Weaver
CONSTRUCTION MANAGEMENT
3679 S Huron Street, Suite 404 Englewood, Colorado 80110
Phone: (303) 789-4111 FAX: (303) 789-4310

SUBMITTAL TRANSMITAL

April 9, 2012
Submittal No: 05500-014

PROJECT: **Harold Thompson Regional WRF**
Birdsall Rd.
Fountain, CO 80817
Job No. 2908

ENGINEER: **GMS, Inc.**
611 No. Weber St., #300
Colorado Springs, CO 80903
719-475-2935 Roger Sams

OWNER: **Lower Fountain Metropolitan Sewage Disposal District**
901 S. Santa Fe Ave.
Fountain, CO 80817
719-382-5303 James Heckman

CONTRACTOR: **CSM Industrial Contractors**
614 Cliff Street
Westcliffe, CO 81252
719-783-2867

SUBJECT: Macropoxy for Flow Diversion Structure Embed, Grating, Beam

SPEC SECTION: 05500 – Misc. Metals

PREVIOUS SUBMISSION DATES:

DEVIATIONS FROM SPEC: ___ YES _X_ NO

CONTRACTOR'S STAMP: This submittal has been reviewed by Weaver Construction Management and, unless indicated otherwise, has been found to be in conformance with the intent of the contract documents.

Contractor's Stamp:	Engineer's Stamp:
Date: 4/9/12 Reviewed by: Tyler Ammerman ( ) Reviewed Without Comments (X) Reviewed With Comments	

ENGINEER'S COMMENTS:_____
_____

Project: HDTWRF Project

Location: Fountain, CO

Supplier: CSM

Date: 4/6/12

Submittal for: 5500-014 – Flow Diversion Structure Embed, Grating, Beam

Submittal Review Comments:

1) **Ref. G-23 All components shall be supplied per drawing. Ref. 3, G-19 for beam details.**
2) **Ref. detail 4, DL-3 for embed angle support.**
3) **Aluminum surfaces in contact with concrete will be coated with coal tar epoxy.**
4) **Mitered corners shall be ground smooth of burrs/sharp edges.**
5) **Grating shall be field measured for fitment into embed angles.**
6) **Sherwin Williams Macropoxy 646 Fast Cure Epoxy submitted as substitute for specified Tnemic N69 Hi Build Epoxoline II for coating beam.**

THE SHERWIN-WILLIAMS COMPANY

INDUSTRIAL & MARINE COATINGS

Industrial and Marine Coatings

4.53

MACROPOXY® 646 FAST CURE EPOXY

PART A B58-600 SERIES
PART B B58V600 HARDENER

PRODUCT INFORMATION

RECOMMENDED SYSTEMS

Immersion and atmospheric:

Steel:
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct

Atmospheric:
*** Steel, Shop Applied system, New Construction, AWWA D102:**
1 ct. Macropoxy 646 Fast Cure Epoxy @ 3.0 - 6.0 mils dft
1-2 cts. of recommended topcoat

Steel:
1 ct. Recoatable Epoxy Primer @ 4.0 - 6.0 mils dft
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct

Steel:
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct
1-2 cts. Acrolon 218 Polyurethane @ 3.0 - 6.0 mils dft/ct
or Hi-Solids Polyurethane @ 3.0 - 5.0 mils dft/ct

Steel:
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct
1-2 cts. Tile-Clad HS Epoxy @ 2.5 - 4.0 mils dft/ct
or Armor-Tile HS @ 2.5 - 4.0 mils dft/ct

Steel:
1 ct. Zinc Clad II HS @ 3.0 - 6.0 mils dft
1 ct. Macropoxy 646 @ 5.0 - 10.0 mils dft
1-2 cts. Acrolon 218 Polyurethane @ 3.0 - 6.0 mils dft/ct

Steel:
1 ct. Zinc Clad III HS @ 3.0 - 5.0 mils dft
or Zinc Clad IV HS @ 3.0 - 5.0 mils dft
1 ct. Macropoxy 646 @ 5.0 - 10.0 mils dft
1-2 cts. Acrolon 218 Polyurethane @ 3.0 - 6.0 mils dft/ct

Aluminum:
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct

Galvanizing:
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct

Concrete/Masonry:
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct

Concrete Block:
1 ct. Kem Cati-Coat HS Epoxy Filler/Sealer @ 10.0 - 20.0 mils dft, as needed to fill voids and provide a continuous substrate.
2 cts. Macropoxy 646 @ 5.0 - 10.0 mils dft/ct

The systems listed above are representative of the product's use. Other systems may be appropriate.

SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure good adhesion.
Refer to product Application Bulletin for detailed surface preparation information.
Minimum recommended surface preparation:

Iron & Steel	
Atmospheric:	SSPC-SP2/3
Immersion:	SSPC-SP10, 2-3 mil profile
Aluminum:	SSPC-SP1
Galvanizing:	SSPC-SP1
Concrete & Masonry	
Atmospheric:	SSPC-SP13/NACE 6
Immersion:	SSPC-SP13/NACE 6-4.3.1 or 4.3.2

COLOR AVAILABILITY/TINTING

Tint with 844 Colorants at 150% strength. Five minutes minimum mixing on a mechanical shaker is required for complete mixing of color.

Tinting is not recommended for immersion service.

Color: Mill White, Black and a wide range of colors available through tinting

APPLICATION CONDITIONS

Temperature:	50°F minimum, 110°F maximum (air, surface, and material) At least 5°F above dew point
Relative humidity:	85% maximum

Refer to product Application Bulletin for detailed application information.

ORDERING INFORMATION

Packaging:	
Part A:	1 and 5 gallon containers
Part B:	1 and 5 gallon containers
Weight per gallon:	12.7 ± 0.2 lb mixed, may vary by color

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

THE SHERWIN-WILLIAMS COMPANY

INDUSTRIAL & MARINE COATINGS

Industrial and Marine Coatings

MACROPOXY® 646 FAST CURE EPOXY

PART A B58-600 SERIES
PART B B58V600 HARDENER

APPLICATION BULLETIN

Revised 1/2002

SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Iron & Steel, Atmospheric Service:
Minimum surface preparation is Hand Tool Clean per SSPC-SP2. Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. For better performance, use Commercial Blast Cleaning per SSPC-SP6, blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils). Prime any bare steel within 8 hours or before flash rusting occurs.

Iron & Steel, Immersion Service:
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Near White Metal Blast Cleaning per SSPC-SP10. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2-3 mils). Remove all weld spatter and round all sharp edges by grinding. Prime any bare steel the same day as it is cleaned.

Aluminum
Remove all oil, grease, dirt, oxide and other foreign material by Solvent Cleaning per SSPC-SP1.

Galvanized Steel
Allow to weather a minimum of six months prior to coating. Solvent Clean per SSPC-SP1 (recommended solvent is VM&P Naphtha). When weathering is not possible, or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test patch. Allow paint to dry at least one week before testing adhesion. If adhesion is poor, brush blasting per SSPC-SP7 is necessary to remove these treatments. Rusty galvanizing requires a minimum of Hand Tool Cleaning per SSPC-SP2, prime the area the same day as cleaned.

Concrete and Masonry, Atmospheric Service:
For surface preparation, refer to NACE 6/SSPC-SP13. Surfaces should be thoroughly clean and dry. Concrete and mortar must be cured at least 28 days @ 75°F. Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement and hardeners. Fill bug holes, air pockets and other voids with a cement patching compound. Weathered masonry and soft or porous cement board must be brush blasted or power tool cleaned to remove loosely adhering contamination and to get to a hard, firm surface. Laitance must be removed by etching with a 10% muriatic acid solution and thoroughly neutralized with water.

Concrete and Masonry, Immersion Service:
For surface preparation, refer to SSPC-SP13/NACE 6, Section 4.3.1 or 4.3.2.

Previously Painted Surfaces
If in sound condition, clean the surface of all foreign material. Smooth, hard or glossy coatings and surfaces should be dulled by abrading the surface. Apply a test area, allowing paint to dry one week before testing adhesion. If adhesion is poor, or if this product attacks the previous finish, removal of the previous coating may be necessary. If paint is peeling or badly weathered, clean surface to sound substrate and treat as a new surface as above.

APPLICATION CONDITIONS

Temperature:	50°F minimum, 110°F maximum (air, surface, and material) At least 5°F above dew point
Relative humidity:	85% maximum

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compatible with the existing environmental and application conditions.

Reducer/Clean Up ..... Reducer R7K15

Airless Spray

Pump	30:1
Pressure	2800 - 3000 psi
Hose	1/4" ID
Tip	.017" - .023"
Filter	60 mesh
Reduction	as needed up to 10% by volume

Conventional Spray

Gun	DeVilbiss MBC-510
Fluid Tip	E
Air Nozzle	704
Atomization Pressure	60-65 psi
Fluid Pressure	10-20 psi
Reduction	as needed up to 10% by volume

Requires oil and moisture separators

Brush

Brush	Nylon/Polyester or Natural Bristle
Reduction	not recommended

Roller

Cover	3/8" woven with phenolic core
Reduction	not recommended

If specific application equipment is listed above, equivalent equipment may be substituted.

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MACROPOXY® 646 FAST CURE EPOXY

PART A	B58-600	SERIES
PART B	B58V600	HARDENER

APPLICATION BULLETIN

APPLICATION PROCEDURES

Surface preparation must be completed as indicated.

Mix contents of each component thoroughly with power agitation. Make certain no pigment remains on the bottom of the can. Then combine one part by volume of Part A with one part by volume of Part B. Thoroughly agitate the mixture with power agitation. Allow the material to sweat-in as indicated prior to application. Re-stir before using.

If reducer solvent is used, add only after both components have been thoroughly mixed, after sweat-in.

Apply paint to the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat:

Wet mils:	7.0 - 13.5
Dry mils:	5.0 - 10.0*
Coverage:	116 - 232 sq ft/gal approximate

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

* See Recommended Systems

Drying Schedule @ 7.0 mils wet and 50% RH:

	@ 50°F	@ 77°F	@ 100°F
To touch:	4 hours	2 hours	1½ hours
To handle:	24 hours	8 hours	4½ hours
To recoat:			
minimum:	24 hours	8 hours	4½ hours
maximum:	3 months	3 months	3 months
Cure for			
service:	7 days	7 days	4 days
immersion:	14 days	7 days	4 days

If maximum recoat time is exceeded, abrade surface before recoating. Drying time is temperature, humidity and film thickness dependent.

Pot Life:	6 hours	4 hours	2 hours
Sweat-in-time:	30 minutes	30 minutes	15 minutes

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

PERFORMANCE TIPS

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, and adhesion.

Do not mix previously catalyzed material with new.

Do not apply the material beyond recommended pot life.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with Reducer R7K15.

Tinting is not recommended for immersion service.

Use only Mil White and Black for immersion service.

Quik-Kick Epoxy Accelerator is acceptable for use. See data page 4.99 for details.

Refer to Product Information sheet for additional performance characteristics and properties.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with Reducer R7K15. Clean tools immediately after use with Reducer R7K15. Follow manufacturer's safety recommendations when using any solvent.

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

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INDUSTRIAL & MARINE COATINGS

Industrial and Marine Coatings

MACROPOXY® 646 FAST CURE EPOXY

PART A B58-600 SERIES
PART B B58V600 HARDENER

PRODUCT INFORMATION

Revised 1/2002

PRODUCT DESCRIPTION

MACROPOXY 646 FAST CURE EPOXY is a high solids, high build, fast drying, polyamide epoxy designed to protect steel and concrete in industrial exposures. Ideal for maintenance painting and fabrication shop applications. The high solids content ensures adequate protection of sharp edges, corners, and welds. This product can be applied directly to marginally prepared steel surfaces.

- Low VOC
- Low odor
- Suitable for use in USDA inspected facilities
- Chemical resistant
- Abrasion resistant

RECOMMENDED USES

For use over prepared steel and concrete in industrial exposures such as:

- Marine applications
- Fabrication shops
- Pulp and paper mills
- Power plants
- Offshore platforms
- Refineries
- Chemical plants
- Tank exteriors
- Water treatment plants
- Mill White and Black are acceptable for immersion use for salt water and fresh water, not acceptable for potable water
- Nuclear power facilities

PRODUCT CHARACTERISTICS

Finish:	Semi-Gloss
Color:	Mill White, Black and a wide range of colors available through tinting
Volume Solids: Mill White	72% ± 2%, mixed
Weight Solids: Mill White	85% ± 2%, mixed
VOC (EPA Method 24): mixed	Unreduced: 235 g/L; 1.96 lb/gal Reduced 10%: 290 g/L; 2.41 lb/gal
Mix Ratio:	1:1 by volume

Recommended Spreading Rate per coat:

Wet mils:	7.0 - 13.5
Dry mils:	5.0 - 10.0*
Coverage:	116 - 232 sq ft/gal approximate

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.
* See Recommended Systems

Drying Schedule @ 7.0 mils wet and 50% RH:

	@ 50°F	@ 77°F	@ 100°F
To touch:	4 hours	2 hours	1½ hours
To handle:	24 hours	8 hours	4½ hours
To recoat:			
minimum:	24 hours	8 hours	4½ hours
maximum:	3 months	3 months	3 months
Cure for			
service:	7 days	7 days	4 days
immersion:	14 days	7 days	4 days

If maximum recoat time is exceeded, abrade surface before recoating. Drying time is temperature, humidity and film thickness dependent.

Pot Life:	6 hours	4 hours	2 hours
Sweat-in-time:	30 minutes	30 minutes	15 minutes

Shelf Life: 36 months

Flash Point: 60°F, TCC, mixed

Reducer/Clean Up: Reducer, R7K15

PERFORMANCE CHARACTERISTICS

System Tested: (unless otherwise indicated)
Substrate: Steel
Surface Preparation: SSPC-SP10
1 ct. Macropoxy 646 Fast Cure @ 6.0 mils dft

Abrasion Resistance:
Method: ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load
Result: 84 mg loss

Accelerated Weathering - QUV, Zinc Clad II HS Primer:
Method: ASTM D4587, QUV-A, 12,000 hours
Results: passes

Adhesion:
Method: ASTM D4541
Result: 830 psi

Corrosion Weathering, Zinc Clad II HS Primer:
Method: ASTM D5894, 36 cycles, 12,000 hours
Result: Rating 10 per ASTM D714 for blistering
Rating 9 per ASTM D610 for rusting

Direct Impact Resistance:
Method: ASTM D2794
Result: 30 in. lb.

Dry Heat Resistance:
Method: ASTM D2485
Result: 250°F

Exterior Durability:
Method: 1 year at 45° South
Result: Excellent, chalks

Flexibility:
Method: ASTM D522, 180° bend, 3/4" mandrel
Result: Passes

Immersion:
Method: 1 year fresh and salt water
Result: Passes, no rusting, blistering, or loss of adhesion

Irradiation-Effects on Coatings used in Nuclear Power Plants
Method: ANSI 5.12 / ASTM D4082-89
Result: Passes

Pencil Hardness:
Method: ASTM D3363
Result: 3H

Permeability Rating:
Method: ASTM D1653
Result: 0.154 mg/cm²

Salt Fog Resistance, Zinc Clad II HS Primer::
Method: ASTM B117, 6,500 hours
Result: Rating 10 per ASTM D610 for rusting
Rating 9 per ASTM D1654 for corrosion

Slip Coefficient, Mill White:
Method: AISC Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts
Result: Class A, 0.36

Epoxy coatings may darken or discolor following application and curing.

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