City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 12, 1999

BJM Development Consultants
4409 Karrol Rd. SW
Albuquerque, New Mexico 87105

RE: DRAINAGE REPORT FOR THE ADDITION TO DIRECT POWER (G-16/D82A)
ENGINEER'S STAMP DATED 2/8/99

Dear Mr. Montoya:

Based on the Information Provided on your February 8, 1999 submittal, the above referenced site is approved for building permit.

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

Also, Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

If I can be of any further assistance, please feel free to contact me at 924-3330.

C: File

Sincerely,

John P. Murray, P.E.
Hydrology

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 17, 2000

Harold Bennett, P.E.
BJM Development Consultant
4409 Karrol Road SW
Albuquerque, NM 87121

RE: DIRECT POWER, Addition (G16-D82A). ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY APPROVAL. ENGINEER'S STAMP DATED OCTOBER 22, 2000.

Dear Mr. Bennett:

Based on the information provided on your October 23, 2000 submittal, the above referenced project is approved for Certificate of Occupancy.

The SO#19 Permit work cited in C.O.A. letter of October 25, 2000 was accomplished in the original phase of the project.

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

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

October 25, 2000

Harold L. Bennett, P.E.
Mr. Bernie Montoya
BJM Development Consultant
4409 Karrol Road, SW
Albuquerque, NM 8712

RE: ENGINEER'S CERTIFICATION FOR ADDITION TO DIRECT POWER (G-16/ D082A), ENGINEER'S STAMP DATED MARCH 3, 2000, CERTIFICATION DATED OCTOBER 22, 2000.

Dear Mr. Bennett,

It appears that this project was never issued an SO 19, which it required to tie the drainage line into the catch basin on Vassar Place, NE, at the northeast corner of the site. Please add a sign-off block to a copy of the plan for the City inspector, have him inspect and approve your installation and return the signed copy to this office at your earliest convenience so that we may approve the Certificate of Occupancy.

If you have any questions, please call me at 924-3988.

Sincerely,

Stuart Reeder, P.E.

Stuart Reeder, P.E.
Hydrology Division

xc: Pam Lujan, Permits
Whitney Reierson
File

DRAINAGE INFORMATION SHEET

APPLICANT'S NAME: ADDITION TO DIRECT POWER ZONE ATLAS/DRNG. FILE #: G16-D82A

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

LEGAL DESCRIPTION: TRACT B-1-K COMANCHE BUSINESS PARK

CITY ADDRESS: 4000 Vassar NE

ENGINEERING FIRM: BJM Development Consultant CONTACT: Bernie J. Montoya

ADDRESS: 4409 Karrol Rd SW. PHONE: 877-4841 OR 450-5851

OWNER: Keven Goodreau CONTACT: _____

ADDRESS: _____ PHONE: _____

ARCHITECT: Rick Bennett & Associates CONTACT: Rick Bennett

ADDRESS: _____ PHONE: 242-1959

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:
- ___ DRAINAGE REPORT
- ___ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- ✓ ENGINEER'S CERTIFICATION
- ___ OTHER AS-BUILT PLAN

PRE-DESIGN MEETING:
- ___ YES
- ✓ 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
- ✓ CERTIFICATE OF OCCUPANCY APPROVAL
- ___ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ S.A.D. DRAINAGE REPORT
- ___ DRAINAGE REQUIREMENTS
- ___ SUBDIVISION CERTIFICATION
- ___ OTHER _____ (SPECIFY)

DATE SUBMITTED: 10/23/2000

BY: BJ MONTOYA

Revised 02/98

RECEIVED
OCT 23 2000
HYDROLOGY SECTION

G-16- D82A

DRAINAGE REPORT

FOR

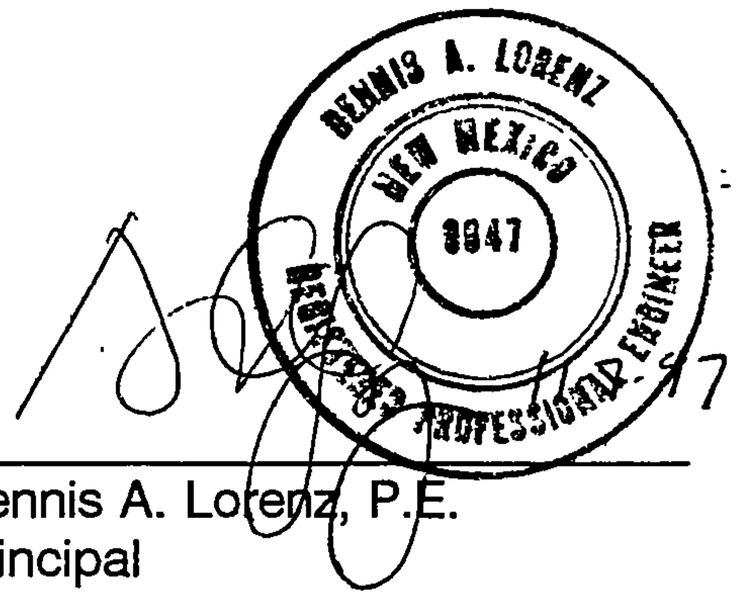
DIRECT POWER

Albuquerque, New Mexico

Prepared by:

BRASHER & LORENZ, INC.
Consulting Engineers
2201 San Pedro NE Building 1, Suite 210
Albuquerque, New Mexico 87110

November 1997



Dennis A. Lorenz, P.E.
Principal

TABLE OF CONTENTS

PURPOSE AND SCOPE

Pursuant to the established Drainage Ordinance for the City of Albuquerque and the Development Process Manual, this Grading and Drainage Plan outlines the drainage management criteria for controlling developed runoff from the project site. The property is to be developed as the Direct Power facility, with associated paving, landscaping, utility, grading, and drainage improvements.

EXISTING CONDITIONS

The project site is approximately 1.033 acres in size and is located on Vassar Place NE. The project site is particularly described as Tract B-1-K, Comanche Business Park. The site is bounded by Vassar Place on the north, an interim retention pond on the east, Vassar Drive on the west, and developed IP property on the south. Presently the site is undeveloped. The site is sparsely covered with native vegetation. Evidence of recent earthmoving activity is present. Site topography slopes from east to west at approximately 3%. All excess runoff drains across the site from east to west. Vassar Place NE has recently been improved with curb, gutter and asphalt pavement. Vassar Place conveys all runoff west to a group of drop inlets which outfall at an interim retention pond located on Tract B-1-J. The interim pond will retain runoff generated by the Comanche Business Park until downstream improvements are constructed by SAD 216. As shown by the attached FIRM Panel, a flood hazard zone is located just south of the site within an existing 30' public drainage easement. This floodplain is to be removed by the SAD 216 improvements.

DRAINAGE MASTERPLAN

The original DPM for this site was prepared by Andrews, Asbury and Robert for Special Assessment District 216. The DPM recommended downstream improvements to increase capacity of an existing storm drain system located in Vassar Drive NE. Due to limited downstream capacity, discharge from this site and the Comanche Business Park is limited to 3.61 cfs per acre.

The DPM for the Comanche Business Park was prepared by Jeff Mortensen & Associates. The DPM utilizes the drainage management conditions established by the SAD 216 DPM. The Vassar Drive storm drain system has been rendered non-functional by blocking the drop inlets. Therefore, an interim retention pond has been constructed on Tract B-1-J for use by the Comanche Business Park. A group of drop inlets located at a sump in Vassar Place NE conveys all runoff to the interim retention pond. Upon construction of the SAD 216 improvements the retention pond will be reclaimed. Per the SAD 216 DPM all property within the Comanche Business Park is required to limit developed peak discharge rates to 3.61 cfs per acre.

DOWNSTREAM CAPACITY

Per the DMP for Comanche Business Park this site is programmed to discharge all excess runoff to the Vassar Place storm drain system, which on an interim basis conveys the flow to the retention pond located on Tract B-1-J. Unfortunately, topography

precludes this site from draining to the Vassar system. The southwest corner of the property is positioned approximately 5 feet lower than the drop inlets located in Vassar Place, and below the predicted water surface in the retention pond. It is technically possible to access the storm drain located along the east and south project boundaries, however, the position of the 100 year water surface within the retention pond (5065.0) could create a backwater condition which could result in property damage.

This Plan recommends routing as much of the site as possible through a small detention pond located along Vassar Place. A majority of the roof area and adjacent storage yard will be routed through the pond and discharge into an existing drop inlet located in Vassar Place. Due to topography, the remaining acreage will free discharge to the west into Vassar Drive and contribute to the floodplain. This is a temporary condition which will be corrected by construction of the SAD 216 drainage improvements. The resulting developed discharge from the site is 3.50 cfs, which is less than allowed by the DMP.

The Vassar Place improvements, which have recently been constructed, rout all flows from the plan area into the interim retention pond, thereby reducing the discharge to Vassar Drive by 52.3 cfs. Direct Power proposes to release 2.8 cfs into Vassar Drive. The net effect is a reduction of flow to Vassar Drive of 49.5 cfs.

DEVELOPED CONDITIONS

As shown by the Plan, the project consists of the Direct Power facility and associated grading, drainage, paving, utility and landscaping improvements. The Plan shows the contours and elevations required to properly grade and construct the required paving and drainage improvements. The direction of drainage flows are given by flow arrows and the project hydrology is tabulated for both existing and developed conditions.

All drainage flows will be managed on-site and discharge to existing improvements. Per the project hydrology, the developed peak discharge for the project is expected to exceed the 3.61 cfs per acre requirement. Therefore, this site will utilize a small detention pond located along Vassar Place to reduce peak flows. The detention pond accepts runoff from the proposed building and adjoining storage area along Vassar Place. As a result, the total peak discharge from the site is estimated at 3.50 cfs, or a unit rate of 3.40 cfs per acre, which complies with the DMP..

TEMPORARY EROSION CONTROL

Temporary erosion control will be required during the construction phase to protect downstream property and improvements from sediment and uncontrolled runoff. This Plan recommends the placement of silt fencing along the west, north and south project boundaries to mitigate sediment deposition in the adjoining public street and downstream drainage facilities during construction. It is the Contractor's responsibility to properly maintain these facilities during the construction phase of the project.

CALCULATIONS

The calculations shown hereon define the 100 year/6 hour design storm falling with the

project area under existing and developed conditions. The Hydrology is per "Section 22.2, Part A, DPM, Vol 2" dated January 1993. Calculations are provided herein which verify downstream capacity, detention pond routing, and drainage infrastructure design.

DOWNSTREAM CAPACITY

DIRECT POWER	7013		/
	11.7.97		

① DOWNSTREAM CAPACITY

SINCE SITE CANNOT ENTIRELY DRAIN TO INTERIM RETENTION PONDS, COMPARE FLOW TO VASSAR DRIVE - PRE + POST DMP IMPROVEMENTS

PER DMP:

HISTORIC Q_{100} TO VASSAR =			
BASINS	B-3A	43.1	CFS
	B-2A-1	2.0	
	1	2.1	
	2	5.6	
	3	1.5	
		54.3	CFS

AFTER DMP IMPROVEMENTS, WHICH ARE NOW IN PLACE:

BASINS B-3A, 1, 2 & 3 DRAIN TO INTERIM RETENTION POND.

FLOW THAT WILL DRAIN TO VASSAR:

BASIN	B-2A-1	2.0	CFS
DIRECT POWER BASINS	A	1.32	
	B	1.47	

DIRECT POWER	7013		/
	11.7.97		

TOTAL FLOW TO VASSAR DRIVE
= 4.79 CFS

=> THIS IS A DECREASE FROM 54.3 CFS
TO 4.79 CFS. GIVEN THIS BASINS
A + B FROM DIRECT POWER SHOULD
BE GRANTED FREE DISCHARGE TO
VASSAR DRIVE

INFRASTRUCTURE DESIGN

DIRECT POWER	7013		/
	11.7.97		

① POND ROUTING

GIVEN: PER DMP MAX DISCHARGE
FOR SITE = 3.61 CFS/AC

SITE A = 1.033 AC

Q_{ALLOW} = 1.033 (3.61) = 3.73 CFS

Q_{SITE} = 4.17 CFS < POND REQ'D >

$Q_{BASIN\ 'A'}$ = 1.32 CFS
$Q_{BASIN\ 'B'}$ = 1.47 CFS
$Q_{BASIN\ 'C'}$ = 1.42 CFS

ROUTE BASIN 'C' THRU POND
LIMIT Q_{OUT} TO 3.73 - 1.32 - 1.47 = 0.94 CFS

(A) SIZE OUTLET

LIMIT OUTLET TO 0.94 CFS

DIA	AREA (SF)
4"	0.087
6"	0.196

$Q = CA\sqrt{2gh}$
C = 0.60

H+	Q 4"	Q 6"
1'	0.42	0.94
2'	0.59	1.33

DIRECT POWER	7013		
	11.7.97		

(B) ROUTE RES TABLE

⇒ USE 6" PIPE

QOUT CFS	STORAGE AF	ELEV MSLD
0	0	65.0
0.82	0.01033	66.0
1.05	0.01782	66.5

PER ATHYMO OUTPUT:

Q_{OUT} = 0.89 CFS

VOL = 0.0125 AF = 545 CF

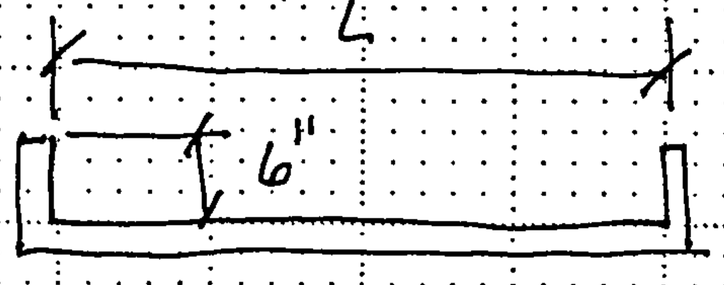
WSE = 66.14

⇒ TOTAL Q SITE = 3.50 CFS < 3.73 CFS

< Q ALLOW

DIRECT POWER	7013		/
	11-7-97		

② POND SPILLWAY



$Q_{100} = 1.42$ CFS

BY WEIR EQN $Q = CLH^{3/2}$

$H = 0.5'$

$C = 2.50$

$L = Q / CH^{3/2} = 1.61'$

⇒ USE $2'$

BRASHER & LORENZ, INC.

AHYMO OUTPUT

```
**************************************************************************
*                        DIRECT POWER
*                     ON-SITE HYDROLOGY
**************************************************************************
START              TIME=0.0  PUNCH CODE=0
RAINFALL           TYPE=1  RAIN QUARTER=0.0  RAIN ONE=2.01
                   RAIN SIX=2.35  RAIN DAY=2.75  DT=0.03333 HRS
* EXISTING SITE
COMPUTE NM HYD     ID=1  HYD NO=EX.SITE  DA= 0.001614 SQ MI
                   PER A=100  PER B=0  PER C=0  PER D=0
                   TP=0.1333 HR  MASS RAIN=-1
* DEVELOPED SITE - PHASE ONE
COMPUTE NM HYD     ID=2  HYD NO=DEV.SITE  DA=0.001614 SQ MI
                   PER A=0  PER B=9  PER C=29  PER D=62
                   TP=0.1333 HR  MASS RAIN=-1
* DEVELOPED BASIN "A"
COMPUTE NM HYD     ID=3  HYD NO=DEV.A  DA=0.000506 SQ MI
                   PER A=0, PER B=9  PER C=29  PER D=62
                   TP=0.1333 HR  MASS RAIN=-1
* DEVELOPED BASIN "B"
COMPUTE NM HYD     ID=4  HYD NO=DEV.B  DA=0.000563 SQ MI
                   PER A=0  PER B=9  PER C=29  PER D=62
                   TP=0.1333 HR  MASS RAIN=-1
* DEVELOPED BASIN "C"
COMPUTE NM HYD     ID=5  HYD NO=DEV.C  DA=0.000545 SQ MI
                   PER A=0  PER B=9  PER C=29  PER D=62
                   TP=0.1333 HR  MASS RAIN=-1
* ROUTE BASIN "C" THRU DETENTION POND TO LIMIT SITE DISCHARGE TO 3.61 CFS/AC
* MAXIMUM ALLOW Q100 FROM DEV SITE = 3.73 CFS
ROUTE RESERVOIR    ID=6  HYD NO=POND.OUT  INFLOW ID=5  CODE=5
                   OUT(CFS)   STORAGE(AC-FT)   ELEV(FT)
                   0          0                65.0
                   0.82       0.01033          66.0
                   1.05       0.01782          66.5
* DETERMINE TOTAL SITE Q100 BY ADDING HYDROGRAPHS
* FIRST ADD BASINS "A" AND "B"
ADD HYD            ID=7  HYD NO=DEV.A+B  ID I=3  ID II=4
* NOW ADD BASINS "A' AND "B" TO "C' WHICH IS ROUTED THRU POND
ADD HYD            ID=8  HYD NO=TOTDEV.SITE  ID I=6  ID II=7
PRINT HYD          ID=1  CODE=5
PRINT HYD          ID=2  CODE=5
PRINT HYD          ID=3  CODE=5
PRINT HYD          ID=4  CODE=5
PRINT HYD          ID=5  CODE=5
PRINT HYD          ID=6  CODE=5
PRINT HYD          ID=7  CODE=5
PRINT HYD          ID=8  CODE=5
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =11/09/1997

INPUT FILE = a:7013.dat USER NO.= BRASHERR.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.350
COMPUTE NM HYD	EX.SITE	-	1	.00161	1.61	.046	.53121	1.533	1.563	PER IMP= .00
COMPUTE NM HYD	DEV.SITE	-	2	.00161	4.17	.147	1.70387	1.500	4.041	PER IMP= 62.00
COMPUTE NM HYD	DEV.A	-	3	.00051	1.32	.046	1.70387	1.500	4.081	PER IMP= 62.00
COMPUTE NM HYD	DEV.B	-	4	.00056	1.47	.051	1.70387	1.500	4.074	PER IMP= 62.00
COMPUTE NM HYD	DEV.C	-	5	.00055	1.42	.050	1.70387	1.500	4.074	PER IMP= 62.00
ROUTE RESERVOIR	POND.OUT	5	6	.00055	.89	.050	1.70337	1.633	2.541	AC-FT= .012
ADD HYD	DEV.A+B	3& 4	7	.00107	2.79	.097	1.70338	1.500	4.077	
ADD HYD	TOTDEV.SITE	6& 7	8	.00161	3.50	.147	1.70324	1.533	3.392	
FINISH										

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 11/09/1997
         START TIME (HR:MIN:SEC) = 19:02:27     USER NO.= BRASHERE.I01
         INPUT FILE = a:7013.dat

**********************************************************************************
*                              DIRECT POWER
*                            ON-SITE HYDROLOGY
**********************************************************************************
START                TIME=0.0  PUNCH CODE=0
RAINFALL             TYPE=1  RAIN QUARTER=0.0  RAIN ONE=2.01
                     RAIN SIX=2.35  RAIN DAY=2.75  DT=0.03333 HRS

               COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
               DT =    .033330 HOURS       END TIME =     5.999400 HOURS
                  .0000   .0016   .0033   .0049   .0066   .0084   .0102
                  .0120   .0139   .0158   .0178   .0199   .0219   .0241
                  .0263   .0286   .0309   .0333   .0358   .0384   .0411
                  .0439   .0467   .0497   .0529   .0561   .0596   .0631
                  .0669   .0709   .0751   .0807   .0866   .0930   .1066
                  .1371   .1840   .2514   .3434   .4644   .6186   .8106
                 1.0449  1.2624  1.3533  1.4300  1.4982  1.5602  1.6174
                 1.6704  1.7200  1.7664  1.8102  1.8514  1.8904  1.9273
                 1.9622  1.9953  2.0268  2.0566  2.0850  2.0915  2.0976
                 2.1033  2.1088  2.1140  2.1191  2.1239  2.1285  2.1329
                 2.1373  2.1414  2.1454  2.1494  2.1531  2.1568  2.1604
                 2.1639  2.1673  2.1706  2.1739  2.1771  2.1802  2.1832
                 2.1862  2.1891  2.1919  2.1947  2.1975  2.2002  2.2028
                 2.2054  2.2080  2.2105  2.2130  2.2154  2.2178  2.2202
                 2.2225  2.2248  2.2270  2.2293  2.2315  2.2336  2.2358
                 2.2379  2.2399  2.2420  2.2440  2.2460  2.2480  2.2500
                 2.2519  2.2538  2.2557  2.2576  2.2594  2.2612  2.2631
                 2.2648  2.2666  2.2684  2.2701  2.2718  2.2735  2.2752
                 2.2769  2.2785  2.2802  2.2818  2.2834  2.2850  2.2866
                 2.2881  2.2897  2.2912  2.2928  2.2943  2.2958  2.2973
                 2.2987  2.3002  2.3017  2.3031  2.3045  2.3060  2.3074
                 2.3088  2.3102  2.3115  2.3129  2.3143  2.3156  2.3169
                 2.3183  2.3196  2.3209  2.3222  2.3235  2.3248  2.3261
                 2.3273  2.3286  2.3298  2.3311  2.3323  2.3335  2.3348
                 2.3360  2.3372  2.3384  2.3396  2.3408  2.3419  2.3431
                 2.3443  2.3454  2.3466  2.3477  2.3488  2.3500

* EXISTING SITE
COMPUTE NM HYD       ID=1  HYD NO=EX.SITE  DA= 0.001614 SQ MI
                     PER A=100  PER B=0  PER C=0  PER D=0
                     TP=0.1333 HR  MASS RAIN=-1

    K =   .160154HR    TP =   .133300HR    K/TP RATIO =  1.201459     SHAPE CONSTANT, N =  2.957910
    UNIT PEAK =   3.3705    CFS   UNIT VOLUME =    .9954       B =   278.37      P60 = 2.0100
    AREA =      .001614 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

* DEVELOPED SITE - PHASE ONE
COMPUTE NM HYD       ID=2  HYD NO=DEV.SITE  DA=0.001614 SQ MI
                     PER A=0  PER B=9  PER C=29  PER D=62
                     TP=0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   3.9507    CFS   UNIT VOLUME =    .9965       B =   526.28      P60 = 2.0100
```

```
    AREA =      .001001 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .113282HR    TP =   .133300HR    K/TP RATIO =   .849829    SHAPE CONSTANT, N =  4.188726
    UNIT PEAK =   1.6912    CFS   UNIT VOLUME =    .9926      B =   367.56      P60 = 2.0100
    AREA =      .000613 SQ MI    IA =    .38553 INCHES    INF =    .92947 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

* DEVELOPED BASIN "A"
COMPUTE NM HYD     ID=3  HYD NO=DEV.A  DA=0.000506 SQ MI
                   PER A=0  PER B=9  PER C=29  PER D=62
                   TP=0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000    SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   1.2386    CFS   UNIT VOLUME =    .9897      B =   526.28      P60 = 2.0100
    AREA =      .000314 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .113282HR    TP =   .133300HR    K/TP RATIO =   .849829    SHAPE CONSTANT, N =  4.188726
    UNIT PEAK =   .53020    CFS   UNIT VOLUME =    .9757      B =   367.56      P60 = 2.0100
    AREA =      .000192 SQ MI    IA =    .38553 INCHES    INF =    .92947 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

* DEVELOPED BASIN "B"
COMPUTE NM HYD     ID=4  HYD NO=DEV.B  DA=0.000563 SQ MI
                   PER A=0  PER B=9  PER C=29  PER D=62
                   TP=0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000    SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   1.3781    CFS   UNIT VOLUME =    .9911      B =   526.28      P60 = 2.0100
    AREA =      .000349 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .113282HR    TP =   .133300HR    K/TP RATIO =   .849829    SHAPE CONSTANT, N =  4.188726
    UNIT PEAK =   .58992    CFS   UNIT VOLUME =    .9779      B =   367.56      P60 = 2.0100
    AREA =      .000214 SQ MI    IA =    .38553 INCHES    INF =    .92947 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

* DEVELOPED BASIN "C"
COMPUTE NM HYD     ID=5  HYD NO=DEV.C  DA=0.000545 SQ MI
                   PER A=0  PER B=9  PER C=29  PER D=62
                   TP=0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000    SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   1.3340    CFS   UNIT VOLUME =    .9911      B =   526.28      P60 = 2.0100
    AREA =      .000338 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .113282HR    TP =   .133300HR    K/TP RATIO =   .849829    SHAPE CONSTANT, N =  4.188726
    UNIT PEAK =   .57106    CFS   UNIT VOLUME =    .9779      B =   367.56      P60 = 2.0100
    AREA =      .000207 SQ MI    IA =    .38553 INCHES    INF =    .92947 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

* ROUTE BASIN "C" THRU DETENTION POND TO LIMIT SITE DISCHARGE TO 3.61 CFS/AC
* MAXIMUM ALLOW Q100 FROM DEV SITE = 3.73 CFS
ROUTE RESERVOIR    ID=6  HYD NO=POND.OUT  INFLOW ID=5  CODE=5
```

OUT(CFS)	STORAGE(AC-FT)	ELEV(FT)
0	0	65.0
0.82	0.01033	66.0
1.05	0.01782	66.5

* * * * * * * * * * * * * * * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	65.00	.000	.00
.17	.00	65.00	.000	.00
.33	.00	65.00	.000	.00
.50	.00	65.00	.000	.00
.67	.00	65.00	.000	.00
.83	.00	65.00	.000	.00
1.00	.00	65.00	.000	.00
1.17	.00	65.00	.000	.00
1.33	.34	65.12	.001	.10
1.50	1.42	65.85	.009	.70
1.67	.74	66.13	.012	.88
1.83	.44	65.85	.009	.70
2.00	.30	65.58	.006	.47
2.17	.14	65.37	.004	.30
2.33	.06	65.19	.002	.16
2.50	.03	65.10	.001	.08
2.67	.02	65.05	.001	.04
2.83	.01	65.03	.000	.02
3.00	.01	65.02	.000	.02
3.17	.01	65.01	.000	.01
3.33	.01	65.01	.000	.01
3.50	.01	65.01	.000	.01
3.67	.01	65.01	.000	.01
3.83	.01	65.01	.000	.01
4.00	.01	65.01	.000	.01
4.17	.01	65.01	.000	.01
4.33	.01	65.01	.000	.01
4.50	.01	65.01	.000	.01
4.67	.01	65.01	.000	.01
4.83	.01	65.01	.000	.01
5.00	.01	65.01	.000	.01
5.17	.01	65.01	.000	.01
5.33	.01	65.01	.000	.01
5.50	.01	65.01	.000	.01
5.67	.01	65.01	.000	.01
5.83	.01	65.01	.000	.01
6.00	.01	65.01	.000	.01
6.17	.00	65.01	.000	.01
6.33	.00	65.00	.000	.00

PEAK DISCHARGE = .886 CFS - PEAK OCCURS AT HOUR 1.63
MAXIMUM WATER SURFACE ELEVATION = 66.144
MAXIMUM STORAGE = .0125 AC-FT INCREMENTAL TIME= .033330HRS

```
* DETERMINE TOTAL SITE Q100 BY ADDING HYDROGRAPHS
* FIRST ADD BASINS "A" AND "B"
ADD HYD            ID=7  HYD NO=DEV.A+B  ID I=3  ID II=4
* NOW ADD BASINS "A' AND "B" TO "C' WHICH IS ROUTED THRU POND
ADD HYD            ID=8  HYD NO=TOTDEV.SITE  ID I=6  ID II=7
PRINT HYD          ID=1  CODE=5
```

HYDROGRAPH FROM AREA EX.SITE

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	.833	.0	1.667	.9	2.500	.1	3.333	.0
.167	.0	1.000	.0	1.833	.3	2.666	.0	3.500	.0
.333	.0	1.167	.0	2.000	.2	2.833	.0		
.500	.0	1.333	.0	2.166	.1	3.000	.0		
.667	.0	1.500	1.6	2.333	.1	3.166	.0		

RUNOFF VOLUME = .53121 INCHES = .0457 ACRE-FEET
PEAK DISCHARGE RATE = 1.61 CFS AT 1.533 HOURS BASIN AREA = .0016 SQ. MI.

PRINT HYD ID=2 CODE=5

HYDROGRAPH FROM AREA DEV.SITE

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.0	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	4.2	2.833	.0	4.166	.0	5.499	.0
.333	.0	1.667	2.2	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	1.3	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	.9	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.4	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.2	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.1	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.70387 INCHES = .1467 ACRE-FEET
PEAK DISCHARGE RATE = 4.17 CFS AT 1.500 HOURS BASIN AREA = .0016 SQ. MI.

PRINT HYD ID=3 CODE=5

HYDROGRAPH FROM AREA DEV.A

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.3	2.666	.0	4.000	.0	5.333	.0
.167	.0	1.500	1.3	2.833	.0	4.166	.0	5.499	.0
.333	.0	1.667	.7	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	.4	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	.3	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.1	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.1	3.666	.0	4.999	.0		
1.167	.0	2.500	.0	3.833	.0	5.166	.0		

RUNOFF VOLUME = 1.70387 INCHES = .0460 ACRE-FEET
PEAK DISCHARGE RATE = 1.32 CFS AT 1.500 HOURS BASIN AREA = .0005 SQ. MI.

PRINT HYD ID=4 CODE=5

HYDROGRAPH FROM AREA DEV.B

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	.4	2.666	.0	4.000	.0	5.333	.0
.167	.0	1.500	1.5	2.833	.0	4.166	.0	5.499	.0
.333	.0	1.667	.8	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	.5	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	.3	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.1	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.1	3.666	.0	4.999	.0		
1.167	.0	2.500	.0	3.833	.0	5.166	.0		

RUNOFF VOLUME = 1.70387 INCHES = .0512 ACRE-FEET
PEAK DISCHARGE RATE = 1.47 CFS AT 1.500 HOURS BASIN AREA = .0006 SQ. MI.

PRINT HYD ID=5 CODE=5

HYDROGRAPH FROM AREA DEV.C

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.3	2.666	.0	4.000	.0	5.333	.0
.167	.0	1.500	1.4	2.833	.0	4.166	.0	5.499	.0
.333	.0	1.667	.7	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	.4	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	.3	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.1	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.1	3.666	.0	4.999	.0		
1.167	.0	2.500	.0	3.833	.0	5.166	.0		

RUNOFF VOLUME = 1.70387 INCHES = .0495 ACRE-FEET
PEAK DISCHARGE RATE = 1.42 CFS AT 1.500 HOURS BASIN AREA = .0005 SQ. MI.

PRINT HYD ID=6 CODE=5

HYDROGRAPH FROM AREA POND.OUT

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.1	2.666	.0	4.000	.0	5.333	.0
.167	.0	1.500	.7	2.833	.0	4.166	.0	5.499	.0
.333	.0	1.667	.9	3.000	.0	4.333	.0	5:666	.0
.500	.0	1.833	.7	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	.5	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.3	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.2	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.1	3.833	.0	5.166	.0		

RUNOFF VOLUME = 1.70337 INCHES = .0495 ACRE-FEET
PEAK DISCHARGE RATE = .89 CFS AT 1.633 HOURS BASIN AREA = .0005 SQ. MI.

PRINT HYD ID=7 CODE=5

HYDROGRAPH FROM AREA DEV.A+B

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	.7	2.666	.0	4.000	.0	5.333	.0
.167	.0	1.500	2.8	2.833	.0	4.166	.0	5.499	.0
.333	.0	1.667	1.4	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	.9	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	.6	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.3	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.1	3.666	.0	4.999	.0		
1.167	.0	2.500	.1	3.833	.0	5.166	.0		

RUNOFF VOLUME = 1.70338 INCHES = .0971 ACRE-FEET
PEAK DISCHARGE RATE = 2.79 CFS AT 1.500 HOURS BASIN AREA = .0011 SQ. MI.

PRINT HYD ID=8 CODE=5

HYDROGRAPH FROM AREA TOTDEV.SITE

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.8	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	3.5	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	2.3	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	1.6	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	1.1	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.6	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.1	3.833	.0	5.166	.0		

RUNOFF VOLUME = 1.70324 INCHES = .1466 ACRE-FEET
PEAK DISCHARGE RATE = 3.50 CFS AT 1.533 HOURS BASIN AREA = .0016 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC): = 19:02:38

DRAINAGE INFORMATION SHEET

PROJECT TITLE: DIRECT POWER ZONE ATLAS/DRNG. FILE #: G16/82

DRB #: — EPC #: — WORK ORDER #: —

LEGAL DESCRIPTION: TRACT B-1-K COMANCHE BUSINESS PARK

CITY ADDRESS: VASSAR DRIVE NE

ENGINEERING FIRM: Brasher & Lorenz, Inc. CONTACT: Dennis A. Lorenz

ADDRESS: 2201 San Pedro NE Bldg.1 Suite 210 Albuquerque, New Mexico 87110 PHONE: 888-6088

OWNER: DIRECT POWER CONTACT: JEFF RANDAL

ADDRESS: 3455 PRINCETON NE PHONE: 889-3585

ARCHITECT: RICK BENNETT CONTACT: SAME

ADDRESS: 1118 PARK SW PHONE: 242-1859

SURVEYOR: BRASHER + LORENZ CONTACT:

ADDRESS: PHONE:

CONTRACTOR: NA CONTACT:

ADDRESS: PHONE:

TYPE OF SUBMITTAL:

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

PRE-DESIGN MEETING:

- X YES
- ___ 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
- 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: 11-10-97

BY: Dennis A. Lorenz

RECEIVED
NOV 12 1997
HYDROLOGY SECTION

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 5, 1997

Dennis A. Lorenz, P.E.
Brasher & Lorenz, Inc.
2201 San Pedro NE Bldg. 1 Suite 210
Albuquerque, New Mexico 87110

RE: Drainage Report and Grading and Drainage Plan for Direct Power, Tract B-1-K, Comanche Business Park (G16/D82) Engineer's Stamp Dated 11/7/97.

A

Dear Mr. Lorenz:

Based on the information provided in the submittal of November 12, 1997, the above referenced plan is approved for Building Permit release.

The above referenced plan is also approved for S.O. 19. A separate permit is required for construction within City Right-of-way. A copy of this approval letter must be on hand when applying for the excavation permit.

As you are aware, the Engineer's Certification is required prior to release of the Certificate of Occupancy.

If you should have any questions, please call me at 924-3982.

Sincerely,

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Andrew Garcia
Arlene Portillo
File

DRAINAGE REPORT

FOR

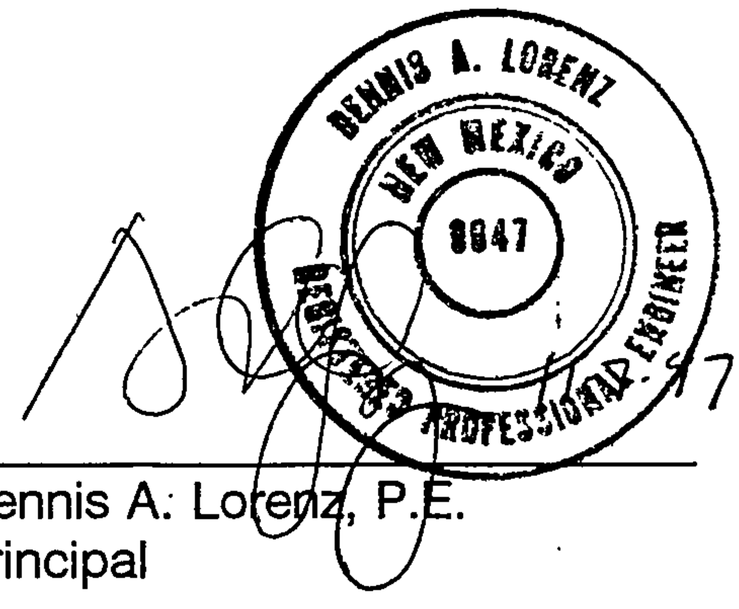
DIRECT POWER

Albuquerque, New Mexico

Prepared by:

BRASHER & LORENZ, INC.
Consulting Engineers
2201 San Pedro NE Building 1, Suite 210
Albuquerque, New Mexico 87110

November 1997



Dennis A. Lorenz, P.E.
Principal

TABLE OF CONTENTS

PURPOSE AND SCOPE

Pursuant to the established Drainage Ordinance for the City of Albuquerque and the Development Process Manual, this Grading and Drainage Plan outlines the drainage management criteria for controlling developed runoff from the project site. The property is to be developed as the Direct Power facility, with associated paving, landscaping, utility, grading, and drainage improvements.

EXISTING CONDITIONS

The project site is approximately 1.033 acres in size and is located on Vassar Place NE. The project site is particularly described as Tract B-1-K, Comanche Business Park. The site is bounded by Vassar Place on the north, an interim retention pond on the east, Vassar Drive on the west, and developed IP property on the south. Presently the site is undeveloped. The site is sparsely covered with native vegetation. Evidence of recent earthmoving activity is present. Site topography slopes from east to west at approximately 3%. All excess runoff drains across the site from east to west. Vassar Place NE has recently been improved with curb, gutter and asphalt pavement. Vassar Place conveys all runoff west to a group of drop inlets which outfall at an interim retention pond located on Tract B-1-J. The interim pond will retain runoff generated by the Comanche Business Park until downstream improvements are constructed by SAD 216. As shown by the attached FIRM Panel, a flood hazard zone is located just south of the site within an existing 30' public drainage easement. This floodplain is to be removed by the SAD 216 improvements.

DRAINAGE MASTERPLAN

The original DPM for this site was prepared by Andrews, Asbury and Robert for Special Assessment District 216. The DPM recommended downstream improvements to increase capacity of an existing storm drain system located in Vassar Drive NE. Due to limited downstream capacity, discharge from this site and the Comanche Business Park is limited to 3.61 cfs per acre.

The DPM for the Comanche Business Park was prepared by Jeff Mortensen & Associates. The DPM utilizes the drainage management conditions established by the SAD 216 DPM. The Vassar Drive storm drain system has been rendered non-functional by blocking the drop inlets. Therefore, an interim retention pond has been constructed on Tract B-1-J for use by the Comanche Business Park. A group of drop inlets located at a sump in Vassar Place NE conveys all runoff to the interim retention pond. Upon construction of the SAD 216 improvements the retention pond will be reclaimed. Per the SAD 216 DPM all property within the Comanche Business Park is required to limit developed peak discharge rates to 3.61 cfs per acre.

DOWNSTREAM CAPACITY

Per the DMP for Comanche Business Park this site is programmed to discharge all excess runoff to the Vassar Place storm drain system, which on an interim basis conveys the flow to the retention pond located on Tract B-1-J. Unfortunately, topography

precludes this site from draining to the Vassar system. The southwest corner of the property is positioned approximately 5 feet lower than the drop inlets located in Vassar Place, and below the predicted water surface in the retention pond. It is technically possible to access the storm drain located along the east and south project boundaries, however, the position of the 100 year water surface within the retention pond (5065.0) could create a backwater condition which could result in property damage.

This Plan recommends routing as much of the site as possible through a small detention pond located along Vassar Place. A majority of the roof area and adjacent storage yard will be routed through the pond and discharge into an existing drop inlet located in Vassar Place. Due to topography, the remaining acreage will free discharge to the west into Vassar Drive and contribute to the floodplain. This is a temporary condition which will be corrected by construction of the SAD 216 drainage improvements. The resulting developed discharge from the site is 3.50 cfs, which is less than allowed by the DMP.

The Vassar Place improvements, which have recently been constructed, rout all flows from the plan area into the interim retention pond, thereby reducing the discharge to Vassar Drive by 52.3 cfs. Direct Power proposes to release 2.8 cfs into Vassar Drive. The net effect is a reduction of flow to Vassar Drive of 49.5 cfs.

DEVELOPED CONDITIONS

As shown by the Plan, the project consists of the Direct Power facility and associated grading, drainage, paving, utility and landscaping improvements. The Plan shows the contours and elevations required to properly grade and construct the required paving and drainage improvements. The direction of drainage flows are given by flow arrows and the project hydrology is tabulated for both existing and developed conditions.

All drainage flows will be managed on-site and discharge to existing improvements. Per the project hydrology, the developed peak discharge for the project is expected to exceed the 3.61 cfs per acre requirement. Therefore, this site will utilize a small detention pond located along Vassar Place to reduce peak flows. The detention pond accepts runoff from the proposed building and adjoining storage area along Vassar Place. As a result, the total peak discharge from the site is estimated at 3.50 cfs, or a unit rate of 3.40 cfs per acre, which complies with the DMP.

TEMPORARY EROSION CONTROL

Temporary erosion control will be required during the construction phase to protect downstream property and improvements from sediment and uncontrolled runoff. This Plan recommends the placement of silt fencing along the west, north and south project boundaries to mitigate sediment deposition in the adjoining public street and downstream drainage facilities during construction. It is the Contractor's responsibility to properly maintain these facilities during the construction phase of the project.

CALCULATIONS

The calculations shown hereon define the 100 year/6 hour design storm falling with the

project area under existing and developed conditions. The Hydrology is per "Section 22.2, Part A, DPM, Vol 2" dated January 1993. Calculations are provided herein which verify downstream capacity, detention pond routing, and drainage infrastructure design.

DOWNSTREAM CAPACITY

DIRECT POWER	7013		/
	11.7.97		

① DOWNSTREAM CAPACITY

SINCE SITE CANNOT ENTIRELY DRAIN TO INTERIM RETENTION POND, COMPARE FLOW TO VASSAR DRIVE - PRE + POST DMP IMPROVEMENTS

PER DMP:

HISTORIC	Q_{100} TO	VASSAR =	
BASINS	B-3A	43.1	CFS
	B-2A-1	2.0	
	1	2.1	
	2	5.6	
	3	1.5	
		54.3	CFS

AFTER DMP IMPROVEMENTS, WHICH ARE NOW IN PLACE:

BASINS B-3A, 1, 2 & 3 DRAIN TO INTERIM RETENTION POND.

FLOW THAT WILL DRAIN TO VASSAR:

BASIN	B-2A-1	2.0 CFS
DIRECT POWER		
BASINS	A	1.32
	B	1.47

DIRECT POWER	7013		/
	11.7.97		

TOTAL FLOW TO VASSAR DRIVE
= 4.79 CFS

⇒ THIS IS A DECREASE FROM 54.3 CFS
TO 4.79 CFS. GIVEN THIS BASINS
A + B FROM DIRECT POWER SHOULD
BE GRANTED FREE DISCHARGE TO
VASSAR DRIVE ✓

BRASHER & LORENZ, INC.

INFRASTRUCTURE DESIGN

DIRECT POWER	7013		/
	11.7.97		

① POND ROUTING

GIVEN: PER DMP MAX DISCHARGE
FOR SITE = 3.61 CFS / AC

SITE A = 1.033 AC

$Q_{ALLOW} = 1.033(3.61) = 3.73$ CFS

$Q_{SITE} = 4.17$ CFS ⟨ POND REQ'D ⟩

$Q_{BASIN\ 'A'} = 1.32$ CFS
$Q_{BASIN\ 'B'} = 1.47$ CFS
$Q_{BASIN\ 'C'} = 1.42$ CFS

ROUTE BASIN 'C' THRU POND
LIMIT Q_{OUT} TO $3.73 - 1.32 - 1.47 = 0.94$ CFS

Ⓐ SIZE OUTLET

LIMIT OUTLET TO 0.94 CFS

DIA	AREA (SF)
4"	0.087
6"	0.196

$Q = CA\sqrt{2gh}$
$C = 0.60$

H	Q 4"	Q 6"
1'	0.42	0.94
2'	0.59	1.33

DIRECT POWER	7013		
	11.7.97		

(B) ROUTE RES TABLE

⇒ USE 6" PIPE

QOUT CFS	STORAGE AF	ELEV MSLD
0	0	65.0
0.82	0.01033	66.0
1.05	0.01782	66.5

PER ATHYMO OUTPUT:

Q_{OUT} = 0.89 CFS

VOL = 0.0125 AF = 545 CF

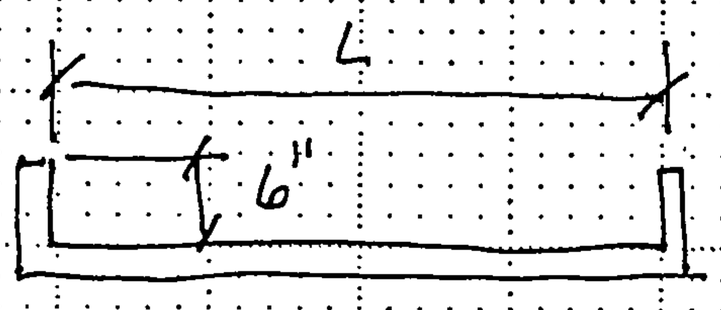
WSE = 66.14

⇒ TOTAL Q SITE = 3.50 CFS < 3.73 CFS

< Q ALLOW

DIRECT POWER	7013		/
	11-7-97		

② POMS SPILLWAY



$Q_{100} = 1.42$ CFS

BY WEIR EQN $Q = CLH^{3/2}$

$H = 0.5'$

$C = 2.50$

$L = Q / CH^{3/2} = 1.61'$

⇒ USE $2'$

AHYMO OUTPUT

```
*****************************************************************************
*                            DIRECT POWER
*                          ON-SITE HYDROLOGY
*****************************************************************************
START               TIME=0.0  PUNCH CODE=0
RAINFALL            TYPE=1  RAIN QUARTER=0.0  RAIN ONE=2.01
                    RAIN SIX=2.35  RAIN DAY=2.75  DT=0.03333 HRS
* EXISTING SITE
COMPUTE NM HYD      ID=1  HYD NO=EX.SITE  DA= 0.001614 SQ MI
                    PER A=100  PER B=0  PER C=0  PER D=0
                    TP=0.1333 HR  MASS RAIN=-1
* DEVELOPED SITE - PHASE ONE
COMPUTE NM HYD      ID=2  HYD NO=DEV.SITE  DA=0.001614 SQ MI
                    PER A=0  PER B=9  PER C=29  PER D=62
                    TP=0.1333 HR  MASS RAIN=-1
* DEVELOPED BASIN "A"
COMPUTE NM HYD      ID=3  HYD NO=DEV.A  DA=0.000506 SQ MI
                    PER A=0  PER B=9  PER C=29  PER D=62
                    TP=0.1333 HR  MASS RAIN=-1
* DEVELOPED BASIN "B"
COMPUTE NM HYD      ID=4  HYD NO=DEV.B  DA=0.000563 SQ MI
                    PER A=0  PER B=9  PER C=29  PER D=62
                    TP=0.1333 HR  MASS RAIN=-1
* DEVELOPED BASIN "C"
COMPUTE NM HYD      ID=5  HYD NO=DEV.C  DA=0.000545 SQ MI
                    PER A=0  PER B=9  PER C=29  PER D=62
                    TP=0.1333 HR  MASS RAIN=-1
* ROUTE BASIN "C" THRU DETENTION POND TO LIMIT SITE DISCHARGE TO 3.61 CFS/AC
* MAXIMUM ALLOW Q100 FROM DEV SITE = 3.73 CFS
ROUTE RESERVOIR     ID=6  HYD NO=POND.OUT  INFLOW ID=5  CODE=5
                    OUT(CFS)   STORAGE(AC-FT)   ELEV(FT)
                    0          0                65.0
                    0.82       0.01033          66.0
                    1.05       0.01782          66.5
* DETERMINE TOTAL SITE Q100 BY ADDING HYDROGRAPHS
* FIRST ADD BASINS "A" AND "B"
ADD HYD             ID=7  HYD NO=DEV.A+B  ID I=3  ID II=4
* NOW ADD BASINS "A' AND "B" TO "C' WHICH IS ROUTED THRU POND
ADD HYD             ID=8  HYD NO=TOTDEV.SITE  ID I=6  ID II=7
PRINT HYD           ID=1  CODE=5
PRINT HYD           ID=2  CODE=5
PRINT HYD           ID=3  CODE=5
PRINT HYD           ID=4  CODE=5
PRINT HYD           ID=5  CODE=5
PRINT HYD           ID=6  CODE=5
PRINT HYD           ID=7  CODE=5
PRINT HYD           ID=8  CODE=5
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =11/09/1997
INPUT FILE = a:7013.dat USER NO.= BRASHERE.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.350
COMPUTE NM HYD	EX.SITE	-	1	.00161	1.61	.046	.53121	1.533	1.563	PER IMP= .00
COMPUTE NM HYD	DEV.SITE	-	2	.00161	4.17	.147	1.70387	1.500	4.041	PER IMP= 62.00
COMPUTE NM HYD	DEV.A	-	3	.00051	1.32	.046	1.70387	1.500	4.081	PER IMP= 62.00
COMPUTE NM HYD	DEV.B	-	4	.00056	1.47	.051	1.70387	1.500	4.074	PER IMP= 62.00
COMPUTE NM HYD	DEV.C	-	5	.00055	1.42	.050	1.70387	1.500	4.074	PER IMP= 62.00
ROUTE RESERVOIR	POND.OUT	5	6	.00055	.89	.050	1.70337	1.633	2.541	AC-FT= .012
ADD HYD	DEV.A+B	3& 4	7	.00107	2.79	.097	1.70338	1.500	4.077	
ADD HYD	TOTDEV.SITE	6& 7	8	.00161	3.50	.147	1.70324	1.533	3.392	
FINISH										

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 11/09/1997
         START TIME (HR:MIN:SEC) = 19:02:27     USER NO.= BRASHERE.I01
         INPUT FILE = a:7013.dat

**********************************************************************************
*                              DIRECT POWER
*                            ON-SITE HYDROLOGY
**********************************************************************************
START                TIME=0.0  PUNCH CODE=0
RAINFALL             TYPE=1  RAIN QUARTER=0.0  RAIN ONE=2.01
                     RAIN SIX=2.35  RAIN DAY=2.75  DT=0.03333 HRS

               COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
               DT =    .033330 HOURS       END TIME =     5.999400 HOURS
                  .0000   .0016   .0033   .0049   .0066   .0084   .0102
                  .0120   .0139   .0158   .0178   .0199   .0219   .0241
                  .0263   .0286   .0309   .0333   .0358   .0384   .0411
                  .0439   .0467   .0497   .0529   .0561   .0596   .0631
                  .0669   .0709   .0751   .0807   .0866   .0930   .1066
                  .1371   .1840   .2514   .3434   .4644   .6186   .8106
                 1.0449  1.2624  1.3533  1.4300  1.4982  1.5602  1.6174
                 1.6704  1.7200  1.7664  1.8102  1.8514  1.8904  1.9273
                 1.9622  1.9953  2.0268  2.0566  2.0850  2.0915  2.0976
                 2.1033  2.1088  2.1140  2.1191  2.1239  2.1285  2.1329
                 2.1373  2.1414  2.1454  2.1494  2.1531  2.1568  2.1604
                 2.1639  2.1673  2.1706  2.1739  2.1771  2.1802  2.1832
                 2.1862  2.1891  2.1919  2.1947  2.1975  2.2002  2.2028
                 2.2054  2.2080  2.2105  2.2130  2.2154  2.2178  2.2202
                 2.2225  2.2248  2.2270  2.2293  2.2315  2.2336  2.2358
                 2.2379  2.2399  2.2420  2.2440  2.2460  2.2480  2.2500
                 2.2519  2.2538  2.2557  2.2576  2.2594  2.2612  2.2631
                 2.2648  2.2666  2.2684  2.2701  2.2718  2.2735  2.2752
                 2.2769  2.2785  2.2802  2.2818  2.2834  2.2850  2.2866
                 2.2881  2.2897  2.2912  2.2928  2.2943  2.2958  2.2973
                 2.2987  2.3002  2.3017  2.3031  2.3045  2.3060  2.3074
                 2.3088  2.3102  2.3115  2.3129  2.3143  2.3156  2.3169
                 2.3183  2.3196  2.3209  2.3222  2.3235  2.3248  2.3261
                 2.3273  2.3286  2.3298  2.3311  2.3323  2.3335  2.3348
                 2.3360  2.3372  2.3384  2.3396  2.3408  2.3419  2.3431
                 2.3443  2.3454  2.3466  2.3477  2.3488  2.3500

* EXISTING SITE
COMPUTE NM HYD       ID=1  HYD NO=EX.SITE  DA= 0.001614 SQ MI
                     PER A=100  PER B=0  PER C=0  PER D=0
                     TP=0.1333 HR  MASS RAIN=-1

    K =   .160154HR    TP =   .133300HR    K/TP RATIO =  1.201459     SHAPE CONSTANT, N =  2.957910
    UNIT PEAK =   3.3705    CFS   UNIT VOLUME =    .9954       B =   278.37      P60 = 2.0100
    AREA =      .001614 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

* DEVELOPED SITE - PHASE ONE
COMPUTE NM HYD       ID=2  HYD NO=DEV.SITE  DA=0.001614 SQ MI
                     PER A=0  PER B=9  PER C=29  PER D=62
                     TP=0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   3.9507    CFS   UNIT VOLUME =    .9965       B =   526.28      P60 = 2.0100
```

```
    AREA =      .001001 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .113282HR    TP =   .133300HR    K/TP RATIO =   .849829     SHAPE CONSTANT, N =  4.188726
    UNIT PEAK =   1.6912    CFS   UNIT VOLUME =    .9926       B =   367.56      P60 = 2.0100
    AREA =      .000613 SQ MI    IA =    .38553 INCHES    INF =    .92947 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

* DEVELOPED BASIN "A"
COMPUTE NM HYD      ID=3  HYD NO=DEV.A  DA=0.000506 SQ MI
                    PER A=0  PER B=9  PER C=29  PER D=62
                    TP=0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   1.2386    CFS   UNIT VOLUME =    .9897       B =   526.28      P60 = 2.0100
    AREA =      .000314 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .113282HR    TP =   .133300HR    K/TP RATIO =   .849829     SHAPE CONSTANT, N =  4.188726
    UNIT PEAK =   .53020    CFS   UNIT VOLUME =    .9757       B =   367.56      P60 = 2.0100
    AREA =      .000192 SQ MI    IA =    .38553 INCHES    INF =    .92947 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

* DEVELOPED BASIN "B"
COMPUTE NM HYD      ID=4  HYD NO=DEV.B  DA=0.000563 SQ MI
                    PER A=0  PER B=9  PER C=29  PER D=62
                    TP=0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   1.3781    CFS   UNIT VOLUME =    .9911       B =   526.28      P60 = 2.0100
    AREA =      .000349 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .113282HR    TP =   .133300HR    K/TP RATIO =   .849829     SHAPE CONSTANT, N =  4.188726
    UNIT PEAK =   .58992    CFS   UNIT VOLUME =    .9779       B =   367.56      P60 = 2.0100
    AREA =      .000214 SQ MI    IA =    .38553 INCHES    INF =    .92947 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

* DEVELOPED BASIN "C"
COMPUTE NM HYD      ID=5  HYD NO=DEV.C  DA=0.000545 SQ MI
                    PER A=0  PER B=9  PER C=29  PER D=62
                    TP=0.1333 HR  MASS RAIN=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   1.3340    CFS   UNIT VOLUME =    .9911       B =   526.28      P60 = 2.0100
    AREA =      .000338 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .113282HR    TP =   .133300HR    K/TP RATIO =   .849829     SHAPE CONSTANT, N =  4.188726
    UNIT PEAK =   .57106    CFS   UNIT VOLUME =    .9779       B =   367.56      P60 = 2.0100
    AREA =      .000207 SQ MI    IA =    .38553 INCHES    INF =    .92947 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

* ROUTE BASIN "C" THRU DETENTION POND TO LIMIT SITE DISCHARGE TO 3.61 CFS/AC
* MAXIMUM ALLOW Q100 FROM DEV SITE = 3.73 CFS
ROUTE RESERVOIR     ID=6  HYD NO=POND.OUT  INFLOW ID=5  CODE=5
```

OUT(CFS)	STORAGE(AC-FT)	ELEV(FT)
0	0	65.0
0.82	0.01033	66.0
1.05	0.01782	66.5

* * * * * * * * * * * * * * * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	65.00	.000	.00
.17	.00	65.00	.000	.00
.33	.00	65.00	.000	.00
.50	.00	65.00	.000	.00
.67	.00	65.00	.000	.00
.83	.00	65.00	.000	.00
1.00	.00	65.00	.000	.00
1.17	.00	65.00	.000	.00
1.33	.34	65.12	.001	.10
1.50	1.42	65.85	.009	.70
1.67	.74	66.13	.012	.88
1.83	.44	65.85	.009	.70
2.00	.30	65.58	.006	.47
2.17	.14	65.37	.004	.30
2.33	.06	65.19	.002	.16
2.50	.03	65.10	.001	.08
2.67	.02	65.05	.001	.04
2.83	.01	65.03	.000	.02
3.00	.01	65.02	.000	.02
3.17	.01	65.01	.000	.01
3.33	.01	65.01	.000	.01
3.50	.01	65.01	.000	.01
3.67	.01	65.01	.000	.01
3.83	.01	65.01	.000	.01
4.00	.01	65.01	.000	.01
4.17	.01	65.01	.000	.01
4.33	.01	65.01	.000	.01
4.50	.01	65.01	.000	.01
4.67	.01	65.01	.000	.01
4.83	.01	65.01	.000	.01
5.00	.01	65.01	.000	.01
5.17	.01	65.01	.000	.01
5.33	.01	65.01	.000	.01
5.50	.01	65.01	.000	.01
5.67	.01	65.01	.000	.01
5.83	.01	65.01	.000	.01
6.00	.01	65.01	.000	.01
6.17	.00	65.01	.000	.01
6.33	.00	65.00	.000	.00

PEAK DISCHARGE = .886 CFS - PEAK OCCURS AT HOUR 1.63
MAXIMUM WATER SURFACE ELEVATION = 66.144
MAXIMUM STORAGE = .0125 AC-FT INCREMENTAL TIME= .033330HRS

```
* DETERMINE TOTAL SITE Q100 BY ADDING HYDROGRAPHS
* FIRST ADD BASINS "A" AND "B"
ADD HYD            ID=7  HYD NO=DEV.A+B  ID I=3  ID II=4
* NOW ADD BASINS "A' AND "B" TO "C' WHICH IS ROUTED THRU POND
ADD HYD            ID=8  HYD NO=TOTDEV.SITE  ID I=6  ID II=7
PRINT HYD          ID=1  CODE=5
```

HYDROGRAPH FROM AREA EX.SITE

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	.833	.0	1.667	.9	2.500	.1	3.333	.0
.167	.0	1.000	.0	1.833	.3	2.666	.0	3.500	.0
.333	.0	1.167	.0	2.000	.2	2.833	.0		
.500	.0	1.333	.0	2.166	.1	3.000	.0		
.667	.0	1.500	1.6	2.333	.1	3.166	.0		

RUNOFF VOLUME = .53121 INCHES = .0457 ACRE-FEET
PEAK DISCHARGE RATE = 1.61 CFS AT 1.533 HOURS BASIN AREA = .0016 SQ. MI.

PRINT HYD ID=2 CODE=5

HYDROGRAPH FROM AREA DEV.SITE

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.0	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	4.2	2.833	.0	4.166	.0	5.499	.0
.333	.0	1.667	2.2	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	1.3	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	.9	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.4	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.2	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.1	3.833	.0	5.166	.0	6.499	.0

RUNOFF VOLUME = 1.70387 INCHES = .1467 ACRE-FEET
PEAK DISCHARGE RATE = 4.17 CFS AT 1.500 HOURS BASIN AREA = .0016 SQ. MI.

PRINT HYD ID=3 CODE=5

HYDROGRAPH FROM AREA DEV.A

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.3	2.666	.0	4.000	.0	5.333	.0
.167	.0	1.500	1.3	2.833	.0	4.166	.0	5.499	.0
.333	.0	1.667	.7	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	.4	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	.3	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.1	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.1	3.666	.0	4.999	.0		
1.167	.0	2.500	.0	3.833	.0	5.166	.0		

RUNOFF VOLUME = 1.70387 INCHES = .0460 ACRE-FEET
PEAK DISCHARGE RATE = 1.32 CFS AT 1.500 HOURS BASIN AREA = .0005 SQ. MI.

PRINT HYD ID=4 CODE=5

HYDROGRAPH FROM AREA DEV.B

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	.4	2.666	.0	4.000	.0	5.333	.0
.167	.0	1.500	1.5	2.833	.0	4.166	.0	5.499	.0
.333	.0	1.667	.8	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	.5	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	.3	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.1	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.1	3.666	.0	4.999	.0		
1.167	.0	2.500	.0	3.833	.0	5.166	.0		

RUNOFF VOLUME = 1.70387 INCHES = .0512 ACRE-FEET
PEAK DISCHARGE RATE = 1.47 CFS AT 1.500 HOURS BASIN AREA = .0006 SQ. MI.

PRINT HYD ID=5 CODE=5

HYDROGRAPH FROM AREA DEV.C

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.3	2.666	.0	4.000	.0	5.333	.0
.167	.0	1.500	1.4	2.833	.0	4.166	.0	5.499	.0
.333	.0	1.667	.7	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	.4	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	.3	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.1	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.1	3.666	.0	4.999	.0		
1.167	.0	2.500	.0	3.833	.0	5.166	.0		

RUNOFF VOLUME = 1.70387 INCHES = .0495 ACRE-FEET
PEAK DISCHARGE RATE = 1.42 CFS AT 1.500 HOURS BASIN AREA = .0005 SQ. MI.

PRINT HYD ID=6 CODE=5

HYDROGRAPH FROM AREA POND.OUT

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.1	2.666	.0	4.000	.0	5.333	.0
.167	.0	1.500	.7	2.833	.0	4.166	.0	5.499	.0
.333	.0	1.667	.9	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	.7	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	.5	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.3	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.2	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.1	3.833	.0	5.166	.0		

RUNOFF VOLUME = 1.70337 INCHES = .0495 ACRE-FEET
PEAK DISCHARGE RATE = .89 CFS AT 1.633 HOURS BASIN AREA = .0005 SQ. MI.

PRINT HYD ID=7 CODE=5

HYDROGRAPH FROM AREA DEV.A+B

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	.7	2.666	.0	4.000	.0	5.333	.0
.167	.0	1.500	2.8	2.833	.0	4.166	.0	5.499	.0
.333	.0	1.667	1.4	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	.9	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	.6	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.3	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.1	3.666	.0	4.999	.0		
1.167	.0	2.500	.1	3.833	.0	5.166	.0		

RUNOFF VOLUME = 1.70338 INCHES = .0971 ACRE-FEET
PEAK DISCHARGE RATE = 2.79 CFS AT 1.500 HOURS BASIN AREA = .0011 SQ. MI.

PRINT HYD ID=8 CODE=5

HYDROGRAPH FROM AREA TOTDEV.SITE

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.8	2.666	.1	4.000	.0	5.333	.0
.167	.0	1.500	3.5	2.833	.1	4.166	.0	5.499	.0
.333	.0	1.667	2.3	3.000	.0	4.333	.0	5.666	.0
.500	.0	1.833	1.6	3.166	.0	4.500	.0	5.833	.0
.667	.0	2.000	1.1	3.333	.0	4.666	.0	5.999	.0
.833	.0	2.166	.6	3.500	.0	4.833	.0	6.166	.0
1.000	.0	2.333	.3	3.666	.0	4.999	.0	6.333	.0
1.167	.0	2.500	.1	3.833	.0	5.166	.0		

RUNOFF VOLUME = 1.70324 INCHES = .1466 ACRE-FEET
PEAK DISCHARGE RATE = 3.50 CFS AT 1.533 HOURS BASIN AREA = .0016 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 19:02:38

City of Albuquerque

March 13, 2000

Harold L. Bennettt, P.E.
BJM Development Consultants
4409 Karrol Road SW
Albuquerque, NM 87121

RE: DIRECT POWER, Addition (G16-D82A). GRADING AND DRAINAGE PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED MARCH 3,2000. PREVIOUS SUBMITTAL STAMPED FEBRUARY 8, 1999.

Dear Mr. Bennett:

The submittal received March 8, 2000 makes the Engineer's Stamp Date current. The above referenced project has been and is approved for Building Permit.

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

Prior to Certificate of Occupancy 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

****
*** TX REPORT ***
****

TRANSMISSION OK

TX/RX NO	3151	
CONNECTION TEL		92686042
SUBADDRESS		
CONNECTION ID		
ST. TIME	10/27 15:14	
USAGE T	01'28	
PGS.	2	
RESULT	OK	

City of Albuquerque
Public Works Department
505-924-3900 (main number)
505-924-3864 (fax number)
Development and Building Services (One Stop Shop)
Plaza Del Sol Building, 2nd Floor
600 2nd Street NW
Albuquerque, NM 87102

City of Albuquerque
Public Works Dept.
Dev. & Bldg. Srvcs.

Fax

To: Michelle Buffington **From:** LP Murray

Fax: 268-6042 **Pages Sent:** (including this page) 2

Phone: **Date:** 10/27/00

Time: 3:15 PM

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

FYI

Comments:

Check back Monday

City of Albuquerque
Public Works Department
505-924-3900 (main number)
505-924-3864 (fax number)
Development and Building Services (One Stop Shop)
Plaza Del Sol Building, 2nd Floor
600 2nd Street NW
Albuquerque, NM 87102

City of Albuquerque
Public Works Dept.
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Phone: **Date:** 10/27/00

Time: 3:15 PM

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

FYI

Comments:

Check back Monday

[redacted]

G-16/D082A

John:

This site was approved back on 2/9/99 One year has lapse therefore I had it stamped and redated. I need a letter for my records

Bernie

CITY OF
Albuquerque

September 14, 1998

Dennis Lorenz
Brasher & Lorenz Inc.
2201 San Pedro NE Bldg 1 Suite 210
Albuquerque, New Mexico 87110

RE: ENGINEERING CERTIFICATION FOR DIRECT POWER (G-16/D82), CERTIFICATION STATEMENT DATED 5/5/98.

Dear Mr. Lorenz:

Based on the information provided on your May 5, 1998 submittal, the above fererenced site is approved for Certificate of Occupancy release.

If I can be of any further assistance, please feel free to contact me at 924-3330.

File

Sincerely,

Andrew Garcia
Drainage Inspector

DRAINAGE INFORMATION SHEET

PROJECT TITLE: DIRECT POWER ZONE ATLAS/DRNG. FILE #: G16-D82

DRB #: — EPC #: — WORK ORDER #: —

LEGAL DESCRIPTION: TRACT B-1-K COMANCHE BUSINESS PARK

CITY ADDRESS: VASSAR DR NE

ENGINEERING FIRM: Brasher & Lorenz, Inc. CONTACT: Dennis A. Lorenz

ADDRESS: 2201 San Pedro NE Bldg.1 Suite 210 Albuquerque, New Mexico 87110 PHONE: 888-6088

OWNER: DIRECT POWER CONTACT: JEFF RANDAL

ADDRESS: 3455A PRINCETON NE PHONE: 889-3585

ARCHITECT: RICK BENNETT CONTACT: R. BENNETT

ADDRESS: 1118 PARK SW PHONE: 242-1859

SURVEYOR: UNKN. CONTACT:

ADDRESS: PHONE:

CONTRACTOR: BROWN DEVELOPMT CONTACT: L. CHAVEZ

ADDRESS: 1118 PARK SW PHONE: 242-1859

TYPE OF SUBMITTAL:

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

PRE-DESIGN MEETING:

____ YES
____ 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)

RECEIVED
AUG 05 1998
HYDROLOGY SECTION

DATE SUBMITTED: 8.5.98

BY: Dennis A. Lorenz

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 12, 1999

BJM Development Consultants
4409 Karrol Rd. SW
Albuquerque, New Mexico 87105 87121 elsewhere

RE: DRAINAGE REPORT FOR THE ADDITION TO DIRECT POWER (G-16/D82A)
ENGINEER'S STAMP DATED 2/8/99

Dear Mr. Montoya:

Based on the Information Provided on your February 8, 1999 submittal, the above referenced site is approved for building permit.

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

Also, Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

If I can be of any further assistance, please feel free to contact me at 924-3330.

C: File

Sincerely,

John P. Murray, P.E.
Hydrology

Undo
F17/D13

DRAINAGE INFORMATION SHEET

D-82A

APPLICANT'S NAME: ADDITION TO DIRECT POWER ZONE ATLAS/DRNG. FILE #: G16-~~D82~~A

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

LEGAL DESCRIPTION: TRACT B-1-K Comanche Business PARK

CITY ADDRESS: 4000 Vassar Dr. NE

ENGINEERING FIRM: BJM Development Consultant CONTACT: Bernie J. Montaya

ADDRESS: 4409 Karrol Rd SW. PHONE: 877-4841

OWNER: DIRECT POWER CONTACT: _____

ADDRESS: 4000 Vassar Dr. NE PHONE: _____

ARCHITECT: Rick Bennett Architect CONTACT: Rick Bennett

ADDRESS: 1118 Park Avenue SW PHONE: 242-1959

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:
- ✓ DRAINAGE REPORT
- ✓ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERTIFICATION
- ___ OTHER _____

PRE-DESIGN MEETING:
- ___ YES
- ___ 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
- ___ CERTIFICATE OF OCCUPANCY APPROVAL
- ___ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ S.A.D. DRAINAGE REPORT
- ___ DRAINAGE REQUIREMENTS
- ___ SUBDIVISION CERTIFICATION
- ___ OTHER _____ (SPECIFY)

DATE SUBMITTED: 2/8/99

BY: B. Montoya

Revised 02/98

RECEIVED
FEB 08 1999
HYDROLOGY SECTION

CITY OF
Albuquerque

May 27,1998

Dennis Lorenz
Brasher & Lorenz Inc.
2201 San Pedro NE Bldg. 1 Suite 210
Albuquerque, New Mexico 87110

RE: TEMPORARY ENGINEER CERTIFICATION FOR DIRECT POWER (G16-D82)
CERTIFICATION STATEMENT DATED 5/5/98

Dear Mr. Lorenz:

Based on the information provided on your May 5,1998 submittal, Engineer Certification for a temporary Certificate of Occupancy is acceptable.

Please be advised that once the items listed on your Certification Statement are completed, you will need to resubmitt for the final C.O..

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

C: Andrew Garcia
File

Sincerely

Bernie J. Montoya CE
Associate Engineer

DRAINAGE INFORMATION SHEET

PROJECT TITLE: DIRECT POWER ZONE ATLAS/DRNG. FILE #: G16-D82

DRB #: — EPC #: — WORK ORDER #: —

LEGAL DESCRIPTION: TRACT B-1-K COMANCHE BUSINESS PARK

CITY ADDRESS: VASSAR DR NE

ENGINEERING FIRM: Brasher & Lorenz, Inc. CONTACT: Dennis A. Lorenz

ADDRESS: 2201 San Pedro NE Bldg.1 Suite 210 Albuquerque, New Mexico 87110 PHONE: 888-6088

OWNER: DIRECT POWER CONTACT: JEFF RANDAL

ADDRESS: 3455A PRINCETON NE PHONE: 889-3585

ARCHITECT: RICK BENNETT CONTACT: R. BENNETT

ADDRESS: 1118 PARK SW PHONE: 242-1859

SURVEYOR: UNKN. CONTACT:

ADDRESS: PHONE:

CONTRACTOR: BROWN DEVELOPMT CONTACT: L. CHAVEZ

ADDRESS: 1118 PARK SW PHONE: 242-1859

TYPE OF SUBMITTAL:

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

PRE-DESIGN MEETING:

___ YES
___ NO
___ COPY PROVIDED

RECEIVED
MAY 05 1998
HYDROLOGY SECTION

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: 5.5.98

BY: Dennis A. Lorenz