Granville
Fearrington Village
Chatham County, NC

STORMWATER CALCULATIONS

DEVELOPER:

Fitch Creations, Inc.
2000 Fearrington Village Center
Pittsboro, NC 27312

11/14/22

PREPARED BY

DIEHL & PHILLIPS, P.A.
1500 PINEY PLAINS ROAD SUITE 200
CARY, NC 27518
License No. C-0465

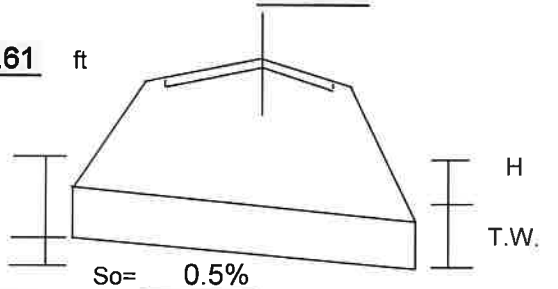
TELEPHONE 919-467-9972

PIPE DATA SHEET

Date:
Project Number: Granville I.D. No.: P-1 County: Chatham Designed By: ARK Sheet ____ of ____ Reviewed By: ____

Alignment:
Station: 17+30
Skew: 90
Size/Type Pipe: 18"RCP
Type Entrance: FES
Direction of Flow: north
Hydrologic Method: Rational
H.W. Control Elevation: 438.61
H.W. Control Feature:

GP Elev.: 439.31 ft
Shoulder Elev.: 438.61 ft



Inlet Invert Elev.: 437.5 ft So= 0.5% L= 48.0 ft Outlet Inv. Elev. 437.3 ft

RCP=.012, CMP=.024
n= 0.012

Plan Summary Data

Drainage Area:	0.32
Design Freq.:	25
Design Disch.:	1
Design H.W. Elev.:	438.43
Q100 Disch.:	2
Q100 Elev.:	438.50
Overtopping Freq.:	N/A
Overtopping Disch.:	N/A
Overtopping Elev.:	N/A

TW Channel Specs.: Slope: 2.8 Lt. Side Slope= 4
Base Width= 0 n= 0.025 Rt. Side Slope= 3

BARRELS			TW	Q	Nat.	Allow.	Inlet Control			Outlet Control							HW	V_o*	
SIZE in	No. Of Pipes	FREQ YR	ft	ft^3/s	H.W. ft	H.W. ft	HW/D ft/ft	HW (ft) ft		Ke	d_c ft	$(d_c+D)/2$ ft	h_o ft	H ft	LS_O ft	HW ft	ELEV.	(FULL FLO) ft/s	Remarks
18	1	10	0.9	1			0.56	0.84		0.5	0.42	0.96	0.96	0.019	0.24	0.74	438.38		INLET CONTROL
18	1	25	1.0	1			0.59	0.89		0.5	0.43	0.97	1.00	0.022	0.24	0.78	438.43		INLET CONTROL
18	1	100	1.0	2			0.64	0.96		0.5	0.46	0.98	1.00	0.028	0.24	0.79	438.50		INLET CONTROL

Notes & Calculations

*V10 is partial flow velocity, all others full flow velocity

SUMMARY AND RECOMMENDATIONS: ____

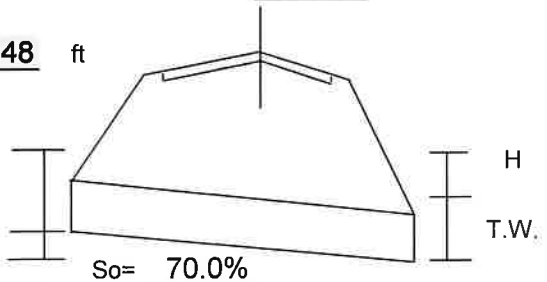
print date: 10/7/2022

PIPE DATA SHEET

Date:
Project Number: Granville I.D. No.: P-2 County: Chatham Designed By: ARK Sheet ____ of ____ Reviewed By:

Alignment:
Station: 19+88
Skew: 60
Size/Type Pipe: 30"RCP
Type Entrance: FES
Direction of Flow: east
Hydrologic Method: Rational
H.W. Control Elevation: 449.48
H.W. Control Feature:

GP Elev.: 450.19 ft
Shoulder Elev.: 449.48 ft



Inlet Invert Elev.: 445.5 ft So= 70.0% L= 72.0 ft Outlet Inv. Elev. 445.0 ft

RCP=.012, CMP=.024
n= 0.012

Plan Summary Data

Drainage Area:	9
Design Freq.:	25
Design Disch.:	29
Design H.W. Elev.:	448.48
Q100 Disch.:	34
Q100 Elev.:	448.91
Overtopping Freq.:	N/A
Overtopping Disch.:	N/A
Overtopping Elev.:	N/A

TW Channel Specs.: Slope: 5 Lt. Side Slope= 2
Base Width= 0 n= 0.025 Rt. Side Slope= 2

BARRELS SIZE in	BARRELS No. Of Pipes	FREQ YR	TW ft	Q ft^3/s	Nat. H.W. ft	Allow. H.W. ft	Inlet Control HW/D ft/ft	Inlet Control HW (ft) ft	Outlet Control Ke	Outlet Control d_c ft	Outlet Control $(d_c+D)/2$ ft	Outlet Control h_o ft	Outlet Control H ft	Outlet Control LS_O ft	Outlet Control HW ft	HW ELEV.	V_o* (FULL FLO) ft/s	Remarks
30	1	10	0.7	26			1.10	2.75	0.5	1.77	2.14	2.14	0.926	50.40	-47.34	448.25		INLET CONTROL
30	1	25	0.8	29			1.19	2.98	0.5	1.87	2.19	2.19	1.117	50.40	-47.10	448.48		INLET CONTROL
30	1	100	0.9	34			1.37	3.43	0.5	2.04	2.27	2.27	1.491	50.40	-46.64	448.93		INLET CONTROL

Notes & Calculations

*V10 is partial flow velocity, all others full flow velocity

SUMMARY AND RECOMMENDATIONS: _____

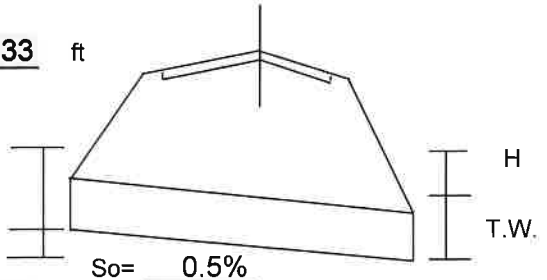
print date: 7/21/2022

PIPE DATA SHEET

Date:
Project Number: Granville I.D. No.: P-3 County: Chatham Designed By: ARK Sheet ____ of ____ Reviewed By: ____

Alignment:
Station: 21+12
Skew: 90
Size/Type Pipe: 24"RCP
Type Entrance: FES
Direction of Flow: east
Hydrologic Method: Rational
H.W. Control Elevation: 450.33
H.W. Control Feature:

GP Elev.: 451.04 ft
Shoulder Elev.: 450.33 ft



Inlet Invert Elev.: 447.7 ft So= 0.5% L= 48.0 ft Outlet Inv. Elev. 447.5 ft

RCP=.012, CMP=.024
n= 0.012

Plan Summary Data

Drainage Area:	2.5
Design Freq.:	25
Design Disch.:	9
Design H.W. Elev.:	449.26
Q100 Disch.:	10
Q100 Elev.:	449.40
Overtopping Freq.:	N/A
Overtopping Disch.:	N/A
Overtopping Elev.:	N/A

TW Channel Specs.: Slope: 15 Lt. Side Slope= 4
Base Width= 0 n= 0.025 Rt. Side Slope= 4

BARRELS			TW	Q	Nat.	Allow.	Inlet Control		Outlet Control							HW	V_o*	
SIZE in	No. Of Pipes	FREQ YR	ft	ft^3/s	H.W. ft	H.W. ft	HW/D ft/ft	HW (ft) ft	Ke	d_c ft	$(d_c+D)/2$ ft	h_o ft	H ft	LS_O ft	HW ft	ELEV.	(FULL FLO) ft/s	Remarks
24	1	10	0.5	8			0.72	1.44	0.5	0.98	1.49	1.49	0.197	0.24	1.45	449.19		OUTLET CONTRO
24	1	25	0.8	9			0.76	1.52	0.5	1.03	1.52	1.52	0.239	0.24	1.51	449.26		INLET CONTROL
24	1	100	0.9	10			0.83	1.66	0.5	1.12	1.56	1.56	0.315	0.24	1.63	449.40		INLET CONTROL

Notes & Calculations

*V10 is partial flow velocity, all others full flow velocity

SUMMARY AND RECOMMENDATIONS: ____

print date: 7/21/2022

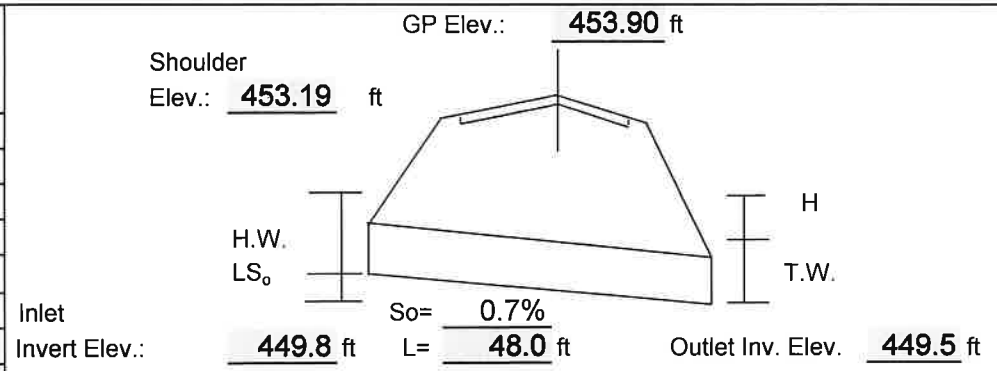
PIPE DATA SHEET

Date:

Sheet _____ of _____

Project Number: Granville | I.D. No.: P-4 | County: Chatham | Designed By: ARK | Reviewed By: _____

Alignment:
Station: 30+14
Skew: 90
Size/Type Pipe: 24"RCP
Type Entrance: FES
Direction of Flow: east
Hydrologic Method: Rational
H.W. Control Elevation: 453.19
H.W. Control Feature:



RCP=.012, CMP=.024
n= 0.012

Plan Summary Data

Drainage Area:	4.73
Design Freq.:	25
Design Disch.:	17
Design H.W. Elev.:	452.20
Q100 Disch.:	19
Q100 Elev.:	452.57
Overtopping Freq.:	N/A
Overtopping Disch.:	N/A
Overtopping Elev.:	N/A

TW Channel Specs.: Slope: 15 Lt. Side Slope= 4
Base Width= 0 n= 0.025 Rt. Side Slope= 4

BARRELS			TW	Q	Nat.	Allow.	Inlet Control		Outlet Control							HW	V_o*	
SIZE in	No. Of Pipes	FREQ YR	ft	ft^3/s	H.W. ft	H.W. ft	HW/D ft/ft	HW (ft) ft	Ke	d_c ft	$(d_c+D)/2$ ft	h_o ft	H ft	LS_O ft	HW ft	ELEV.	(FULL FLO) ft/s	Remarks
24	1	10	0.5	15			1.11	2.22	0.5	1.43	1.71	1.71	0.738	0.34	2.12	452.03		INLET CONTROL
24	1	25	0.8	17			1.20	2.40	0.5	1.51	1.75	1.75	0.890	0.34	2.31	452.21		INLET CONTROL
24	1	100	0.9	19			1.38	2.76	0.5	1.65	1.82	1.82	1.187	0.34	2.67	452.57		INLET CONTROL

Notes & Calculations

*V10 is partial flow velocity, all others full flow velocity

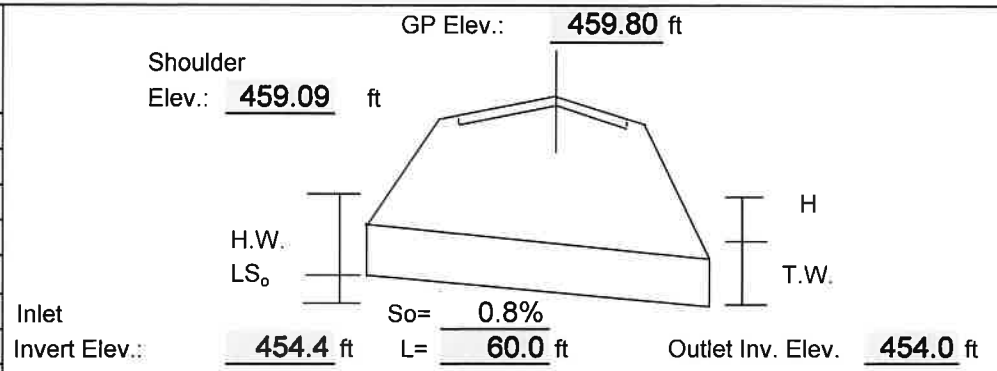
SUMMARY AND RECOMMENDATIONS: _____

print date: 7/21/2022

PIPE DATA SHEET

Date:
Project Number: Granville
I.D. No.: P-6
County: Chatham
Designed By: ARK
Sheet ____ of ____
Reviewed By: ____

Alignment:	
Station:	34+65
Skew:	90
Size/Type Pipe:	24"RCP
Type Entrance:	FES
Direction of Flow:	north
Hydrologic Method:	Rational
H.W. Control Elevation:	459.29
H.W. Control Feature:	



RCP=.012, CMP=.024
n= 0.012

Plan Summary Data

Drainage Area:	4.8
Design Freq.:	25
Design Disch.:	12
Design H.W. Elev.:	456.40
Q100 Disch.:	16
Q100 Elev.:	456.74
Overtopping Freq.:	N/A
Overtopping Disch.:	N/A
Overtopping Elev.:	N/A

TW Channel Specs.: Slope: 5 Lt. Side Slope= 3
Base Width= 0 n= 0.025 Rt. Side Slope= 3

BARRELS			TW	Q	Nat.	Allow.	Inlet Control		Outlet Control							HW	V_o*	
SIZE in	No. Of Pipes	FREQ YR	ft	ft^3/s	H.W. ft	H.W. ft	HW/D ft/ft	HW (ft) ft	Ke	d_c ft	$(d_c+D)/2$ ft	h_o ft	H ft	LS_O ft	HW ft	ELEV.	(FULL FLO) ft/s	Remarks
24	1	10	0.5	11			1.06	2.12	0.5	1.15	1.58	1.58	0.377	0.45	1.50	456.52		INLET CONTROL
24	1	25	0.8	13			1.15	2.30	0.5	1.27	1.63	1.63	0.524	0.45	1.71	456.70		INLET CONTROL
24	1	100	0.9	16			1.30	2.60	0.5	1.45	1.73	1.73	0.826	0.45	2.10	457.00		INLET CONTROL

Notes & Calculations

*V10 is partial flow velocity, all others full flow velocity

SUMMARY AND RECOMMENDATIONS: ____

print date: 10/14/2022

Inlet A NCDOT 840.13 Drop Inlet

Total Drainage Area		0.35 acre
C=	0.4	
I-25 =	6.13	
Q-25 =	0.9	

Inlet B NCDOT 840.13 Drop Inlet

Total Drainage Area		0.06 acre
C=	0.6	
I-25 =	6.13	
Q-25 =	0.2	

P-5

Lot 31 Access Esmt

Drainage Area = 4.66 acres

C= 0.40

I-25 = 6.13 in/hr

Q-25= 11.52 cfs

Slope Required 24 in RCP 0.26 %

HW/25= 0.90 ft

Use

24-inch RCP @ 5.47% Capacity = 53.0 cfs

P-6

Granville Drive 34+65

Drainage Area = 5.01 acres

C= 0.40

I-25 = 6.13 in/hr

Q-25= 12.38 cfs

Slope Required 24 in RCP 0.30 %

HW/25= 0.98 ft

Use

24-inch RCP @ 0.75% Capacity = 19.6 cfs

P-7

Open Space by Lot 43

Drainage Area = 5.07 acres

C= 0.40

I-25 = 6.13 in/hr

Q-25= 12.53 cfs

Slope Required 24 in RCP

HW/25= 0.99 ft

Use

24-inch RCP @ 0.75% Capacity =

Q-Full= 19.6 V-Full= 6.2 fps

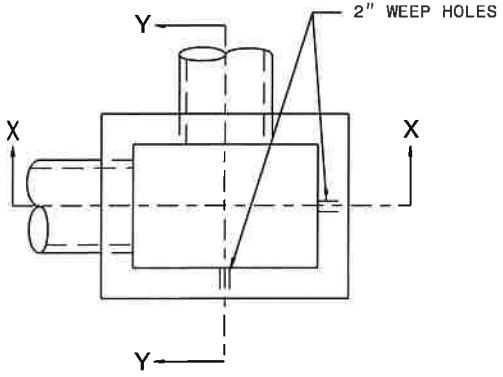
Q-10/Q-Full= 0.58

V-10/V-Full= 1.04

V-10 = 6.4 fps Mat'l in Zone 2

Use 12' x 6' x 22" D Class B

P-7 2' TW
HW = 1.76' OUTLET
HW = 1.97' INLET
P-6 1.87' TW OUT
HW = 1.27 OUTLET
HW = 1.96' INLET



PLAN

WITH GRATE & FRAME REMOVED

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

CONSTRUCT WITH PIPE CROWNS MATCHING.

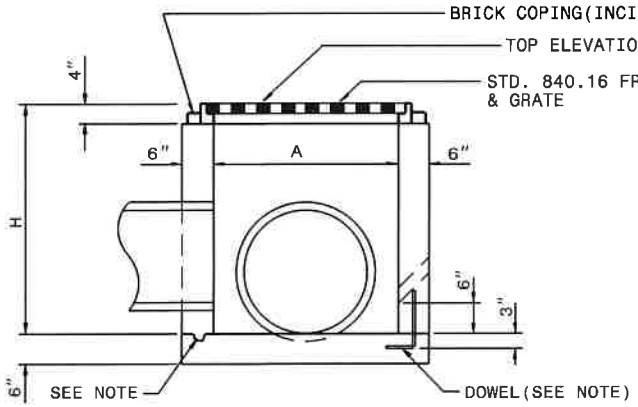
SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.

INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.

INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.



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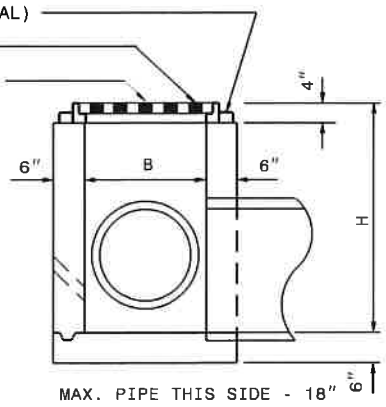
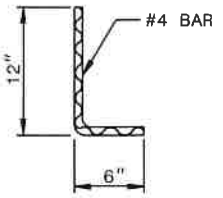


SECTION Y-Y



DOWEL

DIMENSIONS AND QUANTITIES FOR DROP INLET(BASED ON MIN. HEIGHT, H)								
DIMENSIONS OF BOX & PIPE				CUBIC YARDS CONC. IN BOX			DEDUCTIONS FOR ONE PIPE	
PIPE	SPAN	WIDTH	MIN. HEIGHT					
D	A	B	H	BOTTOM SLAB	WALL PER FT. HT.	TOTAL CONCRETE FOR MINIMUM HEIGHT, H	C.M.	R.C.
12"	3'-0"	2'-0"	2'-0"	0.222	0.222	0.592	0.015	0.026
15"	↗	↗	2'-3"	↗	↗	0.648	0.023	0.036
18"	↗	↗	2'-6"	↗	↗	0.703	0.033	0.049
24"	↗	↗	3'-0"	↗	↗	0.814	0.059	0.085
30"	3'-0"	2'-0"	3'-6"	0.222	0.222	0.925	0.092	0.127

1-18

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR

CONCRETE DROP INLET

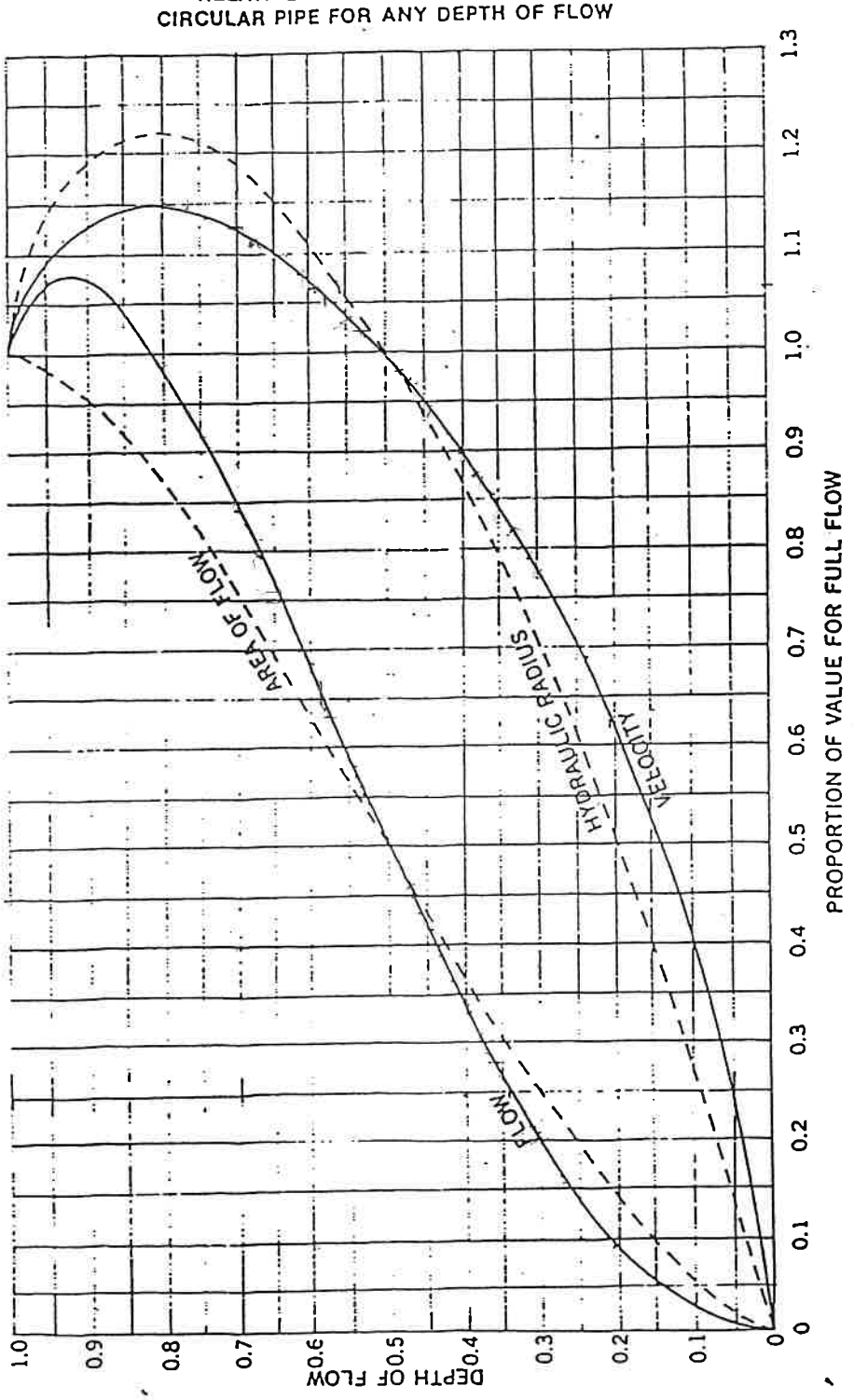
12" THRU 30" PIPE

SHEET 1 OF 1

840.14

FIGURE 20

RELATIVE VELOCITY AND FLOW IN
CIRCULAR PIPE FOR ANY DEPTH OF FLOW



5 10

NEW YORK DOT DISSIPATOR-FOR USE IN DEFINED CHANNELS

NOTE: To use this chart you must know Q full cap., Q_{10}, V full, and true V_{10}

APPENDIX 2:18 ESTIMATION OF STONE SIZE AND DIMENSIONS FOR CULVERT APRONS

Step i) Compute ~~Estimate~~ flow velocity V_o at culvert or paved channel outlet.

Step ii) For pipe culverts D_o is diameter.

For pipe arch, arch, and box culverts, and paved channel outlets, $D_o = A_o$, where A_o = cross sectional area of flow at outlet.

For multiple culverts, use $D_o = 1.25 \times D_o$ of single culvert.

Step iii) For apron grades of 10% or steeper, use recommendations for next higher zone (zones 1 through 6).

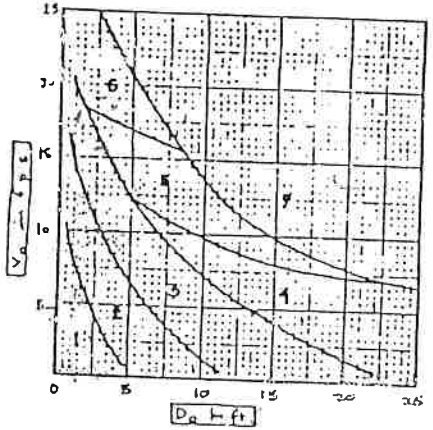


Fig. 1

ZONE	APRON MATERIAL	LENGTH OF APRON: TO PROTECT CULVERT L_1	LENGTH OF APRON: TO PREVENT SCOUR HOLE L_2	*
①	Stone Filling (Fine)	$3 \times D_o$	$4 \times D_o$	"A"
②	" " (Light)	$3 \times D_o$	$6 \times D_o$	"B"
③	" " (Medium)	$4 \times D_o$	$8 \times D_o$	"B"
④	" " (Heavy)	$4 \times D_o$	$8 \times D_o$	CLASS I
⑤	" " "	$5 \times D_o$	$10 \times D_o$	CLASS I
⑥	" " "	$6 \times D_o$	$12 \times D_o$	CLASS II
⑦	Special study required (energy dissipators, stilling basin, or larger size stone			CLASS II

use L_2 always ← Fig. 2

WIDTH = 3 times pipe dia. (min.)

* Approximate equivalent to N.C.D.O.T. Specifications

Source: "Bank and Channel Lining Procedures," New York Department of Transportation, Division of Design and Construction, 1971.

Determination of Stone Sizes for Dumped Stone Channel Linings and Revetments

Step i) Use Fig. 3 to determine maximum stone size (e.g., for 12 fps = 20" or 550 lbs.).

Step ii) Use Fig. 4 to determine acceptable size range for stone (for 12 fps it is 125-500 lbs. for 75% of stone, and the maximum and minimum range in weight should be 25-500 lbs.)

Note: In determining channel velocities for stone linings and revetments, use the following coefficients of roughness:

	Diameter (inches)	Manning's 'n'	Min. Thickness of Lining (inches)	*
Fine	3	0.031	9 Min	"A"
Light	6	0.035	12 22"	"B"
Medium	13	0.040	18 22"	"B"
Heavy	23	0.044	30	CLASS I

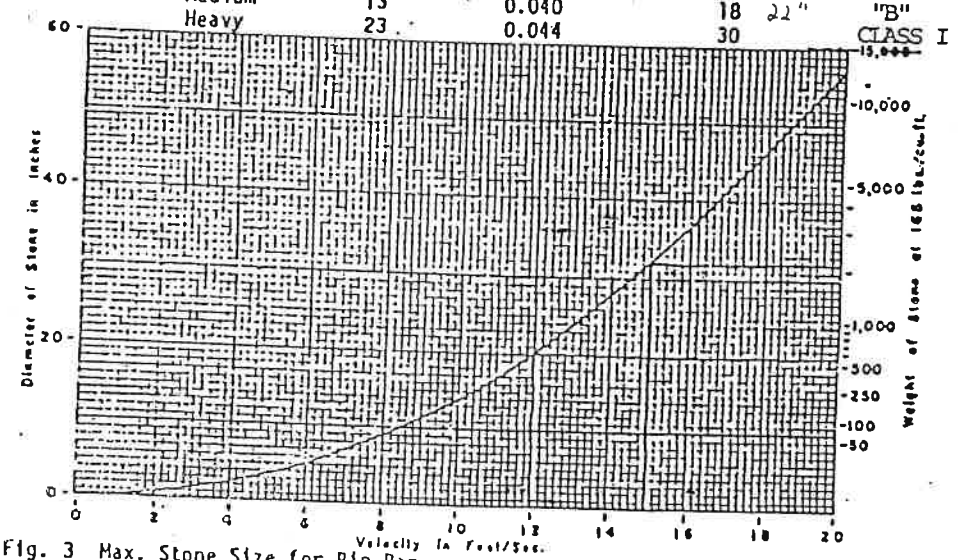


Fig. 3 Max. Stone Size for Rip Rap

Based on Isbash Curve

Maximum weight of stone required	Minimum and maximum range in weight of stones	Weight range of 75% of stones
(lbs.)	(lbs.)	(lbs.)
150	25 - 150	50 - 150
200	25 - 200	50 - 200
250	25 - 250	50 - 250
400	25 - 400	100 - 400
600	25 - 600	150 - 600
800	25 - 800	200 - 800
1,000	50 - 1,000	250 - 1,000
1,300	50 - 1,300	325 - 1,300
1,600	50 - 1,600	400 - 1,600
2,000	75 - 2,000	600 - 2,000
2,700	100 - 2,700	800 - 2,700

Fearrington Granville

Ditch Treatments NAG = North American Green SC-250

I-10 = 7.46 in/hr If no treatment shown- North American Green S-75 or equal

Ditch Side Slopes = 4:1 and 3:1 n=0.025 T=(Normal Depth)*(Street Slope)* 62.4

Street	Stations	Street Slope (%)	Drainage Area (acres)	Rational C	Q-10 (CFS)	V-10 (FPS)	Normal Depth (FT)	T	Treatment
Granville	10+15-12+10 LT	2.76	0.53	0.55	2.2	3.44	0.43	0.74	NAG
Granville	10+15-12+10 RT	2.76	0.64	0.55	2.6	3.6	0.46	0.79	NAG
Granville	12+10-16+50 LT	4.00	0.36	0.55	1.5	3.6	0.35	0.87	NAG
Granville	12+10-16+50 RT	4.00	0.41	0.55	1.7	3.7	0.36	0.90	NAG
Granville	16+50-18+50 LT	4.09	0.54	0.45	1.8	3.8	0.37	0.94	NAG
Granville	16+50-15+50 RT	4.09	0.15	0.55	0.6	2.9	0.24	0.61	
Granville	18+50-20+00 LT	1.50	0.04	0.55	0.2	1.5	0.20	0.19	
Granville	18+50-20+00 RT	1.50	0.04	0.55	0.2	1.5	0.20	0.19	
Granville	20+00-21+12 LT	1.11	0.07	0.55	0.3	1.5	0.24	0.17	
Granville	20+00-21+12 RT	1.11	0.07	0.55	0.3	1.5	0.24	0.17	
Granville	21+12-26+50 LT	1.11	0.49	0.55	2.0	2.4	0.49	0.34	
Granville	21+12-26+50 RT	1.11	2.63	0.45	8.9	3.5	0.86	0.60	NAG
Granville	26+50-30+00 LT	1.00	0.22	0.55	0.9	1.9	0.37	0.23	
Granville	26+50-30+00 RT	1.00	1.67	0.45	5.6	3.0	0.73	0.46	NAG
Granville	30+00-33+00 LT	1.00	0.23	0.55	1.0	1.9	0.38	0.24	
Granville	30+00-33+00 RT	1.00	1.95	0.45	6.6	3.1	0.78	0.49	NAG
Granville	33+00-35+50 LT	2.00	0.28	0.55	1.2	2.6	0.36	0.45	
Granville	33+00-35+50 RT	2.00	0.31	0.55	1.3	2.7	0.37	0.46	
Granville	35+50-38+50 LT	1.00	0.08	0.55	0.3	1.4	0.25	0.16	
Granville	35+50-38+50 RT	1.00	0.08	0.55	0.3	1.4	0.25	0.16	
Granville	38+50-CDS LT	2.24	0.14	0.55	0.6	2.3	0.27	0.38	
Granville	38+50-CDS RT	2.24	0.15	0.55	0.6	2.3	0.27	0.38	

Cabarrus	10+00-15+25 LT	1.00	3.02	0.45	10.2	3.5	0.92	0.57	NAG
Cabarrus	10+00-15+25 RT	1.00	0.38	0.55	1.6	2.2	0.46	0.29	
Cabarrus	15+25-17+00 LT	2.82	0.10	0.55	0.4	2.3	0.22	0.39	
Cabarrus	15+25-17+00 RT	2.82	0.10	0.45	0.3	2.1	0.20	0.35	
Cabarrus	17+00-CDS LT	3.25	0.72	0.45	2.4	3.7	0.43	0.87	NAG
Cabarrus	17+00-CDS RT	3.25	0.31	0.55	1.3	3.2	0.34	0.69	NAG

Fearrington - Granville

Permanent Diversion Channels

C-1

Lot 15

Drainage Area =		0.32 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	0.79	cfs
Slope=	3.60	%
M=	3 : 1	
Normal Depth=		0.29 ft.
V-10=		3 fps
T=	0.65	
Lining	NAG S-75	

C-2

Lot 14

Drainage Area =		0.50 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	1.24	cfs
Slope=	2.15	%
M=	3 : 1	
Normal Depth=		0.38 ft.
V-10=		2.8 fps
T=	0.51	
Lining	NAG S-75	

C-3

Lot 13

Drainage Area =		0.16 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	0.40	cfs
Slope=	2.00	%
M=	3 : 1	
Normal Depth=		0.25 ft.
V-10=		2.05 fps
T=	0.31	
Lining	NAG S-75	

C-4

Lot 12

Drainage Area =		0.19 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	0.47	cfs
Slope=	5.40	%
M=	3 : 1	
Normal Depth=		0.22 ft.
V-10=		3.1 fps
T=	0.74	
Lining	NAG S-75	

C-5

Lot 11

Drainage Area =		0.53 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	1.31	cfs
Slope=	8.80	%
M=	3 : 1	
Normal Depth=		0.3 ft.
V-10=		4.8 fps
T=	1.65	
Lining	NAG S-150	

C-5A

Lot 10

Drainage Area =		0.72 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	1.78	cfs
Slope=	2.20	%
M=	3 : 1	
Normal Depth=		0.44 ft.
V-10=		3.1 fps
T=	0.60	
Lining	NAG S-75	

C-6

Cabarrus to SCM 2

Drainage Area =		0.51 Ac
C=	0.45	
I-25 =	6.13	in/hr
Q-25=	1.42	cfs
Slope=	7.75	%
M=	3 : 1	
Normal Depth=		0.32 ft.
V-10=		4.7 fps
T=	1.55	
Lining	NAG S-150	

C-7

Lot 16

Drainage Area =		0.55 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	1.36	cfs
Slope=	1.00	%
M=	3 : 1	
Normal Depth=		0.46 ft.
V-10=		2.15 fps
T=	0.29	
Lining	NAG S-75	

C-8

Lot 17

Drainage Area =		0.58 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	1.43	cfs
Slope=	1.00	%
M=	3 : 1	
Normal Depth=		0.47 ft.
V-10=		2.18 fps
T=	0.29	
Lining	NAG S-75	

C-9

Lot 21-22

Drainage Area =		0.51 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	1.26	cfs
Slope=	1.33	%
M=	3 : 1	
Normal Depth=		0.42 ft.
V-10=		2.35 fps
T=	0.35	
Lining	NAG S-75	

C-10

Lot 21-22

Drainage Area =		1.01 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	2.50	cfs
Slope=	4.05	%
M=	3 : 1	
Normal Depth=		0.44 ft.
V-10=		4.23 fps
T=	1.11	
Lining	NAG S-150	

C-11

Lot 20-SCM 4

Drainage Area =		1.54 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	3.81	cfs
Slope=	1.00	%
M=	3 : 1	
Normal Depth=		0.68 ft.
V-10=		2.8 fps
T=	0.42	
Lining	NAG S-75	

C-12

Lot 42-43

Drainage Area =		0.78 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	1.93	cfs
Slope=	1.80	%
M=	3 : 1	
Normal Depth=		0.47 ft.
V-10=		2.9 fps
T=	0.53	
Lining	NAG S-75	

C-13

Lot 40-41

Drainage Area =		1.13 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	2.79	cfs
Slope=	7.00	%
M=	3 : 1	
Normal Depth=		0.42 ft.
V-10=		5.3 fps
T=	1.83	
Lining	NAG S-150	

C-14

Lot 39

Drainage Area =		0.39 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	0.96	cfs
Slope=	5.40	%
M=	3 : 1	
Normal Depth=		0.29 ft.
V-10=		3.7 fps
T=	0.98	
Lining	NAG S-150	

C-15

Lot 38

Drainage Area =		0.57 Ac
C=	0.40	
I-25 =	6.13	in/hr
Q-25=	1.41	cfs
Slope=	5.40	%
M=	3 : 1	
Normal Depth=		0.34 ft.
V-10=		4.1 fps
T=	1.15	
Lining	NAG S-150	

C-15A

Lot 38 Access Esmt

Drainage Area =		0.45 Ac
C=	0.45	
I-25 =	6.13	in/hr
Q-25=	1.25	cfs
Slope=	8.75	%
M=	3 : 1	
Normal Depth=		0.30 ft.
V-10=		4.8 fps
T=	1.64	
Lining	NAG S-150	

C-16

Lot 36 Access Esmt

Drainage Area =		0.44 Ac
C=	0.45	
I-25 =	6.13	in/hr
Q-25=	1.22	cfs
Slope=	6.20	%
M=	3 : 1	
Normal Depth=		0.31 ft.
V-10=		4.2 fps
T=	1.20	
Lining	NAG S-150	

C-17

Rear Lot 31

Drainage Area =	1.82	Ac - offsite
C=	0.40	Future Lots
I-25 =	6.13	in/hr
Q-25=	4.50	cfs
Slope=	1.00	%
M=	1	
Normal Depth=	0.72	ft.
V-10=	2.9	fps
T=	0.45	
Lining	NAG S-150	

C-18

Rear Lot 33

Drainage Area =	0.32	Ac - offsite
C=	0.40	Future Lots
I-25 =	6.13	in/hr
Q-25=	0.79	cfs
Slope=	1.25	%
M=	3 : 1	
Normal Depth=	0.36	ft.
V-10=	2	fps
T=	0.28	
Lining	NAG S-75	

C-18A

Rear Lot 33

Drainage Area =	0.71	Ac - offsite
C=	0.40	Future Lots
I-25 =	6.13	in/hr
Q-25=	1.75	cfs
Slope=	8.50	%
M=	3 : 1	
Normal Depth=	0.34	ft.
V-10=	5.1	fps
T=	1.80	
Lining	NAG S-150	

C-18B

Rear Lot 32

Drainage Area =		2.84 Ac - offsite
C=	0.40	Future Lots
I-25 =	6.13	in/hr
Q-25=	7.02	cfs
Slope=	3.25	%
M=	3 : 1	
Normal Depth=		0.68 ft.
V-10=		5 fps
T=	1.38	
Lining	NAG S-150	

C-19

Rear Lot 31 Access Esmt

Drainage Area =		4.66 Ac - offsite
C=	0.40	Future Lots
I-25 =	6.13	in/hr
Q-25=	11.52	cfs
Slope=	3.25	%
M=	3 : 1	
Normal Depth=		0.68 ft.
V-10=		5 fps
T=	1.38	
Lining	NAG S-150	

Fearrington - Granville

Permanent Diversion Pipes

DP-1

Lot 13-14

Drainage Area =		0.82	acres	
C=	0.40			
I-25 =	6.13	in/hr		
Q-25=	2.03	cfs		
Slope Required		12	in HDPE	0.33 %
HW/25=	0.90	ft		
Use				

12-inch HDPE @ 0.56% Capacity = 2.5 cfs

DP-2

Lot 12-13

Drainage Area =		0.98	acres	
C=	0.40			
I-25 =	6.13	in/hr		
Q-25=	2.42	cfs		
Slope Required		12	in HDPE	0.47 %
HW/25=	1.06	ft		
Use				

12-inch HDPE @ 6.52% Capacity = 9.1 cfs

DP-3

Lot 10-11

Drainage Area =		1.7	acres	
C=	0.40			
I-25 =	6.13	in/hr		
Q-25=	4.20	cfs		
Slope Required		12	in HDPE	1.39 %
HW/25=	1.80	ft		
Use				

12-inch HDPE @ 6.05% Capacity = 8.8 cfs

DP-4

Lot 10-SCM 2

Drainage Area = 2.42 acres

C= 0.40

I-25 = 6.13 in/hr

Q-25= 5.98 cfs

Slope Required 15 in HDPE 0.85 %

HW/25= 1.78 ft

Use

15-inch HDPE @ 1.0% Capacity = 8.8 cfs

Q-Full= 6.5 V-Full= 5.3 fps

Q-10/Q-Full= 0.92

V-10/V-Full=1.13

V-10 = 6.0 fps Mat'l in Zone 1

Use 5' x 4' x 22" D Class B

DP-5

Lot 40-41

Drainage Area = 0.78 acres

C= 0.40

I-25 = 6.13 in/hr

Q-25= 1.93 cfs

Slope Required 12 in HDPE 0.29 %

HW/25= 0.87 ft

Use

12-inch HDPE @ 7.0% Capacity = 9.4 cfs

DP-6

Lot 39

Drainage Area = 1.91 acres

C= 0.40

I-25 = 6.13 in/hr

Q-25= 4.72 cfs

Slope Required 15 in HDPE 0.53 %

HW/25= 0.87 ft

Use

15-inch HDPE @ 3.35% Capacity = 11.8cfs

DP-7

Lot 38 -SCM 7

Drainage Area = 2.3 acres

C= 0.40

I-25 = 6.13 in/hr

Q-25= 5.68 cfs

Slope Required 15 in HDPE 0.77 %

HW/25= 1.69 ft

Use

15-inch HDPE @ 5.8% Capacity = 15.6cfs

Q-Full= 15.6 V-Full= 12.8 fps

Q-10/Q-Full= 0.33

V-10/V-Full=0.88

V-10 = 11.3 fps Mat'l in Zone 2

Use 10' x 6' x 22" D Class B