CITY OF ALBUQUERQUE

October 7, 2015

Diane Hoelzer, P.E.
Mark Goodwin & Associates
PO Box 90606
Albuquerque, New Mexico 87199

RE: **Tiburon Heights**
Grading and Drainage Plan
Engineers Stamp Date 11/26/14 (D10D03A)
Certification Date 7/31/15

Dear Ms. Hoelzer,

Based upon the information provided in your submittal received 10/1/2015, the above referenced Certification for Tiburon Heights is acceptable for Release of Financial Guarantee.

If you have any questions, please contact me at 924-3999 or Rudy Rael at 924-3977.

Sincerely,

Shahab Biazar, P.E.
City Engineer, COA
Planning Department

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

RR/SB
C: File

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(Rev. 12/05)

PROJECT TITLE: Tiburon Heights Subdivision ZONE MAP/DRG. FILE: **D 10 / D03A**
DRB# 1009178 EPC# WORK ORDER#: 790681
LEGAL DESCRIPTION: Lot 31, Block 9 Volcano Heights Unit 18
CITY ADDRESS: Petirrojo Road NW

ENGINEERING FIRM: MARK GOODWIN & ASSOCIATES, PA CONTACT: Diane Hoelzer, PE
ADDRESS: PO Box 90606 PHONE: 828-2200
CITY, STATE: Albuquerque, NM ZIP CODE: 87199

OWNER: RTR LLC CONTACT: Rhett Waterman
ADDRESS: Box 27560 PHONE: 248-1688
CITY, STATE: ZIP CODE: 87125

ARCHITECT: N/A CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

SURVEYOR: Surv-Tek, Inc. CONTACT: Russ Hugg
ADDRESS: 9384 Valley View Drive PHONE: 897-3366
CITY, STATE: ABQ, NM ZIP CODE: 87114

CONTRACTOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

TYPE OF SUBMITTAL:
_____ DRAINAGE REPORT
_____ DRAINAGE PLAN 1st SUBMITTAL
_____ DRAINAGE PLAN RESUBMITTAL
_____ CONCEPTUAL G & D PLAN
_____ GRADING PLAN
_____ EROSION CONTROL PLAN
X ENGINEER'S CERT (HYDROLOGY)
_____ CLOMR/LOMR
_____ TRAFFIC CIRCULATION LAYOUT
_____ ENGINEER/ARCHITECT CERT (TCL)
_____ ENGINEER/ARCHITECT (DRB SITE PLAN)
_____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:
X SIA/FINANCIAL GUARANTEE RELEASE
_____ PRELIMINARY PLAT APPROVAL
_____ S. DEV. PLAN FOR SUB'D APPROVAL
_____ S. DEV. FOR BLDG. PERMIT APPROVAL
_____ SECTOR PLAN APPROVAL
_____ FINAL PLAT APPROVAL
_____ FOUNDATION PERMIT APPROVAL
_____ BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY (PERM)
_____ CERTIFICATE OF OCCUPANCY (TEMP)
_____ GRADING PERMIT APPROVAL
_____ PAVING PERMIT APPROVAL
_____ WORK ORDER APPROVAL
_____ OTHER (SPECIFY)

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SEP 1 0 2015
LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:
_____ YES
_____ NO
_____ COPY PROVIDED

SUBMITTED BY: Diane Hoelzer, PE DATE: September 10, 2015

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development define the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.

2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.

3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.

Rael, Rudy E.

From: Diane Hoelzer <Diane@goodwinengineers.com>
Sent: Thursday, October 01, 2015 1:23 PM
To: Rael, Rudy E.
Cc: Biazar, Shahab; Harmon Rita T.; Mark Goodwin; 'Rhett Waterman (watermanrhett@comcast.net)'
Subject: RE: TIBURON HEIGHTS --- Financial Guarantee RELEASE

Rudy,

Is it OK to move forward now with the FG release.

In addition, I spoke with John MacKenzie, formerly of our office about this issue, and he told me that the Inlet D was removed at DRC at the request of one of the DRC reviewers.
His recollection was that Stephen Woodall, the DRC chair at the time and Shahab were aware of the situation.

Diane Hoelzer, PE
MARK GOODWIN & ASSOCIATES, PA
diane@goodwinengineers.com
(505) 828-2200

From: Diane Hoelzer
Sent: Wednesday, September 30, 2015 10:52 AM
To: 'Rael, Rudy E.'
Cc: Biazar, Shahab; Harmon Rita T.; Mark Goodwin; 'Rhett Waterman (watermanrhett@comcast.net)'
Subject: RE: TIBURON HEIGHTS --- Financial Guarantee RELEASE

Rudy,
I do not understand.
My certifica6tion states that all infrastructure is in place according to the construction plans and in accordance with the infrastructure list.
The construction plans do not show this inlet.
The infrastructure does not mention this inlet.
The grading plan in the plan set is "FOR INFORMATION ONLY".

I see no reason for an exclusion statement.

Diane Hoelzer, PE
MARK GOODWIN & ASSOCIATES, PA
diane@goodwinengineers.com
(505) 828-2200

From: Rael, Rudy E. [mailto:RRael@cabq.gov]
Sent: Wednesday, September 30, 2015 10:42 AM
To: Diane Hoelzer
Cc: Biazar, Shahab; Harmon Rita T.; Mark Goodwin; 'Rhett Waterman (watermanrhett@comcast.net)'
Subject: RE: TIBURON HEIGHTS --- Financial Guarantee RELEASE

Diane, you are wanting a release of financial guarantee, which states that all infrastructure is in place, when in fact it is not

because the inlet was not installed. We just need this written as an exclusion in the certification language.

Rudy E. Rael, CE, CFM
Engineer Assistant, Hydrology
Planning Department
600 2nd St. NW Suite 201
Albuquerque NM 87102
(505) 924-3977

From: Diane Hoelzer [mailto:Diane@goodwinengineers.com]
Sent: Wednesday, September 30, 2015 10:35 AM
To: Rael, Rudy E.
Cc: Biazar, Shahab; Harmon Rita T.; Mark Goodwin; 'Rhett Waterman (watermanrhett@comcast.net)'
Subject: RE: TIBURON HEIGHTS --- Financial Guarantee RELEASE

If you are talking about the grading plan.
I am only certifying grading.
I am not certifying anything other than grading on a grading plan.

Diane Hoelzer, PE
MARK GOODWIN & ASSOCIATES, PA
diane@goodwinengineers.com
(505) 828-2200

From: Rael, Rudy E. [mailto:RRael@cabq.gov]
Sent: Wednesday, September 30, 2015 10:32 AM
To: Diane Hoelzer
Cc: Biazar, Shahab; Harmon Rita T.; Mark Goodwin; 'Rhett Waterman (watermanrhett@comcast.net)'
Subject: RE: TIBURON HEIGHTS --- Financial Guarantee RELEASE

Hello Diane, I'm sorry I did not make myself clear. On the plans itself the inlet was not in the certification language stating that the inlet was excluded. We just need the language stating that the inlet is an exclusion.

Rudy E. Rael, CE, CFM
Engineer Assistant, Hydrology
Planning Department
600 2nd St. NW Suite 201
Albuquerque NM 87102
(505) 924-3977

From: Diane Hoelzer [mailto:Diane@goodwinengineers.com]
Sent: Wednesday, September 30, 2015 9:11 AM
To: Rael, Rudy E.
Cc: Biazar, Shahab; Harmon Rita T.; Mark Goodwin; Rhett Waterman (watermanrhett@comcast.net)
Subject: RE: TIBURON HEIGHTS --- Financial Guarantee RELEASE

Rudy, Shahab and Rita,

1. If the additional calculations I provided show that the single inlet handles the flows THEN it is implied that the additional INLET is not necessary.

2. If the DRC plans were finalized and signed off by John MacKenzie of our office as well as the City Engineer at the time on December 31, 2014,
Then the issue was worked out at DRC prior to my involvement. The originally approved plans did not have this inlet on the master utility plan nor the P&P. The subdivision is completely constructed and our office is trying to get it accepted. I am unclear as to why this is still an outstanding issue.

3. In addition, IN MY SEPTEMBER 15, 2015 SUBMITTAL, I PROVIDED HYDROLOGY WITH INLET CALCULATIONS ON SHEET 2 AND 3 OF MY HAND WRITTEN CALCULATIONS.

All of the above reasons are my justification for the additional inlets omission.

Diane Hoelzer, PE
MARK GOODWIN & ASSOCIATES, PA
diane@goodwinengineers.com
(505) 828-2200

From: Rael, Rudy E. [mailto:RRael@cabq.gov]
Sent: Wednesday, September 30, 2015 8:35 AM
To: Diane Hoelzer
Cc: Biazar, Shahab; Harmon Rita T.
Subject: Financial Guarantee

Hello Diane, we still require justification as to why the inlet in the NE corner of Teaberry Drive and Trestle Glen Road was not installed. Send a note and calculations justifying this omission.

Rudy E. Rael, CE, CFM
Engineer Assistant, Hydrology
Planning Department
600 2nd St. NW Suite 201
Albuquerque NM 87102
(505) 924-3977

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Tiburon Heights Subdivision Building Permit #: _____ City Drainage #: D10 / D03A

DRB#: 1009178 EPC#: _____ Work Order#: 790681

Legal Description: Tiburon Heights

City Address: Petirrojo Road NW

Engineering Firm: MARK GOODWIN & ASSOCIATES PA Contact: DIANE HOELZER, PE

Address: PO BOX 90606, ABQ, NM 87199

Phone#: 828-2200 Fax#: _____ E-mail: diane@goodwinengineers.com

Owner: RW INVESTMENT COMPANY Contact: RHETT WATERMAN

Address: PO BOX 27560, ABQ, NM 87125

Phone#: 248-1688 Fax#: _____ E-mail: watermanrhett@comcast.net

Architect: N/A Contact: _____

Address: _____

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

Other Contact: N/A 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
_____ GRADING PLAN
_____ DRAINAGE MASTER PLAN
_____ DRAINAGE REPORT
_____ CLOMR/LOMR

_____ TRAFFIC CIRCULATION LAYOUT (TCL)
_____ TRAFFIC IMPACT STUDY (TIS)
_____ EROSION & SEDIMENT CONTROL PLAN (ESC)

X OTHER (SPECIFY) additional requested hydrology calcs

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

_____ BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY

_____ PRELIMINARY PLAT APPROVAL
_____ SITE PLAN FOR SUB'D APPROVAL
_____ SITE PLAN FOR BLDG. PERMIT APPROVAL
_____ FINAL PLAT APPROVAL
X 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) _____

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SEP 15 2015
LAND DEVELOPMENT SECTION

IS THIS A RESUBMITTAL?: _____ Yes _____ No

DATE SUBMITTED: 9-15-15 By: DIANE HOELZER, PE

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

Diane Hoelzer

From: Harmon Rita T. <rharmon@cabq.gov>
Sent: Monday, August 24, 2015 3:51 PM
To: Diane Hoelzer
Subject: RE: Tiburon Heights

No, for the entire subdivision. I am trying to get an idea of how much "actual" discharge is being generated by the subdivision , as compared to that determined by using the formula.
Then we can compare it to that %D used to size Pond #5. Do you see where I am going with this? Checking to be sure Pond #5 has capacity for the increase in %D.

From: Diane Hoelzer [mailto:Diane@goodwinengineers.com]
Sent: Monday, August 24, 2015 3:45 PM
To: Harmon Rita T.
Subject: RE: Tiburon Heights

Are you going to have me do this for every single lot ?

Diane Hoelzer, PE
MARK GOODWIN & ASSOCIATES, PA
diane@goodwinengineers.com
(505) 828-2200

From: Harmon Rita T. [mailto:rharmon@cabq.gov]
Sent: Monday, August 24, 2015 3:37 PM
To: Diane Hoelzer
Subject: RE: Tiburon Heights

Hi Diane,
Please compare the impervious area calculated using the DPM formula from Table A-5, and the scaled impervious area using the proposed offsets.

Let me know what you get. And I will get with Shahab.

Rita

From: Diane Hoelzer [mailto:Diane@goodwinengineers.com]
Sent: Monday, August 24, 2015 3:03 PM
To: Harmon Rita T.
Cc: Rhett Waterman (watermanrhett@comcast.net)
Subject: FW: Tiburon Heights

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SEP 15 2015
LAND DEVELOPMENT SECTION

Rita,

Can I get an answer to my last email below ?
Until I get an answer I am not sure how to proceed.

Thanks,

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

PROJECT TIBURON HEIGHTS
SUBJECT Drainage Calculations
BY DLH DATE 9-14-15
CHECKED _____ DATE _____
SHEET 1 OF ____

COMPARE TABLE 5 (DPM) W/ TYPICAL PLOT PLAN LAYOUT

TABLE A-5

$N = \frac{39 \text{ UNITS}}{7.9143 \text{ ACRES}} = 4.928$

Treatment D $= 7\sqrt{N^2 + (5N)}$ $\boxed{= 49\%}$

TYPICAL PLOT PLAN

LOT AREA = 0.1460 ACRES = 6360 SF
IMPERVIOUS AREA = 2656. SF (42%)
PERVIOUS AREA = 3704 SF (58%)

PROJECT SITE INCLUDING ALL LOTS AND ROADWAY.

TOTAL LOT AREA =	262,279 SF (42%) =	110,157
TOTAL R/W AREA =	82,437 SF (81.25%) =	66,980
TOTAL =	344,716 SF	177,137 SF

Treatment D $= \frac{177,137 \text{ SF}}{344,716 \text{ SF}} = \boxed{51\%}$

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LAND DEVELOPMENT SECTION

∴ INCREASE FROM 49% to 51%

RERUN AHUMO BASED ON

A = 0
B = 10
C = 41
D = 49

A = 0
B = 9
C = 40
D = 51

WILSON'S SAD 228
DRAINAGE REPORT
ASSUMED RESIDENTIAL:
A = 0 C = 40
B = 10 D = 50

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

PROJECT TIBURON HEIGHTS
SUBJECT Drainage Calcs
BY DMG DATE 9-14-15
CHECKED _____ DATE _____
SHEET 2 OF ____

Summary of Q's

Based on Table A-5 Q = 26.97 cfs
Based on Typical Plot Plan Q = 27.21 cfs } SEE NOTE. Sheet 3

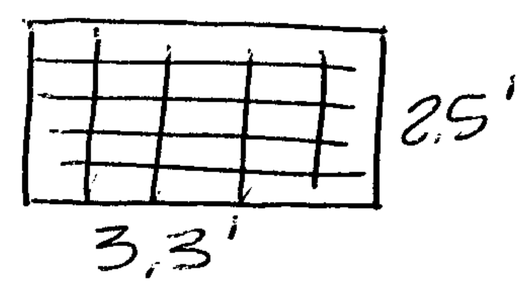
North Basin = $\frac{3.14 \text{ ACRES}}{7.91 \text{ ACRES}}$ = .397 (27.21) = 10.80 cfs

OR .397 (26.97 cfs) = 10.7 cfs

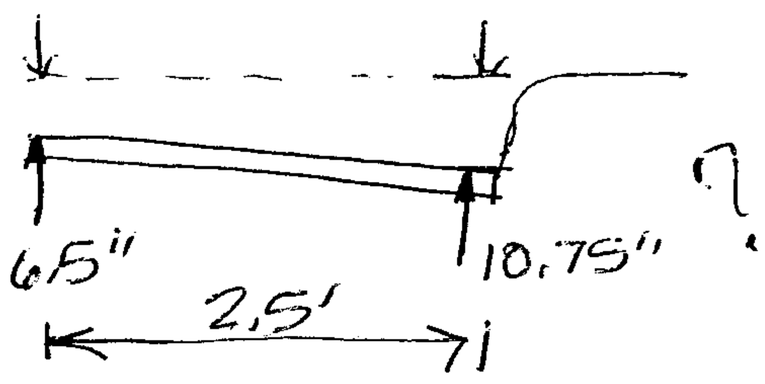
CALCULATE CAPACITY OF SINGLE "C" INLET.

INLET CAPACITY ⇒ USE WEIR EQN. $Q = CLH^{3/2}$

C INLET 2.5' WIDE x 3.3' LONG
REFER TO STD DTL 2220 & 2205



SIDES



AVG = 8.625" = 0.719'

$Q = 3(5)(.719)^{1.5} = 9.14$ cfs (SIDES)

$Q = 3(3.3)(.54)^{1.5} = 3.95$ cfs (CROSS)

$Q_{TOTAL} = 13.0$ cfs CAPACITY AT TOP OF CURB.

$Q_{ACTUAL} \cong 10.7$ cfs

∴ $Q_{CAP} > Q_{ACTUAL}$
13.0 > 10.7

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LAND DEVELOPMENT SECTION

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

PROJECT TIBURON HEIGHTS
SUBJECT Drainage Calcs.
BY DMG DATE 9-14-15
CHECKED _____ DATE _____
SHEET 3 OF ____

ASSUME: 50% Clogging on Inlet
WSEL TO Property/ROW Line
Depth at Property Line = 0.89'
$\Delta H = .89 - .67 = .22'$
P.L. − T.C. = ΔH

$Q = 3(2.5)(0.939)^{1.5} = 6.82$ cfs
$Q = 3(1.65)(.76)^{1.5} = 3.28$ cfs
10.1 cfs

10.1 cfs ≈ 10.7 cfs.

THE INCREASE IN Q100 IS INSIGNIFICANT,
THE RISE IN POND 5 IS INSIGNIFANT.

1.57 AF TO 1.59 AF
ΔVOLUME = 0.02845 AF
= 1,239 CF

POND 5 RAISES $\frac{1,239 \text{ CF}}{72,000 \text{ SF}}$ = .0172 Feet
= 0.207 inches

∴ Insignificant rise in Pond 100yr-24hrs Storm

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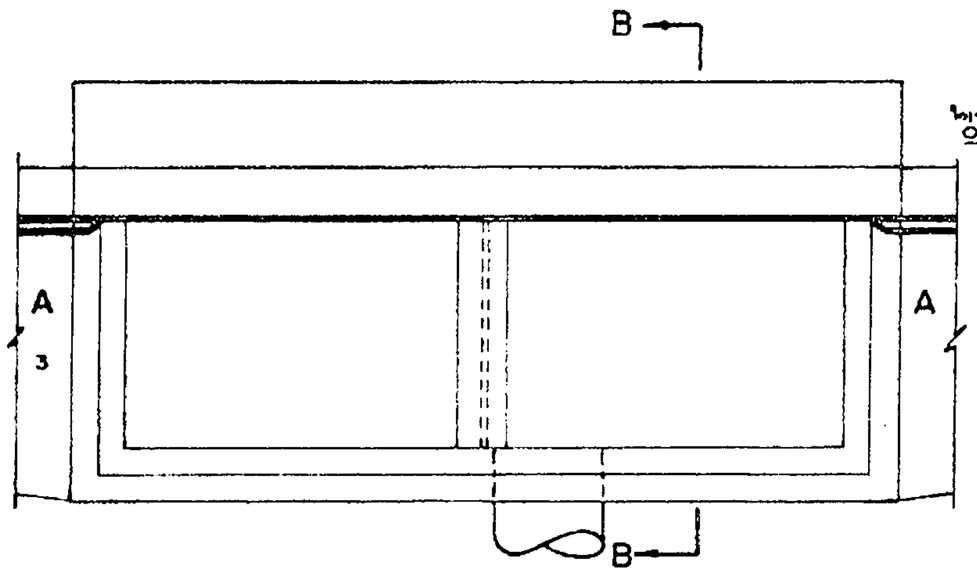
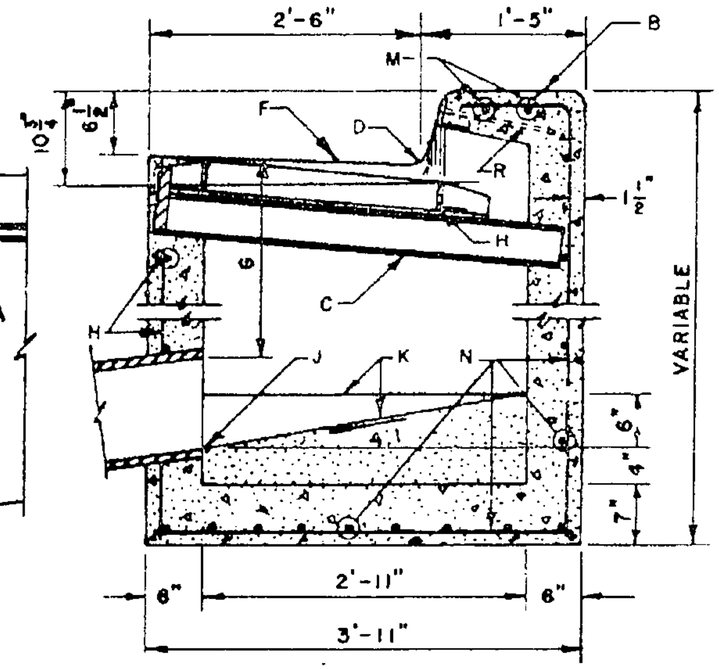
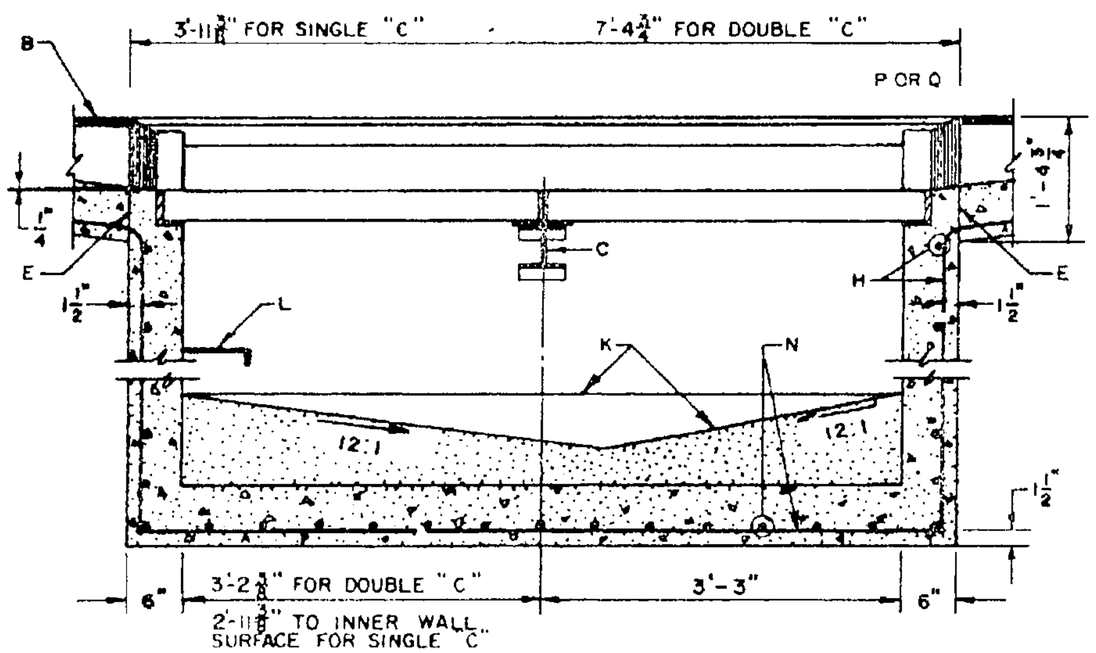
LAND DEVELOPMENT SECTION



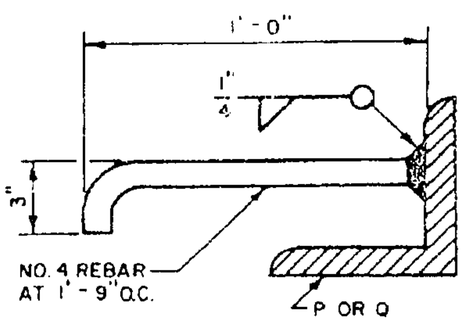
PLAN



SECTION B-B



SECTION A-A



ANCHOR DETAIL

GENERAL NOTES:

1. FOR SINGLE GRATE TYPE STORM INLET DELETE CENTER SUPPORT AND MOVE ONE END WALL TO FORM NEW SINGLE GRATE INLET.
2. FOR STORM INLET GUTTER TRANSITION, SEE DWG 2207.
3. OUTLET PIPE SIZE, PER DESIGN REQUIREMENT.
4. FOR FRAME & GRATING, SEE DWG 2216, 2220 & 2221.
5. FOR ANCHOR SEE DETAIL.
6. FOR CENTER SUPPORT ASSEMBLY, SEE DWG 2215.

CONSTRUCTION NOTES:

A. GUTTER TRANSITION.

B. TOP OF CURB.

C. CENTER SUPPORT ASSEMBLY

D. FLOWLINE.

E. CONSTRUCTION JOINT.

F. NORMAL GUTTER LINE.

G. 1'-10" MIN, UNLESS OTHERWISE DIRECTED.

H. FRAME AND GRATE.

J. INVERT OF OUTLET PIPE.

K. CONCRETE FILL, MINIMUM SLOPES AS SHOWN.

L. FOR STORM INLET DEPTHS GREATER THAN 4' INSTALL STD STEPS. SEE DWG 2229, DOWNSTREAM FACE.

M. EXTEND NO 4 REBARS 18" INTO CURB ON EACH SIDE OF STORM INLET.

N. NO. 4 BARS AT 6" O.C.

P. 3 1/2" X 3 1/2" X 1/2" X 4' - 0" FOR SINGLE GRATE TYPE "C" STORM INLET.

Q. 3 1/2" X 3 1/2" X 1/2" X 7' - 6" FOR DOUBLE GRATE TYPE "C" STORM INLET.

R. ANCHOR.

REVISIONS
12-21-92

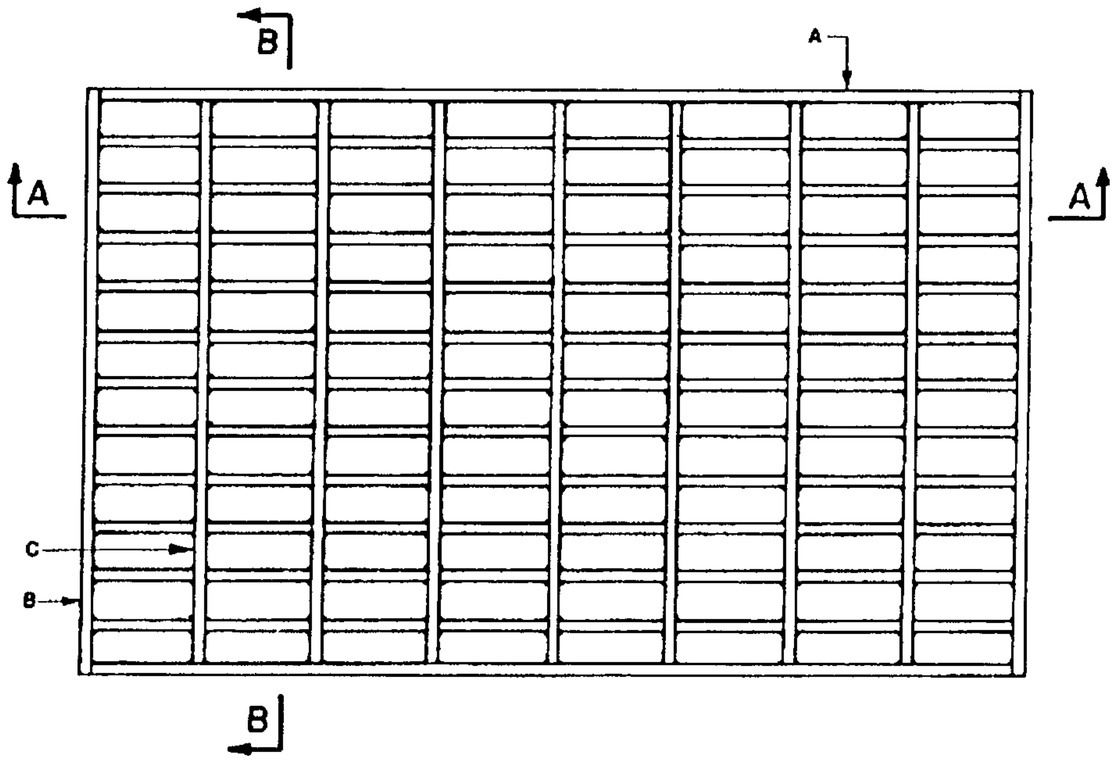
CITY OF ALBUQUERQUE

DRAINAGE

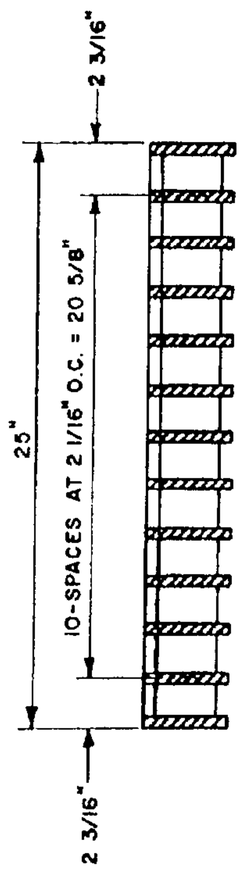
STORM INLET DOUBLE "C"

DWG. 2205

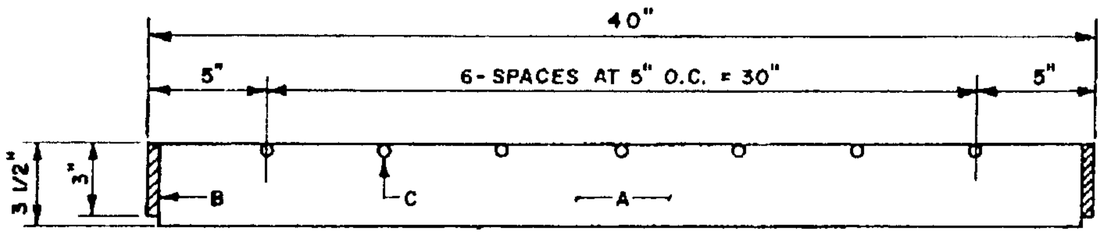
AUG. 1986



PLAN



SECTION B-B



SECTION A-A

GENERAL NOTES:

1. ALL BARS SHALL BE STRUCTURAL GRADE STEEL, GRADE A36.
2. THE GRATE SHALL BE WELDED WITH 1/8" FILLET WELD AROUND BOTH SIDES OF CROSS BARS, 1/4". FILLET WELD BOTH SIDES OF BEARING BARS TO END BARS.
3. AFTER CLEANING SURFACE OF SCALE, RUST, OILS, ETC., PAINT GRATE WITH ONE SHOP COAT RED OXIDE, TWO FINISH COATS ALUMINUM PAINT (AASHTO M 69).
4. TOP OF CROSS BARS SHALL BE FLUSH WITH TOP OF GRATE.
5. GRIND WELDS FLUSH WITH BEARING BARS.
6. WHEN INSTALLED IN FRAME, PUSH TIGHT TO ONE SIDE, OTHER SIDE SHALL HAVE 1/2" MAX. OPENING. SPACERS WELDED TO FRAME MAY BE USED IF REQUIRED TO KEEP 1/2" SPACE OR LESS.

CONSTRUCTION NOTES:

A. BEARING BARS, (13) 1/2" X 3 1/2" X 39".

B. END BARS, (2) 1/2" X 3" X 25".

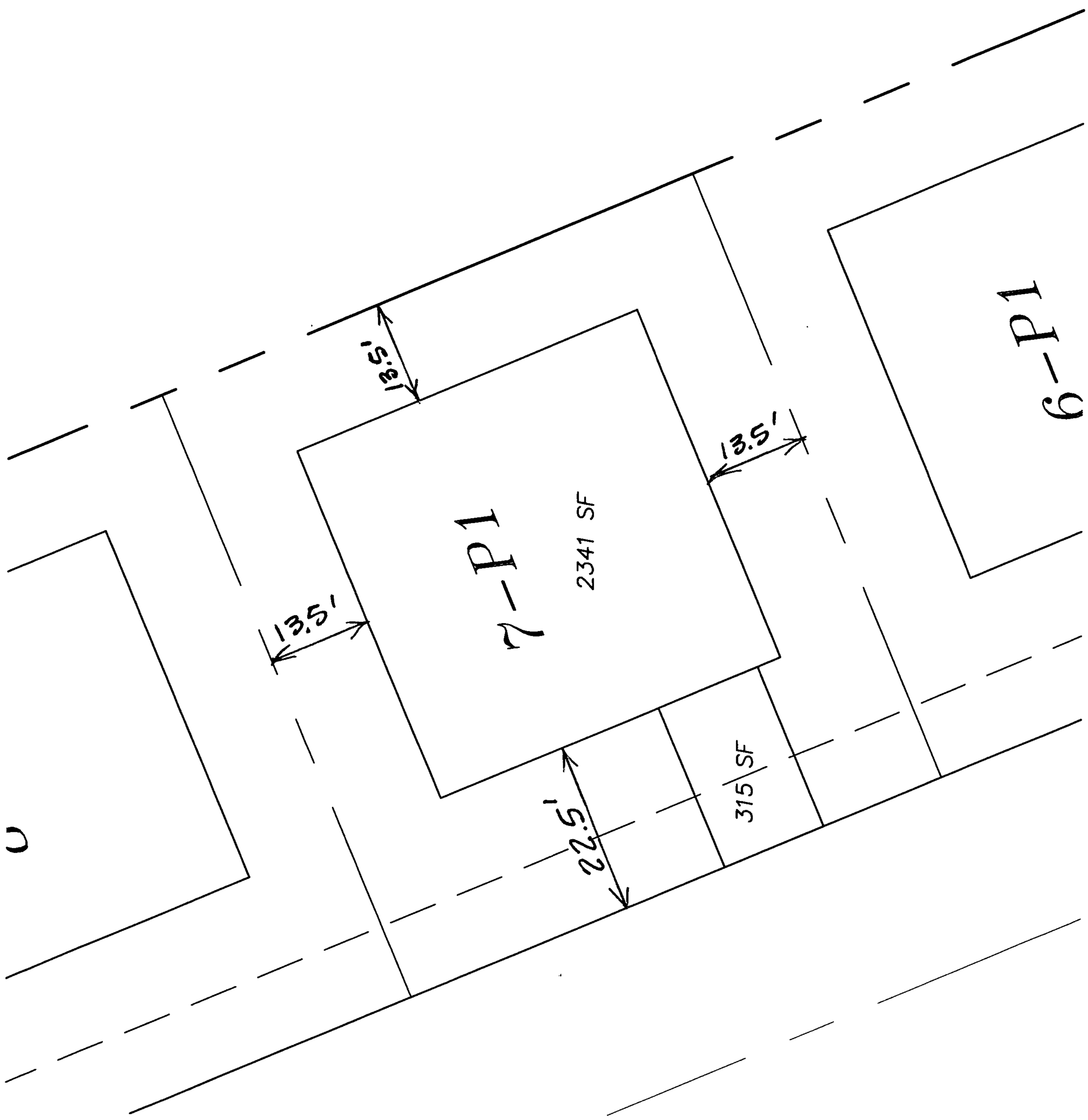
C. CROSS BARS, (7) 1/2" DIA. X 24.

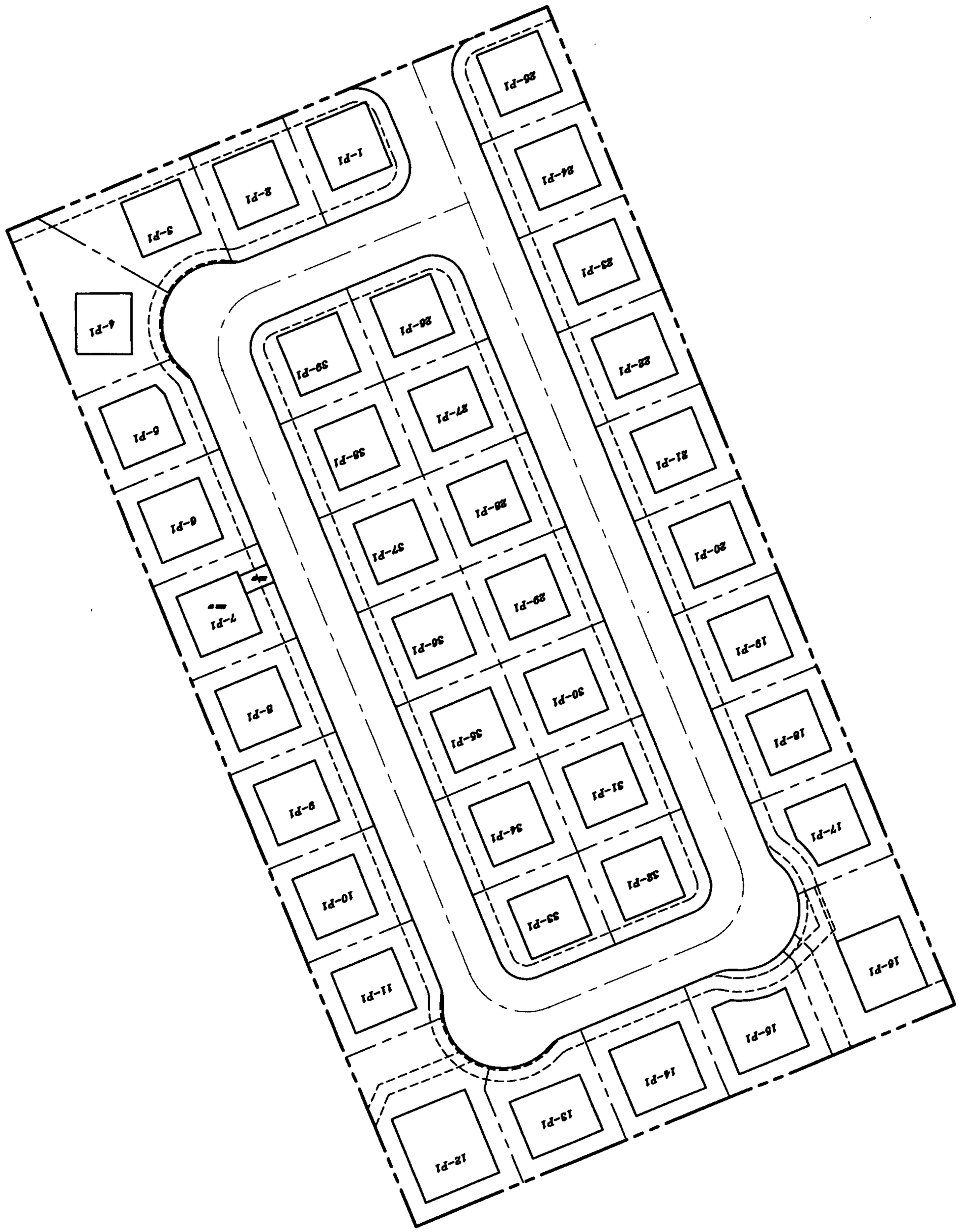
REVISIONS	CITY OF ALBUQUERQUE DRAINAGE STORM INLET ALBUQUERQUE GRATE DWG. 2220 AUG. 1986

TIBURON HEIGHT

Typical Lot Layout - 9-14-15

Typical Minimum Offsets





TIBURON HEIGHTS
PROJECT SITE
9-14-15

```
*S*****************************************************
*S
*S                    TIBURON
*S                    100 YEAR 24 HOUR STORM EVENT
*S
*S                    FILE: TIBURON_1.DAT
*S                    LAST REVISED: 9-14-15
*S                    NOAA ATLAS 2, VOL IV ZONE D 10
START                 TIME=0.0 HR PUNCH CODE=0 PRINT LINES=-6
LOCATION              NEW MEXICO
RAINFALL              TYPE=2 RAIN QUARTER=0.0
                      RAIN ONE=1.70 IN RAIN SIX=2.16 IN
                      RAIN DAY=2.51 IN DT=0.0333 HRS
*S*****************************************************
*S  TOTAL PROJCT SITE
*S  JMM ORIGIAL CALC
*** ******************
*** AREA = 7.9143 ACRES
*** ******************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.0124 SQ MI
                      PER A=0  PER B=10  PER C=47.2  PER D=42.8
                      TP=-.1333 HR  MASS RAIN=-1
PRINT HYD             ID=1 CODE=1
*** ***************************************************************
*S  TOTAL PROJECT SITE
*S  BASED ON DPM TABLE A-5  CALC
*** ***************************
*** AREA = 7.9143 ACRES
*** ******************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.0124 SQ MI
                      PER A=0  PER B=10  PER C=41.  PER D=49
                      TP=-.1333 HR  MASS RAIN=-1
PRINT HYD             ID=1 CODE=1
*** ***************************************************************
*S  TOTAL PROJECT SITE
*S  BASED ON TYPICAL LOT PLOT PLAN AND OFFSETS
*** ****************************************
*** AREA = 7.9143 ACRES
*** ******************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.0124 SQ MI
                      PER A=0  PER B=9  PER C=40  PER D=51
                      TP=-.1333 HR  MASS RAIN=-1
PRINT HYD             ID=1 CODE=1
*** ***************************************************************
FINISH
```

```
AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)                    - Ver. S4.01a, Rel: 01a      RUN DATE (MON/DAY/YR) =09/14/2015
INPUT FILE = C:\Program Files (x86)\AHYMO-S4\TIBURON_1.DAT                            USER NO.= M-GoodwinNMSiteA90075759

                            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*********************************************************
*S
*S                  TIBURON
*S                  100 YEAR 24 HOUR STORM EVENT
*S
*S                  FILE: TIBURON_1.DAT
*S                  LAST REVISED: 9-14-15
*S                  NOAA ATLAS 2, VOL IV ZONE D 10
START                                                                                                   TIME=      0.00
LOCATION                      NEW MEXICO
RAINFALL  TYPE= 2 NOAA 14                                                                               RAIN24=   2.510
*S*********************************************************
*S  TOTAL PROJCT SITE
*S  JMM ORIGIAL CALC
COMPUTE NM HYD        100.00   -     1       0.01240        26.37       0.985      1.48974    1.532    3.322 PER IMP=  42.80
*S  TOTAL PROJECT SITE
*S  BASED ON DPM TABLE A-5  CALC
COMPUTE NM HYD        100.00   -     1       0.01240        26.96       1.038      1.57026    1.532    3.397 PER IMP=  49.00
*S  TOTAL PROJECT SITE
*S  BASED ON TYPICAL LOT PLOT PLAN AND OFFSETS
COMPUTE NM HYD        100.00   -     1       0.01240        27.21       1.057      1.59871    1.532    3.429 PER IMP=  51.00
FINISH
```

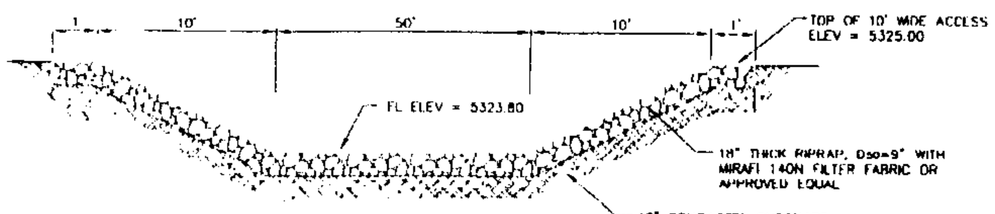
```
←(s16.67h8.5v0T←&l8D

      AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
           RUN DATE (MON/DAY/YR) = 09/14/2015
           START TIME (HR:MIN:SEC) = 09:47:20     USER NO.= M-GoodwinNMSiteA90075759
           INPUT FILE = C:\Program Files (x86)\AHYMO-S4\TIBURON_1.DAT

*S*********************************************************
*S
*S                    TIBURON
*S                    100 YEAR 24 HOUR STORM EVENT
*S
*S                    FILE: TIBURON_1.DAT
*S                    LAST REVISED: 9-14-15
*S                    NOAA ATLAS 2, VOL IV ZONE D 10
START                 TIME=0.0 HR PUNCH CODE=0 PRINT LINES=-6
LOCATION              NEW MEXICO
     State of New Mexico soil infiltration values (LAND FACTORS) used for computations.
     Land Treatment     Initial Abstr.(in)    Unif. Infilt.(in/hour)
          A             0.65                  1.67
          B             0.50                  1.25
          C             0.35                  0.83
          D             0.10                  0.04

RAINFALL              TYPE=2 RAIN QUARTER=0.0
                      RAIN ONE=1.70 IN RAIN SIX=2.16 IN
                      RAIN DAY=2.51 IN DT=0.0333 HRS

24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE AREAS (NM & AZ) - D1
DT =   0.033300 HOURS        END TIME =    24.009300 HOURS
  0.0000  0.0020  0.0041  0.0062  0.0085  0.0107  0.0132
  0.0158  0.0184  0.0213  0.0242  0.0305  0.0368  0.0435
  0.0505  0.0576  0.0653  0.0729  0.0808  0.0888  0.0968
  0.1053  0.1137  0.1225  0.1319  0.1412  0.1517  0.1623
  0.1756  0.1919  0.2083  0.2301  0.2520  0.2781  0.3088
  0.3395  0.3850  0.4311  0.4927  0.5723  0.6518  0.8585
  1.0705  1.2392  1.3567  1.4742  1.5359  1.5949  1.6441
  1.6813  1.7185  1.7448  1.7706  1.7933  1.8122  1.8310
  1.8456  1.8599  1.8722  1.8821  1.8920  1.9009  1.9098
  1.9180  1.9254  1.9327  1.9396  1.9464  1.9530  1.9596
  1.9662  1.9695  1.9725  1.9756  1.9785  1.9815  1.9843
  1.9870  1.9897  1.9924  1.9951  1.9977  2.0003  2.0028
  2.0053  2.0077  2.0101  2.0125  2.0148  2.0171  2.0194
  2.0217  2.0238  2.0260  2.0282  2.0303  2.0324  2.0345
  2.0365  2.0385  2.0405  2.0425  2.0444  2.0464  2.0483
  2.0502  2.0520  2.0539  2.0557  2.0576  2.0594  2.0612
  2.0630  2.0648  2.0665  2.0683  2.0700  2.0717  2.0734
  2.0751  2.0768  2.0785  2.0801  2.0818  2.0834  2.0850
  2.0866  2.0882  2.0898  2.0914  2.0929  2.0945  2.0960
  2.0975  2.0991  2.1006  2.1021  2.1036  2.1050  2.1065
  2.1080  2.1094  2.1109  2.1123  2.1137  2.1151  2.1165
  2.1179  2.1193  2.1207  2.1221  2.1234  2.1248  2.1261
  2.1275  2.1288  2.1301  2.1314  2.1327  2.1340  2.1353
  2.1366  2.1379  2.1392  2.1404  2.1417  2.1430  2.1442
```

2.1454	2.1467	2.1479	2.1491	2.1503	2.1515	2.1527
2.1539	2.1551	2.1563	2.1575	2.1586	2.1598	2.1610
2.1621	2.1633	2.1644	2.1656	2.1667	2.1679	2.1690
2.1702	2.1713	2.1725	2.1736	2.1748	2.1759	2.1771
2.1782	2.1793	2.1805	2.1816	2.1827	2.1838	2.1850
2.1861	2.1872	2.1883	2.1894	2.1906	2.1917	2.1928
2.1939	2.1950	2.1961	2.1972	2.1983	2.1994	2.2005
2.2016	2.2027	2.2038	2.2049	2.2060	2.2071	2.2082
2.2092	2.2103	2.2114	2.2125	2.2136	2.2146	2.2157
2.2168	2.2178	2.2189	2.2200	2.2210	2.2221	2.2231
2.2242	2.2253	2.2263	2.2274	2.2284	2.2295	2.2305
2.2316	2.2326	2.2336	2.2347	2.2357	2.2367	2.2378
2.2388	2.2398	2.2409	2.2419	2.2429	2.2439	2.2450
2.2460	2.2470	2.2480	2.2490	2.2500	2.2510	2.2520
2.2530	2.2540	2.2550	2.2560	2.2570	2.2580	2.2590
2.2600	2.2610	2.2620	2.2630	2.2640	2.2649	2.2659
2.2669	2.2679	2.2688	2.2698	2.2708	2.2718	2.2727
2.2737	2.2746	2.2756	2.2766	2.2775	2.2785	2.2794
2.2804	2.2813	2.2823	2.2832	2.2842	2.2851	2.2860
2.2870	2.2879	2.2889	2.2898	2.2907	2.2916	2.2926
2.2935	2.2944	2.2953	2.2963	2.2972	2.2981	2.2990
2.2999	2.3008	2.3017	2.3026	2.3035	2.3044	2.3053
2.3062	2.3071	2.3080	2.3089	2.3098	2.3107	2.3116
2.3125	2.3133	2.3142	2.3151	2.3160	2.3168	2.3177
2.3186	2.3195	2.3203	2.3212	2.3221	2.3229	2.3238
2.3246	2.3255	2.3263	2.3272	2.3280	2.3289	2.3297
2.3306	2.3314	2.3323	2.3331	2.3339	2.3348	2.3356
2.3364	2.3373	2.3381	2.3389	2.3397	2.3405	2.3414
2.3422	2.3430	2.3438	2.3446	2.3454	2.3462	2.3470
2.3478	2.3486	2.3494	2.3502	2.3510	2.3518	2.3526
2.3534	2.3542	2.3550	2.3558	2.3566	2.3573	2.3581
2.3589	2.3597	2.3604	2.3612	2.3620	2.3627	2.3635
2.3643	2.3650	2.3658	2.3665	2.3673	2.3681	2.3688
2.3696	2.3703	2.3710	2.3718	2.3725	2.3733	2.3740
2.3747	2.3755	2.3762	2.3769	2.3777	2.3784	2.3791
2.3798	2.3806	2.3813	2.3820	2.3827	2.3834	2.3841
2.3848	2.3855	2.3863	2.3870	2.3877	2.3884	2.3891
2.3897	2.3904	2.3911	2.3918	2.3925	2.3932	2.3939
2.3946	2.3952	2.3959	2.3966	2.3973	2.3979	2.3986
2.3993	2.3999	2.4006	2.4013	2.4019	2.4026	2.4032
2.4039	2.4046	2.4052	2.4059	2.4065	2.4071	2.4078
2.4084	2.4091	2.4097	2.4103	2.4110	2.4116	2.4122
2.4129	2.4135	2.4141	2.4147	2.4154	2.4160	2.4166
2.4172	2.4178	2.4184	2.4190	2.4196	2.4202	2.4208
2.4214	2.4220	2.4226	2.4232	2.4238	2.4244	2.4250
2.4256	2.4262	2.4268	2.4273	2.4279	2.4285	2.4291
2.4297	2.4302	2.4308	2.4314	2.4319	2.4325	2.4331
2.4336	2.4342	2.4347	2.4353	2.4358	2.4364	2.4369
2.4375	2.4380	2.4386	2.4391	2.4396	2.4402	2.4407
2.4412	2.4418	2.4423	2.4428	2.4434	2.4439	2.4444
2.4449	2.4454	2.4460	2.4465	2.4470	2.4475	2.4480
2.4485	2.4490	2.4495	2.4500	2.4505	2.4510	2.4515
2.4520	2.4525	2.4530	2.4535	2.4539	2.4544	2.4549
2.4554	2.4559	2.4563	2.4568	2.4573	2.4577	2.4582
2.4587	2.4591	2.4596	2.4601	2.4605	2.4610	2.4614

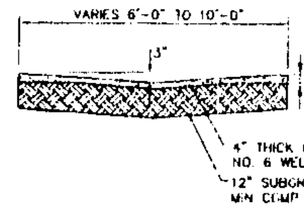
```
2.4619  2.4623  2.4628  2.4632  2.4637  2.4641  2.4645
2.4650  2.4654  2.4658  2.4663  2.4667  2.4671  2.4676
2.4680  2.4684  2.4688  2.4692  2.4697  2.4701  2.4705
2.4709  2.4713  2.4717  2.4721  2.4725  2.4729  2.4733
2.4737  2.4741  2.4745  2.4749  2.4753  2.4757  2.4761
2.4764  2.4768  2.4772  2.4776  2.4779  2.4783  2.4787
2.4791  2.4794  2.4798  2.4802  2.4805  2.4809  2.4812
2.4816  2.4820  2.4823  2.4827  2.4830  2.4833  2.4837
2.4840  2.4844  2.4847  2.4850  2.4854  2.4857  2.4860
2.4864  2.4867  2.4870  2.4873  2.4877  2.4880  2.4883
2.4886  2.4889  2.4892  2.4896  2.4899  2.4902  2.4905
2.4908  2.4911  2.4914  2.4917  2.4920  2.4922  2.4925
2.4928  2.4931  2.4934  2.4937  2.4940  2.4942  2.4945
2.4948  2.4951  2.4953  2.4956  2.4959  2.4961  2.4964
2.4966  2.4969  2.4972  2.4974  2.4977  2.4979  2.4982
2.4984  2.4987  2.4989  2.4991  2.4994  2.4996  2.4999
2.5001  2.5003  2.5006  2.5008  2.5010  2.5012  2.5014
2.5017  2.5019  2.5021  2.5023  2.5025  2.5027  2.5029
2.5031  2.5034  2.5036  2.5038  2.5040  2.5041  2.5043
2.5045  2.5047  2.5049  2.5051  2.5053  2.5055  2.5056
2.5058  2.5060  2.5062  2.5064  2.5065  2.5067  2.5069
2.5070  2.5072  2.5073  2.5075  2.5077  2.5078  2.5080
2.5081  2.5083  2.5084  2.5086  2.5087  2.5088  2.5090
2.5091  2.5093  2.5094  2.5095  2.5097  2.5098  2.5099
2.5100

*S*********************************************************
*S  TOTAL PROJCT SITE
*S  JMM ORIGIAL CALC
*** *******************
*** AREA = 7.9143 ACRES
*** *******************
COMPUTE NM HYD       ID=1  HYD NO=100 AREA= 0.0124 SQ MI
                     PER A=0  PER B=10  PER C=47.2  PER D=42.8
                     TP=-.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   20.953    CFS   UNIT VOLUME =   0.9988       B =   526.28      P60 = 1.7000
     AREA =     0.005307 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033300

     K =  0.109200HR    TP =  0.133300HR    K/TP RATIO =  0.819204     SHAPE CONSTANT, N =  4.361186
     UNIT PEAK =   20.144    CFS   UNIT VOLUME =   0.9998       B =   378.57      P60 = 1.7000
     AREA =     0.007093 SQ MI    IA =   0.37622 INCHES    INF =   0.90343 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033300

PRINT HYD            ID=1 CODE=1

                                PARTIAL HYDROGRAPH   100.00

    RUNOFF VOLUME =     1.48974 INCHES     =       0.9852 ACRE-FEET
    PEAK DISCHARGE RATE =      26.37 CFS  AT   1.532 HOURS   BASIN AREA =  0.0124 SQ. MI.
```

```
*** ******************************************************************
*S  TOTAL PROJECT SITE
*S  BASED ON DPM TABLE A-5  CALC
*** ****************************
*** AREA = 7.9143 ACRES
*** *******************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.0124 SQ MI
                      PER A=0  PER B=10  PER C=41.  PER D=49
                      TP=-.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   23.988    CFS   UNIT VOLUME =   0.9989       B =   526.28      P60 = 1.7000
     AREA =     0.006076 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033300


     K =  0.109838HR    TP =  0.133300HR    K/TP RATIO =  0.823993     SHAPE CONSTANT, N =  4.333148
     UNIT PEAK =   17.876    CFS   UNIT VOLUME =   0.9996       B =   376.80      P60 = 1.7000
     AREA =     0.006324 SQ MI    IA =   0.37941 INCHES    INF =   0.91235 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033300

PRINT HYD             ID=1 CODE=1

                                  PARTIAL HYDROGRAPH   100.00


    RUNOFF VOLUME =      1.57026 INCHES      =        1.0385 ACRE-FEET
    PEAK DISCHARGE RATE =      26.96 CFS  AT   1.532 HOURS   BASIN AREA =  0.0124 SQ. MI.


*** ******************************************************************
*S  TOTAL PROJECT SITE
*S  BASED ON TYPICAL LOT PLOT PLAN AND OFFSETS
*** ******************************************
*** AREA = 7.9143 ACRES
*** *******************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.0124 SQ MI
                      PER A=0  PER B=9  PER C=40  PER D=51
                      TP=-.1333 HR  MASS RAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   24.967    CFS   UNIT VOLUME =   0.9989       B =   526.28      P60 = 1.7000
     AREA =     0.006324 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033300


     K =  0.109466HR    TP =  0.133300HR    K/TP RATIO =  0.821198     SHAPE CONSTANT, N =  4.349463
     UNIT PEAK =   17.222    CFS   UNIT VOLUME =   0.9996       B =   377.83      P60 = 1.7000
     AREA =     0.006076 SQ MI    IA =   0.37755 INCHES    INF =   0.90714 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.033300

PRINT HYD             ID=1 CODE=1
```

```
                                PARTIAL HYDROGRAPH   100.00

    RUNOFF VOLUME =     1.59871 INCHES     =       1.0573 ACRE-FEET
    PEAK DISCHARGE RATE =      27.21 CFS  AT   1.532 HOURS   BASIN AREA =  0.0124 SQ. MI.


*** ********************************************************************
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 09:47:20
```



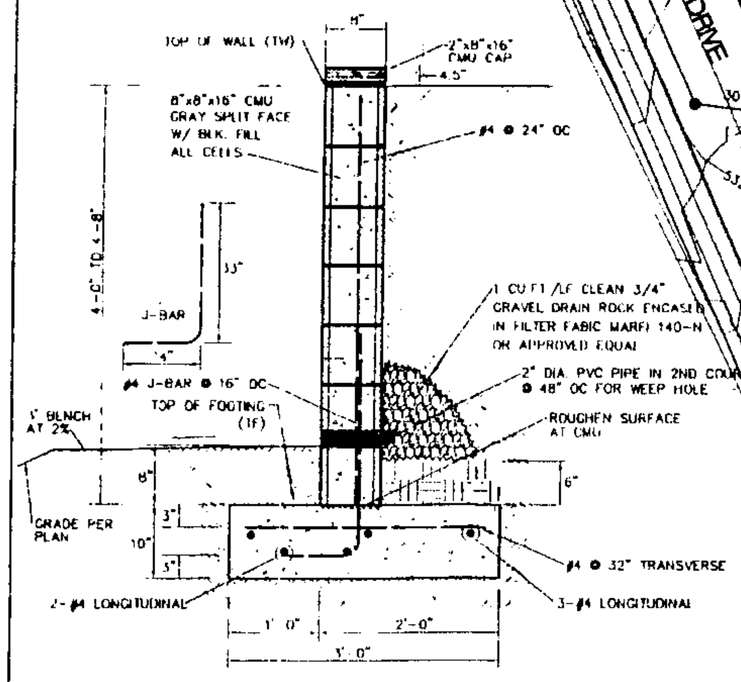
EMERGENCY SPILLWAY
NTS



SECTION A-A
LOW FLOW CHANNEL
NTS

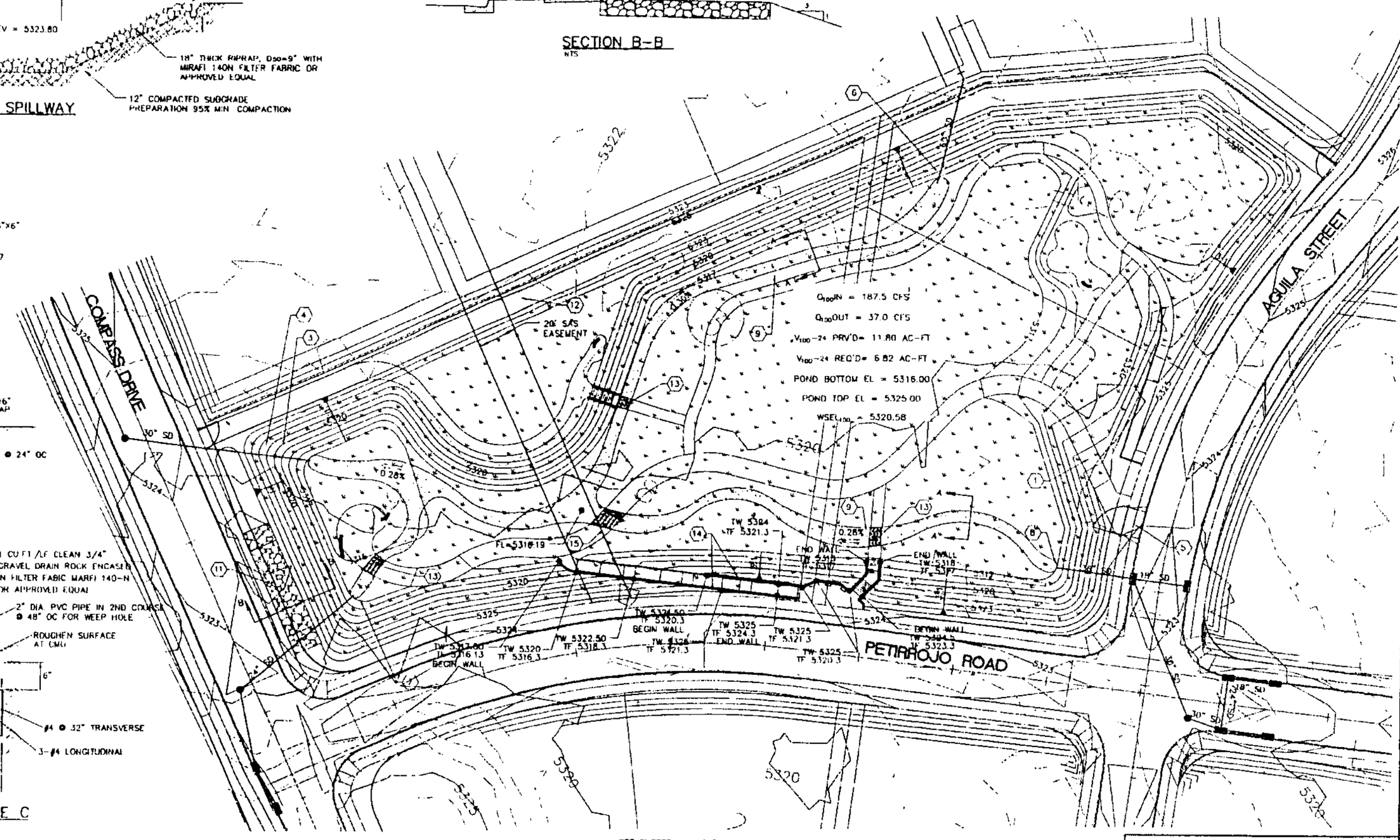
SECTION B-B
NTS

SEE LANDSCAPING PLANS SHEET L10 FOR HAND RAIL DETAILS



RETAINING WALL – TYPE C
2'-0" TO 4'-8"

NOTE
FINISHED GRADE SHALL BE LEVEL WITH OR BELOW TOP OF RETAINING PORTION OF WALL, AND NO ADDITIONAL SURFACE LOADS SHALL BE PLACED, WITHIN AN AREA FROM FACE OF WALL TO A DISTANCE EQUAL TO THE RETAINED EARTH HEIGHT



SEE SHEETS L1-L12 FOR POND 5 LANDSCAPING PLANS AND DETAILS

SHEET KEYNOTES

1. INSTALL 10' WIDE GRAVEL MAINTENANCE ACCESS, S_{max}=10%, 6" AGGREGATE BASE COURSE, 95% MIN COMPACTION. SEE SHEET 124 FOR DETAIL
2. NOT USED
3. FLATTEN CHANNEL BOTTOM FROM 3' TO 0'
4. INSTALL 30" POND OUTLET STRUCTURE, INV =5315.75. SEE SHEET 124 FOR DETAIL.
5. STA 19+17, 15' RT, INSTALL 15' WIDE DRIVEPAD PER COA STD DWG 2425
6. INSTALL 48 LF 60" SD PIPE @ 0.35%, INV = 5317.24, 1- 60" POND INLET STRUCTURE. SEE SHEET 124 FOR DETAIL.
7. INSTALL 81.5 LF 24" PIPE @ 0.12%, INV = 5316.20, 1-24" POND INLET STRUCTURE.
8. INSTALL 34 LF 36" PIPE @ 0.50%, INV = 5317.00, 1-36" INLET STRUCTURE. SEE SHEET 124 FOR DETAIL.
9. INSTALL LOW FLOW CHANNEL. SEE DETAIL THIS SHEET.
10. NOT USED.
11. INSTALL 10'W X 50'L EMERGENCY SPILLWAY. SEE DETAIL THIS SHEET.
12. INSTALL 10' WIDE MAINTENANCE ACCESS. SEE SHEET 124 FOR DETAIL.
13. INSTALL 3-24" SIDEWALK CULVERT PER COA STD DWG 2236. SKEW ANGLE = 0° AND 13°
14. INSTALL RETAINING WALL PER DETAIL THIS SHEET. COST WILL BE INCIDENTAL PER LANDSCAPE LUMP SUM BID ITEM
15. INSTALL 5-24" SIDEWALK CULVERT PER COA STD DWG 2236. SKEW ANGLE = 26°

GENERAL SHEET NOTES

1. NO ROCK EXCAVATION ALLOWED PER V.C.S.P.
2. SEE LANDSCAPE PLANS FOR PROPOSED SURFACE TREATMENTS
3. SEE LANDSCAPE PLANS FOR PROPOSED POND FEATURES.

POND 5
CITY PARK MAINTAINED BY PARKS & REC EXCEPT FOR INLET/OUTLET STRUCTURES AND LOW FLOW CHANNEL (ITEMS 4, 6, 7, 8, AND 9) WHICH WILL BE MAINTAINED BY COA STORM DRAIN MAINTENANCE.

N

GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.

WCEA # 0840010400
DECEMBER 2011

WILSON & COMPANY
4900 LANG AVE NE
ALBUQUERQUE, NEW MEXICO 87109
PH (505) 348-4000
FAX (505) 348-4072
www.wilsonco.com

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

SPECIAL ASSESSMENT DISTRICT 228–VOL. 1
POND 5 GRADING & DRAINAGE PLAN

Design Review Committee: APPROVED JAN 24 2012 TRAFFIC ENGINEER / DRAINAGE MANAGER
City Engineer Approval: APPROVED JAN 24 2012 CITY ENGINEER
Mo./Day/Yr. ___ Mo./Day/Yr. ___

City Project No. 693391 | Zone Map No. D-10, D-11 | Sheet 110 of 156

AS-BUILT INFORMATION
CONTRACTOR ___ DATE
ENGINEER ___ DATE
SURVEYOR ___ DATE
PROJECT ENGINEER ___ DATE
CITY ENGINEER ___ DATE

BENCH MARKS
ACS BRASS CAP, STAMPED "3-E10" SET IN TOP OF CONCRETE POST PROJECTING 0.30 FT. ABOVE GROUND, LOCATED APPROX. 225' E OF THE INTERSECTION OF RIM ROCK DR. NW AND MARIGOLD DR. NW (NAD 1983), X 1499259.808, Y 1512627.946
ELEVATION = 5315.89 FT. (NAVD 1988)

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL
DONALD W. DUNCAN NEW MEXICO LICENSED PROFESSIONAL ENGINEER 7818

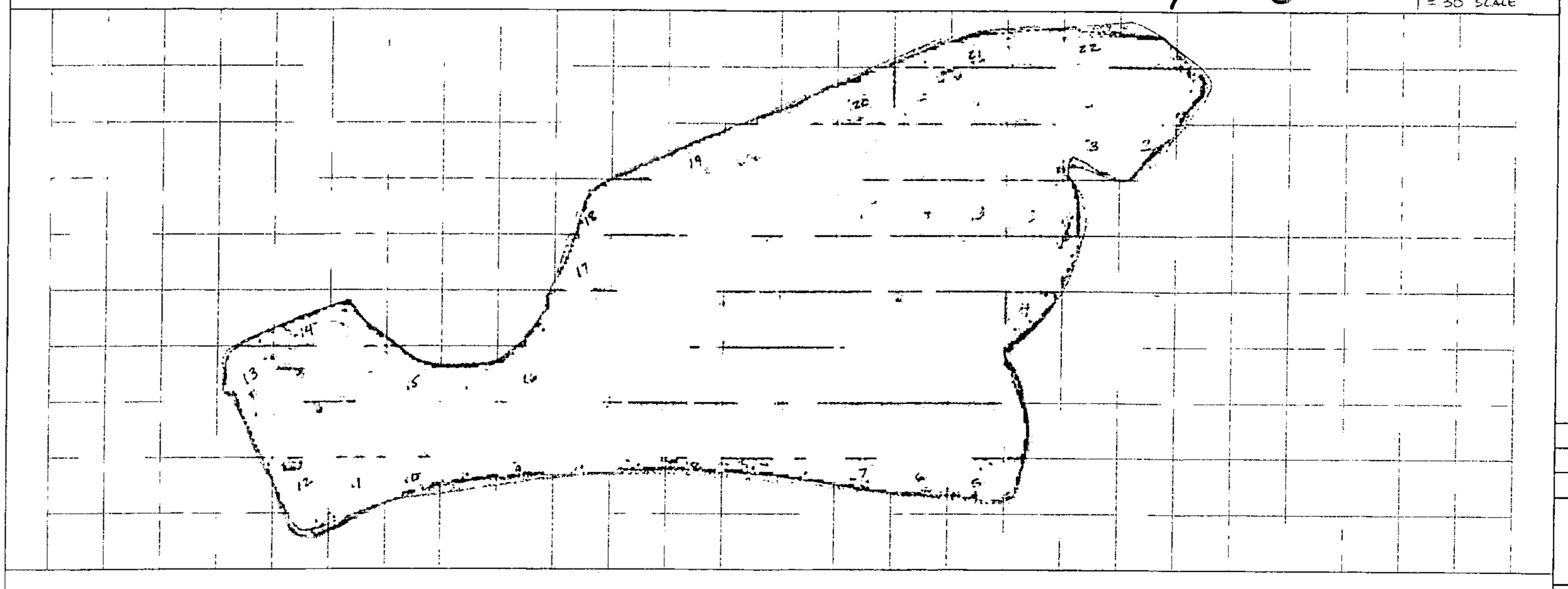
REVISIONS
NO. | DATE | REMARKS | BY

WILSON & COMPANY, ENGINEERS & ARCHITECTS
DESIGNED BY S.TAFF DATE JAN. 2012
DRAWN BY S.TAFF DATE JAN. 2012
CHECKED BY SJW DATE JAN. 2012

ESTIMATED POND 5 AREA = 72,000 SF

1" = 30

1" = 30' SCALE



900 SF (58 EA) = 52,200 SF
900 SF (22 EA) = 19,800 SF
TOTAL AREA OF POND @ 100 YR ELEV. 5320.58' 72,000 SF

Project Title

MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505)828-2200, FAX (505)797-9539

Designed: ####	Drawn:	Checked: DMG	Sheet SheetNumber
Scale:	Date: 1/25/13	Job: A09048	

```
-(s16.67h8.5v0T-&l8D
  AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)                    - Ver. S4.01a, Rel: 01a      RUN DATE (MON/DAY/YR) =08/26/2015
  INPUT FILE = C:\Program Files (x86)\AHYMO-S4\TIBURON.DAT                              USER NO.= M-GoodwinNMSiteA90075759

                                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*********************************************************
  *S
  *S                    TIBURON
  *S                    100 YEAR 6 HOUR STORM EVENT
  *S
  *S                    FILE: TIBURON_CH.DAT
  *S                    LAST REVISED: 8-25-15
  *S                    NOAA ATLAS 2, VOL IV ZONE D 10
  START                                                                                                   TIME=      0.00
  LOCATION                        NEW MEXICO
  RAINFALL  TYPE= 1 NOAA 14                                                                               RAIN6=     2.160
  *S*********************************************************
  *S  TOTAL PROPERTY BOUNDARY
  *S  JMM ORIGIAL CALC
  COMPUTE NM HYD        100.00   -     1       0.01240       26.37       0.886      1.34017    1.532    3.322 PER IMP=  42.80
  *S  TOTAL PROPERTY BOUNDARY
  *S   REVISED CALC
  COMPUTE NM HYD        100.00   -     1       0.01240       26.96       0.925      1.39902    1.532    3.397 PER IMP=  49.00
  *S  TOTAL PROPERTY BOUNDARY
  *S   REVISED CALC
  COMPUTE NM HYD        100.00   -     1       0.01240       27.63       0.969      1.46550    1.532    3.482 PER IMP=  56.00
  *S  TOTAL PROPERTY BOUNDARY
  *S   REVISED CALC
  COMPUTE NM HYD        100.00   -     1       0.01240       28.02       0.994      1.50351    1.532    3.531 PER IMP=  60.00
  FINISH
```

Allowed 1.97 c/s/acre

2.20

```
*S*************************************************************
*S
*S                    TIBURON
*S                    100 YEAR 6 HOUR STORM EVENT
*S
*S                    FILE: TIBURON_CH.DAT
*S                    LAST REVISED: 8-25-15
*S                    NOAA ATLAS 2, VOL IV ZONE D 10
START                 TIME=0.0 HR PUNCH CODE=0 PRINT LINES=-6
LOCATION              NEW MEXICO
RAINFALL              TYPE=1 RAIN QUARTER=0.0
                      RAIN ONE=1.70 IN RAIN SIX=2.16 IN
                      RAIN DAY=2.51 IN DT=0.0333 HRS
*S*************************************************************
*S  TOTAL PROPERTY BOUNDARY
*S  JMM ORIGIAL CALC
*** ********************
*** AREA = 7.9143 ACRES
*** ********************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.0124 SQ MI
                      PER A=0  PER B=10  PER C=47.2  PER D=42.8
                      TP=-.1333 HR  MASS RAIN=-1
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*** ************************************************************************
*S  TOTAL PROPERTY BOUNDARY
*S   REVISED CALC
*** ************************
*** AREA = 7.9143 ACRES
*** ************************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.0124 SQ MI
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                      TP=-.1333 HR  MASS RAIN=-1
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*S  TOTAL PROPERTY BOUNDARY
*S   REVISED CALC
*** **************************
*** AREA = 7.9143 ACRES
*** **************************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.0124 SQ MI
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                      TP=-.1333 HR  MASS RAIN=-1
PRINT HYD             ID=1 CODE=1
*** ************************************************************************
*S  TOTAL PROPERTY BOUNDARY
*S   REVISED CALC
*** **************************
*** AREA = 7.9143 ACRES
*** **************************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.0124 SQ MI
                      PER A=0  PER B=10  PER C=30  PER D=60
                      TP=-.1333 HR  MASS RAIN=-1
PRINT HYD             ID=1 CODE=1
*** ************************************************************************
FINISH
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AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)                    - Ver. S4.01a, Rel: 01a      RUN DATE (MON/DAY/YR) =08/26/2015
INPUT FILE = C:\Program Files (x86)\AHYMO-S4\TIBURON_1.DAT                            USER NO.= M-GoodwinNMSiteA90075759

                              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*********************************************************
*S
*S                    TIBURON
*S                    100 YEAR 24 HOUR STORM EVENT
*S
*S                    FILE: TIBURON_1.DAT
*S                    LAST REVISED: 8-26-15
*S                    NOAA ATLAS 2, VOL IV ZONE D 10
START                                                                                                  TIME=      0.00
LOCATION                        NEW MEXICO
RAINFALL  TYPE= 2 NOAA 14                                                                              RAIN24=   2.510
*S*********************************************************
*S  TOTAL PROPERTY BOUNDARY
*S  JMM ORIGIAL CALC
COMPUTE NM HYD        100.00   -     1       0.01240        26.37       0.985      1.48974    1.532    3.322 PER IMP=  42.80
*S  TOTAL PROPERTY BOUNDARY
*S   REVISED CALC
COMPUTE NM HYD        100.00   -     1       0.01240        26.96       1.038      1.57026    1.532    3.397 PER IMP=  49.00
*S  TOTAL PROPERTY BOUNDARY
*S   REVISED CALC
COMPUTE NM HYD        100.00   -     1       0.01240        27.63       1.099      1.66120    1.532    3.482 PER IMP=  56.00
*S  TOTAL PROPERTY BOUNDARY
*S   REVISED CALC
COMPUTE NM HYD        100.00   -     1       0.01240        28.02       1.133      1.71318    1.532    3.531 PER IMP=  60.00
FINISH
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2.46

```
*S*************************************************************
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*S                    TIBURON
*S                    100 YEAR 24 HOUR STORM EVENT
*S
*S                    FILE: TIBURON_1.DAT
*S                    LAST REVISED: 8-26-15
*S                    NOAA ATLAS 2, VOL IV ZONE D 10
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LOCATION              NEW MEXICO
RAINFALL              TYPE=2 RAIN QUARTER=0.0
                      RAIN ONE=1.70 IN RAIN SIX=2.16 IN
                      RAIN DAY=2.51 IN DT=0.0333 HRS
*S*************************************************************
*S  TOTAL PROPERTY BOUNDARY
*S  JMM ORIGIAL CALC
*** *******************
*** AREA = 7.9143 ACRES
*** *******************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.0124 SQ MI
                      PER A=0  PER B=10  PER C=47.2  PER D=42.8
                      TP=-.1333 HR  MASS RAIN=-1
PRINT HYD             ID=1 CODE=1
*** ***********************************************************************
*S  TOTAL PROPERTY BOUNDARY
*S   REVISED CALC
*** ************************
*** AREA = 7.9143 ACRES
*** ************************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.0124 SQ MI
                      PER A=0  PER B=10  PER C=41.  PER D=49
                      TP=-.1333 HR  MASS RAIN=-1
PRINT HYD             ID=1 CODE=1
*** ***********************************************************************
*S  TOTAL PROPERTY BOUNDARY
*S   REVISED CALC
*** **************************
*** AREA = 7.9143 ACRES
*** **************************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.0124 SQ MI
                      PER A=0  PER B=10  PER C=34.  PER D=56
                      TP=-.1333 HR  MASS RAIN=-1
PRINT HYD             ID=1 CODE=1
*** ***********************************************************************
*S  TOTAL PROPERTY BOUNDARY
*S   REVISED CALC
*** **************************
*** AREA = 7.9143 ACRES
*** **************************
COMPUTE NM HYD        ID=1  HYD NO=100 AREA= 0.0124 SQ MI
                      PER A=0  PER B=10  PER C=30  PER D=60
                      TP=-.1333 HR  MASS RAIN=-1
PRINT HYD             ID=1 CODE=1
*** ***********************************************************************
FINISH
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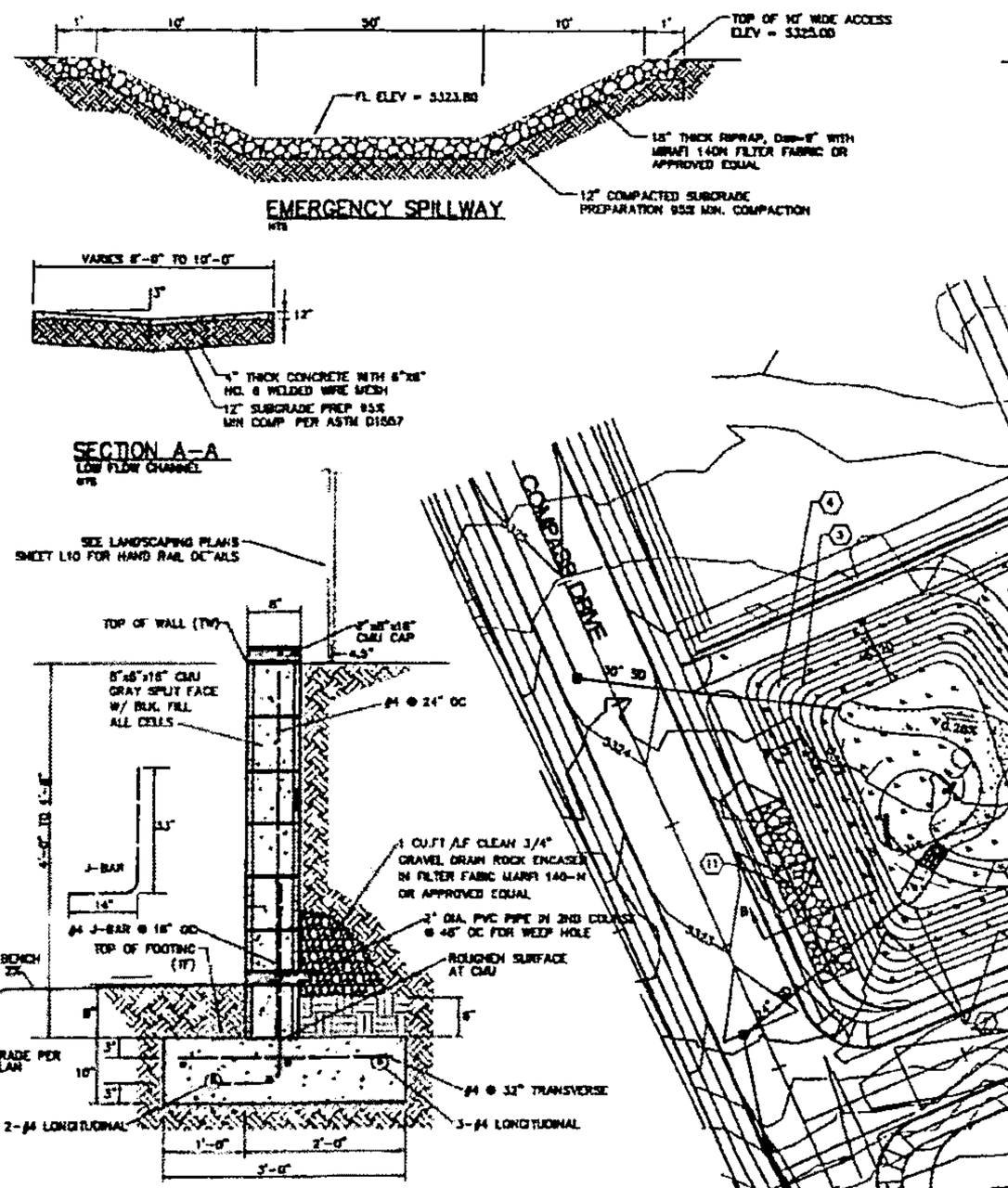

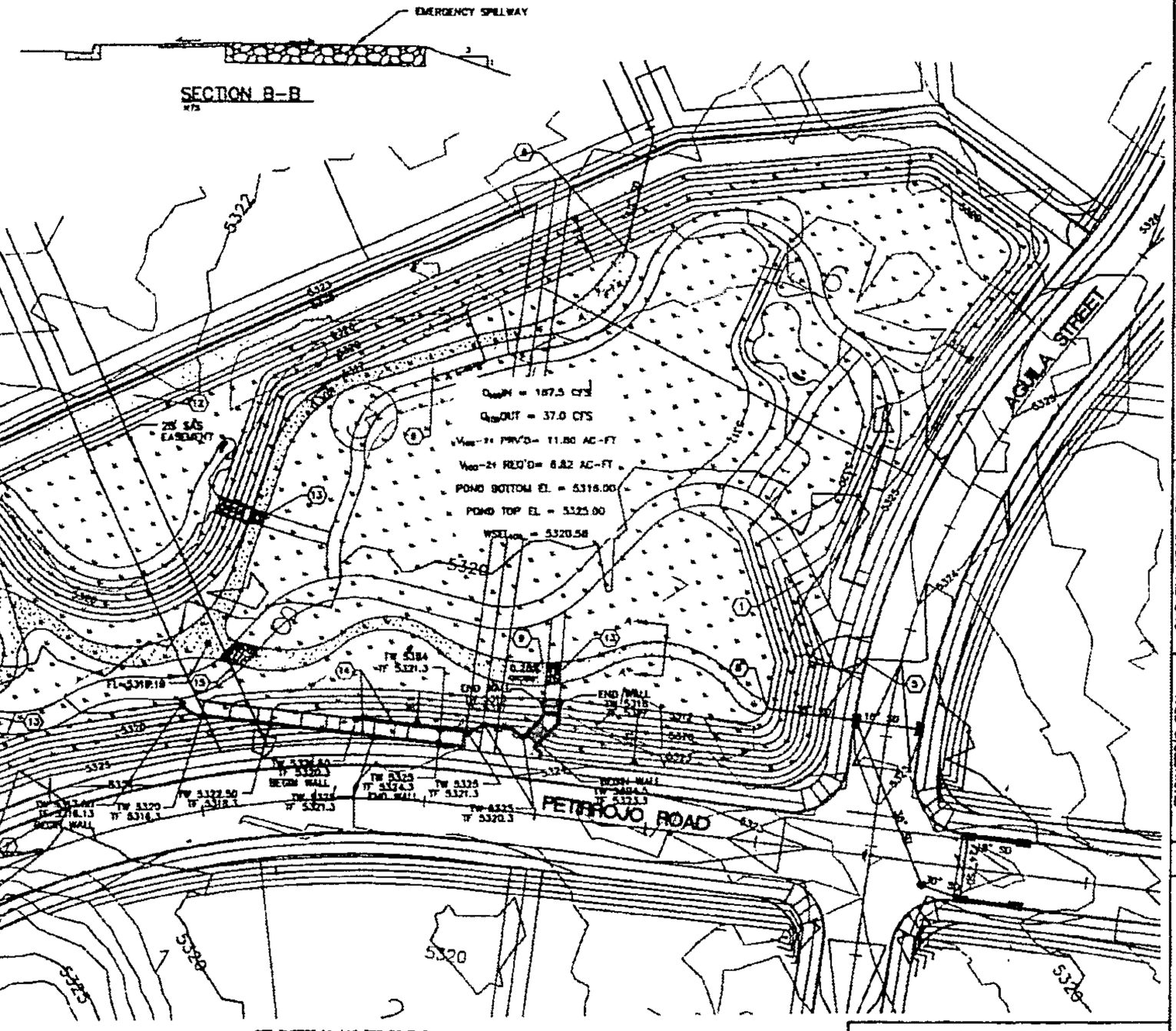

SEE SHEETS L1-L12 FOR POND 5 LANDSCAPING PLANS AND DETAILS.

SHEET KEYNOTES

1. INSTALL 10' WIDE GRAVEL MAINTENANCE ACCESS, S_{max}=10%, 6" AGGREGATE BASE COURSE, 95% MIN COMPACTION. SEE SHEET 124 FOR DETAIL.
2. NOT USED.
3. FLATTEN CHANNEL BOTTOM FROM 3' TO 0'.
4. INSTALL 30" POND OUTLET STRUCTURE, INV =5315.75. SEE SHEET 124 FOR DETAIL.
5. STA 19+17, 15' RT, INSTALL 15' WIDE DRIVEPAD PER COA STD DWG 2425.
6. INSTALL 48 LF 60" SD PIPE @ 0.35%, INV = 5317.24, 1 60" POND INLET STRUCTURE. SEE SHEET 124 FOR DETAIL.
7. INSTALL 81.5 LF 24" PIPE @ 0.12%, INV = 5318.20, 1-24" POND INLET STRUCTURE.
8. INSTALL 34 LF 36" PIPE @ 0.50%, INV = 5317.00, 1-36" INLET STRUCTURE. SEE SHEET 124 FOR DETAIL.
9. INSTALL LOW FLOW CHANNEL. SEE DETAIL THIS SHEET.
10. NOT USED.
11. INSTALL 10'W X 50'L EMERGENCY SPILLWAY. SEE DETAIL THIS SHEET.
12. INSTALL 10' WIDE MAINTENANCE ACCESS. SEE SHEET 124 FOR DETAIL.
13. INSTALL 3-24" SIDEWALK CULVERT PER COA STD DWG 2236. SKEW ANGLE = 0° AND 13°
14. INSTALL RETAINING WALL PER DETAIL THIS SHEET. COST WILL BE INCIDENTAL PER LANDSCAPE LUMP SUM BID ITEM.
15. INSTALL 5-24" SIDEWALK CULVERT PER COA STD DWG 2236. SKEW ANGLE = 20°

GENERAL SHEET NOTES

1. NO ROCK EXCAVATION ALLOWED PER V.C.S.P.
2. SEE LANDSCAPE PLANS FOR PROPOSED SURFACE TREATMENTS
3. SEE LANDSCAPE PLANS FOR PROPOSED POND FEATURES.

POND 5
CITY PARK MAINTAINED BY PARKS & REC EXCEPT FOR INLET/OUTLET STRUCTURES AND LOW FLOW CHANNEL (TICKS 4, 6, 7, 8, AND 9) WHICH WILL BE MAINTAINED BY COA STORM DRAIN MAINTENANCE.

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

WCEA # 0840010400
DECEMBER 2011

WILSON & COMPANY
4900 LANG AVE NE
ALBUQUERQUE, NEW MEXICO 87109
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CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

SPECIAL ASSESSMENT DISTRICT 228-VOL. 1
POND 5 GRADING & DRAINAGE PLAN

Design Review Committee: APPROVED JAN 24 2012 DESIGN REVIEW COMMITTEE
City Engineer Approval: APPROVED JAN 24 2012 CITY ENGINEER
Last Design Update: mm/dd/yy
mm/dd/yy

City Project No.	Zone Map No.	Sheet	Of
693391	D-10, D-11	110	156

AS-BUILT INFORMATION
BENCH MARKS
ACS BRASS CAP, STAMPED "2-C10"
SET IN TOP OF CONCRETE POST PROJECTING 0.50 FT. ABOVE GROUND. LOCATED APPROX. 225' E. OF THE INTERSECTION OF PIM ROCK DR. NW AND MARIGOLD DR. NW (NAD 1983), X 1499059.898, Y 1512627.946
MICRO-FILM INFORMATION
ELEVATION = 5318.89 FT. (NAVD 1988)

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	

WILSON & COMPANY, ENGINEERS & ARCHITECTS

DESIGNED BY	STAFF	DATE JAN. 2012
DRAWN BY	STAFF	DATE JAN. 2012
CHECKED BY	SJM	DATE JAN. 2012

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

PROJECT TIBURON HTS
SUBJECT DRAINAGE CALCS
BY DWA DATE 8-26-15
CHECKED _____ DATE _____
SHEET ___ OF ___

SUMMARY OF RESULTS - Comparison Table 5 w/ PLOT PLAN LOTS 7+8

Table A-5 Calculation

$N = \frac{39 \text{ UNITS}}{7.9143 \text{ Acres}} = 4.928$ 4.98

$Tr\ D = 7 * \sqrt{N^2 + (5N)}$

$Tr\ D = 7\sqrt{(4.928)^2 + 5(4.928)}$

$Tr.D = 49$ 49.35

AHYMO RUN: (A)
A = 0
B = 10
C = 41
D = 49

$Q_{100} = 26.96$ cfs 3.40 cfs/acre allowed 1.97
VOL = 0.925 AcFt (6HR)
VOL = 1.038 AcFt (24HR)

AHYMO RUN (B)
A = 0
B = 10
C = 34
D = 56

Q = 27.63 cfs
VOL = .969 AcFt. (6HR)
VOL = 1.099 AcF (24HR)

AHYMO RUN (C)
A = 0
B = 10
C = 30
D = 60

Q = 28.02 cfs
VOL = 0.994 AcFt. (6HR)
VOL = 1.133 AcFt (24HR)

POND 5 WATER SURFACE AREA @ 100YR = 72,000 SF

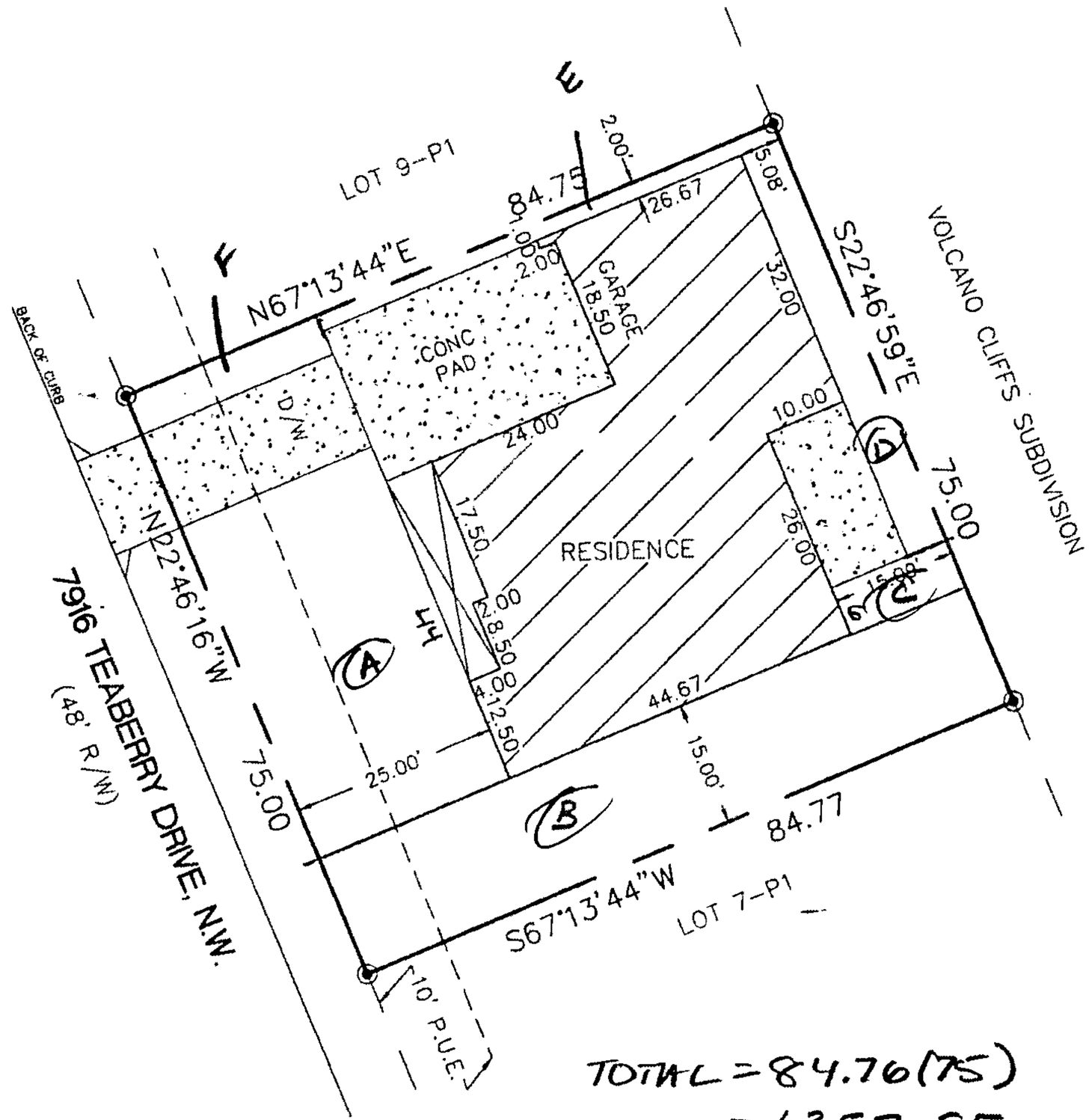
INCREASE IN ELEV. OF POND (24HR)

(A) → (B) 1.099 − 1.038 = 0.061 AF = $\frac{2657 \text{ CF}}{72{,}000 \text{ SF}}$ = 0.037'
= 0.44"

INCREASE IN ELEV. OF POND (24HR)

(A) → (C) 1.133 − 1.038 = 0.095 AF = $\frac{4138 \text{ CF}}{72{,}000 \text{ SF}}$ = Δ = 0.057'
= .68"

This is only 2 lots



TOTAL = 84.76(75)
= 6357. SF
- 2970.
3387.5
53.3% IMPERVIOUS

A 25(44) = 1100
B 15(84.77) = 1271.55
C 6(15.09) = 90.54
D 5.08 (52) = 264.16
E 2.00 (55.75) = 111.50
F 25(5.3) = 132.50
2970.25

PLOT PLAN

46.7% PERVIOUS

LOT 8-P1
TIBURON HEIGHTS
7916 TEABERRY DRIVE, N.W.

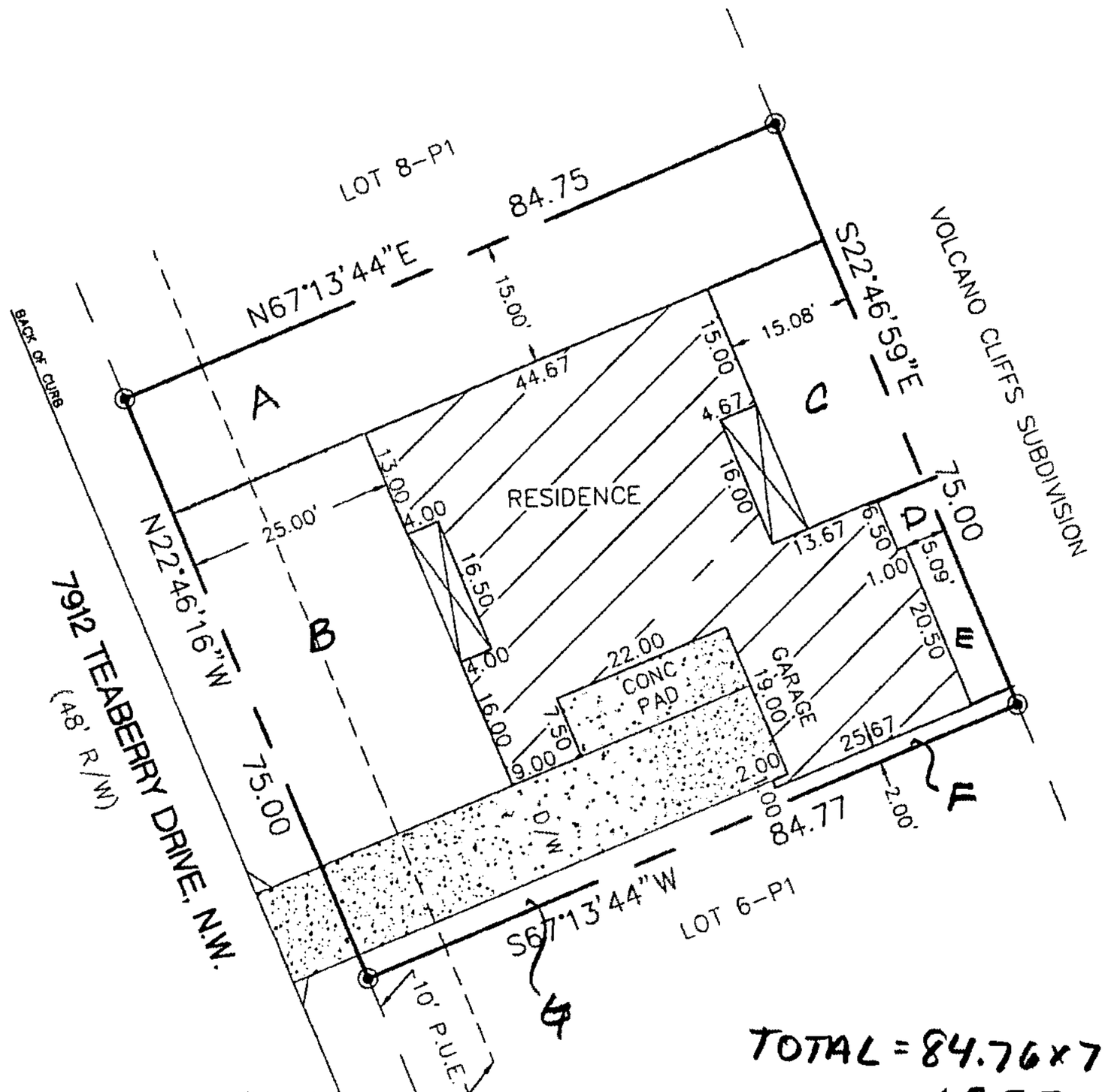
SCALE: 1"=20'

NOTE:
1. PER R-LT ZONE THERE IS NO SIDE YARD SETBACK.
2. THERE SHALL BE A DISTANCE OF NOT LESS THAN TEN (10) FEET BETWEEN RESIDENTIAL BUILDINGS.
3. PROVIDE 12' WIDE DRIVEWAY WITH 18' WIDE CURB CUT.
4. A 4 FT SIDEWALK TO BE CONSTRUCTED WITH THIS PERMIT.
5. COLORS AND LANDSCAPING PER S.D.P.

R.W. INVESTMENTS

06/04/15,SLN REV 8/7/15.DKS

Community Sciences Corporation
LAND SURVEYING & LAND PLANNING
P.O.Box 1328, Corrales N.M., 87048 (505) 897.0000



TOTAL = 84.76 x 75
= 6357 SF
- 3249
3108 SF
IMPERVIOUS.
D = 48.9%

PERVIOUS

A 84.75(15) = 1271.25
B 25(45.5) = 1137.50
C 15.08(31) = 467.48
D 6.5(6.09) = 39.59
E 20.5(5.09) = 104.35
F (2.0) 25.67 = 51.34
G (3) 59.1 = 177.30
3249.
51.1% PERVIOUS.

PLOT PLAN

LOT 7-P1
TIBURON HEIGHTS
7912 TEABERRY DRIVE, N.W.

NOTE:
1. PER R-LT ZONE THERE IS NO SIDE YARD SETBACK.
2. THERE SHALL BE A DISTANCE OF NOT LESS THAN TEN (10) FEET BETWEEN RESIDENTIAL BUILDINGS.
3. PROVIDE 11.5' WIDE DRIVEWAY WITH 17.5' WIDE CURB CUT.
4. A 4 FT SIDEWALK TO BE CONSTRUCTED WITH THIS PERMIT.
5. COLORS AND LANDSCAPING PER S.D.P.

SCALE: 1" = 20'

R.W. INVESTMENTS

06/04/15,SLN, 8/7/15 DKS

Community Sciences Corporation
LAND SURVEYING & LAND PLANNING
P.O.Box 1328, Corrales N.M., 87048 (505) 897.0000

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

PROJECT TIBURON
SUBJECT DRAINAGE CALCS
BY DMG DATE 8-26-15
CHECKED _____ DATE _____
SHEET ____ OF ____

PLOT PLAN LOT 7

ROADWAY APPROX: (1/2 SECTION = 24')

IMPERVIOUS 19.5 (75' WIDE) = 1462.5 SF

PERVIOUS 4.5 (75' WIDE) = 337.5 SF

LOT 7

PERVIOUS = 337.5 + 3249. = 3586.5 SF 44% (Tr. B/C)

IMPERVIOUS = 1462.5 + 3108. = 4570.5 SF 56% (Tr. D)

TOTAL = 8157 SF

LOT 8 Tr B/C

PERVIOUS = 337.5 + 2970 = 3307.5 40.5% ≈ 40%

IMPERVIOUS = 1462.5 + 3387 = 4849.5 59.5% ≈ 60%

Tr. D

TOTAL = 8157 SF

CITY OF ALBUQUERQUE

August 10, 2015

Diane Hoelzer, PE
Mark Goodwin & Associates, PA.
PO Box 90606
Albuquerque, NM 87199

Re: Tiburon Heights Subd.
Pad Certification for entire subdivision.
Engineers Stamp Date 11/26/14 (D10D003A)
Certification Date 7/31/15

Dear Ms. Hoelzer,

Based upon the information provided in your submittal received 7/31/2015, the above referenced Certification is acceptable for building permit.

If you have any questions, you can contact me at 924-3695 or Rudy Rael at 924-3977.

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Sincerely,

Rita Harmon, P.E.
Senior Engineer, Hydrology
Planning Department

RR/RH
C: email

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(Rev. 12/05)

PROJECT TITLE: Tiburon Heights Subdivision ZONE MAP/DRG. FILE: D **10 / D03A**
DRB#: 1009178
LEGAL DESCRIPTION: Lot 31, Block 9 Volcano Heights Unit 18
CITY ADDRESS: Petirrojo Road NW

ENGINEERING FIRM: MARK GOODWIN & ASSOCIATES, PA CONTACT: Diane Hoelzer, PE
ADDRESS: PO Box 90606 PHONE: 828-2200
CITY, STATE: Albuquerque, NM ZIP CODE: 87199

OWNER: RTR LLC CONTACT: Rhett Waterman
ADDRESS: Box 27560 PHONE: 248-1688
CITY, STATE: ZIP CODE: 87125

ARCHITECT: N/A CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

SURVEYOR: Surv-Tek, Inc. CONTACT: Russ Hugg
ADDRESS: 9384 Valley View Drive PHONE: 897-3366
CITY, STATE: ABQ, NM ZIP CODE: 87114

CONTRACTOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

TYPE OF SUBMITTAL:
_____ DRAINAGE REPORT
_____ DRAINAGE PLAN 1st SUBMITTAL
_____ DRAINAGE PLAN RESUBMITTAL
_____ CONCEPTUAL G & D PLAN
_____ GRADING PLAN **(dated 11-26-14)**
_____ EROSION CONTROL PLAN
X_____ ENGINEER'S CERT (HYDROLOGY)
_____ CLOMR/LOMR
_____ TRAFFIC CIRCULATION LAYOUT
_____ ENGINEER/ARCHITECT CERT (TCL)
_____ ENGINEER/ARCHITECT (DRB SITE PLAN)
_____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:
_____ SIA/FINANCIAL GUARANTEE RELEASE
_____ PRELIMINARY PLAT APPROVAL
_____ S. DEV. PLAN FOR SUB'D APPROVAL
_____ S. DEV. FOR BLDG. PERMIT APPROVAL
_____ SECTOR PLAN APPROVAL
_____ FINAL PLAT APPROVAL
_____ FOUNDATION PERMIT APPROVAL
_____ BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY (PERM)
_____ CERTIFICATE OF OCCUPANCY (TEMP)
_____ GRADING PERMIT APPROVAL
_____ PAVING PERMIT APPROVAL
_____ WORK ORDER APPROVAL
_____ OTHER (SPECIFY)

As Verified

WAS A PRE-DESIGN CONFERENCE ATTENDED:
_____ YES
_____ NO
_____ COPY PROVIDED

RECEIVED
JUL 31 2015
LAND DEVELOPMENT SECTION

SUBMITTED BY: Diane Hoelzer, PE DATE: JULY 31, 2015

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development define the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.

2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.

3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.

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: Shahab Biazar, Hydrology
DRB - One Stop

Date: November 19, 2013

RE: Tiburon Heights DRB 1009178 and D10D003A

We are sending:

Type C Inlet Calculations

__X__ For your Approval __X__ For Review

____ As you requested ____ For a Statement

____ Request for Bid ____ Pre-Design Meeting

NOTES:

Project Engineer: John MacKenzie

Copy to: JMac

John MacKenzie

From: John MacKenzie
Sent: Tuesday, November 19, 2013 10:51 AM
To: 'Shahab Biazar (sbiazar@cabq.gov)'
Cc: John Gilletly
Subject: Tiburon Heights Subd. (790681)
Attachments: Type Inlet Nomograph.pdf; Hydroflow Inlet Calculation.pdf

Shahab,

Per our discussion yesterday, I have prepared a couple of responses to your concern that there needs to be more of transition from mountable to standard curb on each side of the new Type C inlet as shown on Sheet 5 of the plans.

The first check is one using a Bureau of Public Roads nomograph, which shows the inlet head to be about 4".

The second check is a Hydroflow run of the inlet conditions, which also indicates the head on the grate will be just over 4".

I can send in a hard copy of this if you'd like one.

John Gilletly is in the process of changing Sheet 5 at this location for a 10-foot transition on each side of the inlet.

John MacKenzie
Mark Goodwin and Associates, PA
828-2200

Inlet Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. Tuesday, Nov 19 2013

<Name>

Drop Grate Inlet

Location	= Sag
Curb Length (ft)	= -0-
Throat Height (in)	= -0-
Grate Area (sqft)	= 3.00
Grate Width (ft)	= 2.00
Grate Length (ft)	= 3.00

Gutter

Slope, Sw (ft/ft)	= 0.008
Slope, Sx (ft/ft)	= 0.008
Local Depr (in)	= -0-
Gutter Width (ft)	= 2.50
Gutter Slope (%)	= -0-
Gutter n-value	= -0-

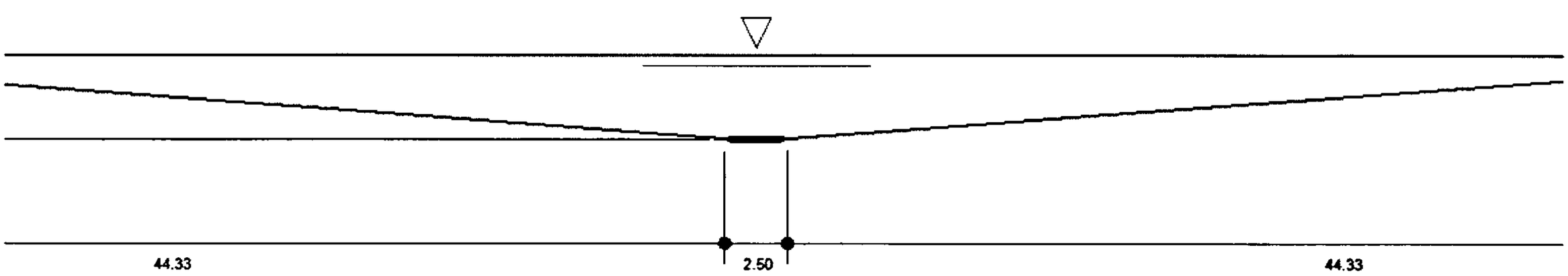
Calculations

Compute by:	Known Q
Q (cfs)	= 6.34

Highlighted

Q Total (cfs)	= 6.34
Q Capt (cfs)	= 6.34
Q Bypass (cfs)	= -0-
Depth at Inlet (in)	= 4.26
Efficiency (%)	= 100
Gutter Spread (ft)	= 91.15
Gutter Vel (ft/s)	= -0-
Bypass Spread (ft)	= -0-
Bypass Depth (in)	= -0-

All dimensions in feet



Inlet Section

Tiburon Heights Subdivision
Using Bureau of Public Roads Nomograph
Sump Condition for "C" Inlet

$Q = 6.34$ cfs "C" dimensions: 2'x3'

"C" Inlet Perimeter = 12 ft

$$Q/P = \frac{6.34}{12.0} = 0.53 \Rightarrow H = 0.33'$$

"C" Inlet Area = 6 SF

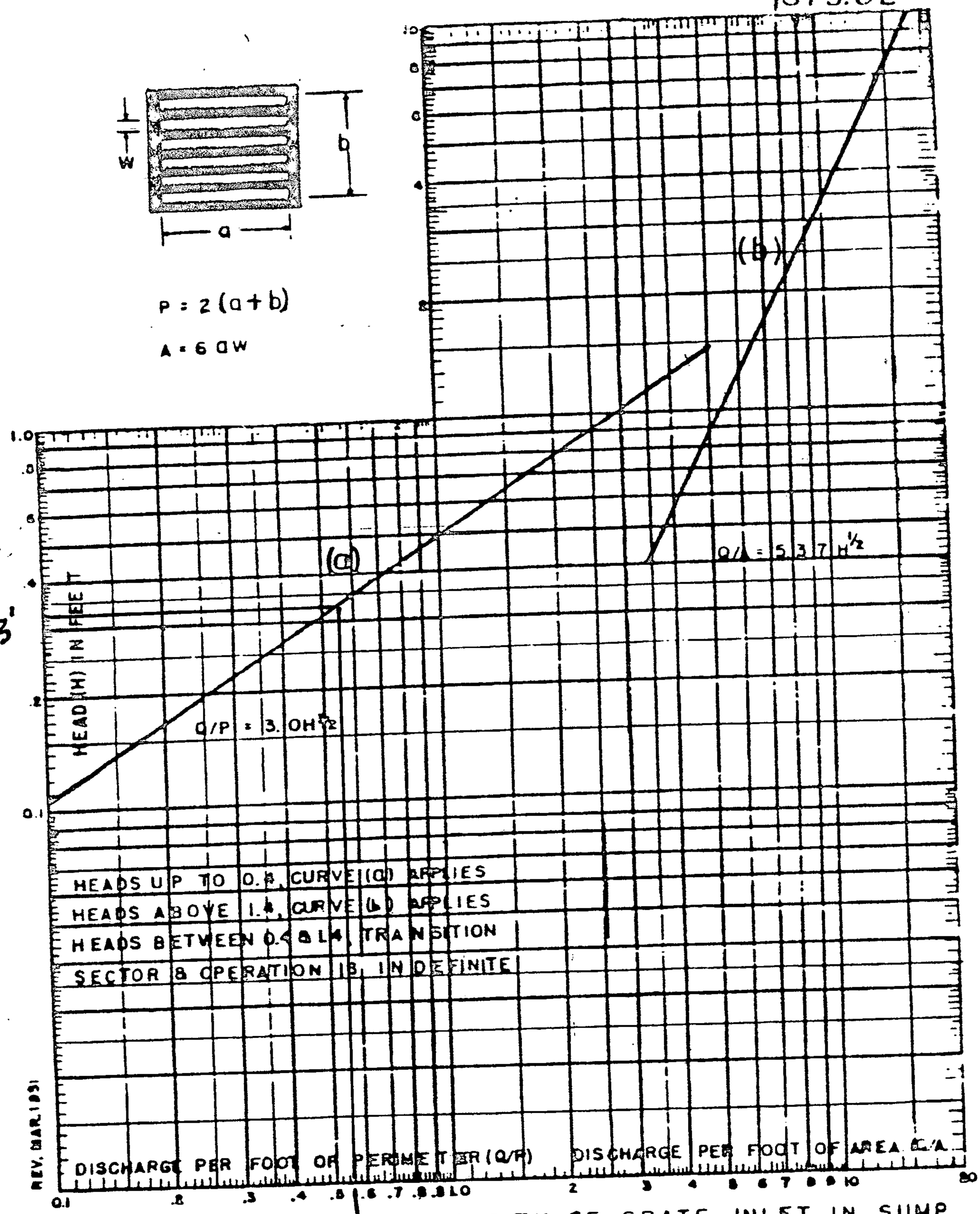
$$Q/a = \frac{6.34}{6} = 1.1 \Rightarrow H = 0.53'$$

Nomograph directions indicate that if head from the Q/p procedure is less than 0.4 ft, then only the perimeter procedure will apply.

1073.02

P = 2 (a + b)

A = 6 aw



H = 0.33'

REV. MAR. 1951

BUREAU OF PUBLIC ROADS

DIVISION TWO WASH, D.C.

CAPACITY OF GRATE INLET IN SUMP

WATER PONDED ON GRATE

Q/P = 0.53

INSTRUCTIONS FOR USE OF FIG. 1073.02
CAPACITY OF GRATE INLETS IN A SUMP

Fig. 1073.02 applies only when the grate is located in a low point or sump where the water will pond at the grate.

The capacity of the grate depends upon the area of the openings and the depth of water at the grate. Recent experiments (1) have determined that a grate will act as a weir and follow the weir formula for depths (heads) on the grate up to 0.4 ft. It will act as an orifice and follow the orifice formula for heads of 1.4 ft. and over. For heads between 0.4 ft. and 1.4 ft. the operation is indefinite because of vortices and eddies over the grate.

In the usual problem the following are given:

1. A particular design of grate with dimensions

2. A design discharge (Q) or information as to drainage area, rainfall intensities and runoff coefficients from which a design discharge can be estimated.

Procedure:

1. Compute the perimeter of the grate opening (P) ignoring the bars and omitting any side over which the water does not enter, such as when one side is against the face of a curb. Divide the result by 2. This allows for partial clogging of the grate by assuming that only half of the perimeter will be effective.

2. Compute the Q/P ratio.

3. Compute the total area of clear opening (A), excluding area taken up by bars, and divide by 2. This allows for partial clogging of the grate by assuming that only half of the area will be effective.

4. Compute the Q/A ratio.

5. Enter the chart at the bottom scale using line (a) with the Q/P value and line (b) with the Q/A value and read the required head in feet at the left margin.

6. If the required head falls below 0.4, (2) only will apply. This is the usual case.

7. If the required head falls above 1.4 ft., (b) only will apply.

Rev. 8/51
Rerun 7/52

8. If the required head falls between 0.4 ft. and 1.4 ft. the actual head may be anywhere between (a) and (b). Use the value that gives the most conservative result, being sure to use line (a) with Q/P and line (b) with Q/A.

   Vortices and eddies over the grate may cause the actual head to differ from the required head in this case (see second paragraph).

9. If the inlet is a combination type with grate and curb opening the recommended procedure is the same as with a grate alone except the perimeter and area are not divided by 2. The reason for this is that the curb opening will serve as a relief in event the grate becomes clogged. With the grate operating freely it is questionable whether much water will get to the curb opening until the discharge is sufficient to submerge the entire grate.

10. If the grate has an appreciable cross slope so the side away from the curb is higher than that next to the curb the inflow over the side should be determined separately from that over the ends. Use the depth at the middle of the grate for end inflow and depth at edge away from the curb for side inflow.

Rev. 8/51
Rerun 7/52

(1) Airfield Drainage Structure Investigation (Final Report)
Hydraulic Laboratory Report No. 54
U. S. Corps of Engineers, St. Paul District Suboffice, April 1949

CITY OF ALBUQUERQUE

December 31, 2014

Diane Hoelzer, P.E.
Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, NM 87199

Re: Tiburon Heights Subdivision, Revised Grading and Drainage Plan
Engineer's Stamp date 11-26-14 (D10D003A)

Dear Ms. Hoelzer,

Based upon the information provided in your submittal received 12-8-14, the above referenced report is approved for Grading Permit. This is the plan to certify.

If you have any questions, you can contact me at 924-3994.

Sincerely,

Amy L. D. Niese, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: File
Email

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

5-21-15
Told Diane to address removal of "D" inlet w/ hr g & d cut

EBEZOY bridge Joint

Doug

Pic of water
drizor@cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(Rev. 12/05)

PROJECT TITLE: Tiburon Heights Subdivision ZONE MAP/DRG. FILE: D **10 / D03A**
DRB#: 1009178
LEGAL DESCRIPTION: Lot 31, Block 9 Volcano Heights Unit 18
CITY ADDRESS: Petirrojo Road NW

ENGINEERING FIRM: MARK GOODWIN & ASSOCIATES, PA CONTACT: Diane Hoelzer, PE
ADDRESS: PO Box 90606 PHONE: 828-2200
CITY, STATE: Albuquerque, NM ZIP CODE: 87199

OWNER: RTR LLC CONTACT: Rhett Waterman
ADDRESS: Box 27560 PHONE: 248-1688
CITY, STATE: ZIP CODE: 87125

ARCHITECT: N/A CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

SURVEYOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

CONTRACTOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

TYPE OF SUBMITTAL:
_____ DRAINAGE REPORT
_____ DRAINAGE PLAN 1st SUBMITTAL
_____ DRAINAGE PLAN RESUBMITTAL
_____ CONCEPTUAL G & D PLAN
X_____ GRADING PLAN **(dated 11-26-14)**
_____ EROSION CONTROL PLAN
_____ ENGINEER'S CERT (HYDROLOGY)
_____ CLOMR/LOMR
_____ TRAFFIC CIRCULATION LAYOUT
_____ ENGINEER/ARCHITECT CERT (TCL)
_____ ENGINEER/ARCHITECT (DRB SITE PLAN)
_____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:
_____ SIA/FINANCIAL GUARANTEE RELEASE
_____ PRELIMINARY PLAT APPROVAL
_____ S. DEV. PLAN FOR SUB'D APPROVAL
_____ S. DEV. FOR BLDG. PERMIT APPROVAL
_____ SECTOR PLAN APPROVAL
_____ FINAL PLAT APPROVAL
_____ FOUNDATION PERMIT APPROVAL
_____ BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY (PERM)
_____ CERTIFICATE OF OCCUPANCY (TEMP)
X_____ GRADING PERMIT APPROVAL
_____ PAVING PERMIT APPROVAL
_____ WORK ORDER APPROVAL
_____ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:
_____ YES
_____ NO
_____ COPY PROVIDED

RECEIVED
DEC - 8 2014
LAND DEVELOPMENT SECTION

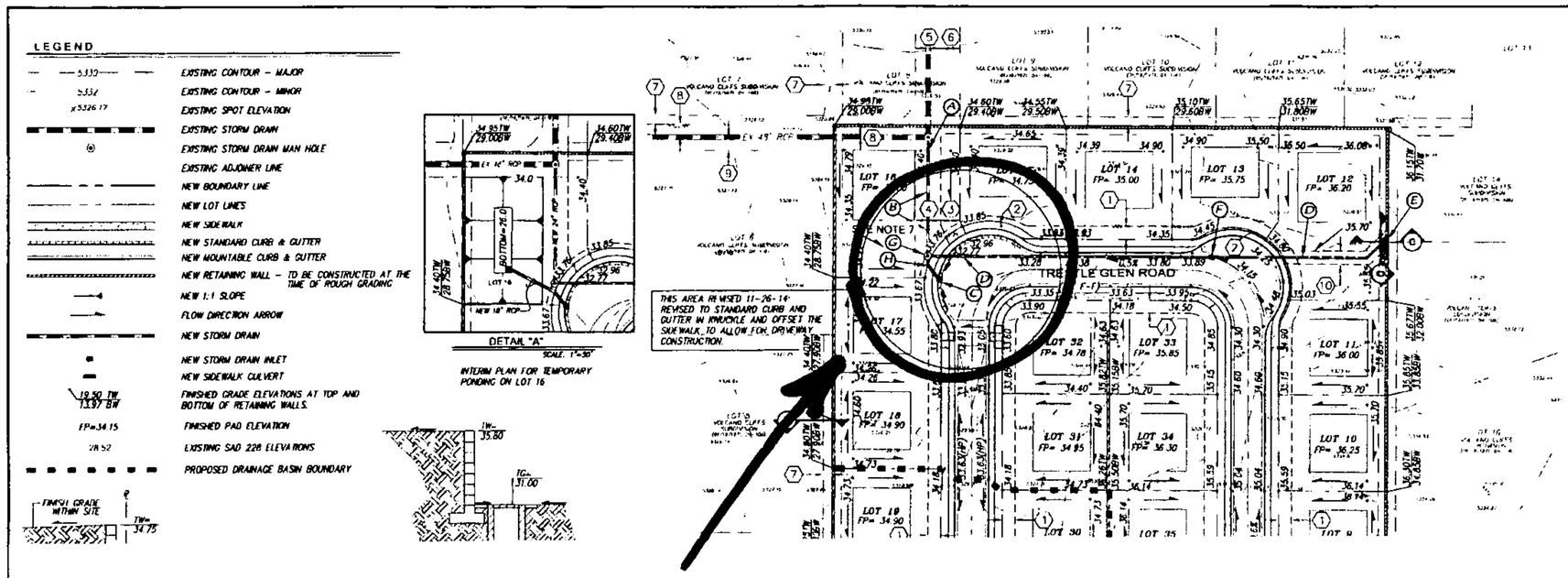
SUBMITTED BY: Diane Hoelzer, PE DATE: December 5, 2014

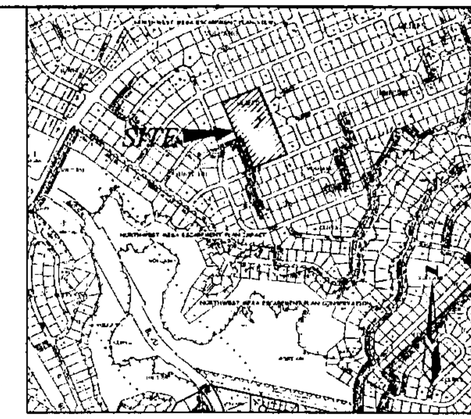
Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development define the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.

2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.

3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.





VICINITY MAP ZONE MAP: D-10-Z

LEGAL DESCRIPTION

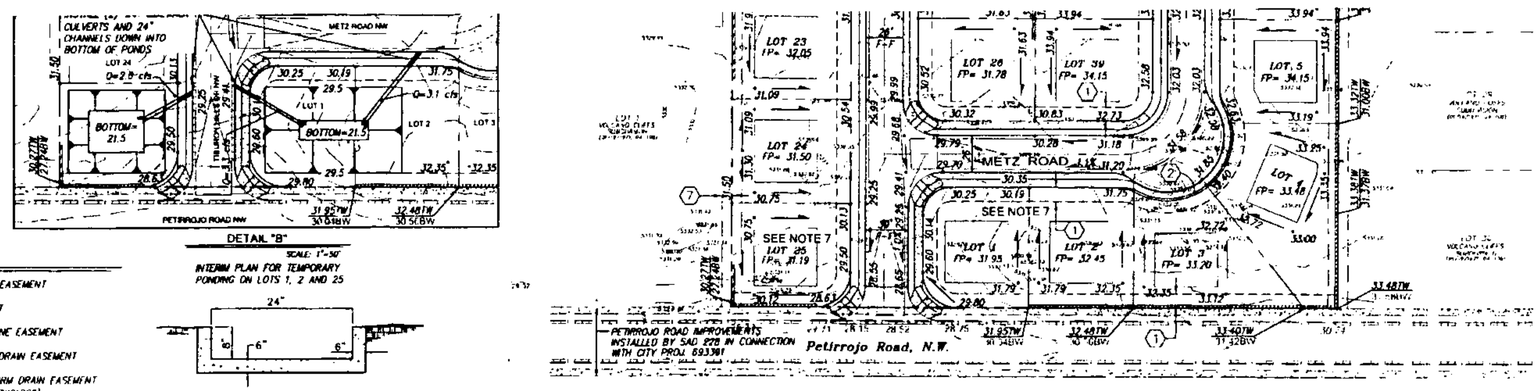
A TRACT OF LAND LYING AND SITUATE WITHIN SECTION 22, TOWNSHIP 11 NORTH, RANGE 2 EAST, NEW MEXICO PRINCIPAL MERIDIAN, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO, COMPRISING OF LOT 31-A, BLOCK 9, UNIT NO. 18 VOLCANO CLIFFS SUBDIVISION AS THE SAME IS SHOWN AND DESIGNATED ON THE PLAT THEREOF FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON _____, RECORDED IN PLAT BOOK ___ PAGE ___ AND CONTAINING 7.9143 ACRES (344,746 SQUARE FEET) MORE OR LESS.

EROSION CONTROL NOTES

1. CONTRACTOR MUST OBTAIN A TOPSOIL DISTURBANCE PERMIT FROM THE ENVIRONMENTAL HEALTH DIVISION PRIOR TO CONSTRUCTION
2. CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION SHALL GOVERN ALL WORK.
3. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE AND FEDERAL DUST CONTROL MEASURES AND REQUIREMENTS AND WILL BE RESPONSIBLE FOR PREPARING AND OBTAINING ALL NECESSARY APPLICATIONS AND APPROVALS.
4. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE LOTS INTO PUBLIC RIGHT-OF-WAY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AND WETTING THE SOIL TO KEEP IT FROM BLOWING.
5. THE EARTHWORK CONTRACTOR SHALL STOCKPILE ENOUGH MATERIAL ADJACENT TO RETAINING WALL LOCATIONS TO BE UTILIZED FOR WALL BACKFILL.
6. SITE DOES NOT LIE IN A 100 YEAR FLOOD ZONE.
7. IF SAD 228'S DOWNSTREAM STORM DRAIN AND STREET INFRASTRUCTURE HAS NOT BEEN BUILT AND ACCEPTED BY THE CITY, CONTRACTOR SHALL INSTALL TEMPORARY RETENTION PONDS ON LOTS 1, 2, 16 AND 25 AS SHOWN HEREON.
8. SIDEWALK CULVERTS ARE PER C.O.A. STANDARD DWG #2236.

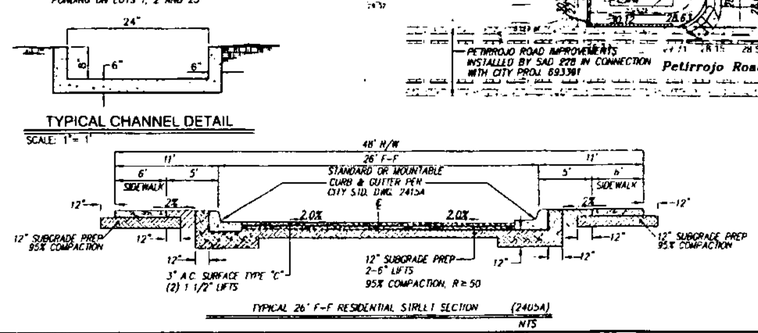
NOTE:
ALL SITE WALLS SHALL CONFORM TO THE GENERAL HEIGHT AND DESIGN REGULATIONS CONTAINED IN SECTION 14-16-3-19 OF THE CITY ZONING CODE.

TIBURON REVISIONS (11-26-14) : the NW culdesac is standard C&G according to proposed spot elevations on the approved grading plan (8-9-13). There is an inlet in this culdesac that would also require standard curb and gutter. In order to make the future driveways work with required sidewalk cross slope, the standard landscape and offset is necessary and the plan has been revised to show this.



Easements:

1. NEW 10' PUBLIC UTILITY EASEMENT
2. NEW SIDEWALK EASEMENT
3. NEW 15' PUBLIC WATERLINE EASEMENT
4. NEW 20' PUBLIC STORM DRAIN EASEMENT
5. EXISTING 20' PUBLIC STORM DRAIN EASEMENT (01-07-2013, DOC #2013001860)
6. EXISTING 15' PUBLIC WATERLINE EASEMENT (12-18-2012, DOC #2012133305)
7. EXISTING 7' ELECTRIC POWER AND TELEPHONE LINE EASEMENT (01/19/1971, D4-106)
8. EXISTING PUBLIC STORM DRAIN EASEMENT
9. EXISTING 10' PUBLIC STORM DRAIN EASEMENT (01-07-2013, DOC #2013001870)
10. NEW 10' PRIVATE DRAINAGE EASEMENT GRANTED TO LOTS 12-16, VOLCANO CLIFFS SUBDIVISION, AND TO BE MAINTAINED BY THE TIBURON HEIGHTS HOME OWNERS ASSOCIATION.



KEYED NOTES:

(A) EXISTING 24" RCP (INV=74.20) REMOVE SD PLUG AND CONNECT NEW 24" RCP

(B) 82.91 LF OF NEW 24" RCP @ 1.0% SLOPE

(C) INSTALL NEW SINGLE, TYPE "C" INLET PER STANDARD DWG #2205
NORMAL FL= 32.77
TG= 32.55
INV(OUT)= 25.2
INV(IN)= 25.3

(D) 361.7 LF OF NEW 18" RCP @ 0.9% SLOPE.

(E) INSTALL NEW SINGLE, TYPE "D" INLET PER STANDARD DWG #2206. LAST SIDE OF COLLAR TO BE FLUSH WITH ADJOINING FINAL GRADE.
TG= 31.00
INV= 28.29

(F) INSTALL NEW SINGLE, TYPE "D" INLET PER STANDARD DWG #2206.
TG= 33.99
INV= 27.08

(G) NEW 4' ø TYPE "E" STORM DRAIN MANHOLE
RIM= 33.85
INV= 25.06

(H) 20.7 LF OF NEW 24" RCP @ 1.0% SLOPE

SCALE: 1" = 50' (50' 25' 0 50' 100')

AS BUILT INFORMATION
CONTRACTOR
WORK STARTED BY
WORK COMPLETED BY
REVISION BY
DRAWINGS PREPARED BY
VICRO-FILM INFORMATION
RECEIVED BY
DATE
NO.

BENCH MARKS
ABRS station is a USGLO section corner stamped
From the intersection of Montano Road NW and Unser Blvd NW go northwest on Unser Blvd 0.78 mile to Molten Rock Road NW then Left on Molten Rock Road 320 feet to 81st Street. The station is located in the southwest quadrant of the intersection.
Geographic Position (NAD83), in feet
N.M. State Plane Coordinates (Central Zone)
N=1513842.436, E=1497656.102, Elev. = 5530.151 (NAVD88), in feet

SURVEY INFORMATION
FIELD NOTES
BY DATE

ENGINEER'S SEAL
DONALD MCKAY
NEW MEXICO
8391
LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY
		REVISIONS	

DESIGNED BY JMM DATE 07/13
DRAWN BY DLR DATE 07/13
CHECKED BY CMG DATE 07/13

CERTIFICATE OF SUBSTANTIAL COMPLIANCE

dmg MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
OFFICE (505) 828-2200, FAX (505) 797-9539

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

TITLE
TIBURON HEIGHTS
GRADING AND DRAINAGE PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO/DAY/YR	MO/DAY/YR

CITY PROJECT NO 790681 | ZONE MAP NO D-10-Z | SHEET 3 OF 10

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CITY OF ALBUQUERQUE

August 12, 2013

John M. MacKensie, P.E.
Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, NM 87199
John@goodwinengineers.com

Re: Tiburon Heights Subdivision, Drainage Report
Engineer's Stamp date 8-9-13 (D10D003A)

Dear Mr. MacKensie,

Based upon the information provided in your submittal received 8-12-13, the above referenced report is approved for Preliminary Plat action by the DRB.

Once the board approves the plan, an Erosion and Sediment Control plan is approved, and an Erosion and Sediment Control Permit is completed, the site will be approved for Grading Permit.

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

Sincerely,

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

C: File

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(Rev. 12/05)

PROJECT TITLE: TIBURON HEIGHTS SUBD. ZONE MAP/DRG. FILE # D-10/D003A
DRB#: 1009178 EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: Lot 31 Block 9, Volcano Heights, Unit 1B
CITY ADDRESS: _____

ENGINEERING FIRM: MARK GOODWIN & ASSOC. CONTACT: JOHN MACKENZIE
ADDRESS: Box 90606 PHONE: 828-2200
CITY, STATE: ALBUQ NM 87199 ZIP CODE: 87199

OWNER: RTR, LLC CONTACT: RUETT WATERMAN
ADDRESS: Box 27560 PHONE: 248-1688
CITY, STATE: ALBUQ NM ZIP CODE: 87125

ARCHITECT: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

SURVEYOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

TYPE OF SUBMITTAL:
- X DRAINAGE REPORT
- ___ DRAINAGE PLAN 1st SUBMITTAL
- ___ DRAINAGE PLAN RESUBMITTAL
- ___ CONCEPTUAL G & D PLAN
- X GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERT (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT
- ___ ENGINEER/ARCHITECT CERT (TCL)
- ___ ENGINEER/ARCHITECT CERT (DRB S.P.)
- ___ ENGINEER/ARCHITECT CERT (AA)
- ___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL SOUGHT:
- ___ SIA/FINANCIAL GUARANTEE RELEASE
- X PRELIMINARY PLAT APPROVAL
- ___ S. DEV. PLAN FOR SUB'D APPROVAL
- ___ S. DEV. FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM)
- ___ CERTIFICATE OF OCCUPANCY (TEMP)
- X GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ OTHER (SPECIFY)

RECEIVED
AUG 12 2013
LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:
- X YES
- ___ NO
- X COPY PROVIDED

SUBMITTED BY: John MacKenzie DATE: 8-12-13

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development define the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

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2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres.

3. **Drainage Report:** Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.

[redacted]

RECEIVED
AUG 12 2013
LAND DEVELOPMENT SECTION

MARK GOODWIN & ASSOCIATES
CONSULTING ENGINEERS

DRAINAGE REPORT

for

TIBURON HEIGHTS SUBDIVISION

Prepared for
RTR, LLC
PO Box 27560
Albuquerque, NM 87125

Prepared by
Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, NM 87199
(505) 828-2200
June 2013

JOHN M. MacKENZIE
NEW MEXICO
11619
REGISTERED PROFESSIONAL ENGINEER

John MacKenzie
6-24-13
Rev. 08-09-13

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Proposed Drainage Plan 4

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Storm Drain, Inlets & Channel Capacity 7

Conclusion 7

Tables:

Table 1 – SAD 228 Proposed Conditions Model (Wilson Report Table 6)

Table 2 – Revised SAD 228 Proposed Conditions with Construction of Tiburon Heights

Appendices:

Appendix A – Street Capacity Analysis

Appendix B – Storm Drain Capacity Analysis

Appendix C – Inlet Capacity Analysis

Appendix D – Temporary Retention Pond Volumes Determination (added with 08/09/13 report revisions - Includes Table 3 Temporary Retention Pond Volumes)

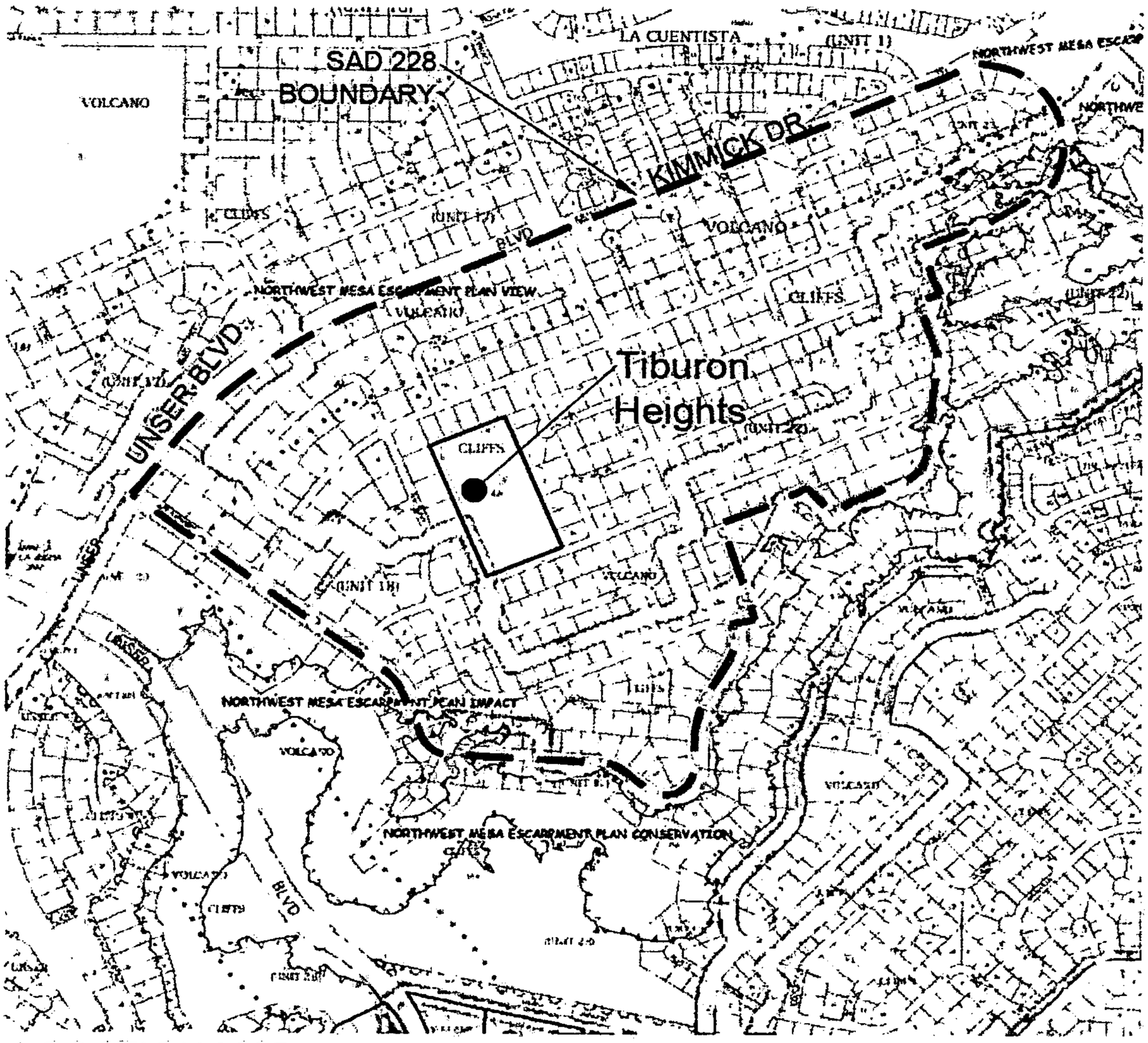
Map Pockets:

Plate 1 - Wilson's Proposed SAD 228 Drainage Sub-Basin Boundary Plan Units 18, 19 & 20

Sheets 1, 2 & 3 - Tiburon Heights Grading and Drainage Plan, Existing SAD 228 Drainage Basin Boundary Plan and Proposed Revisions to Approved Drainage Basin Boundary Plan

INTRODUCTION

The subject property is Lot 31, Block 9, Volcano Cliffs Subdivision, Unit 18 (Zone Atlas D-10), which covers 7.9 acres and is located entirely within the City of Albuquerque's new SAD 228. The drainage report for SAD 228, by Wilson & Company, has been approved and construction on the SAD has been ongoing for approximately the last 6 months. All developed runoff from the subject property has been accounted for within Wilson's SAD report. Once the site is subdivided it will named Tiburon Heights Subdivision (to be referred to as "THS") and be designed in accordance with the adopted Volcano Cliffs Sector Development Plan. This report is being submitted in anticipation of the Tiburon Height's preliminary plat to be submitted shortly thereafter.



LOCATION MAP

NTS

EXISTING CONDITIONS

The THS is presently vacant and covered by native vegetation, with a few areas containing basalt outcroppings. The soils report indicates that basalt bedrock is located close to the surface at

several locations away from the outcroppings. The site's surface exhibits variable slopes with a slight ridge extending from northeast to southwest through the site and a gradual fall from east down to the west toward the adjoining off-site Lots 1 thru 6. Off-site flows appear to come onto the property along its east boundary from relatively small areas within adjoining Lots 12 thru 16, between the site and Canavio Place. From the standpoint of how it affects the subject property, it will be assumed that the SAD's streets and its utilities surrounding the site have been installed since they are currently under construction.

EXISTING SAD 228 DRAINAGE REPORT

The approved SAD 228 Drainage Report; by Wilson, dated January 2012 (Wilson Report), was used as a reference in the preparation of this report. The Wilson Report employed AHYMO-97 modeling software in conformance with the City of Albuquerque's Section 22.2 of the DPM to determine peak runoff flow rates generated within the SAD. Total runoff volumes were created utilizing the 100-year, 24-hour storm event. The precipitation values were obtained from NOAA's Atlas 14 Precipitation Frequency Data.

The Wilson Report designed storm drain and ponding areas for Units 14, 18, 19, 22, 25, 26, and 27 of Volcano Cliffs. Within Units 18, 19, & 20 there were six new ponding areas created. These ponding areas are designed to mitigate potential developed runoff impacts to the Petroglyph National Monument located directly downstream of Volcano Cliffs Units 18-20. The THS was divided into 4 drainage sub-basins within the Wilson Report (see Plate 1).

Much of THS is located within Basin 201-H, which is designed to drain northwest and discharge into a proposed 48" storm drain running through the corner of THS. This particular storm drain also collects runoff from Basins 201-A, 201-B, 201-C, 201-D, 201-E, 201-F, and 201-G; all of which is then conveyed to Pond 5. The northwest corner of THS is within Basin 201-J and its west side is within Basin 201-K. Both of these basins drain west into Aguila Street across Volcano Cliff's existing lot lines. The remaining southeast portion of THS is within Basin 201-L and it's designed to drain south, directly into Petirrojo Road. All of the existing sub-basins contained in the Wilson Report that cover THS drain into Pond 5.

Table 6 on Page 8 within the Wilson Report (Table 1 in this THS report) identifies 16 sub-basins in and around Unit 18, with discharge rates averaging 1.97 cfs per acre, as determined by AHYMO. At 7.9 acres the entire THS area will discharge a total of 15.56 cfs into the SAD's drainage system. Approximately 3.69 acres of sub-basin 201-H in the proposed subdivision will discharge of 7.27 cfs into the 48" storm drain located in its NW corner, while the remaining 4.25 acres of on-site area will discharge 8.37 cfs west onto existing lots 1, 3 and 4 along the east side of Aguila Street (Sub-basins 201-J and 201-K) and south into Petirrojo Road (Sub-basin 201-L).

Special Assessment Districts typically involve construction of only a subdivision's water, sewer, and paving infrastructure, with final lot grading being left up to individual lot owners at the time

Table 1

Table 6: Proposed Conditions Model - Sub-Basin Data				
Basin	**Area (ac)**	**cfs/ac**	**Q_{100} (cfs)**	**$V_{100\text{-}24}$ (ac-ft)**
Basin 200 (Discharge to Pond 4)				
200.00	13.12	2.44	32.02	1.55
Basin 201 (Discharge to Pond 5)				
201-A	7.48	1.97	14.72	0.97
201-B	6.62	1.97	13.03	0.85
201-C	5.12	1.97	10.08	0.66
201-D	2.47	1.97	4.86	0.32
201-E	1.53	1.97	3.01	0.20
201-F	8.73	1.97	17.18	1.13
201-G	8.54	1.97	16.81	1.10
201-H	8.88	1.97	17.47	1.15
201-I	6.09	1.97	11.98	0.79
201-J	8.51	1.97	16.75	1.10
201-K	3.75	1.97	7.38	0.48
201-L	11.78	1.97	23.18	1.52
201-M	5.17	1.97	10.17	0.67
201-N	5.27	1.97	10.37	0.68
201-O	3.16	1.97	6.22	0.41
201-P	2.20	1.97	4.33	0.28
Total	**95.30**		**187.54**	**12.30**
Basin 202 (Discharge to La Cuentista Pond)				
202-A	8.57	3.20	27.44	1.10
202-B	10.72	3.20	34.32	1.38
Total	**19.29**		**61.76**	**2.486**
202-C	1.33	2.62	3.50	0.235
Basin 203 (Discharge to Pond 8)				
203-A	6.51	2.99	19.47	0.84
203-B	9.99	2.99	29.87	1.29
203-C	5.24	2.99	15.67	0.68
203-D	4.18	2.99	12.50	0.54
203-E	9.89	2.99	29.57	1.28
203-F	3.02	2.99	9.03	0.390
Total	**38.83**		**116.11**	**5.014**

SAD 228 Drainage Basins Covering Tiburon Heights Subdivision

Table 2

Proposed Conditions Model - Sub-basin Data				
SAD 228 Sub-basin	SAD 228 Area (ac)	SAD 228 cfs/ac (avg. unit discharge)	SAD 228 Q100 (cfs)	SAD 228 V100-24 (ac-ft)
201-H	8.88	1.97	17.47	1.15
201-J	8.51	1.97	16.75	1.10
201-K	3.75	1.97	7.38	0.48
201-L	11.78	1.97	23.18	1.52
Total	**32.92**		**64.78**	**4.25**

Proposed Conditions Model - Sub-basin Data Revisions for Tiburon Heights Subdivision				
Revised Sub-basin ID	*Revised Sub-basin Area*	*Revised Sub-basin Q100 (cfs)*	*Net Change in Sub-basin Q100 (cfs)*	*SAD 228 V100-24 (ac-ft)*
201-H	*8.02*	*15.78*	*-1.69*	*1.04*
201-J	*8.64*	*17.00*	*+0.25*	*1.12*
201-K	*3.95*	*7.77*	*+0.39*	*0.51*
201-L	*12.31*	*24.24*	*+1.06*	*1.59*
Total	***32.92***	***64.78****	***0.00****	***4.25***

* with rounding

of home construction. This often results in the cross-boundary passage of runoff from one lot to another, instead of toward a fronting street in accordance with the city's Drainage Ordinance. The Wilson Report contains a typical cross-lot drainage detail to guide individual lot owners in resolving this issue on a lot-by-lot basis at the time of home construction.

PROPOSED DRAINAGE PLAN

Since the recently approved Wilson Drainage Report already covers THS, there will not be a supplemental re-analysis of the on-site hydrology because the proposed development is similar to what has already been modeled by the Wilson Report. Sub-basins within the proposed

subdivision, however, will be slightly readjusted to conform to the subdivision ordinance, by redirecting the discharge of developed runoff away from abutting property and into new, on-site public streets. There is a negligible net impact to the downstream Pond 5 since it will receive the same runoff volume as originally planned; due to the fact that affected sub-basins ultimately drain to the same location as first designed. This design approach was agreed to during pre-design meeting held with city Hydrology Staff on May 9, 2012. Table 2 on the preceding page presents the relatively minor sub-basin discharge differentials being proposed.

The subdivision will take its primary access off Petirrojo Road with a principal street forming a loop that connects back to principal access streets. The two drainage outfalls will be to the SAD on-site 48" storm drain and to Petirrojo Road via the surface. Runoff conveyed down new streets within the northern part of Tiburon Heights will be collected in a new Type "C" inlet positioned at the northwest corner of the site in a sump condition. The emergency overflow for this sump condition is the high-point of 33.63 in Tiburon Hills Drive. The remaining site runoff reaching and flowing off-site down Petirrojo Road will ultimately be collected in a nest of two Type A and two Type C drop inlets located in a sump at the Petirrojo Road/Aguila Street intersection (installed by the SAD). Being 3.22 acres in size, the north side of the site (Basin A) will generate 6.34 cfs. The south side of the site (Basin B), being 4.7 acres in size, will generate 9.26 cfs, both of which are according to the runoff rate as determined in the Wilson Report.

Northeast of the site are off-site Lots 12, 13, 14, 15, and 16, which slope toward and drain onto the site's proposed Lot 12 from a 1.66-acre Off-site Basin 1 (which generates 3.3 cfs). Due to the THS site having to be raised, the off-site surface runoff from these lots will be accepted into a new drop inlet that will be positioned at the proposed Lot 12 boundary of the subdivision. This off-site flow will then be piped within a new 18" RCP storm drain across the south side of proposed Lot 12 and down Trestle Glen Road, where it eventually connects to the new "C" inlet at the Trestle Glen Road/Tiburon Hills Drive intersection. A private drainage easement for this runoff will be granted to the owners of off-site Lots 11-16 and it will be maintained by the owner of Lot 12. Existing off-site runoff from remaining Lots 8 thru 11 north of the subdivision will continue to flow east to west toward Aguila Street over existing terrain along Tiburon Height's north boundary (see Sheets 2 and 3 for the revised drainage basin boundary plan). Existing runoff within off-site Lots 27 through 29 located off Picardia Place east of Tiburon Heights slopes gently south-southeast where it eventually reaches Petirrojo Road (part of SAD Basin 201-K).

Grading of the site is driven by the planned elevation of the sanitary sewer service in Petirrojo Road on the site's south boundary. The sanitary sewer line invert that has been installed by SAD 228 in Petirrojo at the intersection of Tiburon Hills Drive is at elevation 5323.37. Extending a new line north into the subdivision at the 0.6% minimum slope requires that the new service invert elevation at proposed Lot 15 be at elevation 5327.68. Minimum cover requirements for a service line from this invert into individual lots mandate a minimum gutter flow-line elevation of 4 feet above existing grade. This, of course, will result in elevating the site up to 6 feet above existing grades within parts of the site. The substantial lifting of the site surface will also reduce the required blasting and excavation into the shallow basalt bedrock for wet and dry utilities. Conversely, there will be retaining walls up to 7 feet high required around certain portions of the

site. The previously mentioned routing of off-site flow in the 18" storm drain and around the south portion of the site in a concrete channel was dictated by having to lift the site.

Report Revision dated 08-09-13:
On Sheet 1 of the proposed Grading and Drainage Plan for THS, there is now an interim plan proposed for temporary retention of on-site runoff due to the possibility of downstream SAD 228 infrastructure not being accepted by the City prior to development of THS. A temporary retention pond will be located on Lot 16 for on-site Basin A and two ponds on Lots 1, 2 & 25 for on-site Basin B. These ponds are designed to contain the 100-year, 10-day storm. Section 22.2, subsection A.5 was used to compute required storage volumes. See the new Appendix D for the calculation. Table 3 has been added as well to demonstrate that adequate storage volume is being provided in the ponds. Other revisions above this paragraph are underlined.

STREET CAPACITY

Total proposed on-site Basin B flow is 9.26 cfs, which is collected about equally off of Tiburon Hills Drive and Metz Road, resulting in approximately 4.63 cfs being conveyed in each street prior to their intersection. With a proposed street slope of approximately 1% on each street; and mountable curb and gutter, Plate 22.3, D-1 from the DPM indicates there will be a street flow capacity of 7.8 cfs for a 32' street (3.9 in each side). With these two streets being 24 feet in width the approximate reduced capacity would be 5.8 cfs, or about 26% more than the 4.63 cfs being needed. Standard curb and gutter is called for on Tiburon Hills Drive between its intersection with Metz Road and its intersection with Petirrojo Road, where 9.26 cfs is conveyed (see Appendix A and Sheet 1).

The other point of concentrated street flow is located at the intersection of Tiburon Hills Drive and Trestle Glen Road in front of Lots 15-17 where 6.28 cfs discharges into a new Type C inlet. This flow results from the confluence of runoff from both Tiburon Hills Drive and Trestle Glen Road. Based upon area, there is approximately and 2.8 cfs in Tiburon Hills and 3.5 cfs in Trestle Glen. With mountable curb and gutter, and a slope of 0.5% on Trestle Glen Road, Plate 22.3, D-1 indicates that 5.4 cfs of flow can be sufficiently accommodated in a 32' street (2.7 cfs for each side - see Appendix A). At 24 feet wide, Teaberry Road is 75% of the nomograph's street width, resulting in a capacity estimated at 4.1 cfs, or 17% more than the total 3.5 cfs expected.

Report Revision dated 08-09-13:
Due to proposed SAD 228 basin boundary changes summarized earlier in this report under "PROPOSED DRAINAGE PLAN," Petirrojo Road will experience a slight increase in peak runoff discharge totaling 1.43 cfs. This results from SAD 228 Basin 201-K decreasing in size by a net 0.125 acres (due to a corresponding increase in Basin 201-J's size) and a decrease in Basin 201-H's size. SAD 228 Basin 201-L also increases in size by 0.53 acres as a result of Basin 201-H's further decrease in size by the same amount. Due to the fact that Petirrojo Road already conveys all Basin 201-L and half of Basin 201-K (approximately 27 cfs), the additional net increase of runoff on this new street within the SAD is expected to be negligible. According to the Wilson & Co. SAD 228 construction plans, Petirrojo Road will be 30' face - face at 2% slope with standard C & G. Adjacent to THS the SAD 228 Drainage Report indicates its normal depth of flow is 0.42'.

STORM DRAIN AND INLETS CAPACITY

A new Type "D" inlet is proposed on the southeast corner of Lot 12 to accept off-site flows from Off-site Basin 1. Appendix C contains an inlet nomograph that was used to determine the capacity of this inlet. It was found that the peak off-site flow rate of 3.3 cfs from off-site Lots 12-16 would create a maximum depth of 0.35 feet over the inlet, assuming a 50% clog factor.

Secondly, a new Type "C" inlet is being proposed on the property line of Lots 16 and 17 to accept the 6.28 cfs of peak flow that is anticipated from The north end of Tiburon Hills Drive and Trestle Glen Road. Calculations in the Appendix C show it also has over 7.04 cfs of capacity, or 11% more than it expects to receive.

New storm drains will be installed in Trestle Glen Road and in an easement on Lot 16 that will carry on-site flow to the SAD's new 48" storm drain in the NW corner of the site. Nomographs in Appendix B indicate there is 10 cfs of capacity for the 18" pipe at the proposed slope of 0.9% (3.3 cfs is needed), and 22 cfs for the 24" pipe in the Lot 16 storm drain easement at a slope of 1% (9.63 cfs is needed).

Report Revision dated 08-09-13 Revision

A new Type D inlet is now proposed to be added in Trestle Glen Road just downstream of its intersection with Teaberry Drive. This inlet will intercept approximately 33% of on-site Basin A runoff (which totals 6.34 cfs – see Sheet 3 in Map Pockets). One-third of that basin's peak flow can easily be intercepted by this inlet. A Type D's capacity was previously shown in Appendix C. Other revisions above are indicated by underlined text.

CONCLUSION

The proposed Tiburon Heights Subdivision is completely contained within the City of Albuquerque's new SAD 228, which has been fully funded and has been under construction since the beginning of this year. Construction of the THS will not be completed until principal infrastructure components of SAD 228 are in place and operational.

Construction of the THS will help prevent the occurrence of cross-lot drainage onto adjoining off-site properties by diverting developed on-site and off-site runoff into its new on-site streets, storm drains and channels, as recommended by City Hydrology personnel during the pre-design meeting held on May 9, 2012. Minor revisions to on-site sub-basin areas were made to achieve this objective, although these minor revision had no appreciable effect on the SAD 228's approved drainage plan, and total runoff volumes reaching the sub-basin's Pond 5 are relatively unchanged and should be considered negligible.

The proposed elevation of THS has to be raised 2 to 7 feet above existing grade due to the existing elevation of the SAD's sanitary sewer in Petirrojo Road and its extension into the site at the Water Authority's minimum allowable pipe slope. Raising the site will also enable the contractor building THS to minimize their blasting and excavation into the underlying basalt bedrock during installation of site utilities.

Appendix A

Street Capacity Analysis

STREET CAPACITY

TRESTLE GLEN ROAD 26'FF 0.5%

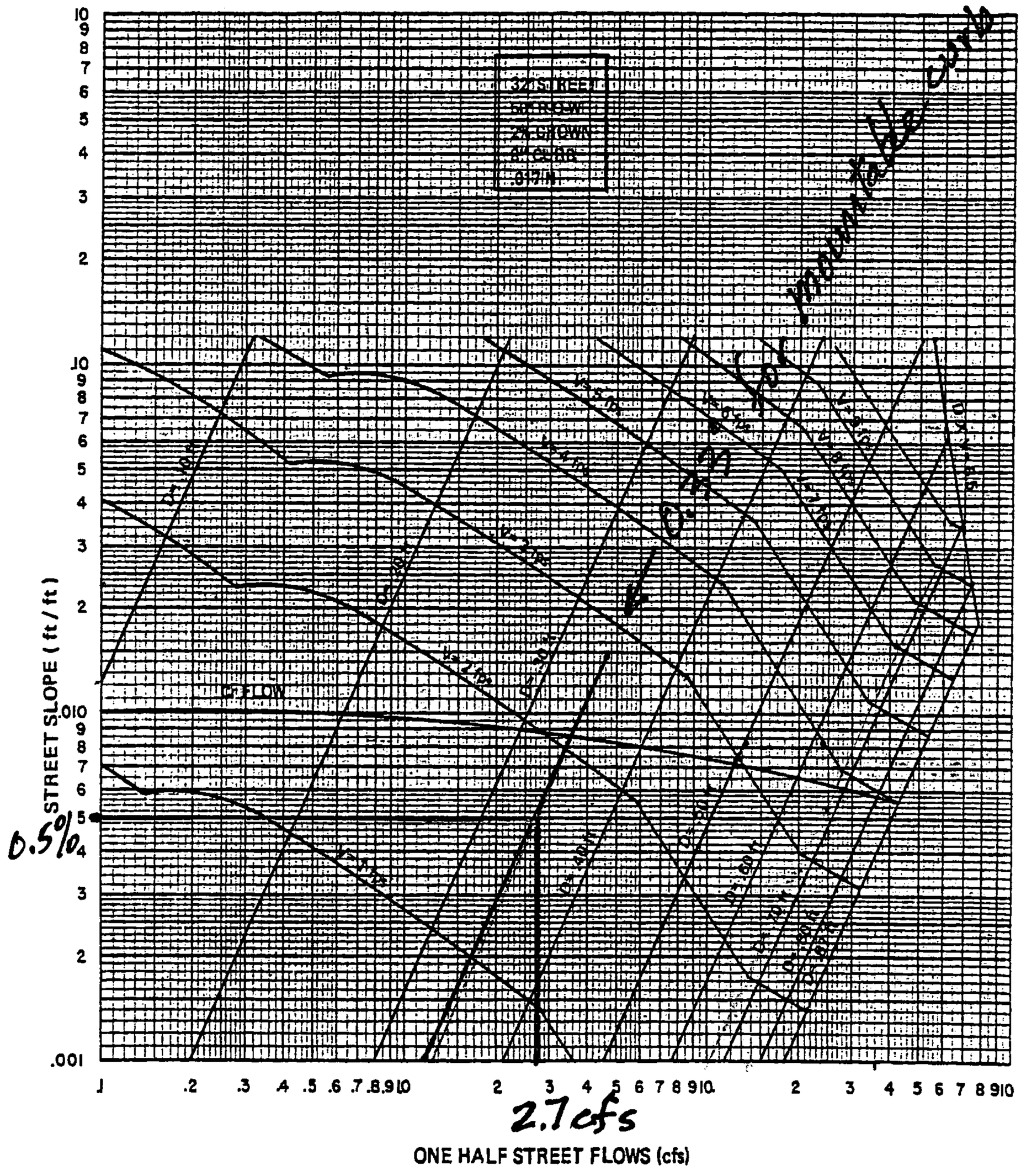


PLATE 22.3 D-1

A-2

STREET CAPACITY

TIBURON Hills Dr. (26' FF @ 1%)

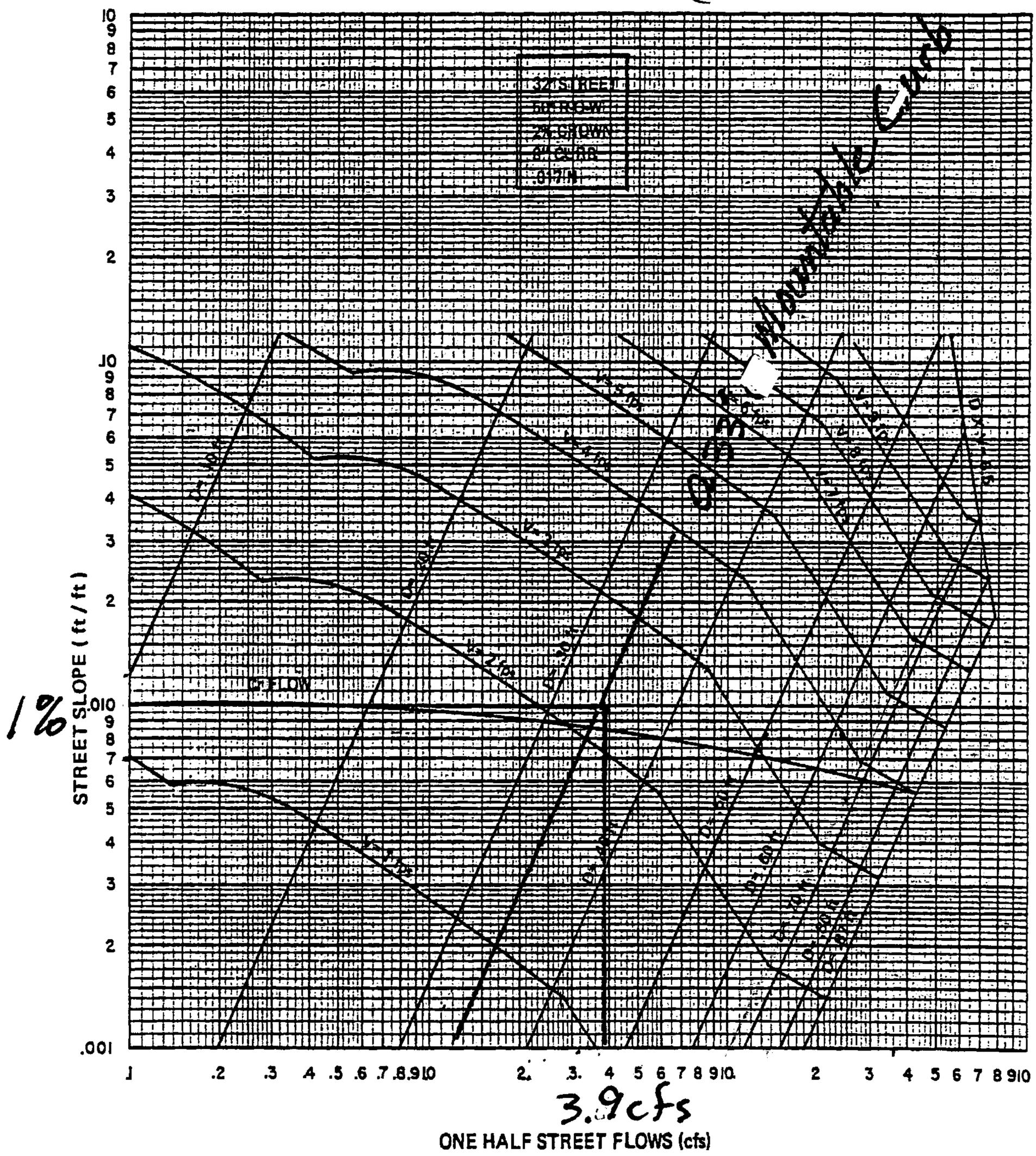


PLATE 22.3 D-1

A - 1

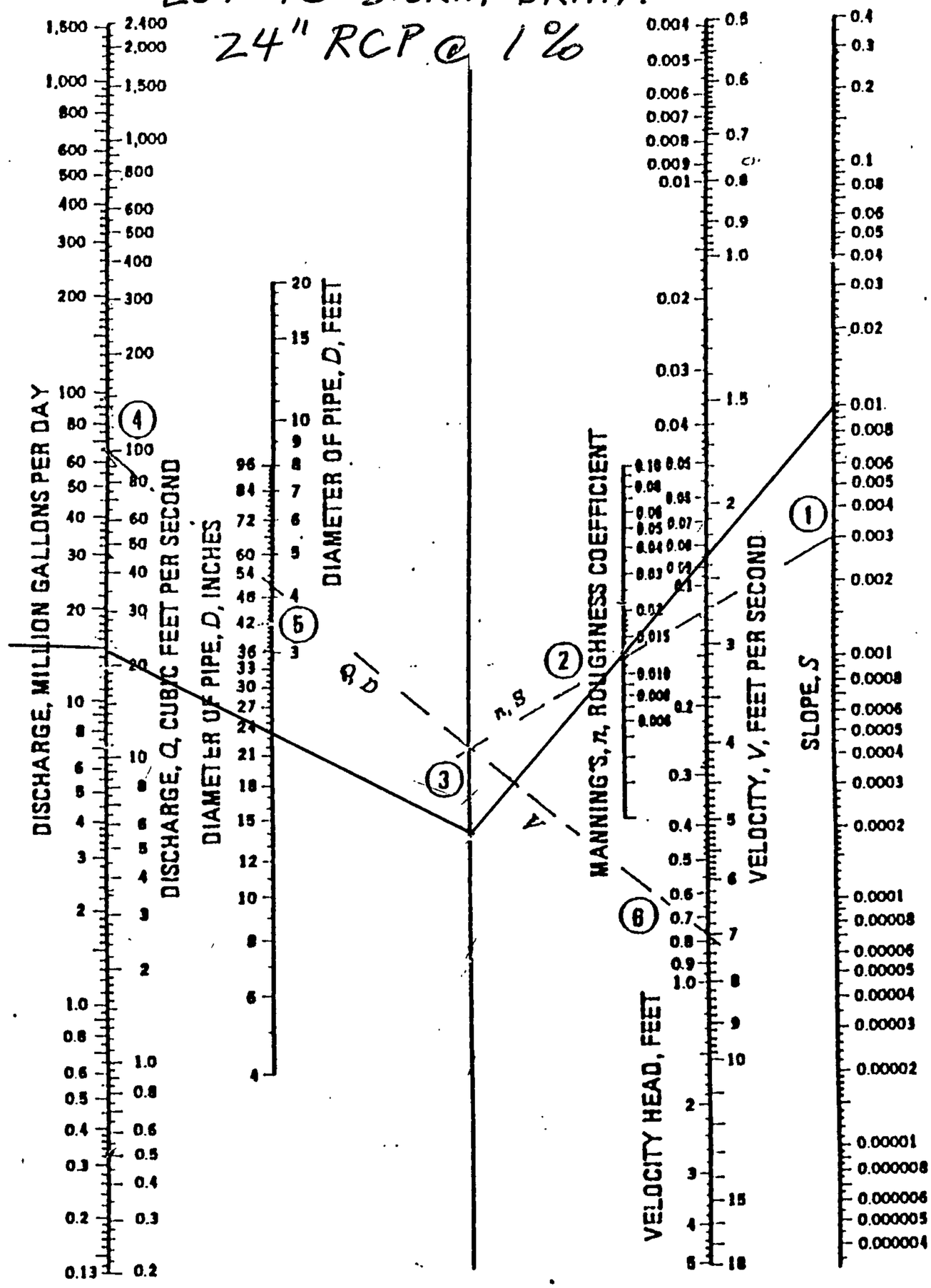
Appendix B

Storm Drain Capacity Analysis

Reference: American Concrete Pipe Association (1980).

LOT 16 STORM DRAIN

24" RCP @ 1%



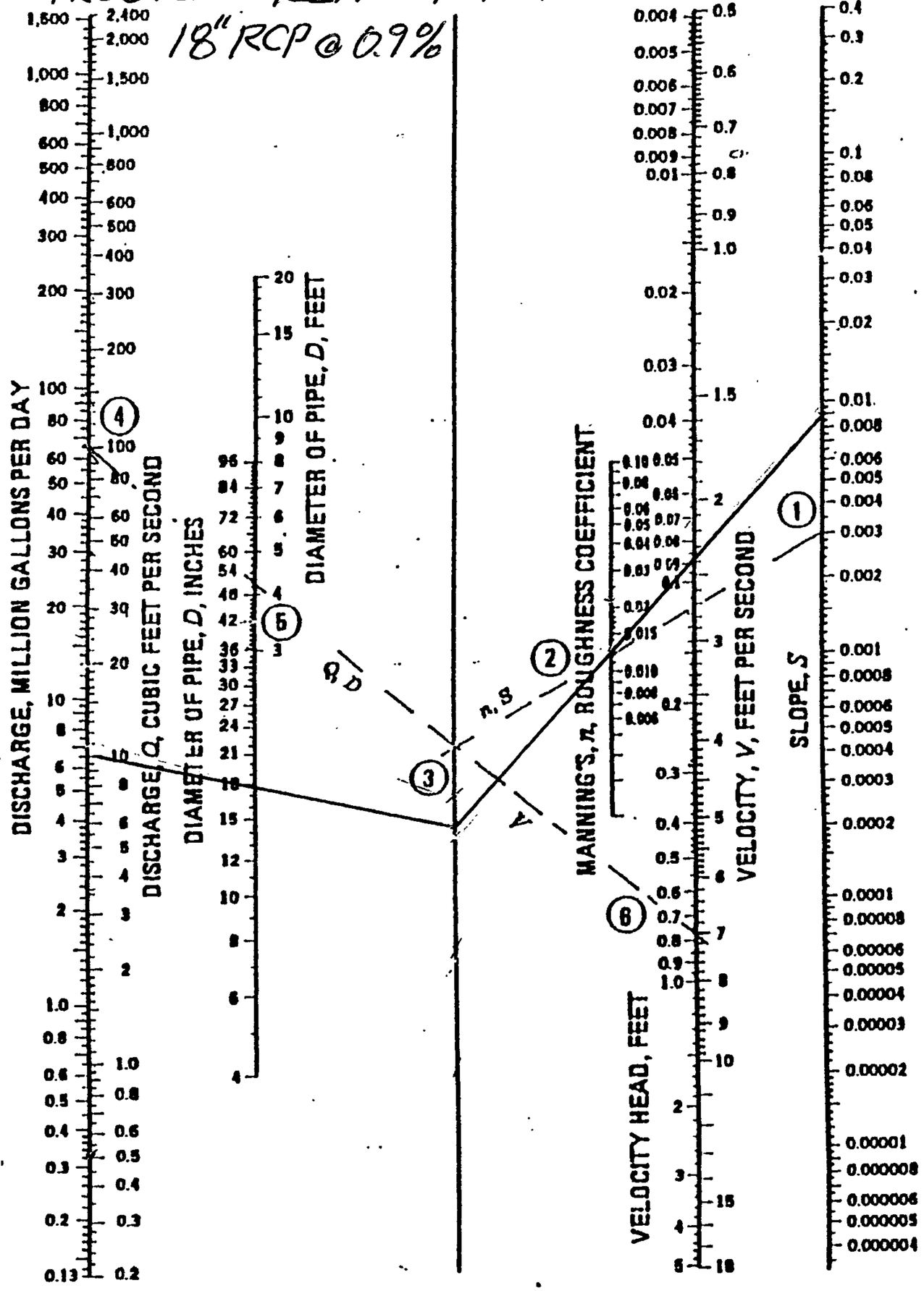
B) Circular Pipe Solution

B-1

Reference: American Concrete Pipe Association (1980).

TRESTLE GLEN STORM DRAIN

18" RCP @ 0.9%



B) Circular Pipe Solution

B-2

Appendix C

Inlet Capacity Analysis

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

PROJECT Tiburon Heights
SUBJECT Drainage
BY _____ DATE _____
CHECKED _____ DATE _____
SHEET ____ OF ____

INLET CALCULATIONS

Single Type "D" Inlet on Lot 12
Q = 3.3 cfs in sump condition.
Using attach Bureau of Public Roads Nomograph inlet perimeter is 5.5 ft (50%)
With discharge of 3.3 cfs Q/p = 0.61
Total area of openings is 1.29 SF (50%)
so Q/A is 2.56.
Nomograph indicates required head to pass 3.3 cfs is 0.35 ft.

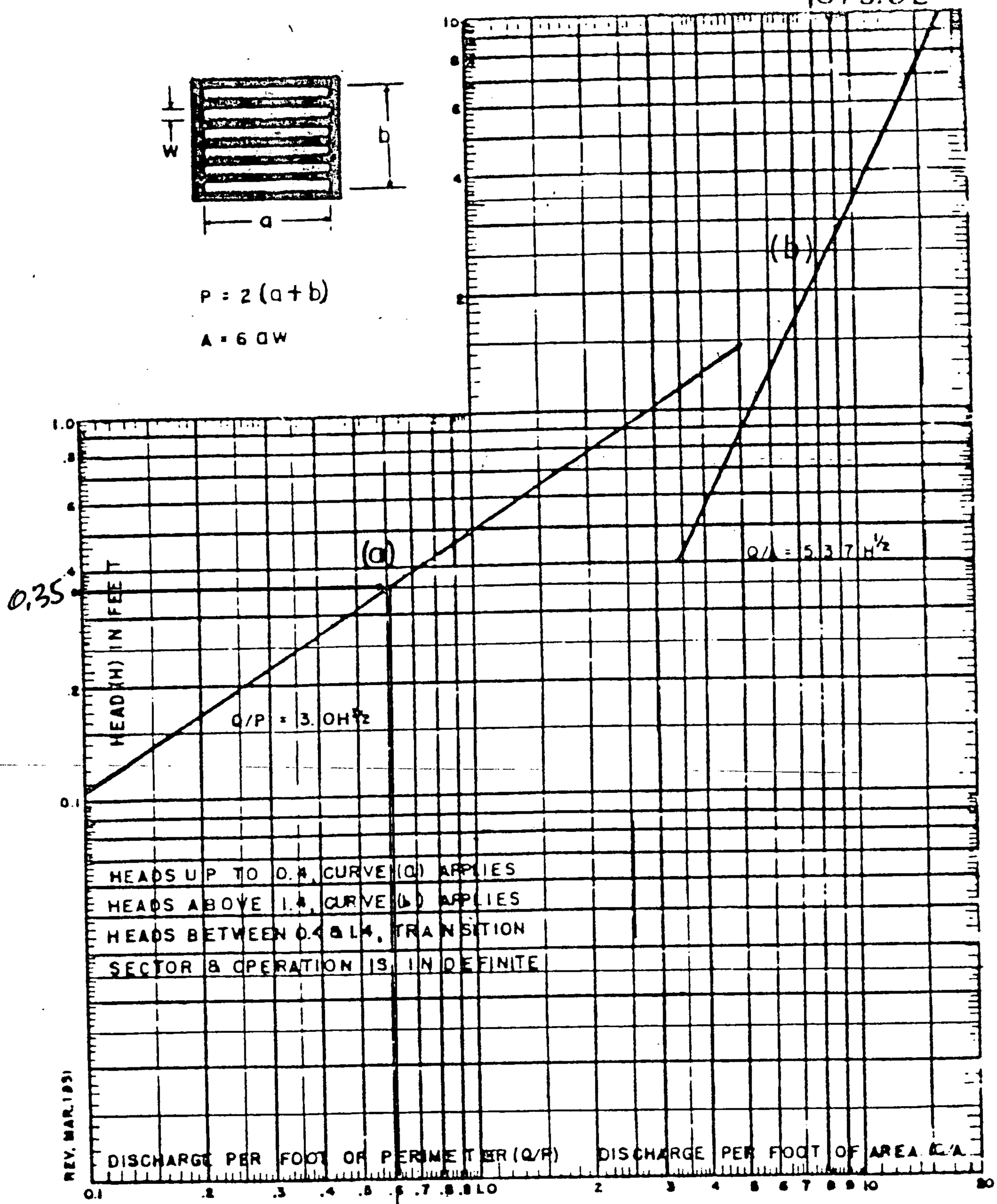
Single Type "C" inlet in front of Lot 16
Q = 6.34 cfs - assume sump condition.
Assume grate is clogged and all flow passes thru curb opening, which is typically 4.0 feet wide and 8" tall.

$$Q = \left(\frac{2}{3}\right) 0.6 (4.0) \sqrt{2(32.2)}\, 0.67^{1.5} = 7.04 \text{ cfs}$$

1073.02

P = 2 (a + b)

A = 6 aw



BUREAU OF PUBLIC ROADS
DIVISION TWO WASH, D.C.

CAPACITY OF GRATE INLET IN SUMP
WATER PONDED ON GRATE

Q/P = 0.61

C-2

Appendix D:

Temporary Retention Pond Volumes Determination

(added with 08-09-13 revisions)

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

PROJECT Tiburon Heights
SUBJECT
BY DATE
CHECKED DATE
SHEET OF

TEMP. RETENTION POND VOLUMES

Retention pond volumes are determined from Section 22.2 of the DPM under subsection A.5 for a 10-day storm.

$V_{10\,day} = V_{360} + A_D (P_{10\,day} - P_{360}) / 12''$

Wilson & Company's SAD 228 Drainage Report, dated January 2012, has been used to find these variables, as follows:

For on-site basins 201-H, 201-J, 201-K and 201-L;

$V_{360} = V_{1440} - A_D (P_{1440} - P_{360})$

$V_{360} = 1.03\,AF - 3.96\,Ac.(2.51'' - 2.16'')/12''$

$V_{360} = 0.91\,AF$ A_D - 50% 5 days

$V_{10\,day} = 0.91\,AF + 3.96\,Ac\,(3.13 - 2.16)/12''$

$V_{10\,day} = 1.23\,AF$

On site Basin A is 41% of site total (0.5 AF) and on-site Basin B is 59% of site, or 0.73 AF. Basin A will be contained on Lot 16, while Basin B will be held on Lots 1, 2 & 25.

TABLE 3 - TEMPORARY RETENTION POND VOLUMES

Basin A (Lot 16)						
Area of Bottom (SF)	Area of Top (SF)	Average Area (SF) Pyramid (A1+A2+√A1A2)	Incremental Pond Depth (FT)	Total Volume (CF) & (AF)	Pond Bottom Elevation (E1)	Pond Top Elevation (E2)
700	5978	2908.9	8.0	23263 (0.534 AF)	5326	5334
Storage Volume=1/3(E2-E1)(AREA TOP + AREA BOTTOM + (SQ.RT. AREA 1 x AREA 2))						
Basin B (Lots 1 & 2)						
Area of Bottom (SF)	Area of Top (SF)	Average Area (SF) Pyramid (A1+A2+√A1A2)	Incremental Pond Depth (FT)	Total Volume (CF) & (AF)	Pond Bottom (E1)	Pond Top (E2)
700	5978	2908.9	8.0	23263 (0.534 AF)	5321.5	5329.5
Storage Volume=1/3(E2-E1)(AREA TOP + AREA BOTTOM + (SQ.RT. AREA 1x AREA 2))						
Basin B (Lot 25)					Pond Bottom (E1)	Pond Top (E2)
Area of Bottom (SF)	Area of Top (SF)	Average Area (SF) Pyramid (A1+A2+√A1A2)	Incremental Pond Depth (FT)	Total Volume (CF) & (AF)	5324.5	5329.5
1200	4200	2548	5.0	12741 (0.293)		
		Total Basin Storage =		~~0.827~~ AF) 1.36 AF CC		
Storage Volume=1/3(E2-E1)(AREA TOP + AREA BOTTOM + (SQ.RT. AREA 1x AREA 2))						

John wckesin
telephone

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PROJECT Tiburon Heights
SUBJECT
BY DATE
CHECKED DATE
SHEET OF

SIDEWALK CULVERTS INTO TEMP PONDS

Ponds of Lots 1, 2 and 25 are filled from roadside flows being diverted with sidewalk culvert. Capacity of each culvert is:

$$Q = 2.9(b)H^{1.5} = 2.9(2)(0.67)^{1.5} = 3.2\,cfs$$

D. Mark Goodwin & Associates, P.A.
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(505) 828-2200 FAX 797-9539

~ 2012 ACEC/NM Award Winner for Engineering Excellence ~
~ 2008 ACEC/NM Award Winner for Engineering Excellence ~

August 12, 2013

Mr. Cutis Cherne, PE
Hydrology Section
City of Albuquerque Planning Department
600 2nd Street, NW
Albuquerque, NM 87102

Re: Tiburon Heights Subdivision Drainage Report (File No. D10D003A)

Dear Mr. Cloud:

Your letter to me on the reference report, dated August 7, 2013, has been received at my office. It contains a listing of six items that are being addressed in the order that they were received, as follows:

1. *It's understood that downstream infrastructure has not been installed yet. Temporary retention ponds for the interim period until downstream infrastructure is installed are located on Lots, 1, 2 16, and 25. All of these interim ponds have been sized for the 100-year, 10-day storm. Calculations demonstrating how these volumes were obtained are provided in new Appendix D in the revised Drainage Report. The appendix also contains a spreadsheet on individual ponding volumes. 0.73 AF is generated during the 10-day storm and total storage in all ponds is 0.83 AF. Sidewalk culverts will be used to divert roadside flow into each of the ponds along Petirrojo, whereas the pond on Lot 16 will be filled from the 18" storm drain running alongside it.*
2. *Public storm drain easements are shown on the plat for each of the previously listed lots and they have been added to the infrastructure list.*
3. *A "D" inlet has been added in Trestle Glen Rd. just downstream of Teaberry Dr. to intercept public roadside flow for conveyance in an upsized storm drain pipe (it's now 18"). A revised nomograph for this pipe has been added in Appendix B indicating there is enough capacity.*
4. *The plat has been changed to show that the inlet on Lot 12 will be maintained by the owner of Lot 12. A stairwell has been added to the plan to demonstrate how the owner gains access.*
5. *A paragraph has been added to the "Street Capacity" portion of the drainage report to discuss the slight increase in peak runoff reaching Petirrojo Rd.*
6. *The volume of required earthwork for the construction of new on-site roads has been added to the infrastructure list based upon 3:1 tie-slopes from off the road to existing grade.*

The drainage report has been redrafted with headings for the changed sections underlined in bold and dated 08-09-13. Sheets 1 of 3 and 3 of 3 of the grading and drainage plan have been revised and are in the pockets of the drainage report. Sheet 2 of 3 remains unchanged.

Sincerely,

MARK GOODWIN & ASSOCIATES, PA

John MacKenzie
Senior Engineer

F:\1-Projects\2012\A12006 -Tiburon Heights\Drainage\Comments Letter.doc

RECEIVED
AUG 12 2013
LAND DEVELOPMENT SECTION

CITY OF ALBUQUERQUE

August 7, 2013

John M. MacKensie, P.E.
Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, NM 87199
John@goodwinengineers.com

Re: Tiburon Heights Subdivision, Drainage Report
Engineer's Stamp date 6-24-13 (D10D003A)

Dear Mr. MacKensie,

Based upon the information provided in your submittal received 6-24-13, the above referenced report cannot be approved for Preliminary Plat approval by the DRB until the following comments are addressed:

1. Since the downstream drainage infrastructure has not been constructed, the drainage report should include an interim plan that proposes temporary retention ponds. Please include an interim plan and a final plan.
2. A public drainage easement with an agreement and covenant is required for the temporary ponds. These items should be listed on the infrastructure list.
3. The storm drain serving the offsite basin is private. It is not standard to have a private storm drain run longitudinally in the street. In addition, this would require a license agreement. As discussed, a "D" inlet could be proposed in the flow line near Lot 12 and the storm drain upsized to an 18" RCP minimum based upon hydraulic capacity.
4. The inlet on Lot 12 will be maintained by the owner of Lot 12 (please add a note to the plat). As discussed, a stairwell could be proposed on the grading plan to allow for maintenance of the inlet. Include a detail of the stairwell or similar.
5. Add a short paragraph under "street capacity" for Petirrojo Rd since there is an increase in flows in the Basin 201-L basin that drains to Petirrojo Rd.
6. The earthwork, in cubic yards, to construct the road should be on the infrastructure list. Assume a 3:1 tie slope when calculating the amount of dirt required.

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

Sincerely,

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

C: File

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

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(Rev. 12/05)

PROJECT TITLE: TIBURON HEIGHTS SUBD. ZONE MAP/DRG. FILE # D-10 D003A
DRB#: 1009178 EPC#: WORK ORDER#:

LEGAL DESCRIPTION: Lot 31 Block 9, Volcano Heights, Unit 1B
CITY ADDRESS:

ENGINEERING FIRM: MARK GOODWIN & ASSOC. CONTACT: JOHN MACKENZIE
ADDRESS: BOX 90606 PHONE: 828-2200
CITY, STATE: ALBUQ NM 87199 ZIP CODE: 87199

OWNER: RTR, LLC CONTACT: RUETT WATERMAN
ADDRESS: BOX 27560 PHONE: 248-1688
CITY, STATE: ALBUQ NM ZIP CODE: 87125

ARCHITECT: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

SURVEYOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

CONTRACTOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

TYPE OF SUBMITTAL:
- X DRAINAGE REPORT
- ___ DRAINAGE PLAN 1st SUBMITTAL
- ___ DRAINAGE PLAN RESUBMITTAL
- ___ CONCEPTUAL G & D PLAN
- X GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERT (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT
- ___ ENGINEER/ARCHITECT CERT (TCL)
- ___ ENGINEER/ARCHITECT CERT (DRB S.P.)
- ___ ENGINEER/ARCHITECT CERT (AA)
- ___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL SOUGHT:
- ___ SIA/FINANCIAL GUARANTEE RELEASE
- X PRELIMINARY PLAT APPROVAL
- ___ S. DEV. PLAN FOR SUB'D APPROVAL
- ___ S. DEV. FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM)
- ___ CERTIFICATE OF OCCUPANCY (TEMP)
- X GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ OTHER (SPECIFY)

39 LOTS x 5 = 195 200.00 Pd 440.00

WAS A PRE-DESIGN CONFERENCE ATTENDED:
- X YES
- ___ NO
- X COPY PROVIDED

RECEIVED JUN 28 2013 LAND DEVELOPMENT SECTION

SUBMITTED BY: John MacKenzie DATE: 6-25-13

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development define the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.

2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres.

3. **Drainage Report:** Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.

[redacted]

MARK GOODWIN & ASSOCIATES
CONSULTING ENGINEERS

DRAINAGE REPORT

for

TIBURON HEIGHTS SUBDIVISION

Prepared for
RTR, LLC
PO Box 27560
Albuquerque, NM 87125

RECEIVED
JUN 28 2013
LAND DEVELOPMENT SECTION

Prepared by
Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, NM 87199
(505) 828-2200
June 2013

JOHN M. MACKENZIE
NEW MEXICO
11619
REGISTERED PROFESSIONAL ENGINEER

John MacKenzie
6-24-13

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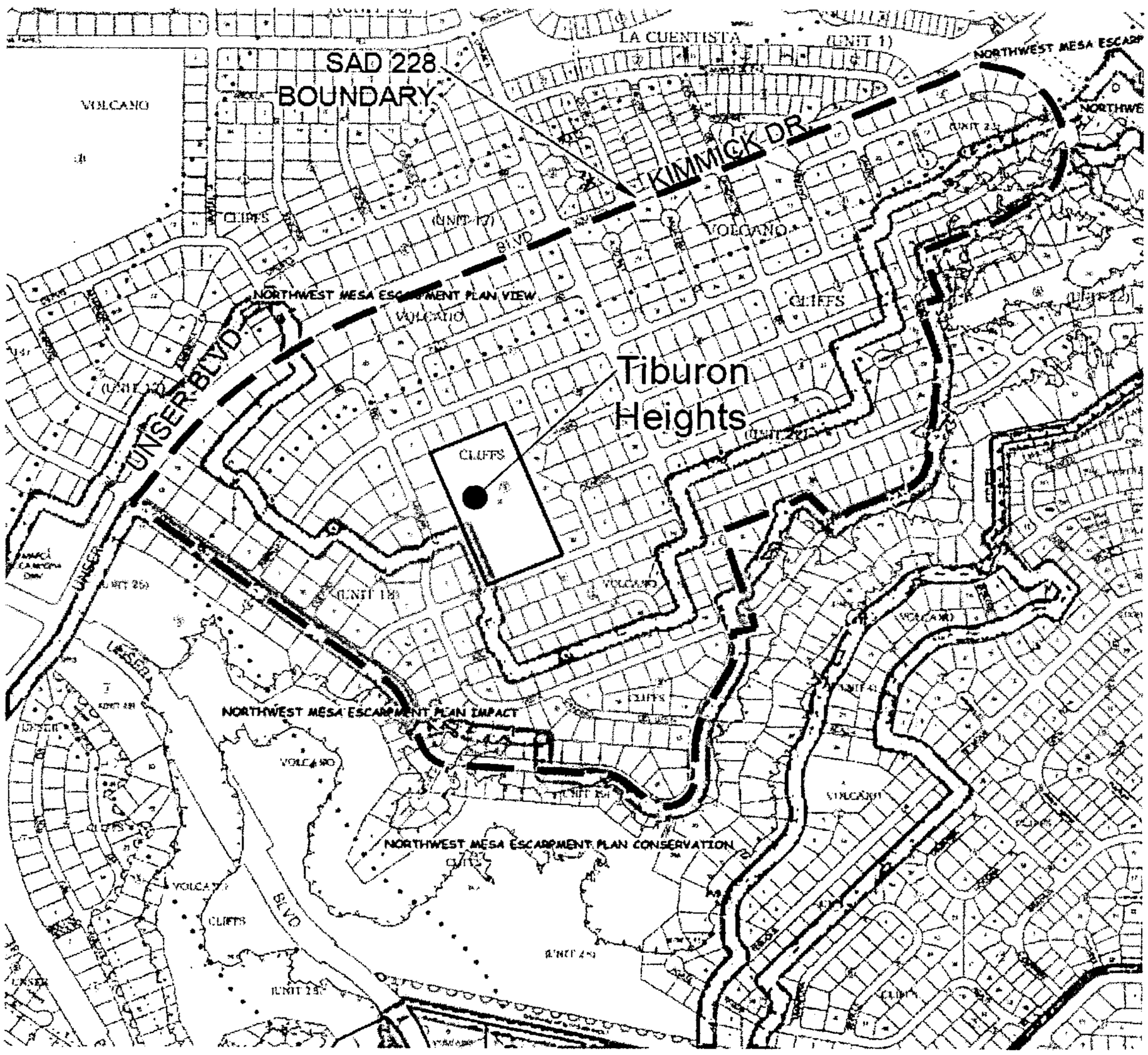
INTRODUCTION

The subject property is Lot 31, Block 9, Volcano Cliffs Subdivision, Unit 18 (Zone Atlas D-10), which covers 7.9 acres and is located entirely within the City of Albuquerque's new SAD 228. The drainage report for SAD 228, by Wilson & Company, has been approved and construction on the SAD has been ongoing for approximately the last 6 months. All developed runoff from the subject property has been accounted for within Wilson's SAD report. Once the site is subdivided it will named Tiburon Heights Subdivision (to be referred to as "THS") and be designed in accordance with the adopted Volcano Cliffs Sector Development Plan. This report is being submitted in anticipation of the Tiburon Height's preliminary plat to be submitted shortly thereafter.



LOCATION MAP

NTS

EXISTING CONDITIONS

The THS is presently vacant and covered by native vegetation, with a few areas containing basalt outcroppings. The soils report indicates that basalt bedrock is located close to the surface at several locations away from the outcroppings. The site's surface exhibits variable slopes with a slight ridge extending from northeast to southwest through the site and a gradual fall from east down to the west toward the adjoining off-site Lots 1 thru 6. Off-site flows appear to come onto the property along its east boundary from relatively small areas within adjoining Lots 12 thru 16, between the site and Canavio Place. From the standpoint of how it affects the subject property, it will be assumed that the SAD's streets and its utilities surrounding the site have been installed since they are currently under construction.

EXISTING SAD 228 DRAINAGE REPORT

The approved SAD 228 Drainage Report, by Wilson, dated January 2012 (Wilson Report), was used as a reference in the preparation of this report. The Wilson Report employed AHYMO-97 modeling software in conformance with the City of Albuquerque's Section 22.2 of the DPM to determine peak runoff flow rates generated within the SAD. Total runoff volumes were created utilizing the 100-year, 24-hour storm event. The precipitation values were obtained from NOAA's Atlas 14 Precipitation Frequency Data.

The Wilson Report designed storm drain and ponding areas for Units 14, 18, 19, 22, 25, 26, and 27 of Volcano Cliffs. Within Units 18, 19, & 20 there were six new ponding areas created. These ponding areas are designed to mitigate potential developed runoff impacts to the Petroglyph National Monument located directly downstream of Volcano Cliffs Units 18-20. The THS was divided into 4 drainage sub-basins within the Wilson Report (see Plate 1).

Much of THS is located within Basin 201-H, which is designed to drain northwest and discharge into a proposed 48" storm drain running through the corner of THS. This particular storm drain also collects runoff from Basins 201-A, 201-B, 201-C, 201-D, 201-E, 201-F, and 201-G; all of which is then conveyed to Pond 5. The northwest corner of THS is within Basin 201-J and its west side is within Basin 201-K. Both of these basins drain west into Aguila Street across Volcano Cliff's existing lot lines. The remaining southeast portion of THS is within Basin 201-L and it's designed to drain south, directly into Petirrojo Road. All of the existing sub-basins contained in the Wilson Report that cover THS drain into Pond 5.

Table 6 on Page 8 within the Wilson Report identifies 16 sub-basins in and around Unit 18, with discharge rates averaging 1.97 cfs per acre, as determined by AHYMO. At 7.9 acres the entire THS area will discharge a total of 15.56 cfs into the SAD's drainage system. Approximately 3.69 acres of sub-basin 201-H in the proposed subdivision will discharge of 7.27 cfs into the 48" storm drain located in its NW corner, while the remaining 4.25 acres of on-site area will discharge 8.37 cfs west onto existing lots 1, 3 and 4 along the east side of Aguila Street (Sub-basins 201-J and 201-K) and south into Petirrojo Road (Sub-basin 201-L).

Special Assessment Districts typically involve construction of only a subdivision's water, sewer, and paving infrastructure, with final lot grading being left up to individual lot owners at the time

Table 2

Proposed Conditions Model - Sub-basin Data				
SAD 228 Sub-basin	SAD 228 Area (ac)	SAD 228 cfs/ac (avg. unit discharge)	SAD 228 Q_{100} (cfs)	SAD 228 $V_{100\text{-}24}$ (ac-ft)
201-H	8.88	1.97	17.47	1.15
201-J	8.51	1.97	16.75	1.10
201-K	3.75	1.97	7.38	0.48
201-L	11.78	1.97	23.18	1.52
Total	**32.92**		**64.78**	**4.25**

Proposed Conditions Model - Sub-basin Data Revisions for Tiburon Heights Subdivision				
Revised Sub-basin ID	*Revised Sub-basin Area*	*Revised Sub-basin Q_{100} (cfs)*	*Net Change in Sub-basin Q_{100} (cfs)*	*SAD 228 $V_{100\text{-}24}$ (ac-ft)*
201-H	*8.02*	*15.78*	*-1.69*	*1.04*
201-J	*8.64*	*17.00*	*+0.25*	*1.12*
201-K	*3.95*	*7.77*	*+0.39*	*0.51*
201-L	*12.31*	*24.24*	*+1.06*	*1.59*
Total	***32.92***	***64.78****	***0.00****	***4.25***

* with rounding

Impact to preliminary plan

of home construction. This often results in the cross-boundary passage of runoff from one lot to another, instead of toward a fronting street in accordance with the city's Drainage Ordinance. The Wilson Report contains a typical cross-lot drainage detail to guide individual lot owners in resolving this issue on a lot-by-lot basis at the time of home construction.

PROPOSED DRAINAGE PLAN

Since the recently approved Wilson Drainage Report already covers THS, there will not be a supplemental re-analysis of the on-site hydrology because the proposed development is similar to what has already been modeled by the Wilson Report. Sub-basins within the proposed subdivision, however, will be slightly readjusted to conform to the subdivision ordinance by redirecting the discharge of developed runoff away from abutting property and into new, on-site public streets. There is no net impact to the downstream Pond 5 since it will receive the same runoff volume as originally planned, due to the fact that affected sub-basins ultimately drain to the same location as first designed. This design approach was agreed to during pre-design meeting held with city Hydrology Staff on May 9, 2012. Table 2 on the following page presents the relatively minor sub-basin discharge differentials being proposed.

The subdivision will take its primary access off Petirrojo Road with a principal street forming a loop that connects back to principal access streets. The two drainage outfalls will be to the SAD on-site 48" storm drain and to Petirrojo Road via the surface. Runoff conveyed down new streets within the northern part of Tiburon Heights will be collected in a new Type "C" inlet positioned at the northwest corner of the site in a sump condition. The emergency overflow for this sump condition is the high-point of 33.63 in Tiburon Hills Drive. The remaining site runoff reaching and flowing off-site down Petirrojo Road will ultimately be collected in a nest of two Type A and two Type C drop inlets located in a sump at the Petirrojo Road/Aguila Street intersection (installed by the SAD). Being 3.22 acres in size, the north side of the site (Basin A) will generate 6.34 cfs. The south side of the site (Basin B), being 4.7 acres in size, will generate 9.26 cfs, both of which are according to the runoff rate as determined in the Wilson Report.

Northeast of the site are off-site Lots 12, 13, 14, 15, and 16, which slope toward and drain onto the site's proposed Lot 12 from a 1.66-acre Off-site Basin 1 (which generates 3.3 cfs). Due to the THS site having to be raised, the off-site surface runoff from these lots will be accepted into a new drop inlet that will be positioned at the proposed Lot 12 boundary of the subdivision. This off-site flow will then be piped within a new 12" RCP storm drain across the south side of proposed Lot 12 and down Trestle Glen Road, where it eventually connects to the new "C" inlet at the Trestle Glen Road/Tiburon Hills Drive intersection. A private drainage easement for this runoff will be granted to the owners of off-site Lots 11-16 and it will be maintained by the THS HOA. Existing off-site runoff from remaining Lots 8 thru 11 north of the subdivision will continue to flow east to west toward Aguila Street over existing terrain along Tiburon Height's north boundary (see Sheets 2 and 3 for the revised drainage basin boundary plan). Existing runoff within off-site Lots 27 through 29 located off Picardia Place east of Tiburon Heights slopes gently south-southeast where it eventually reaches Petirrojo Road (part of SAD Basin 201-K).

Grading of the site is driven by the planned elevation of the sanitary sewer service in Petirrojo Road on the site's south boundary. The sanitary sewer line invert that has been installed by SAD 228 in Petirrojo at the intersection of Tiburon Hills Drive is at elevation 5323.37. Extending a new line north into the subdivision at the 0.6% minimum slope requires that the new service invert elevation at proposed Lot 15 be at elevation 5327.68. Minimum cover requirements for a service line from this invert into individual lots mandate a minimum gutter flow-line elevation of 4

feet above existing grade. This, of course, will result in elevating the site up to 6 feet above existing grades within parts of the site. The substantial lifting of the site surface will also reduce the required blasting and excavation into the shallow basalt bedrock for wet and dry utilities. Conversely, there will be retaining walls up to 7 feet high required around certain portions of the site. The previously mentioned routing of off-site flow in the 12" storm drain and around the south portion of the site in a concrete channel was dictated by having to lift the site.

STREET CAPACITY

Total proposed on-site Basin B flow is 9.26 cfs, which is collected about equally off of Tiburon Hills Drive and Metz Road, resulting in approximately 4.63 cfs being conveyed in each street prior to their intersection. With a proposed street slope of approximately 1% on each street, and mountable curb and gutter, Plate 22.3, D-1 from the DPM indicates there will be a street flow capacity of 7.8 cfs for a 32' street (3.9 in each side). With these two streets being 24 feet in width the approximate reduced capacity would be 5.8 cfs, or about 26% more than the 4.63 cfs being needed. Standard curb and gutter is called for on Tiburon Hills Drive between its intersection with Metz Road and its intersection with Petirrojo Road, where 9.26 cfs is conveyed (see Appendix A and Sheet 1).

The other point of concentrated street flow is located at the intersection of Tiburon Hills Drive and Trestle Glen Road in front of Lots 15-17 where 6.28 cfs discharges into a new Type C inlet. This flow results from the confluence of runoff from both Tiburon Hills Drive and Trestle Glen Road. Based upon area, there is approximately and 2.8 cfs in Tiburon Hills and 3.5 cfs in Trestle Glen. With mountable curb and gutter, and a slope of 0.5% on Trestle Glen Road, Plate 22.3, D-1 indicates that 5.4 cfs of flow can be sufficiently accommodated in a 32' street (2.7 cfs for each side - see Appendix A). At 24 feet wide, Teaberry Road is 75% of the nomograph's street width, resulting in a capacity estimated at 4.1 cfs, or 17% more than the total 3.5 cfs expected.

STORM DRAIN AND INLETS CAPACITY

A new Type "D" inlet is proposed on the southeast corner of Lot 12 to accept off-site flows from Off-site Basin 1. Appendix C contains an inlet nomograph that was used to determine the capacity of this inlet. It was found that the peak off-site flow rate of 3.3 cfs from off-site Lots 12-16 would create a maximum depth of 0.35 feet over the inlet, assuming a 50% clog factor.

Secondly, a new Type "C" inlet is being proposed on the property line of Lots 16 and 17 to accept the 6.28 cfs of peak flow that is anticipated from The north end of Tiburon Hills Drive and Trestle Glen Road. Calculations in the Appendix C show it also has over 7.04 cfs of capacity, or 11% more than it expects to receive.

New storm drains will be installed in Trestle Glen Road and in an easement on Lot 15 that will carry on-site flow to the SAD's new 48" storm drain in the NW corner of the site. Nomographs in Appendix B indicate there is 4 cfs of capacity for the 12" pipe at the proposed slope of 1% (3.3 cfs is needed), and 22 cfs for the 24" pipe in the Lot 16 storm drain easement at a slope of 1% (9.63 cfs is needed).

CONCLUSION

The proposed Tiburon Heights Subdivision is completely contained within the City of Albuquerque's new SAD 228, which has been fully funded and has been under construction since the beginning of this year. Construction of the THS will not be completed until principal infrastructure components of SAD 228 are in place and operational.

Construction of the THS will help prevent the occurrence of cross-lot drainage onto adjoining off-site properties by diverting developed on-site and off-site runoff into its new on-site streets, storm drains and channels, as recommended by City Hydrology personnel during the pre-design meeting held on May 9, 2012. Minor revisions to on-site sub-basin areas were made to achieve this objective, although these minor revision had no appreciable effect on the SAD 228's approved drainage plan, and total runoff volumes reaching the sub-basin's Pond 5 are relatively unchanged and should be considered negligible.

The proposed elevation of THS has to be raised 2 to 7 feet above existing grade due to the existing elevation of the SAD's sanitary sewer in Petirrojo Road and its extension into the site at the Water Authority's minimum allowable pipe slope. Raising the site will also enable the contractor building THS to minimize their blasting and excavation into the underlying basalt bedrock during installation of site utilities.

downstream pipe/pond not built

Appendix A

Street Capacity Analysis

STREET CAPACITY

TIBURON Hills Dr. (24' FF @ 1%)

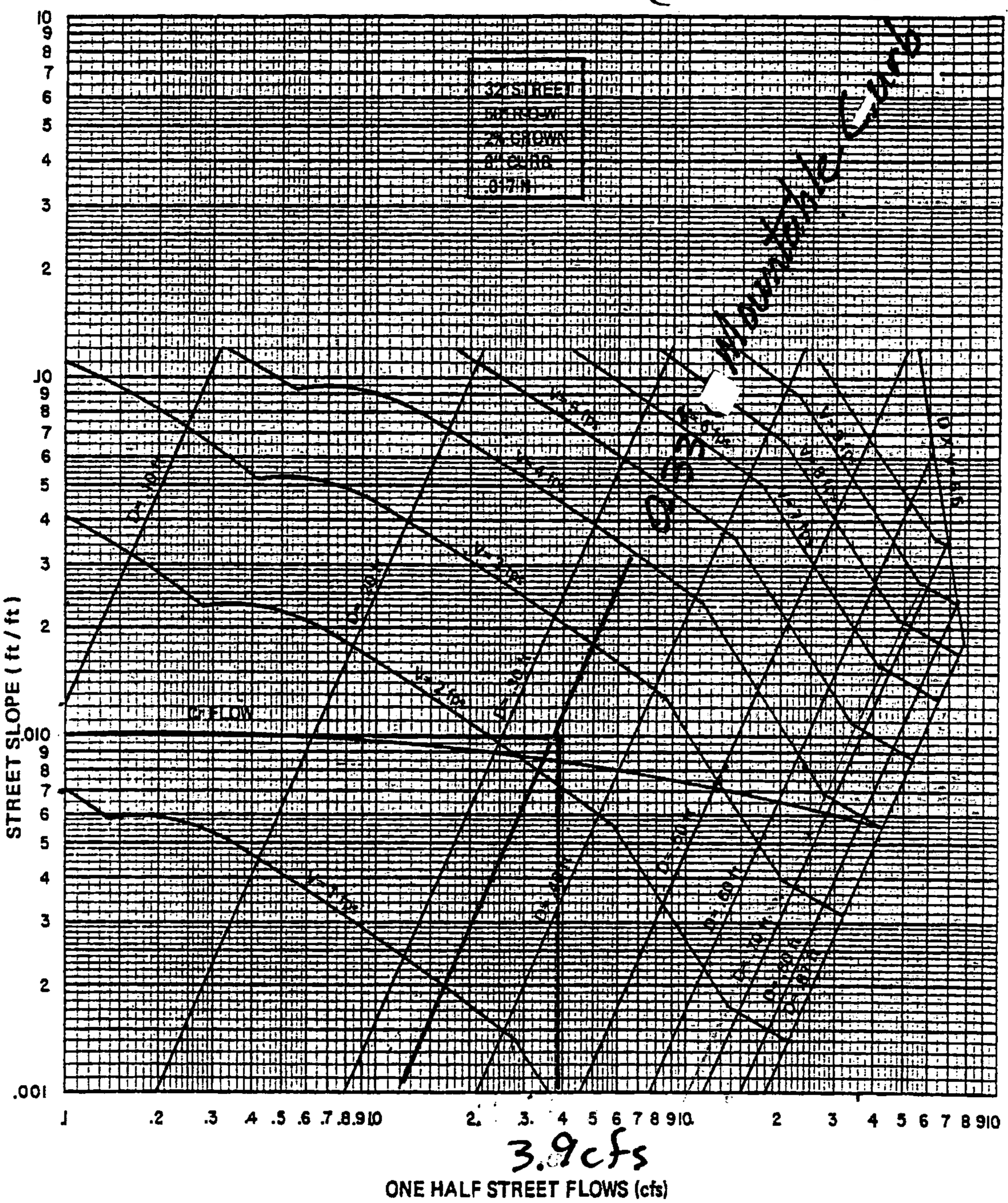


PLATE 22.3 D-1

A - 1

STREET CAPACITY

TRESTLE GLEN ROAD 24'FF 0.5%

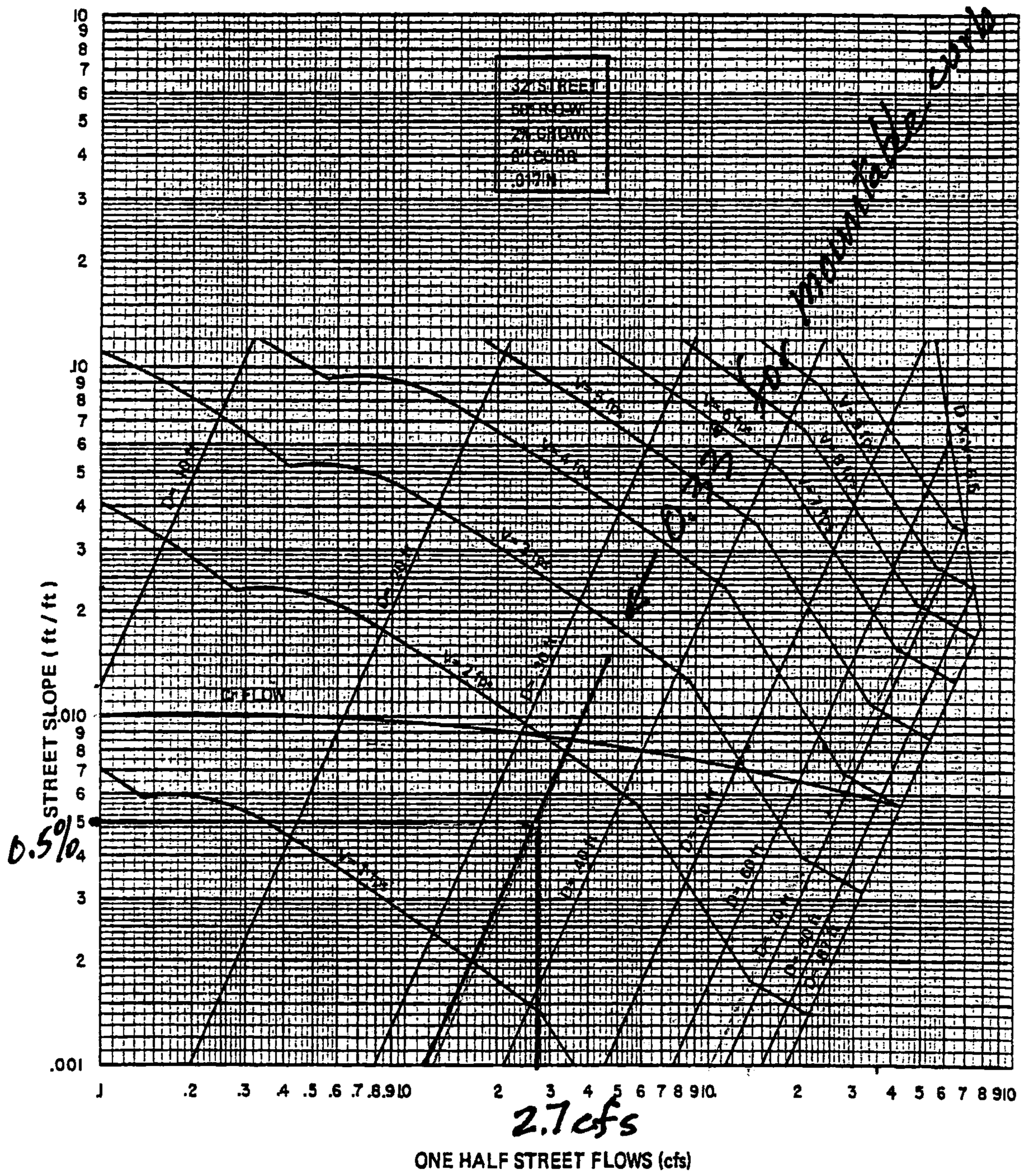


PLATE 22.3 D-1

A-2

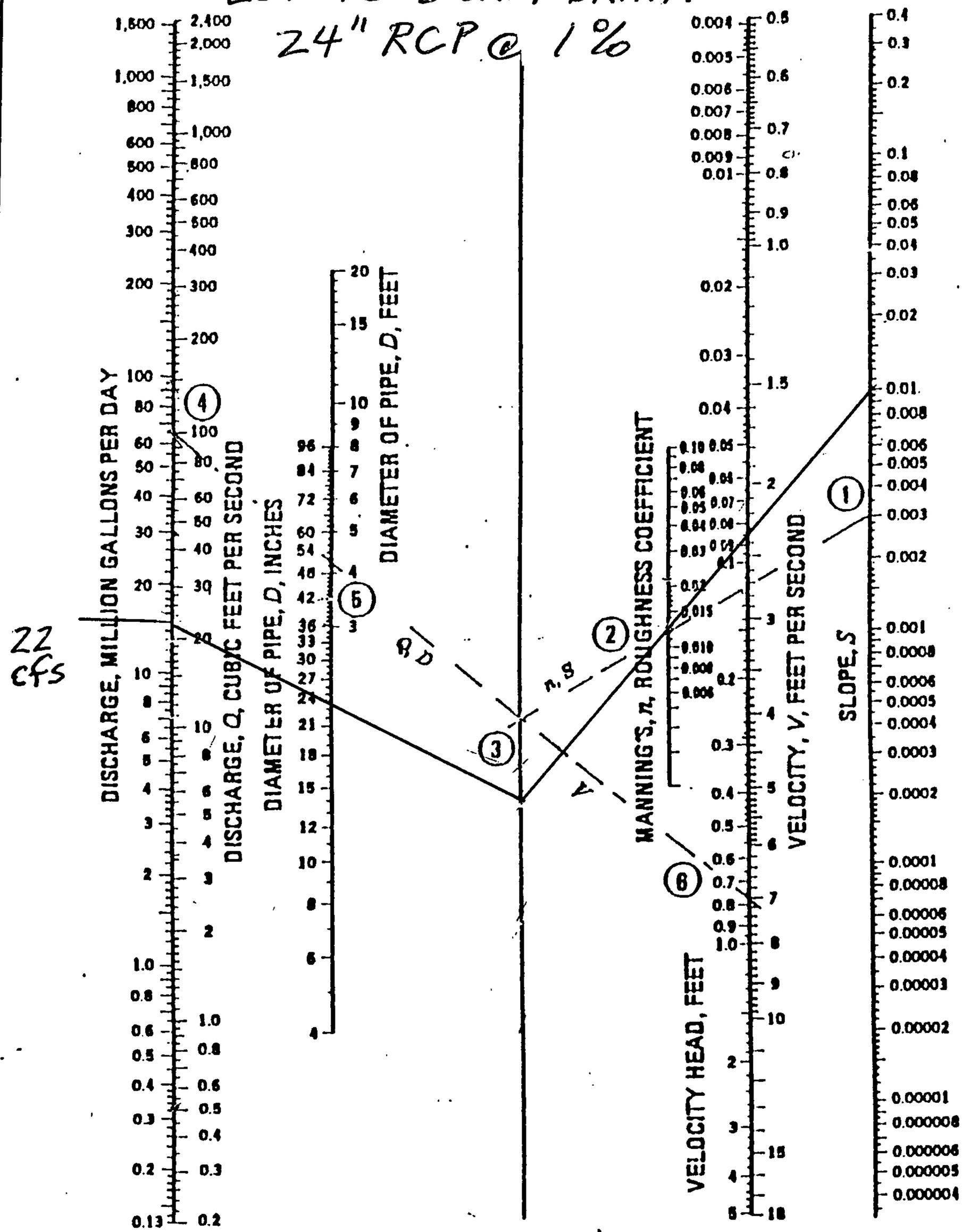
Appendix B

Storm Drain Capacity Analysis

Reference: American Concrete Pipe Association (1980).

LOT 16 STORM DRAIN

24" RCP @ 1%



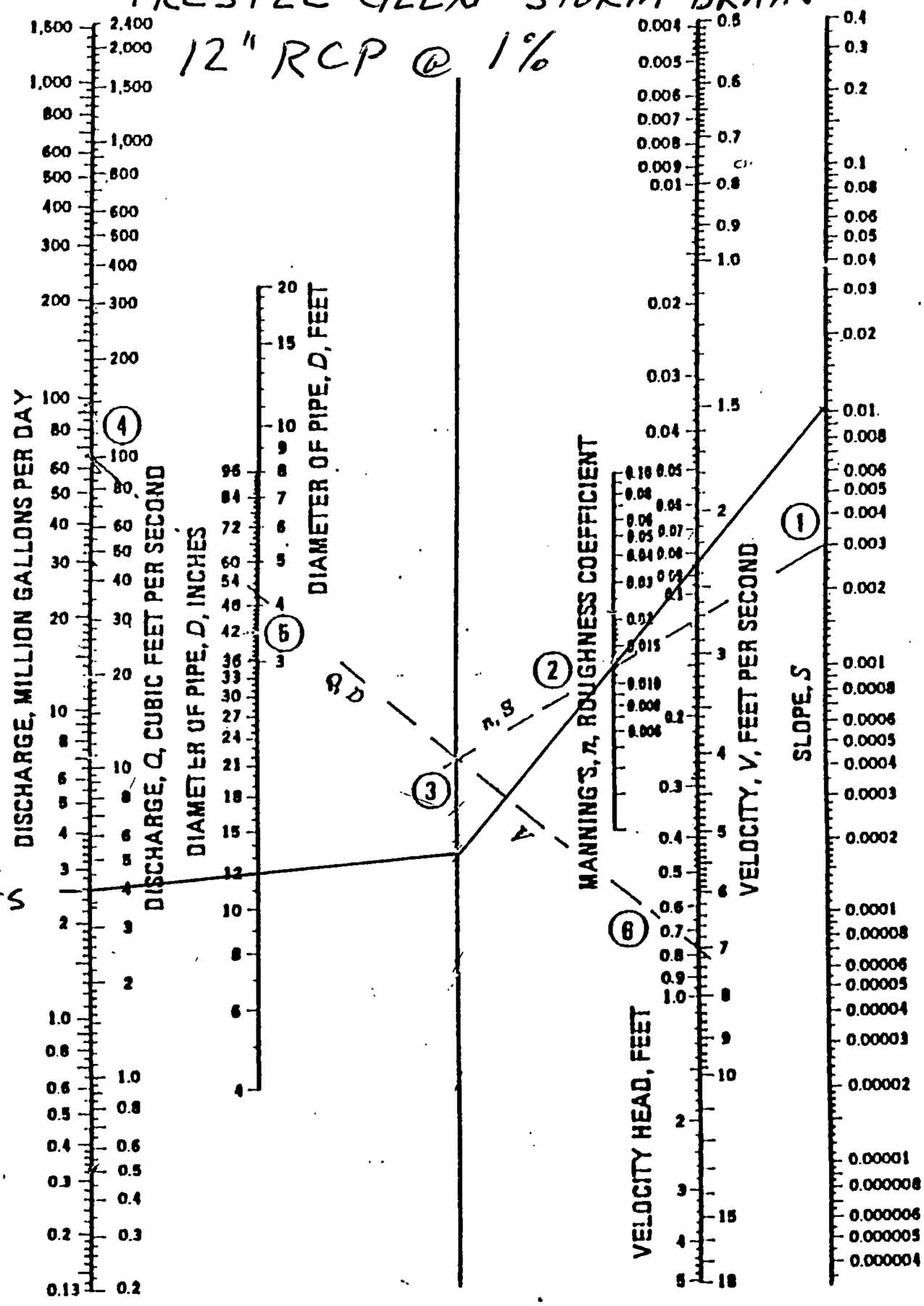
B) Circular Pipe Solution

B-1

Reference: American Concrete Pipe Association (1980).

TRESTLE GLEN STORM DRAIN

12" RCP @ 1%



B) Circular Pipe Solution

B-2

Appendix C

Inlet Capacity Analysis

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

PROJECT Tiburon Heights
SUBJECT Drainage
BY _____ DATE _____
CHECKED _____ DATE _____
SHEET ____ OF ____

INLET CALCULATIONS

Single Type "D" Inlet on Lot 11
Q = 3.3 cfs in sump condition.
Using attach Bureau of Public Roads Nomograph inlet perimeter is 5.5 ft (50%)
With discharge of 3.3 cfs Q/p = 0.61
Total area of openings is 1.29 SF (50%)
so Q/A is 2.56.
Nomograph indicates required head to pass 3.3 cfs is 0.35 ft.

Single Type "C" inlet in front of Lot 16
Q = 6.34 cfs - assume sump condition.
Assume grate is clogged and all flow passes thru curb opening, which is typically 4.0 feet wide and 8" tall.

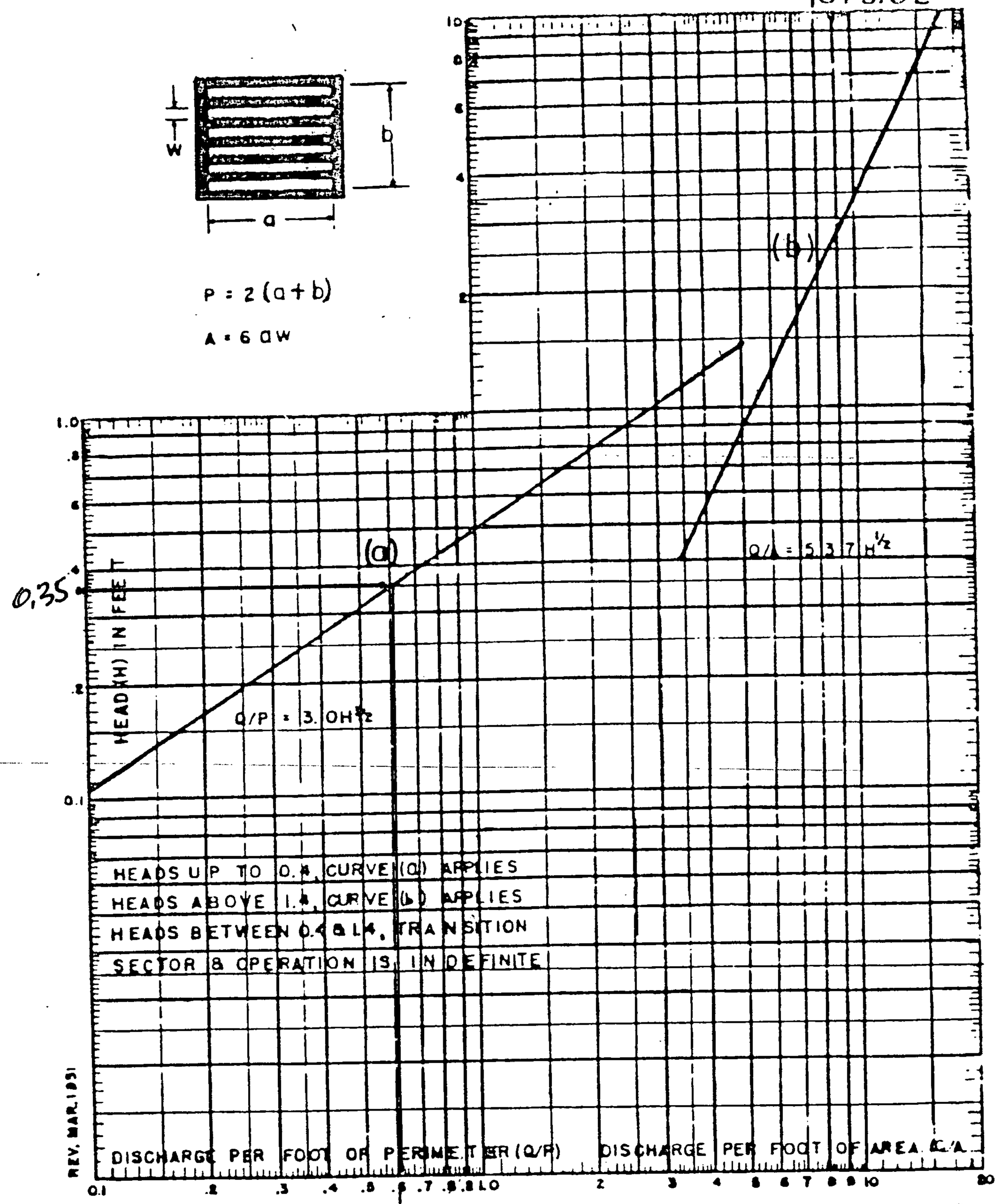
$$Q = \left(\frac{2}{3}\right) 0.6 (4.0) \sqrt{2(32.2)}\, 0.67^{1.5} = 7.04 \text{ cfs}$$

C = 1

1073.02

P = 2 (a + b)

A = 6 aw



BUREAU OF PUBLIC ROADS
DIVISION TWO WASH., D.C.

CAPACITY OF GRATE INLET IN SUMP
WATER PONDED ON GRATE

Q/P = 0.61

C-2

8669

UNIT NO. 18
VOLCANO CLIFFS SUBDIVISION
BERNALILLO COUNTY, NEW MEXICO

DECEMBER 1970 SCALE: 1"=100'

DEDICATION

The foregoing survey of that certain tract of land situate in Section 22, T 11 N, R 2 E, N.M.P.M., Bernalillo County, New Mexico, and being more particularly described by survey as follows:

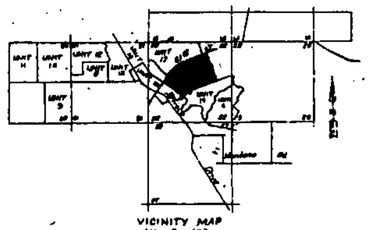
BEGINNING at the most easterly corner of the tract herein described, whence the quarter corner common to Sections 22 and 23, T 11 N, R 2 E, N.M.P.M. bears N 80° 50' 07" E, 1442.47 feet, and from said beginning point running thence, S 67° 43' 50" W, 1560.00 feet; thence,
S 54° 01' 00" W, 90.08 feet to a point; thence,
S 35° 31' 00" W, 135.91 feet to a point; thence,
N 54° 15' 00" W, 39.88 feet to a point; thence,
S 36° 08' 00" W, 215.74 feet to a point; thence,
S 80° 15' 19" W, 78.79 feet to a point; thence,
N 54° 15' 00" W, 175.80 feet to a point, thence,
N 73° 30' 58" W, 137.71 feet to a point; thence,
N 17° 55' 00" W, 190.00 feet to a point; thence,
N 54° 15' 00" W, 885.00 feet to a point; thence,
N 54° 01' 34" W, 251.00 feet to a point on a curve; thence,
1877.62 feet along the arc of a curve to the right, having a radius of 2701.71 feet and a chord bearing N 47° 00' 26" E, 1840.06 feet to a point of tangency; thence,
N 66° 55' 00" E, 1100.76 feet to a point; thence,
S 23° 05' 00" E, 1698.00 feet to a point; thence,
S 29° 16' 10" E, 173.63 feet to a point and place of beginning and containing 102.723 acres, more or less.

Surveyed and subdivided as the same appears hereon, the several public thoroughfares together with the easements as shown hereon, that the owners of the property do hereby dedicate electric power and telephone line easements on the rear seven (7) feet of each lot and also easements as shown on this plat, including easements for overhead, underground and buried service wires and including the right of ingress, egress and the rights to trim or remove interfering trees all in the Volcano Cliffs Subdivision, Unit 18, A subdivision under contract to be annexed to the City of Albuquerque, New Mexico.

First American Title Insurance Co. as Trustee
By: P.C. Templeton
Vice-President, P. C. Templeton
Attest: June Prignoro
Asst. Secretary, June Prignoro

I, _____ County Clerk of the County of Bernalillo, New Mexico, hereby certify that the plat upon which this certificate appears was approved for filing by the County Commission of said County at its meeting held on the ___ day of _____ 1970.

_____
County Clerk



NOTES:

1. All boundary lines intersect at right angles unless otherwise noted.
2. All block corners have deltas = 90°, Radii = 25', and Arc lengths = 39.27' unless otherwise noted.
3. Lots 3 thru 16 in Block 1, all Block 2, all Block 3, all Block 5, Lots 1 thru 8 and Lots 23 thru 41 in Block 6, and Lots 1 thru 7 in Block 8 are Zoned M-3. Remainder of Unit Zoned R-2 except Lot 31 in Block 9

ACKNOWLEDGEMENTS

State of New Mexico
County of Bernalillo ss

On this 3 day of December 1970, before me, a notary public in and for said county and state, personally appeared P.C. Templeton personally known to me, who being duly sworn, did say that he is the Vice-President of the First American Title Insurance Co., a Corporation organized under the laws of the state of California and that the seal affixed to said instrument was signed and sealed on behalf of said corporation, by authority of its board of directors and said P.C. Templeton acknowledged said instrument to be the free act and deed of said corporation.

In witness whereof, I have hereunto set my hand and seal on the day and year last written above. My commission expires October 13, 1974

Pauline Intarling
Notary Public

December 3, 1970
Date

We, the First American Title Insurance Co., hereby certify that all taxes have been paid in full for the period of the last ten years, up to and including 1970 for all the property included in the plat, Volcano Cliffs, a subdivision, Bernalillo County, New Mexico, upon which this certificate appears.

P.C. Templeton
Name

Dec 3, 1970
Date

I, Donald L. Walter, N.M.P.L.S. No. 4875, do hereby certify that the above subdivision was prepared under my supervision from actual field notes and to true and correct to the best of my knowledge and belief.

Donald L. Walter
Donald L. Walter N.M.P.L.S. No. 4875

APPROVALS

Public Service Company	12-4-70 Date
Mountain States Telephone & Telegraph Company	Dec 3 1970 Date
Southwestern Gas Company	12-4-70 Date
City Traffic Engineer	12-3-70 Date
County Engineer	1-19-71 Date
Director of Public Works-Construction	12-4-70 Date
Chairman, County Planning Commission	12-8-70 Date
Executive Secretary, County Planning Commission	12-3-70 Date
County Surveyor	12-14-70 Date
Vice Chairman, City Planning Commission	12/10/70 Date
Executive Secretary, City Planning Commission	12-3-70 Date

D4-106

D4-106

Cherne, Curtis

From: Cherne, Curtis
Sent: Monday, August 05, 2013 10:23 AM
To: 'John MacKenzie'
Subject: letter on Tiburon

John,
I was typing up the letter for Tiburon. I went to review the grading plan in case I may have comments.

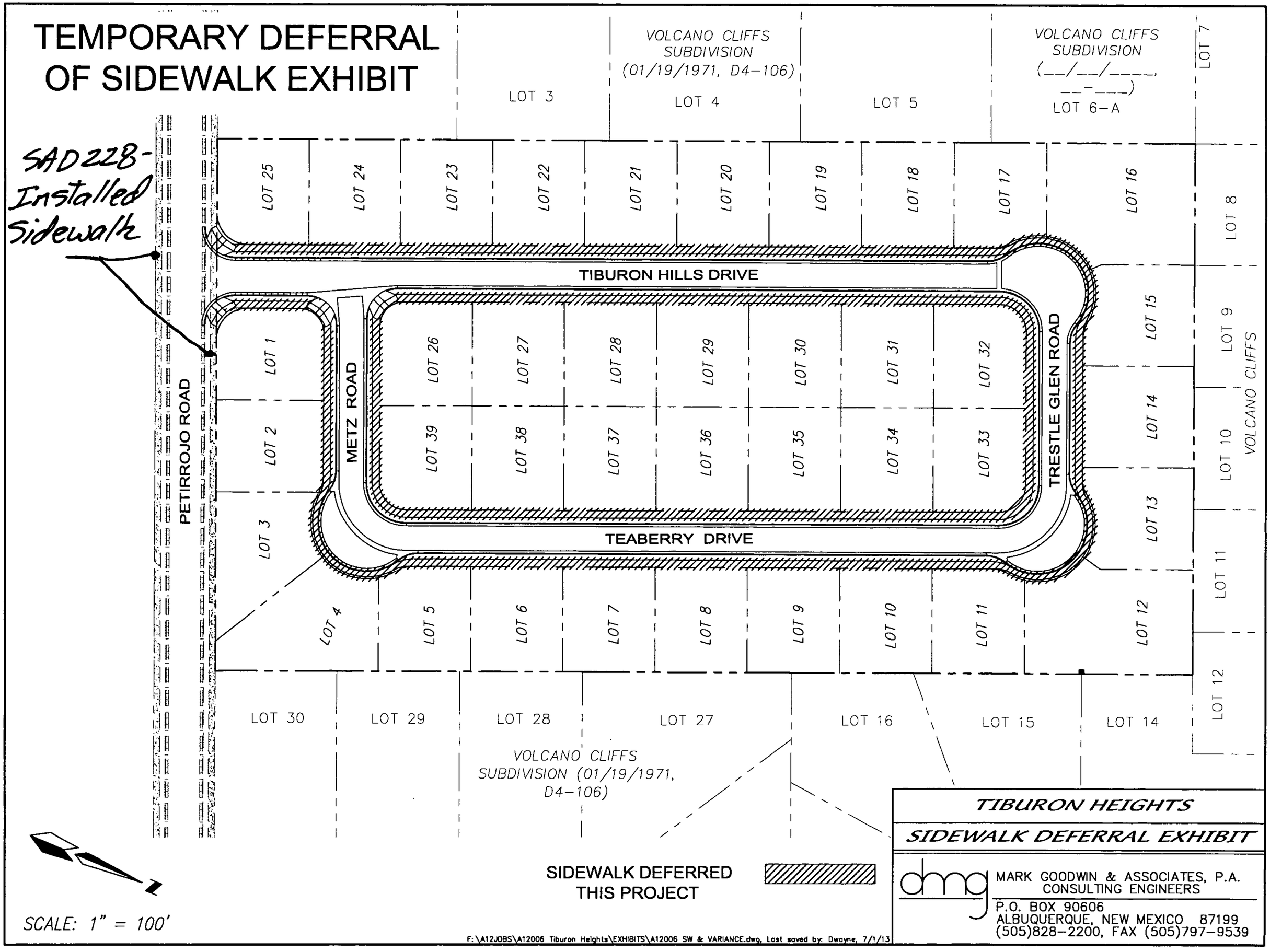
As you know, I gave you the grading plan. I will not be able to write the letter until I get the grading plan back.

If your client wishes to have preliminary comments, they are as follows:

1. Since the downstream drainage infrastructure has not been completed, the drainage report will have to propose temporary drainage ponds.
2. The storm drain serving the offsite basin is private. It is not standard to have a private storm drain run longitudinally in the street. In addition, this would require a license agreement.
As discussed a "D" inlet could be proposed in the flow line near Lot 12, and the storm drain upsized to an 18" RCP, minimum, based on hydraulic capacity.

Curtis Cherne, P.E., CFM
Principal Engineer, Hydrology
COA
924-3986

TEMPORARY DEFERRAL OF SIDEWALK EXHIBIT



Current DRC
Project Number:_____

FIGURE 12

Date Submitted: 6/28/2013
Date Site Plan Approved:_____
Date Preliminary Plat Approved:_____
Date Preliminary Plat Expires:_____
DRB Project No: 1009178
DRB Application No.:_____

RECEIVED
JUN 28 2013
LAND DEVELOPMENT SECTION

INFRASTRUCTURE LIST

EXHIBIT "A"
TO SUBDIVISION IMPROVEMENTS AGREEMENT
DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

TIBURON HEIGHTS
PROPOSED NAME OF PLAT AND/OR SITE DEVELOPMENT PLAN

Lot 31, Block 9, Volcano Cliffs Subdivision, Unit 18
EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION

Following is a summary of PUBLIC/PRIVATE Infrastructure required to be constructed or financially guaranteed for the above development. This Listing is not necessarily a complete listing. During the SIA process and/or in the review of the construction drawings, if the DRC Chair determines that appurtenant items and/or unforeseen items have not been included in the infrastructure listing, the DRC Chair may include those items in the listing and related financial guarantee. Likewise, if the DRC Chair determines that appurtenant or non-essential items can be deleted from the listing, those items may be deleted as well as the related portions of the financial guarantees. All such revisions require approval by the DRC Chair, the User Department and agent/owner. If such approvals are obtained, these revisions to the listing will be incorporated administratively. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility will be required as a condition of project acceptance and close out by the City.

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
			PAVING						
		24' FF	Res Pvmt C&G	Tiburon Hills Dr.	Petirrojo Rd.	Trestle Glen Rd.	/	/	/
		6'	Sidewalk (Both Sides)						
		24' FF	Res Pvmt C&G	Teaberry Dr.	Metz Rd.	Trestle Glen Rd.	/	/	/
		6'	Sidewalk (Both Sides)						
		24' FF	Res Pvmt C&G	Trestle Glen Rd.	Tiburon Hills Dr.	Teaberry Dr.	/	/	/
		6'	Sidewalk (Both Sides)						
		24' FF	Res Pvmt C&G	Metz Road	Tiburon Hills Dr.	Teadberry Dr.	/	/	/
		6'	Sidewalk (Both Sides)						
			WATER						
		8"	Waterline	Tiburon Hills Dr., Lot 16 Esmt. and off-site Lot 8 Easement	Petirrojo Road	Papagayo Rd.	/	/	/
		6"	Waterline	Teaberry Dr.	Metz Rd.	Trestle Glen Rd.	/	/	/
		6"	Waterline	Trestle Glen Rd.	Tiburon Hills Dr.	Teaberry Dr.	/	/	/
		6"	Waterline	Metz	Tiburon Hills Dr.	Teaberry Dr.	/	/	/

		SANITARY SEWER					
	8"	Sanitary Sewer	Tiburon Hills Dr.	Petirrojo Rd.	Trestle Glen Rd.	/	/ /
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	8"	Sanitary Sewer	Metz Road	Tiburon Hills Rd.	Teaberry Dr.		
		STORM DRAIN					
	24"	RCP	Lot 16 SD Easement	Trestle Glen Rd.	N. Boundary Lot 16	/	/ /
	12"	RCP	Trestle Glen Rd.	Lot 16 SD Easement	E. Side Lot 12	/	/ /

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Financially Guaranteed DRC #	Constructed Under DRC #	Size	Type of Improvement	Location	From	To	Construction Certification: Private Inspector /	City Inspector /	City Cnst Engineer /

Approval of Creditable Items:

Impact Fee Admistrator Signature Date

Approval of Creditable Items:

City User Dept. Signature Date

Project name: Tiburon Heights

1 Sidewalks to be deferred.
2 Water Infrastructure to include valves, fittings, and firehydrants.
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5 Grading and Drainage Certification and perimeter wall construction required prior to release of SIA and Financial Guaranty. (Financial Guaranty not required for Grading and Drainage Plan.)
6
7
8

AGENT/OWNER

John M. MacKenzie, PE
NAME (print)

Mark Goodwin & Associates
FIRM

John MacKenzie 6-26-13
SIGNATURE date

DEVELOPMENT REVIEW BOARD MEMBER APPROVALS

DRB CHAIR - date

TRANSPORTATION DEVELOPMENT - date

UTILITY DEVELOPMENT - date

CITY ENGINEER - date

PARKS & GENERAL RECREATION - date

AMAFCA - date

_____ - date

_____ - date

DESIGN REVIEW COMMITTEE REVISIONS

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT /OWNER

From: John MacKenzie
Date: Thursday, May 10, 2012 11:38 AM
To: Shahab Biazar (sbiazar@cabq.gov)
Subject: Hydrology Pre-design for Lot 31, Block 9, Unit 1, Volcano Cliffs on May 9, 2012

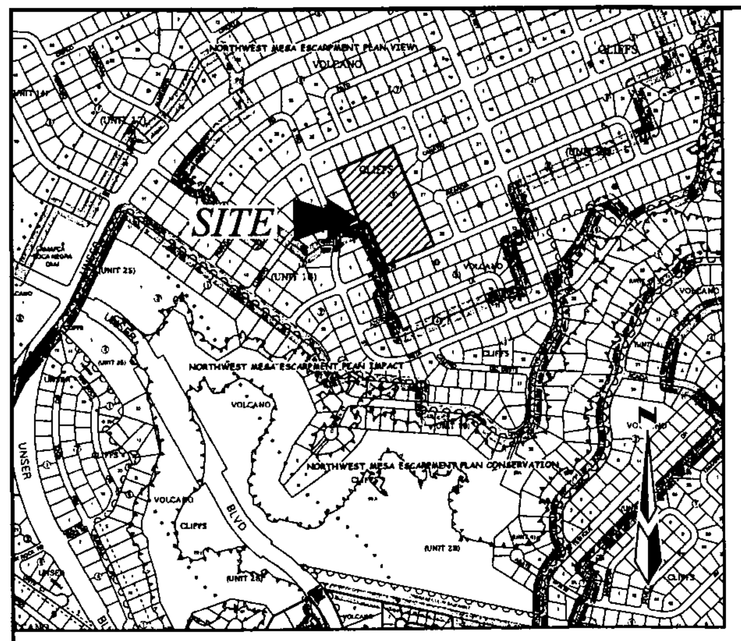
Shahab,

Thanks for meeting with me on this new project. Below is what I took from our meeting. **One thing I forgot to mention is that we may have to raise the site a few feet of increase the depth to basalt so that utility line installation is better**. This may impact the treatment of off-site flows coming onto the property.

1. In general I'll be following Wilson's approved plan for the SAD with some minor adjustments. They have proposed drainage basin boundaries that do not follow property lines so I'll have to make minor adjustments to the boundaries according.
2. Basin 201-H (northern part of our site) will still drain north to the proposed 24" storm drain stubout from MH 12 to be provided to this site. It is designed to receive 17.5 cfs, according to Wilson's Plate 3 and 4 of their Drainage Report.
3. This 24" SD will likely be extended further into our site to receive runoff directly from one of our internal streets via inlets on the street, to avoid conveyance of surface flows thru yards.
4. At the connection point to this 24" SD stubout we may add a D inlet to accept off-site surface flow from the north, which appears to also be within basin 201-H.
5. The south boundary line between basins 201-L and 201-H may be adjusted on-site to keep flows reaching this 24' stubout at or near the allowed 17.5 cfs.
6. Off-site flow from Lots 14 – 16 to the east (off Canovio Place) will be received on-site and then diverted down side lot lines to streets that we are proposing to create. This will require granting of a private drainage easement on our lots to the owners of these off-site lots. The alternative is to extend SD to these locations to accept this flows **if site is raised**.
7. Wilson's on-site drainage basin boundary between Basins 201-K and 201-L is thru the south end of this site. Developed runoff from this site will not follow Wilson's plan to convey flows across property lines on the west boundary of this site. Instead, flows from on-site will be directed into new, on-site streets and then into Petirrojo Road, which then drains to four inlets located in Petirrojo Road, just upstream of its intersection with Aguila Street (I remember us talking about the inlets there and I thought we said two but there are actually four on the PPs. Along with the inlets north of this intersection, this nest of inlets was designed by Wilson to collect all developed runoff from Basins 201-K and 201-L, so the ultimate collection of flows at the intersection of Aguila Street and Petirrojo Road is <u>unchanged</u>. It was acknowledged during our meeting that the two inlets (there are actually four there) located in Petirrojo Road, just upstream of its intersection with Aguila Street, have been designed for some of the flows to bypass the inlets and continue thru the intersection. This is not the case since according to the PP sheet of this street these four inlets are in a sump.
8. It is not expected that new storm drain line will have to be installed within the south end of the site since this area drains directly into Petirrojo Road.
9. If there is to be new private drainage easement down side lot lines, I understand that you want them outside of existing PUEs along these lines, unless these existing PUEs are vacated. I understand from Wilson that all the new dry utilities will be in the front yards of all lots, so we plan to vacate our perimeter PUEs.

That's all I can think of anything else now. Can you review this and give me any comments you may have, or if you concur please indicate that? Thanks.

John MacKenzie, PE
Mark Goodwin and Associates, PA
Phone: 505-828-2200


SITE
NORTHWEST AREA ESCARPMENT PLAN (1984)
NORTHWEST AREA ESCARPMENT PLAN IMPACT
NORTHWEST AREA ESCARPMENT PLAN CONSERVATION
VOLCANO CLIFFS BLVD
UNIT 31
UNIT 18
UNIT 19
UNIT 20
UNIT 21
UNIT 22
UNIT 23
UNIT 24
UNIT 25
UNIT 26
UNIT 27
UNIT 28
UNIT 29
UNIT 30
UNIT 31
UNIT 32
UNIT 33
UNIT 34
UNIT 35
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UNIT 37
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Private

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