D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE,NM 87199
(505) 828-2200 FAX 797-9539

August 30, 2010

Mr. Curtis Cherne, PE
Hydrology Division
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Hope Christian Elementary School Addition (Tract 23, NAA – D18/D009A)

Dear Mr. Cherne:

Your letter of approval for a grading and drainage plan on the referenced property, dated July 9, 2010, has been received and acknowledged by my office. Hope Christian School, Inc. is owner of both Lot 23 and the adjoining 7-acre Tract B, Hope Christian Schools, directly to the west of the subject site. As part of its improvement plan on Lot 23, incidental modifications are being proposed to current site development plan for the adjoining Tract B, HCS (AA submitted 08/27). Minor changes have recently been made to this plan to comply with DRB comments.

Under current conditions the vacant Lot 23 drains directly west and onto the school's existing Tract B. The objective of the subject grading and drainage plan is to divert developed runoff south and toward Palomas Ave., which has previously been shown to have sufficient capacity (Hope Christian School Master Drainage Plan, approved March 30, 2006). Lot 23 and a 0.37-acre portion of Tract B (about 5% of that 7-acre site) has been divided up into 6 distinct drainage basins on the latest grading and drainage plan, stamped with today's date. All these surfaces are presently Type C land treatment and with site development they will convert to primarily Type D, with lesser amounts of Type C. From AHYMO I found that all the basins will generate 5.39 cfs in the future condition, compared to 4.14 cfs in the existing state. Basins A-D will be graded to drain directly into Palomas Ave., while Basins E and F, serving as a transition between the two sites, will still continue to drain west and into the existing school campus. Basins and E and F generate 0.64 cfs under developed conditions. Given that the school's existing campus currently receives all of Tract B's existing of-site flows, implementation of this plan will result in a net 3.5-cfs reduction in total peak flow reaching Tract B of the school.

A letter from Jim Tate of Hope Christian School, concurring with this condition (dated July 6, 2010) should have already been received by your office. A private drainage easement is also being developed for the purpose of allowing this condition to continue. This is all a temporary condition since the pre-engineered modular buildings being proposed for this site will eventually be replaced by site-built structures once the school can afford to construct its campus improvements, as shown and approved on the school's master plan (approved by EPC in 2004).

Please contact me if I can be of further assistance.

Sincerely,

Mark Goodwin & Associates, PA

John M. MacKenzie, PE
Vice President

RECEIVED
AUG 30 2010
HYDROLOGY SECTION

F:\1-Projects\2010\A10032 - Hope Christian Elementary\Ltr. to Curtis_Hydrology COA.doc

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02d RUN DATE (MON/DAY/YR) =08/26/2010
INPUT FILE = Lot23.dat USER NO.=
AHYMO-I-9702dGoodwinM-AH

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.500
COMPUTE NM HYD	101.00	-	1-A(DEV.)	.00030	.82	.028	1.75700	1.500	4.287	PER IMP= 50.00
COMPUTE NM HYD	102.00	-	2-B(DEV.)	.00020	.55	.019	1.75700	1.500	4.334	PER IMP= 50.00
COMPUTE NM HYD	103.00	-	3-C(DEV.)	.00080	2.45	.090	2.11201	1.500	4.783	PER IMP= 85.00
COMPUTE NM HYD	104.00	-	4-D(DEV.)	.00030	.93	.034	2.11201	1.500	4.850	PER IMP= 85.00
COMPUTE NM HYD	105.00	-	5-E(DEV.)	.00010	.32	.011	2.11201	1.500	4.961	PER IMP= 85.00
COMPUTE NM HYD	106.00	-	6-F(DEV.)	.00010	.32	.011	2.11201	1.500	4.961	PER IMP= 85.00
ADD HYD	107.00	1& 2	7	.00050	1.38	.047	1.75625	1.500	4.306	
ADD HYD	108.00	3& 7	8-A,B & C	.00130	3.83	.137	1.97497	1.500	4.600	
COMPUTE NM HYD	109.00	-	9-ABC(Ex)	.00130	2.82	.087	1.24986	1.500	3.390	PER IMP= .00
COMPUTE NM HYD	110.00	-	10	.00050	1.09	.033	1.24986	1.500	3.408	PER IMP= .00
COMPUTE NM HYD	111.00	-	11	.00010	.23	.007	1.24986	1.500	3.536	PER IMP= .00
ADD HYD	112.00	9&10	12	.00180	3.91	.120	1.24971	1.500	3.395	
ADD HYD	113.00	11&12	13-All(Ex)	.00190	4.14	.127	1.24964	1.500	3.403	
FINISH										

Rudy Keep

```
      AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02d
           RUN DATE (MON/DAY/YR) = 08/26/2010
           START TIME (HR:MIN:SEC) = 15:12:52     USER NO.= AHYMO-I-9702dGoodwinM-AH
           INPUT FILE = Lot23.dat

     START                          TIME=0.0
     *****                          HOPE CHRISTIAN ELEMENTARY SCHOOL - LOT 23
     *****                          CALCULATE FLOWS USING 100-YEAR, 6-HOUR STORM
     *****                          INPUT FILE:LOT23.DAT 6/25/10 - REVISED 8/26
     RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=2.13 IN RAIN SIX=2.5 IN
                         RAIN DAY=2.9 IN DT=0.03333 HR

                    COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT
1.40 HR.

                    DT =    .033330 HOURS        END TIME =     5.999400 HOURS
                       .0000   .0018   .0036   .0055   .0074   .0094   .0114
                       .0134   .0155   .0177   .0199   .0222   .0245   .0269
                       .0293   .0319   .0345   .0372   .0400   .0428   .0458
                       .0489   .0521   .0555   .0590   .0626   .0664   .0704
                       .0746   .0791   .0837   .0896   .0959   .1027   .1171
                       .1494   .1991   .2706   .3681   .4962   .6597   .8631
                      1.1115  1.3420  1.4382  1.5195  1.5918  1.6575  1.7181
                      1.7743  1.8268  1.8761  1.9224  1.9661  2.0074  2.0465
                      2.0835  2.1186  2.1519  2.1836  2.2136  2.2206  2.2271
                      2.2333  2.2392  2.2448  2.2502  2.2553  2.2603  2.2651
                      2.2697  2.2742  2.2785  2.2827  2.2868  2.2908  2.2947
                      2.2984  2.3021  2.3057  2.3092  2.3126  2.3159  2.3192
                      2.3224  2.3256  2.3286  2.3317  2.3346  2.3375  2.3404
                      2.3432  2.3460  2.3487  2.3514  2.3540  2.3566  2.3591
                      2.3617  2.3641  2.3666  2.3690  2.3714  2.3737  2.3760
                      2.3783  2.3805  2.3828  2.3850  2.3871  2.3893  2.3914
                      2.3935  2.3956  2.3976  2.3996  2.4016  2.4036  2.4056
                      2.4075  2.4094  2.4113  2.4132  2.4151  2.4169  2.4188
                      2.4206  2.4224  2.4241  2.4259  2.4276  2.4294  2.4311
                      2.4328  2.4345  2.4361  2.4378  2.4394  2.4411  2.4427
                      2.4443  2.4459  2.4475  2.4490  2.4506  2.4521  2.4537
                      2.4552  2.4567  2.4582  2.4597  2.4611  2.4626  2.4641
                      2.4655  2.4669  2.4684  2.4698  2.4712  2.4726  2.4740
                      2.4753  2.4767  2.4781  2.4794  2.4808  2.4821  2.4834
                      2.4847  2.4861  2.4874  2.4887  2.4899  2.4912  2.4925
                      2.4938  2.4950  2.4963  2.4975  2.4987  2.5000

     **********PROPOSED*CONDITIONS**********
     ************************************************************
     ***** DRAINAGE BASIN A - 0.20 ACRES
     COMPUTE NM HYD      ID=1 HYD NO=101.0 AREA=0.0003 SQ MI
                         PER A=0.0 PER B=0.0 PER C=50.00 PER D=50.00
                         TP=0.1333 HR MASS RAINFALL=-1

          K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT,
N =  7.106420
          UNIT PEAK =   .59221    CFS   UNIT VOLUME =    .9786       B =   526.28      P60
= 2.1300
          AREA =      .000150 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER
HOUR
          RUNOFF  COMPUTED  BY  INITIAL  ABSTRACTION/INFILTRATION  NUMBER  METHOD  -  DT  =
.033330

          K =   .108800HR    TP =   .133300HR    K/TP RATIO =   .816201     SHAPE CONSTANT,
N =  4.378976
          UNIT PEAK =   .42726    CFS   UNIT VOLUME =    .9707       B =   379.69      P60
= 2.1300
          AREA =      .000150 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=24

PARTIAL HYDROGRAPH 101.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.2	2.666	.0	4.000	.0	5.333	.0
.667	.0	2.000	.2	3.333	.0	4.666	.0	5.999	.0

RUNOFF VOLUME = 1.75700 INCHES = .0281 ACRE-FEET
PEAK DISCHARGE RATE = .82 CFS AT 1.500 HOURS BASIN AREA = .0003 SQ. MI.

****
***** DRAINAGE BASIN B - 0.10 AC.
COMPUTE NM HYD ID=2 HYD NO=102.0 AREA=0.0002 SQ MI
PER A=0.0 PER B=0.0 PER C=50.0 PER D=50.00
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = .39481 CFS UNIT VOLUME = .9711 B = 526.28 P60 = 2.1300
AREA = .000100 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .108800HR TP = .133300HR K/TP RATIO = .816201 SHAPE CONSTANT, N = 4.378976
UNIT PEAK = .28484 CFS UNIT VOLUME = .9557 B = 379.69 P60 = 2.1300
AREA = .000100 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=2 CODE=24

PARTIAL HYDROGRAPH 102.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.1	2.666	.0	4.000	.0	5.333	.0
.667	.0	2.000	.1	3.333	.0	4.666	.0	5.999	.0

RUNOFF VOLUME = 1.75700 INCHES = .0187 ACRE-FEET
PEAK DISCHARGE RATE = .55 CFS AT 1.500 HOURS BASIN AREA = .0002 SQ. MI.

****

***** DRAINGE BASIN C - 0.53 AC.
COMPUTE NM HYD ID=3 HYD NO=103.0 AREA=0.0008 SQ MI
PER A=0.0 PER B=0.0 PER C=15.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 2.6847 CFS UNIT VOLUME = .9949 B = 526.28 P60 = 2.1300
AREA = .000680 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .108800HR TP = .133300HR K/TP RATIO = .816201 SHAPE CONSTANT, N = 4.378976
UNIT PEAK = .34181 CFS UNIT VOLUME = .9640 B = 379.69 P60 = 2.1300
AREA = .000120 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=24

PARTIAL HYDROGRAPH 103.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.7	2.666	.0	4.000	.0	5.333	.0
.667	.0	2.000	.6	3.333	.0	4.666	.0	5.999	.0

RUNOFF VOLUME = 2.11201 INCHES = .0901 ACRE-FEET
PEAK DISCHARGE RATE = 2.45 CFS AT 1.500 HOURS BASIN AREA = .0008 SQ. MI.

****
***** ADJOINING-SITE DRAINGE BASIN D - 0.21 AC. **********
***** THIS BASIN DISCHARGES DIRECTLY INTO PALOMAS AVE*****
COMPUTE NM HYD ID=4 HYD NO=104.0 AREA=0.0003 SQ MI
PER A=0.0 PER B=0.0 PER C=15.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.0068 CFS UNIT VOLUME = .9881 B = 526.28 P60 = 2.1300
AREA = .000255 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .108800HR TP = .133300HR K/TP RATIO = .816201 SHAPE CONSTANT, N = 4.378976
UNIT PEAK = .12818 CFS UNIT VOLUME = .8993 B = 379.69 P60 = 2.1300
AREA = .000045 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=24

PARTIAL HYDROGRAPH 104.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.3	2.666	.0	4.000	.0	5.333	.0
.667	.0	2.000	.2	3.333	.0	4.666	.0	5.999	.0

RUNOFF VOLUME = 2.11201 INCHES = .0338 ACRE-FEET
PEAK DISCHARGE RATE = .93 CFS AT 1.500 HOURS BASIN AREA = .0003 SQ. MI.

****
***** ADJOINING-SITE DRAINGE BASIN E - 0.09 AC. *************
COMPUTE NM HYD ID=5 HYD NO=105.0 AREA=0.0001 SQ MI
PER A=0.0 PER B=0.0 PER C=15.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = .33558 CFS UNIT VOLUME = .9664 B = 526.28 P60 = 2.1300
AREA = .000085 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .108800HR TP = .133300HR K/TP RATIO = .816201 SHAPE CONSTANT, N = 4.378976
UNIT PEAK = .42726E-01CFS UNIT VOLUME = .8764 B = 379.69 P60 = 2.1300
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=5 CODE=24

PARTIAL HYDROGRAPH 105.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.1	2.666	.0	4.000	.0	5.333	.0
.667	.0	2.000	.1	3.333	.0	4.666	.0	5.999	.0

RUNOFF VOLUME = 2.11201 INCHES = .0113 ACRE-FEET
PEAK DISCHARGE RATE = .32 CFS AT 1.500 HOURS BASIN AREA = .0001 SQ. MI.

```
     ************************************************************
     ***** ADJOINING-SITE DRAINGE BASIN F - 0.07 AC. *************
     COMPUTE NM HYD      ID=6 HYD NO=106.0 AREA=0.0001 SQ MI
                         PER A=0.0 PER B=0.0 PER C=15.0 PER D=85.0
                         TP=0.1333 HR MASS RAINFALL=-1

          K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT,
N =  7.106420
          UNIT PEAK =   .33558    CFS   UNIT VOLUME =    .9664       B =   526.28      P60
= 2.1300
          AREA =      .000085 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER
HOUR
          RUNOFF  COMPUTED  BY  INITIAL  ABSTRACTION/INFILTRATION  NUMBER  METHOD  -  DT  =
.033330


          K =   .108800HR    TP =   .133300HR    K/TP RATIO =   .816201     SHAPE CONSTANT,
N =  4.378976
          UNIT PEAK =   .42726E-01CFS   UNIT VOLUME =    .8764       B =   379.69      P60
= 2.1300
          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=6 CODE=24

                                    PARTIAL HYDROGRAPH   106.00

          TIME      FLOW           TIME      FLOW           TIME      FLOW           TIME
FLOW           TIME      FLOW
           HRS       CFS            HRS       CFS            HRS       CFS            HRS
CFS            HRS       CFS
          .000       .0          1.333       .1          2.666       .0          4.000
.0          5.333       .0
          .667       .0          2.000       .1          3.333       .0          4.666
.0          5.999       .0

         RUNOFF VOLUME =     2.11201 INCHES     =        .0113 ACRE-FEET
         PEAK DISCHARGE RATE =         .32 CFS  AT    1.500 HOURS   BASIN AREA =    .0001 SQ.
MI.


     ****************************************************
     *****COMBINE HYDROGRAPHS FOR BASINS A AND B
     *****
     ADD HYD             ID=7 HYD NO=107.0 ID=1 ID=2
     PRINT HYD           ID=7 CODE=24

                                    PARTIAL HYDROGRAPH   107.00

          TIME      FLOW           TIME      FLOW           TIME      FLOW           TIME
FLOW           TIME      FLOW
           HRS       CFS            HRS       CFS            HRS       CFS            HRS
CFS            HRS       CFS
          .000       .0          1.333       .3          2.666       .0          4.000
.0          5.333       .0
          .667       .0          2.000       .3          3.333       .0          4.666
.0          5.999       .0

         RUNOFF VOLUME =     1.75625 INCHES     =        .0468 ACRE-FEET
         PEAK DISCHARGE RATE =        1.38 CFS  AT    1.500 HOURS   BASIN AREA =    .0005 SQ.
MI.
```

```
     ************************************************************
     *****COMBINE HYDROGRAPHS FOR BASINS A AND B WITH C
     *****
     ADD HYD             ID=8 HYD NO=108.0 ID=3 ID=7
     PRINT HYD           ID=8 CODE=24

                                    PARTIAL HYDROGRAPH   108.00

          TIME      FLOW            TIME      FLOW            TIME      FLOW            TIME
FLOW           TIME      FLOW
           HRS       CFS              HRS       CFS              HRS       CFS              HRS
CFS            HRS       CFS
          .000        .0            1.333       1.0           2.666        .1           4.000
.0          5.333        .0
          .667        .0            2.000        .9           3.333        .0           4.666
.0          5.999        .0

         RUNOFF VOLUME =     1.97497 INCHES     =        .1369 ACRE-FEET
         PEAK DISCHARGE RATE =        3.83 CFS  AT    1.500 HOURS    BASIN AREA =    .0013 SQ.
MI.


     **THIS IS THE TOTAL DEVELOPED DISCHARGE FROM LOT 23 INTO PALOMAS AVE
     ************************************************************
     *************************EXISTING*CONDITIONS*************************
     ***** EXISTING DISCHARGE FOR ON-SITE BASINS A, B AND C - 0.83 ACRES
     COMPUTE NM HYD      ID=9 HYD NO=109.0 AREA=0.0013 SQ MI
                         PER A=0.0 PER B=0.0 PER C=100.00 PER D=0.00
                         TP=0.1333 HR MASS RAINFALL=-1

          K =    .108800HR     TP =    .133300HR     K/TP RATIO =    .816201      SHAPE CONSTANT,
N =  4.378976
          UNIT PEAK =    3.7029     CFS    UNIT VOLUME =     .9969        B =    379.69       P60
= 2.1300
          AREA =       .001300 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER
HOUR
          RUNOFF  COMPUTED  BY  INITIAL  ABSTRACTION/INFILTRATION  NUMBER  METHOD  -  DT  =
.033330

     PRINT HYD           ID=9 CODE=24

                                    PARTIAL HYDROGRAPH   109.00

          TIME      FLOW            TIME      FLOW            TIME      FLOW            TIME
FLOW           TIME      FLOW
           HRS       CFS              HRS       CFS              HRS       CFS              HRS
CFS            HRS       CFS
          .000        .0            .667        .0           1.333        .3           2.000
.4          2.666        .0

         RUNOFF VOLUME =     1.24986 INCHES     =        .0867 ACRE-FEET
         PEAK DISCHARGE RATE =        2.82 CFS  AT    1.500 HOURS    BASIN AREA =    .0013 SQ.
MI.

     *THESE 3 AREAS ORIGINALLY FLOWED DIRECTLY WEST ONTO ADJOINING PROPERTY
     ************************************************************************
     ***** EXISTING DISCHARGE FOR ADJOINING SITE BASINS D & E - 0.31 ACRES
     COMPUTE NM HYD      ID=10 HYD NO=110.0 AREA=0.0005 SQ MI
                         PER A=0.0 PER B=0.0 PER C=100.00 PER D=0.00
                         TP=0.1333 HR MASS RAINFALL=-1

          K =    .108800HR     TP =    .133300HR     K/TP RATIO =    .816201      SHAPE CONSTANT,
N =  4.378976
```

```
          UNIT PEAK =    1.4242     CFS    UNIT VOLUME =     .9917        B =    379.69       P60
= 2.1300
          AREA =       .000500 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER
HOUR
          RUNOFF  COMPUTED  BY  INITIAL  ABSTRACTION/INFILTRATION  NUMBER  METHOD  -  DT  =
.033330

     PRINT HYD           ID=10 CODE=24

                                      PARTIAL HYDROGRAPH   110.00

          TIME      FLOW            TIME      FLOW            TIME      FLOW            TIME
FLOW           TIME      FLOW
           HRS       CFS             HRS       CFS             HRS       CFS             HRS
CFS            HRS       CFS
          .000        .0            .667        .0           1.333        .1           2.000
.2          2.666        .0

         RUNOFF VOLUME =     1.24986 INCHES     =        .0333 ACRE-FEET
         PEAK DISCHARGE RATE =        1.09 CFS  AT    1.500 HOURS    BASIN AREA =    .0005 SQ.
MI.


     *THESE 2 AREAS ORIGINALLY DRAINED DIRECTLY WEST ONTO ADJOINING PROPERTY
     ************************************************************
     ***** EXISTING DISCHARGE FOR ADJOINING-SITE BASIN F - 0.07 ACRES
     COMPUTE NM HYD      ID=11 HYD NO=111.0 AREA=0.0001 SQ MI
                         PER A=0.0 PER B=0.0 PER C=100.00 PER D=0.00
                         TP=0.1333 HR MASS RAINFALL=-1

          K =    .108800HR     TP =    .133300HR     K/TP RATIO =    .816201      SHAPE CONSTANT,
N =  4.378976
          UNIT PEAK =    .28484     CFS    UNIT VOLUME =     .9557        B =    379.69       P60
= 2.1300
          AREA =       .000100 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER
HOUR
          RUNOFF  COMPUTED  BY  INITIAL  ABSTRACTION/INFILTRATION  NUMBER  METHOD  -  DT  =
.033330

     PRINT HYD           ID=11 CODE=24

                                      PARTIAL HYDROGRAPH   111.00

          TIME      FLOW            TIME      FLOW            TIME      FLOW            TIME
FLOW           TIME      FLOW
           HRS       CFS             HRS       CFS             HRS       CFS             HRS
CFS            HRS       CFS
          .000        .0            .667        .0           1.333        .0           2.000
.0

         RUNOFF VOLUME =     1.24986 INCHES     =        .0067 ACRE-FEET
         PEAK DISCHARGE RATE =         .23 CFS  AT    1.500 HOURS    BASIN AREA =    .0001 SQ.
MI.


     *THIS BASIN ALSO DRAINED DIRECTLY WEST ONTO ADJOINING PROPERTY
     ************************************************************
     *COMBINE HYDROGRAPHS-EXISTING CONDITIONS FOR BASINS A, B & C TO D & E
     *****
     ADD HYD             ID=12 HYD NO=112.0 ID=9 ID=10
     PRINT HYD           ID=12 CODE=24

                                      PARTIAL HYDROGRAPH   112.00
```

CITY OF ALBUQUERQUE

September 14, 2010

John M. MacKenzie, P.E.
Mark Goodwin & Associates, PA
P.O. Box 90606
Albuquerque, NM 87199

Re: Hope Christian Elementary School Addition, Lot 23, Grading and Drainage Plan

Engineer's Stamp dated 8-30-10 (D18/D009A)

Dear Mr. MacKenzie,

Based upon the information provided in your submittal received 8-30-10, the above referenced plan is approved for Site Plan for Building Permit action by the DRB with the understanding that Lot 23 can only discharge 3.0 cfs per the DMP.

The above referenced plan cannot be approved for Building Permit until the following comments are addressed:

- SO-19 Notes are required on the plan for construction of the sidewalk culverts in the City ROW.
- Per the Drainage Report for Hope Christian School dated January 2006, Lot 23 is to produce 3 cfs. This plan proposes 3.82 cfs. If the landscape areas/parking islands were depressed as to not produce any runoff, the plan would be approvable. A "Typical" detail could be provided.
- Depressing the landscape areas would also satisfy the condition mentioned for Site Plan.

If you have any questions, you can contact me at 924-3695.

Sincerely,
Curtis A. Cherne

Curtis A. Cherne, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: file
Brad Bingham

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 30, 1996

Scott McGee, PE
Isaacson & Arfman
128 Monroe Street NE
Albuquerque, NM 87108

RE: ENGINEER'S CERTIFICATION FOR GYMNASIUM ADDITION
@ HOPE CHRISTIAN SCHOOL (D-18/D9)
RECEIVED JANUARY 30, 1996 FOR CERTIFICATE OF OCCUPANCY
ENGINEER'S STAMP DATED 1-29-96

Dear Mr. McGee:

Based on the information included in the submittal referenced above, City Hydrology accepts the Engineer's Certification. Contact Vicki Chavez to obtain the Certificate of Occupancy for 6800 Palomas Ave NE.

If I can be of further assistance, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer, Hydrology

c: Andrew Garcia

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 15, 1994

Scott McGee, P.E.
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM 87108

RE: GRADING & DRAINAGE PLAN (REV3) FOR HOPE CHRISTIAN SCHOOL (D18-D9)
RECEIVED JULY 6, 1994 FOR FOUNDATION PERMIT APPROVAL
ENGINEER'S STAMP DATED 7-5-94

Dear Mr. McGee:

Based on the information included in the submittal referenced above, City Hydrology approves Revision 3 for Foundation Permit.

Include a copy of the approved Plan dated 7-5-94 in the set of construction documents that will be submitted to the "one stop" for the Foundation Permit.

Engineer's Certification of grading & drainage per DPM checklist must be approved before any Certificate of Occupancy will be released.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia

WPHYD/7663/jpc

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

June 23, 1994

Scott McGee, P.E.
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM 87108

RE: GRADING & DRAINAGE PLAN (REV2) FOR HOPE CHRISTIAN SCHOOL (D18-D9)
RECEIVED JUNE 13, 1994 FOR FOUNDATION PERMIT APPROVAL
ENGINEER'S STAMP DATED 6-10-94

Dear Mr. McGee:

Based on the information included in the submittal referenced above, City Hydrology approves Revision 2 for Foundation Permit. This is only for the buldings which have a F.F. elevation indicated.

Include a copy of the approved Plan dated 6-10-94 in the set of construction documents that will be submitted to the "one stop" for the Foundation Permit.

Engineer's Certification of grading & drainage per DPM checklist must be approved before any Certificate of Occupancy will be released.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia

WPHYD/7663/jpc

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 30, 1994

Scott McGee, P.E.
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM 87108

RE: REV CON GRADING & DRAINAGE PLAN FOR HOPE CHRISTIAN SCHOOL (D18-D9)
RECEIVED MARCH 29, 1994 FOR FOUNDATION PERMIT APPROVAL
ENGINEER'S STAMP DATED 3-29-94

Dear Mr. McGee:

Based on the information included in the submittal referenced above, City Hydrology approves this project for Foundation Permit.

Include a copy of the approved Plan dated 3-29-94 in the set of construction documents that will be submitted to the "one stop" for the Foundation Permit.

Engineer's Certification of grading & drainage per DPM checklist must be approved before any Certificate of Occupancy will be released.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia

WPHYD/7663/jpc

CITY OF
Albuquerque

Martin J. Chávez, Mayor

August 20, 1997

Scott McGee
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM 87108

RE: HOPE SCHOOL - WEST CAMPUS (D18-D9A). ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY. ENGINEER'S CERTIFICATION DATED AUGUST 13, 1997.

Dear Mr. McGee:

Based on the information provided on your submittal dated August 13, 1997, the above referenced project is approved for Certificate of Occupancy.

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

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

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

April 2, 1996

Scott McGee
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM 87108

RE: HOPE SCHOOL - WEST CAMPUS (D18-D9A) GRADING PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED 3-18-96.

Dear Mr. McGee:

Based on the information provided on your submittal dated March 19, 1996, the above referenced project is approved for Building Permit.

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

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 20, 1995

Scott McGee
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM 87108

RE: HOPE SCHOOL - WEST CAMPUS (D18-D9A) CONCEPTUAL GRADING AND DRAINAGE AND PLAN FOR SITE DEVELOPMENT PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED 11-14-95.

Dear Mr. McGee:

Based on the information provided on your submittal dated November 15, 1995, the above referenced project is approved for Site Development Plan for Building Permit.

With your next submittal, please show sediment control in the area of the (2) 4 inch pipes from the south detention pond to Palomas Ave.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

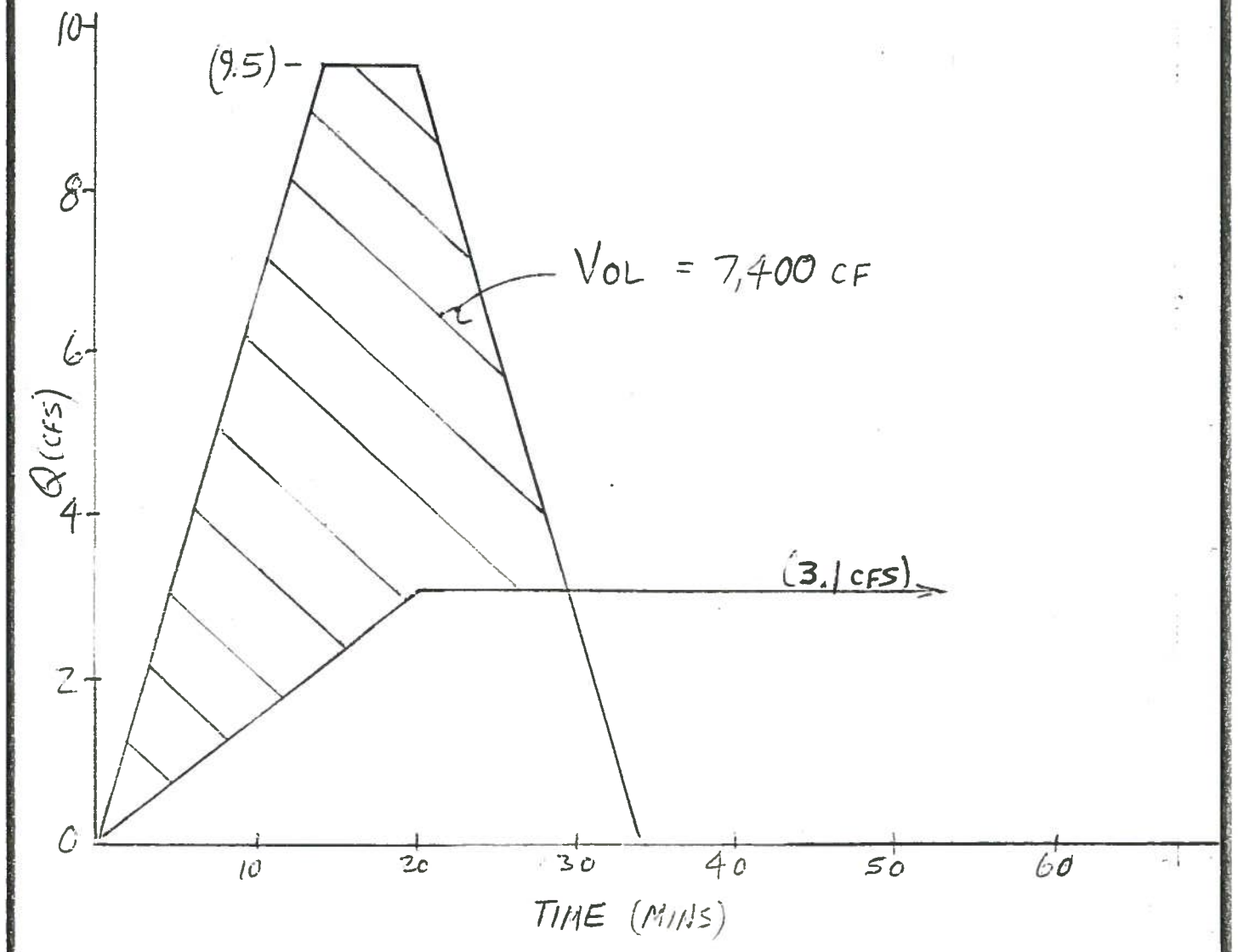
Q_{IN} = 9.5 CFS

Q_{OUT} = 4.3 − 0.3 (PALOMAS) − 0.9 (W. PARKING)

Q_{OUT} = 3.1 CFS

$T_b = (121)(1.36)\left(\frac{2.3}{9.5}\right) - (15)(0.38)$ = 34 MINS

$T_p = (0.7)(12) + 8 - (5)(0.38)$ = 14 MINS



ISAACSON & ARFMAN, P.A.

SUBJECT HOPE ELEMENTARY SCHOOL JOB NO. 835

BY BM DATE 11/95 SHEET NO. ___ OF ___

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 10, 1995

Scott McGee, PE
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM 87108

RE: GRADING & DRAINAGE PLAN FOR HOPE SCHOOL - WEST (D-18/D9A)
RECEIVED JUNE 6, 1995 FOR SITE DEV PLAN & FOUNDATION PERMIT
ENGINEER'S STAMP DATED 6-5-95

Dear Mr. McGee:

Based on the information included in the submittal referenced above, City Hydrology accepts the general concept for Site Development Plan for B.P. The following comments must be addressed before Foundation Permit will be released for Buildings A-F & I:

Verify downstream capacity. Provide specific information about the proposed storm drain in San Pedro from the Wilson & Co's report. Check the future capacity of Palomas to determine whether or not a storm drain is required. What is the DRB number for this Site Plan. Provide a copy of the infrastructure list.

Label each of the eight retention ponds and calculate the volume & maximum water surface elevation of each pond. A single Drainage Covenant could cover all eight ponds. A separate line pattern must be used for the future contours. Include the Erosion Control Plan on the Grading & Drainage Plan.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia
Fred Aguirre, DRB ??-???
Dan Hedges, Hope Christian School, 6800 Palomas Ave NE 87109

D. Mark Goodwin and Associates, P.A.
Consulting Engineers
P.O. Box 90606 □ Albuquerque, NM 87199
(505) 828-2200 □ (505) 797-9539 fax
e-mail: john@goodwinengineers.com

LETTER OF TRANSMITTAL

TO: Brad Bingham
DRB - One Stop

Date: July 6, 2010

RE: Hope Christian Elementary

We are sending:

AHYMO Runs

____ For your Approval ___X__ For your information

____ As you requested _____ For a Statement

____ Request for Bid _____ Pre-Design Meeting

NOTES:

Project Engineer

SIGNED: JMac

RECEIVED
JUL 07 2010
HYDROLOGY SECTION

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02d RUN DATE (MON/DAY/YR) =07/02/2010
INPUT FILE = LOT23.DAT USER NO.= AHYMO-I-9702dGoodwinM-AH

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION	
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.500
COMPUTE NM HYD	101.00	-	1	.00030	.82	.028	1.75700	1.500	4.287	PER IMP=	50.00
COMPUTE NM HYD	102.00	-	2	.00020	.55	.019	1.75700	1.500	4.334	PER IMP=	50.00
COMPUTE NM HYD	103.00	-	3	.00080	2.45	.090	2.11201	1.500	4.783	PER IMP=	85.00
COMPUTE NM HYD	104.00	-	4	.00030	.93	.034	2.11201	1.500	4.850	PER IMP=	85.00
ADD HYD	105.00	1& 2	5	.00050	1.38	.047	1.75625	1.500	4.306		
ADD HYD	106.00	3& 5	6	.00130	3.83	.137	1.97497	1.500	4.600		
COMPUTE NM HYD	107.00	-	7	.00130	2.82	.087	1.24986	1.500	3.390	PER IMP=	.00
COMPUTE NM HYD	108.00	-	8	.00030	.66	.020	1.24986	1.500	3.428	PER IMP=	.00
FINISH											

```
     AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02d
          RUN DATE (MON/DAY/YR) = 07/02/2010
          START TIME (HR:MIN:SEC) = 11:37:15     USER NO.= AHYMO-I-9702dGoodwinM-AH
          INPUT FILE = LOT23.DAT

     START                        TIME=0.0
     *****                        HOPE CHRISTIAN ELEMENTARY SCHOOL LOT 23
     *****                        CALCULATE FLOWS USING 100-YEAR, 6-HOUR STORM
     *****                        INPUT FILE: LOT23.DAT 6-25-10  JMM
     RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=2.13 IN RAIN SIX=2.5 IN
                         RAIN DAY=2.9 IN DT=0.03333 HR

                    COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40
HR.
                    DT =     .033330 HOURS       END TIME =     5.999400 HOURS
                       .0000   .0018   .0036   .0055   .0074   .0094   .0114
                       .0134   .0155   .0177   .0199   .0222   .0245   .0269
                       .0293   .0319   .0345   .0372   .0400   .0428   .0458
                       .0489   .0521   .0555   .0590   .0626   .0664   .0704
                       .0746   .0791   .0837   .0896   .0959   .1027   .1171
                       .1494   .1991   .2706   .3681   .4962   .6597   .8631
                      1.1115  1.3420  1.4382  1.5195  1.5918  1.6575  1.7181
                      1.7743  1.8268  1.8761  1.9224  1.9661  2.0074  2.0465
                      2.0835  2.1186  2.1519  2.1836  2.2136  2.2206  2.2271
                      2.2333  2.2392  2.2448  2.2502  2.2553  2.2603  2.2651
                      2.2697  2.2742  2.2785  2.2827  2.2868  2.2908  2.2947
                      2.2984  2.3021  2.3057  2.3092  2.3126  2.3159  2.3192
                      2.3224  2.3256  2.3286  2.3317  2.3346  2.3375  2.3404
                      2.3432  2.3460  2.3487  2.3514  2.3540  2.3566  2.3591
                      2.3617  2.3641  2.3666  2.3690  2.3714  2.3737  2.3760
                      2.3783  2.3805  2.3828  2.3850  2.3871  2.3893  2.3914
                      2.3935  2.3956  2.3976  2.3996  2.4016  2.4036  2.4056
                      2.4075  2.4094  2.4113  2.4132  2.4151  2.4169  2.4188
                      2.4206  2.4224  2.4241  2.4259  2.4276  2.4294  2.4311
                      2.4328  2.4345  2.4361  2.4378  2.4394  2.4411  2.4427
                      2.4443  2.4459  2.4475  2.4490  2.4506  2.4521  2.4537
                      2.4552  2.4567  2.4582  2.4597  2.4611  2.4626  2.4641
                      2.4655  2.4669  2.4684  2.4698  2.4712  2.4726  2.4740
                      2.4753  2.4767  2.4781  2.4794  2.4808  2.4821  2.4834
                      2.4847  2.4861  2.4874  2.4887  2.4899  2.4912  2.4925
                      2.4938  2.4950  2.4963  2.4975  2.4987  2.5000

     **********************PROPOSED*CONDITIONS*********************
     ************************************************************
     ***** DRAINAGE BASIN A - 0.19 ACRES
     COMPUTE NM HYD      ID=1 HYD NO=101.0 AREA=0.0003 SQ MI
                         PER A=0.0 PER B=0.0 PER C=50.00 PER D=50.00
                         TP=0.1333 HR MASS RAINFALL=-1

          K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N
=  7.106420
          UNIT PEAK =   .59221    CFS   UNIT VOLUME =    .9786       B =   526.28      P60 =
2.1300
          AREA =      .000150 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER
HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


          K =   .108800HR    TP =   .133300HR    K/TP RATIO =   .816201     SHAPE CONSTANT, N
=  4.378976
          UNIT PEAK =   .42726    CFS   UNIT VOLUME =    .9707       B =   379.69      P60 =
2.1300
          AREA =      .000150 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=24

                                    PARTIAL HYDROGRAPH   101.00

          TIME      FLOW           TIME      FLOW           TIME      FLOW           TIME
FLOW           TIME      FLOW
           HRS       CFS            HRS       CFS            HRS       CFS            HRS
CFS            HRS       CFS
          .000        .0           1.333        .2          2.666        .0          4.000
.0          5.333        .0
          .667        .0           2.000        .2          3.333        .0          4.666
.0          5.999        .0

         RUNOFF VOLUME =     1.75700 INCHES     =        .0281 ACRE-FEET
         PEAK DISCHARGE RATE =        .82 CFS  AT    1.500 HOURS   BASIN AREA =    .0003 SQ. MI.


     ************************************************************
     ***** DRAINAGE BASIN B - 0.10 AC.
     ***** ALSO DIRECTLY SOUTH OF BASIN 101
     COMPUTE NM HYD      ID=2 HYD NO=102.0 AREA=0.0002 SQ MI
                         PER A=0.0 PER B=0.0 PER C=50.0 PER D=50.00
                         TP=0.1333 HR MASS RAINFALL=-1

          K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N
=  7.106420
          UNIT PEAK =   .39481    CFS   UNIT VOLUME =    .9711       B =   526.28      P60 =
2.1300
          AREA =      .000100 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER
HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


          K =   .108800HR    TP =   .133300HR    K/TP RATIO =   .816201     SHAPE CONSTANT, N
=  4.378976
          UNIT PEAK =   .28484    CFS   UNIT VOLUME =    .9557       B =   379.69      P60 =
2.1300
          AREA =      .000100 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER
HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     PRINT HYD           ID=2 CODE=24

                                    PARTIAL HYDROGRAPH   102.00

          TIME      FLOW           TIME      FLOW           TIME      FLOW           TIME
FLOW           TIME      FLOW
           HRS       CFS            HRS       CFS            HRS       CFS            HRS
CFS            HRS       CFS
          .000        .0           1.333        .1          2.666        .0          4.000
.0          5.333        .0
          .667        .0           2.000        .1          3.333        .0          4.666
.0          5.999        .0

         RUNOFF VOLUME =     1.75700 INCHES     =        .0187 ACRE-FEET
         PEAK DISCHARGE RATE =        .55 CFS  AT    1.500 HOURS   BASIN AREA =    .0002 SQ. MI.


     ************************************************************
     ***** DRAINGE BASIN C - 0.53 AC.
     COMPUTE NM HYD      ID=3 HYD NO=103.0 AREA=0.0008 SQ MI
                         PER A=0.0 PER B=0.0 PER C=15.0 PER D=85.0
                         TP=0.1333 HR MASS RAINFALL=-1
```

```
          K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N
=  7.106420
          UNIT PEAK =   2.6847    CFS   UNIT VOLUME =    .9949       B =   526.28      P60 =
2.1300
          AREA =      .000680 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER
HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


          K =   .108800HR    TP =   .133300HR    K/TP RATIO =   .816201     SHAPE CONSTANT, N
=  4.378976
          UNIT PEAK =   .34181    CFS   UNIT VOLUME =    .9640       B =   379.69      P60 =
2.1300
          AREA =      .000120 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER
HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     PRINT HYD           ID=3 CODE=24

                                    PARTIAL HYDROGRAPH   103.00

          TIME      FLOW           TIME      FLOW           TIME      FLOW           TIME
FLOW           TIME      FLOW
           HRS       CFS            HRS       CFS            HRS       CFS            HRS
CFS            HRS       CFS
          .000       .0          1.333       .7          2.666       .0          4.000
.0          5.333       .0
          .667       .0          2.000       .6          3.333       .0          4.666
.0          5.999       .0

         RUNOFF VOLUME =     2.11201 INCHES     =        .0901 ACRE-FEET
         PEAK DISCHARGE RATE =       2.45 CFS  AT    1.500 HOURS   BASIN AREA =   .0008 SQ. MI.


     ***************************************************************
     ***************************************************************
     ***** OFF-SITE DRAINGE BASIN D - 0.22 AC.
     COMPUTE NM HYD      ID=4 HYD NO=104.0 AREA=0.0003 SQ MI
                         PER A=0.0 PER B=0.0 PER C=15.0 PER D=85.0
                         TP=0.1333 HR MASS RAINFALL=-1

          K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N
=  7.106420
          UNIT PEAK =   1.0068    CFS   UNIT VOLUME =    .9881       B =   526.28      P60 =
2.1300
          AREA =      .000255 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER
HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


          K =   .108800HR    TP =   .133300HR    K/TP RATIO =   .816201     SHAPE CONSTANT, N
=  4.378976
          UNIT PEAK =   .12818    CFS   UNIT VOLUME =    .8993       B =   379.69      P60 =
2.1300
          AREA =      .000045 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER
HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     PRINT HYD           ID=4 CODE=24

                                    PARTIAL HYDROGRAPH   104.00

          TIME      FLOW           TIME      FLOW           TIME      FLOW           TIME
FLOW           TIME      FLOW
           HRS       CFS            HRS       CFS            HRS       CFS            HRS
CFS            HRS       CFS
```

```
          .000        .0          1.333        .3          2.666        .0          4.000
.0         5.333        .0
          .667        .0          2.000        .2          3.333        .0          4.666
.0         5.999        .0

        RUNOFF VOLUME =     2.11201 INCHES     =        .0338 ACRE-FEET
        PEAK DISCHARGE RATE =        .93 CFS  AT   1.500 HOURS   BASIN AREA =   .0003 SQ. MI.


     ****************************************************************
     *****COMBINE HYDROGRAPHS FOR BASINS A AND B
     *****
     ADD HYD             ID=5 HYD NO=105.0 ID=1 ID=2
     PRINT HYD           ID=5 CODE=24

                                    PARTIAL HYDROGRAPH   105.00

          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME
FLOW           TIME      FLOW
           HRS       CFS            HRS       CFS            HRS       CFS            HRS
CFS            HRS       CFS
          .000        .0          1.333        .3          2.666        .0          4.000
.0         5.333        .0
          .667        .0          2.000        .3          3.333        .0          4.666
.0         5.999        .0

        RUNOFF VOLUME =     1.75625 INCHES     =        .0468 ACRE-FEET
        PEAK DISCHARGE RATE =       1.38 CFS  AT   1.500 HOURS   BASIN AREA =   .0005 SQ. MI.


     ****************************************************************
     *****COMBINE HYDROGRAPHS FOR BASINS A AND B WITH C
     *****THIS IS THE TOTAL DISCHARGE FROM LOT 23 ONTO PALOMAS AVE
     *****
     ADD HYD             ID=6 HYD NO=106.0 ID=3 ID=5
     PRINT HYD           ID=6 CODE=24

                                    PARTIAL HYDROGRAPH   106.00

          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME
FLOW           TIME      FLOW
           HRS       CFS            HRS       CFS            HRS       CFS            HRS
CFS            HRS       CFS
          .000        .0          1.333        1.0         2.666        .1          4.000
.0         5.333        .0
          .667        .0          2.000        .9          3.333        .0          4.666
.0         5.999        .0

        RUNOFF VOLUME =     1.97497 INCHES     =        .1369 ACRE-FEET
        PEAK DISCHARGE RATE =       3.83 CFS  AT   1.500 HOURS   BASIN AREA =   .0013 SQ. MI.


     ****************************************************************
     ************************EXISTING*CONDITIONS*****************************
     ***** EXISTING DISCHARGE FOR ON-SITE BASINS A, B AND C - 0.82 ACRES
     COMPUTE NM HYD      ID=7 HYD NO=107.0 AREA=0.0013 SQ MI
                         PER A=0.0 PER B=0.0 PER C=100.00 PER D=0.00
                         TP=0.1333 HR MASS RAINFALL=-1

          K =   .108800HR    TP =   .133300HR    K/TP RATIO =   .816201     SHAPE CONSTANT, N
=  4.378976
          UNIT PEAK =   3.7029    CFS   UNIT VOLUME =    .9969       B =   379.69      P60 =
2.1300
```

```
          AREA =      .001300 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=24

                                    PARTIAL HYDROGRAPH   107.00

          TIME      FLOW           TIME      FLOW           TIME      FLOW           TIME
FLOW           TIME      FLOW
           HRS       CFS            HRS       CFS            HRS       CFS            HRS
CFS            HRS       CFS
          .000        .0            .667        .0          1.333        .3          2.000
.4          2.666        .0

         RUNOFF VOLUME =     1.24986 INCHES     =        .0867 ACRE-FEET
         PEAK DISCHARGE RATE =       2.82 CFS  AT   1.500 HOURS   BASIN AREA =   .0013 SQ. MI.



     ***** EXISTING DISCHARGE FOR ON-SITE BASIN D - 0.22 ACRES
     COMPUTE NM HYD      ID=8 HYD NO=108.0 AREA=0.0003 SQ MI
                         PER A=0.0 PER B=0.0 PER C=100.00 PER D=0.00
                         TP=0.1333 HR MASS RAINFALL=-1

          K =   .108800HR    TP =   .133300HR    K/TP RATIO =   .816201     SHAPE CONSTANT, N
=  4.378976
          UNIT PEAK =   .85452    CFS   UNIT VOLUME =    .9859       B =   379.69      P60 =
2.1300
          AREA =      .000300 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=24

                                    PARTIAL HYDROGRAPH   108.00

          TIME      FLOW           TIME      FLOW           TIME      FLOW           TIME
FLOW           TIME      FLOW
           HRS       CFS            HRS       CFS            HRS       CFS            HRS
CFS            HRS       CFS
          .000        .0            .667        .0          1.333        .1          2.000
.1          2.666        .0

         RUNOFF VOLUME =     1.24986 INCHES     =        .0200 ACRE-FEET
         PEAK DISCHARGE RATE =        .66 CFS  AT   1.500 HOURS   BASIN AREA =   .0003 SQ. MI.


     FINISH

         NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 11:37:15
```

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 23, 1993

Scott McGee
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM 87108

RE: ENGINEER'S CERTIFICATION FOR HOPE CHRISTIAN SCHOOL (D18-D9)
ENGINEER'S STAMP DATED 8-20-93; RECEIVED AUGUST 20, 1993
FOR CERTIFICATE OF OCCUPANCY APPROVAL

Dear Mr. McGee:

Based on the information included in the submittal referenced above, City Hydrology RELEASES the Certificate of Occupancy for this project.

If I can be of further assistance, You may contact me at 768-2727.

Sincerely,

John P. Curtin

John P. Curtin, P.E.
Civil Engineer/Hydrology

xc: Alan Martinez

WPHYD+7663;jpc

$Q_{100} = 32.7$ cfs

Earthen Swale

SECTION A-A

Channel Depth = 1.3 ft

Water Depth$_{100}$ = 0.6 ± ft (OK)

Manning : $Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$

for $y = 0.5$ ft & slope = 1.6%

$Q = \frac{1.49}{.025}(11.5)(.5)(0.329)^{2/3}(.016)^{1/2} = 20.7$ cfs

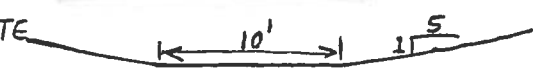
for $y = 0.8$ ft

$Q = \frac{1.49}{.025}(13.5)(0.8)(0.513)^{2/3}(.016)^{1/2} = 52.2$ cfs

---

$Q_{100} = 32.7$ cfs

CONCRETE SIDE INLET



SECTION B-B

Inlet Depth = 1.5 ft

Water Depth ≤ 0.5 ft (OK)

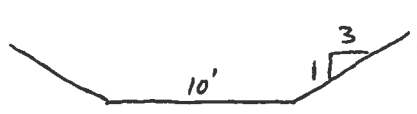
for $y = 0.5$ ft

$Q = \frac{1.49}{.015}(12.5)(0.5)(0.414)^{2/3}(.016)^{1/2} = 43.6$ cfs

---

$Q_{100} = 32.7$ cfs

CONCRETE SIDE INLET



SECTION C-C

Inlet Depth = 2'

Water Depth = 0.3 ± ft (OK)

for $y = 0.5$ ft

$Q = \frac{1.49}{.015}(11.5)(0.5)(.438)^{2/3}(0.10)^{1/2} = 104$ cfs

CHANNEL SIDE INLET CAPACITY ANALYSIS
(DOMINGO BACA ARROYO)

PROPOSED $Q_{100} = 32.7$ cfs (FROM APPROVED MASTER DRAINAGE PLAN)

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 5, 1993

Scott McGee
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM 87108

RE: GRADING PLAN FOR HOPE CHRISTIAN SCHOOL (D18-D9)
ENGINEER'S STAMP DATED 4-28-93; RECEIVED APRIL 28, 1993
FOR BUILDING PERMIT APPROVAL

Dear Mr. McGee:

Based on the information included in the submittal referenced above, City Hydrology APPROVES this project for Building Permit.

Included a copy of the Grading Plan in the set of construction documents submitted for Building Permit.

Engineer's Certification of grades per DPM checklist must be approved before any Certificate of Occupancy will be released.

If you have any questions about this project, you may contact me at 768-2727.

Sincerely,

John P. Curtin

John P. Curtin. P.E.
PWD/Hydrology

xc: Alan Martinez

WPHYD+7663; jpc

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

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

April 26, 1984

Mr. Tom Mann
Tom Mann & Associates
811 Dallas NE
Albuquerque, NM 87108

REF: HOPE HIGH ADDITION (D18-D9) April 18, 1984

Dear Tom:

Based on the information provided on your submittal of April 19, 1984, the above referenced drainage plan is approved.

Also advise your clients that if any further development is to take place on the vacant areas, a drainage plan/report will be required per the DPM.

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

Sincerely,

Bernie J. Montoya

Bernie J. Montoya
Hydrologic Engineering Tech. CE

BJM:mrk

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

D18 - D9

November 25, 1981

Mr. Jeff Mortensen
Tom Mann & Associates, Inc.
811 Dallas N.E.
Albuquerque, N.M. 87110

RE: HOPE HIGH SCHOOL DRAINAGE REPORT

Dear Jeff:

The referenced drainage report is approved based on your revised submittal dated November 22, 1981 and received in our office November 24, 1981.

If I can be of any help, please call.

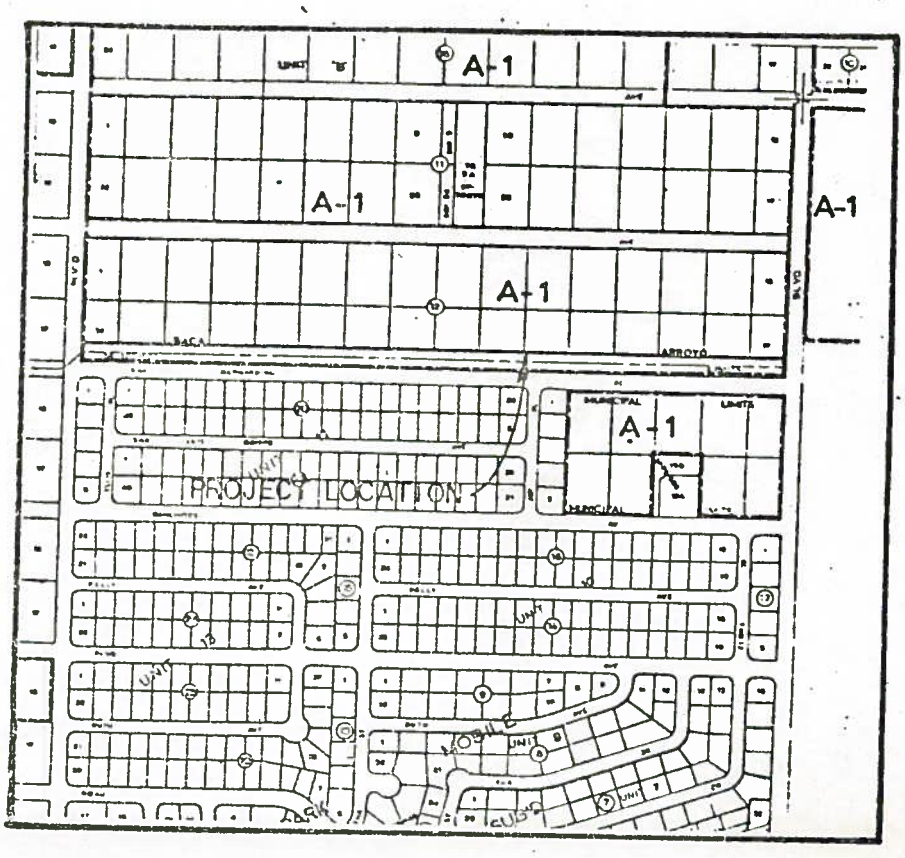
Sincerely,

Jim Fink
Civil Engineer/Hydrology

JF/tsl

MUNICIPAL DEVELOPMENT DEPARTMENT
Richard S. Heller, P.E., City Engineer ENGINEERING DIVISION Telephone (505) 766-7467

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



VICINITY MAP
SCALE: 1" = 800'

D-18-Z

NOTICE TO CONTRACTOR

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

2. All work detailed on these plans to be performed, except as otherwis stated or provided hereon, shall be constructed in accordance wit "Contract Documents for City-Wide Utilities and Cash Paving No. 30 "

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

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

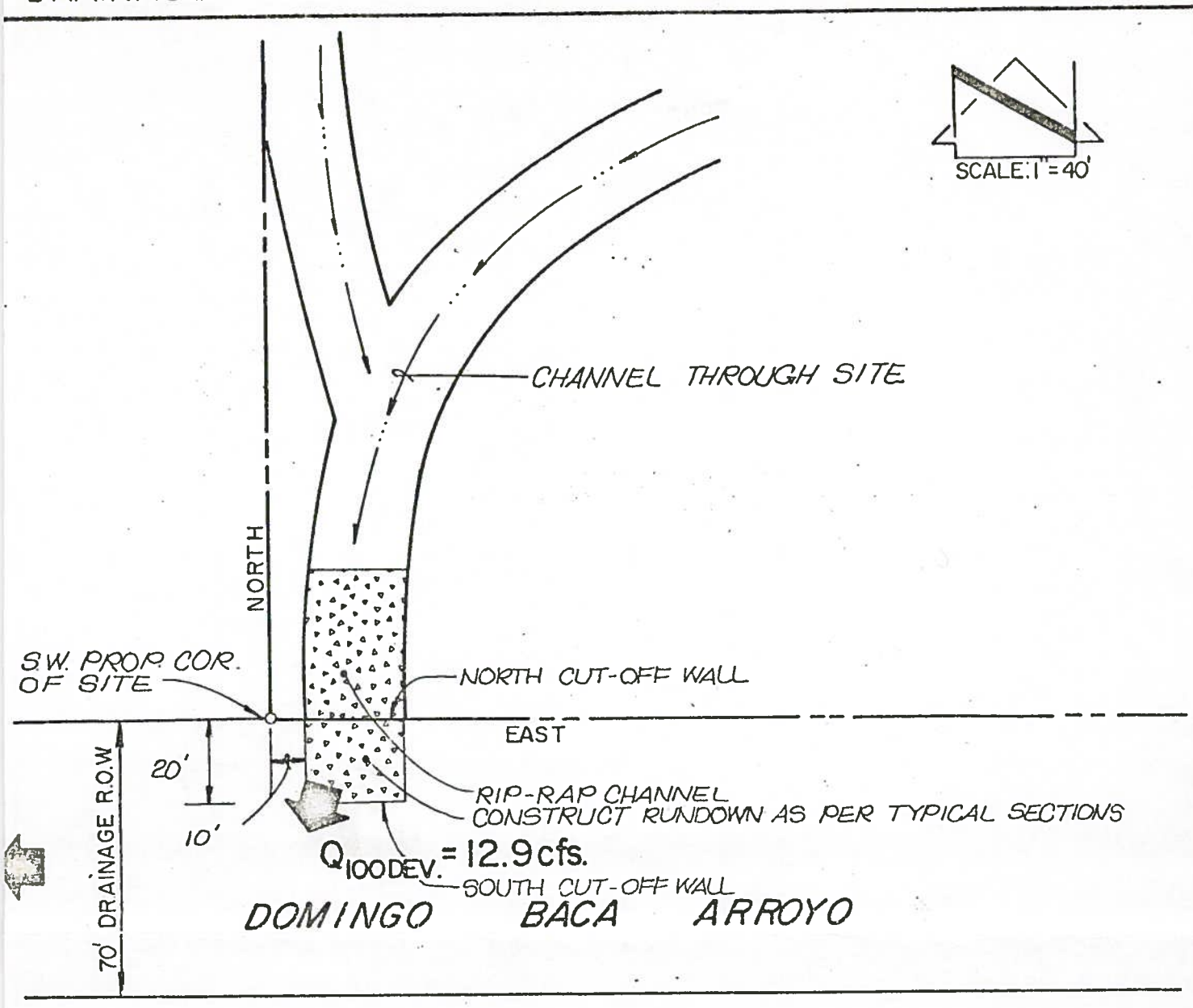
5. Backfill compaction shall be according to N/A street use.

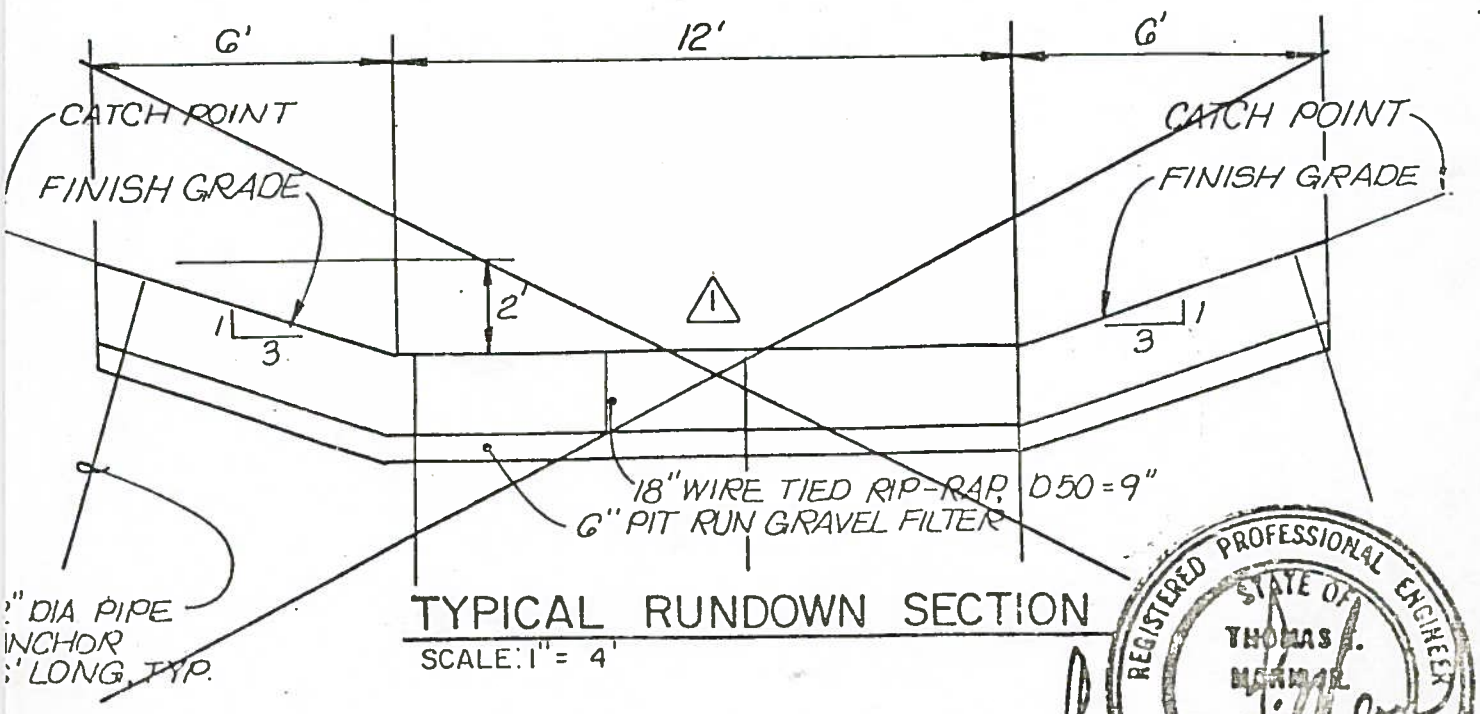
B-14

APPROVALS	NAME	DATE	TITLE: 6800 PALOMAS AVE. N.E. HOPE HIGH SCHOOL DRAINAGE RUNDOWN	
A.C.E./DESIGN	G.R. Kolbek	1 Mar 82		
INSPECTOR	Doug	10-7-82		
A.C.E./FIELD			PERMIT NO. SHEET 1 OF 3	MAP NO. D

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY





TYPICAL RUNDOWN SECTION
SCALE: 1" = 4'

REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
THOMAS J. MORRIS
AND LAND SURVEYOR

DATE	REMARKS	BY	APP'D.
8/20/82	DELETE "TYPICAL RUNDOWN SECTION"	JGM	P.T.C. 8/23/82

8/13/82

APPROVALS	NAME	DATE
C.E./DESIGN		1 Mar-82
SPECTOR		10-7-82
E./FIELD		

TITLE: 6800 PALOMAS AVE. N.E.
HOPE HIGH SCHOOL
DRAINAGE RUNDOWN

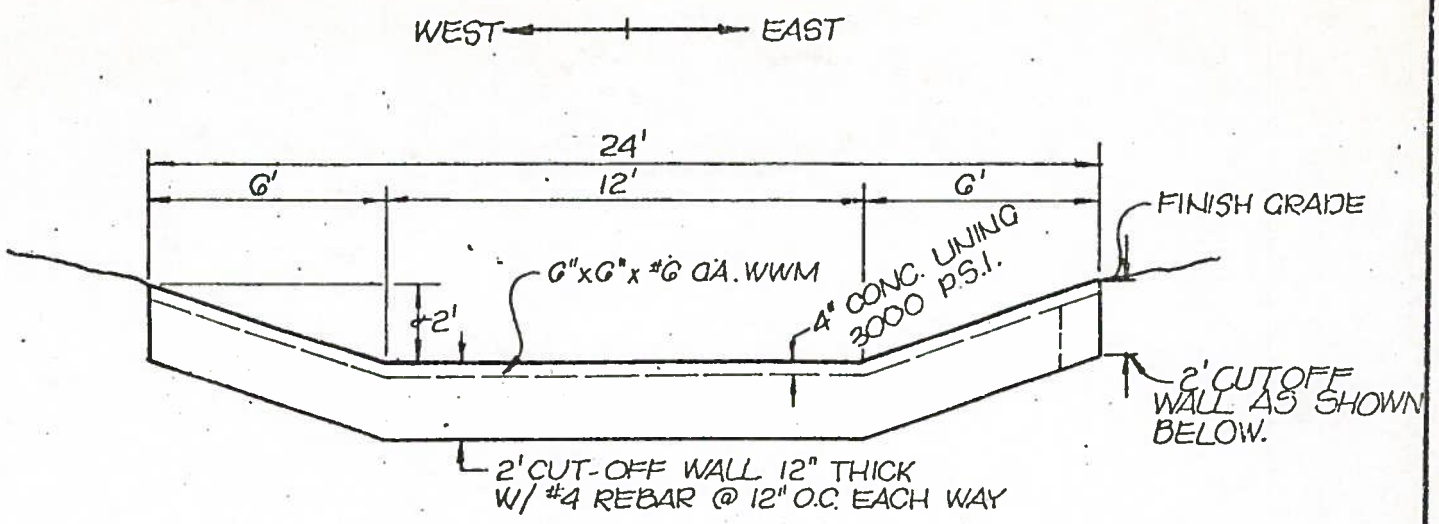
PERMIT NO.

MAP NO. D-18

SHEET 2 OF 3

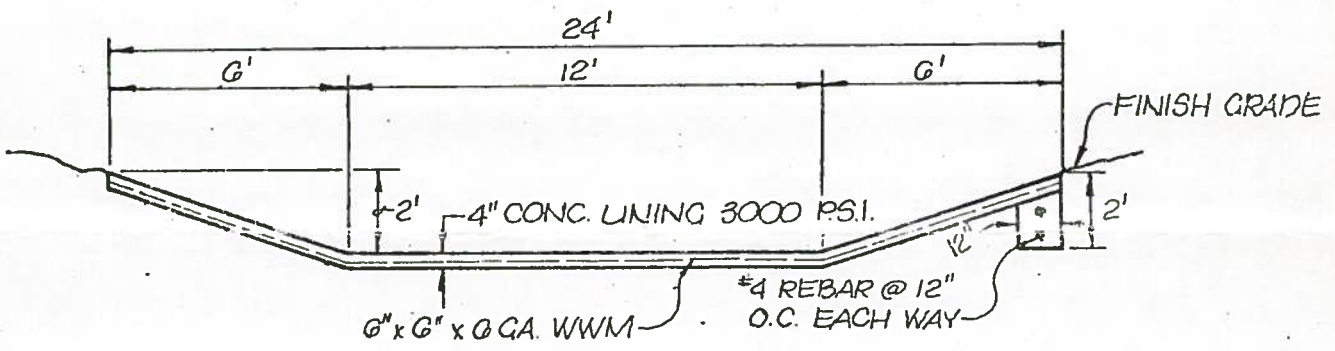
CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY



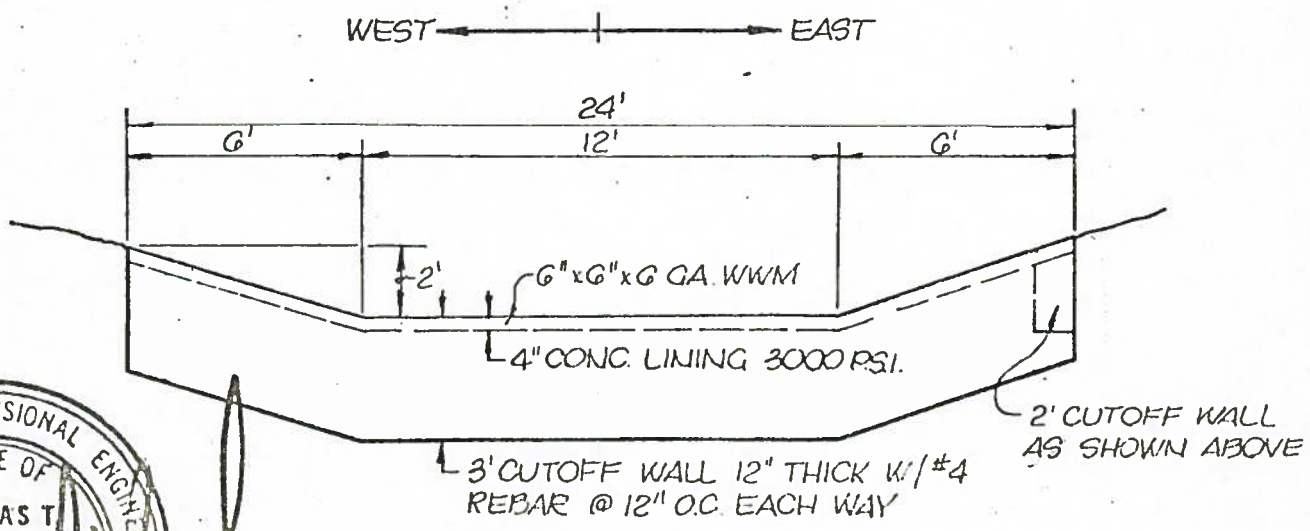
NORTH CUTOFF WALL SECTION

SCALE : 1" = 5'



CONCRETE LINING SECTION

SCALE : 1" = 5'



SOUTH CUTOFF WALL SECTION

SCALE : 1" = 5'

PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
THOMAS T. MANN, JR.
3792
LAND SURVEYOR

APPROVALS	NAME	DATE
DESIGN	P.L. Gifford	9/23/82
CTOR	Daily	10-7-82
FIELD		

TITLE: 6800 PALOMAS AVE. N.E.
HOPE HIGH SCHOOL
DRAINAGE RUNDOWN

PERMIT NO.

SHEET 3 OF 3

MAP NO. D-18