CITY OF
Albuquerque

September 25,1998

James E. Millington
Chavez-Grieves Consulting Engineers
5639 Jefferson St. NE
Albuquerque, New Mexico 87109

RE: ENGINEER CERTIFICATION FOR WALGREENS @ LOMAS (J16-D12) ENGINEER'S CERTIFICATION STATEMENT DATED 8/27/98

Dear Mr. Millington:

Based on the information provided on your August 28,1998 submittal, Engineer Certification for the above referenced site is acceptable.

Please be advised that the permanent C.O. will not be issued until we receive a copy of the green tag for the tie into the back of the existing catchbasin.

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

C: Andrew Garcia
File

Sincerely

Bernie J. Montoya CE
Associate Engineer

DRAINAGE INFORMATION

PROJECT TITLE: Walgreens ZONE ATLAS/DRNG. FILE #: J16-D12

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

LEGAL DESCRIPTION: Lot 1 and 34 of block27 and block 28, second unit of McDuffie Place

CITY ADDRESS: 3501 Lomas Boulevard

ENGINEERING FIRM: Chavez-Grieves CONTACT: James Alarid

ADDRESS: 5639 Jefferson NE PHONE: 344-4080

OWNER: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

ARCHITECT: George Rainhart Architects CONTACT: Bill Johnson

ADDRESS: 2325 San Pedro NE, Suite 2-B PHONE: 884-9110

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT

__X__ DRAINAGE PLAN

____ CONCEPTUAL GRADING & DRAINAGE PLAN

__X__ GRADING PLAN

____ EROSION CONTROL PLAN

____ ENGINEER'S CERTIFICATION

____ OTHER

PRE-DESIGN MEETING:

__X__ YES/ Advised over phone by B. Montoya

____ NO

____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL

____ PRELIMINARY PLAT APPROVAL

____ S. DEV. PLAN FOR SUB'D. APPROVAL

____ S. DEV. PLAN FOR BLDG. PRMT. APPROVAL

____ SECTOR PLAN APPROVAL

____ FINAL PLAT APPROVAL

____ FOUNDATION PERMIT APPROVAL

____ BUILDING PERMIT APPROVAL

__X__ CERTIFICATE OF OCCUPANCY APPROVAL

____ GRADING PERMIT APPROVAL

____ PAVING PERMIT APPROVAL

____ S.A.D. DRAINAGE REPORT

____ DRAINAGE REQUIREMENTS

____ OTHER

DATE SUBMITTED: 8/28/98

BY: _____

RECEIVED
AUG 28 1998
HYDROLOGY SECTION

30 day Temp CO issued on 8/27/98
AG

CHAVEZ · GRIEVES
CONSULTING ENGINEERS, INC.

5639 JEFFERSON STREET NE • ALBUQUERQUE, NEW MEXICO 87109 • PHONE (505) 344-4080 • FAX (505) 343-8759

February 23, 1998

Lisa Ann Manwill, P.E.
City of Albuquerque Hydrology
P.O. Box 1293
Albuquerque, NM 87103

RE: Revised Grading and Drainage Plan
Walgreens File #J16-D12
Albuquerque, New Mexico

Dear Ms. Manwill,

Transmitted herewith for building, grading, and paving permit approval is the revised grading and drainage plan for the above mentioned project. This plan was approved on October 8, 1997, but has since been modified to accommodate changes to the site plan. The changes to the site plan are as follows:

1. The orientation and size of the building has been changed.
2. The parking lot layout has been modified.
3. One additional driveway has been added for access to the site from Amherst Drive.
4. A portion of one of the existing buildings will remain on the site.

Although the grading was changed, the above changes did not alter the general drainage pattern of the site. The extent of the changes were alterations to the grading plan and a lower finished floor elevation.

If you have any questions or wish to discuss this in more detail, please call me.

Sincerely,

CHAVEZ-GRIEVES CONSULTING ENGINEERS, INC.

James Alarid, E.I.

xc: Brad Ponder, Chavez-Grieves

G:\R21\115\DOCUMENT\MANWILL2.WPD

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CONSULTING ENGINEERS, INC.

5639 JEFFERSON STREET NE • ALBUQUERQUE, NEW MEXICO 87109 • PHONE (505) 344-4080 • FAX (505) 343-8759

LETTER OF TRANSMITTAL

TO: COA Hydrology

DATE: 2-23-98

JOB # R21-115-0097

RE: Walgreens on Lomas & Carlisle

ATTN:

WE ARE SENDING YOU X **ATTACHED** ___ **UNDER SEPARATE COVER, THE FOLLOWING ITEMS:**

____SHOP DRAWINGS	____PLANS	____SPECIFICATIONS	____DISKETTE
____CHANGE ORDER	____PRINTS	____CALCULATIONS	____PROPOSAL INFO
____COPY OF LETTER	____SAMPLES	X REPORT	____ _____

COPIES	DATE	NO.	DESCRIPTION
1			Drainage Report

THESE ARE TRANSMITTED AS CHECKED BELOW:

____FOR YOUR USE	X FOR REVIEW & COMMENT
____AS REQUESTED	____RETURNED AFTER LOAN TO US
____PLEASE CORRECT AND RESUBMIT	____SUBMIT____COPIES FOR DISTRIBUTION
____RESUBMITTAL IS NOT REQUIRED	____RETURN____CORRECTED PRINTS
CORRECTIONS, IF ANY, ARE NOTED	____BIDS/PROPOSALS DUE _____ 199_

REMARKS:

RECEIVED
FEB 23 1998
HYDROLOGY SECTION

COPIES TO: File

SIGNED: Colette T. Hoffman

IF ENCLOSURES ARE NOT AS NOTED, KINDLY NOTIFY US AT ONCE.

REV.9/95

DRAINAGE INFORMATION

PROJECT TITLE: Walgreens on Lomas & Carlisle ZONE ATLAS/DRNG. FILE #: J16-D12

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

LEGAL DESCRIPTION: Lot 1 and 34 of block 27 and block 28, second unit of McDuffie Place

CITY ADDRESS: 3501 Lomas Boulevard

ENGINEERING FIRM: Chavez-Grieves CONTACT: James Alarid

ADDRESS: 5639 Jefferson NE PHONE: 344-4080

OWNER: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

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SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT

__X__ DRAINAGE PLAN

____ CONCEPTUAL GRADING & DRAINAGE PLAN

__X__ GRADING PLAN

____ EROSION CONTROL PLAN

____ ENGINEER'S CERTIFICATION

____ OTHER

PRE-DESIGN MEETING:

__X__ YES/ Advised over phone by B. Montoya

____ NO

____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL

____ PRELIMINARY PLAT APPROVAL

____ S. DEV. PLAN FOR SUB'D. APPROVAL

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____ SECTOR PLAN APPROVAL

____ FINAL PLAT APPROVAL

____ FOUNDATION PERMIT APPROVAL

__X__ BUILDING PERMIT APPROVAL

____ CERTIFICATE OF OCCUPANCY APPROVAL

__X__ GRADING PERMIT APPROVAL

__X__ PAVING PERMIT APPROVAL

____ S.A.D. DRAINAGE REPORT

____ DRAINAGE REQUIREMENTS

____ OTHER

DATE SUBMITTED: February 23, 1998

BY: James Alarid

CITY OF ALBUQUERQUE

PUBLIC WORKS DEPARTMENT

October 8, 1997

INTEROFFICE CORRESPONDENCE HYDROLOGY DIVISION

TO: Desiderio Salas, Street Maintenance Division

FROM: Lisa Ann Manwill, P.E. Engineering Associate, PWD

SUBJECT: **PRIVATE DRAINAGE FACILITIES WITHIN PUBLIC RIGHT-OF-WAY DRAINAGE FILE NUMBER J16-D12.**

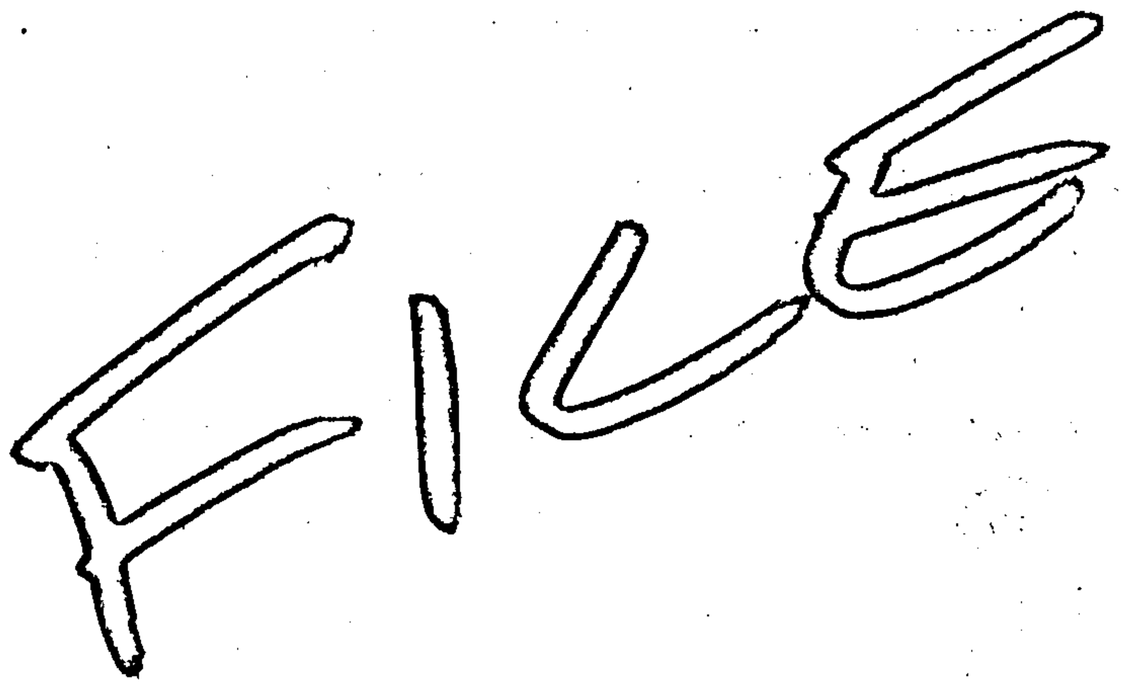
Transmitted herewith, is a copy of the approved drainage plan for the referenced project incorporating the SO #19 design.

This plan is being submitted to you for permitting and inspection. Please provide this section with a signed-off copy per the signature block upon construction and acceptance by your office.

As you are aware, the signed off SO #19 is required by this office for Certificate of Occupancy release; therefore your expeditious processing of this plan would be greatly appreciated and would avoid any unnecessary delay in the release of the Certificate of Occupancy.

Thank you for your cooperation and if you should have any questions and/or comments, please feel free to call me at 924-3984.

Attachment



CITY OF
Albuquerque

October 8, 1997

Martin J. Chávez, Mayor

James Alarid
Chavez-Grieves
5639 Jefferson NE
Albuquerque, NM 87109

RE: WALGREENS (J16-D12). DRAINAGE REPORT FOR BUILDING AND SO #19 PERMIT APPROVALS. ENGINEER'S STAMP DATED SEPTEMBER 22, 1997.

Dear Mr. Alarid:

Based on the information provided on your September 22, 1997 submittal, the above referenced project is approved for Building and SO #19 Permits.

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

A separate permit is required for construction within City right-of-way. A copy of this approval letter must be on hand when applying for the excavation permit.

Prior to Certificate of Occupancy approval, an Engineer's Certification will be required.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Arlene Portillo
Andrew Garcia
File

DRAINAGE INFORMATION

PROJECT TITLE: Walgreens ZONE ATLAS/DRNG. FILE #: J-16 <12

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

LEGAL DESCRIPTION: Lot 1 and 34 of block27 and block 28, second unit of McDuffie Place

CITY ADDRESS: 3501 Lomas Boulevard

ENGINEERING FIRM: Chavez-Grieves CONTACT: James Alarid

ADDRESS: 5639 Jefferson NE PHONE: 344-4080

OWNER: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

ARCHITECT: George Rainhart Architects CONTACT: Bill Johnson

ADDRESS: 2325 San Pedro NE, Suite 2-B PHONE: 884-9110

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

__X__ DRAINAGE REPORT

__X__ DRAINAGE PLAN

____ CONCEPTUAL GRADING & DRAINAGE PLAN

__X__ GRADING PLAN

__X__ EROSION CONTROL PLAN

____ ENGINEER'S CERTIFICATION

____ OTHER

PRE-DESIGN MEETING:

__X__ YES/ Advised over phone by B. Montoya

____ NO

__X__ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL

____ PRELIMINARY PLAT APPROVAL

____ S. DEV. PLAN FOR SUB'D. APPROVAL

____ S. DEV. PLAN FOR BLDG. PRMT. APPROVAL

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__X__ GRADING PERMIT APPROVAL

__X__ PAVING PERMIT APPROVAL

____ S.A.D. DRAINAGE REPORT

____ DRAINAGE REQUIREMENTS

____ OTHER

DATE SUBMITTED: September 22, 1997

BY: James Alarid

RECEIVED
SEP 23 1997
HYDROLOGY SECTION

CHAVEZ · GRIEVES
CONSULTING ENGINEERS, INC.
5639 JEFFERSON STREET NE • ALBUQUERQUE, NEW MEXICO 87109 • PHONE (505) 344-4080 • FAX (505) 343-8759

GRADING AND DRAINAGE PLAN

FOR

WALGREENS ON LOMAS AND CARLISLE

Albuquerque, New Mexico

February 1998

CHAVEZ · GRIEVES
CONSULTING ENGINEERS, INC.
5639 JEFFERSON STREET NE • ALBUQUERQUE, NEW MEXICO 87109 • PHONE (505) 344-4080 • FAX (505) 343-8759

GRADING AND DRAINAGE PLAN

WALGREENS ON LOMAS AND CARLISLE

Albuquerque, New Mexico

February 1998

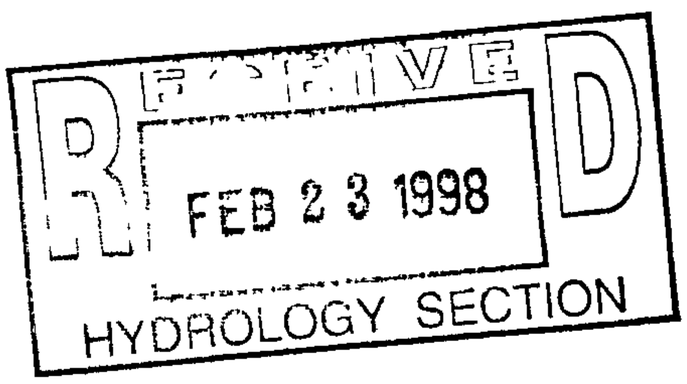

Table of Contents

Figures

Walgreens on Lomas and Carlisle Drainage Report

LOCATION

This site is located on the northwest corner of Carlisle Boulevard and Lomas Boulevard.

LEGAL DESCRIPTION

Lot 1 and 34 of block 27 and block 28, second unit of McDuffie Place.

SURROUNDING DEVELOPMENT

The site is bordered by Lomas Boulevard on the south, Carlisle Boulevard on the east, Amherst Drive on the west, and a residential development to the north.

FLOOD HAZARD ZONES

As shown in Panel 3500020029 of the National Flood Insurance Rate Maps for the City of Albuquerque, dated Oct. 14, 1983, the site is in a designated flood hazard zone C (areas of minimal flooding).

RELATED REPORTS

No related drainage reports exist for this site.

EXISTING SITE CONDITIONS AND DRAINAGE PATTERN

As shown on sheet DB1, the existing site is entirely developed as a shopping center and associated parking lots. The existing site is divided into four drainage basins. Basin A consists of the southern two-thirds of the property which receives runoff from half of the roof tops of the buildings and the parking lot on the south half of the site. Basin A flows east to west through the parking lot and discharges directly into Amherst Drive through an existing driveway. Basin B consists of the northern third of the site which receives flow from building roof tops and the parking lot on the north edge of the property. The runoff from Basin B flows east to west through the parking lot and discharges directly to Amherst Drive through an existing driveway. Basin C consists of a portion of the roof top and sidewalk adjacent to Carlisle Boulevard. The runoff from Basin C flows over the sidewalk into Carlisle Boulevard. Basin D consists of a portion of the roof top and sidewalk on the southeast corner of the site. Runoff from Basin D flows over the sidewalk into Carlisle and Lomas Boulevard.

PROPOSED SITE CONDITIONS AND DRAINAGE PATTERN

The proposed developed site will consist of a new Walgreens and associated parking lots. The new 13,905 square-foot building will be located at the center of the site and have asphalt parking on all sides of the building.

Mr. Bernie Montoya of the City of Albuquerque Hydrology Department was consulted prior to beginning the grading of the site. See the attached memo in the appendices of this report for the issues discussed and guidance received.

See Figure 1 for a runoff comparison of the historical and developed conditions. See sheet DB2 for a detailed view of the developed drainage pattern. The developed site will be divided into four drainage basins. Basin A consists of the northern portion of the site and the entire roof area. Part of the runoff from Basin A will flow west through the parking lot and through a riprap swale located behind the curb and discharge into Amherst Drive via a new sidewalk culvert. The remainder of the runoff from Basin A will flow from the parking lot through a driveway into Amherst Drive. Basin D consists of the asphalt parking on the east and south side of the building. Runoff from Basin D will flow south through the parking lot and flow through a riprap swale located behind the curb along the south parking lot. The riprap swale will route the flow to a new drop inlet which connects to a second new inlet on the southwest corner of the site. Basin C consists of the entrance driveway from Lomas Boulevard. Runoff from Basin C will flow directly into Lomas Boulevard to an existing storm drain inlet located on the corner of Lomas and Amherst. Basin B consists of the west parking area and the landscaped area in the southwest corner of the property. Runoff from Basin B will flow into a new drop inlet which discharges into the existing drop inlet on the corner of Lomas and Amherst. The total runoff from the developed site will be less than the historical due to the additional landscape incorporated into the developed site.

FIGURE 1: RUNOFF COMPARISON

BASIN	EXISTING (CFS)	DEVELOPED (CFS)
A	4.41	4.12
B	3.05	1.02
C	0.15	0.28
D	0.47	2.22
TOTAL	8.08	7.64

HYDROLOGY/HYDRAULICS

The runoff calculations and design have been done in accordance with Section 22.2 of the Development Process Manual of the City of Albuquerque, January 1993. The computerized hydrologic model, AHYMO, was used to calculate storm volumes in accordance with Section 22.2. The 1-hour, 6-hour, and 24-hour precipitation depths were derived from figures C-1, C-2, and C-3 of Section 22.2.

APPENDIX A

HYDROLOGIC COMPUTATIONS

```
    AHYMO PROGRAM (AHYMO_97) -                              - Version:  1997.02c
         RUN DATE (MON/DAY/YR) = 02/20/1998
         START TIME (HR:MIN:SEC) = 10:29:38     USER NO.= AHYMO-I3Chavez-Grieves-C
         INPUT FILE = G:\R21\115\DOCUMENT\AHYMO.IN

*S**************************************************************************
*S******************    CHAVEZ-GRIEVES CONSULTING ENGINEERS, INC.   ********
*S**********************     WALGREENS, LOMAS & CARLISLE    ****************
*S**************************************************************************
*S*  FILENAME: G:\R21\115\DOCUMENT\AHYMO.IN/OUT
*S**************************************************************************
*S 100 YEAR STORM, 6 HOUR STORM
START                   TIME=0.00 PUNCH CODE=0
RAINFALL                TYPE=1 RAIN QUARTER=0.0 RAIN ONE=2.01
                        RAIN SIX=2.31 RAIN DAY=2.69  DT=0.03333

                  COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                  DT =     .033330 HOURS       END TIME =     5.999400 HOURS
                     .0000   .0013   .0025   .0039   .0052   .0066   .0080
                     .0094   .0109   .0124   .0140   .0156   .0172   .0189
                     .0206   .0224   .0242   .0261   .0281   .0301   .0322
                     .0344   .0367   .0390   .0415   .0441   .0468   .0496
                     .0526   .0557   .0591   .0646   .0705   .0769   .0905
                     .1210   .1680   .2354   .3274   .4483   .6025   .7945
                    1.0289  1.2464  1.3372  1.4139  1.4821  1.5442  1.6013
                    1.6544  1.7039  1.7504  1.7941  1.8354  1.8743  1.9112
                    1.9462  1.9793  2.0107  2.0406  2.0689  2.0751  2.0808
                    2.0862  2.0914  2.0963  2.1009  2.1054  2.1097  2.1139
                    2.1179  2.1217  2.1255  2.1291  2.1326  2.1360  2.1393
                    2.1425  2.1457  2.1487  2.1517  2.1546  2.1575  2.1602
                    2.1630  2.1656  2.1682  2.1708  2.1733  2.1758  2.1782
                    2.1805  2.1829  2.1852  2.1874  2.1896  2.1918  2.1939
                    2.1960  2.1981  2.2002  2.2022  2.2042  2.2061  2.2081
                    2.2100  2.2118  2.2137  2.2155  2.2173  2.2191  2.2209
                    2.2226  2.2243  2.2260  2.2277  2.2294  2.2310  2.2327
                    2.2343  2.2359  2.2374  2.2390  2.2405  2.2421  2.2436
                    2.2451  2.2465  2.2480  2.2495  2.2509  2.2523  2.2537
                    2.2551  2.2565  2.2579  2.2592  2.2606  2.2619  2.2633
                    2.2646  2.2659  2.2672  2.2685  2.2697  2.2710  2.2723
                    2.2735  2.2747  2.2760  2.2772  2.2784  2.2796  2.2808
                    2.2819  2.2831  2.2843  2.2854  2.2866  2.2877  2.2888
                    2.2900  2.2911  2.2922  2.2933  2.2944  2.2955  2.2965
                    2.2976  2.2987  2.2997  2.3008  2.3018  2.3029  2.3039
                    2.3049  2.3060  2.3070  2.3080  2.3090  2.3100

*S  COMPUTE THE RUNOFF FROM THE EXISTING BASINS.
*S  BASIN A
COMPUTE NM HYD          ID=1  HYD=EXIST-A  DA=.0014693 SQ MI
                        %A=0  %B=0  %C=1  %D=99
                        TP=0.1333  RAINFALL=-1

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     AREA =      .001455 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     K =   .107446HR     TP =   .133300HR    K/TP RATIO =   .806046     SHAPE CONSTANT, N =  4.440701
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     AREA =      .000015 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD               ID=1  CODE=1
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                                HYDROGRAPH FROM AREA EXIST-A

    RUNOFF VOLUME =     2.06682 INCHES     =        .1620 ACRE-FEET
    PEAK DISCHARGE RATE =      4.41 CFS  AT   1.500 HOURS   BASIN AREA =   .0015 SQ. MI.


*S  BASIN B
COMPUTE NM HYD      ID=2  HYD=EXIST-B  DA=.0010133 SQ MI
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                    TP=0.1333  RAINFALL=-1

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PRINT HYD           ID=2  CODE=1

                                HYDROGRAPH FROM AREA EXIST-B

    RUNOFF VOLUME =     2.07643 INCHES     =        .1122 ACRE-FEET
    PEAK DISCHARGE RATE =      3.05 CFS  AT   1.500 HOURS   BASIN AREA =   .0010 SQ. MI.


*S  BASIN C
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     AREA =      .000046 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=3  CODE=1

                                HYDROGRAPH FROM AREA EXIST-C

    RUNOFF VOLUME =     2.07643 INCHES     =        .0051 ACRE-FEET
    PEAK DISCHARGE RATE =       .15 CFS  AT   1.500 HOURS   BASIN AREA =   .0000 SQ. MI.


*S  BASIN D
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PRINT HYD           ID=4  CODE=1

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```

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*S  COMPUTE THE RUNOFF FROM THE DEVELPED BASINS.
*S  BASIN A
COMPUTE NM HYD       ID=5  HYD=DEVEL-A  DA=.0014168 SQ MI
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                     TP=0.1333  RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   4.9783    CFS   UNIT VOLUME =    .9969       B =   526.28      P60 = 2.0100
     AREA =      .001261 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


     K =   .107446HR    TP =   .133300HR    K/TP RATIO =   .806046     SHAPE CONSTANT, N =  4.440701
     UNIT PEAK =   .44842    CFS   UNIT VOLUME =    .9717       B =   383.55      P60 = 2.0100
     AREA =      .000156 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

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*S  BASIN B
COMPUTE NM HYD       ID=6  HYD=DEVEL-B  DA=.00039084 SQ MI
                     %A=0  %B=0  %C=43  %D=57
                     TP=0.1333  RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   .87954    CFS   UNIT VOLUME =    .9862       B =   526.28      P60 = 2.0100
     AREA =      .000223 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


     K =   .107446HR    TP =   .133300HR    K/TP RATIO =   .806046     SHAPE CONSTANT, N =  4.440701
     UNIT PEAK =   .48357    CFS   UNIT VOLUME =    .9745       B =   383.55      P60 = 2.0100
     AREA =      .000168 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD            ID=6  CODE=1

                                   HYDROGRAPH FROM AREA DEVEL-B

    RUNOFF VOLUME =     1.66321 INCHES     =         .0347 ACRE-FEET
    PEAK DISCHARGE RATE =       1.02 CFS  AT    1.500 HOURS   BASIN AREA =   .0004 SQ. MI.


*S  BASIN C
COMPUTE NM HYD       ID=7  HYD=DEVEL-C  DA=.00009025 SQ MI
                     %A=0  %B=0  %C=4  %D=96
                     TP=0.1333  RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   .34206    CFS   UNIT VOLUME =    .9664       B =   526.28      P60 = 2.0100
     AREA =      .000087 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330
```

```
     K =   .107446HR    TP =   .133300HR    K/TP RATIO =   .806046     SHAPE CONSTANT, N =  4.440701
     UNIT PEAK =   .10387E-01CFS   UNIT VOLUME =    .8782       B =   383.55      P60 = 2.0100
     AREA =      .000004 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=7  CODE=1

                                        HYDROGRAPH FROM AREA DEVEL-C


    RUNOFF VOLUME =     2.03799 INCHES     =        .0098 ACRE-FEET
    PEAK DISCHARGE RATE =        .28 CFS  AT   1.500 HOURS   BASIN AREA =   .0001 SQ. MI.



*S  BASIN D
COMPUTE NM HYD      ID=8  HYD=DEVEL-D  DA=.0007853 SQ MI
                    %A=0  %B=0  %C=20  %D=80
                    TP=0.1333  RAINFALL=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   2.4803    CFS   UNIT VOLUME =    .9949       B =   526.28      P60 = 2.0100
     AREA =      .000628 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


     K =   .107446HR    TP =   .133300HR    K/TP RATIO =   .806046     SHAPE CONSTANT, N =  4.440701
     UNIT PEAK =   .45191    CFS   UNIT VOLUME =    .9717       B =   383.55      P60 = 2.0100
     AREA =      .000157 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=8  CODE=1

                                        HYDROGRAPH FROM AREA DEVEL-D


    RUNOFF VOLUME =     1.88424 INCHES     =        .0789 ACRE-FEET
    PEAK DISCHARGE RATE =       2.22 CFS  AT   1.500 HOURS   BASIN AREA =   .0008 SQ. MI.



*S ROUTE BASIN D FROM DROP INLET#1 TO DROP INLET #2
COMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1  SLP=0.02
                    DIA=0.833 FT  N=.013

                                RATING CURVE PIPE SECTION  1.0
                                   WATER        FLOW         FLOW         MAX
                                 SURFACE        AREA         RATE        WIDTH
                                  ELEV          SQ FT        CFS         FT
                                    .00           .00          .00         .00
                                    .04           .01          .02         .37
                                    .09           .03          .07         .51
                                    .13           .05          .16         .61
                                    .17           .08          .29         .68
                                    .22           .11          .46         .73
                                    .26           .15          .66         .77
                                    .30           .18          .88         .80
                                    .35           .22         1.12         .82
                                    .39           .25         1.39         .83
                                    .43           .29         1.66         .83
                                    .48           .32         1.94         .83
                                    .52           .36         2.21         .83
                                    .56           .39         2.48         .83
                                    .61           .43         2.73         .83
                                    .65           .46         2.95         .83
```

.69	.49	3.14	.83
.74	.51	3.27	.83
.78	.53	3.33	.83
.83	.54	3.33	.83

COMPUTE TRAVEL TIME ID=9 REACH NO=1 NO VS=1 L=105 FT SLP=.02

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.043	.011	.02	.0195
.087	.030	.07	.0125
.130	.054	.16	.0097
.174	.082	.29	.0081
.217	.113	.46	.0072
.260	.146	.66	.0065
.304	.180	.88	.0060
.347	.215	1.12	.0056
.391	.251	1.39	.0053
.434	.287	1.66	.0050
.477	.323	1.94	.0049
.521	.359	2.21	.0047
.564	.393	2.48	.0046
.608	.426	2.73	.0045
.651	.457	2.95	.0045
.695	.486	3.14	.0045
.738	.511	3.27	.0045
.781	.531	3.33	.0047
.833	.545	3.33	.0048

ROUTE ID=9 HYD=10"_SD INFLOW ID=8 DT=0.03333
PRINT HYD ID=9 CODE=1

HYDROGRAPH FROM AREA 10"_SD

RUNOFF VOLUME = 1.88451 INCHES = .0789 ACRE-FEET
PEAK DISCHARGE RATE = 2.21 CFS AT 1.500 HOURS BASIN AREA = .0008 SQ. MI.

*S ADD BASIN B TO ROUTED FLOW FROM BASIN D IN DROP INLET#2
ADD HYD ID=10 HYD=DI#2_TOT ID I=6 TO ID II=9
PRINT HYD ID=10 CODE=1

HYDROGRAPH FROM AREA DI#2_TOT

RUNOFF VOLUME = 1.81039 INCHES = .1136 ACRE-FEET
PEAK DISCHARGE RATE = 3.23 CFS AT 1.500 HOURS BASIN AREA = .0012 SQ. MI.

*S ROUTE TO DROP INLET #2 TO LOMAS SD
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.04
DIA=1.0 FT N=.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	MAX WIDTH FT
.00	.00	.00	.00
.05	.02	.04	.44
.10	.04	.16	.61

```
                                    .16          .08          .38          .73
                                    .21          .12          .68          .81
                                    .26          .16         1.06          .88
                                    .31          .21         1.51          .93
                                    .36          .26         2.02          .96
                                    .42          .31         2.59          .99
                                    .47          .36         3.19         1.00
                                    .52          .41         3.82         1.00
                                    .57          .47         4.46         1.00
                                    .63          .52         5.09         1.00
                                    .68          .57         5.71         1.00
                                    .73          .61         6.29         1.00
                                    .78          .66         6.80         1.00
                                    .83          .70         7.23         1.00
                                    .89          .74         7.54         1.00
                                    .94          .77         7.67         1.00
                                   1.00          .79         7.67         1.00
COMPUTE TRAVEL TIME ID=11  REACH NO=1  NO VS=1  L=13 FT  SLP=.04

                        TRAVEL TIME TABLE
                                        REACH=  1.0

                        WATER        AVERAGE      FLOW         TRAVEL
                        DEPTH        AREA         RATE         TIME
                        FEET         SQ.FT.       CFS          HRS
                           .052         .016          .04        .0015
                           .104         .043          .16        .0010
                           .156         .078          .38        .0008
                           .208         .119          .68        .0006
                           .261         .163         1.06        .0006
                           .313         .210         1.51        .0005
                           .365         .259         2.02        .0005
                           .417         .310         2.59        .0004
                           .469         .362         3.19        .0004
                           .521         .414         3.82        .0004
                           .573         .466         4.46        .0004
                           .625         .517         5.09        .0004
                           .677         .566         5.71        .0004
                           .730         .614         6.29        .0004
                           .782         .659         6.80        .0003
                           .834         .700         7.23        .0003
                           .886         .736         7.54        .0004
                           .938         .765         7.67        .0004
                          1.000         .785         7.67        .0004
ROUTE                ID=11 HYD=12"_SD INFLOW ID=10 DT=0.03333
PRINT HYD            ID=11 CODE=1

                                HYDROGRAPH FROM AREA 12"_SD


    RUNOFF VOLUME =     1.81079 INCHES     =        .1136 ACRE-FEET
    PEAK DISCHARGE RATE =       3.24 CFS  AT    1.500 HOURS   BASIN AREA =    .0012 SQ. MI.


FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 10:29:39
```

WALGREENS -- CONCRETE RUNDOWN
Worksheet for Rectangular Channel

Project Description	
Project File	c:\haestad\fmw\project9.fm2
Worksheet	WALGREENS -- CONCRETE RUNDOWN
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.020000	ft/ft
Depth	0.50	ft
Bottom Width	2.00	ft

Results		
Discharge	7.77	cfs
Flow Area	1.00	ft^2
Wetted Perimeter	3.00	ft
Top Width	2.00	ft
Critical Depth	0.78	ft
Critical Slope	0.005766	ft/ft
Velocity	7.77	ft/s
Velocity Head	0.94	ft
Specific Energy	1.44	ft
Froude Number	0.00	

WALGREENS -- RIPRAP SWALE
Worksheet for Triangular Channel

Project Description	
Project File	c:\haestad\fmw\project9.fm2
Worksheet	444
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.035	
Channel Slope	0.015000	ft/ft
Depth	0.67	ft
Left Side Slope	3.000000	H : V
Right Side Slope	3.000000	H : V

Results		
Discharge	3.26	cfs
Flow Area	1.35	ft²
Wetted Perimeter	4.24	ft
Top Width	4.02	ft
Critical Depth	0.59	ft
Critical Slope	0.028714	ft/ft
Velocity	2.42	ft/s
Velocity Head	0.09	ft
Specific Energy	0.76	ft
Froude Number	0.74	
Flow is subcritical.		

Printed September 15, 1997 (2:45pm)

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc.

5639 Jefferson Street NE, Albuquerque, New Mexico 87109 *Phone (505) 344-4080 - Fax (505) 343-8759*

MEMORANDUM

TO: Bernie Montoya, City of Albuquerque Hydrology Engineer
Fax: 924-3864

FROM: James Alarid, Chavez-Grieves

DATE: September 15, 1997

PROJECT: Walgreens at Lomas and Carlisle

SUBJECT: RECOUNT OF TELEPHONE DISCUSSION ON SEPTEMBER 15, 1997

Mr. Montoya,

Per our discussion regarding the above mentioned project I would like to provide you with my interpretation of some of the aspects of the project we discussed.

The developed runoff will be less than the historical due to the increased area of pervious landscape in the developed condition. The existing site discharges runoff into Lomas Boulevard and Amherst Drive to the south and west respectfully. The runoff flows to two existing drop inlets at the corner of Lomas and Amherst. I inquired if the new Walgreens site could be designed to discharge in the same manner. You indicated that we could grade the site to discharge to the two existing inlets without performing an analysis of the downstream capacity of the existing system since the developed runoff will be less than the historical.

You also advised me that all deficiencies in the existing site such as flow over sidewalks shall be corrected as a part of this project.

We will proceed to grade the site as directed in the summary above. If my interpretation of our conversation as summarized above is not as you intended, please call to discuss.

Sincerely,

Project Engineer

Send: [X] *Fax* [ ] *Mail* [ ] *Runner* [ ] *Call for pick-up* [ ] *Other* _____
Copy: [ ] *Client* [ ] *Owner* [ ] *Contractor* [ ] *File* [ ] *Other* _____ PMM 6.C.

APPENDIX B

DRAWINGS