SPECIFICATION FOR THE REPAINTING OF PASSENGER CAR AND LOCOMOTIVE EXTERIORS

Revision No. 4, June 2016

1.0 GENERAL

1.1 Scope: This specification covers the surface preparation and coating application requirements for performing maintenance painting on the exterior of railroad passenger cars and locomotives for Alaska Railroad Corporation (ARRC). In this context, exterior refers to the sides, roof, ends, vestibule interior(s) and underframe equipment. Substrates include existing intact and adherent coating, high strength low alloy carbon steel, aluminum and durable epoxy body filler. Maintenance painting may include any of the following strategies: spot repairs, spot repairs and over coating, zone repairs and full removal and replacement.

Surface preparation shall include methods for spot repairs, spot repairs and overcoating, zone repairs and full removal and replacement of existing coating systems.

Power Washing, LPWC	SSPC-SP WJ-4/NACE WJ-4
Solvent Cleaning	SSPC-SP 1
Hand and Power Tool Cleaning	SSPC-SP 2, SSPC-SP 3, SSPC-SP 15, SSPC, SP 11
Abrasive Blast Cleaning	SSPC- SP 7/NACE No. 4, SSPC-SP 6/NACE No. 3, SSPC-SP 16
Aluminum Preparation	ASTM D1730

Coating application methods include brush, roller, dauber, conventional spray, HVLP (high volume low pressure) spray, airless spray and plural component airless spray for polyurea application.

1.2 Reference Documents: The following is a listing of the publications referenced in this section of the Technical Specifications. Unless otherwise noted, the latest revision of the standards in effect at the time of bid shall apply. The absence of a reference otherwise identified does not negate the requirements or information therein.

American Society for Testing Materials

ASTM D1730 09	Standard Practices for Preparation of Aluminum and Aluminum-Alloy Surfaces for Painting
ASTM D 3359	Standard Test Methods for Measuring Adhesion by Tape Test

ASTM D 4138	Standard Test Methods for Measurement of Dry Paint Thickness of Protective Coating Systems by Destructive Means
ASTM D 4285	Standard Test Method for Indicating Oil or Water in Compressed Air
ASTM D 4414	Standard Practice for Measurement of Wet Film Thickness by Notch Gages
ASTM D 4417	Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel. Method C
ASTM D 4541	Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
ASTM D4752	Standard Test Method for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub"
ASTM D 6386	Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting
ASTM D 7091	Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals

SSPC: The Society for Protective Coatings (SSPC)

SSPC-SP 1	Solvent Cleaning
SSPC-SP 2	Hand Tool Cleaning
SSPC-SP 3	Power Tool Cleaning
SSPC-SP 15	Commercial Grade Power Tool Cleaning
SSPC- SP 7/ NACE No. 4	Brush-Off Blast Cleaning
SSPC-SP 6/ NACE No. 3	Commercial Blast Cleaning
SSPC-SP WJ-4/NACE WJ-4	Waterjet Cleaning of Metals WJ-4 – Light Cleaning

SSPC-SP 16	Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals
SSPC-VIS 1	Visual Standard for Abrasive Blast Cleaned Steel
SSPC-VIS 3	Visual Standard for Hand and Power Tool Cleaned Steel

Equipment and Coating Manufacturer Published Instructions
Code of Federal Regulations (CFR)

29 CFR 1910, Occupational Safety and Health Regulations for General Industry

29 CFR 1926, Occupational Safety and Health Regulations for the Construction Industry

40 FR 261-268, Resource Conservation and Recovery Act (RCRA)

2.0 MATERIALS: All supplied materials shall be finest quality, suitable for the intended purpose and supplied in original unopened containers. Provide Manufacturer's Warranties for coating performance including blisters and adhesion to properly prepared surfaces. All finish coating products shall also be supplied with the Manufacturer's Warranty for gloss and color retention. Provide manufacture technical data sheets and material safety data sheets for all materials supplied and incorporated into the work.

2.1 Abrasives: Supply abrasives meeting the requirements of SSPC-AB 1 (Mineral and Slag Abrasives) and/or SSPC-AB 4 (Recyclable Encapsulated Abrasive Media). In no case shall steel or iron abrasives be used on stainless steel, aluminum or galvanized surfaces.

2.1.1 Mineral abrasives shall be Type 1[1], Grade 1[2] Class A[3] mineral abrasives per SSPC-AB 1 that will remove existing coating, rust, and scale from substrates to be prepared by abrasive blast cleaning. Abrasives shall be free of oil and meet the water soluble contaminant requirements of Section 4.1.4. When recyclable abrasives are used verify the cleaned recycled abrasive meets the requirements of 4.4 Quality Control Tests for Recycled Work Mix.

2.1.2 Encapsulated abrasive (e.g. Spongjet) shall contain mineral abrasives meeting the requirements of 2.1.1. and produce an anchor profile of 0.5 to

[1] Natural mineral Abrasives
[2] Abrasives that produce surface profiles of 1.5 to 2.5 mils (38 to 64 micrometers [μm]) when tested in accordance with Section 4.1.8.
[3] Containing no more than 1.0% free silica

1.5 mils. Recycled and cleaned encapsulated abrasive media shall conform to the requirements of SSPC-AB 4 Sections 6.2.1.2 Test for Classifier Efficiency, 6.2.2 Water-Soluble Contaminants and 6.2.3 Oil Content.

2.2 Coatings and Thinners: Provide paints, coatings, thinners in original unopened containers. Products or product components that have exceeded their shelf life before the date of application shall not be used. Use only thinners recommended by the coating manufacturer. The coating products listed herein are representative of the type and quality required for application. All coatings shall be provided by the same manufacturer[4]. Table 1 provides alternate systems by PPG Industries and Sherwin-Williams.

2.2.1 Substitutions - Materials specified are those which have been evaluated for the specific service. Products are listed to establish a standard of quality. ARRC approved equal(s) for each product may be substituted. Submit requests for material substitution no later than two weeks[5] prior to date of surface preparation. No substitution of materials is allowed without ARRC written approval. All coatings shall be provided by the same manufacturer[4]. Products of manufacturers other than those specified or approved by ARRC will be accepted when proven to the satisfaction of the County they are equal in composition, durability, usefulness and convenience for the purpose intended. Substitutions will be considered provided the following minimum conditions are met:

The proposed coating or paint system shall have a dry film thickness (DFT) equal to or greater than that of the specified system.

The proposed coating or paint system shall employ an equal or greater number of separate coats.

The proposed coating or paint system shall employ coatings or paints of the same generic type.

All requests for substitution shall carry full descriptive literature and directions for application, along with complete information on generic type, non-volatile content by volume and a list of 10 similar projects, all at least three years old, where the coatings or paints have been applied to a similar exposure.

If the above mentioned data appears to be in order, ARRC may require

[4] Should use of materials from different manufacturers be requested include a letter from at least one of the manufacturers that states it will warranty against all compatibility related failures.
[5] material availability may require a different lead time

that the Contractor provide certified laboratory data sheets showing the results of complete spectrographic and durability tests accomplished on the proposed substitute. An independent testing laboratory satisfactory to ARRC shall accomplish tests and all costs incurred in the testing program shall be borne by the Contractor. In any case, ARRC shall be sole and final judge of the acceptability of any proposed substitution. Requests for substitution must be approved in writing.

2.2.2 Primer: Primer coats may include wash primers for aluminum, galvanized and stainless substrates, epoxy primer for steel surfaces or penetrating sealers to serve as tie- coats for application over existing coatings.

Dupont WP™ Chrome-Free Wash/Etching Pre-Treatment Primer

Corlar® 2.1-St™ Satin High Solids Epoxy Mastic

Imron® Industrial Strength Low VOC Polyurethane Primer

DuPont™ Epoxy DTM Primer/Sealer 2510S/2540S/2570S/2580CR under filler

2.2.3 Intermediate Coat: Intermediate coats may include epoxy, polyurethane or moisture cure polyurethane to provide barrier protection and film build.

Corlar® 2.1-St™ Satin High Solids Epoxy Mastic

2.2.4 Finish Coat: The finish coat shall be a two component polyurethane product with excellent color retention weather resistance. Fluoropolymer coatings based on urethane chemistry may be submitted for review. Provide finish coating products in the colors required for the work. See Section 2.3 and Section 4.0 of this specification.

Imron® 3.5 HG™ +Polyurethane High Gloss Topcoat

Clear Coat- The clear coat shall be two-component polyurethane compatible with the finish coat

Imron® 3.5 HG-C™ High Gloss Clear Polyurethane

2.3 Colors: Provide finish coats to match the following color designations even if the coating supplier is not the manufacturer identified.

Aluminum:	Seymour of Sycamore, Inc. #620-1411 Sherwin Williams B59S11

Other Colors:

Exterior	Dupont Imron 5000 (numbers for Imron 3.5HG):
Yellow:	54701
Blue:	63203
Black:	24926
Silver:	see Aluminum
Clear Coat:	Imron 3.5HG-C clear
Interior	Dulux Color Numbers:
Beige:	LFQ4G34P (locomotive cabs and short hoods)
Grey:	LF25W34P (locomotive engine rooms)

2.4 Caulks, Sealants and Body Fillers: Provide paintable caulks and sealants recommended by the coating manufacturer. Use high solids epoxy body putty suitable for repair of dents, buckles and depressions in the car bodies. Table 2 provides alternate products for use with PPG Industries systems.

Suitable products include:

DuPont™ Premier Filler™ LE 3401S™/LE 3404S™/ LE 3407S™ Urethane Primer Filler

DuPont Premium Lightweight Body Filler 313

3M™ Quick Grip Filler /3M™ Short Strand Fiberglass Reinforced Filler

3.0 EXECUTION

3.1 Workmanship: The performance of all work will be in accordance with industry standards, best practices and applicable state local and federal safety and environmental rules and regulations. Public image is very important to ARRC and the major purpose in undertaking this work is to promote that image including appearance and stewardship.

3.2 Surface Preparation

NOTE: The contractor is hereby advised that many passenger cars still in service were built long before lead-based paints went out of favor and it is most likely that such paint will be found on them.

3.2.1 Surfaces shall be prepared in accordance with paint manufacturer's requirements and recommendations to the extent that they exceed this specification. The contractor shall bring to the attention of ARRC's project manager for resolution any conflict between these specifications and the manufacturer's published data. Tables 3 and 4 provides summary directions for surface preparation based on the substrate and maintenance painting requirements. Do not conduct final surface preparation unless the substrate temperature is a minimum of 5°F above the dew point. Provide clean dry compressed air for all operations where air may be used for surface preparation, surface blow-down, and coating application.

3.2.2 Cleaning- Prior to beginning surface preparation power wash and solvent clean (SSPC-SP 1) all surfaces to be prepared and coated. Use cleaning aids acceptable to the Engineer as necessary to remove soot, soils, sap, and surface dirt. Do not conduct surface preparation unless the substrate temperature is a minimum of 5°F above the dew point.

3.2.3 Spot Repairs- All areas of rust, corrosion, defective paint, cracked, lifting, deformed or otherwise defective caulks, sealers and fillers and oxidation shall be removed Exposed bare metal shall be solvent cleaned and prepared by abrasive blast cleaning (SSPC-SP 6) or may be prepared using power tool cleaning (SSPC-SP 11 or SSPC-SP 15). Produce an anchor profile of 1.5 to 2.0 mils as measured in accordance with ASTM D4417 Method C. Any defects on passenger cars requiring more than 1/8" of filler shall be brought to the attention of ARRC and work held pending a decision as to best method for repair.

Prepare existing adherent existing coating that will remain around the spot repair by sanding using hand or power tools (SSPC-SP 2 or SSPC-SP 3). Feather the edges of the coating around all spot repairs a minimum of 2 inches onto the existing coating and provide a smooth transition for the coating to be applied. Note that removed caulks, sealants and fillers will be replaced in kind. 3.2.3.

3.2.4 Spot Repairs and Overcoating- Perform spot repairs as required in Section 3.2.2. Adherent paint that will remain and be overcoated shall be etched or sanded in accordance with SSPC-SP 3 or SSPC-SP 7 for Steel and SSPC-SP 3 or SSPC-SP 16 for Aluminum and/or Stainless Steel.

3.2.5 Removal and Replacement- Complete or zone removal[6] of the existing coatings shall be performed by abrasive blast cleaning in accordance with SSPC-SP 6. Provide an anchor profile of 1.5 to 2.0 mils as measured in

[6] Zone removal refers to large surface areas that require removal and replacement but not to the extent that the entire car requires maintenance painting. For example, the work may be limited to trucks or roofs.

accordance with ASTM D4417 Method C. Conduct the cleaning with care when moving from steel to aluminum or stainless steel surfaces to avoid excess damage and unacceptable anchor profiles.

3.2.6 Use of Abrasives- Whenever abrasive blasting is performed; protect all surfaces not to be painted from damage and contamination by abrasives. This shall include air intakes, vents, bright metal, glass, gaskets, machined surfaces and mechanical and electrical equipment. All dust, abrasives and other interference materials shall be removed before priming.

3.2.7 Cleanliness-Verify the degree of cleanliness meets the applicable surface preparation criteria. Use SSPC-Vis 1 as an aid in evaluating surfaces prepared by abrasive blast cleaning. Use SSPC-Vis 3 as an aid in evaluating surfaces prepared by hand and power tool cleaning.

3.3 Seams and Uneven Surfaces

All seams and uneven surfaces, dents (depressions) in surface shall be roughened, feathered out primed and filled with compatible body filler suitable for temperature extremes of -60 to +100 F. Some patch work may need to be continuous from seam to seam, to prevent an undesirable finish variation. Old lettering (unless it is to be reapplied) shall be sanded out or filled so as to be illegible after application of the primer coat.

3.3.1 In preparation for painting, girder sheets shall be repaired and any loose side sheeting re-secured using fastening techniques standard to the car's original construction.

3.3.2 Holes, large dents, tears and corroded areas shall be patched (by welding with applicable type of stainless steel, aluminum or steel rod). Small dents (up to 1/8" deep) shall be filled using an epoxy or polyurethane body filler. Patch all damaged areas. Priming of mild carbon steel and non-ferrous metals shall be done before occurrence of any corrosion (detectable by eye or touch). Total film thickness of primer shall be 5 to 6 mils (wet) applied in one coat.

3.4 Application

3.4.1 All materials shall be applied and allowed to cure in strict accordance with manufacturer's requirements and recommendations. All applications and curing shall be done in a warm, dry and dust free atmosphere.

Ambient Conditions - Apply coatings under the following conditions unless the requirements of the coating manufacturer are more restrictive. .

Surface and Air Temperatures - Between 50ºF and 110ºF.

Relative Humidity - Less than 85%.

Dew Point - Surface temperature at least 5ºF above the dew point temperature of the surrounding air.

Frost/Rain - Do not apply coatings to surfaces containing frost or during rain, fog, or similar conditions.

Remove and replace any paint that is exposed to unacceptable conditions (e.g. rain or dew) prior to adequate curing.

It is the responsibility of the contractor to assure that the old finish is compatible with the new materials for spot repairs and overcoating. Any rework necessary due to reaction between the two materials shall be performed at no charge to ARRC.

3.4.2 Pre-treat prepared bare aluminum surfaces with Dupont WP™ Chrome-Free Wash/Etching Pre-Treatment Primer

Primer	Urethane	DFT	3-5
Primer	Epoxy Mastic	DFT	5-8

3.4.3 Primer shall be applied immediately after completion of surface preparation. In the case of bare metal, it shall be completed before the formation of any oxides.

3.4.4 Total film thickness of primer shall be 5 to 6 mils.

3.4.5 Finish coat and lettering

3.4.6 Finish coats shall be applied well within the time limits after immediately prior coat as specified by the paint manufacturer.

3.4.7 Application shall consist of two coats totaling 1.5 to 2 mils DFT.

3.4.8 Lettering shall be applied as shown on the detailed diagram.

3.4.9 Required lettering and logos will be painted on and cleared over.

3.4.10 Edges of all logos and any other decals or Scotch-Lite shall be sealed with a coat of clear lacquer prior to final (clear) coat.

3.4.11 Final Coat: After all painting and lettering is complete the entire car body shall be given one coat of Dupont Imron 3.5 HG-C™ clear-coat within the recoat window of the pigmented finish coats. The finished product shall present a high gloss "wet" appearance.

4.0 Color Scheme

Paint scheme shall be as described on the specific painting diagram for the particular piece of equipment involved. The basic color scheme is described here for information only:

4.1 Aluminum, HSLA steel and flat panel Budd built (“smooth side”) passenger cars:

Car body:

Blue with two yellow strips (on sides only, corner post to corner post):

On girder sheet: $21\frac{7}{8}$ " wide from 57 ¼ " to 79 $\frac{1}{8}$" Above Top of Rail (ATR).

On letter board: $3\frac{7}{8}$" wide from $131\frac{7}{8}$" to $135\frac{3}{4}$ " ATR.

Roof: Blue

Lettering:

Blue, on $21\frac{7}{8}$" yellow stripe as follows:

“ALASKA” in 9 1/4" (nominal) stylized font at left end of stripe (BR and AL), centered over truck.

Road number In 8" (nominal) stylized font, right end of strip (BR and AL), centered over truck.

Alaska Railroad logotype, 24” roundel, (yellow letters with open background allowing 63203 Blue to show), located at right end of each side (BL and AR) centered vertically on blue and horizontally 30” to the right of the visual end of the area (corner post or door post) if space permits, but not less than 21”. (Omit where space is insufficient.)

4.2 **Underframe equipment**: Black. Protect all tags, nameplates and stainless steel. Do not paint these items.

4.3 **Trucks**: Silver (aluminum color enamel per 2.3 applied without primer)

4.4 **Fluted Stainless** steel passenger cars shall be unpainted except as follows:

Striping: A blue stripe shall run the full length of the letter board

Lettering: "ALASKA" in extended yellow stylized font visually centered[7] on the letter board. Name or road number in yellow stylized font on a blue background

Logotype, underframe equipment and trucks: same as smooth side cars

5.0 QUALITY CONTROL

5.1 Contractor - The Contractor shall be held in strict accordance with the requirements and intent of the Specifications.

5.1.1 The Contractor shall perform and document Quality Control inspections and testing specified herein on all phases of surface preparation and coating application throughout the duration of the contract. Procedures or practices not specifically defined herein may be used provided they meet recognized and acceptable professional standards and are approved by ARRC.

Ambient Conditions – Sling Psychrometer, Electronic Gages

Cleanliness of compressed air supplies- ASTM D4285 at least once per shift

Degree of Cleanliness – As defined in the appropriate preparation standard aided by use of SSPC-Vis 1 and SSPC-Vis 3

Anchor Profile - ASTM D4417 Method C

Coating Mixing and Thinning - Products and thinner batch numbers

Include induction time and Potlife as appropriate.

Coating Wet Film Thickness (WFT) - ASTM D4414

Coating Dry Film Thickness (DFT) - SSPC-PA 2, Level 3 Criteria

5.1.2 All materials furnished and all work accomplished under the Contract shall be subject to Quality Assurance (QA) inspections by ARRC at its discretion. The Contractor shall provide access and allow for adequate time to perform all inspections. ARRC will pay the cost of its own inspection.

5.1.3 Work accomplished in the absence of prescribed inspections and may be required to be removed and replaced under the proper inspection. The entire cost of removal and replacement, including the cost of all materials

[7] On dome cars "visually centered" means centered on the dome.

used in the work thus removed, shall be borne by the Contractor regardless of whether the work removed is found to be defective or not.

6.0 UNACCEPTABLE DEFECTS: Unacceptable defects in the applied coating system shall be corrected at no cost to ARRC. Unacceptable defects include deficiencies in surface preparation or coating application that are:

6.1 Detectable by touch or unaided eye at any distance such as:

Off spray or dry spray (rough, sandy finish)

Bubbles, blistering, cracked, lifting or peeling coating

Over-spray or any paint on bright metal, glass and surfaces not scheduled for painting

6.2 Visible from a distance of three feet or more in any lighting condition as determined by ARRC: These include:

Sags, curtains, runs or wrinkles

Air bubbles, pin holes, craters, fish eyes or other poor wetting

Blushing, color bleeding

Fuzzy color separation

Orange peel finish visible from a distance of 10 feet or greater

7.0 COMPLETION

7.1 All masking shall be removed and touch-up work complete before equipment is released or shipped to ARRC.

7.2 ARRC reserves the right to perform a final inspection before shipping is permitted.

8.0 WARRANTEE: The contractor shall warrantee the finish against defects in materials and workmanship for two years of normal service anywhere on the Alaska Railroad.

8.1 The Contractor warrantee shall include the adhesion of paint including bubbles, blisters, cracking, delamination, peeling and flaking between coats or between the underlying substrates and coating materials. If any repairs become necessary, the contractor shall perform the work at a time and place convenient to ARRC. ARRC shall make every effort to release the equipment to the contractor at a time and place convenient to the contractor, but actual performance will of necessity be constrained by operational considerations.

8.2 The coating manufacturer shall provide a ten year warranty against color or gloss change of the finish coat and clear coats following its inspection of the [completed] work.

Table 1 – Coatings and Thinners for the Exterior Surfaces of Rail Cars.

Coat	Manufacturer Product Recommendations		
	DuPont	**PPG**	**SW**
Primer	Dupont WP™ Chrome-Free Wash/Etching Pre-Treatment Primer	PPG Delfleet F4940 3.5 VOC Wash Primer **See note 1.**	E2G970 Chrome Free Wash Primer
	Corlar® 2.1-St™ Satin High Solids Epoxy Mastic	PPG Amercoat AT 370 Epoxy Primer	NP75 Epoxy Primer
	Imron® Industrial Strength Low VOC Polyurethane Primer	-	E2A819 Urethane Primer
	DuPont™ Epoxy DTM Primer/Sealer 2510S/2540S/2570S/2580CR **(for under filler)**	-	E2A960 Epoxy Sealer
Intermediate	Corlar® 2.1-St™ Satin High Solids Epoxy Mastic	PPG Amercoat 370 Epoxy Primer	NP75 Epoxy Primer
Finish	Imron® 3.5 HG™ +Polyurethane High Gloss Topcoat	PPG Amercoat 450H Polyurethane **See Note 2.**	Genesis® 3.5 Urethane Topcoat)
	-	PPG AUE 360 Polyurethane **See Note 3.**	-
Clear Coat	Imron® 3.5 HG-C™ High Gloss Clear Polyurethane	PPG AUE40 Industrial Clear	CC950 Clear coat

Note 1- Use only under Urethane Primers on Aluminum

Note 2- This product is recommended to be used without a clear coat.

Note 3- This finish coat product can be clear coated with PPG AUE40 Industrial Clear

Table 2 – Caulks, Sealants and Body Fillers for the Exterior Surfaces of Rail Cars.

	DuPont	PPG	SW
Caulks, Sealants and Body Fillers	DuPont™ Premier Filler™ LE 3401S™/LE 3404S™/ LE 3407S™ Urethane Primer Filler	PPG Delfleet F 3975 Urethane Surfacer	Request Recommendations
	DuPont Premium Lightweight Body Filler 313	Recommendation- Evercoat Quantum Filler	-

Table 3 – Surface Preparation and Maintenance Painting Guidance for the Exterior Surfaces of Rail Cars.

Exterior Railcar Substrate	Maintenance Painting	Surface Preparation	Bare Metal Treatment	Primer	Finish	Clear Coat
Aluminum	Spot	SP 2, SP 3, SP 15, SP 16	Wash Primer	Epoxy	Polyurethane	Polyurethane
	Zone	SP 2, SP 3, SP 15, SP 6	Wash Primer	Epoxy	Polyurethane	Polyurethane
	Overcoat	SP 2, SP3, SP 16	Wash Primer	Epoxy	Polyurethane	Polyurethane
	Replace	SP 6	Wash Primer	Epoxy	Polyurethane	Polyurethane
Steel	Spot	SP 2, SP 3, SP 15, SP 16	Epoxy	Epoxy	Polyurethane	Polyurethane
	Zone	SP 2, SP 3, SP 15, SP 6	Epoxy	Epoxy	Polyurethane	Polyurethane
	Overcoat	SP 2, SP3	Epoxy	Epoxy	Polyurethane	Polyurethane
	Replace	SP 6	Epoxy	Epoxy	Polyurethane	Polyurethane
Stainless Steel	Spot	SP 2, SP 3, SP 15, SP 16	Wash Primer	Epoxy	Polyurethane	Polyurethane
	Zone	SP 2, SP 3, SP 15, SP 6	Wash Primer	Epoxy	Polyurethane	Polyurethane
	Overcoat	SP 2, SP3, SP 16	Wash Primer	Epoxy	Polyurethane	Polyurethane
	Replace	SP 6	Wash Primer	Epoxy	Polyurethane	Polyurethane

Table 4 – Surface Preparation and Maintenance Painting Guidance for the Exterior HVAC Wells and Roofs.

Exterior	Maintenance Painting	Surface Preparation[1]	Bare Metal Treatment	Primer	Finish[2]	Clear Coat
Railcar Roof	Spot	SP 2, SP 3, SP 15, SP 16	Immersion Grade Epoxy	Recommended Epoxy Primer	Polyurea	N/A
	Zone	SP 2, SP 3, SP 15, SP 6	Immersion Grade Epoxy	Recommended Epoxy Primer	Polyurea	N/A
	Replace	SP 6	Immersion Grade Epoxy	Recommended Epoxy Primer	Polyurea	N/A

1. Polyurea does not lend itself to overcoating.
2. Polyurea shall be used to line HVAC wells to achieve a water tight seal from standing water. Other roof top surfaces may be coated with the systems identified for the metal substrate of the roof.