



June 11, 2024

Mayor Guy Titus  
Board of Public Works and Safety  
10 South State Street  
Greenfield, IN 46140

Re: WWTP Improvements Project: F.A. Wilhelm Change Order #5

Mayor and Board Members,

Commonwealth Engineers, Inc. and F.A. Wilhelm Construction have submitted Change Order #5 for the WWTP Improvements Project. The change order is for the rehabilitation of manhole #105 and does not change the contract cost or timeframe. After this manhole was installed, cracks were discovered that were not able to be repaired. Through negotiations and discussions with representatives of F.A. Wilhelm Construction, a rehabilitation of the manhole was proposed and accepted by Commonwealth Engineers, Inc. and recommended for approval by the City.

At this time, I am requesting that the Board approve Change Order #5 for the WWTP Improvements Project for the rehabilitation of manhole #105 with no change in contract cost or time. A copy of the change order has been included for your review. Please let me know if there are any questions regarding this request or if any other information is needed at this time.

Best Regards,

A handwritten signature in blue ink, appearing to read "Nicholas Dezelan".

Nicholas Dezelan, CHMM, ASP  
Wastewater Utility Manager

Cc: Gregg Morelock – City Attorney  
Jane Webb – Utility Coordinator  
Al Stong – Commonwealth Engineers, Inc.

*Wastewater Utility*  
809 South State Street: Greenfield, Indiana 46140  
[wwtp@greenfieldin.org](mailto:wwtp@greenfieldin.org)  
Phone 317-477-4360 Fax 317-477-4361

**CHANGE ORDER NO.: 5**

Owner:	City of Greenfield	Owner's Project No.:	
Engineer:	Commonwealth Engineers, Inc.	Engineer's Project No.:	S20046
Contractor:	F.A. Wilhelm Construction	Contractor's Project No.:	
Project:	Wastewater Treatment Plant Improvements Project		
Contract Name:	Wastewater Treatment Plant Improvements Project		
Date Issued:	05/10/2024	Effective Date of Change Order:	05/10/2024

The Contract is modified as follows upon execution of this Change Order:

Description: This change order includes a zero cost change for the rehabilitation of MH105. Several leaks were found in the original precast structure. The structural engineer inspected and found it to be defective. Contractor provided a recommended rehabilitation to the structure as outlined in the attached document. This solution has been accepted by Engineer and Owner at a zero cost change.

Attachments: MH105 Resolution

Change in Contract Price	Change in Contract Times
Original Contract Price: \$ <u>70,035,000.00</u>	Original Contract Times: Calendar Days Substantial Completion: <u>730</u> Ready for final payment: <u>60</u>
<del>[(Increase) (Decrease)]</del> from previously approved Change Orders: \$ <u>1,350,184.00</u>	<del>[(Increase) (Decrease)]</del> from previously approved Change Orders: Substantial Completion: <u>25</u> Ready for final payment: <u>0</u>
Contract Price prior to this Change Order: \$ <u>71,385,184.00</u>	Contract Times prior to this Change Order: Substantial Completion: <u>755</u> Ready for final payment: <u>60</u>
<del>[(Increase) (Decrease)]</del> this Change Order: \$ <u>0.00</u>	<del>[(Increase) (Decrease)]</del> this Change Order: Substantial Completion: <u>0</u> Ready for final payment: <u>0</u>
Contract Price incorporating this Change Order: \$ <u>71,385,184.00</u>	Contract Times with all approved Change Orders: Substantial Completion: <u>755</u> Ready for final payment: <u>60</u>

Recommended by Engineer (if required)

By: Mylron Pinterji  
Title: E.I.  
Date: 5/10/2024

Authorized by Owner

By: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

Accepted by Contractor

By: S. Hoyle  
Title: Project Manager  
Date: 5/10/2024

Approved by Funding Agency  
(if applicable)

By: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_



F.A. Wilhelm Construction Co., Inc.  
3914 Prospect Street  
Indianapolis, IN 46206  
Telephone: (317) 359-5411

**CHANGE ESTIMATE**

To: Al Stong, PE (IN)	Estimate	CE-107.1
7256 Company Dr.	Job No.	10802
Indianapolis, IN 46237	Date	5/10/2024
	Job Name	GFWWTP

**SCOPE:** Sanitary MH 105 Resolution

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**COST:** \_\_\_\_\_ **\$0**

**DESCRIPTION:** This CE addresses the cracks in manhole MH105 and documents the solution to this MH105 Issue. The Acceptable Solution includes new twelve-inch (12") cast-in-place walls inside of MH105 as shown on ML-01 REV 0. The cast-in-place walls will include Penetron in the concrete mix.

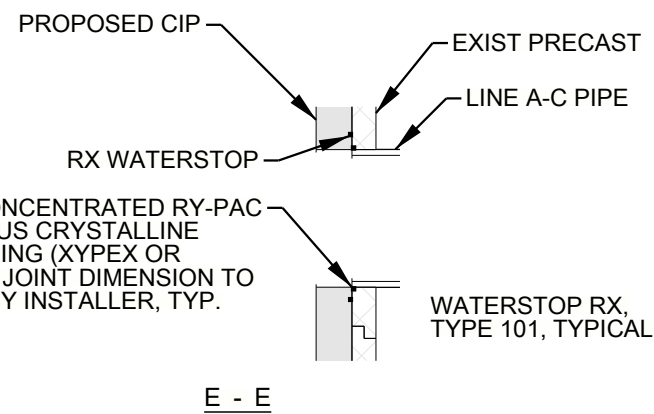
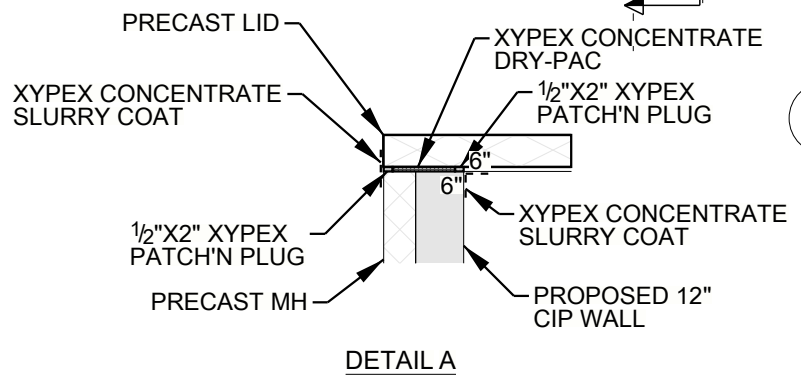
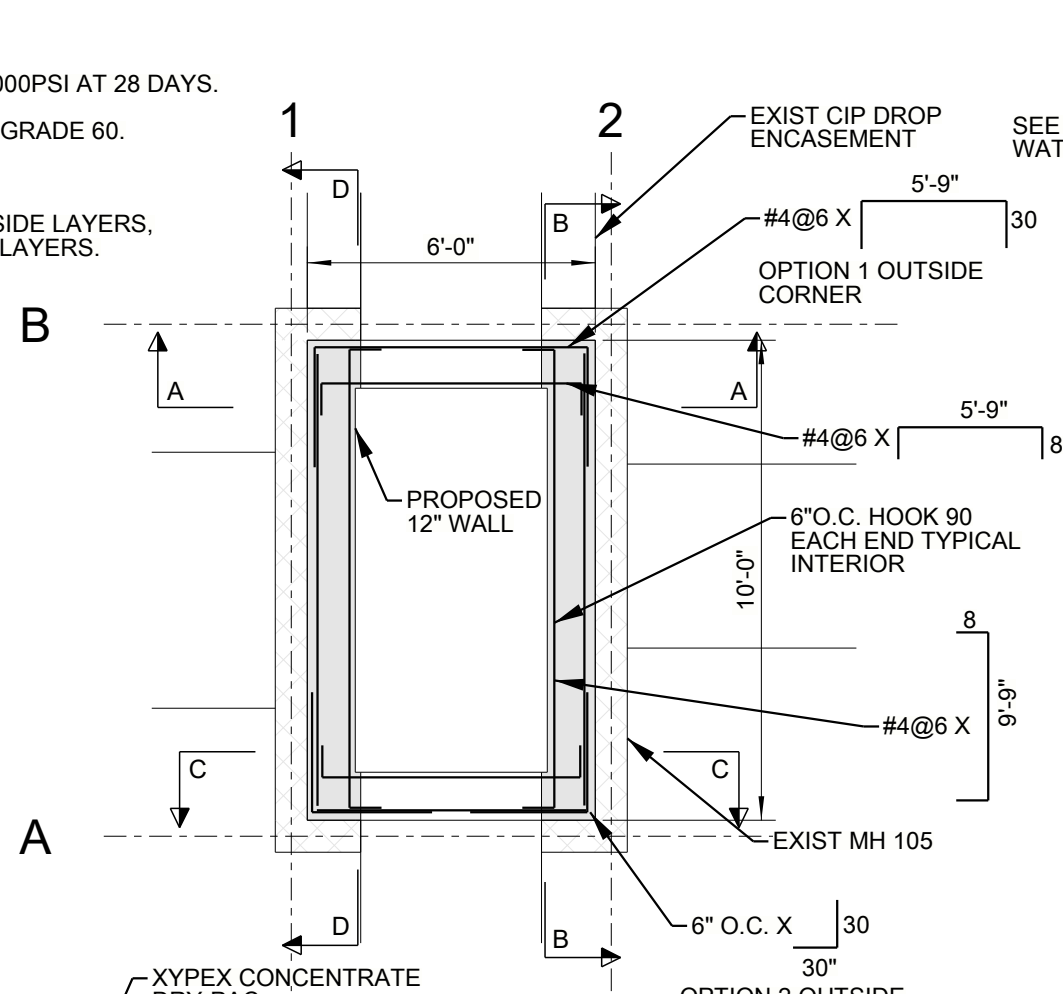
With respect to the Manhole 105 Issue and the corresponding Acceptable Solution, Contractor hereby agrees to toll the ten (10) year and twelve (12) years durations set forth in Ind. Code §32-30-1-5(d) to a duration of eighteen (18) years and twenty (20) years respectively. Effectively, Ind. Code §32-30-1-5(d) would be revised to: "an action to recover damages, whether based upon contract, tort, nuisance, or another legal remedy, for: (1) a deficiency or an alleged deficiency in the design, planning, supervision, construction, or observation of construction of an improvement to real property; (2) an injury to real or personal property arising out of a deficiency; or (3) an injury or wrongful death of a person arising out of a deficiency; may not be brought against a designer or possessor unless the action is commenced within the earlier of eighteen (18) years after the date of substantial completion of the improvement or twenty (20) years after the completion and submission of plans and specifications to the owner if the action is for a deficiency in the design of the improvement." Contractor acknowledges any issues that arise associated with the proposed Acceptable Solution are solely the responsibility of the Contractor to address and fix to the satisfaction of the Owner.

Although not required by the Contract Documents, Contractor shall additionally provide and install a polyurea protective coating to newly cast-in-place walls up to the top of the pipe elevations. The polyurea protective coating shall be Polyeuro 5502.

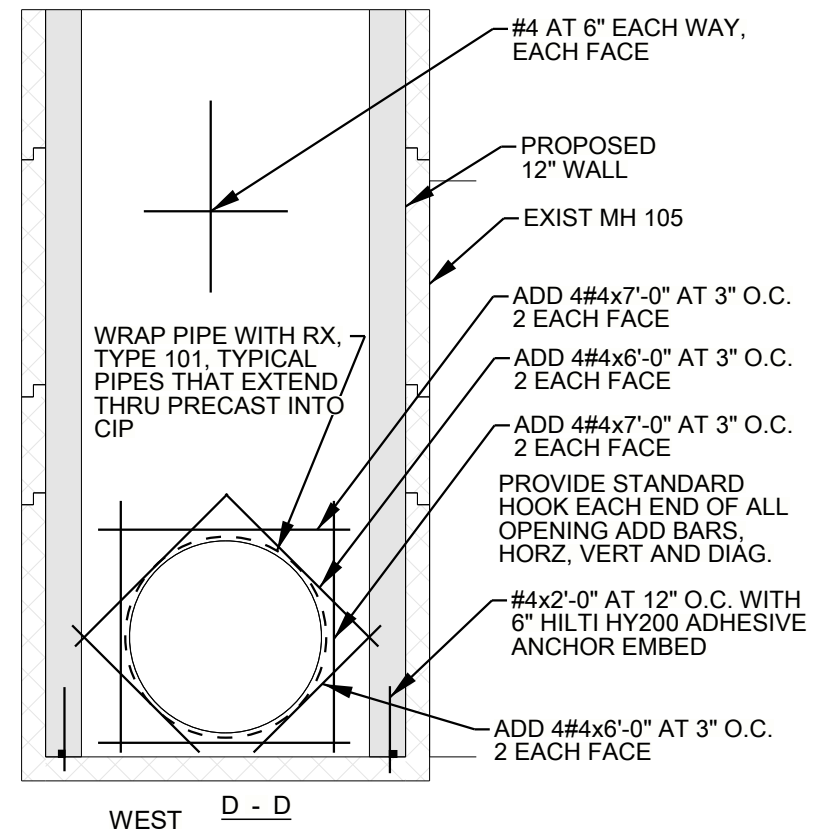
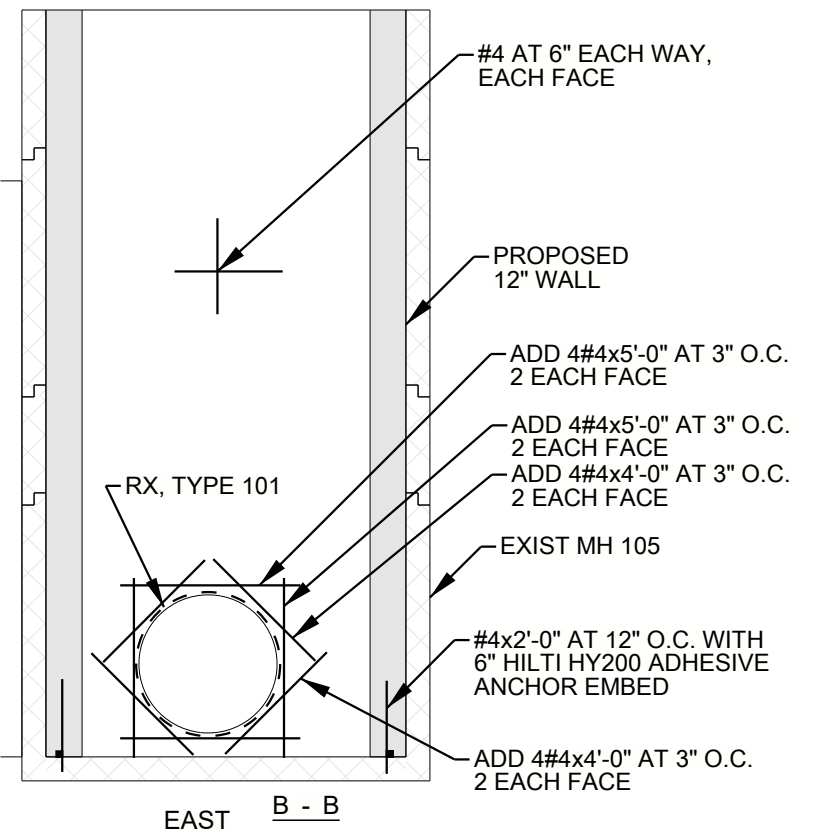
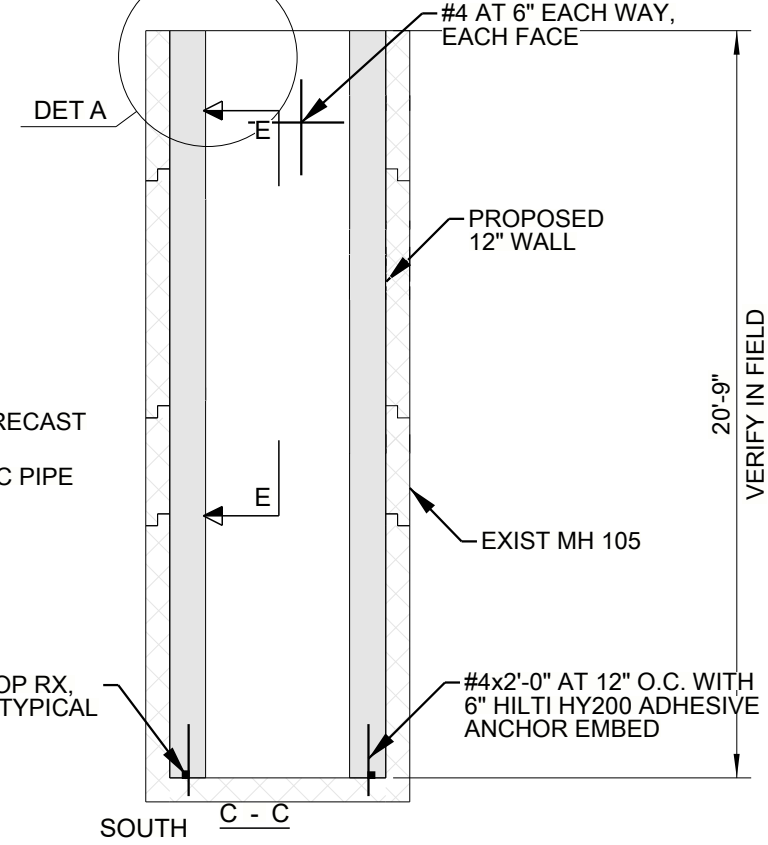
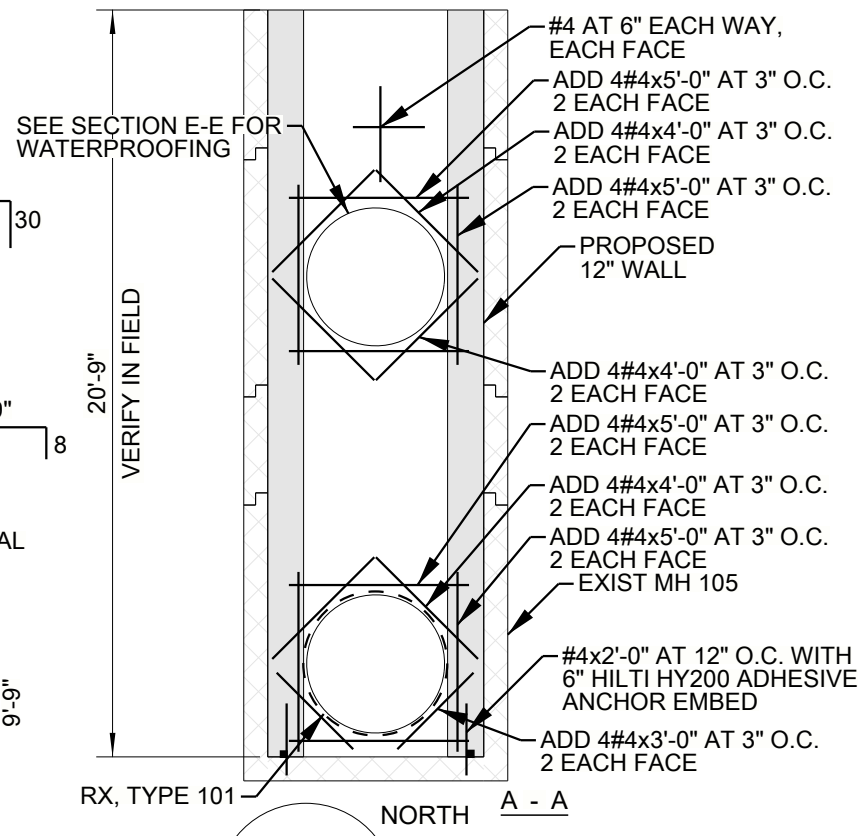
**Attachments:** ML-01 REV 0 and Polyeuro 5502 Product Data

F.A. Wilhelm Construction Co., Inc.  
By: Travis Hempfling 5/10/2024  
Travis Hempfling - Project Manager

NOTES:  
 CONCRETE TO BE F'c=6,000PSI AT 28 DAYS.  
 REINFORCEMENT TO BE GRADE 60.  
 1 1/2" COVER.  
 HORIZONTAL BARS OUTSIDE LAYERS,  
 VERTICAL BARS MIDDLE LAYERS.



SEAL WITH CONCENTRATED RY-PAC OF CEMENTIOUS CRYSTALLINE WATERPROOFING (XYPEX OR EQUIVALENT), JOINT DIMENSION TO BE VARIFIED BY INSTALLER, TYP.



# GREENFIELD WWTP



No.	Description	Date
A	ISSUE FOR REVIEW	04/03/2024
B	FULL HEIGHT WALLS FOR REVIEW	04/18/2024
0	ISSUE FOR CONSTRUCTION	04/23/2024

Manhole 105 Liner	
Project Number	10802-3
Date	04/23/2024
Drawn By	KLP

**ML-01**



### Product Description

Polyeuro® 5502 is a fast setting, rapid curing, 100% solids, flexible, aromatic, two component, spray polyurea that can be applied to suitably prepared concrete and metal surfaces. It has extremely fast gel time making it suitable for applications down to -20°F (-28.89°C). It may be applied in single or multiple applications without appreciable sagging and is relatively insensitive to moisture and temperature allowing application in most temperatures. Polyeuro® 5502 offers a tack free time of less than sixty seconds and exhibits 400% ± 50% elongation upon curing with 50 Shore D hardness.

### Features

- Coats Carbon or Mild Steel Metals Without Primer
- Elastomeric
- Excellent Thermal Stability
- Good Chemical Resistance
- Installed With or Without Reinforcement in Transitional Areas
- Low Temperature Flexibility
- Meets USDA Criteria
- Odorless
- Seamless
- Zero VOC (100% Solids)

### Typical Uses

- Cold-Storage Facilities
- Fertilizer Plants
- Food-Processing Plants
- Industrial and Manufacturing Facilities
- Landfill Containment
- Manholes
- Marine Environments
- Mining Operations
- Paper and Pulp Mills
- Parking Garage Decks
- Pen Stocks
- Power Plants
- Refineries
- Secondary Containment
- Structural Steel
- Walkways and Balconies
- Warehouse Floors

### Packaging

- |                       |   |
|-----------------------|---|
| <b>10-gallon kit</b>  | 5 gallons (18.9 liters) Side-A and 5 gallons (18.9 liters) Side-B |
| <b>100-gallon kit</b> | 50 gallons (189 liters) Side-A and 50 gallons (189 liters) Side-B |

### Technical Data

<b>Mix Ratio by Volume</b>	1A : 1B
<b>Pot Life @ 150-160°F (65.5-71°C), 50% R.H.</b>	4-8 seconds
<b>Tack Free Time</b> (thickness & substrate temperature dependent)	45-60 seconds
<b>Recoat Time</b>	0-6 hours
<b>Viscosity at 150-160°F (65.5-71°C)</b>	
<b>Side-A</b>	100 ± 20 cps
<b>Side-B</b>	50 ± 20 cps
<b>Density (Side-A &amp; Side-B Combined)</b>	8.81 lbs/gal
<b>Flash Point</b>	> 200°F (93.3°C)
<b>Hardness, ASTM D2240</b>	50 ± 5 Shore D
<b>Tensile Strength, ASTM D412*</b>	3000 ± 200 psi 20.68 ± 1.37 MPa
<b>Elongation, ASTM D412*</b>	400 ± 50%
<b>Tear Strength, ASTM D624*</b>	450 ± 50 pli 78.8 ± 8.8 kNm
<b>Service Temperature - Dry</b>	-40°F to 250°F -40°C to 121°C
<b>Service Temperature - Wet</b>	40°F to 120°F 4.44°C to 48.89°C
<b>Water Vapor Permeance (Procedure B) ASTM E96</b>	0.88 perm-inch
<b>Volatile Organic Compounds, (Side-A &amp; B combined) ASTM D2369-81</b>	0 lbs/gal 0 gm/liter
<b>Minimum Applied Thickness</b>	1 mm
<b>Return to Service: Foot Traffic</b>	1- 4 hours
<b>Return to Service: Full Service</b>	> 24 hours
<b>Taber Abrasion Resistance, ASTM D4060 (CS17 wheel, 1000 cycles, 1 kg load) (maximum)</b>	6 mg loss
<b>Hydrostatic Pressure Test, ASTM D5385-93106, Para 7.0</b>	Pass Hold 100 psi
<b>Crack Bridging, ASTM C1305 (10 cycles @ -15°F [-25.5°C], Rate 0.125 inch/hr, Ext. -0.125 inch)</b>	Pass
<b>Volume Resistivity, ASTM D257</b>	6.0 x10 <sup>12</sup> ohm.cm
<b>Water Absorption, ASTM D471 (maximum 74°F or 23°C, 24 hours)</b>	< 2%
<b>Impact Resistance @ 77°F or 25°C (ASTM G14)</b>	> 150 in. lbs
<b>Pull-Off Strength (minimum), ASTM D4541, Inter-Coat Adhesion (within recoat time)</b>	Excellent
<b>Concrete (Shot Blasted and Primed), substrate failure occurred</b>	>500 psi (3.4MPa)
<b>Steel (90 µm blast profile)</b>	>900 psi (6.2 MPa)
<b>Lineal Shrinkage</b>	1 - 2%
<b>Flexibility (1/8" 3mm Mendrel Bend Test), ASTM D1737</b>	Pass
<b>Resistance to Weathering, ASTM G-23 (Type QUV Weatherometer-3000 hrs exposure)</b>	No cracking or blistering. Color change, gloss reduction & chalking are noted.
<b>Fire Test, ASTM E108 (Non Combustible Surface)</b>	Pass Class A

\*These physical properties from sample sprayed with Graco EXP2 @ 2000 psi minimum, with Fusion Gun AR4242 @ 150-160°F (65°C to 71°C). Different machine and parameter will change these properties. User should perform their own independent testing as properties are approximate.

## Colors

Clear/Neutral. Custom colors are available upon request. Color Packs, when used, must be added to Side-B.

Due to its aromatic composition, Polyeuro® 5502 will tend to yellow or darken in color and will become flat after exposure to UV light. A topcoat can be applied to Polyeuro® 5502 within six hours of application with an aliphatic polyurethane/polyurea coating for a colorfast finish.

## Coverage

Polyeuro® 5502 may be applied at any rate to achieve desired thickness. Theoretical coverage for 1 mil (0.254 microns) thickness is one gallon per 1600 sqft (3.78 liters per 149 sqm).

Estimating Formula: (1600 sqft per gal /Dry Mil Thickness) x Solids Content = Application Rate per gallon.

## Surface Preparation

In general, coating performance and adhesion are directly proportional to surface preparation. Most failures in the performance of surface coatings can be attributed to poor surface preparation. Polyurea coatings rely on the structural strength of the substrate to which they are applied. All surfaces must be free of dust, dirt, oil, grease, rust, corrosion and other contaminants. When coating previously used substrates, it is important to consider the possibility of substrate absorption, which may affect the adhesion of the coating system, regardless of the surface preparation. Polycoat recognizes the potential for unique substrates from one project to another. The following information is for general reference. For project-specific questions, contact Polycoat.

### NEW AND OLD CONCRETE

Refer to SSPC-SP13/NACE 6, or ICRI 03732: CSP 3-5. New concrete must be cured for 28 days prior to product application. Surface must be clean, dry, sound and offer sufficient profile for product adhesion. Remove all dust, dirt, oil, form release agents, curing compounds, salts, efflorescence, laitance and other foreign matter by shotblasting and/or suitable chemical means, in accordance with local chemical regulations. Rinse thoroughly to achieve a pH between 8.0 and 11.0. Allow to dry completely. If old concrete has a surface that has deteriorated to an unacceptably rough surface, PC-260 or a mixture of Polyprime® 21 and sand should be used as a repair agent for cracks, spalls, bug holes and voids. Upon full cure of the repair agent, prime the entire surface intended for coating.

### CONCRETE SURFACE PREPARATION REFERENCE

ASTM D4258 - Standard practice for cleaning concrete.  
ASTM D4259 - Standard practice for abrading concrete.  
ASTM D4260 - Standard practice for etching concrete.  
ASTM F1869 - Standard test method for measuring moisture vapor emission rate of concrete.  
ICRI 03732 - Concrete surface preparation.

### WOOD

All wood should be clean, dry and free of any knots, splinters, oil, grease or other contaminants. Splintered or rough areas should be sanded. Knots should be repaired using PC-260 with sand. Upon full cure of the repair agent, prime the entire surface intended for coating.

### STEEL (ATMOSPHERIC AND IMMERSION EXPOSURE)

Remove all oil, grease, weld spatters and round off any sharp edges from surface. Minimum surface preparation is Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Optimum surface profile is 2-3 mils. Prime and shoot Polyeuro® 5502 onto any bare metal the same day as it is cleaned to minimize any potential flash rusting.

### ALUMINUM

Aluminum should be blasted with aluminum oxide or sand, and not with steel or metal grit. Excessive blasting may result in a warped or deformed surface. After blasting, wash aluminum with a commercially available aluminum cleaner. Allow to dry, then prime.

### BRASS AND COPPER

Brass and copper should be blasted with sand, and not with steel or metal grit. Remove all dust and grease prior to applying primer.

### GALVANIZED SURFACES

Clean and degrease any contaminated surfaces before priming. Do not blast galvanized surfaces with an abrasive grit. An adhesion test is recommended prior to starting the project.

### FIBERGLASS REINFORCED PLASTIC

The gel coat should be lightly blasted or sanded with 80 grit sandpaper and cleaned.

### PLASTIC FOAMS

Enhanced adhesion is obtained when the foam is mechanically abraded. When coating polystyrene, do not use a solvent-based primer.

### TEXTILES, CANVAS, FABRICS

Adhesion to most fabrics, geothermal membranes and textiles does not require a primer.

### STAINLESS STEEL

Stainless steel may be grit blasted and degreased before priming. Some stainless steel alloys are so inert that it is not possible to achieve a satisfactory bond. An adhesion test is recommended prior to starting the project.

### NEW AND OLD CAST IRON

Blast with a steel grit and degrease before priming. Old cast iron is difficult to prepare for a satisfactory bond. It can absorb oil and water soluble contaminants that will keep returning to the surface after the coating system has been applied and affect the coating system adhesion. An adhesion test is recommended prior to starting the project.

### ALL OTHER SURFACES

An adhesion test is recommended prior to starting the project.

## Mixing

Polyeuro® 5502 may NOT be diluted under any circumstances. Thoroughly mix Polyeuro® 5502 Side-B with air driven power equipment until a homogeneous mixture and color is attained.

## Application

Both Side-A and Side-B materials should be preconditioned to 75-80°F (24-27°C) before application.

Recommended surface temperature must be at least 5°F (3°C) above the dew point.

Polyeuro® 5502 should be applied using a plural component, heated, high pressure 1:1 spray mixing equipment like Graco's Reactor, Glass Craft or other equivalent machine may be used.

Both Side-A and Side-B materials should be sprayed at a minimum of 2000 psi and at temperatures above 150°F (66°C).

Adequate pressure and temperature should be maintained at all times. Polyeuro® 5502 should be sprayed in smooth, multidirectional passes to improve uniform thickness and appearance.



**POLYCOAT  
PRODUCTS**

A Division of American Polymers Corp.

TECHNICAL DATA SHEET

**POLYEURO® 5502**

*Two Component, Aromatic,  
Polyurea Protective Coating*

### Storage

Polyeuro® 5502 has a shelf life of one (1) year from date of manufacture in original, factory-sealed containers when stored indoors at a temperature between 60-95°F (15-35°C).

Side-A and Side-B drums are recommended to be stored above 60°F (15°C). Avoid freezing temperatures.

Store drums on wooden pallets to avoid direct contact with the ground. If stored for a long period of time, rotate Side-A and Side-B drums regularly.

### Limitations

Do not open until ready to use. Both Side-A and Side-B containers must be fitted with a desiccant device during use.

### Warning

**This product contains Isocyanates and Curative Material.**

**Limited Warranty:** Please read all information in the General Guidelines, Technical Data Sheets, Guide Specifications and Safety Data Sheets (SDS) before applying material. These products are for professional use only and preferably applied by professionals who have prior experience with the Polycoat Products materials or have undergone training in application of Polycoat Products materials. Published technical data and instructions are subject to change without notice. Contact your local Polycoat Products representative or visit our website for current technical data, instructions, and project specific recommendations.

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