



NOTE: ALL DIMENSIONS ARE ±.

**EXISTING TOP FRAMING PLAN**

**NON-DESTRUCTIVE TESTING (NDT)**

CONTRACTOR'S PERSONNEL PERFORMING NON-DESTRUCTIVE TESTING SHALL BE QUALIFIED AS PER 513.21 OF THE CONSTRUCTION AND MATERIAL SPECIFICATION.

**PENCIL ABRASIVE BLASTING**

THE PENCIL BLASTING REFERRED TO BY THE VARIOUS REPAIR ITEMS IN THESE PLANS SHALL CONFORM TO THE FOLLOWING:

THE DESIGNATED NON-DESTRUCTIVE TESTING (NDT) AREAS SHALL BE CLEANED OF ALL PAINT, RUST, AND FOREIGN MATERIALS BY ABRASIVE BLASTING TO A SURFACE QUALITY EQUAL TO PREPARATION GRADE S<sub>a</sub> 2 1/2. SINCE THE INTENT OF THE PENCIL BLASTING IS TO ENHANCE THE VISUAL AND NDT CRACK DETECTION TECHNIQUES PERFORMED UPON THE STRUCTURAL STEEL, A GENTLE BLAST SHALL BE USED SUCH THAT THE SURFACE IS NOT PEENED OR OTHERWISE COLD WORKED. CARE SHALL BE TAKEN SO AS NOT TO DAMAGE THE PAINT IN THE SURROUNDING AREA. THE BLASTING SHALL BE PERFORMED USING A MAXIMUM COMPRESSED AIR PRESSURE OF 100 PSI, A HOSE NOZZLE DIAMETER OF 1/4 ± 1/16 INCH AND A GRADE 30 / 60 COAL SLAG ABRASIVE OR EQUIVALENT. SILICA SAND SHALL NOT BE USED. BLASTERS USED FOR SURFACE PREPARATION FOR STRUCTURAL STEEL COATING CANNOT BE USED FOR PENCIL BLASTING. AFTER ABRASIVE BLASTING IS COMPLETE, THE CLEANED AREA SHALL BE AIR BLOWN CLEAN.

THE CONTRACTOR SHALL DEMONSTRATE TO THE ENGINEER PRIOR TO THE START OF THE WORK THAT HE CAN SATISFACTORILY PERFORM PENCIL ABRASIVE BLASTING ACCORDING TO THESE SPECIFICATIONS. COST OF PENCIL ABRASIVE BLASTING HAS BEEN INCLUDED FOR PAYMENT WITH THE APPROPRIATE PAY ITEMS.

**ITEM SPECIAL - DRILLING STRUCTURAL STEEL**

THIS WORK SHALL CONSIST OF DRILLING CRACKS AND ENDS OF CRACKS, GRINDING AND NON-DESTRUCTIVE TESTING, AS DIRECTED BY THE ENGINEER.

HOLES SHALL BE DRILLED TO REMOVE ENTIRE CRACKS OR THE APPARENT ENDS OF THE CRACKS REVEALED BY THE NDT AND VISUAL INSPECTION PERFORMED UNDER ITEM SPECIAL - PENCIL ABRASIVE BLASTING, GRINDING AND NDT. THE EXPOSED CIRCUMFERENCE OF EACH DRILLED HOLE SHALL BE GROUND SMOOTH AND CAREFULLY INSPECTED FOR CRACKS USING MAGNETIC PARTICLE EXAMINATION AND DYE PENETRANT. DRILLING, GRINDING, AND TESTING SHALL CONTINUE UNTIL ALL CRACK ENDS ARE REMOVED. WHEN NO CRACKS ARE DETECTED AT A LOCATION, NO HOLES SHALL BE DRILLED UNDER THIS ITEM.

SINCE ANY OF THESE CRACKS COULD PROPRAGATE INTO THE TENSION FLANGE, REMOVING THEIR ENDS IS IMPERATIVE. CRACKS LESS THAN 1 1/2" LONG AND CRACKED AREAS OR DEFECTS LESS THAN 1 1/2" IN DIAMETER SHALL BE REMOVED BY A SINGLE HOLE WHEN PRACTICAL. ENDS OF CRACKS LONGER THAN 1 1/2" AND DEFECTS SMALLER THAN 1/2" SHALL BE DRILLED WITH 1-INCH DIAMETER HOLES.

HOLES SHALL BE CAREFULLY EXAMINED FOR CRACKS IN THE PLANE OF THE PLATE. 1 1/2" OR 2" DIAMETER HOLES MAY BE DRILLED WHERE THE PROXIMITY OF THE CRACK END TO ADJACENT STEEL PRECLUDES DRILLING A 1" DIAMETER HOLE.

THE LOCATION OF ALL HOLES SHALL BE DETERMINED BY THE ENGINEER AND DRILLED UNDER HIS DIRECTION. WHERE DISTANCE FROM THE HOLE TO ADJACENT MEMBERS PERMITS, BOLTS SHALL BE INSTALLED AND PAID FOR UNDER ITEM SPECIAL - BOLTS FOR DRILLED HOLES.

THE ACCEPTED NUMBER OF HOLES DRILLED IN THE STRUCTURAL STEEL AS DETAILED ABOVE WILL BE PAID FOR AT THE CONTRACT PRICE PER EACH HOLE, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY FOR DRILLING THE HOLES, GRINDING AND NON-DESTRUCTIVE TESTING. PAYMENTS WILL BE MADE UNDER:

ITEM	UNIT	DESCRIPTION
SPECIAL	EACH	DRILLING STRUCTURAL STEEL (1" DIAMETER HOLE, GRINDING AND NDT)
SPECIAL	EACH	DRILLING STRUCTURAL STEEL (1 1/2" DIAMETER HOLE, GRINDING AND NDT)
SPECIAL	EACH	DRILLING STRUCTURAL STEEL (2" DIAMETER HOLE, GRINDING AND NDT)

**ITEM SPECIAL - PENCIL ABRASIVE BLASTING, GRINDING AND NDT**

THIS WORK SHALL CONSIST OF THE FOLLOWING SEQUENCE OF OPERATIONS PERFORMED AT A SUSPECTED CRACK LOCATION, AS DIRECTED BY THE ENGINEER:

- CLEAN THE SUSPECTED CRACK AREA BY PENCIL ABRASIVE BLASTING THE PAINT AND/OR RUST FROM THE SURFACE OF THE PLATES AND ADJACENT WELDS (APPROXIMATELY A 12-INCH BY 12-INCH AREA).
- THE ENGINEER, ACCOMPANIED BY THE CONTRACTOR, SHALL CAREFULLY, VISUALLY INSPECT THE CLEANED AREA. GRINDING MAY BE DIRECTED BY THE ENGINEER TO ENHANCE INVESTIGATION FOR CRACK PRESENCE. ALL GRINDING MUST BE DONE CAUTIOUSLY, ESPECIALLY IN TENSION ZONES.
- THE CONTRACTOR SHALL NON-DESTRUCTIVELY TEST (NDT) THE AREA USING MAGNETIC PARTICLE EXAMINATION AND/OR DYE PENETRANT SO THAT THE ENGINEER MAY FURTHER INSPECT FOR CRACKS.

- ALL CRACKS AND/OR CRACK TIPS THAT ARE ACCESSIBLE SHALL BE REMOVED ACCORDING TO, AND PAID FOR UNDER, ITEM SPECIAL - DRILLING STRUCTURAL STEEL. ANY CRACKS INACCESSIBLE TO DRILLING SHALL BE REMOVED BY CAREFUL GRINDING OR BY CAREFULLY ENLARGING THE DRILLED HOLES BY GRINDING.

- PERFORM THE STEP 1, THROUGH STEP 4, OPERATIONS ON THE OTHER SIDE OF THIS LOCATION. NO LOCATION SHALL BE LEFT INCOMPLETELY RETROFITTED OVERNIGHT.

THE ACCEPTED NUMBER OF NDT LOCATIONS AS DESCRIBED IN THIS NOTE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LOCATION, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO CLEAN, GRIND AND PERFORM NDT ON BOTH SIDES OF THE SUSPECTED CRACK LOCATION.

PAYMENT WILL BE MADE UNDER:

ITEM	UNIT	DESCRIPTION
SPECIAL	EACH	PENCIL ABRASIVE BLASTING, GRINDING AND NDT

**LEGEND**

- - PENCIL ABRASIVE BLASTING, GRINDING, AND NON-DESTRUCTIVE TESTING OF FLOORBEAM-STRINGER CONNECTION
- - STRINGER FLANGE END RETROFIT
- ☆ - BOLTED STRINGER ANGLE CONNECTION
- - TIGHTEN LOOSE BOLTS
- - INJECT EPOXY BETWEEN MASONRY PLATE AND ABUTMENT SEAT. EPOXY SHALL BE IN ACCORDANCE WITH PROPOSAL NOTE: CONCRETE REPAIR BY EPOXY INJECTION. THIS SHALL NOT BE PERFORMED UNDER VEHICULAR TRAFFIC.
- △ - PENCIL ABRASIVE BLASTING, GRINDING AND NDT OF DIAPHRAGM CONNECTIONS.

Revised 11-19-90

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION  
DISTRICT 12 - BRIDGE DEPT.

**EXISTING FRAMING PLAN**

BR. NO. LAK-90-2342 (L&R)  
OVER THE GRAND RIVER

DESIGNED BGW	DRAWN GLC	CHECKED DWL	REVIEWED GWM	REVISED
DATE:	DATE:	DATE:	DATE: 11-19-90	SHEET 8A / 19

LAKE COUNTY OHIO