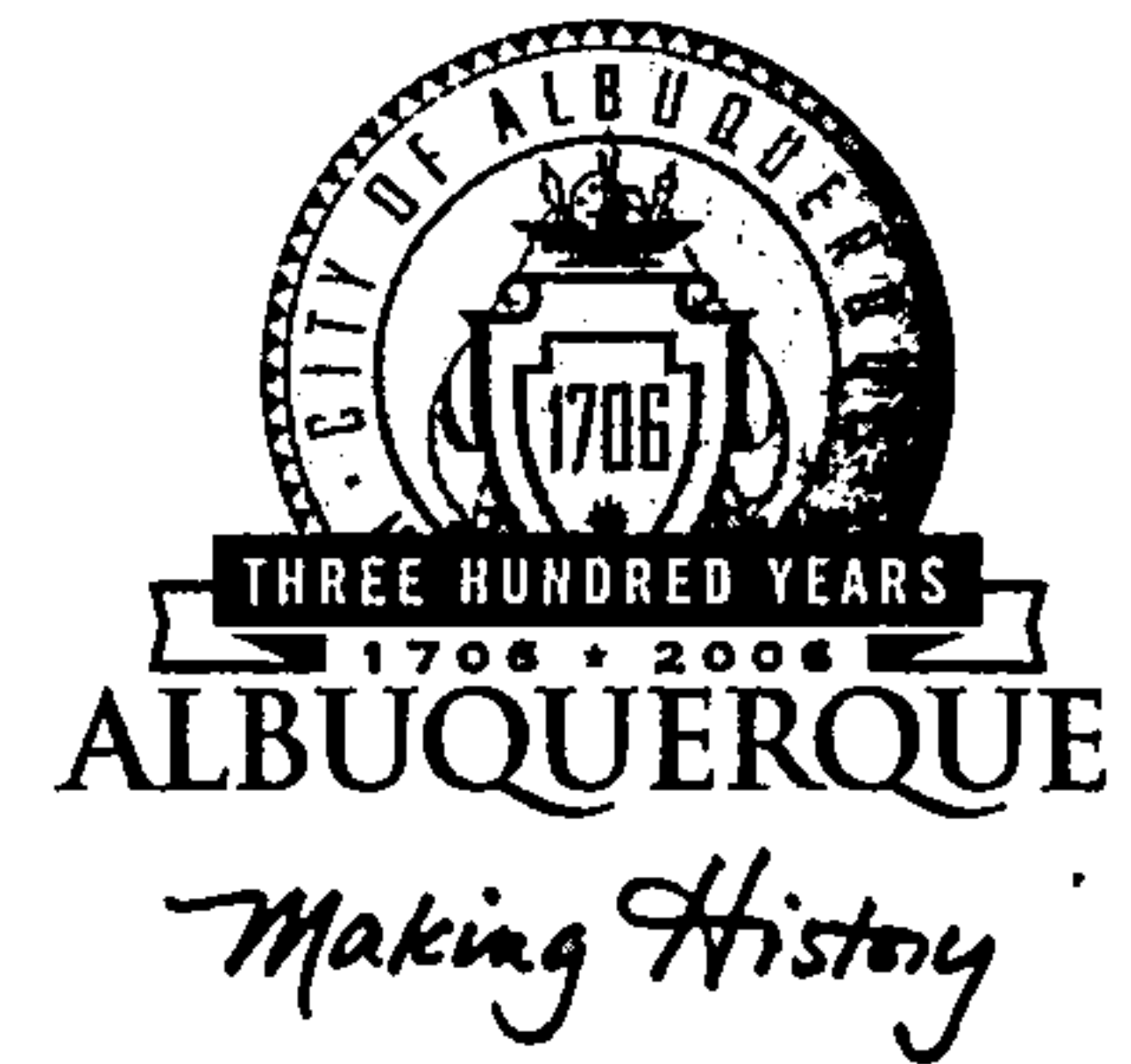


CITY OF ALBUQUERQUE



April 7, 2005

Martin Garcia, P.E.
ABQ Engineering
6739 Academy Rd. Suite 130 NE
Albuquerque, NM 87109

**Re: Meridian Business Park Brunacini Warehouse, Traffic Circulation
Layout (J10-D20)**

Dear Mr. Garcia,

Based upon the information provided in your submittal received 3-30-05, the extents of this project as shown on the above referenced plan do not require Building Permit approval from Transportation.

P.O. Box 1293

If you have any questions, you can contact me at 924-3991.

Albuquerque

New Mexico 87103

Sincerely,

Wilfred A. Gallegos, P.E.
Traffic Engineer, Planning Dept.
Development and Building Services

C: file

www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

5-19/D20

PROJECT TITLE: Brunacini Warehouse Tenant Improvements
DRB #: _____ EPC#: _____

ZONE MAP/DRG. FILE # K-10
WORK ORDER#: _____

LEGAL DESCRIPTION: Lot 1 Meridian Business Park
CITY ADDRESS: _____

ENGINEERING FIRM: ABQ Engineering
ADDRESS: 6739 Academy NE Suite 130
CITY, STATE: Albuquerque

CONTACT: Martin J. Garcia
PHONE: 255-7802
ZIP CODE: 87109

OWNER: Health Care Laundry Services
ADDRESS: 7600 Los Volcanes NW
CITY, STATE: Albuquerque, NM

CONTACT: _____
PHONE: _____
ZIP CODE: 87121

ARCHITECT: Charlie Otero
ADDRESS: 8000 Pennsylvania Circle
CITY, STATE: Albuquerque, NM

CONTACT: Charlie Otero
PHONE: 254-232
ZIP CODE: 87110

SURVEYOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

CHECK TYPE OF APPROVAL SOUGHT:

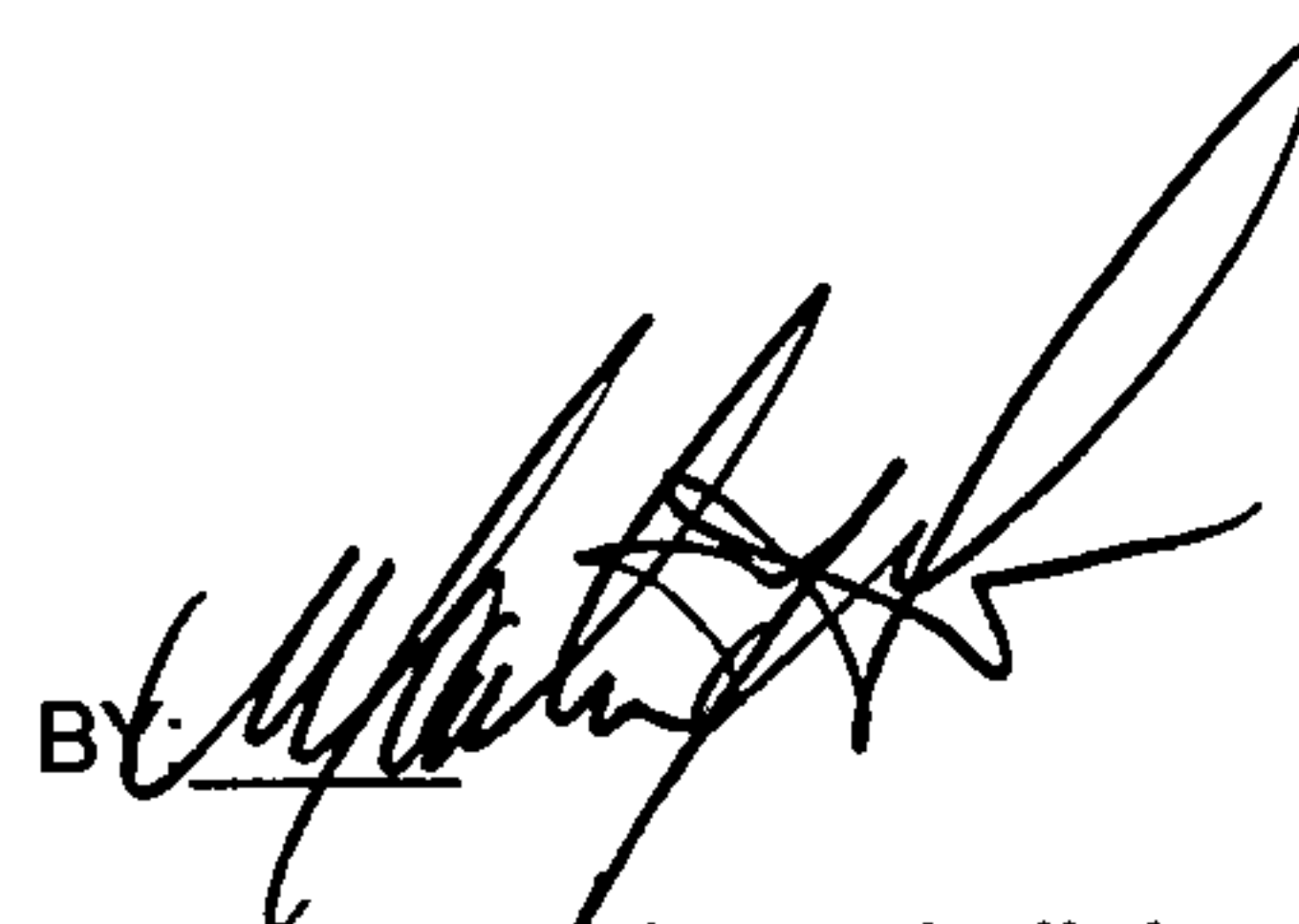
- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1st SUBMITTAL, **REQUIRES TCL or equal**
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☐ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☒ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ ENGINEERS CERTIFICATION (TCL)
- ☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ☐ OTHER

- ☐ SIA / FINANCIAL GUARANTEE RELEASE
- ☐ 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 (PERM.)
- ☐ CERTIFICATE OF OCCUPANCY (TEMP.)
- ☐ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

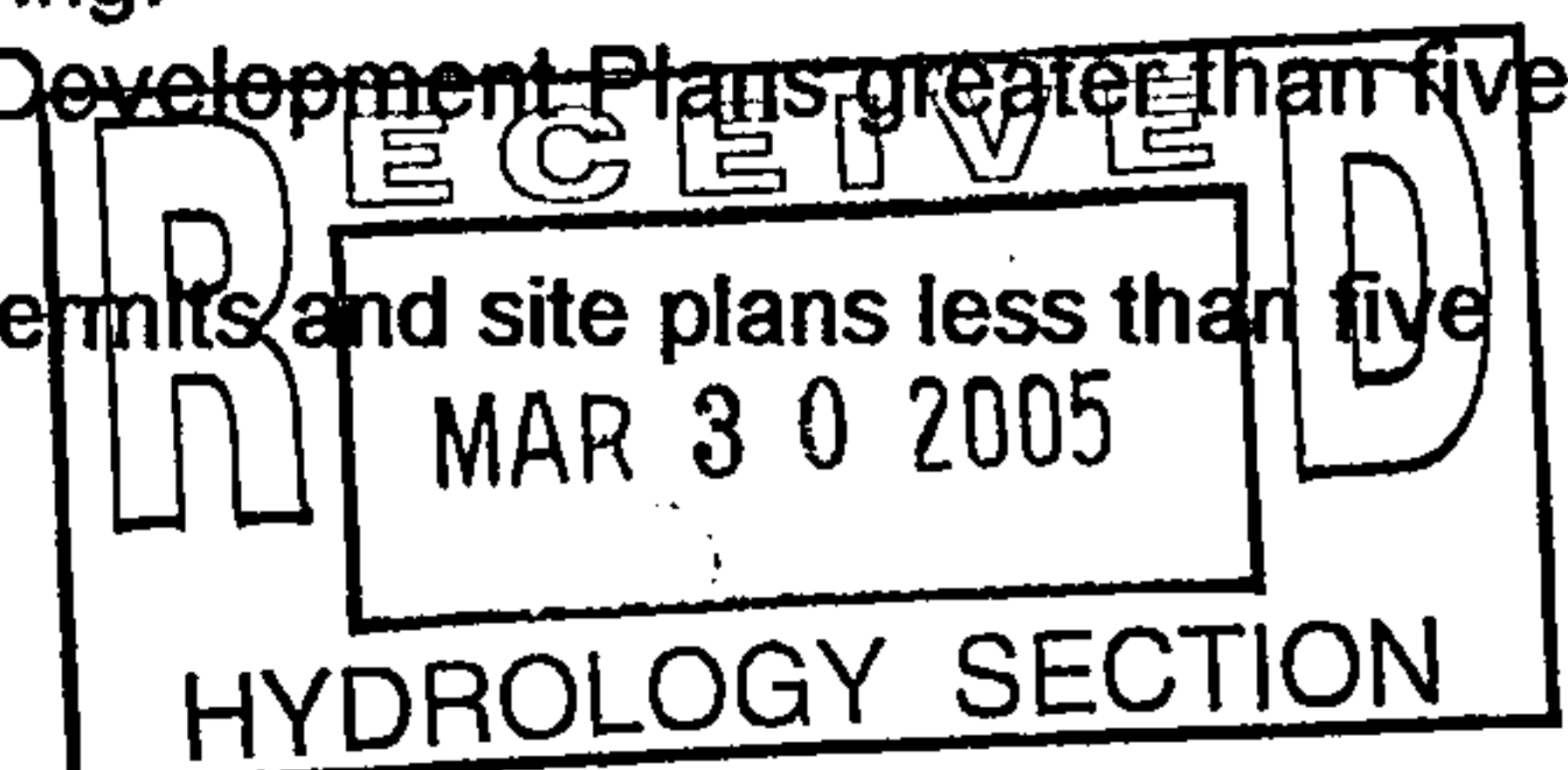
- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED

DATE SUBMITTED: 3/30/05

BY: 

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres.



2 Copies

Needs stamp

~~2. Don't have~~ not intrude on SW

Explain realign of drive aisle

Call Martin

- NW corner align?

- What's being changed?

Extents of project won't reg.

TEL

March 30, 2005

Mr. Wilfred Gallegos, PE
Traffic Engineer, Planning Dept.
Development and Building Services
City of Albuquerque
600 2nd Street NW
Albuquerque, NM 87102

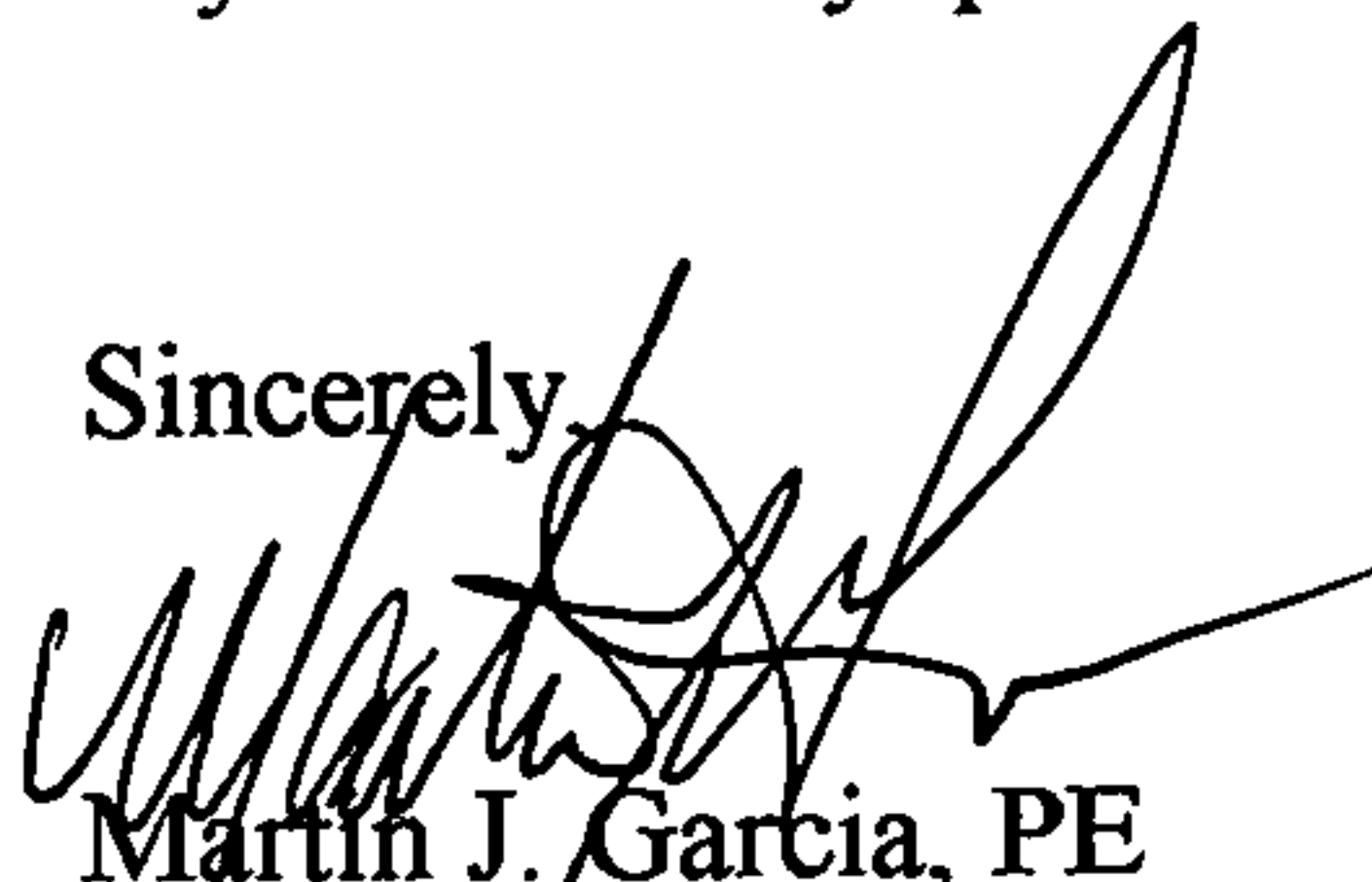
RE: Brunacini Warehouse Tenant Improvements

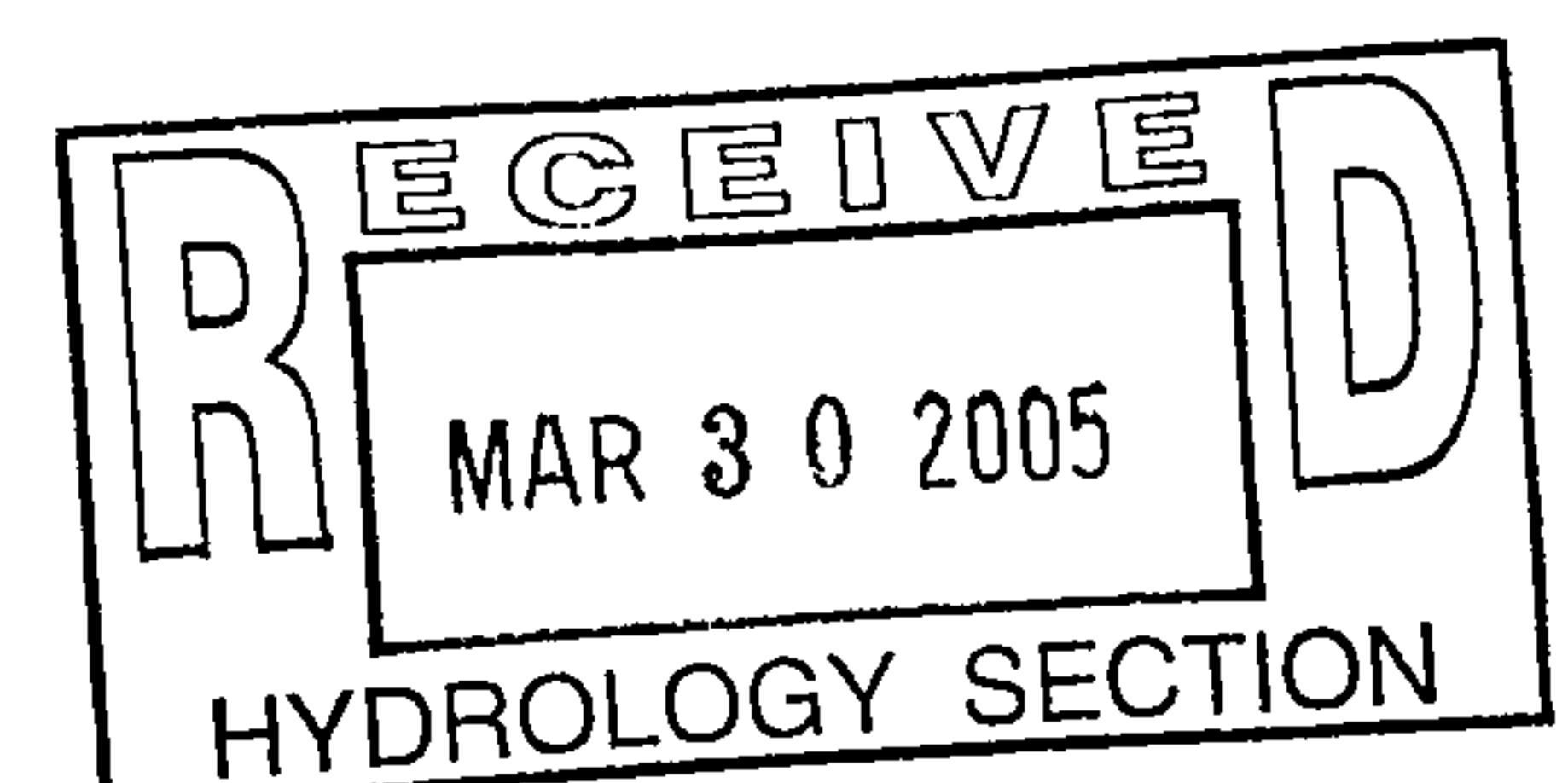
Dear Mr. Gallegos,

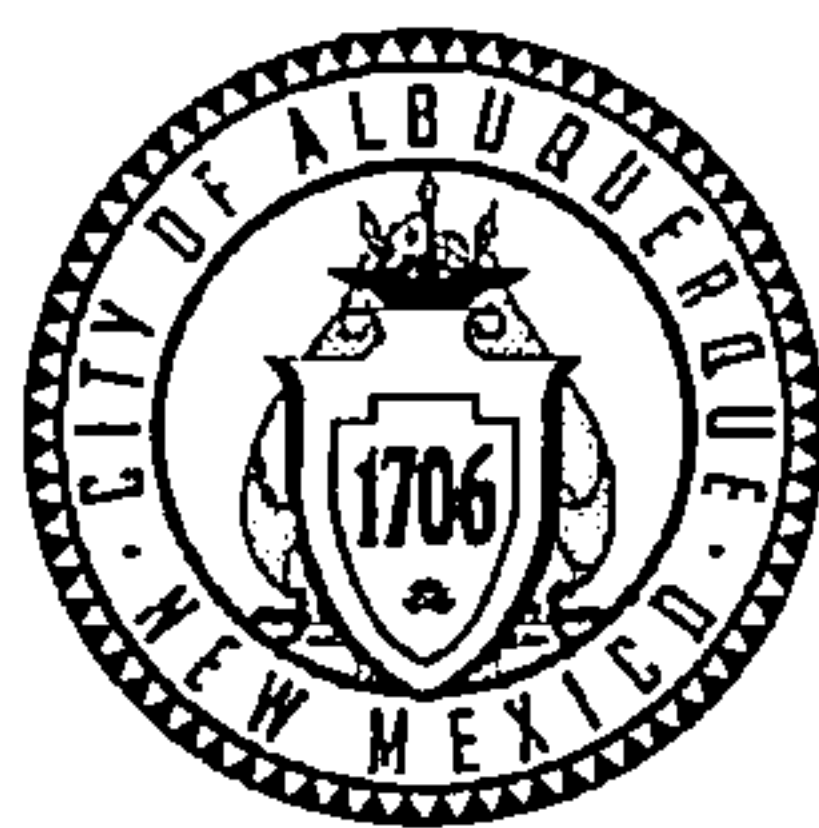
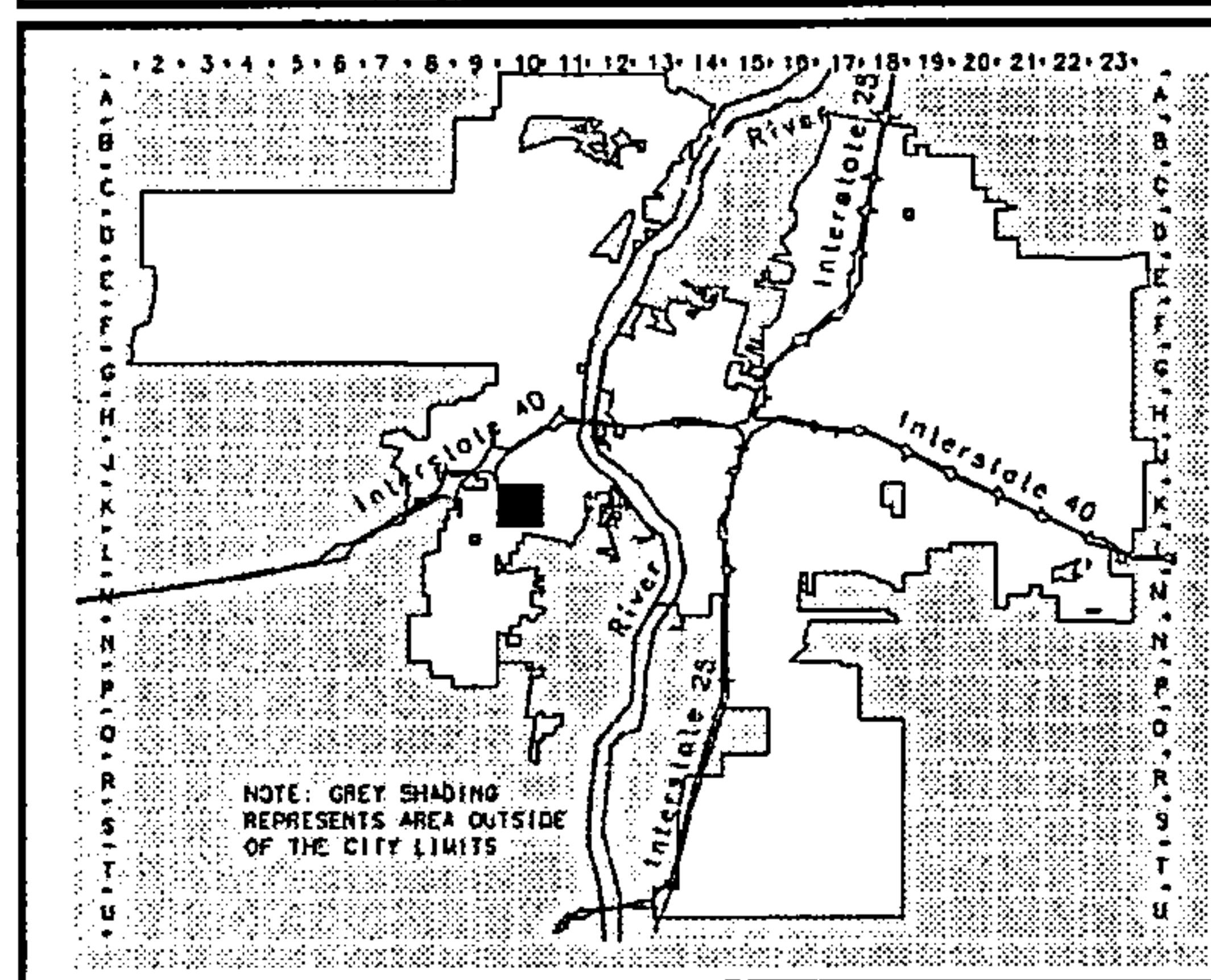
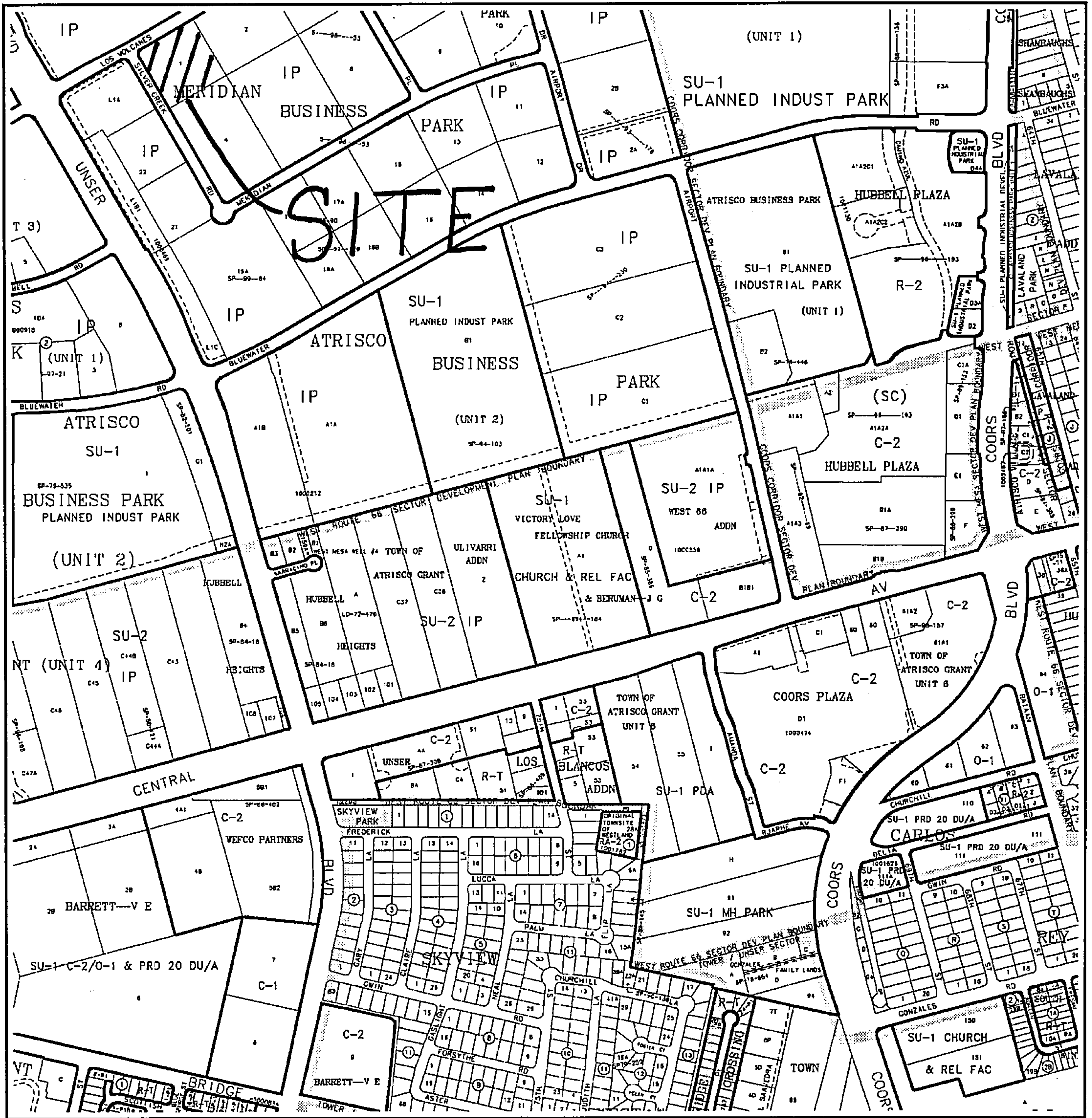
Enclosed herewith is the updated Traffic Circulation Layout for the Brunacini Warehouse Tenant improvements. The tenant improvements consist of a 5500 square foot addition to the existing 37,000 square foot warehouse. As part of the construction of the addition, realignment of the drive aisle on the northwest corner of the site is required. A WB-50 vehicle can still be accommodated through the remaining aisle as can be seen on the attached plan. Minimum site grading and paving will be done to accomplish the addition to the existing warehouse.

If you have any questions or require additional information, please call me at 255-7802.

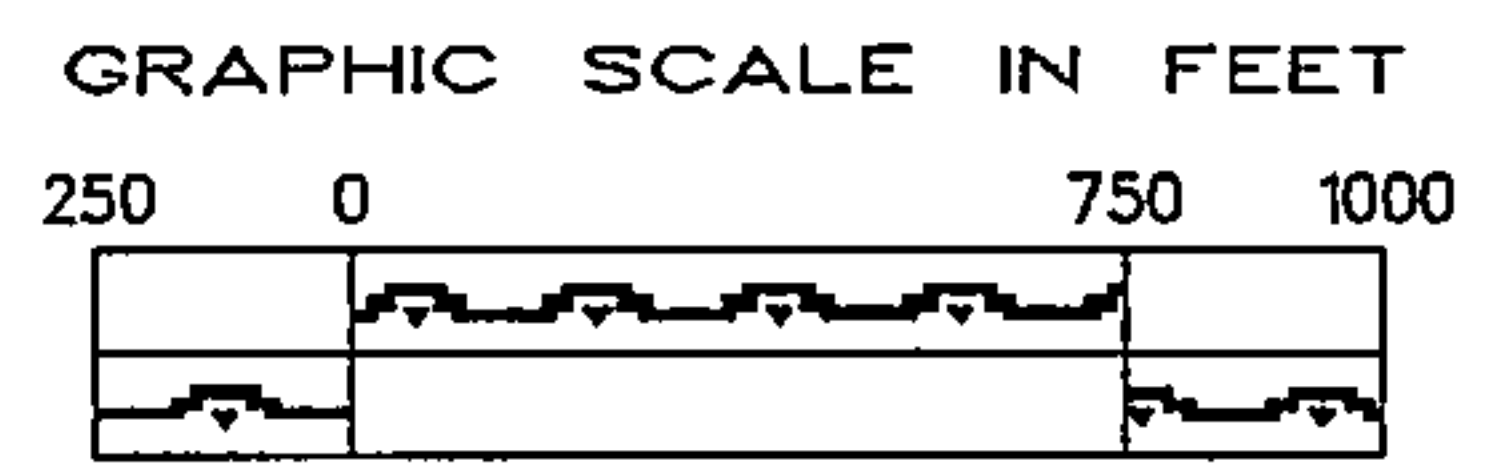
Sincerely,


Martin J. Garcia, PE
ABQ Engineering Inc.
25039





Albuquerque Geographic Information System
PLANNING DEPARTMENT
© Copyright 2003



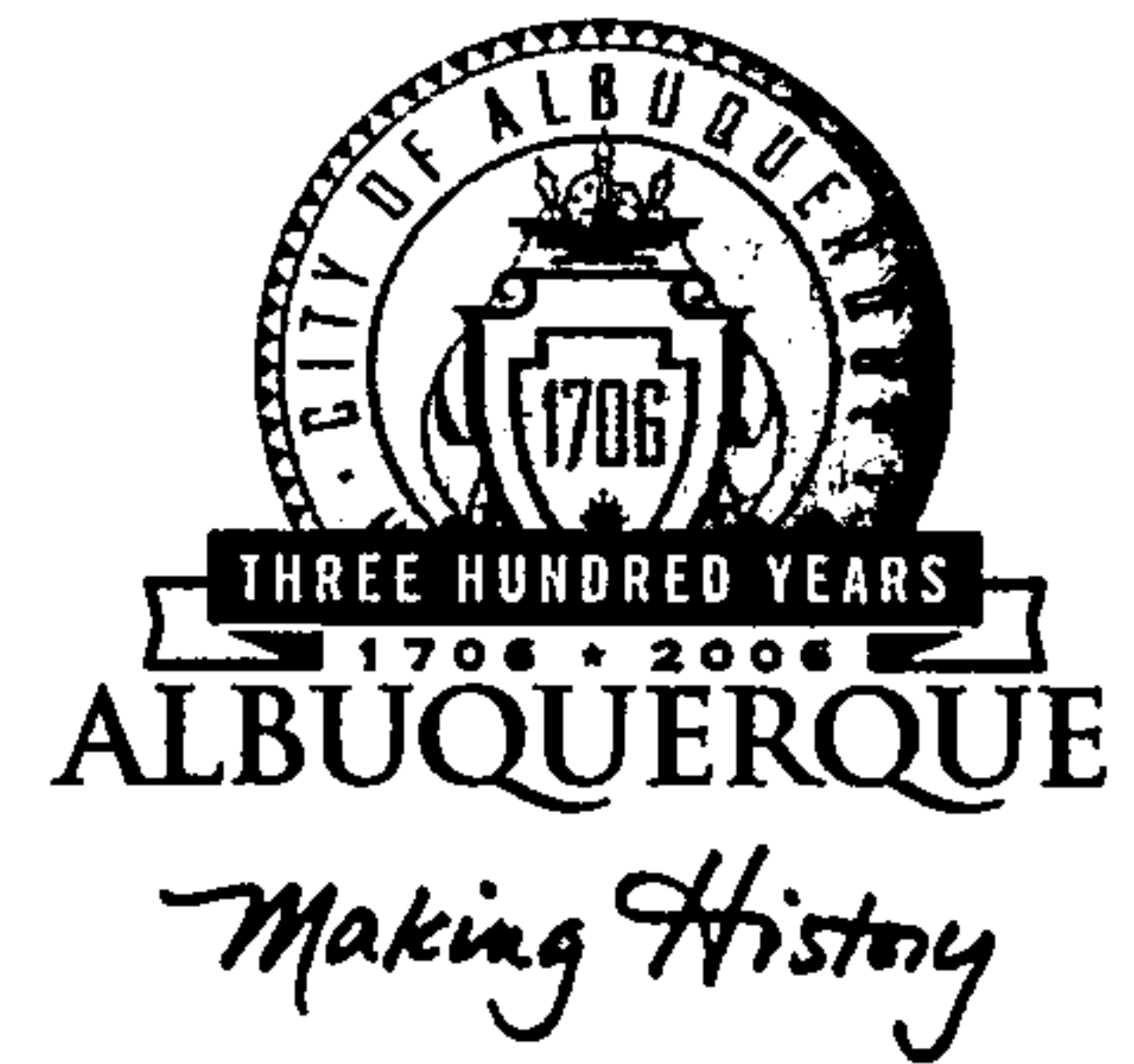
Zone Atlas Page

K-10-Z

Map Amended through November 01, 2003

RECEIVED
MAR 30 2005
HYDROLOGY SECTION

CITY OF ALBUQUERQUE



April 6, 2005

Martin J. Garcia, P.E.
ABQ Engineering, Inc.
6739 Academy Rd. NE – Suite 130
Albuquerque, NM 87109

**Re: Meridian Business Park, Lot 1 – Grading and Drainage Plan
Engineer's Stamp dated 3-22-05 (J10-D20)**

Dear Mr. Garcia,

Based upon the information provided in your submittal dated 3-23-05, the above referenced plan is approved for Building Permit.

Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology and prior to release of the Certificate of Occupancy an Engineer's Certification of the grading plan per the DPM checklist will be required.

If you have any questions, you can contact me at 924-3990.

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Sincerely,

Phillip J. Lovato, E.I.

Associate Engineer, Planning Department
Development and Building Services

C: file

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Meridian Business Park, Lot 1
DRB #: _____ EPC#: _____

ZONE MAP/DRG. FILE #: J-10 K-10/D20
WORK ORDER#: _____

LEGAL DESCRIPTION: Lot 1 Meridian Business Park
CITY ADDRESS: _____

ENGINEERING FIRM: ABQ Engineering
ADDRESS: 6739 Academy NE Suite 130
CITY, STATE: Albuquerque

CONTACT: Martin J. Garcia
PHONE: 255-7802
ZIP CODE: 87109

OWNER: Health Care Laundry Services
ADDRESS: 7600 Los Volcanes NW
CITY, STATE: Albuquerque, NM

CONTACT: _____
PHONE: _____
ZIP CODE: 87121

ARCHITECT: Charlie Otero
ADDRESS: 8000 Pennsylvania Circle
CITY, STATE: Albuquerque, NM

CONTACT: Charlie Otero
PHONE: 254-232
ZIP CODE: 87110

SURVEYOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1st SUBMITTAL, **REQUIRES TCL or equal**
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☒ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ ENGINEERS CERTIFICATION (TCL)
- ☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SIA / FINANCIAL GUARANTEE RELEASE
- ☐ 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 (PERM.)
- ☐ CERTIFICATE OF OCCUPANCY (TEMP.)
- ☐ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED

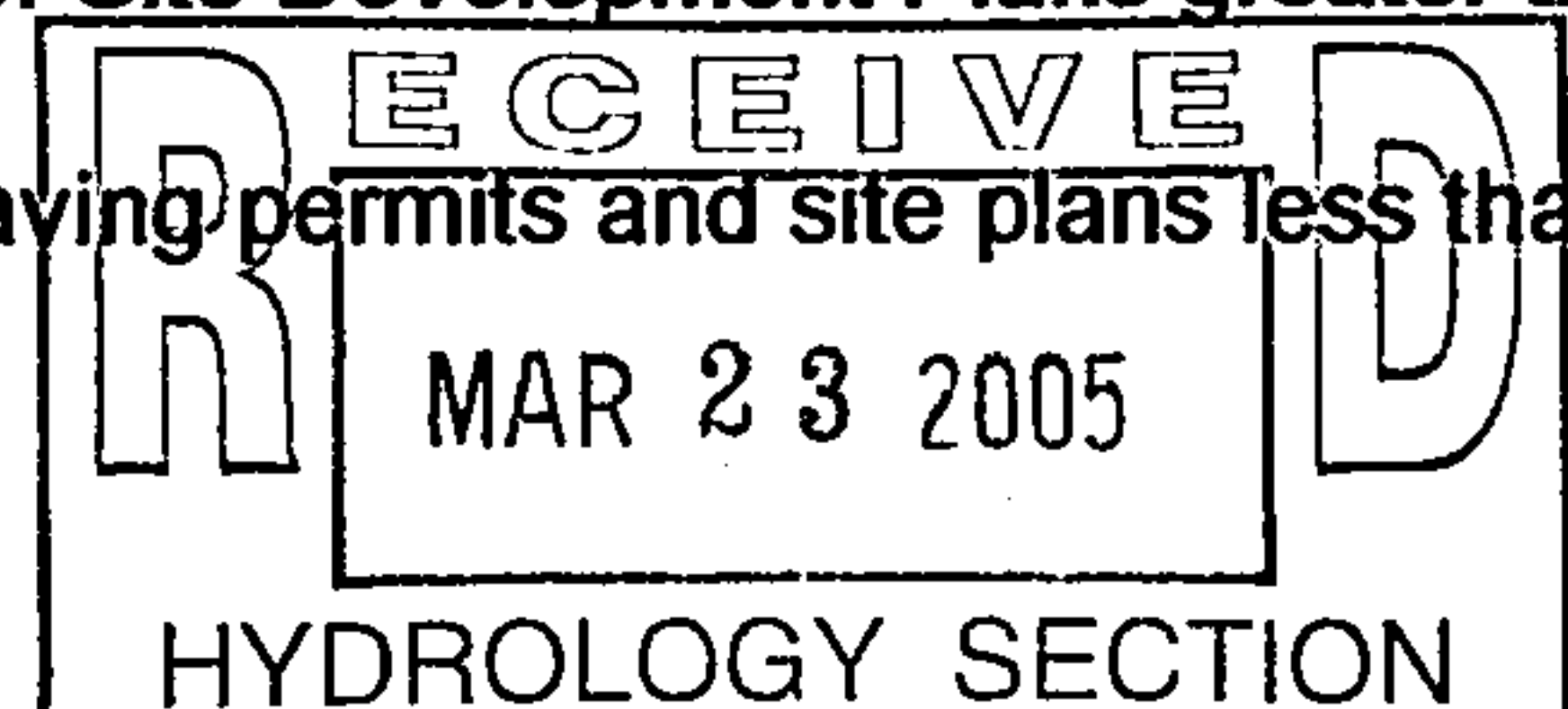
DATE SUBMITTED: 3/27/05

BY: [Signature]

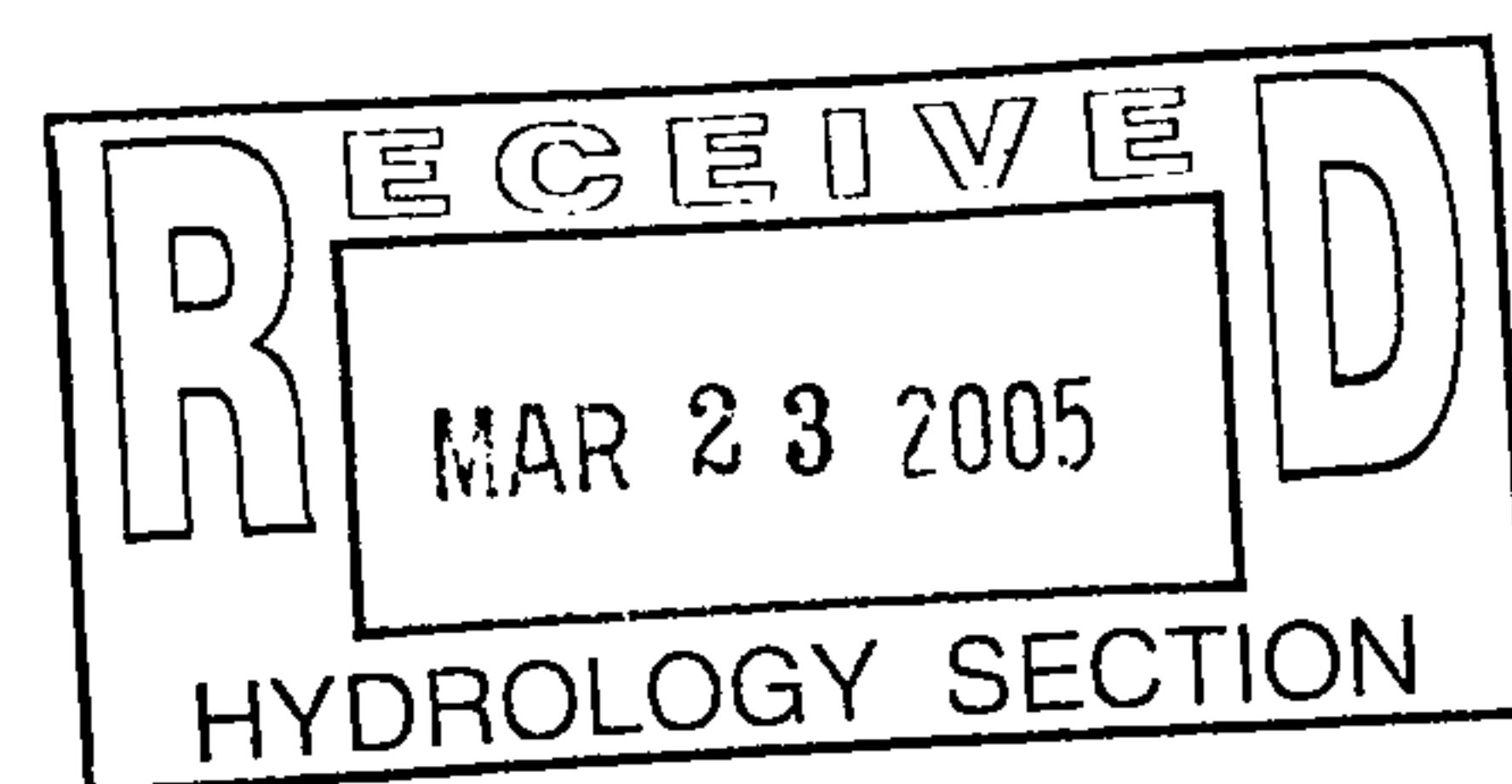
Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.

2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five acres.



3. Drainage Report: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.



March 23, 2005

Mr. Brad Bingham
City of Albuquerque Development Services
600 2nd Street NW
Albuquerque, NM 87102

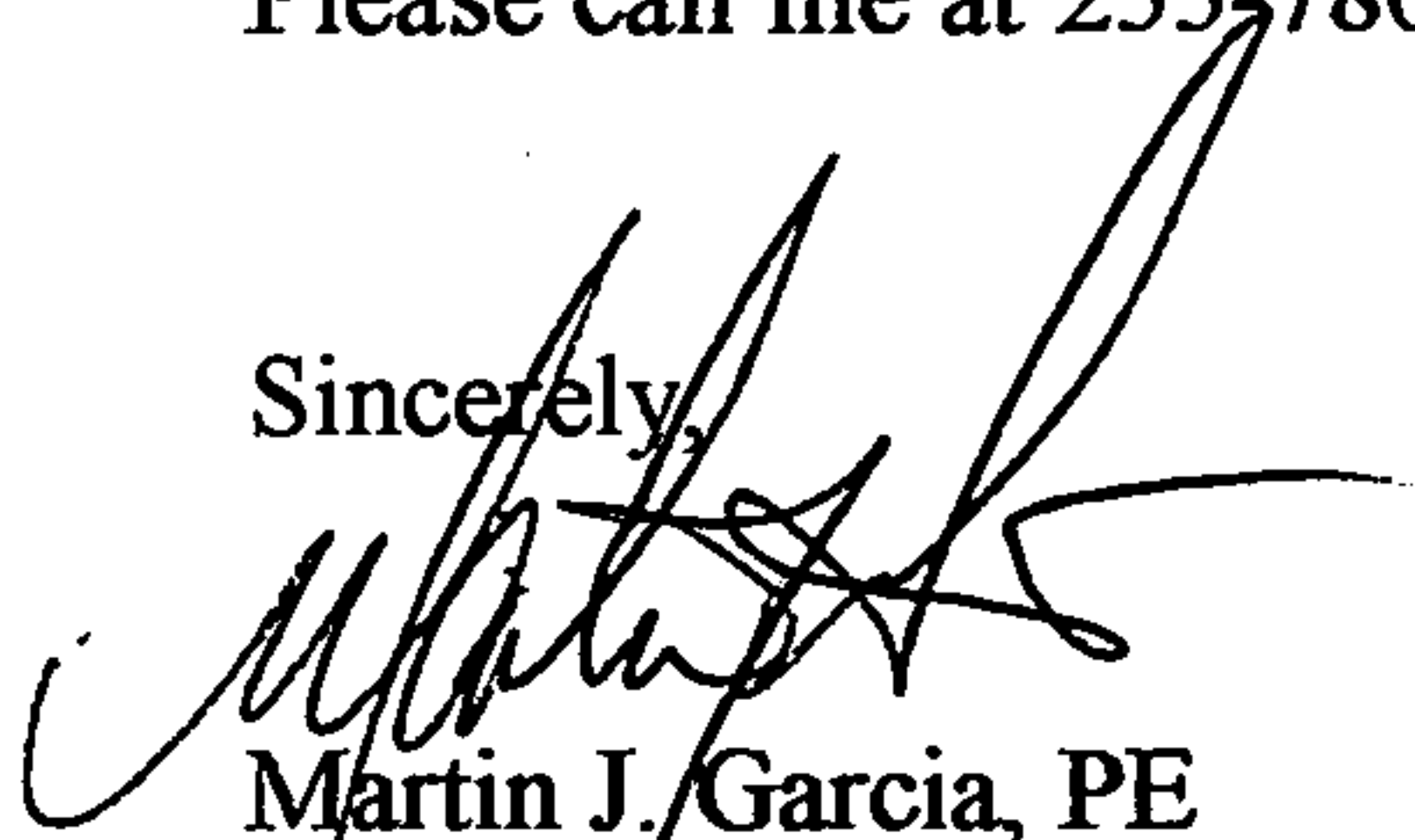
RE: Grading and Drainage Plan for Plaza Acequia II Subdivision for Final Plat approval

Mr. Bingham:

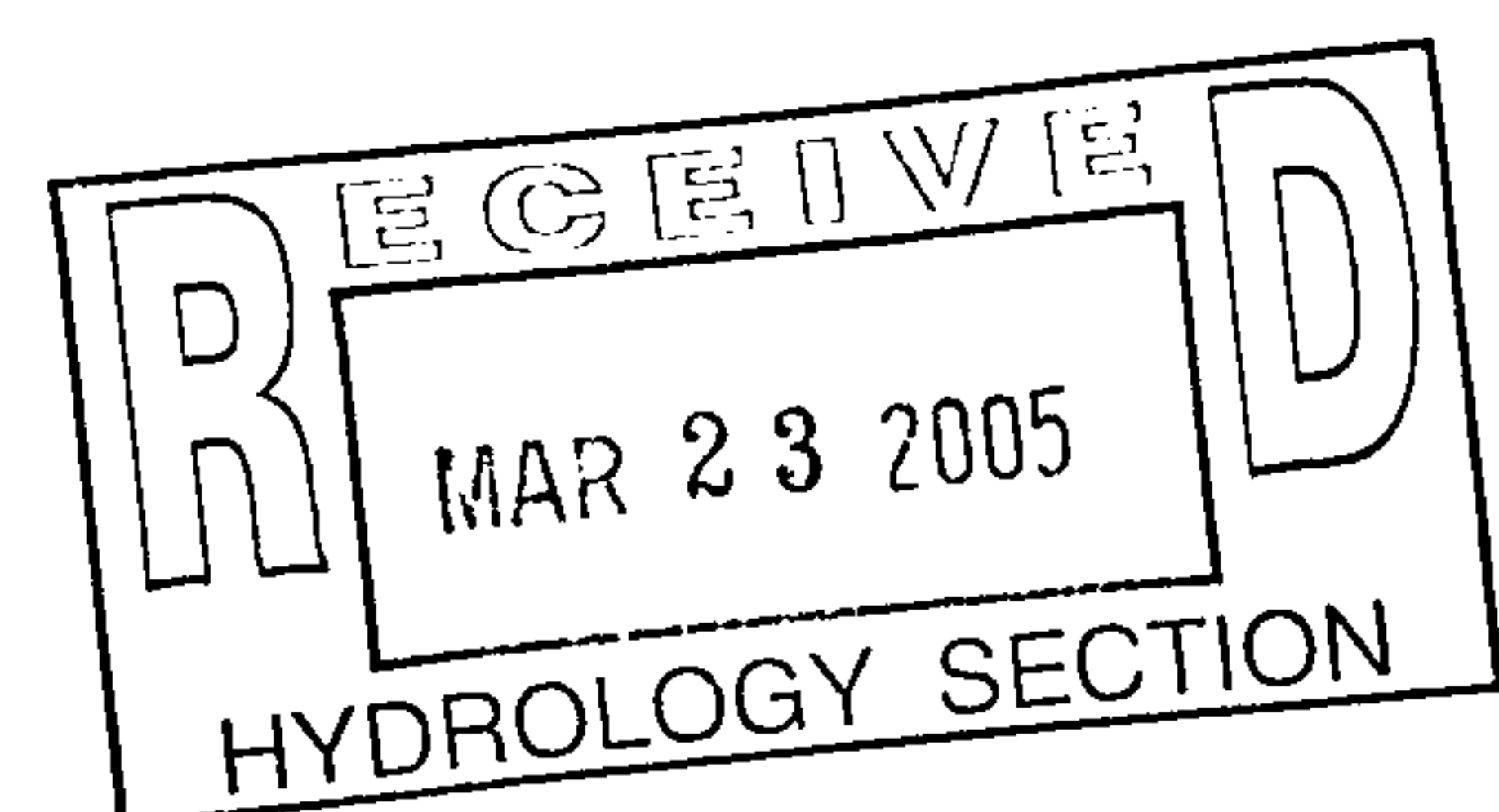
Enclosed is one blueline copy of the Grading and Drainage Plan for Brunacini Warehouse Tenant Improvements. The project entails a 5500 square foot addition to the existing 37,663 square foot warehouse. Minor site grading will be undertaken to accommodate the improvements. The project is located at the corner of Los Volcanes and Silver Creek Road.

Please call me at 255-7802 if you have any questions or require additional information.

Sincerely,



Martin J. Garcia, PE
ABQ Engineering, Inc.
25039



ONE STOP SHOP
CITY OF ALBUQUERQUE PLANNING DEPARTMENT
Development & Building Services

PAID RECEIPT

Meridian Business Park, Lot 1
Brunnani

APPLICANT NAME

AGENT

ABQ Engineering

ADDRESS

6739 Academy NE. Suite 13

PROJECT & APP #

K-10/D20 550 Silver Creek SW

PROJECT NAME

grading & drainage Brunnani

\$ 441032/3424000 Conflict Management Fee

\$ 441006/4983000 DRB Actions

\$ 441006/4971000 EPC/AA/LUCC Actions & All Appeals

\$ 441018/4971000 Public Notification

\$ 50.00 441006/4983000 DRAINAGE PLAN REVIEW OR TRAFFIC IMPACT STUDY***

() Major/Minor Subdivision () Site Development Plan (X) Bldg Permit
() Letter of Map Revision () Conditional Letter of Map Revision
() Traffic Impact Study

\$ 50.00 TOTAL AMOUNT DUE

***NOTE: If a subsequent submittal is required, bring a copy of this paid receipt with you to avoid an additional charge.

City of Albuquerque
Treasury Division

LOC: ANNX

3:24PM

3/23/2005

RECEIPT# 00039402

WS# 007 TRANS# 0030

Account 441006

Fund 0110

Activity 4983000

TRSCCS

Trans Amt \$50.00

J24 Misc

\$50.00

\$50.00

CK

CHANGE

Thank You

MARTIN J. GARCIA
DENISE R. GARCIA
1035 S. BOSQUE LOOP
BOSQUE FARMS, NM 87068
PH. 505-869-9195

PAY TO THE ORDER OF City of Albuquerque

DATE 3/23/04

3903

95-8365/3070 02

\$ 50.00

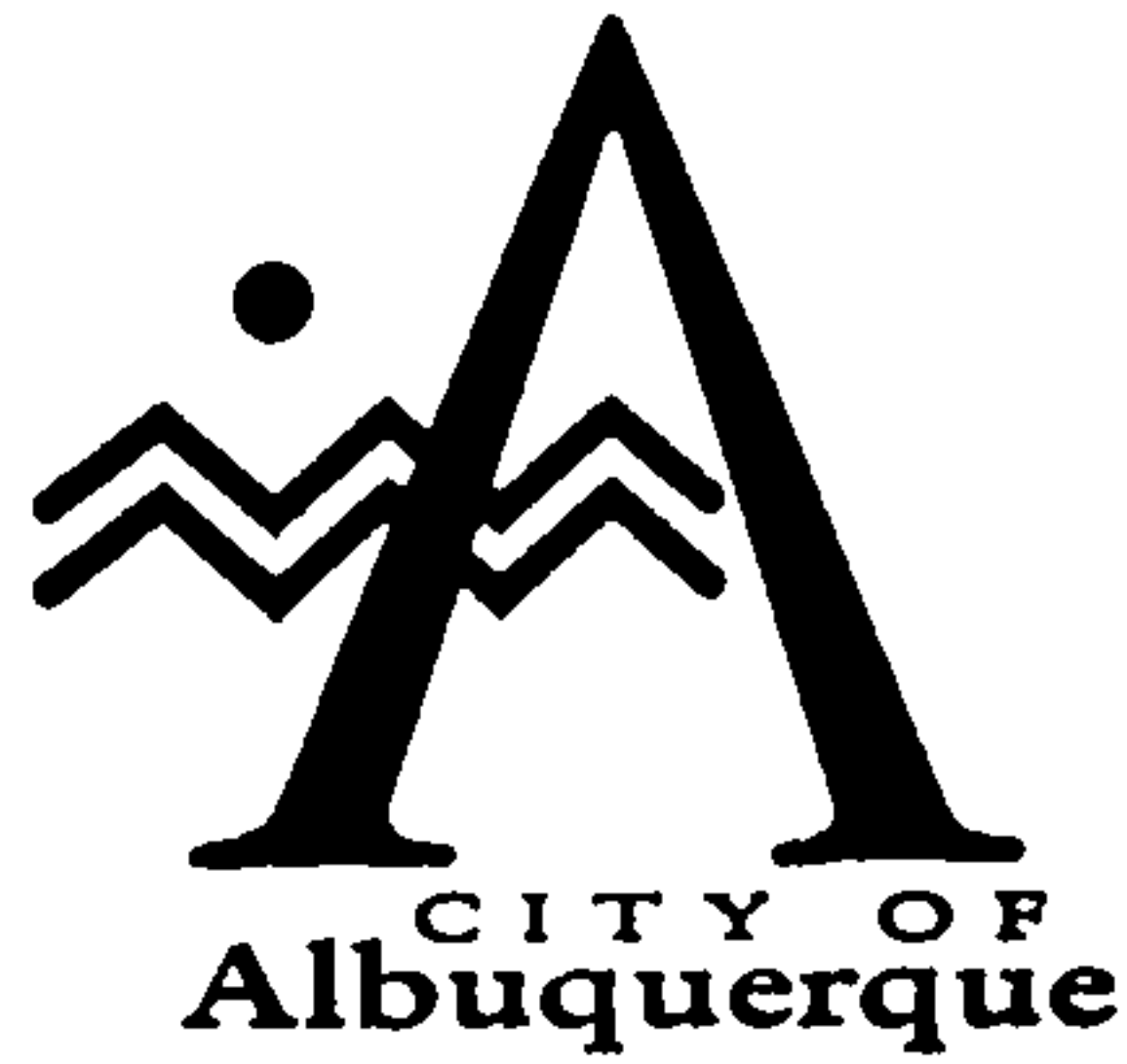
DOLLARS

U.S. New Mexico
FEDERAL CREDIT UNION
P.O. BOX 129 ALB. NM 87103-0129
(505) 342-9888

FOR Charlotte Garcia

3070836521 3114380007 3903

©Clarke American



April 2, 1998

Chuck Easterling
Easterling & Associates
2600 American Rd. SE
Rio Rancho, New Mexico 87124

RE: ENGINEER CERTIFICATION FOR LOT 1 MERIDIAN BUSINESS PARK (J10-D20)
CERTIFICATION STATEMENT DATED 3/23/98

Dear Mr. Easterling:

Based on the information provided on your March 24, 1998 resubmittal, Engineer Certification for the above referenced site is acceptable.

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

Good for You, Albuquerque!



DRAINAGE INFORMATION SHEET

PROJECT TITLE: MERIDIAN BUSINESS PARK LOT 1 ZONE ATLAS / DRNG. FILE #: J-10 / D-20
DRB #: NOT YET ESTABLISHED EPC #: — WORK ORDER #: (CROSS-REFERENCE COA PROJ. 559781)
LEGAL DESCRIPTION: MERIDIAN BUSINESS PARK, LOT 1
CITY ADDRESS: NOT YET ESTABLISHED

ENGINEERING FIRM: EASTERLING & ASSOC CONTACT: CHUCK EASTERLING
ADDRESS: 10131 LOOPS NW STE. H-7 PHONE: 898-8021
ALB. NM 87114

OWNER: MERIDIAN REALTY LTD. CO. CONTACT: ANGELO BRUNARINI
GEORGE BRUNARINI
ADDRESS: PO BOX 6363 PHONE: 345-3909
ALB. NM 87197

ARCHITECT: CLAUDIO VIGIL ARCHITECTS CONTACT: TATE FISHBURN
ADDRESS: 1305 TIGERAS NW PHONE: 842-1113
ALB. NM 87102

SURVEYOR: SURV-TEX CONTACT: GARRY HUGG
ADDRESS: 5643 PARADISE BLVD NW PHONE: 897 - 3366
ALB. NM 87114

CONTRACTOR: NOT YET SELECTED CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
☒ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER _____

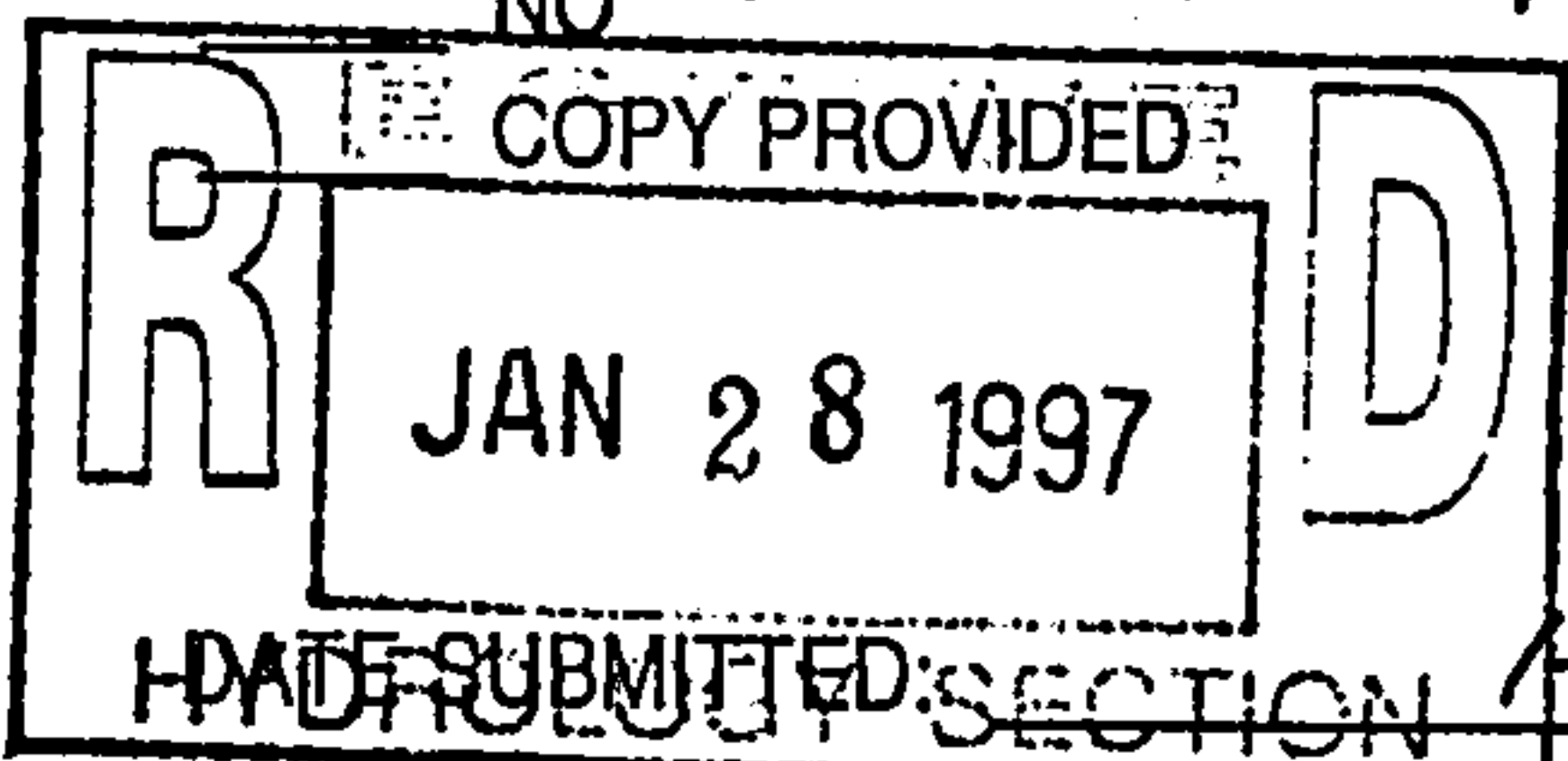
CHECK TYPE OF APPROVAL SOUGHT:

- ☐ 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
☐ OTHER _____ (SPECIFY)

PRE-DESIGN MEETING:

☒ YES PRE-DESIGN FOR MERIDIAN BUSINESS
☐ NO PARK SUBDIVISION, 8/23/96, W/

FRED
AGUIRRE

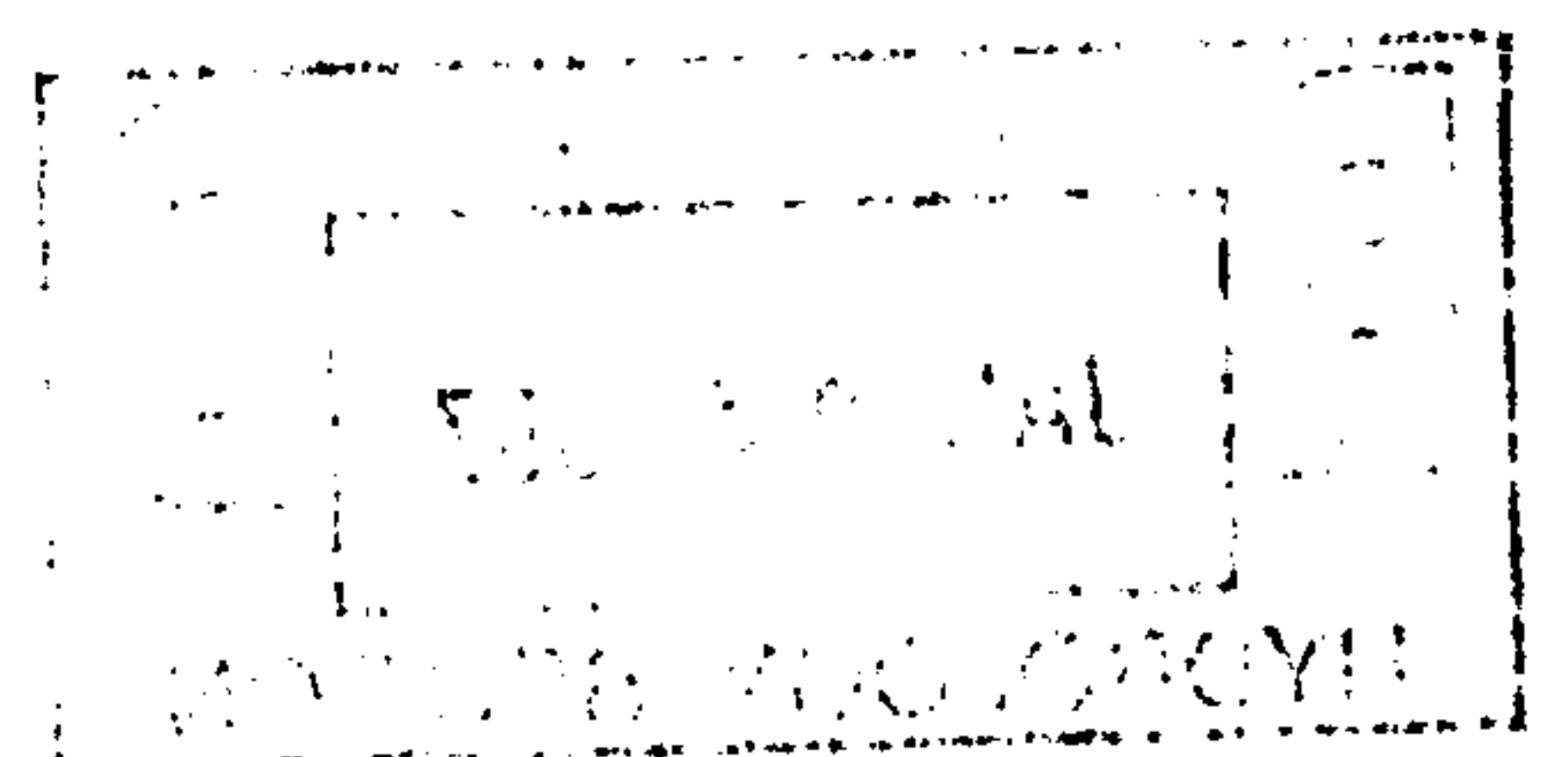


DATE SUBMITTED: SECTION 1-28-97

BY: C. M. EASTERLING

Final Plat for
Meridian Business Park
must be in place

SD Cond. of BP app.
Cert. w/ C.O.
private cov.



AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 01/26/1997
START TIME (HR:MIN:SEC) = 18:27:52 USER NO.= EASTERNM.I01
INPUT FILE = LOT1.HMI

** MERIDIAN BUSINESS PARK
** SIZING COMPUTATIONS FOR PROPOSED DETENTION POND
** DEVELOPED CONDITIONS ONSITE; NO OFFSITE FLOWS.
** 1-20-97
** 100 YEAR 24 HOUR STORM
** INPUT FILE LOT1.HMI

START 0.0 HOURS

RAINFALL TYPE=-2 0.0 1.87 2.20 2.66 DT=0.05

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT
1.40 HR.

DT = .050000 HOURS END TIME = 24.000000 HOURS

** COMPUTE HYDROGRAPH FOR LOT 1 (2.8 acres)
** 79% impervious (21% Landscaping)

COMPUTE NM HYD ID=1 HYDROGRAPH NO=101.0 DA=0.004391
 %A=0.0 %B=21.0 %C=00.0 %D=79.0 TP=0.133333
 MASS RAINFALL=-1

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N
= 7.106420
UNIT PEAK = 13.692 CFS UNIT VOLUME = .9983 B = 526.28 P60 =
1.8700
AREA = .003469 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER
HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .131024HR TP = .133333HR K/TP RATIO = .982685 SHAPE CONSTANT, N
= 3.593454
UNIT PEAK = 2.2621 CFS UNIT VOLUME = .9952 B = 327.09 P60 =
1.8700
AREA = .000922 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER
HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 2.05746 INCHES = .4818 ACRE-FEET
PEAK DISCHARGE RATE = 10.74 CFS AT 1.500 HOURS BASIN AREA = .0044 SQ.
MI.

** Route through detention pond to limit discharge
** to 0.1 cfs per acre (0.28 cfs), per requirements of Atrisco Business Park Mas
** Drainage Plan, 1993, K-10\D-23).

ROUTE RESERVOIR ID=2 HYDROGRAPH NO=500 INFLOW ID=1 CODE=10
 OUTFLOW(cfs) STORAGE(ac ft) ELEV(ft)
 0.00 0.0000 17.0
 0.05 0.0188 18.0
 0.11 0.0359 18.5
 0.15 0.0909 19.5
 0.18 0.1460 20.5
 0.21 0.2010 21.5

0.24	0.2560	22.5
0.26	0.3110	23.5
0.28	0.3661	24.5
0.29	0.4311	25.5
0.30	0.4500	26.5

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	17.00	.000	.00
.50	.00	17.00	.000	.00
1.00	.00	17.00	.000	.00
1.50	10.74	19.98	.117	.16
2.00	2.48	23.63	.318	.26
2.50	.34	24.18	.349	.27
3.00	.12	24.13	.346	.27
3.50	.07	23.99	.338	.27
4.00	.06	23.83	.329	.27
4.50	.06	23.68	.321	.26
5.00	.06	23.53	.312	.26
5.50	.07	23.38	.304	.26
6.00	.07	23.24	.297	.25
6.50	.08	23.11	.289	.25
7.00	.08	22.98	.283	.25
7.50	.08	22.86	.276	.25
8.00	.08	22.73	.269	.24
8.50	.08	22.61	.262	.24
9.00	.07	22.48	.255	.24
9.50	.07	22.36	.248	.24
10.00	.07	22.23	.241	.23
10.50	.07	22.11	.235	.23
11.00	.07	21.99	.228	.22
11.50	.06	21.87	.222	.22
12.00	.06	21.76	.215	.22
12.50	.06	21.64	.209	.21
13.00	.06	21.53	.202	.21
13.50	.06	21.41	.196	.21
14.00	.06	21.30	.190	.20
14.50	.06	21.19	.184	.20
15.00	.05	21.08	.178	.20
15.50	.05	20.98	.172	.19
16.00	.05	20.87	.166	.19
16.50	.05	20.77	.161	.19
17.00	.05	20.67	.155	.19
17.50	.05	20.57	.150	.18
18.00	.05	20.47	.144	.18
18.50	.05	20.37	.139	.18
19.00	.05	20.28	.134	.17
19.50	.05	20.18	.128	.17
20.00	.05	20.09	.123	.17
20.50	.04	20.00	.118	.16
21.00	.04	19.91	.113	.16
21.50	.04	19.82	.109	.16
22.00	.04	19.73	.104	.16
22.50	.04	19.65	.099	.15
23.00	.04	19.56	.094	.15
23.50	.04	19.48	.090	.15
24.00	.04	19.40	.085	.15
24.50	.00	19.30	.080	.14
25.00	.00	19.20	.074	.14
25.50	.00	19.10	.069	.13
26.00	.00	19.00	.063	.13
26.50	.00	18.90	.058	.13
27.00	.00	18.81	.053	.12
27.50	.00	18.72	.048	.12

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
---------------	-----------------	----------------	-------------------	------------------

28.00	.00	18.63	.043	.12
28.50	.00	18.54	.038	.11
29.00	.00	18.44	.034	.10
29.50	.00	18.32	.030	.09

PEAK DISCHARGE = .274 CFS - PEAK OCCURS AT HOUR 2.60
MAXIMUM WATER SURFACE ELEVATION = 24.188
MAXIMUM STORAGE = .3489 AC-FT INCREMENTAL TIME= .050000HRS

PRINT HYD ID=2 CODE=1

OUTFLOW HYDROGRAPH RESERVOIR 500.00

RUNOFF VOLUME = 1.94366 INCHES = .4552 ACRE-FEET
PEAK DISCHARGE RATE = .27 CFS AT 2.600 HOURS BASIN AREA = .0044 SQ.

MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 18:27:53

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 01/26/1997
START TIME (HR:MIN:SEC) = 18:32:11 USER NO.= EASTERNM.I01
INPUT FILE = 2NDSTRM.HMI

** MERIDIAN BUSINESS PARK
** SIZING COMPUTATIONS FOR PROPOSED DETENTION POND
** DEVELOPED CONDITIONS ONSITE; NO OFFSITE FLOWS.
** 1-27-97 ** 2ND STORM OF BACK-TO-BACK 100 YR 24 HR STORMS
** 100 YEAR 24 HOUR STORM ** ASSUMES RESIDUAL OF 1773 CUBIC FEET
** REMAINING FROM PREVIOUS 100-YR 24 HR STORM
** INPUT FILE LOT1.HMI

START 0.0 HOURS

RAINFALL TYPE=-2 0.0 1.87 2.20 2.66 DT=0.05

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT
1.40 HR.

DT = .050000 HOURS END TIME = 24.000000 HOURS

** COMPUTE HYDROGRAPH FOR LOT 1 (2.8 acres)
** 79% impervious (21% Landscaping)

COMPUTE NM HYD ID=1 HYDROGRAPH NO=101.0 DA=0.004391
 %A=0.0 %B=21.0 %C=00.0 %D=79.0 TP=0.133333
 MASS RAINFALL=-1

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N
= 7.106420
UNIT PEAK = 13.692 CFS UNIT VOLUME = .9983 B = 526.28 P60 =
1.8700
AREA = .003469 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER
HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .131024HR TP = .133333HR K/TP RATIO = .982685 SHAPE CONSTANT, N
= 3.593454
UNIT PEAK = 2.2621 CFS UNIT VOLUME = .9952 B = 327.09 P60 =
1.8700
AREA = .000922 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER
HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 2.05746 INCHES = .4818 ACRE-FEET
PEAK DISCHARGE RATE = 10.74 CFS AT 1.500 HOURS BASIN AREA = .0044 SQ.
MI.

** Route through detention pond to limit discharge
** to 0.1 cfs per acre (0.28 cfs), per requirements of Atrisco Business
** Park Master Drainage Plan, 1993, K-10\D-23).
***** POND VOLUME ADJUSTED DOWNWARD BY 1773 CUBIC FEET TO ACCOUNT FOR
** RESIDUAL VOLUME REMAINING AFTER 1ST 100 YR STORM

ROUTE RESERVOIR ID=2 HYDROGRAPH NO=500 INFLOW ID=1 CODE=10
 OUTFLOW(cfs) STORAGE(ac ft) ELEV(ft)
 0.00 0.0000 17.0
 0.05 0.0056 18.0
 0.11 0.0227 18.5

0.15	0.0777	19.5
0.18	0.1328	20.5
0.21	0.1878	21.5
0.24	0.2428	22.5
0.26	0.2978	23.5
0.28	0.3529	24.5
0.29	0.4179	25.5
0.30	0.4500	26.5

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	17.00	.000	.00
.50	.00	17.00	.000	.00
1.00	.00	17.00	.000	.00
1.50	10.74	20.21	.117	.17
2.00	2.48	23.85	.317	.27
2.50	.34	24.41	.348	.28
3.00	.12	24.35	.344	.28
3.50	.07	24.20	.337	.27
4.00	.06	24.05	.328	.27
4.50	.06	23.89	.319	.27
5.00	.06	23.73	.311	.26
5.50	.07	23.58	.302	.26
6.00	.07	23.44	.294	.26
6.50	.08	23.31	.287	.26
7.00	.08	23.18	.280	.25
7.50	.08	23.05	.273	.25
8.00	.08	22.92	.266	.25
8.50	.08	22.79	.259	.25
9.00	.07	22.66	.252	.24
9.50	.07	22.54	.245	.24
10.00	.07	22.41	.238	.24
10.50	.07	22.28	.231	.23
11.00	.07	22.16	.224	.23
11.50	.06	22.04	.217	.23
12.00	.06	21.92	.211	.22
12.50	.06	21.80	.204	.22
13.00	.06	21.68	.198	.22
13.50	.06	21.56	.191	.21
14.00	.06	21.45	.185	.21
14.50	.06	21.34	.179	.21
15.00	.05	21.22	.173	.20
15.50	.05	21.11	.167	.20
16.00	.05	21.01	.161	.20
16.50	.05	20.90	.155	.19
17.00	.05	20.80	.149	.19
17.50	.05	20.69	.143	.19
18.00	.05	20.59	.138	.18
18.50	.05	20.49	.132	.18
19.00	.05	20.39	.127	.18
19.50	.05	20.30	.122	.17
20.00	.05	20.20	.116	.17
20.50	.04	20.11	.111	.17
21.00	.04	20.02	.106	.17
21.50	.04	19.92	.101	.16
22.00	.04	19.84	.096	.16
22.50	.04	19.75	.091	.16
23.00	.04	19.66	.087	.15
23.50	.04	19.58	.082	.15
24.00	.04	19.49	.077	.15
24.50	.00	19.39	.072	.15
25.00	.00	19.29	.066	.14
25.50	.00	19.18	.060	.14
26.00	.00	19.08	.055	.13
26.50	.00	18.98	.049	.13
27.00	.00	18.89	.044	.13
27.50	.00	18.79	.039	.12

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
28.00	.00	18.70	.034	.12
28.50	.00	18.62	.029	.11
29.00	.00	18.53	.024	.11
29.50	.00	18.42	.020	.10

PEAK DISCHARGE = .278 CFS - PEAK OCCURS AT HOUR 2.55
 MAXIMUM WATER SURFACE ELEVATION = 24.410
 MAXIMUM STORAGE = .3479 AC-FT INCREMENTAL TIME= .050000HRS

PRINT HYD ID=2 CODE=1

OUTFLOW HYDROGRAPH RESERVOIR 500.00

RUNOFF VOLUME = 1.98787 INCHES = .4655 ACRE-FEET
 PEAK DISCHARGE RATE = .28 CFS AT 2.550 HOURS BASIN AREA = .0044 SQ.

MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 18:32:12

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 01/26/1997
START TIME (HR:MIN:SEC) = 14:41:39 USER NO.= EASTERNM.I01
INPUT FILE = L1INLET.HMI

** MERIDIAN BUSINESS PARK
** SIZING COMPUTATIONS FOR PROPOSED DETENTION POND
** DEVELOPED CONDITIONS ONSITE; UNDEVELOPED CONDITIONS OFFSITE.
** 1-20-97
** 100 YEAR 24 HOUR STORM
** INPUT FILE LOT1.HMI Area Draining to Inlets Only

START 0.0 HOURS

RAINFALL TYPE=-2 0.0 1.87 2.20 2.66 DT=0.05

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT
1.40 HR.

DT = .050000 HOURS END TIME = 24.000000 HOURS

** COMPUTE HYDROGRAPH FOR LOT 1 Area Draining to Inlets
** 86% impervious (14% Landscaping)

COMPUTE NM HYD ID=1 HYDROGRAPH NO=101.0 DA=0.00197
 %A=0.0 %B=14.0 %C=00.0 %D=86.0 TP=0.133333
 MASS RAINFALL=-1

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N
= 7.106420
UNIT PEAK = 6.6871 CFS UNIT VOLUME = .9975 B = 526.28 P60 =
1.8700
AREA = .001694 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER
HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .131024HR TP = .133333HR K/TP RATIO = .982685 SHAPE CONSTANT, N
= 3.593454
UNIT PEAK = .67658 CFS UNIT VOLUME = .9825 B = 327.09 P60 =
1.8700
AREA = .000276 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER
HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 2.18072 INCHES = .2291 ACRE-FEET
PEAK DISCHARGE RATE = 5.03 CFS AT 1.500 HOURS BASIN AREA = .0020 SQ.
MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 14:41:39

DRAINAGE INFORMATION SHEET

PROJECT TITLE: MERIDIAN BUSINESS PARK LOT 1 ZONE ATLAS / DRNG. FILE #: J-10 / D-20
 DRB #: NOT YET ESTABLISHED EPC #: — WORK ORDER #: (CROSS-REFERENCE COA PROJ. 559781)
 LEGAL DESCRIPTION: MERIDIAN BUSINESS PARK, LOT 1
 CITY ADDRESS: 7600 LOS VOLCANES NW

ENGINEERING FIRM: EASTERLING & ASSOC CONTACT: CHUCK EASTERLING
 ADDRESS: 2600 AMERICAN RD. SE PHONE: 898-8021
~~10131 100TH NW STE. H7~~
RIO RANCHO, NM 87124
~~ALB. NM 87114~~

OWNER: MERIDIAN REALTY LTD. CO. CONTACT: ANGELO BRUNATINI
 ADDRESS: PO BOX 6363 PHONE: 345-3909
ALB. NM 87197

ARCHITECT: CLAUDIO VIGIL ARCHITECTS CONTACT: TATE FISHBURN
 ADDRESS: 1305 TITERAS NW PHONE: 842-1113
ALB. NM 87102

SURVEYOR: SURV-TEK CONTACT: GARRY HUGG
 ADDRESS: 5643 PARADISE BLVD NW PHONE: 877-3366
ALB. NM 87114

CONTRACTOR: — CONTACT: —
 ADDRESS: — PHONE: —

TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☒ ENGINEER'S CERTIFICATION
☐ OTHER —

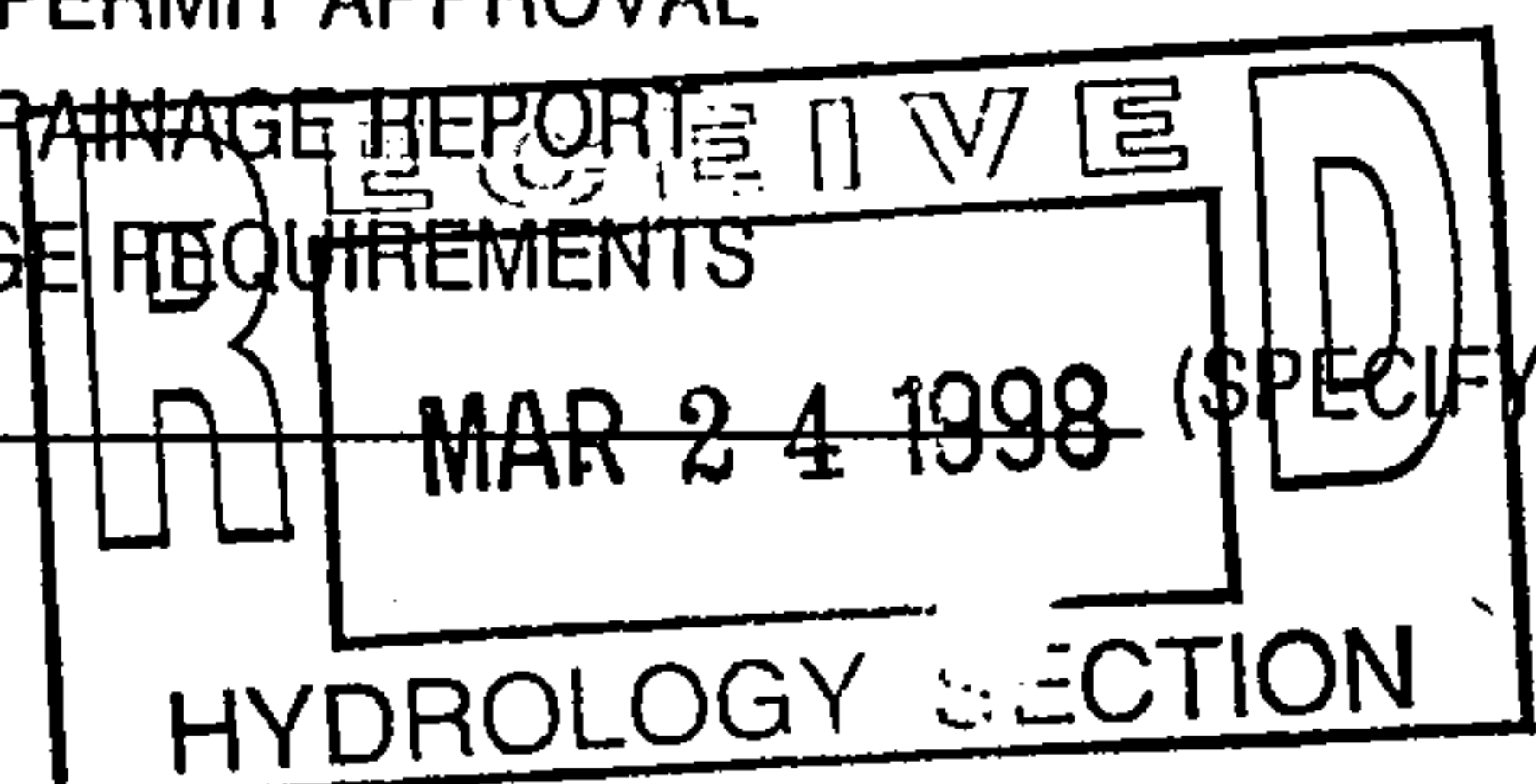
PRE-DESIGN MEETING:

- ☒ YES PRE-DESIGN FOR MERIDIAN BUSINESS
☐ NO PARK SUBDIVISION, 8/23/96, w/
☐ COPY PROVIDED FRED AGUIRRE

DATE SUBMITTED: 3/23/98
 BY: C. M. EASTERLING

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
☐ OTHER —



January 27, 1997

Ms. Susan Calongne, P.E.
City of Albuquerque
Public Works Department/Engineering Group
Hydrology Division
Plaza del Sol
600 2nd Street SW
Albuquerque, NM 87103

**RE: Meridian Business Park Infrastructure Improvements
DRB-96-336; City Project 559781; Hydrology File J-10/D-20**

Dear Ms. Calongne:

In December 1996, we submitted Infrastructure Improvement Plans and a Design Analysis Report for the above subdivision for DRC review. As you are aware, the plans include the following drainage improvements:

1. Public 24" Storm Drain in Meridian Place NW.
2. Privately-maintained Public Detention Pond on Lot 10.
3. Temporary retention ponds on lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 and 23.

The extent and general configuration of drainage improvements were identified in the previously approved Conceptual Master Grading and Drainage Plan for Meridian Business Park, J-10/D-20 (August 1996). The approved plan indicated that detailed analysis and design of improvements would be undertaken as part of the subdivision's Infrastructure Improvement Plans. The subsequent Infrastructure Improvement Plans and associated Design Analysis Report provide such details for the improvements proposed in the Conceptual Master Grading and Drainage Plan, *without altering the approved concept and scope*.

In your plan review of the DRC submittal, you noted a requirement to obtain a Grading Permit for the proposed temporary retention ponds, in addition to DRC Plan Approval. In a telephone conversation on December 31, 1996, we confirmed that all the drainage improvements shown in our DRC submittal will be built as part of the subdivision infrastructure improvements. However, you reiterated the requirement for a separate Grading Permit Approval for the ponds.

Ms. Susan Calongne, P.E.

Page 2

January 27, 1997

As such, we are submitting the following sheets, excerpted from the Infrastructure Improvement Plans, for Grading Permit Approval:

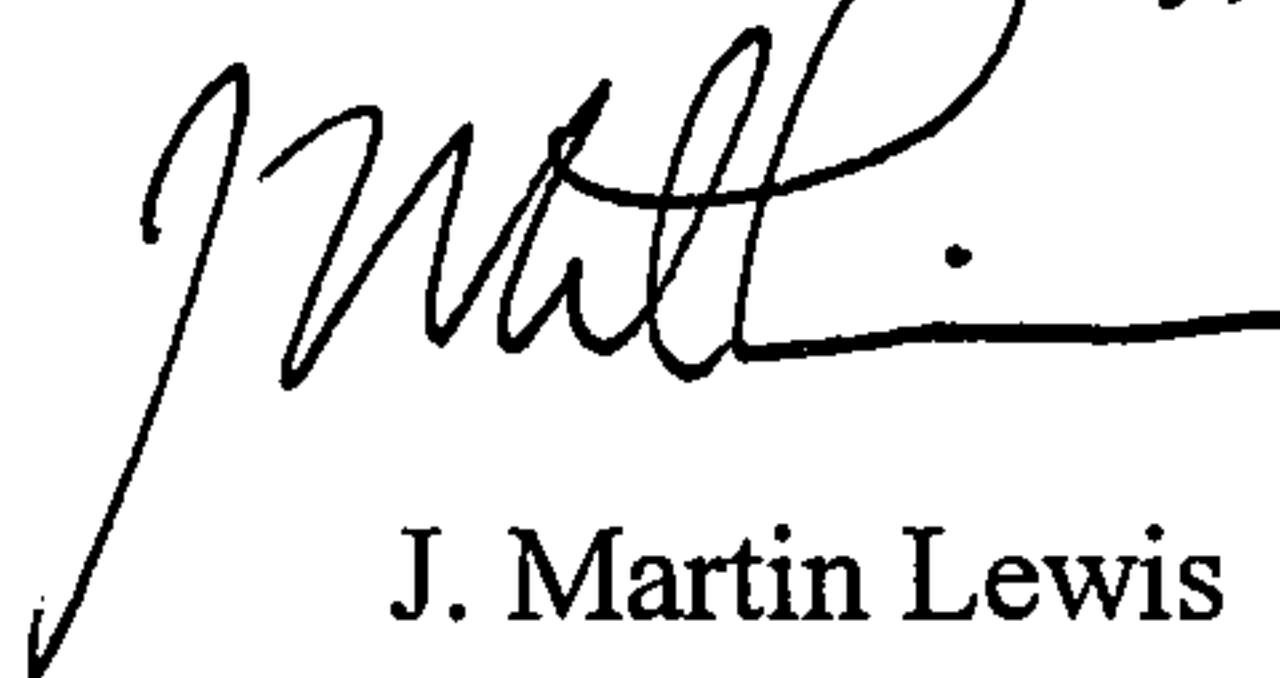
<u>Grading Permit Submittal Sheet No.</u>	<u>COA Proj. 559781 Cross-Reference Sheet No.</u>	<u>Title</u>
1 of 6	15 of 30	Lot 10 Detention Pond Grading Plan
2 of 6	16 of 30	Lot 10 Detention Pond Outlet Details
3 of 6	17 of 30	Temporary Private Drainage Improvements Lots 1, 2, 4, 5, 21, 22 and 23
4 of 6	18 of 30	Temporary Private Drainage Improvements Lots 3, 6, 7, 8 and 9
5 of 6	19 of 30	Temporary Private Drainage Improvements Lots 17, 18, 19 and 20
6 of 6	20 of 30	Temporary Private Drainage Improvements Lots 11, 13, 14, 15 and 16

We are also resubmitting the Design Analysis Report, which contains a summary of the retention pond volumes and the final detention pond routing computations. The report also contains HGL calculations and pipe class/bedding calculations for the proposed 24" public storm drain in Meridian Place NW. A copy of the proposed Agreement and Covenant (and associated easement) for the Lot 10 Detention Pond is also included. It is intended that the materials submitted herein be considered a Supplement to the previously-approved Conceptual Master Grading and Drainage Plan.

The final submittal of the Infrastructure Improvement Plans will follow shortly for DRC signoff.

Please call me if you have questions or require further information.

Yours sincerely,



J. Martin Lewis
Staff Engineer

JML/nad

Job No. 4320/005/ltrcalag

Attachments

EASTERLING & ASSOCIATES, INC.

10131 Coors Rd., NW, Suite H-7
ALBUQUERQUE, NEW MEXICO 87114-4048

(505) 898-8021
FAX (505) 898-8501

TO COA HYDROLOGY
PLAZA DEL SOL

LETTER OF TRANSMITTAL

DATE <u>1-29-97</u>	JOB NO. <u>4320/005</u>
ATTENTION <u>SUSAN CALONGNE</u>	
RE: <u>MERIDIAN BUSINESS PARK,</u> <u>LOTS 1-23.</u>	

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via COURIER the following items:

- ☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☒ AS NOTED

COPIES	DATE	NO.	DESCRIPTION
<u>1</u>	<u>1-28-97</u>		<u>GRADING PLANS (6 SHEETS)</u>
<u>1</u>	<u>12-12-96</u>		<u>DESIGN ANALYSIS REPORT</u>
<u>1</u>	<u>12-12-96</u>		<u>AGREEMENT & COVENANT FORM</u>
<u>1</u>	<u>12-12-96</u>		<u>ETEMENT FORM</u>
<u>1</u>	<u>1-29-97</u>		<u>DRAINAGE INFORMATION SHEET</u>
<u>1</u>	<u>1-27-97</u>		<u>COVER LETTER</u>

THESE ARE TRANSMITTED as checked below:

- ☒ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

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RECYCLED PAPER:
Contents: 40% Pre-Consumer • 10% Post-Consumer

SIGNED: J. Martin Lewis

If enclosures are not as noted, kindly notify us at once.

Private Facility Drainage Covenant
and Reservation of Drainage Easement

DRAINAGE INFORMATION SHEET

PROJECT TITLE: MERIDIAN BUSINESS PARK (IN ATRISCO BUSINESS PARK) ZONE ATLAS / DRNG. FILE #: J-10 / D-20
 DRB #: DRB-96-336 EPC #: N/A WORK ORDER #: COA PROJECT No. 559781

LEGAL DESCRIPTION: (PROPOSED) : LOTS 1-23, MERIDIAN BUSINESS PARK

CITY ADDRESS: (EXISTING) : LOTS 1-9, TRACT M, UNIT 2, ATRISCO BUSINESS PARK

ENGINEERING FIRM: EASTERLING & ASSOC. INC CONTACT: MARTIN LEWIS

ADDRESS: 10131 COORS NW SUITE H-7 PHONE: 898-8021

ALBUQUERQUE NM 87114

OWNER: BRUNACINI INVESTMENT & DEVELOPMENT CONTACT: GEORGE BRUNACINI
ANGELO BRUNACINI

ADDRESS: PO BOX 6363 PHONE: 345-3909

ALBUQUERQUE NM 87117

ARCHITECT: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: SURV-TEK INC. CONTACT: GARRY HACC

ADDRESS: 5643 PARADISE BLVD NW PHONE: 897-3366

ALBUQUERQUE NM 87114

CONTRACTOR: NOT YET SELECTED CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☒ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION
- ☒ OTHER DESIGN ANALYSIS REPORT SECTION
EASEMENT & COVENANT

PRE-DESIGN MEETINGS:

- ☒ YES W/ FRED AGUIRRE 8/23/96
- ☐ NO AND W/ SUSAN CALONGE 12/2/96
- ☐ COPY PROVIDED → REFER TO ATTACHED COVER LETTER

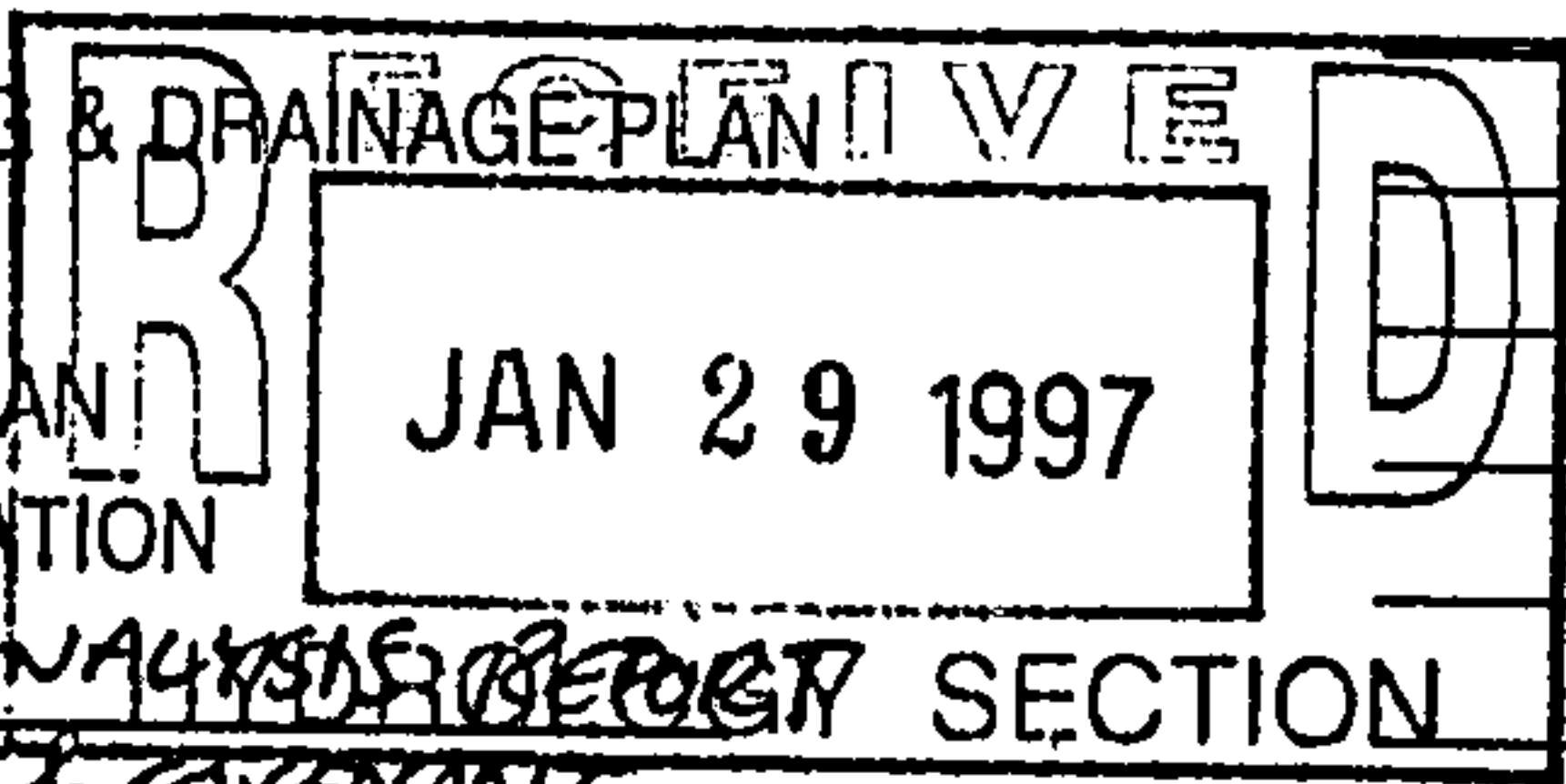
DATE SUBMITTED: 1-29-97

BY: J. MARTIN LEWIS

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
- ☒ OTHER SUPPLEMENT TO (SPECIFY)

PREVIOUSLY-APPROVED
CONCEPTUAL MASTER GRADING
& DRAINAGE PLAN



EASTERLING & ASSOCIATES, INC.

10131 Coors Rd., NW, Suite H-7
ALBUQUERQUE, NEW MEXICO 87114-4048

(505) 898-8021
FAX (505) 898-8501

TO City of Albuquerque
Development Services

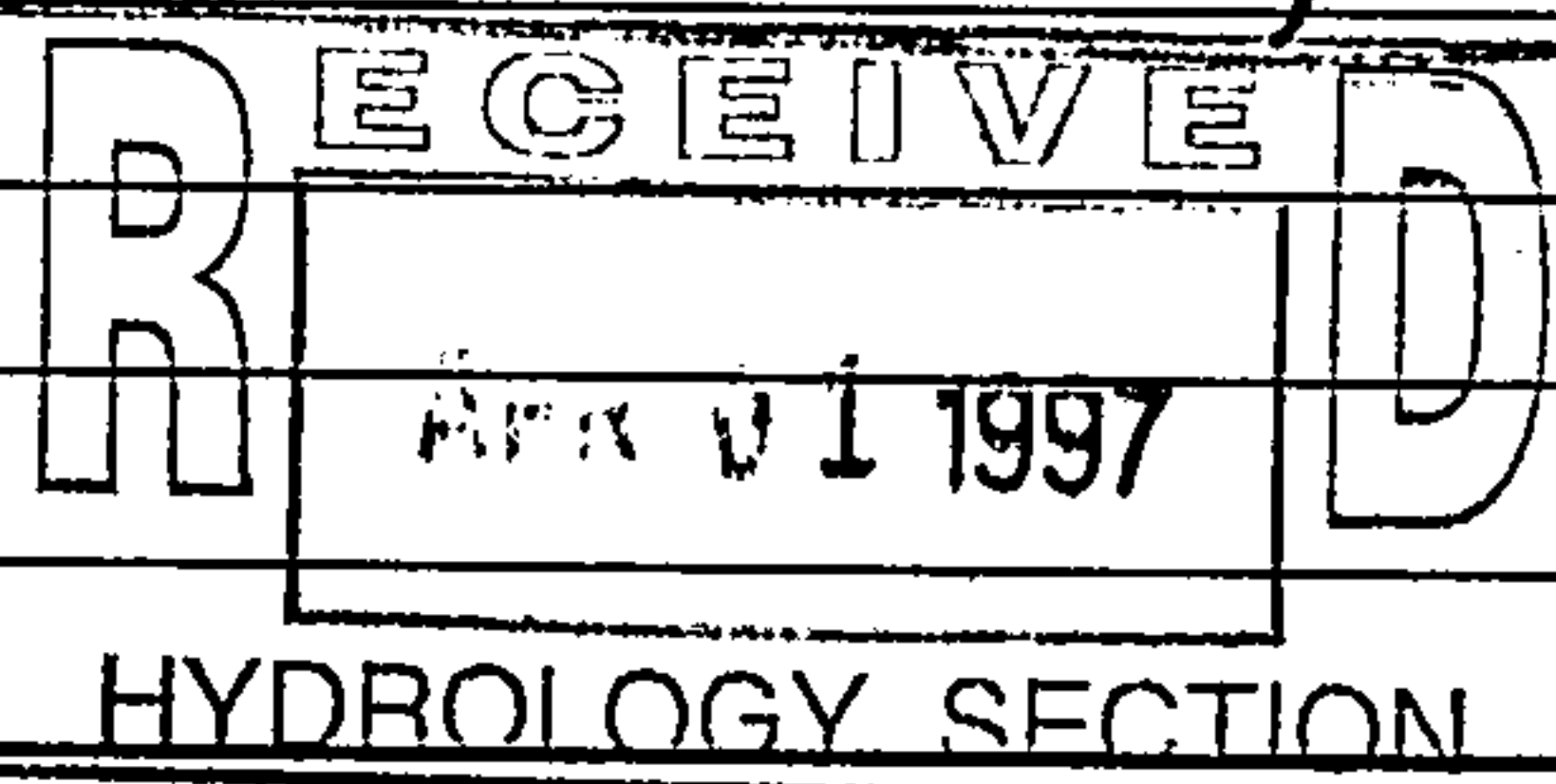
LETTER OF TRANSMITTAL

DATE	4/1/97	JOB NO.	4320/003
ATTENTION	Fred Aguirre		
RE:	Meridian Business Park		
	Final Plat		
	DRB-96-336		
	COA Proj. No. 559781		

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via Courier the following items:

- ☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☒ As noted.

COPIES	DATE	NO.	DESCRIPTION
1	8/96		Final Plat, for signature
1	3/97		Private Drainage Covenant, Lots 1-6
1	"		" " 7-10
1	"		" " 11-23



THESE ARE TRANSMITTED as checked below:

- ☒ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS

Fred -

The attached Drainage Covenants were approved by Susan subsequent to our 3/6/97 meeting at COA with yourself, Susan & the Brunacinis. The Covenants are referenced on the Plat, and will be filed immediately following the recording of the Plat. Please see Susan or call us if questions.

Thanks,

Math

RECEIVED BY

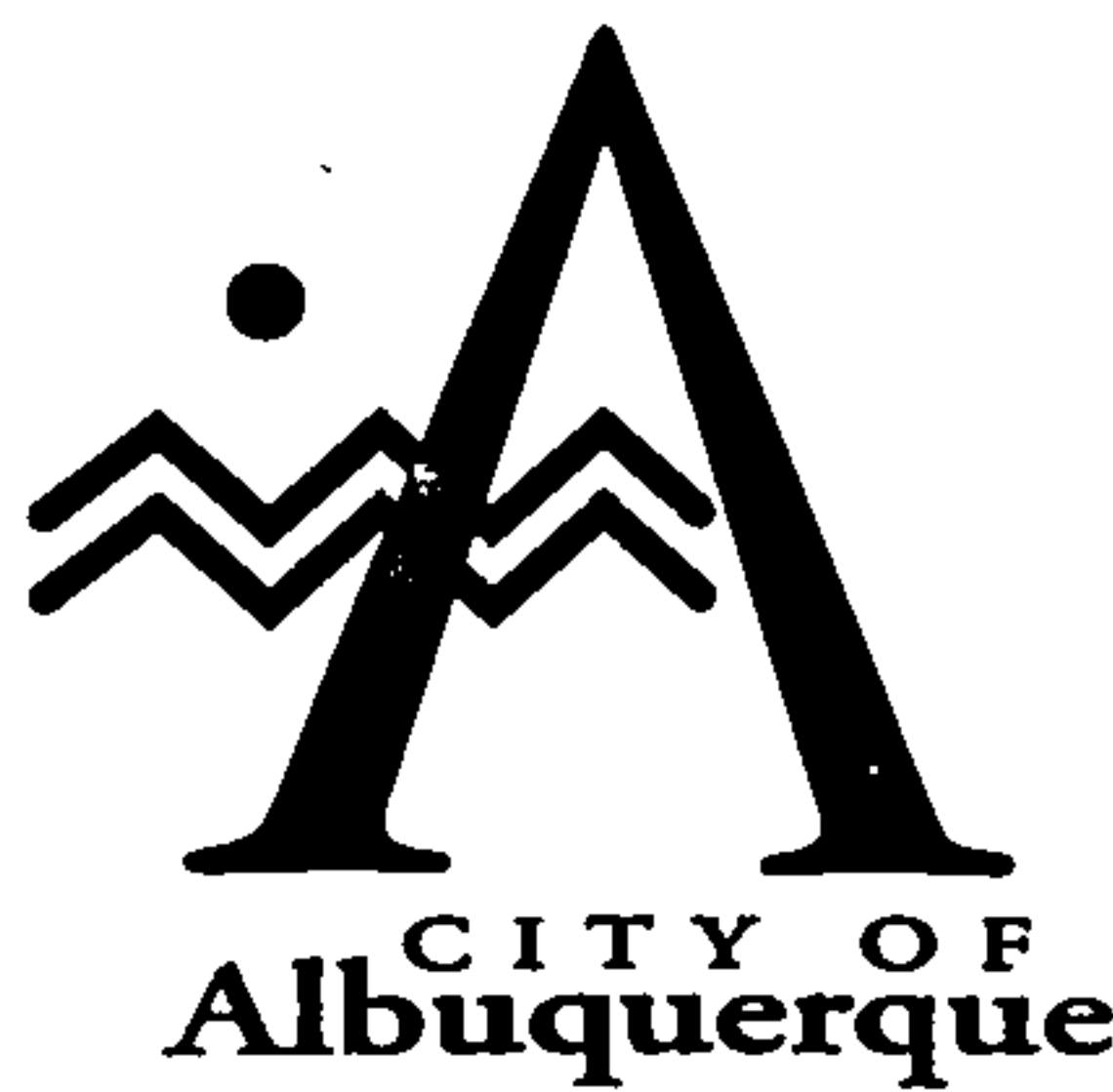
COPY TO



RECYCLED PAPER:
Contents: 40% Pre-Consumer • 10% Post-Consumer

SIGNED:

If enclosures are not as noted, kindly notify us at once.



Martin J. Chávez, Mayor

September 25, 1996

Martin Lewis
Easterling & Associates, Inc.
10131 Coors NW, Suite H-7
Albuquerque, New Mexico 87114

**RE: CONCEPTUAL GRADING AND DRAINAGE PLAN FOR MERIDIAN BUSINESS PARK
(J10/D20) SUBMITTED FOR PRELIMINARY AND FINAL PLAT APPROVAL, ENGINEER'S
STAMP DATE 8/29/96.**

Dear Mr. Lewis:

Based on the information provided in the submittal of August 30, 1996, the above referenced Conceptual Master Grading and Drainage Plan for the Meridian Business Park is acceptable.

Prior to actual platting of this property, however, the Unser Diversion project must be under construction by AMAFCA. The bond for the improvements identified on the Infrastructure List must be in place prior to final Plat sign-off. Also, all private drainage easements must be shown on the Plat.

As you stated, the development of each Lot will require an individual grading and drainage plan which must be in accordance with this conceptual plan. The private storm drains must be built as necessary with each Lot.

An easement and covenant will be required for the public pond on Lot 10. This must be on file prior to approval of the Work Order construction plans.

If you should have any questions, please do not hesitate to call me at 768-2666.

Sincerely,

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

c: George Brunacini, Owner
File

Good for You. Albuquerque!



AGREEMENT AND COVENANT

This Agreement and Covenant, between the City of Albuquerque, New Mexico ("City") and Meridian Realty Ltd. Co., ("User") is made in Albuquerque, New Mexico and is entered into as of the date of recording this Agreement with the Bernalillo County Clerk.

1. Recital. The User is the owner of certain real property ("User's Property") located at Lot 10, Meridian Business Park ^(Proposed), in Albuquerque, New Mexico, and more particularly described as:

EXIST legal description + recording info
See EXHIBIT 'A', attached.

The City is the owner of ~~certain real property, easement or public right-of-way~~ ("City's Property") ~~in the vicinity of, contiguous to, abutting or within~~ User's Property, and more particularly described as:

notes & bonds for pond
See Grant of Easement document, attached.

The User wishes to construct upon, ~~improve or repair~~ and to maintain the following "Improvement" on the City's Property ~~(or already has done so)~~:

One Detention Pond

A sketch of the proposed ~~or existing~~ Improvement is attached as Exhibit A and made a part of this Agreement.

The City agrees to permit the Improvement to exist on the City's Property provided the User complies with the terms of this Agreement.

2. City Use of City's Property and City Liability. The City has the right to enter upon the City's Property at any time and perform whatever inspection, installation, maintenance, repair, modification or removal ("Work") it deems appropriate without liability to the User. If the Work affects the Improvement the City will not be financially or otherwise responsible for rebuilding or repairing the Improvement. The User promptly will repair the Improvement to the City's satisfaction. The cost of repairing the Improvement will be paid by User.

3. User's Responsibility for Improvement. The User will be solely responsible for constructing, maintaining, repairing and, if required, removing the Improvement, all in accordance with standards required by the City as per the approved Grading and Drainage Plan J-10/D-20 on file at City Hydrology. The User will be solely responsible for paying all related costs. The User will not permit the Improvement to constitute a hazard to the health or safety of the general public or to interfere with the City's use of the City's Property. The User will conform with all

Meridian - standard
forms don't apply

> reference on Plat?

sep. covenant -

temp pond

permanent pond

private SD

streamline

Language / Duties

maint responsibility

1. Owners
2. Association
3. City

- Lot 10 pond - No SIA til
Covenant updated

applicable laws, ordinances and regulations.

4. Use of the Improvement. If the City's Property is a public right-of-way, it shall be open to the use of the general public at all times, subject to reasonable curtailment during periods of construction, maintenance or repair.

5. Demand for Repair, Modification or Removal. The City may send written notice ("Notice") to the User requiring the User to repair, modify or remove the Improvement within 30 days ("Deadline") and the User will comply promptly with the requirements of the Notice. If removal is demanded, the City also may require the User to return the City's Property to its original condition by the Deadline. The User will perform all required work by the Deadline, at User's sole expense.

6. Failure to Perform by User and Emergency Work by City. If the User fails to comply with the terms of the Notice by the Deadline stated, or, if the City determines that an emergency condition exists, the City may perform the work itself. The City then may assess the User for the cost of the work and for any other expenses or damages which result from User's failure to perform. The User agrees promptly to pay the City the amount assessed. If the User fails to pay the City within thirty (30) days after the City gives the User written notice of the amount due, the City may impose a lien against User's Property for the total resulting amount.

7. Cancellation of Agreement and Release of Covenant. This Agreement may be cancelled and User's covenants released by the City at will by the City's mailing to the User notice of the City's intention to record a Cancellation and Release with the Bernalillo County Clerk. The Cancellation and Release will be effective thirty (30) days after the date of mailing the notice to the User unless a later date is stated in the notice or the Cancellation and Release. After the effective date, the City will record the Cancellation and Release with the Bernalillo County Clerk.

8. Condemnation. If any part of the User's Property is ever condemned by the City, the User will forego all claims to compensation for any portion of User's structure which encroaches on City Property and for severance damage to the remaining portion of User's structure on User's Property.

9. Assessment. Nothing in this Agreement shall be construed to relieve the User, his heirs, assigns and successors from an assessment against User's Property for improvements to the City Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Improvement will not reduce the amount assessed by the City.

10. Notice. For purposes of giving formal written notice to the User, User's address is:

Meridian Realty Ltd. Co.
Attn: Angelo Brunacini
P. O. Box 6363
Albuquerque, NM 87197

Notice may be given to the User either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the User within 3 days after the notice is mailed if there is no actual evidence of receipt. The User may change User's address by giving written notice of the change by certified mail, return receipt requested, to the City Engineer at P.O. Box 1293, Albuquerque, New Mexico 87103.

11. Indemnification. The User agrees to defend, indemnify and hold harmless the City, its officials, agents and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said parties as a result of User's use of the City's Property. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the indemnitee, or the agents or employees of the indemnitee; or (2) the giving of or the failure to give direction or instructions by the indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

12. Term. This Agreement shall continue until revoked by the City pursuant to Section 7 above.

13. Binding on User's Property. The covenants and obligations of the User set forth herein shall be binding on User, his heirs, assigns and successors and on User's Property and constitute covenants running with User's Property until released by the City.

14. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith.

15. Changes of Agreement. Changes to this Agreement are not binding unless made in writing, signed by both parties.

17. Captions. The captions to the sections or paragraphs of this Agreement are not part of this Agreement and will not affect the meaning or construction of any of its provisions.

Dated: 12-12-94

Rick Roybal, City Engineer
Construction Management/PWD

June 4, 2000

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on _____,
199_____, by Robert E. Gurule, Director, Public Works Department for the City of
Albuquerque, a New Mexico municipal corporation, on behalf of the corporation.

Notary Public

My Commission Expires:

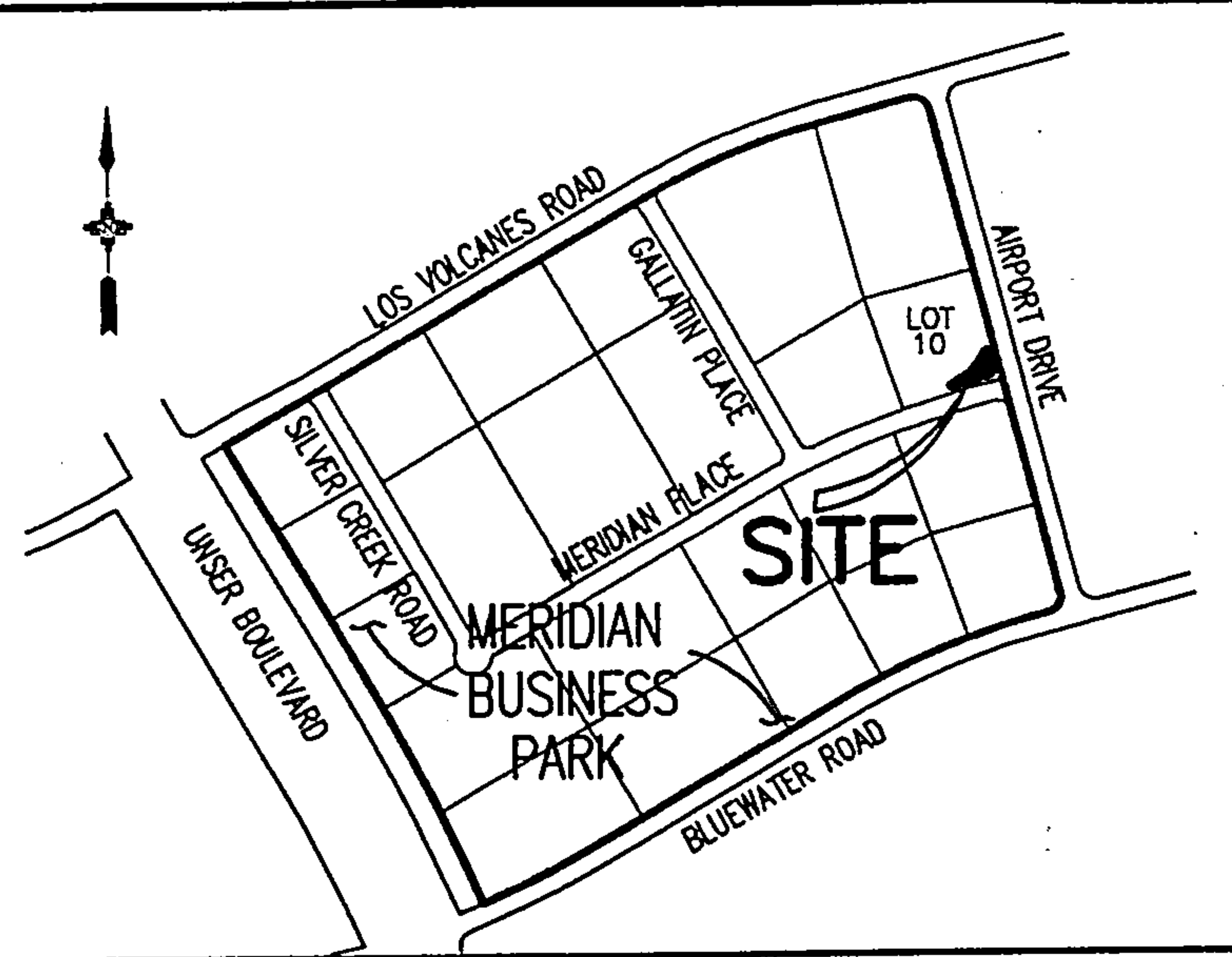
USER'S ACKNOWLEDGEMENT

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on _____,
19_____, by George Brunacini, President, on behalf of _____
Meridian Realty Ltd. Co.

Notary Public

My Commission Expires:



VICINITY MAP (J-10/K-10) N.T.S.

CURVE TABLE (C)

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
(C1)	273.60'	133.74'	68.23'	132.41'	N43°57'54"E	28°00'26"
(C2)	30.00'	47.13'	30.00'	42.43'	S29°57'54"W	90°00'26"
(C3)	3063.83'	125.72'	62.87'	125.71'	N73°47'35"E	02°21'04"

TEMPORARY RUNDOWN.
(FINAL RUNDOWN BY OTHERS
WITH LOT 10 SITE IMPROVEMENTS)

LIMIT OF PROPOSED
EASEMENT (TYP)

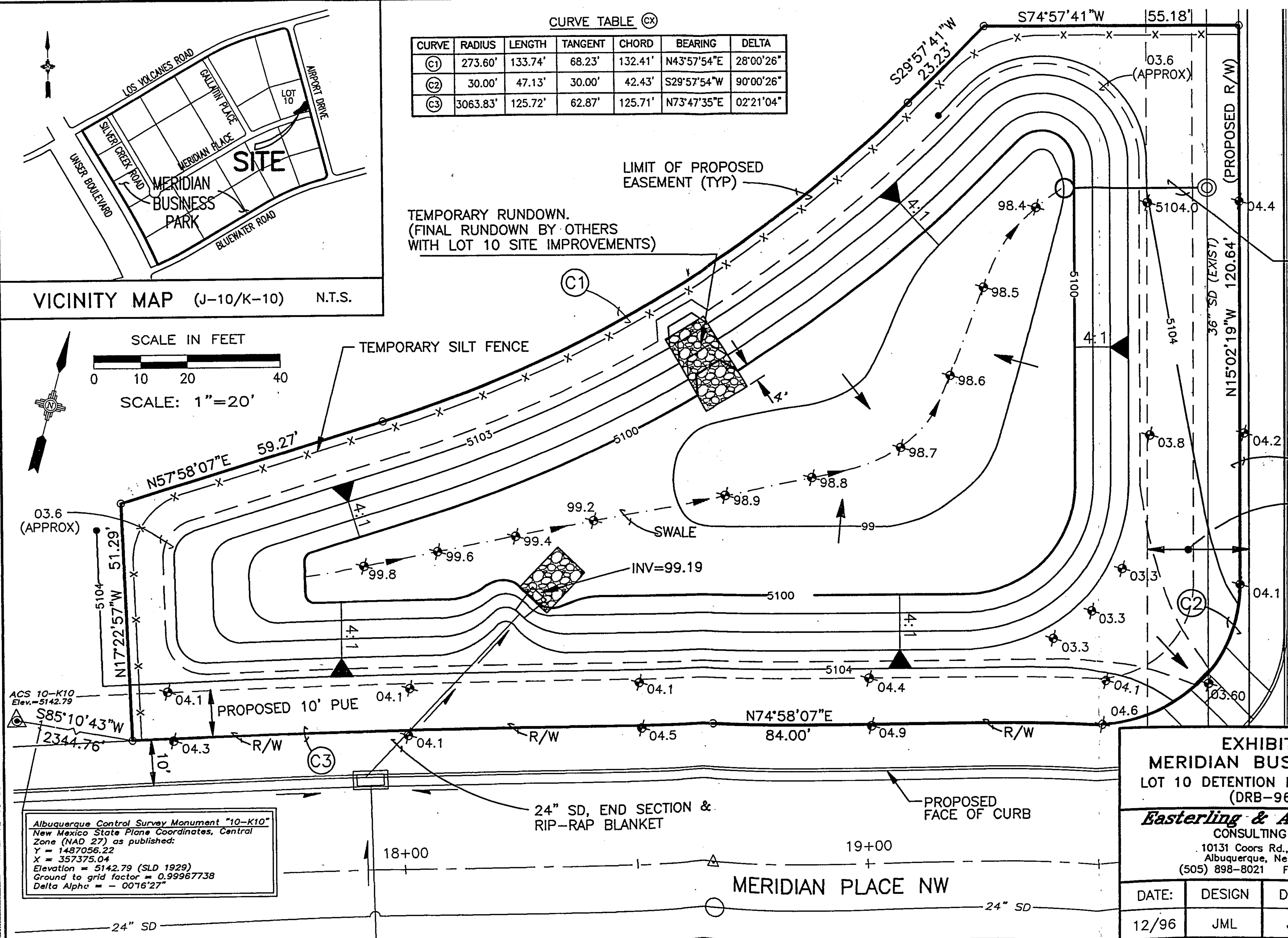
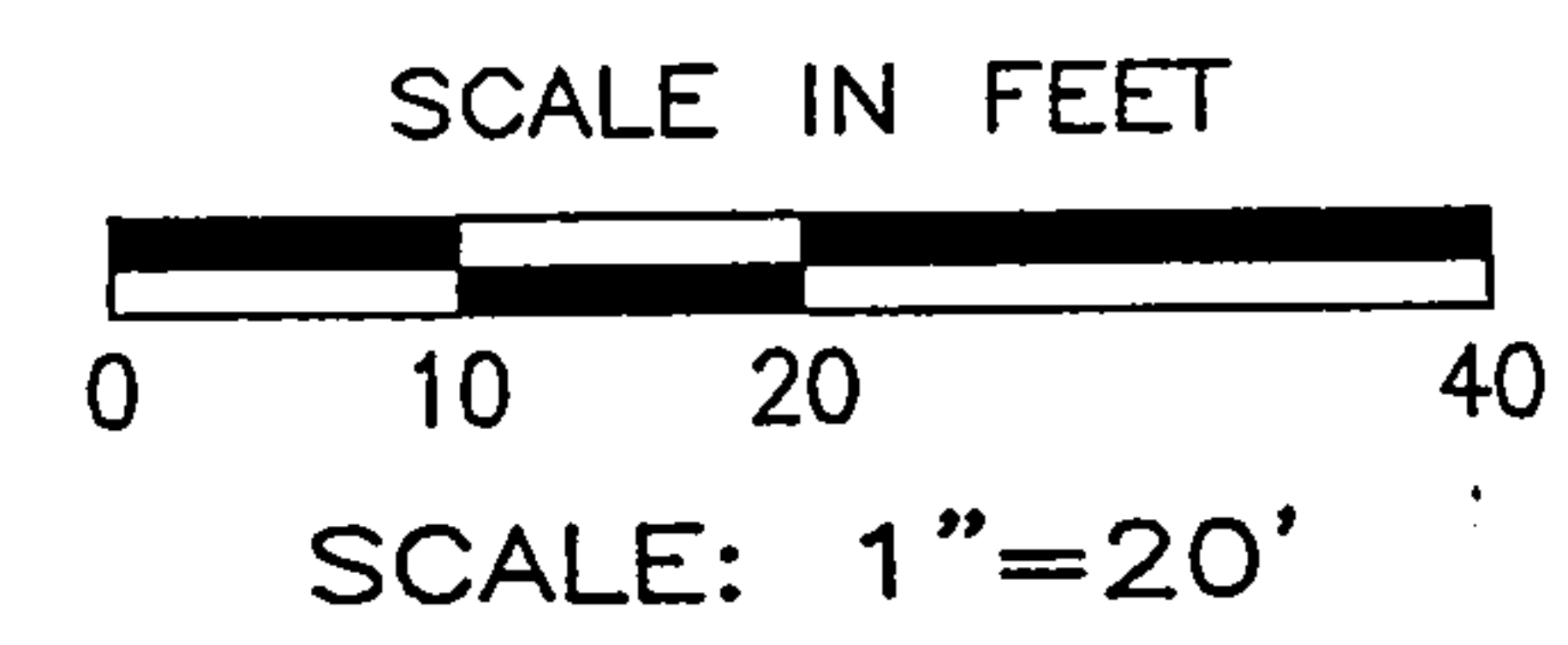


EXHIBIT "A"
MERIDIAN BUSINESS PARK
LOT 10 DETENTION POND & EASEMENT
(DRB-96-336)

Easterling & Associates, Inc.
CONSULTING ENGINEERS
10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-8021 FAX (505) 898-8501

DATE:	DESIGN	DRAWN	DWG NO.
12/96	JML	JMM	1 of 1

DWG: T:\PROJECTS\4320\DWG\JOE\PLANBASE\EASE-DOC
TIME: 12-16-96 14:22:52

Albuquerque Control Survey Monument "10-K10"
New Mexico State Plane Coordinates, Central
Zone (NAD 27) as published:
Y = 1487056.22
X = 357375.04
Elevation = 5142.79 (SLD 1929)
Ground to grid factor = 0.99967738
Delta Alpha = -00°16'27"

EASEMENT

This grant of Easement, between Meridian Realty Ltd. Co., a New Mexico Limited Liability Company, ("Grantor"), and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P. O. Box 1293 Albuquerque, New Mexico 87103.

1. Recital. Grantor is the owner of certain real property located at Lot 10, Meridian Business Park in Bernalillo County, New Mexico (the "Property").

2. Grant of Easement. The Grantor grants to the City an exclusive permanent easement for a Privately-Maintained Public Detention Pond ("Public Improvement") on, over, across and through the property described on Exhibit A attached hereto ("Property"), together with the right of the City to operate, maintain, repair, replace and construct the Public Improvement and the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of the easement.

3. Warranties. Grantor covenants and warrants that it is the owner in fee simple of the Property and that it has a good lawful right to convey the Property or any part thereof and that the Grantor will forever warrant and defend the title to the Property against all claims from all persons or entities.

4. Binding on Grantor's Property. The grant and other provisions of this Easement constitute covenants running with title to the Property for the benefit of the City and its successors and assigns until terminated.

Witness my hand and seal this _____ day of _____, 1996.

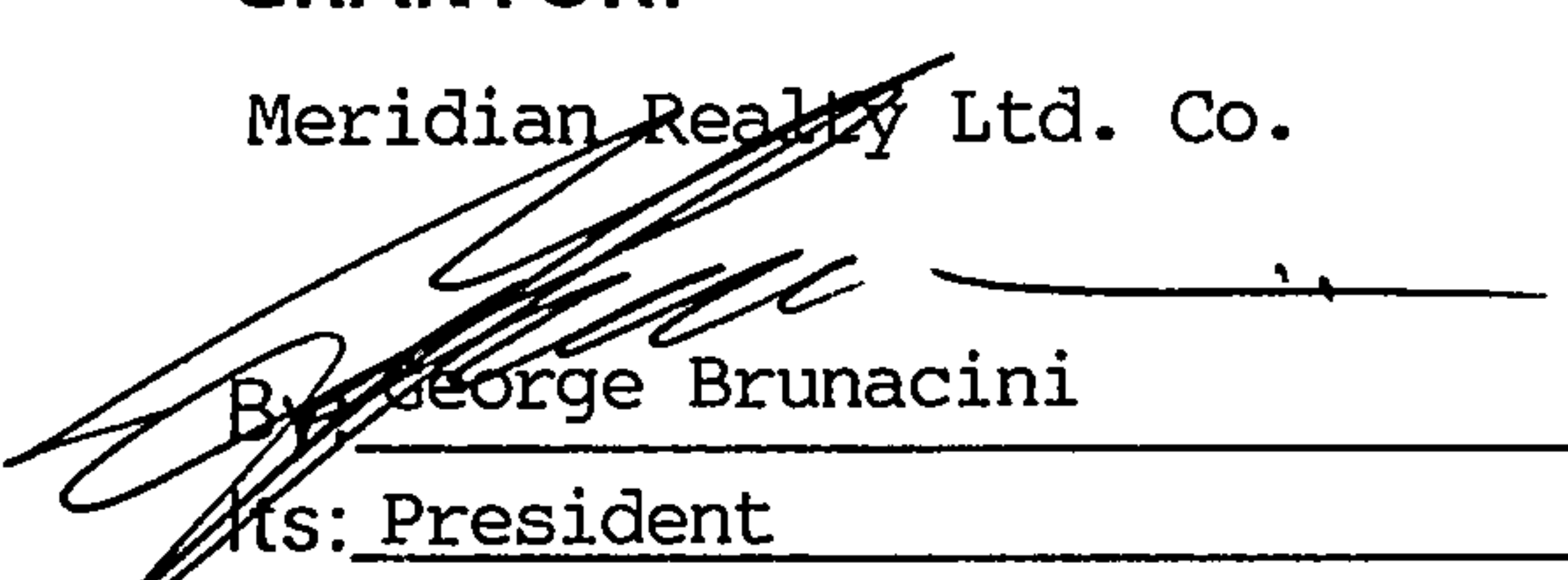
APPROVED:

CITY OF ALBUQUERQUE

Lawrence Rael
Chief Administrative Officer

GRANTOR:

Meridian Realty Ltd. Co.


By: George Brunacini

Its: President

By: _____
Rick Roybal, City Engineer

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on December 12th,
1996, by George Brunadini, President of _____
Meridian Realty LLC Co., on behalf of the Corporation.

Connie S McKee
Notary Public

My Commission Expires:

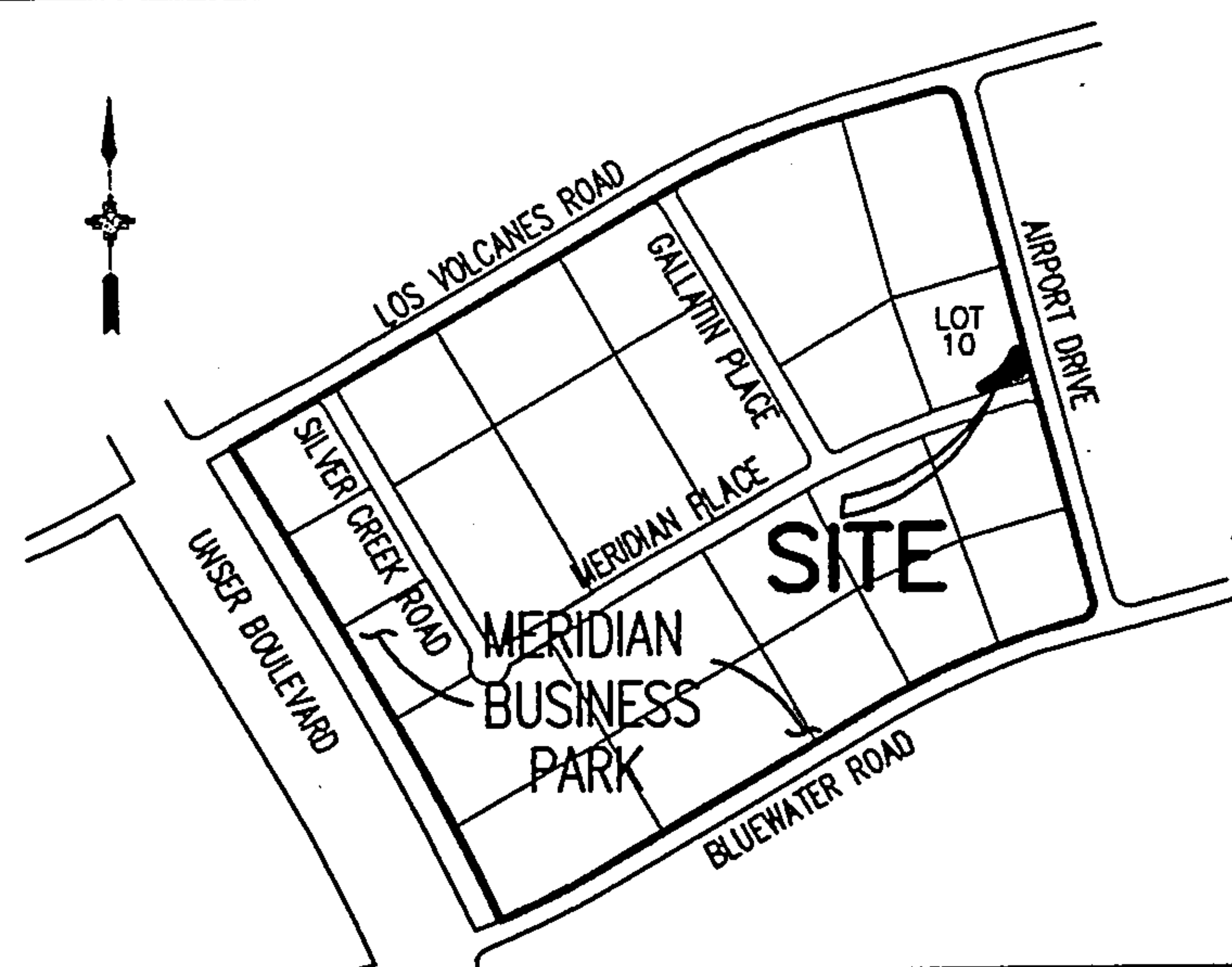
June 6, 2000

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on _____,
1996, Lawrence Rael, Chief Administrative Officer for the City of Albuquerque, a
municipal corporation.

Notary Public

My Commission Expires:



VICINITY MAP (J-10/K-10) N.T.S.

CURVE TABLE (C)

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
(C1)	273.60'	133.74'	68.23'	132.41'	N43°57'54"E	28°00'26"
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TEMPORARY RUNDOWN.
(FINAL RUNDOWN BY OTHERS
WITH LOT 10 SITE IMPROVEMENTS)

LIMIT OF PROPOSED
EASEMENT (TYP)

TEMPORARY SILT FENCE

SWALE

INV=99.19

PROPOSED 10' PUE

24" SD, END SECTION &
RIP-RAP BLANKET

PROPOSED
FACE OF CURB

12" PVC SDR-35
STORM DRAIN

PROPOSED
R/W

EXISTING 22'
STORM DRAIN
EASEMENT

AIRPORT DRIVE NW

MERIDIAN PLACE NW

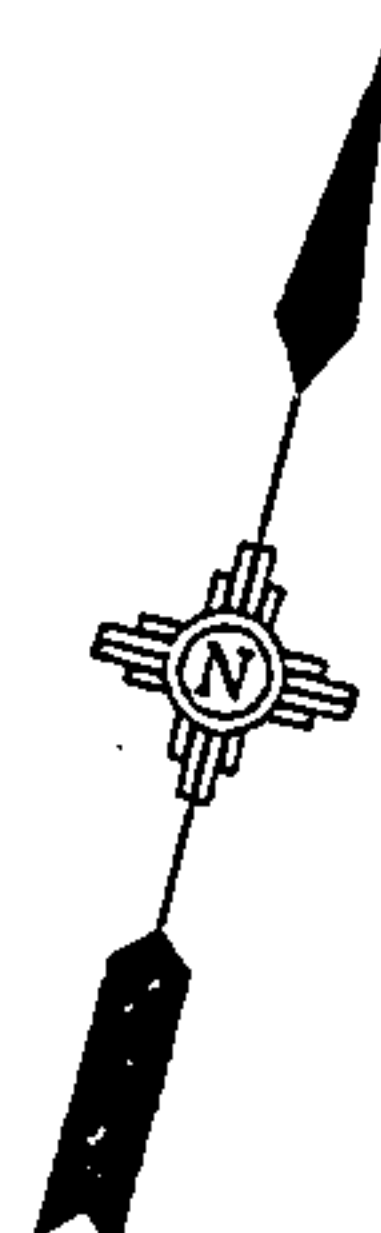
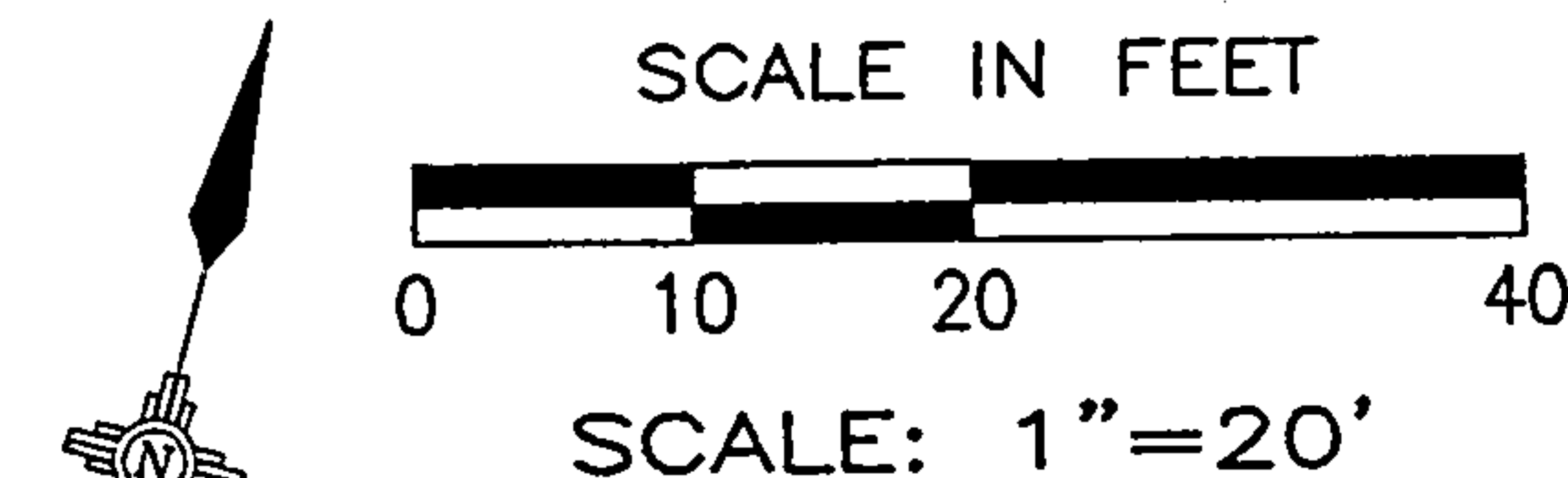
EXHIBIT "A"
MERIDIAN BUSINESS PARK
LOT 10 DETENTION POND & EASEMENT
(DRB-96-336)

Easterling & Associates, Inc.

CONSULTING ENGINEERS

10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-8021 FAX (505) 898-8501

DATE:	DESIGN	DRAWN	DWG NO.
12/96	JML	JMM	1 of 1



ACS 10-K10
Elev. = 5142.79

S85°10'43"W
2344.76'

Albuquerque Control Survey Monument "10-K10"
New Mexico State Plane Coordinates, Central
Zone (NAD 27) as published:
Y = 1487056.22
X = 357375.04
Elevation = 5142.79 (SLD 1929)
Ground to grid factor = 0.99967738
Delta Alpha = -00°16'27"

DWG: T:\PROJECTS\4320\DWG\JOE\PLANBASE\EASE-DOC
TIME: 12-16-96 14:22:52

Easterling & Associates, Inc.

10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-8021

FAX No. (505) 898-8501**FAX TRANSMITTAL**Date: 3/13/97Number of Pages: 8

(includes this cover page)

Job No.: 4320 / 003Job Name: Meridian Business ParkTo: COA DEUT SERVICESHYDROLOGY DIV.Attention: SUSAN CARONGNEFax No.: 924 3339From: MARTIN LEWIS

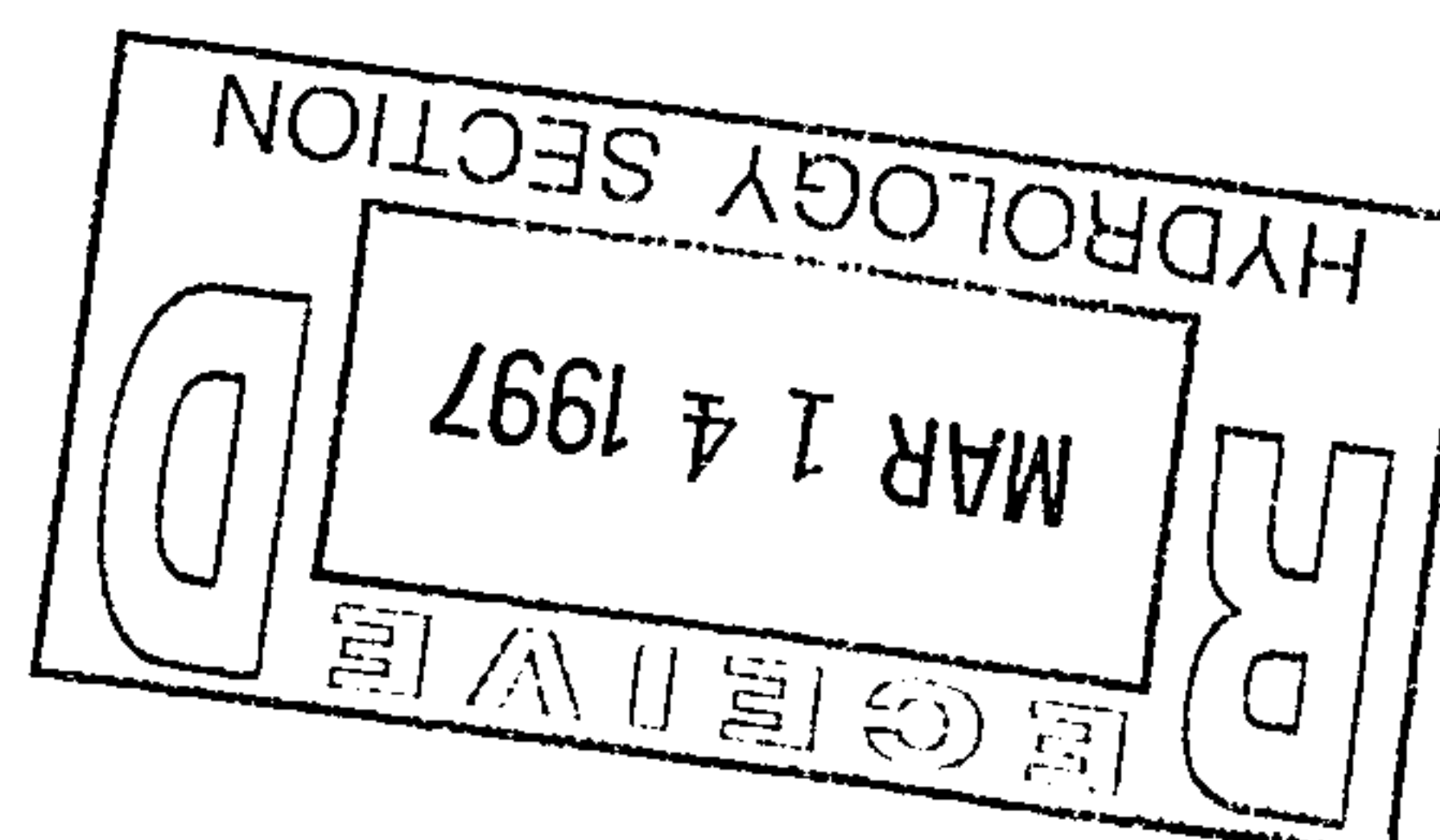
Item

Description:

MERIDIAN BUSINESS PARK, LOTS 1-23REVISED DRAINAGE COVENANT, FOR YOUR REVIEW.Message: SUSAN -THE REVISIONS REFLECT OUR MEETING LAST WEEK.I WILL CALL TO PUT THIS IN CONTEXTThanks,MarkReply
Needed:

If you receive this fax in error or you do not receive all information as noted,
please notify us at once, 505-898-8021.

Form Rev. 5/5/95



Law Offices
HUNT, REECER & DAVIS

A PROFESSIONAL CORPORATION

2632 MESILLA STREET N.E.
ALBUQUERQUE, NEW MEXICO 87110

TELEPHONE (505) 881-3191

FAX (505) 881-4255

CATHERINE F. DAVIS
KENNETH A. HUNT -
LARRY M. REECER
GREGORY J. TOBIAS --
JULIE J. VARGAS

MAILING ADDRESS

POST OFFICE BOX 30088
ALBUQUERQUE, NM 87190-0088

* ALSO MEMBER OF CALIFORNIA BAR
** ALSO MEMBER OF TEXAS BAR

PLEASE REFER TO: 1623.020

March 14, 1997

FAXED TO 898-8501

Martin Lewis

Easterling & Associates, Inc.

RE: Notation on Meridian Plat

Dear Martin:

I believe the following language or some variation thereof can be inserted on the plat as follows:

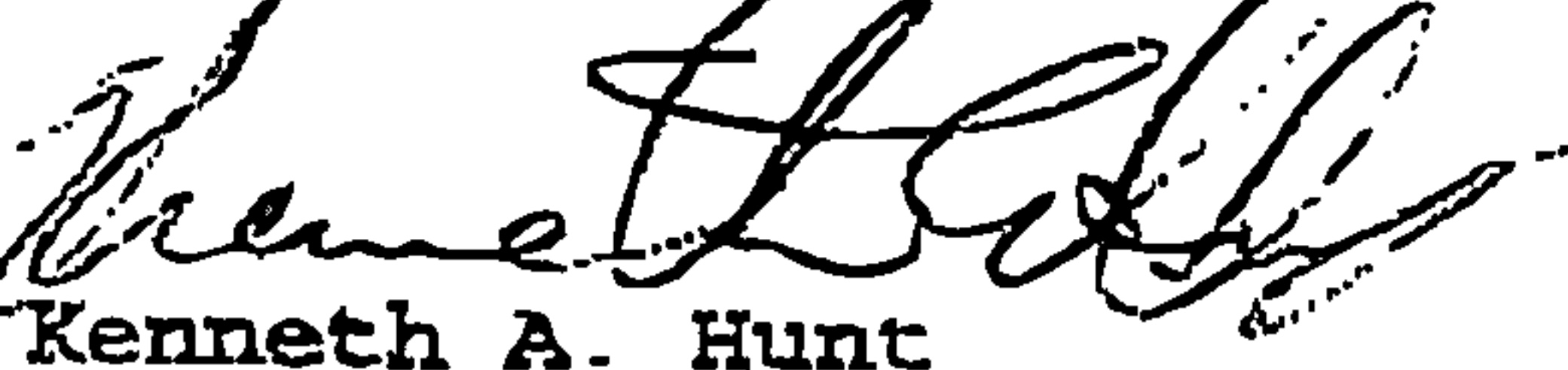
Prior to development, a specific private facilities drainage covenant for Lots 1 through 6 Meridian Business Park shall be filed of record to supersede as to said Lots, the Drainage Covenant filed March _____, 1997, in Book _____, Page _____, records of Bernalillo County, New Mexico.

A separate notation should be placed on the plat for Lots 7 through 10 and for Lots 11 through 23.

If you have any questions or comments about the language, please don't hesitate to contact me.

Sincerely,

HUNT REECER & DAVIS P.C.



Kenneth A. Hunt

KAH:blk

cc: George Brunacini (FAXED TO 345-3790)

3 Notes on Plat
1 for each group
3 covenants - reference
recorded Plat

DECLARATION OF
PRIVATE FACILITY DRAINAGE COVENANT
(LOTS _____, MERIDIAN BUSINESS PARK)

The undersigned, MERIDIAN REALTY LTD. CO., a New Mexico limited liability company ("Meridian"), whose address is P.O. Box 6992, Albuquerque, New Mexico 87197, declares as follows:

1. Recital. Meridian is the owner and developer of the following described real property, to-wit:

Lots _____, MERIDIAN BUSINESS PARK, being a Replat of Lots 1 through 9 and Tract M, ATRISCO BUSINESS PARK UNIT TWO, City of Albuquerque, Bernalillo County, New Mexico, as the same are shown and designated on the Plat thereof, filed in the Office of the County Clerk of Bernalillo County, New Mexico on _____, 1997, in Volume _____, folio _____.

("Lot(s)"); and

Pursuant to City of Albuquerque ("City") ordinances, regulations and other applicable laws, Meridian is required to construct and maintain certain drainage facilities on the Lots, and Meridian desires to create the rights and obligations related thereto in this Declaration.

2. Description and Construction of Drainage Facilities.

Meridian shall construct temporary retention ponds, swales and berms ("Drainage Facilities") on the Lots, at Meridian's sole expense in accordance with the standards, plans and specifications approved by the City. The Drainage Facilities are more particularly described on Exhibit "A" attached hereto and made a part hereof.

1623.020\drngcov5\tdm

March 10, 1997

3. Parties Benefitted by Drainage Facilities. Meridian hereby declares that each Lot is benefitted by each of the Drainage Facilities.

4. Maintenance of Drainage Facilities. The owner of each Lot ("Responsible Owner") shall maintain the Drainage Facility on that Lot, at the Responsible Owner's sole cost and expense, in accordance with the City approved drainage report, as said report may be amended from time to time. In the event the Responsible Owner fails to maintain or repair its Drainage Facility, the owners of the other Lots ("Non-Responsible Owners") or any of them may, but are not required to, undertake said maintenance or repairs, subject to a right to be reimbursed by the Responsible Owner. Notwithstanding the above, the Non-Responsible Owners may not undertake maintenance or repairs on the Drainage Facility of the Responsible Owner, except in the event of an emergency, without first providing not less than fifteen (15) days prior written notice to the Responsible Owner at the address set forth herein, or at such other address as the Responsible Owner may file in the real estate records of Bernalillo County, New Mexico.

5. Lien on Lot of Responsible Owner. If a Non-Responsible Owner(s) performs maintenance or repairs on the Drainage Facility of the Responsible Owner pursuant to the terms of this Declaration, the Non-Responsible Owner(s) shall have a lien against the Lot of the Responsible Owner for the amount of said expense, plus interest at 1.5% per month from the date the expense is incurred, until repaid, together with reasonable

1623.020\drageov5\cm

March 10, 1997

attorney's fees and court costs related to any collection action. The lien may be foreclosed as permitted by New Mexico law for the foreclosure of mortgages or judgment liens.

6. Liability of the Non-Responsible Owners. A Non-Responsible Owner shall not be liable to the Responsible Owner for any damages resulting from the maintenance or repairs to the Drainage Facility of the Responsible Owner following notice as required in this Declaration, or in an emergency, unless the damages are the result of the reckless conduct or gross negligence of that Non-Responsible Owner.

7. Access to Perform Repairs and Maintenance. Access shall be provided for the Non-Responsible Owners to the Drainage Facility of a Responsible Owner for purposes of maintaining or repairing said Drainage Facility either by public rights of way adjoining said Drainage Facility, the fifteen foot (15') private ^{and maintenance} ~~drainage~~ ^{OK} and access easements shown on the Plat of Meridian Business Park, or other specific easements that may hereafter be granted by the owner of the Lot containing the Drainage Facility.

8. Replacement of Temporary Retention Pond, Swales and Berms. At such time as permanent improvements are constructed upon any Lot, and when the temporary retention pond, swales and/or berms constituting the Drainage Facility are replaced by a City-approved permanent ^{and appurtenances} ~~retention pond~~ or other facility, this Declaration shall be amended to reflect the creation of the permanent ^d ~~retention pond~~, or other facility as the new Drainage Facility for that Lot. Any amendment permitted by this Paragraph

1623-020\drmgcov5\tm

March 10, 1997

may be executed solely by the owner of the Lot on which the permanent ⁴retention pond or other facility is constructed, provided access to the new Drainage Facility is available to the owners of the other Lots as required by Paragraph 7 herein.

9. Indemnification. The Responsible Owner agrees to indemnify, defend and hold harmless the Non-Responsible Owners, their heirs, successors and assigns, from any claims, actions, suits or other proceedings, including reasonable attorney's fees, arising from or out of the negligent acts or omissions of the Responsible Owner, its agents, representatives, contractors or subcontractors, or arising from the failure of the Responsible Owner, its agents, representatives, contractors or subcontractors to perform any act or duty required of the owner of Lot 2 herein; provided, however, to the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Declaration, the indemnifications provided for herein will not extend to liability, claims, damages, losses or expenses, including attorneys' fees, arising out of (i) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the respective indemnitee; or (ii) the giving of or the failure to give directions or instructions by the indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

10. Assessments. Nothing in this Declaration shall be construed to relieve any owner of a Lot, its heirs, successors or

1623.020\drngcov5\tn

March 10, 1997

assigns from an assessment against that owner's Lot for improvements under a duly authorized and approved special assessment district. The parties specifically agree that the value of the Drainage Facility will not reduce the amount assessed by the City.

11. Binding Effect. The covenants and obligations set forth herein shall be binding on Meridian, its successors and assigns, and on each Lot, and shall constitute covenants running with the land until released by the City's chief administrative officer as approved by the City engineer, or other applicable City representative.

MERIDIAN REALTY LTD. CO.,
a New Mexico limited liability company

By: _____
GEORGE BRUNACINI,
Managing Member

STATE OF NEW MEXICO)
)
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on March _____, 1997, by GEORGE BRUNACINI, Managing Member of MERIDIAN REALTY LTD. CO., a New Mexico limited liability company.

MY COMMISSION EXPIRES: _____

NOTARY PUBLIC

EXHIBIT "A"

Description of Drainage Facility

TO BE ATTACHED

GROUP 1 : LOTS 1, 2, 3, 4, 5 and 6 (Covenant #1)
GROUP 2 : LOTS 7, 8, 9 and 10 (Covenant #2)
GROUP 3 : LOTS 11 through 23 (Covenant #3)

1623.020\drngcov5\m

March 10, 1997

3-6-97

Temp ponds - built w/ work order

no easements - Covenant (CCR)

Permanent ponds - covered by Covenants (CCR)

Private stormdrain^{maint}

easement & ~~CCR~~ language on plat - reference Covenants
(CCR)

Lot 10 agreement & Covenant - public drn easement

Covenants, Conditions & restrictions (CCR)

Easterling & Associates, Inc.

10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-8021

FAX No. (505) 898-8501**FAX TRANSMITTAL**Date: 3/5/97Number of Pages: 8

(includes this cover page)

Job No.: 4320/003Job Name: MERIDIAN B.P.To: CITY OF ALBUQUERQUE DEV'T SERVICES
HYDROLOGY DIV.Attention: SUSAN CALONGINEFax No.: 924 3339From: MARTIN LEWIS

Item

Description: DRAFT DRAINAGE COVENANT, USING LOT 2 AS
AN EXAMPLE.Message: FOR YOUR REVIEW -IT IS INTENDED THAT A PROTOTYPE SUCH AS THIS BE
APPLIED ON A LOT BY LOT BASIS.Reply
Needed:

If you receive this fax in error or you do not receive all information as noted,
please notify us at once, 505-898-8021.

DESIGN ANALYSIS REPORT

FOR

**MERIDIAN BUSINESS PARK
INFRASTRUCTURE
IMPROVEMENTS**

DRB-96-336

COA PROJECT NO. 559781

COA HYDROLOGY FILE NO. J10/D20

DECEMBER 1996

Billy - 12-23-96

This document
was not reviewed. The
Engineer must submit
to City Hydrology for
review if this is
different from the
approved plan.

— Susan

DESIGN ANALYSIS REPORT
FOR
MERIDIAN BUSINESS PARK
INFRASTRUCTURE IMPROVEMENTS
DRB-96-336
COA PROJECT NO. 559781

DECEMBER 1996

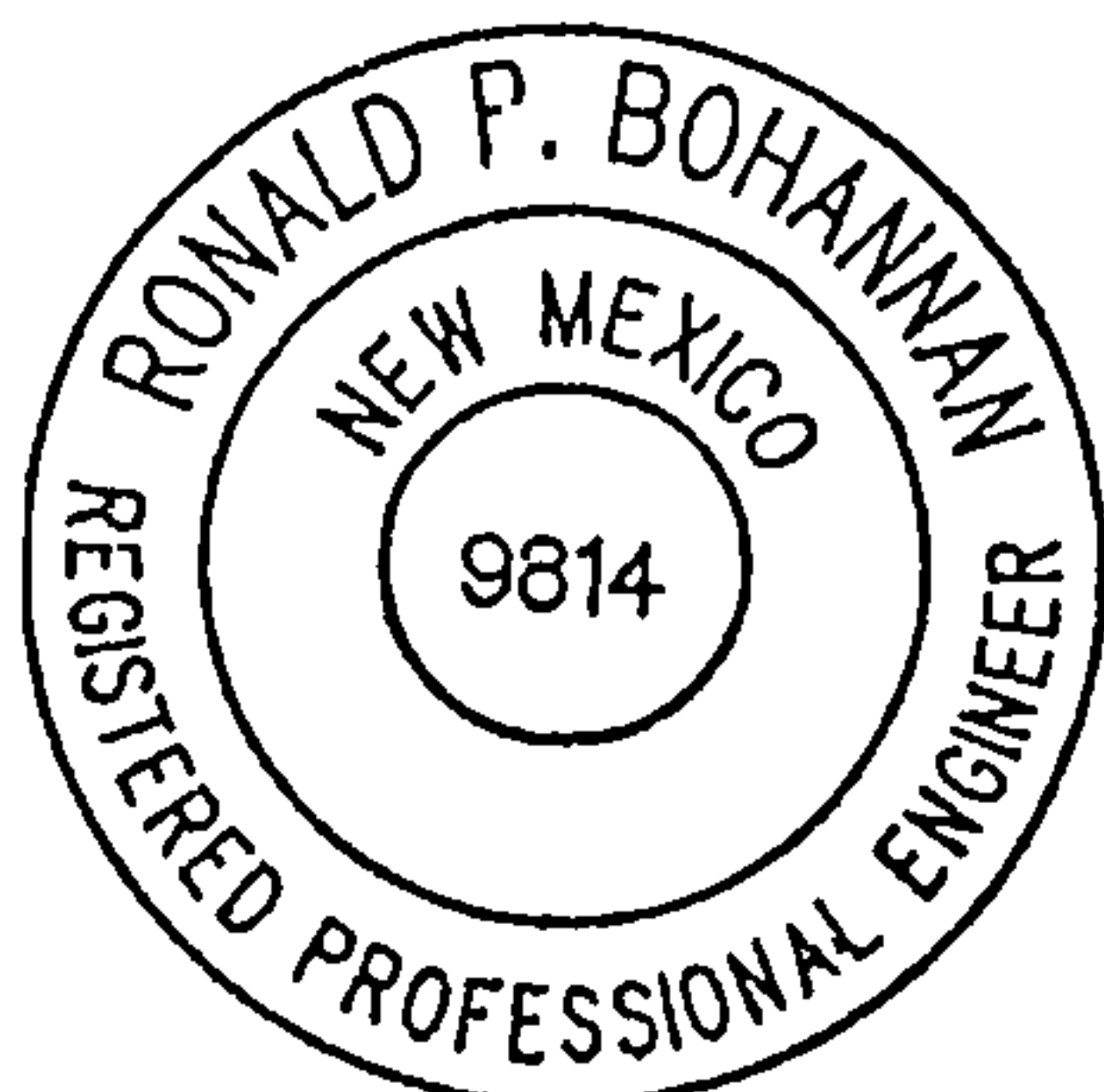
PREPARED FOR:

MERIDIAN REALTY LTD. CO.
2659 PAN AMERICAN FREEWAY NE
SUITE F
P. O. BOX 6363
ALBUQUERQUE, NM 87197

PREPARED BY:

EASTERLING & ASSOCIATES, INC.
10131 Coors Road, NW
Suite H-7
Albuquerque, NM 87114-4048
Telephone (505) 898-8021

I, Ronald P. Bohannon, do hereby certify that this report was prepared by me or under my direction and that I am a duly registered Professional Engineer under the laws of the State of New Mexico.





Ronald P. Bohannon, P.E.
NMPE No. 9814


Date

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<i>HYDRAULICS</i>	<i>2</i>
<i>PIPE CLASS AND BEDDING CLASS</i>	<i>2</i>
<i>PAVING SECTION</i>	<i>3</i>
<i>CONCLUSIONS</i>	<i>3</i>

APPENDICES

<i>HYDROLOGIC COMPUTATIONS</i>	<i>APPENDIX A</i>
<i>HYDRAULIC CALCULATIONS</i>	<i>APPENDIX B</i>
<i>PIPE AND BEDDING CLASS ANALYSIS</i>	<i>APPENDIX C</i>
<i>PAVEMENT SECTION DESIGN</i>	<i>APPENDIX D</i>
<i>GEOTECHNICAL INVESTIGATION FOR ATRISCO BUSINESS PARK BY VINYARD AND ASSOCIATES, INC.</i>	<i>APPENDIX E</i>

DESIGN ANALYSIS REPORT

FOR

MERIDIAN BUSINESS PARK INFRASTRUCTURE IMPROVEMENTS DRB-96-336

COA PROJECT NO. 559781

COA HYDROLOGY FILE NO. J10/D20

DECEMBER 1996

PURPOSE

This report demonstrates the adequacy of the proposed drainage and paving improvements associated with the Meridian Business Park Subdivision. The report is intended to accompany the Construction Plans for Meridian Business Park Infrastructure Improvements (Easterling & Associates, Inc., City of Albuquerque (COA) Project 559781).

The project comprises an 86-acre industrial subdivision, containing 23 lots and approximately 3840 LF of new major local streets. A storm drain and a permanent detention pond will be constructed to control runoff from the new public streets, in accordance with the approved Conceptual Master Grading and Drainage Plan for Lots 1-23, Meridian Business Park (J10/D20) (Easterling & Associates, Inc., August 1996). In addition, temporary retention ponds will be constructed on lots to provide downstream protection until permanent drainage improvements are installed with individual site developments. ✓

HYDROLOGY

The hydrologic conditions for the site were established in the Conceptual Master Grading and Drainage Plan.

The temporary onsite retention facilities have been sized herein to retain the 100-year, 10-day undeveloped runoff from upstream contributing areas. A summary of pond volumes is presented in *APPENDIX "A."* ✓

The AHYMO model used in the Conceptual Plan has been updated herein to reflect the final layout of the proposed detention pond on Lot 10. Hydrologic computations are presented in *APPENDIX "A."* The AHYMO reservoir routing computations demonstrate the adequacy of the proposed pond in limiting peak developed runoff rates from contributing basins to 0.1 cfs/acre at the point of entry to the existing Airport Drive Storm Drain.

HYDRAULICS

The size, configuration and extent of the proposed 24" Meridian Place Storm Drain was determined in the Conceptual Master Grading and Drainage Plan for Meridian Business Park. That plan also established the 100-year discharge in the proposed 24" storm drain.

Hydraulic calculations were performed herein for the proposed 24" storm drain, and the resultant hydraulic grade line is plotted on the storm drain profile in the construction plan set. Calculations were performed using equations published in the COA Development Process Manual (DPM), Chapter 22.3. In storm drain segments where the computed HGL is below the soffit of the pipe, the soffit elevation is reported as the HGL elevation. A summary of these calculations is included in *APPENDIX "B."*

The starting 100-year HGL elevation at the point of connection of the proposed 24" storm drain to the existing Airport Drive Storm Drain is 5097.91. (See Sheet 14 of the Meridian Business Park Infrastructure Improvement Plans.)

The main line 100-year HGL elevation at the point of connection of the proposed 12" pond outlet pipe to the existing Airport Drive Storm Drain is 5098.0, as previously calculated in COA Project 4383.93. (See Sheet 15 of the Meridian Business Park Infrastructure Improvement Plans.) The outlet invert of the 12" lateral has been set at 5098.0 at the connection point (existing manhole). The 12" pipe will flow under gravity to the connection point, without backwater effect from the existing main line. Pond outflow will be governed by a 5" orifice at the entrance of the 12" pond outlet pipe. (See AHYMO output file in *APPENDIX "A"*).

Hydraulic calculations were also performed to demonstrate the adequacy of the short reaches of 18" and 24" storm drain connecting the proposed Double 'C' inlets to the Lot 10 Detention Pond. (See *APPENDIX "B"*). The capacity of the storm inlets was previously established in the Conceptual Master Grading and Drainage Plan.

PIPE CLASS AND BEDDING CLASS

An analysis was performed to demonstrate the adequacy of the pipe and bedding classes specified for the project. A copy of this analysis is included in *APPENDIX "C."* The analysis was performed per the method presented in the "Concrete Pipe Design Manual" published by the American Concrete Pipe Association, June 1980 edition.

The analysis indicated that Class IV RCP is adequate for the proposed 18" and 24" RCP storm drain pipes. Class "C" bedding is recommended.

PAVING SECTION

The proposed paving section has been designed in accordance with the method presented in the COA DPM, Chapter 23.4. The R-value used in the pavement design is derived from the "Geotechnical Investigation and Pavement Section Design for Atrisco Business Park" by Vinyard and Associates, Inc. A copy of this report is included in *APPENDIX "E."*

CONCLUSIONS

The hydrologic and pond routing computations demonstrate that the final design of the Lot 10 Detention Pond is adequate. The temporary retention ponds are shown to have adequate capacity.

The hydraulic calculations confirm that the proposed storm drain will have capacity to convey the design peak 100-year developed flow rate established in the approved Conceptual Master Grading and Drainage Plan for Meridian Business Park.

The calculations performed to check pipe class and bedding class indicate that the specified pipe and bedding are adequate for the project.

The pavement design calculations indicate that the proposed pavement section is adequate for the project.

APPENDIX A
HYDROLOGIC COMPUTATIONS

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994

RUN DATE (MON/DAY/YR) = 12/05/1996

START TIME (HR:MIN:SEC) = 12:59:45 USER NO. = EASTERNM.I01

INPUT FILE = pondfl.hmi

** MERIDIAN BUSINESS PARK SUBDIVISION IN ATRISCO B.P.

** DESIGN ANALYSIS FOR INFRASTRUCTURE IMPROVEMENTS

** SIZING COMPUTATIONS FOR PROPOSED DETENTION POND ON LOT 10.

** DEVELOPED CONDITIONS ONSITE; UNDEVELOPED CONDITIONS OFFSITE.

** 11-22-96

** 100 YEAR 24 HOUR STORM

** INPUT FILE PONDFl.HMI

START 0.0 HOURS

RAINFALL TYPE=-2 0.0 1.87 2.20 2.66 DT=0.05

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.

DT = .050000 HOURS END TIME = 24.000000 HOURS

** DRAINAGE CONCEPT PER CONCEPTUAL MASTER GRADING AND DRAINAGE

** PLAN, AUGUST 1996. LAYOUT OF SUBDIVISION IMPROVEMENTS PER

** INFRASTRUCTURE IMPROVEMENT PLANS, NOVEMBER 1996.

** POND ACCEPTS AND DETAINS DEVELOPED FREE DISCHARGE FROM PROPOSED

** INTERNAL PUBLIC STREETS (3611 LF OF ROADWAY DISCHARGING TO POND).

** POND CAPACITY PROVIDED TO ALSO ACCEPT DEVELOPED FREE DISCHARGE FROM

** LOT 10, CONTROLLED DEVELOPED DISCHARGE @ 0.1 CFS/AC FROM LOTS 21,

** 22 AND 23, AND UNDEVELOPED FREE DISCHARGE FROM OFFSITE BASINS

** OS1, OS2 AND OS3. THIS REPRESENTS THE MOST SEVERE DESIGN CONDITION

** FOR THE POND.

** COMPUTE COMBINED HYDROGRAPH FOR LOTS 21, 22 AND 23 (6.67 ac)

** Assume 80% impervious (20% Landscaping req'd per Atrisco Business

** Park Master Development Plan, 1992)

COMPUTE NM HYD ID=1 HYDROGRAPH NO=101.0 DA=0.010421

%A=0.0 %B=10.0 %C=10.0 %D=80.0 TP=0.133333

MASS RAINFALL=-1

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

UNIT PEAK = 32.906 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.8700

AREA = .008337 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118459HR TP = .133333HR K/TP RATIO = .888442 SHAPE CONSTANT, N = 3.992480

UNIT PEAK = 5.5440 CFS UNIT VOLUME = .9991 B = 354.67 P60 = 1.8700

AREA = .002084 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 2.10488 INCHES = 1.1699 ACRE-FEET
 PEAK DISCHARGE RATE = 26.18 CFS AT 1.500 HOURS BASIN AREA = .0104 SQ. MI.

** Route through theoretical combined detention pond to limit discharge
 ** to 0.1 cfs per acre, per requirements of Atrisco Business Park Master
 ** Drainage Plan, 1993, K-10\D-23). In practice, each developed lot will
 ** have its own onsite pond (future design by others).
 ** Estimate a 450'x 65' equivalent single pond with 3:1 SS, 1.5' deep
 ** for this analysis.
 ** Outlet via three 2.7" orifices with drain lines through proposed curb
 ** on Silver Creek Rd.

ROUTE RESERVOIR ID=2 HYDROGRAPH NO=500 INFLOW ID=1 CODE=10
 OUTFLOW(cfs) STORAGE(ac ft) ELEV(ft)
 0.00 0.0000 0.0
 0.53 0.6016 1.0
 0.67 0.9285 1.5

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.50	.00	.00	.000	.00
1.00	.00	.00	.000	.00
1.50	26.18	.48	.288	.25
2.00	6.02	1.27	.780	.61
2.50	.80	1.39	.855	.64
3.00	.28	1.38	.848	.64
3.50	.17	1.35	.831	.63
4.00	.14	1.32	.811	.62
4.50	.14	1.29	.792	.61
5.00	.14	1.26	.772	.60
5.50	.16	1.23	.754	.60
6.00	.18	1.21	.736	.59
6.50	.20	1.18	.720	.58
7.00	.20	1.16	.705	.57
7.50	.19	1.13	.689	.57
8.00	.19	1.11	.674	.56
8.50	.18	1.09	.658	.55
9.00	.18	1.06	.643	.55
9.50	.17	1.04	.628	.54
10.00	.17	1.02	.612	.53
10.50	.16	.99	.597	.53
11.00	.16	.97	.582	.51
11.50	.15	.94	.568	.50
12.00	.15	.92	.554	.49
12.50	.15	.90	.540	.48
13.00	.14	.88	.526	.46
13.50	.14	.85	.513	.45
14.00	.14	.83	.501	.44
14.50	.13	.81	.488	.43

15.00	.13	.79	.476	.42
15.50	.13	.77	.464	.41
16.00	.13	.75	.453	.40
16.50	.12	.73	.442	.39
17.00	.12	.72	.431	.38
17.50	.12	.70	.420	.37
18.00	.12	.68	.410	.36
18.50	.11	.67	.400	.35
19.00	.11	.65	.391	.34
19.50	.11	.63	.381	.34
20.00	.11	.62	.372	.33
20.50	.11	.60	.363	.32
21.00	.10	.59	.354	.31
21.50	.10	.58	.346	.30
22.00	.10	.56	.338	.30
22.50	.10	.55	.330	.29
23.00	.10	.54	.322	.28
23.50	.10	.52	.315	.28
24.00	.10	.51	.307	.27
24.50	.00	.49	.298	.26
25.00	.00	.48	.287	.25
25.50	.00	.46	.277	.24
26.00	.00	.44	.267	.24
26.50	.00	.43	.257	.23
27.00	.00	.41	.248	.22
27.50	.00	.40	.239	.21

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
---------------	-----------------	----------------	-------------------	------------------

28.00	.00	.38	.231	.20
28.50	.00	.37	.222	.20
29.00	.00	.36	.214	.19
29.50	.00	.34	.207	.18

PEAK DISCHARGE = .639 CFS - PEAK OCCURS AT HOUR 2.60

MAXIMUM WATER SURFACE ELEVATION = 1.388

MAXIMUM STORAGE = .8555 AC-FT INCREMENTAL TIME= .050000HRS

PRINT HYD ID=2 CODE=1

OUTFLOW HYDROGRAPH RESERVOIR 500.00

RUNOFF VOLUME = 1.74538 INCHES = .9701 ACRE-FEET

PEAK DISCHARGE RATE = .64 CFS AT 2.600 HOURS BASIN AREA = .0104 SQ. MI.

** COMPUTE HYDROGRAPH FOR BASINS OS1 THRU OS3 (2.3 ac, undeveloped)
 ** Lots 21 thru 23 may accept and convey existing undeveloped offsite
 ** flows from Tract L1 (not in Meridian Business Park).
 ** When Tract L1 develops, runoff from Basins OS1 thru OS3 will discharge
 ** south to Bluewater Road at a controlled rate, without entering Meridian
 ** Business Park, and hence will not impact the Lot 10 Pond.

COMPUTE NM HYD ID=3 HYDROGRAPH NO=102.0 DA=0.0035974
 %A=90.0 %B=9.0 %C=1.0 %D=0.0 TP=0.133333
 MASS RAINFALL=-1

K = .160203HR TP = .133333HR K/TP RATIO = 1.201526 SHAPE CONSTANT, N = 2.957757
UNIT PEAK = 7.5103 CFS UNIT VOLUME = .9967 B = 278.36 P60 = 1.8700
AREA = .003597 SQ MI IA = .63350 INCHES INF = 1.62380 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = .45961 INCHES = .0882 ACRE-FEET
PEAK DISCHARGE RATE = 3.12 CFS AT 1.500 HOURS BASIN AREA = .0036 SQ. MI.

** ADD HYDROGRAPHS

ADD HYD ID=4 HYDRGRAPH NO=102.1 IDI=2 IDII=3
PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 102.10

RUNOFF VOLUME = 1.41543 INCHES = 1.0582 ACRE-FEET
PEAK DISCHARGE RATE = 3.37 CFS AT 1.500 HOURS BASIN AREA = .0140 SQ. MI.

** COMPUTE HYDROGRAPH FOR PROPOSED INTERNAL STREETS (4.97 ac)
** 3611 LF Major Local Streets (60' ROW; 40' F-F)
** Silver Creek Rd., Gallatin Pl., Meridian Pl..

COMPUTE NM HYD ID=5 HYDROGRAPH NO=103.0 DA=0.007772
%A=0.0 %B=9.0 %C=9.0 %D=82.0 TP=0.133333
MASS RAINFALL=-1

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 25.155 CFS UNIT VOLUME = .9987 B = 526.28 P60 = 1.8700
AREA = .006373 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118459HR TP = .133333HR K/TP RATIO = .888442 SHAPE CONSTANT, N = 3.992480
UNIT PEAK = 3.7213 CFS UNIT VOLUME = .9979 B = 354.67 P60 = 1.8700
AREA = .001399 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = 2.13711 INCHES = .8858 ACRE-FEET
PEAK DISCHARGE RATE = 19.72 CFS AT 1.500 HOURS BASIN AREA = .0078 SQ. MI.

** ADD HYDROGRAPHS

ADD HYD ID=6 HYDRGRAPH NO=103.1 IDI=4 IDII=5
PRINT HYD ID=6 CODE=1

PARTIAL HYDROGRAPH 103.10

RUNOFF VOLUME = 1.67282 INCHES = 1.9441 ACRE-FEET
PEAK DISCHARGE RATE = 23.09 CFS AT 1.500 HOURS BASIN AREA = .0218 SQ. MI.

** COMPUTE HYDROGRAPH FOR LOT 10 (2.82 ac)
** Assume 80% impervious (20% Landscaping req'd per Atrisco Business
** Park Master Development Plan, 1992)

COMPUTE NM HYD ID=7 HYDROGRAPH NO=104.0 DA=0.004418
%A=0.0 %B=10.0 %C=10.0 %D=80.0 TP=0.133333
MASS RAINFALL=-1

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 13.951 CFS UNIT VOLUME = .9983 B = 526.28 P60 = 1.8700
AREA = .003534 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118459HR TP = .133333HR K/TP RATIO = .888442 SHAPE CONSTANT, N = 3.992480
UNIT PEAK = 2.3504 CFS UNIT VOLUME = .9955 B = 354.67 P60 = 1.8700
AREA = .000884 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=7 CODE=1

PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = 2.10487 INCHES = .4960 ACRE-FEET
PEAK DISCHARGE RATE = 11.11 CFS AT 1.500 HOURS BASIN AREA = .0044 SQ. MI.

** ADD HYDROGRAPHS

ADD HYD ID=8 HYDRGRAPH NO=104.1 IDI=6 IDII=7
PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 104.10

RUNOFF VOLUME = 1.74564 INCHES = 2.4400 ACRE-FEET
PEAK DISCHARGE RATE = 34.20 CFS AT 1.500 HOURS BASIN AREA = .0262 SQ. MI.

** Route through proposed detention pond on Lot 10.
 ** Allowable release rate = (0.1 cfs/ac) (6.67 ac +4.97 ac +2.82 ac)=1.45 cfs
 ** Pond configuration per Meridian Business Park Infrastructure
 ** Improvement Plans. Outlet via 12" PVC to existing Storm Drain along
 ** Airport Road. 5" Orifice at pipe entrance provides inlet control.

ROUTE RESERVOIR	ID=9	HYDROGRAPH NO=501	INFLOW ID=8	CODE=10
	OUTFLOW(cfs)	STORAGE(ac ft)	ELEV(ft)	
	0.00	0.0000	5098.2	
	0.45	0.0273	5099.0	
	0.78	0.1508	5100.0	
	1.00	0.3523	5101.0	
	1.19	0.6035	5102.0	
	1.34	0.9087	5103.0	
	1.43	1.1213	5103.6	

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	5098.20	.000	.00
.50	.00	5098.20	.000	.00
1.00	.00	5098.20	.000	.00
1.50	34.20	5101.00	.352	1.00
2.00	8.02	5103.20	.981	1.37
2.50	1.69	5103.47	1.076	1.41
3.00	1.00	5103.46	1.070	1.41
3.50	.84	5103.40	1.049	1.40
4.00	.79	5103.33	1.025	1.39
4.50	.77	5103.26	1.000	1.38
5.00	.77	5103.19	.975	1.37
5.50	.78	5103.12	.951	1.36
6.00	.80	5103.05	.928	1.35
6.50	.82	5102.99	.906	1.34
7.00	.81	5102.92	.885	1.33
7.50	.80	5102.85	.863	1.32
8.00	.78	5102.78	.841	1.31
8.50	.77	5102.71	.820	1.30
9.00	.76	5102.64	.798	1.29
9.50	.75	5102.57	.776	1.27
10.00	.73	5102.49	.754	1.26
10.50	.72	5102.42	.732	1.25
11.00	.70	5102.35	.710	1.24
11.50	.68	5102.27	.687	1.23
12.00	.67	5102.20	.665	1.22
12.50	.65	5102.13	.642	1.21
13.00	.63	5102.05	.618	1.20
13.50	.62	5101.97	.595	1.18
14.00	.60	5101.87	.572	1.17
14.50	.59	5101.78	.549	1.15
15.00	.57	5101.69	.526	1.13
15.50	.56	5101.60	.503	1.11
16.00	.55	5101.51	.480	1.10
16.50	.54	5101.42	.457	1.08
17.00	.52	5101.33	.435	1.06

17.50	.51	5101.24	.413	1.05
18.00	.50	5101.15	.391	1.03
18.50	.49	5101.07	.369	1.01
19.00	.48	5100.98	.348	.99
19.50	.47	5100.87	.327	.97
20.00	.46	5100.77	.306	.95
20.50	.45	5100.67	.286	.93
21.00	.44	5100.57	.266	.91
21.50	.43	5100.48	.247	.89
22.00	.42	5100.39	.228	.86
22.50	.41	5100.29	.210	.84
23.00	.40	5100.21	.193	.83
23.50	.39	5100.12	.175	.81
24.00	.39	5100.04	.158	.79
24.50	.27	5099.90	.139	.75
25.00	.25	5099.75	.120	.70
25.50	.24	5099.61	.102	.65
26.00	.24	5099.48	.086	.61
26.50	.23	5099.36	.072	.57
27.00	.22	5099.25	.058	.53
27.50	.21	5099.15	.046	.50

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
---------------	-----------------	----------------	-------------------	------------------

28.00	.20	5099.06	.034	.47
28.50	.20	5098.90	.024	.40
29.00	.19	5098.72	.018	.29
29.50	.18	5098.63	.015	.24

PEAK DISCHARGE = 1.411 CFS - PEAK OCCURS AT HOUR 2.65
 MAXIMUM WATER SURFACE ELEVATION = 5103.476
 MAXIMUM STORAGE = 1.0773 AC-FT INCREMENTAL TIME= .050000HRS

PRINT HYD ID=9 CODE=1

OUTFLOW HYDROGRAPH RESERVOIR 501.00

RUNOFF VOLUME = 1.73648 INCHES = 2.4272 ACRE-FEET
 PEAK DISCHARGE RATE = 1.41 CFS AT 2.650 HOURS BASIN AREA = .0262 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 12:59:46

10131 Coors Rd. NW, Suite H-7
Albuquerque, New Mexico 87114-4048
(505) 898-8021
FAX (505) 898-8501

Project Name Meridian Business Park
Project No. 4320 Date 12/5/96
Subject Sizing of temporary retention ponds on undeveloped lots
By JML Sheet 1 of 1

Precipitation Zone 1

100 Yr, 10 day Storm to be fully retained

Land Treatment	90% A ;	9% B ;	1% C ;	0% D
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Calculated runoff volume = 1692 cf per acre of contributing area

[illegible]

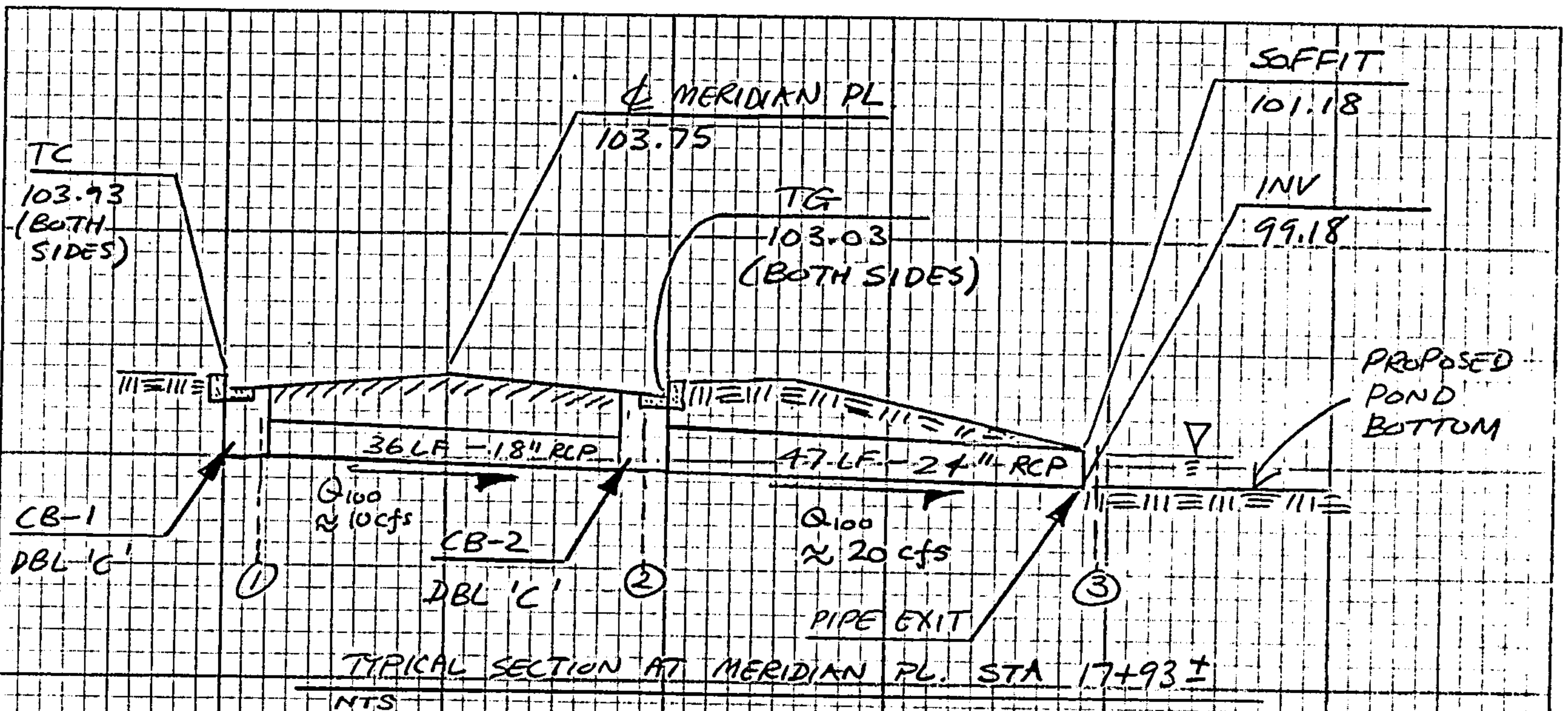
HYDRAULIC CALCULATIONS

APPENDIX B

Easterling & Associates, Inc.

10131 Coors Rd. NW, Suite H-7
Albuquerque, New Mexico 87114-4048
(505) 898-8021
FAX (505) 898-8501

Project Name MERIDIAN BUSINESS PARK
Project No. 4320/005 Date 11/22/96
Subject HYDRAULICS OF 18" & 24" SD'S
ENTERING LOT 10 POND
By JML Sheet 1 of 1



1. Check gravity flow capacity with Manning's Equation

$$n = 0.013 \quad \Rightarrow \quad Q_{cap} = 10.5 \text{ cfs (18")}$$

$$S = 0.01 \text{ ft/ft} \quad \Rightarrow \quad Q_{cap} = 22.6 \text{ cfs (24")}$$

2. Check pressure flow conditions

$$\text{Pipe head loss} = H_f = \left[\frac{\sum K}{2g} + \frac{n^2 L}{2.21(D/4)^{1.33}} \right] V^2$$

Where $\sum K$ = sum of loss coefficients = 0.2 + 1.0 = 1.2
 g = Gravitational acceleration = (ENT.) (EXIT)
 n = Manning's roughness = 0.013
 D = Pipe diameter = 18" or 24"
 V = Mean flow velocity
 L = Pipe length = 36' or 47'

(a) For the 24" pipe, peak inflow to the pond occurs at 1.5h, at which time the computed WSE = 101.00, per AHYMO
 $\Rightarrow$ Set pipe tailwater at soffit, i.e. at 101.18

$$H_{T(3)} = 1.12 \text{ ft (at 20 cfs)}$$

$$\Rightarrow HGL(2) = 101.18 + 1.12 = 102.30 \Rightarrow \underline{OK}$$

(b) For the 18" pipe,

$$H_{T(1)} = 0.93 \text{ ft (at 10 cfs)}$$

$$\Rightarrow HGL(1) = 102.30 + 0.93 = 103.23 \Rightarrow \underline{OK}$$

Easterling & Associates, Inc.

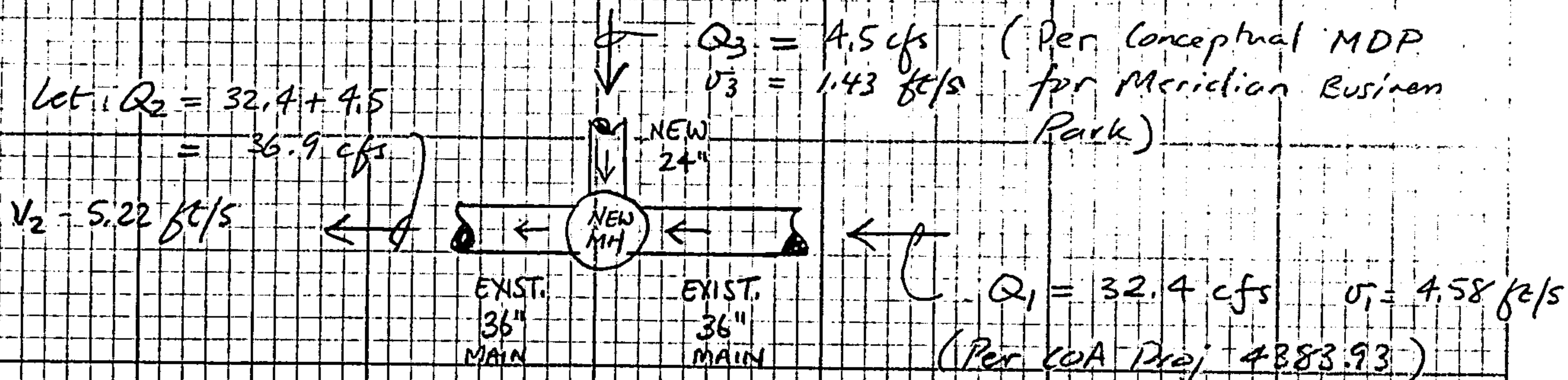
10131 Coors Rd. NW, Suite H-7
Albuquerque, New Mexico 87114-4048
(505) 898-8021
FAX (505) 898-8501

Project Name MERIDIAN BUSINESS PARK
Project No. 4320/005 Date 11/22/96
Subject HYDRAULIC CALCULATIONS
FOR MERIDIAN PL. 24" STORM DRAIN
By JML Sheet 1 of 2

Calculate Starting HGL at connection to existing Airport Dr. SD

- From COA Proj 4383.93 (Airport Dr. Storm Drain, Los Volcanes Rd. Storm Drain, Los Volcanes Rd. Paving Improvements), the HGL in the 36" SD at the proposed point of connection of the Meridian Place 24" SD is 5097.7. The Airport Drive Storm Drain's design flow included the allowable contribution from Meridian Business Park (0.1 cfs/acre).

- Estimate the effect on the local HGL by inserting a MH and 90° junction to the existing 36" Airport Drive Storm Drain:



Increase in HGL in main due to junction and manhole:

$$= \left[\frac{Q_2 V_2 - Q_1 V_1 - Q_3 V_3 \cos \theta}{g A_{avg}} \right] + 0.05 \frac{V_2^2}{2g}$$

$$= \left[\frac{(36.9)(5.22) - (32.4)(4.58)}{(32.2)(7.07)} \right] + 0.02$$

$$= 0.21'$$

$$\Rightarrow \text{Let Starting HGL for 24" line} = 5097.7 + 0.21 = \underline{\underline{5097.91}}$$

HYDRAULIC
GRADE LINE
CALCULATIONS

2 OF 2

PROJECT: MERIDIAN BUSINESS PARK
SUBJECT: MERIDIAN 24" SD, 100 YR. DISCHARGE
JOB#: 4320
DATE: 11/22/96
TIME: 02:05 PM
ANALYSIS: MARTIN LEWIS, EASTERLING & ASSOCIATES

STARTING CONDITIONS:

TAILWATER ELEVATION = 5097.91
MANNING'S ROUGHNESS = 0.013
ASSUMED STARTING EGL ELEV.= 5097.94

STRUCTURE	MAINLINE FLOW RATE (cfs)	PIPE DIA. (inches)	LAY LENGTH (feet) → @	PIPE SLOPE (fpf) OUTLET	INVERT (elev.)	FLOW VELOCITY (fps)	VELOCITY HEAD (feet)	FRICTION SLOPE (fpf)	FRICTION LOSS Hf	MANHOLE LOSS Hm	BEND LOSS Hb	JUNCTION LOSS Hj	EXPANSION LOSS Hx	SUM OF LOSSES	COMPUTED EGL ELEVATION	REPORTED HGL ELEVATION	FINISHED GRADE ELEVATION
MH3	4.5	24	107.00	0.0050	5092.93	1.42	0.03	0.0004	0.042	0.002	0.000	0.000	0.031	0.074	5097.94	5097.91	
MH2	4.2	24	309.62	0.0050	5095.01	1.33	0.03	0.0003	0.105	0.001	0.000	0.014	0.000	0.121	5098.01	5097.98	5104.13
MH1	3.6	24	309.62	0.0050	5096.56	1.14	0.02	0.0003	0.078	0.001	0.000	0.036	0.000	0.115	5098.14	5098.11	5105.04
DUMMY	1.2	24	0.10	0.0050	5096.56	0.37	0.00	0.0000	0.000	0.000	0.000	0.015	0.000	0.015	5098.25	5098.56	5107.15
															5098.27	5098.56	5107.15

APPENDIX C

PIPE AND BEDDING CLASS ANALYSIS

Easterling & Associates, Inc.

10131 Coors Rd. NW, Suite H-7
Albuquerque, New Mexico 87114-4048
(505) 898-8021
FAX (505) 898-8501

Project Name Meridian Business Park

Project No. 4320 Date 12/4/96

Subject Pipe & Bedding Class

By JML Sheet 1 of 2

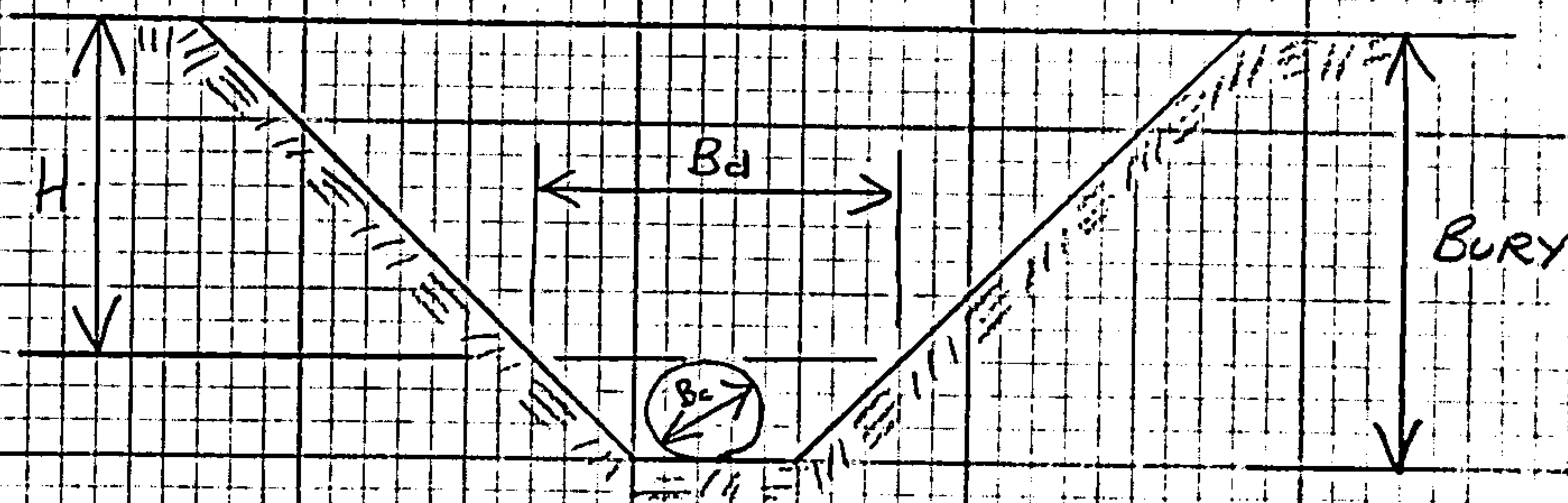
Use method in "Concrete Pipe Design Manual" (ACPA)
to check pipe & bedding class.

Assumptions:

1:1 Trench Side Slopes

Backfill Unit Weight = 120 lb/cf

Class 'C' Bedding $B_f = 1.5$



Check 18" Pipe

Min. bury = 3.03'

$B_c = 1.9'$ and $H = 1.13'$

$B_d = 1.9 + 1.9(2)(1) = 5.7'$

From Table 18-A, Use maximum backfill load for $H = 5 \Rightarrow 1411$ lb/lf
Above load is for 100 lb/cf mat'l. Adjust for 120 lb/cf:

$1411 \times 1.2 = 1693$ lb/cf

From Table 4.5, Live Load = 2482 lb/lf

D-load = $D_{0.01} = \frac{(W_L + W_E)}{(B_f \times D)} \times F.S.$

Where $F.S. = 1$ for RCP

$D_{0.01} = \frac{4175}{1.5 \times 1.5} \times 1 = 1856$ lb/lf I.D.

From ASTM C76,

Class II Pipe $\Rightarrow D_{0.01} = 1350$ lb/lf I.D.

Class IV Pipe $\Rightarrow D_{0.01} = 2000$ lb/lf I.D.

$\Rightarrow$ Use Class IV Pipe, w/ class 'C' bedding or better

Easterling & Associates, Inc.

10131 Coors Rd. NW, Suite H-7
Albuquerque, New Mexico 87114-4048
(505) 898-8021
FAX (505) 898-8501

Project Name Meridian Business Park

Project No. 4320 Date 12/4/96

Subject Pipe & Bedding Class

By JML Sheet 2 of 2

Check 24" Pipe

1. Min. bury = 3.29'

$$B_c = 2.5' \text{ and } H = 0.8'$$

$$B_d = 2.5 + 2.5(2)(1) = 7.5$$

From Table 20-A, Use maximum backfill load for $H = 5' \Rightarrow 1819 \text{ lb/lf}$
Adjust backfill for 120 lb/cf material.

$$1819 \times 1.2 = 2183 \text{ lb/lf}$$

From Table 45, Live Load = 2760 lb/lf

$$D_{o.o.l} = \frac{2183 + 2760}{1.5 \times 2} = \underline{\underline{1648 \text{ lb/lf ID.}}}$$

2. Max bury = 11.3'

$$B_c = 2.5' \text{ and } H = 8.8' \text{ (say } 9')$$

$$B_d = 7.5'$$

From Table 20-A, The transition width for $H = 9$ is 4'11"

$B_d = 7.5' > 4'11"$ Use maximum backfill load for $H = 9$

$$\text{Backfill load} = 3331 \text{ lb/lf}$$

Adjust backfill for 120 lb/cf material:

$$3331 \times 1.2 = 3997 \text{ lb/lf}$$

From Table 45, Live Load = 240 lb/ft

$$D_{o.o.l} = \frac{3997 + 240}{1.5 \times 2} = \underline{\underline{1412 \text{ lb/lf ID.}}}$$

From ASTM C-76,

$$\text{Class III Pipe} \rightarrow D_{o.o.l} = 1350 \text{ lb/lf ID}$$

$$\text{Class IV Pipe} \rightarrow D_{o.o.l} = 2000 \text{ lb/lf ID}$$

Use Class IV Pipe throughout, with class 'C' bedding or better

APPENDIX D
PAVEMENT SECTION DESIGN

Easterling & Associates, Inc.

10131 Coors Rd. NW, Suite H-7
Albuquerque, New Mexico 87114-4048
(505) 898-8021.
FAX (505) 898-8501

Project Name MERIDIAN BUSINESS PARK
Project No. 4320 Date 11/22/96
Subject PAVEMENT SECTION
DESIGN
By JML Sheet 1 of 1

Street Classification = Major Local (2 lane)

Design R-Value = 55 (per Atrisco BP Geotechnical Investigation) *

Soil Support Value = 6.920 (per DPM Fig 23.4.1)

Current AWDT = 3000/lane (assume collector)

Vehicle Distribution:

Vehicle	Percentage	ESAL Factor
SUT	3	0.1890
STT	1	2.3719
MTT	1	2.3187
CARS	65	0.0008
OTHER 4 WH.	30	0.0087

Growth Rate = 4% (DPM Table 23.4.3)

Growth Factor = 29.78 (DPM Table 23.4.6)

$$\begin{aligned} \text{ESAL} &= (3000 \times 365 \times 29.78) [(0.03)(0.1890) + (0.01)(2.3719) + (0.01)(2.3187) + (0.65)(0.0008) + (0.30)(0.0087)] \\ &= 1,816,523 \text{ ESAL units/lane} \end{aligned}$$

For 2-lane roadway, cumulative directional ESAL given by:

$$\begin{aligned} W_{18} &= (1,816,523)(2) \\ &= 3,633,046 \end{aligned}$$

Design Lane Traffic given by:

(Per DPM Sec 23.4, pages 6&7)

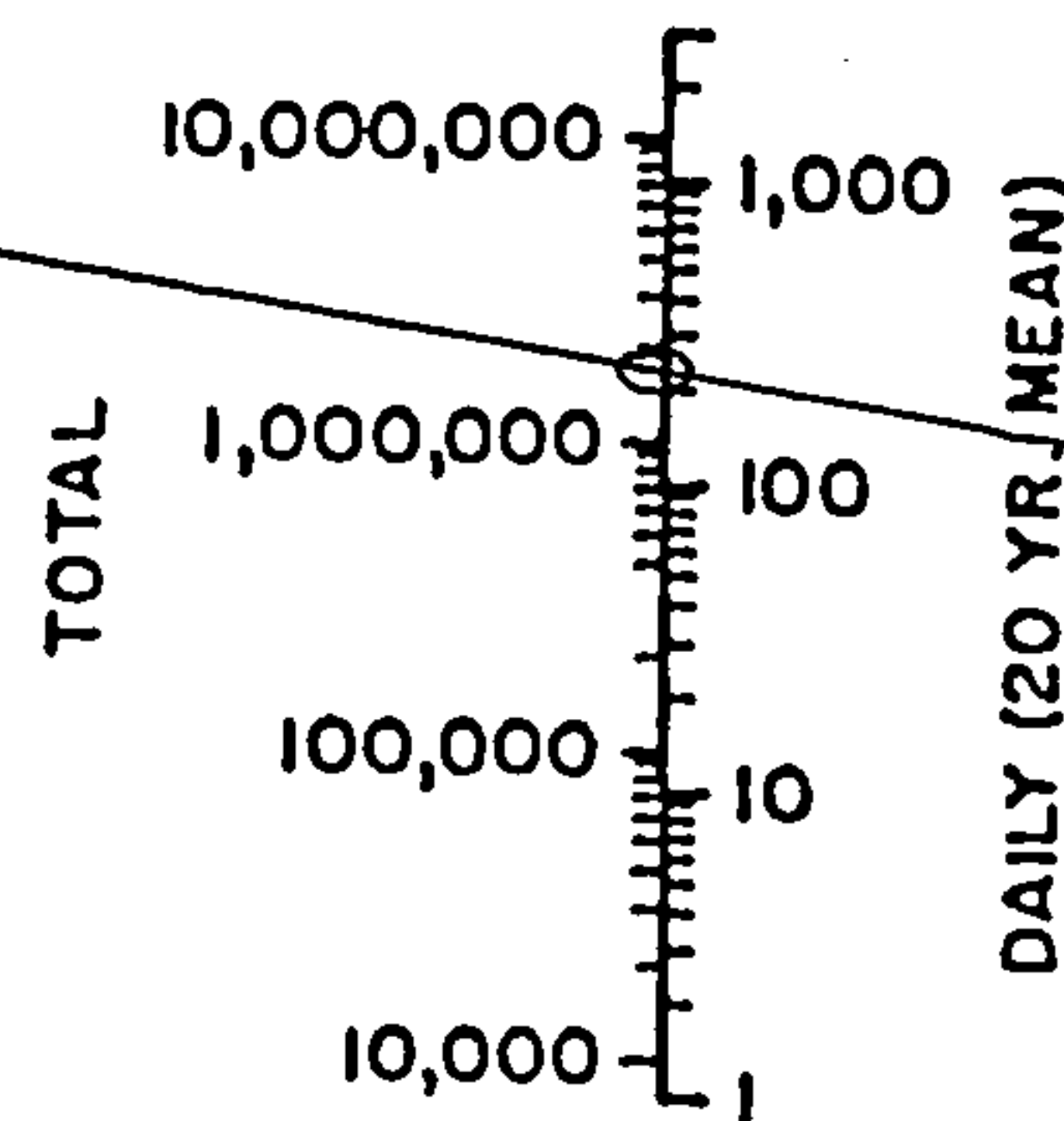
$$\begin{aligned} W_L &= (0.50)(1.0)(3,633,046) \\ &= 1,816,523 \end{aligned}$$

* Vingard & Assoc. 6/19/93

$S = 6.920$

$W_L = 1,816,523$

EQUIV. 18^k SINGLE AXLE LOAD APPLICATIONS



SN-STRUCTURAL NUMBER

R-REGIONAL FACTOR

$R = 2.0$

$\Rightarrow SN = 2.80$

SN-WEIGHTED STRUCTURAL NUMBER

$$SN = \left[\frac{1.0504 \cdot W_L^{0.10684} \cdot R^{0.10684}}{10^{0.039714(SS-3)} \cdot 10^{0.10684 G_{1/\beta}}} - 1 \right]$$

P_f = SERVICIBILITY INDEX = 2.5

R = REGIONAL FACTOR

USE 2.0 FOR CITY OF ALBUQUERQUE

Serviceability Index (P_f) = 2.5

Regional Factor (R) = 2.0 for City of Albuquerque

FIGURE 23.4.2

DESIGN CHART
FLEXIBLE PAVEMENTS
20-YEAR TRAFFIC ANALYSIS

FIGURE 23.4.3 - STRUCTURAL DESIGN COMPUTATION FORM

PROJECT NAME: MERIDIAN BUS PK.PROJECT NO. : 4320DESIGN ADL DESIGN SN 2.80STREET: MERIDIAN PLACE
SILVER CREEK RD.
GALLATIN PLACEFROM: TO: COMPUTED BY: JML

Alternate	Subbase	CTB	BTB	ABC	AC	PMSC	SN
A	$x(.08)=$	$x(.2)=$	$x(.25)=$	$x(.1)=$	$x(.42)=$	$x(.25)=$	
B				$5(0.1) = 0.50$	$5\frac{1}{2}(0.42) = 2.31$		2.81
C							
D							
E							
F							

Design SN

APPENDIX E

*GEOTECHNICAL INVESTIGATION
ATRISCO BUSINESS PARK*

*PREPARED BY
VINYARD AND ASSOCIATES, INC.
1993*

V
Vinyard & Associates, Inc.

4415-D Hawkins, NE
Albuquerque, New Mexico 87109
(505) 345-1937

Geotechnical Engineering • Materials Testing • Environmental Engineering

GEOTECHNICAL INVESTIGATION AND
PAVEMENT SECTION DESIGN
ATRISCO BUSINESS PARK

Prepared for:
Sunwest Bank

Project No.: 93-1-90
June 19, 1993

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1.0 INTRODUCTION

This report presents the results of our geotechnical investigation and pavement section design for a portion of the streets within the Atrisco Business Park. Location of the streets investigated is indicated on Figure 1.

The investigation was performed to determine the subsurface conditions at selected points along the proposed roadways. Based upon the soil conditions observed, geotechnical recommendations were developed for:

Asphaltic Concrete Pavement;
Lateral Earth Pressures;
Site Grading; and
Earthwork Construction.

The conclusions and recommendations presented are based on information provided to us regarding the proposed construction, on laboratory testing, and upon the local standards of our profession at the time this report was prepared. This investigation was not performed to determine the presence of potentially hazardous waste. Determination of the presence of potentially hazardous materials requires the use of exploration techniques and analytic testing which were not appropriate for this investigation.

2.0 PROPOSED CONSTRUCTION AND SITE CONDITIONS

This study addresses a portion of the roads within the Atrisco Business Park. Proposed configuration of the roads is indicated on the Site Plan, Figure 1.

Based upon information obtained from personnel with Easterling & Associates, we anticipate the proposed roads will be either two or four lanes wide. The proposed roadways will be paved with asphaltic concrete. Very limited cut and fill earthwork is anticipated.

The site slopes slightly to the east. Vegetation on site consists of weeds, native grass and occasional cactus. The portion of Bluewater Road adjacent to the Honeywell Facility is presently paved with asphaltic concrete.

3.0 SUBSURFACE CONDITIONS

To evaluate subsurface conditions along the proposed roads fifteen test pits were excavated along the proposed roads. Test pit locations are indicated on the Site Plan, Figure 1. Test pits were excavated on May 24, 1993.

The test pits were excavated using a rubber tired backhoe equipped with a twenty-four inch wide bucket. The test pits were

logged by a qualified field engineer using the Unified Soil Classification System. The field engineer logged the cuttings during excavation and examined the cut faces. Logs of the test pits are presented on Figures 2 through 16.

The soil profile within the study area is relatively uniform. The majority of the soils encountered consisted of slightly silty to silty fine-grained sand. The sands are loose to medium dense and slightly moist to moist.

Very infrequent lenses of clayey sand were encountered in the test pits. To provide a more economical pavement section a sandy soil subgrade was assumed. If clayey sand is encountered at subgrade depth it should be removed as necessary to allow a minimum of eighteen inches of silty sand soil below the pavement.

Flowing groundwater or bedrock was not encountered in the test pits. However, groundwater conditions may change with time due to precipitation, variations in groundwater level, seepage from ponding areas or leaking utilities.

4.0 LABORATORY TESTING

A laboratory testing program was performed on soil samples obtained during the field investigation which appeared representative of the materials encountered. The laboratory

testing program was structured to determine the physical properties of the soils necessary for development of geotechnical recommendations.

The laboratory testing program included:

- o Soil Moisture Content;
- o Sieve Analysis;
- o Atterberg Limits; and
- o R-Value.

Laboratory Moisture Content tests were performed to evaluate the in-place soil moisture content. Test results are presented on the Logs of Test Pits and are summarized on Table 1.

Sieve Analysis and Atterberg Limits tests were performed on selected soil samples to confirm field soil classifications and to provide information on general physical soil properties. Test results are presented on Table 1.

Three R-Value tests were performed on representative soil samples. Test results are presented on Figures 18 through 20. The test results indicate the silty sands which were encountered over most of the alignment have an average R-Value of 72.

5.0 PAVEMENT RECOMMENDATIONS

The pavement recommendations presented are based upon City of Albuquerque design procedures. Default traffic projections specified by the City of Albuquerque were utilized. All of the streets were assumed to be "collectors" with an average weighted daily traffic (AWDT) of 3000 vehicles per day, per lane.

Traffic distribution as specified by the City of Albuquerque is tabulated below:

<u>Automobile</u>	<u>Single Unit Truck</u>	<u>Single Trailer Truck</u>	<u>Multi- Trailer Truck</u>
95%	3%	1%	1%

Calculations to determine equivalent single axle loads (ESAL's) (18 kip) are presented on Figure 21. The design nomograph to determine required structural number is presented on Figure 22.

To evaluate the required weighted structural number the following parameters were utilized.

Serviceability Index	2.5
Regional Factor	2.0
Design Life (years)	20
R-Value	55

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An R-Value of 55 was utilized instead of the average test value of 72 based upon standard correlations of grain size distribution versus R-Value developed by the New Mexico State Highway and Transportation Department.

To evaluate the required pavement section for the proposed construction the following structural coefficients were utilized in our analysis:

<u>Material</u>	<u>Structural Coefficient</u>
Asphaltic Concrete	0.42
Aggregate Base Course	0.10

Based upon the above criteria we recommend the following asphaltic concrete pavement sections:

	<u>Two Lane</u>	<u>Four Lane</u>
Asphaltic Concrete	5"	4.5"
Aggregate Base Course	7"	8"

6.0 CONSTRUCTION METHODS AND MATERIALS

We anticipate the project will be constructed as detailed in the "City of Albuquerque Standard Specifications for Public Works

Construction". Supplemental earthwork recommendations for the project are presented below:

Project earthwork should be performed as detailed in Section 200 of the "City of Albuquerque Standard Specifications for Public Works Construction" except as modified herein. Prior to placing fill or pavement, all paved areas should be cleared and grubbed as detailed in Section 201 of the "City of Albuquerque Standard Specifications for Public Works Construction".

All fill below the proposed roadway should be placed and compacted as detailed in Section 204 of the "City of Albuquerque Standard Specifications for Public Works Construction" with the following exceptions:

- o Subsequent to clearing and grubbing and prior to placing fill, the natural ground surface should be scarified to a depth of six inches and moisture conditioned to a near optimum (± 3 percent) moisture content. The natural ground surface should then be compacted with a minimum of ten passes of a vibratory compactor. The vibratory compactor should exert a minimum dynamic force of 40,000 pounds. However, if vibratory compaction poses a threat to the structural integrity of nearby structures, an equivalent static compactor should be utilized. Special care should be utilized to minimize distress to existing

structures and utilities if vibratory soil or asphalt compactors are utilized in the vicinity of the existing structures and utilities.

- o All fill below within 18" of subgrade elevation shall meet AASHTO Soil Classification A-2-4 or better.

Base course material shall conform to Section 302 of the "City of Albuquerque Standard Specifications for Public Works Construction". We suggest that base course be Class II material.

Plant mix bituminous pavement should conform to Section 116 of the "City of Albuquerque Standard Specifications for Public Works Construction".

7.0 TRENCHES AND EXCAVATIONS

All trenches greater than four feet in depth must be sloped, shored or braced or otherwise supported according to OSHA Construction and Safety Standards. Material excavated from the trench or spoil must be placed a minimum of two feet from the edge of the excavation. The spoil should be retained in an effective manner such that no loose material can fall into the excavation.

Fill in shallow utility line trenches below the pavement must be properly compacted to prevent localized pavement settlement. To

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minimize settlement and maintenance of the pavement, all trenches should be backfilled as specified in the "City of Albuquerque Standard Specifications for Public Works Construction".

8.0 TEMPORARY AND PERMANENT SLOPES

Temporary construction slopes less than eight feet high should be sloped no steeper than 1-1/2:1 (horizontal:vertical). If deeper excavations are required, this office should be contacted for supplemental recommendations. Limited raveling of slopes will occur particularly as the exposed soils dry out. Heavy equipment and material stockpiles should be located a minimum of five feet from the top of slope.

Permanent cut and fill slopes less than eight feet in height should be sloped no steeper than 2:1 (horizontal:vertical). Permanent cut and fill slopes eight to twelve feet in height should be sloped no steeper than 2-1/2:1 (horizontal:vertical). If higher slopes are required this office should be contacted for supplemental recommendations.

9.0 RETAINING WALLS

Retaining walls constructed in conjunction with this project are not anticipated to exceed five feet in height. If higher walls or unusual loading conditions such as sloping backfill, slopes

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below retaining wall footings or surcharges are anticipated, this office should be contacted for supplemental recommendations.

Foundations for retaining walls may be designed for a maximum toe bearing pressure of 1500 pounds per square foot. Retaining wall footings should be embedded a minimum of eighteen inches below lowest adjacent grade. Prior to placing footings, the exposed soils should be scarified to a depth of eight inches, moisture conditioned to a near optimum ($\pm 3\%$) moisture content and compacted to a minimum of 95% of maximum density as determined by ASTM D-1557.

We recommend that the following equivalent fluid pressures be utilized for design of retaining walls:

<u>Loading Condition</u>	<u>Equivalent Fluid Pressure*</u>
Active Earth Pressure	32 pcf
Passive Earth Pressure	
Undisturbed Natural Soils	300 pcf
Structural Fill	400 pcf
Earth Pressure at Rest	60 pcf

* Does not include a factor of safety.

The above earth pressures do not include hydrostatic pressure. If retaining walls are restrained against rotation the earth pressure at rest should be utilized for design.

Lateral retaining wall loads will be resisted by passive earth pressure at the toe and friction along the base of the wall. A coefficient of friction between soil and concrete of 0.4 may be used for design.

Backfill adjacent to retaining walls should be placed and compacted as detailed in Section 501 of the "City of Albuquerque Standard Specifications for Public Works Construction". Backfill adjacent to walls should be compacted with relatively light, hand operated equipment to prevent over stressing the wall and excessive lateral deflections.

To prevent staining of concrete, the back of retaining walls should be waterproofed prior to backfilling. Weep holes should be constructed near the base of exterior walls.

10.0 LANDSCAPING

Landscaping for the project should be designed and constructed to minimize the potential for saturation of soils supporting the proposed pavement. If subgrade soils become saturated, limited settlement and localized failure of the pavement may occur.

11.0 CLOSURE

This report completely supersedes our previous geotechnical report for the project. The recommendations presented in this report are based upon the subsurface conditions disclosed by the test pits. Soil and groundwater conditions may vary between test pits and with time.

Placement and compaction of structural fill should be observed and tested by a qualified Geotechnical Engineer or his representative. The purpose of the observation and testing is to confirm that the recommendations presented herein are followed and to provide supplemental recommendations if subsurface conditions differ from those anticipated. All asphaltic concrete should be tested by a qualified Geotechnical Engineer or his representative to confirm the recommendations presented herein are implemented.

If conditions are encountered during construction which differ from those presented herein, this office should be contacted for supplemental recommendations. The staff of Vinyard & Associates, Inc. is available for supplemental consultation as necessary.

This office would be pleased to review site grading and drainage plans to evaluate conformance with the recommendations presented herein. All site earthwork should be observed by a

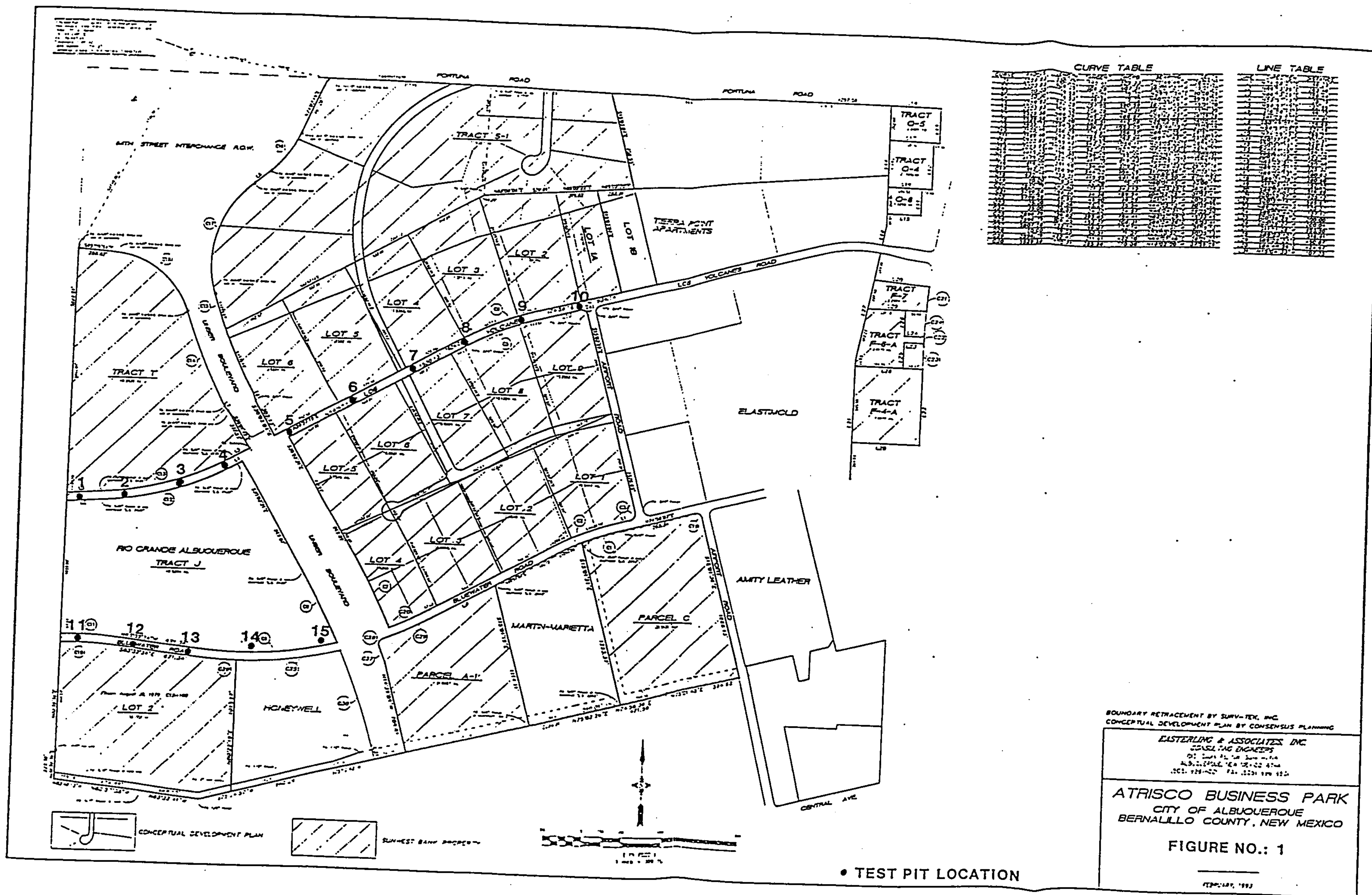
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qualified Geotechnical Engineer or his representative. Vinyard & Associates, Inc. would be pleased to provide these services.

Vinyard & Associates, Inc.

Martin D. Vinyard, PE

File: 93-1-90



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LOG OF TEST PIT NO. 1

Project: Atrisco Business Park Project No. 93-1-90
 Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
 Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B		6.2	1, 2	SM	SAND, silty, fine-grained, poorly graded, moist to medium moist, brown
							Slightly moist
		B		1.9	1		Very gravelly lens, fine to coarse, slightly silty
							Silty sand
							Weakly cemented
10							
15							Bottom of pit at 10'
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

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LOG OF TEST PIT NO. 2

Project: Atrisco Business Park Project No. 93-1-90
 Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
 Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B		5.5	1,2	SM	SAND, silty, fine-grained, poorly graded, moist, light brown
		B		4.6			Very silty, weakly cemented, slightly moist
		B		1.3			Slightly silty, fine to coarse-grained
10							Bottom of pit at 9-1/2'
15							
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

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LOG OF TEST PIT NO. 3

Project: Atrisco Business Park Project No. 93-1-90
 Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
 Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B		4.7		GM	GRAVEL, silty, fine to coarse-grained, very sandy, slightly moist, brown
		B					
10						SM	SAND, silty, fine-grained
15							Bottom of pit at 9'
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

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ALOG OF TEST PIT NO. 4

Project: Atrisco Business Park Project No. 93-1-90
Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B		2.4	1,2,4	SM	SAND, silty to slightly silty, fine to medium-grained, poorly graded, slightly moist, light brown
							Slightly silty, fine to coarse-grained, gravelly, fine to coarse
							Silty fine-grained
10							Bottom of pit at 9'
15							
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

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LOG OF TEST PIT NO. 5

Project: Atrisco Business Park Project No. 93-1-90
 Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
 Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B		4.1	1, 2	SM	SAND, silty, fine to medium-grained, poorly graded, slightly moist to moist, brown
							Very silty, weakly cemented
							Silty
10							Bottom of pit at 9'
15							
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

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ALOG OF TEST PIT NO. 6

Project: Atrisco Business Park Project No. 93-1-90
Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B		2.2	1,2	SM	SAND, silty, fine to medium-grained, poorly graded, slightly moist, brown
							Slightly silty
		B		2.8			Fine to coarse-grained lens, slightly moist
							Very silty
10							Bottom of pit at 9'
15							
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

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ALOG OF TEST PIT NO. 7

Project: Atrisco Business Park Project No. 93-1-90
Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B		6.9	1, 2, 4	SM	SAND, very silty to silty, fine to medium-grained, poorly graded, moist, brown
		B					Slightly silty, fine to coarse-grained
							Gravelly
10							Bottom of pit at 9'
15							
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

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ALOG OF TEST PIT NO. 8

Project: Atrisco Business Park Project No. 93-1-90
Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B		6.7	1,2	SM	SAND, silty to very silty, fine to medium-grained, poorly graded, moist, brown silty Fine to coarse-grained
10							Bottom of pit at 9'
15							
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

Figure 9

V
&
A

LOG OF TEST PIT NO. 9

Project: Atrisco Business Park

Project No. 93-1-90

Elevation - Top of Test Hole: n/a

Date Drilled: 5/24/93

Depth to Groundwater: not encountered

Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B		4.7	1,2	SM	SAND, silty, fine to medium-grained, poorly graded, moist, light brown Very silty Silty to slightly silty, fine to coarse-grained Silty, fine-grained
10							Bottom of pit at 9'
15							
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

Figure 10

V
&
A

LOG OF TEST PIT NO. 10

Project: Atrisco Business Park Project No. 93-1-90
Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B		5.6	1,2	SM	SAND, silty, fine to medium-grained, poorly graded, moist, light brown
							Silty to slightly silty lens
		B					Very silty
10							Bottom of pit at 9'
15							
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

V
&
ALOG OF TEST PIT NO. 11

Project: Atrisco Business Park Project No. 93-1-90
Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B		6.0	1,2	SM	SAND, silty to very silty, fine-grained, poorly graded, moist, brown Silty, medium moist Very silty Silty, slightly moist
10		B					Bottom of pit at 9-1/2'
15							
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

V
&
ALOG OF TEST PIT NO. 12

Project: Atrisco Business Park Project No. 93-1-90
Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
						SM	SAND, silty, fine-grained, poorly graded, moist, light brown
		B					
		B		12.5	1, 2	SC	Clayey sand lens
5							
						SM	Slightly moist
		B		1.9			
							Fine to coarse-grained
10							Bottom of pit at 9-1/2'
15							
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

V
&
ALOG OF TEST PIT NO. 13

Project: Atrisco Business Park Project No. 93-1-90
Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B	2.1	1,2,4		SM	SAND, silty, fine to coarse-grained, slight fine to coarse gravel, poorly graded, sil. moist, light brown
		B	5.2	1			Mostly fine-grained, medium moist
							Very silty lenses
							Silty to slightly silty, fine to coarse-grained
10							Bottom of pit at 9-1/2'
15							
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

V
&
A

LOG OF TEST PIT NO. 14

Project: Atrisco Business Park Project No. 93-1-90
 Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
 Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B	4.2	1, 2		SM	SAND, silty, fine to medium-grained, poorly graded, moist, brown
		B	2.5	1			Mostly medium-grained
		B	2.1				Mostly fine-grained, slightly moist
10							Bottom of pit at 9'
15							
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

V
&
A

LOG OF TEST PIT NO. 15

Project: Atrisco Business Park Project No. 93-1-90
Elevation - Top of Test Hole: n/a Date Drilled: 5/24/93
Depth to Groundwater: not encountered Drilling Method: 24" Backhoe

Depth, feet	Blows/Foot	Sample Type	Dry Density pcf	Water Content, %	Additional Testing	Unified Classification	Material Description
5		B		4.9	1,2	SM	SAND, silty to slightly silty, fine to medium-grained, poorly graded, moist, light brown
		B				SP- SM	SAND, slightly silty, fine to medium-grained, slight fine to coarse gravel, poorly graded, slightly moist, light brown
10							Bottom of pit at 9'
15							
20							
25							
30							

ADDITIONAL TESTS: 1 = Sieve Analysis 2 = Atterberg Limits 3 = Direct Shear 4 = R-Value 5 = Other

NOTES - LOGS OF TEST PITS

Test pit locations were determined by compass bearing and pacing distances from known topographic points.

"Drilling Method" refers to the equipment utilized to advance the test pit. A rubber tired backhoe with a 24" bucket was utilized.

"S" under "Sample Type" indicates a Standard Penetration test (ASTM D-1586). The Standard Penetration sampler is 2 inches in outside diameter and 1 3/8 inches inside diameter.

"R" under "Sample Type" indicates a 3 inch outside diameter by 2.5 inch inside diameter sampler. The sampler is lined with 1 inch high brass rings.

"B" under "Sample Type" indicates a bulk sample.

"Blows Per Foot" indicates the number of blows of a 140 pound hammer falling 30 inches required to drive the indicated sampler 12 inches.

"NR" under "Blows/Foot" indicates that no sample was recovered.

"Dry Density PCF" indicates the laboratory determined soil dry density in pounds per cubic foot.

"Water Content %" indicates the laboratory determined soil moisture content in percent (ASTM D-2216).

"Unified Classification" indicates the field soil classification as per ASTM D-2488. When appropriate, the field classification is modified based upon subsequent laboratory tests.

Variations in soil profile, consistency, and moisture content may occur between test holes. Subsurface conditions may also vary between test holes and with time.

Vinyard & Associates, Inc.

R - Value Test Results

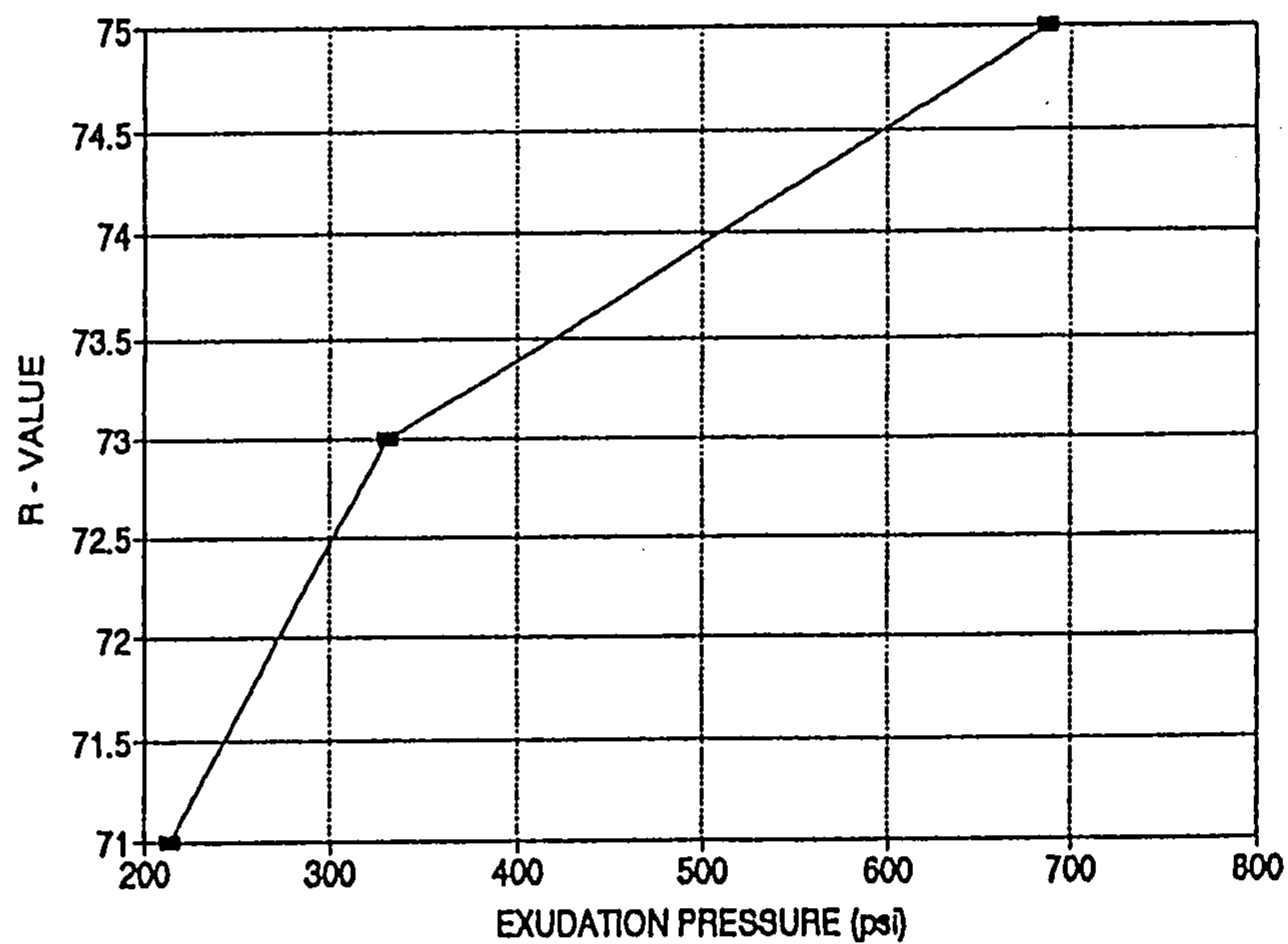
Project No.: 93-1-90

Client: SunWest Bank

Sample Location: Test Pit #4 @ 2'

Sample No.	A	B	C
Moisture Content (%)	11.5	11.9	11.1
Dry Density (PCF)	114	114	116.7
Expansion Pressure (PSI)	0.0	0.0	0.0
Exudation Pressure (PSI)	214	331	688
R - Value	71	73	75

R - Value at 300 PSI 72



Vinyard & Associates, Inc.

R - Value Test Results

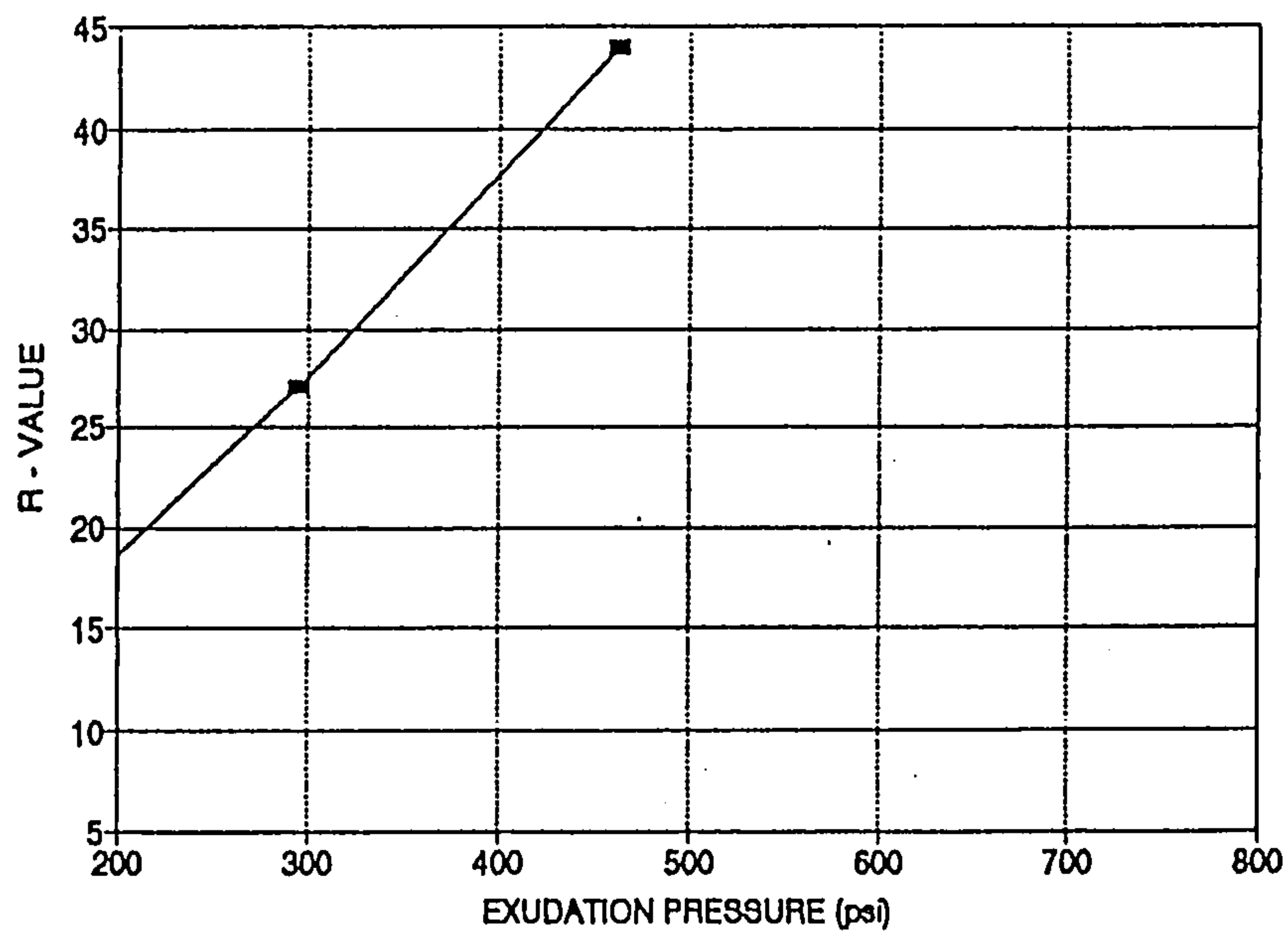
Project No.: 93-1-90

Client: SunWest Bank

Sample Location: Test Pit #7 @ 2'

Sample No.	A	B	C
Moisture Content (%)	13.6	12.2	10.9
Dry Density (PCF)	116.2	122.2	124.2
Expansion Pressure (PSI)	0.0	0.0	0.0
Exudation Pressure (PSI)	91	295	463
R - Value	9	27	44

R - Value at 300 PSI 27



Vinyard & Associates, Inc.

R - Value Test Results

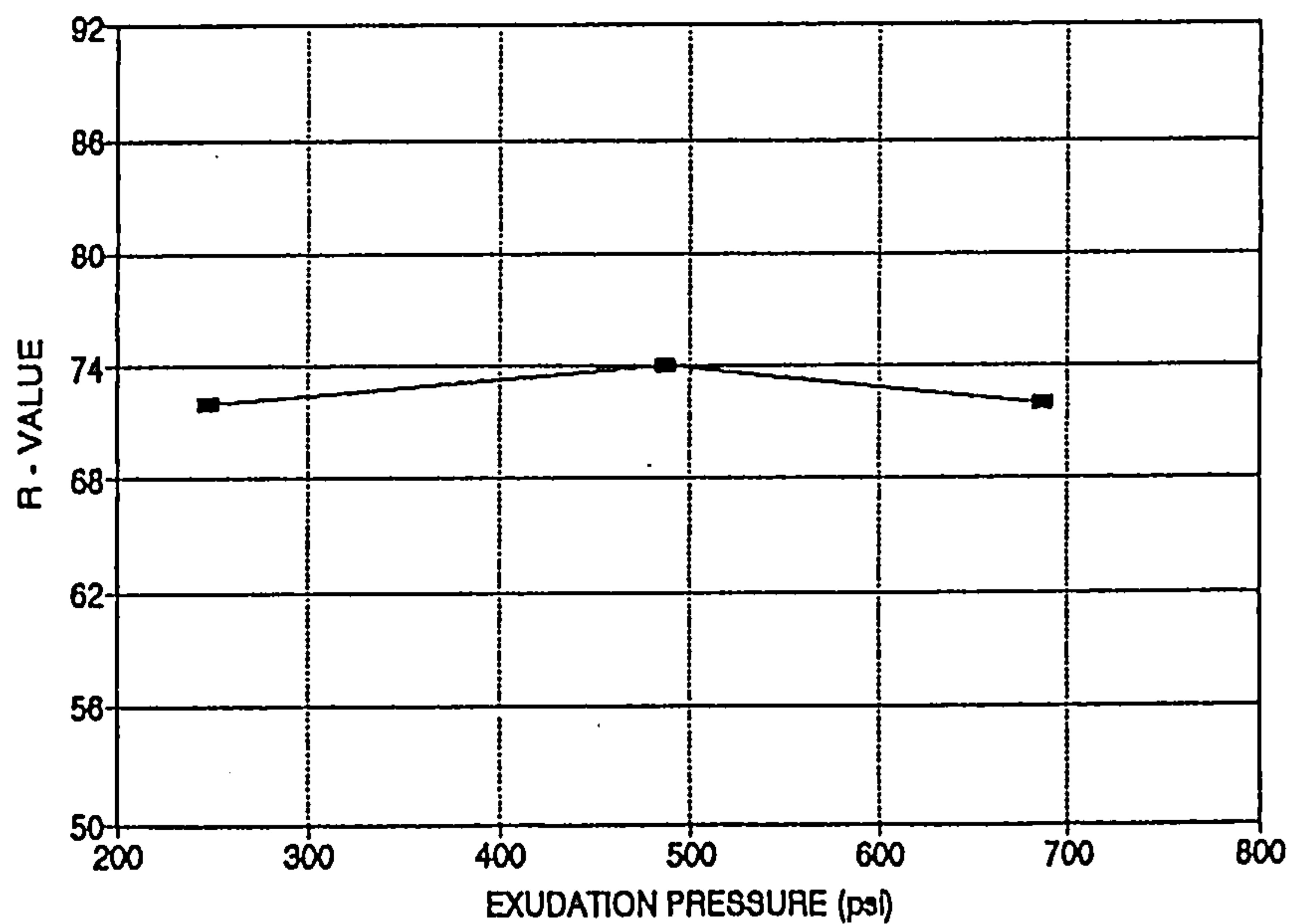
Project No.: 93-1-90

Client: SunWest Bank

Sample Location: Test Pit #13 @ 2'

Sample No.	A	B	C
Moisture Content (%)	12.5	11.9	11.5
Dry Density (PCF)	113	114.7	114.5
Expansion Pressure (PSI)	0.0	0.0	0.0
Exudation Pressure (PSI)	248	487	687
R - Value	72	74	72

R - Value at 300 PSI 72



PAVEMENT SECTION DESIGN

DESIGN R-VALUE = 55

SOIL SUPPORT VALUE = 6.920

CURRENT AWDT = 3000

TRAFFIC :

ESAL FACTOR

SUT = 3%

.1890

STT = 1%

2.3719

MTT = 1%

2.3187

CALS = 95%

.0008

GROWTH FACTOR = 4%

$$ESAL = [(3000)(29.78)(365)] [(.03)(.1890) + (.01)(2.3719) + (.01)(2.3187) + (.95)(.0008)]$$

$$ESAL = (32.6 \times 10^6)(.0533)$$

$$ESAL = 1.7 \times 10^6 \text{ (TWO LANE)}$$

$$\text{WEIGHTED STRUCTURAL NUMBER} = 2.78 \text{ (TWO LANE)}$$

$$ESAL \text{ (FOUR LANE)} = (1.7 \times 10^6)(0.9) = 1.5 \times 10^6$$

$$\text{WEIGHTED STRUCTURAL NUMBER} = 2.70 \text{ (FOUR LANE)}$$

S-SOIL SUPPORT VALUE

$$SN = \left[\frac{1.0504 \cdot W_i^{0.10684} \cdot R^{0.10684}}{10^{0.039714(SS-3)} \cdot 10^{0.10684 G_{1/\beta}}} - 1 \right]$$

P₁ = SERVICIBILITY INDEX = 2.5
 R = REGIONAL FACTOR
 USE 2.0 FOR CITY OF ALBUQUERQUE

Serviceability Index (P_s) = 2.5
 Regional Factor (R) = 2.0 for City of Albuquerque

EQUIV. 18^k SINGLE AXLE LOAD APPLICATIONS

TOTAL

10,000,000
1,000,000
100,000
10,000

DAILY (20 YR. MEAN)

SN-STRUCTURAL NUMBER

R-REGIONAL FACTOR

0.5
1.0
2.0
4.0

SN-WEIGHTED STRUCTURAL NUMBER

Figure No.: 22

FIGURE 23.4.2

DESIGN CHART
 FLEXIBLE PAVEMENTS
 20-YEAR TRAFFIC ANALYSIS

FIGURE 23.4.3 - STRUCTURAL DESIGN COMPUTATION FORM

PROJECT NAME: ATRISCO BUSINESS PARK

STREET: _____

PROJECT NO. : 93-1-90

FROM: _____

TO: _____

DESIGN ADL

COMPUTED BY: M.O.V.

DESIGN SN 2.78 (TWO LANE)

Alternate	Subbase	CTB	BTB	ABC	AC 0.42	PMSC	SN
A	x(0.08)=	x(0.20)=	x(0.25)=	x(0.10)=	x(~~0.25~~)=	x(0.25)=	
B				11(0.10)	(4)(.42)		2.78
C				7(0.10)	(5)(.42)		2.80
D							
E							
F							

Design SN _____

FIGURE 23.4.3 - STRUCTURAL DESIGN COMPUTATION FORM

PROJECT NAME: ATLISCO BUSINESS PARK

PROJECT NO. : 93-1-90

STREET: _____

FROM: _____

TO: _____

DESIGN ADL _____

COMPUTED BY: NOV

DESIGN SN 2.70 (FOUR LANE)

Alternate	Subbase	CTB	BTB	ABC	AC	PMSC	SN
A	<u>x(0.08)=</u>	<u>x(0.20)=</u>	<u>x(0.25)=</u>	<u>x(0.10)=</u>	^{0.42.} <u>x(~~0.25~~)=</u>	<u>x(0.25)=</u>	
B				<u>(10)(0.10)</u>	<u>4(0.42)</u>		<u>2.68</u>
C				<u>(8)(0.10)</u>	<u>(4.5)(0.42)</u>		<u>2.69</u>
D							
E							
F							

Design SN _____

V
&
A

SUMMARY OF LABORATORY TEST DATA

Test Hole No.	Depth (Feet)	Unified Classification	Natural Dry Density (pcf)	Natural Moisture Content (%)	Atterberg Limits		SIEVE ANALYSIS % PASSING BY WEIGHT										DESCRIPTION
					LL	PI	1 1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200	
1	2	SM	-	6.2	NV	NP	-	-	-	100	99	98	95	82	51	23.7	SAND, silty
1	5	SP-SM	-	1.9	-	-	100	94	88	80	72	63	53	41	22	9.3	SAND, slightly silty, gravelly
2	2	SM	-	5.5	NV	NP	-	-	100	99	98	95	87	70	41	19.2	SAND, silty
2	5	-	-	4.6	-	-	-	-	-	-	-	-	-	-	-	-	
2	8	-	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	
3	2	-	-	4.7	-	-	-	-	-	-	-	-	-	-	-	-	
4	2	SP-SM	-	2.4	NV	NP	-	-	-	100	99	97	86	58	20	5.2	SAND, slightly silty
5	2	SM	-	4.1	NV	NP	-	-	-	100	99	98	93	76	39	17.8	SAND, silty
6	2	SP	-	2.2	NV	NP	-	100	98	94	87	73	56	36	13	4.0	SAND, trace silt, slightly gravelly
6	6	-	-	2.8	-	-	-	-	-	-	-	-	-	-	-	-	
7	2	SM	-	6.9	18	3	-	-	-	-	100	99	95	82	53	28.7	SAND, silty, trace clay
8	2	SM	-	6.7	NV	NP	-	-	-	100	99	98	94	82	50	23.9	SAND, silty
9	2	SM	-	4.7	NV	NP	-	-	100	99	98	94	84	66	35	12.1	SAND, silty
10	2	SM	-	5.6	NV	NP	-	-	100	99	98	94	81	60	32	16.8	SAND, silty
11	1 1/2	SC	-	6.0	22	12	-	-	-	100	99	98	94	78	49	30.1	SAND, silty, clayey
12	3	SC	-	12.5	30	17	-	-	-	100	99	98	93	81	59	43.8	SAND, very clayey
12	6	-	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-	
13	2	SP-SM	-	2.1	NV	NP	-	-	-	-	100	99	97	79	35	9.4	SAND, slightly silty
13	5	SM	-	5.2	-	-	-	-	-	100	99	97	92	81	56	33.2	SAND, very silty

NV - Indicates no value
NP - indicates non-plastic

Project No. 93-1-90
Table 1

V
&
A

SUMMARY OF LABORATORY TEST DATA

Test Hole No.	Depth (Feet)	Unified Classification	Natural Dry Density (pcf)	Natural Moisture Content (%)	Atterberg Limits		SIEVE ANALYSIS % PASSING BY WEIGHT										DESCRIPTION
					LL	PI	1 1/2"	3/4"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200	
14	2	SM	-	4.2	NV	NP	-	100	99	98	96	92	82	63	32	13.0	SAND, silty, trace gravel
14	4	SP	-	2.5	-	-	-	-	100	98	93	78	54	32	12	4.5	SAND, trace silt, trace gravel
14	8	-	-	2.1	-	-	-	-	-	-	-	-	-	-	-	-	
15	2	SM	-	4.9	NV	NP	-	-	-	100	99	98	91	77	43	15.0	SAND, silty

NV - indicates no value

NP - indicates non-plastic

Project No. 93-1-90

Table 1 Cont.



CITY OF
Albuquerque
Public Works Department

February 10, 1997

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

Martin Lewis
Easterling & Associates, Inc.
10131 Coors NW, Suite H-7
Albuquerque, New Mexico 87114

RE: GRADING AND DRAINAGE PLAN FOR LOTS 1-23, MERIDIAN BUSINESS PARK, (U10/D20),
SUBMITTED FOR ROUGH GRADING APPROVAL, ENGINEER'S STAMP DATED 1/28/97.

Dear Mr. Lewis:

Based on the information provided in the submittal of January 29, 1997, the above referenced plan is approved for Rough Grading Permit release. The design for the detention pond on Lot 10 is also adequate for Work Order sign-off.

Each of the temporary retention ponds must have a Private Facility Drainage Covenant and Reservation of Drainage Easement in order to ensure that these ponds will be privately maintained.

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

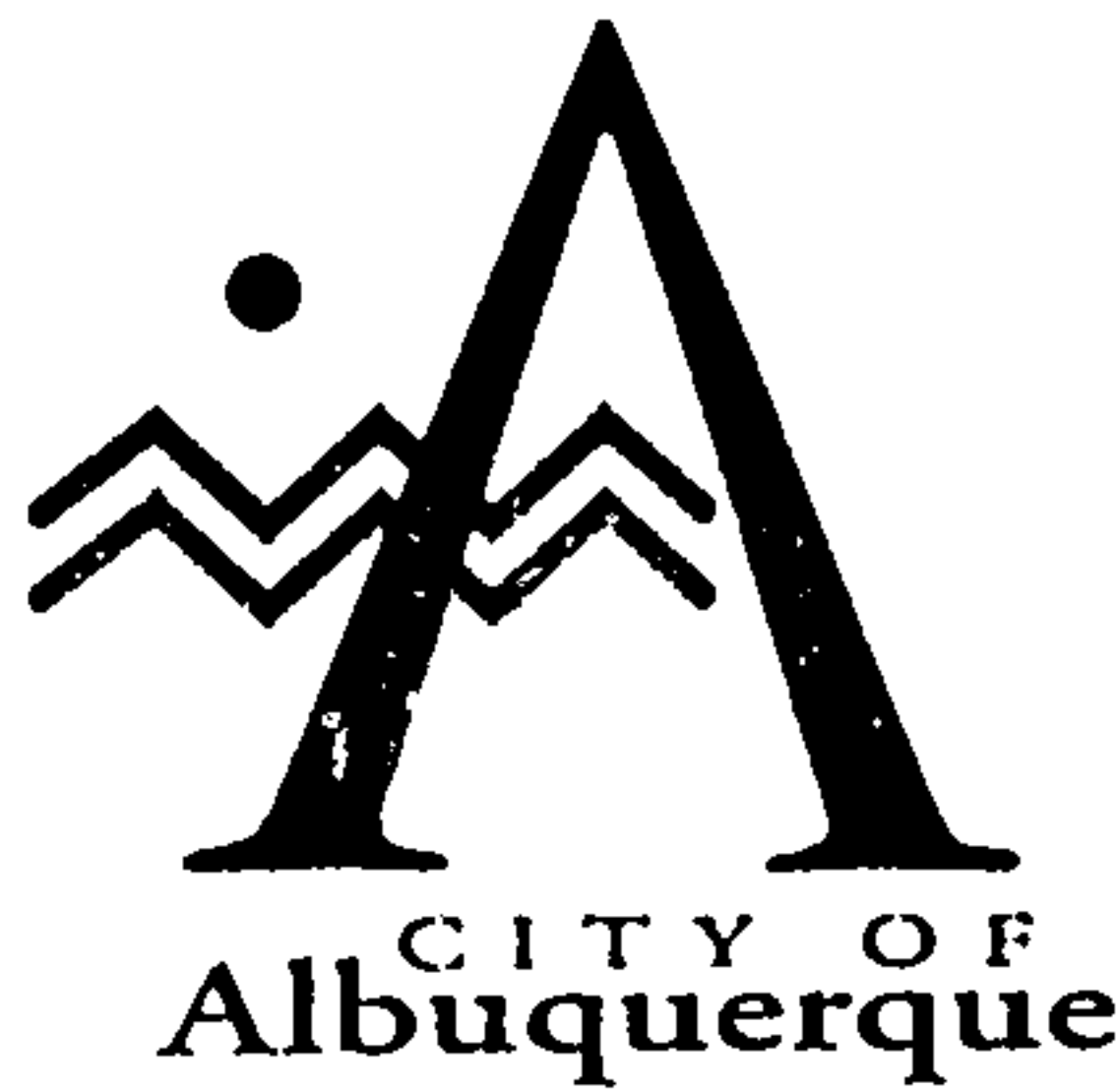
Sincerely,

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

c: George Brunacini, Owner
File

Good for You, Albuquerque!





Public Works Department

February 11, 1997

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

Charles M. Easterling, P.E.
Easterling & Associates, Inc.
10131 Coors NW, Suite H-7
Albuquerque, New Mexico 87114

RE: GRADING AND DRAINAGE PLAN FOR LOT 1, MERIDIAN BUSINESS PARK, (J10/D20)
SUBMITTED FOR SITE DEVELOPMENT PLAN FOR BUILDING PERMIT AND BUILDING PERMIT
APPROVAL, ENGINEER'S STAMP DATED 1/28/97.

Dear Mr. Easterling:

Based on the information provided in the submittal of January 28, 1997, the above referenced plan for Lot 1 is approved for Site Development for Building Permit. Prior to sign off of the Site Plan or Building Permit release, the Final Plat for Meridian Business Park must be in place.

The detention pond on this site must have a Private Facility Drainage Covenant and Reservation of Drainage Easement in order to ensure that this pond will be privately maintained. The covenant must be in place prior to Certificate of Occupancy release.

The Engineer's Certification for this site, as well as for the private storm drain system, must be submitted to and approved by this office prior to Certificate of Occupancy release.

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

Sincerely,

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

c: Andrew Garcia
Angelo and George Brunacini, Owners

File

Good for You, Albuquerque!

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



Easterling & Associates, Inc.10131 Coors Rd. NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-8021

FAX No. (505) 898-8501

FAX TRANSMITTALDate: 12/5/96Number of Pages: 7
(Includes this cover page)Job No.: 4320Job Name: MERIDIAN BUSINESS PK.To: COA HYDROLOGYAttention: SUSAN Fax No.: 768 2765From: MARTIN

Item

Description: CONFIRMATION OF ADEQUACY OF PROPOSED 24" SD IN
MERIDIAN AVE.Message: PER OUR CONVERSATION,INCLUDED IN THIS TRANSMISSION:

1. APPROVED INFRASTRUCTURE LIST.
2. EXCERPT FROM APPROVED Q&D PLAN, IDENTIFYING Q₁₀₀ IN PIPE.
3. EXCERPT FROM PROPOSED CONSTRUCTION PLAN (NOT YET SUBMITTED).
4. HGL CALCS DEMONSTRATING ADEQUATE CAPACITY IN 24" PIPE.

Reply

Needed: PLEASE CALL BILLY & REASSURE HIM THAT THE DRAINAGEIMPROVEMENTS ARE ADEQUATE. THANKS, MartinIf you receive this fax in error or you do not receive all information as noted,
please notify us at once, 505-898-8021.

11/12/96 THU 10:16 FAX 505 898 8501

EASTERLING & ASSOC.

002

EXHIBIT A
TO SUBDIVISION IMPROVEMENT AGREEMENT
DEVELOPMENT REVIEW BOARD
REQUIRED INFRASTRUCTURE LISTING
Lots 1 through 23
Meridian Business Park

DRB Case No.: 98-338
DRC Project No.:
Prelim. Plat Approved: / /
Prelim. Plat Expires: / /
Site Plan Approved: / /
Date Submitted: 11/17/98

Following is a summary of PUBLIC/PRIVATE infrastructure required to be constructed or financially guaranteed for the above development. This summary is not necessarily a complete listing. During CPC, BCC, the design process and/or in the preparation of the construction drawings, if the City, County, and/or AMAFCA determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee. If the items normally are the Subdivider's responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City, County, and/or AMAFCA.

SIZE	IMPROVEMENT	LOCATION	FROM	TO
1. Paving				
40'-wide	A.C. Pavement (Industrial), std. curb & gutter (both sides)	Meridian Ave. NW	Airport Drive	Intersection with Silver Creek Dr.
40'-wide	A.C. Pavement (Industrial), std. curb & gutter (both sides)	Silver Creek Dr. NW	Intersection with Meridian Ave.	Los Volcanes Road
40'-wide	A.C. Pavement (Industrial), std. curb & gutter (both sides)	Gallatin Dr. NW	Intersection with Meridian Ave.	Los Volcanes Road
* 2. Drainage				
1 acre- foot	Privately-Maintained Public Detention Pond	Lot 10	N/A	N/A
24"	Public Storm Drain	Meridian Ave. NW	Intersection of Meridian Ave. and Gallatin Dr.	Airport Drive Storm Drain
*Final size to be confirmed at Design Review Committee				
3. Water				
10"	Water Distribution Line	Meridian Ave. NW	Airport Drive	Intersection of Meridian Ave. and Silver Creek Dr.
10"	Water Distribution Line	Silver Creek Dr. NW	Los Volcanes Road	Intersection of Meridian Ave. and Silver Creek Dr.
10"	Water Distribution Line	Gallatin Dr. NW	Los Volcanes Road	Intersection of Meridian Ave. and Gallatin Dr.
4. Sanitary Sewer				
8"	Sanitary Sewer Main	Meridian Ave. NW	Airport Drive	Intersection of Meridian Ave. and Silver Creek Dr.
8"	Sanitary Sewer Main	Silver Creek Dr. NW	Intersection of Meridian Ave. and Silver Creek Dr.	N.E. Corner Lot 22
8"	Sanitary Sewer Main	Gallatin Dr. NW	Intersection of Meridian Ave. and Gallatin Dr.	N.E. Corner Lot 6

Signed By:

Print Name: J. Martin Little

Firm: Easterling & Associates, Inc.

DEVELOPMENT REVIEW BOARD MEMBER APPROVALS

[Signature] 11-12-96
Traffic Date
[Signature] 11/12/96
City Engineer Date
NA
BOPWD CRE Date

Robert W. Kame 11-12-96
Utility Dev Date
[Signature] 11/12/96
AMAFCA Date
NA
BOPWD DRAN Date

[Signature] 11-12-96
Parks & G.S. Date
[Signature] 11/12/96
DRB Chairman Date

DRB Infrastructure Listing - (Meridian Business Park Lots 1 Through 25)

* DRAINAGE COVENANT REQUIRED.

Easterling & Associates, Inc.

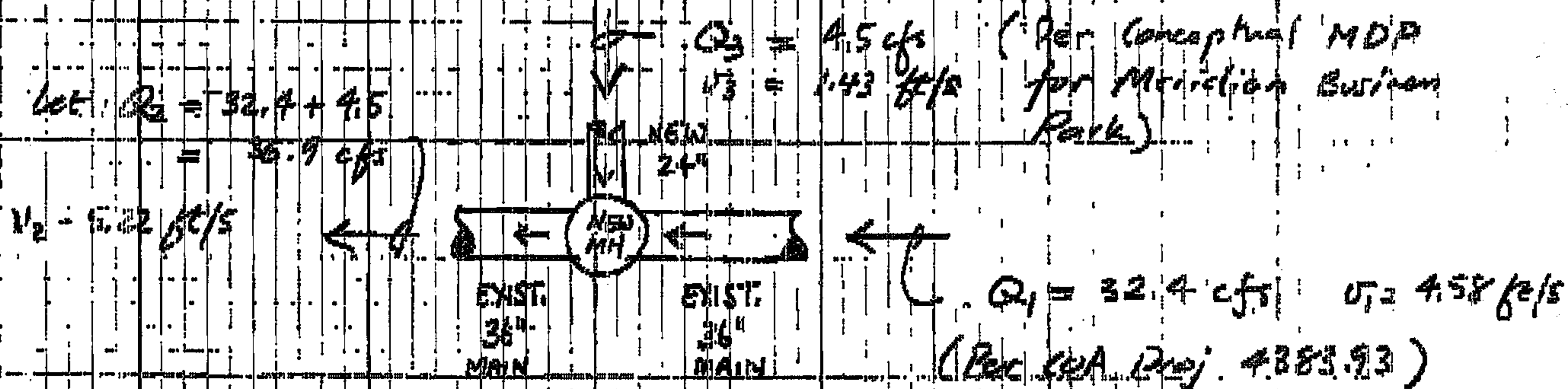
10131 Coors Rd. NW, Suite H-7
 Albuquerque, New Mexico 87114-4048
 (505) 891-8021
 FAX (505) 898-8501

Project Name MERIDIAN BUSINESS PARK
 Project No. 4320/005 Date 11/22/96
 Subject HYDRAULIC CALCULATIONS
FOR MERIDIAN PL. 24" STORM DRAIN
 By JML Sheet 1 of 2

Calculate Starting HGL at connection to existing Airport Dr. SD

- From CDA Proj 4383.93 (Airport Dr Storm Drain, Los Volcanes Rd. Storm Drain, Los Volcanes Rd Paving Improvements), the HGL in the 36" SD at the proposed point of connection of the Meridian Place 24" SD is 5097.7. The Airport Drive Storm Drain's design flow included the allowable contribution from Meridian Business Park (0.1 cfs/acre).

- Estimate the effect on the local HGL by inserting a MH and 90° junction to the existing 36" Airport Drive Storm Drain:



Increase in HGL in main due to junction and manhole:

$$= \left[\frac{Q_2 V_2 + Q_1 V_1 - Q_3 V_3 \cos \theta}{g A_{avg}} \right] + 0.05 \frac{V_2^2}{2g}$$

$$= \left[\frac{(36.9)(5.22) + (32.4)(4.58)}{(32.2)(7.07)} \right] + 0.02$$

$$= 0.21'$$

⇒ Let starting HGL for 24" line = $5097.7 + 0.21 = \underline{\underline{5097.91}}$

HYDRAULIC GRADE LINE CALCULATIONS

2 OF 2

PROJECT: MERIDIAN BUSINESS PARK
SUBJECT: MERIDIAN 24" SD, 100 YR. DISCHARGE
JOB#: 4320
DATE: 11/22/88
TIME: 02:05 PM
ANALYSIS: MARTIN LEWIS, EASTERLING & ASSOCIATES

STARTING CONDITIONS:

TAILWATER ELEVATION = 5097.91
MANNING'S ROUGHNESS = 0.013
ASSUMED STARTING EGL ELEV. = 5097.94

STRUCTURE	MAINLINE FLOW RATE (cfs)	PIPE DIA. (inches)	LAY LENGTH (feet) → @	PIPE SLOPE (ft/ft) OUTLET	INVERT (elev.)	FLOW VELOCITY (fps)	VELOCITY HEAD (feet)	FRICTION SLOPE (ft/ft)	FRICTION LOSS H _f	MANHOLE LOSS H _m	BEND LOSS H _b	JUNCTION LOSS H _j	EXPANSION LOSS H _e	SUM OF LOSSES	COMPUTED EGL ELEVATION	REPORTED HGL ELEVATION	FINISHED GRADE ELEVATION
MH3	4.5	24	197.00	0.0050	5092.93	1.42	0.03	0.0004	0.042	0.002	0.000	0.000	0.031	0.074	5097.94	5097.91	
MH2	4.2	24	309.62	0.0050	5085.01	1.33	0.03	0.0003	0.105	0.001	0.000	0.014	0.000	0.121	5098.01	5097.98	5104.13
MH1	3.8	24	209.62	0.0050	5096.56	1.14	0.02	0.0003	0.078	0.001	0.000	0.036	0.000	0.115	5098.14	5098.11	5105.04
DUMMY	1.2	24	0.10	0.0050	5086.58	0.37	0.00	0.0000	0.000	0.000	0.000	0.015	0.000	0.015	5098.25	5098.56	5107.15
									0.000						5098.27	5098.56	5107.15

TOTAL LENGTH = 726.24'

TOTAL LOSSES = 0.325'

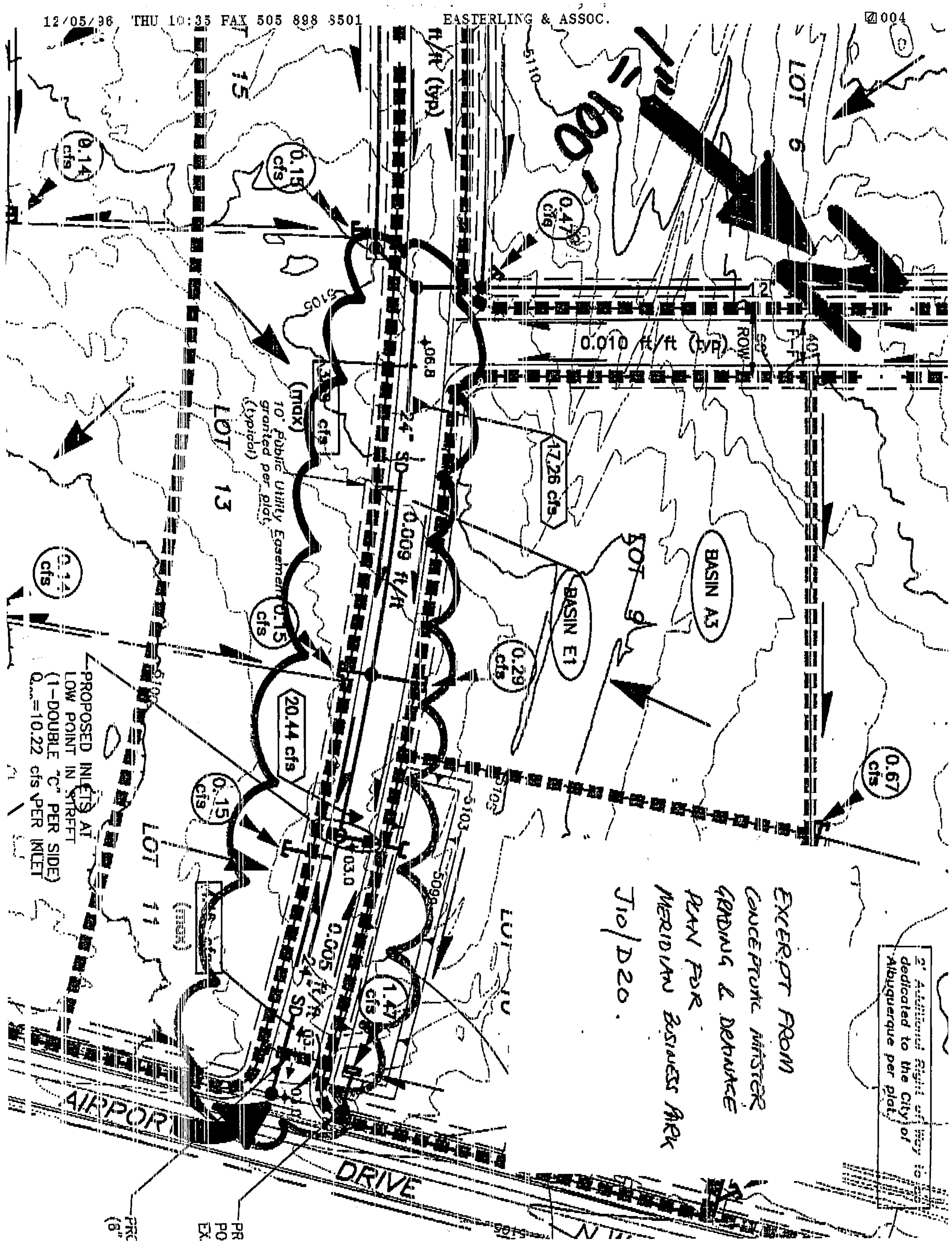
OVER 726 LF PIPE

⇒ STORM DRAIN HAS AMPLE
CAPACITY.

12/05/88 THU 10:38 FAX 605 888 3501

EASTERLING & ASSOC.

007





104

SEE SHEET 15 FOR DETENTION POINT

ERG=1428 34.26
S=0.0010 ft/l.

Private Drainage
Easement granted by
this plat (typical)
(typical)

12 PVC SD
40.00
BRG=N20°53'53"
S=0.0100 ft/ft
INSTALL CAP AT
UPSTREAM END

陳其南

PRG=N205353W
S=0.0100 R/R
INSTALL CAP AT
UPSTREAM END

1

15+56.25 10.00'RT
4' DIA. MH TYPE E

CP 2
17+51.06 20:00 LT
(LOW POINT)
TYPE DOUBLE C

SECRET

BRG= N16°25'34"W
S=D.0010 ft/ft

SD CURVE DATA:
 (MH NO.1 TD MH NO.2
 PC STA=12+45.61
 PT STA=18+66.90
 P1 STA=15+66.26
 A = 11°44'00"
 R = 3023.85'
 T = 310.71'
 L = 819.24'

17+93.06 20.00' RT
(LOW POINT)
TYPE DOUBLE C

SDAH NO.3
18+66.90 10.00 RT
4" DIA MH TYPE E
WITH GRATED COVER

SPORTING

11-50791

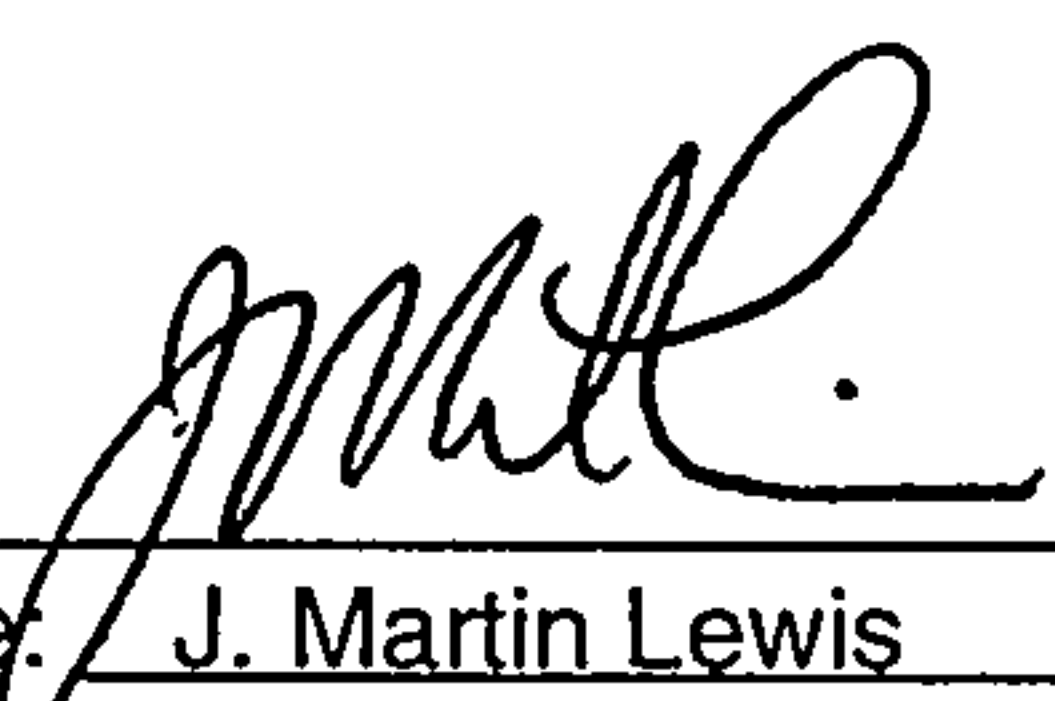
EXHIBIT A
TO SUBDIVISION IMPROVEMENT AGREEMENT
DEVELOPMENT REVIEW BOARD
REQUIRED INFRASTRUCTURE LISTING
 Lots 1 through 23
Meridian Business Park

DRB Case No.: 96-336
 DRC Project No.:
 Prelim. Plat Approved: / /
 Prelim. Plat Expires: / /
 Site Plan Approved: / /
 Date Submitted: 8/29/96

Following is a summary of PUBLIC/PRIVATE Infrastructure required to be constructed or financially guaranteed for the above development. This summary is not necessarily a complete listing. During CPC, BCC, the design process and/or in the preparation of the construction drawings, if the City, County, and/or AMAFCA determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider's responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City, County, and/or AMAFCA.

<u>SIZE</u>	<u>IMPROVEMENT</u>	<u>LOCATION</u>	<u>FROM</u>	<u>TO</u>
1. Paving				
40'-wide	A.C. Pavement, std. curb & gutter	Street "A"	Airport Drive	Intersection with Street "B"
40'-wide	A.C. Pavement, std. curb & gutter	Street "B"	Intersection with Street "A"	Los Volcanes Road
40'-wide	A.C. Pavement, std. curb & gutter	Street "C"	Intersection with Street "A"	Los Volcanes Road
2. Drainage				
✓ 1 acre-foot*	Privately-Maintained Public Detention Pond	Lot 10	N/A	N/A
✓ 24"	Public Storm Drain	Street "A"	Intersection of Streets A and C	Airport Drive Storm Drain
3. Water				
10"	Water Distribution Line	Street "A"	Airport Drive	Intersection of Streets "A" and "B"
10"	Water Distribution Line	Street "B"	Los Volcanes Road	Intersection of Streets "A" and "B"
10"	Water Distribution Line	Street "C"	Los Volcanes Road	Intersection of Streets "A" and "C"
4. Sanitary Sewer				
8"	Sanitary Sewer Main	Street "A"	Airport Drive	Intersection of Streets "A" and "B"
8"	Sanitary Sewer Main	Street "B"	Intersection of Streets "A" and "B"	N.E. Corner Lot 22
8"	Sanitary Sewer Main	Street "C"	Intersection of Streets "A" and "C"	N.E. Corner Lot 6

AUG 30 1996

Signed By: 
 Print Name: J. Martin Lewis
 Firm: Easterling & Associates, Inc.

*Final size to be confirmed at Design Review Committee.

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DEVELOPMENT REVIEW BOARD MEMBER APPROVALS

Traffic	Date	Utility Dev.	Date	Parks & G.S.	Date
City Engineer	Date	AMAFCA	Date	DRB Chairman	Date
BCPWD DRE	Date	BCPWD DRAN	Date		

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994

RUN DATE (MON/DAY/YR) = 08/26/1996

START TIME (HR:MIN:SEC) = 15:44:14 USER NO.= EASTERNM.I01

INPUT FILE = pond.hmi

** LOTS 1-23, MERIDIAN BUSINESS PARK IN ATRISCO B.P.

** CONCEPTUAL GRADING AND DRAINAGE PLAN

** TYPICAL SIZING COMPUTATIONS FOR PROPOSED PUBLIC POND ON LOT 10.

** FULLY DEVELOPED DRAINAGE CONDITIONS

** 08-26-96

** 100 YEAR 24 HOUR STORM

START 0.0 HOURS

RAINFALL TYPE=-2 0.0 1.87 2.20 2.66 DT=0.05

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.

DT = .050000 HOURS END TIME = 24.000000 HOURS

✓ ** PUBLIC POND ACCEPTS AND DETAINS FREE-DISCHARGE FROM NEW INTERNAL

** PUBLIC STREETS (APPROX. 3725 LF).

✓ ** POND CAPACITY PROVIDED TO ALSO ACCEPT FREE DISCHARGE FROM LOT 10,

✓ ** AND CONTROLLED DISCHARGE @ 0.1 CFS\AC FROM LOTS 21, 22 AND 23.

** COMPUTE COMBINED HYDROGRAPH FOR LOTS 21, 22 AND 23 (6.7 ac)

✓ ** Assume 80% impervious

COMPUTE NM HYD ID=1 HYDROGRAPH NO=101.0 DA=0.010421
%A=0.0 %B=10.0 %C=10.0 %D=80.0 TP=0.133333
MASS RAINFALL=-1

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 32.906 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.8700
AREA = .008337 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118459HR TP = .133333HR K/TP RATIO = .888442 SHAPE CONSTANT, N = 3.992480
UNIT PEAK = 5.5440 CFS UNIT VOLUME = .9991 B = 354.67 P60 = 1.8700
AREA = .002084 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 2.10488 INCHES = 1.1699 ACRE-FEET
PEAK DISCHARGE RATE = 26.18 CFS AT 1.500 HOURS BASIN AREA = .0104 SQ. MI.

** Route through theoretical combined detention pond to limit discharge
** to 0.1 cfs per acre.

** Estimate 450'x 65' equivalent single pond with 3:1 SS, 1.5' deep
 ** for preliminary analysis.
 ** Outlet via three 2.7" orifices with drain lines through proposed curb ✓
 ** on Street "B"

ROUTE RESERVOIR	ID=2	HYDROGRAPH NO=500	INFLOW ID=1	CODE=10
	OUTFLOW(cfs)	STORAGE(ac ft)	ELEV(ft)	
	0.00	0.0000	0.0	
	0.53	0.6016	1.0	
	0.67	0.9285	1.5	

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.50	.00	.00	.000	.00
1.00	.00	.00	.000	.00
1.50	26.18	.48	.288	.25
2.00	6.02	1.27	.780	.61
2.50	.80	1.39	.855	.64
3.00	.28	1.38	.848	.64
3.50	.17	1.35	.831	.63
4.00	.14	1.32	.811	.62
4.50	.14	1.29	.792	.61
5.00	.14	1.26	.772	.60
5.50	.16	1.23	.754	.60
6.00	.18	1.21	.736	.59
6.50	.20	1.18	.720	.58
7.00	.20	1.16	.705	.57
7.50	.19	1.13	.689	.57
8.00	.19	1.11	.674	.56
8.50	.18	1.09	.658	.55
9.00	.18	1.06	.643	.55
9.50	.17	1.04	.628	.54
10.00	.17	1.02	.612	.53
10.50	.16	.99	.597	.53
11.00	.16	.97	.582	.51
11.50	.15	.94	.568	.50
12.00	.15	.92	.554	.49
12.50	.15	.90	.540	.48
13.00	.14	.88	.526	.46
13.50	.14	.85	.513	.45
14.00	.14	.83	.501	.44
14.50	.13	.81	.488	.43
15.00	.13	.79	.476	.42
15.50	.13	.77	.464	.41
16.00	.13	.75	.453	.40
16.50	.12	.73	.442	.39
17.00	.12	.72	.431	.38
17.50	.12	.70	.420	.37
18.00	.12	.68	.410	.36
18.50	.11	.67	.400	.35
19.00	.11	.65	.391	.34
19.50	.11	.63	.381	.34
20.00	.11	.62	.372	.33
20.50	.11	.60	.363	.32
21.00	.10	.59	.354	.31

21.50	.10	.58	.346	.30
22.00	.10	.56	.338	.30
22.50	.10	.55	.330	.29
23.00	.10	.54	.322	.28
23.50	.10	.52	.315	.28
24.00	.10	.51	.307	.27
24.50	.00	.49	.298	.26
25.00	.00	.48	.287	.25
25.50	.00	.46	.277	.24
26.00	.00	.44	.267	.24
26.50	.00	.43	.257	.23
27.00	.00	.41	.248	.22
27.50	.00	.40	.239	.21

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
---------------	-----------------	----------------	-------------------	------------------

28.00	.00	.38	.231	.20
28.50	.00	.37	.222	.20
29.00	.00	.36	.214	.19
29.50	.00	.34	.207	.18

PEAK DISCHARGE = .639 CFS - PEAK OCCURS AT HOUR 2.60
 MAXIMUM WATER SURFACE ELEVATION = 1.388
 MAXIMUM STORAGE = .8555 AC-FT INCREMENTAL TIME= .050000HRS

PRINT HYD ID=2 CODE=1

OUTFLOW HYDROGRAPH RESERVOIR 500.00

RUNOFF VOLUME = 1.74538 INCHES = .9701 ACRE-FEET
 PEAK DISCHARGE RATE = .64 CFS AT 2.600 HOURS BASIN AREA = .0104 SQ. MI.

** COMPUTE HYDROGRAPH FOR PROPOSED INTERNAL STREETS (5.2 ac)

** 3725 LF Major Local Streets (60' ROW; 40' F-F)

COMPUTE NM HYD ID=3 HYDROGRAPH NO=102.0 DA=0.008056
 %A=0.0 %B=9.0 %C=9.0 %D=82.0 TP=0.133333
 MASS RAINFALL=-1

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 26.074 CFS UNIT VOLUME = .9987 B = 526.28 P60 = 1.8700
 AREA = .006606 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118459HR TP = .133333HR K/TP RATIO = .888442 SHAPE CONSTANT, N = 3.992480
 UNIT PEAK = 3.8572 CFS UNIT VOLUME = .9979 B = 354.67 P60 = 1.8700
 AREA = .001450 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = 2.13711 INCHES = .9182 ACRE-FEET
PEAK DISCHARGE RATE = 20.44 CFS AT 1.500 HOURS BASIN AREA = .0081 SQ. MI.

** ADD HYDROGRAPHS

ADD HYD ID=4 HYDRGRAPH NO=102.1 IDI=2 IDII=3
PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 102.10

RUNOFF VOLUME = 1.91616 INCHES = 1.8882 ACRE-FEET
PEAK DISCHARGE RATE = 20.69 CFS AT 1.500 HOURS BASIN AREA = .0185 SQ. MI.

** COMPUTE HYDROGRAPH FOR LOT 10 (2.8 ac)

** Assume 80% impervious

COMPUTE NM HYD ID=5 HYDROGRAPH NO=103.0 DA=0.004418
%A=0.0 %B=10.0 %C=10.0 %D=80.0 TP=0.133333
MASS RAINFALL=-1

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 13.951 CFS UNIT VOLUME = .9983 B = 526.28 P60 = 1.8700
AREA = .003534 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118459HR TP = .133333HR K/TP RATIO = .888442 SHAPE CONSTANT, N = 3.992480
UNIT PEAK = 2.3504 CFS UNIT VOLUME = .9955 B = 354.67 P60 = 1.8700
AREA = .000884 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = 2.10487 INCHES = .4960 ACRE-FEET
PEAK DISCHARGE RATE = 11.11 CFS AT 1.500 HOURS BASIN AREA = .0044 SQ. MI.

** ADD HYDROGRAPHS

ADD HYD ID=6 HYDRGRAPH NO=103.1 IDI=4 IDII=5
PRINT HYD ID=6 CODE=1

PARTIAL HYDROGRAPH 103.10

RUNOFF VOLUME = 1.95257 INCHES = 2.3842 ACRE-FEET

PEAK DISCHARGE RATE = 31.80 CFS AT 1.500 HOURS BASIN AREA = .0229 SQ. MI.

** Route through proposed detention pond on Lot 10.
** Allowable release rate = $(0.1)(6.7+5.2+2.8)=1.47$ cfs
** Estimate 290'x 57' pond with 4:1 SS, 4' deep for preliminary
** analysis. Final pond configuration to be determined later in
** conjunction with subdivision improvement plans. Outlet via 12"
** PVC to Storm Drain in Airport Road, with 5.36" orifice providing
** inlet control.

ROUTE RESERVOIR ID=7 HYDROGRAPH NO=501 INFLOW ID=6 CODE=10

OUTFLOW(cfs)	STORAGE(ac ft)	ELEV(ft)
0.00	0.0000	5099
0.67	0.1748	5100
1.01	0.4045	5101
1.26	0.6921	5102
1.47	1.0404	5103

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	5099.00	.000	.00
.50	.00	5099.00	.000	.00
1.00	.00	5099.00	.000	.00
1.50	31.80	5100.74	.344	.92
2.00	7.90	5102.69	.931	1.40
2.50	1.61	5102.94	1.019	1.46
3.00	.97	5102.91	1.010	1.45
3.50	.83	5102.84	.986	1.44
4.00	.79	5102.77	.961	1.42
4.50	.78	5102.70	.934	1.41
5.00	.78	5102.62	.909	1.39
5.50	.79	5102.55	.884	1.38
6.00	.80	5102.48	.860	1.36
6.50	.83	5102.42	.838	1.35
7.00	.82	5102.36	.817	1.34
7.50	.80	5102.30	.795	1.32
8.00	.79	5102.23	.774	1.31
8.50	.78	5102.17	.752	1.30
9.00	.76	5102.11	.731	1.28
9.50	.75	5102.05	.709	1.27
10.00	.74	5101.98	.688	1.26
10.50	.72	5101.91	.666	1.24
11.00	.70	5101.84	.645	1.22
11.50	.69	5101.76	.624	1.20
12.00	.67	5101.69	.603	1.18
12.50	.65	5101.62	.581	1.16
13.00	.64	5101.54	.560	1.15
13.50	.62	5101.47	.540	1.13
14.00	.61	5101.40	.519	1.11
14.50	.59	5101.33	.498	1.09
15.00	.58	5101.25	.478	1.07
15.50	.57	5101.18	.457	1.06
16.00	.55	5101.11	.437	1.04

16.50	.54	5101.04	.417	1.02
17.00	.53	5100.97	.397	1.00
17.50	.51	5100.89	.378	.97
18.00	.50	5100.80	.360	.94
18.50	.49	5100.73	.342	.92
19.00	.48	5100.65	.324	.89
19.50	.47	5100.58	.308	.87
20.00	.46	5100.51	.292	.84
20.50	.45	5100.44	.276	.82
21.00	.44	5100.38	.261	.80
21.50	.43	5100.31	.247	.78
22.00	.42	5100.25	.233	.76
22.50	.41	5100.19	.219	.74
23.00	.40	5100.14	.206	.72
23.50	.40	5100.08	.193	.70
24.00	.39	5100.03	.181	.68
24.50	.27	5099.95	.166	.64
25.00	.25	5099.87	.152	.58
25.50	.24	5099.80	.139	.53
26.00	.24	5099.73	.128	.49
26.50	.23	5099.67	.118	.45
27.00	.22	5099.62	.109	.42
27.50	.21	5099.58	.101	.39

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
---------------	-----------------	----------------	-------------------	------------------

28.00	.20	5099.54	.094	.36
28.50	.20	5099.50	.088	.34
29.00	.19	5099.47	.083	.32
29.50	.18	5099.44	.078	.30

PEAK DISCHARGE = 1.458 CFS - PEAK OCCURS AT HOUR 2.55
 MAXIMUM WATER SURFACE ELEVATION = 5102.941
 MAXIMUM STORAGE = 1.0199 AC-FT INCREMENTAL TIME= .050000HRS

PRINT HYD ID=7 CODE=1

OUTFLOW HYDROGRAPH RESERVOIR 501.00

RUNOFF VOLUME = 1.89253 INCHES = 2.3109 ACRE-FEET
 PEAK DISCHARGE RATE = 1.46 CFS AT 2.550 HOURS BASIN AREA = .0229 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 15:44:15

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994

RUN DATE (MON/DAY/YR) = 08/26/1996

START TIME (HR:MIN:SEC) = 15:39:32 USER NO.= EASTERNM.I01

INPUT FILE = rating.hmi

** STREET RATING TABLE FOR MAJOR LOCAL @ 0.9% SLOPE

COMPUTE RATING CURVE CID=1 VALLEY SECTION=1 NOSEGS=3

MINEL=0.00 MAXEL=0.87

CHSLP=0.0090 FPSLP=0.0090 N=0.025

DIST=10.0 N=0.017 DIST=50.0 N=0.025

DIST=60.0

DIST ELEV

0.0 0.87

9.9 0.67

10.0 0.00

12.0 0.13

30.0 0.49

48.0 0.13

50.0 0.00

50.1 0.67

60.0 0.87

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	.00
.05	.03	.02	1.42
.09	.13	.14	2.83
.14	.30	.38	4.78
.18	.62	.83	9.37
.23	1.15	1.80	13.96
.27	1.90	3.42	18.56
.32	2.85	5.83	23.15
.37	4.02	9.14	27.74
.41	5.39	13.49	32.33
.46	6.98	18.98	36.93
.50	8.77	26.25	40.15
.55	10.60	36.05	40.16
.60	12.44	47.06	40.18
.64	14.28	59.22	40.19
.69	16.14	72.46	41.87
.73	18.16	86.87	46.40
.78	20.39	102.55	50.93
.82	22.82	119.57	55.47
.87	25.47	138.01	60.00

AT $Q_{100} = 20.44 \text{ cfs}$
 $d_n \approx 0.47'$



$A \approx 7.34 \text{ sf}$

$$\bar{V} = \frac{Q}{A}$$

$$= \frac{20.44}{7.34}$$

✓

$$= 2.8 \text{ ft/s}$$

$$d_n \bar{V} = (0.47)(2.8) = 1.3$$

10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-8021
FAX (505) 898-8501

August 29, 1996

Mr. Fred J. Aguirre, P.E.
City Hydrologist
Public Works Department
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

**RE: Meridian Business Park Conceptual Master Grading and Drainage Plan
DRB-96-336
Zone Atlas J-10 / K-10**

Dear Mr. Aguirre:

I am writing to follow up on our meeting of August 23, 1996, in which we reviewed design and procedural issues relating to the above project. It is our understanding that the following items were established at that meeting:

1. Onsite lots 1-20 will drain to new storm drains as depicted on the attached plan (8/29/96). A 24" public storm drain will connect to the existing Airport Drive Storm drain at the NE intersection of Street 'A' and Airport Drive, and will terminate at a manhole in the Right-of-Way at the intersection of Street 'A' and Street 'C'. Storm drains upstream of this terminal manhole will be privately owned and maintained.
2. Onsite lots 21-23 will drain (via onsite ponds) through the back of curb to the Street 'B' gutter.
3. The proposed public storm drain and public detention pond will be included on the infrastructure list for the subdivision plat, and will be built by the subdivider with the basic initial infrastructure improvements. The private storm drains will be built later as required by individual lot developers as lots are built out. As such, they will not be included on the infrastructure list for the subdivision plat. They will either appear on future lot-specific infrastructure lists, or (preferably) be required as a condition of Certificate of Occupancy.
4. The proposed detention pond on lot 10 will be a privately maintained public drainage facility, sited in a public drainage easement on private property.

Yours sincerely,



J. Martin Lewis
Staff Engineer

JML/gm
Job No. 4320

AUG 30 1996

cc: George Brunacini, Brunacini Investment and Development

EASTERLING & ASSOCIATES, INC.

10131 Coors Rd., NW, Suite H-7
ALBUQUERQUE, NEW MEXICO 87114-4048

(505) 898-8021
FAX (505) 898-8501

TO COA HYDROLOGY

1 CIVIC PLAZA

ALBUQUERQUE NM 87102

LETTER OF TRANSMITTAL

DATE	8/29/96	JOB NO.	4320/001
ATTENTION	Fred Aguirre or designated reviewer		
RE:	Meridian Business Park		
	at Atrisco Business Park		
	Conceptual Grading & Drainage Plan		

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via Courier the following items:

- ☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ -Copy of letter ☐ Change order ☒ As noted

COPIES	DATE	NO.	DESCRIPTION
1	8/29/96		Conceptual Grading & Drainage Plan :
			Plan Sheet 1 24"x36"
			Plan Sheet 2 24"x36"
			ATHMO Output File 8 1/2"x11"
			Street Rating Table 8 1/2"x11"
1	8/29/96		Cover Letter
1	8/29/96		Drainage Information Sheet
1	8/29/96		Infrastructure List

THESE ARE TRANSMITTED as checked below:

- ☒ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

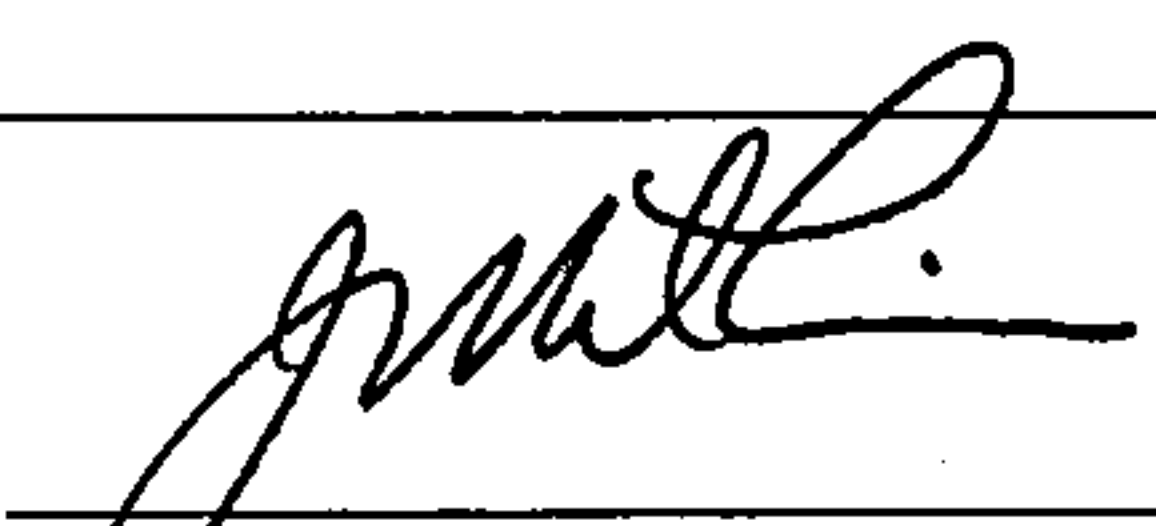
REMARKS _____

AUG 30 1996

RECEIVED BY _____

COPY TO _____

RECYCLED PAPER:
Contents: 40% Pre-Consumer • 10% Post-Consumer

SIGNED: 

If enclosures are not as noted, kindly notify us at once.

11/12/96 TUE 10:15 FAX 505 898 8501

EASTERLING & ASSOC.

002

EXHIBIT A
TO SUBDIVISION IMPROVEMENT AGREEMENT
DEVELOPMENT REVIEW BOARD
REQUIRED INFRASTRUCTURE LISTING
 Lots 1 through 23
 Meridian Business Park

DRB Case No.: 96-336
 DRC Project No.:
 Prelim. Plat Approved: / /
 Prelim. Plat Expires: / /
 Site Plan Approved: / /
 Date Submitted: 11/12/96

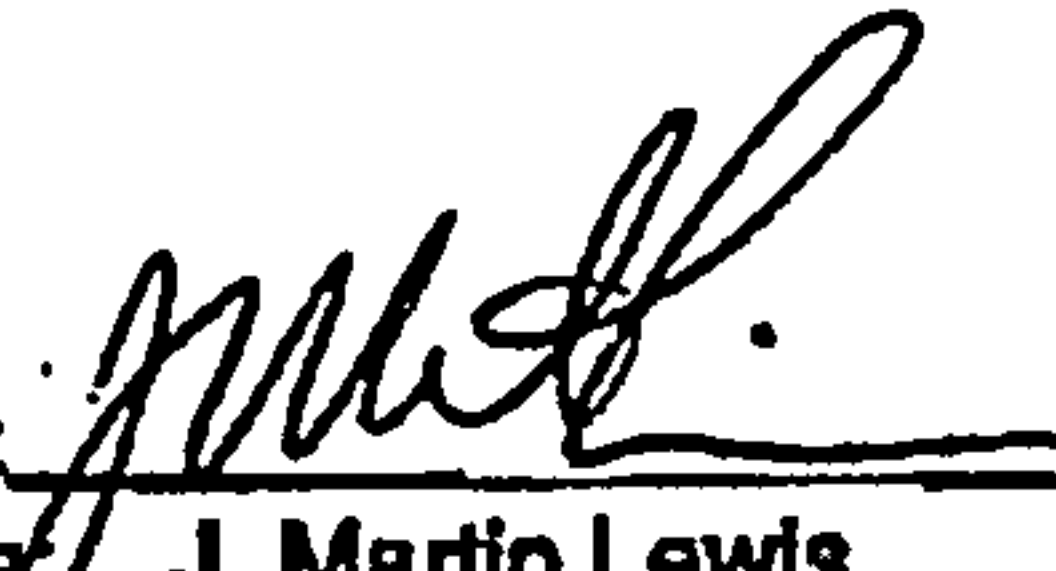
Following is a summary of PUBLIC/PRIVATE Infrastructure required to be constructed or financially guaranteed for the above development. This summary is not necessarily a complete listing. During CPC, BCC, the design process and/or in the preparation of the construction drawings, if the City, County, and/or AMAFCA determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider's responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City, County, and/or AMAFCA.

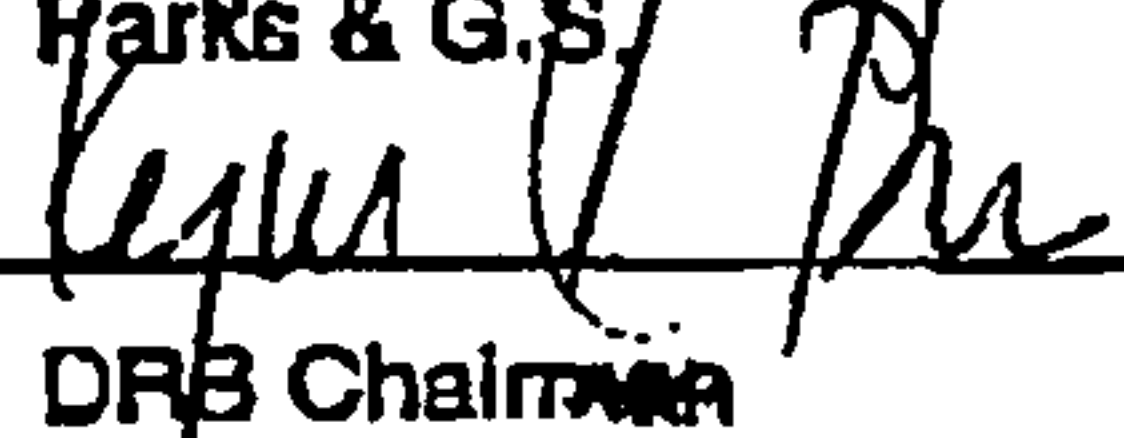
<u>SIZE</u>	<u>IMPROVEMENT</u>	<u>LOCATION</u>	<u>FROM</u>	<u>TO</u>
1. Paving				
40'-wide	A.C. Pavement (Industrial), std. curb & gutter (both sides)	Meridian Ave. NW	Airport Drive	Intersection with Silver Creek Dr.
40'-wide	A.C. Pavement (Industrial), std. curb & gutter (both sides)	Silver Creek Dr. NW	Intersection with Meridian Ave.	Los Volcanes Road
40'-wide	A.C. Pavement (Industrial), std. curb & gutter (both sides)	Gallatin Dr. NW	Intersection with Meridian Ave.	Los Volcanes Road
* 2. Drainage				
1 acre- foot*	Privately-Maintained Public Detention Pond	Lot 10	N/A	N/A
24"	Public Storm Drain	Meridian Ave. NW	Intersection of Meridian Ave. and Gallatin Dr.	Airport Drive Storm Drain
*Final size to be confirmed at Design Review Committee				
3. Water				
10"	Water Distribution Line	Meridian Ave. NW	Airport Drive	Intersection of Meridian Ave. and Silver Creek Dr.
10"	Water Distribution Line	Silver Creek Dr. NW	Los Volcanes Road	Intersection of Meridian Ave. and Silver Creek Dr.
10"	Water Distribution Line	Gallatin Dr. NW	Los Volcanes Road	Intersection of Meridian Ave. and Gallatin Dr.
4. Sanitary Sewer				
8"	Sanitary Sewer Main	Meridian Ave. NW	Airport Drive	Intersection of Meridian Ave. and Silver Creek Dr.
8"	Sanitary Sewer Main	Silver Creek Dr. NW	Intersection of Meridian Ave. and Silver Creek Dr.	N.E. Corner Lot 22
8"	Sanitary Sewer Main	Gallatin Dr. NW	Intersection of Meridian Ave. and Gallatin Dr.	N.E. Corner Lot 6

11/12/96 TUE 10:15 FAX 505 898 8501

EASTERLING & ASSOC.

003

Signed By: Print Name: J. Martin LewisFirm: Easterling & Associates, Inc.**DEVELOPMENT REVIEW BOARD MEMBER APPROVALS**

<u></u> 11-12-96	<u>Robert W. Kame</u> 11-12-96	<u>Ed Stangor</u> 11-12-96
Traffic Date	Utility Dev Date	Parks & G.S. Date
<u></u> 11/12/96	<u></u> 11/12/96	<u></u> 11/12/96
City Engineer Date	AMAFCA Date	DRB Chairman Date
<u>N/A</u>	<u>N/A</u>	
BCPWD DRE Date	BCPWD DRAN Date	

DRB Infrastructure Listing - (Meridian Business Park Lots 1 through 23)

* DRAINAGE COVENANT REQUIRED.

FAX TRANSMISSION



2600 PROSPECT, NE
ALBUQUERQUE, NM 87107
(505) 884-2215
FAX: (505) 884-0214

To: Fred Aguirre Date: 11-12-76

Fax #: # 8 Pages: 2, including this cover sheet.

From: Hurt Browning

Subject: Movidian Business Park - Unseu Diversion

COMMENTS:

GENEIVA MEEKER, CHAIR
DANIEL W. COOK, VICE-CHAIR
RONALD D. BROWN, SECRETARY-TREASURER
MICHAEL MURPHY, ASST. SECRETARY-TREASURER
TIM EICHENBERG, DIRECTOR

LARRY A. BLAIR
EXECUTIVE ENGINEER



**Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority**

2600 PROSPECT N.E. - ALBUQUERQUE, N. M. 87107
TELEPHONE (505) 884-2215

November 8, 1996

Mr. Fred Aguirre, P.E.
City of Albuquerque Public Works
Hydrology
P.O. Box 1293
Albuquerque, NM 87103

RE: Meridian Business Park - Unser Diversion Project

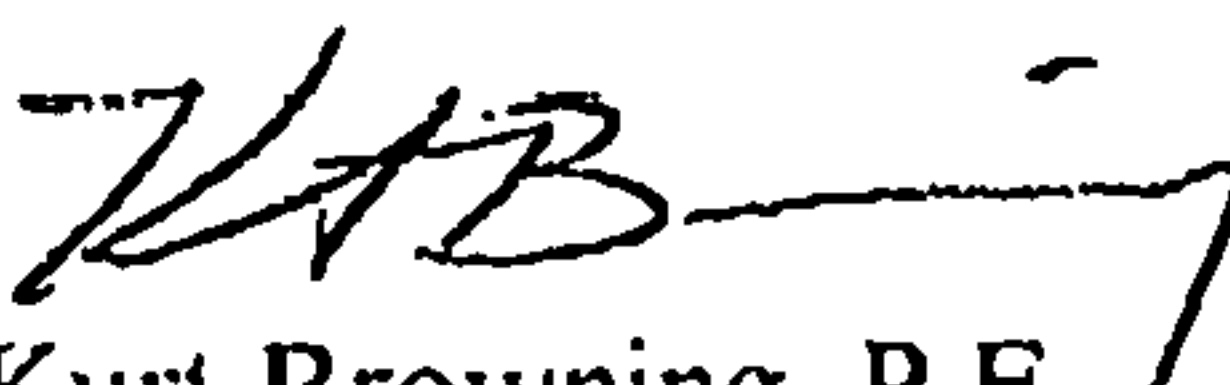
Dear Fred:

AMAFCA has now secured all of the required property interests for the project. At the November 7, 1996 Board meeting, staff received authority to advertise for construction bids. We intend to award a construction contract at the December 12, 1996 Board meeting, and construction should be complete in late Spring of 1997.

AMAFCA interposes no objection to the Meridian Business Park final plat; however, the decision regarding issuance of building permits rests with the City/County Floodplain Administrator.

Thank you for keeping AMAFCA's interests in mind while monitoring the City's development process. Should you have any questions or need further information, please call.

Sincerely,
AMAFCA


Kurt Browning, P.E.
Drainage Engineer

xc: Ted Garret, Garret Group, Inc.
Charles Easterling, Easterling and Associates

Easterling & Associates, Inc.

October 9, 1996

10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-8021
FAX (505) 898-8501

Susan Calongne, P.E.
Public Works Department
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

RE: Lots 1 – 23, Meridian Business Park (J10/D20)

Dear Ms. Calongne:

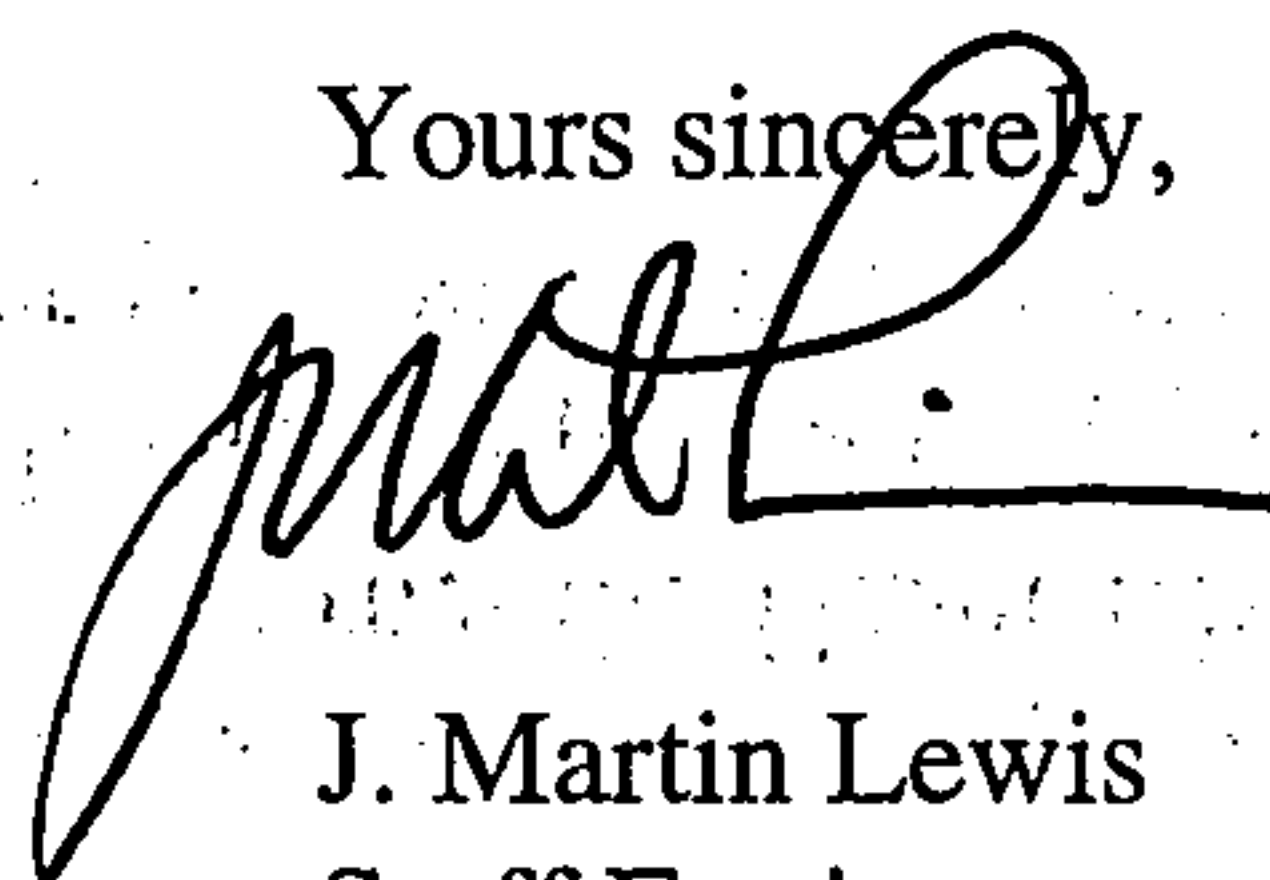
Thank you for your letter dated September 25, 1996, approving the Conceptual Grading and Drainage Plan (August 29, 1996) for the above Subdivision.

I am writing to you regarding the Unser Diversion. Naturally, our client is anxious to proceed with the platting of Meridian Business Park, and is concerned about the statement in the approval letter (September 25, 1996) requiring the Unser Diversion construction to be underway prior to platting Meridian Business Park. As you are aware, the funding for the construction of the Unser Diversion is in place, and construction plans have been approved. This has been the case for some time. However, construction has been held up over right-of-way issues. It is our understanding that the land issues have all been resolved by now, and that AMAFCA holds all right-of-way and easements required to construct the Unser Diversion. To our knowledge, there are now no obstacles preventing AMAFCA from proceeding directly to construction. We believe that the combination of a fully-funded project with right-of-way, easements and plans constitutes a very strong guarantee that the Unser Diversion will be built, and probably in a timely fashion. Such conditions are believed equivalent to the guaranty that would normally be required by the City under a Subdivision Improvement Agreement if our client were to construct the Unser Diversion as part of the subdivision infrastructure improvements.

Based on the above, we would like to request that the Meridian Business Park plat approval not be conditional on commencement of the Unser Diversion construction. We feel that relaxing such a condition is in keeping with the intent of the original agreement between the City, AMAFCA and landowners for the construction of the Unser Diversion ("Agreement for Atrisco Business Park Storm Water Improvements," filed August 25, 1993.) An excerpt from the agreement is attached for your ready reference.

Thank you for your time and consideration. If you have questions or comments, please contact our office.

Yours sincerely,



J. Martin Lewis
Staff Engineer

JML/das
Job No. 4320/002
Attachment

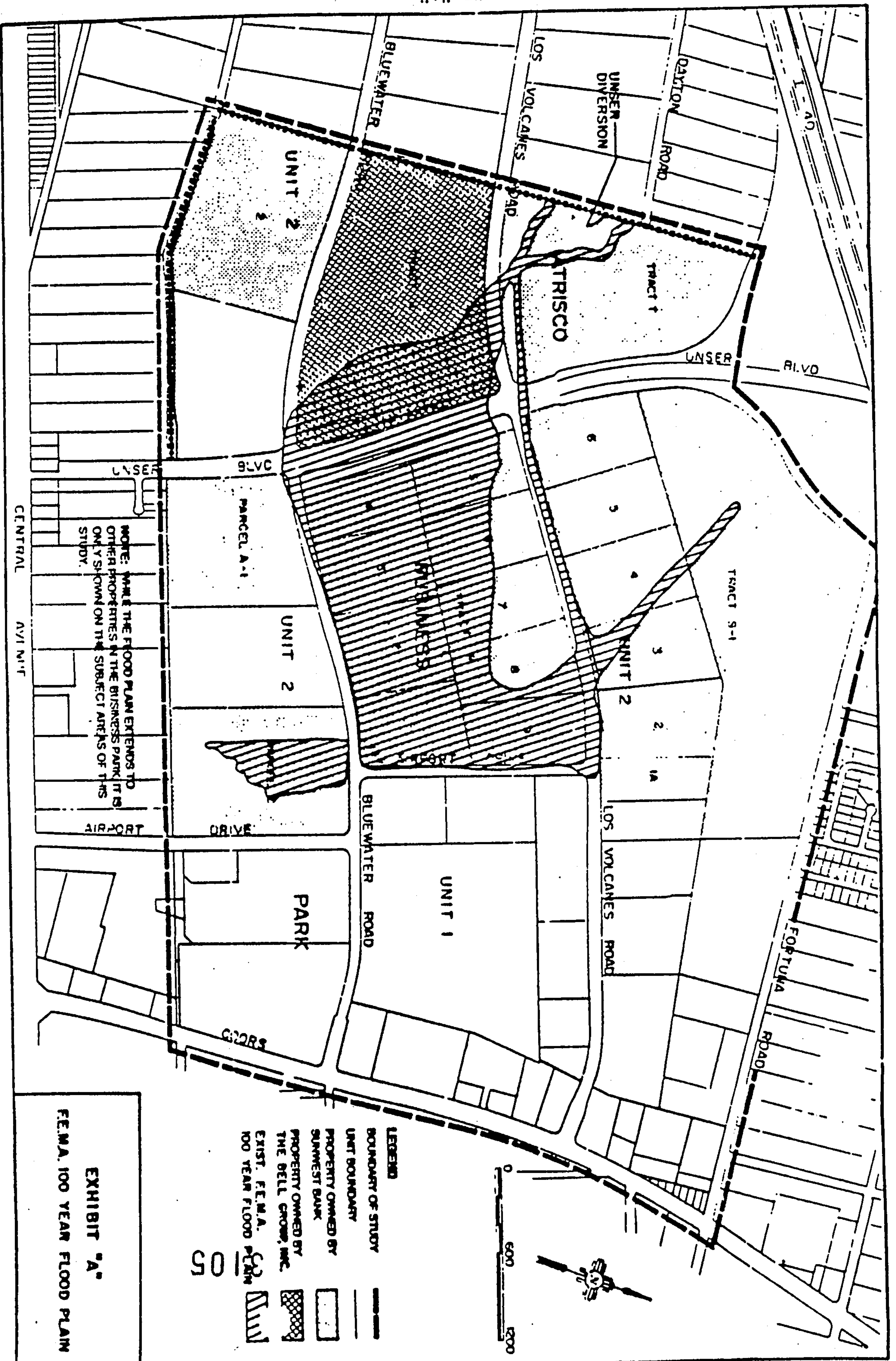
cc: Brunacini Investment & Development

— CONSULTING ENGINEERS —

- 3.5 To operate and maintain the SAD 214 Pond Improvements after their completion and acceptance by the City.
- 3.6 Subject to passage of a bond issue and subsequent sale of the bonds, to construct, operate and maintain the SAD 214 Pond Improvements and the Tierra Bayita Storm Drain.
- 3.7 At such time as the Unser Diversion is funded, to accept from the owners of the Sunwest-Bell Lands applications for development including, but not limited to, subdivision approvals, zone changes and building permits on lands currently encumbered by the flood plan shown on Exhibit "A". The City makes no representation or warranty that the applications will be approved.

Section Four - City and AMAFCA jointly agree:

- 4.1 To work with each other in order to expedite the Unser Diversion, the SAD 214 Pond Improvements and the related improvements.
- 4.2 To keep Sunwest and Bell advised of the progress of the application for the CLOMR and the LOMR.
- 4.3 That (i) prior to the completion of the Unser Diversion, the SAD 214 Pond Improvements, the Tierra Bayita Storm Drain and the West Bluff Channel, the discharge of storm water from the KVA Lands shall be limited by the City Drainage Ordinance, and (ii) upon completion of the Unser Diversion, the SAD 214 Pond Improvements, the Tierra Bayita Storm Drain and the West Bluff Channel, stormwater discharge from the KVA Lands, following construction of improvements upon the KVA Lands, shall be permitted at a minimum of a design rate of 1.3 cubic feet per second per gross acre of KVA Lands.
- 4.4 To continue to plan for the construction of West Bluff Channel.
- 4.5 AMAFCA and the City make no representation or warranty that the application for CLOMR or the LOMR will be approved, it being understood only that AMAFCA and the City will use best efforts to seek approval of the applications.
- 4.6 Until the Unser Diversion is accepted by the City, AMAFCA shall be solely responsible for maintaining the premises upon which the Unser Diversion is being constructed in a safe condition. Until the Unser Diversion is accepted by the City, AMAFCA agrees to defend, indemnify and hold harmless the City and its officials, agents, and employees from any claims, actions, suits or other proceedings arising from or out of the negligent acts or omissions of its agents, representatives, contractors or subcontractors or arising from the failure of AMAFCA, its agents, representatives, contractors or subcontractors to



DRAINAGE INFORMATION SHEET

PROJECT TITLE: MERIDIAN BUSINESS PARK (IN ATRISCO BUSINESS PARK) ZONE ATLAS / DRNG. FILE #: J-10 / ^{Δ20} K-10

DRB #: DRB-96-336 EPC #: N/A WORK ORDER #: NOT YET ESTABLISHED

LEGAL DESCRIPTION: (PROPOSED) : LOTS 1-23, MERIDIAN BUSINESS PARK

N/A → CITY ADDRESS: (EXISTING) : LOTS 1-9, TRACT M, UNIT 2, ATRISCO BUSINESS PARK

ENGINEERING FIRM: EASTERLING & ASSOC. INC CONTACT: MARTIN LEWIS

ADDRESS: 10131 COORS NW SUITE H-7 PHONE: 898-8021

ALBUQUERQUE NM 87114

OWNER: BRUNACINI INVESTMENT & DEVELOPMENT CONTACT: GEORGE BRUNACINI
ANGELO BRUNACINI

ADDRESS: PO BOX 6363 PHONE: 345-3909

ALBUQUERQUE NM 87197

ARCHITECT: N/A CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: SURV-TEK INC. CONTACT: GARRY HAGG

ADDRESS: 5643 PARADISE BLVD NW PHONE: 897-3366

ALBUQUERQUE NM 87114

CONTRACTOR: NOT YET SELECTED 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 w/ FRED AGUIRRE 8/23/96
☐ NO
☐ COPY PROVIDED → REFER TO ATTACHED COVER LETTER

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
☐ OTHER _____ (SPECIFY)

DATE SUBMITTED: 8/29/96

BY: J. MARTIN LEWIS