CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

July 8, 2016

Robert J. Fierro, P.E., P.S.
Fierro & Company
6300 Montano Rd. Suite F3
Albuquerque, NM, 87120

RE: **Calvary Church – Gym Building**
Grading & Drainage Plan/Report
Engineer's Stamp Date 5-31-2016 (File: J22D027A)

Dear Mr. Fierro:

Based upon the information provided in your submittal received 6-1-2016, the above referenced Grading and Drainage Plan and Report is approved for Building Permit with the following condition:

- The roof drains will not be allowed to discharge onto the sidewalk surface, flows need to be routed under the sidewalk with a culvert or piping. These improvements will need to be shown on the certification.

Please attach a copy of this approved plan in the construction sets when submitting for a building permit. Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

If you have any questions you can contact me at 924-3986.

Sincerely,

Abiel Carrillo, P.E.
Principal Engineer, Planning Dept.
Development Review Services

Orig: Drainage file

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Calvary Christian Gymnasium Building Permit #: _____ City Drainage #: _____

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: Lot L1B1B, Block 11 of Panorama Heights

City Address: 12820 Indian School Rd

Engineering Firm: Fierro & Company, LLC Contact: Robert Fierro

Address: 6300 Montano Rd., Suite F3, Albuquerque, NM 88260

Phone#: (505) 352-8930 Fax#: _____ E-mail: robertfierro@fierrocompany.com

Owner: Calvary Chapel East Contact: Dave Moss

Address: 128020 Indian School Rd

Phone#: (505) 967-5592 Fax#: _____ E-mail: davemoss59@gmail.com

Architect: RBA Architecture Contact: David McEachem

Address: 1104 Park Ave., SW, Albuquerque, NM 87102

Phone#: (505) 242-1859 Fax#: _____ E-mail: david@rba81.com

Other Contact: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

X HYDROLOGY/ DRAINAGE

_____ TRAFFIC/ TRANSPORTATION

_____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

_____ ENGINEER/ ARCHITECT CERTIFICATION

_____ CONCEPTUAL G & D PLAN

X GRADING PLAN

_____ DRAINAGE MASTER PLAN

X DRAINAGE REPORT

_____ CLOMR/LOMR

_____ TRAFFIC CIRCULATION LAYOUT (TCL)

_____ TRAFFIC IMPACT STUDY (TIS)

_____ EROSION & SEDIMENT CONTROL PLAN (ESC)

_____ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: _____ Yes X No

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

X BUILDING PERMIT APPROVAL

_____ CERTIFICATE OF OCCUPANCY

_____ PRELIMINARY PLAT APPROVAL

_____ SITE PLAN FOR SUB'D APPROVAL

_____ SITE PLAN FOR BLDG. PERMIT APPROVAL

_____ FINAL PLAT APPROVAL

_____ SIA/ RELEASE OF FINANCIAL GUARANTEE

_____ FOUNDATION PERMIT APPROVAL

_____ GRADING PERMIT APPROVAL

_____ SO-19 APPROVAL

_____ PAVING PERMIT APPROVAL

_____ GRADING/ PAD CERTIFICATION

_____ WORK ORDER APPROVAL

_____ CLOMR/LOMR

_____ PRE-DESIGN MEETING

_____ OTHER (SPECIFY) _____

DATE SUBMITTED: June 1, 2016 By: Fierro & Company, LLC

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

DRAINAGE REPORT
FOR
CALVARY CHAPEL EAST
GYMNASIUM ADDITION

12820 Indian School Rd., NE
Albuquerque, NM 87112

Prepared For:

Calvary Chapel East
12820 Indian School Rd., NE
Albuquerque, NM 87112

Prepared by:

Fierro&Company
ENGINEERING | LAND SURVEYING

May 2016

CALVARY CHAPEL EAST
GYMNASIUM ADDITION
DRAINAGE REPORT
MAY 2016

I, Robert J. Fierro, P.E., do hereby certify that this report was prepared by me or under my direction and that I am a duly registered Professional Engineer under the laws of the State of New Mexico.

Robert J. Fierro

Robert J. Fierro, P.E.
NMPE No. 20585

5-31-16

Date

TABLE OF CONTENTS

TITLE	PAGE NO.
INTRODUCTION	1
HYDROLOGY	1
CONCLUSION	3

APPENDIX INDEX

TITLE	SECTION
HYDROLOGIC DATA & RESULTS	A
PRECIPITATION DATA	
AHYMO CALCULATIONS – EXISTING CONDITIONS	
AHYMO CALCULATIONS – PROPOSED CONDITIONS	
HYDRAULIC DATA & RESULTS	B
CULVERT REPORT: 3-4" DIA. PVC	
WATER SURFACE ELEVATION: EXISTING & PROPOSED	
PANORAMA HEIGHTS DRAINAGE PLAN	C
EXHIBITS	D
GRADING & DRAINAGE	
SITE DETAILS	

INTRODUCTION

Authorization

Calvary Chapel East authorized Fierro & Company, LLC to prepare a Grading & Drainage Plan for the Gymnasium Addition.

Study Area Location

The Gymnasium Addition is proposed at the south parking lot of Calvary Chapel East located at 12820 Indian School Rd., NE Albuquerque, NM 87112. Refer to Sheet C1.

Purpose

The purpose of this drainage report is to 1) determine the existing and proposed runoff conditions for the 100-year, 6-hour storm event, 2) outline the criteria for development of the site, and 3) demonstrate that the downstream basins will not be inversely impacted by this development.

HYDROLOGY

Methodology

Drainage Basin Delineation

A topographic survey with 1-foot contour intervals was obtained in January 2016. This data was used to delineate the existing Basins 101 and 102. These two basins coincide with Basin B of the Panorama Heights Drainage Plan, prepared by ABQ Engineering, Inc. dated June 25, 2007.

Hydrological Method

Hydrologic procedures presented in the Hydrology Section of the DMP, Section 22.2, revised April 7, 1993 were followed. AHYMO-S4 program was used to produce the peak flow and runoff volume values for the 100-year, 6-hour storm event.

Hydrological Characteristics

Precipitation

Rainfall depths for a range of durations were acquired from National Oceanographic and Atmospheric Administration's (NOAA) Precipitation Frequency Data Server (PFDS), Atlas 14, as shown on Table 1. The PFDS requires a location to be entered and Google Earth was used to obtain the site location in latitude and longitude. The location entered into the PFDS is latitude 35.0949º N, longitude 106.5018º W.

Table 1: NOAA Precipitation Depths (in inches)	
Duration	100-year
15-min	1.14
1-hr	1.89
2-hr	2.22
3-hr	2.30
6-hr	2.51
12-hr	2.72
24-hr	3.16

Existing Condition

The site is approximately 2.28 acres, which is encompassed by Basin 101 and Basin 102. A large parking lot is located within Basin 101. The curb's islands in this parking lot are not depressed, but contain landscaping. Basin 101 generally slopes southwest with slopes varying between 2.5% to 9%. 3 - 4" diameter PVC pipes at the southwest corner outlet Basin 101 into a 12" storm drain system, which discharges into the adjoining lot at Bella Vista Assisted Living. The Bella Vista Assisted Living Drainage Plan, prepared by Lorenz Design & Consulting, LLC dated April 2015 states that it receives runoff via 1 – 4" diameter PVC. This is not the case as runoff being discharged into the Bella Vista Assisted Living site is from the said 3- 4" diameter pipes and surface drainage from Basin 102.

Basin 102 is 0.1248 acres and its surface is landscaped. This basin slopes southeast with slopes varying between 0.5% to 1% and surface drainage to the Bella Vista Assisted Living site. Refer to Sheet C4 for the existing condition drainage. Refer to Table 3 below for the hydrologic data and results.

Table 2: Existing Hydrologic Data, Peak Discharge, and Volumetric Runoff							
Basin	Area	Land Treatment Percentage (%)				Q100-year, 6-hour (cfs)	V100-year, 6-hour (ac-ft)
	(acres)	A	B	C	D		
101	2.1590	0	13.3	0	86.7	9.38	0.373
102	0.1248	0	100	0	0	0.34	0.010

Proposed Condition

A gymnasium is proposed at the south parking lot of Calvary Chapel East. This building is 125'x100'. Basin 201 will drain to the existing 3 – 4" diameter PVC pipes. The parking lot ponding has a smaller footprint under the proposed condition as the basin is smaller. The maximum water surface elevation under the 100-year, 6-hour storm event is 5770.02'. The building will have stem walls between 4-7 feet to minimize disturbance of the existing parking lot.

The northern half of the new building will drain to a drainage swale, which discharges into the proposed pond in Basin 202. This pond will retain the 100-year, 6-hour runoff volume. Storms generating a larger runoff volume will discharge through the Pond's spillway. The same drainage pattern will occur in the proposed condition as in the existing. The total discharge entering the Bella Vista Living Assisted Living Site is slightly less under the proposed condition for the 100-year, 6-hour storm.

Table 3: Proposed Hydrologic Data, Peak Discharge, and Volumetric Runoff

Basin	Area	Land Treatment Percentage (%)				Q100-year, 6-hour (cfs)	V100-year, 6-hour (ac-ft)
	(acres)	A	B	C	D		
201	1.9960	0	14	0	86	8.65	0.343
202	0.1248	0	44	0	56	1.21	0.044

90th Percentile Storm

The City of Albuquerque's Drainage Ordinance 14-15-2-12 is met for this new development. The first flush will be routed through and retained in designated landscaping. See Sheet C4 for the landscaping areas intended to capture the first flush. Calculations below show compliance to Ordinance 14-15-2-12.

Basin 201

New Land Treatment D Area = 6,995 sq.ft.

Water Quality Volume Needed = $6{,}995\ sq.ft.\ (.34") * \frac{1ft}{12"} = 198\ ft^3$

Water Quality Volume Provided = 1,916 ft^3 > WQ_{needed}

Basin 202

New Land Treatment D Area = 8,375 sq.ft.

Water Quality Volume Needed = $8{,}375\ sq.ft.\ (.34") * \frac{1ft}{12"} = 237\ ft^3$

Water Quality Volume Provided = 320 ft^3 > WQ_{needed}

CONCLUSION

The proposed development meets the City's drainage and 90th Percentile Storm requirements. This new development does not increase the peak discharge nor runoff volume to the only downstream site being Bella Vista Assisted Living. The Gymnasium addition improvements include depressed landscaping to capture runoff from the new land treatment D areas.

APPENDIX A

NOAA Atlas 14, Volume 1, Version 5
Location name: Albuquerque, New Mexico, US*
Latitude: 35.0949°, Longitude: -106.5018°
Elevation: 5773 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.184** (0.157-0.216)	**0.238** (0.202-0.280)	**0.319** (0.271-0.375)	**0.381** (0.323-0.447)	**0.466** (0.393-0.546)	**0.532** (0.447-0.623)	**0.602** (0.501-0.703)	**0.674** (0.558-0.787)	**0.772** (0.634-0.903)	**0.850** (0.694-0.995)
10-min	**0.280** (0.239-0.329)	**0.362** (0.308-0.426)	**0.486** (0.412-0.571)	**0.580** (0.491-0.680)	**0.709** (0.598-0.831)	**0.810** (0.680-0.948)	**0.915** (0.763-1.07)	**1.02** (0.850-1.20)	**1.17** (0.964-1.37)	**1.29** (1.06-1.51)
15-min	**0.347** (0.296-0.408)	**0.449** (0.381-0.527)	**0.602** (0.511-0.707)	**0.719** (0.609-0.843)	**0.879** (0.741-1.03)	**1.00** (0.842-1.18)	**1.14** (0.946-1.33)	**1.27** (1.05-1.49)	**1.46** (1.20-1.70)	**1.60** (1.31-1.88)
30-min	**0.467** (0.399-0.549)	**0.605** (0.514-0.710)	**0.810** (0.688-0.953)	**0.968** (0.819-1.14)	**1.18** (0.998-1.39)	**1.35** (1.13-1.58)	**1.53** (1.27-1.79)	**1.71** (1.42-2.00)	**1.96** (1.61-2.29)	**2.16** (1.76-2.53)
60-min	**0.578** (0.493-0.679)	**0.748** (0.636-0.879)	**1.00** (0.852-1.18)	**1.20** (1.01-1.40)	**1.47** (1.24-1.72)	**1.67** (1.40-1.96)	**1.89** (1.58-2.21)	**2.12** (1.75-2.48)	**2.43** (1.99-2.84)	**2.67** (2.18-3.13)
2-hr	**0.690** (0.578-0.841)	**0.885** (0.740-1.08)	**1.17** (0.976-1.42)	**1.39** (1.16-1.69)	**1.71** (1.41-2.06)	**1.96** (1.61-2.36)	**2.22** (1.81-2.68)	**2.50** (2.03-3.00)	**2.89** (2.32-3.47)	**3.20** (2.55-3.85)
3-hr	**0.738** (0.622-0.894)	**0.937** (0.788-1.14)	**1.23** (1.03-1.48)	**1.45** (1.22-1.75)	**1.77** (1.47-2.13)	**2.03** (1.68-2.44)	**2.30** (1.89-2.76)	**2.58** (2.10-3.10)	**2.98** (2.40-3.57)	**3.30** (2.64-3.96)
6-hr	**0.859** (0.731-1.03)	**1.08** (0.922-1.31)	**1.39** (1.19-1.67)	**1.64** (1.39-1.96)	**1.97** (1.66-2.36)	**2.23** (1.87-2.67)	**2.51** (2.09-2.99)	**2.79** (2.31-3.33)	**3.18** (2.61-3.78)	**3.49** (2.84-4.16)
12-hr	**0.976** (0.843-1.14)	**1.23** (1.06-1.44)	**1.56** (1.34-1.81)	**1.82** (1.56-2.11)	**2.17** (1.85-2.52)	**2.44** (2.07-2.83)	**2.72** (2.30-3.15)	**3.00** (2.52-3.49)	**3.39** (2.83-3.95)	**3.71** (3.06-4.31)
24-hr	**1.16** (1.02-1.34)	**1.46** (1.28-1.67)	**1.83** (1.60-2.10)	**2.13** (1.86-2.44)	**2.53** (2.20-2.90)	**2.84** (2.46-3.25)	**3.16** (2.73-3.62)	**3.49** (3.00-3.99)	**3.94** (3.36-4.50)	**4.29** (3.64-4.91)
2-day	**1.25** (1.10-1.43)	**1.58** (1.39-1.79)	**1.99** (1.75-2.26)	**2.31** (2.03-2.63)	**2.76** (2.41-3.13)	**3.10** (2.70-3.52)	**3.46** (3.00-3.93)	**3.83** (3.30-4.35)	**4.33** (3.71-4.93)	**4.73** (4.02-5.39)
3-day	**1.38** (1.24-1.54)	**1.73** (1.55-1.93)	**2.16** (1.94-2.41)	**2.50** (2.24-2.78)	**2.96** (2.65-3.30)	**3.32** (2.96-3.70)	**3.69** (3.27-4.11)	**4.07** (3.59-4.54)	**4.58** (4.02-5.12)	**4.98** (4.34-5.57)
4-day	**1.51** (1.38-1.65)	**1.88** (1.72-2.06)	**2.33** (2.13-2.55)	**2.68** (2.45-2.94)	**3.17** (2.88-3.47)	**3.54** (3.21-3.88)	**3.92** (3.55-4.30)	**4.31** (3.88-4.72)	**4.83** (4.32-5.30)	**5.23** (4.66-5.75)
7-day	**1.75** (1.60-1.92)	**2.19** (2.00-2.39)	**2.69** (2.46-2.94)	**3.09** (2.82-3.38)	**3.63** (3.30-3.96)	**4.03** (3.66-4.40)	**4.44** (4.02-4.86)	**4.85** (4.38-5.30)	**5.40** (4.84-5.92)	**5.82** (5.19-6.38)
10-day	**1.97** (1.81-2.14)	**2.45** (2.25-2.67)	**3.04** (2.79-3.30)	**3.49** (3.20-3.80)	**4.11** (3.75-4.47)	**4.58** (4.17-4.97)	**5.06** (4.59-5.50)	**5.54** (5.00-6.03)	**6.18** (5.55-6.74)	**6.67** (5.96-7.29)
20-day	**2.58** (2.37-2.81)	**3.21** (2.95-3.50)	**3.93** (3.61-4.28)	**4.48** (4.11-4.88)	**5.19** (4.75-5.65)	**5.71** (5.21-6.22)	**6.23** (5.67-6.77)	**6.73** (6.10-7.32)	**7.38** (6.66-8.04)	**7.85** (7.07-8.59)
30-day	**3.13** (2.87-3.39)	**3.89** (3.58-4.22)	**4.73** (4.34-5.13)	**5.36** (4.90-5.81)	**6.16** (5.62-6.67)	**6.74** (6.14-7.30)	**7.31** (6.64-7.92)	**7.85** (7.12-8.51)	**8.54** (7.71-9.27)	**9.04** (8.14-9.83)
45-day	**3.82** (3.52-4.13)	**4.74** (4.38-5.14)	**5.70** (5.25-6.17)	**6.40** (5.88-6.93)	**7.27** (6.67-7.89)	**7.89** (7.23-8.57)	**8.49** (7.75-9.22)	**9.05** (8.24-9.84)	**9.75** (8.84-10.6)	**10.3** (9.27-11.2)
60-day	**4.40** (4.05-4.76)	**5.47** (5.04-5.92)	**6.57** (6.06-7.13)	**7.37** (6.79-7.99)	**8.35** (7.68-9.06)	**9.04** (8.30-9.82)	**9.70** (8.89-10.5)	**10.3** (9.44-11.2)	**11.1** (10.1-12.1)	**11.6** (10.6-12.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

```
*S  Calvary Gym Grading & Drainage Plan
*S  Drainage Basin Analysis
*S "Existing" CONDITION MODEL
*S  COMBINED BASIN ANALYSIS
*
START               TIME=0.0  PUNCH CODE=0 PRINT CODE=0
LOCATION            Bernalillo COUNTY
*
* RAINFALL FROM NOAA COA DEVELOPMENT PROCESS MANUAL
*S      RAINFALL DATA FROM NOAA ATLAS 14
*S**************************************************************************
*S  100 YEAR 6HR STORM EXISTING CONDITION
RAINFALL                TYPE=1
                        QUARTER=1.14 IN
                        HOUR=   1.89 IN
                        SIX HR= 2.51 IN
                        DAY=    3.16 IN   DT=0.01
*
****Adding Sediment Bulk Factor to all Basins
SEDIMENT BULK   CODE=1  BULK FACTOR=1.00
*
*
*S**************************************************************************
*S**************************************************************************
*
*
*** BASIN 101 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=3   ISLOPE=1
                        LENGTH=80 FT    SLOPE=0.050  K=0.7
                        LENGTH=325 FT   SLOPE=0.050  K=2.0
                        LENGTH=255 FT   SLOPE=0.030  K=3.0
                        KN=0.05   CENTROID DIST=.5
COMPUTE NM HYD          ID=1   HYD NO=101   DA=0.003373 SQ MI
                        PER A=0 PER B=13.3  PER C=0  PER D=86.7
                        TP=0.0   MASSRAIN=-1
*
PRINT HYD               ID=1   CODE=1
*
*
ROUTE RESERVOIR         ID=30  HYD NO=Pond1  INFLOW ID=1  CODE=1
                        OUTFLOW (CFS)     STORAGE (AC FT)       ELEV
                        0.00                    0               5767.5
                        1.00                    0.0005          5768
                        2.00                    0.0226          5769
                        2.75                    0.1283          5770
                        3.30                    0.3787          5771
*
*
*** BASIN 102 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=1   ISLOPE=1
```

```
                                    16204E
                        LENGTH=200 FT   SLOPE=0.010  K=2.0
                        KN=0.05   CENTROID DIST=.5
COMPUTE NM HYD          ID=1   HYD NO=102   DA=0.00020 SQ MI
                        PER A=0 PER B=100  PER C=0  PER D=0
                        TP=0.0   MASSRAIN=-1
*
PRINT HYD               ID=1   CODE=1
*
* Total Flow from Basin (Pond1 + 102)
ADD HYD                 ID=1  HYD NO=102SUM ID I=30   ID II=1
PRINT HYD               ID=1   CODE=1
*
FINISH
```

```
    AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)                          - Ver. S4.01a, Rel: 01a      RUN DATE (MON/DAY/YR)
=05/24/2016
    INPUT FILE = \\Seagate-4004ED\Public\PROJECTS\SURVEYING\162004\AE\AHYMO\16204E.txt        USER NO.=
AHYMO_Temp_User:20122010

                                  FROM  TO                    PEAK         RUNOFF                TIME TO    CFS
PAGE =   1
                      HYDROGRAPH   ID   ID         AREA     DISCHARGE      VOLUME      RUNOFF     PEAK     PER
    COMMAND       IDENTIFICATION   NO.  NO.      (SQ MI)      (CFS)       (AC-FT)    (INCHES)  (HOURS)    ACRE
NOTATION

    *S  Calvary Gym Grading & Drainage Plan
    *S  Drainage Basin Analysis
    *S "Existing" CONDITION MODEL
    *S  COMBINED BASIN ANALYSIS
    START                                                                                                 TIME=
     0.00
    LOCATION                        BERNALILLO COUNTY
    *S                   RAINFALL DATA FROM NOAA ATLAS 14
    *S*****************************************************************
    *S  100 YEAR 6HR STORM EXISTING CONDITION
    RAINFALL  TYPE= 1 NOAA 14
RAIN6=    2.510
    SEDIMENT BULK                                                                                         PK BF
=    1.00
    *S*************************************************************************
    *S*************************************************************************
    COMPUTE NM HYD        101.00   -     1       0.00337         9.38       0.373      2.07265    1.530    4.344 PER
IMP=  86.70
    ROUTE RESERVOIR        Pond1    1   30       0.00337         2.79       0.373      2.07257    1.810    1.291
AC-FT=    0.145
    COMPUTE NM HYD        102.00   -     1       0.00020         0.34       0.010      0.89430    1.540    2.675 PER
IMP=   0.00
    ADD HYD               102SUM 30& 1   1       0.00357         2.98       0.382      2.00660    1.660    1.302
    FINISH
```

```
*S  Calvary Gym Grading & Drainage Plan
*S  Drainage Basin Analysis
*S "Proposed" CONDITION MODEL
*S  COMBINED BASIN ANALYSIS
*
START               TIME=0.0  PUNCH CODE=0 PRINT CODE=0
LOCATION            Bernalillo COUNTY
*
* RAINFALL FROM NOAA COA DEVELOPMENT PROCESS MANUAL
*S      RAINFALL DATA FROM NOAA ATLAS 14
*S**************************************************************************
*S  100 YEAR 6HR STORM Proposed CONDITION
RAINFALL                TYPE=1
                        QUARTER=1.14 IN
                        HOUR=   1.89 IN
                        SIX HR= 2.51 IN
                        DAY=    3.16 IN   DT=0.01
*
****Adding Sediment Bulk Factor to all Basins
SEDIMENT BULK   CODE=1  BULK FACTOR=1.00
*
*
*S**************************************************************************
*S**************************************************************************
*
*
*
*** BASIN 201 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=3   ISLOPE=1
                        LENGTH=80 FT    SLOPE=0.050  K=0.7
                        LENGTH=325 FT   SLOPE=0.050  K=2.0
                        LENGTH=255 FT   SLOPE=0.030  K=3.0
                        KN=0.05   CENTROID DIST=.5
COMPUTE NM HYD          ID=1   HYD NO=201   DA=0.00312 SQ MI
                        PER A=0 PER B=14.0  PER C=0  PER D=86
                        TP=0.0   MASSRAIN=-1
*
PRINT HYD               ID=1   CODE=1
*
*
ROUTE RESERVOIR         ID=30  HYD NO=Pond1  INFLOW ID=1 CODE=1
                        OUTFLOW (CFS)     STORAGE (AC FT)       ELEV
                        0                       0               5767.5
                        1.00                    0.00047         5768
                        2.00                    0.02275         5769
                        2.75                    0.12285         5770
                        3.30                    0.29566         5771
*
*** BASIN 202 ****
*
COMPUTE LT TP           LCODE=1   UPLAND/LAG TIME METHOD
                        NK=1   ISLOPE=1
```

```
                        LENGTH=290 FT   SLOPE=0.010  K=3.0
                        KN=0.05   CENTROID DIST=.5
COMPUTE NM HYD          ID=1   HYD NO=202   DA=0.0005 SQ MI
                        PER A=0 PER B=44  PER C=0  PER D=56
                        TP=0.0   MASSRAIN=-1
*
PRINT HYD               ID=1   CODE=1
*
ROUTE RESERVOIR         ID=31  HYD NO=Pond2  INFLOW ID=1  CODE=1
                        OUTFLOW (CFS)     STORAGE (AC FT)       ELEV
                        0                       0               5768
                        0.01                    0.010           5769
                        0.01                    0.035           5770
                        0.01                    0.050           5770.50
                        1.0                     0.078           5771

* Total Flow from Basin (POND1 + POND2)
ADD HYD                 ID=1  HYD NO=APSUM ID I=30   ID II=31
PRINT HYD               ID=1   CODE=1
*
*
FINISH
```

```
    AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)                        - Ver. S4.01a, Rel: 01a      RUN DATE (MON/DAY/YR)
=05/30/2016
    INPUT FILE = \\Seagate-4004ED\Public\PROJECTS\SURVEYING\162004\AE\AHYMO\16204P.txt       USER NO.=
AHYMO_Temp_User:20122010

                                  FROM  TO                    PEAK         RUNOFF               TIME TO    CFS
PAGE =   1
                     HYDROGRAPH   ID   ID         AREA     DISCHARGE      VOLUME      RUNOFF     PEAK     PER
    COMMAND       IDENTIFICATION   NO.  NO.      (SQ MI)      (CFS)       (AC-FT)    (INCHES)  (HOURS)    ACRE
NOTATION

    *S  Calvary Gym Grading & Drainage Plan
    *S  Drainage Basin Analysis
    *S "Proposed" CONDITION MODEL
    *S  COMBINED BASIN ANALYSIS
    START                                                                                                 TIME=
     0.00
    LOCATION                        BERNALILLO COUNTY
    *S                   RAINFALL DATA FROM NOAA ATLAS 14
    *S*****************************************************************
    *S  100 YEAR 6HR STORM Proposed CONDITION
    RAINFALL  TYPE= 1 NOAA 14
RAIN6=    2.510
    SEDIMENT BULK                                                                                         PK BF
=    1.00
    *S*************************************************************************
    *S*************************************************************************
    COMPUTE NM HYD        201.00   -     1       0.00312         8.65       0.343      2.06313    1.530    4.330 PER
IMP=  86.00
    ROUTE RESERVOIR        Pond1    1   30       0.00312         2.77       0.343      2.06305    1.800    1.385
AC-FT=    0.128
    COMPUTE NM HYD        202.00   -     1       0.00050         1.21       0.044      1.65540    1.530    3.777 PER
IMP=  56.00
    ROUTE RESERVOIR        Pond2    1   31       0.00050         0.01       0.032      1.19981    1.470    0.031
AC-FT=    0.050
    ADD HYD                APSUM 30&31   1       0.00362         2.78       0.375      1.94379    1.800    1.198
    FINISH
```

APPENDIX B

Culvert Report

3-4in PVC

Invert Elev Dn (ft)	=	5767.42
Pipe Length (ft)	=	3.00
Slope (%)	=	2.00
Invert Elev Up (ft)	=	5767.48
Rise (in)	=	4.0
Shape	=	Circular
Span (in)	=	4.0
No. Barrels	=	3
n-Value	=	0.012
Culvert Type	=	Circular Culvert
Culvert Entrance	=	Smooth tapered inlet throat
Coeff. K,M,c,Y,k	=	0.534, 0.555, 0.0196, 0.9, 0.2

Embankment

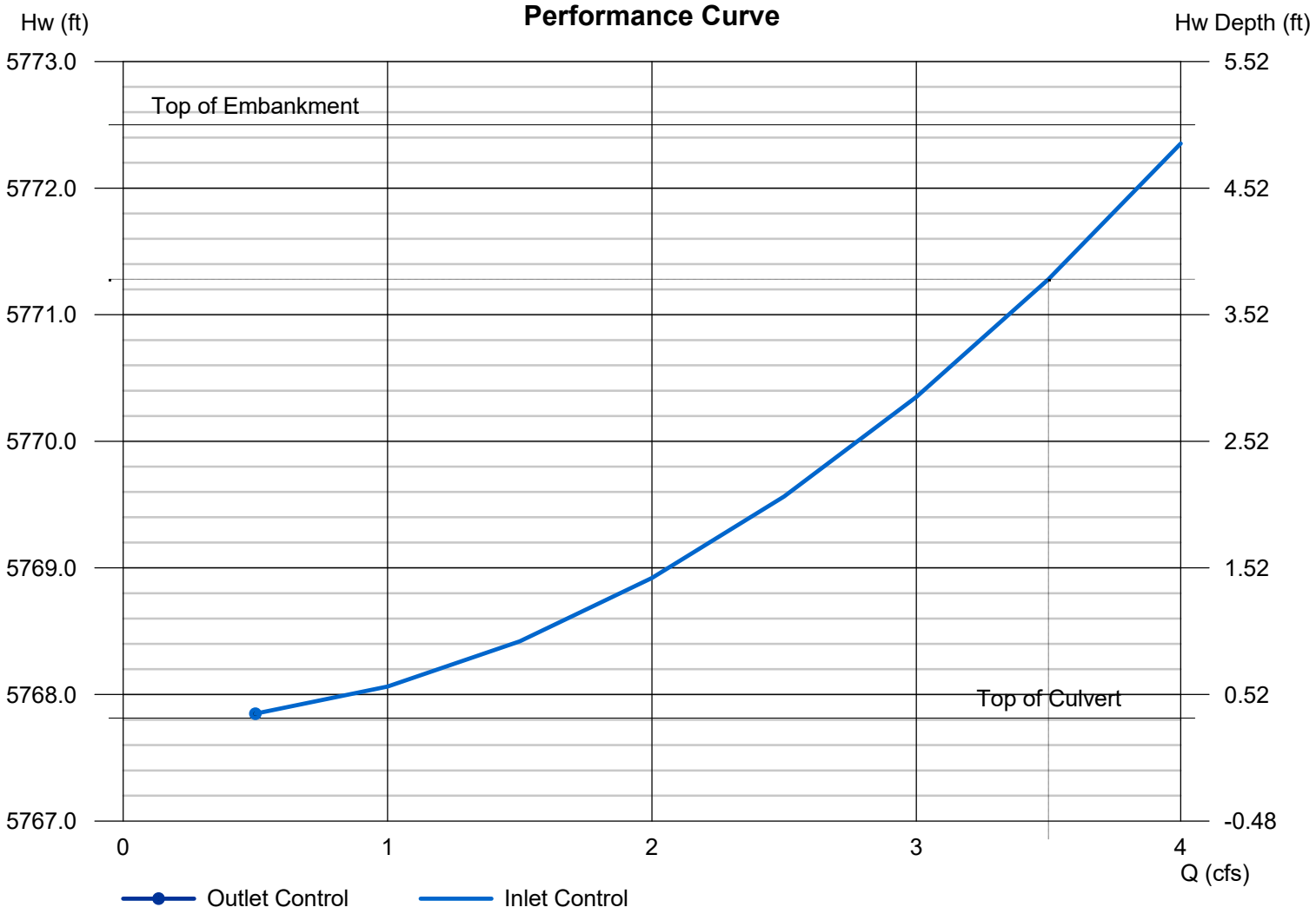
Top Elevation (ft)	=	5772.50
Top Width (ft)	=	1.00
Crest Width (ft)	=	3.00

Calculations

Qmin (cfs)	=	0.00
Qmax (cfs)	=	4.00
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	3.50
Qpipe (cfs)	=	3.50
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	13.37
Veloc Up (ft/s)	=	13.37
HGL Dn (ft)	=	5767.75
HGL Up (ft)	=	5768.70
Hw Elev (ft)	=	5771.28
Hw/D (ft)	=	11.40
Flow Regime	=	Inlet Control



Parking LOT POND

Existing Water surface Elevation 100-YR, 6-HR

Given:

Storage = 0.181 ac-ft (computed from AHYMO)

solve: WSEL

$$\frac{5771 - 5770}{0.3787 - 0.1283} = \frac{5771 - WSElev}{0.3787 - 0.181}$$

$$WSEL = 5770.21 \text{ ft.}$$

Parking Lot POND

Proposed water surface Elevation 100-YR, 6-HR

Given:

Storage = 0.128 ac-ft (computed from AHYMO)

Solve: WSEL

$$\frac{5771 - 5770}{0.2957 - 0.1229} = \frac{5771 - WSEL}{0.2957 - 0.128}$$

$$WSEL = 5770.03 \text{ ft.}$$

APPENDIX C

FLOOD PLAIN N.T.S. PANEL 357 OF 825

Legal Description

TRACT L-1, BLOCK 11 PANORAMA HEIGHTS
WITHIN SEC. 15, T. 10 N., R. 4E

UPC

L-1: 1022-058-399-319-101-14
M-1: 1022-058-428-312-101-15

Benchmark

PROJECT BENCHMARK
ACS MONUMENT "1-J23-A"
X = 426,100.69
Y = 1,490,001.03
ELEV. = 5843.30, NAVD 1988.

LOCAL BENCHMARK
NORTHWEST CORNER OF TRACT L-1-A
BEING A REBAR WITH CAP

ELEV. = 5759.45

Legend

—5030—	EXISTING CONTOUR
—5030—	NEW CONTOUR
30.11	NEW SPOT ELEVATION
TW	TOP OF WALL
BW	BOTTOM OF WALL
FP	FINISH PAD ELEVATION
	DIRECTION OF FLOW
	BASIN BOUNDARY

Drainage Calculations

26268
Panorama Heights
Drainage Subbasin A
Hydrology Calculations
Date: June 20, 2007
DPM - Section 22.2
Volume 2, January 1993

Precipitation Zone 4
100 Year Storm Depth, P (360) 2.9
100 year Storm Depth, P (10 day) 5.95

Treatment Area	A	B	C	D
Excess Precipitation Factors	0.95	1.69	2.45	2.84
Peak Discharge Factors	2.35	2.92	3.73	5.25

Land Treatment Area	Acres	Existing	Proposed	Off-site
Type "D" (Roof)		1.25	1.75	0.00
Type "C" (Unpaved Roadway)		0.45	0.00	0.00
Type "B" (Irrigated Lawns)		0.57	0.52	0.00
Type "A" (Undeveloped)		0.00	0.00	0.00
Total (Acres)		2.27	2.27	0.00
Excess Precipitation(in)		2.28	2.28	0.00
Volume (100), cf		18700.04	18808.21	0.00
Volume (10),cf		12589.33	12832.17	0.00
Volume (100,10 day), cf		38143.02	38184.53	0.00
Q (100), cfs		10.39	10.71	0.00
Q (10), cfs		7.17	7.17	0.00
Total volume ponded				38184.53
total pond volume required (proposed minus historic)				41.31

26268
Panorama Heights
Drainage Subbasin C
Hydrology Calculations
Date: June 20, 2007
DPM - Section 22.2
Volume 2, January 1993

Precipitation Zone 4
100 Year Storm Depth, P (360) 2.9
100 year Storm Depth, P (10 day) 5.95

Treatment Area	A	B	C	D
Excess Precipitation Factors	0.95	1.69	2.45	2.84
Peak Discharge Factors	2.35	2.92	3.73	5.25

Land Treatment Area	Acres	Existing	Proposed	Off-site
Type "D" (Roof)		0.00	0.00	0.00
Type "C" (Unpaved Roadway)		0.00	0.00	0.00
Type "B" (Irrigated Lawns)		2.11	2.11	0.00
Type "A" (Undeveloped)		0.00	0.00	0.00
Total (Acres)		2.11	2.11	0.00
Excess Precipitation(in)		1.08	1.08	0.00
Volume (100), cf		8262.24	8272.04	0.00
Volume (10),cf		5835.70	5842.27	0.00
Volume (100,10 day), cf		8262.24	8272.04	0.00
Q (100), cfs		6.15	6.15	0.00
Q (10), cfs		4.12	4.13	0.00
Total volume ponded				8272.04
total pond volume required (proposed minus historic)				9.80

26268
Panorama Heights
Drainage Subbasin B
Hydrology Calculations
Date: June 20, 2007
DPM - Section 22.2
Volume 2, January 1993

Precipitation Zone 4
100 Year Storm Depth, P (360) 2.9
100 year Storm Depth, P (10 day) 5.95

Treatment Area	A	B	C	D
Excess Precipitation Factors	0.95	1.69	2.45	2.84
Peak Discharge Factors	2.35	2.92	3.73	5.25

Land Treatment Area	Acres	Existing	Proposed	Off-site
Type "D" (Roof)		2.61	2.61	0.00
Type "C" (Unpaved Roadway)		0.00	0.00	0.00
Type "B" (Irrigated Lawns)		0.78	0.78	0.00
Type "A" (Undeveloped)		0.00	0.00	0.00
Total (Acres)		3.39	3.39	0.00
Excess Precipitation(in)		2.28	2.28	0.00
Volume (100), cf		28108.40	28070.08	0.00
Volume (10),cf		18822.83	18805.94	0.00
Volume (100,10 day), cf		57649.30	50968.88	0.00
Q (100), cfs		16.00	15.96	0.00
Q (10), cfs		10.72	10.71	0.00
Total volume ponded				50968.88
total pond volume required (proposed minus historic)				-82.82

26268
Panorama Heights
Drainage Subbasin D
Hydrology Calculations
Date: June 20, 2007
DPM - Section 22.2
Volume 2, January 1993

Precipitation Zone 4
100 Year Storm Depth, P (360) 2.9
100 year Storm Depth, P (10 day) 5.95

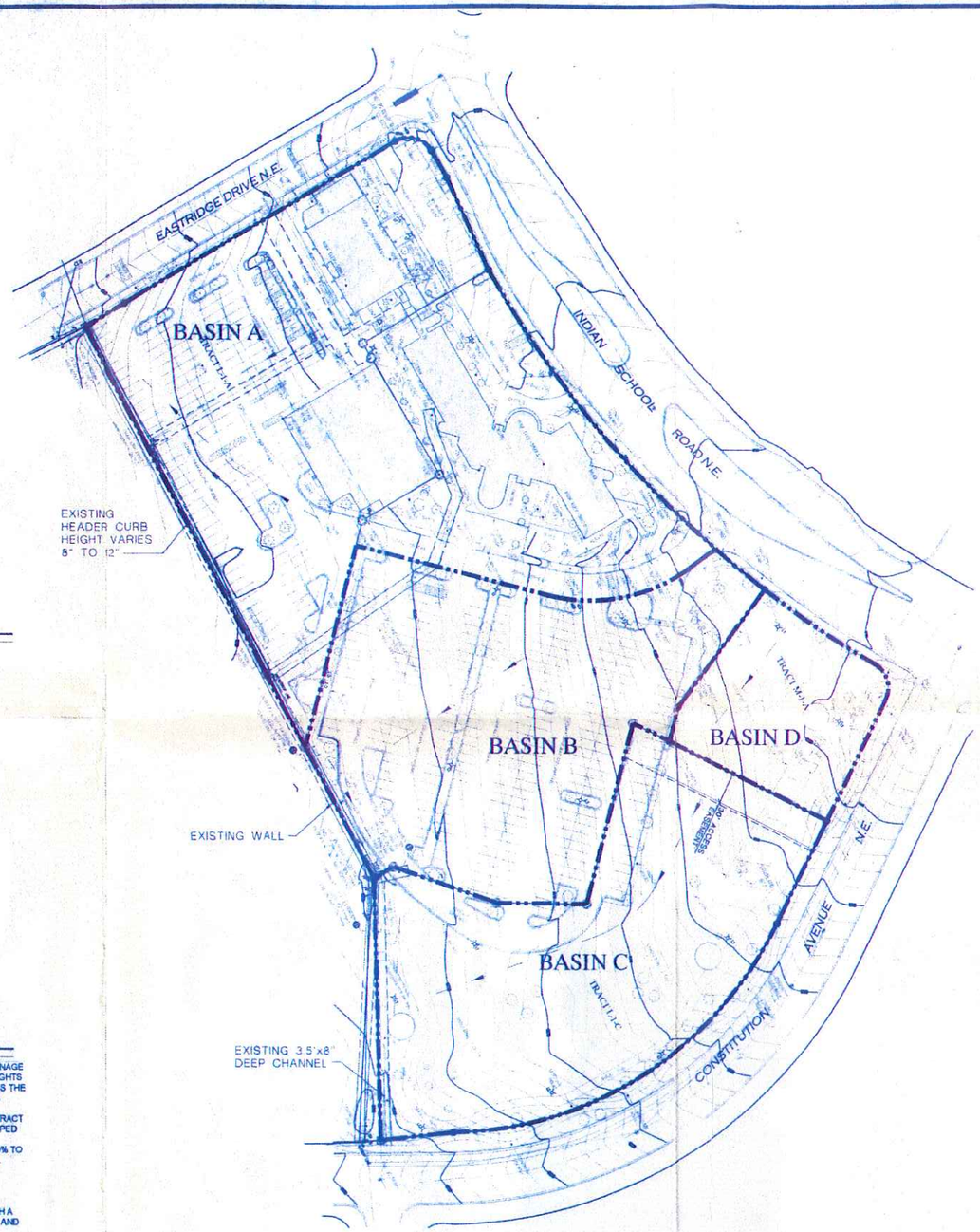
Treatment Area	A	B	C	D
Excess Precipitation Factors	0.80	1.69	2.45	2.84
Peak Discharge Factors	2.20	2.92	3.73	5.25

Land Treatment Area	Acres	Existing	Proposed	Off-site
Type "D" (Roof)		0.00	0.48	0.00
Type "C" (Unpaved Roadway)		0.00	0.00	0.00
Type "B" (Irrigated Lawns)		0.57	0.09	0.00
Type "A" (Undeveloped)		0.00	0.00	0.00
Total (Acres)		0.57	0.57	0.00
Excess Precipitation(in)		1.08	2.39	0.00
Volume (100), cf		2234.63	4962.77	0.00
Volume (10),cf		1497.20	3318.39	0.00
Volume (100,10 day), cf		2234.63	10267.09	0.00
Q (100), cfs		1.66	2.78	0.00
Q (10), cfs		1.12	1.86	0.00
Total volume ponded				10267.09
total pond volume required (proposed minus historic)				8032.46

EXISTING CHANNEL CAPACITY
W = 3.5' D = .67'
AREA = 2.33 ft²
PERIMETER = 4.83 ft
SLOPE = 5.00% $S_0^{1/2}$ = .2236
HYDRAULIC RADIUS = (rn) = .482 $rn^{2/3}$ = .6146
$Q = \frac{1.49}{.015}(2.33)(.6146)(.2236)$
Q = 31.80 cfs

Drainage Narrative

THIS DRAINAGE PLAN IS INTENDED TO IDENTIFY THE EXISTING DRAINAGE CONDITIONS FOR THE EXISTING TRACT L-1 AND M-1 PANORAMA HEIGHTS LOCATED AT INDIAN SCHOOL AND CONSTITUTION. THE PROPERTY IS THE SITE OF THE OLD BLUE CROSS BLUE SHIELD FACILITY. TRACT L-1 IS BEING REPLATTED INTO 3 LOTS. THE MAJORITY OF THE SITE IS CURRENTLY DEVELOPED WITH BUILDING AND PARKING LOT, WITH TRACT M-1 AND THE SOUTH END OF THE PROPERTY CURRENTLY LANDSCAPED (PROPOSED TRACT L-1-C). APPROXIMATELY 50% OF THE SITE CURRENTLY DRAINS TO EAST RIDGE DRIVE, AND THE REMAINING 50% TO CONSTITUTION AVENUE. THERE IS CURRENTLY A PERIMETER WALL ALONG AND A STAND UP CURB ALONG THE WEST SIDE OF THE PROPERTY THAT DIRECTS THE FLOWS TO EASTRIDGE AND CONSTITUTION. THERE IS A DRAINAGE CHANNEL ALONG THE SOUTHWEST CORNER OF THE PROPERTY THAT COLLECTS THE OVERLAND FLOWS AND DIRECTS THEM TO CONSTITUTION THROUGH A SIDEWALK CULVERT. THE CHANNEL HAS A CAPACITY OF 31.80 CFS, AND IS CAPABLE OF ACCEPTING THE EXISTING FLOWS ALONG WITH THE DEVELOPED FLOWS FROM TRACT M-1 AND L-1-C. A FINAL GRADING AND DRAINGE PLAN WILL NEED TO BE PROVIDED CONCURRENT WITH THE DEVELOPMENT OF TRACT M-1 AND L-1-C.



DRAINAGE PLAN

SCALE: 1" = 60'

Engineer's Statement

I, THE ENGINEER OF RECORD CERTIFY THAT I HAVE PERSONALLY VISITED THE SITE AND THE EXISTING GRADES AND CONTOURS DEPICTED ON THIS PLAN MATCH WHAT PRESENTLY EXISTS AT THIS LOCATION.

MARTIN J. GARCIA, NMPE #11767

RECEIVED
JUL 02 2007
HYDROLOGY SECTION

ABQ ENGINEERING, INC.
9738 Academy Rd. NE
Albuquerque, NM 87109
505-255-7603
• Engineers • Planners
• Construction Services

ENGINEERING STAMP
MARTIN J. GARCIA NEW MEXICO 11767 REGISTERED PROFESSIONAL ENGINEER

DO NOT SCALE DRAWINGS
CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS- NOTIFY ENGINEER/ARCHITECT OF ANY DISCREPANCIES PRIOR TO BEGINNING CONSTRUCTION

PANORAMA HEIGHTS
ALBUQUERQUE, NEW MEXICO

REV. NO	REV. DATE	DESCRIPTION

PROJECT NUMBER 26268 DATE: JUNE 29, 2007
DESIGNED BY N. GARCIA
DRAWN BY N. GARCIA
CHECKED BY M. GARCIA
CAD FILE NAME

SHEET TITLE
DRAINAGE PLAN

C-101

SHEET of

APPENDIX D

EXISTING BUILDING
FF = 5774.10

EXISTING BUILDING
FF = 5776.20

NEW BUILDING
FF = 5776.30'

MATCH EXISTING TBC70.86
TBC70.44
TBC71.88
TBC73.30
TBC74.44
TBC75.58
TBC75.84
TBC75.97
TBC76.91
MATCH EXISTING TBC76.70
TBC77.19
MATCH EXISTING TBC76.11
TBC75.94
TBC75.08
TBC73.98
TBC72.95
TBC70.29
TBC71.07
TBC70.38
TBC70.40
TBC69.68
TBC68.75

3-4" DIA. PVC
INV. 5767.50±

EXISTING JUNCTION BOX
INV. 5767.50±

EXISTING 12" CMP

EXISTING STORM DRAIN
1-4' DIA. MH
RIM = 5770.22
INV = 5767.22 (12")

TOP OF RETAINING
WALL ELEV. 5772.50'±

EXISTING STORM DRAIN
1-4' DIA. MH
RIM = 5772.48
INV = 5767.08 (12")

EXISTING 12" CMP

SEE SHEET C2

(2) MATCH EXISTING ASPHALT W/LIP

(2) MATCH EXISTING ASPHALT W/LIP

GENERAL GRADING NOTES:

1. THE CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES SHOWN AND COORDINATE WITH ALL UTILITY OWNERS PRIOR TO ANY EXCAVATION.
2. THE CONTRACTOR SHALL LIMIT DISTURBANCE OF NATIVE VEGETATION TO A MINIMUM.
3. THIS PLAN RECOMMENDS POSITIVE DRAINAGE AWAY FROM ALL STRUCTURES TO PROHIBIT PONDING OF RUNOFF WHICH MAY CAUSE STRUCTURAL SETTLEMENT. FUTURE ALTERATION OF GRADES ADJACENT TO THE PROPOSED STRUCTURES IS NOT RECOMMENDED.
4. PERFORM GRADING AND EXCAVATION WORK IN COMPLIANCE WITH APPLICABLE SPECIFICATIONS, REQUIREMENTS, CODES AND ORDINANCES OF BERNALILLO COUNTY, NEW MEXICO.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF OR OBTAINING EXCESS CUT OR FILL MATERIAL REQUIRED FOR FINAL GRADE.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND COORDINATING WITH NEW MEXICO ONE CALL PRIOR EXCAVATION.
7. CLEAR AND GRUBBING PER NM APWA SECTION 201 SPECIFICATION.
8. PROPOSED POND VOLUME MEASURED FROM BOTTOM OF POND TO SPILLWAY INVERT.
9. SPOT ELEVATIONS ARE TO FINISH GRADE UNLESS NOTED OTHERWISE.
10. PROTECT POND'S SIDE-SLOPE WITH NON-ENCLOSED RIPRAP LINING 4" MIN. ROCK DIA. PLACE OVER NON-WOVEN GEOTEXTILE FILTER FABRIC.

KEYED NOTES:

1. CONSTRUCT STANDARD CURB AND GUTTER PER DETAIL G6/C3.
2. CONSTRUCT CURB AND GUTTER PER DETAIL E6/C3.
3. CONSTRUCT STRAIGHT CURB PER DETIAL A6/C3.
4. CONSTRUCT SIDEWALK PER DETAIL C6/C3..
5. CONSTRUCT ASPHALT PAVEMENT PER A1/C3.
6. CONSTRUCT SPILLWAY PER DETAIL C1/C3.
7. BUILD RETENTION POND
   TOP = 5771.0'
   SPILLWAY INV. = 5770.50'
   BOTTOM = 5768.00'
   RETAIN MIN. = 0.044 CU.FT.
   @ ELEV. 5770.50'

LEGEND

- PROPERTY BOUNDARY
- FLOW PATH
- EXISTING RETAINING WALL
- FLOWLINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- FG26.29 FINISHED GRADE
- FL FLOW LINE
- TBC TOP BACK OF CURB
- TC TOP OF CURB
- TS TOP OF SIDEWALK
- ROOF FLOW DIRECTION

LOCATION
ZONE ATLAS MAP: J-22-Z

0 20' 40'

Fierro&Company
ENGINEERING | LAND SURVEYING
6300 MONTANO RD. N.W.
SUITE 3
ALBUQUERQUE, NEW MEXICO 87120
PH (505) 352-8930
www.fierrocompany.com

ENGINEER'S SEAL
ROBERT J. FIERRO
NEW MEXICO
20585
PROFESSIONAL ENGINEER

PROJECT NAME
CALVARY CHAPEL EAST
GYMNASIUM ADDITION
ALBUQUERQUE, NEW MEXICO

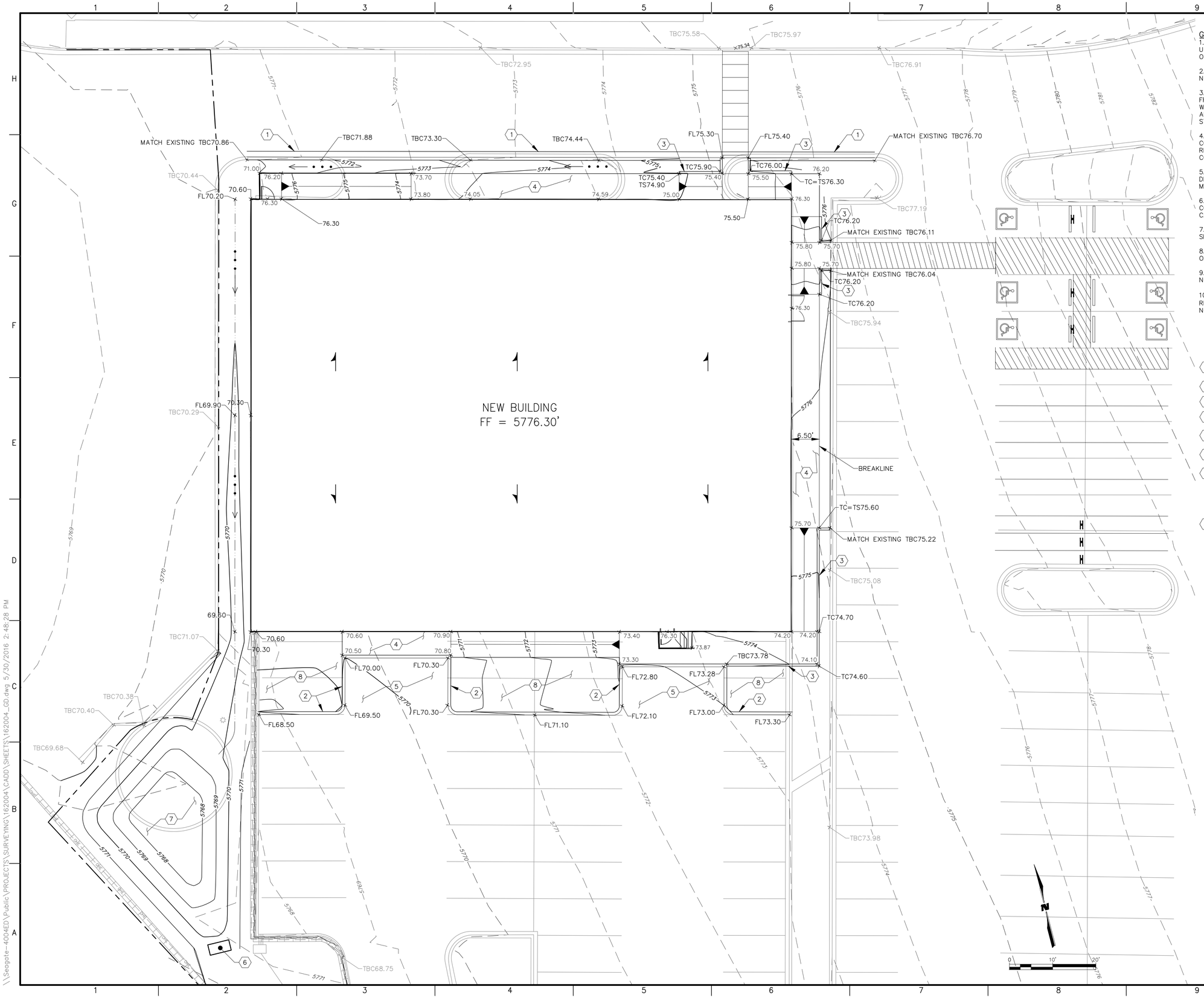
REV.	DATE	DESCRIPTION	BY

PROJECT NO:	162004
DESIGNED BY:	RJF
DRAWN BY:	RJF
CHECKED BY:	RJF
DATE:	MAY 2016

SHEET TITLE
GRADING PLAN

SHEET NO:
C1

\\Seagate-4004ED\Public\PROJECTS\SURVEYING\162004\CADD\SHEETS\162004_GD.dwg 5/30/2016 2:48:28 PM



GENERAL GRADING NOTES:

1. THE CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES SHOWN AND COORDINATE WITH ALL UTILITY OWNERS PRIOR TO ANY EXCAVATION.
2. THE CONTRACTOR SHALL LIMIT DISTURBANCE OF NATIVE VEGETATION TO A MINIMUM.
3. THIS PLAN RECOMMENDS POSITIVE DRAINAGE AWAY FROM ALL STRUCTURES TO PROHIBIT PONDING OF RUNOFF WHICH MAY CAUSE STRUCTURAL SETTLEMENT. FUTURE ALTERATION OF GRADES ADJACENT TO THE PROPOSED STRUCTURES IS NOT RECOMMENDED.
4. PERFORM GRADING AND EXCAVATION WORK IN COMPLIANCE WITH APPLICABLE SPECIFICATIONS, REQUIREMENTS, CODES AND ORDINANCES OF BERNALILLO COUNTY, NEW MEXICO.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF OR OBTAINING EXCESS CUT OR FILL MATERIAL REQUIRED FOR FINAL GRADE.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND COORDINATING WITH NEW MEXICO ONE CALL PRIOR EXCAVATION.
7. CLEAR AND GRUBBING PER NM APWA SECTION 201 SPECIFICATION.
8. PROPOSED POND VOLUME MEASURED FROM BOTTOM OF POND TO SPILLWAY INVERT.
9. SPOT ELEVATIONS ARE TO FINISH GRADE UNLESS NOTED OTHERWISE.
10. PROTECT POND'S SIDE-SLOPE WITH NON-ENCLOSED RIPRAP LINING 4" MIN. ROCK DIA. PLACE OVER NON-WOVEN GEOTEXTILE FILTER FABRIC.

KEYED NOTES:

1. CONSTRUCT STANDARD CURB AND GUTTER PER DETAIL G6/C3.
2. CONSTRUCT CURB AND GUTTER PER DETAIL E6/C3.
3. CONSTRUCT STRAIGHT CURB PER DETIAL A6/C3.
4. CONSTRUCT SIDEWALK PER DETAIL C6/C3..
5. CONSTRUCT ASPHALT PAVEMENT PER A1/C3.
6. CONSTRUCT SPILLWAY PER DETAIL C1/C3.
7. BUILD RETENTION POND
   TOP = 5771.0'
   SPILLWAY INV. = 5770.50'
   BOTTOM = 5768.00'
   RETAIN MIN. = 0.044 CU.FT.
   @ ELEV. 5770.50'
8. CONSTRUCT 3" DEPRESSED LANDSCAPING. MIN. 3" MEASURED BELOW TOP BACK OF CURB. DIRECT SOUTHERN HALF ROOF DRAINAGE TO THIS LANDSCAPING.

LEGEND

- PROPERTY BOUNDARY
- FLOW PATH
- FENCE
- FLOWLINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- FG26.29 FINISHED GRADE
- FL FLOW LINE
- TBC TOP BACK OF CURB
- TC TOP OF CURB
- TS TOP OF SIDEWALK
- ROOF FLOW DIRECTION

LOCATION
ZONE ATLAS MAP: J-22-Z

Fierro&Company
ENGINEERING | LAND SURVEYING
6300 MONTANO RD. N.W.
SUITE 3
ALBUQUERQUE, NEW MEXICO 87120
PH (505) 352-8930
www.fierrocompany.com

ENGINEER'S SEAL

ROBERT J. FIERRO
NEW MEXICO
20585
PROFESSIONAL ENGINEER

PROJECT NAME

CALVARY CHAPEL EAST
GYMNASIUM ADDITION
ALBUQUERQUE, NEW MEXICO

REV.	DATE	DESCRIPTION	BY

PROJECT NO:	162004
DESIGNED BY:	RJF
DRAWN BY:	RJF
CHECKED BY:	RJF
DATE:	MAY 2016

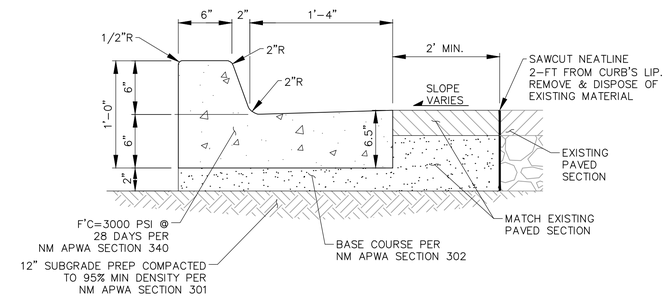
SHEET TITLE

GRADING PLAN

SHEET NO:

C2

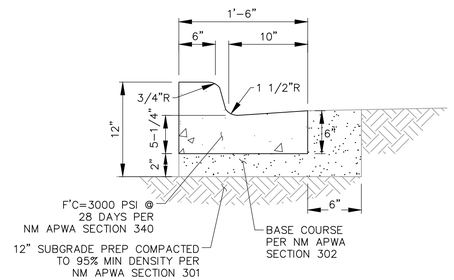
\\Seagate-4004ED\Public\PROJECTS\SURVEYING\162004\CADD\SHEETS\162004_GD.dwg 5/30/2016 2:48:28 PM



G6 STANDARD CURB AND GUTTER
SCALE: NTS

CURB AND GUTTER GENERAL NOTES

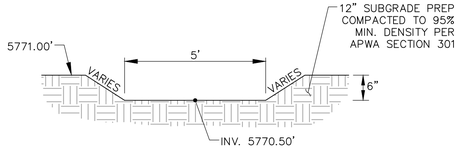
1. ANY DEVIATIONS FROM THESE STANDARDS SHALL BE SUBMITTED TO THE CITY ENGINEER FOR PRIOR APPROVAL
2. ALL WORK IN PUBLIC RIGHT-OF-WAY SHALL BE CONSTRUCTED BY A LICENSED CONTRACTOR AND REQUIRES PERMIT AND APPROVAL BY THE DEPT OF PUBLIC WORKS.
3. SUBGRADE SHALL BE COMPACTED TO 95% ASTM D 1557, MIN.
4. CURB AND GUTTER SHALL BE PORTLAND CEMENT CONCRETE. PORTLAND CEMENT CONCRETE SHALL BE 3000 PSI @ 28 DAYS w/CLASS F FLY ASH AND 7% +/- 2% AIR ENTRAINMENT. (MAX 20% FLY ASH BY WEIGHT).
5. FOR CONCRETE CURB AND GUTTER CONSTRUCT TRANSVERSE JOINTS AS FOLLOWS:
   - TOOLED CONTRACTION JOINTS AT 5' INTERVALS.
   - 1/2" PRE-MOLDED BITUMINOUS EXPANSION JOINTS AT 15' INTERVALS.
   - SEALED EXPANSION JOINTS AT 90' INTERVALS.
6. DIMENSIONS AT ROUNDED CORNERS MEASURED TO INTERSECTION OF STRAIGHT LINES.



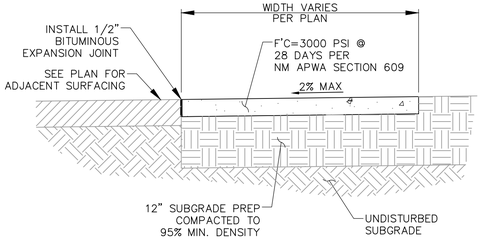
E6 CURB AND GUTTER
SCALE: NTS

CURB AND GUTTER GENERAL NOTES

1. ANY DEVIATIONS FROM THESE STANDARDS SHALL BE SUBMITTED TO THE CITY ENGINEER FOR PRIOR APPROVAL
2. ALL WORK IN PUBLIC RIGHT-OF-WAY SHALL BE CONSTRUCTED BY A LICENSED CONTRACTOR AND REQUIRES PERMIT AND APPROVAL BY THE DEPT OF PUBLIC WORKS.
3. SUBGRADE SHALL BE COMPACTED TO 95% ASTM D 1557, MIN.
4. CURB AND GUTTER SHALL BE PORTLAND CEMENT CONCRETE. PORTLAND CEMENT CONCRETE SHALL BE 3000 PSI @ 28 DAYS w/CLASS F FLY ASH AND 7% +/- 2% AIR ENTRAINMENT. (MAX 20% FLY ASH BY WEIGHT).
5. FOR CONCRETE CURB AND GUTTER CONSTRUCT TRANSVERSE JOINTS AS FOLLOWS:
   - TOOLED CONTRACTION JOINTS AT 5' INTERVALS.
   - 1/2" PRE-MOLDED BITUMINOUS EXPANSION JOINTS AT 15' INTERVALS.
   - SEALED EXPANSION JOINTS AT 90' INTERVALS.
6. DIMENSIONS AT ROUNDED CORNERS MEASURED TO INTERSECTION OF STRAIGHT LINES.



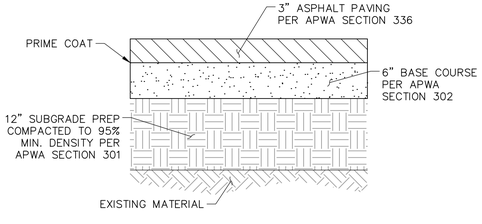
C1 POND OVERFLOW WEIR SECTION
SCALE: NTS



CONSTRUCTION NOTES

1. WHEN ABUTTING TO VERTICAL WALLS, BENCHES, BUILDINGS, OR CURBS. INSTALL 1/2" BITUMINOUS EXPANSION JOINT. RECESS 1/4" VERTICALLY. INSTALL SIKA-FLEX POLYMER SEALANT OR APPROVED EQUAL.
2. INSTALL CONTRACTION JOINTS @ 6'-0" OC.
3. LIGHT BROOM FINISH CONCRETE SURFACE REQUIRED.

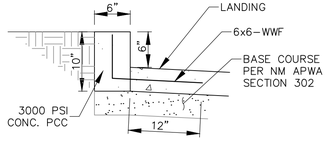
C6 TYPICAL 4" PCC SIDEWALK
SCALE: NTS



BID ITEM NOTE:
1. CONTRACTOR TO OBTAIN GEOTECHNICAL REPORT. COST INCIDENTAL. CONTRACTOR AND ENGINEER TO REVIEW GEOTEHNICAL REPORT'S RECOMMENDED PAVEMENT SECTION AND REVISE DETAIL F1/THIS SHEET, IF REQUIRED. CREDIT OWNER IF PAVEMENT SECTION IS LESS THAN 4" ASPHALT AND 6" BASE COURSE. OWNER TO COMPENSATE ADDITIONAL COST IF PAVEMENT SECTION IS THICKER THEN SAID DETAIL F1.

DO NOT CONSTRUCTION PAYMENT SECTION WITHOUT REVIEWING GEOTECHNICAL REPORT WITH ENGINEER.

A1 TYPICAL ASPHALT PAVEMENT SECTION
SCALE: NTS



CONSTRUCTION JOINT NOT REQUIRED IF LANDING AND CURB POURED MONOLITHIC.

A6 STRAIGHT CURB
SCALE: 1" = 1'

Fierro&Company
ENGINEERING | LAND SURVEYING
6300 MONTANO RD. N.W.
SUITE 3
ALBUQUERQUE, NEW MEXICO 87120
PH (505) 352-8930
www.fierrocompany.com

ENGINEER'S SEAL
ROBERT J. FIERRO
NEW MEXICO
20585
PROFESSIONAL ENGINEER

PROJECT NAME
CALVARY CHAPEL EAST
GYMNASIUM ADDITION
ALBUQUERQUE, NEW MEXICO

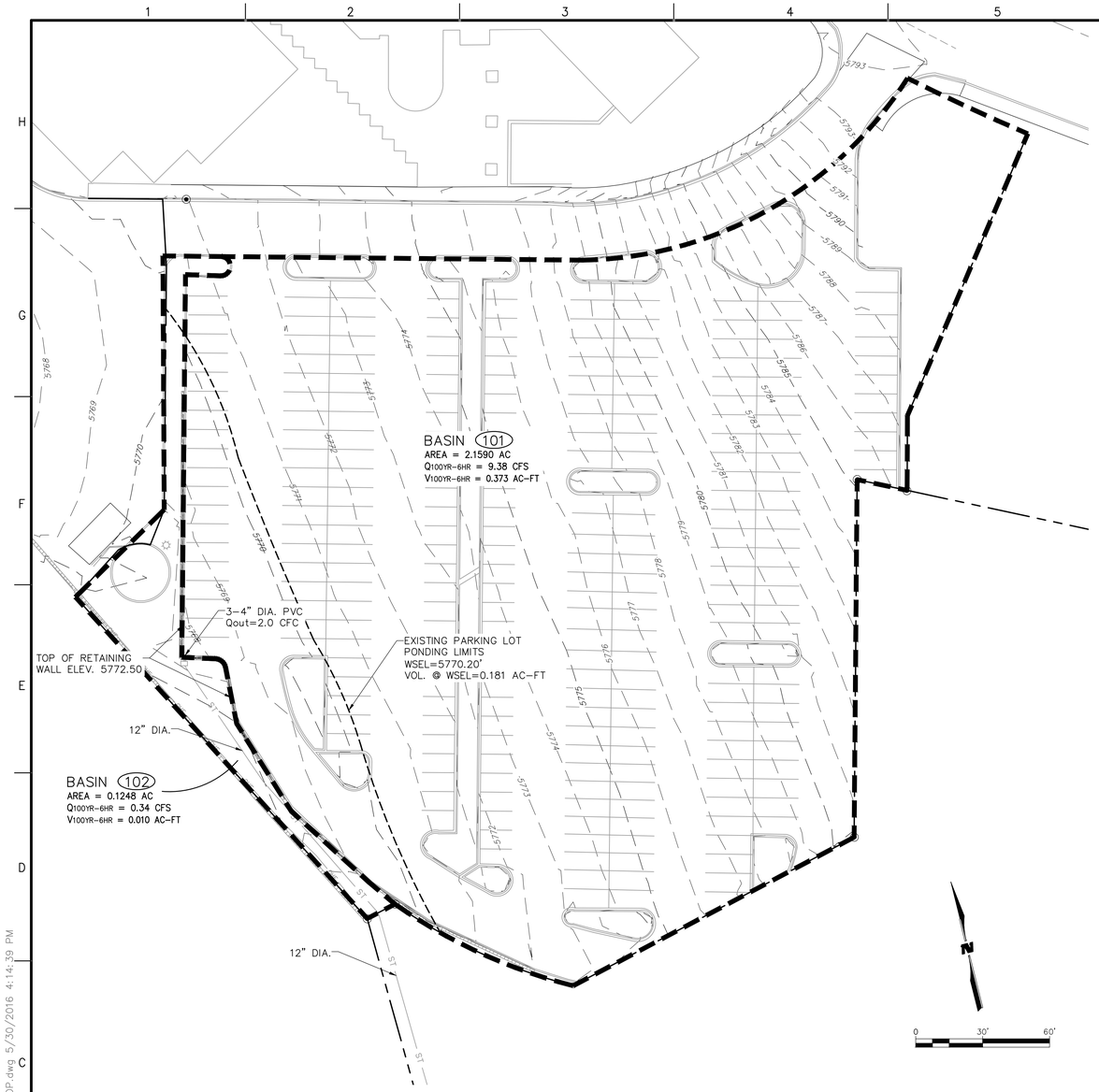
REV.	DATE	DESCRIPTION	BY

PROJECT NO:	162004
DESIGNED BY:	RJF
DRAWN BY:	RJF
CHECKED BY:	RJF
DATE:	MAY 2016

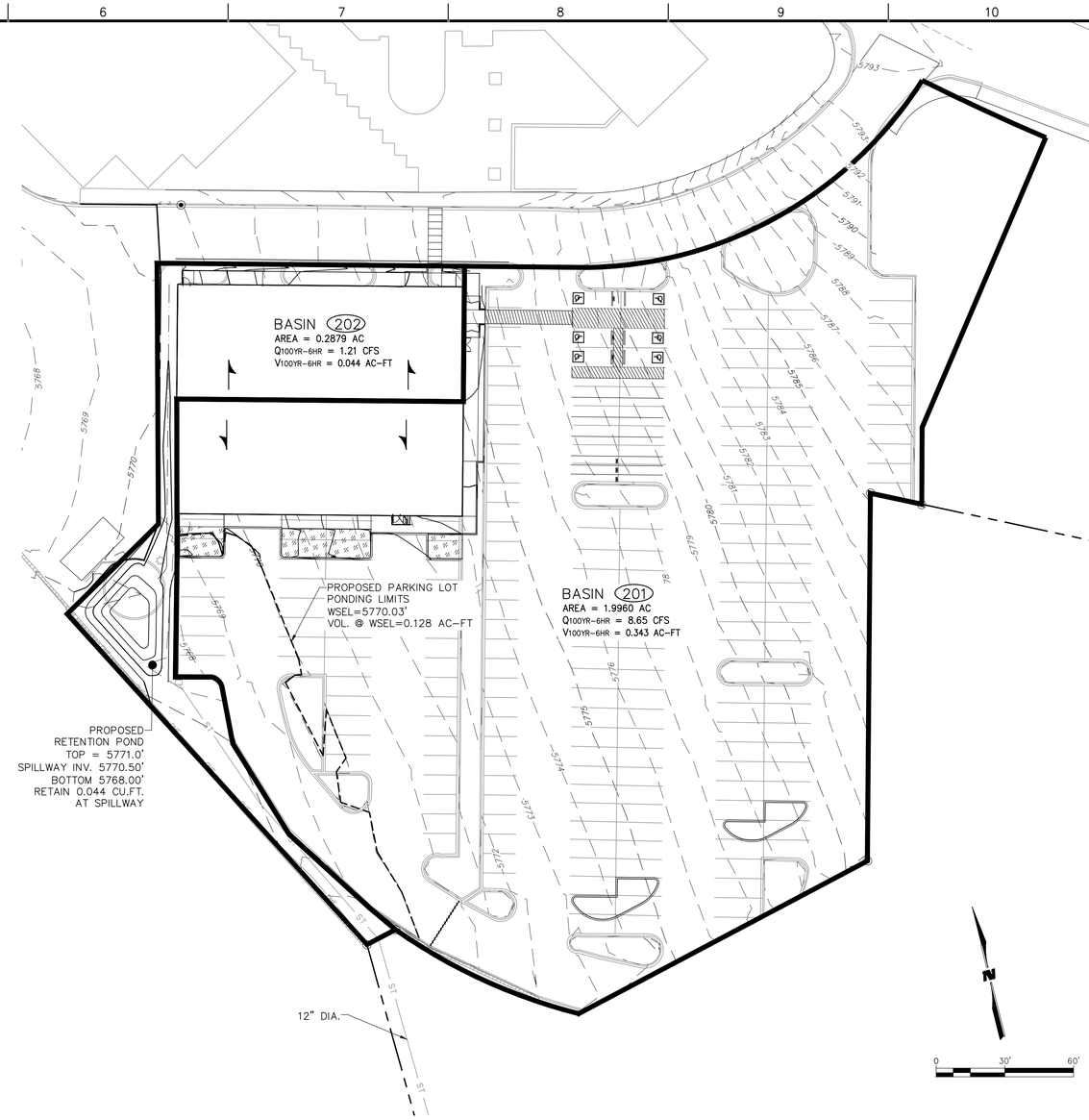
SHEET TITLE
DETAILS

SHEET NO:
C3

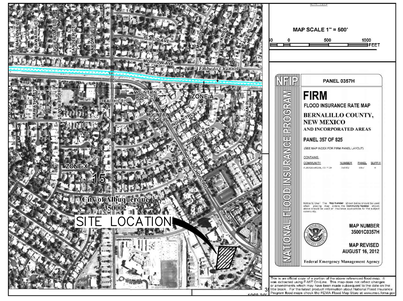
\\Seagate-4004ED\Public\PROJECTS\SURVEYING\162004\CADD\SHEETS\162004_GD.dwg 5/30/2016 1:06:54 PM



C1 EXISTING BASIN MAP



C6 PROPOSED BASIN MAP



FIRM MAP

LEGEND

- PROPERTY BOUNDARY
- FLOW PATH
- 5705 EXISTING MAJOR CONTOUR
- 5704 EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING BASIN MAP
- PROPOSED BASIN MAP
- ROOF FLOW DIRECTION
- 3" DEPRESSED LANDSCAPING. TOTAL SURFACE AREA =1280 SQ.FT.

Fierro&Company
ENGINEERING | LAND SURVEYING
6300 MONTANO RD. N.W.
SUITE C-3
ALBUQUERQUE, NEW MEXICO 87120
PH: (505) 352-8930
www.fierrocompany.com

ENGINEER'S SEAL

ROBERT J. FIERRO NEW MEXICO 20585 PROFESSIONAL ENGINEER

PROJECT NAME

CALVARY CHAPEL EAST
GYMNASIUM ADDITION
ALBUQUERQUE, NEW MEXICO

REV.	DATE	DESCRIPTION	BY

PROJECT NO:	162004
DESIGNED BY:	RJF
DRAWN BY:	RJF
CHECKED BY:	RJF
DATE:	MAY 2016

SHEET TITLE

GRADING PLAN

SHEET NO:

C4

\\Seagate-4004ED\Public\PROJECTS\SURVEYING\162004\CADD\SHEETS\162004_DP.dwg 5/30/2016 4:14:39 PM