



City of Albuquerque

Planning Department

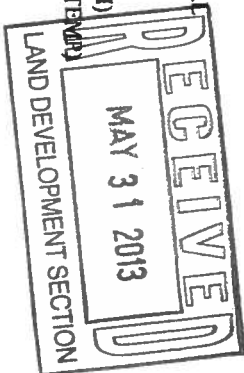
Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

G 17 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 & Artman, P.A.		Contact:	Fred C. Artman, PE	
Address:	128 Monroe Street NE, Albuquerque, NM 87108		E-mail:	Freda@iacivil.com	
Phone#:	268-8828	Fax#:	N/A	E-mail:	Freda@iacivil.com
Owner:	APS				
Address:		Fax#:		E-mail:	
Phone#:					
Architect:	Gregory T. Hicks & Associates		Contact:	Greg Hicks, AIA	
Address:	110 Second St. SW, Suite 204		E-mail:	gthicks@gthicks.com	
Phone#:	243-7492	Fax#:			
Surveyor:			Contact:		
Address:		Fax#:		E-mail:	
Phone#:					
Contractor:			Contact:		
Address:		Fax#:		E-mail:	
Phone#:					
TYPE OF SUBMITTAL:					
<input checked="" type="checkbox"/> DRAINAGE REPORT					
<input checked="" type="checkbox"/> DRAINAGE PLAN IS SUBMITTAL					
DRAINAGE PLAN RESUBMITTAL					
CONCEPTUAL G & D PLAN					
<input checked="" type="checkbox"/> 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					
<input checked="" type="checkbox"/> 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:					
DATE SUBMITTED: May 31, 2013					
By: Isaacson & Artman PA					



Requests for approvals of Site Development Plans and/or Subdivision Plans 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 & Artman, 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:

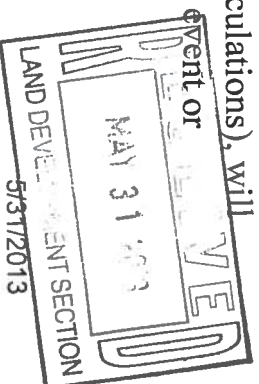
The proposed kindergarten building addition (CG-101) will continue to discharge to historic flowpath(s). Resulting increase of 0.06 cfs to the existing pond. See Sheet CG-101 for calculations.

Courtyard Drainage Improvements:

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

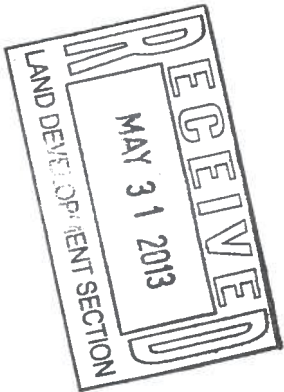
In the existing condition, the upper and lower courtyard walks and landscaping are graded high in the center and drain towards the buildings. The existing curbed planters exacerbate an already problematic area. In the past, numerous localized 'fixes' have been constructed but none have worked sufficiently 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: Hodgin 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-SITE			
AREA OF SITE:	40000	SF	= 0.9
100-year, 6-hour			
STORM DISCHARGE:		EXCESS PRECIP:	
		Treatment SF	% Precip. Zone
Area A	=	0	E _A = 0.53
Area B	=	8000	E _B = 0.78
Area C	=	12000	E _C = 1.13
Area D	=	20000	E _D = 2.12
Total Area	=	40000	100%

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

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: V₃₆₀ =

$$E \cdot A / 12$$

Developed V₃₆₀ = 5183 CF

On-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

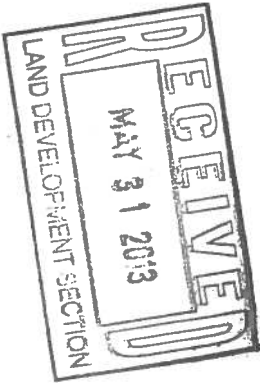
$$Q_{pA} = 1.56$$

$$Q_{pB} = 2.28$$

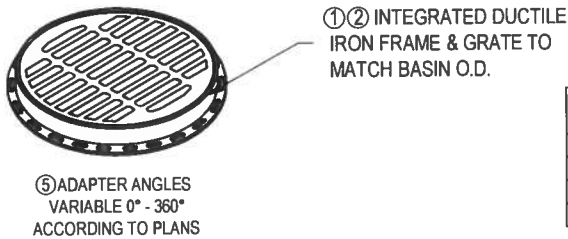
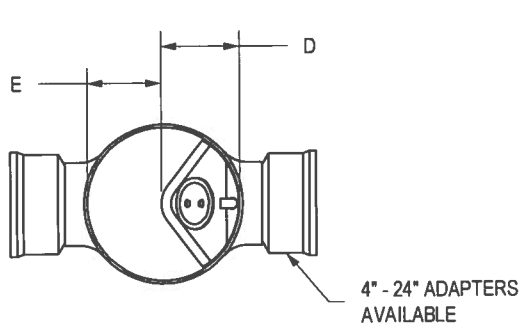
$$Q_{pC} = 3.14$$

$$Q_{pD} = 4.70$$

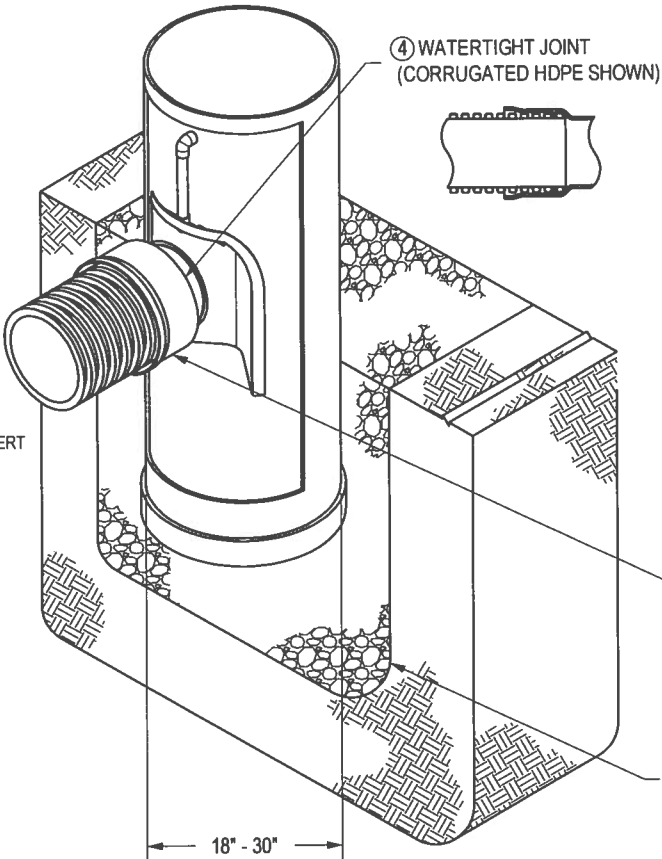
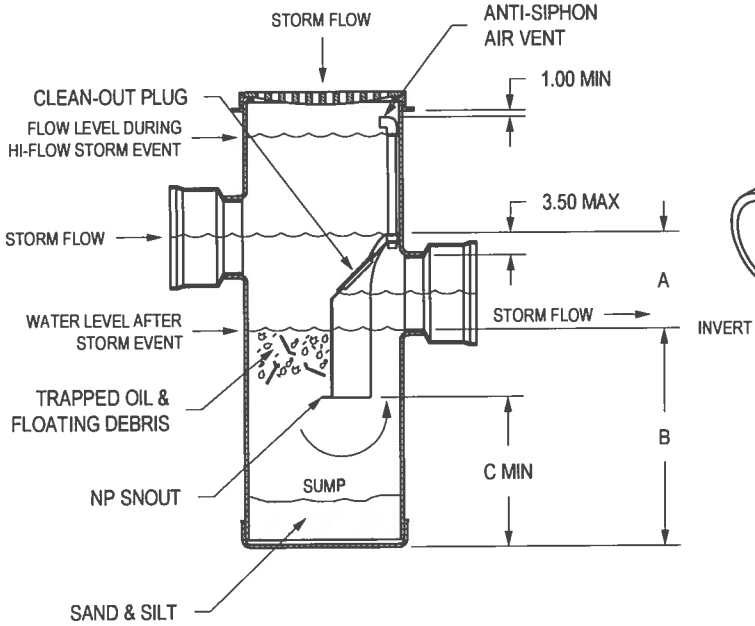
Developed Q_p = 3.4 CFS



NYLOPLAST DRAIN BASIN WITH SNOUT



BASIN SIZE	D	E	OPEN AREA W/ SNOUT	SNOUT 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 SNOUT 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

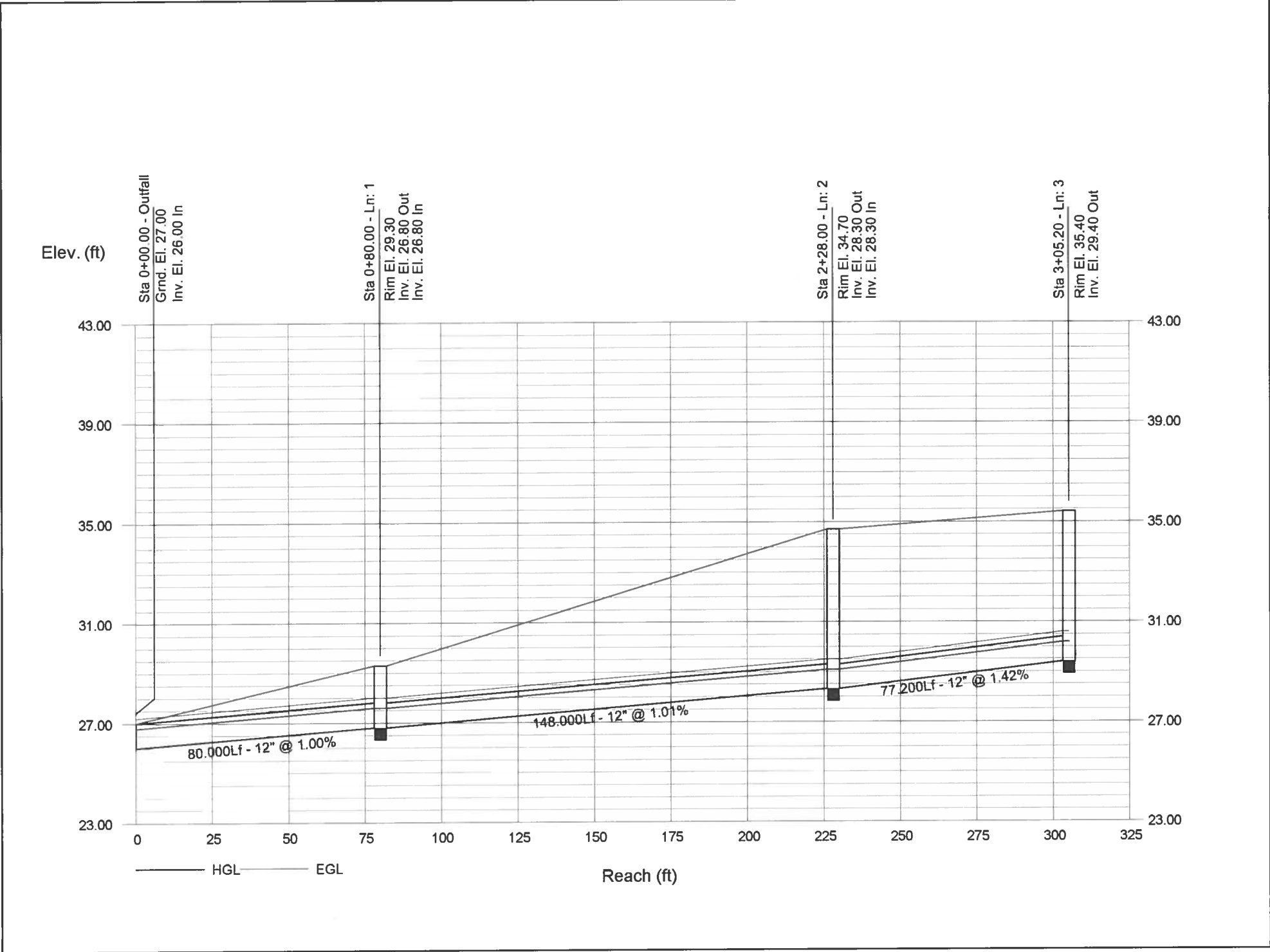
THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS II MATERIAL AS DEFINED IN ASTM D2321. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.

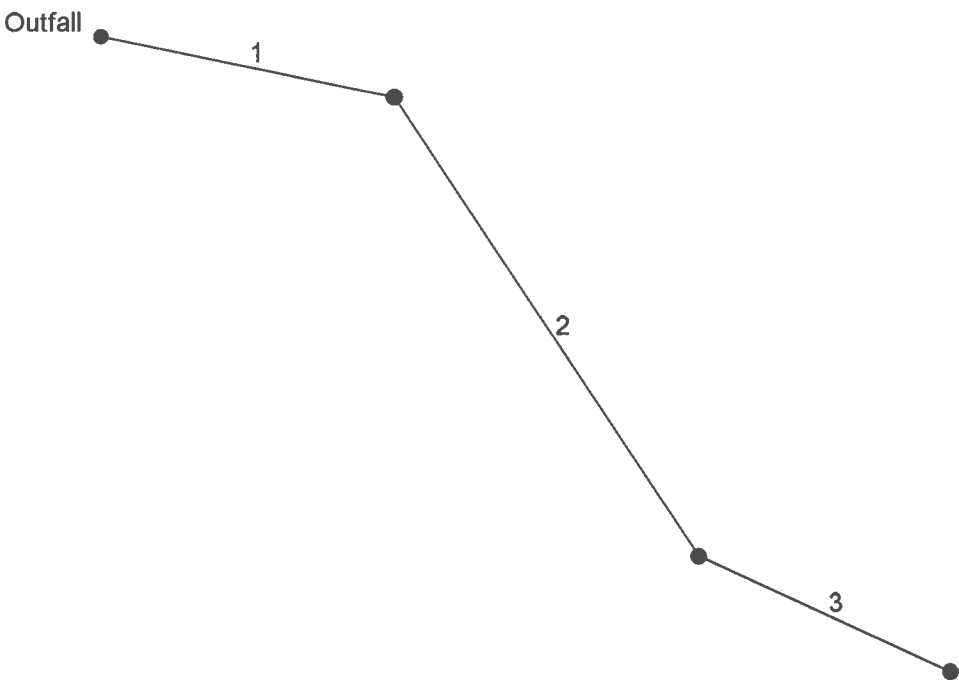
- ① - SNOUT AVAILABLE WITH ALL 18" - 30" STRUCTURE OPTIONS (CUSTOM BASIN, ROAD & HIGHWAY, & CURB INLET)
- ② - FRAMES, GRATES, HOODS, & BASE PLATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
- 3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS RISERS ARE NEEDED FOR BASINS OVER 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

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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 SNOUT QUICK SPEC INSTALLATION DETAIL	
DWG NO.	7004-110-050	REV	B





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	
												Number of lines: 3				Date: 7/27/2012	

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																						

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.														