SEC/SUR * TWP * RGE *

U.I.P. AND REHABILITATE EXISTING (X'-X'-X') ____ SPANS (SKEW: x)

Estimated Quantities

	Item			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
	Cleaning and Epoxy Coating	704-01.13	sq. foot	X

Replace as required → *

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

Note 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 (Year) and Military 24,000 lb Tandem Axle (Year)

A1.3 **Design Unit Stresses:**

Class B-2 Concrete (Half-Sole and Full Depth Repair) f'c = 4,000 psi

Miscellaneous:

I1.0.1 Roadway surfacing adjacent to bridge ends shall match new bridge wearing surface (roadway item).

I1.0.3 (If required) →

I1.0.2 All concrete repairs shall be in accordance with Sec 704, unless otherwise noted.

I1.1 Outline of existing work is indicated by light dashed lines. Heavy lines indicate new work.

I1.2 (K) Contractor shall verify all dimensions in field before ordering new material.

I1.10 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. 2
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)

Detailed
Checked

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

RHB02_PC_PS_Panel_Deck_on_Girders Guidance & Alternate Details (1 of 4)

STANDARD DRAWING GUIDANCE (do not show on plans)

This is an index of Standard Drawing details. Draw typical section as required and scale to fit within attached border. Use appropriate deck repair details and modify as required (match orientation of actual reinforcement).

For bridges with epoxy coated steel, see Sec 710 for repairing bars and add notes as necessary. See SPM.

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.

Consideration shall be made for additional notes for repairing deterioration of the precast prestressed panels. See SPM.

The Prestressed Panel Joint Repair detail is shown transverse because typically deterioration follows the strand closest to the panel edge, referred to as a "joint".

Ⓐ Show difference as plus/minus X"±, see Bridge Memo or SPM.

e.g. Match existing grade plus 2¼"±

Ⓑ Identify new wearing surface (See Bridge Memo or SPM). Specify minimum thickness in deck details.

Ⓒ Identify existing wearing surface and thickness, see Bridge Memo or existing plans.

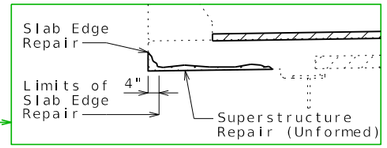
Ⓓ See Bridge Memo or SPM, typically 1/2". Use 1" if more than 30% of existing deck need repair. Verify there will be a minimum of 1/2" of concrete above the top bars after scarification.

Ⓔ See Bridge Memo or SPM, typically 1/2".

Ⓕ See existing plans.

Ⓖ Use appropriate reference (℄ Structure, ℄ Roadway, ℄ Median, etc.)

Ⓗ 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.

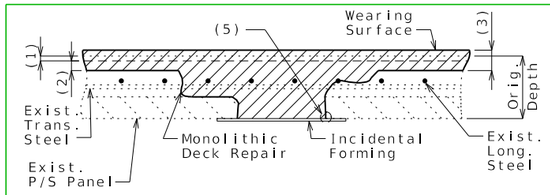


Ⓘ Scarification prior to adding first wearing surface or removing a portion of the deck when removing an existing wearing surface is not required for seal coat, asphalt, UBAWS, epoxy polymer or MMA polymer slurry wearing surfaces.

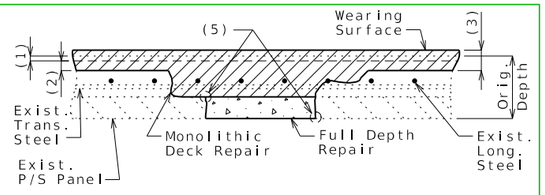
Ⓙ The following note will be required if concrete removal exposing prestressing strands is anticipated.

Adequate precaution shall be taken to prevent any nicks or cuts of the prestressing strands.

If full depth repair thru panels is anticipated additional deck repair details will be required. Details shown are for conventional deck repair post-hydro demolition when adding first wearing surface. Details for other cases are similar.



MONOLITHIC DECK REPAIR REQUIRING INCIDENTAL FORMING

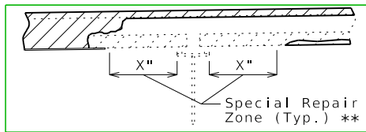


MONOLITHIC DECK REPAIR REQUIRING FULL DEPTH REPAIR

If severe panel deterioration is anticipated at the strand ends (within the development lengths of the strands) either at a transverse joint or in the interior between transverse joints, a repair method will need to be expertly developed. Contact the Development Section and/or reference similar repairs to Bridge A4729. One solution is to show the limits of strand development and require a hold point on the plans for engineer review when panel deterioration is discovered within these limits.

Ⓚ Note is required only when shop drawings will be required (For example, expansion device replacement, diaphragm replacement, etc.)

Add note: (5) One inch vertical side shall be established outside the deteriorated area. See Sec 704.

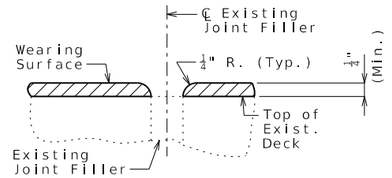


** Hold Point: Concrete removal exposing prestressing strands within a special repair zone shall require engineer approved repair.

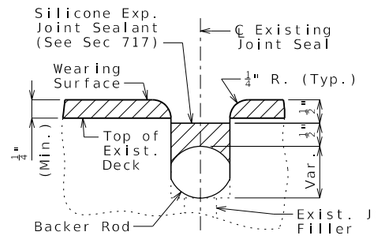
SDG: This will allow time for bridge office to assess situation and develop repair method.

FILLED JOINT DETAILS FOR ALL APPLICATIONS

FOR EPOXY POLYMER OR MMA POLYMER SLURRY WEARING SURFACE

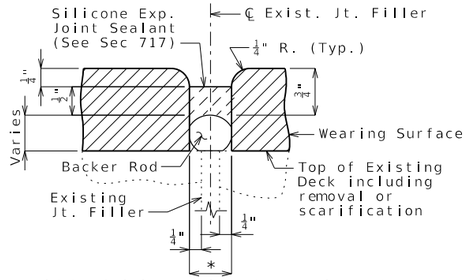


SECTION THRU JOINT
(EPOXY POLYMER OR MMA POLYMER SLURRY)



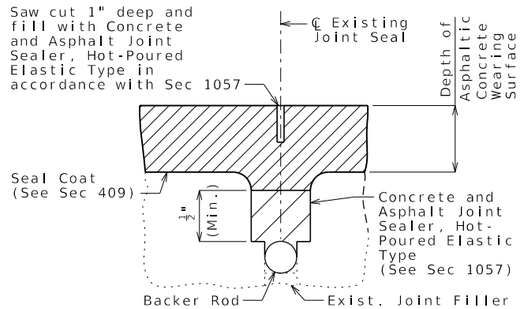
SECTION THRU JOINT
(EPOXY POLYMER OR MMA POLYMER SLURRY)

FOR ALL OTHER WEARING SURFACES

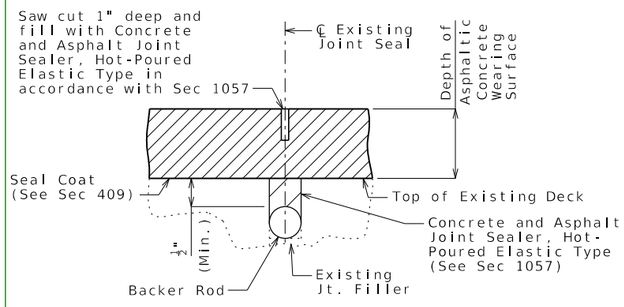


* Width of joint seal to be not less than the depth and not more than twice the depth of the joint seal.

SECTION THRU JOINT
(POLYESTER POLYMER, LATEX, LOW SLUMP OR SILICA FUME CONCRETE)

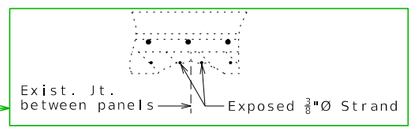


SECTION THRU JOINT
(ASPHALTIC CONCRETE WEARING SURFACE)



SECTION THRU JOINT
(ASPHALTIC CONCRETE WEARING SURFACE)

If severe panel deterioration is anticipated outside the development lengths of the strands at a transverse joint, it is advisable to consider full depth repair even if not required from above. If only cleaned and coated, there is a chance new reflection cracks will appear and the strand deterioration will accelerate due to chlorides being trapped behind the epoxy.



Hydro Demolition Case 1: Monolithic Deck Repair After Hydro Demolition

STANDARD DRAWING GUIDANCE (do not show on plans):

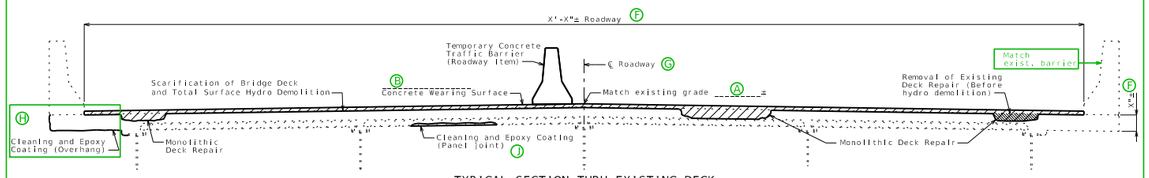
Ⓑ May be used with the following concrete wearing surfaces:
- 1 3/4" to 3" Latex Modified
- 2 1/4" to 3" Silica Fume
- 1 3/4" to 3" Latex Modified Very Early Strength
- 1 3/4" to 3" CSA Cement Very Early Strength
- 3" to 4" Steel Fiber Reinforced

If optional concrete wearing surface is specified and either low slump or polyester polymer is an option:

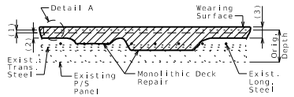
Use appropriate details below on first sheet and add a sheet title using the allowed options for the below details,

e.g. "LATEX MODIFIED CONCRETE DETAILS"

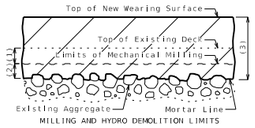
(Adding First Wearing Surface)



TYPICAL SECTION THRU EXISTING DECK

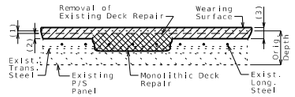


MONOLITHIC DECK REPAIR

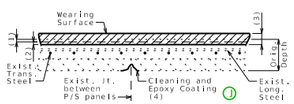


MILLING AND HYDRO DEMOLITION LIMITS

DETAIL A



REMOVAL OF EXISTING DECK REPAIR BEFORE HYDRO DEMOLITION



PRESTRESSED PANEL JOINT REPAIR
(TRANSVERSE SECTION SHOWN)

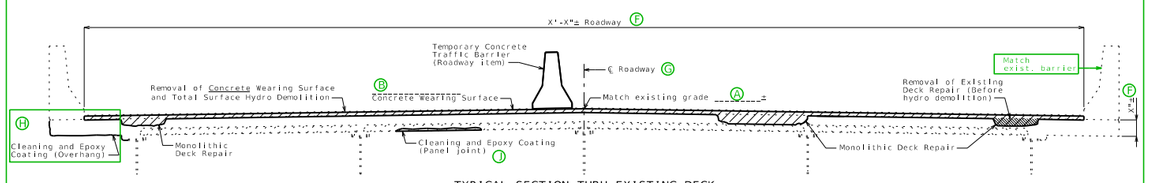
(1) Ⓓ ± scarification of existing deck

(2) Ⓔ " minimum total surface hydro demolition of sound concrete, measured to mortar line

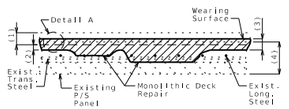
(3) Ⓑ " minimum _____ concrete wearing surface

(4) Remove all deteriorated concrete at transverse joint between prestressed panels and coat with epoxy.

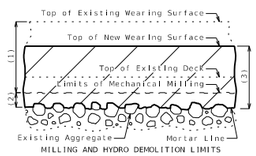
(Replacing Existing Wearing Surface)



TYPICAL SECTION THRU EXISTING DECK

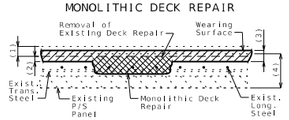


MONOLITHIC DECK REPAIR

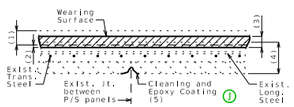


MILLING AND HYDRO DEMOLITION LIMITS

DETAIL A



REMOVAL OF EXISTING DECK REPAIR BEFORE HYDRO DEMOLITION



PRESTRESSED PANEL JOINT REPAIR
(TRANSVERSE SECTION SHOWN)

(1) Removal of existing Ⓒ ± _____ wearing surface plus ____ of existing deck Ⓓ

(2) Ⓔ " minimum total surface hydro demolition of sound concrete, measured to mortar line

(3) Ⓑ " minimum _____ concrete wearing surface

(4) Original depth of deck minus previous scarification.

(5) Remove all deteriorated concrete at transverse joint between prestressed panels and coat with epoxy.

Hydro Demolition Case 2: Conventional Deck Repair After Hydro Demolition

STANDARD DRAWING GUIDANCE (do not show on plans):

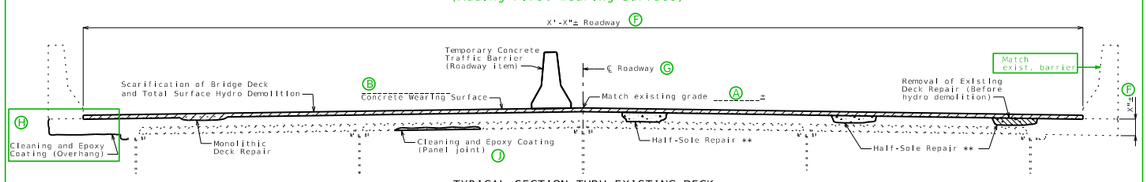
Ⓑ May be used with the following concrete wearing surfaces:
2 1/4" to 3" Low Slump
3/4" to 3" Polyester Polymer

If optional concrete wearing surface is specified and either low slump or polyester polymer is an option:

Use appropriate details below on second sheet and add a sheet title using the allowed options for the below details,

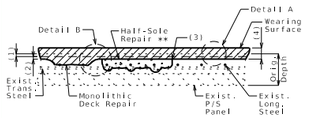
e.g. "LOW SLUMP CONCRETE DETAILS"

(Adding First Wearing Surface)

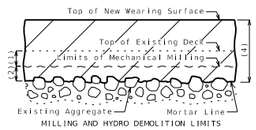


TYPICAL SECTION THRU EXISTING DECK

** After hydro demolition

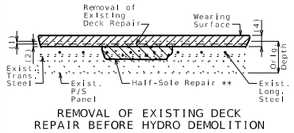


MONOLITHIC AND HALF-SOLE REPAIR

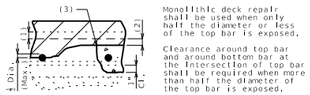


MILLING AND HYDRO DEMOLITION LIMITS

DETAIL A



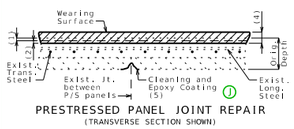
REMOVAL OF EXISTING DECK REPAIR BEFORE HYDRO DEMOLITION



DETAIL B

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

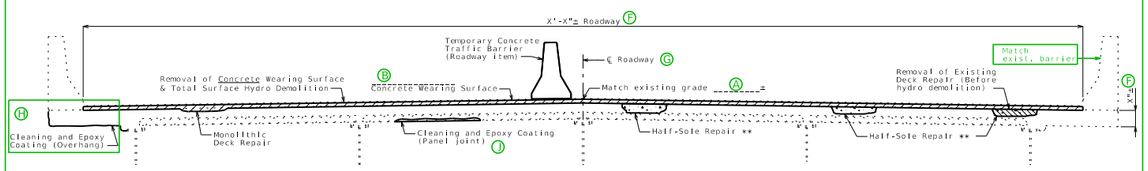
Clearance around top bar and around bottom bar at the intersection of top bar shall be required when more than half the diameter of the top bar is exposed.



PRESTRESSED PANEL JOINT REPAIR
(TRANSVERSE SECTION SHOWN)

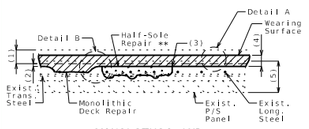
(1) Ⓓ" scarification of existing deck
(2) Ⓔ" minimum total surface hydro demolition of sound concrete, measured to mortar line
(3) 1" vertical side shall be established outside the deteriorated area.
(4) Ⓑ" minimum _____ concrete wearing surface
(5) Remove all deteriorated concrete at transverse joint between prestressed panels and coat with epoxy.

(Replacing Existing Wearing Surface)

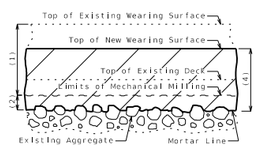


TYPICAL SECTION THRU EXISTING DECK

* After hydro demolition

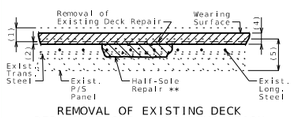


MONOLITHIC AND HALF-SOLE REPAIR

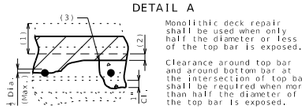


MILLING AND HYDRO DEMOLITION LIMITS

DETAIL A



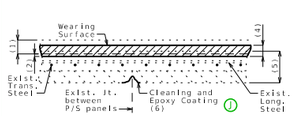
REMOVAL OF EXISTING DECK REPAIR BEFORE HYDRO DEMOLITION



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.



PRESTRESSED PANEL JOINT REPAIR
(TRANSVERSE SECTION SHOWN)

(1) Removal of existing Ⓒ"± _____ wearing surface plus _____Ⓑ of existing deck
(2) Ⓔ" minimum total surface hydro demolition of sound concrete, measured to mortar line
(3) 1" vertical side shall be established outside the deteriorated area.
(4) Ⓑ" minimum _____ concrete wearing surface
(5) Original depth of deck minus previous scarification
(6) Remove all deteriorated concrete at transverse joint between prestressed panels and coat with epoxy.

Conventional Deck Repair Only

STANDARD DRAWING GUIDANCE (do not show on plans):

May be used with all wearing surfaces.

Ⓑ 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" Alternate Asphaltic Concrete

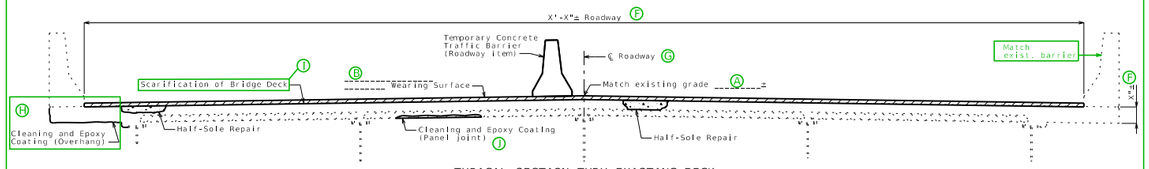
1/2" to 3/4" Alternate Ultrathin Bonded Asphalt

Scarification not required with the following wearing surfaces:

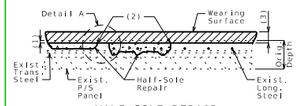
Seal Coat
Asphalt
UBAWS
Epoxy Polymer
MMA Polymer Slurry

Or when applying concrete crack filler.

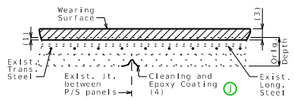
(Adding First Wearing Surface or Applying Concrete Crack Filler)



TYPICAL SECTION THRU EXISTING DECK



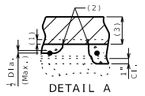
HALF-SOLE REPAIR



PRESTRESSED PANEL JOINT REPAIR
(TRANSVERSE SECTION SHOWN)

SDG: For seal coat, asphalt, UBAWS, epoxy polymer or MMA polymer slurry:
- Delete Dimension/Note (1) and renumber others
- Delete top existing line
- Adjust top of the original depth dimension to bottom of new wearing surface
- Adjust wearing surface thickness for thin wearing surfaces

For application of concrete crack filler:
- Delete Dimension/Note (1) and (3) and renumber others
- Delete top existing line & the wearing surface
- Adjust top of the original depth dimension to the remaining top line.
- Replace "Wearing Surface" with "Concrete Crack Filler" and adjust leader note to point to the remaining top line



DETAIL A

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.

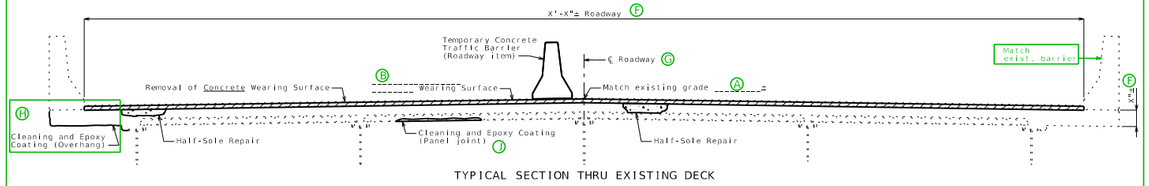
(1) Ⓓ" scarification of existing deck Ⓘ

(2) 1" vertical side shall be established outside the deteriorated area.

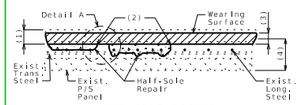
(3) Ⓑ" minimum _____ wearing surface

(4) Remove all deteriorated concrete at transverse joint between prestressed panels and coat with epoxy.

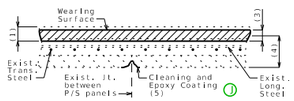
(Replacing Existing Wearing Surface)



TYPICAL SECTION THRU EXISTING DECK

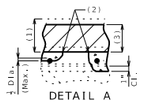


HALF-SOLE REPAIR



PRESTRESSED PANEL JOINT REPAIR
(TRANSVERSE SECTION SHOWN)

SDG: For seal coat, asphalt, UBAWS, epoxy polymer or MMA polymer slurry:
- Delete existing line inside wearing surface
- Adjust top of the original depth dimension to bottom of new wearing surface
- Adjust depth for thin wearing surfaces



DETAIL A

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.

(1) Removal of existing Ⓒ "± _____ wearing surface plus __" of existing deck Ⓘ

(2) 1" vertical side shall be established outside the deteriorated area.

(3) Ⓑ" minimum _____ wearing surface

(4) Original depth of deck minus previous scarification.

(5) Remove all deteriorated concrete at transverse joint between prestressed panels and coat with epoxy.