 22.2 of the Development Process Manual, Volume 2, Design Criteria for the City of Albuquerque, New Mexico in Cooperation with Bernalillo County, New Mexico and the Albuquerque Metropolitan Arroyo Flood Control Authority. July 1997.

6. Section 22.3, Hydraulic Design, of the Development Process Manual, Volume 2, Design Criteria for the City of Albuquerque, New Mexico in Cooperation with Bernalillo County, New Mexico and the Albuquerque Metropolitan Arroyo Flood Control Authority. July 1997.



NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY, NEW MEXICO AND INCORPORATED AREAS

PANEL 138 OF 825

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0138	D
BERNALILLO COUNTY, UNINCORPORATED AREAS	350001	0138	D

MAP NUMBER
35001C0138 D

EFFECTIVE DATE:
SEPTEMBER 20, 1996

Federal Emergency Management Agency

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 18, 1995

John A. Andrews
Andrews, Asbury & Robert, Inc.
149 Jackson St. NE
Albuquerque, NM 87108

RE: PREMIER DISTRIBUTION COMPANY (G15-D7A) DRAINAGE REPORT FOR BUILDING, GRADING, AND PAVING PERMIT APPROVAL. ENGINEER'S STAMP DATED 9-12-95.

Dear Mr. Andrews:

Based on the information provided on your September 13, 1995 submittal, the above referenced project is approved for Building, Grading, and Paving Permits.

Prior to Certificate of Occupancy approval, an Engineer's Certification for the approved site is required. See the DPM for the Engineer's Certification checklist.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

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

August 25, 1995

John A. Andrews
Andrews, Asbury & Robert, Inc.
149 Jackson St. NE
Albuquerque, NM 87108

RE: PREMIER DISTRIBUTION COMPANY (G15-D7A) DRAINAGE REPORT FOR BUILDING PERMIT AND GRADING PERMIT APPROVAL. ENGINEER'S STAMP DATED 8-21-95.

Dear Mr. Andrews:

Based on the information provided on your August 22, 1995 submittal, City Hydrology has the following comments:

1. Please show rim elevations for all new manholes.

2. Give temporary, on site, bench mark elevation, description, and location.

3. Even though your detail shows the new trench bottom drops 0.67 vertical feet in 76.67 horizontal feet, it would be helpful to show on the plan sheet the flow line elevations of the new trench and the invert elevation of the new 12 inch pipe that ties into the trench.

4. Please show a graphic difference between new and existing spot elevations.

5. As is shown by your drainage area boundary lines, the roof of the proposed warehouse addition drains to the existing southwest retention pond. It is, however, policy to show roof drain locations and direction of flow on all buildings. Where does water from the roof of the proposed office addition go?

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 2, 1993

Douglas Andrews
Andrews, Asbury & Roberts, Inc.
149 Jackson St. NE
Albuquerque, N.M. 87108

RE: ENGINEER'S CERTIFICATION FOR PREMIER DIST. CO. WAREHOUSE (G-15/D7A)
RECEIVED JANUARY 21, 1993 FOR CERTIFICAT OF OCCUPANCY APPROVAL
STAMPED & DATED 01-21-93

Dear Mr. Andrews:

Based on the information included in the submittal referenced above, City Hydrology approves the Certificate of Occupancy for this project.

If I can be of further assistance, you may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
PWD/Hydrology

xc: Alan Martinez

WPHYD+3591

Premier Distributing Co. (8-15/107A)

John Andrews 265-6631
AAR 3:40 1-29-93

I asked John to revise Certification Drawing to use different symbols for Existing & As Built Elevations. Also he needs to a note to explain his tolerance criteria for correcting new elevations for As Built conditions.

John P Curtin

DRAINAGE INFORMATION SHEET

PROJECT TITLE: PREMIER DISTRIBUTING COMPANY WAREHOUSE ADDITION ZONE ATLAS/DRNG. FILE #: G-15 D07A

DRB #: N/A EPC #: N/A WORK ORDER #: N/A

LEGAL DESCRIPTION: TRACT A, LANDS OF J.R. NANCE

CITY ADDRESS: 4321 YALE BOULEVARD, N.E., ALBUQUERQUE, NM 87107

ENGINEERING FIRM: ANDREWS, ASBURY & ROBERT, INC. CONTACT: JOHN A. ANDREWS

ADDRESS: 149 JACKSON ST NE 87108 PHONE: 265-6631

OWNER: PREMIER DISTRIBUTING COMPANY CONTACT: JOE POIST

ADDRESS: 4321 YALE BOULEVARD NE 87107 PHONE: 344-0287

ARCHITECT: RAY TRUJILLO & ASSOCIATES CONTACT: RICHARD ENGSTROM

ADDRESS: 210 LA VETA DRIVE NE 87108 PHONE: 265-8885

SURVEYOR: ANDREWS, ASBURY & ROBERT, INC. CONTACT: GAYLE JEWELL

ADDRESS: 149 JACKSON STREET NE 87108 PHONE: 265-6631

CONTRACTOR: KLINGER CONSTRUCTION CONTACT: RAY SMITH

ADDRESS: POB 90850 87199 PHONE: 822-9990

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
__x__ ENGINEER'S CERTIFICATION
____ OTHER

RECEIVED JAN 21 1993 HYDROLOGY DIVISION

PRE-DESIGN MEETING:

____ YES
__x__ NO
____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ S. DEV. PLAN FOR SUB'D. APPROVAL
____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
____ SECTOR PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ FOUNDATION PERMIT APPROVAL
____ BUILDING PERMIT APPROVAL
__x__ CERTIFICATE OF OCCUPANCY APPROVAL
____ GRADING PERMIT APPROVAL
____ PAVING PERMIT APPROVAL
____ S.A.D. DRAINAGE REPORT
____ DRAINAGE REQUIREMENTS
____ OTHER _____ (SPECIFY)

DATE SUBMITTED: JANUARY 21, 1993

BY: ANDREWS, ASBURY & ROBERT, INC.

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 14, 1992

Douglas Andrews
Andrews, Asbury & Roberts, Inc.
149 Jackson St. NE
Albuquerque, N.M. 87108

RE: DRAINAGE REPORT FOR PREMIER DIST. CO. (G-15/D7A)
RECEIVED AUGUST 13, 1992 FOR BUILDING PERMIT APPROVAL
STAMPED & DATED AUGUST 13, 1992

Dear Mr. Andrews:

Based on the information included in the submittal referenced above, the Building Permit for this project is approved by City Hydrology.

The Drainage & Grading plan must be included in the set of construction document that you submit for Building Permit.

Certification of grades in accordance with the DPM checklist will be required before any Certificate of Occupancy is released.

If I can be of further assistance, you may contact me at 768-2727.

Sincerely,

John P. Curtin

John P. Curtin, P.E.
PWD/Hydrology

xc: Alan Martinez

WPHYD+3591

DRAINAGE INFORMATION SHEET

PROJECT TITLE: PREMIER DISTRIBUTING COMPANY WAREHOUSE ADDITION ZONE ATLAS/DRNG. FILE #: G-15/ D7A

DRB #: N/A EPC #: N/A WORK ORDER #: N/A

LEGAL DESCRIPTION: TRACT A, LANDS OF J.R. NANCE

CITY ADDRESS: 4321 YALE BOULEVARD, N.E., ALBUQUERQUE, NM 87107

ENGINEERING FIRM: ANDREWS, ASBURY & ROBERT, INC. CONTACT: DOUGLAS ANDREWS

ADDRESS: 149 JACKSON ST., N.E. ALBUQUERQUE, NM 87108 PHONE: (505) 265-6631

OWNER: PREMIER DISTRIBUTING COMPANY CONTACT: JOE POIST

ADDRESS: 4321 YALE BOULEVARD, N.E. ALBUQUERQUE, NM 87107 PHONE: (505) 344-0287

ARCHITECT: RAY TRUJILLO & ASSOCIATES CONTACT: RICHARD ENGSTROM

ADDRESS: 210 LA VETA DRIVE, N.E. ALBUQUERQUE, NM 87108 PHONE: (505) 265-8885

SURVEYOR: ANDREWS, ASBURY & ROBERT, INC. CONTACT: GAYLE JEWELL

ADDRESS: 149 JACKSON ST., N.E. ALBUQUERQUE, NM 87108 PHONE: (505) 265-6631

CONTRACTOR: KLINGER CONSTRUCTION CONTACT: RAY SMITH

ADDRESS: P.O. BOX 90850 ALBUQUERQUE, NM 87199 PHONE: (505) 822-9990

RECEIVED
AUG 13 1992
HYDROLOGY DIVISION

TYPE OF SUBMITTAL:

__x__ DRAINAGE REPORT

____ DRAINAGE PLAN

____ CONCEPTUAL GRADING & DRAINAGE PLAN

____ GRADING PLAN

____ EROSION CONTROL PLAN

____ ENGINEER'S CERTIFICATION

____ OTHER

PRE-DESIGN MEETING:

____ YES

__x__ NO

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CHECK TYPE OF APPROVAL SOUGHT:

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____ S. DEV. PLAN FOR SUB'D. APPROVAL

____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

____ SECTOR PLAN APPROVAL

____ FINAL PLAT APPROVAL

____ FOUNDATION PERMIT APPROVAL

__x__ BUILDING PERMIT APPROVAL

____ CERTIFICATE OF OCCUPANCY APPROVAL

____ GRADING PERMIT APPROVAL

____ PAVING PERMIT APPROVAL

____ S.A.D. DRAINAGE REPORT

____ DRAINAGE REQUIREMENTS

____ OTHER _____ (SPECIFY)

DATE SUBMITTED: 8-13-92

BY: Douglas L. Andrews

3591

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Premier Distributing Co. Warehouse & Office Addition ZONE ATLAS/DRNG. FILE #: G-15 / D74

DRB #: N/A EPC #: N/A WORK ORDER #: N/A

LEGAL DESCRIPTION: Tract A, Land of J.R. Nance

CITY ADDRESS: 4321 Yale Blvd. N.E., Albuquerque, NM 87107

ENGINEERING FIRM: Andrews, Asbury & Robert, Inc. CONTACT: John A. Andrews
ADDRESS: 149 Jackson St. N.E. Albuquerque, NM 87108 PHONE: (505) 265-6631

OWNER: Premier Distributing Co. CONTACT: Warehouse Manager
ADDRESS: 4321 Yale Blvd. N.E. Albuquerque, NM 87107 PHONE: (505) 344-0287

ARCHITECT: Weller Architects CONTACT: Dick Engstrom
ADDRESS: 401 Alvarado S.E. Albuquerque, NM 87108 PHONE: (505) 255-8270

SURVEYOR: Andrews, Asbury & Robert, Inc. CONTACT: Gayle Jewell
ADDRESS: 149 Jackson St. N.E. Albuquerque, NM 87108 PHONE: (505) 265-6631

CONTRACTOR: Klinger Constructors, Inc. CONTACT: Ray Smith
ADDRESS: 8701 Washington N.E. Albuquerque, NM 87113 PHONE: (505) 822-9990

TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- ____ DRAINAGE PLAN
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- ____ ENGINEER'S CERTIFICATION
- ____ OTHER _____

PRE-DESIGN MEETING:

- ____ YES
- X NO
- ____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

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- ____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- X BUILDING PERMIT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY APPROVAL
- X GRADING PERMIT APPROVAL
- X PAVING PERMIT APPROVAL
- ____ S.A.D. DRAINAGE REPORT
- ____ DRAINAGE REQUIREMENTS
- ____ SUBDIVISION CERTIFICATION
- ____ OTHER _____ (SPECIFY)

DATE SUBMITTED: SEPTEMBER 12, 1995

BY: John A. Andrews

RECEIVED
SEP 13 1995
HYDROLOGY

ANDREWS, ASBURY & ROBERT, INC.
Consulting Engineers

149 Jackson NE, Albuquerque, New Mexico 87108
Tel: (505) 265-6631 • Fax: (505) 266-8112

John A. Andrews, P.E.
Charles T. Asbury, P.E.
John B. Robert, P.E. & L.S. (1915-1984)
James E. Millington, P.E. - V.P.
Gayle D. Jewell, L.S. - V.P.

September 12, 1995

Lisa Manwill
City of Albuquerque
Public Works Department
Hydrology Division
Albuquerque, NM 87103

Subject: Premier Distributing Co. (G15-D7A)
Warehouse & Office Addition

Dear Ms. Manwill:

Submitted herewith is a revised Drainage Report dated September 12, 1995, for subject project for your review.

We have made revisions to this report, including plans, in conformance with comments made in your letter dated August 25, 1995.

Your early review of this submittal is requested. Please call me on any questions and/or the results of your review.

Very truly yours,

ANDREWS, ASBURY & ROBERT, INC.

John A. Andrews, P.E.

JAA:edm

Enclosure

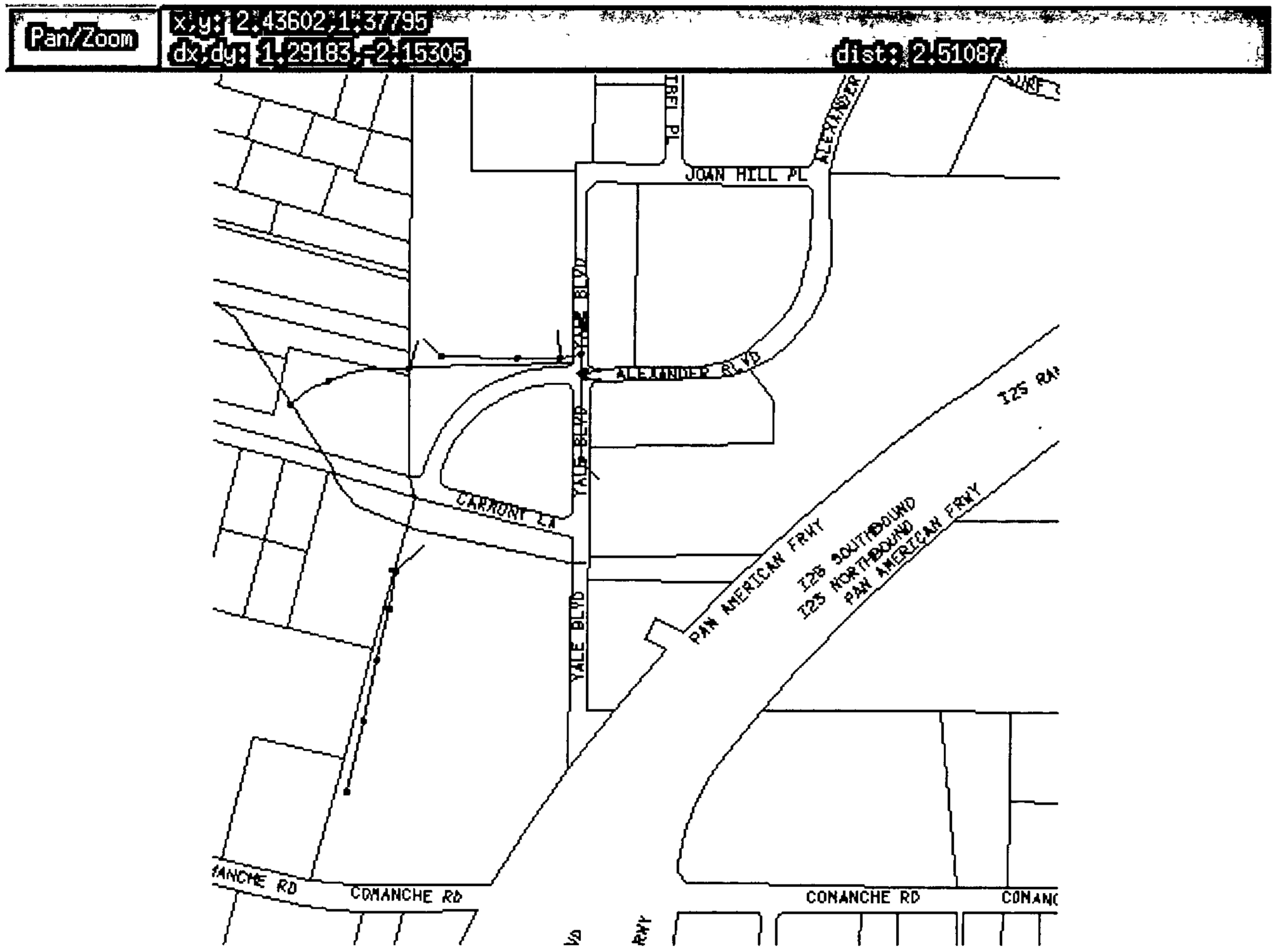
SEP 13 1995

4/23/99

Pond Volume 2 ponds — reduce pond A,
- reconfigure pond A
- scale pond size down

Size of proposed addition — need to scale ~~down~~ ~~to scale~~

4/26/99 Findings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TREL PL
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JOAN HILL PL
YALE BLVD
ALEXANDER BLVD
I25 RAMP
CARMONT LA
YALE BLVD
PAN AMERICAN FRWY
I25 SOUTHBOUND
I25 NORTHBOUND
PAN AMERICAN FRWY
ANCHE RD
COMANCHE RD
COMANCHE RD
COMANC
RAMP

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Premier Distributing Co. Warehouse & Office Addition ZONE ATLAS/DRNG. FILE #: G-15 /D7A

DRB #: N/A EPC #: N/A WORK ORDER #: N/A

LEGAL DESCRIPTION: Tract A, Land of J.R. Nance

CITY ADDRESS: 4321 Yale Blvd. N.E., Albuquerque, NM 87107

ENGINEERING FIRM: Andrews, Asbury & Robert, Inc. CONTACT: John A. Andrews, P.E.
ADDRESS: 149 Jackson St. N.E. Albuquerque, NM 87108 PHONE: (505) 265-6631

OWNER: Premier Distributing Co. CONTACT: Warehouse Manager
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ARCHITECT: Weller Architects CONTACT: Dick Engstrom
ADDRESS: 401 Alvarado S.E. Albuquerque, NM 87108 PHONE: (505) 255-8270

SURVEYOR: Andrews, Asbury & Robert, Inc. CONTACT: Gayle Jewell
ADDRESS: 149 Jackson St. N.E. Albuquerque, NM 87108 PHONE: (505) 265-6631

CONTRACTOR: Klinger Constructors, Inc. CONTACT: Ray Smith
ADDRESS: 8701 Washington N.E. Albuquerque, NM 87113 PHONE: (505) 822-9990

TYPE OF SUBMITTAL:

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____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
__X__ ENGINEER'S CERTIFICATION
__X__ OTHER As-Built Drainage Plan

PRE-DESIGN MEETING:

____ YES
____ NO
____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL
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____ FINAL PLAT APPROVAL
____ FOUNDATION PERMIT APPROVAL
____ BUILDING PERMIT APPROVAL
__X__ CERTIFICATE OF OCCUPANCY APPROVAL
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____ PAVING PERMIT APPROVAL
____ S.A.D. DRAINAGE REPORT
____ DRAINAGE REQUIREMENTS
____ SUBDIVISION CERTIFICATION
____ OTHER _____ (SPECIFY)

DATE SUBMITTED: APRIL 18, 1996

BY: John A. Andrews

RECEIVED
APR 19 1996
HYDROLOGY DIV

CITY OF
Albuquerque

May 2, 1996

Martin J. Chávez, Mayor

John A. Andrews
Andrews, Asbury & Robert, Inc.
149 Jackson St. NE
Albuquerque, NM 87108

RE: PREMIER DISTRIBUTION COMPANY (G15-D7A) ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY APPROVAL. ENGINEER'S CERTIFICATION DATED 4-18-96.

Dear Mr. Andrews:

Based on the information provided on your April 19, 1996 submittal, the above referenced project is approved Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

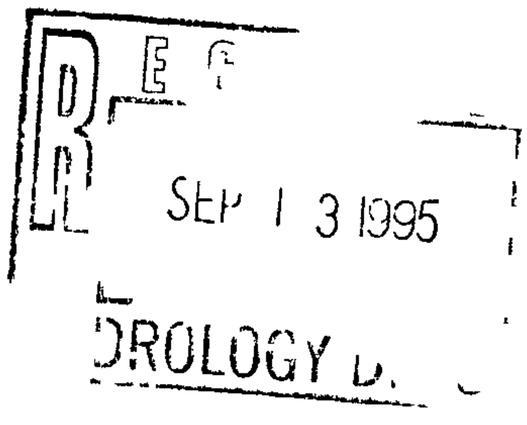
c: Andrew Garcia
File

Premier Distributing Company
Albuquerque, New Mexico

REVISED DRAINAGE REPORT
FOR
PREMIER DISTRIBUTING COMPANY
WAREHOUSE AND OFFICE ADDITION

September 12, 1995

Prepared by
Andrews, Asbury & Robert, Inc.
Consulting Engineers
149 Jackson Street, N.E.
Albuquerque, New Mexico 87108



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II.	Existing Conditions	3-5
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	Map No. 3 - Site Drainage Plan	

ATTACHMENTS

Construction Plans for Premier Distributing Company
Warehouse and Office Addition (Sheets C-1 through C-3)

I

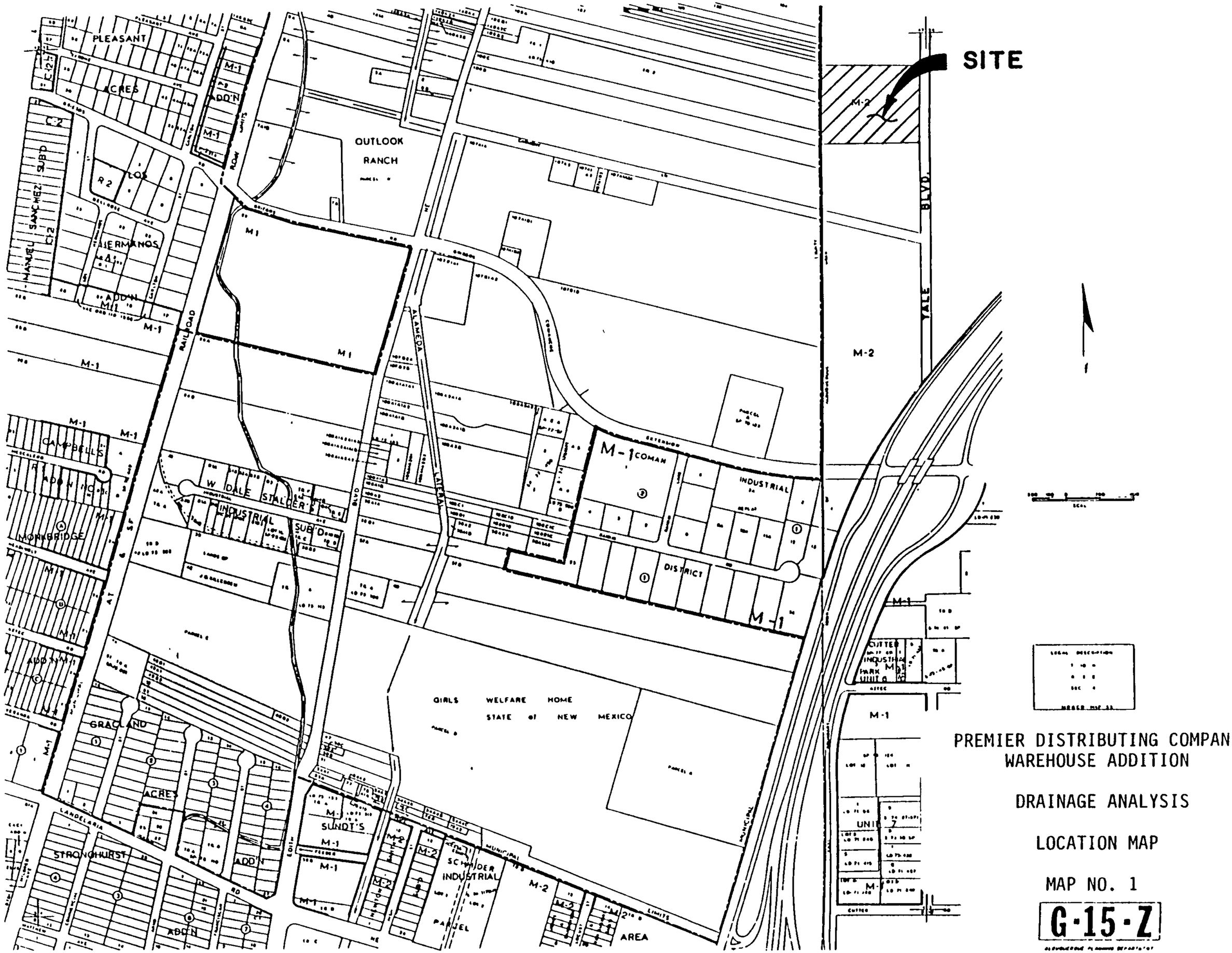
INTRODUCTION

The existing Premier Distributing Company office and warehouse is located on 7.6 developed acres of a 9 acre tract of land. The remaining 1.4 acres are undeveloped. Premier Distributing Company is proposing to develop the remaining 1.4 acres of land. The 9 acre tract of land is located at 4321 Yale Boulevard in the far northeast corner of Section 4, Township 10 North, Range 3 East. The tract is also within the municipal limits and the northeast quadrant of the City of Albuquerque, New Mexico and is platted as Tract A of Land of J.R. Nance. (See Location Map, Map No. 1, Zone Atlas Map G-15.)

The type of development proposed for the tract is an addition to the existing office-warehouse as well as an addition to the asphalt pavement parking area.

It is the intent of this report to provide a drainage plan for the proposed improvements which include the additions to the office-warehouse and the asphalt parking area.

Guidelines for this analysis are based upon Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria for the City of Albuquerque, New Mexico, January 1993.



PREMIER DISTRIBUTING COMPANY
WAREHOUSE ADDITION

DRAINAGE ANALYSIS

LOCATION MAP

MAP NO. 1

G-15-Z

II

EXISTING CONDITIONS

A. GENERAL

The tract of land is bounded on the east by Yale Boulevard, a currently developed street. The areas immediately to the south and west of the site are currently undeveloped. However, the tract is bounded to the north by the New Mexican Kennels and east of Yale Boulevard is the Midtown Business Park.

To date, the southernmost 7.6 acres of the tract are fully developed. There are an additional 1.4 acres that are undeveloped. 100% of the runoff from the entire 9 acre tract is held in two retention ponds at the northwest and southwest corners of the tract.

A drainage report for the southernmost 6.2 acres of development was written in August 1985 by Andrews, Asbury & Robert, Inc. The report was approved and recorded by the City of Albuquerque Engineering Group's Hydrology Section as Report No. 7A of Zone Atlas G-15. The hydrology method used in the 1985 report

is no longer utilized by the City of Albuquerque.

Another drainage report for the southernmost 7.6 acres of development was written in August 1992 by Andrews, Asbury & Robert, Inc. This report was completed to analyze the drainage conditions created by additions to the existing warehouse and the asphalt parking area. This report also re-analyzed the existing 6.2 acres of development using the hydrology methods from a previous version of Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria for the City of Albuquerque, New Mexico, August 1991. Using the new hydrology methods, the southwestern retention pond was found to have sufficient capacity.

There will be no changes to the existing retention pond in the southwest corner of the tract as the additions to the warehouse and parking area will not significantly increase the impervious area contributing to the retention pond. However, it is proposed that the retention pond in the northwest corner of the tract be reduced in surface area to accommodate the addition to the asphalt parking area. The capacity of this retention pond must be re-examined due to the increase in impervious area contributing to the pond and the reduction in surface area of the pond.

B. OFF-SITE AND ON-SITE DRAINAGE

At this time, the only off-site runoff contributing to the tract is from a small area of the New Mexican Kennels to the north. An area of 0.3 acres of the New Mexican Kennels generates a peak flow of 0.9 cfs for a 6-hour, 100 year event (A, A & R, August 1992).

Currently, the entire nine acre tract drains into two on-site retention ponds at the southwest and northwest corners of the tract. The retention ponds are designed to hold the runoff volume generated by a 24-hour, 100 year event. The 1.11 acres (Area B-1, Map No. 2) to be converted to asphalt parking lot presently generate approximately 3.5 cfs peak runoff (A, A & R, August 1992).

NEW MEXICAN KENNELS

NORTHERLY SITE FLOWS RETAINED BY SITE RETENTION POND

AREA O-1 0.3 AC.

MONTBEL PL.

SCALE 1" = 200'

JOAN HILL PLACE

B-1 1.4 AC. UNDEVELOPED

2.8 AC.

DEVELOPED B-2 1.4 AC.

YALE BLVD.

EXISTING DEVELOPMENT A-1 6.2 AC.

MIDTOWN BUSINESS PARK

SOUTHERLY SITE FLOWS RETAINED BY SITE RETENTION POND

EXISTING STORM DRAIN

TEMPORARY RETENTION POND

CARMONY RD.

ALBUQUERQUE BLVD.

PREMIER DISTRIBUTING COMPANY

WAREHOUSE ADDITION
DRAINAGE PLAN
OFF-SITE AND EXISTING CONDITIONS

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
ALBUQUERQUE NEW MEXICO

FILE No.	DRAWN	CHECKED	DATE	
92-637	TTT JB		8-95	MAP NO. 2

III

DEVELOPED CONDITIONS

The site is located in the Hahn Arroyo drainage basin and does not currently have a positive outlet. However, in the future, the Premier Distributing Company tract will be served by a major storm drain system. The system is to be installed under the City of Albuquerque's Special Assessment District 216 and the County of Bernalillo's Special Assessment District BC-83-1. When the storm drain system is complete, the sites within this drainage basin will be provided with an outlet and allowed to drain into the new storm drain system.

At this time, the drainage system for this development is considered an interim drainage system until the Special Assessment District storm drain system is constructed.

INTERIM DRAINAGE SYSTEM

Since there is no positive downstream outlet at the present time, the drainage system will be designed to retain all flows on-site. The system for the additional

development proposed at this time will include the re-sizing of the northwest retention pond to contain the total volume of runoff from the northernmost 2.8 acres. At the time this report was written, the owner was considering additional parking at the north end of the tract. Two scenarios, *Plan "A"* and *Plan "B"*, are considered in the drainage analysis. Plan "A" considers the proposed additional 0.79 acre of asphalt parking lot. Plan "B" considers an additional 0.17 acre, total of 0.96 acre, of asphalt parking lot.

The additions to the warehouse, office and parking lot increase the impervious area contributing to the southwest retention pond by 0.06 acre. Runoff from the office addition (Area I-6, See Map No. 3) is designed to flow northward into the dock area. It is assumed that the additional impervious area within the southerly 6.2 acres will have a minimal effect on the capacity of the southwestern retention pond. Therefore, the volume of runoff flowing into this retention pond will not increase. The capacity of this retention pond may remain unaltered.

The northernmost 2.8 acres of the tract contribute runoff to the northwest retention pond. The addition to the existing parking lot will occur in this area. The parking lot addition increases the impervious area another 0.79 acre (*Plan "A"*) or

0.96 acre (*Plan "B"*). The increase is dependent on the extent of additional paving requested by the owner. As mentioned previously, each scenario is analyzed for its impact on volume of runoff generated. The proposed parking lot addition also encroaches upon the existing northwest retention pond and reduces the available surface area of the pond. Table 1 summarizes the runoff generated under the existing and proposed developed conditions.

Scenario	Additional Parking Lot Area	V_{24}, Volume of Runoff Generated under Existing Conditions (A, A & R, Aug. 1992)	V_{24}, Volume of Runoff Generated under Proposed Developed Conditions
Plan "A"	0.79 Acre	0.3858 Acre-Feet	0.4828 Acre-Feet
Plan "B"	0.96 Acre	0.3858 Acre-Feet	0.5039 Acre-Feet

Table 1
Volume of Runoff Generated by a 24-hour, 100 year Event

FINAL DRAINAGE SYSTEM

If the site is developed further, the northwest retention pond may be filled. The runoff may then flow to the existing southwest retention pond (which will be converted to a detention pond) and allowed to drain at a controlled rate into the storm drain system provided by the Special Assessment District.

IV

DRAINAGE ANALYSIS

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, NE., Albuquerque, N.M. 87108
Telephone (505) 265-6631 • FAX (505) 266-8112

Project PREMIER DISTRIBUTING Sheet ____ of ____
WAREHOUSE ADDITION Job No. 712
By PG Chk'd ____ Date 8/16/95

DRAINAGE ANALYSIS

CRITERIA

DEVELOPMENT PROCESS MANUAL
VOLUME 2 - SECTION 22.2
JANUARY 1993.

STORMS UTILIZED

RUNOFF FLOW RATES - 100 YR 6-HOUR EVENT
RUNOFF VOLUMES - 100 YR 24-HOUR EVENT

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, NE., Albuquerque, N.M. 87108
Telephone (505) 265-6631 • FAX (505) 266-8112

Project PREMIER DISTRIBUTING Sheet 1 of 5
WAREHOUSE ADDITION Job No.
By PG Chk'd Date 8/16/95

NEW DEVELOPMENT FLOWS TO TRENCH DRAIN
100 YEAR - EVENT — SEE MAP NO. 3

AREA I-4: 0.1433 ACRE

LAND TREATMENTS: A = 2% B = 10% C = 0% D = 88%

T_c = 12 MIN

$Q_p = (0.0029^{AC})(1.56^{CFS/AC}) + (0.0143^{AC})(2.28^{CFS/AC}) + (0.1261^{AC})(4.70^{CFS/AC})$

Q_p = 0.6 CFS AT AP-4

AREA I-5: 0.5212 ACRE

LAND TREATMENTS: A = 0% B = 2% C = 0% D = 98%

T_c = 12 MIN

$Q_p = (0.0104^{AC})(2.28^{CFS/AC}) + (0.5108^{AC})(4.70^{CFS/AC})$

Q_p = 2.4 CFS

AREA I-6: 0.0638 ACRE

LAND TREATMENTS: A = 0% B = 0% C = 0% D = 100%

T_c = 12 MIN

$Q_p = (0.0638^{AC})(4.70^{CFS/AC}) = 0.3^{CFS}$

COMBINE FLOWS FROM AREAS I-4, I-5 AND I-6

$Q_{TOTAL} = 0.6^{CFS} + 2.4^{CFS} + 0.3^{CFS} = 3.3$ CFS

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, NE., Albuquerque, N.M. 87108
Telephone (505) 265-6631 • FAX (505) 266-8112

Project PREMIER DISTRIBUTING WAREHOUSE ADDITION Sheet 2 of 5
Job No.
By PG Chk'd Date 8/16/95

NEW DEVELOPMENT FLOWS FOR RETENTION POND "A"

100 YR 6-HOUR EVENT — SEE MAP NO. 3

AREA I-1 : 0.3603 ACRE

LAND TREATMENTS : A = 2% B = 10% C = 0% D = 88%

T_c = 12 MIN.

$Q_p = (0.0072^{AC})(1.56^{CFS/AC}) + (0.0360^{AC})(2.28^{CFS/AC}) + (0.3171^{AC})(4.70^{CFS/AC})$

Q_p = 1.6 CFS AT A.P. - 1

AREA I-2 : 2.1756 ACRE

PLAN A: LAND TREATMENTS (AS PROPOSED):

A = 0% B = 9% C = 6% D = 85%

PLAN B: LAND TREATMENTS (FUTURE 20' PUT NORTH SIDE OF PARKING LOT)

A = 0% B = 5% C = 3% D = 92%

T_c = 12 MIN

PLAN A: $Q_{P_A} = (0.1910^{AC})(2.28^{CFS/AC}) + (0.1273^{AC})(3.14^{CFS/AC}) + (1.8036^{AC})(4.70^{CFS/AC})$

Q_{P_A} = 9.3 CFS

PLAN B: $Q_{P_B} = (0.1061^{AC})(2.28^{CFS/AC}) + (0.0637)(3.14^{CFS}) + (1.9521^{AC})(4.70^{CFS/AC})$

Q_{P_B} = 9.6 CFS

AREA I-3 : 0.2811 ACRE — RETENTION POND "A"

LAND TREATMENT : A = 100% $Q_p = (0.2811^{AC})(1.56^{CFS/AC}) = 0.4$ CFS

COMBINE FLOWS FROM I-1 AND I-2

PLAN A : 1.6 CFS + 9.3 CFS = 10.9 CFS

PLAN B : 1.6 CFS + 9.6 CFS = 11.2 CFS

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
149 Jackson, NE., Albuquerque, N.M. 87108
Telephone (505) 265-6631 • FAX (505) 266-8112

Project PREMIER DISTRIBUTING WAREHOUSE ADDITION Sheet 3 of 5
Job No.
By PG Chk'd Date 8/16/95

RETENTION POND "A"

REQUIRED VOLUME CALCULATIONS

BASIN	AREA		LAND TREATMENTS (ACRE) A	B	C	D
I-1	0.3603 ACRE		0.0072	0.0360	0	0.3171
I-2	2.1219 ACRE	PLAN A	0.0	0.1910	0.1273	1.8036
		PLAN B	0.0	0.1061	0.0637	1.9521
I-3	0.2811 ACRE		0.2811	0.0	0.0	0.0
	2.7633 ACRE					
ACRES		PLAN A:	0.2883	0.2270	0.1273	2.1207
		PLAN B:	0.2883	0.1421	0.0637	2.2692
PERCENT OF TOTAL AREA		PLAN A:	10.4	8.2	4.6	76.7
		PLAN B	10.4	5.1	2.3	82.1

PLAN A:

WEIGHTED E = $(0.104)(0.53^{IN}) + (0.082)(0.78^{IN}) + (0.046)(1.13^{IN}) + (0.767)(2.12^{IN})$

6-HOUR EVENT = 1.79 INCHES

6-HOUR VOLUME:

$$\forall_6 = 1.79\ IN\ (1\ FT/12\ IN)\ (2.7633\ Ac) = 0.4121\ Ac \cdot Ft$$

24-HOUR VOLUME:

$$\forall_{24} = 0.4121\ Ac \cdot Ft + 2.1207\ Ac\ (2.75^{IN} - 2.35^{IN})\ (1\ FT/12\ IN)$$

$$\forall_{24} = 0.4828\ Ac \cdot Ft$$

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Project PREMIER DISTRIBUTING WAREHOUSE ADDITION Sheet 4 of 5
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By PG Chk'd Date 8/16/95

RETENTION POND "A"

REQUIRED VOLUME CALCULATIONS (CONTINUED)

PLAN B:

WEIGHTED 6-HOUR EVENT $E = (0.104)(0.53^{IN}) + (0051.)(0.78^{IN}) + (0.023)(1.13^{IN}) + (0.821)(2.12^{IN})$

$= 1.86$ INCHES

6-HOUR VOLUME:

$$\forall_6 = 1.86^{IN}\left(1^{FT}/12^{IN}\right)(2.7633\ Ac) = 0.4283\ Ac\cdot Ft$$

24-HOUR VOLUME:

$$\forall_{24} = 0.4283\ Ac\cdot Ft + 2.2692^{AC}\left(2.75^{IN} - 2.35^{IN}\right)\left(1^{FT}/12^{IN}\right)$$

$$\forall_{24} = 0.5039\ Ac\cdot Ft$$

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RETENTION POND "A" CAPACITY

$\forall_{24_A}$ = 0.4828 AC·FT PLAN A
$\forall_{24_B}$ = 0.5039 AC·FT PLAN B

AREA OF TOP AT ELEVATION 5034.19 = .8520 FT²

AREA OF BOTTOM AT ELEVATION 5030.19 = 3890 FT²

BOTTOM ELEVATION = 5030.19 (3:1 SLOPE)

VOLUME OF POND "A"

$$\forall_A = \left[\frac{8520\ FT^2 + 3890\ FT^2}{2}\right](4.0\ FT)\left(\frac{1\ AC\cdot FT}{43560\ FT^3}\right) = 0.5698\ AC\cdot FT$$

BOTTOM ELEVATION = 5030.69 (3.4:1 SLOPE)

$$\forall_A = \left[\frac{8520 + 3890}{2}\right](3.5')\left(\frac{1\ AC\cdot FT}{43560\ FT^3}\right) = 0.4986\ AC\cdot FT$$

BOTTOM ELEVATION = 5030.00 (3:1 SLOPE) A_{BOT} = 3717 Ft²

$$\forall_A = \left[\frac{8520 + 3717}{2}\right](4.19)\left(1/43560\right) = 0.5885\ AC\cdot FT$$

RETENTION POND "A" WITH BOTTOM ELEVATION 5030.19
HAS A TOTAL CAPACITY OF 0.5698 AC·FT = $\forall_A$

FOR PLAN "A": $\forall_A$ = 0.5698 AC·FT > 0.4828 AC·FT = $\forall_{24_A}$ ✓ OK

FOR PLAN "B": $\forall_A$ = 0.5698 AC·FT > 0.5039 AC·FT = $\forall_{24_B}$ ✓ OK

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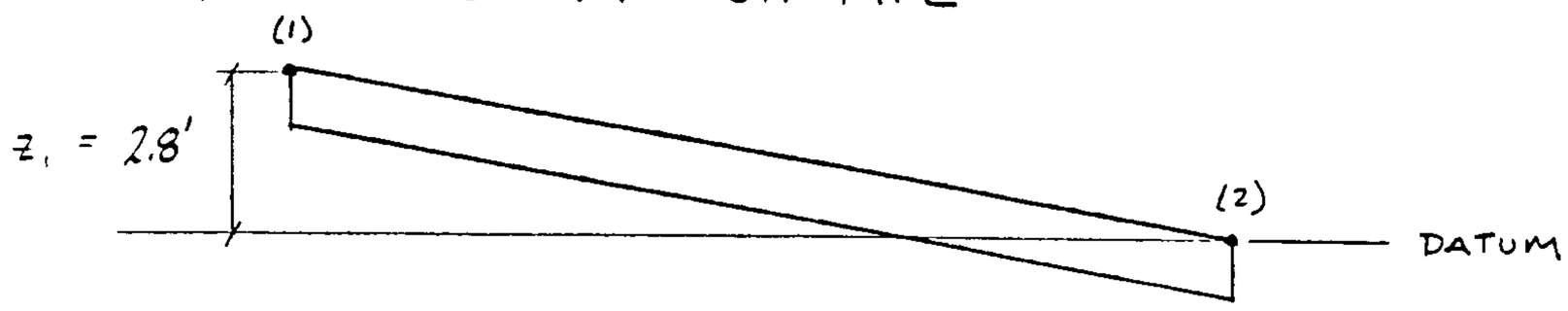
HYDRAULIC CALCULATIONS

FLOW CAPACITY

GIVEN: 112 LINEAR FT PVC PIPE, 12" DIA.

ΔELEVATION = 2.8 FT

FIND: Q THROUGH PIPE



ENERGY EQUATION

$$z_1 + \frac{P_1}{\gamma} + \frac{V_1^2}{2g} = z_2 + \frac{P_2}{\gamma} + \frac{V_2^2}{2g} + h_f$$

ASSUME: $P_1 = P_2 = 0$; $Q_1 = Q_2 \Rightarrow$ $Q_1 = V_1 A = Q_2 = V_2 A$

$$V_1 = V_2$$

$$z_1 = h_f \Rightarrow 2.8' = h_f$$

DARCY-WEISBACH EQN.

$$h_f = \frac{fL}{d} \cdot \frac{V^2}{2g}$$

ASSUME VALUE OF f, SOLVE FOR V

$$V^2 = h_f \left[2gd/fL \right]$$ ASSUME: $f_A = 0.012$. FOR PVC PIPE

$$V^2 = 2.8 \left[\frac{2(32.2\ FT/S^2)(1\ \cancel{FT})}{0.012\ (112\ \cancel{FT})} \right] = 134.17\ FT^2/S^2$$

$$V = 11.58\ FT/S$$

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HYDRAULIC CALCULATIONS (CONTINUED)

ASSUME WATER TEMPERATURE IS 50° F

AT 50° F, KINEMATIC VISCOSITY, $\nu = 1.410 \times 10^{-5}$ FT²/S

REYNOLD'S NUMBER, Re

$$Re = \frac{Vd}{\nu}$$

$$Re = \frac{11.58 \text{ FT/S } (1.0 \text{ FT})}{1.410 \times 10^{-5} \text{ FT}^2/\text{S}} = 8.21 \times 10^5$$

ASSUME $\frac{\epsilon}{D}$ = SMOOTH FOR PVC PIPE (GUPTA p. 550)

USING MOODY DIAGRAM, FIND f IF $Re = 8.2 \times 10^5$
AND ϵ/D = SMOOTH

$$f \approx 0.012 = f_A$$

CALCULATE Q

$$Q = VA \qquad A = \frac{\pi}{4} D^2$$

$$Q = 11.58 \text{ FT/S } \left(\frac{\pi}{4}(1)^2\right)$$

$$Q = 9.1 \text{ FT}^3/\text{S}$$

FOR 112' - 12" DIA. PVC
TOTAL FLOW @ AP-5 = 3.3 FT³/S < 9.1 FT³/S ✓OK

MANNING EQUATION CHECK

$$Q = \frac{1.486}{n} A R^{2/3} S_f^{1/2}$$

$$Q = \frac{1.486}{0.010} \left(\pi/4 (1)^2\right)\left(\frac{\pi/4 (1)^2}{\pi (1)}\right)^{2/3} (0.025)^{1/2}$$

$Q = 7.3$ CFS

$n = 0.010$ PVC
R = AREA/CIRCUMFERENCE (FLOWING FULL)
A = AREA = $\frac{\pi}{4} d^2$
S_f = FRICTION SLOPE

TOTAL FLOW @ AP-5 = 3.3 FT³/S < 7.3 FT³/S = CAPACITY ✓ OK

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HYDRAULIC CALCULATIONS (CONTINUED)

FLOW CAPACITY

GIVEN: 354 FT. OF 18" DIA. RCP
ΔELEVATION = 1.98 FT

FIND: Q THRU PIPE

SOLUTION: USING SAME METHOD AS BEFORE

FROM ENERGY EQUATION

$$h_f = 1.98 \text{ FT}$$

USING DARCY-WEISBACH EQUATION

$$h_f = \frac{fL}{d} \cdot \frac{V^2}{2g}$$

ASSUME F, SOLVE FOR V ASSUME $f_A = 0.025$

$$V^2 = h_f\left[2gd/f_A L\right]$$

$$= 1.98\left[\frac{2(32.2 \text{ FT/S2})(1.5 \text{ FT})}{0.025\ (354 \text{ FT})}\right]$$

$$V^2 = 21.6 \text{ FT}^2/\text{S}^2$$

$$V = 4.65 \text{ FT/S}$$

ASSUME WATER TEMP = 50° F

$$\nu = 1.410 \times 10^{-5} \text{ FT}^2/\text{S} \quad @ \ 50° \text{F}$$

$$R_e = \frac{Vd}{\nu} = \frac{4.65(1.5)}{1.41 \times 10^{-5}} = 4.9 \times 10^5$$

$$\epsilon = 40 \times 10^{-4} \text{ FT (GUPTA, p550)}$$

$$\epsilon/D = 40 \times 10^{-4}/1.5 = 0.0027$$

FROM MOODY DIAGRAM W/ $\epsilon/D = 0.0027$ & $R_e = 4.9 \times 10^5$

$$f \approx 0.025 = f_A = 0.025$$

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HYDRAULIC CALCULATIONS (CONTINUED)

CALCULATE Q

$Q = VA$ $\qquad A = \frac{\pi}{4} d^2$

$Q = 4.65\ FT/S \left(\frac{\pi}{4}(1.5)^2\right)$

$Q = 8.2\ FT^3/S$

FOR 354'-18" DIA. RCP
TOTAL FLOW @AP-5 $= 3.3\ FT^3/S < 8.2\ FT^3/S$ ✓OK

MANNING EQUATION CHECK

$$Q = \frac{1.486}{n} A R^{2/3} S_f^{1/2}$$

$n = 0.013$ FOR CONCRETE

$$Q = \frac{1.486}{0.013} \left(\frac{\pi}{4}(1.5)^2\right) \left(\frac{\frac{\pi}{4}(1.5)^2}{\pi(1.5)}\right)^{2/3} (0.0056)^{1/2}$$

$Q = 7.9$ CFS

TOTAL FLOW @ AP-5 $= 3.3\ FT^3/S < 7.9\ FT^3/S$ ✓OK

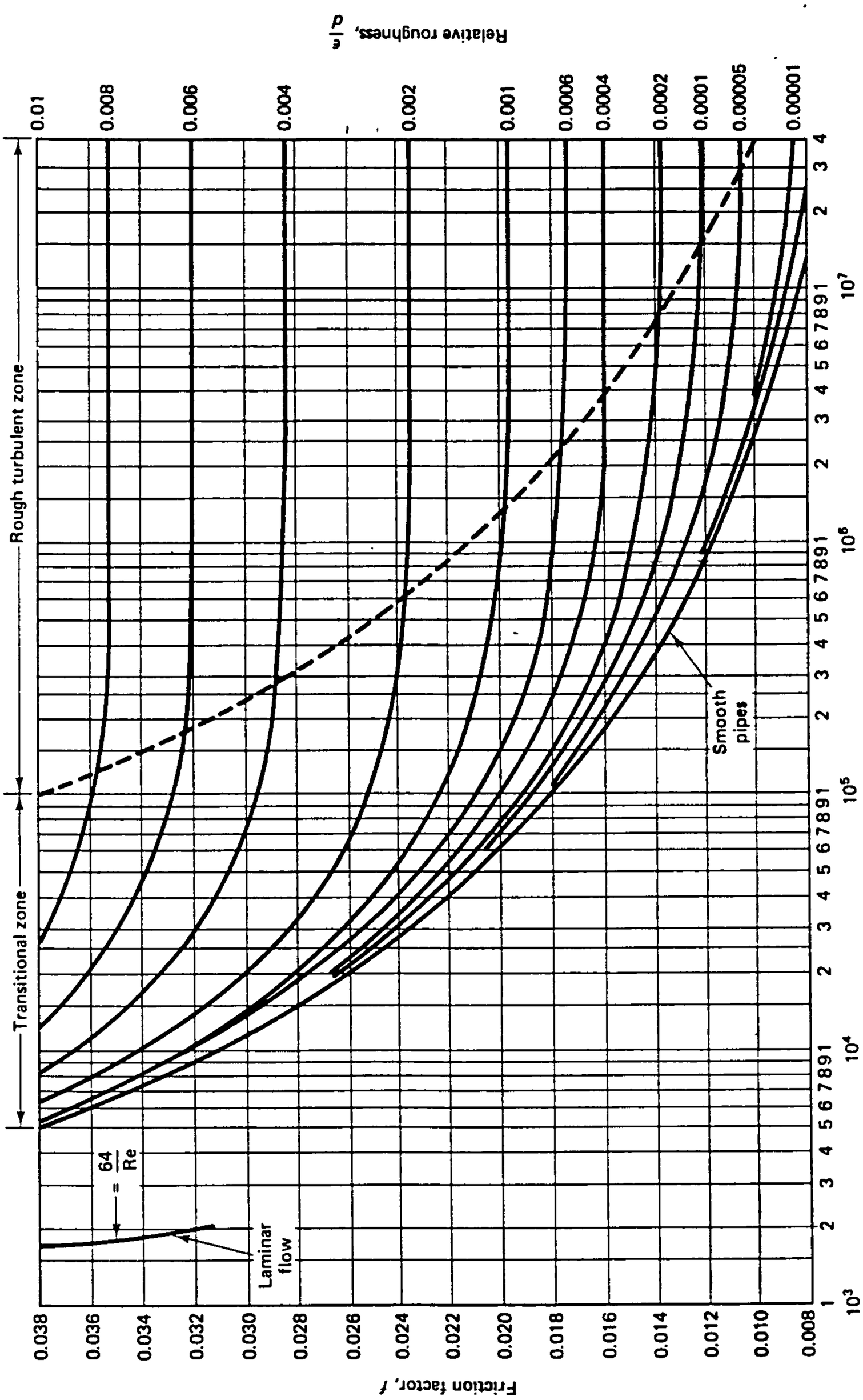

Figure 11.4 Moody diagram for friction factor for pipes.

2. V
3. A
4. T
5. S
6. E
7. R
8. F

Alterna
10^5 and ϵ/d =

11.2.3 Appli

Darcy–Weist

1. It is use known
2. It is use the hea
3. It is use a know

In the f values, Re ca flow and eq. be solved for

Howeve Since Re is u tain groups o direct determi comprising th

1. A value
2. Using t comput
3. Re and
4. Steps 2

GUPTA, R.S.

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