

GENERAL NOTES

IF THE CONTRACTOR CANNOT MEET THE SPECIFIED STRAIGHTNESS TOLERANCES BY HEAT STRAIGHTENING, HE SHALL CUT OUT THE DAMAGED WEB AND BOTTOM FLANGE AND REPLACE WITH NEW STRUCTURAL STEEL OF THE SAME TYPE AND SHAPE BY FULL PENETRATION BUTT WELDING AS PER 513.17 OF THE CMS AND SUBSEQUENT NONDESTRUCTIVE TESTING AS PER 513.21 OF THE CMS. TWO (2) MIN. Ø COPE HOLES SHALL BE PROVIDED AT ALL WELD INTERSECTIONS. RADIOGRAPHS SHALL BE SUBMITTED TO THE DIRECTOR FOR REVIEW AND APPROVAL. CERTIFIED TEST DATA FOR ALL STRUCTURAL STEEL SHALL BE FURNISHED TO THE ENGINEER SHOWING COMPLIANCE WITH THE REQUIREMENTS OF 711 OF THE CMS. IF THIS METHOD OF REPAIR IS CHOSEN, THE CONTRACTOR SHALL REMOVE THE DEAD LOAD OF THE DAMAGED MEMBER IN A MANNER DEEMED SATISFACTORY TO THE ENGINEER BEFORE THE REMOVAL AND REPLACEMENT PROCESS BEGINS. ANY DAMAGE TO THE STRUCTURE CAUSED BY IMPROPER JACKING AND SUPPORT SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE STATE.

IF, AS A RESULT OF THE ACCIDENT OR STRAIGHTENING PROCESS, THE TOP FLANGE OF THE BEAM/GIRDER HAS PULLED AWAY FROM THE CONCRETE DECK, THE RESULTANT VOID SHALL BE COMPLETELY FILLED BY EPOXY INJECTION AFTER COMPLETION OF THE BEAM REPAIR, AS NOTED IN THE PROPOSAL NOTE ENTITLED, "CONCRETE REPAIR BY EPOXY INJECTION".

BASIS OF PAYMENT

ALL OF THE ABOVE IS TO BE INCLUDED FOR PAYMENT UNDER:

ITEM	UNIT	DESCRIPTION
SPECIAL	LUMP SUM	HEAT STRAIGHTENING OF DAMAGED STRUCTURAL STEEL

COAL TAR EPOXY COATING

A. DESCRIPTION

1. THIS WORK SHALL CONSIST OF PROVIDING ALL MATERIALS, SUPERVISION, LABOR, EQUIPMENT, TOOLS AND SUPPLIES NECESSARY TO PROVIDE A PROTECTIVE COAL TAR EPOXY COATING SYSTEM FOR THE STEEL BEAM STRUTS USED IN THE STABILIZATION OF THE FORWARD ABUTMENT OF STRUCTURE LAK-90-2920 AS SHOWN ON SHEET [29/37].

2. THE COATING SHALL BE APPLIED TO ALL SURFACES OF THE STEEL BEAMS, PLATE CONNECTIONS AND ALL BOLTS, NUTS AND WASHERS SHALL BE COATED IN THEIR ENTIRETY, EXCEPT FOR THE THREADS AND NUTS WHICH SHALL BE COATED IN THE FIELD AFTER ASSEMBLY.

B. COATING MATERIALS

1. THE COATING SHALL BE SELF-CURING CONSISTING OF TWO COMPONENTS. THE MATERIAL USED SHALL MEET OR EXCEED ALL THE REQUIREMENTS OF THE CORPS OF ENGINEERS SPECIFICATION C-200, GOVERNMENT SPECIFICATION MIL-P-23236 AND STEEL STRUCTURES PAINTING COUNCIL PAINT SYSTEM SSPC-PAINT NO. 16, COAL TAR EPOXY-POLYAMIDE BLACK.

2. ALL COATINGS SHALL BE SO PROCESSED AND PACKAGED AS TO INSURE THAT WITHIN A PERIOD OF ONE YEAR FROM DATE OF MANUFACTURE, THEY WILL NOT GEL, LIVER OR THICKEN DELETERIOUSLY OR FORM GASES IN THE CLOSED CONTAINER.

C. PACKAGING AND LABELING

COATINGS AND VEHICLES SHALL BE PACKAGED IN STANDARD CONTAINERS NOT LARGER THAN 5 GALLONS IN SIZE, WITH REMOVABLE FRICTION OR LUG-TYPE COVERS. EACH CONTAINER OF SEPARATELY PACKAGED COMPONENTS SHALL BE CLEARLY AND DURABLY LABELED TO INDICATE THE PURCHASER'S ORDER NUMBER, DATE OF MANUFACTURE, MANUFACTURER'S BATCH NUMBER, QUANTITY, COLOR, COMPONENT IDENTIFICATION, AND THE DESIGNATED NAME AND FORMULA OR SPECIFICATION NUMBER OF THE COATING TOGETHER WITH SPECIAL INSTRUCTIONS.

D. CERTIFICATIONS

1. IN ADDITION TO MEETING THE OTHER QUALIFICATIONS, THE COATING MANUFACTURE SHALL CERTIFY THAT:

A. HE HAS BEEN A PRODUCER OF COATINGS OF THIS CLASS FOR A PERIOD OF AT LEAST TWO YEARS.

B. THE COATING BEING OFFERED UNDER THIS SPECIFICATION IS THE SAME FORMULATION WHICH HAS BEEN MANUFACTURED AND DISTRIBUTED BY HIM DURING THIS TWO YEAR PERIOD.

C. THE COATING BEING OFFERED UNDER THIS SPECIFICATION HAS BEEN SUCCESSFULLY USED IN SEA WATER, IMMERSION SERVICE FOR A LEAST TWO YEARS.

E. SURFACE PREPARATION

1. ALL SURFACES SHALL BE THOROUGHLY PREPARED FOR COATING APPLICATION IN STRICT ACCORDANCE WITH THE COATING MANUFACTURER'S RECOMMENDATION. ALL CLEANING AND COATING WORK MUST BE PERFORMED IN A HEATED BUILDING. PRECEDING GRIT BLASTING, STEEL MUST BE HEATED TO A LEAST 100 DEGREES F TO ELIMINATE POSSIBILITY OF MOISTURE ON THE SURFACES TO BE CLEANED AND COATED.

2. GRIT BLASTING SHALL BE TO CLEAN NEAR WHITE METAL BLAST AS DEFINED BY SSPC SPECIFICATION SP-10, ALL WORK BLASTED IN ONE DAY MUST BE COATED ON THAT DAY.

3. ANY AREAS OF THE SURFACE WHICH SHOW TRACES OF OIL, GREASE OR OTHER ORGANIC MATTER SHALL BE REMOVED BY USING SOLVENT WASH AS DEFINED BY STEEL STRUCTURES PAINTING COUNCIL SPECIFICATION SP-1.

4. ALL SURFACES TO BE COATED MUST BE COMPLETELY DRY, FREE OF MOISTURE, SOIL, DUST, GRIT, AT THE TIME THE COATING IS APPLIED.

5. THE FINISHED COATING SHALL BE POST-CURED AT A TEMPERATURE OF APPROXIMATELY 110 DEGREES F WHEREVER THE AMBIENT AVERAGE TEMPERATURE FALLS BELOW 70 DEGREES F.

F. APPLICATION OF COATING

ALL COATINGS SHALL BE APPLIED BY BRUSH OR SPRAY, USING COMMERCIALY AVAILABLE SPRAY EQUIPMENT. THE COATINGS SHALL EXHIBIT REASONABLE LEVELING WITHOUT EXCESSIVE SAGGING WHEN APPLIED AT THE REQUIRED FILM THICKNESS. COATING MANUFACTURER'S RECOMMENDATIONS SHALL BE ADHERED TO STRICTLY. THE TEMPERATURE OF THE COATING SHALL NOT BE LESS THAN THE TEMPERATURE OF THE STEEL AT THE TIME OF APPLICATION. THE TEMPERATURE OF THE SUBSTRUCTURE MUST BE AT LEAST 5 DEGREES F ABOVE THE DEW POINT TEMPERATURE.

G. PROGRESS OF COATING WORK

WHERE COATING ON ANY TYPE OF SURFACE HAS COMMENCED, THE COMPLETE COATING OPERATION, INCLUDING PRIMING AND FINISHING COATS WHEN MULTIPLE COATS ARE USED ON THAT PORTION OF THE WORK, SHALL BE COMPLETED AS SOON AS PRACTICABLE, WITHOUT PROLONGED DELAYS. WHERE NECESSARY, SUFFICIENT TIME SHALL ELAPSE BETWEEN SUCCESSIVE COATS TO PERMIT THEM TO DRY PROPERLY FOR RECOATING AND THIS PERIOD SHALL BE MODIFIED AS NECESSARY TO SUIT SHOP CONDITIONS. FASTER BETWEEN-COAT APPLICATIONS ARE POSSIBLE AT HIGHER TEMPERATURES; FOR EXAMPLE, IF INITIAL COAT IS APPLIED AT 100 DEGREES F BY USE OF AN IN-LINE HEATER, A SECOND COAT MAY USUALLY BE APPLIED WITHIN THREE HOURS AFTER THE FIRST COAT.

H. COATING THICKNESS

1. A MINIMUM THICKNESS (NOT AVERAGE) OF 16 MILS DRY FILM IS REQUIRED ON ALL SURFACES TO BE COATED.

2. WHERE TWO COATS ARE REQUIRED TO ACHIEVE THE RECOMMENDED FILM BUILD, THE INTERVAL BETWEEN THE COATS SHOULD BE AS SHORT AS POSSIBLE. TO INSURE MAXIMUM INTERCOAT ADHESION, IT IS RECOMMENDED THAT:

A. THE NEXT COAT BE APPLIED AS SOON AS POSSIBLE AFTER THE PREVIOUS COAT IS FIRM.

B. IF PREVIOUS COAT HAS CURED FOR MORE THAN RECOAT TIME SPECIFIED BY MANUFACTURER, BRUSH SANDBLAST, FOLLOWED BY DRY CLEANING SUCH AS VACUUMING, USE OF AIR HOSES OR SWEEPING TO REMOVE DIRT. ALL SURFACES TO BE RECOATED MUST SHOW A SURFACE PROFILE SUFFICIENT TO PROVIDE AN ADEQUATE MECHANICAL BOND. SURFACE PROFILE IS ESSENTIAL FOR INTERCOAT ADHESION.

I. FINAL CURING TIME

COATING SURFACES SHALL BE PERMITTED AS LONG A DRYING TIME AS PRACTICABLE BUT IN ANY EVENT THE FOLLOWING MINIMUM REQUIREMENTS SHALL BE MET. THE STEEL COATED WITH THE COAL TAR EPOXY SYSTEM SHALL NOT BE DRIVEN UNTIL THE FINISHED COATING HAS CURED AT LEAST 7 DAYS AT 77 DEGREES F, OR BEEN POST-CURED AT HIGHER TEMPERATURES FOR A SHORT PERIOD OF TIME IN ACCORDANCE WITH THE COATING MANUFACTURER'S RECOMMENDATIONS.

J. THINNING

THINNING OF THE COATING MATERIAL FOR APPLICATION WILL BE PERMITTED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

K. INSPECTION

1. SATISFACTORY PERFORMANCE WILL BE BASED ON ACCEPTANCE OF THE COMPLETED WORK BY THE ENGINEER. ALL WORK WILL BE SUBJECT TO THE INSPECTION BY THE ENGINEER. THE GRIT BLASTING IS TO BE APPROVED BEFORE THE START OF THE COATING APPLICATION.

2. INSPECTION OF THE COMPLETED COATING WILL BE BASED UPON A NORDSON MIKROTEST OR OTHER MAGNETIC DETECTOR READINGS. DETECTION OF INADEQUATELY COATED SECTIONS WILL BE INDICATED BY CIRCLING WITH CHALK THE AREAS TO BE RECORDED.

L. APPEARANCE OF FINISHED COATING

1. THE FINISHED COATING SHALL BE GENERALLY SMOOTH AND FREE OF SHARP PROTUBERANCES WHICH COULD BE REMOVED BY ABRASION. A MINOR AMOUNT OF SAGS, DIMPLING OR CURTAINING WHICH DOES NOT EXCEED 2 TO 3% OF THE SURFACE WILL NOT BE CONSIDERED CAUSE FOR REJECTION UNLESS THEY PRESENT SHARP EDGES WHICH MIGHT BE REMOVED BY ABRASION.

2. SHARP PROTUBERANCES SHALL BE CUT OFF USING A SHARP WOOD CHISEL LAID FLAT AGAINST THE SURFACE. THE AREA FROM WHICH MATERIAL HAS BEEN REMOVED SHALL BE RECOATED TO SMOOTH THE SURFACE.

M. PROTECTION OF COATED STEEL

THE CONTRACTOR SHALL EXERCISE EXTREME CARE IN THE HANDLING OF ALL COARSE STEEL SO AS NOT TO DAMAGE THE COATED SURFACE. ANY DAMAGE TO THE COATING DUE TO HANDLING OR CONSTRUCTION OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE.

N. SAFETY

1. IF COATING IS APPLIED BY SPRAY IT SHALL BE PERFORMED IN AN ENCLOSED PLACE WITH A FORCED VENTILATION SYSTEM. THE SYSTEM SHALL BE CAPABLE OF POSITIVELY EXCHANGING THE AIR IN THE ENCLOSED PLACE FOR FRESH AIR AT THE RATE OF NOT LESS THAN 5,000 CUBIC FEET PER MINUTE FOR EACH SPRAY GUN IN OPERATION, AND ALL PARTS OF THE SPACE SHALL BE SWEEPED BY MOVING AIR. THE VENTILATING SYSTEM SHALL BE OPERATED DURING THE ENTIRE OPERATION OF APPLICATION AND SHALL BE CONTINUED AFTER SPRAYING HAS BEEN HALTED UNTIL THE APPLIED FILM IS NO LONGER GIVING OFF APPRECIABLE SOLVENT VAPORS. THE AIR IN THE ENCLOSED PAINTING SPACE SHALL BE SAFE AT ALL TIMES FROM FIRE AND EXPLOSION HAZARDS AS DETERMINED BY THE EXPLOSI-METER, MANUFACTURED BY THE MINE SAFETY APPLIANCE COMPANY. WHERE SPRAYING IS BEING CARRIED OUT IN ENCLOSED OR OTHER SPACES NOT FREELY SWEEPED BY NATURAL WIND CURRENTS, WORKMEN SHALL WEAR RESPIRATORS FED BY FRESH AIR. GRIT BLAST NOZZLE OPERATORS SHALL WEAR FRESH AIR-FED HELMETS UNDER ALL CIRCUMSTANCES.

2. IN ADDITION TO NORMAL SAFETY PRECAUTIONS, WORKMEN SHALL TAKE EXTRA CARE TO AVOID CONTACT OF THE PAINT WITH THE SKIN AND TO AVOID INHALING FUMES OR ATOMIZED PARTICLES OF THE COATING.

O. MEASUREMENT AND PAYMENT

SEPARATE MEASUREMENT AND PAYMENT WILL NOT BE MADE FOR COAL TAR EPOXY COATING. THE COST CONNECTED THEREWITH SHALL BE INCLUDED WITH THE APPROPRIATE ITEM AS SPECIFIED.

ITEM SPECIAL - LOW-PRESSURE EPOXY INJECTING DELAMINATED CONCRETE

I. DESCRIPTION: THIS WORK SHALL CONSIST OF LOW-PRESSURE EPOXY INJECTION OF DELAMINATED BOTTOM COVER CONCRETE OF BRIDGE DECKS IN ACCORDANCE WITH THESE SPECIFICATIONS, IN REASONABLY CLOSE CONFORMITY WITH THE PLANS AND MANUFACTURER'S RECOMMENDATIONS AS DIRECTED BY THE ENGINEER.

II. MATERIALS: THE PASTE AND INJECTION EPOXIES SHALL BE MATERIALS PRODUCED IN THE UNITED STATES BY A COMPANY RECOGNIZED AS AN ESTABLISHED MANUFACTURER OF CHEMICAL PRODUCTS. THE EPOXY INJECTION SYSTEM SHALL BE ONE THAT IS DESCRIBED IN BROCHURES OR TECHNICAL PAPERS WHICH CONTAIN DOCUMENTATION OF SUCCESSFUL REPAIRS IN SIMILAR APPLICATION SITUATIONS.

THE EPOXY INJECTION RESIN SHALL BE CAPABLE OF APPLICATION, POSITIVE ADHERENCE AND STRENGTH DEVELOPMENT WHEN APPLIED TO MOIST OR WET SURFACES AT TEMPERATURES OF 33°F (1°C) AND ABOVE; HOWEVER, FIELD APPLICATIONS PREFERABLY SHALL BE MADE TO DRY SURFACES.

WHEN MANUFACTURED, THE FORMULATIONS SHALL CONTAIN NO UNREACTIVE DILUENTS, SOLVENTS OR OTHER FILLERS AND SHALL BE 100% SOLIDS. THE EPOXIES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

1. INJECTION EPOXY ADHESIVE

A. COMPONENT A SHALL BE MODIFIED EPOXY RESIN.

1. VISCOSITY* @ 40 ± 3°F	1,000 - 8,000 CPS
2. VISCOSITY* @ 77 ± 3°F	50 - 700 CPS
3. ASH CONTENT	1% MAX.
4. SHELF LIFE, ORIGINAL UNOPENED SEALED CONTAINER (SEE NOTE A)	18 MONTHS