

SECTION 9L

PROTECTIVE COATING OF CARBON STEEL

---GENERAL REQUIREMENTS---

---GENERAL

THIS SPECIFICATION COVERS ALL SURFACE PREPARATION AND PAINTING OF ALL FERROUS METAL SURFACES PROVIDED UNDER THIS CONTRACT, AS WELL AS EXISTING FINISHES DAMAGED BY CONNECTION OF THE SPECIFIED NEW WORK AND BY ANY OTHER OPERATIONS OF THE CONTRACTOR. FACTORY FINISHES SHALL BE AS SPECIFIED IN OTHER SECTIONS OF THESE SPECIFICATIONS. THIS SPECIFICATION OUTLINES THE REQUIREMENTS FOR THE APPLICATION OF INORGANIC ZINC-RICH PROTECTIVE COATINGS (WITHOUT TOPCOAT EXCEPT WHERE SPECIFIED) FOR THE PROTECTION OF ALL FERROUS METALS. TOUCH-UP OF DAMAGED FINISH SHALL BE WITH ORGANIC ZINC-RICH PROTECTIVE COATINGS AS HEREINAFTER SPECIFIED. TOPCOATS SHALL BE APPLIED ONLY TO ACHIEVE COLOR FOR SPECIFIC AREAS.

THE WORD "PAINT" AS MAY BE USED HEREIN IS SYNONYMOUS WITH THE PHRASE "PROTECTIVE COATING."

ALL EQUIPMENT THAT MIGHT BE DAMAGED DURING OPERATIONS REQUIRED BY THIS SPECIFICATION SHALL BE PROTECTED BY COVERING WITH TARPAULINS, REMOVING FROM THE AREA, TAPING, OR OTHERWISE ENCLOSING. THE ABOVE APPLIES, BUT IS NOT LIMITED TO SAND BLASTING, POWER TOOL CLEANING AND PAINTING OPERATIONS.

UNLESS OTHERWISE SPECIFIED, SURFACE PREPARATION AND COATING OF FERROUS METALS AND ASSOCIATED FASTENERS SHALL BE ACCOMPLISHED PRIOR TO ERECTION OF THE FACILITY OR INSTALLATION OF FABRICATED SECTION. SURFACE DAMAGED DURING ERECTION SHALL BE TOUCHED UP AS SOON AS POSSIBLE. DAMAGED SURFACES SHALL BE CLEANED BY POWER TOOL CLEANING AS SPECIFIED HEREINAFTER, AND THE TOUCH-UP COATING SHALL BE TYPE II CLASS I ORGANIC ZINC-RICH COATING AS LISTED HEREINAFTER.

ADEQUATE DRAINAGE HOLES SHALL BE DRILLED TO ELIMINATE ALL WATER TRAPS PRIOR TO SURFACE PREPARATION WHERE THIS OPERATION MAY AFFECT STRUCTURAL INTEGRITY, THE DESIGNATED GOVERNMENT REPRESENTATIVE SHALL BE CONSULTED. MAXIMUM HOLE SIZE SHALL BE 3/8 INCH.

ALL SURFACES WHICH WILL BECOME INACCESSIBLE, INCLUDING FAYING SURFACES, WHICH ARE NOT PARTS OF FRICTION-TYPE JOINTS, SHALL BE CLEANED AND COATED PRIOR TO INSTALLATION, EXCEPT WHERE THESE SURFACES ARE SEALED AIR TIGHT BY WELDING.

GALVANIZED METAL SHALL NOT BE COATED, EXCEPT FOR THOSE AREAS THAT HAVE FAILED, HAVE BEEN DAMAGED, OR HAVE EXPOSED THREADED AREAS.

NO PAINT SHALL BE APPLIED ON THE EXTERIOR WHEN RAIN IS IMMINENT OR WHEN THE HUMIDITY OR TEMPERATURE EXCEEDS THE MANUFACTURER'S RECOMMENDATIONS. ENVIRONMENT FOR BLASTING SHALL BE AS HEREINAFTER SPECIFIED.

ALL FINISHED SURFACES SHALL BE SMOOTH, EVEN AND FREE FROM VOIDS, BARE SPOTS AND OTHER DEFECTS AND SHALL SHOW EVEN COATINGS. PAINT SHALL BE THOROUGHLY WORKED INTO ALL JOINTS, CREVICES, AND OPEN SPACES. ALL FRESHLY PAINTED SURFACES SHALL BE ADEQUATELY PROTECTED. NO PAINT SHALL BE APPLIED UNTIL THE SURFACES HAVE BEEN ADEQUATELY PREPARED AS SPECIFIED HEREINAFTER.

---REFERENCE SPECIFICATIONS

THE FOLLOWING PUBLICATIONS OF THE ISSUES IN EFFECT ON THE DATE OF ISSUANCE OF INVITATION FOR BIDS FORM A PART OF THIS SPECIFICATION AND, WHERE REFERRED TO THEREAFTER BY BASIC DESIGNATION ONLY, ARE APPLICABLE TO THE EXTENT INDICATED BY THE REFERENCES THERETO. IN THE EVENT OF DIFFERENCE BETWEEN THIS SPECIFICATION OR ITS ACCOMPANYING DRAWINGS AND THE REFERENCED SPECIFICATION, THIS SPECIFICATION AND ITS ACCOMPANYING DRAWINGS SHALL GOVERN TO THE EXTENT OF SUCH DIFFERENCE.

KENNEDY SPACE CENTER SPECIFICATIONS:

KSC-SPEC-F-0020	COATING, ORGANIC AND INORGANIC ZINC-RICH, SPECIFICATION FOR
KSC-SPEC-F-0020-KAPL-MAT-4	CORROSION CONTROL PRODUCTS QUALIFIED UNDER KSC-SPEC-F-0020, KENNEDY APPROVED PARTS LIST-MATERIAL
KSC-STD-F-0001	PROTECTIVE COATING OF CARBON STEEL, STANDARD FOR

MILITARY SPECIFICATIONS:

MIL-L-81352	COATING KIT, TOPCOAT, PIGMENTED FOR APPLICATION OVER INORGANIC ZINC PRIMER-COATED STEEL SURFACES
MIL-P-22750	COATING, EPOXY-POLYAMIDE
MIL-S-87733	SEALING COMPOUND - CORROSION INHIBITIVE

FEDERAL STANDARDS:

595

COLORS

STEEL STRUCTURES PAINTING COUNCIL:

SSPC-SP-10

SURFACE PREPARATION SPECIFICATION NO. 10, NEAR WHITE BLAST CLEANING

SSPC-SP-3

SURFACE PREPARATION SPECIFICATION NO. 3, POWER TOOL CLEANING

---PERSONNEL SAFETY

NECESSARY PRECAUTIONS SHALL BE TAKEN TO ENSURE SAFETY OF PERSONNEL ENGAGED IN THE OPERATIONS REQUIRED BY THIS SPECIFICATION, OR PERSONNEL WHO MAY BE AFFECTED BY SUCH OPERATIONS. SOME OF THE MATERIALS TO BE HANDLED UNDER THIS SPECIFICATION ARE COMBUSTIBLE AND/OR TOXIC. SUCH MATERIALS SHALL BE USED IN ACCORDANCE WITH SOP NO. 4, AFM 172-101 AND THE MANUFACTURER'S RECOMMENDATIONS.

---SEALING

ALL FAYING SURFACES, JOINTS OPEN LESS THAN 1/2 INCH, AND SKIP WELDED JOINTS SHALL BE TOTALLY SEALED. THE SEALANT SHALL BE A SELF CURING, SINGLE COMPONENT, POLYSULFIDE RUBBER TYPE, CONFORMING TO SPECIFICATION NO. MIL-S-87733A, GRAY COLOR, AND SHALL BE GUN-APPLIED TO THE JOINT AFTER COATING MATERIAL IS DRY.

---MIXING

UNLESS OTHERWISE SPECIFIED, THE MIXING AND APPLICATION OF ALL PAINT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED DIRECTIONS. PAINT THAT HAS LIMITED "POT LIFE" AFTER MIXING SHALL BE PREPARED IN LIMITED BATCHES SO THAT IT MAY BE USED BEFORE ITS AGE EXCEEDS THE RECOMMENDED POT LIFE. ALL BATCHES OR PORTIONS OF BATCHES THAT EXCEED THE RECOMMENDED POT LIFE SHALL BE DISCARDED. THINNERS, OTHER THAN THOSE RECOMMENDED BY THE MANUFACTURER SHALL NOT BE USED. ALL PAINT SHALL BE THOROUGHLY AGITATED BEFORE AND DURING USE TO INSURE UNIFORMITY OF SOLID MATERIAL. ZINC-RICH COATINGS SHALL BE MIXED USING POWER MIXERS ONLY (NOT PAINT SHAKERS) AND APPLIED USING CONTINUOUSLY AGITATED PRESSURE POTS. THESE POTS SHALL BE ABOVE THE ELEVATION OF THE SPRAY GUNS.

---FILM THICKNESS

WHERE SPECIFIC FILM THICKNESSES ARE CALLED FOR HEREIN, IT IS OF UTMOST IMPORTANCE AND FINAL ACCEPTANCE OF THE WORK WILL NOT BE MADE UNTIL ALL PAINT FILMS ARE BUILT UP TO PROPER THICKNESS. REGARDLESS OF THE

NUMBER OF COATS THAT MAY BE SPECIFIED OR ANTICIPATED, SUCCEEDING COATS SHALL BE APPLIED TO THE SURFACE UNTIL THE FILM HAS REACHED SPECIFIED THICKNESS. THE FILM SPECIFIED IN THIS SECTION SHALL BE THE MINIMUM ACCEPTABLE. COATING THICKNESS SHALL BE CHECKED IN BOTH WET AND DRY CONDITION. A WET THICKNESS OF 10 MILS SHOULD RESULT IN A DRY THICKNESS OF APPROXIMATELY 6 MILS. APPROXIMATELY 15 MINUTES AFTER APPLICATION (OR WHEN COATING HAS LOST ITS TACKINESS) THE DRY THICKNESS SHALL BE CHECKED. THICKNESS SHALL BE CHECKED BY WET TEST GAGE; AND CALIBRATED MIKROTEST MAGNETIC GAGE AS MADE BY NORDSON CORPORATION, OR EQUAL, FOR DRY TEST. THE PROCEDURE FOR USING THE MIKROTEST MAGNETIC GAGE SHALL BE ACCORDING TO THE PRINTED INSTRUCTIONS SUPPLIED BY THE MANUFACTURER OF THE INSTRUMENT; FOR THIS PURPOSE THESE PRINTED INSTRUCTIONS SHALL BECOME A PART OF THIS SPECIFICATION. IT IS A REQUIREMENT THAT THE CONTRACTOR HAVE GAGES AVAILABLE ON THE JOB FOR USE BY HIS OWN PERSONNEL.

---DESCRIPTIVE LITERATURE

BEFORE ANY MATERIALS ARE INCORPORATED INTO THE WORK, THE FOLLOWING DESCRIPTIVE LITERATURE SHALL BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL:

PAINT	MANUFACTURER'S COMPLETE DESCRIPTION AND MIXING AND APPLICATION INSTRUCTIONS
ABRASIVE	SIEVE ANALYSIS

---SURFACE PREPARATION---

---BLAST CLEANING

ALL FERROUS METAL SURFACES, EXCEPT THOSE LISTED HEREINBELOW, SHALL BE BLAST CLEANED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL SSPC-SP-10 "NEAR-WHITE BLAST CLEANING". SURFACES NOT TO BE BLAST CLEANED ARE:

GALVANIZED SURFACES

PISTON RODS, SLIDING BEARING SURFACES AND LUBRICATED SCREW THREADED RODS

PREFINISHED SURFACES HAVING CERAMIC OR BAKED ENAMEL FINISH COATS

CONDUIT

FACTORY PRIMED ELECTRICAL BOXES, PANELS AND SUPPORTING ACCESSORIES, LIGHTING FIXTURES, AND ELECTRICAL CABLE INSULATION

SURFACE PREPARATION SHALL BE ABRASIVE BLASTING IN ACCORDANCE WITH SSPC-SP-10 AND THE FOLLOWING:

DRY BLASTING SHALL BE USED.

BLASTING EQUIPMENT SHALL DELIVER 95 POUNDS PER SQUARE INCH MINIMUM CONTINUOUS NOZZLE PRESSURE THROUGHOUT ALL OPERATING PERIODS.

BLASTING ABRASIVE SHALL BE IN ACCORDANCE WITH 3.1.3.3 AND 3.1.3.6 OF SSPC-SP-10 AS REQUIRED TO ACHIEVE AN ANCHOR PROFILE BETWEEN 1.0 AND 1.5 MILS.

COMPRESSED AIR USED FOR ABRASIVE BLASTING SHALL BE FREE OF DETRIMENTAL AMOUNTS OF MOISTURE OR OIL.

SPECIAL CARE SHALL BE TAKEN TO ENSURE SURFACES ARE PROPERLY PREPARED AS FOLLOWS:

WELD SPATTER AND SHARP EDGES SHALL BE GROUND SMOOTH. WHEN THIS OPERATION IS PERFORMED AFTER BLAST CLEANING, AFFECTED AREAS SHALL BE REBLASTED.

ALL WELDS SHALL BE SUBJECTED TO A MINIMUM OF A DOUBLE-PASS, ONE IN EACH DIRECTION WITH THE BLASTER, DURING BLAST CLEANING OPERATION.

BLASTING AND COATING OPERATIONS SHALL BE SEQUENCED SO THAT FRESHLY COATED OR WET SURFACES SHALL NOT BE CONTAMINATED BY DUST.

BLAST CLEANING OPERATIONS SHALL NOT BE CONDUCTED ON SURFACES THAT WILL BE WET AFTER BLASTING.

PRIOR TO APPLICATION OF COATING MATERIAL, ALL TRACES OF DUST SHALL BE REMOVED BY BLOWING OFF SURFACES WITH CLEAN DRY AIR, OR BY USE OF INDUSTRIAL TYPE VACUUM CLEANERS.

NO ACID WASHES OR OTHER CLEANING SOLUTIONS OR SOLVENTS SHALL BE USED ON BLAST CLEANED METAL SURFACES AFTER BEING BLASTED. INHIBITIVE WASHERS INTENDED TO PREVENT RUSTING ARE PROHIBITED.

---INSPECTION OF BLASTED SURFACES

BLAST CLEANED SURFACES SHALL BE INSPECTED BY THE CONTRACTING OFFICER, AND, IF APPROVED, SHALL BE COATED WITH SUFFICIENT COATING THE SAME DAY AS BLASTED BEFORE ANY VISIBLE RUSTING OF THE BLASTED SURFACES OCCURS. ANY BLASTED SURFACES NOT COATED, OR WHICH SHOW RUST, SHALL BE REBLASTED UNTIL APPROVED.

---POWER TOOL CLEANING

SURFACE PREPARATION BY POWER TOOL CLEANING IN ACCORDANCE WITH SSPC-SP-3 SHALL BE LIMITED TO FIELD TOUCH-UP OF DAMAGED COATING REQUIREMENTS ONLY. WRITTEN APPROVAL FOR POWER TOOL CLEANING FOR ANY OTHER PURPOSES SHALL BE OBTAINED FROM THE CONTRACTING OFFICER OR HIS DESIGNATED REPRESENTATIVE.



EDGES OF COATING ADJACENT TO POWER TOOL CLEANED AREAS SHALL BE FEATHERED SO THAT RECOATED SURFACE WILL HAVE A SMOOTH APPEARANCE. OVERLAP OF FORMER AGED AND CURED ZINC-RICH COATING SHALL NOT EXCEED LIMITS OF TOOL CLEANING BY MORE THAN 3 INCHES.

---APPLICATION---

---GENERAL

INORGANIC ZINC-RICH COATING APPLIED OVER ABRASIVELY BLASTED STEEL IS THE BASIC COATING FOR CORROSIVE PROTECTION OF CARBON STEEL FURNISHED UNDER THIS CONTRACT. THIS COATING SHALL BE APPLIED BY SPRAY IN THE SHOP AND SHALL BE DESIGNATED AS THE "SHOP PRIME PAINT" OR "PRIMER."

ORGANIC ZINC-RICH COATING APPLIED OVER POWER TOOL CLEANED STEEL SHALL BE USED ONLY IN THE FIELD FOR TOUCH-UP OF DAMAGED AREAS OF THE SHOP PRIME PAINT, AT FIELD CONNECTIONS, AND DAMAGED GALVANIZED SURFACES. IT SHALL BE APPLIED BY SPRAY EXCEPT AS APPROVED BY THE CONTRACTING OFFICER.

SPECIAL ATTENTION SHALL BE GIVEN TO ALL WELDS, SEAMS, CORNERS, RIVETS AND OTHER FASTENERS, AND ROUGH SPOTS TO MAKE SURE THEY ARE COMPLETELY COVERED. PRIOR TO SPRAYING, A BRUSH COAT SHALL BE APPLIED TO ALL BOLTS, WELDS, CREVICES, EDGES, INVOLVED CORNERS AND POCKETS, FOLLOWED BY IMMEDIATE SPRAYING.

EXCEPT AS DESCRIBED ABOVE, BRUSH APPLICATION OF PRIMER IS PROHIBITED AND BRUSH APPLICATION OF THE FIELD PAINT WILL BE ACCEPTABLE ONLY WITH THE APPROVAL OF THE CONTRACTING OFFICER.

THE MATERIAL SHALL BE APPLIED BY SPRAY, TAKING CARE TO OBTAIN A UNIFORM FILM WITH NO BARE AREAS OR VOIDS. THE SPRAY GUN SHALL BE HELD AT RIGHT ANGLES TO THE SURFACE AND PASSES SHALL BE EVEN AND PARALLEL.

---ZINC COATING THICKNESS

TOTAL DRY FILM THICKNESS OF COATING SHALL BE 4 TO 6 MILS APPLIED IN ONE COAT UTILIZING CROSS AND MULTIPLE PASSES. SPECIAL CARE SHALL BE TAKEN TO ENSURE THAT EDGES, CORNERS, CREVICES, WELDS, BOLTS, AND RIVETS RECEIVE A FILM THICKNESS EQUIVALENT TO THAT OF ADJACENT SURFACES. FINISHED SURFACES SHALL



BE FREE FROM RUNS, DROPS, RIDGES, WAVES, LAPS, BRUSH MARKS, VARIATIONS IN COLOR, TEXTURE AND FINISH. TEST APPLICATIONS SHALL BE PERFORMED AT THE WORK AREA OF THE CONTRACTOR TO DETERMINE MATERIAL CHARACTERISTICS.

---SHOP COATING

ALL SURFACES SHALL BE COATED WITHIN 6 HOURS AFTER SURFACE PREPARATION. WHEN THE INTERVAL EXCEEDS 6 HOURS, OR SURFACES BECOME CONTAMINATED, PRIOR TO THIS TIME LIMIT, AREAS SHALL BE RECLEANED IN ACCORDANCE WITH THE ---BLAST CLEANING PARAGRAPH.

---FIELD COATING OF DAMAGED SURFACES

DAMAGED AREAS SHALL BE COATED THE DAY SURFACE PREPARATION IS PERFORMED. IF COATING OPERATION IS NOT ACCOMPLISHED, SURFACES SHALL BE RECLEANED IN ACCORDANCE WITH THE "---POWER TOOL CLEANING" PARAGRAPH.

---MATERIALS---

---GENERAL

COATINGS OR COMPONENTS OF COATING BY DIFFERENT MANUFACTURERS SHALL NOT BE INTERMIXED.

THE MANUFACTURER'S RECOMMENDATIONS FOR THINNING, MIXING, AND HANDLING HIS PRODUCT SHALL BE CONSIDERED A PART OF THIS SPECIFICATION.

COMPRESSED AIR USED FOR SPRAYING COATING MATERIALS SHALL BE FREE OF DETRIMENTAL AMOUNTS OF MOISTURE OR OIL.

ZINC-RICH COATINGS SHALL BE GRAY. NO TINT SHALL BE ADDED THAT WILL APPRECIABLY AFFECT CHANGE IN COLOR FROM THAT OF THE CHARACTERISTIC COLOR OF THE ZINC PIGMENT.

---INORGANIC ZINC-RICH COATING

INORGANIC ZINC-RICH COATING MATERIAL SHALL BE PROVIDED IN ACCORDANCE WITH SPECIFICATION KSC-SPEC-F-0020, TYPE 1, CLASS 1. PRODUCTS QUALIFIED UNDER THIS SPECIFICATION ARE LISTED IN APPROVED PARTS LIST KSC-SPEC-F-0020-KAPL-MAT-4.

---ORGANIC ZINC-RICH COATING

ORGANIC ZINC-RICH COATING: ORGANIC ZINC-RICH COATINGS SHALL ONLY BE EMPLOYED TO REPAIR DAMAGED AREAS OF INORGANIC ZINC-RICH COATINGS AND DAMAGED GALVANIZED SURFACES. SURFACE PREPARATION SHALL BE BY POWER TOOL CLEANING TO SSPC-SP-3 AS OUTLINED ABOVE UNDER THE "---POWER TOOL CLEANING" PARAGRAPH. ORGANIC ZINC-RICH COATING SHALL BE COMPATIBLE WITH THE INORGANIC ZINC-RICH COATING SELECTED AND SHALL BE PER KSC-SPEC-F-0020, TYPE II, CLASS 1.

PRODUCTS QUALIFIED UNDER THIS SPECIFICATION ARE LISTED IN APPROVED PARTS LIST KSC-SPEC-F-0020-KAPL-MAT-4.

---COLORED TOPCOATS (OVER ZINC-RICH COATINGS PER KSC-STD-F-0001)

THESE SHALL BE APPLIED OVER THE ZINC-RICH COATINGS ONLY WHERE INDICATED AND SHALL CONFORM TO MIL-L-81352 OR MIL-P-22750, AND SHALL BE COMPATIBLE WITH THE ZINC COATING. FILM THICKNESS SHALL BE SUFFICIENT FOR UNIFORM COLOR AND COVERAGE. COLORED TOPCOATS SHALL COMPLY WITH FEDERAL STANDARD 595. FOR TOP COATS REFER TO SECTION OF THE SPECIFICATIONS ENTITLED "PAINTING AND FINISHING." TOP COATS SHALL BE APPLIED NOT LESS THAN 7 DAYS AFTER APPLICATION OF ZINC-RICH COATING. WHERE A PRIME COAT IS REQUIRED FOR BONDING OF TOP COAT, THIS SHALL BE PROVIDED BY THE CONTRACTOR.

---INSPECTION---

---CONTRACTOR'S INSPECTION

THE CONTRACTOR SHALL PROVIDE INSPECTORS AS REQUIRED TO ASSURE THAT THE SPECIFICATION REQUIREMENTS ARE FULFILLED, THE COST OF SAID INSPECTION SERVICES TO BE INCLUDED IN THE CONTRACT PRICE AND AT NO FURTHER ADDITIONAL COST TO THE GOVERNMENT.

---GOVERNMENT INSPECTION

THE GOVERNMENT RESERVES THE RIGHT TO INSPECT THE WORK AT ANY TIME FOR CONTRACT COMPLIANCE INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING INSPECTIONS:

AREAS MAY BE INSPECTED PRIOR TO STARTING SURFACE PREPARATION FOR ADEQUATE EQUIPMENT PROTECTION.

CLEANED SURFACES MAY BE INSPECTED PRIOR TO COATING APPLICATION TO ENSURE SURFACE PREPARATION COMPLIES WITH THAT SPECIFIED.



---FINAL INSPECTION

FINAL INSPECTION FOR DRY FILM THICKNESS, POROSITY, AND JOINT SEALING WILL OCCUR AFTER COATING IS COMPLETELY DRY.

---SAFETY---

---GENERAL

SEE SECTION ENTITLED "CONTRACT SCHEDULE".