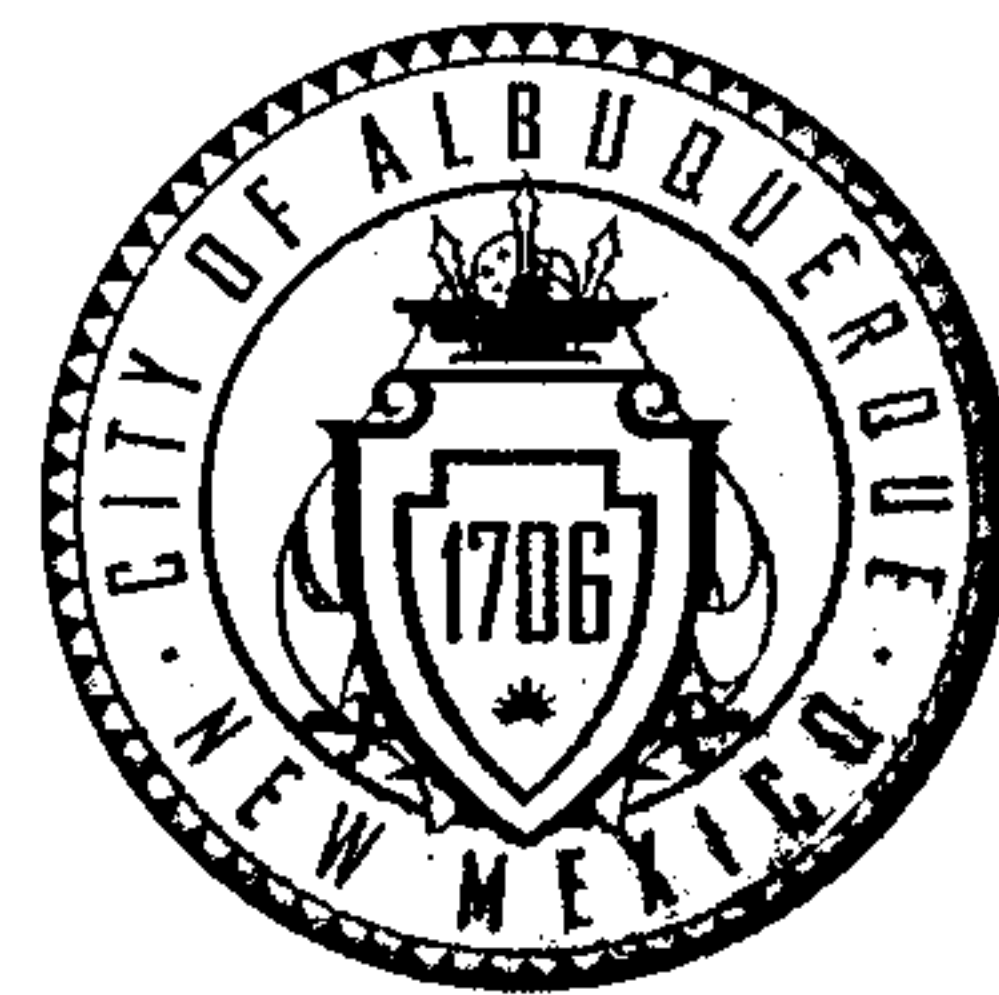


CITY OF ALBUQUERQUE

Planning Department
Suzanne Lubar, Director



Mayor Richard J. Berry

January 14, 2016

Fred C. Arfman, P.E.
Isaacson & Arfman, PA
128 Monroe St NE
Albuquerque, NM 87108

**Re: Hodgin Elementary School-Kindergarten Addition
3801 Morningside Dr. NE
Request Permanent C.O. - Accepted
Engineer's Stamp dated: 5-31-13 (G17D037)
Certification dated: 1-12-16**

PO Box 1293

Dear Mr. Arfman,

Albuquerque

Based upon the information provided in your submittal received 1/13/2016, the above referenced Certification received is acceptable for the release of permanent Certificate of Occupancy by Hydrology.

New Mexico 87103

If you have any questions, you can contact me at 924-3686 or Totten Elliott at 924-3982.

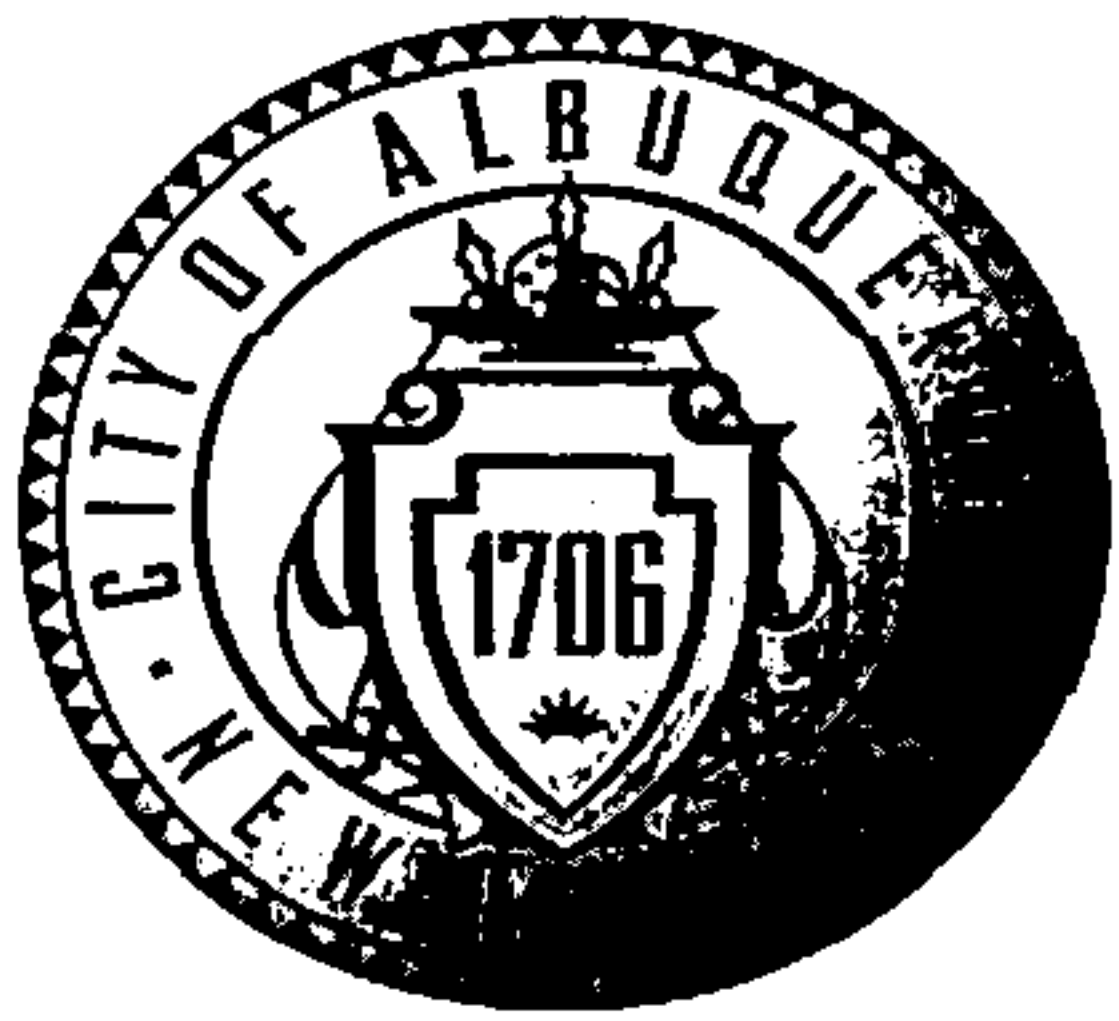
Sincerely,

www.cabq.gov

Shahab Biazar, P.E.
City Engineer, Planning Dept.
Development Review Services

TE/SB

C: email, Cordova, Camille C.; Miranda, Rachel; Sandoval, Darlene M.; Barreras, Gary S.;
Blocker, Lois



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Hodgin Elementary School - Kindergarten Addition Building Permit #: _____ City Drainage #: G17/ 037
DRB#: _____ EPC#: _____ Work Order#: _____
Legal Description: Tract A, Hodgin Elementary School, Albuquerque, NM
City Address: 3801 Morningside Dr. NE 87110

Engineering Firm: Isaacson & Arfman, P.A. Contact: Fred Arfman, Project Engineer
Address: 128 Monroe Street NE - Albuquerque, NM 87108
Phone#: (505) 268-8828 Fax#: _____ E-mail: freda@iacivil.com

Owner: APS Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Architect: Gregory T. Hicks & Associates Contact: Greg Hicks - Project Architect
Address: 110 Second St. SW, Suite 204 - Albuquerque, NM 87102
Phone#: (505) 243-7492 Fax#: _____ E-mail: gthicks@gthicks.com

Other Contact: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

- ☐ 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)

☐ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: ☐ Yes ☒ No

DATE SUBMITTED: January 12, 2016

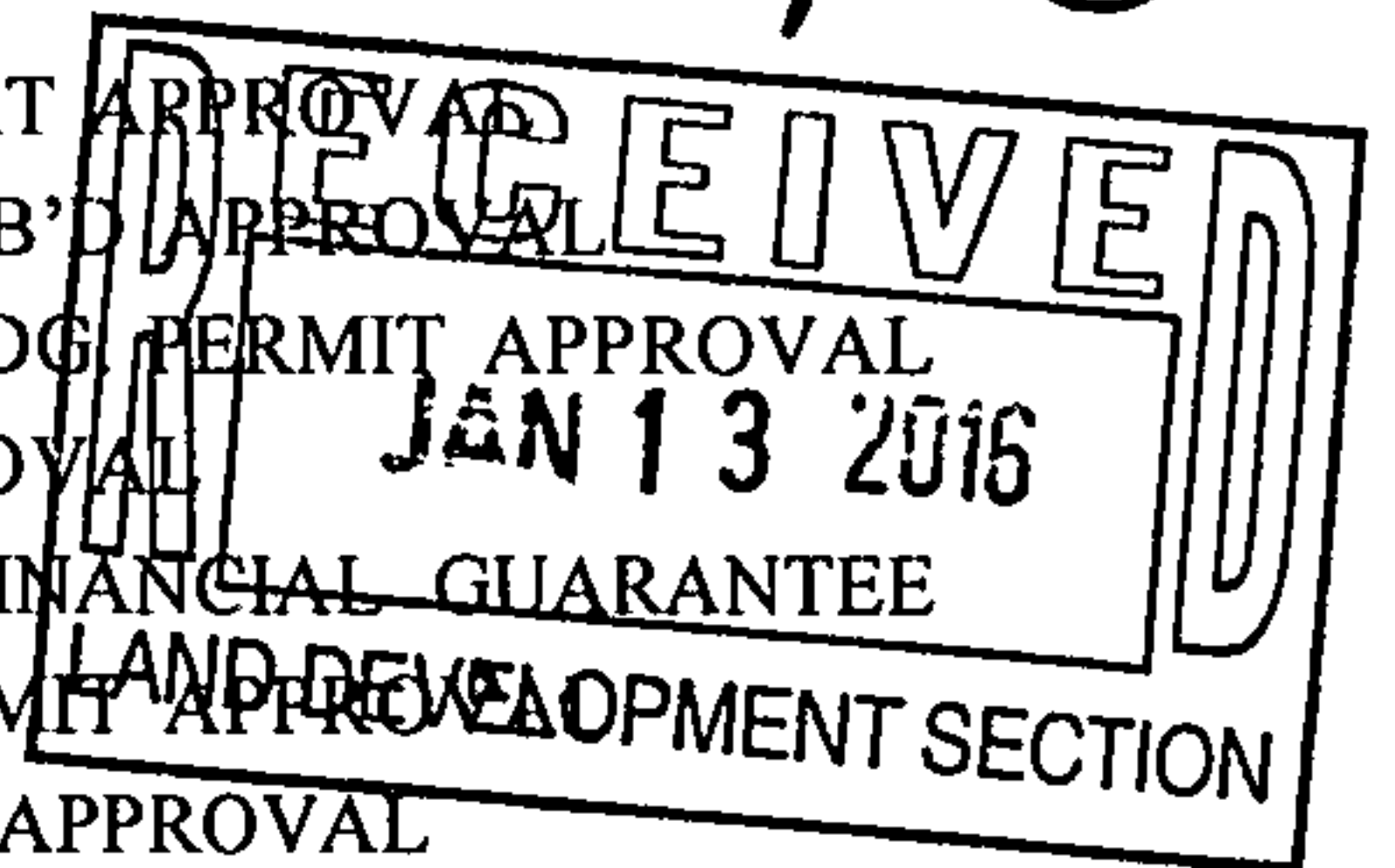
By: Fred C. Arfman

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
☐ 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) _____



COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: _____



Bryan Bobrick <bryanb@iacivil.com>

Hydrology Submittal: Hodgkin Elementary School Kindergarten Addition - Engr. Cert for CO

1 message

Bryan Bobrick <bryanb@iacivil.com>

Tue, Jan 12, 2016 at 3:11 PM

To: COA Planning Development Review Services <PLNDRS@cabq.gov>

Bryan Bobrick
Isaacson & Arfman, P.A.
128 Monroe N.E.
Albuquerque, NM 87108
(505) 268-8828

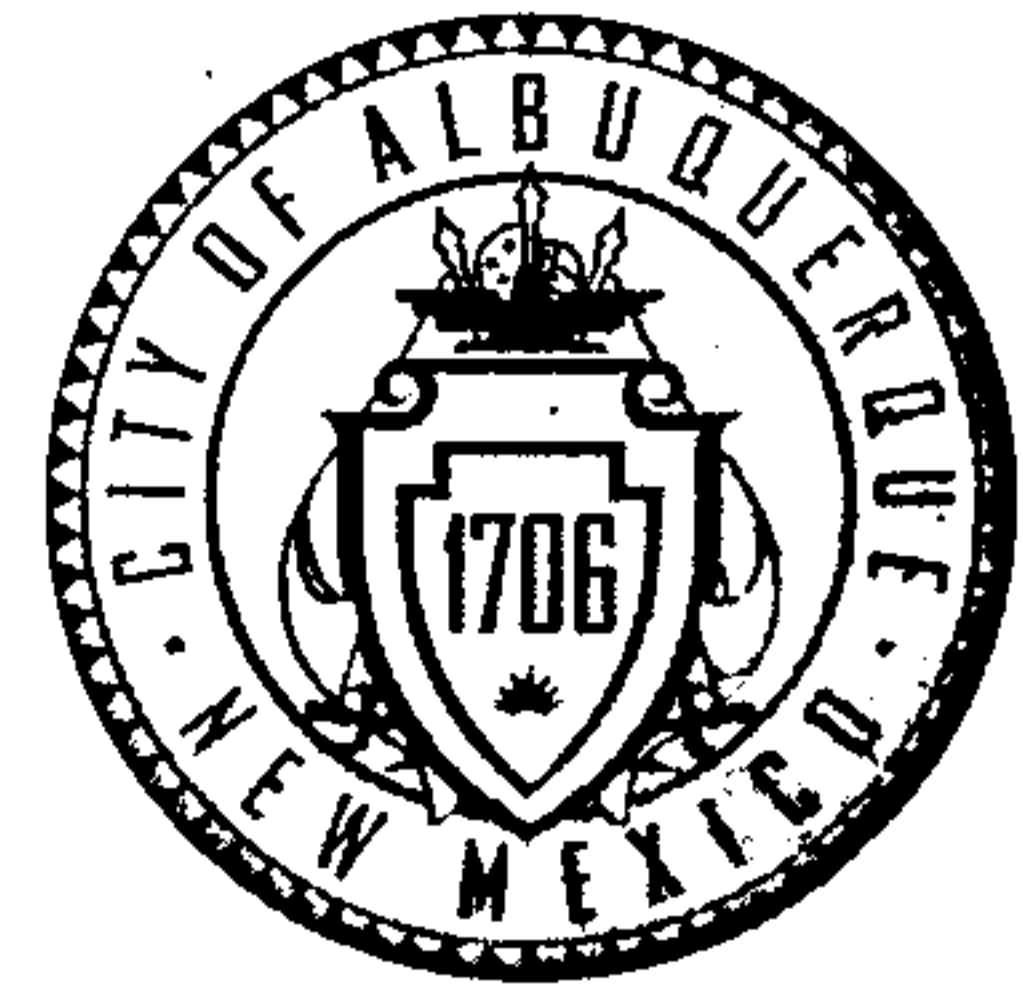
2 attachments

1773 CG-101 AS-BLT 1 OF 2.pdf
4089K

1773 CG-101 AS-BLT 2 OF 2.pdf
2402K



CITY OF ALBUQUERQUE



September 24, 2015

Jeffrey Mortensen, PE
High Mesa Consulting Group
6010 -B Midway Park Blvd NE
Albuquerque, NM 87109

**Re: Hodgins Elementary Portables
3801 Morningside Drive NE
Engineer's Stamp dated: 4/11/2014 (G17D037)
Certification dated: 9-11-15**

Dear Mr. Mortensen,

Based on the Certification received 9/17/2015, the site is acceptable for release of Certificate of Occupancy by Hydrology.

PO Box 1293

If you have any questions, you can contact me at 924-3999 or Totten Elliott at 924-3982.

Albuquerque

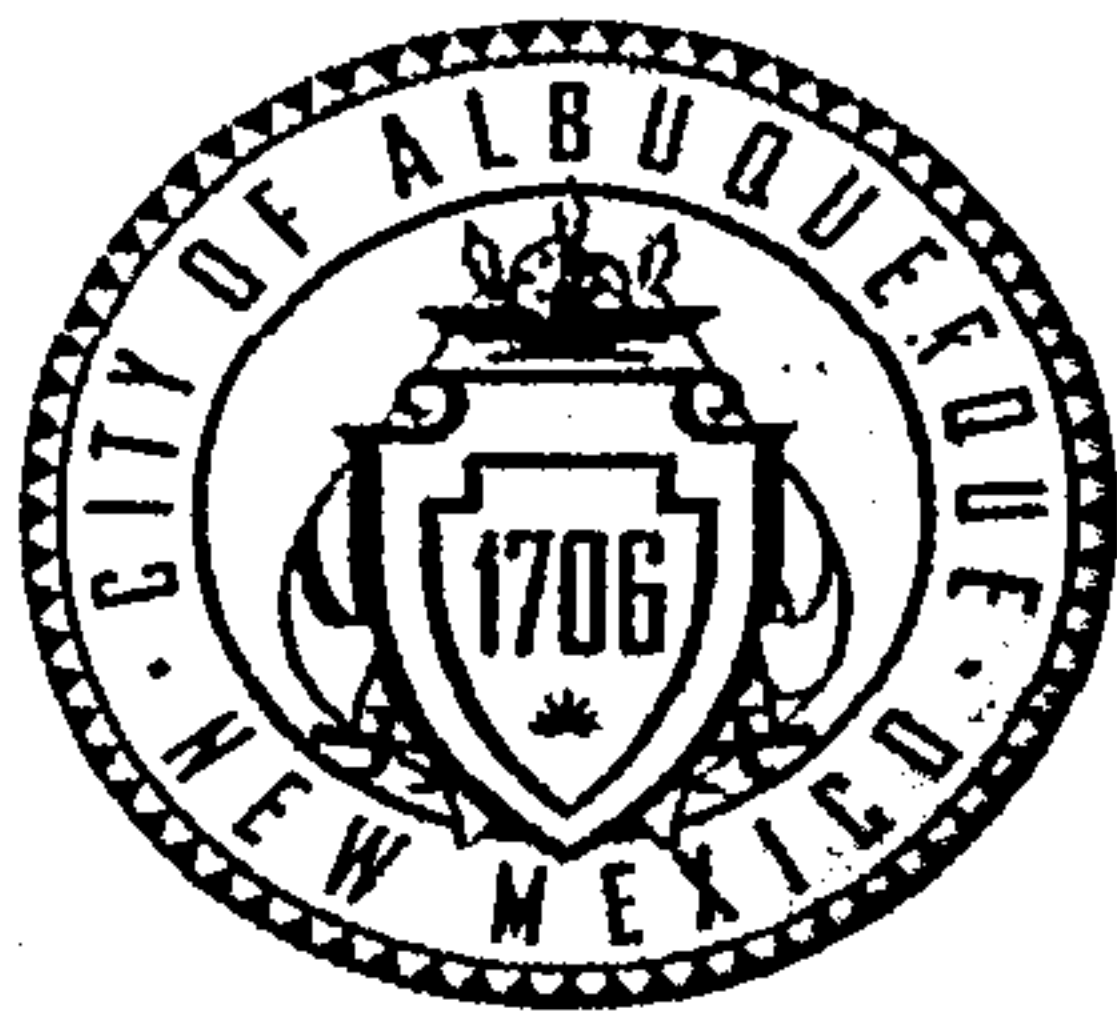
New Mexico 87103

www.cabq.gov

Sincerely,

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development and Review Services

C: TE/RH
CO Clerk
email



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Hodgin Elementary School SPED Pre-K Building Permit #: _____ City Drainage #: G17/D037
DRB#: _____ EPC#: _____ Work Order#: _____
Legal Description: Tract A, Hodgin Elementary School
City Address: 3801 Morningside Drive NE, Albuquerque

Engineering Firm: High Mesa Consulting Group Contact: Jeffrey G. Mortensen #8547
Address: 6010-B Midway Park Blvd NE, Albuquerque NM 87109
Phone#: 505-345-4250 Fax#: 505-345-4254 E-mail: jmortensen@highmesecg.com

Owner: Albuquerque Public Schools Contact: Sal War
Address: 915 Oak Street SE, Albuquerque NM 87125
Phone#: 505-975-5965 Fax#: _____ E-mail: war@aps.edu

Architect: see Engineer Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Other Contact: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

- ☒ 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)

☐ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: ☐ Yes ☒ No

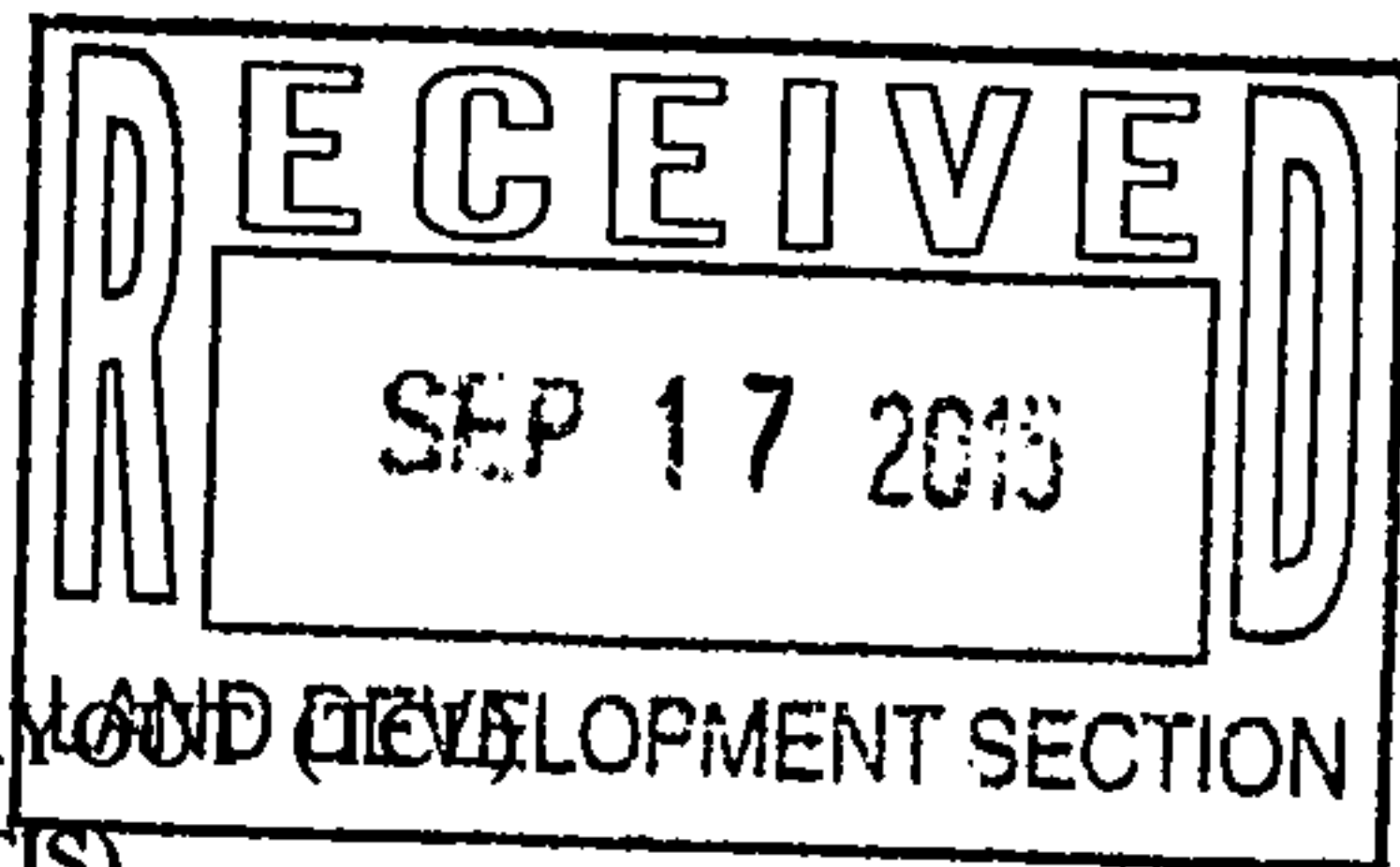
DATE SUBMITTED: 9-15-15 By: Jeffrey G. Mortensen

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
☐ 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) _____



COA STAFF: _____ ELECTRONIC SUBMITTAL RECEIVED: _____

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development & Building Services



May 2, 2014

Richard J. Berry, Mayor

Jeffrey Mortensen, P.E.
High Mesa Consulting Group
6010-B Midway Park Blvd. NE
Albuquerque, New Mexico 87109

RE: **Hodgin Elementary School – 3801 Morningside Drive NE**
Special Education / Pre-Kindergarten Portable Building
Grading and Drainage Plan for Building Permit

File **G17--D037**

PE Stamp: 4/11/14

Dear Mr. Mortensen,

Based upon the information provided in your submittal received April 11, 2014, the above referenced Grading and Drainage Plan is approved for Building Permit.

Please attach a copy of this approved plan to each of the Building Permit sets, prior to seeking approval by Hydrology section.

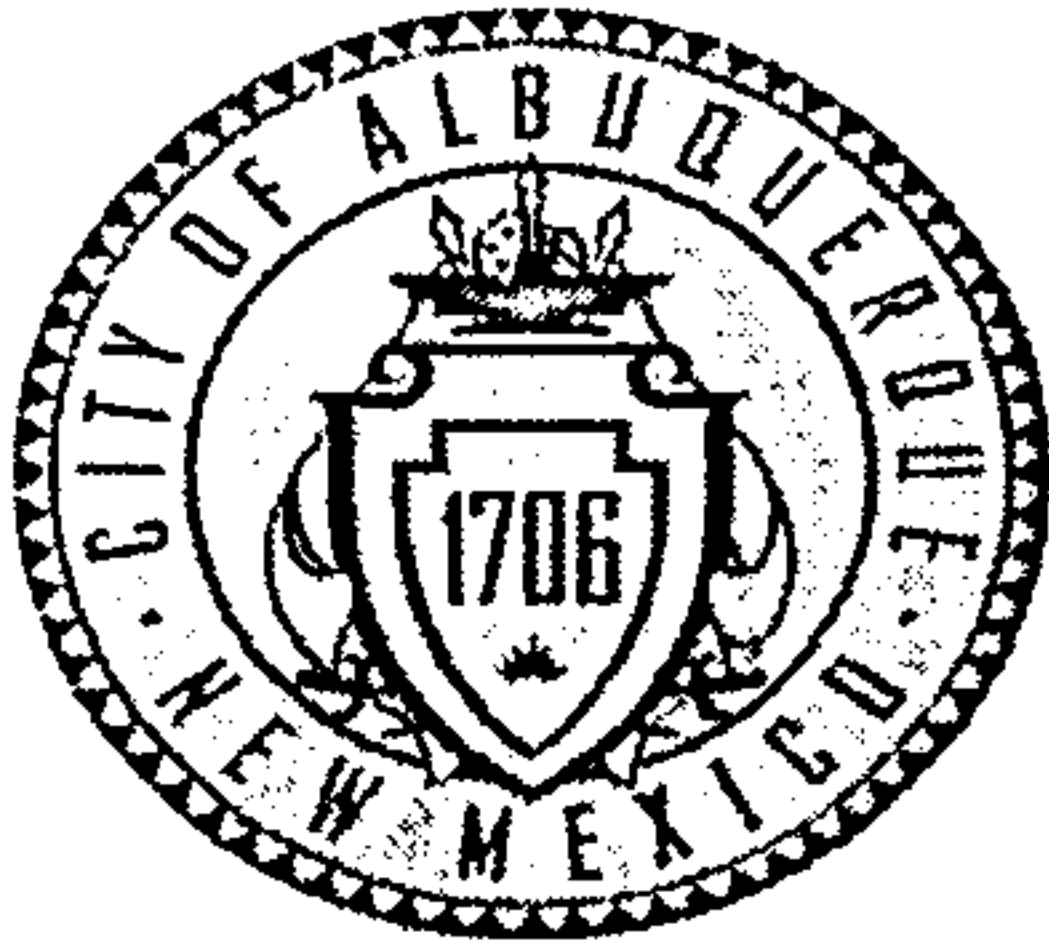
Prior to Certificate of Occupancy release, an Engineer Certification of the as-constructed, Grading and Drainage Plan will be required, per the DPM checklist.

If you have any questions, please contact me at rolson@cabq.gov, or call 505-924-3994.

Sincerely,

Gregory R. Olson, P.E.
Senior Engineer

Orig: Drainage file **G17-D037**
c.pdf Addressee via Email: JMortensen@HighMesaCG.com



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: Hodgin Elementary School SPED Pre-K Building Permit #: _____ City Drainage #: G17/D037

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

Legal Description: Tract A, Hodgin Elementary School

City Address: 3801 Morningside Drive NE, Alberquer

Engineering Firm: High Mesa Consulting Group

Contact: Jeffrey Mortensen #8547

Address: 6010-B Midway Park Blvd NE, Albuquerque NM 87109

Phone#: 505-345-4250

Fax#: 505-345-4254

E-mail: jmortensen@highmesacg.com

Owner: Albuquerque Public Schools

Contact: Sal War

Address: 915 Oak Street SE, Albuquerque NM 87125

Phone#: 505-765-5950

Fax#: _____

E-mail: war@aps.edu

Architect: see Engineer

Contact: _____

Address: _____

Phone#: _____

Fax#: _____

E-mail: _____

Surveyor: High Mesa Consulting Group

Contact: Chuck Cala #11184

Address: 6010-B Midway Park Blvd NE, Albuquerque NM 87109

Phone#: 505-345-4250

Fax#: 505-345-4254

E-mail: ccala@highmesacg.com

Contractor: Not Known

Contact: _____

Address: _____

Phone#: _____

Fax#: _____

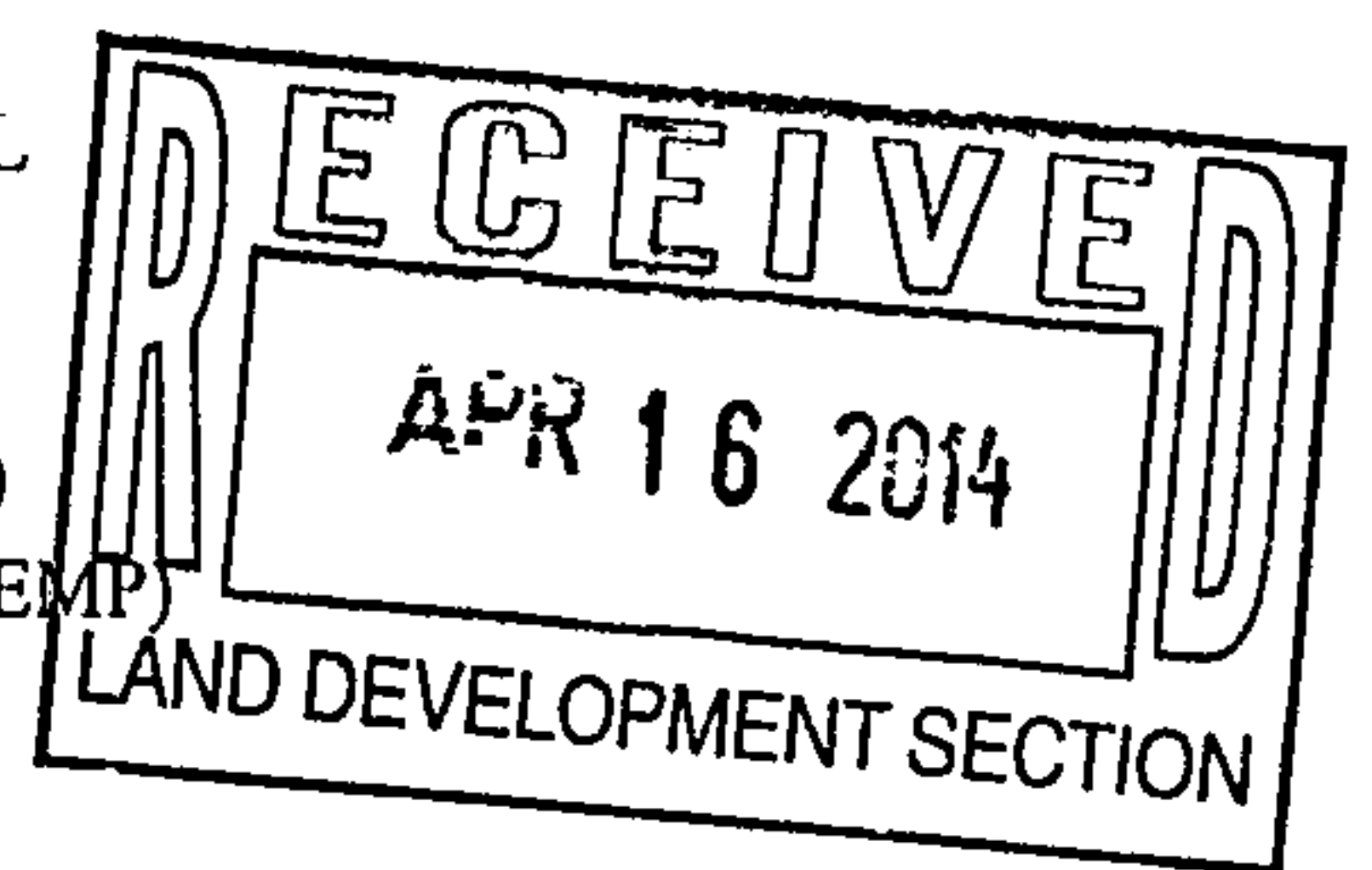
E-mail: _____

TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
☒ DRAINAGE PLAN 1st SUBMITTAL
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL G & D PLAN
☐ GRADING PLAN
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)
☐ ENGINEER'S CERT (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ ENGINEER'S CERT (TCL)
☐ ENGINEER'S CERT (DRB SITE PLAN)
☐ ENGINEER'S CERT (ESC)
☐ SO-19
☐ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE 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
☐ CERTIFICATE OF OCCUPANCY (PERM)
☐ CERTIFICATE OF OCCUPANCY (TCL TEMP)
☐ FOUNDATION PERMIT APPROVAL
☒ BUILDING PERMIT APPROVAL
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☐ GRADING CERTIFICATION
☐ SO-19 APPROVAL
☐ ESC PERMIT APPROVAL
☐ ESC CERT. ACCEPTANCE
☐ OTHER (SPECIFY)



WAS A PRE-DESIGN CONFERENCE ATTENDED: _____ Yes ☒ No _____ Copy Provided

DATE SUBMITTED: 4-14-2014

By: Justin Schara

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 defines 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
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

CITY OF ALBUQUERQUE



June 18, 2013

Fred C. Arfman, P.E.
Isaacson & Arfman, P.A.
128 Monroe St NE
Albuquerque, NM 87108

**Re: Hodgin Elementary School
3801 Morningside Drive NE, 87110
Grading and Drainage Plan
Engineer's Stamp Date 5/31/2013 (G17D037)**

Dear Mr. Arfman,

PO Box 1293

Based upon the information provided in your submittal received 5/31/2013, the grading and drainage plan is approved for Building Permits. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology. Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

Albuquerque

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

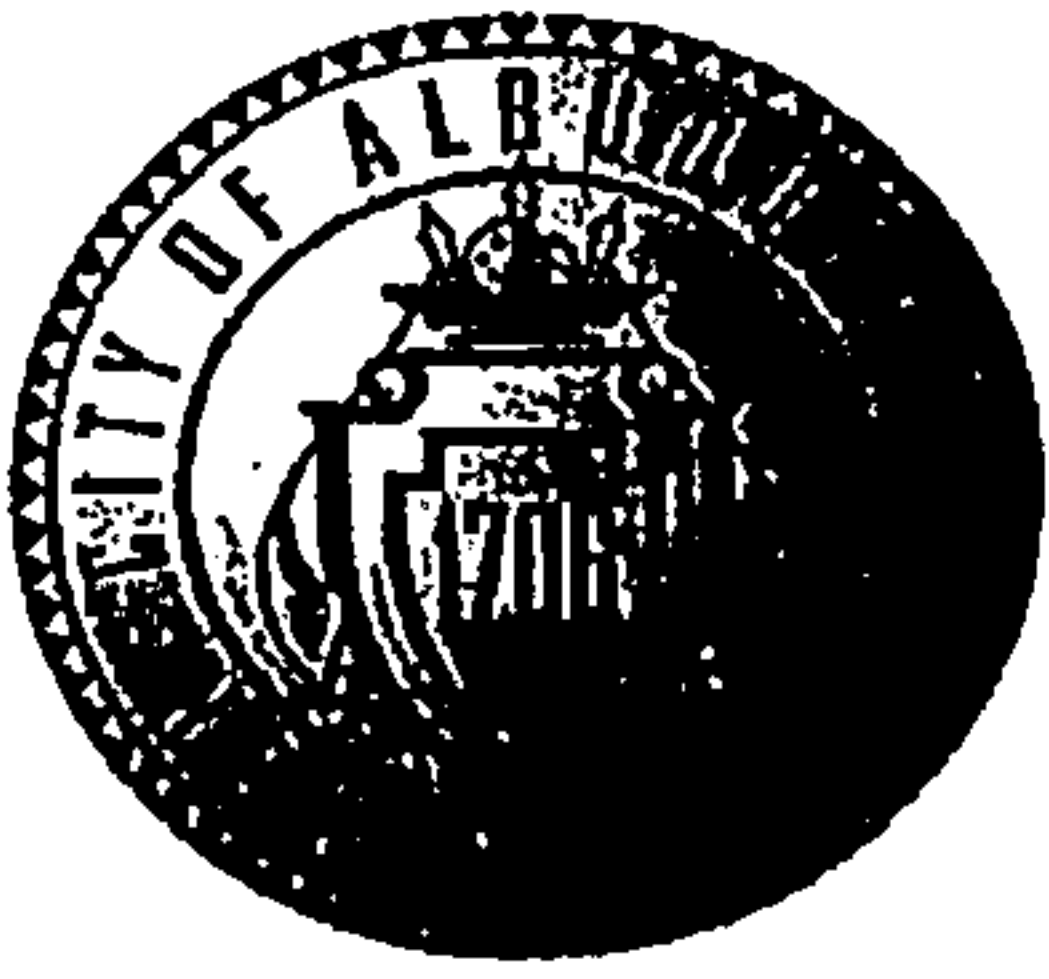
New Mexico 87103

www.cabq.gov

Sincerely,

Shahab Biazar, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: e-mail



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

G17 D037

Project Title: Hodgin Elementary School Building Permit #: _____ City Drainage #: _____

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

Legal Description: Tract A, Hodgin Elem. School, Albuquerque, NM

City Address: 3801 Morningside Drive NE, 87110

Engineering Firm: Isaacson & Arfman, P.A. Contact: Fred C. Arfman, PE

Address: 128 Monroe Street NE, Albuquerque, NM 87108

Phone#: 268-8828 Fax#: N/A E-mail: Freda@iacivil.com

Owner: APS Contact: _____

Address: _____

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

Architect: Gregory T. Hicks & Associates Contact: Greg Hicks, AIA

Address: 110 Second St. SW, Suite 204

Phone#: 243-7492 Fax#: _____ E-mail: gthicks@gthicks.com

Surveyor: _____ Contact: _____

Address: _____

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

Contractor: _____ Contact: _____

Address: _____

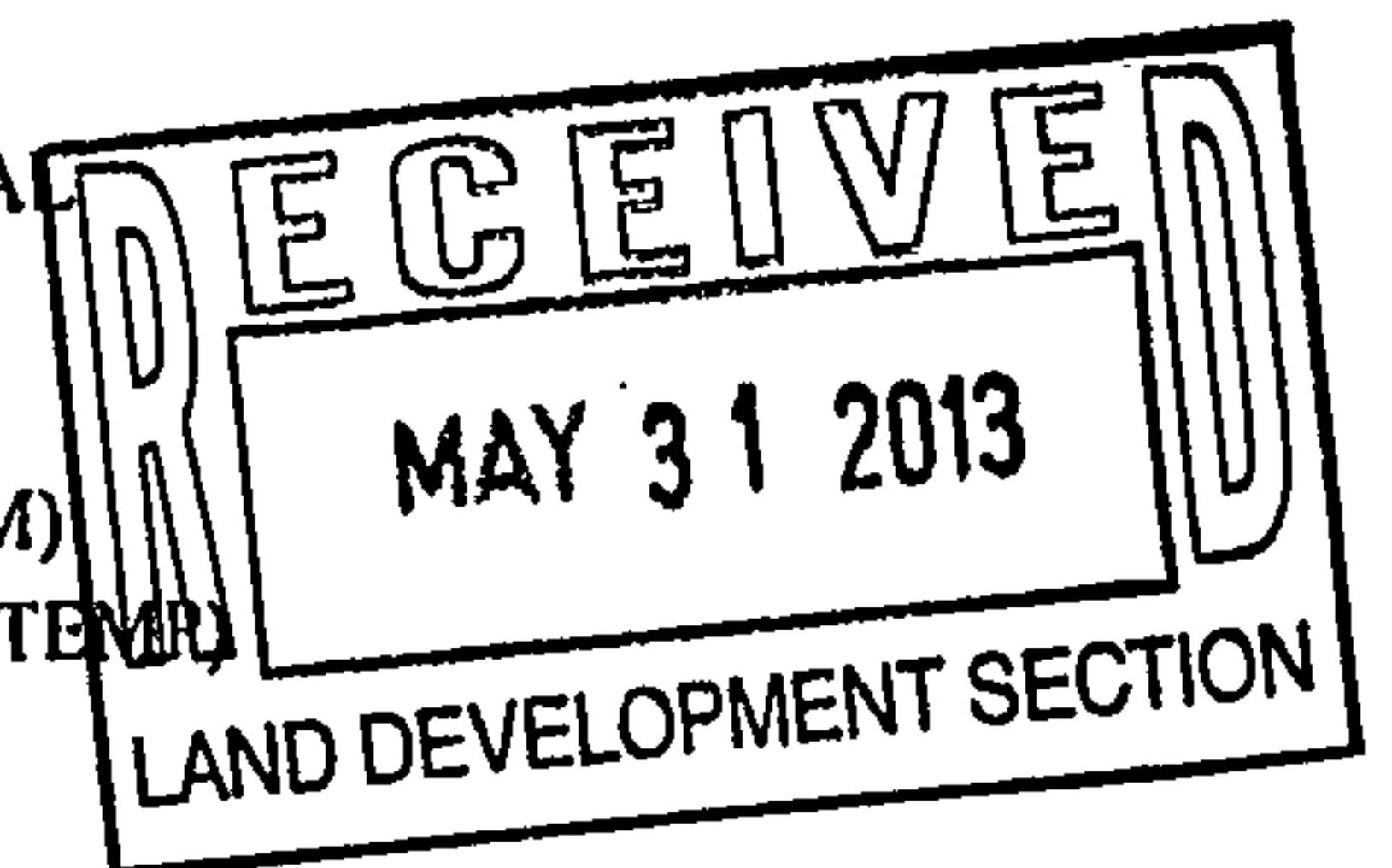
Phone#: _____ Fax#: _____ E-mail: _____

TYPE OF SUBMITTAL:

- ☒ DRAINAGE REPORT
- ☒ DRAINAGE PLAN 1st SUBMITTAL
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☐ CONCEPTUAL G & D PLAN
- ☒ GRADING PLAN
- ☐ EROSION & SEDIMENT CONTROL PLAN (ESC)
- ☐ ENGINEER'S CERT (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ ENGINEER'S CERT (TCL)
- ☐ ENGINEER'S CERT (DRB SITE PLAN)
- ☐ ENGINEER'S CERT (ESC)
- ☐ SO-19
- ☐ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE 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
- ☐ CERTIFICATE OF OCCUPANCY (PERM)
- ☐ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ☐ FOUNDATION PERMIT APPROVAL
- ☒ BUILDING PERMIT APPROVAL
- ☐ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ GRADING CERTIFICATION
- ☐ SO-19 APPROVAL
- ☐ ESC PERMIT APPROVAL
- ☐ ESC CERT. ACCEPTANCE
- ☐ OTHER (SPECIFY) _____

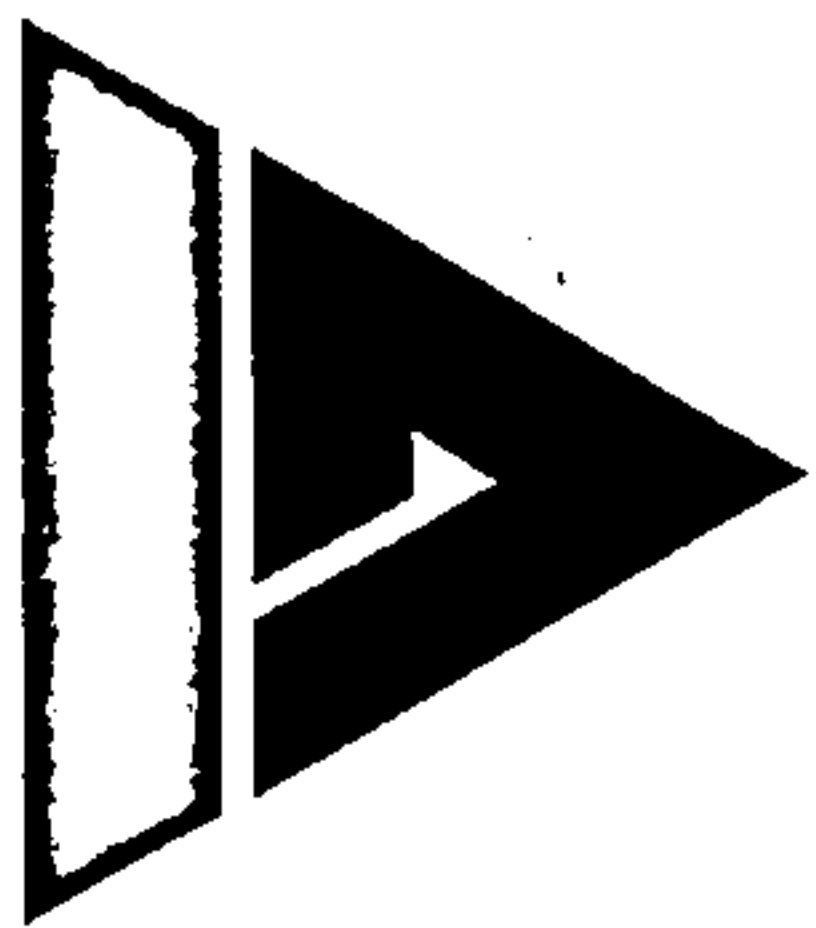


WAS A PRE-DESIGN CONFERENCE ATTENDED: _____ Yes _____ No _____ Copy Provided

DATE SUBMITTED: May 31, 2013 By: Isaacson & Arfman PA

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 defines 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
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development



Hodgin Elementary School
by
Isaacson & Arfman, PA
May 20, 2013

The majority of the Hodgin Elementary School property drains to an existing sports field / detention pond constructed as part of 2001 site improvements. This pond includes outlet control structures to limit release of discharge to Hermosa Street. The proposed improvements consist of two separate areas of the school. Each proposed development will result in an insignificant change to the 100-year 6-hour storm discharge to the pond.

Kindergarten Addition:

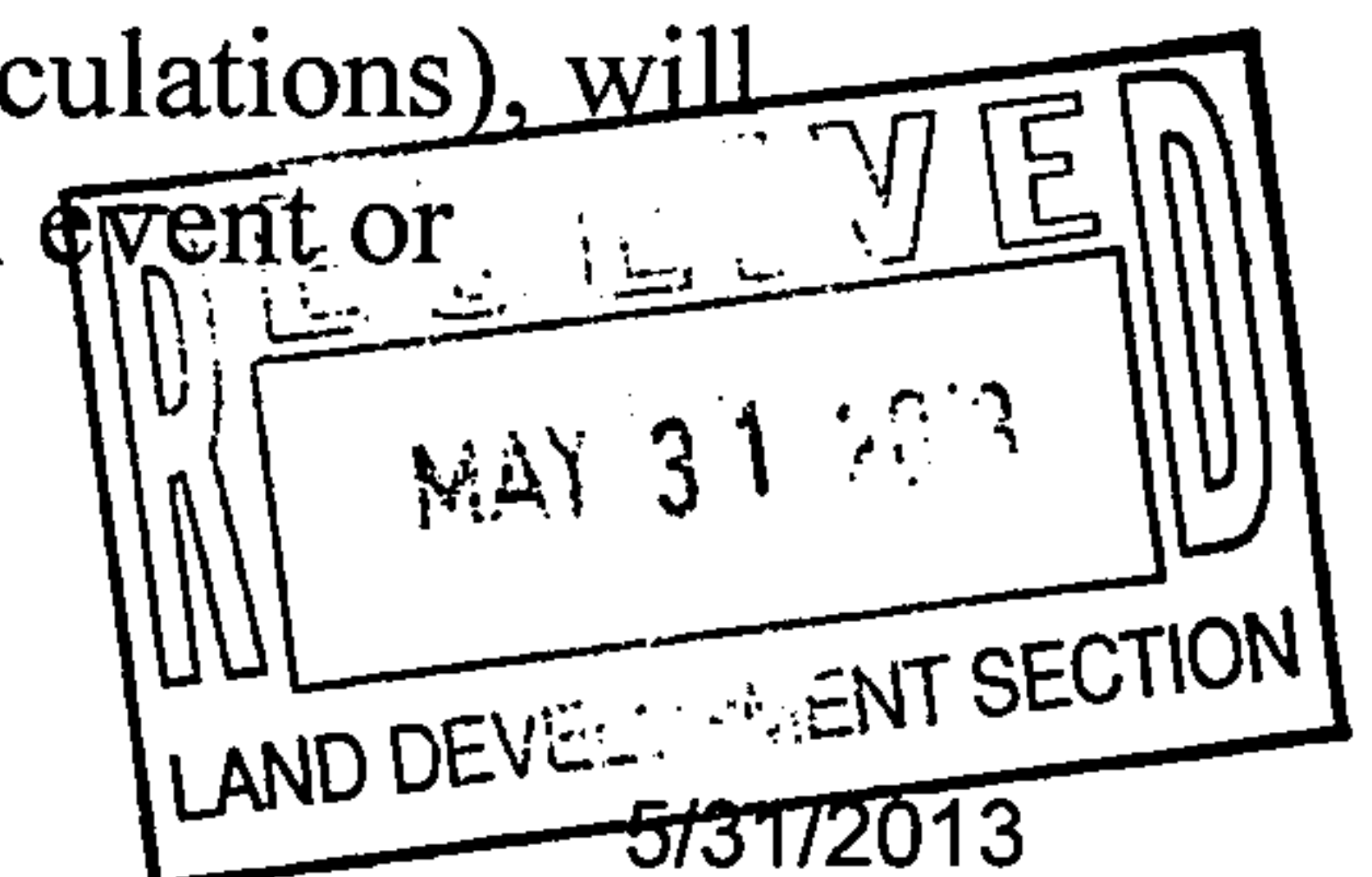
The proposed kindergarten building addition (CG-101) will continue to discharge to historic flowpath(s). Resulting increase of 0.06 cfs to the existing pond. See Sheet CG-101 for calculations.

Courtyard Drainage Improvements:

The proposed courtyard regrading and storm drain improvements are intended to protect the existing buildings from future flooding.

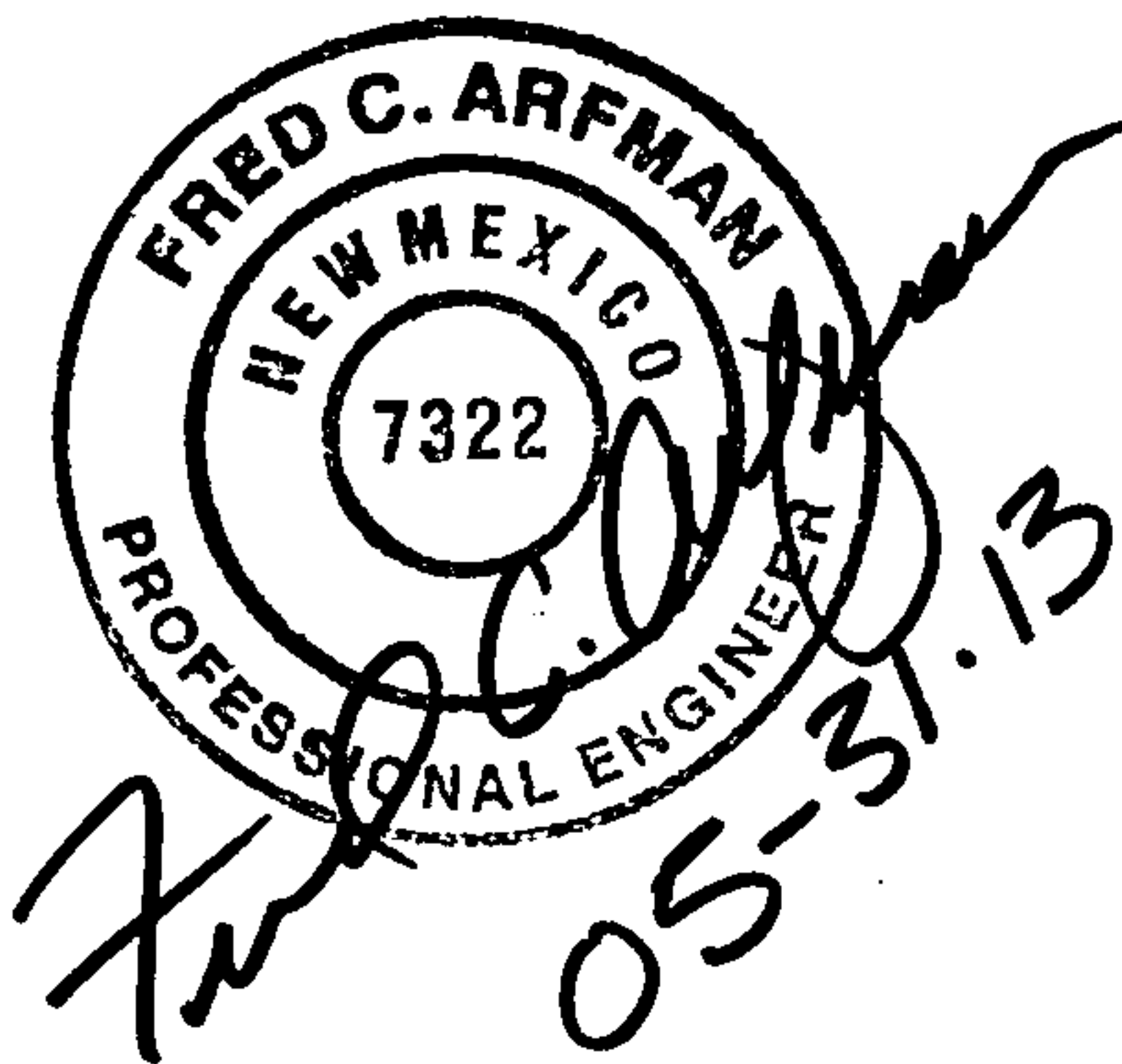
In the existing condition, the upper and lower courtyard walks and landscaping are graded high in the center and drain towards the buildings. The existing curbed planters exacerbate an already problematic area. In the past, numerous localized 'fixes' have been constructed but none have worked sufficiently to prevent flooding and water damage. Currently, sandbags are kept on-site to reduce stormwater passing into the building during rainstorms.

The historic area draining into the courtyards is estimated conservatively at 0.9 acres. This area, at the land treatments shown (see attached calculations), will generate approximately 3.4 cfs during a 100-year 6-hour storm event or approximately 1.7 cfs to each courtyard.



The stormwater enters the courtyard via numerous roof drain downspouts located on all sides. The majority of these downspouts will be extended directly to the proposed storm drain system. In addition, the removal and replacement of concrete walks in the upper courtyard will allow for sloping away from existing doors and overflows to the surrounding landscaping. Trench drains and surface drains will be installed to collect surface flow. The discharge will drain to the existing regional pond as it is historically intended to do.

A water quality manhole (ADS Nyloplast inlet with 'snout') will be installed in the lower courtyard before flow passes beneath the building to the exterior system.



CALCULATIONS: Hodgkin Elementary School Courtyard Drainage Solution : May 31, 2012

Based on Drainage Design Criteria for City of Albuquerque Section 22.2, DPM, Vol 2, dated Jan., 1993

ON-SITEAREA OF SITE: 40000 SF = 0.9

100-year, 6-hour

STORM DISCHARGE:**EXCESS PRECIP:**

		Treatment SF	%	Precip. Zone	2
Area A	=	0	0%	$E_A = 0.53$	
Area B	=	8000	20%	$E_B = 0.78$	
Area C	=	12000	30%	$E_C = 1.13$	
Area D	=	20000	50%	$E_D = 2.12$	
Total Area	=	40000	100%		

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted E} = \frac{E_A A_A + E_B A_B + E_C A_C + E_D A_D}{A_A + A_B + A_C + A_D}$$

Developed E = 1.56 in.On-Site Volume of Runoff: $V_{360} =$

$$E \cdot A / 12$$

Developed $V_{360} = 5183$ CFOn-Site Peak Discharge Rate: $Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D / 43,560$

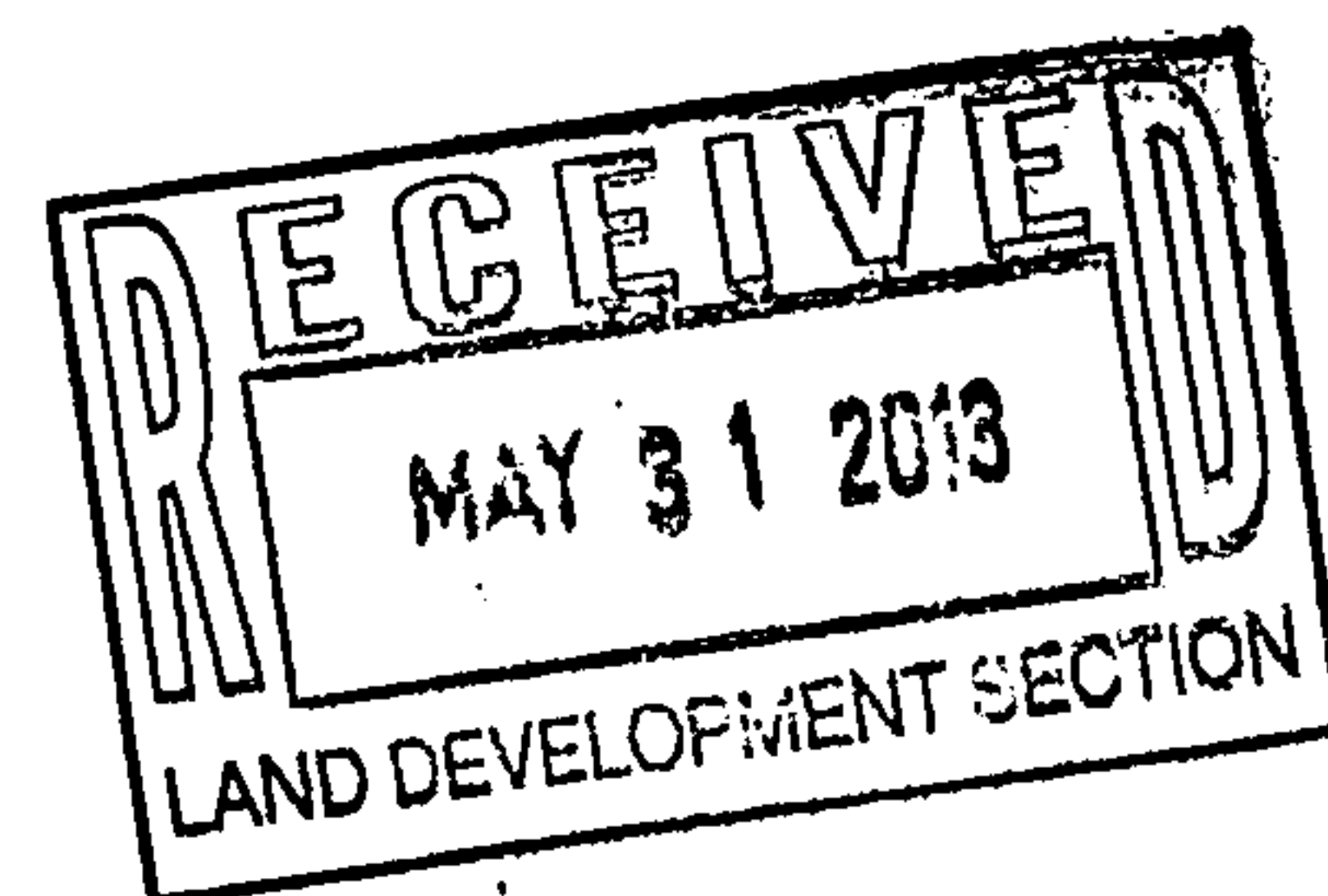
For Precipitation Zone 2

$Q_{pA} = 1.56$

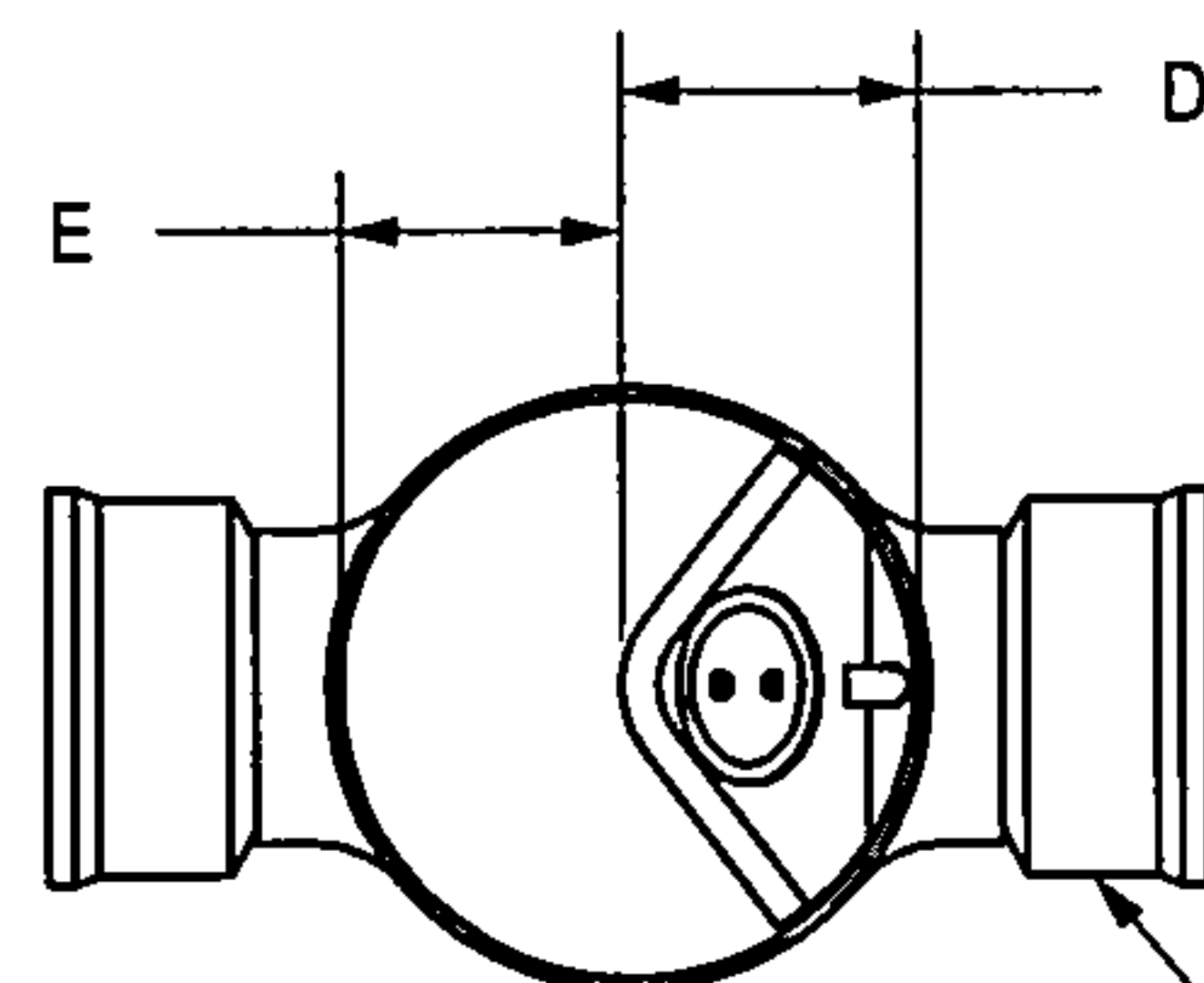
$Q_{pC} = 3.14$

$Q_{pB} = 2.28$

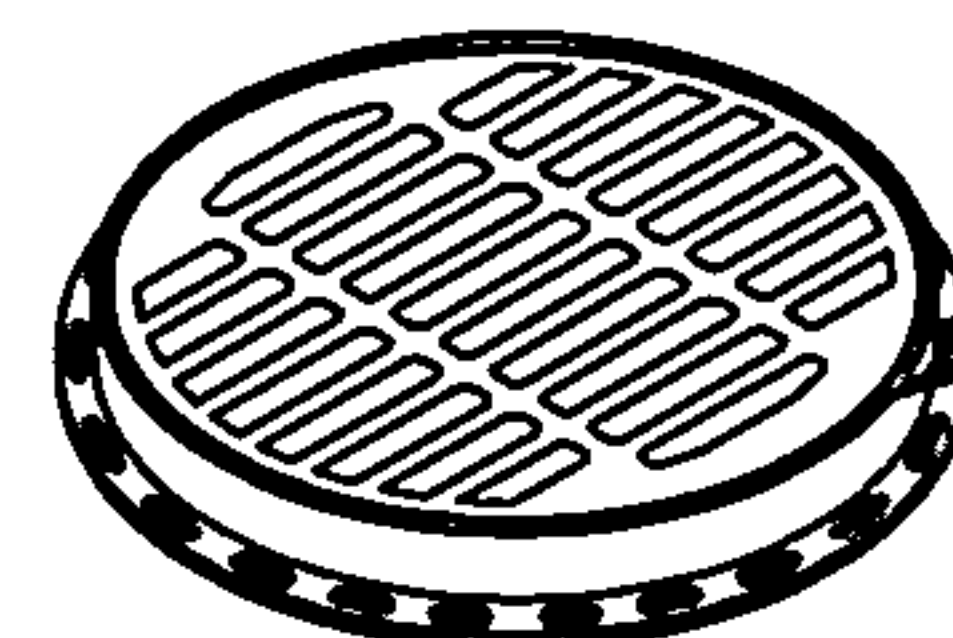
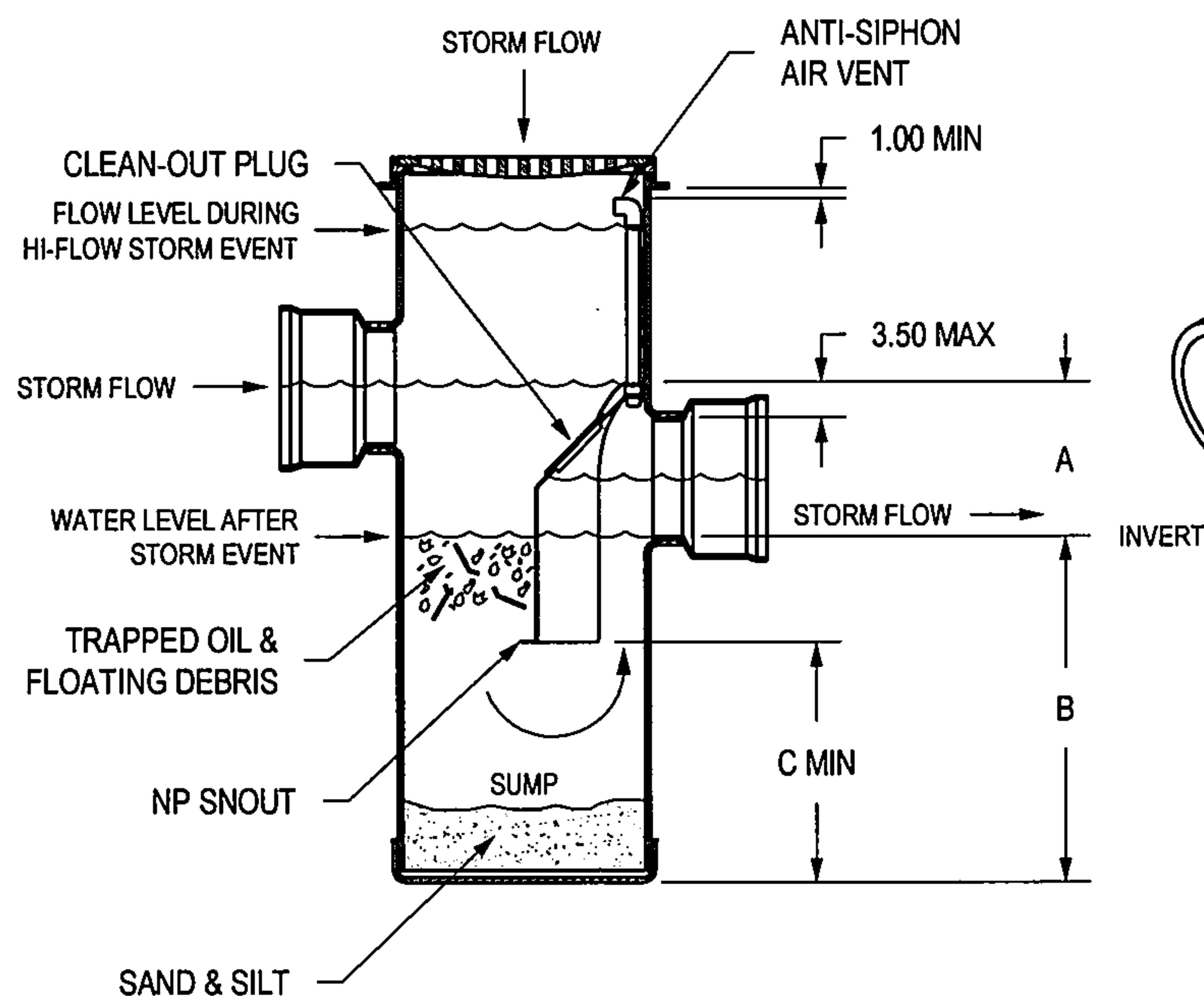
$Q_{pD} = 4.70$

Developed $Q_p = 3.4$ CFS

NYLOPLAST DRAIN BASIN WITH SNOUT

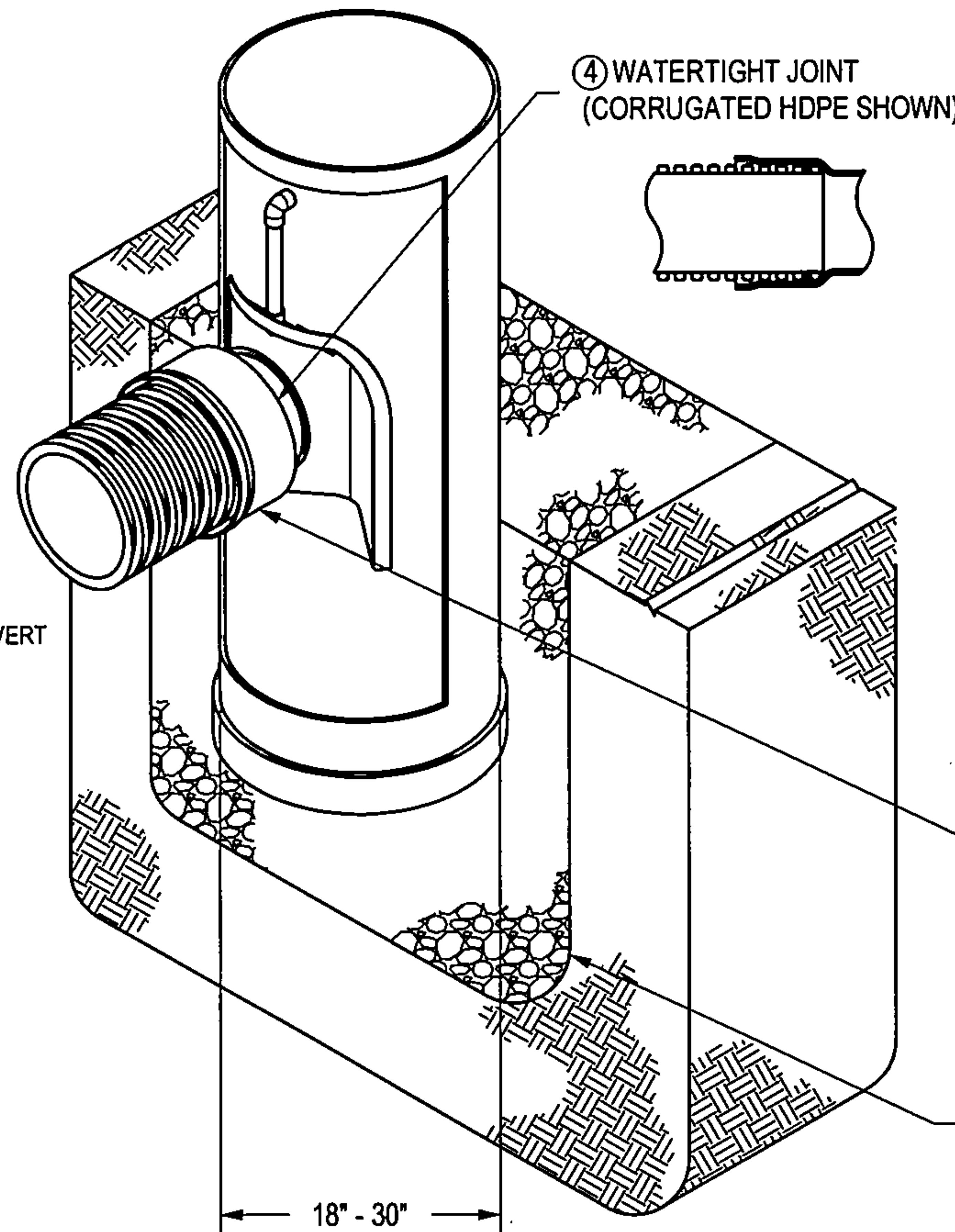


4" - 24" ADAPTERS AVAILABLE



①② INTEGRATED DUCTILE IRON FRAME & GRATE TO MATCH BASIN O.D.

⑤ ADAPTER ANGLES VARIABLE 0° - 360° ACCORDING TO PLANS



④ WATERTIGHT JOINT (CORRUGATED HDPE SHOWN)

BASIN SIZE	D	E	OPEN AREA W/ SNOUT	SNOOT PART #	OPEN AREA W/O SNOUT
18"	9.45	8.52	181.34	5618AG0412	254.07
24"	12.24	11.59	290.50	5624AG0418	446.00
30"	15.25	15.50	509.95	5630AG0418	742.40
30"	21.75	8.99	354.63	5630AG24	742.40

PERCENTAGE OF SNOOT OPEN AREA VS OUTLET PIPE OPEN AREA				
PIPE SIZE	5618AG0412	5624AG0418	5630AG0418	5630AG24
4"	551%	893%	1395%	2469%
6"	257%	417%	651%	1153%
8"	145%	235%	366%	649%
10"	93%	150%	235%	415%
12"	63%	102%	159%	281%
15"	N/A	67%	104%	184%
18"	N/A	46%	72%	127%
24"	N/A	N/A	N/A	72%

PIPE SIZE	A	B 18" BASIN	B 24" BASIN	B 30" BASIN	C
4"	7.51	24.18	30.05	36.87	12.00
6"	9.25	22.44	28.31	35.13	12.00
8"	11.29	24.40	30.27	37.09	16.00
10"	13.21	26.48	32.35	39.17	20.00
12"	15.05	28.64	34.51	41.33	24.00
15"	17.78	N/A	37.78	44.60	30.00
18"	20.98	N/A	40.58	47.40	36.00
24"	27.79	N/A	N/A	58.96	48.00

④ VARIOUS TYPES OF INLET & OUTLET ADAPTERS AVAILABLE: 4" - 24" FOR CORRUGATED HDPE (ADS N-12, ADS SINGLE WALL, HANCOR DUAL WALL), SDR 35, SCH 40 DWV, CORRUGATED & RIBBED PVC

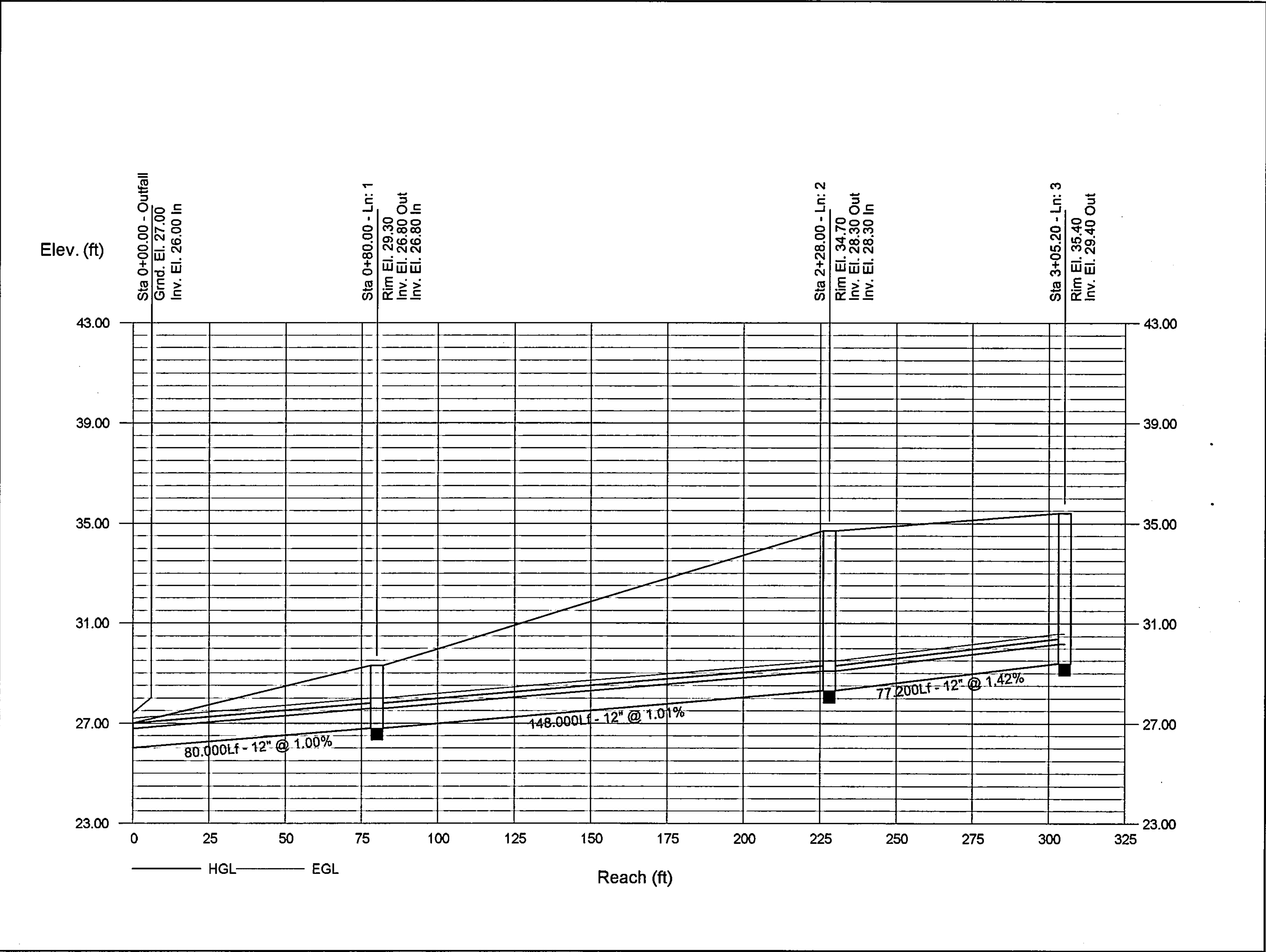
THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS II MATERIAL AS DEFINED IN ASTM D2321. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.

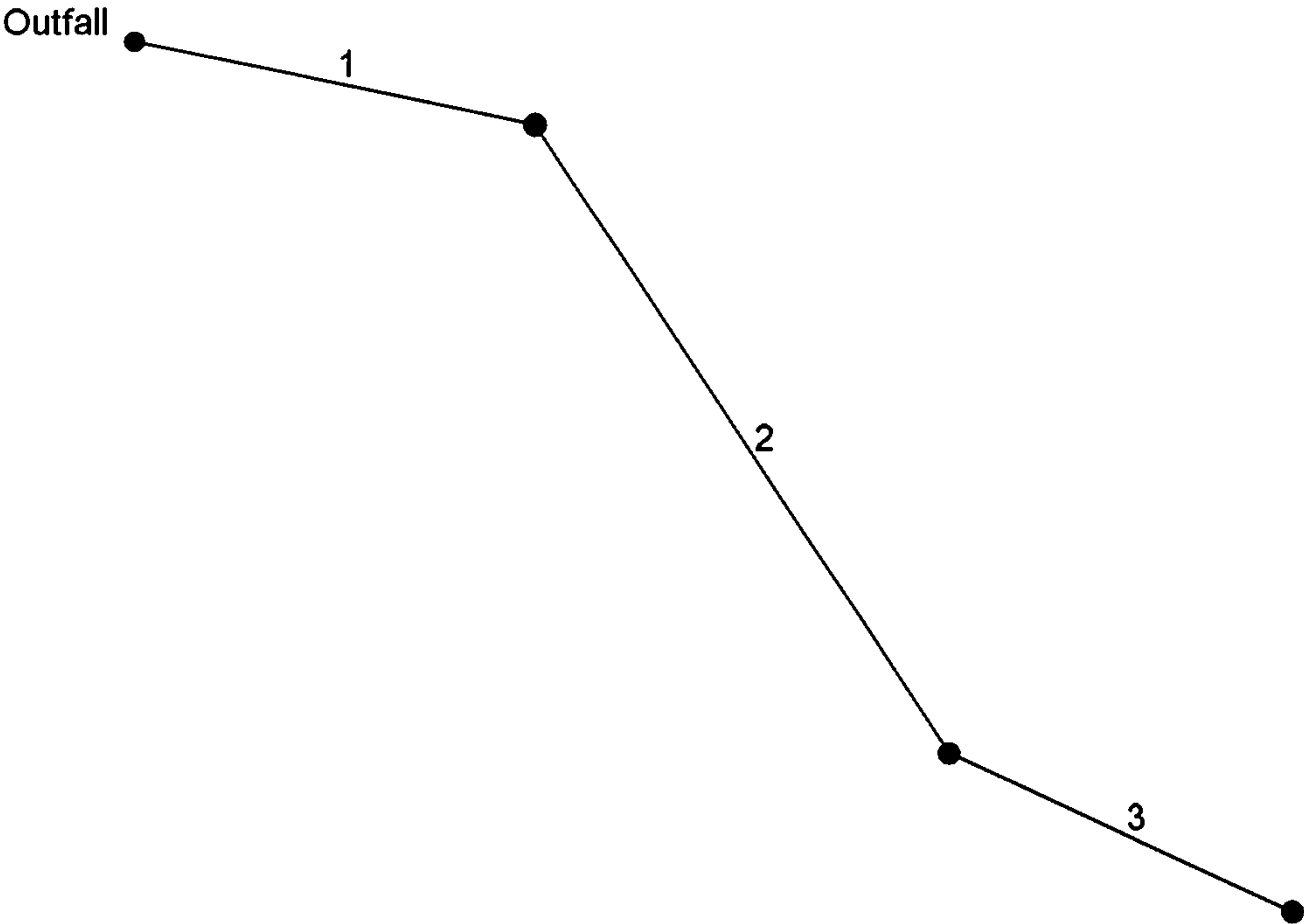
- ①- SNOOT AVAILABLE WITH ALL 18" - 30" STRUCTURE OPTIONS (CUSTOM BASIN, ROAD & HIGHWAY, & CURB INLET)
- ②- FRAMES, GRATES, HOODS, & BASE PLATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
- 3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS SEE DRAWING NO. 7001-110-065
- ④- DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
- ⑤- ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7004-110-043, 7004-110-044, & 7004-110-045

THIS PRINT DISCLOSES SUBJECT MATTER IN WHICH NYLOPLAST HAS PROPRIETARY RIGHTS. THE RECEIPT OR POSSESSION OF THIS PRINT DOES NOT CONFER, TRANSFER, OR LICENSE THE USE OF THE DESIGN OR TECHNICAL INFORMATION SHOWN HEREIN REPRODUCTION OF THIS PRINT OR ANY INFORMATION CONTAINED HEREIN, OR MANUFACTURE OF ANY ARTICLE HEREFROM, FOR THE DISCLOSURE TO OTHERS IS FORBIDDEN, EXCEPT BY SPECIFIC WRITTEN PERMISSION FROM NYLOPLAST.

DRAWN BY	EBC	MATERIAL
DATE	4-27-06	
APPD BY	CJA	PROJECT NO./NAME
DATE	4-27-06	
DWG SIZE	A	SCALE 1:30 SHEET 1 OF 1

		3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com	
		TITLE DRAIN BASIN WITH SNOOT QUICK SPEC INSTALLATION DETAIL	
DWG NO.	7004-110-050	REV	B





Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	80.000	11.995	MH	0.00	0.00	0.00	0.0	26.00	1.00	26.80	12	Cir	0.012	0.75	29.30	
2	1	148.000	44.937	MH	0.00	0.00	0.00	0.0	26.80	1.01	28.30	12	Cir	0.012	0.58	34.70	
3	2	74.000	-31.819	Genr	3.40	0.00	0.00	0.0	28.30	1.49	29.40	12	Cir	0.012	1.00	35.40	
1773												Number of lines: 3				Date: 7/27/2012	

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (l)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID	
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up		
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)		
1	End	80.000	0.00	0.00	0.00	0.00	0.00	0.0	0.9	0.0	3.40	3.86	5.16	12	1.00	26.00	26.80	26.78	27.58	27.00	29.30		
2	1	148.000	0.00	0.00	0.00	0.00	0.00	0.0	0.3	0.0	3.40	3.88	5.16	12	1.01	26.80	28.30	27.58	29.08	29.30	34.70		
3	2	74.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.40	4.70	5.16	12	1.49	28.30	29.40	29.08	30.18	34.70	35.40		
1773																Number of lines: 3				Run Date: 7/27/2012			
NOTES:Intensity = 69.87 / (Inlet time + 13.10) ^ 0.87 ; Return period =Yrs. 2 ; c = cir e = ellip b = box																							

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1		3.40	12	Cir	80.000	26.00	26.80	1.000	26.78	27.58	0.31	27.58	End	Manhole
2		3.40	12	Cir	148.000	26.80	28.30	1.014	27.58	29.08	0.24	29.08	1	Manhole
3		3.40	12	Cir	77.200	28.30	29.40	1.425	29.08	30.18	0.41	30.18	2	Generic
1773									Number of lines: 3			Run Date: 7/27/2012		
NOTES: Return period = 2 Yrs.														

CITY OF ALBUQUERQUE



November 8, 2011

Jeffrey G. Mortensen, P.E.
High Mesa Consulting Group
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

Re: Hodgin Elementary Pre-K, 3801 Morningside NE, (G-17/D037),

Engineer's Stamp Date: 06/30/2011

Engineer's Certification Date: 11-03-11

Dear Mr. Mortensen,

Thank you for providing an Engineer Certification for the Grading/Drainage Plan received on 11-07-11, for the above referenced plan. This information will be placed in the project file.

If you have any questions, I can be contacted at 924-3982.

Sincerely,

Timothy E. Sims
Plan Checker, Planning Dept.-Hydrology
Development and Building Services

C: file

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE:	HODGIN ELEMENTARY PRE-K PLAYGROUND	ZONE ATLAS/DRNG. FILE #:	G17/D037
DRB #:	EPC #:	WORK ORDER #:	
LEGAL DESCRIPTION:	TRACT A, HODGIN ELEMENTARY SCHOOL		
CITY ADDRESS:	3801 MORNINGSIDE NE		
ENGINEERING FIRM:	HIGH MESA CONSULTING GROUP	CONTACT:	JEFF MORTENSEN, NMPE 8547
ADDRESS:	6010-B MIDWAY PARK BLVD. NE	PHONE:	505-345-4250
CITY, STATE:	ALBUQUERQUE, NM	ZIP CODE:	87109
OWNER:	ALBUQUERQUE PUBLIC SCHOOLS	CONTACT:	SAL WAR
ADDRESS:	915 OAK STREET SE	PHONE:	505-765-5950
CITY, STATE:	ALBUQUERQUE, NM	ZIP CODE:	87106
ARCHITECT:	N/A	CONTACT:	
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	
SURVEYOR:	HIGH MESA CONSULTING GROUP	CONTACT:	CHARLES CALA, NMPS 11184
ADDRESS:	6010-B MIDWAY PARK BLVD. NE	PHONE:	505-345-4250
CITY, STATE:	ALBUQUERQUE, NM	ZIP CODE:	87109
CONTRACTOR:	APS ON-CALLS	CONTACT:	SAL WAR
ADDRESS:	915 OAK STREET SE	PHONE:	505-765-5950 ext 289
CITY, STATE:	ALBUQUERQUE, NM	ZIP CODE:	87106

TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL, *REQUIRES TCL or equal*
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☒ ENGINEER'S CERTIFICATION (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ ENGINEER'S CERTIFICATION (TCL)
☐ ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

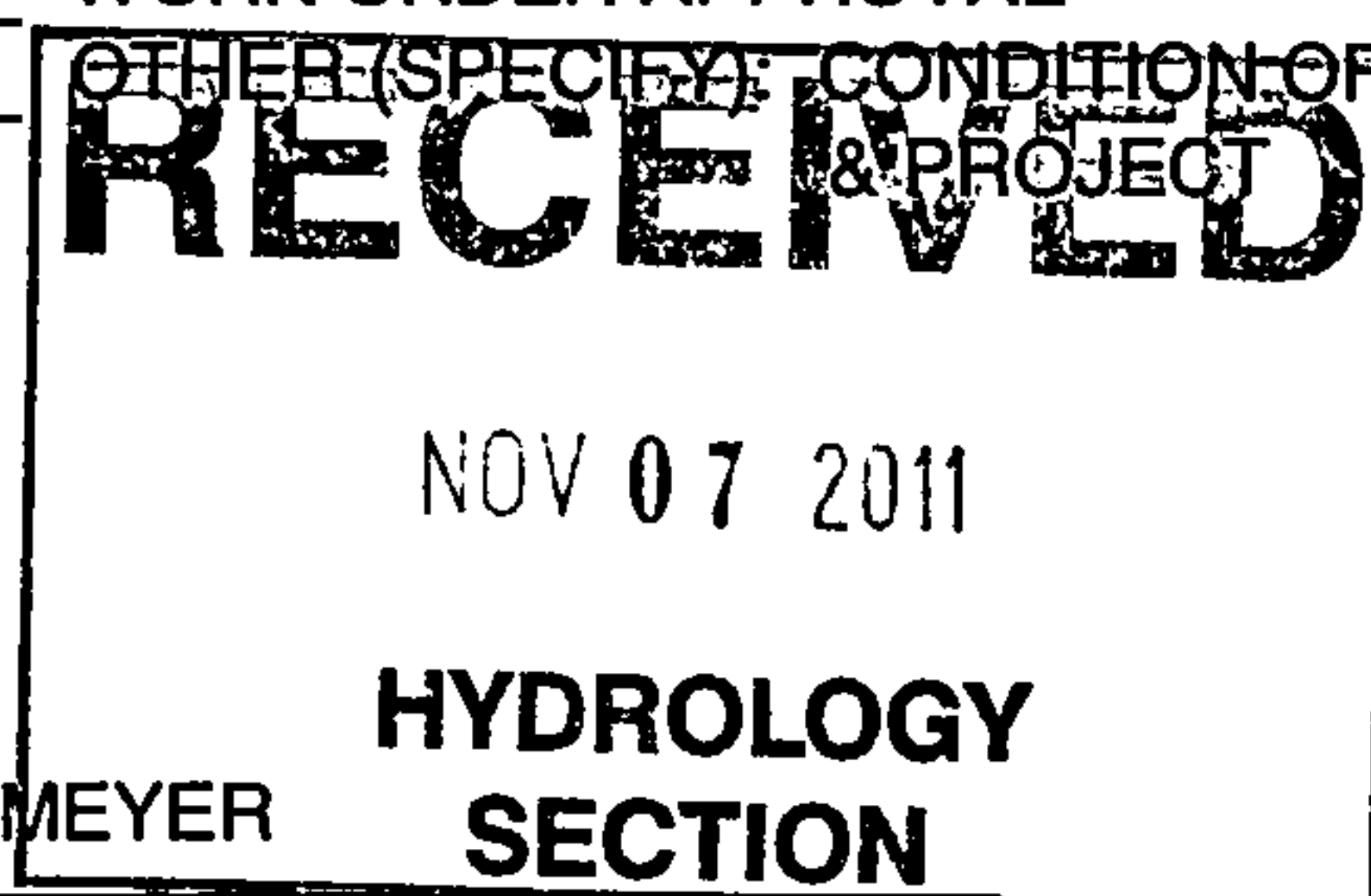
- ☐ SIA/FINANCIAL GUARANTEE RELEASE
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY (PERM.)
☐ CERTIFICATE OF OCCUPANCY (TEMP.)
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL

☒ OTHER (SPECIFY: CONDITION OF APPROVAL & PROJECT)
WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
☒ NO
☐ COPY PROVIDED

DATE SUBMITTED: 11-07-2011

BY: BRIAN E. EVERMEYER



Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based upon 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 subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

CITY OF ALBUQUERQUE



July 12, 2011

Jeffrey G. Mortensen, P.E.
High Mesa Consulting Group
6010-B Midway Park Blvd NE
Albuquerque, NM 87109

**Re: Pre K Playground Hodgin Elementary School
Paving and Grading Plan
Engineer's Stamp date 6-30-11 (G17/D037)**

PO Box 1293

Dear Mr. Mortensen,

Albuquerque

Based upon the information provided in your submittal received 6-30-11, the above referenced plan is approved for Grading Permit and Paving Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

NM 87103

Upon completion of the project, provide an Engineer Certification for our files.

www.cabq.gov

If you have any questions, you may contact me at 924-3986 or Rudy Rael at 924-3977.

Sincerely,

A handwritten signature in cursive script, appearing to read "Curtis Cherne".

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

RER/CAC
C: file

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: HODGIN ELEMENTARY PRE-K PLAYGROUND ZONE ATLAS/DRNG. FILE #: G17 D037
 DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: TRACT A, HODGIN ELEMENTARY SCHOOL
 CITY ADDRESS: 3801 MORNINGSIDE NE

ENGINEERING FIRM: HIGH MESA CONSULTING GROUP CONTACT: JEFF MORTENSEN
 ADDRESS: 6010-B MIDWAY PARK BLVD. NE PHONE: (505) 345-4250
 CITY, STATE: ALBUQUERQUE, NM ZIP CODE: 87109

OWNER: ALBUQUERQUE PUBLIC SCHOOLS CONTACT: DAVID RITCHEY
 ADDRESS: 915 OAK SE PHONE: 505-848-8876
 CITY, STATE: ALBUQUERQUE, NM ZIP CODE: 87106

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

SURVEYOR: HIGH MESA CONSULTING GROUP (NMPS 11184) CONTACT: CHARLES G. CALA, JR
 ADDRESS: 6010-B MIDWAY PARK BLVD. NE PHONE: (505) 345-4250
 CITY, STATE: ALBUQUERQUE, NM ZIP CODE: 87109

CONTRACTOR: NOT SELECTED CONTACT: _____
 ADDRESS: _____ PHONE: _____
 CITY, STATE: _____ ZIP CODE: _____

TYPE OF SUBMITTAL:

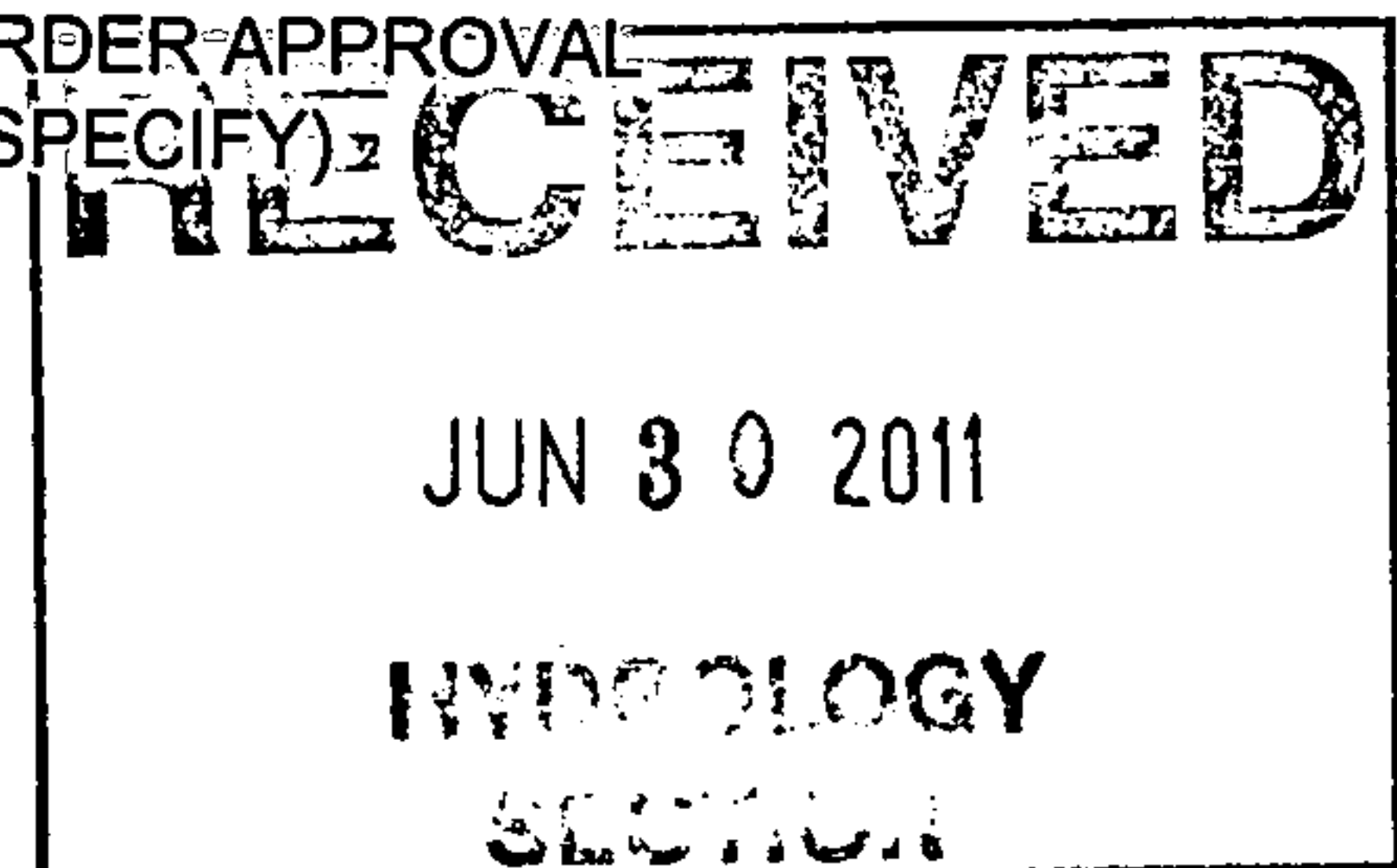
- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL, **REQUIRES TCL or equal**
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ ENGINEER'S CERTIFICATION (TCL)
☐ ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
☐ OTHER -

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SIA/FINANCIAL GUARANTEE RELEASE
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN 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) _____

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
☒ NO
☐ COPY PROVIDED



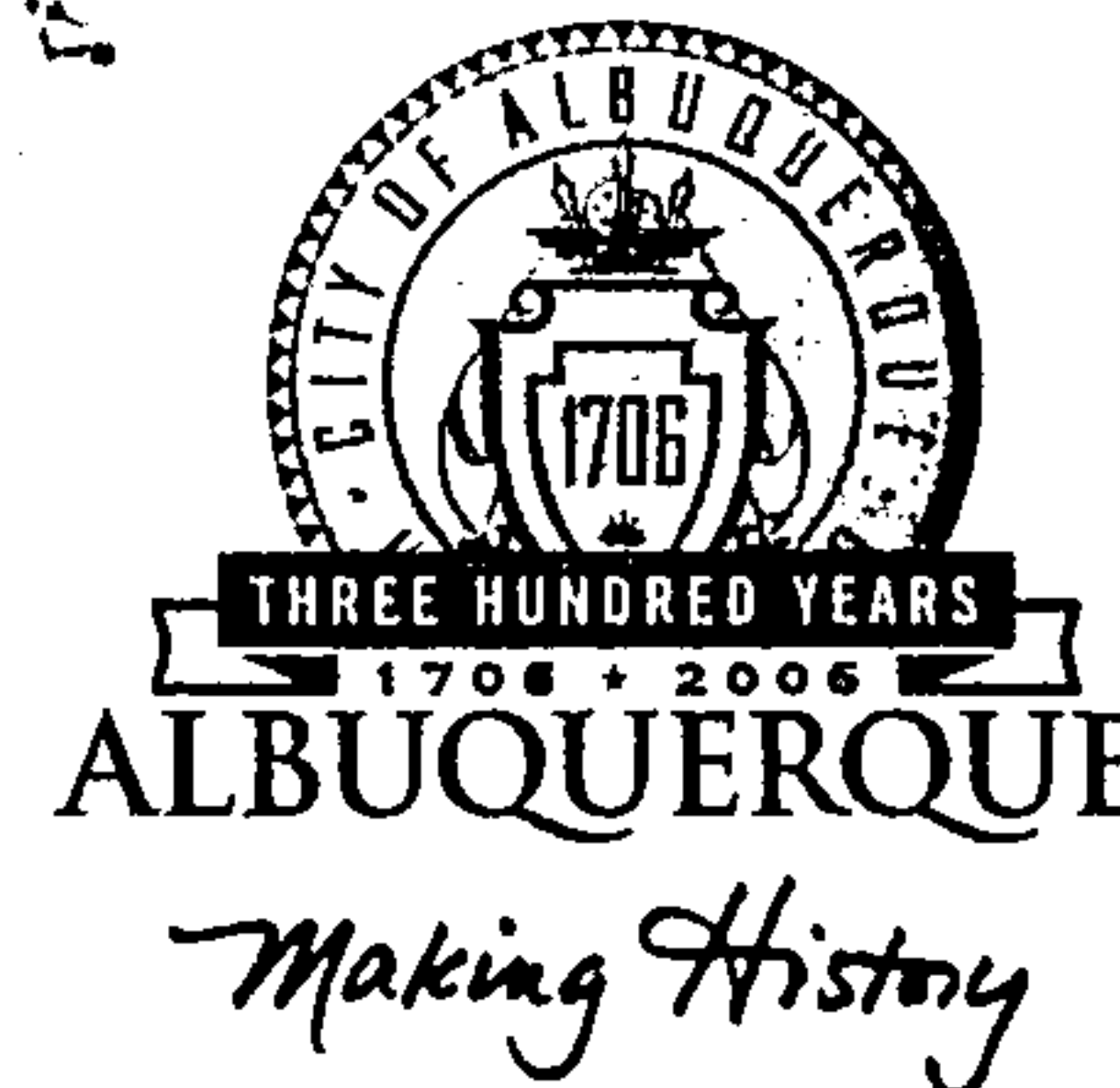
DATE SUBMITTED: 06-30-2011 BY: JEFFREY G. MORTENSEN

XC: DAVID RITCHEY (APS); SAL WAR (APS)

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based upon 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 subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

CITY OF ALBUQUERQUE



March 2, 2006

Celia Tomlinson, PE
RHOMBUS P.A., INC.
2620 San Mateo Blvd. NE
Albuquerque, NM 87110

Re: HODGINS ELEMENTARY KINDERGARDEN ADDITION
3801 Morningside Drive NE
Approval of Permanent Certificate of Occupancy (C.O.)
Engineer's Stamp dated 09/28/2004, (G-17/D37)
Certification dated 02/21/2006

Dear Celia,

P.O. Box 1293

Based upon the information provided in your submittal received 03/01/2006, the above referenced certification is approved for release of Permanent Certificate of Occupancy by Hydrology.

Albuquerque

If you have any questions, you can contact me at 924-3982.

New Mexico 87103

Sincerely,

Arlene V. Portillo

Arlene V. Portillo
Plan Checker, Planning Dept. - Hydrology
Development and Building Services

www.cabq.gov

C: CO Clerk
File

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(Rev. 12/2005)

PROJECT TITLE: APS Hodgin Elementary Kindergarten Addition ZONE MAP/DRG. FILE # G-17/D037
 DRB#: _____ EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: Lot A, Hodgin Elementary School
 CITY ADDRESS: 3801 Morningstar Dr., NE Albuquerque, NM

ENGINEERING FIRM: RHOMBOS P.A. Inc. CONTACT: Celia Tomlinson
 ADDRESS: 2620 San Mateo Blvd NE Suite 8 PHONE: 881-6690
 CITY, STATE: Albuquerque, NM ZIP CODE: 87110

OWNER: APS CONTACT: Karen Alarid
 ADDRESS: 915 Oak St. SE PHONE: 242-5865 ext 30
 CITY, STATE: Albuquerque, NM ZIP CODE: 87125

ARCHITECT: CBL Architects CONTACT: Nancy Barrett
 ADDRESS: 1700 Louisiana Blvd, NE PHONE: 765-1020
 CITY, STATE: Albuquerque, NM ZIP CODE: 87110

SURVEYOR: Jeff Mortensen & Assoc. Inc. CONTACT: Survey Section
 ADDRESS: 6010-B Midway Park Blvd. NE PHONE: 345-4250
 CITY, STATE: Albuquerque, NM ZIP CODE: 87109

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

TYPE OF SUBMITTAL:

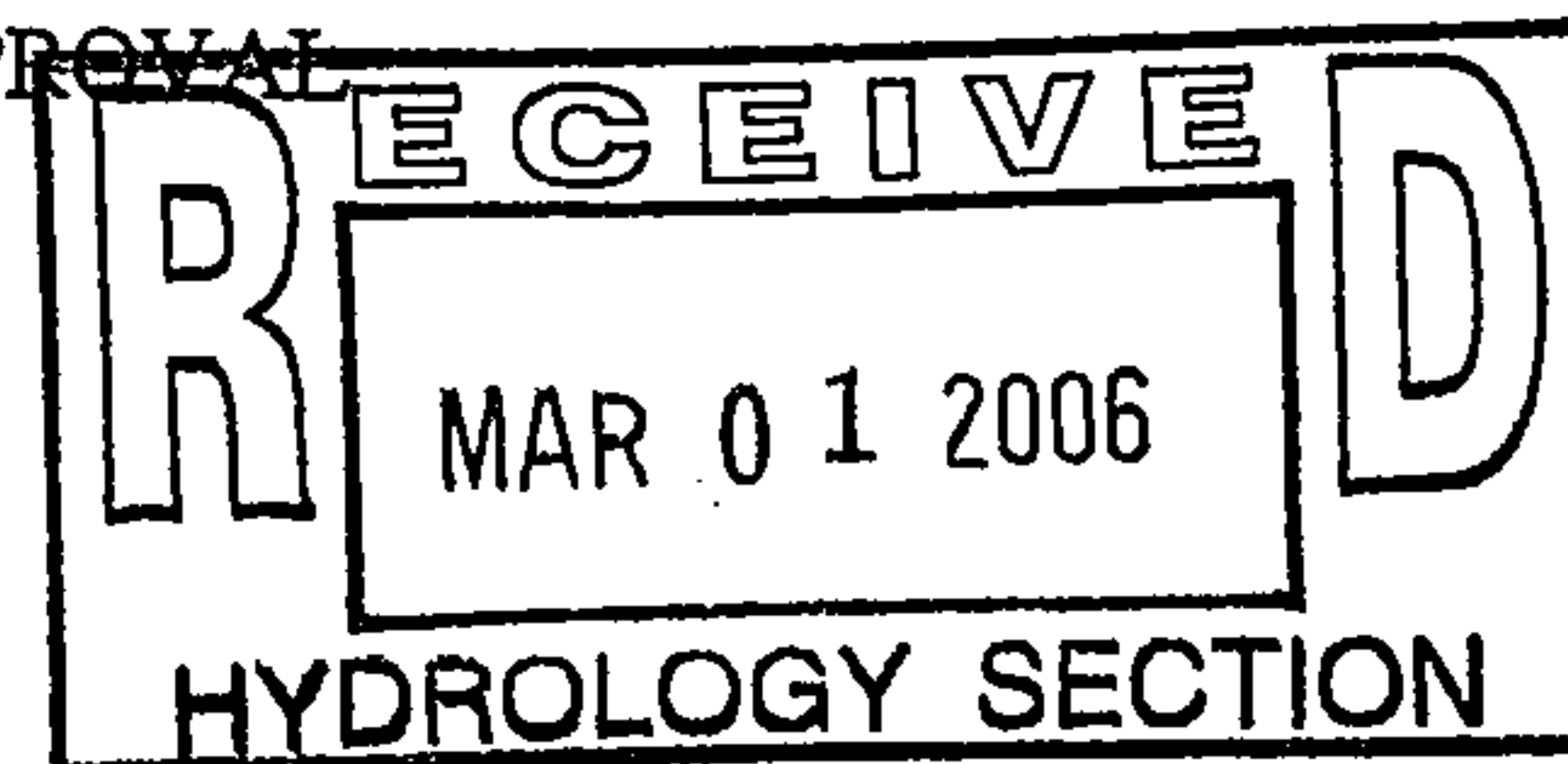
- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL G & D PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☒ ENGINEER'S CERT (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT
☐ ENGINEER'S/ARCHITECT'S CERT (TCL)
☐ ENGINEER'S CERT (DRB SITE PLAN)
☐ OTHER

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) _____

WAS A PRE-DESIGN CONFERENCE ATTENDED:

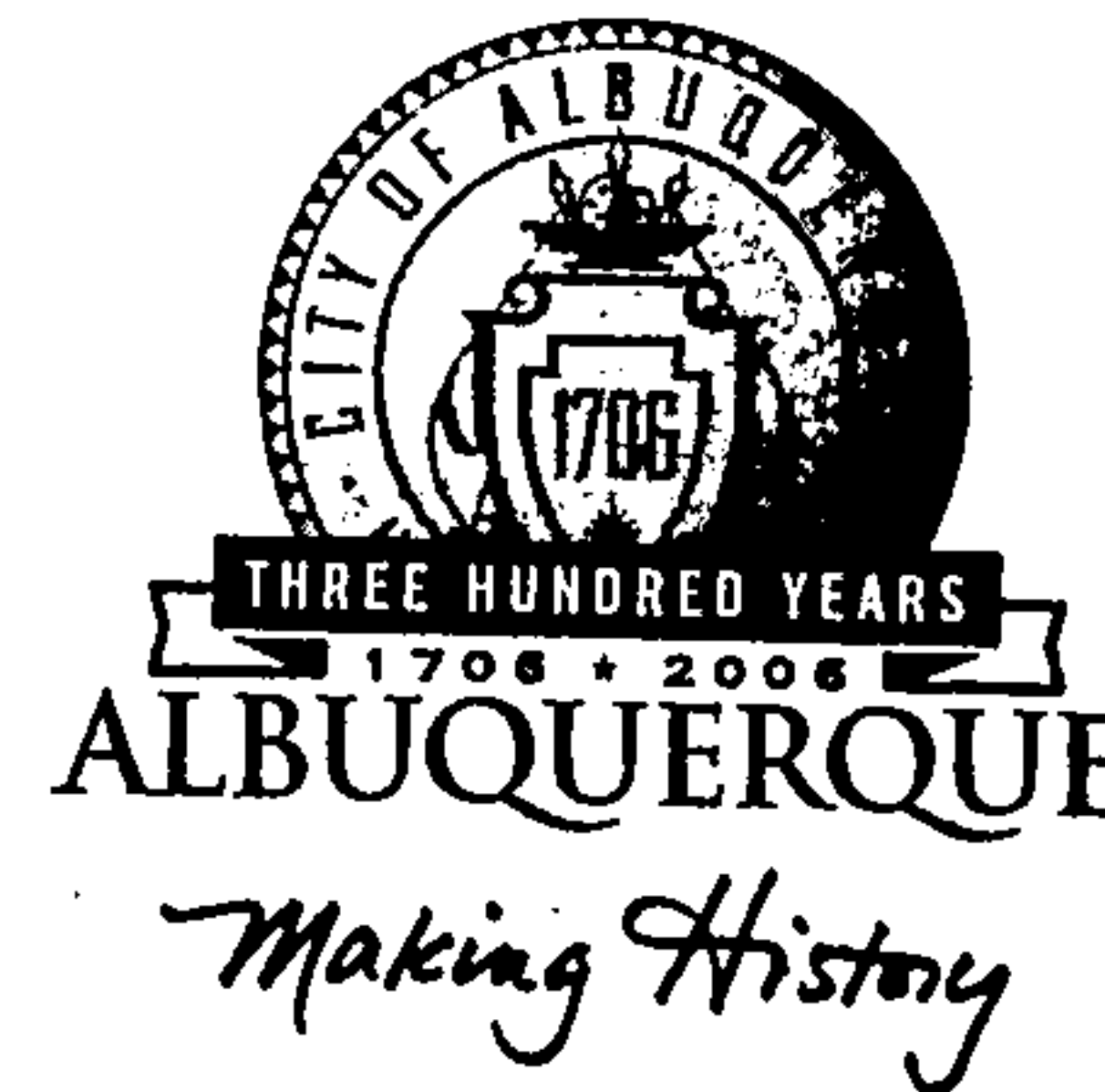
- ☒ YES
☐ NO
☐ COPY PROVIDED

SUBMITTED BY: [Signature] DATE: 03/01/06

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

CITY OF ALBUQUERQUE



November 9, 2004

Celia Tomlinson, P.E.
Rhombus P.A., Inc.
2620 San Mateo Blvd., Suite B
Albuquerque, NM 87110

**Re: Hodgin Elementary School, 3801 Morningside Drive NE, Grading and
Drainage Plan**

Engineer's Stamp dated 9-28-04 (G17-D37)

Dear Ms. Tomlinson,

Based upon the information provided in your submittal received 9-28-04, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology. Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

P.O. Box 1293

Albuquerque

If you have any questions, you can contact me at 924-3981.

New Mexico 87103

www.cabq.gov

Sincerely,

Kristal D. Metro
Engineering Associate, Planning Dept.
Development and Building Services

C: File

Area < 1 acre

Drainage Report for Hodgin Elementary School Addition, September 2004

INTRODUCTION and HISTORY:

The overall Hodgin School site is located roughly 3 blocks north and east of the intersection of Carlisle Blvd. NE and Comanche Rd. NE. Generally speaking, the overall site is bordered on the west by Hermosa, on the east by Morningside, on the south by lots fronting on Palo Duro, and on the north by lots fronting on Delamar. The New Mexico School for the Deaf occupies the southwest corner of what would otherwise have been a rectangular lot. The concrete-lined Hahn Arroyo is about a block north of the site.

The general slope of the site is from east down to west. The surrounding area is established residential. CMU (concrete block) walls separate the site from the residences on the north and south. The east part of the site - parking and bus loading areas fronting Morningside - is raised to keep offsite from from entering the site there.

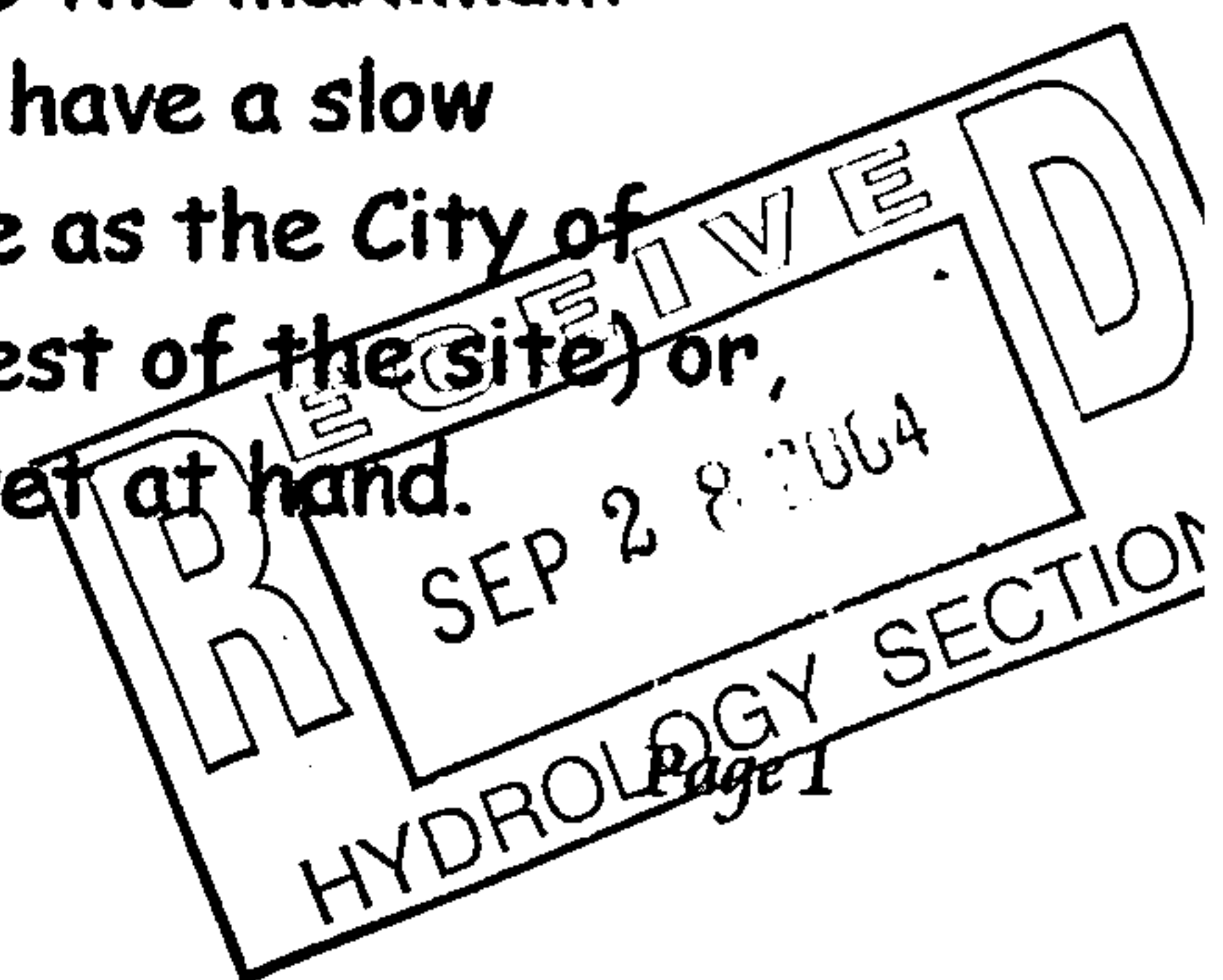
The project location within the overall site is the northeast corner of the active, non-parking area: west of the east parking area, north of existing permanent classrooms, east of the grey-green "mini-gym", and south of the CMU wall along the north property line. The project will address slightly less than 1 acre of the roughly 9.74-acre site.

The school's legal description is: Tract A, Hodgin Elementary School. The City of Albuquerque Zone Atlas map is G17.

Per FEMA FIRM (Flood Insurance Rate Maps) panels 35001C0138D and 35001C0351D, 1996, the school site is not within a designated flood hazard zone. There are designated flood hazard zones nearby.

Several previous studies have addressed the site and the surrounding area. The most recent and relevant of these is the "Grading and Drainage Plan for Hodgin Elementary School...", prepared by Chavez-Grieves Consulting Engineers, Inc., and dated August 1999, The City of Albuquerque drainage file is G17-D37.

The Chavez-Grieves plan addressed not only immediate improvements but also future "master plan" conditions. A major feature was providing - at the athletic field at the west end of the site - onsite ponding to contain "a full 100-year storm event". Also, in that report, "Only the master plan condition is analyzed, since it generates the maximum runoff." and "A 6" PVC outlet to Hermosa Drive will allow the pond to have a slow discharge.". The pond was to be a temporary solution, until such time as the City of Albuquerque could install a 36" storm drain either in Carlisle Blvd. (west of the site) or, preferably, in Morningside Drive (east of the site). That time is not yet at hand.



Grading for the pond is shown both on Chavez-Grieves sheet C-5 "Future Grading" (August 25, 1999) and on sheet C-3 "Grading Plan" (with original date of December 15, 1999 and "as-built" stamp date of 3-20-01). Both plans provided for the 1.34 acre-feet identified in the AHYMO runoff analysis in the Chavez-Grieves report. Topography prepared for the present project generally agrees with the "as-built" drawing.

The Chavez-Grieves report apparently did not include pond volume calculations and the AHYMO storm routing did not include any discharge from the pond. Since during a storm some water would drain out the 6" pipe provided, the pond as designed could allow for slightly increased inflow. Since the entire site had previously discharged freely to Hermosa, the pond represented a major improvement over pre-1999 conditions for downstream areas.

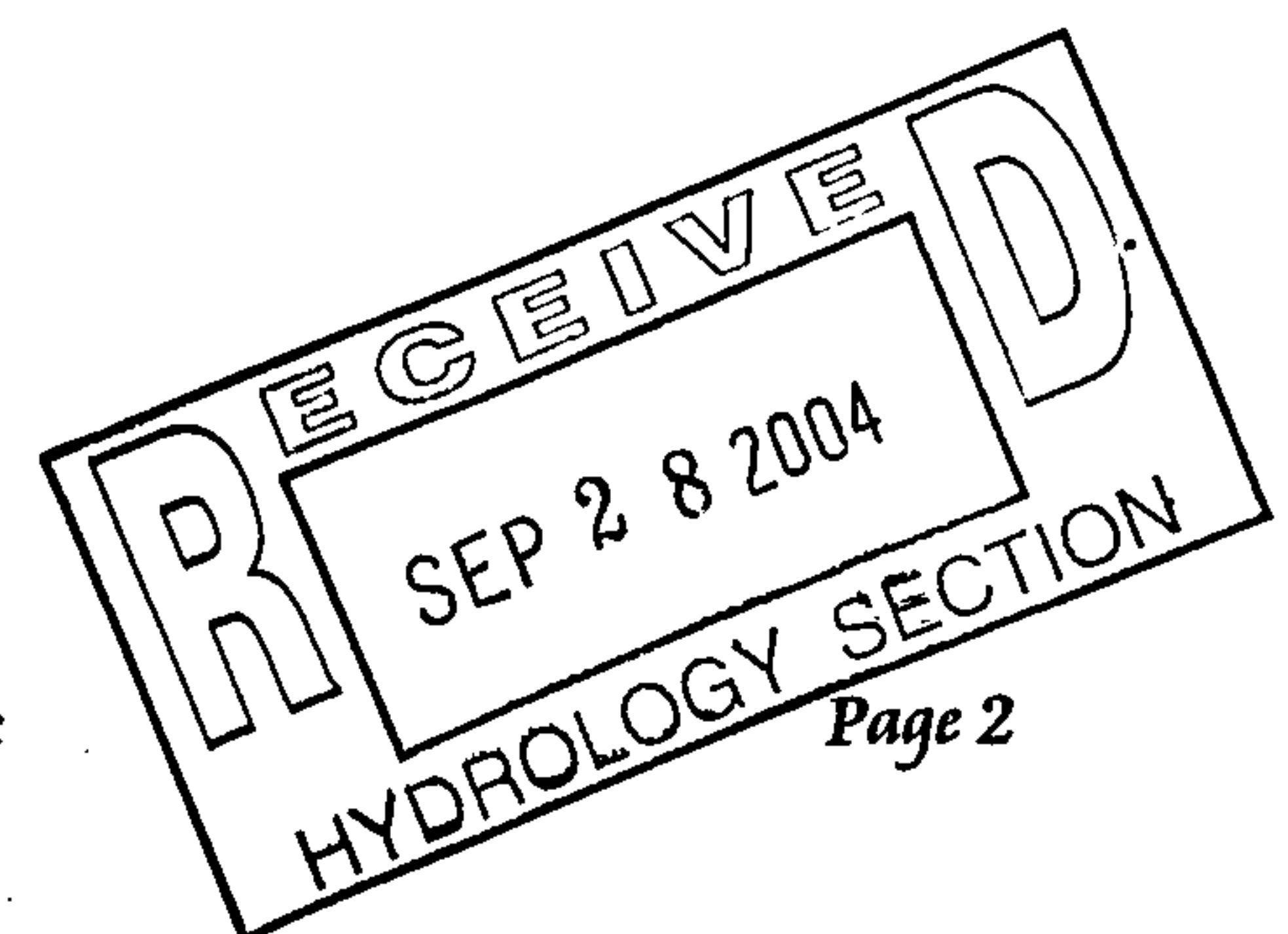
PRESENT PROJECT:

Separate phase? → The project involves a new classroom building, a "soft" play area (surface is bark mulch 12 inches deep), new sidewalks, and new landscaping. The area was previously home to several portable classrooms and hard-surfaced play areas, plus lots of bare dirt. The project has several additive alternates, mostly addressing additional sidewalks and landscaping instead of bare dirt. The full project produces the most runoff.

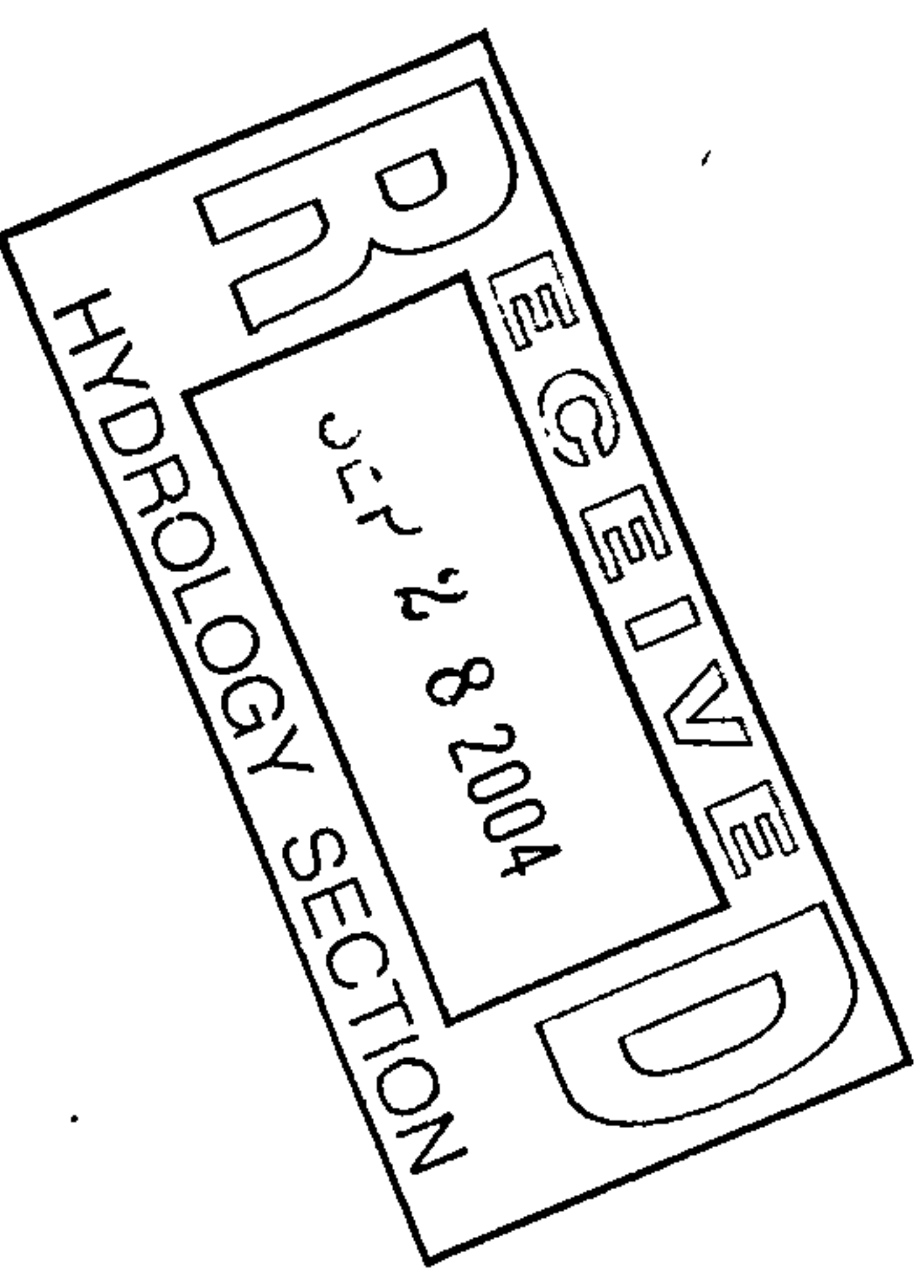
The Appendix to this report includes plan views of the relevant portion of the site for 3 conditions: (1) before the start of this project; (2) as proposed by this project; and (3) as envisaged by Chavez-Grieves as master plan. The Appendix includes calculations for all 3 cases and also a pair of related cases: [DEVELOPED CONDITIONS - main part of Alt II as All C] and [DEVELOPED CONDITIONS - main part of Alt II as some B, rest D]. This pair of cases shows that full development produces the most runoff for the present project. Although the "bark-mulch" play area probably has an air-void ratio of 25%-30% and its actual runoff would be essentially zero (0) for a ratio of 20%, it is conservatively considered as Treatment A for analysis. The landscape islands with the raised benches are considered Treatment B even though they, too, probably yield no runoff.

The runoff rates and amounts for this project are very slightly above "before" conditions and less than "master plan" conditions. This project creates no adverse drainage conditions and its runoff is accounted for by the design of the existing drainage pond.

END OF REPORT TEXT



APPENDIX



RUNOFF SUMMARY

RUNOFF EQUATIONS REQUIRED

(From City of Albuquerque NM DPM (Development Process Manual) Chapter 22.2)

$Q_{peak,total} = Q_p$ $Q_p = Q_{pA} \cdot AreaA + Q_{pB} \cdot AreaB + Q_{pC} \cdot AreaC + Q_{pD} \cdot AreaD$ (Cubic feet / second) (EQ. a-10)
 $E_{360min} (=6hr)$ $WEIGHTED E_{6hr} = E \cdot A + E \cdot A + E \cdot A + E \cdot A / A + A + A + A$ (inches) (EQ. a-5)
 $Volume_{360min}$ $V = WEIGHTED E_{6hr} \cdot A + A + A + A / 12$ (Cubic feet) (EQ. a-6)
 $Volume_{10-days}$ $V_{10-day} = V_{360} + AreaD \cdot (P_{10days} - P_{360min}) / 12$ (Cubic feet) (EQ. a-9)

RAIN ZONE 2 SEE DPM FIGURE A-1 p22-7

100-YEAR STORM PRECIPITATION (P) DEPTHS, INCHES (DPM TABLE A-2, P22-8)

1Hr=60Min	6Hr=360Min	24-HR	4-DAY	10-DAY
2.01	2.35	2.75	3.3	3.95

100-YEAR 6-HOUR (360 MINUTE) STORM EVENT (E=Depth of Rain Excess-->Runoff Volume)

TREATMENT CLASS	A	B	C	D	
Q_{peak} , CFS/ACRE	1.56	2.28	3.14	4.70	(DPM TABLE A-9, P22-15)
E_{360} , INCHES	0.53	0.78	1.13	2.12	(DPM TABLE A-8, P22-13)

EXISTING CONDITIONS

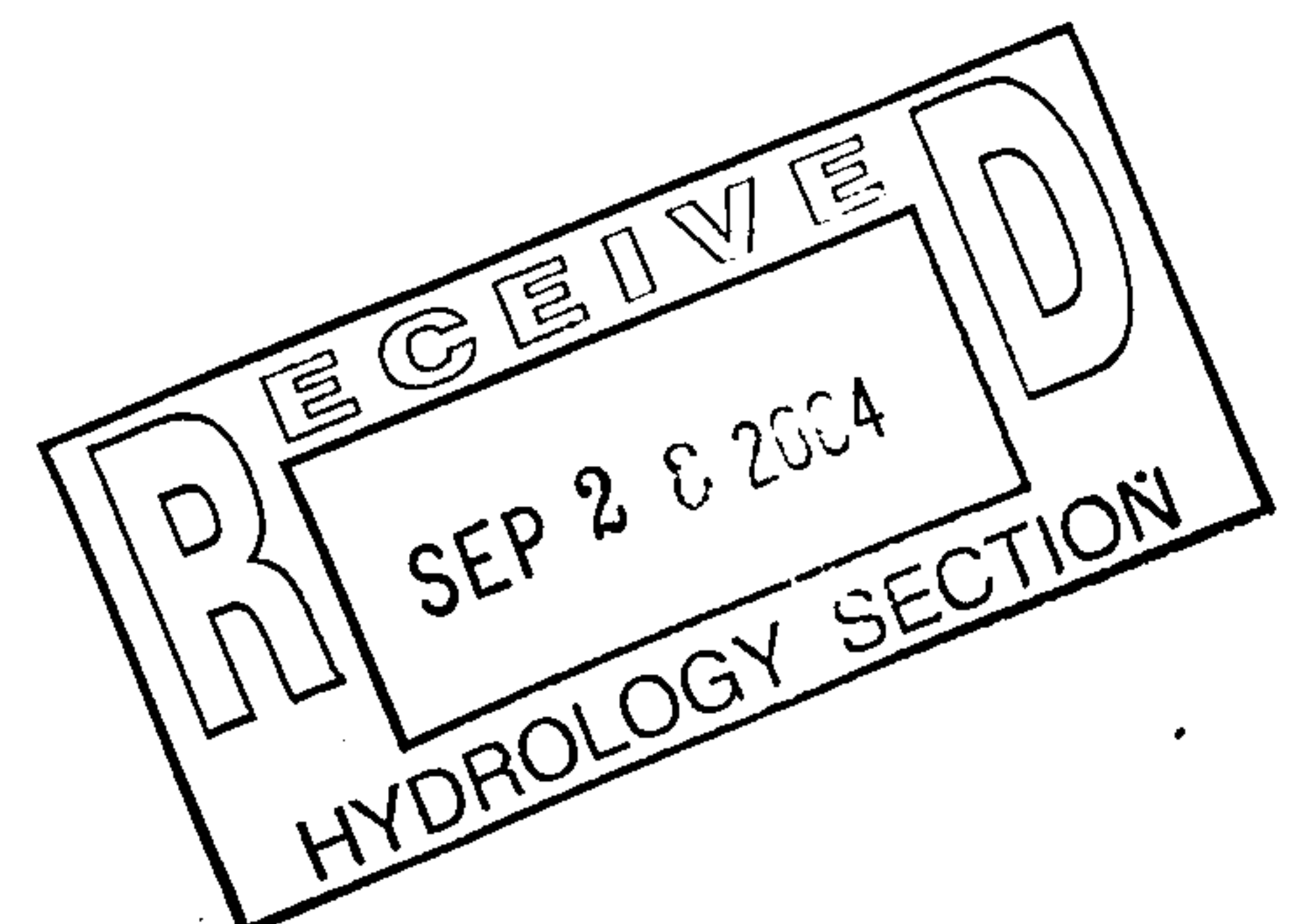
TREATMENT CLASS	A	B	C	D	Total
ACRES	0.0000	0.0000	0.6445	0.3027	0.9472
Q_{peak} , 100-yr, cfs:	6-hr:	3.45			
Volume, 100-yr, cf:	6-hr:	4,973	24-hr:	5,412	

DEVELOPED CONDITIONS

TREATMENT CLASS	A	B	C	D	Total
ACRES	0.0675	0.1565	0.0858	0.6373	0.9472
Q_{peak} , 100-yr, cfs:	6-hr:	3.73			
Volume, 100-yr, cf:	6-hr:	5,830	24-hr:	6,755	

INCREASE IN RATE, cfs: 6-hr: 0.28 Very minor on 424,300sf (9.74ac) site
 INCREASE IN VOLUME, cf: 6-hr: 857 24-hr: 1,343

(Same area per 1999 Master Plan: $Q_{p6hr} = 3.97$ cfs, $V_{6hr} = 6,248$ cf, $V_{24hr} = 7,245$ cf
 G17-D37, and this report)



ALBUQUERQUE, NM (1/93) CRITERIA - SIMPLE PROCEDURE FOR <= 40 ACRES

PX100-6 = PRECIPITATION EXCESS FROM 100-YEAR 6-HOUR STORM

VOL10D = VOLUME OF RUNOFF FROM 100-YEAR 10-DAY STORM

TRTMT CLASS A=UNDISTURBED, B=LAWNS, C=UNPAVED ROADS, D=ROOFS,PAVEMENT: SEE DPM 22-2 P A-5

Hodgin School Addition for Rhombus, PA, Albuquerque NM

RAIN ZONE 2 SEE DPM FIGURE A-1 p22-7

100-YEAR STORM PRECIPITATION (P) DEPTHS, INCHES (DPM TABLE A-2, P22-8)

1Hr=60Min	6Hr=360Min	24 HR	4 DAY	10 DAY
2.01	2.35	2.75	3.3	3.95

EXISTING CONDITIONS

TRTMT CLASS	AREA SQ SF	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	0.0	0.0000	0.53	1.56	0.00	0.0000	0.0000	0.0000	0.0000	0.00
B	0.0	0.0000	0.78	2.28	0.00	0.0000	0.0000	0.0000	0.0000	0.00
C	28,074.0	0.6445	1.13	3.14	2.02	0.0607	0.0607	0.0607	0.0607	68.04
D	13,184.0	0.3027	2.12	4.7	1.42	0.0535	0.0636	0.0774	0.0938	31.96
TOTAL	41,258.0	0.9472	AVG Q/AC=	3.64	3.45	0.1142	0.1242	0.1381	0.1545	100.00
SQ MI=>		0.0014799			CU FT=>	4,973	5,412	6,017	6,731	<=CU FT

DEVELOPED CONDITIONS

TRTMT CLASS	AREA SQ SF	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A (mulch)	2,942.0	0.0675	0.53	1.56	0.11	0.0030	0.0030	0.0030	0.0030	7.13
B	6,815.0	0.1565	0.78	2.28	0.36	0.0102	0.0102	0.0102	0.0102	16.52
C	3,739.0	0.0858	1.13	3.14	0.27	0.0081	0.0081	0.0081	0.0081	9.06
D	27,762.0	0.6373	2.12	4.7	3.00	0.1126	0.1338	0.1630	0.1976	67.29
TOTAL	41,258.0	0.9472	AVG Q/AC=	3.93	3.73	0.1338	0.1551	0.1843	0.2188	100.00
SQ MI=>		0.0014799			CU FT=>	5,830	6,755	8,027	9,531	<=CU FT

MASTER PLAN CONDITIONS FROM 1999 G17-D37

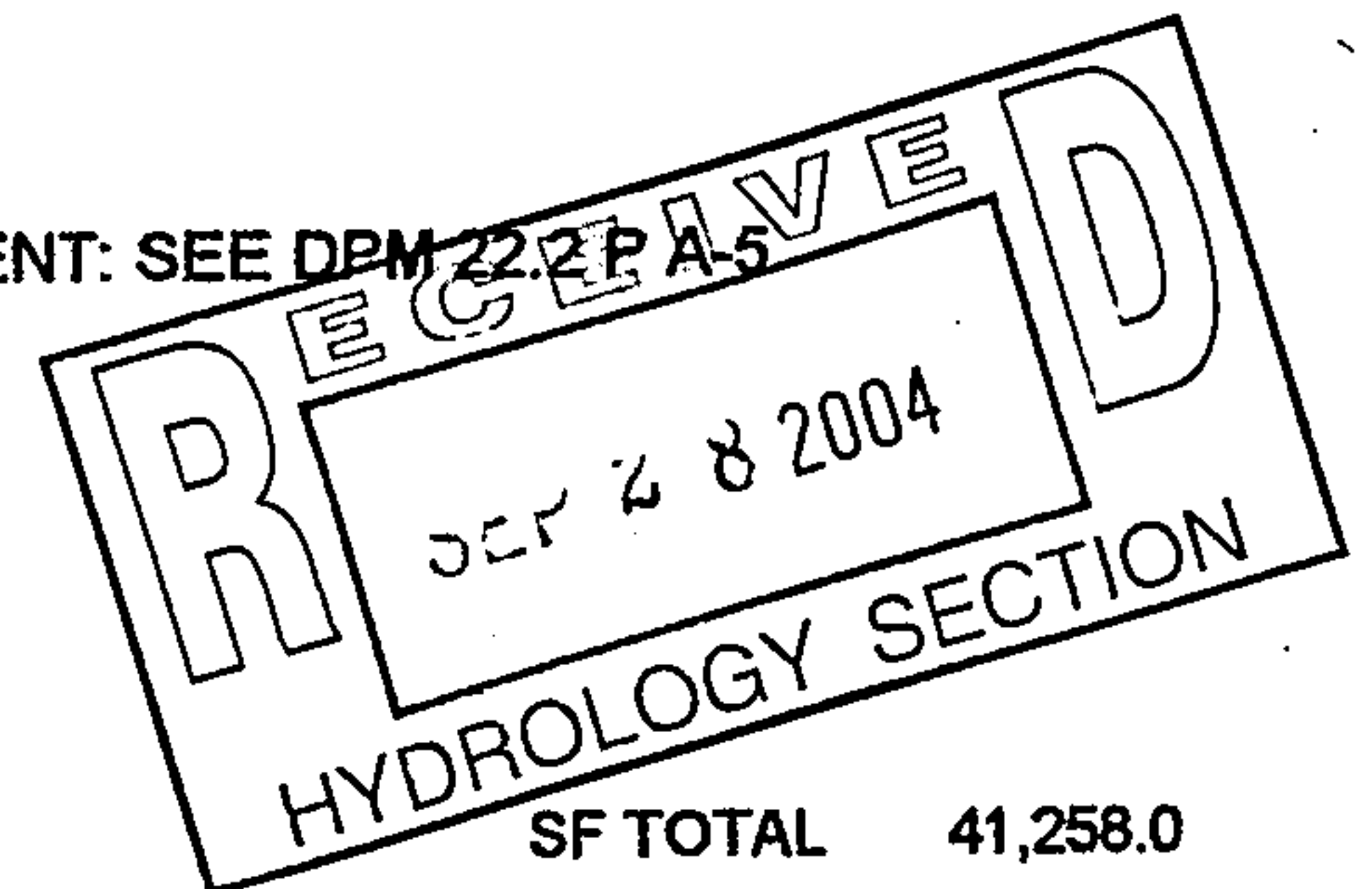
TRTMT CLASS	AREA SQ SF	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	0.0	0.0000	0.53	1.56	0.00	0.0000	0.0000	0.0000	0.0000	0.00
B	3,543.0	0.0813	0.78	2.28	0.19	0.0053	0.0053	0.0053	0.0053	8.59
C	7,819.0	0.1795	1.13	3.14	0.56	0.0169	0.0169	0.0169	0.0169	18.95
D	29,896.0	0.6863	2.12	4.7	3.23	0.1212	0.1441	0.1756	0.2128	72.46
TOTAL	41,258.0	0.9472	AVG Q/AC=	4.20	3.97	0.1434	0.1663	0.1978	0.2349	100.00
SQ MI=>		0.0014799			CU FT=>	6,248	7,245	8,615	10,234	<=CU FT

DEVELOPED CONDITIONS - main part of Alt II as All C

TRTMT CLASS	AREA SQ SF	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	0.0	0.0000	0.53	1.56	0.00	0.0000	0.0000	0.0000	0.0000	0.00
B	0.0	0.0000	0.78	2.28	0.00	0.0000	0.0000	0.0000	0.0000	0.00
C	10,682.0	0.2452	1.13	3.14	0.77	0.0231	0.0231	0.0231	0.0231	100.00
D	0.0	0.0000	2.12	4.7	0.00	0.0000	0.0000	0.0000	0.0000	0.00
TOTAL	10,682.0	0.2452	AVG Q/AC=	3.14	0.77	0.0231	0.0231	0.0231	0.0231	100.00
SQ MI=>		0.0003832			CU FT=>	1,006	1,006	1,006	1,006	<=CU FT

DEVELOPED CONDITIONS - main part of Alt II as some B, rest D

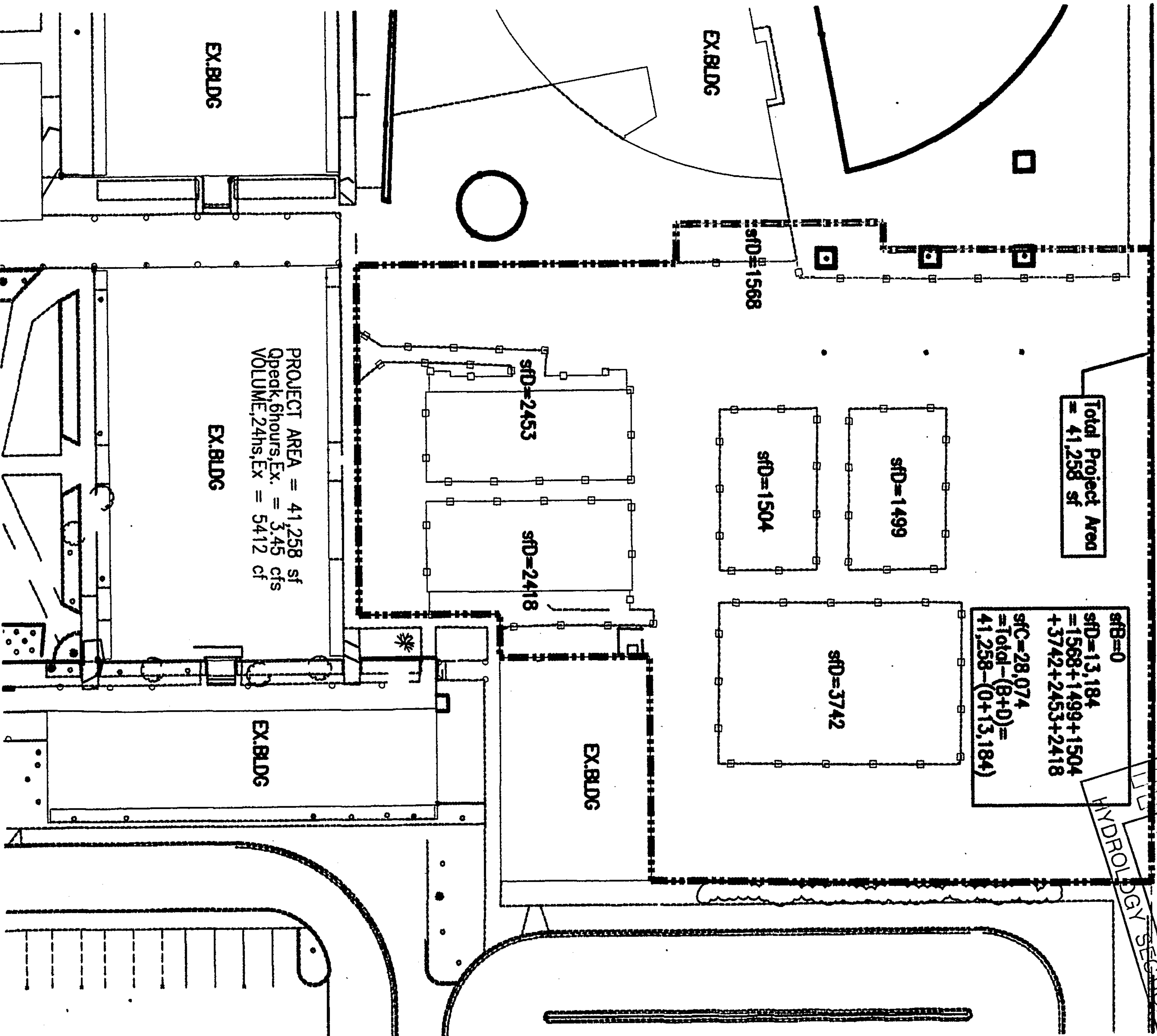
TRTMT CLASS	AREA SQ SF	AREA ACRES	PX100-6 IN/AC	QP100-6 CFS/AC	QP100-6 CFS	VOL6HR AC-FT	VOL1D AC-FT	VOL4D AC-FT	VOL10D AC-FT	TRTMT PERCENT
A	0.0	0.0000	0.53	1.56	0.00	0.0000	0.0000	0.0000	0.0000	0.00
B	5,038.0	0.1157	0.78	2.28	0.26	0.0075	0.0075	0.0075	0.0075	47.16
C	0.0	0.0000	1.13	3.14	0.00	0.0000	0.0000	0.0000	0.0000	0.00
D	5,644.0	0.1296	2.12	4.7	0.61	0.0229	0.0272	0.0331	0.0402	52.84
TOTAL	10,682.0	0.2452	AVG Q/AC=	3.56	0.87	0.0304	0.0347	0.0407	0.0477	100.00
SQ MI=>		0.0003832			CU FT=>	1,325	1,513	1,771	2,077	<=CU FT

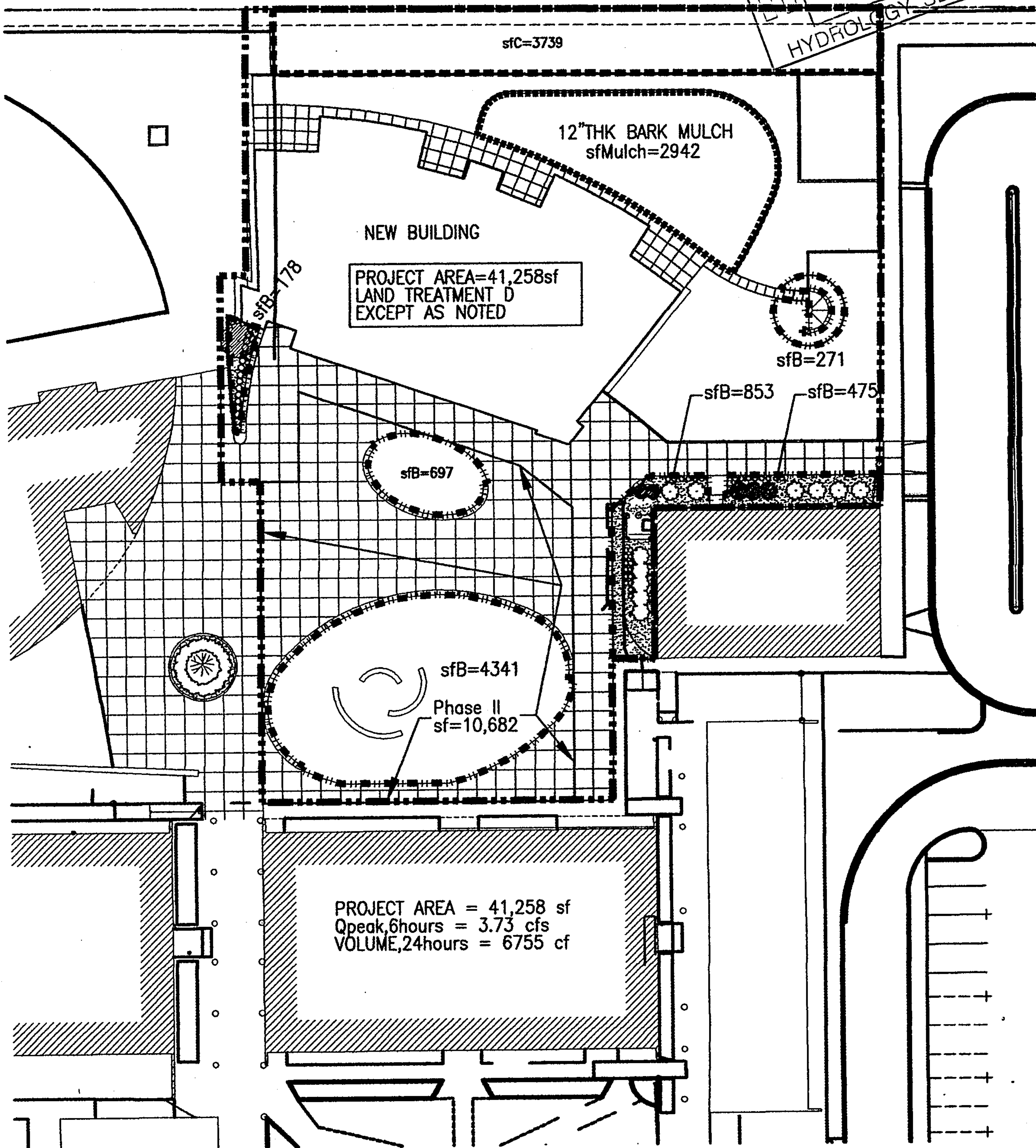
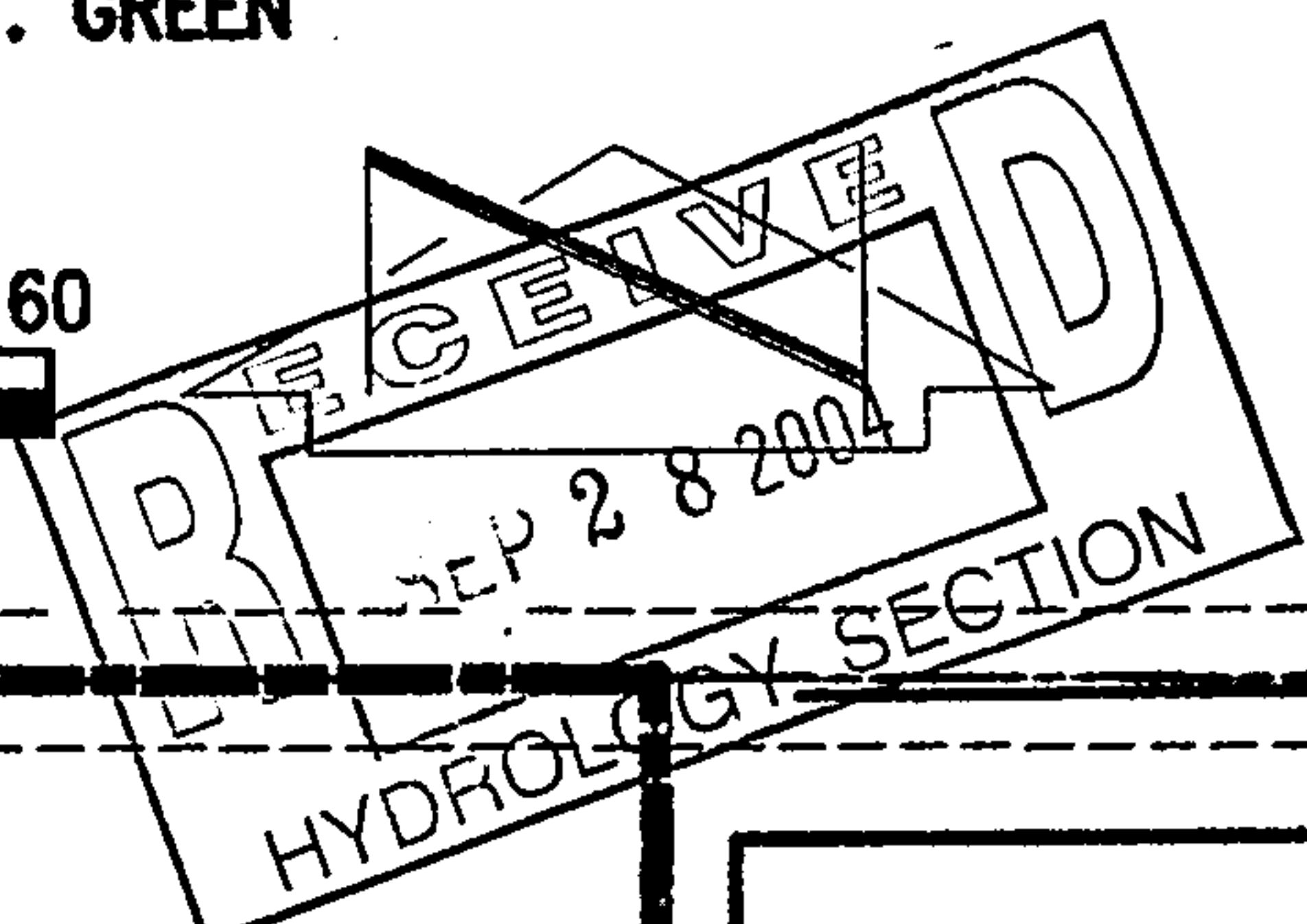


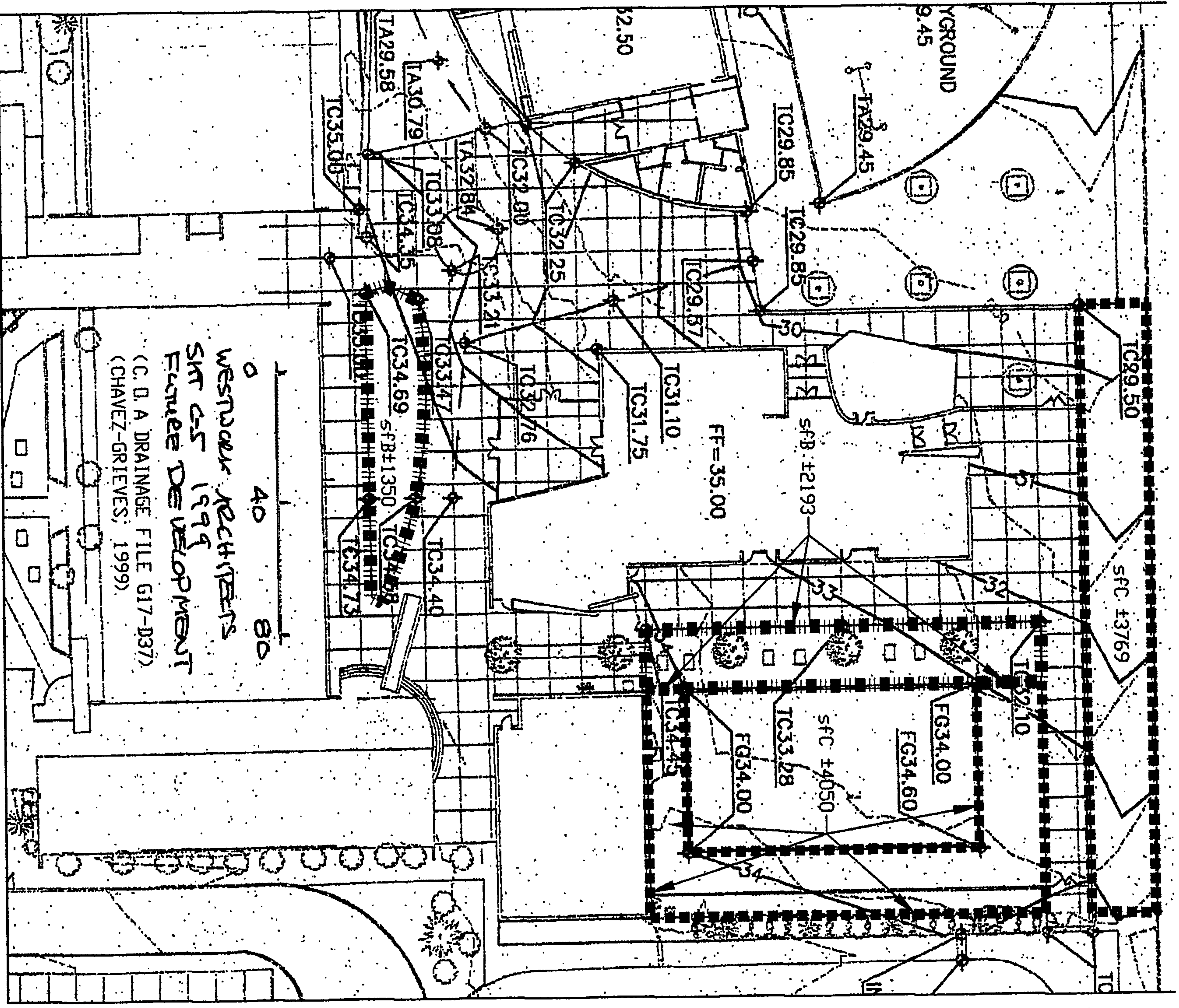


Total Project Area
= 41,258 sf

sfB=0
sfD=13,184
=1568+1499+1504
+3742+2453+2418
sfC=28,074
=Total-(B+D)=
41,258-(0+13,184)







C:\0prj\Rhoribus\Hodgin\HodginNewTr2.dwg DATE: 09/19/04 TIME: 21:18 T. GREEN
 Image: Hodgin\HodginFutDev.tif

PROJECT AREA = 41,258 sf
 Peak 6hours = 3.97cfs
 VOLUME 24hours = 7245 cf

SEP 28 2004
 PROLOGY SECTION



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 4, 1992

Victor Chavez, P.E.
Chavez-Grieves Consulting Engineers
4600-C Montgomery Boulevard, NE
Albuquerque, New Mexico 87109

RE: DRAINAGE PLAN FOR A SHADE COVER @ HODGIN ELEMENTARY SCHOOL
(G-17/D37) REVISION DATED JULY 30, 1992

Dear Mr. Chavez:

Based on the information provided on your resubmittal of July 30, 1992, the above referenced plan is approved for Building Permit.

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

If I can be of further assistance, please feel free to call me at 768-2650.

Cordially,

Bernie J. Montoya
Bernie J. Montoya, C.E.
Engineering Assistant

xc: Alan Martinez

BJM/bsj
(WP+2941)

PUBLIC WORKS DEPARTMENT



City of Albuquerque

P. O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103
PUBLIC WORKS DEPARTMENT

August 23, 1995

CERTIFICATE OF COMPLETION AND ACCEPTANCE

John Myers
New Mexico School For The Deaf
1060 Cerrillos Rd. SE
Santa Fe, NM 87503

**RE: PROJECT NO. 5102.80 NEW MEXICO SCHOOL FOR THE DEAF,
MAP NO. G-17**

Dear Mr. Myers:

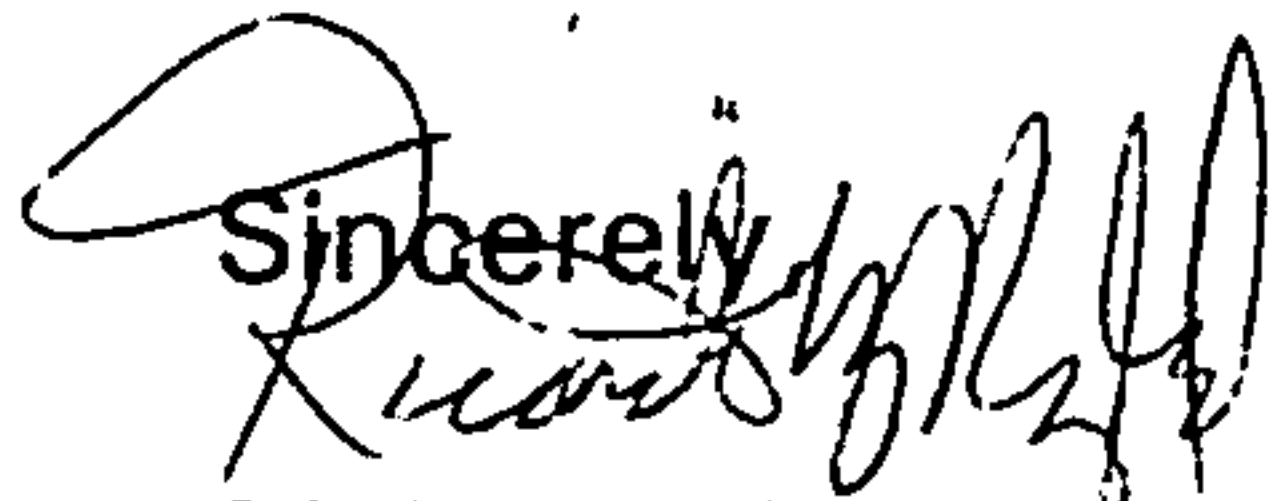
This is to certify that the City of Albuquerque accepts Project No. 5102.80 as being completed according to approved plans and construction specifications. Please be advised this certificate of completion and acceptance shall only become effective upon final plat approval and filing in the office of the Bernalillo County Clerk's Office.

The project is described as follows:

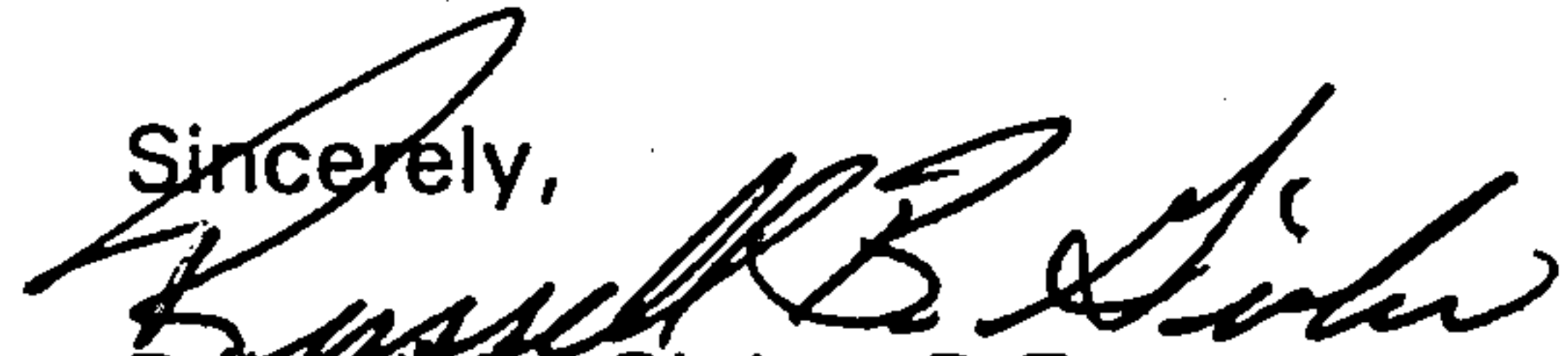
- Extension of linear feet of 6" PVC water pipeline including one 1.5" service stubout three 6" gate valves, one fire hydrant and all necessary apparatus in the public waterline easement from Hermosa to Morningside.
- Installation of 130 linear feet of 8" PVC sanitary sewer pipeline including two manholes to provide services to the subject school.
- Minor concrete work associating with sidewalk, drivepad and curb and gutter was done to facilitate the installations of water and sanitary sewer pipelines.

The contractor's correction period began the date of this letter and is effective for a period of one (1) year. Please note that NM School for the Deaf will assume maintenance responsibility on the sanitary pipeline portion in the "private" easement.

Ltr NM School
for the Deaf
August 23, 1995
Page 2

Sincerely,


Rick Roybal, P.E.
City Engineer,
Engineering Group
Public Works Department

Sincerely,


Russell B. Givler, P.E.
Chief Construction Engineer,
Engineering Group
Public Works Department

cc: Jeff Mortensen & Assoc.
Russ Pitney Earthmoving
Fred Aguirre, Engineering Group, PWD
Theresa Lucero, Engineering Group, PWD
Terri Martin, Engineering Group, PWD
Martin Barker, Engineering Group, PWD
Linda Adamsko, Special Assessments, DFM
Sam Hall, Operations Group, PWD
Jim Fink, Operations Group, PWD
Dean Wall, Engineering Group, PWD
Stuart Reeder, Water/Wastewater Group, PWD
Ray Chavez, Traffic Engineering, PWD
Josie Gutierrez, New Meter Sales, Finance Group, PWD
Richard Zamora, Engineering Group, PWD
f/Project No. 5102.80
f/Readers
f/Warranty:Contract..



City of Albuquerque

P.O. BOX 1293 · ALBUQUERQUE, NEW MEXICO 87103

November 3, 1994

Jeff Mortensen
Jeff Mortensen & Associates
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

RE: DRAINAGE PLAN FOR NMSD PRESCHOOL (G17-D37)
ENGINEER'S STAMP DATED 10/24/94.

Dear Mr. Mortensen:

Based on the information provided on your October 24, 1994 submittal, the above referenced site is approved for Building Permit.

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

Also, a separate permit is required for construction within city Right-of-Way. A copy of this approval letter must be on hand when applying for the excavation permit.

Prior to Certificate of Occupancy release, Engineer Certification per the D.P.M. checklist will be required.

If I can be of further assistance, please feel free to contact me at 768-2667.

Sincerely,

Bernie J. Montoya, CE
Engineering Associate

BJM/d1/WPHYD/8938

c: Andrew Garcia
Arlene Portillo
File



City of Albuquerque

Whitney
PLEASE
File

December 8, 1999

Ms. Cindy Terry
Westwork Architects
2403 San Mateo, NE, Suite S-2
Albuquerque, NM 87110

RE: TRAFFIC CIRCULATION LAYOUT REVIEW FOR BUILDING PERMIT APPROVAL
HODGIN ELEMENTARY SCHOOL, MINIGYM, G-17-D037, RECEIVED 12-08-99

Dear Ms. Terry:

The above referenced Traffic Circulation Layout (TCL) has been approved for Building Permit. Please note that the engineer's certification required by the Hydrology section needs to include certification that this site was constructed in accordance with the approved TCL before certificate of occupancy can be released by the Transportation Development section.

Sincerely,

Richard Dourte, PE
Transportation Development

cc: file

G-17/D037

TRANSMITTAL LETTER

AIA DOCUMENT G810

Westwork
ARCHITECTS

PROJECT: HODGIN ELEMENTARY SCHOOL
(name, address)

ARCHITECT'S
PROJECT NO:

DATE: 12/8/99

TO: RICHARD DOUARTE

ATTN: L

If enclosures are not as noted, please
inform us immediately.

If checked below, please:

() Acknowledge receipt of enclosures.

() Return enclosures to us.

WE TRANSMIT:

() herewith () under separate cover via

(X) in accordance with your request

FOR YOUR:

() approval

() distribution to parties

() information

() review & comment

(X) record

() use

()

THE FOLLOWING:

() Drawings

() Shop Drawing Prints

() Samples

() Specifications

() Shop Drawing Reproducibles

() Product Literature

() Change Order

()

COPIES	DATE	REV. NO.	DESCRIPTION	ACTION CODE
1	12/8/99		SITE PLAN	
1	10/1		REVIEW RESPONSE LETTER FROM AFSANEH XAVARI	

ACTION A. Action indicated on item transmitted

CODE B. No action required

C. For signature and return to this office

D. For signature and forwarding as noted below under REMARKS

E. See REMARKS below

REMARKS

COPIES TO:

(with enclosures)

☐
☐
☐
☐
☐

BY: CINDY TERRY



City of Albuquerque

Cindy Terry
Westwork Architects, P.A.
2403 San Mateo, N.E., Suite S-2
Albuquerque, NM 87110

October 1, 1999

RE: TRAFFIC CIRCULATION LAYOUT REVIEW FOR BUILDING PERMIT
APPROVAL
Hodgin Elementary School, Mini-Gym and Site Improvements, G17-D037, Not Stamped.

Dear Ms. Terry:

The above referenced Traffic Circulation Layout (TCL) requires modifications to the site plan prior to review for Building Permit. The comments are indicated in red ink on the attached marked-up site plan.

Please add the following note on the site plan: "The engineer's certification required by the Hydrology section needs to include certification that this site was constructed in accordance with the TCL before Certificate of Occupancy (C.O.) is released."

Please return the attached marked-up site plan with your next submittal.

You can reach me at 924-3993 to set up a meeting to discuss this project.

Sincerely,

Afsaneh Yavari
Associate Engineer

Attachments

cc: Billy McCarty, Chavez-Grieves



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 14, 1999

Billy O. McCarty
Chavez-Grieves Inc.
5639 Jefferson NE
Albuquerque, New Mexico 87109

RE: Drainage Plan for Hodgin Elementary School (G17-D37) Received December 13, 1999

Dear Mr. McCarty:

The above referenced plan dated December 13, 1999 is approved for Building Permit. Also, the Drainage Facilities Within City Right Of Way (SO #19) is approved for the sidewalk culvert.

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

Prior to Certificate of Occupancy release the Engineer will need to certify the project per the DPM.

If you have any questions please call me at 768-2654.

Sincerely,

Carlos A. Montoya
Project Manager

c: File

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

December 14, 1999

INTER-OFFICE CORRESPONDENCE

HYDROLOGY DIVISION

TO: Desiderio Salas, Street Maintenance Division
FROM: Carlos A. Montoya, Project Manager, PWD *AM*
SUBJECT: **PRIVATE DRAINAGE FACILITIES WITHIN PUBLIC
RIGHTS-OF-WAY/EASEMENT**
_____(G17-D37)_____

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

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

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

Thank you for your cooperation and if you should have any questions and/or comments regarding the process, please feel free to call me at 768-2654.

Attachment

DRAINAGE INFORMATION

PROJECT TITLE: Hodgin Elementary School ZONE ATLAS/DRNG. FILE #: G-17-1031

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

LEGAL DESCRIPTION: Tract A, Hodgin Elementary School

CITY ADDRESS: northwest quadrant of Morningside Drive and ponderosa Avenue

ENGINEERING FIRM: Chavez-Grieves CONTACT: BILLY O. MCCARTY, P.E.

ADDRESS: 5639 Jefferson NE PHONE: 344-4080

OWNER: Albuquerque Public Schools CONTACT: _____

ADDRESS: _____ PHONE: _____

ARCHITECT: Westwork Architects CONTACT: Cindy Terry

ADDRESS: 2403 San Mateo, NE Suite S-2 PHONE: 884-5252

Albuquerque, NM 87110

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

☒ DRAINAGE REPORT

☐ DRAINAGE PLAN

☐ CONCEPTUAL GRADING & DRAINAGE PLAN

☒ GRADING PLAN

☐ EROSION CONTROL PLAN

☐ ENGINEER'S CERTIFICATION

☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

☐ SKETCH PLAT APPROVAL

☐ PRELIMINARY PLAT APPROVAL

☐ S. DEV. PLAN FOR SUB'D. APPROVAL

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

☐ SECTOR PLAN APPROVAL

☐ FINAL PLAT APPROVAL

☐ FOUNDATION PERMIT APPROVAL

☒ BUILDING PERMIT APPROVAL

☐ CERTIFICATE OF OCCUPANCY APPROVAL

☐ GRADING PERMIT APPROVAL

☐ PAVING PERMIT APPROVAL

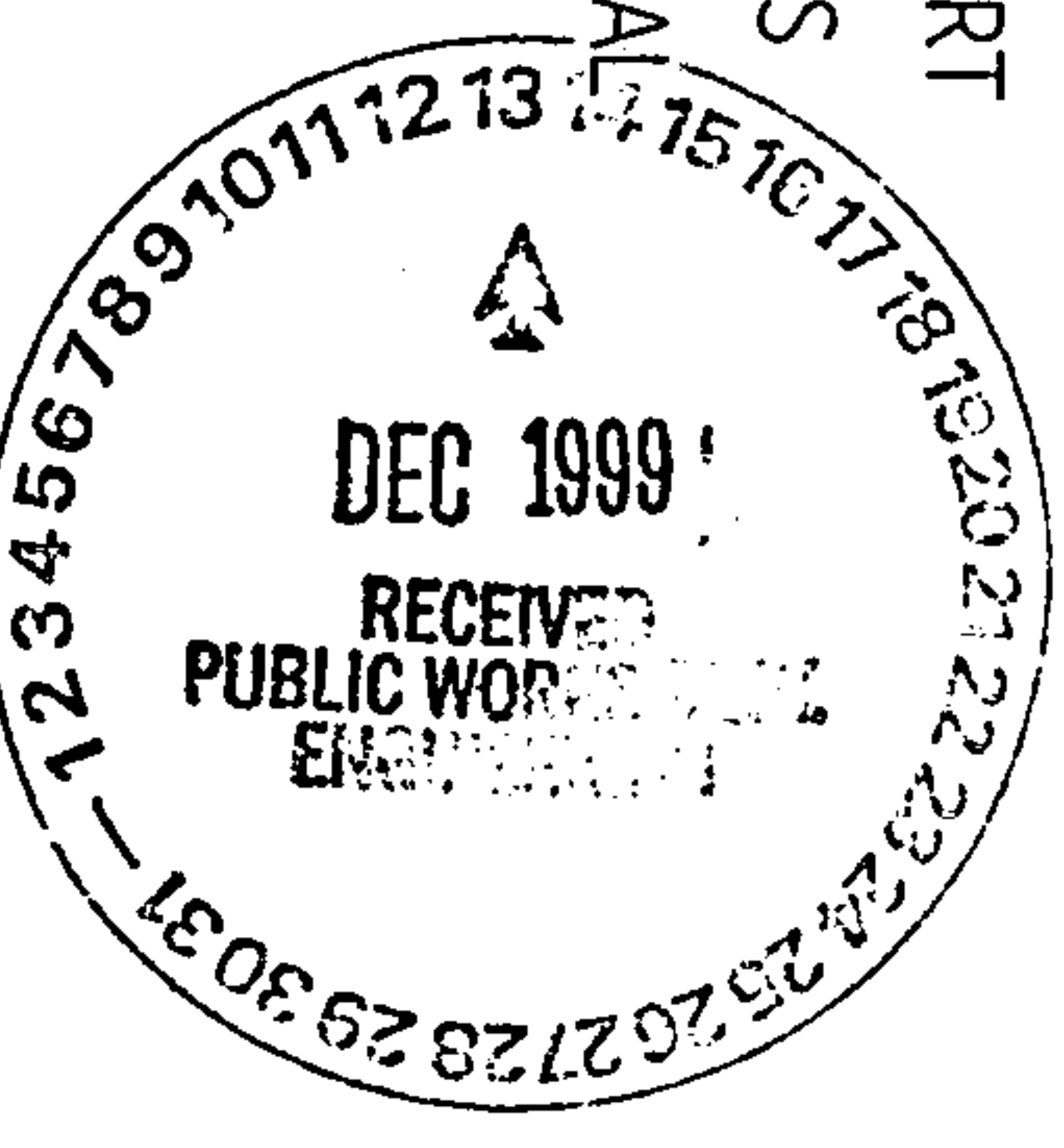
☐ S.A.D. DRAINAGE REPORT

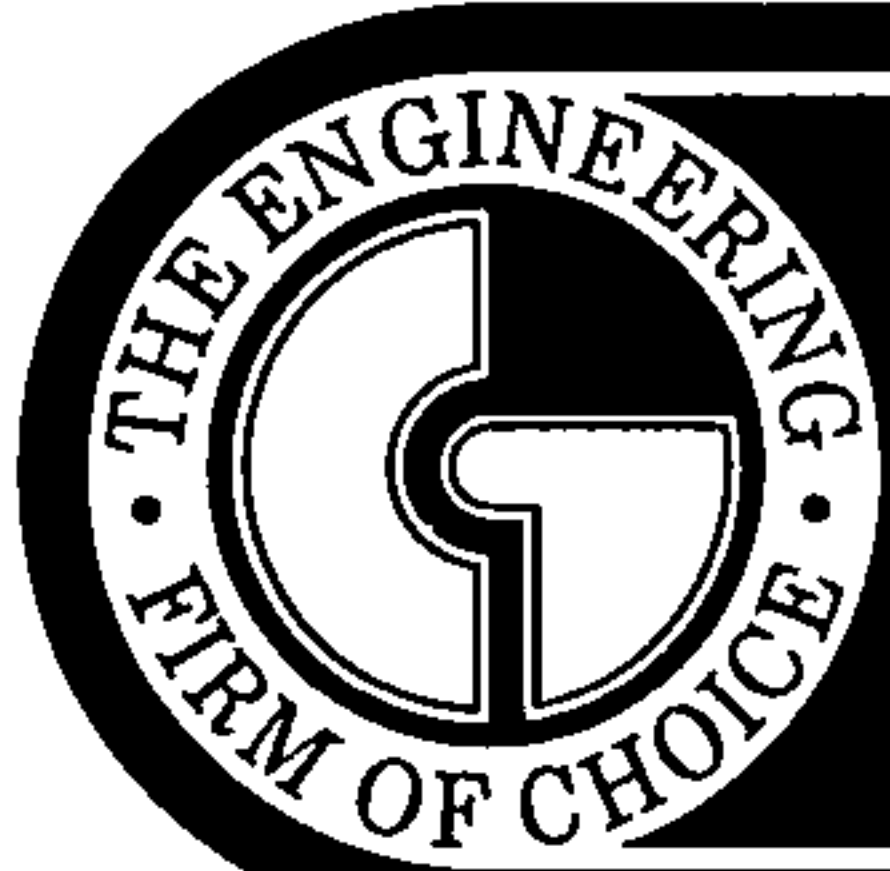
☐ DRAINAGE REQUIREMENTS

☐ DRB SITE PLAN APPROVAL

DATE SUBMITTED: December 13, 1999

BY: BILLY O. MCCARTY, P.E.





CHAVEZ • GRIEVES

CONSULTING ENGINEERS, INC.

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

GRADING AND DRAINAGE PLAN

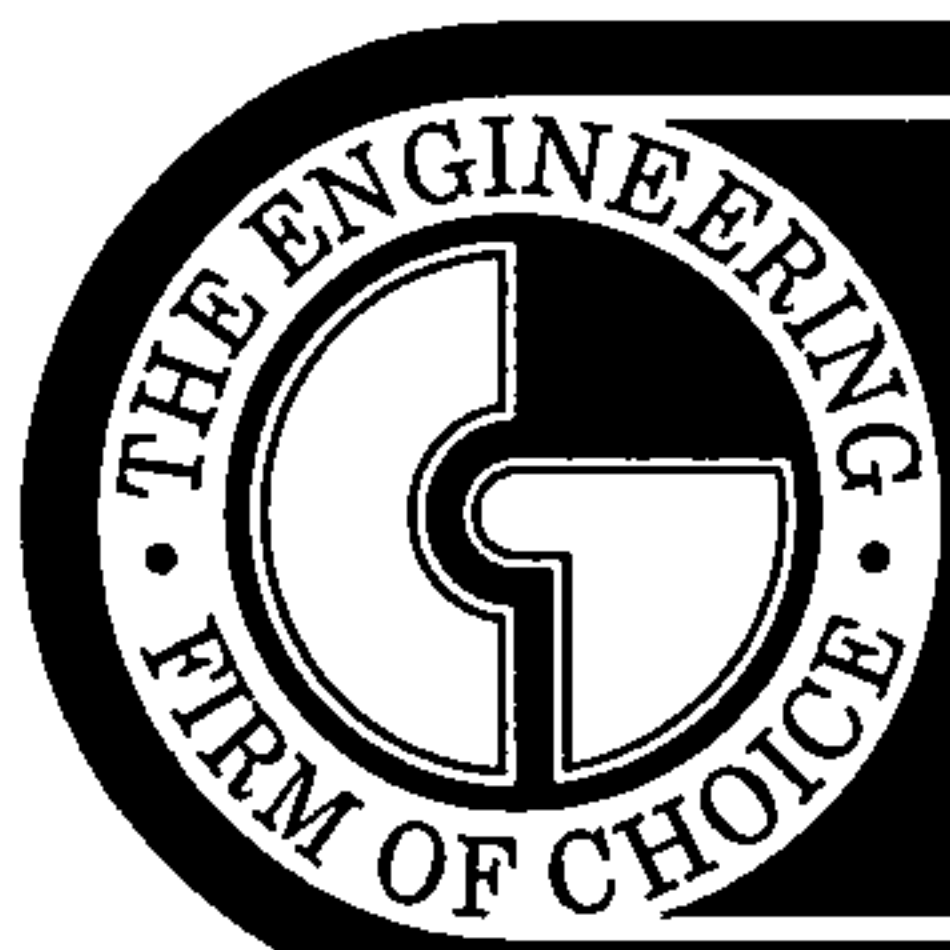
FOR

HODGIN ELEMENTARY SCHOOL

ALBUQUERQUE PUBLIC SCHOOLS

ALBUQUERQUE, NEW MEXICO

AUGUST 1999



CHAVEZ · GRIEVES

CONSULTING ENGINEERS, INC.

5639 JEFFERSON STREET NE • SUITE 1 • ALBUQUERQUE, NEW MEXICO 87109 • PHONE (505) 344-4080 • FAX (505) 343-8759

GRADING AND DRAINAGE PLAN

FOR

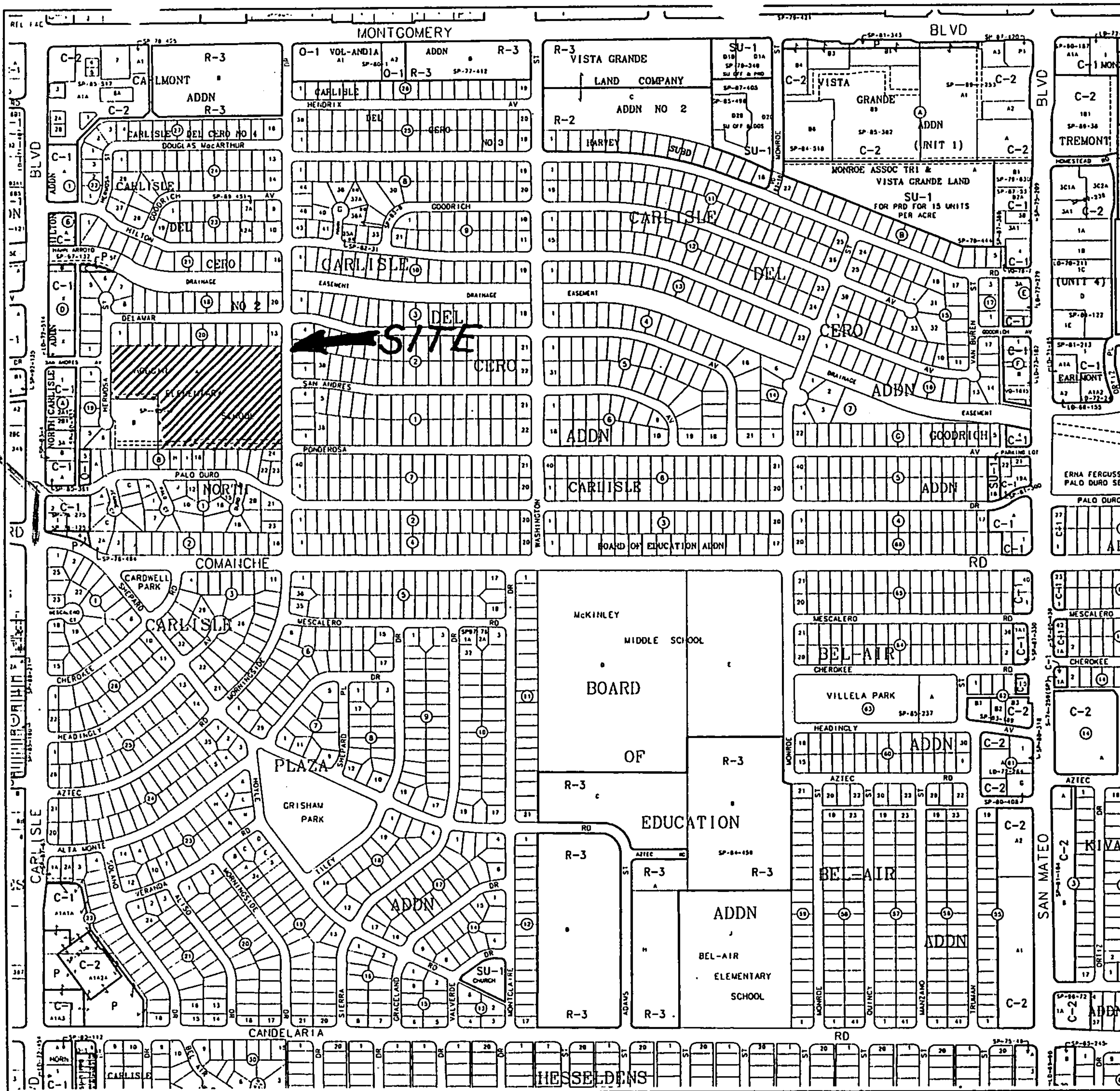
HODGIN ELEMENTARY SCHOOL

ALBUQUERQUE PUBLIC SCHOOLS

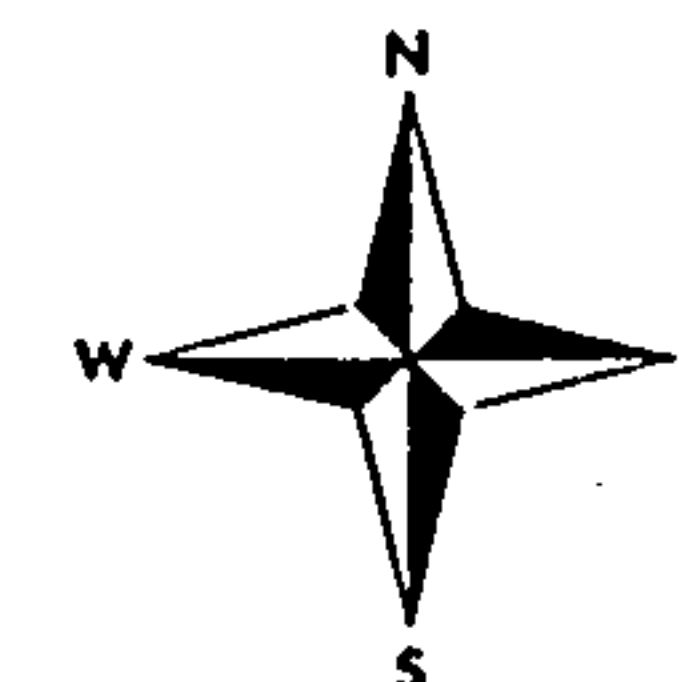
ALBUQUERQUE, NEW MEXICO



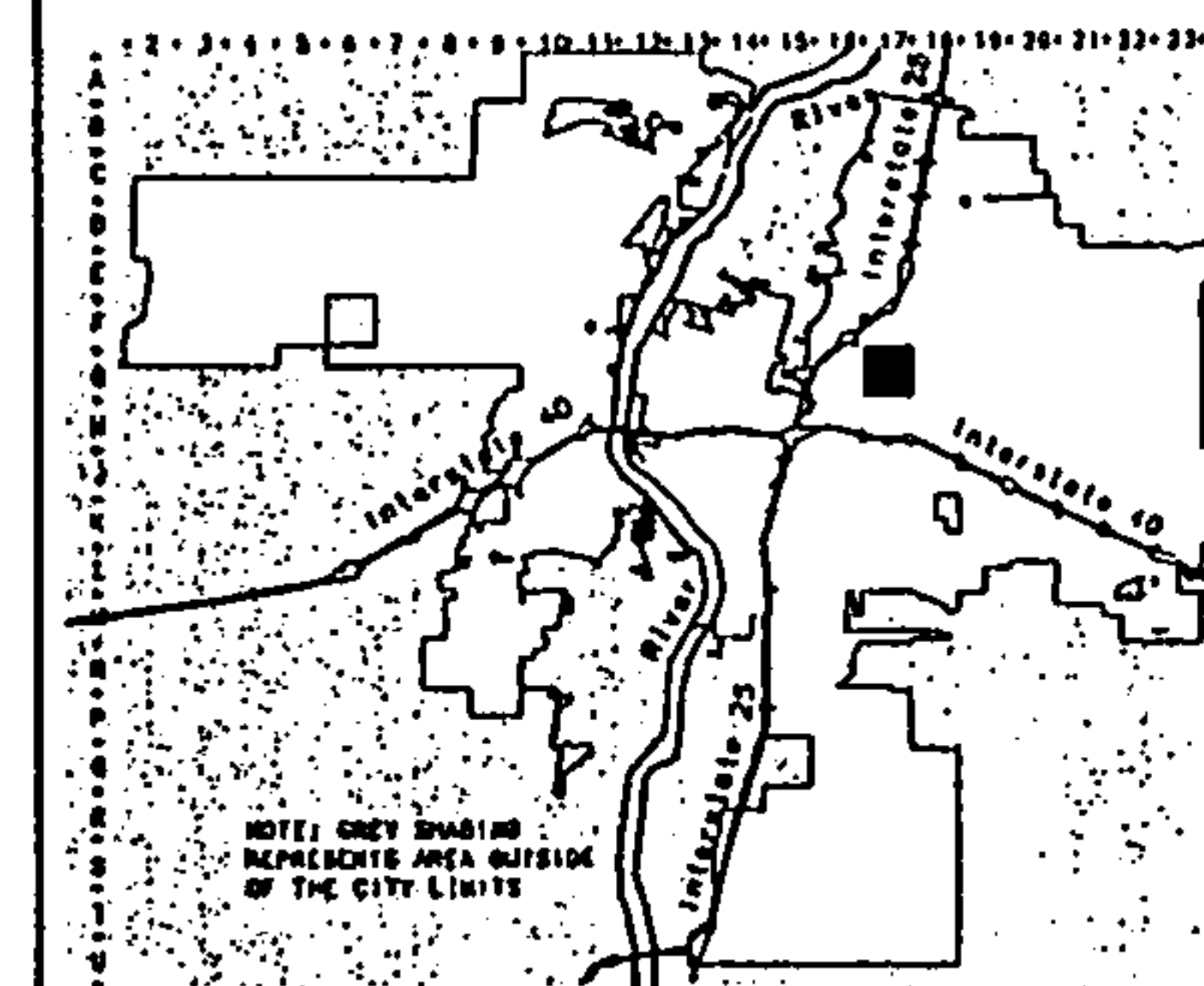
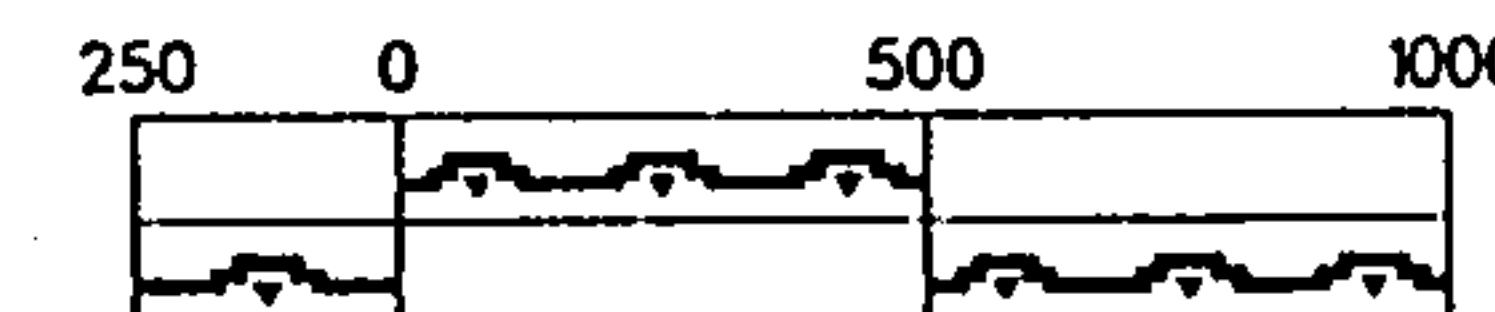
AUGUST 1999



CITY OF
Albuquerque
A lbuquerque Geographic Information System
PLANNING DEPARTMENT
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GRAPHIC SCALE IN FEET



Zone Atlas Page
G-17-Z

Map Amended through
February 27, 1998

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I. PURPOSE OF THIS REPORT

This report has been prepared to obtain a Master Drainage plan, a grading and paving permit, and a building permit for Hodgkin Elementary School. Grading and paving permits are sought at this time to proceed with the construction of the two (2) revised parking areas, new playground area, and new location for the portable buildings. In addition, a building permit is being requested for the new multipurpose building. In order to obtain these permits, the City of Albuquerque (COA) Hydrology Department has requested a master plan to show how the school site will ultimately be developed. Part of this master plan request includes analyzing the residential subdivision area which discharges to Hermosa Street and San Andres Avenue. The Albuquerque Master Drainage Study (AMDS) Volume III, prepared by Bohannon-Houston, Inc. in January 1981 identifies a flooding problem on Hermosa Street at the west side of the school site. This report addresses this flooding and offers an alternative option from the AMDS to resolve the flooding problem.

II. LOCATION

Hodgin Elementary School is located east of Carlisle Boulevard, north of Comanche Road, and south of the Hahn Arroyo. See the Vicinity Map (Zone Atlas Page G-17) in the front of this report for the exact location.

III. LEGAL DESCRIPTION

Tract A, Hodgkin Elementary School

IV. FLOOD HAZARD ZONES

As shown by Panels 35001C0138 D and 35001C0351 D of the National Flood Insurance Rate Maps for the City of Albuquerque, dated September 20, 1996, this site is not within a designated flood hazard Zone.

V. EXISTING SITE CONDITIONS AND DRAINAGE PATTERN

A fully developed residential subdivision (Basin 110.00) exists which surrounds the Hodgkin Elementary School (refer to Basin Map in a pocket at the end of this report). San Andres Avenue and Delmar Avenue drain a significant area of this subdivision to Morningside Drive along the east boundary of the school. Due to the cross slope of Washington Street and Morningside Drive at Delmar Avenue, a minor portion of the drainage from this area is diverted to the Hahn Arroyo to the north at Washington Street and Morningside Drive. These split flows were not analyzed in this report since it was determined that they were insignificant to the overall

drainage analysis. It is also more conservative for this analysis to assume the full flow is confined to the basin analyzed. The residential flow continues down Delmar Avenue from Morningside Drive to Hermosa Street where runoff from New Mexico School for the Deaf (Basin 120.00) and Hodgkin Elementary School (Basin 130.00) combines with the residential flow.

The AHYMO analysis (Appendix A) confirmed the flooding problem identified in the AMDS since there is 127 cfs. exiting this basin through San Andres Avenue. Hermosa Street has a capacity of 45 cfs. and San Andres Avenue has a capacity of 60 cfs. (see "Hermosa Street Capacity" and "San Andres Street Capacity" in Appendix B). Therefore, even the residential area by itself (97 cfs.) exceeds Hermosa Drive street capacity by 0.26' ("Full Residential Development" in Appendix B) before the two (2) school sites are added at San Andres Avenue. The street capacity for Delmar Avenue was also checked at its intersection with Morningside Drive. This analysis ("Delmar Downstream of Morningside" in Appendix B) indicates that the Delmar Avenue street capacity is exceeded when flows are combined from Delmar Avenue and Morningside Drive.

Both of the schools currently have free discharge to Hermosa Drive. The New Mexico School for the Deaf utilizes surface discharge to the cul-de-sac on the south end of Hermosa Street. The parking lot on the east end of the Hodgkin Elementary site is raised above the street grade along Morningside Drive to prevent runoff from entering the school site. CMU walls along the north and south sides also prevent runoff from the residential lots from entering the site. A swale and berm around the property boundary between the two (2) school sites prevent cross lot drainage along the common lot lines between the schools. Therefore, there is not any offsite flow entering this site. Hodgkin Elementary School drains via swales along the north and south property lines from the east to the west. The swales connect along the west property line and create a minor depression for low flows before discharging to Hermosa Street. This depression will not contain the 100-year storm event and therefore is not considered as part of this analysis since it will overtop when the peak flow reaches it. The school site is currently divided up into the following land treatments:

- A = 1.5% (sand play areas)
- B = 1.0% (grass)
- C = 64.7% (hard compacted earth with no vegetation)
- D = 32.8% (concrete, asphalt, and roofs)

The result of this analysis confirmed the AMDS since San Andres Avenue and Hermosa Street do not have adequate capacity to meet current COA drainage criteria. Since the criterion has changed since the AMDS was completed, the storm drain needed to relieve the problem would have to be increased to a 36" instead of the 30" identified in the AMDS. However, if the desire of COA is to bring this area up to current standards, the 36" storm drain needs to be installed in Morningside Drive from the intersection of Delmar Avenue to the

Hahn Arroyo. This 200' reach of storm drain in Morningside Drive will be by far more economical to construct than the 950' reach in Carlisle Boulevard and San Andres Avenue. Not only is it one-fifth ($\frac{1}{5}$) the length, but the traffic control on Morningside Drive will be much easier than Carlisle Boulevard.

VI. PROPOSED SITE CONDITIONS AND DRAINAGE PATTERNS

Two grading plans are included in pockets in the back of this report. The first is the grading associated with this phase of development. The second is the master plan for the entire site. Only the master plan condition is analyzed in this report since it generates the maximum runoff. Even though the impervious area is increased by 17.2% in the ultimate condition, the increased pervious area created by the sand play areas and the new grass areas maintains the runoff near existing conditions (38.12 cfs. existing compared to 38.85 cfs. developed). The proposed land treatments are listed below for Hodgkin Elementary school.

A = 7.0% (sand play areas)

B = 12.0% (grass)

C = 31.0% (hard compacted earth with no vegetation)

D = 50.0% (concrete, asphalt, and roofs)

The New Mexico School for the Deaf and the residential area will not be altered by this development. However, in order to improve the downstream condition, it is proposed to create a pond area to contain a full 100-year storm event. This can be accomplished by creating a level grass area 1.5' below the running track near the west property line. A 6" PVC outlet to Hermosa Drive will allow the pond to have a slow discharge. This will prevent prolonged standing water on the school property and provide a temporary solution until COA is able to install a 36" storm drain either in Carlisle Boulevard and San Andres Avenue according to the AMDS or the alternative 36" storm drain in Morningside Drive which was recommended above. There are four (4) additional street and inlet capacity calculations included at the end of Appendix B to justify how the flow can be intercepted at the Morningside Drive and Delmar Avenue intersection. One (1) Type 'A', double grate, single throat inlet and one (1) Type 'C', double grate inlet will need to be installed on each side of both streets upstream of the intersection as shown on the Basin Map in a pocket at the end of this report. The four (4) Type 'A', double grate, single throat inlets are identified as "INLET#1" on the calculations in Appendix B. Similarly, the four (4) Type 'C', double grate inlets are identified as "INLET#2" in Appendix B. Two (2) inlets will be installed for each set of calculations since the flows will be symmetrical about the street center line. Once COA installs this storm drain, Hodgkin Elementary School will be able to utilize free discharge from the temporary pond to Hermosa Street. **Although the AMDS storm drain would alleviate the flooding problem in Hermosa Street and San Andres Avenue west of Hodgkin Elementary School, the alternative storm drain in Morningside Drive is the preferred alternative since it will also relieve flooding in the west end of Delmar Avenue and would be a much more economical solution to the**

flooding problem.

VII. PREVIOUS RELATED REPORTS

This area was previously studied by the Albuquerque Master Drainage Study (AMDS) prepared by Bohannon-Houston, Inc. in 1981. Hodgkin Elementary School also had site improvements designed by Chavez-Grieves Consulting Engineers, Inc. in 1991 and the New Mexico School for the Deaf was designed by Jeff Mortensen and Associates in 1994. However, neither of the latest studies addressed the downstream conditions and justified minimal increase in runoff.

VIII. HYDROLOGY/HYDRAULICS

The runoff calculations and design have been done in accordance with Section 22.2 of the Development Process Manual of the City of Albuquerque, January 1993.

Tables

TABLE 1

HYDROLOGIC CONDITIONS

BASIN I. D.	AREA (sq. mi.)	CONTRI- BUTING BASIN	AREA SUM (sq. mi.)	Tp (hrs.)	LAND TREATMENT (%)				INCREMENTAL Q100 (cfs.)	TOTAL Q100 (cfs.)	REMARKS
					A	B	C	D			
EXISTING HYDROLOGIC CONDITIONS											
110.00	0.06292	---	---	0.250	0.0	30.1	30.2	39.7	96.84	96.84	1
120.00	0.00229	110.00	0.06521	0.133	0.0	47.0	0.0	53.0	5.23	100.04	2
130.00	0.01647	120.00	0.08168	0.133	1.5	1.0	64.7	32.8	38.12	126.57	3
PROPOSED HYDROLOGIC CONDITIONS (WITH TEMPORARY POND)											
110.00	0.06292	---	---	0.250	0.0	30.1	30.2	39.7	96.84	96.84	1
120.00	0.00229	110.00	0.06521	0.133	0.0	47.0	0.0	53.0	5.23	100.04	2
130.00	0.01647	---	---	0.133	7.0	12.0	31.0	50.0	38.85	100.04	4
FUTURE HYDROLOGIC CONDITIONS (WITH STORM DRAIN AND FREE DISCHARGE)											
110.00	0.06292	---	---	0.250	0.0	30.1	30.2	39.7	66.89 / 29.95	29.95	5
120.00	0.00229	110.00	0.06521	0.133	0.0	47.0	0.0	53.0	5.23	33.15	6
130.00	0.01647	120.00	0.08168	0.133	7.0	12.0	31.0	50.0	38.85	59.95	7

REMARKS:

- 1) Existing residential subdivision discharge to San Andres Avenue via Delmar Avenue and Hermosa Street.
- 2) Existing free discharge from New Mexico School for the Deaf to San Andres Avenue via Hermosa Street.
- 3) Existing free discharge from Hodgin Elementary School to San Andres Avenue via Hermosa Street.
- 4) Total Hodgin Elementary School Master Plan flow contained onsite in temporary pond.
- 5) Existing residential subdivision with 66.89 cfs. intercepted by storm drain and 29.95 cfs. Street flow to San Andres Avenue via Delmar Avenue and Hermosa Street.
- 6) Existing free discharge from New Mexico School for the Deaf to reduced flow in San Andres Avenue.
- 7) Total Hodgin Elementary School Master Plan flow with free discharge to reduced San Andres Avenue flow.

NOTE:

The Incremental Q100 column actual runoff generated by the independent basin. The Total Q100 column is the combined flow in San Andres Avenue as it leaves the study area.

TABLE 2

FLOW CHARACTERISTICS AT KEY LOCATIONS

STREET	LOCATION	Q100 (cfs.)	ST. WIDTH	S. (%)	D. (ft.)	VEL. (fps.)	FROUDE NUMBER	E.G. (ft.)	REMARKS
HERMOSA	N. OF SAN ANDRES	44.53	32'	0.45	0.67	3.24	0.88	0.83	1
SAN ANDRES	W. OF HERMOSA	59.95	32'	1.18	0.63	4.88	1.40	1.00	2
HERMOSA	N. OF SAN ANDRES	96.84	32'	0.45	0.93	4.40	0.94	1.23	3
DELMAR	W. OF MORNINGSIDE	75.53	32'	1.40	0.66	5.63	1.54	1.15	4
DELMAR	E. OF MORNINGSIDE	37.76	32'	2.50	0.47	5.10	1.88	0.88	5
DELMAR	E. OF MORNINGSIDE	19.76	32'	2.50	0.40	4.01	1.77	0.65	6
MORNINGSIDE	S. OF DELMAR	37.76	32'	1.00	0.55	3.87	1.24	0.78	7
MORNINGSIDE	S. OF DELMAR	19.76	32'	1.00	0.45	2.99	1.17	0.59	8

REMARKS:

- 1) Street capacity limited by 8" curb depth.
- 2) Street capacity limited by energy grade line.
- 3) Hermosa St. currently exceeds both curb depth and energy grade criteria for full residential development.
- 4) Existing Delmar Avenue flow is at curb capacity and exceeds energy grade line criteria west of Morningside.
- 5) Flow entering proposed upstream inlets (INLETS#1) on Delmar Avenue.
- 6) Flow entering proposed downstream inlets (INLETS#2) on Delmar Avenue.
- 7) Flow entering proposed upstream inlets (INLETS#1) on Morningside Avenue.
- 8) Flow entering proposed downstream inlets (INLETS#2) on Morningside Avenue.

NOTE:

Future construction of eight (8) double grate inlets at the intersection of Delmar Avenue and Morningside Drive as shown on the BASIN MAP will reduce the flow in Delmar Avenue from 75.53 cfs. to 8.64 cfs. at this intersection. These inlets will also reduce the flow in Hermosa Street north of San Andes Avenue to 29.95 cfs. And the total flow in San Andres Avenue west of Hermosa Street to 59.95 cfs. Therefore, all of the streets in this area will perform in accordance with current drainage criteria and allow free discharge from Hodgkin Elementary School in its fully developed condition.

Appendices



Appendix A

Hydrology Calculations

AHYMO INPUT FILE

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*S*****
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*S*****
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*S***** EXISTING CONDITIONS *****
*S*****
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ADD HYD         ID=3  HYD=100.12 ID I=1  ID II=2
PRINT HYD      ID=3  CODE=1
*S COMPUTE BASIN 130.00 EXISTING CONDITIONS FROM HODGIN ELEMENTARY SCHOOL
COMPUTE NM HYD   ID=4 HYD=130.00 DA=0.01647 SQ MI
                %A=  1.50 %B=  1.00 %C= 64.70 %D= 32.80
                TP=0.1333  RAINFALL=-1
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*S TOTAL EXISTING FLOW EXITING THIS SITE AT THE SAN ANDRES/HERMOSA INTERSECTION
ADD HYD         ID=5  HYD=100.123 ID I=3  ID II=4
PRINT HYD      ID=5  CODE=1
*S*****
*S***** DEVELOPED CONDITIONS *****
*S*****
*S
*S 78% OF BASIN 110.00 IS UPSTREAM OF THE DELMAR AVE./MONINGSIDE DR. INTERSECTION.
*S DIVERT APPROXIMATELY 69% OF THE BASIN 110.00 FLOW TO THE HAHN ARROYO AT THIS INTERSECTION.
*S
DIVIDE HYD      ID=1  CODE= 66.89 ID=6  HYD NO= MORNINGSIDE
                ID=7  HYD NO= DELMAR
PRINT HYD      ID=6  CODE=1
PRINT HYD      ID=7  CODE=1
ADD HYD         ID=3  HYD=100.12 ID I=7  ID II=2
PRINT HYD      ID=3  CODE=1
*S COMPUTE BASIN 130.00 DEVELOPED CONDITIONS FROM HODGIN ELEMENTARY SCHOOL
COMPUTE NM HYD   ID=4 HYD=130.00 DA=0.01647 SQ MI
                %A=  7.00 %B= 12.00 %C= 31.00 %D= 50.00
                TP=0.1333  RAINFALL=-1
PRINT HYD      ID=4 CODE=1
*S TOTAL DEVELOPED FLOW EXITING THIS SITE AT THE SAN ANDRES/HERMOSA INTERSECTION
ADD HYD         ID=5  HYD=100.123 ID I=3  ID II=4
PRINT HYD      ID=5  CODE=1
FINISH
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*S***** CHAVEZ-GRIEVES CONSULTING ENGINEERS, INC. *****											
*S***** HODGIN ELEMENTARY SCHOOL *****											
*S*****											
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*S*****											
*S***** 100 YEAR, 6 HOUR STORM (Section 22.2 Hydrology)											
START											
RAINFALL TYPE= 1											
*S*****											
*S***** EXISTING CONDITIONS *****											
*S*****											
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*S COMPUTE BASIN 120.00 EXISTING CONDITIONS FROM NEW MEXICO SCHOOL FOR THE DEAF											
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ADD HYD	100.12	1& 2	3	.06521	100.04	4.896	1.40764	1.633	2.397		
*S COMPUTE BASIN 130.00 EXISTING CONDITIONS FROM HODGIN ELEMENTARY SCHOOL											
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*S TOTAL EXISTING FLOW EXITING THIS SITE AT THE SAN ANDRES/HERMOSA INTERSECTION											
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*S*****											
*S***** DEVELOPED CONDITIONS *****											
*S*****											
*S											
*S 78% OF BASIN 110.00 IS UPSTREAM OF THE DELMAR AVE./MONINGSIDE DR. INTERSECTIO											
*S DIVERT APPROXIMATELY 69% OF THE BASIN 110.00 FLOW TO THE HAHN ARROYO AT THIS											
*S											
DIVIDE HYD	MORNINGSIDE	1	6	.05681	66.89	4.256	1.40476	1.533	1.840		
	DELMAR and	7		.00611	29.95	.458	1.40476	1.633	7.656		
ADD HYD	100.12	7& 2	3	.00840	33.15	.639	1.42712	1.633	6.165		
*S COMPUTE BASIN 130.00 DEVELOPED CONDITIONS FROM HODGIN ELEMENTARY SCHOOL											
COMPUTE NM HYD	130.00	-	4	.01647	38.85	1.337	1.52253	1.500	3.686 PER IMP=	50.00	
*S TOTAL DEVELOPED FLOW EXITING THIS SITE AT THE SAN ANDRES/HERMOSA INTERSECTION											
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FINISH											

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*S***** HODGIN ELEMENTARY SCHOOL *****
*S*****

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.0669	.0709	.0751	.0807	.0866	.0930	.1066
.1371	.1840	.2514	.3434	.4644	.6186	.8106
1.0449	1.2624	1.3533	1.4300	1.4982	1.5602	1.6174
1.6704	1.7200	1.7664	1.8102	1.8514	1.8904	1.9273
1.9622	1.9953	2.0268	2.0566	2.0850	2.0915	2.0976
2.1033	2.1088	2.1140	2.1191	2.1239	2.1285	2.1329
2.1373	2.1414	2.1454	2.1494	2.1531	2.1568	2.1604
2.1639	2.1673	2.1706	2.1739	2.1771	2.1802	2.1832
2.1862	2.1891	2.1919	2.1947	2.1975	2.2002	2.2028
2.2054	2.2080	2.2105	2.2130	2.2154	2.2178	2.2202
2.2225	2.2248	2.2270	2.2293	2.2315	2.2336	2.2358
2.2379	2.2399	2.2420	2.2440	2.2460	2.2480	2.2500
2.2519	2.2538	2.2557	2.2576	2.2594	2.2612	2.2631
2.2648	2.2666	2.2684	2.2701	2.2718	2.2735	2.2752
2.2769	2.2785	2.2802	2.2818	2.2834	2.2850	2.2866
2.2881	2.2897	2.2912	2.2928	2.2943	2.2958	2.2973
2.2987	2.3002	2.3017	2.3031	2.3045	2.3060	2.3074
2.3088	2.3102	2.3115	2.3129	2.3143	2.3156	2.3169
2.3183	2.3196	2.3209	2.3222	2.3235	2.3248	2.3261
2.3273	2.3286	2.3298	2.3311	2.3323	2.3335	2.3348
2.3360	2.3372	2.3384	2.3396	2.3408	2.3419	2.3431
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*S*****

*S***** EXISTING CONDITIONS *****

*S*****

*S COMPUTE BASIN 110.00 EXISTING CONDITIONS FROM RESIDENTIAL SUBDIVISION

COMPUTE NM HYD ID=1 HYD=110.00 DA=0.06292 SQ MI

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 TP=0.1333 RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 4.7918 CFS UNIT VOLUME = .9969 B = 526.28 P60 = 2.0100
 AREA = .001214 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .132088HR TP = .133300HR K/TP RATIO = .990905 SHAPE CONSTANT, N = 3.563124
 UNIT PEAK = 2.6234 CFS UNIT VOLUME = .9950 B = 324.91 P60 = 2.0100
 AREA = .001076 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 120.00

RUNOFF VOLUME = 1.48690 INCHES = .1816 ACRE-Feet
 PEAK DISCHARGE RATE = 5.23 CFS AT 1.500 HOURS BASIN AREA = .0023 SQ. MI.

ADD HYD ID=3 HYD=100.12 ID I=1 ID II=2
 PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 100.12

RUNOFF VOLUME = 1.40764 INCHES = 4.8956 ACRE-Feet
 PEAK DISCHARGE RATE = 100.04 CFS AT 1.633 HOURS BASIN AREA = .0652 SQ. MI.

*S COMPUTE BASIN 130.00 EXISTING CONDITIONS FROM HODGIN ELEMENTARY SCHOOL

COMPUTE NM HYD ID=4 HYD=130.00 DA=0.01647 SQ MI
 %A= 1.50 %B= 1.00 %C= 64.70 %D= 32.80
 TP=0.1333 RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 21.328 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 2.0100
 AREA = .005402 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .108989HR TP = .133300HR K/TP RATIO = .817623 SHAPE CONSTANT, N = 4.370529
 UNIT PEAK = 31.482 CFS UNIT VOLUME = 1.000 B = 379.16 P60 = 2.0100
 AREA = .011068 SQ MI IA = .35893 INCHES INF = .85500 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 130.00

RUNOFF VOLUME = 1.43498 INCHES = 1.2605 ACRE-Feet
 PEAK DISCHARGE RATE = 38.12 CFS AT 1.500 HOURS BASIN AREA = .0165 SQ. MI.

*S TOTAL EXISTING FLOW EXITING THIS SITE AT THE SAN ANDRES/HERMOSA INTERSECTION
ADD HYD ID=5 HYD=100.123 ID I=3 ID II=4
PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 100.12

RUNOFF VOLUME = 1.41315 INCHES = 6.1560 ACRE-FEET
PEAK DISCHARGE RATE = 126.57 CFS AT 1.600 HOURS BASIN AREA = .0817 SQ. MI.

*S*****
*S***** DEVELOPED CONDITIONS *****
*S*****
*S
*S 78% OF BASIN 110.00 IS UPSTREAM OF THE DELMAR AVE./MORNINGSIDE DR. INTERSECTIO
*S DIVERT APPROXIMATELY 69% OF THE BASIN 110.00 FLOW TO THE HAHN ARROYO AT THIS
*S
DIVIDE HYD ID=1 CODE= 66.89 ID=6 HYD NO= MORNINGSIDE
ID=7 HYD NO= DELMAR
PRINT HYD ID=6 CODE=1

HYDROGRAPH FROM AREA MORNINGSIDE

RUNOFF VOLUME = 1.40476 INCHES = 4.2561 ACRE-FEET
PEAK DISCHARGE RATE = 66.89 CFS AT 1.533 HOURS BASIN AREA = .0568 SQ. MI.

PRINT HYD ID=7 CODE=1

HYDROGRAPH FROM AREA DELMAR

RUNOFF VOLUME = 1.40476 INCHES = .4579 ACRE-FEET
PEAK DISCHARGE RATE = 29.95 CFS AT 1.633 HOURS BASIN AREA = .0061 SQ. MI.

ADD HYD ID=3 HYD=100.12 ID I=7 ID II=2
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 100.12

RUNOFF VOLUME = 1.42712 INCHES = .6394 ACRE-FEET
PEAK DISCHARGE RATE = 33.15 CFS AT 1.633 HOURS BASIN AREA = .0084 SQ. MI.

*S COMPUTE BASIN 130.00 DEVELOPED CONDITIONS FROM HODGIN ELEMENTARY SCHOOL
COMPUTE NM HYD ID=4 HYD=130.00 DA=0.01647 SQ MI
%A= 7.00 %B= 12.00 %C= 31.00 %D= 50.00
TP=0.1333 RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 32.512 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 2.0100
AREA = .008235 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .120739HR TP = .133300HR K/TP RATIO = .905770 SHAPE CONSTANT, N = 3.911229
UNIT PEAK = 21.573 CFS UNIT VOLUME = .9998 B = 349.21 P60 = 2.0100
AREA = .008235 SQ MI IA = .42800 INCHES INF = 1.04840 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 130.00

RUNOFF VOLUME = 1.52253 INCHES = 1.3374 ACRE-FEET
PEAK DISCHARGE RATE = 38.85 CFS AT 1.500 HOURS BASIN AREA = .0165 SQ. MI.

*S TOTAL DEVELOPED FLOW EXITING THIS SITE AT THE SAN ANDRES/HERMOSA INTERSECTION
ADD HYD ID=5 HYD=100.123 ID I=3 ID II=4
PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 100.12

RUNOFF VOLUME = 1.49029 INCHES = 1.9768 ACRE-FEET
PEAK DISCHARGE RATE = 59.95 CFS AT 1.600 HOURS BASIN AREA = .0249 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 07:48:18



Appendix B

Street and Inlet Capacity Calculations

HERMOSA STREET CAPACITY

Worksheet for Irregular Channel

Project Description	
Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	STREET CAPACITY
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

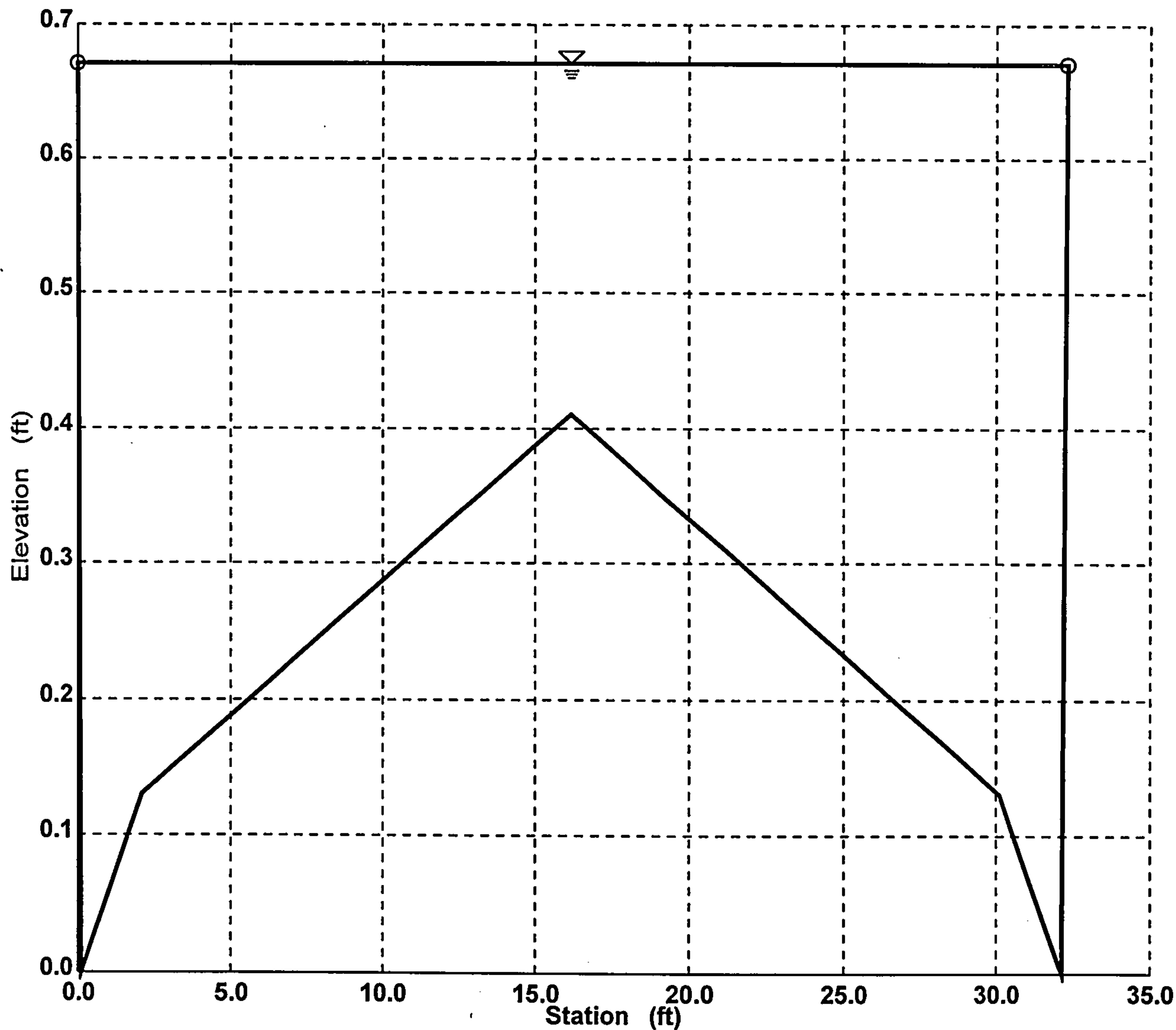
Input Data					
Channel Slope		0.004500 ft/ft			
Water Surface Elevation		0.67 ft			
Elevation range: 0.00 ft to 0.67 ft.					
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness	
0.00	0.67	0.00	32.34	0.017	
0.17	0.00				
2.17	0.13				
16.17	0.41				
30.17	0.13				
32.17	0.00				
32.34	0.67				

Results		
Wtd. Mannings Coefficient	0.017	
<u>Discharge</u>	<u>44.53</u>	<u>cfs</u>
Flow Area	13.73	ft ²
Wetted Perimeter	33.40	ft
Top Width	32.34	ft
<u>Height</u>	<u>0.67</u>	<u>ft</u>
Critical Depth	0.63	ft
Critical Slope	0.006007	ft/ft
Velocity	3.24	ft/s
Velocity Head	0.16	ft
<u>Specific Energy</u>	<u>0.83</u>	<u>ft</u>
Froude Number	0.88	
Flow is subcritical.		

HERMOSA STREET CAPACITY
Cross Section for Irregular Channel

Project Description	
Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	STREET CAPACITY
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data	
Wtd. Mannings Coefficient	0.017
Channel Slope	0.004500 ft/ft
Water Surface Elevation	0.67 ft
Discharge	44.53 cfs



SAN ANDRES STREET CAPACITY

Worksheet for Irregular Channel

Project Description	
Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	SANANDRES
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	0.011800 ft/ft
Water Surface Elevation	0.63 ft
Elevation range: 0.00 ft to 0.67 ft.	
Station (ft)	Elevation (ft)
0.00	0.67
0.17	0.00
2.17	0.13
16.17	0.41
30.17	0.13
32.17	0.00
32.34	0.67

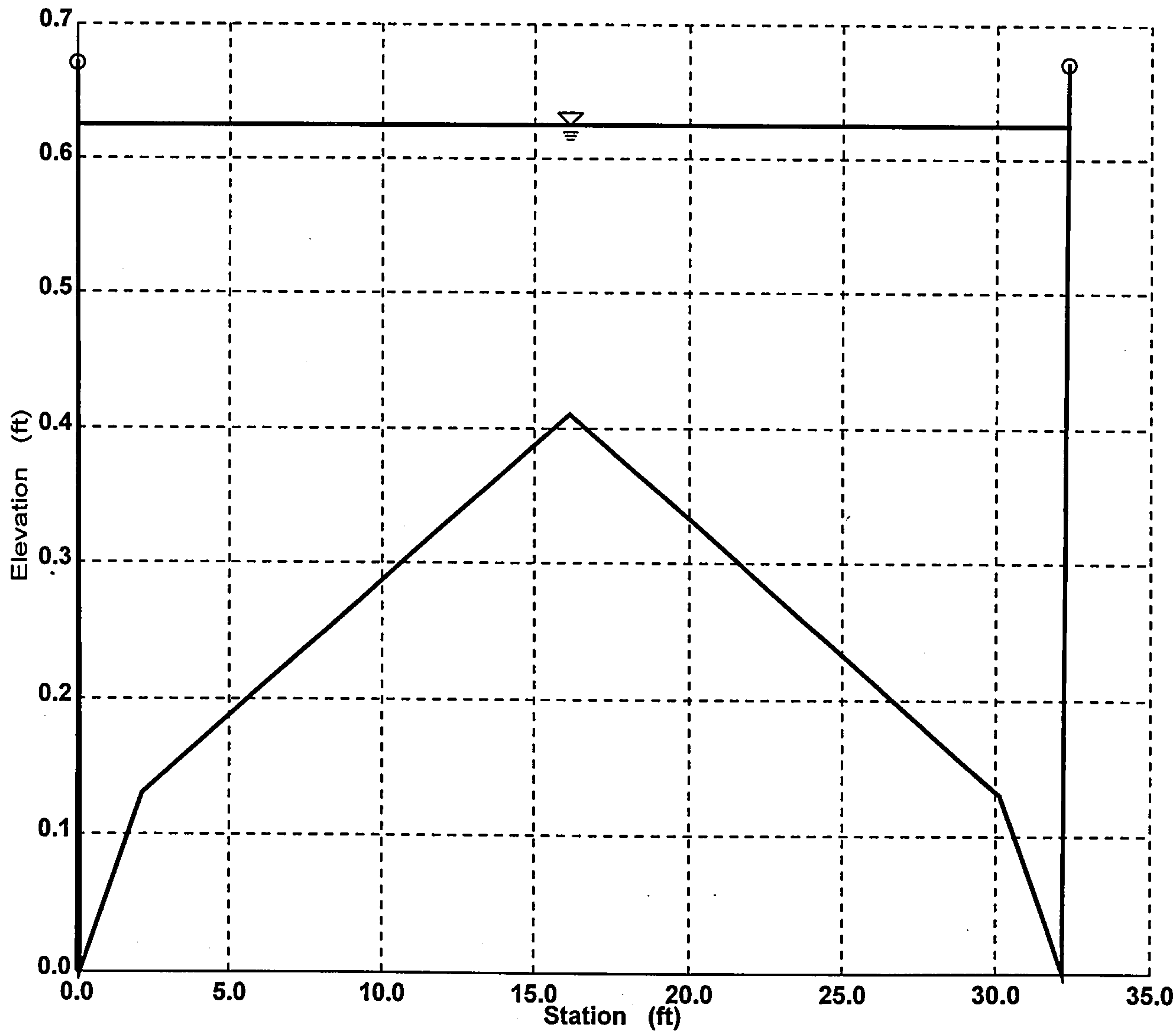
Start Station	End Station	Roughness
0.00	32.34	0.017

Results	
Wtd. Mannings Coefficient	0.017
Discharge	59.95 cfs
Flow Area	12.28 ft ²
Wetted Perimeter	33.30 ft
Top Width	32.32 ft
Height	0.63 ft
Critical Depth	0.72 ft
Critical Slope	0.005659 ft/ft
Velocity	4.88 ft/s
Velocity Head	0.37 ft
Specific Energy	1.00 ft
Froude Number	1.40
Flow is supercritical.	

SAN ANDRES STREET CAPACITY
Cross Section for Irregular Channel

Project Description	
Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	SANANDRES
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data	
Wtd. Mannings Coefficient	0.017
Channel Slope	0.011800 ft/ft
Water Surface Elevation	0.63 ft
Discharge	59.95 cfs



FULL RESIDENTIAL DEVELOPMENT

Worksheet for Irregular Channel

Project Description	
Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	FULL RESIDENTIAL DRAINAGE TO HERMOSA
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope		0.004500 ft/ft		
Elevation range: 0.00 ft to 0.67 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	0.67	0.00	32.34	0.017
0.17	0.00			
2.17	0.13			
16.17	0.41			
30.17	0.13			
32.17	0.00			
32.34	0.67			
Discharge	96.84	cfs		

Results		
Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	0.93	ft
Flow Area	22.02	ft ²
Wetted Perimeter	33.91	ft
Top Width	32.34	ft
Height	0.93	ft
Critical Depth	0.90	ft
Critical Slope	0.005159	ft/ft
Velocity	4.40	ft/s
Velocity Head	0.30	ft
Specific Energy	1.23	ft
Froude Number	0.94	
Flow is subcritical.		
Water elevation exceeds lowest end station by 0.26 ft.		

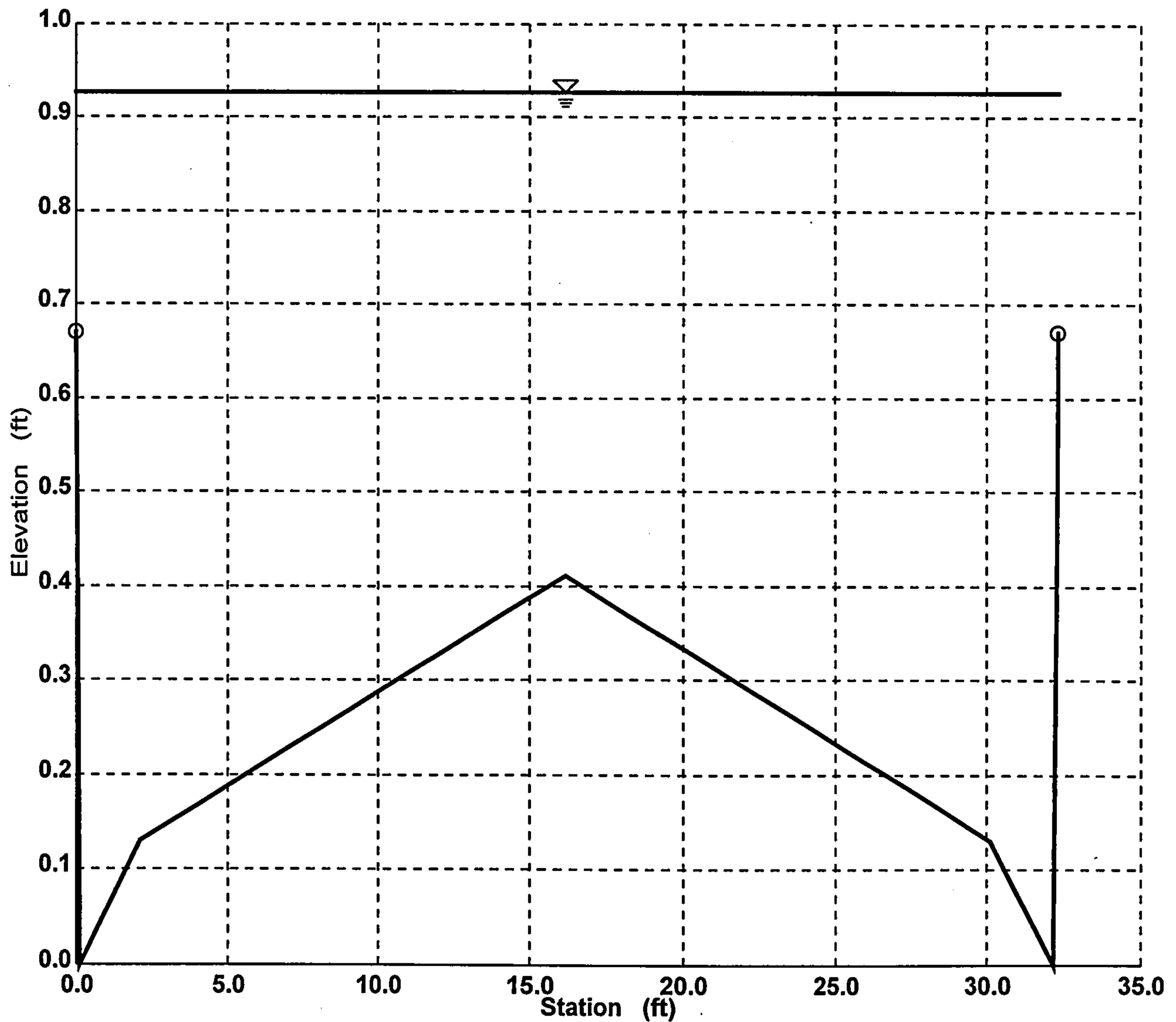
FULL RESIDENTIAL DEVELOPMENT
Cross Section for Irregular Channel

Project Description

Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	FULL RESIDENTIAL DRAINAGE TO HERMOSA
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data

Wtd. Mannings Coefficient	0.017
Channel Slope	0.004500 ft/ft
Water Surface Elevation	0.93 ft
Discharge	96.84 cfs



DELMAR DOWNSTREAM OF MORNINGSIDE

Worksheet for Irregular Channel

Project Description	
Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	DELMAR
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

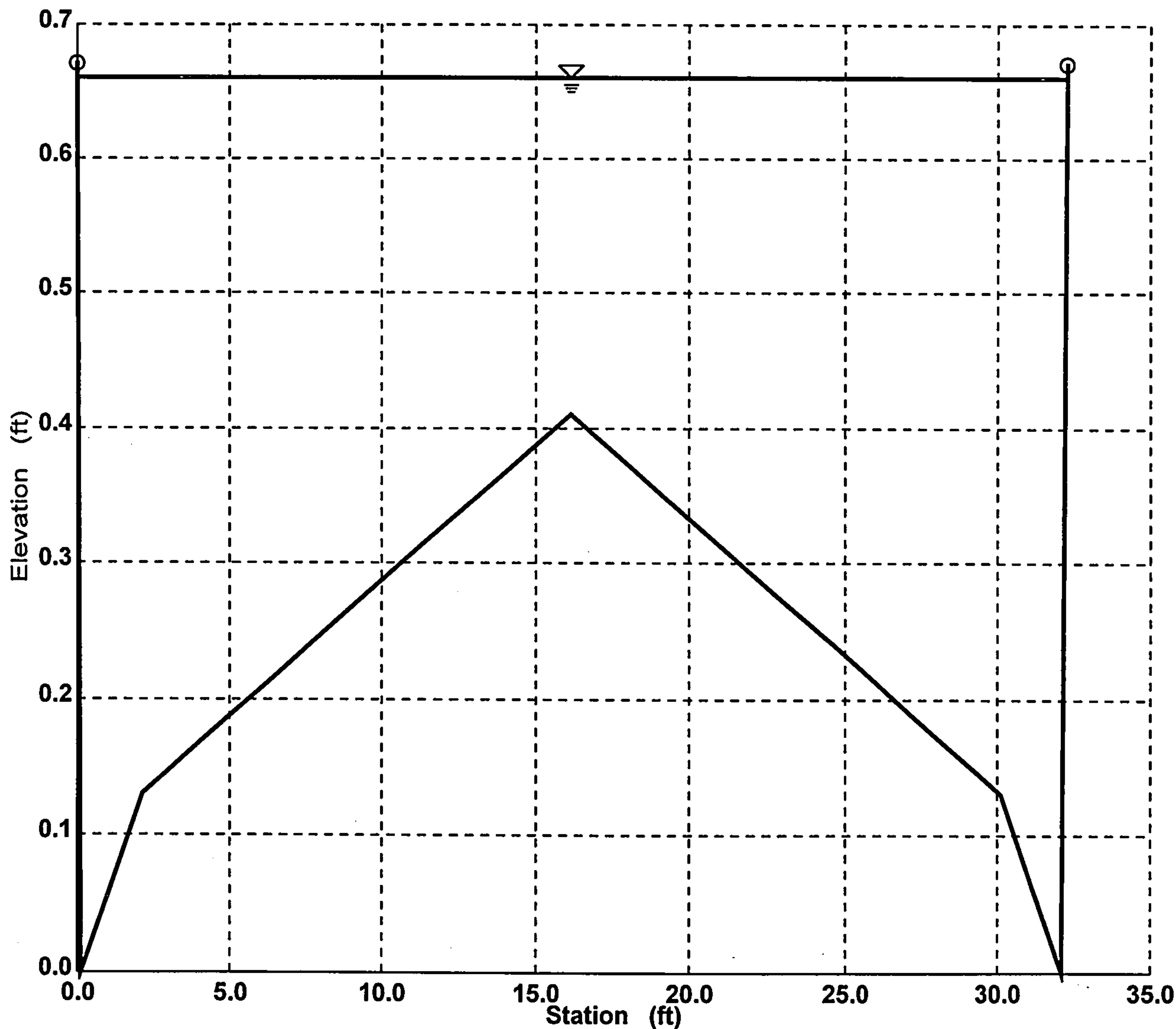
Input Data				
Channel Slope		0.014000 ft/ft		
Elevation range: 0.00 ft to 0.67 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	0.67	0.00	32.34	0.017
0.17	0.00			
2.17	0.13			
16.17	0.41			
30.17	0.13			
32.17	0.00			
32.34	0.67			
Discharge	75.53	cfs		

Results		
Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	0.66	ft
Flow Area	13.41	ft ²
Wetted Perimeter	33.38	ft
Top Width	32.33	ft
<u>Height</u>	<u>0.66</u>	<u>ft</u>
Critical Depth	0.80	ft
Critical Slope	0.005409	ft/ft
Velocity	5.63	ft/s
Velocity Head	0.49	ft
<u>Specific Energy</u>	<u>1.15</u>	<u>ft</u>
Froude Number	1.54	
Flow is supercritical.		

DELMAR DOWNSTREAM OF MORNINGSIDE
Cross Section for Irregular Channel

Project Description	
Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	DELMAR
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.017
Channel Slope	0.014000 ft/ft
Water Surface Elevation	0.66 ft
Discharge	75.53 cfs



DELMAR UPSTREAM OF MORNINGSIDE (INLET#1)

Worksheet for Irregular Channel

Project Description

Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	DELMAR
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data

Channel Slope 0.025000 ft/ft

Elevation range: 0.00 ft to 0.67 ft.

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	0.67	0.00	32.34	0.017
0.17	0.00			
2.17	0.13			
16.17	0.41			
30.17	0.13			
32.17	0.00			
32.34	0.67			

Discharge 37.76 cfs

Results

Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	0.47	ft
Flow Area	7.40	ft ²
Wetted Perimeter	32.99	ft
Top Width	32.24	ft
Height	0.47	ft
Critical Depth	0.59	ft
Critical Slope	0.006214	ft/ft
Velocity	5.10	ft/s
Velocity Head	0.40	ft
Specific Energy	0.88	ft
Froude Number	1.88	
Flow is supercritical.		

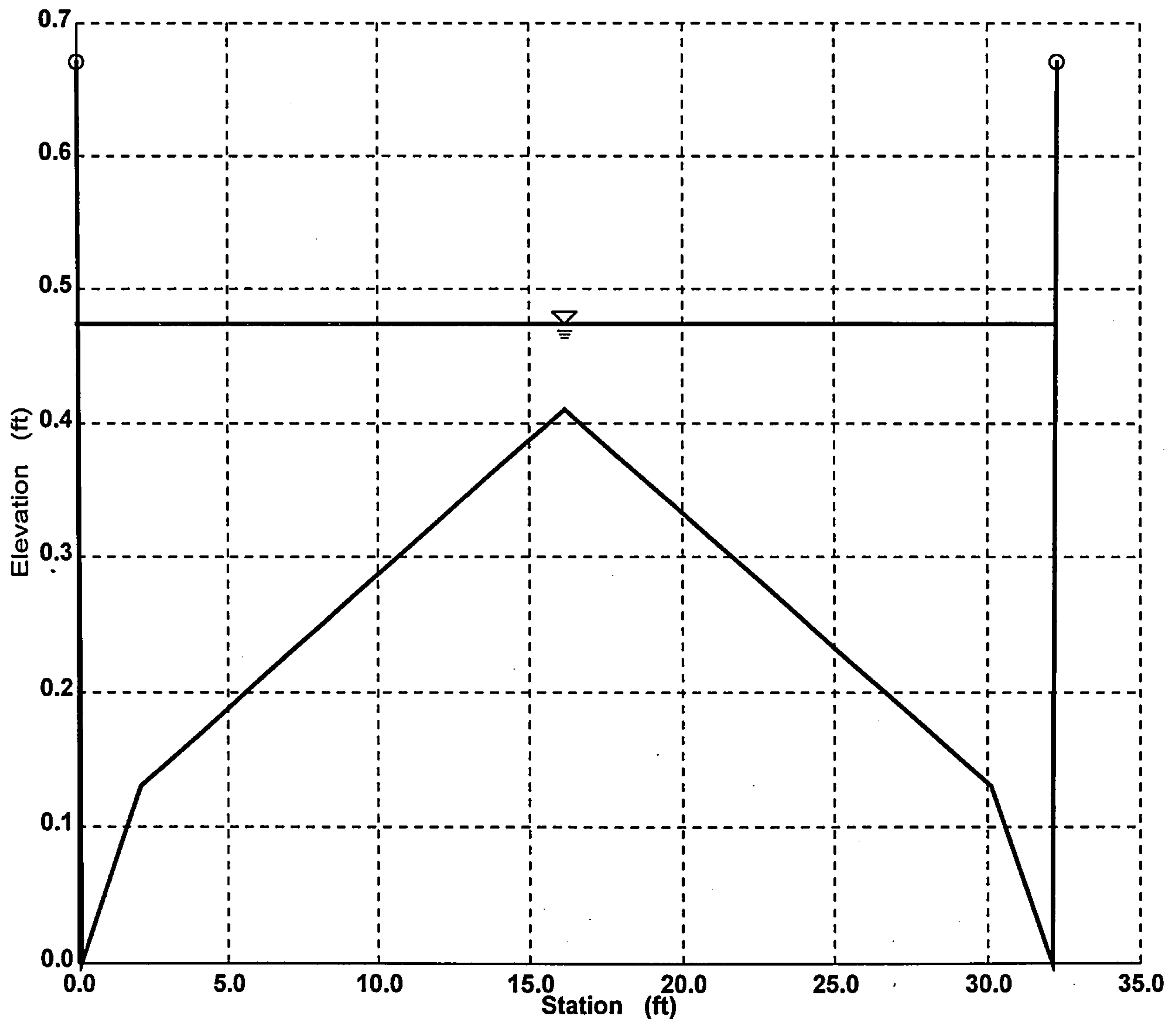
DELMAR UPSTREAM OF MORNINGSIDE (INLET#1)
Cross Section for Irregular Channel

Project Description

Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	DELMAR
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

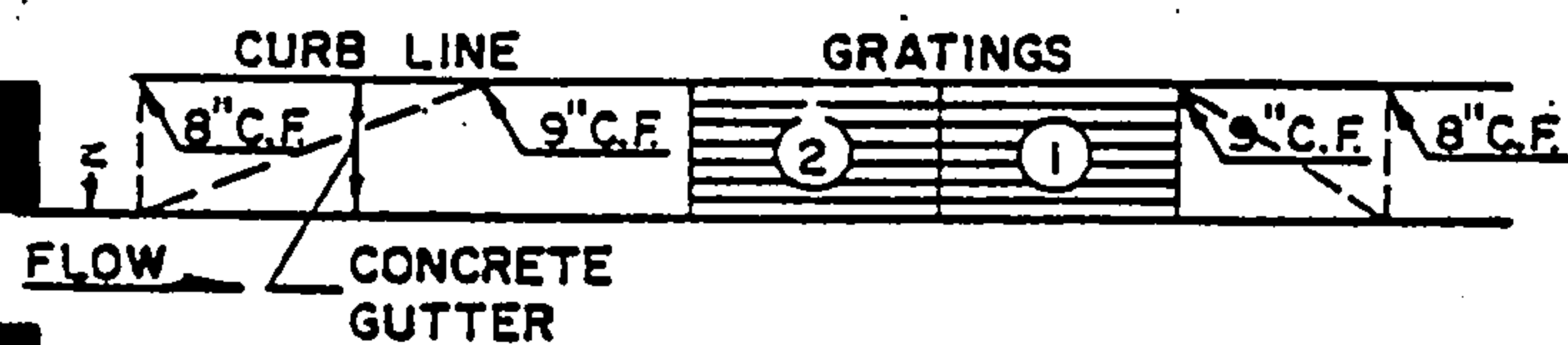
Section Data

Wtd. Mannings Coefficient	0.017
Channel Slope	0.025000 ft/ft
Water Surface Elevation	0.47 ft
Discharge	37.76 cfs

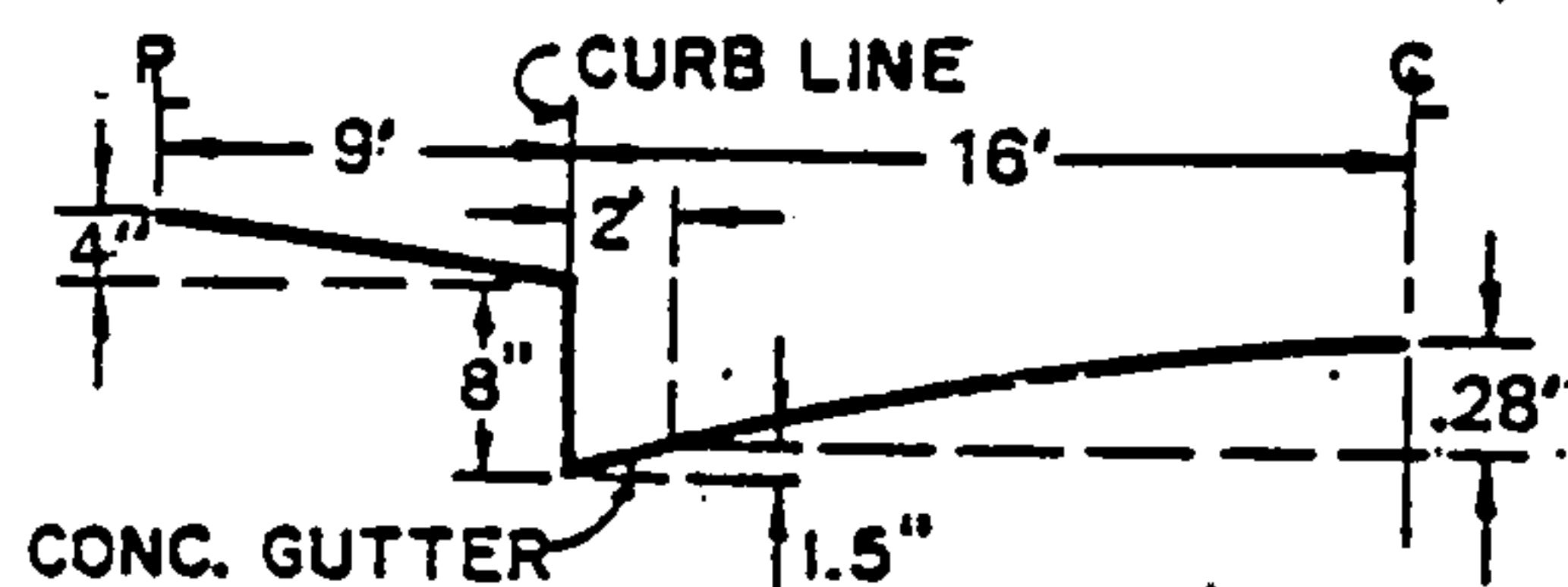
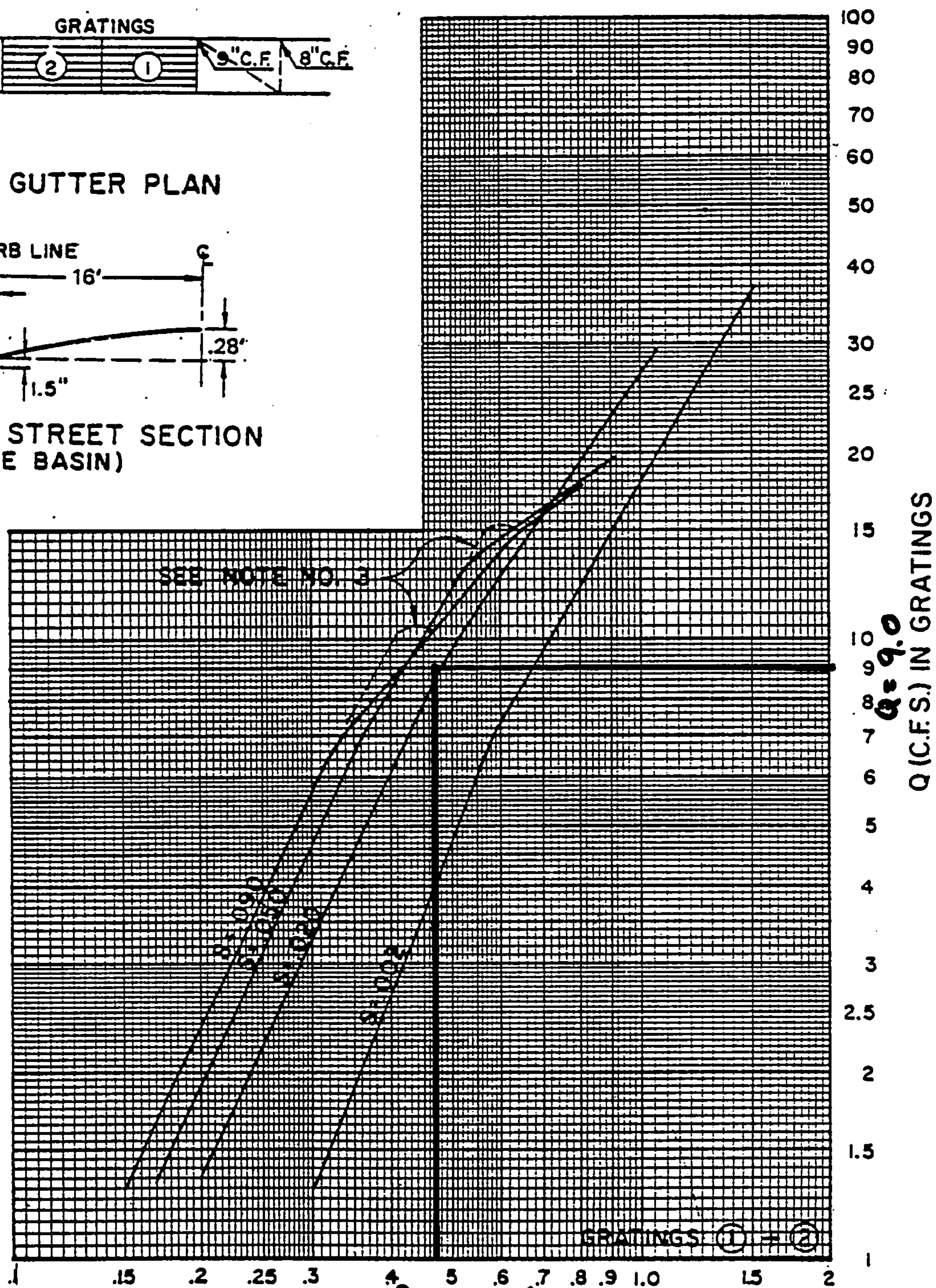


GRATING CAPACITIES FOR TYPE DOUBLE

"C," AND "D"



GRATING & GUTTER PLAN

TYPICAL HALF STREET SECTION
(ABOVE BASIN)

D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

Delmar Upstream Inlets #1

At $s = 2.5\%$ and $D = 0.47$; $Q_{intercepted} = 9.0 \text{ cfs}$

DELMAR UPSTREAM OF MORNINGSIDE (INLET#2)

Worksheet for Irregular Channel

Project Description	
Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	DELMAR
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

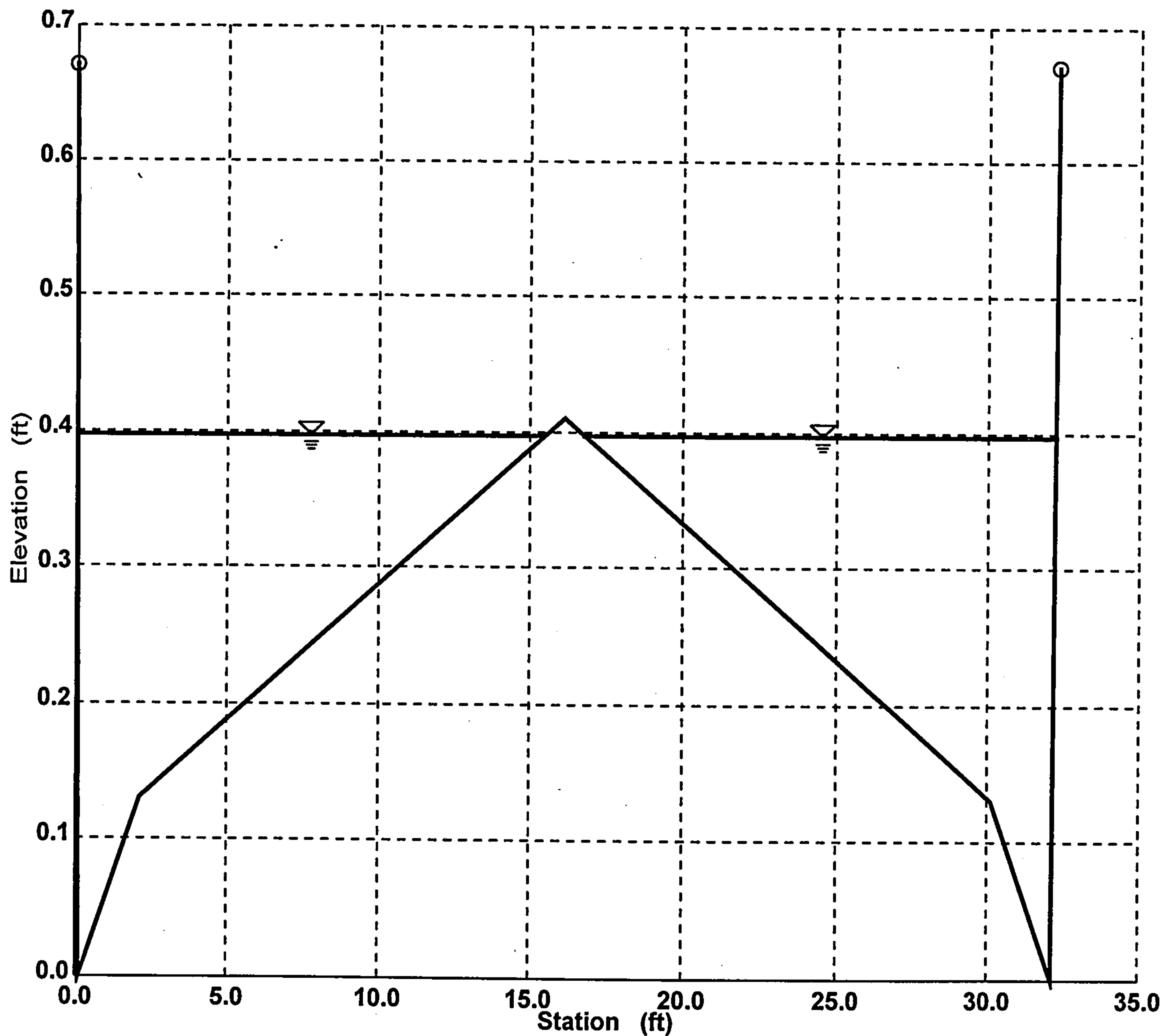
Input Data				
Channel Slope		0.025000 ft/ft		
Elevation range: 0.00 ft to 0.67 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	0.67	0.00	32.34	0.017
0.17	0.00			
2.17	0.13			
16.17	0.41			
30.17	0.13			
32.17	0.00			
32.34	0.67			
Discharge	19.76	cfs		

Results		
Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	0.40	ft
Flow Area	4.93	ft ²
Wetted Perimeter	31.51	ft
Top Width	30.88	ft
Height	0.40	ft
Critical Depth	0.47	ft
Critical Slope	0.007120	ft/ft
Velocity	4.01	ft/s
Velocity Head	0.25	ft
Specific Energy	0.65	ft
Froude Number	1.77	
Flow is supercritical.		
Flow is divided.		

DELMAR UPSTREAM OF MORNINGSIDE (INLET#2) Cross Section for Irregular Channel

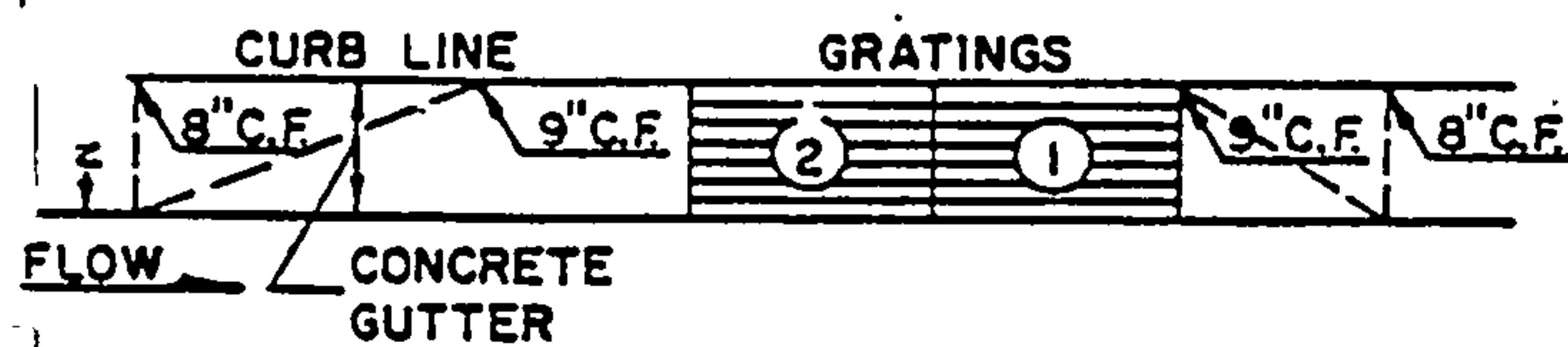
Project Description	
Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	DELMAR
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data		
Wtd. Mannings Coefficient	0.017	
Channel Slope	0.025000	ft/ft
Water Surface Elevation	0.40	ft
Discharge	19.76	cfs

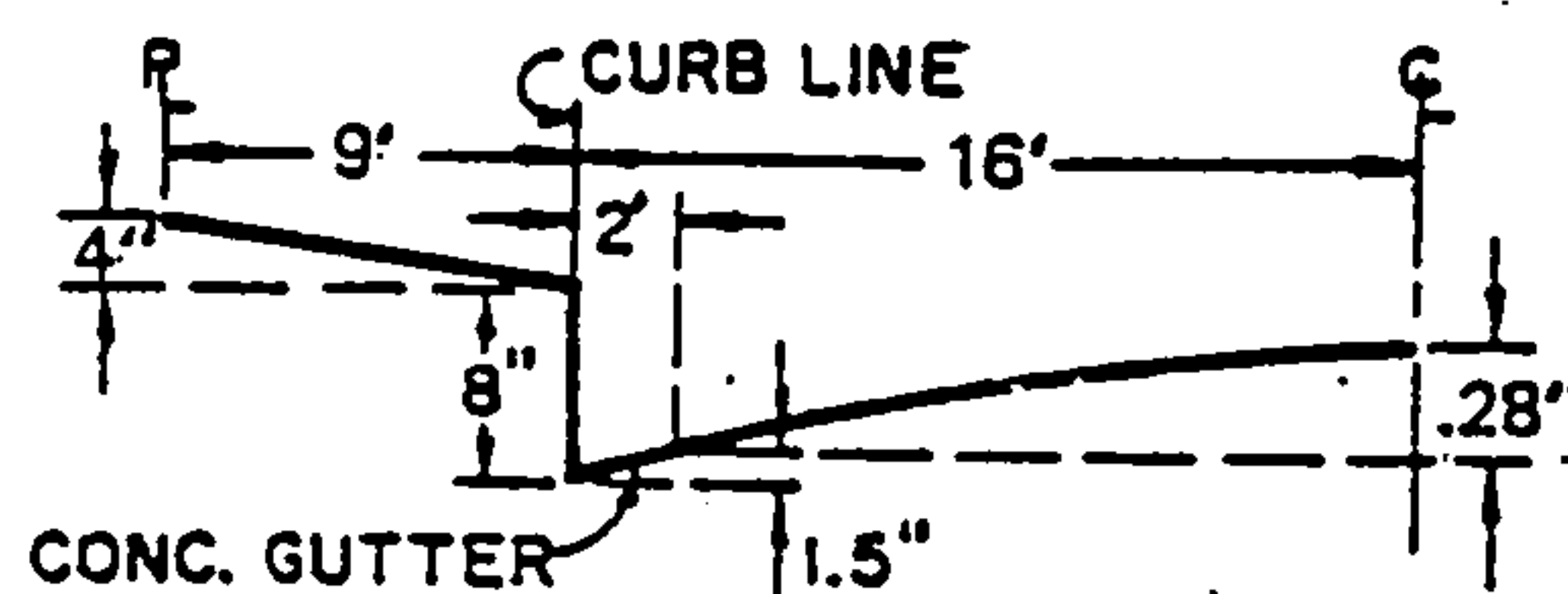
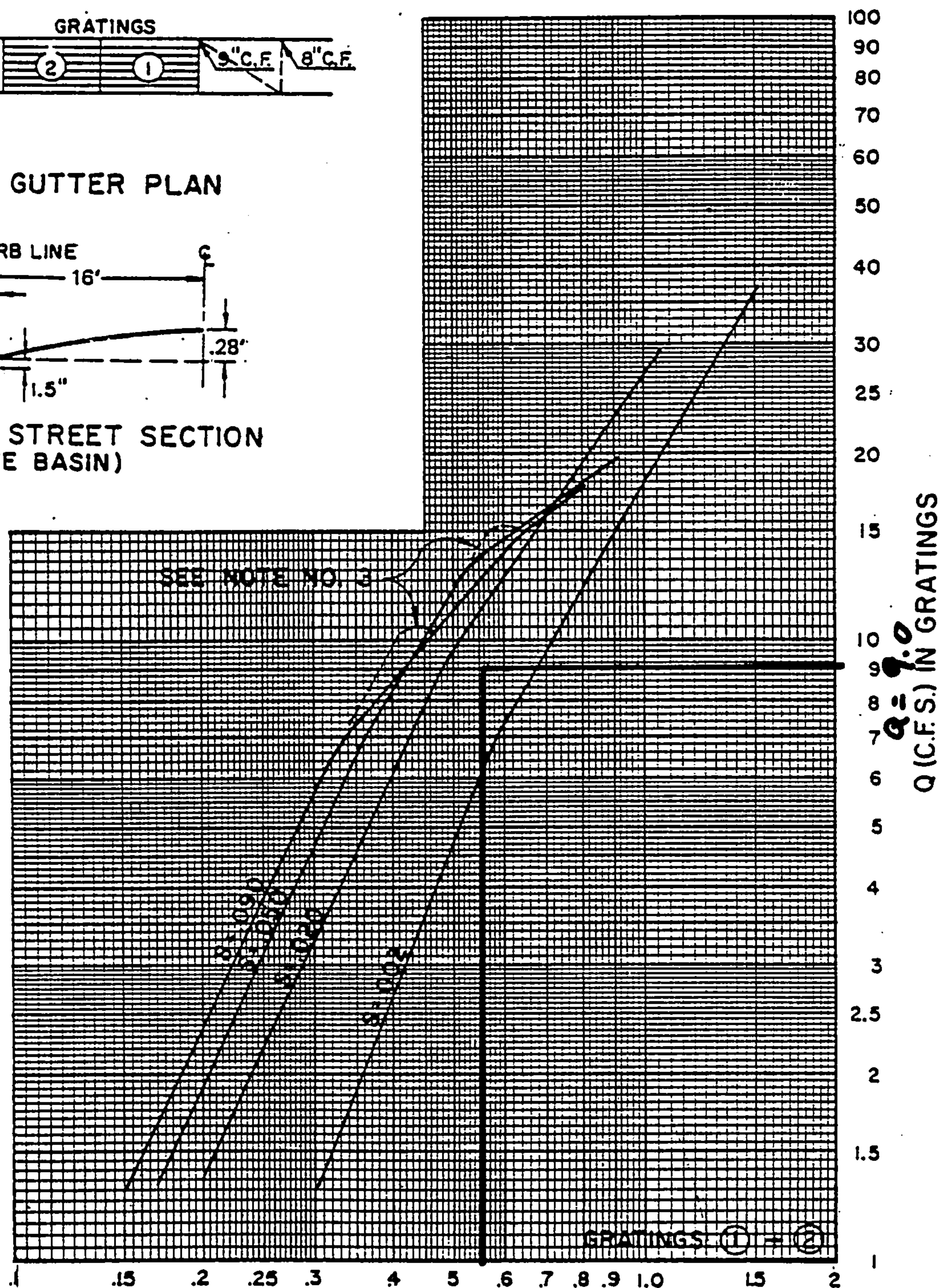


GRATING CAPACITIES FOR TYPE DOUBLE

"C," AND "D"



GRATING & GUTTER PLAN

TYPICAL HALF STREET SECTION
(ABOVE BASIN)

$D = 0.55'$
 $D = \text{DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE}$

Morningside Upstream Inlets #1

At $s = 1.0\%$ and $D = 0.55'$, $Q_{\text{intercepted}} = 9.0 \text{ cfs}$

MORNINGSIDE UPSTREAM OF DELMAR (INLET#1)
Worksheet for Irregular Channel

Project Description	
Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	MORNINGSIDE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope		0.010000 ft/ft		
Elevation range: 0.00 ft to 0.67 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	0.67	0.00	32.34	0.017
0.17	0.00			
2.17	0.13			
16.17	0.41			
30.17	0.13			
32.17	0.00			
32.34	0.67			
Discharge	37.76	cfs		

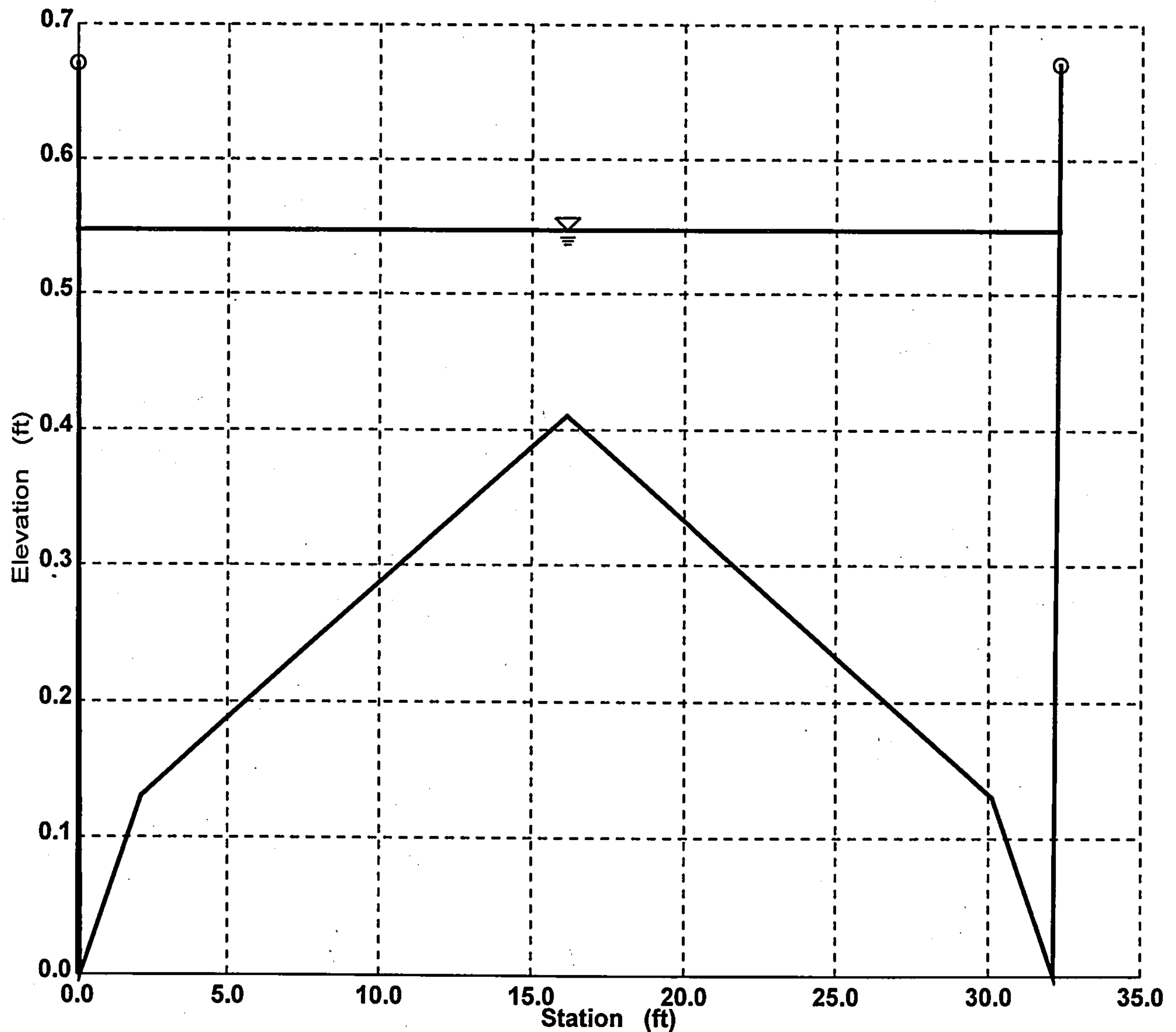
Results		
Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	0.55	ft
Flow Area	9.76	ft ²
Wetted Perimeter	33.14	ft
Top Width	32.28	ft
Height	0.55	ft
Critical Depth	0.59	ft
Critical Slope	0.006215	ft/ft
Velocity	3.87	ft/s
Velocity Head	0.23	ft
Specific Energy	0.78	ft
Froude Number	1.24	
Flow is supercritical.		

MORNINGSIDE UPSTREAM OF DELMAR (INLET#1)

Cross Section for Irregular Channel

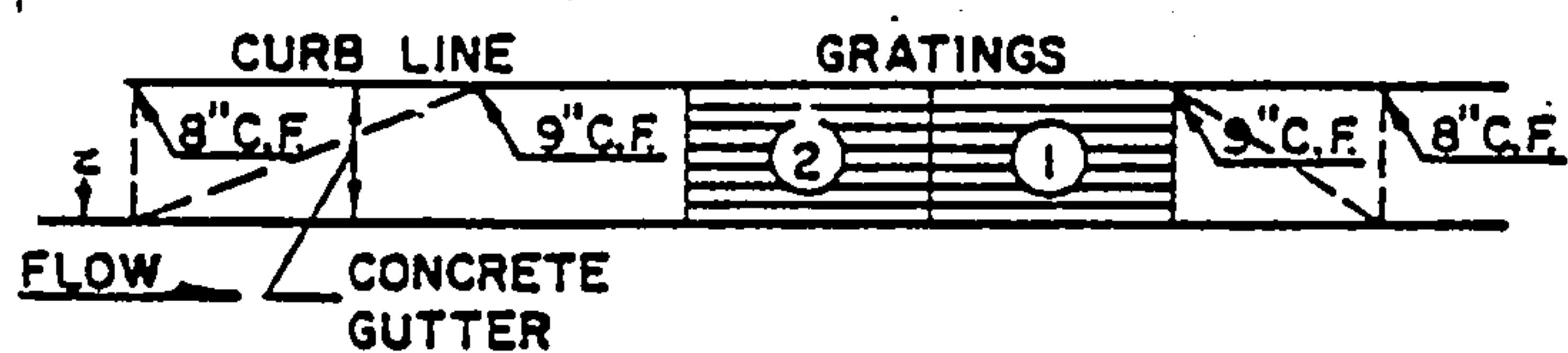
Project Description	
Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	MORNINGSIDE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.017
Channel Slope	0.010000 ft/ft
Water Surface Elevation	0.55 ft
Discharge	37.76 cfs

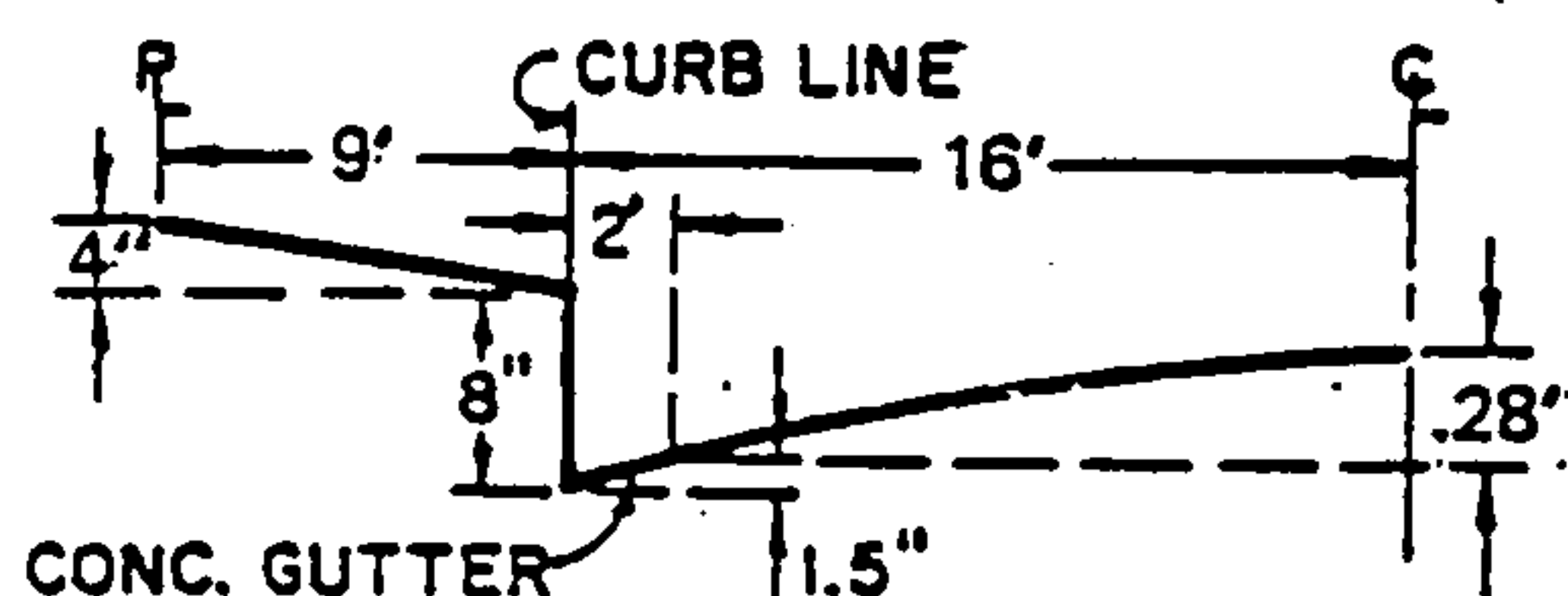
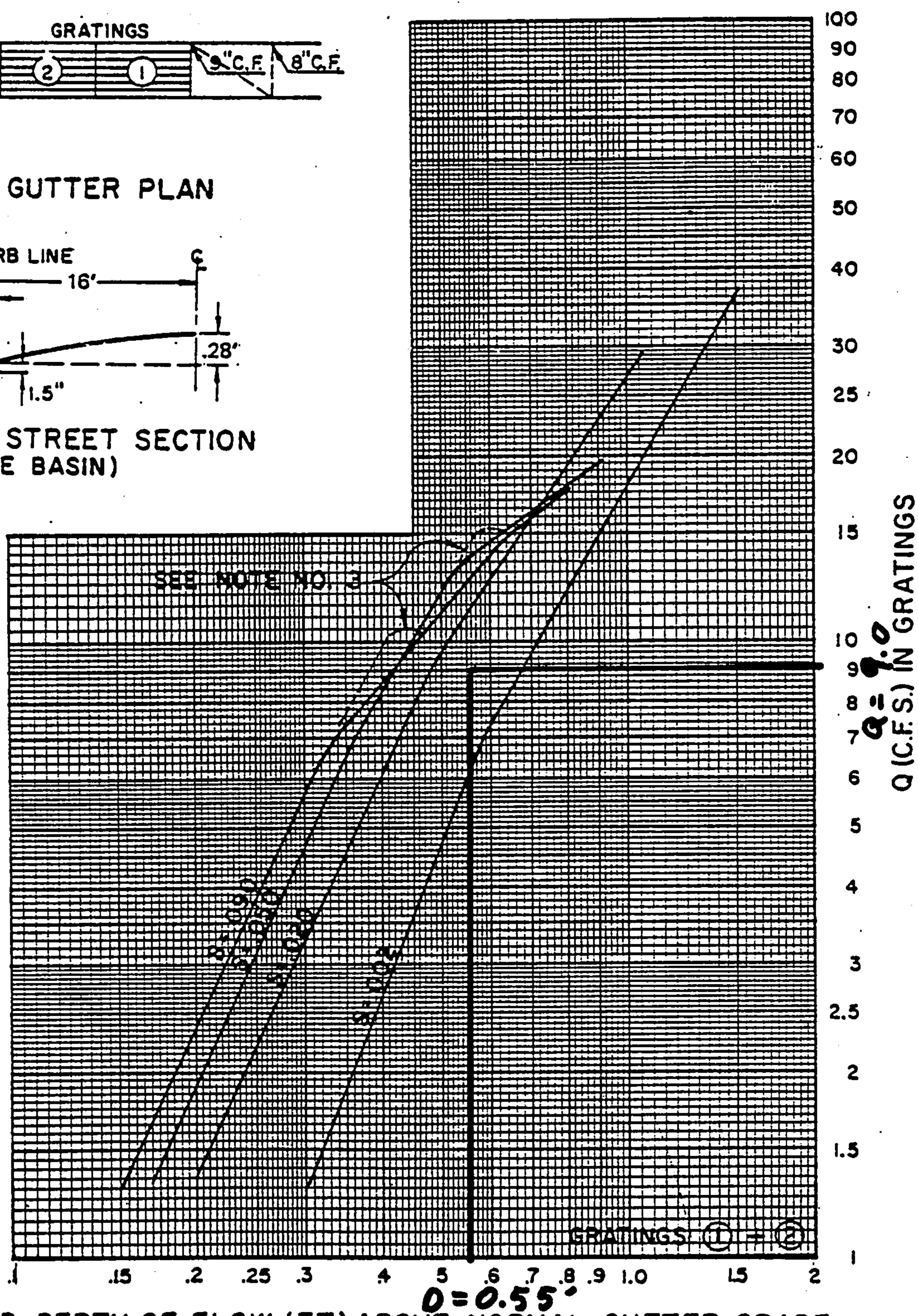


GRATING CAPACITIES FOR TYPE DOUBLE

"C," AND "D"



GRATING & GUTTER PLAN

TYPICAL HALF STREET SECTION
(ABOVE BASIN)

D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

Morningside Upstream Inlets #1

At $s = 1.0\%$ and $D = 0.55'$, $Q_{intercepted} = 9.0 \text{ cfs}$

MORNINGSIDE UPSTREAM OF DELMAR (INLET#2)
Worksheet for Irregular Channel

Project Description	
Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	MORNINGSIDE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope		0.010000 ft/ft		
Elevation range: 0.00 ft to 0.67 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	0.67	0.00	32.34	0.017
0.17	0.00			
2.17	0.13			
16.17	0.41			
30.17	0.13			
32.17	0.00			
32.34	0.67			
Discharge	19.76	cfs		

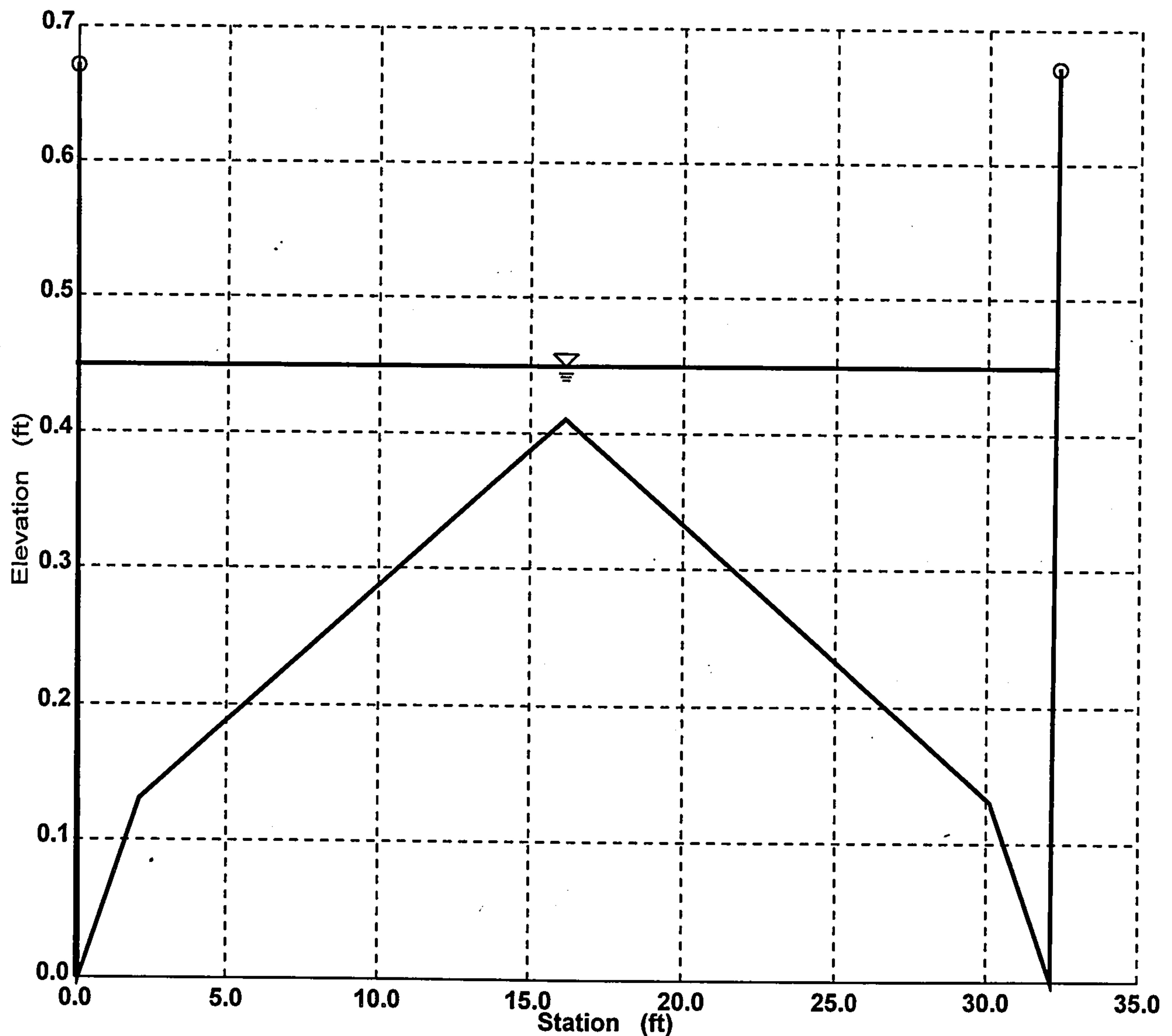
Results		
Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	0.45	ft
Flow Area	6.60	ft ²
Wetted Perimeter	32.94	ft
Top Width	32.23	ft
Height	0.45	ft
Critical Depth	0.47	ft
Critical Slope	0.007119	ft/ft
Velocity	2.99	ft/s
Velocity Head	0.14	ft
Specific Energy	0.59	ft
Froude Number	1.17	
Flow is supercritical.		

MORNINGSIDE UPSTREAM OF DELMAR (INLET#2)

Cross Section for Irregular Channel

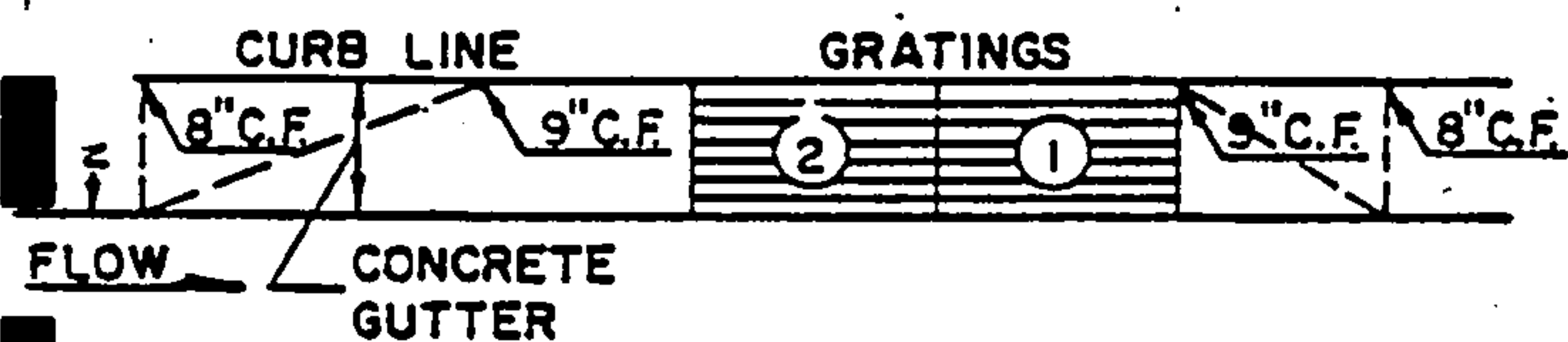
Project Description	
Project File	g:\w01\169\calcs\streetca.fm2
Worksheet	MORNINGSIDE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.017
Channel Slope	0.010000 ft/ft
Water Surface Elevation	0.45 ft
Discharge	19.76 cfs

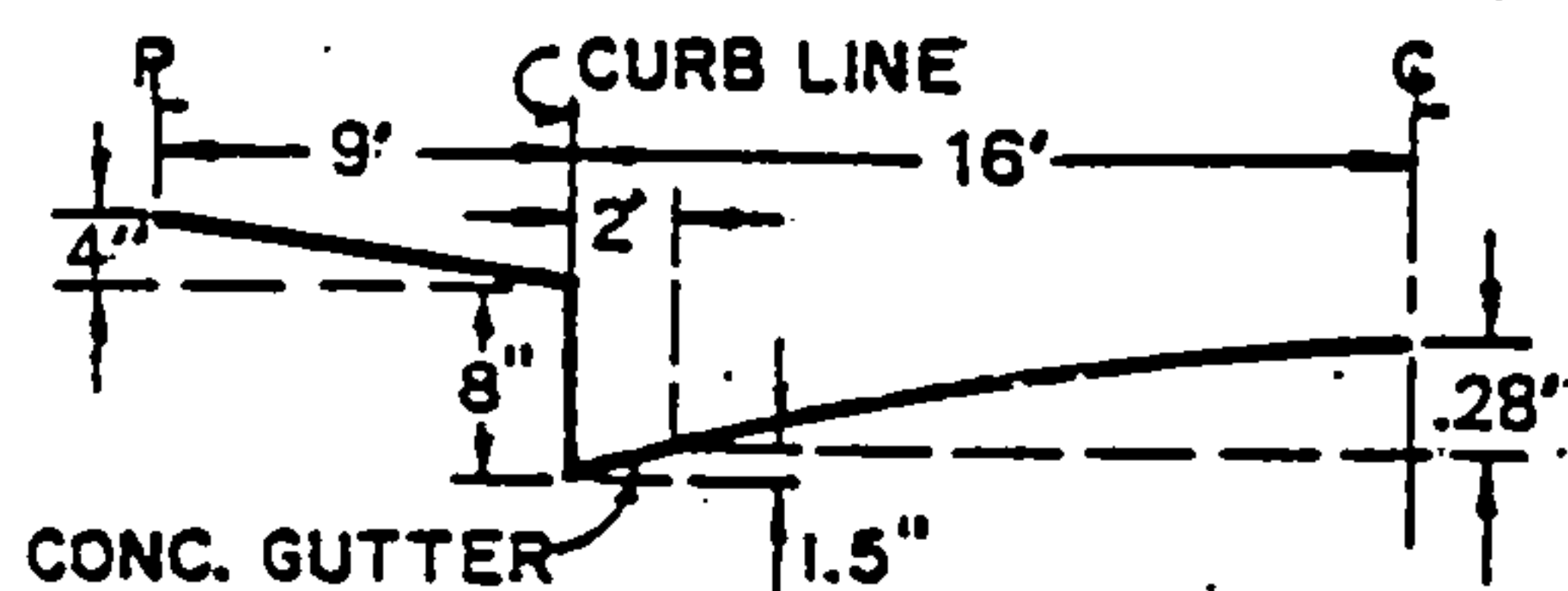
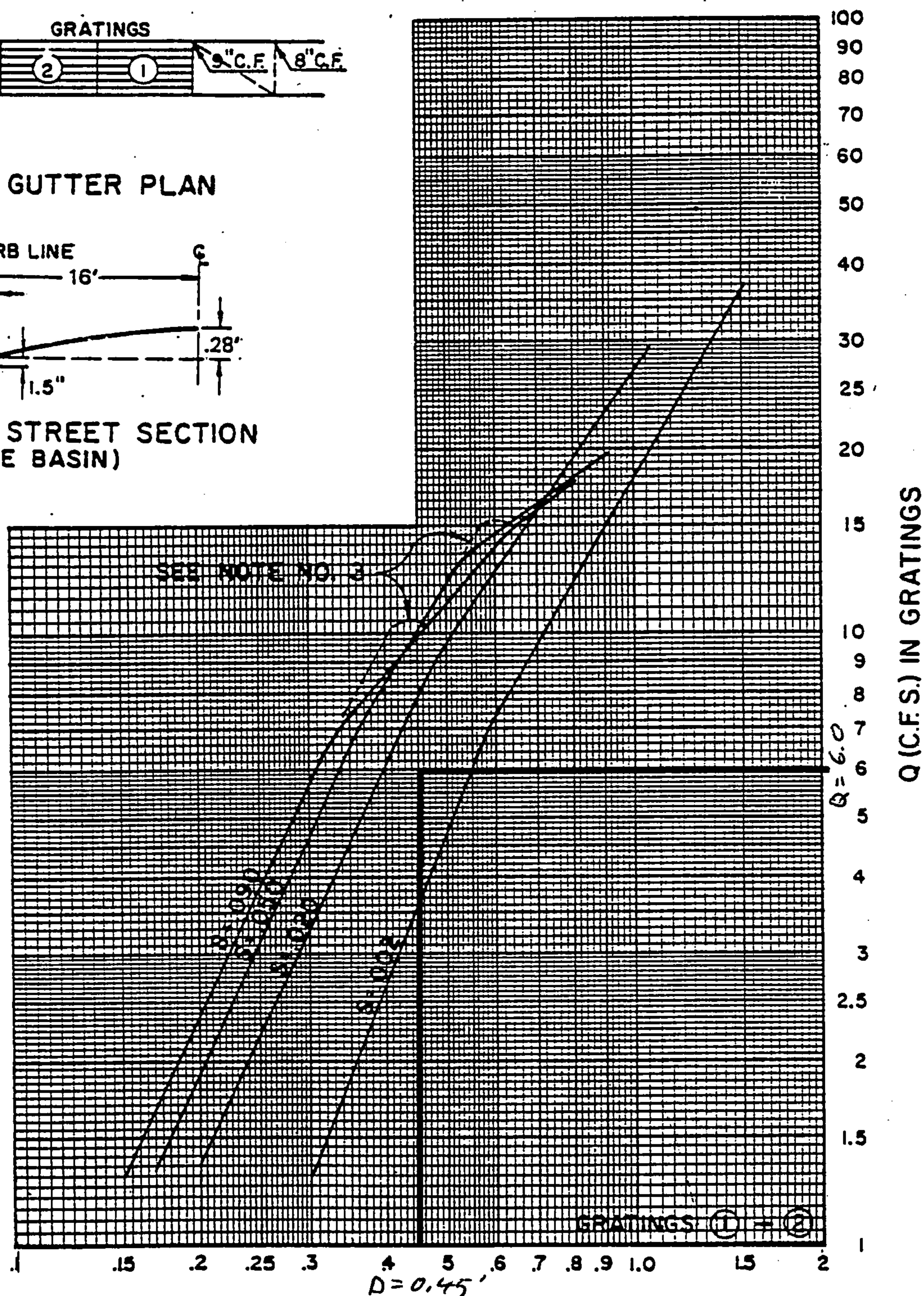


GRATING CAPACITIES FOR TYPE DOUBLE

"C," AND "D"



GRATING & GUTTER PLAN

TYPICAL HALF STREET SECTION
(ABOVE BASIN)

D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

*Morningside Downstream Inlets #2**At 1.0 % slope and D = 0.45', Qintercepted = 6.0 cfs*



Appendix C

AMDS Reference Material

ALBUQUERQUE MASTER DRAINAGE STUDY

1981 Cost estimate for old hydrology

System 359-01D, Sheets G-16, G-17

Construct 30" RCP on San Andres Drive from 380' east of Carlisle Boulevard to Carlisle Boulevard, then on Carlisle Boulevard from San Andres Avenue to the Hahn Arroyo.

This system will eliminate flooding at Hermosa Street and San Andres Avenue.
\$115,500.00.

System 361-01D, Sheet J-19

Construct 30" RCP on Wyoming Boulevard from Indian School Road to the Embudo Arroyo.

This system will dry the intersection of Indian School Road and Wyoming Boulevard from the 10-year storm. \$183,000.00.

AREA 7

System 318-01A, Sheets J-20, J-21

Construct 36" RCP on Aspen Avenue from Mary Ellen Street to Eubank Boulevard, then on Eubank Boulevard from Aspen Avenue to Hannett Avenue.

Parallel 27" with 48" RCP on Eubank Boulevard from Hannett Avenue to McKnight Avenue, then on McKnight Avenue from Eubank Boulevard to the Embudo Arroyo.

This system will eliminate flooding on Mary Ellen Street at Aspen Avenue, on Eubank Boulevard from Constitution Avenue to Indian School Road, on Hannett Avenue from Eubank Boulevard to Moon Street and on McKnight Avenue from Eubank Boulevard to the Embudo Arroyo at Moon Street. \$828,500.00.

System 320-01A, Sheets J-21, K-21

Construct 48" RCP on Morris Street from Haines Avenue to Love Avenue.

Construct 54" RCP on Morris Street from Love Avenue to Lomas Boulevard.

Construct 60" RCP on Hotel Circle from Lomas Boulevard to the I-40 drainage channel.

Eubank SD
Built

Location	From	To
LOUISIANA BLVD.	CONACHE RD.	NORTH HAHN ARROYO
TOPPE PL. & EASEMENT	930' W. OF SAN PEDRO DR.	GRANT LINE DITCH
ALTA MONTE AVE.	CARDENAS DR.	PALOMAS DR.
PALOMAS DR.	ALTA MONTE AVE.	AZTEC RD.
AZTEC RD.	ALVARADO DR.	LA VETA DR.
AZTEC RD.	PALOMAS DR.	SAN HATED BLVD.
CONACHE RD.	LA VETA DR.	SAN HATED BLVD.
SAN HATED BLVD.	AZTEC RD.	HAHN ARROYO
PROSPECT AVE.	PALOMAS DR.	HADEIRA DR.
CUTLER AVE.	LA VETA DR.	HADEIRA DR.
HADEIRA DR.	PROSPECT AVE.	CUTLER AVE.
HADEIRA DR.	CUTLER AVE.	I-40 CHANNEL
INDIAN SCHOOL RD.	1,000' E. OF LOUISIANA BLVD.	I-40 CHANNEL AT SAN PEDRO DR.
WINROCK CENTER	W. ENTRANCE TO WINROCK CENTER	DRAINAGE CHANNEL CONNECTING TO I-40 CHANNEL
MONTGOMERY BLVD.	PENNSYLVANIA ST. 380' E. OF CARLISLE BLVD.	HAHN ARROYO
SAN ANDRES DR.	SAN ANDRES DR.	CARLISLE BLVD.
CARLISLE BLVD.	HAHN ARROYO	HAHN ARROYO
EUBANK BLVD.	CONACHE RD.	40' N. OF MESA ARRIBA AVE.
EUBANK BLVD.	40' N. OF MESA ARRIBA AVE.	CANDELARIA RD.
EUBANK BLVD.	CANDELARIA RD.	MEHAUL BLVD.
EUBANK BLVD.	MEHAUL BLVD.	EMBUDO ARROYO

Size (in.)	Length (ft.)	Slope (ft./ft.)	Design Capacity (c.f.s.)	Map	Comment	Improvement System No.
42	1100	.010	87	G-18	CONSTRUCT	348-01
36	290	.0267	94	F-18	CONSTRUCT	353-01
24	1100	.006	15	G-18	CONSTRUCT	354-01
24	200	.006	15	G-18	CONSTRUCT	354-01
24	710	.006	15	G-18	CONSTRUCT	354-01
36	950	.006	45	G-18	CONSTRUCT	354-01
24	850	.006	15	G-18	CONSTRUCT	354-01
40	2000	.006	96	G-17	CONSTRUCT	354-01
24	650	.0133	23	H-18	CONSTRUCT	355-01
24	300	.0133	23	H-18	CONSTRUCT	355-01
36	650	.0133	67	H-1A	CONSTRUCT	355-01
42	650	.0133	101	H-18	CONSTRUCT	355-01
54	3,900	.006	132	J-18 J-19	PARALLEL	356-01
30	600	.020	50	J-19	CONSTRUCT	357-01
24	700	.031	35	G-19	CONSTRUCT	358-01
30	380	.0071	30	G-17	CONSTRUCT	359-01
30	570	.0071	30	G-16	CONSTRUCT	359-01
54	1,580	.011	179	G-20	CONSTRUCT	360-01
54	1,020	.011	179	G-20	PARALLEL	360-01
66	2,600	.011	305	H-20	CONSTRUCT	360-01
72	1,750	.011	305	H-20	CONSTRUCT	360-01

950 LF 30' SD in Carlisle Blvd and San Andres Dr.

TABLE 3
AREA 3
SUMMARY OF 100-YEAR FLOOD DAMAGES

Project	Acres Flooded	Miles of Streets Flooded	Intersections Flooded	Residential Structures	Commercial Structures	Public Structures	Weighted Flood Totals
360-01	53.03	5.233	66	283	33	4	3597
337-02	11.69	1.482	24	51	18	6	871
337-01	11.69	1.482	23	51	17	6	856
354-01	5.56	0.663	5	75	0	1	791
348-01	10.58	1.169	21	64	0	1	768
362-01	7.34	0.576	6	36	9	0	490
322-05	11.31	0.647	7	26	4	1	357
347-01	14.88	1.210	4	15	13	0	321
322-01	4.95	0.394	4	10	6	0	187
322-04	1.81	0.170	2	15	1	1	180
363-01	1.54	0.218	3	11	3	0	158
364-01	17.64	0.384	6	0	8	0	130
356-01	7.34	0.589	6	5	2	2	124
359-01	1.01	0.235	2	6	1	0	82
355-01	2.62	0.286	3	1	5	0	79
322-02	0.40	0.071	2	5	0	0	61
322-03	0.47	0.117	2	4	0	1	58
353-01	0.38	0.057	0	4	0	0	44
357-01	0.73	0.105	1	0	3	0	36
358-01	2.63	0.161	2	0	0	0	13
339-01	0.83	0.038	1	0	0	0	6
361-01	0	0	1	0	0	0	5
TOTALS	168.43	15.287	190	662	123	23	

AREA 7

318-01	15.45	2.002	19	119	11	0	1420
320-01	15.12	1.546	20	98	9	1	1200
377-01	5.25	0.688	9	63	0	1	691
314-04	6.00	0.915	14	30	1	0	391
325-01	2.40	0.208	4	28	0	0	303
312-01	16.40	0.733	9	0	10	0	275
310-01	4.50	0.388	7	11	0	0	151
317-01	7.10	0.474	6	5	2	0	109



