

**COATINGS MANUAL  
HAMPTON ROADS SANITATION DISTRICT**

**4.0 SELECTING THE RIGHT STANDARD COATING SYSTEM**

Using the coating system selection schedule in Subsection 4.1, refer to the pertinent substrate first, then to the environment and next to the service condition description and typical structure columns. If further information is required, go to Subsection 4.2 entitled “Coating System Selection by Typical Wastewater Treatment Plant Structure”. This information should help you to easily select the right standard coating system for your specific application.

Refer to Subsection 4.3 for the procedure to use for reviewing and accepting or rejecting “or equal” product submittals.

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**4.1 COATING SYSTEM SELECTION SCHEDULE**

<b>SUBSTRATE</b>	<b>ENVIRONMENT</b>	<b>SERVICE CONDITIONS</b>	<b>TYPICAL STRUCTURES</b>	<b>COATING SYSTEM IDENTIFICATION</b>
Cloth Cover for Insulation	Interior	Non-corrosive	Insulated piping or vessels for hot water or steam.	L-1
Cloth Cover for Insulation.	Exterior	Weathering only.	Piping or equipment insulation.	L-2 Or TW-1*
CMU or Concrete	Exterior	Weathering exposure only for aesthetics.	Building walls or other exterior masonry building features.	L-2 Or S-1
Concrete	Headspaces of existing structures or tanks. (Including 1-0" below minimum water elevation.)	High H <sub>2</sub> S gas exposure – Avg. 150 ppm H <sub>2</sub> S or less, plus 100% moisture and oxygen – biogenic corrosion. >150 ppm H <sub>2</sub> S – contact PPD.	Covered grit chambers. Covered channels. Covered primary clarifiers. Trickling filters. Sludge Holding Tanks. (ceilings + walls)	E-5-C overhead E-6 vertical & horizontal. If active cracking is present, use system FP-2 or treat cracks per manufacturer for E-5-C or E-6.
Concrete	Interior/Immersed	Exposed to chlorine or sodium hypochlorite and/or sodium bisulfite, water, and sunlight.	Chlorine contact tanks or Disinfection Basins or Channels.	E-5-C
Concrete	Interior	Heavy wheeled traffic, foot traffic – moderately corrosive – frequent wetting.	Process floor areas in sludge holding facilities or heavy maintenance shops.	EF-2

\*The TW-1 Tape Wrap System could be used directly over insulation (calcium silicate or fiberglass, etc.) with no cloth covering or over the cloth covering for insulation.

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Concrete	Interior	Abrasive exposure and mildly corrosive.	Concrete floors or walkways or chemical feed areas – not secondary containment.	EF-1 Or EF-2 Traffic type dependent.
Concrete	Secondary containment	Sodium hydroxide or ferric chloride storage tank areas.	Containment dikes and floors and tank support pads or pump bases, etc.	E-4-C or Interior FP-2 Use FP-2 where actively moving cracks are present.
Concrete	Secondary containment	Sodium hypochlorite storage tank areas.	Sodium hypochlorite dikes, floor slabs and bases/pads.	PU-1 Where active crack movement needs to be bridged.
Concrete	Secondary Containment	Muratic Acid (dilute Hydrochloric Acid). Sodium Hypochlorite or Sodium Bisulfite.	Dikes, floor slabs and bases/pads for Muratic Acid, dikes, floor slabs and base/pads.	**VE-1
Concrete Decks	Exterior	To prevent weathering and freeze thaw damage and as waterproofing.	Building or tank roofs, decks, walkways and stairs – exterior.	FP-3
Concrete or CMU	Below grade buried.	Non-corrosive needs to be waterproofed.	Buried structures that need to be waterproofed (like backfilled surfaces of concrete walls common to enclosed spaces like pipe galleries).	E-2-C

\*\*Where moving cracks exist in Secondary Containment Areas, treat cracks per CSM's recommendations or use Coating System PU-1 if appropriate for chemical exposure.

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SUBSTRATE	ENVIRONMENT	SERVICE CONDITIONS	TYPICAL STRUCTURES	COATING SYSTEM IDENTIFICATION
Concrete or CMU	Interior Damp	Underside of floor slabs, beams, etc. exposed to mildly - corrosive fumes and vapors, concrete exposed to intermittent wetting or walls or ceilings exposed to mildly corrosive conditions.	Underside of floor slabs or topside of floors – non-walkways.	E-2-C
Concrete or CMU	Non immersed interior or exterior	Exposure to corrosive liquids and vapors.	Chlorination rooms, lime rooms, or odor control scrubber pads. Influent pump station - building rooms.	E-4-C
Concrete, CMU, Plaster or Sheetrock	Non-immersed interior	Non-corrosive exposure – needs to be colored and cleanable for aesthetics only.	Building walls, ceilings, etc.	L-1
Concrete or CMU	Non-immersed exterior	Non-corrosive exposure and exposure to sunlight and weathering for aesthetics only.	Building feature exteriors or other concrete structures.	L-2
Concrete, Masonry, CMU, Split Face Block	Exterior	Non-corrosive exposure to sunlight and weathering only for aesthetics only.	Building exteriors clarifier, aeration tank or other tanks or channel exteriors.	L-4 For Textured Coating Finish

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Concrete with actively moving cracks.	Headspaces of structures or tanks.	High H <sub>2</sub> S gas (Avg. 150 ppm or less) exposure plus 100% moisture and oxygen – biogenic corrosion. If greater than 150 ppm H <sub>2</sub> S, contact PPD.	Covered grit chambers. Covered channels. Covered primary clarifiers. Trickling filters. Sludge holding tanks. (ceilings & walls) Concrete digester roofs (interior).	FP-2
Ferrous Metal	Exterior	Non-immersed – exposure to sunlight and weathering, only.	Pipe bridges Building structures Structural steel. Steel above the waterline in clarifiers.	EU-1 for touch-up of existing. EU-2 for new or complete recoating.
Ferrous Metal	Immersed or Non-immersed	Corrosive environment not exposed to sunlight.	Primary clarifier rake mechanisms, secondary clarifier rake mechanisms, and steel supports for piping, etc.	E-4
Ferrous Metal	Interior Non-immersed or immersed	No sunlight exposure. Mildly corrosive environment.	Interior structural steel or steel in maintenance facilities, exterior of steel tanks – inside buildings or immersed.	E-1
Ferrous Metal	Interior or Exterior	Mildly corrosive or constantly wet conditions where proper surface preparation for other coating systems is	Transmission piping or other steel or ductile iron structures in wet environments, piping suspended under bridges	TW-1 (first choice) Or MIOX-1 or E-3. Choose coating system

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<b>SUBSTRATE</b>	<b>ENVIRONMENT</b>	<b>SERVICE CONDITIONS</b>	<b>TYPICAL STRUCTURES</b>	<b>COATING SYSTEM IDENTIFICATION</b>
		impossible.	or in populated areas or buried piping.	based on application conditions. MIOX-1 can be applied when damp, etc.
Ferrous Metal	Interior or Exterior	High temperatures up to 500°F and weathering.	Hot piping or equipment where color is desired (not just aluminum).	HT-1
Ferrous Metals	Exterior or interior	High temperatures from 500°F to 1200°F and weathering.	Exhaust manifolds, mufflers for large engines, methane gas burning pipes, etc.	HT-2
Ferrous Metal	Headspace – of tanks and channels (plus 1'-0" below minimum water elevation).	Headspace exposure to H <sub>2</sub> S gas, constant moisture and biogenetic sulfide corrosion. H <sub>2</sub> S gas concentrations up to Avg. 150 ppm. If H <sub>2</sub> S higher than 150 ppm, contact PPD.	Steel structures in covered tanks or in wastewater channels or tanks with headspace exposure.	E-5
Ferrous Metals	Exterior	Mildly corrosive weathering.	Structural steel for buildings, pipe bridges, and structural steel over the operating water level of clarifiers.	EU-1 for touch-up. EU-2 for recoating.
Ferrous Metals	Exterior or Interior	Wet or damp conditions at all times – minimal surface preparation possible.	Structural steel above operating equipment (i.e. sludge presses or belt filters or other wet processes).	MIOX-1
Ferrous Metals	Immersed/Headspace	Digester interiors with exposure to methane,	Digester headspaces and floating cover skirts, etc.	E-5

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		CO <sub>2</sub> , H <sub>2</sub> S, etc.		
Ferrous Metals	Interior	Operating conditions that permit only minimal surface preparation.	Structural steel, piping, or equipment housings.	E-3
Ferrous Metal	Below grade buried	Buried piping in non-aggressive soils.	Water or sewer piping.	E-1
Ferrous Metals Previously coated with Alkyd Coatings	Interior or Exterior	Non-corrosive interior or weathering outside.	Structural steel, piping, valves, etc. inside/outside pump stations, or other facilities.	A-1
Ferrous Metals	Exterior or Interior	Non-corrosive conditions – for aesthetics or color coding and weathering resistance.	Structural steel building siding.	L-3
Fiberglass Reinforced Plastics (FRP)	Exterior	Exposure to corrosive fumes or chemical liquid spills from leaks or truck unloading.	Exterior of FRP Tanks, Odor Control Piping, Ductwork in Secondary Containment Areas or storage/handling areas for NaOH, HCl, Sodium Hypochlorite, etc.	EU-1 - FRP Use bonding primer if existing coatings are present – consult with CSM for help with primer selection.
Galvanized Carbon Steel	Exterior - mildly corrosive.	Exposed to mildly corrosive wet conditions (pH above 3.0).	Structural steel.	EU-1-G If pH below 3, use E-5.

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Galvanized Carbon Steel	Exterior - non-corrosive	Weathering and sunlight exposure only.	Electrical conduit, walkways, ladders, handrails, pipe bridges, etc.	L-3
Galvanized Steel	Interior - mildly corrosive environment.	Exposed to mildly corrosive wet conditions (pH above 3.0).	Electrical conduit, control boxes, valves, handrails, and walkways.	E-1-G
Non-Ferrous Metals	Interior - mildly corrosive exposure – non-immersed.	Exposed to constant wetting and/or mildly corrosive liquids or vapors.	Aluminum, brass, copper pipe (i.e. valves, handrails, etc.).	E-1-NF
Non-Ferrous Metals	Exterior non-corrosive.	Exposure to sunlight and weathering only.	Aluminum, brass, copper pipe or fittings or handrails outdoors.	EU-1-NF
Non-Ferrous Metals	Interior	Minimal surface prep.	Bypass aluminum valves, fittings, etc.	E-3-NF
Non-Ferrous Metals	Interior	Non-Corrosive	Valves, fittings, piping, etc.	L-3
Plaster or Sheetrock	Interior	Non-corrosive exposure – needs to be colored and cleanable.	Building walls, ceilings, or trim.	L-1
PVC or CPVC	Exterior	Exposed to sunlight and weathering only.	Piping or conduit located outdoors in WWT Plants or at Pump Stations.	L-2 or TW-1-P
Wood	Exterior	Weathering Only	Building exteriors, etc.	L-2 -W
Wood	Interior	Non-corrosive (no	Trim in offices or other	L-1-W

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<b>SUBSTRATE</b>	<b>ENVIRONMENT</b>	<b>SERVICE CONDITIONS</b>	<b>TYPICAL STRUCTURES</b>	<b>COATING SYSTEM IDENTIFICATION</b>
		sunlight).	building finishes.	

\*\*Where moving cracks exist in secondary containment areas, treat the cracks per CSM's recommendations.

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**4.2 COATING SYSTEM SELECTION BY TYPICAL WASTEWATER TREATMENT PLANT STRUCTURES.**

The tables that follow provide a convenient way to select a standard HRSD Coating System by first selecting a typical wastewater treatment plant structure.

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**COATING SYSTEM SELECTION BY TYPICAL WASTEWATER TREATMENT PLANT STRUCTURES**

<b>TYPICAL WASTEWATER TREATMENT PLANT STRUCTURES</b>	<b>SUBSTRATE DESCRIPTION</b>	<b>COMMENTS</b>	<b>COATING SYSTEM ID</b>
Bar Screen Chambers or Channels	Concrete in headspaces.	Often high H <sub>2</sub> S gas concentrations (Avg. 150 ppm or below). For H <sub>2</sub> S greater than 150 ppm, contact PPD.	E-5-C for ceilings. E-6 for walls.
Raw Influent Wet Wells in Pump Stations.	Concrete in headspaces.	Often high H <sub>2</sub> S gas concentrations (Avg. 150 ppm or below). For H <sub>2</sub> S greater than 150 ppm, contact PPD.	E-5-C for ceilings. E-6 for walls.
*Headworks – traveling screen channels or chambers.	Concrete in headspaces.	Often high H <sub>2</sub> S gas concentrations (Avg. 150 ppm or below). For H <sub>2</sub> S greater than 150 ppm, contact PPD.	E-5-C for ceilings. E-6 for walls.
*Screw pump channels or influent pump station channels.	Concrete in headspaces.	Often high H <sub>2</sub> S gas concentrations (Avg. 150 ppm or below). For H <sub>2</sub> S greater than 150 ppm, contact PPD.	E-5-C for ceilings. E-6 for walls.
Grit classifiers, grit chambers or tanks.	Concrete in headspaces.	Often high H <sub>2</sub> S gas concentrations (Avg. 150 ppm or below). For H <sub>2</sub> S greater than 150 ppm, contact PPD.	E-5-C for ceilings. E-6 for walls.
Primary clarifiers or sedimentation tanks.	Concrete in headspaces.	Often high H <sub>2</sub> S gas concentrations (Avg. 150 ppm or below). For H <sub>2</sub> S greater than 150 ppm, contact PPD.	E-5-C for ceilings. E-6 for walls.
Aeration basins.	Concrete in headspaces.	No H <sub>2</sub> S	No coating required.
Trickling filters or similar intermediate trickling filters.	Concrete in headspaces or exposed to acidic condensate.	Aggressive acidic exposure.	E-5-C for overhead. E-6 for vertical
* For all such areas, crack treatment is critical if cracks are thermally active or use FP-2.			

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<b>TYPICAL WASTEWATER TREATMENT PLANT STRUCTURES</b>	<b>SUBSTRATE DESCRIPTION</b>	<b>COMMENTS</b>	<b>COATING SYSTEM ID</b>
Pure Oxygen Reactors	Concrete in headspaces.	Not aggressive.	No coating required.
Pure Oxygen Reactors	Concrete	Below waterline.	E-2-C or FP-2
General Building Areas	Coated Concrete	Only mildly corrosive – no sunlight.	E-2-C
General Building Areas.	Coated Concrete	Corrosive – no sunlight	E-4-C
Secondary Clarifiers or Sedimentation Tanks	Concrete – above or below waterline	Not aggressive exposure	No coating required
Disinfection basins or tanks	Concrete – below waterline	Residual chlorine and chlorides	E-5-C
Headworks – bar screen or traveling screen rooms.	Structural steel in buildings.	Mildly corrosive	E-3 if touch-up (E-4 if recoat).
Screw pump or influent pump station buildings.	Structural steel in buildings.	Mildly corrosive	E-3 if touch-up (E-4 if recoat).
Grit Facility Buildings	Structural steel in buildings.	Mildly corrosive	E-3 if touch-up (E-4 if recoat).
*Primary Clarifiers	Ferrous metals below waterline	Rake mechanism	E-4
Primary Clarifiers	Ferrous metals above waterline	Exposed to sunlight	EU-2
Primary Clarifiers	Ferrous metals	Above waterline (covered tanks).	EU-5
Aeration Basins	Ferrous metals immersed	Below waterline	E-1
Trickling Filters or similar multi-media type filters	Ferrous metals in structure.	Above or below waterline.	E-5
*Secondary Clarifiers	Ferrous metals below waterline	Rake Mechanisms	E-1
Secondary Clarifiers	Ferrous metals above waterline	Rake Mechanisms, bridge and center platform	EU-1 if touch-up. EU-2 if recoating.
Disinfection Basins	Ferrous metal components above waterline	Weathering and vapor exposure	EU-1 if touch-up. EU-2 if recoating.
Secondary Containment	Concrete Storage/Handling Areas	For Muratic Acid, Sodium Hypochlorite, Sodium Bisulfite	VE-1 with crack/joint treatment or use PU-1 for Sodium Hypochlorite where flexibility required.

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<b>TYPICAL WASTEWATER TREATMENT PLANT STRUCTURES</b>	<b>SUBSTRATE DESCRIPTION</b>	<b>COMMENTS</b>	<b>COATING SYSTEM ID</b>
Secondary Containment	Concrete Storage/Handling Areas	For Sodium Hydroxide or ferric chlorides	E-4-C or FP-2 for actively moving cracks.
General Structural Steel Framing	Ferrous Metals	Inside buildings needing touch-up maintenance (cannot perform good surface preparation).	E-3
General Structural Steel Framing	Ferrous Metals	Outdoors – exposure to weathering – mildly corrosive.	EU-1 for touch-up. EU-2 for recoating.
Structural Steel	Ferrous Metals	In constantly damp, humid environments – min. surface prep.	MIOX-1
Digesters Roofs	Ferrous Metals	Interior of roofs	E-5 or FP-1
Digesters Roofs	Concrete	Fixed Covers	E-5-C or FP-2 for crack bridging.

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**4.3 “OR EQUAL” PRODUCT REVIEW PROCEDURE**

The HRSD personnel responsible for tailoring the specifications for specific coatings projects shall select coatings from the Standard HRSD Coating Systems. When receiving submittals from Contractors for “Or Equal” product approval, review shall be handled by filling out the attached comparative spreadsheet and comparing the submitted product data to the data for the approved standard HRSD products. Fill out a spreadsheet for each product submitted and compare it against the same data for the approved standard HRSD listed products (obtain data from the CSM) in Part 5.0 of the Coatings Manual and in Section 7, Standard Coating Specifications.

The submitted product data must be provided to you by the Contractor, bidder or CTR from the manufacturer.

Use the following guidelines for comparison of the products:

1. Case Histories of field performance – Products must have documentable good performance under nearly identical exposure conditions for a minimum of 2 years. The Manufacturer must provide the customer reference name and telephone number for at least two such references. Contact the references and confirm case histories.
2. Volatile Organic Content Comparison – The manufacturer must submit the VOC number for the submitted product for comparison to the approved products list. The coating must meet current Federal and Virginia VOC regulations. For industrial/maintenance coatings, the State of Virginia currently has two distinctly differing VOC regulations. The northern counties of Arlington, Fairfax, Loudon, Prince William, and Stafford have followed the Ozone Transport Commission (OTC) regulations for 340 g/l or 2.8 lbs. per gallon for VOC limits. The remainder of the State of Virginia follows the National Architectural and Industrial Maintenance Coating Rule or AIM of 450 g/l or 3.8 lbs. per gallon.
3. Solids Content by Volume – The manufacturer must submit the solids by volume data for the submitted product for comparison to the solids data for the approved products list.
4. Chemical Resistance Data – Be sure the manufacturer submits chemical resistance data for the specific environment so it can be compared to the approved products list. Define the exposure conditions carefully (i.e. splash/spillage of muratic acid or high H<sub>2</sub>S gas in headspace with H<sub>2</sub>SO<sub>4</sub> exposure, etc.).
5. Generic Description of Coating Material – Be sure that the manufacturer submits the generic description of the product such as cycloaliphatic amine cured epoxy. If they claim it is proprietary, it usually means it isn't the same technology as the approved product list. Do not approve products that are of a different generic type from the approved products.

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6. Cure Time for Recoating – Compare the time and temperature requirements for recoating between the submitted and approved products. If schedule is critical to the job, this recoat time will be important. Also, if the conditions such as weather affect the job, this is an important criteria. Therefore, the shorter minimum recoat time will be desirable. If it is an extensive job and will take a long time to complete or if conditions such as weather could change for the worse, the maximum recoat time will also be important. You don't want to be in a situation where the maximum recoat window is exceeded and recleaning or blasting is required prior to topcoating.
7. Cure Time Prior to Exposure to Normal Service Conditions. This is self-explanatory. If the schedule is tight, the shorter the cure time – the better. If the schedule is not critical, this is less of an issue unless weathering could affect the work, etc.
8. Suitability for Application Methods – Can the submitted product be brush, roller and spray applied? Compare to approved products list and actual project conditions. Some jobs require brush or roller application where overspray can't be contained or tolerated. And some products can only be spray applied. Can the film build required be achieved using brush or roller application? Review the specific application requirements of the job.
9. Gloss. Compare gloss of coatings for the project aesthetic needs.
10. Compare the physical and resistance properties of the submitted products to the selected products using the following criteria:
  - a. Abrasive resistance.
  - b. Surface hardness.
  - c. Pot life.
  - d. Adhesion to blasted carbon steel.
  - e. Adhesion to blast cleaned concrete.
  - f. Temperature resistance – dry.
  - g. Temperature resistance – wet (immersion).
  - h. Flexibility/Elongation.
  - i. Impact resistance.
  - j. Tensile strength.
  - k. Water vapor transmission.
  - l. Weatherometer 3500 hours (blasted steel).
  - m. QUV 2500 hours.
  - n. Salt fog.
  - o. QUV A Prohesion.
  - p. Other properties.

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Assess the importance of given properties for the project exposure conditions. For example, if the exposure will include abrasion, abrasion resistance will be very important. Or if the coating must bridge cracks in concrete, properties like flexibility and elongation will be very important. If other physical properties like compressive strength or high temperature resistance seem important to the job, add these comparisons to the spreadsheets.

11. Cost per Gallon – Compare the cost per gallon of the submitted products to the approved products. If the cost is extremely lower per gallon for the submitted product, this is often a clue that the product is not equal. A few dollars difference is normal competition, but a wide gap in price means look closer at the submitted product.
12. Yield per Unit– Compare the cost per gallon or per other unit as delivered. Be sure to be clear on quantities provided per unit of yield. For example, some manufacturers may provide a cheaper price per unit, but the unit is 1.5 gallons compared to another supplier’s 2 gallon unit.
13. Temperature and Humidity Requirements – These requirements are often critical to a coating job. Does the submitted product have the same temperature and humidity requirements for curing as the approved products? If the submitted product requires 50°F as a minimum substrate and air temperature and the approved product requires only 40°F, this is a good reason to reject a submitted coating provided temperature is a factor when the work is being done. Similarly, if the submitted product cannot be applied within 10 degrees above dew point and the approved product can be, this is a good reason to reject the submitted product.

Not all of the criteria listed in the comparative spreadsheet applies to every type of product. So only fill in the pertinent information. For example, QUV data is generally not pertinent to epoxy coatings that are not topcoated with a polyurethane as with the EU coating systems.

14. Product Evaluation - Once you have completed the comparison on the spreadsheet, assign the submitted product as approved or not approved as an “or equal” and list your reasons from the spreadsheet comparison if rejecting a product. The spreadsheet form once filled out and signed can then be sent back to the Contractor (bidder) informing them of your decision. If rejected, the Contractor will then have to make another submittal (hopefully using the approved coating products or product that are equal to the approved products).
15. List the criteria numbers below where the submitted product considered was not equal to the selected or specified product.

**COMPARATIVE SPREADSHEET FOR  
“OR EQUAL” COATING PRODUCT SUBMITTALS  
(to be filled out electronically)**

Submitted Product Name and Designation: \_\_\_\_\_

Standard Coating System No.: \_\_\_\_\_

Criteria No.	Criteria	Submitted Product Data	Approved Product Data
1	Confirmed successful – Case Histories 2 years.	<input type="checkbox"/> Yes or <input type="checkbox"/> No	Yes
2	VOC lbs./gallon range	lbs./gal	lbs./gal
3	Solids by Volume %	%	%
4	Will Resist Chemical Exposure	<input type="checkbox"/> Yes Or <input type="checkbox"/> No	Yes
5	Generic Coating Type	Describe	Describe
6	Cure Time for Recoat (hrs./temp °F min./max.)	Min.        minutes/ °F Max.        minutes/ °F	Min.        minutes/ °F Max.        minutes/ °F
7	Cure Time to Go into Service (hrs./temp °F min./max.)	hrs./        °F	hrs./        °F
8	Application Method (Check)	<input type="checkbox"/> Spray <input type="checkbox"/> Brush or <input type="checkbox"/> Roll	<input type="checkbox"/> Spray <input type="checkbox"/> Brush or <input type="checkbox"/> Roll
9	Gloss Semi-gloss Flat Satin Etc.	Describe	Describe
10 a.	Abrasion Resistance (Taber Abrasor) CS-17 Wheel 1000 gm. Weight 1000 cycles Weight Loss	milligrams	milligrams

**COMPARATIVE SPREADSHEET FOR  
 “OR EQUAL” COATING PRODUCT SUBMITTALS  
 (to be filled out electronically)**

<b>Criteria No.</b>	<b>Criteria</b>	<b>Submitted Product Data</b>	<b>Approved Product Data</b>
10 b.	Surface Hardness ASTM D4366 Konig Pendulum Gloss Standard = 250 Seconds	seconds	seconds
10 c.	Pot Life minutes @ °F	minutes °F	minutes °F
10 d.	Adhesion ASTM D4541 to Steel Blasted to psi SSPC-SP10	psi	psi
10 e.	Adhesion ASTM D4541 to blast cleaned Concrete psi	psi	psi
10 f.	Temperature Resistance Dry in °F	Continuous °F Non-continuous hrs.	Continuous °F Non-continuous hrs.
10 g.	Temperature Resistance Wet in °F (Immersion)	°F	_____°F
10 h.	Flexibility/Elongation ASTM D522 Method B ¼” Cylindrical Mandrel Bend	% Elongation	% Elongation
10 i.	Impact Resistance ASTM D2794	inch lbs.	inch lbs.
10 j.	Tensile Strength ASTM D412	psi	psi
10 k.	Water Vapor Transmission ASTM F1249	gm/100 sq. in./24 hrs.	gm/100 sq. in./24 hrs.
10 l.	Weatherometer ASTM G26 Blasted Steel 3500 hours	Describe	No blistering, rusting, or cracking after 3500 hours
10 m.	QUV ASTM G53 2500 hours w/UVA 340 bulb	Describe	Color change less than 2 McAdam units – no blistering, rusting, cracking, or chalking.

**COMPARATIVE SPREADSHEET FOR  
 “OR EQUAL” COATING PRODUCT SUBMITTALS  
 (to be filled out electronically)**

Criteria No.	Criteria	Submitted Product Data	Approved Product Data
10 n.	Salt Fog ASTM B117 Blasted Steel 4000 hours	Describe	No rusting, blistering, on plane or scribe
10 o.	QUV A Prohesion ASTM D5894	Describe	No effect on plane area and % gloss retention after _____ hours of wet/dry salt fog cycle.
10 p.	Other Properties		
10 q.	Other Properties		
11	Cost per Gallon for	\$ _____ /gal.	\$ _____ /gal.
12	Yield per Unit		
13	Temperature and Humidity Requirements for Application & Cure	Min. temp. _____ °F Max. Rel. Humidity _____ %	Min. temp. _____ °F Max. Rel. Humidity _____ %

14. Product Evaluation:

Approved or equal:       YES       NO

Reasons Not Approved:

15. List the criteria numbers where product considered was not equal.

**COMPARATIVE SPREADSHEET FOR  
 “OR EQUAL” COATING PRODUCT SUBMITTALS  
 (to be filled out electronically)**

Submitted Product Name and Designation: \_\_\_\_\_

Standard Coating System No.: \_\_\_\_\_

Criteria No.	Criteria	Submitted Product Data	Approved Product Data
1	Confirmed successful – Case Histories 2 years.	Yes or No	Yes
2	VOC lbs./gallon range	_____ lbs./gal	_____ lbs./gal
3	Solids by Volume %	_____ %	_____ %
4	Will Resist Chemical Exposure	Yes or No	Yes
5	Generic Coating Type	Describe	Describe
6	Cure Time for Recoat (hrs./temp °F min./max.)	Min. _____ minutes/ _____ °F Max. _____ minutes/ _____ °F	Min. _____ minutes/____ °F Max. _____ minutes/____ °F
7	Cure Time to Go into Service (hrs./temp °F min./max.)	_____ hrs./ ____ °F	_____ hrs./ ____ °F
8	Application Method (Circle)	Spray, Brush or Roll	Spray, Brush or Roll
9	Gloss Semi-gloss Flat Satin Etc.	Describe	Describe
10 a.	Abrasion Resistance (Taber Abrasor) CS-17 Wheel 1000 gm. Weight 1000 cycles Weight Loss	_____ milligrams	_____ milligrams

**COMPARATIVE SPREADSHEET FOR  
 “OR EQUAL” COATING PRODUCT SUBMITTALS  
 (to be filled out electronically)**

<b>Criteria No.</b>	<b>Criteria</b>	<b>Submitted Product Data</b>	<b>Approved Product Data</b>
10 b.	Surface Hardness ASTM D4366 Konig Pendulum Gloss Standard = 250 Seconds	_____ seconds	_____ seconds
10 c.	Pot Life minutes @ °F	_____ minutes _____°F	_____ minutes _____°F
10 d.	Adhesion ASTM D4541 to Steel Blasted to psi SSPC-SP10	_____ psi	_____ psi
10 e.	Adhesion ASTM D4541 to blast cleaned Concrete psi	_____ psi	_____ psi
10 f.	Temperature Resistance Dry in °F	Continuous _____°F Non continuous _____ hrs.	Continuous _____°F Non continuous _____ hrs.
10 g.	Temperature Resistance Wet in °F (Immersion)	_____°F	_____°F
10 h.	Flexibility/Elongation ASTM D522 Method B ¼” Cylindrical Mandrel Bend	_____ % Elongation	_____ % Elongation
10 i.	Impact Resistance ASTM D2794	_____ inch lbs.	_____ inch lbs.
10 j.	Tensile Strength ASTM D412	_____ psi	_____ psi
10 k.	Water Vapor Transmission ASTM F1249	_____ gm/100 sq. in./24 hrs.	_____ gm/100 sq. in./24 hrs.
10 l.	Weatherometer ASTM G26 Blasted Steel 3500 hours	Describe	No blistering, rusting, or cracking after 3500 hours

**COMPARATIVE SPREADSHEET FOR  
 “OR EQUAL” COATING PRODUCT SUBMITTALS  
 (to be filled out electronically)**

Criteria No.	Criteria	Submitted Product Data	Approved Product Data
10 m.	QUV ASTM G53 2500 hours w/UVA 340 bulb	Describe	Color change less than 2 McAdam units – no blistering, rusting, cracking, or chalking.
10 n.	Salt Fog ASTM B117 Blasted Steel 4000 hours	Describe	No rusting, blistering, on plane or scribe
10 o.	QUV A Prohesion ASTM D5894	Describe	No effect on plane area and _____% gloss retention after _____ hours of wet/dry salt fog cycle.
10 p.	Other Properties		
10 q.	Other Properties		
11	Cost per Gallon for	\$_____/gal.	\$_____/gal.
12	Yield per Unit		
13	Temperature and Humidity Requirements for Application & Cure	Min. temp. _____°F Max. Rel. Humidity _____%	Min. temp. _____°F Max. Rel. Humidity _____%

14. Product Evaluation:

Approved or equal:       YES       NO

Reasons Not Approved:

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**COMPARATIVE SPREADSHEET FOR  
“OR EQUAL” COATING PRODUCT SUBMITTALS  
(to be filled out electronically)**

15. List the criteria numbers where product considered was not equal.

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