15.00

F16/D017
609381

PERMANENT EASEMENT

4/24/01

Grant of Permanent Easement, between Vista del Norte Development L.L.C, a New Mexico limited liability company ("Grantor"), whose address is 4101 East Irvington Rd, Tucson, Az 85706 and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico, 87103.

Grantor grants to the City an exclusive, permanent easement ("Easement") in, over, upon and across the real property described on Exhibit "A" attached hereto ("Property") for the construction, installation, maintenance, repair, modification, replacement and operation of ROADWAY EASEMENT, together with the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of this Easement.

In the event Grantor constructs any improvements "(improvements") within the Easement, the city has the right to enter upon Grantors property at any time and perform whatever inspection, installation, maintenance, repair, modification or removal ("Work") it deems appropriate without liability to the City. If the Work effects any Improvements or Encroachments made by the Grantor, the City will not be financially or otherwise responsible for rebuilding or repairing the Improvements or Encroachments. If in the opinion of the city, the Work to be performed by the City could endanger the structural integrity or otherwise damage the improvements or Encroachments, the Grantor shall, at its own expense, take whatever protective measures are required to safeguard the Improvements aor Encroachments.

Grantor covenants and warrants that Grantor is the owner if fee simple of the Property, that Grantor has a good lawful right to convey the Property or any part thereof and that Grantor will forever warrant and defend the title to the Property against all claims fro all persons or entities.

The grant and other provisions of this Easement constitute covenants running with the property for the benefit of the City and its successors and assigns until terminated.

WITNESS my hand and seal this 9th day of April, 2001.

APPROVED:

City Engineer

4-24-01
Dated

4-17-01

4/24/01

GRANTOR:

(Individual)

GRANTOR: Vista del Norte Development, L.L.C., a New Mexico limited liability company

By:

Its: John A. Myers, Asst. Manager Pro Tem
(Corporation or Partnership)

Mary Herrera Bern. Co. EASE R 15.00

2001045808
5496696
Page: 1 of 5
04/25/2001 10:55A
Bk-A18 Pg-4255

INDIVIDUAL

STATE OF _____)
)ss
COUNTY OF _____)

This instrument was acknowledged before me on _____ day of _____, 20___, by _____.

_____
Notary Public

My Commission Expires:

_____

CORPORATION

STATE OF New Mexico
)ss
COUNTY OF Bernalillo

This instrument was acknowledged before me on 9th day of April, 2001, by John A. Myers, Assistant Manager Pro Tem of Vista del Norte Development, LLC., a New Mexico limited liability company ~~corporation, on behalf of the corporation.~~

Karen Lee Anderson
Notary Public

My Commission Expires:

11-18-2001

PARTNERSHIP

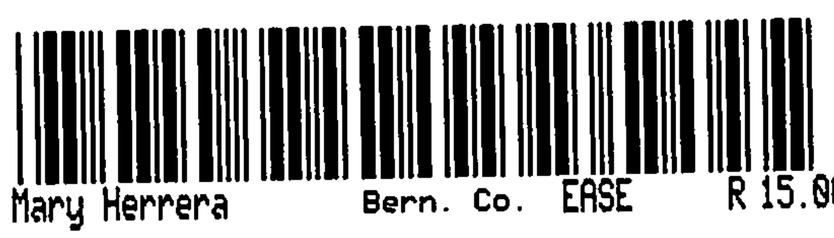
STATE OF _____)
)
COUNTY OF _____)

This instrument was acknowledged before me on ____ day of _____, 20___, by _____,partner(s), on behalf of _____, a partnership.

_____
Notary Public

My Commission Expires:

_____



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Page: 2 of 5
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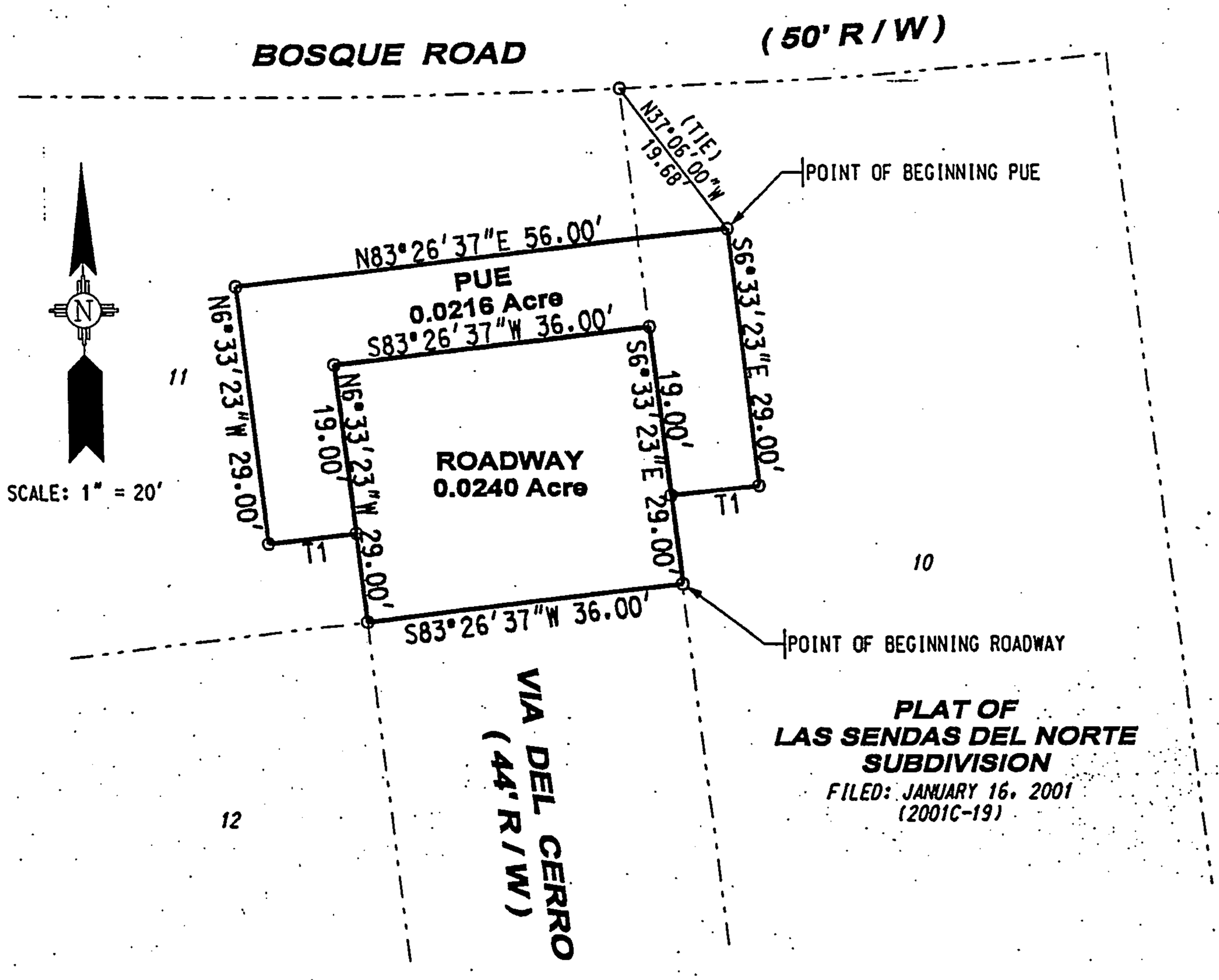
(EXHIBIT "A" ATTACHED)

E16/D17

EXHIBIT "A"



TANGENT DATA

No.	BEARING	DISTANCE
T1	S 83°26'37" W	10.00

Mary Herrera Bern. Co. EASE R 15.00

2001045808
5496696
Page: 3 of 5
04/25/2001 10:55A
Bk-A18 Pg-4255

Bohannan ▲ Huston

Courtyard One 7500 JEFFERSON NE Albuquerque NEW MEXICO 87109

P:97455\SURVEY\C2-01
97455Exhibit.dgn

JOB NO. 97455C2 01

EXHIBIT "A"

ROADWAY DESCRIPTION

A certain tract of land situate within the Elena Gallegos Grant, within projected Section 27, Township 11 North, Range 3 East, New Mexico Principal Meridian, Bernalillo County, Albuquerque, New Mexico, being a southeasterly portion of Lot 11 of the PLAT OF LAS SENDAS DEL NORTE SUBDIVISION, Albuquerque, New Mexico, as the same is shown and designated on the plat thereof, recorded in the office of the County Clerk of Bernalillo County, New Mexico on January 16, 2001 in Book 2001C, Page 19 as Document No. 2001004465 and being more particularly described by New Mexico State Plane Grid Bearings (Central Zone NAD 1927 Datum) and ground distances as follows:

BEGINNING at the southeast corner of said Lot 11, a point on the northerly right-of-way line of Via Del Cerro, and from said point of beginning running thence along the southerly boundary line of said Lot 11 and also along said right-of-way line,
S83° 26'37"W, a distance of 36.00 feet to the southwest corner of the tract herein described; thence leaving the southerly boundary line of said Lot 11 and also said right-of-way line and running thence along the westerly boundary line of the tract herein described,
N06° 33'23"W, a distance of 29.00 feet to the northwest corner of the tract herein described; thence,
N83° 26'37"E, a distance of 36.00 feet to the northeast corner of the tract herein described, a point on the easterly boundary line of said Lot 11; thence running along the easterly boundary line of said Lot 11,
S06° 33'23"E, a distance of 29.00 feet to the point and place of beginning.

Tract contains 1044 square feet or 0.0240 acre, more or less.

A. Dwain Weaver
N.M.P.S. No. 6544

A. DWAIN WEAVER
NEW MEXICO
6544
REGISTERED PROFESSIONAL SURVEYOR

Date: April 4, 2001

Mary Herrera Bern. Co. EASE R 15.00

2001045808
5496696
Page: 4 of 5
04/25/2001 10:55A
Bk-A18 Pg-4255

Bohannan Huston

Courtyard One 7500 JEFFERSON NE Albuquerque NEW MEXICO 87109

P:97455\SURVEY\C2-01
97455Exhibit.dgn

JOB NO. 97455C2 01

EXHIBIT "A"

PUE DESCRIPTION

A certain tract of land situate within the Elena Gallegos Grant, within projected Section 27, Township 11 North, Range 3 East, New Mexico Principal Meridian, Bernalillo County, Albuquerque, New Mexico, being a westerly portion of Lot 10 and an easterly portion of Lot 11 of the PLAT OF LAS SENDAS DEL NORTE SUBDIVISION, Albuquerque, New Mexico, as the same are shown and designated on the plat thereof, recorded in the office of the County Clerk of Bernalillo County, New Mexico on January 16, 2001 in Book 2001C, Page 19 as Document No. 2001004465 and being more particularly described by New Mexico State Plane Grid Bearings (Central Zone NAD 1927 Datum) and ground distances as follows:

BEGINNING at the northeast corner of the tract herein described, whence the northwest corner of said Lot 10 and also being the northeast corner of said Lot 11, bears N37°06'00"W, a distance of 19.68 feet and from said point of beginning running thence along the easterly boundary line of the tract herein described,
S06°33'23"E, a distance of 29.00 feet to the southeast corner of the tract herein described;
thence running along the southerly boundary line of the tract herein described,
S83°26'37"W, a distance of 10.00 feet to a point; thence,
N06°33'23"W, a distance of 19.00 feet to a point; thence,
S83°26'37"W, a distance of 36.00 feet to a point; thence,
S06°33'23"E, a distance of 19.00 feet to a point; thence,
S83°26'37"W, a distance of 10.00 feet to the southwest corner of the tract herein described;
thence running along the westerly boundary line
of the tract herein described,
N06°33'23"W, a distance of 29.00 feet to the northwest corner of the tract herein described;
thence running along the northerly boundary line of the tract herein described,
N83°26'37"E, a distance of 56.00 feet to the point and place of beginning.

Tract contains 940 square feet or 0.0216 acre, more or less.

A. Dwain Weaver
N.M.P.S. No. 6544

Date: April 4, 2001

A. DWAIN WEAVER
NEW MEXICO
6544
REGISTERED PROFESSIONAL SURVEYOR

Mary Herrera Bern. Co. EASE R 15.00

2001045808
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Page: 5 of 5
04/25/2001 10:55A
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Bohannan ▲ Huston

Courtyard One 7500 JEFFERSON NE Albuquerque NEW MEXICO 87109

P:97455\SURVEY\C2-01
97455Exhibit.dgn

JOB NO. 97455C2 01

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

September 10, 2001

James Topmiller, P.E.
Bohannan-Huston, Inc.
7500 Jefferson NE
Albuquerque, New Mexico 87109

RE: **LAS SENDAS DEL NORTE (E-16/D17)**
(FORMERLY: LA SALA DEL NORTE UNIT 2)
Engineers Certification For Release of Financial Guaranty
Engineers Stamp dated 11/7/1998
Engineer's Certification dated 8/30/2001

Dear Mr. Topmiller:

Based upon the information provided in your submittal dated 8/30/2001, the above referenced plan is adequate to satisfy the Grading and Drainage Certification requirements for Release of Financial Guaranty.

If you have any questions, please call me at 924-3981.

Sincerely,

Teresa A. Martin

Teresa A. Martin
Hydrology Plan Checker
Public Works Department
BUD

C: Arlene Portillo, PWD – #6093.81
File

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

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

December 11, 2000

James Topmiller, PE
Bohannan Huston, Inc.
7500 Jefferson NE
Albuquerque, NM 87109

Re: La Sala del Norte Unit 2 Subdivision Grading Plan Revisions
Engineer's Stamp dated 10-9-00 (E16/D17)

Dear Mr. Topmiller,

Based upon the information provided in your submittal dated 10-9-00, the above referenced revisions are approved for the Drainage Requirements you seek.

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

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Sr. Engineer, Hydrology

C: Kevin Broderick, CoA proj # 609381
file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

City of Albuquerque

November 30, 1999

James Topmiller, P.E.
Bohannan-Huston Inc.
7500 Jefferson NE
Albuquerque, New Mexico 87109

RE: ***Grading and Drainage Certification Plan for La Sala Del Norte Subdivision, Unit I (E16/D17) Submitted for Release of Financial Guarantees, Engineer's Certification Stamp Dated 11/3/99.***

Dear Mr. Topmiller:

Based on the information provided, the above referenced plan is adequate to satisfy the Grading and Drainage certification requirement per the Infrastructure List dated February 16, 1999 for the release of Financial Guarantees for Unit 1 of La Sala Del Norte Subdivision.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

Susan Calongne

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Terri Martin, City Project No. 603581
Jerry Sundt, Sundt Corporation
File

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

9cr

603581
Brad

File E16/D17

CANCELLATION AND RELEASE OF DRAINAGE COVENANT

This **CANCELLATION AND RELEASE OF DRAINAGE COVENANT** is made and entered into as of the 22ND day of August, 2006, by the City of Albuquerque, (the "City").

WHEREAS, the City of Albuquerque ("City") and **SUNDT CONSTRUCTION, INC.** entered into a Drainage Covenant (the "Agreement") to construct a **LA SALA DEL NORTE UNIT 1**. The Agreement was recorded **May 27, 1999**, in Book **9907** at page **9912** thru **9912** as Document No. **1999070074** in the records of the Bernalillo County Clerks Office, New Mexico; and

WHEREAS, all of the conditions prior to cancellation and release of the Agreement have been satisfactorily performed, and the parties wish to cancel and release the Agreement.

THEREFORE, City of Albuquerque hereby cancels and releases the Agreement.

IN WITNESS WHEREOF, the undersigned has executed this Cancellation and Release of Drainage Covenant as of the day and year first above written.

CITY OF ALBUQUERQUE

By: _____
Its: City Engineer

8/21/06

8-16-06

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

This instrument was acknowledged before me on August 22, 2006 by Richard Dourte, City Engineer, Planning Department of the City of Albuquerque, a municipal corporation, on behalf of the corporation.

Gloria S. Saavedra
Notary Public

My Commission Expires:

11-25-2007
~~Notary Public~~

Mary Herrera Bern. Co. CANC R 9.00

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6514982
Page: 1 of 1
08/22/2006 01:59P
Bk-A122 Pg-7077

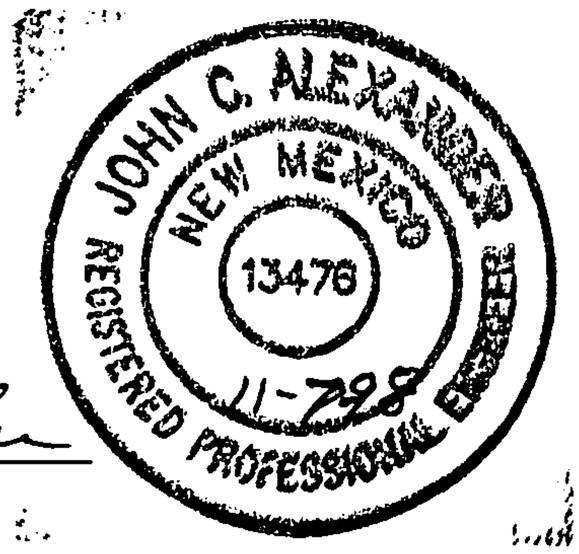
Revised Drainage Report
for
La Sala del Norte Subdivision, Units I and II

December 7, 1998

Prepared for:

BROWN & ASSOCIATES
3411 CANDELARIA NE
ALBUQUERQUE, NEW MEXICO 87107

Prepared by:



John Alexander, P.E.

I. INTRODUCTION

La Sala del Norte Subdivision is a proposed new subdivision in Vista del Norte consisting of 118 lots on approximately 25.3 acres. Development of the property will occur in two phases, to be called Units I and II. The report is in compliance with the City of Albuquerque Subdivision standards and is consistent with the drainage criteria set forth by the Vista del Norte Master Drainage Plan (June 1998).

Detailed drainage and grading plans are included in the plates section of this report.

This subdivision is located north of Osuna Road, west of the AMAFCA North Diversion Channel and Vista del Norte Drive, and east of Edith Blvd. The land is zoned for residential development. Please refer to the Location Map enclosed in the Appendices for the specific location.

This report outlines the study methodologies used and summarizes the existing and proposed drainage conditions. Calculations and supporting data are presented in the appendices. Drainage master plan, drainage basin maps, grading plans and a copy of the Preliminary Plat are included in the pockets at the end of the report.

The purpose of this report is to obtain approval for the Preliminary and Final Plat, grading plans and Public Infrastructure Construction Plans of the La Sala del Norte Subdivision, Units I and II.

II. STUDY METHODOLOGIES

The City of Albuquerque standards for drainage analyses have been incorporated by this report. This drainage report contains all applicable calculations per section 22.2 of the Development Process Manual for deriving the following values using the rational method analysis:

LAND TREATMENT	PEAK DISCHARGE (CFS/ACRE)	EXCESS PRECIPITATION (INCHES)
A	1.56	0.53
B	2.28	0.78
C	3.14	1.13
D	4.70	2.12

ZONE 2

Flow rate references in this report are 6-hour, 100-year storm event values.

Street hydraulics and capacities were analyzed using Manning's equation. Spread sheets for street capacities are provided in Appendix 3, along with a summary page defining curb type. Streets are designed to convey the energy grade line of the design storm event within the width of the street right-of-way. Normal flow depth is confined to the top of the curb.

The calculated pipe hydraulics assume pressure flow conditions and are analyzed by computer spread sheets. Rating curvaes for storm drain basins, along with inlet design, are found in Appendix 4.

III. EXISTING CONDITIONS

Please reference Plate 2 for interim grading conditions per the previously submitted and approved June 1998 Drainage Master Plan.

A. Onsite Drainage Basins

The site sheet flows in a general northwest direction. The flows from La Sala del Norte (Tract K) are directed to the 'middle detention pond." Detailed analysis of the pond and surrounding area hydrologic analysis can be found in the previously submitted June 1998 report.

Plate 3 is an exhibit of our existing condition analysis, which assumes post construction of the master plan infrastructure, and prior to our development. Supporting data and calculations are located in Appendix 2.

B. Offsite Drainage Basins

This site is impacted by an offsite basin directly south of our proposed subdivision. Its flow has been incorporated into the volume calculations for the south detention pond. This pond is to be built with the drainage master plan infrastructure.

IV. PROPOSED DEVELOPED CONDITIONS

Please refer to the "Proposed Conditions/Drainage Basins Map and Preliminary Plat, provided in the pockets at the end of the report, for a graphical depiction of the proposed conditions. The Proposed Conditions/Drainage Basins Maps identify the individual basins for Units I and II and their respective flow rates resulting from the 6-hour, 100-year storm event. The Proposed Conditions Maps also identifies the extent of construction to be included with Unit I and II. The drainage plan is summarized in the following two sections.

V. UNIT I DEVELOPMENT

A. Onsite Drainage Basins

For the purpose of analysis, Unit I is subdivided into sub-basins, as is shown on the Proposed Conditions Map (Plate 4). Basin K-1 will convey its flow (1.8 cfs) via an earthen channel which will terminate at a "turtle-back" open-grate manhole cover (manhole #9). The remainder of the site runoff (48.3 cfs) will be conveyed by the streets and intercepted by a battery of inlets in sump condition. The flow is then discharged via a 48" RCP to an existing storm network and conveyed to the existing detention pond directly west of Unit I and south of Tract A. Calculations for the grate capacities are located in Appendix 4.

Street capacities have been calculated at several analysis points (reference the Proposed Conditions Basin Map in Plate 4 pocket of this report). The data for street capacities can be found in Appendix 3. Normal depth of flow is contained below the top of curb elevation, and the energy grade line is contained within the street right-of-way.

Individual lot grading has been identified on the Grading Plan located in the rear pockets. A typical lot drainage configuration is used, as shown on the Grading Plan.

B. OffSite Drainage Basins

Please refer to Plate 4 and Plate 6 in the rear of this report. A portion of the undeveloped Tract L's runoff sheet flows to our southern boundary. The area of the offsite basin is approximately 2.6 acres and generates 8.3 cfs. A temporary retention pond will be constructed on Tract 'L' near the southwest corner of our site. An earthen channel will be built to route the off-site flow to the temporary pond.

VI. UNIT II DEVELOPMENT

For the purpose of analysis, Unit II is subdivided into sub-basins. Please refer to the ultimate proposed conditions map in Plate 5. Basin K-10 (1.7 cfs) drains via sheet flow offsite to the western adjacent tract and into an existing detention pond. The remaining Basins K-7, K-8 and K-9 have a combined flow of 37.5 cfs, which will be conveyed by the streets and intercepted by a vane grate that extends the entire width of the street (22' face-to-face). The vane grate inlet trench carries the entire street flow to a 36" RCP which in turn conveys the flow to an existing pipe network and into a detention pond created by the Drainage Master Plan on Tract 'F'. Calculations for the grate capacity and the 36" RCP are located in Appendix 4.

Street capacities have been calculated at several analysis points (reference the Proposed Conditions Basin Map in Plate 5 pocket of this report). The data for street capacities can be found in Appendix 3. Normal depth of flow is contained below the top of curb elevation, and the energy grade line is contained within the street right-of-way.

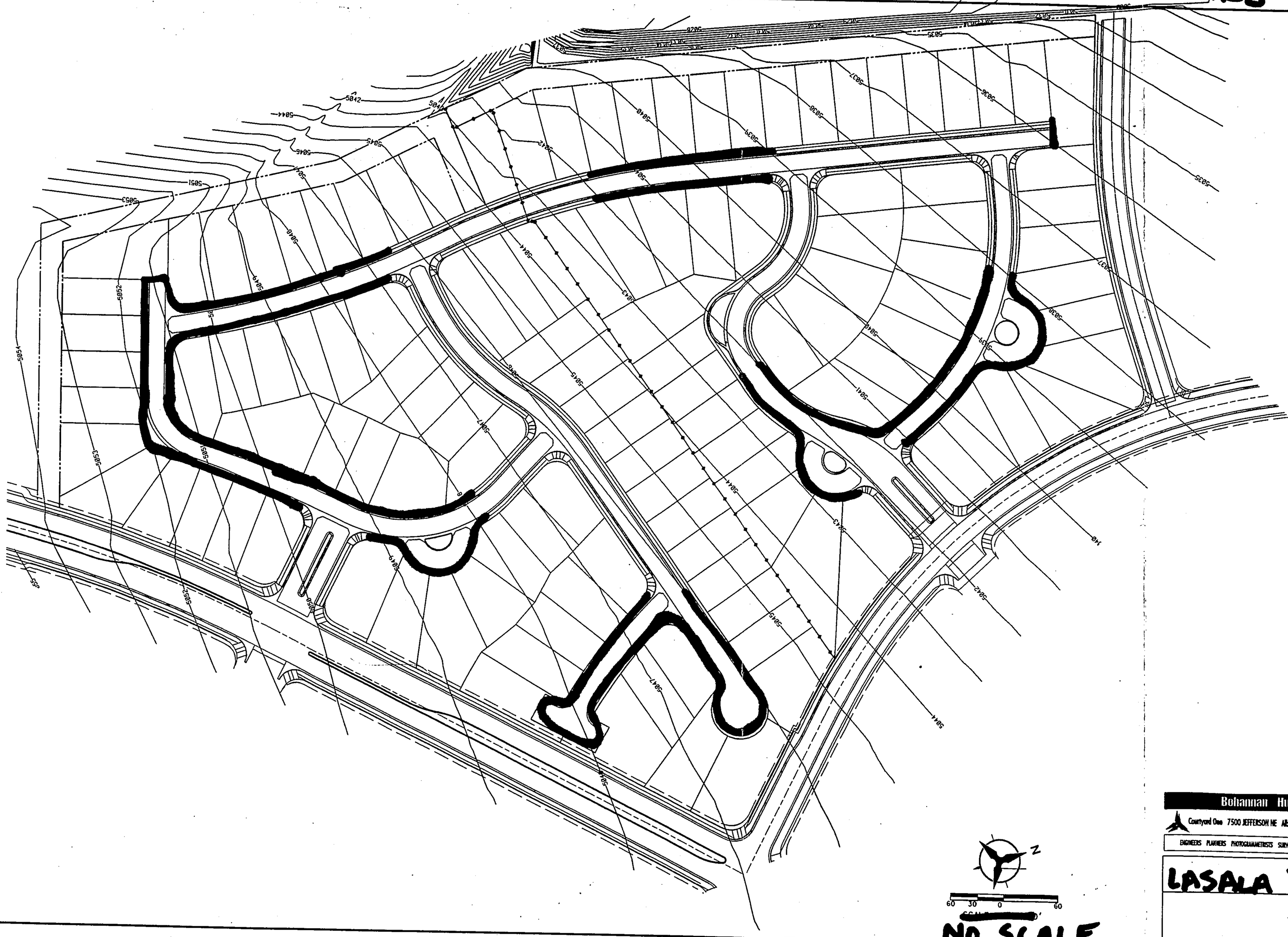
Individual lot grading has been identified on the Grading Plan located in the rear pockets. A typical lot drainage configuration is used, as shown on the Grading Plan.

VII. CONCLUSION

This report requests approval for the Preliminary and Final Plat grading plans and Public Infrastructure Construction Plans. The drainage management plan presented in this revised report for La Sala del Norte, Units I and II, provides a workable solution to the drainage issues created by the development of this property, and satisfactorily addresses the comments of the City of Albuquerque Hydrology Division. It is recommended that this plan be approved for the requested items.

ROLL CURB EXHIBIT

— = ROLL CURB



Bohannan Huston

Courtyard One 7500 JEFFERSON NE Albuquerque NEW MEXICO 87109

ENGINEERS PLANNERS PHOTOGRAMMETRISTS SURVEYORS SOFTWARE DEVELOPERS

OCTOBER 1998

LASALA DEL NORTE

A-1-2

EXISTING CONDITIONS
100 YR, 6 HR. STORM

SUMMARY OF HYDROLOGIC DATA

BASIN ID	AREA AC	AREA SQ.MI.	% LAND TREATMENT				TIME TO PEAK	100-YR DISCHARGE CFS/AC	Q(100YR) CFS
			A	B	C	D			
K	25.270	0.0395	0.0	0.0	100.0	0.0	0.1333	3.14	79.3

Q100's value is equivalent to the one used in the Vista Del Norte Master Drainage Report, June 1998. (89cfs) @27 ac
The difference is due to the area used for each analysis.

A-2-1

ADDRESSES COMMENT #2
OF SUSAN CALONGNE'S LETTER
(11-16-98)

EXISTING CONDITIONS
100 YR, 6 HR. STORM

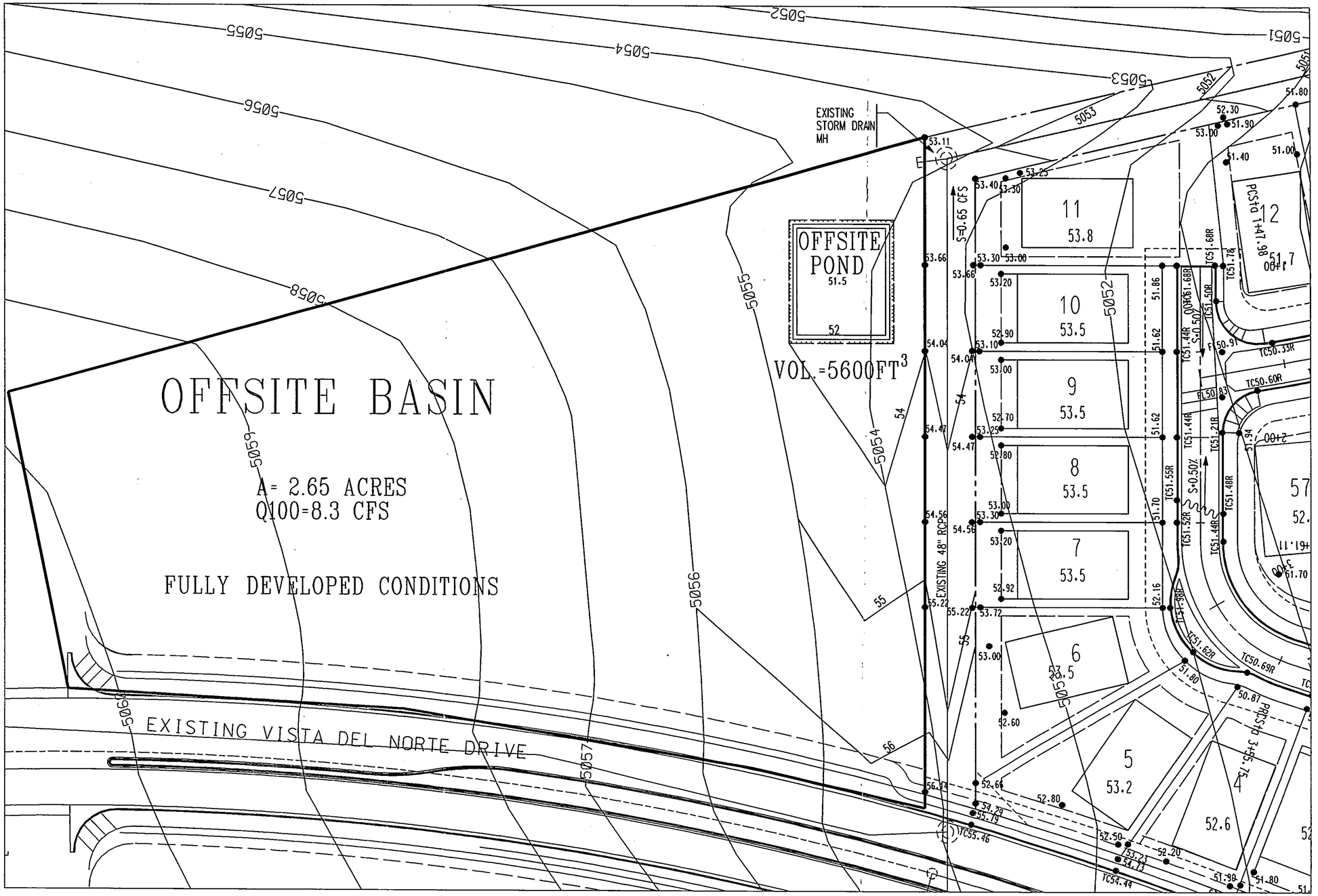
SUMMARY OF OFF-SITE HYDROLOGIC DATA

BASIN ID	AREA AC	AREA SQ.MI.	% LAND TREATMENT				TIME TO PEAK	100-YR DISCHARGE CFS/AC	Q(100YR) CFS
			A	B	C	D			
OFFSITE-1	2.650	0.0041	0.0	0.0	100.0	0.0	0.1333	3.14	8.3

Q100's value is equivalent to the one used in the Vista Del Norte Master Drainage Report, June 1998.

REPLACES SHEET A-2-2

ADDRESSES COMMENT #2
OF SUSAN CALONGNE'S LETTER
(11-16-98)



N

SCALE 1"=60'

LA SALA DEL NORTE
DRAINAGE REPORT
ADDS SHEET A-2-2A

P:97455\CDP\DESIGN\TOPO.DGN (LEVELS 62&63)

ADDRESSES COMMENT #21 OF SUSAN CALONGNE'S LETTER (11-16-98)

SIZE A TEMP. DENTION POND.

DESIGN EVENT: 100yr 6hr STORM.

Basin Area (INCLD. POND SURFACE) = 2.65 AC.

ZONE 2

TREATMENT 100% 'C'

$Q_{100} = 8.3 cfs$

$E_{100} = 0.53 in.$

$V_{100} = \frac{0.53''}{12} (2.65 ac) = 0.12 AC\text{-}FT.$

$V_{100} = 0.12 ac \cdot ft \ (43560 sf/Ac) = 5227 cf$

SIZE POND DEPTH TO HAVE 1 foot free Board.

TRY: BOTTOM AREA AS 50' x 60' = 3000 sf

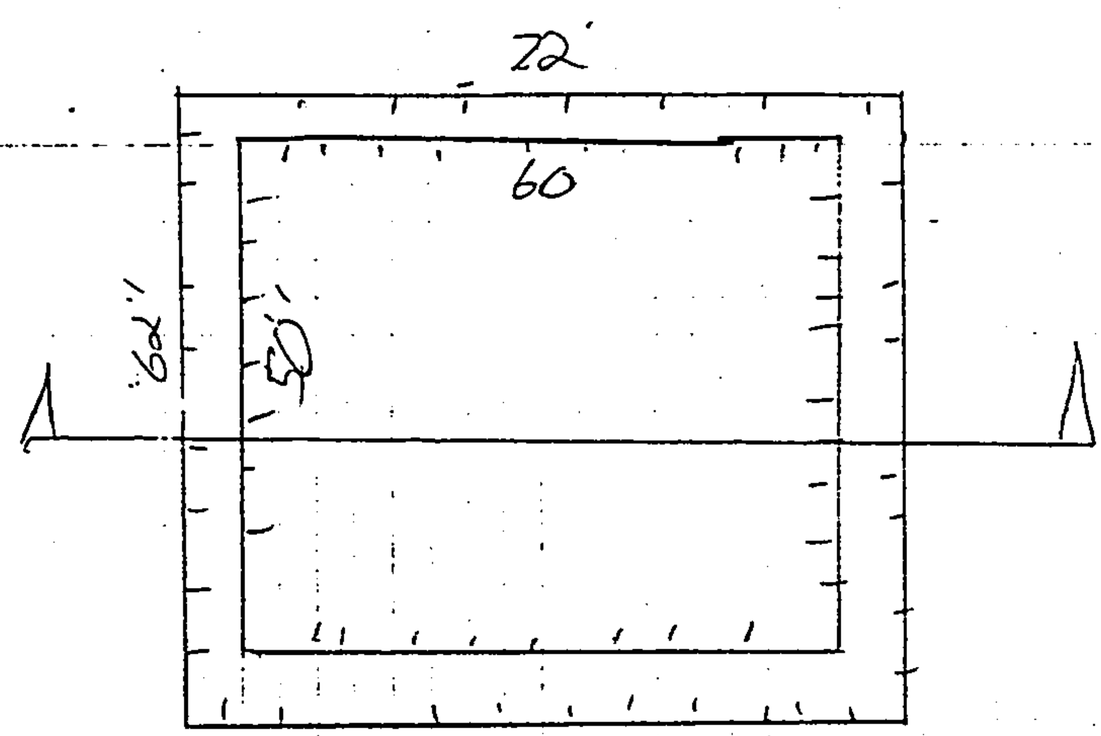
TOP AREA 62 x 72' = 4464 sf

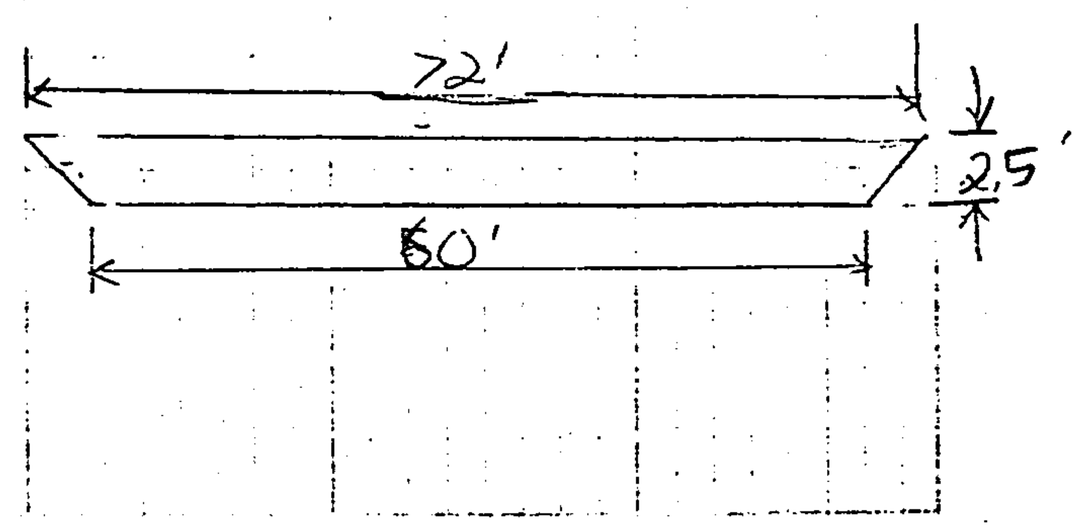
TRY 2.5 DEPTH : Pond Volume = $\frac{\text{Bottom A} + \text{Top A}}{2} Z$

(with Freeboard) $\frac{3000 + 4464}{2} (2.5) = 9330 cy$

check that we have a one foot freeboard $\approx \frac{3000 + 4464}{2} (1.5) = 5600 cy > 5227 cy$

OKAY





BOHANNAN-HUSTON INC.

ADDS SHEET A-2-2B

PROJECT NAME La Sala Off-site Pond SHEET 1 OF 2

PROJECT NO. [illegible] BY [illegible] DATE 12 2 98

SUBJECT CH'D DATE

SUMMARY OF
HYDROLOGIC DATA -

UNIT 1

10/09/98

VISTA DEL NORTE: TRACT K

ZONE 2:

PEAK DISCHARGE, CFS/ACRE				
EVENT	A	B	C	D
100-YR (~~1~~ 6hr)	1.56	2.28	3.14	4.7

FULLY DEVELOPED CONDITIONS

100 YR, 6 HR. STORM

SUMMARY OF HYDROLOGIC DATA

BASIN ID	AREA AC	AREA SQ.MI.	% LAND TREATMENT				TIME TO PEAK	100-YR DISCHARGE CFS/AC	Q(100YR) CFS
			A	B	C	D			
K1*	0.68	0.0011	0.0	50.0	50.0	0.0	0.1333	2.71	1.8
K2	2.73	0.0043	8.8	20.8	20.8	49.5	0.1333	3.59	9.8
K3	3.92	0.0061	7.4	22.8	22.8	47.0	0.1333	3.56	14.0
K4	1.57	0.0025	8.2	22.0	22.0	47.8	0.1333	3.57	5.6
K5	3.51	0.0055	8.2	19.4	19.4	53.0	0.1333	3.67	12.9
K6	1.76	0.0028	7.3	26.2	26.2	40.3	0.1333	3.43	6.0
	14.17								50.1

AC-FT

* BASIN K1 SHEET FLOWS INTO EXISTING OFFSITE POND VIA DRAINS IN THE MASONARY FENCE.
THEREFORE TOTAL FLOW INTO THE STORM DRAIN SYSTEM IS 50.1 - 1.8 = 48.3 CFS

p:\97455\cdp\hydro\basins.xls

A-2-3

HYDROLOGIC DATA - VISTA DEL NORTE: TRACT K

UNIT 1 DATA BASE FOR DEVELOPED HYDROLOGIC CONDITIONS

10/09/98

IMPERVIOUS AREA CALCULATIONS

10/09/98

LOT WIDTH (IN FEET)	45	50	55	60	65	70	75	80
PAD WIDTH	37	40	40	45	50	55	60	65
PAD DEPTH	60	60	60	60	60	60	60	60
DRIVEWAY (20'x20')	400	400	400	400	400	400	400	400
WALKWAY (4' WIDE)	0	0	0	0	0	0	0	0
PATIO (10'x10')	100	100	100	100	100	100	100	100
TOTAL IMPERVIOUS	2720 sq.ft/lot	2900 sq.ft/lot	2900 sq.ft/lot	3200 sq.ft/lot	3500 sq.ft/lot	3800 sq.ft/lot	4100 sq.ft/lot	4400 sq.ft/lot

ROADWAY	TYPE 1	TYPE 2	TYPE 3	TYPE 4	CUL 1
F-F WIDTH	22	25	26	28	
SIDEWALK	4	4	4	4	4
RADIUS					40
AREA/ LF	26 sq.ft/ft	29 sq.ft/ft	34 sq.ft/ft	36 sq.ft/ft	5027 sq.ft

BASIN ID	AREA TYPE D AC	PERCENT TYPE D	TOTAL NUMBER OF LOTS PER BASIN							
			45'	50'	55'	60'	65'	70'	75'	80'
K1*	0.00	0.0	0	0	0	0	0	0	0	0
K2	1.35	49.5	0	15	0	0	0	0	0	0
K3	1.84	47.0	0	18	0	0	0	0	0	0
K4	0.75	47.8	0	8	0	0	0	0	0	0
K5	1.86	53.0	0	18	0	0	0	0	0	0
K6	0.71	40.3	0	8	0	0	0	0	0	0
				67						

TOTAL LENGTH OF ROADWAY PER BASIN				NUMBER OF CUL-DE-SACS PER BASIN
TYPE 1	TYPE 2	TYPE 3	TYPE 4	
0	0	0	0	0
0	0	452	0	0
47	47	174	472	0.5
0	0	179	0	0.68
0	0	698	0	1
0	0	227	0	0

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A-2-4

SUMMARY OF
HYDROLOGIC DATA -
UNIT II
10/12/98

VISTA DEL NORTE: LA SALA DEL NORTE

PEAK DISCHARGE, CFS/ACRE				
EVENT	A	B	C	D
100-YR (1)	1.56	2.28	3.14	4.70

FULLY DEVELOPED CONDITIONS
100 YR, 6 HR. STORM

SUMMARY OF HYDROLOGIC DATA

BASIN ID	AREA AC	AREA SQ.MI.	% LAND TREATMENT				TIME TO PEAK	100-YR DISCHARGE CFS/AC	Q(100YR) CFS
			A	B	C	D			
K7	3.67	0.0057	5.0	21.4	21.4	52.25	0.1333	3.69	13.6
K8	3.36	0.0053	3.8	25.1	25.1	45.91	0.1333	3.58	12.0
K9	3.32	0.0052	4.7	24.1	24.1	47.11	0.1333	3.59	11.9
K10	0.62	0.0010	0.0	50.0	50.0	0.00	0.1333	2.71	1.7
	10.97								39.2

AC-FT

Basin K-10 SHEET FLOWS ONTO THE ADJACENT TRACT (WESTWARD).

Therefore Total Flow into the storm system is
39.2 - 1.7 = 37.5 cfs

A-2-5

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HYDROLOGIC DATA - VISTA DEL NORTE: LA SALA DEL NORTE
UNIT II DATA BASE FOR DEVELOPED HYDROLOGIC CONDITIONS
10/12/98

IMPERVIOUS AREA CALCULATIONS

10/12/98

LOT WIDTH (IN FEET)	45	50	55	60	65	70	75	80
PAD WIDTH	37	40	40	45	50	55	60	65
PAD DEPTH	60	60	60	60	60	60	60	60
DRIVEWAY (20'x20')	400	400	400	400	400	400	400	400
WALKWAY (4' WIDE)	0	0	0	0	0	0	0	0
PATIO (10'x10')	100	100	100	100	100	100	100	100
TOTAL IMPERVIOUS	2720 sq.ft/lot	2900 sq.ft/lot	2900 sq.ft/lot	3200 sq.ft/lot	3500 sq.ft/lot	3800 sq.ft/lot	4100 sq.ft/lot	4400 sq.ft/lot

ROADWAY	TYPE 1	TYPE 2	TYPE 3	TYPE 4	CUL 1
F-F WIDTH	22	25	26	28	
SIDEWALK	4	4	4	4	4
RADIUS					35
AREA/ LF	30 sq.ft/ft	29 sq.ft/ft	34 sq.ft/ft	36 sq.ft/ft	3848 sq.ft

BASIN ID	AREA TYPE D AC	PERCENT TYPE D	TOTAL NUMBER OF LOTS PER BASIN							
			45'	50'	55'	60'	65'	70'	75'	80'
K7	1.92	52.3	0	20	0	0	0	0	0	0
K8	1.54	45.9	0	14	0	0	0	0	0	0
K9	1.56	47.1	0	17	0	0	0	0	0	0
K10	0.00	0.0	0	0	0	0	0	0	0	0
				51						

	TOTAL LENGTH OF ROADWAY PER BASIN				NUMBER OF CUL-DE-SACS PER BASIN
	TYPE 1	TYPE 2	TYPE 3	TYPE 4	
K7	0	0	751	0	0
K8	120	120	0	435	1.00
K9	0	0	469	0	0.75
K10	0	0	0	0	0

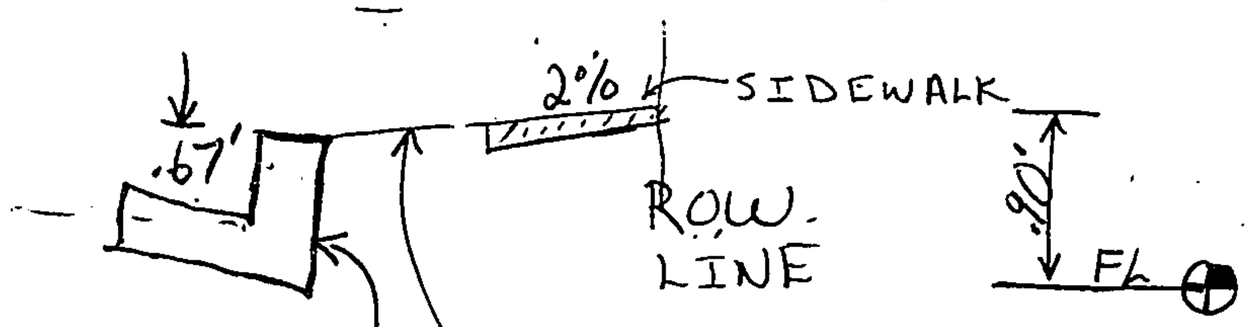
A-2-6

ADDRESSES - COMMENT #6 OF
SUSAN CALONGNE'S LETTER (11-16-98)

STREET CAPACITY ANALYSIS SUMMARY
LA SALA DEL NORTE OF VISTA DEL NORTE
10/22/98

ANALYSIS POINT	SLOPE, %	Q-100 YR (CFS)	NORMAL DEPTH (FT)	V-100YR (FPS)	Energy Head E-100YR (FT)	E<? (R/W)	TRIBUTARY BASIN(S)	NOTE
1	1.7	5.60	0.32	2.3	0.4	YES	K-4	
2	0.5	4.30	0.32	1.5	0.4	YES	K-5	
3	1.8	12.40	0.35	2.7	0.4	YES	K-3	
4	1.8	14.00	0.32	2.9	0.5	YES	K-3	
5	0.5	21.3	0.51	2.7	0.7	YES	K-3,4,5	
6	2.5	9.80	0.32	3.4	0.5	YES	K-2	
7	SUMP	48.30	0.68	3.7	0.90	YES	K-2,3,4,5	at grate
8	0.6	5.10	0.33	1.7	0.4	YES	K-8	
9	0.6	12.02	0.42	2.2	0.5	YES	K-8	
10	1.3	7.5	0.33	2.4	0.4	YES	K-7	
11	1.7	7.7	0.32	2.7	0.4	YES	K-9	
12	1.7	11.9	0.36	3.1	0.5	YES	K-9	
13	0.5	37.5	0.64	3.4	0.8	YES	K-7,8,9	

NOTE: The edge of R.O.W. is calculated from top of grate at flow line.



Increase slope slightly to pick up an addtional 0.03' at R.O.W.

STD. Curb

(conservatively we have neglected the addtional depth from Top of grate to Top of Curb (10¾") instead we used an 8" curb). Thus we need to modifig slope slightly ≈ 50 L.F.

[Detail to be placed on construction plans]

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REPLACES SHEET A-3-1

STREET CAPACITY ANALYSIS

BASIN K-4 Q_{100} MAX = 5.60 CFS
∴ ROLL CURB IS SUFFICIENT

SALA DEL NORTE
STREET: ELENA
26' F-F, 44' R/W

ANALYSIS PT 1

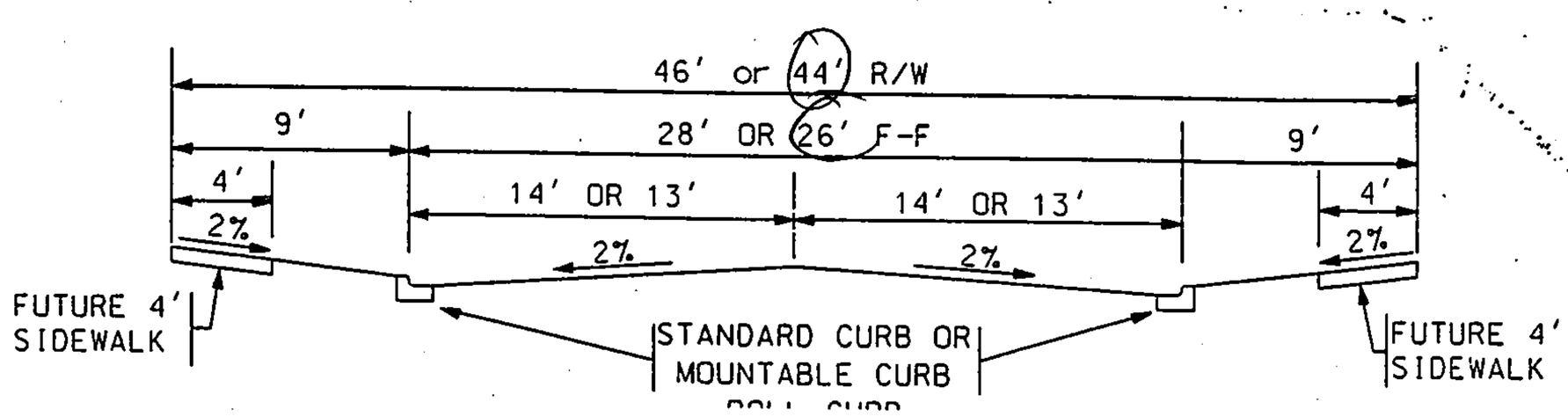
MANNING'S N= .017 SLOPE= .0118

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	22.00	0.35	9	44.00	0.85
2	8.83	0.67	6	33.00	0.13	10	0.00	0.00
3	9.00	0.00	7	35.00	0.00	11	0.00	0.00
4	11.00	0.13	8	35.17	0.67	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.03	0.03	0.01	0.0	0.99	0.56	0.94	0.00	0.03
0.06	0.06	0.06	0.0	1.97	0.89	1.88	0.01	0.07
0.09	0.09	0.13	0.1	2.96	1.16	2.81	0.02	0.11
0.12	0.12	0.23	0.3	3.95	1.41	3.75	0.03	0.15
0.15	0.15	0.37	0.5	6.32	1.42	6.08	0.03	0.18
0.18	0.18	0.59	0.9	9.38	1.51	9.09	0.04	0.22
0.21	0.21	0.91	1.5	12.44	1.66	12.11	0.04	0.25
0.24	0.24	1.32	2.4	15.51	1.84	15.12	0.05	0.29
0.27	0.27	1.82	3.7	18.57	2.02	18.14	0.06	0.33
0.30	0.30	2.41	5.3	21.63	2.20	21.15	0.07	0.37
0.33	0.33	3.09	7.3	24.69	2.37	24.17	0.09	0.42
0.36	0.36	3.85	10.1	26.76	2.61	26.18	0.11	0.47
0.39	0.39	4.64	13.7	26.82	2.95	26.20	0.13	0.52
0.42	0.42	5.42	17.7	26.88	3.27	26.21	0.17	0.59
0.45	0.45	6.21	22.2	26.94	3.57	26.23	0.20	0.65
0.48	0.48	7.00	27.0	27.00	3.86	26.24	0.23	0.71
0.51	0.51	7.79	32.2	27.07	4.14	26.26	0.27	0.78
0.54	0.54	8.57	37.8	27.13	4.41	26.27	0.30	0.84
0.57	0.57	9.36	43.7	27.19	4.66	26.29	0.34	0.91
0.60	0.60	10.15	49.9	27.25	4.92	26.30	0.38	0.98
0.63	0.63	10.94	56.5	27.31	5.16	26.32	0.41	1.04
0.66	0.66	11.73	63.3	27.37	5.40	26.33	0.45	1.11
0.69	0.69	12.54	67.5	29.36	5.39	28.30	0.45	1.14
0.72	0.72	13.43	71.1	32.30	5.29	31.25	0.43	1.15
0.75	0.75	14.42	75.4	35.25	5.23	34.19	0.43	1.18
0.78	0.78	15.48	80.5	38.19	5.20	37.13	0.42	1.20
0.81	0.81	16.64	86.4	41.13	5.19	40.08	0.42	1.23
0.84	0.84	17.89	93.1	44.08	5.21	43.02	0.42	1.26
0.85	0.85	18.32	95.5	45.06	5.21	44.00	0.42	1.27

Q_{100} MAX = 5.6 CFS

DEPTH @ Q_{100} = 5.6 CFS IS 0.32' ✓ ROLL CURB OK



A-3-2

STREET CAPACITY ANALYSIS

ANALYS PTS 3 & 4

SALA DEL NORTE
STREET: SANTIAGO
28' F-F, 46' R/W

MANNING'S N= .017 SLOPE= .0176

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	23.00	0.37	9	46.00	0.85
2	8.83	0.67	6	35.00	0.13	10	0.00	0.00
3	9.00	0.00	7	37.00	0.00	11	0.00	0.00
4	11.00	13.00	8	37.17	0.67	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.03	0.03	0.01	0.0	0.55	0.64	0.48	0.01	0.04
0.06	0.06	0.03	0.0	1.11	1.02	0.96	0.02	0.08
0.09	0.09	0.06	0.1	1.66	1.33	1.44	0.03	0.12
0.12	0.12	0.12	0.2	2.22	1.62	1.93	0.04	0.16
0.15	0.15	0.19	0.3	3.47	1.66	3.10	0.04	0.19
0.18	0.18	0.30	0.5	5.06	1.78	4.62	0.05	0.23
0.21	0.21	0.46	0.9	6.65	1.97	6.14	0.06	0.27
0.24	0.24	0.67	1.5	8.24	2.18	7.66	0.07	0.31
0.27	0.27	0.92	2.2	9.84	2.40	9.18	0.09	0.36
0.30	0.30	1.22	3.2	11.43	2.61	10.70	0.11	0.41
0.33	0.33	1.57	4.4	13.02	2.83	12.22	0.12	0.45
0.36	0.36	1.96	5.9	14.61	3.03	13.74	0.14	0.50
0.39	0.39	2.38	8.0	15.23	3.36	14.28	0.18	0.57
0.42	0.42	2.81	10.5	15.37	3.74	14.33	0.22	0.64
0.45	0.45	3.24	13.2	15.50	4.08	14.37	0.26	0.71
0.48	0.48	3.67	16.2	15.63	4.41	14.42	0.30	0.78
0.51	0.51	4.11	19.4	15.77	4.73	14.47	0.35	0.86
0.54	0.54	4.54	22.8	15.90	5.03	14.52	0.39	0.93
0.57	0.57	4.98	26.5	16.04	5.32	14.57	0.44	1.01
0.60	0.60	5.41	30.3	16.17	5.59	14.62	0.49	1.09
0.63	0.63	5.85	34.3	16.30	5.86	14.66	0.53	1.16
0.66	0.66	6.29	38.5	16.44	6.12	14.71	0.58	1.24
0.69	0.69	6.76	40.0	18.49	5.93	16.71	0.55	1.24
0.72	0.72	7.30	41.2	21.51	5.64	19.69	0.49	1.21
0.75	0.75	7.94	43.4	24.52	5.47	22.67	0.46	1.21
0.78	0.78	8.66	46.5	27.54	5.36	25.64	0.45	1.23
0.81	0.81	9.48	50.3	30.55	5.31	28.62	0.44	1.25
0.84	0.84	10.38	55.0	33.57	5.30	31.59	0.44	1.28
0.85	0.85	10.70	56.8	34.57	5.31	32.59	0.44	1.29

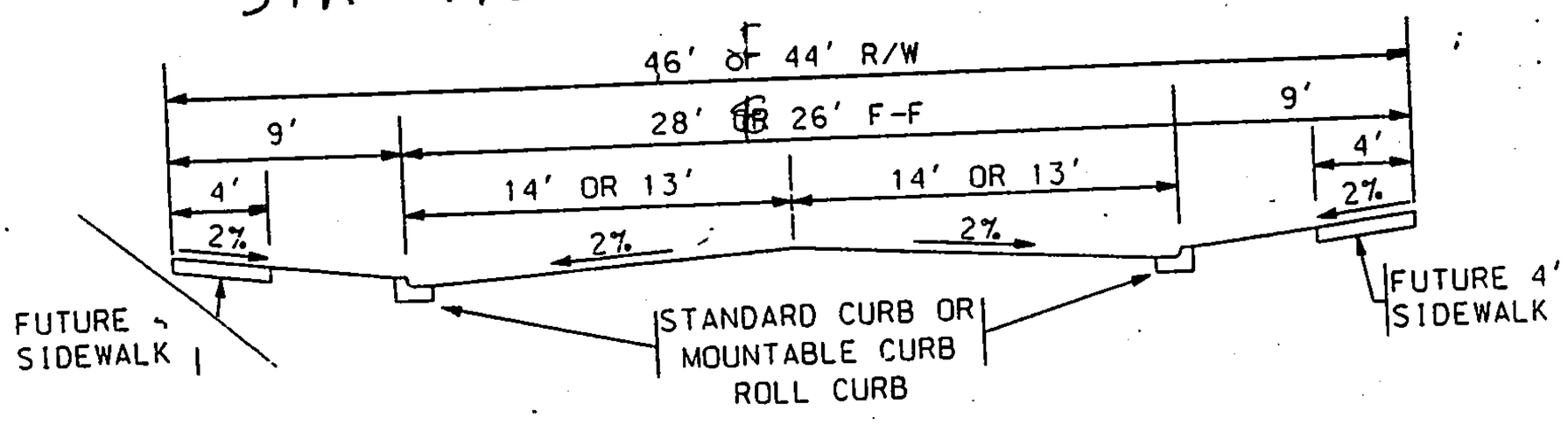
ANALYSIS PT 3 Q_{100} = 12.44 CFS

PT 4 BASIN K-3 Q_{100} = 14.0 CFS

1.) DEPTH AT ANALYSIS PT 4 FOR BASIN = 0.35 (ROLL CURB

2.) Q FOR ANALYSIS PT 3 = $\frac{16}{18}$ (14.0 CFS) = 12.44 CFS

DEPTH = 0.32' ROLL CURB OK TRANSITION @ NORTH RETURN OF KNUCKLE BEFORE LOT 51 TO STANDARD CURB. ✓



A-3-5

STREET CAPACITY ANALYSIS

ANALYSIS PT # 2 = $\left(\frac{6}{18}\right)$ 12.9 cfs = 4.3 CFS

ANALYSIS PT # 5 = $Q_3 + Q_4 + Q_5$
= 14 + 5.6 + 12.9 = 32.5 cfs
= ~~21.3 CFS~~

LA SALA DEL NORTE
STREET: GARZA
26' F-F, 44' R/W

MANNING'S N= .017 SLOPE= .005

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	22.00	0.35	9	44.00	0.85
2	8.83	0.67	6	33.00	0.13	10	0.00	0.00
3	9.00	0.00	7	35.00	0.00	11	0.00	0.00
4	11.00	0.13	8	35.17	0.67	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.03	0.03	0.01	0.0	0.99	0.36	0.94	0.00	0.03
0.06	0.06	0.06	0.0	1.97	0.58	1.88	0.01	0.07
0.09	0.09	0.13	0.1	2.96	0.76	2.81	0.01	0.10
0.12	0.12	0.23	0.2	3.95	0.92	3.75	0.01	0.13
0.15	0.15	0.37	0.3	6.32	0.92	6.08	0.01	0.16
0.18	0.18	0.59	0.6	9.38	0.98	9.09	0.01	0.19
0.21	0.21	0.91	1.0	12.44	1.08	12.11	0.02	0.23
0.24	0.24	1.32	1.6	15.51	1.20	15.12	0.02	0.26
0.27	0.27	1.82	2.4	18.57	1.31	18.14	0.03	0.30
0.30	0.30	2.41	3.4	21.63	1.43	21.15	0.03	0.33
0.33	0.33	3.09	4.8	24.69	1.55	24.17	0.04	0.37
0.36	0.36	3.85	6.5	26.76	1.70	26.18	0.04	0.40
0.39	0.39	4.64	8.9	26.82	1.92	26.20	0.06	0.45
0.42	0.42	5.42	11.5	26.88	2.13	26.21	0.07	0.49
0.45	0.45	6.21	14.4	26.94	2.32	26.23	0.08	0.53
0.48	0.48	7.00	17.6	27.00	2.51	26.24	0.10	0.58
0.51	0.51	7.79	21.0	27.07	2.69	26.26	0.11	0.62
0.54	0.54	8.57	24.6	27.13	2.87	26.27	0.13	0.67
0.57	0.57	9.36	28.4	27.19	3.04	26.29	0.14	0.71
0.60	0.60 ✓	10.15	32.5	27.25	3.20	26.30	0.16	0.76
0.63	0.63	10.94	36.7	27.31	3.36	26.32	0.18	0.81
0.66	0.66	11.73	41.2	27.37	3.51	26.33	0.19	0.85
0.69	0.69	12.54	44.0	29.36	3.51	28.30	0.19	0.88
0.72	0.72	13.43	46.3	32.30	3.44	31.25	0.18	0.90
0.75	0.75	14.42	49.1	35.25	3.41	34.19	0.18	0.93
0.78	0.78	15.48	52.4	38.19	3.39	37.13	0.18	0.96
0.81	0.81	16.64	56.3	41.13	3.38	40.08	0.18	0.99
0.84	0.84	17.89	60.6	44.08	3.39	43.02	0.18	1.02
0.85	0.85	18.32	62.2	45.06	3.39	44.00	0.18	1.03

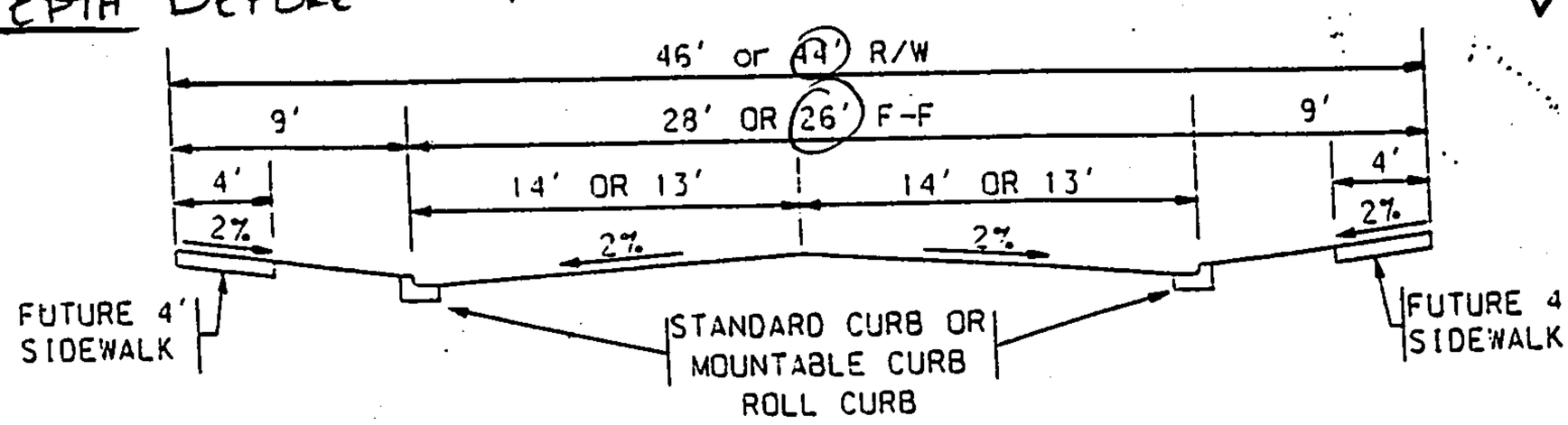
PT 2
Q_{100} = 4.3 CFS MAX

PT 5
Q_{100} = 21.3 CFS MAX

2 DEPTH BEFORE INT. OF ELENA & GARZA = 0.32' ✓ ROLL CURB OK! ✓

* TRANSITION TO STANDARD CURB THROUGH INTERSECTION W/ ELENA

5 DEPTH BEFORE INT OF GARZA & LUNA = 0.51' < 0.67' ✓ STND CURB OK



A-3-41

STREET CAPACITY ANALYSIS

ANALYSIS PTS 6 & 7

LA SALA DEL NORTE
STREET: ~~LUNA~~ CERRO
26'F-F, 44' R/W

MANNING'S N= .017 SLOPE= .0252

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	22.00	0.35	9	44.00	0.85
2	8.83	0.67	6	33.00	0.13	10	0.00	0.00
3	9.00	0.00	7	35.00	0.00	11	0.00	0.00
4	11.00	0.13	8	35.17	0.67	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.03	0.03	0.01	0.0	0.99	0.82	0.94	0.01	0.04
0.06	0.06	0.06	0.1	1.97	1.30	1.88	0.03	0.09
0.09	0.09	0.13	0.2	2.96	1.70	2.81	0.04	0.13
0.12	0.12	0.23	0.5	3.95	2.06	3.75	0.07	0.19
0.15	0.15	0.37	0.8	6.32	2.08	6.08	0.07	0.22
0.18	0.18	0.59	1.3	9.38	2.20	9.09	0.08	0.26
0.21	0.21	0.91	2.2	12.44	2.43	12.11	0.09	0.30
0.24	0.24	1.32	3.5	15.51	2.68	15.12	0.11	0.35
0.27	0.27	1.82	5.4	18.57	2.95	18.14	0.13	0.40
0.30	0.30	2.41	7.7	21.63	3.21	21.15	0.16	0.46
0.33	0.33	3.09	10.7	24.69	3.47	24.17	0.19	0.52
0.36	0.36	3.85	14.7	26.76	3.81	26.18	0.23	0.59
0.39	0.39	4.64	20.0	26.82	4.31	26.20	0.29	0.68
0.42	0.42	5.42	25.9	26.88	4.77	26.21	0.35	0.77
0.45	0.45	6.21	32.4	26.94	5.22	26.23	0.42	0.87
0.48	0.48	7.00	39.5	27.00	5.64	26.24	0.49	0.97
0.51	0.51	7.79	47.1	27.07	6.05	26.26	0.57	1.08
0.54	0.54	8.57	55.2	27.13	6.44	26.27	0.64	1.18
0.57	0.57	9.36	63.8	27.19	6.82	26.29	0.72	1.29
0.60	0.60	10.15	72.9	27.25	7.18	26.30	0.80	1.40
0.63	0.63	10.94	82.5	27.31	7.54	26.32	0.88	1.51
0.66	0.66	11.73	92.5	27.37	7.89	26.33	0.97	1.63
0.69	0.69	12.54	98.7	29.36	7.87	28.30	0.96	1.65
0.72	0.72	13.43	103.9	32.30	7.73	31.25	0.93	1.65
0.75	0.75	14.42	110.2	35.25	7.65	34.19	0.91	1.66
0.78	0.78	15.48	117.7	38.19	7.60	37.13	0.90	1.68
0.81	0.81	16.64	126.3	41.13	7.59	40.08	0.89	1.70
0.84	0.84	17.89	136.1	44.08	7.61	43.02	0.90	1.74
0.85	0.85	18.32	139.6	45.06	7.62	44.00	0.90	1.75

ANAL PT 6
Q_{100} = 9.8 CFS MAX

ANAL PT 7
Q_{100} = 48.3 CFS MAX

1.) BASIN K_2 ANALYSIS PT # 6 Q_{MAX} = 9.8 CFS
DEPTH = 0.32' ✓ ROLL CURB OK!

* TRANSITION TO STND CURB THROUGH INT. OF GARZA & LUNA

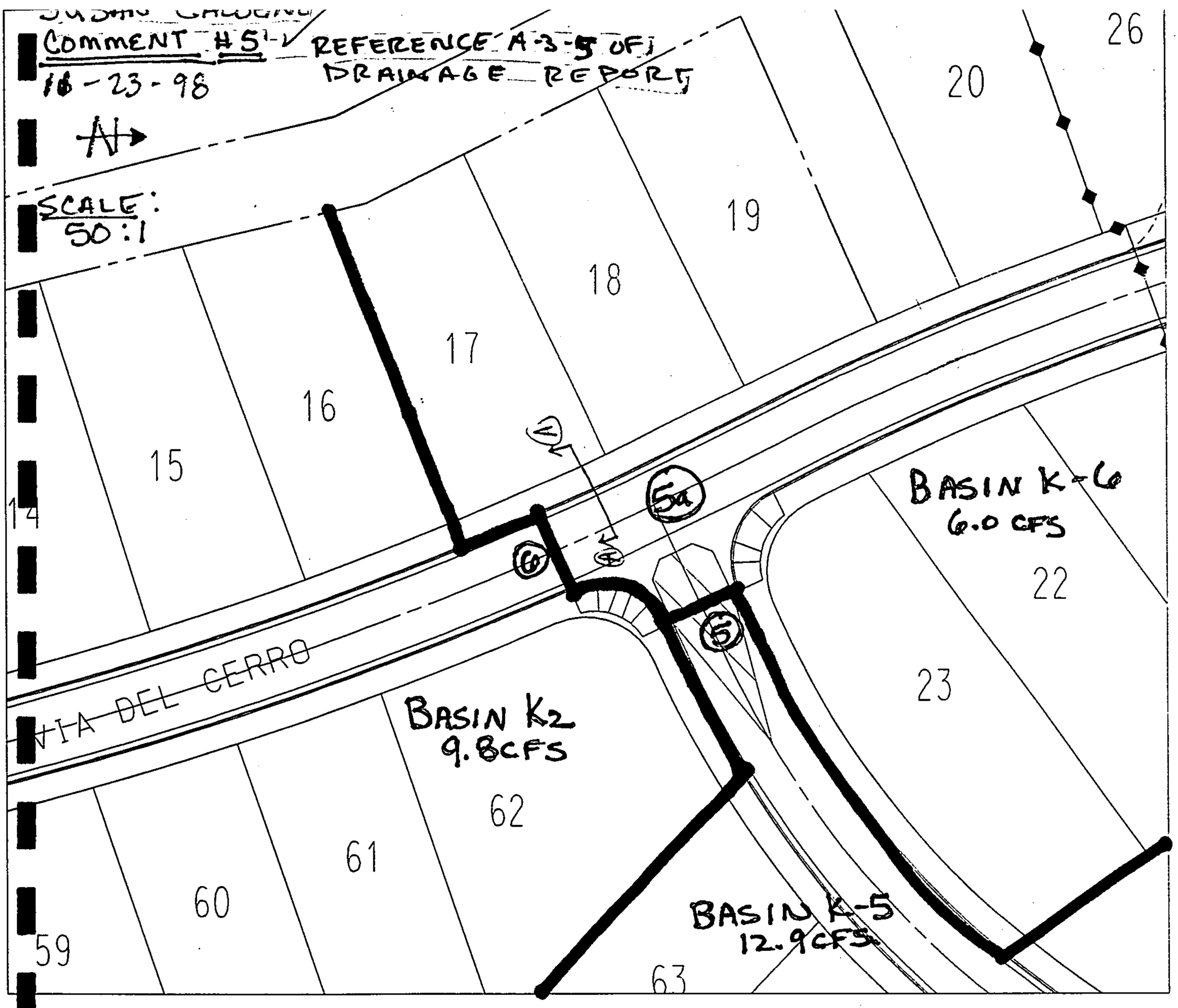
K_1 NOT INCLUDED.

ANALYSIS PT 7
2.) Q @ SUMP = $K_2 + K_3 + K_4 + K_5 + K_6$ = 48.3 CFS ✓
9.8 + 14 + 5.6 + 12.9 + 6.0

DEPTH = 0.51' ✓ STND CURB OK CONTINUE THROUGH SUMP

COMMENT #5 REFERENCE A-3-5 OF DRAINAGE REPORT
10-23-98

SCALE: 50:1



Analysis Point Calculations

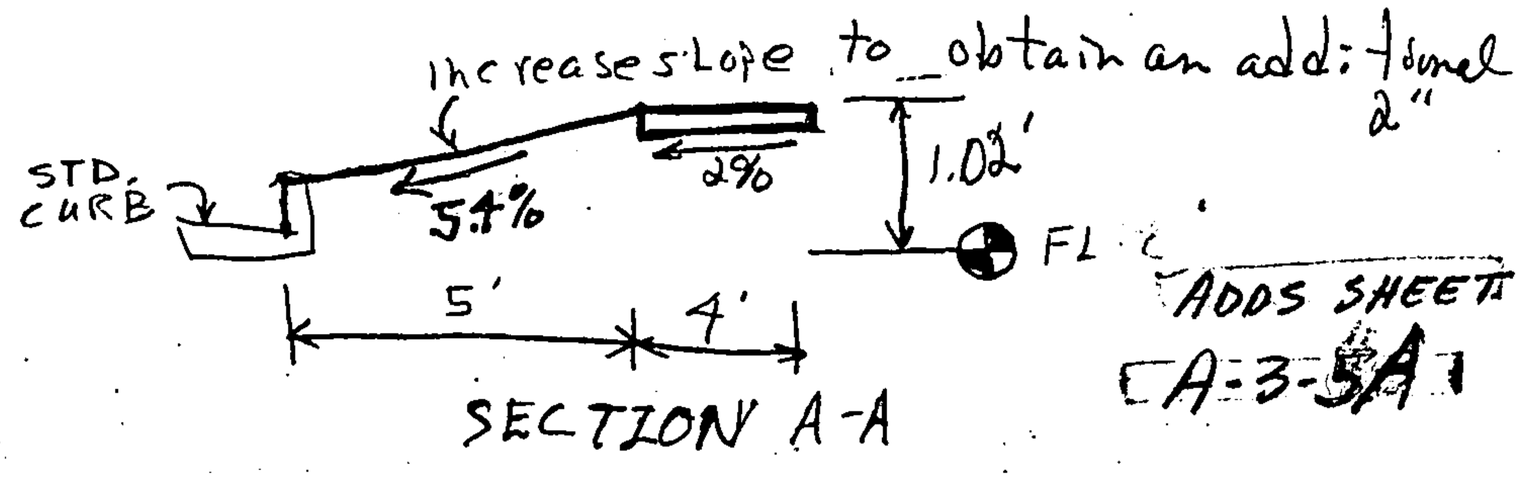
(5) = Σ OF BASIN K-5 + K-4 + K-3 = 12.9 CFS + 5.6 CFS + 14.0 CFS = 32.5 CFS

(6) = BASIN K-2 = 9.8 CFS

(5a) = (5) + (6) + $\frac{1.5 \text{ LOTS}}{8 \text{ LOTS}}$ (K-6) = 32.5 + 9.8 + 1.12 = 43.42 CFS

S = 2.52% (VIA DEL CERRO) w/ Q = 43.42 CFS ENERGY HEAD = 1.02'
HEAD =

SOLUTION: x sect



[Detail to be provided on construction plans]

ADDS SHEET A-3-5A

STREET CAPACITY ANALYSIS

LAS SALA DEL NORTE
STREET: CHAMISA
28' F-F, 46' R/W

ANALYSIS PTS 8 & 9

MANNING'S N= .017 MIN SLOPE= .0058

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	23.00	0.37	9	46.00	0.85
2	8.83	0.67	6	35.00	0.13	10	0.00	0.00
3	9.00	0.00	7	37.00	0.00	11	0.00	0.00
4	11.00	0.13	8	37.17	0.67	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.03	0.03	0.01	0.0	0.99	0.39	0.94	0.00	0.03
0.06	0.06	0.06	0.0	1.97	0.62	1.88	0.01	0.07
0.09	0.09	0.13	0.1	2.96	0.81	2.81	0.01	0.10
0.12	0.12	0.23	0.2	3.95	0.99	3.75	0.02	0.14
0.15	0.15	0.37	0.4	6.32	1.00	6.08	0.02	0.17
0.18	0.18	0.59	0.6	9.38	1.06	9.09	0.02	0.20
0.21	0.21	0.91	1.1	12.44	1.17	12.11	0.02	0.23
0.24	0.24	1.32	1.7	15.51	1.29	15.12	0.03	0.27
0.27	0.27	1.82	2.6	18.57	1.41	18.14	0.03	0.30
0.30	0.30	2.41	3.7	21.63	1.54	21.15	0.04	0.34
0.33	0.33	3.09	5.1	24.69	1.66	24.17	0.04	0.37
0.36	0.36	3.86	6.9	27.76	1.79	27.18	0.05	0.41
0.39	0.39	4.70	9.3	28.82	1.99	28.20	0.06	0.45
0.42	0.42	5.54	12.3	28.88	2.22	28.21	0.08	0.50
0.45	0.45	6.39	15.5	28.94	2.43	28.23	0.09	0.54
0.48	0.48	7.24	19.1	29.00	2.64	28.24	0.11	0.59
0.51	0.51	8.09	22.9	29.07	2.84	28.26	0.12	0.63
0.54	0.54	8.93	27.0	29.13	3.03	28.27	0.14	0.68
0.57	0.57	9.78	31.4	29.19	3.21	28.29	0.16	0.73
0.60	0.60	10.63	36.0	29.25	3.39	28.30	0.18	0.78
0.63	0.63	11.48	40.9	29.31	3.56	28.32	0.20	0.83
0.66	0.66	12.33	46.0	29.38	3.73	28.33	0.22	0.88
0.69	0.69	13.20	49.4	31.36	3.74	30.30	0.22	0.91
0.72	0.72	14.15	52.2	34.30	3.69	33.25	0.21	0.93
0.75	0.75	15.20	55.6	37.25	3.66	36.19	0.21	0.96
0.78	0.78	16.32	59.6	40.19	3.65	39.13	0.21	0.99
0.81	0.81	17.54	64.1	43.13	3.65	42.08	0.21	1.02
0.84	0.84	18.85	69.1	46.08	3.67	45.02	0.21	1.05
0.85	0.85	19.30	70.9	47.06	3.68	46.00	0.21	1.06

ANAL PT 8 CFS = 5.1

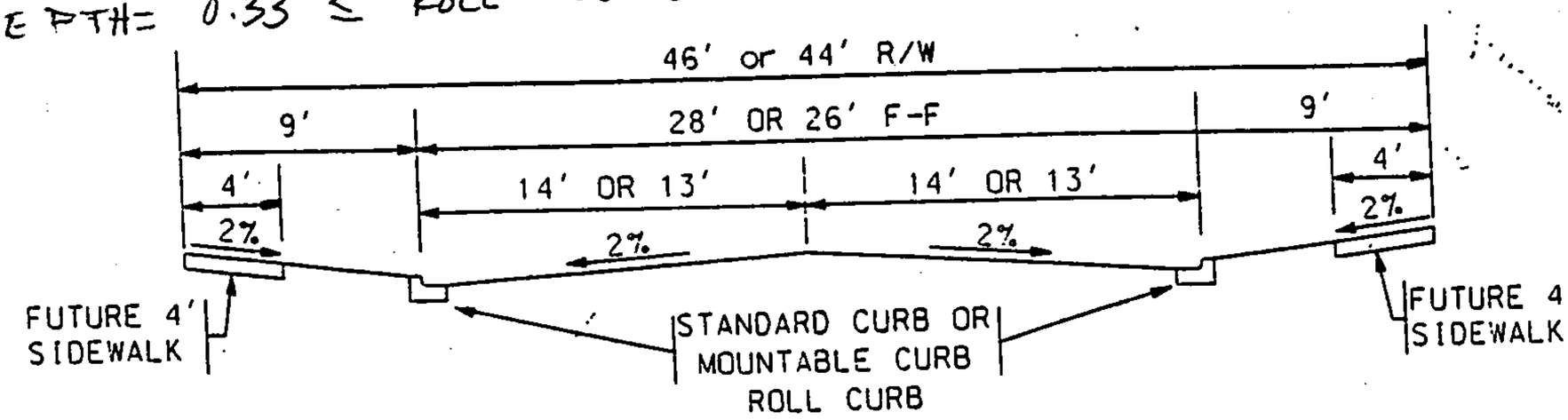
Q100 KB 9 MAX = 12 CFS

< STND CURB / OK

1.) DEPTH @ END OF KB 9 = 0.42' > ROLL CURB → FIND TRANSITION PT

2.) $\left(\frac{6 \text{ LOTS}}{14 \text{ LOTS}}\right)$ (12 CFS) = 5.1 CFS @ ANALYSIS PT 8

DEPTH = 0.33 ≤ ROLL CURB ∴ USE ROLL CURB TO ANAL PT. ✓



5.14

STREET CAPACITY ANALYSIS

LA SALA DEL NORTE
UNIT II
STREET: CERRO
26' F-FK, 44' R/W

ANALYSIS PT 10

MANNING'S N= .017 SLOPE= .0126

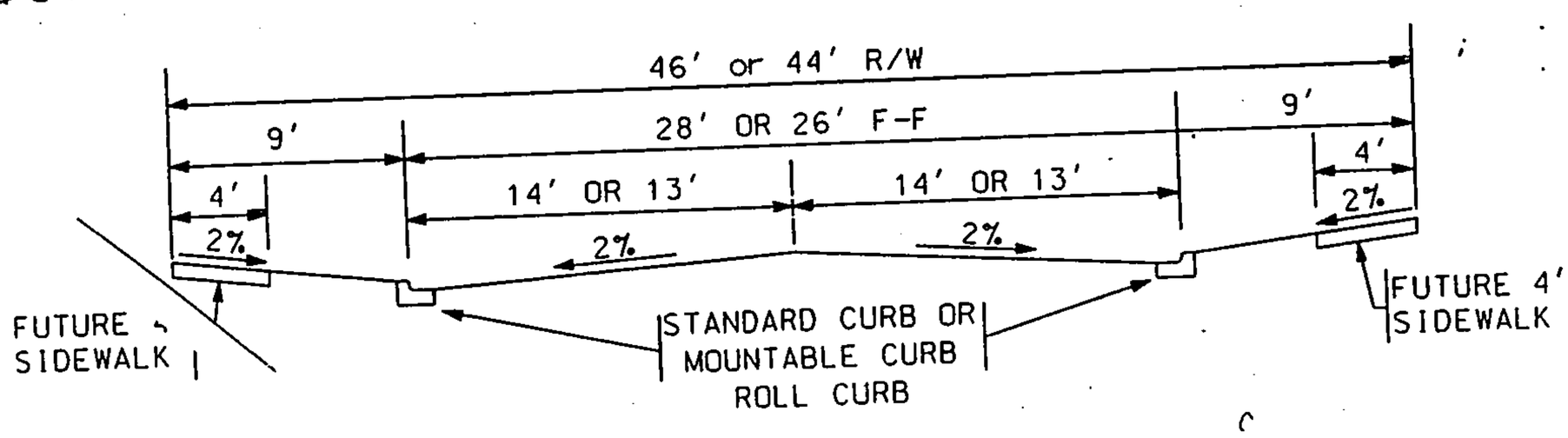
POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	22.00	0.35	9	44.00	0.85
2	8.83	0.67	6	33.00	0.13	10	0.00	0.00
3	9.00	0.00	7	35.00	0.00	11	0.00	0.00
4	11.00	0.13	8	35.17	0.67	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.03	0.03	0.01	0.0	0.99	0.58	0.94	0.01	0.04
0.06	0.06	0.06	0.1	1.97	0.92	1.88	0.01	0.07
0.09	0.09	0.13	0.2	2.96	1.20	2.81	0.02	0.11
0.12	0.12	0.23	0.3	3.95	1.45	3.75	0.03	0.15
0.15	0.15	0.37	0.5	6.32	1.47	6.08	0.03	0.18
0.18	0.18	0.59	0.9	9.38	1.56	9.09	0.04	0.22
0.21	0.21	0.91	1.6	12.44	1.72	12.11	0.05	0.26
0.24	0.24	1.32	2.5	15.51	1.90	15.12	0.06	0.30
0.27	0.27	1.82	3.8	18.57	2.08	18.14	0.07	0.34
0.30	0.30	2.41	5.5	21.63	2.27	21.15	0.08	0.38
0.33	0.33	3.09	7.6	24.69	2.45	24.17	0.09	0.42
0.36	0.36	3.85	10.4	26.76	2.70	26.18	0.11	0.47
0.39	0.39	4.64	14.1	26.82	3.05	26.20	0.14	0.53
0.42	0.42	5.42	18.3	26.88	3.38	26.21	0.18	0.60
0.45	0.45	6.21	22.9	26.94	3.69	26.23	0.21	0.66
0.48	0.48	7.00	27.9	27.00	3.99	26.24	0.25	0.73
0.51	0.51	7.79	33.3	27.07	4.28	26.26	0.28	0.79
0.54	0.54	8.57	39.0	27.13	4.55	26.27	0.32	0.86
0.57	0.57	9.36	45.1	27.19	4.82	26.29	0.36	0.93
0.60	0.60	10.15	51.6	27.25	5.08	26.30	0.40	1.00
0.63	0.63	10.94	58.3	27.31	5.33	26.32	0.44	1.07
0.66	0.66	11.73	65.4	27.37	5.58	26.33	0.48	1.14
0.69	0.69	12.54	69.8	29.36	5.57	28.30	0.48	1.17
0.72	0.72	13.43	73.4	32.30	5.47	31.25	0.46	1.18
0.75	0.75	14.42	77.9	35.25	5.41	34.19	0.45	1.20
0.78	0.78	15.48	83.2	38.19	5.38	37.13	0.45	1.23
0.81	0.81	16.64	89.3	41.13	5.37	40.08	0.45	1.26
0.84	0.84	17.89	96.2	44.08	5.38	43.02	0.45	1.29
0.85	0.85	18.32	98.7	45.06	5.39	44.00	0.45	1.30

ANAL PT 10
Q = 7.48 CFS

ANAL. PT. $\left(\frac{11 \text{ LOTS}}{20 \text{ LOTS}}\right)$ (13.6CFS) = 7.48CFS

DEPTH = 0.328' < ROLL CURB ✓ OK. ✓



STREET CAPACITY ANALYSIS

LA SALA DEL NORTE (TRACT K)
STREET: TOMAS
26'F-F, 44' R/W

ANALYSIS PTS 11 & 12

MANNING'S N= .017 SLOPE= .0172

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	22.00	0.35	9	44.00	0.85
2	8.83	0.67	6	33.00	0.13	10	0.00	0.00
3	9.00	0.00	7	35.00	0.00	11	0.00	0.00
4	11.00	0.13	8	35.17	0.67	12	0.00	0.00

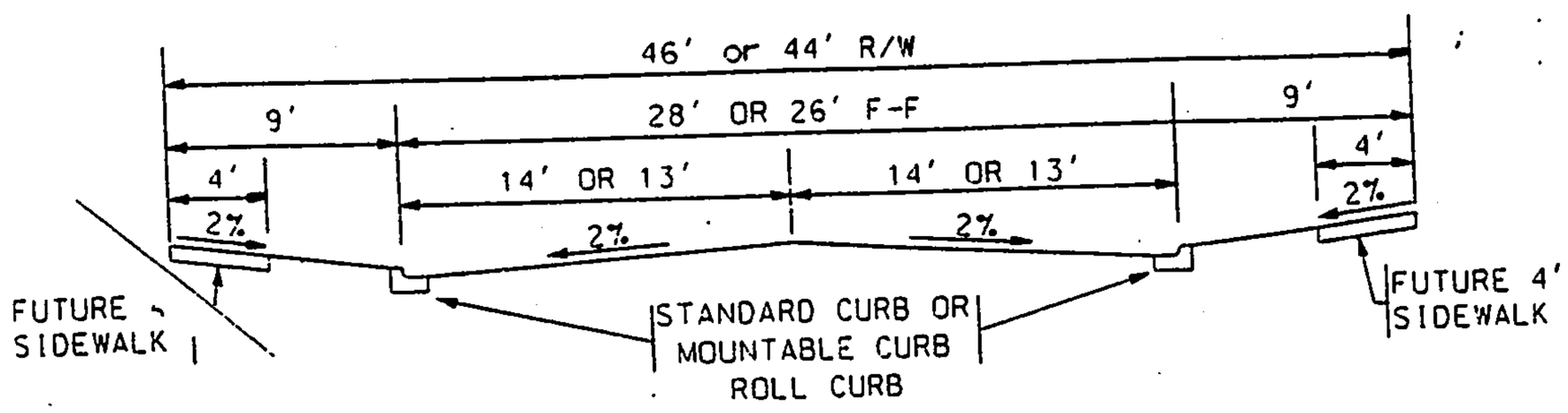
WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.03	0.03	0.01	0.0	0.99	0.67	0.94	0.01	0.04
0.06	0.06	0.06	0.1	1.97	1.07	1.88	0.02	0.08
0.09	0.09	0.13	0.2	2.96	1.40	2.81	0.03	0.12
0.12	0.12	0.23	0.4	3.95	1.70	3.75	0.04	0.16
0.15	0.15	0.37	0.6	6.32	1.72	6.08	0.05	0.20
0.18	0.18	0.59	1.1	9.38	1.82	9.09	0.05	0.23
0.21	0.21	0.91	1.8	12.44	2.01	12.11	0.06	0.27
0.24	0.24	1.32	2.9	15.51	2.22	15.12	0.08	0.32
0.27	0.27	1.82	4.4	18.57	2.44	18.14	0.09	0.36
0.30	0.30	2.41	6.4	21.63	2.65	21.15	0.11	0.41
0.33	0.33	3.09	8.9	24.69	2.87	24.17	0.13	0.46
0.36	0.36	3.85	12.1	26.76	3.15	26.18	0.15	0.51
0.39	0.39	4.64	16.5	26.82	3.56	26.20	0.20	0.59
0.42	0.42	5.42	21.4	26.88	3.94	26.21	0.24	0.66
0.45	0.45	6.21	26.8	26.94	4.31	26.23	0.29	0.74
0.48	0.48	7.00	32.6	27.00	4.66	26.24	0.34	0.82
0.51	0.51	7.79	38.9	27.07	5.00	26.26	0.39	0.90
0.54	0.54	8.57	45.6	27.13	5.32	26.27	0.44	0.98
0.57	0.57	9.36	52.7	27.19	5.63	26.29	0.49	1.06
0.60	0.60	10.15	60.2	27.25	5.94	26.30	0.55	1.15
0.63	0.63	10.94	68.2	27.31	6.23	26.32	0.60	1.23
0.66	0.66	11.73	76.4	27.37	6.52	26.33	0.66	1.32
0.69	0.69	12.54	81.5	29.36	6.50	28.30	0.66	1.35
0.72	0.72	13.43	85.8	32.30	6.39	31.25	0.63	1.35
0.75	0.75	14.42	91.1	35.25	6.32	34.19	0.62	1.37
0.78	0.78	15.48	97.2	38.19	6.28	37.13	0.61	1.39
0.81	0.81	16.64	104.4	41.13	6.27	40.08	0.61	1.42
0.84	0.84	17.89	112.4	44.08	6.28	43.02	0.61	1.45
0.85	0.85	18.32	115.3	45.06	6.29	44.00	0.61	1.46

ANALYSIS PT 11
CFS - 7.7

ANAL PT 12
Q100 FOR K9
MAX = 11.9 CFS

ANAL PT 12
1.) K9 DEPTH = 0.36' > ROLL CURB FIND TRANSITION PT
2.) ANAL PT 11 (11 LOTS / 17 LOTS) (11.9 CFS) = 7.7 CFS — DEPTH = 0.32' < ROLL CURB ✓

CONCLUSION: USE ROLL CURB TO KNUCKLE RETURN.



STREET CAPACITY ANALYSIS

LA SALA DEL NORTE
UNIT II @ GRATE
STREET: CERRO
26' F-F, 44' R/W

ANALYSIS PT 13

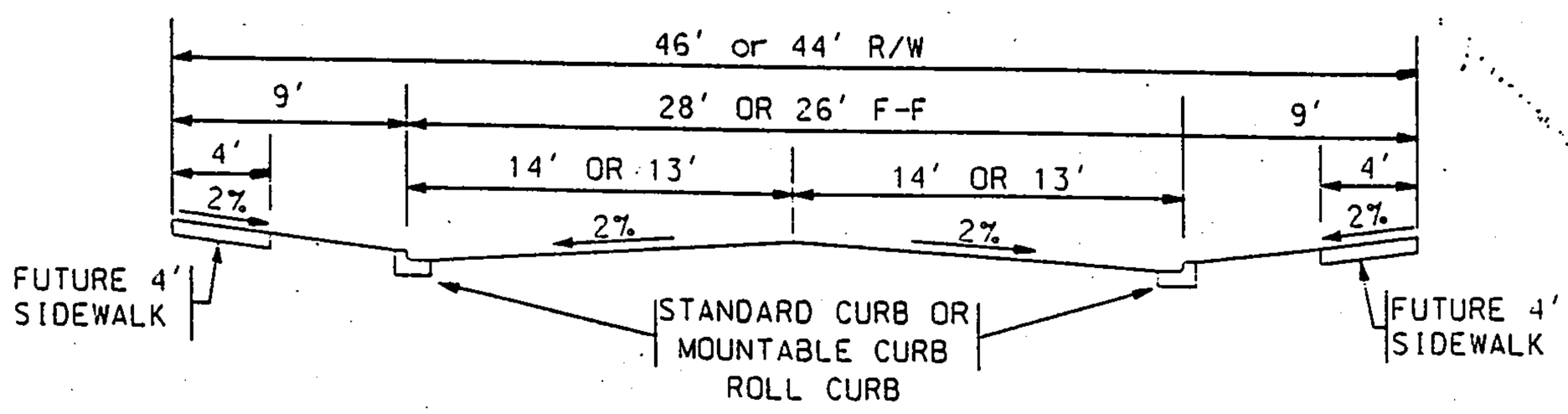
MANNING'S N= .017 SLOPE= .005

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	22.00	0.35	9	44.00	0.85
2	8.83	0.67	6	33.00	0.13	10	0.00	0.00
3	9.00	0.00	7	35.00	0.00	11	0.00	0.00
4	11.00	0.13	8	35.17	0.67	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.03	0.03	0.01	0.0	0.99	0.36	0.94	0.00	0.03
0.06	0.06	0.06	0.0	1.97	0.58	1.88	0.01	0.07
0.09	0.09	0.13	0.1	2.96	0.76	2.81	0.01	0.10
0.12	0.12	0.23	0.2	3.95	0.92	3.75	0.01	0.13
0.15	0.15	0.37	0.3	6.32	0.92	6.08	0.01	0.16
0.18	0.18	0.59	0.6	9.38	0.98	9.09	0.01	0.19
0.21	0.21	0.91	1.0	12.44	1.08	12.11	0.02	0.23
0.24	0.24	1.32	1.6	15.51	1.20	15.12	0.02	0.26
0.27	0.27	1.82	2.4	18.57	1.31	18.14	0.03	0.30
0.30	0.30	2.41	3.4	21.63	1.43	21.15	0.03	0.33
0.33	0.33	3.09	4.8	24.69	1.55	24.17	0.04	0.37
0.36	0.36	3.85	6.5	26.76	1.70	26.18	0.04	0.40
0.39	0.39	4.64	8.9	26.82	1.92	26.20	0.06	0.45
0.42	0.42	5.42	11.5	26.88	2.13	26.21	0.07	0.49
0.45	0.45	6.21	14.4	26.94	2.32	26.23	0.08	0.53
0.48	0.48	7.00	17.6	27.00	2.51	26.24	0.10	0.58
0.51	0.51	7.79	21.0	27.07	2.69	26.26	0.11	0.62
0.54	0.54	8.57	24.6	27.13	2.87	26.27	0.13	0.67
0.57	0.57	9.36	28.4	27.19	3.04	26.29	0.14	0.71
0.60	0.60	10.15	32.5	27.25	3.20	26.30	0.16	0.76
0.63	0.63	10.94	36.7	27.31	3.36	26.32	0.18	0.81
0.66	0.66	11.73	41.2	27.37	3.51	26.33	0.19	0.85
0.69	0.69	12.54	44.0	29.36	3.51	28.30	0.19	0.88
0.72	0.72	13.43	46.3	32.30	3.44	31.25	0.18	0.90
0.75	0.75	14.42	49.1	35.25	3.41	34.19	0.18	0.93
0.78	0.78	15.48	52.4	38.19	3.39	37.13	0.18	0.96
0.81	0.81	16.64	56.3	41.13	3.38	40.08	0.18	0.99
0.84	0.84	17.89	60.6	44.08	3.39	43.02	0.18	1.02
0.85	0.85	18.32	62.2	45.06	3.39	44.00	0.18	1.03

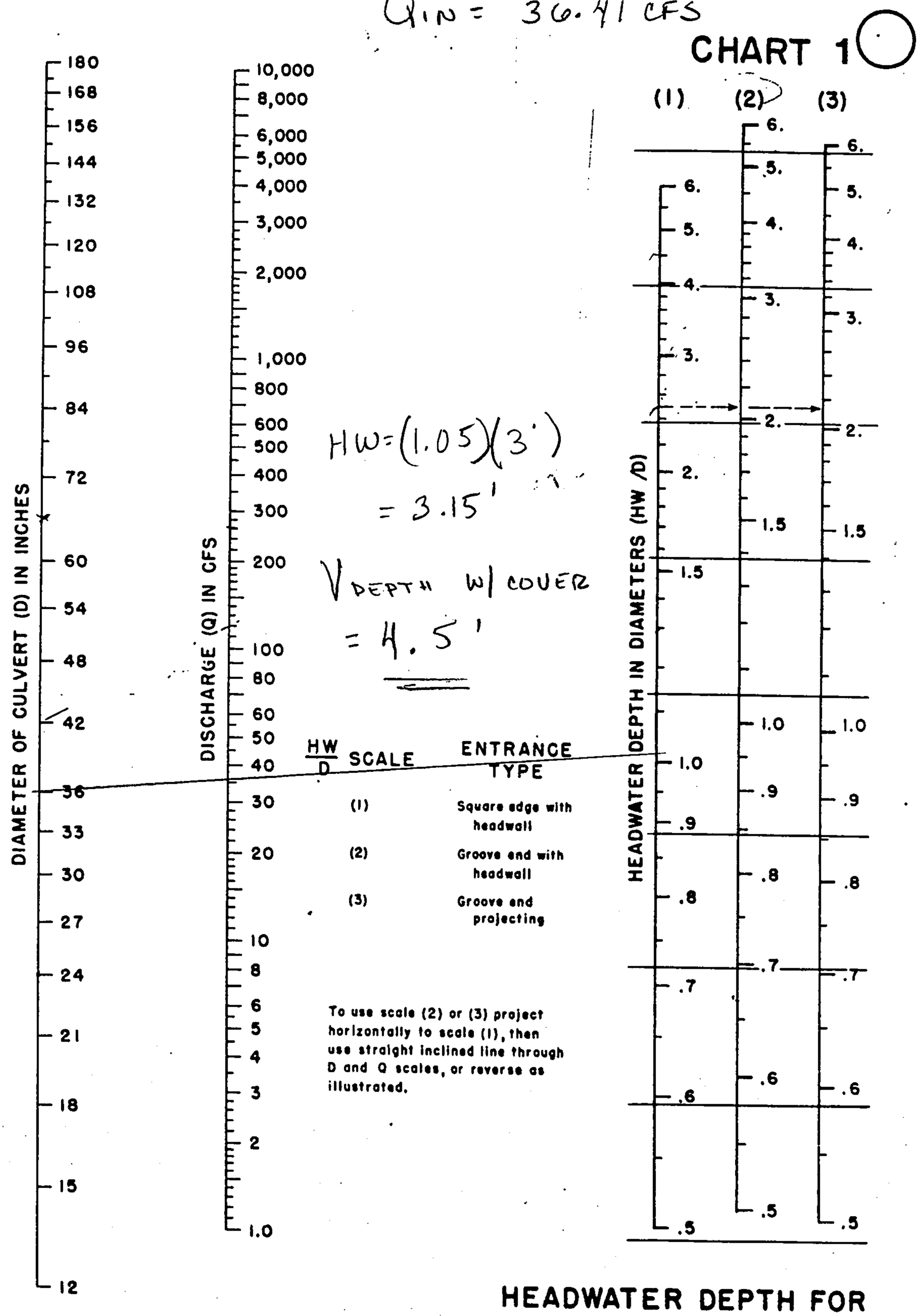
Q_{100} ANL PT (13) = 37.5 CFS

(13) Q_{T100} = 37.5 CFS DEPTH = 0.64' < 0.67', CONTAINED IN STND. CURB. ✓ OK!



UNIT I STORM DRAIN SIZING
PIPE BETWEEN CATCH BASINS
Q_{IN} = 36.41 CFS

10-21-99



HEADWATER SCALES 2&3
REVISED MAY 1964

BUREAU OF PUBLIC ROADS JAN. 1963

HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

A4-1

CONCLUSION -- USE 36" PIPE W/ 4.5' V DEPTH.

UNIT I CONNECTION TO MAIN

STORM DRAIN SIZING.

48" RCP

$2 \times Q_{100} = 96.6$ cfs

MANNINGS

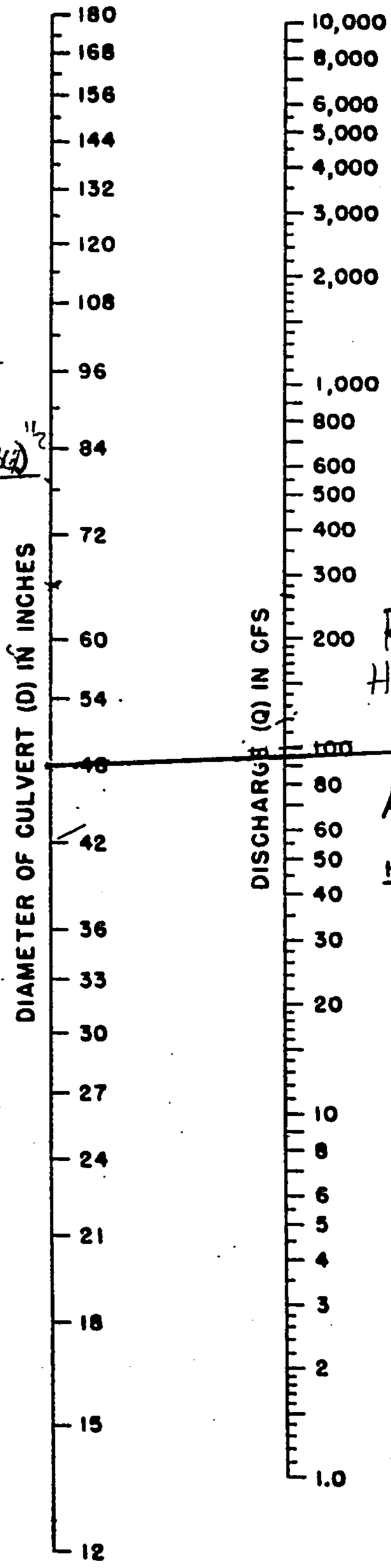
$Q_A = \frac{A R^{2/3} S^{1/2}}{n}$

$= \frac{12.56 (1)^{2/3} (.842)^{1/2}}{.013}$

$Q_A = 61.56$ CFS

$Q_{100} = 48.3$ cfs

✓ OK!



Required head.

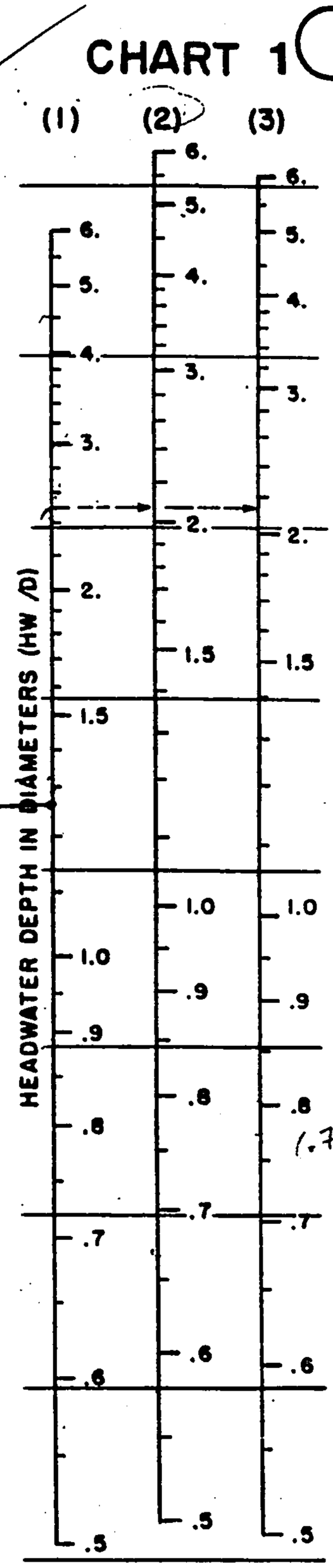
$Hw = (4')(1.27) = 5.08'$

Available Head = 5.8'

OK ✓

HW/D SCALE	ENTRANCE TYPE
(1)	Square edge with headwall
(2)	Groove end with headwall
(3)	Groove end projecting

To use scale (2) or (3) project horizontally to scale (1), then use straight inclined line through D and Q scales, or reverse as illustrated.



(.78)(4) = 3.12

HEADWATER SCALES 2&3
REVISED MAY 1964

BUREAU OF PUBLIC ROADS JAN. 1963

HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

CONCLUSION: 48" RCP OK!

10-21-98

A-4-2

STORM DRAIN ANALYSIS

DOUBLE GRATE SINGLE (TYPE A) WINGED: (EASTSIDE OF CERRO)

– IN SUMP CONDITION

CAPACITY OF ORFICE: $Q = 0.6 A_n \sqrt{2gh}$

$A_n = 2[(31 \times 18.5)/144] = 7.97 \text{ FT}^2$

h = FLOWLINE TO TOP OF CURB = 10 3/4" = 0.90'

$Q_A = 0.6(7.97)\sqrt{2(32.2)(0.9)}$

$Q_A = 36.41$ CFS

Q_{100} THROUGH STREET = 48.3 CFS

★ MUST HAVE 2Q100 THROUGH GRATES.

WILL 48.3 - 36.41 = 11.89 (RESIDUAL) CFS CROSS THE CROWN INTO THE OTHER GRATE BEFORE IT FLOWS ABOVE THE TOP OF CURB?

WEIR ANALYSIS: SEE NEXT SHEET For Conclusion

Bohannan ▲ Huston

PROJECT NAME LA SALA DEL NORTE SHEET ____ OF ____

PROJECT NO. 97 455 BY CG DATE 10-21-98

SUBJECT STORM DRAINS CH'D ____ DATE ____

ENGINEERS PLANNERS PHOTOGRAMMETRISTS SURVEYORS SOFTWARE DEVELOPERS

A-4-3

10-21-92

sump condition phase 1

WEIR COEFFICENT = 3.0000
CROSS SECTION DIVIDED INTO VERTICAL SLICES 0. FEET APART

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	1.00	4	78.50	0.00	7	140.00	0.90
2	15.00	0.50	5	110.00	0.10	8	152.00	0.93
3	40.00	0.20	6	145.00	0.40			

WSEL (FT)	DEPTH INC (FT)	FLOW AREA (SQ FT)	FLOW RATE (CFS)	FLOW VEL (FPS)	TOP WID PLUS OBSTRUCTIONS
0.10	0.10	2.54	1.93	0.76	50.75
0.20	0.20	9.16	10.14	1.11	81.67
0.30	0.30	18.33	25.35	1.38	101.67
0.40	0.40	29.49	47.55	1.61	121.67
0.50	0.50	42.13	76.64	1.82	131.00
0.60	0.60	55.43	111.60	2.01	135.00
0.70	0.70	69.13	151.57	2.19	139.00
0.80	0.80	83.23	196.12	2.36	143.00
0.90	0.90	97.73	244.93	2.51	147.00
0.93	0.93	102.33	260.40	2.54	159.90

elev @ crown = 0.345'
Q = 35.34 CFS

elev @ TC = 0.67'
Q = 139.58 FS

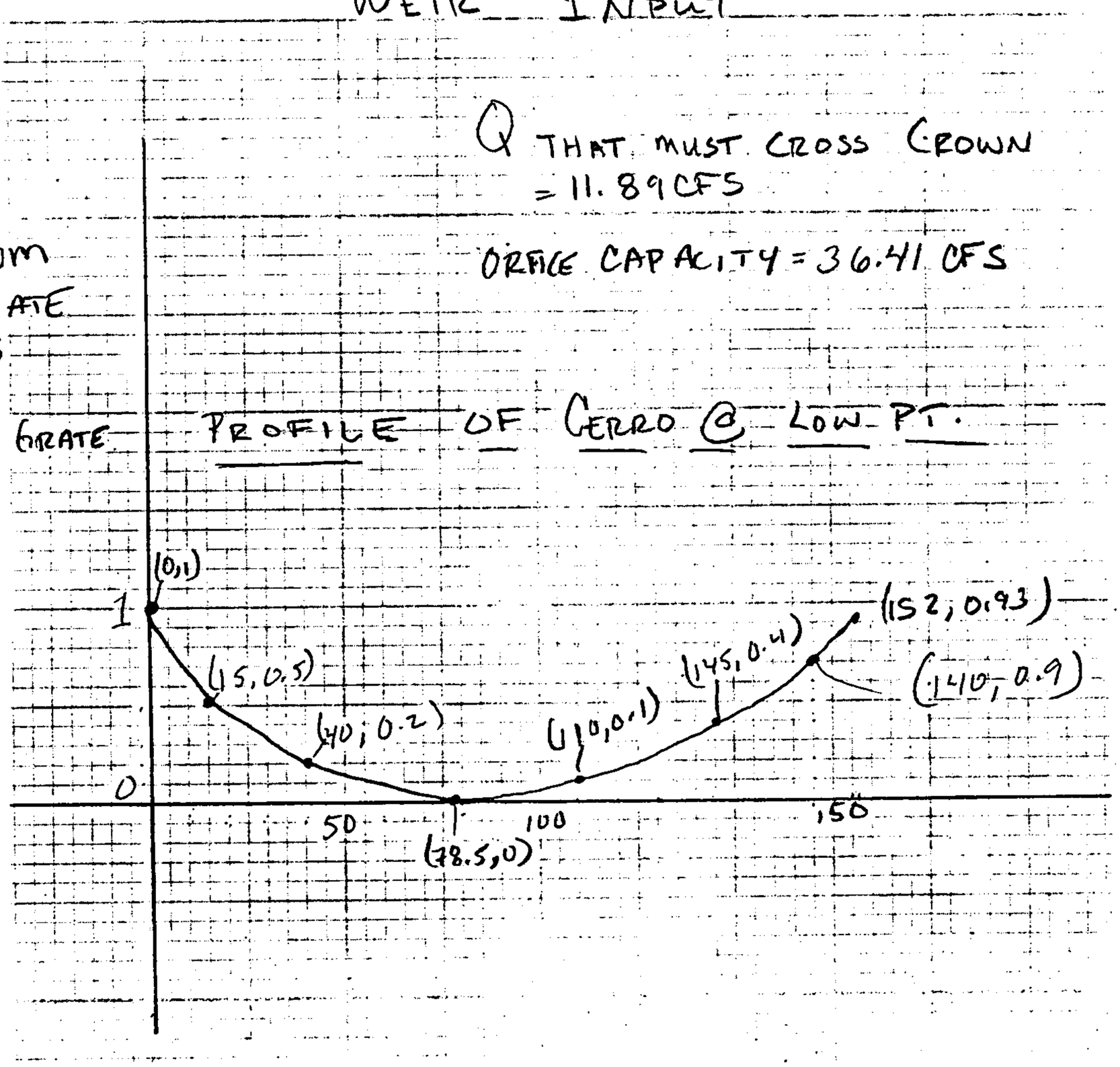
DIFFERENCE IN Q'S = 104.24 CFS

CONCLUSION:
RESIDUAL FLOW FROM DOUBLE GRATE WILL CROSS CROWN TO QUADRUPLE BEFORE IT OVER FLOWS THE CURB.

WEIR INPUT

Q THAT MUST CROSS CROWN = 11.89 CFS

ORFICE CAPACITY = 36.41 CFS



A-4-4

QUADRUPLE GRATE (modified Type D) : (WEST SIDE OF CERRO)
"TYPE D" IN SUMP CONDITION

CAPACITY OF ORFICE: $Q = 0.6 A_n \sqrt{2gh}$

★ $2 \cdot Q_{REQUIRED} = 48.3 \text{ CFS} + 11.89 = 60.19$

$A_n = 4[(31 \times 18.5)/144) = 15.9 \text{ FT}^2$

h = FLOWLINE TO TOP OF CURB = 0.90'

$Q = 0.6(15.9)\sqrt{2(32.2)(0.9')}$

$Q_A = 72.63 \text{ CFS}$

$Q^{★}_{\cancel{REQUIRED}\ Actual}$ 2Q + RESIDUAL FROM EAST SIDE = 60.19

$Q_{ALLOW} > Q_{\cancel{REQUIRED}\ actual}$ ✓ OK.

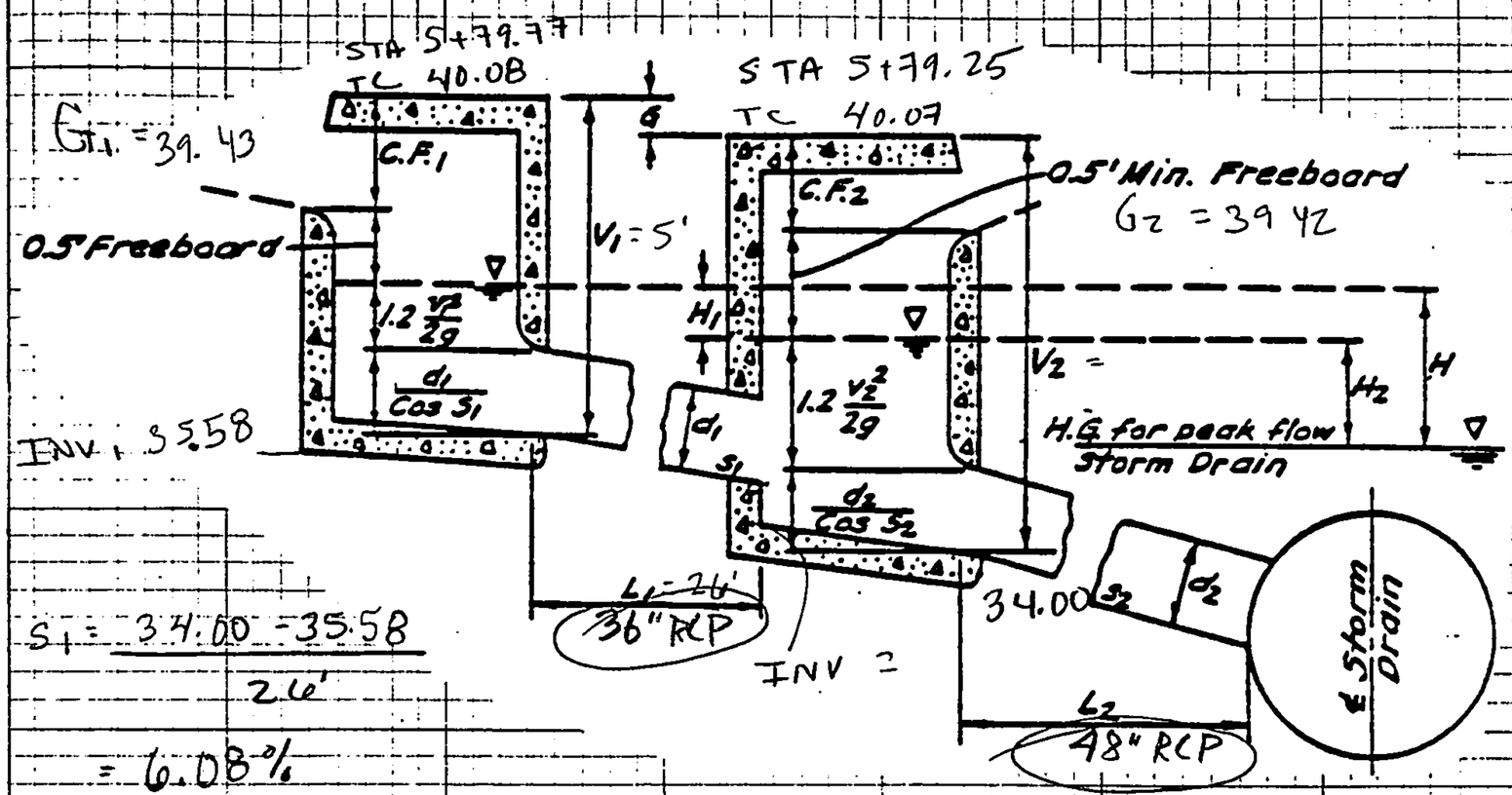
Bohannan ▲ Huston

PROJECT NAME LA SALA DEL NORTE SHEET ____ OF ____
PROJECT NO. 97455 BY GG DATE 10-21-98
SUBJECT STORM DRAIN CH'D ____ DATE ____

ENGINEERS PLANNERS PHOTOGRAMMETRISTS SURVEYORS SOFTWARE DEVELOPERS

A-4-5

DRAINS LA SALA DEL NORTE - UNIT 1



$S_1 = \frac{34.00 - 35.58}{26'}$

$= 6.08\%$

$d_1 = 36''$

$A_1 = 7.06\ ft^2$

$Q_1 = 36.41\ CFS$

$Vel = \frac{Q}{A} = \frac{36.41}{7.06} = 5.16\ ft/s$

$HEADLOSS = 1.2\left(\frac{V^2}{2g}\right) = 1.2\left(\frac{5.16^2}{2(32.2)}\right) = 0.50'$

$V_{min} = 1.33' + 0.50 + \frac{3'}{2} = 3.32'$

$V_{provided} = \underline{4.5'}$ ✓ ok!

$INV = 35.58$

$H_1 = \left(\frac{Q_1}{K_1}\right)^2 * L$ where $K_1 = 666.9$ (PPM)

$H_1 = 0.08'$

$S_2 = 0.92\%$ $Q_2 = 100.2\ CFS$

$d_2 = 48''$

$A_2 = 12.57\ FT^2$

$V = \frac{Q}{A} = 7.97\ ft/s$

$HEADLOSS = 1.2\left(\frac{V_2^2}{2g}\right) = 1.18'$

$V_2\ min = 1.17 + H_1 + 1.2\left(\frac{V_2^2}{2g}\right) + d_2 - G$

where $G = G_1 - G_2$

$= 39.43 - 39.42$

$= .01$

$V_2 = 1.17 + 0.5 + 1.18 + 2' - .01$

$= 4.84'$ (min depth)

$V_{provided} = \underline{5.93'}$ ✓ OK!

CHECK: $V_2 - 5 > V_1 - G$

$5.93 - .5 > 4.5 - .01$

$5.43 > 4.49$ ok

BOHANNAN-HUSTON INC.

PROJECT NAME La Sala Del Norte SHEET ____ OF ____

PROJECT NO. 97155 BY CG DATE 10-21-98

SUBJECT V depth analysis CH'D ____ DATE A-4-6

ADDRESSES COMMENT #6 OF SUSAN CALONGNE LETTER-(11-16-98)

UNIT II PIONEER PK
36 RCP CONNECT

36" PIPE
Q = 39.2 CFS = 2 x Q_{180} = 78.4 CFS

12-1-98

MANNINGS

$$Q = \frac{AR^{2/3}S^{1/2}}{n}$$

$$= \frac{(7.06)(.75)^{2/3}(1\%)^{1/2}}{.013}$$

Q = 44.83 CFS

Q_{100} = 39.2 CFS

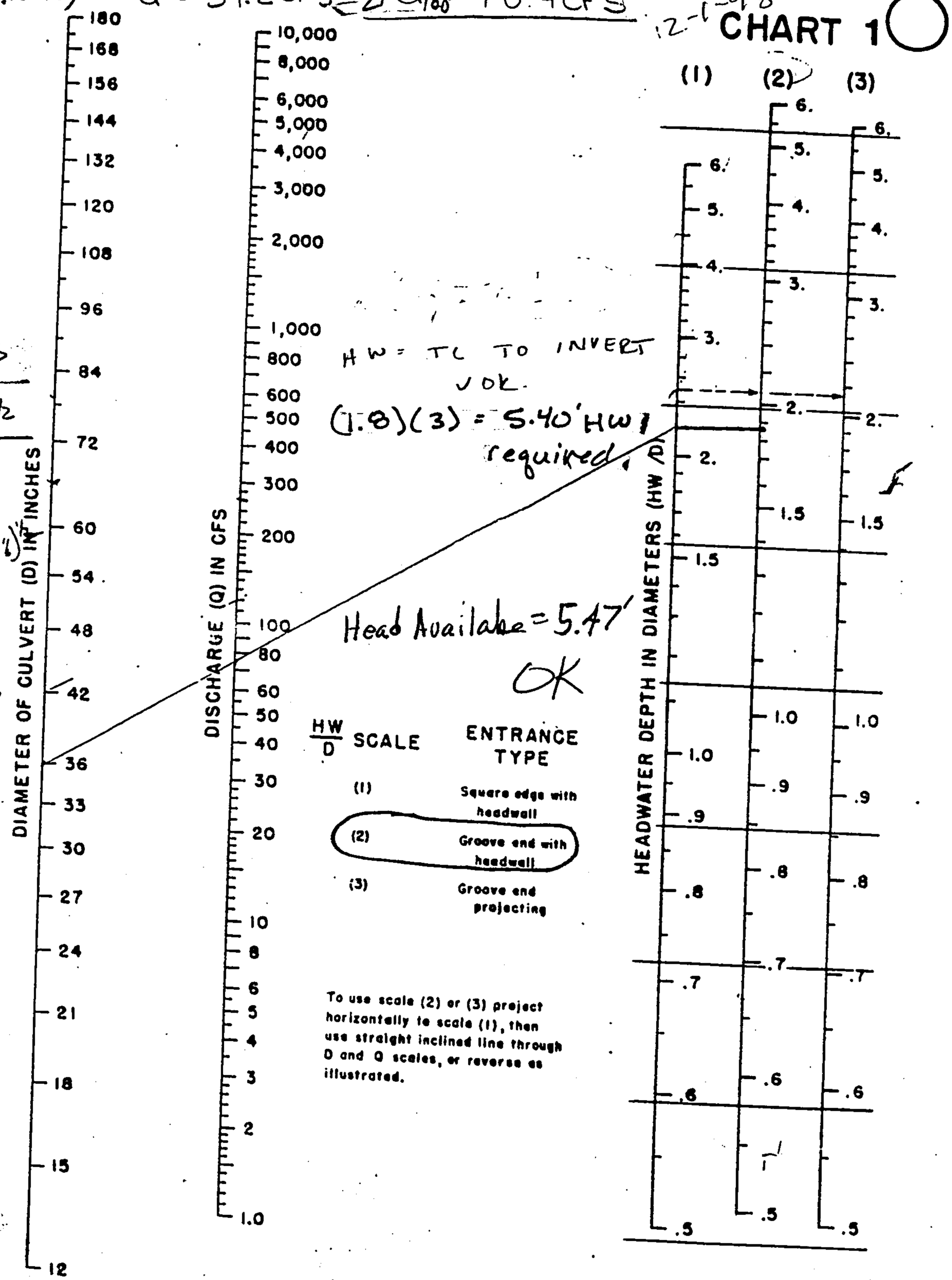
✓ OK.

HW = TC TO INVERT ✓ OK.

(1.8)(3) = 5.40' HW required.

Head Available = 5.47'

OK



HEADWATER SCALES 2&3
REVISED MAY 1964

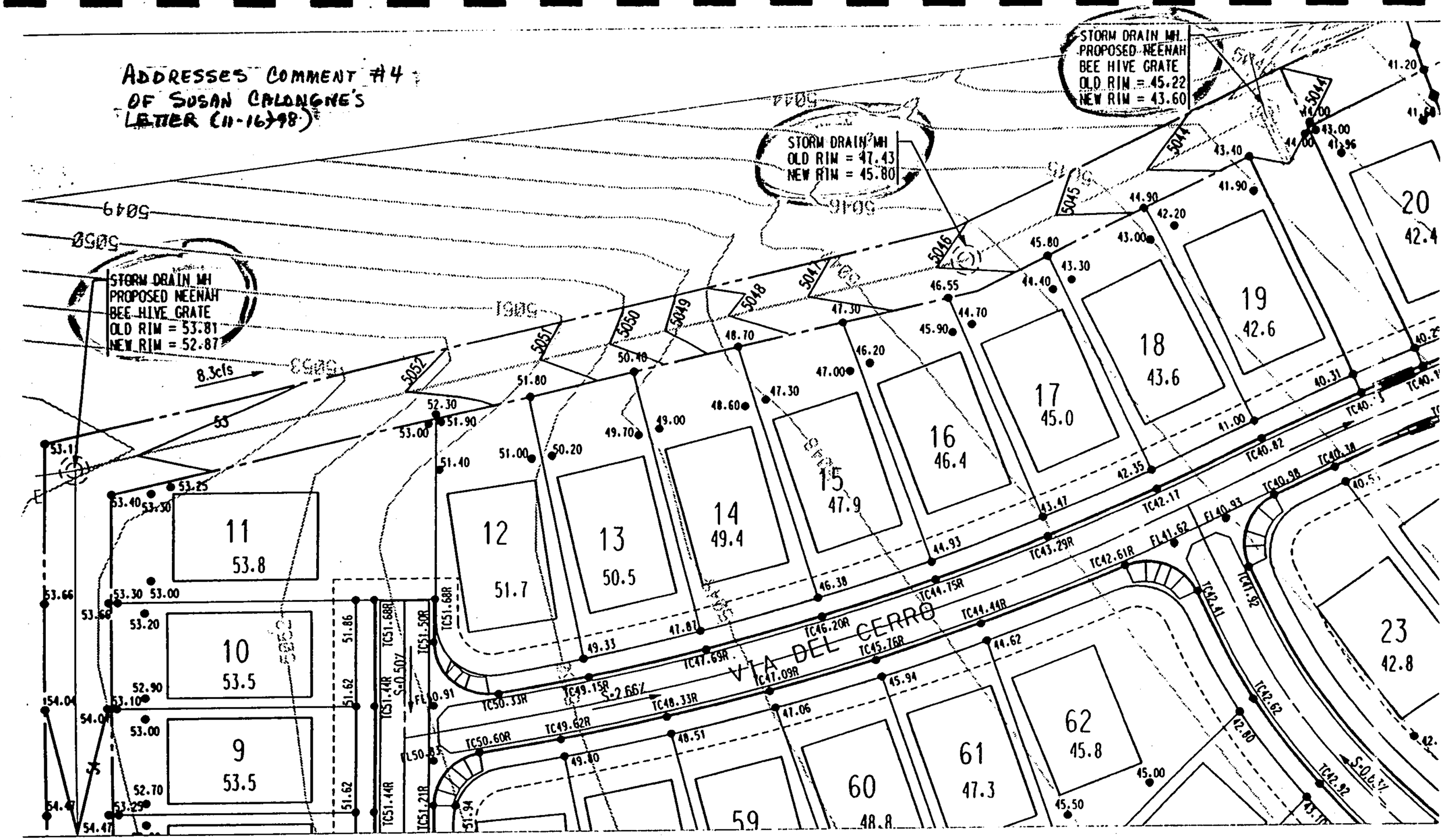
BUREAU OF PUBLIC ROADS JAN. 1963

HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL (orifice)

REPLACES A-4-9
10-21-98

CONCLUSION: USE A 36" RCP PIPE

ADDRESSES COMMENT #4
OF SUSAN CALONGNE'S
LETTER (11-16-98)



LA SALA DEL NORTE
DRAINAGE REPORT
ADDS SHEET A-4-10

SWALE CAPACITY CALC. ALONG WEST SIDE

ADDRESSES COMMENT OF SUSAN CALONGNE'S LETTER (11-16-98)

RP STREAM
30' DRAINAGE EASEMENT

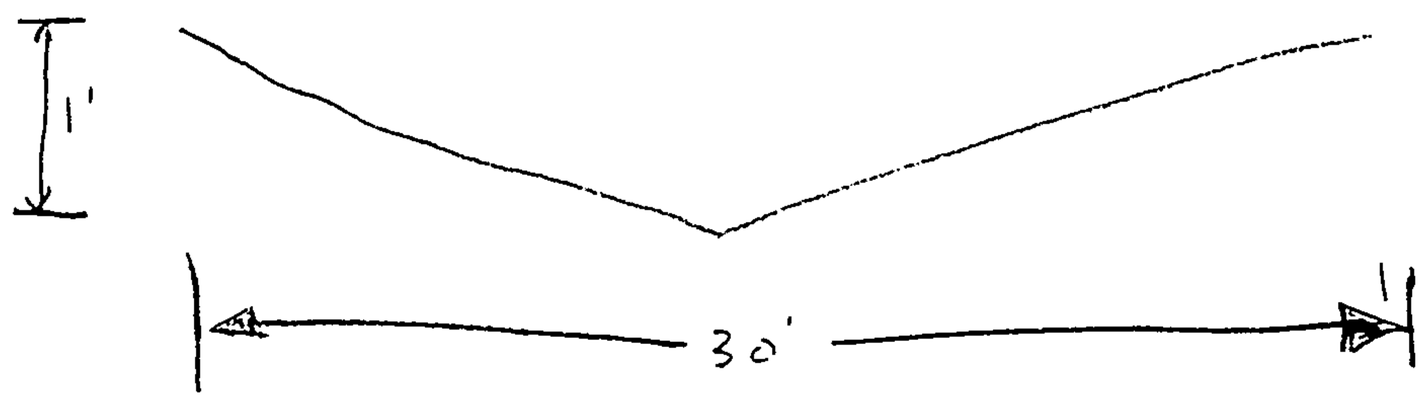
MANNING'S N= .03 SLOPE= .008

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	1.00	3	30.00	1.00			
2	15.00	0.00	4	0.00	0.00			

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.10	0.10	0.15	0.1	3.01	0.60	3.00	0.01	0.11
0.20	0.20	0.60	0.6	6.01	0.95	6.00	0.01	0.21
0.30	0.30	1.35	1.7	9.02	1.25	9.00	0.02	0.32
0.40	0.40	2.40	3.6	12.03	1.51	12.00	0.04	0.44
0.50	0.50	3.75	6.6	15.03	1.76	15.00	0.05	0.55
0.60	0.60	5.40	10.7	18.04	1.98	18.00	0.06	0.66
0.70	0.70	7.35	16.1	21.05	2.20	21.00	0.07	0.77
0.80	0.80	9.60	23.1	24.05	2.40	24.00	0.09	0.89
0.90	0.90	12.15	31.6	27.06	2.60	27.00	0.10	1.00
1.00	1.00	15.00	41.8	30.07	2.79	30.00	0.12	1.12

Q ALONG BACK SWALE = 1.7 CFS

SWALE X-SECTION:



DEPTH @ Q = 1.7 CFS IS 0.30' << 1' ✓ WILL WORK.

LA SALA DEL NORTE
DRAINAGE REPORT

ADDS SHEET A-4-10

Neenah TURTLE BACK GRATE CAPACITY

"ADDRESSES" COMMENT #4 OF "SUSAN CALONGNE'S LETTER" (11-16-98)

ORIFICE EQUATION:

$$Q = 0.6 A n \sqrt{2gh}$$

A = area of grate = 1.4 FT²

h = height to top of swale

g = gravity

Q = capacity of Grate

$$Q = (0.6)(1.4 ft^2)\sqrt{2(32.2)(1)}$$

$$Q = 6.74 CFS > 1.8 CFS$$

∴ CAPACITY OF GRATE IS GREATER THAN EXPECTED FLOW ∴ OK.

LA SALA DEL NORTE DRAINAGE REPORT

ADDS SHEET

Bohannan ▲ Huston

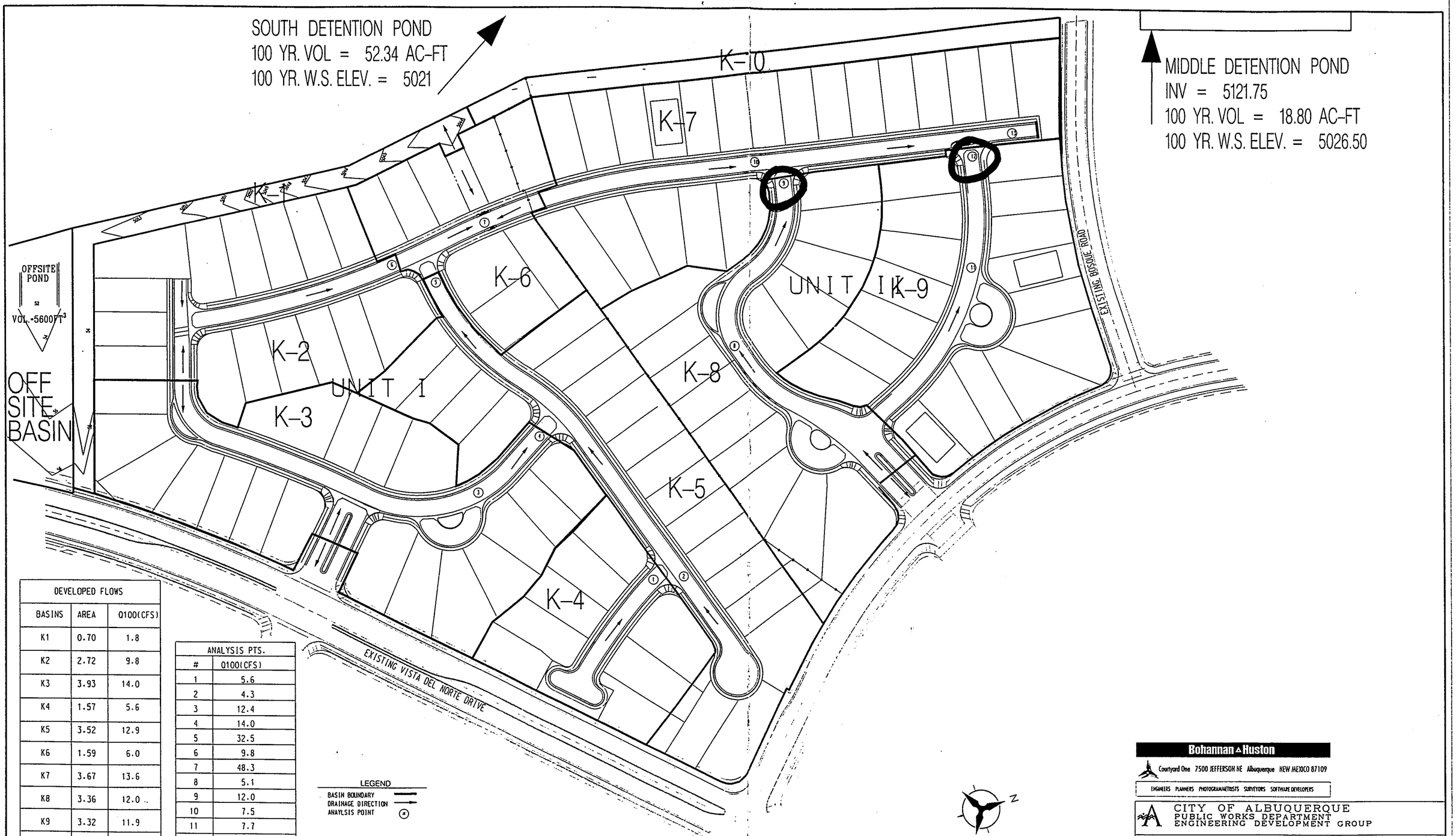
CA-4-12

ENGINEERS PLANNERS PHOTOGRAMMETRISTS SURVEYORS SOFTWARE DEVELOPERS

PROJECT NAME La Sala Del Norte SHEET 1 OF 1

PROJECT NO. 97455 BY CG DATE 12-2-98

SUBJECT Grate Capacity CH'D _____ DATE _____



DEVELOPED FLOWS		
BASINS	AREA	Q100(CFS)
K1	0.70	1.8
K2	2.72	9.8
K3	3.93	14.0
K4	1.57	5.6
K5	3.52	12.9
K6	1.59	6.0
K7	3.67	13.6
K8	3.36	12.0
K9	3.32	11.9
K10	0.62	1.7
OFF SITE	2.65	8.3

ANALYSIS PTS.	
#	Q100(CFS)
1	5.6
2	4.3
3	12.4
4	14.0
5	32.5
6	9.8
7	48.3
8	5.1
9	12.0
10	7.5
11	7.7
12	11.9
13	37.5

ULTIMATE PROPOSED DRAINAGE CONDITIONS

Bohannan ▲ Huston

Courtyard One 7500 JEFFERSON NE Albuquerque NEW MEXICO 87109

ENGINEERS PLANNERS PHOTOGRAMMETRISTS SURVEYORS SOFTWARE DEVELOPERS

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

VISTA DEL NORTE
TRACT K UNITS I & II
PROPOSED CONDITIONS
BASIN MAP

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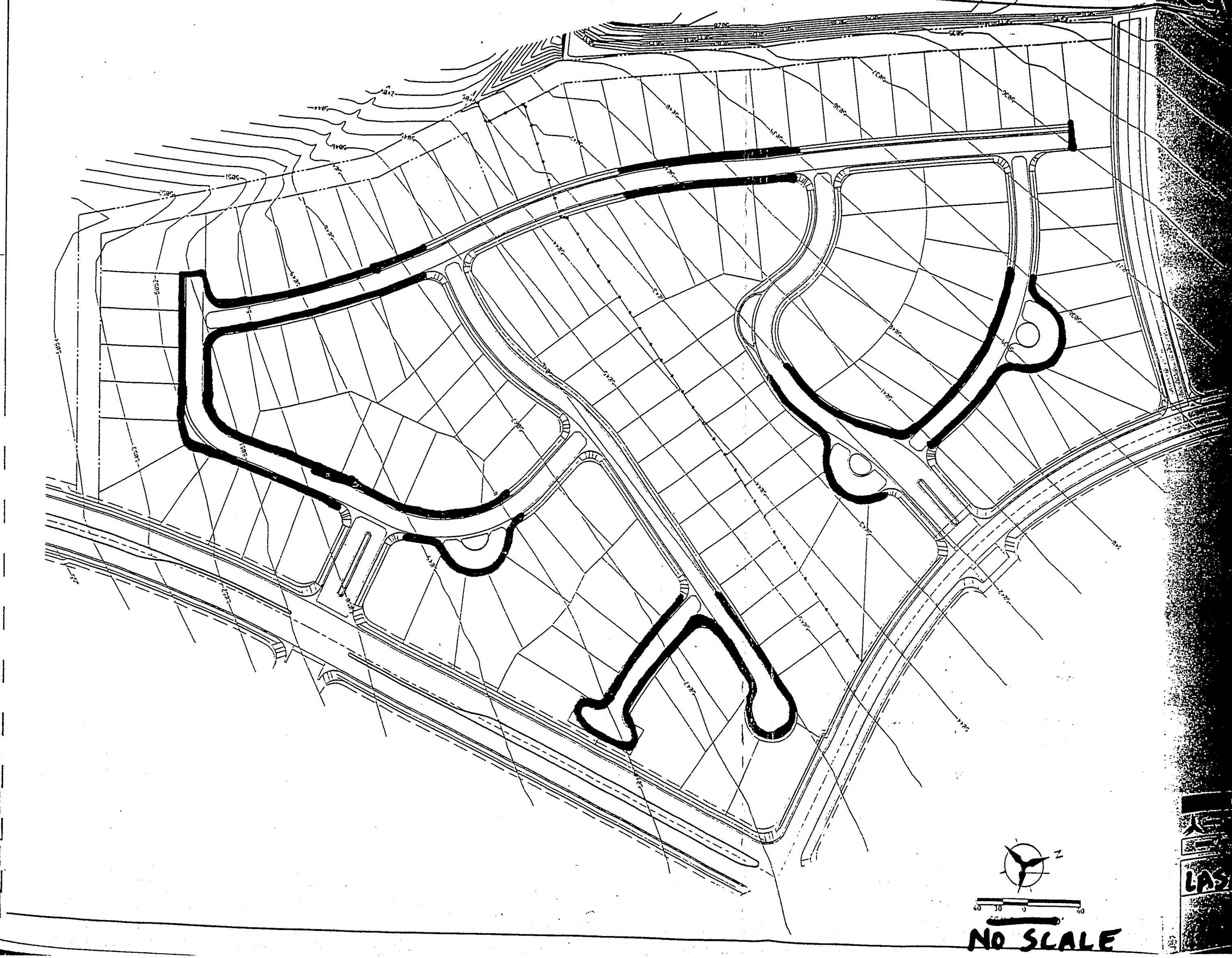
DATE: DECEMBER, 1998

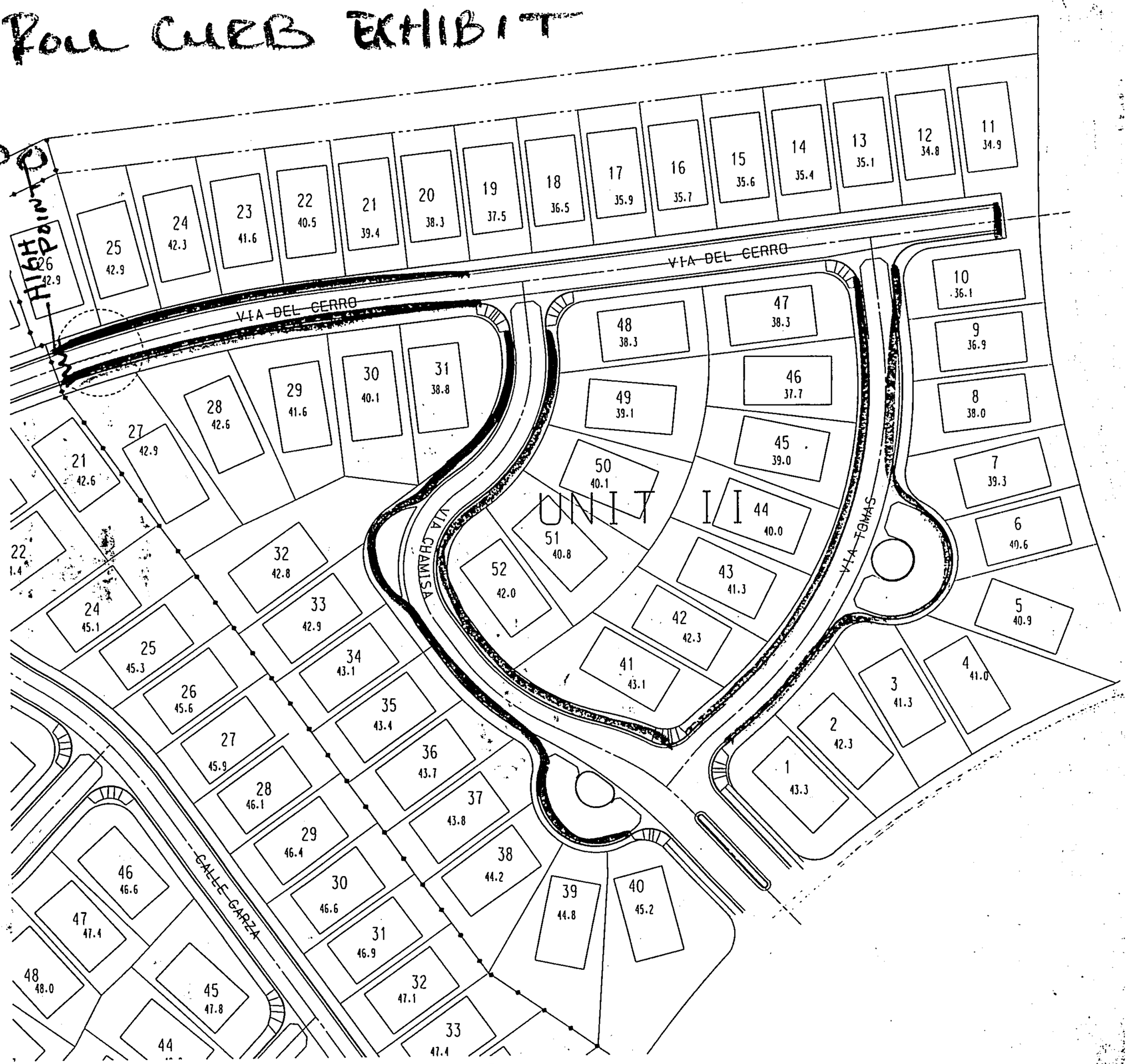
P:\BHI-MAN\PROJECTS\97455\CDP\GENERAL\
97455DP03.DGN

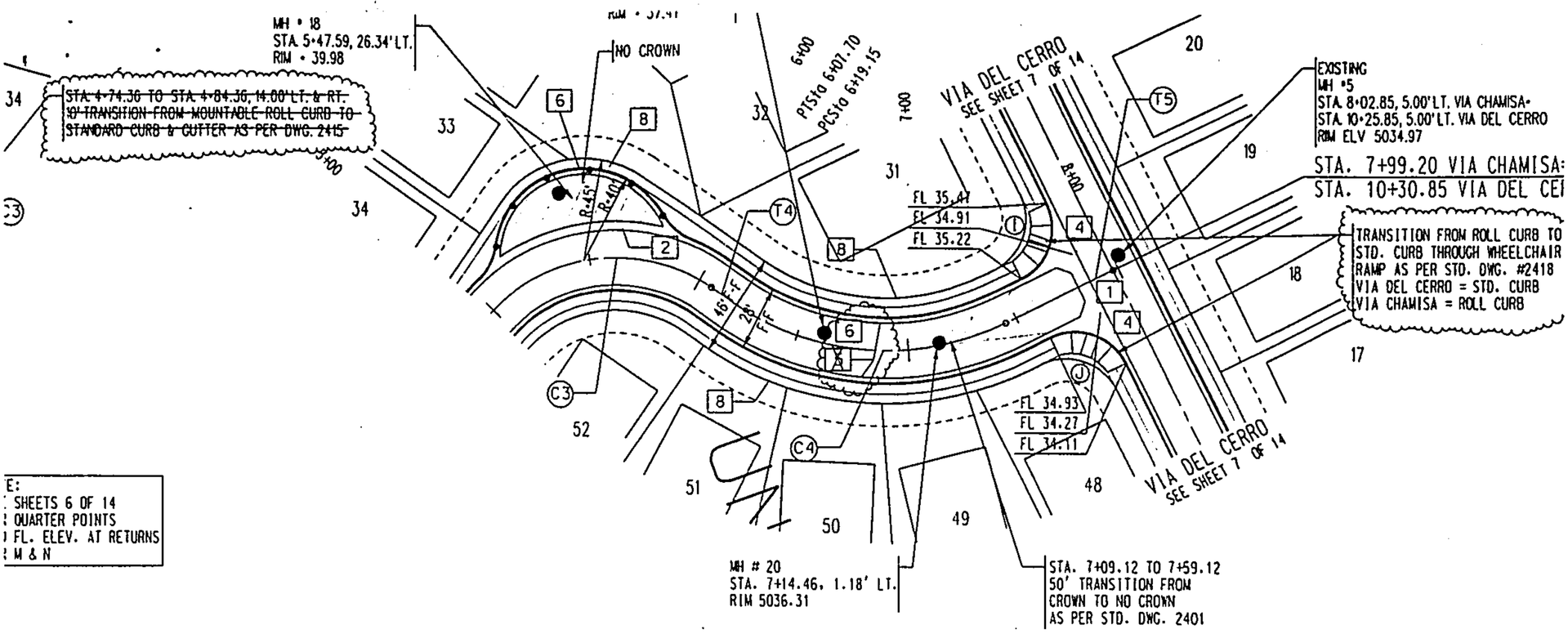
ORIGINAL ROLL CURB EXHIBIT — = ROLL CU



REVISED POOL CURB EXHIBIT

10-9-2000





E:
SHEETS 6 OF 14
QUARTER POINTS
FL. ELEV. AT RETURNS
M & N

FL
41.67
41.69
41.71

28"

FACE OF CURB DATA				
NUMBER	DELTA	TANGENT	ARC	RADIUS
C5	27°44'46"	24.72'	49.20'	206.50'
C6	34°30'56"	61.63'	118.02'	166.00'

	TC	FL
1	35.74R	35.41
2	35.37	35.35
3	35.95	35.28

D = 90°00'00"
L = 39.27'
R = 25.00'

	TC	FL
1	35.39	34.73
2	34.54	34.52
3	34.99	34.32

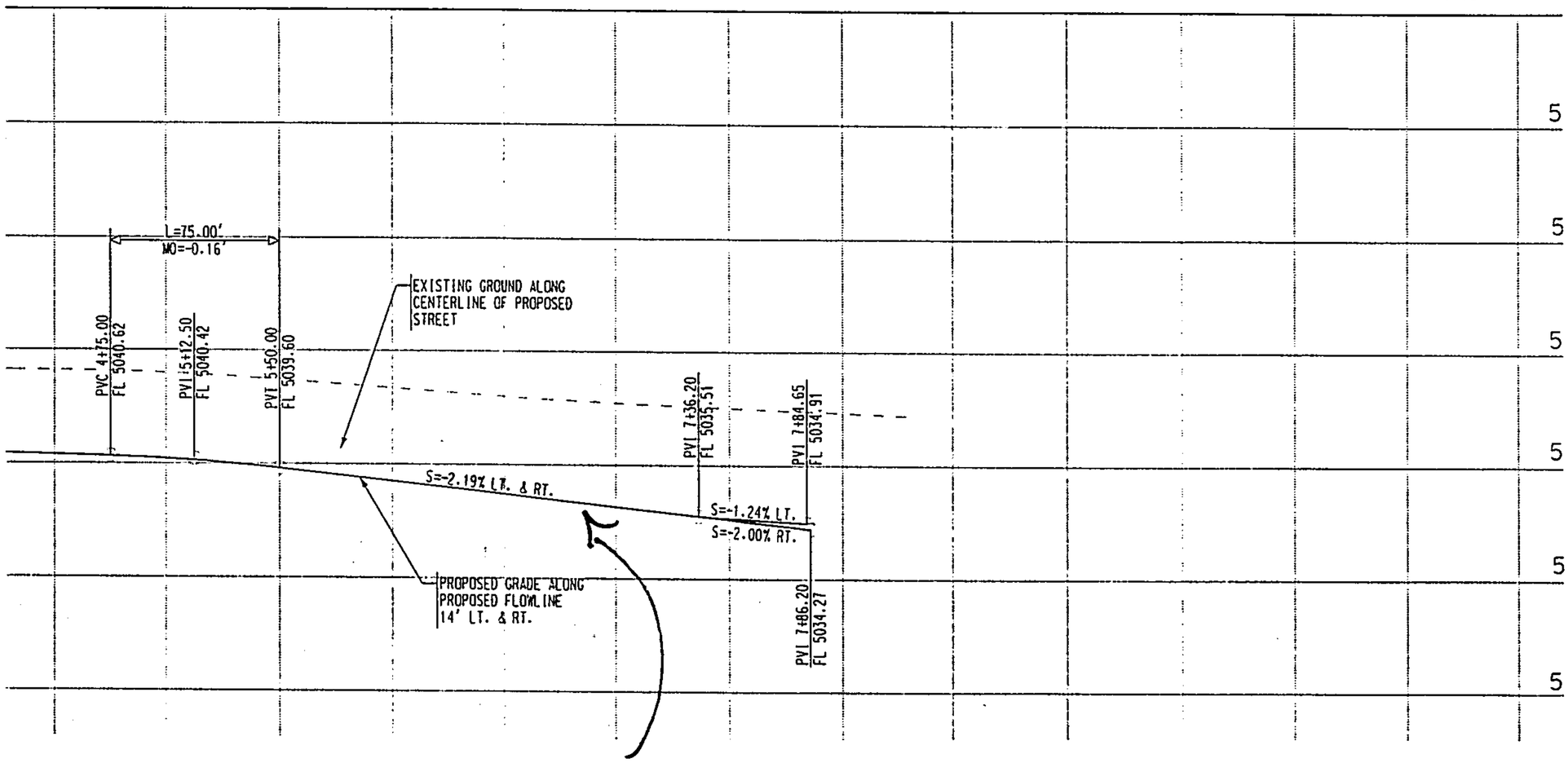
D = 90°00'00"
L = 39.27'
R = 25.00'

N

50 25 0

SCALE: 1" = 50'
(HORIZ.)

A CHAMISA



ANALYSIS POINT 9
ORIGINAL CALCULATIONS
USE SLOPE = 0.58%

ORIGINAL STREET CAPACITY ANALYSIS

LAS SALA DEL NORTE
STREET: CHAMISA
28' F-F, 46' R/W

ANALYSIS PTS 8 & 9

MANNING'S N= .017 MIN SLOPE= .0058

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	23.00	0.37	9	46.00	0.85
2	8.83	0.67	6	35.00	0.13	10	0.00	0.00
3	9.00	0.00	7	37.00	0.00	11	0.00	0.00
4	11.00	0.13	8	37.17	0.67	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.03	0.03	0.01	0.0	0.99	0.39	0.94	0.00	0.03
0.06	0.06	0.06	0.0	1.97	0.62	1.88	0.01	0.07
0.09	0.09	0.13	0.1	2.96	0.81	2.81	0.01	0.10
0.12	0.12	0.23	0.2	3.95	0.99	3.75	0.02	0.14
0.15	0.15	0.37	0.4	6.32	1.00	6.08	0.02	0.17
0.18	0.18	0.59	0.6	9.38	1.06	9.09	0.02	0.20
0.21	0.21	0.91	1.1	12.44	1.17	12.11	0.02	0.23
0.24	0.24	1.32	1.7	15.51	1.29	15.12	0.03	0.27
0.27	0.27	1.82	2.6	18.57	1.41	18.14	0.03	0.30
0.30	0.30	2.41	3.7	21.63	1.54	21.15	0.04	0.34
0.33	0.33	3.09	5.1	24.69	1.66	24.17	0.04	0.37
0.36	0.36	3.86	6.9	27.76	1.79	27.18	0.05	0.41
0.39	0.39	4.70	9.3	28.82	1.99	28.20	0.06	0.45
0.42	0.42	5.54	12.3	28.88	2.22	28.21	0.08	0.50
0.45	0.45	6.39	15.5	28.94	2.43	28.23	0.09	0.54
0.48	0.48	7.24	19.1	29.00	2.64	28.24	0.11	0.59
0.51	0.51	8.09	22.9	29.07	2.84	28.26	0.12	0.63
0.54	0.54	8.93	27.0	29.13	3.03	28.27	0.14	0.68
0.57	0.57	9.78	31.4	29.19	3.21	28.29	0.16	0.73
0.60	0.60	10.63	36.0	29.25	3.39	28.30	0.18	0.78
0.63	0.63	11.48	40.9	29.31	3.56	28.32	0.20	0.83
0.66	0.66	12.33	46.0	29.38	3.73	28.33	0.22	0.88
0.69	0.69	13.20	49.4	31.36	3.74	30.30	0.22	0.91
0.72	0.72	14.15	52.2	34.30	3.69	33.25	0.21	0.93
0.75	0.75	15.20	55.6	37.25	3.66	36.19	0.21	0.96
0.78	0.78	16.32	59.6	40.19	3.65	39.13	0.21	0.99
0.81	0.81	17.54	64.1	43.13	3.65	42.08	0.21	1.02
0.84	0.84	18.85	69.1	46.08	3.67	45.02	0.21	1.05
0.85	0.85	19.30	70.9	47.06	3.68	46.00	0.21	1.06

ANAL PT 8 CFS = 5.1

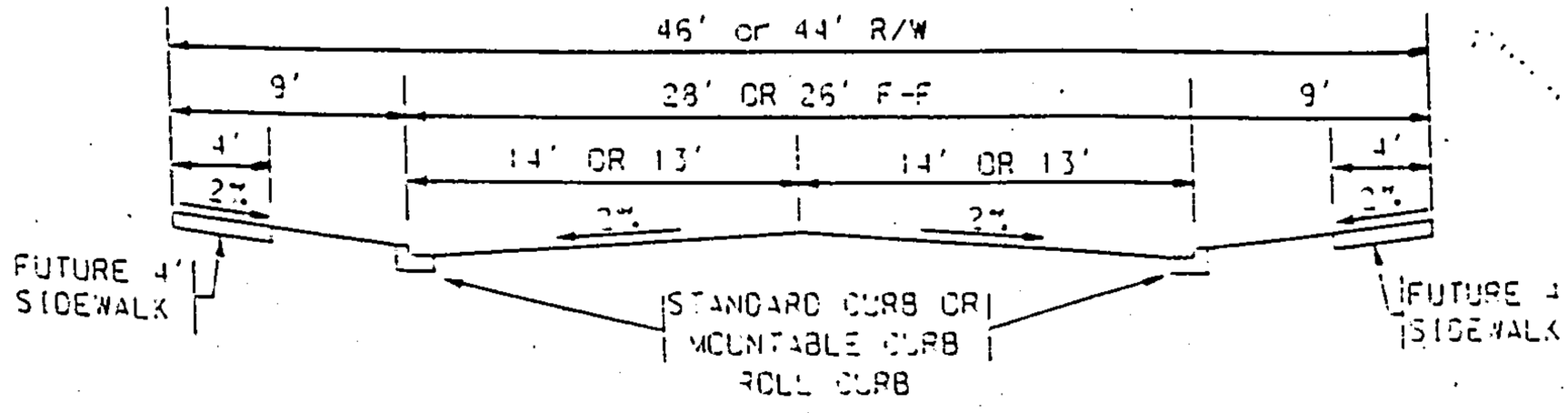
Q100 KB 9 MAX = 12 CFS

< STND CURB / OK

1.) DEPTH @ END OF KB = 0.42' > ROLL CURB → FIND TRANSITION PT

2.) 8 (16 LOTS / 14 LOTS) (12 CFS) = 5.1 CFS @ ANALYSIS PT 8

DEPTH = 0.33 ≤ ROLL CURB ∴ USE ROLL CURB TO ANAL PT



REVISED STREET CAPACITY ANALYSIS

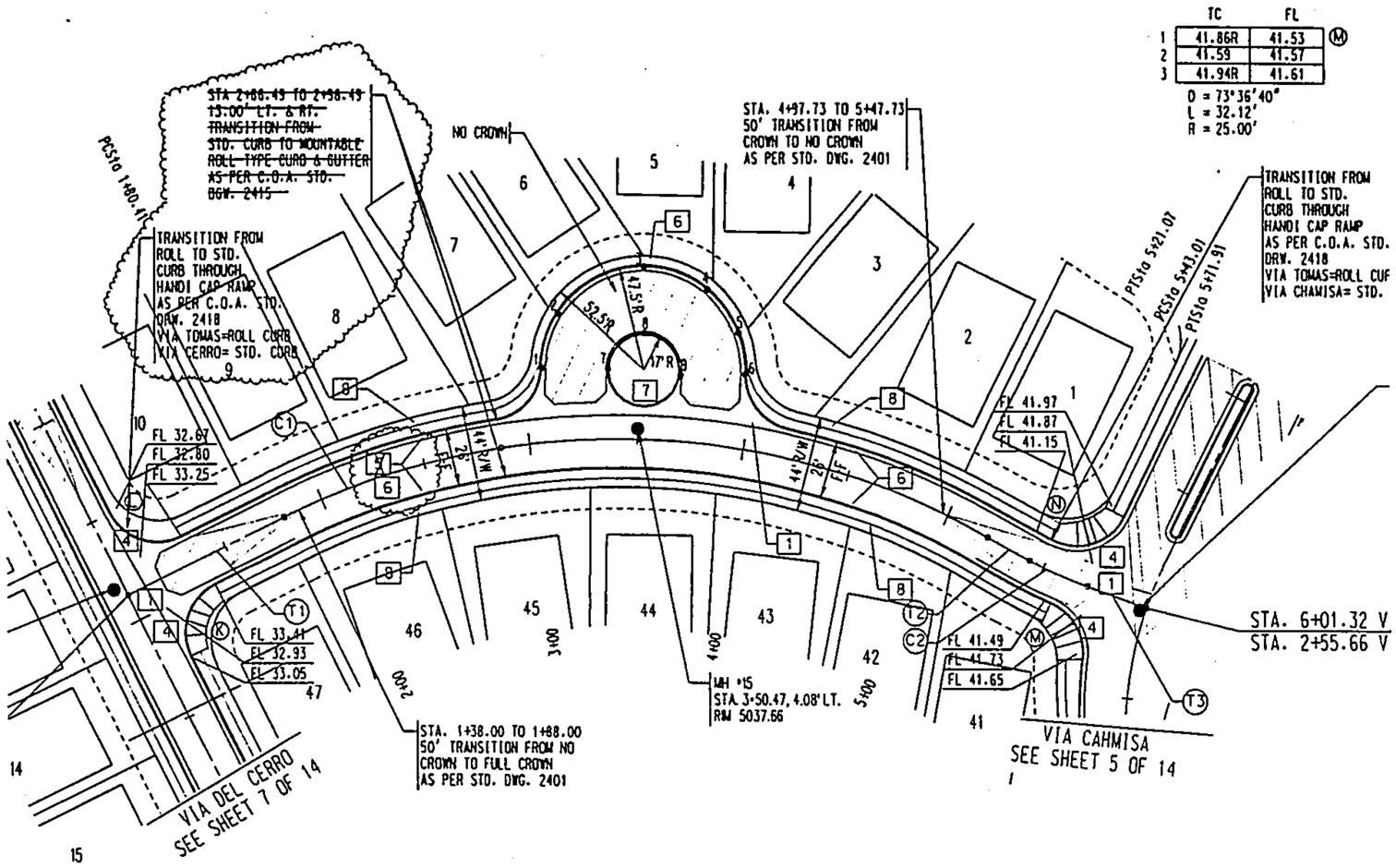
La Sala II
Redo of anlaysis pt 9

MANNING'S N= .017 SLOPE= .0218

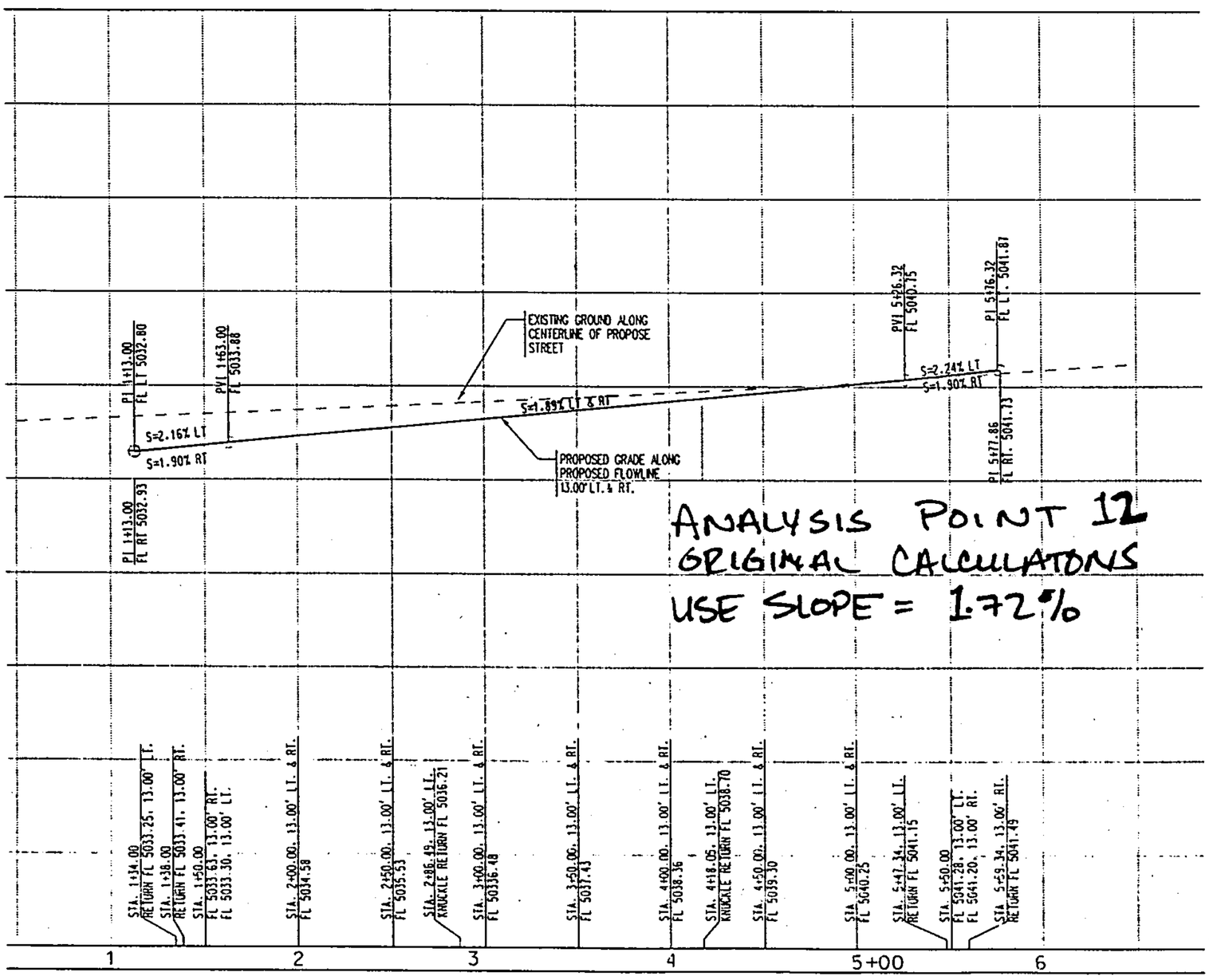
POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	23.00	0.37	9	46.00	0.85
2	8.83	0.67	6	35.00	0.13	10	0.00	0.00
3	9.00	0.00	7	37.00	0.00	11	0.00	0.00
4	11.00	0.13	8	37.17	0.67	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.03	0.03	0.01	0.0	0.99	0.76	0.94	0.01	0.04
0.06	0.06	0.06	0.1	1.97	1.20	1.88	0.02	0.08
0.09	0.09	0.13	0.2	2.96	1.58	2.81	0.04	0.13
0.12	0.12	0.23	0.4	3.95	1.91	3.75	0.06	0.18
0.15	0.15	0.37	0.7	6.32	1.93	6.08	0.06	0.21
0.18	0.18	0.59	1.2	9.38	2.05	9.09	0.07	0.25
0.21	0.21	0.91	2.1	12.44	2.26	12.11	0.08	0.29
0.24	0.24	1.32	3.3	15.51	2.50	15.12	0.10	0.34
0.27	0.27	1.82	5.0	18.57	2.74	18.14	0.12	0.39
0.30	0.30	2.41	7.2	21.63	2.99	21.15	0.14	0.44
0.33	0.33	3.09	10.0	24.69	3.23	24.17	0.16	0.49
0.36	0.36	3.86	13.4	27.76	3.46	27.18	0.19	0.55
0.39	0.39	4.70	18.1	28.82	3.85	28.20	0.23	0.62
0.42	0.42	5.54	23.8	28.88	4.30	28.21	0.29	0.71
0.45	0.45	6.39	30.1	28.94	4.72	28.23	0.35	0.80
0.48	0.48	7.24	37.0	29.00	5.12	28.24	0.41	0.89
0.51	0.51	8.09	44.5	29.07	5.50	28.26	0.47	0.98
0.54	0.54	8.93	52.4	29.13	5.87	28.27	0.54	1.08
0.57	0.57	9.78	60.9	29.19	6.23	28.29	0.60	1.17
0.60	0.60	10.63	69.9	29.25	6.57	28.30	0.67	1.27
0.63	0.63	11.48	79.3	29.31	6.91	28.32	0.74	1.37
0.66	0.66	12.33	89.2	29.38	7.24	28.33	0.81	1.47
0.69	0.69	13.20	95.7	31.36	7.25	30.30	0.82	1.51

Q100 = 12.0 cfs
Depth = 0.34'ok



VIA TOMAS



ANALYSIS POINT 12
ORIGINAL CALCULATONS
USE SLOPE = 1.72%

ORIGINAL STREET CAPACITY ANALYSIS

LA SALA DEL NORTE (TRACT K)
STREET: TOMAS
26'F-F, 44' R/W

ANALYSIS PTS 11 & 12

MANNING'S N= .017 SLOPE= .0172

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	22.00	0.35	9	44.00	0.85
2	8.83	0.67	6	33.00	0.13	10	0.00	0.00
3	9.00	0.00	7	35.00	0.00	11	0.00	0.00
4	11.00	0.13	8	35.17	0.67	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.03	0.03	0.01	0.0	0.99	0.67	0.94	0.01	0.04
0.06	0.06	0.06	0.1	1.97	1.07	1.88	0.02	0.08
0.09	0.09	0.13	0.2	2.96	1.40	2.81	0.03	0.12
0.12	0.12	0.23	0.4	3.95	1.70	3.75	0.04	0.16
0.15	0.15	0.37	0.6	6.32	1.72	6.08	0.05	0.20
0.18	0.18	0.59	1.1	9.38	1.82	9.09	0.05	0.23
0.21	0.21	0.91	1.8	12.44	2.01	12.11	0.06	0.27
0.24	0.24	1.32	2.9	15.51	2.22	15.12	0.08	0.32
0.27	0.27	1.82	4.4	18.57	2.44	18.14	0.09	0.36
0.30	0.30	2.41	6.4	21.63	2.65	21.15	0.11	0.41
0.33	0.33	3.09	8.9	24.69	2.87	24.17	0.13	0.46
0.36	0.36	3.85	12.1	26.76	3.15	26.18	0.15	0.51
0.39	0.39	4.64	16.5	26.82	3.56	26.20	0.20	0.59
0.42	0.42	5.42	21.4	26.88	3.94	26.21	0.24	0.66
0.45	0.45	6.21	26.8	26.94	4.31	26.23	0.29	0.74
0.48	0.48	7.00	32.6	27.00	4.66	26.24	0.34	0.82
0.51	0.51	7.79	38.9	27.07	5.00	26.26	0.39	0.90
0.54	0.54	8.57	45.6	27.13	5.32	26.27	0.44	0.98
0.57	0.57	9.36	52.7	27.19	5.63	26.29	0.49	1.06
0.60	0.60	10.15	60.2	27.25	5.94	26.30	0.55	1.15
0.63	0.63	10.94	68.2	27.31	6.23	26.32	0.60	1.23
0.66	0.66	11.73	76.4	27.37	6.52	26.33	0.66	1.32
0.69	0.69	12.54	81.5	29.36	6.50	28.30	0.66	1.35
0.72	0.72	13.43	85.8	32.30	6.39	31.25	0.63	1.35
0.75	0.75	14.42	91.1	35.25	6.32	34.19	0.62	1.37
0.78	0.78	15.48	97.2	38.19	6.28	37.13	0.61	1.39
0.81	0.81	16.64	104.4	41.13	6.27	40.08	0.61	1.42
0.84	0.84	17.89	112.4	44.08	6.28	43.02	0.61	1.45
0.85	0.85	18.32	115.3	45.06	6.29	44.00	0.61	1.46

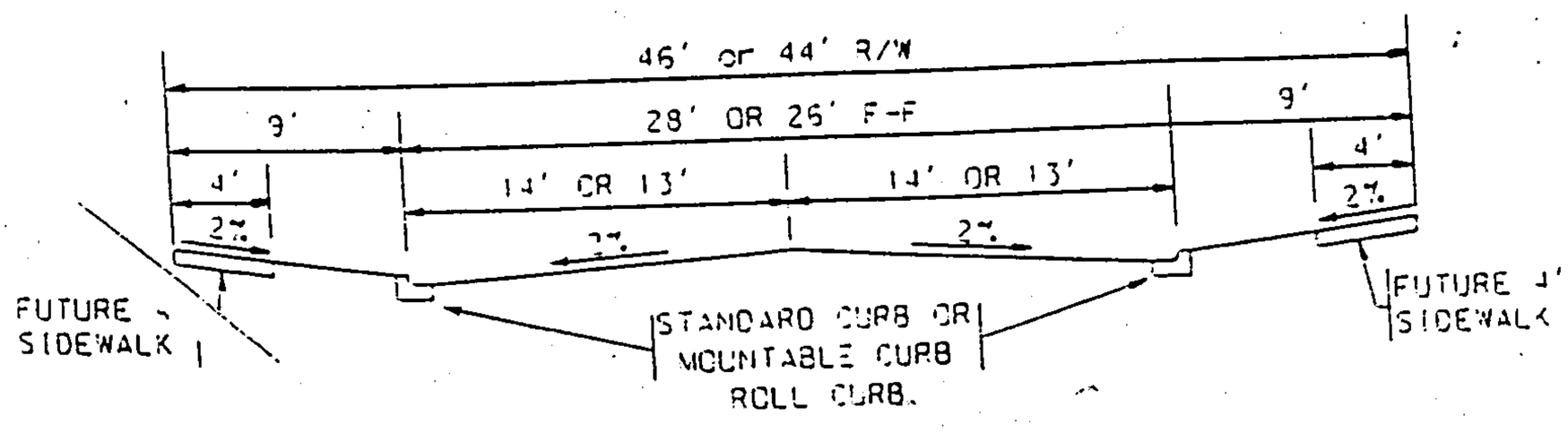
ANALYSIS PT 11
CFS = 7.7

ANAL PT 12
Q_{100} FOR K9
MAX = 11.9 CFS

ANAL PT 12
1.) K9 DEPTH = 0.36' > ROLL CURB FIND TRANSITION PT

ANAL PT 11
2.) $\left(\frac{11 \text{ LOTS}}{17 \text{ LOTS}}\right)$ (11.9 CFS) = 7.7 CFS — DEPTH = 0.32' < ROLL CURB

CONCLUSION: USE ROLL CURB TO KNUCKLE RETURN.



REVISED STREET CAPACITY

Analysis pt 12
TOMAS

MANNING'S N= .017 SLOPE= .019

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	22.00	0.35	9	44.00	0.85
2	8.83	0.67	6	33.00	0.13	10	0.00	0.00
3	9.00	0.00	7	35.00	0.00	11	0.00	0.00
4	11.00	0.13	8	35.17	0.67	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.10	0.10	0.16	0.2	3.29	1.58	3.13	0.04	0.14
0.20	0.20	0.80	1.6	11.42	2.04	11.10	0.06	0.26
0.30	0.30	2.41	6.7	21.63	2.79	21.15	0.12	0.42
0.40	0.40	4.90	19.0	26.84	3.88	26.20	0.23	0.63
0.50	0.50	7.52	38.6	27.04	5.13	26.25	0.41	0.91
0.60	0.60	10.15	63.3	27.25	6.24	26.30	0.60	1.20
0.70	0.70	12.83	87.1	30.34	6.79	29.28	0.72	1.42
0.80	0.80	16.25	107.1	40.15	6.59	39.09	0.67	1.47
0.85	0.85	18.32	121.2	45.06	6.61	44.00	0.68	1.53

Q_{100} = 11.9 CFS

Q100 = 11.9 cfs
Depth = 0.34' Roll curb OK

Reason for change - final slope of road increased.

Change - extended road 25' North moved trench grate & utility crossings appropriately

STA. 13+86.74 VIA DEL CERRO
INSTALL 1-NEENAH GRATE
MODEL R-4999-L9
SEE SHEET 12 OF 14 FOR DETAILS
SEE NOTE 13.

MH # 6
STA. 13+17.65, 5.00' LT. VIA DEL CERRO=
STA. 0+95.00, 5.00' LT. VIA THOMAS
EXISTING 4' DIA
TYPE "E" SAS MH

STA.13+12.65 VIA DEL CERRO
STA. 1+00.00 VIA TOMAS

EXISTING BOSQUE RD.

STA. 14+09.13, 15.00' LT.
INSTALL 1 - 6" 45° BEND
w/ RESTRAINED JOINTS

STA. 14+49.67, 15.00' LT
REMOVE 6" WL CAP
& CONNECT TO
EXISTING 6" WL

EXISTING 6"WL AND GATE VALVE

EXISTING 8"SAS

EXISTING 36"RCP

STA. 14+43.37, 5' RT.
REMOVE 36" RCP CAP
& CONNECT TO EXISTING
36" RCP STORM DRAIN
INV. 23.80
SEE NOTE 1

36" RCP
L= 55.5'
S=7.35%
V=10.6 FT/S
Q=75.0 CFS

STA. 13+89.13, 5.00' RT.
INSTALL 1 - 6" 45° BEND
w/ RESTRAINED JOINTS

VIA TOMAS
SEE SHEET 10 OF 14

:+74.65, 5.00' RT.
x 6" TEE
GATE VALVE ON RUN
"A" BOX & LID
AINED JOINTS
E HYDRANT 4' BURY
COA STD. DWG. 2340
10.27LF. 6" PVC
ELEV. = 5034.22

STA 13+17.65, 7.00' RT
EXISTING 8" SAS PLUG
SLOPE 1.72%
INV. @ PLUG 27.26

3+07.65, 5.00' R
L CERRO=.
1+05.00, 5.00' RT.
MAS
L
x 6" TEE
RAINED JOINTS

ORIGINAL LOCATION

N

SCALE: 1" = 50'
(HORIZ.)

5070
5060
5050
5040
5030
5020
5010

STA. 13+86.74
TOP OF GRATE 32.50

DEPRESSED
CURB SECTION

STA. 14+25.40 14+47.07, TP=30.75
TP 30.75
INSTALL 1-11.25°
BEND w/RESTRAINED
JOINTS.

EXISTING GROUND ALONG
CENTERLINE OF PROPOSED
STREET.

13+85.23, TP=29.50
STA. 13+66.05
TP 29.59
INSTALL 1-11.25°
BEND w/RESTRAINED
JOINTS.

STA 14+49.67
TP 30.75

STA 14+64.59
TP 30.75

13+07.65
TP29.88

12+74.65
TP30.05

S=-0.50% LT & RT
3' MIN
COVER

WL

SEE SHEET 12
FOR STORM SYSTEM
DETAILS.

14+06.71, TP=25.04
STA. 13+80.03
TP 26.60
INSTALL 1-11.25°
BEND w/RESTRAINED
JOINTS.

STA. 14+05.61 14+19.30, TP=25.04
TP 26.60
INSTALL 1-11.25°
BEND w/RESTRAINED
JOINTS.

603581
file
Closed

CANCELLATION AND RELEASE OF DRAINAGE COVENANT

E16/D017

This **CANCELLATION AND RELEASE OF DRAINAGE COVENANT** is made and entered into as of the 22ND day of August, 2006, by the City of Albuquerque, (the "City").

WHEREAS, the City of Albuquerque ("City") and **SUNDT CONSTRUCTION, INC.** entered into a Drainage Covenant (the "Agreement") to construct a **LA SALA DEL NORTE UNIT 1**. The Agreement was recorded **May 27, 1999**, in Book **9907** at page **9912** thru **9912** as Document No. **1999070074** in the records of the Bernalillo County Clerks Office, New Mexico; and

WHEREAS, all of the conditions prior to cancellation and release of the Agreement have been satisfactorily performed, and the parties wish to cancel and release the Agreement.

THEREFORE, City of Albuquerque hereby cancels and releases the Agreement.

IN WITNESS WHEREOF, the undersigned has executed this Cancellation and Release of Drainage Covenant as of the day and year first above written.

CITY OF ALBUQUERQUE

By: _____
Its: City Engineer

8/21/06

8-16-06

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

This instrument was acknowledged before me on August 22, 2006 by Richard Dourte, City Engineer, Planning Department of the City of Albuquerque, a municipal corporation, on behalf of the corporation.

Gloria S. Saavedra
Notary Public

My Commission Expires:

11-25-2007
~~Notary Public~~

Mary Herrera Bern. Co. CANC R 9.00

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6514982
Page: 1 of 1
08/22/2006 01:59P
Bk-A122 Pg-7077

Brad L. Bingham/PWD/CABQ
08/16/2006 12:52 PM

To Jane E. Rael/PWD/CABQ@COA
cc Pamela C. Lujan/PLN/CABQ@COA, Richard H. Dourte/PWD/CABQ@COA
bcc
Subject Re: release of drainage covenant

The release of the AGAVE subdivision Work Order (CPN 768281), which has completely developed the tract where this pond was.
Jane E. Rael/PWD/CABQ

Jane E. Rael/PWD/CABQ
08/16/2006 12:33 PM

To Brad L. Bingham/PWD/CABQ@COA
cc Pamela C. Lujan/PLN/CABQ@COA, Richard H. Dourte/PWD/CABQ@COA
Subject release of drainage covenant

Brad,

We need something in writing to put in the file as to why it is okay to release the Drainage Covenant for La Sala del Norte, Unit 1, CPN 603581.

Thanks
Jane

CONTRACT CONTROL FORM

PRELIMINARY REVIEW

Contact Person Pamela Lujan
Phone No. 924-3996

Project 603581
CCN# 990102O
Existing or New (Circle One)

Type of Agreement: Release of Drainage Covenant

Description/Project Name La Sala Del Norte, Unit 1
Planning Dept./Division: Design Review
Developer: Sundt Construction, Inc.

Contract Amount $ _____ SIA Contract Period: 8-22-06 - _____
Contract Amount $ _____ SIA Contract Period: _____ - _____
Contract Amount $ _____ SIA Contract Period: _____ - _____
Contract Amount $ _____ S/W Contract Period: _____ - _____
Contract Amount $ _____ S/W Contract Period: _____ - _____

DRAFT CONTRACT:
Recd by Legal: _____ Rejected/Returned to Dept.: _____/_____
Returned to Legal: _____/_____ Approved: _____ Initials: _____

FINANCIAL GUARANTY:
Letter of Credit No. _____ Date: _____ Attached: Yes___ No.___ Initial_____
Other: Type _____ Date: _____ Attached: Yes___ No.___ Initial_____

FINAL CONTRACT REVIEW

APPROVALS REQUIRED:

	Date Delivered	Returned to Dept.	Approved By	Approval Date
Utility Div				
Hydrology Div	8-15-06			
Transportation Div			KBM	8/15/06
DRC Chairman	8-15-06	8-16-06		
Legal Dept	8-17-06			8-16-06
City Engineer	8-22-06	8-22-06		8/21/06
Finance				8-22-06
CAO				
ABCWUA				
Other: _____				

DISTRIBUTION:

	Date:	By:
User Department.	8-24-06	PCL
Vendor		
City Clerk	8/25/06	
Treasury		
Other: _____		

...M TO COVER PAGE

8-21-06
(Date)

TO: Kevin Curran, Assistant City Attorney, Legal Department

FROM: Project Administrator, Project Review Sec., PWD

SUBJECT: PROJECT NAME: La Sala Del Norte #1 PROJECT # 603581

The attached documents have been review, approved, initialed and/or signed by the DRC Chairman and are submitted for your action as noted.

8-16-06

ITEM	ACTION: Review & Approval	ACTION: Reference	Comments
Procedure "A"			
Procedure "B"			
Procedure "B" Modified Non Work Order			
Procedure "C"			
Procedure "C" Modified			
Special Agreement			
Sidewalk Deferral Agreement			
Amendment			
Assignment			
Financial Guarantee			
Construction Paperwork:			
Contractors Proposal			
Performance/Warranty Bonds			
Labor/Material Bonds			
Certificate of Insurance			
Engineers Cost Estimate			
Extension			
Release/Agreement			
Release/Financial Guarantee			
Calling Notice			
Letter of Commitment			
Reduction Letter			
License Agreement			
Monitoring Well Permit			
Agreement & Covenant			
Drainage Covenant			
Revocable Permit			
Encroachment			
Permanent Easement			
Temporary Easement			
Power of Attorney			
Certificate of Work Order Completion			
Certificate of Completion and Acceptance			
Grading & Drainage Certification			
Notice of Acceptance - Centerline Monu.			
Corporate Resolution			

Other:

Please Call Pamela at 4-3996 if you have any questions regarding the above or when the documents are ready to be picked up.

No. of Attachments ( )

#2
(NO PUBLIC EASEMENT)

DRAINAGE COVENANT

#603581

This Drainage Covenant, between Sundt Construction, Inc. ("Owner"), whose address is P. O. Box 26685, Tucson, AZ 85726, and the City of Albuquerque, New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Owner signs this Covenant.

1. Recital. Owner is the owner of certain real property described as: See attached Exhibit A.

in Bernalillo County, New Mexico (the "Property"). (Give legal description and filing information.)

Pursuant to City ordinances, regulations and other applicable laws, the Owner is required to construct and maintain certain Drainage Facilities on the Property, and the parties wish to enter into this Agreement to establish the obligations and responsibilities of the parties.

2. Description and Construction of Drainage Facilities. Owner shall construct the following "Drainage Facility" within the Property at Owner's sole expense in accordance with the standard plans and specifications approved by the City pursuant to Drainage File No. E16/D16, DRB #98/314 :
Off-site retention pond as shown on La Sala Del Norte Grading Plan Unit I.

The Drainage Facility is more particularly described in the attached Exhibit A. The Owner will not permit the Drainage Facility to constitute a hazard to the health or safety of the general public.

3. Maintenance of Drainage Facility. The Owner will maintain the Drainage Facility at Owner's cost in accordance with the approved Drainage Report and plans.

4. City's Right of Entry. The City has the right to enter upon the Property at any time and perform whatever inspection, maintenance or repair of the Drainage Facility it deems appropriate, without liability to the Owner.

5. Demand for Construction or Repair. The City may send written notice ("Notice") to the Owner requiring the Owner to construct or repair the Drainage Facility

Judy D. Woodward Bern. Co. COV R 17.00
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Bk-9907 Pg-9912

within 30 days ("Deadline") of receipt of the Notice, as provided in Section 11, and the Owner will comply promptly with the requirements of the Notice. The Owner will perform all required work by the Deadline, at Owner's sole expense.

6. Failure to Perform by Owner and Emergency Work by City. If the Owner fails to comply with the terms of the Notice by the Deadline, or if the City determines that an emergency condition exists, the City may perform the work itself. The City may assess the Owner for the cost of the work and for any other expenses or damages which result from Owner's failure to perform. The Owner agrees promptly to pay the City the amount assessed. If the Owner fails to pay the City within thirty (30) days after the City gives the Owner written notice of the amount due, the City may impose a lien against Owner's Property for the total resulting amount.

7. Liability of City for Repair after Notice or as a Result of Emergency. The City shall not be liable to the Owner for any damages resulting from the City's repair or maintenance following notice to the Owner as required in this agreement or in an emergency unless the damages are the result of the reckless conduct or gross negligence of the City.

8. Indemnification. Owner agrees to indemnify and save the City, its officials, agents and employees harmless from all claims, actions, suits and proceedings arising out of or resulting from the Owner's negligent maintenance, construction, repair or use of the Drainage Facility. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the indemnitee, or the agents or employees of the indemnitee; or (2) the giving of or the failure to give direction or instructions by the indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

9. Cancellation of Agreement and Release of Covenant. This Agreement may be released if the Drainage Facility is no longer required for the protection of the public health, safety and welfare by the City filing "Notice of Release" with the Bernalillo County Clerk. The Notice of Release must be signed by the City's Chief Administrative Officer, or his designee, and the approval of the City Hydrologist must be endorsed thereon.

10. Assessment. Nothing in this agreement shall be construed to relieve the Owner, his heirs, assigns, and successors from an assessment against Owner's Property for improvements to the property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Drainage Facility will not reduce the amount assessed by the City.

Judy D. Woodward Bern. Co. COV R 17.00
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5230347
Page: 2 of 6
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Bk-9907 Pg-9912

11. Notice. For purposes of given formal written notice to the Owner, Owner's address is:

Sundt Construction Inc.
P. O. Box 26685
Tucson, AZ 85726

Notice may be given to the Owner either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the Owner within three days after the notice is mailed if there is no actual evidence of receipt. The Owner may change Owner's address by given written notice of the change by Certified Mail, return receipt requested, to the City Public Works Department, P.O. Box 1293, Albuquerque, New Mexico, 87103.

12. Term. This Agreement shall continue until terminated by the City pursuant to Section 9 above.

13. Binding on Owner's Property. The covenants and obligations of the Owner said forth herein shall be binding on Owner, its heirs, personal representatives, assigns and successors and on Owner's Property and shall constitute covenants running the Owner's Property until released by the City.

14. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understanding, oral or written, whether previous to the execution hereof or contemporaneous herewith regarding this subject matter.

15. Changes to Agreement. Changes to this Agreement are not binding unless made in writing, signed by both parties.

16. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, the remainder of the Agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this Agreement are not part of this Agreement and will not affect the meaning of construction of any of its provisions.

Judy D. Woodward Bern. Co. COV R 17.00
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5230347
Page: 3 of 6
05/27/1999 10:55A
Bk-9907 Pg-9912

CITY OF ALBUQUERQUE:

By: _____
Lawrence Rael
Chief Administrative Officer
Dated: 5/25/99

OWNER: SUNDT CONSTRUCTION, INC.

By: Raymond C Barquell
Its: Executive Vice President/CFO

Dated: January 28, 1999

APPROVED:

5/20/99
Director, Public Works Dept.

5/13/99

REVIEWED BY:

5/3/99
City Engineer

5/3/99

CITY'S ACKNOWLEDGMENT

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on May 25, 199 9, by Lawrence Rael, Chief Administrative Officer for the City of Albuquerque, a New Mexico municipal corporation, on behalf of the corporation.

OFFICIAL SEAL
Renie Carmona
NOTARY PUBLIC
STATE OF NEW MEXICO

Renie Carmona
Notary Public

My Commission Expires:
11/15/2002

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5230347
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Judy D. Woodward Bern. Co. COV R 17.00 Bk-9907 Pg-9912

rpd4\drain2.cov (Revised by Legal 8/97)

OWNER'S ACKNOWLEDGMENT

STATE OF ~~NEW MEXICO~~ ARIZONA)
) ss.
COUNTY OF ~~BERNALILLO~~ PIMA)

This instrument was acknowledged before me on January 28, 19 99, by Raymond C. Bargull, Exec. VP/CFO, on behalf of Lindt Construction, Inc.

Jan Irwin
Notary Public

My Commission Expires:
July 30, 2002

OFFICIAL SEAL
JAN IRWIN
NOTARY PUBLIC
Pima Co., Arizona
My Comm. Exp. July 30, 2002

Judy D. Woodward Bern. Co. COV R 17.00
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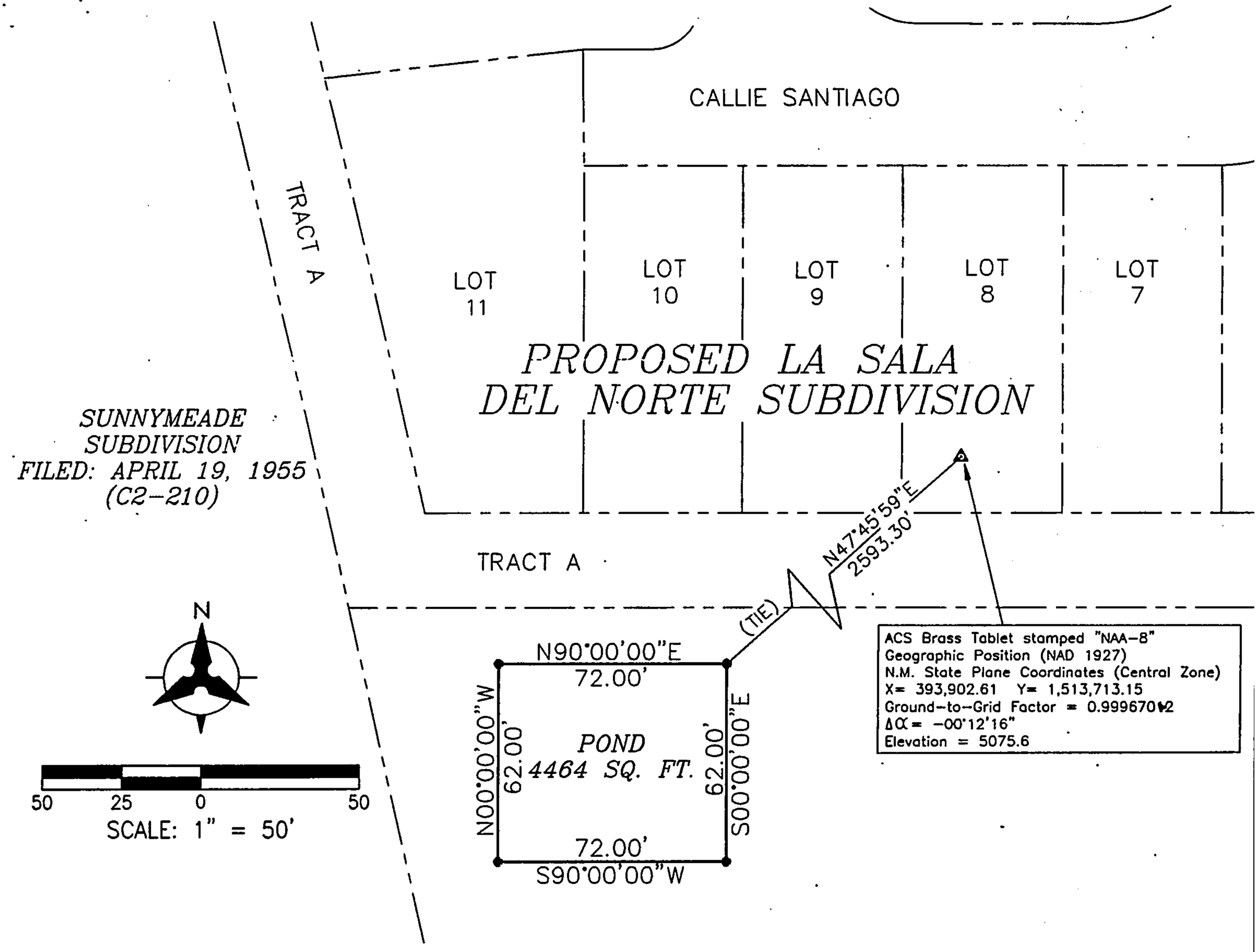
Bk-9907 Pg-9912

EXHIBIT A



DESCRIPTION

A certain tract of land situate within the unplatted lands of the Elena Gallegos Grant, in projected Section 27, Township 11 North, Range 3 East, New Mexico Principal Meridian, City of Albuquerque, Bernalillo County, New Mexico. Said tract being more particularly described as follows:

BEGINNING at the northeast corner of the tract herein described, whence the City of Albuquerque survey monument "NAA-8", having New Mexico State Plane Grid Coordinates for the Central Zone:
X=1,513,713.15, Y=393,902.61, bears N47°45'59"E a distance of 2593.30 feet; thence along the easterly boundary line of the tract herein described,
S00°00'00"E a distance of 62.00 feet; thence along the southerly boundary line of the tract herein described,
S90°00'00"W a distance of 72.00 feet; thence along the westerly boundary line of the tract herein described,
N00°00'00"W a distance of 62.00 feet; thence along the northerly boundary line of the tract herein described,
N90°00'00"E a distance of 72.00 feet to the point and place of beginning.

This tract contains 4,464 square feet, more or less.

Bohannan-Huston Inc.
Courtyard I
7500 Jefferson St. NE
Albuquerque, NM 87109

Thomas G. Klingenhagen
NM Land Surveyor No. 5978

Date: 1-22-99

TOM KLINGENHAGEN NEW MEXICO 5978 REGISTERED PROFESSIONAL SURVEYOR

JOB NO. 97-455A-02

Bohannan Huston

Courtyard One 7500 JEFFERSON NE Albuquerque NEW MEXICO 87109

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Judy D. Woodward Bern Co CNU R 17.00
ARE DEVELOPERS

CONTRACT CONTROL FORM

PRELIMINARY REVIEW

Project # 603581

Contact Person Terri Martin

CCN # 990102 0

Phone No. 924-3997

~~Non~~ or Ext. #

Type of Agreement : Drainage Covenant

Description/Project: La Sera Del Norte Unit 1

Public Works/Div.: Project Review Section

Developer: Vista Del Norte LLC

Contract Amount $ -0-

SIA Contract Period: 5-25-99 Perm.

Contract Amount $

SW'S Contract Period: ____ - ____

Project Completed Date:

DRAFT CONTRACT:

Rec'd by Legal: ____ Rejected/Returned to Dept.: 5/11/99 / KJC

Returned to Legal: 5-12-99 Approved: ____ Initials: ____

FINANCIAL GUARANTY:

Letter of Credit No.: ____ Date: ____ Attached: Yes___ No___ Initial___

Other: Type ____ Date: ____ Attached: Yes___ No___ Initial___

FINAL CONTRACT REVIEW

APPROVALS REQUIRED:

	Date Delivered	Returned to Dept.	Approved By	Approval Date:
~~Purchasing:~~ Hydro:	4-23-99			4-29-99
Asst. City Attorney:	5-3-99 BL			5/13/99
~~CIP:~~ PWO Director	5-18-99 BL			5/20/99
City Attorney:				
CAO:	5-24-99 BL		LR RC for	5/25/99
Other:				
Council:	EC No.:	Approved:		Date:

DISTRIBUTION:

	Date:	By:
User Department		
Vendor		
City Clerk	6/4/99 BL	
Treasury		

Revised 9/6/95 WP+125805/tsl