

# GENERAL NOTES

**ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN**

**ITEM 520 - PNEUMATICALLY PLACED MORTAR, AS PER PLAN**

THESE ITEMS SHALL BE USED AS DIRECTED BY THE ENGINEER TO REPAIR DAMAGED CONCRETE AREAS. GENERALLY, ITEM 520 SHALL BE USED WHERE THE SURFACE TO BE REPAIRED CANNOT READILY BE FORMED AND POURED OR THE REPAIR DEPTH IS LESS THAN THREE INCHES. ITEM 519 SHALL BE USED WHERE THE REPAIR DEPTH IS THREE INCHES OR GREATER AND THE SURFACE CAN BE READILY FORMED AND POURED. ALL SURFACES TO BE PATCHED AND THE EXPOSED REINFORCING STEEL WITHIN, SHALL BE THOROUGHLY CLEANED BY SAND BLASTING PRIOR TO THE CLEANING SPECIFIED BY 519.04 AND 520.05. CLEANING SHALL PRECEDE APPLICATION OF THE PATCHING MATERIAL OR ERECTION OF THE FORMS BY NOT MORE THAN 24 HOURS. See also proposal note titled Item 520 - Pneumatically Placed Mortar

**ITEM SPECIAL - SEALING OF CONCRETE SURFACES (EPOXY)**

A SEALER SHALL BE APPLIED TO THE EXPOSED CONCRETE SURFACES OF THE BRIDGES AS LISTED BELOW. SEE PROPOSAL NOTE FOR SEALER MATERIAL AND SURFACE PREPARATION REQUIREMENTS AND APPLICATION RATES AND PROCEDURES.

- 1) CURBS, SIDEWALKS AND PARAPETS (ALL FACES).
- 2) DECK EDGES AND THE UNDERSIDE IN ANY BAY LOCATED BENEATH AN OPEN OR SEALED JOINT OR AN UNDERSIDE EXTENDING BEYOND THE EXTERIOR BEAMS.
- 3) PIERS INCLUDING CAPS AND COLUMNS
- 4) ABUTMENTS INCLUDING BACKWALLS, BRIDGE SEATS AND WINGWALLS.

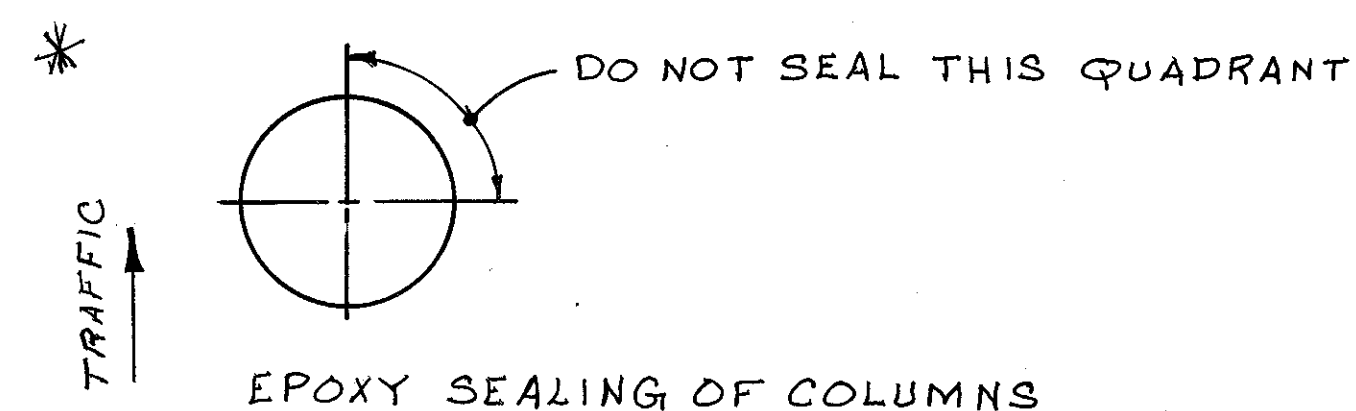
**ITEM 607 - FENCE, TYPE CL, AS PER PLAN, TYPE OPV**

THIS ITEM CONSISTS OF ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO INSTALL NEW CHAIN LINK FENCE RAILING, MOUNTED AT THE OUTSIDE FACE OF THE EXISTING PARAPETS ON STRUCTURES LAK-90-0877, 1054, 1297, 1921, 2210 AND 2920, AS SHOWN ON SHEET 37A/37. PAYMENT SHALL BE MADE AT THE PRICE BID FOR ITEM 607 - FENCE, TYPE CL, AS PER PLAN, TYPE OPV.

**ITEM 517 - RAILING, FACED AS PER PLAN**

THIS ITEM SHALL INCLUDE THE REMOVAL OF THE CONCRETE SAFETY CURBS. THE PARTIAL REMOVAL OF EXISTING PARAPETS AND TOPS OF WINGWALLS ON STRUCTURES LAK-90-1370 L&R/ 1487 L&R/ 1641 L&R/ 2003 L&R/ 2110 L&R, AS SHOWN ON SHEETS 2/37 TO 5/37. THE GREATER PORTION OF THE CONCRETE SAFETY CURB, THE ENDS OF EXISTING PARAPET, THE TOPS OF WINGWALLS AND THE TOP OF THE BULB ANGLE SHALL BE REMOVED. THE CONTRACTOR SHALL CAREFULLY REMOVE THE EXISTING ALUMINUM RAILINGS. THE CURVED TERMINAL PIECES WITH END PLATES SHALL BE DELIVERED AND UNLOADED AT A DESIGNATED AREA AT THE STATE MAINTENANCE YARD ON S.R. 91 IN MAYFIELD, OHIO. ALL OTHER RAILING MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR, AND HE IS RESPONSIBLE FOR IT REMOVAL FROM THE SITE.

1 INCH DIAMETER HOLES, 6 INCH DEEP (MIN.), SHALL BE DRILLED AT INTERVALS AS SHOWN ON THE PLANS. THE HOLES SHALL BE THOROUGHLY CLEANED OF ALL DUST AND DELETERIOUS MATERIAL. THE GROUT SHALL CONSIST OF CEMENT AND WATER USING TYPE I, TYPE III OR SHRINKAGE COMPENSATING CEMENT. CLEAN HOLES SHALL BE THOROUGHLY SATURATED WITH WATER FOR A MINIMUM OF 5 MINUTES PRIOR TO PLACING GROUT. IMMEDIATELY PRIOR TO GROUTING, ALL FREE STANDING WATER SHALL BE REMOVED FROM HOLES. AFTER INITIAL MIXING, THINNING OR RETEMPERING OF GROUT WITH EXTRA WATER SHALL NOT BE ALLOWED. HARDENED OR SET GROUT WHICH HAS BECOME TOO STIFF OR DRY TO PROVIDE A GOOD BOND SHALL BE DISCARDED. DOWELS SHALL NOT BE INSTALLED IF THE MEAN AIR OR GROUT TEMPERATURE IS LESS THAN 45° F. FURTHERMORE, AFTER PLACING, THE FRESH GROUT SHALL BE MAINTAINED AT A TEMPERATURE OF NOT LESS THAN 45° F FOR 72 HOURS, AND AT NOT LESS THAN 40° F FOR AN ADDITIONAL 4 DAYS. THE TEMPERATURE OF THE MIXED GROUT IMMEDIATELY BEFORE PLACING, SHALL NOT BE LESS THAN 50° F NOR MORE THAN 90° F. THE CEMENT GROUT SHALL BE CURED CONTINUOUSLY WITH WET RAGS FOR A MINIMUM PERIOD OF 3 DAYS WITHOUT DISTURBING THE DOWELS. GROUT ANCHORING USING EPOXY AS PER SS 853 AND 956 OR POLYESTER/VINYLESTER RESIN AS PER SS 852 AND 952 MAY BE USED IN LIEU OF THE ABOVE REQUIREMENTS WITH THE EXCEPTION THAT THE HOLE SIZE SHALL REMAIN AT 1 INCH DIAMETER.



ALL LOOSE AND UNSOUND CONCRETE IN THE AREA OF THE PARAPET TO BE FACED SHALL BE REMOVED. ALL REMAINING SOUND CONCRETE ON THE TOP AND ROADWAY SIDE OF THE EXISTING PARAPET SHALL BE MACHINE SCARIFIED 1/4 INCH DEEP. THE MINIMUM THICKNESS OF THE PROPOSED FACING SHALL BE 4 INCH. ALL REINFORCING STEEL SHALL BE EPOXY COATED AS PER SS 824. EPOXY COATED REINFORCING STEEL WHICH IS DAMAGED DUE TO CUTTING, BENDING OR FOR ANY OTHER REASON SHALL BE REPAIRED AS PER SS 824. CONCRETE COVER FOR ALL REINFORCING STEEL SHALL BE 2 INCHES. THE CONCRETE SURFACES TO BE FACED SHALL BE THOROUGHLY DRENCHED WITH CLEAN WATER AND ALLOWED TO DRY TO A DAMP CONDITION JUST BEFORE THE CONCRETE IS PLACED.

THE EXISTING DEFLECTION JOINTS SHALL BE EXTENDED COMPLETELY THROUGH THE PROPOSED FACING AND SHALL BE MADE BY FORMING OR SAWCUTTING THE HARDENED CONCRETE AS SOON AS IT HAS TAKEN ITS INITIAL SET. THE 1/4 INCH JOINTS SHALL BE SEALED 3/4 INCH DEEP (MIN) WITH AN IMPREGNATED, PRECOMPRESSED, EXPANDING FOAM SEALANT TAPE KNOWN AS WILL-SEAL AS MANUFACTURED BY ILLBRUCK/USA INC., MINNEAPOLIS, MINNESOTA; A LOW DENSITY CLOSED CELL, CROSS-LINKED ETHYLENE VINYL ACETATE FOAM KNOWN AS EVAZOTE 50 AS MANUFACTURED BY E-POXY INDUSTRIES, INC., RAVENA, NEW YORK OR E.V.A. AS MANUFACTURED BY THERMAL-CHEM INC., ELK GROVE, ILLINOIS; OR AN APPROVED EQUAL.

DESIGN STRESSES: CONCRETE CLASS S - UNIT STRESS 1,500 P.S.I.

REINFORCING STEEL ASTM A615, A616 OR A617  
GRADE 60 - UNIT STRESS 24,000 P.S.I.

THIS WORK SHALL INCLUDE THE FURNISHING OF ALL LABOR, EQUIPMENT AND MATERIALS CONSISTING OF CONCRETE, REINFORCING STEEL, JOINT SEALANT, GROUT AND INCIDENTALS NECESSARY TO ACCOMPLISH THE ABOVE MENTIONED REMOVALS AND WORK TO FACE THE EXISTING PARAPET AND PROVIDE NEW PARAPET ENDS. PAYMENT WILL BE MADE AT THE PRICE BID FOR:

ITEM	UNIT	DESCRIPTION
517	LIN. FT.	RAILING, FACED AS PER PLAN

**PARAPET DEFLECTION JOINTS**

DEFLECTION JOINTS ON LAK-90-1370 L&R/ 1487 L&R/ 1641 L&R/ 2003 L&R/ AND 2110 L&R MATCHING EXISTING DEFLECTION JOINT SPACING, SHALL BE PLACED IN THE CONCRETE PARAPETS BY EITHER OF THE FOLLOWING METHODS:

1. CONCRETE PARAPETS SHALL BE PLACED IN ALTERNATE SECTIONS BY THE USE OF BULKHEADS. CLOSING SECTIONS SHALL BE PLACED AFTER REMOVAL OF BULKHEADS AND AFTER PLACEMENT OF SPONGE FILLER. FILLER SHALL BE FLUSH WITH SURFACE OF CONCRETE AND EXPOSED EDGES SHALL BE FREE OF MORTAR. THE UNCOMPRESSED WIDTH OF THE SPONGE FILLER SHALL BE 1/2".

OR

2. DEFLECTION JOINTS SHALL BE MADE VERTICALLY OR AT RIGHT ANGLE TO THE DECK BY SAWING. THE SAWING SHALL BE DONE AFTER THE CONCRETE HAS TAKEN ITS INITIAL SET AND BEFORE ANY SHRINKAGE CRACKS CAN DEVELOP. THE USE OF AN EDGE GUIDE, FENCE OR JIG IS REQUIRED TO INSURE THAT THE CUT OF THE JOINT IS STRAIGHT, TRUE AND ALIGNED ON ALL FACES OF THE PARAPET. THE NEED FOR A GUIDE ON THE BACK SIDE MAY BE ELIMINATED IF THE INITIAL CUT ON THE FRONT SIDE OF THE PARAPET EXTENDS AT LEAST TWO THIRDS OF THE WAY THROUGH THE PARAPET. THE REAR CUT WOULD THEN BE GUIDED BY THE SLOT OF THE FIRST CUT. A SAW BLADE SUFFICIENTLY LARGE TO SAW THROUGH THE ENTIRE PARAPET WOULD BE ACCEPTABLE. THE MINIMUM DEPTH OF SAW CUT SHALL BE 3 INCHES. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, NOT TO EXCEED ONE QUARTER INCH.

PAYMENT FOR ALL MATERIAL, EQUIPMENT AND LABOR NECESSARY TO COMPLETE THIS WORK SHALL BE MADE UNDER ITEM 517-RAILING, FACED, AS PER PLAN.

**ITEM SPECIAL - RESET BEARINGS**

RESETTING BEARINGS INCLUDING JACKING AND TEMPORARY SUPPORT ON STRUCTURES LAK-90-0877 / 1641R / 1921 / 2003R / 2210 AND 2920 SHALL BE ACCOMPLISHED IN ACCORDANCE WITH SHEETS 34/37 AND 35/37 OF THE PLANS. STRUCTURES LAK-90-1487L&R SHALL HAVE BEARINGS RESET IN ACCORDANCE WITH SHEET 32/37 AND 33/37 OF THE PLANS. THIS ITEM OF WORK SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM SPECIAL - RESET BEARINGS. THIS PRICE SHALL BE PAYMENT IN FULL FOR ALL MATERIAL, EQUIPMENT AND LABOR NECESSARY TO COMPLETE THIS WORK.

**ITEM 611 - REINFORCED CONCRETE APPROACH SLABS, PARTIAL REPLACEMENT, AS PER PLAN**

THE FORWARD APPROACH SLABS FOR STRUCTURES LAK-90-1641R AND THE FORWARD AND REAR APPROACH SLABS FOR STRUCTURE LAK-90-1487R (RAMP D) SHALL BE PARTIALLY REPLACED AS SHOWN ON SHEET 34/101.

**ITEM SPECIAL -- HEAT STRAIGHTENING OF DAMAGED STRUCTURAL STEEL**

**DESCRIPTION**

THIS ITEM SHALL CONSIST OF HEAT STRAIGHTENING DAMAGED PORTIONS OF THE EXISTING BEAM ON STRUCTURE LAK-90-2110L AS SHOWN ON SHEET 37/37 OF THE PLANS. IT SHALL BE ACCOMPLISHED IN ACCORDANCE WITH 513.06 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) AND AS NOTED IN THESE PLANS.

**COMMON PROCEDURES, REQUIREMENTS AND RESTRICTIONS**

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 DEGREES FAHRENHEIT 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.

FINAL STRAIGHTNESS TOLERANCES FOR THE BOTTOM FLANGE SHALL BE WITHIN 1/4" OF TILT ROTATION AT THE EDGES AND 1/2" OF SWEEP IN 20 FEET (3/4" AT POINT OF IMPACT). 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 STRAIGHTEDGE 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 BEAMS/GIRDERS BE FORCED INTO POSITION AND THEN WELDED TO THE CROSS FRAMES TO HOLD THEM IN POSITION.

OBVIOUS TEARS OR CRACKS PRESENT IN THE BEAMS/GIRDERS AS A RESULT OF THE ACCIDENT SHALL BE REPAIRED WITH FULL PENETRATION BUTT WELDING AS PER 513.17 OF THE CMS AND SUBSEQUENT NON-DESTRUCTIVE TESTING AS PER 513.21 OF THE CMS, UNLESS OTHERWISE SPECIFIED ON THE PLANS. THE CONTRACTOR WILL BE RESPONSIBLE FOR HAVING THIS WELDING RADIOGRAPHICALLY INSPECTED. RADIOGRAPHS SHALL BE SUBMITTED TO THE DIRECTOR FOR REVIEW AND APPROVAL.

BURRS, NICKS, GOUGES, SCRAPES, ETC. SHALL BE GROUND AS SMOOTH AS POSSIBLE TO ELIMINATE POSSIBLE STRESS CONCENTRATIONS AND SHALL COMPLY WITH SURFACE QUALITY AS DEFINED IN ASTM A6.

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. THE CONTRACTOR IS RESPONSIBLE FOR THIS TESTING AND IT SHALL BE WITNESSED BY THE ENGINEER. *Minor cracks in the flanges (less than 1/2" long) discovered as a result of this inspection shall be removed by grinding. Larger cracks shall be reviewed by the Engineer and shall be properly prepared and welded or plated by bolting. Extra work incurred by the Contractor as a result of this crack repair shall be handled on a force account basis.* THIS ITEM SHALL INCLUDE REPLACEMENT OF ALL DAMAGED CROSS FRAMES AND OTHER ATTACHMENTS BY THE SAME METHOD OF ATTACHMENT AS ORIGINALLY CONSTRUCTED.

ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS IN ACCORDANCE WITH 513.17 OF THE CMS AND THE AWS STRUCTURAL WELDING CODE, SUPPLEMENT 1011.