Plumbing Board
c/o Department of Labor and Industry
443 Lafayette Road North
St. Paul, MN 55155-4344
www.dli.mn.gov

PRINT IN INK or TYPE

Plumbing Board
Request for Action

NAME OF SUBMITTER	**PURPOSE OF REQUEST** (check all that apply): ☐ New Code
Robert G Moore	☒ Code Amendment ☐ Repeal of an existing Rule

The Minnesota Plumbing Code (MN Rules, Chapter 4714) is available at http://www.dli.mn.gov/CCLD/PlumbingCode.asp.

Specify the purpose of the proposal: (If recommendation for code change for fixture, appurtenance, material, or method, check all that apply)

☒ Appurtenance (e.g., water conditioning equipment) ☐ Test Method

☐ Other (describe) _____

Does your submission contain a Trade Secret? ☐ Yes ☒ No

If Yes, mark **"TRADE SECRET"** prominently on each page of your submission that you believe contains trade secret information. Minnesota Statutes, section 13.37, subdivision 1(b), defines "trade secret" as follows:

> "Trade secret information" means government data, including a formula, pattern, compilation, program, device, method, technique or process (1) that was supplied by the affected individual or organization, (2) that is the subject of efforts by the individual or organization that are reasonable under the circumstances to maintain its secrecy, and (3) that derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use.

Note that, although "trade secret" information is generally not public, the Board and its committees may disclose "trade secret" information at a public meeting of the Board or committee if reasonably necessary for the Board or committee to conduct the business or agenda item before it (such as your request.) The record of the meeting will be public.

Describe the proposed change. The Minnesota Plumbing Code (Minnesota Rules Chapter 4714) is available via the World Wide Web at http://www.revisor.leg.state.mn.us/arule/4714/

NOTE:

- Please review the Minnesota Plumbing Code and include all parts of the Code that require revision to accomplish your purpose.
- The proposed change, including suggested rule language, should be *specific*. If modifying existing rule language, underline new words and ~~strike through deleted words~~. Please list all areas of the Minnesota Plumbing Code that would be affected.

We are asking this pipe product be added to Table 701.1 in Chapter 7.

Table 701.1
Materials for Drain, Waste, Vent Pipe and Fittings

Material	Underground Drain, Waste, & Fittings	Aboveground Drain, Waste & Fittings	Building Sewer Pipe & Fittings	Referenced Stand. Pipe	Referenced Stand. Fittings
SRPE Pipe			**X**	**ASTM F2562**	**ASTM F2562**

Office Use Only			
RFA File No. PB0133		Dated Received by Committee	Date Forwarded to Board
Title of RFA	By:		

Committee Recommendation to the Board: ☐ Accept ☐ Reject ☐ Abstain	
Board approved as submitted: ☐ Yes ☐ No	Board approved as modified: ☐ Yes ☐ No

This material can be made available in different forms, such as large print, Braille or audio. To request, call 1-800-342-5354.

Need and Reasons For the Change. Thoroughly explain the need and why you believe it is reasonable to make this change. During a rulemaking process, the need and reasonableness of all proposed rule changes must be justified; therefore, a detailed explanation is necessary to ensure the Board thoroughly considers all aspects of the proposal.

Storm Water regulations are more stringent today and meeting the needs of storm water storage and rain water harvesting requirements have created a need for water-tight storage pipe systems both close to and under buildings. Medium and larger diameter water-tight pipe systems are more economical for storing large quantities of storm water. In addition, large diameters pipe allow for storm water storage in a smaller footprint than smaller diameter pipes that are currently on the approval list.

We are asking for SRPE per ASTM F2562 be added to Chapter 11 Storm Drainage and Chapter 7, table 701. This pipe product has water-tight joints as described by ASTM D3212 testing. This pipe is currently used in storm, sanitary, irrigation, storm water detention, and rain water harvesting applications.

Steel Reinforced Polyethylene Pipe (SRPE) per ASTM F2562 is available in 30" – 120" diameters. SRPE pipe has been manufactured in the USA for over 10 years. SRPE is manufactured from a high quality polyethylene plastic resin that is reinforced with high strength, 80KSI steel ribs. The additional rib reinforcement allows the pipe to be made in diameters up to 120" and handle very high fills of cover in underground utility and storm water applications. Water-tight joints of SRPE pipe can be provided with two methods of construction. The first is a steel reinforced bell and spigot with a double seated gasket up through 72" diameter. The second means of connection are an internally welded joint. These tight joints help make a water-tight systems that are idea for storm water detention and storm water rain water harvesting applications for large diameter applications.

Below are listed some of the Minnesota projects were SRPE storm water pipe systems have been installed;
US Bank Stadium, Minneapolis – 48" diameter
Allianz Field (Minnesota United FC), Saint Paul – 120" and 96" diameter
Chaska Curling Center, Chaska – 120" diameter
Krauss Anderson HQ Building (Finnegan's Brewery), Minneapolis – 60" and 48" diameter
T3 Development, Minneapolis – 96" diameter
Artist Lofts, Minneapolis – 96" diameter
Burant Park, Phase 1 and 2, Waconia – 120" diameter
Crosby Hotel, Stillwater – 96" diameter
Douglas Corp, Saint Louis Park – 120" diameter



SRPE per ASTM F2562 with internal welded joints under construction at Allianz Field, Saint Paul, MN.

If your product/method standard(s) is not currently listed in both national codes, your Request For Action will not be considered by the Board or its committees, however, you are welcome to present at any Board meeting during the Open Forum section of the Agenda.

The proposal must be accompanied by copies of any published standards, the results of testing, and copies of any product listings, as documentation of the health, sanitation and safety performance of any materials, methods, fixtures, and/or appurtenances. If none are available, please explain:

This pipe is currently in compliance with the Uniform Plumbing Code (UPC) and The International Association of Plumbing and Mechanical Officials (IAPMO IGC).

There pipe meets current ASTM F2562 standard specification.

Please attach electronic scanned copies of any literature, standards and product approvals or listings. Printed or copyrighted materials, ***along with written permission from the publisher to distribute the materials at meetings***, should be sent to the Plumbing Board, c/o Department of Labor and Industry, 443 Lafayette Road No., St. Paul, MN 55155-4344.

Primary reason for change: (check only one)

- ☐ Protect public, health, safety, welfare, or security
- ☒ Lower construction costs
- ☐ Encourage new methods and materials
- ☐ Change made at national level
- ☐ Mandated by legislature
- ☐ Provide uniform application
- ☐ Clarify provisions
- ☐ Situation unique to Minnesota
- ☒ Other (describe) More flexibility for design engineer to meet current Storm Water Regulations.

Anticipated benefits: (check all that apply)

- ☐ Save lives/reduce injuries
- ☐ Improve uniform application
- ☐ Improve health of indoor environment
- ☒ Provide more construction alternatives
- ☐ Reduce regulation
- ☒ Provide more affordable construction
- ☐ Provide building property
- ☐ Drinking water quality protection
- ☐ Decrease cost of enforcement
- ☐ Other (describe) _____

Economic impact: (explain all answers marked "yes")

1. Does the proposed change increase or decrease the cost of enforcement? ☐ Yes ☒ No If yes, explain

2. Does the proposed change increase or decrease the cost of compliance? ☐ Yes ☒ No If yes, explain
Include the estimated cost increase or decrease, and who will bear the cost increase or experience the cost decrease:

3. Are there less costly or intrusive methods to achieve the proposed change? ☐ Yes ☒ No If yes, explain

4. Were alternative methods considered? ☐ Yes ☒ No If no, why not? If yes, explain what alternative methods were considered and why they were rejected.

5. If there is a fiscal impact, try to explain any benefit that will offset the cost of the change. If there is no impact, mark "N/A." N/A

6. Provide a description of the classes of persons affected by a proposed change, who will bear the cost, and who will benefit. **There will be no additional cost by approving the pipe products. Cost savings will be seen by the tax payer for government funded projects, the owner of the project and therefore building tenants on private projects. This also provides the design engineer more flexibility in designing to current existing municipal and watershed storm water regulations.**

7. Does the proposed rule affect farming operations? (Agricultural buildings are exempt from the Minnesota Building Code under Minnesota Statutes, Section 326B.121.) ☐ Yes ☒ No If yes, explain

Are there any existing Federal Standards? ☐ Yes ☒ No If yes, list:

Are there any differences between the proposed change and existing federal regulations?
☐ Yes ☐ No ☒ Not applicable ☐ Unknown
If yes, describe each difference & explain why each difference is needed & reasonable.

Minnesota Statutes, section 14.127, requires the Board to determine if the cost of complying with proposed rule changes in the first year after the changes take effect will exceed $25,000 for any small business or small city. A small business is defined as a business (either for profit or nonprofit) with less than 50 full-time employees and a small city is defined as a city with less than ten full-time employees.

During the first year after the proposed changes go into effect, will it cost more than $25,000 for any small business or small city of comply with the change? ☐ Yes ☒ No If yes, identify by name the small business(es or small city(ies).

Will this proposed plumbing code amendment require any local government to adopt or amend an ordinance or other regulation in order to comply with the proposed plumbing code amendment? ☐ Yes ☒ No, If yes, identify by name the government(s) and ordinances(s) that will need to be amended in order to comply with the proposed plumbing code amendment.

Additional supporting documentation may also be attached to this form. Are there any additional comments you feel the Committee/Board may need to consider? If so, please state them here:

There is a need for approval in the MN Plumbing Code because more projects requiring storm water management are within 10 feet of buildings. The project sites being redeveloped in urban areas of Minnesota create a complex design requiring medium and large diameter pipe to meet current storm water regulations.

By approving this proven, water-tight, pipe product, it will create more design options and aid in the approval process for the civil design engineering community.

Information regarding submitting this form:

- Submissions are received and heard by the Committee on an "as received" basis. **Any missing documentation will delay the process, and your proposal will be listed as the date it was received "Complete."**
- **Submit any supporting documentation to be considered,** such as manufacturer's literature, approvals by other states, and engineering data electronically to DLI.CCLDBOARDS@state.mn.us. Once your Request For Action form has been received, it will be assigned a file number. Please reference this file number on any correspondence and supplemental submissions.
- **For copyrighted materials that must be purchased from publishers, such as published standards, product approvals or testing data, listings by agencies (IAPMO, ASSE, ASTM, etc.,) you may send just 2 copies, *along with written permission from the publisher to distribute the materials at meetings*, via U.S. Mail to: Plumbing Board, c/o Department of Labor and Industry, 443 Lafayette Road No., St. Paul, MN 55155-4344.**
- **For materials that must be submitted by U.S. Mail, please include a copy of your "Request For Action" form originally submitted and reference your assigned RFA file number.**

Information for presentation to the Committee and/or Board:

- Limit presentations to 5 minutes or less.
- Be prepared to answer questions regarding the proposal and any documentation.

Information regarding Committee and/or Board function:

- The Plumbing Board or designated committee.

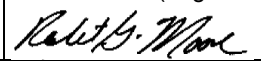
I understand that any committee action is a recommendation to the Plumbing Board and is not to be considered final action.

SUBMITTED BY NAME	FIRM NAME	SUBMITTER'S E-MAIL ADDRESS
Robert G Moore	CONTECH	bmoore@conteches.com

NAME, PHONE NUMBER & E-MAIL ADDRESS OF PRESENTER TO THE COMMITTEE (if different):

Robert G Moore

ADDRESS	CITY	STATE	ZIP CODE
11155 Chaparral	Shakopee	MN	55379

PHONE	SIGNATURE (original or electronic)	DATE
612-247-7134		April 15, 2019

For Assistance or questions on completing this form, contact Cathy Tran, Department of Labor and Industry at 651-284-5898.

For Office/Committee Use Only Proposal received completed? ☐ Yes ☐ No

Date Proposer notified of gaps:	Mode of notification (e.g., e-mail)	Date returned to Proposer:	Date materials re-received:

IAPMO RESEARCH AND TESTING, INC.

5001 East Philadelphia Street, Ontario, California 91761-2816 – USA • 909-472-4100 • 909-472-4244 • www.iapmort.org

ISO/IEC 17065 Product Certification Body #0202

CERTIFICATE OF LISTING

IAPMO Research and Testing, Inc. is a product certification body which tests and inspects samples taken from the supplier's stock or from the market or a combination of both to verify compliance to the requirements of applicable codes and standards. This activity is coupled with periodic surveillance of the supplier's factory and warehouses as well as the assessment of the supplier's Quality Assurance System. This listing is subject to the conditions set forth in the characteristics below and is not to be construed as any recommendation, assurance or guarantee by IAPMO Research and Testing, Inc. of the product acceptance by Authorities Having Jurisdiction.

This certificate is not evidence of current listing. To verify listing status, visit the IAPMO R&T Product Listing Directory at pld.iapmo.org

Effective Date: April 2019 Void After: April 2024

Product: Steel Reinforced Polyethylene Rainwater Harvesting Tanks File No. 9829

Issued To: Contech Engineered Solutions
9025 Centre Pointe Drive
West Chester, OH 45069

Identification: The product shall be marked with the manufacturer's name or trademark, model or serial number, working liquid volume, date (i.e., month and year), date code, or identifier traceable to the date of manufacture; and maximum design load and maximum burial depth for which the tank is designed, when applicable. The accesses of rainwater harvesting tanks shall also be marked "DO NOT ENTER" if not suitable for human entry; or "CONFINED SPACE. FOLLOW APPROPRIATE PROCEDURES BEFORE ENTRY" if intended for human entry. The product shall also bear the UPC® certification mark.

Characteristics: Reinforced polyethylene rainwater harvesting tanks are intended for below ground applications, they shall be accompanied with instructions for their installation and maintenance. Maintenance instructions shall, as a minimum, include procedures for repair, inspection, and cleaning. Installation instructions shall, as a minimum, indicate (a) the tank capacity; (b) the tank capabilities and limitations, as applicable; (c) the suitability of the tank for above‐ or below‐ground applications; (d) the suitability of the tank for potable and

Chairman, Product Certification Committee

CEO, The IAPMO Group

This listing period is based upon the last date of the month indicated on the Effective Date and Void After Date shown above. Any change in material, manufacturing process, marking or design without having first obtained the approval of the Product Certification Committee, or any evidence of non-compliance with applicable codes and standards or of inferior workmanship, may be deemed sufficient cause for revocation of this listing. Production of or reference to this form for advertising purposes may be made only by specific written permission of IAPMO Research and Testing, Inc. Any alteration of this certificate could be grounds for revocation of the listing. This document shall be reproduced in its entirety.

IAPMO RESEARCH AND TESTING, INC.
CERTIFICATE OF LISTING

Void After: April 2024

Product: Steel Reinforced Polyethylene Rainwater Harvesting Tanks File No. 9829

Issued To: Contech Engineered Solutions

non‐potable applications of rainwater collection; (e) the need for the system designer to consider seismic, buoyancy, wind, and snow loads, as applicable; (f) the recommended draining procedures; (g) when tank openings are (i) not made at the factory, the location and manner of creating tank openings, including access and access security; or (ii) made at the factory, the need to comply with ARCSA/ASPE/ANSI 63; (h) the tank corrosion and chemical leaching potential; and (i) the acceptable pH range for rainwater applications. To be installed in accordance with the manufacturer's instructions and the provisions of the latest edition of the Uniform Plumbing Code.

Products listed on this certificate have been tested by an IAPMO R&T recognized laboratory. This recognition has been granted based upon the laboratory's compliance to the applicable requirements of ISO/IEC 17025.

Products are in compliance with the following code(s):

Uniform Plumbing Code (UPC®)

Products are in compliance with the following standard(s):

IAPMO IGC 329-2016

IAPMO RESEARCH AND TESTING, INC.

CERTIFICATE OF LISTING

This certificate is not evidence of current listing. To verify listing status, visit the IAPMO R&T Product Listing Directory at pld.iapmo.org

Void After: April 2024

Product: Steel Reinforced Polyethylene Rainwater Harvesting Tanks

File No. 9829

Issued To: Contech Engineered Solutions

MODELS:

Model No.	Description
UGSRPE108	108″ Diam. Steel reinforced PE RWH Cistern
UGSRPE120	120″ Diam. Steel reinforced PE RWH Cistern
UGSRPE36	36″ Diam. Steel reinforced PE RWH Cistern
UGSRPE42	42″ Diam. Steel reinforced PE RWH Cistern
UGSRPE48	48″ Diam. Steel reinforced PE RWH Cistern
UGSRPE54	54″ Diam. Steel reinforced PE RWH Cistern
UGSRPE60	60″ Diam. Steel reinforced PE RWH Cistern
UGSRPE66	66″ Diam. Steel reinforced PE RWH Cistern
UGSRPE72	72″ Diam. Steel reinforced PE RWH Cistern
UGSRPE84	84″ Diam. Steel reinforced PE RWH Cistern
UGSRPE96	96″ Diam. Steel reinforced PE RWH Cistern

ASTM Permission via Email 4.12.19

From: Morgan, Robert [mailto:rmorgan@astm.org]
Sent: Friday, April 12, 2019 7:04 AM
To: Moore, Bob
Cc: Jenkins, Andrew; Sanders, Darrell
Subject: RE: ASTM Copy for Application to MN Plumbing Board

Hi Bob,

Here is the link that provides access to the standards: https://www.astm.org/MNPB.htm We can provide another link for the second phase of your process. Feel free to use this link as needed. Let me know if you have any questions.

Best,
Bob

Robert J. Morgan
Director, Technical Committee Operations
—
ASTM INTERNATIONAL
Helping our world work better
—
100 Barr Harbor Drive, PO Box C700
West Conshohocken, PA 19428-2959, USA
tel +1.610.832.9732 fax +1.610.832.9666
www.astm.org

From: Moore, Bob <BMoore@conteches.com>
Sent: Wednesday, April 10, 2019 4:35 PM
To: Morgan, Robert <rmorgan@astm.org>
Cc: Jenkins, Andrew <AJenkins@conteches.com>; Sanders, Darrell <DSanders@conteches.com>; Grove, Jeff <jgrove@astm.org>
Subject: RE: ASTM Copy for Application to MN Plumbing Board

Bob,

The ASTM copies are needed for the next Plumbing Board Ad-Hoc Rulemaking Committee meeting April 22, 2019. If the Request for Action (RFA) is approved by the committee, then it would go to a Plumbing Board for approval. The next Plumbing Board meeting date has not been selected yet, but will occur sometime late in 2019.

We would need a copyright permission from ASTM.

Thank you.

Bob Moore
Region Engineer
CONTECH Engineered Solutions
Phone 612-247-7134
bmoore@conteches.com

CONTECH®
ENGINEERED SOLUTIONS

DuroMaxx® Steel Reinforced Polyethylene Technology

LEED with Contech®

Sanitary & Storm Sewer | Reline | Irrigation | Detention | Wastewater

DuroMaxx®
STEEL REINFORCED PE TECHNOLOGY

CONTECH®
PIPE SOLUTIONS

Key Performance Advantages

» Manufactured in accordance with ASTM F2562 and AASHTO MP-20.

The Strength of Steel. The Durability of Plastic.

It's the ideal combination of materials that makes DuroMaxx an exceptional pipe. 80 ksi steel reinforcing ribs provide the strength, and pressure rated Polyethylene Resin (PE) provides the durability. This combination of materials results in an extraordinarily strong and durable pipe. DuroMaxx is designed with a smooth inner wall for outstanding hydraulic capacity and provides the properties you can count on for long-term service and performance in the most demanding environments.

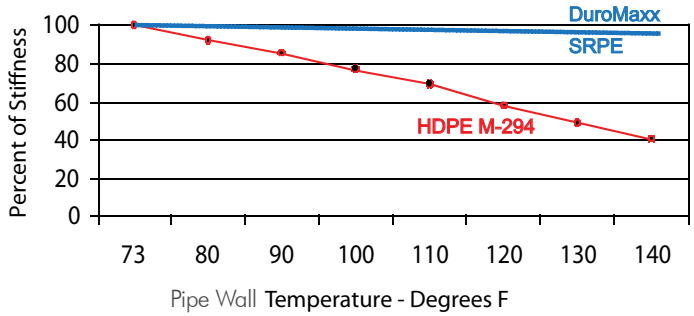
Lifelong Performance

DuroMaxx steel reinforced ribbed profile wall construction will not creep or buckle. The built-in capacity of the high strength steel eliminates concerns that have long plagued profile wall HDPE pipe. Today, it is possible to design with confidence to meet the long-term structural demands of the most difficult **sanitary & storm sewer, reline, irrigation, detention,** and **wastewater** projects.

Temperature Effects on Strength

All flexible pipes must be designed to have adequate pipe stiffness to resist handling, installation and construction loads and to minimize deflection, ensuring a successful installation. Published pipe stiffness levels are measured at 73°F in a laboratory. The actual or apparent field pipe stiffness due to the effects of sunlight and a modest 80° temperature can produce results that are very different in the field – where it counts. A pipe wall temperature in excess of 110°results in a loss of pipe stiffness greater than 30% for a non-reinforced profile wall polyethylene pipe. Steel reinforced DuroMaxx pipe loses less than 1% of its stiffness under the same conditions because the steel provides the pipe stiffness, not the PE plastic. As a result, DuroMaxx can be twice as stiff as non-steel reinforced HDPE pipe.

Effective Pipe Stiffness vs. Temperature*



*The information in this graph is an average stiffness loss observed over several diameters of one AASHTO M-294 HDPE profile wall product.

High Strength Steel & High Performance Pressure Rated Resins

Predictable service life demands predictable material properties. DuroMaxx uses only high quality pressure rated PE resin that provides predictable engineering properties including crack resistance, tensile strength and modulus of elasticity. Hydrostatic Design Basis (HDB) testing verifies and documents important 50 and 100 year design properties that aid the professional engineer when designing piping systems.

Unlike unreinforced plastic pipes which rely fully on time/strain sensitive materials for their structural performance, DuroMaxx's steel reinforcement provides 100% of the load carrying capacity. DuroMaxx resin contains 3% carbon black which long-standing research has shown will inhibit the affects of UV degradation (strength loss and brittleness) in excess of 50 years of direct exposure to sunlight. Therefore, the strength of DuroMaxx does not diminish over time, nor is it significantly impacted by elevated summertime temperatures.

Multiple Joint Options

DuroMaxx's steel reinforced bell and spigot achieves a level of watertight joint performance that sets it apart from conventional pipe products. The DuroMaxx steel reinforced high performance (HP) joint is designed to meet, exceed, and maintain the highest standards of performance when tested in accordance with ASTM D3212. Additional options include: soil tight (ST), welded coupler (WC), and electrofusion (EF) joints.

Savings

High flow rates are achieved with a smooth polyethylene waterway wall for optimal savings. Target flow rates can be assured with DuroMaxx by contacting your local Contech sales engineer for the appropriate information. Manning's "n" values will range between 0.011 to 0.013, depending on velocity and flow rate.

DuroMaxx pipe is lightweight and can be easily handled and quickly installed, often eliminating the need to use heavy construction equipment. The outside diameter (OD) of DuroMaxx is smaller than other conventional pipe materials, resulting in less trench excavation. As the two main cost drivers to install water conveyance products are manpower and machinery, DuroMaxx provides the opportunity to save in both, resulting in less overall spending. The longer lengths and easy joint assembly are just some of the DuroMaxx installation advantages. DuroMaxx should be installed in accordance with nationally accepted ASTM D2321 installation practices. Contact your local Contech representative for the DuroMaxx Installation Guide.

Fittings & Fabricated Manholes

DuroMaxx pipe is available with a full range of fabricated fittings such as elbows, tees, wyes, slope junctions and reducers. Both standard and custom fittings can be readily fabricated, which can result in fewer concrete structures and lower project costs. Manhole structures fabricated with DuroMaxx and HDPE pipe can be an excellent alternative to precast or cast-in-place concrete manholes and structures by providing greater durability and better hydraulic flow through the structure. This solution is both efficient and cost effective.

Sizes

Available in diameters from 30 to 120 inches and manufactured in standard lengths of 14 or 24 feet with bell and spigot joints, DuroMaxx has fewer joints to assemble on site, resulting in faster installation rates for the contractor. If your project requires custom lengths, contact your Contech representative for details and availability.

Pipe Dimensions & Handling Weights

Nom. Pipe Dia.(in)	Pipe OD (in)	Pipe ID (in)	Bell OD (in)	Min. Cover (ft)	Max. Cover (ft)**	Approx. Weight (lbs/ft)
30	30.9	29.5	34.0	1.0	50	18.8
36	37.1	35.4	39.9	1.0	50	23.6
42	43.2	41.3	45.8	1.0	50	27.0
48	49.5	47.2	52.3	1.0	30	30.8
54	55.5	53.2	58.2	1.0	30	36.1
60	61.4	59.1	64.1	1.0	30	42.9
66	67.8	65.0	71.6	1.5	30	56.9
72	73.7	70.9	77.6	1.5	30	65.6
84	85.9	82.7	88.9	2.0	30	76.3
96	97.8	94.5	NA*	2.0	30	87.0
108	111.3	108	NA*	2.5	25	99.7
120	121.9	118.1	NA*	3.0	25	109.0

* Currently available with welded coupler (WC) and electrofusion (EF) joints or plain ended with or without soil tight (ST) joints.

** The maximum cover limits shown in the table above are conservative and greater burial depths are possible. Contact your local Sales Engineer for project specific information.

Environmental Benefits

Contech is an environmentally conscious company committed to shaping the future of green building and design. Contech offers a wide range of site solutions that respond to green building and construction needs and can contribute towards LEED® and NAHB green credits. DuroMaxx has the potential to contribute to a variety of LEED credits in the categories for sustainable sites, water efficiency, materials and resources, innovation in design and regional priority. DuroMaxx consumes 35% less of the natural resources required to produce AASHTO M-294 pipe. The steel reinforcing ribs in the profile wall that provide the structural integrity for the pipe are made out of steel with recycled content levels ranging from 55-80%.

About LEED

A third party certification program, U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) Green Building Rating System™ is based on points and evaluates the overall performance of a green building project by assessing each of the materials and systems used in aggregate.

Sanitary Sewer & Yard Piping

Large diameter sanitary sewer projects can be tough to deal with for many agencies. These long interceptors or trunk lines can run for miles, from manhole to manhole, eating away at an already constrained budget. Much of the costs can be contributed to installation realities for large quantities of very large diameters. These costs can include:

- Freight and number of trucks needed.
- Number of picks and weight of those picks.
- Number of joints and procedure to meet watertight standard.
- Other material costs.

DuroMaxx provides real answers that help make the agency's and engineer's job easier. Outstanding performance and value are clearly evident when comparing DuroMaxx to a wide variety of other products such as RCP, HDPE, Polypropylene, PVC and fiberglass pipe.

Benefits

- Large diameters up to 120 inches.
- Predictable, high strength for deep covers, shape and deflection control.
- Joint tightness that meets initial testing requirements and long-term infiltration/exfiltration needs.
- Resistant to corrosive effluent.
- Smooth inner walls allow for minimum slope designs and longer runs.
- Lightweight for installation efficiency.

Shelley, Idaho
14 miles installed up to 48" diameter

DuroMaxx
Sanitary System

Barker Ranch,
Washington
3 miles
54″ & 60″ diameter

DuroMaxx
Irrigation System

Irrigation Applications

Agriculture and irrigation agencies are in need of more dependable and cost effective solutions to conserve their most valuable resource, water. Many are enclosing ditches and canals with pipe conveyance systems in remote areas of the country. These projects can be challenging to any engineer or project manager, especially when hydraulic parameters require larger diameter pipe sizes. DuroMaxx has proven solutions to these problems.

Benefits

- HDB pressure rated PE resins provide superior corrosion resistance.
- A variety of joint configurations and joint tightness levels are available to meet your specific project needs.
- Installation cost advantages important for remote locations.
- Versatile fabrication supports unique fittings and components.
- Excels in short and long-term cost analysis for irrigation applications.

100-Year Gravity Flow Capabilities
50-Year Pressurized Service Period

Diameters (in)	9 Months	Continuous (50 years)
30-42	9.5 psi	6.75 psi
48-60	12.0 psi	8.5 psi
66-120	15.0 psi*	15.0 psi

* Stated pressure capabilities based on assumed burial depth. Higher pressure may be possible. Please consult your Contech sales representative.

Direct Bury & Reline Applications

DuroMaxx drainage pipe is ideally suited for the collection and removal of stormwater from highway, urban, industrial and residential projects. Its unique combination of steel reinforcement and pressure rated PE resin allows it to perform like no other drainage pipe on the market.

Benefits

- 80 ksi high strength steel provides maximum load carrying capabilities with allowable cover limits ranging from 30 to 50 feet.
- High strength steel provides exceptional shape and deflection control even on warm, sunny days where typical corrugated HDPE drainage pipes fall short.
- Pressure rated PE resin provides unmatched durability.
- Abrasion and chemical resistance is unaffected by water pH levels unlike reinforced concrete pipe, where abrasion resistance varies with water pH levels.
- Available with soil tight, steel reinforced high performance, and welded coupler joint options. If your project requires extreme joint tightness for the life of the system, rely on the DuroMaxx steel reinforced high performance or welded coupler joints.
- While DuroMaxx may not be the least expensive storm sewer pipe on the market, it outperforms when other products fall short. Long-term, DuroMaxx's outstanding performance and durability generate value.
- The efficient wall profile makes DuroMaxx ideally suited for reline of deteriorating culverts.

Colorado Springs, Colorado

1,296 lf

96" diameter

DuroMaxx
Storm Sewer System

Monticello, Indiana
395,000 gal. storage
96", 84" & 72" diameters

DuroMaxx
CSO System

Tank Applications

Sanitary Sewer Overflow/Combined Sewer Overflow/ Pump Station Equalization Tanks/Detention

Storage tank systems are used to regulate stormwater and wastewater flow through main pipelines by acting as a buffer during peak loads. DuroMaxx systems are designed to contain the water and slowly release it into the main system over a period of time. These systems are often custom made to watertight specifications in order to suit the project requirements.

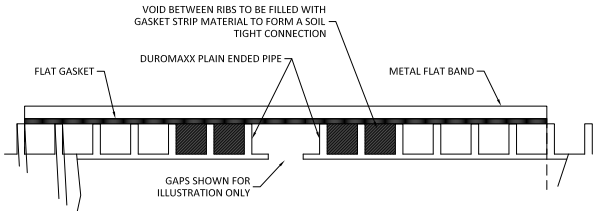
DuroMaxx tank systems can incorporate a wide range of fittings such as bends, risers, bulk headed ends, and inlet/outlet pipes. The systems can be custom manufactured to individual lengths in sizes and configurations that can be economically transported and assembled on site.

Benefits

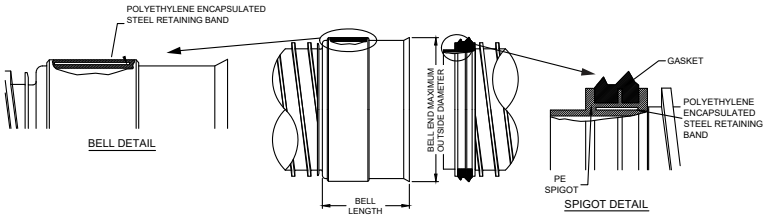
- Utilizing larger diameters whenever possible reduces storage cost per gallon. DuroMaxx is available up to 120 inches.
- Steel reinforcing results in smaller outside diameter dimensions when compared to corrugated HDPE pipe or reinforced concrete pipe. When maximum diameter selection is limited by minimal cover, DuroMaxx can typically be upsized by 6 inches or more, resulting in reduced overall water storage cost.
- A variety of joint configurations and joint tightness levels available to meet specific project needs.
- Offers a corrosion resistant system alternative to concrete in wastewater management without need for protective coatings.
- Fast, efficient installation.

THE DESIGN BEHIND THE PERFORMANCE

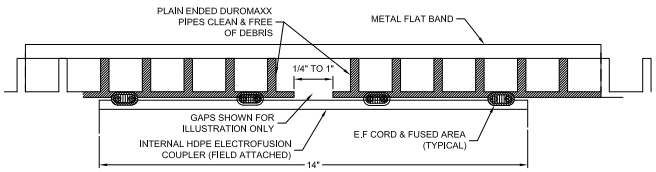
Soil Tight (ST) Joint Detail



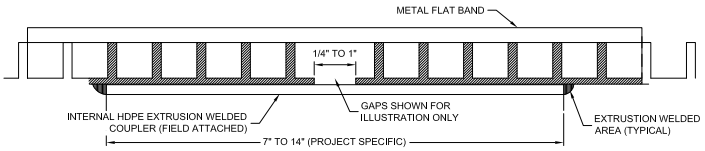
High Performance (HP) Joint Details



Electrofusion (EF) Joint Detail



Welded Coupler (WC) Joint Detail



Contech Engineered Solutions provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, retaining walls, sanitary sewer, erosion control and stormwater management solutions.

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