# STATE OF WISCONSIN
# DEPARTMENT OF TRANSPORTATION

# Inspection Report for B-67-114

## CROWBAR DR over IH 43

**Nov 12,2018**


| Type | Prior | Frequency (mos) | Performed |
|---|---|---|---|
| Routine | 06-06-17 | 24 | X |
| Deck Evaluation | 06-06-17 | 0 | |
| SIA Review | 06-06-17 | 48 | X |
| Vertical Clearance Measured | 06-06-17 | 0 | X |

| | Start Coordinates | End Coordinates (optional) |
|---|---|---|
| Latitude | 42°55'27.52"N | |
| Longitude | 88°11'19.56"W | |

| | | |
|---|---|---|
| Owner | STATE HIGHWAY DEPT | |
| Maintainer | | STATE HIGHWAY DEPT |

### Time Log

| Hours | Minutes |
|---|---|
| 1 | 0 |

### Team members

| | Name | Number | Signature | Signature Date |
|---|---|---|---|---|
| Inspector | Bolka, John | 2007 | John Bolka<br>E-signed by John Bolka(dotjtb) | 01-23-19 |

# BRIDGE INSPECTION REPORT
# Wisconsin Department of Transportation
# DT2007 2003 s.84.17 Wis. Stats.



## Identification & Location

| Feature On: | Section Town Range: | Structure Number: |
|---|---|---|
| CROWBAR DR | S06 T05N R20E | B-67-114 |
| Feature Under: | County: | |
| IH 43 | WAUKESHA | |
| Location | Municipality: | Structure Name: |
| 0.1 MI S JCT CTH ES | NEW BERLIN | |

## Geometry

measurements in feet, except where noted

| Approach Roadway Width: | Bridge Roadway Width: | Total Length: |
|---|---|---|
| 34 | 34.0 | 421.7 |
| Approach Pavement Width: | Deck Width: | Deck Area (sq ft): |
| 22 | 36.5 | 15392 |

## Traffic

| | Lanes | ADT | ADT year | Traffic Pattern |
|---|---|---|---|---|
| On | 2 | 2000 | 2020 | TWO WAY TRAFFIC |
| Under | 4 | 53000 | 2015 | TWO WAY TRAFFIC |

## Capacity

## Load Rating

| Inventory rating: | Overburden depth (in): | Last rating date: | Controlling: |
|---|---|---|---|
| HS18 | 0.0 | 10-24-17 | INTERIOR DECK GIRDER Moment |
| Operating rating: | Deck surface material: | Re-rate for capacity (Y/N): | Control location: |
| HS30 | CONCRETE | | 7.9 SPAN 1, 110.7 |
| Posting: | Re-rate notes: | | |

## Hydraulic

## Classification

| Scour Critical Code(113): | Q100 (ft3/sec): | |
|---|---|---|
| (N) NO WATERWAY | 0 | |
| High water elevation (ft): | Velocity (ft/sec): | Sufficiency #: |
| 0.0 | 0.0 | 96.3 |

## Span(s)

| Span # | Material | Configuration | Depth (in) | Length (ft) | Main |
|---|---|---|---|---|---|
| 1 | CONT STEEL | DECK GIRDER | 78 | 140.5 | |
| 2 | CONT STEEL | DECK GIRDER | 78 | 139.0 | Y |
| 3 | CONT STEEL | DECK GIRDER | 78 | 137.0 | |

## Expansion joint(s)

**Temperature:** File:66 New:27

| Joint # | Location | Type | Last inspection date | Last measure (in) | New measure (in) |
|---|---|---|---|---|---|
| 1 | S ABUTMENT | STRIPSEAL | | | 3.0 |
| 2 | N ABUTMENT | STRIPSEAL | | | 3.0 |

## Clearance

| Item | File Measurement (ft) | File Date | New Measurement (ft) |
|---|---|---|---|
| Highway Min Vertical Under Cardinal | 16.22 | 06-Jun-2017 | 16.19 |
| Highway Min Vertical Under Non-Cardinal | 16.15 | 06-Jun-2017 | 16.08 |
| Horizontal Under Cardinal | 75.0 | | |
| Horizontal Under Non-Cardinal | 76.6 | | |
| Highway Min Vertical On Cardinal | | | |
| Horizontal On Cardinal | | | |

## Special Components

| Component | Year | Work Performed | Note |
|---|---|---|---|
| DECK - IOWA MIX | 1992 | OVERLAY - CONCRETE | |
| SUPERSTRUCTURE - CONCRETE GIRDER HAUNCH | 1969 | NEW STRUCTURE | |

## Construction History

| Year | Work Performed | FOS id |
|---|---|---|
| 2018 | PAINTING | 1090-30-70 |
| 2018 | NEW DECK | 1090-30-70 |
| 1992 | OVERLAY - CONCRETE | 1090-04-74 |
| 1985 | PAINTING | |
| 1969 | NEW STRUCTURE | 1092-03-75 |

## Maintenance Items History

| Item | Recommended by | Status | Status change | Year completed |
|---|---|---|---|---|
| **Approach - Patch Bituminous** | Brooks, Julie (2017) | COMPLETE | 02/13/17 | 2016 |
| Patch/wedge asphalt at south paving block, seal all cracks and joints in both approaches | | | | |
| **IMP-Concrete Overlay** | Brooks, Julie (2017) | REJECTED | 07/10/17 | |
| Delamination Present at Soffit, Program as Deck Replacement. | | | | |
| **Deck - Clean and Sweep Deck/Drains** | Brooks, Julie (2017) | COMPLETE | 02/13/17 | 2016 |
| Clean deck drains to improve flow | | | | |
| **IMP-Paint Structure** | Brooks, Julie (2017) | COMPLETE | 11/12/18 | 2018 |
| 2024 - Recommend w/Deck Replacement. | | | | |
| **IMP-Deck Replacement** | Bolka, John (2007) | COMPLETE | 11/12/18 | 2018 |
| 2024 - Recommend Deck Replacement | | | | |

## Elements

| Chk | Element | Defect | Description | UOM | Total | Quantity in Condition State 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| X | **12** | | **Reinforced Concrete Deck-Coated Reinforcing** | SF | 15,603 | 15,603 | 0 | 0 | 0 |
| | | | **Spans Numbered S=>N** | | | | | | |
| | | 1130 | Cracking (RC) | SF | | 0 | 0 | 0 | 0 |
| | | | **No** Cracks **Noted** | | | | | | |
| | 8000 | | Wearing Surface (Bare) | SF | 14,338 | 14,338 | 0 | 0 | 0 |
| | | | | | | | | | |
| | | 3220 | Crack (Wearing Surface) | SF | | 0 | 0 | 0 | 0 |
| | | | **No Cracks Noted** | | | | | | |
| X | **107** | | **Steel Open Girder** | LF | 1,668 | 1,665 | 3 | 0 | 0 |
| | | | Girders Numbered W=>E | | | | | | |
| | | 1000 | Corrosion | LF | | 0 | 0 | 0 | 0 |
| | | | **Scattered Pitting Throughout** | | | | | | |
| | | 1900 | Distortion | LF | | 0 | 3 | 0 | 0 |
| | | | **SPAN 3: G4, Two Areas of Impact Distortion in Web over Lane 1.** | | | | | | |
| | 8516 | | Painted Steel | SF | 33,799 | 33,799 | 0 | 0 | 0 |
| | | | | | | | | | |
| | | 3440 | Effectiveness (Steel Protective Coatings) | SF | | 33,799 | 0 | 0 | 0 |
| | | | **2018 Re-**Paint | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X | **205** | | **Reinforced Concrete Column** | EA | 6 | 5 | 1 | 0 | 0 |
| | | | **Girders Numbered W=>E** | | | | | | |
| | | 1080 | Delamination - Spall - Patched Area | EA | | 0 | 1 | 0 | 0 |
| | | | **PIER** 2: Small Spall @ C1 | | | | | | |
| X | **215** | | **Reinforced Concrete Abutment** | LF | 84 | 73 | 7 | 4 | 0 |
| | | | | | | | | | |
| | | 1080 | Delamination - Spall - Patched Area | LF | | 0 | 0 | 4 | 0 |
| | | | S ABUTMENT: **Spall w/exp Reinforcement at SW Corner of Backwall, G1-2,** Vertical Crack w/Adjacent Delamination**, G2-3, Vertical Crack w/Adjacent Delamination,** Spall w/exp Reinforcement; N ABUTMENT: Delamination at NW & NE Corners of Backwall, Vertical Crack w/Adjacent Delamination at Barrel and Backwall G2-3. | | | | | | |
| | | 1130 | Cracking (RC) | LF | | 0 | 7 | 0 | 0 |
| | | | S ABUTMENT: HL/Narrow Vertical Cracks w/Staining; N ABUTMENT: HL/Narrow Vertical Cracks w/Staining and Efflorescence. | | | | | | |
| X | **234** | | **Reinforced Concrete Cap** | LF | 77 | 72 | 4 | 1 | 0 |
| | | | | | | | | | |
| | | 1080 | Delamination - Spall - Patched Area | LF | | 0 | 0 | 1 | 0 |
| | | | **PIER 2: Spall w/exp Reinforcement at NW Bottom Corner.** | | | | | | |
| | | 1130 | Cracking (RC) | LF | | 0 | 4 | 0 | 0 |
| | | | PIER 1: **FRP Wrap on Portions of Cap**; PIER 2: Narrow Diagonal Crack w/leaching @ C**1-2, FRP Wrap on Portions of Cap.** | | | | | | |
| X | **300** | | **Strip Seal Expansion Joint** | LF | 85 | 85 | 0 | 0 | 0 |
| | | | S JOINT: **3" @ 27** deg @ S**W** Corner; N J**OINT: 3" @ 27** deg @ N**W** Corner | | | | | | |
| X | **311** | | **Moveable Bearing** | EA | 12 | 9 | 3 | 0 | 0 |
| | | | Includes Bearings at Abutments and Pier 2**; New Assemblies Installed at Abutments**. | | | | | | |
| | | 1020 | Connection | EA | | 0 | 3 | 0 | 0 |
| | | | S ABUTMENT: Anchor Bolts **not Tightened at G2-4.** | | | | | | |
| X | **313** | | **Fixed Bearing** | EA | 4 | 4 | 0 | 0 | 0 |
| | | | Includes Bearings @ Pier 1 | | | | | | |
| X | **331** | | **Reinforced Concrete Bridge Rail** | LF | 882 | 845 | 37 | 0 | 0 |
| | | | | | | | | | |
| | | 1130 | Cracking (RC) | LF | | 0 | 37 | 0 | 0 |
| | | | W Rail: Few HL /Narrow Vertical Cracks; E Rail: Few HL /Narrow Vertical Cracks. | | | | | | |
| X | **8400** | | **Integral Wingwall** | EA | 4 | 0 | 4 | 0 | 0 |
| | | | | | | | | | |
| | | 8903 | Wall Deterioration | EA | | 0 | 4 | 0 | 0 |
| | | | **NE: Diagonal** Crack w/Staining **at Abutment; NW: Diagonal Crack w/Staining at Abutment; SE: Diagonal Crack w/Staining at Abutment; SW: Diagonal Crack w/Staining at Abutment.** | | | | | | |
| X | **8800** | | **FRP Strengthening** | EA | 2 | 2 | 0 | 0 | 0 |
| | | | **Includes Strengthening at Caps at Piers 1 & 2.** | | | | | | |

## Assessments

| Chk | Element | Defect | Description | UOM | Total | Quantity in Condition State 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| | | | **Drainage - Ends of Structure** | EA | 4 | 0 | 0 | 4 | 0 |
| X | **9001** | | SE: Gra**nular Material** at Wingtip **w/Erosion**; SW: **Granular Material** at Wingtip w/Erosion; NW: **Concrete Curb & Gutter w/Flume** at Wingtip, **Undermining of Curb** at Wingtip; NE: **Concrete Curb & Gutter w/Flume at Wingtip, Erosion w/Undermining of Curb** at Wingtip. | | | | | | |
| | | | **Drainage - Drainage Along Structure (Deck Drains)** | EA | 2 | 2 | 0 | 0 | 0 |
| X | **9004** | | **SPAN 2: East** and **West Rails near Pier 2.** | | | | | | |
| | | | **Slope Protection- Crushed Aggregate with Bit.** | EA | 2 | 2 | 0 | 0 | 0 |
| X | **9043** | | S SLOPE: S**urface Coverage** of **Bitumen has scattered Damage**; N SLOPE: Aggregate **not Spread Uniformly, Piles and Pockets, Surface Coverage of Bitumen has scattered Damage.** | | | | | | |
| | | | **Steel Diaphragm** | EA | 57 | 57 | 0 | 0 | 0 |
| X | **9167** | | | | | | | | |
| | | | **Lateral Bracing** | EA | 2 | 2 | 0 | 0 | 0 |
| X | **9169** | | G1-2 & G3-4. | | | | | | |
| | | | **Approach Roadway - Concrete (non-structural)** | EA | 2 | 2 | 0 | 0 | 0 |
| X | **9322** | | | | | | | | |

## NBI Ratings

| | File | New |
|---|---|---|
| Deck | 5 | 9 |
| Superstructure | 5 | 8 |
| Substructure | 6 | 7 |
| Culvert | N | N |
| Channel | N | N |
| Waterway | N | N |

## Structure Specific Notes

Cardinal Minimum Vertical Clearance (16.22', 6/6/17) Measured at G4 (East Fascia) at Lane 1/Shoulder Joint; Non-Cardinal Minimum Vertical Clearance (16.15', 6/6/17) Measured at G4 (East Fascia) at Lane 1/Shoulder Joint; Gravel Pit at SE Quadrant Runs Street Sweeper periodically across deck which leads to Filling of Deck Drains with Fines.

## Inspection Specific Notes

## Inspector Site-Specific Safety Considerations

## Structure Inspection Procedures

Ample Vehicular Access.

## Special Requirements

| Chk | Hours | Cost | Comments |
|---|---|---|---|

**Routine**

**Document Comment/Description**

Girder 4, Span 3

**Routine**

**Document Comment/Description**

North Abutment Bearing

**Routine**

**Document Comment/Description**

North Abutment & Slope

**Routine**

**Document Comment/Description**

North Abutment

**Routine**

**Document Comment/Description**

North Approach

## Routine

**Document Comment/Description**

North Expansion Joint

**Routine**

**Document Comment/Description**

North Slope

## Routine

**Document Comment/Description**

NE Approach Drainage

**Routine**

**Document Comment/Description**

NE Wingwall

**Routine**

**Document Comment/Description**

NW Approach Drainage

**Routine**

**Document Comment/Description**

NW Wingwall

**Routine**

**Document Comment/Description**

Pier 2, Column 1

**Routine**

**Document Comment/Description**

Pier 1 FRP

**Routine**

**Document Comment/Description**

Pier 2 FRP

**Routine**

**Document Comment/Description**

Pier 2 Cap

**Routine**

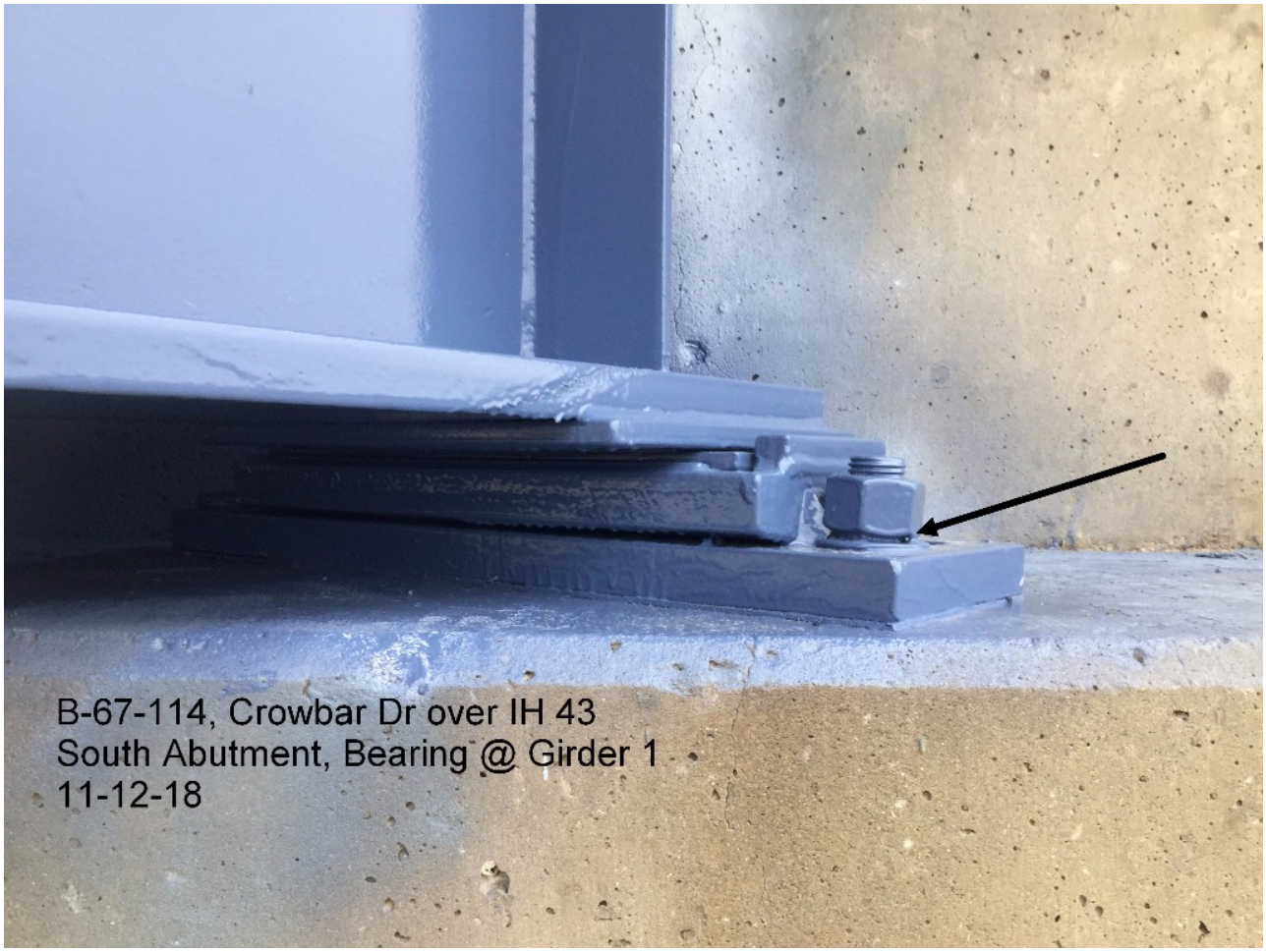
**Document Comment/Description**

Roadway

**Routine**

**Document Comment/Description**

South Abutment Bearing



**Routine**

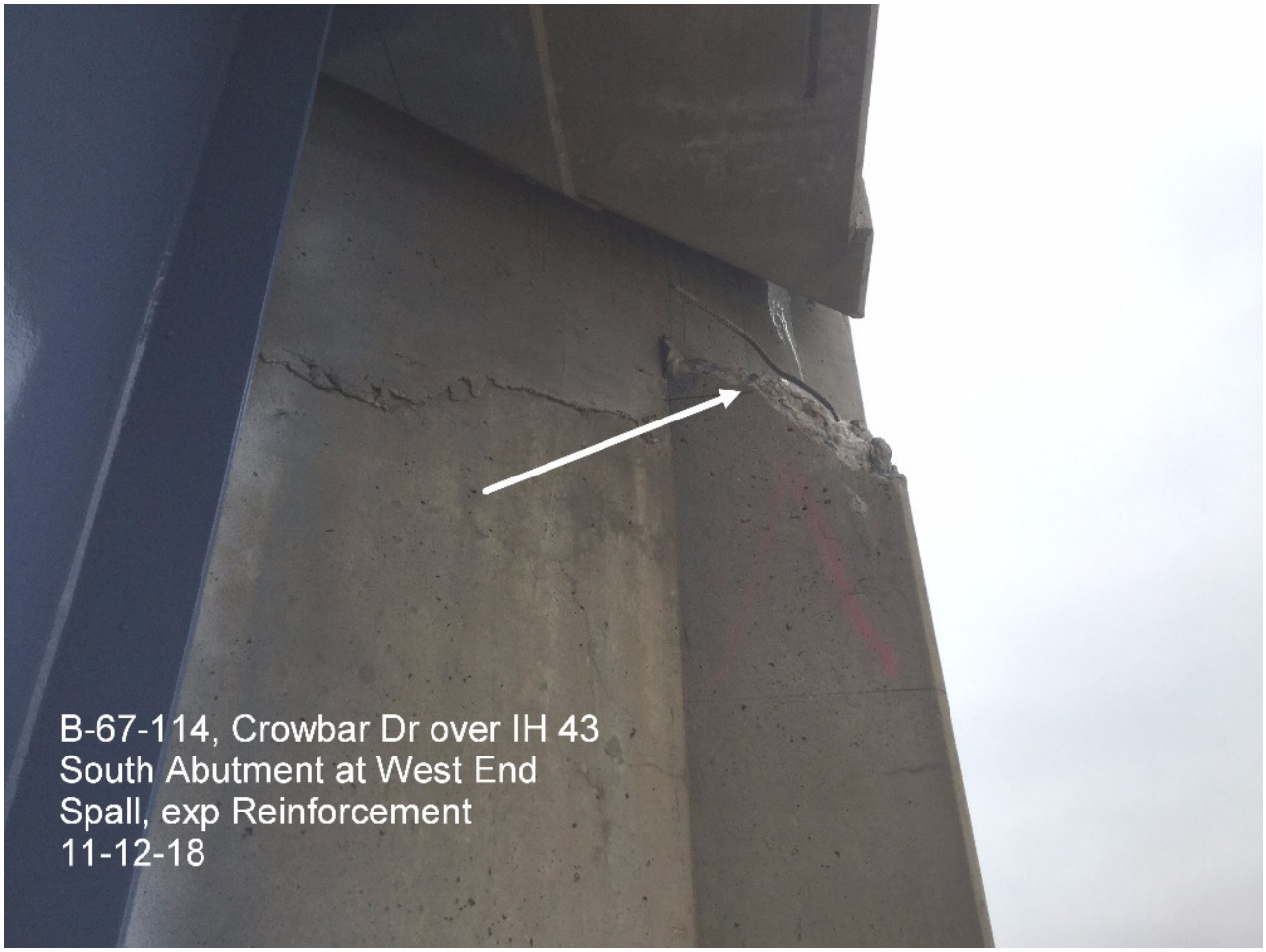
**Document Comment/Description**

South Abutment

**Routine**

**Document Comment/Description**

South Abutment



**Routine**

**Document Comment/Description**

South Abutment

**Routine**

**Document Comment/Description**

South Approach

## Routine

**Document Comment/Description**

South Expansion Joint

**Routine**

**Document Comment/Description**

South Slope & Abutment

**Routine**

**Document Comment/Description**

SE Approach Drainage

**Routine**

**Document Comment/Description**

SE Wingwall

## Routine

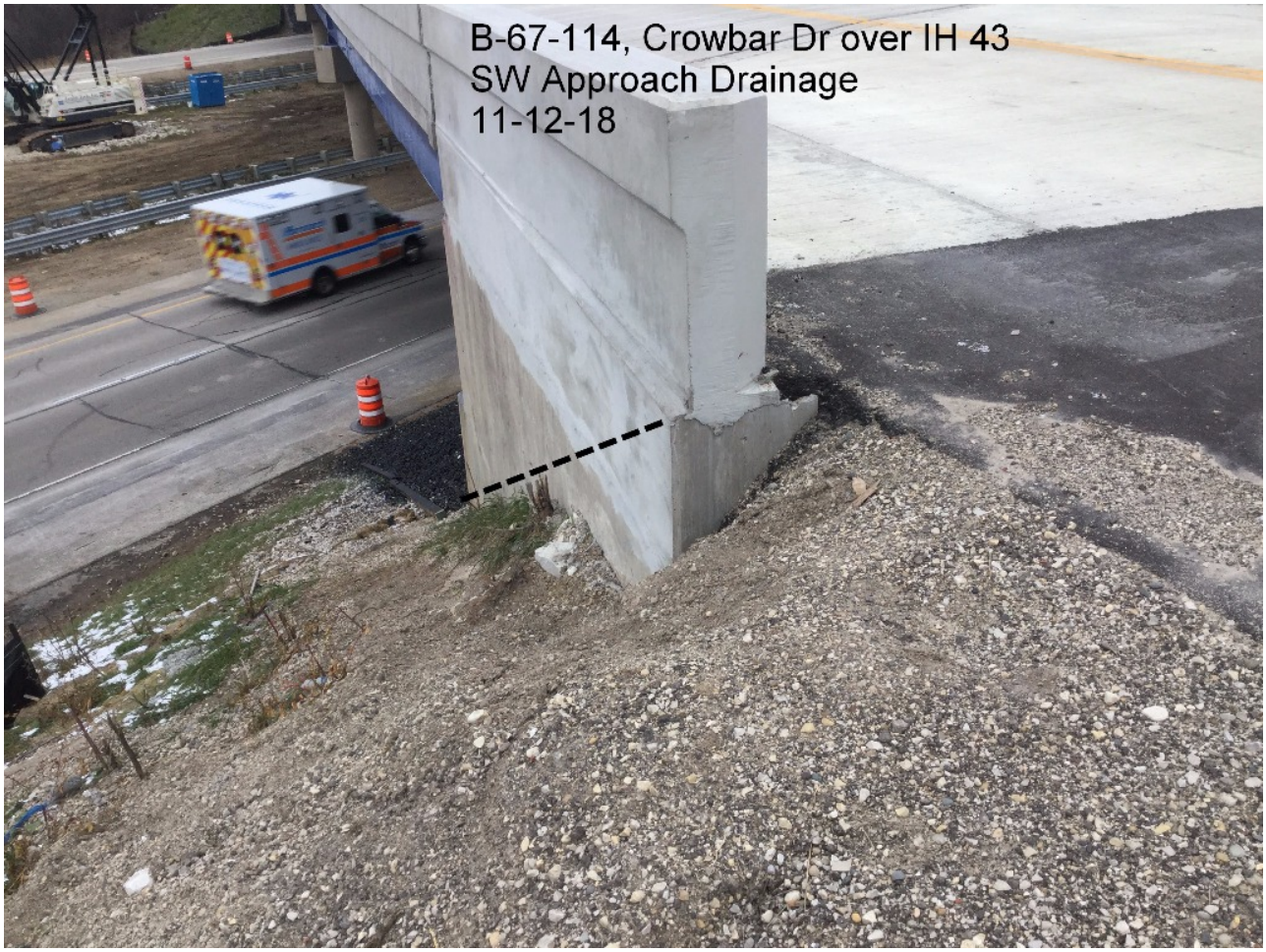
**Document Comment/Description**

Soffit, Span 1

**Routine**

**Document Comment/Description**

SW Approach Drainage



## Routine

**Document Comment/Description**

West Rail

**Routine**

**Document Comment/Description**

Wearing Surface

## Non-Image Documents

| Type | Document | Document Comment/Description | Attached |
|---|---|---|---|
| Vertical Clearance Verification | b67-114_18_Vd1.pdf | Cardinal Minimum Vertical Clearances Measured 1/11/19. | X |
| Vertical Clearance Verification | b67-114_18_Vd2.pdf | Non-Cardinal Minimum Vertical Clearances Measured 1/11/19. | X |

# STRUCTURE INVENTORY AND APPRAISAL FIELD REVIEW FORM

## B-67-114
**CROWBAR DR over IH 43**

### LOCATION

| | |
|---|---|
| **(3) Municipality:** | NEW BERLIN |
| **(16) Latitiude(° ' "):** | 42°55'27.52"N |
| **(17) Longitude(° ' "):** | 88°11'19.56"W |

### TRAFFIC SERVICE

| | |
|---|---|
| **(28A) Lanes On:** | 2 |
| **(28B) Lanes Under:** | 4 |
| **(102) Traffic Pattern On:** | -NO TRAFFIC -ONE WAY TRAFFIC X-TWO WAY TRAFFIC |
| **(102) Traffic Pattern Under:** | -NO TRAFFIC -ONE WAY TRAFFIC X-TWO WAY TRAFFIC |
| **(19) Detour Length(mi):** | 5 |

### GEOMETRY

| | | |
|---|---|---|
| **(49) Structure Length(ft):** | 421.7 | |
| **(50) Sidewalk Width(ft):** | **Left:** 0.0 | **Right:** 0.0 |
| **(50) Curb Width(ft):** | 0.0 | |
| **(52) Culvert Barrel Length(ft):** | | |
| **(34) Skew:** | **Angle(°):** 39 | **Direction:** X-RIGHT FORWARD -LEFT FORWARD |
| | **Cardinal** | **Non-Cardinal** |
| **(51) Bridge Roadway Width(ft):** | 34.0 | 34.0 |
| **(52) Deck Width(ft):** | 36.5 | 36.5 |
| **Right Wingwall Length(ft):** | 20.0 | 22.9 |
| **Left Wingwall Length(ft):** | 22.9 | 20.0 |
| **(32) Approach Roadway Width(ft):** | 34 | 0 |
| | **Cardinal Under Clearance** | **Non-Cardinal Under Clearance** |
| **(47) Minimum Horizontal(ft):** | 75.0 | 76.6 |
| **(55) Minimum Right Lateral(ft):** | 14.0 | 14.0 |
| **(56) Minimum Left Lateral(ft):** | 41.3 | 43.2 |

### RAILING APPRAISAL

| | |
|---|---|
| **(36A) Bridge Rail Adequacy:** | -SUB-STANDARD X-STANDARD -NOT APPLICABLE |
| **(36B) Transition Adequacy:** | -SUB-STANDARD X-STANDARD -NOT APPLICABLE |
| **(36C) Approach Guardrail Adequacy:** | -SUB-STANDARD X-STANDARD -NOT APPLICABLE |
| **(36D) Guardrail Termination Adequacy:** | -SUB-STANDARD X-STANDARD -NOT APPLICABLE |

**Outer Rail:**

| Left | Right | Type |
|---|---|---|
| | | TYPE F (TWO SQUARE TUBES) - STEEL(8) |
| | | TYPE F (3 SQUARE TUBES) - STEEL(65) |
| | | TYPE F (4 SQUARE TUBES) - STEEL(72) |
| | | TYPE M-STEEL 3 SQUARE TUBES(93) |
| | | SLOPED FACE PARAPET LF(91) |
| | | SLOPED FACE PARAPET HF(92) |
| | | VERTICAL FACE PARAPET TYPE A(74) |
| | | TYPE W-THRIE BEAM(79) |
| | | TYPE H ON VERTICAL PARAPET(80) |
| | | TIMBER(38) |
| X | X | OTHER(99) (Please specify)<br>**Left:** SINGLE SLOPE MEDIAN BARRIER 32SS(107)<br>**Right:** SINGLE SLOPE MEDIAN BARRIER 32SS(107) |

**Transition Type:**

| | |
|---|---|
| | CONT GUARD RAIL |
| | NO APP GRDRL |
| | NO ATTACHMENT |
| 5 | 22 MM(7/8") BOLT (Please enter quantity) |
| | 25 MM(1") BOLT (Please enter quantity) |
| | OTHER (Please specify) |

**Approach Attachment Rail Note:**

**Guardrail Termination Type:**

| | |
|---|---|
| X | (01) ENERGY ABSORBING TERMINAL/EAT |
| | (02) TURN DOWN |
| | (99) OTHER (Please specify) |

**Guardrail Termination Note:**

### ROADWAY ALIGNMENT APPRAISAL

**(72) Approach Alignment Appraisal:**

| | |
|---|---|
| | 3 Intolerable- Substantial speed reduction |
| | 6 Fair- Minor speed reduction |
| X | 8 Good- No speed reduction |

WKE APR 2018

PROJECT ID: 1090-30-70
WITH: N/A

COUNTY: WAUKESHA

ORDER OF SHEETS



TOTAL SHEETS = 408

90

N

DESIGN DESIGNATION IH 43 CROWBAR DR SUNNYSLOPE RD

| | | | | |
|---|---|---|---|---|
| A.A.D.T. 2022 | = | 76900 | 2000 | 10200 |
| A.A.D.T. 2042 | = | 87400 | 3000 | 14000 |
| D.H.V. 2042 | = | 8565 | 312 | 1456 |
| D.D. | = | 56-44 | - | - |
| T. | = | 8.2% | - | - |
| DESIGN SPEED | = | 75 MPH | 40 MPH | 40 MPH |
| ESALS | = | 26.5 MILLION ESAL | - | - |

CONVENTIONAL SYMBOLS

| PLAN | | PROFILE | |
|---|---|---|---|
| CORPORATE LIMITS | | GRADE LINE | |
| PROPERTY LINE | | ORIGINAL GROUND | |
| LOT LINE | | MARSH OR ROCK PROFILE (To be noted as such) | ROCK |
| LIMITED HIGHWAY EASEMENT | | SPECIAL DITCH | LABEL |
| EXISTING RIGHT OF WAY | | GRADE ELEVATION | 95.36 |
| PROPOSED OR NEW R/W LINE | | CULVERT (Profile View) | |
| SLOPE INTERCEPT | | UTILITIES | |
| REFERENCE LINE | | ELECTRIC | E |
| EXISTING CULVERT | | FIBER OPTIC | FO |
| PROPOSED CULVERT (Box or Pipe) | | GAS | G |
| COMBUSTIBLE FLUIDS | CAUTION | SANITARY SEWER | SAN |
| | | STORM SEWER | SS |
| | | TELEPHONE | T |
| MARSH AREA | | WATER | W |
| | | UTILITY PEDESTAL | |
| | | POWER POLE | |
| WOODED OR SHRUB AREA | | TELEPHONE POLE | |

# STATE OF WISCONSIN
# DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

# ROCK FREEWAY

**CROWBAR DR TO CTH I**

## IH 43

## WAUKESHA COUNTY

| STATE PROJECT | FEDERAL PROJECT | |
|---|---|---|
| | PROJECT | CONTRACT |
| 1090-30-70 | WISC 2018190 | 1 |
| | | |
| | | |
| | | |

STATE PROJECT NUMBER
1090-30-70


LAYOUT
SCALE 0 3.0 MI.

TOTAL NET LENGTH OF CENTERLINE = 0.000 MI.

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE, WISCONSIN COUNTY COORDINATES, 'WAUKESHA' COUNTY, NAD83(2011), IN U.S. SURVEY FEET, VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM NAVD88 (2012)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

| | |
|---|---|
| Surveyor | R.A. SMITH NATIONAL |
| Designer | STEVEN RING |
| Project Manager | ASHLEY KIEPCZYNSKI, P.E. |
| Regional Examiner | |
| Regional Supervisor | JOEY D. GALLAMORE, P.E. |
| C.O. Examiner | |

APPROVED FOR THE DEPARTMENT
DATE: 11-1-17 Ashley Kiepczynski (Signature)

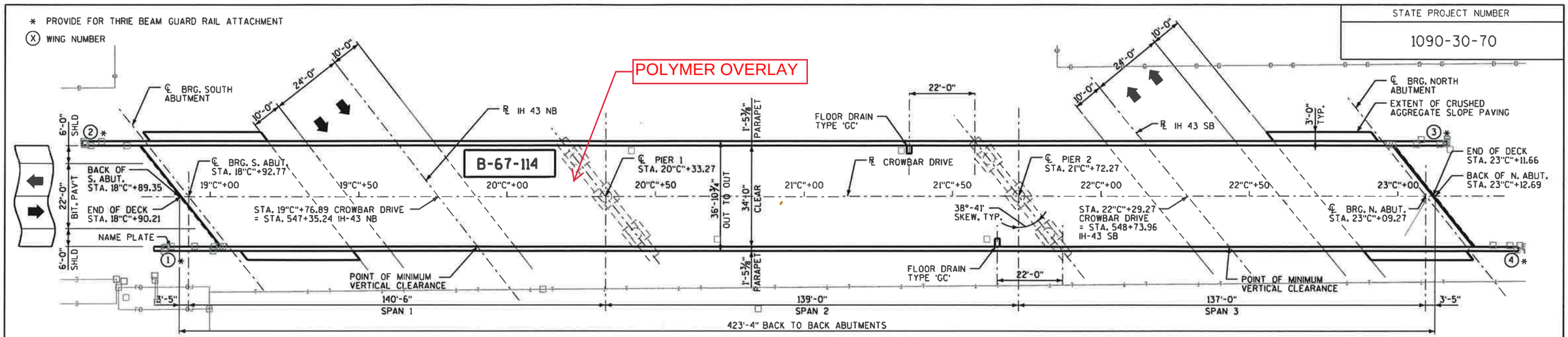
E

* PROVIDE FOR THRIE BEAM GUARD RAIL ATTACHMENT

(X) WING NUMBER

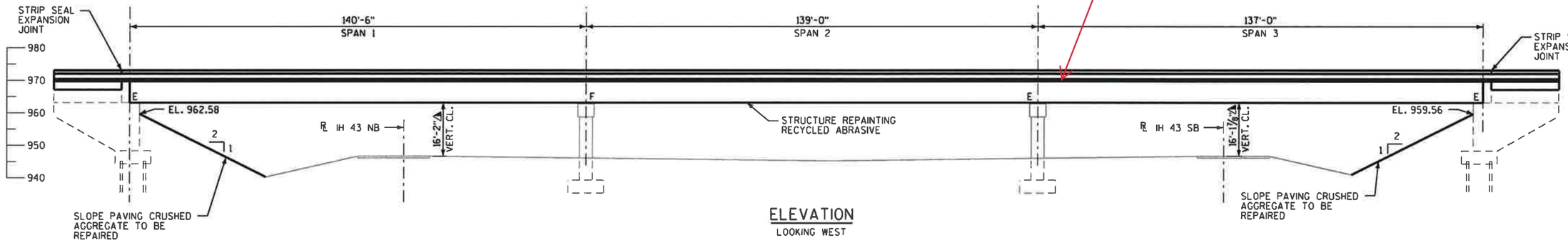
STATE PROJECT NUMBER

1090-30-70




PLAN

NEW DECK - 3 SPAN CONTINUOUS STEEL GIRDERS




ELEVATION

LOOKING WEST

## DESIGN DATA

LIVE LOAD:

DESIGN LOADING: H-20
INVENTORY RATING: HS-18
OPERATING RATING: HS-30
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS

MATERIAL PROPERTIES:

CONCRETE MASONRY
SUPERSTRUCTURE f'c = 4,000 P.S.I.
SUBSTRUCTURE f'c = 3,500 P.S.I.

HIGH STRENGTH BAR STEEL REINFORCEMENT GRADE 60 fy = 60,000 P.S.I.

## LEGEND

⚠ PER HSI (DIMENSION DATED 7-23-13)

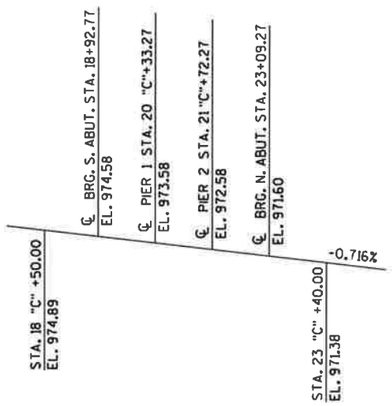
## TRAFFIC DATA

CROWBAR DRIVE

A.D.T. (2020) = 2,000
A.D.T. (2040) = 3,000
R.D.S. = 40 MPH

IH 43

A.D.T. (2040) = 42,500
R.D.S. = 75 MPH




PROFILE GRADE LINE

CROWBAR DRIVE

LIST OF DRAWINGS



WISCONSIN
KEVIN G. WOOD
E-32070
MILWAUKEE, WI
PROFESSIONAL ENGINEER

10-24-2017

STRUCTURES DESIGN CONTACTS

BRIDGE OFFICE:
WILLIAM DREHER, P.E. (608) 266-8489
CONSULTANT:
KEVIN WOOD, P.E. (414) 259-1500

| NO. | DATE | REVISION | BY |
|---|---|---|---|

ORIGINAL PLANS PREPARED BY

K&G A Kapur & Associates and GRAEF Joint Venture
7711 North Port Washington Road Milwaukee, WI 53217

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher SDR 11/07/17
CHIEF STRUCTURES DESIGN ENGINEER DATE

# STRUCTURE B-67-114

CROWBAR DRIVE OVER I-43

| COUNTY | CITY |
|---|---|
| WAUKESHA | NEW BERLIN |

DESIGN SPEC.
REHABILITATION N/A

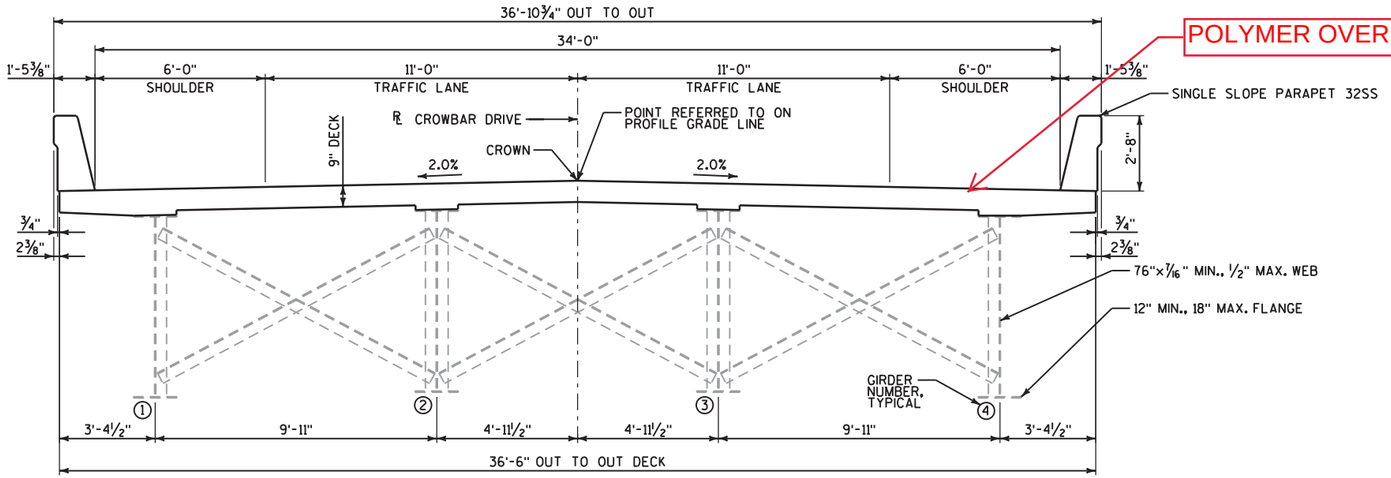
| DESIGNED BY | DESIGN CK'D. | DRAWN BY | PLANS CK'D. |
|---|---|---|---|
| RPB | KGW | SRK | JR |

GENERAL PLAN & ELEVATION

SHEET 1 OF 16

289

FILE NAME : L:\Jobs2015\20150143\CAD\Structural\dgn\00\B-67-114_01.dgn PLOT DATE : 10/24/2017 PLOT BY : GRAEF PLOT NAME : $FILE$ PLOT SCALE : 33.334 ft / in.




## CROSS SECTION THRU ROADWAY

(LOOKING NORTH)

## TOTAL ESTIMATED QUANTITIES

| BID ITEM NUMBER | BID ITEMS | UNIT | SOUTH ABUT. | PIER 1 | PIER 2 | NORTH ABUT. | SUPER. | TOTALS |
|---|---|---|---|---|---|---|---|---|
| 203.0200.0010 | REMOVING OLD STRUCTURE STA. 21"C"+10 | LS | | | | | | 1 |
| 203.0210.S.0010 | ABATEMENT OF ASBESTOS CONTAINING MATERIAL B-67-114 | LS | | | | | | 1 |
| 203.0225.S.0010 | DEBRIS CONTAINMENT B-67-114 | LS | | | | | | 1 |
| 206.1000.0010 | EXCAVATION FOR STRUCTURES BRIDGES B-67-114 | LS | | | | | | 1 |
| 210.1500 | BACKFILL STRUCTURE TYPE A | TON | 28 | | | 28 | | 56 |
| 502.0100 | CONCRETE MASONRY BRIDGES | CY | 11 | | | 11 | 570 | 592 |
| 502.3100.0010 | EXPANSION DEVICE B-67-114 | LS | | | | | | 1 |
| 502.3200 | PROTECTIVE SURFACE TREATMENT | SY | | | | | 1591 | 1591 |
| 502.3210 | PIGMENTED SURFACE SEALER | SY | 17 | | | 17 | 349 | 383 |
| 502.4205 | ADHESIVE ANCHORS NO. 5 BARS | EACH | 172 | | | 172 | | 344 |
| 505.0600 | BAR STEEL REINFORCEMENT HS COATED STRUCTURES | LB | 2590 | | | 2590 | 125,450 | 130,630 |
| 506.6000.0010 | BEARING ASSEMBLIES EXPANSION STRUCTURE B-67-114 | EACH | 4 | | | 4 | | 8 |
| 506.7050.S.0010 | REMOVING BEARINGS B-67-114 | EACH | 4 | | | 4 | | 8 |
| 509.1500 | CONCRETE SURFACE REPAIR | SF | 2 | | | 12 | | 14 |
| 514.0445 | FLOOR DRAIN TYPE GC | EACH | | | | | 2 | 2 |
| 516.0500 | RUBBERIZED MEMBRANE WATERPROOFING | SY | 7 | | | 7 | | 14 |
| 517.0900.S.0010 | PREPARATION AND COATING OF TOP FLANGES B-67-114 | LS | | | | | | 1 |
| 517.1800.S.0030 | STRUCTURE REPAINTING RECYCLED ABRASIVE B-67-114 | LS | | | | | | 1 |
| 517.4500.S.0030 | NEGATIVE PRESSURE CONTAINMENT AND COLLECTION OF WASTE MATERIAL B-67-114 | LS | | | | | | 1 |
| 517.6001.S | PORTABLE DECONTAMINATION FACILITY | EACH | | | | | | 1 |
| 604.9010.S | SLOPE PAVING REPAIR CRUSHED AGGREGATE | CY | 21 | | | 21 | | 42 |
| 604.9015.S | RESEAL CRUSHED AGGREGATE SLOPE PAVING | SY | 189 | | | 189 | | 378 |
| 614.0150 | ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD | EACH | 2 | | | 2 | | 4 |
| SPV.0060.4020 | EMBEDDED GALVANIC ANODES | EACH | 4 | | | 12 | | 16 |
| SPV.0165.4040 | FIBER WRAP REINFORCING STRUCTURAL | SF | | 229 | 229 | | | 458 |
| | NON-BID ITEMS | | | | | | | |
| | BRIDGE SEAT PROTECTION | LS | | | | | | 1 |
| | PREFORMED JOINT FILLER | SIZE | | | | | | |

ALL ITEMS ARE CATEGORY 2020

## BENCH MARK DATA

| BM NO. | DESCRIPTION | NORTHING | EASTING | ELEVATION |
|---|---|---|---|---|
| BM 5 | STA. 18+88.03, 17.19' RT BRASS CAP MON. FOUND SE CORNER OF CROWBAR BRIDGE OVER IH-43 | 129322.831 | 694696.521 | 974.80 |
| CP 100 | STA. 543+40.74, 483.42' RT (EB) 39" BERNTSEN FENO MON. WITH ALUMINUM CAP SET AT WEST SIDE OF CROWBAR DRIVE, AT THE CROWBAR DRIVE AND TANS DRIVE INTERSECTION | 128788.144 | 694661.317 | 982.06 |
| CP 101 | STA. 29+38.42, 17.26' RT 39" BERNTSEN FENO MON. WITH ALUMINUM CAP SET AT SE CORNER OF NATIONAL AVENUE & CROWBAR DRIVE | 130373.186 | 694704.851 | 963.15 |
| CP 102 | STA. 546+18.75, 90.48' LT (EB) 39" BERNTSEN FENO MON. WITH ALUMINUM CAP SET IN MEDIAN OF IH-43 APPROXIMATELY 200 FEET SW OF CROWBAR DRIVE | 129412.695 | 694532.542 | 953.18 |
| CP 103 | STA. 551+50.28, 92.67' LT (EB) 39" BERNTSEN FENO MON. WITH ALUMINUM CAP SET IN MEDIAN OF IH-43 APPROXIMATELY 300 FEET NE OF CROWBAR DRIVE | 129737.993 | 694952.906 | 944.47 |

STATE PROJECT NUMBER

1090-30-70

## NOTES

DRAWINGS SHALL NOT BE SCALED

DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL STRUCTURE PLANS.

ALL CONCRETE REMOVAL SHALL BE DEFINED BY A 1 INCH DEEP SAW CUT.

UTILIZE EXISTING BAR STEEL REINFORCEMENT WHERE SHOWN AND EXTEND 24 BAR DIAMETERS INTO NEW WORK, UNLESS SPECIFIED OTHERWISE.

BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

VARIATIONS TO THE NEW GRADE LINE OVER ¼" MUST BE SUBMITTED BY THE FIELD ENGINEER TO THE STRUCTURES DESIGN SECTION FOR REVIEW.

EXPANSION JOINT ASSEMBLY, INCLUDING ANCHOR STUDS AND HARDWARE SHALL BE PAID FOR IN THE LUMP SUM PRICE BID AS "EXPANSION DEVICE B-67-114"

BEVEL EXPOSED EDGES OF CONCRETE ¾" UNLESS OTHERWISE NOTED.

ALL DETAILS, MATERIALS AND FABRICATION SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION OF THE STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION, EDITION OF 2018.

THE EXISTING ROADWAY SHALL BE THE UPPER LIMITS OF EXCAVATION FOR STRUCTURES.

EXISTING STEEL SUPERSTRUCTURE SHALL BE PAINTED A COLOR TO MATCH SHERWIN WILLIAMS COLOR "SW6523".

THE EXISTING STRUCTURE, B-67-114 IS A 3 SPAN, STEEL DECK GIRDER STRUCTURE WITH AN OVERALL WIDTH OF 37 FEET AND AN OVERALL LENGTH OF 423 FEET 4 INCHES. THE DECK AND PARAPETS ARE TO BE REPLACED.

CONCRETE SURFACE REPAIR AS DIRECTED BY THE FIELD ENGINEER. QUANTITIES SHOWN ON THE PLANS ARE APPROXIMATE.

CONTRACTOR SHALL SUPPLY A NEW NAME PLATE IN ACCORDANCE WITH SECTION 502.3.11 OF THE STANDARD SPECIFICATION AND THE STANDARD DETAIL DRAWINGS. THE NEW NAME PLATE SHALL SHOW THE ORIGINAL CONSTRUCTION YEAR OF 1969.

THE TOP LAYER OF BAR STEEL REINFORCEMENT IN THE DECK SHALL BE PLACED WITH 2½ INCHES OF CLEAR COVER.

AT THE BACKFACE OF ABUTMENT ALL VOLUME WHICH CANNOT BE PLACED BEFORE ABUTMENT CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL.

THE SUPERSTRUCTURE CONCRETE QUANTITY INCLUDES VOLUME FOR THE AVERAGE ESTIMATED HAUNCH HEIGHT, OVERHANG TRIANGULAR AREA, AND THICKENED DECK AT EXPANSION JOINTS.

THE WISCONSIN DEPARTMENT OF TRANSPORTATION WILL FURNISH THE CONTRACTOR WITH BENCHMARK CAPS TO BE INSTALLED AS SHOWN ON PLANS.

"PROTECTIVE SURFACE TREATMENT" SHALL BE APPLIED TO THE ENTIRE CONCRETE DECK. "PIGMENTED SURFACE SEALER" TO BE APPLIED TO THE TOP AND INSIDE FACES OF PARAPETS.

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| NO. | DATE | REVISION | BY |
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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-114

DRAWN BY SRK | PLANS CK'D. KGW

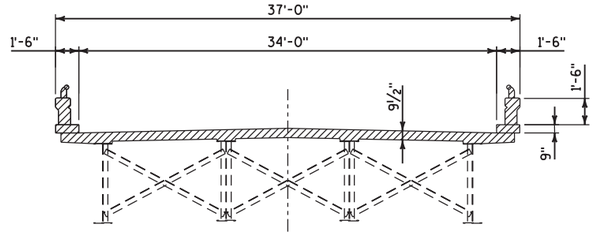
CROSS SECTION AND QUANTITIES

SHEET 2 OF 16

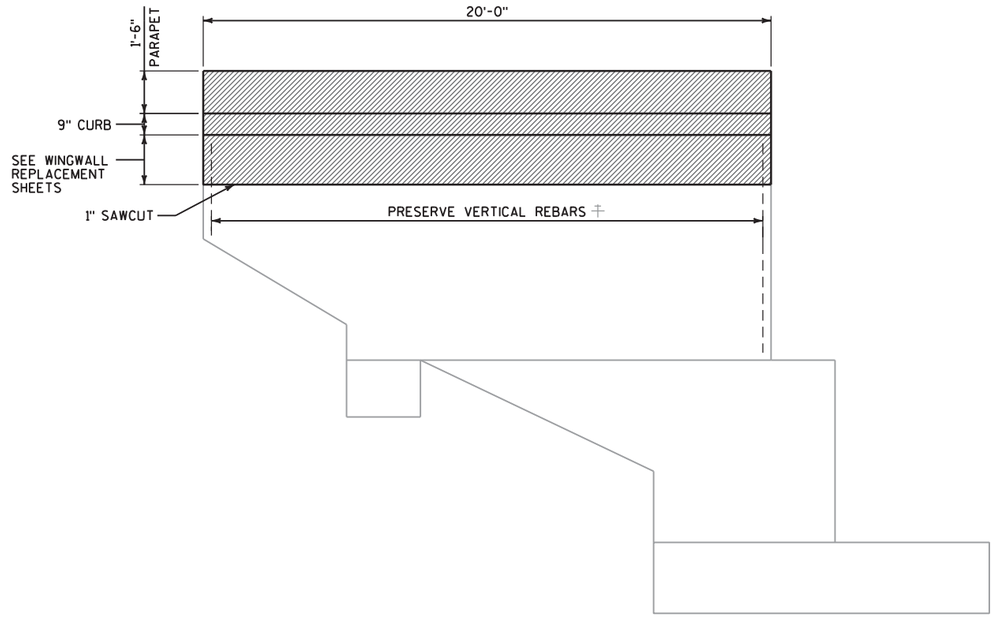


FILE NAME : L:\Jobs2015\20150143\CAD\Structural\dgn\00\B-67-114_02.dgn PLOT DATE : 10/24/2017 PLOT BY : GRAEF PLOT NAME : $FILE$ PLOT SCALE : 5.333 ft / in.

| STATE PROJECT NUMBER |
| --- |
| 1090-30-70 |

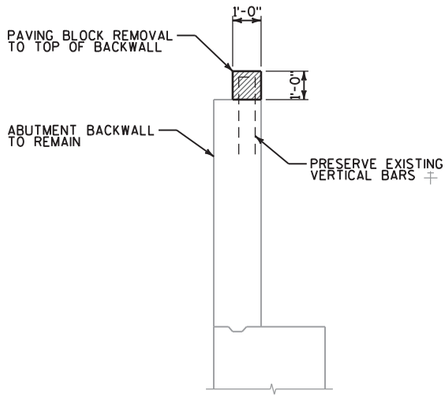



DECK REMOVAL




WINGWALL REMOVAL

TYPICAL OF 4 WINGWALLS




PAVING BLOCK REMOVAL

LEGEND

▨ = REMOVAL LIMITS

⊹ EXISTING BARS ARE LIKELY TO BE CORRODED AND/OR DAMAGED DURING CONCRETE REMOVAL. PRESERVE AND INCORPORATE AS MUCH REBAR AS PRACTICAL.

| NO. | DATE | REVISION | BY |
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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-114

DRAWN BY BLM | PLANS CK'D. KGW

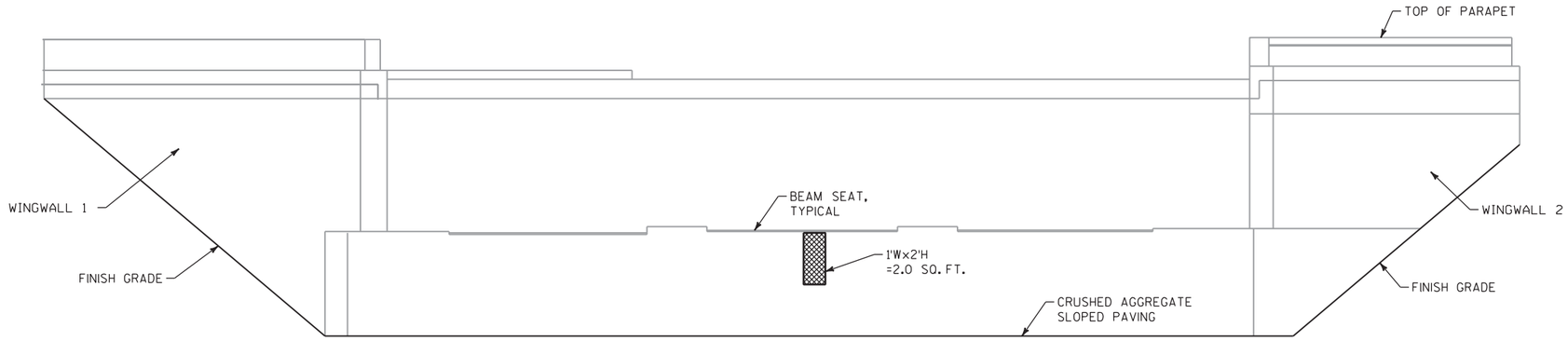
REMOVAL DETAILS

SHEET 3 OF 16



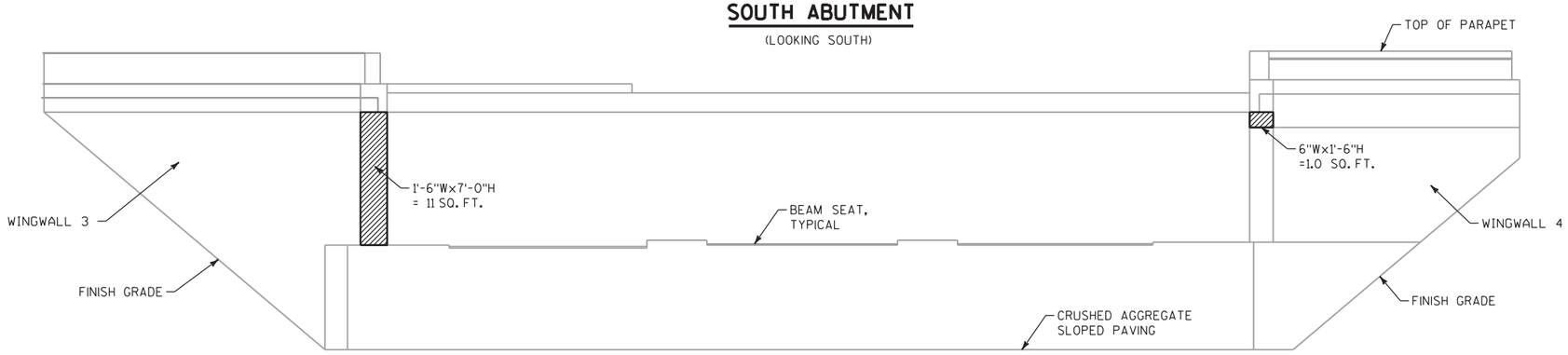
FILE NAME : L:\Jobs2015\20150143\CAD\Structural\dgn\00\B-67-114_03.dgn PLOT DATE : 10/24/2017 PLOT BY : GRAEF PLOT NAME : $FILE$ PLOT SCALE : 2.0000 in / in.

| STATE PROJECT NUMBER |
|---|
| 1090-30-70 |




## SOUTH ABUTMENT

(LOOKING SOUTH)




## NORTH ABUTMENT

(LOOKING NORTH)

## NOTES

AREAS AND LOCATIONS FOR CONCRETE SURFACE REPAIR ARE APPROXIMATE. PERFORM REPAIRS AS DIRECTED BY THE FIELD ENGINEER.

THE FINISHED CONCRETE SURFACE SHALL MATCH THE SHAPE AND FINISH OF THE ORIGINAL CONCRETE SURFACE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER TO PROVIDE ADDITIONAL CONCRETE.

SEE SPECIAL PROVISION "EMBEDDED GALVANIC ANODES" FOR DESCRIPTION, MATERIALS, CONSTRUCTION, MEASUREMENT, AND PAYMENT INFORMATION.

ANODES NEAREST TO THE EDGE OF REPAIR TO BE WITHIN 6" OF EDGE.

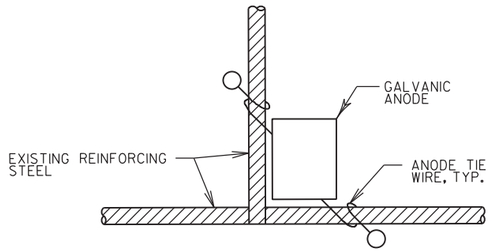
AFTER PLACEMENT, GALVANIC ANODES SHOULD MAINTAIN A MINIMUM TOP COVER OF 1½" AND A MINIMUM BOTTOM COVER OF ¾".

GALVANIC ANODES ARE TO BE INSTALLED IN THE ABUTMENTS, WINGWALLS, AND PIERS ONLY.

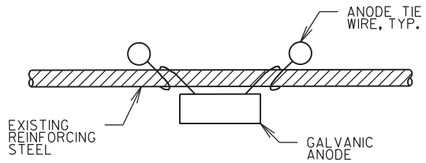
ENSURE ALL EXPOSED REINFORCING STEEL IS SECURELY FASTENED TOGETHER WITH TIE WIRE TO PROVIDE GOOD CONTINUITY. SEE SPECIAL PROVISIONS

GALVANIC ANODES SHALL BE PLACED PER SPECIAL PROVISIONS "EMBEDDED GALVANIC ANODES". GALVANIC ANODES ESTIMATED QUANTITIES ON PLANS ARE BASED ON A MAXIMUM SPACING OF 24 INCHES IN EACH DIRECTION OF THE ESTIMATED "CONCRETE SURFACE REPAIR" AREA.

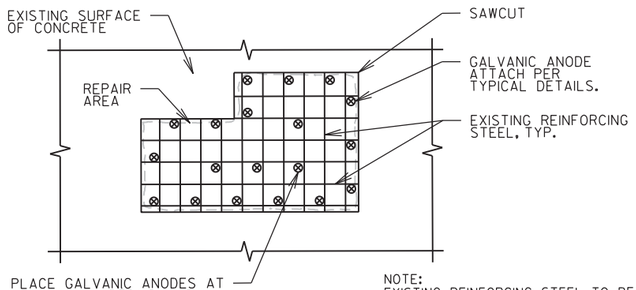
EXISTING REINFORCING BARS MAY BE CORRODED AND/OR DAMAGED DURING CONCRETE REMOVAL. PRESERVE AND INCORPORATE EXISTING REINFORCEMENT.

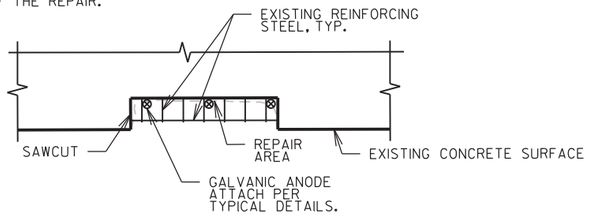



## TYPICAL ANODE INSTALLATION AT BAR STEEL INTERSECTION

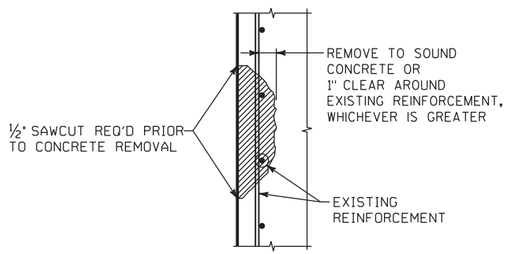



## TYPICAL ANODE INSTALLATION FOR BAR STEEL

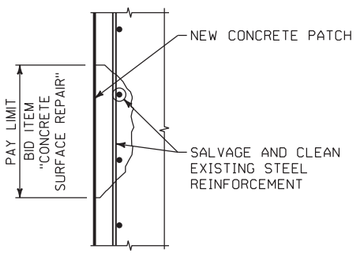



## PART. PLAN TYPICAL REPAIR DETAIL




## TYPICAL CONCRETE SURFACE REMOVAL DETAIL




## TYPICAL CONCRETE SURFACE REPAIR DETAIL

### LEGEND

- DELAMINATED AREA
- SPALL AREA

| NO. | DATE | REVISION | BY |
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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-114

DRAWN BY BLM | PLANS CK'D. KGW

ABUTMENT SURFACE REPAIRS

SHEET 4 OF 16

8

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FILE NAME : L:\Jobs2015\20150143\CAD\Structural\dgn\00\B-67-114_04.dgn
PLOT DATE : 10/24/2017
PLOT BY : GRAEF
PLOT NAME : $FILE$
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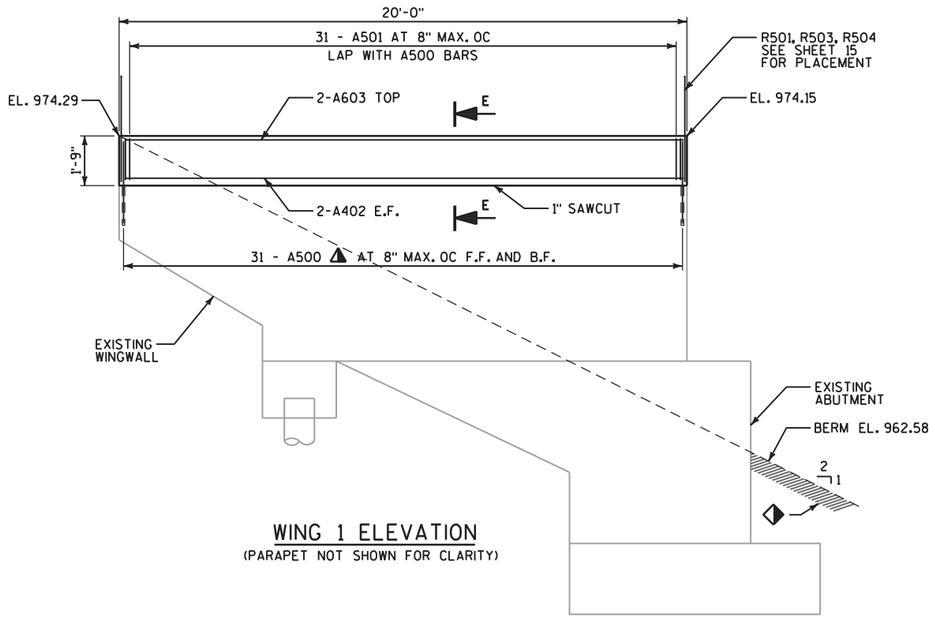
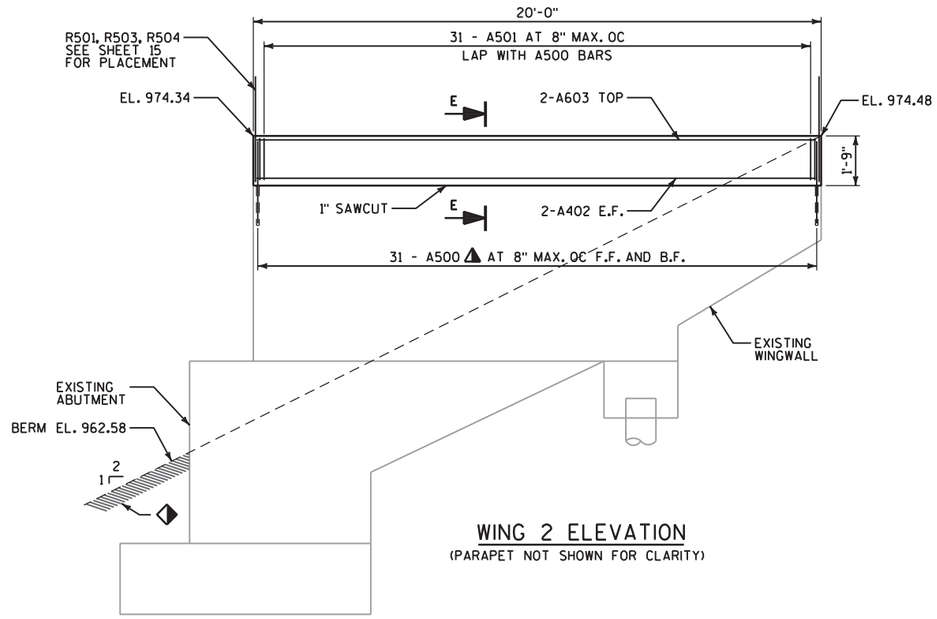
STATE PROJECT NUMBER

1090-30-70



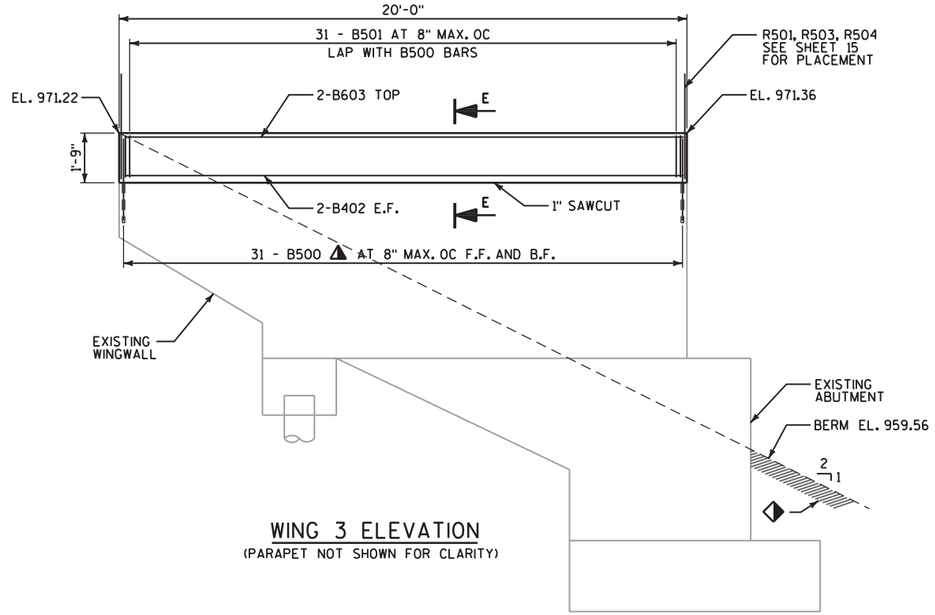

WING 1 ELEVATION

(PARAPET NOT SHOWN FOR CLARITY)



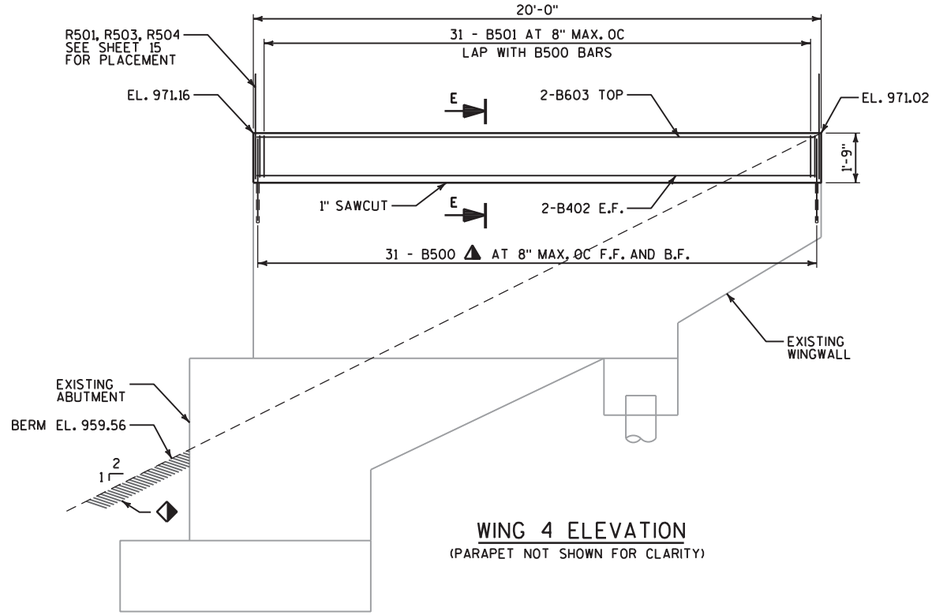

WING 2 ELEVATION

(PARAPET NOT SHOWN FOR CLARITY)




WING 3 ELEVATION

(PARAPET NOT SHOWN FOR CLARITY)




WING 4 ELEVATION

(PARAPET NOT SHOWN FOR CLARITY)

## LEGEND

▲ ADHESIVE ANCHORS NO. 5 BAR. EMBED 8" IN CONCRETE.

◆ EXISTING SLOPE PAVING HAS SETTLED OR WASHED AWAY IN SEVERAL SPOTS. THESE AREAS SHALL BE DETERMINED BY THE ENGINEER.

ADD NEW (AS REQ'D) AND RESTORE EXISTING SLOPE PAVING TO THE ELEVATIONS AND SLOPES INDICATED. TO BE COMPLETED PRIOR TO SEALING/RESEALING ALL NEW/EXISTING SLOPE PAVING CRUSHED AGGREGATE.

## NOTE

FOR SECTION E-E SEE SHEET 6

| NO. | DATE | REVISION | BY |
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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-114

DRAWN BY BLM | PLANS CK'D. KGW

WINGWALL DETAILS

SHEET 5 OF 16

8

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FILE NAME : L:\Jobs2015\20150143\CAD\Structural\dgn\00\B-67-114_05.dgn
PLOT DATE : 10/24/2017
PLOT BY : GRAEF
PLOT NAME : $FILE$
PLOT SCALE : 2.0000 in / in.

STATE PROJECT NUMBER

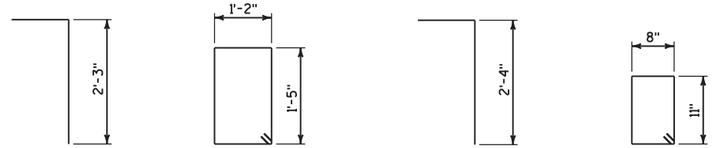
1090-30-70

## SOUTH ABUTMENT BILL OF BARS

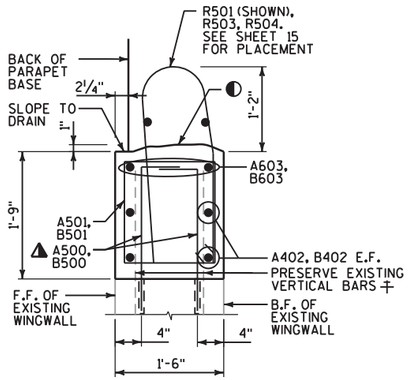
| MARK | COATED | NO. REQ'D | LENGTH | BAR SERIES | BENT | LOCATION |
|---|---|---|---|---|---|---|
| ⚠ A500 | X | 124 | 3'-2" | N | Y | WINGWALL DOWELS |
| A501 | X | 62 | 5'-10" | N | Y | WINGWALL STIRRUPS |
| A402 | X | 8 | 19'-8" | N | N | WINGWALL LONGITUDINAL |
| A603 | X | 4 | 19'-8" | N | N | WINGWALL LONGITUDINAL TOP |
| | | | | | | |
| A511 | X | 21 | 7'-9" | N | N | PAVING BLOCK |
| A412 | X | 48 | 3'-8" | N | Y | PAVING BLOCK STIRRUP |
| ⚠ A513 | X | 48 | 3'-1" | N | Y | PAVING BLOCK DOWEL |
| | | | | | | |

## NORTH ABUTMENT BILL OF BARS

| MARK | COATED | NO. REQ'D | LENGTH | BAR SERIES | BENT | LOCATION |
|---|---|---|---|---|---|---|
| ⚠ B500 | X | 124 | 3'-2" | N | Y | WINGWALL DOWELS |
| B501 | X | 62 | 5'-10" | N | Y | WINGWALL STIRRUPS |
| B402 | X | 8 | 19'-8" | N | N | WINGWALL LONGITUDINAL |
| B603 | X | 4 | 19'-8" | N | N | WINGWALL LONGITUDINAL TOP |
| | | | | | | |
| B511 | X | 21 | 7'-9" | N | N | PAVING BLOCK |
| B412 | X | 48 | 3'-8" | N | Y | PAVING BLOCK STIRRUP |
| ⚠ B513 | X | 48 | 3'-1" | N | Y | PAVING BLOCK DOWEL |
| | | | | | | |




A500, B500 | A501, B501 | A513, B513 | A412, B412




SECTION E-E

## LEGEND

┼ EXISTING BARS ARE LIKELY TO BE CORRODED AND/OR DAMAGED DURING CONCRETE REMOVAL. PRESERVE AND INCORPORATE AS MUCH REBAR AS PRACTICAL.

◐ CONST. JOINT - STRIKE OFF AS SHOWN.

⚠ ADHESIVE ANCHORS NO. 5 BAR. EMBED 8" IN CONCRETE.

## NOTE

SEE SHEET 13 FOR PLACEMENT OF PAVING BLOCK REINFORCEMENT.

| NO. | DATE | REVISION | BY |
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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-114

DRAWN BY BLM | PLANS CK'D. KGW

ABUTMENT BILL OF BARS

SHEET 6 OF 16



FILE NAME : L:\Jobs2015\20150143\CAD\Structural\dgn\00\B-67-114_06.dgn
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PLOT NAME : $FILE$
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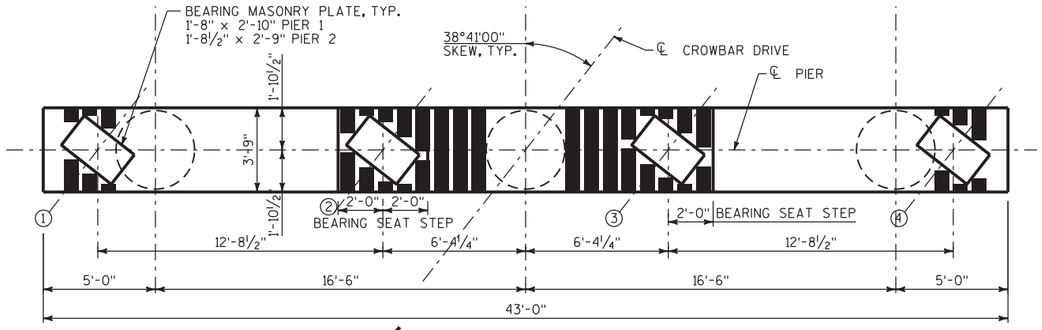
STATE PROJECT NUMBER

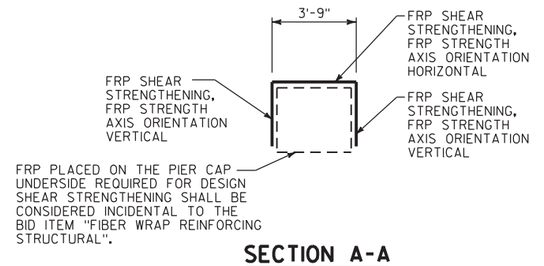
1090-30-70




## PLAN PIERS 1 AND 2

## PIERS 1 AND 2

| | REQ'D FACTORED SHEAR CAPACITY (KIPS) | EXISTING FACTORED SHEAR CAPACITY (KIPS) | ADDT'L FACTORED SHEAR CAPACITY (KIPS) |
|---|---|---|---|
| ☆ | 589 | 339 | 250 |
| ★ | 539 | 301 | 238 |




## SECTION A-A

## FRP NOTES

IN REGION WHERE FRP IS TO BE APPLIED, THE FIELD ENGINEER TO DETERMINE LOCATIONS WHERE "CONCRETE SURFACE REPAIR" IS REQUIRED. WORK TO BE DONE BEFORE FIBER WRAPS APPLIED, IF NEEDED.

"CONCRETE SURFACE REPAIR" MATERIAL MUST BE ON THE DEPARTMENTS APPROVED PRODUCTS LIST AND SHOULD BE SUITABLE FOR VERTICAL AND OVERHEAD APPLICATIONS.

REMOVE AND REPLACE UNSOUND CONCRETE FROM PIER CAP PER "CONCRETE SURFACE REPAIR" ITEM.

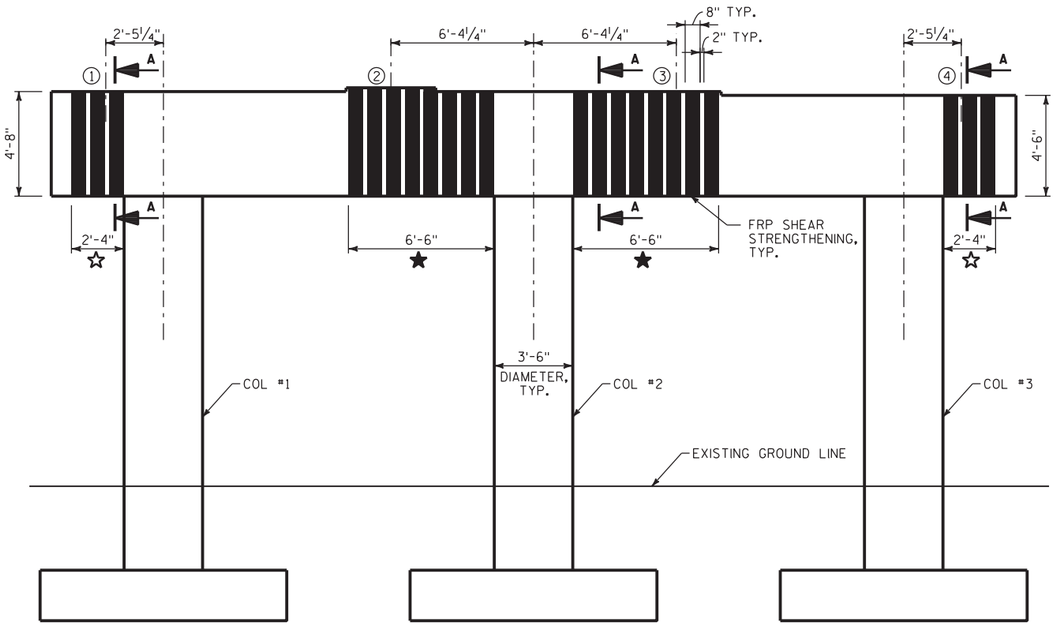
ONLY THE THEORETICAL LIMITS OF FRP REPAIR ARE GIVEN. ANY ADDITIONAL FRP LENGTH FOR CONSTRUCTIBILITY, DEVELOPMENT, OR OFFSET IS TO BE DETERMINED BY THE FRP MANUFACTURER. THE FRP IS TO BE UNIFORMLY DISTRIBUTED ALONG THE PIER CAP.

THE ADDITIONAL FACTORED SHEAR CAPACITY REQUIRED SHOWN IN THE TABLE IS THE FACTORED SHEAR FORCE, IN KIPS, TO BE PROVIDED BY THE FRP FABRIC INSTALLATION.

PIER EXISTING MATERIAL STRENGTHS: CONCRETE f'c = 3.5 KSI, REINFORCING STEEL fy = 40 KSI.

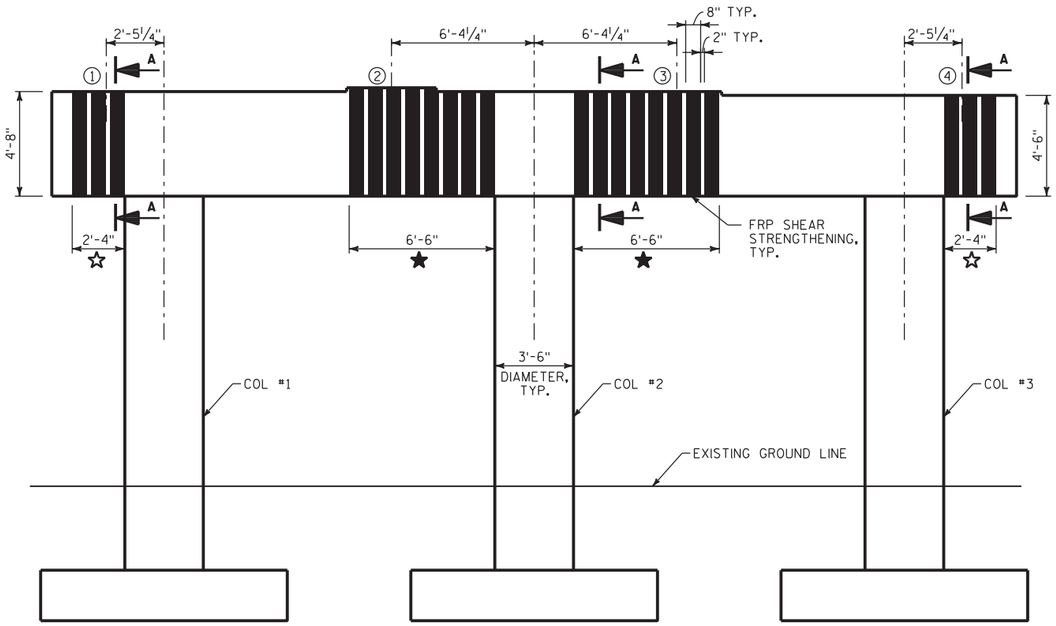
EXISTING FACTORED SHEAR CAPACITY IS BASED ON AS-BUILT PLANS.

PROVIDE 2" MINIMUM CLEAR DISTANCE BETWEEN VERTICAL WRAPS.




## ELEVATION PIER 1

LOOKING NORTH




## ELEVATION PIER 2

LOOKING NORTH

## LEGEND

- DELAMINATED AREA
- SPALL AREA
- (X) GIRDER NUMBER

## NOTES

AREAS AND LOCATIONS FOR CONCRETE SURFACE REPAIR ARE APPROXIMATE. PERFORM REPAIRS AS DIRECTED BY THE FIELD ENGINEER.

THE FINISHED CONCRETE SURFACE SHALL MATCH THE SHAPE AND FINISH OF THE ORIGINAL CONCRETE SURFACE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER TO PROVIDE ADDITIONAL CONCRETE.

DIMENSIONS ARE TAKEN FROM EXISTING STRUCTURE PLANS.

FOR CONCRETE SURFACE REMOVAL AND REPAIR DETAILS SEE SHEET 4.

FOR GALVANIC ANODE DETAILS SEE SHEET 4.

| NO. | DATE | REVISION | BY |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-114

DRAWN BY BLM | PLANS CK'D. KGW

PIER STRENGTHENING

SHEET 7 OF 16

8

8



FILE NAME : L:\Jobs2015\20150143\CAD\Structural\dgn\00\B-67-114_07.dgn
PLOT DATE : 10/24/2017
PLOT BY : GRAEF
PLOT NAME : $FILE$
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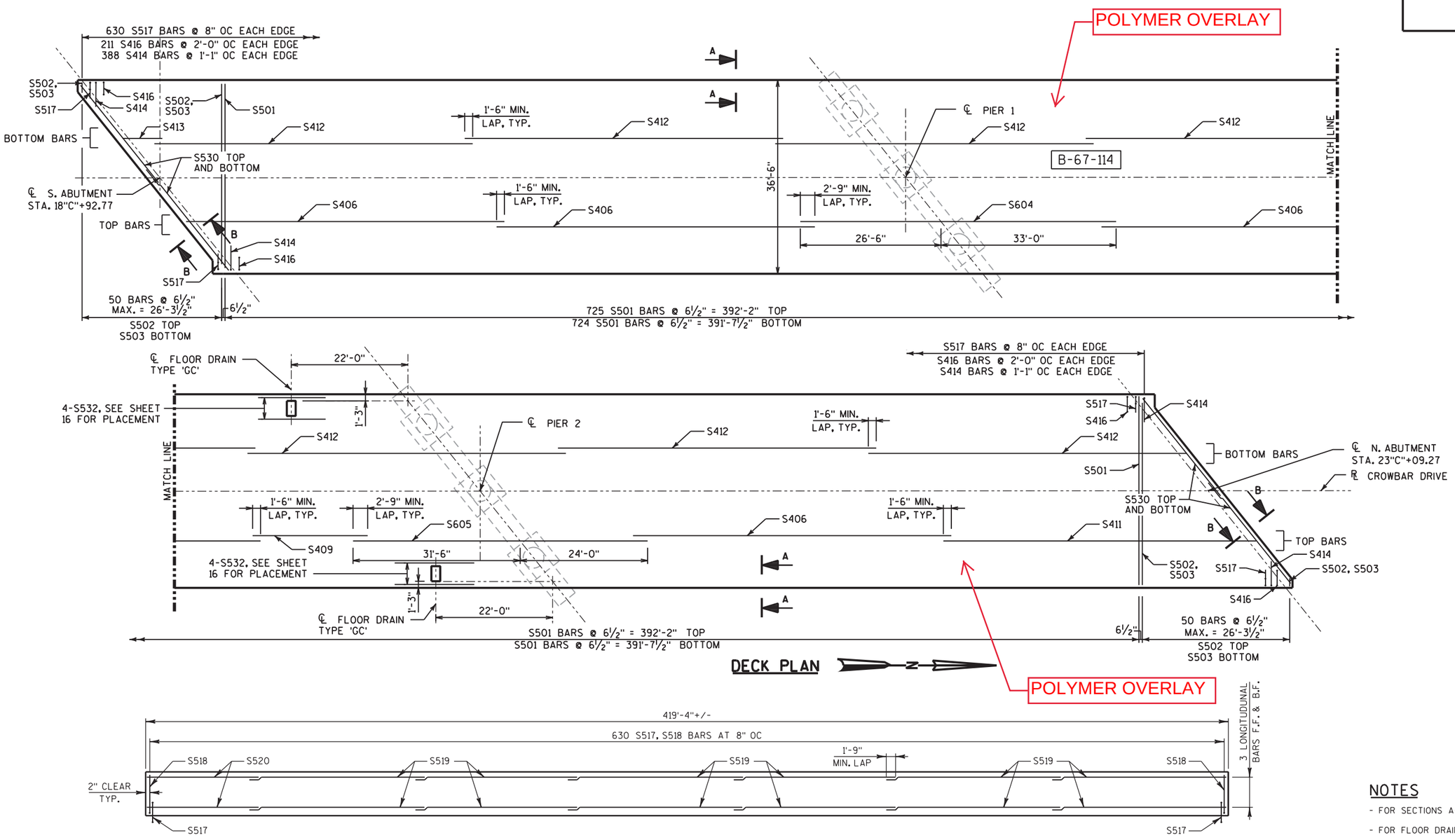
STATE PROJECT NUMBER

1090-30-70







PARAPET 32SS REINFORCING ELEVATION

NOTES

- FOR SECTIONS A-A AND B-B, SEE SHEET 9.
- FOR FLOOR DRAIN TYPE 'GC' DETAILS, SEE SHEET 16.

| NO. | DATE | REVISION | BY |
|---|---|---|---|

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-114

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SUPERSTRUCTURE PLAN

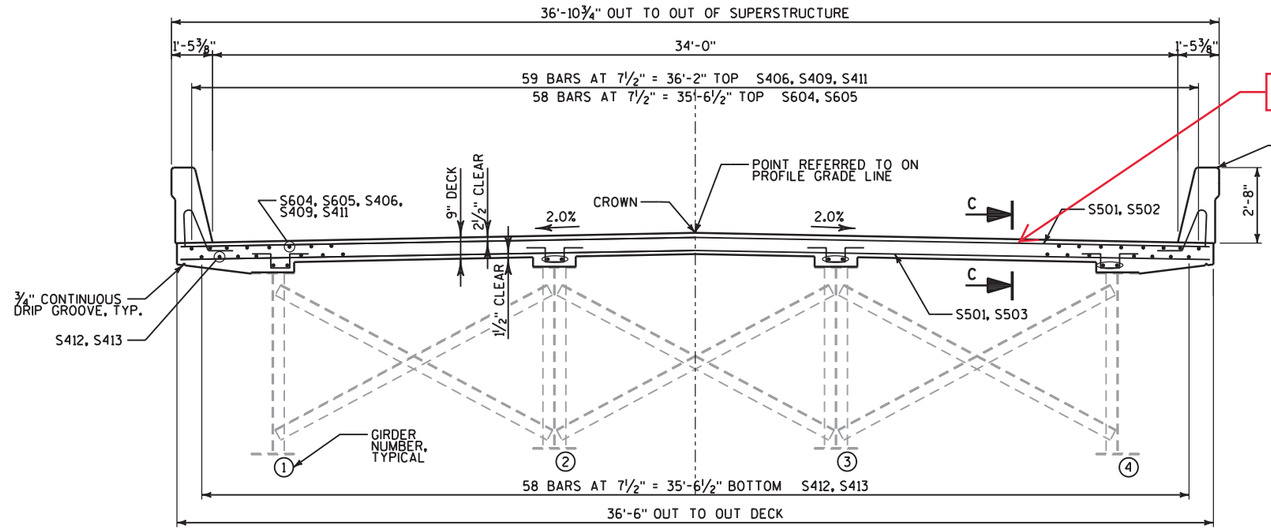
SHEET 8 OF 16



FILE NAME : L:\Jobs2015\20150143\CAD\Structural\dgn\00\B-67-114_08.dgn
PLOT DATE : 10/24/2017
PLOT BY : GRAEF
PLOT NAME : $FILE$
PLOT SCALE : 2.0000 in / in.

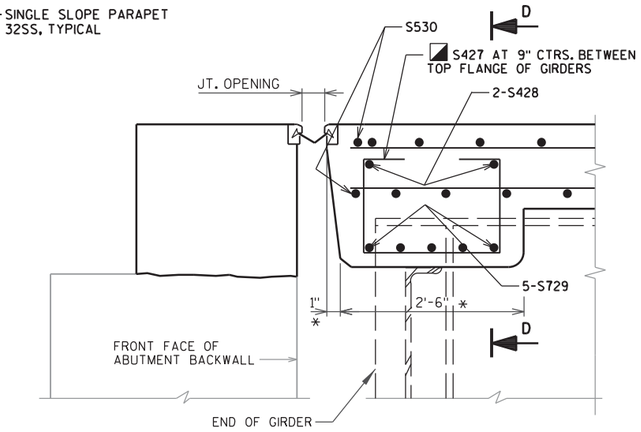
STATE PROJECT NUMBER

1090-30-70

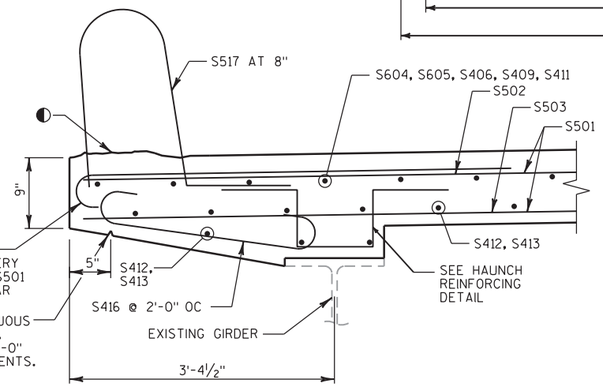



CROSS SECTION THRU ROADWAY

(LOOKING NORTH)

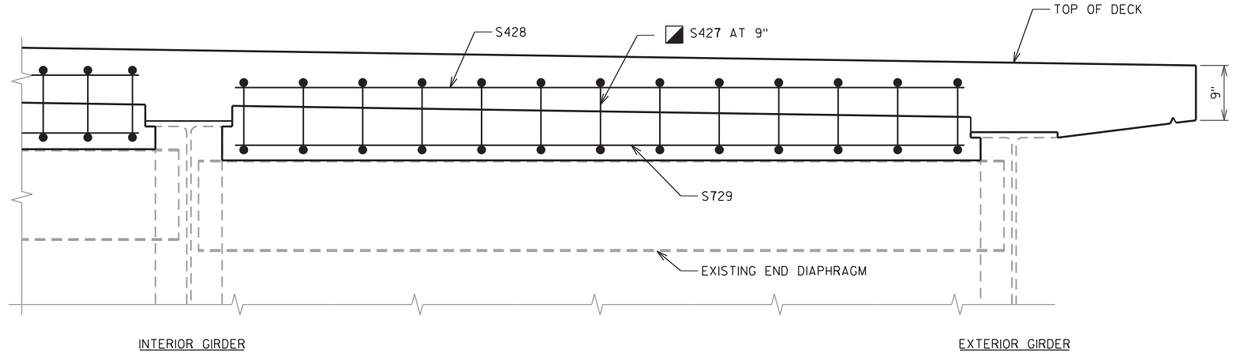



SECTION B-B THRU EXPANSION JOINT

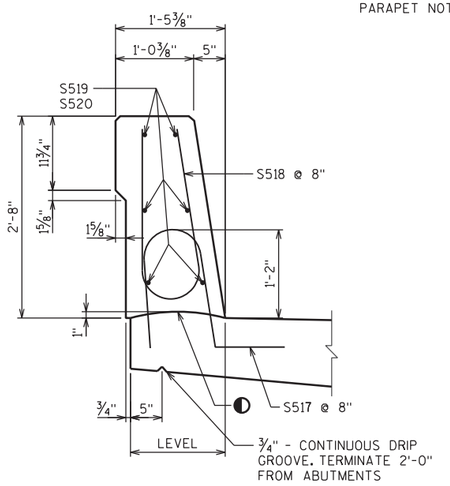



SECTION A-A EDGE OF DECK DETAIL

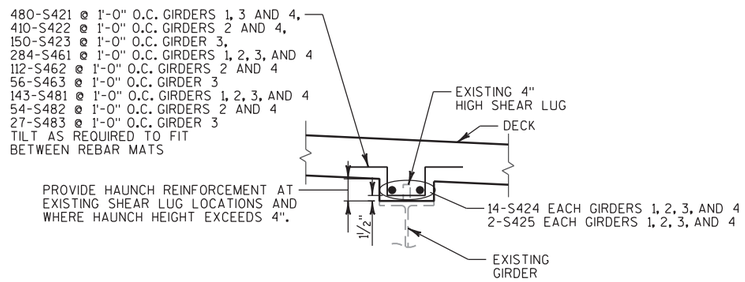
PARAPET NOT SHOWN FOR CLARITY



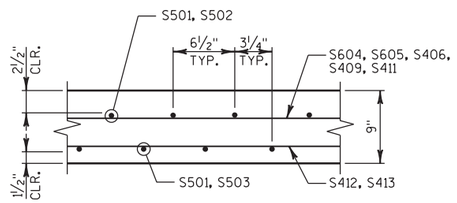

SECTION D-D PART TRANSVERSE SECTION AT END DIAPHRAGM




SECTION THRU '32SS' PARAPET ON BRIDGE




HAUNCH REINFORCING DETAIL




SECTION C-C

LEGEND

- ◐ CONSTRUCTION JOINT - STRIKE OFF AND LEAVE ROUGH
- ◪ DIMENSION IS TAKEN PARALLEL TO ℄ GIRDER
- * DIMENSION IS TAKEN NORMAL TO ℄ ABUTMENT

| NO. | DATE | REVISION | BY |
|---|---|---|---|

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-114

DRAWN BY BLM | PLANS CK'D. KGW

SUPERSTRUCTURE CROSS SECTION AND DETAILS

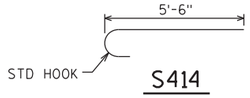
SHEET 9 OF 16



FILE NAME : L:\Jobs2015\20150143\CAD\Structural\dgn\00\B-67-114_09.dgn
PLOT DATE : 10/24/2017
PLOT BY : GRAEF
PLOT NAME : $FILE$
PLOT SCALE : 2.0001 in / in.

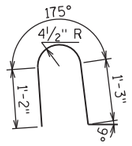
STATE PROJECT NUMBER

1090-30-70




S414


S416

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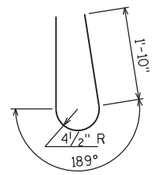


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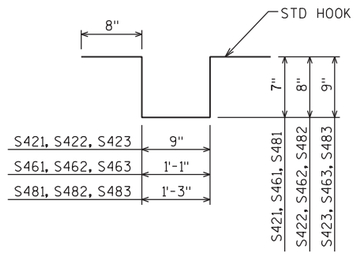
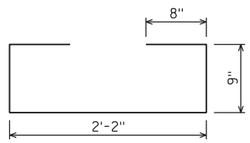



S421, S422, S423
S461, S462, S463
S481, S482, S483




S427

## BILL OF BARS

| MARK | COATED | NO. REQ'D | LENGTH | BAR SERIES | BENT | LOCATION |
|---|---|---|---|---|---|---|
| S501 | X | 1449 | 36'-2" | N | N | DECK TRANSVERSE - TOP AND BOTTOM |
| S502 | X | 100 | 17'-9" | Y | N | DECK TRANSVERSE - N. AND S. ENDS |
| S503 | X | 100 | 18'-1" | Y | N | DECK TRANSVERSE - N. AND S. ENDS |
| S604 | X | 58 | 59'-6" | N | N | DECK LONGITUDINAL TOP OVER PIER 1 |
| S605 | X | 58 | 55'-6" | N | N | DECK LONGITUDINAL TOP OVER PIER 2 |
| S406 | X | 236 | 60'-0" | N | N | LONGITUDINAL TOP |
| | | | | | | |
| S409 | X | 59 | 22'-0" | N | N | LONGITUDINAL TOP SPAN 2 |
| | | | | | | |
| S411 | X | 59 | 58'-6" | N | N | LONGITUDINAL TOP SPAN 3 |
| S412 | X | 420 | 60'-0" | N | N | LONGITUDINAL BOTTOM AND OVERHANG |
| S413 | X | 60 | 10'-0" | N | N | LONGITUDINAL BOTTOM |
| S414 | X | 776 | 5'-6" | N | Y | TRANSVERSE OVERHANG |
| | | | | | | |
| S416 | X | 422 | 3'-11" | N | Y | TRANSVERSE OVERHANG |
| S517 | X | 1260 | 4'-5" | N | Y | PARAPET - VERTICAL DOWELS |
| S518 | X | 1260 | 5'-0" | N | Y | PARAPET - VERTICAL |
| S519 | X | 72 | 60'-0" | N | N | PARAPET - HORIZONTAL |
| S520 | X | 12 | 50'-0" | N | N | PARAPET - HORIZONTAL |
| S421 | X | 480 | 2'-11" | N | Y | HAUNCH - 12" FLANGE, GIRD 1 SPANS 1-3, GIRD 3 SPAN 1, GIRD 4 SPAN 1 |
| S422 | X | 410 | 3'-1" | N | Y | HAUNCH - 12" FLANGE, GIRD 2 SPANS 1-3, GIRD 4 SPANS 2-3 |
| S423 | X | 150 | 3'-3" | N | Y | HAUNCH - 12" FLANGE, GIRD 3 SPANS 2-3 |
| S424 | X | 56 | 60'-0" | N | N | LONGITUDINAL @ HAUNCH |
| S425 | X | 8 | 6'-0" | N | N | LONGITUDINAL @ HAUNCH |
| | | | | | | |
| S427 | X | 78 | 4'-8" | N | Y | STIRRUPS @ DIAPHRAGM END |
| S428 | X | 12 | 11'-2" | N | N | END DIAPHRAGM TOP |
| S729 | X | 30 | 11'-2" | N | N | END DIAPHRAGM BOTTOM |
| S530 | X | 8 | 18'-7" | N | N | DECK ENDS ALONG SKEW |
| S431 | X | 12 | 13'-5" | N | N | EXPANSION JOINT |
| S532 | X | 8 | 5'-0" | N | N | FLOOR DRAIN |
| | | | | | | |
| S461 | X | 284 | 3'-1" | N | Y | HAUNCH - 16" FLANGE, GIRDER 1 - PIERS 1 AND 2, GIRDERS 2, 3 AND 4 - PIER 1 |
| S462 | X | 112 | 3'-5" | N | Y | HAUNCH - 16" FLANGE, GIRDER 2 - PIER 2, GIRDER 4 - PIER 2 |
| S463 | X | 56 | 3'-7" | N | Y | HAUNCH - 16" FLANGE, GIRDER 3 - PIER 2 |
| | | | | | | |
| S481 | X | 143 | 3'-3" | N | Y | HAUNCH - 18" FLANGE, GIRDER 1 - PIERS 1 AND 2, GIRDERS 2, 3 AND 4 - PIER 1 |
| S482 | X | 54 | 3'-7" | N | Y | HAUNCH - 18" FLANGE, GIRDER 2 - PIER 2, GIRDER 4 - PIER 2 |
| S483 | X | 27 | 3'-9" | N | Y | HAUNCH - 18" FLANGE, GIRDER 3 - PIER 2 |

| NO. | DATE | REVISION | BY |
|---|---|---|---|

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-114

DRAWN BY BLM | PLANS CK'D. KGW

SUPERSTRUCTURE BILL OF BARS

SHEET 10 OF 16



FILE NAME : L:\Jobs2015\20150143\CAD\Structural\dgn\00\B-67-114_10.dgn
PLOT DATE : 10/24/2017
PLOT BY : GRAEF
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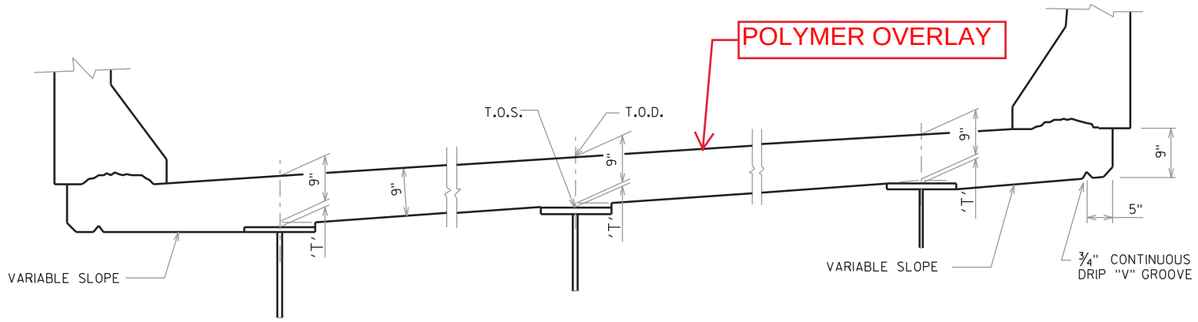



SECTION THRU SLAB

## NOTES

'T' = HAUNCH HEIGHT AT CENTERLINE OF GIRDER.

TO DETERMINE 'T':
ELEVATIONS OF THE TOP FLANGE SHALL BE TAKEN AT CENTERLINE OF BEARING AND AT 0.1 POINTS.

| | |
|---|---|
| | TOP OF DECK ELEV. AT FINAL GRADE. |
| - | TOP OF STEEL ELEV. AS ERECTED |
| + | CONC. ONLY DEFLECTION; DOWNWARD DEFLECTION IS ADDED, UPWARD DEFLECTION IS SUBTRACTED. |
| - | DECK THICKNESS |
| = | 'T' VALUE FOR SETTING HAUNCH. |

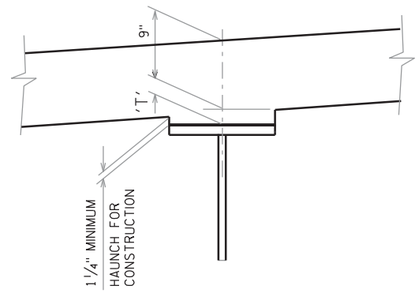
## DEFLECTION TABLE (INCHES)

| | C/L BRG | SPAN 1 | | | | | | | | | | C/L BRG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | SOUTH ABUT. | 0.1 SPAN | 0.2 SPAN | 0.3 SPAN | 0.4 SPAN | 0.5 SPAN | 0.6 SPAN | 0.7 SPAN | F.S. #1 | 0.8 SPAN | 0.9 SPAN | PIER 1 |
| CONCRETE DEFLECTION | 0.0 | 1.2 | 2.1 | 2.8 | 3.1 | 3.1 | 2.7 | 2.1 | 1.5 | 1.3 | 0.5 | 0.0 |

| C/L BRG | SPAN 2 | | | | | | | | | | C/L BRG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIER 1 | 0.1 SPAN | 0.2 SPAN | 0.3 SPAN | F.S. #2 | 0.4 SPAN | 0.5 SPAN | 0.6 SPAN | F.S. #3 | 0.7 SPAN | 0.8 SPAN | 0.9 SPAN | PIER 2 |
| 0.0 | -0.2 | -0.2 | 0.0 | 0.1 | 0.2 | 0.3 | 0.2 | 0.1 | 0.0 | -0.2 | -0.2 | 0.0 |

| C/L BRG | SPAN 3 | | | | | | | | | | C/L ERG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIER 2 | 0.1 SPAN | 0.2 SPAN | F.S. #4 | 0.3 SPAN | 0.4 SPAN | 0.5 SPAN | 0.6 SPAN | 0.7 SPAN | 0.8 SPAN | 0.9 SPAN | NORTH ABUT. |
| 0.0 | 0.5 | 1.3 | 1.5 | 2.0 | 2.6 | 3.0 | 3.0 | 2.7 | 2.0 | 1.1 | 0.0 |

DEFLECTIONS ARE DUE TO WEIGHT OF CONCRETE DECK AND PARAPETS.
DEFLECTIONS ARE THEORETICAL AND MAY VARY IN THE FIELD.
NEGATIVE VALUES ARE UPWARD DEFLECTIONS.




HAUNCH DETAIL

## ELEVATIONS AT TOP OF DECK (T.O.D.) & TOP OF STEEL (T.O.S.)

| | | C/L BRG | SPAN 1 | | | | | | | | | | C/L BRG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | | SOUTH ABUT. | 0.1 SPAN | 0.2 SPAN | 0.3 SPAN | 0.4 SPAN | 0.5 SPAN | 0.6 SPAN | 0.7 SPAN | F.S. #1 | 0.8 SPAN | 0.9 SPAN | PIER 1 |
| WEST DECK EDGE | T.D. | 974.34 | 974.24 | 974.14 | 974.04 | 973.94 | 973.84 | 973.74 | 973.64 | 973.57 | 973.54 | 973.44 | 973.33 |
| GIRDER 1 | T.D. | 974.37 | 974.27 | 974.17 | 974.07 | 973.97 | 973.87 | 973.77 | 973.67 | 973.60 | 973.57 | 973.47 | 973.37 |
| | T.S. | 973.32 | | | | | | | | 972.76 | | | 972.43 |
| GIRDER 2 | T.D. | 974.51 | 974.41 | 974.31 | 974.21 | 974.11 | 974.01 | 973.91 | 973.81 | 973.74 | 973.71 | 973.61 | 973.51 |
| | T.S. | 973.37 | | | | | | | | 972.77 | | | 972.43 |
| CROWN | T.D. | 974.58 | 974.48 | 974.38 | 974.28 | 974.18 | 974.08 | 973.98 | 973.88 | 973.81 | 973.78 | 973.68 | 973.58 |
| GIRDER 3 | T.D. | 974.46 | 974.36 | 974.25 | 974.15 | 974.05 | 973.95 | 973.85 | 973.75 | 973.68 | 973.65 | 973.55 | 973.45 |
| | T.S. | 973.31 | | | | | | | | 972.75 | | | 972.43 |
| GIRDER 4 | T.D. | 974.20 | 974.10 | 974.00 | 973.90 | 973.80 | 973.70 | 973.60 | 973.50 | 973.43 | 973.40 | 973.30 | 973.19 |
| | T.S. | 973.17 | | | | | | | | 972.59 | | | 972.26 |
| EAST DECK EDGE | T.D. | 974.15 | 974.05 | 973.94 | 973.84 | 973.74 | 973.64 | 973.54 | 973.44 | 973.37 | 973.34 | 973.24 | 973.14 |

| | | C/L BRG | SPAN 2 | | | | | | | | | | C/L BRG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | | PIER 1 | 0.1 SPAN | 0.2 SPAN | 0.3 SPAN | F.S. #2 | 0.4 SPAN | 0.5 SPAN | 0.6 SPAN | F.S. #3 | 0.7 SPAN | 0.8 SPAN | PIER 2 |
| WEST DECK EDGE | T.D. | 973.04 | 972.94 | 972.84 | 972.79 | 972.74 | 972.64 | 972.54 | 972.49 | 972.44 | 972.34 | 972.24 | 972.14 |
| GIRDER 1 | T.D. | 973.01 | 972.97 | 972.87 | 972.77 | 972.71 | 972.67 | 972.57 | 972.47 | 972.37 | 972.27 | 972.17 | 972.07 |
| | T.S. | | | | 971.98 | | | | | 971.63 | | | 971.21 |
| GIRDER 2 | T.D. | 973.15 | 973.11 | 973.01 | 972.91 | 972.85 | 972.81 | 972.71 | 972.61 | 972.51 | 972.41 | 972.31 | 972.21 |
| | T.S. | | | | 971.98 | | | | | 971.61 | | | 971.21 |
| CROWN | T.D. | 973.22 | 973.18 | 973.08 | 972.98 | 972.93 | 972.88 | 972.78 | 972.68 | 972.58 | 972.48 | 972.38 | 972.28 |
| GIRDER 3 | T.D. | 973.10 | 973.05 | 972.95 | 972.85 | 972.80 | 972.75 | 972.65 | 972.55 | 972.45 | 972.35 | 972.25 | 972.15 |
| | T.S. | | | | 971.94 | | | | | 971.56 | | | 971.11 |
| GIRDER 4 | T.D. | 972.84 | 972.80 | 972.70 | 972.60 | 972.54 | 972.50 | 972.40 | 972.30 | 972.20 | 972.10 | 972.00 | 971.90 |
| | T.S. | | | | 971.76 | | | | | 971.36 | | | 970.92 |
| EAST DECK EDGE | T.D. | 972.79 | 972.74 | 972.64 | 972.54 | 972.49 | 972.44 | 972.34 | 972.24 | 972.14 | 972.05 | 971.95 | 971.85 |

| | | C/L BRG | SPAN 3 | | | | | | | | | | C/L BRG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | | PIER 2 | 0.1 SPAN | 0.2 SPAN | F.S. #4 | 0.3 SPAN | 0.4 SPAN | 0.5 SPAN | 0.6 SPAN | 0.7 SPAN | 0.8 SPAN | 0.9 SPAN | NORTH ABUT. |
| WEST DECK EDGE | T.D. | 972.34 | 972.24 | 972.14 | 972.12 | 972.04 | 971.95 | 971.85 | 971.75 | 971.65 | 971.55 | 971.46 | 971.36 |
| GIRDER 1 | T.D. | 972.37 | 972.27 | 972.17 | 972.15 | 972.07 | 971.98 | 971.88 | 971.78 | 971.68 | 971.58 | 971.49 | 971.39 |
| | T.S. | 971.21 | | | 971.14 | | | | | | | | 970.38 |
| GIRDER 2 | T.D. | 972.51 | 972.41 | 972.31 | 972.29 | 972.22 | 972.12 | 972.02 | 971.92 | 971.82 | 971.73 | 971.63 | 971.53 |
| | T.S. | 971.21 | | | 971.14 | | | | | | | | 970.40 |
| CROWN | T.D. | 972.58 | 972.48 | 972.39 | 972.36 | 972.29 | 972.19 | 972.09 | 971.99 | 971.89 | 971.80 | 971.70 | 971.60 |
| GIRDER 3 | T.D. | 972.45 | 972.36 | 972.26 | 972.23 | 972.16 | 972.06 | 971.96 | 971.87 | 971.77 | 971.67 | 971.57 | 971.47 |
| | T.S. | 971.11 | | | 971.05 | | | | | | | | 970.33 |
| GIRDER 4 | T.D. | 972.20 | 972.10 | 972.00 | 971.98 | 971.90 | 971.81 | 971.71 | 971.61 | 971.51 | 971.41 | 971.32 | 971.22 |
| | T.S. | 970.92 | | | 970.85 | | | | | | | | 970.16 |
| EAST DECK EDGE | T.D. | 972.14 | 972.05 | 971.95 | 971.92 | 971.85 | 971.75 | 971.65 | 971.56 | 971.46 | 971.36 | 971.26 | 971.16 |

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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-114

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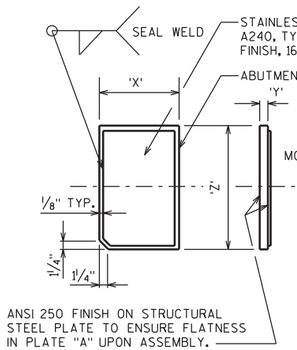
TOP OF DECK ELEVATIONS

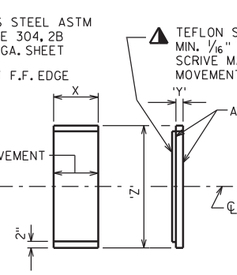
SHEET 11 OF 16

STATE PROJECT NUMBER

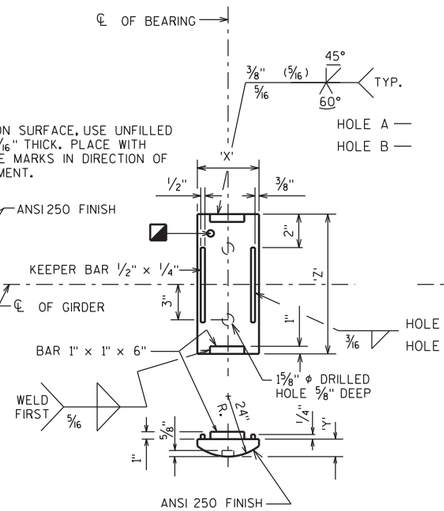
1090-30-70



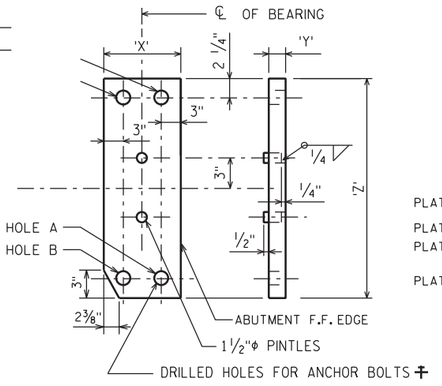

TOP PLATE 'A'




TEFLON COATED PLATE 'B'

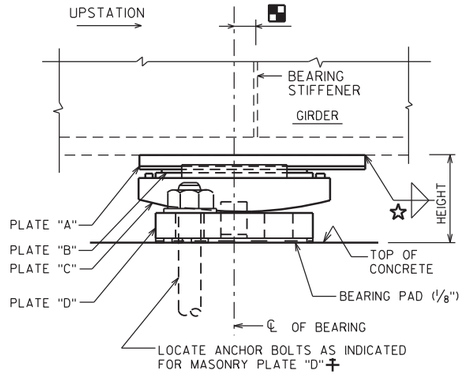



ROCKER PLATE 'C'




TYPE II

MASONRY PLATE 'D'




EXPANSION BEARING ASSEMBLY

## 18" BEARING AT ABUTMENTS

| CAP. KIPS | PLATE A | | | PLATE B | | | PLATE C | | | PLATE D | | | HEIGHT FEET |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | X | Y | Z | X | Y | Z | X | Y | Z | X | Y | Z | |
| 280 | 1'-1" | 5/8" | 1'-6" | 7" | 1/2" | 1'-8" | 9" | 1 5/16" | 1'-10 1/4" | 9" | 1 1/2" | 2'-6" | 0.401 |

USED AT NORTH AND SOUTH ABUTMENTS ON ALL BEARINGS - 8 REQUIRED

| °F | S. ABUT. | N. ABUT. |
|---|---|---|
| 30 | 0.2 | -0.3 |
| 45 | 0 | 0 |
| 60 | -0.2 | 0.3 |
| 75 | -0.4 | 0.6 |
| 90 | -0.5 | 0.9 |

## ◪ BEARING OFFSET TABLE

ALL DIMENSIONS IN INCHES
AMBIENT TEMPERATURE DURING GIRDER INSTALLATION.

## NOTES

ALL BEARINGS ARE SYMMETRICAL ABOUT ℄ OF GIRDER AND ℄ OF BEARING.

ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION A153, CLASS C.

ROCKER PLATE "C" AND MASONRY PLATE "D" SHALL BE GALVANIZED. TOP PLATE "A" AND STEEL PLATE "B" SHALL BE SHOP PAINTED. USE A WELDABLE PRIMER ON TOP PLATE "A". DO NOT PAINT STAINLESS STEEL OR TEFLON SURFACES.

ALL MATERIAL IN BEARINGS, INCLUDING SHIM PLATES, BUT EXCLUDING STAINLESS STEEL SHEET, TEFLON SURFACES, PINTLES, ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A709 GRADE 50W.

IN LIEU OF USING SHIM PLATES FABRICATOR MAY INCREASE THICKNESS OF TOP PLATE PLATE "A" OR MASONRY PLATE "D" BY THE SHIM PLATE THICKNESS.

ALL MATERIALS IN TYPE "A-T" BEARINGS, INCLUDING SHIM PLATES AND BEARING PADS, SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "BEARING ASSEMBLIES EXPANSION B-67-114", EACH.

CHAMFER ANCHOR BOLTS PRIOR TO THREADING.

ALL FINISHED SURFACES SHALL BE MACHINE FINISHED BY AN AUTOMATIC PROCESS.

ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.

ALL STRUCTURAL STEEL BEARING PLATES SHALL BE FLAT ROLLED STEEL PLATES WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL.

PROVIDE 1/8" THICK BEARING PAD THE SAME SIZE AS MASONRY PLATE "D" FOR EACH BEARING.

ANCHOR BOLTS SHALL BE THREADED 3". PROVIDE ONE STANDARD WROUGHT WASHER AND ONE HEX NUT PER BOLT. PROJECT ANCHOR BOLTS, MASONRY PLATE "D" THICKNESS +2 1/4", ABOVE TOP OF CONCRETE.

CHAMFER TOP OF PINTLES 1/8". DRILL HOLES FOR ALL PINTLES IN MASONRY PLATE "D" FOR A DRIVING FIT.

STEEL PINTLES SHALL CONFORM TO ASTM A449 OR MATERIAL OF EQUIVALENT YIELD STRENGTH AND ELONGATION.

ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A709 GRADE 36, OR MATERIAL OF EQUIVALENT YIELD STRENGTH AND ELONGATION.

PLACE SHIM PLATES BETWEEN BEARING PAD AND MASONRY PLATE "D". PLATES SHALL HAVE 'X' AND 'Z' DIMENSIONS THAT MATCH MASONRY PLATE "D".

◪ PROVIDE A METHOD FOR HANDLING ROCKER PLATE "C" DURING GALVANIZING.

◭ BOND STEEL PLATE "B" AND TEFLON WITH ADHESIVE MATERIAL MEETING THE REQUIREMENTS FOUND IN THE STANDARD SPECIFICATIONS.

‡ DRILLED HOLES FOR ANCHOR BOLTS IN MASONRY PLATE "D" SHALL HAVE A DIAMETER 3/8" LARGER THAN ANCHOR BOLT. TWO BOLTS ARE REQUIRED AND MAY BE PLACED IN EITHER HOLES "A" OR "B". FILL UNUSED HOLES IN CONCRETE OR PLATE "D" WITH NONSHRINK GROUT OR CAULK.

AT INSTALLATION, ENSURE STAINLESS STEEL SLIDING FACE OF THE UPPER ELEMENT AND THE TFE SLIDING FACE OF THE LOWER ELEMENT HAVE THE SURFACE FINISH SPECIFIED AND ARE CLEAN AND FREE OF ALL DUST, MOISTURE, OR ANY OTHER FOREIGN MATTER.

ANCHOR BOLTS TO BE (2) 1 1/2" DIA x 1'-10" LONG.

HEIGHT OF BEARINGS GIVEN IN TABLES INCLUDES 1/8" BEARING PAD, 16 GAGE STAINLESS STEEL SHEET AND 1/16" TEFLON SURFACE.

## ☆ TABLE OF FILLET WELD SIZES

| MATERIAL THICKNESS OF THICKER PART JOINED. | ⬠ MIN. SIZE OF FILLET WELD |
|---|---|
| TO 1/2" INCLUSIVE | 3/16" |
| OVER 1/2" TO 3/4" | 1/4" |
| OVER 3/4" TO 1 1/2" | △ 5/16" |
| OVER 1 1/2" | △ 3/8" |

⬠ EXCEPT THAT THE WELD SIZE SHALL NOT EXCEED THE THICKNESS OF THE THINNER PART JOINED.

△ MIN. PASS SIZE IS 5/16"

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STATE OF WISCONSIN
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STRUCTURE B-67-114

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EXPANSION BEARING DETAILS

SHEET 12 OF 16



8

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FILE NAME : L:\Jobs2015\20150143\CAD\Structural\dgn\00\B-67-114_15.dgn
PLOT DATE : 10/24/2017
PLOT BY : GRAEF
PLOT NAME : $FILE$
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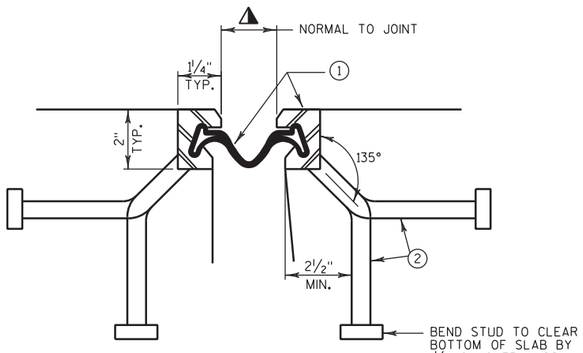
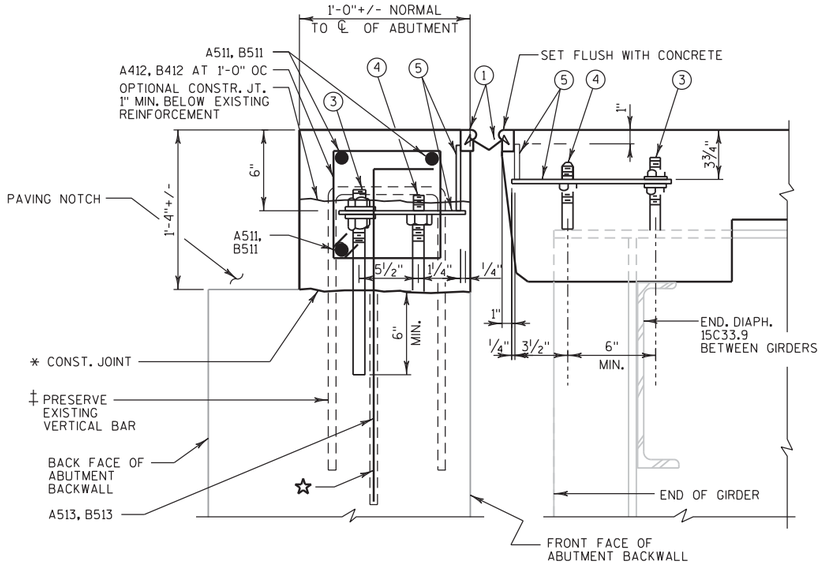



## SECTION THRU JOINT

EXTERIOR GIRDER TO EDGE OF DECK AND AT PARAPETS.




## TYPICAL SECTION THRU JOINT AT STEEL GIRDER

NORMAL TO ℄ SUBSTRUCTURE AT ABUTMENT

* POUR CONC. ABOVE THIS JOINT AFTER SUPERSTRUCTURE IS IN PLACE.

‡ EXISTING BARS ARE LIKELY TO BE CORRODED AND/OR DAMAGED DURING CONCRETE REMOVAL. PRESERVE AND INCORPORATE AS MUCH REBAR AS PRACTICAL. SUPPLEMENT WITH THE BARS INDICATED BY .

☆ ADHESIVE ANCHORS NO. 5 BAR. EMBED 1'-6" IN CONCRETE. SPACE AT 1'-0". TURN 10" LEG AS NECESSARY TO FIT.

## LEGEND

⚠ (1) NEOPRENE STRIP SEAL (5-INCH) AND STEEL EXTRUSIONS. JOINT OPENINGS GIVEN NORMAL TO JOINT.

(2) STUDS ⅝" ϕ × 6⅜" LONG AT 6" ALTERNATE CENTERS, WELD TO EXTRUSIONS AND BEND AS SHOWN AFTER WELDING.

(2A) ½" THICK ANCHOR PLATE WITH ⅝" ϕ ROD (OR ALTERNATE STRIP SEAL ANCHOR). WELD ROD TO ANCHOR PLATE, WELD ANCHOR PLATE TO NO. 1 AT 1'-6" CENTERS BETWEEN GIRDERS.

(3) ¾" ϕ THREADED ROD WITH 2 NUTS AND PLATE WASHERS. WELD THREADED ROD TO TOP FLANGE OR ATTACH BY BOLTING THRU FLANGE. ON ABUTMENT SIDE, GROUT THREADED ROD INTO FIELD DRILLED HOLES IN ABUTMENT BACKWALL AS SHOWN.

(4) ¾" ϕ THREADED ROD WITH NUT, TACK WELD NUT TO NO. 5.

(5) FABRICATE SUPPORT FROM 3" × ½" BAR AS SHOWN OR EQUIVALENT. ONE PER GIRDER PER SIDE, SHOP OR FIELD WELD TO NO. 1. IF FIELD WELDED, COVER WELDED AREAS WITH EPOXY-COATING MATERIAL. PROVIDE 1½" ϕ HOLE FOR NO. 3 AND 1" ϕ HOLE FOR NO. 4.

(6) GALVANIZED PLATE ⅜" × 10½" × 2'-2" LONG WITH HOLES FOR NO. 7.

(7) ¾" ϕ × 1½" STAINLESS STEEL SOCKET FLAT HEAD SCREWS WITH ANTI-SEIZE LUBRICANT. PLACE IN COUNTERSUNK HOLE. RECESS 1/16" BELOW PLATE SURFACE.

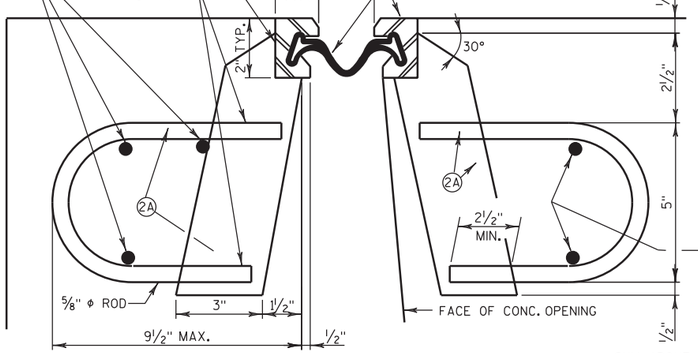
(8) ¾" ϕ × 4" GALVANIZED HEX HEAD BOLT. BEND 45°.

(9) ¾" ϕ × 2¼" GALVANIZED THREADED COUPLING.

(11) 1" × 5" SLOTTED COUNTERSUNK HOLE FOR NO. 7 PLACE SLOT PARALLEL TO DIRECTION OF MOVEMENT.

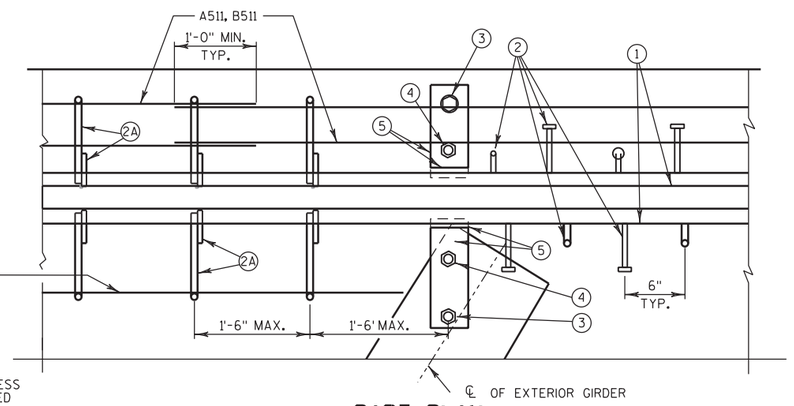
## NOTES

1. ONE FIELD SPLICE PERMITTED IN STEEL EXTRUSIONS, UNLESS MORE ARE REQUIRED FOR STAGED CONSTRUCTION, HANDLING, OR GALVANIZING REQUIREMENTS. IF USED, DETAILS SHALL BE SUBMITTED FOR APPROVAL. NO SPLICING PERMITTED IN NEOPRENE STRIP SEAL.
2. AFTER FABRICATION, BUT BEFORE SHIPMENT, STRAIGHTEN STEEL EXTRUSIONS SUCH THAT THEY SHALL BE FREE FROM WARP, TWIST AND SWEEP.
3. FABRICATOR SHALL PROVIDE MEANS OF KEEPING GALVANIZED EXTRUSIONS CLEAN AND SMOOTH DURING SHIPMENT AND PRIOR TO APPLYING LUBRICANT ADHESIVE FOR NEOPRENE GLAND INSTALLATION.
4. SANDBLAST PLATES AND EXTRUSIONS AFTER FABRICATION IN ACCORDANCE WITH SSPC SP. #6 "COMMERCIAL BLAST CLEANING". AFTER BLAST CLEANING, THE PLATES AND EXTRUSIONS SHALL BE HOT DIPPED GALVANIZED.
5. ANCHOR SYSTEM NO. 8 AND NO. 9 SHALL CONFORM TO ASTM A307 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM 153 CLASS C AND D.
6. STRIP SEAL EXPANSION JOINT ASSEMBLY, INCLUDING ANCHOR STUDS AND HARDWARE WILL BE PAID FOR AT THE LUMP SUM PRICE BID FOR "EXPANSION DEVICE B-67-114."




## SECTION THRU JOINT

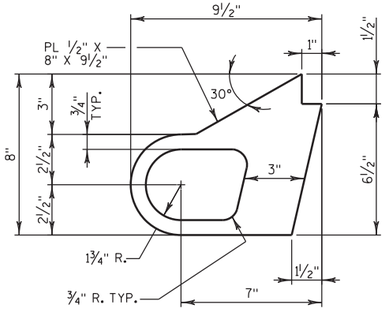
ROADWAY TRAFFIC AREA FROM EXTERIOR GIRDERS TO EDGE OF DECK.




## PART PLAN

| TEMPERATURE TABLE | | |
|---|---|---|
| TEMPERATURE | ⚠ JOINT OPENING | |
| | N. ABUT. | S. ABUT. |
| 5° | 3⅛" | 2⅞" |
| 15° | 3" | 2¾" |
| 25° | 2⅞" | 2¾" |
| 35° | 2⅝" | 2⅝" |
| 45° | 2½" | 2½" |
| 55° | 2⅜" | 2⅜" |
| 65° | 2⅛" | 2¼" |
| 75° | 2" | 2¼" |
| 85° | 1⅞" | 2⅛" |

A SMALL JOINT OPENING DUE TO A HIGH TEMPERATURE AT TIME OF CONSTRUCTION MAY REQUIRE NEOPRENE STRIP SEAL INSTALLATION INTO STEEL EXTRUSIONS PRIOR TO SETTING THE EXPANSION JOINT.




## ALTERNATE STRIP SEAL ANCHOR

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STRUCTURE B-67-114

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STRIP SEAL EXPANSION JOINT DETAILS

SHEET 13 OF 16

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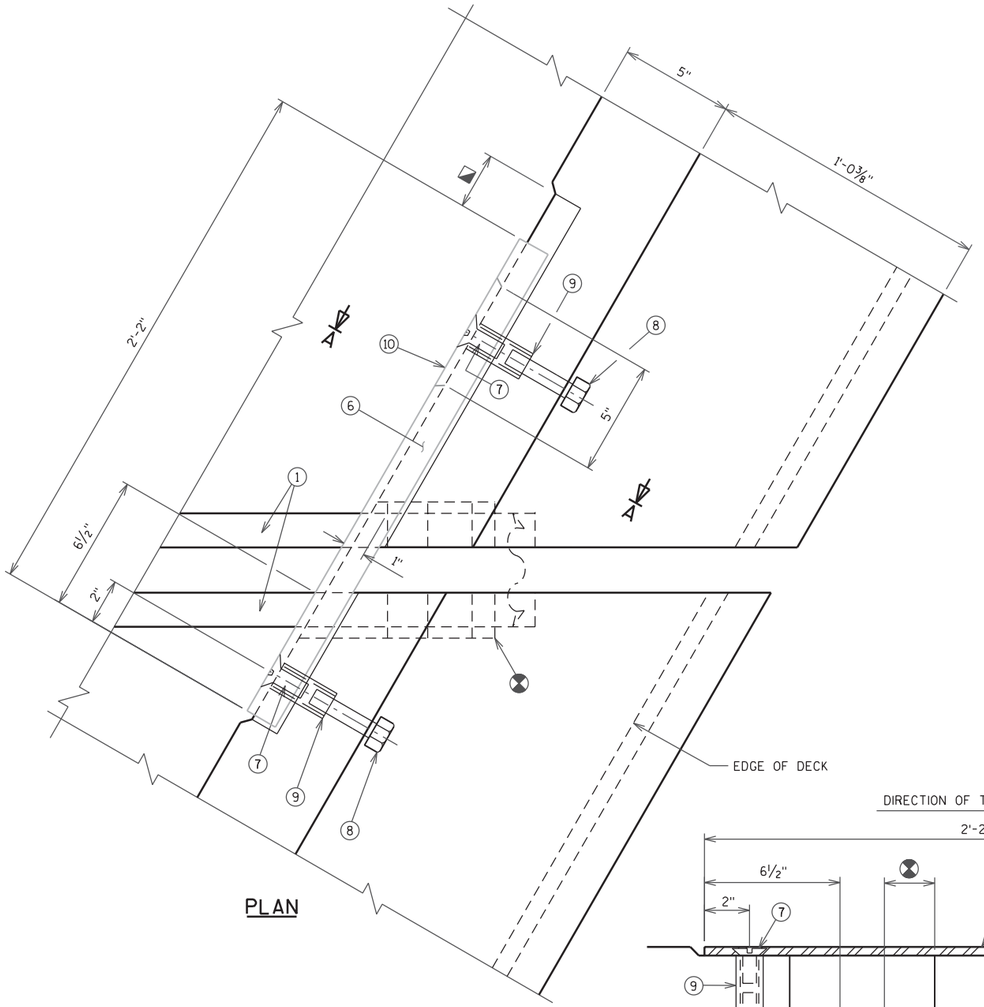
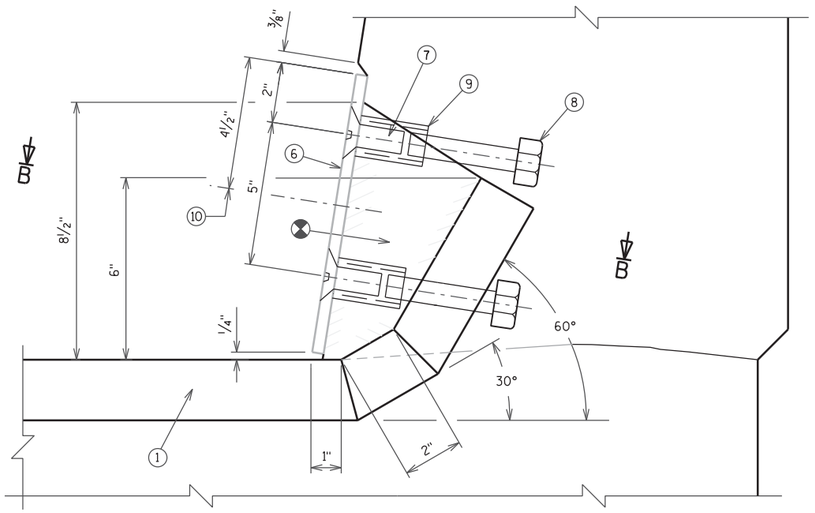
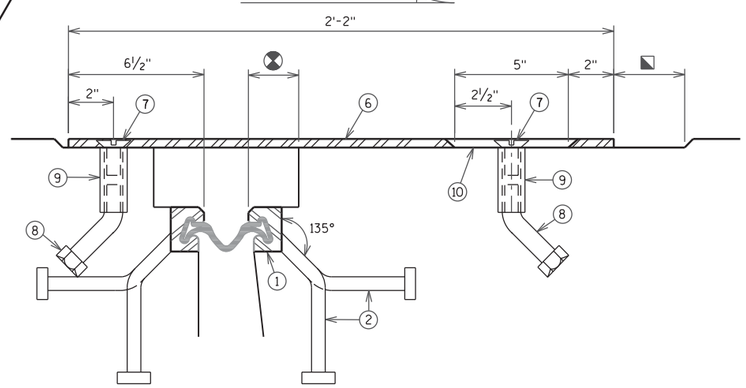


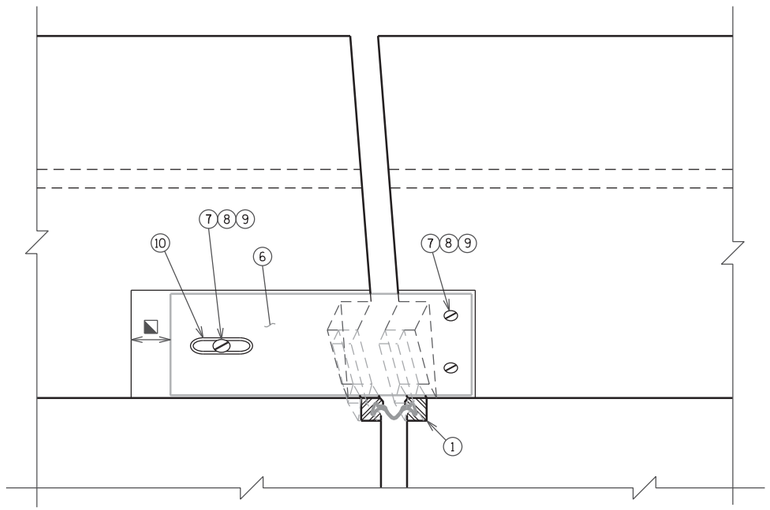

PLAN




SECTION A-A




SECTION B-B



VIEW OF PARAPET PLATE FROM ROADWAY

LEGEND

- BLOCK OUT CONCRETE 2" EACH SIDE OF JOINT OPENING.
- JOINT OPENING DIMENSION ALONG SKEW PLUS 1/2".
- (X) SEE SHEET 13 FOR COMPONENT DESCRIPTIONS

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STRIP SEAL COVER PLATES SINGLE SLOPE

SHEET 14 OF 16



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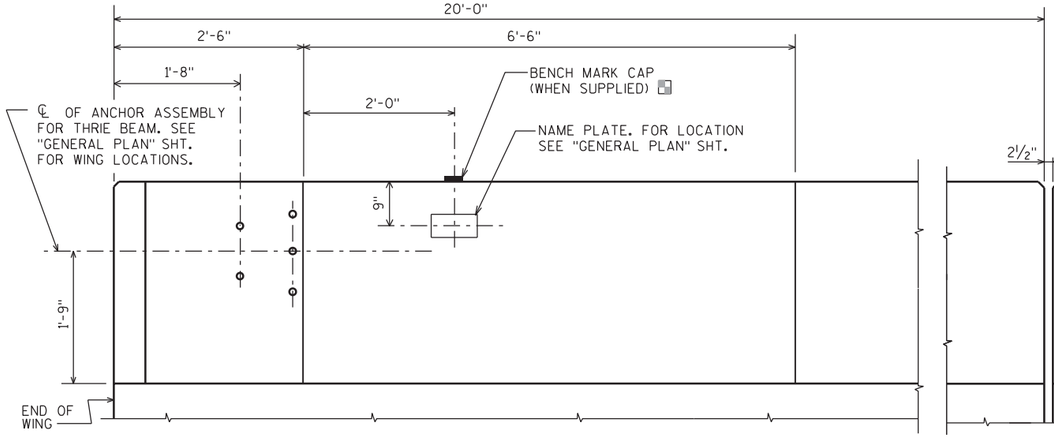
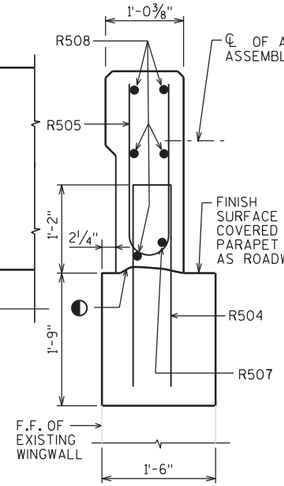
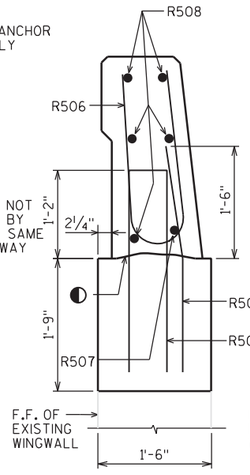
| 1090-30-70 |



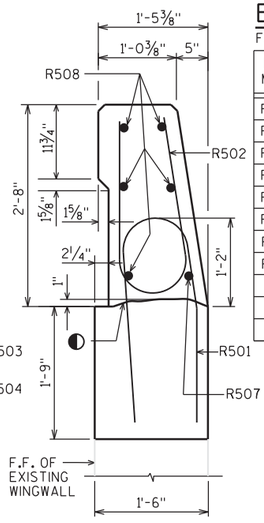

INSIDE ELEVATION




SECTION A*




SECTION B*

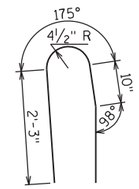



SECTION C*

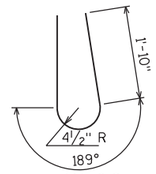
## BILL OF BARS

FOR ABUTMENT PARAPETS

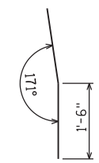
| BAR MARK | COAT | SOUTH ABUT. | NORTH ABUT. | LENGTH | BENT | BAR SERIES | LOCATION |
|---|---|---|---|---|---|---|---|
| R501 | X | 36 | 36 | 5-10 | X | | PARAPET VERT. |
| R502 | X | 36 | 36 | 5-0 | X | | PARAPET VERT. |
| R503 | X | 24 | 24 | 3-0 | X | | PARAPET VERT. |
| R504 | X | 34 | 34 | 5-7 | X | | PARAPET VERT. |
| R505 | X | 22 | 22 | 4-9 | X | | PARAPET VERT. |
| R506 | X | 12 | 12 | 4-10 | X | | PARAPET VERT. |
| R507 | X | 2 | 2 | 19-8 | X | | PARAPET HORIZ. |
| R508 | X | 12 | 12 | 19-8 | | | PARAPET HORIZ. |



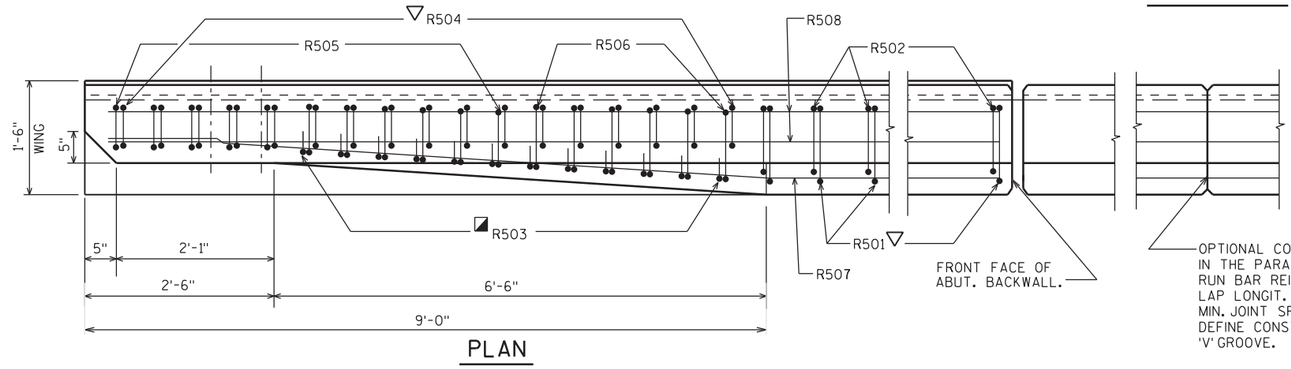

R501




R502

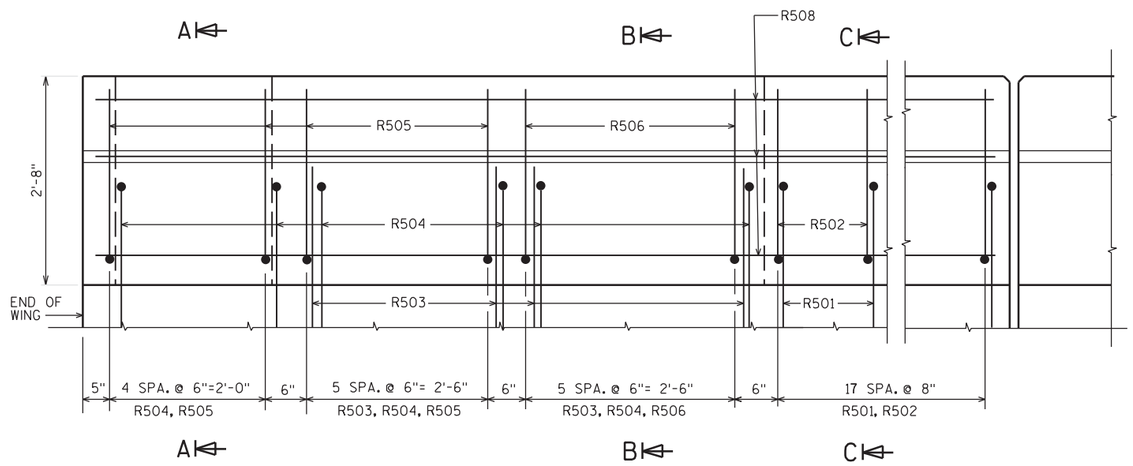



R503



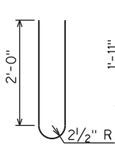

PLAN

OPTIONAL CONSTRUCTION JOINTS IN THE PARAPETS MAY BE USED. RUN BAR REINF. THRU THE JOINT. LAP LONGIT. BARS A MIN. OF 1'-9". MIN. JOINT SPACING OF 80'-0". DEFINE CONST. JOINT WITH A ¾" - 'V' GROOVE.

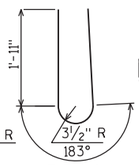



OUTSIDE ELEVATION

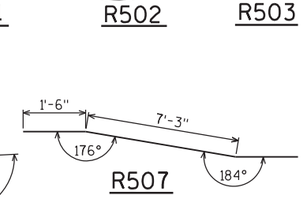

R504



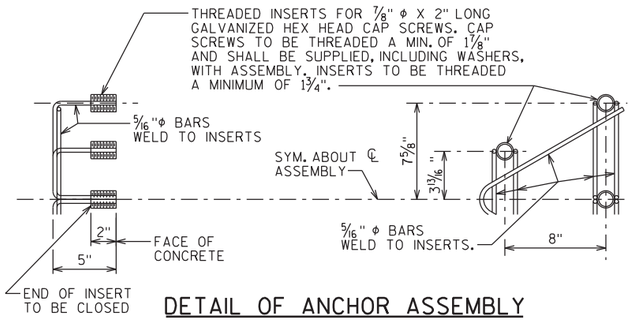

R505




R506




R507




## DETAIL OF ANCHOR ASSEMBLY

NOTE: HEX HEAD CAP SCREWS & WASHERS TO BE GALVANIZED IN ACCORDANCE WITH AASHTO M232 CLASS C.

ASSEMBLY SHALL BE BID ITEM "ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD", EACH.

* WING STEEL NOT SHOWN FOR CLARITY, SEE SHEETS 6 AND 7.

◐ CONST. JOINT - STRIKE OFF AS SHOWN.

◪ R503 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE. USE CARE TO PLACE R503 OR S503 BARS CORRECTLY ALONG TRANSITION OF PARAPET.

▽ R501 AND R504 BARS TO BE TIED TO WING STEEL BEFORE WING IS POURED.

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STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-67-114

DRAWN BY BLM | PLANS CK'D. KGW

SINGLE SLOPE PARAPET 32SS

SHEET 15 OF 16
303

8

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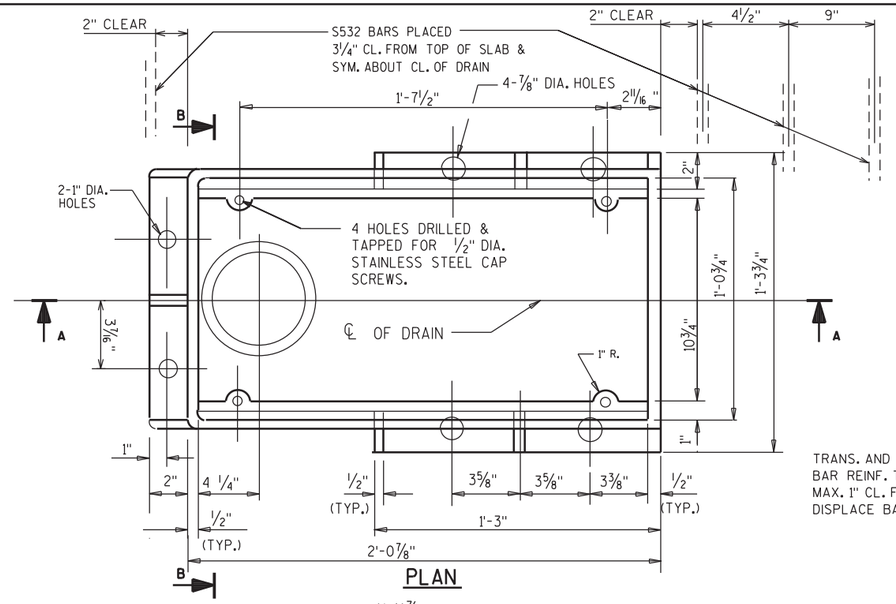
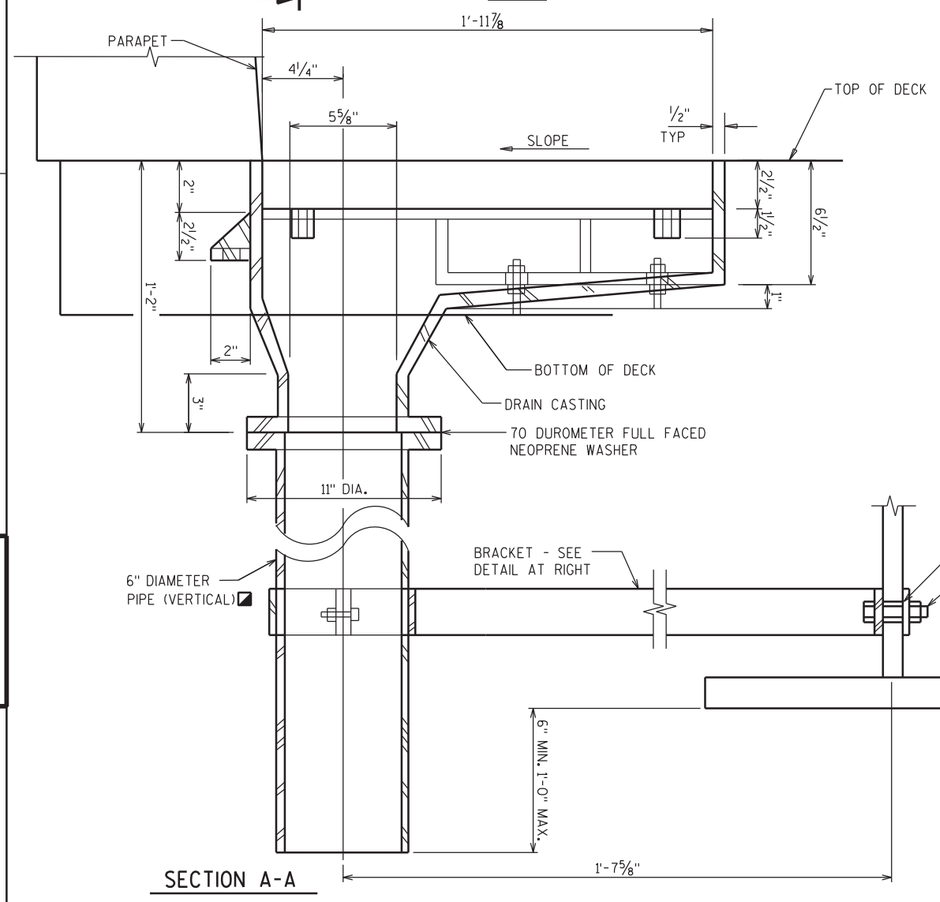
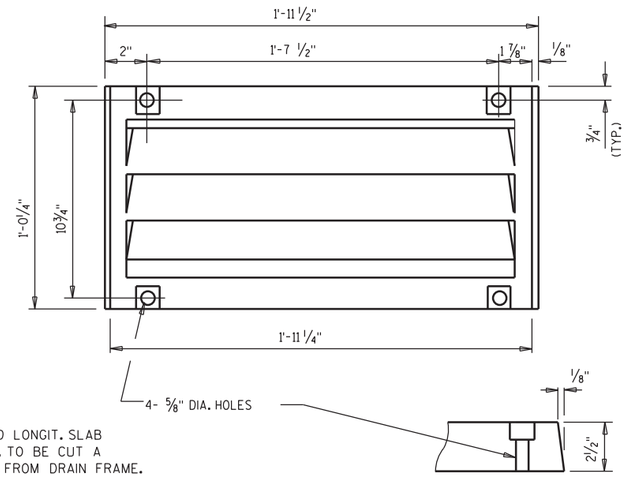
| STATE PROJECT NUMBER |
|---|
| 1090-30-70 |




PLAN



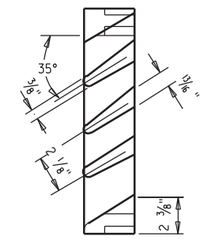

SECTION A-A




TRANS. AND LONGIT. SLAB BAR REINF. TO BE CUT A MAX. 1" CL. FROM DRAIN FRAME. DISPLACE BARS WHERE POSSIBLE.

GRATE CASTING DETAIL

ATTACH GRATE TO FRAME FOR SHIPMENT



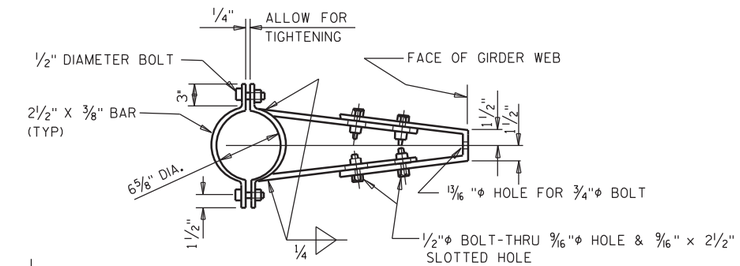

## NOTES

ALL MATERIAL FOR TYPE "GC" CASTING, EXCLUDING GRATE HOLD DOWN SCREWS, SHALL BE GRAY IRON CONFORMING TO A.S.T.M. A48, CLASS 30. (APPROX. WEIGHT = 225#)

MATERIAL FOR BRACKETS SHALL CONFORM TO A.S.T.M. A36.

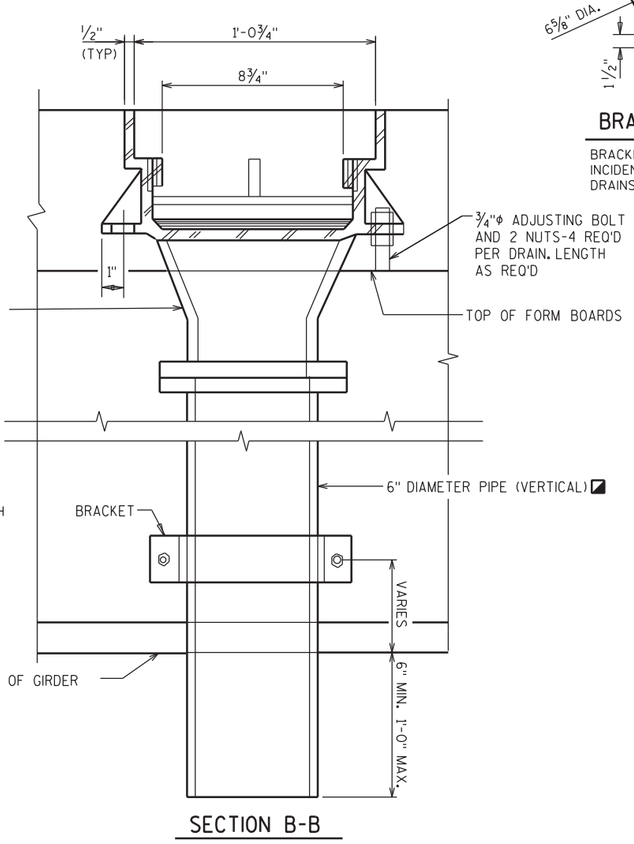
THE CONTRACTOR MAY PROPOSE AN ALTERNATE TYPE OF BRACKET. THE PROPOSED ALTERNATE DETAILS SHALL BE SUBMITTED AND SUBJECT TO THE APPROVAL OF THE ENGINEER.

◪ FLANGED 6" DIA. DOWNSPOUTS SHALL BE REINFORCED THERMOSSETTING RESIN PIPE (RTRP) OR GALVANIZED STANDARD PIPE CONFORMING TO ASTM A53.




BRACKET DETAIL

BRACKET AND VERTICAL PIPE ARE INCIDENTAL TO BID ITEM "FLOOR DRAINS TYPE GC"




SECTION B-B

| NO. | DATE | REVISION | BY |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-67-114

| DRAWN BY | BLM | PLANS CK'D. | KGW |
|---|---|---|---|

FLOOR DRAIN TYPE 'GC'

SHEET 16 OF 16



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FILE NAME : L:\Jobs2015\20150143\CAD\Structural\dgn\00\B-67-114_16.dgn

PLOT DATE : 10/24/2017

PLOT BY : GRAEF

PLOT NAME : $FILE$

PLOT SCALE : 2.0000 in / in.