CITY OF ALBUQUERQUE

June 24, 2008

Scott McGee, P.E.
Isaacson & Arfman, P.A.
128 Monroe Street N.E.
Albuquerque, NM 87108

Re: Albuquerque Retirement Residence, 8301 Palomas NE,
(D-19/D025)
Approval of Permanent Certificate of Occupancy,
Engineer's Stamp Date 4/10/2007
Certification dated: 6/24/08

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Mr. McGee:

Based upon the information provided in your submittal received 6/24/08, the above referenced certification is approved for release of Permanent Certificate of Occupancy by Hydrology.

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

Sincerely,

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

C: CO Clerk—Katrina Sigala
file

CITY OF ALBUQUERQUE

April 27, 2007

Scott M. McGee, P.E.
Isaacson & Arfman, P.A.
128 Monroe St. NE
Albuquerque, NM 87108

Re: Albuquerque Retirement Residence Grading and Drainage Plan
Engineer's Stamp dated 4-10-07 (D19/D25)

Dear Mr. McGee,

Based upon the information provided in your submittal dated 4-12-07, 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.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit.

Prior to Certificate of Occupancy release:

- The slope on the east side of the property that has a slope greater than 3:1 requires an engineer specified means of erosion control. Indicate method used upon certification.
- Engineer Certification per the DPM checklist will be required.

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

Sincerely,

Curtis A. Cherne, E.I.
Engineering Associate, Planning Dept.
Development and Building Services

C: file

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

CITY OF ALBUQUERQUE

December 22, 2006

Scott M. McGee, PE
Isaacson & Arfman, PA
128 Monroe St. NE.
Albuquerque, NM 87108

Re: Albuquerque Retirement Residence, Lots 19-22 Block 21 Tract A
Grading and Drainage Plan
Engineer's Stamp dated 12-13-06 (D19/D25)

Dear Mr. McGee,

Based upon the information provided in your submittal received 12-13-06, 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. Also, prior to Certificate of Occupancy release, Engineer Certification of the grading plan per the DPM checklist will be required.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. If you have any questions regarding this permit please feel free to call the DMD Storm Drainage Design section at 768-3654 (Sertil Kanbar).

If you have any questions, you can contact me at 924-3977.

Sincerely,

Rudy E. Rael, Associate Engineer
Planning Department.
Building and Development Services

C: Sertil Kanbar
CC: file

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

DECEMBER 11, 2006

SUPPLEMENTAL INFORMATION

FOR

Albuquerque Retirement Residence

By

ISAACSON AND ARFMAN, PA
128 MONROE ST. N.E.
ALBUQUERQUE, NM 87108
Project No. 1499

ALBUQUERQUE RETIREMENT RESIDENCE
DRAINAGE SUMMARY

December 6, 2006

I&A Project No.	1499
Architect:	Curry Brandaw Architects
Legal:	Lots 19-22, Block 21, Tract A, Unit A, North Albuquerque Acres
Zone Map:	D-19
Flood Zone:	Zone X (Outside 500 Year Flood Zone)

Existing Conditions:
The Property is an undeveloped commercial property located in Albuquerque's Northeast Heights. Palomas Ave. NE borders the property to the south, undeveloped property and the Paseo Del Norte R.O.W. to the north, and undeveloped commercial properties to the east and west. The undeveloped site is covered with native vegetation and naturally slopes at 5% from east to west to discharge approximately 6.6 cfs (100% Treatment A) to the Paseo Del Norte R.O.W.

Changing outfall - flows up to Palomas

Proposed Conditions:
The proposed construction will fully develop the site with a 118 unit retirement residence, paved access / parking and associated landscaping. Per the calculations, the developed runoff of 15.1 cfs will be released to Palomas Avenue NE. A 'V' shaped bar ditch will be constructed within the north half of the Palomas R.O.W. (by C.O.A. Work Order) from the west 825 ft to the commercial development currently being built at the SE corner of Wyoming Blvd. and Paseo Del Norte NE. Runoff will then be accepted and routed through that site to public storm drain facilities.

ALBUQUERQUE RETIREMENT RESIDENCE
DRAINAGE SUMMARY

December 6, 2006

REPORT:

SUPPORTING EXHIBITS and CALCULATIONS:

PRODUCT INFORMATION:

CALCULATIONS: Albuquerque Retirement Center : Nov. 7, 2006

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

ON-SITE

AREA OF SITE: 154420 SF = 3.54 Ac.

HISTORIC FLOWS:

On-Site Historic Land Condition

Area a	=	154420	SF
Area b	=	0	SF
Area c	=	0	SF
Area d	=	0	SF
Total Area	=	154420	SF

DEVELOPED FLOWS:

On-Site Developed Land Condition

Area a	=	0	SF
Area b	=	38605	SF
Area c	=	15442	SF
Area d	=	100373	SF
Total Area	=	154420	SF

EXCESS PRECIP:

Precip. Zone 3

Ea = 0.66

Eb = 0.92

Ec = 1.29

Ed = 2.36

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

$$\text{Weighted } E = \frac{EaAa + EbAb + EcAc + EdAd}{Aa + Ab + Ac + Ad}$$

3.54 ac × 4.1 = 14.51

4.1 cfs/ac

Historic E	=	0.66 in.		Developed E	=	1.89 in.

On-Site Volume of Runoff: V360 = E*A / 12

Historic V360	=	8493	CF	Developed V360	=	24360 CF

On-Site Peak Discharge Rate: Qp = QpaAa+QpbAb+QpcAc+QpdAd / 43,560

For Precipitation Zone 3

Qpa	=	1.87	Qpc	=	3.45
Qbb	=	2.60	Qpd	=	5.02

Historic Qp	=	6.6	CFS	Developed Qp	=	15.1 CFS

BASIN NO. 1	DESCRIPTION	Drains to INLET 1
Area of basin flows = 20889 SF	=	0.5 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.86 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 3234 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 2.0 cfs

TREATMENT	
A =	0%
B =	20%
C =	20%
D =	60%

BASIN NO. 2	DESCRIPTION	Drains to INLET 2
Area of basin flows = 689 SF	=	0.0 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.64 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 94 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 0.1 cfs

TREATMENT	
A =	0%
B =	50%
C =	0%
D =	50%

BASIN NO. 3	DESCRIPTION	Drains to INLET 3
Area of basin flows = 950 SF	=	0.0 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.64 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 130 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 0.1 cfs

TREATMENT	
A =	0%
B =	50%
C =	0%
D =	50%

BASIN NO. 4	DESCRIPTION	Drains to INLET 4
Area of basin flows = 755 SF	=	0.0 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.64 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 103 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 0.1 cfs

TREATMENT	
A =	0%
B =	50%
C =	0%
D =	50%

BASIN NO. 5	DESCRIPTION	Drains to INLET 5
Area of basin flows = 2638 SF	=	0.1 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 2.14 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 471 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 0.3 cfs

TREATMENT	
A =	0%
B =	15%
C =	0%
D =	85%

BASIN NO. 6	DESCRIPTION	Drains to INLET 6
Area of basin flows = 2076 SF	=	0.0 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.43 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 247 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 0.2 cfs

TREATMENT	
A =	0%
B =	20%
C =	60%
D =	20%

BASIN NO. 7	DESCRIPTION	Drains to INLET 7
Area of basin flows = 10744 SF	=	0.2 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.19 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 1067 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 0.8 cfs

TREATMENT	
A =	0%
B =	70%
C =	15%
D =	15%

BASIN NO. 8	DESCRIPTION	Drains to Palomas via Access Drive
Area of basin flows = 5017 SF	=	0.1 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 2.14 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 896 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 0.5 cfs

TREATMENT	
A =	0%
B =	15%
C =	0%
D =	85%

BASIN NO. 9	DESCRIPTION	Drains to Landscaping
Area of basin flows = 21122 SF	=	0.5 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.82 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 3205 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 2.0 cfs

TREATMENT	
A =	0%
B =	30%
C =	10%
D =	60%

BASIN NO. 10	DESCRIPTION	Drains to INLET 8
Area of basin flows = 12329 SF	=	0.3 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.68 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 1723 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 1.1 cfs

TREATMENT	
A =	0%
B =	40%
C =	10%
D =	50%

BASIN NO. 11	DESCRIPTION	Drains to INLET 9
Area of basin flows = 6221 SF	=	0.1 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.53 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 795 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 0.5 cfs

TREATMENT	
A =	0%
B =	50%
C =	10%
D =	40%

BASIN NO. 12	DESCRIPTION	Drains to INLET 10
Area of basin flows = 2599 SF	=	0.1 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.68 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 363 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 0.2 cfs

TREATMENT	
A =	0%
B =	40%
C =	10%
D =	50%

BASIN NO. 13	DESCRIPTION	Drains to INLET 11
Area of basin flows = 1724 SF	=	0.0 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.39 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 200 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 0.1 cfs

TREATMENT	
A =	0%
B =	60%
C =	10%
D =	30%

BASIN NO. 14	DESCRIPTION	Drains to INLET 12
Area of basin flows = 1469 SF	=	0.0 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.68 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 205 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 0.1 cfs

TREATMENT	
A =	0%
B =	40%
C =	10%
D =	50%

BASIN NO. 15	DESCRIPTION	Drains to INLET 13
Area of basin flows = 9756 SF	=	0.2 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.89 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 1539 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 1.0 cfs

TREATMENT	
A =	0%
B =	25%
C =	10%
D =	65%

BASIN NO. 16	DESCRIPTION	Drains to Palomas via Access Drive

Area of basin flows = 10173 SF = 0.2 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 2.22 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 1879 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 1.1 cfs

TREATMENT	
A =	0%
B =	10%
C =	0%
D =	90%

BASIN NO. 17	DESCRIPTION	Perimeter Landscape Basin

Area of basin flows = 7418 SF = 0.2 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 1.11 in.

Sub-basin Volume of Runoff (see formula above)

V360 = 683 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 0.5 cfs

TREATMENT	
A =	0%
B =	50%
C =	50%
D =	0%

BASIN NO. 18	DESCRIPTION	Building Roof Drainage to Private Storm Drain

Area of basin flows = 37688 SF = 0.9 Ac.

The following calculations are based on Treatment areas as shown in table to the right

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 2.36 in.

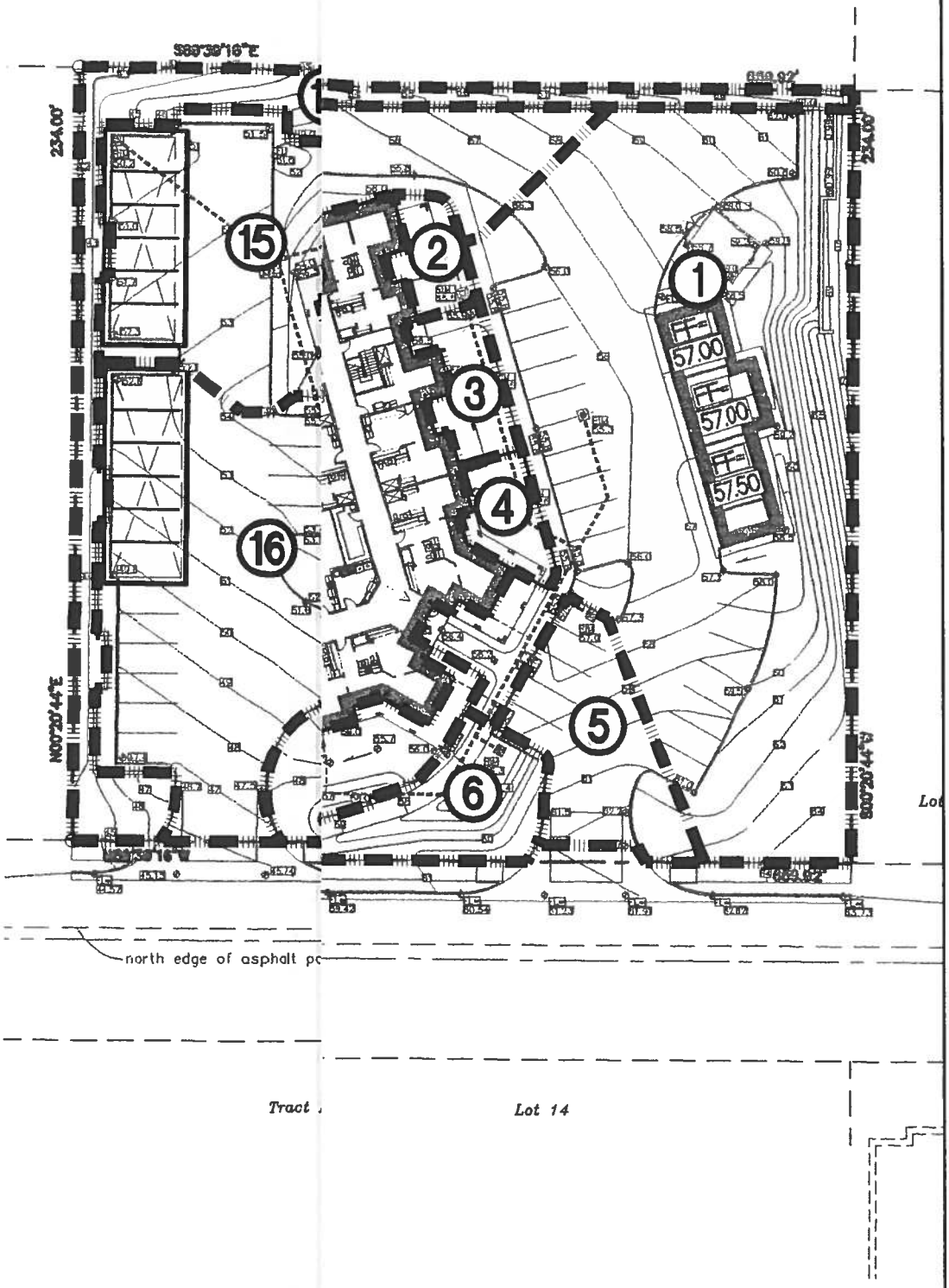
Sub-basin Volume of Runoff (see formula above)

V360 = 7412 CF

Sub-basin Peak Discharge Rate: (see formula above)

Qp = 4.3 cfs

TREATMENT	
A =	0%
B =	0%
C =	0%
D =	100%



BASIN AREAS	
1	20889 SF
2	689 SF
3	950 SF
4	755 SF
5	2638 SF
6	2076 SF
7	10744 SF
8	5017 SF
9	21122 SF
10	12329 SF
11	6221 SF
12	2599 SF
13	1724 SF
14	1469 SF
15	9756 SF
16	10172 SF
17	7418 SF
18	37688 SF

M:\ACTIVE\LD4\1499\dwg\1499EXH-BASIN.dwg, Layout1, 12/11/2006 3:27:27 PM

Albuquerque Retir Residence

Curry Brandaw Archi

DRAINAGE BASIN

ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates
128 Monroe Street N.E.
Albuquerque, New Mexico 87108
Ph. 505-268-8828 Fax. 505-268-2632

1499EXH-BASIN.dwg Dec 11,2006

SUMMARY

Basin No.	Description		DISCHARGE		LOCATION	GRATE	CAPACITY
1	Drains to INLET 1	=	2.0	cfs	Pavement	2'x2' Road Inlet	6.0 cfs
2	Drains to INLET 2	=	0.1	cfs	Landscape	8" Dome	0.8 cfs
3	Drains to INLET 3	=	0.1	cfs	Landscape	8" Dome	0.8 cfs
4	Drains to INLET 4	=	0.1	cfs	Landscape	8" Dome	0.8 cfs
5	Drains to INLET 5	=	0.3	cfs	Pavement	2'x2' Road Inlet	6.0 cfs
6	Drains to INLET 6	=	0.2	cfs	Landscape	12" Dome	1.4 cfs
7	Drains to INLET 7	=	0.8	cfs	Landscape	18" Dome	4.0 cfs
8	Drains to Palomas via Access Drive	=	0.5	cfs			
9	Drains to Landscaping	=	2.0	cfs			
10	Drains to INLET 8	=	1.1	cfs	Pavement	2'x2' Road Inlet	6.0 cfs
11	Drains to INLET 9	=	0.5	cfs	Landscape	12" Dome	1.4 cfs
12	Drains to INLET 10	=	0.2	cfs	Landscape	8" Dome	0.8 cfs
13	Drains to INLET 11	=	0.1	cfs	Landscape	8" Dome	0.8 cfs
14	Drains to INLET 12	=	0.1	cfs	Landscape	8" Dome	0.8 cfs
15	Drains to INLET 13	=	1.0	cfs	Pavement	2'x2' Road Inlet	6.0 cfs
16	Drains to Palomas via Access Drive	=	1.1	cfs			
17	Perimeter Landscape Basin	=	0.5	cfs			
18	Building Roof Drainage to Private Storm I	=	4.3	cfs			
TOTAL DISCHARGE		=	15.0	cfs			

Note: Inlet Capacity based on a Head of 0.5' → .25'

leak – should have cut [illegible] which [illegible]
ratio 1/3 x 4.3 = 1.4 cfs to south SD

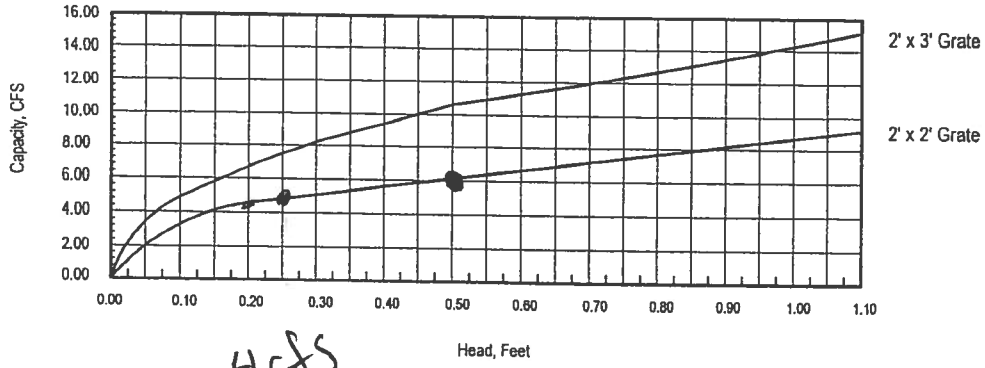
Nyloplast Road & Highway Inlet Capacity Chart

This chart is based on equations from the FAA Airport Drainage AC 150/5320-5B, 1970, Page 35. Certain assumptions have been made and no two installations will necessarily perform the same way. Safety factors should change with site conditions such that a safety factor 1.25 should be used for an inlet in pavement, and a safety factor of 2.0 should be used in turf areas.

Structure Outlet Pipe Size	Flow Rate CFS *
4"	0.229
6"	0.662
8"	1.441
10"	2.612
12"	4.152
15"	7.126
18"	12.163
24"	25.821

* Maximum flow capacity before road & highway grate begins to backfill. Calculation based on an average pipe slope of 1%.

Nyloplast 2' X 2' & 2' X 3' Road & Highway Grates



4 cfs

Inlets #
1, 5, 8
& 13

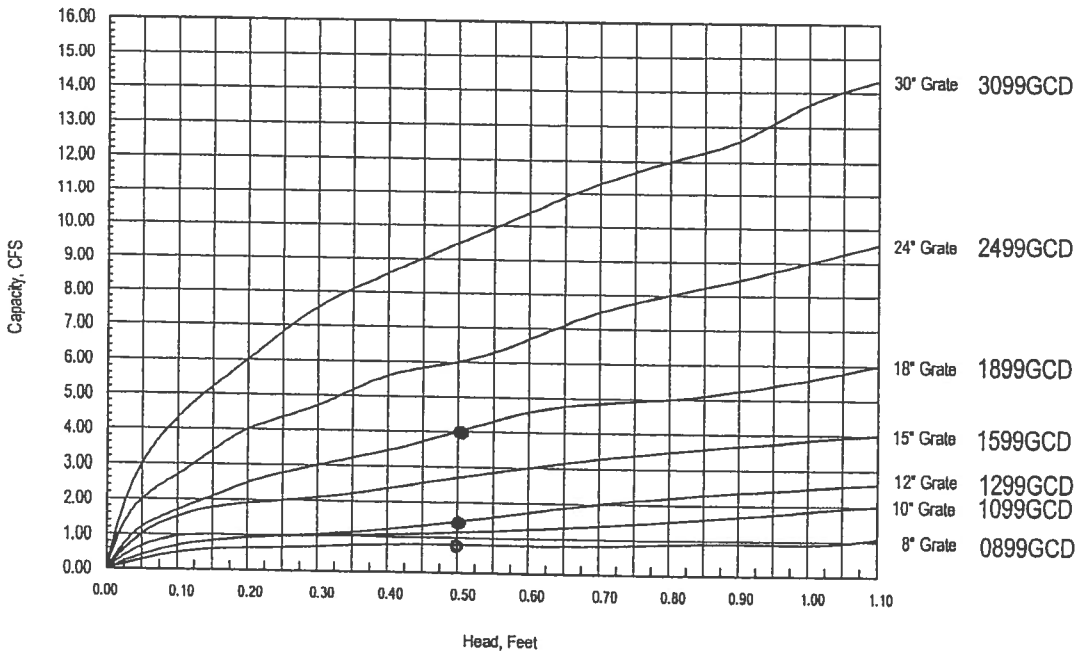
THIS PRINT DISCLOSES SUBJECT MATTER IN WHICH NYLOPLAST HAS PROPRIETARY RIGHTS. THE RECEIPT OR POSSESSION OF THIS PRINT DOES NOT CONFER, TRANSFER, OR LICENSE THE USE OF THE DESIGN OR TECHNICAL INFORMATION SHOWN HEREIN REPRODUCTION OF THIS PRINT OR ANY INFORMATION CONTAINED HEREIN, OR MANUFACTURE OF ANY ARTICLE HEREFROM, FOR THE DISCLOSURE TO OTHERS IS FORBIDDEN, EXCEPT BY SPECIFIC WRITTEN PERMISSION FROM NYLOPLAST.	DRAWN BY AWA DATE 19DEC01 APPD BY CJA DATE 19DEC01 DWG SIZE A	MATERIAL PROJECT NO./NAME ROAD & HIGHWAY STRUCTURE SCALE 1:2 SHEET 1 OF 1	Nyloplast 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com TITLE 2' X 2' & 2' X 3' INLET CAPACITY DWG NO. 7001-110-084 REV A

Nyloplast Dome Grate Inlet Capacity Chart

This chart is based on equations from the FAA Airport Drainage AC 150/5320-5B, 1970, Page 35. Certain assumptions have been made and no two installations will necessarily perform the same way. Safety factors should change with site conditions such that a safety factor 1.25 should be used for an inlet in pavement, and a safety factor of 2.0 should be used in turf areas.

Basin Outlet Pipe Size	Flow Rate CFS *
4"	0.229
6"	0.662
8"	1.441
10"	2.612
12"	4.152
15"	7.126
18"	12.163
24"	25.821
30"	52.173

Nyloplast Dome Grates 8" - 30"



* Maximum flow capacity before drain basin begins to backfill.
Calculation based on an average pipe slope of 1%.

8" Dome
Inlets # 2, 3, 4, 10, 11, 12

12" Dome
Inlets # 6, 9

18" Dome
Inlet # 7

DRAWN BY AWA	MATERIAL	Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 07MAR00			
APPD BY CJA	PROJECT NO./NAME	TITLE	
DATE 07MAR00	GRATE / COVER	8" - 30" DOME INLET CAPACITY	
DWG SIZE A	SCALE 1:2 SHEET 1 OF 1	DWG NO. 7001-110-000	REV C

Manning Pipe Calculator

12" ϕ @ 0.5% slope

Given Input Data:

Shape	Circular
Solving for	Flowrate
Diameter	12.0000 in
Depth	12.0000 in
Slope	0.0050 ft/ft
Manning's n	0.0090

Computed Results:

Flowrate	3.6390 cfs
Area	0.7854 ft2
Wetted Area	0.7854 ft2
Wetted Perimeter	37.6991 in
Perimeter	37.6991 in
Velocity	4.6333 fps
Hydraulic Radius	3.0000 in
Percent Full	100.0000 %
Full flow Flowrate	3.6390 cfs
Full flow velocity	4.6333 fps

Manning Pipe Calculator

Given Input Data:

Shape	Circular
Solving for	Flowrate
Diameter	12.0000 in
Depth	12.0000 in
Slope	0.0100 ft/ft
Manning's n	0.0090

12" ϕ @ 1% slope

Computed Results:

Flowrate	5.1463 cfs ✓
Area	0.7854 ft2
Wetted Area	0.7854 ft2
Wetted Perimeter	37.6991 in
Perimeter	37.6991 in
Velocity	6.5524 fps
Hydraulic Radius	3.0000 in
Percent Full	100.0000 %
Full flow Flowrate	5.1463 cfs
Full flow velocity	6.5524 fps

Manning Pipe Calculator

Given Input Data:

Shape	Circular
Solving for	Flowrate
Diameter	15.0000 in
Depth	15.0000 in
Slope	0.0100 ft/ft
Manning's n	0.0090

15"ϕ @ 1% slope

Computed Results:

Flowrate	9.3308 cfs
Area	1.2272 ft2
Wetted Area	1.2272 ft2
Wetted Perimeter	47.1239 in
Perimeter	47.1239 in
Velocity	7.6034 fps
Hydraulic Radius	3.7500 in
Percent Full	100.0000 %
Full flow Flowrate	9.3308 cfs
Full flow velocity	7.6034 fps