CITY OF
Albuquerque

Martin J. Chávez, Mayor

October 23,1997

Mark H. Burak PE
Burak Engineering
1512 Sagebrush Trail SE
Albuquerque, New Mexico 87103

RE: REVISED DRAINAGE PLAN FOR PARADISE VISTA SUBDIVISION (B11-D2A)
REVISION DATED 10/16/97

Dear Mr. Burak:

Based on the information provided on your October 17,1997 resubmittal, the above referenced site is approved FOR Preliminary Plat, Site Development Plan FOR Subdivision, and Grading Permit.

Please be advised that prior to Final Plat approval, the Agreement & Covenant FOR the retention pond must have been executed and filed.

Also, prior to Financial Guarantee release, Engineer Certification per the DPM checklist will be required.

If I can be of further assistance, please feel free to contact me at 924-3986.

C: Andrew Garcia
Felix Rabadi
File

Sincerely

Bernie J. Montoya CE
Associate Engineer

DRAINAGE INFORMATION SHEET

RECEIVED
OCT 17 1997
HYDROLOGY SECTION

B11024

PROJECT TITLE: Paradise Vista Subdivision ZONE ATLAS/DRNG.FILE# B-11/D2A

DRB #: EPC #: WORK ORDER #:

LEGAL DESCRIPTION: Tracts A-2B, Paradise Bluff

CITY ADDRESS: Justin / Buglo

ENGINEERING FIRM: Burak Civil Engineering Consulting CONTACT: Mark Burak
ADDRESS: 1512 Sagebrush Trail SE, ABQ, NM 87123 (505) 296-0461

OWNER: Felix Rabadi CONTACT: _____
ADDRESS: _____

ARCHITECT: _____ CONTACT: _____
ADDRESS: _____

SURVEYOR: _____ CONTACT: _____
ADDRESS: _____

CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____

TYPE OF SUBMITTAL

xxx DRAINAGE REPORT
___ DRAINAGE PLAN
___ CONCEPTUAL GRADE & DRAIN PLAN
xxx GRADING PLAN
___ EROSION CONTROL PLAN
___ ENGINEER'S CERTIFICATION
___ OTHER

PRE-DESIGN MEETING

xxx YES
___ NO
___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL
xxx PRELIMINARY PLAT APPROVAL
xxx SITE DEV. PLAN FOR SUBD. APPROVAL
___ SITE DEV. PLAN FOR BLDG. PERMIT APP.
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ FOUNDATION PERMIT APPROVAL
___ BUILDING PERMIT APPROVAL
___ CERTIFICATION OF OCCUPANCY APPROVAL
xxx GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ S.A.D. DRAINAGE REPORT
___ DRAINAGE REQUIREMENTS
___ OTHER

DATE SUBMITTED: 10/17/97

BY: Mark Burak

Mark H. Burak, P.E.

1512 Sagebrush Trail SE Albuquerque, NM 87123 (505) 296-0461 235-2256 cell 296-0467 fax

October 17, 1997

Bernie J. Montoya
Associate Engineer
City of Albuquerque Public Works
Albuquerque, NM 87110

RE: Paradise Vista Subdivision (B11-D2A) Grading and Drainage Plan

Dear Mr. Montoya:

This letter is in response to your comments dated September 16, 1997. I would like to thank you for faxing your comments to me to help speed up the revision process. Hopefully, the following will alleviate any concerns you may have so that we may gain approval and move on to DRB with this project.

OK 1. The street capacity analysis with my spreadsheet template "Hydrapak" is more detailed and versatile than the DPM street capacity graphs. The template will calculate open channel flow capacity for streets with normal crown; inverted crown; streets with medians; with sidewalks or without; and variable curb and gutter dimensions. The DPM street section analyzes only a triangle flow area for a half street. Attached are some examples of the spreadsheet printout with the corresponding DPM graph. The DPM graph consistently shows a slightly higher street capacity than the spreadsheet. Calculations and graph attached.

OK 2. After further analysis, it was found that the fully developed flow can be carried in the streets through the subdivision. The EGL in the streets is still well below the right-of-way limits. The wall openings to the easements were estimated assuming a five foot wide by one foot high box culvert calculation. These spreadsheet printouts are included with this letter. The permanent drainage easements are ten feet wide and one foot high and will flow at a depth of about 0.4-feet during the fully developed 100-year storm.

OK 3. All pad elevations have been converted to MSL.

OK 4. The typical detail for side lot swales is shown on the plan.

OK 5. A note for concrete grouting of the rundowns has been added to the plan.

6. Top of curb and flow line elevations are shown at all turnouts and along all streets at periodic intervals. Plan and profile sheets showing the roadway construction have been generated also.

7. The lot lines along the western boundary have been relocated to the north to allow proper minimal setbacks from the proposed drainage easements as shown on the plan. The detail of the easements has also been updated to show the required setbacks.

8. If offsite flows are allowed to pass through the site, the temporary storm drain inlets on Justin will not be needed. Even without the inlets, some of the existing offsite runoff will be intercepted by the sidewalk culverts. The inlets were intended solely to intercept all runoff exiting the site. Without them, approximately eight cfs will continue north on Justin primarily on the east side of the roadway.

9. The process for the Agreement and Covenant for the retention pond has been started. I do not want to proceed further with it until I am confident that all your concerns are met.

10. The drainage easements will be public and are designed as shown on the plan conforming to COA standard drawing 22-60. The ten foot easement will be concrete lined with an eight foot bottom, one foot deep and will flow the fully developed runoff rate at about 0.4 feet. The EGL was calculated as 0.7 feet, thus maintaining any potential hydraulic jump to be maintained within the curbs on each side of the street.

11. Traffic engineering does not have a problem with the driveway slopes.

12. The height of the retaining wall on the west side of the property has been called out on the plan at each lot line. The wall will be 500 feet long and will range between two and four feet in height. It should be noted that runoff from the west will not discharge to the proposed easements until the commercial site to the west is developed. In the interim, a small amount of ponding may occur along the retaining wall.

Thanks for your attention to this project and please feel free to contact me at 296-0461 if you have any more questions or concerns that may further delay approval. Also, for your information, Mr. Rabadi is working on obtaining a slope easement from the property owner to the north to eliminate the need for the retaining wall.

Sincerely,

Mark Burak

STREET FLOWS

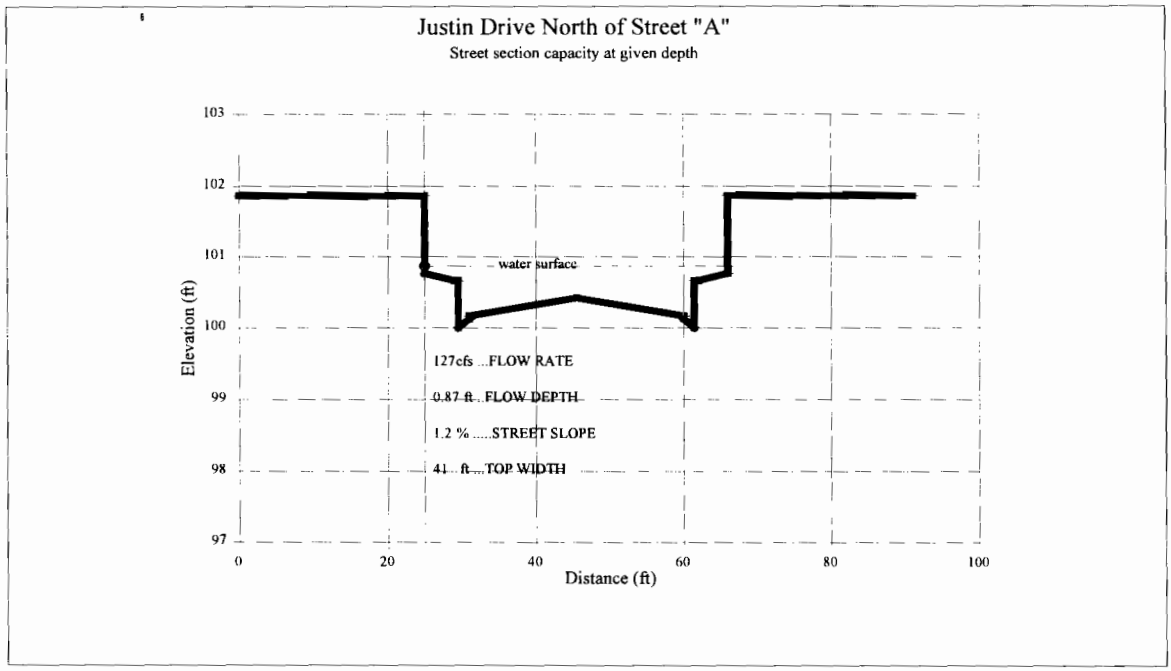
Manning's Equation for flow capacity in a street section.

Justin Drive North of Street "A"

Input variables:			*Output Parameters:*		
Depth of flow	0.87	ft	Capacity at d	127.1	cfs
Width (back of curb)	33.0	ft	@ top of curb	68.5	cfs
Crown height	0.42	ft	@ back of walk	79.9	cfs
Street slope	1.20	%	Velocity at d	6.0	fps
Sidewalk width	4.0	ft	V*d FACTOR.....	5.2	
Curb height	8	in	Gutter width	1.5	ft
Median width	0.0	ft	Gutter depression	1.5	in
Rt back of walk	100.0	%	Asphalt lip	0	in
Lt back of walk	100.0	%	Manning's n	0.017	

Note: To maintain two 12-ft dry lanes, depth cannot exceed 0.185 **feet**

Note: Input 100% slope at back of walk for vertical walls. **BURAK**



STREET FLOWS

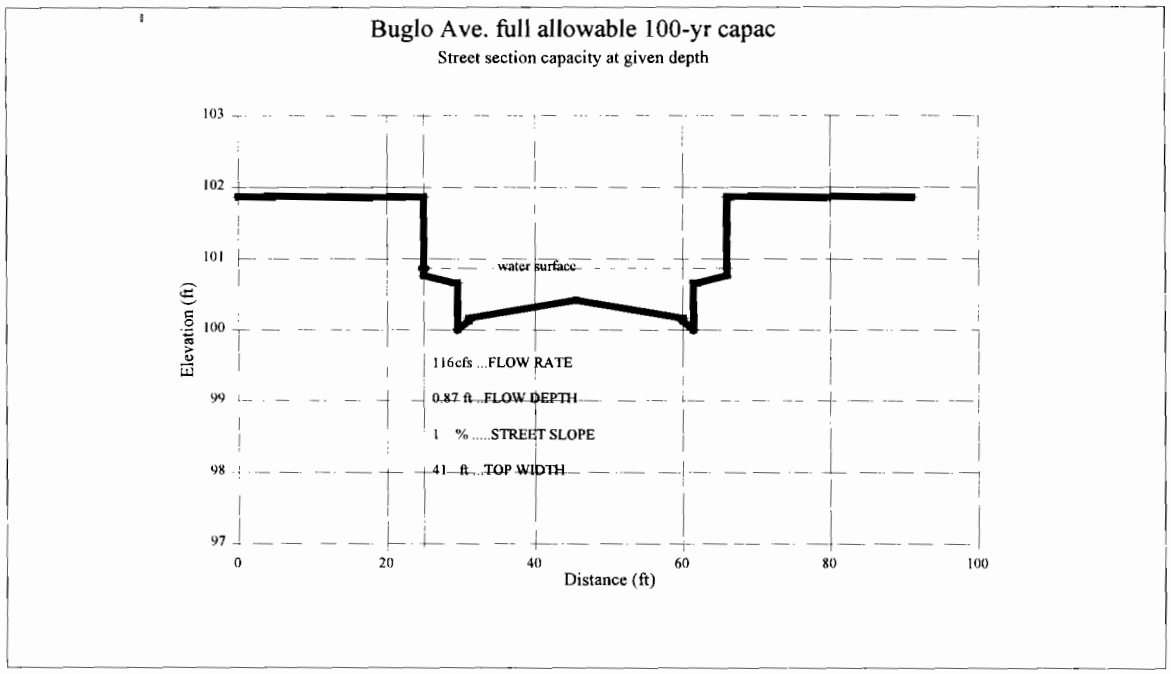
Manning's Equation for flow capacity in a street section.

Buglo Ave. full allowable 100-yr capacity

Input variables:		*Output Parameters:*	
Depth of flow	0.87 ft	Capacity at d	116.0 cfs
Width (back of curb)	33.0 ft	@ top of curb	62.5 cfs
Crown height	0.42 ft	@ back of walk	72.9 cfs
Street slope	1.00 %	Velocity at d	5.5 fps
Sidewalk width	4.0 ft	V*d FACTOR.....	4.8
Curb height	8 in	Gutter width	1.5 ft
Median width	0.0 ft	Gutter depression	1.5 in
Rt back of walk	100.0 %	Asphalt lip	0 in
Lt back of walk	100.0 %	Manning's n	0.017

Note: To maintain two 12-ft dry lanes, depth cannot exceed 0.185 **feet**

Note: Input 100% slope at back of walk for vertical walls. **BURAK**



STREET FLOWS

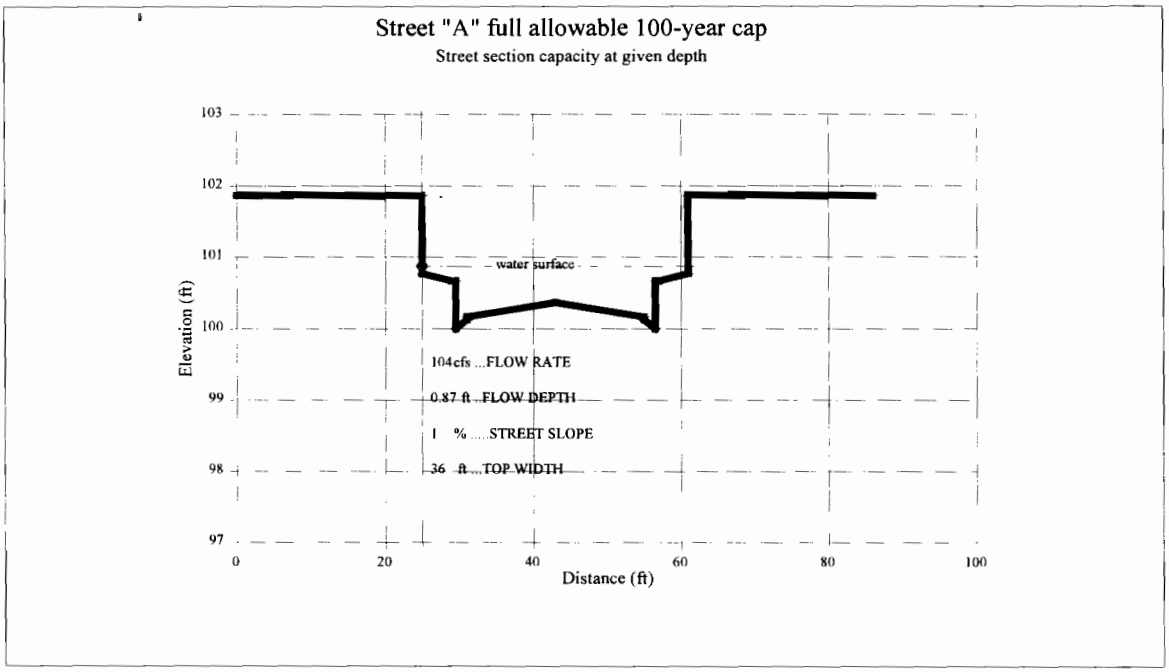
Manning's Equation for flow capacity in a street section.

Street "A" full allowable 100-year capacity

Input variables:		*Output Parameters:*	
Depth of flow	0.87 ft	Capacity at d	103.9 cfs
Width (back of curb)	28.0 ft	@ top of curb	58.6 cfs
Crown height	0.37 ft	@ back of walk	65.6 cfs
Street slope	1.00 %	Velocity at d	5.5 fps
Sidewalk width	4.0 ft	V*d FACTOR.....	4.8
Curb height	8 in	Gutter width	1.5 ft
Median width	0.0 ft	Gutter depression	1.5 in
Rt back of walk	100.0 %	Asphalt lip	0 in
Lt back of walk	100.0 %	Manning's n	0.017

Note: To maintain two 12-ft dry lanes, depth cannot exceed 0.135 **feet**

Note: Input 100% slope at back of walk for vertical walls. **BURAK**



TRAPEZOIDAL CHANNEL

Normal depth and critical depth parameters

Drainage Easement for Area "B" - Fully Developed

Input variables:			Output Parameters:		
Discharge	18	cfs	**Normal depth**	**0.43**	ft
Channel slope	0.01000	ft/ft	Normal velocity	5.23	fps
Manning's n	0.015		Froude number	1.41	
Bottom width	8	ft	Critical depth	0.54	ft
Left side slope	0	H:1	Critical velocity	4.17	fps
Right side slope	0	H:1	Scour Depth	1.10	ft
			Superelevation	0.00	ft
Curve Radius	10000	ft	Freeboard	2.10	ft
			Channel Depth	2.53	ft
			Sequent Depth	**0.67**	ft

Note: **Freeboard = (2+0.025(velocity)(depth)^(1/3))** **BURAK**

TRAPEZOIDAL CHANNEL

Normal depth and critical depth parameters

Drainage Easement for Area "C" - Fully Developed

Input variables:			Output Parameters:		
Discharge	19.56	cfs	**Normal depth**	**0.46**	ft
Channel slope	0.01000	ft/ft	Normal velocity	5.32	fps
Manning's n	0.015		Froude number	1.38	
Bottom width	8	ft	Critical depth	0.58	ft
Left side slope	0	H:1	Critical velocity	4.22	fps
Right side slope	0	H:1	Scour Depth	1.12	ft
			Superelevation	0.00	ft
Curve Radius	10000	ft	Freeboard	2.10	ft
			Channel Depth	2.56	ft
			Sequent Depth	**0.70**	ft

Note: **Freeboard = (2+0.025(velocity)(depth)^(1/3))** **BURAK**

BOX CULVERT

Inlet control and outlet control parameters

Wall Opening to Easement for Area "B"

Box height	1.0	ft	***INLET CTRL HWo:***		
Box width	5.0	ft	tapered throat	1.11	ft
Number of boxes	1		45 degree bevels	1.19	ft
Slope	0.01000	ft/ft	sq edge headwall	1.29	ft
Manning's n	0.015		***OUTLET CTRL HW***	1.10	ft
Culvert length	1	ft	Velocity	3.6	fps
Discharge	18	cfs	Critical depth	0.74	ft

Note: 1. Full flowing box assumed.

2. Critical depth cannot exceed the height of box culvert. **BURAK**

BOX CULVERT

Inlet control and outlet control parameters

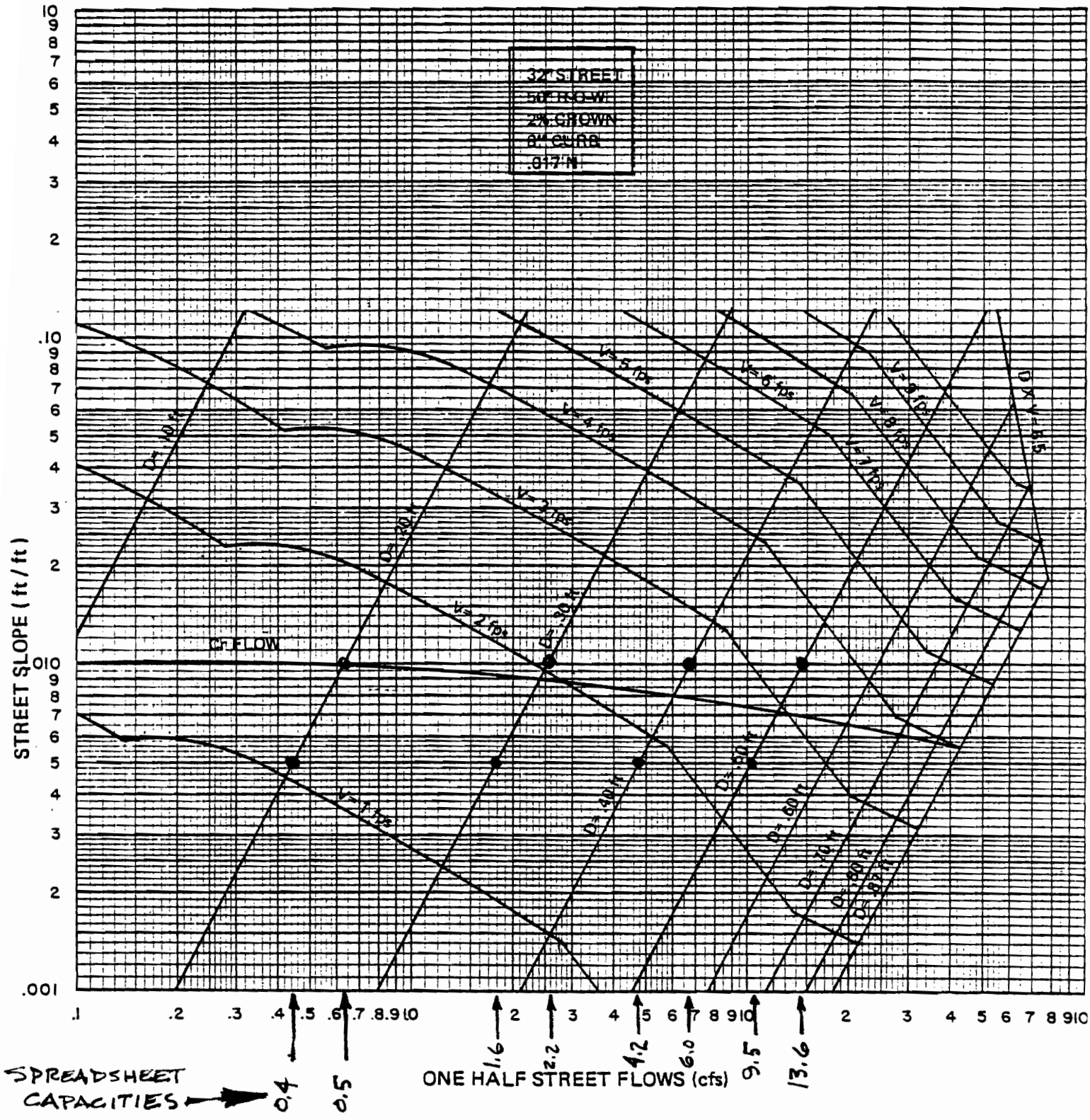
Wall Opening to Easement for Area "C"

Box height	1.0 ft	***INLET CTRL HWo:***	
Box width	5.0 ft	tapered throat	1.17 ft
Number of boxes	1	45 degree bevels	1.28 ft
Slope	0.01000 ft/ft	sq edge headwall	1.38 ft
Manning's n	0.015	***OUTLET CTRL HW***	1.17 ft
Culvert length	1 ft	Velocity	3.9 fps
Discharge	20 cfs	Critical depth	0.78 ft

Note: 1. Full flowing box assumed.

2. Critical depth cannot exceed the height of box culvert. **BURAK**

STREET CAPACITY



STREET FLOWS

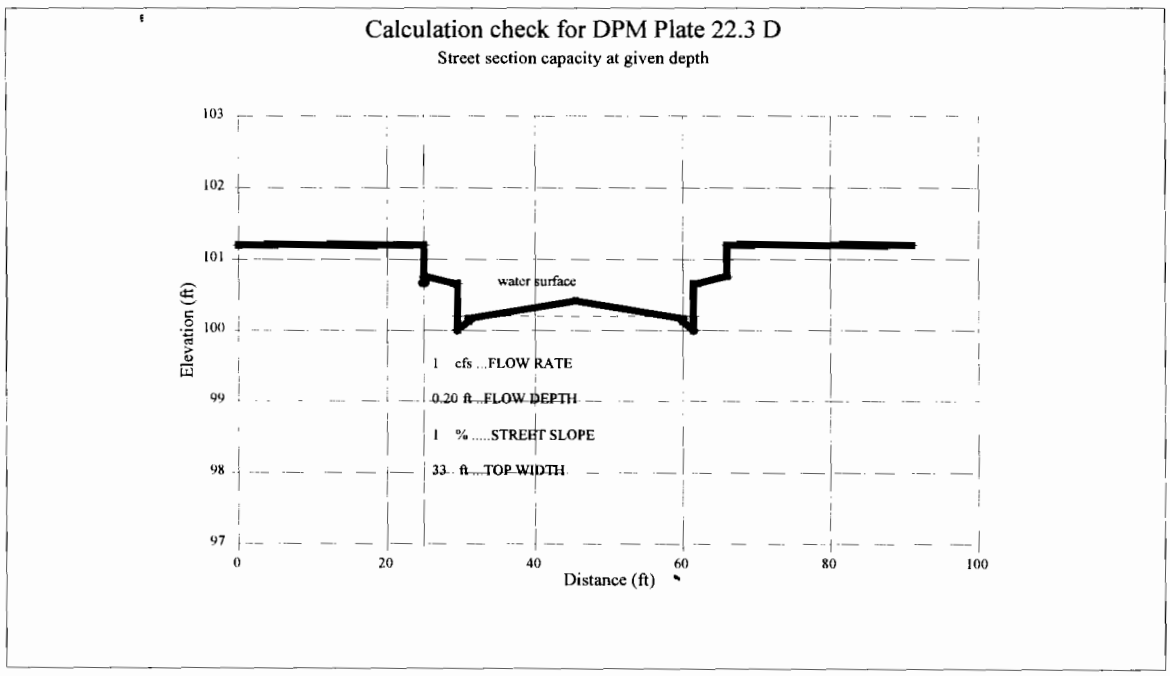
Manning's Equation for flow capacity in a street section.

Calculation check for DPM Plate 22.3 D-1 (Street Capacity)

Input variables:		***Output Parameters:***	
Depth of flow	0.20 ft	Capacity at d	1.0 cfs
Width (back of curb)	33.0 ft	@ top of curb	63.1 cfs
Crown height	0.42 ft	@ back of walk	73.5 cfs
Street slope	1.00 %	Velocity at d	1.4 fps
Sidewalk width	4.0 ft	V*d FACTOR.....	0.3
Curb height	8 in	Gutter width	1.5 ft
Median width	0.0 ft	Gutter depression	1.5 in
Rt back of walk	100.0 %	Asphalt lip	0 in
Lt back of walk	100.0 %	Manning's n	0.017

Note: To maintain two 12-ft dry lanes, depth cannot exceed 0.185 **feet**

Note: Input 100% slope at back of walk for vertical walls. **BURAK**



STREET FLOWS

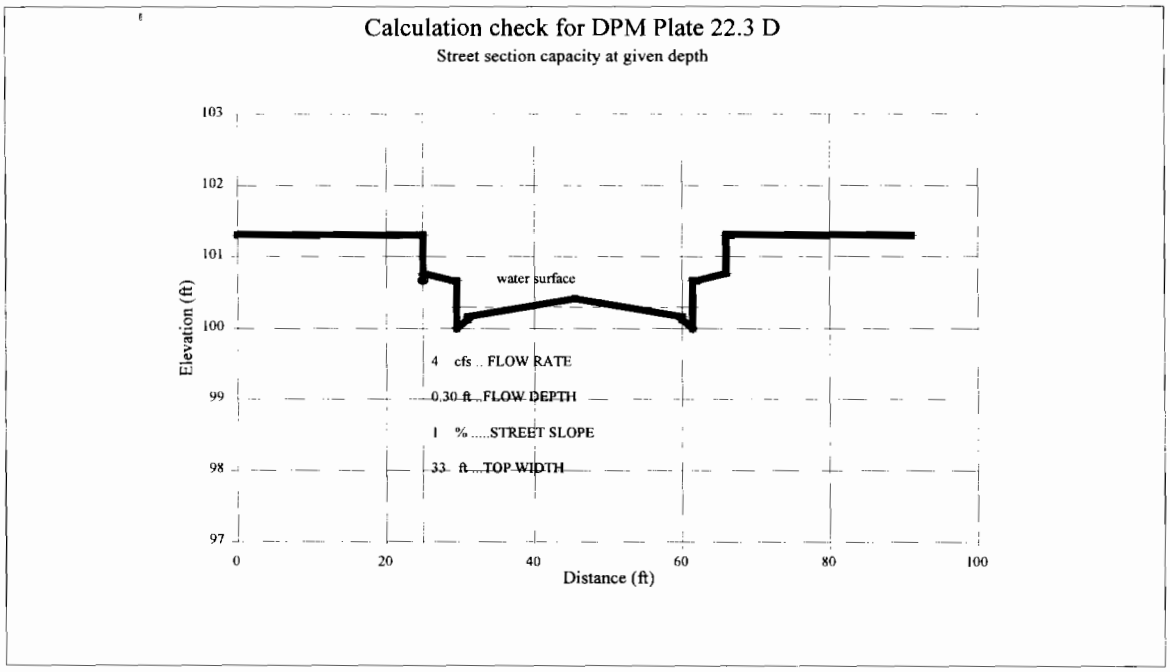
Manning's Equation for flow capacity in a street section.

Calculation check for DPM Plate 22.3 D-1 (Street Capacity)

Input variables:			***Output Parameters:***		
Depth of flow	0.30	ft	Capacity at d	4.4	cfs
Width (back of curb)	33.0	ft	@ top of curb	63.1	cfs
Crown height	0.42	ft	@ back of walk	73.5	cfs
Street slope	1.00	%	Velocity at d	2.0	fps
Sidewalk width	4.0	ft	V*d FACTOR.....	0.6	
Curb height	8	in	Gutter width	1.5	ft
Median width	0.0	ft	Gutter depression	1.5	in
Rt back of walk	100.0	%	Asphalt lip	0	in
Lt back of walk	100.0	%	Manning's n	0.017	

Note: To maintain two 12-ft dry lanes, depth cannot exceed 0.185 **feet**

Note: Input 100% slope at back of walk for vertical walls. **BURAK**



STREET FLOWS

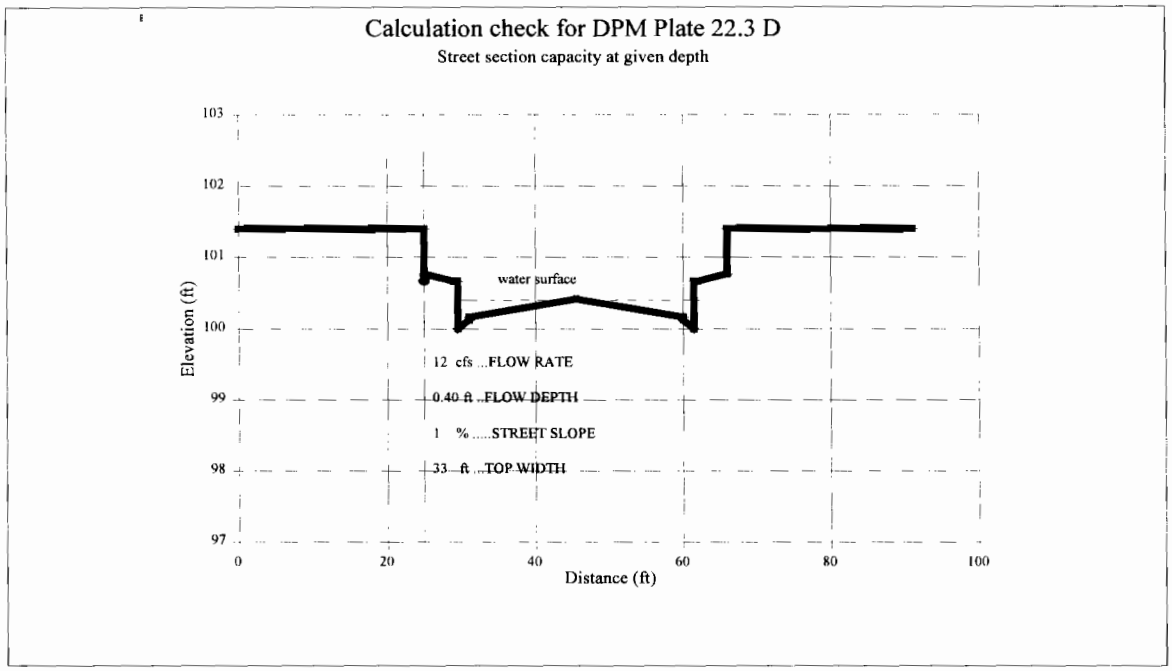
Manning's Equation for flow capacity in a street section.

Calculation check for DPM Plate 22.3 D-1 (Street Capacity)

Input variables:		*Output Parameters:*	
Depth of flow	0.40 ft	Capacity at d	12.0 cfs
Width (back of curb)	33.0 ft	@ top of curb	63.1 cfs
Crown height	0.42 ft	@ back of walk	73.5 cfs
Street slope	1.00 %	Velocity at d	2.5 fps
Sidewalk width	4.0 ft	V*d FACTOR.....	1.0
Curb height	8 in	Gutter width	1.5 ft
Median width	0.0 ft	Gutter depression	1.5 in
Rt back of walk	100.0 %	Asphalt lip	0 in
Lt back of walk	100.0 %	Manning's n	0.017

Note: To maintain two 12-ft dry lanes, depth cannot exceed 0.185 **feet**

Note: Input 100% slope at back of walk for vertical walls. **BURAK**



STREET FLOWS

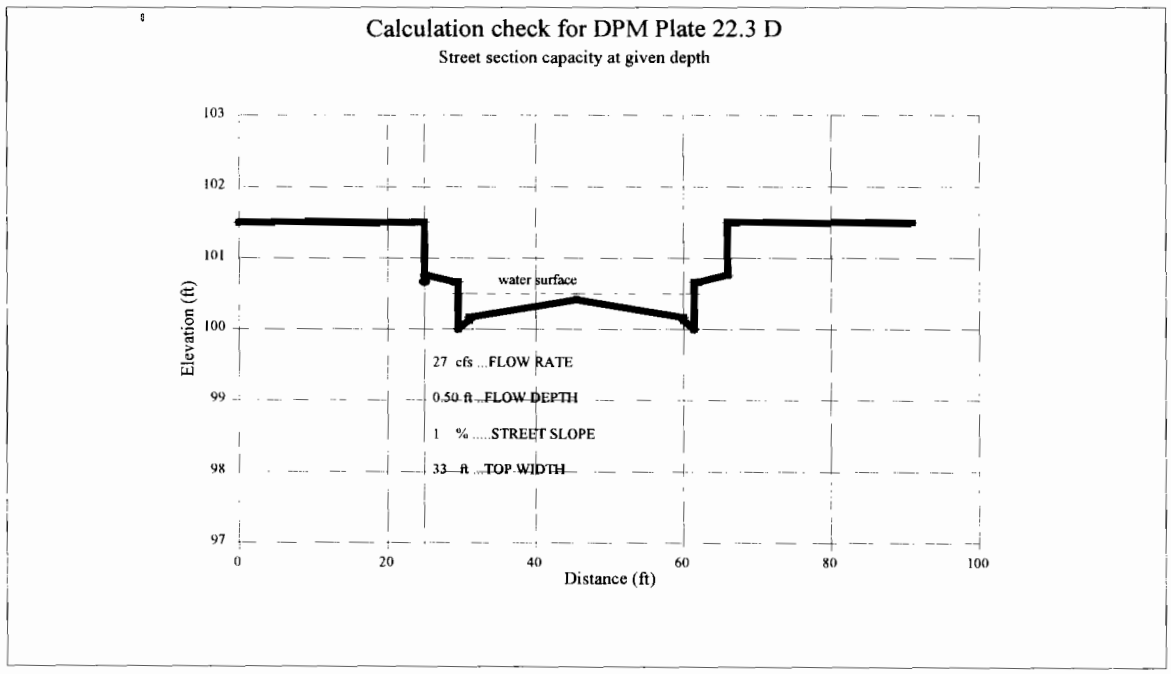
Manning's Equation for flow capacity in a street section.

Calculation check for DPM Plate 22.3 D-1 (Street Capacity)

Input variables:			***Output Parameters:***		
Depth of flow	0.50	ft	Capacity at d	27.1	cfs
Width (back of curb)	33.0	ft	@ top of curb	63.1	cfs
Crown height	0.42	ft	@ back of walk	73.5	cfs
Street slope	1.00	%	Velocity at d	3.4	fps
Sidewalk width	4.0	ft	V*d FACTOR.....	1.7	
Curb height	8	in	Gutter width	1.5	ft
Median width	0.0	ft	Gutter depression	1.5	in
Rt back of walk	100.0	%	Asphalt lip	0	in
Lt back of walk	100.0	%	Manning's n	0.017	

Note: To maintain two 12-ft dry lanes, depth cannot exceed 0.185 **feet**

Note: Input 100% slope at back of walk for vertical walls. **BURAK**



STREET FLOWS

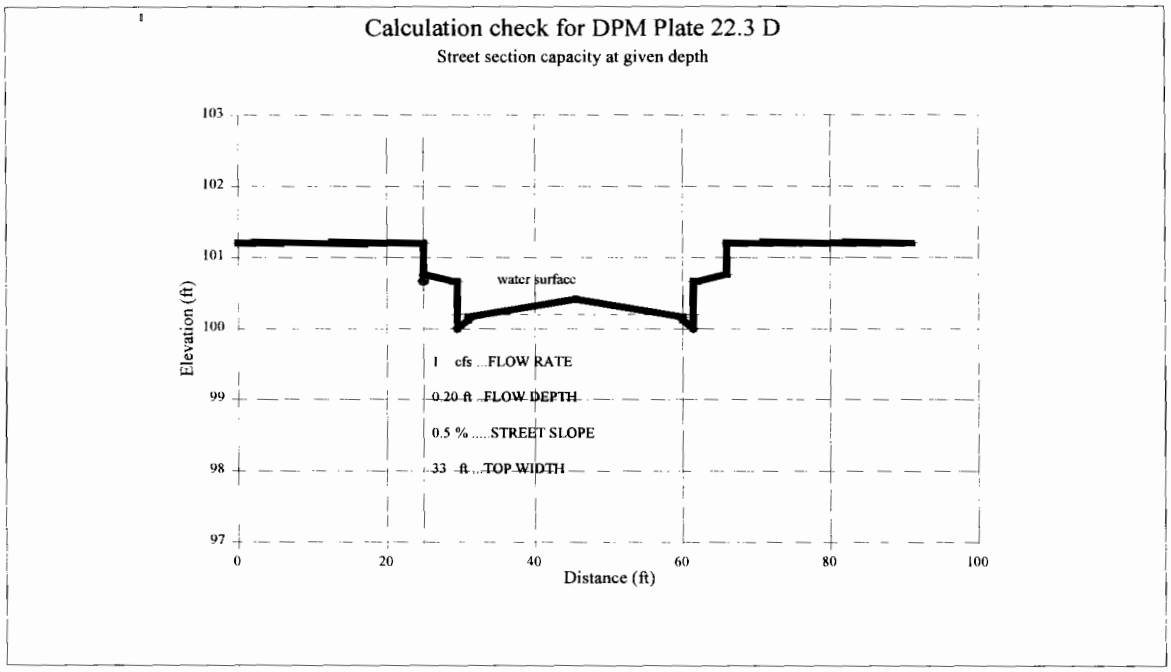
Manning's Equation for flow capacity in a street section.

Calculation check for DPM Plate 22.3 D-1 (Street Capacity)

Input variables:			***Output Parameters:***		
Depth of flow	0.20	ft	Capacity at d	0.7	cfs
Width (back of curb)	33.0	ft	@ top of curb	44.6	cfs
Crown height	0.42	ft	@ back of walk	52.0	cfs
Street slope	0.50	%	Velocity at d	1.0	fps
Sidewalk width	4.0	ft	V*d FACTOR.....	0.2	
Curb height	8	in	Gutter width	1.5	ft
Median width	0.0	ft	Gutter depression	1.5	in
Rt back of walk	100.0	%	Asphalt lip	0	in
Lt back of walk	100.0	%	Manning's n	0.017	

Note: To maintain two 12-ft dry lanes, depth cannot exceed 0.185 **feet**

Note: Input 100% slope at back of walk for vertical walls. **BURAK**



STREET FLOWS

Manning's Equation for flow capacity in a street section.

Calculation check for DPM Plate 22.3 D-1 (Street Capacity)

Input variables:			*Output Parameters:*		
Depth of flow	0.30	ft	Capacity at d	3.1	cfs
Width (back of curb)	33.0	ft	@ top of curb	44.6	cfs
Crown height	0.42	ft	@ back of walk	52.0	cfs
Street slope	0.50	%	Velocity at d	1.4	fps
Sidewalk width	4.0	ft	V*d FACTOR.....	0.4	
Curb height	8	in	Gutter width	1.5	ft
Median width	0.0	ft	Gutter depression	1.5	in
Rt back of walk	100.0	%	Asphalt lip	0	in
Lt back of walk	100.0	%	Manning's n	0.017	

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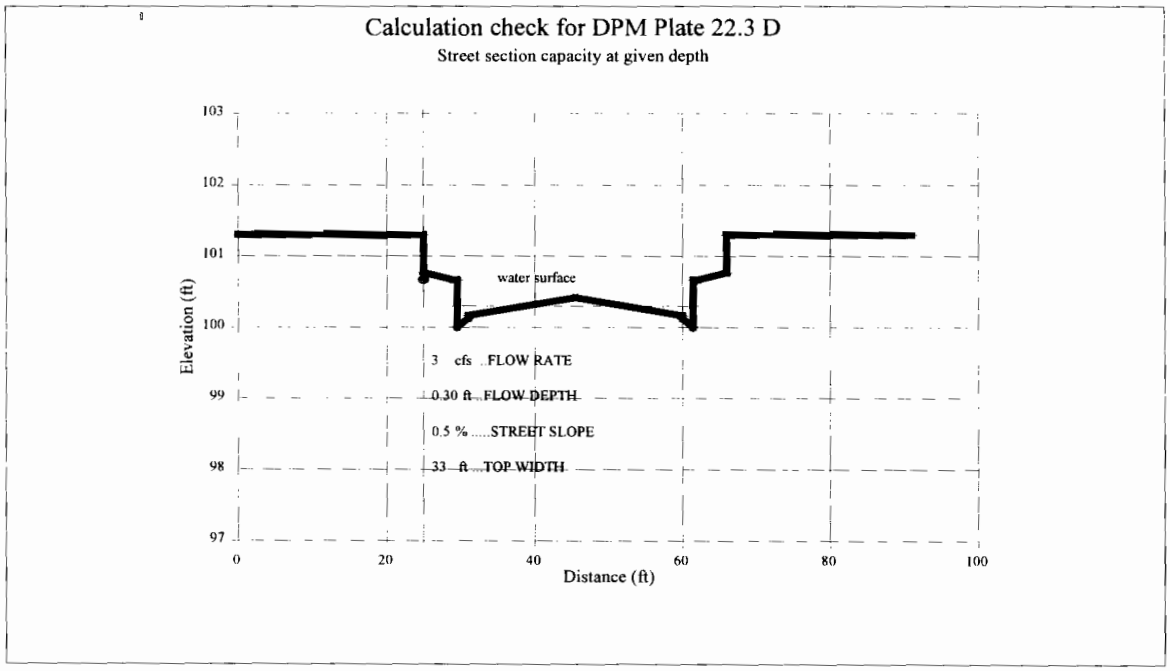

STREET FLOWS

Manning's Equation for flow capacity in a street section.

Calculation check for DPM Plate 22.3 D-1 (Street Capacity)

Input variables:			***Output Parameters:***		
Depth of flow	0.40	ft	Capacity at d	8.5	cfs
Width (back of curb)	33.0	ft	@ top of curb	44.6	cfs
Crown height	0.42	ft	@ back of walk	52.0	cfs
Street slope	0.50	%	Velocity at d	1.8	fps
Sidewalk width	4.0	ft	V*d FACTOR.....	0.7	
Curb height	8	in	Gutter width	1.5	ft
Median width	0.0	ft	Gutter depression	1.5	in
Rt back of walk	100.0	%	Asphalt lip	0	in
Lt back of walk	100.0	%	Manning's n	0.017	

Note: To maintain two 12-ft dry lanes, depth cannot exceed 0.185 **feet**

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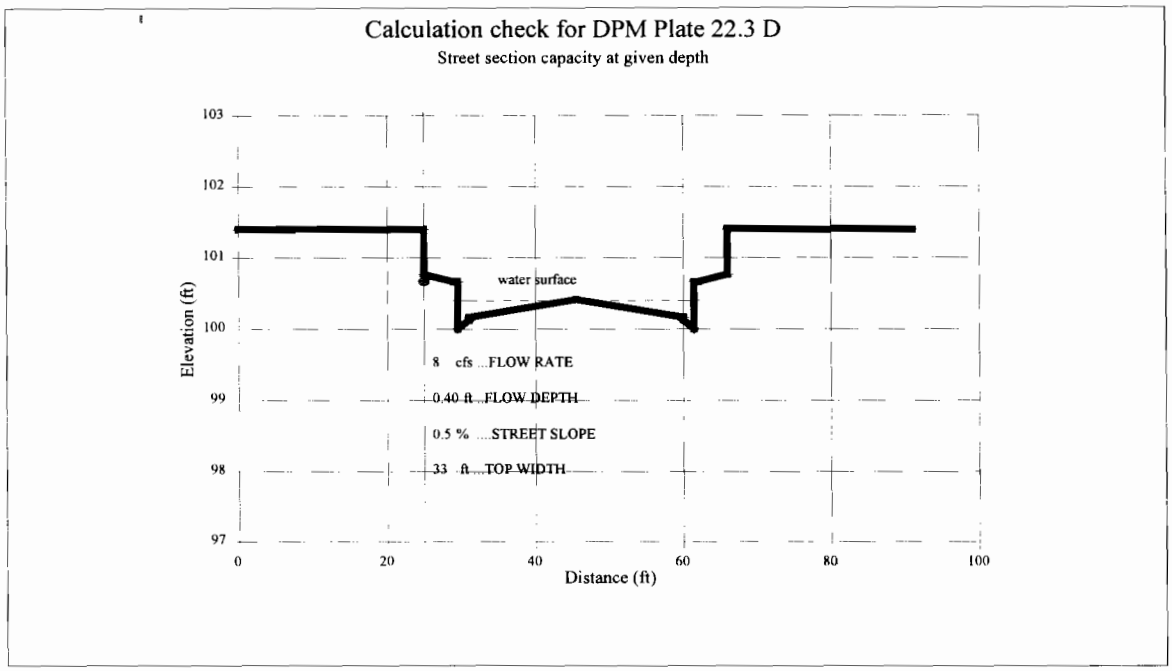

STREET FLOWS

Manning's Equation for flow capacity in a street section.

Calculation check for DPM Plate 22.3 D-1 (Street Capacity)

Input variables:			***Output Parameters:***		
Depth of flow	0.50	ft	Capacity at d	19.1	cfs
Width (back of curb)	33.0	ft	@ top of curb	44.6	cfs
Crown height	0.42	ft	@ back of walk	52.0	cfs
Street slope	0.50	%	Velocity at d	2.4	fps
Sidewalk width	4.0	ft	V*d FACTOR.....	1.2	
Curb height	8	in	Gutter width	1.5	ft
Median width	0.0	ft	Gutter depression	1.5	in
Rt back of walk	100.0	%	Asphalt lip	0	in
Lt back of walk	100.0	%	Manning's n	0.017	

Note: To maintain two 12-ft dry lanes, depth cannot exceed 0.185 **feet**

Note: Input 100% slope at back of walk for vertical walls. **BURAK**