HYDROLOGY M18/D9 3 PLANS

M18/D9

3 Plans

Address 5814 Gibson SE Engr/Arch Rick Williams

Plans Approved _____ Cond. 2/16/84

Comments: M18-D9

Conditional upon owner filing approved hold harmless w/ County Clerk and solving parking problem on property to west (Church's Fried Chicken)

Inspection Requested 5/29/89 Contractor _____

Appr. _____ Disappr. _____ ~~30~~ 55 Day Temp. 6-1-89

Comments: See letter in File. Engineer to Contact.

Reinspection and/or comments:

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

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

November 2, 1984

Mr. Jean J. "Jake" Bordenave, PE
5700 Harper Boulevard NE, Suite 280
Albuquerque, NM 87109

REF: LOT K-2, BLOCK 1 SIESTA HILLS LUBE & GO (M18-D9) CERTIFICATION

Dear Mr. Bordenave:

Based on the information provided on your September 11, 1984 submittal, certification for the above referenced drainage plan is acceptable.

Please be advised that a certification statement as per the DPM will need to be included in future certification submittals.

If you have any questions or comments, please feel free to call me at 766-7644.

Sincerely yours,

Bernie J. Montoya

Bernie J. Montoya
Engineering Assistant, CE

BJM:mrk

INFORMATION SHEET

PROJECT TITLE LUBE & GO TYPE OF SUBMITTAL RECORD DRAWING

ZONE ATLAS PAGE NO. M-18 D-9 update CITY ADDRESS 5814 Gibson Blvd.

LEGAL DESCRIPTION Lot K-2, Block 1, Siesta Hills

ENGINEERING FIRM _____ CONTACT _____

ADDRESS _____ PHONE _____

OWNER Bob Bowersock CONTACT Bob Bowersock

ADDRESS _____ PHONE _____

ARCHITECT J. Burwinkle CONTACT J. Burwinkle

ADDRESS 3209 Silver Ave. SE PHONE 844-1312

SURVEYOR DMJM/Adam, Hamlyn, Anderson CONTACT Jake Bordenave

ADDRESS 5700 Harper Blvd. NE,Suite 280 PHONE 822-7955

CONTRACTOR Sunbelt CONTACT Bill Wieman

ADDRESS 3705 Hawkins NE" PHONE 345-8829

PRE-DESIGN MEETING:

X YES
___ NO
___ COPY OF CONFERENCE RECAP SHEET PROVIDED

PLEASE CHECK TYPE OF APPROVAL EXPECTED WITH THIS SUBMITTAL:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ SITE DEVELOPMENT PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ BUILDING PERMIT APPROVAL
X CERTIFICATE OF OCCUPANCY APPROVAL
___ ROUGH GRADING PERMIT APPROVAL
___ GRADING/PAVING PERMIT APPROVAL
___ OTHER _____ (SPECIFY)

SEP 11 1984
HYDROLOGY SECTION

DATE SUBMITTED: 9/10/84

BY: J. J. Burkhart

Attn: Steve Chavez

INFORMATION SHEET

PROJECT TITLE Lube - N - Go TYPE OF SUBMITTAL Record Drawing

ZONE ATLAS PAGE NO. M-18 CITY ADDRESS 5814 Gibson SE

LEGAL DESCRIPTION Lot K-2 Siesta Hills Subd #2

ENGINEERING FIRM _____ CONTACT _____

ADDRESS _____ PHONE _____

OWNER _____ CONTACT _____

ADDRESS _____ PHONE _____

ARCHITECT _____ CONTACT _____

ADDRESS _____ PHONE _____

SURVEYOR _____ CONTACT _____

ADDRESS _____ PHONE _____

CONTRACTOR _____ CONTACT _____

ADDRESS _____ PHONE _____

PRE-DESIGN MEETING:

___ YES
___ NO
___ COPY OF CONFERENCE RECAP SHEET PROVIDED

PLEASE CHECK TYPE OF APPROVAL EXPECTED WITH THIS SUBMITTAL:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ SITE DEVELOPMENT PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ BUILDING PERMIT APPROVAL
X CERTIFICATE OF OCCUPANCY APPROVAL
___ ROUGH GRADING PERMIT APPROVAL
___ GRADING/PAVING PERMIT APPROVAL
___ OTHER _____ (SPECIFY)

RECEIVED
JUN 18 1984
HYDROLOGY SECTION

DATE SUBMITTED: 6/18/84

BY: Jean L Barbrave

Called Jake on 6/18/84 and informed him that

June 14, 1984

In Reference to: Lot K-2, Siesta Hills Subdivision #2.

To whom it may concern:

I, acknowledge the fact that the site will be receiving public water through the 4" drainpipe at the Northwest corner of the property and will not hold the City of Albuquerque responsible for any damage from public water received through this 4" pipe.

Furthermore, it is hereby acknowledged that water will pond on the asphalt on the above referenced property, and that maintenance is the responsibility of the owner. (B)

Sincerely,

Robert D. Bowersock (Owner)
Lube 'n Go
5814 Gibson S.E.

RECEIVED
JUN 18 1984
HYDROLOGY SECTION

June 1, 1984

Sun Belt Business Centers, Inc.
3715 A. Hawkins, N.E.
Albuquerque, New Mexico

To Whom It May Concern:

This letter is to verify that the site at 5814 Gibson, S.E. will be certified by a New Mexico Licensed Professional Engineer to comply with all on and off site water flows. This will be done at the earliest possible date.

Sincerely,

William P. Wieman
Contractor

305-FEL 5

June 1, 1984

Sun Belt Business Centers, Inc.
3715 A. Hawkins, N.E.
Albuquerque, New Mexico

To Whom It May Concern:

This letter is to verify that the site at 5814 Gibson, S.E. will be certified by a New Mexico Licensed Professional Engineer to comply with all on and off site water flows. This will be done at the earliest possible date.

Sincerely,

William P. Wiaman
Contractor

COPY

THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT

CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE February 23, 1984 REF. NO.

TO: Jim Fitzgerald, Assistant City Attorney

FROM: Denise Wilson, Office [illegible]

SUBJECT: COVENANT NOT TO SUE - ROBERT D. BOWERSOCK, INC.

The attached is submitted for your review. Due to conditions on site, there will be public [illegible] entering the property through a curb cut. The owners have planned for this and elevated the building above the anticipated high water level.

If you have any questions regarding this covenant, please call John Armstrong, Civil Engineer/Hydrology, at 766-7644.

/dw

cc: John Armstrong, Civil Engineer/Hydrology
File

THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT

COVENANT NOT TO SUE

ROBERT D. BOWERSOCK, INC., a New Mexico corporation, the owner of the following described property, to wit:

> Tract K-2 in SIESTA HILLS SUBDIVISION No. 2, Albuquerque, New Mexico as the same is shown and designated on the Replat of a Portion of Tract K and all of Tract One (1) of said subdivision, filed in the office of the County Clerk of Bernalillo County, New Mexico on February 15, 1977, in Map Book D-[illegible], folio 109.

for itself and its assigns in consideration of the City of Albuquerque permitting construction of a structure on the above-described property hereby agrees and covenants with the City of Albuquerque to never make any claim or institute any suit or action at law or in equity against the City of Albuquerque by reason of rain water flowing from city streets in and upon the above-described property.

This covenant shall run with the above-described property and be binding upon all future owners, lessees, and occupiers of said property.

Dated at Albuquerque, New Mexico this 14th day of February, 1984.

ROBERT D. BOWERSOCK, INC.

BY: [signature]
President

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

The foregoing instrument was acknowledged before me this 14th day of February, 1984, by Robert D. Bowersock, President of Robert D. Bowersock, Inc., a New Mexico corporation, on behalf of said corporation.

[signature]
Notary Public

My Commission Expires:

[illegible]

RECEIVED
FEB 16 1984
HYDROLOGY SECTION

COVENANT NOT TO SUE

ROBERT D. BOWERSOCK, INC., a New Mexico corporation, the owner of the following described property, to wit:

> Tract K-2 in SIESTA HILLS SUBDIVISION No. 2, Albuquerque, New Mexico as the same is shown and designated on the Replat of a Portion of Tract K and all of Tract One (1) of said subdivision, filed in the office of the County Clerk of Bernalillo County, New Mexico on February 15, 1977, in Map Book B-12, folio 109.

for itself and its assigns in consideration of the City of Albuquerque permitting construction of a structure on the above-described property hereby agrees and covenants with the City of Albuquerque to never make any claim or institute any suit or action at law or in equity against the City of Albuquerque by reason of rain water flowing from city streets in and upon the above-described property.

This covenant shall run with the above-described property and be binding upon all future owners, lessees, and occupiers of said property.

Dated at Albuquerque, New Mexico this 14th day of February, 1984.

ROBERT D. BOWERSOCK, INC.

BY: President

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

The foregoing instrument was acknowledged before me this 14th day of February, 1984, by Robert D. Bowersock, President of Robert D. Bowersock, Inc., a New Mexico corporation, on behalf of said corporation.

Notary Public

My Commission Expires:

8-14-87

Robert D. Bowersock, Inc.

1008 Madison N.E.
Albuquerque, New Mexico 87110
(505) 247-0444

February 14, 1984

City of Albuquerque
Hydrology Dept.

Attn: John Armstorng

Dear Mr. Armstrong:

I will endeaver to work with the owner of the Church's Fried Chicken store located at the southeast corner of San Pedro and Gibson S.E. immediately west of our site being utilized for Lube 'n Go of Albuquerque.

I will work with Church's Fried Chicken to ensure that no puddles of water will be created due to our construction of a building and appertuant improvements on Lot K-2; Siesta Hills Subdivision.

Sincerely yours,

Robert D. Bowersock
President

RDB/rj

BOHANNAN-HUSTON INC.

4125 CARLISLE BLVD., N. E. ALBUQUERQUE, NEW MEXICO 87107 505 881-2000
8713 VISCOUNT BLVD., EL PASO, TEXAS 79925 915 778-4491
330 GARFIELD, SANTA FE, NEW MEXICO 87501 505 988-7671

February 6, 1984

Mr. John Armstrong
Civil Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Drainage Evaluation at Sirloin Stockade and Lot K-2, building site for a proposed Lube-n-Go

Dear Mr. Armstrong:

In accordance with our January 30, 1984 meeting held at the Lube-n-Go construction site, I have analyzed the drainage that flows onto Tract K-2 from Tract J (Sirloin Stockade), north of Tract L-1-D. It should be noted here that if the owners of Tract L-1-D would open the existing drainage easement along the east and north as required, then the flood potential to the Sirloin Stockade would be greatly reduced, regardless of the construction on Tract K-2.

I estimated the flow capacity at the opening between the Sirloin Stockade and Lube-n-Go, south of the Sirloin Stockade building and north of the Tract L-1-D wooden fence. I used the weir equation because of the adverse grade to the east and this section will control flows out of the Sirloin Stockade parking area. The opening will carry approximately 21 cfs at a maximum depth of 0.70 feet at elevation 5309.41. (See attachment 1). Elevation 5309.41 is the elevation of the doc ill to the Sirloin Stockade so any flows greater than 21 cfs could enter the building if not protected, regardless of downstream conditions.

The 21 cfs would then flow northwest across Tract K-2. Normal depth of flow required to convey the discharge on both sides of the Lube-n-Go would be 0.4' (See attachment 2 & 3).

The flow would then exit the northwest corner of Tract K-2 onto Gibson at the 30' weir section that is shown on the Lube-n-Go grading plan. The weir is shown to be at elevation 5308.53 on the west end and 5308.79 on the east but discussions with Richard Williams indicate this will be changed to a flat section at elevation 8308.18. Twenty-one cfs would pass the weir section at an elevation of 8308.56 or a depth of about 0.4 feet (See attachment 4).

PRINCIPALS
JERRY R. BOHANNAN, P.E. & L.S.
LARRY W. HUSTON
MICHIAL M. EMERY, P.E.

Assuming the grading plan is carefully followed and the weir section at the northwest corner is at elevation 8308.18, I feel the proposed development on Tract K-2 will not adversely impact the flow depths or drainage of the Sirloin Stockade.

Sincerely,

Patrick L. Stiehr

Patrick L. Stiehr, P.E.
Project Manager

cc: Monroe Enterprises, Inc.
Mr. Bob Bowersock

PS/bl
Job No. 49201

ATTACHMT #1

WEIR SEC.AT SIRLOIN STCKADE

WEIR COEFFICENT=3.0000
PROGRAM DIVIDED X-SECTION INTO VERTIAL SLICES 1. FEET APART

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	9.41	3	11.00	8.89	5	16.50	9.41
2	1.00	8.71	4	16.20	8.88			

WSEL FT.	DEPTH INC FT.	FLOW AREA SQ.FT.	FLOW RATE (CFS)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS
8.73	0.02	0.01	0.00	0.31	1.14
8.75	0.04	0.05	0.02	0.47	2.28
8.77	0.06	0.10	0.06	0.58	3.42
8.79	0.08	0.18	0.12	0.67	4.56
8.81	0.10	0.28	0.21	0.75	5.70
8.83	0.12	0.41	0.34	0.83	6.84
8.85	0.14	0.56	0.50	0.89	7.98
8.87	0.16	0.73	0.70	0.96	9.12
8.89	0.18	0.95	0.94	0.99	15.46
8.91	0.20	1.26	1.28	1.01	15.50
8.93	0.22	1.57	1.68	1.07	15.54
8.95	0.24	1.88	2.12	1.13	15.58
8.97	0.26	2.19	2.62	1.19	15.62
8.99	0.28	2.51	3.15	1.26	15.66
9.01	0.30	2.82	3.72	1.32	15.70
9.03	0.32	3.13	4.33	1.38	15.74
9.05	0.34	3.45	4.97	1.44	15.78
9.07	0.36	3.76	5.64	1.50	15.82
9.09	0.38	4.08	6.34	1.55	15.86
9.11	0.40	4.40	7.07	1.61	15.90
9.13	0.42	4.72	7.82	1.66	15.94
9.15	0.44	5.04	8.61	1.71	15.98
9.17	0.46	5.36	9.42	1.76	16.02
9.19	0.48	5.68	10.26	1.81	16.06
9.21	0.50	6.00	11.12	1.85	16.10
9.23	0.52	6.32	12.01	1.90	16.14
9.25	0.54	6.65	12.92	1.94	16.18
9.28	0.56	6.97	13.85	1.99	16.22
9.27	0.58	7.29	14.81	2.03	16.26
9.31	0.60	7.62	15.79	2.07	16.30
9.33	0.62	7.95	16.79	2.11	16.34
9.35	0.64	8.27	17.81	2.15	16.38
9.37	0.66	8.60	18.86	2.19	16.42
9.39	0.68	8.93	19.92	2.23	16.46
9.41	0.70	9.26	21.01	2.27	16.50

ATTACHMT #2

FLOW SECTION AT WEST SIDE OF LUBE-N-GO

MANNINGS N=.0150 SLOPE =.0030

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	8.50	3	15.00	8.00			
2	0.50	8.00	4	16.00	8.50			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS
8.02	0.02	0.29	0.12	14.57	0.40	14.56
8.04	0.04	0.58	0.37	14.65	0.63	[illegible].62
8.06	0.06	0.88	0.72	14.72	0.83	[illegible].68
8.08	0.08	1.17	1.17	14.79	1.00	[illegible]
8.10	0.10	1.47	1.70	14.87	1.16	[illegible]
8.12	0.12	1.76	2.30	14.94	1.30	[illegible].88
8.14	0.14	2.06	2.97	15.01	1.44	14.92
8.16	0.16	2.36	3.71	15.08	1.57	14.98
8.18	0.18	2.66	4.52	15.16	1.70	15.04
8.20	0.20	2.96	5.39	15.23	1.82	15.10
8.22	0.22	3.26	6.32	15.30	1.94	15.16
8.24	0.24	3.57	7.31	15.38	2.05	15.22
8.26	0.26	3.87	8.35	15.45	2.16	15.28
8.28	0.28	4.18	9.45	15.52	2.26	15.34
8.30	0.30	4.49	10.60	15.60	2.36	15.40
8.32	0.32	4.79	11.81	15.67	2.46	15.46
8.34	0.34	5.10	13.07	15.74	2.56	15.52
8.36	0.36	5.41	14.38	15.81	2.66	15.58
8.38	0.38	5.73	15.74	15.89	2.75	15.64
8.40	0.40	6.04	17.15	15.96	2.84	15.70
8.42	0.42	6.35	18.60	16.03	2.93	15.76
8.44	0.44	6.67	20.11	16.11	3.01	15.82
8.46	0.46	6.99	21.66	16.18	3.10	15.88
8.48	0.48	7.31	23.26	16.25	3.18	15.94
8.50	0.50	7.63	24.91	16.33	3.27	16.00

ATTACHMT #3

SECTION EAST SIDE OF LUBE-N-GO

MANNINGS N=.0150 SLOPE =.0025

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	8.50	3	6.00	8.00			
2	0.10	8.00	4	7.00	8.50			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS
8.05	0.05	0.30	0.20	6.06	0.66	6.01
8.10	0.10	0.60	0.63	6.23	1.04	6.12
8.15	0.15	0.91	1.23	6.39	1.35	6.23
8.20	0.20	1.22	1.98	6.55	1.62	6.34
8.25	0.25	1.54	2.87	6.71	1.86	6.45
8.30	0.30	1.87	3.88	6.88	2.08	6.56
8.35	0.35	2.20	5.02	7.04	2.28	6.67
8.40	0.40	2.54	6.26	7.20	2.47	6.78
8.45	0.45	2.88	7.62	7.37	2.65	6.89
8.50	0.50	3.23	9.08	7.53	2.81	7.00

ATTACHMT #4

WEIR SECTION AT NW CORNER OF LUBE-N-GO TO GIBSON

WEIR COEFFICENT=3.0000

PROGRAM DIVIDED X-SECTION INTO VERTIAL SLICES 1. FEET APART

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	8.90	3	30.00	8.18			
2	0.50	8.18	4	31.00	8.90			

WSEL FT.	DEPTH INC FT.	FLOW AREA SQ.FT.	FLOW RATE (CFS)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS
8.20	0.02	0.59	0.25	0.42	29.54
8.22	0.04	1.18	0.71	0.60	29.58
8.24	0.06	1.77	1.30	0.73	29.63
8.26	0.08	2.37	2.01	0.85	29.67
8.28	0.10	2.96	2.81	0.95	29.71
8.30	0.12	3.56	3.69	1.04	29.75
8.32	0.14	4.15	4.65	1.12	29.79
8.34	0.16	4.75	5.69	1.20	29.83
8.36	0.18	5.34	6.79	1.27	29.88
8.38	0.20	5.94	7.96	1.34	29.92
8.40	0.22	6.54	9.18	1.40	29.96
8.42	0.24	7.14	10.47	1.47	30.00
8.44	0.26	7.74	11.81	1.53	30.04
8.46	0.28	8.34	13.20	1.58	30.08
8.48	0.30	8.94	14.65	1.64	30.13
8.50	0.32	9.55	16.15	1.69	30.17
8.52	0.34	10.15	17.69	1.74	30.21
8.54	0.36	10.76	19.29	1.79	30.25
8.56	0.38	11.36	20.93	1.84	30.29
8.58	0.40	11.97	22.61	1.89	30.33
8.60	0.42	12.57	24.34	1.94	30.38
8.62	0.44	13.18	26.1[illegible]	1.98	30.42
8.64	0.46	13.79	27.93	2.03	30.46
8.66	0.48	14.40	29.78	2.07	30.50
8.68	0.50	15.01	31.68	2.11	30.54
8.70	0.52	15.62	33.62	2.15	30.58
8.72	0.54	16.23	35.59	2.19	30.63
8.74	0.56	16.85	37.61	2.23	30.67
8.76	0.58	17.46	39.66	2.27	30.71
8.78	0.60	18.08	41.75	2.31	30.75
8.80	0.62	18.69	43.87	2.35	30.79
8.82	0.64	19.31	46.04	2.38	30.83
8.84	0.66	19.92	48.23	2.42	30.88
8.86	0.68	20.54	50.47	2.46	30.92
8.88	0.70	21.16	52.74	2.49	30.96
8.90	0.72	21.78	55.04	2.53	31.00

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 10, 1984

Mr. Richard T. Williams, PE
New Mexico Engineering Services
1108 Alvarado Drive NE, Suite 8
Albuquerque, NM 87110

REF: LUBE N' GO DRAINAGE PLAN DATED 12/16/83 (M18-D9)

Dear Mr. Williams:

After review of the proposed drainage plan, it appears, from the given information that there is no way to build the proposed water blocks at the Gibson Right-of-Way without adversely affecting the offsite flows from the Sirloin Stockade. This project will have to wait for the Court ruling on the property to the South unless you can come up with some interim plan or can show that you are not affecting the existing upstream flooding problem.

If you have any questions on the above, please feel free to contact me at 766-7644.

Thank you,

John Armstrong
Civil Engineer/Hydrology

JA:mrk

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

FILE COPY

November 29, 1983

Mr. Richard T. Williams
New Mexico Engineering Services
1108 Alvarado Drive NE Suite B
Albuquerque, NM 87110

REF: LUBE N' GO DRAINAGE PLAN (M18-D9) DATED NOVEMBER 7, 1983

Dear Mr. Williams:

These are my comments on the above mentioned plan:

1. Need more spot elevations, both existing and proposed:

   a. Curb cuts with required elevations shown.

   b. Existing spot elevations along property line and the Sirloin Stockade.

   c. Proposed spot elevations along with section through the water blocks to insure that all water stays on this property or goes to public R/W.

   d. It appears that water will never reach the elevation required to flow through the 30 foot drivepad.

2. Provide pond volume calculations:

   a. The pond routing procedure used is much too elaborate. This Department will allow you to simply take the pipe discharge rate off the bottom of the hydrograph to determine pond volume.

3. Proposed grades at the southeast corner and along the south line should match existing and slope down to this property:

a. In some places you could use a vertical transition as long as off-sites are not blocked.

4. Either set a TBM and reference it on the plan or show where the City BM is if it can be seen from this site.

5. The legend on the plan needs more entries.

6. Please be sure that the "Drainage Facilities Within City Right-of-Way" Documents are approved and included with the permit sets prior to submittal to Hydrology for sign-off. It appears that the invert elevations are reversed on the copy submitted.

If you have any questions on the above, please feel free to call me at 766-7644.

Thank you,

John Armstrong
Civil Engineer/Hydrology

JA:mrk

RECEIVED
NOV 07 1983
RECEIVED

INFORMATION SHEET

PROJECT TITLE Lube n' Go TYPE OF SUBMITTAL Drainage Plan

ZONE ATLAS PAGE NO. M-18-09 CITY ADDRESS

LEGAL DESCRIPTION Tract K-2 Block 4 Siesta Hills Subdivision #2

ENGINEERING FIRM New Mexico Engineering Services CONTACT R.T. Williams, P.E.

ADDRESS 1108 Alvarado N.E. Suite B PHONE 265-8568

OWNER Bob Bowersock CONTACT

ADDRESS 3715 Hawkins PHONE 345-8829

ARCHITECT Joseph Burwinkle CONTACT Joseph Burwinkle

ADDRESS 3209 Silver S.E. PHONE 268-9987

SURVEYOR Wayjohn Surveying Co. CONTACT Wayne E. Johnston, L.S.

ADDRESS 209 Eubank N.E. Suite A-1 PHONE 293-1205

CONTRACTOR Sunbelt Business Centers CONTACT Bill Wieman, JR

ADDRESS 3715 Hawkins N.E. PHONE 345-8829

DATE SUBMITTED Nov 7, 1983

BY RTWilliams

Use this Information Sheet when submitting the following:

Drainage report or plan, conceptual grading and drainage plan, engineer's certification plan, erosion plan and grading plan. Provide the information applicable to your submittal.

NEW MEXICO ENGINEERING SERVICES
1108 Alvarado Dr. NE • Suite 8
Albuquerque, NM 87110
(505) 265-8568

RECEIVED
NOV 07 1983
HYDROLOGY SECTION

November 4, 1983

Mr. John Armstrong, P.E.
Civil Engineer/Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

SUBJECT: Drainage for Lube n' Go.

Dear Mr. Armstrong:

This is to submit the referenced drainage plan. The site is not in the 100-year flood hazard zone. I have computed the 100-year water surface elevation to be 5308.41 ft. M.S.L. The plan calls for a berm at crest elevation 5308.50 ft. M.S.L. to confine the flows generated on site. The ponding area will be drained into Gibson Blvd. by a 4" PVC pipe at 2% slope.

Offsite flows are generated from the west side of the roof of Sirloin Stockade and from the back parking lots of Sirloin Stockade and Mr. Sub. Under emergency (overflow) conditions these flows will enter Gibson Blvd. over a 20 ft. and a 30 ft. spillway. Maximum depth of flow is 0.06 ft.

An erosion control plan has not been submitted becasue the site is less than 1.0 acre and grading will imvolve less than 500 cubic yards. I will instruct the contractor to take precautions to insure that sediment is not deposited on the public right-of-way.

Please contact me if you require additional information.

Sincerely,

RTWilliams

Richard T. Williams, P.E.
New Mexico Engineering Services

83-8 DRAINAGE PLAN for TRACT K-2, SIESTA HILLS SUBDIVISION
#2 (LUBE n' GO)

USE RATIONAL FORMULA - $Q = CIA$, $V = CRA$

1. DETERMINE "C" FACTOR

TOTAL AREA = 100' x 150' = 15,000 SF = 0.34 AC

IMPERVIOUS AREA - ALL

SOIL SERIES - W&B (WINK - EMBUDO COMPLEX. FLOODING AND POOR COMPACTION ARE POTENTIAL PROBLEMS WHERE THIS MAPPING UNIT IS USED for COMMUNITY DEVELOPMENT.) SOIL SURVEY of BERNALILLO COUNTY, NM, SCS, MAP 31 & P.46.

HYDROLOGIC SOIL GROUP - B (op. cit., P 83)

C = 1 (DPM Vol 2, # 22.2 C-1)

2. DETERMINE "I" FACTOR

$I = 6hr - 100\ yr$ RAINFALL $\div 6.84 \div t_c^{-0.51}$

6hr - 100 yr RAINFALL = 2.4" (DPM Vol 2, # 22.2 D-1)

$T_c = 0.0078 \frac{L^{0.77}}{S^{0.385}}$

$\Delta h = 8.89 - 7.70 = 1.19$ /

$L = \sqrt{(100)^2 + (150)^2} = 180'$ /

$S = \frac{1.19}{180} = 0.0066$ /

$T_c = 0.0078 \frac{180^{0.77}}{0.0066^{0.385}} = 2.34$ min USE $t_c = 10$ min /

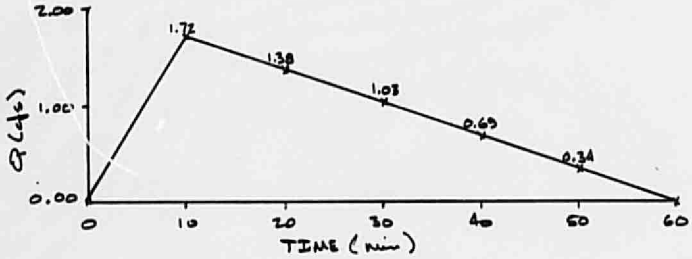
$I = 2.4 \div 6.84 \div 10^{-0.51} = \underline{5.07}$ /

$Q_{100} = 1 (5.07)(0.34) = 1.72$ cfs /

$Q_{10} = 0.657 (Q_{100}) = 0.657 (1.72) = 1.13$ cfs /

$V_{100} = 1 \left(\frac{2.4}{12}\right)(15{,}000) = 3{,}000$ CF /

DURATION of RUNOFF $= \frac{2V}{Q_{100}} = \frac{2(3000)}{1.72} = 3488$ sec = 58 min USE 60 min /



INFLOW

T	AVG FLOW	VOLUME	ACCUM VOLUME
0	0	0	0
10	0.86 /	516 /	516 /
20	1.56 /	930 /	1,446 /
30	1.21 /	726 /	2,172 /
40	0.86 /	516 /	2,688 /
50	0.52 /	312 /	3,000 /
60	0.17 /	102 /	3,102 /

OUTFLOW

USE 15' - 4" PVC PIPE ($n = 0.009$), $S = .02$

$r = \frac{A}{WP}$

$A = \pi r^2 = \pi (0.167)^2 = 0.087$ /

$WP = 2\pi r = 2\pi (0.167) = 1.049$ /

$r = \frac{0.087}{1.049} = 0.083$ /

$V = \frac{1.486}{0.009} (0.083)^{\frac{2}{3}} (.02)^{\frac{1}{2}} = 4.44$ fps /

$Q = AV = 0.087 (4.44) = 0.39$ cfs /

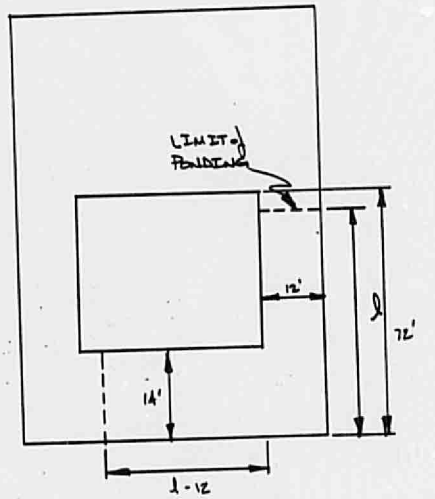
AT WHAT HEAD WILL THIS OCCUR? ASSUME OUTLET CONTROL.

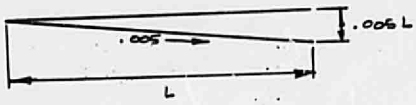
$$H = \left[1 + k_e + \frac{29 n^2 l}{r^{1.33}} \right] \frac{V^2}{2g}$$ (HYDRAULIC ENGINEERING CIRCULAR NO. 5, FEDERAL HIGHWAY ADMIN., P. 5-6, EQ. (2)).

USE $k_e = 0.2$

$$H = \left[1 + 0.2 + \frac{29(0.009)^2(15)}{0.083^{1.33}} \right] \frac{(4.44)^2}{2(32.2)} = 0.66$$

$$HW = H + H_o - l_{so} = 0.66 + 0.33 - 15(.02) = 0.69$$





$$\text{DEPTH} = \frac{.005 L}{2}$$

$$\text{AREA} = L\left(\frac{14+12}{2}\right) = 13L$$

$$\text{VOLUME} = \frac{.005 L}{2}(13L) = 0.0325 L^2$$

T	AVG HEAD	AVG FLOW	VOL OUT	ACCUM VOL OUT	NET
0	0	0	0	0	0
10	0.25	0.06	36	36	480
20	0.45	0.31	186	222	1224
30	0.51	0.33	198	420	1752
40	0.54	0.34	204	624	2064
50	0.56	0.35	210	834	2166 ←
60	0.56	0.35	210	1044	2058

100 YR W.S. ELEV = 5307.85 + 0.56 = 5308.41

$t = 10$

AVG VOL $= \frac{516}{2} = 258$ CF /

$0.0325\, L^2 = 258$

$L = 89.09$

$2l - 12 = 89.09$

$l = 50.55'$ /

$HW = 50.55\,(.005) = 0.25$

$HW = H + H_o - l s_o \Rightarrow H = HW - H_o + l s_o$

$H = 0.25 - 0.33 + 15\,(.02) = 0.22$

$$H = \left[1 + k_e + \frac{29 n^2 l}{r^{1.33}}\right]\frac{V^2}{2g} \Rightarrow V = \sqrt{\frac{2gH}{[\ \ ]}}$$

$$\frac{D}{d} = \frac{0.25}{0.33} = 0.76 \Rightarrow \frac{r}{d} = 0.3025,\ \frac{A}{d^2} = 0.6404$$

$r = 0.3025\, d = 0.3025\,(0.33) = 0.010$

$$V = \sqrt{\frac{2(32.2)(0.22)}{\left[1 + 0.2 + \frac{29(.009)^2(15)}{0.010^{1.33}}\right]}} = 0.90 \text{ fps} /$$

$A = 0.6404\,(.33)^2 = 0.070\ ft^2$ /

$Q = AV = 0.070\,(0.90) = 0.06$ cfs /

VOL OUT $= 0.06\,(600) = 36$ CF /

$t = 20$

AVG VOL $= \frac{480 + 480 + 930}{2} = 345$ CF /

$0.0325\,L^2 = 945$

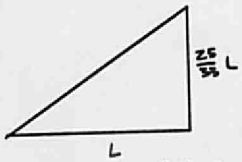
$L = 170.52$ /

$2l - 12 = 170.52$

$l = 91.26 > 72$

$91.26 - 72 = 19.26'$ /

EXCESS WATER $= 19.26 \times 12 = \frac{19.26(0.005)}{2} = 11.13$ CF /



AREA $= \frac{1}{2}(L)(\frac{25}{33}L) = 0.3788\,L^2$

AVG DEPTH $= \frac{.005L}{2} = 0.0025L$

VOLUME $= 0.3788\,L^2(0.0025L) = 0.0009\,L^3$ /

$0.0009\,L^3 = 11.13$

$L = 23.13'$

$\frac{25}{33}(23.13) = 17.52'$

$HW = 17.52(.005) + 72(.005) = 0.45'$ /

$H = 0.45 - 0.33 + 15(.02) = 0.42$

$$V = \sqrt{\frac{2(32.2)(0.42)}{\left[1 + 0.2 + \frac{2.5(.009)^2(16)}{0.083^{1.33}}\right]}} = 3.53 \text{ fps}$$ /

$Q = 0.087(3.53) = 0.31$ cfs /

VOL OUT $= 0.31(600) = 186$ CF /

$t = 30$

AVG VOL $= \frac{1224 + 1224 + 726}{2} = 1587$ ✓

$0.0325 L^2 = 1587$

$L = 220.98$ ✓

$2l - 12 = 220.98$

$l = 116.49 > 72$

$116.49 - 72 = 44.49$

EXCESS WATER $= 44.49 \times 12 \times \frac{44.49(.005)}{2} = 59.38$ CF ✓

$0.0009 L^3 = 59.38$

$L = 40.41'$ ✓

$\frac{25}{33}(40.41) = 30.61'$ ✓

$HW = 30.61(.005) + 72(.005) = 0.51$ ✓

$H = 0.51 - 0.33 + 15(.02) = 0.48$ ✓

$V = \sqrt{\frac{2(32.2)(0.48)}{\left[1 + 0.2 + \frac{29(.009)^2(15)}{0.083^{1.33}}\right]}} = 3.78$ fps ✓

$Q = 0.087(3.78) = 0.33$ cfs ✓

VOL OUT $= 0.33(600) = 198$ CF ✓

$t = 40$

AVG VOL $= \frac{1752 + 1752 + 516}{2} = 2010$ ✓

$0.0325 L^2 = 2010$

$L = 248.69$

$2l - 12 = 248.69$

$l = 130.34 \; > 72$

$130.34 - 72 = 58.34$

EXCESS WATER $= 58.34 \times 12 \times \frac{58.34(.005)}{2} = 102.11$ CF

$.0008L^3 = 102.11$

$L = 48.41'$

$\frac{25}{33}(48.41) = 36.67$

$HW = 36.67(.005) + 72(.005) = 0.54$

$H = 0.54 - 0.33 + 15(.02) = 0.51$

$V = \sqrt{\frac{2(32.2)(0.51)}{\left[1 + 0.2 + \frac{29(.009)^2(16)}{0.083^{1.33}}\right]}} = 3.89$ fps

$Q = 3.89(0.087) = 0.34$ cfs

VOL OUT $= 0.34(600) = 204$ CF

$t = 50$

AVG VOL $= \frac{2064 + 2064 + 312}{2} = 2220$

$0.0325L^2 = 2220$

$L = 261.36$

$2l - 12 = 261.36$

$l = 136.68 > 72$

$136.68 - 72 = 64.68$ /

EXCESS WATER $= 64.68 \times 12 \times \frac{64.68(.005)}{2} = 125.51$ CF /

$.0009\ L^3 = 125.51$

$L = 51.86'$ /

$\frac{25}{33}(51.86) = 39.29'$ /

$HW = 39.29(.005) + 72(.005) = 0.56$ /

$H = 0.56 - 0.33 + 15(.02) = 0.53$ /

$$V = \sqrt{\frac{2(32.2)(0.53)}{\left[1 + 0.2 + \frac{25(.009)(15)}{0.083^{1.33}}\right]}} = 3.97 \text{ fps}$$ /

$Q = 3.97(0.087) = 0.35$ cfs /

VOL OUT $= 0.35(600) = 210$ CF /

$t = 60$

AVG VOL $= \frac{2166 + 2166 + 102}{2} = 2217$ /

$0.0325\ L^2 = 2217$

$L = 261.18$ /

$2l - 12 = 261.18$

$l = 136.59 > 72$

$136.59 - 72 = 64.59$

EXCESS WATER $= 64.59 \times 12 \times \frac{64.59(.005)}{2} = 125.16$ CF /

$.0009\ L^3 = 125.16$

$L = 51.81$

$\frac{25}{53}(51.81) = 39.25$

$HW = 39.25(.005) + 72(.005) = 0.56$

$H = 0.56 - 0.33 + 15(.02) = 0.53$

$$V = \sqrt{\frac{2(32.2)(0.53)}{\left[1 + 0.2 + \frac{29(.005)^2(15)}{0.083^{1.33}}\right]}} = 3.97 \text{ fps}$$

$Q = 3.97(0.087) = 0.35$ cfs

VOL OUT $= 0.35(600) = 210$ CF

100 YR W.S. ELEV $= 5307.85 + 0.56 = 5308.41$

OFF - SITE FLOWS

DRAINAGE AREA :

1. WEST ½ of ROOF of SIRLOIN STOCKADE 89.1 x 21 = 1871 SF
2. BACK PARKING LOTS of SIRLOIN STOCKADE AND MR. SUB 300 x 50 = 15,000 SF

16,871 SF =

0.39 AC

ALL IMPERVIOUS - C = 1

6 hr - 100 yr RAINFALL = 2.4"

ASSUME t_c = 10 min

$I = 2.4 \div 6.84 \div 10^{-0.51} = 5.07$

$Q_{100} = 1(5.07)(0.39) = 1.98$ cfs

USE WEIR FORMULA - $Q = CLH^{\frac{3}{2}}$, C = 2.6, L = 50

$H^{\frac{3}{2}} = \frac{Q}{CL} = \frac{1.98}{2.6(50)} = 0.015$

H = 0.06 ft

NEW MEXICO ENGINEERING SERVICES
1108 Alvarado Dr. NE • Suite 8
Albuquerque, NM 87110
(505) 265-8568

November 4, 1983

Mr. John Armstrong, P.E.
Civil Engineer/Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

SUBJECT: Drainage for Lube n' Go.

Dear Mr. Armstrong:

This is to submit the referenced drainage plan. The site is not in the 100-year flood hazard zone. I have computed the 100-year water surface elevation to be 5308.41 ft. M.S.L. The plan calls for a berm at crest elevation 5308.50 ft. M.S.L. to confine the flows generated on site. The ponding area will be drained into Gibson Blvd. by a 4" PVC pipe at 2% slope.

Offsite flows are generated from the west side of the roof of Sirloin Stockade and from the back parking lots of Sirloin Stockade and Mr. Sub. Under emergency (overflow) conditions these flows will enter Gibson Blvd. over a 20 ft. and a 30 ft. spillway. Maximum depth of flow is 0.06 ft.

No

An erosion control plan has not been submitted becasue the site is less than 1.0 acre and grading will imvolve less than 500 cubic yards. I will instruct the contractor to take precautions to insure that sediment is not deposited on the public right-of-way.

Please contact me if you require additional information.

Sincerely,

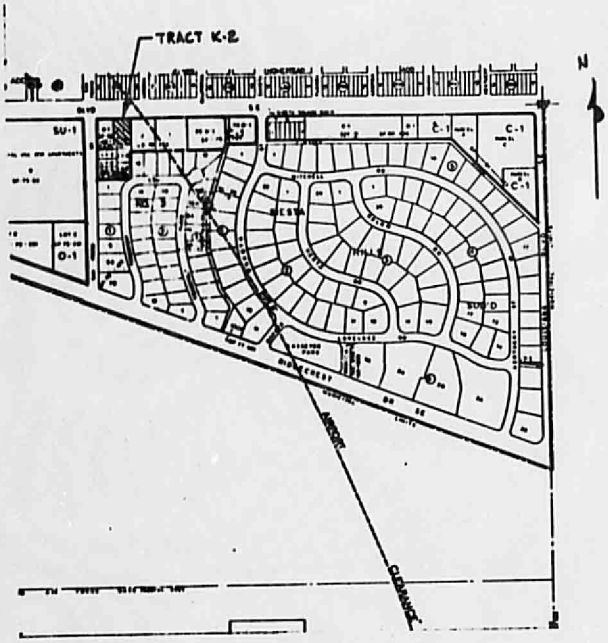
RTWilliams

Richard T. Williams, P.E.
New Mexico Engineering Services

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY

No file #



OWNER:
BOB BOWERSOCK
3715 HAWKINS NE
345-8829

M15 D9

PREPARED BY:
NEW MEXICO ENGINEERING SERVICES
1108 ALVARADO DR NE- SUITE B
265-8568

RICHARD T. WILLIAMS
REGISTERED PROFESSIONAL ENGINEER
DEC 19, 1983

NOTICE TO CONTRACTOR

1. An excavation/construction permit will be required before beginning any work within City right-of-way. An approved copy of these plans must be submitted at the time of application for this permit.

2. All work detailed on these plans to be performed, except as otherwise stated or provided hereon, shall be constructed in accordance with "Contract Documents for City-Wide Utilities and Cash Paving No. 31 "

3. Two working days prior to any excavation, contractor must contact Line Locating Service, 765-1234, for location of existing utilities.

4. Prior to construction, the contractor shall excavate and verify the horizontal and vertical locations of all obstructions. Should a conflict exist, the contractor shall notify the engineer so that the conflict can be resolved with a minimum amount of delay.

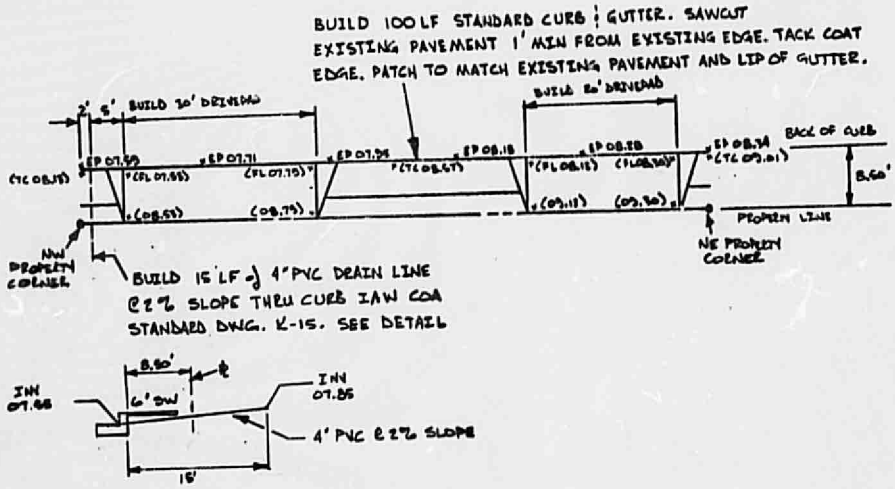
5. Backfill compaction shall be according to ARTERIAL street use.

Madrid Const. 211878 C-16a

APPROVALS	NAME	DATE	TITLE: DRAINAGE PLAN FOR LUBE N'GO 5814 GIBSON BLVD SE	
A.C.E./DESIGN	[illegible]	19 Dec 83		
INSPECTOR	[illegible]	4/30/84	PERMIT NO.	MAP NO. M-18
A.C.E./FIELD	[illegible]	4/30/84	SHEET 1 OF 2	

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



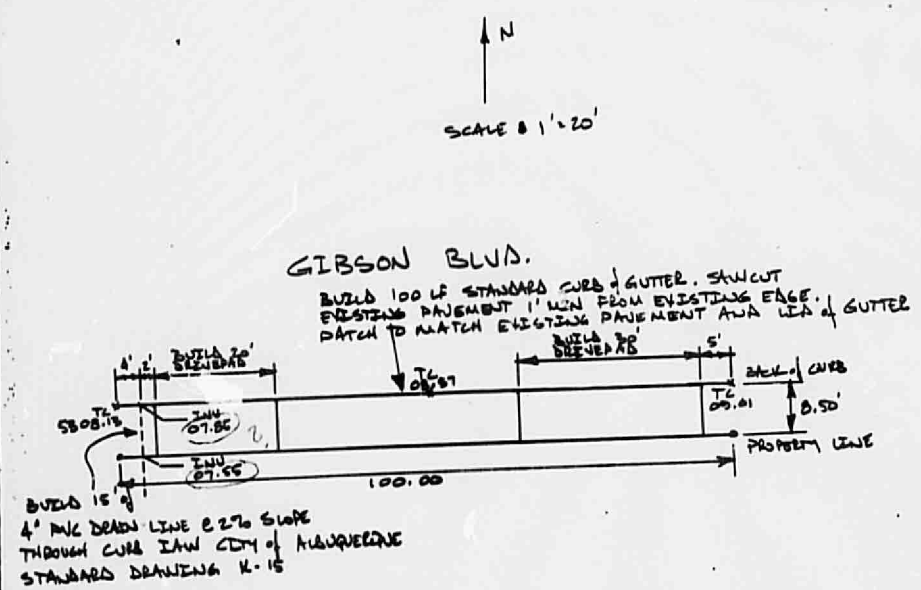
RICHARD T. WILLIAMS
NEW MEXICO
7309
REGISTERED PROFESSIONAL ENGINEER
DEC 19, 1983

C-162

APPROVALS	NAME	DATE	TITLE: DRAINAGE PLAN FOR LUBE N' GO 5814 GIBEON BLVD SE	
A.C.E./DESIGN	[illegible]	19 Dec 83		
INSPECTOR	[illegible]	4/30/84	PERMIT NO.	MAP NO. M-18
A.C.E./FIELD	[illegible]	4/30/84	SHEET 2 OF 2	

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



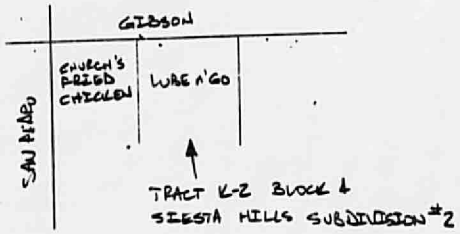
RICHARD T. WILLIAMS NEW MEXICO 5309 REGISTERED PROFESSIONAL ENGINEER

Nov 7, 1983

APPROVALS	NAME	DATE	TITLE:
A.C.E./DESIGN			
INSPECTOR			PERMIT NO. / SHEET OF / MAP NO.
A.C.E./FIELD			

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



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APPROVALS	NAME	DATE	TITLE:	
A.C.E./DESIGN				
INSPECTOR			PERMIT NO.	MAP
A.C.E./FIELD			SHEET OF	NO.

M18-D9

NEW MEXICO ENGINEERING SERVICES
1108 Alvarado Dr. NE • Suite 8
Albuquerque, NM 87110
(505) 265-8568

December 9, 1983

Mr. John Armstrong, P.E.
Civil Engineer/Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

SUBJECT: Lube n' Go Drainage Plan (M18-D9)

Dear Mr. Armstrong:

Thank you for your comments dated November 29, 1983 on the referenced plan. This is to submit the revised plan.

I have added additional spot elevations at the locations you mentioned. The 30 - foot drivepad was relocated to the west side of the property and will serve as an emergency spillway for flows generated off-site from Sirloin Stockade (all of property) and the back parking lot of Mr. Sub.

I have modified the proposed grades at the southeast corner and along the south line as you requested.

Please contact me if you require additional information.

Sincerely,

RTWilliams

Richard T. Williams, P.E.
New Mexico Engineering Services

RTW:crp

RECEIVED
DEC 19 1983
ENGINEERING

INFORMATION SHEET

PROJECT TITLE Lube n' Go

TYPE OF SUBMITTAL Drainage Plan

ZONE ATLAS PAGE NO. M-18

CITY ADDRESS 5814 GIBSON BLVD SE

LEGAL DESCRIPTION Tract K-2 Block 4 Siesta Hills Subdivision #2

ENGINEERING FIRM New Mexico Engineering Services

CONTACT R.T. Williams, P.E.

ADDRESS 1108 Alvarado N.E. Suite 8

PHONE 265-8568

OWNER Bob Bowersock

CONTACT

ADDRESS 3715 Hawkins

PHONE 345-8829

ARCHITECT Joseph Burwinkle

CONTACT Joseph Burwinkle

ADDRESS 3209 Silver S.E.

PHONE 268-9987

SURVEYOR Wayjohn Surveying Co.

CONTACT Wayne E. Johnston, L.S.

ADDRESS 209 Eubank N.E. Suite A-1

PHONE 293-1205

CONTRACTOR Sunbelt Business Centers

CONTACT Bill Wieman, JR

ADDRESS 3715 Hawkins N.E.

PHONE 345-8829

DATE SUBMITTED DEC 9, 1983

BY RTW Williams

Use this Information Sheet when submitting the following:

Drainage report or plan, conceptual grading and drainage plan, engineer's certification plan, erosion plan and grading plan. Provide the information applicable to your submittal.

RECEIVED

DEC 19 1983

ENGINEERING

3E-3 DRAINAGE PLAN for TRACT K-2, SIESTA HILLS SUBDIVISION
=2 (LURE n' GO)

USE RATIONAL FORMULA - $Q = CIA$, $V = CRA$

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TOTAL AREA = 100' x 150' = 15,000 SF = 0.34 AC

IMPERVIOUS AREA - ALL

SOIL SERIES - WeB (WINK - EMRUDO COMPLEX. FLOODING AND POOR COMPACTION ARE POTENTIAL PROBLEMS WHERE THIS MAPPING UNIT IS USED for COMMUNITY DEVELOPMENT.) SOIL SURVEY of BERNALILLO COUNTY, NM, SCS, MAP 31 #, p.45.

HYDROLOGIC SOIL GROUP - B (op. cit., p 83)

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$\Delta h = 8.89 - 7.70 = 1.19$ /

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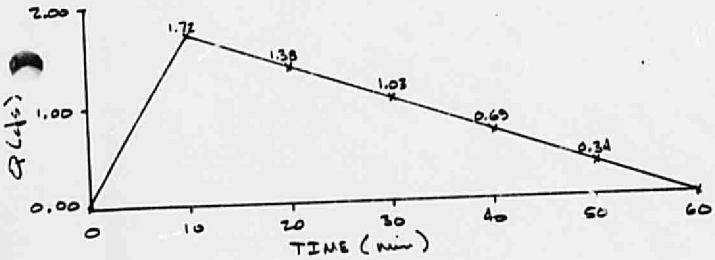
DURATION of RUNOFF $= \frac{2V}{Q_{100}} = \frac{2(3000)}{1.72} = 3488$ sec = 58 min USE 60 min /



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30	1.21	726	2,172
40	0.86	516	2,688
50	0.52	312	3,000
60	0.17	102	3,102

OUTFLOW

USE 15' - 4" PVC PIPE ($n = 0.009$), $S = .02$

$r = \frac{A}{WP}$

$A = \pi r^2 = \pi (0.167)^2 = 0.087$

$WP = 2\pi r = 2\pi (0.167) = 1.049$

$r = \frac{0.087}{1.049} = 0.083$

$V = \frac{1.486}{0.009} (0.083)^{\frac{2}{3}} (.02)^{\frac{1}{2}} = 4.44$ fps

$Q = AV = 0.087 (4.44) = 0.39$ cfs

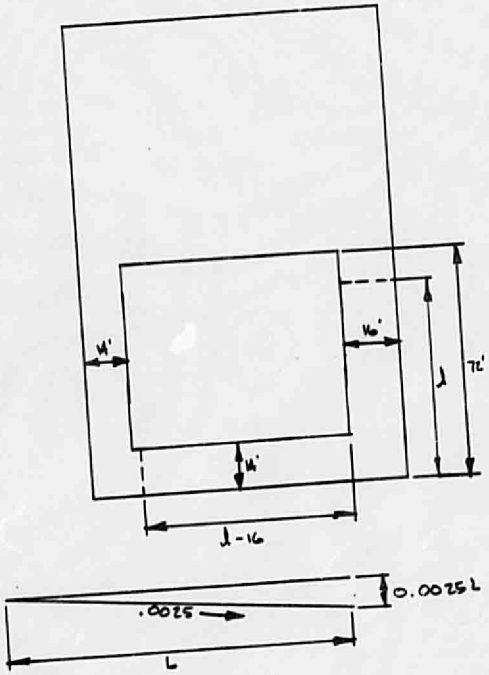
AT WHAT HEAD WILL THIS OCCUR? ASSUME OUTLET CONTROL.

$$H = \left[1 + k_e + \frac{29 n^2 l}{r^{1.33}} \right] \frac{V^2}{2g}$$ (HYDRAULIC ENGINEERING CIRCULAR NO 5, FEDERAL HIGHWAY ADMIN., P5-6, EQ (2))

USE $k_e = 0.2$

$$H = \left[1 + 0.2 + \frac{29(0.009)^2(15)}{0.083^{1.33}} \right] \frac{(4.44)^2}{2(32.2)} = 0.66$$

$$HW = H + H_o - l s_o = 0.66 + 0.33 - 15(.02) = 0.69$$



$$\text{DEPTH} = \frac{.0026 L}{2}$$

$$\text{AREA} = L\left(\frac{14+16}{2}\right) = 15L$$

$$\text{VOLUME} = \frac{.0026 L}{2}(15L) = 0.0188 L^2$$

T	AVG HEAD	AVG FLOW	VOL OUT	ACCUM VOL OUT	NET
0	0	0	0	0	0
10	0.17	0.09	54	54	462
20	0.26	0.20	120	174	1272
30	0.30	0.24	144	318	1854
40	0.32	0.26	156	474	2214
50	0.33	0.26	156	630	2370
60	0.33	0.26	156	786	2316

100 YR WS ELEV = 5307.85 + 0.33 = 5308.18

$t = 10$

AVG VOL $= \frac{516}{2} = 258$ CF

$0.0188\, L^2 = 258$

$L = 117.15'$

$2l - 16 = 117.15$

$l = 66.57'$

$HW = 66.57(.0025) = 0.17$

$HW = H + H_o - ls_o \Rightarrow H = HW - H_o + ls_o$

$H = 0.17 - 0.33 + 15(.02) = 0.14$

$H = \left[1 + k_e + \frac{29n^2 l}{r^{1.33}}\right]\frac{V^2}{2g} \Rightarrow V = \sqrt{\frac{2gH}{[\ ]}}$

$\frac{D}{d} = \frac{0.17}{0.33} = 0.52 \Rightarrow \frac{r}{d} = 0.2561, \frac{A}{d^2} = 0.4127$

$r = 0.2561\, d = 0.2561(0.33) = 0.084$

$V = \sqrt{\frac{2(32.2)(0.14)}{\left[1 + 0.2 + \frac{29(.009)^2(15)}{0.084^{1.33}}\right]}} = 2.05$ fps ✓

$A = 0.4127(.33)^2 = 0.045\ ft^2$

$Q = AV = 2.05(0.045) = 0.09\ cfs$

VOL OUT $= 0.09(600) = 54$ CF

$t = 20$

AVG VOL $= \frac{462 + 462 + 930}{2} = 927$ CF

$0.0188L^2 = 927$

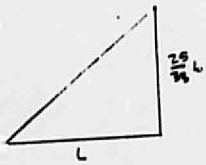
$L = 222.06$

$2l - 16 = 222.06$

$l = 119.03 > 72$

$119.03 - 72 = 47.03$

EXCESS WATER $= 47.03 \times 16 + \frac{47.03 \times .0025}{2} = 44.24$ CF



AREA $= \frac{1}{2}(L)(\frac{25}{33}L) = 0.3788L^2$

AVG DEPTH $= \frac{.0025L}{2}$

VOLUME $= 0.3788L^2\left(\frac{.0025L}{2}\right) = 0.0005\,L^3$

$0.0005\,L^3 = 44.24$

$L = 44.56'$

$\frac{25}{33}(44.56) = 33.76'$

$HW = 33.76\,(.0025) + 72\,(.0025) = 0.26$

$H = 0.26 - 0.33 + 15(.02) = 0.23$

$\frac{D}{d} = \frac{0.26}{0.33} = 0.79 \Rightarrow \frac{r}{d} = 0.3040,\ \frac{A}{d^2} = 0.6655$

$r = C\,\Xi040\,d = 0.3040(0.33) = 0.100$ /

$$V = \sqrt{\frac{2(32.2)(0.23)}{\left[1 + 0.2 + \frac{29(.005)(.15)}{0.100^{1.33}}\right]}} = 2.75 \text{ fps}$$ /

$A = 0.6655\,(.33)^2 = 0.073$ SF

$Q = AV = 0.073\,(2.75) = 0.20$ cfs /

VOL OUT $= 0.20\,(600) = 120$ CF /

$t = 30$

AVG VOL $= \frac{1272 + 1272 + 726}{2} = 1635$ CF

$0.0188\,L^2 = 1635$

$L = 294.90'$ /

$2l - 16 = 294.90$

$l = 155.45 > 72$

$155.45 - 72 = 83.45$ /

EXCESS WATER $= 83.45 + 16 = \frac{83.45 \times .0025}{2} = 139.28$ CF /

$0.0005\,L^3 = 139.28$

$L = 65.31$ /

$\frac{25}{32}(65.31) = 49.48$

$HW = 49.48(.0025) + 72(.0025) = 0.30$ /

$H = 0.30 - 0.33 + 15(.02) = 0.27$ /

$\frac{D}{d} = \frac{0.30}{0.33} = 0.91 \Longrightarrow \frac{r}{d} = 0.2962,\ \frac{A}{d^2} = 0.7504$

$r = 0.2963d = 0.2963(.33) = 0.098$ /

$$V = \sqrt{\frac{2(32.2)(0.27)}{\left[1 + 0.2 + \frac{29(.009)^2(15)}{0.098^{1.33}}\right]}} = 2.97 \text{ fps} /$$

$A = 0.7854(.33)^2 = 0.082$ SF

$Q = AV = 0.082(2.97) = 0.24$ cfs

VOL OUT $= 0.24(600) = 144$ CF

$t = 40$

AVG VOL $= \frac{1854 + 1854 + 516}{2} = 2,112$ CF /

$0.0188\,L^2 = 2,112$

$L = 335.17'$ /

$2l - 16 = 335.17$

$l = 175.59 > 72$ /

$175.59 - 72 = 103.59$

EXCESS WATER $= 103.59 \times 16 \times \frac{103.59 \times .0025}{2} = 214.62$ CF /

$0.0005\,L^3 = 214.62$

$L = 75.43$ /

$\frac{25}{33}(75.43) = 57.15$ /

$H.W. = 57.15(.0025) + 72(.0025) = 0.32$ /

$H = 0.32 - 0.33 - 15(.02) = 0.[illegible]$ /

$\frac{D}{d} = \frac{0.32}{0.33} = 0.97 \Rightarrow \frac{r}{d} = 0.2787,\ \frac{A}{d^2} = 0.7185$

$r = 0.2787\,d = 0.2787(.33) = 0.092$ /

$$V = \sqrt{\frac{2(32.2)(0.23)}{\left[1 + 0.2 + \frac{29(.009)^2(15)}{0.092^{1.33}}\right]}} = 3.02 \text{ fps}$$ /

$A = 0.7785\,d^2 = 0.7785(.33)^2 = 0.085$ SF /

$Q = 0.085(3.02) = 0.26$ cfs /

VOL OUT $= 0.26(600) = 156$ CF

T = 50

$$\text{AVG VOL} = \frac{2214 + 2214 + 312}{2} = 2370 \text{ CF}$$ /

$0.0188\,L^2 = 2370$

$L = 355.05'$ /

$2l \cdot 16 = 355.05$

$l = 185.53' > 72'$

$185.53 - 72 = 113.53'$ /

$$\text{EXCESS WATER} = 113.53 \times 16 \times \frac{113.53 \times .0025}{2} = 257.78 \text{ CF}$$ /

$0.0005\,L^3 = 257.78$

$L = 80.18'$ /

$\frac{25}{33}(80.18) = 60.75'$ /

$HW = 60.75(.0025) + 72(.0025) = 0.33$ /

$H = 0.32 - 0.33 + 15(.02) = 0.30$ /

$r = 0.083$, $A = 0.087$ (from PAGE 2)

$$V = \sqrt{\frac{2(32.2)(0.30)}{\left[1 + 0.2 + \frac{29(.003)^2(15)}{0.083^{1.33}}\right]}} = 2.99 \text{ fps}$$

$Q = 0.087(2.99) = 0.26$ cfs

VOL OUT $= 0.26(600) = 156$ CF

T = 60

$$\text{AVG VOL} = \frac{2370 + 2370 + 102}{2} = 2421 \text{ CF}$$

$0.0188\, L^2 = 2421$

$L = 358.85$

$2l \cdot 16 = 358.85$

$l = 187.43 > 72$

$187.43 - 72 = 115.43$

$$\text{EXCESS WATER} = 115.43 \times 16 = \frac{115.43(.0025)}{2} = 266.48 \text{ CF}$$

$0.0005\, L^3 = 266.48$

$L = 81.08'$

$\frac{25}{33}(81.08) = 61.42'$

$HW = 61.42(.0025) + 72(.0025) = 0.33$

$H = 0.33 - 0.30 + 15(.02) = 0.30$

$r = 0.083$, $A = 0.087$ (from PAGE 2)

$$V = \sqrt{\frac{2(32.2)(0.30)}{\left[1 + 0.2 + \frac{29(.003)^2(15)}{0.083^{1.33}}\right]}} = 2.99 \text{ fps}$$

$Q = 0.087(2.99) = 0.26$ cfs /

VOL OUT $= 0.26(600) = 156$ CF /

OFF SITE FLOWS

DRAINAGE AREA

1. SIRLOIN STOCKADE 187.5 × 150 = 28,125 SF /
2. BACK PKG. LOT MR. SUB 50 × 150 = 7,500 /

35,625 SF = 0.82 AC /

$Q_{100} = 4.16 + 1.72 = 5.88$

ALL IMPERVIOUS ⇒ $C = 1$

6 hr - 100 yr RAINFALL = 2.4"

ASSUME $t_c = 10$ min

$I = 2.4 \times 6.84 \times 10^{-0.51} = 5.07$ /

$Q_{100} = 1(5.07)(0.82) = 4.16$ cfs /

USE WEIR FORMULA - $Q = CLH^{3/2}$, $C = 2.6$, $L = 30$

$H^{3/2} = \frac{Q}{CL} = \frac{4.16}{2.6(30)} = 0.053$

$H = 0.14$ FT

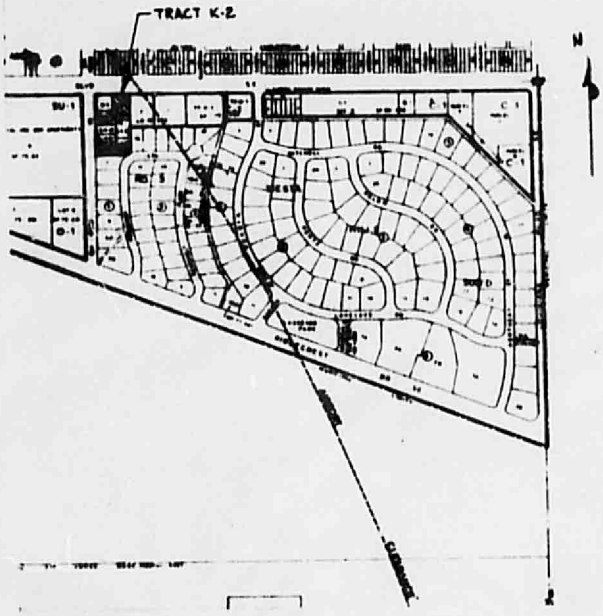
SPILLWAY ELEV = 5308.18 (100 YR W.S. ELEV from PAGE 4)

TOP of BERM = 5308.18 + 0.14 = 5308.32

NO

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



OWNER:
BOB BOWERSOCK
8715 HAWKINS NE
345-8620

PREPARED BY:
NEW MEXICO ENGINEERING SERVICES
1108 ALVARADO DR NE - SUITE B
265-8568

NOTICE TO CONTRACTOR

1. An excavation/construction permit will be required before beginning any work within City right-of-way. An approved copy of these plans must be submitted at the time of application for this permit.

2. All work detailed on these plans to be performed, except as otherwise stated or provided hereon, shall be constructed in accordance with "Contract Documents for City-Wide Utilities and Cash Paving No. 31 "

3. Two working days prior to any excavation, contractor must contact Line Locating Service, 765-1234, for location of existing utilities.

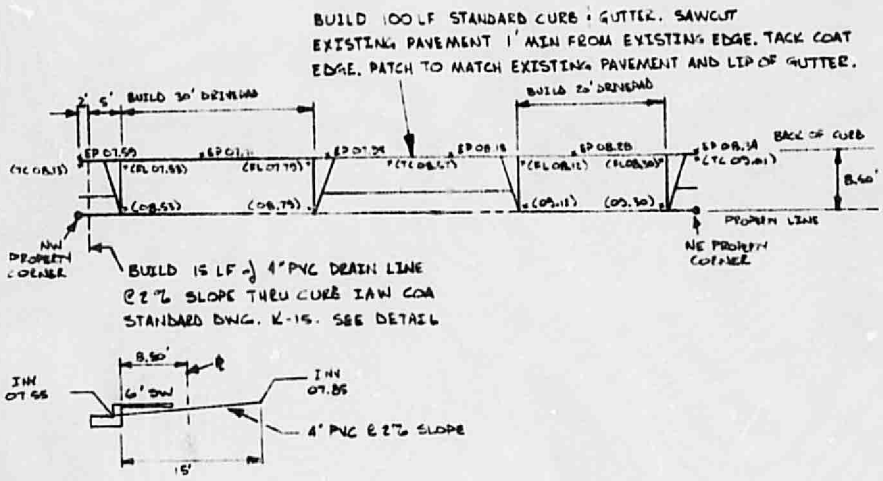
4. Prior to construction, the contractor shall excavate and verify the horizontal and vertical locations of all obstructions. Should a conflict exist, the contractor shall notify the engineer so that the conflict can be resolved with a minimum amount of delay.

5. Backfill compaction shall be according to ARTERIAL street use.

ROVALS	NAME	DATE	TITLE: DRAINAGE PLAN FOR LOWE'S GO 5814 GIBSON BLVD SE	
DESIGN				
TOR			PERMIT NO.	MAP NO. M-18
FIELD			SHEET 1 OF 2	

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



ROVALS	NAME	DATE
ESIGN		
R		
D		

TITLE:
DRAINAGE PLAN FOR LUCKY'S
5814 GIBSON BLVD SE

PERMIT NO.
SHEET 2 OF 2

MAP NO.