CONCRETE REPAIR NOTES

1. STANDARDS

   A. ASTM C171, C309, C387, AND C881, LATEST EDITIONS.

   B. AMERICAN CONCRETE INSTITUTE (ACI) STANDARDS: ACI 301, ACI 305R, ACI 306R, ACI 308, ACI 311.4R, ACI 318.1, AND ACI SP-15.

2. PACKAGED PRODUCTS: SUBMIT MANUFACTURER'S SPECIFICATIONS, INSTALLATION PROCEDURES, AND MATERIAL SAFETY DATA SHEETS FOR ONE OF THE APPROVED PRODUCTS:

   A. NON-SAG POLYMER-MODIFIED PORTLAND CEMENT PATCHING MORTAR.

      1. SIKAREPAIR SHB - SIKA CONCRETE RESTORATION.
      2. OVERHEAD MORTAR - STO CONCRETE RESTORATION DIVISION.
      3. VERTICOAT - EUCLID CHEMICAL COMPANY.
      4. APPROVED EQUAL.

   B. CORROSION INHIBITORS

      1. SIKA ARMATEC 110 - SIKA FERRO GUARD.
      2. CORTEC MCI - 2020 BY MONEX RESOURCES, INC.
      3. APPROVED EQUAL.

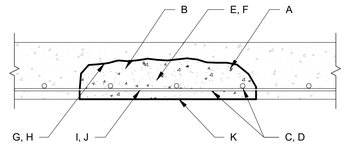
3. SEQUENCE & CONSTRUCTION NOTES (SEE SECTION A)

   A. PREPARE SURFACES TO BE RESTORED IN COMPLIANCE WITH PRODUCT MANUFACTURER'S PRINTED INSTRUCTIONS AND AS SPECIFIED. CLEAN AREAS TO BE RESTORED WITH WIRE BRUSH AND COMPRESSED AIR OR WATER TO REMOVE ALL LOOSE MATERIALS, INCLUDING OIL, DIRT, DUST, OR OTHER FOREIGN MATERIAL FROM SURFACES TO BE REPAIRED.
   B. REMOVE LOOSE AND DETERIORATED CONCRETE BY MECHANICAL MEANS DOWN TO SOUND CONCRETE SUBSTRATE. DETAIL THE EDGE OF THE PATCH TO A 90-DEGREE ANGLE AND 1/2" MINIMUM DEPTH TO PREVENT FURTHER EDGING. CHIP CONCRETE SUBSTRATE TO OBTAIN A FRACTURED AGGREGATE SURFACE WITH A MINIMUM SURFACE PROFILE OF 1/8" DEPTH.
   C. ALL OXIDIZED AND CORRODED BARS SHALL BE UNDERCUT A MINIMUM OF 3/4" OR 1/4" LARGER THAN THE LARGEST SIZE AGGREGATE IN THE PATCHING CONCRETE, WHICHEVER IS GREATER. EXPOSED BARS WHICH ARE NOT OXIDIZED OR CORRODED DO NOT HAVE TO BE UNDERCUT IF LESS THAN 50% OF THE BAR'S CIRCUMFERENCE IS EXPOSED AND THE BOND BETWEEN THE BAR AND CONCRETE IS INTACT. IF THE BOND IS BROKEN OR MORE THAN 50% OF THE BAR'S CIRCUMFERENCE IS EXPOSED, THEN THE BAR SHALL BE UNDERCUT AS DESCRIBED IN SECTION C.
   D. CLEAN REINFORCING STEEL OF OXIDATION USING A WIRE BRUSH. THE REINFORCING BARS SHALL BE CLEANED TO BRIGHT METAL. APPLY ANTI-CORROSION PRIMER AND BONDING BRIDGE. COAT THE REINFORCEMENT OR OTHER STEEL TO REMAIN WITH CORROSION INHIBITOR.
   E. IF REDUCED SECTION OF REINFORCEMENT IS LESS THAN 80% OF ORIGINAL AREA, PROVIDE ADDITIONAL REINFORCING STEEL OF 1.5 x AREA LOST OR GREATER OR REPLACE WITH NEW.
   F. REINFORCING SHALL BE ADDED ACCORDING TO NOTES BELOW AND SECTIONS B AND C.

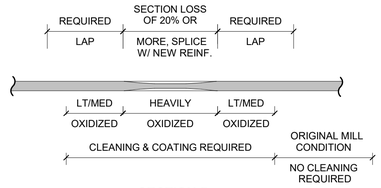
      1. SPLICE LENGTH SHOWN SHALL EXTEND ON BOTH ENDS OF HEAVILY OXIDIZED SECTION FROM THE POINT WHERE THE EXISTING BAR IS BEING SPLICED.
      2. IF LAP SPLICE OF ADDITIONAL STEEL EXTENDS BEYOND THE REPAIR AREA PERIMETER, CUT A NOTCH IN THE EXISTING CONCRETE TO PROVIDE A 3/4" CLEAR SPACE BEHIND AND ON EACH SIDE OF THE ADDED STEEL.
      3. BOTTOM BAR SPLICE NEED NOT EXTEND BEYOND THE FACE OF SUPPORT OF THE BEAM OR GIRDER.
      4. IF ADDED STEEL ENCOUNTERS END OF MEMBER, PROVIDE HOOK OR MECHANICAL ANCHOR TO DEVELOP THE STEEL TENSION CAPACITY. DRILL & GROUT AS REQ'D.
      5. IF OBSTRUCTION PREVENTS FULL SPLICE LENGTH, USE MECHANICAL TENSION SPLICE COUPLER. CUT AND CONNECT TO EXIST REINF.
      6. SEE SECTIONS B & C FOR ADDITIONAL INFO.

   G. SATURATE THE SURFACE OF THE PREPARED CONCRETE WITH WATER FOR A MAXIMUM OF TWO HOURS PRIOR TO THE PLACEMENT OF THE NEW CONCRETE. NO STANDING WATER AT THE TIME OF PATCH INSTALLATION.
   H. JUST PRIOR TO NEW CONCRETE PLACEMENT, APPLY A SCRUB COAT OF A THIN CEMENT SLURRY WITH A STIFF BRUSH. SLURRY MUST BE SCRUBBED INTO SUBSTRATE, FILLING ALL PORES AND VOIDS.
   I. APPLY REPAIR MORTAR PER MANUFACTURER'S REQUIREMENTS. AT AREAS WHERE THE DEPTH OF REPAIR TO SOUND CONCRETE EXCEEDS THE MAXIMUM THICKNESS OF A SINGLE LIFT AS INDICATED BY THE MORTAR MANUFACTURER, APPLY THE PATCHING MORTAR IN MULTIPLE LIFTS WITH THICKNESS NOT EXCEEDING THE MAXIMUM. ALLOW SUFFICIENT CURING TIME AND SCORE MORTAR SURFACE BETWEEN LIFTS.
   J. PLACE CONCRETE TO MINIMUM 3/4" COVER OVER REINFORCING BARS.
   K. STRIKE OFF SURFACES AS NECESSARY AND ALLOW CONCRETE TO SET. COORDINATE WITH ARCHITECT FOR FINAL FINISH APPEARANCE, CURE BY COVERING EXPOSED SURFACES WITH WET BURLAP.

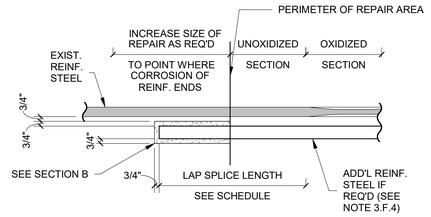
4. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL REPAIR DETAILS.



SECTION A

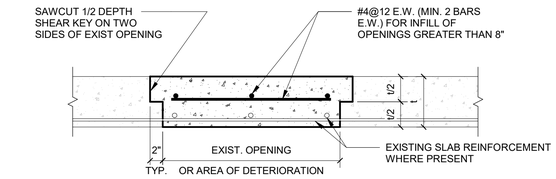


SECTION B



SECTION C

SLAB BAR REPAIR SPLICE SCHEDULE			
EXISTING BAR SIZE	BOT BARS	TOP BARS	REMARKS
#3	12"	16"	
#4	16"	22"	
#5	20"	27"	
#6	25"	35"	
#7	34"	48"	
#8	45"	63"	



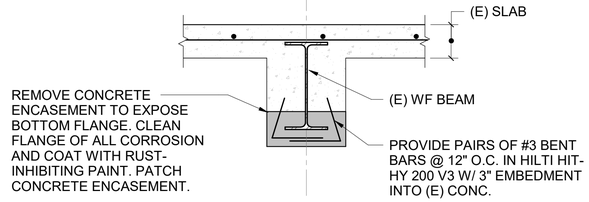
INFILL OF EXISTING OPENINGS < 3'-0" MAX DIMENSION

NOTES FOR INFILL OF EXISTING OPENINGS:
1. THIS DETAIL APPLIES FOR INFILL OF EXISTING OPENINGS UP TO 3'-0" MAX. IN DIMENSION.
2. CREATE SHEAR KEY ON SIDES OF OPENING.
3. PROVIDE REINFORCING PER DETAIL FOR INFILL OF OPENINGS GREATER THAN 8".
4. FORM BOTTOM OF INFILL AND CAST CONCRETE.

NOTES FOR FULL-DEPTH CONCRETE SLAB REPAIR
1. REMOVE LOOSE CONCRETE PER 1/S6.5 TO SOUNDS MATERIAL. THIS DETAIL APPLIES WHERE LOOSE / DETERIORATED CONCRETE EXTENDS TO FULL DEPTH OF SLAB.
2. CLEAN AND COAT REINFORCING STEEL PER 1/S6.5. PROVIDE ADDITIONAL REINFORCING AS NEEDED PER 1/S6.5 (MID-DEPTH REINFORCING AS SHOWN ABOVE NOT REQUIRED).
3. CREATE SHEAR KEY ON SIDES OF OPENING.
4. SATURATE THE SURFACE OF THE PREPARED CONCRETE WITH WATER FOR A MAXIMUM OF TWO HOURS PRIOR TO THE PLACEMENT OF THE NEW CONCRETE. NO STANDING WATER AT THE TIME OF PATCH INSTALLATION.
5. JUST PRIOR TO NEW CONCRETE PLACEMENT, APPLY A SCRUB COAT OF A THIN CEMENT SLURRY WITH A STIFF BRUSH. SLURRY MUST BE SCRUBBED INTO SUBSTRATE, FILLING ALL PORES AND VOIDS.
6. FORM BOTTOM OF REPAIR AREA AND CAST CONCRETE.

2 S6.5 TYPICAL FULL-DEPTH CONCRETE REPAIR DETAIL / INFILL OF EXISTING OPENINGS

SCALE: NTS

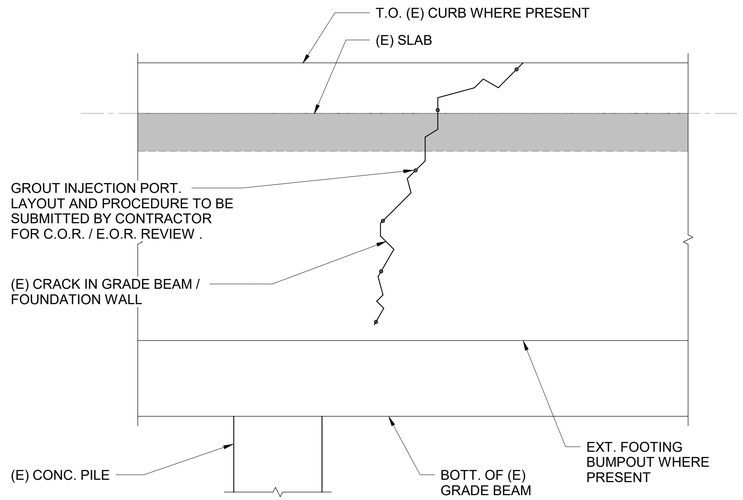


3 S6.5 TYPICAL CONCRETE ENCASEMENT REPAIR

SCALE: NTS

1 S6.5 TYPICAL CONCRETE REPAIR DETAIL

SCALE: NTS



CONCRETE EPOXY INJECTION REPAIR NOTES

1. STANDARDS

   A. ASTM C881, STANDARD SPECIFICATION FOR EPOXY-RESIN-BASE BONDING SYSTEMS FOR CONCRETE, LATEST EDITION.

   B. AMERICAN CONCRETE INSTITUTE (ACI) STANDARDS: ACI 224.1R, ACI 364.1R, ACI 503R, AND ACI 546.

2. EPOXY PRODUCTS: SUBMIT MANUFACTURER'S SPECIFICATIONS, INSTALLATION PROCEDURES, AND MATERIAL SAFETY DATA SHEETS.

3. RECOMMENDED SEQUENCE & CONSTRUCTION NOTES

   A. CLEAN THE SURFACE AREA ABOUT 1/2" WIDE ON EACH SIDE OF THE CRACK BY WIRE BRUSHING. WHERE CONCRETE SURFACES ADJACENT TO THE CRACK ARE DETERIORATED, V-GROOVE THE CRACK UNTIL SOUND CONCRETE IS REACHED.
   B. INSTALL INJECTION PORTS AT 8 INCHES ON CENTER OR AS REQUIRED BASED ON MATERIAL THICKNESS AND WIDTH OF CRACK. INSTALL THE CAP SEAL.
   C. BATCH AND MIX THE EPOXY IN STRICT ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. FOR CRACK WIDTHS 0.010 INCHES OR SMALLER, USE A LOW-VISCOSITY EPOXY (500 CPS OR LESS). FOR WIDER CRACKS, OR WHERE INJECTION ACCESS IS LIMITED TO ONE SIDE, USE A MEDIUM TO GEL VISCOSITY MATERIAL.
   D. INJECT THE EPOXY, STARTING AT THE WIDEST SECTION OF THE CRACK AT HORIZONTAL CRACKS OR AT THE BASE OF THE CRACK FOR VERTICAL CRACKS. CONTINUE THE INJECTION UNTIL REFUSAL AND CAP PORT. MANAGE PRESSURE WITH CARE TO PREVENT BLOWOUT OF THE CAP SEAL OR PORTS.
   E. REMOVE THE PORTS AND CAP SEAL BY HEAT, CHIPPING OR GRINDING.
   F. TO ENSURE THAT THE INJECTIONS HAS BEEN SUCCESSFUL, PERFORM NON-DESTRUCTIVE EVALUATION (NDE) USING ONE OF THE FOLLOWING METHODS:

      1. IMPACT ECHO (IE).
      2. ULTRASONIC PULSE VELOCITY (UPV)
      3. SPECTRAL ANALYSIS OF SURVACE WAVES (SASW)

4. PROVIDE ADD UNIT COST FOR ADDITIONAL LOCATIONS THAT MAY BE DISCOVERED DURING CONSTRUCTION.

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4 S6.5 GRADE BEAM CRACK EPOXY REPAIR (ELEVATION)

N.T.S.

DESIGNED: JCT / EB / PA	SUB SHEET NO. S6.5	TITLE OF SHEET: TYPICAL CONCRETE REPAIR DETAILS	DRAWING NO. 646 190066
CADD: MAS			PMIS/PKG NO. GATE 308504
TECH. REVIEW: NF		HANGARS 3 & 4 REHABILITATION	SHEET 114 OF 150
DATE: 12/19/2025			

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