DRAINAGE CALCULATIONS:

EXISTING CONDITIONS:

The site is located in Broadbent Business Park, at the West end of Lamberton Place. Lamberton place ends in a cul de sac adjacent to the East boundary of the site. The existing street is paved with curb and gutter and storm drain. There is an Type 'C' inlet in the approximate middle of the proposed driveway into the site. The existing storm drain is shown from as-constructed drawings from Project 2697, Lamberton Place.

PROPOSED CONDITIONS:

It is proposed to construct an office building and paved parking. It will be required to modify the existing inlet at the west curb line of the cul de sac. It is proposed to catch the runoff from the site in a single Type 'D' inlet in the parking lot and and connect the Type 'D' inlet to the existing storm drain manhole near the NW corner of the site. All site runoff will be conveyed to the Type 'D' inlet by means of the City of Albuquerque standard 'Alley Curb' as shown on City of Albuquerque Standard Drawing 2415.

DRAINAGE CRITERIA:

The calculations shown on this plan were prepared in accordance with Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque in cooperation with Bernalillo County, New Mexico and the Metropolitan Arroyo Flood Control Authority, January, 1993.

PRECIPITATION ZONE:

The site is between the Rio Grande River and San Mateo Blvd. and is, therefore, in Precipitation Zone 2.

LAND TREATMENT AREAS, EXCESS PRECIPITATION AND UNIT PEAK DISCHARGE:

The peak discharge per acre and excess precipitation are shown for the four land treatments in Zone 2 in the table below, and the values shown are from the City of Albuquerque D.P.M. Also shown are the existing and proposed land treatment areas.

LAND TREAT.	q(cfs/ac) 100-yr.	q(cfs/ac) 10-yr.	E (in) 100-yr.	E (in) 10-yr.	Existing Site Areas %	Existing Site Areas Sq. Ft.	Existing Site Areas Acres	Developed Site Areas %	Developed Site Areas Sq. Ft.	Developed Site Areas Acres
A	1.56	0.38	0.53	0.13	100.0	72,266	1.6590	0.0	0	0.0000
B	2.28	0.95	0.78	0.28	0.0	0	0.0000	17.8	12,872	0.2955
C	3.14	1.71	1.13	0.52	0.0	0	0.0000	0.0	0	0.0000
D	4.70	3.14	2.12	1.34	0.0	0	0.0000	82.2	59,394	1.3635
Totals					100.0	72,266	1.6590	100.0	72,266	1.6590

PEAK DISCHARGE:

EXISTING CONDITIONS:
Q100 = 1.6590 × 1.56 = 2.59 cfs
Q10 = 1.6590 × 0.38 = 0.63 cfs
DEVELOPED CONDITIONS:
Q100 = 0.2955 × 2.28 + 1.3635 × 4.70 = 7.08 cfs
Q10 = 0.2955 × 0.95 + 1.3635 × 3.14 = 4.56 cfs

VOLUME, 100-YEAR AND 10-YEAR, 6-HOUR:

EXISTING CONDITIONS:
V100 = (72,266 × 0.53) / 12 = 3,192 cf
V10 = (72,266 × 0.13) / 12 = 783 cf

DEVELOPED CONDITIONS:
V100 = (12,872 × 0.78 + 59,394 × 2.12) /12 = 11,330 cf
V10 = (12,872 × 0.28 + 59,394 × 1.34) /12 = 6,933 cf

SUMMARY OF ON-SITE VOLUMES AND PEAK DISCHARGE RATES:

	V100(CF)	V10(CF)	Q100(CFS)	Q10(CFS)
DEVELOPED	11,330	6,933	7.08	4.56
EXISTING	3,192	783	2.59	0.63
INCREASE	8,138	6,150	4.49	3.93

OFFSITE FLOW:

THE TRACT TO THE SOUTH IS PAVED AND APPROXIMATELY 50% OF IT IS OFFSITE FLOW FOR THIS SITE. THE AREA IS APPROXIMATELY 75' X 300' = 0.51 ACRE.

Q 100 = 0.51 ACRE X 4.7 CFS/ACRE = 2.40 CFS. THIS IS ACCEPTED AND WILL BE ROUTED THROUGH THE SITE.

DRAIN LINE CONNECTING TYPE 'D' INLET AND EXISTING MANHOLE:

DESIGN Q = 7.08 + 2.4 = 9.48 CFS USE ORIFICE EQUEATION. $Q = CA(2gH)^{1/2}$
USE ORIFICE EQUATION ASSUME DEPTH OF WATER EQUAL TOP OF GRATE DURING 100-YEAR STORM:
C = 0.6 $A = \pi D^2/4$ FOR 18' DIA. PVC PIPE, $A = \pi(1.5^2)/4 = 1.7671$ SF
HEAD, H= HIGH WATER ELEV. = 05.54 INVERT 2.50 H = 05.54 - 03.25 = 2.29 FT.
$Q = 0.6 \times 1.7671 (2 \times 32.2 \times 2.29)^{1/2} = 12.87$ CFS > 9.48 CFS OK

MANNINGS EQUATION IN THE FORM FOR CIRCULAR PIPE FLOWING FULL.
$Q = (0.463/n)\, d^{8/3} s^{1/2}$ n = 0.013 Conc. Pipe d = 18' (1.5') s = 0.0100 ft./ft.

$Q = (0.463/0.013)(1.5)^{8/3}(0.0100)^{1/2} = 10.5$ cfs > 9.48 cfs

DOWNSTREAM CAPACITY:

THE STORM DRAIN SYSTEM AND DETENTION POND FOR BROADBENT BUSINESS PARK IS DESIGNED TO HANDLE ALL DEVELOPED FLOW FROM THE VARIOUS TRACTS.

KEYED NOTES:

1. EXIST. DBL. 'C' INLET. REMOVE
2. EXIST. 30" RCP - REMOVE
3. EXIST. 24" RCP SD LINE- REMOVE.
4. EXIST. 24" RCP BEND - REMOVE.
5. EXIST. 24" RCP SD LINE - TO REMAIN.
6. NEW 24" RCP CL. III SD.- 9.5' @ 1.4%
7. NEW DBL. 'C' INLET PER C.O.A. STD. DWG. 2205
   B.O.C. ELEV. = 08.83
   GRATE ELEV. = 07.93
   INVERT IN = 01.36
   INVERT OUT = 00.86
7A. REMOVE AND REPLACE CURB AND GUTTER AS REQUIRED TO ACCOMODATE NEW INLET.
8. NEW 30" RCP CL. III S.D. 39.5 LF @ 2.46 %
9. NEW 18" RCP CL. IV S.D. 89.0 LF @ 1.00 %
10. NEW 6' WIDE CURB AROUND H.C. SPACES.
11. OFFSET EAST SIDE OF ALLEY GUTTER 1.0' USING BACK TO BACK 20' R CURVES. FLOWLINE TRANSITIONS FROM CENTER OF A.G. TO FACE OF CURB.
12. N-S CURB TO HAVE 3'-0" PIPE HANDRAIL.

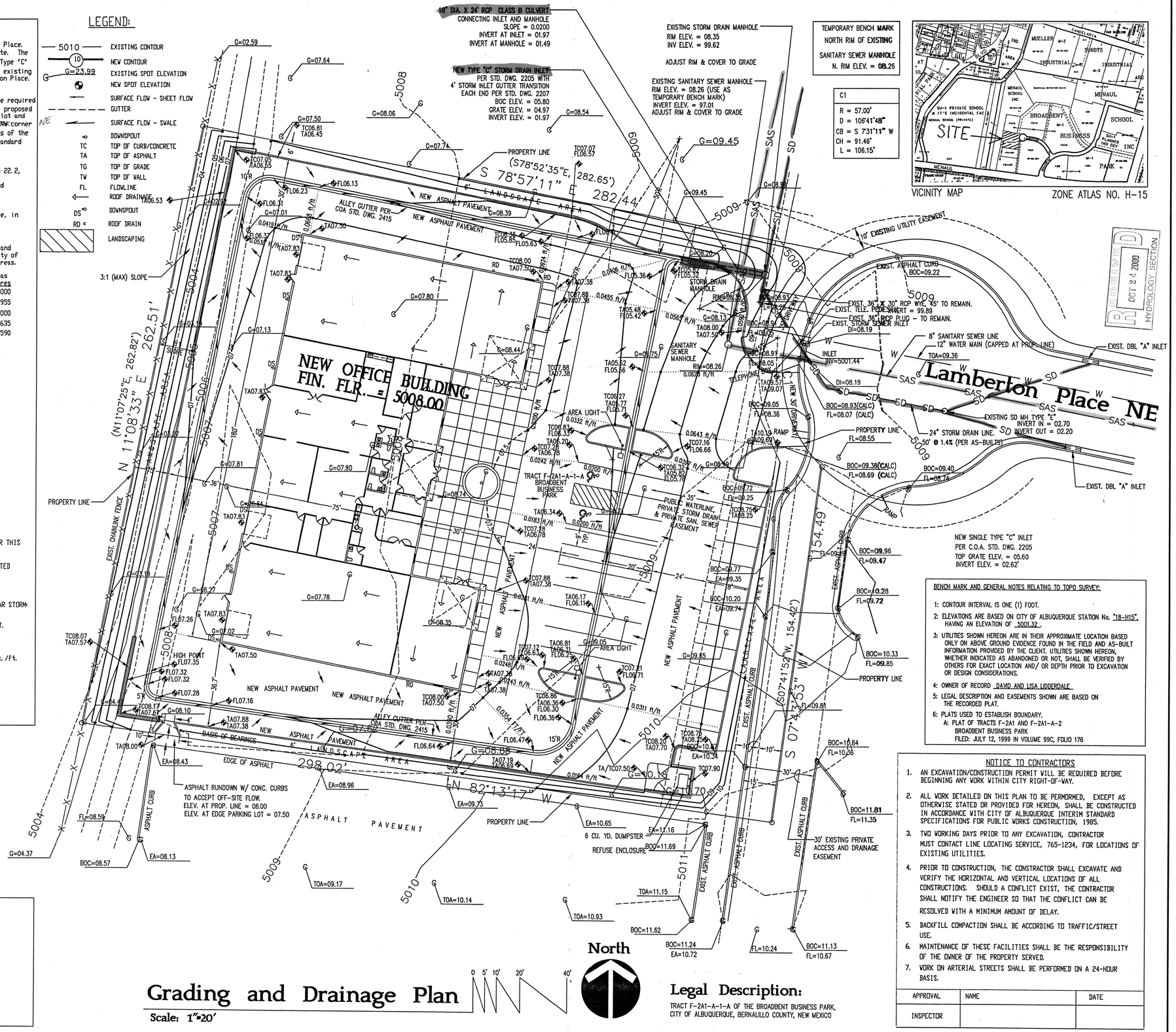
EROSION CONTROL NOTES:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE FOLLOWING:

1. NO SEDIMENT-BEARING WATER SHALL BE ALLOWED TO DISCHARGE FROM THE SITE DURING CONSTRUCTION.
2. DURING GRADING OPERATIONS AND UNTIL THE PROJECT HAS BEEN COMPLETED, ALL ADJACENT PROPERTY, RIGHTS-OF-WAY, AND EASEMENTS SHALL BE PROTECTED FROM FLOODING BY RUNOFF FROM THE SITE.
3. SHOULD THE CONTRACTOR FAIL TO PREVENT SEDIMENT-BEARING WATER FROM ENTERING PUBLIC RIGHT-OF-WAY, HE SHALL PROMPLTY REMOVE FROM THE PUBLIC RIGHT-OF-WAY ANY AND ALL SEDIMENT ORIGINATING FROM THE SITE.
4. CONTROL OF SEDIMENT-LADEN WATERS WILL BE ACCOMPLISHED BY USE OF A COMPACTED EARTH BERM OF ADEQUATE HEIGHT. THE BERM SHALL BE LOCATED ALONG THE DOWNSTREAM PERIMETER OF THE PROPERTY.

LEGEND:

- 5010 — EXISTING CONTOUR
- 10 — NEW CONTOUR
- G=23.99 — EXISTING SPOT ELEVATION
- NEW SPOT ELEVATION
- SURFACE FLOW - SHEET FLOW
- GUTTER
- NE — SURFACE FLOW - SVALE
- DOWNSPOUT
- TC — TOP OF CURB/CONCRETE
- TA — TOP OF ASPHALT
- TG — TOP OF GRADE
- TW — TOP OF WALL
- FL — FLOWLINE
- ROOF DRAINAGE
- DS — DOWNSPOUT
- RD — ROOF DRAIN
- LANDSCAPING



Grading and Drainage Plan

Scale: 1"=20'

Legal Description:

TRACT F-2A1-A-1-A OF THE BROADBENT BUSINESS PARK, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO

BENCH MARK AND GENERAL NOTES RELATING TO TOPO SURVEY:

1: CONTOUR INTERVAL IS ONE (1) FOOT.

2: ELEVATIONS ARE BASED ON CITY OF ALBUQUERQUE STATION No. "18-H15", HAVING AN ELEVATION OF 5001.32.

3: UTILITIES SHOWN HEREON ARE IN THEIR APPROXIMATE LOCATION BASED ONLY ON ABOVE GROUND EVIDENCE FOUND IN THE FIELD AND AS-BUILT INFORMATION PROVIDED BY THE CLIENT. UTILITIES SHOWN HEREON, WHETHER INDICATED AS ABANDONED OR NOT, SHALL BE VERIFIED BY OTHERS FOR EXACT LOCATION AND/ OR DEPTH PRIOR TO EXCAVATION OR DESIGN CONSIDERATIONS.

4: OWNER OF RECORD DAVID AND LISA LIDDERDALE

5: LEGAL DESCRIPTION AND EASEMENTS SHOWN ARE BASED ON THE RECORDED PLAT.

6: PLATS USED TO ESTABLISH BOUNDARY.
A: PLAT OF TRACTS F-2A1 AND F-2A1-A-2 BROADBENT BUSINESS PARK FILED: JULY 12, 1999 IN VOLUME 99C, FOLIO 176

NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
2. ALL WORK DETAILED ON THIS PLAN TO BE PERMORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATIONS OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONSTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVAL	NAME	DATE
INSPECTOR		

FRANK D. LOVELADY — NEW MEXICO — 6512 — REGISTERED PROFESSIONAL ENGINEER — REVISED OCT 24 00

Facility for L&L Electronics Inc.

900 LAMBERTON PLACE NE, ALBUQUERQUE, NEW MEXICO

KEN HOVEY, ARCHITECT
(505) 254-0083 • Fax (505) 254-1809 • 3908 SIMMS AVE. SE • Albuquerque, NM

JOB NO: 2012
DATE: 06 OCTOBER, 2000
REVISIONS

SHEET NO. 1

C:\ALLPROJ\PROJ606\ALREGTDWG (OCTOBER 06, 2000)

DRAINAGE CALCULATIONS:

EXISTING CONDITIONS:

The site is located in Broadbent Business Park, at the West end of Lamberton Place. Lamberton place ends in a cul de sac adjacent to the East boundary of the site. The existing street is paved with curb and gutter and storm drain. There is an Type 'C' inlet in the approximate middle of the proposed driveway into the site. The existing storm drain is shown from as-constructed drawings from Project 2697, Lamberton Place.

PROPOSED CONDITIONS:

It is proposed to construct an office building and paved parking. It will be required to modify the existing inlet at the west curb line of the cul de sac. It is proposed to catch the runoff from the site in a single Type 'D' inlet in the parking lot and and connect the Type 'D' inlet to the existing storm drain manhole near the NW corner of the site. All site runoff will be conveyed to the Type 'D' inlet by means of the City of Albuquerque standard 'Alley Curb' as shown on City of Albuquerque Standard Drawing 2415.

DRAINAGE CRITERIA:

The calculations shown on this plan were prepared in accordance with Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque in cooperation with Bernalillo County, New Mexico and the Metropolitan Arroyo Flood Control Authority, January, 1993.

PRECIPITATION ZONE:

The site is between the Rio Grande River and San Mateo Blvd. and is, therefore, in Precipitation Zone 2.

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The peak discharge per acre and excess precipitation are shown for the four land treatments in Zone 2 in the table below, and the values shown are from the City of Albuquerque D.P.M. Also shown are the existing and proposed land treatment areas.

LAND TREAT.	q(cfs/ac) 100-yr.	10-yr.	E (in) 100-yr.	10-yr.	Existing Site Areas %	Sq.Ft.	Acres	Developed Site Areas %	Sq.Ft.	Acres
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D	4.70	3.14	2.12	1.34	0.0	0	0.0000	82.2	59,394	1.3635
Totals					100.0	72,266	1.6590	100.0	72,266	1.6590

PEAK DISCHARGE:

EXISTING CONDITIONS:

Q100 = 1.6590 * 1.56 = 2.59 cfs

Q10 = 1.6590 * 0.38 = 0.63 cfs

DEVELOPED CONDITIONS:

Q100 = 0.2955 * 2.28 + 1.3635 * 4.70 = 7.08 cfs

Q10 = 0.2955 * 0.95 + 1.3635 * 3.14 = 4.56 cfs

VOLUME, 100-YEAR AND 10-YEAR, 6-HOUR:

EXISTING CONDITIONS:

V100 = (72,266 * 0.53) / 12 = 3,192 cf

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THE TRACT TO THE SOUTH IS PAVED AND APPROXIMATELY 50% OF IT IS OFFSITE FLOW FOR THIS SITE. THE AREA IS APPROXIMATELY 75' X 300' = 0.51 ACRE.

Q 100 = 0.51 ACRE X 4.7 CFS/ACRE = 2.40 CFS. THIS IS ACCEPTED AND WILL BE ROUTED THROUGH THE SITE.

DRAIN LINE CONNECTING TYPE 'D' INLET AND EXISTING MANHOLE:

DESIGN Q = 7.08 + 2.4 = 9.48 CFS USE ORIFICE EQUEATION, $Q = CA(2GH)^{1/2}$

USE ORIFICE EQUATION: ASSUME DEPTH OF WATER EQUAL TOP OF GRATE DURING 100-YEAR STORM:

$C = 0.6$ $A = pi\ D^2 / 4$ FOR 18' DIA. PVC PIPE, $A = PI(1.5^2/4 = 1.7671$ SF

HEAD, H: HIGH WATER ELEV. = 05.54 INVERT 2.50 H = 05.54 - 03.25 = 2.29 FT.

$Q = 0.6 \times 1.7671 (2 \times 32.2 \times 2.29)^{1/2} = 12.87$ CFS > 9.48 CFS OK

MANNINGS EQUATION IN THE FORM FOR CIRCULAR PIPE FLOWING FULL.

$Q = (0.463/n)\ d^{8/3} s^{1/2}$ n = 0.013 Conc. Pipe d = 18' (1.5') s = 0.0100 ft./ft.

$Q = (0.463/0.013)(1.5)^{8/3}(0.0100)^{1/2} = 10.5$ cfs > 9.48 cfs

DOWNSTREAM CAPACITY:

THE STORM DRAIN SYSTEM AND DETENTION POND FOR BROADBENT BUSINESS PARK IS DESIGNED TO HANDLE ALL DEVELOPED FLOW FROM THE VARIOUS TRACTS.

SELECTION OF TYPE OF INLET:

CRITERIA: DEPTH OF HEAD OVER GRATE = 6' USE ORIFICE EQUEATION.

CHECK CAPACITY OF ONE GRATE ORIFICE 1-9/16' X 4-1/2' = 1.5625 X 4.5 = 7.0313 SQ. IN.

7.0313/144 = 0.0488 SF (SEE STD. DWG. 2220)

ORIFICE EQUATION: $Q = CA(2GH)^{1/2} = 0.6 \times 0.0488 (2 \times 32.2 \times 0.5)^{1/2} = 0.1661$ CFS

ONE ALBUQUERQUE GRATE HAS 96 OPENINGS. TOTAL Q = 96 X 0.1661 = 15.94 CFS.

ASSUME 50% OF THE GRATE SURFACE WILL BE CLOGGED. TOTAL Q = 15.94 X 0.5 = 7.97 CFS

7.97 CFS. < 9.48 CFS EITHER USE A DOUBLE 'D' INLET OR A SINGLE 'C' INLET,

SINCE THE THROAT OF THE SINGLE 'C' GIVES THE INLET MUCH GREATER CAPACITY.

THE SINGLE 'C' INLET IS LESS EXPENSIVE THAN A DOUBLE 'D' INLET.

USE A SINGLE 'C' INLET.

EROSION CONTROL NOTES:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONPLIANCE WITH THE FOLLOWING:

1. NO SEDIMENT-BEARING WATER SHALL BE ALLOWED TO DISCHARGE FROM THE SITE DURING CONSTRUCTION.
2. DURING GRADING OPERATIONS AND UNTIL THE PROJECT HAS BEEN COMPLETED, ALL ADJACENT PROPERTY, RIGHTS-OF-WAY, AND EASEMENTS SHALL BE PROTECTED FROM FLOODING BY RUNOFF FROM THE SITE.
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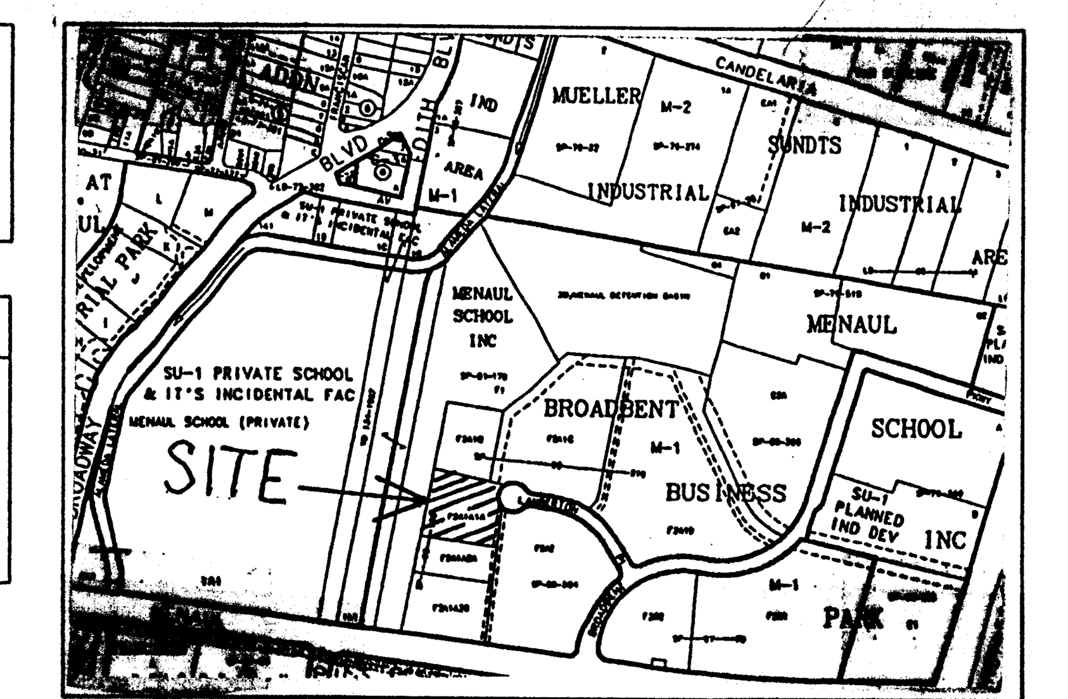
C:\ALLPROJ\PROJ606\L&ELECT-CERT.DWG (APRIL 25, 2001)

LEGEND:

Symbol	Meaning
5010	EXISTING CONTOUR
(10)	NEW CONTOUR
G=23.99	EXISTING SPOT ELEVATION
⊕	NEW SPOT ELEVATION
	SURFACE FLOW - SHEET FLOW
- - -	GUTTER
	SURFACE FLOW - SWALE
	DOWNSPOUT
TC	TOP OF CURB/CONCRETE
TA	TOP OF ASPHALT
TG	TOP OF GRADE
TW	TOP OF WALL
FL	FLOWLINE
	ROOF DRAINAGE
DS	DOWNSPOUT
RD	ROOF DRAIN
(hatch)	LANDSCAPING



VICINITY MAP

ZONE ATLAS NO. H-15

ENGINEER'S CERTIFICATION:

HAVING FIELD-INSPECTED THE SITE AND HAVING TAKEN SPOT ELEVATIONS AT CRITICAL LOCATIONS, I HEREBY CERTIFY THAT THE AS-CONSTRUCTED FACILITY IS IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED GRADING AND DRAINAGE PLAN WITH ENGINEER'S STAMP DATED OCTOBER 5, 2000, AND AS REVISED OCTOBER 24, 2000.

FRANK D. LOVELADY N.M.P.E. 6512 — APRIL 25, 2001 — DATE

FRANK D. LOVELADY NEW MEXICO 6512 REGISTERED PROFESSIONAL ENGINEER

Grading and Drainage Plan

Scale: 1"=20'

0 5' 10' 20' 40'

North

Legal Description:

TRACT F-2A1-A-1-A OF THE BROADBENT BUSINESS PARK, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO

BENCH MARK AND GENERAL NOTES RELATING TO TOPO SURVEY:

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2: ELEVATIONS ARE BASED ON CITY OF ALBUQUERQUE STATION No. "18-H15", HAVING AN ELEVATION OF 5001.32.

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4: OWNER OF RECORD DAVID AND LISA LIDDERDALE

5: LEGAL DESCRIPTION AND EASEMENTS SHOWN ARE BASED ON THE RECORDED PLAT.

6: PLATS USED TO ESTABLISH BOUNDARY.
A: PLAT OF TRACTS F-2A1 AND F-2A1-A-2 BROADBENT BUSINESS PARK FILED: JULY 12, 1999 IN VOLUME 99C, FOLIO 176

NOTICE TO CONTRACTORS

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7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVAL	NAME	DATE
INSPECTOR		

FRANK D. LOVELADY NEW MEXICO 6512 REGISTERED PROFESSIONAL ENGINEER October 5, 2000

Revised Oct. 24, 2000

Facility for L&L Electronics Inc.

900 LAMBERTON PLACE NE, ALBUQUERQUE, NEW MEXICO

KEN HOVEY, ARCHITECT
(505) 254-0083 * Fax (505) 254-1809 * 3808 SIMMS AVE. SE * Albuquerque, NM * 87108

JOB NO:	2012
DATE:	25 APRIL, 2001
REVISIONS	

SHEET NO. 1

DRAINAGE CALCULATIONS:

EXISTING CONDITIONS:

The site is located in Broadbent Business Park, at the West end of Lamberton Place. Lamberton place ends in a cul de sac adjacent to the East boundary of the site. The existing street is paved with curb and gutter and storm drain. There is an Type 'C' inlet in the approximate middle of the proposed driveway into the site. The existing storm drain is shown from as-constructed drawings from Project 2697, Lamberton Place.

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EXISTING CONDITIONS:
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DEVELOPED CONDITIONS:
Q100 = 0.2955 × 2.28 + 1.3635 × 4.70 = 7.08 cfs
Q10 = 0.2955 × 0.95 + 1.3635 × 3.14 = 4.56 cfs

VOLUME, 100-YEAR AND 10-YEAR, 6-HOUR:

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V100 = (72,266 × 0.53) / 12 = 3,192 cf
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OFFSITE FLOW:

THE TRACT TO THE SOUTH IS PAVED AND APPROXIMATELY 50% OF IT IS OFFSITE FLOW FOR THIS SITE. THE AREA IS APPROXIMATELY 75' X 300' = 0.51 ACRE.
Q 100 = 0.51 ACRE X 4.7 CFS/ACRE = 2.40 CFS. THIS IS ACCEPTED AND WILL BE ROUTED THROUGH THE SITE.

DRAIN LINE CONNECTING TYPE 'D' INLET AND EXISTING MANHOLE:

DESIGN Q = 7.08 + 2.4 = 9.48 CFS USE ORIFICE EQUATION, $Q = CA(2gH)^{1/2}$
USE ORIFICE EQUATION: ASSUME DEPTH OF WATER EQUAL TOP OF GRATE DURING 100-YEAR STORM:
C = 0.6 A = $\pi D^2/4$ FOR 18" DIA. PVC PIPE, A = $\pi(1.5)^2/4$ = 1.7671 SF
HEAD, H= HIGH WATER ELEV. = 05.54 INVERT 2.50 H = 05.54 - 03.25 = 2.29 FT.
$Q = 0.6 \times 1.7671 (2 \times 32.2 \times 2.29)^{1/2}$ = 12.87 CFS > 9.48 CFS OK

MANNINGS EQUATION IN THE FORM FOR CIRCULAR PIPE FLOWING FULL.
$Q = (0.463/n)\, d^{8/3} s^{1/2}$ n = 0.013 Conc. Pipe d = 18' (1.5') s = 0.0100 ft./ft.
$Q = (0.463/0.013)(1.5)^{8/3}(0.0100)^{1/2}$ = 10.5 cfs > 9.48 cfs

DOWNSTREAM CAPACITY:

THE STORM DRAIN SYSTEM AND DETENTION POND FOR BROADBENT BUSINESS PARK IS DESIGNED TO HANDLE ALL DEVELOPED FLOW FROM THE VARIOUS TRACTS.

SELECTION OF TYPE OF INLET:

CRITERIA: DEPTH OF HEAD OVER GRATE = 6' USE ORIFICE EQUEATION.
CHECK CAPACITY OF ONE GRATE ORIFICE 1-9/16' X 4-1/2' = 1.5625 X 4.5 = 7.0313 SQ. IN.
7.0313/144 = 0.0488 SF (SEE STD. DWG. 2220)
ORIFICE EQUATION: $Q = CA(2gH)^{1/2} = 0.6 \times 0.0488 (2 \times 32.2 \times 0.5)^{1/2} = 0.1661$ CFS
ONE ALBUQUERQUE GRATE HAS 96 OPENINGS. TOTAL Q = 96 X 0.1661 = 15.94 CFS.
ASSUME 50% OF THE GRATE SURFACE WILL BE CLOGGED. TOTAL Q = 15.94 X 0.5 = 7.97 CFS
7.97 CFS. < 9.48 CFS EITHER USE A DOUBLE 'D' INLET OR A SINGLE 'C' INLET,
SINCE THE THROAT OF THE SINGLE 'C' GIVES THE INLET MUCH GREATER CAPACITY.
THE SINGLE 'C' INLET IS LESS EXPENSIVE THAN A DOUBLE 'D' INLET.
USE A SINGLE 'C' INLET.

EROSION CONTROL NOTES:

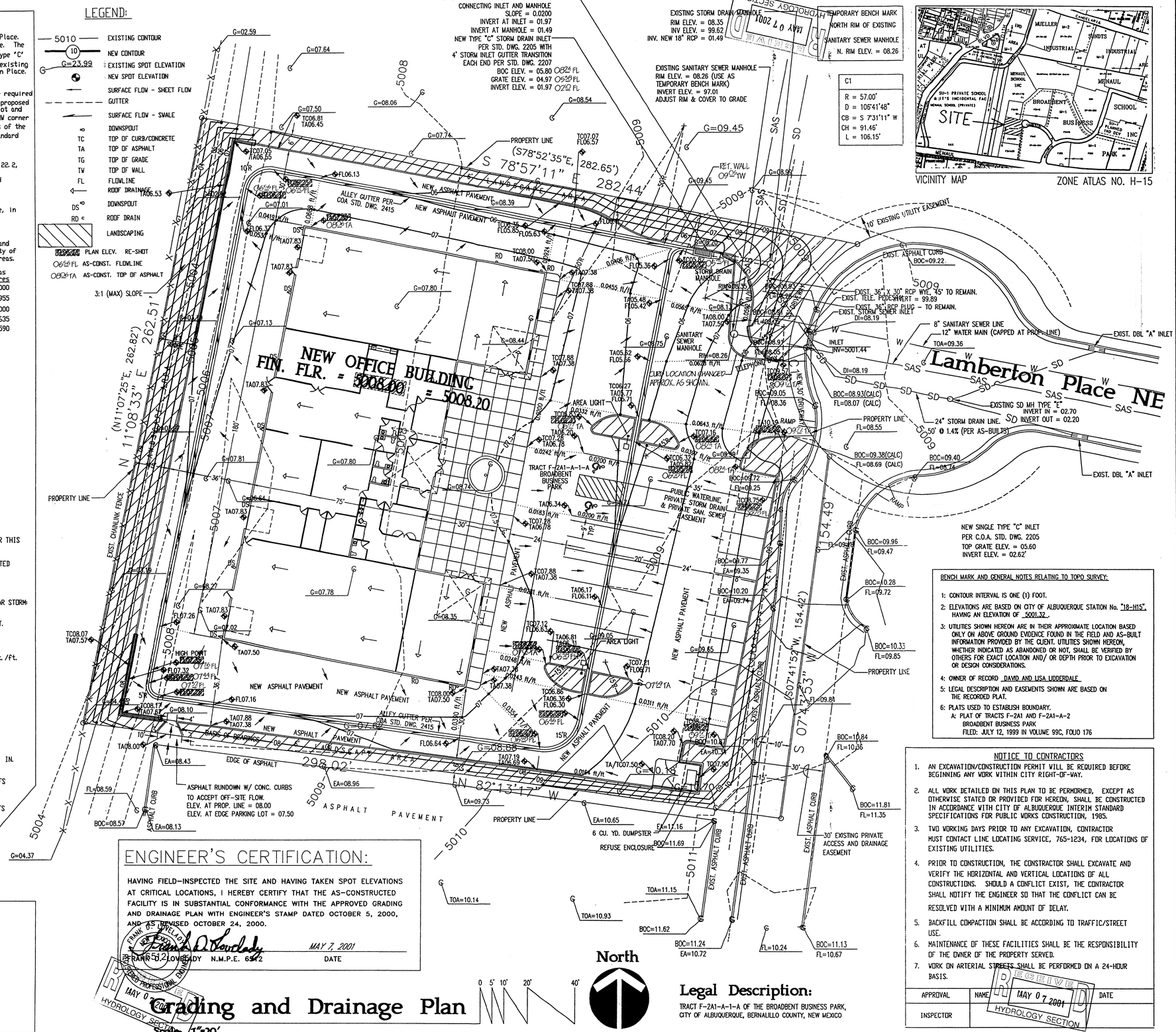
THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONPLIANCE WITH THE FOLLOWING:

1. NO SEDIMENT-BEARING WATER SHALL BE ALLOWED TO DISCHARGE FROM THE SITE DURING CONSTRUCTION.
2. DURING GRADING OPERATIONS AND UNTIL THE PROJECT HAS BEEN COMPLETED, ALL ADJACENT PROPERTY, RIGHTS-OF-WAY, AND EASEMENTS SHALL BE PROTECTED FROM FLOODING BY RUNOFF FROM THE SITE.
3. SHOULD THE CONTRACTOR FAIL TO PREVENT SEDIMENT-BEARING WATER FROM ENTERING PUBLIC RIGHT-OF-WAY, HE SHALL PROMPLTY REMOVE FROM THE PUBLIC RIGHT-OF-WAY ANY AND ALL SEDIMENT ORIGINATING FROM THE SITE.
4. CONTROL OF SEDIMENT-LADEN WATERS WILL BE ACCOMPLISHED BY USE OF A COMPACTED EARTH BERM OF ADEQUATE HEIGHT. THE BERM SHALL BE LOCATED ALONG THE DOWNSTREAM PERIMETER OF THE PROPERTY.

C:\ALLPROJ\PROJ606\L&LELECT-CERT.DWG (MAY 7, 2001)

LEGEND:

- 5010 — EXISTING CONTOUR
- (10) — NEW CONTOUR
- G=23.99 — EXISTING SPOT ELEVATION
- NEW SPOT ELEVATION
- SURFACE FLOW - SHEET FLOW
- GUTTER
- SURFACE FLOW - SWALE
- DOWNSPOUT
- TC — TOP OF CURB/CONCRETE
- TA — TOP OF ASPHALT
- TG — TOP OF GRADE
- TW — TOP OF WALL
- FL — FLOWLINE
- ROOF DRAINAGE
- DS — DOWNSPOUT
- RD — ROOF DRAIN
- LANDSCAPING
- PLAN ELEV. RE-SHOT
- FL AS-CONST. FLOWLINE
- TA AS-CONST. TOP OF ASPHALT



C1
R = 57.00'
D = 106°41'48"
CB = S 7°31'11" W
CH = 91.46'
L = 106.15'

VICINITY MAP — ZONE ATLAS NO. H-15

ENGINEER'S CERTIFICATION:

HAVING FIELD-INSPECTED THE SITE AND HAVING TAKEN SPOT ELEVATIONS AT CRITICAL LOCATIONS, I HEREBY CERTIFY THAT THE AS-CONSTRUCTED FACILITY IS IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED GRADING AND DRAINAGE PLAN WITH ENGINEER'S STAMP DATED OCTOBER 5, 2000, AND AS REVISED OCTOBER 24, 2000.

FRANK D. LOVEDAY N.M.P.E. 6512 — MAY 7, 2001 — DATE

Grading and Drainage Plan

Scale: 1"=20'

Legal Description:

TRACT F-2A1-A-1-A OF THE BROADBENT BUSINESS PARK, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO

BENCH MARK AND GENERAL NOTES RELATING TO TOPO SURVEY:

1: CONTOUR INTERVAL IS ONE (1) FOOT.
2: ELEVATIONS ARE BASED ON CITY OF ALBUQUERQUE STATION No. "18-H15", HAVING AN ELEVATION OF 5001.32.
3: UTILITIES SHOWN HEREON ARE IN THEIR APPROXIMATE LOCATION BASED ONLY ON ABOVE GROUND EVIDENCE FOUND IN THE FIELD AND AS-BUILT INFORMATION PROVIDED BY THE CLIENT. UTILITIES SHOWN HEREON, WHETHER INDICATED AS ABANDONED OR NOT, SHALL BE VERIFIED BY OTHERS FOR EXACT LOCATION AND/ OR DEPTH PRIOR TO EXCAVATION OR DESIGN CONSIDERATIONS.
4: OWNER OF RECORD DAVID AND LISA UDDERDALE
5: LEGAL DESCRIPTION AND EASEMENTS SHOWN ARE BASED ON THE RECORDED PLAT.
6: PLATS USED TO ESTABLISH BOUNDARY.
A: PLAT OF TRACTS F-2A1 AND F-2A1-A-2 BROADBENT BUSINESS PARK FILED: JULY 12, 1999 IN VOLUME 99C, FOLIO 176

NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
2. ALL WORK DETAILED ON THIS PLAN TO BE PERMORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATIONS OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONSTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVAL	NAME	DATE
INSPECTOR		

Facility for L&L Electronics Inc.

900 LAMBERTON PLACE NE, ALBUQUERQUE, NEW MEXICO

KEN HOVEY, ARCHITECT
(505) 254-0083 • Fax (505) 254-1809 • 3808 SAWS AVE. SE • Albuquerque, NM • 87108

JOB NO: 2012
DATE: 07 MAY, 2001
REVISIONS

SHEET NO. 1

RECEIVED MAY 07 2001 HYDROLOGY SECTION

DRAINAGE CALCULATIONS:

EXISTING CONDITIONS:

The site is located in Broadbent Business Park, at the West end of Lamberton Place. Lamberton place ends in a cul de sac adjacent to the East boundary of the site. The existing street is paved with curb and gutter and storm drain. There is an Type 'C' inlet in the approximate middle of the proposed driveway into the site. The existing storm drain is shown from as-constructed drawings from Project 2697, Lamberton Place.

PROPOSED CONDITIONS:

It is proposed to construct an office building and paved parking. It will be required to modify the existing inlet at the west curb line of the cul de sac. It is proposed to catch the runoff from the site in a single Type 'D' inlet in the parking lot and and connect the Type 'D' inlet to the existing storm drain manhole near the NW corner of the site. All site runoff will be conveyed to the Type 'D' inlet by means of the City of Albuquerque standard 'Alley Curb' as shown on City of Albuquerque Standard Drawing 2415.

DRAINAGE CRITERIA:

The calculations shown on this plan were prepared in accordance with Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque in cooperation with Bernalillo County, New Mexico and the Metropolitan Arroyo Flood Control Authority, January, 1993.

PRECIPITATION ZONE:

The site is between the Rio Grande River and San Mateo Blvd. and is, therefore, in Precipitation Zone 2.

LAND TREATMENT AREAS, EXCESS PRECIPITATION AND UNIT PEAK DISCHARGE:

The peak discharge per acre and excess precipitation are shown for the four land treatments in Zone 2 in the table below, and the values shown are from the City of Albuquerque D.P.M. Also shown are the existing and proposed land treatment areas.

LAND TREAT.	q(cfs/ac) 100-yr.	q(cfs/ac) 10-yr.	E (in) 100-yr.	E (in) 10-yr.	Existing Site Areas %	Existing Site Areas Sq.Ft.	Existing Site Areas Acres	Developed Site Areas %	Developed Site Areas Sq.Ft.	Developed Site Areas Acres
A	1.56	0.38	0.53	0.13	100.0	72,266	1.6590	0.0	0	0.0000
B	2.28	0.95	0.78	0.28	0.0	0	0.0000	17.8	12,872	0.2955
C	3.14	1.71	1.13	0.52	0.0	0	0.0000	0.0	0	0.0000
D	4.70	3.14	2.12	1.34	0.0	0	0.0000	82.2	59,394	1.3635
Totals					100.0	72,266	1.6590	100.0	72,266	1.6590

PEAK DISCHARGE:

EXISTING CONDITIONS:

Q100 = 1.6590 * 1.56 = 2.59 cfs
Q10 = 1.6590 * 0.38 = 0.63 cfs

DEVELOPED CONDITIONS:

Q100 = 0.2955 * 2.28 + 1.3635 * 4.70 = 7.08 cfs
Q10 = 0.2955 * 0.95 + 1.3635 * 3.14 = 4.56 cfs

VOLUME, 100-YEAR AND 10-YEAR, 6-HOUR:

EXISTING CONDITIONS:

V100 = (72,266 * 0.53) / 12 = 3,192 cf
V10 = (72,266 * 0.13) / 12 = 783 cf

DEVELOPED CONDITIONS:

V100 = (12,872 * 0.78 + 59,394 * 2.12) /12 = 11,330 cf
V10 = (12,872 * 0.28 + 59,394 * 1.34) /12 = 6,933 cf

SUMMARY OF ON-SITE VOLUMES AND PEAK DISCHARGE RATES:

	V100(CF)	V10(CF)	Q100(CFS)	Q10(CFS)
DEVELOPED	11,330	6,933	7.08	4.56
EXISTING	3,192	783	2.59	0.63
INCREASE	8,138	6,150	4.49	3.93

OFFSITE FLOW:

THE TRACT TO THE SOUTH IS PAVED AND APPROXIMATELY 50% OF IT IS OFFSITE FLOW FOR THIS SITE. THE AREA IS APPROXIMATELY 75' X 300' = 0.51 ACRE.

Q 100 = 0.51 ACRE X 4.7 CFS/ACRE = 2.40 CFS. THIS IS ACCEPTED AND WILL BE ROUTED THROUGH THE SITE.

DRAIN LINE CONNECTING TYPE 'D' INLET AND EXISTING MANHOLE:

DESIGN Q = 7.08 + 2.4 = 9.48 CFS USE ORIFICE EQUATION, $Q = CA(2GH)^{1/2}$
USE ORIFICE EQUATION ASSUME DEPTH OF WATER EQUAL TOP OF GRATE DURING 100-YEAR STORM

C = 0.6 A = pi $D^2/4$ FOR 18" DIA PVC PIPE, A = PI(1.5)^2/4 = 1.7671 SF
HEAD, H= HIGH WATER ELEV. = 05.54 INVERT 2.50 H = 05.54 - 03.25 = 2.29 FT.
$Q = 0.6 \times 1.7671 \times (2 \times 32.2 \times 2.29)^{1/2} = 12.87$ CFS > 9.48 CFS OK

MANNINGS EQUATION IN THE FORM FOR CIRCULAR PIPE FLOWING FULL.
$Q = (0.463/n)\, d^{8/3} s^{1/2}$ n = 0.013 Conc. Pipe d = 18' (1.5') s = 0.0100 ft./ft.

$Q = (0.463/0.013)\,(1.5)^{8/3}(0.0100)^{1/2} = 10.5$ cfs > 9.48 cfs

DOWNSTREAM CAPACITY:

THE STORM DRAIN SYSTEM AND DETENTION POND FOR BROADBENT BUSINESS PARK IS DESIGNED TO HANDLE ALL DEVELOPED FLOW FROM THE VARIOUS TRACTS.

SELECTION OF TYPE OF INLET:

CRITERIA: DEPTH OF HEAD OVER GRATE = 6' USE ORIFICE EQUATION.
CHECK CAPACITY OF ONE GRATE ORIFICE 1-9/16" X 4-1/2" = 1.5625 X 4.5 = 7.0313 SQ. IN.
7.0313/144 = 0.0488 SF (SEE STD. DWG. 2220)
ORIFICE EQUATION: $Q = CA(2GH)^{1/2} = 0.6 \times 0.0488 \times (2 \times 32.2 \times 0.5)^{1/2} = 0.1661$ CFS

ONE ALBUQUERQUE GRATE HAS 96 OPENINGS. TOTAL Q = 96 X 0.1661 = 15.94 CFS.
ASSUME 50% OF THE GRATE SURFACE WILL BE CLOGGED. TOTAL Q = 15.94 X 0.5 = 7.97 CFS
7.97 CFS. < 9.48 CFS EITHER USE A DOUBLE 'D' INLET OR A SINGLE 'C' INLET,
SINCE THE THROAT OF THE SINGLE 'C' GIVES THE INLET MUCH GREATER CAPACITY.
THE SINGLE 'C' INLET IS LESS EXPENSIVE THAN A DOUBLE 'D' INLET.
USE A SINGLE 'C' INLET.

EROSION CONTROL NOTES:

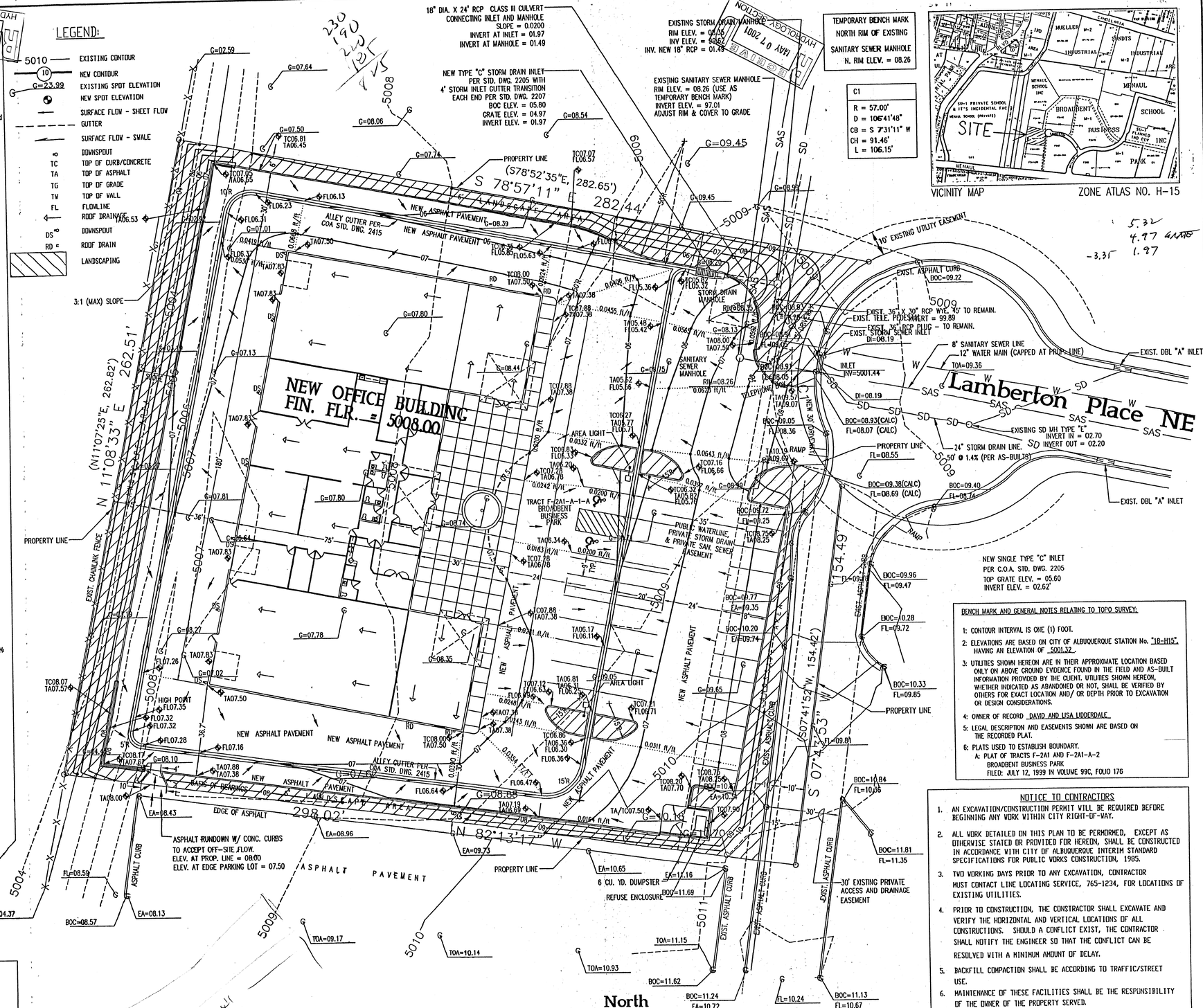
THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE FOLLOWING:

1. NO SEDIMENT-BEARING WATER SHALL BE ALLOWED TO DISCHARGE FROM THE SITE DURING CONSTRUCTION.
2. DURING GRADING OPERATIONS AND UNTIL THE PROJECT HAS BEEN COMPLETED, ALL ADJACENT PROPERTY, RIGHTS-OF-WAY, AND EASEMENTS SHALL BE PROTECTED FROM FLOODING BY RUNOFF FROM THE SITE.
3. SHOULD THE CONTRACTOR FAIL TO PREVENT SEDIMENT-BEARING WATER FROM ENTERING PUBLIC RIGHT-OF-WAY, HE SHALL PROMPLTY REMOVE FROM THE PUBLIC RIGHT-OF-WAY ANY AND ALL SEDIMENT ORIGINATING FROM THE SITE.
4. CONTROL OF SEDIMENT-LADEN WATERS WILL BE ACCOMPLISHED BY USE OF A COMPACTED EARTH BERM OF ADEQUATE HEIGHT. THE BERM SHALL BE LOCATED ALONG THE DOWNSTREAM PERIMETER OF THE PROPERTY.

C:\ALLPROJ\PROJ506\L&LELECT.DWG (OCTOBER 24, 2000)

LEGEND:

- 5010 — EXISTING CONTOUR
- (10) — NEW CONTOUR
- G=23.99 — EXISTING SPOT ELEVATION
- NEW SPOT ELEVATION
- SURFACE FLOW - SHEET FLOW
- GUTTER
- SURFACE FLOW - SWALE
- DS — DOWNSPOUT
- TC — TOP OF CURB/CONCRETE
- TA — TOP OF ASPHALT
- TG — TOP OF GRADE
- TW — TOP OF WALL
- FL — FLOWLINE
- ROOF DRAINAGE TA06.53
- DS — DOWNSPOUT
- RD — ROOF DRAIN
- LANDSCAPING



VICINITY MAP ZONE ATLAS NO. H-15

TEMPORARY BENCH MARK
NORTH RIM OF EXISTING SANITARY SEWER MANHOLE
N. RIM ELEV. = 08.26

C1
R = 57.00'
D = 106°41'48"
CB = S 7°31'11" W
CH = 91.46'
L = 106.15'

BENCH MARK AND GENERAL NOTES RELATING TO TOPO SURVEY:

1: CONTOUR INTERVAL IS ONE (1) FOOT.
2: ELEVATIONS ARE BASED ON CITY OF ALBUQUERQUE STATION No. "18-H15", HAVING AN ELEVATION OF 5001.32.
3: UTILITIES SHOWN HEREON ARE IN THEIR APPROXIMATE LOCATION BASED ONLY ON ABOVE GROUND EVIDENCE FOUND IN THE FIELD AND AS-BUILT INFORMATION PROVIDED BY THE CLIENT. UTILITIES SHOWN HEREON, WHETHER INDICATED AS ABANDONED OR NOT, SHALL BE VERIFIED BY OTHERS FOR EXACT LOCATION AND/ OR DEPTH PRIOR TO EXCAVATION OR DESIGN CONSIDERATIONS.
4: OWNER OF RECORD DAVID AND LISA UDDERDALE
5: LEGAL DESCRIPTION AND EASEMENTS SHOWN ARE BASED ON THE RECORDED PLAT.
6: PLATS USED TO ESTABLISH BOUNDARY.
A: PLAT OF TRACTS F-2A1 AND F-2A1-A-2 BROADBENT BUSINESS PARK FILED: JULY 12, 1999 IN VOLUME 99C, FOLIO 176

NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
2. ALL WORK DETAILED ON THIS PLAN TO BE PERHORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATIONS OF EXISTING UTILITIES.
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5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVAL	NAME	DATE
INSPECTOR	COA SDHI SD-14 # 2044708	5/7/01

North

0 5' 10' 20' 40'

Grading and Drainage Plan

Scale: 1"=20'

Legal Description:

TRACT F-2A1-A-1-A OF THE BROADBENT BUSINESS PARK, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO

RECEIVED MAY 07 2001 HYDROLOGY SECTION

RECEIVED MAY 07 2001 HYDROLOGY SECTION

FRANK D. LOVELADY NEW MEXICO 8512 REGISTERED PROFESSIONAL ENGINEER
October 5, 2000
Revised Oct. 24, 2000

Facility for L&L Electronics Inc.
900 LAMBERTON PLACE NE, ALBUQUERQUE, NEW MEXICO

KEN HOVEY, ARCHITECT
3808 SIGNAL AVE. SE • Albuquerque, NM • 87108
(505) 254-0083 • Fax (505) 254-1809

JOB NO:	2012
DATE:	24 OCTOBER, 2000
REVISIONS	

SHEET NO. 1 of 2

RECEIVED MAY 07 2001 HYDROLOGY SECTION

DRAINAGE CALCULATIONS:

EXISTING CONDITIONS:

The site is located in Broadbent Business Park, at the West end of Lamberton Place. Lamberton place ends in a cul de sac adjacent to the East boundary of the site. The existing street is paved with curb and gutter and storm drain. There is an Type 'C' inlet in the approximate middle of the proposed driveway into the site. The existing storm drain is shown from as-constructed drawings from Project 2697, Lamberton Place.

PROPOSED CONDITIONS:

It is proposed to construct an office building and paved parking. It will be required to modify the existing inlet at the west curb line of the cul de sac. It is proposed to catch the runoff from the site in a single Type 'D' inlet in the parking lot and and connect the Type 'D' inlet to the existing storm drain manhole near the NW corner of the site. All site runoff will be conveyed to the Type 'D' inlet by means of the City of Albuquerque standard 'Alley Curb' as shown on City of Albuquerque Standard Drawing 2415.

DRAINAGE CRITERIA:

The calculations shown on this plan were prepared in accordance with Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque in cooperation with Bernalillo County, New Mexico and the Metropolitan Arroyo Flood Control Authority, January, 1993.

PRECIPITATION ZONE:

The site is between the Rio Grande River and San Mateo Blvd. and is, therefore, in Precipitation Zone 2.

LAND TREATMENT AREAS, EXCESS PRECIPITATION AND UNIT PEAK DISCHARGE:

The peak discharge per acre and excess precipitation are shown for the four land treatments in Zone 2 in the table below, and the values shown are from the City of Albuquerque D.P.M. Also shown are the existing and proposed land treatment areas.

LAND	q(cfs/ac)		E (in)		Existing Site Areas			Developed Site Areas		
TREAT.	100-yr.	10-yr.	100-yr.	10-yr.	%	Sq.Ft.	Acres	%	Sq.Ft.	Acres
A	1.56	0.38	0.53	0.13	100.0	72,266	1.6590	0.0	0	0.0000
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D	4.70	3.14	2.12	1.34	0.0	0	0.0000	82.2	59,394	1.3635
Totals					100.0	72,266	1.6590	100.0	72,266	1.6590

PEAK DISCHARGE:

EXISTING CONDITIONS:

Q100 = 1.6590 * 1.56 = 2.59 cfs

Q10 = 1.6590 * 0.38 = 0.63 cfs

DEVELOPED CONDITIONS:

Q100 = 0.2955 * 2.28 + 1.3635 * 4.70 = 7.08 cfs

Q10 = 0.2955 * 0.95 + 1.3635 * 3.14 = 4.56 cfs

VOLUME, 100-YEAR AND 10-YEAR, 6-HOUR:

EXISTING CONDITIONS:

V100 = (72,266 * 0.53) / 12 = 3,192 cf

V10 = (72,266 * 0.13) / 12 = 783 cf

DEVELOPED CONDITIONS:

V100 = (12,872 * 0.78 + 59,394 * 2.12) /12 = 11,330 cf

V10 = (12,872 * 0.28 + 59,394 * 1.34) /12 = 6,933 cf

SUMMARY OF ON-SITE VOLUMES AND PEAK DISCHARGE RATES:

	V100(CF)	V10(CF)	Q100(CFS)	Q10(CFS)
DEVELOPED	11,330	6,933	7.08	4.56
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INCREASE	8,138	6,150	4.49	3.93

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Q 100 = 0.51 ACRE X 4.7 CFS/ACRE = 2.40 CFS. THIS IS ACCEPTED AND WILL BE ROUTED THROUGH THE SITE.

DRAIN LINE CONNECTING TYPE 'D' INLET AND EXISTING MANHOLE:

DESIGN Q = 7.08 + 2.4 = 9.48 CFS USE ORIFICE EQUEATION, $Q = CA(2GH)^{1/2}$

USE ORIFICE EQUATION: ASSUME DEPTH OF WATER EQUAL TOP OF GRATE DURING 100-YEAR STORM:

C = 0.6 $A = \pi D^2 / 4$ FOR 18" DIA. PVC PIPE, $A = \pi(1.5)^2/4 = 1.7671$ SF

HEAD, H: HIGH WATER ELEV. = 05.54 INVERT 2.50 H = 05.54 - 03.25 = 2.29 FT.

$Q = 0.6 \times 1.7671\,(2 \times 32.2 \times 2.29)^{1/2} = 12.87$ CFS > 9.48 CFS OK

mannings ⇒ 18" dia @ 0.0050 ⇒ Q = 7.5 cfs

18" dia @ 0.0130 ⇒ Q = 13.0

DOWNSTREAM CAPACITY:

THE STORM DRAIN SYSTEM AND DETENTION POND FOR BROADBENT BUSINESS PARK IS DESIGNED TO HANDLE ALL DEVELOPED FLOW FROM THE VARIOUS TRACTS.

C:\ALLPROJ\PROJ606\L&LELECT.DWG (SEPTEMBER 22, 2000)

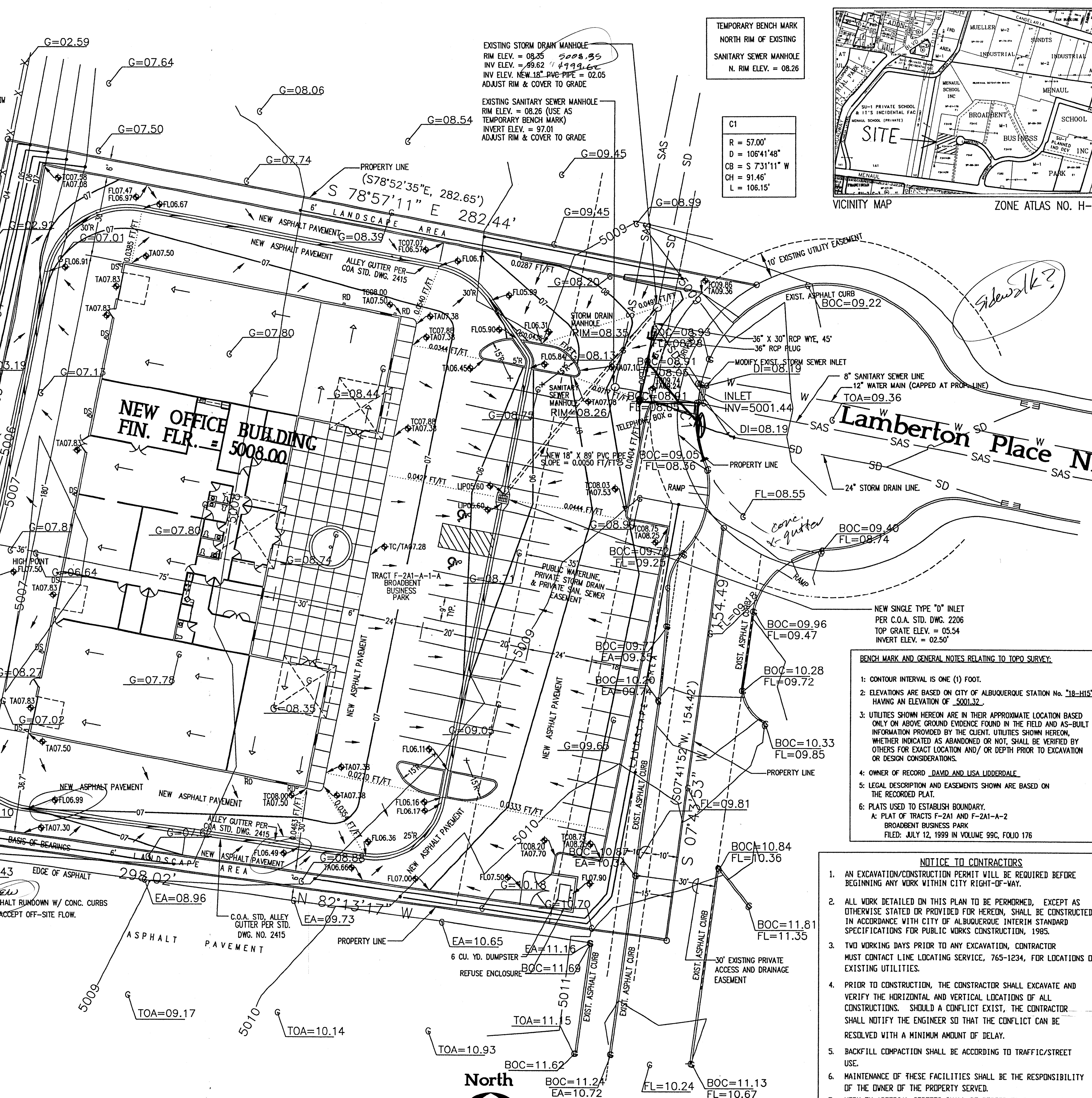
ERDSION CONTROL NOTES:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONPLIANCE WITH THE FOLLOWING:

1. NO SEDIMENT-BEARING WATER SHALL BE ALLOWED TO DISCHARGE FROM THE SITE DURING CONSTRUCTION.
2. DURING GRADING OPERATIONS AND UNTIL THE PROJECT HAS BEEN COMPLETED, ALL ADJACENT PROPERTY, RIGHTS-OF-WAY, AND EASEMENTS SHALL BE PROTECTED FROM FLOODING BY RUNOFF FROM THE SITE.
3. SHOULD THE CONTRACTOR FAIL TO PREVENT SEDIMENT-BEARING WATER FROM ENTERING PUBLIC RIGHT-OF-WAY, HE SHALL PROMPLTY REMOVE FROM THE PUBLIC RIGHT-OF-WAY ANY AND ALL SEDIMENT ORIGINATING FROM THE SITE.
3. CONTROL OF SEDIMENT-LADEN WATERS WILL BE ACCOMPLISHED BY USE OF A COMPACTED EARTH BERM OF ADEQUATE HEIGHT. THE BERM SHALL BE LOCATED ALONG THE DOWNSTREAM PERIMETER OF THE PROPERTY.

LEGEND:

5010	EXISTING CONTOUR
10	NEW CONTOUR
G=23.99	EXISTING SPOT ELEVATION
	NEW SPOT ELEVATION
	SURFACE FLOW - SHEET FLOW
	GUTTER
	SURFACE FLOW - SWALE
	DOWNSPOUT
TC	TOP OF CURB/CONCRETE
TA	TOP OF ASPHALT
TG	TOP OF GRADE
TW	TOP OF WALL
FL	FLOWLINE
	ROOF DRAINAGE
DS	DOWNSPOUT
RD	ROOF DRAIN



BENCH MARK AND GENERAL NOTES RELATING TO TOPO SURVEY:

1: CONTOUR INTERVAL IS ONE (1) FOOT.

2: ELEVATIONS ARE BASED ON CITY OF ALBUQUERQUE STATION No. "18-H15". HAVING AN ELEVATION OF 5001.32.

3: UTILITIES SHOWN HEREON ARE IN THEIR APPROXIMATE LOCATION BASED ONLY ON ABOVE GROUND EVIDENCE FOUND IN THE FIELD AND AS-BUILT INFORMATION PROVIDED BY THE CLIENT. UTILITIES SHOWN HEREON, WHETHER INDICATED AS ABANDONED OR NOT, SHALL BE VERIFIED BY OTHERS FOR EXACT LOCATION AND/ OR DEPTH PRIOR TO EXCAVATION OR DESIGN CONSIDERATIONS.

4: OWNER OF RECORD DAVID AND LISA LIDDERDALE

5: LEGAL DESCRIPTION AND EASEMENTS SHOWN ARE BASED ON THE RECORDED PLAT.

6: PLATS USED TO ESTABLISH BOUNDARY.
A: PLAT OF TRACTS F-2A1 AND F-2A1-A-2
BROADBENT BUSINESS PARK
FILED: JULY 12, 1999 IN VOLUME 99C, FOLIO 176

NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
2. ALL WORK DETAILED ON THIS PLAN TO BE PERMORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATIONS OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONSTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVAL	NAME	DATE
INSPECTOR		

RECEIVED SEP 22 2000 PWD/DESIGN REVIEW

Grading and Drainage Plan

Scale: 1"=20'

0 5' 10' 20' 40'

North

Legal Description:

TRACT F-2A1-A-1-A OF THE BROADBENT BUSINESS PARK, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO

FRANK D. LOVELADY NEW MEXICO 5512 REGISTERED PROFESSIONAL ENGINEER September 22, 2000

Facility for L&L Electronics Inc.

900 LAMBERTON PLACE NE, ALBUQUERQUE, NEW MEXICO

KEN HOVEY, ARCHITECT

(505) 254-0083 * Fax (505) 254-1809 * 3808 SIMMS AVE. SE * Albuquerque, NM * 87108

JOB NO: 2012

DATE: 22 SEPTEMBER, 2000

REVISIONS

SHEET NO. 1