STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

# Inspection Report for B-36-065

## IH 43 SB-STH 42 SB over CS  W CUSTER ST

**Jun 14,2017**

| Type | Prior | Frequency (mos) | Performed |
|---|---|---|---|
| Routine | 09-08-15 | 24 | X |
| Deck Evaluation | 06-15-16 | 0 | |
| SIA Review | 09-08-15 | 48 | |

| | | | |
|---|---|---|---|
| Latitude | 44°04'54.00"N | Owner | STATE HIGHWAY DEPT |
| Longitude | 87°43'30.00"W | Maintainer | STATE HIGHWAY DEPT |

### Time Log

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

### Team members

Noah Bertrand

| | Name | Number | Signature | Date |
|---|---|---|---|---|
| Inspector | Lahm, Jason G | 3011 | Jason G Lahm<br>E-signed by Jason G Lahm(dotj2l) | 06-19-17 |

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



## Identification & Location

| | | |
|---|---|---|
| Feature On: IH 43 SB-STH 42 SB | Section Town Range: S27 T19N R23E | Structure Number: **B-36-065** |
| Feature Under: CS W CUSTER ST | County: MANITOWOC | |
| Location: 1.6M S JCT STH 42 TO N | Municipality: MANITOWOC RAPIDS | Structure Name: |

## Geometry

measurements in feet, except where noted

| | | |
|---|---|---|
| Approach Roadway Width: 40 | Bridge Roadway Width: 40.0 | Total Length: 154.3 |
| Approach Pavement Width: 24 | Deck Width: 43.0 | Deck Area (sq ft): 6634 |

## Traffic

| | Lanes | ADT | ADT year | Traffic Pattern |
|---|---|---|---|---|
| On | 2 | 10600 | 2017 | ONE WAY TRAFFIC |
| Under | 2 | 800 | 2017 | TWO WAY TRAFFIC |

## Capacity

## Load Rating

| | | | |
|---|---|---|---|
| Inventory rating: HS16 | Overburden depth (in): 2.0 | Last rating date: 07-21-15 | Controlling: INTERIOR DECK GIRDER Positive Moment |
| Operating rating: HS26 | Deck surface material: BITUMINOUS | Re-rate for capacity (Y/N): | Control location: SPAN 2 |
| Posting: | Re-rate notes: | | |

## Hydraulic

## Classification

| | | |
|---|---|---|
| Scour Critical Code(113): (N) NO WATERWAY | Q100 (ft3/sec): 0 | |
| High water elevation (ft): 0.0 | Velocity (ft/sec): 0.0 | Sufficiency #: 79.9 |

## Span(s)

| Span # | Material | Configuration | Depth (in) | Length (ft) | Main |
|---|---|---|---|---|---|
| 1 | CONT PREST CONC | DECK GIRDER | 45 | 35.5 | |
| 2 | CONT PREST CONC | DECK GIRDER | 45 | 79.0 | Y |
| 3 | CONT PREST CONC | DECK GIRDER | 45 | 35.5 | |

## Expansion joint(s)

## Temperature: File: New: 75

| Joint # | Location | Type | Last inspection date | Last measure (in) | New measure (in) |
|---|---|---|---|---|---|
| 1 | NORTH ABUTMENT | T-30SA | 09-08-15 | 1.0 | 2.5 |

## Clearance

| Item | File Measurement (ft) | File Date | New Measurement (ft) |
|---|---|---|---|
| Highway Min Vertical Under Cardinal | 14.99 | 14-Aug-2000 | |
| Highway Min Vertical Under Non-Cardinal | 14.99 | 14-Aug-2000 | |
| Horizontal Under Cardinal | 62.0 | | |
| Horizontal Under Non-Cardinal | | | |
| Highway Min Vertical On Cardinal | | | |
| Horizontal On Cardinal | | | |

## Special Components

| Component | Year | Work Performed | Note |
|---|---|---|---|
| POLYMER OVERLAY - ROSPHALT 50 | 2001 | OVERLAY - BITUMINOUS | |

## Construction History

| Year | Work Performed | FOS id |
|---|---|---|
| 2016 | OVERLAY - CONCRETE | 1224-21-71 |
| 9999 | NOT BUILT | 1224-00-21 |
| 2001 | OVERLAY - BITUMINOUS | 1224-07-00 |
| 1994 | REPAIR DECK | |
| 1979 | NEW STRUCTURE | 1225-01-85 |

## Maintenance Items

| Item | Priority | Recommended by | Status | Status change |
|---|---|---|---|---|
| **Deck - Other Work** | MEDIUM | Lahm, Jason G (3011) | IDENTIFIED | 06/15/17 |
| MMA Deck | | | | |
| **Approach - Seal Approach to Paving Block** | MEDIUM | Lahm, Jason G (3011) | IDENTIFIED | 06/15/17 |
| Hot Rubber joint | | | | |
| **Expansion Joints - Repair** | LOW | Lahm, Jason G (3011) | IDENTIFIED | 06/15/17 |
| | | | | |

## Elements

| Chk | Element | Defect | Description | UOM | Total | Quantity in Condition State 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| X | **12** | | **Reinforced Concrete Deck-Coated Reinforcing** | SF | 6,635 | 6,595 | 40 | 0 | 0 |
| | | 1130 | Cracking (RC) **Span 1 (20SF) Span 2 (0SF) Span (20SF) (**Diagonal cracking at abutment**)** | SF | | 0 | 40 | 0 | 0 |
| | 8514 | | Concrete Overlay | SF | 6,635 | 0 | 6,635 | 0 | 0 |
| | | 3220 | Crack (Wearing Surface) **map cracking throughout** | SF | | 0 | 6,635 | 0 | 0 |
| X | **109** | | **Prestressed Concrete Open Girder** | LF | 754 | 754 | 0 | 0 | 0 |
| X | **205** | | **Reinforced Concrete Column** | EA | 6 | 6 | 0 | 0 | 0 |
| X | **215** | | **Reinforced Concrete Abutment** | LF | 98 | 88 | 10 | 0 | 0 |
| | | 1130 | Cracking (RC) Light vertical cracking CS-2 (N Abut 3" & S Abut 7) | LF | | 0 | 10 | 0 | 0 |
| X | **234** | | **Reinforced Concrete Cap** | LF | 91 | 86 | 5 | 0 | 0 |
| | | 1080 | Delamination - Spall - Patched Area Small spall areas at south face west end of pier 2 | LF | | 0 | 2 | 0 | 0 |
| | | 1130 | Cracking (RC) CS-2: cracks on underside of cap (2' @ pier 1 & 1' @ pier 2) | LF | | 0 | 3 | 0 | 0 |
| X | **300** | | **Strip Seal Expansion Joint** | LF | 52 | 52 | 0 | 0 | 0 |
| X | **310** | | **Elastomeric Bearing** | EA | 5 | 5 | 0 | 0 | 0 |
| X | **331** | | **Reinforced Concrete Bridge Rail** | LF | 360 | 360 | 0 | 0 | 0 |
| | | 1130 | Cracking (RC) | LF | | 0 | 0 | 0 | 0 |

# BRIDGE INSPECTION REPORT
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Structure No.: **B-36-065**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X | **8400** | | **Integral Wingwall** | EA | 4 | 2 | 2 | 0 | 0 |
| | | 8902 | Wall Movement | EA | | 0 | 2 | 0 | 0 |
| | | | **CS-2:** NW wing tipped 1/2". SE wing tipped 1/2" and strapped. | | | | | | |

## Assessments

| Chk | Element | Defect | Description | UOM | Total | Quantity in Condition State 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| X | **9001** | | **Drainage - Approach** | EA | 2 | 2 | 0 | 0 | 0 |
| | | | Inlets at south end. | | | | | | |
| X | **9042** | | **Slope Protection- Concrete** | EA | 2 | 0 | 2 | 0 | 0 |
| | | | Both settling & cracking | | | | | | |
| X | **9168** | | **Concrete Diaphragm** | EA | 12 | 11 | 1 | 0 | 0 |
| | | | Spalled diaphragm at pier 2 between G1 & G2 | | | | | | |
| X | **9323** | | **Approach Roadway - Asphalt** | EA | 2 | 2 | 0 | 0 | 0 |

## NBI Ratings

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

## Structure Specific Notes

3221 Bit Appl 4/EA/2/2  Bit overlay [2001]

## Inspection Specific Notes

## Inspector Site-Specific Safety Considerations

## Structure Inspection Procedures

## Special Requirements

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

## Routine

### Document Comment/Description

SW wing movement (9/8/15) Verified 2017

## Routine

### Document Comment/Description

Slope paving condition (9/8/15)
Verified 2017

## Routine

### Document Comment/Description

Diaphragm spall (9/8/15)
Verified 2017

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# Wisconsin Dept. of Transportation
# Structure Inventory Data

## Bridge B360065

| Structure No.: B360065 | Municipality: MANITOWOC RAPIDS | Section: | Town: | Range: | Maintenance Agency: STATE HIGHWAY DEPT | Owner: STATE HIGHWAY DEPT |
|---|---|---|---|---|---|---|
| Replaced Structure No.: | Historical Sig.: 5 | Latitude: 440454.0 | Longitude: 874330.0 | | County: MANITOWOC(36) | District: 3 |

### ABUTMENT DATA (CARDINAL)

| |
|---|
| 1. Abutment Type: SILL FLEXIBLE |
| 2. Pile Type: PILING - CAST IN PLACE (CIP) |
| 3. Pile Size: 254 OR 273 MM (10 OR 10-3/4") |
| 4. Slope Protection Type: SOLID CONC |
| 5. Rdwy. Width: 40.0 ft |
| 6. Deck Width: 43.0 ft |
| 7. Wing Type: |

### ABUTMENT DATA (NON-CARDINAL)

| |
|---|
| 1. Abutment Type: SILL FLEXIBLE |
| 2. Pile Type: PILING - CAST IN PLACE (CIP) |
| 3. Pile Size: 254 OR 273 MM (10 OR 10-3/4") |
| 4. Slope Protection Type: SOLID CONC |
| 5. Rdwy. Width: 40.0 ft |
| 6. Deck Width: 43.0 ft |
| 7. Wing Type: |

### GEOMETRIC DATA

| |
|---|
| 1. Structure Length: 154.3 ft (Back to Back Abuts. Along Rrdwy. Centerline) |
| 2. No. Lanes On: 2 |
| 3. L. Sdk. Width On: 0.0 ft |
| 4. R. Sdk. Width On: 0.0 ft |
| 5. Median Type: |
| 6. Median Width: 0.0 ft |
| 7. Skew Angle: 34 Deg. |
| 8. Direction Skew Angle: LEFT |
| 9. Horizontal Curve: 0.0 Radius, ft |
| 10. Dir.-Hor. Curve: |
| 11. Girder Spacing: 8.8 ft |
| 12. Height: 45.0 ft (Top Pier Footing to Top Deck or Streambed Elev. to Top Deck) |
| 13. NBI Bridge Length Met: true |

### APPROACH DATA

| |
|---|
| 1. Appr. Pavement Width: 24 ft |
| 2. Rt. Shoulder Width: 6 ft |
| 3. Lt. Shoulder Width: 10 ft |
| 4. Total Width (Sum Above): 40 ft |
| 5. Guardrail Termination: 1 |
| 6. Guardrail Adequacy: 1 |
| 7. Railing Attachment Type: 5 - 22 MM (7/8") BOLTS |
| 8. Railing Design Year: 1965 AASHO |
| 9. Left Outer Railing Type: |
| 10. Right Outer Railing Type: |
| 11. Left Inner Railing Type: |
| 12. Right Inner Railing Type: |

### HYDRAULIC DATA

| |
|---|
| 1. Design Flood Frequency: 0 yrs |
| 2. Design Discharge: 0 cu-ft/s |
| 3. Max. Velocity: 0.0 ft/s |
| 4. Drainage Area: 0.0 sq. ft |
| 5. High Water Elev.: 0.0 ft |
| 6. Scour Critical Code: N |
| 7. Scour Calculated?: false |

### CAPACITY DATA

| |
|---|
| 1. Design MS: HS20M |
| 2. Inventory MS: HS16 |
| 3. Operating MS: HS26 |
| 4. Max. Veh. Wt.: 250 kips |
| 5. Load Rating Basis.: LFR |
| 6. Load Governing Member: INTERIOR DECK GIRDER |
| 7. Deck Composition: NONE |
| 8a. Deck Membrane: OTHER |
| 8b. Deck Surface: BITUMINOUS |

### STRUCTURE SERVICE DATA

| |
|---|
| 1. Hwy. On Detour Length: 15 ft |
| 2. Type Service On: HIGHWAY |
| 3. Type Service Under: HIGHWAY |

### APPRAISAL UPDATE

| |
|---|
| 1. Load Capacity: 5-LEGAL LOAD STRESS NOT EXCEEDED |
| 2. Geom. On: |
| 3. Geom. Under: |
| 4. Appr. Align: 8-COND EQUAL DESIRABLE CRITERIA |
| 5. Horiz. Align: |
| 6. Vert. Align: |

### PLANNING DATA

| |
|---|
| 1. Functional Classification: INTERSTATE-URBAN(11) |
| 2. ADT: 10600 |
| 3. ADT-Year: 2017 |
| 4. Truck ADT %: 22 |
| 5. Future ADT: 21650 |
| 6. Future ADT-Year: 2016 |

### CONDITION DATA

| Deck: | SuperStructure: | SubStructure: | Channel: |
|---|---|---|---|
| Culvert: | Waterway: | | |

# Bridge B360065

## CONSTRUCTION DATE

| Project ID | Construction Contractor | Construction Designer | Construction Year | Plans Reel Number | Letting Date | Survey Received | Work Performed |
|---|---|---|---|---|---|---|---|
| 1224-21-71 | NORTHEAST ASPHALT, INC. | OMNNI | 2016 | | 12-Jan-2016 | | OVERLAY - CONCRETE |
| 1224-00-21 | | OMNNI | 9999 | | | 01-Apr-2014 | NOT BUILT |
| 1224-07-00 | UNKNOWN | BRIDGE SECTION DESIGN UNIT 1 | 2001 | | | 22-Sep-1998 | OVERLAY - PMA |
| | UNKNOWN | UNKNOWN | 1994 | | | | REPAIR DECK |
| 1225-01-85 | LUNDA CONST | BRIDGE SECTION | 1979 | C221 | | 01-Jul-1975 | NEW STRUCTURE |

## CLEARANCE DATA

| Clearance Lane Number | Minimum Vertical | Minimum Vertical Date | Minumum Horizontal Distance | Right Minimum Lateral |
|---|---|---|---|---|
| | 15.26 | 12-Jun-2018 | 62.0 | 19.0 |

| Left Minimum Lateral | Railroad Right Minimum Lateral | Railroad Left Minimum Lateral | Railroad Vertical Distance | Railroad Horizontal Distance |
|---|---|---|---|---|
| 19.0 | | | | |

## ROUTE DATA

| Number | Direction | Type | Structure Route On / Under | Structure Route Cardinal / NonCardinal |
|---|---|---|---|---|
| 043 | S | | O | N |
| 042 | S | | O | N |
| | E | | U | C |

| Number | Structure Route Location | Highway Feature Name | Structure Route Local System | Highway Feature Designation |
|---|---|---|---|---|
| 043 | 1.6M S JCT STH 42 TO N | IH 43 SB-STH 42 SB | IH | MAINLINE |
| 042 | 1.6M S JCT IH 43 TO N | IH 43 SB-STH 42 SB | STH | MAINLINE |
| | 2.0M E JCT USH 151 | CS W CUSTER ST | CTH | MAINLINE |

| Number | Structure Route Primary Flag | Designed National Network Flag | Structure Defense Highway Designation | Highway On Inventory Route |
|---|---|---|---|---|
| 043 | Y | Y | 1 | NHI |
| 042 | N | Y | 1 | NHI |
| | Y | N | 0 | NON |

## PIER DATA

| Number | Pier Type | Piling Type | Piling Size | Pier Skew Angle | Direction of Skew |
|---|---|---|---|---|---|
| 1 | ROUND COL BENT | PILING - CAST IN PLACE (CIP) | 254 OR 273 MM (10 OR 10-3/4") | | |
| 2 | ROUND COL BENT | PILING - CAST IN PLACE (CIP) | 254 OR 273 MM (10 OR 10-3/4") | | |

## SPAN DATA

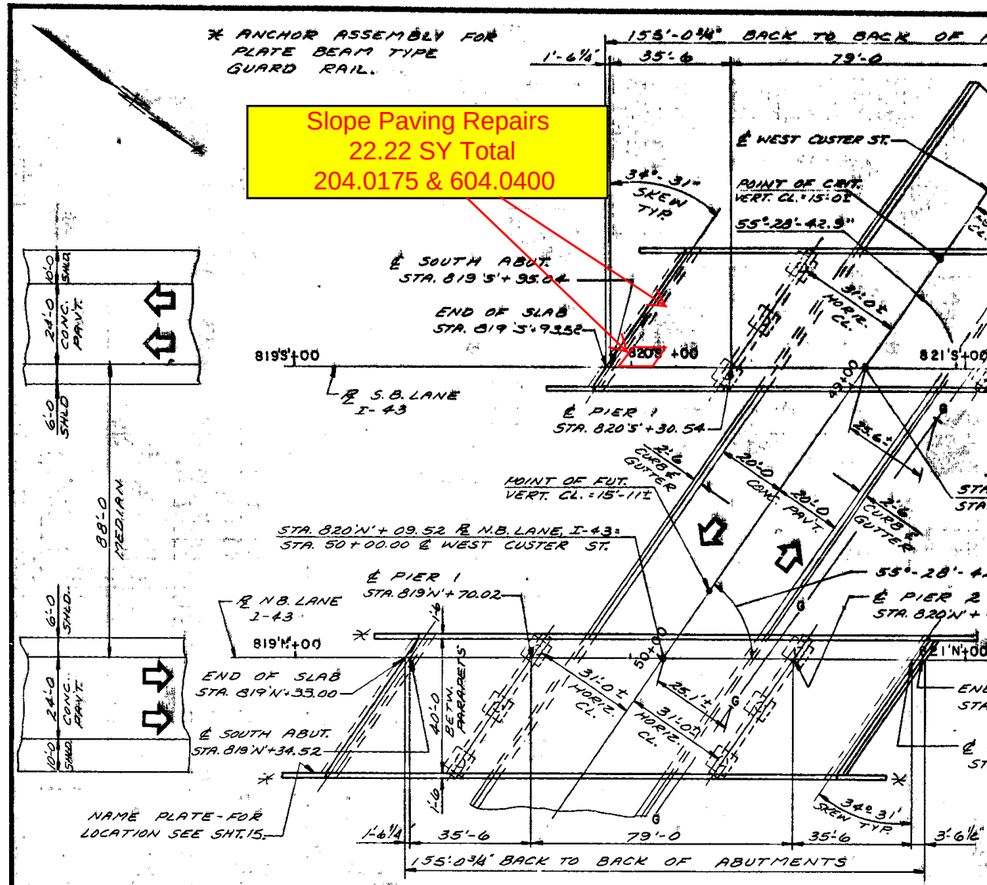
| Number | Type | Length | Configuration | Material | Girder or Truss Height | Girder or Truss Spacing |
|---|---|---|---|---|---|---|
| 1 | | 35.5 | DECK GIRDER | CONT PREST CONC | 45.0 | 8.8 |
| 2 | | 79.0 | DECK GIRDER | CONT PREST CONC | 45.0 | 8.8 |
| 3 | | 35.5 | DECK GIRDER | CONT PREST CONC | 45.0 | 8.8 |

## EXPANSIONJOINT DATA

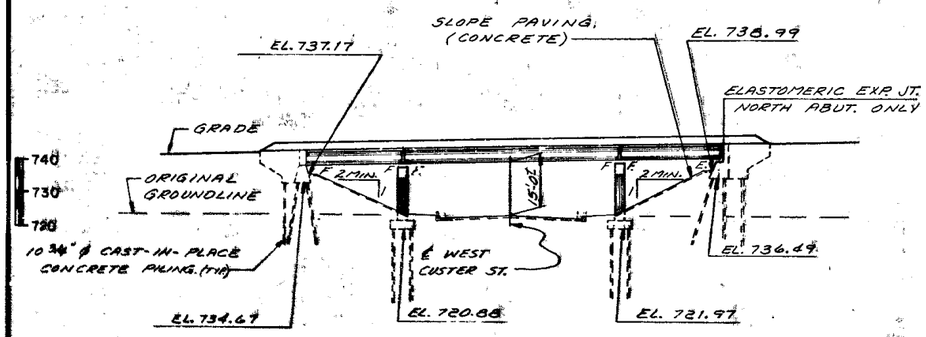
| Number | Location | Type | Inactive Date |
|---|---|---|---|
| 1 | NORTH ABUTMENT | FEL-SPAN T-30SA | |

Slope Paving Repairs
22.22 SY Total
204.0175 & 604.0400

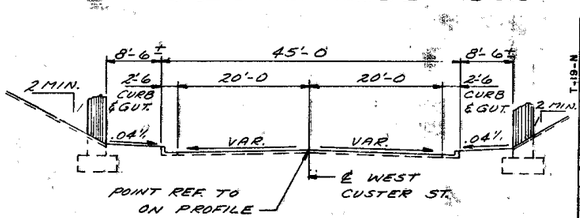
* ANCHOR ASSEMBLY FOR PLATE BEAM TYPE GUARD RAIL.




PLAN - B-36-65/66
3 SPAN - 45" PRESTRESSED GIRDERS




ELEVATION
NORMAL TO WEST CUSTER STREET




ULTIMATE TYPICAL SECTION THRU WEST CUSTER STREET

**BENCH MARK**

| NO. | STATION | DESCRIPTION | ELEV. |
|---|---|---|---|
| 285 | 820+18 | R.R. SPIKE -40" WILLOW - 190' LT. | 725.02 |

| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1225-1-85 | 7 |

**TRAFFIC VOLUME**

INTERSTATE 43
A.D.T. = 12,200 (1994)
D.D.S. = 70 M.P.H.
WEST CUSTER STREET
A.D.T. = 750 (1994)
D.D.S. = 50 M.P.H.

**FOUNDATION DATA**

NOTE: SUPPORT ABUTMENTS ON 10 ¾" DIA. CAST-IN-PLACE PILING, EST. 45'-0" LG. & DRIVEN TO A MIN. BRG. VALUE OF 50T PER PILE. SUPPORT PIERS ON 10 ¾" DIA. CAST-IN-PLACE CONC. PILING, EST. 45'-0" LG. & DRIVEN TO A MIN. BRG. VALUE OF 55T / PILE.

**DESIGN DATA**

LIVE LOAD:
DESIGN RATING; HS-20 MOD.
INVENTORY RATING; HS-23
OPERATIONAL RATING; HS 43
STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 POUNDS PER SQUARE FOOT.
ALLOWABLE DESIGN STRESSES:
CONCRETE MASONRY SLAB — $f'_c$ = 4,000 P.S.I.
ALL OTHER — $f_c$ = 3,500 P.S.I.
BAR STEEL REINFORCEMENT, GRADE 60 — $f_s$ = 60,000 P.S.I.
45" PRESTRESSED GIRDERS, CONCRETE MASONRY - $f_c$ = 6,000 P.S.I.
STRANDS - ½" ϕ WITH ULTIMATE TENSILE STRENGTH OF 270,000 P.S.I.

**GENERAL NOTES**

DRAWINGS SHALL NOT BE SCALED.

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

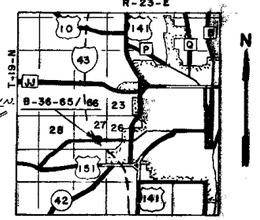
ELASTOMERIC BRG. PADS NEED NOT BE INDIVIDUALLY MOLDED PROVIDED THE CUT EDGES ARE SMOOTH & TRUE.

PREBORE ABUTMENT PILING TO ORIG. GROUND LINE EL. 725.0±

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES" FOR THE PIERS SHALL BE THE FINISHED GRADED SECTION.

**LIST OF DRAWINGS**

| | |
|---|---|
| 1. GENERAL PLAN | X59354 |
| 2. GENERAL PLAN | X59355 |
| 3. SUBSURFACE EXPLORATION | X59356 |
| 4. SOUTH ABUTMENT | X59357 |
| 5. SOUTH ABUTMENT | X59358 |
| 6. NORTH ABUTMENT | X59359 |
| 7. NORTH ABUTMENT | X59360 |
| 8. PIER 1 | X59361 |
| 9. PIER 2 | X59362 |
| 10. SUPERSTRUCTURE | X59363 |
| 11. SUPERSTRUCTURE | X59364 |
| 12. BEARINGS | X59365 |
| 13. 45" PRESTRESSED GIRDER DETAILS | X59366 |
| 14. ELASTOMERIC EXPANSION JOINT DETAILS | X59367 |
| 15. SLOPED FACE PARAPET 'B' | X59368 |




LAYOUT

AS BUILT PLAN
DATE 9-'81 BY W.J.K.

| No. | Date | Revision | By |
|---|---|---|---|

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**STRUCTURE B-36-65**

INTERSTATE 43 OVER WEST CUSTER ST.

| | | | |
|---|---|---|---|
| County MANITOWOC | | Town/City/Village MANITOWOC RAPIDS | |
| Design Spec. A.A.S.H.T.O. 1973 | Load HS20 MOD. | Const Spec. 1978 | |
| Designed By C. RAY | Design Checked C.D.W. | Drawn By BJdd | Plans Checked KOK |

Approved W.A. Kline, Chief Bridge Engineer — Date 1-9-78

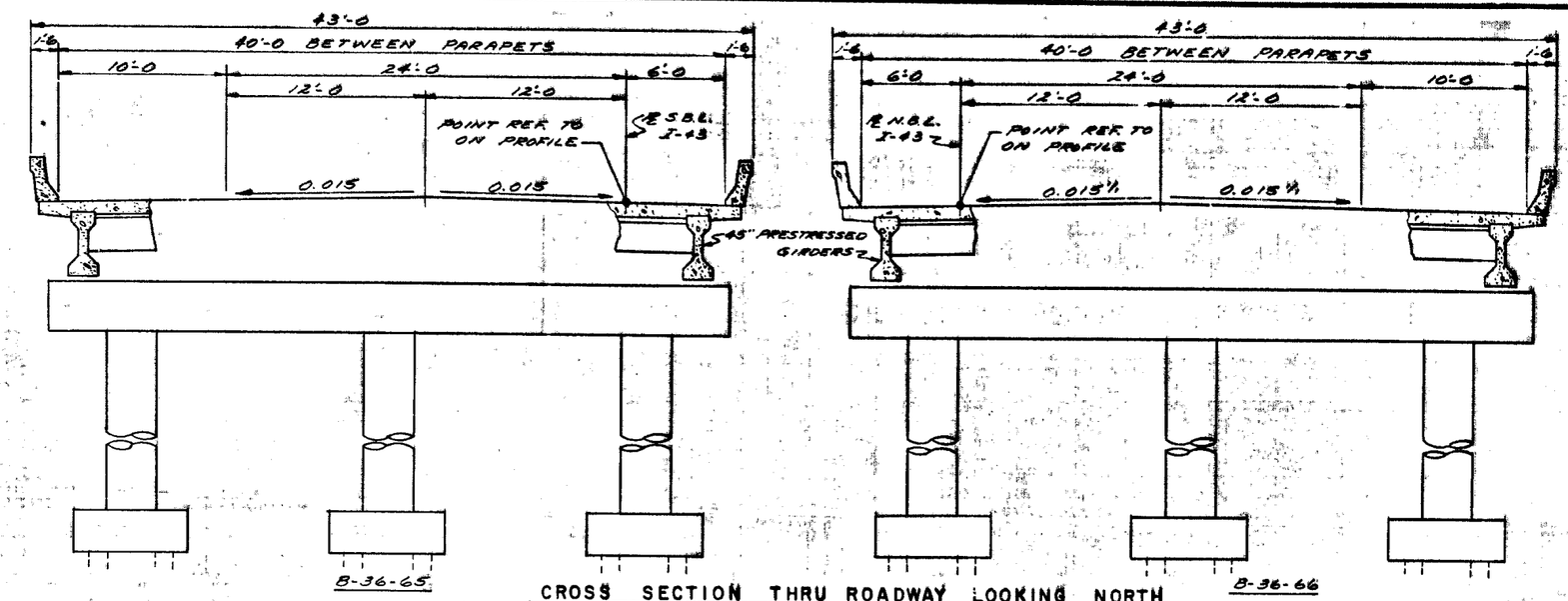
GENERAL PLAN

SHEET 1 OF 15

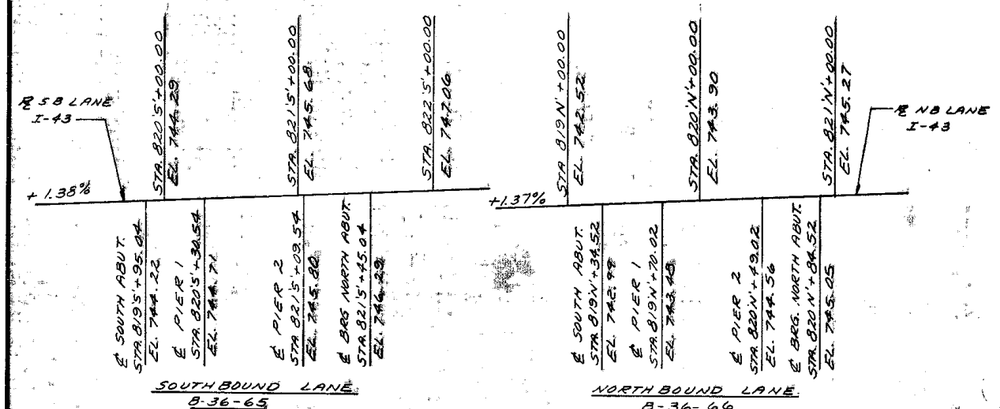
X 59354

Form E-B-11-69

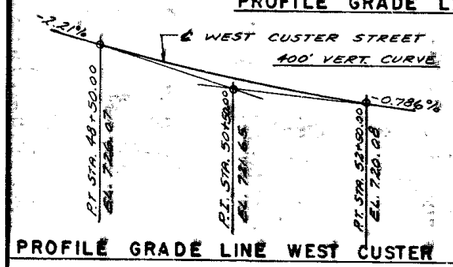
| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1225-1-85 | 7.1 |




CROSS SECTION THRU ROADWAY LOOKING NORTH




PROFILE GRADE LINES INTERSTATE 43




PROFILE GRADE LINE WEST CUSTER STREET

TOTAL ESTIMATED QUANTITIES

| BID ITEMS | UNIT | SUPER | So. ABUT. | PIER 1 | PIER 2 | No. ABUT. | TOTAL |
|---|---|---|---|---|---|---|---|
| EXCAVATION FOR STRUCTURES | L.S. | — | — | — | — | — | 1 |
| CONCRETE MASONRY | C.Y. | 232.1 | 50.3 | 47.2 | 58.5 | 74.9 | 463 |
| PRESTRESSED GIRDER, I TYPE, 45" | L.F. | 75.3 | — | — | — | — | 75.3 |
| HIGH STRENGTH BAR STEEL REINFORCEMENT | LBS. | 48,820 | 2,090 | 4,830 | 7,640 | 3,050 | 66,450 |
| STRUCTURAL CARBON STEEL | LBS. | 530 | — | — | — | — | 530 |
| BEARING PADS, ELASTOMERIC | S.F. | 42 | — | — | — | — | 42 |
| PREBORING, CAST-IN-PLACE CONCRETE PILING | L.F. | — | 150 | — | — | 170 | 320 |
| CAST-IN-PLACE CONCRETE PILING, DELIVERED & DRIVEN, 10¾" | L.F. | — | 675 | 540 | 810 | 675 | 2,700 |
| SLOPE PAVING, CONCRETE | S.Y. | — | 180 | — | — | 180 | 360 |
| EXPANSION DEVICE | L.S. | — | — | — | — | — | 1 |
| STRUCTURAL LOW ALLOY STEEL | LBS. | 850 | — | — | — | — | 850 |
| LUBRICATED BRONZE PLATES | LBS. | 80 | — | — | — | — | 80 |
| BEARING PADS | S.F. | 8 | — | — | — | — | 8 |
| PILE REDRIVING | EA. | — | 1 | 1 | 1 | 1 | 4 |
| NON-BID ITEMS | | | | | | | |
| POLYVINYL CHLORIDE WATERSTOP | L.F. | — | 58 | — | — | 49 | 107 |
| FILLER | SIZE | — | — | — | — | — | ½" & ¾" |
| ALUMINUM OR ZINC PLATE | S.F. | 32 | — | — | — | — | 32 |

| No. | Date | Revision | By |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

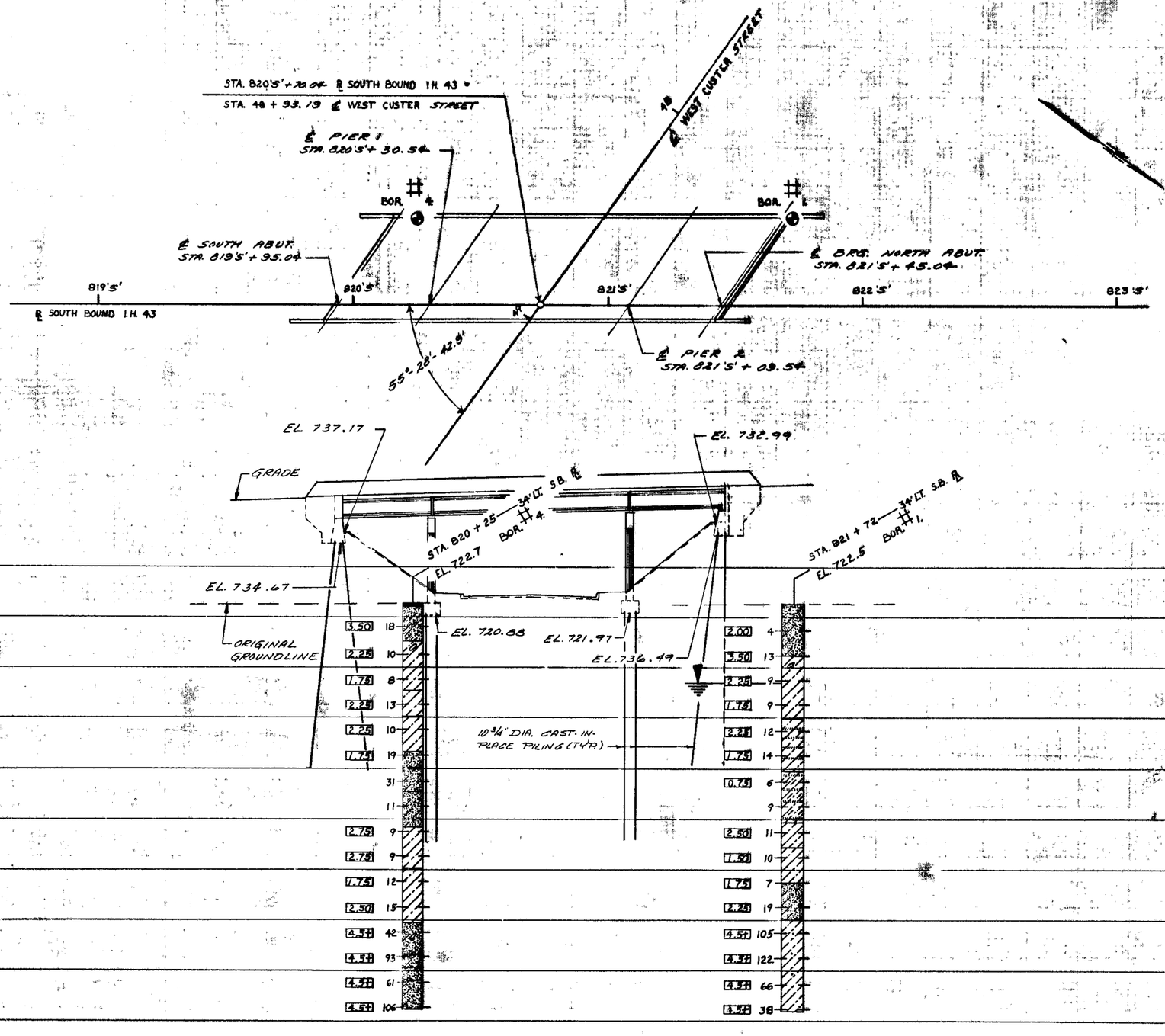
STRUCTURE B-36-65

| Const. Spec. 1975 | Drawn By Budd | Plans Checked KOK |
|---|---|---|
| GENERAL PLAN | SHEET 2 OF 15 | |
| | X 59355 | |

Form E-B-12-69

Form C-B 44-65

| PROJECT I.D. | SHEET NUMBER | TOTAL SHEETS |
|---|---|---|
| 1225-1-85 | 7.2 | |
| FEDERAL PROJECT DESIGNATION | | |




ABBREVIATIONS

F — Fine M — Medium C — Coarse
We — Weathered So — Sound

MATERIAL SYMBOLS

Topsoil, Silt, Sandstone
Sand, Peat, Limestone
Gravel, Clay, Igneous Rock

LEGEND OF PROBING

95/6—95 Blows for 6" Penetration
Probing taken with a 350# wt. Falling 18" on a 2" O. D. Point.

Probing No.
Sta.
Elevation
7 Average Blows Per Foot
Refusal 95/6

LEGEND OF BORING

Boring No.
Sta.
Elev.
Unconfined Strength → 7.7
Blows Per Ft. Using 140# Wt. Falling 30"
Wash Sample
Shelby Tube — S. T.
Ground Water Elevation
No Ground Water Observed Above This Elevation
Sandy Gravel
F.
Boulders or Cobbles
Sand
Silty Clay
So.
Limestone

Unless otherwise specified, the blows per foot at the locations indicated are based on driving a 2" O. D. x 1.4" I. D. split spoon sampler with a 140# hammer having a free fall of 30". The blow count is taken in undisturbed soil immediately below a cased or open hole eliminating side friction on the drive pipe.

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

To obtain relative data concerning the character of material in and upon which the foundation might be built, borings and/or soundings were made at points approximately as indicated on this drawing. The data presented herein represents the findings of the subsurface explorations made. However, because the depths investigated are limited and the area of the borings and/or soundings is very small in relation to the entire area, the Division of Highways does not warrant conditions below the depths investigated or that the classification of material encountered in these investigations is necessarily typical of the entire site.

| No. | Date | Revision | By |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-36-65

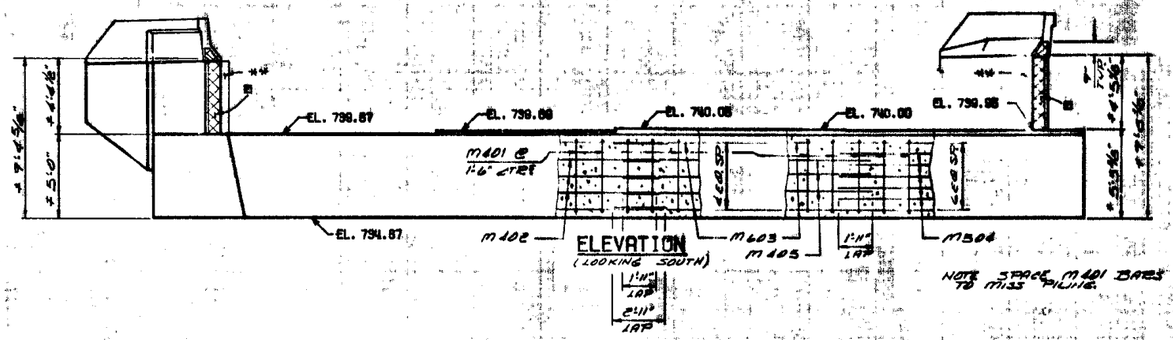
| Const Spec. | Drawn By | Plans Checked |
|---|---|---|
| 1975 | D.C.M. Buck | KOK |

SUBSURFACE EXPLORATION

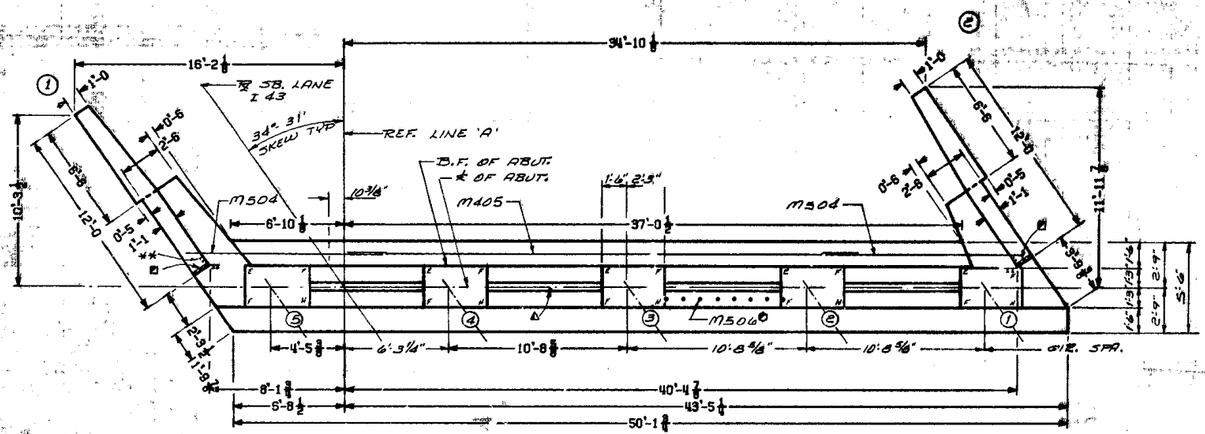
SHEET 3 OF 15

X 59356

| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1225-1-85 | 7.3 |



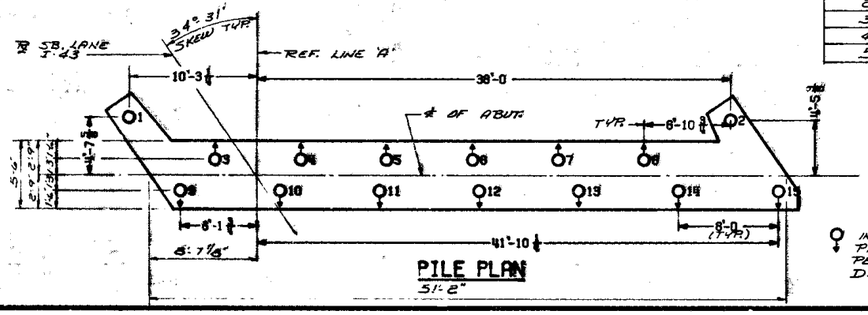

ELEVATION
(LOOKING SOUTH)




ABUTMENT PLAN

## TABLE OF BEAM SEAT ELEVS.

| GIRDER | ℄ GIR. @ ℄ ABUT. | 'E' | 'F' | 'H' |
|---|---|---|---|---|
| 1 | 739.95 | 739.92 | 739.95 | 739.98 |
| 2 | 740.00 | 739.97 | 740.00 | 740.03 |
| 3 | 740.05 | 740.02 | 740.05 | 740.08 |
| 4 | 739.89 | 739.86 | 739.89 | 739.92 |
| 5 | 739.67 | 739.64 | 739.67 | 739.70 |




PILE PLAN
31'-2"

♀ INDICATES BATTERED PILES. BATTER 3" PER FT. IN DIRECTION OF ARROW

## NOTES

A CONST. JOINT. FORMED BY SURFACE BEVELED 2½" KEYWAY, BETWN. BRIDGE SEATS.

B ½" FILLER. TO EXTEND FROM BRIDGE SEAT TO LIMITS SHOWN. SEAL ALL EXPOSED NOSE. & VERT. SURFACES OF ½" FILLER WITH NON. STAINING GRAY NON. BITUMINOUS JOINT SEALER (1" DEEP & HOLD ½" BELOW SURFACE OF CONCRETE.)

C 3½" FILLER. TO EXTEND OUT TO OUT OF ABUT. EXCEPT UNDER GIRDERS.

POLYVINYL CHLORIDE WATERSTOP (P.C.W.) TO BE FLUSH WITH FACE OF CONCRETE. (4 P.C.W. TO EXTEND BETWEEN INSIDE FACES OF WINGS) (4 P.C.W. TO EXTEND FROM BRIDGE SEAT TO TOP OF WING) SEE P.C.W. DETAILS ON SHT. 6.

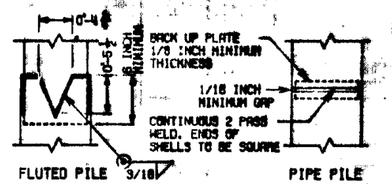
D M504 BARS @ 1'-0" CTRS BETWEEN GIR. BARS MAY BE PLACED AFTER CONC. IS POURED BUT BEFORE SET HAS TAKEN PLACE.

SUPPORT ABUT. ON 10¾" DIA. CAST-IN-PLACE CONC. PILES, ESTIMATED 45'-0" LONG & DRIVEN TO A MIN. BEG. VALUE OF 50T/PILE.

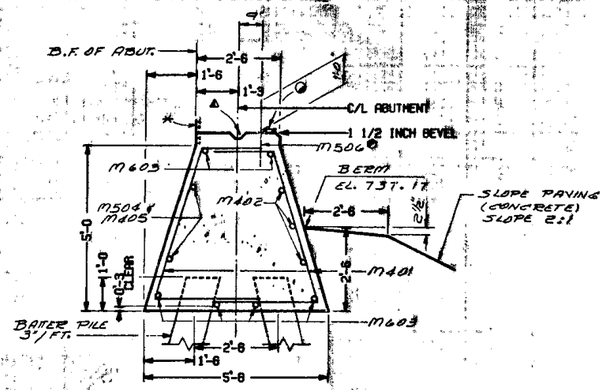
PREBORE PILING TO ORIG. GROUND LINE. (± EL. 785.0)

FILL TO ELEV. 734.67 BEFORE DRIVING PILES.

± DIM! GIVEN AT B.F. OF ABUTMENT.




PILE SPLICE DETAIL




BODY SECTION

| No. | Date | Revision | By |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-36-65

| Const. Spec. | Drawn By | Plans Checked |
|---|---|---|
| 1975 | Budd | KOK |

SOUTH ABUTMENT

SHEET 4 OF 15

X 59357

CONTINUED ON NEXT SHEET

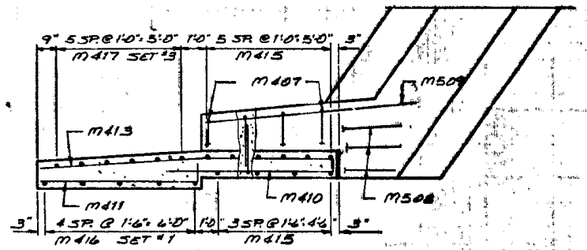
| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1225-1-85 | 7.4 |

**NOTES**

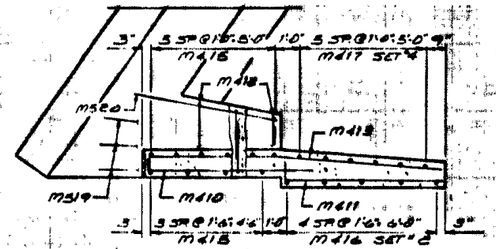
⊖ FOR PARAPET BARS & DIM'S SEE SHT. 15.

▲ CONSTR. JOINT - FORMED BY SURFACED, BEVELED 2"x6" KEYWAY, ½" "V" GROOVE ALONG F.F. OF WING. "V" GROOVE NOT REQ'D. IF JOINT IS NOT USED.

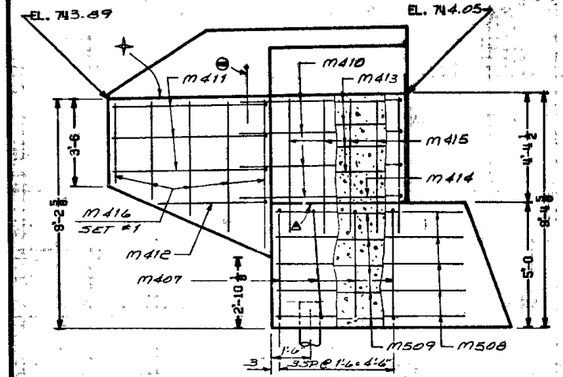
✚ CONST. JOINT - STRIKE OFF AS SHOWN ON SHT. 15.



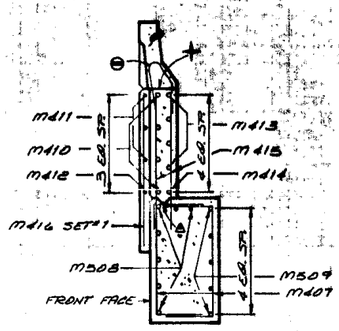

PLAN WING 1



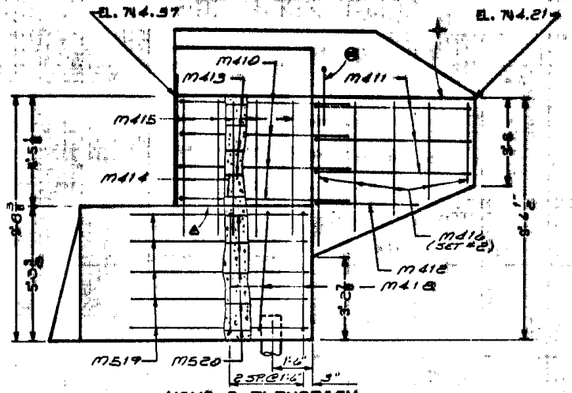

PLAN WING 2



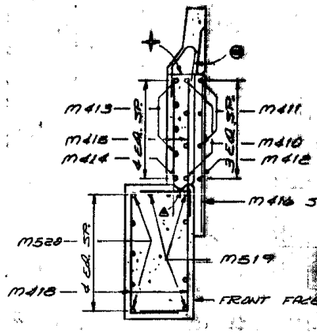

WING 1 ELEVATION




WING 1 SECTION




WING 2 ELEVATION

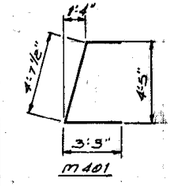


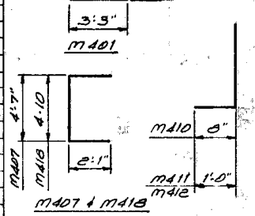

WING 2 SECTION

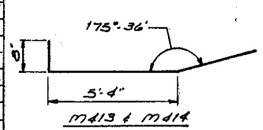
## BILL OF BARS

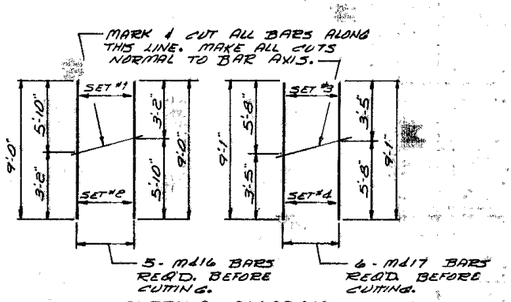
THE FIRST DIGIT OF THE BAR MARK SIGNIFIES THE BAR SIZE. BENDING DIM'S ARE OUT TO OUT OF BAR.

| MARK | NO. REQ'D | LENGTH | BEND | CUT DIA. | LOCATION | | |
|---|---|---|---|---|---|---|---|
| M401 | 68 | 9-7 | * | | BODY | STIRRUPS | VERT. |
| M402 | 6 | 26-6 | | | " | F.F. | HORIZ. |
| M603 | 12 | 26-10 | | | " | TOP & BOT. | " |
| M504 | 10 | 12-0 | | | " | B.F. @ WING | " |
| M405 | 3 | 30-8 | | | " | " | " |
| M506 | 36 | 2-0 | | | " | TOP | VERT. |
| M407 | 8 | 8-7 | * | | WING 1 | BASE | " |
| M508 | 7 | 7-9 | | | " 1 | F.F. | HORIZ. |
| M509 | 5 | 8-3 | | | " 1 | B.F. | " |
| M410 | 8 | 7-5 | * | | " 1½ | F.F. | " |
| M411 | 6 | 7-1 | * | | " 1½ | " | " |
| M412 | 2 | 4-10 | * | | " 1½ | " | " |
| M413 | 6 | 12-3 | * | | " 1½ | B.F. | " |
| M414 | 2 | 11-6 | * | | " 1½ | " | " |
| M415 | 20 | 5-6 | | | " 1½ | F.F. & B.F. | VERT. |
| M416 | 5 | 9-0 | | * | " 1½ | " | " |
| M417 | 6 | 9-1 | | * | " 1½ | " | " |
| M418 | 6 | 8-10 | * | | " 2 | BASE | " |
| M519 | 7 | 7-0 | | | " 2 | F.F. | HORIZ. |
| M520 | 5 | 5-10 | | | " 2 | B.F. | " |




CUTTING DIAGRAM

NOTE: CUT, BUNDLE & MARK. MARK WITH BAR No. & SET No.

| No. | Date | Revision | By |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-36-65

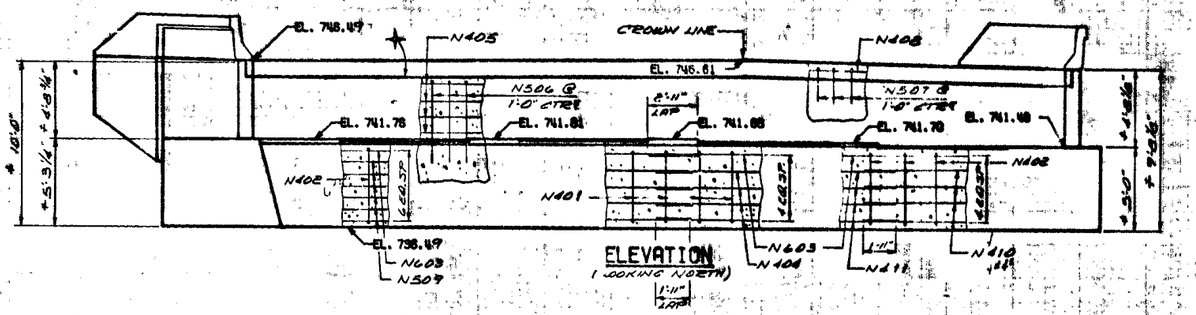
| Const. Spec. 1975 | Drawn By Budd | Plans Checked KOK |
|---|---|---|

SOUTH ABUTMENT

SHEET 5 OF 15

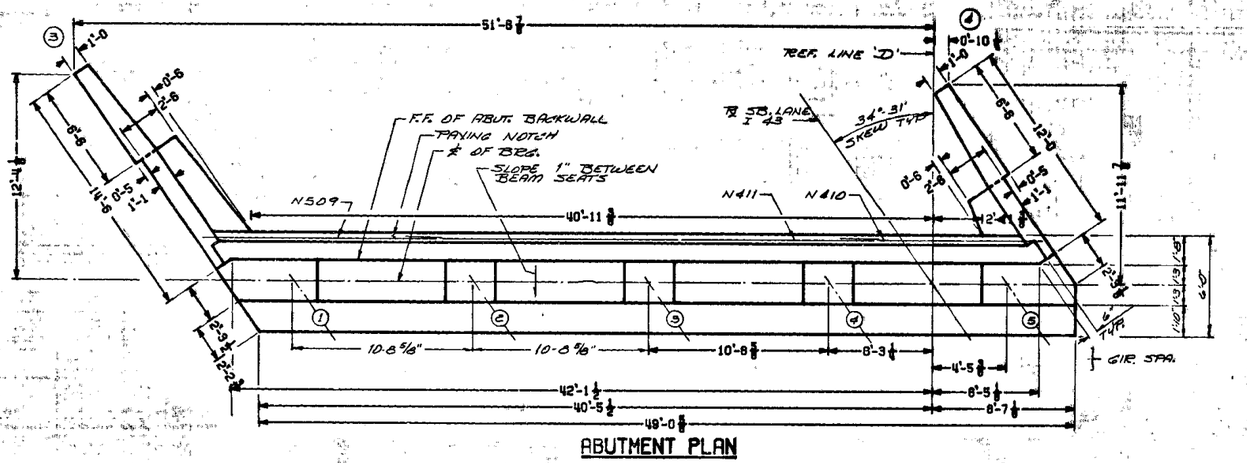
X 59358

| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1225-1-88 | 7.5 |

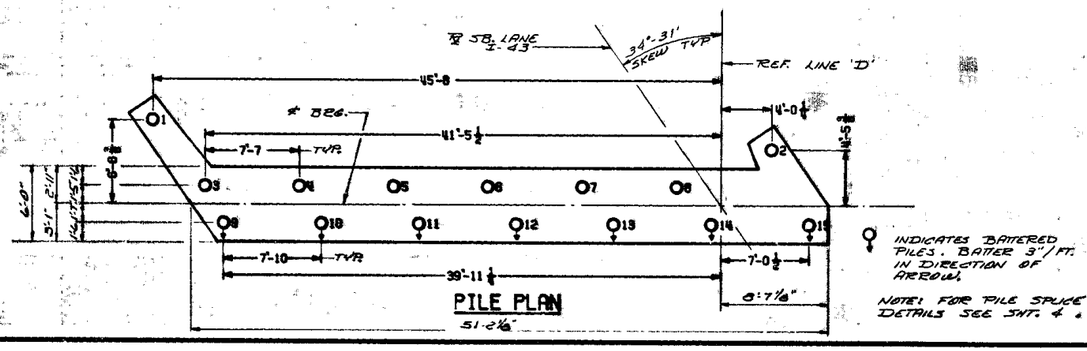



ELEVATION
( LOOKING NORTH)

North backwall face
3' x 3' = 9 SF Concrete Repair
509.1500




ABUTMENT PLAN




PILE PLAN

INDICATES BATTERED PILES. BATTER 3" / FT. IN DIRECTION OF ARROW.

NOTE: FOR PILE SPLICE DETAILS SEE SHT. 4.

## NOTES

✚ CONST. JOINT. POUR CONC. ABOVE THIS JOINT AFTER SUPER CONC. IS IN PLACE (STRIKE OFF & LEAVE ROUGH)

▲ OPT. CONST. JOINT. FORMED BY SURFACED BEVELED 2"x6" KEYWAY. ( IF JOINT IS NOT USED Rc.W. IS NOT REQ'D.)

★ POLYVINYL CHLORIDE WATERSTOP. (Rc.W.) TO EXTEND ALONG BK. OF ABUT. BETWEEN INSIDE FACES OF WINGS. (TO BE FLUSH WITH FACE OF CONC.)

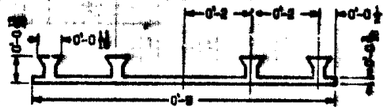
SPACE N401 & N402 BARS TO MISS PILING.

SUPPORT ABUT. ON 10 3/4" DIA. CAST-IN-PLACE CONC. PILES, EST. 45'-0" L.G. & DRIVEN TO A MIN. BRG. VALUE OF 30T/PILE.

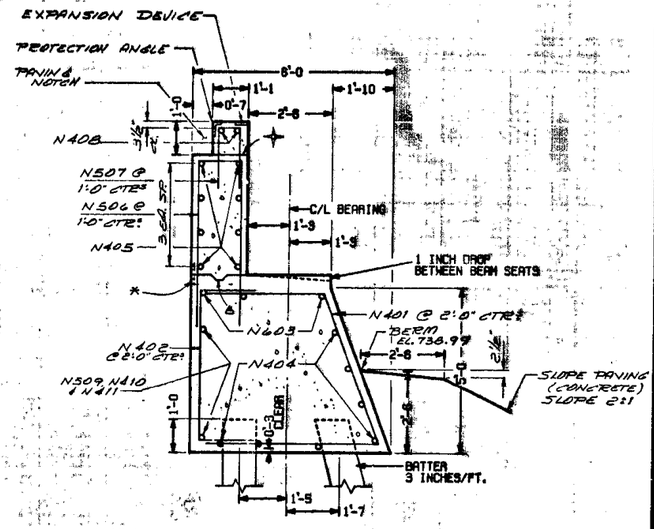
FILL TO ELEV. 736.49 BEFORE DRIVING PILING.

PREBORE PILING TO ORIG. GROUND LINE ( ELEV. ± 725.0 )

+ DIMS. GIVEN AT F.F. OF ABUT. BACKWALL




POLYVINYL CHLORIDE WATERSTOP




BODY SECTION

| No. | Date | Revision | By |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-36-65

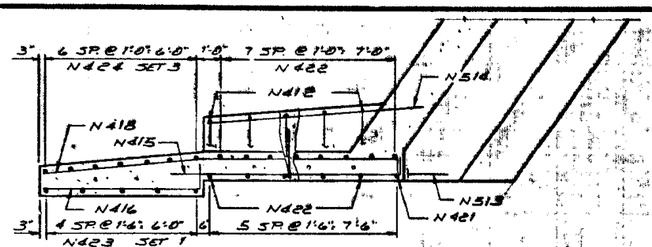
| Const. Spec. | Drawn By | Plans Checked |
|---|---|---|
| 1975 | Budd | KOK |

NORTH ABUTMENT

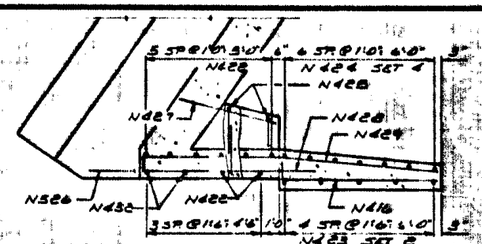
SHEET 6 OF 15

X59359

| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1225-1-85 | 7.0 |



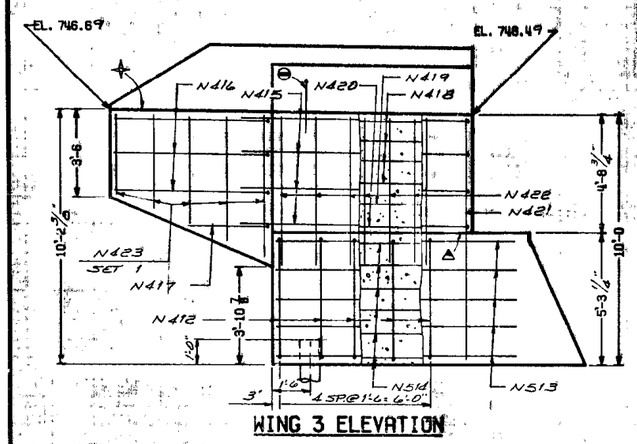

WING 3 PLAN



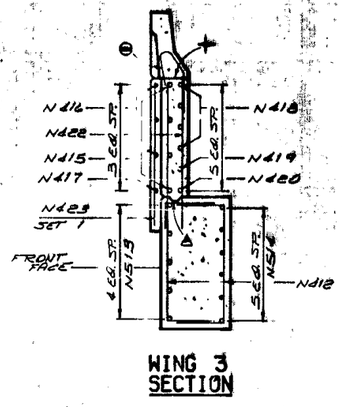

WING 4 PLAN

NOTES

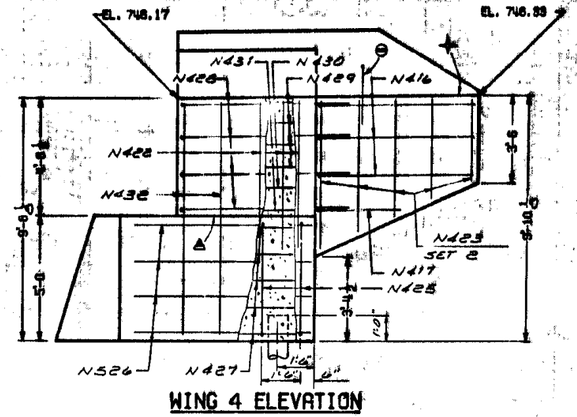
- ⊖ FOR PARAPET BARS & DIM. SEE SHT. 18.
- △ CONST. JOINT - FORMED BY SURFACED BEVELED 2"x6" KEYWAY. 3/4" "V" GROOVE ALONG F.F. OF WING. "V" GROOVE NOT REQ'D. IF JOINT IS NOT USED.
- ✚ CONST. JOINT - STRIKE OFF AS SHOWN ON SHT. 15.



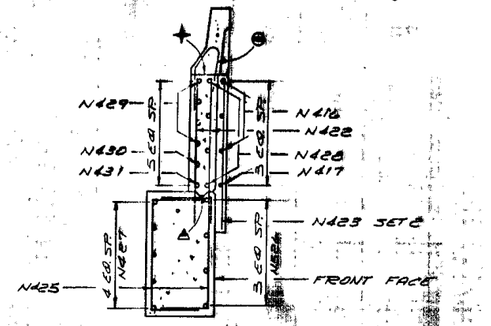

WING 3 ELEVATION




WING 3 SECTION




WING 4 ELEVATION

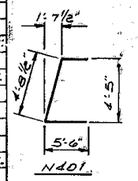


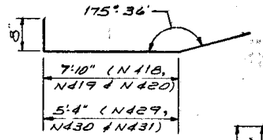

WING 4 SECTION

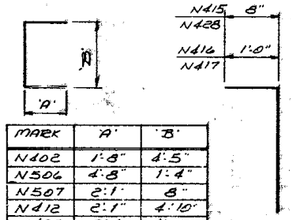
## BILL OF BARS

THE FIRST DIGIT OF THE BAR MARK SIGNIFIES THE BAR SIZE.
BENDING DIMS. ARE OUT TO OUT OF BAR.

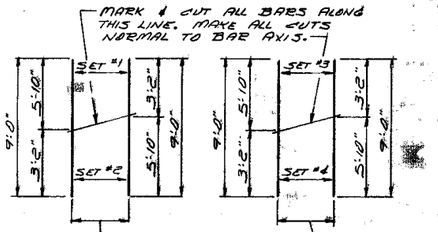
| MARK | NO. REQ'D. | LENGTH | BENT | CUT DIA | LOCATION | |
|---|---|---|---|---|---|---|
| N401 | 26 | 13-11 | * | | BODY F.F. | VERT. |
| N402 | 26 | 7-7 | * | | " B.F. | " |
| N403 | 6 | 26-11 | | | " TOP | HORIZ. |
| N404 | 14 | 26-5 | | | " | " |
| N405 | 16 | 26-4 | | | BACKWALL | " |
| N506 | 49 | 10-6 | * | | " | VERT. |
| N507 | 49 | 4-7 | * | | PAVING BLOCK | " |
| N408 | 12 | 8-0 | | | " " | HORIZ. |
| N509 | 6 | 14-6 | | | BODY B.F. @ WING 3 | " |
| N410 | 4 | 12-0 | | | " " " 4 | " |
| N411 | 4 | 28-2 | | | " " | " |
| N412 | 10 | 8-10 | * | | WING 3 BASE | VERT. |
| N513 | 5 | 9-6 | | | " 3 F.F. " | HORIZ. |
| N514 | 6 | 8-7 | | | " 3 B.F. " | " |
| N415 | 4 | 9-11 | * | | " 3 F.F. TOP | " |
| N416 | 6 | 7-1 | * | | " 3 & 4 " " | " |
| N417 | 2 | 4-6 | * | | " 3 & 4 " " | " |
| N418 | 4 | 14-9 | * | | " 3 B.F. " | " |
| N419 | 1 | 14-3 | * | | " 3 " " | " |
| N420 | 1 | 11-11 | * | | " 3 " " | " |
| N421 | 1 | 9-7 | | | " 3 F.F. | VERT. |
| N422 | 21 | 5-10 | | | " 3 & 4 B.F. | " |
| N423 | 5 | 9-0 | | * | " 3 & 4 " " | " |
| N424 | 7 | 9-0 | | * | " 3 & 4 B.F. " | " |
| N425 | 4 | 8-7 | * | | " 4 BASE | " |
| N526 | 4 | 7-0 | | | " 4 F.F. " | HORIZ. |
| N427 | 5 | 4-0 | | | " 4 B.F. " | " |
| N428 | 4 | 7-5 | * | | " 4 F.F. TOP | " |
| N429 | 4 | 12-3 | * | | " 4 B.F. " | " |
| N430 | 1 | 11-9 | * | | WING 4 B.F. TOP | HORIZ. |
| N431 | 1 | 9-9 | * | | " 4 " " | " |
| N432 | 2 | 9-3 | | | " 4 F.F. | VERT. |




| MARK | A' | B' |
|---|---|---|
| N402 | 1'-8" | 4'-5" |
| N506 | 4'-8" | 1'-4" |
| N507 | 2'-1" | 8" |
| N412 | 2'-1" | 4'-10" |
| N425 | 2'-1" | 4'-7" |




CUTTING DIAGRAM

NOTE: CUT, BUNDLE & MARK. MARK WITH BAR No. & SET No.

| No. | Date | Revision | By |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-36-65

| Const. Spec. 1975 | Drawn By Budd | Plans Checked KOK |
|---|---|---|

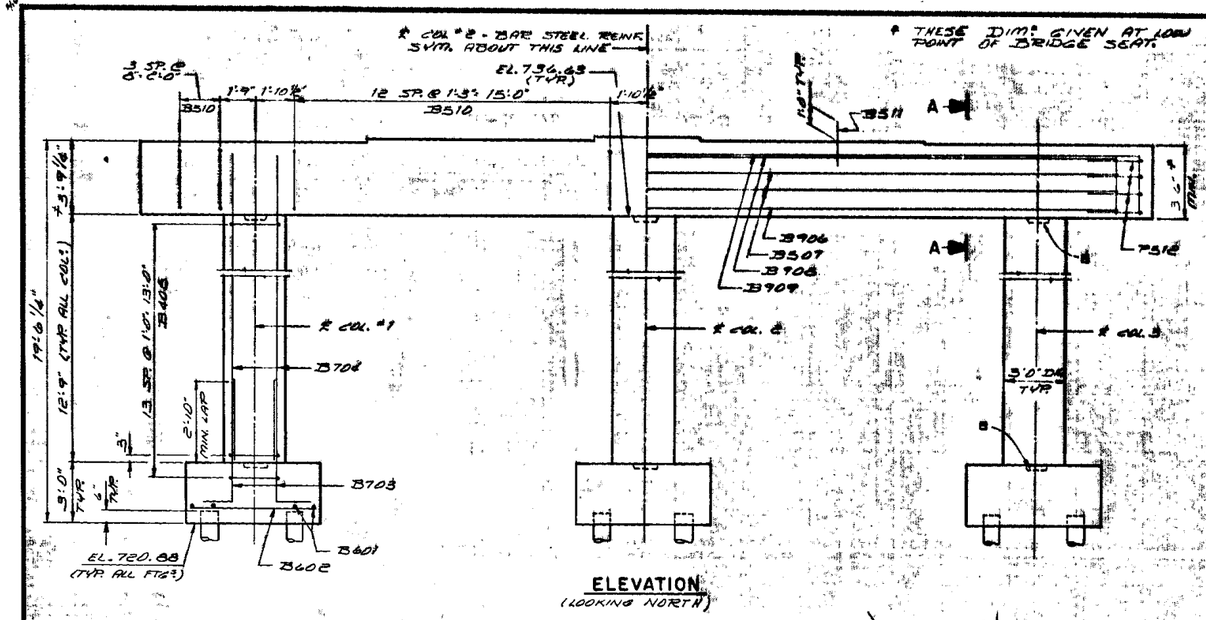
NORTH ABUTMENT

SHEET 7 OF 15

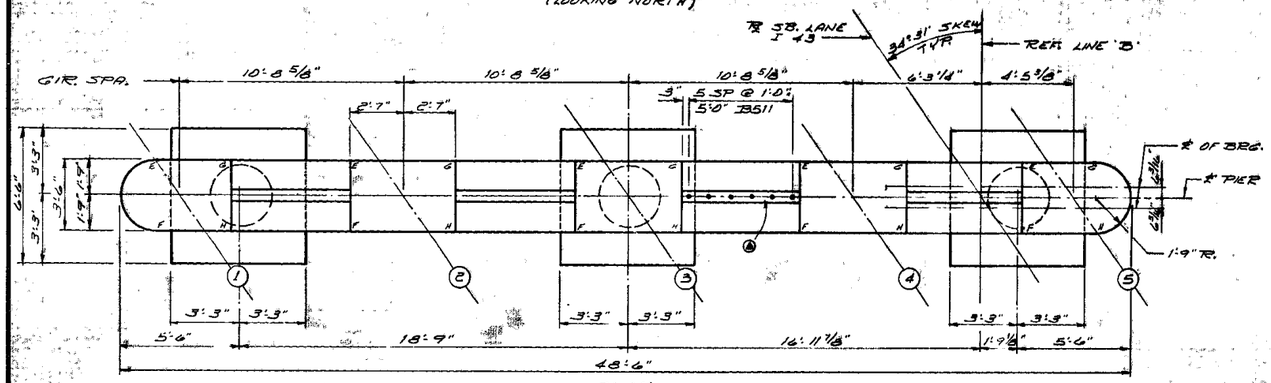
X 59360

BLUE CROSS STEEL

| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1225-1-82 | 7.7 |




ELEVATION
(LOOKING NORTH)

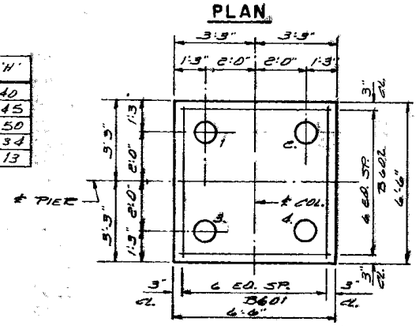



PLAN

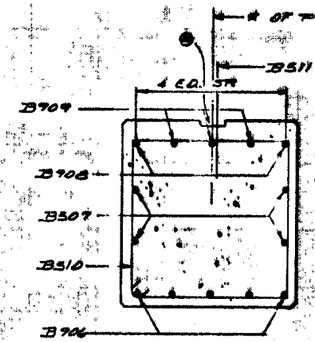
TABLE OF PIER CAP ELEVATIONS

| GIRDER | ℄ GIR. @ ℄ PIER | PT. 'E' | PT. 'F' | PT. 'G' | PT. 'H' |
|---|---|---|---|---|---|
| 1 | 740.44 | *740.47 | *740.43 | 740.44 | 740.40 |
| 2 | 740.49 | 740.53 | 740.49 | 740.49 | 740.45 |
| 3 | 740.54 | 740.58 | 740.54 | 740.54 | 740.50 |
| 4 | 740.38 | 740.42 | 740.38 | 740.38 | 740.34 |
| 5 | 740.16 | 740.20 | 740.16 | *740.17 | *740.13 |

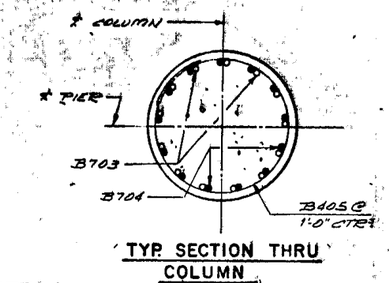
* ELEV'S ARE AT RADIUS POINT.




FOOTING PLAN




SECTION A-A




TYP. SECTION THRU COLUMN

NOTE: VERT. COLUMN BARS SHALL BE EQUALLY SPACED.

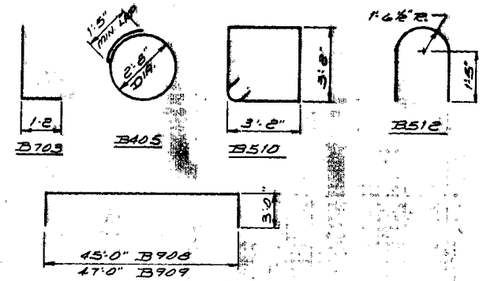
ESTIMATED CONCRETE QUANTITIES

| | |
|---|---|
| FOOTINGS | 13.9 C.Y. |
| COLUMNS | 10.0 C.Y. |
| PIER CAP | 23.3 C.Y. |
| TOTAL | 47.2 C.Y. |

## BILL OF BARS

BENDING DIM. ARE OUT TO OUT OF BAR
THE FIRST DIGIT OF THE BAR MARK SIGNIFIES THE BAR SIZE.

| MARK | NO. REQ'D | LENGTH | WT. | LOCATION |
|---|---|---|---|---|
| B401 | 21 | 6-0 | | FOOTING |
| B402 | 21 | 6-0 | | " |
| B703 | 39 | 6-3 | * | " DOWELS VERT. |
| B704 | 39 | 15-9 | | COLUMNS " |
| B405 | 42 | 9-10 | * | " HOOPS |
| B706 | 5 | 45-0 | | PIER CAP BOT. HORIZ. |
| B507 | 4 | 45-0 | | " " SIDES " |
| B708 | 2 | 50-6 | * | " " TOP " |
| B709 | 3 | 52-6 | * | " " " " |
| B510 | 38 | 13-5 | * | " " STIRRUPS VERT. |
| B511 | 44 | 6-0 | | " " TOP " |
| B512 | 8 | 7-10 | * | " " ENDS |




## NOTES

■ CONST. JOINT - FORMED BY 1'-3" x 1'-3" x 3" SURFACED BEVELED KEYWAY. (TYP. ALL COL'S & FTG'S)

SPA. CAP REINF. TO CLEAR VERT. COLUMN REINFORCEMENT.

Ⓐ 2'-6" KEYWAY BETWEEN BEAM SEATS.

FOR PILE SPLICE DETAILS SEE SHT. 4.

SUPPORT PIER ON 10 3/4" DIA. CAST-IN-PLACE CONCRETE PILES, EST. 45'-0" LG., DRIVEN TO A MIN. BRG. VALUE OF 55T/PILE.

B511 BARS, BETWEEN BEAM SEATS, MAY BE PLACED ANYTIME BEFORE CONC. HAS TAKEN INITIAL SET.

| No. | Date | Revision | By |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-36-65

| Const. Spec. | Drawn By | Plans Checked |
|---|---|---|
| 1975 | Budd | KOK |

PIER 1/

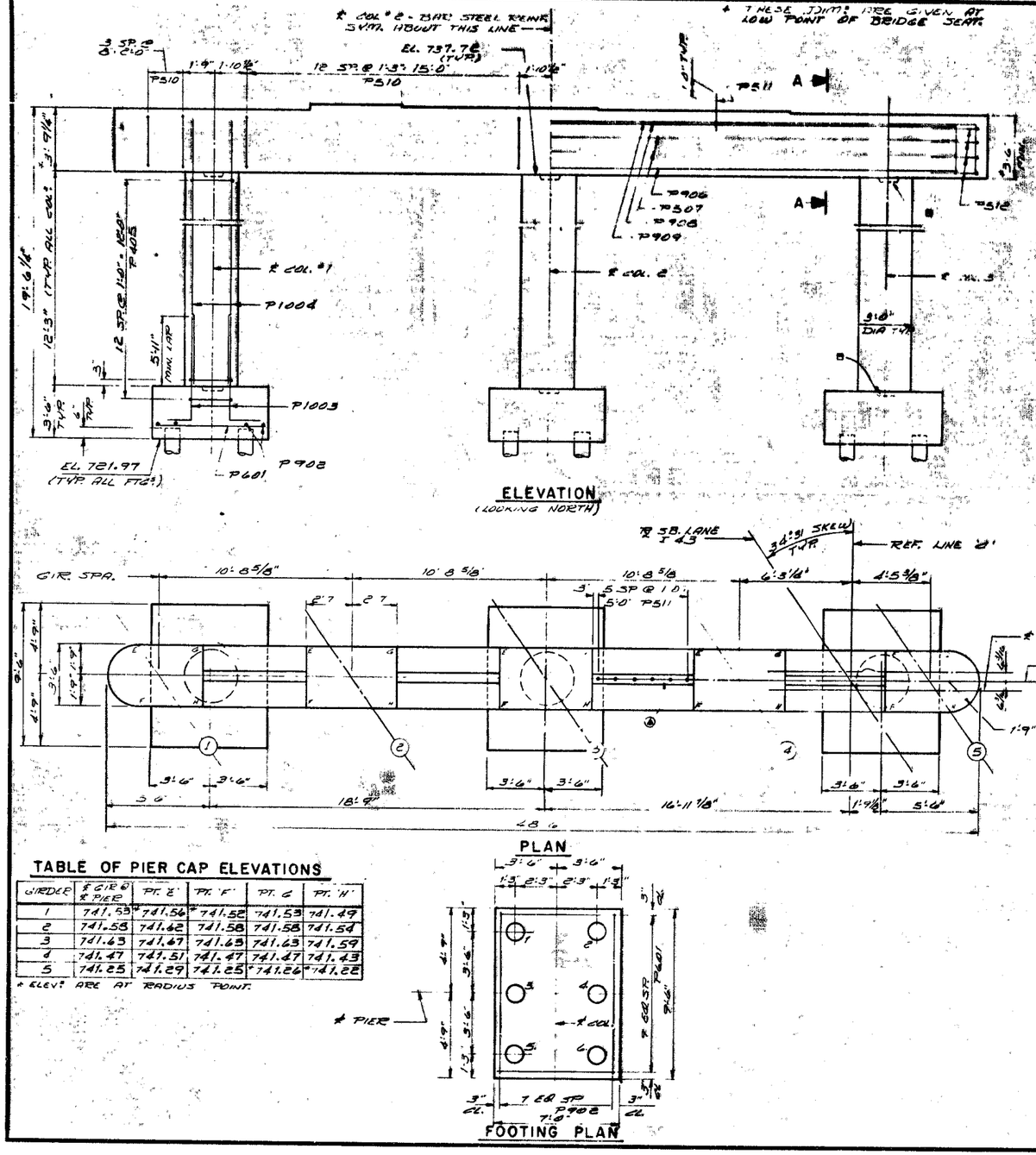
SHEET 8 OF 15

X59361

Form E-B-12-69

B-36-65

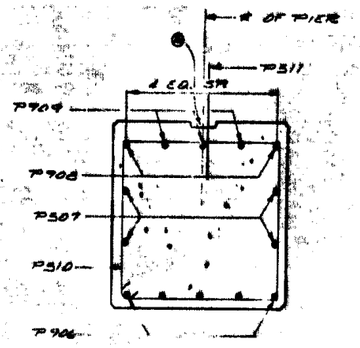
| STATE PROJECT NUMBER | SHEET NO |
|---|---|
| 1225-1-85 | 7.8 |



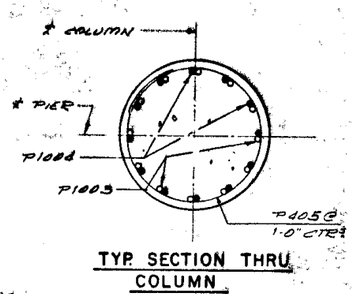

## TABLE OF PIER CAP ELEVATIONS

| GIRDER | ℄ GIR @ ℄ PIER | PT. 'E' | PT. 'F' | PT. 'G' | PT. 'H' |
|---|---|---|---|---|---|
| 1 | 741.55* | 741.56* | 741.52* | 741.53 | 741.49 |
| 2 | 741.58 | 741.62 | 741.58 | 741.58 | 741.54 |
| 3 | 741.63 | 741.67 | 741.63 | 741.63 | 741.59 |
| 4 | 741.47 | 741.51 | 741.47 | 741.47 | 741.43 |
| 5 | 741.25 | 741.29 | 741.25* | 741.26* | 741.22 |

* ELEV'S ARE AT RADIUS POINT.




SECTION A-A




TYP. SECTION THRU COLUMN

NOTE: VERT. COLUMN BARS SHALL BE EQUALLY SPACED.

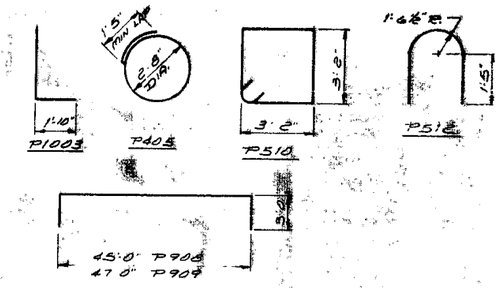
## ESTIMATED CONCRETE QUANTITIES

| | |
|---|---|
| FOOTINGS | 25.6 C.Y. |
| COLUMNS | 9.6 C.Y. |
| PIER CAP | 23.3 C.Y. |
| TOTAL | 58.5 C.Y. |

## BILL OF BARS

BENDING DIM! REF. OUT TO OUT OF BAR
THE FIRST DIGIT OF THE BAR MARK SIGNIFIES THE BAR SIZE.

| MARK | No. REQ'D | LENGTH | * | LOCATION |
|---|---|---|---|---|
| P601 | 30 | 6-6 | | FOOTING |
| P902 | 24 | 9-8 | | " |
| P1003 | 30 | 10-3 | * | " DOWELS VERT. |
| P904 | 36 | 15-3 | | COLUMNS " |
| P405 | 34 | 9-10 | * | " HOOPS " |
| P904 | 5 | 15-0 | | PIER CAP BOT. HORIZ. |
| P507 | 1 | 15-0 | | " SIDES " |
| P908 | 2 | 30-6 | * | " TOP " |
| P909 | 3 | 30-6 | * | " " " |
| P510 | 34 | 13-5 | * | " STIRRUPS VERT. |
| P511 | 24 | 8-0 | | " TOP " |
| P512 | 8 | 7-10 | * | " ENDS " |




## NOTES

A CONST. JOINT - FORMED BY 1'-3½" 1'-3½" 2" SURFACED BEVELED KEYWAY. (TYP ALL COL'S & FTG'S)

SPR. CAP REINF. TO CLEAR VERT. COLUMN REINFORCEMENT.

B 2'-6" KEYWAY BETWEEN BEAM SEATS.

FOR PILE SPLICE DETAILS SEE SHT. 4.

SUPPORT PIER ON 10¾" DIA. CAST-IN-PLACE CONCRETE PILES, EST. 45'-0" LG. & DRIVEN TO A MIN. BRG. VALUE OF 55T/PILE.

P511 BARS, BETWEEN BEAM SEATS, MAY BE PLACED ANYTIME BEFORE CONC. HAS TAKEN INITIAL SET.

| No. | Date | Revision | By |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-36-65

| Const Spec | 1975 | Drawn By | Budd | Plans Checked | KOK |
|---|---|---|---|---|---|

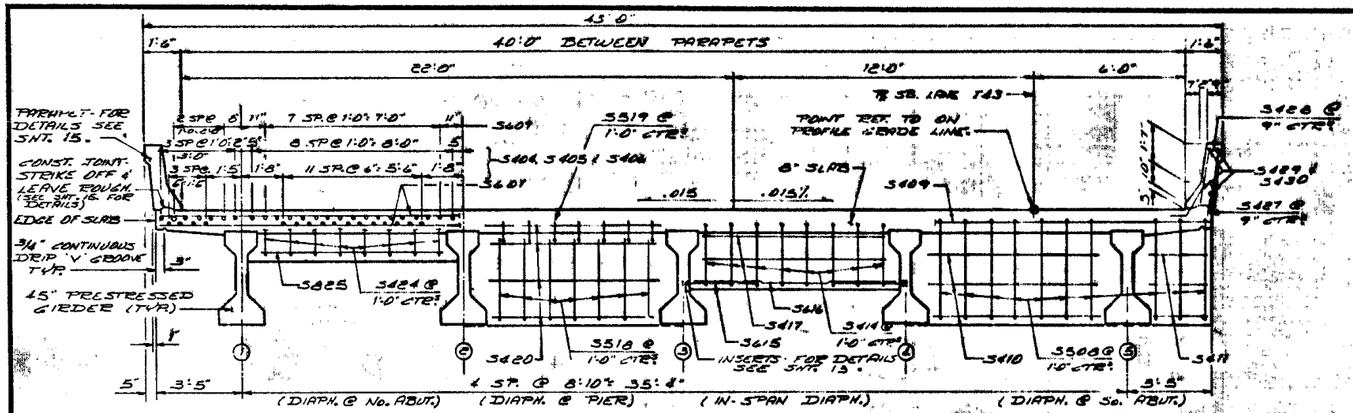
PIER 1

SHEET 9 OF 15

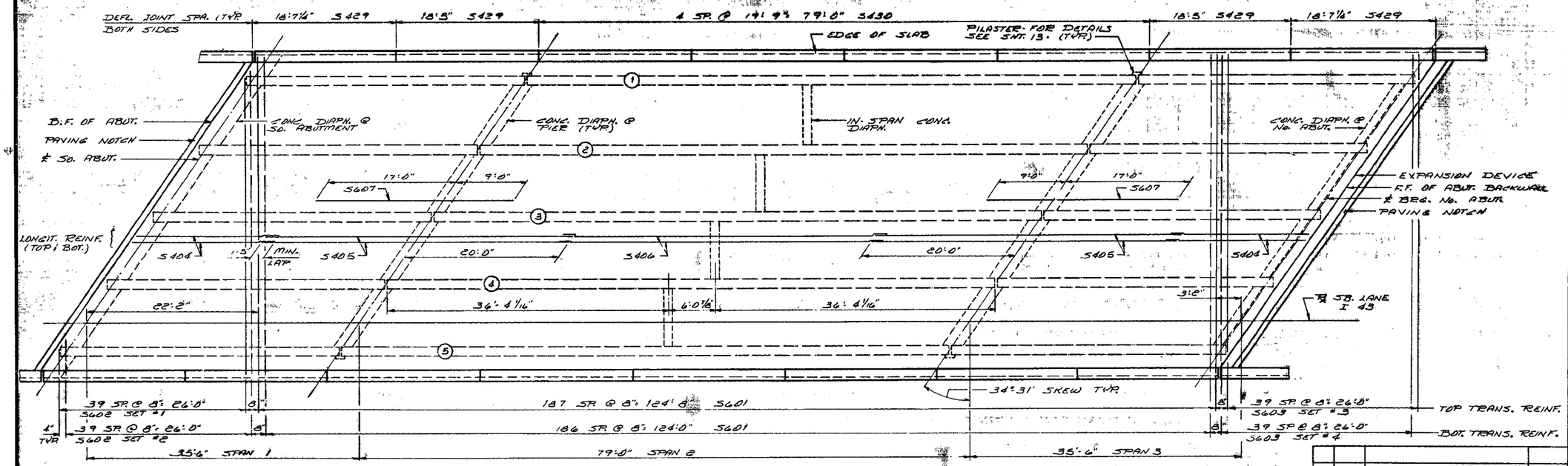
X59362

Form E-B-12-69

| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1225-1-85 | 7.9 |




CROSS SECTION THRU ROADWAY LOOKING NORTH




PLAN

## NOTES

NOTE: BOTTOM TRANS. BARS IN SLAB SHALL BE SUPPORTED BY CONTINUOUS BAR CHAIRS ON OR ADJACENT TO EACH GIRDER & BY INDIVIDUAL BAR CHAIRS PLACED AT 8'0" CENTERS AT APPROXIMATELY THE 1/3 POINTS BETWEEN GIRDERS.

NOTE: TOP LONGIT. BAR STEEL SHALL BE SUPPORTED BY CONTINUOUS BAR CHAIRS AT APPROXIMATELY 4'0" CENTERS.

NOTE: THE 3" VERT. FACE OF PARAPET TO BE MAINTAINED AT ALL POINTS OF BRG.

NOTE: THE CONCRETE IN ANY SPAN SHALL BE PLACED WITHIN 4 HOURS OF THE TIME CONCRETE WAS PLACED OVER THE ADJACENT PIER.

| No. | Date | Revision | By |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-36-65

| Const. Spec. | Drawn By | Plans Checked |
|---|---|---|
| 1975 | Budd | KOK |

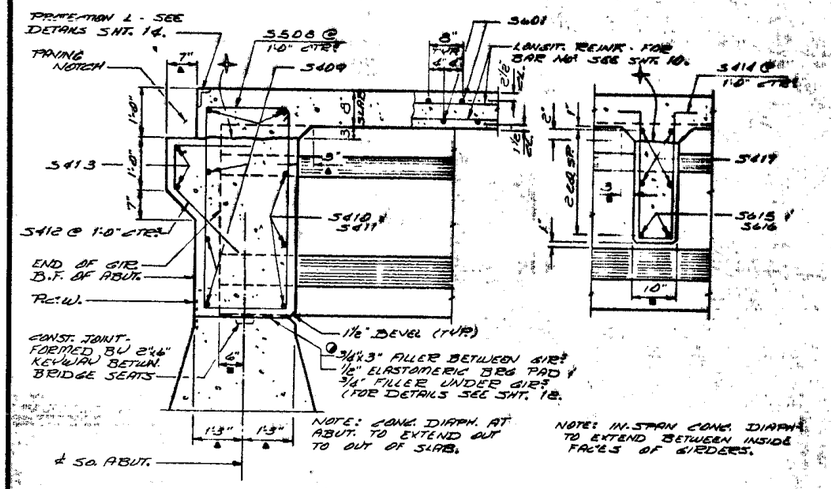
SUPERSTRUCTURE

SHEET 10 OF 15

X 59363

Form E-B-12-69

| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1225-1-85 | 7.10 |

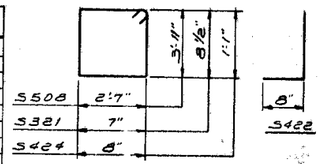


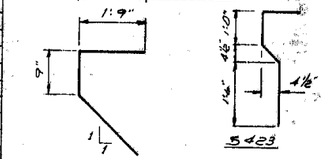

## PART LONGITUDINAL SECTION

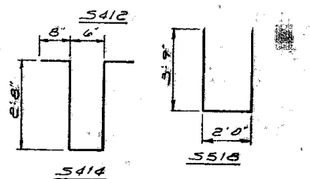
## BILL OF BARS

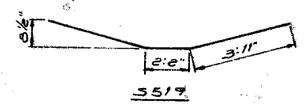
THE FIRST DIGIT OF THE BAR MARK SIGNIFIES THE BAR SIZE. BENDING DIM^S ARE OUT TO OUT OF BAR.

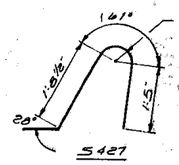
| MARK | NO. REQ'D. | LENGTH | BENT | CUT DIA | LOCATION | |
|---|---|---|---|---|---|---|
| S401 | 375 | 41-10 | | | SLAB TOP & BOT. | TRANS. |
| S402 | 40 | 42-1 | | * | " " | " |
| S403 | 40 | 42-7 | | * | " " | " |
| S404 | 200 | 18-3 | | | " " " SPANS 1 & 3 | LONGIT. |
| S405 | 200 | 40-0 | | | " " " OVER PIERS | " |
| S406 | 100 | 41-10 | | | " " SPAN 2 | " |
| S407 | 76 | 26-0 | | | " " OVER PIERS | " |
| S508 | 34 | 13-9 | * | | DIAPH @ So. ABUT. | VERT. |
| S409 | 10 | 26-5 | | | " " " | HORIZ. |
| S410 | 12 | 8-1 | | | " " " | " |
| S411 | 6 | 2-8 | | | " " " | " |
| S412 | 628 | 3-11 | * | | CORBEL " " | VERT. |
| S413 | 4 | 25-0 | | | " " | HORIZ. |
| S414 | 32 | 6-10 | * | | IN SPAN CONC. DIAPH. | VERT. |
| S415 | 16 | 3-0 | | | " " " PLAIN BAR THRU ONE END 3" | HORIZ. |
| S416 | 8 | 7-11 | | | " " " | " |
| S417 | 16 | 7-2 | | | " " " | " |
| S518 | 54 | 9-3 | * | | DIAPH. @ PIER | VERT. |
| S519 | 56 | 10-0 | * | | " " " | " |
| S420 | 80 | 8-1 | | | " " " | HORIZ. |
| S321 | 12 | 3-1 | | | PILASTER | |
| S422 | 8 | 4-6 | | | " | VERT. |
| S423 | 8 | 3-6 | | | " | " |
| S424 | 32 | 4-0 | * | | DIAPH @ No. ABUT. | " |
| S425 | 12 | 8-8 | | | " " " | HORIZ. |
| S426 | 8 | 10-2 | | | " " " | " |
| S427 | 408 | 4-3 | * | | PARAPET | VERT. |
| S428 | 408 | 5-0 | * | | " | " |
| S429 | 32 | 18-1 | | | " | HORIZ. |
| S430 | 32 | 19-5 | | | " | " |

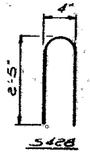


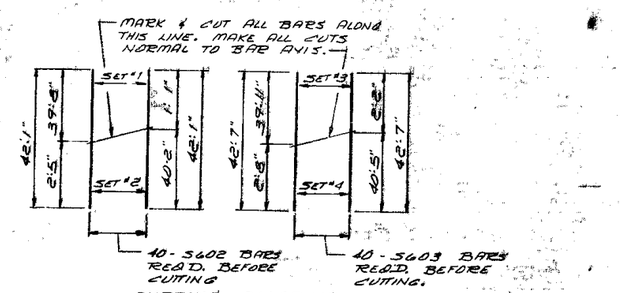




## CUTTING DIAGRAM

NOTE: CUT, BUNDLE & MARK. MARK WITH BAR No. & SET No.

## NOTES

- ▲ DIM^S ARE GIVEN NORMAL TO SUBSTRUCTURE UNITS.
- ■ DIM^S ARE GIVEN PARALLEL TO # OF GIRDERS.
- ✚ OPTIONAL CONST. JOINT.

| No. | Date | Revision | By |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-36-65

| Const. Spec. | Drawn By | Plans Checked |
|---|---|---|
| 1975 | Budd | KOH |

SUPERSTRUCTURE

SHEET 11 OF 15

X 59364

Form S-B-12-69

FORM E-9-15-69

| PROJECT ID | SHEET NUMBER | TOTAL SHEETS |
|---|---|---|
| 1225-1-85 | 7.11 | |
| FEDERAL PROJECT DESIGNATION | | |

## BEARING NOTES

ALL MATERIAL EXCLUDING ANCHOR BOLTS AND PINTLES SHALL BE MADE OF A588 STEEL.
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.
ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.
MACHINE FINISH THE BOTTOM SURFACE ONLY OF PLATES SHOWN TO BE FINISHED.
ALL MATERIAL EXCLUDING BRONZE PLATES, BEARING PADS AND ANCHOR PLATES SHALL BE PAID FOR AT THE UNIT PRICE BID FOR 'STRUCTURAL LOW ALLOY STEEL.
ALL ANCHOR BOLTS TO BE 1 1/4" x 1'-3" LONG, SET FLUSH AND CAULKED WITH LEAD TO THE TOP OF PLATE 'C'. EXCESS LENGTH MAY BE FURNISHED, THREADED FOR SETTING AND THEN CUT OFF FLUSH.
CHAMFER TOP OF PINTLES 1/8". DRILL HOLES FOR PINTLES IN PLATE 'C' FOR DRIVING FIT.
PROVIDE 1/8" THICK BEARING PAD SAME SIZE AS PLATE 'C' FOR EACH BEARING.
ALL BEARINGS ARE SYMMETRICAL ABOUT ℄ GIRDER AND ℄ OF BEARING.
PINTLES SHALL CONFORM TO A.S.T.M. SPECIFICATION TYPE A449 STEEL.
ALL ANCHOR BOLTS SHALL CONFORM TO A.S.T.M. SPECIFICATION TYPE A36 STEEL.

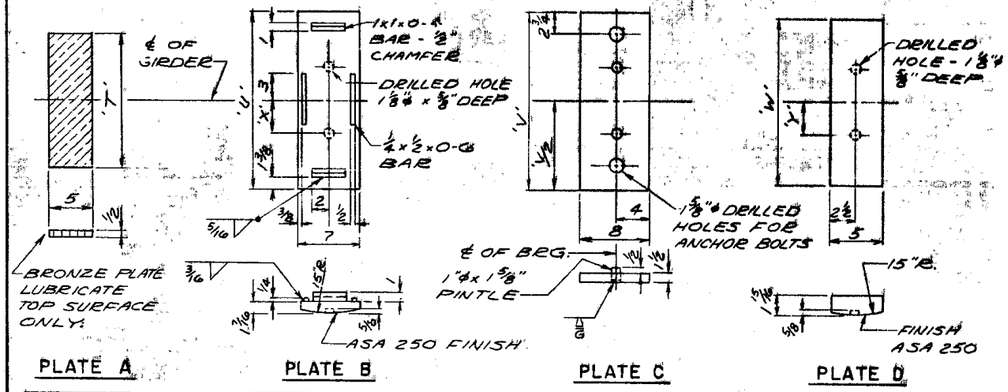
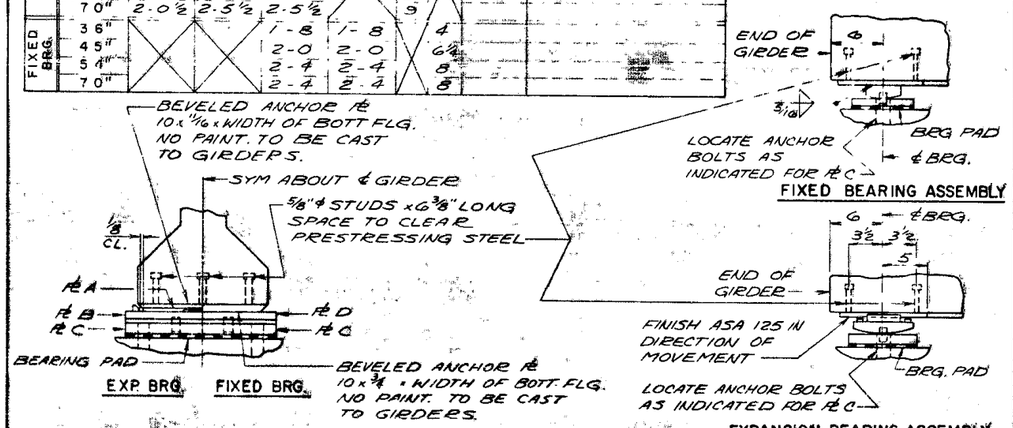
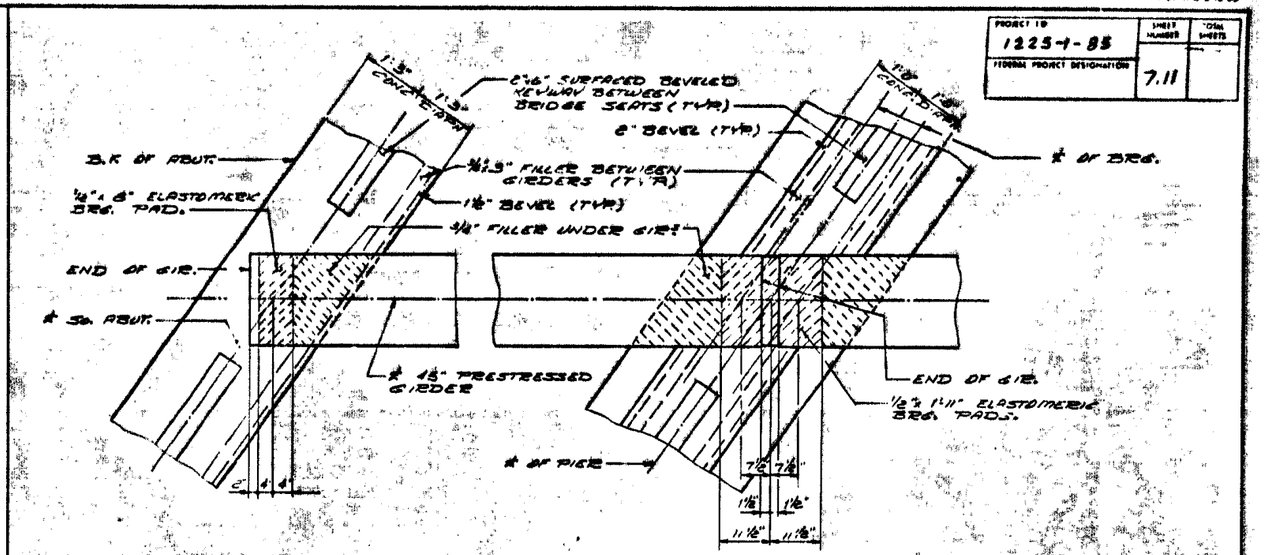



PLATE A PLATE B PLATE C PLATE D

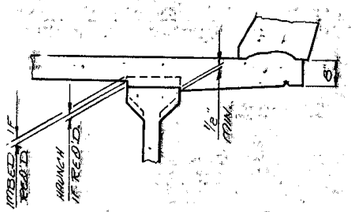
| | GIRDER SIZE | DIM. 'T' | DIM. 'U' | DIM. 'V' | DIM. 'W' | DIM. 'X' | DIM. 'Y' | NO. OF BRGS. REQ'D. | LOCATION |
|---|---|---|---|---|---|---|---|---|---|
| EXP. BRG. | 36" | 1'-4 1/2" | 1'-9 1/2" | 1'-9 1/2" | | 4 | | 5 | No. ABUTMENT |
| | 45" | 1'-8 1/2" | 2'-1 1/2" | 2'-1 1/2" | | 7 | | | |
| | 54" | 2'-0 1/2" | 2'-5 1/2" | 2'-5 1/2" | | 9 | | | |
| | 70" | 2'-0 1/2" | 2'-5 1/2" | 2'-5 1/2" | | 9 | | | |
| FIXED BRG. | 36" | | | 1'-8 | 1'-8 | 4 | | | |
| | 45" | | | 2'-0 | 2'-0 | 6 3/4 | | | |
| | 54" | | | 2'-4 | 2'-4 | 8 | | | |
| | 70" | | | 2'-4 | 2'-4 | 8 | | | |




## BEARING DETAILS




## ELASTOMERIC BRG. PAD DETAILS




## SECTION AT EXTERIOR GIRDER

| No. | Date | Revision | By |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**STRUCTURE B-36-65**

| Const. Spec. | Drawn By | Plans Checked |
|---|---|---|
| 1975 | Budd | KOK |

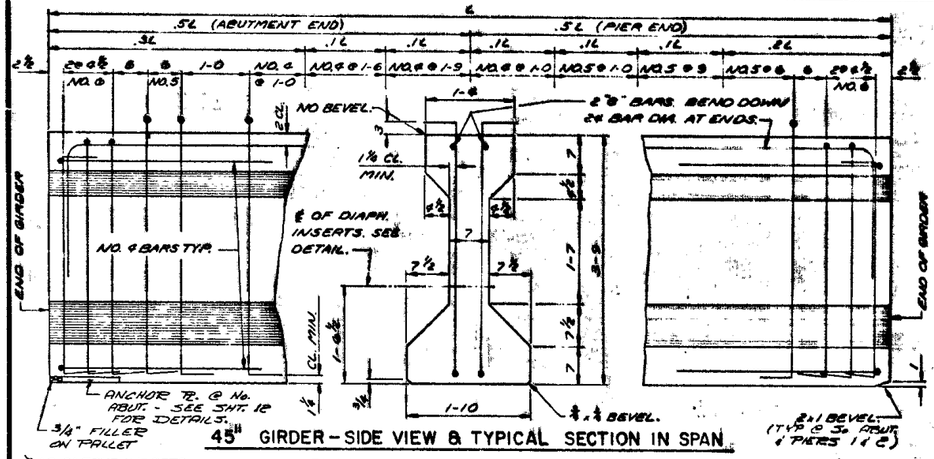
BEARINGS

SHEET 12 OF 15

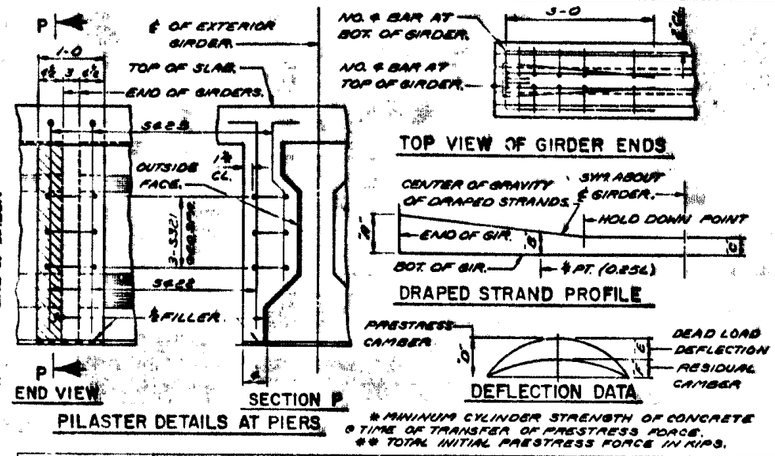
X59369

B-36-65

| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1225-1-85 | 7.12 |




45" GIRDER - SIDE VIEW & TYPICAL SECTION IN SPAN




PILASTER DETAILS AT PIERS

TOP VIEW OF GIRDER ENDS




DRAPED STRAND PROFILE




DEFLECTION DATA

* MINIMUM CYLINDER STRENGTH OF CONCRETE @ TIME OF TRANSFER OF PRESTRESS FORCE.
** TOTAL INITIAL PRESTRESS FORCE IN KIPS.

GIRDER DATA | USE DIAPH. INSERT DETAIL TYPE "B"

| SPAN | GIRDER LENGTH "ℓ" | DEFLECTION DATA (IN.) "D" | "E" | "F" | TYPE OF STRANDS | DRAPED STRANDS NO. OF STRANDS | f'ci * (psi) | ** "P" | (INCHES) "A" | "B" MIN. | "B" MAX. | "C" | UNDRAPED STRANDS NO. OF STRANDS | f'ci * (psi) | ** "P" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 & 3 | 35'-10½" | 1⅛ | 0 | 1⅛ | STRESS RELIEVED | | | | | | | | 12 | 4800 | 347 |
| | | 1⅛ | 0 | 1⅛ | LOW RELAXATION | | | | | | | | 12 | 4800 | 347 |
| 2 | 78'-9" | 1-⅛ | 1⅛ | ½ | STRESS RELIEVED | 28 | 4800 | 810 | 38 | 12½ | 15¼ | 4 | | | |
| | | 1½ | 1⅛ | ⅜ | LOW RELAXATION | 26 | 4800 | 752 | 37 | 12¼ | 15¼ | 4 | | | |

USE No. 8 "G" BARS WITH A 5'-11" LONG LAP FOR 6 1/2" IN SPANS 1 & 3.
" " 5 " " " " 3'-0" " " " 6 1/2" " " " 2.

NOTES

TOP OF GIRDERS TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY FOR BONDING TO THE SLAB.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS.

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

PRESTRESSING STRANDS SHALL BE ½" ø 7 WIRE STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 psi AND SHALL BE FLUSH WITH THE ENDS OF THE GIRDER.

INSERTS SHALL BE PLACED ON 6" CTRS. SYMMETRICALLY ABOUT THE ℄ OF DIAPHRAGMS IN SPANS.

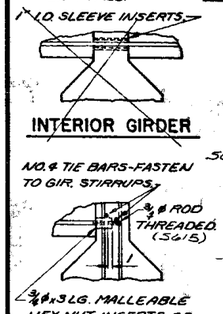
ALL STIRRUPS SHALL BE IN PAIRS AND THE SPACING SHOWN IN "SIDE VIEW" IS MAXIMUM. THE LOCATION SHALL BE SHOWN IN THE SHOP DRAWINGS.

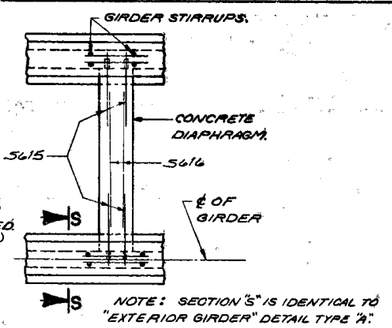
BEND EACH END OF NO. 4 AND NO. 5 STIRRUPS 6" AND NO. 6 STIRRUPS 6½".

ENDS OF STRANDS SHALL BE PAINTED WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (THIS APPLIES ONLY TO THOSE ENDS OF GIRDERS THAT ARE FINALLY EXPOSED.)

BARS "G" MAY BE SPLICED AT THE ℄ POINTS OF GIRDER. USE LAP LENGTH SHOWN.

DATA SHOWN IN "DEFLECTION DATA" IS THEORETICAL AND MAY VARY WITH CONCRETE STRENGTH, VARIABLE PRESTRESS CONDITIONS AND PRESTRESS LOSSES.



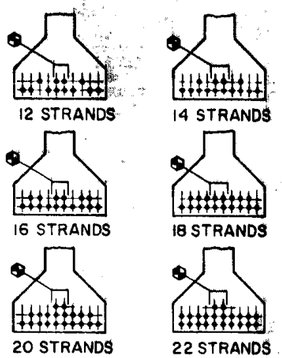




NOTE: SECTION "S" IS IDENTICAL TO "EXTERIOR GIRDER" DETAIL TYPE "A".

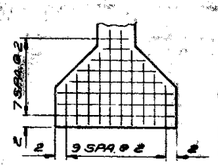
PLAN

TYPE "A" TYPE "B"

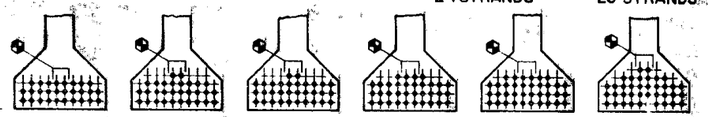
DIAPHRAGM INSERT DETAILS



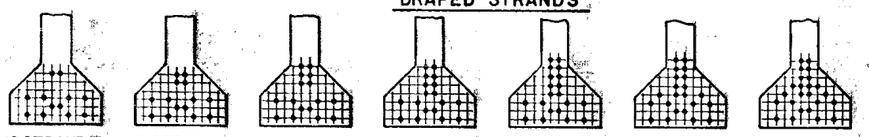

DRAPED STRANDS



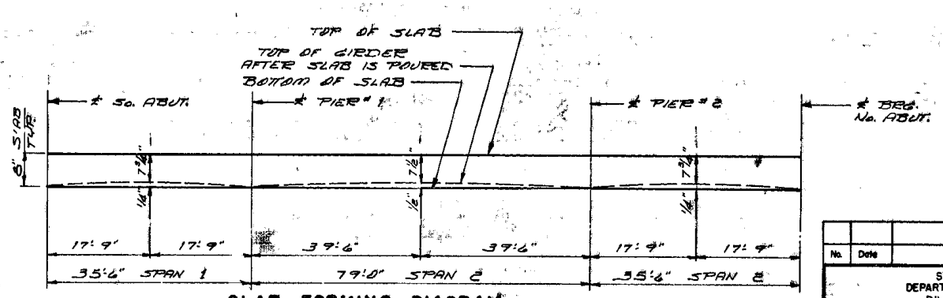

TYP. STRAND GRID




DRAPED STRANDS




UNDRAPED STRANDS




SLAB FORMING DIAGRAM

NOTE: TO COMPENSATE FOR VARIATIONS IN PRESTRESS CAMBER AND OTHER MINOR CONSTRUCTION DISCREPANCIES THE IMBEDMENT OF THE GIRDER INTO THE SLAB MAY BE VARIED WITH A MAX. OF 1½" ALLOWABLE AND THE SLAB HELD TO PLAN THICKNESS. IF THE VARIATIONS ARE OF SUCH A MAGNITUDE THAT THE 1½" ALLOWABLE IMBEDMENT WILL BE EXCEEDED, THE HAUNCH OR IMBEDMENT DIMENSIONS AT THE ℄ OF SUBSTRUCTURE UNITS AND THE GRADE LINE SHALL BE REVISED. THE 1½" IMBEDMENT AND THE PLAN SLAB THICKNESS SHALL BE HELD.

| No. | Date | Revision | By |
|---|---|---|---|
| | | | |

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-36-65

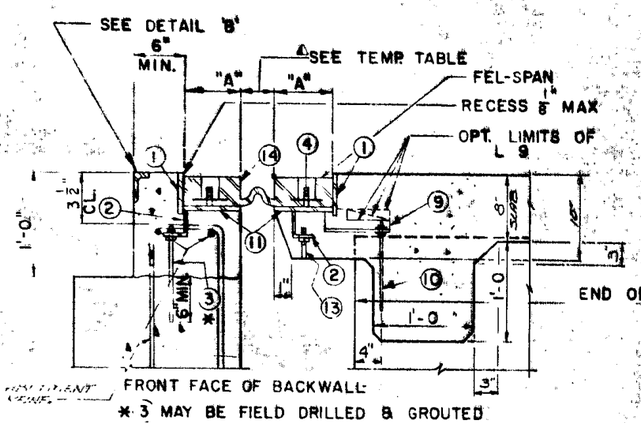
| Const. Spec. | 1975 | Drawn By | Budd | Plans Checked | KOH |
|---|---|---|---|---|---|

45" PRESTRESSED GIRDER DETAILS

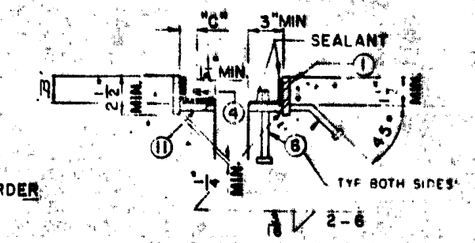
SHEET 13 OF 15

X 59366

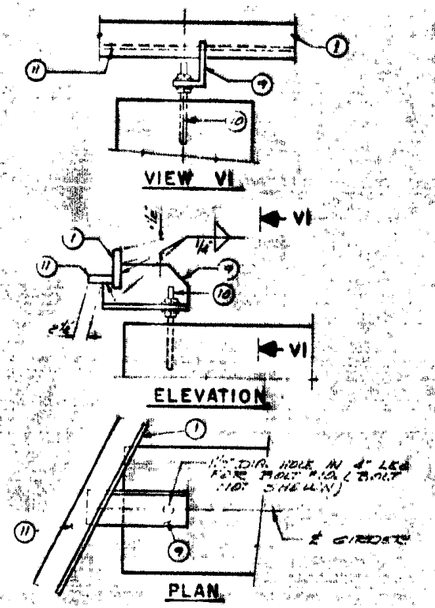
Form E-8-12-69




TYPICAL SECTION THRU JOINT




ANCHORAGE DETAILS
(ROADWAY SECTION)




## LEGEND

1. BAR 2 1/2" x 3/8", BUILD TO CONFORM TO ROADWAY CROWN.
2. L 3" x 2 1/2" x 5/16" x 3" LONG. PLACE MIDWAY BETWEEN GIRDERS AND AT 3'-0" CENTERS ON ABUTMENT SIDE. IF NECESSARY TURN L 180°. WELD TO NO. 11. PROVIDE 13/16Ø HOLE IN 2 1/2" LEG FOR NO. 3 @ 13.
3. 3/4Ø ROD, W/2 STD NUTS & WASHERS, THREAD 4".
4. THREADED STUDS PROVIDED BY MANUF. WELD TO NO. 11.
5. 5/8" DIA x 4" LG. STUDS. WELD TO L NO. 15 AT 6" ALTERNATE CTRS.
6. 1/2Ø x 0'-4" STUDS AT 0'-6" ALTERNATE CENTERS. BEND AFTER WELDING TO NO. 1.
9. L 4 x 3 x 3/8 WITH 1 1/2Ø HOLE FOR NO. 10 IN 4" LEG.
10. 3/4Ø EXPANSION BOLT WITH 2 NUTS AND 2 WASHERS FIELD SET ON ℄ OF GIR. TO A MIN. DEPTH OF 0'-4".
11. BAR 3/8" x 3 1/4", WELD TO NO. 1.
13. 3/4Ø ROD, THREAD 4" WELD NUT TO NO. 2.
14. FEL-SPAN MODEL T-30 SA
15. L 3" x 2" x 5/16" x RDWY. WIDTH. PROVIDE 11/16" VENT HOLES AT 3'-0" CTRS. IN 2" LEG. CUT 3" LEG AS REQ'D. FOR BENDING ANGLE TO CONFORM TO RDWY. CROWN.

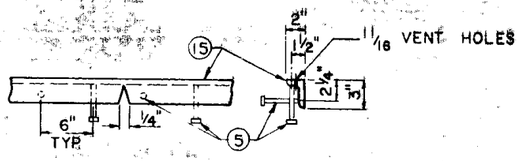
APPLY SEALANT ALONG BOTTOM AND SIDES OF TROUGH AS RECOMMENDED BY MANUFACTURER PRIOR TO PLACING EXPANSION DEVICE. CONCRETE MUST BE FREE OF ALL DEBRIS.

EXPANSION DEVICE ANCHORAGE IN CURBS PARAPETS, MEDIANS, AND SIDEWALKS SHALL BE WITH EITHER EXPANSION TYPE ANCHOR BOLTS OR EPOXY GROUTED TYPE ANCHOR BOLTS.

EACH STUD NO 4 OR ANCHORAGE DEVICE NO. 12 SHALL HAVE A WASHER AND HEX. NUT OR TORQUE NUT. TIGHTEN ALL NUTS TO MANUFACTURERS RECOMMENDED TORQUE.

CLEAN BOLT HOLE CAVITY AND FILL CAVITY DEPTH WITH SEALANT AND/OR BOLT HOLE PLUG. CLEAN EXCESS SEALANT FROM SURFACE.

ELASTOMERIC JOINT ASSEMBLY, INCLUDING ANCHORAGE ARMOR AND HARDWARE WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "EXPANSION DEVICE".

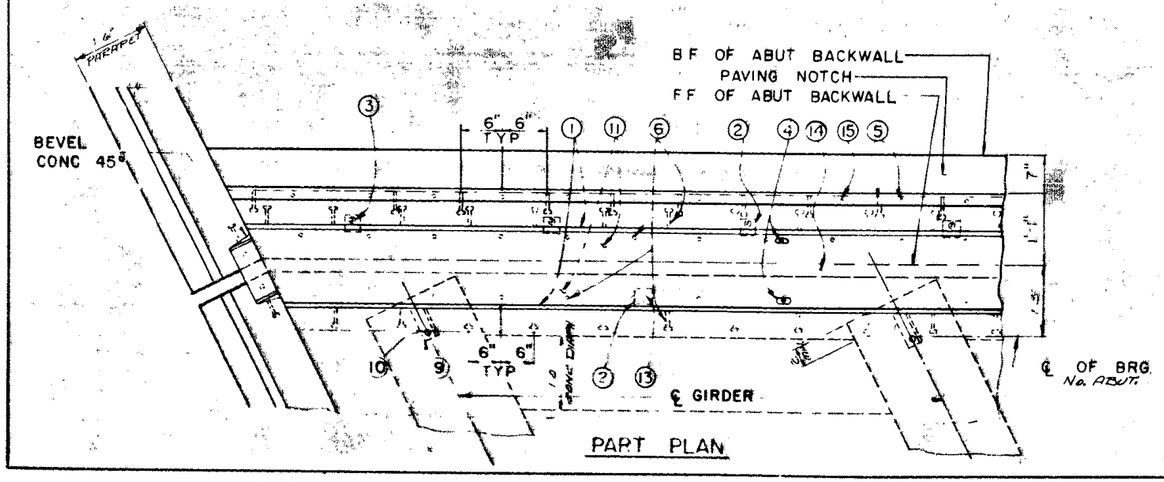



NOTES: ONE CUT IN 3" LEG OF NO. 15 SHALL BE AT CROWN.
ONE FIELD SPLICE SHALL BE PERMITTED IN ANGLE
ANGLES AND STUDS SHALL BE PAID FOR AS STRUCTURE CARBON STEEL.

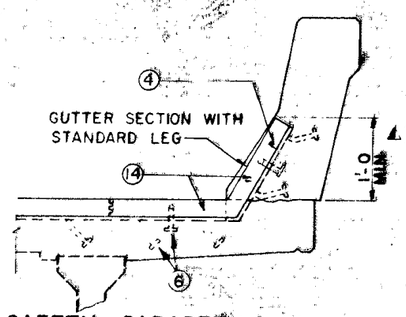
| A | B | C |
|---|---|---|
| 3 1/4 | 1 5/8 | 1 7/8 |

JOINT TABLE

DETAIL 'B'




PART PLAN




SAFETY PARAPET

SHADED UNDERSIDE DECK TEMPERATURE

JOINT OPENING

| | |
|---|---|
| 90° | 1 1/2 |
| 80° | 1 1/4 |
| 70° | 1 5/16 |
| 60° | 1 1/16 |
| 50° | 1 1/8 |
| 40° | 1 9/16 |
| 30° | 1 1/16 |

TEMPERATURE TABLE

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-36-65

| Const Spec 1975 | Drawn By Budd | Plans Checked HOK |
|---|---|---|

ELASTOMERIC EXPANSION JOINT DETAILS

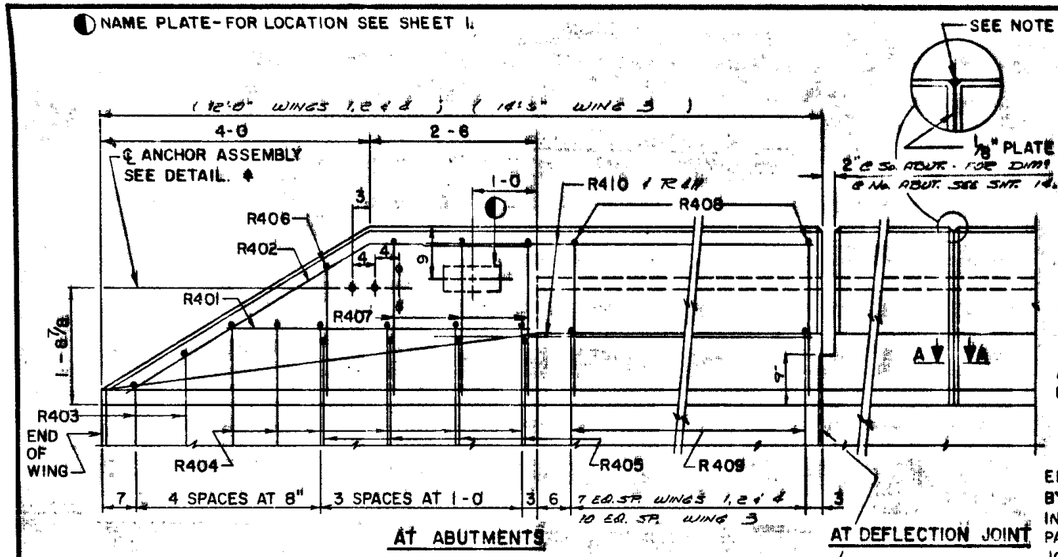
SHEET 14 OF 15

X59367

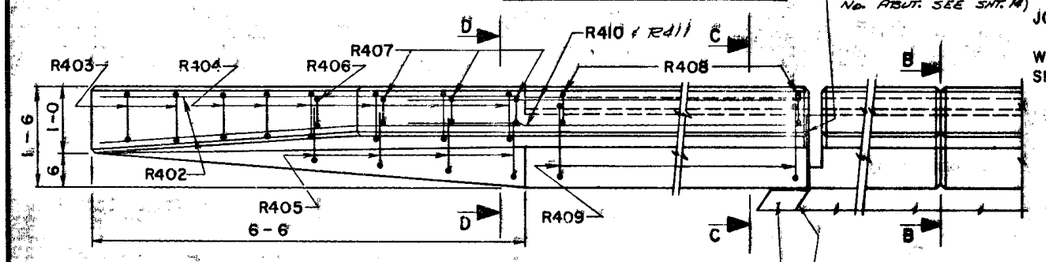
B-36-65

| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1225-1-85 | 7.14 |

NAME PLATE - FOR LOCATION SEE SHEET 1.

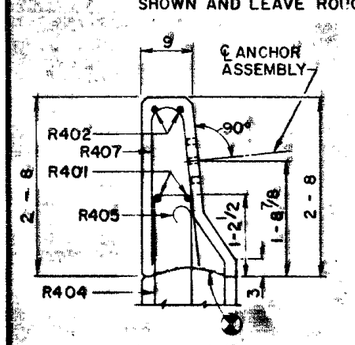



ELEVATION OF PARAPET

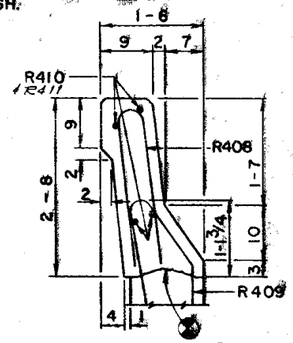



PLAN OF PARAPET

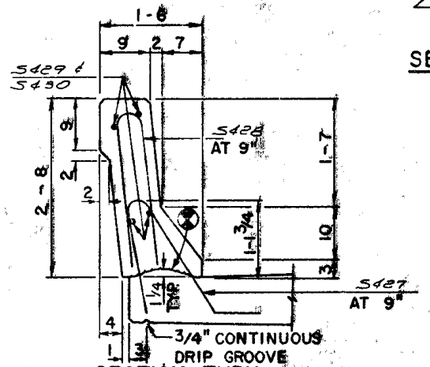
CONST. JOINT - STRIKE OFF AS SHOWN AND LEAVE ROUGH.




SECTION D

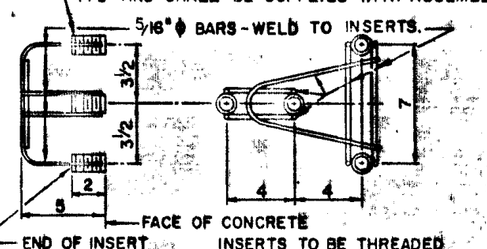



SECTION C




SECTION THRU PARAPET ON BRIDGE

THREADED INSERTS FOR 1/8" ϕ X 2" LG. GALVANIZED HEX. HEAD CAP SCREWS. CAP SCREWS TO BE THREADED A MINIMUM OF 1 7/8" AND SHALL BE SUPPLIED WITH ASSEMBLY.




DETAIL OF ANCHOR ASSEMBLY

ASSEMBLY SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STRUCTURAL CARBON STEEL".

NOTES

WHEN PARAPETS ARE POURED CONTINUOUSLY FROM END TO END, THEY SHALL BE SEPARATED AT THE DEFLECTION JOINTS BY A PIECE OF 1/8" ALUMINUM OR ZINC PLATE CUT AS SHOWN IN SECTION 'B' BY SHADED AREA. IF CONSTRUCTION JOINTS IN PARAPETS ARE USED AT THE DEFLECTION JOINTS, ONE SIDE OF JOINT SHALL BE COATED WITH BITUMINOUS PAINT AND THE PLATE SEPARATORS MAY BE OMMITED.

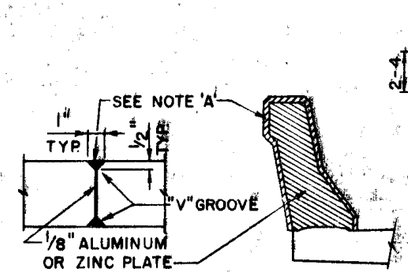
NOTE 'A' - FILL WITH NON-STAINING, GRAY, NON-BITUMINOUS JOINT SEALER.

♦ PLACE ANCHOR ASSEMBLY AT ALL ABUTMENT WINGS WHERE ATTACHMENT FOR BEAM GUARD RAIL IS NEEDED. SEE SHEET 1.

PARAPET BILL OF BARS AT ABUTMENTS

| MARK | NO REQ'D. S ABUT | NO REQ'D. N ABUT | LENGTH | BENT | LOCATION |
|---|---|---|---|---|---|
| R401 | 4 | 4 | 4-6 | | WINGS 1-4 |
| R402 | 4 | 4 | 6-8 | X | " " |
| R403 | 4 | 4 | 4-1 | X | " " |
| R404 | 12 | 12 | 4-11 | X | " " |
| R405 | 8 | 8 | 3-1 | X | " " |
| R406 | 2 | 2 | 4-0 | X | " " |
| R407 | 6 | 6 | 5-0 | X | " " |
| R408 | 18 | 19 | 5-0 | X | " " |
| R409 | 16 | 19 | 4-7 | X | " " |
| R410 | 8 | 4 | 7-6 | | " 1, 2 & 4 |
| R411 | | 4 | 10-0 | | " 3 |

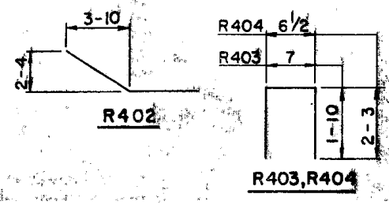
ABUTMENT TOTAL ESTIMATED QUANTITIES INCLUDE THIS WEIGHT.




SECTION A



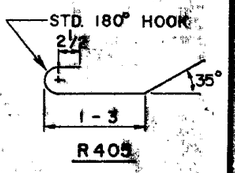
SECTION B



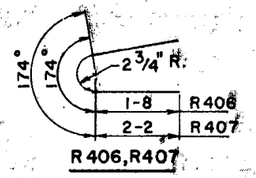

R402



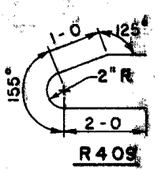

R403, R404




R405




R406, R407




R408




VIEW SHOWING FRONT FACE OF PARAPET




R406

| No. | Date | Revision | By |
|---|---|---|---|

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STRUCTURE B-36-65

Const. Spec. 1975 | Drawn By Budd | Plans Checked HOK

SLOPED FACE PARAPET "B"

SHEET 15 OF 15

X59368

Form E-B-12-66

B-36-65

PROJECT ID: 1224-07-71
WITH: N/A

(DESIGN ID: 1224-07-00)

COUNTY: MANITOWOC

INDEX OF SHEETS



TOTAL SHEETS = 80

24

# STATE OF WISCONSIN
# DEPARTMENT OF TRANSPORTATION

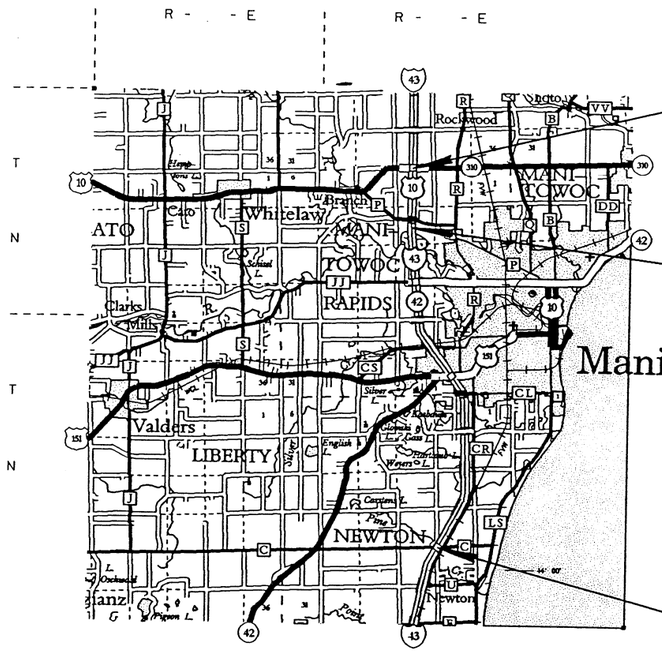
PLAN OF PROPOSED IMPROVEMENT

# CTH C - USH 10

## IH 43
## MANITOWOC COUNTY

| STATE PROJECT | FEDERAL PROJECT | |
|---|---|---|
| | PROJECT | CONTRACT |
| 1224-07-71 | IM 2001 (023) | 1 |
| | | |
| | | |
| | | |

STATE PROJECT NUMBER
1224-07-71




END PROJECT
STA 170+00 NB ℄
(END CONSTRUCTION STA 170+00 SB ℄)

EQUATION
90+00 NB ℄ AH=
990+00 NB ℄ BK

BEGIN PROJECT
STA 521+50 NB ℄
(BEGIN CONSTRUCTION STA 521+50 SB ℄)
X = 2,599,550 (±200')
Y = 739,450 (±200')

COORDINATES ARE SCALED FROM USGS TOPOGRAPHIC MAP MANITOWOC, WISCONSIN QUADRANGLE. FOR IDENTIFICATION ONLY.

LAYOUT
SCALE 0 2 MI.

TOTAL NET LENGTH OF CENTERLINE = 10.38 MI.

## DESIGN DESIGNATION

| | | | |
|---|---|---|---|
| A.D.T. | 2001 | = 11,120 NB | 11,640 SB |
| A.D.T. | 2021 | = 17,080 NB | 17,890 SB |
| D.H.V. | | = 2,289 NB | 2,397 SB |
| D. | | = 50/50 | |
| T. | | = 11.7% | |
| DESIGN SPEED | | = 65 MPH | |
| ESALS | | = 8,402,300 | |

## CONVENTIONAL SYMBOLS

COUNTY LINE
CORPORATE LIMITS
PROPERTY LINE (P.L. + 58.1)
LOT LINE
LIMITED EASEMENT
EXISTING RIGHT OF WAY
PROPOSED OR NEW R/W LINE
SURVEY LINE
SLOPE INTERCEPT
ORIGINAL GROUND
MARSH OR ROCK PROFILE (To be notes as such) (ROCK)
MARSH AREA
WOODED OR SHRUB AREA

COMBUSTIBLE FLUIDS
UNDERGROUND UTILITIES
GAS — G
ELECTRIC — E
TELEPHONE OR TELEGRAPH — T
COMMUNICATIONS LINE — C
SERVICE PEDESTAL
POWER POLE
TELEPHONE POLE
RAILROAD
SANITARY SEWER — SAN
STORM SEWER — SS
WATER — W
EXISTING CULVERT
PROPOSED CULVERT (Box or Pipe)
CULVERT (Profile View)

THIS PLAN IS SUBJECT TO FEDERAL OVERSIGHT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY
Surveyor
Designer J. J. GRAINGER, F. N. HEINTZ
District Examiner
District Supervisor S. C. NOEL
Proj. Dev. Engineer
C.O. Examiner N.R. AFFELDT

APPROVED FOR DISTRICT OFFICE
DATE: 6/29/00 (Signature)

AUTHORIZED FOR BUREAU OF HIGHWAY DEVELOPMENT
DATE: 7/27/00 (Signature)

E

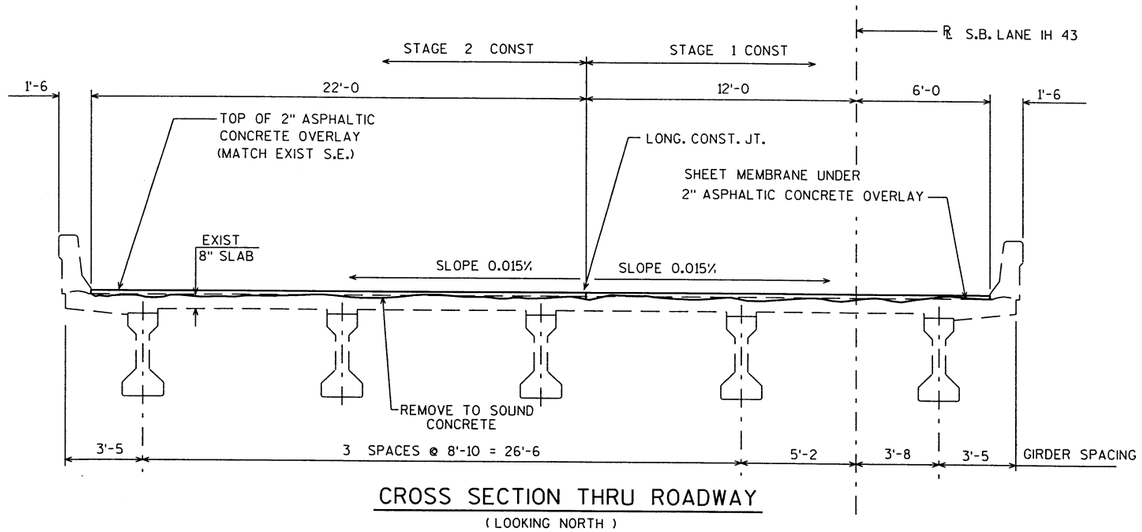
FILE NAME : d3_122407i01.dgn
PLOT DATE: 5-15-2000
ORG DATE : 5-15-2000
PLOT NAME : 101d
Originator : Dist 3
PLOT SCALE :

WISDOT/CADDS SHEET 10

4/15-D

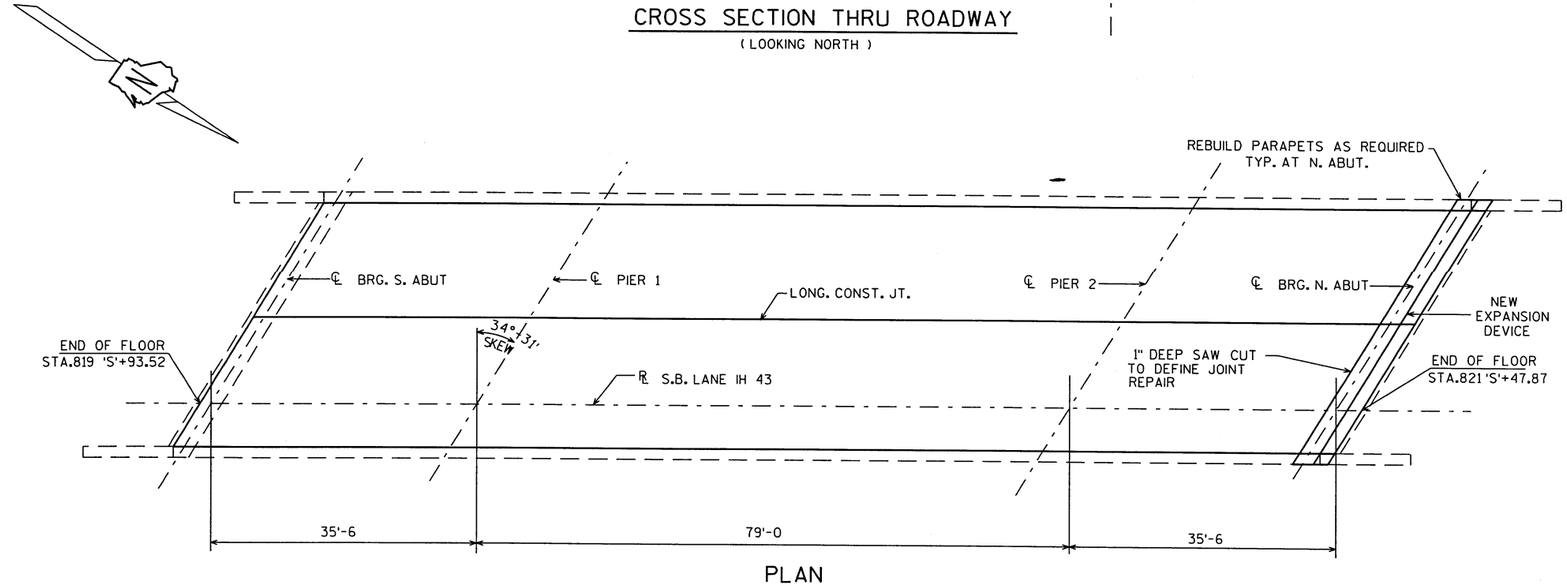
DISTRICT CONTACT: ROOYAKKERS/KROOK TYPE CODE = X

| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1224-07-71 | 8.5 |

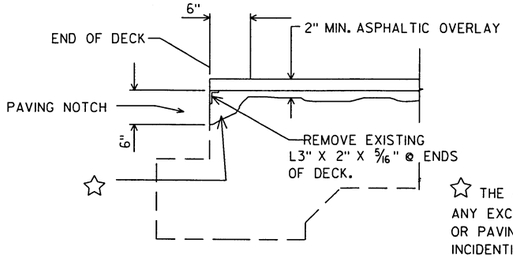



## CROSS SECTION THRU ROADWAY

( LOOKING NORTH )

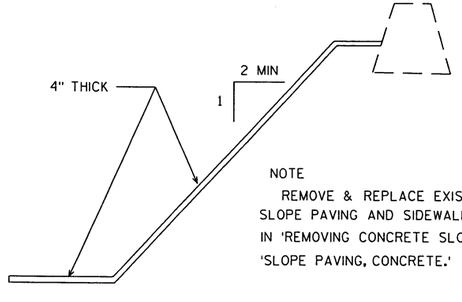



## PLAN




☆ THE ANGLE REMOVAL AND ANY EXCAVATION REQUIRED TO COMPLETE THE OVERLAY OR PAVING BLOCK AT THE ABUTMENTS IS TO BE CONSIDERED INCIDENTIAL TO THE BID ITEM 'CONCRETE MASONRY, DECK PATCHING'.

## DETAIL AT S. END OF DECK




NOTE

REMOVE & REPLACE EXISTING CONCRETE SLOPE PAVING AND SIDEWALK. ALL WORK INCLUDED IN 'REMOVING CONCRETE SLOPE PAVING' AND 'SLOPE PAVING, CONCRETE.'

## SLOPE PAVING DETAIL

## DESIGN DATA

LIVE LOAD :

INVENTORY RATING : HS20

OPERATIONAL RATING : HS44

MAX. STANDARD PERMIT VEHICLE LOAD = 250 KIPS

ULTIMATE DESIGN STRESSES :

CONCRETE MASONRY, SLAB _____ f'c = 4,000 p.s.i.

BAR STEEL REINFORCEMENT, GRADE 60 _____ fy = 60,000 p.s.i.

## GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

DIMENSIONS ARE BASED ON THE EXISTING ORIGINAL PLANS.

CONCRETE REQ'D. FOR PREPARATION, DECKS AND JOINT REPAIR SHALL BE INCLUDED IN CONCRETE MASONRY, DECK PATCHING.

## TOTAL ESTIMATED QUANTITIES

| | | |
|---|---|---|
| SHEET MEMBRANE WATERPROOFING | 665 | S.Y. |
| ASPHALTIC CONCRETE PAVEMENT, SUPERPAVE | 72 | TON |
| ASPHALTIC MATERIAL FOR PLANT MIXES | 4.3 | TON |
| CONCRETE MASONRY, DECK PATCHING | 11 | C.Y. |
| CURB RESURFACING | 310 | L.F. |
| PREPARATION, DECKS, TYPE 1 | 38 | S.Y. |
| PREPARATION, DECKS, TYPE 2 | 8 | S.Y. |
| EXPANSION DEVICE, B-36-65 | 1 | L.S. |
| JOINT REPAIR | 19 | S.Y. |
| REMOVING BEARINGS | 5 | EACH |
| LAMINATED ELASTOMERIC BEARING PADS | 5 | EACH |
| HIGH STRENGTH BAR STEEL REINFORCEMENT | 1210 | LB |
| GROUTING BRIDGE DECK | 1 | L.S. |
| PROTECTIVE SURFACE TREATMENT | 19 | S.Y. |
| REMOVING CONCRETE SLOPE PAVING | 400 | S.Y. |
| SLOPE PAVING, CONCRETE | 400 | S.Y. |
| SAWING PAVEMENT, DECK PREPARATION AREAS | 209 | L.F. |

## LIST OF DRAWINGS

1. ASPHALTIC OVERLAY
2. EXPANSION DEVICE
3. BEARING DETAILS

BRIDGE OFFICE CONTACTS :

FINN HUBBARD (608) 266-8489

DAVE KIEKBUSCH (608) 266-5084

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

**STRUCTURE B-36-65**

IH 43 S.B. OVER W. CUSTER STR.

| | |
|---|---|
| COUNTY: MANITOWOC | TOWN/~~CITY/VILLAGE~~: MANITOWOC RAPIDS |
| DESIGN SPEC.: AASHTO 1998 | LOAD: ____ CONST. SPEC.: 1996 |
| DESIGNED BY: DJK / DESIGN CK'D.: ____ | DRAWN BY: RJG / PLANS CK'D.: DJK |

APPROVED: W.H. Anderson 03-23-99
CHIEF STRUCTURAL DESIGN ENGINEER — DATE

**ASPHALTIC OVERLAY**

SHEET 1 OF 3

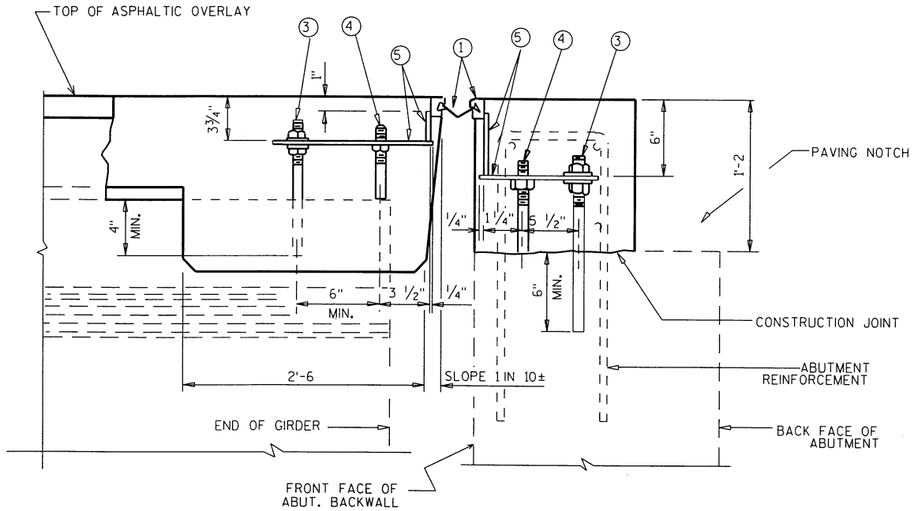
DATE: APR '99

I.D. 1224-07-00C

SCALE = 10

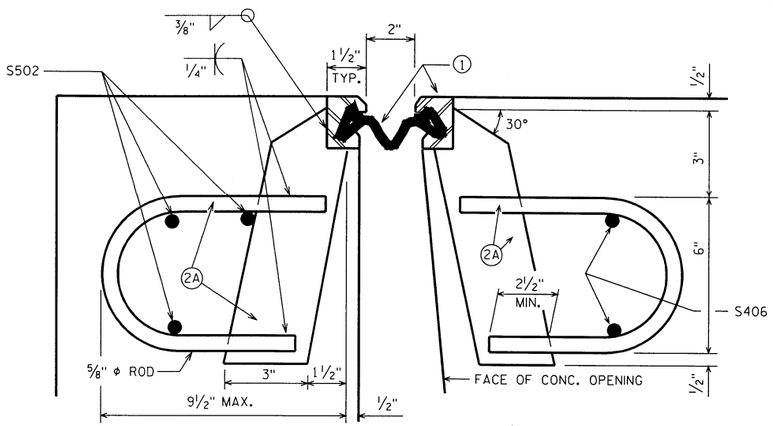
FILE= 650VLAY.DGN

| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1224-07-71 | 8.6 |



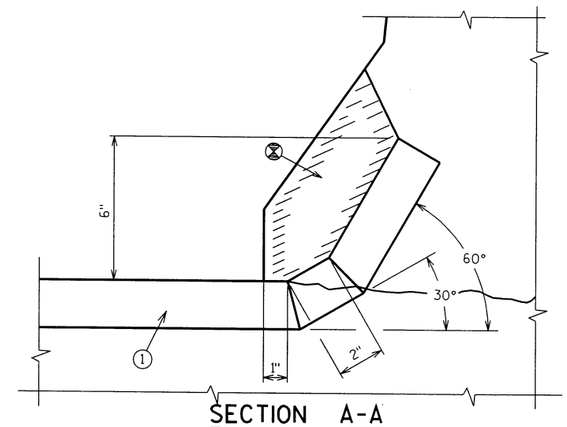

## SECTION THRU JOINT AT ABUTMENT

NORMAL TO ℄ SUBSTRUCTURE




## SECTION THRU JOINT

ROADWAY TRAFFIC AREA BETWEEN EXTERIOR GIRDERS.




## SECTION A-A

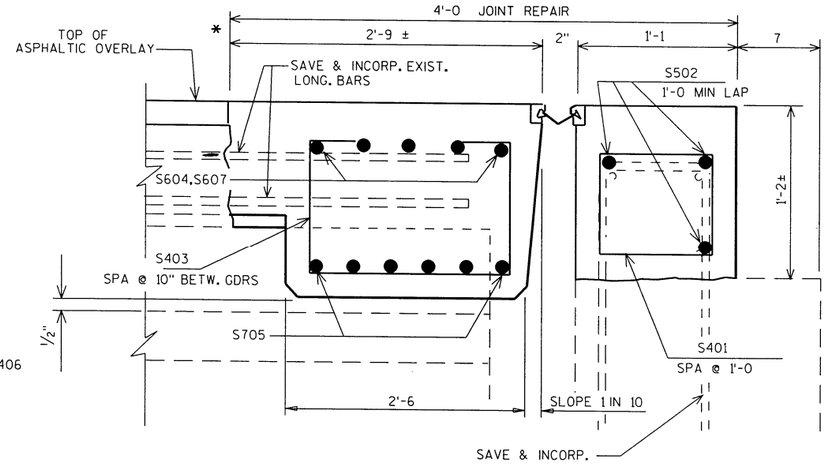
## LEGEND

1. NEOPRENE STRIP SEAL ( 4 - INCH) & STEEL EXTRUSIONS.
2. STUDS ⅝" ℄ X 6⅜" LONG AT 6" ALTERNATE CENTERS. WELD TO EXTRUSIONS & BEND AS SHOWN AFTER WELDING.
2A. 3" × ½" ANCHOR PLATE WITH ⅝"℄ ROD. WELD ROD TO ANCHOR PLATE. WELD ANCHOR PLATE TO #1 AT 1'-6" CTRS. BETWEEN GIRDERS.
3. ¾" ℄ THREADED ROD WITH 2 NUTS AND WASHERS. FIELD SET ON ℄ OF GIRDER. ON ABUTMENT SIDE GROUT THREADED ROD INTO FIELD DRILLED HOLES IN ABUTMENT BACKWALL AS SHOWN.
4. ¾"℄ THREADED ROD WITH NUT. TACK WELD NUT TO NO. 5.
5. FABRICATE SUPPORT FROM 3" X ½" BAR AS SHOWN OR EQUIVALENT. ONE PER GIRDER PER SIDE. FIELD OR SHOP WELD TO NO. 1. PROVIDE 1½" ℄ HOLE FOR NO. 3 & 1" ℄ HOLE FOR NO. 4.

## BILL OF BARS

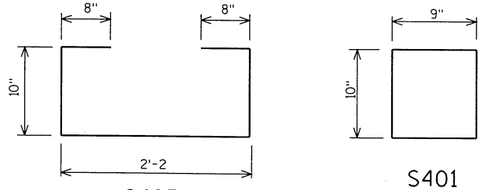
NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

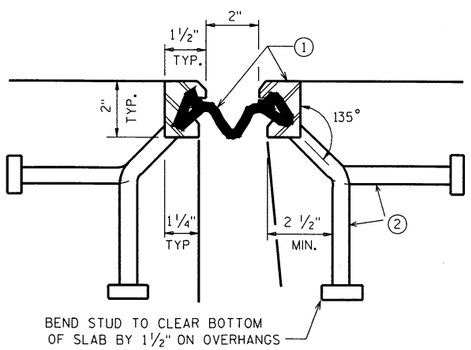
| BAR MARK | COAT | NO. REQ'D. | LENGTH | BENT | CUT. DIAG. | BUN-DLE | LOCATION |
|---|---|---|---|---|---|---|---|
| S401 | | 41 | 3-8 | × | | | PAVING BLOCK - STIRRUPS |
| S502 | | 18 | 8-3 | | | | PAVING BLOCK - HORIZ |
| S403 | | 44 | 4-10 | × | | | SLAB - DIAPH |
| S604 | | 5 | 21-0 | | | | SLAB - TRANS - STAGE 1 |
| S705 | | 24 | 8-10 | | | | DIAPH BETWN GDRS |
| S406 | | 8 | 8-10 | | | | SLAB BETWN GDRS |
| S607 | | 5 | 23-0 | | | | SLAB - TRANS - STAGE 2 |
| | | | | | | | |
| | | | | | | | |




## SECTION THRU JOINT AT N. ABUTMENT SHOWING REINFORCEMENT

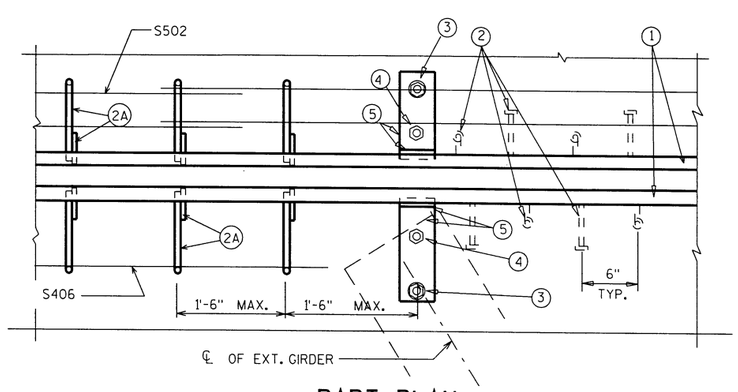
* DIMENSIONS TAKEN NORMAL TO SUBSTRUCTURE




## SECTION THRU JOINT

EXTERIOR GIRDER TO EDGE OF SLAB & AT PARAPETS, MEDIAN & SIDEWALKS




## PART PLAN

## 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 & SWEEP.

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

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

ANCHOR SYSTEM #8 & #9 SHALL CONFORM TO ASTM A307 & SHALL BE GALV. IN ACCORDANCE WITH ASTM A153 CLASS C & D.

STRIP SEAL EXPANSION JOINT ASSEMBLY, INCLUDING ANCHOR STUDS & HARDWARE WILL BE PAID FOR AT THE LUMP SUM PRICE BID FOR "EXPANSION DEVICE"

⊗ BLOCK OUT CONCRETE 2" EACH SIDE OF JOINT OPENING.

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-36-65

| CONST. SPEC. | 1996 | DRAWN BY | RJG | PLANS CK'D. | DJK |
|---|---|---|---|---|---|

EXPANSION DEVICE

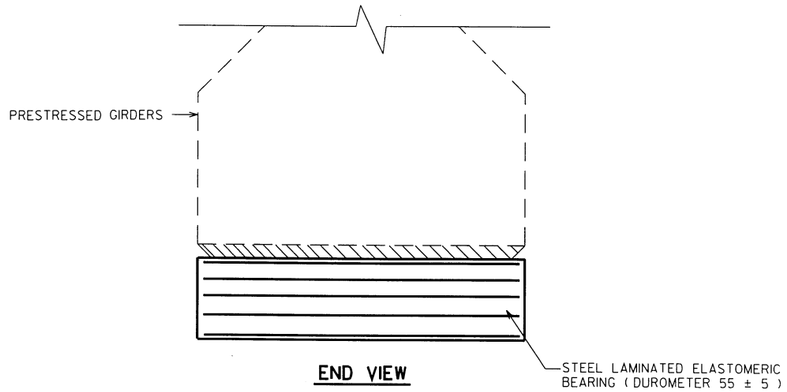
SHEET 2

SCALE =

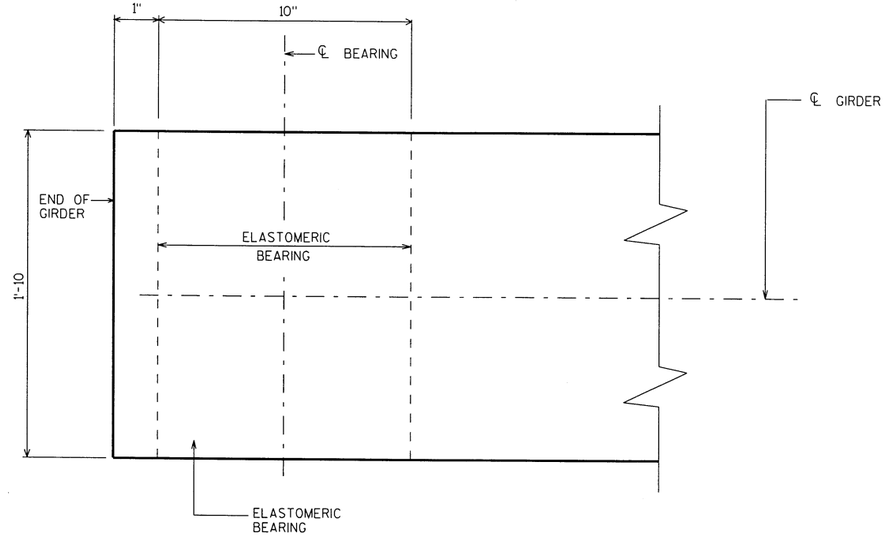
FILE= 65EXP.DGN

3-5-99

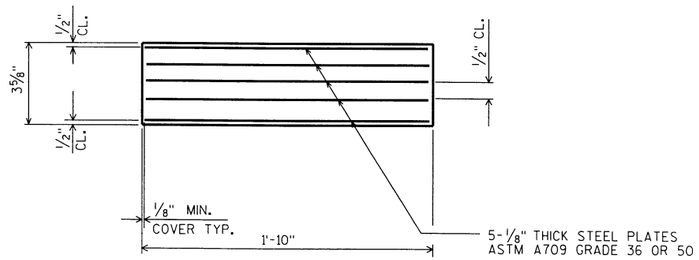
| STATE PROJECT NUMBER | SHEET NO. |
|---|---|
| 1224-07-71 | 8.7 |




END VIEW




PLAN VIEW




SECTION THRU ELASTOMERIC BEARING

## BEARING REPLACEMENT PROCEDURE

REMOVE EXISTING BEARINGS AT N. ABUTMENT.

CLEAN GIRDER PLATE.

BOND ELASTOMERIC BEARING TO GIRDER PLATE WITH ELASTOMERIC COMPATIBLE EPOXY.

## BEARING NOTES

BEARINGS SHALL NOT BE PLACED AT A TEMPERATURE GREATER THAN 85° F.

ALL MATERIAL USED FOR BEARINGS SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "LAMINATED ELASTOMERIC BEARING PADS, EACH".

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

ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN SECTION

STRUCTURE B-36-65

| CONST. SPEC. | 1996 | DRAWN BY | RJG | PLANS CK'D. | DJK |
|---|---|---|---|---|---|

BEARING DETAILS

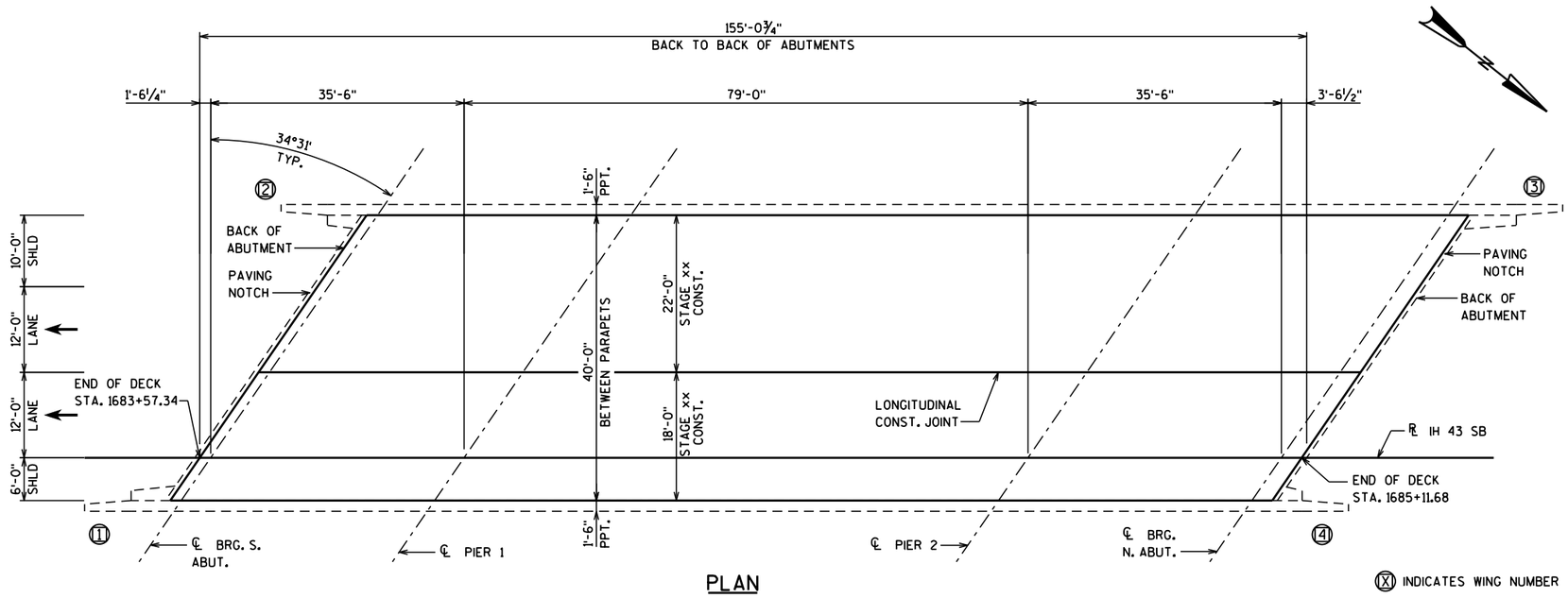
SHEET 3

SCALE = :4

FILE= BR3665; 65BRGS.DGN

9-1-94

| STATE PROJECT NUMBER |
|---|
| 1225-10-71 |




PLAN

Ⓧ INDICATES WING NUMBER

## DESIGN DATA

LIVE LOAD:

| | |
|---|---|
| DESIGN LOADING: | HS-20 |
| INVENTORY RATING: | HS-xx |
| OPERATING RATING: | HS-xx |
| WISCONSIN STANDARD PERMIT VEHICLE (Wis-SPV): | 250 KIPS |

## GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

DIMENSIONS ARE BASED ON EXISTING STRUCTURE PLANS.

DECK SURFACE PREPARATION IS INCLUDED IN THE BID ITEM "POLYMER OVERLAY".

## TOTAL ESTIMATED QUANTITIES

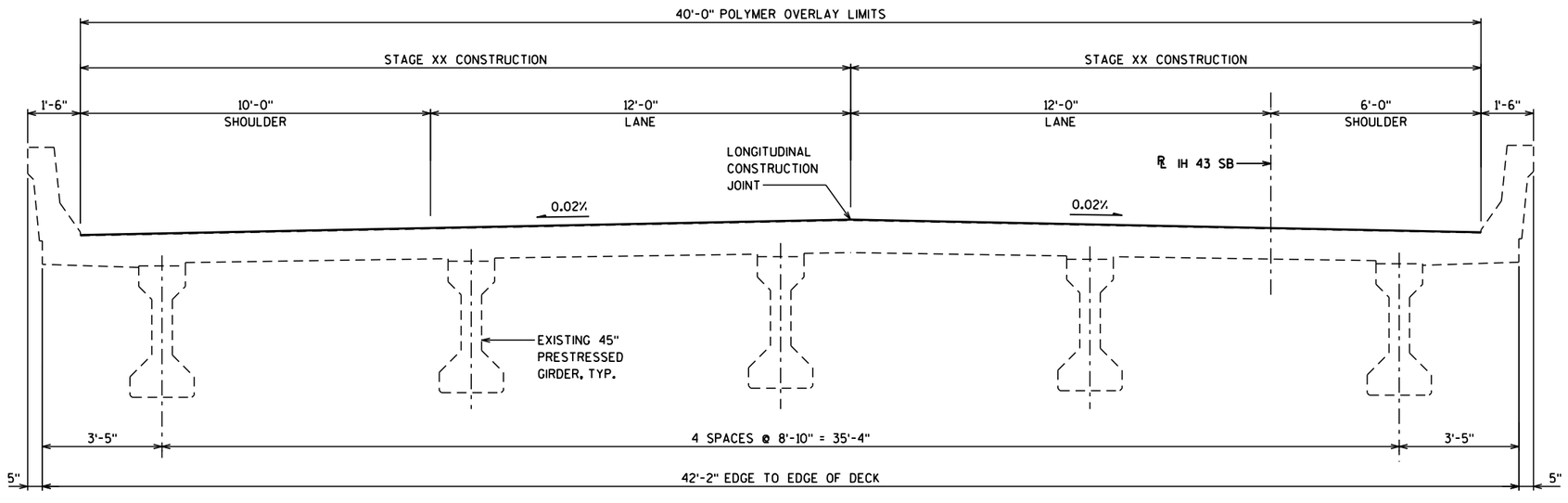
509.5100.S POLYMER OVERLAY ——— 686 SY

## LIST OF DRAWINGS

1. GENERAL PLAN

## TRAFFIC DATA

ADT = 11,800 (2036)
RDS = 70 M.P.H.




CROSS SECTION THRU EXISTING ROADWAY

(LOOKING NORTH)


BRIDGE OFFICE CONTACT

WILLIAM DREHER
(608) 266-8489

CONSULTANT CONTACT

KRISTOFER OLSON
OMNNI ASSOCIATES
(920) 735-6900


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

ORIGINAL PLANS PREPARED BY

OMNNI ASSOCIATES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED _____ _____
CHIEF STRUCTURES DESIGN ENGINEER — DATE

# STRUCTURE B-36-65

IH 43 SB OVER WEST CUSTER ST

| COUNTY | TOWN |
|---|---|
| MANITOWOC | MANITOWOC RAPIDS |

DESIGN SPEC. REHABILITATION N/A

| DESIGNED BY | DESIGN CK'D. | DRAWN BY | PLANS CK'D. |
|---|---|---|---|
| BRE | KRO | BRE | KRO |

GENERAL PLAN

SHEET 1 OF 1

8

8


FILE NAME : F:±TR±JOBS±E2340A18±Sheets±B-36-65 01 gp.dgn PLOT BY : EpleyB PLOT DATE: 1/30/2019 10:46:47 AM

***** CONTINUOUS PRESTRESSED CONCRETE GIRDER DESIGN, ANALYSIS, AND RATING *****

WISCONSIN DEPT. OF TRANSPORTATION
BRIDGE RESEARCH AND DEVELOPMENT SECTION
DESIGN AUTOMATION UNIT
P.O. BOX 7916
MADISON,WI. 53707

PROGRAM KWIKSPAN VERSION 99-08 NT
24-Nov-03 14:54:21

FOR ASSISTANCE CONTACT: LEE SCHUCHARDT AT (608) 266-8494 OR DAVE NELSON AT (608) 264-9420

INPUT DATA
0301 B-36-65 JDG 11/24/03
35.500 79.000 99999.000 .000 .000 .000
.000 .000 .000 .000 45.000 4.000 4800.000 1.000
Interior girder 2" overlay 1. 60000. 0. .5
8.800 1.600 1.864 913.400 580.000 .000 6000.000 .000
7.500 97.000 .500 .000 1.000 2.000 1.257

INTERIOR GIRDER SPACING = 8.800 FT.
SLAB THICKNESS = 8.0 INCHES
SLAB WIDTH FOR COMPOSITE ACTION = 97.00 INCHES
HAUNCH HEIGHT USED TO COMPUTE COMPOSITE SECTION PROPERTIES = -.50 INCHES
DISTRIBUTION FACTOR = 1.600
DISTRIBUTION FACTOR FOR END REACTIONS = 1.864
NON-COMPOSITE DEAD LOAD = 913. LBS./FT.
COMPOSITE DEAD LOAD = 580. LBS./FT.
CONCRETE DIAPHRAGMS
LIVE LOAD = HS20

MAXIMUM MOMENTS AT X/10 PTS.-IN FT. KIPS

| | X | COMPOSITE DL MOMENTS | +SDK.LL | -SDK.LL | +TRUCK | -TRUCK | +LANE | -LANE | NON-COMPOSITE DL GIRDER | NON-COMPOSITE DL SLAB+DIA |
|---|---|---|---|---|---|---|---|---|---|---|
| SPAN | 1 | | | | | | | | | |
| | 1.0 | 7.6 | .0 | .0 | 158.6 | -54.7 | 94.0 | -40.4 | 33.1 | 57.1 |
| | 2.0 | 8.0 | .0 | .0 | 261.4 | -109.4 | 164.1 | -80.8 | 58.8 | 102.6 |
| | 3.0 | 1.0 | .0 | .0 | 317.0 | -164.2 | 210.8 | -121.2 | 77.2 | 136.7 |
| | 4.0 | -13.3 | .0 | .0 | 329.3 | -218.9 | 234.8 | -161.6 | 88.2 | 159.2 |
| | 5.0 | -34.9 | .0 | .0 | 318.9 | -273.6 | 237.0 | -202.0 | 91.9 | 170.2 |
| | 6.0 | -63.8 | .0 | .0 | 309.0 | -328.3 | 218.7 | -242.3 | 88.2 | 159.2 |
| | 7.0 | -100.0 | .0 | .0 | 264.2 | -383.1 | 181.5 | -282.7 | 77.2 | 136.7 |
| | 8.0 | -143.6 | .0 | .0 | 180.9 | -437.8 | 127.2 | -323.1 | 58.8 | 102.6 |
| | 9.0 | -194.4 | .0 | .0 | 61.9 | -492.5 | 62.4 | -377.1 | 33.1 | 57.1 |
| | 10.0 | -252.5 | .0 | .0 | 41.8 | -547.2 | 28.2 | -485.6 | .0 | .0 |
| SPAN | 2 | | | | | | | | | |
| | 1.0 | -89.7 | .0 | .0 | 40.1 | -231.8 | 79.6 | -226.5 | 163.8 | 268.3 |
| | 2.0 | 37.0 | .0 | .0 | 277.9 | -96.1 | 193.3 | -79.1 | 291.2 | 479.5 |
| | 3.0 | 127.5 | .0 | .0 | 476.8 | -78.4 | 333.7 | -53.5 | 382.3 | 633.8 |
| | 4.0 | 181.8 | .0 | .0 | 599.7 | -60.7 | 428.5 | -53.5 | 436.9 | 731.0 |
| | 5.0 | 199.9 | .0 | .0 | 631.3 | -43.0 | 460.7 | -53.5 | 455.1 | 771.2 |
| | 6.0 | 181.8 | .0 | .0 | 599.7 | -60.7 | 428.5 | -53.5 | 436.9 | 731.0 |
| | 7.0 | 127.5 | .0 | .0 | 476.8 | -78.4 | 333.7 | -53.5 | 382.3 | 633.8 |
| | 8.0 | 37.0 | .0 | .0 | 277.9 | -96.1 | 193.3 | -79.1 | 291.2 | 479.5 |
| | 9.0 | -89.7 | .0 | .0 | 40.1 | -231.8 | 79.6 | -226.5 | 163.8 | 268.3 |
| | 10.0 | -252.5 | .0 | .0 | 41.8 | -547.2 | 28.2 | -485.6 | .0 | .0 |

LIVE LOAD SHEARS AND REACTIONS(KIPS)

LEFT SUPPORT REACTIONS

| PIER-LANE | BRG-LANE | PIER-TRUCK | BRG-TRUCK |
|---|---|---|---|
| SPAN 1 | | | |
| 36.7 | 42.0 | 50.8 | 57.5 |

SHEARS AT X/10TH POINTS

| X | COMPOSITE DEAD LOAD | +SDK.LL | -SDK.LL | +TRUCK | -TRUCK | +LANE | -LANE | NON-COMPOSITE DEAD LOAD |
|---|---|---|---|---|---|---|---|---|
| .0 | 3.2 | .0 | .0 | 52.8 | .0 | 38.2 | -7.5 | 28.1 |
| 1.0 | 1.1 | .0 | .0 | 44.7 | -3.9 | 32.8 | -10.8 | 22.7 |
| 2.0 | -.9 | .0 | .0 | 36.8 | -7.8 | 27.7 | -14.4 | 17.4 |

```
       3.0      -3.0        .0        .0      29.3     -11.6      22.9     -18.1      12.1
       4.0      -5.1        .0        .0      22.3     -15.5      18.5     -22.1       6.8
       5.0      -7.1        .0        .0      15.7     -23.0      14.5     -26.2       1.5
       6.0      -9.2        .0        .0       9.7     -30.2      10.8     -30.4       6.8
       7.0     -11.2        .0        .0       4.4     -37.2       7.6     -34.7      12.1
       8.0     -13.3        .0        .0       -.4     -43.9       4.7     -39.0      17.4
       9.0     -15.3        .0        .0      -4.5     -51.1       2.3     -43.2      22.7
      10.0     -17.4        .0        .0      -7.9     -57.7        .4     -47.4      28.1
SPAN  2
      71.4      76.1       71.3      77.1

        .0      22.9        .0        .0      65.1       1.5      51.7       -.6      60.6
       1.0      18.3        .0        .0      58.9       -.8      45.2      -2.4      48.8
       2.0      13.7        .0        .0      51.4      -4.8      38.4      -5.1      37.0
       3.0       9.2        .0        .0      43.0     -10.6      31.6      -8.9      25.1
       4.0       4.6        .0        .0      34.3     -17.7      25.1     -13.6      13.3
       5.0        .0        .0        .0      25.7     -25.7      19.0     -19.0       1.5
       6.0      -4.6        .0        .0      17.7     -34.3      13.6     -25.1      13.3
       7.0      -9.2        .0        .0      10.6     -43.0       8.9     -31.6      25.1
       8.0     -13.7        .0        .0       4.8     -51.4       5.1     -38.4      37.0
       9.0     -18.3        .0        .0        .8     -58.9       2.4     -45.2      48.8
      10.0     -22.9        .0        .0      -1.5     -65.1        .6     -51.7      60.6
SPAN  3
      71.4      78.1       71.3      78.8


********** 45 INCH PRESTRESSED GIRDER **********

COMPOSITE SECTION MODULII - INCHES CUBED
   FACTOR USED TO DETERMINE EQUIVALENT AREA OF SLAB =  .7500
   BOTTOM OF GIRDER=  10100.
   TOP OF GIRDER=  31219.

COMPOSITE MOMENT OF INERTIA
   I= 343389.

MOMENT OF AREA OF SLAB ABOUT COMPOSITE CENTROID
   Q= 7689.

NON COMPOSITE SECTION PROPERTIES
    A=560.
    I= 125390.
    YB=20.27
    YT=24.73
    SB= 6186.
    ST= 5070.

TOP FLANGE WIDTH= 16.

WEB THICKNESS= 7.00


INPUT DATA

     1.000    12.000   347.000      .000      .000
     4.130     4.130     4.130     4.130     4.130     7.660
     7.660     7.660     7.660     7.660     7.660




***** SPAN  1 ANALYSIS *****

UNDRAPED STRAND DESIGN

 NUMBER OF STRANDS = 12. STRESS-RELIEVED STRAND
 ECCENTRICITY OF STRANDS = 14.94
 DIAMETER OF STRANDS =  .5 INCHES
 AREA OF STRAND = .1531 SQ. INCHES
 GIRDER CONCRETE STRENGTH =  6000. PSI.
 SLAB CONCRETE STRENGTH =  4000. PSI.

PRESTRESS LOSSES IN PSI BASED ON AASHTO 1989 AASHTO  SPECIFICATIONS
    SH = 6000.
    ES = 6875.
    CRC=10327.
    CRS=13984.

 FORCE IN STRANDS WHEN CONCRETE TAKES ITS INITIAL SET SHALL BE  347. KIPS
```

MAXIMUM ALLOWABLE TEMPORARY FORCE = 358. KIPS

GIRDER CAMBER = .21 INCHES
SLAB+DIAPHRAGM DEFLECTION = -.05 INCHES

INITIAL GIRD. STRESSES IN FOLLOWING TABLE ARE BASED ON A PRESTRESS FORCE OF 334. KIPS.
FINAL GIRD. STRESSES ARE BASED ON FORCE OF 279. KIPS AND POSITIVE MOMENTS ONLY.
MIN. COMPRESSIVE STRENGTH OF CONCRETE AT TIME OF INITIAL PRESTRESS = 4800. PSI
COMPRESSION STRESSES HAVE NEGATIVE SIGNS, TENSION STRESSES ARE POSITIVE. INITIAL GIRDER STRESSES AT POINT 0 ARE COMPUTED THREE FEET FROM END FOR DESIGN RUNS.

NOTE: NON-PRESTRESSED GIRDER STEEL IS GRADE 60

| TENTH POINT | INITIAL GIRD.STRESSES TOP | BOTTOM | NON-PRE GIRD.STEEL | FINAL GIRD.STRESSES TOP | BOTTOM | STRENGTH SLAB.STEEL | FACTORED NEG.MOM. | FACTORED MOM. TOP GIRD.STRESS | FATIGUE SLAB STEEL |
|---|---|---|---|---|---|---|---|---|---|
| 0 | .388 | -1.405 | 1.261 | .324 | -1.171 | .000 | .0 | .324 | .000 |
| 1 | .310 | -1.340 | .873 | .046 | -.798 | .457 | 111.1 | .373 | .651 |
| 2 | .249 | -1.291 | .604 | -.162 | -.537 | .946 | 229.4 | .484 | 1.316 |
| 3 | .206 | -1.255 | .000 | -.305 | -.378 | 1.467 | 354.7 | .657 | 1.991 |
| 4 | .179 | -1.234 | .000 | -.384 | -.315 | 2.039 | 491.6 | .901 | 2.673 |
| 5 | .171 | -1.226 | .000 | -.406 | -.325 | 2.657 | 638.2 | 1.214 | 3.362 |
| 6 | .179 | -1.234 | .000 | -.356 | -.399 | 3.319 | 794.3 | 1.618 | 4.057 |
| 7 | .206 | -1.255 | .000 | -.246 | -.561 | 4.027 | 960.0 | 2.090 | 4.756 |
| 8 | .249 | -1.291 | .604 | -.073 | -.813 | 4.782 | 1135.1 | 2.628 | 5.461 |
| 9 | .310 | -1.340 | .873 | .110 | -.996 | 5.586 | 1319.8 | 3.234 | 6.170 |
| 10 | .388 | -1.405 | 1.261 | .324 | -1.171 | 6.438 | 1514.0 | 3.907 | 6.883 |

MAXIMUM FINAL GIRDER STRESS AT TOP WITH NO LIVE LOAD = -.283 KSI
MAXIMUM ALLOWABLE PER AASHTO = 0.40fc = -2.400 KSI

SHEAR DESIGN (AASHTO 9.20 )

| POINT | D | VU | MCR | MMAX | VI | VCI | FPC | VP | VCW | VS | NO.4 STIR.SPAC.(IN) GR 60 | GR 40 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 42.92 | 140.6 | 1376.4 | 1.0 | 82.5 | ***** | .042 | .0 | 85.2 | 80.3 | 12.84 | 8.56 |
| 1 | 42.92 | 127.8 | 1229.2 | 353.5 | 81.2 | 319.1 | .160 | .0 | 95.9 | 54.5 | 18.91 | 12.61 |
| 2 | 42.92 | 101.2 | 1112.9 | 576.7 | 81.0 | 187.7 | .254 | .0 | 104.3 | 14.7 | 21.00 | 20.00 |
| 3 | 42.92 | 75.4 | 1027.3 | 688.9 | 67.4 | 126.6 | .323 | .0 | 110.5 | 1.0 | 21.00 | 20.00 |
| 4 | 42.92 | 50.5 | 972.5 | 701.4 | 54.8 | 96.8 | .367 | .0 | 114.5 | 1.0 | 21.00 | 20.00 |
| 5 | 48.75 | 67.9 | 357.3 | 657.1 | 59.0 | 49.4 | .492 | .0 | 142.9 | 30.5 | 21.00 | 20.00 |
| 6 | 48.75 | 86.6 | 349.4 | 794.3 | 77.4 | 56.7 | .490 | .0 | 142.7 | 45.2 | 21.00 | 17.25 |
| 7 | 48.75 | 110.9 | 319.3 | 960.0 | 95.2 | 59.6 | .485 | .0 | 142.2 | 70.9 | 16.51 | 11.01 |
| 8 | 48.75 | 135.1 | 265.1 | 1135.1 | 112.4 | 59.5 | .477 | .0 | 141.4 | 99.4 | 11.78 | 7.85 |
| 9 | 48.75 | 160.2 | 184.6 | 1319.8 | 115.1 | 54.7 | .465 | .0 | 140.1 | 133.7 | 8.75 | 5.83 |
| 10 | 48.75 | 171.5 | 75.7 | 1514.0 | 116.3 | 46.9 | .447 | .0 | 138.3 | 154.8 | 7.56 | 5.04 |

POSITIVE MOMENT DESIGN FLEXURAL STRENGTH = 1780. FT-KIPS

RATIO OF PRESTRESSING STEEL (As/bd) (96 AASHTO 9.17.2) = .00040583
MAXIMUM ALLOWABLE As/bd (96 AASHTO 9.18.1) = .00459254

1.2*CRACKING MOMENT (89 AASHTO 9.18.2.1) = 1571. FT-KIPS

MAXIMUM POSITIVE DESIGN MOMENT (FACTORED) 1.3(D+5/3(L+I))= 1018. FT-KIPS

POSITIVE OPERATING MOMENT CAPACITY BASED ON 90 PERCENT OF YIELD STRESS = 1308. FT-KIPS

POSITIVE OPERATING MOMENT CAPACITY (BASED ON 75 OR 90 PERCENT CRITERIA) = 1308. FT-KIPS

POSITIVE LIVE LOAD OPERATING MOMENT CAPACITY = 1081. FT-KIPS

NOTE: ALL RATINGS ARE BASED ON THE INPUT WHEEL DISTRIBUTION FACTOR FOR MOMENT.

OPERATING RATING BASED ON POSITIVE MOMENT (LF OR WS)
HS-RATING= 65.7

OPERATING RATING BASED ON NEGATIVE MOMENT - GRADE 60 STEEL (LF OR WS)
HS-RATING= 38.6

INVENTORY RATING BASED ON POSITIVE MOMENT (WS)
HS-RATING= 59.7

INVENTORY RATING BASED ON FATIGUE (WS)
HS-RATING= 22.1

INVENTORY RATING BASED ON NEGATIVE MOMENT (LF)
HS-RATING= 24.6
WHEEL LOADS AND SPACINGS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 25.000 | 35.000 | 35.000 | 35.000 | 30.000 | 30.000 | 30.000 | 30.000 | .000 | .000 |
| 13.000 | 4.000 | 4.000 | 30.000 | 4.000 | 4.000 | 4.000 | .000 | .000 | |

MAX. LIVE LOAD MOMENTS AT X/10 PTS. IN FT. KIPS PER WHEEL LINE WITH IMPACT

SPAN 1

| X | CURB & +LL | CURB & -LL | +TRUCK | -TRUCK |
|---|---|---|---|---|
| 1.0 | 7.6 | 7.6 | 387.4 | -160.8 |
| 2.0 | 8.0 | 8.0 | 644.7 | -321.6 |
| 3.0 | 1.0 | 1.0 | 824.4 | -482.4 |
| 4.0 | -13.3 | -13.3 | 914.4 | -643.2 |
| 5.0 | -34.9 | -34.9 | 908.0 | -804.1 |
| 6.0 | -63.8 | -63.8 | 837.7 | -964.9 |
| 7.0 | -100.0 | -100.0 | 671.2 | -1125.7 |
| 8.0 | -143.6 | -143.6 | 431.0 | -1286.5 |
| 9.0 | -194.4 | -194.4 | 129.4 | -1447.3 |
| 10.0 | -252.5 | -252.5 | 123.2 | -1631.0 |

SPAN 2

| X | CURB & +LL | CURB & -LL | +TRUCK | -TRUCK |
|---|---|---|---|---|
| 1.0 | -89.7 | -89.7 | 171.1 | -773.3 |
| 2.0 | 37.0 | 37.0 | 650.5 | -253.8 |
| 3.0 | 127.5 | 127.5 | 1247.5 | -207.1 |
| 4.0 | 181.8 | 181.8 | 1537.5 | -160.4 |
| 5.0 | 199.9 | 199.9 | 1555.0 | -113.7 |
| 6.0 | 181.8 | 181.8 | 1537.5 | -160.4 |
| 7.0 | 127.5 | 127.5 | 1234.4 | -207.1 |
| 8.0 | 37.0 | 37.0 | 650.5 | -253.8 |
| 9.0 | -89.7 | -89.7 | 187.2 | -773.3 |
| 10.0 | -252.5 | -252.5 | 119.8 | -1631.0 |

THE FOLLOWING RATINGS ARE BASED ON A DISTRIBUTION FACTOR OF 1.257

***** RATINGS BASED ON NEGATIVE MOMENT *****

| TENTH POINT | SLAB STEEL | LL CAPACITIES WS | LF | RATINGS WS | LF |
|---|---|---|---|---|---|
| 0 | .000 | .0 | .0 | .0 | .0 |
| 1 | .000 | .0 | .0 | .0 | .0 |
| 2 | .000 | .0 | .0 | .0 | .0 |
| 3 | 4.130 | 853.4 | 985.2 | 703.6 | 624.8 |
| 4 | 4.130 | 839.1 | 966.6 | 518.8 | 459.7 |
| 5 | 7.660 | 1517.3 | 1743.3 | 750.5 | 663.3 |
| 6 | 7.660 | 1488.4 | 1705.7 | 613.5 | 540.9 |
| 7 | 7.660 | 1452.1 | 1658.6 | 513.1 | 450.8 |
| 8 | 7.660 | 1408.6 | 1602.1 | 435.5 | 381.0 |
| 9 | 7.660 | 1357.8 | 1536.0 | 373.1 | 324.7 |
| 10 | 7.660 | 1299.6 | 1370.9 | 316.9 | 257.2 |

***** RATING BASED ON POSITIVE MOMENT *****

CAUTION: POSITIVE MOMENT RATING WAS CALCULATED AT MIDDLE OF SPAN ONLY. OTHER LOCATIONS MAY CONTROL

POS/NEG MAXIMUM TOTAL VEHICLE LOAD = 257.2 KIPS, POS MAX. TOTAL VEHICLE LOAD = 473.6 KIPS

INPUT DATA

2.000 28.000 810.000 38.000 14.000
7.660 7.660 4.130 4.130 4.130 4.130
4.130 4.130 4.130 7.660 7.660

***** SPAN 2 ANALYSIS *****
DRAPED STRAND DESIGN

NUMBER OF STRANDS = 28. STRESS-RELIEVED STRAND
NUMBER OF DRAPED STRANDS = 6.
ECCENTRICITY OF STRANDS = 16.41
DIAMETER OF STRANDS = .5 INCHES
AREA OF STRAND = .1531 SQ. INCHES
GIRDER CONCRETE STRENGTH = 6000. PSI.
SLAB CONCRETE STRENGTH = 4000. PSI.

PRESTRESS LOSSES IN PSI BASED ON AASHTO 1989 AASHTO SPECIFICATIONS
SH = 6000.
ES =15069.
CRC=15880.
CRS= 9596.

FORCE IN STRANDS WHEN CONCRETE TAKES ITS INITIAL SET SHALL BE 810. KIPS
MAXIMUM ALLOWABLE TEMPORARY FORCE = 884. KIPS
LOCATION OF DRAPED STRANDS
DIMENSION A = 38.
DIMENSION B = 14.00
DIMENSION C = 4.00

MAX. SLOPE OF STRANDS = 10.13 %

GIRDER CAMBER = 1.73 INCHES
SLAB+DIAPHRAGM DEFLECTION =-1.24 INCHES

INITIAL GIRD. STRESSES IN FOLLOWING TABLE ARE BASED ON A PRESTRESS FORCE OF 745. KIPS.
FINAL GIRD. STRESSES ARE BASED ON FORCE OF 610. KIPS AND POSITIVE MOMENTS ONLY.
MIN. COMPRESSIVE STRENGTH OF CONCRETE AT TIME OF INITIAL PRESTRESS = 4800. PSI
COMPRESSION STRESSES HAVE NEGATIVE SIGNS, TENSION STRESSES ARE POSITIVE. INITIAL GIRDER STRESSES AT POINT 0 ARE COMPUTED THREE FEET FROM END FOR DESIGN RUNS.

NOTE: NON-PRESTRESSED GIRDER STEEL IS GRADE 60

| TENTH POINT | INITIAL GIRD.STRESSES TOP | BOTTOM | NON-PRE GIRD.STEEL | FINAL GIRD.STRESSES TOP | BOTTOM | STRENGTH SLAB.STEEL | FACTORED NEG.MOM. | FACTORED MOM. TOP GIRD.STRESS | FATIGUE SLAB STEEL |
|---|---|---|---|---|---|---|---|---|---|
| 0 | .015 | -2.431 | .000 | .012 | -1.991 | 6.438 | 1514.0 | 3.595 | 6.883 |
| 1 | -.072 | -2.360 | .000 | -.764 | -1.355 | 2.575 | 618.8 | .700 | 2.835 |
| 2 | -.073 | -2.360 | .000 | -1.440 | -.526 | .708 | 172.0 | -.912 | 1.152 |
| 3 | .013 | -2.430 | .000 | -1.886 | .092 | .187 | 45.5 | -1.546 | .937 |
| 4 | .048 | -2.461 | .000 | -2.179 | .484 | .000 | .0 | -2.004 | .723 |
| 5 | .004 | -2.426 | .000 | -2.336 | .657 | .000 | .0 | -2.234 | .636 |
| 6 | .048 | -2.461 | .000 | -2.179 | .484 | .000 | .0 | -2.004 | .723 |
| 7 | .013 | -2.430 | .000 | -1.886 | .092 | .187 | 45.5 | -1.546 | .937 |
| 8 | -.073 | -2.360 | .000 | -1.440 | -.526 | .708 | 172.0 | -.912 | 1.152 |
| 9 | -.072 | -2.360 | .000 | -.764 | -1.355 | 2.575 | 618.8 | .700 | 2.835 |
| 10 | .015 | -2.431 | .000 | .012 | -1.991 | 6.438 | 1514.0 | 3.595 | 6.883 |

MAXIMUM FINAL GIRDER STRESS AT TOP WITH NO LIVE LOAD = -2.094 KSI
MAXIMUM ALLOWABLE PER AASHTO = 0.40fc = -2.400 KSI

***CHECK FINAL BOTTOM OF GIRDER STRESSES!!!***

SHEAR DESIGN (AASHTO 9.20 )

| POINT | D | VU | MCR | MMAX | VI | VCI | FPC | VP | VCW | VS | NO.4 STIR.SPAC.(IN) GR 60 | GR 40 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 48.75 | 241.3 | 242.6 | 1514.0 | 139.7 | 96.0 | 1.021 | 13.2 | 210.2 | 187.9 | 6.23 | 4.15 |
| 1 | 48.75 | 214.8 | 574.7 | 618.8 | 135.1 | 190.1 | 1.081 | 13.2 | 216.3 | 62.6 | 18.70 | 12.47 |
| 2 | 41.23 | 177.2 | 1148.7 | 650.2 | 129.2 | 278.5 | 1.217 | 13.2 | 196.8 | 11.7 | 21.00 | 20.00 |
| 3 | 43.28 | 137.8 | 918.2 | 1198.8 | 105.2 | 119.8 | 1.402 | 13.2 | 222.8 | 42.4 | 21.00 | 16.33 |
| 4 | 44.39 | 97.7 | 764.9 | 1535.6 | 80.4 | 67.8 | 1.528 | .0 | 226.7 | 47.1 | 21.00 | 15.07 |
| 5 | 44.39 | 57.7 | 669.5 | 1627.8 | 55.7 | 40.9 | 1.605 | .0 | 233.8 | 26.9 | 21.00 | 20.00 |
| 6 | 44.39 | 97.7 | 764.9 | 1535.6 | 80.4 | 67.8 | 1.528 | .0 | 226.7 | 47.1 | 21.00 | 15.07 |
| 7 | 43.28 | 137.8 | 918.2 | 1198.8 | 105.2 | 119.8 | 1.402 | 13.2 | 222.8 | 42.4 | 21.00 | 16.33 |
| 8 | 41.23 | 177.2 | 1148.7 | 650.2 | 129.2 | 278.5 | 1.217 | 13.2 | 196.8 | 11.7 | 21.00 | 20.00 |
| 9 | 48.75 | 214.8 | 574.7 | 618.8 | 135.1 | 190.1 | 1.081 | 13.2 | 216.3 | 62.6 | 18.70 | 12.47 |
| 10 | 48.75 | 241.3 | 242.6 | 1514.0 | 139.7 | 96.0 | 1.021 | 13.2 | 210.2 | 187.9 | 6.23 | 4.15 |

POSITIVE MOMENT DESIGN FLEXURAL STRENGTH = 4128. FT-KIPS

RATIO OF PRESTRESSING STEEL (As/bd) (96 AASHTO 9.17.2) = .00091803
MAXIMUM ALLOWABLE As/bd (96 AASHTO 9.18.1) = .00466950

1.2*CRACKING MOMENT (89 AASHTO 9.18.2.1) = 2393. FT-KIPS

MAXIMUM POSITIVE DESIGN MOMENT (FACTORED) 1.3(D+5/3(L+I))= 3222. FT-KIPS

POSITIVE OPERATING MOMENT CAPACITY BASED ON 90 PERCENT OF YIELD STRESS = 2826. FT-KIPS

POSITIVE OPERATING MOMENT CAPACITY (BASED ON 75 OR 90 PERCENT CRITERIA) = 2826. FT-KIPS

POSITIVE LIVE LOAD OPERATING MOMENT CAPACITY = 1400. FT-KIPS

NOTE: ALL RATINGS ARE BASED ON THE INPUT WHEEL DISTRIBUTION FACTOR FOR MOMENT.

OPERATING RATING BASED ON POSITIVE MOMENT (LF OR WS)
HS-RATING= 44.3

OPERATING RATING BASED ON NEGATIVE MOMENT - GRADE 60 STEEL (LF OR WS)
HS-RATING= 38.6

INVENTORY RATING BASED ON POSITIVE MOMENT (WS)
HS-RATING= 14.9

INVENTORY RATING BASED ON FATIGUE (WS)
HS-RATING= 22.1

INVENTORY RATING BASED ON NEGATIVE MOMENT (LF)
HS-RATING= 24.6
WHEEL LOADS AND SPACINGS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 25.000 | 35.000 | 35.000 | 35.000 | 30.000 | 30.000 | 30.000 | 30.000 | .000 | .000 |
| 13.000 | 4.000 | 4.000 | 30.000 | 4.000 | 4.000 | 4.000 | .000 | .000 | |

MAX. LIVE LOAD MOMENTS AT X/10 PTS. IN FT. KIPS PER WHEEL LINE WITH IMPACT

SPAN 1

| X | CURB & +LL | CURB & -LL | +TRUCK | -TRUCK |
|---|---|---|---|---|
| 1.0 | 7.6 | 7.6 | 387.4 | -160.8 |
| 2.0 | 8.0 | 8.0 | 644.7 | -321.6 |
| 3.0 | 1.0 | 1.0 | 824.4 | -482.4 |
| 4.0 | -13.3 | -13.3 | 914.4 | -643.2 |
| 5.0 | -34.9 | -34.9 | 908.0 | -804.1 |
| 6.0 | -63.8 | -63.8 | 837.7 | -964.9 |
| 7.0 | -100.0 | -100.0 | 671.2 | -1125.7 |
| 8.0 | -143.6 | -143.6 | 431.0 | -1286.5 |
| 9.0 | -194.4 | -194.4 | 129.4 | -1447.3 |
| 10.0 | -252.5 | -252.5 | 123.2 | -1631.0 |

SPAN 2

| X | CURB & +LL | CURB & -LL | +TRUCK | -TRUCK |
|---|---|---|---|---|
| 1.0 | -89.7 | -89.7 | 171.1 | -773.3 |
| 2.0 | 37.0 | 37.0 | 650.5 | -253.8 |
| 3.0 | 127.5 | 127.5 | 1247.5 | -207.1 |
| 4.0 | 181.8 | 181.8 | 1537.5 | -160.4 |
| 5.0 | 199.9 | 199.9 | 1555.0 | -113.7 |
| 6.0 | 181.8 | 181.8 | 1537.5 | -160.4 |
| 7.0 | 127.5 | 127.5 | 1234.4 | -207.1 |
| 8.0 | 37.0 | 37.0 | 650.5 | -253.8 |
| 9.0 | -89.7 | -89.7 | 187.2 | -773.3 |
| 10.0 | -252.5 | -252.5 | 119.8 | -1631.0 |

THE FOLLOWING RATINGS ARE BASED ON A DISTRIBUTION FACTOR OF 1.257

***** RATINGS BASED ON NEGATIVE MOMENT *****

| TENTH POINT | SLAB STEEL | LL CAPACITIES WS | LF | RATINGS WS | LF |
|---|---|---|---|---|---|
| 0 | 7.660 | 1299.6 | 1370.9 | 316.9 | 257.2 |
| 1 | 7.660 | 1462.5 | 1672.1 | 752.2 | 661.5 |
| 2 | .000 | .0 | .0 | .0 | .0 |
| 3 | .000 | .0 | .0 | .0 | .0 |
| 4 | .000 | .0 | .0 | .0 | .0 |
| 5 | .000 | .0 | .0 | .0 | .0 |
| 6 | .000 | .0 | .0 | .0 | .0 |
| 7 | .000 | .0 | .0 | .0 | .0 |
| 8 | .000 | .0 | .0 | .0 | .0 |
| 9 | 7.660 | 1462.5 | 1672.1 | 752.2 | 661.5 |
| 10 | 7.660 | 1299.6 | 1370.9 | 316.9 | 257.2 |

***** RATING BASED ON POSITIVE MOMENT *****

CAUTION: POSITIVE MOMENT RATING WAS CALCULATED AT MIDDLE OF SPAN ONLY. OTHER LOCATIONS MAY CONTROL

POS/NEG MAXIMUM TOTAL VEHICLE LOAD = 257.2 KIPS, POS MAX. TOTAL VEHICLE LOAD = 358.0 KIPS