SAMPLE ENGINEERING SPECIFICATION

AAR Deep Pit Style, Full Electronic Railroad Track Scales

PART 1 - GENERAL

1.1. Scope. This section sets forth the requirements for one full-electronic deep pit-style railroad track scale. The scale shall be furnished and installed complete as specified in the following paragraphs, including weighbridge, load cells, instrumentation, platform, reinforcing steel and channels, along with pit coping, foundation bolts, nuts, and bumper plates should be furnished by the manufacturer.

1.1.1. Acceptable Manufacturer. The track scale(s) furnished under this section shall be manufactured by Fairbanks Scales or equal.

1.2. General. Equipment furnished and installed under this section shall be assembled, erected, and placed in proper operating condition in full conformity with drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer unless exceptions are noted by the Engineer.

1.2.1. General Equipment Stipulations. The General Equipment Stipulations shall apply to all equipment furnished under this section.

1.2.2. Governing Standards. The scale systems shall have been issued a Certificate of Conformance by the National Type Evaluation Program, (N.T.E.P.) and shall conform to the following standards:

- National Institute of Standards and Technology (NIST), Handbook 44, "Specifications, Tolerances, and Technical Requirements for Weighing and Measuring Devices".
- AREA/AAR requirements for railroad track scales
- AREA/AAR Cooper E-80 bridge specifications
- Applicable state regulations for commercial weighing devices.
- American Welding Society AWS D1.1, latest edition.
- Weighbridge structural steel and structural steel embedments shall conform to ASTM A36.
- Reinforcing steel shall conform to ASTM A615, Grade 40 or Grade 60.

1.2.3. Anchor Bolts. All anchor bolts, nuts, and washers shall be made of carbon steel or comparable, and shall be plated.

1.2.4. Edge Grinding. Sharp projections of cut or sheared edges of ferrous metals, which are not to be welded, shall be ground as required to ensure paint adherence.

1.2.5. Surface Preparation. All ferrous metal surfaces, except stainless steel or plated steel, shall be blast cleaned in the shop in accordance with the paint manufacturer's recommendations. All mill scale, rust, and contaminants shall be completely removed before shop primer is applied. The components of each module shall be cleaned to an SSPC-SP6 finish prior to painting.

1.2.6. Shop Painting. All steel surfaces, except stainless steel or plated steel, shall be primed with a PPG ASP-795 Red Oxide Primer. The primer will be applied per the manufacturer's recommendations. See attached data sheet.

Additional field painting other than touchup painting of damaged surfaces will not be required.

1.2.7. Power Supply. Unless otherwise specified, the power supply to the equipment will be a dedicated 120 volt, single phase, 60 Hz connection. Where control voltages lower than the power supply voltage are required, suitable control power transformers shall be furnished.

1.2.8. Surge Voltage Protection. The scale system shall be surge and lightning protected. This protection shall include a surge protection device which plugs into a standard 115 VAC outlet. The load cells shall be optically isolated, and surge protected. The scale shall have a dual point ground rod system for the grounding of the weighbridge, power supply, and the sectional controllers. The surge voltage package shall be provided as a unit and be tested and approved by the scale manufacturer.

1.3. Submittals. Complete foundation and installation drawings, together with detailed specifications and data covering materials, parts, devices, and accessories forming a part of the equipment furnished, shall be submitted in accordance with the submittals section. Drawings shall cover all scale components, foundation details, and pier loading information necessary for the design of the scale foundation or installation.

PART 2 – PRODUCTS

1.4. Scale Design

1.4.1. General Description. The scale shall be a Fairbanks Series 12-149X or equal. Scale platform assembly shall consist of reinforced concrete deck, steel weighbridge supported on multiple load cells. Equipment is to consist of parts designed to act as a unit by a manufacturer experienced in design, construction, manufacture of electronic components, and operation of equipment for the purpose required.

1.4.2. Scale Capacity. The scale shall have a minimum scale capacity of 360 tons.

1.4.3. Sectional Capacity. The scale shall have a minimum sectional capacity of 180 tons.

1.4.4. Weighbridge Design. The platform shall be _____ feet long and _____ feet wide and shall have a 6” reinforced concrete deck poured on-site using 4000 psi compressive strength concrete. The deck is to be lined along the bottom with corrugated steel, a reinforcing mat shall be set into place the length and width of the scale deck and the deck channel is to have studs welded to the steel to form a composite structure when the concrete is added.

1.4.5. Checking. The scale shall utilize rigid check rods to minimize deck movement. Checking shall be mechanically isolated from the load cell, or load cell stands or base plates.

1.4.6. Load Cell and Controller/Junction Box Specifications. The load cell shall have a minimum capacity of 200,000 lbs. The load cell shall be provided with a shielded cable.

Minimum capacity:	200,000 lbs
Design	Compression Canister
Rated Output (mV/V):	2 ± 0.1%
NTEP Accuracy Class:	IIIL
Combined error (%FS):	≤ ± 0.02500%
Temperature effect on sensitivity (%/°C):	≤ ± 0.0072%
Excitation voltage:	10 Nom. 25 Max.
Zero balance (%FS):	≤ ± 5.0%
Compensated temperature range (°C):	–10° to 40°
Operating temperature range (°C):	–50° to 90°
Safe load limit (% of Capacity):	150%
Ultimate load (% of Capacity):	300%
Load cell material:	Stainless load button and base
Sealing:	Hermetically sealed

The scale shall have self-diagnostic capabilities able to identify load cell problems, failure, and predict failure before it occurs to prevent downtime. The diagnostics are to measure load cell counts (not weight) and will be used to determine reliability. Should a load cell fail, the instrumentation shall identify the specific load cell that has failed. All troubleshooting shall be done from within the scale house.

Load cell output shall be a DC analog signal. Load cells with digital output shall not be acceptable. Each load cell shall be optically isolated via a smart sectional controller. PC boards shall be encapsulated in epoxy or similar material. A board that is not protected in this fashion is unacceptable. Furthermore, each encapsulated board shall be housed in a type 304 Stainless steel enclosure rated NEMA 4X. Access to the encapsulated board within the smart sectional controller enclosure shall be achieved without the use of tools. Bolts, screws or other hardware shall not be used to seal the smart sectional controller enclosure.

1.5. Platform and Foundation Requirements. The weighbridge and load cell assemblies shall be supported by a reinforced concrete pier type or full slab foundation as indicated on the drawings. The dimensions for the scale foundation and platform shall be as recommended by the equipment manufacturer and accepted by the Engineer. Reinforcing steel placement and structural steel embedment placement shall be performed as shown on the manufacturer's foundation drawings.

The scale manufacturer shall furnish the following items for construction of the scale platforms and pits:

- Weighbridge modules
- Longitudinal and lateral rigid checking devices
- Load cells and load cell assemblies.
- Anchor bolts.
- Painted structural steel embedments for platform and endwall coping.

2. PART 3 – EXECUTION

2.1. Installation. The scale shall be manufactured, provided, and installed by a scale company that has a minimum of five years of experience installing similar track scale systems.

The installer shall configure the scale system as indicated on the certified drawings. All concrete work shall be as specified in the cast-in-place concrete section. Anchor bolts shall be set as required by the scale manufacturer's drawings.

2.2. Manufacturer's Field Services. Where scheduled in the equipment schedule section, an experienced, competent, and authorized representative of the manufacturer shall provide field services for equipment furnished under this section. Field services shall meet the requirements of Manufacturer's Field Services in the quality control section.

2.3. Field Testing and Acceptance. An authorized manufacturer's representative shall provide the required scale certification for capacity and accuracy to the Engineer as required by the applicable state department of weights and measures and any other applicable state or county agency.

2.4. Personnel Training. An experienced, competent, and authorized representative of the manufacturer shall train the Owner's personnel in operating, maintaining, and repairing the equipment specified in this section. The training provided shall meet the requirements of Personnel Training Services in the quality control section. The number of training sessions and duration of each session shall be as scheduled in the equipment schedule section.

End of Section

Commercial Performance Coatings

CPCPB101

Alkyd Shop Primers

ASP Series Primers

ASP-495 2.8 – Gray
ASP-795 2.8 – Red Oxide
ASP-901 2.8 – Black
ASP-435 3.5 – Gray
ASP-735 3.5 – Red Oxide

The ASP Series Primers (alkyd shop primers) are cost-effective, fast dry, single component primers that can be sprayed through a variety of application equipment.

Factory-packaged colors, in both 2.8 and 3.5 lbs/gal VOC versions, are available in this primer series.

Features and Benefits:

- One component, easy-to-use
- Fast dry time for productivity
- VOC compliant options

Associated Products:

- ASP-495 2.8 VOC Shop Primer (Gray)
- ASP-795 2.8 VOC Shop Primer (Red Oxide)
- ASP-901 2.8 VOC Shop Primer (Black)
- ASP-435 3.5 VOC Shop Primer (Gray)
- ASP-735 3.5 VOC Shop Primer (Red Oxide)

Physical Constants:

All values are theoretical, depend on color and are Ready-to-Spray. Actual values could vary slightly due to manufacturing variability.

	ASP-435/735	ASP-495/795/901
Percent solids (by weight)	71.3 / 70.6	77.8 / 77.7 / 77.5
Percent solids (by volume)	46.5 / 46.1	57.0 / 56.8 / 57.2
HAPs	≤0.1 lbs/gal	≤0.1 lbs/gal
Photo-chemically reactive	No	No

Flashpoint:
ASP-435, 495, 735, 795, 901 – 73°F (22.7°C)

RTS Combinations:	ASP-435/735	ASP-495/795/901
Volume Ratio:	As is	As is
Applicable Use Category	Primer Sealer	Primer Sealer
VOC Actual	415 / 417 g/L 3.46 / 3.48 lbs/gal	333 / 334 / 332 g/L 2.78 / 2.79 / 2.77 lbs/gal
VOC Regulatory (less water less exempt)	413 / 417 g/L 3.45 / 3.48 lbs/gal	333 / 334 / 332 g/L 2.78 / 2.79 / 2.77 lbs/gal
Density	1444 / 1419 g/L 12.04 / 11.83 lbs/gal	1504 / 1499 / 1474 g/L 12.54 / 12.50 / 12.29 lbs/gal
Volatiles wt. %	28.7 / 29.4	22.2 / 22.3 / 22.5
Water wt. %	0.0	0.0
Exempt wt. %	0.0	0.0
Water vol. %	0.0	0.0
Exempt vol. %	0.0	0.0

Product Information Effective 10/09

PPG

ASP Series Primers

Directions for Use

Substrate Preparation:

The surface to be coated must be sanded and free of all contamination (including dust, dirt, oil, grease, and oxidation). A chemical treatment (or conversion coating) will improve adhesion and performance properties of the finished coat. Variability can occur with substrates, preparation, application method or environment. We recommend that adhesion and system compatibility be checked prior to full application.

Metal (Direct to Substrate)	ASP-x35*	ASP-x95/901*
Cold Rolled Steel	Excellent	Excellent
Hot Rolled Steel	Excellent	Excellent
Galvaneal	Not Recommended	Not Recommended
Galvanized	Not Recommended	Not Recommended
Aluminum	Not Recommended	Not Recommended
Plastic / Fiberglass	Not Recommended	Not Recommended

** It is recommended that the substrate be cleaned with SSPC-SPC2 Hand Tool or SSPC-SPC3 Power Tool clean Minimum. For best performance, SSPC-SP6 (NACE#3), Commercial Blast Cleaning is recommended.*

Mix Directions:

Mix Directions: Single component product, stir thoroughly before and occasionally during use. No induction needed.

Thinning:	ASP-x35	ASP-x95/901
	Do not thin.	Do not thin.

Blend Ratio	N/A - Single component product
Pot Life @ 77°F (25°C):	N/A
Spray Viscosity Range:	#3 Zahn: ~ 20 seconds
Unopened Shelf Life: (each component)	2 years

Application Equipment:

	ASP-x35	ASP-x95/901
Conventional (with or without pressure pot):	30 – 60 psi at the gun, 1.3" or larger cap	30 – 60 psi at the gun, 1.3" or larger cap
HVLP (with or without pressure pot):	10 psi at the gun, 1.3" or larger cap	10 psi at the gun, 1.3" or larger cap
Airless:	0.011 – 0.019 mm: 1700 psi fluid pressure	0.011 – 0.019 mm: 1700 psi fluid pressure
Air-Assisted Airless:	No Recommendation	No Recommendation
Brush:	High quality, natural bristle brush	High quality, natural bristle brush
Roll:	3/8 – ¾ inch nap roller	3/8 – ¾ inch nap roller
Electrostatic:	No Recommendation	No Recommendation

Application:

Apply: Apply only when air, product and surface temperatures are above 60°F (16°C) and when surface temperature is at least 5°F (3°C) above the dewpoint.

	ASP-x35	ASP-x95/901
Recommended Wet Film Build:	3.2 – 3.9 mils	2.6 – 3.2 mils
Recommended Dry Film Build:	1.5 – 1.8 mils	1.5 – 1.8 mils
Square Foot Coverage @ 1mil no loss:	739 – 746 sq. ft.	911 - 917 sq. ft.

Dry Times:

Air Dry @ 77°F 50% RH:

	ASP-x35	ASP-x95/901
To Touch	10 – 20 minutes	20 minutes
To Handle*	1 hour	1 hour
To Recoat	1 hour	1 hour

** Paint film is not fully cured for 7 days. Drying time listed may vary, depending upon film build, color selection, temperature, humidity and degree of air movement.*

ASP Series Primers

Technical Data*

Performance Properties:

System:
Bonderite 1000
ASP-435 / ASP-495

Test	ASTM Method	Results ASP-x35	Results ASP-x95/901
Gloss @ 60° Angle	D523	1	2
Pencil Hardness	D3363	H	3B
Impact (Forward/Reverse)	D522	50 / < 5 in - lbs	50 / < 5 in - lbs
Adhesion	D3359	4B	4B
In Service Temperature Limit		200°F	200°F

Weather Resistance:

System:
Bonderite 1000
ASP-435 / ASP-495

	ASTM Method	Results ASP-x35	Results ASP-x95/901
Salt Spray – 250 hours	B117		
Corrosion Creep	D1654	10A	6A
Scribe Blisters	D714	None	None
Face Blisters	D714	None	None
Humidity – 100 hours	D2247		
5 Minute Recovery Adhesion	D3359	4B	3B
1 Hour Recovery Adhesion	D3359	5B	2B
24 Hour Recovery Adhesion	D3359	3B	2B

All tests results assume proper cure and preparation of test substrates. Unless otherwise stated, all results were obtained spraying product direct to metal on Bonderite 1000.

* The application and performance property data above are believed to be reliable based on laboratory findings. It is for the buyer to satisfy itself on the suitability of the product for its particular use. Variation in environment, procedures of use, or extrapolation of data may cause unsatisfactory results.

Miscellaneous

Not to be used on zinc substrates.

ASP Series Primers

Alkyd Shop Primers

Safety:

These materials are designed for application only by professional, trained personnel, using proper equipment under controlled conditions and are not intended for sale to the general public.

Safe application of paints and coatings requires knowledge of equipment, materials and individual training. Directions and precautionary information on both equipment and products should be carefully read and strictly observed for personal safety and property protection. Consideration must be given to eliminate conditions, which may generate hazardous atmospheres during spray application or subject operators or bystanders to injury or illness.

Special precautions must be taken when utilizing spray equipment, particularly airless equipment. High-pressure injection of coatings into the skin by airless equipment may cause serious injury requiring immediate medical attention at a hospital. Treatment advice may also be obtained from Poison Centers.

Air quality should be maintained with adequate ventilation; applicators can achieve additional protection by wearing respirators and other protective garments such as gloves and overalls. In all cases, wear protective eye equipment. During the application of all coatings materials, all flames, welding and smoking must be prohibited. Explosion proof equipment must be used when coating these materials in confined areas.

PRECAUTIONARY INFORMATION

Before using the products listed herein, carefully read each product label and follow directions for its use. Please read and observe all warnings and precautionary information on all product labels. Prevent all contact with skin and eyes and breathing of vapors and spray mist. Repeated inhalation of high vapor concentrations may cause a series of progressive effects including irritation of the respiratory system, permanent brain and nervous system damage and possible unconsciousness and death in poorly ventilated areas. Eye watering, headaches, nausea, dizziness and loss of coordination are indications that solvent levels are too high. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

KEEP OUT OF THE REACH OF CHILDREN

MEDICAL RESPONSE

Emergency Medical or Spill Control Information (412) 434-4515; CANADA (514) 645-1320
Have label information available.

Material Safety Data Sheets for the PPG products mentioned in this publication are available through your PPG Distributor.

For additional information regarding this product, see the MSDS AND LABEL information.

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Commercial Coatings
We're Everywhere You Look

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