

WKE  
PROJECT ID: 1090-33-61  
WITH:

COUNTY: MILWAUKEE

MAY 2014  
ORDER OF SHEETS

|                          |                                     |
|--------------------------|-------------------------------------|
| Section No. 1            | Title                               |
| Section No. 2            | Typical Sections and Details        |
| Section No. 3            | Estimate of Quantities              |
| <del>Section No. 3</del> | <del>Miscellaneous Quantities</del> |
| <del>Section No. 4</del> | <del>Right of Way Plat</del>        |
| <del>Section No. 5</del> | <del>Plan and Profile</del>         |
| <del>Section No. 6</del> | <del>Standard Detail Drawings</del> |
| <del>Section No. 7</del> | <del>Sign Plates</del>              |
| Section No. 8            | Structure Plans                     |
| <del>Section No. 9</del> | <del>Computer Earthwork Data</del>  |
| <del>Section No. 9</del> | <del>Cross Sections</del>           |

TOTAL SHEETS = 32



DESIGN DESIGNATION

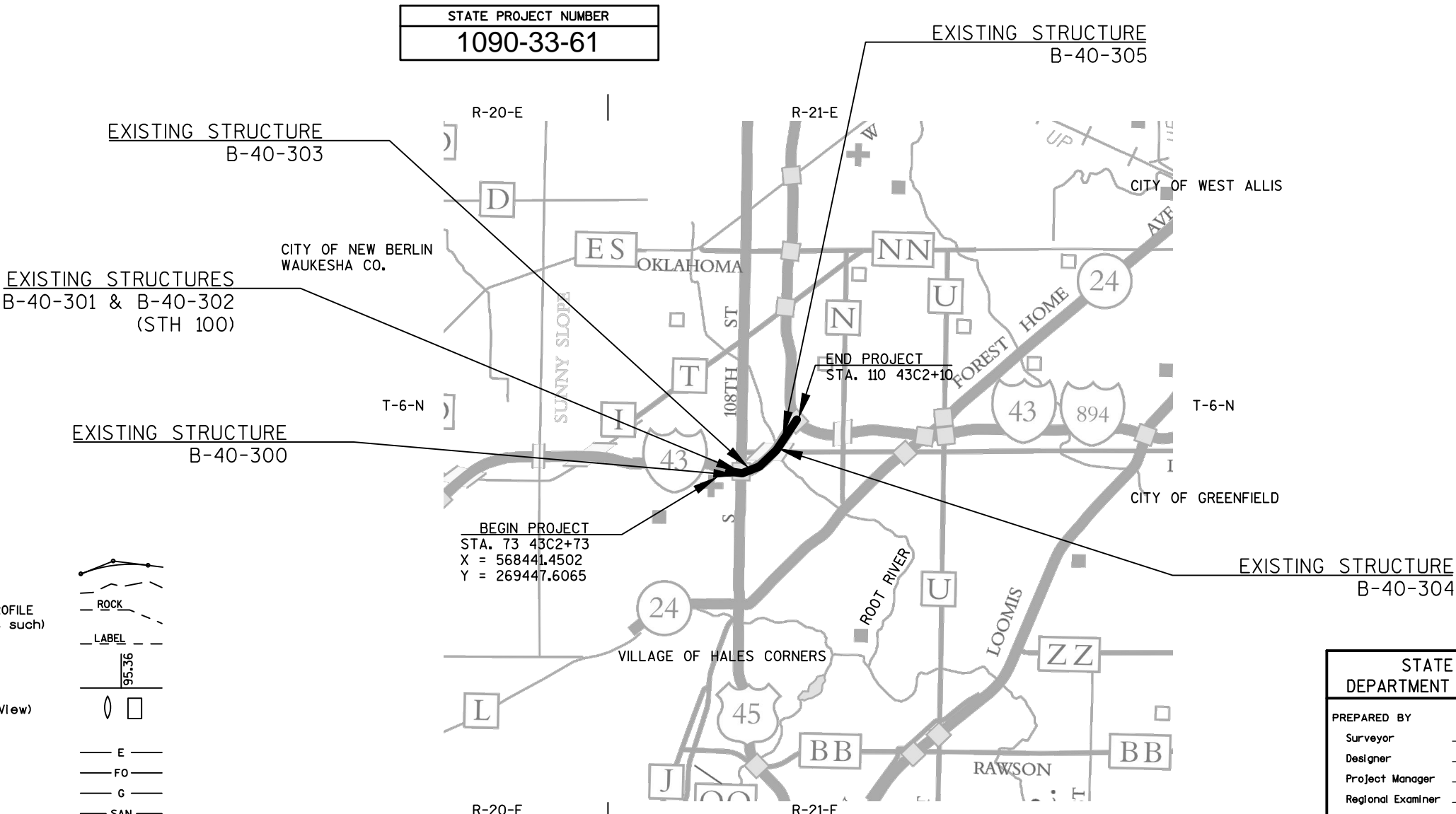
|              |      |   |                 |
|--------------|------|---|-----------------|
| A.A.D.T.     | 2014 | = | 41,200          |
| A.A.D.T.     | 2034 | = | 45,300          |
| D.H.V.       |      | = | 4167.6          |
| D.D.         |      | = | 56% NB / 44% SB |
| T.           |      | = | 10.3            |
| DESIGN SPEED |      | = | 60 MPH          |
| ESALS        |      | = | N/A             |

CONVENTIONAL SYMBOLS

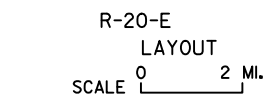
|                                |  |
|--------------------------------|--|
| PLAN                           |  |
| CORPORATE LIMITS               |  |
| PROPERTY LINE                  |  |
| LOT LINE                       |  |
| LIMITED HIGHWAY EASEMENT       |  |
| EXISTING RIGHT OF WAY          |  |
| PROPOSED OR NEW R/W LINE       |  |
| SLOPE INTERCEPT                |  |
| REFERENCE LINE                 |  |
| EXISTING CULVERT               |  |
| PROPOSED CULVERT (Box or Pipe) |  |
| COMBUSTIBLE FLUIDS             |  |
| MARSH AREA                     |  |
| WOODED OR SHRUB AREA           |  |

|   |  |
|---|--|
| PROFILE                                     |  |
| GRADE LINE                                  |  |
| ORIGINAL GROUND                             |  |
| MARSH OR ROCK PROFILE (To be noted as such) |  |
| SPECIAL DITCH                               |  |
| GRADE ELEVATION                             |  |
| CULVERT (Profile View)                      |  |
| UTILITIES                                   |  |
| ELECTRIC                                    |  |
| FIBER OPTIC                                 |  |
| GAS   |  |
| SANITARY SEWER                              |  |
| STORM SEWER                                 |  |
| TELEPHONE                                   |  |
| WATER                                       |  |
| UTILITY PEDESTAL                            |  |
| POWER POLE                                  |  |
| TELEPHONE POLE                              |  |

|  |       |
|--|-------|
|  | ROCK  |
|  | LABEL |
|  | 95.36 |
|  |       |
|  | E     |
|  | FO    |
|  | G     |
|  | SAN   |
|  | SS    |
|  | T     |
|  | W     |
|  |       |
|  |       |
|  |       |



|                      |
|----------------------|
| STATE PROJECT NUMBER |
| 1090-33-61           |



TOTAL NET LENGTH OF CENTERLINE = 0.960 MI.

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, MILWAUKEE COUNTY, NAD83 (2007), 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 NAVD 88 (2007)

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

ROCK FREEWAY

HALE INTERCHANGE B-40-300-305 EARLY STEEL-EXPANSION JOINT MATERIAL

IH-43

MILWAUKEE COUNTY

| STATE PROJECT | FEDERAL PROJECT |          |
|---------------|-----------------|----------|
|               | PROJECT         | CONTRACT |
| 1090-33-61    |                 |          |
|               |                 |          |
|               |                 |          |
|               |                 |          |

| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION |                    |
|--|--------------------|
| PREPARED BY  |                    |
| Surveyor   | WISDOT             |
| Designer   | WISDOT             |
| Project Manager                                    | CASEY WIERZCHOWSKI |
| Regional Examiner                                  | WILLIAM ANDERSON   |
| Regional Supervisor                                | WAFA ELQAO         |
| APPROVED FOR THE DEPARTMENT                        |                    |
| DATE: 4/15/14                                      |                    |
|  |                    |
|  |                    |
|  |                    |

GENERAL NOTES

NO TREES OR SHRUBS SHALL BE REMOVED WITHOUT APPROVAL OF THE ENGINEER.

THE CONTRACTOR SHALL NOTIFY DIGGERS HOTLINE AND AFFECTED UTILITIES PRIOR TO THE START OF WORK. ANY LOCAL MUNICIPAL UTILITY WHICH IS NOT A MEMBER OF THE DIGGERS HOTLINE MUST BE CONTACTED SEPARATELY.

ALL HOLES OR OPENINGS BELOW SUBGRADE RESULTING FROM ABANDONMENT OR REMOVAL OF EXISTING STRUCTURES SHALL BE FILLED WITH GRANULAR BACKFILL.

TEMPORARY STORAGE OF ANY EXCAVATED MATERIAL WILL NOT BE PERMITTED IN WETLANDS.

TRAFFIC CONTROL DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

CONCRETE JOINTS SHALL MATCH ABUTTING PAVEMENT AND CURB AND GUTTER JOINTS UNLESS OTHERWISE DESIGNATED BY THE ENGINEER.

THE LCOATIONS OF EXISTING UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN..

EROSION CONTROL BMP'S ARE AT SUGGESTED LOCATIONS. THE ACTUAL LOCATIONS WILL BE DETERMINED BY THE CONTRACTORS ECIP AND BY THE ENGINEER. EROSION CONTROL BMP'S SHALL BE UNTIL THE ENGINEER DETERMINES THAT THE BMP IS NO LONGER REQUIRED.

OTHER CONTACTS

WISDOT DESIGN

MR. CASEY WIERZCHOWSKI, PROJECT MANAGER  
141 NW BARSTOW ST.  
WAUKESHA, WI 53187 0798  
PHONE: (262 521-4427  
casey.wierzchowski@dot.wi.gov

WISCONSIN DNR

MR. MICHAEL THOMPSON  
2300 N. MARTIN LUTHER KING DR.  
MILWAUKEE WI 53213  
PHONE: (414) 263-8648  
FAX: (414) 263-8483  
MichaelC.Thompson@Wisconsin.gov

UTILITY CONTACTS

WE ENERGIES (ELECTRIC)

MR. DAN SANDE, PROJECT MANAGER  
333 W. EVERETT ST - A299  
MILWAUKEE, WI 53203  
PHONE: (414) 221-4578  
FAX: (414) 221-2336  
dan.sande@we-energies.com

WISDOT STOC

MR. JEFF MADSON  
433 W ST. PAUL AVE., STE 300  
MILWAUKEE, WI 53203 3007  
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jeffrey.madson@dot.wi.gov

MILWAUKEE, CITY OF

MR. JEFFREY POLENSKE, CITY ENGINEER  
841 N BROADWAY RM 701  
MILWAUKEE, WI 53202  
PHONE: (414) 286-3701  
FAX: (414) 286-5994  
jeffrey.polenske@milwaukee.gov  
MAJOR PROJECTS CONTACT  
MR. SAMUEL MEDHIN  
PHONE: 414-286-0474  
samuel.medhin@milwaukee.gov

MILWAUKEE WATER WORKS

MS. CARRIE LEWIS, SUPERINTENDENT  
841 N BROADWAY RM 409  
MILWAUKEE, WI 53202  
PHONE: (414) 286-2801  
FAX: (414) 286-2672  
carrie.lewis@milwaukee.gov

CITY OF GREENFIELD

MR. RICHARD SOKOL, DIR. OF NGHBRHD SVC.  
7325 W. FOREST HOME AVE.  
ROOM 203  
GREENFIELD, WI 53220  
PHONE: (414) 329-5325  
FAX: (414) 543-9615  
ricks@greenfieldwi.us

WISDOT TRAFFIC LIGHTING

MR. ERIC PEREA, SE REGION LIGHTING ENGR  
141 NW BARSTOW ST.  
WAUKESHA, WI 53187 0798  
PHONE: (262) 574-5422  
eric.perea@dot.wi.gov

WISC. GAS CO. D/B/A WE ENERGIES

MR. DAN SANDE, PROJECT MANAGER  
333 W. EVERETT ST - A299  
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PHONE: (414) 221-4578  
FAX: (414) 221-2336  
dan.sande@we-energies.com

ATC MANAGEMENT, INC.

MR. MIKE OLSON  
801 O'KEEFE ROAD  
PO BOX 6113  
DEPERE, WI 54115-6113  
PHONE: (920) 338-6582  
molson@atcllc.com

WISDOT OVERHEAD SIGNING

MR. DENNIS NEWTON  
935 S. 60TH STREET  
WEST ALLIS, WI 53214  
PHONE: (414) 266-1157  
dennis.newton@dot.wi.gov

TDS METROCOM

MR. MICHAEL JOHNSON, SR NETWORK SPECIALIST  
20875 CROSSROADS CIRCLE  
WAUKESHA, WI 53186  
PHONE: (262) 754-3052  
FAX: (262) 717-6002  
michael.johnson@tdstelecom.com

CITY OF GREENFIELD

MR. DANIEL EWERT, SUP. OF PUBLIC WORKS  
4551 S. 52ND ST.  
GREENFIELD, WI 53220  
PHONE: (414) 761-5374  
dane@greenfieldwi.us

TIME WARNER CABLE

TW CABLE ENGINEERING  
1320 N. MARTIN LUTHER KING JR. DR.  
MILWAUKEE, WI 53212  
PHONE: (414) 277-4045  
wis.engineering@twcable.com

TW TELECOM

MR. JOHN COTTRELL  
OSP ENGINEERING DEPARTMENT  
3235 INTERTECH DRIVE, SUITE 600  
BROOKFIELD, WI 53045  
PHONE: (414) 908-1011  
john.cottrell@twtelecom.com

AT&T WISCONSIN

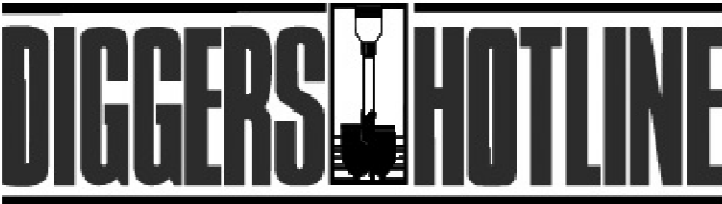
MS. KEVIN ANDERSON, AREA MANAGER  
7721 W. FONDULAC AVE.  
MILWAUKEE, WI 53218  
PHONE: (414) 536-2971  
FAX: (262) 896-7435  
ka8421@att.com

MILWAUKEE METRO SEWERAGE DIST.

MS. DEBRA JENSEN, PLANNING SVCS SUPERVISOR  
260 W SEEBOTH ST  
MILWAUKEE, WI 53204 1446  
PHONE: (414) 225-2143  
djensen@mmsd.com

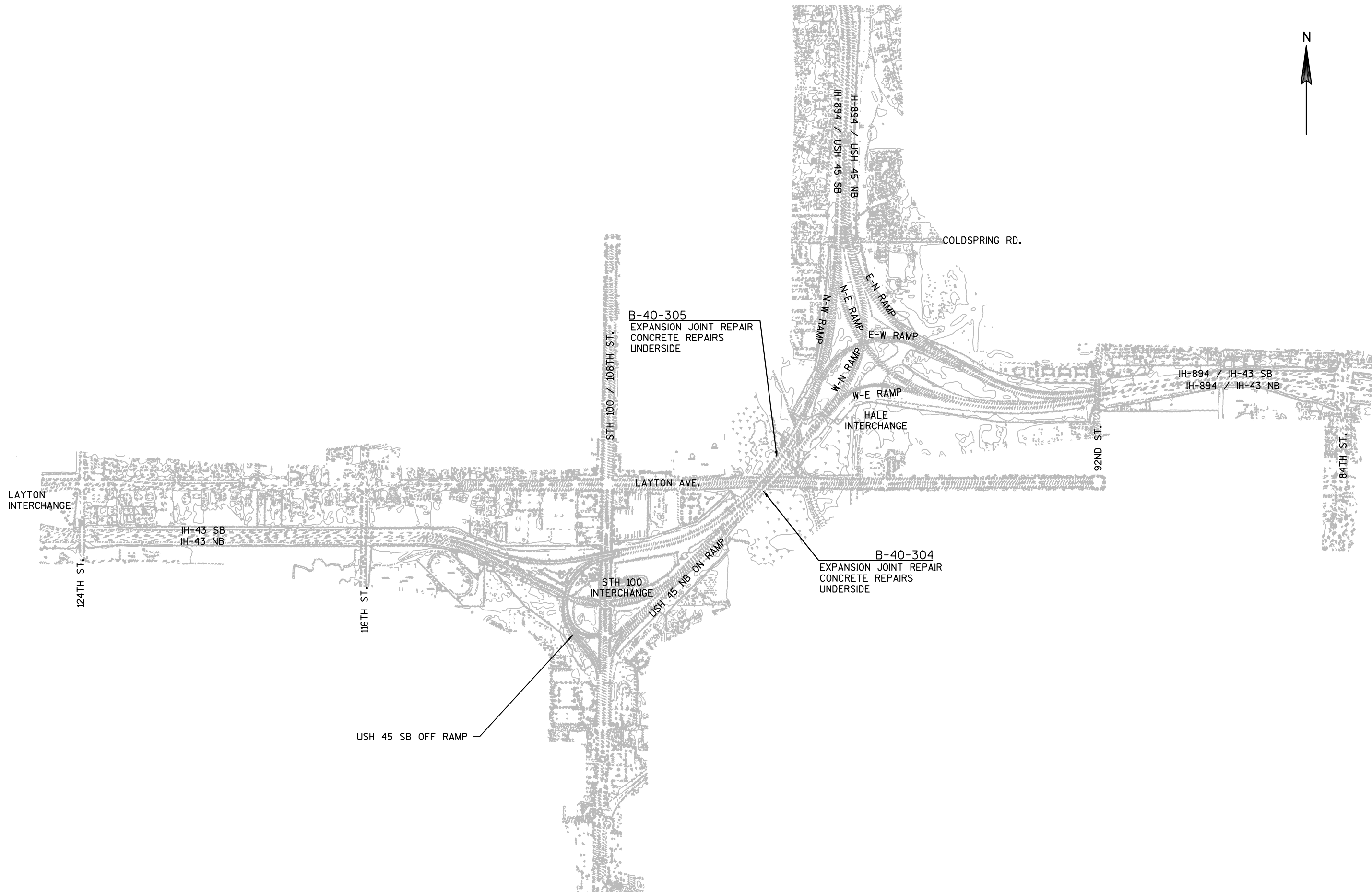
TO OBTAIN LOCATION OF  
PARTICIPANTS' UNDERGROUND  
FACILITIES BEFORE YOU DIG IN  
WISCONSIN

WIS. STATUTE 182.0175 (1974)  
REQUIRES MIN. OF 3 WORK DAYS  
NOTICE BEFORE YOU EXCAVATE.

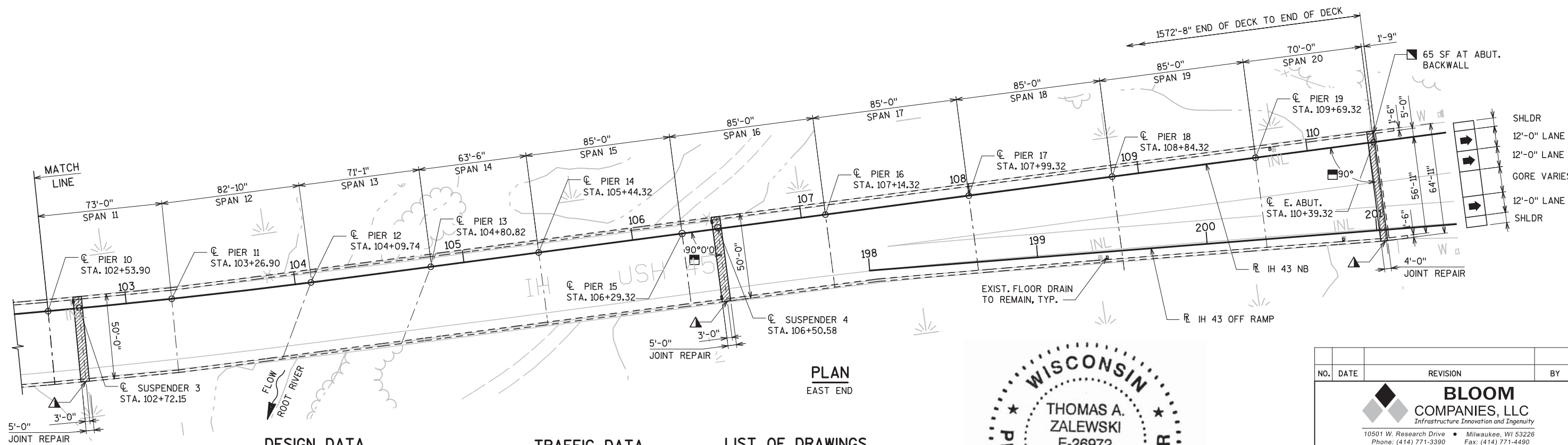
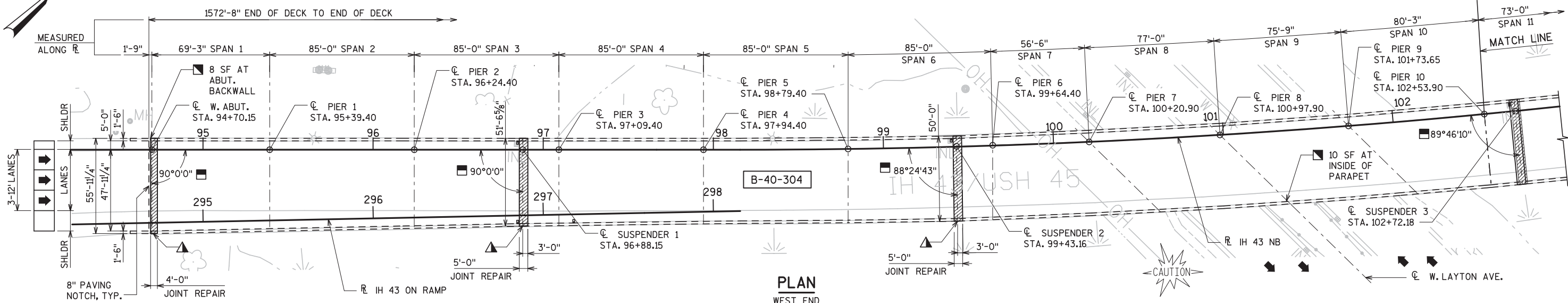


Dial 811 or (800) 242-8511

www.DiggersHotline.com



|              |           |  |      |       |            |
|--------------|-----------|--|------|-------|------------|
| DATE 17APR14 |           | E S T I M A T E O F Q U A N T I T I E S                        |      |       |            |
| LINE         |           |  |      |       | 1090-33-61 |
| NUMBER       | ITEM      | ITEM DESCRIPTION   | UNIT | TOTAL | QUANTITY   |
| 0010         | SPV. 0105 | SPECIAL 4001. FURNISH AND DELIVER<br>EXPANSION DEVICE B-40-304 | LS   | 1.000 | 1.000      |
| 0020         | SPV. 0105 | SPECIAL 4002. FURNISH AND DELIVER<br>EXPANSION DEVICE B-40-305 | LS   | 1.000 | 1.000      |

**DESIGN DATA****ULTIMATE DESIGN STRESSES**

CONCRETE MASONRY  
 $f'_c = 4,000$  psi

BAR STEEL REINFORCEMENT, GRADE 60  
 $f_y = 60,000$  psi

STRUCTURAL STEEL CARBON A709, GRADE 36  
 $f_y = 36,000$  psi

**LIVE LOAD**

DESIGN LOAD: HS-20\*  
 INVENTORY RATING: HS-17\*  
 OPERATIONAL RATING: HS-26\*  
 WISCONSIN STANDARD PERMIT VEHICLE LOAD  
 (WIS-SPV): 190 KIPS\*

\* TAKEN FROM HSI 11/13/2013

**TRAFFIC DATA****IH 43 NB**

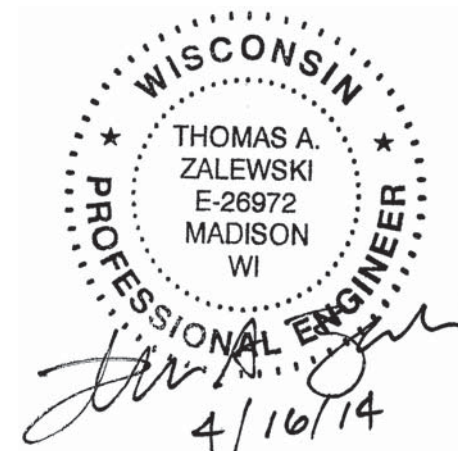
A.D.T. = 39,600 (2014)  
 A.D.T. = 43,500 (2034)  
 R.D.S. = 60 MPH

**CURVE DATA****IH 43 NB**

P.C 98+15.79  
 P.T 104+35.79  
 $R = 4583.66'$   
 $D = 1^\circ 15' 00''$   
 $\Delta = 7^\circ 45' 00''$   
 $T = 310.47'$   
 $SE = 0.022^\circ$

**LIST OF DRAWINGS**

1. GENERAL PLAN
2. TYPICAL SECTION
3. CONSTRUCTION STAGING
4. EXISTING FRAMING PLAN 1
5. EXISTING FRAMING PLAN 2
6. PIN AND HANGER CLEANING
7. DIAPHRAGM CONNECTION REPAIR
8. EXPANSION JOINT REINFORCING 1
9. EXPANSION JOINT REINFORCING 2
10. EXPANSION JOINT REINFORCING 3
11. EXPANSION JOINT DETAILS (1 OF 2)
12. EXPANSION JOINT DETAILS (2 OF 2)
13. BILL OF BARS
14. BAR COUPLERS



**STRUCTURE DESIGN CONTACTS**

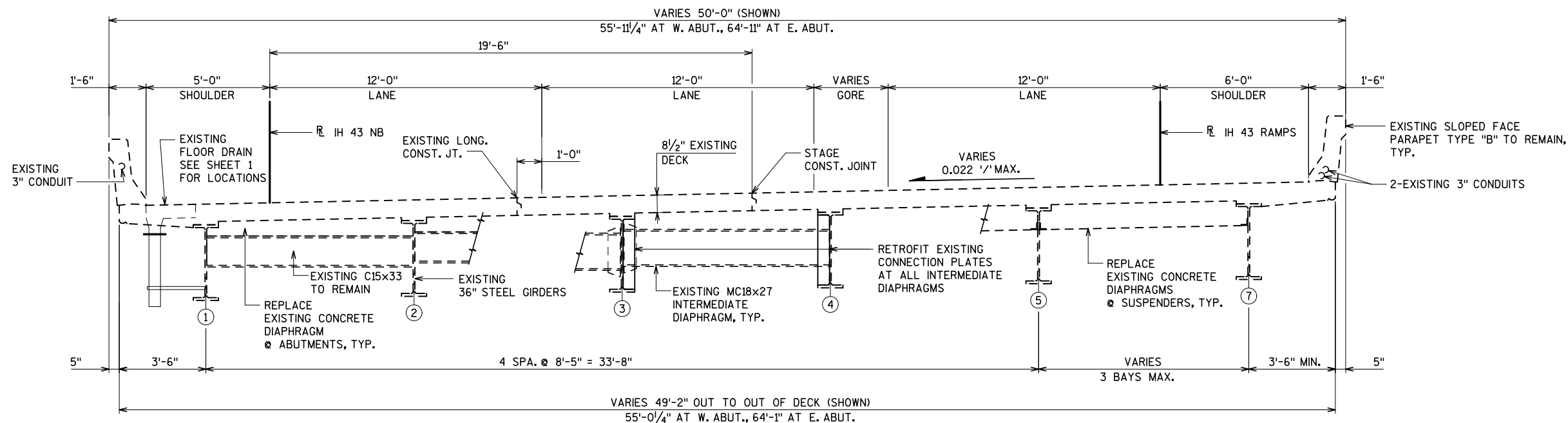
BUREAU OF STRUCTURES CONTACT:  
 WILLIAM DREHER  
 (608) 266-8489

CONSULTANT CONTACT:  
 JASON SADOWSKI  
 (414) 292-4508

**LEGEND**

- ▲ STRIP SEAL EXPANSION JOINT
- ANGLES MEASURED FROM TANGENT TO  $\mathcal{R}$  AT LOCATION OF INTERSECTION, TYP.
- LOCATION FOR CONCRETE SURFACE REPAIR.

|   |      |   |              |                    |               |
|---|------|---|--------------|--------------------|---------------|
|   |      |   |              |                    |               |
| NO.   | DATE | REVISION  |              |                    | BY            |
| <div></div> <div><b>BLOOM</b><br/>COMPANIES, LLC<br/><i>Infrastructure Innovation and Ingenuity</i></div> <div>10501 W. Research Drive • Milwaukee, WI 53226<br/>Phone: (414) 771-3390 • Fax: (414) 771-4490</div> |      |   |              |                    |               |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION  |      |   |              |                    |               |
| ACCEPTED  |      | <br>CHIEF STRUCTURES DESIGN ENGINEER |              | 04/16/14<br>DATE   |               |
| STRUCTURE B-40-304  |      |   |              |                    |               |
| IH 43/USH 45 NB OVER W. LAYTON AVE  |      |   |              |                    |               |
| COUNTY  |      | MILWAUKEE   |              | CITY<br>GREENFIELD |               |
| DESIGN SPEC. REHABILITATION N/A   |      |   |              |                    |               |
| DESIGNED BY   |      | JRS   | DESIGN CK'D. | BDT                | DRAWN BY      |
|   |      |   |              |                    | TB            |
|   |      |   |              |                    | PLANS CK'D.   |
|   |      |   |              |                    | JRS           |
| GENERAL PLAN  |      |   |              |                    | SHEET 1 OF 14 |



(LOOKING EAST)

▲

| ITEM<br>NUMBER | BID ITEMS                                     | UNIT | TOTAL |
|----------------|---|------|-------|
| SPV.0105.4001  | FURNISH AND DELIVER EXPANSION DEVICE B-40-304 | LS   | 1     |
|                |   |      |       |

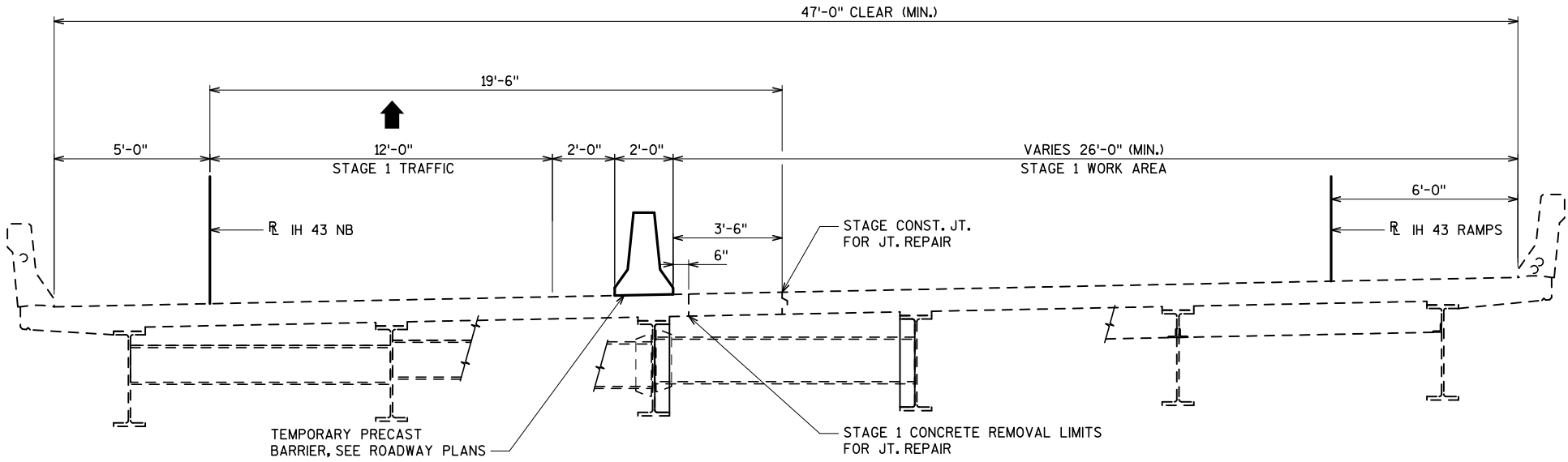
THE PROPOSED WORK INCLUDES PROVIDING ALL STEEL, NEOPRENE STRIP SEALS, INCIDENTAL HARDWARE, FABRICATION, STORAGE, AND DELIVERY FOR EXPANSION DEVICES. THIS WORK INCLUDES FIELD VERIFICATION OF ALL EXISTING DIMENSIONS REQUIRED, OTHER PLANS AND DETAILS ARE INCLUDED FOR REFERENCE ONLY.

DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL STRUCTURE PLANS, THE CONTRACTOR SHALL VERIFY ALL DIMENSION IN THE FIELD PRIOR TO FABRICATION AND CONSTRUCTION.

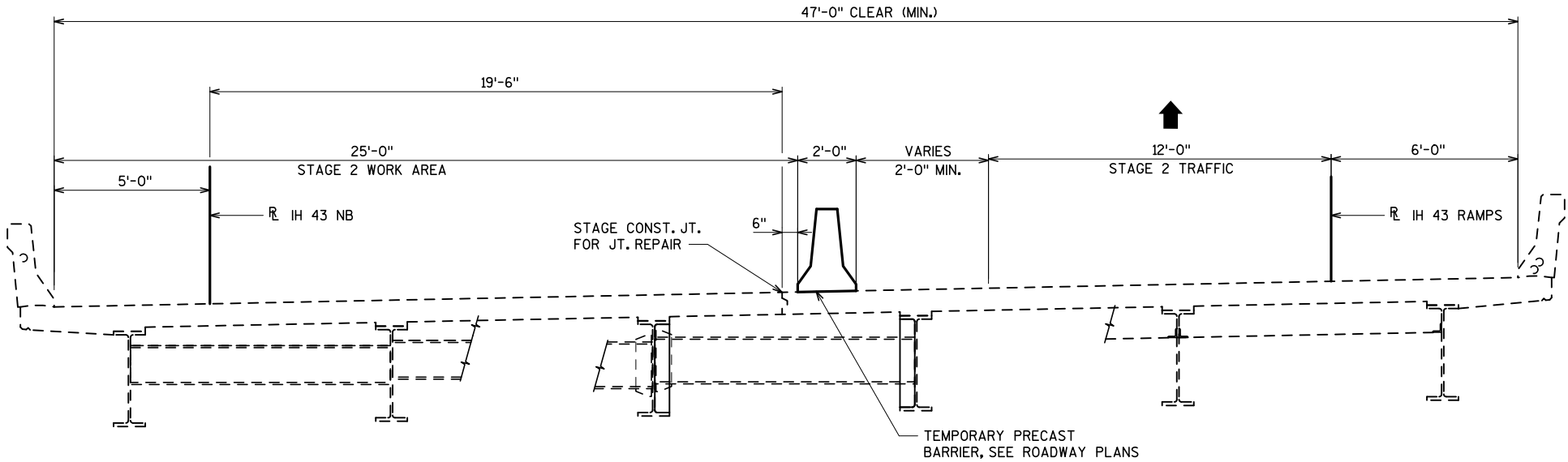
EXPANSION DEVICE ASSEMBLIES, INCLUDING ANCHOR STUDS, NEOPRENE SEALS, PARAPET PLATES, AND HARDWARE WILL BE PAID FOR AT THE LUMP SUM PRICE BID FOR "FURNISH AND DELIVER EXPANSION DEVICE B-40-304.

FILE NAME: F:\BMI-3160E Hale Interchange Bridges\structure\cds\1030\_33-61.4-15-2014\FB-40-304\02B40304\_4\_ts.dgn  
DATE: 4/16/2014 9:30:59 AM Plotted by: flegear PEN TABLE: v8\_Structural\_rev.tbl

|   |      |               |                 |
|---|------|---------------|-----------------|
|   |      |               |                 |
| NO.   | DATE | REVISION      | BY              |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |               |                 |
| STRUCTURE B-40-304  |      |               |                 |
| DRAWN BY  |      | TB            | PLANS CK'D. JRS |
| TYPICAL SECTION   |      | SHEET 2 OF 14 |                 |
|   |      |               |                 |



**TYPICAL SECTION - STAGE 1**  
(LOOKING EAST)



**TYPICAL SECTION - STAGE 2**  
(LOOKING EAST)

**NOTES**

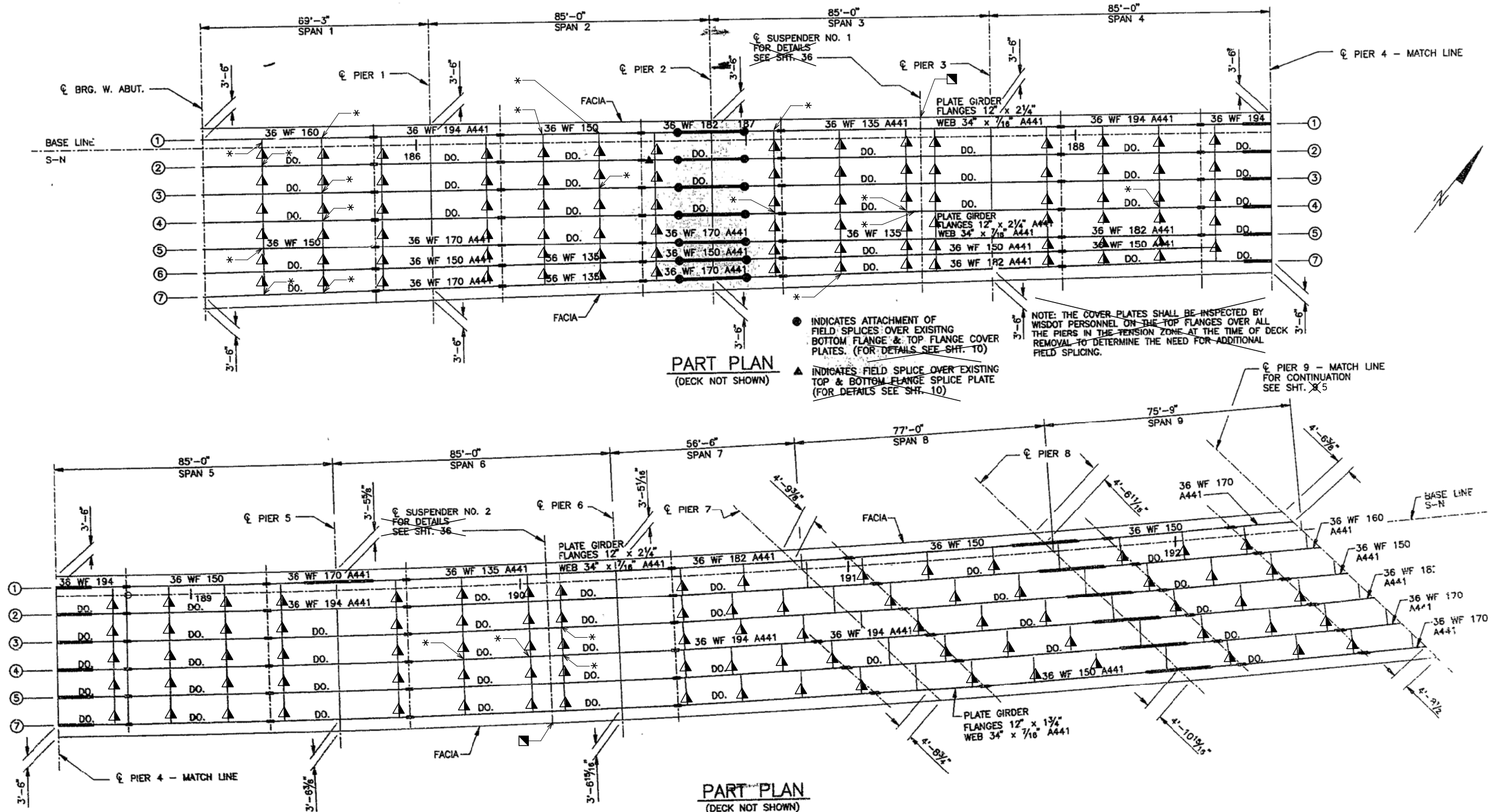
SEE TRAFFIC CONTROL PLANS FOR COMPLETE STAGING DETAILS.

TEMPORARY BARRIER SHOULD NOT BE ANCHORED TO THE DECK.

FILE NAME: F:\BIM-360E Hole Interchange Bridges\Structures\cds\1090-33-61.4-15-2014-B-40-304\03840304\_staging.dgn  
DATE: 4/15/2014 11:58 AM  
PLOTTER: HP DesignJet 500  
PLOTTER: HP DesignJet 500  
PLOTTER: HP DesignJet 500

| NO.   | DATE | REVISION      | BY                 |
|---|------|---------------|--------------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |               |                    |
| STRUCTURE B-40-304  |      |               |                    |
| DRAWN<br>BY   |      | TB            | PLANS<br>CK'D. JRS |
| CONSTRUCTION<br>STAGING   |      | SHEET 3 OF 14 |                    |





## NOTES

FRAMING PLAN SHOWN IS PER 1991 REHABILITATION PLANS.

- ▲ INDICATES DIAPHRAGM LOCATION WITHOUT PREVIOUS CONNECTION PLATE RETROFIT REPAIR AT EITHER END. REPAIR PER "EXISTING CONNECTION PLATE RETROFIT DETAIL" ON SHEET 7 AT BOTH ENDS OF THE DIAPHRAGM. (397 LOCATIONS SHOWN)

- \* INDICATES LOCATION WITH A CRACK OBSERVED AT THE DIAPHRAGM CONNECTION PLATE WELD. REPAIR PER "GIRDER CRACK REPAIR DETAIL" ON SHEET 7. KNOWN CRACK LOCATIONS ARE MARKED IN THE FIELD. PERFORM AT OTHER LOCATIONS IF CRACKS ARE OBSERVED. (22 LOCATIONS SHOWN, 30 ASSUMED TOTAL QTY.)

DO NOT PERFORM RETROFIT REPAIRS AT ABUTMENT AND PIER DIAPHRAGM CONNECTION PLATES.

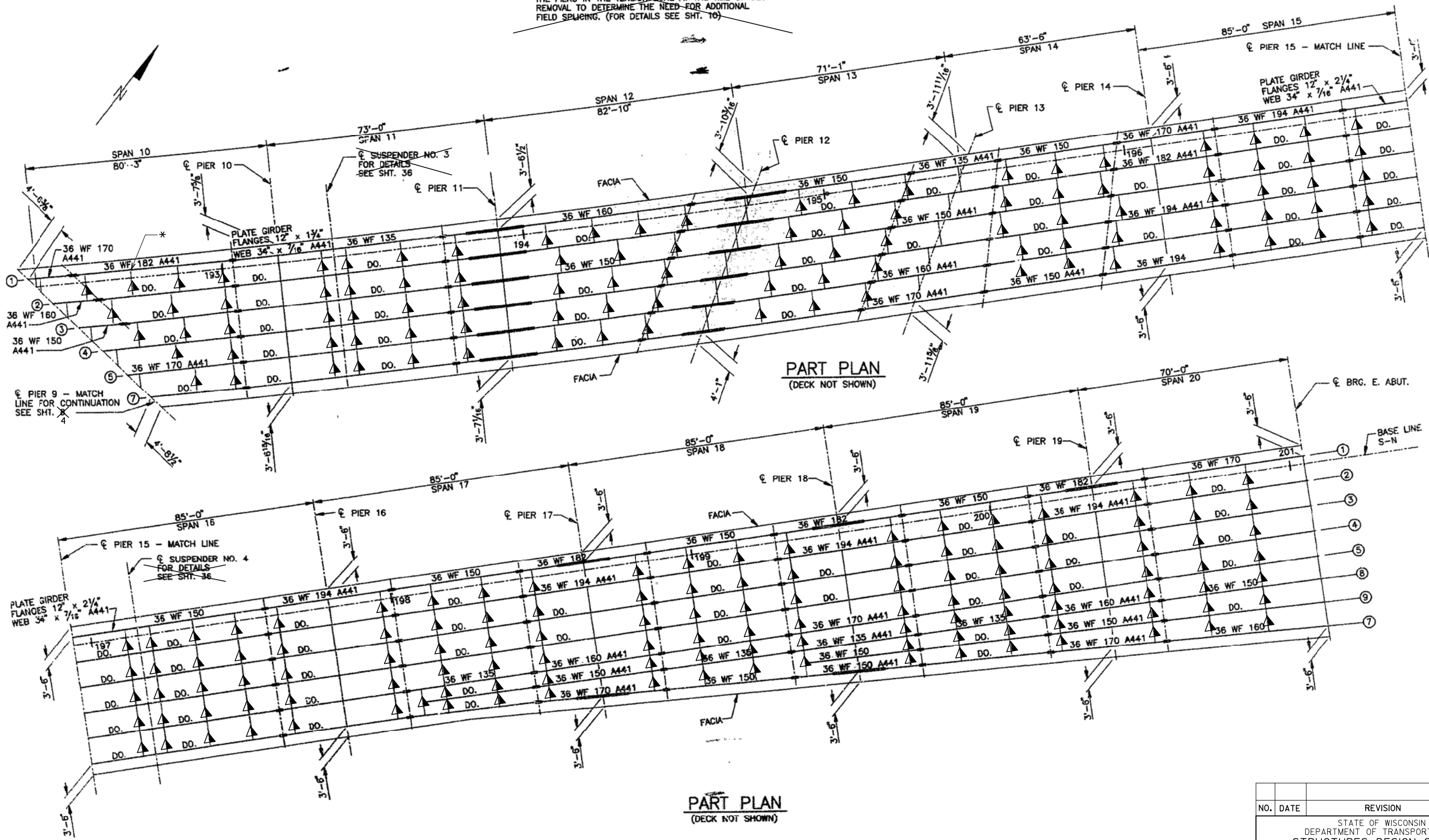
SEE SHEET 7 FOR CONNECTION PLATE RETROFIT DETAILS.

- INDICATES LOCATION TO PERFORM PIN AND HANGER CLEANING. CLEAN PIN AND HANGER ASSEMBLY AT ALL GIRDERS ALONG THIS JOINT. (SUSPENDERS 1 AND 2 ONLY)

| NO.   | DATE | REVISION | BY              |
|---|------|----------|-----------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |          |                 |
| STRUCTURE B-40-304  |      |          |                 |
| DRAWN BY  |      | TB       | PLANS CK'D. JRS |
| EXISTING FRAMING PLAN 1   |      |          | SHEET 4 OF 14   |



NOTE: THE COVER PLATES SHALL BE INSPECTED BY WISDOT PERSONNEL ON THE TOP FLANGES OVER ALL THE PIERS IN THE TENSION ZONE AT THE TIME OF DECK REMOVAL TO DETERMINE THE NEED FOR ADDITIONAL FIELD SPlicing. (FOR DETAILS SEE SHT. 16)



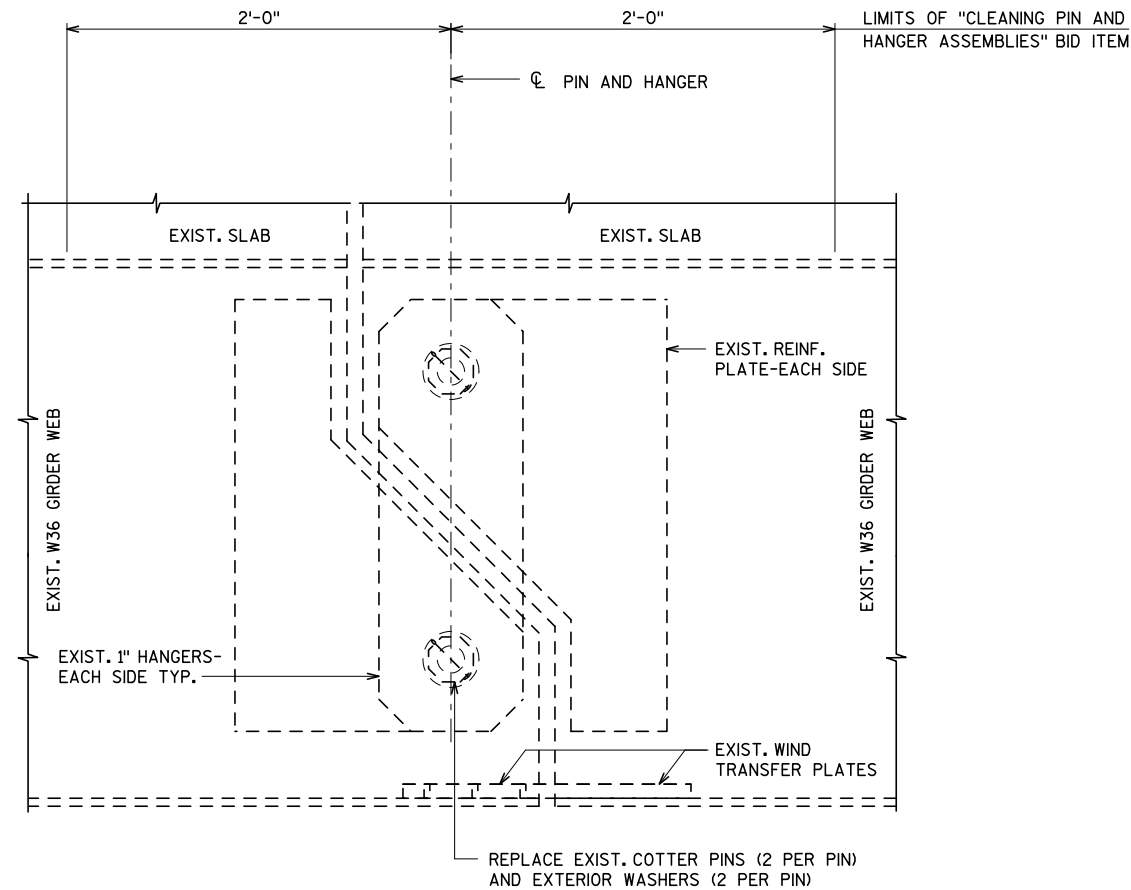
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DATE: 4/15/2014 10:36 AM Plotted by: Heger

NOTES

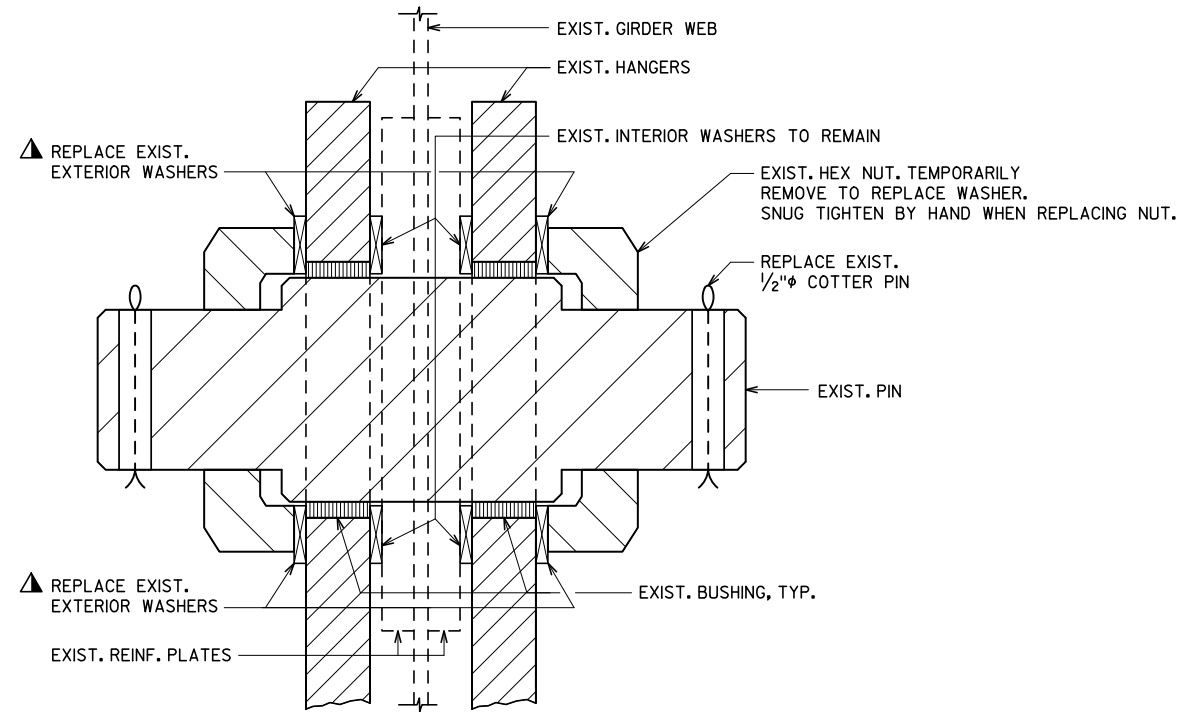
SEE SHEET 4 FOR NOTES.

| NO.   | DATE | REVISION      | BY              |
|---|------|---------------|-----------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |               |                 |
| STRUCTURE B-40-304  |      |               |                 |
| DRAWN BY  |      | TB            | PLANS CK'D. JRS |
| EXISTING FRAMING PLAN 2   |      | SHEET 5 OF 14 |                 |

FILE NAME: F:\BIM-360E Hale Interchange Bridges\Structures\B-40-304\B-40-304-06840304\_hanger.dgn  
DATE: 4/15/2014 11:55 AM  
PLOTTER: HP DesignJet 5000  
PLOT TABLE: v8.Structural\_rev.tbl



PIN AND HANGER ELEVATION



SECTION THRU EXISTING PIN

NOTES

CLEAN AND PAINT EXISTING GIRDER AND PIN AND HANGER ASSEMBLIES PER SPECIAL PROVISIONS, 2'-0" TO EACH SIDE OF THE  $\phi$  OF PIN. CLEAN AND PAINT ALL EXPOSED COMPONENTS WITHOUT DISASSEMBLING.

CLEAN PIN AND HANGER ASSEMBLIES AT LOCATIONS SHOWN ON "FRAMING PLAN" SHEETS.

THE BID ITEM "CLEANING PIN AND HANGER ASSEMBLIES B-40-304" INCLUDES ALL WORK SHOWN INCLUDING REPLACEMENT OF NON-METALLIC WASHERS AND COTTER PINS.

NON-METALLIC WASHERS SHALL HAVE AN INSIDE DIAMETER OF BETWEEN 0.005" AND 0.010" LARGER THAN THE PIN DIAMETER.

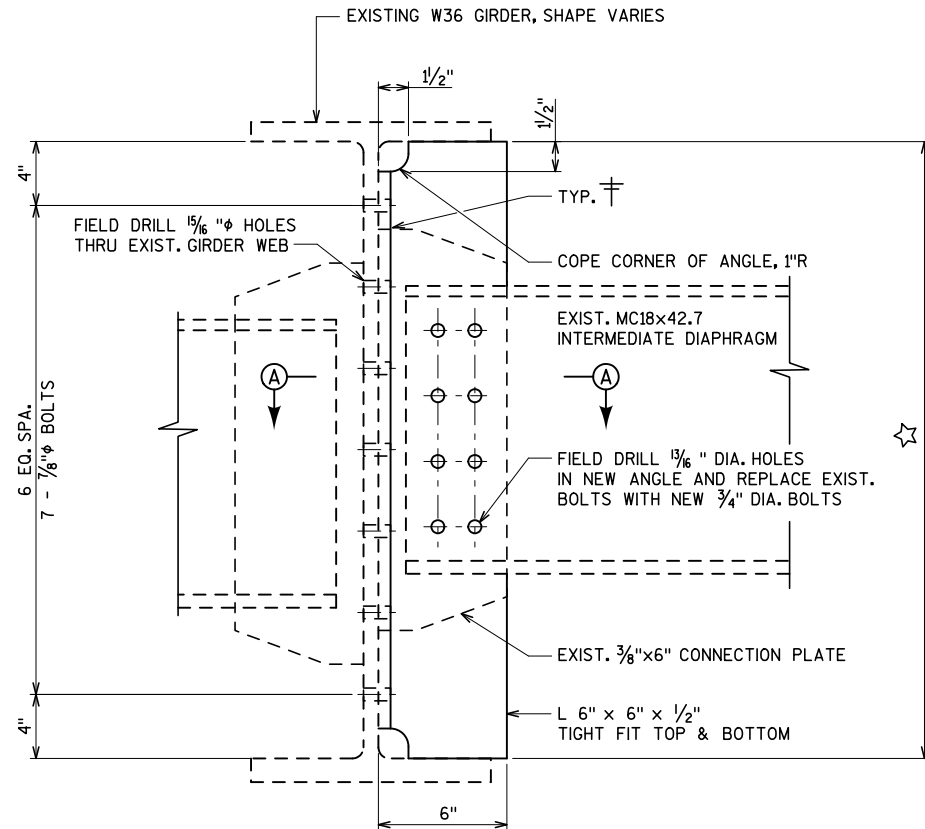
▲ NON-METALLIC WASHERS REQUIRED FOR USE AS SPACERS BETWEEN THE HANGER PLATES AND NUTS SHALL BE MADE FROM ONE OF THE FOLLOWING MATERIALS:

1. PHENOLIC, CANVAS REINFORCED, MIL-P-15035
2. POLYETHYLENE, HIGH DENSITY, BLACK ASTM D 1248, TYPE 111, CLASS B
3. ACETAL, FEDERAL SPECIFICATION L-P-392
4. TEFLON TFE, MIL-P-22241A

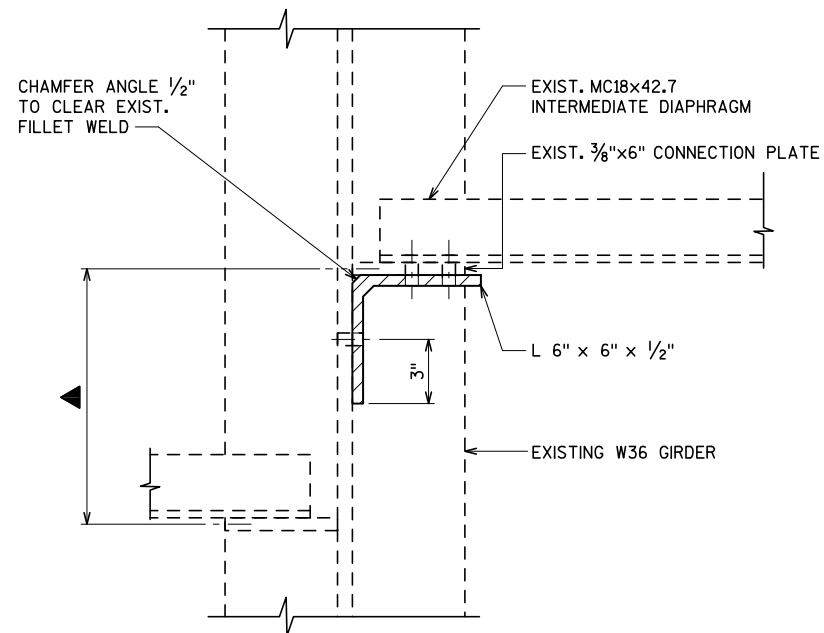
| NO.   | DATE | REVISION | BY              |
|---|------|----------|-----------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |          |                 |
| STRUCTURE B-40-304  |      |          |                 |
| DRAWN BY  |      | TB       | PLANS CK'D. JRS |
| PIN AND HANGER CLEANING   |      |          | SHEET 6 OF 14   |

FILE NAME: F:\BIM-360E\Hole Interchange Bridges\Structures\1090-33-61\4-15-2014\B-40-304\07B40304\_dia.ph.dgn  
DATE: 4/15/2014 10:55 AM  
Plotted by: Hiegar  
PEN TABLE: v8.Structural\_rev.tbl

8

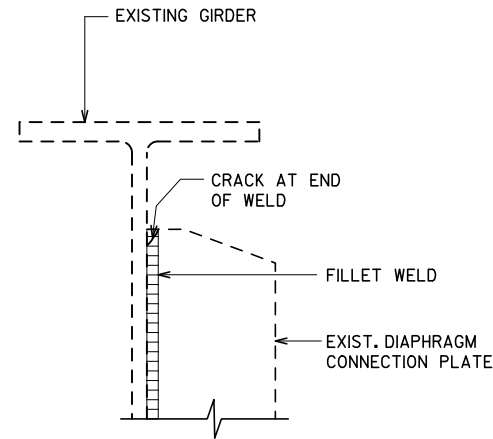


**EXISTING CONNECTION PLATE RETROFIT DETAIL**

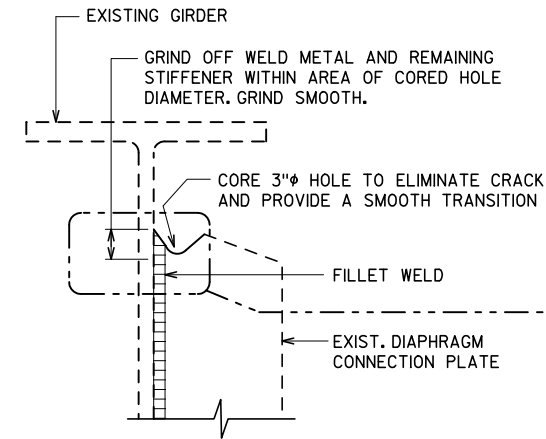


**SECTION A-A**

▲ USE DETAIL "A" WHEN THE DISTANCE BETWEEN EXIST. CONN. PLATES DOES NOT PERMIT HOLES IN EXIST. GIRDER WEB TO BE DRILLED AND BOLTED.



**EXISTING CONDITION**



**REPAIRED CONDITION**

**GIRDER CRACK REPAIR DETAIL**

**NOTES**

ALL NEW STEEL SHALL BE ASTM A709 GRADE 36.

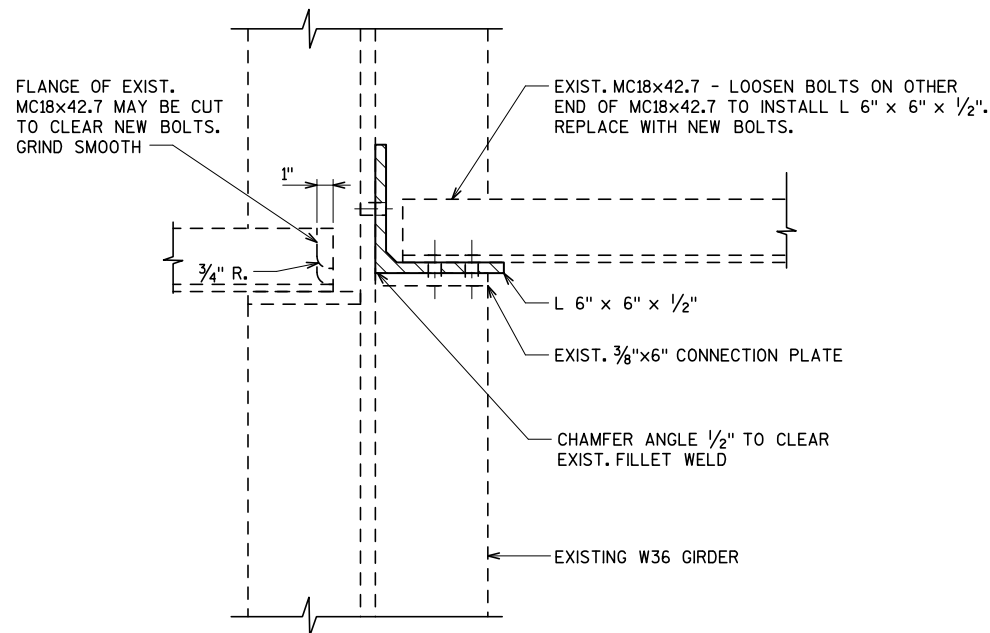
ALL BOLTS TO BE A325 FRICTION TYPE HIGH TENSILE STRENGTH BOLTS.

NEW STEEL SHALL BE SHOP PAINTED TO MATCH THE EXISTING GIRDERS ACCORDING TO THE BID ITEM "PAINTING EPOXY SYSTEM B-40-304".

REPAIR PAINT DAMAGED OR REMOVED BY INSTALLING THE RETROFIT DETAIL. WORK IS INCIDENTAL TO THE BID ITEM "PAINTING EPOXY SYSTEM B-40-304".

☆ ANGLE LENGTH VARIES, SEE FRAMING PLAN FOR GIRDER SIZES. ANGLE MAY BE FIELD CUT TO FIT, GRIND SMOOTH.

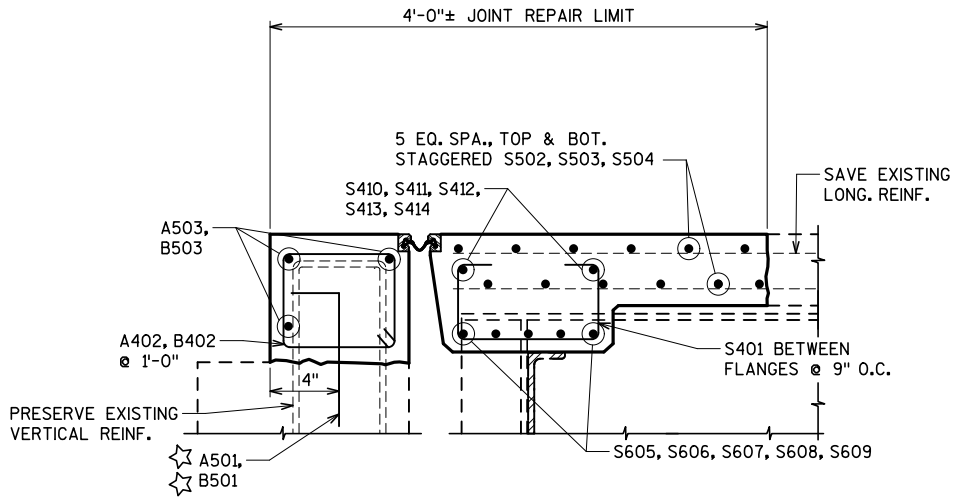
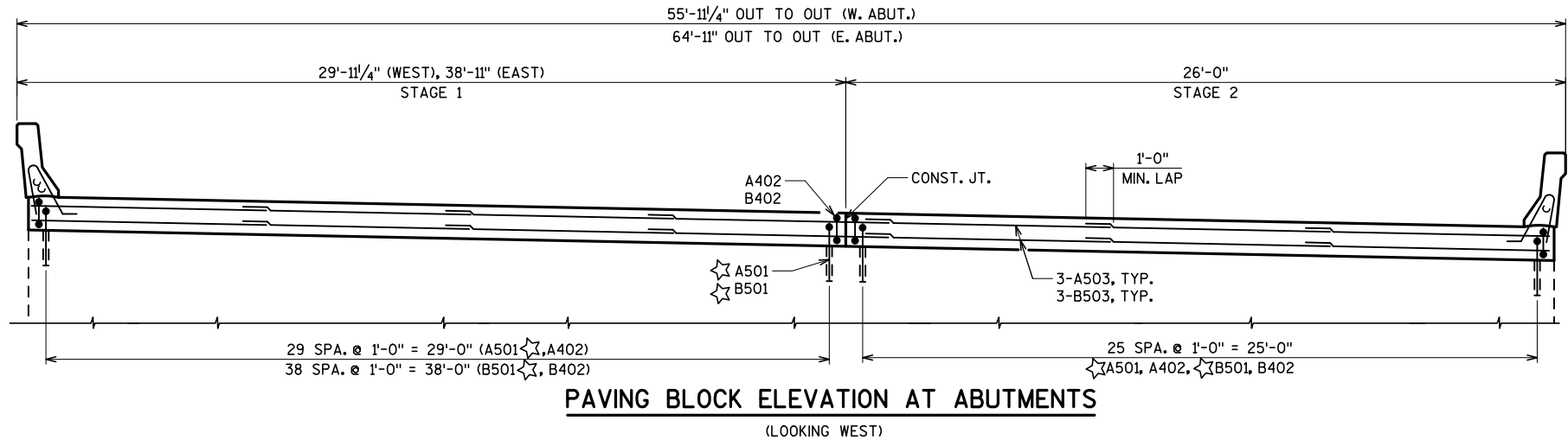
† INSPECT EXISTING FILLET WELDS AT CONNECTION PLATES. IF CRACKS ARE OBSERVED REMOVE PER PLAN AT THE DIRECTION OF THE FIELD ENGINEER. BID ITEM FOR THIS WORK IS "GIRDER CRACK REPAIR".



**DETAIL "A"**

| NO.   | DATE | REVISION      | BY              |
|---|------|---------------|-----------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |               |                 |
| STRUCTURE B-40-304  |      |               |                 |
| DRAWN BY  |      | TB            | PLANS CK'D. JRS |
| DIAPHRAGM CONNECTION REPAIRS  |      | SHEET 7 OF 14 |                 |

8

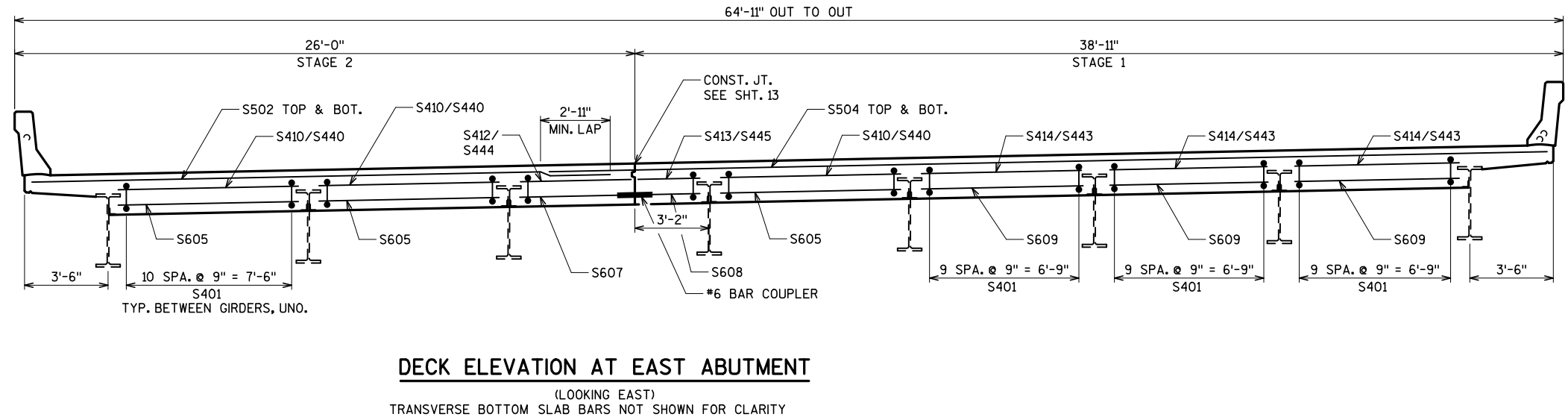
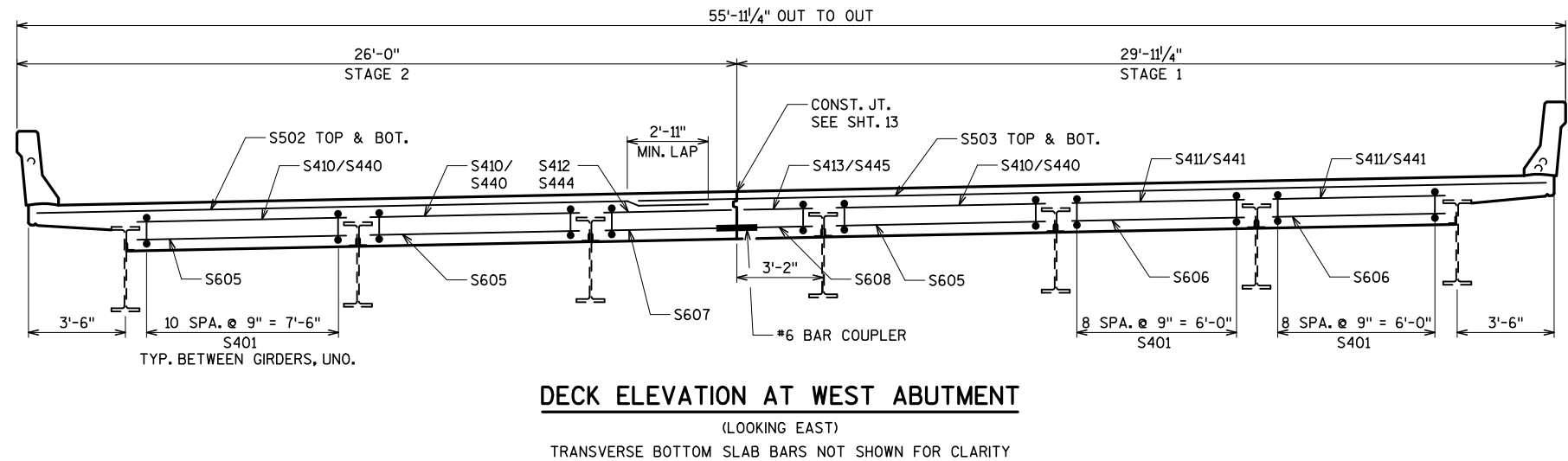


**SECTION THRU JOINT AT ABUTMENT**

NORMAL TO  $\perp$  SUBSTRUCTURE  
SEE SHEET 11 FOR S440 THRU S445 BARS,  
WHICH ARE NOT SHOWN FOR CLARITY.  
SEE SHEET 11 FOR DIMENSIONS

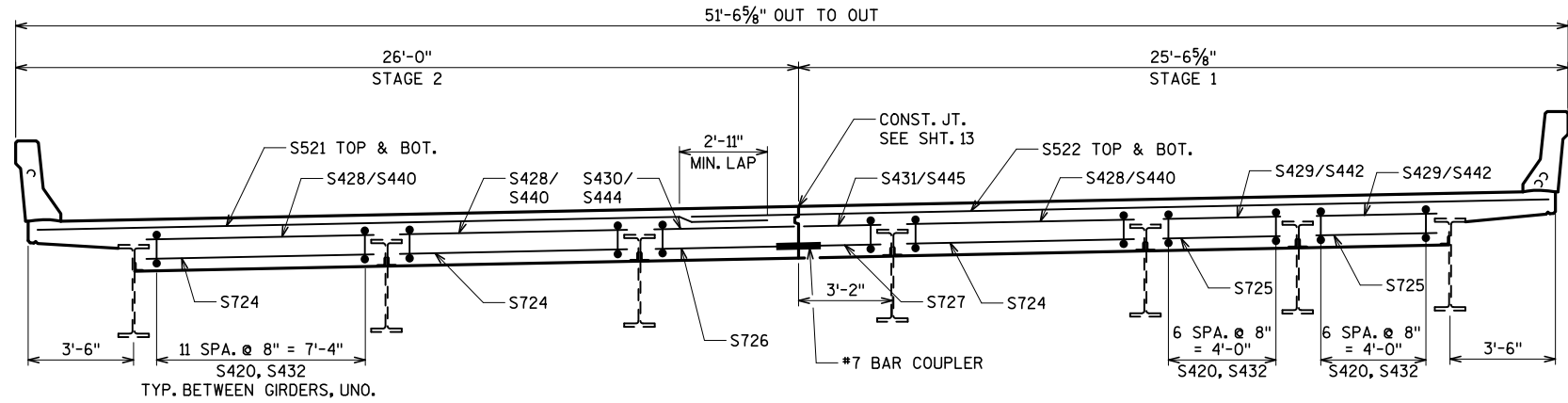
**LEGEND**

- ☆ EXISTING BARS ARE LIKELY TO BE CORRODED AND/OR DAMAGED DURING CONCRETE REMOVAL. PRESERVE AND INCORPORATE AS MUCH REBAR AS PRACTICAL. SUPPLEMENT WITH THE MASONRY ANCHORS TYPE L NO. 5 MIN. PULLOUT CAPACITY OF 19 KIPS, EMBED A MINIMUM OF 1'-6" INTO CONCRETE. SPACE AT 1'-0". TURN 10" LEG AS NECESSARY TO FIT.



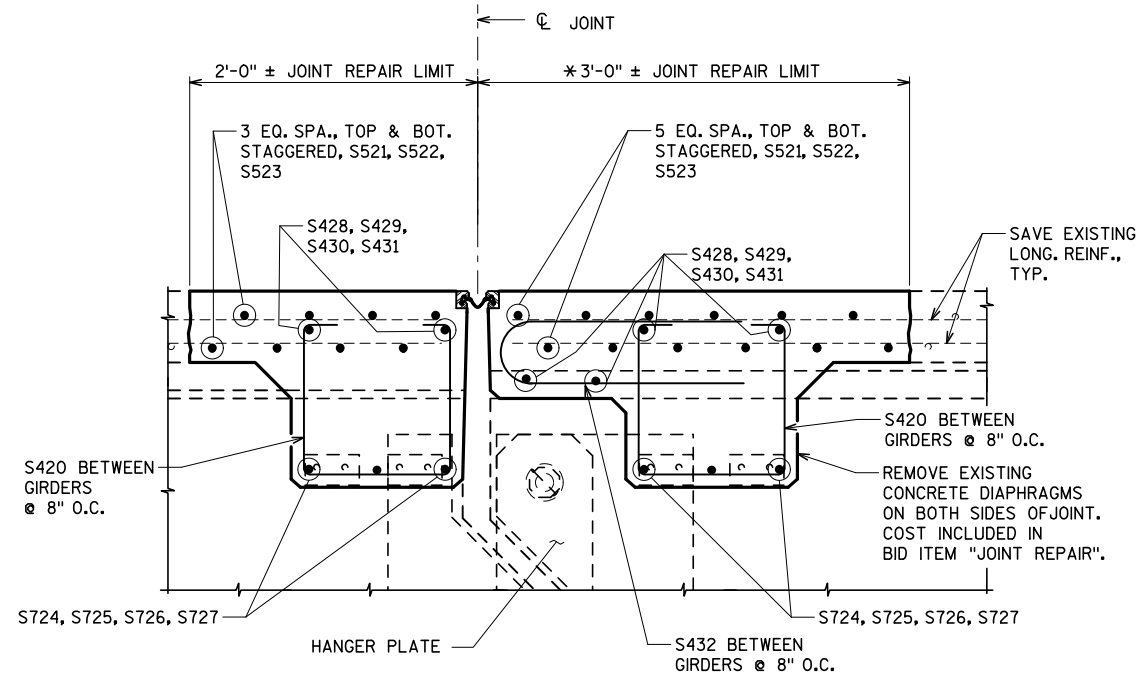
FILE NAME: F:\BIM-360E\Hole Interchange Bridges\Structure\1090-33-61\4-15-2014-B-40-304\08940304\_Joint Reinf.dgn  
DATE: 4/15/2014 11:52:00 AM  
PEN TABLE: v8.Structural\_rev.tbl  
Plotted by: Hiegar

| NO.   | DATE | REVISION           | BY            |
|---|------|--------------------|---------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |                    |               |
| STRUCTURE B-40-304  |      |                    |               |
| DRAWN<br>BY TB  |      | PLANS<br>CK'D. JRS |               |
| EXPANSION JOINT<br>REINFORCING 1  |      |                    | SHEET 8 OF 14 |



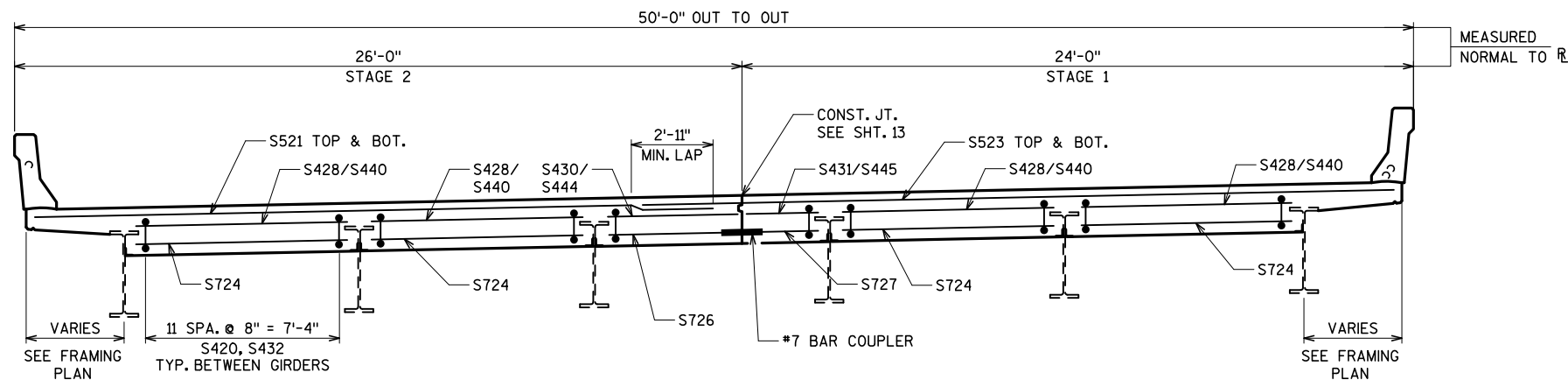
DECK ELEVATION AT SUSPENDER 1

(LOOKING EAST)  
TRANSVERSE BOTTOM SLAB BARS NOT SHOWN FOR CLARITY



SECTION THRU JOINT AT SUSPENDER

NORMAL TO  $\perp$  SUBSTRUCTURE  
SEE SHEET 11 FOR S440 THRU S445 BARS, WHICH ARE NOT SHOWN FOR CLARITY.  
SEE SHEET 11 FOR DIMENSIONS  
\* 3'-0" DIMENSION IS LOCATED TO THE SIDE OF EXPANSION JOINT WITH HANGER PLATE.



DECK ELEVATION AT SUSPENDERS 2, 3 AND 4

(LOOKING EAST)  
TRANSVERSE BOTTOM SLAB BARS NOT SHOWN FOR CLARITY

| NO.   | DATE | REVISION | BY              |
|---|------|----------|-----------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |          |                 |
| STRUCTURE B-40-304  |      |          |                 |
| DRAWN BY  |      | TB       | PLANS CK'D. JRS |
| EXPANSION JOINT REINFORCING 2   |      |          | SHEET 9 OF 14   |



W. ABUT. SHOWN, E. ABUT. SIMILAR

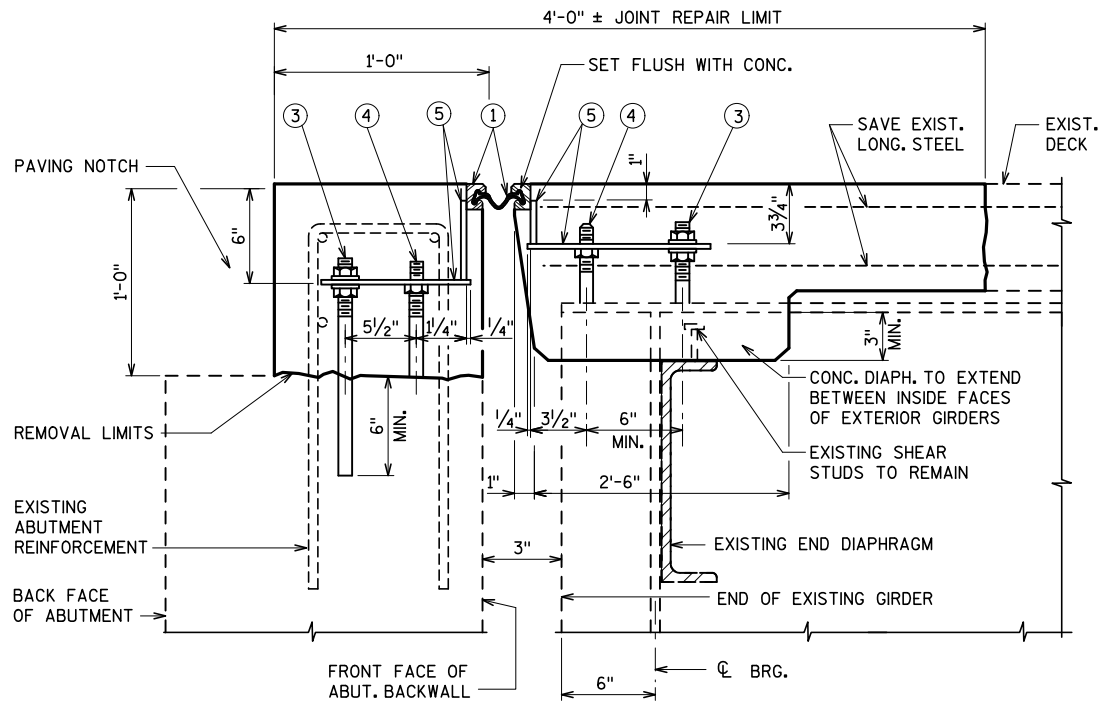


\* 3'-0" DIMENSION LOCATED TO THE SIDE OF  
EXPANSION JOINT WITH HANGER PLATE.

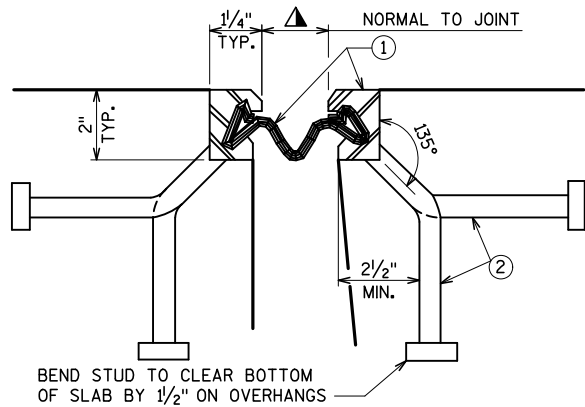


|   |      |             |    |                |     |
|---|------|-------------|----|----------------|-----|
|   |      |             |    |                |     |
| NO.   | DATE | REVISION    |    |                | BY  |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |             |    |                |     |
| <b>STRUCTURE B-40-304</b>   |      |             |    |                |     |
|   |      | DRAWN<br>BY | TB | PLANS<br>CK'D. | JRS |
| <b>EXPANSION JOINT<br/>REINFORCING 3</b>  |      |             |    | SHEET 10 OF 14 |     |
|   |      |             |    |                |     |

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Plotted by: Heger

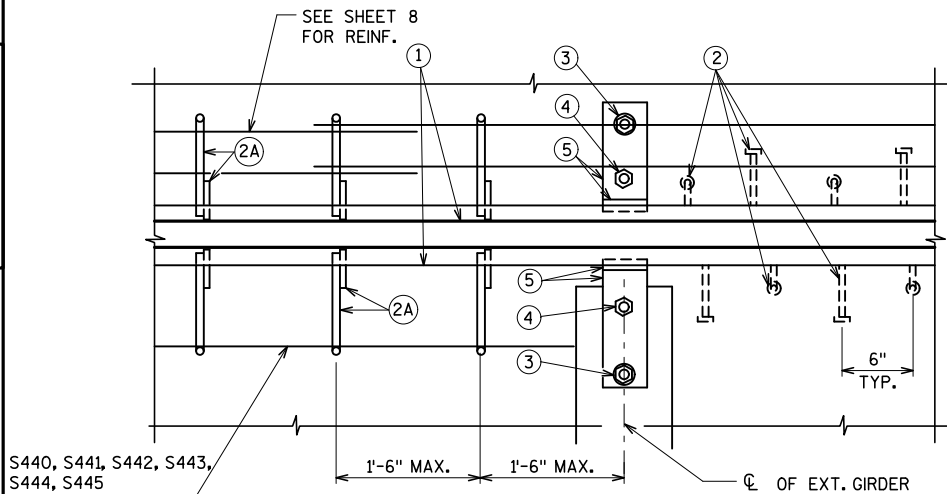


SECTION THRU JOINT AT ABUTMENT  
NORMAL TO CL SUBSTRUCTURE



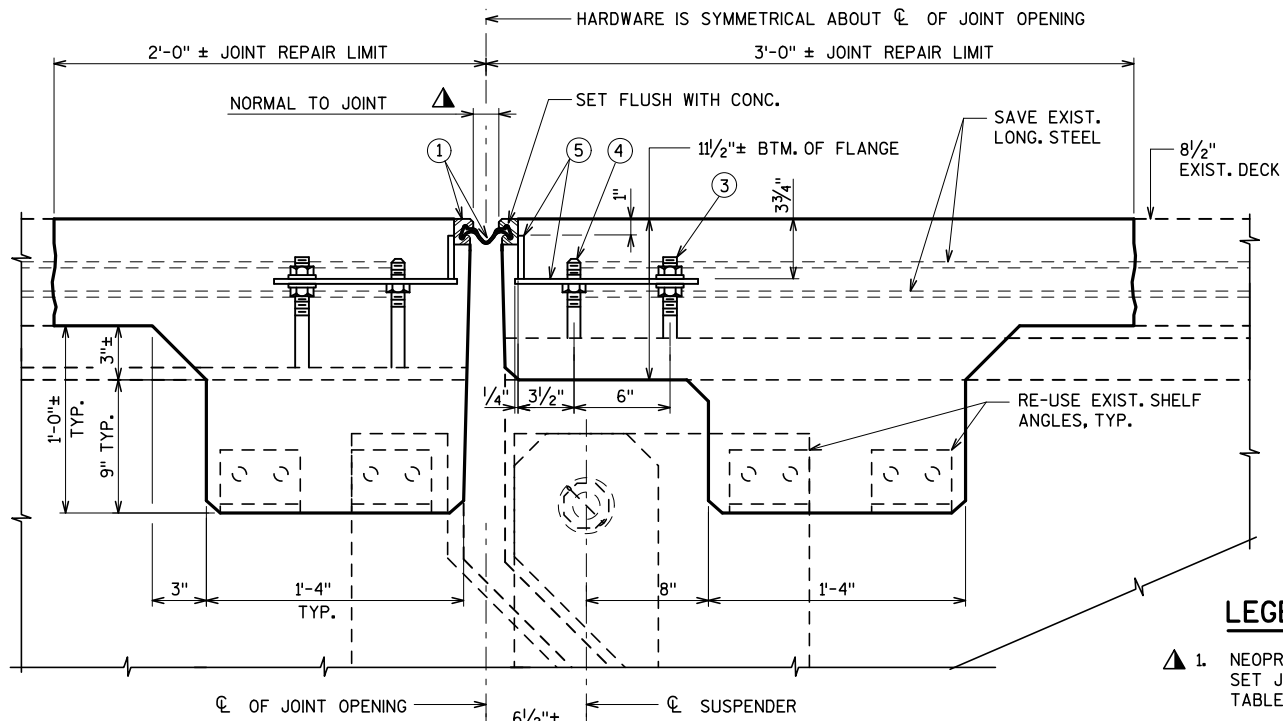
SECTION THRU JOINT

EXTERIOR GIRDER TO EDGE OF SLAB AND AT PARAPETS



PART PLAN

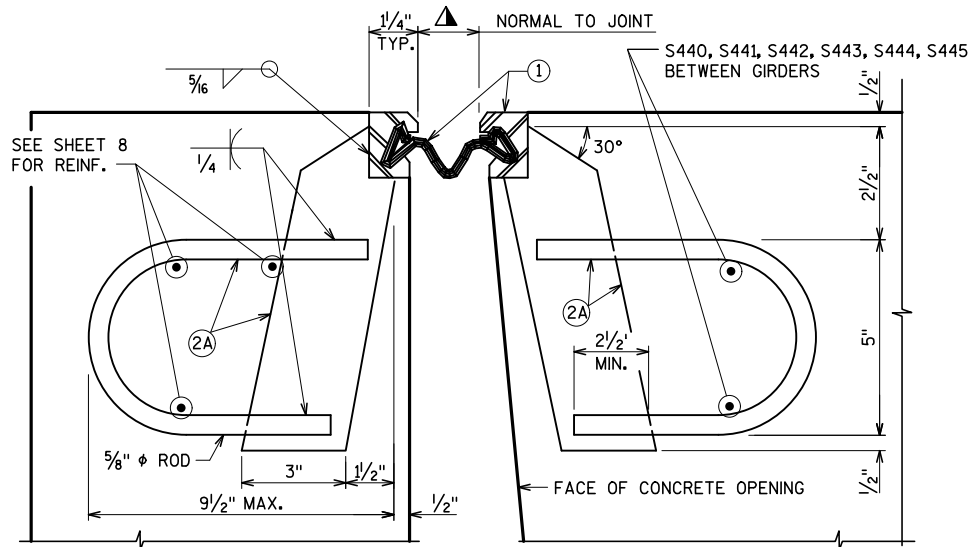
S440, S441, S442, S443,  
S444, S445  
BETWEEN GIRDERS



TYPICAL SECTION THRU JOINT AT SUSPENDERS

TEMPERATURE TABLE

| SHADED UNDERSIDE<br>OF DECK TEMP.<br>(DEG. F) | JOINT OPENING WIDTH (IN.) |                        |                |
|---|---------------------------|------------------------|----------------|
|   | E. ABUT. &<br>W. ABUT.    | SUSPENDERS<br>1, 2 & 4 | SUSPENDER<br>3 |
| 5   | 1 3/4"                    | 3 3/8"                 | 3 3/4"         |
| 15  | 1 3/4"                    | 3"                     | 3 1/2"         |
| 25  | 1 3/4"                    | 2 3/4"                 | 3 1/8"         |
| 35  | 1 3/4"                    | 2 1/2"                 | 2 3/4"         |
| 45  | 1 3/4"                    | 2 1/4"                 | 2 1/2"         |
| 55  | 1 3/4"                    | 2"                     | 2 1/8"         |
| 65  | 1 3/4"                    | 1 3/4"                 | 1 7/8"         |
| 75  | 1 3/4"                    | 1 3/8"                 | 1 1/2"         |
| 85  | 1 3/4"                    | 1 1/8"                 | 1 1/8"         |
| STRIP SEAL SIZE                               | 4.0"                      | 5.0"                   | 5.0"           |



AT PAVING BLOCK

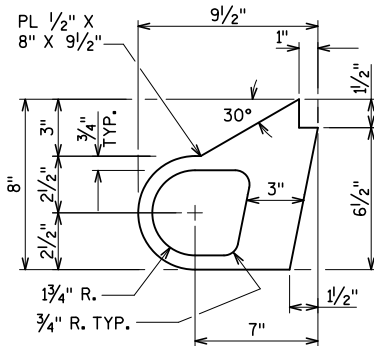
SYM. ABOUT CL JOINT UNLESS OTHERWISE SHOWN OR NOTED

SECTION THRU JOINT

ROADWAY TRAFFIC AREA BETWEEN EXTERIOR GIRDERS

STATE PROJECT NUMBER

1090-33-61



ALTERNATE STRIP SEAL  
ANCHOR

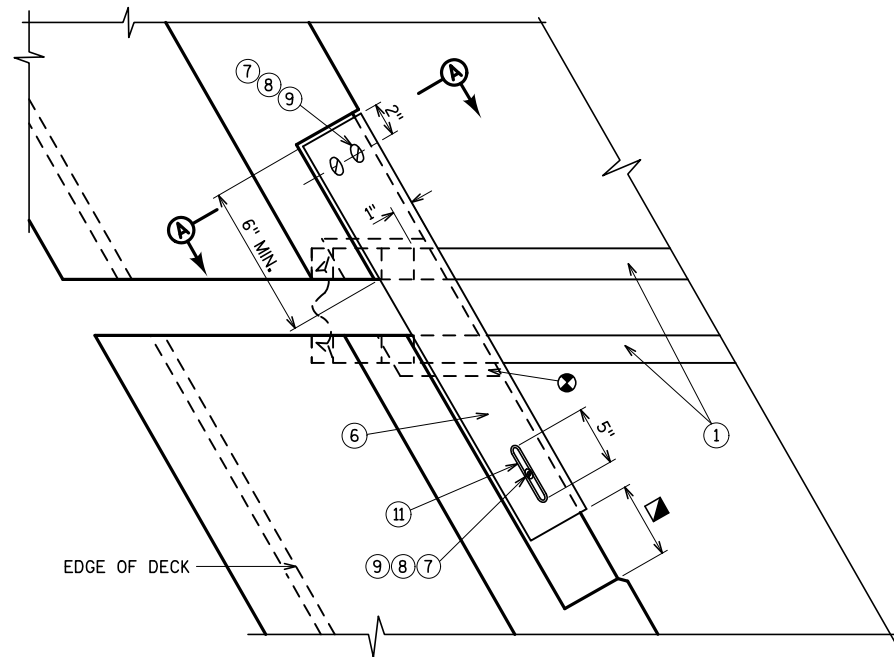
LEGEND

1. NEOPRENE STRIP SEAL AND STEEL EXTRUSIONS. SET JOINT OPENING AND SIZE PER TEMPERATURE TABLE.
  2. STUDS 5/8"  $\phi$  X 6 3/8" LONG AT 6" ALTERNATE CENTERS. WELD TO EXTRUSIONS AND BEND AS SHOWN AFTER WELDING.
  - 2A. 1/2" THICK ANCHOR PLATE WITH 5/8"  $\phi$  ROD (OR ALTERNATE STRIP SEAL ANCHOR). WELD ROD TO ANCHOR PLATE, WELD ANCHOR PLATE TO NO.1 AT 1'-6" CENTERS BETWEEN GIRDERS.
  3. 3/4"  $\phi$  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. 3/4"  $\phi$  THREADED ROD WITH NUT. TACK WELD NUT TO NO. 5.
  5. FABRICATE SUPPORT FROM 3" X 1/2" 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 1 1/2"  $\phi$  HOLE FOR NO. 3 AND 1"  $\phi$  HOLE FOR NO. 4.
  6. GALVANIZED PLATE 3/8" X 14 3/4" X 2'-2" WITH HOLES FOR NO. 7. BEND AS SHOWN.
  7. 3/4"  $\phi$  X 1 1/2" STAINLESS STEEL SOCKET FLAT HEAD SCREWS WITH ANTI-SEIZE LUBRICANT. RECESS 1/16" BELOW PLATE SURFACE.
  8. 3/4"  $\phi$  X 4" GALVANIZED HEX HEAD BOLT. BEND 45°.
  9. 3/4"  $\phi$  X 2 1/4" GALVANIZED THREADED COUPLING.
  10. NOT USED
  11. 1" X 5" SLOTTED CSK. HOLE FOR NO. 7 SLOT PARALLEL TO DIRECTION OF MOVEMENT.
- 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.

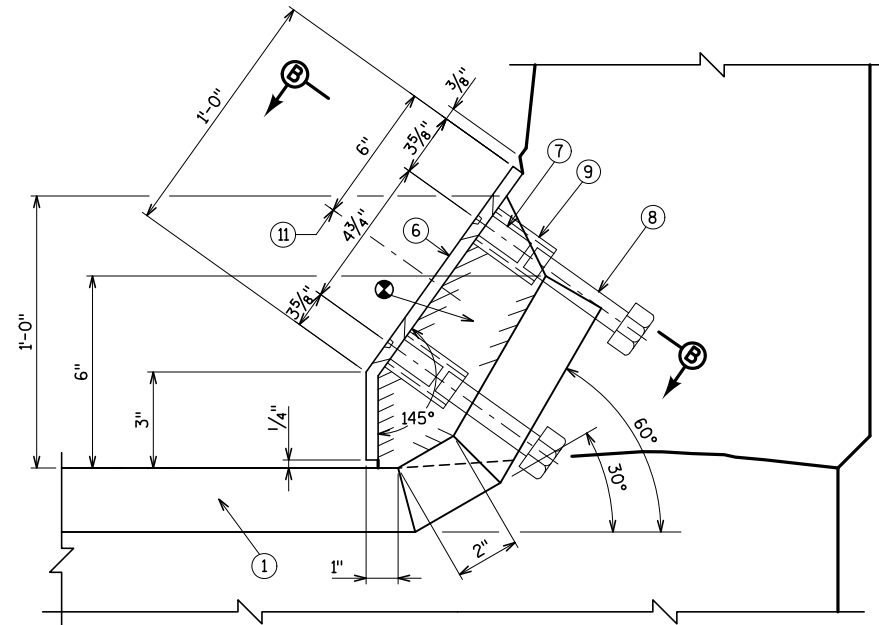
| NO.   | DATE | REVISION | BY              |
|---|------|----------|-----------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |          |                 |
| STRUCTURE B-40-304  |      |          |                 |
| DRAWN BY  |      | TB       | PLANS CK'D. JRS |
| EXPANSION JOINT<br>DETAILS (1 OF 2)   |      |          | SHEET 11 OF 14  |



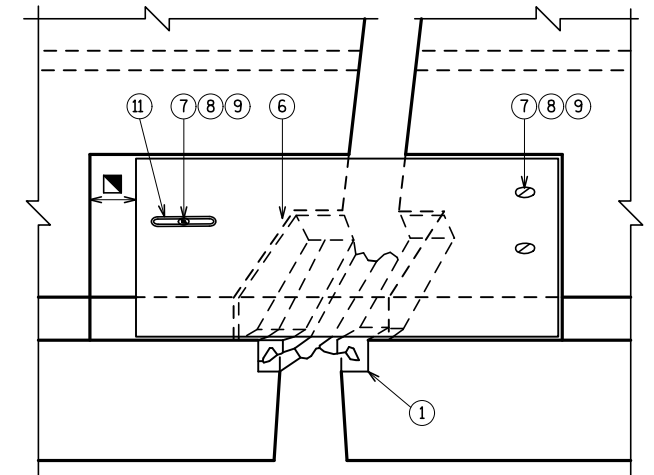
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DATE: 4/15/2014 11:52:09 AM  
PEN TABLE: v8.Structural\_rev.tbl  
Plotted by: Hiegar



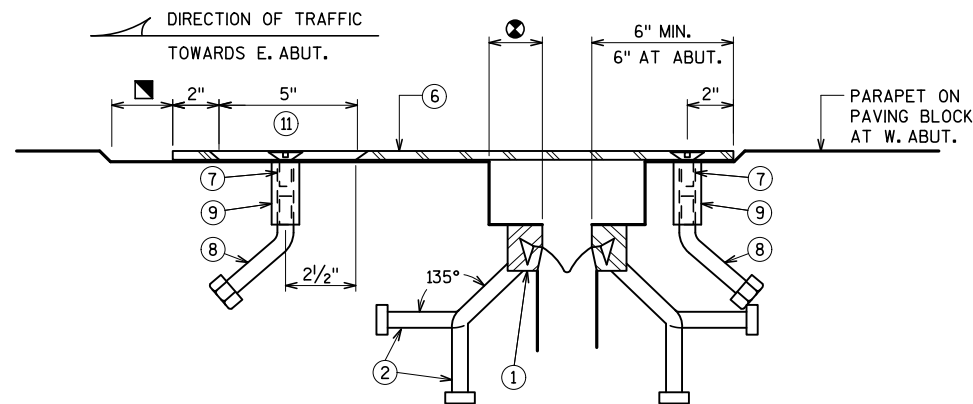
PLAN AT PARAPET



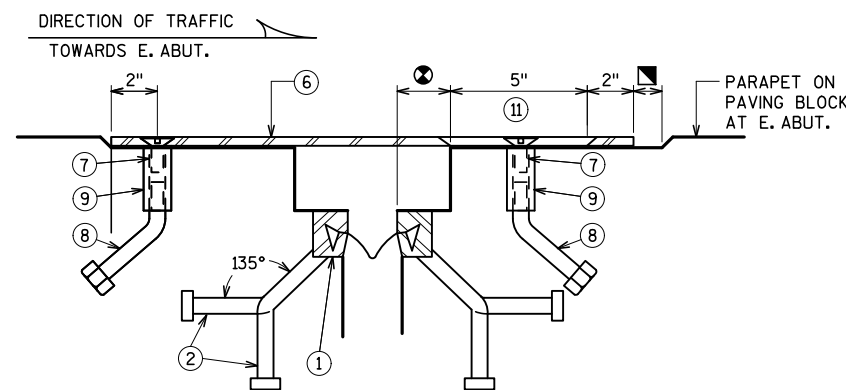
SECTION A-A



VIEW OF PARAPET PLATE  
FROM ROADWAY



SECTION B-B  
APPLIES AT WEST ABUT. AND SUSPENDERS



SECTION B-B  
APPLIES AT EAST ABUTMENT

NOTES

- ⊗ BLOCKOUT CONCRETE 2" EACH SIDE OF JOINT OPENING.
  - ▣ JOINT OPENING DIM. ALONG SKEW PLUS 1/2".
- SEE SHEET 11 FOR ADDITIONAL NOTES AND LEGEND.

| NO.   | DATE | REVISION       | BY                 |
|---|------|----------------|--------------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |                |                    |
| STRUCTURE B-40-304  |      |                |                    |
| DRAWN<br>BY   |      | TB             | PLANS<br>CK'D. JRS |
| EXPANSION JOINT<br>DETAILS (2 OF 2)   |      | SHEET 12 OF 14 |                    |

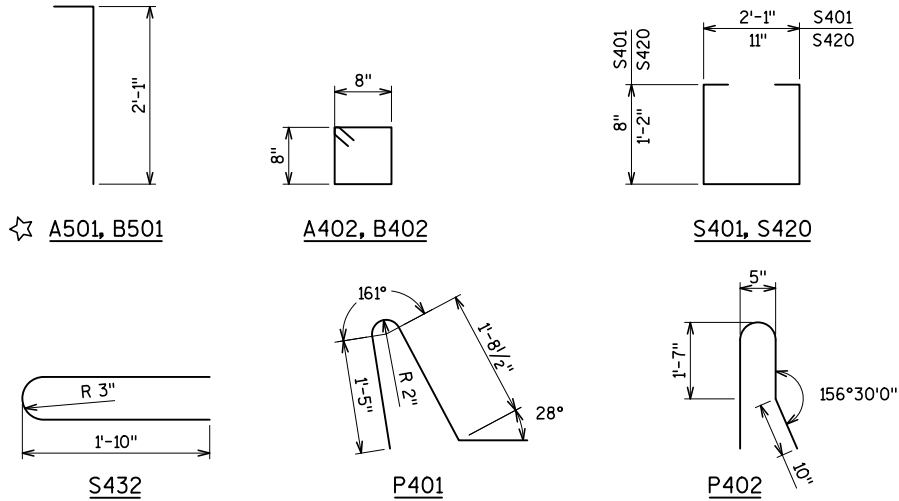
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DATE: 4/15/2014 11:52:11 AM  
Plotted by: Hiegar  
PEN TABLE: v8\_Structural\_rev.tbl

BILL OF BARS - WEST AND EAST ABUT.

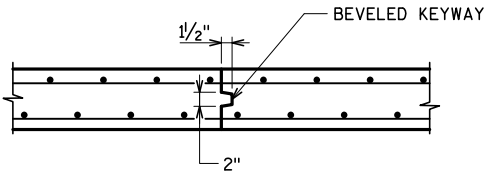
| BAR MARK | COAT | NO. STAGE 1 | NO. STAGE 2 | NO. TOTAL | LENGTH | BENT | BAR SERIES | LOCATION                           |
|----------|------|-------------|-------------|-----------|--------|------|------------|------------------------------------|
| ☆ A501   | X    | 30          | 26          | 56        | 2'-9"  | X    | -          | W. ABUT. - PAVING BLOCK VERTICAL   |
| A402     | X    | 30          | 26          | 56        | 3'-2"  | X    | -          | W. ABUT. - PAVING BLOCK VERTICAL   |
| A503     | X    | 12          | 9           | 21        | 8'-7"  | -    | -          | W. ABUT. - PAVING BLOCK HORIZONTAL |
|          |      |             |             |           |        |      |            |                                    |
|          |      |             |             |           |        |      |            |                                    |
| ☆ B501   | X    | 39          | 26          | 65        | 2'-9"  | X    | -          | E. ABUT. - PAVING BLOCK VERTICAL   |
| B402     | X    | 39          | 26          | 65        | 3'-2"  | X    | -          | E. ABUT. - PAVING BLOCK VERTICAL   |
| B503     | X    | 15          | 9           | 24        | 8'-10" | -    | -          | E. ABUT. - PAVING BLOCK HORIZONTAL |
|          |      |             |             |           |        |      |            |                                    |
|          |      |             |             |           |        |      |            |                                    |

BILL OF BARS - PARAPET

| BAR MARK | COAT | NO. STAGE 1 | NO. STAGE 2 | NO. TOTAL | LENGTH | BENT | BAR SERIES | LOCATION            |
|----------|------|-------------|-------------|-----------|--------|------|------------|---------------------|
| P401     | X    | 50          | 50          | 100       | 4'-3"  | X    | -          | PARAPETS VERTICAL   |
| P402     | X    | 50          | 50          | 100       | 4'-4"  | X    | -          | PARAPETS VERTICAL   |
| P503     | X    | 10          | 10          | 20        | 8"     | -    | -          | PARAPETS HORIZONTAL |
| P504     | X    | 20          | 20          | 40        | 1'-8"  | -    | -          | PARAPETS HORIZONTAL |
| P505     | X    | 30          | 30          | 60        | 2'-6"  | -    | -          | PARAPETS HORIZONTAL |
|          |      |             |             |           |        |      |            |                     |
|          |      |             |             |           |        |      |            |                     |
|          |      |             |             |           |        |      |            |                     |



BENDING DIAGRAMS



CONSTRUCTION JOINT DETAIL

STATE PROJECT NUMBER

1090-33-61

BILL OF BARS - SUPERSTRUCTURE

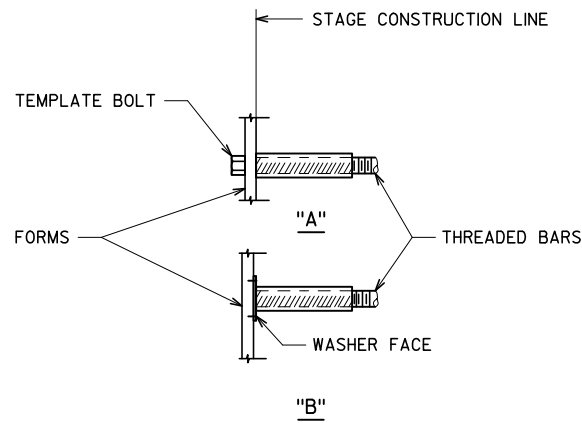
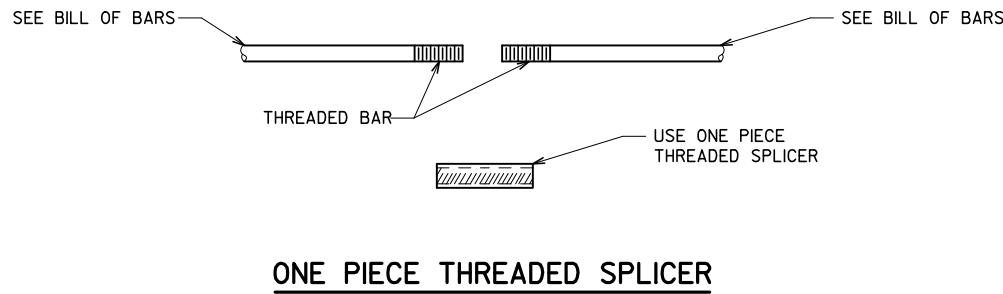
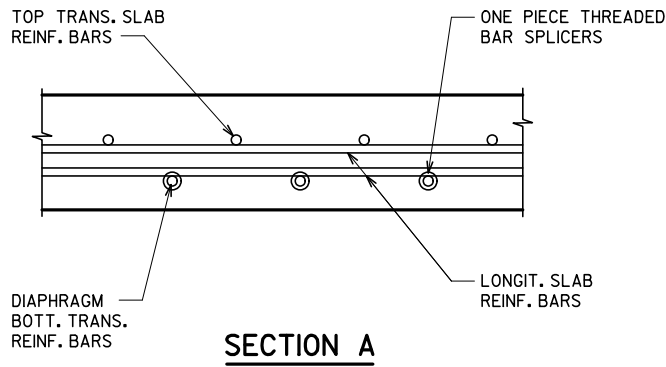
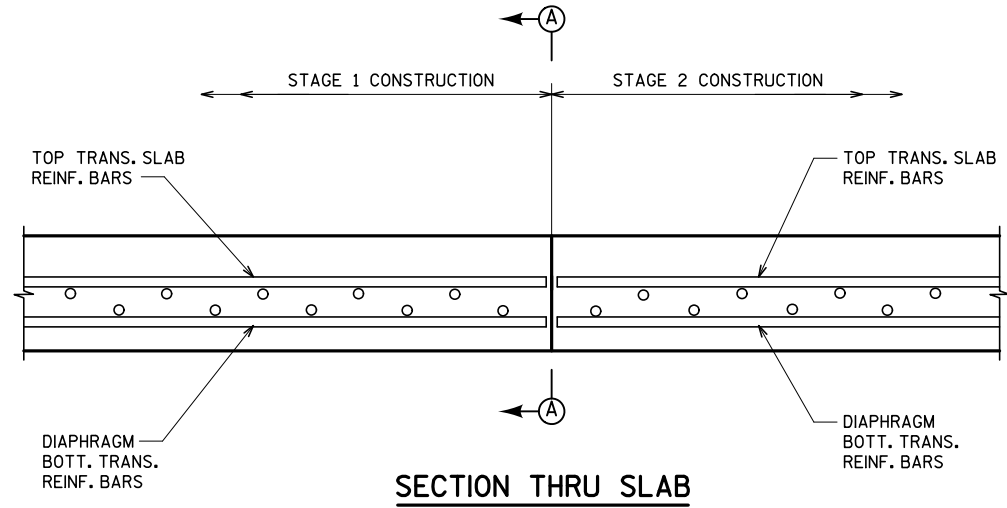
| BAR MARK | COAT | NO. STAGE 1 | NO. STAGE 2 | NO. TOTAL | LENGTH  | BENT | BAR SERIES | LOCATION                                       |
|----------|------|-------------|-------------|-----------|---------|------|------------|--|
| S401     | X    | 80          | 56          | 136       | 3'-11"  | X    | -          | DECK JOINT VERT. - ABUTMENTS                   |
| S502     | X    | -           | 24          | 24        | 25'-4"  | -    | -          | DECK JOINT HORIZ. - W. ABUTMENT                |
| S503     | X    | 12          | -           | 12        | 32'-3"  | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                  |
| S504     | X    | 12          | -           | 12        | 41'-3"  | -    | -          | DECK JOINT HORIZ. - E. ABUTMENT                |
| S605     | X    | 10          | 20          | 30        | 8'-1"   | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                  |
| S606     | X    | 10          | -           | 10        | 6'-11"  | -    | -          | DECK JOINT HORIZ. - W. ABUTMENT                |
| S607     | X    | -           | 10          | 10        | 5'-1"   | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                  |
| S608     | X    | 10          | -           | 10        | 3'-0"   | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                  |
| S609     | X    | 15          | -           | 15        | 7'-6"   | -    | -          | DECK JOINT HORIZ. - E. ABUTMENT                |
| S410     | X    | 4           | 8           | 12        | 8'-1"   | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                  |
| S411     | X    | 4           | -           | 4         | 6'-11"  | -    | -          | DECK JOINT HORIZ. - W. ABUTMENT                |
| S412     | X    | -           | 4           | 4         | 5'-0"   | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                  |
| S413     | X    | 4           | -           | 4         | 2'-11"  | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                  |
| S414     | X    | 6           | -           | 6         | 7'-6"   | -    | -          | DECK JOINT HORIZ. - E. ABUTMENT                |
|          |      |             |             |           |         |      |            |  |
|          |      |             |             |           |         |      |            |  |
|          |      |             |             |           |         |      |            |  |
| S420     | X    | 236         | 248         | 484       | 3'-8"   | X    | -          | DECK JOINT VERT. - SUSPENDERS                  |
| S521     | X    | -           | 80          | 80        | 25'-4"  | -    | -          | DECK JOINT HORIZ. - SUSPENDERS                 |
| S522     | X    | 20          | -           | 20        | 27'-11" | -    | -          | DECK JOINT HORIZ. - SUSPENDER 1                |
| S523     | X    | 60          | -           | 60        | 26'-5"  | -    | -          | DECK JOINT HORIZ. - SUSPENDERS 2, 3, 4         |
| S724     | X    | 42          | 48          | 90        | 8'-1"   | -    | -          | DECK JOINT HORIZ. - SUSPENDERS                 |
| S725     | X    | 12          | -           | 12        | 4'-8"   | -    | -          | DECK JOINT HORIZ. - SUSPENDER 1                |
| S726     | X    | -           | 24          | 24        | 5'-1"   | -    | -          | DECK JOINT HORIZ. - SUSPENDERS                 |
| S727     | X    | 24          | -           | 24        | 3'-0"   | -    | -          | DECK JOINT HORIZ. - SUSPENDERS                 |
| S428     | X    | 42          | 48          | 90        | 8'-1"   | -    | -          | DECK JOINT HORIZ. - SUSPENDERS                 |
| S429     | X    | 12          | -           | 12        | 4'-8"   | -    | -          | DECK JOINT HORIZ. - SUSPENDER 1                |
| S430     | X    | -           | 24          | 24        | 5'-0"   | -    | -          | DECK JOINT HORIZ. - SUSPENDERS                 |
| S431     | X    | 24          | -           | 24        | 2'-11"  | -    | -          | DECK JOINT HORIZ. - SUSPENDERS                 |
| S432     | X    | 118         | 124         | 242       | 3'-11"  | X    | -          | DECK JOINT VERT. - SUSPENDERS                  |
|          |      |             |             |           |         |      |            |  |
|          |      |             |             |           |         |      |            |  |
|          |      |             |             |           |         |      |            |  |
| S440     | X    | 32          | 40          | 72        | 8'-1"   | -    | -          | DECK JOINT HORIZ.                              |
| S441     | X    | 4           | -           | 4         | 6'-11"  | -    | -          | DECK JOINT HORIZ. - W. ABUT. STAGE 1           |
| S442     | X    | 8           | -           | 8         | 4'-8"   | -    | -          | DECK JOINT HORIZ. - SUSPENDER 1 STAGE 1        |
| S443     | X    | 6           | -           | 6         | 7'-6."  | -    | -          | DECK JOINT HORIZ. - E. ABUT. STAGE 1           |
| S444     | X    | 20          | -           | 20        | 5'-0"   | -    | -          | DECK JOINT HORIZ. - SUSPENDERS & ABUTS STAGE 1 |
| S445     | X    | -           | 20          | 20        | 2'-11"  | -    | -          | DECK JOINT HORIZ. - SUSPENDERS & ABUTS STAGE 2 |
|          |      |             |             |           |         |      |            |  |
|          |      |             |             |           |         |      |            |  |
|          |      |             |             |           |         |      |            |  |

LEGEND

- ☆ CONCRETE MASONRY ANCHOR TYPE L NO.5 WITH MIN. PULLOUT CAPACITY OF 19 KIPS. EMBED 1'-6" MIN. INTO CONCRETE
- BAR COUPLERS REQUIRED

|   |      |          |                 |
|---|------|----------|-----------------|
|   |      |          |                 |
| NO.   | DATE | REVISION | BY              |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |          |                 |
| STRUCTURE B-40-304  |      |          |                 |
| DRAWN BY  |      | TB       | PLANS CK'D. JRS |
| BILL OF BARS  |      |          | SHEET 13 OF 14  |

FILE NAME: F:\BIM-360E Hole Interchange Bridges\Structures\cds\1090-33-61.4-15-2014-B-40-304\4B40304.couplers.dgn  
DATE: 4/15/2014 11:53:13 AM  
PEN TABLE: v8.Structural\_rev.tbl  
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INSTALLATION AND SETTING METHODS

"A" SET SPLICER BY MEANS OF A TEMPLATE BOLT  
"B" SET SPLICER BY NAILING TO WOOD FORMS OR CEMENTING TO STEEL FORMS.

NOTES

STEEL SPLICE (COUPLER) ASSEMBLY SHALL BE AN APPROVED TYPE AND SHALL DEVELOP IN TENSION AT LEAST 125% OF THE YIELD STRENGTH OF THE SPLICED REINFORCEMENT BARS.

DOWEL BAR SPLICERS SHALL BE OF MINIMUM 60 KSI YIELD STRENGTH, AND HAVE TENSILE STRENGTH AREA EQUAL OR GREATER THAN THAT OF THE LAPPED REINFORCEMENT BARS.

DOWEL BAR SPLICERS SHALL MEET THE DEFORMATION REQUIREMENTS FOR STANDARD ASTM DEFORMED REINFORCING BARS.

ONE PIECE THREADED COUPLERS SHALL BE USED AS THE LAP LENGTHS REQUIRED FOR BAR SPLICERS ARE NOT AVAILABLE IN SOME LOCATIONS.

SPLICER (COUPLER) ASSEMBLY IN THE SLAB SHALL BE EPOXY COATED IN ACCORDANCE WITH THE REQUIREMENTS FOR REINFORCEMENT BARS.

OTHER SYSTEMS OF SIMILAR DESIGN MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL. APPROVAL SHALL BE BASED ON CERTIFIED TEST RESULTS FROM AN APPROVED TESTING LABORATORY THAT THE PROPOSED SPLICER (COUPLER) ASSEMBLY SATISFIES THE FOLLOWING REQUIREMENT:

① MINIMUM CAPACITY = 1.25 X  $f_y$  X AREA OF SPLICED REINFORCEMENT BAR.

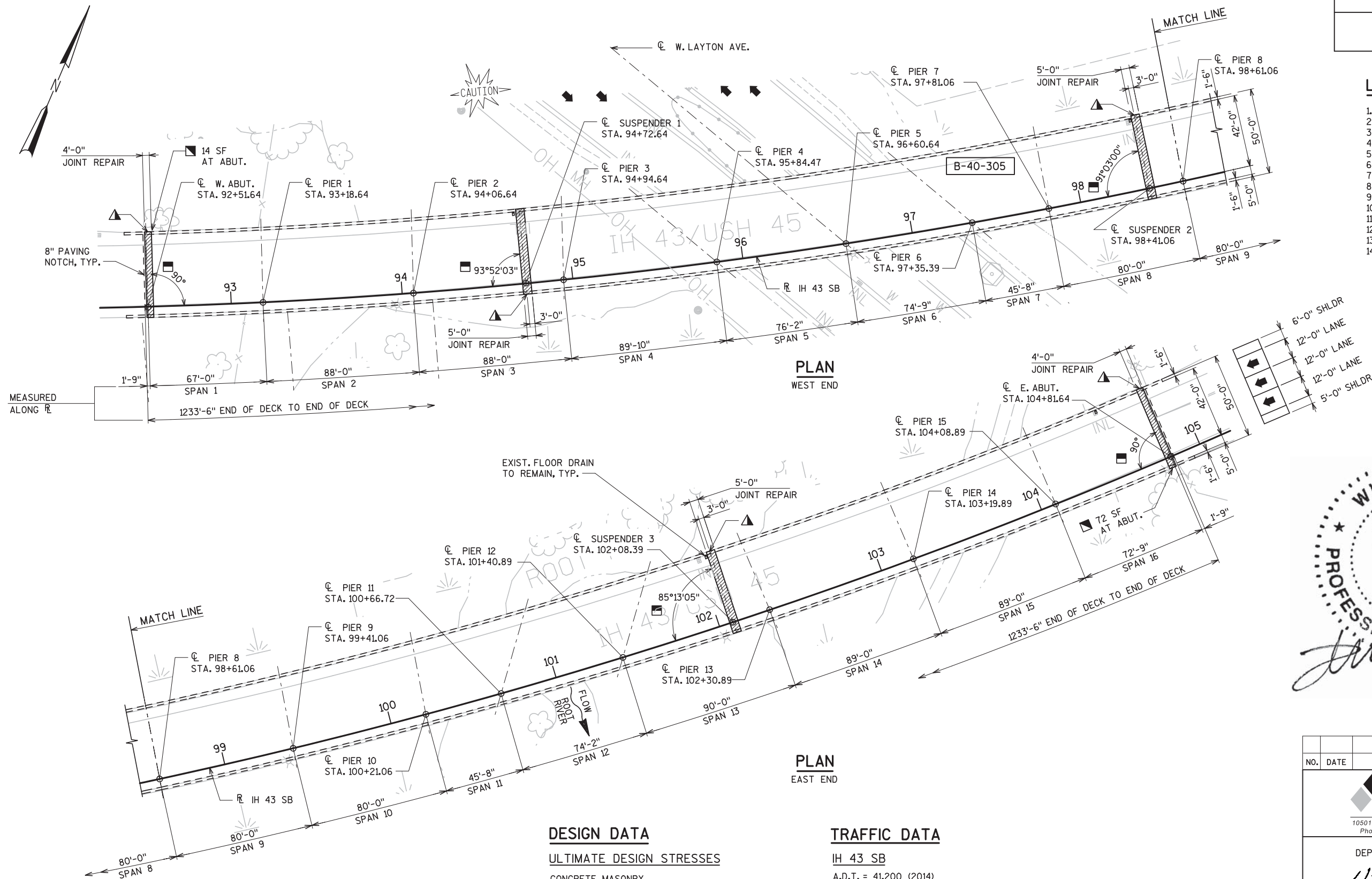
WHERE  $f_y$  = YIELD STRENGTH OF SPLICED REINFORCEMENT BARS

BAR LENGTH COMPUTED TO  $\phi$  LONGIT. JOINT AND SHALL BE MODIFIED IF REQ'D. TO BAR COUPLER MANUFACTURER RECOMMENDATIONS. PAY BASED ON BARS AS DETAILED.

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|---|------|--------------------|----------------|
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| STRUCTURE B-40-304  |      |                    |                |
| DRAWN<br>BY TB  |      | PLANS<br>CK'D. JRS |                |
| BAR COUPLERS  |      |                    | SHEET 14 OF 14 |

## LIST OF DRAWINGS

1. GENERAL PLAN
2. TYPICAL SECTION
3. CONSTRUCTION STAGING
4. SLOPE PAVING REPAIR
5. EXISTING FRAMING PLAN 1
6. EXISTING FRAMING PLAN 2
7. PIN AND HANGER CLEANING
8. DIAPHRAGM CONNECTION REPAIR
9. EXPANSION JOINT REINFORCING 1
10. EXPANSION JOINT REINFORCING 2
11. EXPANSION JOINT DETAILS (1 OF 2)
12. EXPANSION JOINT DETAILS (2 OF 2)
13. BILL OF BARS
14. BAR COUPLERS

PLAN  
WEST ENDPLAN  
EAST END

## DESIGN DATA

## ULTIMATE DESIGN STRESSES

CONCRETE MASONRY,  
 $f'_c = 4,000$  psi

BAR STEEL REINFORCEMENT, GRADE 60  
 $f_y = 60,000$  psi

STRUCTURAL STEEL CARBON, A709, GRADE 36  
 $f_y = 36,000$  psi

## LIVE LOAD

DESIGN LOAD: HS-20\*  
INVENTORY RATING: HS-16\*  
OPERATIONAL RATING: HS-27\*  
WISCONSIN STANDARD PERMIT VEHICLE LOAD  
(WIS-SPV): 200 KIPS\*

\* TAKEN FROM HSI 11/13/2013

## TRAFFIC DATA

## IH 43 SB

A.D.T. = 41,200 (2014)  
A.D.T. = 45,300 (2034)  
R.D.S. = 60 MPH

## CURVE DATA

## IH 43 SB

P.C. 91+60.96  
P.T. 105+55.72  
R = 3274.04'  
D = 1°45'00"  
 $\Delta = 24°24'24''$   
T = 708.12'  
SE = 0.0281/1

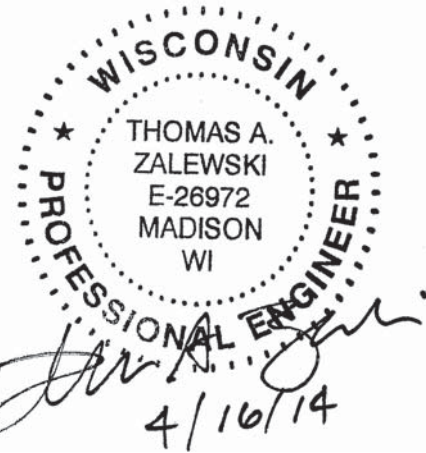
## STRUCTURE DESIGN CONTACTS



BUREAU OF STRUCTURES CONTACT:  
WILLIAM DREHER  
(608) 266-8489

CONSULTANT CONTACT:  
JASON SADOWSKI  
(414) 292-4508

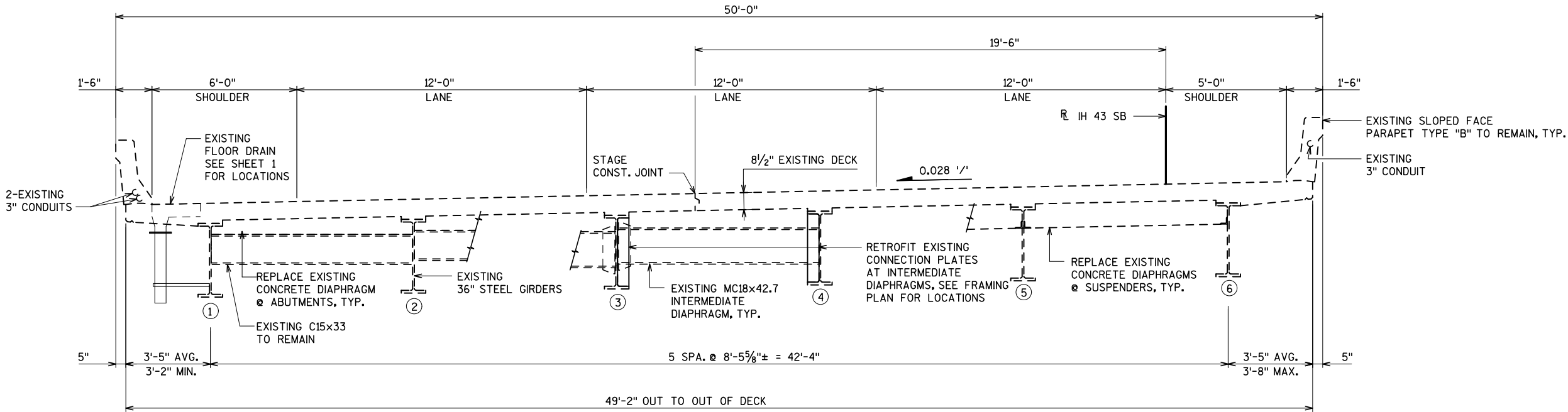
## LEGEND

- ▲ STRIP SEAL EXPANSION JOINT
- ANGLES MEASURED FROM TANGENT TO  $\bar{R}$  AT LOCATION OF INTERSECTION, TYP.
- LOCATION FOR CONCRETE SURFACE REPAIR.



|   |  |   |  |  |  |                 |  |
|---|--|---|--|--|--|-----------------|--|
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|  |  |   |  | <b>BLOOM</b><br><b>COMPANIES, LLC</b><br>Infrastructure Innovation and Ingenuity |  |                 |  |
| 10501 W. Research Drive   |  |   |  | • Milwaukee, WI 53226  |  |                 |  |
| Phone: (414) 771-3390   |  |   |  | Fax: (414) 771-4490  |  |                 |  |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION                                    |  |   |  |  |  |                 |  |
| ACCEPTED  |  |  KAR |  |  |  | <b>04/16/14</b> |  |
|   |  | CHIEF STRUCTURES DESIGN ENGINEER  |  |  |  | DATE            |  |
| <b>STRUCTURE B-40-305</b>   |  |   |  |  |  |                 |  |
| IH 43/USH 45 SB OVER W. LAYTON AVE  |  |   |  |  |  |                 |  |
| COUNTY  |  | MILWAUKEE   |  | CITY   |  | GREENFIELD      |  |
| DESIGN SPEC.  |  |   |  |  |  |                 |  |
| REHABILITATION N/A  |  |   |  |  |  |                 |  |
| DESIGNED BY   |  | JRS   |  | DESIGN CK'D.   |  | BDT             |  |
| DRAWN BY  |  | TB  |  | PLANS CK'D.  |  | JRS             |  |
| <b>GENERAL PLAN</b>   |  |   |  | SHEET 1 OF 14  |  |                 |  |
|   |  |   |  |  |  |                 |  |

FILE NAME: F:\BIM-360E Hole Interchange Bridges\Structures\cds\1090-33-61-15-2014-B-40-305\02840305.rvs.dgn  
DATE: 4/16/2014 9:31:08 AM  
PLOTTER: HP-GL/2014 93108 AM  
PLOTTER BY: Hiegar  
PEN TABLE: v8.Structural\_rev.tbl



**TYPICAL SECTION**

(LOOKING EAST)

**GENERAL NOTES**

THE PROPOSED WORK INCLUDES PROVIDING ALL STEEL, NEOPRENE STRIP SEALS, INCIDENTAL HARDWARE, FABRICATION, STORAGE, AND DELIVERY FOR EXPANSION DEVICES. THIS WORK INCLUDES FIELD VERIFICATION OF ALL EXISTING DIMENSIONS REQUIRED, OTHER PLANS AND DETAILS ARE INCLUDED FOR REFERENCE ONLY.

DRAWING SHALL NOT BE SCALED.

DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL STRUCTURE PLANS, THE CONTRACTOR SHALL VERIFY ALL DIMENSION IN THE FIELD PRIOR TO FABRICATION AND CONSTRUCTION.

MATERIAL, EQUIPMENT, ETC. SHALL NOT BE STOCKPILES/STORED ON THE BRIDGE DECK WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

EXPANSION DEVICE ASSEMBLIES, INCLUDING ANCHOR STUDS, NEOPRENE SEALS, PARAPET PLATES, AND HARDWARE WILL BE PAID FOR AT THE LUMP SUM PRICE BID FOR "FURNISH AND DELIVER EXPANSION DEVICE B-40-305.

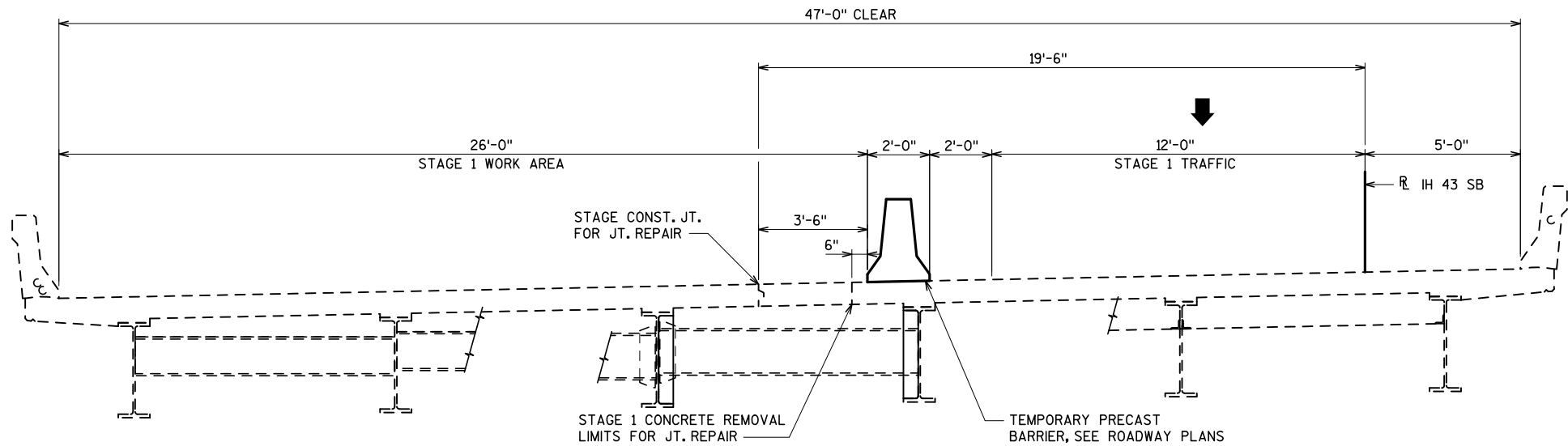
INSTALLATION OF EXPANSION DEVICE B-40-305 WILL BE PAID FOR UNDER PROJECT ID 1090-33-60.

**TOTAL ESTIMATED QUANTITIES**

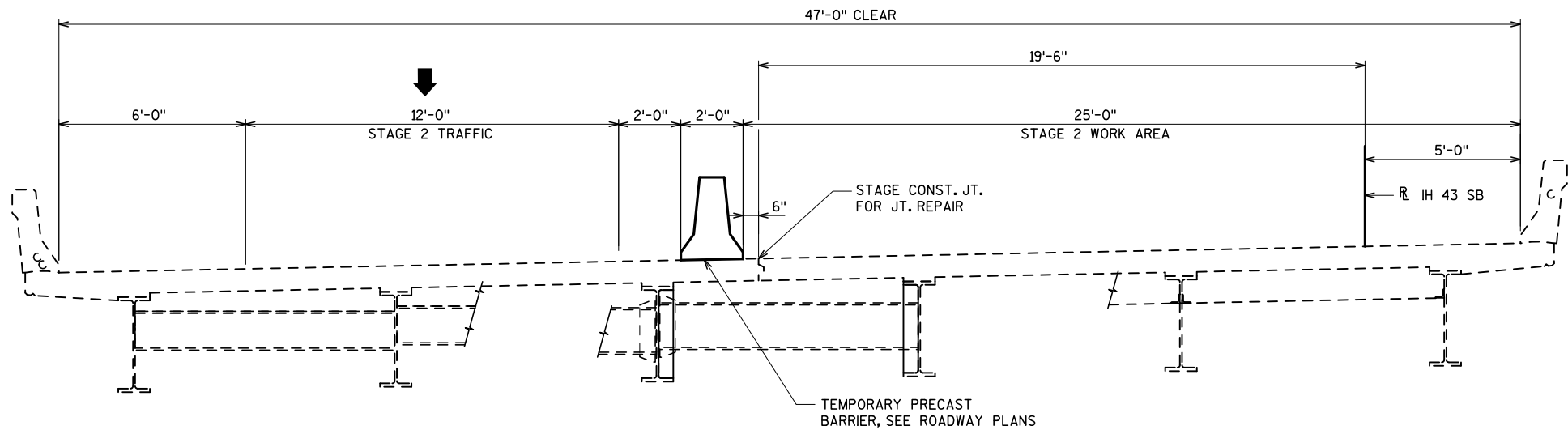
| ITEM NUMBER     | BID ITEMS                                     | UNIT | TOTAL |
|-----------------|---|------|-------|
| ▲ SPV.0105.4002 | FURNISH AND DELIVER EXPANSION DEVICE B-40-305 | SY   | 1     |

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| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |          |                 |
| STRUCTURE B-40-305  |      |          |                 |
| DRAWN BY  |      | TB       | PLANS CK'D. JRS |
| TYPICAL SECTION   |      |          | SHEET 2 OF 14   |

FILE NAME: F:\BIM-360E-Hall Interchange Bridges\Structures\1090-33-61-4-15-2014-B-40-305\03840305\_staging.dgn  
DATE: 4/15/2014 11:56 AM  
PEN TABLE: v8.Structural\_rev.tbl  
Plotted by: Hiegar



**TYPICAL SECTION - STAGE 1**  
(LOOKING EAST)



**TYPICAL SECTION - STAGE 2**  
(LOOKING EAST)

STATE PROJECT NUMBER

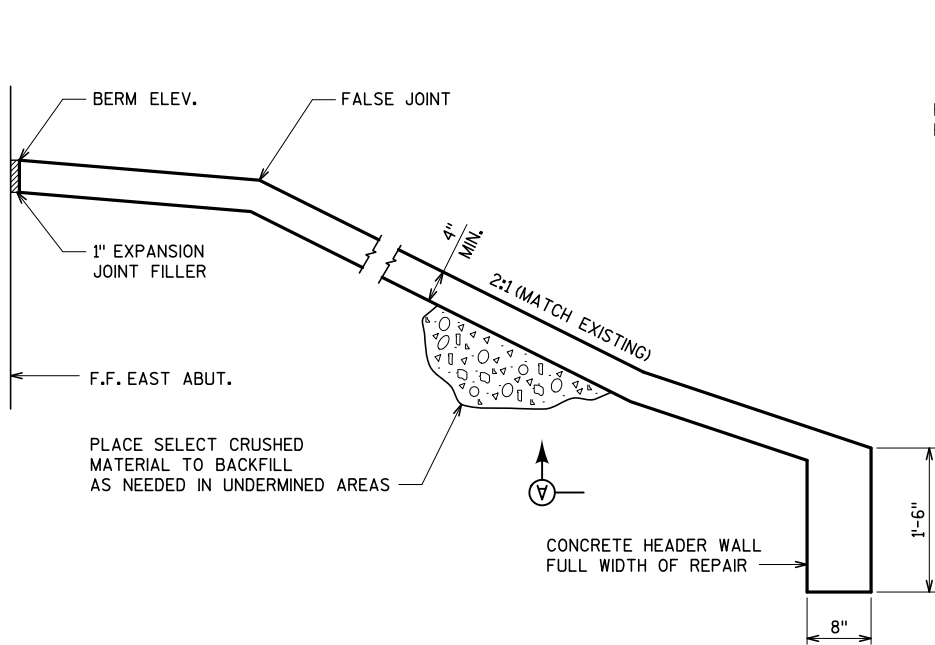
1090-33-61

**NOTES**

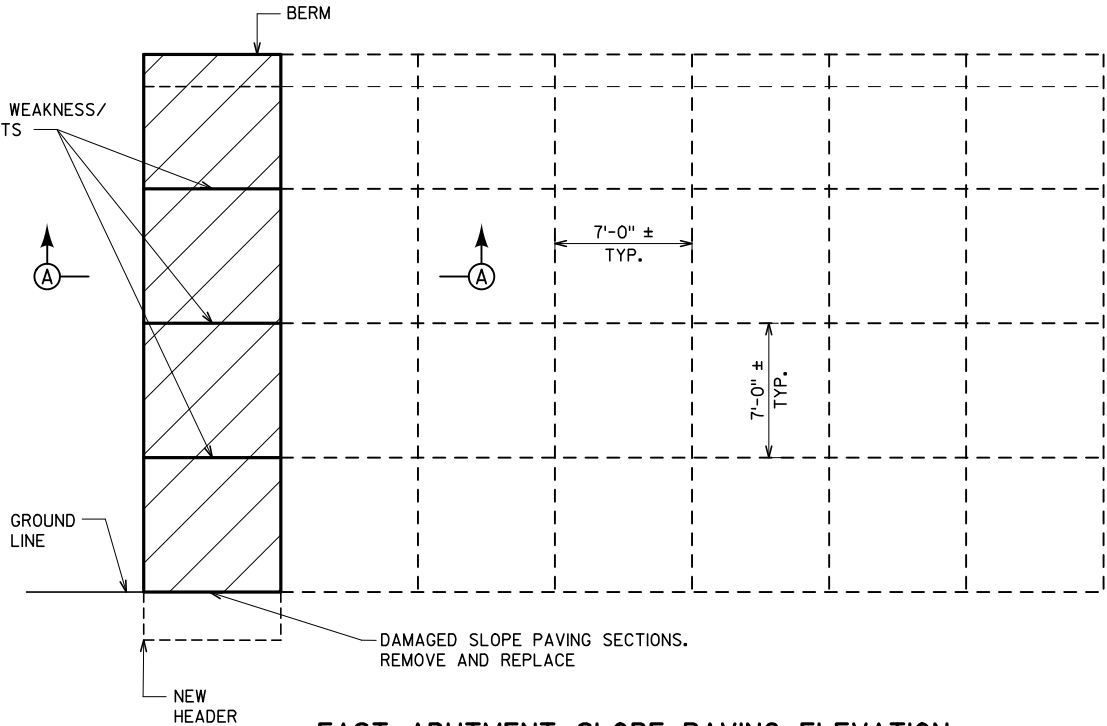
SEE TRAFFIC CONTROL PLANS FOR COMPLETE STAGING DETAILS.

TEMPORARY BARRIER SHOULD NOT BE ANCHORED TO THE DECK.

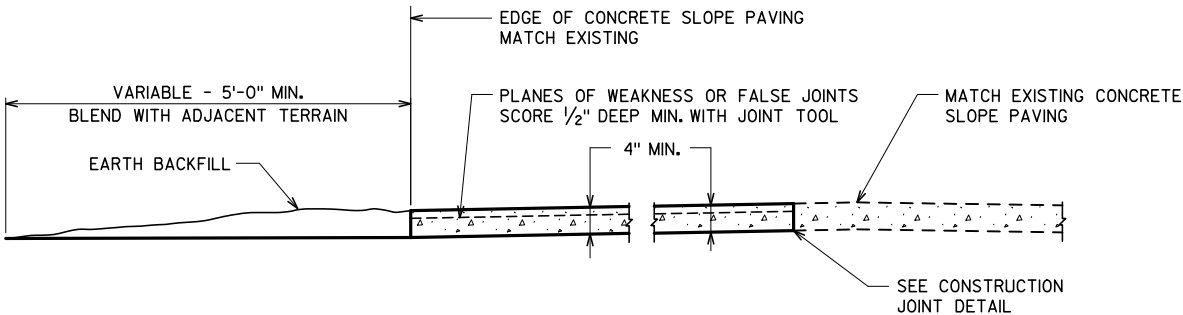
| NO.   | DATE | REVISION      | BY                 |
|---|------|---------------|--------------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |               |                    |
| STRUCTURE B-40-305  |      |               |                    |
| DRAWN<br>BY   |      | TB            | PLANS<br>CK'D. JRS |
| CONSTRUCTION<br>STAGING   |      | SHEET 3 OF 14 |                    |



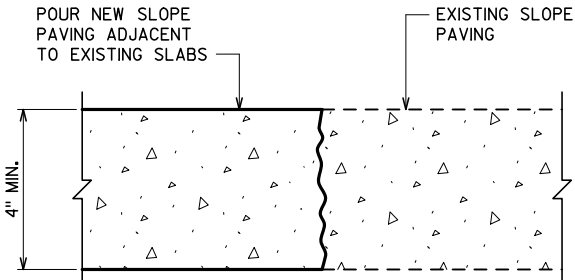
TYPICAL SECTION THRU SLOPE PAVING



EAST ABUTMENT SLOPE PAVING ELEVATION  
(LOOKING EAST)



SECTION A-A



CONSTRUCTION JOINT DETAIL

NOTES

DETAILS OF CONSTRUCTION NOT SHOWN HEREON SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS.

REMOVE DAMAGED SLOPE PAVING SECTIONS AT EAST ABUTMENT AS DIRECTED BY THE FIELD ENGINEER.

EXCAVATE AS REQUIRED. PLACE SELECT CRUSHED MATERIAL TO MATCH EXISTING SLOPE AND TO SPECIFIED SLOPE PAVING THICKNESS.

PLACE CONCRETE SLOPE PAVING TO MATCH EXISTING SLOPE AND PROVIDE BROOM FINISH.

BACKFILL WITH EXCAVATED MATERIAL.

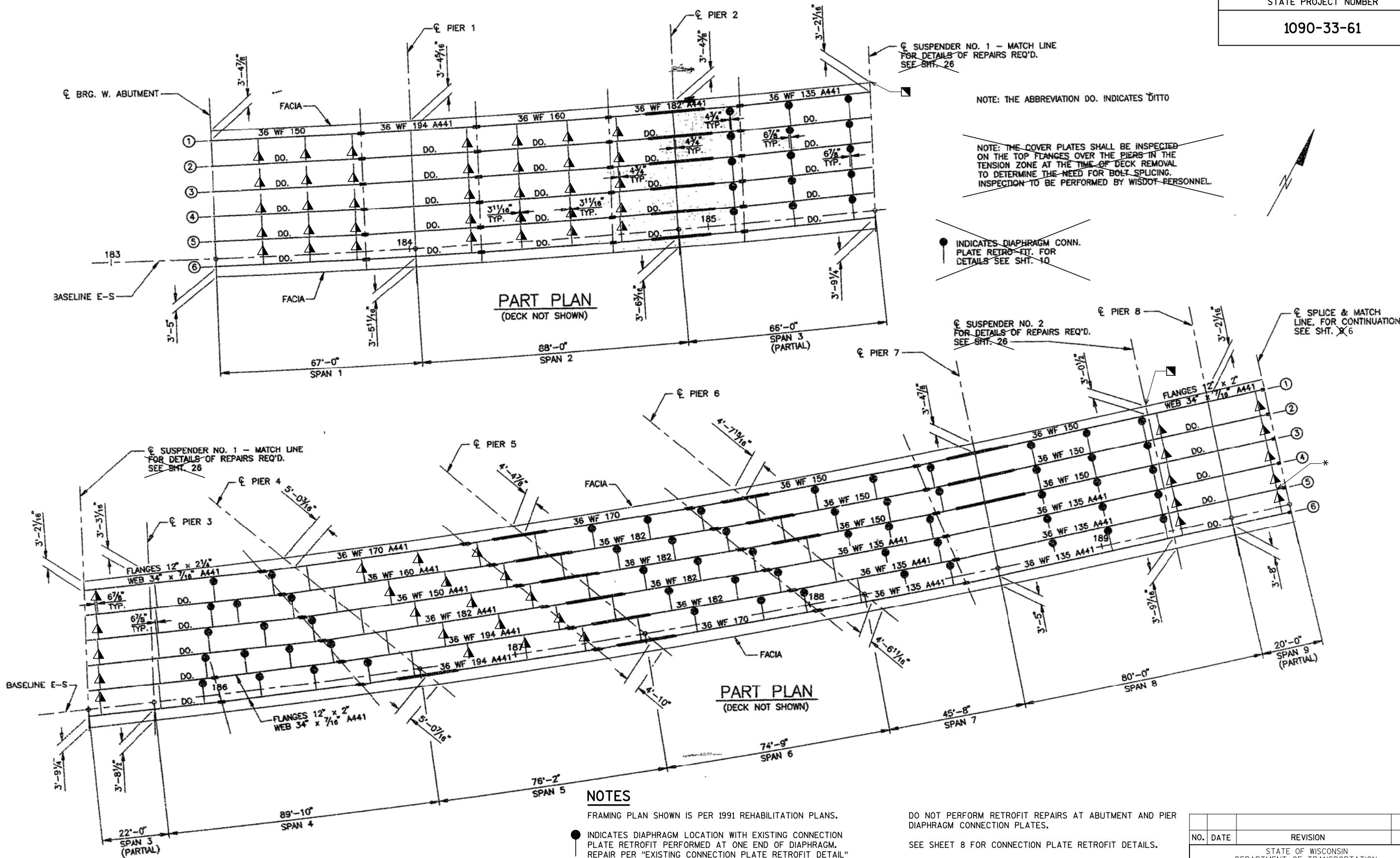
BID ITEMS ARE "REMOVING CONCRETE SLOPE PAVING" AND "SLOPE PAVING CONCRETE", AND INCLUDE ALL ITEMS SHOWN INCLUDING REMOVAL, EXCAVATION, BACKFILL, SELECT CRUSHED MATERIAL AND NEW SLOPE PAVING.

FILE NAME: F:\BIM-360E\Hole Interchange Bridges\Structures\cds\1090-33-61\4-15-2014\B-40-305\04840305\_slope\_pav.dgn  
DATE: 4/15/2014 11:59:19 AM  
PEN TABLE: v8.Structural\_rev.tbl  
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| STRUCTURE B-40-305  |      |          |                 |
| DRAWN BY  |      | TB       | PLANS CK'D. JRS |
| SLOPE PAVING REPAIR   |      |          | SHEET 4 OF 14   |



FILE NAME: F:\BIM\360E Hale Interchange Bridge\Structures\1090-33-61\4-15-2014\B-40-305\05840305.EX FRAMING PLAN.dgn  
DATE: 4/15/2014 11:52:11AM Plotted by: Hiegar PEN TABLE: v8.Structural\_rev.tbl



NOTES

FRAMING PLAN SHOWN IS PER 1991 REHABILITATION PLANS.

- INDICATES DIAPHRAGM LOCATION WITH EXISTING CONNECTION PLATE RETROFIT PERFORMED AT ONE END OF DIAPHRAGM. REPAIR PER "EXISTING CONNECTION PLATE RETROFIT DETAIL" ON SHEET 8 AT THE REMAINING END. (89 LOCATIONS SHOWN)
- ▲ INDICATES DIAPHRAGM LOCATION WITHOUT PREVIOUS CONNECTION PLATE RETROFIT REPAIR AT EITHER END. REPAIR PER "EXISTING CONNECTION PLATE RETROFIT DETAIL" ON SHEET 8 AT BOTH ENDS OF THE DIAPHRAGM. (186 LOCATIONS SHOWN)
- \* INDICATES LOCATION WITH A CRACK OBSERVED AT THE DIAPHRAGM CONNECTION PLATE WELD. REPAIR PER "GIRDER CRACK REPAIR DETAIL" ON SHEET 8. KNOWN CRACK LOCATIONS ARE MARKED IN THE FIELD. PERFORM AT OTHER LOCATIONS IF CRACKS ARE OBSERVED. (5 LOCATIONS SHOWN)

DO NOT PERFORM RETROFIT REPAIRS AT ABUTMENT AND PIER DIAPHRAGM CONNECTION PLATES.

SEE SHEET 8 FOR CONNECTION PLATE RETROFIT DETAILS.

■ INDICATES LOCATION TO PERFORM PIN AND HANGER CLEANING. CLEAN PIN AND HANGER ASSEMBLY AT ALL GIRDERS ALONG THIS JOINT. (SUSPENDERS 1, 2 AND 3)

| NO.   | DATE | REVISION      | BY              |
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| STRUCTURE B-40-305  |      |               |                 |
| DRAWN BY  |      | TB            | PLANS CK'D. JRS |
| EXISTING FRAMING PLAN 1   |      | SHEET 5 OF 14 |                 |

SPlice & MATCH  
LINE, FOR CONTINUATION  
SEE SHT. 5

SUSPENDER NO. 3 - MATCH LINE  
FOR DETAILS OF REPAIRS REQ'D.  
SEE SHT. 26

NOTE: THE ABBREVIATION DO. INDICATES DITTO

NOTE: THE COVER PLATES SHALL BE INSPECTED  
ON THE TOP FLANGES OVER THE PIERS IN THE  
TENSION ZONE AT THE TIME OF DECK REMOVAL  
TO DETERMINE THE NEED FOR BOLT SPlicing.  
INSPECTION TO BE PERFORMED BY WISDOT PERSONNEL.

INDICATES DIAPHRAGM CONN.  
PLATE RETRO-FIT. FOR  
DETAILS SEE SHT. 10

PART PLAN  
(DECK NOT SHOWN)

PART PLAN  
(DECK NOT SHOWN)

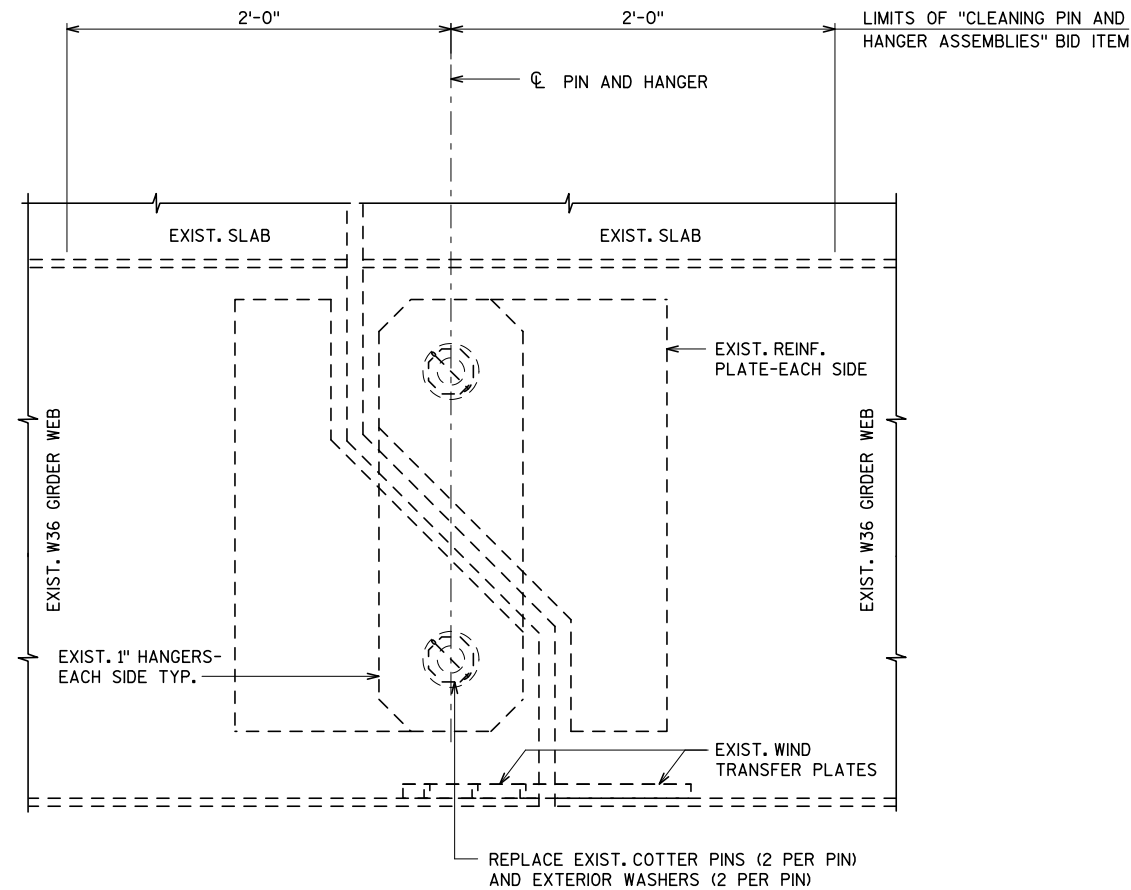
## NOTES

☆ INDICATES A SINGLE LOCATION WITH 3 UNTIGHTENED BOLTS AT  
THE BOTTOM FLANGE FIELD SPlice. REPLACE THE LOOSE BOLTS  
WITH NEW 3/4" DIAMETER HIGH STRENGTH BOLTS. WORK IS  
INCIDENTAL TO THE BID ITEM "STRUCTURAL STEEL CARBON".

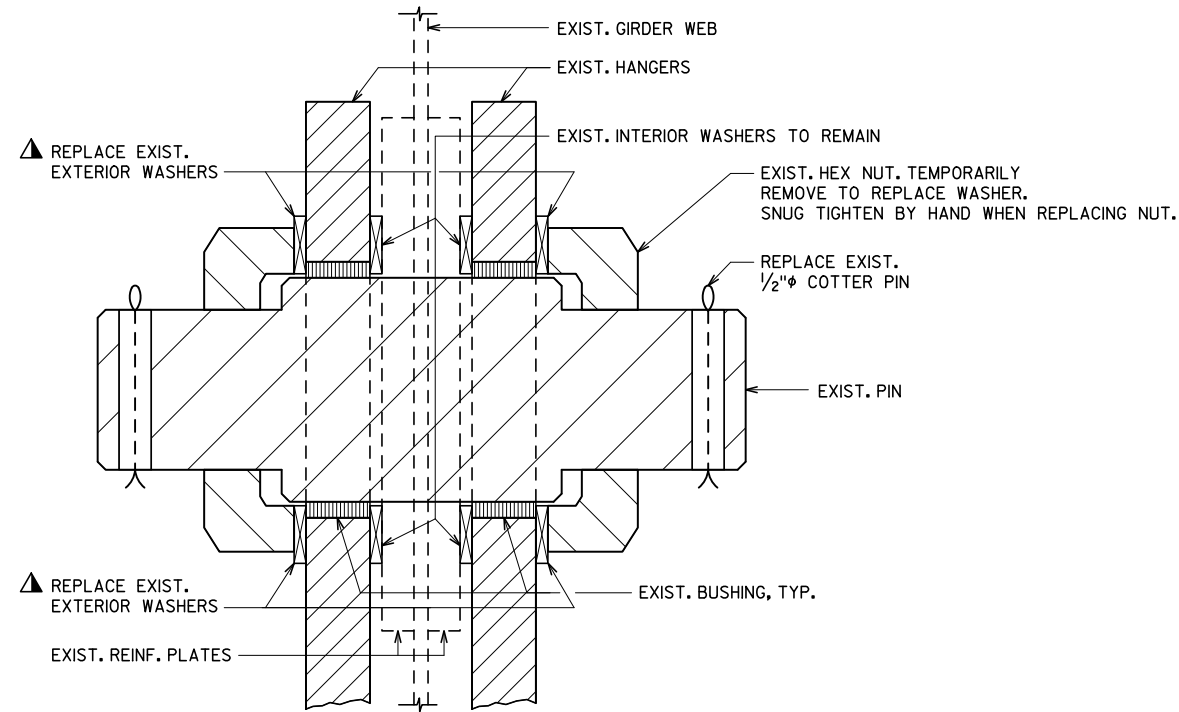
SEE SHEET 5 FOR NOTES.

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|---|------|----------|--------------------|
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| STRUCTURE B-40-305  |      |          |                    |
| DRAWN<br>BY   |      | TB       | PLANS<br>CK'D. JRS |
| EXISTING<br>FRAMING PLAN 2  |      |          | SHEET 6 OF 14      |

FILE NAME: F:\BIM-360E\_Hole Interchange Bridges\Structure\cds\1090-33-61.4-15-2014-B-40-305\07B40305\_hanger.dgn  
DATE: 4/15/2014 11:20:21AM Plotted by: Heger  
PEN TABLE: v8.Structural\_rev.tbl



**PIN AND HANGER ELEVATION**



**SECTION THRU EXISTING PIN**

**NOTES**

CLEAN AND PAINT EXISTING GIRDER AND PIN AND HANGER ASSEMBLIES PER SPECIAL PROVISIONS, 2'-0" TO EACH SIDE OF THE CL OF PIN. CLEAN AND PAINT ALL EXPOSED COMPONENTS WITHOUT DISASSEMBLING.

CLEAN PIN AND HANGER ASSEMBLIES AT LOCATIONS SHOWN ON "FRAMING PLAN" SHEETS.

THE BID ITEM "CLEANING PIN AND HANGER ASSEMBLIES B-40-305" INCLUDES ALL WORK SHOWN INCLUDING REPLACEMENT OF NON-METALLIC WASHERS AND COTTER PINS.

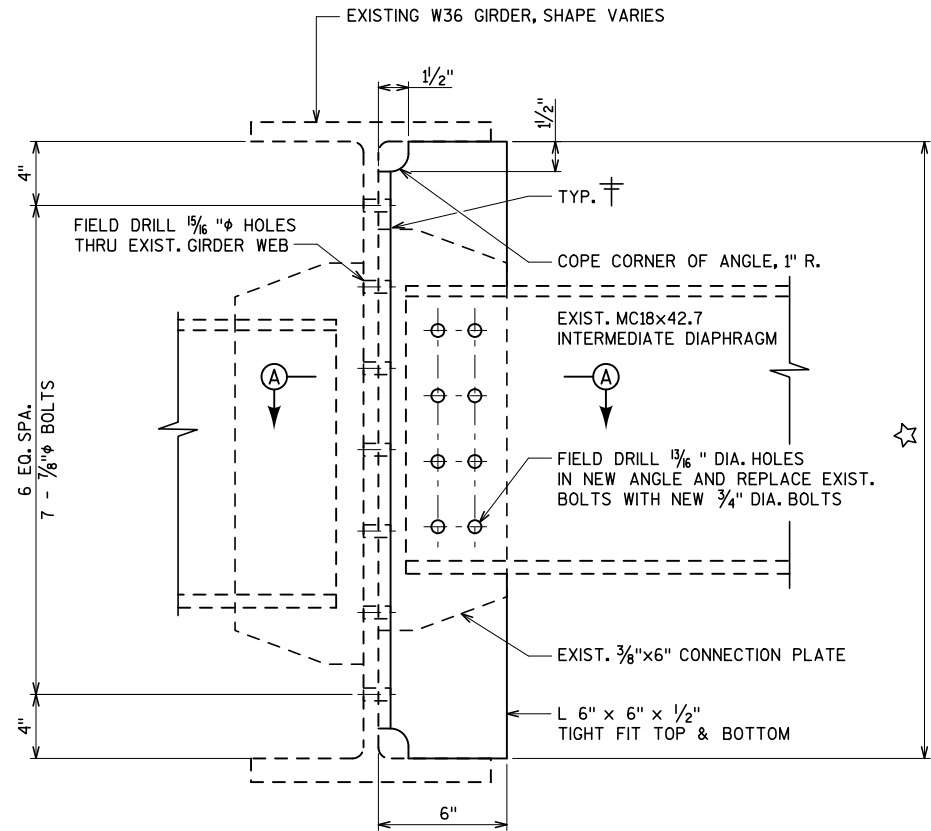
NON-METALLIC WASHERS SHALL HAVE AN INSIDE DIAMETER OF BETWEEN 0.005" AND 0.010" LARGER THAN THE PIN DIAMETER.

▲ NON-METALLIC WASHERS REQUIRED FOR USE AS SPACERS BETWEEN THE HANGER PLATES AND NUTS SHALL BE MADE FROM ONE OF THE FOLLOWING MATERIALS:

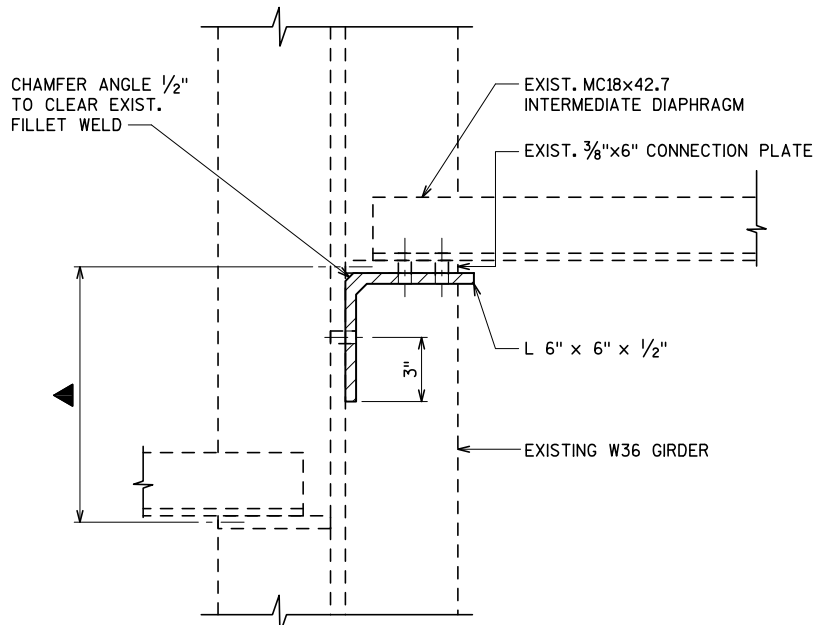
1. PHENOLIC, CANVAS REINFORCED, MIL-P-15035
2. POLYETHYLENE, HIGH DENSITY, BLACK ASTM D 1248, TYPE III, CLASS B
3. ACETAL, FEDERAL SPECIFICATION L-P-392
4. TEFLON TFE, MIL-P-22241A

|   |      |               |                    |
|---|------|---------------|--------------------|
|   |      |               |                    |
| NO.   | DATE | REVISION      | BY                 |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |               |                    |
| STRUCTURE B-40-305  |      |               |                    |
| DRAWN<br>BY   |      | TB            | PLANS<br>CK'D. JRS |
| PIN AND HANGER<br>CLEANING  |      | SHEET 7 OF 14 |                    |
|   |      |               |                    |

FILE NAME: F:\BIM-360E\Hale Interchange Bridges\Structures\1090-33-61-15-2014-B-40-305\08940305\_dia.ph.dgn  
DATE: 4/15/2014 11:20:23 AM  
PLOT BY: HEGEAR  
PEN TABLE: v8\_Structural\_rev.tbl

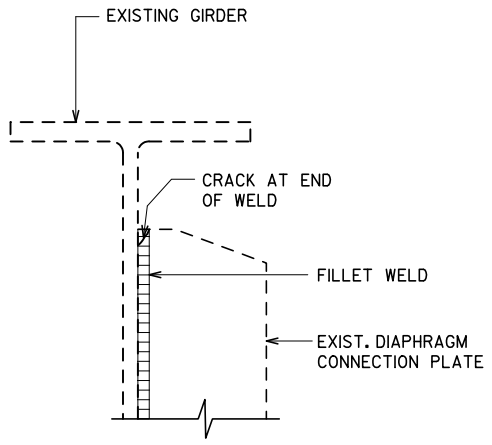


EXISTING CONNECTION PLATE RETROFIT DETAIL

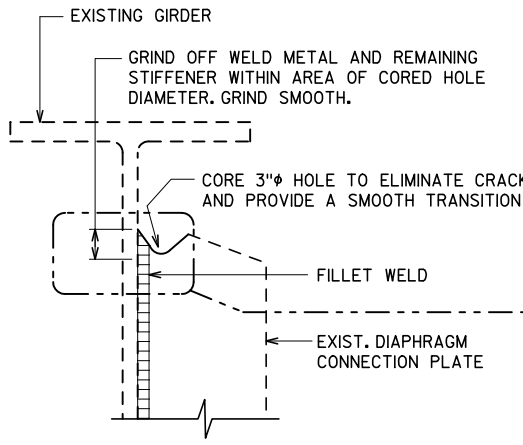


SECTION A-A

▲ USE DETAIL "A" WHEN THE DISTANCE BETWEEN EXIST. CONN. PLATES DOES NOT PERMIT HOLES IN EXIST. GIRDER WEB TO BE DRILLED AND BOLTED.

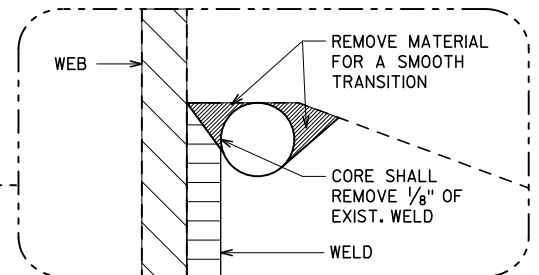


EXISTING CONDITION



REPAIRED CONDITION

GIRDER CRACK REPAIR DETAIL



NOTES

ALL NEW STEEL SHALL BE ASTM A709 GRADE 36.

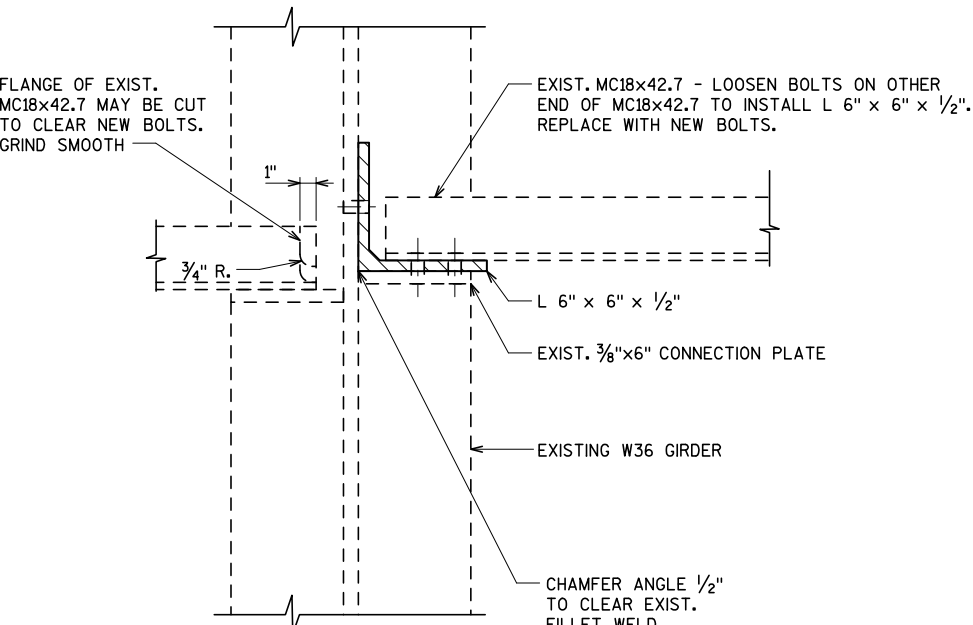
ALL BOLTS TO BE A325 FRICTION TYPE HIGH TENSILE STRENGTH BOLTS.

NEW STEEL SHALL BE SHOP PAINTED TO MATCH THE EXISTING GIRDERS ACCORDING TO THE BID ITEM "PAINTING EPOXY SYSTEM B-40-305".

REPAIR PAINT DAMAGED OR REMOVED BY INSTALLING THE RETROFIT DETAIL. WORK IS INCIDENTAL TO THE BID ITEM "PAINTING EPOXY SYSTEM B-40-305".

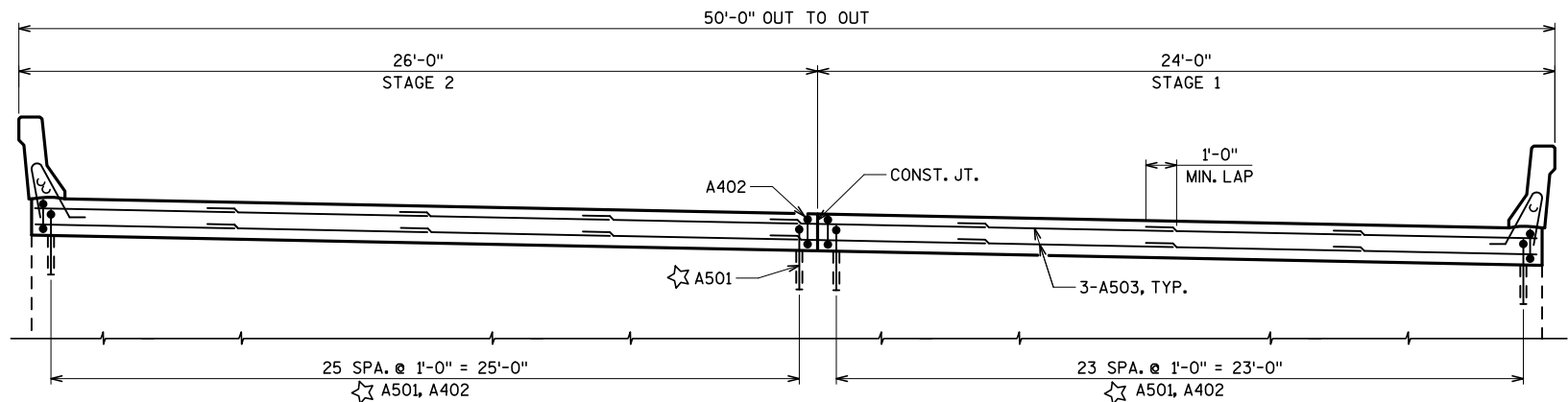
☆ ANGLE LENGTH VARIES, SEE FRAMING PLAN FOR GIRDER SIZES. ANGLE MAY BE FIELD CUT TO FIT, GRIND SMOOTH.

† INSPECT EXISTING FILLET WELDS AT CONNECTION PLATES. IF CRACKS ARE OBSERVED REMOVE PER PLAN AT THE DIRECTION OF THE FIELD ENGINEER. BID ITEM FOR THIS WORK IS "GIRDER CRACK REPAIR".



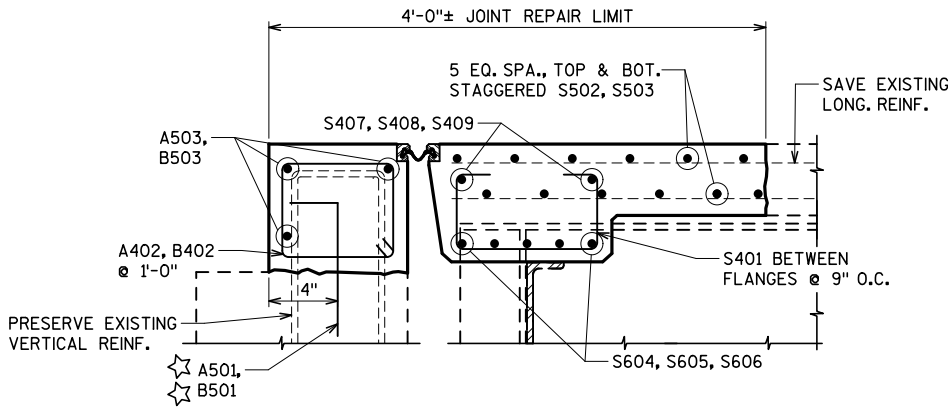
DETAIL "A"

| NO.   | DATE | REVISION      | BY              |
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| STRUCTURE B-40-305  |      |               |                 |
| DRAWN BY  |      | TB            | PLANS CK'D. JRS |
| DIAPHRAGM CONNECTION REPAIRS  |      | SHEET 8 OF 14 |                 |



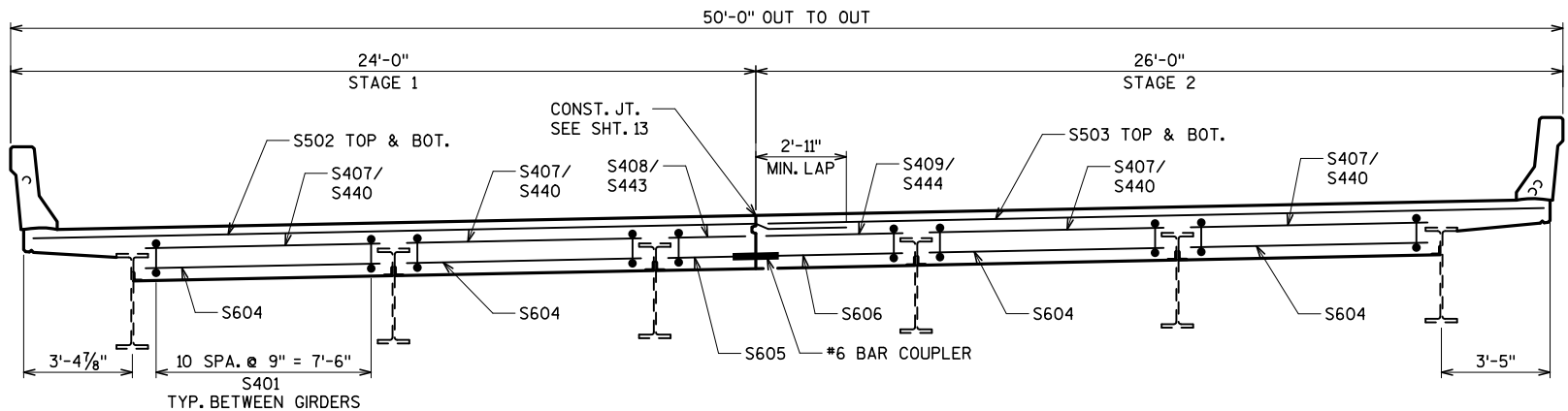
**PAVING BLOCK ELEVATION AT WEST ABUTMENT**

(LOOKING WEST)  
(EAST ABUTMENT LOOKING WEST SIMILAR)



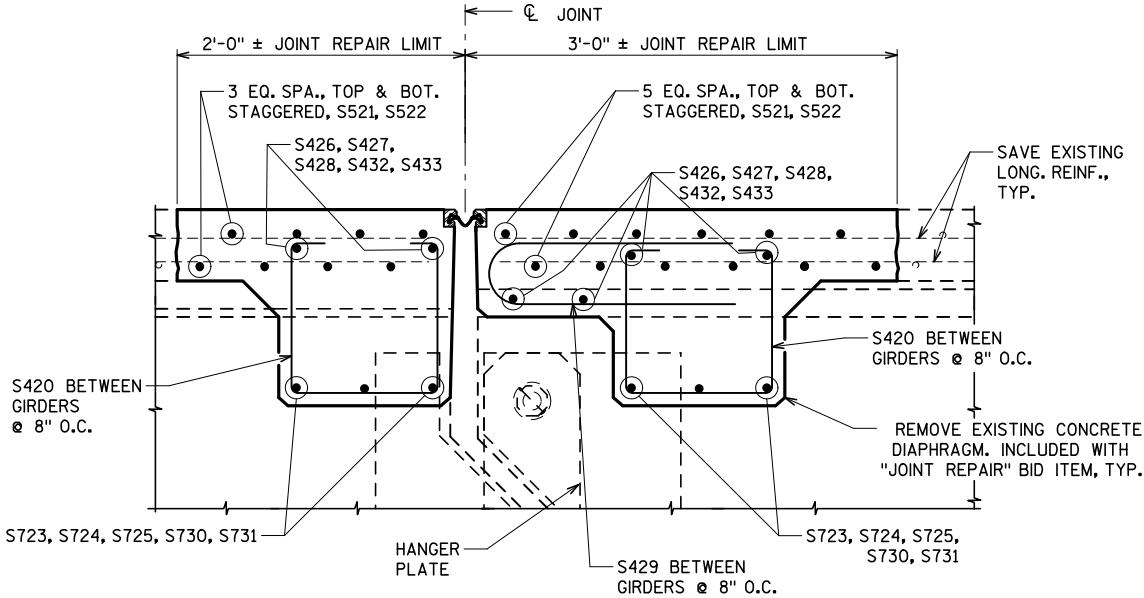
**SECTION THRU JOINT AT ABUTMENT**

NORMAL TO  $\perp$  SUBSTRUCTURE  
SEE SHEET 11 FOR S440 THRU S444 BARS WHICH ARE NOT SHOWN FOR CLARITY. SEE SHEET 11 FOR DIMENSIONS.



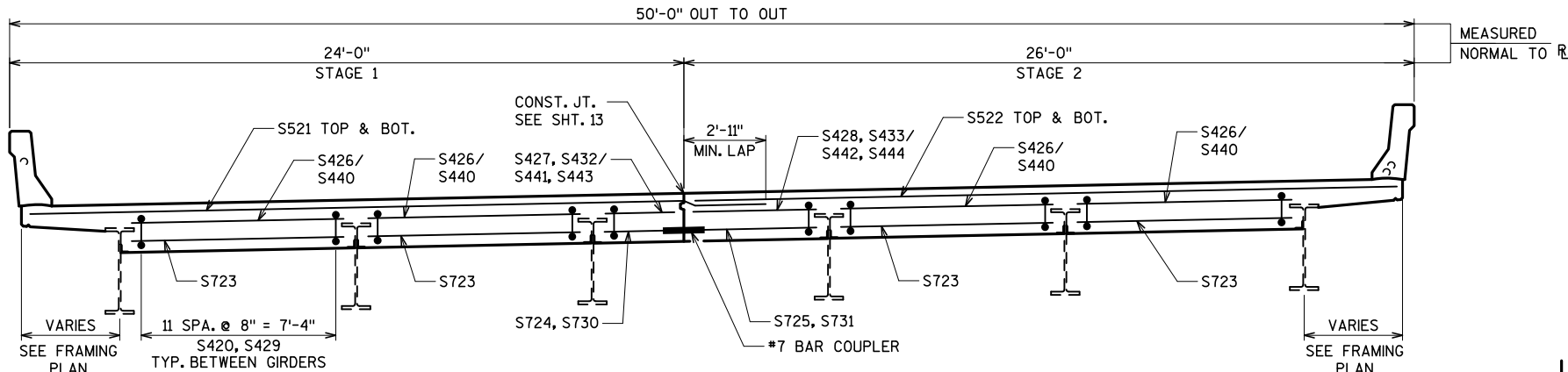
**DECK ELEVATION AT EAST ABUTMENT**

(LOOKING EAST)  
WEST ABUTMENT SIMILAR  
BOTTOM TRANSVERSE DECK BARS NOT SHOWN FOR CLARITY



**SECTION THRU JOINT AT SUSPENDER**

NORMAL TO  $\perp$  SUBSTRUCTURE  
SEE SHEET 11 FOR S440 THRU S444 BARS WHICH ARE NOT SHOWN FOR CLARITY. SEE SHEET 11 FOR DIMENSIONS.  
3'-0" DIMENSION IS LOCATED TO THE SIDE OF THE EXPANSION JOINT WITH THE HANGER PLATE.



**DECK ELEVATION AT SUSPENDERS 1, 2 & 3**

(LOOKING EAST)  
BOTTOM TRANSVERSE DECK BARS NOT SHOWN FOR CLARITY

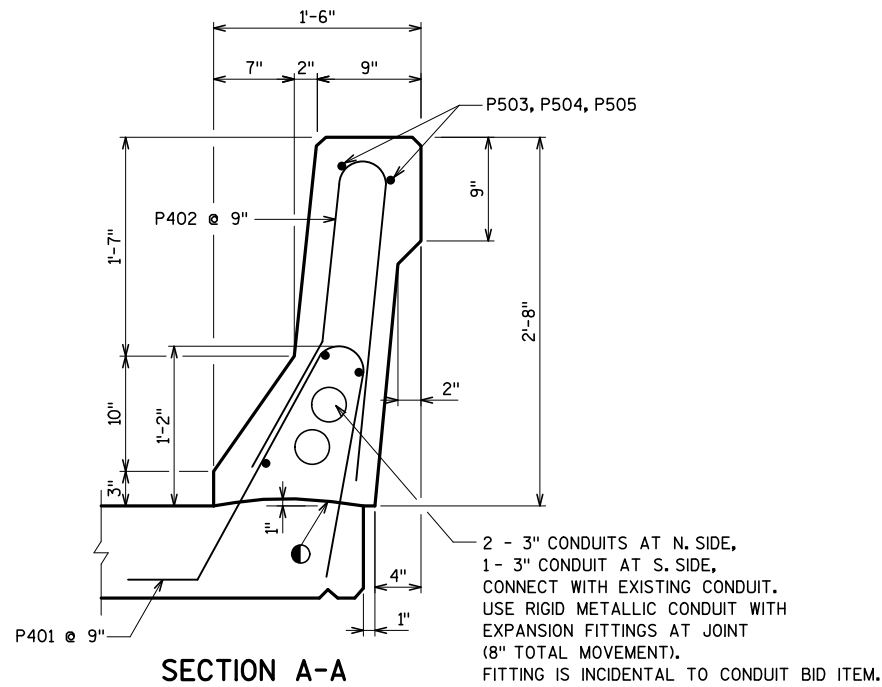
**LEGEND**

☆ EXISTING BARS ARE LIKELY TO BE CORRODED AND/OR DAMAGED DURING CONCRETE REMOVAL. PRESERVE AND INCORPORATE AS MUCH REBAR AS PRACTICAL. SUPPLEMENT WITH THE MASONRY ANCHORS TYPE L NO. 5 MIN. PULLOUT CAPACITY OF 19 KIPS, EMBED A MINIMUM OF 1'-6" INTO CONCRETE. SPACE AT 1'-0". TURN 10" LEG AS NECESSARY TO FIT.

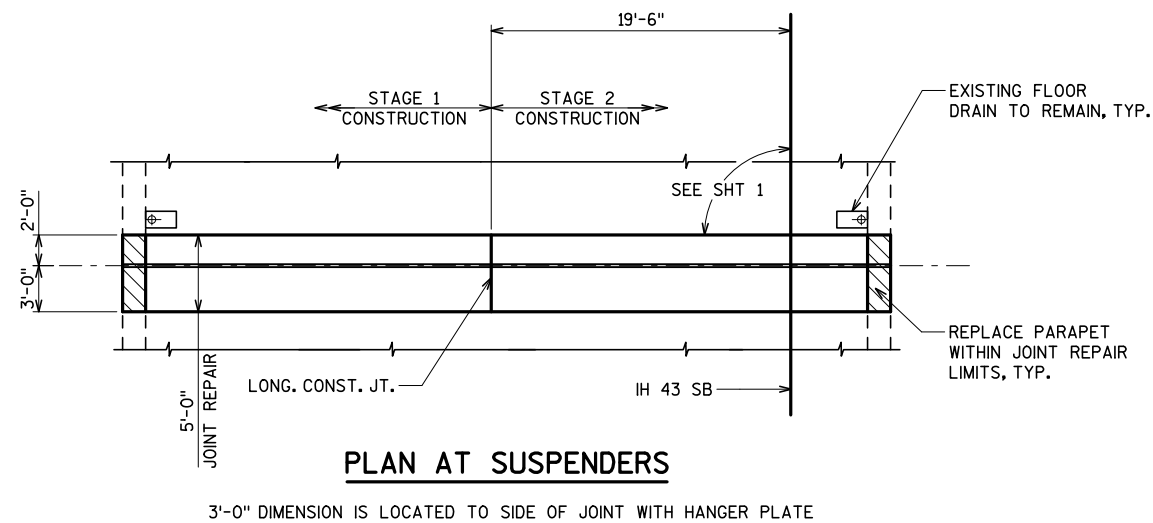
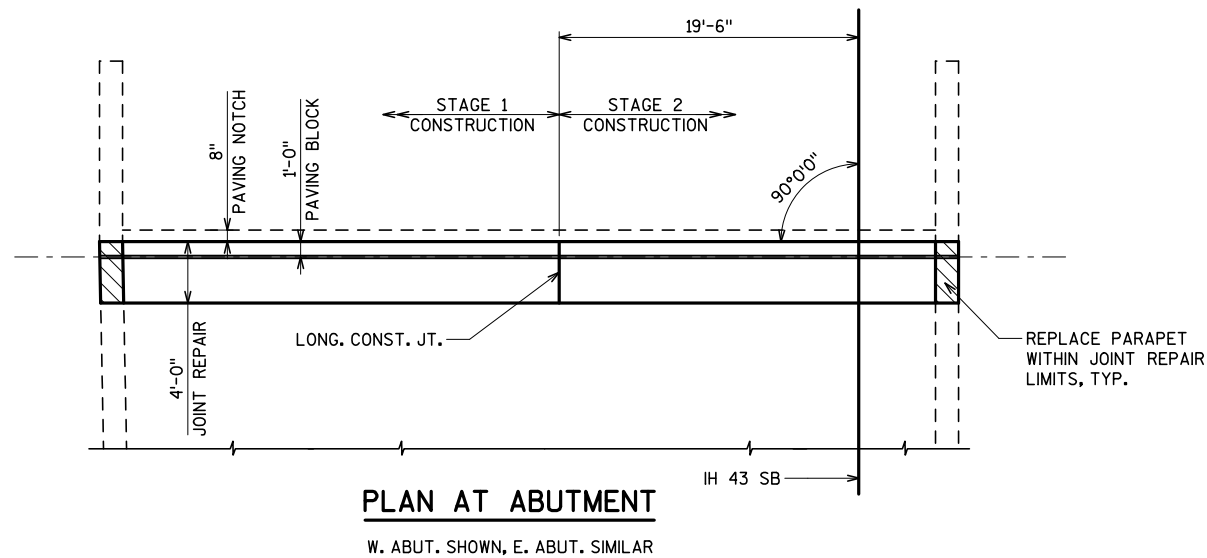
| NO.   | DATE | REVISION | BY              |
|---|------|----------|-----------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |          |                 |
| STRUCTURE B-40-305  |      |          |                 |
| DRAWN BY  |      | TB       | PLANS CK'D. JRS |
| EXPANSION JOINT REINFORCING 1   |      |          | SHEET 9 OF 14   |

FILE NAME: F:\BIM-360E Hole Interchange Bridges\Structures\1090-33-61.4-15-2014-B-40-305\1090-33-61.4-15-2014-B-40-305.dgn  
DATE: 4/15/2014 11:20:26 AM  
PEN TABLE: v8.Structural\_rev.tbl  
Plotted by: Hiegar

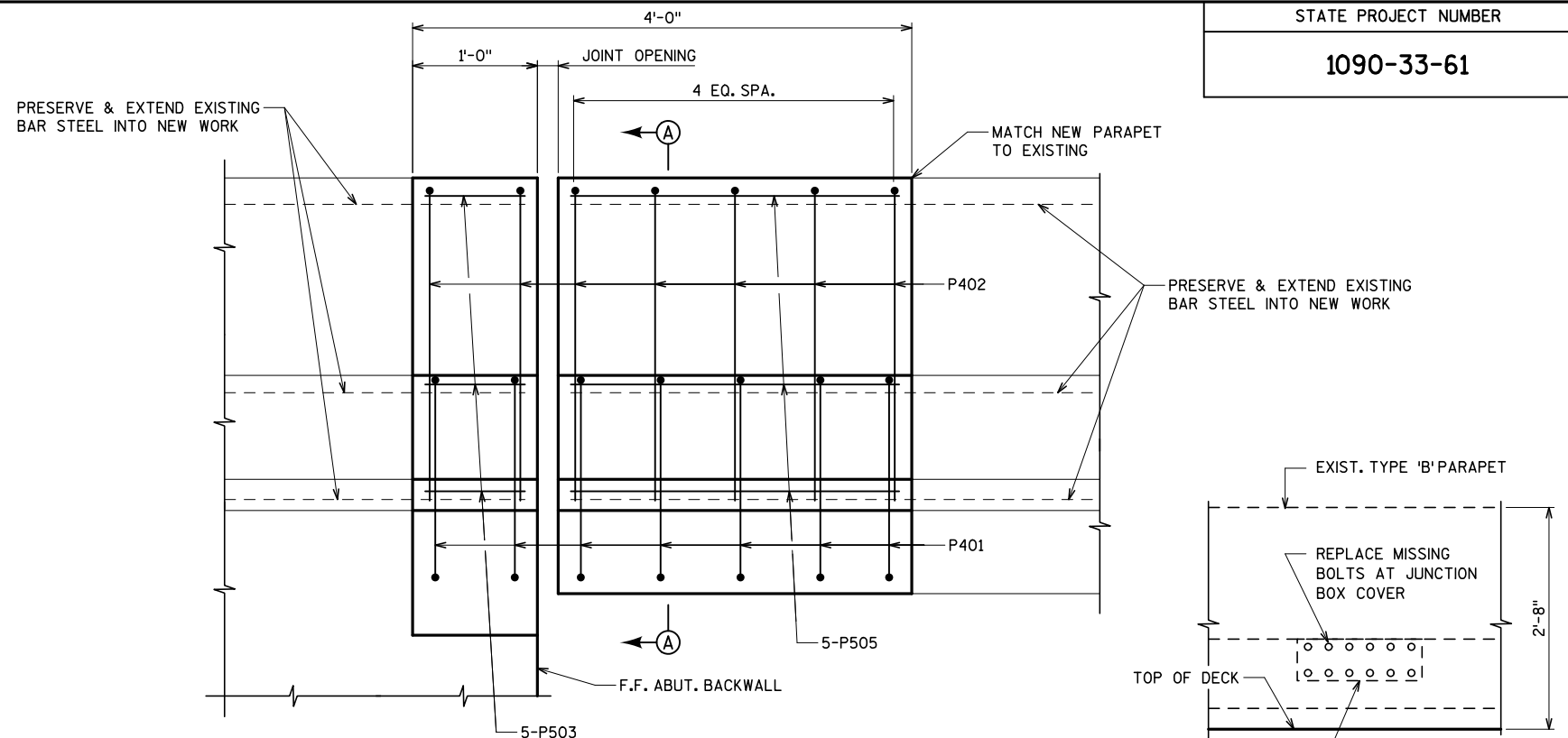
8



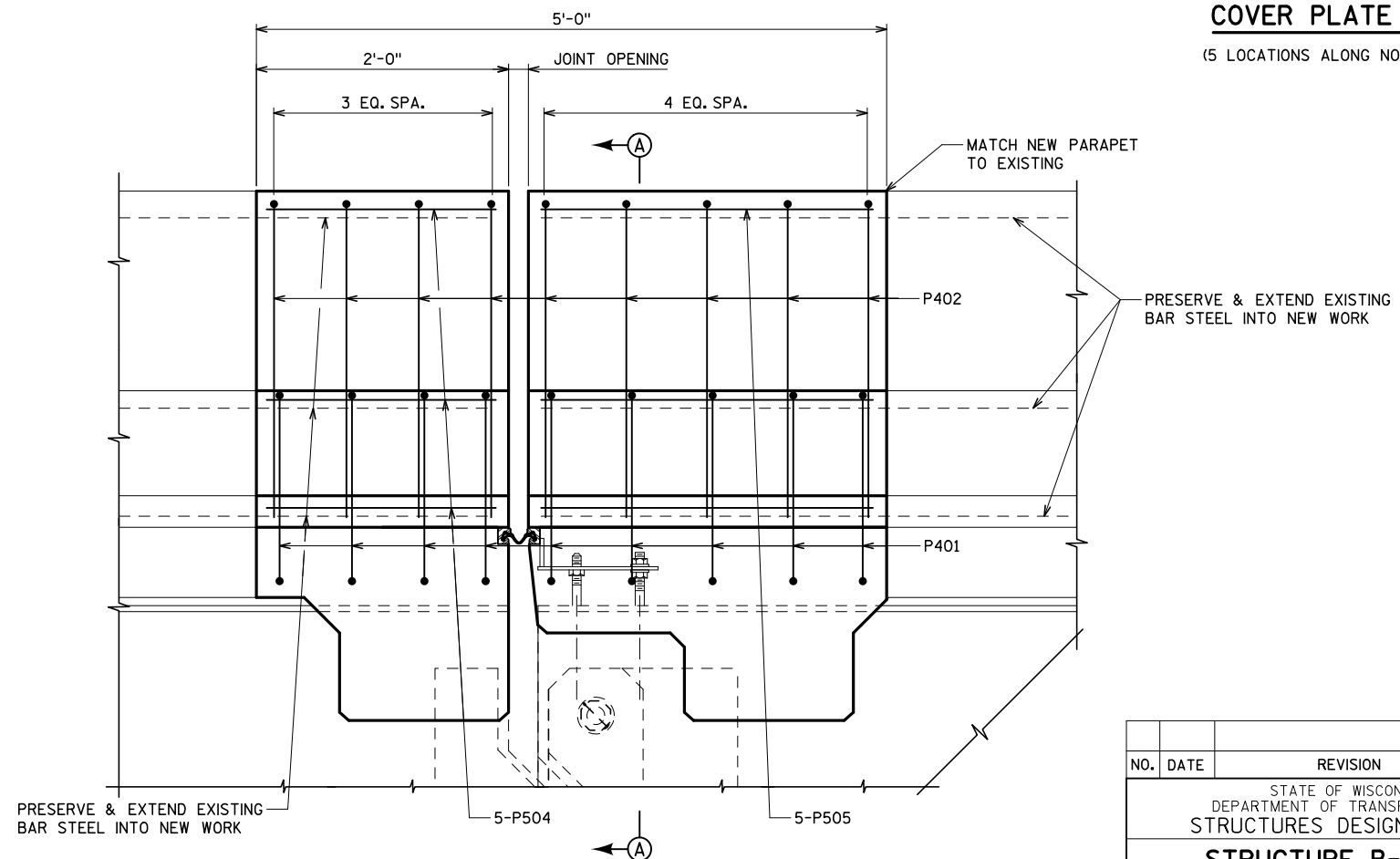
● CONSTRUCTION JOINT STRIKE OFF AS SHOWN



3'-0" DIMENSION IS LOCATED TO SIDE OF JOINT WITH HANGER PLATE



PARAPET ELEVATION AT ABUTMENT

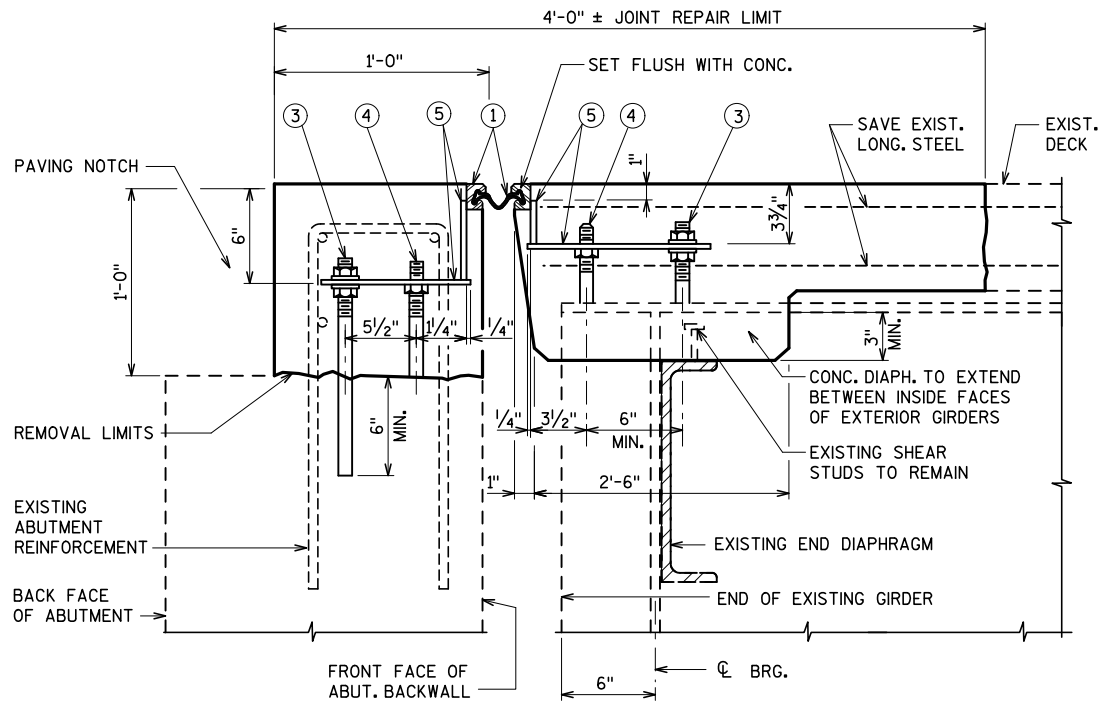


PARAPET ELEVATION AT SUSPENDERS

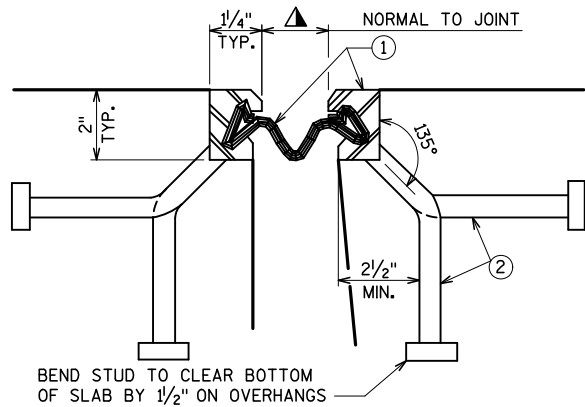
| NO.   | DATE | REVISION | BY              |
|---|------|----------|-----------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |          |                 |
| STRUCTURE B-40-305  |      |          |                 |
| DRAWN BY  |      | TB       | PLANS CK'D. JRS |
| EXPANSION JOINT REINFORCING 2   |      |          | SHEET 10 OF 14  |

8

FILE NAME: F:\BIM-360E-Hall Interchange Bridges\Structures\1090-33-61.4-15-2014-B-40-305-1B40305\_exp\_j11.dgn  
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Plotted by: Heger

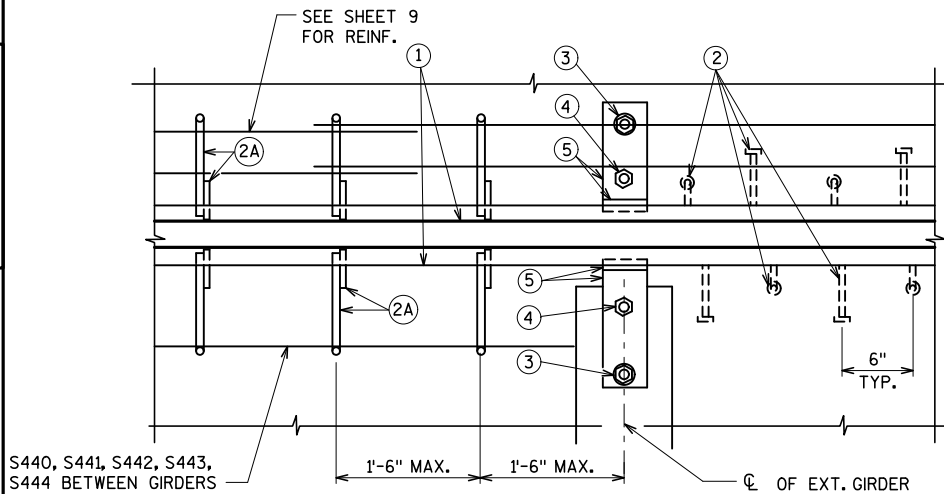


SECTION THRU JOINT AT ABUTMENT  
NORMAL TO  $\phi$  SUBSTRUCTURE



SECTION THRU JOINT

EXTERIOR GIRDER TO EDGE OF SLAB AND AT PARAPETS



PART PLAN

S440, S441, S442, S443, S444 BETWEEN GIRDERS

### GENERAL NOTES

ONE FIELD SPLICE PERMITTED IN STEEL EXTRUSIONS. IF USED, DETAILS SHALL BE SUBMITTED FOR APPROVAL. NO SPLICING PERMITTED IN NEOPRENE STRIP SEAL.

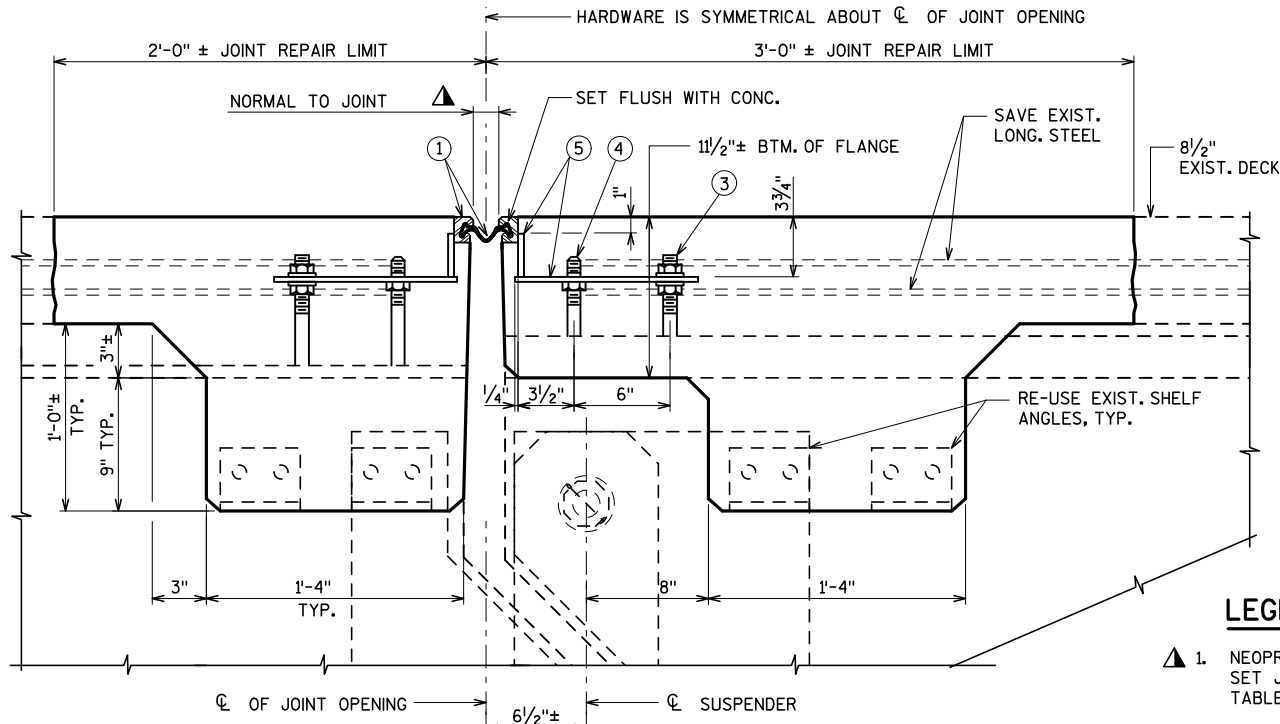
AFTER FABRICATION, BUT BEFORE SHIPMENT, STRAIGHTEN STEEL EXTRUSIONS SUCH THAT THEY SHALL BE FREE FROM WARP, TWIST AND SWEEP.

FABRICATOR SHALL PROVIDE MEANS OF KEEPING GALVANIZED EXTRUSIONS CLEAN AND SMOOTH DURING SHIPMENT AND PRIOR TO APPLYING LUBRICANT ADHESIVE FOR NEOPRENE GLAND INSTALLATION.

SANDBLAST PLATES AND EXTRUSIONS AFTER FABRICATION IN ACCORDANCE WITH SSPC SP. #6 "COMMERCIAL BLAST CLEANING". AFTER BLAST CLEANING, THE PLATES, SUPPORTS AND EXTRUSIONS SHALL BE HOT DIPPED GALVANIZED.

ANCHOR SYSTEM NO. 8 AND NO. 9 SHALL CONFORM TO ASTM A307 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C AND D.

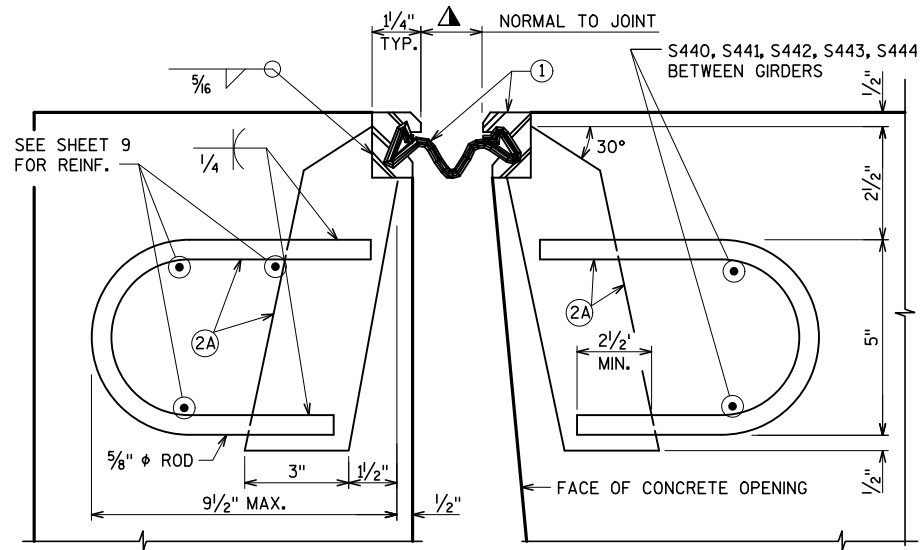
STRIP SEAL EXPANSION JOINT ASSEMBLY, INCLUDING ANCHOR STUDS AND HARDWARE WILL BE PAID FOR AT THE LUMP SUM PRICE BID FOR "FURNISH AND DELIVERED EXPANSION DEVICE B-40-305".



TYPICAL SECTION THRU JOINT AT SUSPENDERS

### TEMPERATURE TABLE

| SHADED UNDERSIDE<br>OF DECK TEMP.<br>(DEG. F) | JOINT OPENING WIDTH (IN.) |                |                     |
|---|---------------------------|----------------|---------------------|
|   | E. ABUT. &<br>W. ABUT.    | SUSPENDER<br>1 | SUSPENDERS<br>2 & 3 |
| 5   | 1 3/4"                    | 3 5/8"         | 3 1/4"              |
| 15  | 1 3/4"                    | 3 1/4"         | 3"                  |
| 25  | 1 3/4"                    | 3"             | 2 3/4"              |
| 35  | 1 3/4"                    | 2 3/4"         | 2 3/8"              |
| 45  | 1 3/4"                    | 2 3/8"         | 2 1/8"              |
| 55  | 1 3/4"                    | 2 1/8"         | 1 7/8"              |
| 65  | 1 3/4"                    | 1 3/4"         | 1 5/8"              |
| 75  | 1 3/4"                    | 1 1/2"         | 1 1/4"              |
| 85  | 1 3/4"                    | 1 1/8"         | 1"                  |
| STRIP SEAL SIZE                               | 4.0"                      | 5.0"           | 5.0"                |



AT PAVING BLOCK

AT DECK

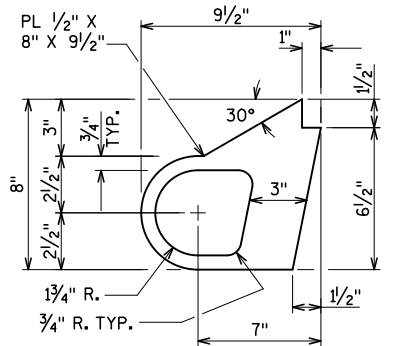
SYM. ABOUT  $\phi$  JOINT UNLESS OTHERWISE SHOWN OR NOTED

SECTION THRU JOINT

ROADWAY TRAFFIC AREA BETWEEN EXTERIOR GIRDERS

STATE PROJECT NUMBER

1090-33-61



ALTERNATE STRIP SEAL  
ANCHOR

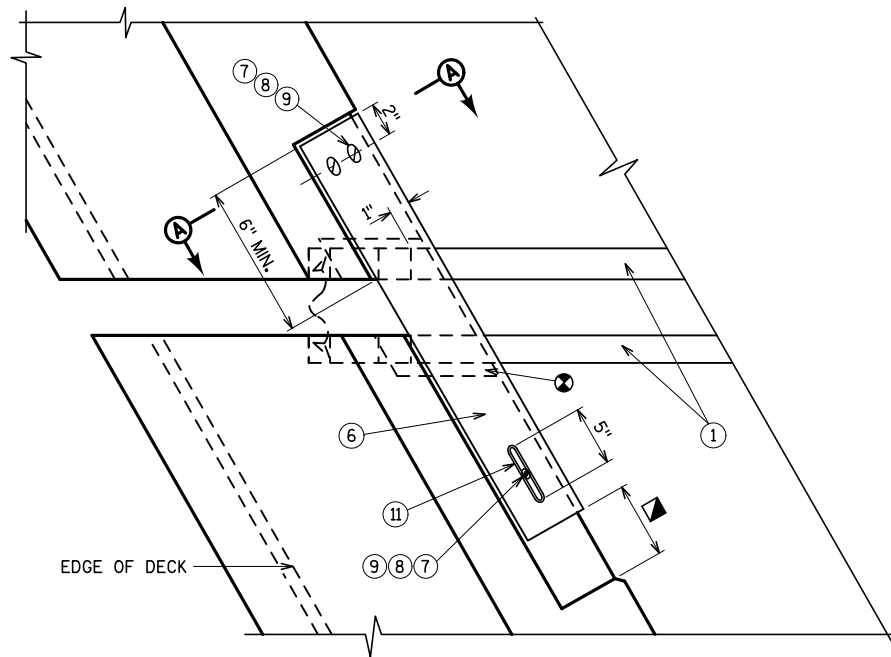
### LEGEND

- NEOPRENE STRIP SEAL AND STEEL EXTRUSIONS. SET JOINT OPENING AND SIZE PER TEMPERATURE TABLE.
- STUDS  $\frac{5}{8}$ "  $\phi$  X  $6\frac{3}{8}$ " LONG AT 6" ALTERNATE CENTERS. WELD TO EXTRUSIONS AND BEND AS SHOWN AFTER WELDING.
- $\frac{1}{2}$ " THICK ANCHOR PLATE WITH  $\frac{5}{8}$ "  $\phi$  ROD (OR ALTERNATE STRIP SEAL ANCHOR). WELD ROD TO ANCHOR PLATE, WELD ANCHOR PLATE TO NO. 1 AT 1'-6" CENTERS BETWEEN GIRDERS.
- $\frac{3}{4}$ "  $\phi$  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.
- $\frac{3}{4}$ "  $\phi$  THREADED ROD WITH NUT. TACK WELD NUT TO NO. 5.
- FABRICATE SUPPORT FROM 3" X  $\frac{1}{2}$ " 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  $\frac{1}{2}$ "  $\phi$  HOLE FOR NO. 3 AND 1"  $\phi$  HOLE FOR NO. 4.
- GALVANIZED PLATE  $\frac{3}{8}$ " X  $14\frac{3}{4}$ " X 2'-2" WITH HOLES FOR NO. 7. BEND AS SHOWN.
- $\frac{3}{4}$ "  $\phi$  X  $1\frac{1}{2}$ " STAINLESS STEEL SOCKET FLAT HEAD SCREWS WITH ANTI-SEIZE LUBRICANT. RECESS  $\frac{1}{16}$ " BELOW PLATE SURFACE.
- $\frac{3}{4}$ "  $\phi$  X 4" GALVANIZED HEX HEAD BOLT. BEND 45°.
- $\frac{3}{4}$ "  $\phi$  X 2  $\frac{1}{4}$ " GALVANIZED THREADED COUPLING.
- NOT USED
- 1" X 5" SLOTTED CSK. HOLE FOR NO. 7 SLOT PARALLEL TO DIRECTION OF MOVEMENT.
- 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.

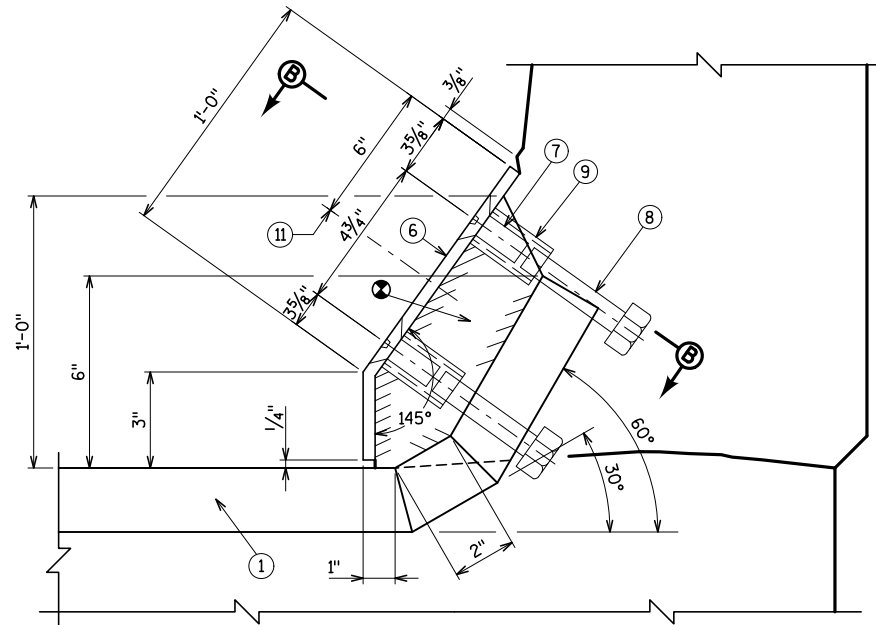
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|---|------|----------|-----------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |          |                 |
| STRUCTURE B-40-305  |      |          |                 |
| DRAWN BY  |      | TB       | PLANS CK'D. JRS |
| EXPANSION JOINT<br>DETAILS (1 OF 2)   |      |          | SHEET 11 OF 14  |



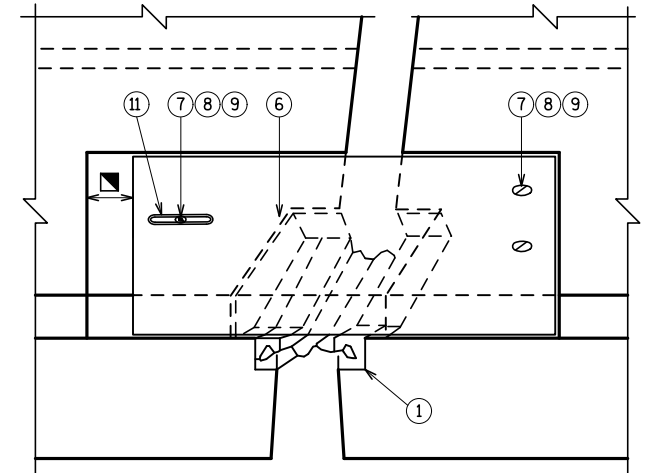
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Plotted by: Hiegar



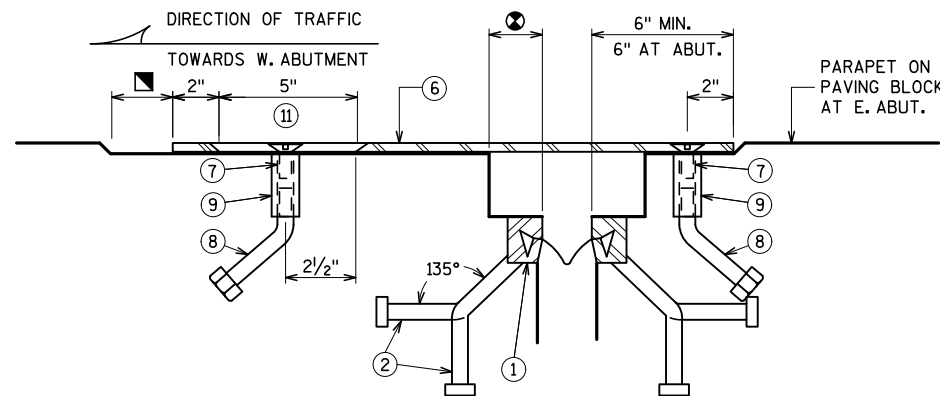
PLAN AT PARAPET



SECTION A-A

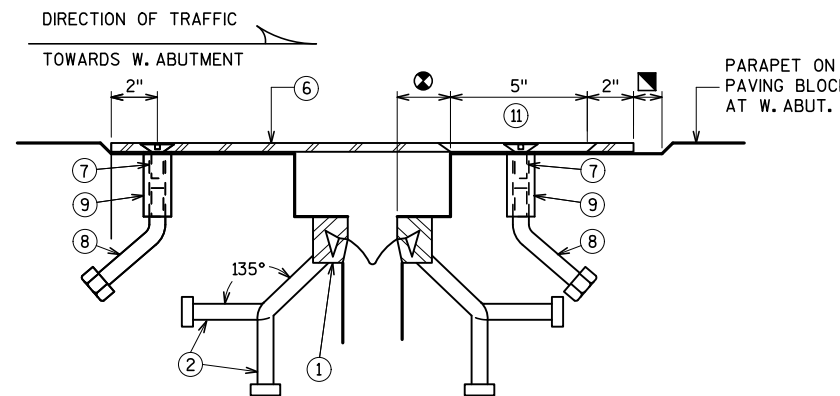


VIEW OF PARAPET PLATE  
FROM ROADWAY



SECTION B-B

APPLIES AT EAST ABUTMENT AND SUSPENDERS



SECTION B-B

APPLIES AT WEST ABUT. AND PIERS

NOTES

- ⊗ BLOCKOUT CONCRETE 2" EACH SIDE OF JOINT OPENING.
  - ▣ JOINT OPENING DIM. ALONG SKEW PLUS 1/2".
- SEE SHEET 11 FOR ADDITIONAL NOTES AND LEGEND.

| NO.   | DATE | REVISION           | BY             |
|---|------|--------------------|----------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |                    |                |
| STRUCTURE B-40-305  |      |                    |                |
| DRAWN<br>BY TB  |      | PLANS<br>CK'D. JRS |                |
| EXPANSION JOINT<br>DETAILS (2 OF 2)   |      |                    | SHEET 12 OF 14 |

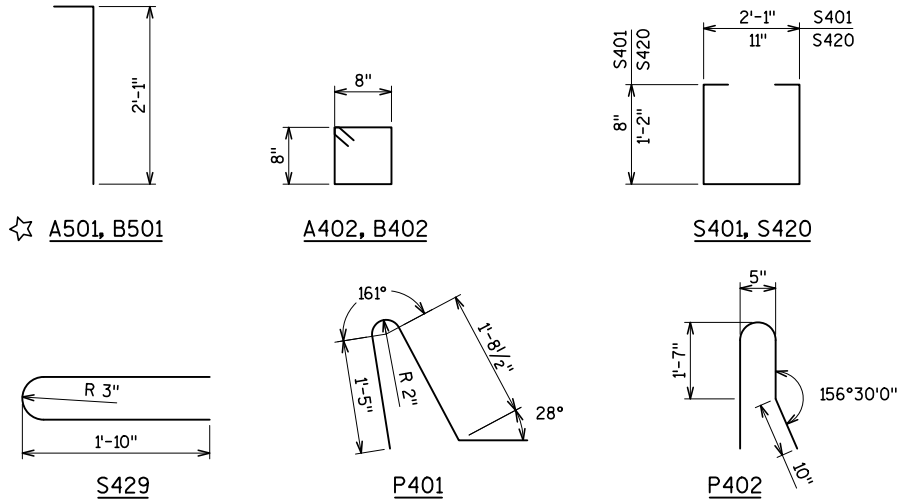
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Plotted by: Hiegar

BILL OF BARS - WEST AND EAST ABUT.

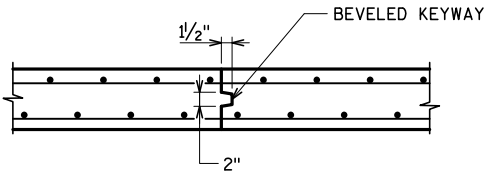
| BAR MARK | COAT | NO. STAGE 1 | NO. STAGE 2 | NO. TOTAL | LENGTH | BENT | BAR SERIES | LOCATION                           |
|----------|------|-------------|-------------|-----------|--------|------|------------|------------------------------------|
| ☆ A501   | X    | 24          | 26          | 50        | 2'-9"  | X    | -          | W. ABUT. - PAVING BLOCK VERTICAL   |
| A402     | X    | 24          | 26          | 50        | 3'-2"  | X    | -          | W. ABUT. - PAVING BLOCK VERTICAL   |
| A503     | X    | 12          | 12          | 24        | 7'-0"  | -    | -          | W. ABUT. - PAVING BLOCK HORIZONTAL |
|          |      |             |             |           |        |      |            |                                    |
|          |      |             |             |           |        |      |            |                                    |
| ☆ B501   | X    | 24          | 26          | 50        | 2'-9"  | X    | -          | E. ABUT. - PAVING BLOCK VERTICAL   |
| B402     | X    | 24          | 26          | 50        | 3'-2"  | X    | -          | E. ABUT. - PAVING BLOCK VERTICAL   |
| B503     | X    | 12          | 12          | 24        | 7'-0"  | -    | -          | E. ABUT. - PAVING BLOCK HORIZONTAL |
|          |      |             |             |           |        |      |            |                                    |
|          |      |             |             |           |        |      |            |                                    |
|          |      |             |             |           |        |      |            |                                    |

BILL OF BARS - PARAPET

| BAR MARK | COAT | NO. STAGE 1 | NO. STAGE 2 | NO. TOTAL | LENGTH | BENT | BAR SERIES | LOCATION            |
|----------|------|-------------|-------------|-----------|--------|------|------------|---------------------|
| P401     | X    | 41          | 41          | 82        | 4'-3"  | X    | -          | PARAPETS VERTICAL   |
| P402     | X    | 41          | 41          | 82        | 4'-4"  | X    | -          | PARAPETS VERTICAL   |
| P503     | X    | 10          | 10          | 20        | 0'-8"  | -    | -          | PARAPETS HORIZONTAL |
| P504     | X    | 15          | 15          | 30        | 1'-8"  | -    | -          | PARAPETS HORIZONTAL |
| P505     | X    | 25          | 25          | 50        | 2'-6"  | -    | -          | PARAPETS HORIZONTAL |
|          |      |             |             |           |        |      |            |                     |
|          |      |             |             |           |        |      |            |                     |
|          |      |             |             |           |        |      |            |                     |



BENDING DIAGRAMS



CONSTRUCTION JOINT DETAIL

STATE PROJECT NUMBER

1090-33-61

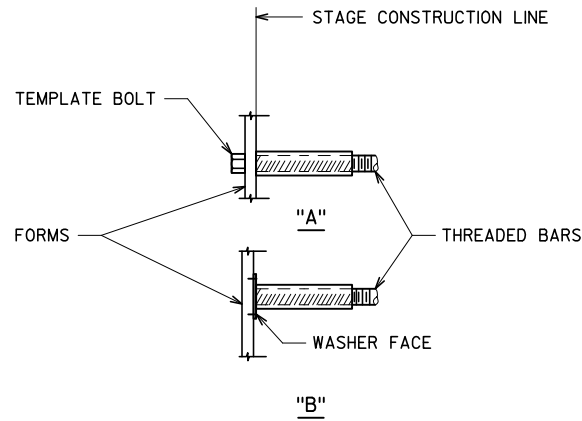
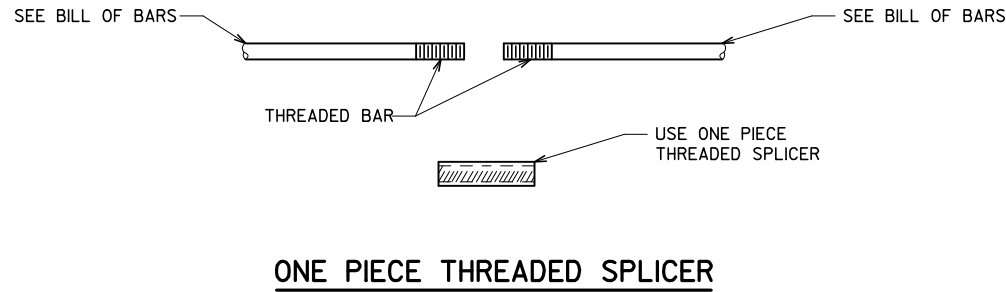
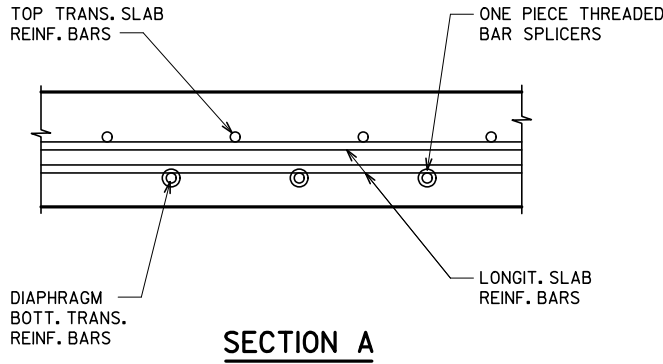
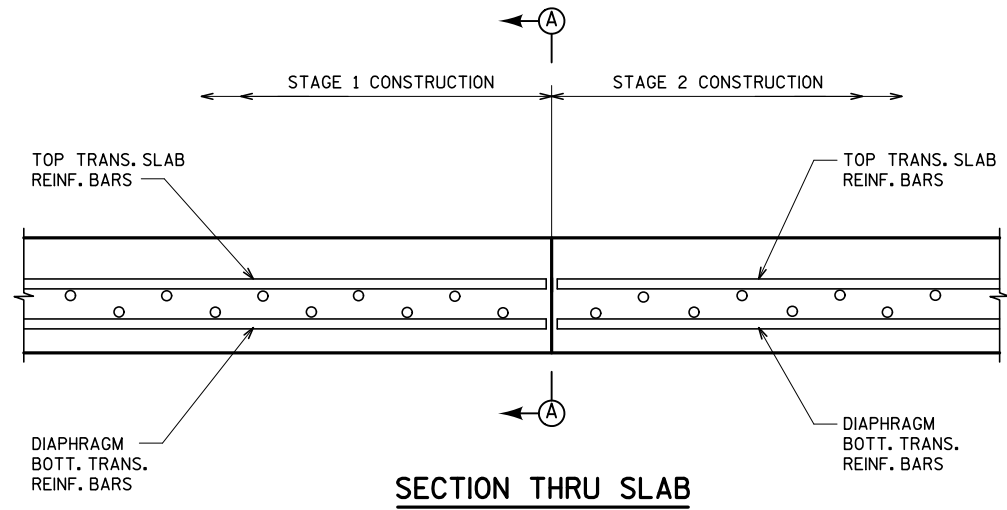
BILL OF BARS - SUPERSTRUCTURE

| BAR MARK | COAT | NO. STAGE 1 | NO. STAGE 2 | NO. TOTAL | LENGTH | BENT | BAR SERIES | LOCATION  |
|----------|------|-------------|-------------|-----------|--------|------|------------|---|
| S401     | X    | 52          | 58          | 110       | 3'-10" | X    | -          | DECK JOINT VERT. - ABUTMENTS                    |
| S502     | X    | 24          | -           | 24        | 26'-4" | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                   |
| S503     | X    | -           | 24          | 24        | 25'-4" | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                   |
| S604     | X    | 20          | 20          | 40        | 8'-1"  | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                   |
| S605     | X    | 10          | -           | 10        | 3'-0"  | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                   |
| S606     | X    | -           | 10          | 10        | 5'-0"  | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                   |
| S407     | X    | 8           | 8           | 16        | 8'-1"  | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                   |
| S408     | X    | 4           | -           | 4         | 3'-0"  | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                   |
| S409     | X    | -           | 4           | 4         | 5'-0"  | -    | -          | DECK JOINT HORIZ. - ABUTMENTS                   |
|          |      |             |             |           |        | -    |            |   |
|          |      |             |             |           |        | -    |            |   |
| S420     | X    | 174         | 186         | 360       | 3'-8"  | X    | -          | DECK JOINT VERT. - SUSPENDERS                   |
| S521     | X    | 60          | -           | 60        | 26'-4" | -    | -          | DECK JOINT HORIZ. - SUSPENDERS                  |
| S522     | X    | -           | 60          | 60        | 25'-4" | -    | -          | DECK JOINT HORIZ. - SUSPENDERS                  |
| S723     | X    | 36          | 36          | 72        | 8'-1"  | -    | -          | DECK JOINT HORIZ. - SUSPENDERS                  |
| S724     | X    | 12          | -           | 12        | 3'-4"  | -    | -          | DECK JOINT HORIZ. - SUSPENDERS 1 & 2            |
| S725     | X    | -           | 12          | 12        | 4'-8"  | -    | -          | DECK JOINT HORIZ. - SUSPENDERS 1 & 2            |
| S426     | X    | 24          | 24          | 48        | 8'-1"  | -    | -          | DECK JOINT HORIZ. - SUSPENDERS                  |
| S427     | X    | 12          | -           | 12        | 3'-3"  | -    | -          | DECK JOINT HORIZ. - SUSPENDERS 1 & 2            |
| S428     | X    | -           | 12          | 12        | 4'-7"  | -    | -          | DECK JOINT HORIZ. - SUSPENDERS 1 & 2            |
| S429     | X    | 87          | 93          | 180       | 3'-4"  | X    | -          | DECK JOINT VERT. - SUSPENDERS                   |
| S730     | X    | 6           | -           | 6         | 3'-1"  | -    | -          | DECK JOINT HORIZ. - SUSPENDER 3                 |
| S731     | X    | -           | 6           | 6         | 5'-1"  | -    | -          | DECK JOINT HORIZ. - SUSPENDER 3                 |
| S432     | X    | 6           | -           | 6         | 3'-0"  | -    | -          | DECK JOINT HORIZ. - SUSPENDER 3                 |
| S433     | X    | -           | 6           | 6         | 5'-0"  | -    | -          | DECK JOINT HORIZ. - SUSPENDER 3                 |
|          |      |             |             |           |        |      |            |   |
|          |      |             |             |           |        |      |            |   |
|          |      |             |             |           |        |      |            |   |
| S440     | X    | 32          | 32          | 64        | 8'-1"  | -    | -          | DECK JOINT HORIZ.                               |
| S441     | X    | 8           | -           | 8         | 3'-3"  | -    | -          | DECK JOINT HORIZ. - SUSPENDERS 1&2 STAGE 1      |
| S442     | X    | -           | 8           | 8         | 4'-7"  | -    | -          | DECK JOINT HORIZ. - SUSPENDERS 1&2 STAGE 2      |
| S443     | X    | 6           | -           | 6         | 3'-0"  | -    | -          | DECK JOINT HORIZ. - SUSPENDER 3 & ABUTS STAGE 1 |
| S444     | X    | -           | 6           | 6         | 5'-0"  | -    | -          | DECK JOINT HORIZ. - SUSPENDER 3 & ABUTS STAGE 2 |
|          |      |             |             |           |        |      |            |   |
|          |      |             |             |           |        |      |            |   |
|          |      |             |             |           |        |      |            |   |
|          |      |             |             |           |        |      |            |   |

LEGEND

- ☆ CONCRETE MASONRY ANCHOR TYPE L NO. 5 WITH MIN. PULLOUT CAPACITY OF 19 KIPS. EMBED 1'-6" MIN. INTO CONCRETE
- BAR COUPLERS REQUIRED

|   |      |          |                 |
|---|------|----------|-----------------|
|   |      |          |                 |
| NO.   | DATE | REVISION | BY              |
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |          |                 |
| STRUCTURE B-40-305  |      |          |                 |
| DRAWN BY  |      | TB       | PLANS CK'D. JRS |
| BILL OF BARS  |      |          | SHEET 13 OF 14  |



NOTES

STEEL SPLICE (COUPLER) ASSEMBLY SHALL BE AN APPROVED TYPE AND SHALL DEVELOP IN TENSION AT LEAST 125% OF THE YIELD STRENGTH OF THE SPLICED REINFORCEMENT BARS.

DOWEL BAR SPLICERS SHALL BE OF MINIMUM 60 ksi YIELD STRENGTH, AND HAVE TENSILE STRENGTH AREA EQUAL OR GREATER THAN THAT OF THE LAPPED REINFORCEMENT BARS.

DOWEL BAR SPLICERS SHALL MEET THE DEFORMATION REQUIREMENTS FOR STANDARD ASTM DEFORMED REINFORCING BARS.

ONE PIECE THREADED COUPLERS SHALL BE USED AS THE LAP LENGTHS REQUIRED FOR BAR SPLICERS ARE NOT AVAILABLE IN SOME LOCATIONS.

SPLICER (COUPLER) ASSEMBLY IN THE SLAB SHALL BE EPOXY COATED IN ACCORDANCE WITH THE REQUIREMENTS FOR REINFORCEMENT BARS.

OTHER SYSTEMS OF SIMILAR DESIGN MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL. APPROVAL SHALL BE BASED ON CERTIFIED TEST RESULTS FROM AN APPROVED TESTING LABORATORY THAT THE PROPOSED SPLICER (COUPLER) ASSEMBLY SATISFIES THE FOLLOWING REQUIREMENT:

① MINIMUM CAPACITY = 1.25 X f<sub>y</sub> X AREA OF SPLICED REINFORCEMENT BAR.

WHERE f<sub>y</sub> = YIELD STRENGTH OF SPLICED REINFORCEMENT BARS

BAR LENGTH COMPUTED TO  $\phi$  LONGIT. JOINT AND SHALL BE MODIFIED IF REQ'D. TO BAR COUPLER MANUFACTURER RECOMMENDATIONS. PAY BASED ON BARS AS DETAILED.

FILE NAME: F:\BIM-360E Hole Interchange Bridges\Structures\1090-33-61.4-15-2014-B-40-305\4B40305.couplers.dgn  
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|---|------|----------|--------------------|
| STATE OF WISCONSIN<br>DEPARTMENT OF TRANSPORTATION<br>STRUCTURES DESIGN SECTION |      |          |                    |
| STRUCTURE B-40-305  |      |          |                    |
| DRAWN<br>BY   |      | TB       | PLANS<br>CK'D. JRS |
| BAR COUPLERS  |      |          | SHEET 14 OF 14     |

## Notes



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