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MIKE CAUSEY, INSURANCE COMMISSIONER & STATE FIRE MARSHAL
BRIAN TAYLOR, CHIEF STATE FIRE MARSHAL

June 22, 2021

Thomas Brasse
NC HBA - CLT
5047 Sharlon Woods Lane
Charlotte, NC 28210

RE: NCPC 403.5.1 C900 Underground Water Distribution Pipe
2012 NCPC Section 101.2, exception #4

Mr. Brasse:

This letter is in response to your request for formal interpretation dated April 13, 2020 that was received in NCDOI by email on April 13, 2021. Your request for formal interpretation, in my words, states:

> Can AWWA C900 water service pipe be used even though it is not listed in 2012 NC Plumbing Code Tables 605.3 – Water Service Pipe or 605.5 – Pipe Fittings?

Remarks:

Code sections noted in this letter are referring to the 2012 edition of the NC Plumbing Code (NCPC) unless otherwise noted.

Your reference to Section 403.5.1 is not correct as there is no section in the 2012 NCPC with that number. This interpretation assumes that the correct reference is 605.3 – Water Service Pipe.

Code Analysis:

Section 605.3 indicates that all acceptable pipes are listed in Table 605.3 – Water Service Pipe. Table 605.3 does not list C900 pipe just as Mecklenburg County Code Enforcement indicates in the attachment provided with the request for formal interpretation.

Section 605.3 indicates the water service pipe shall have a minimum water pressure of 160psi and piping shall be rated for the maximum pressure that exists at the site even if it is over 160psi.

The first sentence of Section 105.2 – Alternative Materials, Methods, and Equipment states: "The provisions of this are not intended to prevent the installation of any material or to prohibit any method of construction not specifically prescribed by this code, provided that such alternative has been *approved*."

Conclusions:

The code does not list C900 as an approved water service pipe in Section 605.3, however, C900 piping is a proven water pipe that has been used for years and continues to be used as municipal and county water mains. C900 pipe and associated fittings should, therefore, be acceptable as approved alternate materials under Section 105.2 where the pipe and associated fittings are used similar to municipal or county water mains. Because it is an alternate material and local inspection jurisdiction may not have a

means of testing such installation, the contractor installing the pipe and associated fittings is responsible for hiring and paying for third-party inspections and test of such installations as is allowed under Section 105.3 – Required Testing when the local inspection jurisdiction determines it is unqualified to or incapable of performing such tests and inspections.

Please call if you have comments or questions.

Sincerely,

Carl Martin, RA
Deputy Commissioner
Division Chief of Engineering

cc: File
Patrick Granson, Director, Mecklenburg County Code Enforcement
Robbie Davis, Chairman – BCC
Danny Priest, Vice-Chairman – BCC
Keith Rogers, Chairman – BCC Mechanical/Plumbing Standing Committee

ATTACHMENT A

APPENDIX E
APPEALS
NORTH CAROLINA
BUILDING CODE COUNCIL

325 North Salisbury Street, Room 5_44
Raleigh, North Carolina 27603
(919) 647-0009

APPEAL TO NCDOI/NCBCC Hearing Date_____/_____/_____

GS 153A-374, GS 160A-434
Formal Interpretation by NCDOI _____
Appeal of Local Decision to NCDOI _____

GS 143-140, GS 143-141
Appeal of Local Decision to NCBCC _____
Appeal of NCDOI Decision to NCBCC ___X___

APPELANT **Thomas Brasse** PHONE: **(704) 309-1937**
REPRESENTING: **NC HBA - CLT**
ADDRESS: **5047 Sharlon Woods Lane**
CITY: **Charlotte** STATE: **NC** ZIP: **28210**
E-MAIL: **tbrasse@rkinvestors.com** FAX: **No**

North Carolina State Building Code, Volume **2012 NC Plumbing Code** - Section **403.5.1**

REQUEST ONE: [X] Formal Interpretation by NCDOI [ ] Appeal of Local Decision to NCBCC
[ ] Appeal of Local Decision to NCDOI [ ] Appeal of NCDOI Decision to NCBCC

Type or print. Include all background information as required by the referenced General Statutes and the attached policies. Attach additional supporting information.

Project: **No Specific Project - all underground distribution systems in NC**
Primary Occupancy: ANY
Construction Type: All underground water supply piping.
Sprinkers: Any/None

Exhibits: **Exhibit 'A': manufacturer information on piping and emails related to this request and why it is necessary.**

REASON: **Installation of c900 pipe for private underground water distribution (after a municipal meter) used to fall to Charlotte Water and other municipal utility authorities for approval and inspection. Recently a determination was made following a language change that this piping needs to be permitted and installed under the plumbing code. Local code officials cannot approve the C900 pipe because it is not specifically listed on Table 605.3, despite the fact that it is specifically approved for this use by AWWA, ANSI and NSF. I have personally spoken to Mecklenburg County officalss who support this request, as well as the Chief Plumbing Code Consultant - Mark Burns and supplied him all of the pertinent information. Mecklenburg County Code Enforcement did not feel they could make an exception for this and specifically asked me to elevate the interpretation question to the NC Department of Insurance, whom subsequently denied the initial appeal when it did not include this form.**

I have included information on the pipe materials as well as the email from the chief plumbing code inspector in Mecklenburg County. Please help get this issue resolved, as it is clear it is just a change in rules and the handoff from one group to another has had an unintended consequence here. To this day Charlotte water and all the other municipalities in the State continue to install, allow developers and contractors to install and use this material for the safe and reliable distribution of potable water in the public domain. There is no difference in the private domain and it has been installed for more than 20 years without issue.

Lastly, it is important to point out that this is not a health, safety or welfare issue and I feel the interpretation being requested meets the intent of the code.

In summary, I am requesting confirmation on appeal that this type of pipe be allowed.

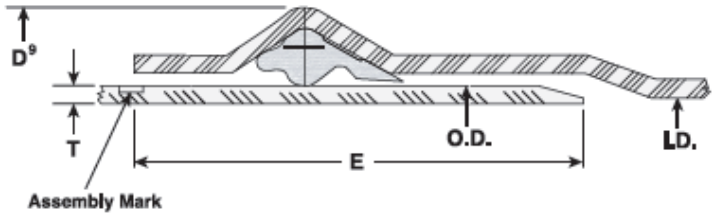
JM Eagle *Building essentials for a better tomorrow™*

BLUE BRUTE™

SUBMITTAL AND DATA SHEET

PIPE SIZE (IN)	AVERAGE O.D. (IN)	NOM. I.D. (IN)	MIN. T. (IN)	MIN. E (IN)	APPROX. D^9 (IN)	APPROX. WEIGHT (LBS/FT)
PRESSURE CLASS 165 psi (DR 25)						
4	4.80	4.39	0.192	5.25	5.57	1.9
6	6.90	6.31	0.276	6.40	8.00	3.9
8	9.05	8.28	0.362	7.05	10.50	6.7
10	11.10	10.16	0.444	8.20	12.88	10.1
12	13.20	12.08	0.528	8.80	15.31	14.4
PRESSURE CLASS 235 psi (DR 18)*						
4	4.80	4.23	0.267	5.25	5.87	2.6
6	6.90	6.09	0.383	6.40	8.43	5.3
8	9.05	7.98	0.503	7.05	11.06	9.2
10	11.10	9.79	0.617	8.20	13.57	13.9
12	13.20	11.65	0.733	8.80	16.13	19.7
PRESSURE CLASS 305 psi (DR 14)*						
4	4.80	4.07	0.343	5.25	6.17	3.2
6	6.90	5.86	0.493	6.40	8.87	6.7
8	9.05	7.68	0.646	7.05	11.63	11.6
10	11.10	9.42	0.793	8.20	14.27	17.6
12	13.20	11.20	0.943	8.80	16.97	25.1

Consult JM Eagle™ for CSA and other listing availability prior to shipment.
Note: *FM Approvals Pressure Class 150 psi for DR 18 and 200 psi for DR 14.
* Contact your JM eagleTM sales representative for location availability.



I.D. : Inside Diameter
O.D. : Outside Diameter
T. : Wall Thickness
D^9 : Bell Outside Diameter
E : Distance between Assembly Mark to the end of spigot.

Product Standard:	ANSI/AWWA C900
Pipe Compound:	ASTM D1784 Cells Class 12454
Gasket:	ASTM F477
Integral Bell Joint:	ASTM D3139
Certifications:	ANSI/NSF Standard 61
	UL Standard 1285
	Pipe Length: 20 feet laying length
Installation:	AWWA C605
	JM Eagle™ Installation Guide

JM Eagle™ also manufactures this pipe in green for sewer force main applications and purple, specifically for reclaimed water systems. This pipe is made to the same requirements as our standard products. The only difference is that the pigment used is green or purple. These products will not be marked with UL or NSF listing marks. Additionally, the green pipe will be marked "Forced Sewer" and the purple pipe will be marked: "Reclaimed Water... Do Not Drink."

C900: PVC Pressure Pipe
SPECIFICATION DATA

Diamond (C900) PVC Pipe (4" through 12") is made of 12454 compound per ASTM D1784, in accordance with the dimensional, chemical, and physical requirements of AWWA C900.

Diamond (C900) PVC Pipe bears the mark of NSF, International (NSF), the listing of Underwriters Laboratory, Inc. (UL), and (DR14 & DR18) bears the listing of Factory Mutual(FM).

Diamond (C900) PVC Pipe utilizes a gasket, per ASTM F477, to seal the integral bell socket to the spigot of the next joint (which conforms to the requirements of ASTM D3139.) Each male end is beveled to facilitate joint assembly, and the spigot is referenced marked to ensure proper insertion depth. Diamond furnished lubricant is to be used in the joining process.

Diamond C900 is supplied in 20 foot laying lengths.

Physical Properties of PVC 12454:

Property	ASTM Test	Minimum
Specific Gravity	D792	1.40
Tensile Strength, psi	D638	7,000
Tensile Modulus, psi	D638	400,000
IZOD Impact Strength	D256	.65ft., lb./in.

Factory Mutual Systems APPROVED

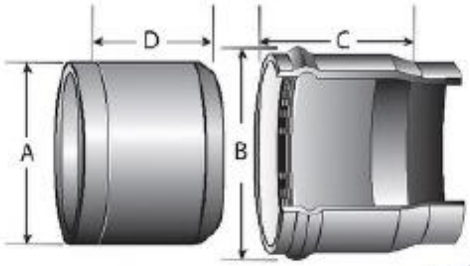
Underwriter Laboratories Inc.©

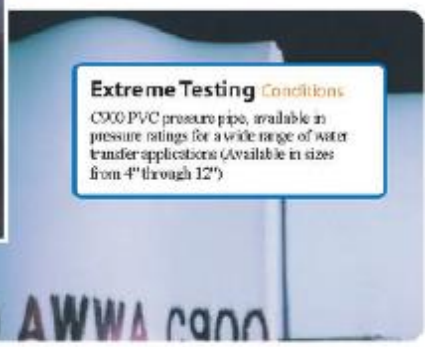
SHORT FORM **Specification for Diamond C900 PVC Water Pipe**
Diamond C900 PVC Water Pipe shall be made of compounds conforming to ASTM D1784 with a cell classification of 12454. Diamond C900 shall meet all the dimensional, chemical, and physical requirements as outlined in AWWA C900 and will be supplied in 20 foot laying lengths. Joints shall meet the requirements of ASTM D3139 and shall be formed using Rieber Technology. Gaskets shall meet the requirements of ASTM F477.
Potable water pipe shall be manufactured from National Sanitation Foundation (NSF) approved compounds.

DIAMOND PLASTICS® CORPORATION

Corporate Headquarters • 1212 Johnstown Road • P.O. Box 1608 • Grand Island, NE 68802-1608

Reiber Joint Illustration





C900™ AWWA C900 SPECIFICATION DATA — Tough

Nominal Pipe Size in. (mm)	Outside Diameter A Inches	Bell Diameter B Inches	Approximate Bell Depth C Inches	Spigot Insert Mark D Inches	C900 DR-14 305 psi Min Wall (t) Inches	C900 DR-18 235 psi Min Wall (t) Inches	C900 DR-25 165 psi Min Wall (t) Inches
4" (100)	4.800	6-1/2"	6	5	0.343	0.267	0.192
6" (150)	6.900	9-1/4"	6.5	6	0.493	0.383	0.276
8" (200)	9.050	11-3/4"	7	6.5	0.646	0.503	0.362
10" (250)	11.100	14-1/4"	7.5	7	0.793	0.617	0.444
12" (300)	13.200	16-3/4"	8	7.5	0.943	0.733	0.528

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Corporate Headquarters • 1212 Johnstown Road • P.O. Box 1608 • Grand Island, NE 68802-1608

North American Pipe Corporation™

ASTM D2241: *Gasketed Integral Bell PVC Pipe*

Municipal

Water, Wastewater, Reclaimed Water

North American Pipe Corporation's ASTM D2241 Gasketed Integral Bell PVC Pipe product line is manufactured to meet the needs of water distribution and irrigation systems. With top quality raw materials and modern processing technology, our D2241 pipe meets all industry standards in addition to our own rigorous quality control requirements.

Our D2241 pipe utilizes Rieber style gaskets throughout the entire product offering to create a leak-free joint.

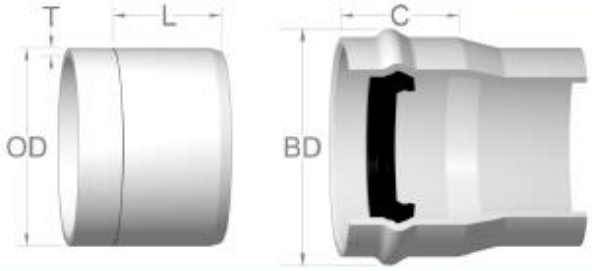
Whether specifying or installing our pipe, you can be assured that North American Pipe will provide the pipe "Right, On Time, All the Time".

Pipe Standard:	ASTM D2241
Diameter Standard:	Iron Pipe Size (IPS)
Nominal Sizes:	1½", 2", 2½", 3", 4", 6", 8", 10", 12"
Dimension Ratios & Pressure Ratings:	SDR 41 – 100 psi SDR 32.5 – 125 psi SDR 26 – 160 psi SDR 21 – 200 psi SDR 17 – 250 psi SDR 13.5 – 315 psi
Lay Length:	20' – All Sizes 40' and 42' – 2" to 6" Sizes
Pipe Compound:	ASTM D1784 Cell Class 12454
Pipe Joint Std.:	ASTM D3139
Gasket Standard:	ASTM F477
Gasket Material Offerings:	Styrene-Butadiene Rubber *[Std.]* Nitrile, EPDM *[Optional]*
Installation Std.:	ASTM D2774

Applications:	Water	Wastewater	Reclaimed Water
Color:	White	Green	Purple
Certifications:	NSF 14 NSF 61	None	None

North American Pipe Corporation™

ASTM D2241: *Gasketed Integral Bell PVC Pipe*



NOMINAL PIPE SIZE	OUTSIDE DIAMETER (OD)	*APPROX. BELL DIAMETER (BD)	APPROX. BELL DEPTH (C)	INSERTION MARK (L)
1½"	1.900	2.625	3.250	2.625
2"	2.375	3.250	3.500	2.750
2½"	2.875	4.000	4.125	3.125
3"	3.500	4.750	4.125	3.625
4"	4.500	5.875	4.625	4.000
6"	6.625	8.500	6.250	5.375
8"	8.625	10.625	7.250	6.375
10"	10.750	13.125	7.500	6.625
12"	12.750	15.500	8.250	7.375

NOMINAL PIPE SIZE	MINIMUM WALL THICKNESS (T)					
	PR 100 SDR 41	PR 125 SDR 32.5	PR 160 SDR 26	PR 200 SDR 21	PR 250 SDR 17	PR 315 SDR 13.5
1½"	---	**	**	.090	.112	.141
2"	---	**	.091	.113	.140	.176
2½"	---	**	.110	.137	.169	.213
3"	.085	.108	.135	.167	.206	.259
4"	.110	.138	.173	.214	.265	.333
6"	.162	.204	.255	.316	.390	.491
8"	.210	.265	.332	.410	.508	---
10"	.262	.331	.413	.511	.632	---
12"	.311	.392	.490	.606	.750	---

Notes:

1. These dimensions are for estimating purposes only. All dimension are in inches.
2. SDR = Standard Dimension Ratio
3. PR = Pressure Rating (psi).
4. * Dimension given for Approx. Bell Diameter (BD) is for highest pressure rating.
5. ** Consult our Customer Service or Sales Department for availability.

From: Rowland, Tommy D. <Tommy.Rowland@mecklenburgcountync.gov>
Sent: Friday, March 5, 2021 11:01 AM
To: Tom Brasse <tbrasse@rkinvestors.com>; Granson, Patrick <Patrick.Granson@mecklenburgcountync.gov>
Subject: RE: [External]C900 pipe underground, outside of the building footprint, inside property lines

605.3 Water service pipe. Water service pipe shall conform to NSF 61 and shall conform to one of the standards listed in Table 605.3. Water service pipe or tubing, installed underground and outside of the structure, shall have a working pressure rating of not less than 160 psi (1100 kPa) at 73.4°F (23°C). Where the water pressure exceeds 160 psi (1100 kPa), piping material shall have a working pressure rating not less than the highest available pressure. Water service piping materials not third-party certified for water distribution shall terminate 5 feet (1.524 m) outside of the building. Ductile iron water service piping shall be cement mortar lined in accordance with AWWA C104.

C900 is not an approved material on Table 605.3

TABLE 605.3
WATER SERVICE PIPE

MATERIAL	STANDARD
Acrylonitrile butadiene styrene (ABS) plastic pipe	ASTM D1527; ASTM D2282
Brass pipe	ASTM B43
Chlorinated polyvinyl chloride (CPVC) plastic pipe	ASTM D2846; ASTM F441; ASTM F442; CSA B137.6
Chlorinated polyvinyl chloride/aluminum/chlorinated polyvinyl chloride (CPVC/AL/CPVC)	ASTM F2855
Copper or copper-alloy pipe	ASTM B42; ASTM B302
Copper or copper-alloy tubing (Type K, WK, L, WL, M or WM)[a]	ASTM B75; ASTM B88; ASTM B251; ASTM B447
Cross-linked polyethylene (PEX) plastic pipe and tubing	ASTM F876; ASTM F877; AWWA C904; CSA B137.5
Cross-linked polyethylene/aluminum/cross-linked polyethylene (PEX-AL-PEX) pipe	ASTM F1281; ASTM F2262; CSA B137.10
Cross-linked polyethylene/aluminum/high-density polyethylene (PEX-AL-HDPE)	ASTM F1986
Ductile iron water pipe	AWWA C151/A21.51; AWWA C115/A21.15
Galvanized steel pipe	ASTM A53
Polyethylene (PE) plastic pipe	ASTM D2239; ASTM D3035; AWWA C901; CSA B137.11
Polyethylene (PE) plastic tubing	ASTM D2737; AWWA C901; CSA B137.1
Polyethylene/aluminum/polethylene (PE-AL-PE) pipe	ASTM F1282; CSA B137.9
Polyethylene of raised temperature (PE-RT) plastic tubing	ASTM F2769
Polypropylene (PP) plastic pipe or tubing	ASTM F2389; CSA B137.11
Polyvinyl chloride (PVC) plastic pipe	ASTM D1785; ASTM D2241; ASTM D2672; CSA B137.3
Stainless steel pipe (Type 304/304L)	ASTM A312; ASTM A778
Stainless steel pipe (Type 316/316L)	ASTM A312; ASTM A778

a. Below grade Type K, WK, L, WL.

Tommy Rowland
Mechanical/Plumbing Code Administrator
2145 Suttle Ave
Charlotte, NC 28208
980-314-3099
Tommy.Rowland@Mecklenburgcountync.gov

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Click on the box above for Email Alerts, Bulletins & Code Enforcement News

From: Tom Brasse <tbrasse@rkinvestors.com>
Sent: Friday, March 5, 2021 10:52 AM
To: Granson, Patrick <Patrick.Granson@mecklenburgcountync.gov>
Cc: Rowland, Tommy D. <Tommy.Rowland@mecklenburgcountync.gov>
Subject: [External]C900 pipe underground, outside of the building footprint, inside property lines
Importance: High

Patrick, (copying Tommy too)
They want more specific information. Can you give me the Plumbing code and section that C900 conflicts with for this use? I am trying to turn this back to them quickly. I thought what I had sent was enough, but paperwork….
Thanks,
Tom
From: Martin, Carl <Carl.Martin@ncdoi.gov>
Sent: Thursday, January 7, 2021 10:19 AM
To: Tom Brasse <tbrasse@rkinvestors.com>
Cc: Privott, Robert <RPrivott@nchba.org>; Granson, Patrick <Patrick.Granson@mecklenburgcountync.gov>; Burns, Mark <mark.burns@ncdoi.gov>
Subject: [SPAM]RE: Formal Interpretation needed.- C900 pipe underground, outside of the building footprint, inside property lines

Tom,
This often happens with methods or products that are beyond the actual codes. You can request a formal interpretation by completing the attached form and attaching a letter on letterhead stationary describing in detail the situation and the reason for approval of the material. You can then either mail me the hardcopy of all this or email a pdf of it to me. Attach any other information that would be helpful in describing or detailing the material and situation or otherwise supports your position. Things like a site plan showing a site indicating where the proposed pipe would be located as well as a product description of the material (C900 pipe in this case) would be helpful.

I am typically able to respond to a request within 2 weeks of receipt of the request. Hope to hear from you soon.

Carl Martin, RA
Chief Code Consultant

N.C. Department of Insurance
Office of State Fire Marshal
1202 Mail Service Center
Raleigh, NC 27699-1202
cell: 919-888-0284

"Consistency" as defined by Miriam Webster – "harmony of conduct or practice with profession"

From: Tom Brasse <tbrasse@rkinvestors.com>
Sent: Wednesday, January 6, 2021 4:24 PM
To: Burns, Mark <mark.burns@ncdoi.gov>; Martin, Carl <Carl.Martin@ncdoi.gov>
Cc: Privott, Robert <RPrivott@nchba.org>; Granson, Patrick <Patrick.Granson@mecklenburgcountync.gov>
Subject: [External] Formal Interpretation needed.- C900 pipe undergound, outside of the building

footprint, inside property lines
Importance: High

Mr. Burns and Mr. Martin,
Thank you for your email to Mr. Privott, which I was lucky enough to see. I have spoken to Mr. Granson, who is Mecklenburg County's code enforcement head and they cannot allow us to use the pipe with the email you generated for us.
We do not have a vested rights issue here that we need to address. We need a product approved, with limitations. Despite the pipe being installed for over 20 years in this exact scenario on private properties and more than that in the public domain, The City and County are NOT going to allow the use of this pipe based on the plumbing code. This issue is the outcome of the local municipality deciding they cannot review underground distribution on private property and throwing it to the County for review and inspection. NCDENR DWQ is reviewing this very product on sites in other counties today and approving it on private systems. It is designed, installed and inspected by a licensed professional engineer. There are literally thousands of miles of this pipe in use all over Mecklenburg County.

We need someone to step up and make the formal interpretation that this is acceptable for use as a utility pipe on private sites, underground, outside of the building footprint. We need it approved as an alternate and a formal interpretation and I have been working on this for nearly a year and sent all the information that could possibly be needed, testing, ASTM info, engineering, etc. This is equivalent or better than what is in the code now and after more than a year of asking and now hundreds of thousands of unnecessary cost to housing in Mecklenburg County, we need your help.
Thank you for your consideration.
Tom

Thomas Brasse
RK Investors Charlotte
3800 Pomfret Lane
Charlotte NC 28211
704-309-1937