

RHB04_CIP_VS_or_SS_Slab Guidance & Alternate Details

STANDARD DRAWING GUIDANCE (SDG) (do not show on plans)

Select the appropriate 1st and 2nd sheet. Draw typical section as required and scale to fit within attached border replacing the provided example. Modify other details and notes as required (match orientation of actual reinforcement).

For solid slabs, all details shall be modified by removing voids and all notes pertaining to void repair.

District/SPM typically estimates the percentage of void tube replacement.

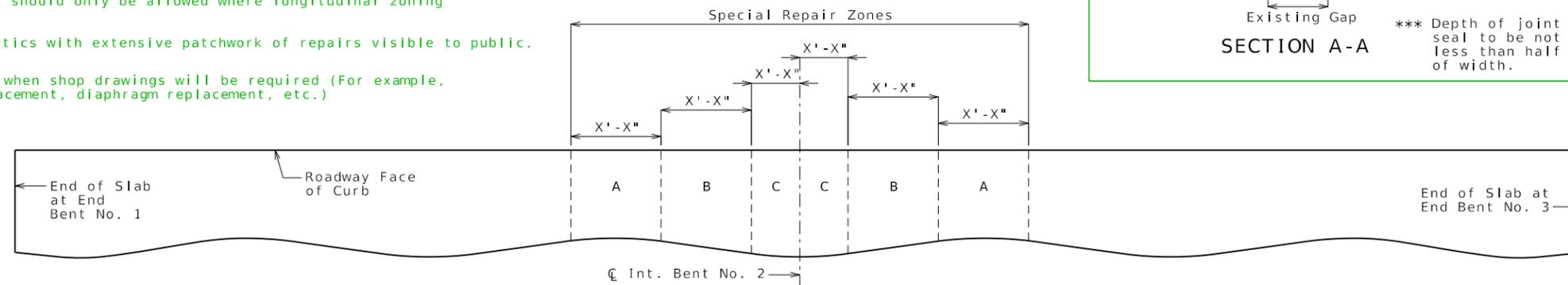
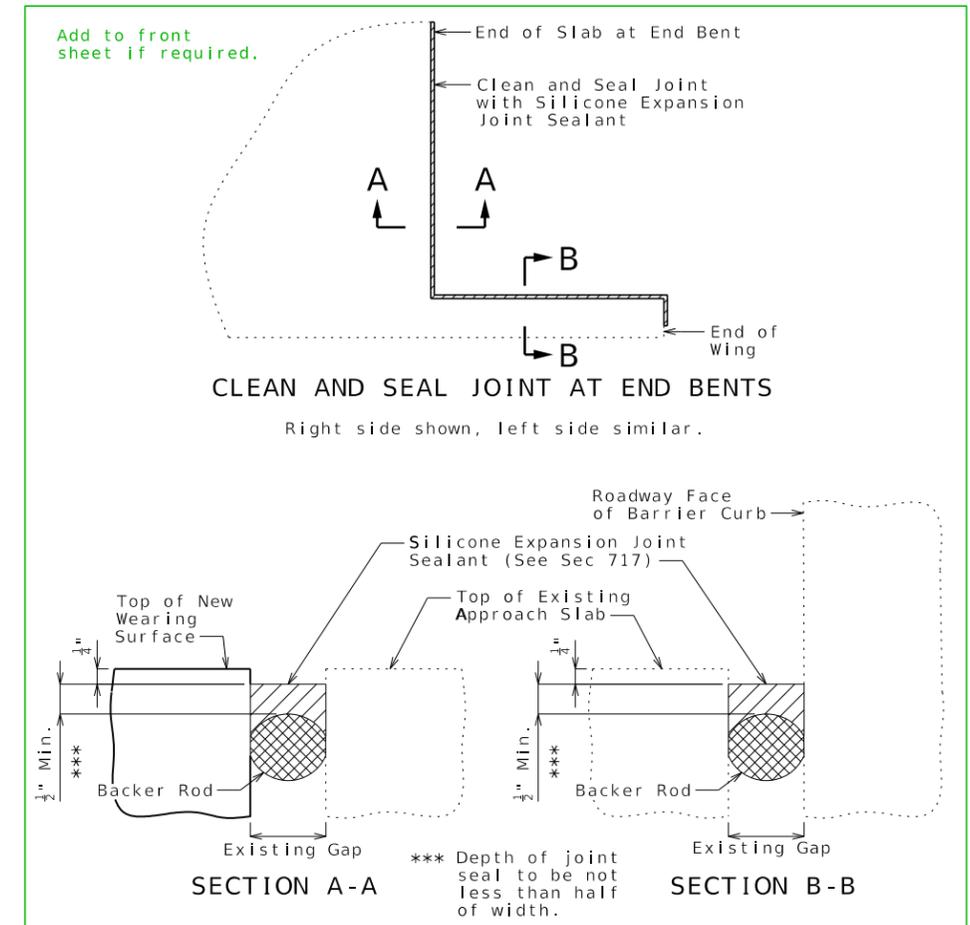
Transverse repair zoning over intermediate bents is required for these structures. Longitudinal repair zoning in spans is required only when hydro demolition is required and is based on anticipated quantity of deck repair if not overlaid, confidence of anticipated quantity of deck repair if overlaid, deck rating (e.g. 6 or better may not need zoning). See EPG 751.40 (If only transverse zoning is required, Zones shall be called "Special Repair Zones").

Wearing surface thickness can vary according to grade elevation requirements and minimum barrier curb height requirements. Maximum thickness should be limited to 3" (Ref. Organizational Results Research Report ORO6.004, May 2006). Limit excludes reinforced concrete slab wearing surfaces.

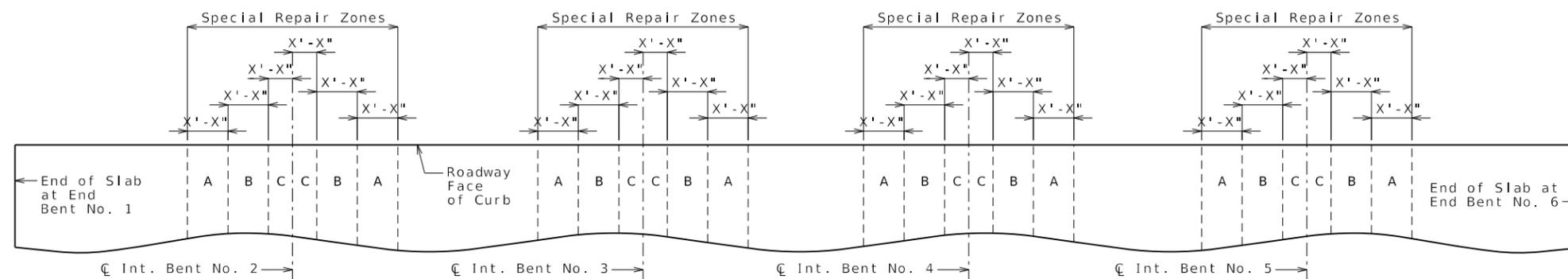
Will need to adjust wearing surface thickness when detailing a thin wearing surface (1" or less), but it is a preferred detailing practice to show a discernable thickness on the plans. No thickness is shown for crack filler application.

- (A) Show difference as \pm , see Bridge Memo or SPM. e.g. \pm
- (B) Identify new wearing surface, see Bridge Memo or SPM. Specify minimum thickness in deck details, typically 1/4" thicker outside special repair zones for hydro Case 1 & 2.
- (C) Identify existing wearing surface and thickness, see Bridge Memo or existing plans.
- (D) See Bridge Memo or SPM, typically 1/2". Use 1" if more than 30% of existing deck needs repair. Verify there will be a minimum of 1/2" of concrete above top bars to allow for this much scarification.
- (E) See Bridge Memo or SPM, typically 1/4" inside special repair zones to avoid deeper penetration into newly repaired areas and 1/2" outside special repair zones.
- (F) See existing plans.
- (G) Use appropriate reference (C Structure, C Roadway, C Median, etc.)
- (H) Two types of overhang rehabilitation are shown. Cleaning and epoxy coating is preferred because of the relative short life of slab edge repair and unformed repair especially when over traffic. However in urban regions repairing the overhang may be preferred. Consult with SPM or SLE.
- (I) Scarification prior to adding first wearing surface or removing a portion of the deck when removing an existing wearing surface is not required for seal coat, asphalt, UBAWS, epoxy polymer or MMA polymer slurry wearing surfaces.
- (J) Monolithic deck repair should only be allowed where longitudinal zoning is not required.
- (K) May be used for aesthetics with extensive patchwork of repairs visible to public.
- (L) Note is required only when shop drawings will be required (For example, expansion device replacement, diaphragm replacement, etc.)

Detach all unused Drawing Models & Sheet Models before requesting PDFs for sign and seal.



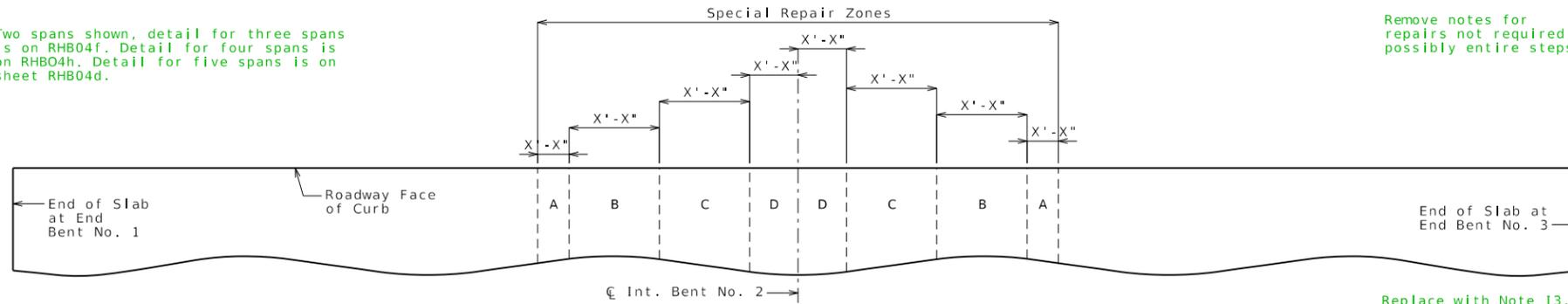
PART PLAN OF SLAB SHOWING SPECIAL REPAIR ZONES



PART PLAN OF SLAB SHOWING SPECIAL REPAIR ZONES

Two spans and five spans shown. These details can be used on Sheets RHB04j and RHB04L for conventional deck repair only projects.

Two spans shown, detail for three spans is on RHB04f. Detail for four spans is on RHB04h. Detail for five spans is on sheet RHB04d.



PART PLAN OF SLAB SHOWING SPECIAL REPAIR ZONES

Remove notes for repairs not required, possibly entire steps.

Replace with Note 13.3 for structures with single column bents.

Deck Repair Notes:

- Order of Repair:
 1. Scarify existing deck **(D)**.
 2. Power wash deck to identify sound and unsound existing deck repair.
 3. Inside special repair zones, complete the following repairs:
 - a. Removal of existing deck repair
 - b. Half-sole repair
 - c. Deck repair with void tube replacement
 - d. Full depth repair
 4. Outside special repair zones, remove existing deck repair.
 5. Complete total surface hydro demolition, removing **(E)** minimum of sound concrete inside special repair zones and removing **(E)** minimum of sound concrete and all deteriorated concrete outside special repair zones.
 6. Sound deck and if needed complete incidental concrete removal.
 7. Outside special repair zones, complete the following repairs:
 - a. Deck repair with void tube replacement
 - b. Full depth repair
 8. Place new wearing surface including additional material for areas of monolithic deck repair.

Special Repair Zones:
 13.2 Deck repair required in the areas designated as special repair zones shall be completed before hydro demolition in alphabetical sequence beginning with Zone A. Zones with the same letter designation may be repaired at the same time. Hydro demolition shall not move forward until the repairs in all special repair zones are completed and properly cured.

13.4 Any deck repair in areas not designated as a special repair zone shall be completed after hydro demolition.

13.5 Removal and deck repair shall be completed in one special repair zone and concrete shall have attained a compressive strength of 3200 psi before work can be started in the next special repair zone.

13.6 If any single repair area does not exceed 4 square feet in size and the total repair area within a special repair zone does not exceed 12 square feet, the special repair zone may be repaired at the same time as an adjacent zone.

Void Repair:

13.10 Any damage sustained to the void tube as a result of the contractor's operations shall be patched or replaced as required by the engineer at the contractor's expense.

13.11 An exposed void in the deck shall be patched as approved by the engineer in a manner that shall maintain the void area completely free of concrete. Cost of patching an exposed void will be considered completely covered by the contract unit price for Half-Sole Repair inside special repair zones and Monolithic Deck Repair outside special repair zones.

13.12 When a deteriorated portion of the void tube is beyond the point of patching as determined by the engineer, the portion of the deteriorated void tube shall be replaced. The void area shall be maintained completely free of concrete. Cutting of the longitudinal reinforcing steel will not be permitted. The fiber tubes for producing the voids shall have an outside diameter with the wall thickness the same as the existing tubes and anchored at not more than the original spacing. Cost of replacing the void tube will be considered completely covered by the contract unit price for Deck Repair with Void Tube Replacement. Measurement will be horizontal projection of the area of exposed tube in plan.

Remove if repair is not required.

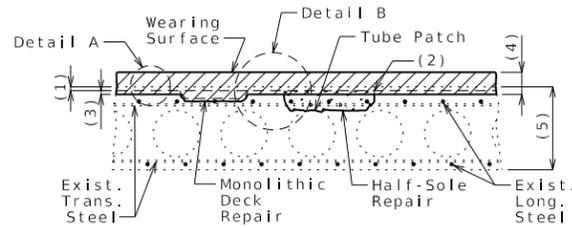
DESCRIPTION

DATE

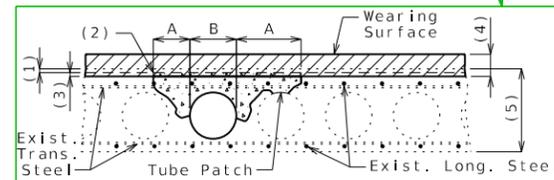
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



DATE PREPARED 3/7/2024	
ROUTE	STATE MO
DISTRICT	SHEET NO. 16
COUNTY	
JOB NO.	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

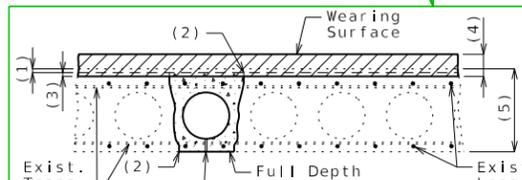


MONOLITHIC AND HALF-SOLE REPAIR

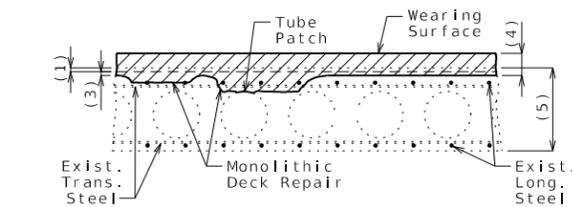


DECK REPAIR WITH VOID TUBE REPLACEMENT

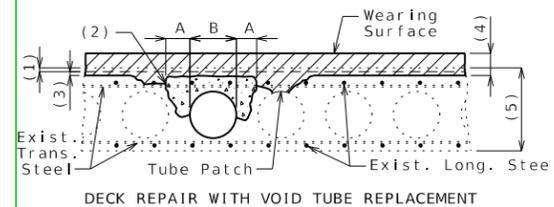
A = Half-Sole Repair
 B = Deck Repair with Void Tube Replacement



FULL DEPTH REPAIR

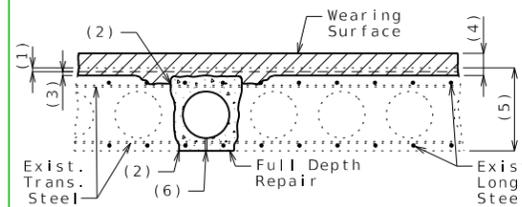


MONOLITHIC DECK REPAIR



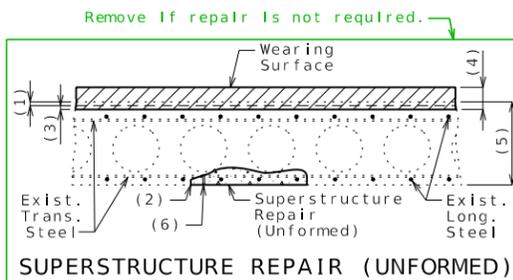
DECK REPAIR WITH VOID TUBE REPLACEMENT

A = Half-Sole Repair
 B = Deck Repair with Void Tube Replacement



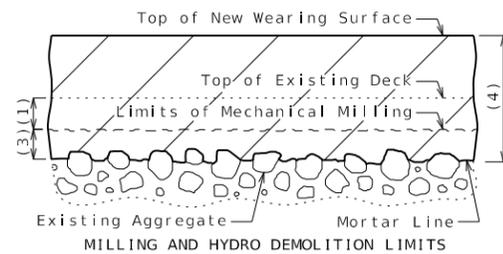
FULL DEPTH REPAIR

DECK REPAIR OUTSIDE SPECIAL REPAIR ZONES (AFTER HYDRO DEMOLITION)

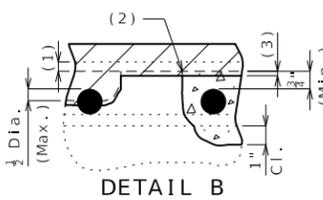


SUPERSTRUCTURE REPAIR (UNFORMED)

- (1) **(D)** scarification of existing deck
- (2) 1" vertical side shall be established outside the deteriorated area.
- (3) Total surface hydro demolition of sound concrete, measured to mortar line:
 - (E)** minimum inside special repair zones
 - (E)** minimum outside special repair zones
- (4) **(B)** concrete wearing surface:
 - minimum inside special repair zones
 - minimum outside special repair zones
- (5) Original depth
- (6) Restore existing weep hole, if encountered.



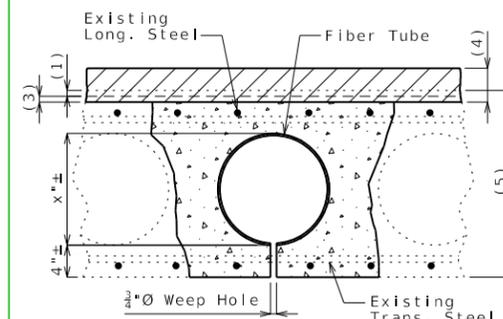
DETAIL A



DETAIL B

Monolithic deck repair shall be used when only half the diameter or less of the top bar is exposed.

Clearance around top bar and around bottom bar at the intersection of top bar shall be required when more than half the diameter of the top bar is exposed.



FIBER VOID TUBE REPLACEMENT

Fiber tubes for producing voids shall have an approximate outside diameter of x inches and a wall thickness of 1/4 inch and shall be anchored to joists carrying the floor form at not more than 4-foot centers.

One 3/4"Ø weep hole shall be provided at 2 inches from each end of each new void.

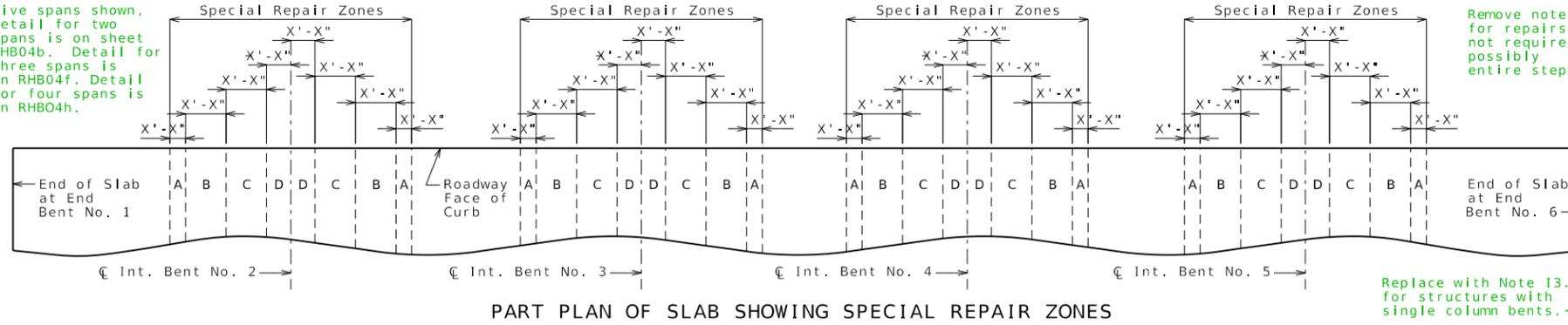
DECK REPAIR DETAILS

Detailed Checked

Note: This drawing is not to scale. Follow dimensions.

Sheet No. of

Five spans shown, detail for two spans is on sheet RHB04b. Detail for three spans is on RHB04f. Detail for four spans is on RHB04h.



PART PLAN OF SLAB SHOWING SPECIAL REPAIR ZONES

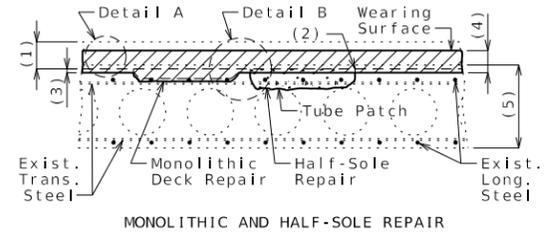
Remove notes for repairs not required, possibly entire steps.

Deck Repair Notes:

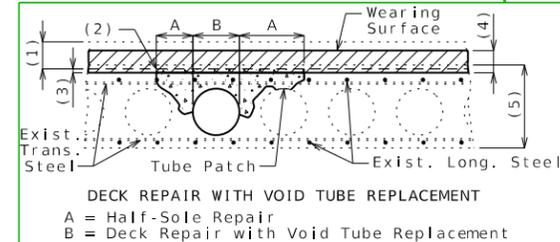
- Order of Repair:**
1. Remove existing wearing surface plus $\text{---}''$ of existing deck.
 2. Power wash deck to identify sound and unsound existing deck repair.
 3. Inside special repair zones, complete the following repairs:
 - a. Removal of existing deck repair
 - b. Half-sole repair
 - c. Deck repair with void tube replacement
 - d. Full depth repair
 4. Outside special repair zones, remove existing deck repair.
 5. Complete total surface hydro demolition, removing $\text{---}''$ minimum of sound concrete inside special repair zones and removing $\text{---}''$ minimum of sound concrete and all deteriorated concrete outside special repair zones.
 6. Sound deck and if needed complete incidental concrete removal.
 7. Outside special repair zones, complete the following repairs:
 - a. Deck repair with void tube replacement
 - b. Full depth repair
 8. Place new wearing surface including additional material for areas of monolithic deck repair.

Special Repair Zones:

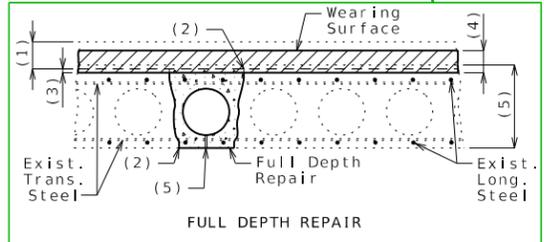
- 13.2 Deck repair required in the areas designated as special repair zones shall be completed before hydro demolition in alphabetical sequence beginning with Zone A. Zones with the same letter designation may be repaired at the same time. Hydro demolition shall not move forward until the repairs in all special repair zones are completed and properly cured.
 - 13.4 Any deck repair in areas not designated as a special repair zone shall be completed after hydro demolition.
 - 13.5 Removal and deck repair shall be completed in one special repair zone and concrete shall have attained a compressive strength of 3200 psi before work can be started in the next special repair zone.
 - 13.6 If any single repair area does not exceed 4 square feet in size and the total repair area within a special repair zone does not exceed 12 square feet, the special repair zone may be repaired at the same time as an adjacent zone.
- Void Repair:**
- 13.10 Any damage sustained to the void tube as a result of the contractor's operations shall be patched or replaced as required by the engineer at the contractor's expense.
 - 13.11 An exposed void in the deck shall be patched as approved by the engineer in a manner that shall maintain the void area completely free of concrete. Cost of patching an exposed void will be considered completely covered by the contract unit price for Half-Sole Repair inside special repair zones and Monolithic Deck Repair outside special repair zones.
 - 13.12 When a deteriorated portion of the void tube is beyond the point of patching as determined by the engineer, the portion of the deteriorated void tube shall be replaced. The void area shall be maintained completely free of concrete. Cutting of the longitudinal reinforcing steel will not be permitted. The fiber tubes for producing the voids shall have an outside diameter with the wall thickness the same as the existing tubes and anchored at not more than the original spacing. Cost of replacing the void tube will be considered completely covered by the contract unit price for Deck Repair with Void Tube Replacement. Measurement will be horizontal projection of the area of exposed tube in plan.



MONOLITHIC AND HALF-SOLE REPAIR

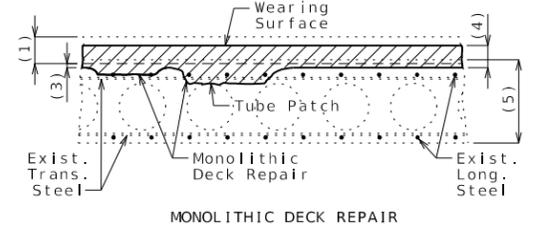


DECK REPAIR WITH VOID TUBE REPLACEMENT
A = Half-Sole Repair
B = Deck Repair with Void Tube Replacement

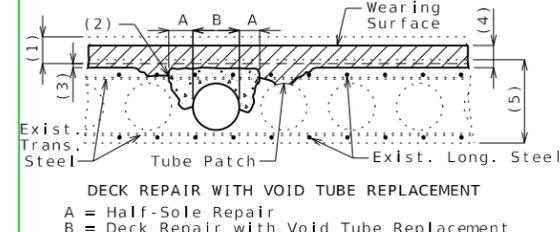


FULL DEPTH REPAIR

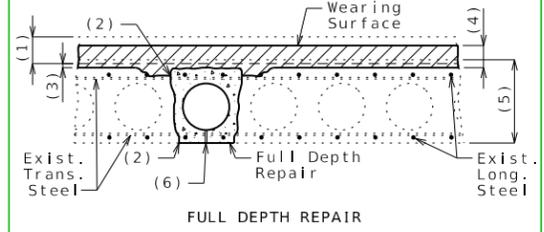
DECK REPAIR INSIDE SPECIAL REPAIR ZONES (BEFORE HYDRO DEMOLITION)



MONOLITHIC DECK REPAIR

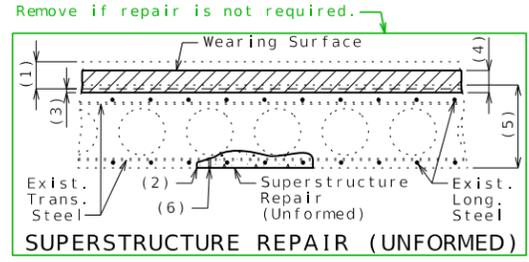


DECK REPAIR WITH VOID TUBE REPLACEMENT
A = Half-Sole Repair
B = Deck Repair with Void Tube Replacement



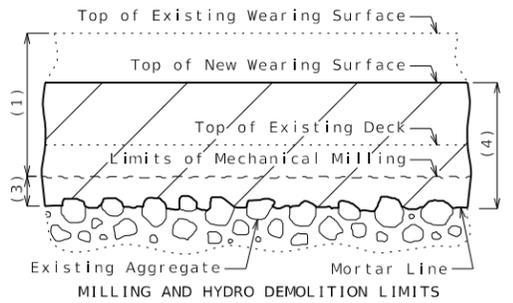
FULL DEPTH REPAIR

DECK REPAIR OUTSIDE SPECIAL REPAIR ZONES (AFTER HYDRO DEMOLITION)

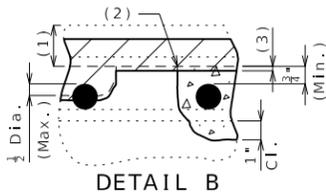


SUPERSTRUCTURE REPAIR (UNFORMED)

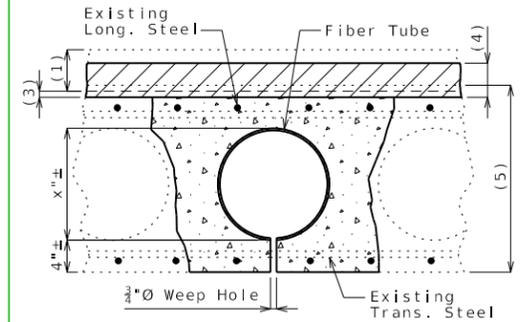
- (1) Removal of existing $\text{---}''$ wearing surface plus $\text{---}''$ of existing deck
- (2) 1" vertical side shall be established outside the deteriorated area.
- (3) Total surface hydro demolition of sound concrete, measured to mortar line:
 - $\text{---}''$ minimum inside special repair zones
 - $\text{---}''$ minimum outside special repair zones
- (4) $\text{---}''$ concrete wearing surface:
 - $\text{---}''$ minimum inside special repair zones
 - $\text{---}''$ minimum outside special repair zones
- (5) Original depth minus previous scarification
- (6) Restore existing weep hole, if encountered.



DETAIL A



Monolithic deck repair shall be used when only half the diameter or less of the top bar is exposed.
Clearance around top bar and around bottom bar at the intersection of top bar shall be required when more than half the diameter of the top bar is exposed.



FIBER VOID TUBE REPLACEMENT

Fiber tubes for producing voids shall have an approximate outside diameter of $\text{---}''$ and a wall thickness of $\text{---}''$ inch and shall be anchored to joists carrying the floor form at not more than 4-foot centers.
One $\text{---}''$ weep hole shall be provided at 2 inches from each end of each new void.

Remove if repair is not required.

DECK REPAIR DETAILS

Detailed Checked

Note: This drawing is not to scale. Follow dimensions.

Sheet No. of

DESCRIPTION

DATE

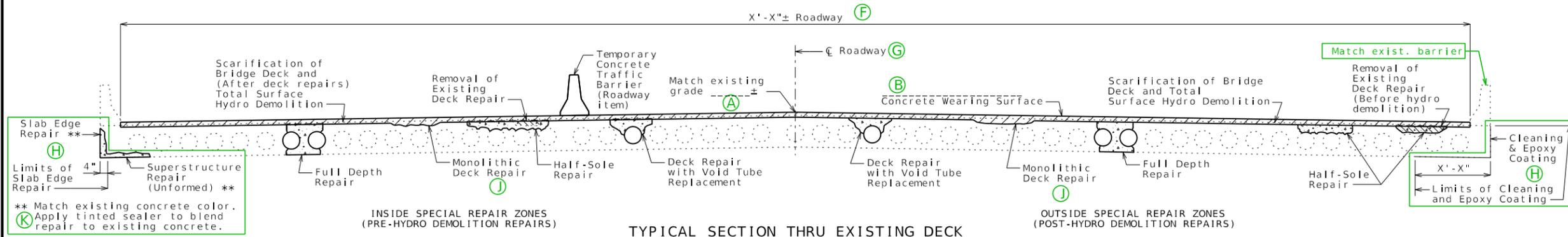
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)

DATE PREPARED 3/7/2024	
ROUTE	STATE MO
DISTRICT	SHEET NO. 18
COUNTY	
JOB NO.	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

U.I.P. AND REHABILITATE EXISTING (X'-X'-X') CONTINUOUS CONCRETE VOIDED SLAB SPANS (SKEW: X)



TYPICAL SECTION THRU EXISTING DECK

Hydro Demolition Case 2A:

Zoned Conventional Deck Repair Before Hydro Demolition and Non-Zoned Conventional Deck Repair After Hydro Demolition (Adding First Wearing Surface)

Replace as required →

Estimated Quantities			
Item	Quantity	Unit	Total
Scarification of Bridge Deck	216-10.00	sq. yard	X
Total Surface Hydro Demolition	216-10.01	sq. yard	X
Removal of Existing Deck Repair	216-15.03	sq. foot	X
Supplementary Wearing Surface Material	505-00.04	cu. yard	X
Latex Modified Concrete Wearing Surface	505-20.00	sq. yard	X
Substructure Repair (Formed)	704-01.01	sq. foot	X
Substructure Repair (Unformed)	704-01.02	sq. foot	X
Superstructure Repair (Unformed)	704-01.03	sq. foot	X
Half-Sole Repair	704-01.04	sq. foot	X
Full Depth Repair	704-01.06	sq. foot	X
Slab Edge Repair (Bridges)	704-01.07	linear foot	X
Deck Repair with Void Tube Replacement	704-01.12	sq. foot	X
Cleaning and Epoxy Coating	704-01.13	sq. foot	X

STANDARD DRAWING GUIDANCE (do not show on plans):

- ⓑ May be used with the following concrete wearing surfaces:
2 1/4" to 3" Low Slump
3/4" to 3" Polyester Polymer

If optional concrete wearing surface is specified and low slump or polyester polymer is an option follow guidance on Sheet RHB04a.

B3.8 * Supplementary wearing surface material for monolithic deck repair will be paid for at the fixed unit price in accordance with Sec 109.
B3.9 if required →

General Notes:

- A1.1 Design Specifications:
2002 AASHTO LFD (17th Ed.) Standard Specifications
Bridge Deck Rating =
- A1.2 Design Loading:
HS20-44 Modified () and Military 24,000 lb Tandem Axle ()
- A1.3 Design Unit Stresses:
Class **B-1** Concrete (Half-Sole and Full Depth Repair and Deck Repair with Void Tube Replacement) f'c = 4,000 psi

Miscellaneous:

- 11.0.1 Roadway surfacing adjacent to bridge ends shall match new bridge wearing surface (roadway item).
- 11.0.2 All concrete repairs shall be in accordance with Sec 704, unless otherwise noted.
- 11.1 Outline of existing work is indicated by light dashed lines. Heavy lines indicate new work.
- 11.2 **L** Contractor shall verify all dimensions in field before finalizing the shop drawings.
- 11.10 In order to maintain grade and a minimum thickness of wearing surface as shown on plans it may be necessary to use additional quantities of wearing surface at various locations throughout the structure. The cost of furnishing and installing the wearing surface will be considered completely covered in the contract unit price, including all additional labor, materials or equipment for variations in thickness of wearing surface.
- Traffic Handling:
A3.8 Structure to be closed during construction. Traffic to be maintained on during construction. See roadway plans for traffic control and Sheet No. for staged construction details.

11.0.3 If required →

REPAIRS TO BRIDGE: ROUTE * OVER *

ROUTE * FROM * TO *
ABOUT * MILES * OF *
BEGINNING STATION _____± (Match Existing)

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

DATE PREPARED: 3/7/2024

ROUTE: STATE MO

DISTRICT: SHEET NO. 19

COUNTY:

JOB NO.:

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.:

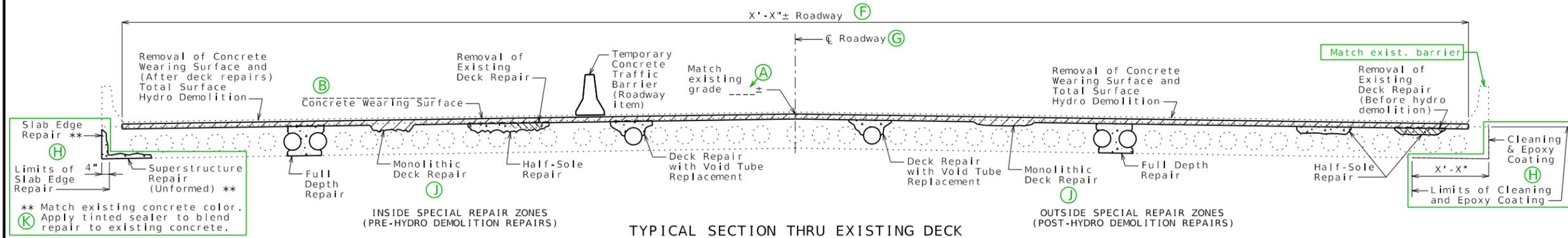
DESCRIPTION:

DATE:

105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)

U.I.P. AND REHABILITATE EXISTING (X'-X'-X') CONTINUOUS CONCRETE VOIDED SLAB SPANS (SKEW: X)

SEC/SUR * TWP * RGE *



Slab Edge Repair **
Limits of Slab Edge Repair
H
4"
Superstructure Repair (Unformed)**
K
** Match existing concrete color. Apply tinted sealer to blend repair to existing concrete.

INSIDE SPECIAL REPAIR ZONES (PRE-HYDRO DEMOLITION REPAIRS)

TYPICAL SECTION THRU EXISTING DECK

OUTSIDE SPECIAL REPAIR ZONES (POST-HYDRO DEMOLITION REPAIRS)

Hydro Demolition Case 2B:

Zoned Conventional Deck Repair Before Hydro Demolition and Non-Zoned Conventional Deck Repair After Hydro Demolition

(Replacing Existing Wearing Surface)

Estimated Quantities			
Item	Quantity	Unit	Total
Total Surface Hydro Demolition	216-10.01	sq. yard	X
Removal of Concrete Wearing Surface	216-15.02	sq. foot	X
Removal of Existing Deck Repair	216-15.03	sq. foot	X
Supplementary Wearing Surface Material	505-00.04	cu. yard	X
Latex Modified Concrete Wearing Surface	505-20.00	sq. yard	X
Substructure Repair (Formed)	704-01.01	sq. foot	X
Substructure Repair (Unformed)	704-01.02	sq. foot	X
Superstructure Repair (Unformed)	704-01.03	sq. foot	X
Half-Sole Repair	704-01.04	sq. foot	X
Full Depth Repair	704-01.06	sq. foot	X
Slab Edge Repair (Bridges)	704-01.07	linear foot	X
Deck Repair with Void Tube Replacement	704-01.12	sq. foot	X
Cleaning and Epoxy Coating	704-01.13	sq. foot	X

STANDARD DRAWING GUIDANCE (do not show on plans):

- B May be used with the following concrete wearing surfaces:
2 1/4" to 3" Low Slump
3/4" to 3" Polyester Polymer

If optional concrete wearing surface is specified and low slump or polyester polymer is an option follow guidance on Sheet RHB04c.

- B3.8 * Supplementary wearing surface material for monolithic deck repair will be paid for at the fixed unit price in accordance with Sec 109.
- B3.9 if required

General Notes:

- A1.1 Design Specifications:
2002 AASHTO LFD (17th Ed.) Standard Specifications
Bridge Deck Rating =
- A1.2 Design Loading:
HS20-44 Modified () and Military 24,000 lb Tandem Axle ()
- A1.3 Design Unit Stresses:
Class B-1 Concrete (Half-Sole and Full Depth Repair and Deck Repair with Void Tube Replacement) f'c = 4,000 psi
- Miscellaneous:
11.0.1 Roadway surfacing adjacent to bridge ends shall match new bridge wearing surface (roadway item).
- 11.0.2 All concrete repairs shall be in accordance with Sec 704, unless otherwise noted.
- 11.1 Outline of existing work is indicated by light dashed lines. Heavy lines indicate new work.
- 11.2 Contractor shall verify all dimensions in field before finalizing the shop drawings.
- 11.10 In order to maintain grade and a minimum thickness of wearing surface as shown on plans it may be necessary to use additional quantities of wearing surface at various locations throughout the structure. The cost of furnishing and installing the wearing surface will be considered completely covered in the contract unit price, including all additional labor, materials or equipment for variations in thickness of wearing surface.
- Traffic Handling:
A3.8 Structure to be closed during construction. Traffic to be maintained on during construction. See roadway plans for traffic control and Sheet No. for staged construction details.

REPAIRS TO BRIDGE: ROUTE * OVER *

ROUTE * FROM * TO *
ABOUT * MILES * OF *
BEGINNING STATION ± (Match Existing)

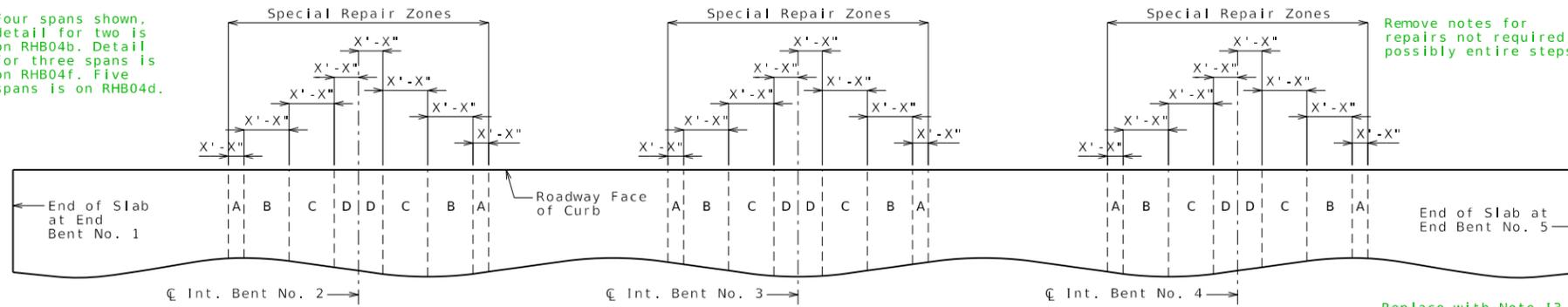
DATE PREPARED 3/7/2024
ROUTE STATE MO
DISTRICT SHEET NO. 21
COUNTY
JOB NO.
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MDOT (1-888-275-6636)

Four spans shown, detail for two is on RHB04b. Detail for three spans is on RHB04f. Five spans is on RHB04d.



PART PLAN OF SLAB SHOWING SPECIAL REPAIR ZONES

Remove notes for repairs not required, possibly entire steps.

Deck Repair Notes:

- Order of Repair:
1. Remove existing wearing surface plus $\text{---}''$ of existing deck.
 2. Power wash deck to identify sound and unsound existing deck repair.
 3. Inside special repair zones, complete the following repairs:
 - a. Removal of existing deck repair
 - b. Half-sole repair
 - c. Deck repair with void tube replacement
 - d. Full depth repair
 4. Outside special repair zones, remove existing deck repair.
 5. Complete total surface hydro demolition, removing $\text{---}''$ minimum of sound concrete inside special repair zones and removing $\text{---}''$ minimum of sound concrete and all deteriorated concrete outside special repair zones.
 6. Sound deck and if needed complete incidental concrete removal.
 7. Outside special repair zones, complete the following repairs:
 - a. Half-sole repair
 - b. Deck repair with void tube replacement
 - c. Full depth repair
 8. Place new wearing surface including additional material for areas of monolithic deck repair.

13.2 Deck repair required in the areas designated as special repair zones shall be completed before hydro demolition in alphabetical sequence beginning with Zone A. Zones with the same letter designation may be repaired at the same time. Hydro demolition shall not move forward until the repairs in all special repair zones are completed and properly cured.

13.4 Any deck repair in areas not designated as a special repair zone shall be completed after hydro demolition.

13.5 Removal and deck repair shall be completed in one special repair zone and concrete shall have attained a compressive strength of 3200 psi before work can be started in the next special repair zone.

13.6 If any single repair area does not exceed 4 square feet in size and the total repair area within a special repair zone does not exceed 12 square feet, the special repair zone may be repaired at the same time as an adjacent zone.

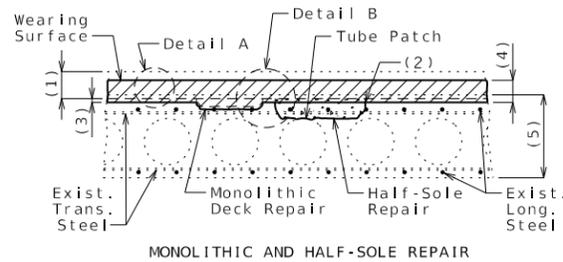
Void Repair:

13.10 Any damage sustained to the void tube as a result of the contractor's operations shall be patched or replaced as required by the engineer at the contractor's expense.

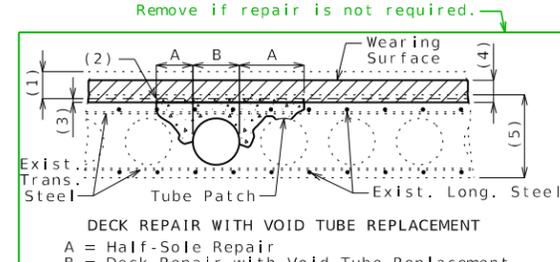
13.11 An exposed void in the deck shall be patched as approved by the engineer in a manner that shall maintain the void area completely free of concrete. Cost of patching an exposed void will be considered completely covered by the contract unit price for Half-Sole Repair.

13.12 When a deteriorated portion of the void tube is beyond the point of patching as determined by the engineer, the portion of the deteriorated void tube shall be replaced. The void area shall be maintained completely free of concrete. Cutting of the longitudinal reinforcing steel will not be permitted. The fiber tubes for producing the voids shall have an outside diameter with the wall thickness the same as the existing tubes and anchored at not more than the original spacing. Cost of replacing the void tube will be considered completely covered by the contract unit price for Deck Repair with Void Tube Replacement. Measurement will be horizontal projection of the area of exposed tube in plan.

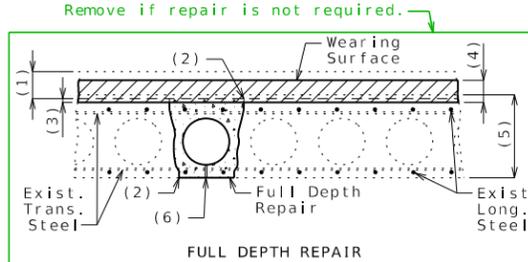
Remove if repair is not required.



MONOLITHIC AND HALF-SOLE REPAIR

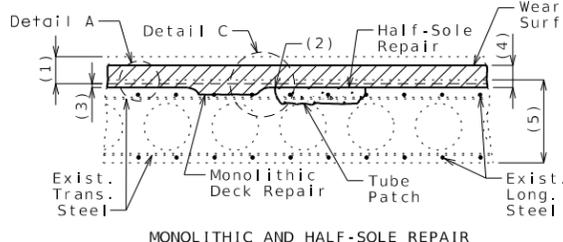


DECK REPAIR WITH VOID TUBE REPLACEMENT
A = Half-Sole Repair
B = Deck Repair with Void Tube Replacement

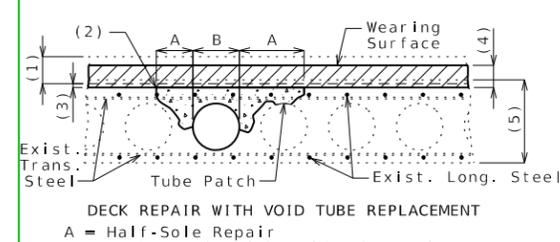


FULL DEPTH REPAIR

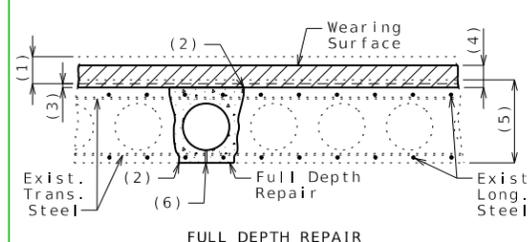
DECK REPAIR INSIDE SPECIAL REPAIR ZONES (BEFORE HYDRO DEMOLITION)



MONOLITHIC AND HALF-SOLE REPAIR



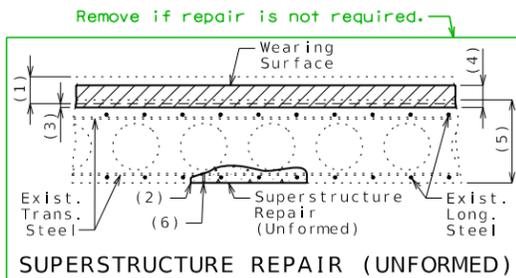
DECK REPAIR WITH VOID TUBE REPLACEMENT
A = Half-Sole Repair
B = Deck Repair with Void Tube Replacement



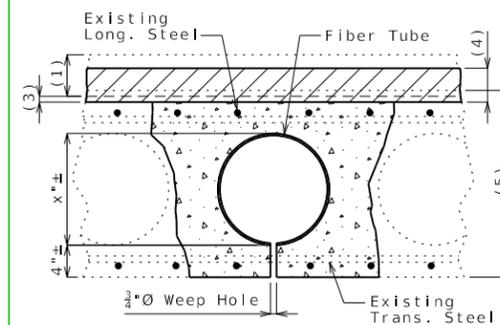
FULL DEPTH REPAIR

DECK REPAIR OUTSIDE SPECIAL REPAIR ZONES (AFTER HYDRO DEMOLITION)

- (1) Removal of existing $\text{---}''$ wearing surface plus $\text{---}''$ of existing deck
- (2) 1" vertical side shall be established outside the deteriorated area.
- (3) Total surface hydro demolition of sound concrete, measured to mortar line:
 - $\text{---}''$ minimum inside special repair zones
 - $\text{---}''$ minimum outside special repair zones
- (4) $\text{---}''$ concrete wearing surface:
 - $\text{---}''$ minimum inside special repair zones
 - $\text{---}''$ minimum outside special repair zones
- (5) Original depth minus previous scarification
- (6) Restore existing weep hole, if encountered.



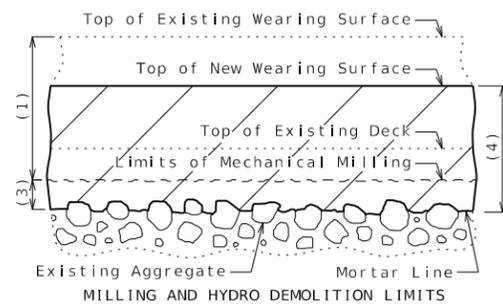
SUPERSTRUCTURE REPAIR (UNFORMED)



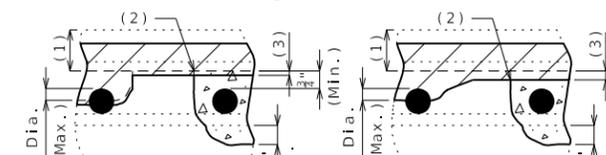
FIBER VOID TUBE REPLACEMENT

Fiber tubes for producing voids shall have an approximate outside diameter of --- inches and a wall thickness of 1/4 inch and shall be anchored to joists carrying the floor form at not more than 4-foot centers.

One 3/4" weep hole shall be provided at 2 inches from each end of each new void.



DETAIL A



DETAIL B

DETAIL C

Monolithic deck repair shall be used when only half the diameter or less of the top bar is exposed.

Clearance around top bar and around bottom bar at the intersection of top bar shall be required when more than half the diameter of the top bar is exposed.

DECK REPAIR DETAILS

Note: This drawing is not to scale. Follow dimensions.

Sheet No. of

Detailed Checked

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

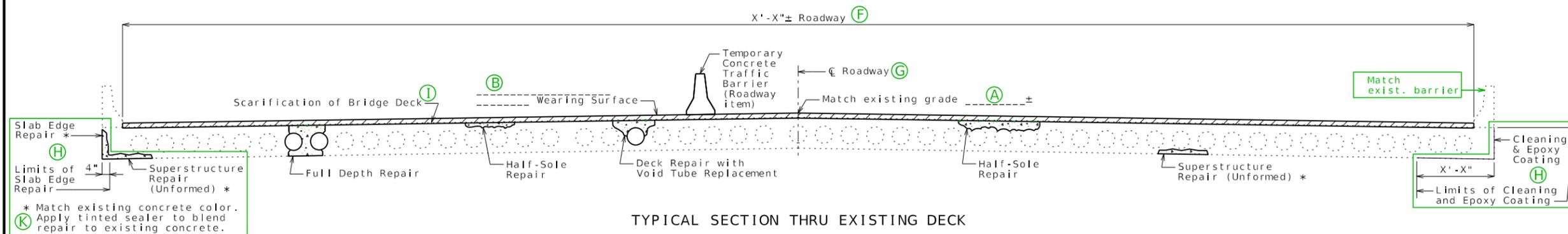


105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)

DATE PREPARED 3/7/2024	
ROUTE	STATE MO
DISTRICT	SHEET NO. 22
COUNTY	
JOB NO.	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

U.I.P. AND REHABILITATE EXISTING (X'-X'-X') CONTINUOUS CONCRETE VOIDED SLAB SPANS (SKEW: X)

SEC/SUR * TWP * RGE *



TYPICAL SECTION THRU EXISTING DECK

Conventional Deck Repair Only (Case A)

(Adding First Wearing Surface or Applying Concrete Crack Filler)

STANDARD DRAWING GUIDANCE (do not show on plans):

May be used for all wearing surfaces and when applying concrete crack filler:

Scarification not required when applying concrete crack filler or with the following wearing surfaces:

- Seal Coat
- Asphalt
- UBAWS
- Epoxy Polymer
- MMA Polymer Slurry

- ② 2 1/4" to 3" Low Slump Concrete
- 1 3/4" to 3" Latex Modified Concrete
- 2 1/4" to 3" Silica Fume Concrete
- 1 3/4" to 3" Latex Modified Very Early Strength Concrete
- 1 3/4" to 3" CSA Cement Very Early Strength Concrete
- 3" to 4" Steel Fiber Reinforced Concrete
- 1/4" Epoxy Polymer
- 3/4" to 3" Polyester Polymer Concrete
- 3/8" MMA Polymer Slurry
- 4" to 5" Reinforced Concrete Slab
- 3/8" Chip Seal Grade A1
- 1" to 3" Optional Asphaltic Concrete
- 1/2" to 3/4" Optional Ultrathin Bonded Asphalt

Estimated Quantities			
Item	Quantity	Unit	Total
Scarification of Bridge Deck	216-10.00	sq. yard	X
Latex Modified Concrete Wearing Surface	505-20.00	sq. yard	X
Substructure Repair (Formed)	704-01.01	sq. foot	X
Substructure Repair (Unformed)	704-01.02	sq. foot	X
Superstructure Repair (Unformed)	704-01.03	sq. foot	X
Half-Sole Repair	704-01.04	sq. foot	X
Full Depth Repair	704-01.06	sq. foot	X
Slab Edge Repair (Bridges)	704-01.07	linear foot	X
Deck Repair with Void Tube Replacement	704-01.12	sq. foot	X
Cleaning and Epoxy Coating	704-01.13	sq. foot	X

Replace as required →

11.0.3 If required →

General Notes:

- A1.1 Design Specifications: 2002 AASHTO LFD (17th Ed.) Standard Specifications Bridge Deck Rating =
- A1.2 Design Loading: HS20-44 Modified () and Military 24,000 lb Tandem Axle ()
- A1.3 Design Unit Stresses: Class B-1 Concrete (Half-Sole and Full Depth Repair and Deck Repair with Void Tube Replacement) f'c = 4,000 psi
- Miscellaneous:
 - 11.0.1 Roadway surfacing adjacent to bridge ends shall match new bridge wearing surface (roadway item).
 - 11.0.2 All concrete repairs shall be in accordance with Sec 704, unless otherwise noted.
 - 11.1 Outline of existing work is indicated by light dashed lines. Heavy lines indicate new work.
 - 11.2 Contractor shall verify all dimensions in field before finalizing the shop drawings.
 - 11.10 In order to maintain grade and a minimum thickness of wearing surface as shown on plans it may be necessary to use additional quantities of wearing surface at various locations throughout the structure. The cost of furnishing and installing the wearing surface will be considered completely covered in the contract unit price, including all additional labor, materials or equipment for variations in thickness of wearing surface.
- A3.8 Structure to be closed during construction. Traffic to be maintained on during construction. See roadway plans for traffic control and Sheet No. for staged construction details.

REPAIRS TO BRIDGE: ROUTE * OVER *

ROUTE * FROM * TO *
ABOUT * MILES * OF *
BEGINNING STATION ± (Match Existing)

Detailed Checked

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 1 of

DATE PREPARED 3/7/2024	
ROUTE	STATE MO
DISTRICT	SHEET NO. 23
COUNTY	
JOB NO.	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

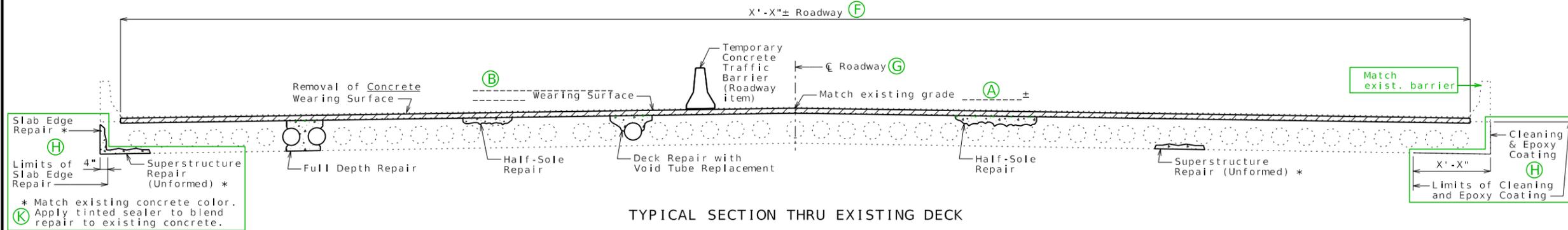
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

U.I.P. AND REHABILITATE EXISTING (X'-X'-X') CONTINUOUS CONCRETE VOIDED SLAB SPANS (SKEW: X)

SEC/SUR * TWP * RGE *



TYPICAL SECTION THRU EXISTING DECK

Conventional Deck Repair Only (Case B)

(Replacing Existing Wearing Surface)

Estimated Quantities			
Item			Total
Removal of Concrete Wearing Surface	216-15.02	sq. foot	X
Latex Modified Concrete Wearing Surface	505-20.00	sq. yard	X
Substructure Repair (Formed)	704-01.01	sq. foot	X
Substructure Repair (Unformed)	704-01.02	sq. foot	X
Superstructure Repair (Unformed)	704-01.03	sq. foot	X
Half-Sole Repair	704-01.04	sq. foot	X
Full Depth Repair	704-01.06	sq. foot	X
Slab Edge Repair (Bridges)	704-01.07	linear foot	X
Deck Repair with Void Tube Replacement	704-01.12	sq. foot	X
Cleaning and Epoxy Coating	704-01.13	sq. foot	X

Replace as required

STANDARD DRAWING GUIDANCE (do not show on plans):

May be used for all wearing surfaces:

Scarification not required with the following wearing surfaces:

- Seal Coat
- Asphalt
- UBAWS
- Epoxy Polymer
- MMA Polymer Slurry

- 2 1/4" to 3" Low Slump Concrete
- 1 3/4" to 3" Latex Modified Concrete
- 2 1/4" to 3" Silica Fume Concrete
- 1 3/4" to 3" Latex Modified Very Early Strength Concrete
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- 1/4" Epoxy Polymer
- 3/4" to 3" Polyester Polymer Concrete
- 3/8" MMA Polymer Slurry
- 4" to 5" Reinforced Concrete Slab
- 3/8" Chip Seal Grade A1
- 1" to 3" Optional Asphaltic Concrete
- 1/2" to 3/4" Optional Ultrathin Bonded Asphalt

General Notes:

- A1.1 Design Specifications: 2002 AASHTO LFD (17th Ed.) Standard Specifications Bridge Deck Rating =
- A1.2 Design Loading: HS20-44 Modified () and Military 24,000 lb Tandem Axle ()
- A1.3 Design Unit Stresses: Class B-1 Concrete (Half-Sole and Full Depth Repair and Deck Repair with Void Tube Replacement) f'c = 4,000 psi
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11.0.3 If required

REPAIRS TO BRIDGE: ROUTE * OVER *
ROUTE * FROM * TO *
ABOUT * MILES * OF *
BEGINNING STATION _____± (Match Existing)

Detailed Checked

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 1 of

DATE PREPARED 3/7/2024	
ROUTE	STATE MO
DISTRICT	SHEET NO. 25
COUNTY	
JOB NO.	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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JEFFERSON CITY, MO 65102
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