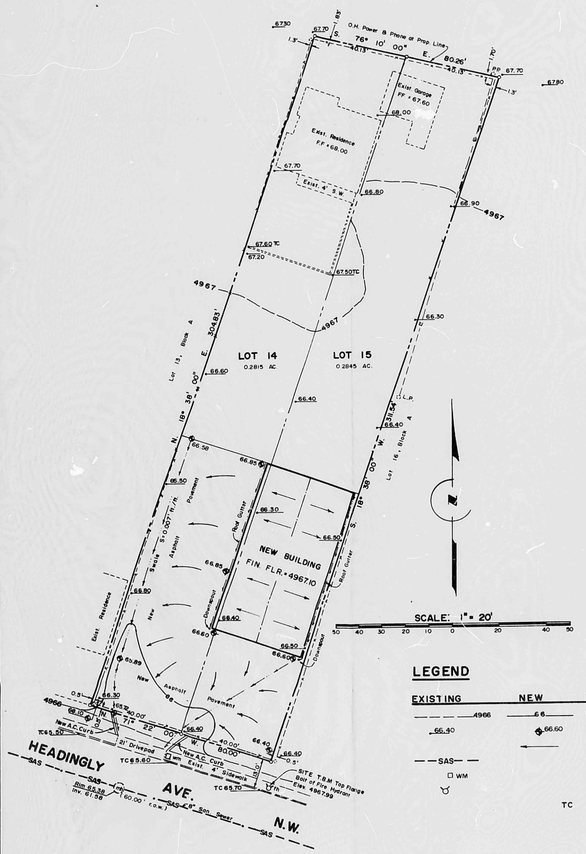
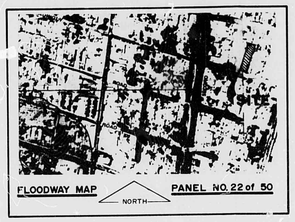
PUBLIC WORKS/HYDROLOGY

G14/D37

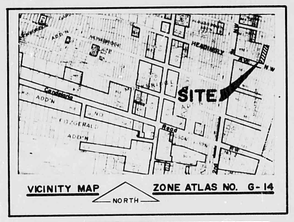


LEGEND

EXISTING	NEW	DESCRIPTION
4966	66	CONTOUR LINE
66.40	66.60	SPOT ELEVATION
		FLOW DIRECTION
SAS		SANITARY SEWER
WM		WATER METER
		FIRE HYDRANT
	TC	TOP OF CURB



FLOODWAY MAP — PANEL NO. 22 of 50 — NORTH



VICINITY MAP — ZONE ATLAS NO. G-14 — NORTH

PRE-DESIGN CONFERENCE FINDINGS:

1. DRAINAGE PLAN PER D.P.M. GUIDELINES.
2. REPLAT, EASEMENTS OR COVENANTS REQUIRED FOR CROSS-LOT-LINE DRAINAGE BEFORE BUILDING PERMIT IS ISSUED.
3. SITE IS ENCROACHED BY AN AO-1' FLOOD ZONE.
4. FINISH FLOOR ELEVATION MUST BE AT LEAST 2' OR MORE ABOVE THE FLOWLINE OR HEADINGLY.
5. FREE DISCHARGE MAY BE APPROPRIATE. ENGINEER MUST ADDRESS:
   A. INFILL SITE.
   B. ADEQUACY OF DOWNSTREAM FACILITIES; CATCH BASINS AT HEADINGLY JUST WEST OF THE PROPOSED SITE.
6. MUST ADDRESS ANY OFF-SITE FLOWS, IF ANY.

DRAINAGE COMMENTS:

1. THIS DRAINAGE PLAN HAS BEEN DEVELOPED IN ACCORDANCE WITH THE GUIDELINES ESTABLISHED IN THE DEVELOPMENT PROCESS MANUAL (DPM).
2. A REPLAT OF LOTS 14 AND 15 INTO A SINGLE LOT IS CURRENTLY BEING PROCESSED.
3. THE SITE IS ADJACENT TO AN AO-1 FLOOD ZONE.
4. DUE TO THE AO-1 FLOOD ZONE, THE FINISHED FLOOR OF THE BUILDING MUST BE AT LEAST 2.0 FEET ABOVE THE FLOWLINE OR HEADINGLY. THE EXISTING FLOWLINE ON HEADINGLY IS 65.20. THEREFORE, THE FINISHED FLOOR ELEVATION IS 67.10. THEREFORE, THE FINISHED FLOOR ELEVATION IS ADEQUATE.
5. FREE DISCHARGE IS WARRANTED FOR THE FOLLOWING REASONS:
   A. THE SITE IS AN INFILL SITE.
   B. THERE IS A STORM SEWER IN HEADINGLY WITH A CATCH BASIN ONLY A FEW FEET WEST OF THE SITE.
6. THERE ARE NO SIGNIFICANT OFF-SITE FLOWS ENTERING THE SITE FROM ADJACENT PROPERTY. ANY MINOR OFF-SITE FLOWS ARE ACCEPTED. THE PROPOSED DEVELOPMENT DOES NOT BLOCK ANY EXISTING OFF-SITE FLOWS.

EROSION CONTROL PLAN:

SINCE THE SITE WILL BE DEVELOPED WELL IN ADVANCE OF THE SEASON OF TYPICAL HIGH PEAK RUNOFF, TEMPORARY PONDING SHOULD BE PROVIDED DURING BUILDING CONSTRUCTION. THE VOLUME OF SAID PONDING SHOULD BE EQUAL TO THE 10-YEAR, UNDEVELOPED VOLUME AS COMPUTED BY THE S.C.S. METHOD, OR 472 CF.

GENERAL NOTES:

1. SEE ARCHITECTURAL SITE PLAN FOR PARKING LAYOUT, ETC.
2. NO SEARCH HAS BEEN MADE FOR EASEMENTS OF RECORD OTHER THAN THOSE SHOWN ON THE PLAT OF RECORD.

DRAINAGE CALCULATIONS

I. **REFERENCES:**

A. CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL (DPM) VOLUME 2, DESIGN CRITERIA, CHAPTER 22.

B. FLOODWAY MAP, PANEL 22 OF 50, (FEMA), OCTOBER 16, 1983.

C. SOIL SURVEY OF BERNALILLO COUNTY, NEW MEXICO, U.S. SOIL CONSERVATION SERVICE, JUNE, 1977.

II. **ON-SITE RUNOFF CHARACTERISTICS:**

A. UNDEVELOPED RUNOFF COEFFICIENT:

TYPE OF SURFACE	AREA	"C"VALUE	AREA("C")
STREETS, DRIVES, WALKS	104	0.95	99
ROOFS	1719	0.90	1547
LAWNS & LANDSCAPING	1216	0.25	304
UNDEVELOPED	21616	0.40	8646
TOTAL AREA	24655SF	= 0.5660 AC.	10596

WEIGHTED "C" VALUE = 10596/24655 = 0.43

PERCENT IMPERVIOUS = 8%

B. DEVELOPED RUNOFF COEFFICIENT:

TYPE OF SURFACE	AREA	"C"VALUE	AREA("C")
STREETS, DRIVES, WALKS	6864	0.95	6587
ROOFS	4224	0.90	3803
LAWNS & LANDSCAPING	1216	0.25	304
UNDEVELOPED	12270	0.40	4908
TOTAL AREA	24655		15612

WEIGHTED "C" VALUE = 15612/24655 = 0.63

PERCENT IMPERVIOUS = 45%

C. RAINFALL, 100-YR.,6-HR.:(REF. A., PLATE 22.2 D-1) $P_{6,100}$ = 2.2 INCHES

D. TIME OF CONCENTRATION:10 MINUTES

E. RAINFALL INTENSITY,I (REF. A., PLATE 22.2 D-2)

$I=P_{6,100}(60.MIN)^{(-0.78)}(t)^{(0.78)}=2.2(6.0\times10)^{(-0.78)}=4.45IN/HR$

F. SOIL TYPE (REF. U.C., SHEET NO. 203 SOIL, IS Ga, GLENDALE CLAY LOAM, HYDROLOGIC SOIL GROUP "B".

G. RUNOFF CURVE NUMBER (CN):(REF.1.A., PLATE 22.2 C-2)

UNDEVELOPED LAND USE: PASTURE OR RANGE, LAND, FAIR CONDITION.

UNDEVELOPED CN = 70

DEVELOPED LAND USE: BUSINESS AND COMMERCIAL, 45% IMP.

DEVELOPED CN = (98x0.08+1x0.15)70/24655 = 81 (WEIGHTED)

H. DIRECT RUNOFF, Q_d, INCHES (REF. 1.A., FL. 22.2 C-4)

UNDEVELOPED Q_d = 0.35 IN. DEVELOPED Q_d = 0.72 IN.

III. **ON-SITE PEAK DISCHARGE BY RATIONAL EQUATION:**

A. EXISTING CONDITIONS:

Q_{100} = 0.63 X 4.45 X 0.57 = 1.14 CFS

Q_{10} = 0.657 X 1.14 = 0.75 CFS

B. DEVELOPED CONDITIONS:

Q_{100} = 0.63 X 4.45 X 0.57 = 1.67 CFS

Q_{10} = 0.657 X 1.67 = 1.10 CFS

IV. **ON-SITE VOLUME BY S.C.S. METHOD:**

A. EXISTING CONDITIONS:

V_{100} = AREA (Q_d/12) = 24655 (0.35/12) = 719 CF

V_{10} = 0.657 X 719 = 472 CF

B. DEVELOPED CONDITIONS:

V_{100} = AREA (Q_d/12) = 24655(0.72/12) =1479 CF

V_{10} = 0.657 X 1479 = 972 CF

BENCH MARK:

ELEVATIONS ARE BASED ON THE A.C.S. BENCH MARK "9-G14" WHICH IS 4969.12 FEET ABOVE SEA LEVEL. THE STATION IS LOCATED AT THE INTERSECTION OF 4TH STREET AND HEADINGLY AVE., W., IN THE NE QUADRANT OF THE INTERSECTION. STATION IS A 3/4 INCH PIPE AT THE BAR CURB RETURN.

LEGAL DESCRIPTION:

LOTS NUMBERED FOURTEEN (14) AND FIFTEEN (15) IN BLOCK LETTERED "A" OF THE OF THE MONTEREIGH ADDITION, AS THE SAME IS SHOWN AND DESIGNATED ON THE PLAT THEREOF, FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO, ON APRIL 13, 1937, IN VOL. C2, FOLIO 135.

RECEIVED
FEB 12 1987
ENGINEERING COUNTY SECTION

REGISTERED PROFESSIONAL ENGINEER
DONALD LOVE
STATE OF NEW MEXICO
7127
FEBRUARY 9, 1987

GRADING AND DRAINAGE PLAN
MOONLIGHT ELECTRIC
NEW OFFICE / WAREHOUSE
139 HEADINGLY AVE. N.W.
ALBUQUERQUE, NEW MEXICO

R# 26 DATE 3-26-02 DP
CITY OF ALBUQUERQUE
This microimage is certified to be a complete and accurate copy of the original as it appears in the files of the Public Works Department and was created in the normal course of business.
The photographic process used meets the Basic Microfilm Standards of the National Micrographics Association (MS115-1977)
DIRECTOR 11-15-62
PLAN SHOT TWICE ONCE ON LIGHT ONCE ON DARK
CITY OF ALBUQUERQUE
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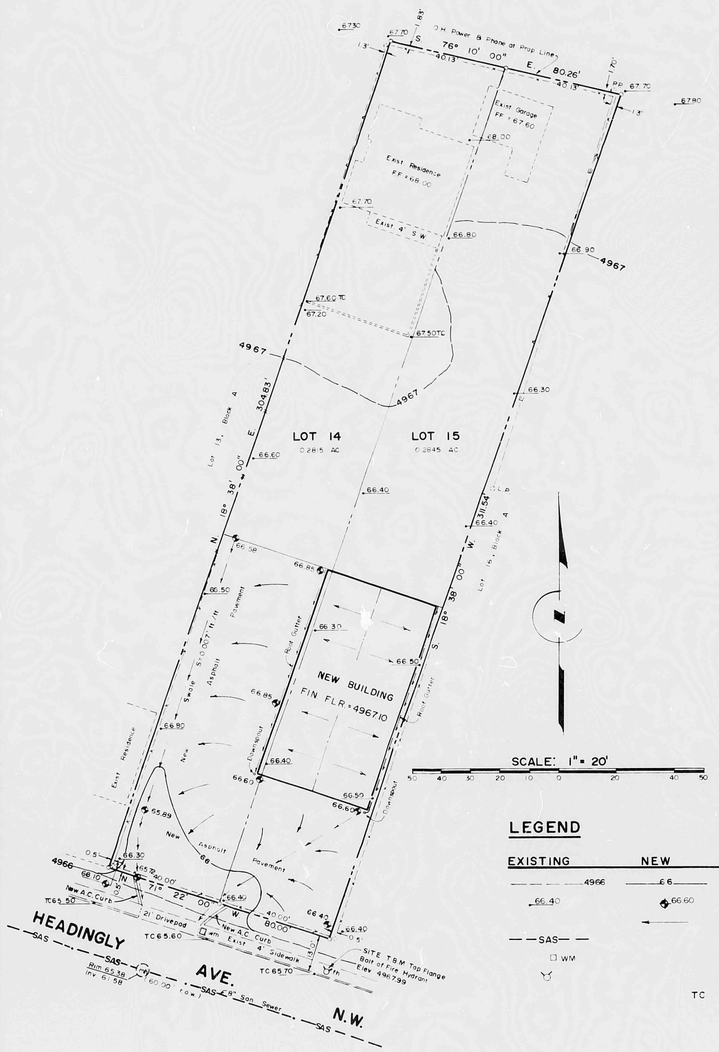
NOTARY PUBLIC
OFFICIAL SEAL
Roberta Duran
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires 11/01/02
PLANS/PLATS ON FILE
FILE DESC: G14/D37
PLANS/PLATS 1

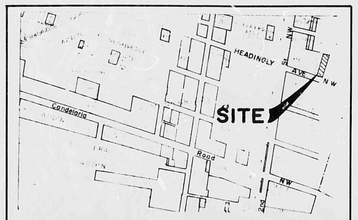
E 30 D 24 C 20 B 16 A 12
CITY OF ALBUQUERQUE C D F



LEGEND

EXISTING	NEW	DESCRIPTION
4966	66	CONTOUR LINE
66.40	66.60	SPOT ELEVATION
		FLOW DIRECTION
SAS		SANITARY SEWER
WM		WATER METER
		FIRE HYDRANT
	TC	TOP OF CURB

FLOODWAY MAP — PANEL NO. 22 of 50



VICINITY MAP — ZONE ATLAS NO. G-14

PRE-DESIGN CONFERENCE FINDINGS:

1. DRAINAGE PLAN PER D.P.M. GUIDELINES.
2. REPLAT, EASEMENTS OR COVENANTS REQUIRED FOR CROSS-LOT-LINE DRAINAGE BEFORE BUILDING PERMIT IS ISSUED.
3. SITE IS ENCROACHED BY AN "AO-1" FLOOD ZONE.
4. FINISH FLOOR ELEVATION MUST BE AT LEAST 2' OR MORE ABOVE THE FLOWLINE ON HEADINGLY.
5. FREE DISCHARGE MAY BE APPROPRIATE. ENGINEER MUST ADDRESS:
   A. INFILL SITE.
   B. ADEQUACY OF DOWNSTREAM FACILITIES, CATCH BASINS AT HEADINGLY JUST WEST OF THE PROPOSED SITE.
6. MUST ADDRESS ANY OFF-SITE FLOWS, IF ANY.

DRAINAGE COMMENTS:

1. THIS DRAINAGE PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH THE GUIDELINES ESTABLISHED IN THE DEVELOPMENT PROCESS MANUAL (DPM).
2. A REPLAT OF LOTS 14 AND 15 INTO A SINGLE LOT IS CURRENTLY BEING PROCESSED.
3. THE SITE IS ADJACENT TO AN AO-1 FLOOD ZONE.
4. DUE TO THE AO-1 FLOOD ZONE, THE FINISHED FLOOR OF THE BUILDING MUST BE AT LEAST 2'... FEET ABOVE THE FLOWLINE ON HEADINGLY. THE EXISTING FLOWLINE ON HEADINGLY IS ... FEET. FINISHED FLOOR ELEVATION IS 4967.10. THEREFORE, THE FINISHED FLOOR ELEVATION IS ADEQUATE.
5. FREE DISCHARGE IS ACCEPTABLE FOR THE FOLLOWING REASONS:
   A. THE SITE IS AN INFILL SITE.
   B. THERE IS A STORM ... IN HEADINGLY WITH A CATCH BASIN ONLY A FEW FEET WEST OF THE SITE.
6. THERE ARE NO SIGNIFICANT OFF-SITE FLOWS ENTERING THE SITE FROM ADJACENT PROPERTY, AND MINOR OFF-SITE FLOWS ARE ACCEPTABLE. THE PROPOSED DEVELOPMENT DOES NOT PRODUCE ANY EXISTING OFF-SITE FLOWS.

EROSION CONTROL PLAN:

SINCE THE CITY WILL BE DEVELOPING THIS IN ADVANCE OF THE SEASON OF TYPICAL HIGH FLOW RUNOFF, TEMPORARY FUNDING WOULD BE PROVIDED DURING BUILDING CONSTRUCTION. THE VOLUME OF THIS FUNDING SHOULD BE EQUAL TO THE 10-YEAR, UNDEVELOPED VOLUME AS COMPUTED BY THE S.C.S. METHOD, OR 472 CF.

GENERAL NOTES:

1. SEE ARCHITECTURAL SITE PLAN FOR PARKING LAYOUT, ETC.
2. NO SEARCH HAS BEEN MADE FOR EASEMENTS OF RECORD OTHER THAN THOSE SHOWN ON THE PLAT OR RECORD.

DRAINAGE CALCULATIONS

I. **REFERENCES:**

A. CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL (DPM) VOLUME 2, DESIGN CRITERIA, CHAPTER 22.

B. FLOODWAY MAP, PANEL 22 OF 50, (FEMA), OCTOBER 16, 1983.

C. SOIL SURVEY OF BERNALILLO COUNTY, NEW MEXICO, U.S. SOIL CONSERVATION SERVICE, DMC, 1977.

II. **ON-SITE RUNOFF CHARACTERISTICS:**

A. UNDEVELOPED RUNOFF COEFFICIENT:

TYPE OF SURFACE	AREA	"C" VALUE	AREA("C")
STREETS, DRIVES, WALKS	104	0.95	99
ROOFS	1719	0.95	1633
LAWNS & LANDSCAPING	1516	0.25	379
UNDEVELOPED	21416	0.20	4283
TOTAL AREA	24655SF = 0.5660 AC.		10596

WEIGHTED "C" VALUE = 10596/24655 = 0.43

PERCENT IMPERVIOUS = 45

B. DEVELOPED RUNOFF COEFFICIENT:

TYPE OF SURFACE	AREA	"C" VALUE	AREA("C")
STREETS, DRIVES, WALKS	6944	0.95	6597
ROOFS	2227	0.95	2115
LAWNS & LANDSCAPING	3516	0.25	879
UNDEVELOPED	12270	0.20	2454
TOTAL AREA	24655		12045

WEIGHTED "C" VALUE = 12045/24655 = 0.49

PERCENT IMPERVIOUS = 45%

C. RAINFALL, 100-YR,6-HR:(REF. A., PLATE 22.2 D-1) P_6 = 2.2 INCHES

D. TIME OF CONCENTRATION:10 MINUTES

E. RAINFALL INTENSITY:(REF. A., PLATE 22.2 D-2)

$I_{10}=K_{10}\cdot P_6 = 1.0^{-0.51}(22.2)\cdot 4.2(10)^{-0.51} = 4.6(5)$ IN/HR

F. SOIL TYPE (REF. I.,C., SHEET NO. 20) SOIL IS Ga, GLENDALE CLAY LOAM, HYDROLOGIC SOIL GROUP "B".

G. RUNOFF CURVE NUMBER (CN):(REF.I.A., PLATE 22.2 D-5)

UNDEVELOPED LAND USE: PASTURE, OR RANGE LAND, FAIR CONDITION.

UNDEVELOPED CN = 70

DEVELOPED LAND USE: BUSINESS AND COMMERCIAL, 45% IMP.

DEVELOPED CN = (98%x45%+(1-45%)x70) 24655 = 81 (WEIGHTED)

H. DIRECT RUNOFF, Q_D, INCHES (REF. I.A., PL. 22.2 D-6)

UNDEVELOPED Q_D = 0.35 IN. DEVELOPED Q_D = 0.72 IN.

III. **ON-SITE PEAK DISCHARGE BY RATIONAL EQUATION:**

A. EXISTING CONDITIONS:

Q_{100} = 5.23 X 4.65 X 0.57 = 12.4 CFS

Q_{10} = 0.657 X 12.4 = 8.15 CFS

B. DEVELOPED CONDITIONS:

Q_{100} = 5.23 X 4.65 X 0.97 = 21.07 CFS

Q_{10} = 0.657 X 21.07 = 13.80 CFS

IV. **ON-SITE VOLUME BY S.C.S. METHOD:**

A. EXISTING CONDITIONS:

V_{100} = AREA Q_D/12 = 24655 (0.35/12) = 719 CF

V_{10} = 0.657 X 719 = 472 CF

B. DEVELOPED CONDITIONS:

V_{100} = AREA Q_D/12 = 24655(0.72/12) =1479 CF

V_{10} = 0.657 X 1479 = 972 CF

BENCH MARK:

ELEVATIONS ARE BASED ON THE A.C.S. BENCH MARK "9-G14" WHICH IS 4969.92 FEET ABOVE SEA LEVEL. THE STATION IS LOCATED AT THE INTERSECTION OF 4TH STREET AND HEADINGLY AVE., N.W. IN THE SW QUADRANT OF THE INTERSECTION. STATION IS A 3/4" INCH PIPE AT THE NW CURB RETURN.

LEGAL DESCRIPTION:

LOTS NUMBERED FOURTEEN (14) AND FIFTEEN (15) IN BLOCK LETTERED "A" OF THE OF THE "NORTHRIDGE ADDITION, AS THE SAME IS SHOWN AND DESIGNATED ON THE PLAT THEREOF, FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO, ON APRIL 13, 1937, IN VOL. 22, FOLIO 155.

Frank D. Lovelady
NEW MEXICO

FEBRUARY 9, 1987

GRADING AND DRAINAGE PLAN
MOONLIGHT ELECTRIC
NEW OFFICE / WAREHOUSE
139 HEADINGLY AVE. N.W.
ALBUQUERQUE, NEW MEXICO

PLAN SHOT TWICE
ONCE ON LIGHT
ONCE ON DARK

CITY OF ALBUQUERQUE
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CITY OF ALBUQUERQUE

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DIRECTOR 11/5/02

NOTARY PUBLIC

OFFICIAL SEAL
R. Rivera Duran
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires
07/07/02

D24 C20 B16 A12

CITY OF ALBUQUERQUE C D