

GENERAL NOTES

LAK-91-3.83

OHIO
FHWA
REGION 5

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ITEM SPECIAL - SEALING OF CONCRETE SURFACES

CONCRETE SEALER SHALL BE APPLIED TO THE FOLLOWING SURFACES:

BRIDGE NO. LAK -91-0455

1. AN EPOXY CONCRETE SEALER SHALL BE APPLIED TO THE PORTION OF THE SUBSTRUCTURE AND TO THE SUPERSTRUCTURE CONCRETE SURFACES SHOWN ON SHEETS 4/8, 5/8.
2. A NON-EPOXY SEALER SHALL BE APPLIED TO ALL ABOVE-GROUND SURFACES OF THE PIERS.

BRIDGE NO. LAK-91-0547

1. A NON-EPOXY SEALER SHALL BE APPLIED TO THE SUPERSTRUCTURE CONCRETE SURFACES AND THE WALKWAY RAMP CONCRETE SURFACES SHOWN ON SHEETS 6/8, 7/8, 8/8.

SEE THE PROPOSAL NOTE NO. 110, "SEALING OF CONCRETE SURFACES" FOR MATERIAL REQUIREMENTS AND APPLICATION RATES AND PROCEDURES.

PAYMENT SHALL BE MADE UNDER THE SQUARE FOOT UNIT PRICE FOR ITEM SPECIAL - SEALING OF CONCRETE SURFACES, EPOXY OR ITEM SPECIAL - SEALING OF CONCRETE SURFACES, NON-EPOXY

ITEM SPECIAL - CROSS FRAME REPAIRS

- A. **DESCRIPTION:** THIS ITEM SHALL CONSIST OF ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY TO REMOVE AND REPLACE THE CROSSFRAMES OF BRIDGE NO. LAK-91-0547 AS SHOWN ON THE PLANS, AS SPECIFIED HEREIN, AND AS DIRECTED BY THE ENGINEER.
- B. **REMOVAL OF EXISTING MEMBERS:** EXISTING CROSSFRAME MEMBERS TO BE REPLACED SHALL BE REMOVED FROM THE STRUCTURE BY CUTTING WITH A TORCH. THE END OF EACH MEMBER SHALL BE REMOVED AS CLOSE AS POSSIBLE TO THE EXISTING WEB OF EACH GIRDER WITHOUT DAMAGING THE WEB. EXTREME CARE SHALL BE USED IN THE OPERATION OF THE TORCH SO AS NOT TO DAMAGE ANY PORTION OF THE STRUCTURE TO REMAIN. ANY SUCH DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE. THE REMAINING STUB SHALL THEN BE CAREFULLY GROUND FLUSH WITH THE FACE OF THE EXISTING WEB. WHERE CUTTING IS NOT NECESSARY TO REMOVE CROSSFRAME END, THE WELD ON THE WEB SHALL BE GROUND SMOOTH.
- C. **INSTALLATION OF NEW CROSSFRAMES:** EACH NEW CROSSFRAME TO BE INSTALLED SHALL BE LOCATED AT A POSITION THAT IS OFFSET SIX INCHES TOWARDS THE CENTER OF THE BRIDGE FROM THE ORIGINAL LOCATION OF THE CROSSFRAME. EACH END OF EACH NEW MEMBER SHALL BE ATTACHED TO THE GIRDER WEB WITH A 1/4 INCH CONTINUOUS FILLET WELD AS SHOWN ON THE PLANS AND THE JUNCTION OF CROSSFRAME DIAGONALS SHALL BE CONNECTED WITH A 1/4-INCH CONTINUOUS FILLET WELD AS SHOWN ON THE PLANS. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH ITEM 513.17. WELDS SHALL BE INSPECTED USING NONDESTRUCTIVE TESTING METHODS IN ACCORDANCE WITH ITEM 513.21. NONDESTRUCTIVE TESTING METHODS SHALL BE MAGNETIC PARTICLE AND/OR DYE PENETRANT
- D. **PAYMENT:** PAYMENT FOR THIS WORK WILL BE AT THE CONTRACT LUMP SUM PRICE FOR ITEM SPECIAL - CROSSFRAME REPAIRS.

ITEM SPECIAL - HANDRAIL REPAIR

THIS WORK SHALL CONSIST OF REPLACING MISSING SECTIONS OR REMOVING AND REPLACING DAMAGED SECTIONS OF HANDRAIL AT BRIDGE NO. LAK-91-0547 WHERE SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN.

THE HANDRAIL PROVIDED SHALL BE 2" DIAMETER SCHEDULE 40 STEEL PIPE TO MATCH THE EXISTING HANDRAIL AND SHALL INCLUDE BRACKETS AND ATTACHMENT HARDWARE AS NECESSARY FOR A SECURE INSTALLATION.

PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR ITEM SPECIAL - HANDRAIL REPAIR.

ITEM SPECIAL - GIRDER REPAIR

- A. **DESCRIPTION:** THIS ITEM SHALL CONSIST OF ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY TO REPAIR THE GIRDERS OF BRIDGE NO. LAK-91-0547 AS SHOWN ON THE PLANS, AS SPECIFIED HEREIN, AND AS DIRECTED BY THE ENGINEER.
- B. **REPAIR OF WEB TEARS AND CRACKS**
DESCRIPTION. CRACKS AND TEARS IN THE GIRDER WEBS SHALL BE REPAIRED BY GROOVING AND WELDING WHERE SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE REQUIREMENTS HEREIN.

PREPARATION. PORTIONS OF THE WEB ON EITHER SIDE OF A CRACK OR TEAR SHALL BE REALIGNED AS REQUIRED SO THAT THE SURFACE OF THE WEB AT THE CRACK OR TEAR SHALL BE FLUSH AND SHALL BE ALIGNED IN ONE PLANE. REALIGNMENT OF ANY WEB PLATES SHALL BE ACCOMPLISHED USING HEAT-STRAIGHTENING TECHNIQUES IN ACCORDANCE WITH ITEM SPECIAL - "HEAT STRAIGHTENING OF DAMAGED STRUCTURAL STEEL." CRACKS AND TEARS TO BE REPAIRED SHALL BE GROOVED WITH A 90 DEGREE V-GROOVE TO THE MID-DEPTH THICKNESS OF THE WEB FROM EACH SIDE OF THE WEB. A ROOT OPENING OF 1/8 INCH SHALL BE PROVIDED AT THE BASE OF THE GROOVES. THE GROOVES SHALL BE CENTERED ON AND SHALL FOLLOW THE CENTERLINE OF THE CRACK OR TEAR FOR THE FULL LENGTH OF THE CRACK. EACH END OF EACH CRACK OR TEAR SHALL BE PRECISELY LOCATED USING HOLE DRILLING AND MAG. PARTICLE AND/OR DYE PENETRANT. EACH END OF EACH CRACK OR TEAR SHALL BE DRILLED WITH A 3/8 INCH DIAMETER HOLE TO PROVIDE A DEFINITE END POINT TO EACH CRACK. THE HOLES SHALL BE DRILLED IN A MANNER THAT WILL NOT INDUCE ANY ADDITIONAL CRACKING, AND EXTREME CARE SHALL BE USED IN THE GROOVING PROCEDURES TO PREVENT ADDITIONAL DAMAGE. ANY DAMAGE TO THE GIRDERS AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, SUBJECT TO THE APPROVAL OF THE ENGINEER.

WELD INSTALLATION. A CONTINUOUS GROOVE WELD SHALL BE PLACED ALONG THE PREPARED SURFACES OF THE CRACKS AND TEARS. WELDS SHALL BE INSTALLED ON EACH SIDE OF EACH CRACK. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH ITEM 513.17. WELDS SHALL BE GROUND FLUSH WITH THE SURFACE OF THE WEBS ON EACH SIDE OF THE WEB. AFTER WELDING AND GRINDING PROCEDURES HAVE BEEN COMPLETED, THE WELDS SHALL BE INSPECTED USING RADIOGRAPHIC (NONDESTRUCTIVE) TESTING METHODS IN ACCORDANCE WITH ITEM 513.21.

C. REPAIR OF FLANGE NICKS

DESCRIPTION. NICKS IN THE BOTTOM FLANGES OF THE GIRDERS SHALL BE REPAIRED BY GRINDING TO SMOOTH TRANSITIONS WHERE SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE REQUIREMENTS HEREIN.

PROCEDURE. ALL LOCATIONS OF FLANGE NICKS TO BE REPAIRED ARE SHOWN ON THE PLANS. NICKS SHALL BE REMOVED BY GRINDING AND SMOOTHING TO A 3:1 SLOPE. GRINDING AND SMOOTHING SHALL BE DONE ONLY IN A DIRECTION PARALLEL TO THE LONGITUDINAL AXIS OF THE GIRDER USING A GRINDING WHEEL WITH A MINIMUM RADIUS OF SIX INCHES. AFTER GRINDING OPERATIONS HAVE BEEN COMPLETED, THE AREA AROUND THE NICK REPAIRS SHALL BE INSPECTED USING NONDESTRUCTIVE TESTING METHODS IN ACCORDANCE WITH ITEM 513.21. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER, IN WRITING, HIS PROPOSED METHOD AND ALL PERTINENT INFORMATION REGARDING THE GIRDER REPAIR PROCEDURE BEFORE ANY GIRDER FLANGE REPAIRS BEGIN. NONDESTRUCTIVE TESTING METHODS SHALL BE MAGNETIC PARTICLE AND/OR DYE PENETRANT.

D. PAYMENT: PAYMENT FOR THIS WORK WILL BE AT THE CONTRACT LUMP SUM PRICE FOR ITEM SPECIAL - GIRDER REPAIR.

ITEM SPECIAL - HEAT STRAIGHTENING OF DAMAGED STRUCTURAL STEEL

DESCRIPTION. THIS ITEM SHALL CONSIST OF ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY TO HEAT STRAIGHTEN DAMAGED PORTIONS OF THE TWO EXISTING GIRDERS OF BRIDGE NO. LAKE-91-0547 AS SHOWN ON THE PLANS. IT SHALL BE ACCOMPLISHED IN ACCORDANCE WITH 513.06 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) AND AS NOTED IN THESE PLANS.

PROCEDURES, REQUIREMENTS AND RESTRICTIONS

1. PRIOR TO BEGINNING THE WORK THE CONTRACTOR SHALL SUBMIT TO THE DIRECTOR IN WRITING DETAILED INFORMATION AND SKETCHES DESCRIBING THE EXACT PROCEDURES TO BE USED TO COMPLETE THE WORK SPECIFIED HEREIN.
2. THE CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORTS FOR THE GIRDERS ON EITHER SIDE OF THE AREA TO BE HEAT STRAIGHTENED. THE TEMPORARY SUPPORTS SHALL BE CAPABLE OF SUPPORTING A LOAD OF 60,000 POUNDS EACH AND SHALL BE PLACED APPROXIMATELY FIVE FEET FROM THE CENTERLINE OF THE DAMAGED AREA. THE TEMPORARY SUPPORTS SHALL BEAR UPON A 3'-6" SQUARE GRILLAGE CONSTRUCTED OF 6 X 6 TIMBERS AND SHALL BE INSTALLED TO CONTACT THE BOTTOM FLANGE OF THE GIRDER.

3. TRAFFIC SHALL REMAIN OPEN IN THE LEFT LANE NORTH-BOUND AT ALL TIMES DURING THE HEAT STRAIGHTENING OPERATIONS. LANE CLOSURE SHALL CONFORM TO OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. HEAT STRAIGHTENING OPERATIONS SHALL BE PERFORMED PRIOR TO ANY ROADWAY RESURFACING UNDER BRIDGE NO. LAK-91-0547.
4. REPAIR OF FLANGE NICKS AND OF TEARS OR CRACKS IN THE GIRDER WEBS SHALL BE AS PER ITEM SPECIAL - GIRDER REPAIR.
5. WORK ON EXISTING CROSSFRAMES SHALL BE AS PER ITEM SPECIAL - CROSSFRAME REPAIR.
6. THE REPAIRS SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF A PERSON WHO SHALL PRESENT WRITTEN DOCUMENTATION PRIOR TO BEGINNING WORK OF HIS SUCCESSFUL HEAT STRAIGHTENING EXPERIENCES WITH COMPARABLE BRIDGE BEAMS/GIRDERS. HE SHALL POSSESS THE KNOWLEDGE AND EXPERIENCE TO APPLY THE HEAT IN SUCH A MANNER, SEQUENCE AND AMOUNT THAT THE FINAL STRAIGHTENED MEMBER RETAINS AS LITTLE RESIDUAL STRESS AS POSSIBLE. HEAT SHALL BE APPLIED AT OR BELOW 1200°F AND MONITORED WITH CONTACT THERMOMETERS, PYROMETRIC STICKS, OR OTHER HEAT INDICATING DEVICES. THESE HEAT INDICATING DEVICES SHALL BE SUPPLIED BY THE CONTRACTOR AND MADE AVAILABLE TO THE INSPECTOR AT ALL TIMES. TORCH TIP SIZES SHALL BE LIMITED TO 1" DIAMETER MAXIMUM. THE HEAT STRAIGHTENING SHALL BE ACCOMPLISHED WITH THE USE OF "V" HEATS OR TRIANGULAR HEATS. THE BASE OF THE "V" SHALL NOT EXCEED 6". THE "V" IS HEATED FROM THE APEX TO THE BASE IN A MANNER SUCH THAT THE ONLY PLACE SHOWING COLOR IS DIRECTLY UNDER THE TORCH. THE ENTIRE "V" SHALL NOT BE HEATED SIMULTANEOUSLY NOR SHALL IT BE REHEATED UNTIL AFTER IT HAS COOLED TO THE TOUCH. FORCED COOLING IS NOT PERMITTED. THE STRAIGHTENING SHALL BE ACCOMPLISHED WITH AS LITTLE MECHANICAL FORCE AS POSSIBLE.

THE FINAL WEB SHALL BE LESS THAN 3/16" OUT OF PLUMB. LOCALIZED DEFLECTIONS IN THE WEB SHALL BE NO MORE THAN 3/16" AS MEASURED WITH A STRAIGHT EDGE HELD VERTICALLY AND HORIZONTALLY. THESE TOLERANCES SHALL BE MET BEFORE ANY CROSS FRAMES OR OTHER LATERAL RESTRAINT DEVICES ARE ATTACHED. IN NO CASE SHALL THE GIRDERS BE FORCED INTO POSITION AND THEN WELDED TO THE CROSS FRAMES TO HOLD THEM IN POSITION.

THE COMPLETED STRAIGHTENING SHALL BE FOLLOWED BY AN INSPECTION FOR CRACKS ON THE FLANGE EDGES. THIS INSPECTION SHALL BE MADE BY USING A MAGNETIC PARTICLE INSTRUMENT SUCH AS THE PARKER CONTOUR PROBE OR BY DYE PENETRANT TESTING. CRACKS DISCOVERED AS A RESULT OF THIS INSPECTION WILL BE REPAIRED BY THE CONTRACTOR WITH THE COST BEING SUBJECT TO NEGOTIATION.

IF AS A RESULT OF THE ACCIDENT OR STRAIGHTENING PROCESS, THE TO FLANGE OF THE BEAM/GIRDER HAS PULLED AWAY FROM THE CONCRETE DECK, THE VOID SHALL BE FILLED WITH NON-SHRINKING EPOXY GROUT OR MORTAR (SS 952) APPLIED UNDER PRESSURE THROUGH HOLES DRILLED IN THE DECK OVER THE VOID, OR FILLED BY EPOXY INJECTION, AFTER COMPLETION OF THE BEAM REPAIR.

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

Burgess & Niple, Limited Engineers and Architects		bn 1962	3 / 8
STRUCTURE GENERAL NOTES			
BRIDGE NO LAK-91-0455 BRIDGE NO. LAK-91-0547			
DESIGNED	DRAWN	TRACED	CHECKED
WAC	PRD		RBB
REVIEWED DATE	7-20-90	REVISED	