



City of Elko Clerk's Department
1751 College Avenue
Elko, NV 89801
(775) 777-7126
FAX (775) 777-7129

ADDENDUM NUMBER ONE

EAST SECONDARY CLARIFIER REHABILITATION PROJECT - 2019

Please confirm receipt of ADDENDUM NUMBER ONE AND FAX BACK TO (775) 777-7129 or email to cityclerk@elkocity.nv.gov.

RECEIVED:

SIGNATURE

COMPANY NAME

Dated this ___th day of _____, 2019.

Elko City Clerk

Kelly Wooldridge

***** PLEASE NOTE RECEIPT OF ADDENDUM NUMBER ONE ON
APPLICABLE LINE ON SUBMITTED BID PROPOSAL *****

**City of Elko, Nevada
Elko Water Reclamation Facility
1751 College Avenue
Elko, Nevada 89801**

**Addendum No. 1 to the Project Bid Documents for the City of Elko
EAST SECONDARY CLARIFIER REHABILITATION PROJECT - 2019**

To all prospective Bidders for the **City of Elko EAST SECONDARY CLARIFIER REHABILITATION PROJECT - 2019** for which sealed bids will be received until **3:00 PM, local time, on Wednesday, March 6, 2019** at the office of the Elko City Clerk; 1751 College Avenue; Elko, Nevada 89801.

- I. Addendum No. 1 a change and clarifications to the contract time stated within the Construction Contract Documents as stated in ARTICLE THREE – STARTING AND COMPLETION DATES, the Notice To Proceed with work and SECTION 01010 SUMMARY OF WORK, Paragraph 1.04 – Contract Time. The following clarifications, deletions, and additions shall be made to the written Contract Documents and Project Specifications for the Project:
 - A. The Contract Time is hereby **increased from Forty-Five (45) calendar days to Sixty (60) calendar days** measured from date of the commencement of work on the project to the date of completion of project cleanup. This shall be amended in the Project Bid Documents and in particular ARTICLE THREE – STARTING AND COMPLETION DATES, Paragraph 1.04 Contract Time of SECTION 01010 SUMMARY OF WORK and in the NOTICE TO PROCEED. **The Contract Time shall be Sixty (60) alendar days.**
 - B. Delete the existing technical specifications shown in “EXHIBIT 16 – TECHNICAL SPECIFICATIONS” and add the technical specifications attached to Addendum No. 1 that describes the materials and work included within the contract. All bidders shall be aware that the project specifications were formed using industrial coating standards provided by TENEMEC Company Inc. Contractors can bid “OR EQUAL COATING MATERIALS” on this project. All Bidders are instructed to include product brand names; coating product specifications; and all product information necessary to allow the Engineer and the City of Elko to determine if the proposed coatings are an “or equal” product meeting the Technical Specification requirements.
 - C. Bidders shall be aware that the contractor shall provide dewatering pumps to maintain dry conditions in the East Secondary Clarifier for the duration of the work. The Elko WRF is currently dewater using two (2) 120 Volt (60 Hz.) submersible pumps rated to pump 79-gpm at 40-feet of head (1.5 – 2.0 HP). 120-volt power is available at the clarifier site.
 - D. Bid Item No. 2 – Water Cleaning of the Clarifier Surfaces prior to sand blasting is required to remove built-up dirt and organic matter. Water pressure for water cleaning shall be a minimum of 3,000 psi and a maximum of 5,000 psi (low pressure water jetting).
 - E. The amended specification (attached) has added the requirement for “holiday testing” to the work specification. Include the cost for “Holiday Testing” in Bid Item No. 6, as described.
 - F. All Bidders shall acknowledge the receipt of “Addendum No. 1” and complete EXHIBIT NO. 1 – BID FORM shown in the original Contract Documents.

The Bidder shall acknowledge receipt of Addendum No. 1 on his, or her, bid submittal. A copy of this Addendum shall be submitted with the bidder's bid proposal.

Owner: City of Elko, Nevada

Mr. Ryan Limberg
Elko Utilities Director

Date: 3/1/19

Engineer: Konakis Engineering, LLC

Ferron S. Konakis, P.E.
Consulting Civil Engineer

Date: 3/1/19

Attachments:

1. Revised EXHIBIT 16 - TECHNICAL SPECIFICATIONS (describing the work have been added and attached to Addendum No. 1).
2. Pre-Bid Meeting Notes.

TECHNICAL SPECIFICATIONS
East Secondary Clarifier Rehabilitation Project- 2019

SCOPE OF WORK

1.1 SUMMARY

- A. The WRF East Secondary Clarifier shall receive four coats of protective paint for all metal surfaces above and below the water line-rakes; the rake support structure and feed tube to the mechanical drive unit; both the clarifier center wells and supports; the scum arm; the scum pit and the exposed scum pit piping. The walkway and support, and the rake support platform shall receive three coats of protective paint for all metal surfaces. Work shall be completed in the field at the City of Elko WRF during normal working hours unless prior arrangements have been made with the WRF Superintendent. The East Secondary Clarifier is 83 feet in diameter with 12-foot deep side walls.

Bidding contractors are encouraged to tour the project site. The clarifier will be drained and washed for project inspection during the week of February 25th, 2019.

Contractors can contact the following personnel as required:

- Mike Haddenham, WRF Superintendent, 775-777-7386;
- Kevin Woten, Assistant WRF Superintendent, 775-777-7384;
- Ms. Michelle Call, Tnemec Sales Representative, 801-518-6802

Note: The project shall be completed during the month of May 2019 within Forty-Five (45) calendar days unless both parties agree to a different completion date.

1.2 REFERENCES

- A. The Codes and Standards referred to in this section include:
1. SSPC PA 1 - Shop, Field, and Maintenance Painting of Steel
 2. SSPC PA 2 - Procedure for Determining Conformance to Dry Film Thickness Requirements
 3. SSPC PA 11 - Protecting Edges, Crevices, and Irregular Steel Surfaces by Stripe Coating
 4. SSPC SP 5 - White Metal Blast Cleaning Standard Specification
 5. SSPC SP 6 - Commercial Blast Cleaning Standard Specification
 6. SSPC SP 10 - Near-White Blast Cleaning Standard Specification
 7. SSPC SP 16 Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals
 8. SSPC-VIS 1 Guide to Reference Photographs for Steel Surfaces

Prepared by Dry Abrasive Blast Cleaning

- B. NACE International, (NACE)
 - 1. NACE RP0287 – Field Measurement of Surface Profile of Abrasive Blast-Cleaned Steel Surfaces Using a Replica Tape
 - 2. NACE SP0188 – Standard Practice for Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates

1.3 SUBMITTALS

- A. Provide the following submittals to the City of Elko for approval prior to the Notice to Proceed:
 - 1. **Project Superintendent:** The Contractor shall provide one (1) project superintendent for the duration of the project. The Contractor shall not reassign his, or her, project superintendent until the project is complete. The Contractor shall provide a resume of the project superintendent's training and experience to the Owner and Engineer.
 - 2. Provide a written construction schedule for all work included in the project. The schedule shall include mobilization; the metal surfaces preparation work; the painting/surface coating of the clarifier metal surfaces; proper curing; and demobilization that will be completed as a part of this project.
 - 3. Provide a written procedure for preparing all surfaces to be coated with paint and/or epoxy coating materials. The procedure shall include all items required by specification as well as work standards to the trade. The written procedure shall include providing the mil thickness for each coating applied and as a minimum shall meet or exceed the coating manufacturers recommendations. Procedures shall include weather protection as well as curing and re-coating times and procedures. All curing and recoating must meet the Manufacturer's specifications. Any deviation in application from the specifications must be approved by the paint Manufacturer's representative.
 - 4. Submit complete product information for primer, intermediate and finish coats.
 - 5. The contractor shall submit the manufacturer's warranty on the proposed protective coating to be used on this project to coat the clarifier metal surfaces. This shall include all primers, intermediate and finish coatings that will be applied as a part of the coating (painting) process.
 - 6. Provide manufacturer's affidavits certifying that all coating materials meet the requirements specified and that paint products have been checked for compatibility.
 - 7. Furnish certifications from the manufacturer that all paint coatings that are to be immersed in water shall not contain water-soluble solvents or corrosive inhibitive (active) pigments with slight water solubility.

8. Provide a complete safety and confined space entry program that shall be used for this project which meets or exceeds the City of Elko confined space program and all OSHA standards.
9. Provide a list of utility requirements including electric power and clean water for pressure washing.

1.4 CONTRACTOR REQUIREMENTS

- A. The contractor will understand and be completely responsible for all the requirements of the Tnemec paint specified within this bid document. This is to include the Tnemec product data sheet and all listed sub-sections: product profile, coating system, re-coat windows, surface preparation, technical data and the application for each Tnemec paint coating of the coating system specified.
- B. The Tnemec technical product data sheet will supersede any errors and/or conflicts contained within this bid document.
- C. If the Contractor should have technical questions related to the specified coating system; require technical assistance; require manufacturer specific coating information; require on-site visits and/or guidance for the application of the specified Tnemec coating systems or products – the Contractor shall contact the local Tnemec Sales Representative: Ms. Michelle Call at 801-282-2327 or email at mcall@tnemec.com.
- D. The Contractor shall provide Tnemec coatings, or equal products, as outlined in this bid document.
- E. The Contract Work will be complete within **Sixty (60) calendar days**.
- F. Access to the WRF worksite shall be extended to allow Contractor access to the work site with arrangements made with the WRF Superintendent.
- G. Safety and confined space entry procedures shall be strictly adhered to as outlined by the OSHA standards. The Contractor shall have and maintain an OSHA approved written safety and confined space entry program on site at all times. The plan shall meet the minimum requirements established by OSHA. This work site is categorized as a **Confined Space Category C-7 Non-Permit Site**.
- H. Lock out/tagged out procedures shall be strictly adhered to as established and defined in the City of Elko's Safety Program and OSHA.
- I. The Contractor shall be responsible for the safety of the work force and safety conditions of the work site at all times during construction. Any work related accidents and/or injuries will be immediately reported to WRF staff, and are the sole responsibility of the contractor.
- J. The Contractor shall furnish all materials, tools and equipment to perform the requirements of this contract.
- K. The contractor shall provide all personnel protective equipment (PPE) required by their workforce which meets OSHA standards. Contractor must insist that their

employees utilize proper PPE as the conditions require per OSHA standards.

- L. The Contractor shall isolate all work and/or work related debris including but not limited to blasting sand from the underflow pumping system and over flow system.
- M. The Contractor shall remove the existing aluminum hand rail system and light fixtures located on the walkway bridge and platform above the clarifier prior to abrasive sand blasting work. The Contractor shall replace the existing aluminum handrail after the curing of the coating system on the walkway. The plan for accomplishing this shall be submitted to the owner for review and approval. The Contractor shall be responsible for site organization and safety, site clean-up, proper disposal of garbage, sand/grit (take to the City of Elko Landfill) and site restoration.
- N. The Contractor shall be required to dewater the site during construction activities. This is estimated to be up to 250 GPM. The dewatering will require pumping an estimated distance of 50 feet with a static lift of approximately 20 feet. All dewatering and/or pumping shall be the responsibility of the Contractor. The Contractor shall provide backup pumping as required in case of a pump failure.
- O. The Contractor shall be responsible for disposal of all debris, including sandblasting sand and grit material, from the project site in a manner approved by the Owner. **Note: All blasting sand shall be dark in color.**
- P. Contractor shall maintain the jobsite in a clean condition, free of debris at all times and shall inspect and pick up trash and debris on the jobsite at the end of each working day.
- Q. The Contractor shall be responsible for removing all trash, debris and waste that is generated by contractor activities in a legal and approved manner.
- R. The Contractor shall maintain all necessary product SDS sheet at the project site and shall be responsible for the proper disposal and clean-up all such products.
- S. The Contractor shall provide temporary restroom facilities for the Contractor's workforce on-site during the construction.
- T. The Contractor shall notify the Owner at least 24-hours in advance of all required inspections.
- U. The Contractor shall properly protect all electrical circuits, instrumentation circuits, all mechanical and electrical drives, gearboxes and all aluminum structures and handrail from sandblasting and/or painting activities. Any damage and associated repair costs shall be the responsibility of the Contractor.
- V. The Contractor understands and agrees to comply with the City of Elko WRF Site Specific Training and the work requirements stated within the City of Elko WRF Site Specific Training (see Appendix).
- W. The Contractor further agrees to promptly repair, replace, restore, or rebuild, as the City may determine, any finished work that exhibits defects in the materials or workmanship or to which damage may occur, because of such defects, during a **one (1) year period subsequent to the date of final acceptance of the work.**

- X. The contractor shall schedule a pre-construction meeting to be attended by Contractor, Owner's representative, coating applicators, and a representative of the coating material manufacturer. The preconstruction meeting shall be held on-site before field application of the coating systems begins. Topics to be discussed at meeting shall include:
- Review of Contract Documents;
 - Review items such as environmental conditions, surface conditions, surface preparation, application procedures, and protection following application;
 - Establish on-site storage and working areas;
 - Identify application requirements and required preparation work; and
 - Prepare a written report of pre-installation conference and submit to parties in attendance within 3 days following the preconstruction conference.
- Y. The contractor shall submit the following information at the completion of the work identified within the scope of this section:
- Submit daily reports that contain the following information: surface preparation, substrate conditions, ambient conditions, application procedures, coating materials used, coating material quantities, batch numbers of materials used, work completed, location thereof, and mark-up drawings that show location of work.

1.5 WRF RESPONSIBILITY

- A. WRF personnel shall drain and wash down the interior of the East Secondary Clarifier prior to releasing the work site to the Contractor. This work site shall be categorized as a **Confined Space Category C-7 Non-Permit Site**.
- B. The City of Elko WRF reserves the right to withhold final payment until the contractor's work site has been cleaned up, and all damages and/or repairs have been made in a satisfactory manner.
- C. WRF personnel shall assist the contractor with all the lock out tag out locations.
- D. The WRF shall provide limited utilities including 110-volt 30-amp electrical service for the Contractor. **Contractor shall notify the Owner of project utility requirements.**
- E. The WRF shall be responsible for disconnecting, and if necessary removing all electrical and instrumentation, as required, for the removal of decking and as is required for blast cleaning and the application of each epoxy coating system specified as a part of the work for this project.
- F. The WRF shall provide for all Quality Assurance inspection services. **Contractor shall notify Owner 24-hours in advance of required inspections.**
- G. The WRF staff will conduct the required Site Specific Training for the Contractor's personnel (see Appendix).

1.6 COATING/PAINTING REQUIREMENTS

- A. Immersion coating products:
1. Primer, Intermediate, and Finish Coats: Series N69F Hi-Build Epoxoline II.
 2. Painting materials shall be delivered to the WRF in labeled, unbroken containers with SDS sheets.
- B. Non-Immersion coating products:
1. Primer and Intermediate: Series N69F Hi-Build Epoxoline II.
 2. Finish: Series 73U Endura-Shield.
 3. Painting materials shall be delivered to the WRF in labeled, unbroken containers with SDS sheets.
- C. Surface Preparation Requirements:
1. All blasting sand shall be dark in color.
 2. All Immersion metal surfaces shall require SSPC-SP 10/NACE No. 2 Near-White Blast Cleaning with a minimum angular anchor profile of 1.5 mils. (see Appendix).
 3. All Immersion non-ferrous metals require a SSPC-SP 16 Brush off Blast Cleaning of Coat and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals with a minimum angular anchor profile of 2.0 mils. (see Appendix).
 4. All non-Immersion metal surfaces shall require SSPC-SP 6/NACE No. 3 Commercial Blast Cleaning with a minimum angular anchor profile of 1.5 mils (see Appendix).
 5. All metal surfaces must be clean, dry and free of dirt, rust, scale, oil, grease and other foreign contaminants, prior to painting (see References above).
 6. Surface Profile and Degree of Surface Cleanliness: Inspect and record substrate profile (anchor pattern) and degree of cleanliness. Surfaces shall meet the manufacturer's recommended anchor profile and degree of blast cleaning.
 - a. Visually confirm the specified degree of surface cleanliness of the ferrous metal surface in accordance with SSPC-VIS 1.
 - b. The specified surface profile of the prepared substrate shall be verified in accordance with ASTM D4417 – Method C Replica Tape or NACE RP0287.
 7. The center drive assembly (gearboxes and motors) shall be totally wrapped and protected from all sandblasting and painting activities.
 8. All electrical, instrumentation and all aluminum structures shall be totally

- wrapped and protected from sandblasting and painting activities.
9. The aluminum stair treads, walkway, kickboard and handrail will be removed or adequately protected from sandblasting and painting activities.

D. Coating Systems:

1. Immersion Coating System:

- a. Surface Preparation Carbon Steel: SSPC-SP 10 Near White Metal Blasting with a minimum angular anchor profile of 1.5 mils.
- b. Surface Preparation Non-Ferrous: SSPC-SP 16 Brush off Blast Cleaning of Coat and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals with a minimum angular anchor profile of 2.0 mils.
- c. Primer: Hi-Build Epoxoline II Series N69F-00WH White at 4.0 – 6.0 mils DFT.
- d. Stripe Coat: Hi-Build Epoxoline II Series N69F-26BL Clear Sky.
- e. Intermediate: Hi-Build Epoxoline II Series N69F-1255 Beige at 4.0 – 6.0 mils DFT.
- f. Finish: Hi-Build Epoxoline II Series N69F-83GN Trade Winds at 4.0 – 6.0 mils DFT.
- g. Total Dry Film Thickness 12.0 – 18.0 mils DFT.

2. Non-Immersion Coating System:

- a. Surface Preparation Carbon Steel: SSPC-SP 10 Near White Metal Blasting with a minimum angular anchor profile of 1.5 mils.
- b. Surface Preparation: SSPC-SP Near White Metal Blasting with a minimum angular anchor profile of 1.5 mil.
- c. Primer: Hi-Build Epoxoline II Series N69F-00WH White at 4.0 – 6.0 mils DFT.
- d. Stripe Coat: Hi-Build Epoxoline II Series N69F-26BL Clear Sky.
- e. Intermediate: Hi-Build Epoxoline II Series N69F-1255 Beige at 4.0 – 6.0 mils DFT.
- f. Finish: Endura-Shield Series 73U-83GN Trade Winds at 3.0 – 5.0 mils DFT.
- g. Total Dry Film Thickness 11.0 – 17.0 mils DFT.
- h. Remove the aluminum handrail located on the clarifier bridge and the clarifier center platform prior to commencing sand blasting. Replace the handrail after the coating finish coat has cured.

3. Stripe paint with brush critical locations such as bolts, welds, corners, and edges as per SSPC-PA11.
4. All paint shall be thinned/reduced with the thinner recommended by the paint manufacturer and shall be applied in strict accordance with the manufacturer's instructions and specifications.
5. Measure and record ambient air temperature, relative humidity and dew point temperature once every two hours of work shift to ensure that the products are being applied within the manufacturer's recommendations.
6. Measure and record substrate temperature once every two hours using an infrared or other surface thermometer to ensure that the products are being applied within the manufacturer's recommendations.
7. Film Thickness:
 - a. Wet-Film Thickness shall be taken every 100 square feet in accordance with ASTM D4414 or other agreed-upon method.
 - b. The Dry-Film Thickness (DFT) shall be measured in accordance with SSPC-PA 2 Measurement of Dry Coating Thickness. Verify DFT of each coat and total DFT of each coating system are as specified.

E. Coating System Requirements:

1. The surface preparation and painting/coating requirements for the East Secondary Clarifier are as follows (see Figures 1 through 6- East Secondary Clarifier). Additional pictures are available as requested:
2. Stair, center well support platform and walkway support structure which accesses the center well and mechanical drive unit shall be painted Blue in color as the final coat as stated in Painting Application Requirements (see above). The motor, gearboxes, aluminum stair treads, walkway, kickboard and handrail shall be removed or adequately protected, by the Contractor, from any damage by abrasion and/or coating material as a result of the sandblasting and painting/coating activities.
3. The skimmer arm and sludge rake assemblies; the scum box, the center support structure and piping; and the center support tube and all other structural steel shall be painted with a Blue final finish coat, as stated in the Painting Application Requirements (see above).
4. The following surface areas were supplied by Ovivo Water Technologies. Additional information can be supplied through **Karen Burns of Ovivo at 801-931-3027**. The areas shown below are approximate surface areas to be used for surface preparation and coating estimation. The Coating Contractor shall make necessary arrangements with the City of Elko to measure the exact surface areas to be prepared and coated, as specified in these Project Specifications.

5. **East Secondary Clarifier - Approximate Surface Areas for Cleaning and Coating:**

- Both center wells (inside/outside) ~ 1,400 square feet
- Both rakes ~ 650 square feet
- Walkway bridge ~ 350 square feet
- Center tube support pipe ~ 250 square feet
- Scum arm ~ 50 square feet
- Scum pit and piping ~ 50 square feet

F. **Independent-Third Party NACE Level III Coating Inspector/Tester for Clarifier Coating Mil Thickness and Holiday (Spark) Testing.**

1. The Contractor shall include the project costs required to hire a NACE Level III Coating Inspector to conduct final Dry Film Thickness readings and Holiday Testing.
2. Coating/paint mil thickness shall meet the specified coating thicknesses indicated in the Project Specifications. Mil thickness tests shall be conducted according to SSPC-PA 2 Procedure for Determining Conformance to Dry Film Thickness Requirements.
3. Holiday (Spark) Testing for immersion areas: Upon full cure, the installed coating system shall be checked by voltage spark detection in accordance with NACE SP0188 and the Manufacturer's recommendations to verify a pinhole-free surface.
 - a. Areas which do not pass the spark detection test shall be properly repaired in accordance with the manufacturer's instructions and **retested** at no cost to the Owner.
4. Submit written reports of the test results and actions taken to correct non-conforming work to the City of Elko and the Engineer prior to final acceptance of the work and final payment. The costs associated with the coating mil thickness report shall be included in Bid Item No. 6 of the Contractor's Bid Proposal for this Project.
5. Include the contract costs associated with providing third party NACE Coating mil thickness tests and holiday testing, as described in (1) above, in the "Contractor's Bid Proposal Form, Bid Item No. 6 – Third Party Paint/Coating mil thickness Tests & Test Report".

Appendix

- Tnemec High-Build Epoxoline II Series N69F Product Data Sheet
- Tnemec Endura-Shield Series 73U Product Data Sheet
- SSPC-SP 16 Brush off Blast Cleaning of Coat and Uncoated Galvanized Steel
- SSPC-SP 6/NACE 3 Commercial Blast Cleaning
- SSPC-SP 10/NACE 2 Near White Blast Cleaning
- City of Elko – Secondary Clarifier No. 2 Photographs
- City of Elko - WRF Site Specific Training



HI-BUILD EPOXOLINE® II SERIES N69F

PRODUCT DATA SHEET

PRODUCT PROFILE

- GENERIC DESCRIPTION** Polyepoxide Epoxy
- COMMON USAGE** An advanced generation epoxy for the protection and finishing of steel and concrete. It has excellent resistance to abrasion and is suitable for immersion as well as chemical contact exposure. Contact your local Tremco representative for a list of chemicals. This product can also be used as a floor filler on concrete or existing substrates.
- COLORS** Limited color availability. Contact your Tremco representative.
- FINISH** Matte

COATING SYSTEM

- SEMPACK/FILLER/PATCHER** 225
- PRIMERS** Steel, Self-priming or Series 1, 27, 571, 66, 163, 163P, 203, V03, 901-92, 90G-1037, 91-97, 1390-97, 90-91, 91-11, O, 94-11, O, 133, 161, 164, 530
Galvanized Steel and Non-Ferrous Metals, Self-priming or Series 66, 163, 163P, N69, V03, 161
- TOPCOATS** 22, 401-413, 66, 163, 163P, N69, 203P, V03, V03P, 72, 73, 84, 204, 223, 214, 241, 156, 197, 161, 175, 180, 181, 287, 446, 740, 750, 1020, 1025, 1070, 1070V, 1071, 1071V, 1072, 1072V, 1074, 1074L, 1075, 1075L, 1077, 1078, 1080, 1081 Refer to COLUMNS on applicable topcoat data sheets for additional information. Note: The following general times apply for Series N69F. Immersion Service—Surface must be scrubbed after 30 days. Atmospheric Service—After 30 days, abradation or an epoxy top-coat is required. When topcoating with Series 740 or 750, recoat time for N69F is 14 days. Contact your Tremco representative for specific recommendations.

SURFACE PREPARATION

- PRIMED STEEL** Immersion Service. Scrub the epoxy primer coat surface by abrasive blasting with fine abrasive before topcoating if it has been exterior exposed for 30 days or longer and N69F is the specified topcoat.
- STEEL** Immersion Service. SSPC-SP 10/NACE 2 Near-White Blast Cleaning with a minimum angular anchor profile of 1.5 mils. Non-Immersion Service. SSPC-SP 6/NACE 3 Commercial Blast Cleaning with a minimum angular anchor profile of 1.5 mils.
- GALVANIZED STEEL & NON-FERROUS METAL** Surface preparation recommendations will vary depending on substrate and exposure conditions. Contact your Tremco representative or Tremco Technical Services.
- CAST/EXPOSED REIN** Contact your Tremco representative or Tremco Technical Services.
- CONCRETE** Allow new concrete to cure 28 days. For repair areas made and/or immersion service, abrasive blast referencing SSPC-SP 13/NACE 6, ICRI CSP 2-4 Surface Preparation of Concrete and Tremco's Surface Preparation and Application Guide.
- OLD** Allow mortar to cure for 28 days. Level protrusions and mortar spalls.
- PAINTED SURFACES** Non-Immersion Service. Ask your Tremco representative for specific recommendations.
- ALL SURFACES** Must be clean, dry and free of oil, grease, chalk and other contaminants.

TECHNICAL DATA

- VOLUME SOLIDS** 69.0 ± 2.0% (minimum) †
- RECOMMENDED OFF** 2.0 to 10.0 mils (50 to 250 microns) per coat. Note: The number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Tremco representative.

CURING TIME AT 5 MILS OFF

Temperature	To Handle	To Recoat	Immersion
75°F (24°C)	4 hours	5 hours	7 days
65°F (18°C)	7-8 hours	9-11 hours	8 days
55°F (13°C)	12-14 hours	16-20 hours	9-10 days
45°F (7°C)	18-22 hours	28-32 hours	12-13 days
35°F (2°C)	28-32 hours	40-50 hours	16-18 days

Curing time varies with surface temperature, air movement, humidity and film thickness.

WEARABLE ORGANIC CHEMICALS

- Unthinned: 2.30 lbs/gal on (200 grams/liter)
Thinned 10% (Vis. 4 Thinner): 2.75 lbs/gal on (230 grams/liter)
Thinned 10% (Vis. 60 Thinner): 2.76 lbs/gal on (231 grams/liter)

WAPS

- Unthinned: 2.95 lbs/gal solids
Thinned 10% (Vis. 4 Thinner): 3.20 lbs/gal solids
Thinned 10% (Vis. 60 Thinner): 3.35 lbs/gal solids

THEORETICAL COVERAGE

1,107 sq ft/gal (27.2 m²/L at 25 microns). See APPLICATION for coverage rates. †

NUMBER OF COATS REQS

Two Part A (analog) and Part B (epoxy) — One (Part A) to one (Part B) by volume.

PACKAGING

9 gallons (18.5L) pails - Order in multiples of 2.

NET WEIGHTS PER GALLON

13.34 ± 0.25 lbs (6.10 ± .11 kg) (minimum)

STORAGE TEMPERATURE

Minimum 20°F (-7°C) Maximum 110°F (43°C)

TEMPERATURE RESISTANCE

(Dry) Continuous 230°F (121°C) Intermittent 375°F (195°C)

SHELF LIFE

Part A: 24 months, Part B: 12 months at recommended storage temperature.

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Additional technical data and instructions available in Chinese without charge, also online at www.tremco.com. Please refer to the most current technical data and instructions or your local Tremco representative for current technical data and instructions.

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HI-BUILD EPOXOLINE® II | SERIES N69F

FLASH POINT - SEMI HEALTH & SAFETY

Part A: 60°F (20°C) Part B: 50°F (10°C)

This product contains chemical ingredients which are considered hazardous. Read container label warnings and Material Safety Data Sheet for important health and safety information prior to the use of this product. Keep out of the reach of children.

APPLICATION

COVERAGE RATES

	Dry MILs (Microins)	Wet MILs (Microins)	Sq Ft/Gal (Dry/Gal)
Suggested (1)	6.0 (150)	9.0 (225)	104 (17.1)
Maximum	3.0 (75)	5.0 (125)	521 (91.4)
Minimum	0.0 (0)	12.0 (300)	112 (30.5)

Dense Concrete & Masonry: From 100 to 150 sq ft (9.3 to 13.9 m²) per gallon.

CMU: From 75 to 100 sq ft (7.0 to 9.3 m²) per gallon.

(1) Note for Steel, Rafter or brush application requires two or more coats to obtain recommended film thickness. Also, Series N69F can be spray applied to an optional high-build film thickness range of 8.0 to 10.0 dry mils (225 to 270 dry microns) or 11.5 to 14.5 wet mils (300 to 370 wet microns). Allow for coverage and surface irregularities. Film thickness is measured in the normal 0.5 mil or 5 microns. Application of coating below minimum or above maximum recommended dry film thickness may adversely affect coating performance.

MIXING

1. Start with equal amounts of both Parts A & B.
2. Using a power mixer, separately mix Parts A & B.
3. Add Part A to Part B under agitation, stir until thoroughly mixed.
4. Both components should be above 50°F (10°C) prior to mixing. For application to surfaces between 50°F to 70°F (10°C to 21°C), allow mixed material to stand 5-10 minutes and mix before using. For optimum application properties, blended components should be above 60°F (16°C).

THICKNESS

Use No. 4 or No. 60 Thread. For air spray, this up to 10% or 3/4 pint (300 ml) per gallon. For airless spray, roller or brush, this up to 5% or 1/4 pint (75 ml) per gallon.

PER LIFE

2 hours at 50°F (10°C) 1 hour at 70°F (21°C) 30 minutes at 100°F (38°C)

SPRAY LIFE

30 minutes at 70°F (21°C)

Note: Spray application after latent time will adversely affect ability to achieve recommended dry film thickness.

APPLICATION EQUIPMENT

Air Spray *

Gun	Fluid Tip	Air Cap	Air Hose ID	Airfit Hose ID	Actuating Pressure	Psi Pressure
DeVilbiss JGA	8	703 or 704	3/16" or 3/8" (7.9 or 9.9 mm)	3/8" or 1/2" (9.9 or 12.7 mm)	75-100 psi (5.2-6.9 bar)	10-20 psi (0.7-1.4 bar)

Low temperatures or longer hoses require higher psi pressure.

Airless Spray *

Tip Orifice	Actuating Pressure	Mix Hose ID	Manifold Filter
0.025" or 0.031" (0.64-0.8 mm)	3000-4000 psi (210-280 bar)	1/4" or 3/8" (6.4 or 9.5 mm)	60 mesh (250 microns)

Use appropriate tip/orifice pressure for equipment, application technique and weather conditions.

* Spray application of this coat on CMU should be followed by backfilling.

Note: Application over irregular, non-flat surfaces. Apply a wet mist coat first and allow tiny bubbles to form. When bubbles disappear in 1 to 2 minutes, apply a full wet coat at specified wet thickness.

Roller: Use 3/8" or 1/2" (9.9 or 12.7 mm) synthetic woven nap roller cover. Use longer nap to obtain penetration on rough or porous surfaces.

Brush: Recommended for small areas only. Use high quality natural or synthetic bristle brushes.

SUBSTRATE TEMPERATURE

Minimum 50°F (10°C) Maximum 120°F (49°C)

The surface should be dry and at least 5°F (3°C) above the dew point. Coating will not cure below minimum surface temperature.

CLEANUP

Flush and clean all equipment immediately after use with the recommended thinner or MEK.

† Values may vary with color.

WARRANTY & LIMITATION OF REMEDY: THE BUYER HEREBY AGREES TO THE LIMITATION OF REMEDY AND WAIVER OF REMEDY SET FORTH IN THIS WARRANTY. THE BUYER'S SOLE AND EXCLUSIVE REMEDY FOR ANY DEFECTIVE PRODUCT IS LIMITED TO THE REPLACEMENT OF THE DEFECTIVE PRODUCT OR THE REFUND OF THE PURCHASE PRICE. THE BUYER'S SOLE AND EXCLUSIVE REMEDY FOR ANY DEFECTIVE PRODUCT IS LIMITED TO THE REPLACEMENT OF THE DEFECTIVE PRODUCT OR THE REFUND OF THE PURCHASE PRICE. THE BUYER'S SOLE AND EXCLUSIVE REMEDY FOR ANY DEFECTIVE PRODUCT IS LIMITED TO THE REPLACEMENT OF THE DEFECTIVE PRODUCT OR THE REFUND OF THE PURCHASE PRICE. THE BUYER'S SOLE AND EXCLUSIVE REMEDY FOR ANY DEFECTIVE PRODUCT IS LIMITED TO THE REPLACEMENT OF THE DEFECTIVE PRODUCT OR THE REFUND OF THE PURCHASE PRICE.

Interne Company Incorporated 6801 Corporate Drive Kansas City, Missouri 64120-1372 1-800-9ENACE Fax: 1-816-483-3969 www.interne.com



ENDURA-SHIELD® SERIES 73

PRODUCT PROFILE

GENERIC DESCRIPTION	Aliphatic Acrylic Polyurethane
COMMON USAGE	A coating highly resistant to abrasion, wet conditions, oxidative finish, chemical contact and exterior weathering. High build spall resistant systems with project specific primers for two-coat, labor saving systems. ACPT PCR INSULATION SYSTEM.
COLORS	Refer to Thacoac Color Guide. Note: Certain colors may require multiple coats depending on method of application and finish coat color. When feasible, the preceding coat should be in the same color family (blue, gray, etc.) but noticeably different.
FINISH	Semi-gloss
SPECIAL QUALIFICATIONS	Series 73 meets the accelerated weathering requirements of SSPC-Paint Standard 36.
PERFORMANCE CRITERIA	Extensive test data available. Contact your Thacoac representative for specific test results.

COATING SYSTEM

PRIMERS	<p>Steel: Series 1, 20, H123, 27, 374, 66, 169, 169F, N69, N69F, V69, V69F, 90-97, 1190-97, 910-1K57, 91-81-C, 1190-81-C, 54-11-C, 134, 134-1, 11-40F, N140, N140F, V140, V140F, 141, 161, 304, 533</p> <p>Galvanized Steel & Non-Ferrous Metal: Series 66, 169, 169F, N69, N69F, V69, V69F, 161</p> <p>Concrete: Series 66, 169, 169F, N69, N69F, V69, V69F, 141, 161, 1294</p> <p>CMR: Series 1294</p> <p>Note: Series 930 exterior exposed more than 24 hours. Series 169, N69, V69, 139, 1140, N140, or V140 exterior exposed more than 60 days. Series 169F, N69F, V69F, 1140F, N140F or V140F exterior exposed more than 30 days, or Series 140 exterior exposed more than 14 days must first be scuffed or sanded with themselves. Brush blasting with fine slats is the preferred method of scuffing. Repeat windows for other primers may apply. See these data sheets for additional information.</p>
TOPCOATS	Series 201, 201, 240, 250, 1070, 1070V, 1071, 1071V, 1072, 1072V, 1074, 1074U, 1075, 1075U, 1077, 1078

SURFACE PREPARATION

ALL SURFACES Must be clean, dry and free of oil, grease and other contaminants. See product data sheet for surface preparation recommendations.

TECHNICAL DATA

VOLUME SOLIDS	58.0 ± 1.0% (mixed) †												
RECOMMENDED DFT	2.0 to 3.0 mils (50 to 125 microns) per coat. Note: Number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Thacoac representative.												
DWBS TIME	<table border="1"> <thead> <tr> <th>Temperature</th> <th>To Touch</th> <th>To Handle</th> <th>To Recoat</th> </tr> </thead> <tbody> <tr> <td>75°F (24°C)</td> <td>1 hour</td> <td>3-6 hours</td> <td>12 hours</td> </tr> </tbody> </table> <p>Coat time varies with surface temperature, air movement, humidity and film thickness. Note: For faster drying and low-temperature applications, add Nts. 44-710 Ultracure Accelerator, see separate product data sheet.</p>	Temperature	To Touch	To Handle	To Recoat	75°F (24°C)	1 hour	3-6 hours	12 hours				
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0.27 lbs/gal solids	0.27 lbs/gal solids	0.27 lbs/gal solids	0.27 lbs/gal solids	0.27 lbs/gal solids	0.32 lbs/gal solids								
THEORETICAL COVERAGE	5.70 mil sq ft/gal (22.8 m ² /l at 25 microns) †												
NUMBER OF COMPONENTS	Two Part A and Part B												
MIXING RATIO	By volume, Four (Part A) to one (Part B)												
PACKAGING	<table border="1"> <thead> <tr> <th></th> <th>PART A</th> <th>PART B</th> <th>When Mixed</th> </tr> </thead> <tbody> <tr> <td>5 Gallon Kit</td> <td>5 gallon pail (partial fill)</td> <td>1 gallon can</td> <td>5 gallons (15.9L)</td> </tr> <tr> <td>1 Gallon Kit</td> <td>1 gallon pail (partial fill)</td> <td>1 quart can (partial fill)</td> <td>1 gallon (3.78L)</td> </tr> </tbody> </table>		PART A	PART B	When Mixed	5 Gallon Kit	5 gallon pail (partial fill)	1 gallon can	5 gallons (15.9L)	1 Gallon Kit	1 gallon pail (partial fill)	1 quart can (partial fill)	1 gallon (3.78L)
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NET WEIGHT PER GALLON	12.11 ± 0.21 lbs (5.50 ± 0.11 kg) †												
STORAGE TEMPERATURE	Minimum 23°F (-7°C) Minimum 110°F (43°C)												
TEMPERATURE RESISTANCE	(Dry) Continuous 240°F (121°C) Intermittent 275°F (135°C)												
SELF LIFE	Part A: 24 months at recommended storage temperature. Part B: 12 months at recommended storage temperature.												
FLASH POINT - SEB	Part A: 55°F (13°C) Part B: 112°F (45°C)												
HEALTH & SAFETY	Paint products contain chemical ingredients which are considered hazardous. Read container label warning and Material Safety Data Sheet for important health and safety information prior to the use of this product. Keep out of the reach of children.												

ENDURA-SHIELD® | SERIES 73

APPLICATION

COVERAGE RATES

Conventional Method (Spray, Brush or Roller)

	Dry MILs (MICRONS)	Wet MILs (MICRONS)	Sq FT/Gal (m ² /Gal)
Suggested	2.5 (63) ¹	4.5 (115)	572 (14.6)
Maximum	2.0 (50)	3.5 (88)	468 (11.7)
Minimum	3.0 (75)	5.0 (125)	319 (29.8)

High Build (Spray Only)

	Dry MILs (MICRONS)	Wet MILs (MICRONS)	Sq FT/Gal (m ² /Gal)
Suggested	4.0 (100)	7.0 (175)	233 (21.6)
Maximum	3.0 (75)	5.0 (125)	319 (29.8)
Minimum	5.0 (125)	8.5 (215)	185 (17.3)

(1) Can be spray applied at 5.0 to 5.0 mils (75 to 125 microns) DFT per coat when extra protection or the distribution of a coat is desired.

(2) Can be sprayed, brushed or rolled at 2.0 to 3.0 mils (50 to 75 microns) DFT per coat for use in systems requiring a cross-linked total system.

Allow for overspray and surface irregularities. Wet film thickness is rounded to the nearest 0.5 mil or 5 microns.

Application of coating below minimum or above maximum recommended dry film thicknesses may adversely affect coating performance. †

MIXING

Stir contents of the container marked Part A, making sure no trapped materials on the bottom. Add the contents of the can marked Part B to Part A while under agitation. Continue agitation until the two components are thoroughly mixed. When used with 44-710 Urethane Accelerator, first blend 44-710 with Part A under agitation, combine as above. Do not use mixed material beyond pot life limits. **Caution: Part B is moisture-sensitive and will react with atmospheric moisture. Keep unopened material tightly closed at all times.**

THICKENS

For air spray, thin up to 10% or 1/4 pint (160 mL) per gallon by volume with No. 42 Thinner if temperatures are below 80°F (27°C), use No. 40 Thinner for temperatures above 80°F (27°C). Thin up to 5% or 1/4 pint (80 mL) per gallon for airless spray. For brush or roller, thin 5% to 10% or 1/4 to 1/2 pint (160 to 320 mL) per gallon with No. 37 or No. 61 Thinner. Thinning is required for proper brush or roller application. Note: A maximum of 10% of No. 36 Thinner may be used in compliance with VOC regulations. **Caution: Do not add thinner if more than thirty (30) minutes have elapsed after mixing.**

POT LIFE

8 hours at 40°F (4°C) 4 hours at 77°F (25°C) 2 hours at 100°F (38°C)

APPLICATOR EQUIPMENT

Air Spray

Gun	Fluid Tip	Air Cap	Air Line ID	Manif. Hose ID	Atomizing Pressure	Pot Pressure
DeVilbiss XIA	Ø	205 or 704	3/16" or 3/8" (7.9 or 9.5 mm)	1/8" or 1/2" (3.2 or 12.7 mm)	75-90 psi (5.2-6.2 bar)	10-20 psi (0.7-1.4 bar)

Low temperatures or longer hoses require higher pot pressure.

Airless Spray

Tip Orifice	Atomizing Pressure	Manif. Hose ID	Manifold Filter
0055-0607" (1.38-4.92 mm)	2700-3900 psi (186-270 bar)	1/4" or 3/8" (6.4 or 9.5 mm)	60 mesh (250 microns)

Use appropriate tip/orifice pressure for equipment, application technique and weather conditions.

Notes: Use 1/4" to 3/8" (6.4 mm to 9.5 mm) synthetic woven rag roller cover. Do not use long nap roller covers. Note: Two coats are required to obtain dry film thickness above 3.0 mils (75 microns).

Notes: Recommended for steel areas only. Use high quality natural or synthetic brock brushes. Note: Two or more coats may be required to obtain recommended film thicknesses.

MINIMUM TEMPERATURE

Minimum 34°F (2°C) Maximum 120°F (49°C)

The surface should be dry and at least 5°F (9°C) above the dew point.

Cure time necessary to reach direct contact with moisture at surface temperature:

40°F (4°C), 24 to 48 hours 90°F (32°C), 18 to 24 hours 60°F (16°C), 12 to 16 hours

70°F (21°C), 4 to 8 hours 50°F (10°C), 2 to 4 hours 100°F (38°C), 2 to 3 hours

If the coating is exposed to moisture before the preceding cure parameters are met, dull, flat or spotty appearing areas may develop. Actual times will vary with air movement, film thickness and humidity.

CLEANUP

Flush and clean all equipment immediately after use with the recommended thinner or AGK.

† Values may vary with color.

WARRANTY & LIMITATION OF REMEDY LIABILITY: THESE COMPANY, INC. MAKES ONLY THAT WHICH IS STATED HEREIN AND THE LIMITATION OF REMEDY OF THESE COMPANY, INC. IS THAT THE PRODUCT WILL BE REPAIRED OR REPLACED AT THE OPTION OF THESE COMPANY, INC. IF IT IS FOUND TO BE DEFECTIVE OR DOES NOT MEET THE SPECIFICATIONS OF THESE COMPANY, INC. FOR A PARTICULAR PURPOSE, PROVIDED THAT THE PRODUCT HAS BEEN USED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THESE COMPANY, INC. AND THAT THE DEFECT OR PERFORMANCE FAILURE IS NOT THE RESULT OF MISUSE, ABUSE, NEGLIGENCE, OR IMPROPER APPLICATION. THESE COMPANY, INC. SHALL NOT BE RESPONSIBLE FOR DAMAGE TO PROPERTY OR PERSONS OR FOR CONSEQUENTIAL DAMAGES. THESE COMPANY, INC. MAKES NO WARRANTY, REPRESENTATION, OR ENDORSEMENT FOR ANY OTHER PRODUCTS, SERVICES, OR MATERIALS. THESE COMPANY, INC. SHALL NOT BE RESPONSIBLE FOR ANY OTHER PRODUCTS, SERVICES, OR MATERIALS. THESE COMPANY, INC. SHALL NOT BE RESPONSIBLE FOR ANY OTHER PRODUCTS, SERVICES, OR MATERIALS. THESE COMPANY, INC. SHALL NOT BE RESPONSIBLE FOR ANY OTHER PRODUCTS, SERVICES, OR MATERIALS.

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SSPC-SP5/NACE 1

White Metal Blast Cleaning. White Metal Blast Cleaning (SSPC-SP5/NACE 1) is a standard for cleaning unpainted or painted steel surfaces prior to applying high performance protective coating or lining systems. This standard is specified to remove all visible oil, grease, dust, dirt, mill scale, rust, existing coatings, oxides, corrosion products other foreign matter from the metal surface. White metal blast cleaning is the standard when cleaning metal surfaces for immersion services that require the highest level of cleaning prior to applying the protective coating system. The metal surfaces shall be the same temperature as the air temperature. The abrasives used for white metal blast cleaning shall be dry and free of all contaminants including grease, oil, dust and dirt. Air compressors used for applying abrasives shall be checked and monitored for oil and moisture contamination that can affect the metal surfaces to be cleaned. White metal blast cleaning accomplishes two objectives – it provides the cleanest surface possible to help prevent early failure of the new metal coating system, as well as providing an adequate metal roughness to establish a better adhesive surface for the new coating system to be applied.

SSPC-SP6/NACE 3

Commercial Blast Cleaning. Removal of mill scale, rust, rust scale, paint or foreign matter by the use of abrasives propelled through nozzles or by centrifugal wheels, to the degree specified. A Commercial Blast Cleaned Surface Finish is defined as one from which all oil, grease, dirt, rust scale and foreign matter have been completely removed from the surface and all rust, mill scale and old paint have been completely removed except for slight shadows, streaks, or discolorations caused by rust stain, mill scale oxides or slight, tight residues of paint or coating that may remain; if the surface is pitted, slight residues of rust or paint may be found in the bottom of pits; at least two-thirds of each square inch of surface area shall be free of all visible residues and the remainder shall be limited to the light discoloration, slight staining or tight residues mentioned above. Should additional information be required refer to The Society for Protective Coatings, Joint Surface Preparation Stand, SSPC-SP 6/Nace No. 3, Commercial Blast Cleaning.

SSPC-SP10/NACE 2

Near-White Blast Cleaning. Removal of nearly all mill scale, rust, rust scale, paint, or foreign matter by the use of abrasives propelled through nozzles or by centrifugal wheels, to the degree hereafter specified. A Near-White Blast Cleaned Surface Finish is defined as one from which all oil, grease, dirt, mill scale, rust, corrosion products, oxides, paint or other foreign matter have been completely removed from the surface except for very light shadows, very slight streaks or slight discolorations caused by rust stain, mill scale oxides, or light, tight residues of paint or coating that may remain. At least 95 percent of each square inch of surface area shall be free of all visible residues, and the remainder shall be limited to the light discoloration mentioned above. Should additional information

be required refer to The Society for Protective Coatings, Joint Surface Preparation Standard, SSPC-SP 10/Nace No. 2, Near-White Metal Blast Cleaning.