

**PERFORMANCE BASED EVALUATION AND ACCEPTANCE
OF STRUCTURAL STEEL COATING SYSTEMS**

1. **SCOPE:** This method outlines the process for submission of structural steel coating systems for approval for use on both new construction and maintenance structural steel coatings projects conducted by the Department.
2. **SUBMISSION:**
 - 2.1. **Category I Submission Process:**
 - 2.1.1. Coating systems shall be evaluated for performance through the National Transportation Product Evaluation Program (NTPEP) for Structural Steel Coatings. Submission of products through AASHTO/NTPEP is a continuous process. Manufacturers may submit systems at any time.
 - 2.2. **Category II Submission Process:**
 - 2.2.1. Coating systems shall be evaluated for performance through the University of Kentucky Transportation Center (UKTC). Manufacturers may submit systems at any time.
3. **APPROVAL PROCESS:** A submitted coating system will be given approval for each appropriate Class and Type for which the system meets the minimum established performance criteria.
 - 3.1. **Class I:** Coating systems submitted through Category I, utilizing zinc rich primers that meet the minimum performance acceptance criteria established by the Department. Class I coating systems are acceptable for use as fabrication shop applied primers to steel surfaces prepared by abrasive blasting to a minimum of a Society for Protective Coatings (SSPC) SP-10 / NACE No.2, Near White Metal Blast with fabrication shop applied or field applied intermediates and/or finish coats.

<i>Type I</i>	Three coat system using an epoxy based organic zinc rich primer
<i>Type II</i>	Three coat system using a urethane based organic zinc rich primer
<i>Type III</i>	Two coat system using an epoxy based organic zinc rich primer
<i>Type IV</i>	Two coat system using a urethane based organic zinc rich primer
<i>Type V</i>	Three coat system using an inorganic zinc rich primer
<i>Type VI</i>	Two coat system using an inorganic zinc rich primer
 - 3.2. **Class II:** Coating systems submitted through either Category I or Category II, utilizing zinc rich primers that meet the minimum performance acceptance criteria established by the Department. Coating systems submitted through Category I meeting the established acceptance criteria for Class I, Types I through IV without regard to Slip Coefficient shall

be acceptable as Class II coatings systems. Class II coating systems are acceptable for use as field applied zinc rich primers to steel surfaces prepared by abrasive blasting.

<i>Type I</i>	Three coat system using an epoxy based organic zinc rich primer
<i>Type II</i>	Three coat system using a urethane based organic zinc rich primer
<i>Type III</i>	Two coat system using an epoxy based organic zinc rich primer
<i>Type IV</i>	Two coat system using a urethane based organic zinc rich primer

- 3.3. Class III: Coating systems submitted through Category I, utilizing non-zinc rich primers that meet the acceptance criteria established by the Department. Class III coating systems are acceptable for use as field applied coating systems to steel surfaces prepared by abrasive blasting.

<i>Type I</i>	Three coat system using an epoxy based primer
<i>Type II</i>	Three coat system using a urethane based primer
<i>Type III</i>	Three coat system using an acrylic based primer
<i>Type IV</i>	Two coat system using an epoxy based primer
<i>Type V</i>	Two coat system using a urethane based primer
<i>Type VI</i>	Two coat system using an acrylic based primer
<i>Type VII</i>	Two coat system using a long-oil alkyd based primer
<i>Type VIII</i>	Single coat system using a long-oil alkyd

- 3.4. Class IV: Coating systems submitted through Category II, utilizing non-zinc rich primers that meet the acceptance criteria established by the Department. Class IV coating systems are acceptable for use as field applied coating systems to steel surfaces prepared by means other than abrasive blasting.

<i>Type I</i>	Three coat system using an epoxy based primer
<i>Type II</i>	Three coat system using a urethane based primer
<i>Type III</i>	Three coat system using an acrylic based primer
<i>Type IV</i>	Two coat system using an epoxy based primer
<i>Type V</i>	Two coat system using a urethane based primer
<i>Type VI</i>	Two coat system using an acrylic based primer
<i>Type VII</i>	Two coat system using a long-oil alkyd based primer
<i>Type VIII</i>	Single coat system using a long-oil alkyd

- 3.5. Class V: Coating systems submitted through Category II, utilizing innovative technologies not defined in Classes I through IV that meet the acceptance criteria established by the Department. Acceptable use of Class V coating systems will be detailed through project specific special notes.

4. PERFORMANCE CRITERIA: Each of the following tables defines the acceptable performance criteria for the designated Class and Type of coating system. For each performance parameter, a minimum of two of the three evaluated specimen panels shall meet or exceed the stated acceptable performance criteria.

- 4.1. Class I, Types I through IV

<i>Performance Test</i>	<i>Performance Parameter</i>	<i>Performance Criteria</i>
Adhesion		
	Primer to Substrate	1000 PSI Minimum
	System to Substrate	1000 PSI Minimum
Thermal Cycling		
	Primer to Substrate	750 PSI Minimum
	System to Substrate	750 PSI Minimum
Cyclic Weathering		
5000 Hours Exposure	Rust Creep	5mm Average*
	Color Retention	Report*
	Gloss Retention	Report*
	Blistering	10
	Field Rusting	10
Salt Fog		
5000 Hours Exposure	Rust Creep	3mm Average*
	Blistering	10
	Field Rusting	10
Slip Coefficient		Class B Minimum
Atmospheric Weathering		
2 Years Exposure	Rust Creep	3mm Average*
	Color Retention	Report*
	Gloss Retention	Report*
	Blistering	10
	Field Rusting	10

4.2. Class I, Types V and VI

<i>Performance Test</i>	<i>Performance Parameter</i>	<i>Performance Criteria</i>
Adhesion		
	Primer to Substrate	1000 PSI Minimum
	System to Substrate	1000 PSI Minimum
Thermal Cycling		
	Primer to Substrate	750 PSI Minimum
	System to Substrate	750 PSI Minimum
Cyclic Weathering		
5000 Hours Exposure	Rust Creep	3mm Average*
	Color Retention	Report*
	Gloss Retention	Report*
	Blistering	10
	Field Rusting	10
Salt Fog		
5000 Hours Exposure	Rust Creep	2mm Average*
	Blistering	10
	Field Rusting	10
Slip Coefficient		Class B Minimum
Atmospheric Weathering		
2 Years Exposure	Rust Creep	3mm Average*

	Color Retention	Report*
	Gloss Retention	Report*
	Blistering	10
	Field Rusting	10

4.3. Class II, Types I through IV

<i>Performance Test</i>	<i>Performance Parameter</i>	<i>Performance Criteria</i>
Accelerated Performance		
5000 Hours Exposure	Rust Creep	5mm Average*
	Color Retention	Report*
	Gloss Retention	Report*
	Blistering	10
	Field Rusting	10

4.4. Class III, Types I through VI

<i>Performance Test</i>	<i>Performance Parameter</i>	<i>Performance Criteria</i>
Adhesion		
	Primer to Substrate	750 PSI Minimum
	System to Substrate	500 PSI Minimum
Thermal Cycling		
	Primer to Substrate	750 PSI Minimum
	System to Substrate	500 PSI Minimum
Cyclic Weathering		
5000 Hours Exposure	Rust Creep	15mm Average*
	Color Retention	Report*
	Gloss Retention	Report*
	Blistering	10
	Field Rusting	10
Salt Fog		
5000 Hours Exposure	Rust Creep	5mm Average*
	Blistering	10
	Field Rusting	10
Atmospheric Weathering		
2 Years Exposure	Rust Creep	5mm Average*
	Color Retention	Report*
	Gloss Retention	Report*
	Blistering	10
	Field Rusting	10

4.5. Class III, Types VII and VIII

<i>Performance Test</i>	<i>Performance Parameter</i>	<i>Performance Criteria</i>
Adhesion		
	Primer to Substrate	750 PSI Minimum
	System to Substrate	500 PSI Minimum

Thermal Cycling		
	Primer to Substrate	750 PSI Minimum
	System to Substrate	500 PSI Minimum
Cyclic Weathering		
5000 Hours Exposure	Rust Creep	5mm Average*
	Color Retention	Report*
	Gloss Retention	Report*
	Blistering	10
	Field Rusting	10
Salt Fog		
5000 Hours Exposure	Rust Creep	3mm Average*
	Blistering	10
	Field Rusting	10
Atmospheric Weathering		
2 Years Exposure	Rust Creep	3mm Average*
	Color Retention	Report*
	Gloss Retention	Report*
	Blistering	10
	Field Rusting	10

4.6. Class IV, Types I through VI

<i>Performance Test</i>	<i>Performance Parameter</i>	<i>Performance Criteria</i>
Accelerated Performance		
5000 Hours Exposure	Rust Creep	15mm Average*
	Color Retention	Report*
	Gloss Retention	Report*
	Blistering	10
	Field Rusting	10

4.7. Class IV, Types VII and VIII

<i>Performance Test</i>	<i>Performance Parameter</i>	<i>Performance Criteria</i>
Accelerated Performance		
5000 Hours Exposure	Rust Creep	5mm Average*
	Color Retention	Report*
	Blistering	10
	Field Rusting	10

4.8. Class V

<i>Performance Test</i>	<i>Performance Parameter</i>	<i>Performance Criteria</i>
Accelerated Performance		
5000 Hours Exposure	Rust Creep	*
	Color Retention	Report*
	Gloss Retention	Report*
	Blistering	10

	Field Rusting	10
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* Values are assigned as target values and are subject to change pending accelerated weathering performance of submitted systems with known field performance characteristics within Kentucky.

5. REMOVAL PROCESS: Coating systems may be removed from the Departments List of Approved Materials based on any of the following requirements. Coating systems removed from the List of Approved Materials shall not be eligible for re-submission for one calendar year from the date of removal.
 - 5.1. Verification Testing: Rejection of any three (3) lots of any product within a single calendar year shall constitute grounds for removal of all approved coating systems containing the rejected product.
 - 5.1.1. Appropriate chemical and physical properties will be verified for compliance to Section 821 of the Kentucky Standard Specifications for each product of a coating system delivered for use. The target value for each property evaluated shall be established from data obtained through the selected submission process. Appropriate differences in chemical and physical properties related to change of finish coat color to meet Kentucky project specifications shall be given consideration. The manufacturer shall be notified in writing of each rejection of each product.
 - 5.2. Requalification Testing (Category I Submissions): Failure to comply with the requalification requirements set forth under the AASHTO/NTPEP Structural Steel Coatings Technical Committee and maintain compliance to the applicable established acceptance criteria.
 - 5.2.1. Requalification data for chemical and physical properties of each product within a submitted system shall meet the Specification Acceptance Range as defined in Section 821 of the Kentucky Standard Specifications. Requalification data for performance characteristics of submitted systems shall meet the applicable requirements of this method.
 - 5.3. Field Performance Evaluation: Failure of the coating system to be suitably applied within the recommendations of the coating manufacturer or failure of the coating system to provide a durable protective product.

APPROVED

DIRECTOR
DIVISION OF MATERIALS

DATE

05/09/08

Kentucky Method 64-266-08
Dated 05/09/08

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