Submittal Transmittal

Project: Pike Addition Lift Station near Maple & 151st St.

City of Wichita Project Number: 468-2019-005340

Contractor Project Number: 20059

Submittal Number: 2-02 Revision 1

Subcontractor/Supplier: WCP

Description: Wet Well, Valve Vault

Date Submitted: May 27, 2020

Stamp Area

BAUGHMAN

315 ELLIS | WICHITA, KS 67211
[P] 316-262-7271
[BaughmanCo.com]

☐ REVIEWED ONLY
☒ REVIEWED AS NOTED
☐ REJECTED

BY: TPV

DATE: 5-1-2020

WICHITA CONCRETE PIPE

LETTER OF TRANSMITTAL

SANITARY SEWER SUBMITTAL

To Whom It May Concern:

Please review the following submittal documents carefully. We have noted any issues or changes below. Contact us if you have any questions.

We will schedule production for this project when the Approved/Redlined documents have been returned.

All request for information items (RFIs) are listed on each applicable structure detail notes.

Respectfully,
Wichita Concrete Pipe
221 W. 37th St North
Wichita, KS 67204
(316) 838-8651 phone

WICHITA CONCRETE PIPE
221 W. 37th St. N (316) 838-8651 phone
Wichita, KS 67204 (316) 838-0838 fax

Pending

4/28/2020

Contractor: McCullough Excavation, Inc.
Job Name: Pike Addition - Force Main & Pump Station
Job Number: **20-0133** **Structure:** **MH 1**
Station: **0+89.43 Line 2**
Specification: 48" Manhole Sanitary
Take-off by: RHOLLINGER Revision: NA

Design Build Height

Top of Casting	+	1421.80'
Outlet Invert	-	1414.15'
Design Height	=	**7.65'**

Openings

Pipe ID	X Dim	Flow Line	Pipe Size	Hole Width	Hole Height	Connector	Angle (Deg.)
(1)	7	1414.15	08 PVC SDR35	14	14	A-lok X-Cel Gasket, 8.50" Nom OD (XC-285)	0
(2)	8	1414.25	08 PVC SDR35	14	14	A-lok X-Cel Gasket, 8.50" Nom OD (XC-285)	170

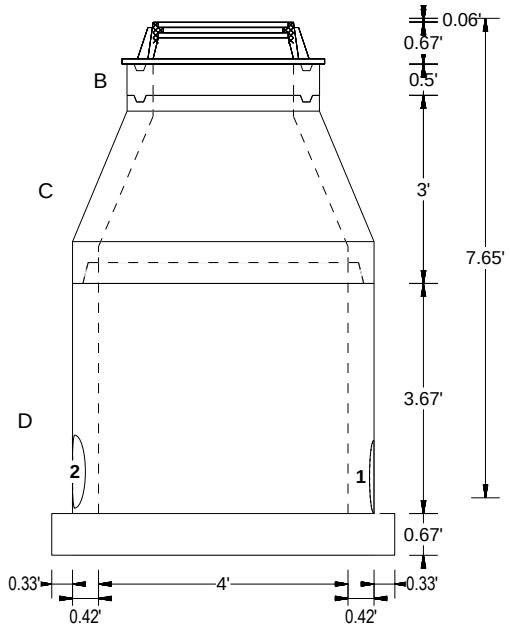
BOM of Structure

Ref	Description	Qty	Weight
A	EJ 1936 Z1 Ring (00193611)	1	189
B	27" ID Manhole Adj. Ring, 6" Tall, w/Groove	1	259
C	48" Concentric Cone (3.00 ft)	1	2,000
D	48"ID MH w/ 8" Mono Base, 4" Ext. x 44"	1	5,382
	EJ 1936 Cover, Wichita Sanitary (00193627)	1	141
	A-lok X-Cel Gasket, 8.50" Nom OD (XC-285)	2	
	Coating, Bituminous Black, Exterior	107.384	
	Coating, Grey Epoxy, Interior	33.775	
	Total Structure		7,971

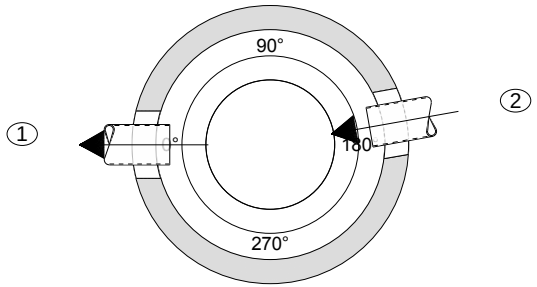
Stack Build Height

Ring and Cover	+	0.67'
Adjustment	+	0.06'
Top/Cone/Ring	+	3.50'
Risers	+	0.00'
Base Gains	+	3.67'
Invert	-	0.25'
Design Height	=	**7.65'**
Invert	+	0.25'
Stock Floor	+	0.67'
Outside Height	=	**8.57'**

Elevation



Plan View



Specifications:

Coating, Bituminous Black, Exterior
Coating, Grey Epoxy, Interior

Structure Notes:

Pending

5/27/2020

Contractor: McCullough Excavation, Inc.

Job Name: Pike Addition - Force Main & Pump Station

Job Number: 20-0133 **Structure: Wet Well**

Station: **0+00.00 Line 1**

Specification: 72" Manhole Sanitary

Take-off by: RHOLLINGER Revision: NA

221 W. 37th St. N (316) 838-8651 phone

Wichita, KS 67204 (316) 838-0838 fax

Design Build Height

Top of Casting	+	1421.55'
Outlet Invert	-	1414.17'
Design Height =		**7.38'**

Openings

Pipe ID	X Dim	Flow Line	Pipe Size	Hole Width	Hole Height	Connector	Angle (Deg.)
(1)	38	14.17	04 DI	10	10	Hole	0
(2)	38	14.17	04 DI	10	10	Hole	0
(3)	39	13.26	08 PVC SDR35	14	14	A-lok X-Cel Gasket, 8.50" Nom OD (XC-285)	174
(4)	54	13	93.29	10 PVC SDR35	16	16	A-lok X-Cel Gasket, 10.50" Nom OD (XC-350)	180
(5)	42	13	94	10 PVC SDR35	16	16	A-lok X-Cel Gasket, 10.50" Nom OD (XC-350)	270

BOM of Structure

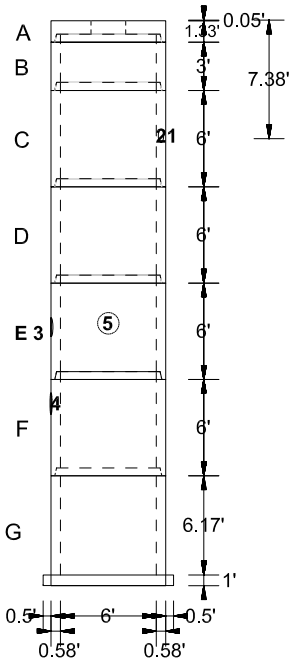
Ref	Description	Qty	Weight
	Halliday Hatch, S1R 4860, 48"x60"	1	91
A	72" RC Flat Top, 16" Tall (Bell Down Conc)	1	4,900
B	72"ID MH RIser Section, 36" Tall	1	5,835
C	72"ID MH Riser Section, 72" Tall	1	10,706
D	72"ID MH Riser Section, 72" Tall	1	10,800
E	72"ID MH Riser Section, 72" Tall	1	10,586
F	72"ID MH Riser Section, 72" Tall	1	10,679
G	72"ID MH w/ 8" Mono Base, 6" Ext, Blunt x 74"	1	15,886
	Vent Pipe, 3"x24", Stainless Steel w/ Insect Screen	1	
	A-lok X-Cel Gasket, 10.50" Nom OD (XC-350)	2	
	A-lok X-Cel Gasket, 8.50" Nom OD (XC-285)	1	
	Coating, Bituminous Black, Exterior	773.675	
	Coating, Grey Epoxy, Interior	620.7628	
	~~Sealant, ConSeal Wrap CS-212, 0.10x8"x50', 3 Rolls/Box~~	1	
	Sealant, Conseal Primer CS-75, 1 Gallon	1	
	Total Structure		69,483

Stack Build Height

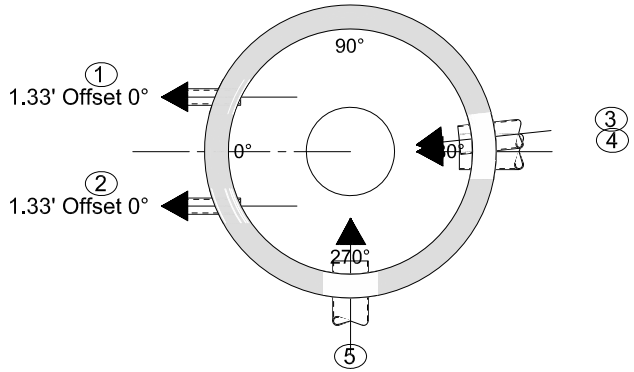
Ring and Cover	+	0.00'
Adjustment	+	0.05'
Top/Cone/Ring	+	1.33'
Risers	+	27.00'
Base Gains	+	6.17'
Invert	-	27.17'
Design Height	=	**7.38'**
Invert	+	27.17'
Stock Floor	+	0.67'
Outside Height =		**35.22'**

Elevation

Have the Flowlines of the 2-4" DI Pipes be at 1414.00.



Plan View



Structure Notes:

R.F.I. - Please verify the 4" DIP outflow elevation.
Submittal Note: NO epoxy coating on the interior.

Specifications:

Coating, Bituminous Black, Exterior
Coating, Grey Epoxy, Interior

221 W. 37th St. N (316) 838-8651 phone
Wichita, KS 67204 (316) 838-0838 fax

Pending

Contractor: McCullough Excavation, Inc.
Job Name: Pike Addition - Force Main & Pump Station
Job Number: 20-0133 **Structure:** Valve Vault
Station:
Specification: Valve Vault, 11'0"x6'0"
Take-off by: RHOLLINGER Revision: NA

4/28/2020

Design Build Height

Top of Casting	+	1421.31'
Outlet Invert	-	1413.88'
Design Height	=	**7.43'**

Openings

Pipe ID	X Dimension	Flow Line	Pipe Size	Hole Width	Hole Height	Connector	Angle (Deg.)
(1)	16	1413.88	06 DI	12	12	Hole	0
(2)	16	1414	04 DI	10	10	Hole	90
(3)	16	1414	04 DI	10	10	Hole	90

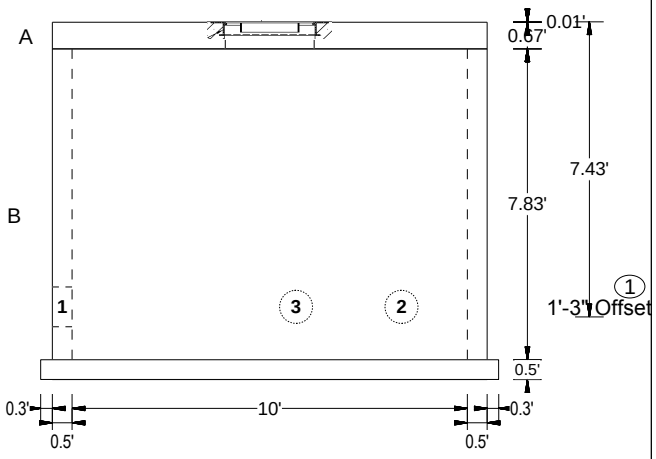
BOM of Structure

Ref	Description	Qty	Weight
	alliday Hatch, S1R 3048, 30"x48" w/ Safety Gra	1	91
	alliday Hatch, S1R 4848, 48"x48" w/ Safety Gra	1	91
A	RCMH COW Top, 11'x6', 8" Tall	1	6,552
B	RCMH, Base Walls, 11'x6' x 94"	1	24,077
	Total Structure		30,811

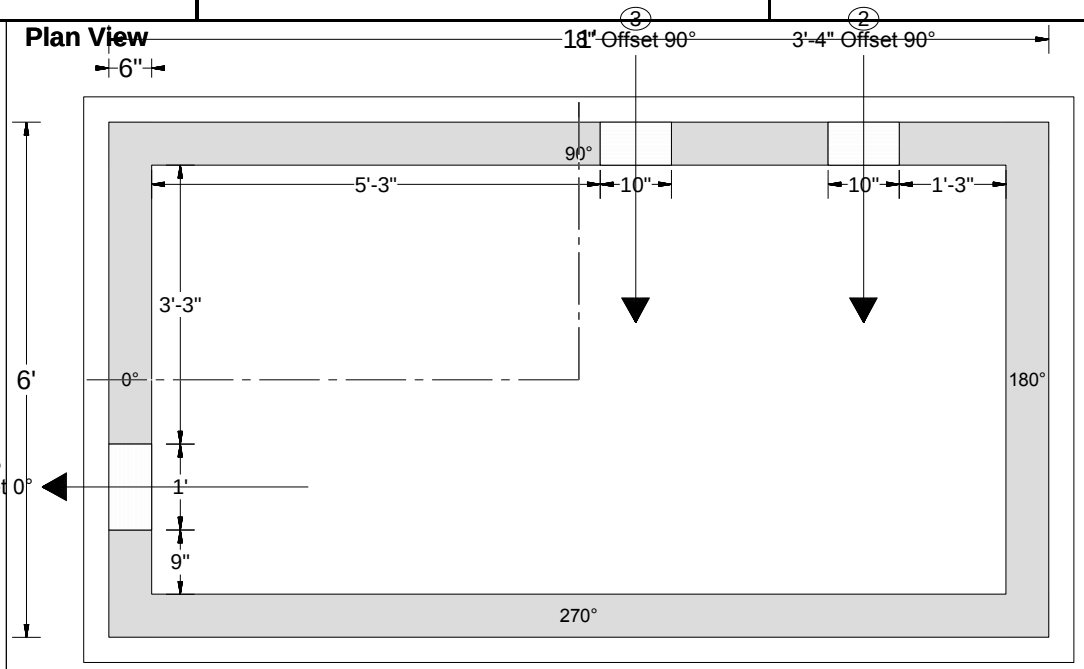
Stack Build Height

Casting	+	0.00'
Top + Adjustment	+	0.67'
Misc. Adjustment	+	0.01'
Wall Section(s)	+	0.00'
Base Section	+	7.83'
Invert	-	1.08'
Design Height	=	**7.43'**
Invert	+	1.08'
Base Thickness	+	0.50'
Overall Height	=	**9.01'**

Elevation (270°)

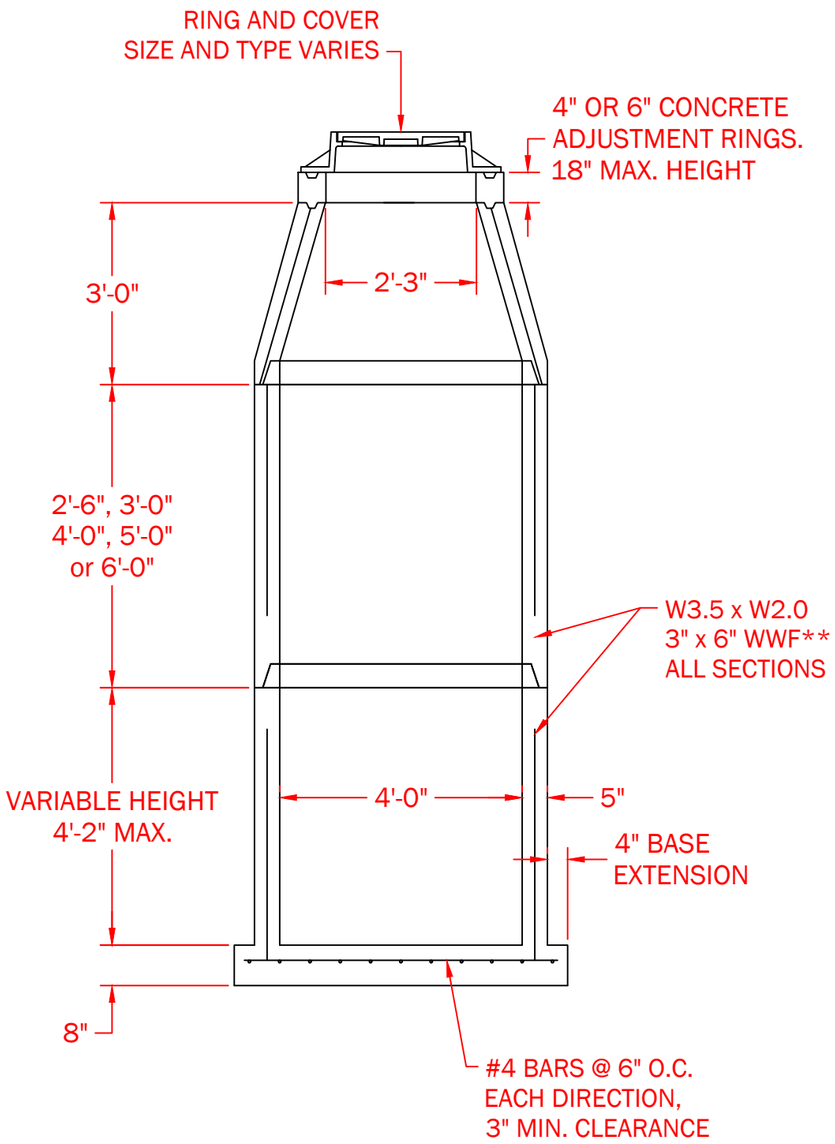


Plan View

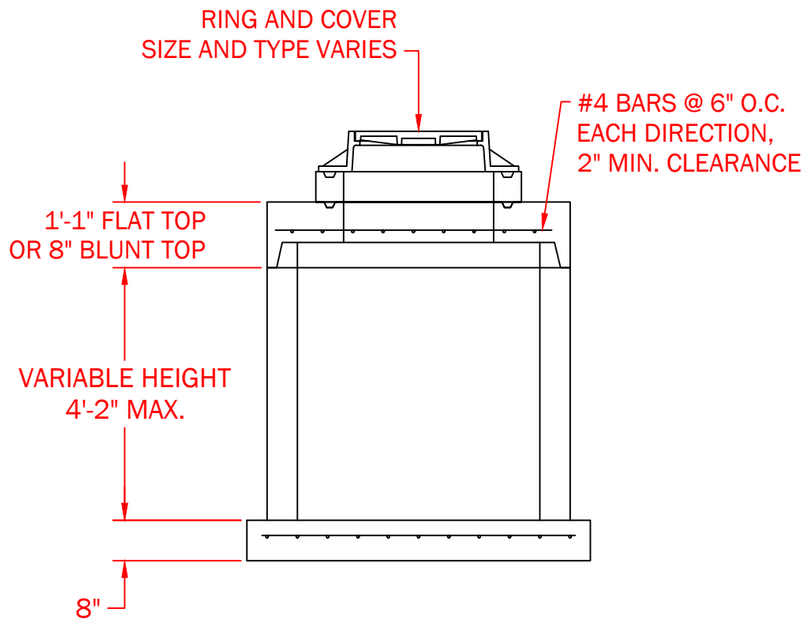


Specifications:

Structure Notes:



**NOTE: ALL WELDED WIRE TO OVERLAP A MINIMUM OF 8 7/16"



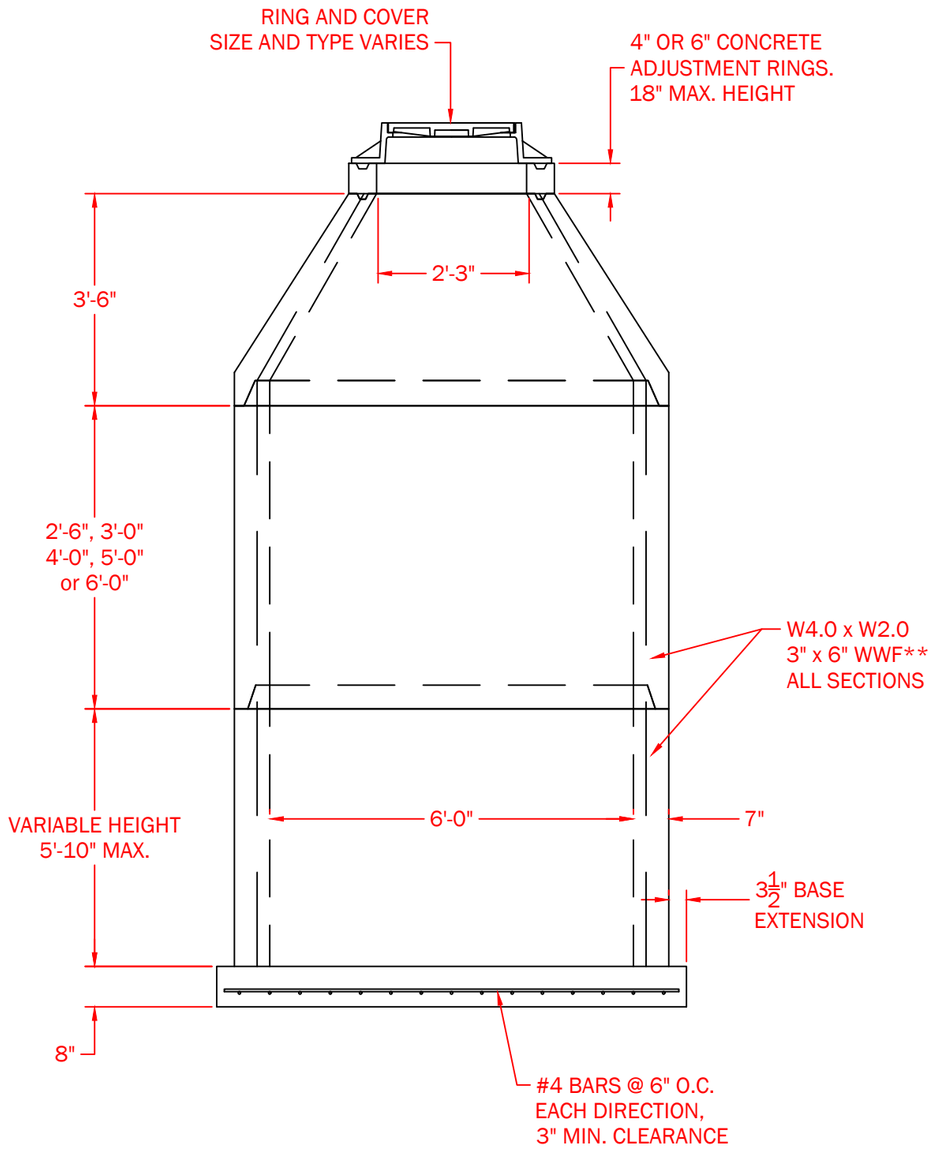
1. ALL MANHOLES MEET CURRENT ASTM C478 SPECIFICATIONS.
2. ALL REINFORCING IS GRADE 60 MINIMUM.
3. FOR ROUGH CUT OPENINGS, AN APPROVED WATER STOP GASKET AND NON-SHRINK GROUT MEETING MANHOLE SPECIFICATIONS WILL BE USED FOR PIPE TO MANHOLE CONNECTIONS.
4. FOR PREFORMED GASKET CONNECTION USE ALOK GASKETS AS MANUFACTURED BY A-LOK PRODUCTS, CORP.
5. JOINTS BETWEEN MANHOLE SECTIONS TO BE SEALED WITH TWO WRAPS OF EXTENDED BUTYL RUBBER JOINT MASTIC MEETING MANHOLE SPECIFICATIONS

Structure Type: 48" CONC MANHOLE
Structure ID: -
Station Number: -

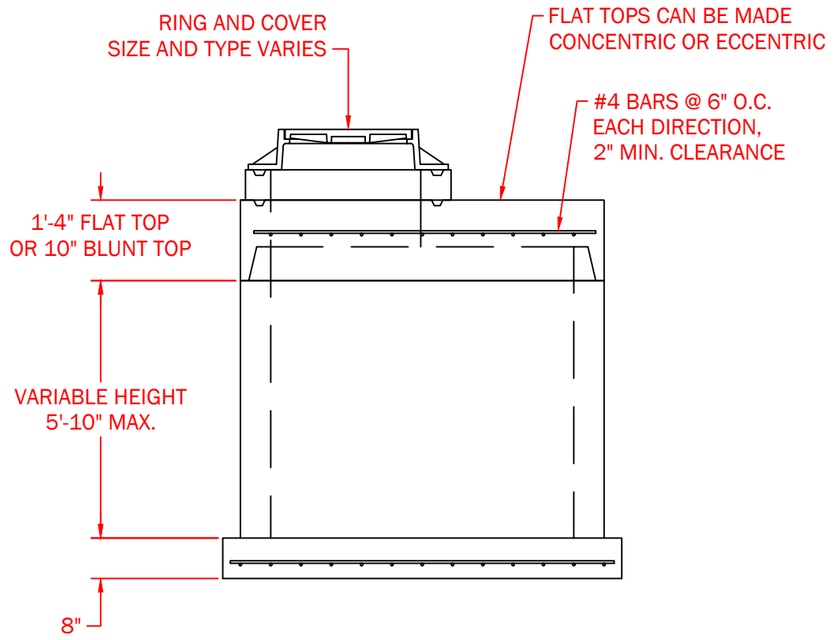
WCP
WICHITA CONCRETE PIPE
221 W. 37th St. North
Wichita,KS. 67204
Phone: (316)-838-8651
Fax: (316)-838-0838

Rev.	Date	Desc.
-	-	-
-	-	-
-	-	-
-	-	-

Project: WCP STANDARD DRAWING/DETAIL
Appr. By: -
Date: -
Drawn By: -
Job # -
Client: -



**NOTE: ALL WELDED WIRE TO OVERLAP A MINIMUM OF 9 1/16"



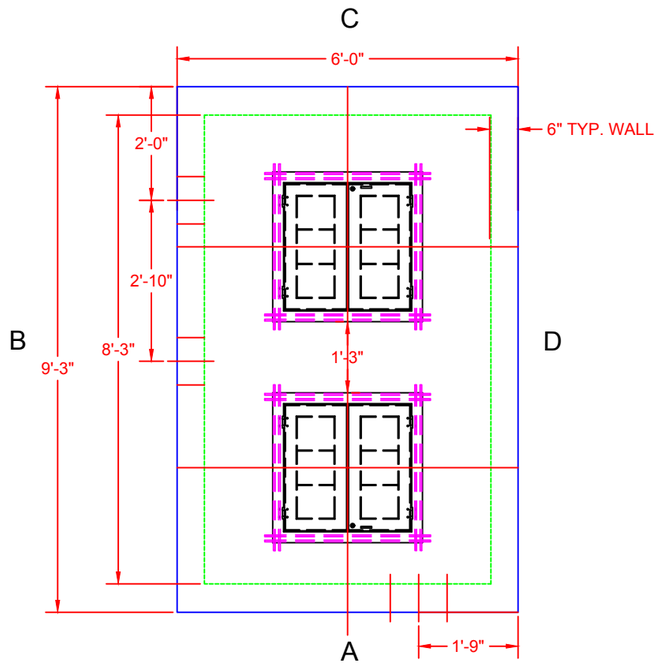
1. ALL MANHOLES MEET CURRENT ASTM C478 SPECIFICATIONS.
2. ALL REINFORCING IS GRADE 60 MINIMUM.
3. FOR ROUGH CUT OPENINGS, AN APPROVED WATER STOP GASKET AND NON-SHRINK GROUT MEETING MANHOLE SPECIFICATIONS WILL BE USED FOR PIPE TO MANHOLE CONNECTIONS.
4. FOR PREFORMED GASKET CONNECTION USE ALOK GASKETS AS MANUFACTURED BY A-LOK PRODUCTS, CORP.
5. JOINTS BETWEEN MANHOLE SECTIONS TO BE SEALED WITH TWO WRAPS OF EXTENDED BUTYL RUBBER JOINT MASTIC MEETING MANHOLE SPECIFICATIONS
6. SEE PLASTIC LINER DETAIL SHEETS IF REQ'D.

Structure Type: 72" ROUND MANHOLE
Structure ID: -
Station Number: -

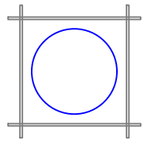
WICHITA CONCRETE PIPE
221 W. 37th St. North
Wichita,KS. 67204
Phone: (316)-838-8651
Fax: (316)-838-0838

Rev.	Date	Desc.
-	-	-
-	-	-
-	-	-
-	-	-

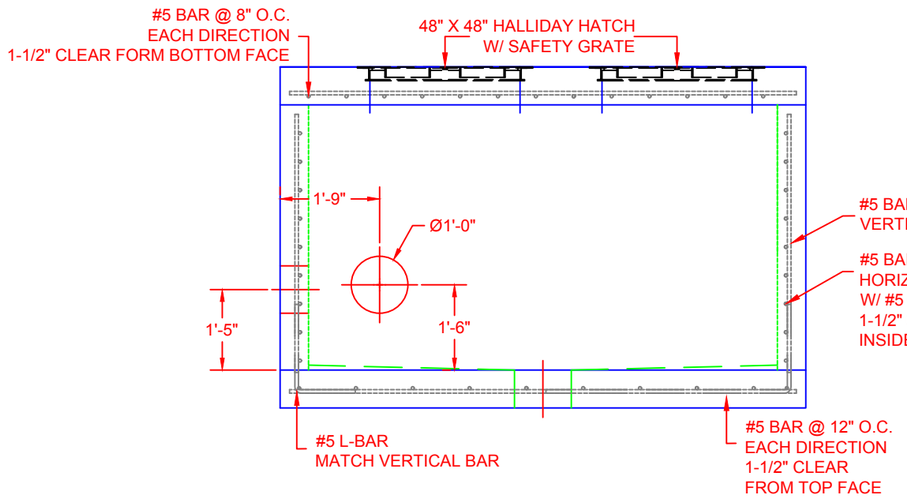
Project: WCP STANDARD DRAWING/DETAIL
Appr. By: -
Date: -
Drawn By: -
Job # -
Client: -



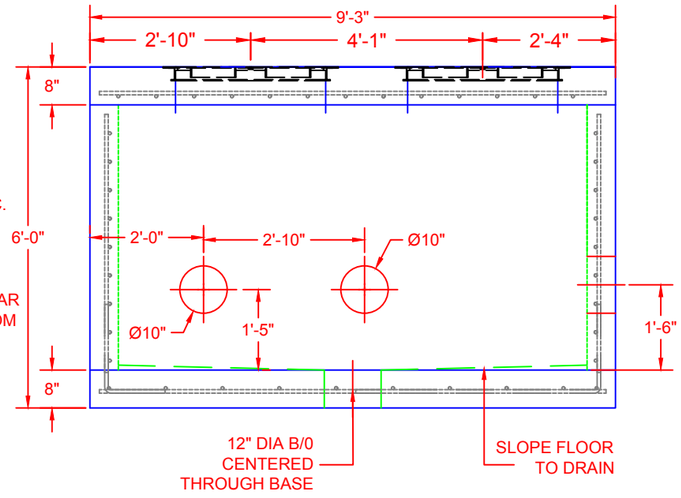
PLAN VIEW



REINFORCING DETAIL
TYPICAL BLOCKOUT REINFORCING
(4) EA. #5 BARS



VIEW A



VIEW B

NOT FOR PRODUCTION

Structure Type: VALVE VAULT
Structure ID: VALVE VAULT
Station Number: -

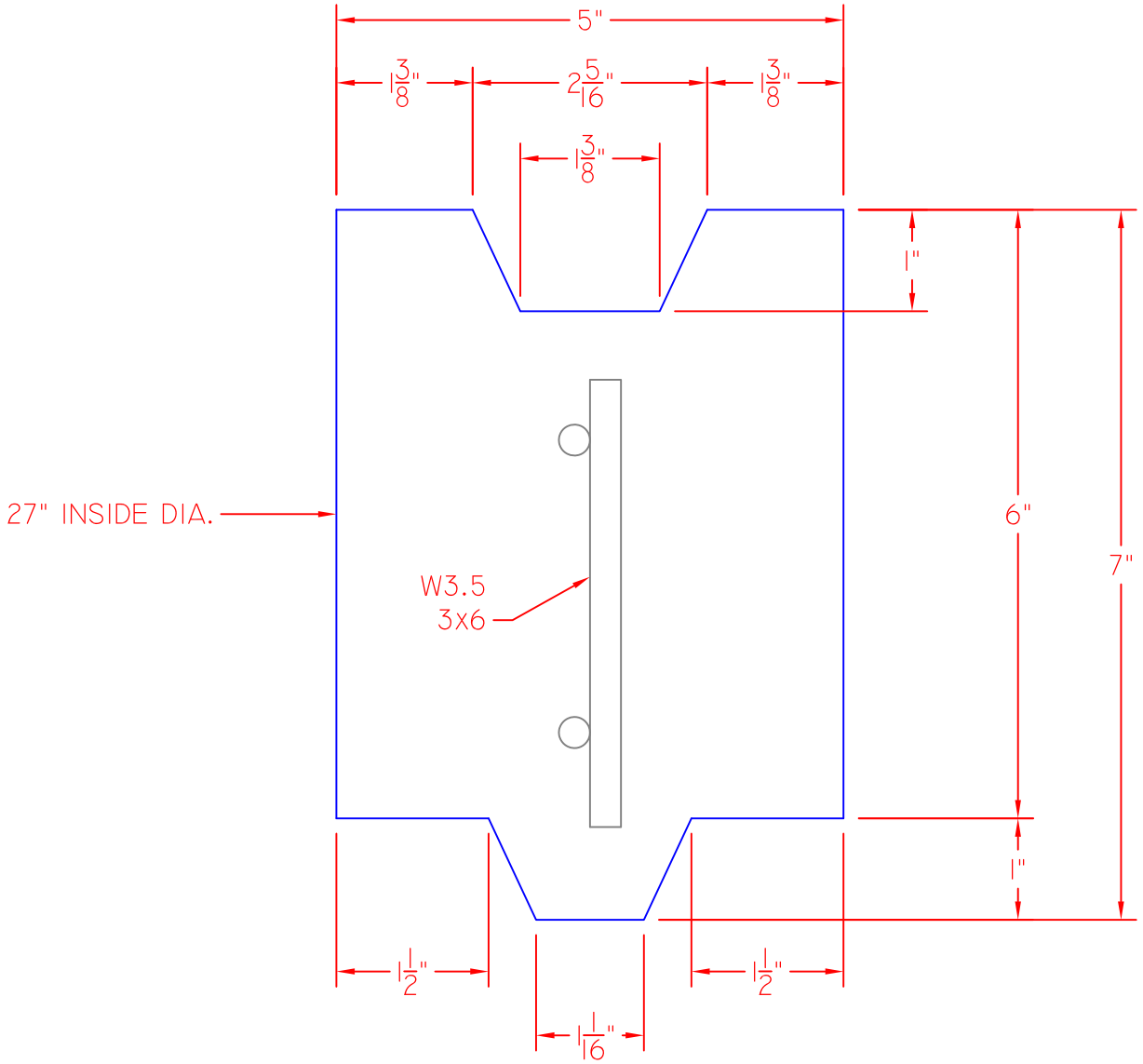
WICHITA CONCRETE PIPE

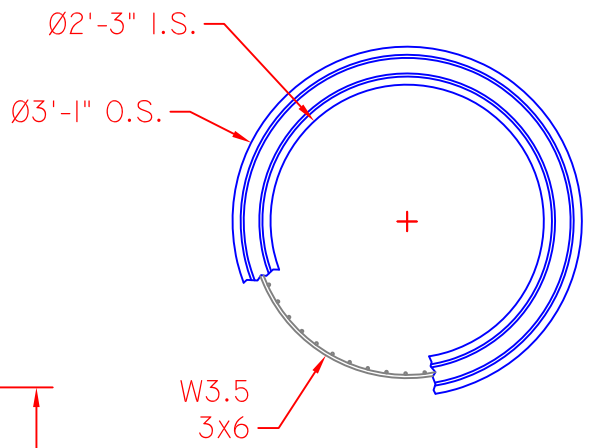
221 W. 37th St. North
Wichita,KS. 67204
Phone: (316)-838-8651
Fax: (316)-838-0838

Rev.	Date	Desc.
-	-	-
-	-	-
-	-	-
-	-	-

Project: PIKE ADDITION SS LIFT STATION
Appr. By: -
Date: 2/29/20
Drawn By: RH
Job # 20-0133
Client: MCCULLOUGH EXCAVATION

ADJUSTMENT RING DETAIL





Rev.	Date	Description	Approved	Sheet: 1
•				Total sheets: 1

Project: WCP WICHITA, KS

Title: ADJUSTMENT RING

File name: 6ADJ.dwg

Drawn By: JCS

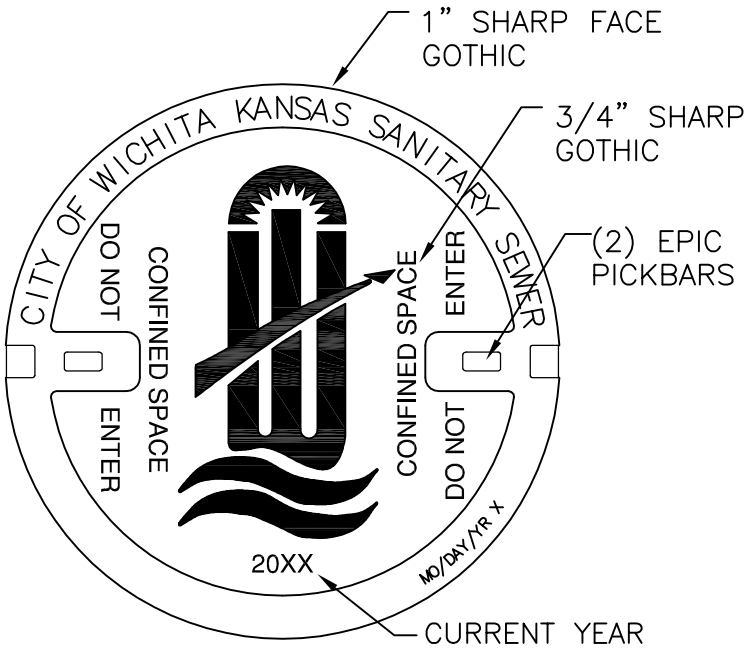
Date: 06/29/2009

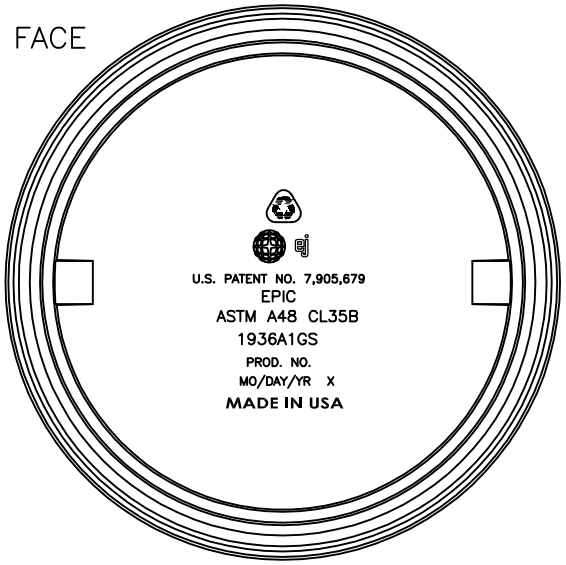
Approved By:

WICHITA CONCRETE PIPE COMPANY

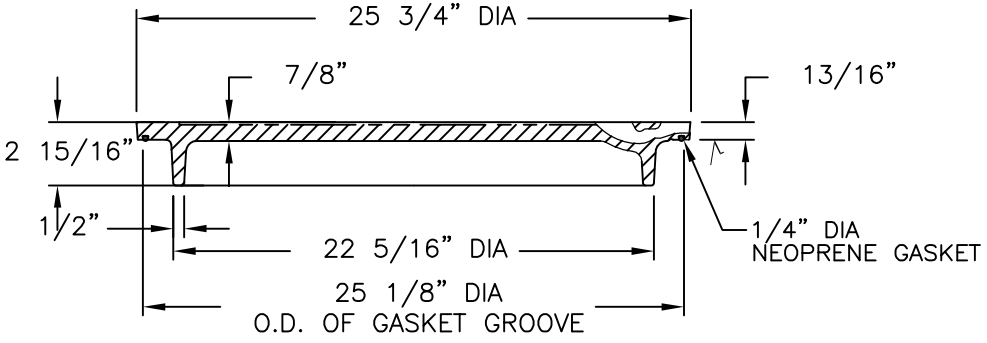
Concrete Pipe · Precast Manholes · Storm Sewer Inlets · Junction Boxes · Specialty Items

1936A1GS Cover

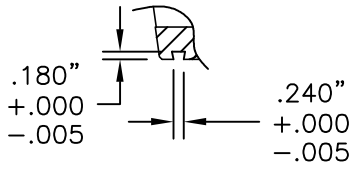




BOTTOM VIEW



SECTION VIEW



GROOVE DETAIL

Product Number

00193627

Design Features

-Materials
Gray Iron (CL35B)
-Design Load
Heavy Duty
-Open Area
n/a
-Coating
Undipped
-√ Designates Machined Surface

Certification

- ASTM A48
-
-
-Country of Origin: USA

Drawing Revision

09/27/2011 Designer: JIJ
06/13/2013 Revised By: DAE

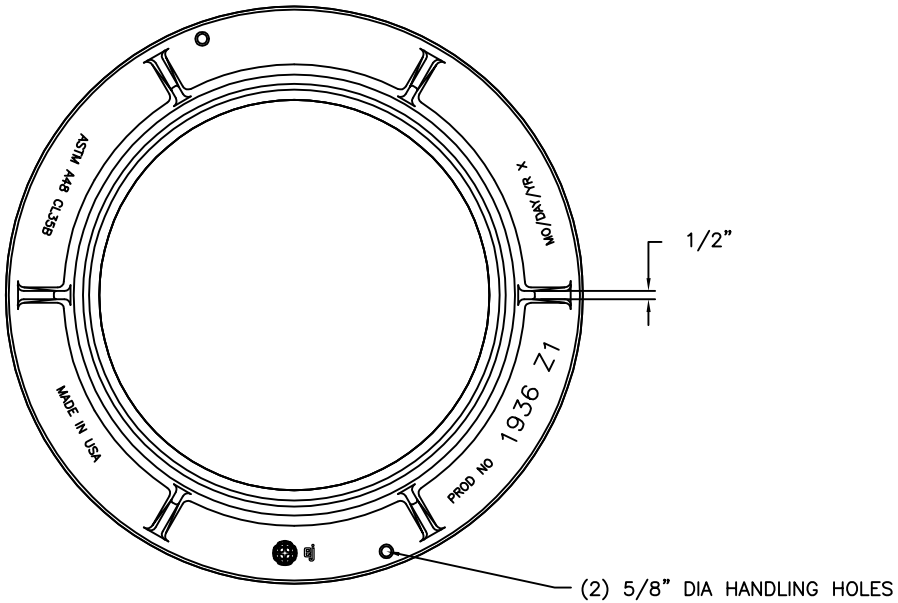
Disclaimer

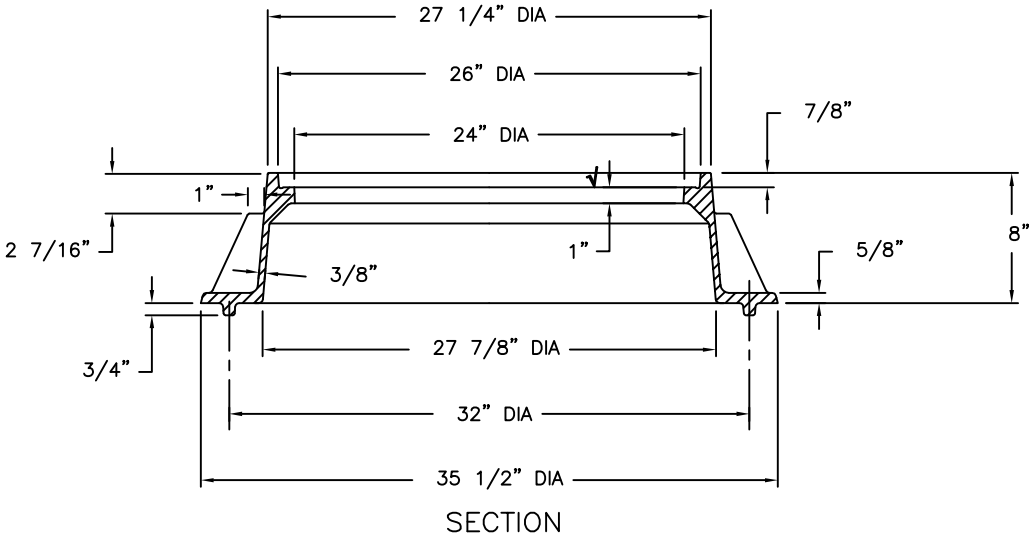
Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

Contact

800 626 4653
ejco.com

1936Z1 Frame





SECTION

Product Number

00193611

Design Features

-Materials
Gray Iron (CL35B)
-Design Load
Heavy Duty
-Open Area
n/a
-Coating
Undipped
- √ Designates Machined Surface
- Weight
189 Lbs

Certification

- ASTM A48
- AASHTO M306
-
-Country of Origin: USA

Estimated Weight

189.0 lbs.

Drawing Revision

07/12/2004 Designer: DAL
11/11/2014 Revised By: DAE

Disclaimer

Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

Contact

800 626 4653
ejco.com

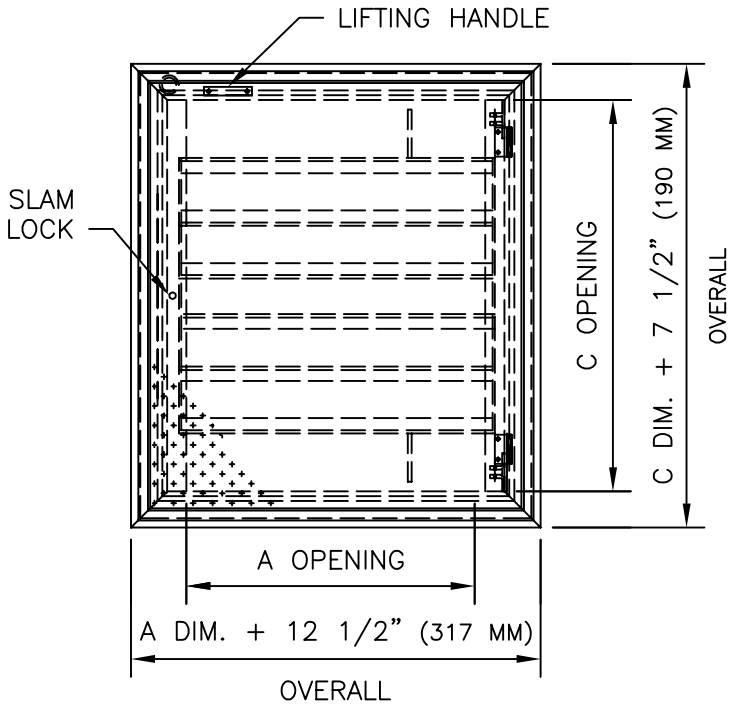
SERIES H1W ACCESS DOOR

HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800–298–1027
Fax 407–298–4534
Sales@HallidayProducts.com

STANDARD FEATURES:

- AUTO–LOCK T–316 STAINLESS STEEL HOLD OPEN ARM WITH RELEASE HANDLE
- T–316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE
- T–316 STAINLESS STEEL SLAM LOCK WITH REMOVABLE KEY
- STAINLESS STEEL COMPRESSION SPRING ASSIST
- SINGLE LEAF CONSTRUCTION
- H20 LOAD RATING (SEE NOTES)
- EXTRUDED ALUMINUM CHANNEL FRAME
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE

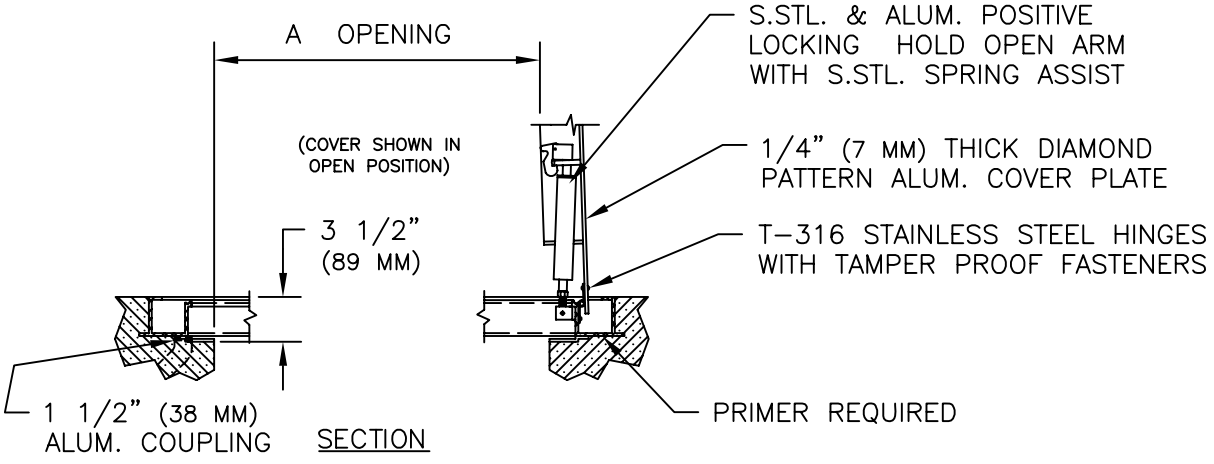
STANDARD SIZES				
QTY.	MODEL NO.	A DIM. INCHES (MM)	C DIM. INCHES (MM)	UNIT WT. LBS. (KG.)
	H1W2424	24 (610)	24 (610)	72 (33)
	H1W2430	24 (610)	30 (762)	90 (41)
	H1W2436	24 (610)	36 (914)	108 (49)
	H1W2442	24 (610)	42 (1067)	126 (57)
	H1W3030	30 (762)	30 (762)	113 (51)
	H1W3036	30 (762)	36 (914)	135 (61)
	H1W3042	30 (762)	42 (1067)	158 (72)
	H1W3048	30 (762)	48 (1219)	180 (82)
	H1W3636	36 (914)	36 (914)	162 (73)
	H1W3642	36 (914)	42 (1067)	189 (86)
	H1W3648	36 (914)	48 (1219)	216 (98)



NOTES:

1) SUITABLE FOR USE IN OFF STREET LOCATION WHERE NOT SUBJECTED TO HIGH DENSITY TRAFFIC.

2) PROVIDE A FULL BED OF CLASS "A" CONCRETE UNDER FRAME AND SUPPORT ANGLES.

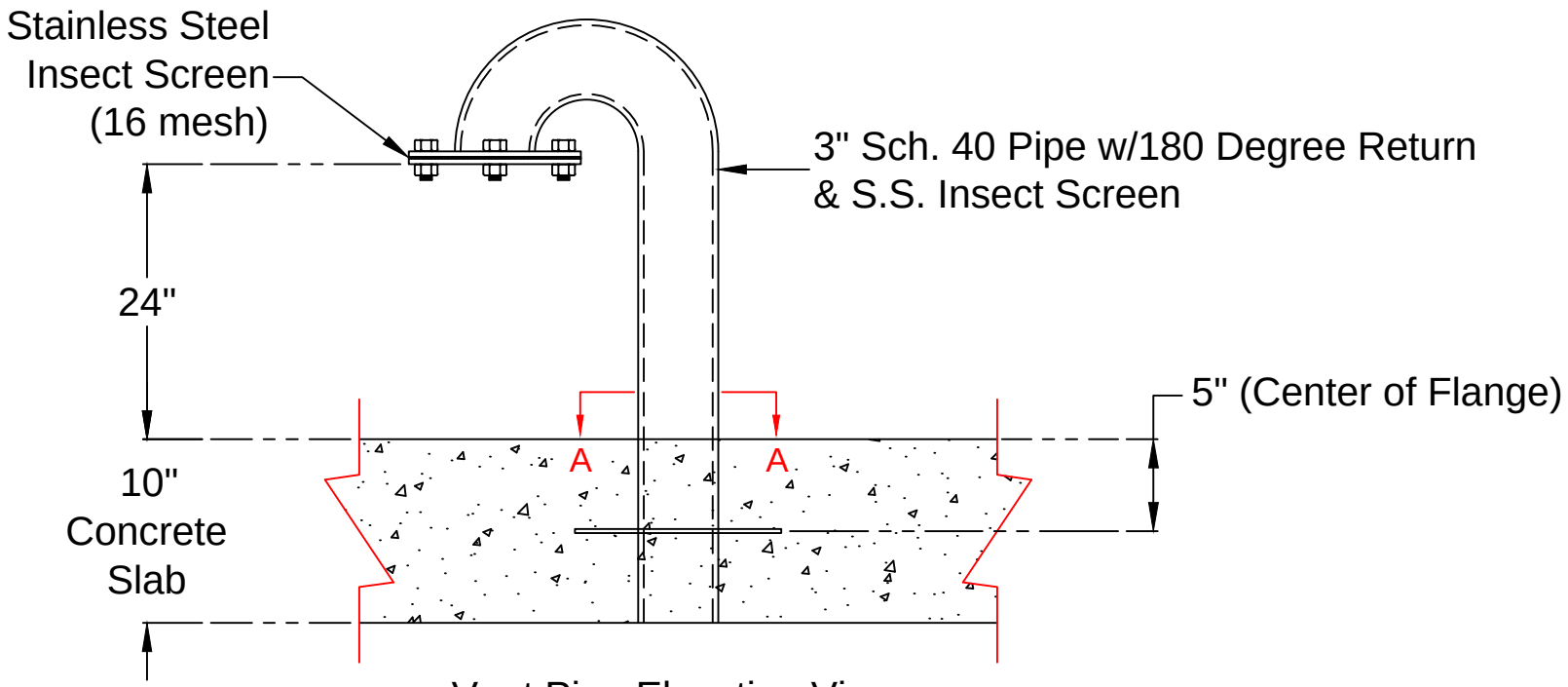


SECTION

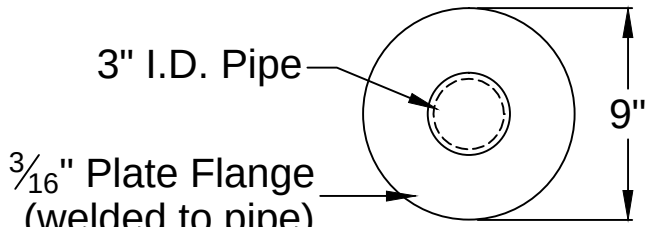
K&B\Vent Pipes\3in. S.S. Vent Pipe (24in. clearance) w-180 Degree Return ans S.S. Insect Screen 011018

304 Stainless Steel

3" Vent Pipe w/Insect Screen



Vent Pipe Elevation View



Section A-A

Note:
1. 304 Stainless Steel

3" I.D. Stainless Steel Sch. 40 Vent Pipe w/Insect Screen

K&B Steel
E-Mail: kbsteel@valornet.com
525 Industrial Blvd. Clarksville, Texas 75426
Phone: (903) 427-3980 FAX: (903) 427-5817

(Date: 03-17-20)

A•LOK PRODUCTS, INC.

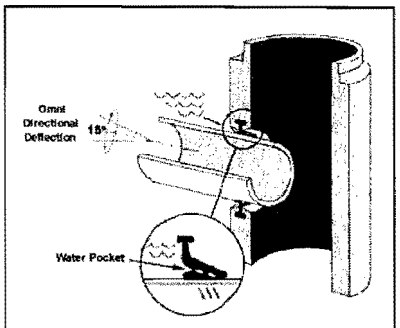
The Company With Connections

INCOMPARABLE PIPE-TO-MANHOLE CONNECTORS FOR SANITARY SYSTEMS

X-CEL

A•LOK X-CEL

Designed to produce a guaranteed watertight seal between pipe and concrete, the **A•LOK X-CEL** flexible pipe-to-manhole connector provides maximum performance on the job site. Its unique design not only saves valuable project time, but also ensures longevity and offers unsurpassed environmental benefits.



The A•LOK Pipe to Manhole Compression Connection

A•LOK X-CEL connectors prevent infiltration and ex-filtration into wastewater or stormwater systems, and are installed in the precast structure in a way that does not require coring or placement after the base component is cast. This eliminates residual waste from coring, disposal of the slugs or wasted raw material utilization or energy. Once cast-in, the connector becomes an integral component of the structure wall.

Based on the traditional **A•LOK** connector, the **X-CEL's** enhanced features improve performance. Take the patented "water pocket" for example, which utilizes the untapped pressure of ground water to exert a clamping force around the connector and pipe, allowing the connector to perform in deeper installations.

Demonstrated in tests higher than 15 psi of hydrostatic water pressure, the **X-CEL's** unique design provides 45 percent more rubber contact with the pipe, allowing for greater pipe deflection.

MATERIAL

Molded or extruded from compounds formulated for wastewater applications and engineered to conform to the requirements of section 4.1.1 of ASTM C-923, the standard rubber connector is available in alternative compounds upon request. Contact an **A•LOK** representative regarding special applications, such as the presence of hydrocarbons.

KEY ADVANTAGES

The **A•LOK X-CEL** offers distinct advantages for engineers, specifiers, precasters and municipalities. An enhanced profile gives the connector 45% greater rubber contact with the pipe, thus allowing the pipe to be deflected in excess of 10 degrees of omnidirectional deflection, all the while maintaining a watertight seal. These enhancements allow for more flexibility to compensate for pipe shear due to settlement or ground movement.

KEY ADVANTAGES (continued)

On larger-diameter pipe, where size prohibits a gasket from being installed in a flat plane, the **X-CEL** can be configured for casting in a curve with the connector staying perpendicular to the center line of the pipe. Discovered through years of extensive research and development, the configurations cause no loss of compression or deflection.

Functioning on pure compression, the **X-CEL** allows for fast and easy field installation. After the connector and pipe are cleaned and lubricated, the pipe is simply centered in the connector and inserted. Backfilling can be done immediately, thus enhancing project safety and overcoming the typical problems of water, running sand and other unstable trench conditions.

For Specifiers, the **X-CEL** connector offers a guaranteed solution to the age-old containment system problem of the best way to connect pipes and concrete structures. Precasters using **X-CEL** connectors experience increased satisfaction due to their ability to offer a complete watertight, guaranteed product, while municipalities that install **X-CEL** will ultimately spend less on road repair by avoiding the possibility of pot/sink holes that are often the result of leaking, non-connected, systems.

PRODUCT REFERENCES

A.) ASTM C-923-00
Resilient Connector Between Reinforced Concrete Manholes Structures, Pipe and Laterals.

B.) ASTM C-1244-00
Standard Test Method For Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test

C.) ASTM C-478C
Standard Specification for Precast Reinforced Concrete Manhole Sections

PERFORMANCE STANDARD

The A•LOK X-CEL guaranteed Connector meets or exceeds all material and test requirements outlined in ASTM C-923: *"Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals."*

Molded or extruded from compounds formulated for wastewater applications, the standard rubber connector is engineered to confirm with the requirements of section 4.1.1 of ASTM C-923. Alternative compounds are available upon special request.

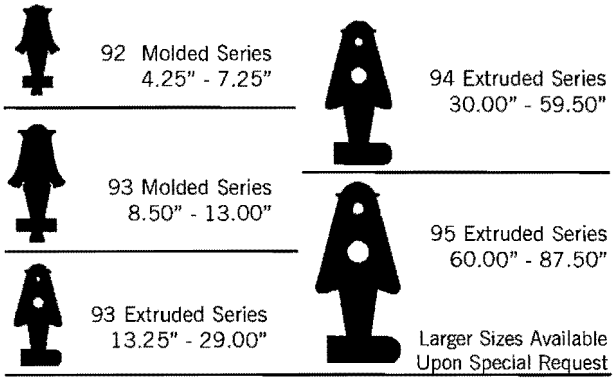
PERFORMANCE STANDARD (continued)

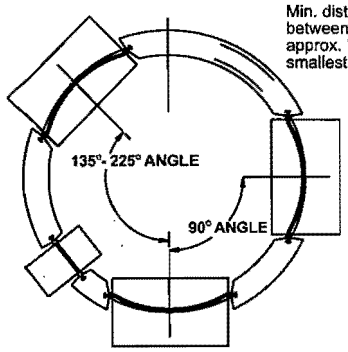
RESILIENT TEST REQUIREMENTS OF A.S.T.M. C-923-00

TEST	RESULTS	ASTM METHOD
Chemical resistance 1 N Sulfuric acid 1 N Hydrochloric Acid	 no weight loss no weight loss	at 22°C for 48h
Tensile strength	1200 psi or 8.5 MPa, min	D 412
Elongation at break	350% min.	
Hardness	±5 from mfg's. specified hardness	D 2240 (Shore A durometer)
Accelerated oven-aging	decr. of 15%, max. of original tensile strength, decr. of 20% max. of elongation	D 573, 70±1°C for 7 days
Compression set	decr. of 25%, max. of original deflection	D 395, Method B, at 70°C for 22h
Water absorption	increase of 10%, max. of original by weight	D 471, immerse 0.75 by 2-in. or 19 by 25-mm Specimen in distilled water at 70°C for 48h
Ozone resistance	rating 0	D 1171
Low-temp brittle point	no fracture at -40°C	D 746
Tear resistance	200 lbf/in. or 34 kn/m	D 624, Method B

PART 6 • DIMENSIONAL DATA

A•LOK X-CEL Cross Sections / Pipe Size OD's





MAX. PIPE SIZE OD's

MAX. PIPE SIZE OD's

Manhole Diameter	135° - 225° Pipe Angle	90° Pipe Angle
42"	26.5"	22.0"
48"	31.5"	25.0"
60"	42.0"	32.0"
72"	52.5"	38.0"
84"	59.5"	44.0"
96"	73.5"	50.0"
108"	76.0"	56.0"
120"	85.0"	62.0"

PRODUCT SPECIFICATIONS

A flexible pipe to manhole connector shall be used whenever a pipe penetrates into a precast concrete manhole or structure. The connector shall be the **A•LOK X-CEL CONNECTOR** as manufactured by **A•LOK PRODUCTS, INC.**, Tullytown, PA, or approved equal.

The design of the connector shall provide a flexible, watertight seal between the pipe and concrete structure. The connector shall assure that a seal is made between:

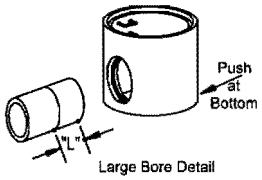
(1) The connector and the structure wall by casting the connector integrally with the structure wall during the manufacturing process in a manner that it will not pull out during pipe coupling. The connector shall also be capable of being cast into a round structure by curving the connector in a manner that allows it to remain centrally located within the structure wall and perpendicular to the pipe. This configuration will result in no loss of seal or deflection of pipe entering a concrete structure.

(2) The seal between the connector and the pipe shall be made by the compression of the connector between the outside circumference of the pipe and the interior hole opening of the structure. The connector shall be the only component to affect the seal between the pipe and structure.

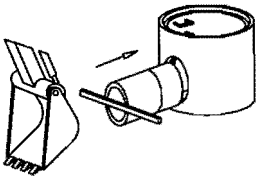
The connector shall be made from materials that conform to the physical and chemical requirements outlined in Section 4, *"Materials and Manufacture"* of ASTM C-923 Standard Specification for Resilient Connectors between Reinforced Concrete Manhole Structures, Pipes, and Laterals, and the overall design will meet or exceed Section 7, *"Test Methods and Requirements"* of ASTM C-923.

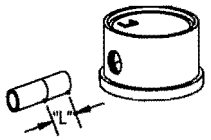
The connector shall be sized specifically for the type of pipe being used and shall be installed in accordance with the recommendations of the manufacturer.

INSTALLATION INSTRUCTIONS

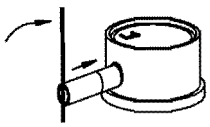


Large Bore Detail





Small Bore Detail



CAUTION:

When installing pipe stubs for future pipeline installation, all stubs must be properly restrained to prevent any movement by means other than the **A-LOK X-CEL** Connector.

STEP 1:
Confirm that the pipe surface is smooth, clean and free of foreign materials, chips, gouges and form seams due to manufacturing or handling. Slightly bevel any sharp or blunt edges caused by the cutting of the pipe.

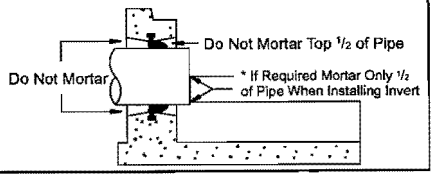
STEP 2:
Lubricate the connector and the entire section of the pipe that will be inserted into the connector. The chart below lists A-LOK's minimum lubrication length "L".

PIPE SIZE	MIN. LUBRICATION LENGTH "L"
4" - 15"	12"
16" - 18"	18"
21" & Larger	24"

STEP 3:
Center the pipe and connector square to each other and insert the pipe into the connector using a bar or back hoe depending on the size. Once the pipe is coupled with the connector, deflect the structure or pipe to achieve the proper angle.

WARNING
To ensure the A-LOK X-CEL Connector remains a flexible watertight connector, it is A-LOK Products, Inc. strong recommendation that no mortar be placed between the pipe and wall of the concrete structure. The use of mortar in this area would decrease the effectiveness of the connector to compensate for shear caused by settlement or ground movement.

NOTE:
To find approximate subgrade, measure from the outside base of the structure to the junction of the connector and flat spot. Then add the wall thickness of the pipe plus 1/4 inch.



A•LOK PRODUCTS INCORPORATED P.O. BOX 1647 • 697 Main Street • Tullytown, PA 19007 • www.a-lok.com • email: info@a-lok.com
800-822-2565 • 215-547-3366 • 215-547-5260 FAX

A-LOK® PRODUCTS, INC. The Company With Connections

697 Main Street • P.O. Box 1647 • Tullytown, PA 19007 • Toll Free: 1.800.822.2565 • Phone: 1.215.547.3366 • Fax: 1.215.547.5260 • www.a-lok.com

July 27, 2009

Re: Product Information

Please be aware that all of our rubber connectors are manufactured in the A-LOK Products, Inc. facility located at 697 Main Street, Tullytown, PA, US or the Vertex facility located at 3956 Mogadore Industrial Parkway, Mogadore, OH, US.

If you have any other questions or need assistance in any way, please don't hesitate to contact us.

Thank you,

Wally Swiger
Sales Manager
A-LOK Products, Inc.

A-LOK® PRODUCTS, INC.
THE COMPANY WITH CONNECTIONS®
P.O. BOX 1647 • 697 MAIN STREET • TULLYTOWN, PA 19007

May 12, 2004

A-lok Products, Inc. provides Material Safety Data Sheets (MSDS) upon request to all customers. However, it may be important to note that many, if not all of A-LOK's products are considered to be finished articles as defined by OSHA's standard, 29 CFR 1910.1200(c) and do not require that a Material Safety Data Sheet be produced as stated in 29CFR 1910.1200(b)(6)(v).

This section does not apply to:

1910.1200(b)(6)(v)

Articles (as that term is defined in paragraph (c) of this section);

1910.1200(c)

"Definitions."

"Article" means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

Under this definition, all gaskets, step and lift pin inserts, Dura-Plate Liner, and fiberglass and steel hole formers meet OSHA's definition.

In the event that one of A-LOK's products meets the definition of a finished article, the Material Safety Data Sheets of the raw materials will be provided, upon request, to give our customers and their employees' additional information that may be helpful in enhancing their safety and health efforts.

If there is ever a concern with any of A-LOK Products. Inc.'s products, please contact Joseph Glowaski, A-LOK's Safety and Health Director.

Respectfully:

James A. Westhoff

James A. Westhoff
President

Phone: (800) 822-2565 • (215) 547-3366 • Fax: (215) 547-5260 • E-mail: info@a-lok.com • http://www.a-lok.com

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Certificate of Conformance

Date: 09/08/10

Wichita Concrete Pipe Co.
221 West 37th St. North
Wichita, KS 67204
Attention: Mr. Joseph Shreve

Dear Mr. Joseph Shreve,
This is to certify that the product listed below conforms to the following specifications.

Product: A-LOK X-CEL pipe to manhole connectors

Performance: These Connectors meet the requirements of C-923-02, C-1478-06

Resilient Test Requirements of ASTM C-923-02, C-1478-06:

TEST	RESULTS	ASTM METHOD
Chemical resistance		
1 N Sulfuric acid	No weight loss	At 22°C for 48h
1 N Hydrochloric acid	No weight loss	
Tensile strength	1200 psi or 8.5 MPa, min	D 412
Elongation at break	350% min.	
Hardness	+/- 5 from mfg's. specified hardness	D 2240 (Shore A durometer)
Accelerated oven-aging	Decrease of 15% max. of original tensile strength, decrease of 20% max. of elongation	D 573, 70+/- 1°C for 7 days
Compression set	Decrease of 25% max. of original deflection	D 395, Method B, at 70°C for 22h
Water absorption	Increase of 10%, max. of original by weight	D 471, immerse 0.75 by 2-in. or 19 by 25-mm specimen in distilled water at 70°C for 48h
Ozone resistance	Rating 0	D 1171
Low-temp brittle point	No fracture at -40°C	D 746
Tear resistance	200 lbf/in. or 34 kn/m	D 624, Method B

Sincerely,

Jim Kelly

Jim Kelly
Research & Development Director

ConSeal™ CS-212

Polyolefin Backed Exterior Joint Wrap

Membrane Waterproofing and Exterior Joint Wrap for Precast Concrete Joints

Applications

For joints in: Box Culverts, Underground Concrete Vaults, Segmented Bridge Structures, Wastewater Structures and Arched Bridge Structures, Manholes. **Not intended for use in expansion joints or joints that move.**

Sealing Properties

- Excellent resistance to puncture, tear and abrasions.
- Aggressively bonds to concrete and metal structures.
- Provides a permanent flexible water and soil barrier.
- Will not shrink, harden or oxide upon aging.
- Available in numerous standard sizes.
  - Standard thicknesses: 0.065” and 0.100”
  - Standard widths: 4”, 6”, 8”, 12”, 24”, 36” and 48”
- Custom widths and lengths available upon request.
- No priming normally necessary. When confronted with difficult installation conditions, such as wet concrete or temperatures below 40°F (4°C), priming the concrete will improve the bonding action. Consult Concrete Sealants for the proper primer to meet your application.

Specifications

ConSeal CS-212 meets ASTM E-1745, C-877, C-990 Specifications, and AASHTO M198 Type B.

Technical Data

ASTM E-1745: Standard specification for plastic water vapor retarders used in contact with soil or granular fill under concrete slabs.

Class C. Specification	Test Method	E-1745 Requirement	CS-212
Water Vapor Permeance	ASTM F-1249	0.30 perms, max.	0.045 perms, max.
Tensile Strength	ASTM E-154	13.6 lbs./ inch, min.	21.0 lbs./ inch, min.
Puncture Resistance	ASTM D-1709	475 grams, min.	864 grams, min.

ASTM C-877: Standard specification for external sealing bands for non-circular concrete sewer, storm drain and culvert pipe.

Type III, Specification	E-1745 Requirement	CS-212
Backing Bond Element	4 Mil, min. thickness	4 Mil
Butyl Rubber Adhesive	0.03 inch, min. thickness	0.065, min.

Don’t Just Seal It, ConSeal It!

Concrete Sealants, Inc. 9325 State Route 201 ■ Tipp City, OH 45371 ■ P.O. Box 176 ■ New Carlisle, OH 45344
P. 937.845.8776 **F.** 937.845.3587 **Toll Free** 800.332.7325 ■ **www.conseal.com**

ISO 9001 Registered

ConSeal™ CS-212

Polyolefin Backed Exterior Joint Wrap

ConSeal™ Concrete Sealants Inc.

Membrane Waterproofing and Exterior Joint Wrap for Precast Concrete Joints

Technical Data Continued

ASTM C-990: Standard specification for joints for concrete pipe, manholes and precast box sections using preformed flexible joint sealants.

Section 6, Specification	Test Method	C-990 Requirements	CS-212
Hydrocarbon blend content % by weight	ASTM D-4	50-70%	52, min.
Inert mineral filler % by weight	ASTM C-990	30% min.	45, min.
Volatile Matter % by weight	ASTM C-990	2.0 max.	1.20
Specific Gravity	ASTM C-990	1.15-1.50	1.20-1.25
Ductility, 7°F	ASTM D-113	5.0, min.	12, min.
Penetration, cone 77°F, 150 gm. 5 sec.	ASTM D-217	50-120 mm	70-80 mm
Softening point, °F	ASTM D-36	320°F, min.	335°F, min.

Limited Warranty

This information is presented in good faith, but we cannot anticipate all conditions under which this information and our products, or the products of other manufactures in combination with our products, may be used. We accept no responsibility for results obtained by the application of this information or the safety and suitability of our products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each such product or product combinations for their own purposes. It is the **users' responsibility** to satisfy himself as to the suitability and completeness of such information for this own particular use. We sell this product without warranty, and buyers and users assume all responsibility and liability for loss or damage arising from the handling and use of this product, whether used alone or in combination with other products.

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1. PRODUCT NAME

Ultra-Shield WB Waterproofing

2. MANUFACTURER

GMX, Inc.
3800 E. 91st Street
Cleveland, OH 44105
Phone: 866-228-7743
Fax: 216-430-3500

3. PRODUCT DESCRIPTION

Ultra-Shield WB Waterproofing is a polymer modified asphalt emulsion membrane. It is designed and recommended for use as the membrane component in an exterior wall waterproofing system. Ultra-Shield WB forms a tough, durable membrane which bridges shrinkage cracks and maintains its superior performance properties when exposed to the chemicals found in soil. Ultra-Shield WB meets the ICC ESR acceptance criteria for cold, liquid applied below grade exterior waterproofing materials.

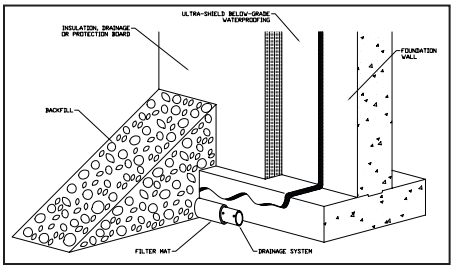
The addition of rubber polymer to the base emulsion enables the membrane to:

- Elongate up to 2000%
- Bridge shrinkage cracks (up to 1/16")
- Control water migration between the coating and application surface (localize leaks)
- Impede water at high heads due to improved water vapor permeance
- Comply with EPA Model Standard for radon control in new home construction
- Self-heal

Ultra-Shield WB is manufactured to the highest quality control standards and in accordance with ISO 9001 requirements. ISO certification ensures that each gallon produced meets the highest quality control standards in the industry.

Ultra-Shield WB is compatible with a wide range of insulation, drainage and protection products. Your applicator can design the waterproofing solutions best suited to each project's specific application requirements and budgetary constraints.

Storage and Handling Considerations: Store materials in a dry area and protect from direct sunlight. Ideally, the materials should be stored inside in a temperature controlled environment (interior temperatures between 60–80°F). Do not allow Ultra-Shield WB to freeze. Any materials exposed to the elements should be elevated above the ground and covered by a tarpaulin. Materials should not be exposed to excessive heat or direct flame.



Ultra-Shield WB should not be applied during inclement weather and the installation should not proceed in the event that precipitation is probable during the application.Consult your local GMX representative or the GMX Technical Department for application recommendations when application temperatures are less than 20°F. Store waterproofing materials at room temperature until immediately prior to use when the ambient temperature is less than 40°F. Discontinue application if the material can not be stored at temperatures which permit even distribution of product. Avoid inhaling the spray mist and take precautions to ensure adequate ventilation. Consult the product MSDS Sheet prior to spraying.

4. INSTALLATION

Preparatory Work: The walls and footings must be dry and of sufficient strength and design to ensure structural integrity. Concrete wall and mortar joints must cure a minimum 16 hours before Ultra-Shield WB is applied. Foundation design using concrete blocks should fall within guidelines established by the National Concrete Masonry Association and be acceptable to the local building code enforcement agency.

Remove dirt and debris from the walls and footings with a stiff brush or broom. Scrape any loose mortar and debris from the walls and footings with a metal scraper. Do not apply Ultra-Shield WB over standing water. Repair any cracks in excess of 1/16" along the footings or in the wall surface and all honeycombed areas with a non shrinking grout. Fill all voids around tie holes, recessed ties and other small voids with an acceptable fiber reinforced asphalt roofing cement or cementitious repair material.

Membrane Installation: After the wall and footing surfaces have been properly prepared, spray, roller or brush apply Ultra-Shield WB over the entire wall surface (to the designated grade line) and along the perimeter. Particular emphasis should be paid to wall joints and the joint between the walls and footings. Ultra-Shield WB is applied at a rate of 20–25 sq. ft. per gallon in residential applications and to the specified rate in commercial applications. A two pass application is generally recommended to ensure sufficient dry mil thickness without excessive running or puddling. To ensure a smooth, consistent spray pattern, warm the material to 100–130°F immediately prior to spraying.

Protection, drainage or insulation board is typically installed over Ultra-Shield WB to protect the membrane from damage by the backfill, to assist in draining water away from the foundation and/or to insulate the foundation wall. The insulation/protection course is not required by code in residential applications. It is required for commercial waterproofing applications. Ultra-Shield WB is compatible with a wide range of insulation and protection boards including, but not limited to rigid fiberglass insulation/ protection board, extruded polystyrene

TECHNICAL DATA

PRODUCT SPECIFICATIONS
Type: Polymer modified asphalt waterproofing membrane

Color:	Black
Solids:	62% +/- 5 (by weight)
Density:	8.4 lbs./gal (1.0 g/cu. cm)
Application:	Airless spray, brush, roller
Cure Time:	2 – 24 hours
Hydrostatic Pressure:	Meets AC 29 requirement over Cracks (ASTM C 1306) for pressure resistance.
Low-Temperature Flexibility: (ASTM C 836 @ - 26 C.)	Meets AC 29 requirement. No cracking or loss of and Crack Bridging adhesion.
Adhesion Strength to Poured Cement:	2.469 lbf/in. ASTM C 836, Meets AC 29 requirement. Section 6.10
Adhesion Strength to Unparged Masonry:	1.855 lbf/in. Meets AC 29 requirement. ASTM C 836, Section 6.10
Resistance to Water: (ASTM D 2939, Section 15)	No blistering or re-emulsification. Meets AC 29 requirement.
Remains in Place During Application:	Meets AC 29 requirement.
Water Vapor Permeance:	.29 perms ASTM E 96, Water Method
Extensibility after Heat Aging: (ASTM C 836, Section 6.12)	¼" No Cracking Meets AC 29 requirement.
Elongation: (ASTM D 412, die c)	1936% min.
Cure Time	12 – 24 hours.

May help to contribute to LEED® credits:

EA Credit 1: Optimize Energy Performance

EQ Credit 3.1: Construction IAQ Management Plan: During Construction

EQ Credit 4.2: Low Emitting Materials: Paints and Coatings

MR Credit 5.1: Regional Materials: 10% Extracted, Processed and Manufactured Regionally

MR Credit 5.2: Regional Materials: 20% Extracted, Processed and Manufactured Regionally

insulation and sheet drain materials. Any question regarding the compatibility of Ultra-Shield WB with a specific insulation/protection board or drainage board should be directed to the GMX Technical Department.

Drain tile or strip drain must be installed as per the manufacturer's instructions to ensure proper removal of water from the foundation walls and footings.

Backfill must be graded to direct surface water away from the exterior foundation walls.

Additional Procedures for Poured Concrete Walls: Ultra Shield WB can be applied immediately after the forms have been removed. Remove wall ties prior to application. Fill any large voids and tie holes with a non-shrinking grout or asphalt based cement. Do not apply GMX WB to frozen concrete.

Additional Procedures for Concrete Block Walls: Mortar joints must be made flush to provide a void free bonding surface. Ultra-Shield WB will adhere to both parged and unparged concrete block walls. Due to the porous nature of unparged concrete block walls, additional material may be required to achieve the specified dry mil thickness. The mortar must be Type M or Type S as specified by ASTM C-270-91
a (Specification for Mortar for Unit Masonry, ASTM Vol. 04.01 and 04.05).

Allow the mortar joints to cure a minimum 16 hours prior to applying waterproofing.

Spray Equipment Recommendations: Gasoline powered, airless spray units with a minimum 4,000 p.s.i. rating will effectively spray any Ultra-Shield waterproofing product. For efficient spraying, use a heat exchanger to warm product to 100–130°F immediately prior to spraying. A reverse-a-clean spray tip with an orifice between .029 and .035 is recommended for spraying Ultra-Shield WB. Most spray systems utilize 150' of hose. Use ½ inch, 5,400 p.s.i. rated hose for the first 100 feet. Use 3/8 inch, 4,700 p.s.i. rated hose for the next 50 feet. A 4 foot, ¼ inch whip line is used immediately before the spray gun to facilitate spraying. Do not mix water and solvent based materials in the hose lines. Clean lines with mineral spirits before switching materials. Clean spray equipment with mineral spirits.

5. AVAILABILITY AND COST

GMX materials are produced in and shipped from our plant in Cleveland, OH. For the name and number of the nearest GMX representative, call us at 866-228-7743. Our representatives can provide pricing and put you in contact with our nearest stocking distributor.

6. WARRANTY

GMX warrants its material for 10 years and its system applications for a period of up to 30 years provided our materials are applied in accordance with the published specifications in effect at the time of installation. For specific warranty terms and conditions, contact your local GMX representative or the Cleveland office.

7. TECHNICAL SERVICES

Your local GMX representative is available to assist you in selecting the appropriate product and to provide on-site application assistance. For further information, please contact our Technical Service Dept. at 866-228-7743.

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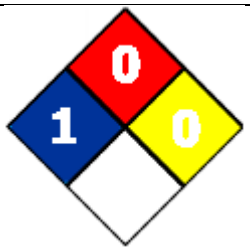
GMX, Inc.
3800 E. 91st Street
Cleveland, OH 44105
Toll Free: 866-228-7743
Fax: 216-430-3500
www.gmxwaterproofing.com

Material Safety Data Sheet

NFPA	WHMIS	PPE	Transport Symbol
			Not Regulated

Preparation Date 08-Dec-2006 **Revision Date** 30-Sep-2011 **Revision Number** 3

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name Ultra-Shield WB Waterproofing
Product Code 1724
UN-No
Contact Manufacturer
GMX, Inc.
3800 East 91st Street
Cleveland, OH 44105
Ph: (216) 641-7502 Fax: (216) 641-0633

Emergency Telephone Number 1-800-762-8225 (24 Hrs.)

2. HAZARDS IDENTIFICATION

Emergency Overview
Irritant

Appearance Black. **Physical State** Liquid. **Odor** Slight. Odor.

Mexico - Grade Slight risk, Grade 1

Potential Health Effects

Principle Routes of Exposure Skin contact, Eye contact, Inhalation, Ingestion.

Acute Effects

Eyes Avoid contact with eyes. Moderately irritating to the eyes. May cause corneal damage..

Skin Avoid contact with skin. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. May cause sensitization by skin contact.

Inhalation May cause irritation of respiratory tract.

Ingestion Harmful if swallowed. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic Effects Prolonged exposure may cause chronic effects. Repeated contact may cause allergic reactions in very susceptible persons.

See Section 11 for additional Toxicological information.

Main Symptoms Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Aggravated Medical Conditions Skin disorders.

Interactions with Other Chemicals Not available

Potential Environmental Effects See Section 12 for additional Ecological information.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components

Chemical Name	CAS-No	Weight %	North American Hazard Indicator
Petroleum Asphalt	8052-42-4	30 - 60	1
Stoddard solvent	8052-41-3	5 - 10	1

4. FIRST AID MEASURES

Eye Contact Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Skin Contact Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Remove and wash contaminated clothing before re-use. If skin irritation persists, call a physician.

Inhalation Move to fresh air. Oxygen or artificial respiration if needed. If symptoms persist, call a physician.

Ingestion Call a physician or Poison Control Center immediately. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice.

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Carbon dioxide (CO2). Foam. Dry powder. Dry chemical.

Unsuitable Extinguishing Media Do not use a solid water stream as it may scatter and spread fire.

Hazardous Combustion Products Carbon monoxide, Carbon dioxide (CO2), Hydrocarbons.

Explosion Data

Sensitivity to mechanical impact No

Sensitivity to static discharge No

Specific Hazards Arising from the Chemical

No information available.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA **Health** 1 **Flammability** 0 **Instability** 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions Evacuate personnel to safe areas.

Environmental Precautions Prevent further leakage or spillage if safe to do so. Keep out of waterways.

Methods for Containment Dike with inert absorbent material

Methods for Cleaning Up Take precautionary measures against static discharges. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. Keep in suitable and closed containers for disposal.

Other Information Not applicable

7. HANDLING AND STORAGE

Handling Avoid contact with skin and eyes. Ensure adequate ventilation.

Storage Keep container tightly closed. Keep in properly labeled containers. Keep out of the reach of children.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	Ontario TWAEV	Mexico
Petroleum Asphalt	TWA: 0.5 mg/m^3		TWA: 0.5 mg/m^3	STEL: 10 mg/m^3 TWA: 5 mg/m^3
Stoddard solvent	TWA: 100 ppm	TWA: 2900 mg/m^3 TWA: 500 ppm	TWA: 525 mg/m^3	STEL: 200 ppm STEL: 1050 mg/m^3 TWA: 523 mg/m^3 TWA: 100 ppm

Chemical Name	NIOSH IDLH
Stoddard solvent	20000 mg/m^3

Engineering Measures Do not allow ventilation equipment to draw material odors indoors..

Personal Protective Equipment

Eye/face Protection Safety glasses with side-shields
Skin Protection Impervious gloves. Long sleeved clothing.
Respiratory Protection No special protective equipment required.

Hygiene Measures
Wash hands before breaks and at the end of workday. Remove and wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Black	
Odor	Slight Odor	
Physical State	Liquid	
pH	pH	
Flash Point	> 400°F / > 204°C	
Autoignition Temperature	> 400°F / > 204°C	
Boiling Point/Range	212°F / 100°C	
Freezing Point	32 °F / 0 °C	
Flammability Limits in Air	**Lower** Not available	**Upper** Not available
Explosive Properties	Not available	
Oxidizing Properties	Not available	
Evaporation Rate	Not available	
Vapor Pressure	Not available	
Vapor Density	>1.0 @ Air = 1	
Specific Gravity	>1.0	
Solubility	partly miscible	
Water Solubility	Insoluble	
Volatiles	Not available	
VOC Content	5 g/L	

10. STABILITY AND REACTIVITY

Stability	Stable under normal conditions.
Conditions to Avoid	No information available.
Incompatible Materials	No materials to be especially mentioned.
Hazardous Decomposition Products	Carbon monoxide. Carbon dioxide (CO2). Hydrocarbons.
Possibility of Hazardous Reactions	Hazardous polymerization does not occur

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Petroleum Asphalt	5000 mg/kg Rat	2000 mg/kg Rabbit	

Chronic Toxicity

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

12. ECOLOGICAL INFORMATION

Ecotoxicity

12. ECOLOGICAL INFORMATION

Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants

Persistence/Degradability	Not available
Bioaccumulation/ Accumulation	Not available
Mobility in Environmental Media	Not available

Petroleum Asphalt
log Pow = 6

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method	Dispose of in accordance with local, state, and federal regulations
Contaminated Packaging	Empty containers should be taken for local recycling, recovery or waste disposal
US EPA Waste Number	Not available

14. TRANSPORT INFORMATION

DOT Not Regulated
Hazard Class
Subsidiary Class
UN-No
Packing Group
Reportable Quantity (RQ)

TDG Not regulated
Hazard Class
Subsidiary Class
UN-No
Packing Group

MEX Not regulated
Hazard Class
Subsidiary Class
UN-No
Packing Group

ICAO Not regulated
UN-No
Hazard Class
Subsidiary Class
Packing Group

IATA Not regulated
UN-No

14. TRANSPORT INFORMATION

Hazard Class
Subsidiary Class
Packing Group
ERG Code

IMDG/IMO Not regulated

Hazard Class
Subsidiary Class
UN-No
Packing Group
EmS No.

15. REGULATORY INFORMATION

International Inventories

Chemical Name	TSCA	DSL	NDSL	EINECS	ELINCS	ENCS	CHINA	KECL	PICCS	AICS
Petroleum Asphalt	X	X	-	X	-	-	X	X	X	X
Stoddard solvent	X	X	-	X	-	-	X	X	X	X

TSCA Complies
DSL Complies
NDSL Complies
EINECS Complies
ELINCS Complies
ENCS Complies
CHINA Complies
KECL Complies
PICCS Complies
AICS Complies

USA

Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40n of the Code of Federal Regulations, Part 372.

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product does not contain any HAPs.

State Regulations

California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

State Right-to-Know

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Petroleum Asphalt	X	X	X		X
Stoddard solvent	X	X	X		X

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class
D2B Toxic materials

16. OTHER INFORMATION

Preparation Date	08-Dec-2006
Revision Date	30-Sep-2011
Revision Summary	Not available

Disclaimer
The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS

GMX ULTRA-SHIELD WATERPROOFING SPECIFICATION

Section 07120 FLUID APPLIED WATERPROOFING

Part 1 GENERAL

1.01 SYSTEM DESCRIPTION

Furnish and install GMX Ultra-Shield Membrane Waterproofing System for vertical and horizontal applications on parged cinder block, non-parged cinder block and reinforced concrete in accordance with drawings and specifications.

1.02 REFERENCES

American Society of Testing Methods

ASTM C 836	-	Adhesion to Concrete
ASTM D 412	-	Elongation
ASTM E 96	-	Water Vapor Permeance
ASTM D 95	-	Liquid Water Absorption
ASTM E 154	-	Resistance to Degradation in Soil
ASTM D 4299-83	-	Bacterial Attack
ASTM G 29-75	-	Algal Attack
ASTM D 2020	-	Fungal Attack

1.03 QUALITY ASSURANCE

A) Manufacturer: Primary waterproofing materials shall be supplied by a single manufacturer to the greatest extent possible. Materials not provided directly by the manufacturer shall be approved by them prior to use.

B) Installer: The application contractor should have a minimum three years successful experience in similar size and scope projects. The contractor should be approved and/or acceptable to the manufacturer of primary waterproofing materials.

C) Pre-Application Conference: Approximately two weeks prior to the scheduled application start date, the application contractor, installer of the substrate to receive the application, installers of other work in and around the waterproofing which precedes, follows and/or penetrates the waterproofing, architect, owner and waterproofing material manufacturer's representative shall meet to review the methods and procedures related to the application including:

1. Review of job site areas to be waterproofed. Inspect and discuss the condition of the substrate, drains, penetrations and other preparatory work performed by other trades.

2. Review of waterproofing requirements i.e. drawings and specifications.

3. Review required submittals.

4. Review and finalize construction schedule related to the waterproofing work and verify the availability of materials, trained personnel, equipment and facilities needed to perform the application in a timely manner.

5. Review required inspection, testing and certification procedures.

1.04 SUBMITTALS

A) Manufacturer's product literature for each item listed in the installation instructions and general recommendations.

B) Manufacturer's Material Safety Data Sheets (MSDS) for each item listed in the installation instructions and general recommendations. The MSDS sheets should list the VOC content of each finished good (if applicable).

C) Installation contractor shall submit a letter from the primary waterproofing manufacturer stating that they are an approved system installer.

D) Shop drawings (if required) shall include an outline of the waterproofing area and type of penetrations, perimeter and special details.

1.05 DELIVERY, STORAGE AND HANDLING

A) Deliver materials in original, unopened containers labeled with the manufacturer's name, brand name and installation instructions.

B) Store materials between 60 – 80°F. Store materials in a dry area and protect from direct sunlight. Do not allow Ultra-Shield WB to freeze.

C) Any material exposed to the elements shall be elevated above the ground and covered by a tarpaulin. Materials must not be exposed to excessive heat or direct flame.

D) Material shall be handled so as to minimize damage or contamination with moisture or foreign matter. Solvent-based materials are combustible. Keep containers closed.

1.06 JOB CONDITIONS

A) Waterproofing materials shall not be applied during inclement weather and the installation shall not proceed in the event that precipitation is probable during the application.

B) Waterproofing shall not be applied when temperatures are less than 25°F.

C) Store waterproofing materials at room temperature until immediately prior to use when the ambient temperature is 40°F or below. Discontinue the application of waterproofing if the material cannot be stored at temperatures which permit even distribution during application.

D) When applying materials with spray equipment, take precautions to prevent over spray from damaging or defacing surrounding walls, building surfaces, vehicles or other property.

E) Avoid inhaling spray mist; take precautions to ensure adequate ventilation.

PART 2 - PRODUCTS

2.01 GENERAL

Components of the Ultra-Shield Waterproofing System shall be products of GMX, Inc. or accepted by GMX as compatible.

2.02 MEMBRANE

Choose one of the following:

A) Ultra-Shield Exterior Wall Waterproofing

PRODUCT SPECIFICATIONS:

Type: Hydrocarbon polymer in hydrocarbon solvent, liquid applied membrane.

Color:	Black.
Solids:	min. 62% +/- 5%.
Density:	7.7 lbs. per gal.
Minimum Application Temp:	15°F
Application:	Airless Spray.
Application Rate:	Min. 20 -25 sq. ft. per gal.
Coating Cure Time:	12 to 24 hours.
Availability:	55-gallon drums.

PROPERTY	TEST METHOD	RESULT
Adhesion to Concrete	ASTM C 836	Exceeds
Elongation	ASTM D 412	850%
Low Temp. Flex	Bend around 1.5 " mandrel	Flexible to – 10°F
Water Vapor Permeance	ASTM E 96	< .28 perms for 40 mil dry coating
Liquid Water Absorption	ASTM D 95	< .5% (weight)
Resistance to Soil Degradation	ASTM E 154	Excellent
Bacterial Attack	ASTM D 4299-83	No degradation
Algal Attack	ASTM G-29-75	No degradation
Fungal Attack	ASTM D 2020	No degradation
Resistance to Chemical Attack		Resistant to salts, acid

B) Ultra-Shield WB Exterior Wall Waterproofing

PRODUCT SPECIFICATIONS

Type: Polymer in asphalt emulsion solution, liquid applied membrane.

Color:	Black.
Solids:	62% +/- 5%.
Density:	8.4 lbs. per gal.
Min. Application Temp:	15°F
Application:	Airless spray.
Application Rate:	20 - 25 sq. ft. per gal.
Coating Cure Time:	12 to 24 hours.
Availability	55-gallon drums.

PROPERTY	TEST METHOD	RESULT
Adhesion to Concrete	ASTM C 836	Exceeds
Elongation	ASTM D 412	1936%
Low Temp. Flex	Bend around 1.5" mandrel	Flexible to 15°F
Water Vapor Permeance	ASTM E 96	<.5 perms; 40 mil ctg.
Liquid Water Absorption	ASTM D 1228	< 1% by weight

2.03 RELATED MATERIALS

A) Asphalt Roofing Cement.
B) Non-Shrinking Grout and/or Quick Dry Concrete Patching Materials.
C) Pre-Fabricated Drainage Board.
D) Insulation Board.
E) Drain Tile.
F) Geotextile Fabric.
G) Gravel/Sand.
H) Polyurethane Foam Adhesive.
I) Flashing, Cant Strips, and Accessories.
J) Strip Drain

Part 3 EXECUTION

3.01 INSPECTION

A) Surfaces to be waterproofed shall be smooth and free of all elements detrimental to membrane performance.

B) Inspect for cracks, control joints and expansion joints; notify owner prior to proceeding.

C) Start of work presumes acceptability of substrate.

3.02 PREPARATION

A) The walls and footings must be dry and of sufficient strength and design to ensure structural integrity. Concrete wall and mortar joints must cure a minimum of 16 hours before Ultra-Shield is applied. Ultra-Shield WB can be applied immediately after ties are removed.

B) Remove dirt and debris from the footings and walls with a stiff brush or broom. Scrape any debris from the walls and footings with a metal scraper. Do not apply waterproofing materials over standing water or when rain is imminent.

C) Repair any cracks in excess of 1/16th inch along the footings or in the wall surface and all honeycombed surfaces with a non-shrinking grout.

D) Fill voids around tie holes, recessed ties and other small voids with an acceptable solvent based, asphalt fibered roof cement or a suitable cement repair material.

E) Install cant strips and similar accessories as indicated on the drawings and as recommended by the prime materials manufacturer even though not shown.

F) Mask off adjoining surfaces not to receive fluid applied waterproofing to minimize spillage or over spray.

3.03 INSTALLATION

A) After all preparatory work has been completed, spray apply Ultra-Shield Exterior Wall Waterproofing over all the planks, along the perimeter, along the joints between the foundation and the footings and the walls.

B) Apply Ultra-Shield Exterior Wall Waterproofing at a rate, which ensures a minimum 60 dry mil membrane thickness. A two pass application at a rate of approximately 30 sq. ft. per gallon per coat will provide the proper thickness with the minimum of excessive running and puddling at the footings.

C) Extend waterproofing and flashings to provide complete membrane protection over the area to be waterproofed. Seal to projections through the membrane and seal seams, bond to vertical and horizontal surfaces as required by the manufacturer.

D) Apply protection, insulation and/or drainage board over the installed membrane per manufacturer's recommendations. Extend board down to top of footing or strip drain.

E) Install drain tile or strip drain as per the manufacturer's instructions to ensure proper removal of water from the foundation walls and footings.

F) Leave the area clean of all debris and ready for the backfilling operation. Backfill must be graded to direct surface water away from the exterior foundation walls.

3.04 PERFORMANCE REQUIREMENTS

It is required that the waterproof membrane be watertight and not deteriorate in excess of the limitations published by the manufacturer.

WILKO PAINT, Inc.

W I C H I T A, K A N S A S 67204-0089

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WILKOPON HB GRAY
WILKO NO. 332.98

PRODUCT DESCRIPTION: No. 332.98 Wilkopon HB Gray is a two - component epoxy polyamide coating that has good moisture, chemical and abrasion resistance, good hardness and excellent adhesion to steel and concrete. It provides excellent protection in chemical spillage areas.

TYPICAL USES: Recommended as a coating for structural steel, exterior of storage tanks, concrete floors, shower and locker rooms, and miscellaneous equipment in chemical, refinery and sewage treatment facilities. It is an ideal intermediate coat in high build epoxy or zinc rich systems.

GENERIC TYPE: Epoxy-Polyamide

COLOR: Gray

FINISH: Semi-Gloss

COMPONENTS: Two

MIXING RATIO: One volume No. 332.98 to one volume No. 332.98B Activator.

WEIGHT PER GALLON: 10.4 + .5 lbs (mixed)

VOC: 3.2 lbs (mixed)

SOLIDS BY VOLUME: 54.9 + 1.0% (mixed)

COVERAGE: @ 1 mil DFT
Theoretical - 880 sq. ft./act. gal.
Practical - 704 sq. ft./act. gal.

RECOMMENDED DRY FILM PER COAT: 4.0-6.0 mils

DRYING TIME: @ 77°F
To Touch: 2 hours
To Recoat: 8 to 12 hours

POT LIFE: 8 - 10 hours @ 77oF. Additional thinning may be necessary after 8 hours.

APPLICATION: Airless Spray is recommended for maximum film build. Use a high volume output pump and a tip of 19 or larger.

THINNER: No. 1, No. 13 or No. 100 Thinner. Use No. 71 Thinner for maximum pot life. Do not use more than 11 ounces of thinner to keep VOC level below 3.5#/gal. Adding 25 ounces of thinner will increase the VOC to 3.8#/gal.

TEMPERATURE RESISTANCE: 200°F continuous, dry

CLEAN UP THINNER: No. 71 or MEK

RECOMMENDED SUBSTRATE: Steel or Concrete

RECOMMENDED PRIMERS: May be applied directly to properly cleaned steel or properly prepared concrete. For additional corrosion resistance use No. 349-08 Primer Organic Zinc Rich or No. 859-06 Primer Inorganic Zinc Rich Primer. For concrete, use 342-45 for added adhesion

RECOMMENDED TOPCOATS: Topcoat with epoxy or urethane coatings only. Latter is recommended for maximum gloss retention.

SURFACE PREPARATION:
Steel: Surface must be clean and dry, free from oil, grease, wax or other contaminants. he use of chemical cleaning or pretreatment (e.g., phosphatizing) will help improve the adhesion and will enhance the overall properties of the coating, and is highly recommended. For most industrial applications, this multi - stage surface preparation is adequate. When coating newly fabricated steel, or if heavy mill scale, rust, or loose paint is present on existing structures, clean the parts by mechanical means. All sharp edges must be rounded and weld splatter must be removed prior to cleaning. Hand, power tool or SP6 Blast Cleaning will afford minimum protection. For maximum protection of steel surface, dry abrasive blast to a Commercial Blast Finish in accordance with SSPC-SP6-63 Apply prior to development of any surface rust. An appropriate primer should be used when coating sandblasted steel.
New Concrete*:* New concrete must cure for a minimum of 30 days prior to coating. After this period the only surface preparation necessary is etching. This can be accomplished with an acid solution. After applying acid the reaction residues must be removed by using fresh water and a squeegee. Allow floor to dry thoroughly, sweep or vacuum to remove any/all powdery residue, and apply first coat of material.
Old Concrete**:** Surface must be free of dirt and oily contaminants. If painted, check for compatibility before applying, and if needed, old paint must be stripped. Etch surface as described in the preceding paragraph.
NOTE: Refer to "Coating Concrete" Brochure for more in-depth surface preparation.

EQUIPMENT REQUIRED:
Conventional Spray:
1. Pressure pot with a dual regulator.
2. Spray gun such as DeVilbiss MBC with an AV-601 EX fluid tip, 496 DEX needle and a 704 or 64 air cap. As an alternate, a Binks No. 18 heavy duty spray gun with a 66 PB nozzle.
3. A 25-50 foot length of fluid hose - ½ inch ID minimum.
4. A 25 - 50 foot length of air hose - ½ inch ID minimum.
5. A minimum 75 PSI continuous air supply to each spray gun.

Airless Spray:
1. Airless spray equipment with pump ratio of 28:1 or 30:1.
2. Airless spray tip with orifice diameter of 0.017 or larger should be used.

continued on page 2

APPLICATION PROCEDURE:

1. Separately mix base and activator until uniform, then mix equal volumes of each. Allow mixture to stand for at least 30 minutes before using.
2. Reduction:
   Conventional Spray - Thin up to 25% with appropriate thinner (refer to previous section for recommended thinner). Airless Spray - May apply without any thinning at 70-85oF. In cooler temperatures, or with smaller airless units, thin up to 10% with appropriate thinner. CAUTION: VOC will be affected by thinner addition – refer to *Recommended Thinner*, above.
3. Apply one tack coat and follow with one full wet coat. Hold gun 8-10 inches from the surface and overlap each pass 25% to avoid holidays.
4. If the ambient temperature exceeds 85°F, thin with No. 100 to avoid dry spray. Do not apply if the surface temperature is less than 5° above the dew point. Do not use below 40°F.
5. Allow coating to cure 3-5 days at 77oF before placing into service. Applicators should be made aware, especially during cooler temperatures, that this material will require 12-16 hours curing time, at 77oF for recoating, and that during this period the film is extremely vulnerable to moisture and moisture laden contaminants. The schedule for painting must be planned to include the application of material early enough to provide for at least partial cure prior to lower nighttime temperatures and the possibility of dew point conditions. Curing rates are accelerated by heat and are retarded by lower temperatures. Drying rates are based on 75° F. As a rule of thumb, for every 18o above 75° F, the curing rate will accelerate by approximately 100%. For every 18° below 75°F, curing rate is retarded by approximately 100%. The premature failure of fine coating systems is often experienced because of failure to acknowledge the facts related to low temperature application.

The porous nature of zinc often causes pinholes or bubbling of the Intermediate (Tie) Coat. To eliminate bubbling of the first coat, apply a wet mist coat over surface area, allowing a short interval for solvent to escape. Follow with full wet coat, or apply a tie coat that has been reduced by 50% or more. This Tie Coat will penetrate the porous structure displacing trapped air and providing a sealed substrate for succeeding topcoat. Tie Coat should be applied to provide 3.0-5.0 mils dry film, depending on the topcoat and exposure.

RESISTANCE PROPERTIES:

Water: Excellent immersion resistance to fresh, salt and seawater.

Salt: Resists spillage and splash by most alkaline salt solutions in atmospheric exposures at temperatures up to 200°F.

Alkali: Resists temporary exposure to fumes splash and/or spillage of concentrated solutions at temperatures up to 150ºF.

Acid: Resists fumes of non-oxidizing acids.

Alcohol: Accepts the spillage of isopropyl, ethyl and butyl alcohols.

Sewage: Excellent resistance to wastewater, sewage and sewer gas.

Petroleum Distillate: Resists splash and/or spillage of gasoline, sour crude, diesel fuel, jet fuel and lubricating oil.

Adhesion: Excellent to properly prepared steel or zinc rich coated surfaces.

Weather Exposure: Will not check, crack or craze after long or severe exposure.

Chalking: Early surface chalking will occur under exterior exposure, and is a condition inherent with polyamide or amine catalyzed epoxy coatings.

FIRST AID: If inhaled, remove to fresh air. If not breathing, administer artificial respiration, preferably mouth to mouth. In case of any contact with eyes, flush with plenty of water for 15 minutes and secure medical attention.

PRECAUTION: Not intended for general consumer use. This product is flammable and can cause skin and eye irritations. Keep away from sparks, heat and open flames. Avoid contact with eyes, skin and clothing. Use with adequate ventilation and avoid prolonged breathing of vapors. Wear an air-supplied mask to avoid breathing concentrated vapors in enclosed areas. Keep the container closed. For additional safety information, refer to Material Safety Data Sheets.

ConSeal™ CS-75

Water-Based Adhesive/Surface Primer

A Highly Adhesive Water-Based Surface Primer for Concrete, Plastic and Metal Surfaces

Applications

For use on concrete, plastic and metal surfaces, ConSeal CS-75 enhances the bonding between preformed sealants and concrete surfaces aiding in the installation process. Conveniently applied at the job site, CS-75 improves adhesion of the sealant to the concrete.

Physical Properties

Description

Color:	Bright Orange
% Solids:	33% minimum
Solvent Type:	Water
Flash Point:	200°F minimum
Weight / Gallon:	8.0 Pounds
Dry Time @ 77°F (25°C):	10 minutes
Dry Time @ 40°F (4°C):	60 minutes
Clean Up:	Soap and Water
Coverage Per Gallon:	Approx. 400 sq ft on wet cast concrete. Coverage diminishes on dry cast concrete.
Appropriate Substrates:	Concrete, Plastic, Metal
Min. Storage Temperature:	40°F (4°C) Product should not be allowed to freeze
Min. Application Temperature:	40°F (4°C)
Surface When Dry:	Tacky

Limited Warranty

This information is presented in good faith, but we cannot anticipate all conditions under which this information and our products, or the products of other manufactures in combination with our products, may be used. We accept no responsibility for results obtained by the application of this information or the safety and suitability of our products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each such product or product combinations for their own purposes. It is the **users' responsibility** to satisfy himself as to the suitability and completeness of such information for this own particular use. We sell this product without warranty, and buyers and users assume all responsibility and liability for loss or damage arising from the handling and use of this product, whether used alone or in combination with other products.

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ConSeal™ CS-102

Butyl Rubber Sealant

Butyl Rubber Sealant for All Precast Concrete Structures - Meets ASTM C-990

Applications

For concrete joints in: Manholes, Concrete Pipe, Vaults, Box Culverts, Septic Tanks, and Vertical Panel Structures. **Not intended for use in expansion joints or joints that move.**

Sealing Properties

- Provides permanently flexible watertight joints.
- Low to high temperature workability: 30°F to 120°F (-1°C to +48°C)
- Rugged service temperature: -30°F to +200°F (-34°C to +93°C)
- Excellent chemical and mechanical adhesion to clean dry surfaces.
- Greater cohesive and adhesive strengths.
- Sealed joints will not shrink, harden or oxidize upon aging.
- Controlled flow resistance for application ease.
- No priming normally necessary. When confronted with difficult installation conditions, such as wet concrete or temperatures below 40°F (4°C), priming the concrete will improve the bonding action. Consult Concrete Sealants for the proper primer to meet your application.

Hydrostatic Strength

ConSeal CS-102 meets the hydrostatic performance requirement as set forth in ASTM C-990 section 10.1 (Performance requirement: 10psi for 10 minutes in straight alignment – in plant, quality control test for joint materials.)

Specifications

ConSeal CS-102 meets or exceeds all of the requirements of Federal Specification SS-S-210 (210-A), AASHTO M-198B, and ASTM C-990-91.

Physical Properties

Description

	Spec	Required	CS-102
Color			Black
Specific Gravity, 77°F	ASTM D71	1.15-1.50	1.25
Ductility, 77°F	ASTM D113	5.0 min.	10
Penetration, cone 77°F (25°C), 150 gm, 5 sec.	ASTM D217	50-100 mm	55-60 mm
Penetration, cone 32°F (0°C), 150 gm, 5 sec.	ASTM D217	40 mm min.	40-65 mm
Flash Point, C.O.C., °F	ASTM D92	350°F min.	450°F
Fire Point, C.O.C., °F	ASTM D92	375°F min.	475°F

Don't Just Seal It, ConSeal It!

Concrete Sealants, Inc. 9325 State Route 201 ■ Tipp City, OH 45371 ■ P.O. Box 176 ■ New Carlisle, OH 45344
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ISO 9001 Registered

ConSeal™ CS-102

Butyl Rubber Sealant

Butyl Rubber Sealant for All Precast Concrete Structures - Meets ASTM C-990

Chemical Composition

Description

	Spec	Required	CS-102
Hydrocarbon plastic content % by weight	ASTM D4 (mod.)	50% min.	51%
Inert mineral filler % by weight	AASHTO T111	30% min.	35%
Volatile Mater % by weight	ASTM D6	2% max.	1.2%
Recycled Content, % by weight			
Post Consumer:			8.41%
Post Industrial:			10.85%

Immersion Testing

30-Day Immersion Testing: No visible deterioration when tested in 5% Caustic Potash, 5% Hydrochloric Acid, 5% Sulfuric Acid, and 5% saturated Hydrogen Sulfide.

One Year Immersion Testing: No visible deterioration when tested in 5% Formaldehyde, 5% Formic Acid, 5% Sulfuric Acid, 5% Hydrochloric Acid, 5% Sodium Hydroxide, 5% Hydrogen Sulfide, and 5% Potassium Hydroxide.

Limited Warranty

This information is presented in good faith, but we cannot anticipate all conditions under which this information and our products, or the products of other manufactures in combination with our products, may be used. We accept no responsibility for results obtained by the application of this information or the safety and suitability of our products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each such product or product combinations for their own purposes. It is the **users' responsibility** to satisfy himself as to the suitability and completeness of such information for this own particular use. We sell this product without warranty, and buyers and users assume all responsibility and liability for loss or damage arising from the handling and use of this product, whether used alone or in combination with other products.

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