BRIDGE REPLACEMENT - PPCB
NHS-080-6(348)239--11-52
LETTING DATE 7-21-2020

JOHNSON COUNTY - DESIGN NO. 1317, 1417, 718 & 121

JOHNSON COUNTY

## LEGEND

- INTERSTATE HIGHWAY
- PRIMARY HIGHWAY-DIVIDED
- PRIMARY HIGHWAY
- PORTLAND CEMENT CONCRETE ROAD
- ASPHALT ROAD
- BITUMINOUS ROAD
- GRAVEL ROAD
- EARTHEN ROAD
- INTERSTATE HIGHWAY (80)
- UNITED STATES HIGHWAY (65)
- STATE HIGHWAY (175)
- COUNTY HIGHWAY (S27)
- RAILROAD
- PIPELINE
- AIRPORT
- HYDROLOGY
- BRIDGE
- STATE BOUNDARY
- COUNTY BOUNDARY
- CORPORATE BOUNDARY
- TOWNSHIP LINE
- SECTION LINE
- ROAD NAMES — ABBEY ROAD
- UNINCORPORATED PLACE — ELWOOD

IOWA DOT
Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

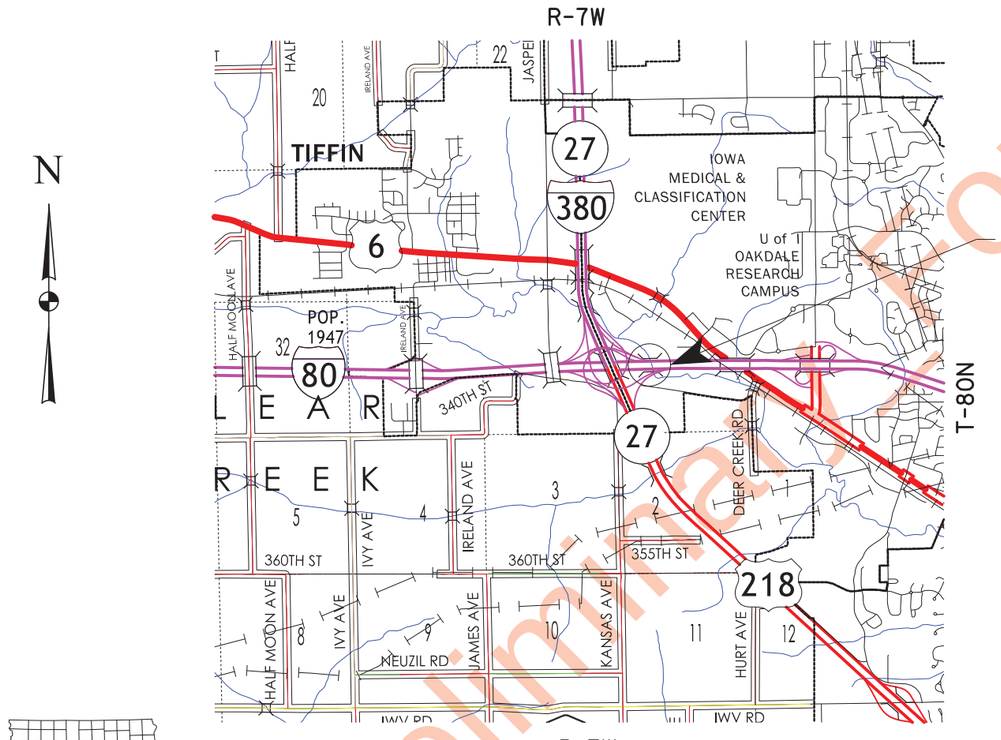
# INTERSTATE ROAD SYSTEM

# JOHNSON COUNTY

## BRIDGE REPLACEMENT - PPCB

## *I-80 E.B. & W.B. OVER CLEAR CREEK*

THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.




R-7W
LOCATION MAP

PROJECT DIRECTORY NAME: 5208001002

DESIGN NO. 1317, 1417, 718 & 121
FHWA NO. 31991 & 32001

| STANDARD ROAD PLANS |
|---|
| STANDARD ROAD PLANS ARE LISTED ON SHEET NUMBER C.1 |

REFER TO INDIVIDUAL SITUATION PLANS FOR TRAFFIC DATA INFORMATION.

PROJECT WEBSITE:
http://www.e-Builder.net
ACCESS TO THE PROJECT WEBSITE FOR SUBCONTRACTORS, FABRICATORS, AND SUPPLIERS SHALL BE GRANTED BY THE PRIME CONTRACTOR.

ALL WORKING DRAWINGS INCLUDING SHOP DRAWINGS AND FALSEWORK DRAWINGS SHALL BE SUBMITTED THROUGH THE PROJECT WEBSITE AND SHALL BE REVIEWED BY:
HNTB CORPORATION
7400 W. 129TH STREET, SUITE 100
OVERLAND PARK, KS 66213

| ENGLISH STANDARD BRIDGE PLANS | | |
|---|---|---|
| STANDARD | ISSUED | REVISED |
| | | |

| REVISIONS |
|---|
| |

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

| | TOTAL SHEETS |
|---|---|
| | ?? |
| PROJECT NUMBER | |
| NHS-080-6(348)239--11-52 | |
| R.O.W. PROJECT NUMBER | |
| | |
| PROJECT IDENTIFICATION NUMBER | |
| 02-52-080-010 | |

## INDEX OF SHEETS



## INDEX OF SEALS

| SHEET NO. | NAME | TYPE |
|---|---|---|
| 1 | BRENDA P. FOREE | STRUCTURAL DESIGN |
| 5,29,53,54,91,92 | DAVID R. CLAMAN | HYDRAULIC DESIGN |
| SPS.1, SPS.3 | JUSTIN D. HUMKE | GEOTECHNICAL DESIGN |
| C.1 | JASON HOLST | ROADWAY DESIGN |
| | | |
| | | |
| | | |

## STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER
BRENDA PAIGE FOREE
22776
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature _____ Date _____
Printed or Typed Name Brenda P. Foree
My license renewal date is December 31, 2020
Pages or sheets covered by this seal: SHEETS 1 THRU 125 OF 125

PRELIMINARY
NOT FOR CONSTRUCTION



| DESIGN TEAM HNTB | ENGLISH | IOWA DOT * OFFICE OF BRIDGES AND STRUCTURES | FILE NO. 30864 | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER |
|---|---|---|---|---|---|---|

# ESTIMATED BRIDGE QUANTITIES - DESIGN NO. 1317

| ITEM NO. | ITEM CODE | ITEM | UNIT | TOTAL | AS-BUILT QUANTITY |
|---|---|---|---|---|---|
| 1 | 2401-6745625 | REMOVAL OF EXISTING BRIDGE | LS | 1.00 | |
| 2 | 2402-2720000 | EXCAVATION, CLASS 20 | CY | 126 | |
| 3 | 2402-2721000 | EXCAVATION, CLASS 21 | CY | 48 | |
| 4 | 2403-0100010 | STRUCTURAL CONCRETE (BRIDGE) | CY | 91.8 | |
| 5 | 2403-7000210 | HIGH PERFORMANCE STRUCTURAL CONCRETE | CY | 142.0 | |
| 6 | 2404-7775000 | REINFORCING STEEL | LB | 5,572 | |
| 7 | 2404-7775005 | REINFORCING STEEL, EPOXY COATED | LB | 35,330 | |
| 8 | 2404-7775009 | REINFORCING STEEL, STAINLESS STEEL | LB | 7,079 | |
| 9 | 2407-0563065 | BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTC65 | EACH | 4 | |
| 10 | 2407-0563115 | BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTC115 | EACH | 2 | |
| 11 | 2408-7800000 | STRUCTURAL STEEL | LB | 1,102 | |
| 12 | 2408-7900020 | SLOTTED DECK DRAINS | LS | 1.00 | |
| 13 | 2501-0201057 | PILES, STEEL, HP 10x57 | LF | 420 | |
| 14 | 2501-0201489 | PILES, STEEL, HP 14x89 | LF | 725 | |
| 15 | 2501-6335010 | PREBORED HOLES | LF | 60 | |
| 16 | 2501-8400172 | TEMPORARY SHORING | LS | 1.00 | |
| 17 | 2526-8285000 | CONSTRUCTION SURVEY | LS | 1.00 | |
| 18 | 2533-4980005 | MOBILIZATION | LS | 1.00 | |

| ITEM NO. | ESTIMATE REFERENCE INFORMATION |
|---|---|
| 1 | INCLUDES ALL WORK FOR PARTIAL REMOVAL OF EXISTING DECK, RAILING, ABUTMENT AND PIER TO THE LIMITS SPECIFIED. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE. |
| 4 | INCLUDES THE CONCRETE FOR THE PIERS AND ABUTMENT FOOTINGS. INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), FLOODABLE BACKFILL, POROUS BACKFILL, GEOTEXTILE FABRIC, WATER FLOODING, AND SUBDRAIN OUTLET AT ABUTMENTS AND TOE OF BERM. |
| 5 | INCLUDES THE CONCRETE FOR THE DECK, ABUTMENT DIAPHRAGMS AND PIER DIAPHRAGMS. INCLUDES ALL PREFORMED EXPANSION JOINT FILLER REQUIRED. REFER TO THE DEVELOPMENTAL SPECIFICATION FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES" FOR ADDITIONAL INFORMATION. |
| 9,10 | INCLUDES PIER AND ABUTMENT BEARING MATERIAL. INCLUDES FURNISHING AND PLACING COIL RODS. NONSTANDARD STIRRUP LENGTHS ARE USED FOR THESE BEAMS. INCLUDES CONTRACTOR FILLING OUT BEAM NUMBERS BY LOCATION AND BEAM SEAT ELEVATIONS IN "PPC BEAM DATA SPREADSHEET" AND FORWARDING ELECTRONIC SPREADSHEET TO THE ENGINEER. |
| 11 | INCLUDES ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS. |
| 12 | INCLUDES ALL COSTS ASSOCIATED WITH THE MANUFACTURE AND INSTALLATION OF A SLOTTED DECK DRAIN AND CORRUGATED STEEL PIPE AS WELL AS THE POLYETHYLENE OUTLET PIPE. |
| 13,14 | INCLUDES FURNISHING AND INSTALLING STEEL PILE POINTS. |

## DESIGN HISTORY AT THIS SITE
(INCLUDES THIS DESIGN)

| DES. NO. | TYPE OF WORK |
|---|---|
| 2361 | ORIGINAL DESIGN |
| 884 | E.B. BRIDGE REPAIR & FLOOR OVERLAY |
| 396 | W.B. & E.B. BRIDGE WIDENING |

NOTE: ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## ESTIMATED BRIDGE QUANTITIES

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 24 FILE NO. 30864 DESIGN NO. 1317





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## SUMMARY OF CONCRETE QUANTITIES

| LOCATION | STRUCTURAL CONCRETE | HPC STRUCT. CONCRETE |
|---|---|---|
| WEST ABUTMENT FOOTING | 7.1 | ----- |
| EAST ABUTMENT FOOTING | 7.1 | ----- |
| BRIDGE DECK + ABUT. & PIER DIAPHAGMS | ----- | 142.0 |
| PIER NO. 1 | 39.2 | ----- |
| PIER NO. 2 | 38.4 | ----- |
| TOTAL (CU. YDS.) | 91.8 | 142.0 |

## SUMMARY OF REINFORCING STEEL

| LOCATION | NON-COATED REINFORCING STEEL | STAINLESS STEEL REINFORCING STEEL | EPOXY COATED REINFORCING STEEL |
|---|---|---|---|
| BRIDGE DECK + ABUTMENT FOOTING ** | 62 | 6,420 | 35,330 |
| PIER NO. 1 | 2,791 | 334 | ----- |
| PIER NO. 2 | 2,719 | 325 | ----- |
| TOTAL (LBS.) | 5,572 | 7,079 | 35,330 |

** INCLUDES ABUTMENT AND PIER DIAPHRAGMS

## SUMMARY OF EXCAVATION

| LOCATION | CLASS 20 EXCAVATION | CLASS 21 EXCAVATION |
|---|---|---|
| WEST ABUTMENT | 19 | ----- |
| EAST ABUTMENT | 19 | ----- |
| PIER 1 | 39 | 24 |
| PIER 2 | 49 | 24 |
| TOTAL (CU. YDS.) | 126 | 48 |

## SUMMARY OF FOUNDATIONS

| LOCATION | SUBSTRUCTURE TYPE | FOUNDATION TYPE | NUMBER | LENGTH (LIN. FT.) | TOTAL (LIN. FT.) |
|---|---|---|---|---|---|
| WEST ABUTMENT | INTEGRAL ABUTMENT | HP 10x57 | 3 | 70 | 210 |
| EAST ABUTMENT | INTEGRAL ABUTMENT | HP 10x57 | 3 | 70 | 210 |
| PIER 1 | PILE BENT PIER | HP 14x89 | 5 | 70 | 350 |
| PIER 2 | PILE BENT PIER | HP 14x89 | 5 | 75 | 375 |

## SUMMARY OF STRUCTURAL STEEL

| LOCATION | TOTAL (LBS.) |
|---|---|
| INTERMEDIATE DIAPHRAGMS | 1,102 |
| TOTAL (LBS.) | 1,102 |

## SUMMARY OF BEARINGS

| LOCATION | BEARING TYPE | NUMBER | ASSOCIATED BID ITEM |
|---|---|---|---|
| WEST ABUTMENT | 3x3x2'-4½ BAR | 2 | INCIDENTAL ITEM |
| EAST ABUTMENT | 3x3x2'-4½ BAR | 2 | INCIDENTAL ITEM |
| PIER 1 | PLAIN NEOPRENE 1" | 4 | INCIDENTAL ITEM |
| PIER 2 | PLAIN NEOPRENE 1" | 4 | INCIDENTAL ITEM |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SUMMARY QUANTITIES SHEET

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 24 FILE NO. 30864 DESIGN NO. 1317





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# GENERAL NOTES:

THIS DESIGN INVOLVES THE CONSTRUCTION OF A 249'-0 x 15'-4 PRESTRESSED CONCRETE BEAM BRIDGE IN THE MEDIAN OF I-80 OVER CLEAR CREEK. FUTURE CONTRACTS WILL INVOLVE ADDITIONAL STAGES OF CONSTRUCTION TO COMPLETE THE REPLACEMENT OF THE EXISTING 159'-2 x 73'-2 PRESTRESSED CONCRETE BEAM BRIDGE (EASTBOUND) AND THE EXISTING 159'-2 X 57'-3 PRESTRESSED CONCRETE BEAM BRIDGE (WESTBOUND).

"REMOVAL OF EXISTING BRIDGE" SHALL INCLUDE ALL COSTS ASSOCIATED WITH REMOVING A PORTION OF THE EXISTING EASTBOUND BRIDGE SUPERSTRUCTURE, ABUTMENTS AND PIERS AS NOTED AND SHOWN IN THESE PLANS.

REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO OTHER PORTIONS OF THE EXISTING STRUCTURE NOT NOTED FOR REMOVAL SHALL BE THE RESPONSIBILITY OF THE BRIDGE CONTRACTOR AND SHALL BE REPAIRED AT NO EXTRA COST TO THE STATE.

A SCRAPE SAMPLE WAS TAKEN FROM AN AREA OF THIS BRIDGE TO GET AN INDICATION OF THE EXISTENCE OF AND LEVEL OF TOTAL LEAD AND TOTAL CHROMIUM. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WAS 1900 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 84 PPM. THESE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER CONSTITUENTS WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE IOWA DOT'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

ELECTRONIC COPIES OF ORIGINAL DESIGN PLANS ARE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. DIMENSIONS SHOWN ON THESE PLANS ARE BASED ON DESIGN PLANS (ORIGINAL DESIGN NO. 2361 AND WIDENING DESIGNS NO. 396 AND 920).

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

THIS BRIDGE IS DESIGNED FOR HL-93 LOADING, PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

404 PERMIT INFORMATION AND THE POLLUTION PREVENTION PLAN ARE INCLUDED IN THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52.

DURING CONSTRUCTION OF THIS PROJECT THE BRIDGE CONTRACTOR WILL BE REQUIRED TO COORDINATE OPERATIONS WITH THOSE OF OTHER CONTRACTORS WORKING WITHIN THE SAME AREA. SEE THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52, FOR THE LIST OF OTHER WORK IN THE AREA.

UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE BRIDGE CONTRACTOR OF THE STARTING DATE.

IT SHALL BE THE BRIDGE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

THE BRIDGE CONTRACTOR IS TO RETAIN EARTH AND/OR GRANULAR MATERIAL BEHIND THE PORTION OF ABUTMENTS SUBJECTED TO TRAFFIC BY METHODS APPROVED BY THE ENGINEER. ALL COSTS FOR RETAINING THE EARTH AND/OR GRANULAR MATERIAL SHALL BE INCLUDED IN THE PRICE BID FOR "CLASS 20 EXCAVATION".

TEMPORARY SHORING (SHEET PILE OR OTHER) SHALL BE REQUIRED AS NECESSARY TO PREVENT THE EARTH UNDER THE TRAFFIC LANE FROM SLOUGHING IN DURING CONSTRUCTION.

THE CONTRACTOR SHALL SUBMIT A TEMPORARY SHORING PLAN FOR REVIEW. THE TEMPORARY SHORING PLAN SHALL BE DESIGNED AND CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF IOWA. THE CONTRACTOR SHALL NOT PROCEED WITH INSTALLATION OF THE TEMPORARY SHORING WITHOUT NOTICE TO PROCEED FROM THE ENGINEER.

THE TEMPORARY SHORING SUBMITTAL SHALL INCLUDE:
- DESIGN CALCULATIONS (INCLUDING A GLOBAL STABILITY ANALYSIS)
- SOIL PROPERTIES
- SHORING MATERIAL PROPERTIES
- SHORING PLAN LAYOUT (SHOWING LOCATION OF TRAFFIC)
- SHORING DETAILS

# GENERAL NOTES, CONT'D:

TEMPORARY SHORING SHALL BE PAID FOR AS A LUMP SUM INCLUDING ALL COST FOR DESIGNING, FURNISHING, INSTALLING AND REMOVAL. ALL MATERIAL USED FOR SHORING SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. SHORING IS TO BE REMOVED ONLY AFTER BACKFILLING HAS BEEN COMPLETED. IN ADDITION TO THE REQUIREMENTS NOTED ABOVE, ARTICLE 1107.07 OF THE STANDARD SPECIFICATIONS STILL APPLIES.

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

THE APPROACH FILLS AS SHOWN ARE NOT A PART OF THIS CONTRACT, BUT ARE TO BE IN PLACE BEFORE ABUTMENT PILES ARE DRIVEN. THE BRIDGE CONTRACTOR IS TO LEVEL OFF AND SHAPE THE BERMS TO THE ELEVATIONS AND DIMENSIONS SHOWN. DRESSING OF SLOPES OUTSIDE THE BRIDGE AREA NOT DISTURBED BY THE BRIDGE CONTRACTOR SHALL BE PAID FOR AS EXTRA WORK.

THE BRIDGE CONTRACTOR SHALL PREBORE HOLES FOR ABUTMENT PILES. HOLES SHALL BE BORED TO THE ELEVATIONS SHOWN ON THE "LONGITUDINAL SECTION ALONG CENTERLINE ROADWAY" ON DESIGN SHEET 4. PILES SHALL BE DRIVEN THROUGH THE HOLES TO AT LEAST THE SPECIFIED DESIGN BEARING.

CAST IN-ONE-PIECE STEEL PILE POINTS ARE REQUIRED FOR ALL ABUTMENT AND PIER PILES IN ACCORDANCE WITH ARTICLE 4167.02 OF THE CURRENT STANDARD SPECIFICATIONS AND MATERIALS IM 468.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING STABILITY OF PRESTRESSED CONCRETE BEAMS DURING ERECTION AND CONSTRUCTION UP THROUGH THE CONCRETE BRIDGE DECK REACHING ITS FULL 28-DAY STRENGTH. THE CONTRACTOR SHALL PROVIDE SUFFICIENT TEMPORARY ANCHOR BRACING AT BEAM ENDS AND TEMPORARY INTERMEDIATE BRACING AS NEEDED TO ENSURE PRESTRESSED BEAM STABILITY. PARTIALLY OR FULLY INSTALLED PERMANENT BRACING AS SHOWN IN THESE DESIGN PLANS SHALL NOT BE ASSUMED SUFFICIENT TO BRACE PRESTRESSED BEAMS DURING ERECTION AND CONSTRUCTION. TEMPORARY BRACING SHALL NOT BE WELDED TO PRESTRESSED BEAM STIRRUPS.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5a1 is $\frac{5}{8}$ inch diameter bar). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

| ENGLISH SIZE | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|
| BAR DESIGNATION | 10 | 13 | 16 | 19 | 22 | 25 | 29 | 32 | 36 |

## BRIDGE DECK DIMENSIONS TABLE

| | ITEM | UNITS | QUANTITY |
|---|---|---|---|
| 1 | DECK LENGTH | L.F. | 252.1 |
| 2 | MINIMUM DECK WIDTH | L.F. | 16.9 |
| 3 | MAXIMUM DECK WIDTH | L.F. | 16.9 |
| 4 | DECK AREA | S.F. | 4,264 |

1. DECK LENGTH IS MEASURED FROM FACE-TO-FACE OF PAVING NOTCHES ALONG THE CENTERLINE OF THE ROADWAY.
2, 3. DECK WIDTHS ARE MEASURED FROM OUT-TO-OUT OF DECK PERPENDICULAR TO THE CENTERLINE OF ROADWAY.
4. DECK AREA IS TO BE BASED ON THE FACE-TO-FACE PAVING NOTCH DISTANCE AND OUT-TO-OUT DECK DIMENSIONS.

# SPECIFICATIONS:

DESIGN:
AASHTO LRFD 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

CONSTRUCTION:
IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.
- "DEVELOPMENTAL SPECIFICATIONS FOR HIGH PERFORMANCE CONCRETE FOR STRUCTURES"
- "SPECIAL PROVISIONS FOR PROGRESS SCHEDULING (CRITICAL PATH METHOD)"
- "SPECIAL PROVISIONS FOR E-BUILDER"

# DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

REINFORCING STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 5, GRADE 60 FOR EPOXY COATED AND NON-COATED, AND GRADE 60 OR 75 FOR STAINLESS.

CONCRETE IN ACCORDANCE WITH AASHTO LRFD SECTION 5, f'c = 4.0 KSI, EXCEPT PRESTRESSED BEAM CONCRETE AS NOTED.

PRESTRESSED CONCRETE BEAMS, SEE DESIGN SHEET 20.

BRIDGE DECK CONCRETE f'c = 4.0 KSI

STRUCTURAL STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 6. ASTM A709 GRADE 36, GRADE 50, AND GRADE 50W (AASHTO M270 GRADE 36, GRADE 50, AND GRADE 50W).

## SHOP DRAWING SUBMITTALS

SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS SHOWN IN THE TABLE BELOW. (NOTE ADDITIONAL SHOP DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS.)

SUBMITTAL REQUIREMENTS FOR SHOP DRAWINGS SHOULD BE IN ACCORDANCE WITH ARTICLE 1105.03, OF THE STANDARD SPECIFICATIONS, FOR HIGHWAY AND BRIDGE CONSTRUCTION OF THE IOWA DEPARTMENT OF TRANSPORTATION.

SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION:
(Paren)_County_DesignNumber_SubmittalDescription.pdf
Example: (090)_BlackHawk_Design915_DeckDrains.pdf

| | |
|---|---|
| 1 | INTERMEDIATE STEEL DIAPHRAGMS |
| 2 | TEMPORARY SHORING |

## TRAFFIC CONTROL PLAN

THE ROADWAY WILL BE OPEN TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN INCLUDED IN THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## GENERAL NOTES

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 24 FILE NO. 30864 DESIGN NO. 1317





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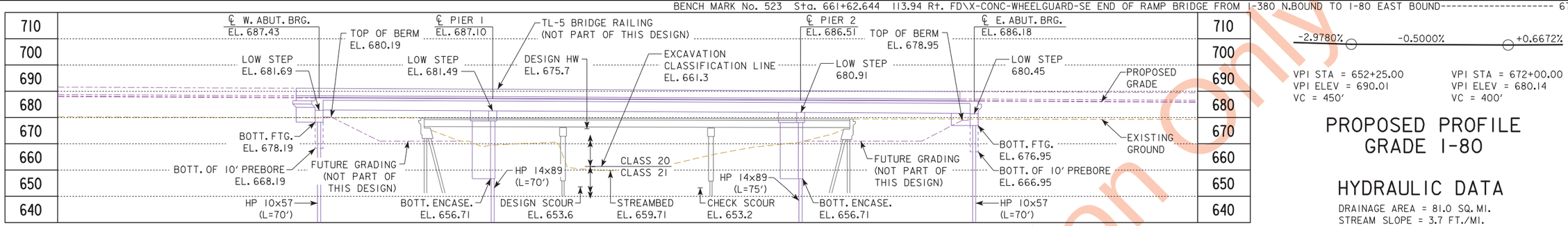
BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334




NOTE: TOP OF BRIDGE DECK AT CENTERLINE ROADWAY IS +0.99' ABOVE THE PROFILE GRADE TO ACCOUNT FOR DECK CROSS SLOPE AND PARABOLIC CROWN.

## LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

(LONGITUDINAL SECTION THROUGH FUTURE STAGE II CONSTRUCTION)

-2.9780% -0.5000% +0.6672%

VPI STA = 652+25.00
VPI ELEV = 690.01
VC = 450'

VPI STA = 672+00.00
VPI ELEV = 680.14
VC = 400'

## PROPOSED PROFILE GRADE I-80

## HYDRAULIC DATA

DRAINAGE AREA = 81.0 SQ. MI.
STREAM SLOPE = 3.7 FT./MI.
AVG. LOW WATER STAGE = 661.3

$Q_{50}$ = 8,700 CFS
STAGE = 675.7
BACKWATER = 1.2 FT.
AVG. BRIDGE VELOCIT = 5.6 FPS

$Q_{100}$ = 10,500 CFS
STAGE = 676.5
BACKWATER = 1.5 FT.
AVG. BRIDGE VELOCITY = 6.1 FPS

$Q_{200}$ = 13,400 CFS
STAGE = 677.6
CALCULATED DESIGN SCOUR = 653.6

$Q_{500}$ = 15,000 CFS
STAGE = 678.2
CALCULATED CHECK SCOUR = 653.2

ROADWAY OVERTOP 681.72
STA. 671+71

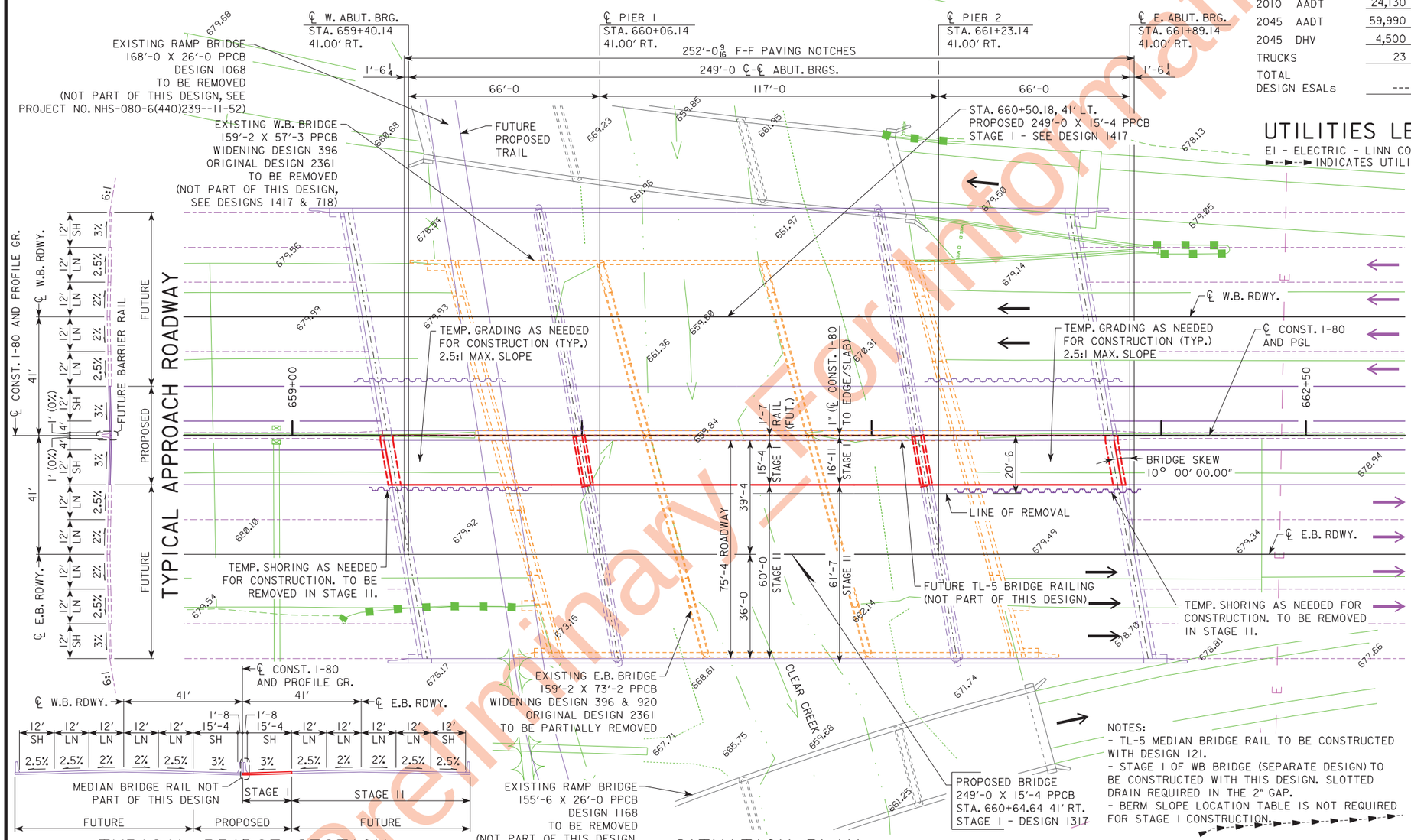
50, 100 & 500 YR. STAGES AND DISCHARGES FROM JOHNSON COUNTY F.I.S., DATED FEBRUARY 16, 2007.
F.I.S. DATUM - 0.10 FT = PROJECT DATUM.

## TRAFFIC ESTIMATE

| | | | |
|---|---|---|---|
| 2010 | AADT | 24,130 | V.P.D. |
| 2045 | AADT | 59,990 | V.P.D. |
| 2045 | DHV | 4,500 | V.P.H. |
| TRUCKS | | 23 | % |
| TOTAL DESIGN ESALs | | --- | |

## UTILITIES LEGEND:

EI - ELECTRIC - LINN CO. REC
►--►--► INDICATES UTILITY AS ABANDONED







TYPICAL BRIDGE SECTION

SITUATION PLAN

N

## LOCATION

E.B. I-80 OVER CLEAR CREEK
T-80N R-7W
SECTION 35
CLEAR CREEK TOWNSHIP
JOHNSON COUNTY
FHWA NO. 31991
BRIDGE MAINT. NO. 5239.4R080
LATITUDE 41.694234°
LONGITUDE -91.632376°

### HYDRAULIC DESIGN

LICENSED PROFESSIONAL ENGINEER David R. Claman 11571 IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature David R. Claman Date
Printed or Typed Name
My license renewal date is December 31, 2020
Pages or sheets covered by this seal: SHEET 5

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SITUATION PLAN

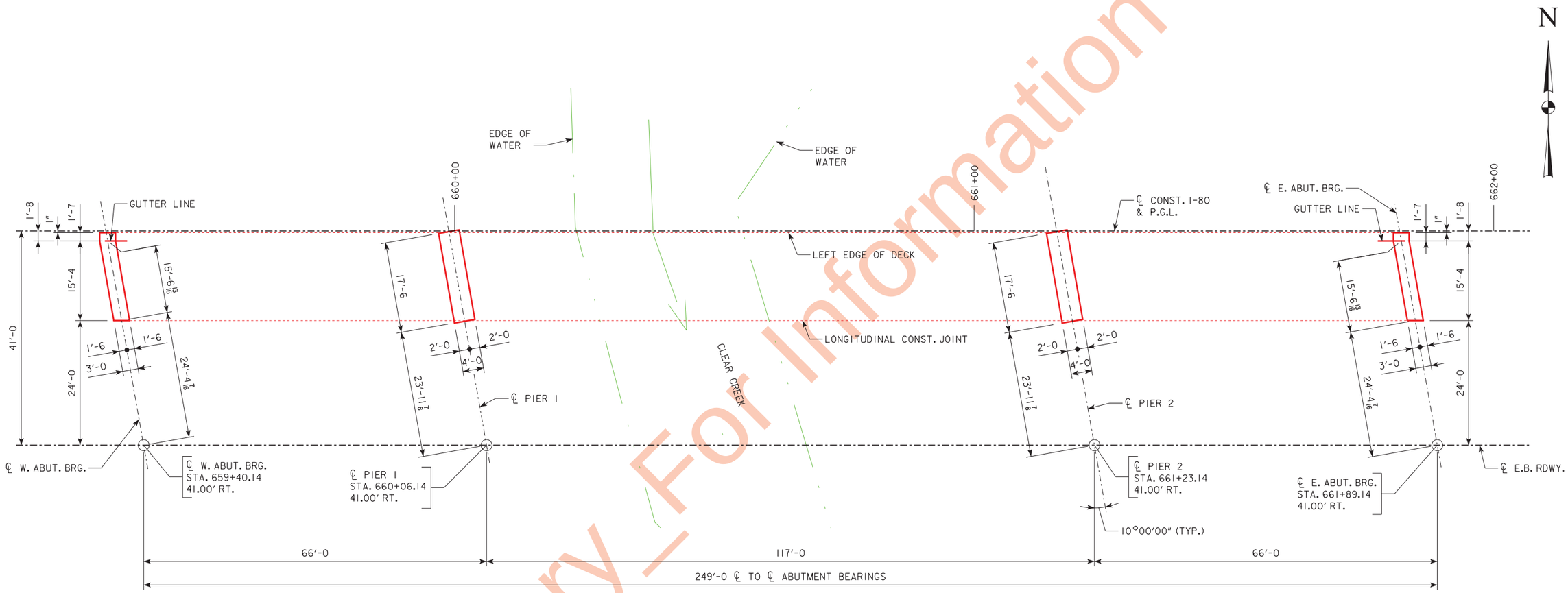
STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 24 FILE NO. 30864 DESIGN NO. 1317

DESIGN TEAM HNTB | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 5




## STAKING DIAGRAM

## BRIDGE COORDINATES

| LOCATION | ℄ W. ABUT. BRG. | ℄ PIER 1 | ℄ PIER 2 | ℄ E. ABUT. BRG. |
|---|---|---|---|---|
| LEFT EDGE OF DECK | E=2150320.298<br>N=622792.515 | E=2150386.281<br>N=622794.008 | E=2150503.251<br>N=622796.654 | E=2150569.234<br>N=622798.147 |
| LONGITUDINAL CONST. JOINT | E=2150323.662<br>N=622775.670 | E=2150389.645<br>N=622777.163 | E=2150506.615<br>N=622779.809 | E=2150572.599<br>N=622781.302 |
| ℄ E.B. ROADWAY | E=2150328.436<br>N=622751.772 | E=2150394.419<br>N=622753.265 | E=2150511.389<br>N=622755.911 | E=2150577.372<br>N=622757.404 |

NOTE: AN ELECTRONIC FILE CONTAINING THE BRIDGE COORDINATE DATA IS AVAILABLE AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL VERIFY THESE COORDINATES WITH THE PROJECT HORIZONTAL CONTROL INFORMATION PROVIDED IN THE ROAD PLANS.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## STAKING DIAGRAM

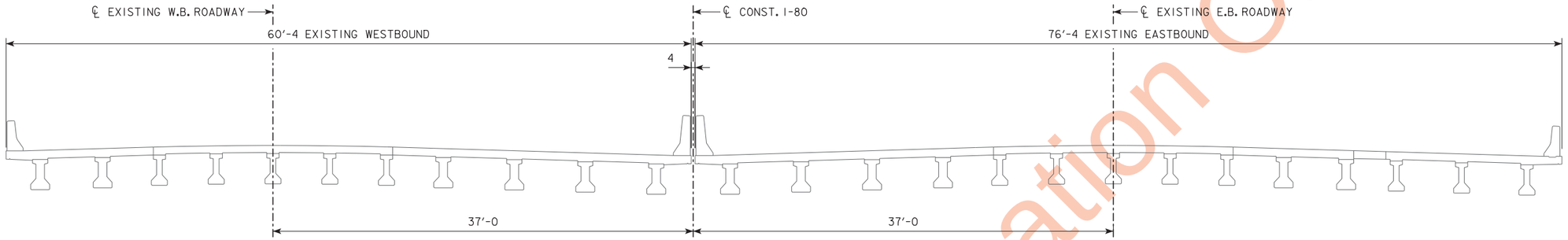
STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

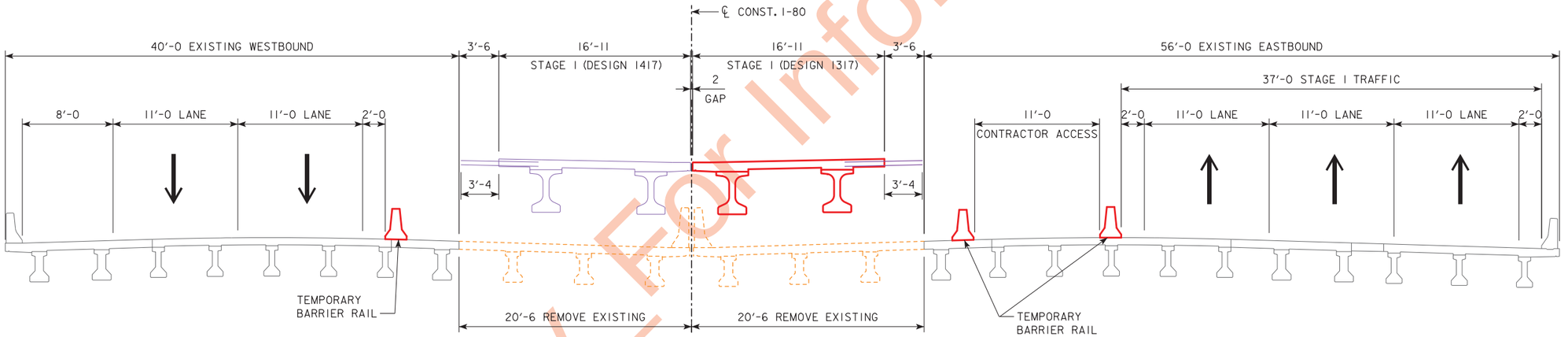
DESIGN SHEET NO. 5 OF 24 FILE NO. 30864 DESIGN NO. 1317

DESIGN TEAM HNTB | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 6




## EXISTING CROSS SECTION

(LOOKING EAST)




## CROSS SECTION - STAGE I (LIMITS OF THIS CONTRACT)

(LOOKING EAST)

NOTE:
SEE TRAFFIC CONTROL PLAN IN THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52 FOR LOCATION OF LANES AND TEMPORARY SAFETY BARRIER DURING AND AFTER THE CONSTRUCTION OF DESIGN 1317.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## STAGED CONSTRUCTION PLAN

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 24 FILE NO. 30864 DESIGN NO. 1317





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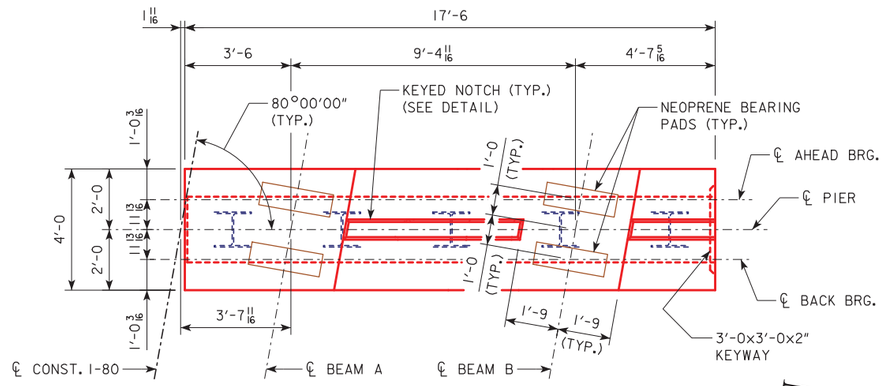
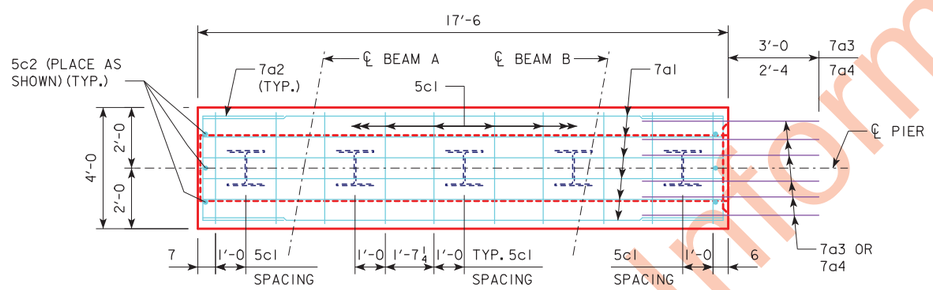
BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334

| TABLE OF VARIABLES | | |
|---|---|---|
| VARIABLE | PIER 1 | PIER 2 |
| ELEV. A | 681.49 | 680.91 |
| ELEV. B | 681.76 | 681.18 |
| ELEV. C | 681.93 | 681.35 |
| ELEV. D | 677.99 | 677.41 |
| A | 21 | 20 |
| B | 21'-3 3/8 | 20'-8 3/8 |

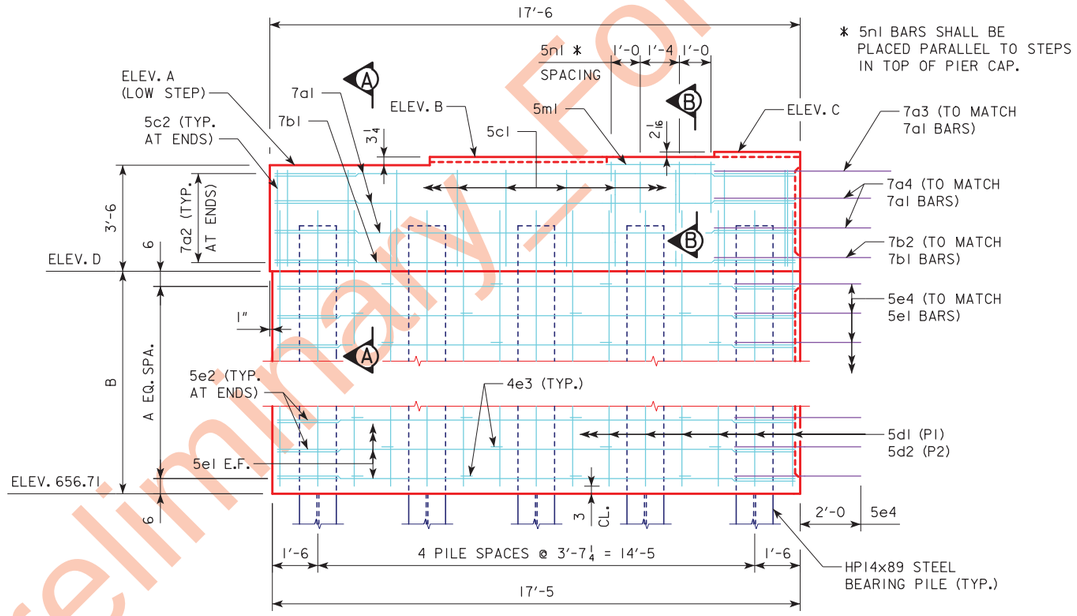



## PIER CAP PLAN

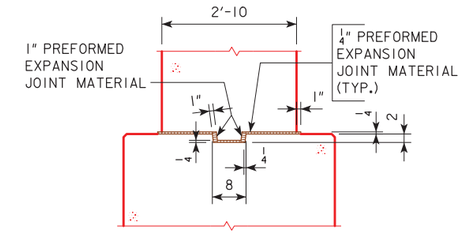



## PIER CAP REINFORCING PLAN

(PIER CAP STEPS AND KEYED NOTCHES NOT SHOWN FOR CLARITY.)




## PIER ELEVATION




## KEYED NOTCH DETAIL

NOTES:
SEE DESIGN SHEET 8 FOR SECTIONS A-A & B-B, ENCASEMENT PLAN, PILE BENT NOTES, AND QUANTITIES.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS 117'-0 INTERIOR SPAN

## PILE BENT PIER DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 24 FILE NO. 30864 DESIGN NO. 1317





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# PILE BENT NOTES:

5 - HP 14x89 STEEL BEARING PILING REQUIRED AT PIER 1.
5 - HP 14x89 STEEL BEARING PILING REQUIRED AT PIER 2.

STEEL PILE POINTS ARE REQUIRED FOR THE STEEL H-PILES AT THE PIERS.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.

PIER 1:
THE CONTRACT LENGTH OF 70 FEET FOR THE PIER 1 PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 255 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PILE ENCASEMENT. DESIGN SCOUR (200-YEAR) WAS ASSUMED TO AFFECT THE UPPER 3 FEET OF EMBEDDED PILE LENGTH AND CAUSE 11 KIPS OF DRIVING RESISTANCE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 1 PILES IS 194 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

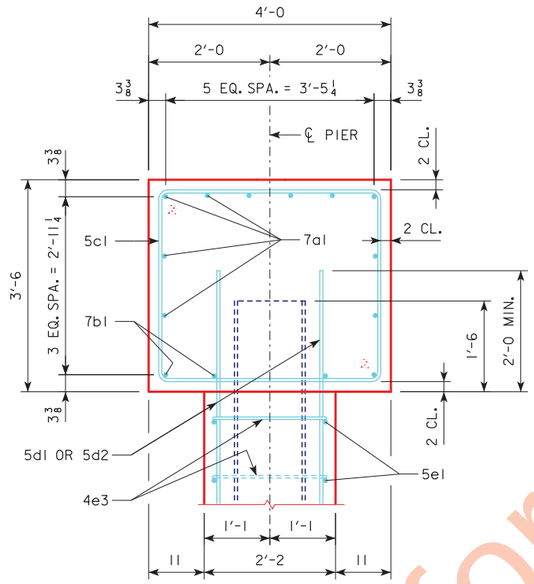
THE WEAP ANALYSIS WILL BE PERFORMED ON THE BASIS THAT ALL EXCAVATION IS COMPLETED BEFORE DRIVING PILES. IF THIS WILL NOT BE THE CASE, PLEASE INFORM THE OFFICE OF CONSTRUCTION TO ACCOUNT FOR ADDITIONAL PILE CAPACITY.

PIER 2:
THE CONTRACT LENGTH OF 75 FEET FOR THE PIER 2 PILES IS BASED ON A NON-COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 255 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING.

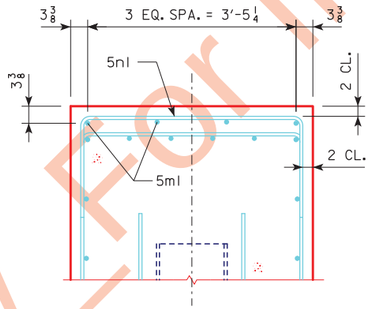
THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A NON-COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PILE ENCASEMENT. DESIGN SCOUR (200-YEAR) WAS ASSUMED TO AFFECT THE UPPER 3 FEET OF EMBEDDED PILE LENGTH AND CAUSE 5 KIPS OF DRIVING RESISTANCE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 2 PILES IS 198 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

THE WEAP ANALYSIS WILL BE PERFORMED ON THE BASIS THAT ALL EXCAVATION IS COMPLETED BEFORE DRIVING PILES. IF THIS WILL NOT BE THE CASE, PLEASE INFORM THE OFFICE OF CONSTRUCTION TO ACCOUNT FOR ADDITIONAL PILE CAPACITY.



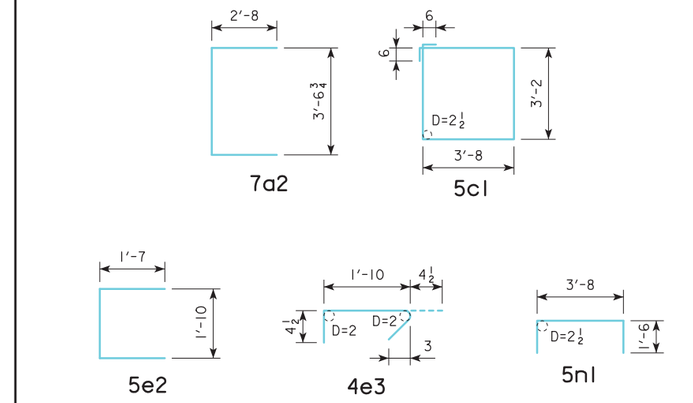

SECTION A-A




SECTION B-B

# REINFORCING BAR LIST AND ESTIMATED QUANTITIES

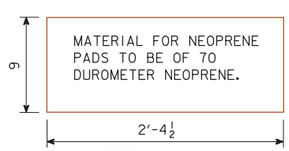
| | BAR | LOCATION | SHAPE | PIER 1 NO. | PIER 1 LENGTH | PIER 1 WEIGHT | PIER 2 NO. | PIER 2 LENGTH | PIER 2 WEIGHT |
|---|---|---|---|---|---|---|---|---|---|
| NON-COATED REINF. | 7a1 | PIER CAP, HORIZONTAL, TOP & SIDES | | 10 | 17'-2 | 351 | 10 | 17'-2 | 351 |
| | 7a2 | PIER CAP, ENDS | | 8 | 8'-11 | 146 | 8 | 8'-11 | 146 |
| | 7b1 | PIER CAP, HORIZONTAL, BOTTOM | | 4 | 17'-2 | 140 | 4 | 17'-2 | 140 |
| | 5c1 | PIER CAP, HOOPS | | 10 | 14'-8 | 153 | 10 | 14'-8 | 153 |
| | 5c2 | PIER CAP, VERTICAL, ENDS | | 6 | 3'-2 | 20 | 6 | 3'-2 | 20 |
| | 5d1 | ENCASEMENT, VERTICAL | | 32 | 23'-2 | 773 | - | - | - |
| | 5d2 | ENCASEMENT, VERTICAL | | - | - | - | 32 | 22'-7 | 754 |
| | 5e1 | ENCASEMENT, HORIZONTAL | | 44 | 17'-1 | 784 | 42 | 17'-1 | 748 |
| | 5e2 | ENCASEMENT, ENDS | | 44 | 5'-0 | 229 | 42 | 5'-0 | 219 |
| | 4e3 | ENCASEMENT, TIES | | 88 | 2'-7 | 152 | 84 | 2'-7 | 145 |
| | 5m1 | PIER CAP STEPS, HORIZONTAL | | 4 | 3'-6 | 15 | 4 | 3'-6 | 15 |
| | 5n1 | PIER CAP STEPS, TRANSVERSE | | 4 | 6'-8 | 28 | 4 | 6'-8 | 28 |
| | | | | | | | | | |
| | | | | | | | | | |
| | REINFORCING STEEL - TOTAL (LBS.) | | | | | 2,791 | | | 2,719 |
| S.S. REINF. | 7a3 | PIER CAP DOWELS, TOP | | 6 | 6'-0 | 74 | 6 | 6'-0 | 74 |
| | 7a4 | PIER CAP DOWELS, SIDES | | 4 | 4'-8 | 38 | 4 | 4'-8 | 38 |
| | 7b2 | PIER CAP DOWELS, BOTTOM | | 4 | 4'-8 | 38 | 4 | 4'-8 | 38 |
| | 5e4 | ENCASEMENT DOWELS | | 44 | 4'-0 | 184 | 42 | 4'-0 | 175 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | REINFORCING STEEL, STAINLESS - TOTAL (LBS.) | | | | | 334 | | | 325 |
| | STRUCTURAL CONCRETE (CY) | | | | | 39.2 | | | 38.4 |
| | HP14x89 STEEL PILE (LF) | | | | | 350 | | | 375 |




BENT BAR DETAILS

NOTE:
ALL DIMENSIONS ARE OUT TO OUT.
D = PIN DIAMETER.

NOTE: CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

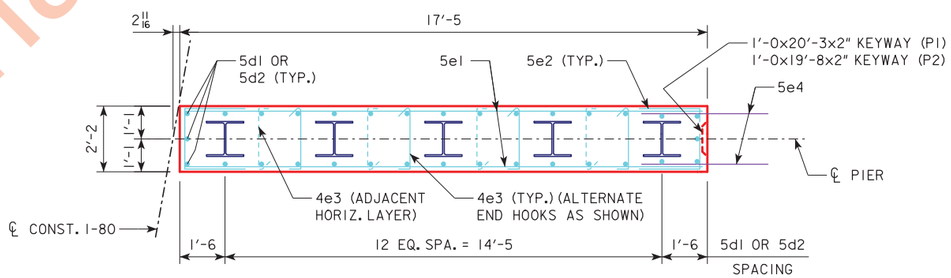




PLAIN NEOPRENE PAD

NOTE:
COST OF NEOPRENE PADS SHALL BE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".

FIXED PIER BEARING DETAILS




ENCASEMENT PLAN

NOTES:
SEE DESIGN SHEET 7 FOR LOCATIONS OF SECTIONS A-A & B-B.

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## PILE BENT PIER DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 24 FILE NO. 30864 DESIGN NO. 1317





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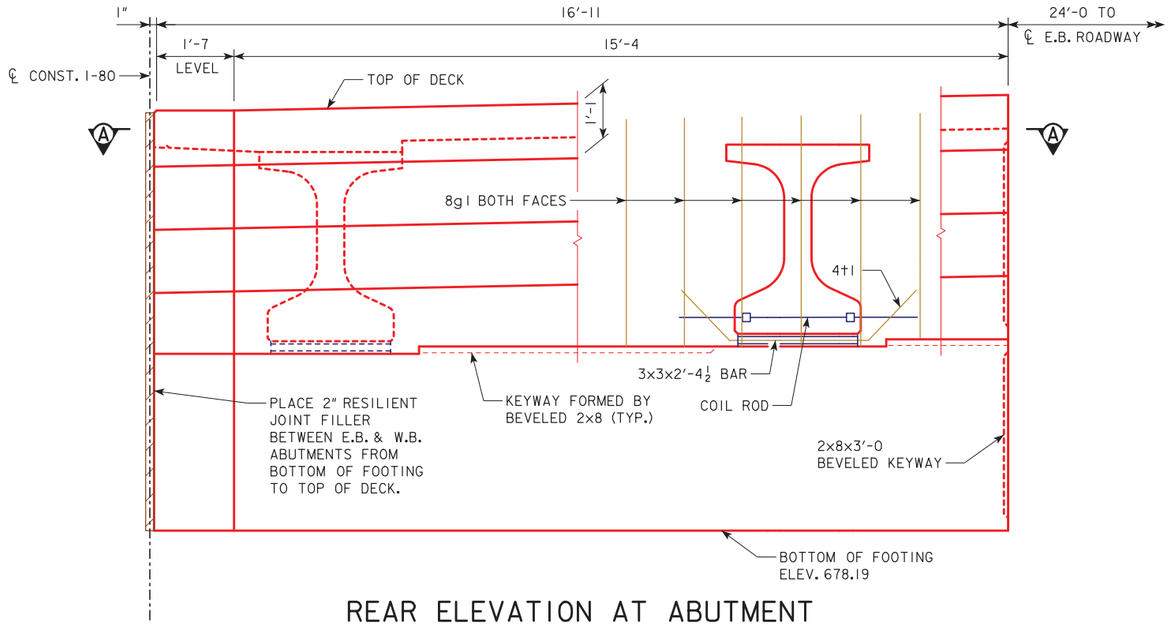
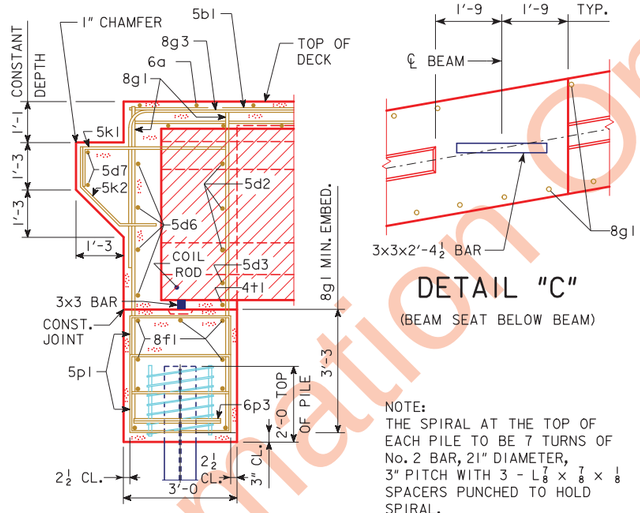
BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334

CORRECTION 04-14 - ADDED CONCRETE QUANTITY TABLE & REFERRAL NOTE TO SUMMARY QUANTITY SHEET. REMOVED DESIGN BEARING NOTE FOR ABUT. PILING FROM ABUTMENT NOTES.
ENGLISHBTINTEGRALBRIDGES.DGN - 2090-BTCD - THIS SHEET ISSUED 02-08.




## REAR ELEVATION AT ABUTMENT




## PART SECTION B-B




## DETAIL "C"
(BEAM SEAT BELOW BEAM)

NOTE:
THE SPIRAL AT THE TOP OF EACH PILE TO BE 7 TURNS OF No. 2 BAR, 21" DIAMETER, 3" PITCH WITH 3 - L $\frac{7}{8} \times \frac{7}{8} \times \frac{1}{8}$ SPACERS PUNCHED TO HOLD SPIRAL.

## ABUTMENT NOTES:

STEEL PILE POINTS ARE REQUIRED FOR THE STEEL H-PILES AT THE ABUTMENT.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

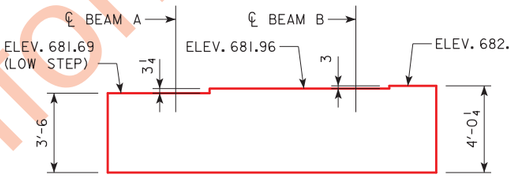
IF NECESSARY TO PREVENT DAMAGE TO THE END OF THE BRIDGE DECK OR BACKWALL FROM CONSTRUCTION EQUIPMENT, AN APPROPRIATE METHOD OF PROTECTION APPROVED BY THE ENGINEER SHALL BE PROVIDED BY THE BRIDGE CONTRACTOR AT NO EXTRA COST TO THE STATE.

## WEST ABUTMENT PILING NOTES:

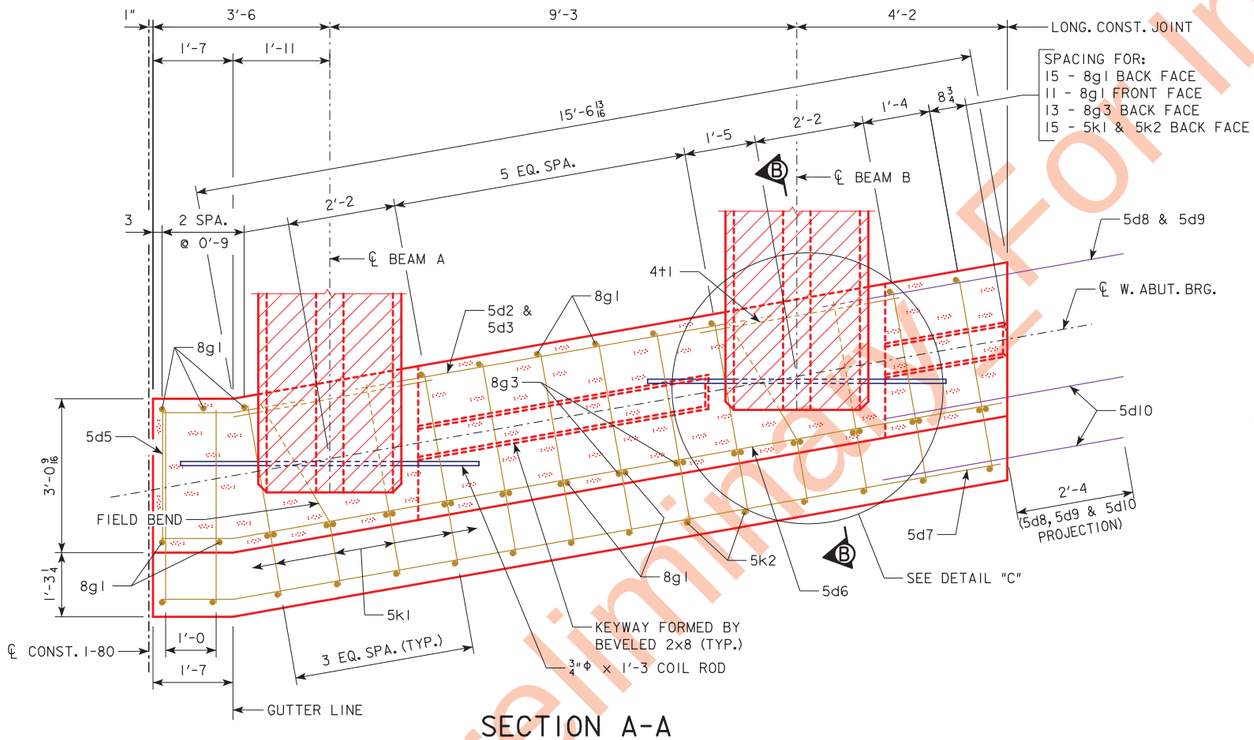
THE CONTRACT LENGTH OF 70 FEET FOR THE WEST ABUTMENT PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 193 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. TO ACCOUNT FOR SOIL CONSOLIDATION UNDER THE NEW FILL, THE FACTORED AXIAL LOAD INCLUDES A FACTORED DOWNDRAG LOAD OF 19 KIPS.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PREBORE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR WEST ABUTMENT PILES IS 153 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

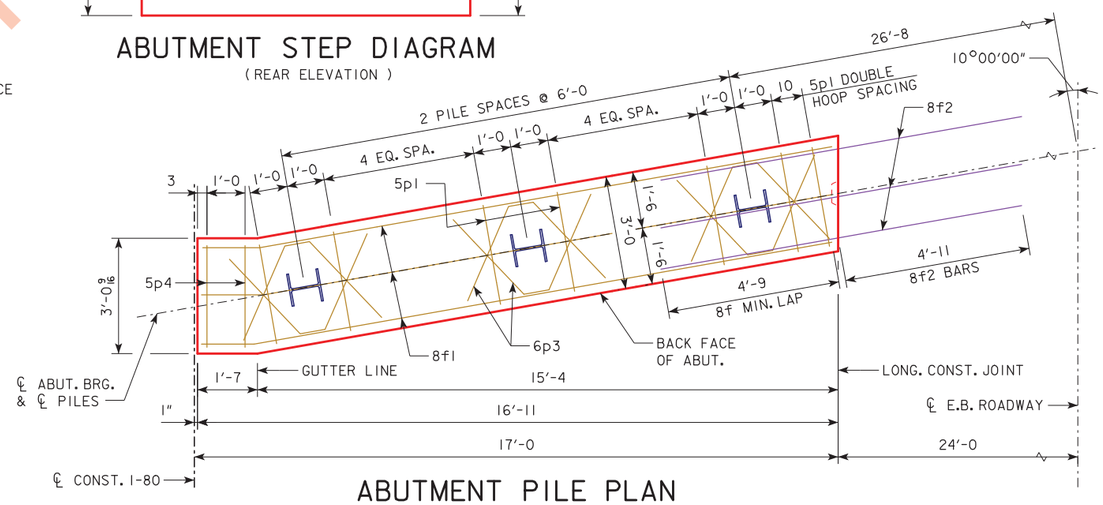



## ABUTMENT STEP DIAGRAM
(REAR ELEVATION)




## SECTION A-A

NOTE:
SHIFT 8g1 BARS IN F.F. AS NECESSARY TO MISS BEAMS.
PLACE 8g3 BARS PARALLEL TO LONGIT. STEEL.




## ABUTMENT PILE PLAN

## ABUTMENT CONCRETE QUANTITY

| LOCATION | QUANTITY |
|---|---|
| WEST ABUTMENT FOOTING | 7.1 |
| TOTAL (CU. YDS.) | 7.1 |

NOTE: CONCRETE QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

NOTE: 3 - HP 10 x 57 STEEL BEARING PILING REQUIRED AT WEST ABUTMENT.

NOTE: BARRIER RAIL NOT SHOWN IN DETAILS AND NOT PART OF THIS DESIGN.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

# WEST ABUTMENT FOOTING DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

# JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 24 FILE NO. 30864 DESIGN NO. 1317

| DESIGN TEAM HNTB | "BTC" OR "BTD" BEAMS - INTEGRAL ABUT. DETAILS - (R.A.) 7°31' - 15° SKEW | MODIFIED STANDARD SHEET 2090-BTCD | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 10 |
|---|---|---|---|---|---|

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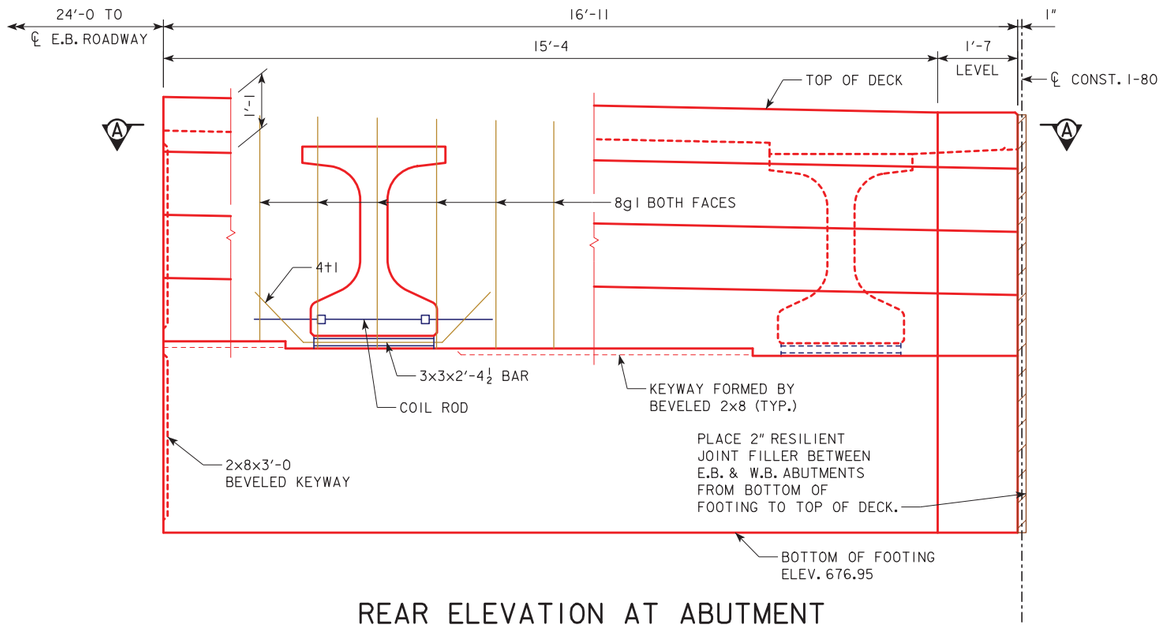
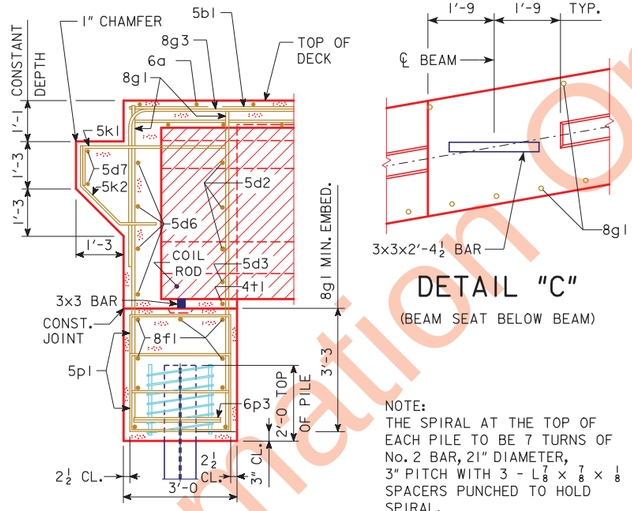
BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334




## REAR ELEVATION AT ABUTMENT




## PART SECTION B-B




## DETAIL "C"

(BEAM SEAT BELOW BEAM)

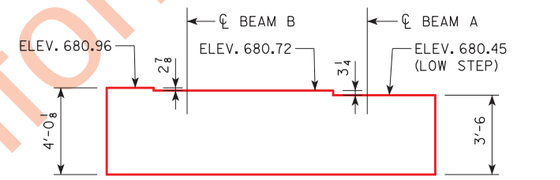
NOTE:
THE SPIRAL AT THE TOP OF EACH PILE TO BE 7 TURNS OF No. 2 BAR, 21" DIAMETER, 3" PITCH WITH 3 - L $\frac{7}{8} \times \frac{7}{8} \times \frac{1}{8}$ SPACERS PUNCHED TO HOLD SPIRAL.

## EAST ABUTMENT PILING NOTES:

THE CONTRACT LENGTH OF 70 FEET FOR THE EAST ABUTMENT PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 197 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. TO ACCOUNT FOR SOIL CONSOLIDATION UNDER THE NEW FILL, THE FACTORED AXIAL LOAD INCLUDES A FACTORED DOWNDRAG LOAD OF 23 KIPS.

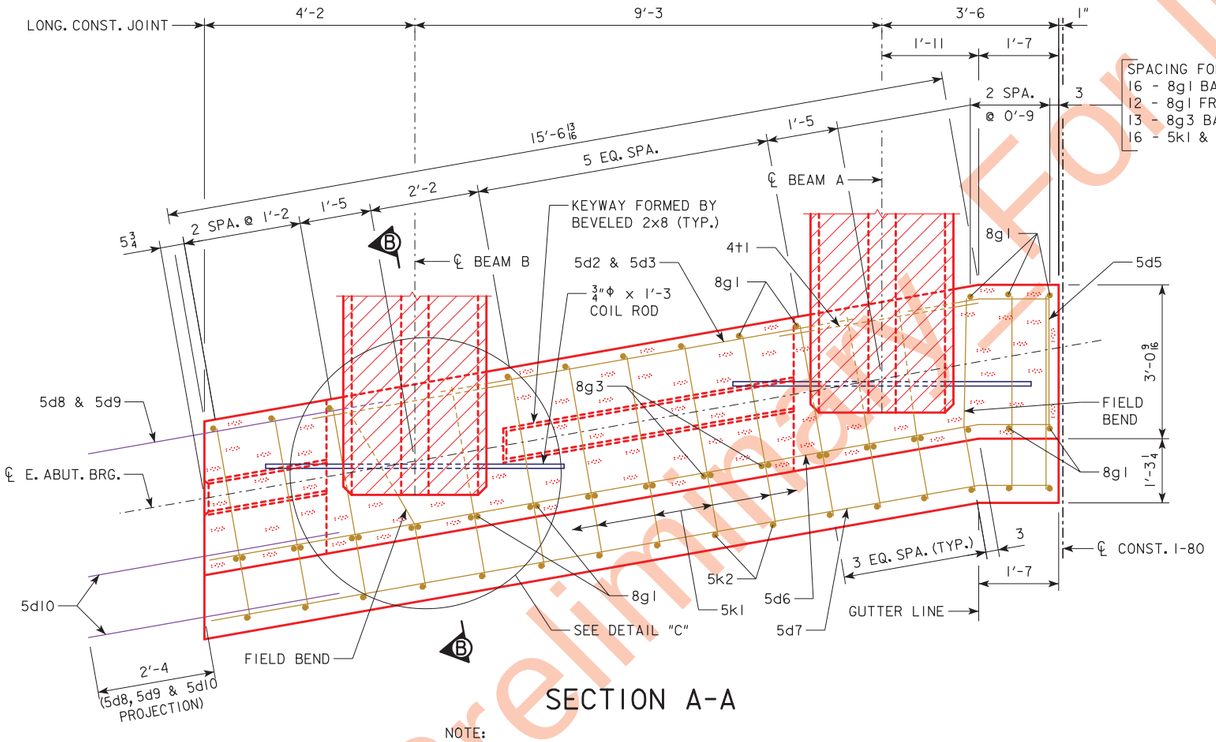
THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PREBORE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR EAST ABUTMENT PILES IS 157 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.



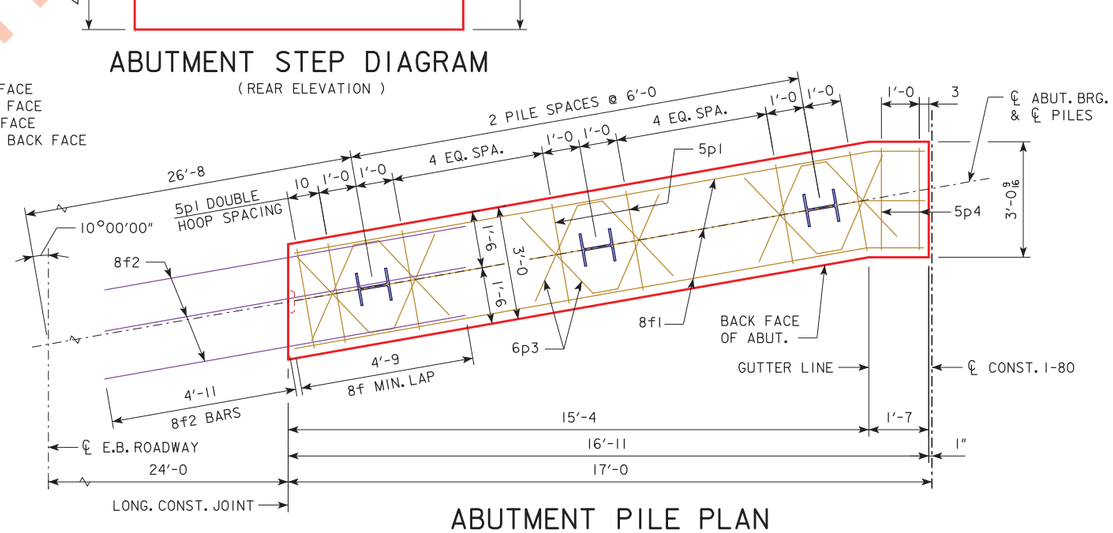

## ABUTMENT STEP DIAGRAM

( REAR ELEVATION )




## SECTION A-A

NOTE:
SHIFT 8g1 BARS IN F.F. AS NECESSARY TO MISS BEAMS.
PLACE 8g3 BARS PARALLEL TO LONGIT. STEEL.




## ABUTMENT PILE PLAN

## ABUTMENT CONCRETE QUANTITY

| LOCATION | QUANTITY |
|---|---|
| EAST ABUTMENT FOOTING | 7.1 |
| TOTAL (CU. YDS.) | 7.1 |

NOTE: CONCRETE QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

NOTE: 3 - HP 10 x 57 STEEL BEARING PILING REQUIRED AT EAST ABUTMENT.

NOTE: BARRIER RAIL NOT SHOWN IN DETAILS AND NOT PART OF THIS DESIGN.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

# EAST ABUTMENT FOOTING DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

# JOHNSON COUNTY

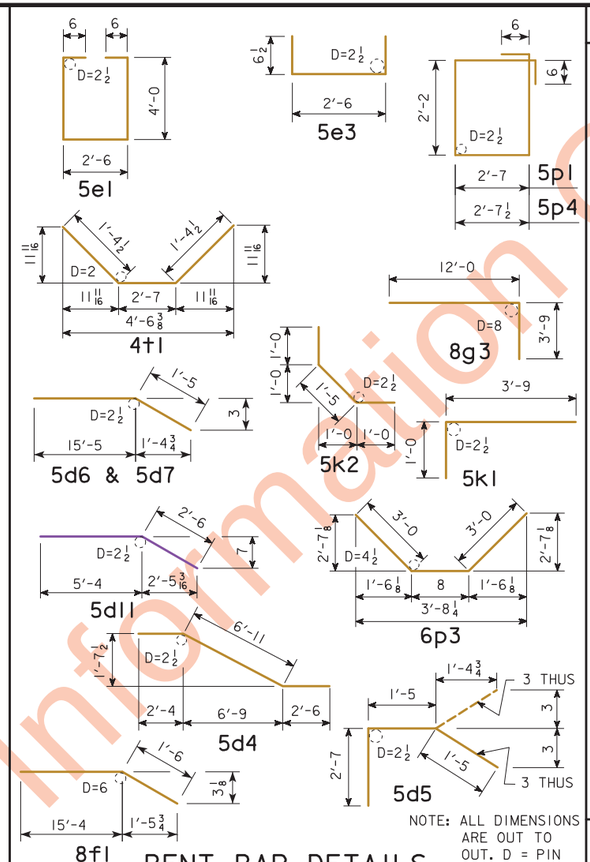
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 24 FILE NO. 30864 DESIGN NO. 1317

| DESIGN TEAM HNTB | "BTC" OR "BTD" BEAMS - INTEGRAL ABUT. DETAILS - (R.A.) 7°31' - 15° SKEW | MODIFIED STANDARD SHEET 2090-BTCD | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 11 |
|---|---|---|---|---|---|

CORRECTION 04-14 - ADDED CONCRETE QUANTITY TABLE & REFERRAL NOTE TO SUMMARY QUANTITY SHEET.
ENGLISHBTINTEGRALBRIDGES.DGN - 2090-BTCD - THIS SHEET ISSUED 02-08.

REVISED 07-2015 - CHANGED CONCRETE PLACEMENT NOTE TO ACCOUNT FOR THE POSSIBLE ADDITION OF A RETARDING ADMIXTURE TO THE CONCRETE.
ENGLISHBTINTEGRALBRIDGES.DGN - 4520-BTCD - THIS SHEET ISSUED 02-08.




BENT BAR DETAILS

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

## CONCRETE PLACEMENT QUANTITIES

| LOCATION | QUANTITY |
|---|---|
| SECTION 1, DECK & WEST ABUT. DIAPH. | 32.8 |
| SECTION 2, DECK | 38.8 |
| SECTION 3, DECK & EAST ABUT. DIAPH. | 32.8 |
| SECTION 4, DECK & PIER 1 DIAPH. | 18.8 |
| SECTION 5, DECK & PIER 2 DIAPH. | 18.8 |
| TOTAL (CU. YDS.) | 142.0 |

NOTE:
CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

## REINFORCING BAR LIST

| | BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|---|
| EPOXY COATED REINFORCING | 6a1 | DECK TRANSV. TOP & BOTT. | | 569 | 16'-7 | 14,173 |
| | 6a2 | DECK TRANSV. TOP ENDS | | 6 | VARIES | 67 |
| | 6a3 | DECK TRANSV. BOTT ENDS | | 6 | VARIES | 90 |
| | 5b1 | DECK LONGIT. TOP & BOTT. | | 224 | 37'-8 | 8,800 |
| | 8b2 | DECK LONGIT. TOP & BOTT. AT PIERS | | 60 | 29'-0 | 4,646 |
| | 5d2 | PIER & ABUT. DIAPH. LONGIT. | | 18 | 8'-4 | 156 |
| | 5d3 | PIER & ABUT. DIAPH. LONGIT. | | 6 | 6'-6 | 42 |
| | 5d4 | PIER DIAPH. LONGIT. | | 2 | 11'-9 | 24 |
| | 5d5 | ABUT. DIAPH. ENDS | | 6 | 5'-5 | 34 |
| | 5d6 | ABUT. DIAPH. LONGIT. B.F. | | 8 | 16'-10 | 140 |
| | 5d7 | PAVING NOTCH LONGIT. | | 4 | 16'-10 | 70 |
| | 5e1 | PIER DIAPH. HOOPS | | 20 | 11'-6 | 240 |
| | 5e3 | PIER DIAPH. TIES | | 20 | 3'-7 | 74 |
| | 8f1 | ABUT. FOOTING LONGIT. BOTH FACE | | 18 | 16'-10 | 810 |
| | 8g1 | ABUT. VERT. BOTH FACE | | 54 | 7'-10 | 1,130 |
| | 8g3 | ABUT. DIAPH. VERT. B.F. | | 26 | 15'-9 | 1,094 |
| | 6j1 | TOP OF DECK TRANSV. (AT RAIL) | | 286 | 6'-3 | 2,685 |
| | 5k1 | PAVING NOTCH | | 31 | 4'-9 | 153 |
| | 5k2 | PAVING NOTCH | | 31 | 3'-5 | 110 |
| | 5p1 | ABUT HOOPS | | 52 | 10'-6 | 570 |
| | 6p3 | ABUT. BOTT. AT PILES | | 12 | 6'-8 | 120 |
| | 5p4 | ABUT. HOOPS AT ENDS | | 8 | 10'-7 | 88 |
| | 4t1 | UNDER BEAMS AT ABUTMENTS | | 4 | 5'-4 | 14 |
| | | REINFORCING STEEL, EPOXY COATED - TOTAL (LBS.) | | | | 35,330 |
| STAINLESS STEEL | 6a4 | DECK TRANSV. TOP & BOTT. | | 572 | 6'-8 | 5,728 |
| | 5d8 | ABUT. & PIER DIAPH. LONGIT. | | 18 | 6'-1 | 114 |
| | 5d9 | ABUT. & PIER DIAPH. LONGIT. | | 6 | 5'-2 | 32 |
| | 5d10 | ABUT. DIAPH. LONG. B.F. & PAVING NOTCH | | 12 | 4'-8 | 58 |
| | 5d11 | PIER DIAPH. LONGIT. | | 2 | 7'-10 | 16 |
| | 8f2 | ABUT. FOOTING LONGIT. BOTH FACE | | 18 | 9'-10 | 472 |
| | | REINFORCING STEEL, STAINLESS STEEL - TOTAL (LBS.) | | | | 6,420 |
| NON-COATED | #2 | PILE SPIRAL | | 6 | 38'-6 | 38 |
| | | SPIRAL SPACERS, L 7/8 x 7/8 x 1/8 x 0.70 | | 18 | 1'-10 | 24 |
| | | REINFORCING STEEL - TOTAL (LBS.) | | | | 62 |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS 117'-0 INTERIOR SPAN

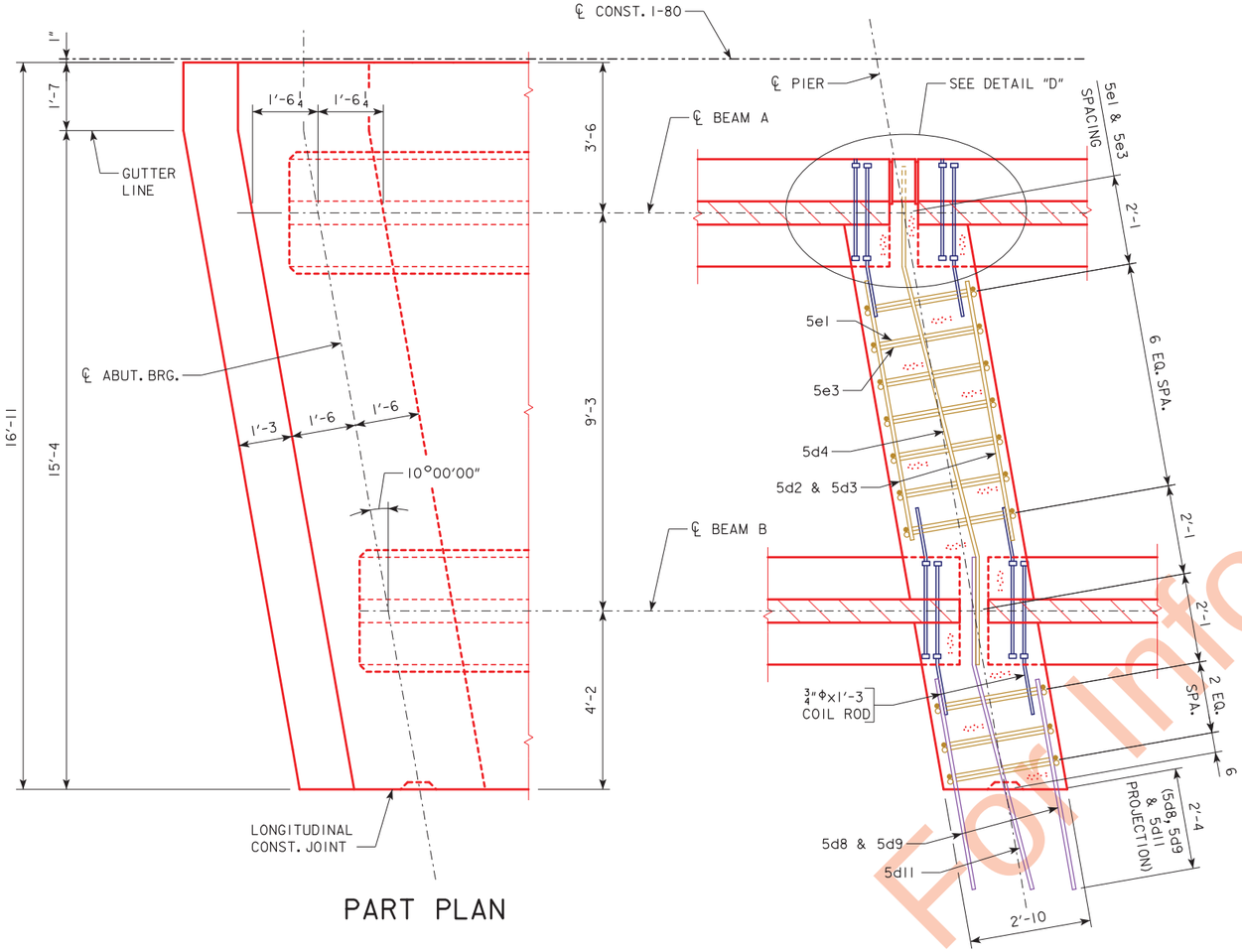
## DECK, ABUTMENT & DIAPHRAGM QUANTITIES

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

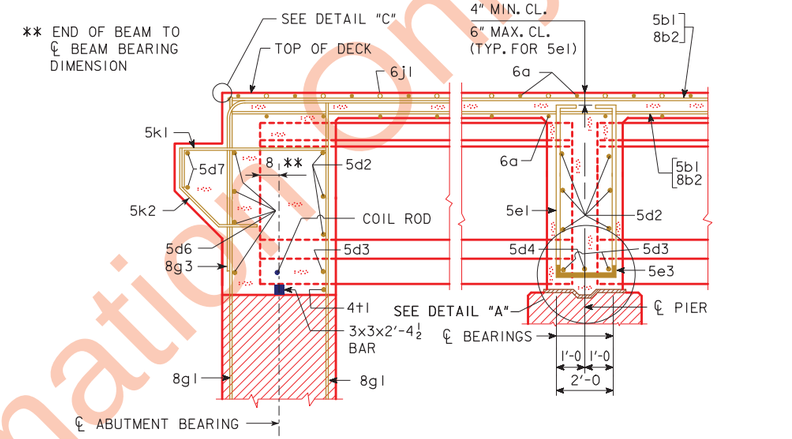
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 11 OF 24 FILE NO. 30864 DESIGN NO. 1317



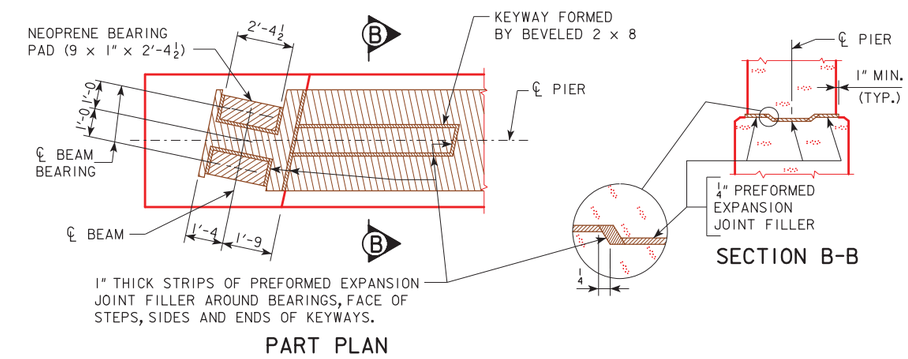

PART PLAN

PART SECTION AT PIER



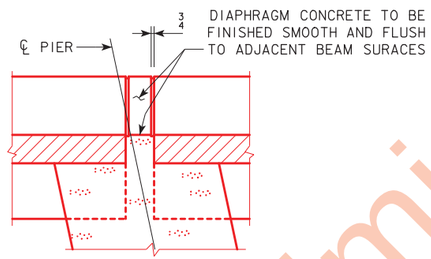

## PART LONGITUDINAL SECTION NEAR GUTTER

(FOR DETAILS OF INTERMEDIATE DIAPHRAGM SEE DESIGN SHEET 19)



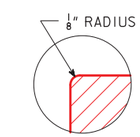

PART PLAN

TOP OF PIER DETAILS

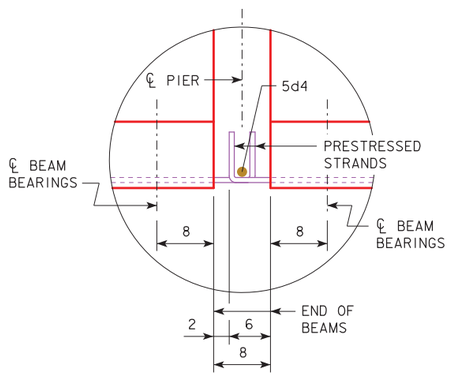



DETAIL "D"

NOTE: THE EXTERIOR SURFACES OF THE EXTERIOR BEAM ENDS OVER THE PIER SHALL NOT BE ROUGHENED.




DETAIL "C"




DETAIL "A"

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## ABUTMENT & PIER DIAPHRAGM DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 12 OF 24 — FILE NO. 30864 — DESIGN NO. 1317

REVISED 01-12 - ADDED FIELD BEND 5h4 BAR TO AVOID PILE IN ABUTMENT WING NOTE.
ENGLISHBTINTEGRALBRIDGES.DGN - 4512-BTCD - THIS SHEET ISSUED 02-08.





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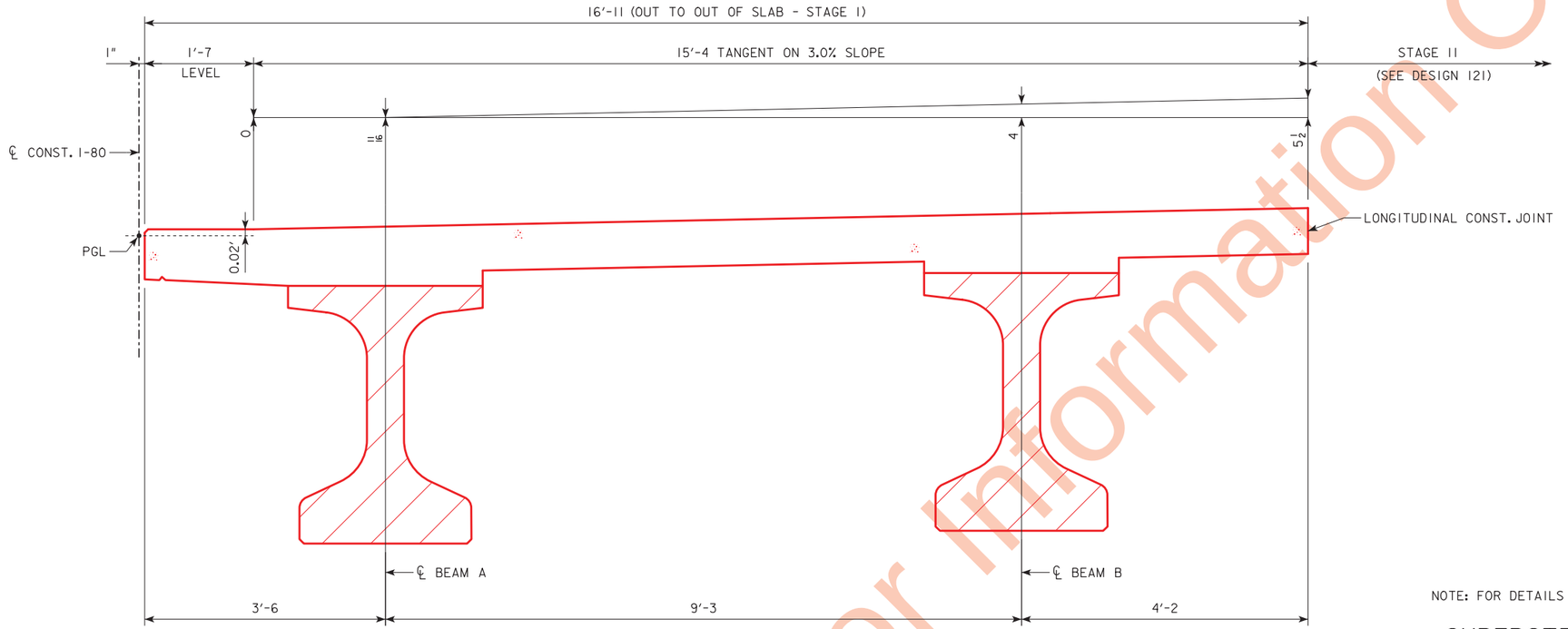
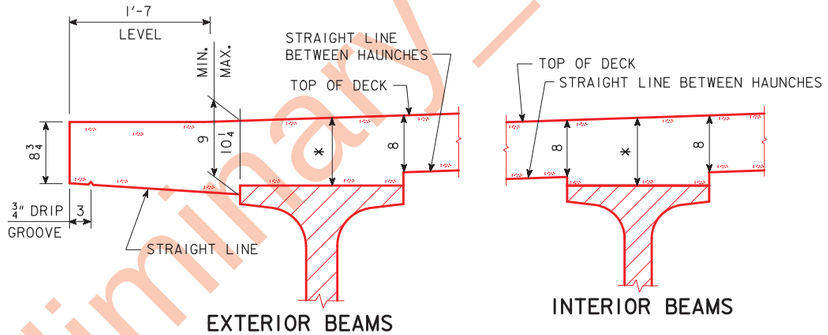



## TYPICAL SECTION

DECK AREA = 11.38 SQ. FT.
DECK AREA DOES NOT
INCLUDE THE HAUNCH.




## TYPICAL DECK AND HAUNCH DETAIL

* FOR DECK THICKNESS OVER BEAMS SEE HAUNCH AND CAMBER DETAILS ON DESIGN SHEET 16.

NOTE: FOR DETAILS OF INTERMEDIATE DIAPHRAGMS SEE DESIGN SHEET 19.

## SUPERSTRUCTURE NOTES:

THE BRIDGE DECK AS SHOWN INCLUDES ½" INTEGRAL WEARING SURFACE.

THE PIER AND ABUTMENT DIAPHRAGM CONCRETE IS TO BE PLACED MONOLITHICALLY WITH THE BRIDGE DECK.

COST OF ALL PREFORMED EXPANSION JOINT FILLER MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "HIGH PERFORMANCE STRUCTURAL CONCRETE".

ALL BEAMS ARE TO BE SET VERTICAL.

FORMS FOR THE DECK ARE TO BE SUPPORTED BY THE PRESTRESSED CONCRETE BEAMS.

CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.

ALL DECK AND DIAPHRAGM REINFORCING IS TO BE WIRED IN PLACE AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS PLACED.

TOP TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 2½" CLEAR BELOW TOP OF DECK. BOTTOM TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 1" CLEAR ABOVE BOTTOM OF DECK. TOP AND BOTTOM REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL BAR CHAIRS SPACED AT NOT MORE THAN 3'-0 CENTERS LONGITUDINALLY AND TRANSVERSELY, OR BY CONTINUOUS ROWS OF BAR HIGH CHAIRS OR DECK BOLSTERS SPACED 4'-0 APART. I.M. 451.01 REQUIREMENTS SHALL APPLY FOR BAR CHAIRS, BAR HIGH CHAIRS, AND DECK BOLSTERS.

COST OF BEARING MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## BRIDGE DECK CROSS SECTION

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 13 OF 24 FILE NO. 30864 DESIGN NO. 1317

CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET FOR THE DRAIN WEIGHT. NOTE ABOUT CHOICE OF EPOXY OR STAINLESS STEEL DECK TO BARRIER RAIL BARS.
ENGLISHINTEGRALBRIDGES.DGN 4385 - THIS SHEET ISSUED 11-06. LRFD DESIGNED DECK.

| DESIGN TEAM HNTB | 44' RDWY. PPCB (BTC BEAMS - INTEGRAL ABUT.) CROSS SECTION ( SPANS 30' - 120' ) | MODIFIED STANDARD SHEET 4383-BTC-6 | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 14 |
|---|---|---|---|---|---|

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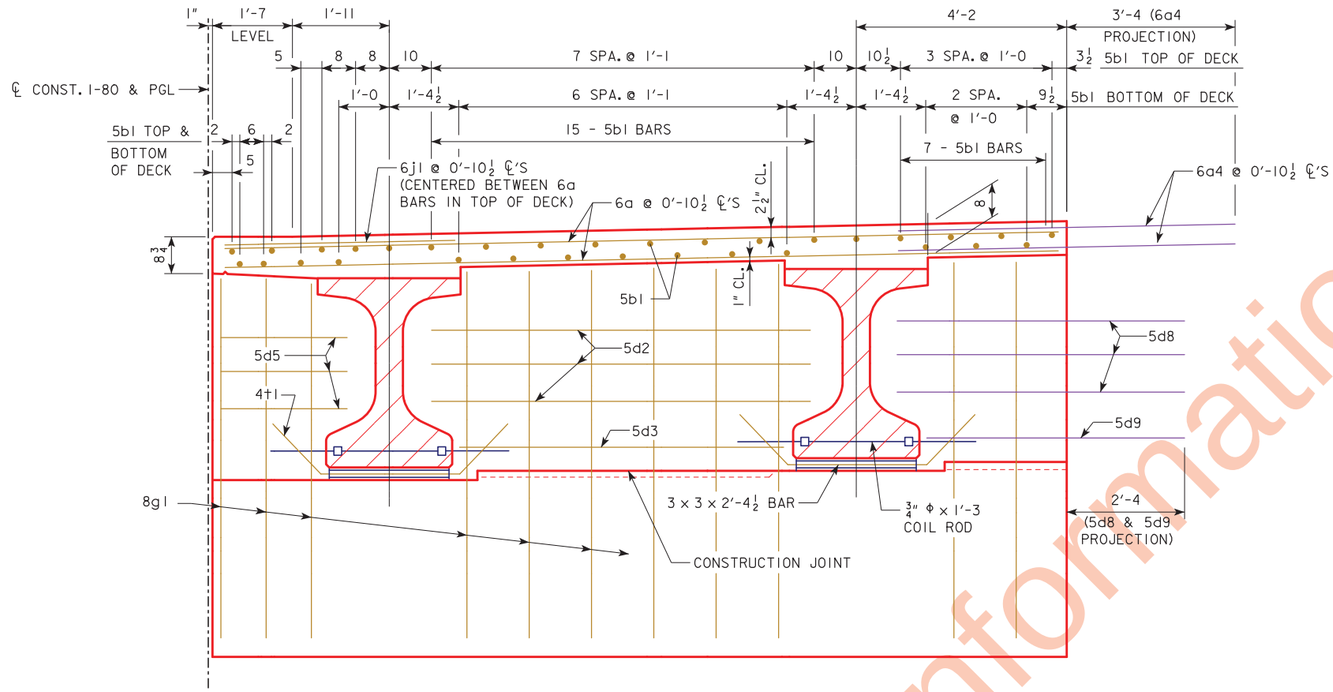
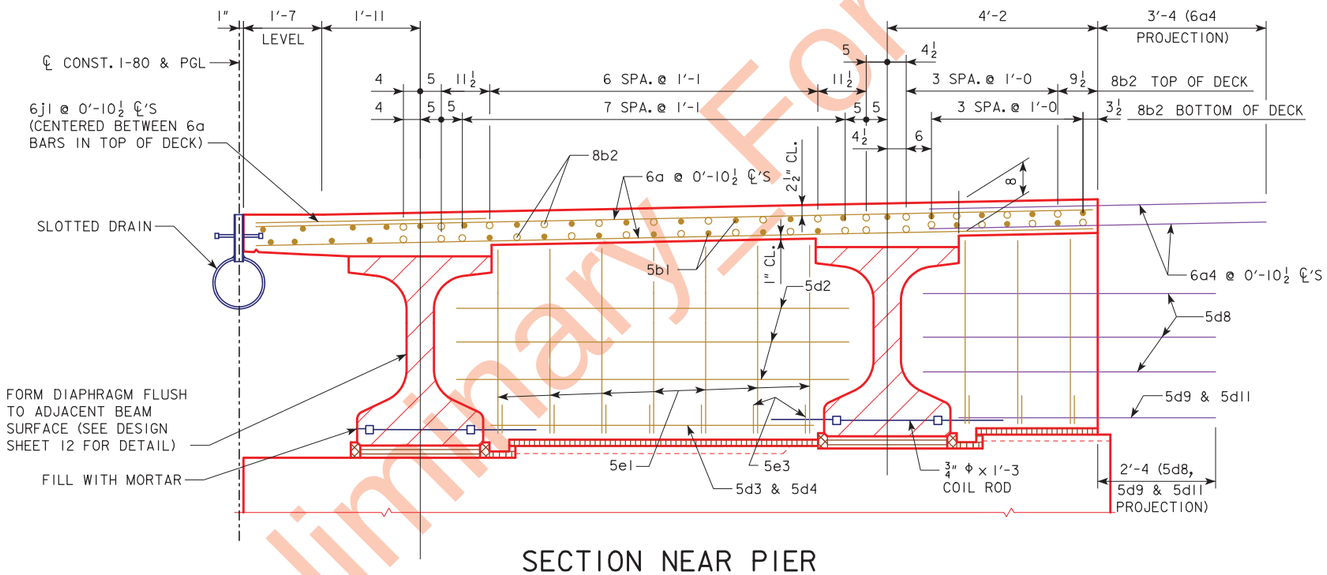



SECTION NEAR ABUTMENT




SECTION NEAR PIER

NOTE: FOR SUPERSTRUCTURE NOTES SEE DESIGN SHEET 13.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## BRIDGE DECK CROSS SECTION

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 14 OF 24 FILE NO. 30864 DESIGN NO. 1317

CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET FOR THE DRAIN WEIGHT. NOTE ABOUT CHOICE OF EPOXY OR STAINLESS STEEL DECK TO BARRIER RAIL BARS.
ENGLISHINTEGRALBRIDGES.DGN 4385 - THIS SHEET ISSUED 11-06. LRFD DESIGNED DECK.





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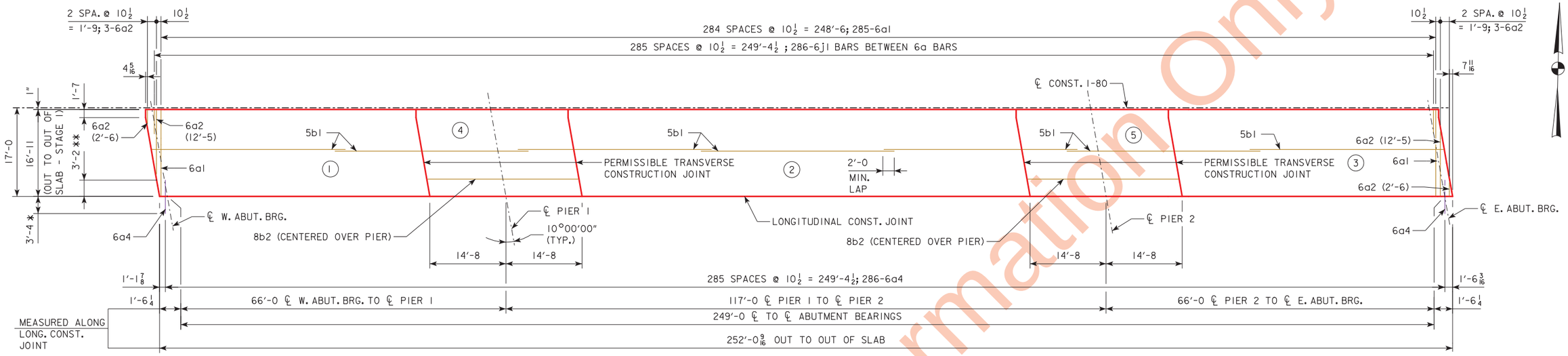
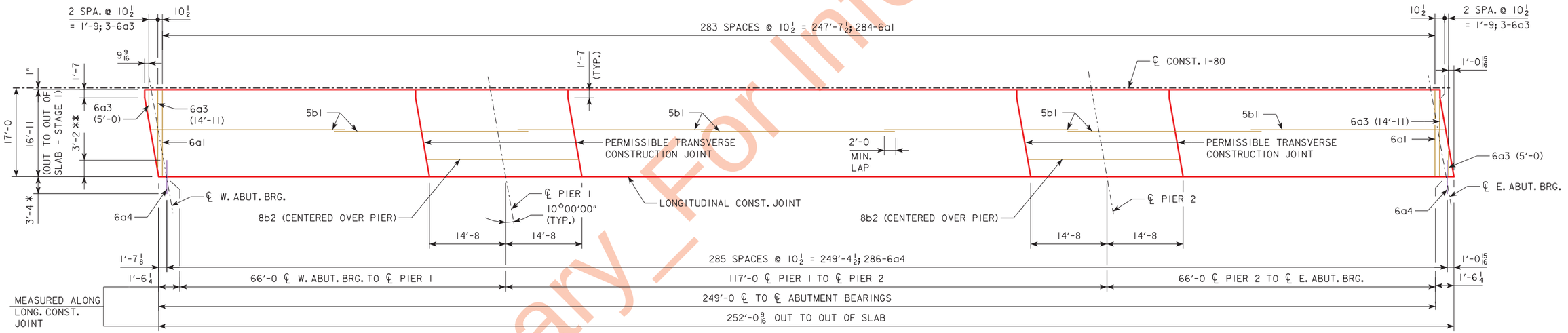
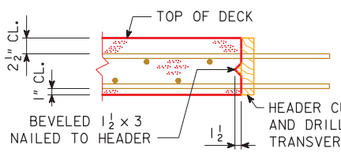



* TYPICAL 6a4 BAR PROJECTION.
** MINIMUM LAP OF 6a4 BAR WITH 6a1, 6a2 AND 6a3 BARS.

## TOP SLAB REINFORCING LAYOUT AND CONCRETE PLACEMENT



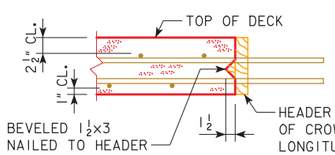

## BOTTOM SLAB REINFORCING LAYOUT




### LONGITUDINAL SLAB CONSTRUCTION JOINT

NOTES:
ALL LONGITUDINAL DIMENSIONS ARE ALONG LONGITUDINAL CONST. JOINT UNLESS NOTED OTHERWISE.
ALL TRANSVERSE DIMENSIONS ARE NORMAL TO LONGITUDINAL CONST. JOINT.
ALL TRANSVERSE BARS SHALL BE PLACED NORMAL TO LONGITUDINAL CONST. JOINT.
FOR CONCRETE PLACEMENT QUANTITIES, SEE DESIGN SHEET 11.

NOTE: CONCRETE DECK SHALL BE PLACED IN SECTIONS AND SEQUENCES INDICATED. (AN APPROVED ALTERNATE PROCEDURE IS TO PLACE THE CONCRETE DECK IN ONE CONTINUOUS POUR BEGINNING AT ONE END OF THE BRIDGE.) ALTERNATE PROCEDURES FOR PLACING DECK CONCRETE MAY BE SUBMITTED FOR APPROVAL TOGETHER WITH A STATEMENT OF THE PROPOSED METHOD AND EVIDENCE THAT THE CONTRACTOR POSSESSES THE NECESSARY EQUIPMENT AND FACILITIES TO ACCOMPLISH THE REQUIRED RESULTS. THE BRIDGE ENGINEER SHALL REVIEW ANY ALTERNATE PROCEDURES. THE COST OF ANY ADDITIONAL ANALYSIS AND PLAN MODIFICATIONS SHALL BE PAID FOR BY THE CONTRACTOR. THE ENGINEER SHALL DETERMINE IF A RETARDING ADMIXTURE IS REQUIRED TO MAINTAIN PLASTICITY OF THE CONCRETE DECK DURING PLACEMENT.




### PERMISSIBLE TRANSVERSE DECK CONSTRUCTION JOINT

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## SUPERSTRUCTURE DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 15 OF 24 FILE NO. 30864 DESIGN NO. 1317





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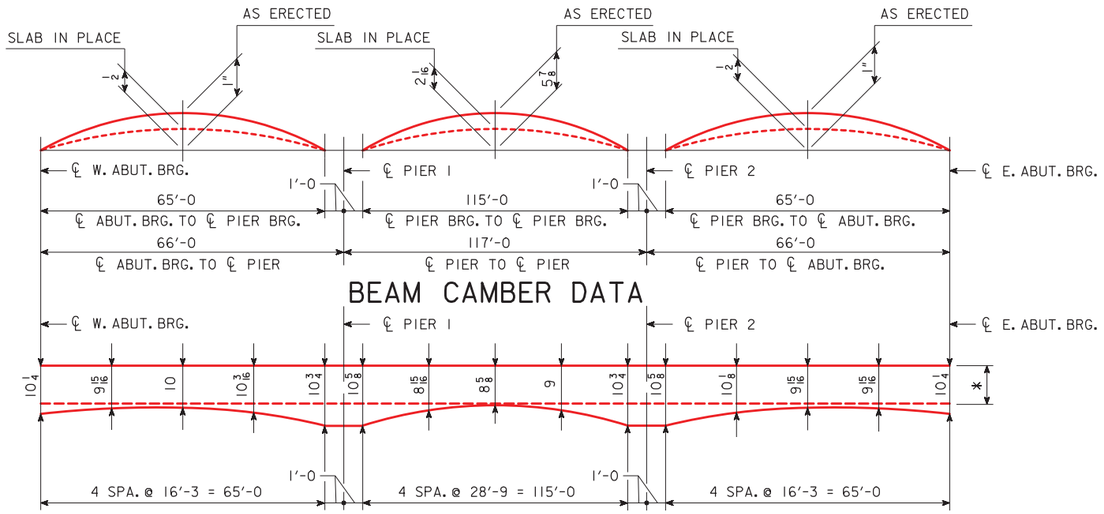
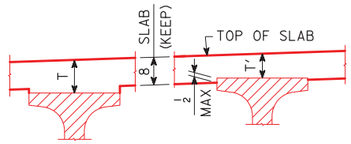


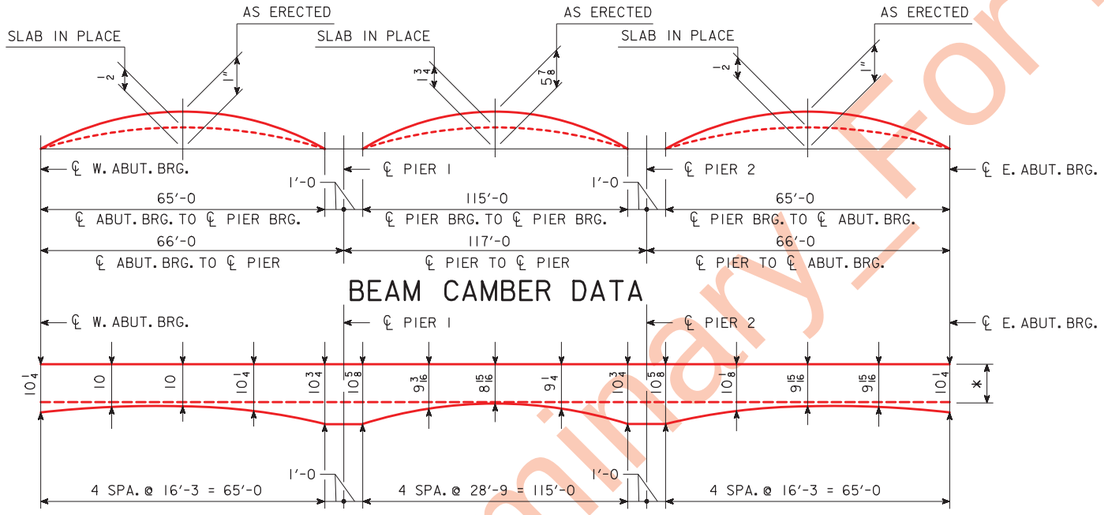

## SLAB THICKNESS AT BEAMS (T) FOR BEAM LINE A

* NOMINAL SLAB THICKNESS AT BEAMS INCLUDES 8" SLAB + HAUNCH = T




## SLAB THICKNESS DETAILS

NOTE: THE SLAB THICKNESS (T) AT BEAMS IS BASED ON THE ANTICIPATED BEAM CAMBER AND DEFLECTIONS. THESE VALUES ARE USED BY THE DESIGNER TO SET BEAM ELEVATIONS AND ESTIMATE CONCRETE QUANTITIES. REFER TO THE HAUNCH DATA DETAILS SHEET FOR ADDITIONAL INFORMATION TO AID THE CONTRACTOR IN SETTING THE FIELD HAUNCHES REQUIRED FOR CONSTRUCTION.




## SLAB THICKNESS AT BEAMS (T) FOR BEAM LINE B

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## SLAB THICKNESS DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 16 OF 24 FILE NO. 30864 DESIGN NO. 1317

| DESIGN TEAM HNTB | BEAM CAMBER AND SLAB THICKNESS DETAILS | MODIFIED STANDARD SHEET 1065 | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 17 |
|---|---|---|---|---|---|





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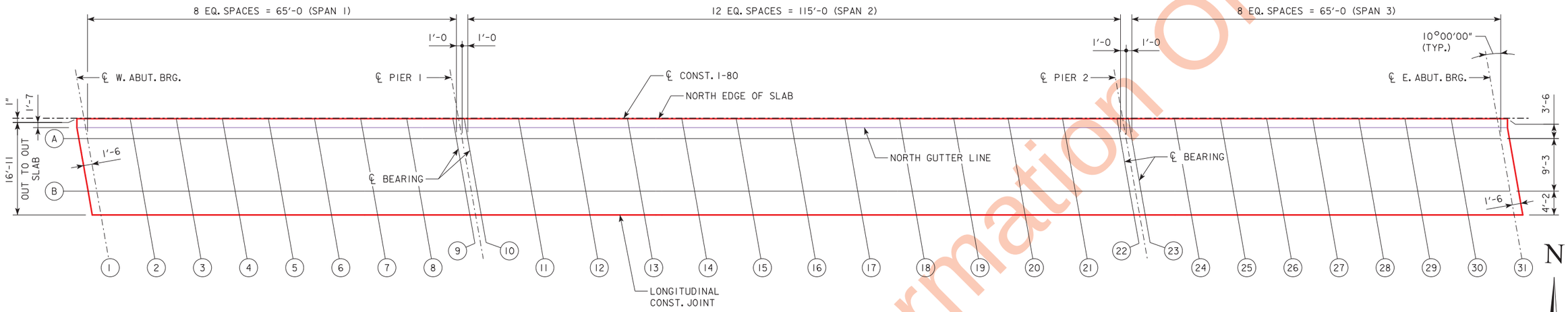
BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334




## TOP OF SLAB ELEVATION PLAN

## TOP OF SLAB ELEVATIONS

| | ℄ W. ABUT. BEARING | | | | | | | | ℄ PIER 1 BEARINGS | | | | | | | | | | | | | ℄ PIER 2 BEARINGS | | | | | | | | | ℄ E. ABUT. BEARING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| NORTH GUTTER LINE | 686.49 | 686.45 | 686.41 | 686.37 | 686.33 | 686.29 | 686.25 | 686.21 | 686.17 | 686.16 | 686.11 | 686.06 | 686.01 | 685.96 | 685.92 | 685.87 | 685.82 | 685.77 | 685.73 | 685.68 | 685.63 | 685.58 | 685.57 | 685.53 | 685.49 | 685.45 | 685.41 | 685.37 | 685.33 | 685.29 | 685.25 |
| BEAM A | 686.55 | 686.51 | 686.47 | 686.43 | 686.38 | 686.34 | 686.30 | 686.26 | 686.22 | 686.21 | 686.16 | 686.12 | 686.07 | 686.02 | 685.97 | 685.92 | 685.88 | 685.83 | 685.78 | 685.73 | 685.69 | 685.64 | 685.63 | 685.59 | 685.55 | 685.51 | 685.46 | 685.42 | 685.38 | 685.34 | 685.30 |
| BEAM B | 686.82 | 686.78 | 686.74 | 686.69 | 686.65 | 686.61 | 686.57 | 686.53 | 686.49 | 686.48 | 686.43 | 686.39 | 686.34 | 686.29 | 686.24 | 686.19 | 686.15 | 686.10 | 686.05 | 686.00 | 685.95 | 685.91 | 685.90 | 685.86 | 685.82 | 685.77 | 685.73 | 685.69 | 685.65 | 685.61 | 685.57 |
| LONG. CONST. JOINT | 686.94 | 686.90 | 686.86 | 686.82 | 686.78 | 686.73 | 686.69 | 686.65 | 686.61 | 686.60 | 686.56 | 686.51 | 686.46 | 686.41 | 686.36 | 686.32 | 686.27 | 686.22 | 686.17 | 686.12 | 686.08 | 686.03 | 686.02 | 685.98 | 685.94 | 685.90 | 685.86 | 685.81 | 685.77 | 685.73 | 685.69 |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SLAB ELEVATIONS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 17 OF 24 FILE NO. 30864 DESIGN NO. 1317





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REVISED 06-12 - THE ALLOWABLE FIELD HAUNCH MAX. & MIN. WAS CHANGED TO INCHES & DECIMALS OF FEET. NOTE & NOTE 1 WERE CHANGED. THE SLAB HAUNCH LOCATIONS EXAMPLE WAS REPLACED WITH A NOTE.
ENGLISH\MISCELLANEOUSBRIDGES.DGN - 1066 - THIS SHEET ISSUED 02-08.

BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334

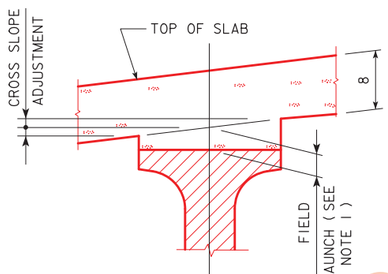
## TABLE OF BEAM LINE SLAB HAUNCH ELEVATIONS

| BEAM LINE | ℄ W. ABUT. BEARING | | | | | | | | ℄ PIER 1 BEARINGS | | | | | | | | | | | | | ℄ PIER 2 BEARINGS | | | | | | | | ℄ E. ABUT. BEARING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LINE 1 | LINE 2 | LINE 3 | LINE 4 | LINE 5 | LINE 6 | LINE 7 | LINE 8 | LINE 9 | LINE 10 | LINE 11 | LINE 12 | LINE 13 | LINE 14 | LINE 15 | LINE 16 | LINE 17 | LINE 18 | LINE 19 | LINE 20 | LINE 21 | LINE 22 | LINE 23 | LINE 24 | LINE 25 | LINE 26 | LINE 27 | LINE 28 | LINE 29 | LINE 30 | LINE 31 |
| A | 685.88 | 685.86 | 685.83 | 685.80 | 685.76 | 685.72 | 685.67 | 685.61 | 685.56 | 685.55 | 685.58 | 685.61 | 685.63 | 685.63 | 685.61 | 685.57 | 685.52 | 685.44 | 685.34 | 685.23 | 685.10 | 684.97 | 684.96 | 684.94 | 684.91 | 684.88 | 684.84 | 684.80 | 684.75 | 684.69 | 684.64 |
| B | 686.15 | 686.13 | 686.10 | 686.07 | 686.03 | 685.99 | 685.94 | 685.88 | 685.83 | 685.82 | 685.86 | 685.89 | 685.91 | 685.92 | 685.91 | 685.87 | 685.81 | 685.73 | 685.63 | 685.51 | 685.38 | 685.24 | 685.23 | 685.21 | 685.18 | 685.15 | 685.11 | 685.07 | 685.02 | 684.96 | 684.91 |

## MISCELLANEOUS DATA TABLE

| | BEAM LINE | | ℄ W. ABUT. BEARING | | | | | | | | ℄ PIER 1 BEARINGS | | | | | | | | | | | | | ℄ PIER 2 BEARINGS | | | | | | | | ℄ E. ABUT. BEARING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LINE 1 | LINE 2 | LINE 3 | LINE 4 | LINE 5 | LINE 6 | LINE 7 | LINE 8 | LINE 9 | LINE 10 | LINE 11 | LINE 12 | LINE 13 | LINE 14 | LINE 15 | LINE 16 | LINE 17 | LINE 18 | LINE 19 | LINE 20 | LINE 21 | LINE 22 | LINE 23 | LINE 24 | LINE 25 | LINE 26 | LINE 27 | LINE 28 | LINE 29 | LINE 30 | LINE 31 |
| ANTICIPATED DEFLECTION DUE TO SLAB (IN.) | A | | 0 | 3/16 | 3/8 | 7/16 | 1/2 | 7/16 | 3/8 | 3/16 | 0 | 0 | 1 | 1 15/16 | 2 11/16 | 3 5/16 | 3 11/16 | 3 13/16 | 3 11/16 | 3 5/16 | 2 11/16 | 1 15/16 | 1 | 0 | 0 | 3/16 | 3/8 | 7/16 | 1/2 | 7/16 | 3/8 | 3/16 | 0 |
| | B | | 0 | 3/16 | 3/8 | 1/2 | 9/16 | 1/2 | 3/8 | 3/16 | 0 | 0 | 1 1/16 | 2 1/16 | 2 15/16 | 3 9/16 | 3 15/16 | 4 1/8 | 3 15/16 | 3 9/16 | 2 15/16 | 2 1/16 | 1 1/16 | 0 | 0 | 3/16 | 3/8 | 1/2 | 9/16 | 1/2 | 3/8 | 3/16 | 0 |
| CROSS SLOPE ADJUSTMENTS (IN.) | ALL | | | | | | | | | | | | | | | | | 1/2 | | | | | | | | | | | | | | |
| ALLOWABLE FIELD HAUNCH IN. & (FT.) | MAX. | ALL | 4 (0.333) | 4 (0.333) | 3 1/2 (0.292) | 3 1/2 (0.292) | 3 (0.250) | 3 1/2 (0.292) | 3 1/2 (0.292) | 4 (0.333) | 4 (0.333) | 4 (0.333) | 3 1/2 (0.292) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 3 1/2 (0.292) | 4 (0.333) | 4 (0.333) | 4 (0.333) | 3 1/2 (0.292) | 3 1/2 (0.292) | 3 (0.250) | 3 1/2 (0.292) | 3 1/2 (0.292) | 4 (0.333) | 4 (0.333) |
| | MIN. | ALL | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) |

NOTE:
HAUNCH LOCATIONS ARE AT THE SAME LOCATION AS THE ENCIRCLED LETTERS AND NUMBERS SHOWN ON SLAB ELEVATIONS SHEET.




HAUNCH DETAIL

NOTE:
BRIDGE SEAT ELEVATIONS ARE SET BASED ON THEORETICAL CAMBER AND BEAM DEFLECTIONS. THESE BRIDGE SEATS WILL PROVIDE A THEORETICAL BEAM HAUNCH WITHIN DESIGN PARAMETERS. FIELD HAUNCHES ARE DETERMINED USING SURVEYED TOP OF BEAM ELEVATIONS AND "BEAM LINE HAUNCH ELEVATION" DATA. ALLOWABLE MAXIMUM AND MINIMUM "FIELD HAUNCH" VALUES ARE GIVEN IN INCHES AND DECIMALS OF FEET IN THE "MISCELLANEOUS DATA" TABLE. "CROSS SLOPE ADJUSTMENT" VALUES WILL AID THE CONTRACTOR IN DETERMINING ACTUAL FORMED HAUNCH DIMENSIONS AT THE EDGES OF THE TOP FLANGE.

NOTE 1:
TO CALCULATE FIELD HAUNCH REQUIRED AT EACH LOCATION, SURVEY THE BEAM TOPS CONSISTENT WITH THE SPACINGS SHOWN ON THE "TOP OF SLAB ELEVATIONS LAYOUT". SUBTRACT THE SURVEYED BEAM SHOT FROM THE "BEAM LINE HAUNCH ELEVATION". THIS VALUE WILL BE THE HAUNCH NEEDED (SEE "FIELD HAUNCH" IN HAUNCH DETAIL). THE "BEAM LINE HAUNCH ELEVATION" INCLUDES ADJUSTMENTS FOR SLAB THICKNESSES AND ANTICIPATED DEFLECTIONS. NO ADDITIONAL CALCULATIONS ARE REQUIRED. IF THE FIELD HAUNCH EXCEEDS THE MAXIMUMS AND MINIMUMS SHOWN IN INCHES AND DECIMALS OF FEET IN THE MISCELLANEOUS DATA TABLE, ADJUSTMENTS TO THE GRADE OR ADDITIONAL HAUNCH REINFORCEMENT WILL BE REQUIRED.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SLAB HAUNCH DATA DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

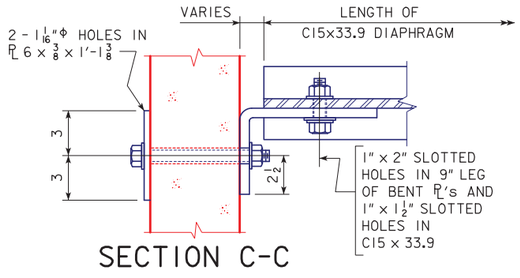
DESIGN SHEET NO. 18 OF 24 FILE NO. 30864 DESIGN NO. 1317



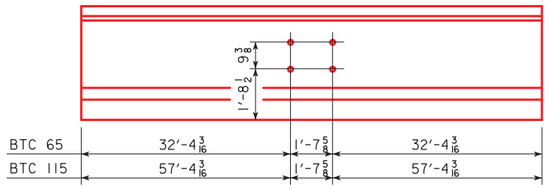
| DESIGN TEAM HNTB | SLAB HAUNCH DATA DETAILS | STANDARD SHEET 1066 | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 19 |
|---|---|---|---|---|---|

# BULB TEE "C" BEAM INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL

| ONE BEAM CONNECTION DETAIL "F" | | | WEIGHT |
|---|---|---|---|
| | | NO. OF BEAM CONNECTIONS | |
| 2 - $\frac{7}{8}$"Φ x 9$\frac{1}{4}$" H.S. BOLTS WITH NUTS & WASHERS = 4.8 LBS. | | 6 | 29 |
| ONE DETAIL "F" | 1 - BACKING PL 6 x $\frac{3}{8}$ x 1'-1$\frac{3}{8}$ = 8.5 LBS. | 6 | 51 |
| | 1 - BENT PL 9 x 6 x $\frac{1}{2}$ x 1'-1$\frac{3}{8}$ = 28.5 LBS. | 6 | 171 |
| **ONE DIAPHRAGM** | | | |
| | | NUMBER OF DIAPHRAGMS | |
| 8 - $\frac{7}{8}$"Φ x 2$\frac{3}{4}$" H.S.BOLTS WITH NUTS & WASHERS = 10.3 LBS. | | 3 | 31 |
| | LENGTH OF MEMBER | | |
| 1 - C15 x 33.9 = 33.9 LBS./FT. | 8'-0$\frac{3}{4}$ | 3 | 820 |
| INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL - TOTAL (LBS.) | | | 1,102 |



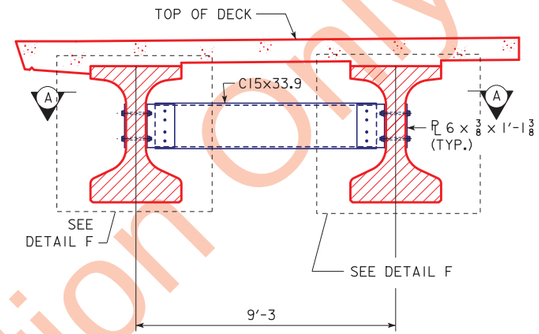

SECTION C-C



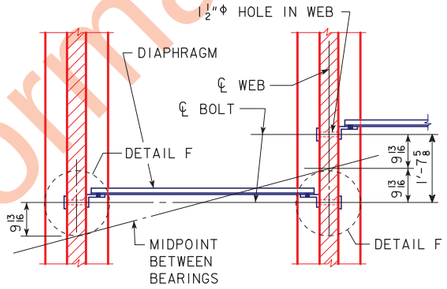

INTERMEDIATE DIAPHRAGM BOLT HOLE LOCATIONS

| STRUCTURAL STEEL | |
|---|---|
| WEIGHT | 1,102 LBS. |

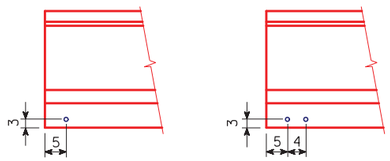
NOTE: STRUCTURAL STEEL WEIGHT IS INCLUDED ON THE SUMMARY QUANTITIES SHEET.




SECTION SHOWING INTERMEDIATE DIAPHRAGM

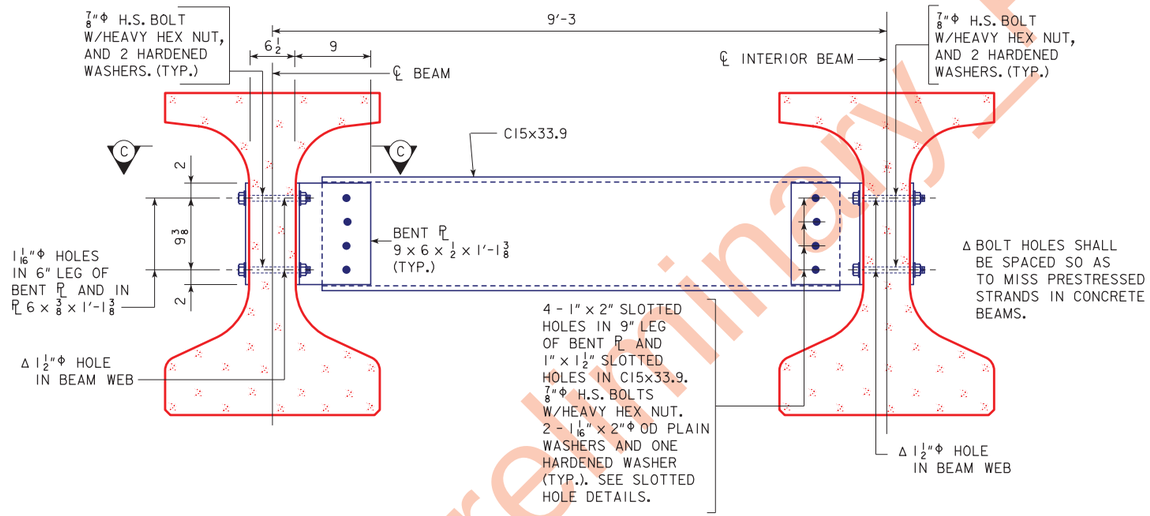



PART SECTION A-A

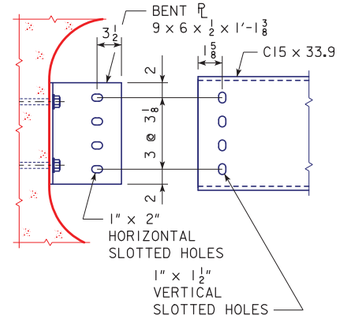



INTEGRAL ABUT. FIXED PIER

BEAM COIL TIE LOCATIONS




DETAIL F




SLOTTED HOLE DETAILS

## NOTES:

ALL DIAPHRAGM MATERIALS, INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.

SHOP DRAWINGS OF THE STEEL DIAPHRAGMS SHOWING LAYOUT AND DETAILS OF THE DIAPHRAGMS SHALL BE SUBMITTED FOR APPROVAL.

ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS SHALL BE INCLUDED IN THE PRICE BID FOR STRUCTURAL STEEL.

THE 1$\frac{1}{2}$"Φ HOLES FOR THE $\frac{7}{8}$"Φ H.S. BOLTS SHALL BE CAST INTO THE WEB. DRILLING IS NOT ALLOWED.

THE $\frac{7}{8}$"Φ H.S. BOLTS THROUGH THE WEB SHALL HAVE A THREAD LENGTH OF 3" MIN. AND 4" MAX. AND SHALL MEET THE REQUIREMENTS OF ASTM A449.

ALL BOLTS ARE TO BE TIGHTENED PRIOR TO PLACING BRIDGE FLOOR CONCRETE.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS 117'-0 INTERIOR SPAN

# INTERMEDIATE DIAPHRAGM DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

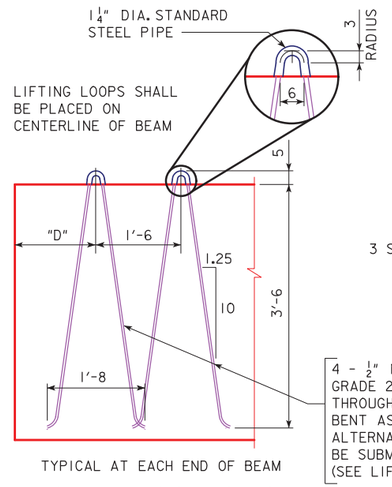
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 19 OF 24 FILE NO. 30864 DESIGN NO. 1317



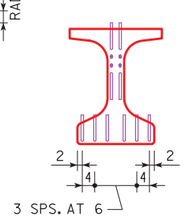
ENGLISHBEAMS.DGN - 1036-2-BTC - THIS SHEET ISSUED 06-14. SHEET 2 OF 2.



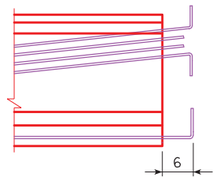

TYPICAL AT EACH END OF BEAM

4 - ½" NOMINAL DIA. GRADE 270 STRANDS THREADED THROUGH EACH PIPE SLEEVE BENT AS SHOWN AFTER THREADING. ALTERNATE LIFTING DEVICES MAY BE SUBMITTED FOR APPROVAL (SEE LIFTING LOOP TABLE).

## LIFTING LOOP DETAIL




THE TOP AND BOTTOM ROWS OF THE DEFLECTED STRANDS ARE TO BE CUT WITH 1'-6 PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN. THE REMAINING TOP DEFLECTED STRANDS ARE TO BE CUT WITH 5" PROJECTIONS.
SIX BOTTOM STRANDS ARE TO BE CUT WITH 1'-6 PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN. THE REMAINING BOTTOM STRANDS ARE TO BE CUT OFF REASONABLY FLUSH WITH THE CONCRETE.




TYPICAL AT BOTH BEAM ENDS

## STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS

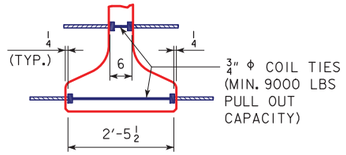
## LIFTING LOOP AND OVERHANG TABLE

| BEAMS | LIFTING LOOPS EACH END | # OF STRANDS PER LOOP | D | BEAM OVERHANG (FT) |
|---|---|---|---|---|
| BTC65 | 1 | 4 | 2'-0 | ** |
| BTCII5 | 2 | 4 | 8'-3 | 14 |

** IN ACCORDANCE WITH ARTICLE 2407.03, K OF THE STANDARD SPECIFICATIONS.

LIFTING LOOPS SHALL CARRY LOADS EQUALLY.

NUMBER AND EXACT LOCATION OF COIL TIES TO BE AS DETAILED ON INTERMEDIATE DIAPHRAGM DETAILS SHEET.




## COIL TIE DETAIL

## DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE TO BE IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2007.
REINFORCING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 5.
PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 270.

## SPECIFICATIONS:

CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, CURRENT SERIES, WITH CURRENT APPLICABLE SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.
DESIGN: AASHTO LRFD, SERIES OF 2007, WITH MINOR MODIFICATIONS.

## ALTERNATE BAR NOTES:

ALTERNATE BARS SHOWN IN BENT BAR DETAILS MAY BE USED IN LIEU OF REINFORCING BARS SHOWN IN BAR LIST. NO ADDITIONAL PAYMENT SHALL BE MADE FOR USE OF ALTERNATE BARS.

## BTC BEAM DATA

| BTC BEAM | SPAN LENGTH ℄ - ℄ BEARING | OVERALL BEAM LENGTH (L) | CONCRETE STRENGTH f'ci (ksi) | CONCRETE STRENGTH f'c (ksi) | STRAND SIZE DIA. (in) | NO. OF STRAND STRAIGHT | NO. OF STRAND DEFLECTED | ③ TOTAL INITIAL PRESTRESS kips | HOLD DOWN FORCE-kips | CAMBER (in) AT RELEASE | CAMBER (in) AFTER LOSSES | DEFLECTION (in) $\Delta_D$ ① IMMEDIATE (ELASTIC) $\Delta_I$ STEEL DIAPHRAGM | DEFLECTION (in) $\Delta_D$ ② TIME (PLASTIC) $\Delta_T$ STEEL DIAPHRAGM | PERMISSIBLE MAXIMUM SPACING HL-93 LOADING STEEL DIAPHRAGM | WEIGHT (TONS) | CONCRETE (CU YD.) | REINFORCING STEEL (WEIGHT-LBS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BTC65 | 65'-0 | 66'-4 | 5.00 | 6.00 | 0.60 | 14 | 2 | 681 | 11.5 | 0.57 | 1.01 | 0.47 | 0.12 | 9'-3 | 23.9 | 11.8 | 1,695 |
| BTCII5 | 115'-0 | 116'-4 | 8.00 | 9.00 | 0.60 | 38 | 10 | 2042 | 27.7 | 3.32 | 5.86 | 3.83 | 0.96 | 9'-3 | 41.9 | 20.7 | 2,916 |

① DEFLECTIONS AT MID-SPAN DUE TO WEIGHT OF SLAB AND DIAPHRAGM. THE DEFLECTIONS SHOWN ARE FOR A SLAB ( 8 in ) AND HAUNCH ( 1.5 in ) WEIGHT OF:
0.98 kips/ft FOR 9'-3 BEAM SPACING
AND ONE STEEL DIAPHRAGM ( 0.500 kips ) AT ℄ OF SPAN.
FOR DIFFERENT SLAB AND DIAPHRAGM WEIGHTS, DEFLECTIONS WILL BE DIRECTLY PROPORTIONAL.
② DEFLECTIONS DUE TO THE COMBINED EFFECT OF CREEP DUE TO WEIGHT OF SLAB AND SHRINKAGE OF SLAB.
TOTAL BEAM DEFLECTIONS AT ℄ OF SPAN, $\Delta_D$ , DUE TO WEIGHT OF SLAB AND DIAPHRAGMS FOR DETAILING PURPOSE:
(A) $\Delta_D = \Delta_I + \Delta_T$ FOR SIMPLE SPAN.
(B) $\Delta_D = \Delta_I + \frac{3}{4}\Delta_T$ FOR END SPANS OF CONTINUOUS BRIDGE.
(C) $\Delta_D = \Delta_I + \frac{1}{2}\Delta_T$ FOR INTERIOR SPANS OF CONTINUOUS BRIDGE.
③ TOTAL INITIAL PRESTRESS IS BASED ON 72.6% f's, f's. = 270 ksi. AND As = 0.217 $in^2$.

CALCULATED DESIGN CAMBERS HAVE BEEN REDUCED FROM THEIR THEORETICAL VALUES BY 15% TO AID CONSTRUCTABILITY.

## BEAM NOTES:

THESE BEAMS ARE DESIGNED FOR AASHTO LIVE LOADS AS INDICATED IN ABOVE TABLE WITH AN ALLOWANCE OF 20 LBS PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.
ALL PPC BEAMS SHALL USE HIGH PERFORMANCE CONCRETE ( HPC ) IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
HOLD DOWN POINTS FOR DEFLECTED STRANDS MAY BE MOVED TOWARD ENDS OF BEAM A DISTANCE OF 0.05 L MAXIMUM AT PRODUCER'S OPTION.
ALL PRESTRESSING STRANDS EXCEPT LIFTING LOOP STRANDS SHALL BE 0.60 in. NOMINAL DIAMETER (NOMINAL STEEL AREA = 0.217 $in^2$) AND CONFORM TO ASTM A416 GRADE 270 LOW RELAXATION STRANDS. MINIMUM STRAND BREAKING STRENGTH SHALL BE 58.6 kips.
TOPS OF BEAMS ARE TO BE STRUCK OFF LEVEL AND FINISHED AS PER MATERIALS IM570.
BEARINGS SHALL BE AS DETAILED ON OTHER DESIGN SHEETS.
BEAMS TO BE USED IN BRIDGES MADE CONTINUOUS BY THE POURED IN PLACE FLOOR, ARE TO BE AT LEAST 28 DAYS OLD BEFORE THE FLOOR IS PLACED UNLESS A SHORTER CURING TIME IS APPROVED BY THE BRIDGE ENGINEER.
THE PORTIONS OF THE PRESTRESSED BEAMS THAT ARE TO BE EMBEDDED IN THE ABUTMENT AND PIER DIAPHRAGMS SHALL BE ROUGHENED FOR A DISTANCE OF 10" FROM THE BEAM END BY SANDBLASTING OR OTHER APPROVED METHODS TO PROVIDE SUITABLE BOND BETWEEN THE BEAM AND THE DIAPHRAGM IN ACCORDANCE WITH ARTICLE 2403.03, I, OF THE STANDARD SPECIFICATIONS.
ALL BEAMS ARE TO BE INCREASED IN LENGTH TO COMPENSATE FOR ELASTIC SHORTENING, CREEP AND SHRINKAGE.
FOR TRANSPORTING, THE ALLOWABLE OVERHANG IS SHOWN IN THE LIFTING LOOP AND OVERHANG TABLE.
THE CONTRACTOR SHALL ASSURE THE LATERAL STABILITY OF THE BTCII5 BEAMS DURING HANDLING, TRANSPORTING AND ERECTION BY PROVIDING TEMPORARY BRACING AS NEEDED.
HOLES MUST BE CAST IN THE WEB TO ACCOMMODATE THE STEEL DIAPHRAGM ATTACHMENTS AS DETAILED ON THE STEEL DIAPHRAGM DETAIL SHEET.
MINIMUM CONCRETE f'c (AT 28 DAYS) AND MINIMUM f'ci AT RELEASE ARE LOCATED IN THE BTC BEAM DATA TABLE ABOVE.
FOUR 0.60 IN. DIAMETER STRANDS STRESSED TO NOT MORE THAN 5000 lbs EACH MAY BE USED IN LIEU OF BARS 5a1 AND 5a2 IN THE TOP FLANGE.
FOR MODIFIED STIRRUP EXTENSIONS SEE "BENT BAR DETAILS" AND BEAM DETAILS FOR DIMENSIONS AND LOCATIONS.

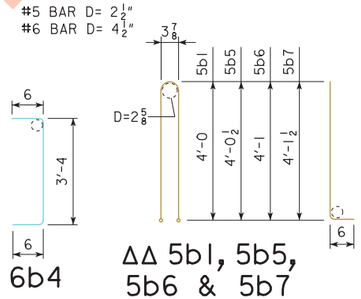
ΔΔ 5b1, 5b5, 5b6, 5b7 AND 6b3 BARS TO BE EPOXY COATED
* 6b3 AND 6b4 BARS TO BE USED IN PAIRS

## REINFORCING BAR LIST

| | BEAM | | BTC65 | | BTCII5 | |
|---|---|---|---|---|---|---|
| | BAR | SHAPE | NO. | LENGTH | NO. | LENGTH |
| | 5a1 | | 12 | 34'-2 | 12 | 21'-4 |
| | 5a2 | | — | — | 12 | 40'-0 |
| ΔΔ | 5b1 | | — | — | 63 | 9'-2 |
| ΔΔ | 5b5 | | 7 | 9'-3 | — | — |
| ΔΔ | 5b6 | | 22 | 9'-4 | 26 | 9'-4 |
| ΔΔ | 5b7 | | 18 | 9'-5 | 4 | 9'-5 |
| ΔΔ * | 6b3 | | 32 | 5'-1 | 36 | 5'-1 |
| * | 6b4 | | 8 | 4'-4 | 24 | 4'-4 |
| | 4c1 | | 83 | 2'-7 | 149 | 2'-7 |
| | 4d1 | | 67 | 6'-5 | 113 | 6'-5 |
| | 4e1 | | 24 | 3'-2 | 24 | 3'-2 |
| | 4h1 | | 6 | 8'-0 | 6 | 8'-0 |

## BENT BAR DETAILS

NOTE: ALL BAR DIMENSIONS ARE OUT TO OUT
D = PIN DIAMETER FOR BENDING (UNLESS OTHERWISE SHOWN)
#4 BAR D= 2"
#5 BAR D= 2½"
#6 BAR D= 4½"




DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BTC BEAM DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 20 OF 24 FILE NO. 30864 DESIGN NO. 1317

CORRECTION 12-13 - COIL TIE DETAIL WAS CHANGED TO REFLECT THE DISTANCE BETWEEN COIL TIE ANCHORS EMBEDDED 4 INCH.
ENGLISHBEAMS.DGN 4700 - THIS SHEET ISSUED 05-04.





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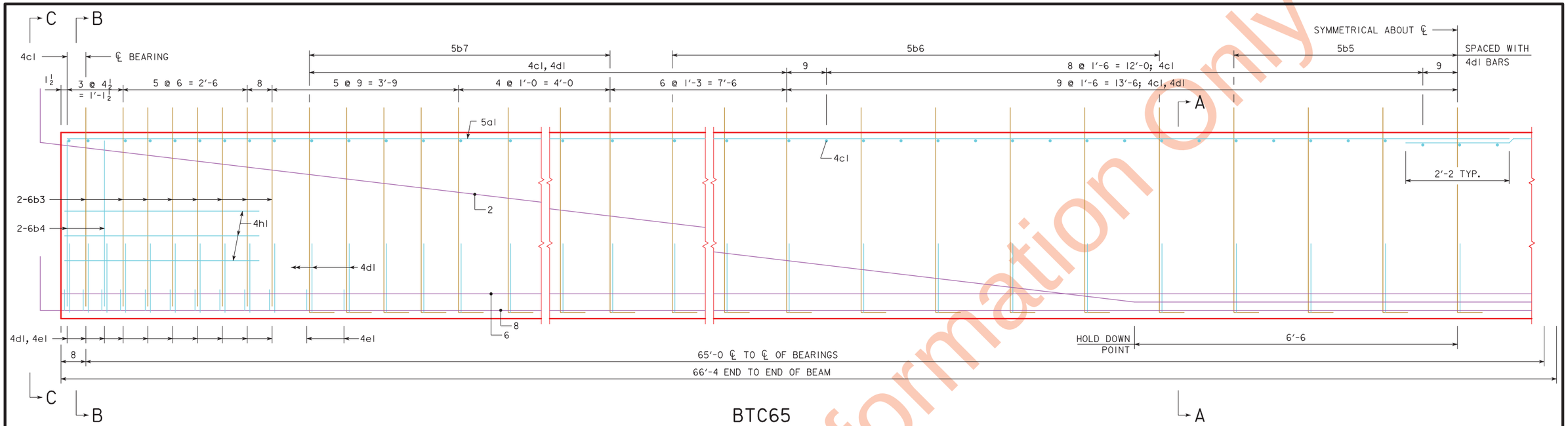
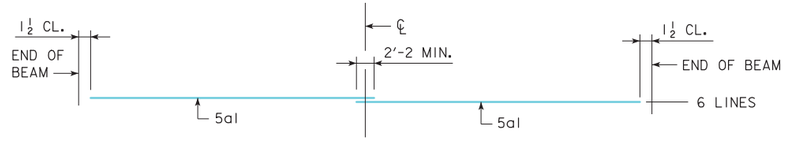
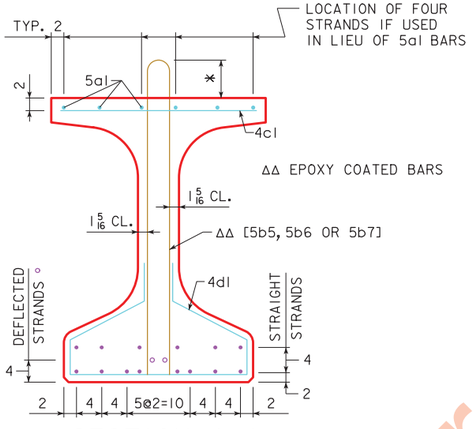



BTC65

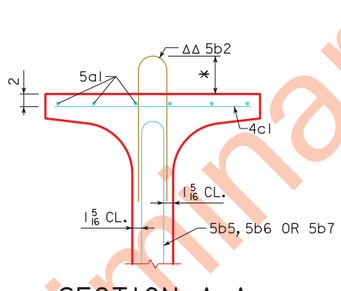



## TOP FLANGE LONGITUDINAL BAR LAYOUT

NOTE STIRRUP EXTENSION
*HEIGHT = 5½ FOR ΔΔ5b2 AND ΔΔ5b5
*HEIGHT = 6 FOR ΔΔ5b2 AND ΔΔ5b6
*HEIGHT = 6½ FOR ΔΔ5b2 AND ΔΔ5b7

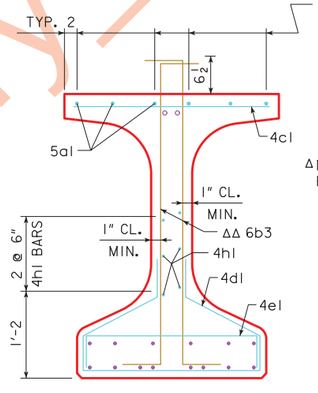



## SECTION A-A

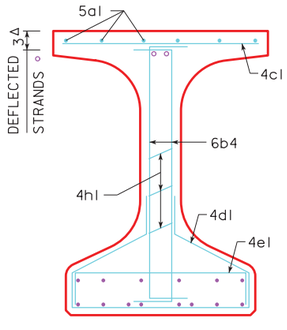



## SECTION A-A (ALTERNATE)

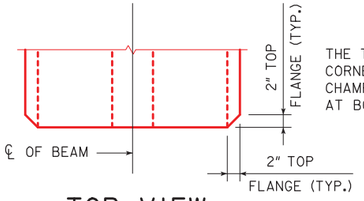
SEE ALTERNATE BAR NOTE ON DESIGN SHEET 20.




## SECTION B-B

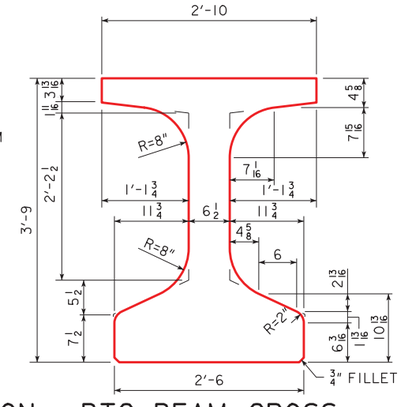



## SECTION C-C




## TOP VIEW

THE TOP FLANGE BEAM CORNERS ARE TO BE CHAMFERED 2" AS SHOWN AT BOTH ENDS OF THE BEAM




AREA = 691.8 in²
$\bar{y}_b$ = 20.74 in.
I = 178,971 in⁴

## BEAM SECTION PROPERTIES

## BTC BEAM CROSS SECTION

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

# BTC65 BEAM DETAILS

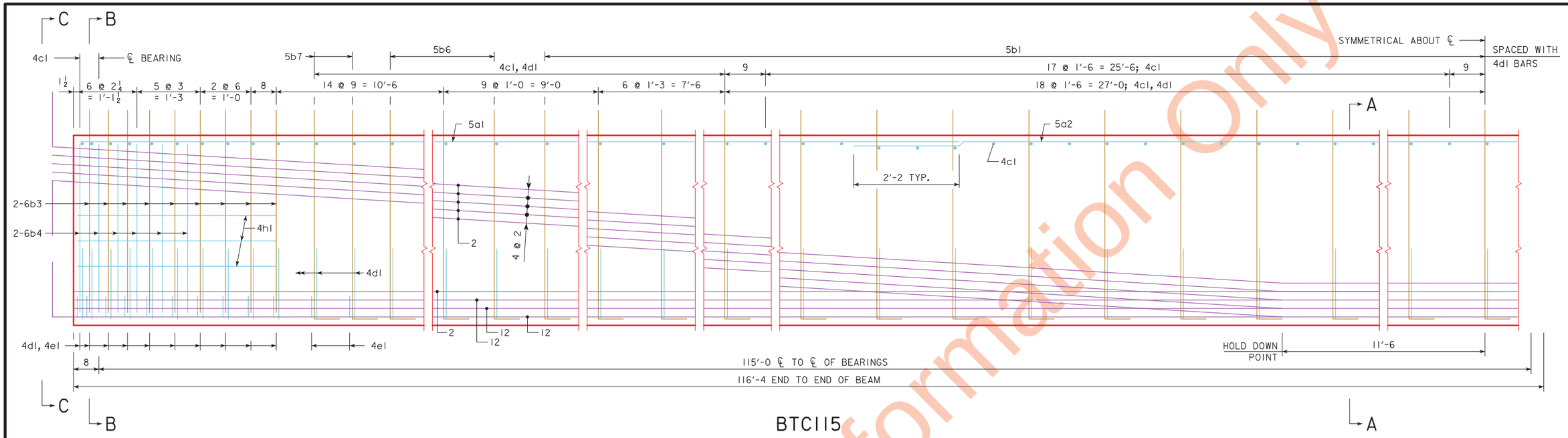
STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

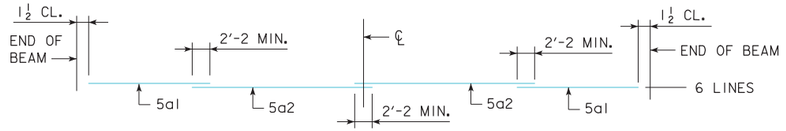
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 21 OF 24 — FILE NO. 30864 — DESIGN NO. 1317

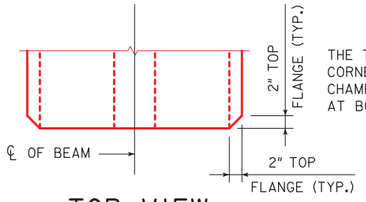
REVISED 10-07 - 5b2 BAR DELETED. 5b1 BAR LENGTHENED TO EXTEND 5 INCHES ABOVE BEAM TOP. ALTERNATE SECTION A-A ADDED.
ENGLISHBEAMS.DGN 4708 - THIS SHEET ISSUED 05-04.



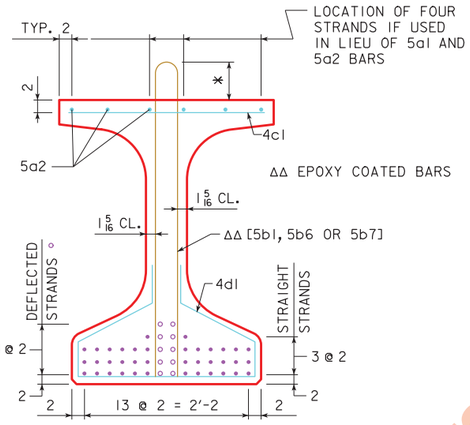

## TOP FLANGE LONGITUDINAL BAR LAYOUT

NOTE STIRRUP EXTENSION
*HEIGHT = 5 FOR ΔΔ5b2 AND ΔΔ5b1
*HEIGHT = 6 FOR ΔΔ5b2 AND ΔΔ5b6
*HEIGHT = 6½ FOR ΔΔ5b2 AND ΔΔ5b7

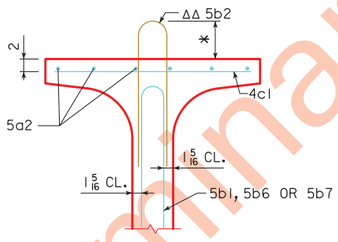



THE TOP FLANGE BEAM CORNERS ARE TO BE CHAMFERED 2" AS SHOWN AT BOTH ENDS OF THE BEAM

## TOP VIEW

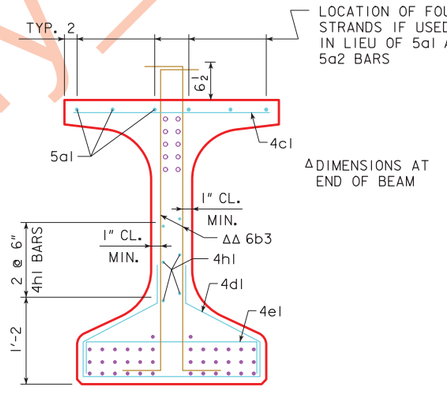



## SECTION A-A

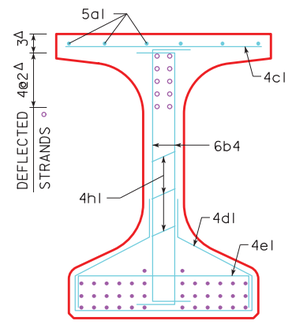



## SECTION A-A (ALTERNATE)

SEE ALTERNATE BAR NOTE ON DESIGN SHEET 20.



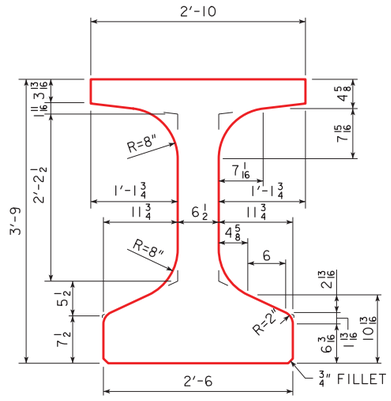

## SECTION B-B




## SECTION C-C

AREA = 691.8 in²
$\bar{y}_b$ = 20.74 in.
I = 178,971 in⁴

## BEAM SECTION PROPERTIES




## BTC BEAM CROSS SECTION

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BTC115 BEAM DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 22 OF 24 — FILE NO. 30864 — DESIGN NO. 1317

REVISED 10-07 - 5b2 BAR DELETED. 5b1 BAR LENGTHENED TO EXTEND 5 INCHES ABOVE BEAM TOP. ALTERNATE SECTION A-A ADDED.
ENGLISHBEAMS.DGN 4718 - THIS SHEET ISSUED 05-04.





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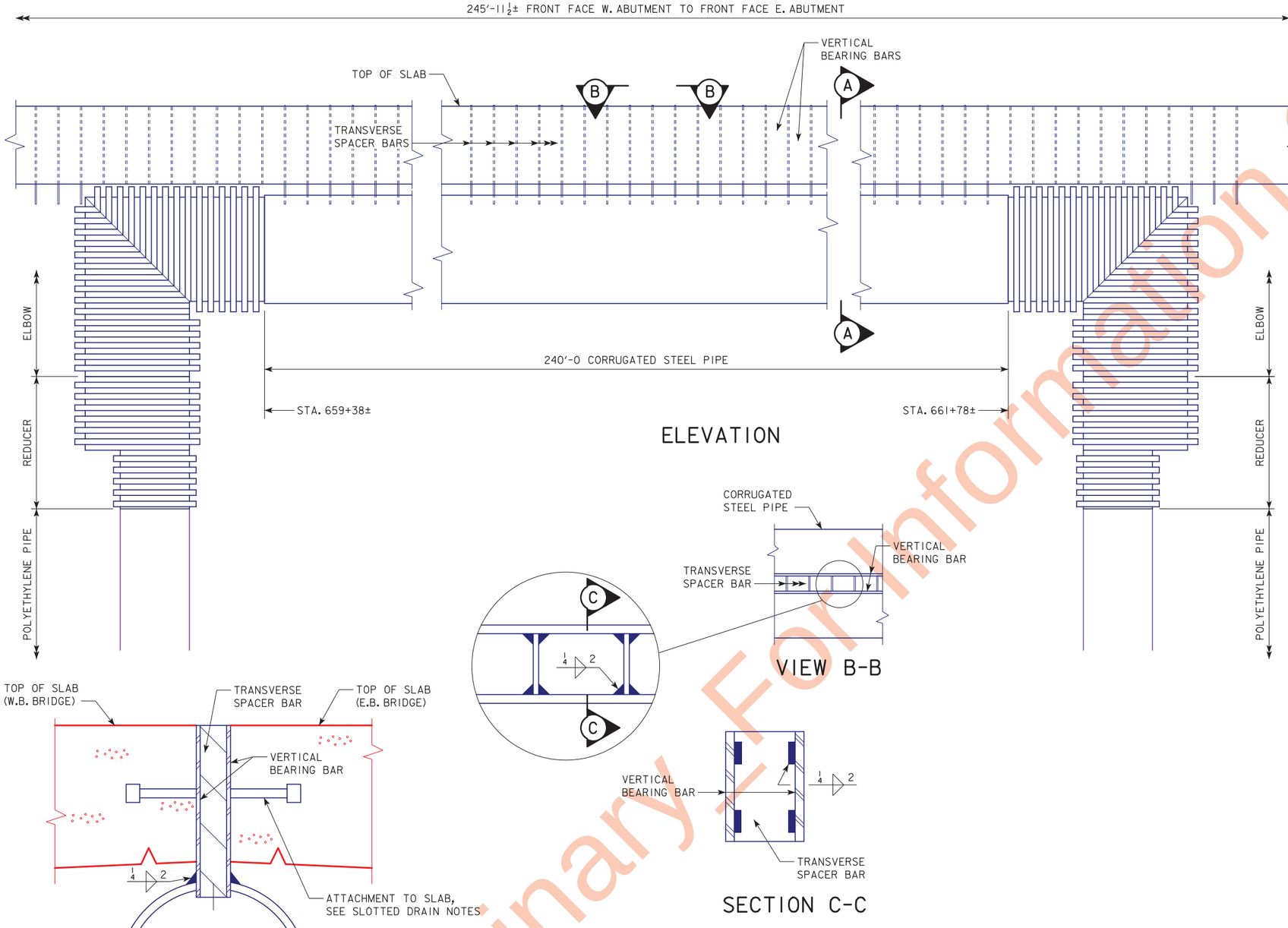


## SLOTTED DRAIN NOTES:

THIS SPECIFICATION COVERS THE SLOTTED DRAIN TO BE FABRICATED AND INSTALLED FOR THE REMOVAL OF WATER AS SHOWN ON THE PLANS. THE DRAIN IS TO BE INSTALLED DURING STAGE I BRIDGE CONSTRUCTION.

THE DRAIN SHALL CONSIST OF TWO VERTICAL BEARING BARS, TRANSVERSE SPACER BARS, AND A CORRUGATED STEEL PIPE (CSP). ALL STEEL USED FOR THE BEARING BARS, SPACER BARS, AND CSP SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A 123. THE SLOTTED DRAIN SHALL BE INSTALLED SO AS TO BE FLUSH WITH OR SLIGHTLY BELOW THE RIDING SURFACE. PROTRUSION OF THE VERTICAL BEARING BARS ABOVE THE RIDING SURFACE IS NOT ACCEPTABLE. THE BEARING BARS SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE ENTIRE 8¾ INCH SLAB PLUS ANY ADDITIONAL HEIGHT REQUIRED TO FACILITATE INSTALLATION OF THE 90 DEGREE VERTICAL ELBOWS. EMBEDMENT OF ANY PORTION OF THE CSP IN THE BRIDGE DECK WILL NOT BE PERMITTED. THE VERTICAL BEARING BARS SHALL BE FABRICATED WITH AN ACCEPTABLE MEANS OF POSITIVE ATTACHMENT TO THE SURROUNDING BRIDGE DECK. THE CONTRACTOR IS REQUIRED TO SUBMIT A PROPOSED MEANS OF PROVIDING THIS ATTACHMENT TO THE IOWA DOT PRIOR TO FABRICATION. EXAMPLES OF ACCEPTABLE ATTACHMENTS WOULD BE SHEAR STUD TYPE CONNECTORS OR OTHER VARIETIES OF WELDED BARS OR PLATES CAPABLE OF BEING EMBEDDED IN THE SLAB DURING CONSTRUCTION. SLOTTED DRAIN IS TO BE PLACED BETWEEN EASTBOUND AND WESTBOUND BRIDGES. CONTRACTOR WILL NEED TO COORDINATE BRIDGE CONSTRUCTION TO ENSURE VERTICAL BEARING BARS ARE ATTACHED TO BOTH SLABS.

THE VERTICAL BEARING BARS AND TRANSVERSE SPACER BARS SHALL BE MANUFACTURED OF ASTM A36 STEEL. THE VERTICAL BEARING AND TRANSVERSE SPACER BARS SHALL BE A MINIMUM OF ¼ INCH THICK. THE TRANSVERSE SPACER BARS SHALL BE THE FULL HEIGHT OF THE VERTICAL BEARING BARS AND SHALL BE CONNECTED THERETO AS SHOWN ON THIS SHEET. THE SPACER BARS SHALL BE PLACED A MAXIMUM OF 4 INCH ON CENTER FOR THE FULL LENGTH OF THE VERTICAL BEARING BARS. THE VERTICAL BEARING BARS SHALL EXTEND FOR THE FULL LENGTH OF THE BRIDGE DECK BETWEEN THE ABUTMENTS.

THE CSP SHALL HAVE A 12 INCH DIAMETER AND A MINIMUM THICKNESS OF 1/16 INCH (16 GAGE). THE CSP SHALL EXTEND FROM STA. 659+38± TO STATION STA. 661+78± AT WHICH POINTS A 90 DEGREE ELBOW IN THE VERTICAL DIRECTION SHALL BE INSTALLED. THE END OF THE ELBOW NOT CONNECTED TO THE CSP SHALL BE FITTED WITH A 12 INCH TO 8 INCH REDUCER IN THE VERTICAL DIRECTION. THE 8 INCH END OF THE REDUCER SHALL THEN BE CONTINUED WITH APPROXIMATELY 80 FEET OF 8 INCH DIAMETER SINGLE-WALL POLYETHYLENE PIPE TO BE OUTLET TO NEAREST DITCH.

ALL COSTS ASSOCIATED WITH THE INSTALLATION OF THE SLOTTED DRAIN AND ASSOCIATED ATTACHMENTS SHALL BE BID AS A LUMP SUM.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SLOTTED DRAIN DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 23 OF 24 FILE NO. 30864 DESIGN NO. 1317





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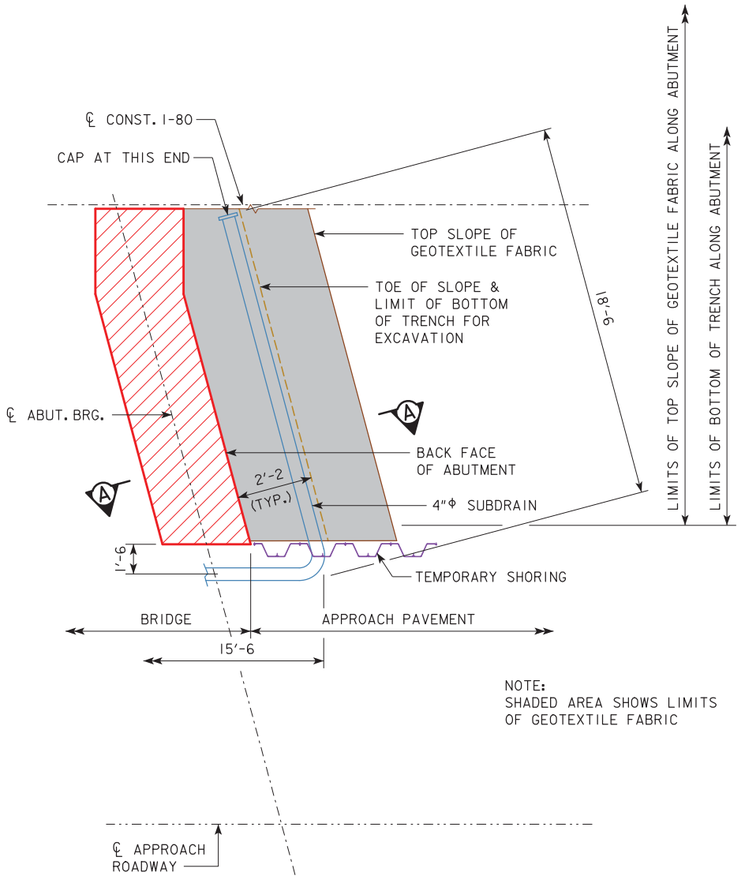
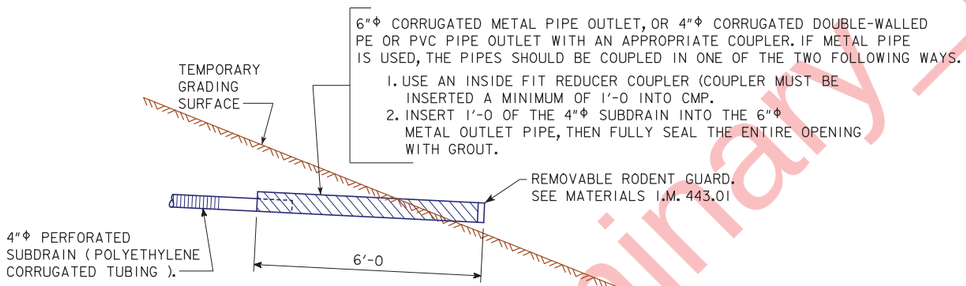


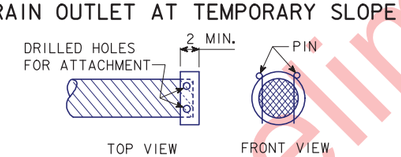

NOTE:
SHADED AREA SHOWS LIMITS OF GEOTEXTILE FABRIC

## ABUTMENT PLAN

(EAST ABUTMENT SHOWN, WEST ABUTMENT SIMILAR)




## SUBDRAIN OUTLET AT TEMPORARY SLOPE




## REMOVABLE RODENT GUARD DETAILS

## OUTLET DETAILS

## ABUTMENT BACKFILL PROCESS:

THE BASE OF THE EXCAVATION SUBGRADE BEHIND THE ABUTMENT IS TO BE GRADED WITH A 4% SLOPE AWAY FROM THE ABUTMENT FOOTING AND A 2% CROSS SLOPE IN THE DIRECTION OF THE SUBDRAIN OUTLET. THIS EXCAVATION SHAPING IS TO BE DONE PRIOR TO BEGINNING INSTALLATION OF THE GEOTEXTILE AND BACKFILL MATERIAL.

AFTER THE SUBGRADE HAS BEEN SHAPED, THE GEOTEXTILE FABRIC SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN. THE FABRIC IS INTENDED TO BE INSTALLED IN THE BASE OF THE EXCAVATION AND EXTENDED VERTICALLY UP THE ABUTMENT BACKWALL AND EXCAVATION FACE TO A HEIGHT THAT WILL BE APPROXIMATELY 1 TO 2 FOOT HIGHER THAN THE HEIGHT OF THE POROUS BACKFILL PLACEMENT AS SHOWN IN THE "BACKFILL DETAILS" ON THIS SHEET. THE STRIPS OF THE FABRIC PLACED SHALL OVERLAP APPROXIMATELY 1 FOOT AND SHALL BE PINNED IN PLACE. THE FABRIC SHALL BE ATTACHED TO THE ABUTMENT BY USING LATH FOLDED IN THE FABRIC AND SECURED TO THE CONCRETE WITH SHALLOW CONCRETE NAILS. THE FABRIC PLACED AGAINST THE EXCAVATION FACE SHALL BE PINNED.

WHEN THE FABRIC IS IN PLACE, THE SUBDRAIN SHALL BE INSTALLED DIRECTLY ON THE FABRIC AT THE TOE OF THE REAR EXCAVATION SLOPE. A SLOT WILL NEED TO BE CUT IN THE FABRIC AT THE POINT WHERE THE SUBDRAIN EXITS THE FABRIC NEAR THE TEMPORARY SHORING.

POROUS BACKFILL IS THEN PLACED AND LEVELED, NO COMPACTION IS REQUIRED.

THE REMAINING WORK INVOLVES BACKFILLING WITH FLOODABLE BACKFILL, SURFACE FLOODING, AND VIBRATORY COMPACTION. THE FLOODABLE BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE FLOODABLE BACKFILL SHALL BE PLACED IN INDIVIDUAL LIFTS, SURFACE FLOODED, AND COMPACTED WITH VIBRATORY COMPACTION TO ENSURE FULL CONSOLIDATION. LIMIT THE LOOSE LIFTS TO NO MORE THAN 2 FEET OF THICKNESS.

START SURFACE FLOODING FOR EACH FLOODABLE BACKFILL LIFT AT THE HIGH POINT OF THE SUBDRAIN AND PROGRESS TO THE LOW POINT WHERE THE SUBDRAIN EXITS THE FABRIC. TO ENSURE UNIFORM SURFACE FLOODING, WATER RUNNING FULL IN A 2-INCH DIAMETER HOSE SHOULD BE SPRAYED IN SUCCESSIVE 6-FOOT TO 8-FOOT INCREMENTS FOR 5 MINUTES WITHIN EACH INCREMENT.

FLOODABLE BACKFILL LIFT PLACEMENT, FLOODING, AND COMPACTION SHALL PROGRESS UNTIL THE REQUIRED FULL THICKNESS OF THE ABUTMENT BACKFILL HAS BEEN COMPLETED.

WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS WILL NOT BE MEASURED SEPARATELY FOR PAYMENT.

THE COST OF WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR STRUCTURAL CONCRETE.

## SUBDRAIN NOTES:

THIS PLAN SHEET SHOWS DETAILS FOR PLACING ALL SUBDRAINS AND SUBDRAIN OUTLETS REQUIRED FOR THIS STRUCTURE.

THE SUBDRAINS SHALL BE 4" IN DIAMETER AND MEET THE REQUIREMENTS OF SECTION 4143.01 B OF THE STANDARD SPECIFICATIONS. THE SUBDRAIN OUTLET SHALL CONSIST OF A 6'-0 LENGTH OF PIPE WITH A REMOVABLE RODENT GUARD AS DETAILED ON THIS SHEET.

THE COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL, POROUS BACKFILL, AND SUBDRAIN OUTLET IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)". NO EXTRA PAYMENT WILL BE MADE.

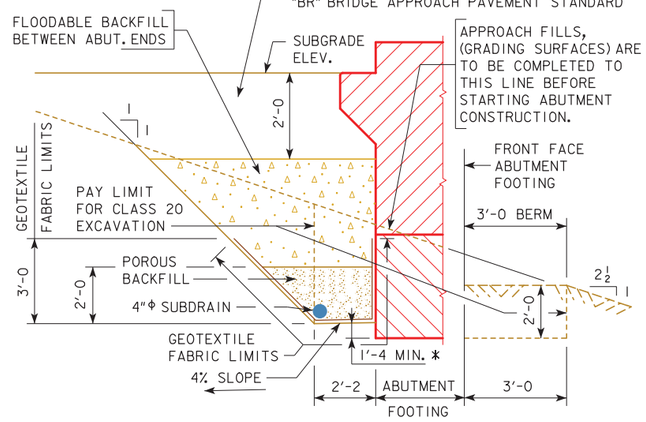
THE DIMENSIONS SHOWN FOR THE PROPOSED SUBDRAINS ARE BASED ON THE PROPOSED GRADING LAYOUT OF BRIDGE BERMS. THE DIMENSIONS SHOWN ARE FOR ESTIMATING ONLY. REQUIRED LENGTHS AND GENERAL LOCATIONS OF SUBDRAINS ARE SUBJECT TO CHANGE DUE TO FIELD ADJUSTMENTS OF THE GRADING LAYOUT.

SUBDRAIN OUTLETS SHALL DAYLIGHT A MINIMUM OF 10'-0 IN FRONT OF ABUTMENT.

## NOTE:

SUBDRAIN SHALL SLOPE DOWNWARD 2% FROM HIGH END WHEN OUTLETTING AT ONE END OF THE ABUTMENT.

THE GEOTEXTILE FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 6 OF THE STANDARD SPECIFICATIONS. IF THE ENGINEERING FABRIC IS LAPPED THE LAPS SHALL BE A MINIMUM OF ONE FOOT IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.




## SECTION A-A

## BACKFILL DETAILS

NOTE: GEOTEXTILE FABRIC WILL BE ATTACHED TO FACE OF ABUTMENT FOOTING.

* DIMENSION VARIES DUE TO 2% SUBDRAIN SLOPE

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## ABUTMENT BACKFILL DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 24 OF 24 FILE NO. 30864 DESIGN NO. 1317

REVISED 09-14 - THE TECHNICAL DATA INFORMATION TABLE WAS REMOVED AND IS LOCATED IN THE STANDARD SPECIFICATIONS. CHANGED SURFACE FLOODING TIME TO 5 MINUTE INCREMENTS.
REVISED 09-2016 - CHANGED THE BRIDGE APPROACH PAVEMENT STANDARD TO "BR" (WAS "RK").
ENGLISHFORESLOPEPROTECTIONBRIDGES.DGN - 1007E - THIS SHEET ISSUED 08-07.





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# ESTIMATED BRIDGE QUANTITIES - DESIGN NO. 1417

| ITEM NO. | ITEM CODE | ITEM | UNIT | TOTAL | AS-BUILT QUANTITY |
|---|---|---|---|---|---|
| 1 | 2401-6745625 | REMOVAL OF EXISTING BRIDGE | LS | 1.00 | |
| 2 | 2402-2720000 | EXCAVATION, CLASS 20 | CY | 133 | |
| 3 | 2402-2721000 | EXCAVATION, CLASS 21 | CY | 48 | |
| 4 | 2403-0100010 | STRUCTURAL CONCRETE (BRIDGE) | CY | 91.8 | |
| 5 | 2403-7000210 | HIGH PERFORMANCE STRUCTURAL CONCRETE | CY | 142.0 | |
| 6 | 2404-7775000 | REINFORCING STEEL | LB | 5,572 | |
| 7 | 2404-7775005 | REINFORCING STEEL, EPOXY COATED | LB | 35,330 | |
| 8 | 2404-7775009 | REINFORCING STEEL, STAINLESS STEEL | LB | 7,079 | |
| 9 | 2407-0563065 | BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTC65 | EACH | 4 | |
| 10 | 2407-0563115 | BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTC115 | EACH | 2 | |
| 11 | 2408-7800000 | STRUCTURAL STEEL | LB | 1,102 | |
| 12 | 2501-0201057 | PILES, STEEL, HP 10x57 | LF | 420 | |
| 13 | 2501-0201489 | PILES, STEEL, HP 14x89 | LF | 725 | |
| 14 | 2501-6335010 | PREBORED HOLES | LF | 60 | |
| 15 | 2501-8400172 | TEMPORARY SHORING | LS | 1.00 | |
| 16 | 2526-8285000 | CONSTRUCTION SURVEY | LS | 1.00 | |
| 17 | 2533-4980005 | MOBILIZATION | LS | 1.00 | |

| ITEM NO. | ESTIMATE REFERENCE INFORMATION |
|---|---|
| 1 | INCLUDES ALL WORK FOR PARTIAL REMOVAL OF EXISTING DECK, RAILING, ABUTMENT AND PIER TO THE LIMITS SPECIFIED. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE. |
| 4 | INCLUDES THE CONCRETE FOR THE PIERS AND ABUTMENT FOOTINGS. INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), FLOODABLE BACKFILL, POROUS BACKFILL, GEOTEXTILE FABRIC, WATER FLOODING, AND SUBDRAIN OUTLET AT ABUTMENTS AND TOE OF BERM. |
| 5 | INCLUDES THE CONCRETE FOR THE DECK, ABUTMENT DIAPHRAGMS AND PIER DIAPHRAGMS. INCLUDES ALL PREFORMED EXPANSION JOINT FILLER REQUIRED. REFER TO THE DEVELOPMENTAL SPECIFICATION FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES" FOR ADDITIONAL INFORMATION. |
| 9,10 | INCLUDES PIER AND ABUTMENT BEARING MATERIAL. INCLUDES FURNISHING AND PLACING COIL RODS. NONSTANDARD STIRRUP LENGTHS ARE USED FOR THESE BEAMS. INCLUDES CONTRACTOR FILLING OUT BEAM NUMBERS BY LOCATION AND BEAM SEAT ELEVATIONS IN "PPC BEAM DATA SPREADSHEET" AND FORWARDING ELECTRONIC SPREADSHEET TO THE ENGINEER. |
| 11 | INCLUDES ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS. |
| 12,13 | INCLUDES FURNISHING AND INSTALLING STEEL PILE POINTS. |

## DESIGN HISTORY AT THIS SITE
(INCLUDES THIS DESIGN)

| DES. NO. | TYPE OF WORK |
|---|---|
| 2361 | ORIGINAL DESIGN |
| 1284 | W.B. BRIDGE REPAIR & FLOOR OVERLAY |
| 396 | W.B. & E.B. BRIDGE WIDENING |
| 920 | E.B. BRIDGE WIDENING |

NOTE: ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## ESTIMATED BRIDGE QUANTITIES

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 23 FILE NO. 30864 DESIGN NO. 1417





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## SUMMARY OF CONCRETE QUANTITIES

| LOCATION | STRUCTURAL CONCRETE | HPC STRUCT. CONCRETE |
|---|---|---|
| WEST ABUTMENT FOOTING | 7.1 | ----- |
| EAST ABUTMENT FOOTING | 7.1 | ----- |
| BRIDGE DECK + ABUT. & PIER DIAPHAGMS | ----- | 142.0 |
| PIER NO. 1 | 39.2 | ----- |
| PIER NO. 2 | 38.4 | ----- |
| TOTAL (CU. YDS.) | 91.8 | 142.0 |

## SUMMARY OF REINFORCING STEEL

| LOCATION | NON-COATED REINFORCING STEEL | STAINLESS STEEL REINFORCING STEEL | EPOXY COATED REINFORCING STEEL |
|---|---|---|---|
| BRIDGE DECK + ABUTMENT FOOTING ** | 62 | 6,420 | 35,330 |
| PIER NO. 1 | 2,791 | 334 | ----- |
| PIER NO. 2 | 2,719 | 325 | ----- |
| TOTAL (LBS.) | 5,572 | 7,079 | 35,330 |

** INCLUDES ABUTMENT AND PIER DIAPHRAGMS

## SUMMARY OF EXCAVATION

| LOCATION | CLASS 20 EXCAVATION | CLASS 21 EXCAVATION |
|---|---|---|
| WEST ABUTMENT | 19 | ----- |
| EAST ABUTMENT | 19 | ----- |
| PIER 1 | 44 | 24 |
| PIER 2 | 51 | 24 |
| TOTAL (CU. YDS.) | 133 | 48 |

## SUMMARY OF FOUNDATIONS

| LOCATION | SUBSTRUCTURE TYPE | FOUNDATION TYPE | NUMBER | LENGTH (LIN. FT.) | TOTAL (LIN. FT.) |
|---|---|---|---|---|---|
| WEST ABUTMENT | INTEGRAL ABUTMENT | HP 10x57 | 3 | 70 | 210 |
| EAST ABUTMENT | INTEGRAL ABUTMENT | HP 10x57 | 3 | 70 | 210 |
| PIER 1 | PILE BENT PIER | HP 14x89 | 5 | 70 | 350 |
| PIER 2 | PILE BENT PIER | HP 14x89 | 5 | 75 | 375 |

## SUMMARY OF STRUCTURAL STEEL

| LOCATION | TOTAL (LBS.) |
|---|---|
| INTERMEDIATE DIAPHRAGMS | 1,102 |
| TOTAL (LBS.) | 1,102 |

## SUMMARY OF BEARINGS

| LOCATION | BEARING TYPE | NUMBER | ASSOCIATED BID ITEM |
|---|---|---|---|
| WEST ABUTMENT | 3x3x2'-4½ BAR | 2 | INCIDENTAL ITEM |
| EAST ABUTMENT | 3x3x2'-4½ BAR | 2 | INCIDENTAL ITEM |
| PIER 1 | PLAIN NEOPRENE 1" | 4 | INCIDENTAL ITEM |
| PIER 2 | PLAIN NEOPRENE 1" | 4 | INCIDENTAL ITEM |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SUMMARY QUANTITIES SHEET

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 23 FILE NO. 30864 DESIGN NO. 1417





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# GENERAL NOTES:

THIS DESIGN INVOLVES THE CONSTRUCTION OF A 249'-0 x 15'-4 PRESTRESSED CONCRETE BEAM BRIDGE IN THE MEDIAN OF I-80 OVER CLEAR CREEK. FUTURE CONTRACTS WILL INVOLVE ADDITIONAL STAGES OF CONSTRUCTION TO COMPLETE THE REPLACEMENT OF THE EXISTING 159'-2 x 73'-2 PRESTRESSED CONCRETE BEAM BRIDGE (EASTBOUND) AND THE EXISTING 159'-2 X 57'-3 PRESTRESSED CONCRETE BEAM BRIDGE (WESTBOUND).

"REMOVAL OF EXISTING BRIDGE" SHALL INCLUDE ALL COSTS ASSOCIATED WITH REMOVING A PORTION OF THE EXISTING WESTBOUND BRIDGE SUPERSTRUCTURE, ABUTMENTS AND PIERS AS NOTED AND SHOWN IN THESE PLANS.

REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO OTHER PORTIONS OF THE EXISTING STRUCTURE NOT NOTED FOR REMOVAL SHALL BE THE RESPONSIBILITY OF THE BRIDGE CONTRACTOR AND SHALL BE REPAIRED AT NO EXTRA COST TO THE STATE.

A SCRAPE SAMPLE WAS TAKEN FROM AN AREA OF THIS BRIDGE TO GET AN INDICATION OF THE EXISTENCE OF AND LEVEL OF TOTAL LEAD AND TOTAL CHROMIUM. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WAS 140 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 94 PPM. THESE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER CONSTITUENTS WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE IOWA DOT'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

ELECTRONIC COPIES OF ORIGINAL DESIGN PLANS ARE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. DIMENSIONS SHOWN ON THESE PLANS ARE BASED ON DESIGN PLANS (ORIGINAL DESIGN NO. 2361 AND WIDENING DESIGN NO. 396).

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

THIS BRIDGE IS DESIGNED FOR HL-93 LOADING, PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

404 PERMIT INFORMATION AND THE POLLUTION PREVENTION PLAN ARE INCLUDED IN THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52.

DURING CONSTRUCTION OF THIS PROJECT THE BRIDGE CONTRACTOR WILL BE REQUIRED TO COORDINATE OPERATIONS WITH THOSE OF OTHER CONTRACTORS WORKING WITHIN THE SAME AREA. SEE THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52, FOR THE LIST OF OTHER WORK IN THE AREA.

UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE BRIDGE CONTRACTOR OF THE STARTING DATE.

IT SHALL BE THE BRIDGE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

THE BRIDGE CONTRACTOR IS TO RETAIN EARTH AND/OR GRANULAR MATERIAL BEHIND THE PORTION OF ABUTMENTS SUBJECTED TO TRAFFIC BY METHODS APPROVED BY THE ENGINEER. ALL COSTS FOR RETAINING THE EARTH AND/OR GRANULAR MATERIAL SHALL BE INCLUDED IN THE PRICE BID FOR "CLASS 20 EXCAVATION".

TEMPORARY SHORING (SHEET PILE OR OTHER) SHALL BE REQUIRED AS NECESSARY TO PREVENT THE EARTH UNDER THE TRAFFIC LANE FROM SLOUGHING IN DURING CONSTRUCTION.

THE CONTRACTOR SHALL SUBMIT A TEMPORARY SHORING PLAN FOR REVIEW. THE TEMPORARY SHORING PLAN SHALL BE DESIGNED AND CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF IOWA. THE CONTRACTOR SHALL NOT PROCEED WITH INSTALLATION OF THE TEMPORARY SHORING WITHOUT NOTICE TO PROCEED FROM THE ENGINEER.

THE TEMPORARY SHORING SUBMITTAL SHALL INCLUDE:
- DESIGN CALCULATIONS (INCLUDING A GLOBAL STABILITY ANALYSIS)
- SOIL PROPERTIES
- SHORING MATERIAL PROPERTIES
- SHORING PLAN LAYOUT (SHOWING LOCATION OF TRAFFIC)
- SHORING DETAILS

# GENERAL NOTES, CONT'D:

TEMPORARY SHORING SHALL BE PAID FOR AS A LUMP SUM INCLUDING ALL COST FOR DESIGNING, FURNISHING, INSTALLING AND REMOVAL. ALL MATERIAL USED FOR SHORING SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. SHORING IS TO BE REMOVED ONLY AFTER BACKFILLING HAS BEEN COMPLETED. IN ADDITION TO THE REQUIREMENTS NOTED ABOVE, ARTICLE 1107.07 OF THE STANDARD SPECIFICATIONS STILL APPLIES.

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

THE APPROACH FILLS AS SHOWN ARE NOT A PART OF THIS CONTRACT, BUT ARE TO BE IN PLACE BEFORE ABUTMENT PILES ARE DRIVEN. THE BRIDGE CONTRACTOR IS TO LEVEL OFF AND SHAPE THE BERMS TO THE ELEVATIONS AND DIMENSIONS SHOWN. DRESSING OF SLOPES OUTSIDE THE BRIDGE AREA NOT DISTURBED BY THE BRIDGE CONTRACTOR SHALL BE PAID FOR AS EXTRA WORK.

THE BRIDGE CONTRACTOR SHALL PREBORE HOLES FOR ABUTMENT PILES. HOLES SHALL BE BORED TO THE ELEVATIONS SHOWN ON THE "LONGITUDINAL SECTION ALONG CENTERLINE ROADWAY" ON DESIGN SHEET 4. PILES SHALL BE DRIVEN THROUGH THE HOLES TO AT LEAST THE SPECIFIED DESIGN BEARING.

CAST IN-ONE-PIECE STEEL PILE POINTS ARE REQUIRED FOR ALL ABUTMENT AND PIER PILES IN ACCORDANCE WITH ARTICLE 4167.02 OF THE CURRENT STANDARD SPECIFICATIONS AND MATERIALS IM 468.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING STABILITY OF PRESTRESSED CONCRETE BEAMS DURING ERECTION AND CONSTRUCTION UP THROUGH THE CONCRETE BRIDGE DECK REACHING ITS FULL 28-DAY STRENGTH. THE CONTRACTOR SHALL PROVIDE SUFFICIENT TEMPORARY ANCHOR BRACING AT BEAM ENDS AND TEMPORARY INTERMEDIATE BRACING AS NEEDED TO ENSURE PRESTRESSED BEAM STABILITY. PARTIALLY OR FULLY INSTALLED PERMANENT BRACING AS SHOWN IN THESE DESIGN PLANS SHALL NOT BE ASSUMED SUFFICIENT TO BRACE PRESTRESSED BEAMS DURING ERECTION AND CONSTRUCTION. TEMPORARY BRACING SHALL NOT BE WELDED TO PRESTRESSED BEAM STIRRUPS.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5a1 is $\frac{5}{8}$ inch diameter bar). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

| ENGLISH SIZE | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|
| BAR DESIGNATION | 10 | 13 | 16 | 19 | 22 | 25 | 29 | 32 | 36 |

## BRIDGE DECK DIMENSIONS TABLE

| | ITEM | UNITS | QUANTITY |
|---|---|---|---|
| 1 | DECK LENGTH | L.F. | 252.1 |
| 2 | MINIMUM DECK WIDTH | L.F. | 16.9 |
| 3 | MAXIMUM DECK WIDTH | L.F. | 16.9 |
| 4 | DECK AREA | S.F. | 4,264 |

1. DECK LENGTH IS MEASURED FROM FACE-TO-FACE OF PAVING NOTCHES ALONG THE CENTERLINE OF THE ROADWAY.
2, 3. DECK WIDTHS ARE MEASURED FROM OUT-TO-OUT OF DECK PERPENDICULAR TO THE CENTERLINE OF ROADWAY.
4. DECK AREA IS TO BE BASED ON THE FACE-TO-FACE PAVING NOTCH DISTANCE AND OUT-TO-OUT DECK DIMENSIONS.

# SPECIFICATIONS:

DESIGN:
AASHTO LRFD 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

CONSTRUCTION:
IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.
- "DEVELOPMENTAL SPECIFICATIONS FOR HIGH PERFORMANCE CONCRETE FOR STRUCTURES"
- "SPECIAL PROVISIONS FOR PROGRESS SCHEDULING (CRITICAL PATH METHOD)"
- "SPECIAL PROVISIONS FOR E-BUILDER"

# DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

REINFORCING STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 5, GRADE 60 FOR EPOXY COATED AND NON-COATED, AND GRADE 60 OR 75 FOR STAINLESS.

CONCRETE IN ACCORDANCE WITH AASHTO LRFD SECTION 5, f'c = 4.0 KSI, EXCEPT PRESTRESSED BEAM CONCRETE AS NOTED.

PRESTRESSED CONCRETE BEAMS, SEE DESIGN SHEET 20.

BRIDGE DECK CONCRETE f'c = 4.0 KSI

STRUCTURAL STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 6. ASTM A709 GRADE 36, GRADE 50, AND GRADE 50W (AASHTO M270 GRADE 36, GRADE 50, AND GRADE 50W).

## SHOP DRAWING SUBMITTALS

SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS SHOWN IN THE TABLE BELOW. (NOTE ADDITIONAL SHOP DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS.)

SUBMITTAL REQUIREMENTS FOR SHOP DRAWINGS SHOULD BE IN ACCORDANCE WITH ARTICLE 1105.03, OF THE STANDARD SPECIFICATIONS, FOR HIGHWAY AND BRIDGE CONSTRUCTION OF THE IOWA DEPARTMENT OF TRANSPORTATION.

SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION:
(Paren)_County_DesignNumber_SubmittalDescription.pdf
Example: (090)_BlackHawk_Design915_DeckDrains.pdf

| | |
|---|---|
| 1 | INTERMEDIATE STEEL DIAPHRAGMS |
| 2 | TEMPORARY SHORING |

## TRAFFIC CONTROL PLAN

THE ROADWAY WILL BE OPEN TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN INCLUDED IN THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## GENERAL NOTES

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 23 FILE NO. 30864 DESIGN NO. 1417





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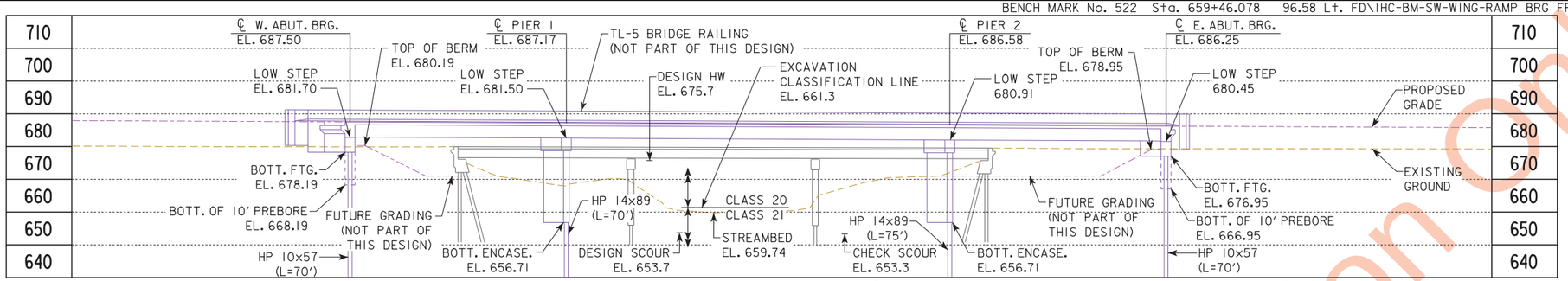
BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510




NOTE: TOP OF BRIDGE DECK AT CENTERLINE ROADWAY IS +0.99' ABOVE THE PROFILE GRADE TO ACCOUNT FOR DECK CROSS SLOPE AND PARABOLIC CROWN.

## LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

(LONGITUDINAL SECTION THROUGH FUTURE STAGE II CONSTRUCTION)

-2.9780% -0.5000% +0.6672%

VPI STA = 652+25.00
VPI ELEV = 690.01
VC = 450'

VPI STA = 672+00.00
VPI ELEV = 680.14
VC = 400'

## PROPOSED PROFILE GRADE I-80

## HYDRAULIC DATA

DRAINAGE AREA = 81.0 SQ. MI.
STREAM SLOPE = 3.7 FT./MI.
AVG. LOW WATER STAGE = 661.3

$Q_{50}$ = 8,700 CFS
STAGE = 675.7
BACKWATER = 1.2 FT.
AVG. BRIDGE VELOCITY = 5.6 FPS

$Q_{100}$ = 10,500 CFS
STAGE = 676.5
BACKWATER = 1.5 FT.
AVG. BRIDGE VELOCITY = 6.1 FPS

$Q_{200}$ = 13,400 CFS
STAGE = 677.6
CALCULATED DESIGN SCOUR = 653.7

$Q_{500}$ = 15,000 CFS
STAGE = 678.2
CALCULATED CHECK SCOUR = 653.3

ROADWAY OVERTOP 681.72
STA. 671+71

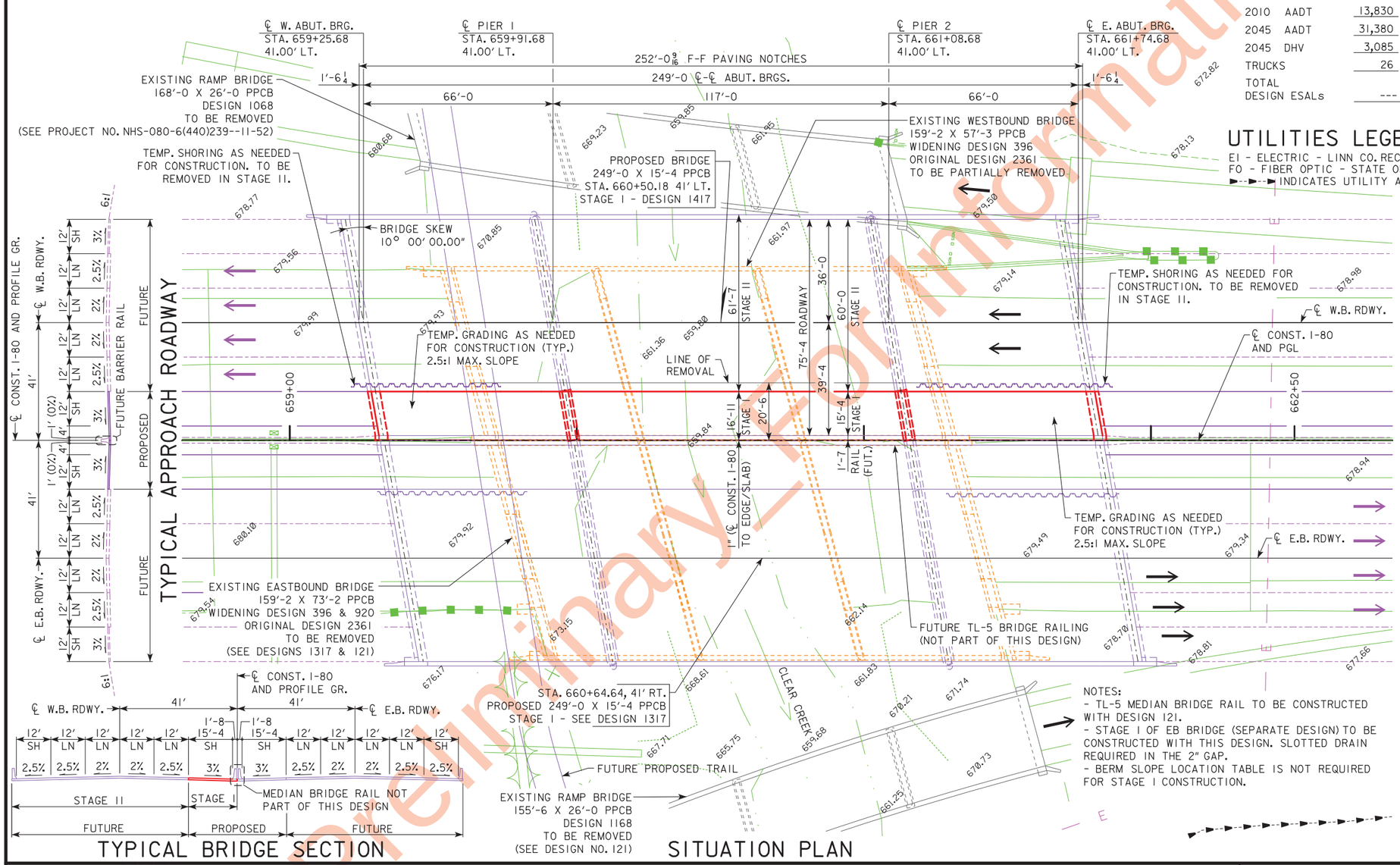
50, 100 & 500 YR. STAGES AND DISCHARGES FROM JOHNSON COUNTY F.I.S., DATED FEBRUARY 16, 2007.
F.I.S. DATUM - 0.10 FT = PROJECT DATUM.

## TRAFFIC ESTIMATE

| | | | |
|---|---|---|---|
| 2010 | AADT | 13,830 | V.P.D. |
| 2045 | AADT | 31,380 | V.P.D. |
| 2045 | DHV | 3,085 | V.P.H. |
| TRUCKS | | 26 | % |
| TOTAL DESIGN ESALs | | --- | |

## UTILITIES LEGEND:

EI - ELECTRIC - LINN CO. REC
FO - FIBER OPTIC - STATE OF IOWA (ICN)
►-►-► INDICATES UTILITY AS ABANDONED




## SITUATION PLAN




## TYPICAL BRIDGE SECTION




## HYDRAULIC DESIGN

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

David R. Claman 11571 LICENSED PROFESSIONAL ENGINEER IOWA

Signature Date
David R. Claman
Printed or Typed Name

My license renewal date is December 31, 2020

Pages or sheets covered by this seal: SHEET 29

N

## LOCATION

W.B. I-80 OVER CLEAR CREEK
T-80N R-7W
SECTION 35
CLEAR CREEK TOWNSHIP
JOHNSON COUNTY
FHWA NO. 32001
BRIDGE MAINT. NO. 5239.4L080
LATITUDE 41.694459°
LONGITUDE -91.632418°

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SITUATION PLAN

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

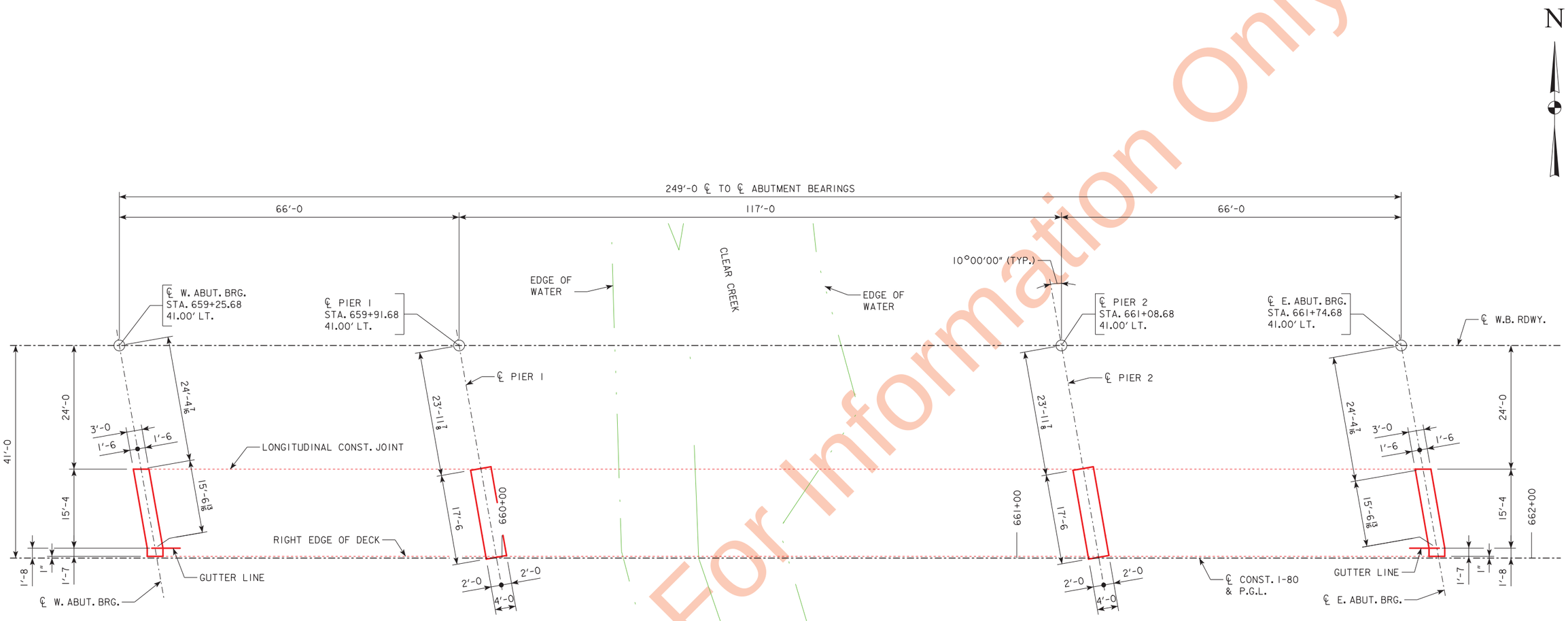
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 23 FILE NO. 30864 DESIGN NO. 1417



DESIGN TEAM HNTB | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 29




STAKING DIAGRAM

## BRIDGE COORDINATES

| LOCATION | ℄ W. ABUT. BRG. | ℄ PIER 1 | ℄ PIER 2 | ℄ E. ABUT. BRG. |
|---|---|---|---|---|
| ℄ W.B. ROADWAY | E=2150312.126<br>N=622833.424 | E=2150378.109<br>N=622834.917 | E=2150495.079<br>N=622837.563 | E=2150561.062<br>N=622839.056 |
| LONGITUDINAL CONST. JOINT | E=2150316.900<br>N=622809.526 | E=2150382.883<br>N=622811.019 | E=2150499.853<br>N=622813.665 | E=2150565.836<br>N=622815.157 |
| RIGHT EDGE OF DECK | E=2150320.264<br>N=622792.681 | E=2150386.247<br>N=622794.174 | E=2150503.217<br>N=622796.820 | E=2150569.201<br>N=622798.313 |

NOTE: AN ELECTRONIC FILE CONTAINING THE BRIDGE COORDINATE DATA IS AVAILABLE AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL VERIFY THESE COORDINATES WITH THE PROJECT HORIZONTAL CONTROL INFORMATION PROVIDED IN THE ROAD PLANS.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## STAKING DIAGRAM

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 23 — FILE NO. 30864 — DESIGN NO. 1417





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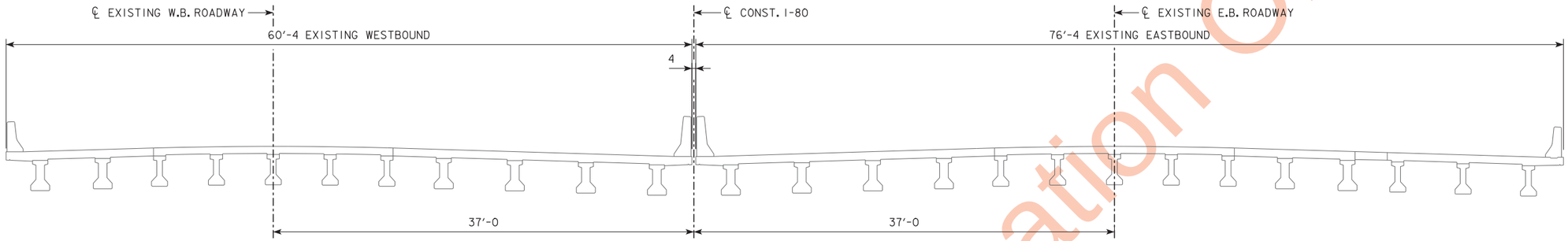
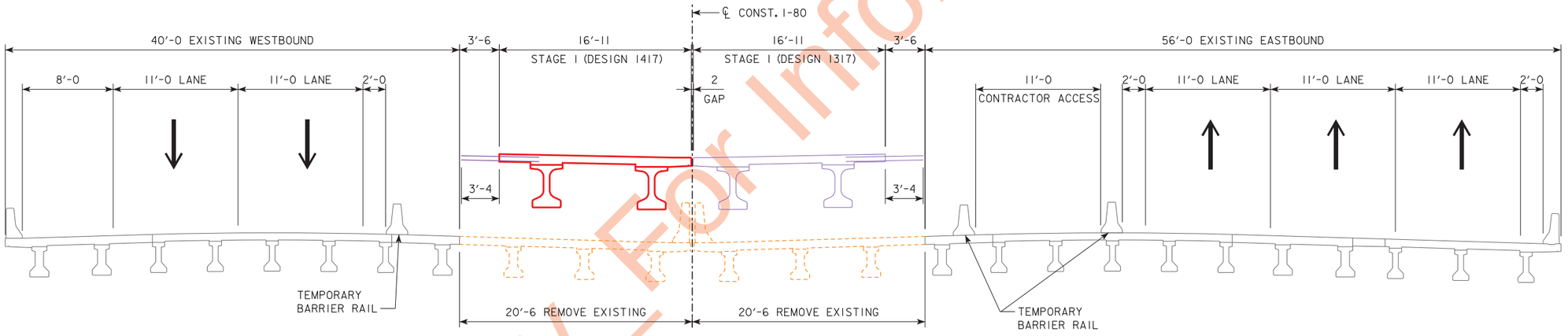



## EXISTING CROSS SECTION

(LOOKING EAST)




## CROSS SECTION - STAGE I (LIMITS OF THIS CONTRACT)

(LOOKING EAST)

NOTE:
SEE TRAFFIC CONTROL PLAN IN THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52 FOR LOCATION OF LANES AND TEMPORARY SAFETY BARRIER DURING AND AFTER THE CONSTRUCTION OF DESIGN 1417.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## STAGED CONSTRUCTION PLAN

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 23 FILE NO. 30864 DESIGN NO. 1417





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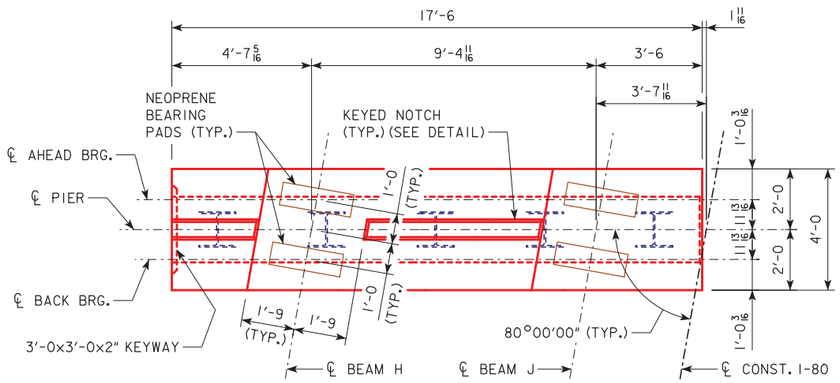
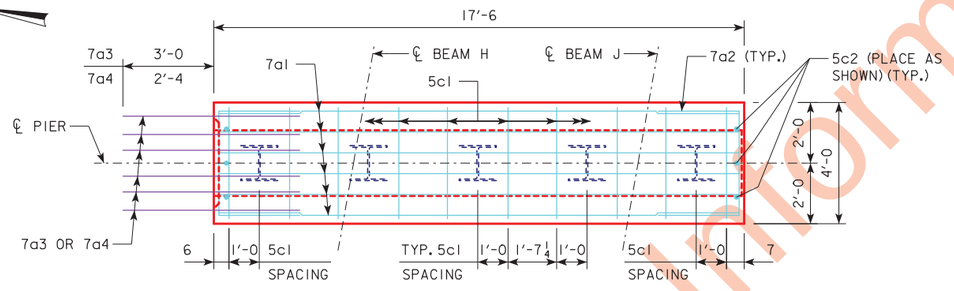
BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510

| TABLE OF VARIABLES | | |
|---|---|---|
| VARIABLE | PIER 1 | PIER 2 |
| ELEV. A | 681.50 | 680.91 |
| ELEV. B | 681.79 | 681.20 |
| ELEV. C | 681.97 | 681.39 |
| ELEV. D | 678.00 | 677.41 |
| A | 21 | 20 |
| B | 21'-3 1/2 | 20'-8 3/8 |

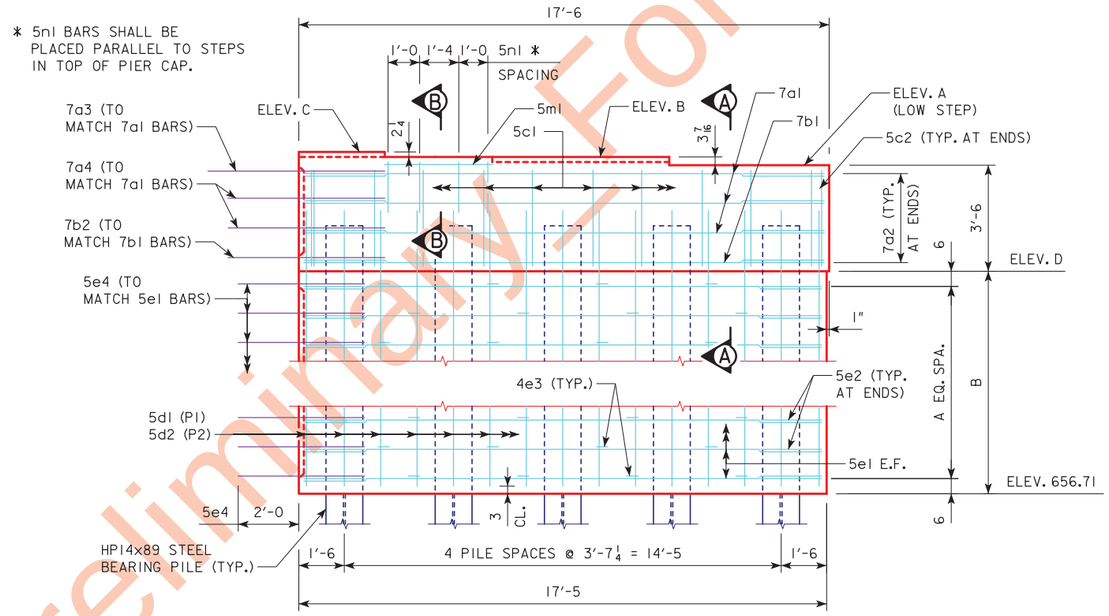



## PIER CAP PLAN

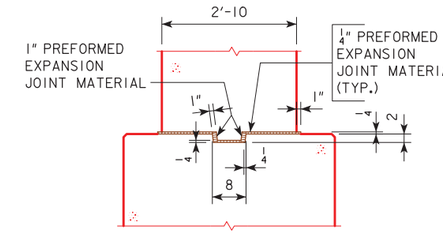



## PIER CAP REINFORCING PLAN

(PIER CAP STEPS AND KEYED NOTCHES NOT SHOWN FOR CLARITY.)




## PIER ELEVATION




## KEYED NOTCH DETAIL

NOTES:
SEE DESIGN SHEET 8 FOR SECTIONS A-A & B-B, ENCASEMENT PLAN, PILE BENT NOTES, AND QUANTITIES.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS 117'-0 INTERIOR SPAN

# PILE BENT PIER DETAILS

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 23 FILE NO. 30864 DESIGN NO. 1417





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# PILE BENT NOTES:

5 - HP 14x89 STEEL BEARING PILING REQUIRED AT PIER 1.
5 - HP 14x89 STEEL BEARING PILING REQUIRED AT PIER 2.

STEEL PILE POINTS ARE REQUIRED FOR THE STEEL H-PILES AT THE PIERS.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.

PIER 1:
THE CONTRACT LENGTH OF 70 FEET FOR THE PIER 1 PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 255 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PILE ENCASEMENT. DESIGN SCOUR (200-YEAR) WAS ASSUMED TO AFFECT THE UPPER 3 FEET OF EMBEDDED PILE LENGTH AND CAUSE 5 KIPS OF DRIVING RESISTANCE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 1 PILES IS 191 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

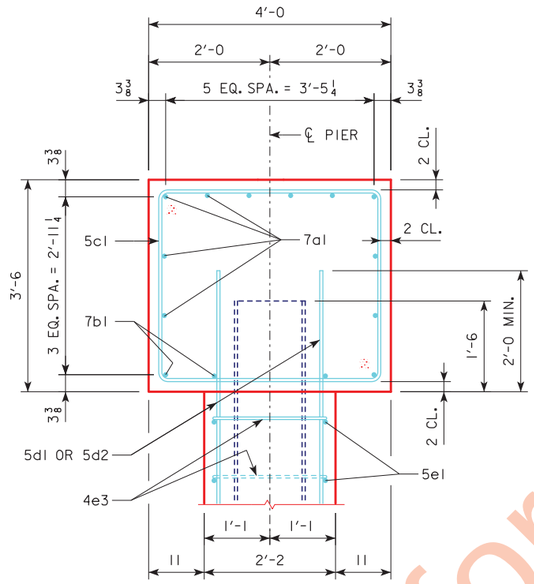
THE WEAP ANALYSIS WILL BE PERFORMED ON THE BASIS THAT ALL EXCAVATION IS COMPLETED BEFORE DRIVING PILES. IF THIS WILL NOT BE THE CASE, PLEASE INFORM THE OFFICE OF CONSTRUCTION TO ACCOUNT FOR ADDITIONAL PILE CAPACITY.

PIER 2:
THE CONTRACT LENGTH OF 75 FEET FOR THE PIER 2 PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 255 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING.

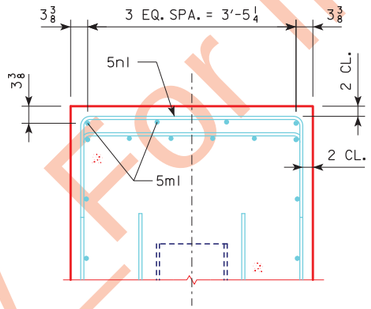
THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PILE ENCASEMENT. DESIGN SCOUR (200-YEAR) WAS ASSUMED TO AFFECT THE UPPER 3 FEET OF EMBEDDED PILE LENGTH AND CAUSE 6 KIPS OF DRIVING RESISTANCE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 2 PILES IS 191 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

THE WEAP ANALYSIS WILL BE PERFORMED ON THE BASIS THAT ALL EXCAVATION IS COMPLETED BEFORE DRIVING PILES. IF THIS WILL NOT BE THE CASE, PLEASE INFORM THE OFFICE OF CONSTRUCTION TO ACCOUNT FOR ADDITIONAL PILE CAPACITY.



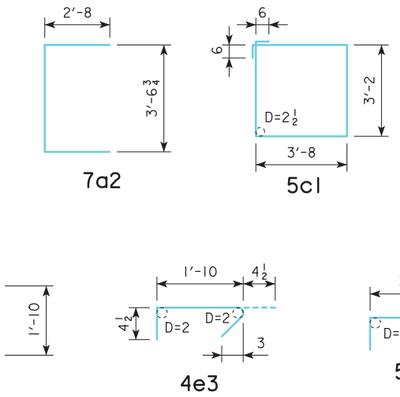

SECTION A-A




SECTION B-B

# REINFORCING BAR LIST AND ESTIMATED QUANTITIES

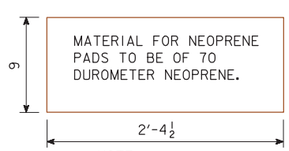
| | BAR | LOCATION | SHAPE | PIER 1 NO. | PIER 1 LENGTH | PIER 1 WEIGHT | PIER 2 NO. | PIER 2 LENGTH | PIER 2 WEIGHT |
|---|---|---|---|---|---|---|---|---|---|
| NON-COATED REINF. | 7a1 | PIER CAP, HORIZONTAL, TOP & SIDES | | 10 | 17'-2 | 351 | 10 | 17'-2 | 351 |
| | 7a2 | PIER CAP, ENDS | | 8 | 8'-11 | 146 | 8 | 8'-11 | 146 |
| | 7b1 | PIER CAP, HORIZONTAL, BOTTOM | | 4 | 17'-2 | 140 | 4 | 17'-2 | 140 |
| | 5c1 | PIER CAP, HOOPS | | 10 | 14'-8 | 153 | 10 | 14'-8 | 153 |
| | 5c2 | PIER CAP, VERTICAL, ENDS | | 6 | 3'-2 | 20 | 6 | 3'-2 | 20 |
| | 5d1 | ENCASEMENT, VERTICAL | | 32 | 23'-2 | 773 | - | - | - |
| | 5d2 | ENCASEMENT, VERTICAL | | - | - | - | 32 | 22'-7 | 754 |
| | 5e1 | ENCASEMENT, HORIZONTAL | | 44 | 17'-1 | 784 | 42 | 17'-1 | 748 |
| | 5e2 | ENCASEMENT, ENDS | | 44 | 5'-0 | 229 | 42 | 5'-0 | 219 |
| | 4e3 | ENCASEMENT, TIES | | 88 | 2'-7 | 152 | 84 | 2'-7 | 145 |
| | 5m1 | PIER CAP STEPS, HORIZONTAL | | 4 | 3'-6 | 15 | 4 | 3'-6 | 15 |
| | 5n1 | PIER CAP STEPS, TRANSVERSE | | 4 | 6'-8 | 28 | 4 | 6'-8 | 28 |
| | | | | | | | | | |
| | | | | | | | | | |
| | REINFORCING STEEL - TOTAL (LBS.) | | | | | 2,791 | | | 2,719 |
| S.S. REINF. | 7a3 | PIER CAP DOWELS, TOP | | 6 | 6'-0 | 74 | 6 | 6'-0 | 74 |
| | 7a4 | PIER CAP DOWELS, SIDES | | 4 | 4'-8 | 38 | 4 | 4'-8 | 38 |
| | 7b2 | PIER CAP DOWELS, BOTTOM | | 4 | 4'-8 | 38 | 4 | 4'-8 | 38 |
| | 5e4 | ENCASEMENT DOWELS | | 44 | 4'-0 | 184 | 42 | 4'-0 | 175 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | REINFORCING STEEL, STAINLESS - TOTAL (LBS.) | | | | | 334 | | | 325 |
| | STRUCTURAL CONCRETE (CY) | | | | | 39.2 | | | 38.4 |
| | HP14x89 STEEL PILE (LF) | | | | | 350 | | | 375 |




NOTE:
ALL DIMENSIONS ARE OUT TO OUT.
D = PIN DIAMETER.

BENT BAR DETAILS

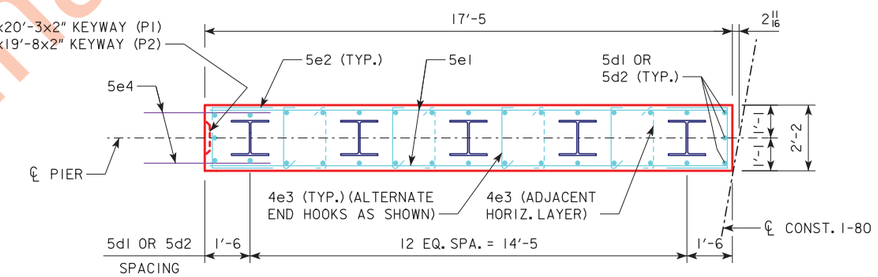
NOTE: CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.




NOTE:
COST OF NEOPRENE PADS SHALL BE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".


PLAIN NEOPRENE PAD

FIXED PIER BEARING DETAILS




ENCASEMENT PLAN

NOTES:
SEE DESIGN SHEET 7 FOR LOCATIONS OF SECTIONS A-A & B-B.

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## PILE BENT PIER DETAILS

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 23 FILE NO. 30864 DESIGN NO. 1417





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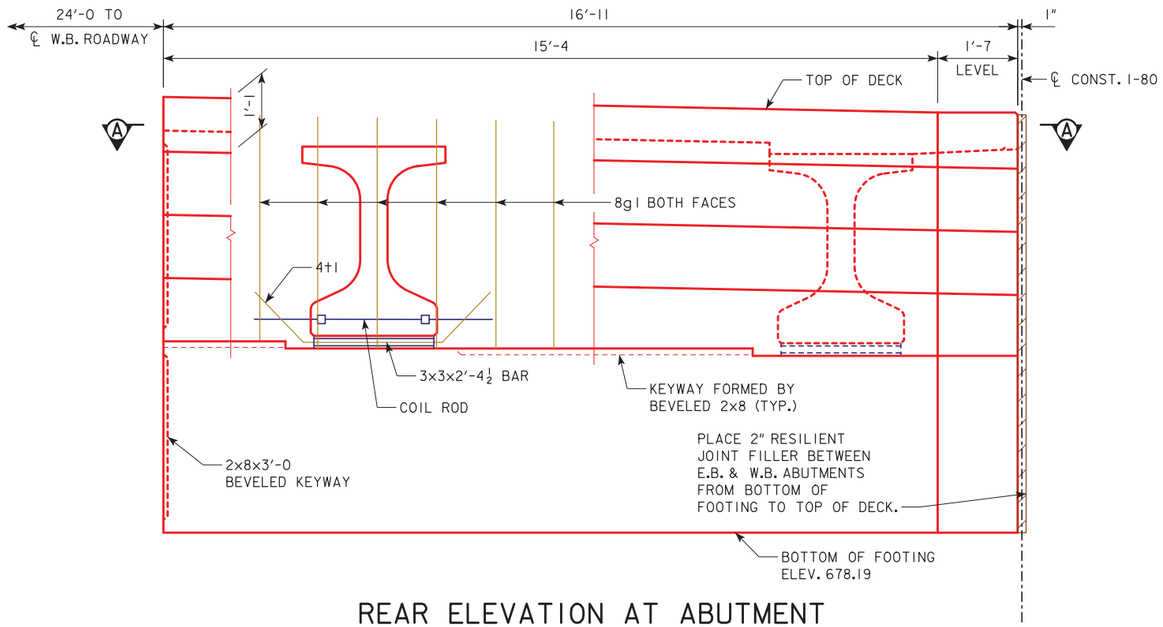
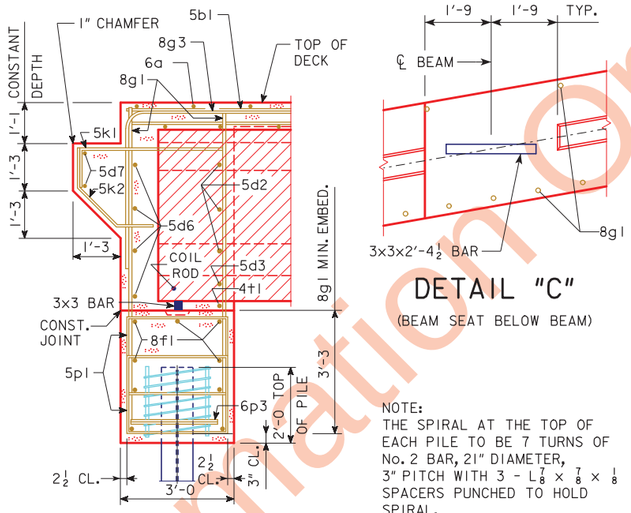
CORRECTION 04-14 - ADDED CONCRETE QUANTITY TABLE & REFERRAL NOTE TO SUMMARY QUANTITY SHEET. REMOVED DESIGN BEARING NOTE FOR ABUT. PILING FROM ABUTMENT NOTES.
ENGLISHBTINTEGRALBRIDGES.DGN - 2090-BTCD - THIS SHEET ISSUED 02-08.

BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510




REAR ELEVATION AT ABUTMENT

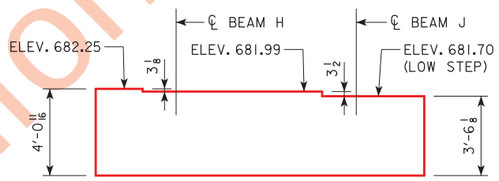



PART SECTION B-B

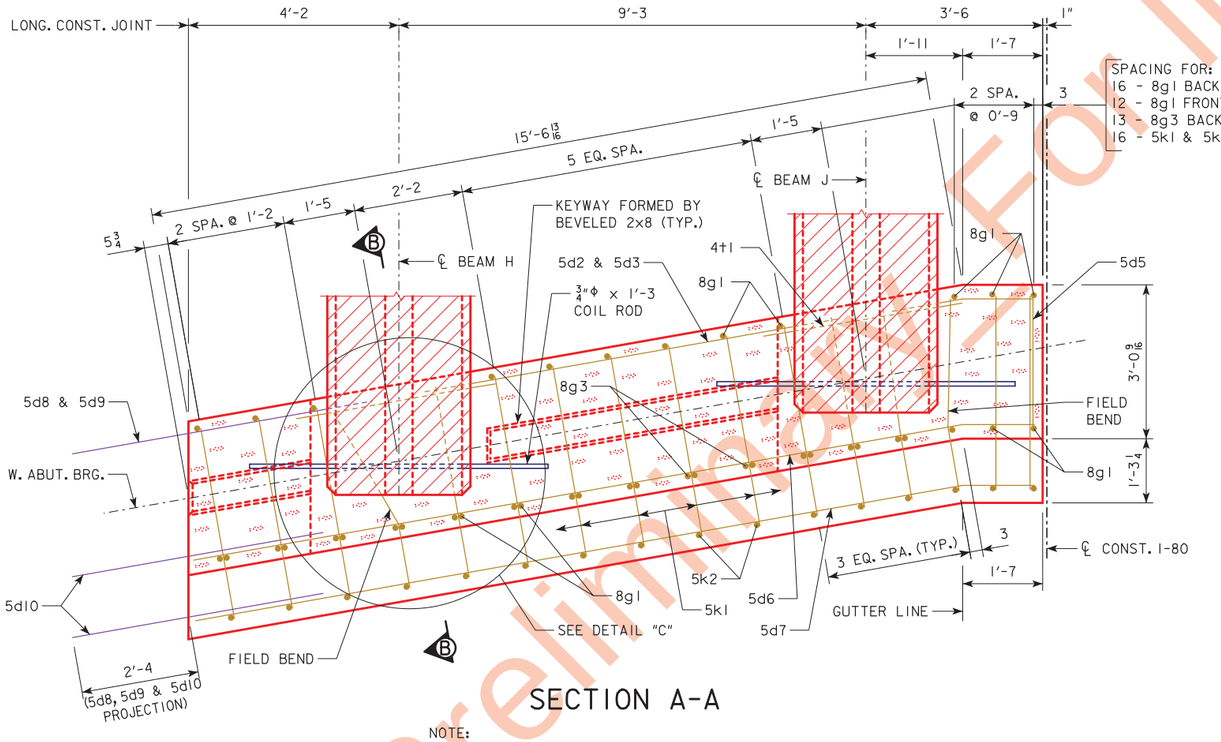



DETAIL "C"
(BEAM SEAT BELOW BEAM)

NOTE:
THE SPIRAL AT THE TOP OF EACH PILE TO BE 7 TURNS OF No. 2 BAR, 21" DIAMETER, 3" PITCH WITH 3 - L⅞ × ⅞ × ⅛ SPACERS PUNCHED TO HOLD SPIRAL.

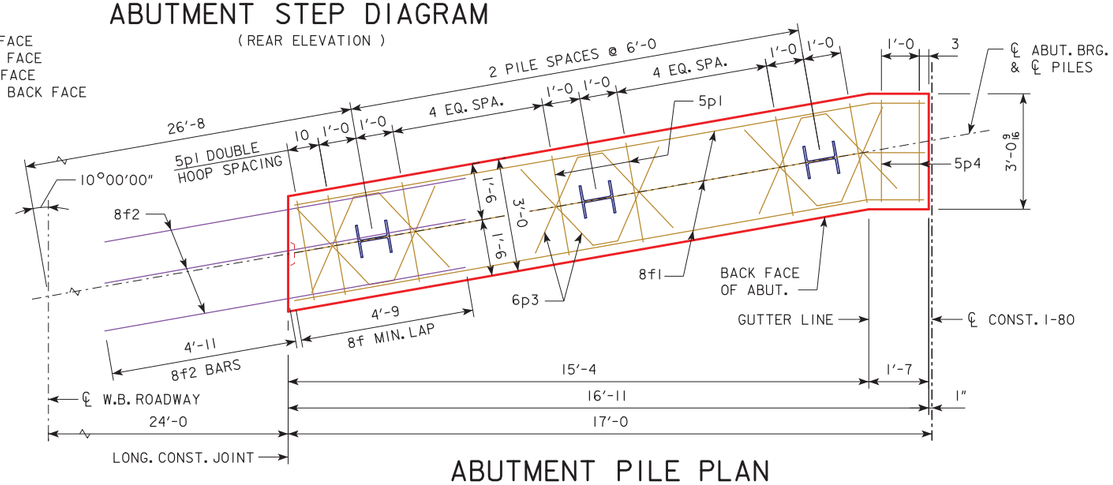



ABUTMENT STEP DIAGRAM
(REAR ELEVATION)




SECTION A-A

NOTE:
SHIFT 8g1 BARS IN F.F. AS NECESSARY TO MISS BEAMS.
PLACE 8g3 BARS PARALLEL TO LONGIT. STEEL.




ABUTMENT PILE PLAN

## ABUTMENT NOTES:

STEEL PILE POINTS ARE REQUIRED FOR THE STEEL H-PILES AT THE ABUTMENT.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

IF NECESSARY TO PREVENT DAMAGE TO THE END OF THE BRIDGE DECK OR BACKWALL FROM CONSTRUCTION EQUIPMENT, AN APPROPRIATE METHOD OF PROTECTION APPROVED BY THE ENGINEER SHALL BE PROVIDED BY THE BRIDGE CONTRACTOR AT NO EXTRA COST TO THE STATE.

## WEST ABUTMENT PILING NOTES:

THE CONTRACT LENGTH OF 70 FEET FOR THE WEST ABUTMENT PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 193 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. TO ACCOUNT FOR SOIL CONSOLIDATION UNDER THE NEW FILL, THE FACTORED AXIAL LOAD INCLUDES A FACTORED DOWNDRAG LOAD OF 19 KIPS.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PREBORE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE WEST ABUTMENT PILES IS 153 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

## ABUTMENT CONCRETE QUANTITY

| LOCATION | QUANTITY |
|---|---|
| WEST ABUTMENT FOOTING | 7.1 |
| TOTAL (CU. YDS.) | 7.1 |

NOTE: CONCRETE QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

NOTE: 3 - HP 10 x 57 STEEL BEARING PILING REQUIRED AT WEST ABUTMENT.

NOTE: BARRIER RAIL NOT SHOWN IN DETAILS AND NOT PART OF THIS DESIGN.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

# WEST ABUTMENT FOOTING DETAILS

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

# JOHNSON COUNTY

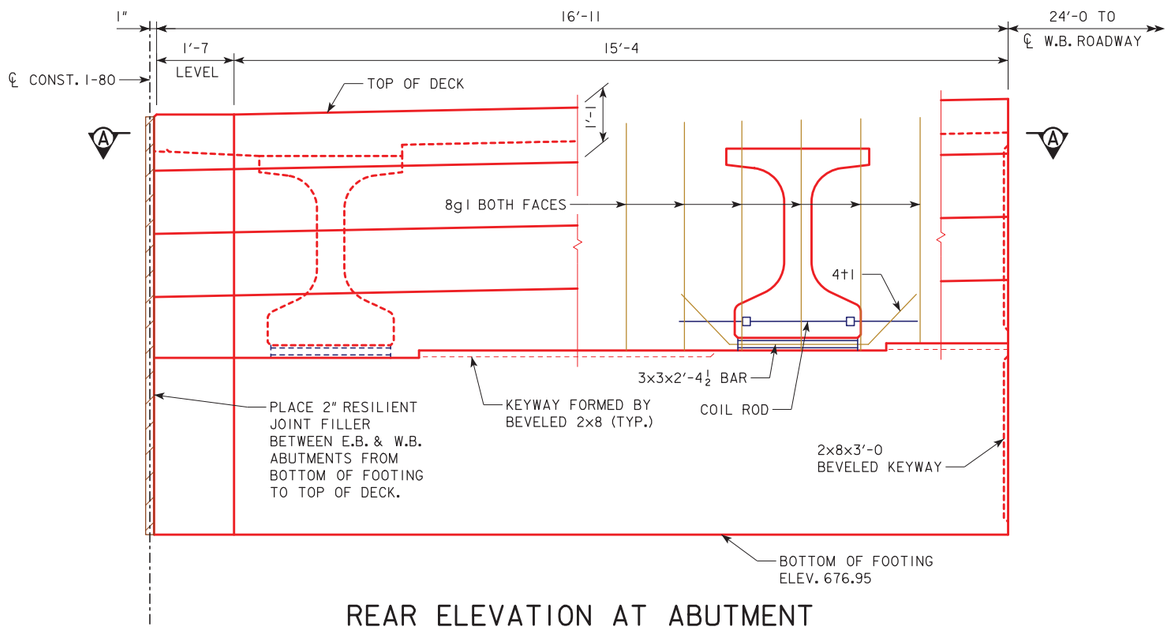
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 23 FILE NO. 30864 DESIGN NO. 1417

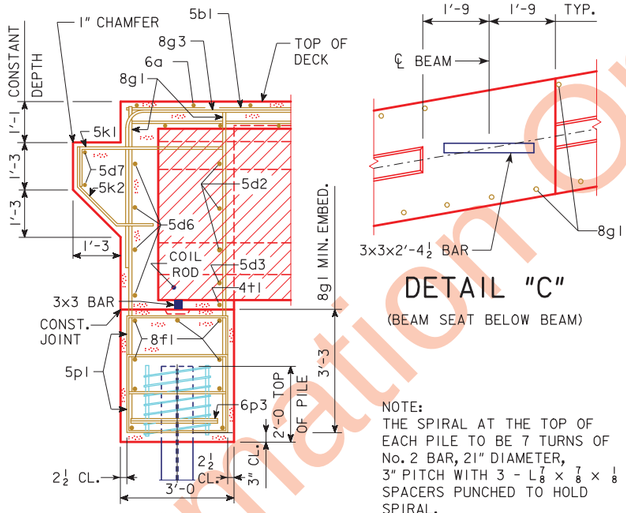


| DESIGN TEAM HNTB | "BTC" OR "BTD" BEAMS - INTEGRAL ABUT. DETAILS - (R.A.) 7°31' - 15° SKEW | MODIFIED STANDARD SHEET 2090-BTCD | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 34 |
|---|---|---|---|---|---|

BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510




REAR ELEVATION AT ABUTMENT




PART SECTION B-B




DETAIL "C"

(BEAM SEAT BELOW BEAM)

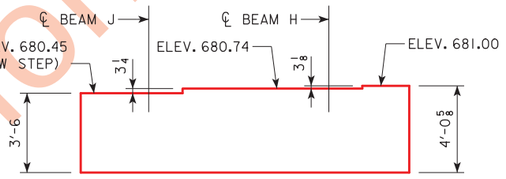
NOTE:
THE SPIRAL AT THE TOP OF EACH PILE TO BE 7 TURNS OF No. 2 BAR, 21" DIAMETER, 3" PITCH WITH 3 - L $\frac{7}{8} \times \frac{7}{8} \times \frac{1}{8}$ SPACERS PUNCHED TO HOLD SPIRAL.

## EAST ABUTMENT PILING NOTES:

THE CONTRACT LENGTH OF 70 FEET FOR THE EAST ABUTMENT PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 197 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. TO ACCOUNT FOR SOIL CONSOLIDATION UNDER THE NEW FILL, THE FACTORED AXIAL LOAD INCLUDES A FACTORED DOWNDRAG LOAD OF 23 KIPS.

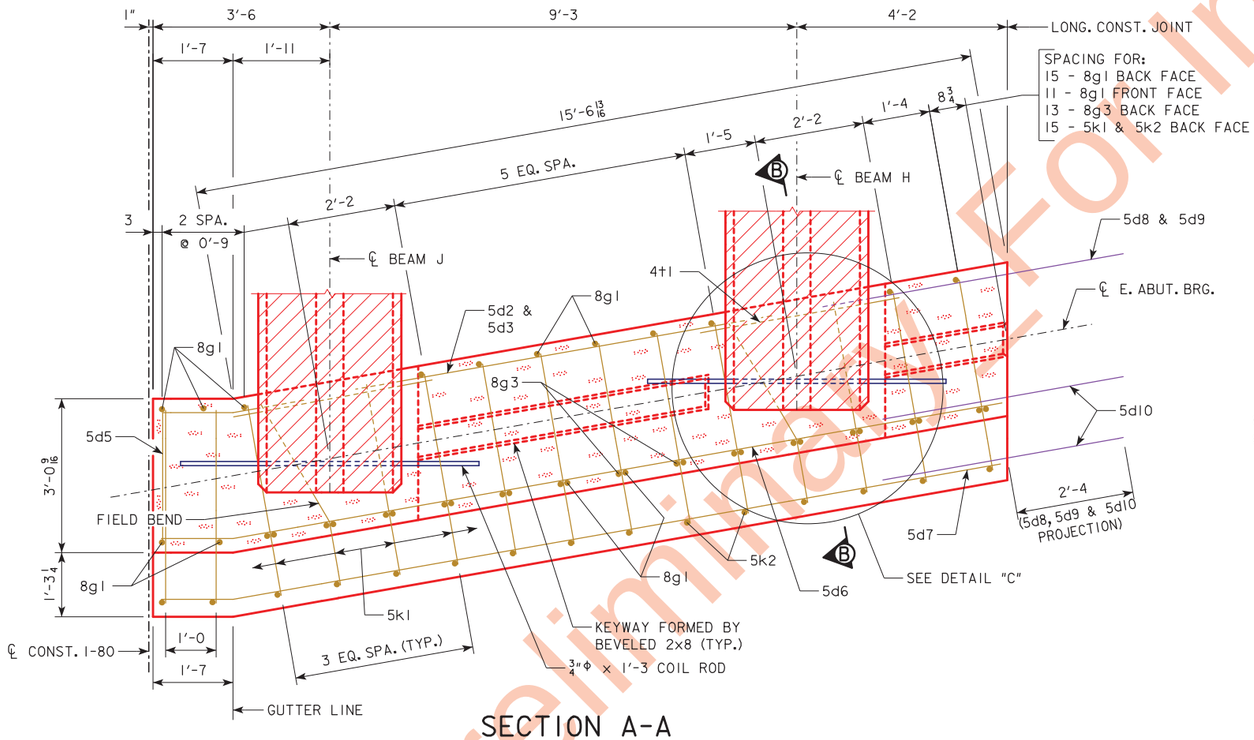
THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PREBORE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE EAST ABUTMENT PILES IS 157 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.



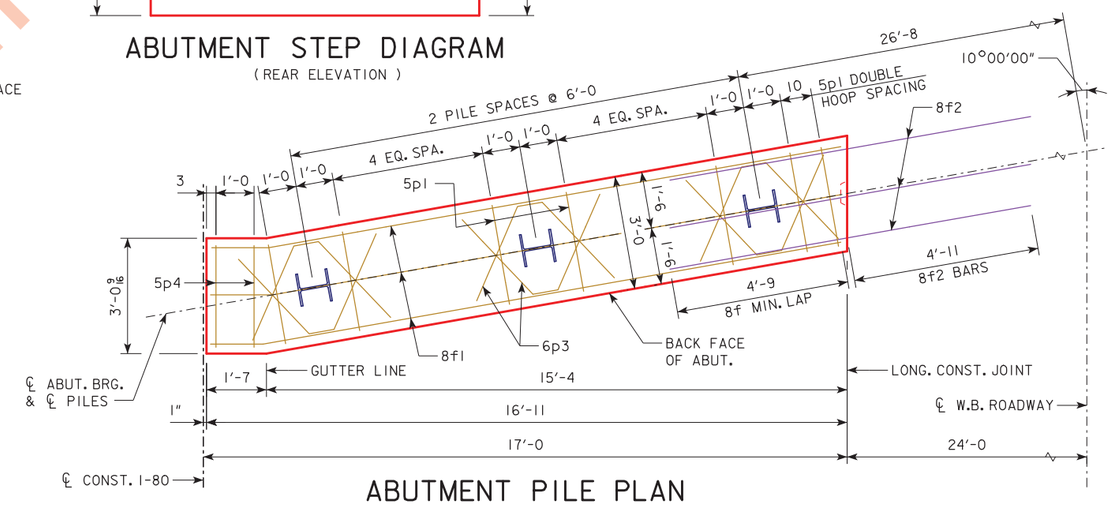

ABUTMENT STEP DIAGRAM

(REAR ELEVATION)




SECTION A-A

NOTE:
SHIFT 8g1 BARS IN F.F. AS NECESSARY TO MISS BEAMS.
PLACE 8g3 BARS PARALLEL TO LONGIT. STEEL.




ABUTMENT PILE PLAN

## ABUTMENT CONCRETE QUANTITY

| LOCATION | QUANTITY |
|---|---|
| EAST ABUTMENT FOOTING | 7.1 |
| TOTAL (CU. YDS.) | 7.1 |

NOTE: CONCRETE QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

NOTE: 3 - HP 10 x 57 STEEL BEARING PILING REQUIRED AT EAST ABUTMENT.

NOTE: BARRIER RAIL NOT SHOWN IN DETAILS AND NOT PART OF THIS DESIGN.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

# EAST ABUTMENT FOOTING DETAILS

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

# JOHNSON COUNTY

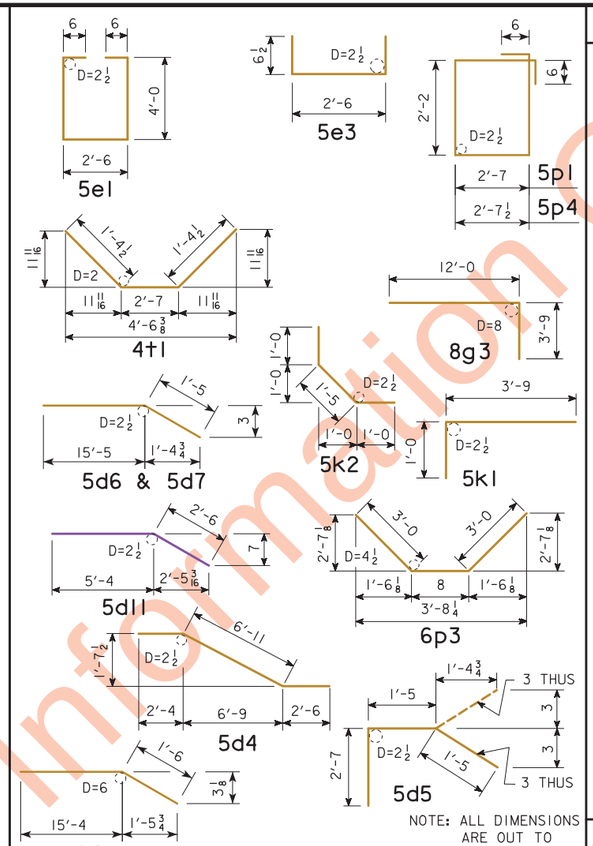
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 23 FILE NO. 30864 DESIGN NO. 1417

| DESIGN TEAM HNTB | "BTC" OR "BTD" BEAMS - INTEGRAL ABUT. DETAILS - (R.A.) 7°31' - 15° SKEW | MODIFIED STANDARD SHEET 2090-BTCD | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 35 |
|---|---|---|---|---|---|

CORRECTION 04-14 - ADDED CONCRETE QUANTITY TABLE & REFERRAL NOTE TO SUMMARY QUANTITY SHEET. REMOVED DESIGN BEARING NOTE FOR ABUT. PILING FROM ABUTMENT NOTES.
ENGLISHBTINTEGRALBRIDGES.DGN - 2090-BTCD - THIS SHEET ISSUED 02-08.

REVISED 07-2015 - CHANGED CONCRETE PLACEMENT NOTE TO ACCOUNT FOR THE POSSIBLE ADDITION OF A RETARDING ADMIXTURE TO THE CONCRETE.
ENGLISHBTINTEGRALBRIDGES.DGN - 4520-BTCD - THIS SHEET ISSUED 02-08.




## BENT BAR DETAILS

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

## CONCRETE PLACEMENT QUANTITIES

| LOCATION | QUANTITY |
|---|---|
| SECTION 1, DECK & WEST ABUT. DIAPH. | 32.8 |
| SECTION 2, DECK | 38.8 |
| SECTION 3, DECK & EAST ABUT. DIAPH. | 32.8 |
| SECTION 4, DECK & PIER 1 DIAPH. | 18.8 |
| SECTION 5, DECK & PIER 2 DIAPH. | 18.8 |
| TOTAL (CU. YDS.) | 142.0 |

NOTE:
CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

## REINFORCING BAR LIST

| | BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|---|
| EPOXY COATED REINFORCING | 6a1 | DECK TRANSV. TOP & BOTT. | | 569 | 16'-7 | 14,173 |
| | 6a2 | DECK TRANSV. TOP ENDS | | 6 | VARIES | 67 |
| | 6a3 | DECK TRANSV. BOTT ENDS | | 6 | VARIES | 90 |
| | 5b1 | DECK LONGIT. TOP & BOTT. | | 224 | 37'-8 | 8,800 |
| | 8b2 | DECK LONGIT. TOP & BOTT. AT PIERS | | 60 | 29'-0 | 4,646 |
| | 5d2 | PIER & ABUT. DIAPH. LONGIT. | | 18 | 8'-4 | 156 |
| | 5d3 | PIER & ABUT. DIAPH. LONGIT. | | 6 | 6'-6 | 42 |
| | 5d4 | PIER DIAPH. LONGIT. | | 2 | 11'-9 | 24 |
| | 5d5 | ABUT. DIAPH. ENDS | | 6 | 5'-5 | 34 |
| | 5d6 | ABUT. DIAPH. LONGIT. B.F. | | 8 | 16'-10 | 140 |
| | 5d7 | PAVING NOTCH LONGIT. | | 4 | 16'-10 | 70 |
| | 5e1 | PIER DIAPH. HOOPS | | 20 | 11'-6 | 240 |
| | 5e3 | PIER DIAPH. TIES | | 20 | 3'-7 | 74 |
| | 8f1 | ABUT. FOOTING LONGIT. BOTH FACE | | 18 | 16'-10 | 810 |
| | 8g1 | ABUT. VERT. BOTH FACE | | 54 | 7'-10 | 1,130 |
| | 8g3 | ABUT. DIAPH. VERT. B.F. | | 26 | 15'-9 | 1,094 |
| | 6j1 | TOP OF DECK TRANSV. (AT RAIL) | | 286 | 6'-3 | 2,685 |
| | 5k1 | PAVING NOTCH | | 31 | 4'-9 | 153 |
| | 5k2 | PAVING NOTCH | | 31 | 3'-5 | 110 |
| | 5p1 | ABUT HOOPS | | 52 | 10'-6 | 570 |
| | 6p3 | ABUT. BOTT. AT PILES | | 12 | 6'-8 | 120 |
| | 5p4 | ABUT. HOOPS AT ENDS | | 8 | 10'-7 | 88 |
| | 4t1 | UNDER BEAMS AT ABUTMENTS | | 4 | 5'-4 | 14 |
| | | REINFORCING STEEL, EPOXY COATED - TOTAL (LBS.) | | | | 35,330 |
| STAINLESS STEEL | 6a4 | DECK TRANSV. TOP & BOTT. | | 572 | 6'-8 | 5,728 |
| | 5d8 | ABUT. & PIER DIAPH. LONGIT. | | 18 | 6'-1 | 114 |
| | 5d9 | ABUT. & PIER DIAPH. LONGIT. | | 6 | 5'-2 | 32 |
| | 5d10 | ABUT. DIAPH. LONG. B.F. & PAVING NOTCH | | 12 | 4'-8 | 58 |
| | 5d11 | PIER DIAPH. LONGIT. | | 2 | 7'-10 | 16 |
| | 8f2 | ABUT. FOOTING LONGIT. BOTH FACE | | 18 | 9'-10 | 472 |
| | | REINFORCING STEEL, STAINLESS STEEL - TOTAL (LBS.) | | | | 6,420 |
| NON-COATED | #2 | PILE SPIRAL | | 6 | 38'-6 | 38 |
| | | SPIRAL SPACERS, $L\frac{7}{8} \times \frac{7}{8} \times \frac{1}{8} \times 0.70$ | | 18 | 1'-10 | 24 |
| | | REINFORCING STEEL - TOTAL (LBS.) | | | | 62 |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS — 117'-0 INTERIOR SPAN

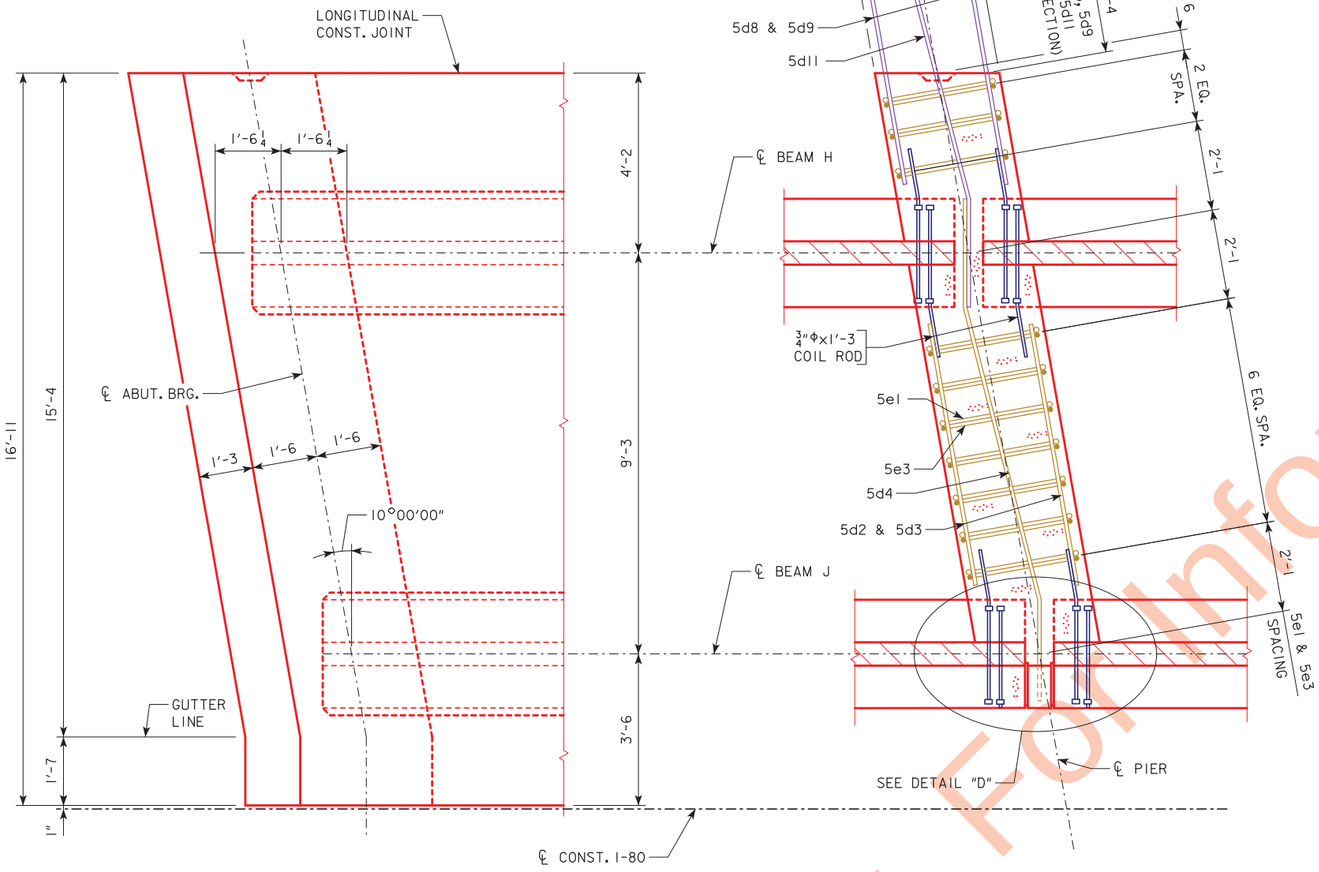
## DECK, ABUTMENT & DIAPHRAGM QUANTITIES

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

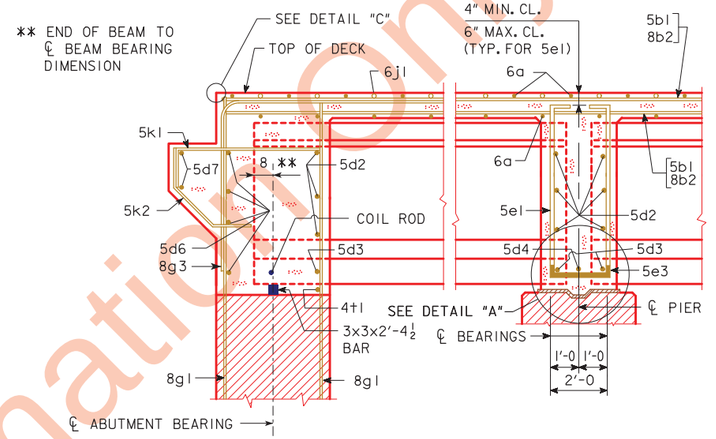
DESIGN SHEET NO. 11 OF 23 FILE NO. 30864 DESIGN NO. 1417




PART PLAN

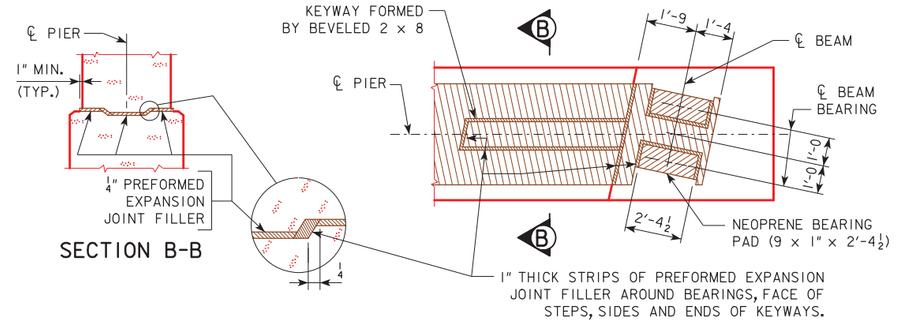



PART SECTION AT PIER



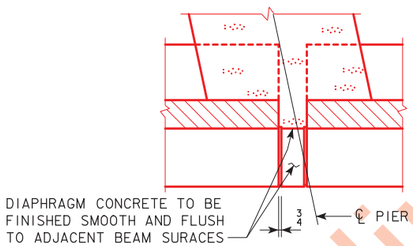

PART LONGITUDINAL SECTION NEAR GUTTER

(FOR DETAILS OF INTERMEDIATE DIAPHRAGM SEE DESIGN SHEET 19)



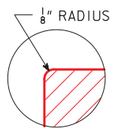

PART PLAN

TOP OF PIER DETAILS

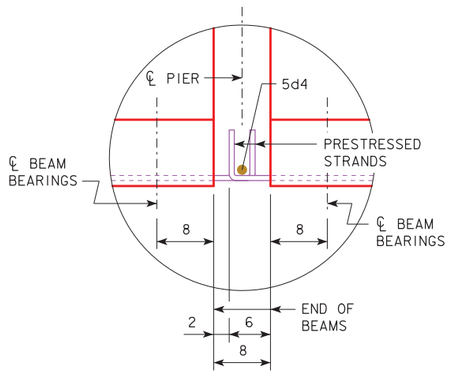



DETAIL "D"

NOTE: THE EXTERIOR SURFACES OF THE EXTERIOR BEAM ENDS OVER THE PIER SHALL NOT BE ROUGHENED.




DETAIL "C"




DETAIL "A"

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## ABUTMENT & PIER DIAPHRAGM DETAILS

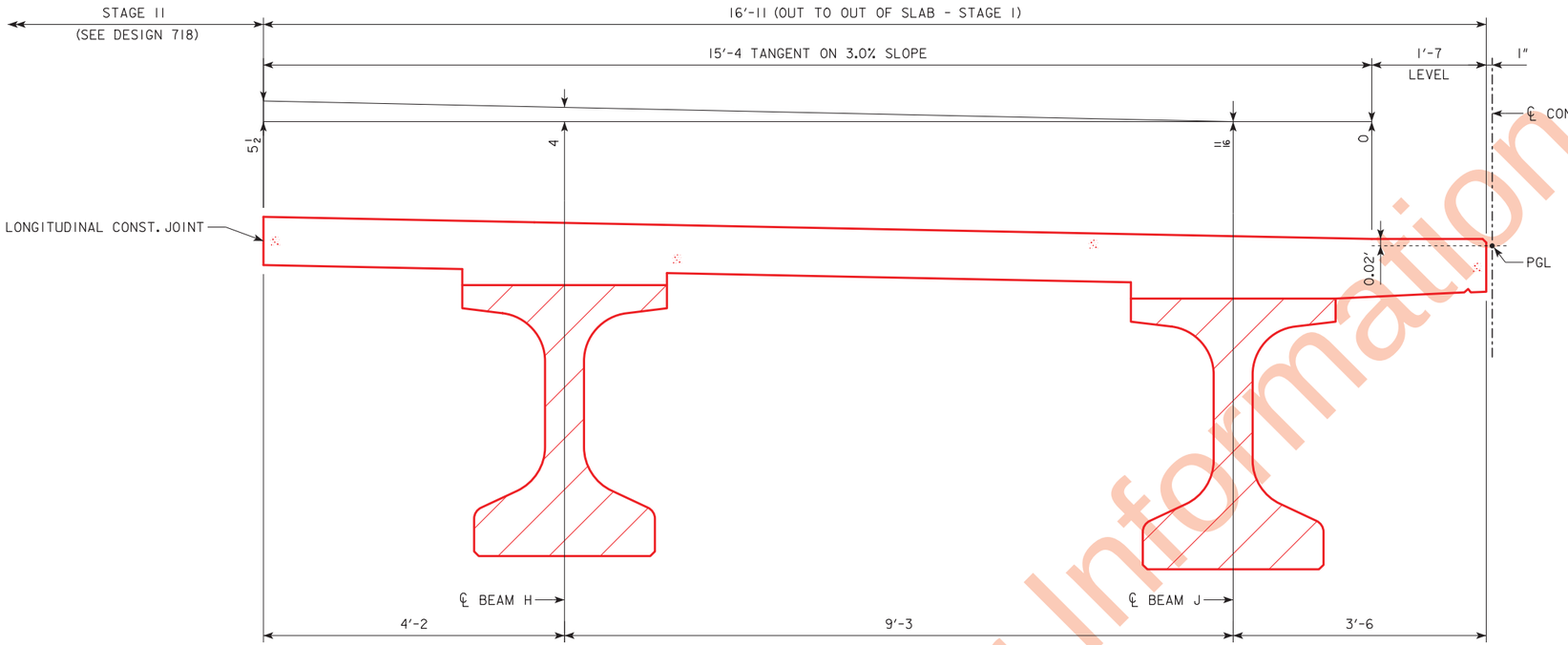
STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

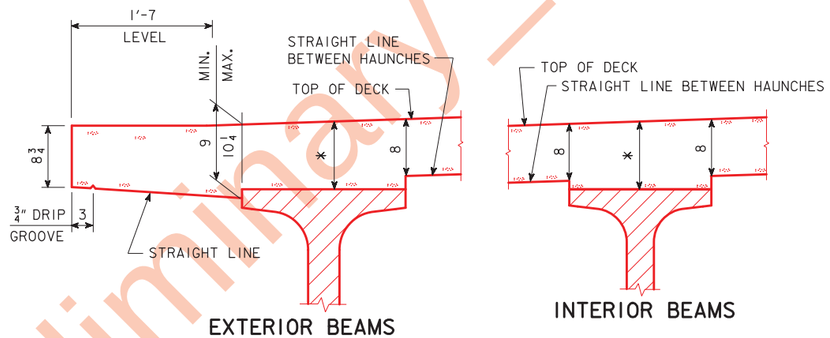
DESIGN SHEET NO. 12 OF 23 FILE NO. 30864 DESIGN NO. 1417

REVISED 01-12 - ADDED FIELD BEND 5h4 BAR TO AVOID PILE IN ABUTMENT WING NOTE.
ENGLISHBTINTEGRALBRIDGES.DGN - 4512-BTCD - THIS SHEET ISSUED 02-08.




## TYPICAL SECTION

DECK AREA = 11.38 SQ. FT.
DECK AREA DOES NOT
INCLUDE THE HAUNCH.




## TYPICAL DECK AND HAUNCH DETAIL

* FOR DECK THICKNESS OVER BEAMS SEE HAUNCH AND CAMBER DETAILS ON DESIGN SHEET 16.

NOTE: FOR DETAILS OF INTERMEDIATE DIAPHRAGMS SEE DESIGN SHEET 19.

## SUPERSTRUCTURE NOTES:

THE BRIDGE DECK AS SHOWN INCLUDES ½" INTEGRAL WEARING SURFACE.

THE PIER AND ABUTMENT DIAPHRAGM CONCRETE IS TO BE PLACED MONOLITHICALLY WITH THE BRIDGE DECK.

COST OF ALL PREFORMED EXPANSION JOINT FILLER MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "HIGH PERFORMANCE STRUCTURAL CONCRETE".

ALL BEAMS ARE TO BE SET VERTICAL.

FORMS FOR THE DECK ARE TO BE SUPPORTED BY THE PRESTRESSED CONCRETE BEAMS.

CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.

ALL DECK AND DIAPHRAGM REINFORCING IS TO BE WIRED IN PLACE AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS PLACED.

TOP TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 2½" CLEAR BELOW TOP OF DECK. BOTTOM TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 1" CLEAR ABOVE BOTTOM OF DECK. TOP AND BOTTOM REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL BAR CHAIRS SPACED AT NOT MORE THAN 3'-0 CENTERS LONGITUDINALLY AND TRANSVERSELY, OR BY CONTINUOUS ROWS OF BAR HIGH CHAIRS OR DECK BOLSTERS SPACED 4'-0 APART. I.M. 451.01 REQUIREMENTS SHALL APPLY FOR BAR CHAIRS, BAR HIGH CHAIRS, AND DECK BOLSTERS.

COST OF BEARING MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BRIDGE DECK CROSS SECTION

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

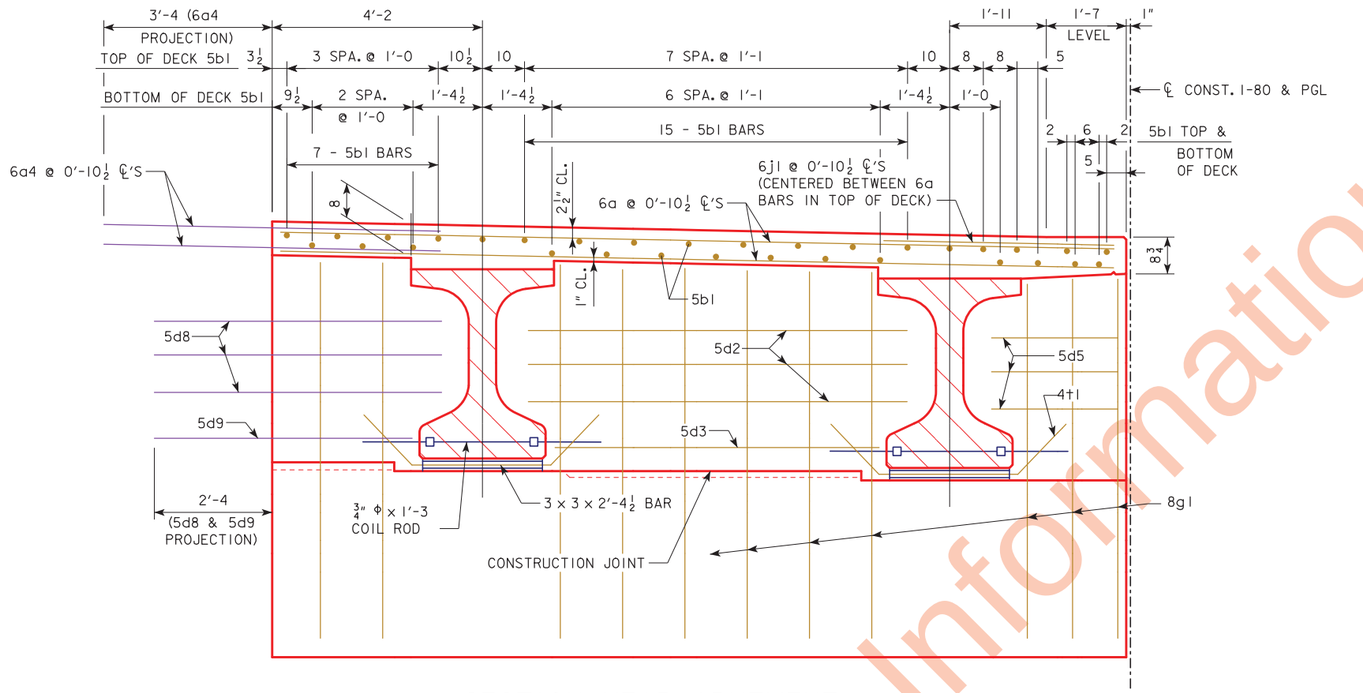
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 13 OF 23 — FILE NO. 30864 — DESIGN NO. 1417

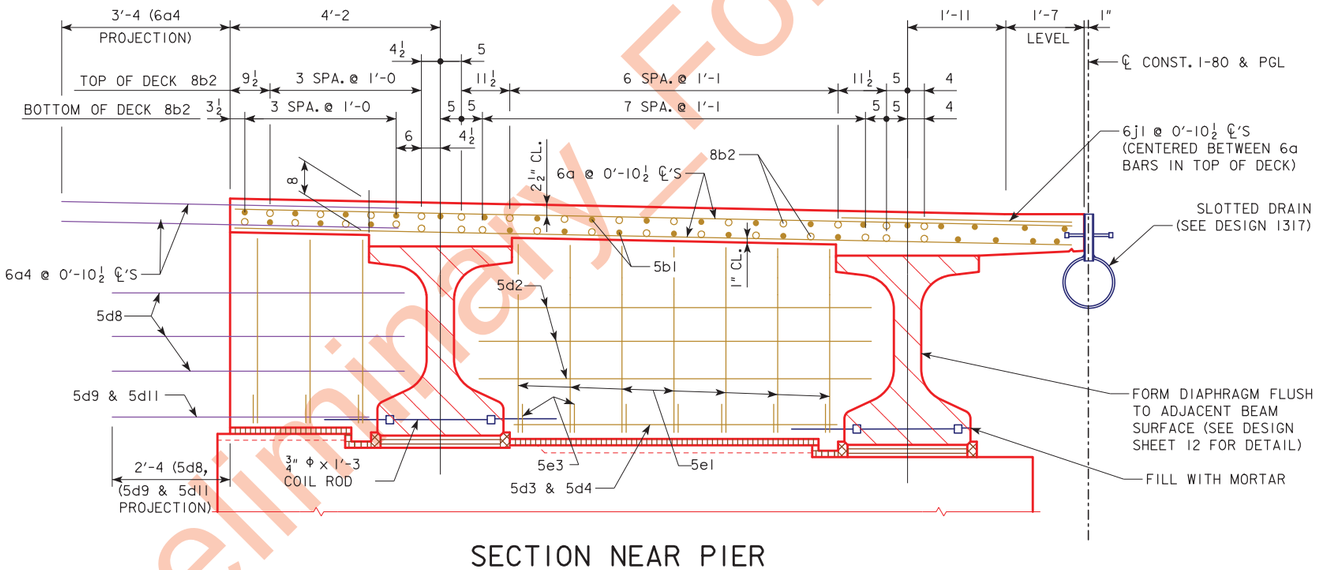


| DESIGN TEAM HNTB | 44' RDWY. PPCB (BTC BEAMS - INTEGRAL ABUT.) CROSS SECTION ( SPANS 30' - 120' ) | MODIFIED STANDARD SHEET 4383-BTC-6 | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 38 |
|---|---|---|---|---|---|

CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET FOR THE DRAIN WEIGHT. NOTE ABOUT CHOICE OF EPOXY OR STAINLESS STEEL DECK TO BARRIER RAIL BARS.
ENGLISHINTEGRALBRIDGES.DGN 4385 - THIS SHEET ISSUED 11-06. LRFD DESIGNED DECK.




SECTION NEAR ABUTMENT




SECTION NEAR PIER

NOTE: FOR SUPERSTRUCTURE NOTES SEE DESIGN SHEET 13.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BRIDGE DECK CROSS SECTION

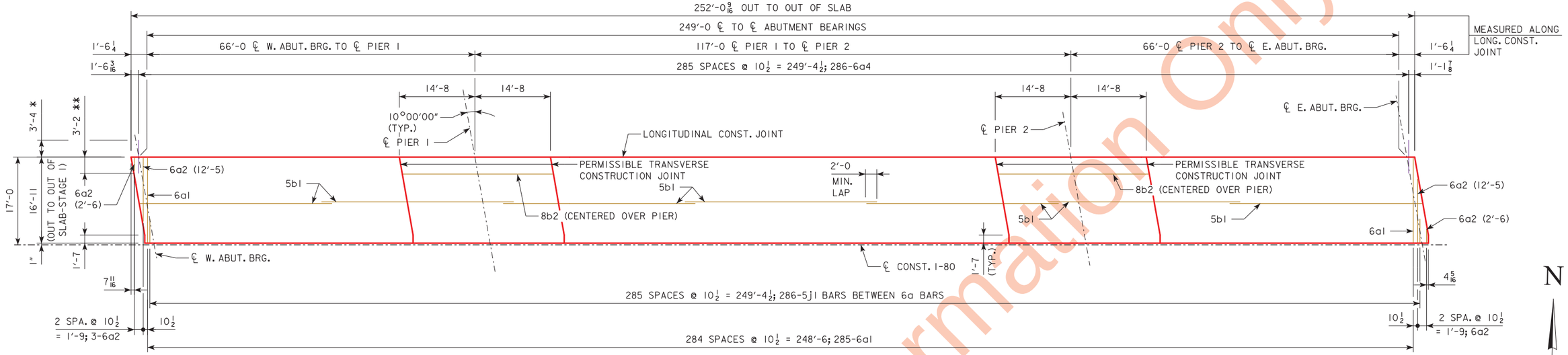
STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

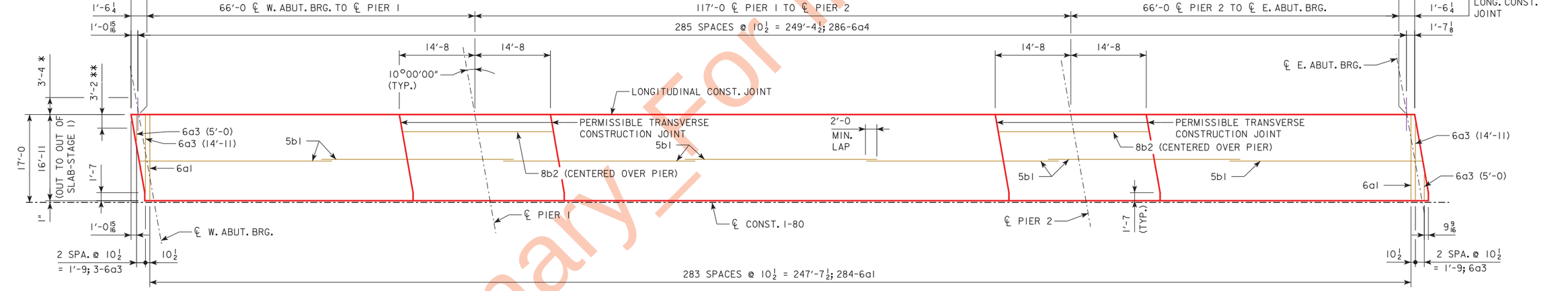
DESIGN SHEET NO. 14 OF 23 FILE NO. 30864 DESIGN NO. 1417

CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET FOR THE DRAIN WEIGHT. NOTE ABOUT CHOICE OF EPOXY OR STAINLESS STEEL DECK TO BARRIER RAIL BARS.
ENGLISH\INTEGRALBRIDGES.DGN 4385 - THIS SHEET ISSUED 11-06. LRFD DESIGNED DECK.

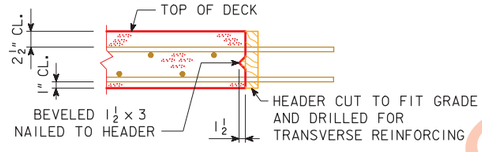



* TYPICAL 6a4 BAR PROJECTION.
** MINIMUM LAP OF 6a4 BAR WITH 6a1, 6a2 AND 6a3 BARS.

## TOP SLAB REINFORCING LAYOUT AND CONCRETE PLACEMENT



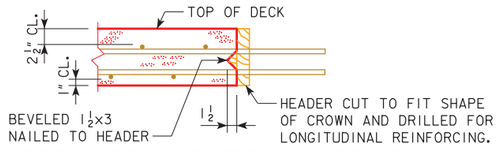

## BOTTOM SLAB REINFORCING LAYOUT




## LONGITUDINAL SLAB CONSTRUCTION JOINT

NOTES:
ALL LONGITUDINAL DIMENSIONS ARE ALONG LONGITUDINAL CONST. JOINT UNLESS NOTED OTHERWISE.
ALL TRANSVERSE DIMENSIONS ARE NORMAL TO LONGITUDINAL CONST. JOINT.
ALL TRANSVERSE BARS SHALL BE PLACED NORMAL TO LONGITUDINAL CONST. JOINT.
FOR CONCRETE PLACEMENT QUANTITIES, SEE DESIGN SHEET 11.

NOTE: CONCRETE DECK SHALL BE PLACED IN SECTIONS AND SEQUENCES INDICATED. (AN APPROVED ALTERNATE PROCEDURE IS TO PLACE THE CONCRETE DECK IN ONE CONTINUOUS POUR BEGINNING AT ONE END OF THE BRIDGE.) ALTERNATE PROCEDURES FOR PLACING DECK CONCRETE MAY BE SUBMITTED FOR APPROVAL TOGETHER WITH A STATEMENT OF THE PROPOSED METHOD AND EVIDENCE THAT THE CONTRACTOR POSSESSES THE NECESSARY EQUIPMENT AND FACILITIES TO ACCOMPLISH THE REQUIRED RESULTS. THE BRIDGE ENGINEER SHALL REVIEW ANY ALTERNATE PROCEDURES. THE COST OF ANY ADDITIONAL ANALYSIS AND PLAN MODIFICATIONS SHALL BE PAID FOR BY THE CONTRACTOR. THE ENGINEER SHALL DETERMINE IF A RETARDING ADMIXTURE IS REQUIRED TO MAINTAIN PLASTICITY OF THE CONCRETE DECK DURING PLACEMENT.




## PERMISSIBLE TRANSVERSE DECK CONSTRUCTION JOINT

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 1

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## SUPERSTRUCTURE DETAILS

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 15 OF 23 — FILE NO. 30864 — DESIGN NO. 1417





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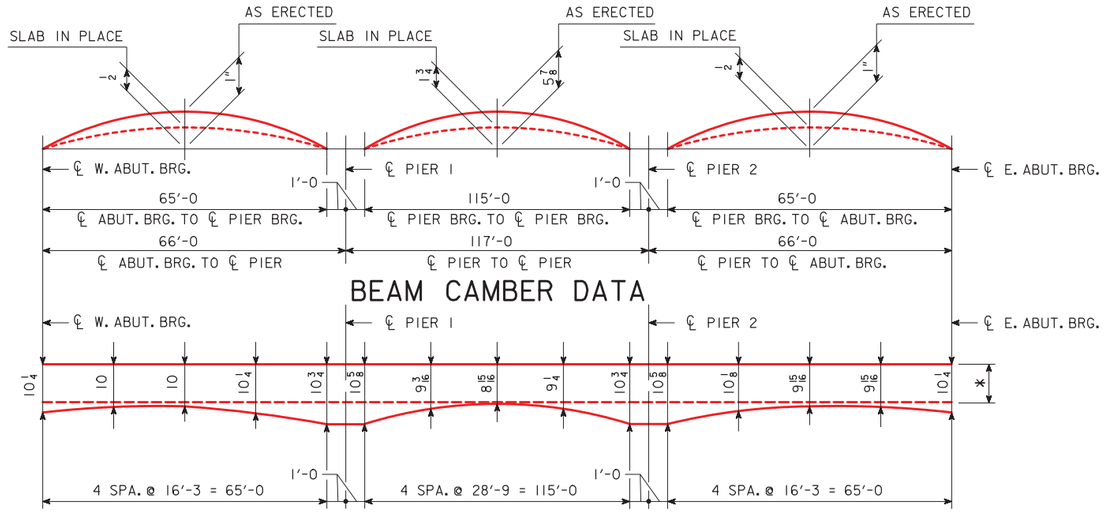
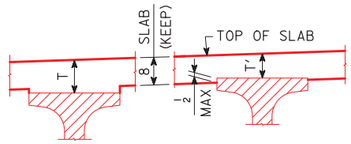


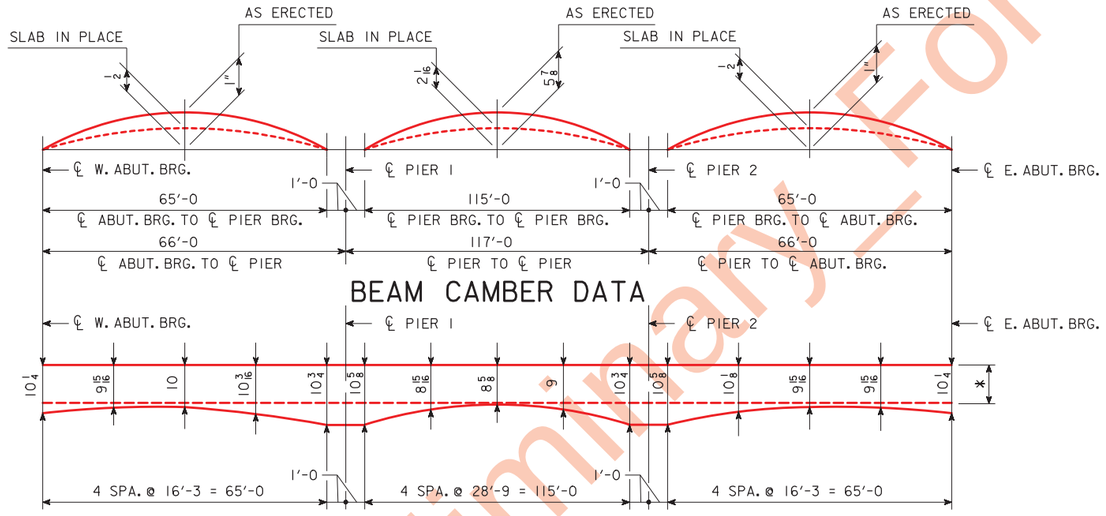

SLAB THICKNESS AT BEAMS (T)
FOR BEAM LINE H

* NOMINAL SLAB THICKNESS AT BEAMS INCLUDES 8" SLAB + HAUNCH = T




SLAB THICKNESS DETAILS

NOTE: THE SLAB THICKNESS (T) AT BEAMS IS BASED ON THE ANTICIPATED BEAM CAMBER AND DEFLECTIONS. THESE VALUES ARE USED BY THE DESIGNER TO SET BEAM ELEVATIONS AND ESTIMATE CONCRETE QUANTITIES. REFER TO THE HAUNCH DATA DETAILS SHEET FOR ADDITIONAL INFORMATION TO AID THE CONTRACTOR IN SETTING THE FIELD HAUNCHES REQUIRED FOR CONSTRUCTION.




SLAB THICKNESS AT BEAMS (T)
FOR BEAM LINE J

DESIGN FOR 10° SKEW (RA)

249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

SLAB THICKNESS DETAILS

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 16 OF 23 FILE NO. 30864 DESIGN NO. 1417



| DESIGN TEAM HNTB | BEAM CAMBER AND SLAB THICKNESS DETAILS | MODIFIED STANDARD SHEET 1065 | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 41 |
|---|---|---|---|---|---|



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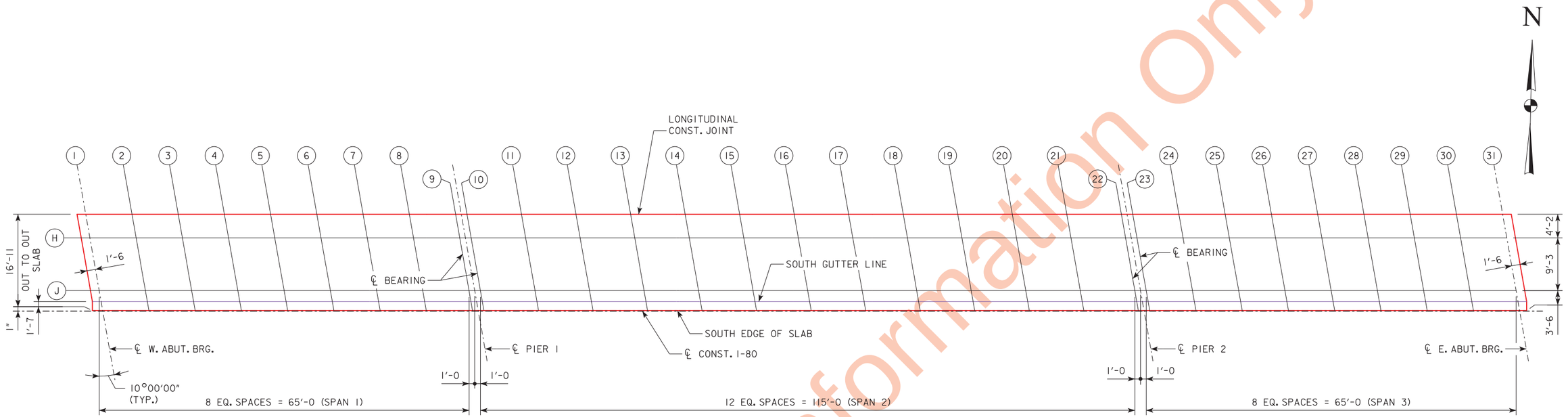
BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510




## TOP OF SLAB ELEVATION PLAN

### TOP OF SLAB ELEVATIONS

| | ℄ W. ABUT. BEARING | | | | | | | | ℄ PIER 1 BEARINGS | | | | | | | | | | | | | ℄ PIER 2 BEARINGS | | | | | | | | ℄ E. ABUT. BEARING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| LONG. CONST. JOINT | 686.97 | 686.93 | 686.89 | 686.85 | 686.81 | 686.76 | 686.72 | 686.68 | 686.64 | 686.63 | 686.59 | 686.54 | 686.49 | 686.44 | 686.39 | 686.35 | 686.30 | 686.25 | 686.20 | 686.15 | 686.11 | 686.06 | 686.05 | 686.01 | 685.97 | 685.93 | 685.89 | 685.84 | 685.80 | 685.76 | 685.72 |
| BEAM H | 686.84 | 686.80 | 686.76 | 686.72 | 686.68 | 686.64 | 686.60 | 686.55 | 686.51 | 686.50 | 686.46 | 686.41 | 686.36 | 686.31 | 686.26 | 686.22 | 686.17 | 686.12 | 686.07 | 686.03 | 685.98 | 685.93 | 685.92 | 685.88 | 685.84 | 685.80 | 685.76 | 685.72 | 685.68 | 685.63 | 685.59 |
| BEAM J | 686.55 | 686.51 | 686.47 | 686.43 | 686.39 | 686.35 | 686.31 | 686.27 | 686.23 | 686.22 | 686.17 | 686.12 | 686.07 | 686.03 | 685.98 | 685.93 | 685.88 | 685.84 | 685.79 | 685.74 | 685.69 | 685.64 | 685.63 | 685.59 | 685.55 | 685.51 | 685.47 | 685.43 | 685.39 | 685.35 | 685.31 |
| SOUTH GUTTER LINE | 686.49 | 686.45 | 686.41 | 686.37 | 686.33 | 686.29 | 686.25 | 686.21 | 686.17 | 686.16 | 686.11 | 686.06 | 686.02 | 685.97 | 685.92 | 685.87 | 685.82 | 685.78 | 685.73 | 685.68 | 685.63 | 685.58 | 685.57 | 685.53 | 685.49 | 685.45 | 685.41 | 685.37 | 685.33 | 685.29 | 685.25 |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SLAB ELEVATIONS

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 17 OF 23 FILE NO. 30864 DESIGN NO. 1417





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REVISED 06-12 - THE ALLOWABLE FIELD HAUNCH MAX. & MIN. WAS CHANGED TO INCHES & DECIMALS OF FEET. NOTE & NOTE 1 WERE CHANGED. THE SLAB HAUNCH LOCATIONS EXAMPLE WAS REPLACED WITH A NOTE.
ENGLISH\MISCELLANEOUSBRIDGES.DGN - 1066 - THIS SHEET ISSUED 02-08.

BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510

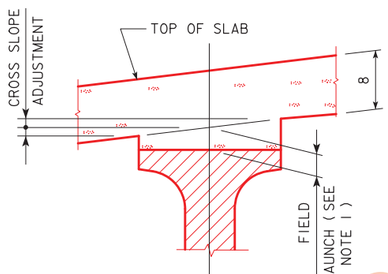
## TABLE OF BEAM LINE SLAB HAUNCH ELEVATIONS

| BEAM LINE | ℄ W. ABUT. BEARING | | | | | | | | ℄ PIER 1 BEARINGS | | | | | | | | | | | | | ℄ PIER 2 BEARINGS | | | | | | | | ℄ E. ABUT. BEARING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LINE 1 | LINE 2 | LINE 3 | LINE 4 | LINE 5 | LINE 6 | LINE 7 | LINE 8 | LINE 9 | LINE 10 | LINE 11 | LINE 12 | LINE 13 | LINE 14 | LINE 15 | LINE 16 | LINE 17 | LINE 18 | LINE 19 | LINE 20 | LINE 21 | LINE 22 | LINE 23 | LINE 24 | LINE 25 | LINE 26 | LINE 27 | LINE 28 | LINE 29 | LINE 30 | LINE 31 |
| H | 686.17 | 686.15 | 686.12 | 686.09 | 686.05 | 686.01 | 685.96 | 685.91 | 685.85 | 685.84 | 685.88 | 685.91 | 685.94 | 685.94 | 685.93 | 685.89 | 685.83 | 685.75 | 685.65 | 685.53 | 685.40 | 685.26 | 685.25 | 685.23 | 685.20 | 685.17 | 685.13 | 685.09 | 685.04 | 684.99 | 684.93 |
| J | 685.89 | 685.86 | 685.84 | 685.80 | 685.77 | 685.72 | 685.67 | 685.62 | 685.56 | 685.55 | 685.59 | 685.62 | 685.63 | 685.63 | 685.62 | 685.58 | 685.52 | 685.44 | 685.35 | 685.23 | 685.11 | 684.98 | 684.97 | 684.94 | 684.92 | 684.88 | 684.85 | 684.80 | 684.75 | 684.70 | 684.64 |

## MISCELLANEOUS DATA TABLE

| | BEAM LINE | | ℄ W. ABUT. BEARING | | | | | | | | ℄ PIER 1 BEARINGS | | | | | | | | | | | | | ℄ PIER 2 BEARINGS | | | | | | | | ℄ E. ABUT. BEARING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LINE 1 | LINE 2 | LINE 3 | LINE 4 | LINE 5 | LINE 6 | LINE 7 | LINE 8 | LINE 9 | LINE 10 | LINE 11 | LINE 12 | LINE 13 | LINE 14 | LINE 15 | LINE 16 | LINE 17 | LINE 18 | LINE 19 | LINE 20 | LINE 21 | LINE 22 | LINE 23 | LINE 24 | LINE 25 | LINE 26 | LINE 27 | LINE 28 | LINE 29 | LINE 30 | LINE 31 |
| ANTICIPATED DEFLECTION DUE TO SLAB (IN.) | H | | 0 | 3/16 | 3/8 | 1/2 | 9/16 | 1/2 | 3/8 | 3/16 | 0 | 0 | 1 1/16 | 2 1/16 | 2 15/16 | 3 9/16 | 3 15/16 | 4 1/8 | 3 15/16 | 3 9/16 | 2 15/16 | 2 1/16 | 1 1/16 | 0 | 0 | 3/16 | 3/8 | 1/2 | 9/16 | 1/2 | 3/8 | 3/16 | 0 |
| | J | | 0 | 3/16 | 3/8 | 7/16 | 1/2 | 7/16 | 3/8 | 3/16 | 0 | 0 | 1 | 1 15/16 | 2 11/16 | 3 5/16 | 3 11/16 | 3 13/16 | 3 11/16 | 3 5/16 | 2 11/16 | 1 15/16 | 1 | 0 | 0 | 3/16 | 3/8 | 7/16 | 1/2 | 7/16 | 3/8 | 3/16 | 0 |
| CROSS SLOPE ADJUSTMENTS (IN.) | ALL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ALLOWABLE FIELD HAUNCH IN. & (FT.) | MAX. | ALL | 4 (0.333) | 4 (0.333) | 3 1/2 (0.292) | 3 1/2 (0.292) | 3 (0.250) | 3 1/2 (0.292) | 3 1/2 (0.292) | 4 (0.333) | 4 (0.333) | 4 (0.333) | 3 1/2 (0.292) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 3 1/2 (0.292) | 4 (0.333) | 4 (0.333) | 4 (0.333) | 3 1/2 (0.292) | 3 1/2 (0.292) | 3 (0.250) | 3 1/2 (0.292) | 3 1/2 (0.292) | 4 (0.333) | 4 (0.333) |
| | MIN. | ALL | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.001) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 0 (0.001) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.001) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) |

NOTE:
HAUNCH LOCATIONS ARE AT THE SAME LOCATION AS THE ENCIRCLED LETTERS AND NUMBERS SHOWN ON SLAB ELEVATIONS SHEET.




HAUNCH DETAIL

NOTE:
BRIDGE SEAT ELEVATIONS ARE SET BASED ON THEORETICAL CAMBER AND BEAM DEFLECTIONS. THESE BRIDGE SEATS WILL PROVIDE A THEORETICAL BEAM HAUNCH WITHIN DESIGN PARAMETERS. FIELD HAUNCHES ARE DETERMINED USING SURVEYED TOP OF BEAM ELEVATIONS AND "BEAM LINE HAUNCH ELEVATION" DATA. ALLOWABLE MAXIMUM AND MINIMUM "FIELD HAUNCH" VALUES ARE GIVEN IN INCHES AND DECIMALS OF FEET IN THE "MISCELLANEOUS DATA" TABLE. "CROSS SLOPE ADJUSTMENT" VALUES WILL AID THE CONTRACTOR IN DETERMINING ACTUAL FORMED HAUNCH DIMENSIONS AT THE EDGES OF THE TOP FLANGE.

NOTE 1:
TO CALCULATE FIELD HAUNCH REQUIRED AT EACH LOCATION, SURVEY THE BEAM TOPS CONSISTENT WITH THE SPACINGS SHOWN ON THE "TOP OF SLAB ELEVATIONS LAYOUT". SUBTRACT THE SURVEYED BEAM SHOT FROM THE "BEAM LINE HAUNCH ELEVATION". THIS VALUE WILL BE THE HAUNCH NEEDED (SEE "FIELD HAUNCH" IN HAUNCH DETAIL). THE "BEAM LINE HAUNCH ELEVATION" INCLUDES ADJUSTMENTS FOR SLAB THICKNESSES AND ANTICIPATED DEFLECTIONS. NO ADDITIONAL CALCULATIONS ARE REQUIRED. IF THE FIELD HAUNCH EXCEEDS THE MAXIMUMS AND MINIMUMS SHOWN IN INCHES AND DECIMALS OF FEET IN THE MISCELLANEOUS DATA TABLE, ADJUSTMENTS TO THE GRADE OR ADDITIONAL HAUNCH REINFORCEMENT WILL BE REQUIRED.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SLAB HAUNCH DATA DETAILS

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

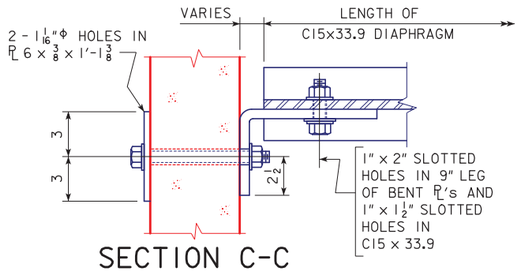
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 18 OF 23 FILE NO. 30864 DESIGN NO. 1417

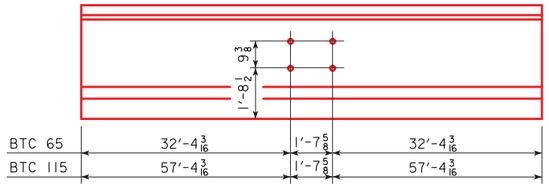
| DESIGN TEAM HNTB | SLAB HAUNCH DATA DETAILS | STANDARD SHEET 1066 | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 43 |
|---|---|---|---|---|---|

# BULB TEE "C" BEAM INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL

| ONE BEAM CONNECTION DETAIL "F" | | | WEIGHT |
|---|---|---|---|
| | | NO. OF BEAM CONNECTIONS | |
| 2 - $\frac{7}{8}$"Φ x 9$\frac{1}{4}$" H.S. BOLTS WITH NUTS & WASHERS = 4.8 LBS. | | 6 | 29 |
| ONE DETAIL "F" | 1 - BACKING PL 6 x $\frac{3}{8}$ x 1'-1$\frac{3}{8}$ = 8.5 LBS. | 6 | 51 |
| | 1 - BENT PL 9 x 6 x $\frac{1}{2}$ x 1'-1$\frac{3}{8}$ = 28.5 LBS. | 6 | 171 |
| **ONE DIAPHRAGM** | | | |
| | | NUMBER OF DIAPHRAGMS | |
| 8 - $\frac{7}{8}$"Φ x 2$\frac{3}{4}$" H.S.BOLTS WITH NUTS & WASHERS = 10.3 LBS. | | 3 | 31 |
| | LENGTH OF MEMBER | 3 | 820 |
| 1 - C15 x 33.9 = 33.9 LBS./FT. | 8'-0$\frac{3}{4}$ | | |
| INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL - TOTAL (LBS.) | | | 1,102 |



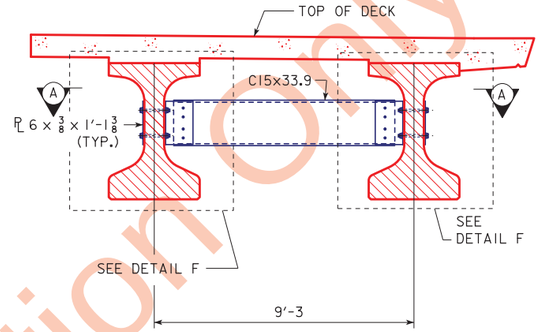

SECTION C-C



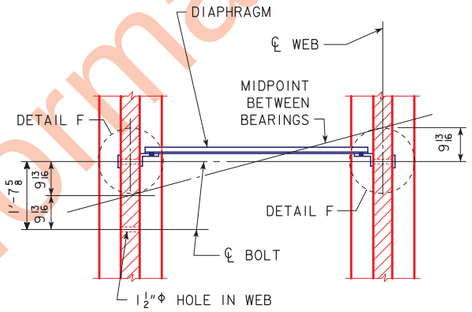

INTERMEDIATE DIAPHRAGM BOLT HOLE LOCATIONS

| STRUCTURAL STEEL | |
|---|---|
| WEIGHT | 1,102 LBS. |

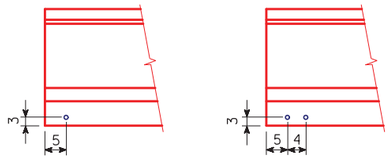
NOTE: STRUCTURAL STEEL WEIGHT IS INCLUDED ON THE SUMMARY QUANTITIES SHEET.




SECTION SHOWING INTERMEDIATE DIAPHRAGM

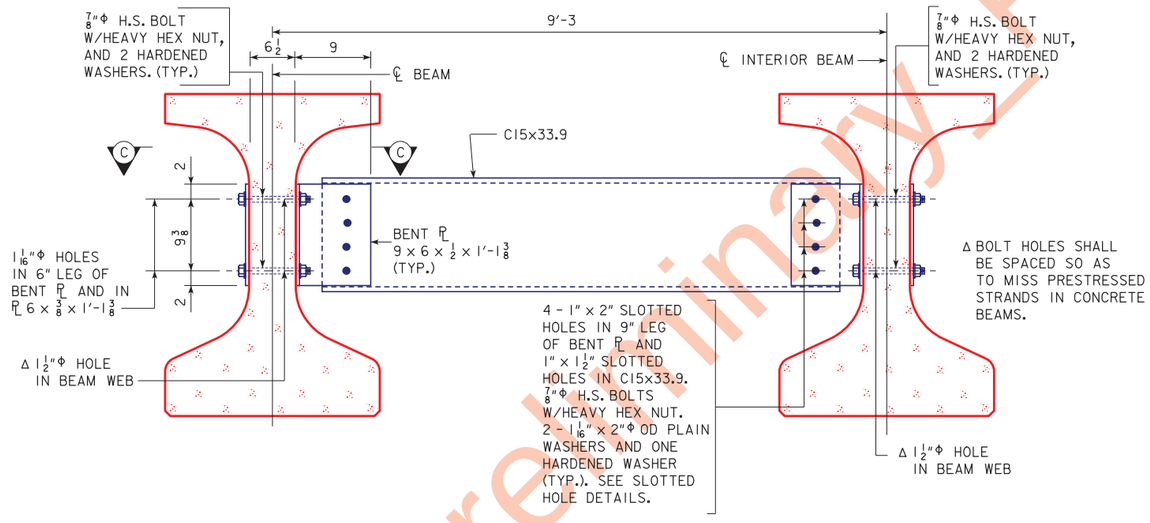



PART SECTION A-A

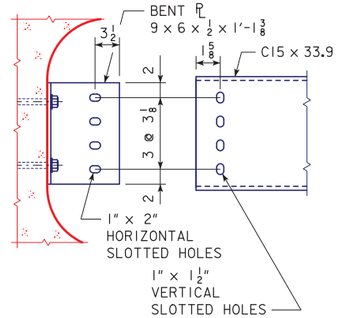



INTEGRAL ABUT. FIXED PIER

BEAM COIL TIE LOCATIONS




DETAIL F




SLOTTED HOLE DETAILS

## NOTES:

ALL DIAPHRAGM MATERIALS, INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.

SHOP DRAWINGS OF THE STEEL DIAPHRAGMS SHOWING LAYOUT AND DETAILS OF THE DIAPHRAGMS SHALL BE SUBMITTED FOR APPROVAL.

ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS SHALL BE INCLUDED IN THE PRICE BID FOR STRUCTURAL STEEL.

THE 1$\frac{1}{2}$"Φ HOLES FOR THE $\frac{7}{8}$"Φ H.S. BOLTS SHALL BE CAST INTO THE WEB. DRILLING IS NOT ALLOWED.

THE $\frac{7}{8}$"Φ H.S. BOLTS THROUGH THE WEB SHALL HAVE A THREAD LENGTH OF 3" MIN. AND 4" MAX. AND SHALL MEET THE REQUIREMENTS OF ASTM A449.

ALL BOLTS ARE TO BE TIGHTENED PRIOR TO PLACING BRIDGE FLOOR CONCRETE.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## INTERMEDIATE DIAPHRAGM DETAILS

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

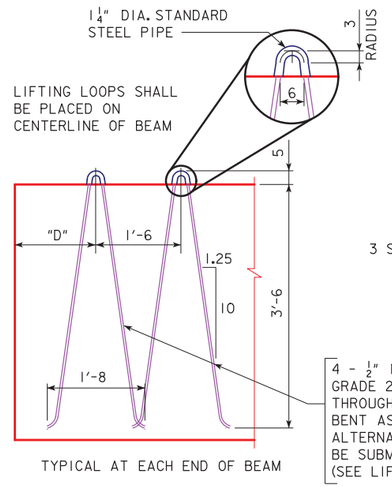
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 19 OF 23 FILE NO. 30864 DESIGN NO. 1417



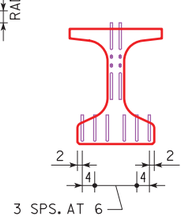
ENGLISHBEAMS.DGN - 1036-2-BTC - THIS SHEET ISSUED 06-14. SHEET 2 OF 2.



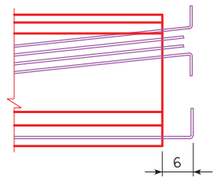

TYPICAL AT EACH END OF BEAM

4 - ½" NOMINAL DIA. GRADE 270 STRANDS THREADED THROUGH EACH PIPE SLEEVE BENT AS SHOWN AFTER THREADING. ALTERNATE LIFTING DEVICES MAY BE SUBMITTED FOR APPROVAL (SEE LIFTING LOOP TABLE).

## LIFTING LOOP DETAIL




THE TOP AND BOTTOM ROWS OF THE DEFLECTED STRANDS ARE TO BE CUT WITH 1'-6 PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN. THE REMAINING TOP DEFLECTED STRANDS ARE TO BE CUT WITH 5" PROJECTIONS.
SIX BOTTOM STRANDS ARE TO BE CUT WITH 1'-6 PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN. THE REMAINING BOTTOM STRANDS ARE TO BE CUT OFF REASONABLY FLUSH WITH THE CONCRETE.




TYPICAL AT BOTH BEAM ENDS

## STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS

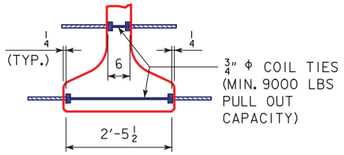
## LIFTING LOOP AND OVERHANG TABLE

| BEAMS | LIFTING LOOPS EACH END | # OF STRANDS PER LOOP | D | BEAM OVERHANG (FT) |
|---|---|---|---|---|
| BTC65 | 1 | 4 | 2'-0 | ** |
| BTCII5 | 2 | 4 | 8'-3 | 14 |

** IN ACCORDANCE WITH ARTICLE 2407.03, K OF THE STANDARD SPECIFICATIONS.

LIFTING LOOPS SHALL CARRY LOADS EQUALLY.

NUMBER AND EXACT LOCATION OF COIL TIES TO BE AS DETAILED ON INTERMEDIATE DIAPHRAGM DETAILS SHEET.




## COIL TIE DETAIL

## DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE TO BE IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2007.
REINFORCING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 5.
PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 270.

## SPECIFICATIONS:

CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, CURRENT SERIES, WITH CURRENT APPLICABLE SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.
DESIGN: AASHTO LRFD, SERIES OF 2007, WITH MINOR MODIFICATIONS.

## ALTERNATE BAR NOTES:

ALTERNATE BARS SHOWN IN BENT BAR DETAILS MAY BE USED IN LIEU OF REINFORCING BARS SHOWN IN BAR LIST. NO ADDITIONAL PAYMENT SHALL BE MADE FOR USE OF ALTERNATE BARS.

## BTC BEAM DATA

| BTC BEAM | SPAN LENGTH ℄ - ℄ BEARING | OVERALL BEAM LENGTH (L) | CONCRETE STRENGTH f'ci (ksi) | CONCRETE STRENGTH f'c (ksi) | STRAND SIZE DIA. (in) | NO. OF STRAND STRAIGHT | NO. OF STRAND DEFLECTED | TOTAL INITIAL PRESTRESS ③ kips | HOLD DOWN FORCE-kips | CAMBER (in) AT RELEASE | CAMBER (in) AFTER LOSSES | DEFLECTION (in) $\Delta_D$ IMMEDIATE ① (ELASTIC) $\Delta_I$ STEEL DIAPHRAGM | DEFLECTION (in) $\Delta_D$ TIME ② (PLASTIC) $\Delta_T$ STEEL DIAPHRAGM | PERMISSIBLE MAXIMUM SPACING HL-93 LOADING STEEL DIAPHRAGM | WEIGHT (TONS) | CONCRETE (CU YD.) | REINFORCING STEEL (WEIGHT-LBS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BTC65 | 65'-0 | 66'-4 | 5.00 | 6.00 | 0.60 | 14 | 2 | 681 | 11.5 | 0.57 | 1.01 | 0.47 | 0.12 | 9'-3 | 23.9 | 11.8 | 1,695 |
| BTCII5 | 115'-0 | 116'-4 | 8.00 | 9.00 | 0.60 | 38 | 10 | 2042 | 27.7 | 3.32 | 5.86 | 3.83 | 0.96 | 9'-3 | 41.9 | 20.7 | 2,916 |

① DEFLECTIONS AT MID-SPAN DUE TO WEIGHT OF SLAB AND DIAPHRAGM. THE DEFLECTIONS SHOWN ARE FOR A SLAB ( 8 in ) AND HAUNCH ( 1.5 in ) WEIGHT OF:
0.98 kips/ft FOR 9'-3 BEAM SPACING
AND ONE STEEL DIAPHRAGM ( 0.500 kips ) AT ℄ OF SPAN.
FOR DIFFERENT SLAB AND DIAPHRAGM WEIGHTS, DEFLECTIONS WILL BE DIRECTLY PROPORTIONAL.
② DEFLECTIONS DUE TO THE COMBINED EFFECT OF CREEP DUE TO WEIGHT OF SLAB AND SHRINKAGE OF SLAB.
TOTAL BEAM DEFLECTIONS AT ℄ OF SPAN, $\Delta_D$ , DUE TO WEIGHT OF SLAB AND DIAPHRAGMS FOR DETAILING PURPOSE:
(A) $\Delta_D = \Delta_I + \Delta_T$ FOR SIMPLE SPAN.
(B) $\Delta_D = \Delta_I + \frac{3}{4}\Delta_T$ FOR END SPANS OF CONTINUOUS BRIDGE.
(C) $\Delta_D = \Delta_I + \frac{1}{2}\Delta_T$ FOR INTERIOR SPANS OF CONTINUOUS BRIDGE.
③ TOTAL INITIAL PRESTRESS IS BASED ON 72.6% f's, f's. = 270 ksi. AND As = 0.217 $in^2$.

CALCULATED DESIGN CAMBERS HAVE BEEN REDUCED FROM THEIR THEORETICAL VALUES BY 15% TO AID CONSTRUCTABILITY.

## BEAM NOTES:

THESE BEAMS ARE DESIGNED FOR AASHTO LIVE LOADS AS INDICATED IN ABOVE TABLE WITH AN ALLOWANCE OF 20 LBS PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.
ALL PPC BEAMS SHALL USE HIGH PERFORMANCE CONCRETE ( HPC ) IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
HOLD DOWN POINTS FOR DEFLECTED STRANDS MAY BE MOVED TOWARD ENDS OF BEAM A DISTANCE OF 0.05 L MAXIMUM AT PRODUCER'S OPTION.
ALL PRESTRESSING STRANDS EXCEPT LIFTING LOOP STRANDS SHALL BE 0.60 in. NOMINAL DIAMETER (NOMINAL STEEL AREA = 0.217 $in^2$) AND CONFORM TO ASTM A416 GRADE 270 LOW RELAXATION STRANDS. MINIMUM STRAND BREAKING STRENGTH SHALL BE 58.6 kips.
TOPS OF BEAMS ARE TO BE STRUCK OFF LEVEL AND FINISHED AS PER MATERIALS IM570.
BEARINGS SHALL BE AS DETAILED ON OTHER DESIGN SHEETS.
BEAMS TO BE USED IN BRIDGES MADE CONTINUOUS BY THE POURED IN PLACE FLOOR, ARE TO BE AT LEAST 28 DAYS OLD BEFORE THE FLOOR IS PLACED UNLESS A SHORTER CURING TIME IS APPROVED BY THE BRIDGE ENGINEER.
THE PORTIONS OF THE PRESTRESSED BEAMS THAT ARE TO BE EMBEDDED IN THE ABUTMENT AND PIER DIAPHRAGMS SHALL BE ROUGHENED FOR A DISTANCE OF 10" FROM THE BEAM END BY SANDBLASTING OR OTHER APPROVED METHODS TO PROVIDE SUITABLE BOND BETWEEN THE BEAM AND THE DIAPHRAGM IN ACCORDANCE WITH ARTICLE 2403.03, I, OF THE STANDARD SPECIFICATIONS.
ALL BEAMS ARE TO BE INCREASED IN LENGTH TO COMPENSATE FOR ELASTIC SHORTENING, CREEP AND SHRINKAGE.
FOR TRANSPORTING, THE ALLOWABLE OVERHANG IS SHOWN IN THE LIFTING LOOP AND OVERHANG TABLE.
THE CONTRACTOR SHALL ASSURE THE LATERAL STABILITY OF THE BTCII5 BEAMS DURING HANDLING, TRANSPORTING AND ERECTION BY PROVIDING TEMPORARY BRACING AS NEEDED.
HOLES MUST BE CAST IN THE WEB TO ACCOMMODATE THE STEEL DIAPHRAGM ATTACHMENTS AS DETAILED ON THE STEEL DIAPHRAGM DETAIL SHEET.
MINIMUM CONCRETE f'c (AT 28 DAYS) AND MINIMUM f'ci AT RELEASE ARE LOCATED IN THE BTC BEAM DATA TABLE ABOVE.
FOUR 0.60 IN. DIAMETER STRANDS STRESSED TO NOT MORE THAN 5000 lbs EACH MAY BE USED IN LIEU OF BARS 5a1 AND 5a2 IN THE TOP FLANGE.
FOR MODIFIED STIRRUP EXTENSIONS SEE "BENT BAR DETAILS" AND BEAM DETAILS FOR DIMENSIONS AND LOCATIONS.

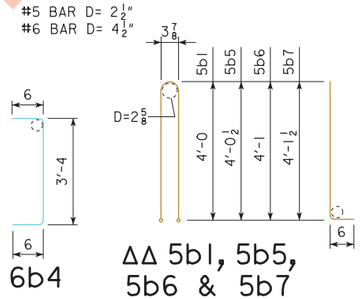
ΔΔ 5b1, 5b5, 5b6, 5b7 AND 6b3 BARS TO BE EPOXY COATED
* 6b3 AND 6b4 BARS TO BE USED IN PAIRS

## REINFORCING BAR LIST

| | BEAM | | BTC65 | | BTCII5 | |
|---|---|---|---|---|---|---|
| | BAR | SHAPE | NO. | LENGTH | NO. | LENGTH |
| | 5a1 | | 12 | 34'-2 | 12 | 21'-4 |
| | 5a2 | | — | — | 12 | 40'-0 |
| ΔΔ | 5b1 | | — | — | 63 | 9'-2 |
| ΔΔ | 5b5 | | 7 | 9'-3 | — | — |
| ΔΔ | 5b6 | | 22 | 9'-4 | 26 | 9'-4 |
| ΔΔ | 5b7 | | 18 | 9'-5 | 4 | 9'-5 |
| ΔΔ * | 6b3 | | 32 | 5'-1 | 36 | 5'-1 |
| * | 6b4 | | 8 | 4'-4 | 24 | 4'-4 |
| | 4c1 | | 83 | 2'-7 | 149 | 2'-7 |
| | 4d1 | | 67 | 6'-5 | 113 | 6'-5 |
| | 4e1 | | 24 | 3'-2 | 24 | 3'-2 |
| | 4h1 | | 6 | 8'-0 | 6 | 8'-0 |

## BENT BAR DETAILS

NOTE: ALL BAR DIMENSIONS ARE OUT TO OUT
D = PIN DIAMETER FOR BENDING (UNLESS OTHERWISE SHOWN)
#4 BAR D= 2"
#5 BAR D= 2½"
#6 BAR D= 4½"




DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BTC BEAM DETAILS

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

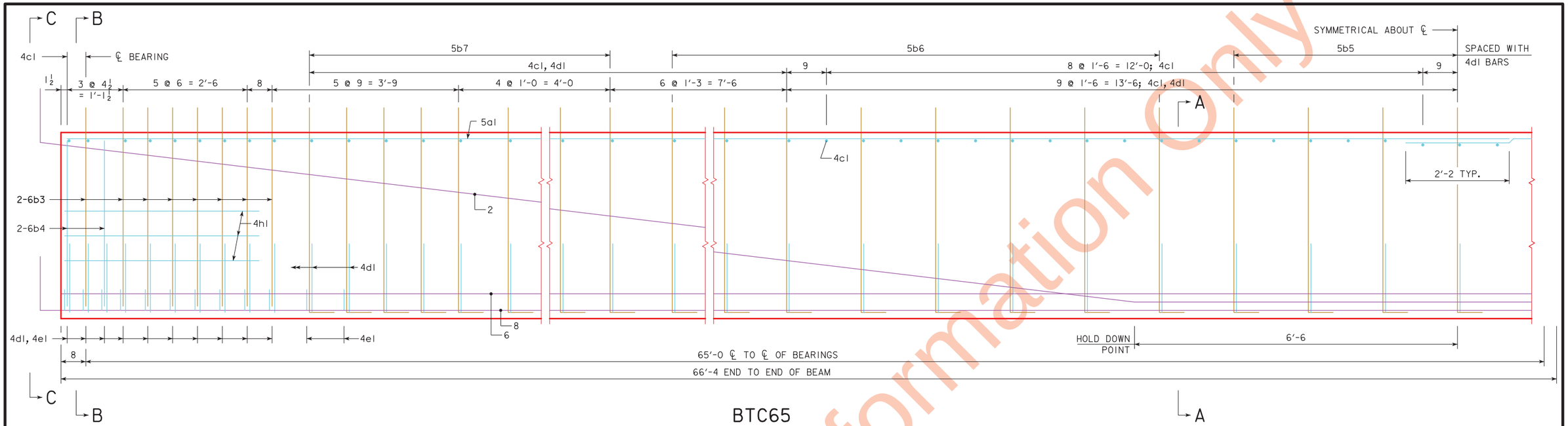
DESIGN SHEET NO. 20 OF 23 FILE NO. 30864 DESIGN NO. 1417

CORRECTION 12-13 - COIL TIE DETAIL WAS CHANGED TO REFLECT THE DISTANCE BETWEEN COIL TIE ANCHORS EMBEDDED ¼ INCH.
ENGLISHBEAMS.DGN 4700 - THIS SHEET ISSUED 05-04.

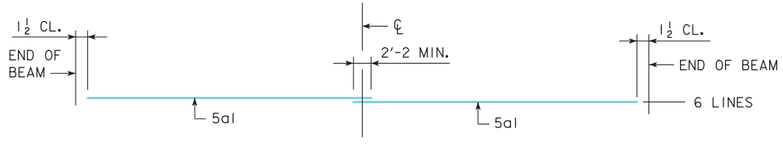




10/25/2019 1:09:20 PM cmeyers pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5208001002\BRFinal\HNTB\52080348.brg 521417S020 11x17_pdf.pltcfg

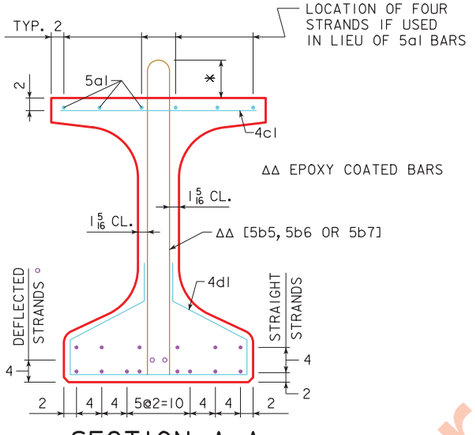



BTC65

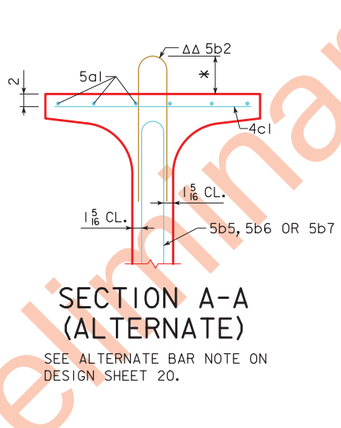



## TOP FLANGE LONGITUDINAL BAR LAYOUT

NOTE STIRRUP EXTENSION
*HEIGHT = 5½ FOR ΔΔ5b2 AND ΔΔ5b5
*HEIGHT = 6 FOR ΔΔ5b2 AND ΔΔ5b6
*HEIGHT = 6½ FOR ΔΔ5b2 AND ΔΔ5b7

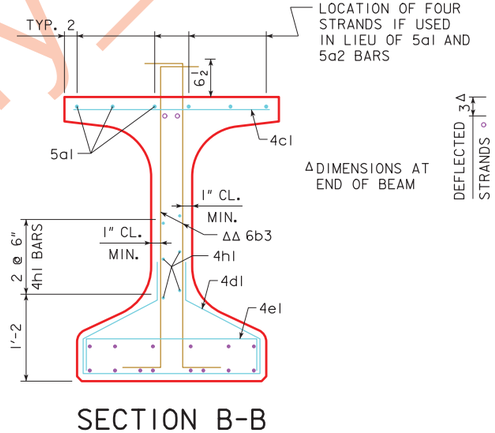



## SECTION A-A

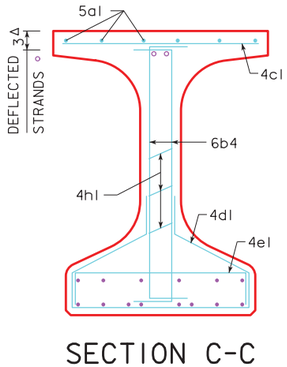



## SECTION A-A (ALTERNATE)

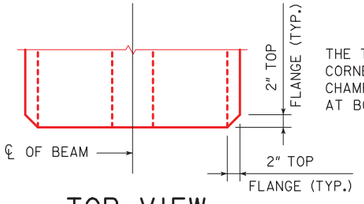
SEE ALTERNATE BAR NOTE ON DESIGN SHEET 20.




## SECTION B-B

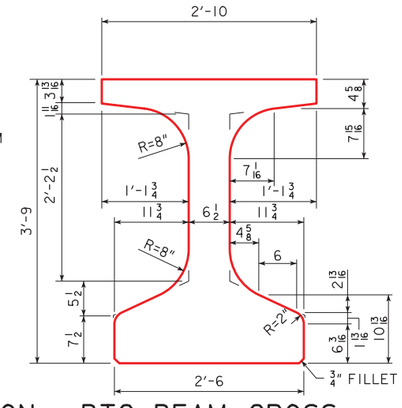



## SECTION C-C




## TOP VIEW

THE TOP FLANGE BEAM CORNERS ARE TO BE CHAMFERED 2" AS SHOWN AT BOTH ENDS OF THE BEAM




AREA = 691.8 in²
$\bar{y}_b$ = 20.74 in.
I = 178,971 in⁴

## BEAM SECTION PROPERTIES

## BTC BEAM CROSS SECTION

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BTC65 BEAM DETAILS

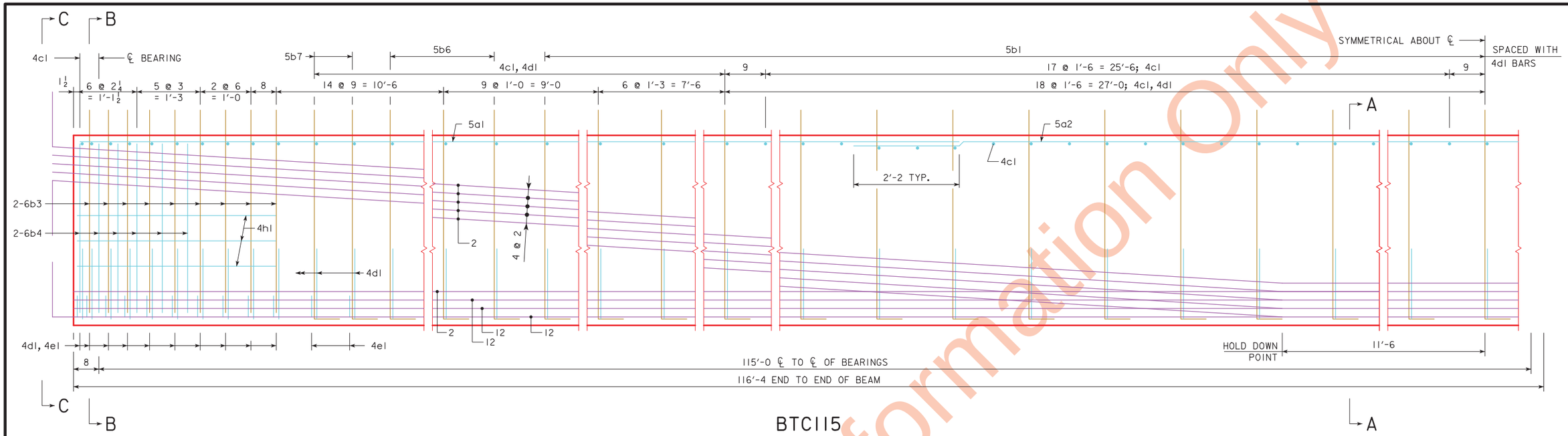
STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

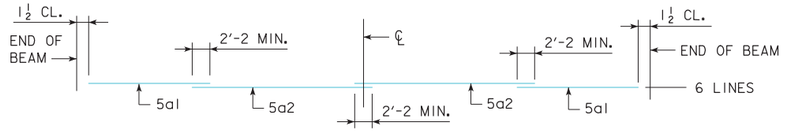
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 21 OF 23 FILE NO. 30864 DESIGN NO. 1417

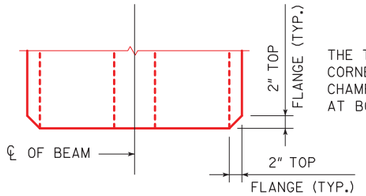
REVISED 10-07 - 5b2 BAR DELETED. 5b1 BAR LENGTHENED TO EXTEND 5 INCHES ABOVE BEAM TOP. ALTERNATE SECTION A-A ADDED.
ENGLISHBEAMS.DGN 4708 - THIS SHEET ISSUED 05-04.



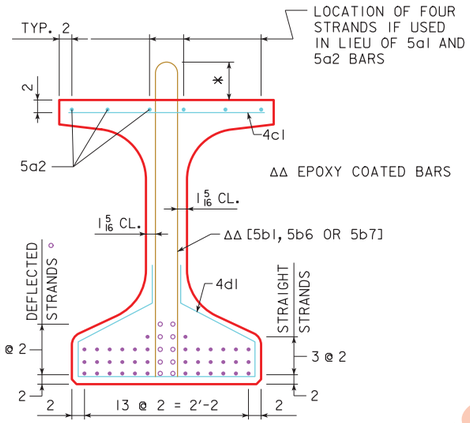

## TOP FLANGE LONGITUDINAL BAR LAYOUT

NOTE STIRRUP EXTENSION
*HEIGHT = 5 FOR ΔΔ5b2 AND ΔΔ5b1
*HEIGHT = 6 FOR ΔΔ5b2 AND ΔΔ5b6
*HEIGHT = 6½ FOR ΔΔ5b2 AND ΔΔ5b7

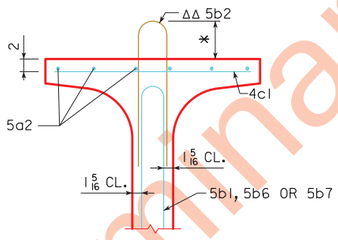



THE TOP FLANGE BEAM CORNERS ARE TO BE CHAMFERED 2" AS SHOWN AT BOTH ENDS OF THE BEAM

## TOP VIEW

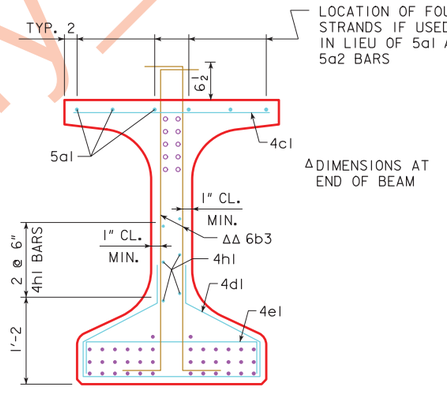



## SECTION A-A

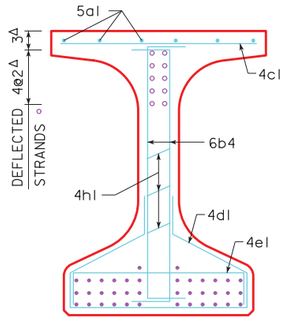



## SECTION A-A (ALTERNATE)

SEE ALTERNATE BAR NOTE ON DESIGN SHEET 20.



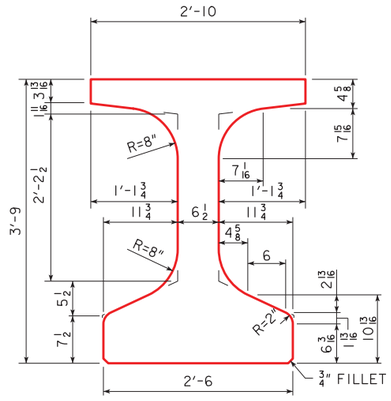

## SECTION B-B




## SECTION C-C

AREA = 691.8 in²
$\bar{y}_b$ = 20.74 in.
I = 178,971 in⁴

## BEAM SECTION PROPERTIES




## BTC BEAM CROSS SECTION

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BTC115 BEAM DETAILS

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 22 OF 23 — FILE NO. 30864 — DESIGN NO. 1417

REVISED 10-07 - 5b2 BAR DELETED. 5b1 BAR LENGTHENED TO EXTEND 5 INCHES ABOVE BEAM TOP. ALTERNATE SECTION A-A ADDED.
ENGLISHBEAMS.DGN 4718 - THIS SHEET ISSUED 05-04.





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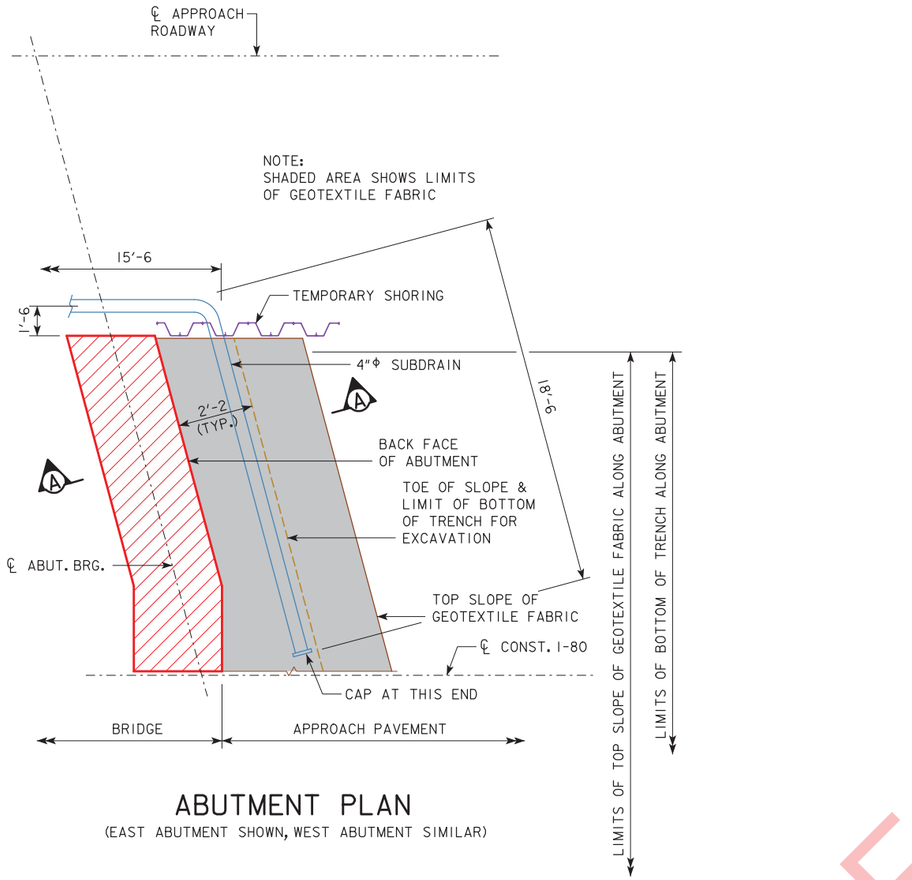
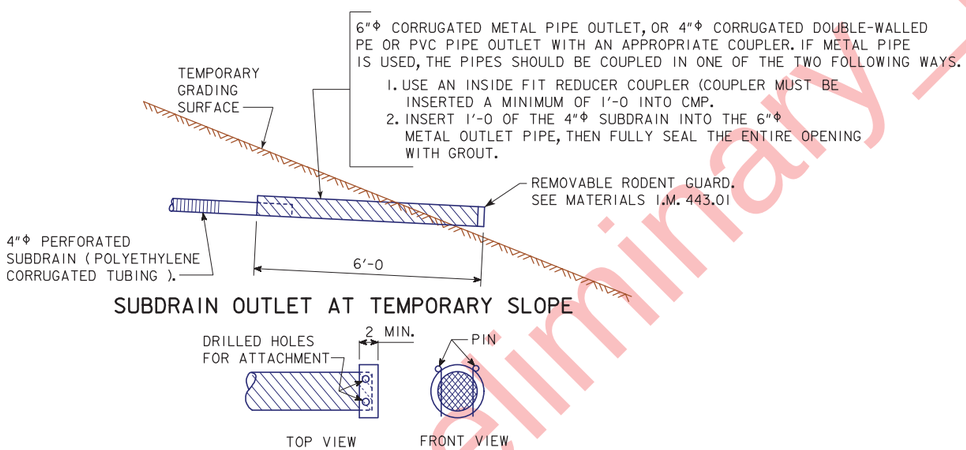
REVISED 09-14 - THE TECHNICAL DATA INFORMATION TABLE WAS REMOVED AND IS LOCATED IN THE STANDARD SPECIFICATIONS. CHANGED SURFACE FLOODING TIME TO 5 MINUTE INCREMENTS.
REVISED 09-2016 - CHANGED THE BRIDGE APPROACH PAVEMENT STANDARD TO "BR" (WAS "RK").
ENGLISHFORESLOPEPROTECTIONBRIDGES.DGN - 1007E - THIS SHEET ISSUED 08-07.




## ABUTMENT PLAN

(EAST ABUTMENT SHOWN, WEST ABUTMENT SIMILAR)




SUBDRAIN OUTLET AT TEMPORARY SLOPE

REMOVABLE RODENT GUARD DETAILS

## OUTLET DETAILS

## ABUTMENT BACKFILL PROCESS:

THE BASE OF THE EXCAVATION SUBGRADE BEHIND THE ABUTMENT IS TO BE GRADED WITH A 4% SLOPE AWAY FROM THE ABUTMENT FOOTING AND A 2% CROSS SLOPE IN THE DIRECTION OF THE SUBDRAIN OUTLET. THIS EXCAVATION SHAPING IS TO BE DONE PRIOR TO BEGINNING INSTALLATION OF THE GEOTEXTILE AND BACKFILL MATERIAL.

AFTER THE SUBGRADE HAS BEEN SHAPED, THE GEOTEXTILE FABRIC SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN. THE FABRIC IS INTENDED TO BE INSTALLED IN THE BASE OF THE EXCAVATION AND EXTENDED VERTICALLY UP THE ABUTMENT BACKWALL AND EXCAVATION FACE TO A HEIGHT THAT WILL BE APPROXIMATELY 1 TO 2 FOOT HIGHER THAN THE HEIGHT OF THE POROUS BACKFILL PLACEMENT AS SHOWN IN THE "BACKFILL DETAILS" ON THIS SHEET. THE STRIPS OF THE FABRIC PLACED SHALL OVERLAP APPROXIMATELY 1 FOOT AND SHALL BE PINNED IN PLACE. THE FABRIC SHALL BE ATTACHED TO THE ABUTMENT BY USING LATH FOLDED IN THE FABRIC AND SECURED TO THE CONCRETE WITH SHALLOW CONCRETE NAILS. THE FABRIC PLACED AGAINST THE EXCAVATION FACE SHALL BE PINNED.

WHEN THE FABRIC IS IN PLACE, THE SUBDRAIN SHALL BE INSTALLED DIRECTLY ON THE FABRIC AT THE TOE OF THE REAR EXCAVATION SLOPE. A SLOT WILL NEED TO BE CUT IN THE FABRIC AT THE POINT WHERE THE SUBDRAIN EXITS THE FABRIC NEAR THE TEMPORARY SHORING.

POROUS BACKFILL IS THEN PLACED AND LEVELED, NO COMPACTION IS REQUIRED.

THE REMAINING WORK INVOLVES BACKFILLING WITH FLOODABLE BACKFILL, SURFACE FLOODING, AND VIBRATORY COMPACTION. THE FLOODABLE BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE FLOODABLE BACKFILL SHALL BE PLACED IN INDIVIDUAL LIFTS, SURFACE FLOODED, AND COMPACTED WITH VIBRATORY COMPACTION TO ENSURE FULL CONSOLIDATION. LIMIT THE LOOSE LIFTS TO NO MORE THAN 2 FEET OF THICKNESS.

START SURFACE FLOODING FOR EACH FLOODABLE BACKFILL LIFT AT THE HIGH POINT OF THE SUBDRAIN AND PROGRESS TO THE LOW POINT WHERE THE SUBDRAIN EXITS THE FABRIC. TO ENSURE UNIFORM SURFACE FLOODING, WATER RUNNING FULL IN A 2-INCH DIAMETER HOSE SHOULD BE SPRAYED IN SUCCESSIVE 6-FOOT TO 8-FOOT INCREMENTS FOR 5 MINUTES WITHIN EACH INCREMENT.

FLOODABLE BACKFILL LIFT PLACEMENT, FLOODING, AND COMPACTION SHALL PROGRESS UNTIL THE REQUIRED FULL THICKNESS OF THE ABUTMENT BACKFILL HAS BEEN COMPLETED.

WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS WILL NOT BE MEASURED SEPARATELY FOR PAYMENT.

THE COST OF WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR STRUCTURAL CONCRETE.

## SUBDRAIN NOTES:

THIS PLAN SHEET SHOWS DETAILS FOR PLACING ALL SUBDRAINS AND SUBDRAIN OUTLETS REQUIRED FOR THIS STRUCTURE.

THE SUBDRAINS SHALL BE 4" IN DIAMETER AND MEET THE REQUIREMENTS OF SECTION 4143.01 B OF THE STANDARD SPECIFICATIONS. THE SUBDRAIN OUTLET SHALL CONSIST OF A 6'-0 LENGTH OF PIPE WITH A REMOVABLE RODENT GUARD AS DETAILED ON THIS SHEET.

THE COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL, POROUS BACKFILL, AND SUBDRAIN OUTLET IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)". NO EXTRA PAYMENT WILL BE MADE.

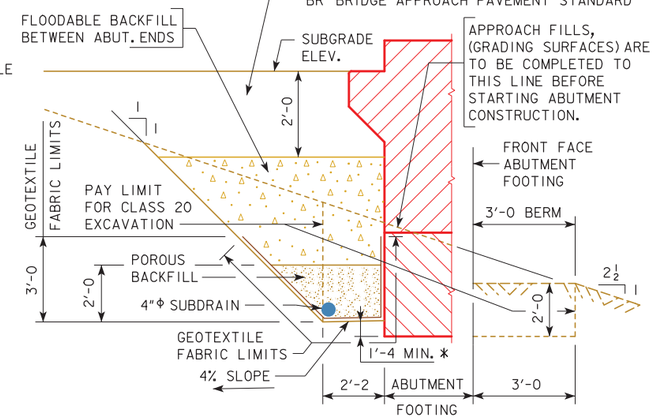
THE DIMENSIONS SHOWN FOR THE PROPOSED SUBDRAINS ARE BASED ON THE PROPOSED GRADING LAYOUT OF BRIDGE BERMS. THE DIMENSIONS SHOWN ARE FOR ESTIMATING ONLY. REQUIRED LENGTHS AND GENERAL LOCATIONS OF SUBDRAINS ARE SUBJECT TO CHANGE DUE TO FIELD ADJUSTMENTS OF THE GRADING LAYOUT.

SUBDRAIN OUTLETS SHALL DAYLIGHT A MINIMUM OF 10'-0 IN FRONT OF ABUTMENT.

## NOTE:

SUBDRAIN SHALL SLOPE DOWNWARD 2% FROM HIGH END WHEN OUTLETTING AT ONE END OF THE ABUTMENT.

THE GEOTEXTILE FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 6 OF THE STANDARD SPECIFICATIONS. IF THE ENGINEERING FABRIC IS LAPPED THE LAPS SHALL BE A MINIMUM OF ONE FOOT IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.




SECTION A-A

## BACKFILL DETAILS

NOTE: GEOTEXTILE FABRIC WILL BE ATTACHED TO FACE OF ABUTMENT FOOTING.

* DIMENSION VARIES DUE TO 2% SUBDRAIN SLOPE

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## ABUTMENT BACKFILL DETAILS

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 23 OF 23 FILE NO. 30864 DESIGN NO. 1417





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# ESTIMATED BRIDGE QUANTITIES - DESIGN NO. 718

| ITEM NO. | ITEM CODE | ITEM | UNIT | TOTAL | AS-BUILT QUANTITY |
|---|---|---|---|---|---|
| 1 | 2104-2710020 | EXCAVATION, CLASS 10, CHANNEL | CY | 353.7 | |
| 2 | 2401-6745625 | REMOVAL OF EXISTING BRIDGE | LS | 1.00 | |
| 3 | 2402-2720000 | EXCAVATION, CLASS 20 | CY | 507 | |
| 4 | 2402-2721000 | EXCAVATION, CLASS 21 | CY | 184 | |
| 5 | 2403-0100010 | STRUCTURAL CONCRETE (BRIDGE) | CY | 348.2 | |
| 6 | 2403-7000210 | HIGH PERFORMANCE STRUCTURAL CONCRETE | CY | 530.4 | |
| 7 | 2403-7303000 | STRUCTURAL CONCRETE COATING | SY | 219.5 | |
| 8 | 2404-7775000 | REINFORCING STEEL | LB | 18,574 | |
| 9 | 2404-7775005 | REINFORCING STEEL, EPOXY COATED | LB | 137,937 | |
| 10 | 2404-7775009 | REINFORCING STEEL, STAINLESS STEEL | LB | 2,041 | |
| 11 | 2407-0563065 | BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTC65 | EACH | 14 | |
| 12 | 2407-0563115 | BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTC115 | EACH | 7 | |
| 13 | 2408-7800000 | STRUCTURAL STEEL | LB | 7,457 | |
| 14 | 2414-6424119 | CONCRETE BARRIER RAIL, AESTHETIC | LF | 276.0 | |
| 15 | 2499-2300001 | DECK DRAINS | LS | 1.00 | |
| 16 | 2501-0201057 | PILES, STEEL, HP 10x57 | LF | 1,260 | |
| 17 | 2501-0201489 | PILES, STEEL, HP 14x89 | LF | 2,480 | |
| 18 | 2501-6335010 | PREBORED HOLES | LF | 180 | |
| 19 | 2507-2638650 | BRIDGE WING ARMORING - EROSION STONE | SY | 11.3 | |
| 20 | 2507-3250005 | ENGINEERING FABRIC | SY | 700.8 | |
| 21 | 2507-6800061 | REVETMENT, CLASS E | TON | 466.9 | |
| 22 | 2507-8029000 | EROSION STONE | TON | 99.0 | |
| 23 | 2526-8285000 | CONSTRUCTION SURVEY | LS | 1.00 | |
| 24 | 2533-4980005 | MOBILIZATION | LS | 1.00 | |

| ITEM NO. | ESTIMATE REFERENCE INFORMATION |
|---|---|
| 5 | INCLUDES THE CONCRETE FOR THE PIERS AND ABUTMENT FOOTINGS. INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), FLOODABLE BACKFILL, POROUS BACKFILL, GEOTEXTILE FABRIC, WATER FLOODING, AND SUBDRAIN OUTLET AT ABUTMENTS AND TOE OF BERM. |
| 6 | INCLUDES THE CONCRETE FOR THE DECK, ABUTMENT DIAPHRAGMS, PIER DIAPHRAGMS, MASKWALLS, AND WINGWALLS. INCLUDES ALL COSTS ASSOCIATED WITH CONCRETE TEXTURING AND RUSTICATION AT THE ABUTMENT WINGS. INCLUDES ALL PREFORMED EXPANSION JOINT FILLER REQUIRED. REFER TO THE DEVELOPMENTAL SPECIFICATION FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES" FOR ADDITIONAL INFORMATION. INCLUDES FURNISHING AND PLACING 3 INCH DIAMETER PVC PLASTIC PIPE AND EXPANDING FOAM IN THE ABUTMENT WINGS. |
| 7 | REFER TO THE "CONCRETE PAINTING NOTES" ON DESIGN SHEET 17 FOR MORE INFORMATION. |
| 11,12 | INCLUDES PIER AND ABUTMENT BEARING MATERIAL. INCLUDES FURNISHING AND PLACING COIL RODS. NONSTANDARD STIRRUP LENGTHS ARE USED FOR THESE BEAMS. INCLUDES CONTRACTOR FILLING OUT BEAM NUMBERS BY LOCATION AND BEAM SEAT ELEVATIONS IN "PPC BEAM DATA SPREADSHEET" AND FORWARDING ELECTRONIC SPREADSHEET TO THE ENGINEER. |
| 13 | INCLUDES ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS. |
| 14 | IF PLACEMENT OF CONCRETE IS DONE BY THE SLIP-FORMING METHOD, CLASS BR CONCRETE IS REQUIRED. CAST-IN-PLACE BARRIER RAILS SHALL USE CLASS C MIX. PRICE BID FOR THIS ITEM SHALL INCLUDE THE COST OF CAST-IN-PLACE FORMS IF REQUIRED FOR PLACEMENT OF CONCRETE. INCLUDES ALL COSTS ASSOCIATED WITH INTEGRALLY COLORED CONCRETE AND BARRIER RUSTICATION. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS. INCLUDES 276 FT. OF 2" DIAMETER RIGID STEEL CONDUIT. |
| 15 | INCLUDES ALL NEW DECK DRAINS. REFER TO DESIGN SHEETS 22 AND 34 FOR LOCATION, MATERIALS AND THE DETAILS OF THEIR CONSTRUCTION. MEASUREMENT WILL BE THE LUMP SUM FOR ALL DECK DRAINS REQUIRED AS SPECIFIED IN THE PLANS. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EQUIPMENT AND LABOR AND FOR PERFORMANCE OF ALL WORK NECESSARY FOR FABRICATING AND INSTALLING THE DECK DRAINS AS PER PLAN. |
| 16,17 | INCLUDES FURNISHING AND INSTALLING STEEL PILE POINTS. |
| 19 | INCLUDES FURNISHING AND PLACING ENGINEERING FABRIC, EROSION STONE, AND ALL REQUIRED EXCAVATING, SHAPING AND COMPACTING FOR WING ARMORING. |
| 20 | ENGINEERING FABRIC SHALL BE MATERIAL AS SPECIFIED FOR EMBANKMENT EROSION CONTROL IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS. |
| 21,22 | ESTIMATED AT 1.6 TON/CY. |



## DESIGN HISTORY AT THIS SITE
(INCLUDES THIS DESIGN)

| DES. NO. | TYPE OF WORK |
|---|---|
| 2361 | ORIGINAL DESIGN |
| 1284 | W.B. BRIDGE REPAIR & FLOOR OVERLAY |
| 396 | W.B. & E.B. BRIDGE WIDENING |
| 1417 | STAGE 1 - W.B. RECONSTRUCTION |

NOTE: ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## ESTIMATED BRIDGE QUANTITIES

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 38 FILE NO. 30864 DESIGN NO. 718



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## SUMMARY OF CONCRETE QUANTITIES

| LOCATION | STRUCTURAL CONCRETE | HPC STRUCT. CONCRETE |
|---|---|---|
| WEST ABUTMENT FOOTING | 31.2 | ----- |
| EAST ABUTMENT FOOTING | 31.2 | ----- |
| BRIDGE DECK + ABUT. & PIER DIAPHAGMS | ----- | 520.0 |
| ABUTMENT WINGWALLS AND MASKWALLS | ----- | 10.4 |
| PIER NO. 1 | 144.4 | ----- |
| PIER NO. 2 | 141.4 | ----- |
| TOTAL (CU. YDS.) | 348.2 | 530.4 |

## SUMMARY OF REINFORCING STEEL

| LOCATION | NON-COATED REINFORCING STEEL | STAINLESS STEEL REINFORCING STEEL | EPOXY COATED REINFORCING STEEL |
|---|---|---|---|
| BRIDGE DECK + ABUTMENT FOOTING ** | 186 | ----- | 128,101 |
| ABUTMENT WINGWALLS & MASKWALLS | ----- | ----- | 1,640 |
| NORTH BARRIER RAIL | ----- | 1,657 | 7,449 |
| NORTH BARRIER RAIL END SECTIONS | ----- | 384 | 644 |
| RAIL CONDUIT - NORTH BARRIER RAIL | ----- | --- | 103 |
| PIER NO. 1 | 9,310 | ----- | ----- |
| PIER NO. 2 | 9,078 | ----- | ----- |
| ** INCLUDES ABUTMENT AND PIER DIAPHRAGMS | | | |
| TOTAL (LBS.) | 18,574 | 2,041 | 137,937 |

## SUMMARY OF EXCAVATION

| LOCATION | CLASS 20 EXCAVATION | CLASS 21 EXCAVATION |
|---|---|---|
| WEST ABUTMENT | 78 | ----- |
| EAST ABUTMENT | 78 | ----- |
| PIER 1 | 157 | 92 |
| PIER 2 | 194 | 92 |
| TOTAL (CU. YDS.) | 507 | 184 |

## SUMMARY OF FOUNDATIONS

| LOCATION | SUBSTRUCTURE TYPE | FOUNDATION TYPE | NUMBER | LENGTH (LIN. FT.) | TOTAL (LIN. FT.) |
|---|---|---|---|---|---|
| WEST ABUTMENT | INTEGRAL ABUTMENT | HP 10x57 | 9 | 70 | 630 |
| EAST ABUTMENT | INTEGRAL ABUTMENT | HP 10x57 | 9 | 70 | 630 |
| PIER 1 | PILE BENT PIER | HP 14x89 | 16 | 75 | 1,200 |
| PIER 2 | PILE BENT PIER | HP 14x89 | 16 | 80 | 1,280 |

## SUMMARY OF STRUCTURAL STEEL

| LOCATION | TOTAL (LBS.) |
|---|---|
| INTERMEDIATE DIAPHRAGMS | 7,457 |
| TOTAL (LBS.) | 7,457 |

## SUMMARY OF BEARINGS

| LOCATION | BEARING TYPE | NUMBER | ASSOCIATED BID ITEM |
|---|---|---|---|
| WEST ABUTMENT | 3x3x2'-4½ BAR | 7 | INCIDENTAL ITEM |
| EAST ABUTMENT | 3x3x2'-4½ BAR | 7 | INCIDENTAL ITEM |
| PIER 1 | PLAIN NEOPRENE 1" | 14 | INCIDENTAL ITEM |
| PIER 2 | PLAIN NEOPRENE 1" | 14 | INCIDENTAL ITEM |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SUMMARY QUANTITIES SHEET

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 38 FILE NO. 30864 DESIGN NO. 718





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# GENERAL NOTES:

THIS DESIGN INVOLVES THE CONSTRUCTION OF A 249'-0 x 60'-0 PRESTRESSED CONCRETE BEAM BRIDGE FOR THE WESTBOUND I-80 OVER CLEAR CREEK. THIS CONTRACT REPRESENTS STAGE II CONSTRUCTION FOR THE REPLACEMENT OF THE EXISTING 159'-2 x 57'-3 PRESTRESSED CONCRETE BEAM BRIDGE (ORIGINAL DESIGN NO. 2361 AND WIDENING DESIGN NO. 396).

ELECTRONIC COPIES OF ORIGINAL DESIGN PLANS ARE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS.

THE LUMP SUM BID FOR "REMOVAL OF EXISTING BRIDGE" SHALL INCLUDE REMOVAL OF EXISTING SUPERSTRUCTURE, ABUTMENTS, PIERS AND TEMPORARY SHORING PLACED IN STAGE I (DESIGN NO. 1417) THAT CONFLICTS WITH STAGE II CONSTRUCTION.

REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS.

A SCRAPE SAMPLE WAS TAKEN FROM AN AREA OF THIS BRIDGE TO GET AN INDICATION OF THE EXISTENCE OF AND LEVEL OF TOTAL LEAD AND TOTAL CHROMIUM. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WAS 1400 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 94 PPM. THESE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER CONSTITUENTS WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE IOWA DOT'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

THIS BRIDGE IS DESIGNED FOR HL-93 LOADING, PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

404 PERMIT INFORMATION AND THE POLLUTION PREVENTION PLAN ARE INCLUDED IN THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52.

DURING CONSTRUCTION OF THIS PROJECT THE BRIDGE CONTRACTOR WILL BE REQUIRED TO COORDINATE OPERATIONS WITH THOSE OF OTHER CONTRACTORS WORKING WITHIN THE SAME AREA. SEE THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52, FOR THE LIST OF OTHER WORK IN THE AREA.

UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE BRIDGE CONTRACTOR OF THE STARTING DATE.

THE BRIDGE CONTRACTOR IS TO CLEAR AND/OR SHAPE THE CHANNEL WITHIN THE APPROXIMATE LIMITS OF THE AREAS AS SHOWN ON THE "SITUATION PLAN" AND "LONGITUDINAL SECTION ALONG CENTERLINE ROADWAY" ON DESIGN SHEET 5.

IT SHALL BE THE BRIDGE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

TEMPORARY SHORING PLACED IN STAGE I SHALL BE REMOVED PRIOR TO BEGINNING CONSTRUCTION OF THE STAGE II ABUTMENTS, AS NEEDED. IN ADDITION TO THE REQUIREMENTS NOTED ABOVE, ARTICLE 1107.07 OF THE STANDARD SPECIFICATIONS APPLIES. ALL REMOVED SHORING MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

# GENERAL NOTES, CONT'D:

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

CONCRETE BARRIERS PLACED USING THE SLIPFORM METHOD WILL REQUIRE THE USE OF A CLASS BR CONCRETE IN ACCORDANCE WITH ARTICLE 2513.03, A, 2, OF THE STANDARD SPECIFICATIONS. CAST-IN-PLACE BARRIER RAILS SHALL USE CLASS C MIX. CLASS D CONCRETE IS NOT PERMITTED FOR CONCRETE BARRIER RAILS (CAST-IN-PLACE OR SLIPFORMED METHOD).

THE APPROACH FILLS AS SHOWN ARE NOT A PART OF THIS CONTRACT, BUT ARE TO BE IN PLACE BEFORE ABUTMENT PILES ARE DRIVEN. THE BRIDGE CONTRACTOR IS TO LEVEL OFF AND SHAPE THE BERMS TO THE ELEVATIONS AND DIMENSIONS SHOWN. DRESSING OF SLOPES OUTSIDE THE BRIDGE AREA NOT DISTURBED BY THE BRIDGE CONTRACTOR SHALL BE PAID FOR AS EXTRA WORK.

THE BRIDGE CONTRACTOR SHALL PREBORE HOLES FOR ABUTMENT PILES. HOLES SHALL BE BORED TO THE ELEVATIONS SHOWN ON THE "LONGITUDINAL SECTION ALONG CENTERLINE ROADWAY" ON DESIGN SHEET 5. PILES SHALL BE DRIVEN THROUGH THE HOLES TO AT LEAST THE SPECIFIED DESIGN BEARING.

CAST IN-ONE-PIECE STEEL PILE POINTS ARE REQUIRED FOR ALL ABUTMENT AND PIER PILES IN ACCORDANCE WITH ARTICLE 4167.02 OF THE CURRENT STANDARD SPECIFICATIONS AND MATERIALS IM 468.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING STABILITY OF PRESTRESSED CONCRETE BEAMS DURING ERECTION AND CONSTRUCTION UP THROUGH THE CONCRETE BRIDGE DECK REACHING ITS FULL 28-DAY STRENGTH. THE CONTRACTOR SHALL PROVIDE SUFFICIENT TEMPORARY ANCHOR BRACING AT BEAM ENDS AND TEMPORARY INTERMEDIATE BRACING AS NEEDED TO ENSURE PRESTRESSED BEAM STABILITY. PARTIALLY OR FULLY INSTALLED PERMANENT BRACING AS SHOWN IN THESE DESIGN PLANS SHALL NOT BE ASSUMED SUFFICIENT TO BRACE PRESTRESSED BEAMS DURING ERECTION AND CONSTRUCTION. TEMPORARY BRACING SHALL NOT BE WELDED TO PRESTRESSED BEAM STIRRUPS.

GUARDRAIL IS TO BE PLACED BY PROJECT NO. NHS-080-6(372)239--11-52.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5a1 is $\frac{5}{8}$ inch diameter bar). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

| ENGLISH SIZE | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|
| BAR DESIGNATION | 10 | 13 | 16 | 19 | 22 | 25 | 29 | 32 | 36 |

## BRIDGE DECK DIMENSIONS TABLE

| | ITEM | UNITS | QUANTITY |
|---|---|---|---|
| 1 | DECK LENGTH | L.F. | 252.1 |
| 2 | MINIMUM DECK WIDTH | L.F. | 61.6 |
| 3 | MAXIMUM DECK WIDTH | L.F. | 61.6 |
| 4 | DECK AREA | S.F. | 15,522 |

1. DECK LENGTH IS MEASURED FROM FACE-TO-FACE OF PAVING NOTCHES ALONG THE CENTERLINE OF THE ROADWAY.
2, 3. DECK WIDTHS ARE MEASURED FROM OUT-TO-OUT OF DECK PERPENDICULAR TO THE CENTERLINE OF ROADWAY.
4. DECK AREA IS TO BE BASED ON THE FACE-TO-FACE PAVING NOTCH DISTANCE AND OUT-TO-OUT DECK DIMENSIONS.

# SPECIFICATIONS:

DESIGN:
AASHTO LRFD 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

CONSTRUCTION:
IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.
- "DEVELOPMENTAL SPECIFICATIONS FOR HIGH PERFORMANCE CONCRETE FOR STRUCTURES"
- "DEVELOPMENTAL SPECIFICATIONS FOR CONCRETE SURFACE PREPARATION AND TESTING PRIOR TO COATING APPLICATION"
- "DEVELOPMENTAL SPECIFICATIONS FOR STRUCTURAL CONCRETE COATING"
- "SPECIAL PROVISIONS FOR PROGRESS SCHEDULING (CRITICAL PATH METHOD)"
- "SPECIAL PROVISIONS FOR AESTHETIC TREATMENT OF CONCRETE BARRIER"
- "SPECIAL PROVISIONS FOR E-BUILDER"

# DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

REINFORCING STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 5, GRADE 60 FOR EPOXY COATED AND NON-COATED, AND GRADE 60 OR 75 FOR STAINLESS.

CONCRETE IN ACCORDANCE WITH AASHTO LRFD SECTION 5, f'c = 4.0 KSI, EXCEPT PRESTRESSED BEAM CONCRETE AS NOTED.

PRESTRESSED CONCRETE BEAMS, SEE DESIGN SHEET 28.

BRIDGE DECK CONCRETE f'c = 4.0 KSI

STRUCTURAL STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 6. ASTM A709 GRADE 36, GRADE 50, AND GRADE 50W (AASHTO M270 GRADE 36, GRADE 50, AND GRADE 50W).

## SHOP DRAWING SUBMITTALS

SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS SHOWN IN THE TABLE BELOW. (NOTE ADDITIONAL SHOP DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS.)

SUBMITTAL REQUIREMENTS FOR SHOP DRAWINGS SHOULD BE IN ACCORDANCE WITH ARTICLE 1105.03, OF THE STANDARD SPECIFICATIONS, FOR HIGHWAY AND BRIDGE CONSTRUCTION OF THE IOWA DEPARTMENT OF TRANSPORTATION.

SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION:
(Paren)_County_DesignNumber_SubmittalDescription.pdf
Example: (090)_BlackHawk_Design915_DeckDrains.pdf

| | |
|---|---|
| 1 | INTERMEDIATE STEEL DIAPHRAGMS |
| 2 | DECK DRAINS |
| 3 | FORMWORK FOR AESTHETIC TREATMENT AT ABUTMENTS |

## TRAFFIC CONTROL PLAN

THE ROADWAY WILL BE OPEN TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN INCLUDED IN THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## GENERAL NOTES

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 38 FILE NO. 30864 DESIGN NO. 718





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## GENERAL NOTES FOR TEXTURED CONCRETE FORM LINERS:

SEE INDIVIDUAL DESIGN SHEETS FOR SPECIFIC NOTES AND DETAILS DESCRIBING THE FEATURES WHICH INCORPORATE TEXTURED CONCRETE. WORK PERFORMED TO CREATE TEXTURED CONCRETE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR FORMWORK AND THE FOLLOWING:

FORM THE TEXTURED CONCRETE SURFACE USING A FORM LINER SYSTEM MADE OF HIGH-STRENGTH URETHANE ELASTOMER, PLASTIC OR FLEXIBLE FOAM MATERIALS CAPABLE OF WITHSTANDING ANTICIPATED CONCRETE POUR PRESSURES WITHOUT LEAKAGE OR CAUSING PHYSICAL DEFECTS. FORM LINERS SHALL EASILY ATTACH TO FORMS AND BE REMOVABLE WITHOUT CAUSING CONCRETE SURFACE DAMAGE. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR ATTACHING FORM LINERS TO THE CONCRETE FORMS. IF RECOMMENDED BY THE FORM LINER MANUFACTURER, USE STRUCTURAL BACKERS TO PREVENT DEFORMATION OF THE LINER DURING LOADING OF THE FORMS. THE LINERS SHALL BE DESIGNED TO FORM SURFACES CONFORMING TO THE DESIGN INTENT INCLUDING THE SHAPE, LINES AND DIMENSIONS SHOWN IN THE PLANS AND TO AVOID VISIBLE PATTERN REPEATS. MATCH PATTERN FEATURES AT FORM LINER JOINTS TO MINIMIZE PATTERN REPEATS AND MAKE THE FORMED CONCRETE SURFACE APPEAR UNIFORM AND CONTINUOUS WITHOUT VISIBLE SEAMS AND FORM MARKS. WHEN JOINTS ARE UNAVOIDABLE, MAKE JOINTS ALONG MAIN FEATURES OF THE PATTERN IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. DO NOT MIX FORM LINERS FROM DIFFERENT MANUFACTURERS WHEN FORMING ANY INDIVIDUAL TEXTURE ON THE PROJECT.

FORM LINER EDGES FOLLOWING CURVES ARE TO BE CUT CLEANLY AND PARALLEL TO THE CURVE. USE ADEQUATE BLOCKING, SEALING AND OTHER MEANS IN ORDER TO MAINTAIN THE APPROPRIATE DEPTH AND CHARACTER OF TEXTURE AT CUT EDGES OF LINERS AND TO PREVENT MORTAR LEAKAGE.

DURING LOADING OF FORMS WITH CONCRETE, TAKE EXTRA CARE TO ADEQUATELY VIBRATE CONCRETE IN ORDER TO MAINTAIN ALL INTENDED FEATURES OF THE FORM LINER IN THE FINAL SURFACE AND TO PREVENT VOIDS. FOLLOWING REMOVAL OF FORMS, FINISH MINOR DEFECTS TO BLEND WITH THE BALANCE OF THE SURFACE TEXTURE. THE COMPLETED SURFACE SHALL BE FREE OF BLEMISHES, SURFACE VOIDS AND CONSPICUOUS FORM MARKS TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL CORRECT ANY SURFACE DEFECTS AT NO ADDITIONAL COST TO THE PROJECT.

VERIFY THAT RELEASE AGENTS USED ARE COMPATIBLE WITH FORM LINER MATERIAL, AND ARE NON-STAINING. APPLY RELEASE AGENT IN ACCORDANCE WITH THE FORM LINER MANUFACTURER'S RECOMMENDATIONS.

IF USED, FORM TIES SHALL BE MADE OF NON-CORROSIVE MATERIALS WHEN THE PORTION PERMANENTLY EMBEDDED IN THE CONCRETE IS LESS THAN $1\frac{1}{2}$ INCHES FROM THE FINISHED SURFACE. POSITION FORM TIES AND ACCESSORIES IN STONE PATTERN MORTAR JOINTS IF APPLICABLE AND AT HIGH POINTS OF FINISHED WALL.

STRIP FORMWORK USING TECHNIQUES IN ACCORDANCE WITH LINER MANUFACTURER'S RECOMMENDATIONS AFTER THE CONCRETE HAS ACHIEVED THE STRENGTHS AND CURE TIMES REQUIRED BY THE PLANS AND APPLICABLE SPECIFICATIONS. CLEAN AND REPAIR FORM LINER SURFACES PRIOR TO USE. DO NOT USE SPLIT, FRAYED, DELAMINATED OR OTHERWISE DAMAGED FORM LINERS.

ALL COSTS ASSOCIATED WITH CONCRETE TEXTURING AND FORM LINERS ARE TO BE INCLUDED IN THE BID ITEM, "HIGH PERFORMANCE STRUCTURAL CONCRETE".

## TEXTURED CONCRETE MOCKUP PANEL NOTES:

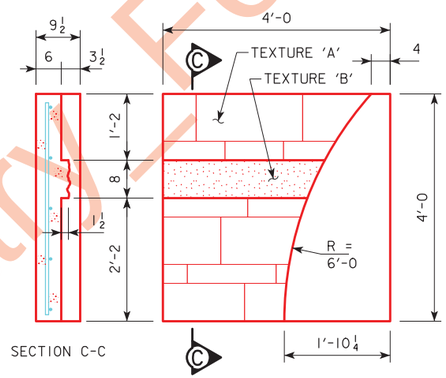
PRIOR TO BEGINNING ANY PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE, A TEXTURED CONCRETE MOCKUP PANEL MUST BE REVIEWED AND APPROVED BY THE ENGINEER.

CONSTRUCT A 4-FOOT HIGH, BY 6-INCH WIDE (MIN.), BY 4-FOOT LONG MOCKUP PANEL IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND THESE PLANS. SEE MOCKUP PANEL DETAILS ON THIS DESIGN SHEET.

CAST THE MOCKUP PANEL(S) ON SITE, USING THE SAME FORMING METHODS, PROCEDURES, FORM LINERS, AND CONCRETE MIXTURE(S) AS ARE PROPOSED FOR THE PRODUCTION WORK. TEXTURED FACES SHALL BE VERTICAL DURING THE CASTING PROCESS. A SINGLE MAT OF NO. 5 REINFORCING BARS IN TWO DIRECTIONS SHALL BE SET 2 INCHES CLEAR TO THE BOTTOM OF THE TEXTURED FACE. IF THE MOCKUP PANEL IS REJECTED, CONSTRUCT A NEW MOCKUP PANEL AS DIRECTED BY THE ENGINEER. BEGIN TEXTURED CONCRETE PRODUCTION WORK ONLY AFTER THE MOCKUP HAS BEEN APPROVED BY THE ENGINEER.

AFTER ALL PRODUCTION TEXTURED CONCRETE WORK IS COMPLETE, THE MOCKUP PANEL(S) SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.

ALL COSTS ASSOCIATED WITH THE TEXTURED CONCRETE MOCKUP PANEL(S) SHALL BE INCLUDED IN THE PRICE BID FOR "HIGH PERFORMANCE STRUCTURAL CONCRETE".




MOCKUP PANEL DETAILS

## GENERAL NOTES FOR CONCRETE RUSTICATION:

STRIPS AND PANELS USED AS INSERTS WITHIN CONCRETE FORMS TO CREATE THE RUSTICATION FEATURES MAY BE MADE OF WOOD, STEEL, NYLON, PLASTIC OR OTHER NONPOROUS MATERIAL CAPABLE OF WITHSTANDING ANTICIPATED CONCRETE POUR PRESSURES WITHOUT PHYSICAL DEFECTS. WOOD INSERTS, IF USED, SHALL BE FREE OF WARP, TWIST, CHECKS OR CRACKS, AND SHALL BE PRESOAKED PRIOR TO PLACEMENT OF CONCRETE IN THE FORMS.

RUSTICATION INSERTS SHALL EASILY ATTACH TO FORMS AND SHALL NOT ALLOW LEAKAGE OF CONCRETE BETWEEN THE FORM AND THE INSERT. WHEN STEEL FORMS ARE USED, RUSTICATION STRIPS MAY BE RIGIDLY ATTACHED TO THE INSIDE SURFACES OF THE FORMS. WHEN STEEL FORMS ARE NOT USED, RUSTICATION STRIPS AND OTHER INSERTS FOR SMALL RECESSES ON EXPOSED CONCRETE SURFACES SHALL BE FASTENED TO THE FORMS IN A MANNER THAT WILL PERMIT THEM TO REMAIN IN PLACE WHEN THE FORMS ARE REMOVED. LEAVE INSERTS IN PLACE UNTIL THEY CAN BE REMOVED WITHOUT DAMAGE TO THE SURROUNDING CONCRETE.

THE INSERTS SHALL BE DESIGNED TO FORM SURFACES AND FEATURES CONFORMING TO THE DESIGN INTENT INCLUDING THE SHAPE, LINES, DEPTHS AND DIMENSIONS SHOWN IN THE PLANS. CREATE INSERTS USING A MINIMUM NUMBER OF SPLICE JOINTS IN THEIR LENGTH. SPLICES, IF USED, SHALL BE TIGHTLY JOINED SO AS NOT TO ALLOW GAPS OR LEAKS, AND SHALL NOT CREATE ANY CHANGE IN ALIGNMENT OR SHAPE OF THE RUSTICATION FEATURE. DO NOT LOCATE FORM TIES WITHIN CONCRETE RUSTICATIONS.

FOR RUSTICATION FEATURES FOLLOWING THE PERIMETER OF ROUNDED SURFACES, IT MAY BE NECESSARY TO USE MULTIPLE LAYERS OF INSERT MATERIAL IN ORDER TO ACHIEVE THE RADIUS CURVE. THIS IS ACCEPTABLE, PROVIDED THAT THE FINAL SHAPE, LINE, DEPTH, AND DIMENSION OF THE FEATURES ARE MAINTAINED IN THE FINAL RESULT.

DURING LOADING OF FORMS WITH CONCRETE, TAKE EXTRA CARE TO ENSURE PROPER CONSOLIDATION OF CONCRETE AROUND ALL RUSTICATION INSERTS TO PRESERVE THE SHAPE, LINE AND DEPTH OF ALL INTENDED FEATURES IN THE FINAL CONCRETE SURFACE. FOLLOWING REMOVAL OF FORMS, REPAIR ALL DEFECTS TO ACHIEVE THE RUSTICATION FEATURES AS SPECIFIED IN THE PLANS. PATCH VOIDS, HONEYCOMB AREAS, ETC., IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. IF SURFACES WILL NOT RECEIVE A COATING, ADD WHITE CEMENT TO THE PATCHING MORTAR TO LIGHTEN IT IN ORDER TO MATCH OR BE SLIGHTLY LIGHTER THAN SURROUNDING CONCRETE WHEN DRY. COMPLETED SURFACE SHALL BE FREE FROM BLEMISHES, SURFACE VOIDS AND CONSPICUOUS FORM MARKS TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL CORRECT ANY SURFACE DEFECTS TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE PROJECT.

ALL COSTS ASSOCIATED WITH CONCRETE RUSTICATION ARE TO BE INCLUDED IN THE BID ITEM "HIGH PERFORMANCE STRUCTURAL CONCRETE".

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## GENERAL NOTES

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 38 FILE NO. 30864 DESIGN NO. 718





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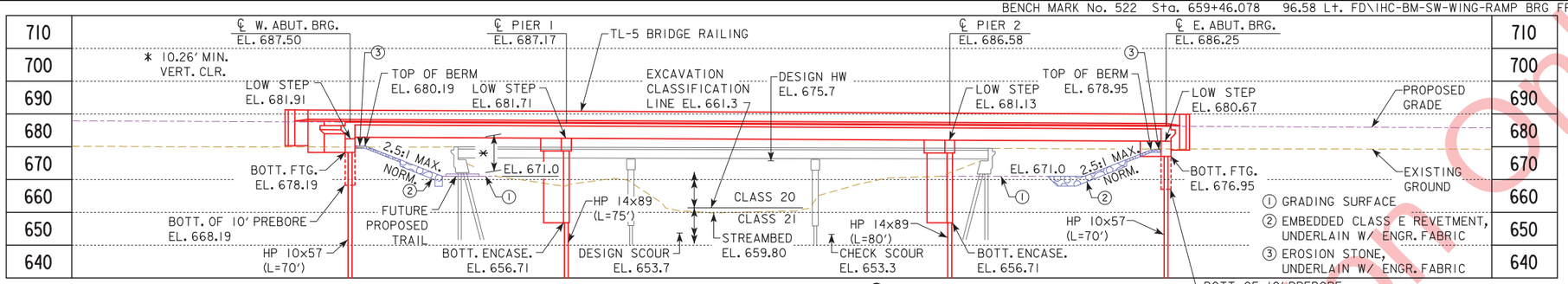
BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510




NOTE: TOP OF BRIDGE DECK AT CENTERLINE ROADWAY IS +0.99' ABOVE THE PROFILE GRADE TO ACCOUNT FOR DECK CROSS SLOPE AND PARABOLIC CROWN.

## LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

-2.9780% -0.5000% +0.6672%

VPI STA = 652+25.00
VPI ELEV = 690.01
VC = 450'

VPI STA = 672+00.00
VPI ELEV = 680.14
VC = 400'

## PROPOSED PROFILE GRADE I-80

## HYDRAULIC DATA

DRAINAGE AREA = 81.0 SQ. MI.
STREAM SLOPE = 3.7 FT./MI.
AVG. LOW WATER STAGE = 661.3

$Q_{50}$ = 8,700 CFS
STAGE = 675.7
BACKWATER = 1.2 FT.
AVG. BRIDGE VELOCITY = 5.6 FPS

$Q_{100}$ = 10,500 CFS
STAGE = 676.5
BACKWATER = 1.5 FT.
AVG. BRIDGE VELOCITY = 6.1 FPS

$Q_{200}$ = 13,400 CFS
STAGE = 677.6
CALCULATED DESIGN SCOUR = 653.7

$Q_{500}$ = 15,000 CFS
STAGE = 678.2
CALCULATED CHECK SCOUR = 653.3

ROADWAY OVERTOP 681.72
STA. 671+71

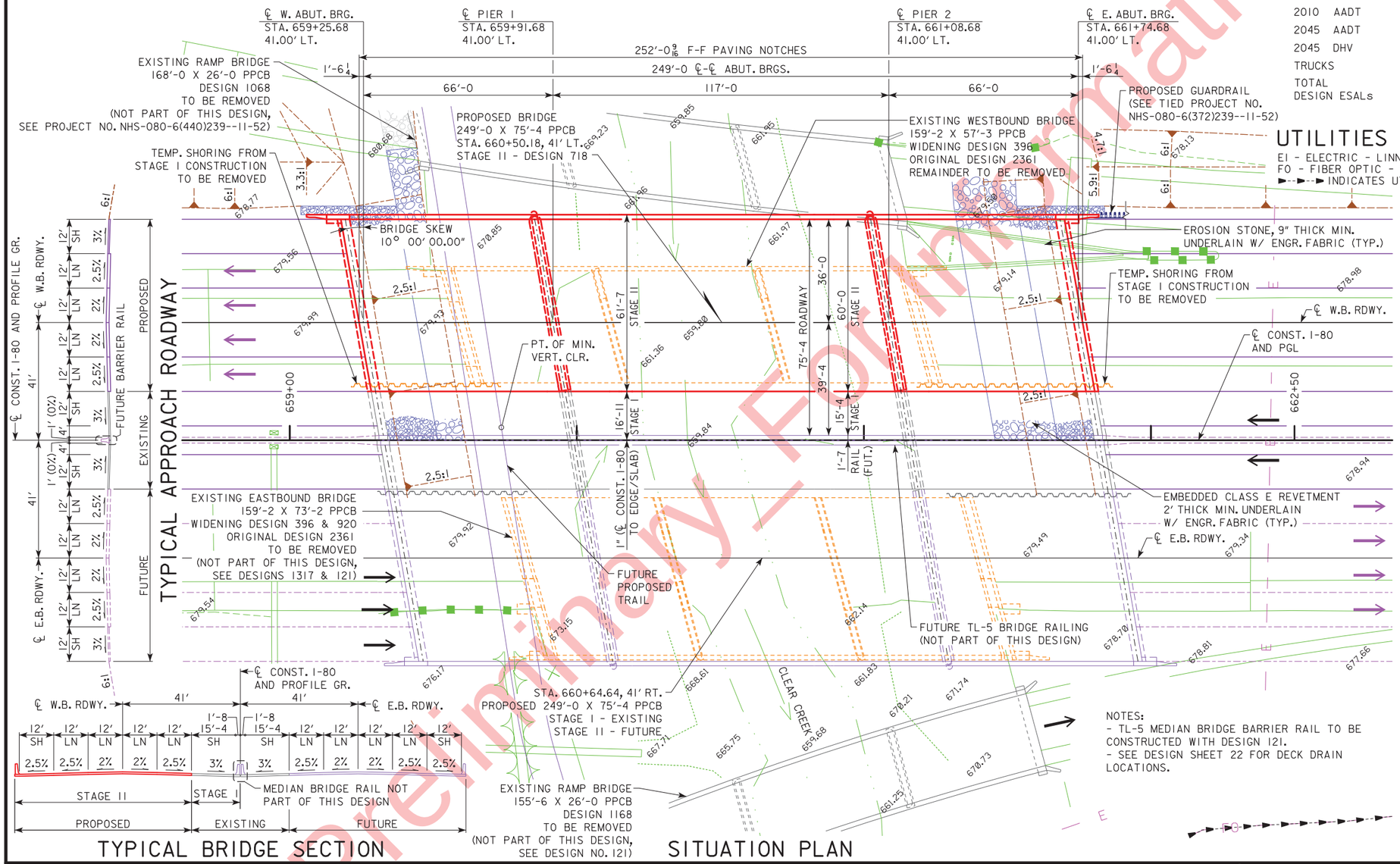
50, 100 & 500 YR. STAGES AND DISCHARGES FROM JOHNSON COUNTY F.I.S., DATED FEBRUARY 16, 2007.
F.I.S. DATUM - 0.10 FT = PROJECT DATUM.

## TRAFFIC ESTIMATE

| | | |
|---|---|---|
| 2010 AADT | 13,830 | V.P.D. |
| 2045 AADT | 31,380 | V.P.D. |
| 2045 DHV | 3,085 | V.P.H. |
| TRUCKS | 26 | % |
| TOTAL DESIGN ESALs | --- | |

## UTILITIES LEGEND:

EI - ELECTRIC - LINN CO. REC
FO - FIBER OPTIC - STATE OF IOWA (ICN)
►--►--► INDICATES UTILITY AS ABANDONED




## SITUATION PLAN




## TYPICAL BRIDGE SECTION


## LOCATION

W.B. I-80 OVER CLEAR CREEK
T-80N R-7W
SECTION 35
CLEAR CREEK TOWNSHIP
JOHNSON COUNTY
FHWA NO. 32001
BRIDGE MAINT. NO. 5239.4L080
LATITUDE 41.694459°
LONGITUDE -91.632418°

## HYDRAULIC DESIGN

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

David R. Claman 11571 LICENSED PROFESSIONAL ENGINEER IOWA

Signature Date
Printed or Typed Name: David R. Claman
My license renewal date is December 31, 2020
Pages or sheets covered by this seal: SHEETS 53 & 54

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SITUATION PLAN

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 38 FILE NO. 30864 DESIGN NO. 718

DESIGN TEAM HNTB | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 53

BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510

REVETMENT LIMITS - WEST

(R1) 659+44.08, 101.96' LT

(R2) 659+48.88, 0.00' LT

REVETMENT LIMITS - EAST

(R1) 661+41.73, 94.58' LT

(R2) 661+69.09, 0.00' LT

## ESTIMATED BERM ARMORING QUANTITIES

| LOCATION | REVETMENT CL. E (TON) | EROSION STONE (TON) | ENGINEERING FABRIC (SY) | EXCAVATION (CY) |
|---|---|---|---|---|
| BERM LINING - WEST ABUTMENT | 164.4 | 55.7 | 324.7 | 137.5 |
| BERM LINING - EAST ABUTMENT | 302.5 | 43.3 | 376.1 | 216.2 |
| | | | | |
| TOTALS | 466.9 | 99.0 | 700.8 | 353.7 |

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

## BERM SLOPE LOCATION TABLE

| POINTS | WEST ABUTMENT STATION | WEST ABUTMENT OFFSET | WEST ABUTMENT ELEV. | EAST ABUTMENT STATION | EAST ABUTMENT OFFSET | EAST ABUTMENT ELEV. |
|---|---|---|---|---|---|---|
| A1 | 659+46.45 | 81.58' LT | 671.00 | 661+43.04 | 81.58' LT | 671.00 |
| A2 | 659+60.83 | 0.00' | 671.00 | 661+57.16 | 0.00' | 671.00 |
| B1 | 659+23.09 | 81.58' LT | 680.19 | 661+62.95 | 81.58' LT | 678.95 |
| B2 | 659+37.48 | 0.00' | 680.19 | 661+77.34 | 0.00' | 678.95 |
| W1 | 659+05.83 | 81.58' LT | 686.64 | 661+81.83 | 81.58' LT | 685.26 |

BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE

PROPOSED BRIDGE
259'-0 X VARIES PPCB
STA. 7560+29.40 (℄ RAMP G)
(NOT PART OF THIS DESIGN,
SEE PROJECT NO.
NHS-080-6(354)239--11-52
& NHS-080-6(440)239--11-52)

℄ W. ABUT. BRG.
STA. 659+25.68
41.00' LT.

FUTURE PROPOSED TRAIL

EXISTING RAMP BRIDGE
168'-0 X 26'-0 PPCB
DESIGN 1068
TO BE REMOVED
(NOT PART OF THIS DESIGN,
SEE PROJECT NO.
NHS-080-6(440)239--11-52)

EXISTING WESTBOUND BRIDGE
159'-2 X 57'-3 PPCB
WIDENING DESIGN 396
ORIGINAL DESIGN 2361
REMAINDER TO BE REMOVED

℄ E. ABUT. BRG.
STA. 661+74.68
41.00' LT.

℄ RAMP A

℄ RAMP G

EROSION STONE, 9" THICK MIN.
UNDERLAIN W/ ENGR. FABRIC (TYP.)

℄ W.B. RDWY.

EMBEDDED CLASS E REVETMENT
2' THICK MIN. UNDERLAIN W/ ENGR. FABRIC (TYP.)

℄ CONST. I-80
AND PGL

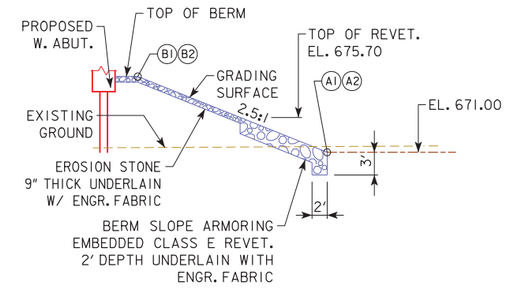
EXISTING EASTBOUND BRIDGE
159'-2 X 57'-3 PPCB
WIDENING DESIGN 396 & 920
ORIGINAL DESIGN 2361
TO BE REMOVED
(NOT PART OF THIS DESIGN,
SEE DESIGNS 1317 & 121)

℄ E.B. RDWY.

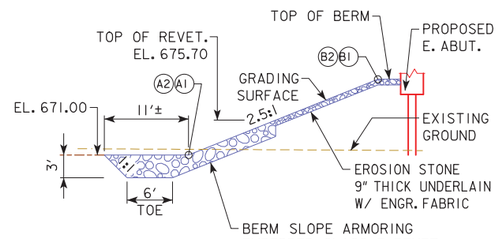
STA. 660+64.64, 41' RT.
PROPOSED 249'-0 X 75'-4 PPCB
STAGE I - EXISTING
STAGE II - FUTURE

CLEAR CREEK

SITE PLAN




## EMBEDDED BERM REVETMENT
(WEST ABUTMENT)




## EMBEDDED BERM REVETMENT
(EAST ABUTMENT)

N

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SITUATION PLAN - SITE

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 38 FILE NO. 30864 DESIGN NO. 718





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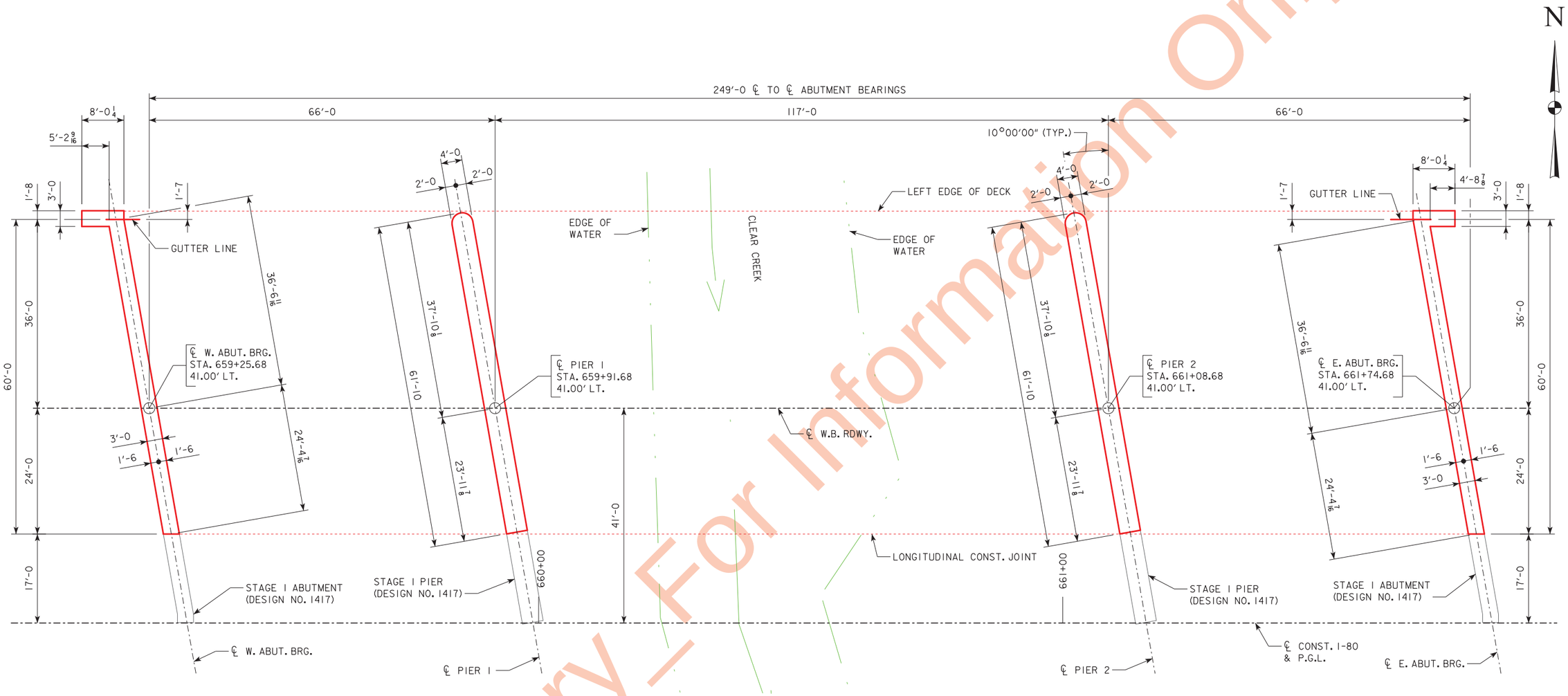


STAKING DIAGRAM

## BRIDGE COORDINATES

| LOCATION | ℄ W. ABUT. BRG. | ℄ PIER 1 | ℄ PIER 2 | ℄ E. ABUT. BRG. |
|---|---|---|---|---|
| LEFT EDGE OF DECK | E=2150304.651<br>N=622870.848 | E=2150370.634<br>N=622872.341 | E=2150487.604<br>N=622874.987 | E=2150553.587<br>N=622876.479 |
| ℄ W.B. ROADWAY | E=2150312.126<br>N=622833.424 | E=2150378.109<br>N=622834.917 | E=2150495.079<br>N=622837.563 | E=2150561.062<br>N=622839.056 |
| LONGITUDINAL CONST. JOINT | E=2150316.900<br>N=622809.526 | E=2150382.883<br>N=622811.019 | E=2150499.853<br>N=622813.665 | E=2150565.836<br>N=622815.157 |

NOTE: AN ELECTRONIC FILE CONTAINING THE BRIDGE COORDINATE DATA IS AVAILABLE AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL VERIFY THESE COORDINATES WITH THE PROJECT HORIZONTAL CONTROL INFORMATION PROVIDED IN THE ROAD PLANS.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## STAKING DIAGRAM

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 38 FILE NO. 30864 DESIGN NO. 718





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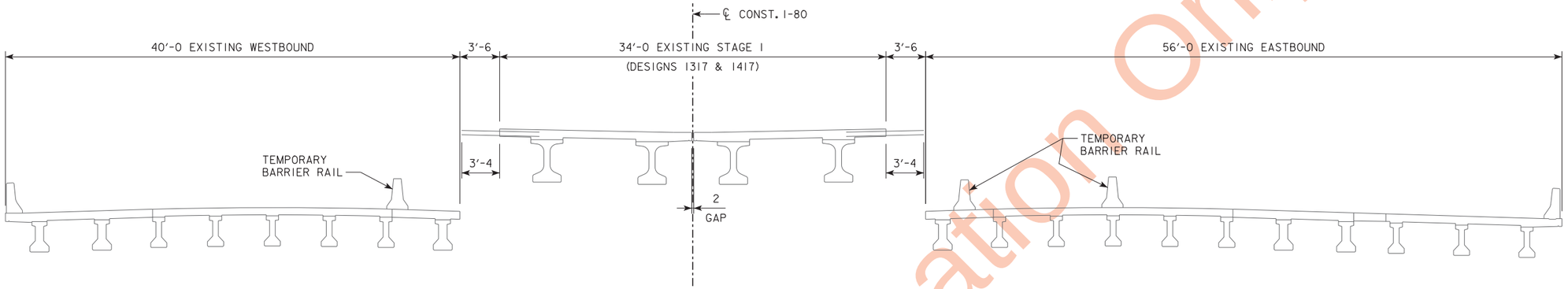
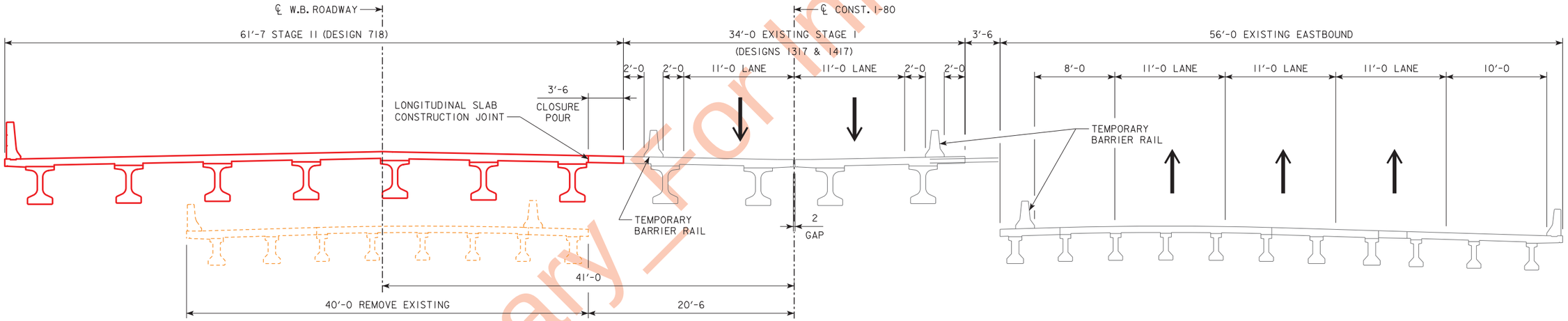



## EXISTING CROSS SECTION

(LOOKING EAST)




## CROSS SECTION - STAGE II

(LOOKING EAST)

NOTE:
SEE TRAFFIC CONTROL PLAN IN THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52 FOR LOCATION OF LANES AND TEMPORARY SAFETY BARRIER DURING AND AFTER THE CONSTRUCTION OF DESIGN 718.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## STAGED CONSTRUCTION PLAN

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 38 FILE NO. 30864 DESIGN NO. 718





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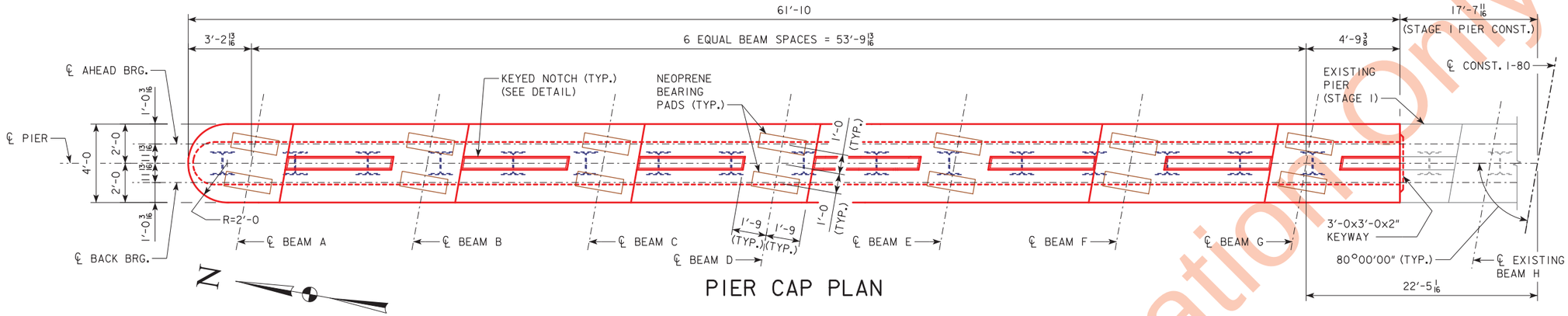
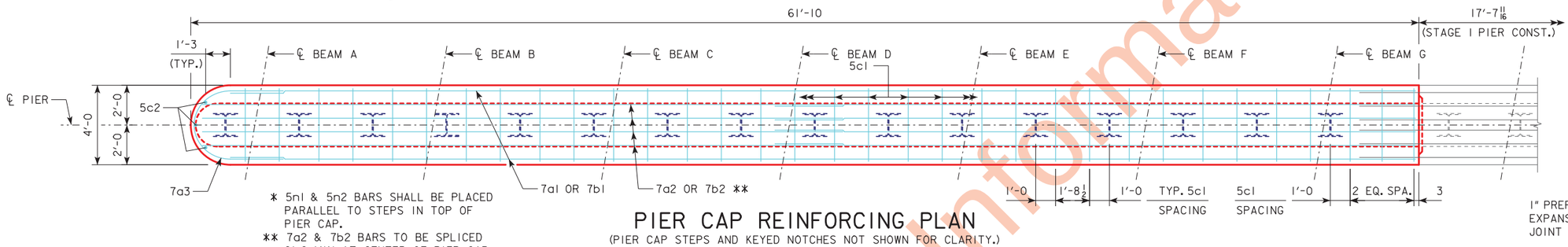
BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510



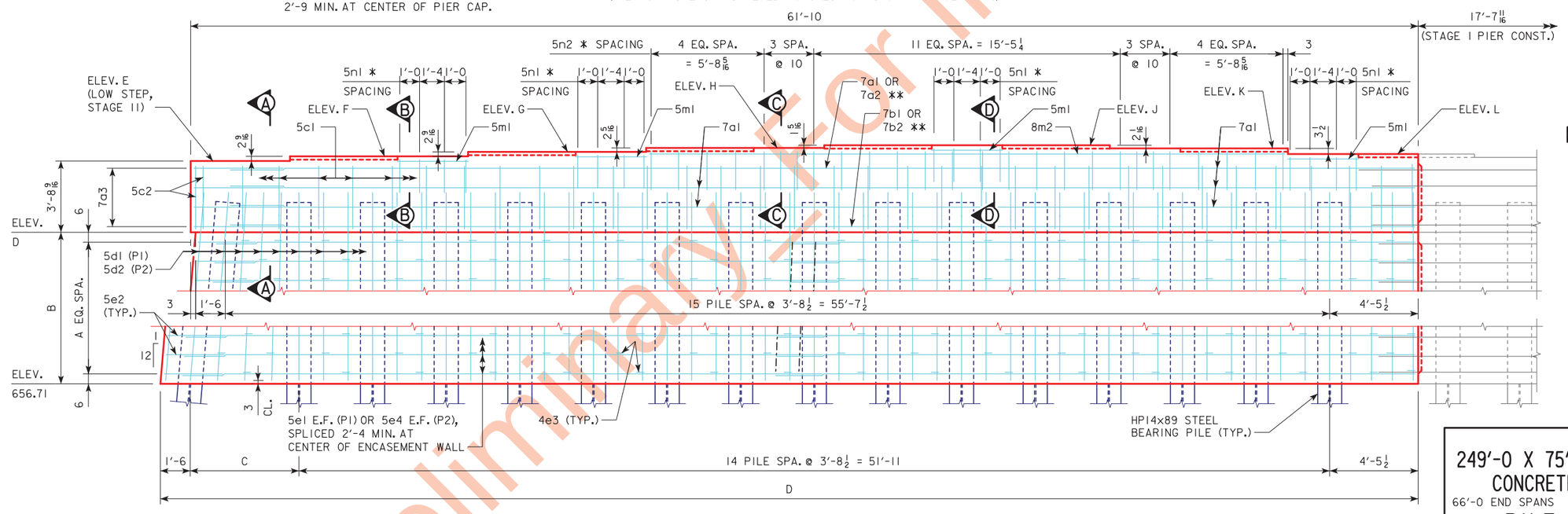

## PIER CAP PLAN




* 5n1 & 5n2 BARS SHALL BE PLACED PARALLEL TO STEPS IN TOP OF PIER CAP.
** 7a2 & 7b2 BARS TO BE SPLICED 2'-9 MIN. AT CENTER OF PIER CAP.

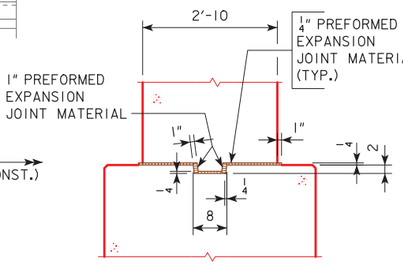
## PIER CAP REINFORCING PLAN

(PIER CAP STEPS AND KEYED NOTCHES NOT SHOWN FOR CLARITY.)




## PIER ELEVATION

NOTES:
SEE DESIGN SHEET 10 FOR SECTIONS A-A THRU D-D, ENCASEMENT PLAN, PILE BENT NOTES, AND QUANTITIES.




## KEYED NOTCH DETAIL

## TABLE OF VARIABLES

| VARIABLE | PIER 1 | PIER 2 |
|---|---|---|
| ELEV. D | 678.00 | 677.41 |
| ELEV. E | 681.71 | 681.13 |
| ELEV. F | 681.93 | 681.34 |
| ELEV. G | 682.14 | 681.55 |
| ELEV. H | 682.33 | 681.75 |
| ELEV. J | 682.44 | 681.85 |
| ELEV. K | 682.26 | 681.68 |
| ELEV. L | 681.97 | 681.39 |
| A | 21 | 20 |
| B | 21'-3 1/2 | 20'-8 3/8 |
| C | 5'-5 13/16 | 5'-5 3/16 |
| D | 63'-4 5/16 | 63'-3 11/16 |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

# PILE BENT PIER DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 38 FILE NO. 30864 DESIGN NO. 718





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# PILE BENT NOTES:

16 - HP 14x89 STEEL BEARING PILING REQUIRED AT PIER 1.
16 - HP 14x89 STEEL BEARING PILING REQUIRED AT PIER 2.

STEEL PILE POINTS ARE REQUIRED FOR THE STEEL H-PILES AT THE PIERS.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.

PIER 1:
THE CONTRACT LENGTH OF 75 FEET FOR THE PIER 1 PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 255 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PILE ENCASEMENT. DESIGN SCOUR (200-YEAR) WAS ASSUMED TO AFFECT THE UPPER 3 FEET OF EMBEDDED PILE LENGTH AND CAUSE 5 KIPS OF DRIVING RESISTANCE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 1 PILES IS 191 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

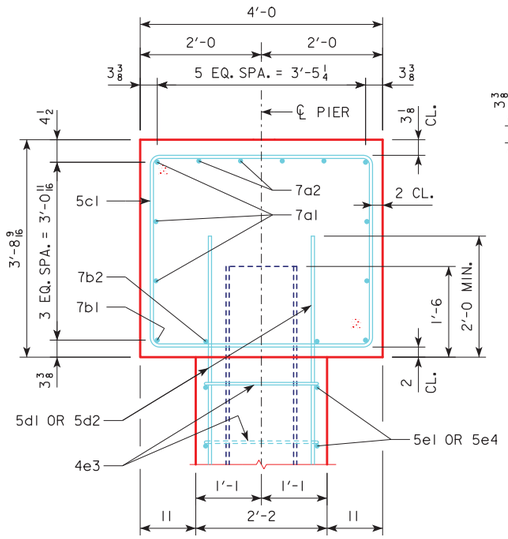
THE WEAP ANALYSIS WILL BE PERFORMED ON THE BASIS THAT ALL EXCAVATION IS COMPLETED BEFORE DRIVING PILES. IF THIS WILL NOT BE THE CASE, PLEASE INFORM THE OFFICE OF CONSTRUCTION TO ACCOUNT FOR ADDITIONAL PILE CAPACITY.

PIER 2:
THE CONTRACT LENGTH OF 80 FEET FOR THE PIER 2 PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 255 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING.

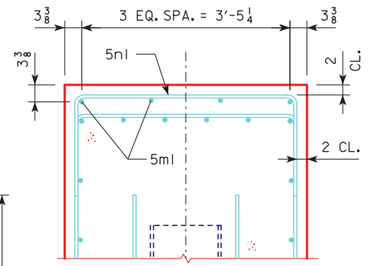
THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PILE ENCASEMENT. DESIGN SCOUR (200-YEAR) WAS ASSUMED TO AFFECT THE UPPER 3 FEET OF EMBEDDED PILE LENGTH AND CAUSE 6 KIPS OF DRIVING RESISTANCE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 2 PILES IS 191 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

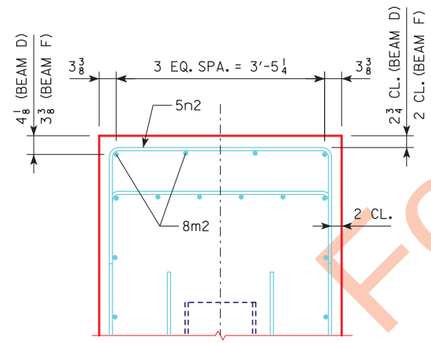
THE WEAP ANALYSIS WILL BE PERFORMED ON THE BASIS THAT ALL EXCAVATION IS COMPLETED BEFORE DRIVING PILES. IF THIS WILL NOT BE THE CASE, PLEASE INFORM THE OFFICE OF CONSTRUCTION TO ACCOUNT FOR ADDITIONAL PILE CAPACITY.



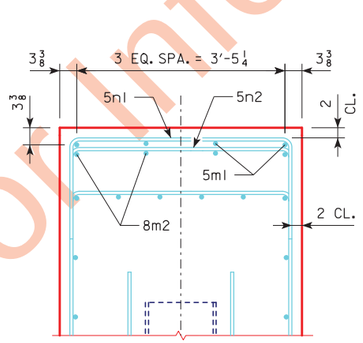

SECTION A-A




SECTION B-B



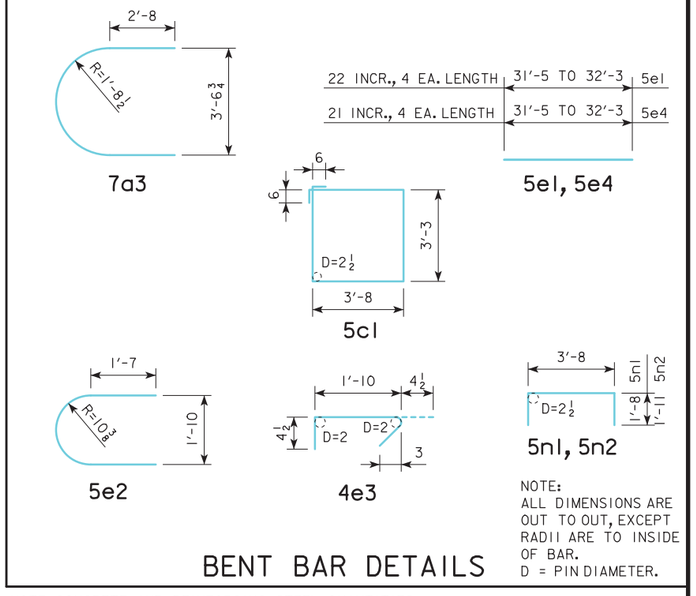

SECTION C-C




SECTION D-D

# REINFORCING BAR LIST AND ESTIMATED QUANTITIES

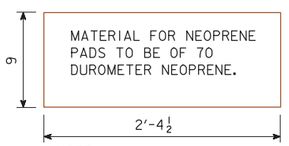
| BAR | LOCATION | SHAPE | PIER 1 NO. | PIER 1 LENGTH | PIER 1 WEIGHT | PIER 2 NO. | PIER 2 LENGTH | PIER 2 WEIGHT |
|---|---|---|---|---|---|---|---|---|
| 7a1 | PIER CAP, HORIZONTAL, TOP & SIDES | | 6 | 59'-8 | 732 | 6 | 59'-8 | 732 |
| 7a2 | PIER CAP, HORIZONTAL, TOP | | 8 | 32'-3 | 527 | 8 | 32'-3 | 527 |
| 7a3 | PIER CAP, END | | 4 | 10'-10 | 89 | 4 | 10'-10 | 89 |
| 7b1 | PIER CAP, HORIZONTAL, BOTTOM | | 2 | 59'-8 | 244 | 2 | 59'-8 | 244 |
| 7b2 | PIER CAP, HORIZONTAL, BOTTOM | | 4 | 32'-3 | 264 | 4 | 32'-3 | 264 |
| 5c1 | PIER CAP, HOOPS | | 33 | 14'-10 | 511 | 33 | 14'-10 | 511 |
| 5c2 | PIER CAP, VERTICAL, END | | 3 | 3'-3 | 10 | 3 | 3'-3 | 10 |
| 5d1 | ENCASEMENT, VERTICAL | | 103 | 23'-2 | 2,489 | - | - | - |
| 5d2 | ENCASEMENT, VERTICAL | | - | - | - | 103 | 22'-7 | 2,426 |
| 5e1 | ENCASEMENT, HORIZONTAL | | 88 | VARIES | 2,922 | - | - | - |
| 5e2 | ENCASEMENT, ENDS | | 22 | 6'-0 | 138 | 21 | 6'-0 | 131 |
| 4e3 | ENCASEMENT, TIES | | 385 | 2'-7 | 664 | 368 | 2'-7 | 635 |
| 5e4 | ENCASEMENT, HORIZONTAL | | - | - | - | 84 | VARIES | 2,789 |
| 5m1 | PIER CAP STEPS, HORIZONTAL | | 16 | 3'-6 | 58 | 16 | 3'-6 | 58 |
| 8m2 | PIER CAP STEPS, HORIZONTAL | | 4 | 32'-0 | 342 | 4 | 32'-0 | 342 |
| 5n1 | PIER CAP STEPS, TRANSVERSE | | 16 | 7'-0 | 117 | 16 | 7'-0 | 117 |
| 5n2 | PIER CAP STEPS, TRANSVERSE | | 26 | 7'-6 | 203 | 26 | 7'-6 | 203 |
| | | | | | | | | |
| | | | | | | | | |
| REINFORCING STEEL - TOTAL (LBS.) | | | | | 9,310 | | | 9,078 |
| STRUCTURAL CONCRETE (CY) | | | | | 144.4 | | | 141.4 |
| HP14x89 STEEL PILE (LF) | | | | | 1,200 | | | 1,280 |




NOTE:
ALL DIMENSIONS ARE OUT TO OUT, EXCEPT RADII ARE TO INSIDE OF BAR.
D = PIN DIAMETER.

BENT BAR DETAILS

NOTE: CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

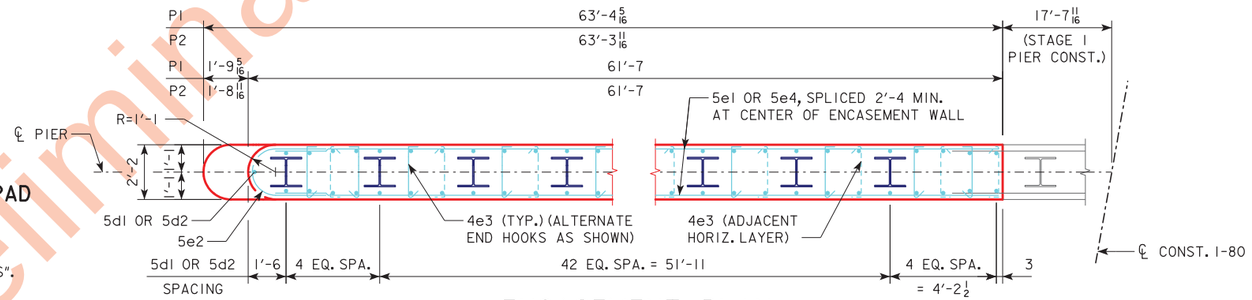




PLAIN NEOPRENE PAD

NOTE:
COST OF NEOPRENE PADS SHALL BE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".

FIXED PIER BEARING DETAILS




ENCASEMENT PLAN

NOTES:
SEE DESIGN SHEET 9 FOR LOCATIONS OF SECTIONS A-A THRU D-D.

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## PILE BENT PIER DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 38 — FILE NO. 30864 — DESIGN NO. 718





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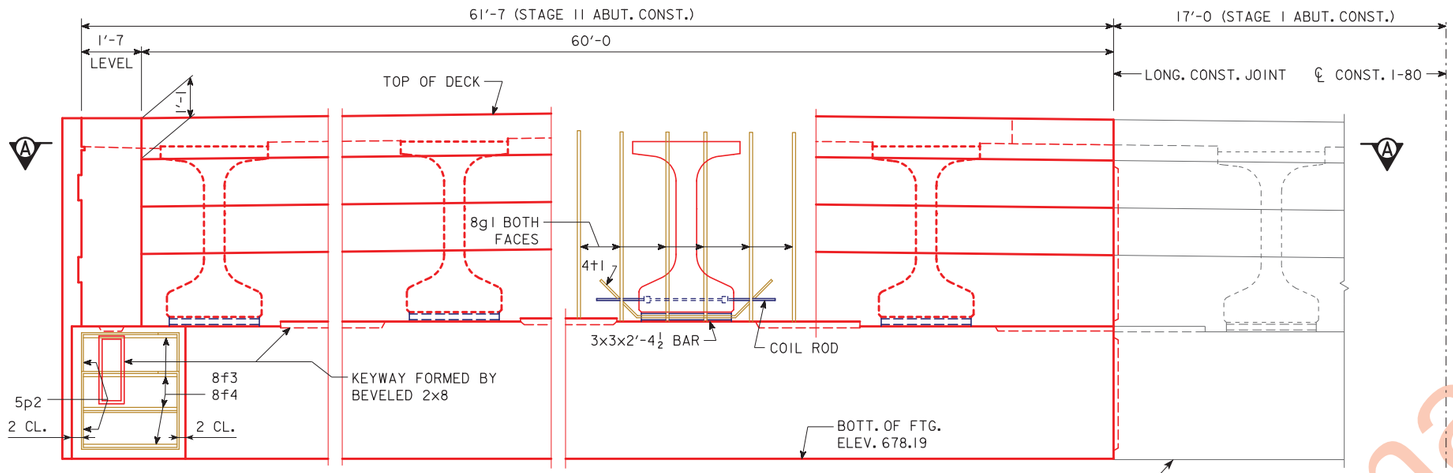
BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510

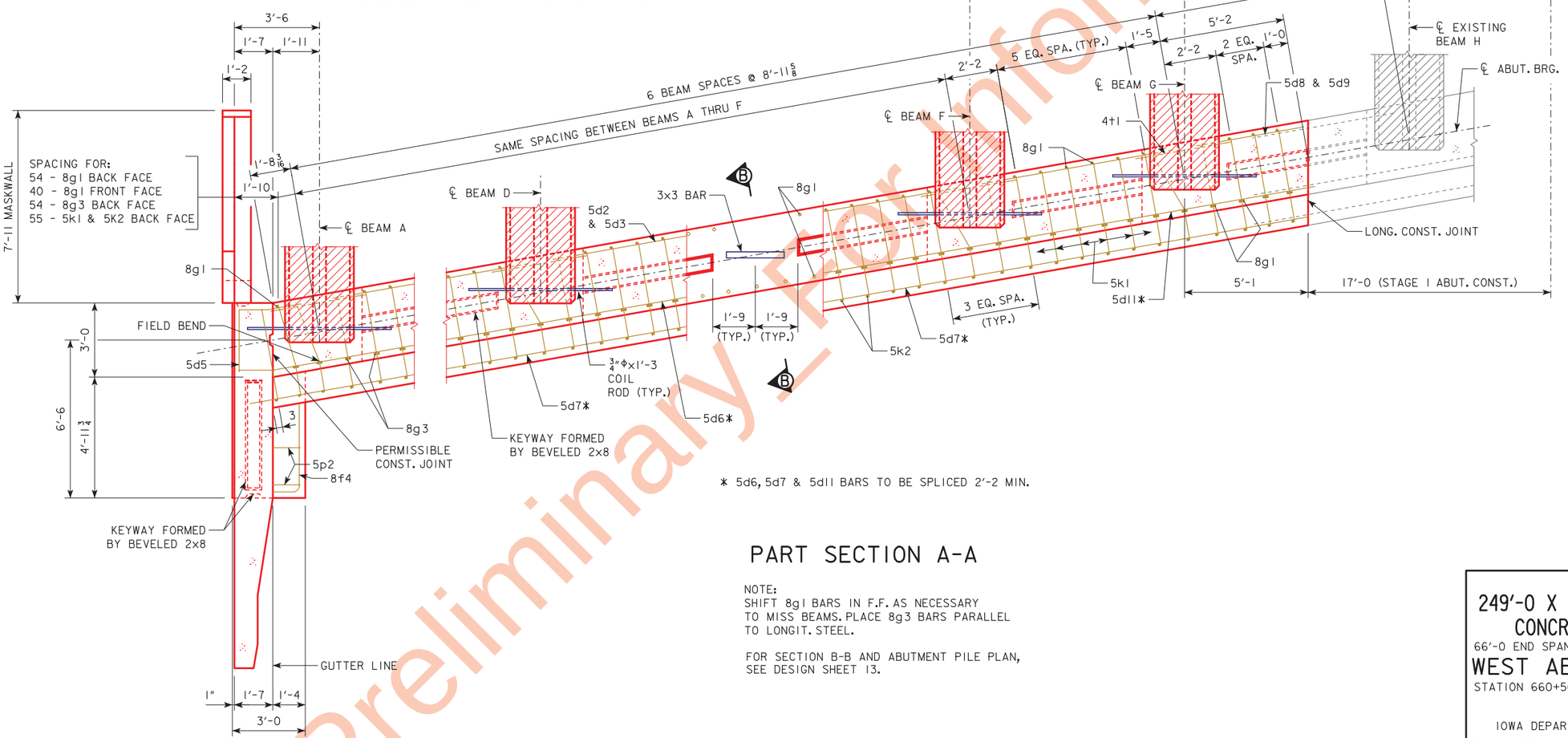



## PART REAR ELEVATION AT ABUTMENT

( WING NOT SHOWN )

NOTE: SEE DESIGN SHEET 15 FOR ABUTMENT STEP DIAGRAM.

BUILT WITH DESIGN 1417




* 5d6, 5d7 & 5d11 BARS TO BE SPLICED 2'-2 MIN.

## PART SECTION A-A

NOTE:
SHIFT 8g1 BARS IN F.F. AS NECESSARY TO MISS BEAMS. PLACE 8g3 BARS PARALLEL TO LONGIT. STEEL.

FOR SECTION B-B AND ABUTMENT PILE PLAN, SEE DESIGN SHEET 13.

## ABUTMENT CONCRETE QUANTITY

| LOCATION | QUANTITY |
|---|---|
| WEST ABUTMENT FOOTING | 31.2 |
| | |
| TOTAL (CU. YDS.) | 31.2 |

NOTE: CONCRETE QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.
NOTE: 9 - HP 10 x 57 STEEL BEARING PILING REQUIRED AT WEST ABUTMENT.

NOTE: BARRIER RAIL NOT SHOWN IN DETAILS.

## ABUTMENT NOTES:

STEEL PILE POINTS ARE REQUIRED FOR THE STEEL H-PILES AT THE ABUTMENT.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

IF NECESSARY TO PREVENT DAMAGE TO THE END OF THE BRIDGE DECK OR BACKWALL FROM CONSTRUCTION EQUIPMENT, AN APPROPRIATE METHOD OF PROTECTION APPROVED BY THE ENGINEER SHALL BE PROVIDED BY THE BRIDGE CONTRACTOR AT NO EXTRA COST TO THE STATE.

## WEST ABUTMENT PILING NOTES:

THE CONTRACT LENGTH OF 70 FEET FOR THE WEST ABUTMENT PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 174 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PREBORE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE WEST ABUTMENT PILES IS 129 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

# WEST ABUTMENT FOOTING DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

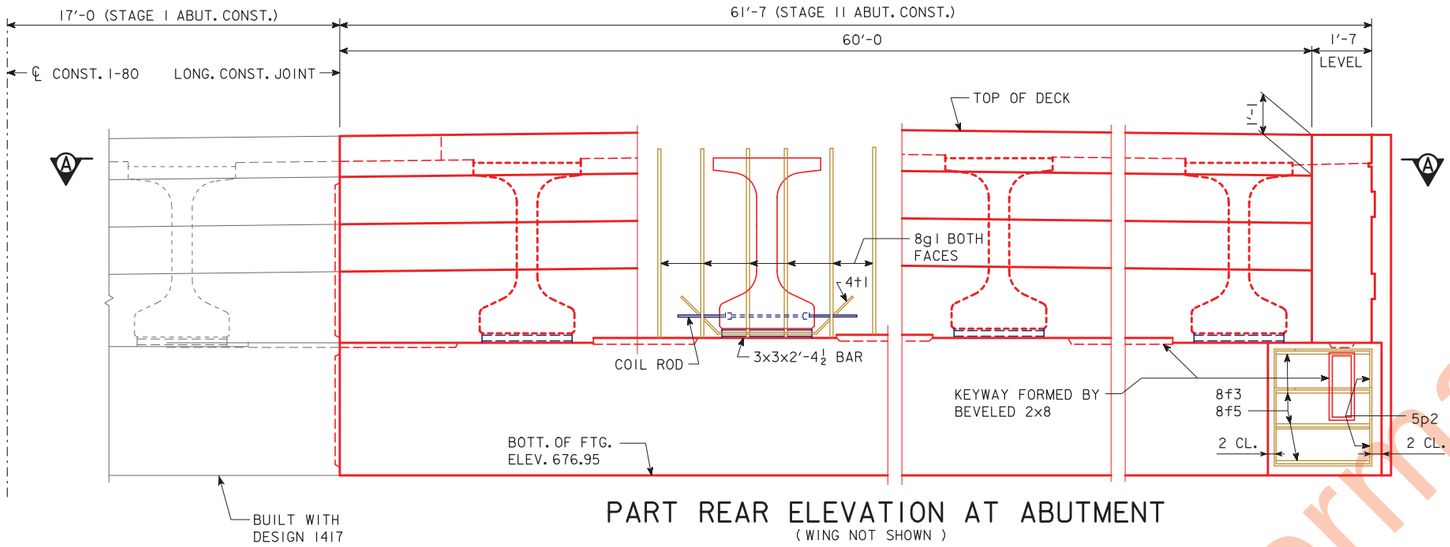
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 11 OF 38 FILE NO. 30864 DESIGN NO. 718

| DESIGN TEAM HNTB | "BTC" OR "BTD" BEAMS - INTEGRAL ABUT. DETAILS - (R.A.) 7°31' - 15° SKEW | MODIFIED STANDARD SHEET 2090-BTCD | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 59 |
|---|---|---|---|---|---|

CORRECTION 04-14 - ADDED CONCRETE QUANTITY TABLE & REFERRAL NOTE TO SUMMARY QUANTITY SHEET. REMOVED DESIGN BEARING NOTE FOR ABUT. PILING FROM ABUTMENT NOTES.
ENGLISHBTINTEGRALBRIDGES.DGN - 2090-BTCD - THIS SHEET ISSUED 02-08.

BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510




## PART REAR ELEVATION AT ABUTMENT

( WING NOT SHOWN )

NOTE: SEE DESIGN SHEET 15 FOR ABUTMENT STEP DIAGRAM.

## ABUTMENT CONCRETE QUANTITY

| LOCATION | QUANTITY |
|---|---|
| EAST ABUTMENT FOOTING | 31.2 |
| | |
| TOTAL (CU. YDS.) | 31.2 |

NOTE: CONCRETE QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

NOTE: 9 - HP 10 x 57 STEEL BEARING PILING REQUIRED AT EAST ABUTMENT.

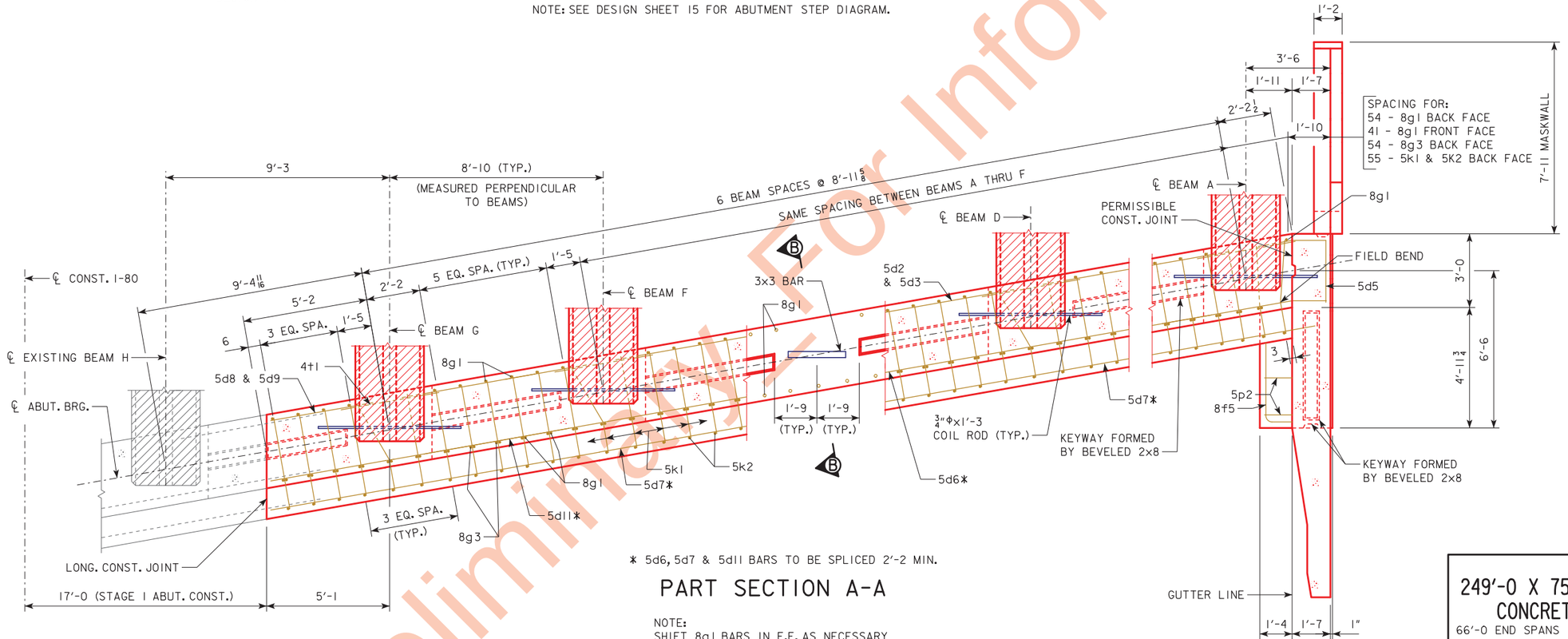
NOTE: BARRIER RAIL NOT SHOWN IN DETAILS.

## EAST ABUTMENT PILING NOTES:

THE CONTRACT LENGTH OF 70 FEET FOR THE EAST ABUTMENT PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 196 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. TO ACCOUNT FOR SOIL CONSOLIDATION UNDER THE NEW FILL, THE FACTORED AXIAL LOAD INCLUDES A FACTORED DOWNDRAG LOAD OF 22 KIPS.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PREBORE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE EAST ABUTMENT PILES IS 155 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.




* 5d6, 5d7 & 5d11 BARS TO BE SPLICED 2'-2 MIN.

## PART SECTION A-A

NOTE:
SHIFT 8g1 BARS IN F.F. AS NECESSARY TO MISS BEAMS. PLACE 8g3 BARS PARALLEL TO LONGIT. STEEL.

FOR SECTION B-B AND ABUTMENT PILE PLAN, SEE DESIGN SHEET 13.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## EAST ABUTMENT FOOTING DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

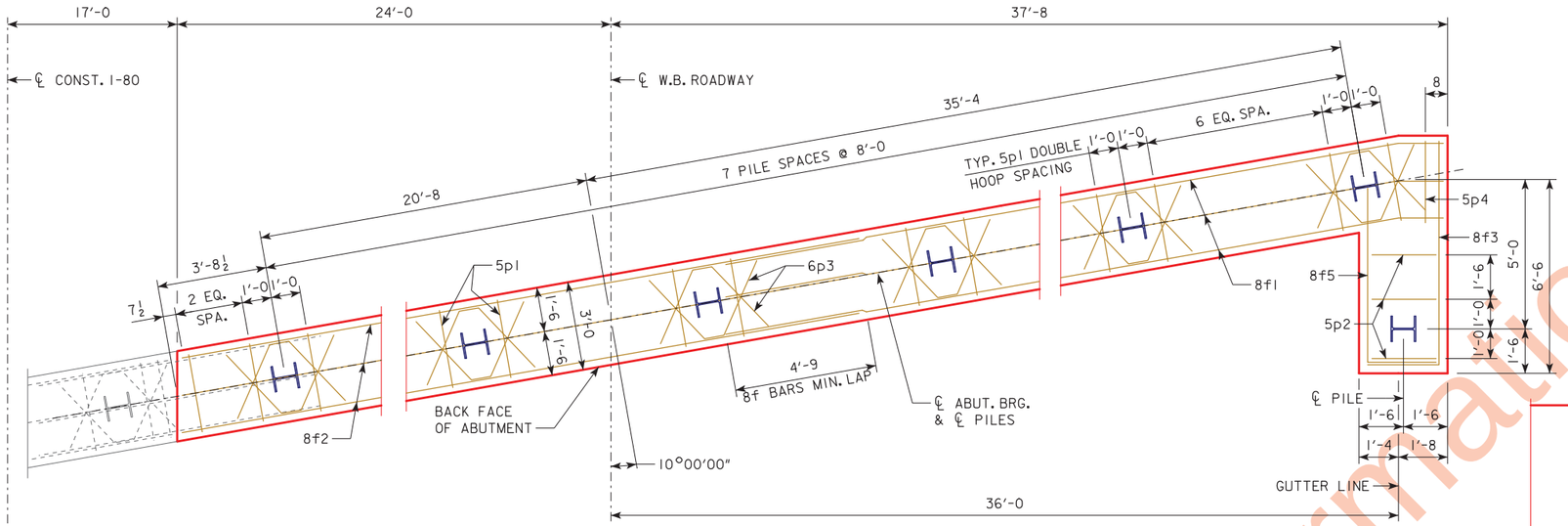
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

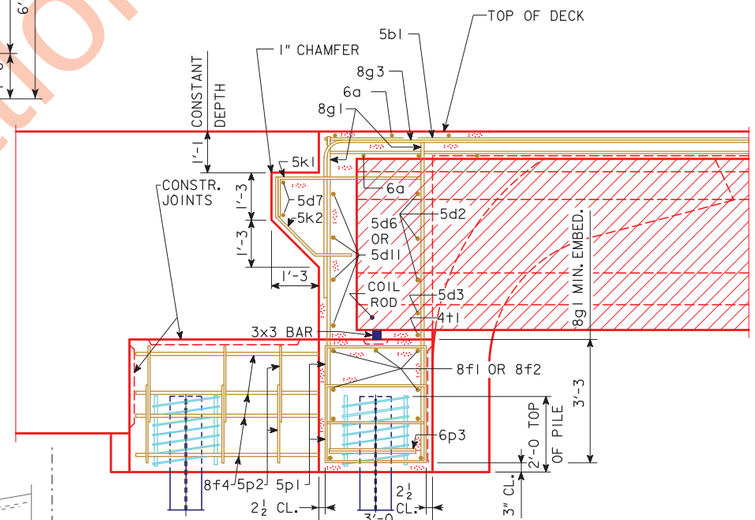
DESIGN SHEET NO. 12 OF 38 FILE NO. 30864 DESIGN NO. 718

| DESIGN TEAM HNTB | "BTC" OR "BTD" BEAMS - INTEGRAL ABUT. DETAILS - (R.A.) 7°31'- 15° SKEW | MODIFIED STANDARD SHEET 2090-BTCD | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 60 |
|---|---|---|---|---|---|

CORRECTION 04-14 - ADDED CONCRETE QUANTITY TABLE & REFERRAL NOTE TO SUMMARY QUANTITY SHEET. REMOVED DESIGN BEARING NOTE FOR ABUT. PILING FROM ABUTMENT NOTES.
ENGLISHBTINTEGRALBRIDGES.DGN - 2090-BTCD - THIS SHEET ISSUED 02-08.




EAST ABUTMENT PILE PLAN

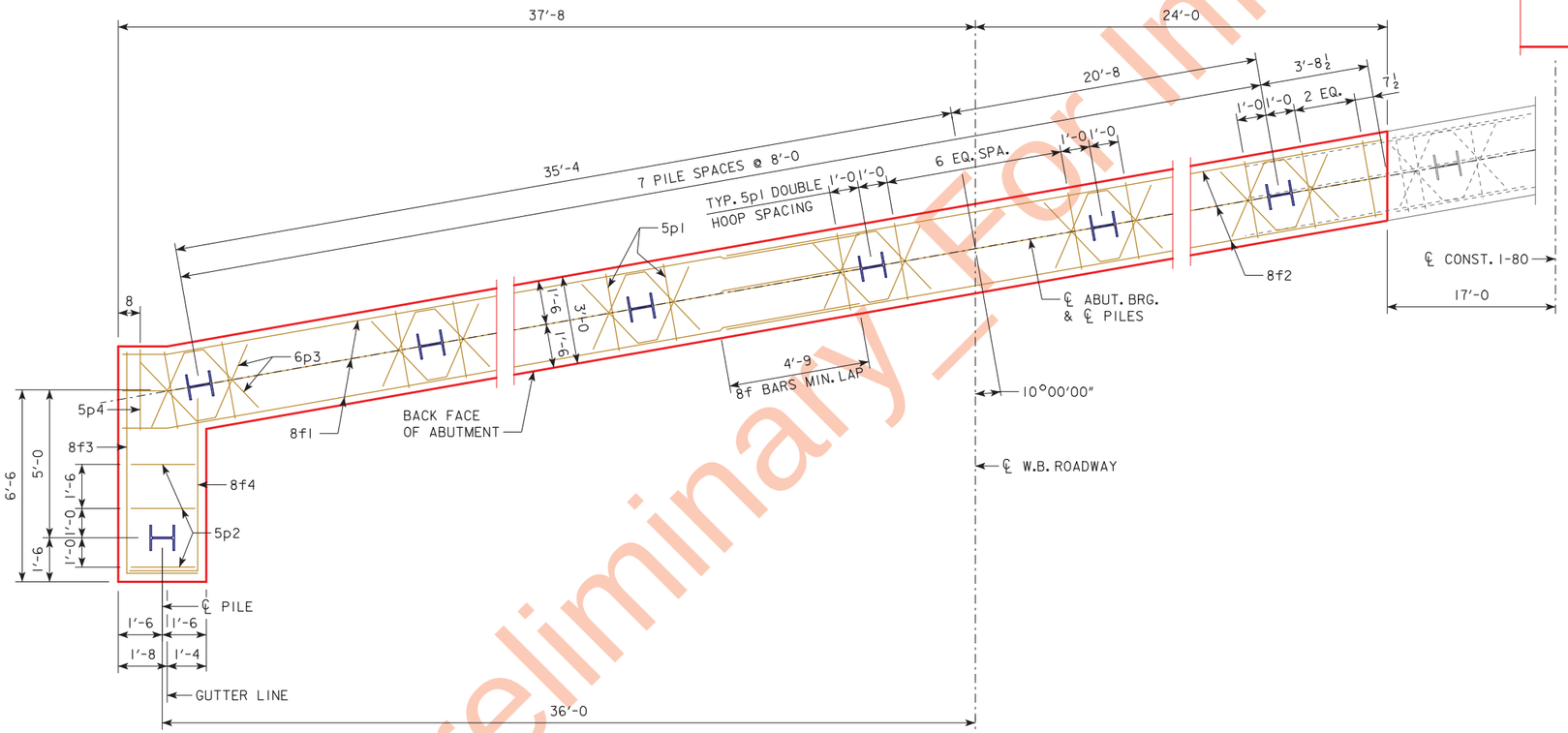



PART SECTION B-B

(WEST ABUTMENT SHOWN, EAST ABUTMENT SIMILAR)

NOTE:
THE SPIRAL AT THE TOP OF EACH PILE TO BE 7 TURNS OF No. 2 BAR, 21" DIAMETER, 3" PITCH WITH 3 - L⅞ × ⅞ × ⅛ SPACERS PUNCHED TO HOLD SPIRAL.

NOTE: ABUTMENT DIAPHRAGM, WING EXTENSION AND WING SURFACES INCLUDE CONCRETE TEXTURE AND PAINT. SEE DESIGN SHEETS 16 AND 17 FOR DETAILS.




WEST ABUTMENT PILE PLAN

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## ABUTMENT FOOTING DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 13 OF 38 — FILE NO. 30864 — DESIGN NO. 718

CORRECTION 04-14 - ADDED CONCRETE QUANTITY TABLE & REFERRAL NOTE TO SUMMARY QUANTITY SHEET. REMOVED DESIGN BEARING NOTE FOR ABUT. PILING FROM ABUTMENT NOTES.
ENGLISHBTINTEGRALBRIDGES.DGN - 2087-BTCD - THIS SHEET ISSUED 02-08.





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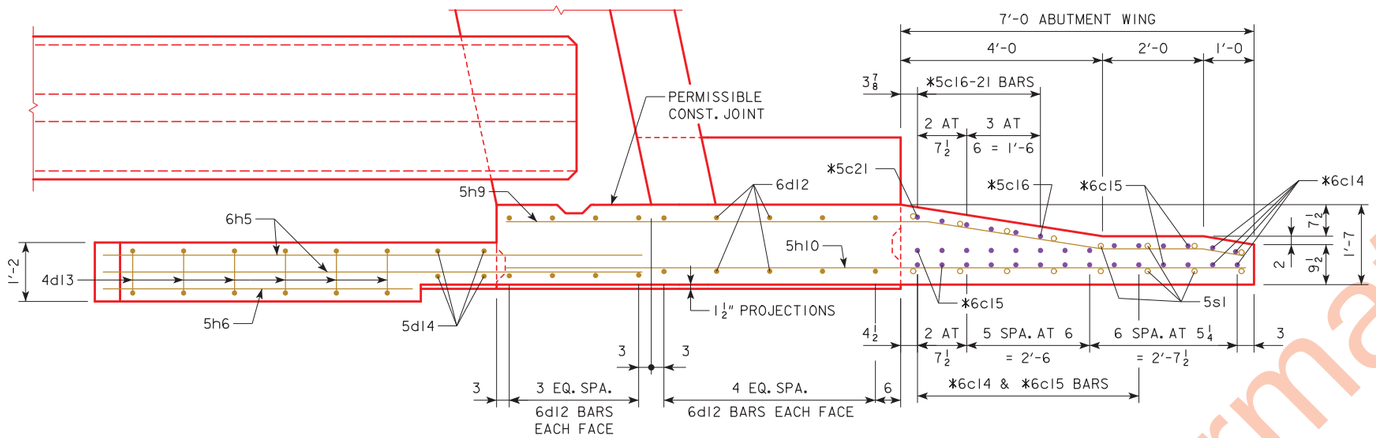
BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510

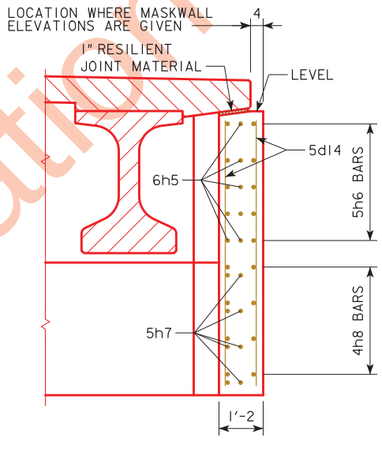
## TABLE OF MASKWALL VARIABLES

| ABUTMENT | WING | ELEV. A | ELEV. B | DIM. "C" | DIM. "D" | DIM. "E" |
|---|---|---|---|---|---|---|
| WEST | NORTH | 685.86 | 685.90 | 7'-8 1/16 | 2'-2 5/16 | 1'-7 3/16 |
| EAST | NORTH | 684.71 | 684.67 | 7'-9 1/8 | 2'-3 3/8 | 1'-5 1/2 |



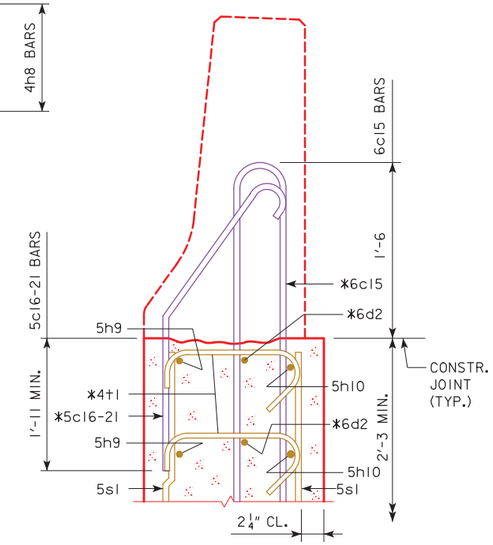

## PART PLAN VIEW B-B

(DECK NOT SHOWN FOR CLARITY)




## PART SECTION A-A

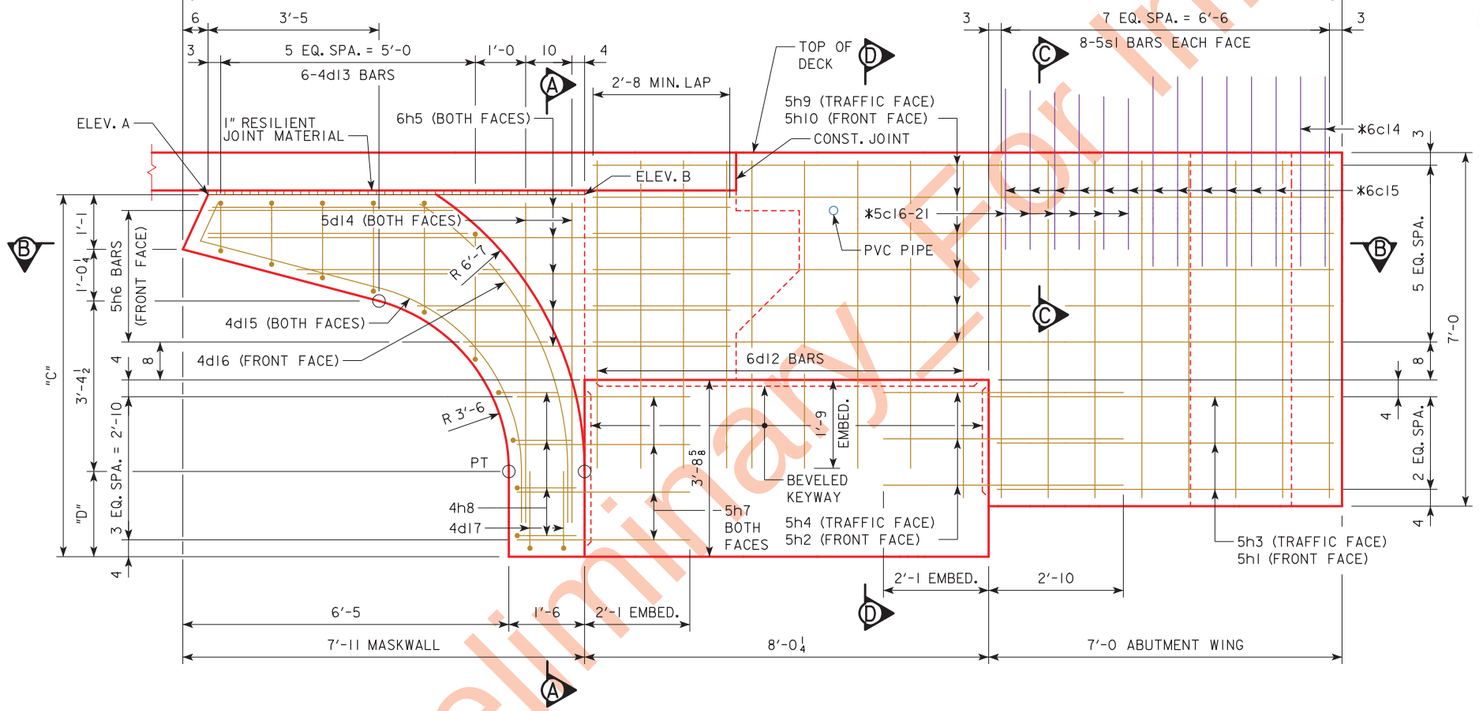
(BARRIER RAIL NOT SHOWN)



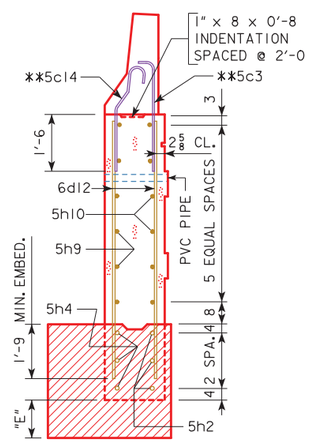

## SECTION C-C

* BARRIER RAIL END SECTION BARS TO BE PLACED WITH ABUTMENT WING.

SEE BARRIER RAIL END SECTION SHEET IN THESE PLANS FOR DETAILS OF REINFORCING BARS 6c14, 6c15, 5c16-21, 6d2 & 4t1.




## ABUTMENT WINGWALL & MASKWALL ELEVATION




## SECTION D-D

FIELD BEND 5h4 BAR AS NECESSARY TO AVOID PILE IN ABUTMENT WING.

**NOTE: SEE DESIGN SHEETS 31 THRU 33 FOR DETAILS OF BARRIER RAIL. REINFORCING BARS 5c3 AND 5c14 ARE INCLUDED IN SUBSTRUCTURE QUANTITIES.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## ABUTMENT DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 14 OF 38 FILE NO. 30864 DESIGN NO. 718





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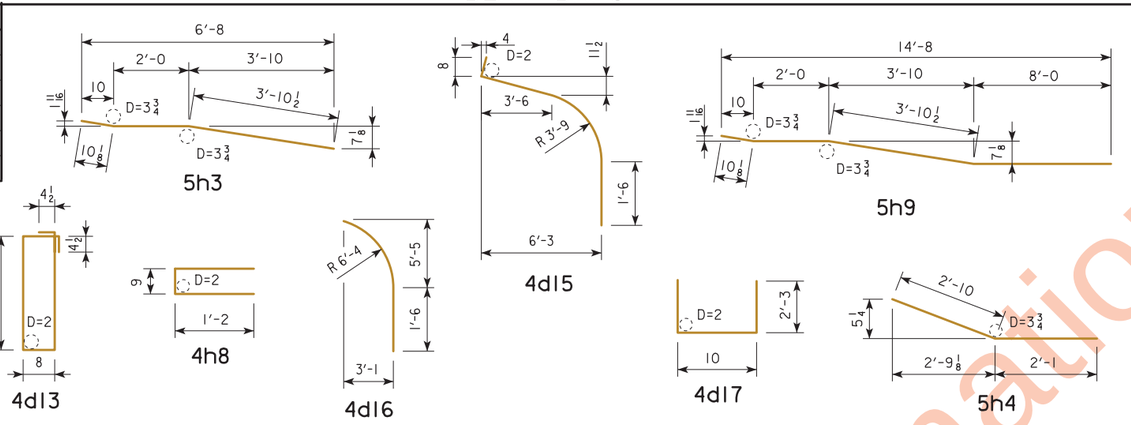
BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510

## BENT BARS

| "X" |
|---|
| 2'-4 |
| 2'-2 |
| 1'-9 |
| 1'-6 |
| 1'-3 |
| 0'-11 |




## BENT BAR DETAILS

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

## REINFORCING BAR LIST-ONE WINGWALL & MASKWALL

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| 6d12 | WINGWALL, VERTICAL, BOTH FACES | | 18 | 6'-4 | 171 |
| 4d13 | MASKWALL, VERTICAL, HOOPS | | 6 | VARIES | 52 |
| 5d14 | MASKWALL, VERTICAL | | 4 | 7'-0 | 29 |
| 4d15 | MASKWALL, VERTICAL, CURVED, BOTH FACES | | 2 | 10'-10 | 14 |
| 4d16 | MASKWALL, VERTICAL, CURVED, FRONT FACE | | 1 | 8'-0 | 5 |
| 4d17 | MASKWALL, VERTICAL | | 2 | 5'-4 | 7 |
| | | | | | |
| 5h1 | WINGWALL, HORIZONTAL, FRONT FACE | | 3 | 6'-8 | 21 |
| 5h2 | ABUT. TO WING ANCHOR | | 3 | 4'-11 | 15 |
| 5h3 | WINGWALL, HORIZONTAL, TRAFFIC FACE | | 3 | 6'-9 | 21 |
| 5h4 | ABUT. TO WING ANCHOR | | 3 | 4'-11 | 15 |
| 6h5 | MASKWALL, HORIZONTAL, BOTH FACES | | 10 | VARIES | 122 |
| 5h6 | MASKWALL, HORIZONTAL, FRONT FACE | | 5 | VARIES | 18 |
| 5h7 | ABUT. TO MASKWALL ANCHOR | | 8 | 3'-4 | 28 |
| 4h8 | MASKWALL, HORIZONTAL | | 4 | 3'-1 | 8 |
| 5h9 | WINGWALL, HORIZONTAL, TRAFFIC FACE | | 6 | 14'-9 | 92 |
| 5h10 | WINGWALL, HORIZONTAL, FRONT FACE | | 6 | 14'-8 | 92 |
| | | | | | |
| 5s1 | WINGWALL, VERTICAL, BOTH FACES | | 16 | 6'-7 | 110 |
| | | | | | |
| | | | | REINFORCING STEEL, EPOXY COATED - TOTAL (LBS.) | 820 |

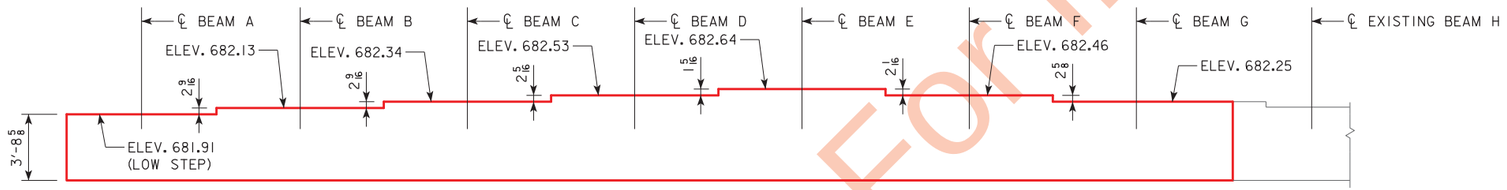
## VARIABLE BAR LENGTHS

| BAR | NUMBER | TOTAL LENGTH | | | | | |
|---|---|---|---|---|---|---|---|
| 6h5 | 2 EACH LENGTH | 5'-6 | 6'-9 | 8'-0 | 10'-0 | 10'-6 | --- |
| 5h6 | 1 EACH LENGTH | 1'-6 | 2'-0 | 3'-5 | 5'-6 | 4'-6 | --- |
| 4d13 | 1 EACH LENGTH | 6'-9 | 6'-5 | 5'-7 | 5'-1 | 4'-7 | 3'-11 |
| | | | | | | | |

## CONCRETE PLACEMENT SUMMARY

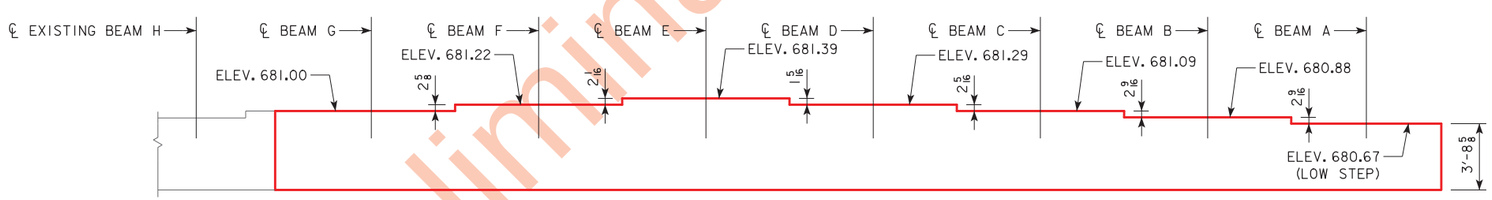
| CONCRETE | TOTAL |
|---|---|
| ONE ABUTMENT WINGWALL & MASKWALL (WEST ABUTMENT) | 5.2 |
| ONE ABUTMENT WINGWALL & MASKWALL (EAST ABUTMENT) | 5.2 |
| TWO ABUTMENT WINGWALLS & MASKWALLS - TOTAL (CU. YDS.) | 10.4 |

CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.




## WEST ABUTMENT STEP DIAGRAM

( REAR ELEVATION )




## EAST ABUTMENT STEP DIAGRAM

( REAR ELEVATION )

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## ABUTMENT DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 15 OF 38 FILE NO. 30864 DESIGN NO. 718





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# ABUTMENT CONCRETE TEXTURE NOTES

THIS WORK CONSISTS OF APPLYING TEXTURED FINISHES ON ALL DESIGNATED CONCRETE SURFACES OF THE ABUTMENTS SHOWN IN THIS PLAN. SEE 'GENERAL NOTES FOR TEXTURED CONCRETE FORM LINERS' ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING THE USE OF FORM LINERS. THE TEXTURED CONCRETE MOCKUP PANEL MUST BE REVIEWED AND APPROVED BY THE ENGINEER BEFORE BEGINNING PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE.

THE FORM LINER USED TO PRODUCE TEXTURE 'A' AS SHOWN IN THE PLAN DETAILS SHALL PRODUCE A TEXTURED EFFECT OF ALTERNATING 10-INCH AND 4-INCH TALL COURSES OF CUT STONE IN RANDOM LENGTHS WITH SIMULATED MORTAR JOINTS. DEPTH OF TEXTURE SHALL BE 0.3125 INCH.

OBTAIN TEXTURE 'A' FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURERS:

1. CUSTOM ROCK INTERNATIONAL (PATTERN NO. 12008)
2. FITZGERALD FORMLINERS (PATTERN NO. 17003)
3. SUBMIT ALL OTHER MANUFACTURERS AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORM LINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, OFFICE OF BRIDGES AND STRUCTURES, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORM LINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

THE FORM LINER USED TO PRODUCE TEXTURE 'B' AS SHOWN IN THE PLAN DETAILS SHALL PRODUCE A TEXTURED EFFECT OF A REALISTIC FRACTURED ROCK FACE WITH NO SIMULATED MASONRY JOINTS. DEPTH OF TEXTURE SHALL BE 1 INCH.

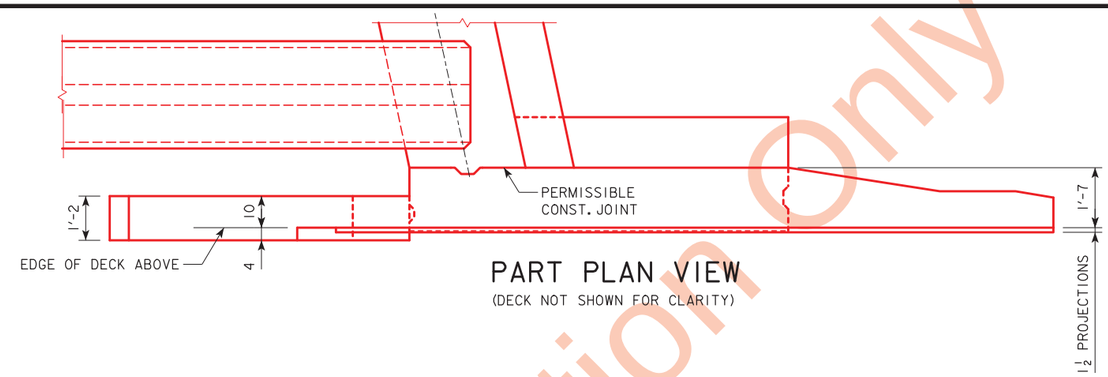
OBTAIN TEXTURE 'B' FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURERS:

1. CUSTOM ROCK INTERNATIONAL (PATTERN NO. T325)
2. FITZGERALD FORMLINERS (PATTERN NO. 17030)
3. SUBMIT ALL OTHER MANUFACTURERS AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORM LINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, OFFICE OF BRIDGES AND STRUCTURES, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORM LINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

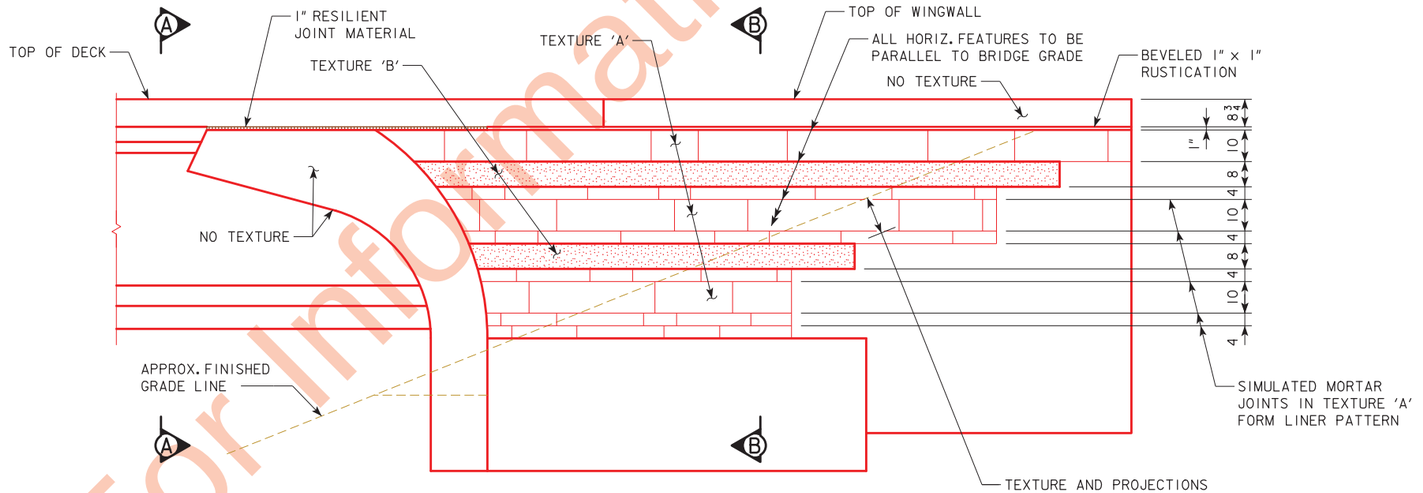
PRIOR TO BEGINNING ANY PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE, SUBMIT MANUFACTURER'S CUT SHEETS FOR FORM LINERS.

THE ABUTMENT SURFACES AS DESIGNATED IN THE PLANS SHALL ALSO RECEIVE CONCRETE RUSTICATION. SEE 'GENERAL NOTES FOR CONCRETE RUSTICATION' ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING APPROVED TECHNIQUES AND METHODS OF CONCRETE RUSTICATION.

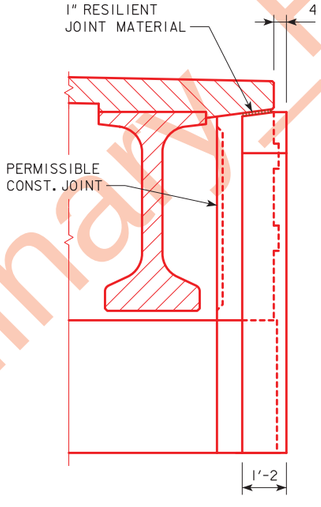
ALL COSTS ASSOCIATED WITH CONCRETE TEXTURES AND FORM LINERS AT THE ABUTMENTS SHALL BE INCLUDED IN THE BID ITEM, HIGH PERFORMANCE STRUCTURAL CONCRETE.



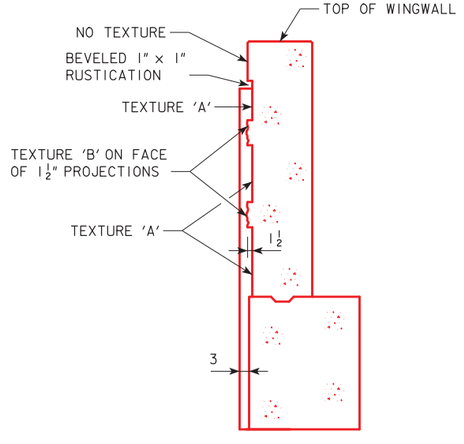

PART PLAN VIEW
(DECK NOT SHOWN FOR CLARITY)




ABUTMENT SIDE ELEVATION
(BARRIER RAIL NOT SHOWN)




PART SECTION A-A




SECTION B-B

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## ABUTMENT AESTHETIC DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 16 OF 38 FILE NO. 30864 DESIGN NO. 718

# CONCRETE PAINTING NOTES

THE TEXTURED SURFACES OF THE ABUTMENT WINGS AND MASK WALLS AND THE FASCIA BEAM SURFACES AS NOTED AND SHOWN IN THE PLANS SHALL BE FINISHED WITH MINERAL SILICATE PAINT CHOSEN FROM THE FOLLOWING LISTED PRODUCTS:

1. KEIM MINERAL COATINGS OF AMERICA: CONCRETAL MINERAL COATING
2. EDISON COATINGS, INC.: EVERKOTE 300 MINERAL COATING
3. CATHEDRAL STONE PRODUCTS: MASONRE MINERAL COATING
4. BEECK MINERAL PAINTS: BEECKO-SOL OR RENOSIL COATING
5. APPROVED EQUAL

PRIOR TO BEGINNING PRODUCTION PAINTING, DEMONSTRATE SURFACE PREPARATION METHODS AND PAINT APPLICATION ON THE TEXTURED CONCRETE MOCKUP PANEL LOCATED AT THE BRIDGE SITE. NO PRODUCTION CONCRETE PAINTING MAY BEGIN UNTIL FINAL APPROVAL OF PAINTING RESULTS ON THE MOCKUP. APPROVED MOCKUP SHALL REMAIN IN PLACE NEAR THE BRIDGE FOR COMPARISON TO PRODUCTION PAINTING UNTIL WORK IS COMPLETED.

VEGETATION IN THE GRADE AREAS IMMEDIATELY ADJACENT TO THE ABUTMENT WINGS AND PIER COLUMNS SHALL BE THOROUGHLY MOWED PRIOR TO SURFACE PREPARATION AND COATING APPLICATION. ALL COSTS FOR MOWING SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM, "STRUCTURAL CONCRETE COATING".

PRIOR TO CONCRETE COATING APPLICATION, PREPARE SURFACES IN ACCORDANCE WITH THE "DEVELOPMENTAL SPECIFICATIONS FOR CONCRETE SURFACE PREPARATION AND TESTING PRIOR TO COATING APPLICATION". APPLY MINERAL SILICATE PAINT IN ACCORDANCE WITH THE "DEVELOPMENTAL SPECIFICATIONS FOR STRUCTURAL CONCRETE COATING".

THERE ARE TWO COLOR FINISH TYPES TO BE USED ON THE BRIDGE. "COLOR NO. 1" SHALL BE USED ONLY ON THE COURSED STONE TEXTURE 'A' SURFACES, AND "COLOR NO. 2" SHALL BE USED ON THE PROJECTED, FRACTURED FACE TEXTURE 'B' SURFACES AND ON THE FASCIA BEAMS. SEE DETAILS ON THIS DESIGN SHEET FOR SPECIFIC COLOR LOCATIONS AND LIMITS. "COLOR NO. 1" SHALL BE A FULL RANGE OF NATURAL LIMESTONE COLORS INCLUDING SUBTLE COLOR VARIATIONS, MINERAL OXIDATION AND STAINING. THE FINAL COLORATION OF THE CONCRETE SURFACE SHALL ACCURATELY SIMULATE THE APPEARANCE OF REAL STONE INCLUDING THE MULTIPLE COLOR SHADES THAT ARE APPARENT IN REAL CUT LIMESTONE. USE AT LEAST THREE COLOR SHADES TO SIMULATE THE APPEARANCE OF STONE. BEGIN WITH A BASE COLOR APPLICATION OF LIGHT OR MEDIUM BUFF. APPLY A SLIGHTLY LIGHTER OR DARKER BASE COLOR TO RANDOM STONES PRIOR TO ADDING THE COLOR VARIATIONS. "COLOR NO. 2" SHALL BE A SINGLE DARK GREY-BROWN COLOR TO MATCH SAE AMS-STD-595 COLOR NUMBER 30099. SUBMIT PRODUCT SPECIFICATION SHEETS AND COLOR SAMPLES AS DESCRIBED IN THE DEVELOPMENTAL SPECIFICATIONS.

COATED SURFACE AREA TABULATION (SY):

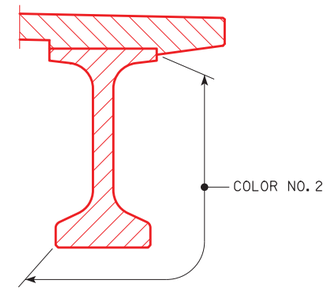
COLOR NO. 1
ABUTMENT WINGS AND MASK WALLS: 8.2 SY

TOTAL COLOR NO. 1: 8.2 SY

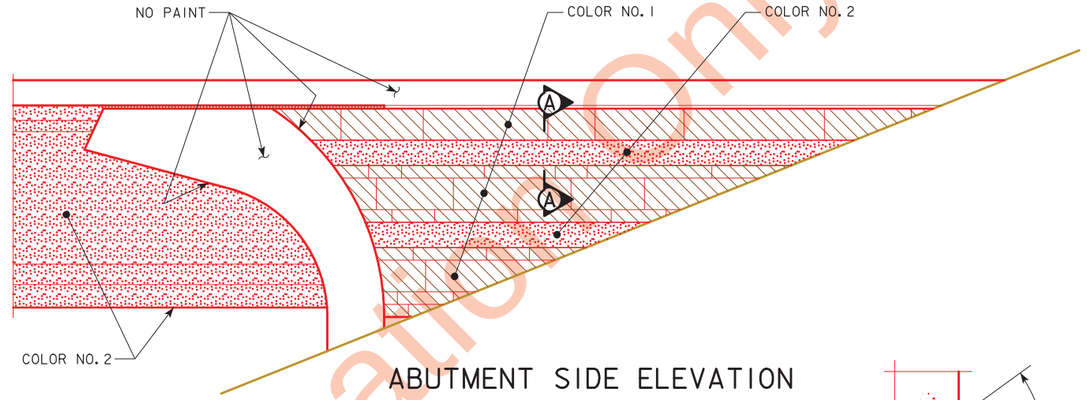
COLOR NO. 2
ABUTMENT WINGS AND MASK WALLS: 3.8 SY
FASCIA BEAMS: 207.5 SY

TOTAL COLOR NO. 2: 211.3 SY

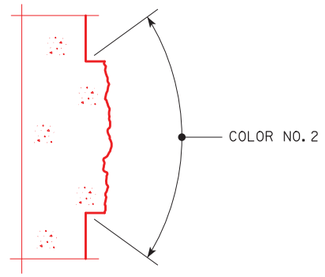
WHEN ALL PRODUCTION CONCRETE PAINTING IS COMPLETE, THE CONCRETE MOCKUP PANEL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.
ALL COSTS ASSOCIATED WITH SURFACE PREPARATION AND APPLICATION OF MINERAL SILICATE PAINT SHALL BE INCLUDED IN THE BID ITEM, "STRUCTURAL CONCRETE COATING".



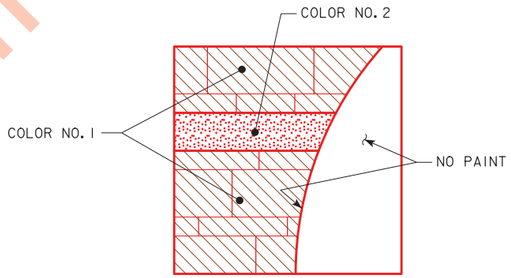

PART SECTION
AT FASCIA BEAM




ABUTMENT SIDE ELEVATION




PART SECTION A-A




MOCKUP PANEL PAINTING DETAILS
(FOR MOCKUP PANEL DETAILS SEE DES. SHT. 4)

## CONCRETE PAINT QUANTITY

| LOCATION | UNIT | QUANTITY |
|---|---|---|
| ABUTMENTS (2 CORNERS) | SY | 12.0 |
| FASCIA BEAMS (1) | SY | 207.5 |
| | | |
| TOTAL | SY | 219.5 |

DESIGN FOR 10° SKEW (RA)
249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II
66'-0 END SPANS 117'-0 INTERIOR SPAN
CONCRETE PAINTING DETAILS
STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020
JOHNSON COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 17 OF 38 FILE NO. 30864 DESIGN NO. 718





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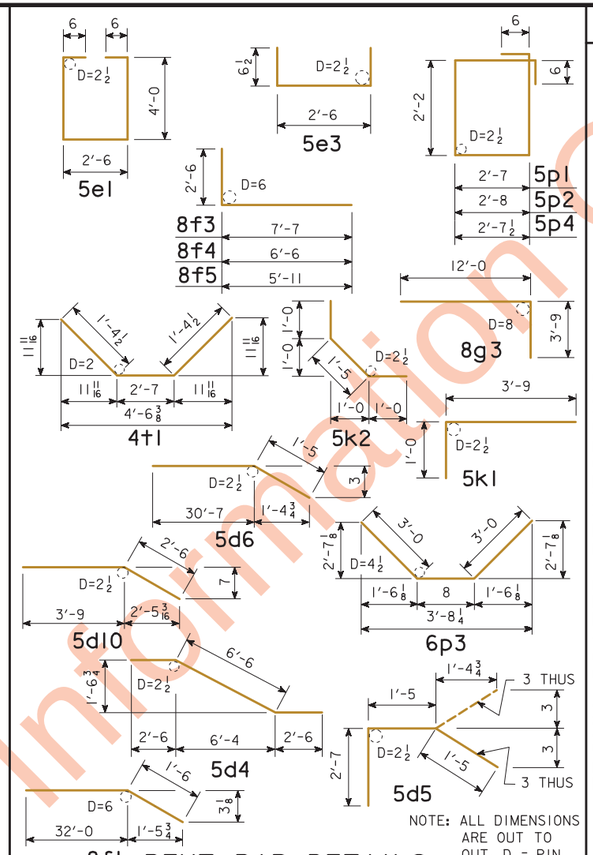
REVISED 07-2015 - CHANGED CONCRETE PLACEMENT NOTE TO ACCOUNT FOR THE POSSIBLE ADDITION OF A RETARDING ADMIXTURE TO THE CONCRETE.
ENGLISHINTEGRALBRIDGES.DGN 4520-BTCD - THIS SHEET ISSUED 02-08




## BENT BAR DETAILS

## CONCRETE PLACEMENT QUANTITIES

| LOCATION | QUANTITY |
|---|---|
| SECTION 1, DECK & WEST ABUT. DIAPH. | 113.8 |
| SECTION 2, DECK | 132.3 |
| SECTION 3, DECK & EAST ABUT. DIAPH. | 113.6 |
| SECTION 4, DECK & PIER 1 DIAPH. | 69.5 |
| SECTION 5, DECK & PIER 2 DIAPH. | 69.5 |
| SECTION 6, CLOSURE POUR | 21.3 |
| TOTAL (CU. YDS.) | 520.0 |

NOTE:
CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

## REINFORCING BAR LIST

| | BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|---|
| EPOXY COATED REINFORCING | 6a1 | DECK TRANSV. TOP | | 275 | 35'-2 | 14,526 |
| | 6a2 | DECK TRANSV. TOP | | 275 | 27'-11 | 11,531 |
| | 6a3 | DECK TRANSV. TOP END | | 24 | VARIES | 1,164 |
| | 6a4 | DECK TRANSV. BOTT. | | 246 | 32'-4 | 13,404 |
| | 6a5 | DECK TRANSV. BOTT. | | 276 | 30'-9 | 12,747 |
| | 6a6 | DECK TRANSV. BOTT. END | | 22 | VARIES | 1,066 |
| | 5a7 | DECK TRANSV. AT DECK DRAINS | | 20 | 3'-0 | 63 |
| | 5b1 | DECK LONGIT. TOP & BOTT. | | 805 | 37'-8 | 31,626 |
| | 8b2 | DECK LONGIT. TOP & BOTT. AT PIERS | | 256 | 29'-0 | 19,822 |
| | 5d2 | PIER & ABUT. DIAPH. LONGIT. | | 108 | 8'-0 | 900 |
| | 5d3 | PIER & ABUT. DIAPH. LONGIT. | | 36 | 6'-1 | 228 |
| | 5d4 | PIER DIAPH. LONGIT. | | 12 | 11'-6 | 144 |
| | 5d5 | ABUT. DIAPH. ENDS | | 6 | 5'-5 | 34 |
| | 5d6 | ABUT. DIAPH. LONGIT. B.F. | | 8 | 32'-0 | 268 |
| | 5d7 | PAVING NOTCH LONGIT. | | 8 | 32'-4 | 270 |
| | 5d8 | PIER & ABUT. DIAPH. LONGIT. | | 18 | 4'-6 | 84 |
| | 5d9 | PIER & ABUT. DIAPH. LONGIT. | | 6 | 3'-6 | 22 |
| | 5d10 | PIER DIAPH. LONGIT. | | 2 | 6'-3 | 14 |
| | 5d11 | ABUT. DIAPH. LONGIT. B.F. | | 8 | 32'-4 | 270 |
| | 5e1 | PIER. DIAPH. HOOPS | | 80 | 11'-6 | 960 |
| | 5e3 | PIER DIAPH. TIES | | 80 | 3'-7 | 298 |
| | 8f1 | ABUT. FOOTING LONGIT. BOTH. F. | | 18 | 33'-6 | 1,610 |
| | 8f2 | ABUT. FOOTING LONGIT. BOTH F. | | 18 | 33'-6 | 1,610 |
| | 8f3 | ABUT. EXTENSION LONGIT. | | 18 | 10'-1 | 216 |
| | 8f4 | ABUT. EXTENSION LONGIT. | | 4 | 9'-0 | 96 |
| | 8f5 | ABUT. EXTENSION LONGIT. | | 4 | 8'-6 | 91 |
| | 8g1 | ABUT. VERT. BOTH F. | | 189 | 7'-11 | 3,995 |
| | 8g3 | ABUT. DIAPH. VERT. B.F. | | 108 | 15'-9 | 4,542 |
| | 6j1 | TOP OF DECK TRANSV. (AT RAIL) | | 287 | 6'-3 | 2,694 |
| | 5k1 | PAVING NOTCH | | 110 | 4'-9 | 544 |
| | 5k2 | PAVING NOTCH | | 110 | 3'-5 | 392 |
| | 5p1 | ABUT. HOOPS | | 212 | 10'-6 | 2,322 |
| | 5p2 | ABUT. EXTENSION HOOPS | | 12 | 10'-8 | 134 |
| | 6p3 | ABUT. BOTT. AT PILES | | 32 | 6'-8 | 320 |
| | 5p4 | ABUT. HOOPS AT ENDS | | 4 | 10'-7 | 44 |
| | 4t1 | UNDER BEAMS AT ABUTMENTS | | 14 | 5'-4 | 50 |
| | | REINFORCING STEEL, EPOXY COATED - TOTAL (LBS.) | | | | 128,101 |
| NON-COATED | #2 | PILE SPIRAL | | 18 | 38'-6 | 116 |
| | | SPIRAL SPACERS, L $\frac{7}{8}$ x $\frac{7}{8}$ x $\frac{1}{8}$ x 0.70 | | 54 | 1'-10 | 70 |
| | | REINFORCING STEEL - TOTAL (LBS.) | | | | 186 |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## DECK, ABUTMENT & DIAPHRAGM QUANTITIES

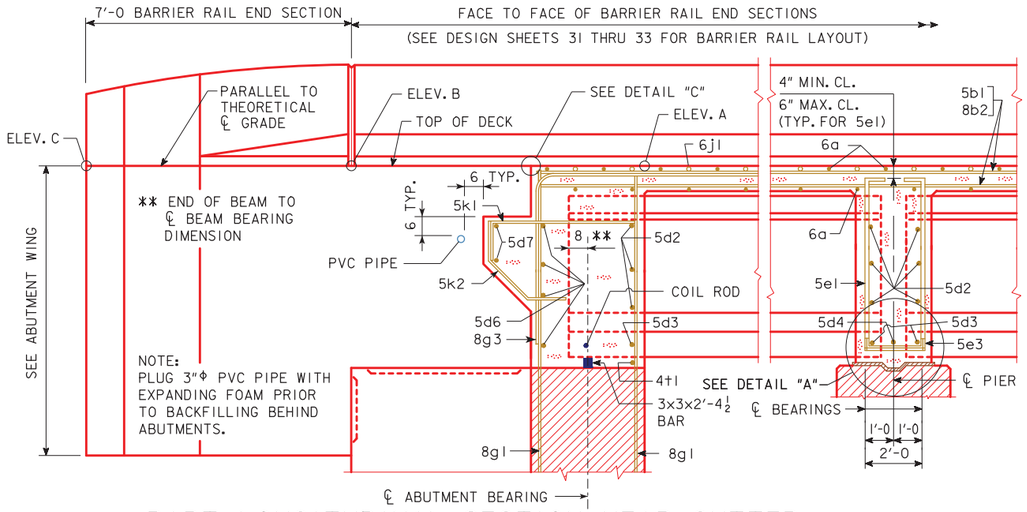
STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

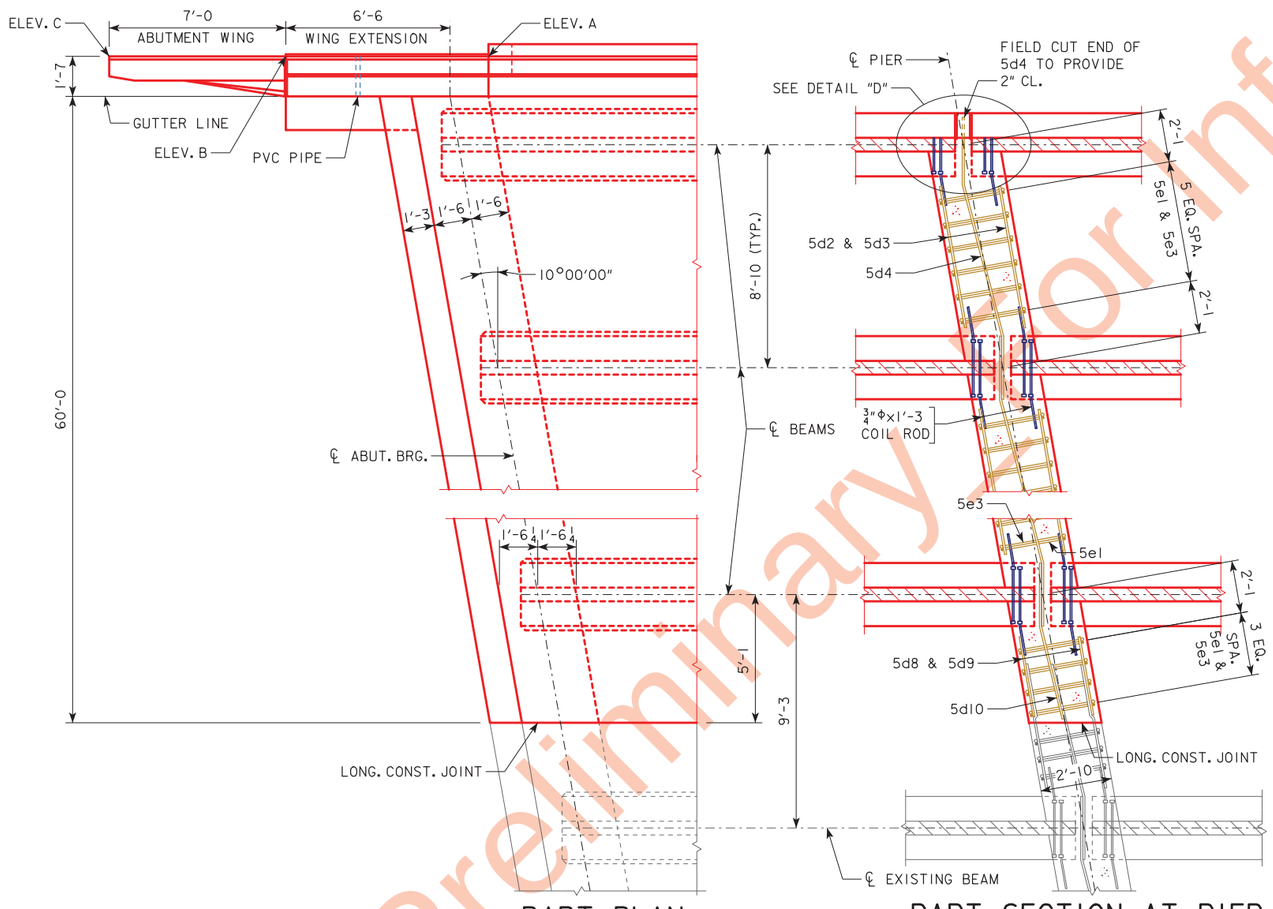
DESIGN SHEET NO. 18 OF 38 FILE NO. 30864 DESIGN NO. 718

BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510



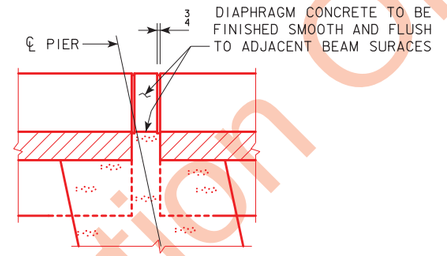

## PART LONGITUDINAL SECTION NEAR GUTTER

(FOR DETAILS OF INTERMEDIATE DIAPHRAGM SEE DESIGN SHEET 27)



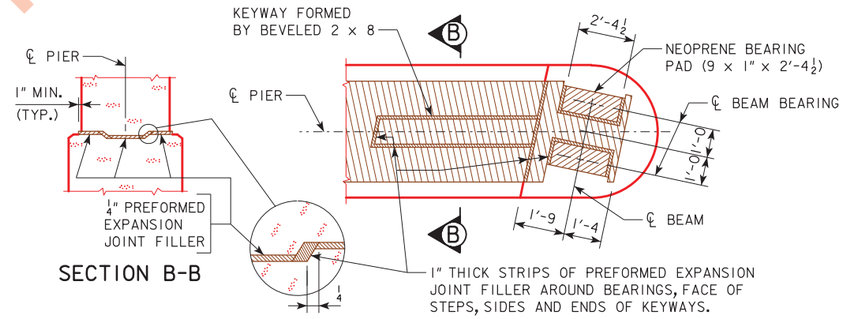

## PART PLAN

## PART SECTION AT PIER

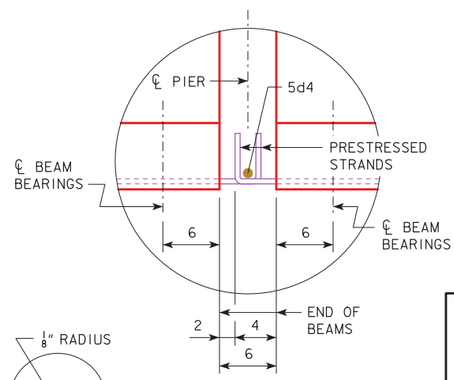



## DETAIL "D"

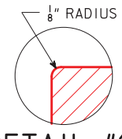
NOTE: THE EXTERIOR SURFACES OF THE EXTERIOR BEAM ENDS OVER THE PIER SHALL NOT BE ROUGHENED.




## TOP OF PIER DETAILS




## DETAIL "A"




## DETAIL "C"

## TABLE OF WINGWALL ELEVATIONS

| LOCATION | ELEV. A | ELEV. B | ELEV. C |
|---|---|---|---|
| N.W. CORNER | 686.71 | 686.75 | 686.79 |
| N.E. CORNER | 685.48 | 685.44 | 685.41 |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## ABUT. & PIER DIAPHRAGM DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

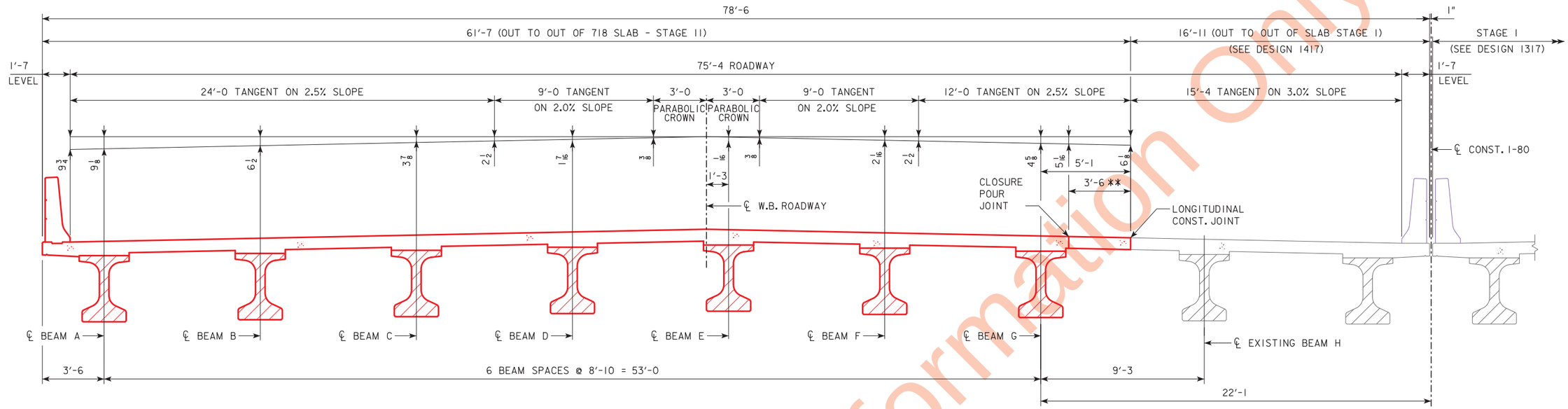
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 19 OF 38 FILE NO. 30864 DESIGN NO. 718

REVISED 01-12 - ADDED FIELD BEND 5h4 BAR TO AVOID PILE IN ABUTMENT WING NOTE.
ENGLISHBTINTEGRALBRIDGES.DGN - 4512-BTCD - THIS SHEET ISSUED 02-08.



| DESIGN TEAM HNTB | "BTC" OR "BTD" BULB TEE BEAMS - PART PLAN & LONGIT. SECTION - (R.A.) 7°31'-15° SKEW | MODIFIED STANDARD SHEET 4512-BTCD | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 67 |
|---|---|---|---|---|---|




## TYPICAL SECTION

** CLOSURE POUR (DECK ONLY)

NOTE: FOR DETAILS OF INTERMEDIATE DIAPHRAGMS SEE DESIGN SHEET 27.

DECK AREA = 38.90 SQ. FT.
CLOSURE POUR AREA = 2.33 SQ. FT.
DECK AREA DOES NOT INCLUDE THE HAUNCH.

## SUPERSTRUCTURE NOTES:

THE BRIDGE DECK AS SHOWN INCLUDES ½" INTEGRAL WEARING SURFACE.

THE PIER AND ABUTMENT DIAPHRAGM CONCRETE IS TO BE PLACED MONOLITHICALLY WITH THE BRIDGE DECK.

COST OF ALL PREFORMED EXPANSION JOINT FILLER MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "HIGH PERFORMANCE STRUCTURAL CONCRETE".

ALL BEAMS ARE TO BE SET VERTICAL.

FORMS FOR THE DECK AND BARRIER RAIL ARE TO BE SUPPORTED BY THE PRESTRESSED CONCRETE BEAMS.

CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.

ALL DECK AND DIAPHRAGM REINFORCING IS TO BE WIRED IN PLACE AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS PLACED.

TOP TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 2½" CLEAR BELOW TOP OF DECK. BOTTOM TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 1" CLEAR ABOVE BOTTOM OF DECK. TOP AND BOTTOM REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL BAR CHAIRS SPACED AT NOT MORE THAN 3'-0 CENTERS LONGITUDINALLY AND TRANSVERSELY, OR BY CONTINUOUS ROWS OF BAR HIGH CHAIRS OR DECK BOLSTERS SPACED 4'-0 APART. I.M. 451.01 REQUIREMENTS SHALL APPLY FOR BAR CHAIRS, BAR HIGH CHAIRS, AND DECK BOLSTERS.

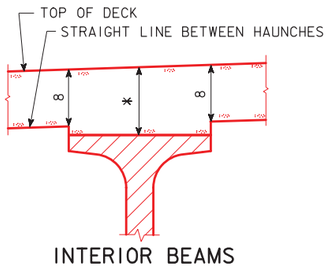
COST OF BEARING MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".

TRANSVERSE DECK REINFORCING MAY BE SPLICED WITH ONE LAP LOCATED AS FOLLOWS:

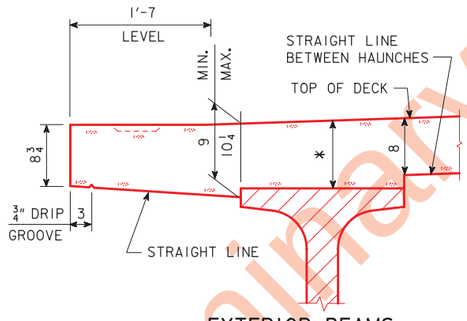
TOP BAR - LAP MIDWAY BETWEEN BEAMS (MIN. LAP = 1'-10).

BOTTOM BARS - LAP OVER BEAMS (MIN. LAP = 1'-10).

PAYMENT FOR REINFORCING BARS SHALL BE BASED ON NO SPLICES, AND NO ALLOWANCE SHALL BE MADE FOR THE ADDITIONAL LENGTH OF BAR REQUIRED FOR THE USE OF SPLICES.



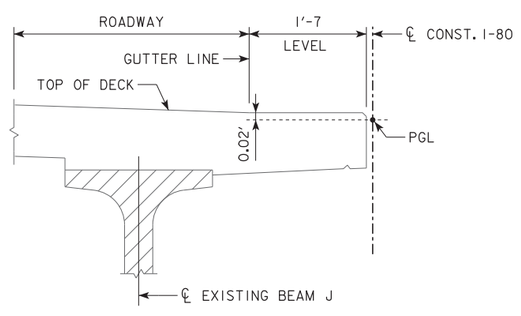

INTERIOR BEAMS




EXTERIOR BEAMS

## TYPICAL DECK AND HAUNCH DETAIL

* FOR DECK THICKNESS OVER BEAMS SEE HAUNCH AND CAMBER DETAILS ON DESIGN SHEET 24.




## PGL DETAIL

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BRIDGE DECK CROSS SECTION

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

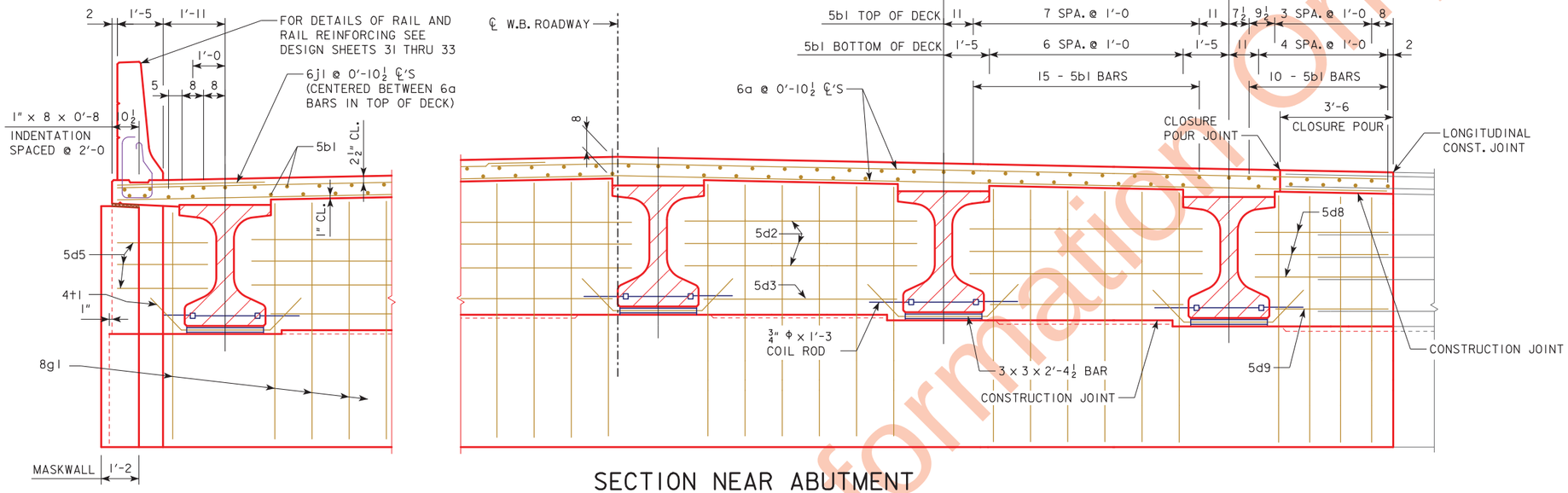
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

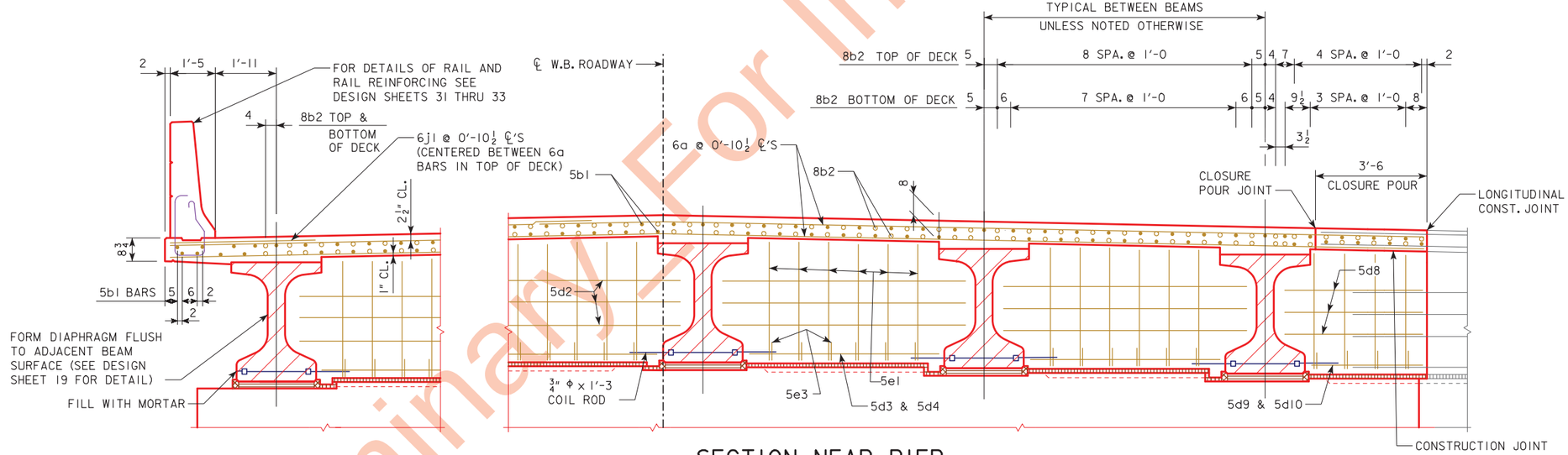
DESIGN SHEET NO. 20 OF 38 — FILE NO. 30864 — DESIGN NO. 718

| DESIGN TEAM HNTB | 44' RDWY. PPCB (BTC BEAMS - INTEGRAL ABUT.) CROSS SECTION (SPANS 30' - 120') | MODIFIED STANDARD SHEET 4384-BTC-6 | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 68 |
|---|---|---|---|---|---|

CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET FOR THE DRAIN WEIGHT. NOTE ABOUT CHOICE OF EPOXY OR STAINLESS STEEL DECK TO BARRIER RAIL BARS.
ENGLISHBTINTEGRALBRIDGES.DGN - 4384-BTC-6 - THIS SHEET ISSUED 02-08.




SECTION NEAR ABUTMENT




SECTION NEAR PIER

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BRIDGE DECK CROSS SECTION

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

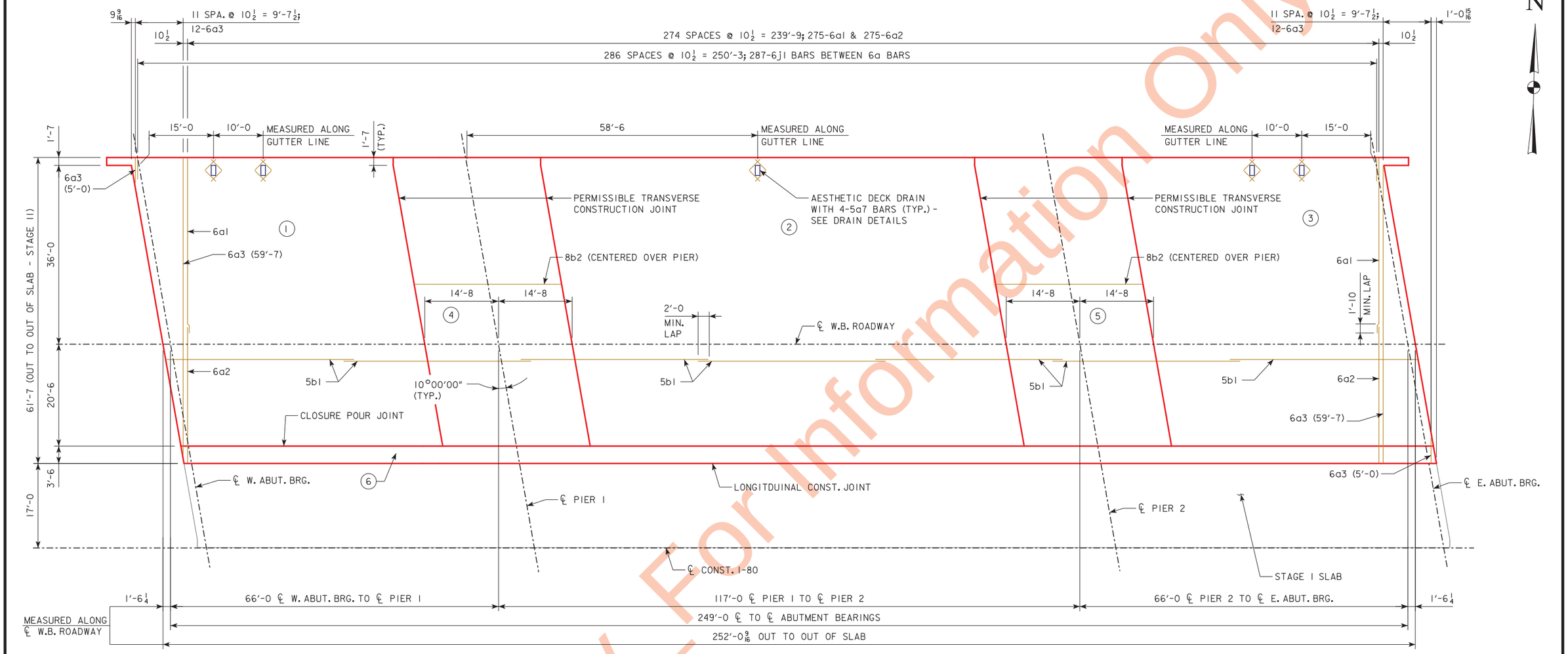
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 21 OF 38 FILE NO. 30864 DESIGN NO. 718

NOTE: FOR SUPERSTRUCTURE NOTES SEE DESIGN SHEET 20.

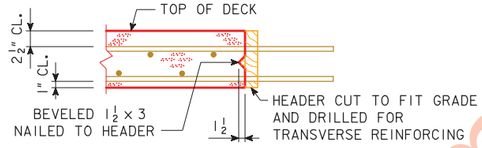


CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET FOR THE DRAIN WEIGHT. NOTE ABOUT CHOICE OF EPOXY OR STAINLESS STEEL DECK TO BARRIER RAIL BARS.
ENGLISHBTINTEGRALBRIDGES.DGN - 4384-BTC-6 - THIS SHEET ISSUED 02-08.



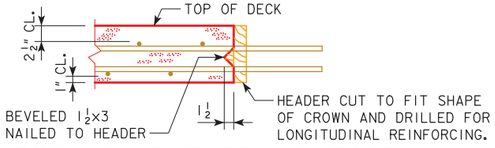

## TOP SLAB REINFORCING LAYOUT AND CONCRETE PLACEMENT

NOTES:
ALL LONGITUDINAL DIMENSIONS ARE ALONG ℄ W.B. ROADWAY UNLESS NOTED OTHERWISE.
ALL TRANSVERSE DIMENSIONS ARE NORMAL TO ℄ W.B. ROADWAY.
ALL TRANSVERSE BARS SHALL BE PLACED NORMAL TO ℄ W.B. ROADWAY.
FOR CONCRETE PLACEMENT QUANTITIES, SEE DESIGN SHEET 18.
LAP 6a BARS WITH STAGE I BARS.




### LONGITUDINAL SLAB CONSTRUCTION JOINT

NOTE: CONCRETE DECK SHALL BE PLACED IN SECTIONS AND SEQUENCES INDICATED. (AN APPROVED ALTERNATE PROCEDURE IS TO PLACE THE CONCRETE DECK IN ONE CONTINUOUS POUR BEGINNING AT ONE END OF THE BRIDGE.) ALTERNATE PROCEDURES FOR PLACING DECK CONCRETE MAY BE SUBMITTED FOR APPROVAL TOGETHER WITH A STATEMENT OF THE PROPOSED METHOD AND EVIDENCE THAT THE CONTRACTOR POSSESSES THE NECESSARY EQUIPMENT AND FACILITIES TO ACCOMPLISH THE REQUIRED RESULTS. THE BRIDGE ENGINEER SHALL REVIEW ANY ALTERNATE PROCEDURES. THE COST OF ANY ADDITIONAL ANALYSIS AND PLAN MODIFICATIONS SHALL BE PAID FOR BY THE CONTRACTOR. THE ENGINEER SHALL DETERMINE IF A RETARDING ADMIXTURE IS REQUIRED TO MAINTAIN PLASTICITY OF THE CONCRETE DECK DURING PLACEMENT.




### PERMISSIBLE TRANSVERSE DECK CONSTRUCTION JOINT

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## SUPERSTRUCTURE DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 22 OF 38 — FILE NO. 30864 — DESIGN NO. 718





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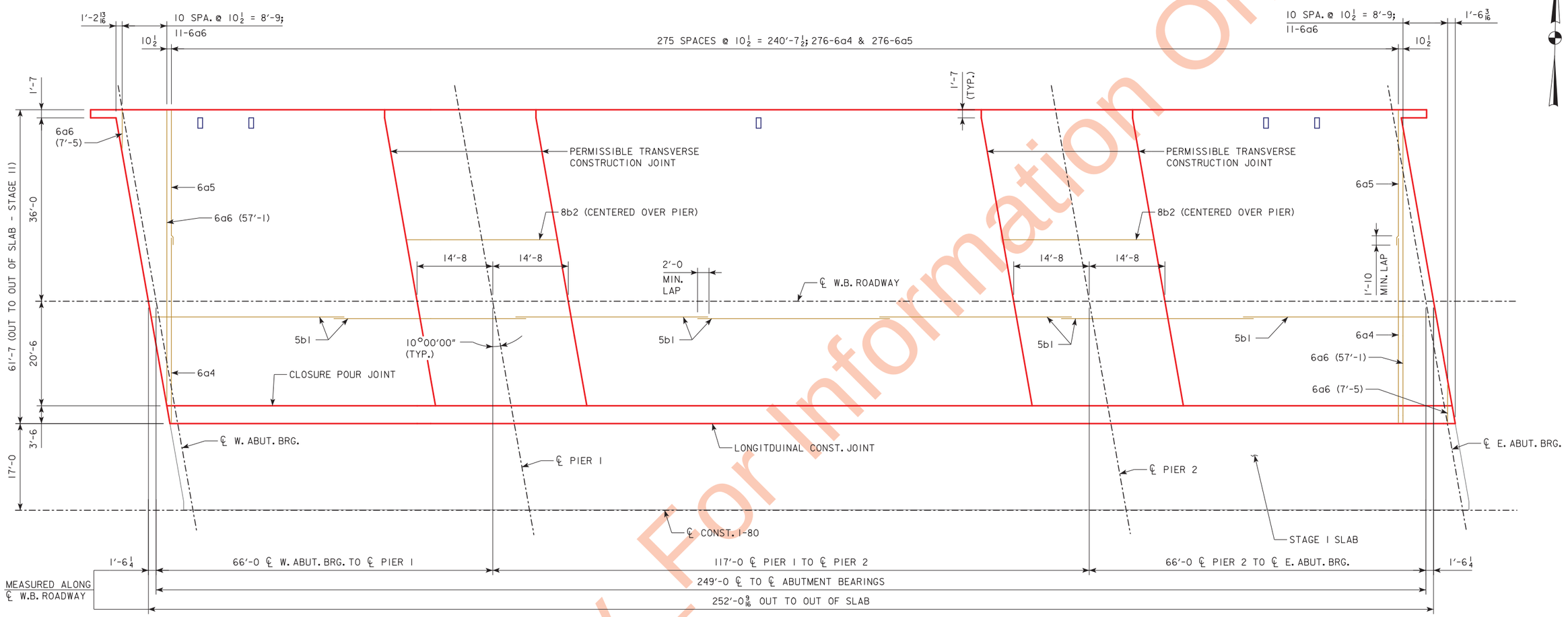


# BOTTOM SLAB REINFORCING LAYOUT

NOTES:
ALL LONGITUDINAL DIMENSIONS ARE ALONG ℄ W.B. ROADWAY.
ALL TRANSVERSE DIMENSIONS ARE NORMAL TO ℄ W.B. ROADWAY.
ALL TRANSVERSE BARS SHALL BE PLACED NORMAL TO ℄ W.B. ROADWAY.
LAP 6a BARS WITH STAGE I BARS.

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SUPERSTRUCTURE DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 23 OF 38 FILE NO. 30864 DESIGN NO. 718





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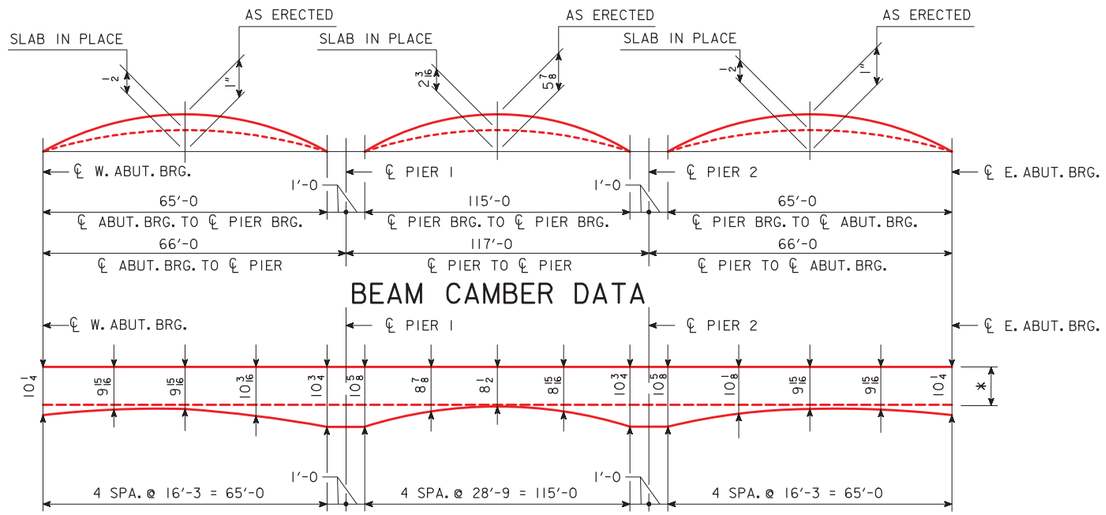
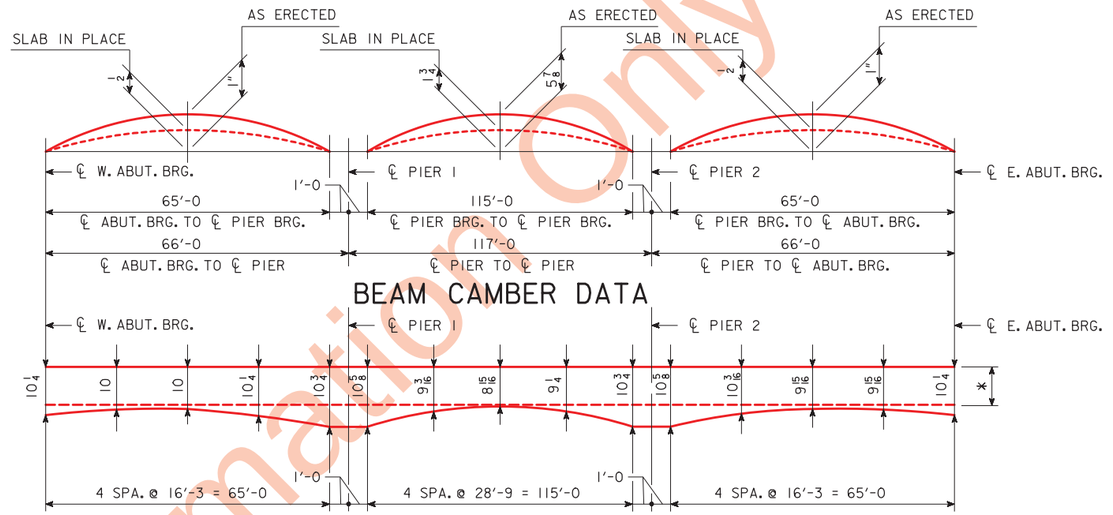
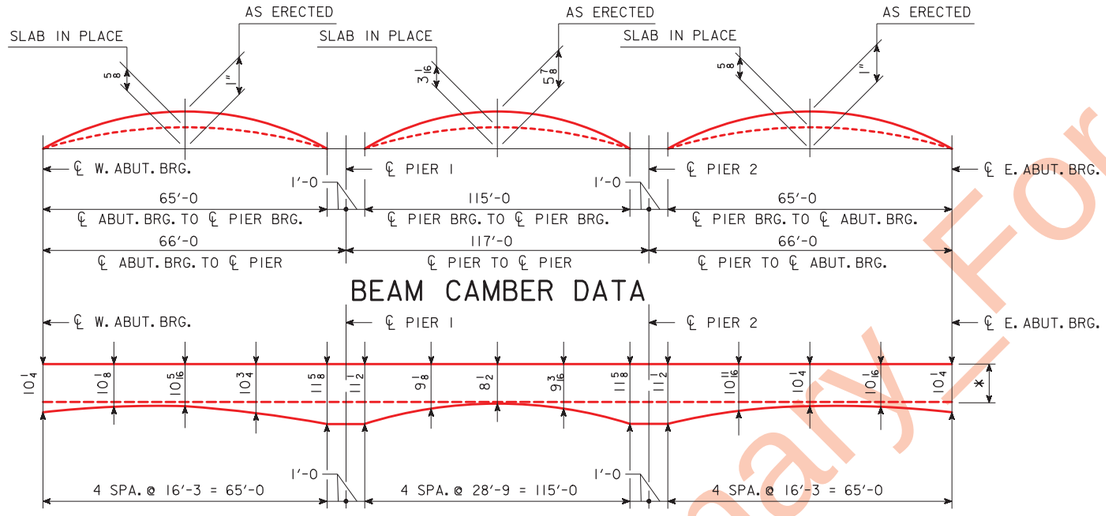



SLAB THICKNESS AT BEAMS (T)
FOR BEAM LINE A

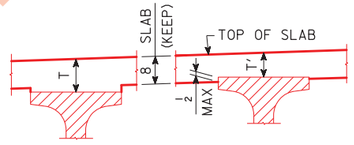
*NOMINAL SLAB THICKNESS AT BEAMS INCLUDES 8" SLAB + HAUNCH = T




SLAB THICKNESS AT BEAMS (T)
FOR BEAM LINE B THRU F




SLAB THICKNESS AT BEAMS (T)
FOR BEAM LINE G




SLAB THICKNESS DETAILS

NOTE: THE SLAB THICKNESS (T) AT BEAMS IS BASED ON THE ANTICIPATED BEAM CAMBER AND DEFLECTIONS. THESE VALUES ARE USED BY THE DESIGNER TO SET BEAM ELEVATIONS AND ESTIMATE CONCRETE QUANTITIES. REFER TO THE HAUNCH DATA DETAILS SHEET FOR ADDITIONAL INFORMATION TO AID THE CONTRACTOR IN SETTING THE FIELD HAUNCHES REQUIRED FOR CONSTRUCTION.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## SLAB THICKNESS DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

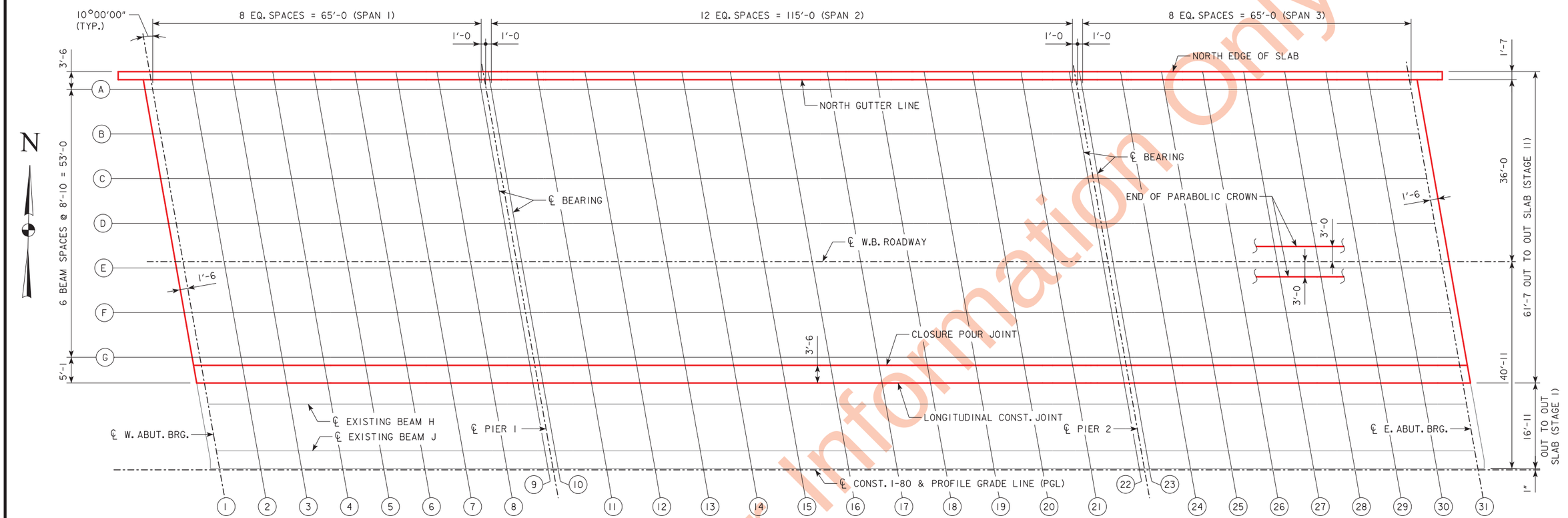
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 24 OF 38 — FILE NO. 30864 — DESIGN NO. 718



ENGLISH\MISCELLANEOUSBRIDGES.DGN - 1065 - THIS SHEET ISSUED 02-08.

BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510




## TOP OF SLAB ELEVATION PLAN

## TOP OF SLAB ELEVATIONS

| | ℄ W. ABUT. BEARING | | | | | | | | ℄ PIER 1 BEARINGS | | | | | | | | | | | | ℄ PIER 2 BEARINGS | | | | | | | | ℄ E. ABUT. BEARING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| NORTH GUTTER LINE | 686.72 | 686.68 | 686.64 | 686.60 | 686.56 | 686.52 | 686.48 | 686.44 | 686.40 | 686.39 | 686.34 | 686.29 | 686.24 | 686.19 | 686.15 | 686.10 | 686.05 | 686.00 | 685.95 | 685.91 | 685.86 | 685.81 | 685.80 | 685.76 | 685.72 | 685.68 | 685.64 | 685.60 | 685.56 | 685.52 | 685.48 |
| BEAM A | 686.77 | 686.73 | 686.69 | 686.65 | 686.60 | 686.56 | 686.52 | 686.48 | 686.44 | 686.43 | 686.38 | 686.34 | 686.29 | 686.24 | 686.19 | 686.14 | 686.10 | 686.05 | 686.00 | 685.95 | 685.91 | 685.86 | 685.85 | 685.81 | 685.77 | 685.73 | 685.68 | 685.64 | 685.60 | 685.56 | 685.52 |
| BEAM B | 686.98 | 686.94 | 686.90 | 686.86 | 686.82 | 686.78 | 686.74 | 686.70 | 686.66 | 686.65 | 686.60 | 686.55 | 686.50 | 686.45 | 686.41 | 686.36 | 686.31 | 686.26 | 686.21 | 686.17 | 686.12 | 686.07 | 686.06 | 686.02 | 685.98 | 685.94 | 685.90 | 685.86 | 685.82 | 685.78 | 685.74 |
| BEAM C | 687.19 | 687.15 | 687.11 | 687.07 | 687.03 | 686.99 | 686.95 | 686.91 | 686.87 | 686.86 | 686.81 | 686.76 | 686.71 | 686.67 | 686.62 | 686.57 | 686.52 | 686.47 | 686.43 | 686.38 | 686.33 | 686.28 | 686.27 | 686.23 | 686.19 | 686.15 | 686.11 | 686.07 | 686.03 | 685.99 | 685.95 |
| BEAM D | 687.38 | 687.34 | 687.30 | 687.26 | 687.22 | 687.18 | 687.14 | 687.10 | 687.06 | 687.05 | 687.00 | 686.95 | 686.91 | 686.86 | 686.81 | 686.76 | 686.71 | 686.67 | 686.62 | 686.57 | 686.52 | 686.47 | 686.46 | 686.42 | 686.38 | 686.34 | 686.30 | 686.26 | 686.22 | 686.18 | 686.14 |
| ℄ W.B. ROADWAY | 687.50 | 687.46 | 687.42 | 687.38 | 687.34 | 687.30 | 687.26 | 687.21 | 687.17 | 687.16 | 687.12 | 687.07 | 687.02 | 686.97 | 686.92 | 686.88 | 686.83 | 686.78 | 686.73 | 686.69 | 686.64 | 686.59 | 686.58 | 686.54 | 686.50 | 686.46 | 686.42 | 686.38 | 686.34 | 686.29 | 686.25 |
| BEAM E | 687.49 | 687.45 | 687.41 | 687.37 | 687.33 | 687.29 | 687.25 | 687.21 | 687.17 | 687.16 | 687.11 | 687.06 | 687.01 | 686.97 | 686.92 | 686.87 | 686.82 | 686.77 | 686.73 | 686.68 | 686.63 | 686.58 | 686.57 | 686.53 | 686.49 | 686.45 | 686.41 | 686.37 | 686.33 | 686.29 | 686.25 |
| BEAM F | 687.32 | 687.28 | 687.24 | 687.20 | 687.16 | 687.12 | 687.07 | 687.03 | 686.99 | 686.98 | 686.94 | 686.89 | 686.84 | 686.79 | 686.74 | 686.70 | 686.65 | 686.60 | 686.55 | 686.50 | 686.46 | 686.41 | 686.40 | 686.36 | 686.32 | 686.28 | 686.24 | 686.20 | 686.15 | 686.11 | 686.07 |
| BEAM G | 687.10 | 687.06 | 687.02 | 686.98 | 686.94 | 686.90 | 686.86 | 686.82 | 686.77 | 686.76 | 686.72 | 686.67 | 686.62 | 686.57 | 686.53 | 686.48 | 686.43 | 686.38 | 686.33 | 686.29 | 686.24 | 686.19 | 686.18 | 686.14 | 686.10 | 686.06 | 686.02 | 685.98 | 685.94 | 685.90 | 685.85 |
| CLOSURE POUR JOINT | 687.06 | 687.02 | 686.98 | 686.94 | 686.90 | 686.86 | 686.81 | 686.77 | 686.73 | 686.72 | 686.68 | 686.63 | 686.58 | 686.53 | 686.48 | 686.44 | 686.39 | 686.34 | 686.29 | 686.24 | 686.20 | 686.15 | 686.14 | 686.10 | 686.06 | 686.02 | 685.98 | 685.94 | 685.89 | 685.85 | 685.81 |
| LONG. CONST. JOINT | 686.97 | 686.93 | 686.89 | 686.85 | 686.81 | 686.76 | 686.72 | 686.68 | 686.64 | 686.63 | 686.59 | 686.54 | 686.49 | 686.44 | 686.39 | 686.35 | 686.30 | 686.25 | 686.20 | 686.15 | 686.11 | 686.06 | 686.05 | 686.01 | 685.97 | 685.93 | 685.89 | 685.84 | 685.80 | 685.76 | 685.72 |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SLAB ELEVATIONS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 25 OF 38 FILE NO. 30864 DESIGN NO. 718

DESIGN TEAM HNTB | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 73

REVISED 06-12 - THE ALLOWABLE FIELD HAUNCH MAX. & MIN. WAS CHANGED TO INCHES & DECIMALS OF FEET. NOTE & NOTE 1 WERE CHANGED. THE SLAB HAUNCH LOCATIONS EXAMPLE WAS REPLACED WITH A NOTE.
ENGLISH\MISCELLANEOUSBRIDGES.DGN - 1066 - THIS SHEET ISSUED 02-08.

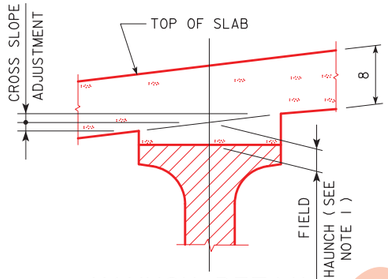
BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510

## TABLE OF BEAM LINE SLAB HAUNCH ELEVATIONS

| BEAM LINE | ℄ W. ABUT. BEARING | | | | | | | | ℄ PIER 1 BEARINGS | | | | | | | | | | | | | ℄ PIER 2 BEARINGS | | | | | | | | ℄ E. ABUT. BEARING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LINE 1 | LINE 2 | LINE 3 | LINE 4 | LINE 5 | LINE 6 | LINE 7 | LINE 8 | LINE 9 | LINE 10 | LINE 11 | LINE 12 | LINE 13 | LINE 14 | LINE 15 | LINE 16 | LINE 17 | LINE 18 | LINE 19 | LINE 20 | LINE 21 | LINE 22 | LINE 23 | LINE 24 | LINE 25 | LINE 26 | LINE 27 | LINE 28 | LINE 29 | LINE 30 | LINE 31 |
| A | 686.10 | 686.08 | 686.05 | 686.02 | 685.98 | 685.93 | 685.89 | 685.83 | 685.78 | 685.77 | 685.80 | 685.83 | 685.84 | 685.84 | 685.82 | 685.79 | 685.73 | 685.65 | 685.55 | 685.44 | 685.32 | 685.19 | 685.18 | 685.16 | 685.13 | 685.10 | 685.06 | 685.01 | 684.97 | 684.91 | 684.86 |
| B | 686.31 | 686.29 | 686.26 | 686.23 | 686.20 | 686.15 | 686.10 | 686.05 | 685.99 | 685.98 | 686.02 | 686.06 | 686.08 | 686.08 | 686.07 | 686.03 | 685.97 | 685.89 | 685.79 | 685.67 | 685.54 | 685.40 | 685.39 | 685.37 | 685.34 | 685.31 | 685.28 | 685.23 | 685.18 | 685.13 | 685.07 |
| C | 686.53 | 686.50 | 686.48 | 686.45 | 686.41 | 686.36 | 686.31 | 686.26 | 686.20 | 686.19 | 686.23 | 686.27 | 686.29 | 686.30 | 686.28 | 686.25 | 686.19 | 686.11 | 686.00 | 685.89 | 685.75 | 685.62 | 685.61 | 685.58 | 685.56 | 685.53 | 685.49 | 685.44 | 685.39 | 685.34 | 685.28 |
| D | 686.72 | 686.69 | 686.67 | 686.64 | 686.60 | 686.56 | 686.51 | 686.45 | 686.39 | 686.38 | 686.42 | 686.46 | 686.48 | 686.49 | 686.47 | 686.44 | 686.38 | 686.30 | 686.20 | 686.08 | 685.95 | 685.81 | 685.80 | 685.77 | 685.75 | 685.72 | 685.68 | 685.64 | 685.59 | 685.53 | 685.47 |
| E | 686.83 | 686.80 | 686.78 | 686.75 | 686.71 | 686.66 | 686.61 | 686.56 | 686.50 | 686.49 | 686.53 | 686.57 | 686.59 | 686.60 | 686.58 | 686.55 | 686.49 | 686.41 | 686.30 | 686.19 | 686.05 | 685.92 | 685.91 | 685.88 | 685.86 | 685.83 | 685.79 | 685.74 | 685.69 | 685.64 | 685.58 |
| F | 686.65 | 686.63 | 686.60 | 686.57 | 686.53 | 686.49 | 686.44 | 686.38 | 686.33 | 686.32 | 686.36 | 686.39 | 686.42 | 686.42 | 686.41 | 686.37 | 686.31 | 686.23 | 686.13 | 686.01 | 685.88 | 685.74 | 685.73 | 685.71 | 685.68 | 685.65 | 685.61 | 685.57 | 685.52 | 685.46 | 685.41 |
| G | 686.43 | 686.40 | 686.37 | 686.34 | 686.30 | 686.26 | 686.21 | 686.16 | 686.11 | 686.10 | 686.11 | 686.12 | 686.12 | 686.11 | 686.08 | 686.04 | 685.99 | 685.92 | 685.83 | 685.74 | 685.63 | 685.52 | 685.51 | 685.48 | 685.45 | 685.42 | 685.38 | 685.34 | 685.29 | 685.24 | 685.19 |

## MISCELLANEOUS DATA TABLE

| | BEAM LINE | ℄ W. ABUT. BEARING | | | | | | | | ℄ PIER 1 BEARINGS | | | | | | | | | | | | | ℄ PIER 2 BEARINGS | | | | | | | | ℄ E. ABUT. BEARING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LINE 1 | LINE 2 | LINE 3 | LINE 4 | LINE 5 | LINE 6 | LINE 7 | LINE 8 | LINE 9 | LINE 10 | LINE 11 | LINE 12 | LINE 13 | LINE 14 | LINE 15 | LINE 16 | LINE 17 | LINE 18 | LINE 19 | LINE 20 | LINE 21 | LINE 22 | LINE 23 | LINE 24 | LINE 25 | LINE 26 | LINE 27 | LINE 28 | LINE 29 | LINE 30 | LINE 31 |
| ANTICIPATED DEFLECTION DUE TO SLAB (IN.) | A | 0 | 3/16 | 5/16 | 7/16 | 1/2 | 7/16 | 5/16 | 3/16 | 0 | 0 | 1 | 1 7/8 | 2 5/8 | 3 3/16 | 3 9/16 | 3 11/16 | 3 9/16 | 3 3/16 | 2 5/8 | 1 7/8 | 1 | 0 | 0 | 3/16 | 5/16 | 7/16 | 1/2 | 7/16 | 5/16 | 3/16 | 0 |
| | B - F | 0 | 3/16 | 3/8 | 1/2 | 9/16 | 1/2 | 3/8 | 3/16 | 0 | 0 | 1 1/16 | 2 1/16 | 2 15/16 | 3 9/16 | 4 | 4 1/8 | 4 | 3 9/16 | 2 15/16 | 2 1/16 | 1 1/16 | 0 | 0 | 3/16 | 3/8 | 1/2 | 9/16 | 1/2 | 3/8 | 3/16 | 0 |
| | G | 0 | 1/8 | 1/4 | 5/16 | 3/8 | 5/16 | 1/4 | 1/8 | 0 | 0 | 3/4 | 1 7/16 | 2 | 2 7/16 | 2 11/16 | 2 13/16 | 2 11/16 | 2 7/16 | 2 | 1 7/16 | 3/4 | 0 | 0 | 1/8 | 1/4 | 5/16 | 3/8 | 5/16 | 1/4 | 1/8 | 0 |
| CROSS SLOPE ADJUSTMENTS (IN.) | A - C | 7/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D | 5/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | E | (+) 1/16 (-) 1/4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | F | 5/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | G | 7/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ALLOWABLE FIELD HAUNCH IN. & (FT.) | MAX. ALL | 4 (0.333) | 4 (0.333) | 3 1/2 (0.292) | 3 1/2 (0.292) | 3 (0.250) | 3 1/2 (0.292) | 3 1/2 (0.292) | 4 (0.333) | 4 (0.333) | 4 (0.333) | 3 1/2 (0.292) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 3 1/2 (0.292) | 4 (0.333) | 4 (0.333) | 4 (0.333) | 3 1/2 (0.292) | 3 1/2 (0.292) | 3 (0.250) | 3 1/2 (0.292) | 3 1/2 (0.292) | 4 (0.333) | 4 (0.333) |
| | MIN. A-C | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) |
| | MIN. D | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) |
| | MIN. E | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) |
| | MIN. F | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) |
| | MIN. G | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) |




HAUNCH DETAIL

NOTE:
HAUNCH LOCATIONS ARE AT THE SAME LOCATION AS THE ENCIRCLED LETTERS AND NUMBERS SHOWN ON SLAB ELEVATIONS SHEET.

NOTE:
BRIDGE SEAT ELEVATIONS ARE SET BASED ON THEORETICAL CAMBER AND BEAM DEFLECTIONS. THESE BRIDGE SEATS WILL PROVIDE A THEORETICAL BEAM HAUNCH WITHIN DESIGN PARAMETERS. FIELD HAUNCHES ARE DETERMINED USING SURVEYED TOP OF BEAM ELEVATIONS AND "BEAM LINE HAUNCH ELEVATION" DATA. ALLOWABLE MAXIMUM AND MINIMUM "FIELD HAUNCH" VALUES ARE GIVEN IN INCHES AND DECIMALS OF FEET IN THE "MISCELLANEOUS DATA" TABLE. "CROSS SLOPE ADJUSTMENT" VALUES WILL AID THE CONTRACTOR IN DETERMINING ACTUAL FORMED HAUNCH DIMENSIONS AT THE EDGES OF THE TOP FLANGE.

NOTE 1:
TO CALCULATE FIELD HAUNCH REQUIRED AT EACH LOCATION, SURVEY THE BEAM TOPS CONSISTENT WITH THE SPACINGS SHOWN ON THE "TOP OF SLAB ELEVATIONS LAYOUT". SUBTRACT THE SURVEYED BEAM SHOT FROM THE "BEAM LINE HAUNCH ELEVATION". THIS VALUE WILL BE THE HAUNCH NEEDED (SEE "FIELD HAUNCH" IN HAUNCH DETAIL). THE "BEAM LINE HAUNCH ELEVATION" INCLUDES ADJUSTMENTS FOR SLAB THICKNESSES AND ANTICIPATED DEFLECTIONS. NO ADDITIONAL CALCULATIONS ARE REQUIRED. IF THE FIELD HAUNCH EXCEEDS THE MAXIMUMS AND MINIMUMS SHOWN IN INCHES AND DECIMALS OF FEET IN THE MISCELLANEOUS DATA TABLE, ADJUSTMENTS TO THE GRADE OR ADDITIONAL HAUNCH REINFORCEMENT WILL BE REQUIRED.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SLAB HAUNCH DATA DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 26 OF 38 FILE NO. 30864 DESIGN NO. 718

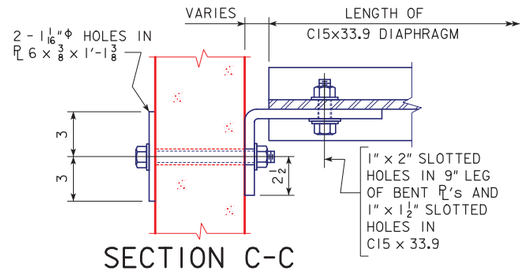


| DESIGN TEAM HNTB | SLAB HAUNCH DATA DETAILS | STANDARD SHEET 1066 | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 74 |
|---|---|---|---|---|---|

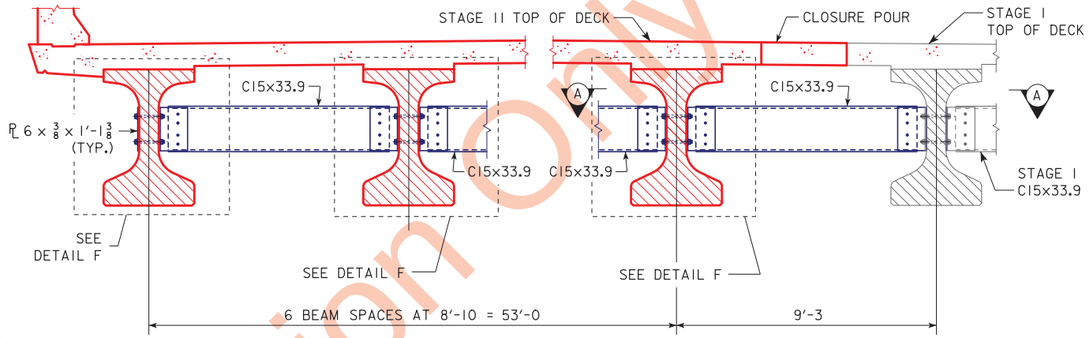
# BULB TEE "C" BEAM INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL

| ONE BEAM CONNECTION DETAIL "F" | | | WEIGHT |
|---|---|---|---|
| | | NO. OF BEAM CONNECTIONS | |
| 2 - $\frac{7}{8}$"Φ x 9$\frac{1}{4}$" H.S. BOLTS WITH NUTS & WASHERS = 4.8 LBS. | | 42 | 202 |
| ONE DETAIL "F" | 1 - BACKING PL 6 x $\frac{3}{8}$ x 1'-1$\frac{3}{8}$ = 8.5 LBS. | 42 | 357 |
| | 1 - BENT PL 9 x 6 x $\frac{1}{2}$ x 1'-1$\frac{3}{8}$ = 28.5 LBS. | 42 | 1,197 |
| **ONE DIAPHRAGM** | | | |
| | | NUMBER OF DIAPHRAGMS | |
| 8 - $\frac{7}{8}$"Φ x 2$\frac{3}{4}$" H.S.BOLTS WITH NUTS & WASHERS = 10.3 LBS. | | 21 | 216 |
| | LENGTH OF MEMBER | | |
| 1 - C15 x 33.9 = 33.9 LBS./FT. | 8'-0$\frac{3}{4}$ | 3 | 820 |
| 1 - C15 x 33.9 = 33.9 LBS./FT. | 7'-7$\frac{3}{4}$ | 18 | 4,665 |
| INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL - TOTAL (LBS.) | | | 7,457 |

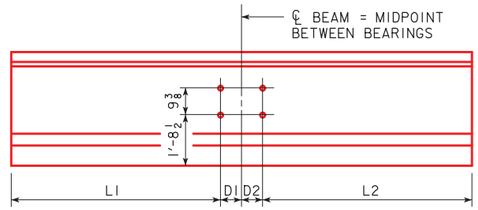
| TABLE OF VARIABLES | | | | | |
|---|---|---|---|---|---|
| | BEAM | L1 | L2 | D1 | D2 |
| BTC 65 | A-F | 32'-4$\frac{5}{8}$ | 32'-5$\frac{5}{8}$ | 9$\frac{3}{8}$ | 9$\frac{3}{8}$ |
| | G | 32'-4$\frac{5}{8}$ | 32'-4$\frac{3}{16}$ | 9$\frac{3}{8}$ | 9$\frac{13}{16}$ |
| BTC 115 | A-F | 57'-4$\frac{5}{8}$ | 57'-4$\frac{5}{8}$ | 9$\frac{3}{8}$ | 9$\frac{3}{8}$ |
| | G | 57'-4$\frac{5}{8}$ | 57'-4$\frac{3}{16}$ | 9$\frac{3}{8}$ | 9$\frac{13}{16}$ |



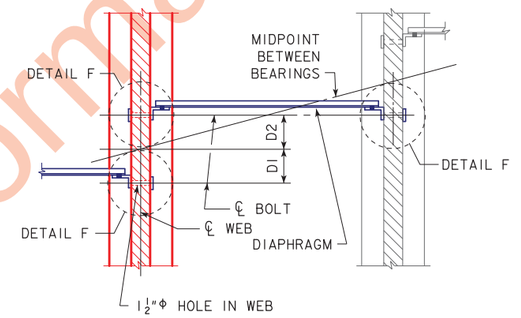

SECTION C-C




SECTION SHOWING INTERMEDIATE DIAPHRAGM



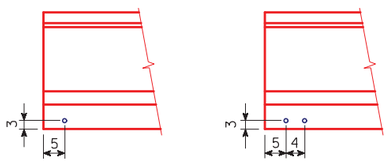

INTERMEDIATE DIAPHRAGM BOLT HOLE LOCATIONS




PART SECTION A-A

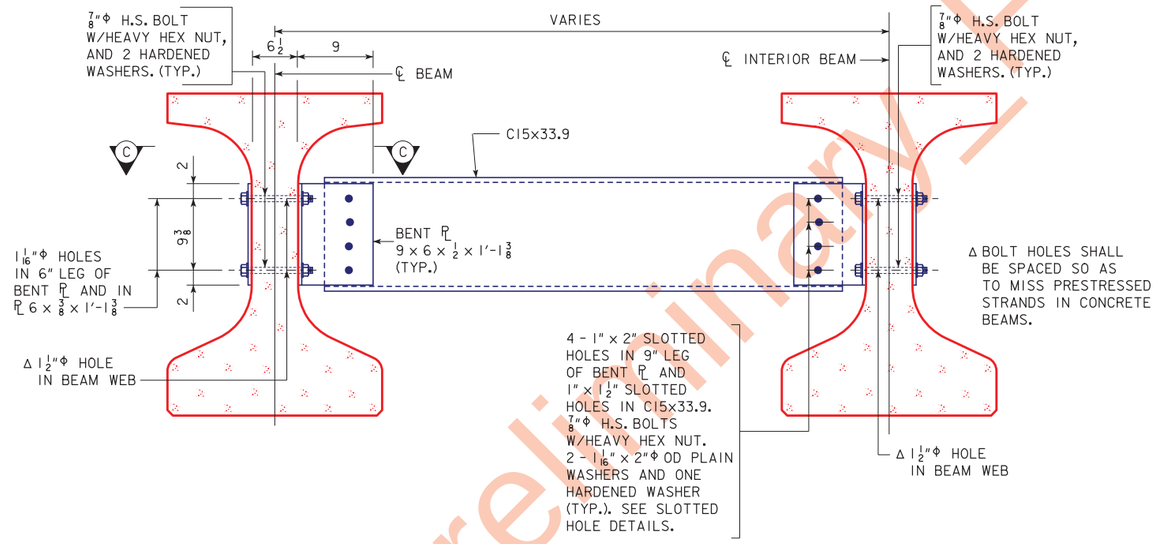
| STRUCTURAL STEEL | |
|---|---|
| WEIGHT | 7,457 LBS. |

NOTE: STRUCTURAL STEEL WEIGHT IS INCLUDED ON THE SUMMARY QUANTITIES SHEET.

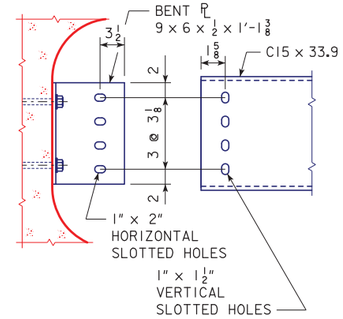



INTEGRAL ABUT. FIXED PIER

BEAM COIL TIE LOCATIONS




DETAIL F




SLOTTED HOLE DETAILS

**NOTES:**

ALL DIAPHRAGM MATERIALS, INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.

SHOP DRAWINGS OF THE STEEL DIAPHRAGMS SHOWING LAYOUT AND DETAILS OF THE DIAPHRAGMS SHALL BE SUBMITTED FOR APPROVAL.

ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS SHALL BE INCLUDED IN THE PRICE BID FOR STRUCTURAL STEEL.

THE 1$\frac{1}{2}$"Φ HOLES FOR THE $\frac{7}{8}$"Φ H.S. BOLTS SHALL BE CAST INTO THE WEB. DRILLING IS NOT ALLOWED.

THE $\frac{7}{8}$"Φ H.S. BOLTS THROUGH THE WEB SHALL HAVE A THREAD LENGTH OF 3" MIN. AND 4" MAX. AND SHALL MEET THE REQUIREMENTS OF ASTM A449.

ALL BOLTS ARE TO BE TIGHTENED PRIOR TO PLACING BRIDGE FLOOR CONCRETE WITH THE FOLLOWING EXCEPTION: BOLTS IN DIAPHRAGMS LOCATED UNDER LONGITUDINAL BRIDGE FLOOR CONSTRUCTION JOINTS SHALL NOT BE TIGHTENED UNTIL STAGE II OF THE BRIDGE FLOOR HAS BEEN PLACED.

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

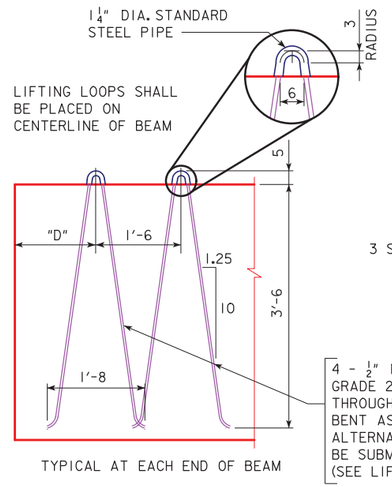
## INTERMEDIATE DIAPHRAGM DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

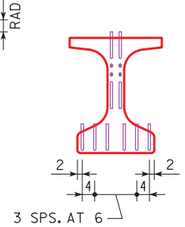
DESIGN SHEET NO. 27 OF 38 FILE NO. 30864 DESIGN NO. 718



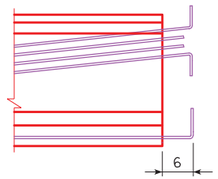

TYPICAL AT EACH END OF BEAM

4 - ½" NOMINAL DIA. GRADE 270 STRANDS THREADED THROUGH EACH PIPE SLEEVE BENT AS SHOWN AFTER THREADING. ALTERNATE LIFTING DEVICES MAY BE SUBMITTED FOR APPROVAL (SEE LIFTING LOOP TABLE).

## LIFTING LOOP DETAIL




THE TOP AND BOTTOM ROWS OF THE DEFLECTED STRANDS ARE TO BE CUT WITH 1'-6 PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN. THE REMAINING TOP DEFLECTED STRANDS ARE TO BE CUT WITH 5" PROJECTIONS.
SIX BOTTOM STRANDS ARE TO BE CUT WITH 1'-6 PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN. THE REMAINING BOTTOM STRANDS ARE TO BE CUT OFF REASONABLY FLUSH WITH THE CONCRETE.




TYPICAL AT BOTH BEAM ENDS

## STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS

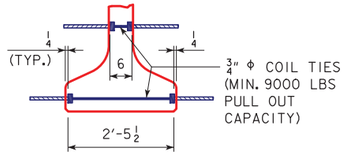
## LIFTING LOOP AND OVERHANG TABLE

| BEAMS | LIFTING LOOPS EACH END | # OF STRANDS PER LOOP | D | BEAM OVERHANG (FT) |
|---|---|---|---|---|
| BTC65 | 1 | 4 | 2'-0 | ** |
| BTCII5 | 2 | 4 | 8'-3 | 14 |

** IN ACCORDANCE WITH ARTICLE 2407.03, K OF THE STANDARD SPECIFICATIONS.

LIFTING LOOPS SHALL CARRY LOADS EQUALLY.

NUMBER AND EXACT LOCATION OF COIL TIES TO BE AS DETAILED ON INTERMEDIATE DIAPHRAGM DETAILS SHEET.




## COIL TIE DETAIL

## DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE TO BE IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2007.
REINFORCING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 5.
PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 270.

## SPECIFICATIONS:

CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, CURRENT SERIES, WITH CURRENT APPLICABLE SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.
DESIGN: AASHTO LRFD, SERIES OF 2007, WITH MINOR MODIFICATIONS.

## ALTERNATE BAR NOTES:

ALTERNATE BARS SHOWN IN BENT BAR DETAILS MAY BE USED IN LIEU OF REINFORCING BARS SHOWN IN BAR LIST. NO ADDITIONAL PAYMENT SHALL BE MADE FOR USE OF ALTERNATE BARS.

## BTC BEAM DATA

| BTC BEAM | SPAN LENGTH ℄ BEARING | OVERALL BEAM LENGTH (L) | CONCRETE STRENGTH f'ci (ksi) | CONCRETE STRENGTH f'c (ksi) | STRAND SIZE DIA. (in) | NO. OF STRAND STRAIGHT | NO. OF STRAND DEFLECTED | TOTAL INITIAL PRESTRESS ③ kips | HOLD DOWN FORCE-kips | CAMBER (in) AT RELEASE | CAMBER (in) AFTER LOSSES | DEFLECTION (in) $\Delta_D$ IMMEDIATE ① (ELASTIC) $\Delta_I$ STEEL DIAPHRAGM | DEFLECTION (in) $\Delta_D$ TIME ② (PLASTIC) $\Delta_T$ STEEL DIAPHRAGM | PERMISSIBLE MAXIMUM SPACING HL-93 LOADING STEEL DIAPHRAGM | WEIGHT (TONS) | CONCRETE (CU YD.) | REINFORCING STEEL (WEIGHT-LBS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BTC65 | 65'-0 | 66'-4 | 5.00 | 6.00 | 0.60 | 14 | 2 | 681 | 11.5 | 0.57 | 1.01 | 0.47 | 0.12 | 9'-3 | 23.9 | 11.8 | 1,695 |
| BTCII5 | 115'-0 | 116'-4 | 8.00 | 9.00 | 0.60 | 38 | 10 | 2042 | 27.7 | 3.32 | 5.86 | 3.83 | 0.96 | 9'-3 | 41.9 | 20.7 | 2,916 |

① DEFLECTIONS AT MID-SPAN DUE TO WEIGHT OF SLAB AND DIAPHRAGM. THE DEFLECTIONS SHOWN ARE FOR A SLAB ( 8 in ) AND HAUNCH ( 1.5 in ) WEIGHT OF:
0.98 kips/ft FOR 9'-3 BEAM SPACING
AND ONE STEEL DIAPHRAGM ( 0.500 kips ) AT ℄ OF SPAN.
FOR DIFFERENT SLAB AND DIAPHRAGM WEIGHTS, DEFLECTIONS WILL BE DIRECTLY PROPORTIONAL.
② DEFLECTIONS DUE TO THE COMBINED EFFECT OF CREEP DUE TO WEIGHT OF SLAB AND SHRINKAGE OF SLAB.
TOTAL BEAM DEFLECTIONS AT ℄ OF SPAN, $\Delta_D$ , DUE TO WEIGHT OF SLAB AND DIAPHRAGMS FOR DETAILING PURPOSE:
(A) $\Delta_D = \Delta_I + \Delta_T$ FOR SIMPLE SPAN.
(B) $\Delta_D = \Delta_I + \frac{3}{4}\Delta_T$ FOR END SPANS OF CONTINUOUS BRIDGE.
(C) $\Delta_D = \Delta_I + \frac{1}{2}\Delta_T$ FOR INTERIOR SPANS OF CONTINUOUS BRIDGE.
③ TOTAL INITIAL PRESTRESS IS BASED ON 72.6% f's, f's. = 270 ksi. AND As = 0.217 $in^2$.

CALCULATED DESIGN CAMBERS HAVE BEEN REDUCED FROM THEIR THEORETICAL VALUES BY 15% TO AID CONSTRUCTABILITY.

## BEAM NOTES:

THESE BEAMS ARE DESIGNED FOR AASHTO LIVE LOADS AS INDICATED IN ABOVE TABLE WITH AN ALLOWANCE OF 20 LBS PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.
ALL PPC BEAMS SHALL USE HIGH PERFORMANCE CONCRETE ( HPC ) IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
HOLD DOWN POINTS FOR DEFLECTED STRANDS MAY BE MOVED TOWARD ENDS OF BEAM A DISTANCE OF 0.05 L MAXIMUM AT PRODUCER'S OPTION.
ALL PRESTRESSING STRANDS EXCEPT LIFTING LOOP STRANDS SHALL BE 0.60 in. NOMINAL DIAMETER (NOMINAL STEEL AREA = 0.217 $in^2$) AND CONFORM TO ASTM A416 GRADE 270 LOW RELAXATION STRANDS. MINIMUM STRAND BREAKING STRENGTH SHALL BE 58.6 kips.
TOPS OF BEAMS ARE TO BE STRUCK OFF LEVEL AND FINISHED AS PER MATERIALS IM570.
BEARINGS SHALL BE AS DETAILED ON OTHER DESIGN SHEETS.
BEAMS TO BE USED IN BRIDGES MADE CONTINUOUS BY THE POURED IN PLACE FLOOR, ARE TO BE AT LEAST 28 DAYS OLD BEFORE THE FLOOR IS PLACED UNLESS A SHORTER CURING TIME IS APPROVED BY THE BRIDGE ENGINEER.
THE PORTIONS OF THE PRESTRESSED BEAMS THAT ARE TO BE EMBEDDED IN THE ABUTMENT AND PIER DIAPHRAGMS SHALL BE ROUGHENED FOR A DISTANCE OF 10" FROM THE BEAM END BY SANDBLASTING OR OTHER APPROVED METHODS TO PROVIDE SUITABLE BOND BETWEEN THE BEAM AND THE DIAPHRAGM IN ACCORDANCE WITH ARTICLE 2403.03, I, OF THE STANDARD SPECIFICATIONS.
ALL BEAMS ARE TO BE INCREASED IN LENGTH TO COMPENSATE FOR ELASTIC SHORTENING, CREEP AND SHRINKAGE.
FOR TRANSPORTING, THE ALLOWABLE OVERHANG IS SHOWN IN THE LIFTING LOOP AND OVERHANG TABLE.
THE CONTRACTOR SHALL ASSURE THE LATERAL STABILITY OF THE BTCII5 BEAMS DURING HANDLING, TRANSPORTING AND ERECTION BY PROVIDING TEMPORARY BRACING AS NEEDED.
HOLES MUST BE CAST IN THE WEB TO ACCOMMODATE THE STEEL DIAPHRAGM ATTACHMENTS AS DETAILED ON THE STEEL DIAPHRAGM DETAIL SHEET.
MINIMUM CONCRETE f'c (AT 28 DAYS) AND MINIMUM f'ci AT RELEASE ARE LOCATED IN THE BTC BEAM DATA TABLE ABOVE.
FOUR 0.60 IN. DIAMETER STRANDS STRESSED TO NOT MORE THAN 5000 lbs EACH MAY BE USED IN LIEU OF BARS 5a1 AND 5a2 IN THE TOP FLANGE.
FOR MODIFIED STIRRUP EXTENSIONS SEE "BENT BAR DETAILS" AND BEAM DETAILS FOR DIMENSIONS AND LOCATIONS.
FASCIA BEAM LINE A SHALL BE PAINTED. SEE DESIGN SHEET 17 FOR DETAILS.

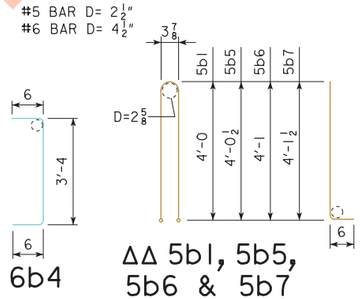
ΔΔ 5b1, 5b5, 5b6, 5b7 AND 6b3 BARS TO BE EPOXY COATED
* 6b3 AND 6b4 BARS TO BE USED IN PAIRS

## REINFORCING BAR LIST

| | BEAM | | BTC65 | | BTCII5 | |
|---|---|---|---|---|---|---|
| | BAR | SHAPE | NO. | LENGTH | NO. | LENGTH |
| | 5a1 | | 12 | 34'-2 | 12 | 21'-4 |
| | 5a2 | | — | — | 12 | 40'-0 |
| ΔΔ | 5b1 | | — | — | 63 | 9'-2 |
| ΔΔ | 5b5 | | 7 | 9'-3 | — | — |
| ΔΔ | 5b6 | | 22 | 9'-4 | 26 | 9'-4 |
| ΔΔ | 5b7 | | 18 | 9'-5 | 4 | 9'-5 |
| ΔΔ * | 6b3 | | 32 | 5'-1 | 36 | 5'-1 |
| * | 6b4 | | 8 | 4'-4 | 24 | 4'-4 |
| | 4c1 | | 83 | 2'-7 | 149 | 2'-7 |
| | 4d1 | | 67 | 6'-5 | 113 | 6'-5 |
| | 4e1 | | 24 | 3'-2 | 24 | 3'-2 |
| | 4h1 | | 6 | 8'-0 | 6 | 8'-0 |

## BENT BAR DETAILS

NOTE: ALL BAR DIMENSIONS ARE OUT TO OUT
D = PIN DIAMETER FOR BENDING (UNLESS OTHERWISE SHOWN)
#4 BAR D= 2"
#5 BAR D= 2½"
#6 BAR D= 4½"




DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BTC BEAM DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 28 OF 38 FILE NO. 30864 DESIGN NO. 718

CORRECTION 12-13 - COIL TIE DETAIL WAS CHANGED TO REFLECT THE DISTANCE BETWEEN COIL TIE ANCHORS EMBEDDED 4 INCH.
ENGLISHBEAMS.DGN 4700 - THIS SHEET ISSUED 05-04.





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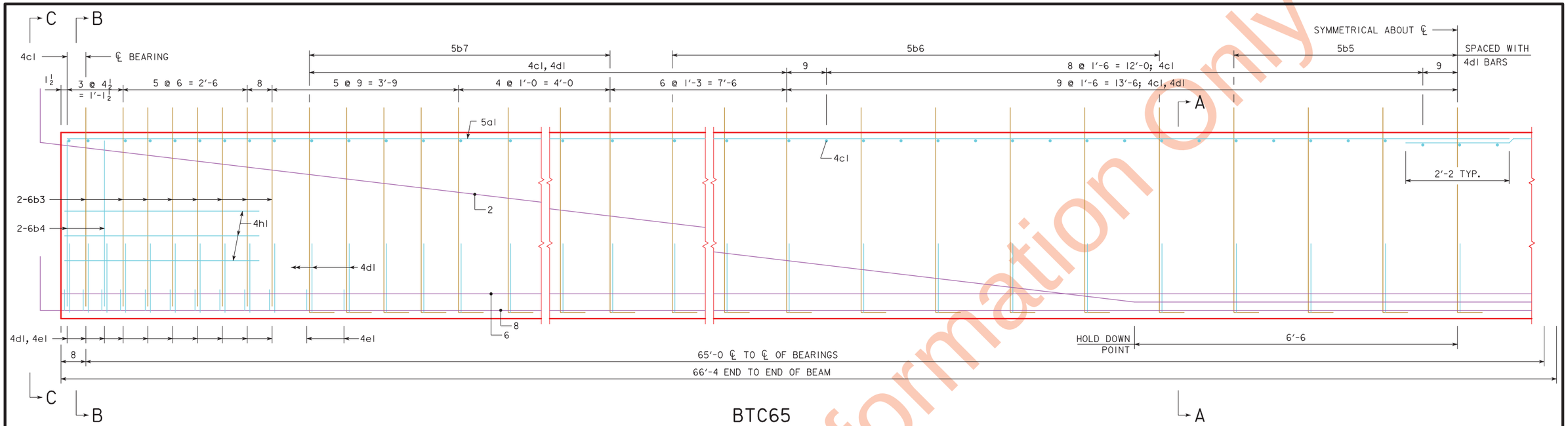
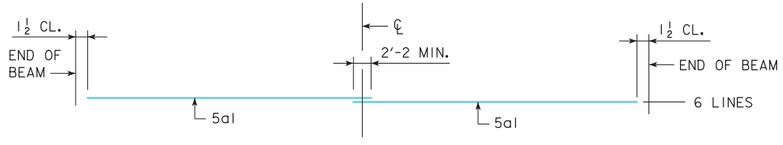
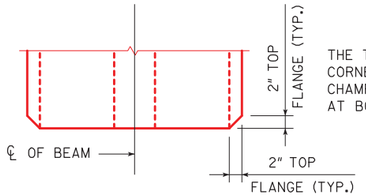


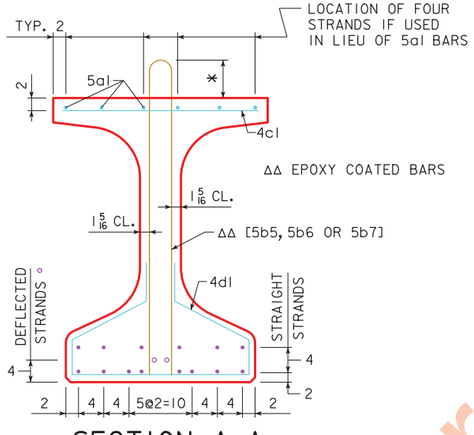

## TOP FLANGE LONGITUDINAL BAR LAYOUT

NOTE STIRRUP EXTENSION
*HEIGHT = 5½ FOR ΔΔ5b2 AND ΔΔ5b5
*HEIGHT = 6 FOR ΔΔ5b2 AND ΔΔ5b6
*HEIGHT = 6½ FOR ΔΔ5b2 AND ΔΔ5b7

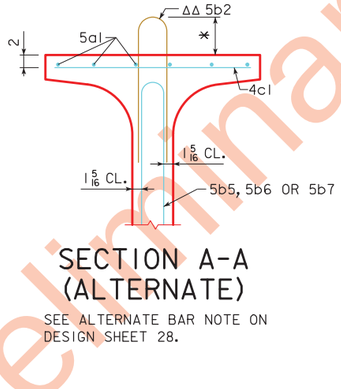



## TOP VIEW

THE TOP FLANGE BEAM CORNERS ARE TO BE CHAMFERED 2" AS SHOWN AT BOTH ENDS OF THE BEAM

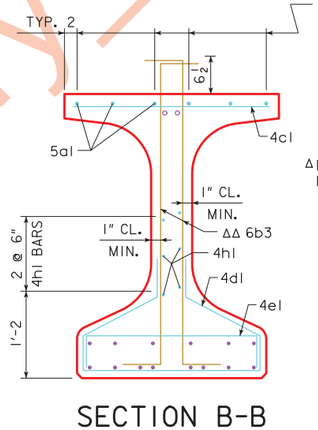



## SECTION A-A

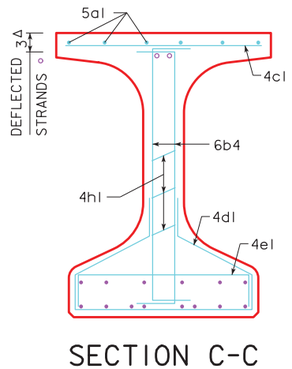



## SECTION A-A (ALTERNATE)

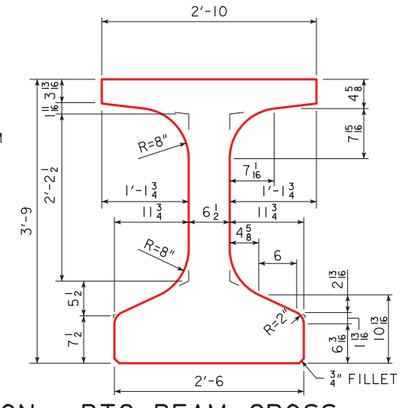
SEE ALTERNATE BAR NOTE ON DESIGN SHEET 28.




## SECTION B-B




## SECTION C-C




AREA = 691.8 in²
$\bar{y}_b$ = 20.74 in.
I = 178,971 in⁴

## BEAM SECTION PROPERTIES

## BTC BEAM CROSS SECTION

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

# BTC65 BEAM DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

# JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 29 OF 38 — FILE NO. 30864 — DESIGN NO. 718

REVISED 10-07 - 5b2 BAR DELETED. 5b1 BAR LENGTHENED TO EXTEND 5 INCHES ABOVE BEAM TOP. ALTERNATE SECTION A-A ADDED.
ENGLISHBEAMS.DGN 4708 - THIS SHEET ISSUED 05-04.





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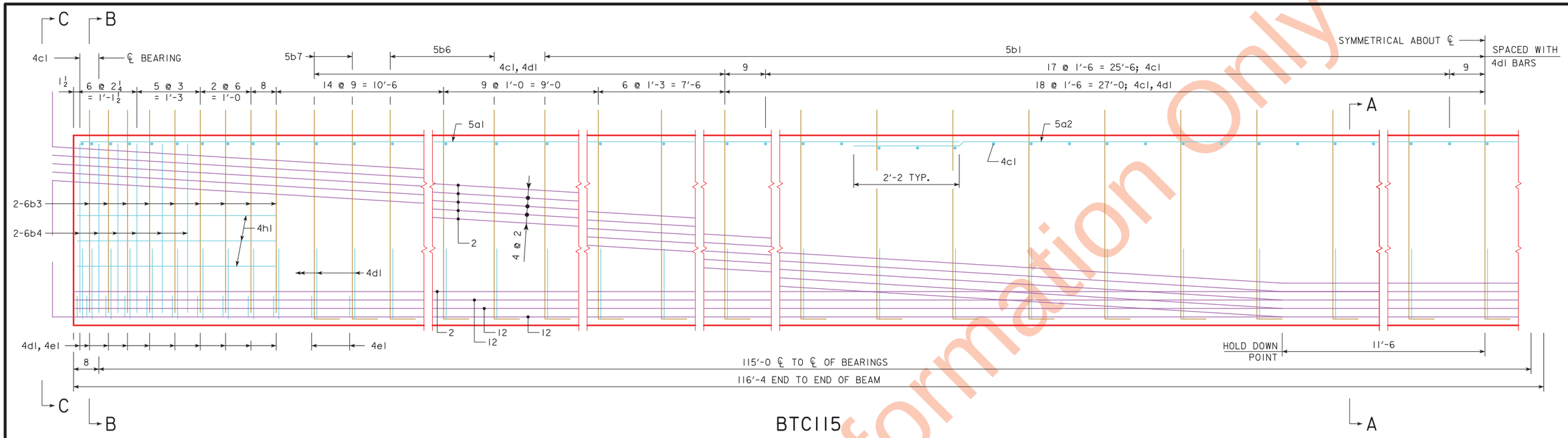
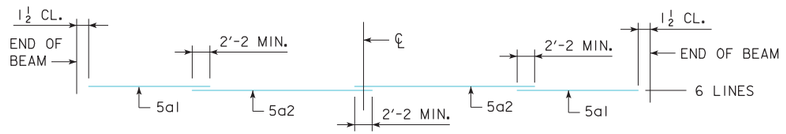
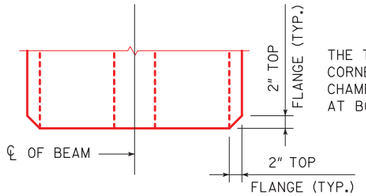



BTC115



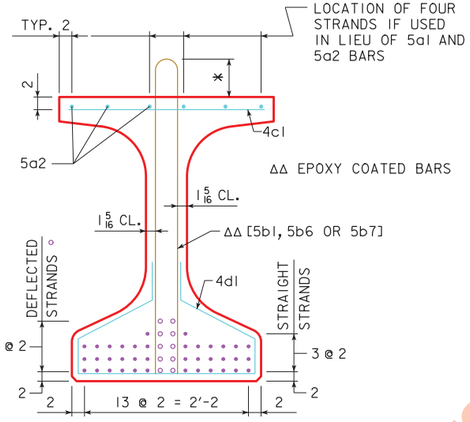

TOP FLANGE LONGITUDINAL BAR LAYOUT

NOTE STIRRUP EXTENSION
*HEIGHT = 5 FOR ΔΔ5b2 AND ΔΔ5b1
*HEIGHT = 6 FOR ΔΔ5b2 AND ΔΔ5b6
*HEIGHT = 6½ FOR ΔΔ5b2 AND ΔΔ5b7

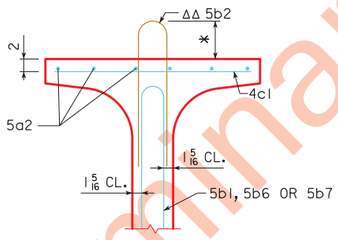



TOP VIEW

THE TOP FLANGE BEAM CORNERS ARE TO BE CHAMFERED 2" AS SHOWN AT BOTH ENDS OF THE BEAM

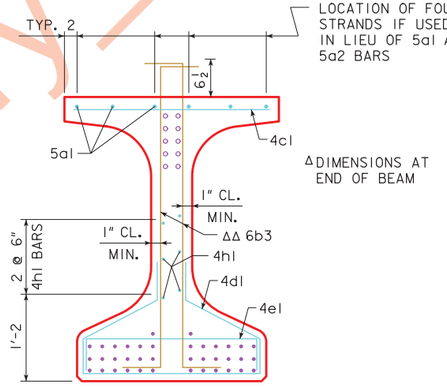



SECTION A-A

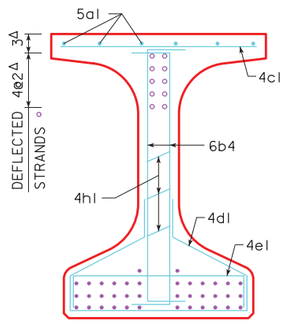



SECTION A-A (ALTERNATE)

SEE ALTERNATE BAR NOTE ON DESIGN SHEET 28.



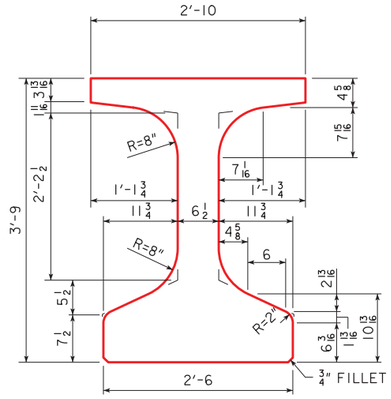

SECTION B-B




SECTION C-C

AREA = 691.8 in²
ȳb = 20.74 in.
I = 178,971 in⁴

BEAM SECTION PROPERTIES




BTC BEAM CROSS SECTION

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BTC115 BEAM DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 30 OF 38 — FILE NO. 30864 — DESIGN NO. 718

REVISED 10-07 - 5b2 BAR DELETED. 5b1 BAR LENGTHENED TO EXTEND 5 INCHES ABOVE BEAM TOP. ALTERNATE SECTION A-A ADDED.
ENGLISHBEAMS.DGN 4718 - THIS SHEET ISSUED 05-04.





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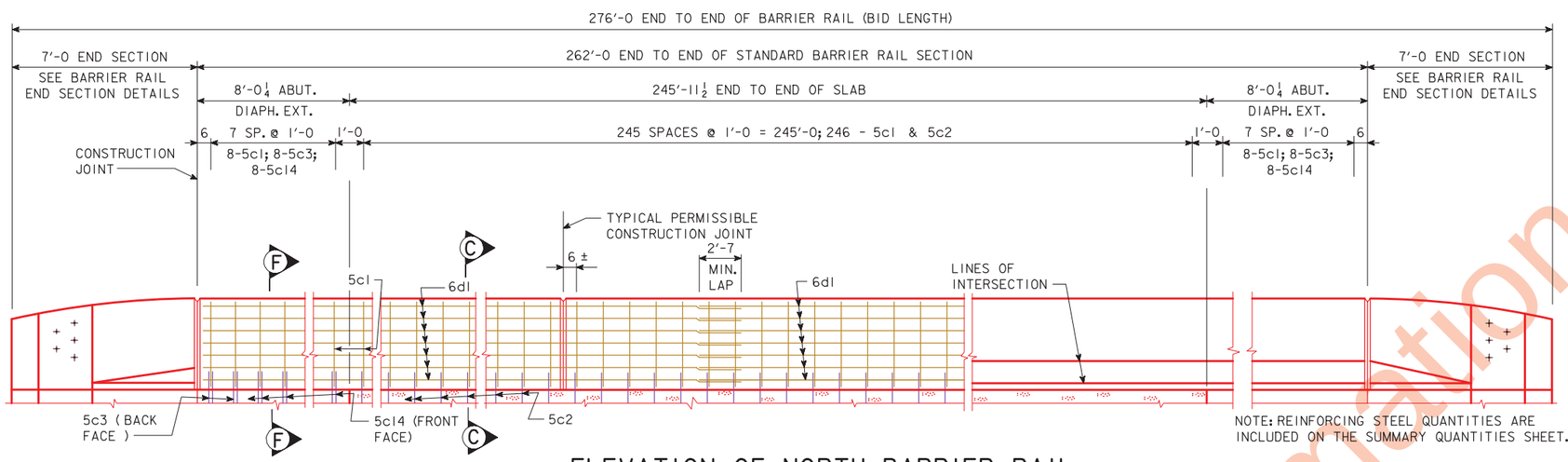
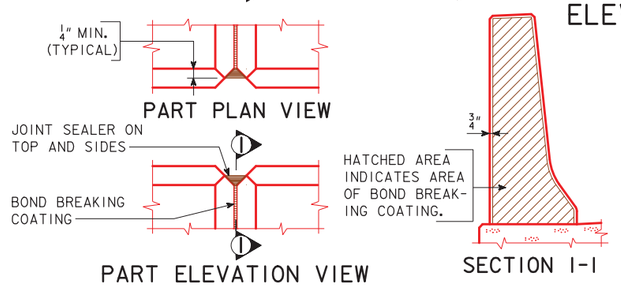



NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

## ELEVATION OF NORTH BARRIER RAIL

(ALL DIMENSIONS ARE ALONG GUTTERLINE)
(LOOKING NORTH)




## BARRIER RAIL JOINT DETAILS

## BARRIER AESTHETIC TREATMENT NOTES:

THE BARRIER RAIL SHALL UTILIZE HORIZONTAL RUSTICATIONS WHERE DESIGNATED IN THE PLANS AND INTEGRALLY COLORED CONCRETE.

SEE "GENERAL NOTES FOR CONCRETE RUSTICATION" ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING APPROVED TECHNIQUES AND METHODS OF CONCRETE RUSTICATION.

NO PRODUCTION BARRIER WORK MAY PROCEED UNTIL FINAL APPROVAL OF THE BARRIER MOCKUP BY THE ENGINEER.

ALL COSTS ASSOCIATED WITH HORIZONTAL RUSTICATIONS, INTEGRAL CONCRETE COLOR, AND CONSTRUCTING THE BARRIER MOCKUP PANEL ARE TO BE INCLUDED IN THE BID ITEM, "CONCRETE BARRIER RAILING, AESTHETIC".

## BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.

COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.

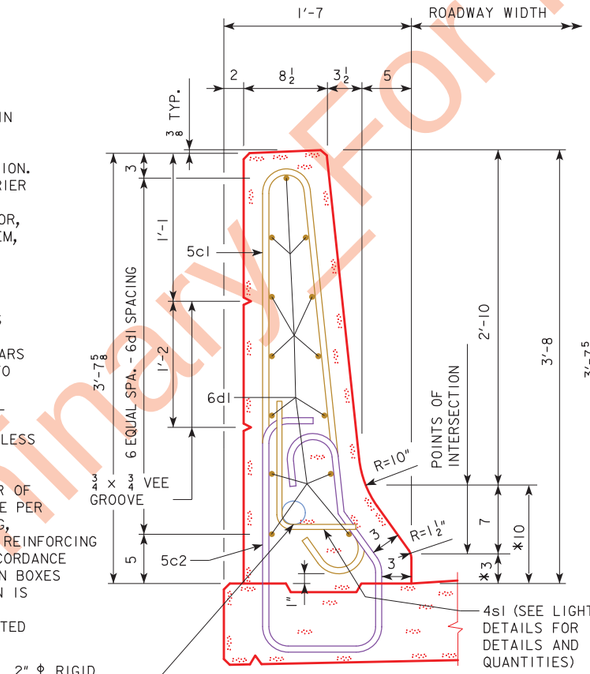
THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR "CONCRETE BARRIER RAILING, AESTHETIC" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL ℄ GRADE, EXCEPT AT THE END SECTIONS.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET EXCEPT AT THE END SECTIONS.

* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.



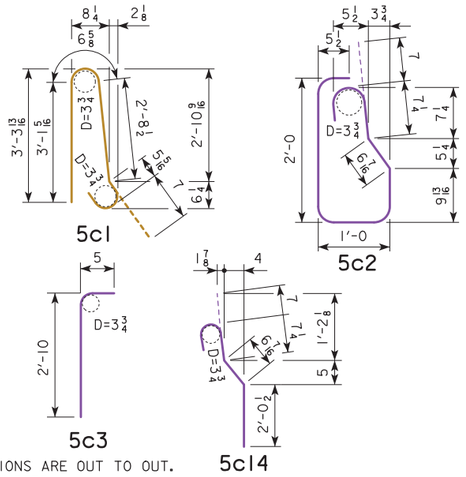

## EPOXY COATED REINF. STEEL - NORTH RAIL

| SECTION | BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|---|
| STANDARD SECTIONS | 5c1 | RAIL, VERTICAL | | 262 | 7'-5 | 2,027 |
| | 6d1 | RAIL, LONGITUDINAL | | 91 | 39'-8 | 5,422 |
| | | | | | EPOXY STEEL TOTAL (LBS.) | 7,449 |

## STAINLESS STEEL REINF. STEEL - NORTH RAIL

| SECTION | BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|---|
| STANDARD SECTIONS | 5c2 | RAIL, VERTICAL | | 246 | 6'-0 | 1,539 |
| | 5c3 | RAIL, VERTICAL | | 16 | 3'-3 | 54 |
| | 5c14 | RAIL, VERTICAL | | 16 | 3'-10 | 64 |
| | | | | | STAINLESS STEEL TOTAL (LBS.) | 1,657 |

## BENT BAR DETAILS




NOTE:
ALL DIMENSIONS ARE OUT TO OUT.
D = PIN DIAMETER.

## CONCRETE PLACEMENT SUMMARY

| SECTION | | TOTAL |
|---|---|---|
| STANDARD SECTION | 262'-0 @ 0.1281 CU. YD. PER FT. | 33.6 |
| BARRIER RAIL END SECTION | 2 @ 0.77 CU. YD. | 1.5 |
| | TOTAL ( CU. YD. ) | 35.1 |

## CONCRETE BARRIER RAIL QUANTITIES

| ITEM | UNIT | QUANTITY |
|---|---|---|
| CONCRETE BARRIER RAILING, AESTHETIC | L.F. | 276.0 |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## NORTH BARRIER RAIL DETAILS

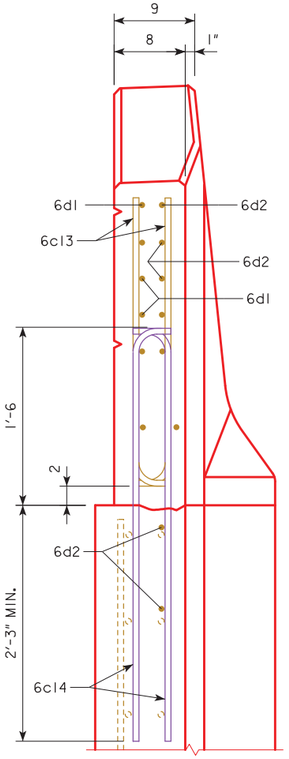
STATION 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

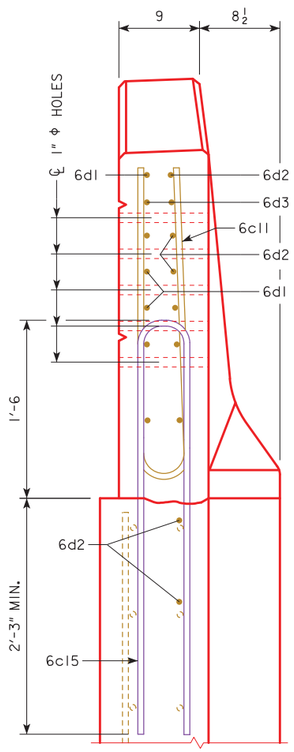
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 31 OF 38 — FILE NO. 30864 — DESIGN NO. 718

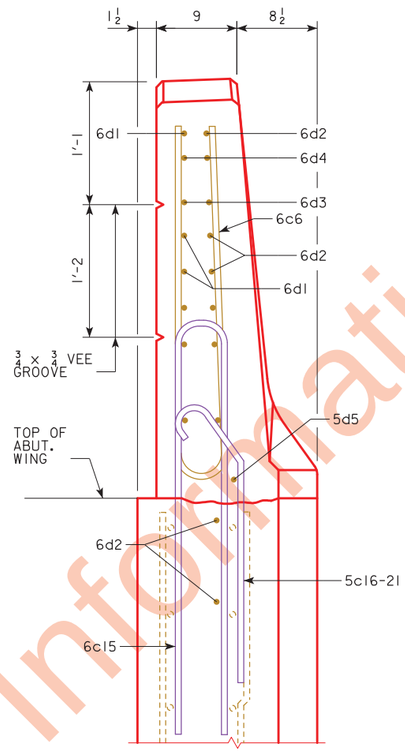
REVISED 09-2016 - CHANGED 5c1 BAR LENGTH TO 7'-5 (IT WAS 5'-11 IN ERROR).
ENGLISHDECKRAILBRIDGES.DGN 1020SF - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2, 5c3, 5c14 BARS TO STAINLESS STEEL.



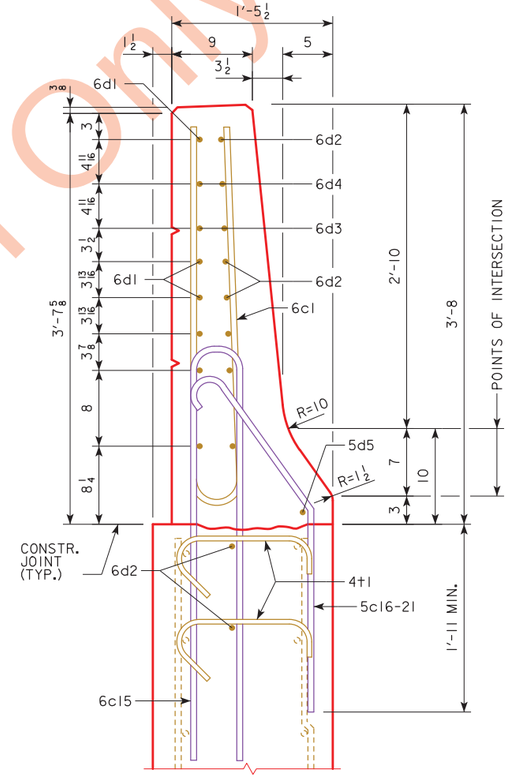

VIEW A-A




SECTION B-B

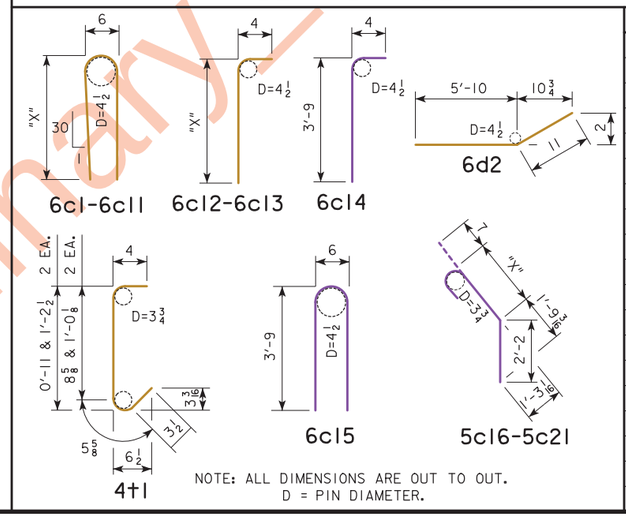



SECTION C-C




SECTION D-D

## BENT BAR DETAILS




NOTE: ALL DIMENSIONS ARE OUT TO OUT.
D = PIN DIAMETER.

| BAR | "X" |
|---|---|
| 6c1 | 3'-4 |
| 6c2 | 3'-3½ |
| 6c3 | 3'-3 |
| 6c4 | 3'-2½ |
| 6c5 | 3'-2 |
| 6c6 | 3'-1½ |
| 6c7 | 3'-0½ |
| 6c8 | 3'-0 |
| 6c9 | 2'-11 |
| 6c10 | 2'-10 |
| 6c11 | 2'-9 |
| 6c12 | 2'-8 |
| 6c13 | 2'-6 |
| 5c16 | 0'-6½ |
| 5c17 | 0'-8½ |
| 5c18 | 0'-10¼ |
| 5c19 | 1'-0¼ |
| 5c20 | 1'-2 |
| 5c21 | 1'-4 |

NOTE:
CONSTRUCTION JOINT BETWEEN TOP OF WING AND BARRIER RAIL IS ROUGHENED CONCRETE.

NOTE:
THE 10" RADIUS AND 1½" RADIUS ARE TYPICAL AND SHALL BE USED WHEN CONSTRUCTING THE CORNERS FOR VIEW A-A, SECTION B-B, SECTION C-C AND SECTION D-D.

NOTE:
DASHED LINES BELOW THE TOP OF WING ARE THE ABUTMENT WING REINFORCING STEEL. SEE WING ABUTMENT SHEET FOR PLACEMENT.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

# NORTH BARRIER RAIL END SECTION

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 32 OF 38 FILE NO. 30864 DESIGN NO. 718





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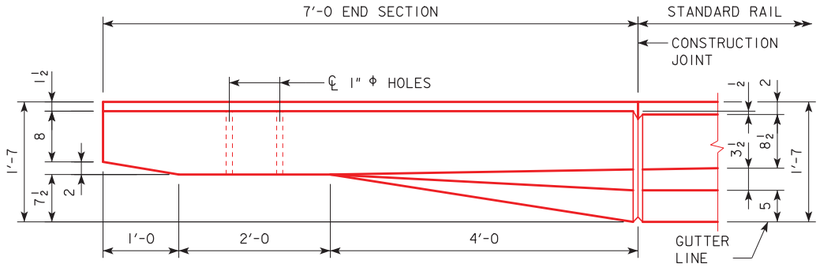
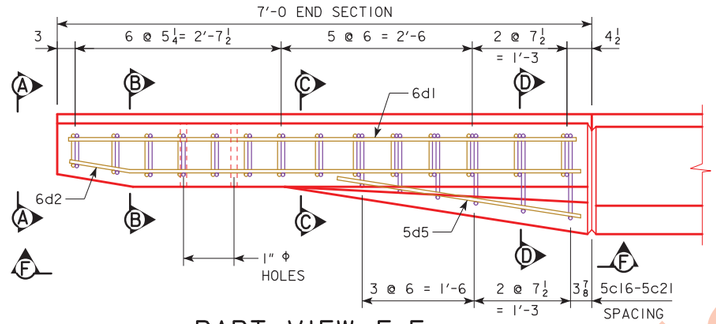
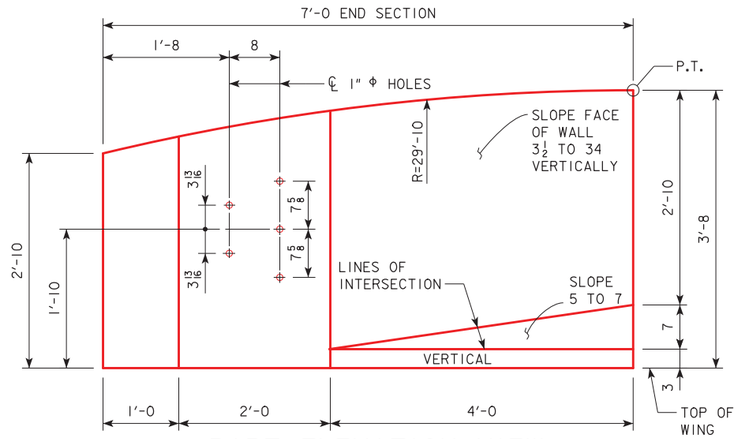



## PART PLAN VIEW

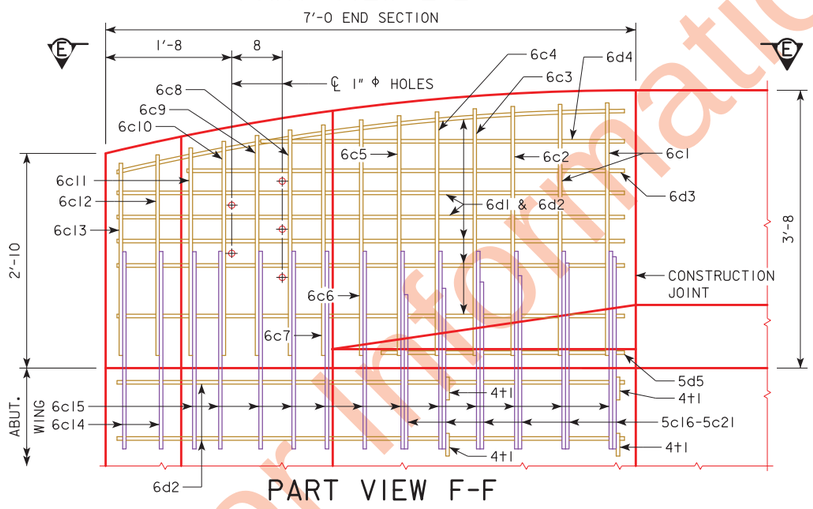



## PART VIEW E-E




## PART ELEVATION VIEW

PROVIDE 5 HOLES FORMED WITH 1"Φ PLASTIC CONDUIT. COST TO BE INCLUDED IN PRICE BID FOR CONCRETE BARRIER RAILING.




## PART VIEW F-F

## EPOXY COATED REINF. STEEL - ONE END SECT.

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| 6c1 | RAIL, VERTICAL | ⊓ | 2 | 7'-2 | 22 |
| 6c2 | RAIL, VERTICAL | ⊓ | 1 | 7'-1 | 11 |
| 6c3 | RAIL, VERTICAL | ⊓ | 1 | 7'-0 | 11 |
| 6c4 | RAIL, VERTICAL | ⊓ | 1 | 6'-11 | 10 |
| 6c5 | RAIL, VERTICAL | ⊓ | 1 | 6'-10 | 10 |
| 6c6 | RAIL, VERTICAL | ⊓ | 1 | 6'-9 | 10 |
| 6c7 | RAIL, VERTICAL | ⊓ | 1 | 6'-7 | 10 |
| 6c8 | RAIL, VERTICAL | ⊓ | 1 | 6'-6 | 10 |
| 6c9 | RAIL, VERTICAL | ⊓ | 1 | 6'-4 | 10 |
| 6c10 | RAIL, VERTICAL | ⊓ | 1 | 6'-2 | 9 |
| 6c11 | RAIL, VERTICAL | ⊓ | 1 | 6'-0 | 9 |
| 6c12 | RAIL, VERTICAL | ⌐ | 2 | 3'-0 | 9 |
| 6c13 | RAIL, VERTICAL | ⌐ | 2 | 2'-10 | 9 |
| | | | | | |
| 6d1 | RAIL, HORIZONTAL | — | 6 | 6'-8 | 60 |
| 6d2 | RAIL, HORIZONTAL | ⌒ | 8 | 6'-9 | 81 |
| 6d3 | RAIL, HORIZONTAL | — | 2 | 5'-8 | 17 |
| 6d4 | RAIL, HORIZONTAL | — | 2 | 5'-1 | 15 |
| 5d5 | RAIL, HORIZONTAL | — | 1 | 3'-9 | 4 |
| | | | | | |
| 4†1 | RAIL, ABUTMENT WING TIE BARS | ⊐ | 4 | VARIES | 5 |
| | | | | | |
| | | | EPOXY REINF. TOTAL WEIGHT (LBS.) | | 322 |

## STAINLESS STEEL REINF. STEEL - ONE END SECT.

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| 6c14 | RAIL, VERTICAL | ⌐ | 4 | 4'-1 | 25 |
| 6c15 | RAIL, VERTICAL | ⊓ | 12 | 8'-0 | 144 |
| 5c16-21 | RAIL, VERTICAL | ⌝ | 6 | VARIES | 23 |
| | | | | | |
| | | STAINLESS STEEL TOTAL WEIGHT (LBS.) | | | 192 |

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

## CONCRETE PLACEMENT SUMMARY

| SECTION | TOTAL |
|---|---|
| BARRIER RAIL ONE END SECTION | 0.77 CU. YD. |
| | |

NOTE:
FIELD BEND 6d1 AND 6d2 BARS AS NEEDED.

NOTE:
4†1 PLACEMENT- 2 BARS EACH LEVEL OF 6d2 IN WING FOOTING.

NOTE:
FOR NORTH BARRIER RAIL END SECTION VIEW A-A, SECTION B-B, SECTION C-C, SECTION D-D AND BENT BAR DETAILS SEE DESIGN SHEET 32.

NOTE:
THE 6c14, 6c15, 5c16-21, 2 - 6d2 AND 4†1 BARS ARE TO BE PLACED WITH THE ABUTMENT WING. THE DETAILS FOR PLACEMENT ARE SHOWN ON THE WING ABUTMENT SHEET.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## NORTH BARRIER RAIL END SECTION

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 33 OF 38 FILE NO. 30864 DESIGN NO. 718





ENGLISHDECKRAILBRIDGES.DGN I017S - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 6c3, 6c4 & 5c5-10 BARS TO STAINLESS STEEL.

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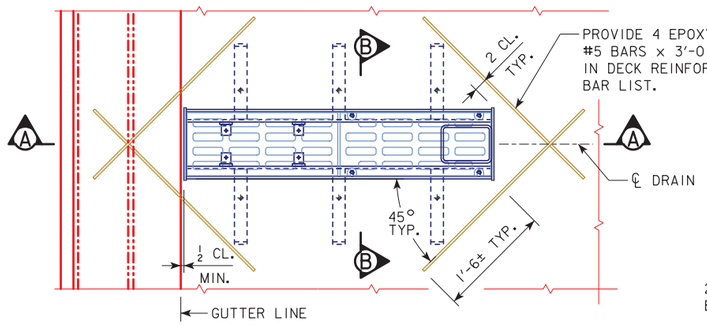
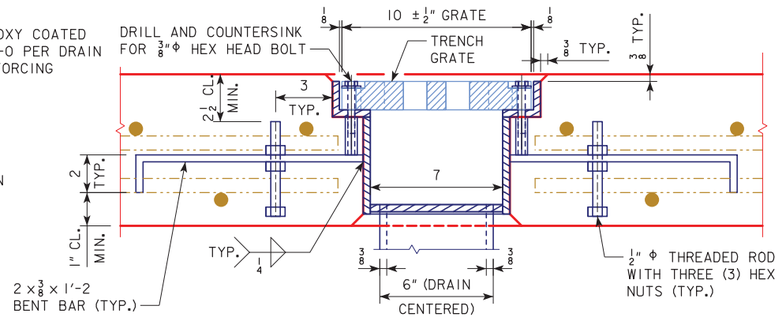
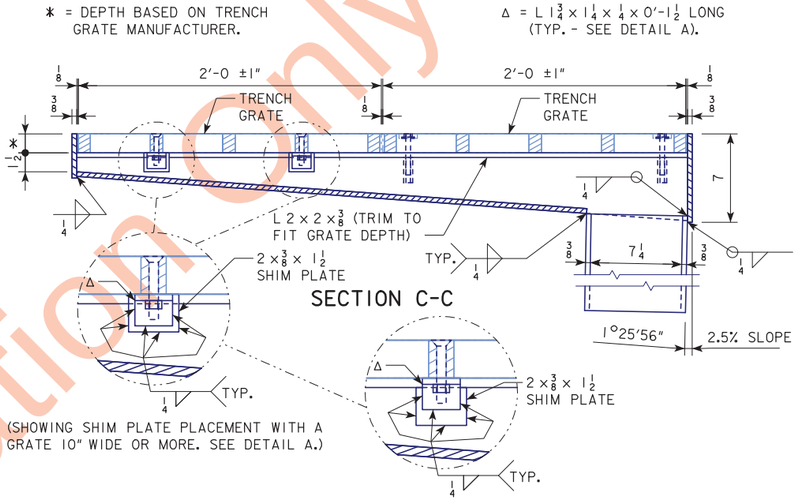


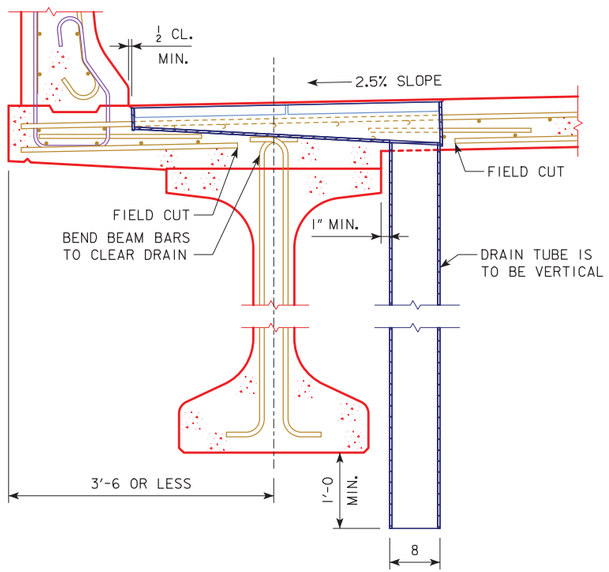

PART PLAN AT DRAIN




PART SECTION B-B - SHOWING DTL. B OPTION

(DETAIL IS SHOWN USING 10" WIDE GRATE)




PART SECTION A-A

## DRAIN NOTES

THE DRAINS SHALL BE ⅜ INCH THICK STEEL. THE DRAIN ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION. THE BID ITEM "DECK DRAIN" SHALL INCLUDE ALL COSTS ASSOCIATED WITH FABRICATING AND INSTALLING THE DECK DRAINS AS PER PLAN.

THE DRAIN TRENCH GRATES SHALL BE FERROUS CASTINGS. METAL USED IN THE MANUFACTURE OF CASTINGS SHALL CONFORM TO ASTM A48-83 CLASS 35B OR BETTER GRAY IRON CASTINGS IN ACCORDANCE WITH CURRENT IOWA D.O.T. STANDARD SPECIFICATIONS. FINISH OF CASTINGS SHALL BE SMOOTH AND FREE OF DEFECTS. TRENCH GRATES SHALL BE CAPABLE OF CARRYING AASHTO HL-93 LOADING. GALVANIZING OF THE TRENCH GRATES IS NOT REQUIRED.

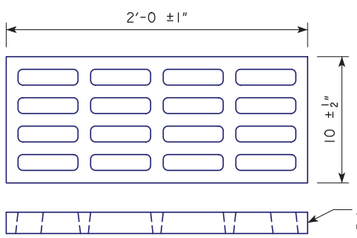
DRAINS SHALL BE CENTERED OVER THE NEAREST BOTTOM TRANSVERSE SLAB REINFORCING BAR FROM THE LOCATION DESIGNATED ON THE SLAB LAYOUT. THE BOTTOM TRANSVERSE SLAB REINFORCING BAR SHALL BE CUT OFF TO PROVIDE 1 INCH CLEARANCE FROM THE DRAIN. THE TOP TRANSVERSE SLAB REINFORCING BARS ON EACH SIDE OF THE DRAIN, SHALL BE SPACED AS NECESSARY TO PROVIDE 1 INCH CLEARANCE FROM THE DRAIN. LONGITUDINAL SLAB REINFORCING BARS THAT CONFLICT WITH THE DRAIN SHALL BE CUT OFF TO PROVIDE 2 INCH CLEARANCE FROM THE DRAIN. ALL CUT ENDS OF BARS SHALL BE COATED WITH EPOXY PATCHING MATERIAL SUPPLIED BY THE MANUFACTURER OF THE EPOXY COATING. LONGITUDINAL SLAB REINFORCING BARS SHALL BE SHIFTED AS NECESSARY TO ACCOMMODATE ANCHOR BARS.

## MATERIALS

PLATES, BARS, THREADED RODS AND ANGLES SHALL MEET THE REQUIREMENTS ASTM A709 GRADE 36. THE TUBE STEEL SHALL MEET THE REQUIREMENTS ASTM A500 GRADE B.

⅜"Φ MECHANICALLY GALVANIZED STEEL FLAT HEAD SCREW SHALL MEET THE REQUIREMENTS OF ASTM B695-04 (2009) AND ASTM F835-12.

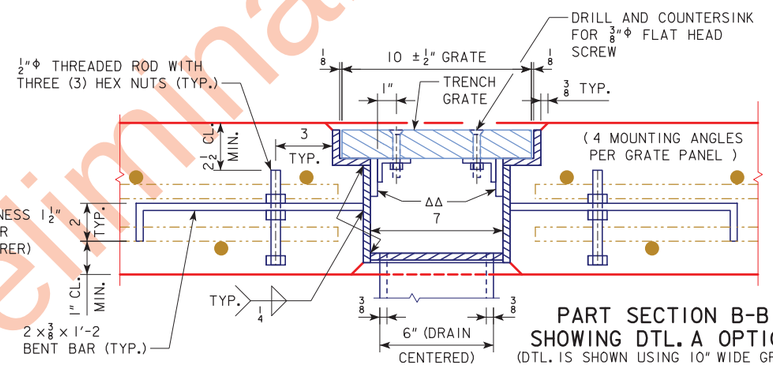
⅜"Φ MECHANICALLY GALVANIZED STEEL HEX HEAD BOLT AND HEX NUT SHALL MEET THE REQUIREMENTS OF ASTM B695-04 (2009) AND ASTM A307-12 GRADE A.




DRAIN TRENCH GRATE DETAILS

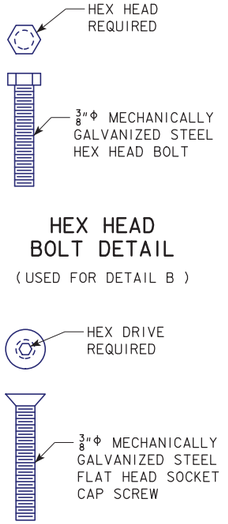
( 2 GRATES REQUIRED PER DRAIN )

NOTE: PATTERN AND DIRECTION OF GRATE OPENINGS SHALL BE SIMILAR TO THE PATTERN SHOWN.




PART SECTION B-B SHOWING DTL. A OPTION

(DTL. IS SHOWN USING 10" WIDE GRATE)



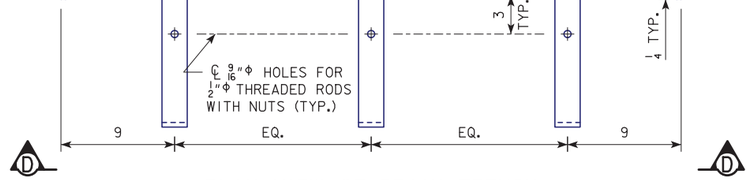

HEX HEAD BOLT DETAIL

( USED FOR DETAIL B )

FLAT HEAD SCREW DETAIL

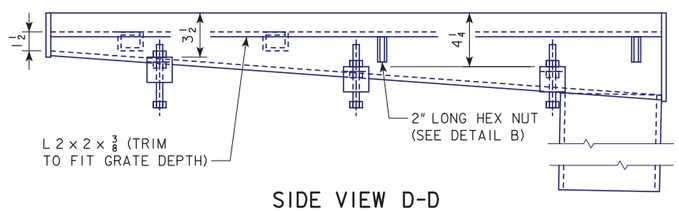
( USED FOR DETAIL A )

ΔΔ = ADJUST SHIM PLATE ACCORDING TO WIDTH OF GRATE.




PLAN VIEW OF DRAIN TRENCH

( GRATE TIE DOWNS SHOW BOTH DETAIL A AND DETAIL B )




SIDE VIEW D-D

NOTE: 5 DRAINS REQUIRED. SEE SLAB LAYOUT FOR LOCATIONS.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## AESTHETIC DECK DRAIN

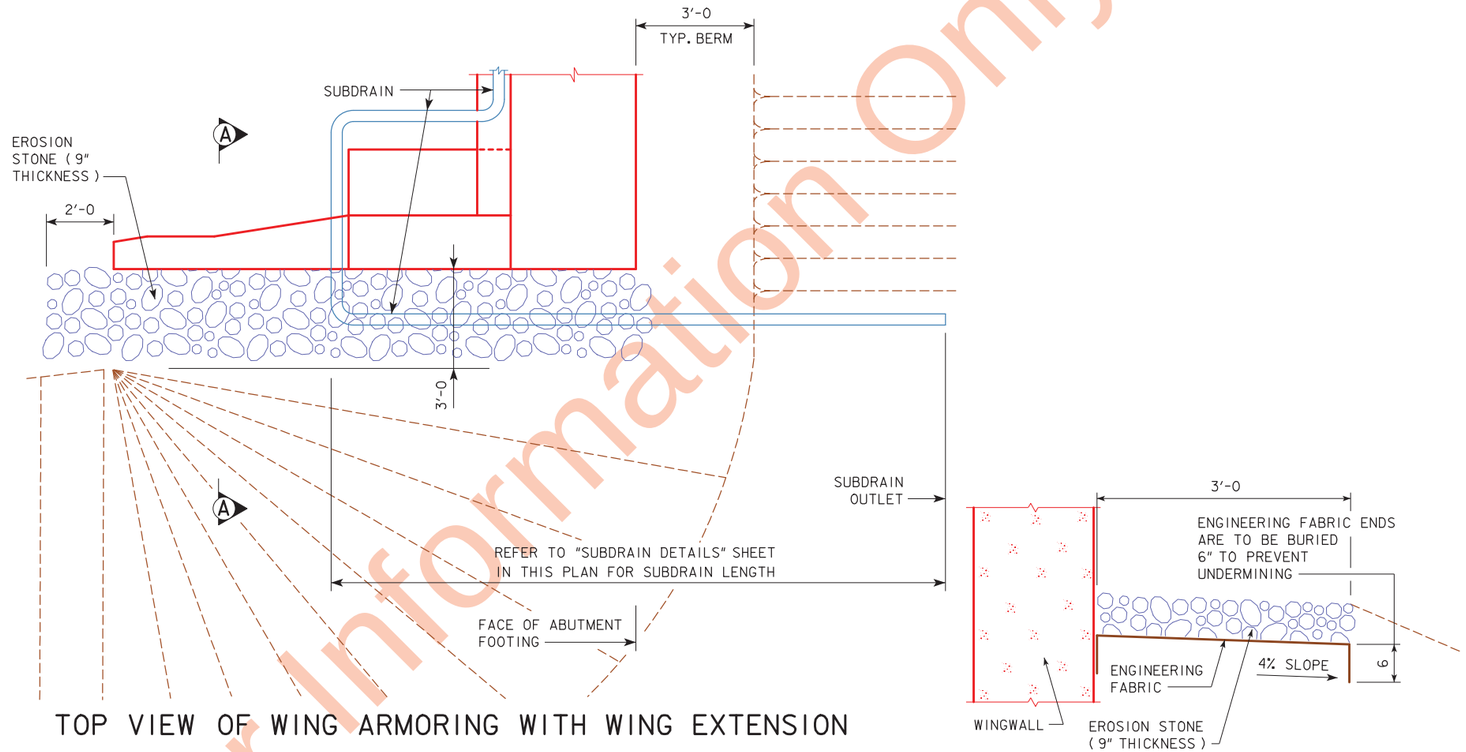
STATION 660+50.18, 41' LEFT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 34 OF 38 — FILE NO. 30864 — DESIGN NO. 718

REVISED 07-13 - THE STAINLESS STEEL ⅜" CAP SCREWS AND HEX HEAD BOLT WERE CHANGED TO MECHANICALLY GALANIZED.
REVISED 10-2016 - ADDED ¼" FILLET WELD CALLOUT TO DRAIN TUBE IN "PART SECTION A-A" STEEL BEAM DETAIL.
REVISED 06-2017 - SHEET IS REDRAWN TO ACCOMODATE THE USE OF A 6" x 8" x ⅜" DRAIN TUBE. (WAS 8" DIA. x ⅜" STRUCTURAL DRAIN TUBE MAY BE SUBSTITUTED WITH A 8" x 8" x ⅜" STRUCTURAL TUBE).
ENGLISH\MISCELLANEOUSBRIDGES.DGN 1054 - THIS SHEET REDRAWN 11-00.

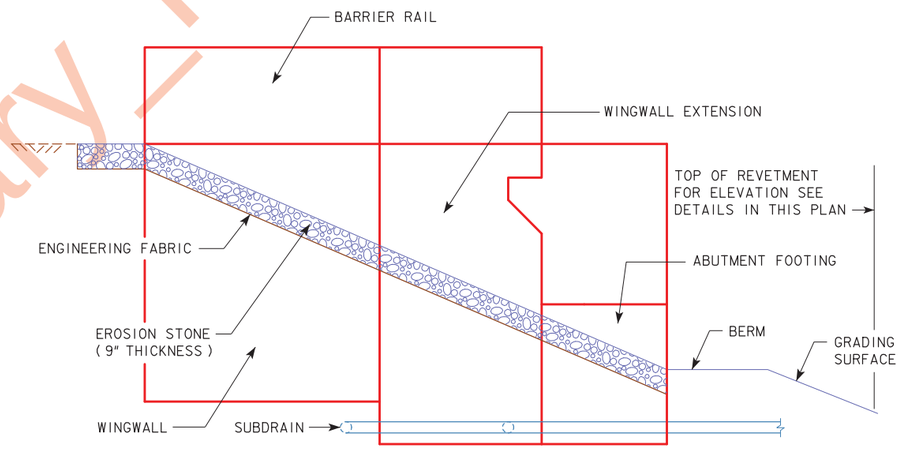



TOP VIEW OF WING ARMORING WITH WING EXTENSION




SECTION A-A

A CHECK SHALL BE MADE AT THE SUBDRAIN OUTLET TO INSURE THAT IT IS DRAINING PROPERLY DURING THE BACKFILL FLOODING PROCESS.




PROFILE VIEW OF WING ARMORING WITH WING EXTENSION

( INTEGRAL ABUTMENT WITH WING EXTENSIONS )

## GENERAL NOTES:

EROSION STONE SHALL BE PLACED ALONG THE SIDES OF THE WINGS AND ABUTMENT FOOTING AS SHOWN IN SECTION A-A. THIS IS TYPICAL AT EACH CORNER OF THE BRIDGE UNLESS OTHERWISE NOTED IN THE PLANS. THE EROSION STONE AT THESE LOCATIONS SHALL BE UNDERLAYED WITH ENGINEERING FABRIC IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

THE EROSION STONE SHALL BE IN ACCORDANCE WITH SECTION 4130, OF THE STANDARD SPECIFICATIONS. MATERIAL PASSING THE 3 INCH SCREEEN BUT 100% RETAINED ON A 1 INCH SCREEN MAY BE USED AS CHOKE STONE.

THE EROSION STONE SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM 9" DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

PAYMENT FOR THE BRIDGE WING ARMORING WILL BE BID PER SQUARE YARD. COST WILL INCLUDE ENGINEERING FABRIC, EROSION STONE, EXCAVATION, SHAPING, AND COMPACTION TO DIMENSIONS SHOWN IN THESE PLANS. BID ITEM SHALL BE "BRIDGE WING ARMORING - EROSION STONE".

DESIGN FOR 10° SKEW (RA)

249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

BRIDGE WING ARMORING

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 35 OF 38 FILE NO. 30864 DESIGN NO. 718

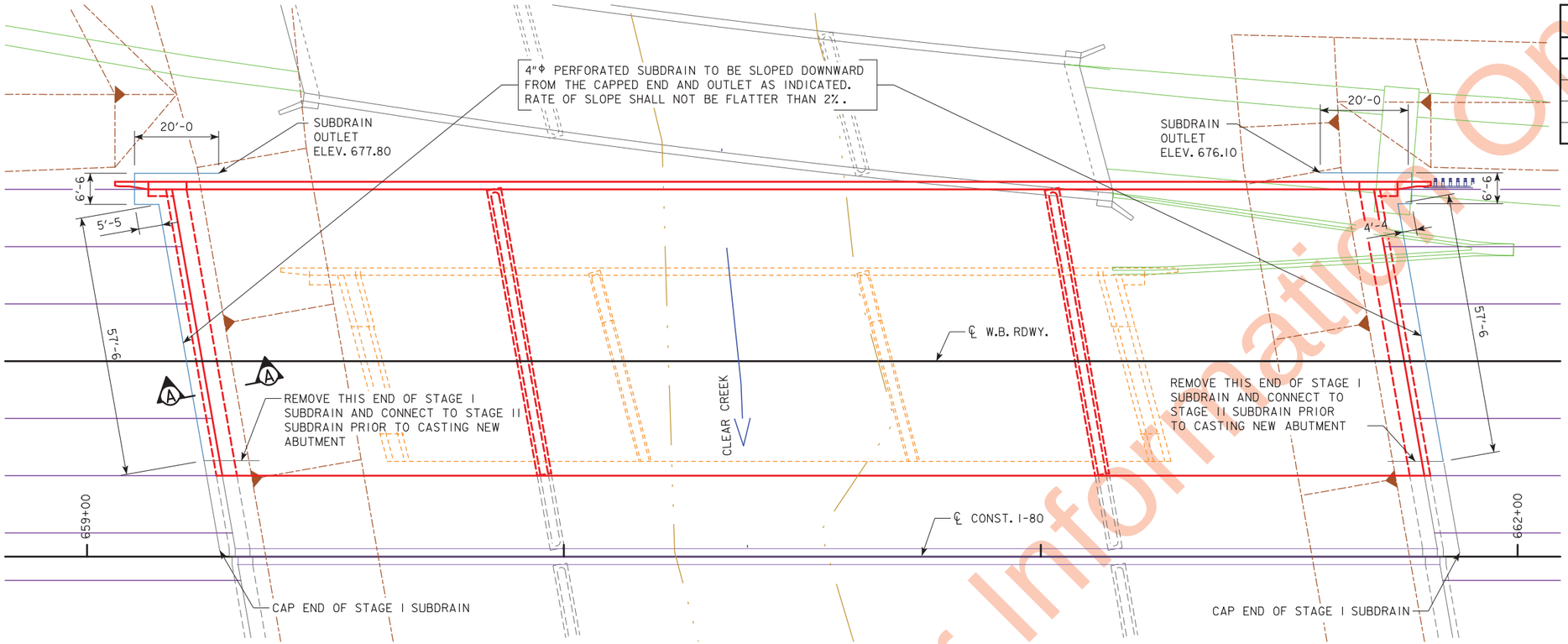
REVISED 06-14 - ADDED 2 FEET OF LENGTH OF EROSION STONE IN FRONT OF THE BRIDGE WING.
ENGLISHFORESLOPEPROTECTIONBRIDGES.DGN 1005A - THIS SHEET ISSUED 06-02.





10/25/2019 1:10:16 PM cmeyers pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5208001002\BRFinal\HNTB\52080348.brg 520718S035 11x17_pdf.pltcfg

BENCH MARK No. 522 Sta. 659+46.078 96.58 Lt. FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- 683.510




| SUBDRAIN OUTLET ELEVATIONS | |
|---|---|
| LOCATION | ELEVATION |
| WEST ABUTMENT | 677.80 |
| | |
| EAST ABUTMENT | 676.10 |
| | |

NOTE:
SECTION A-A IS SHOWN ON ABUTMENT BACKFILL DETAILS SHEET.

## SITUATION PLAN
SHOWING SUBDRAIN LOCATIONS

## SUBDRAIN NOTES :

THIS PLAN SHEET SHOWS DETAILS FOR PLACING ALL SUBDRAINS AND SUBDRAIN OUTLETS REQUIRED FOR THIS STRUCTURE.

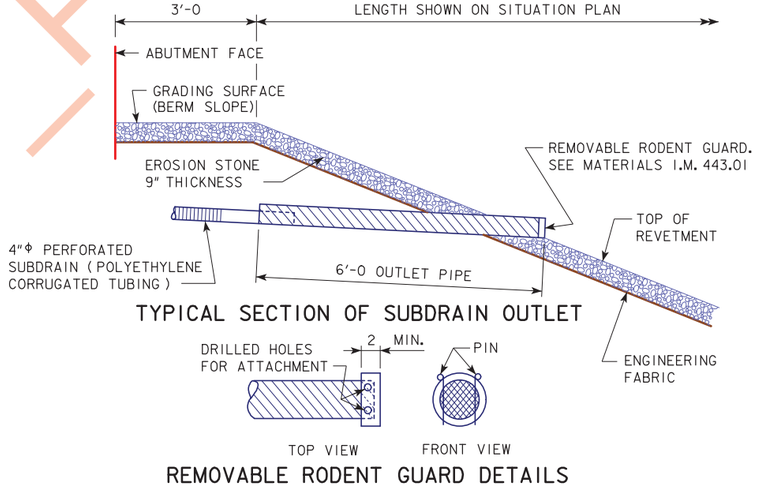
THE SUBDRAINS SHALL BE 4" IN DIAMETER AND SHALL BE IN ACCORDANCE WITH ARTICLE 4143.01, B, OF THE STANDARD SPECIFICATIONS.

THE SUBDRAIN OUTLET SHALL CONSIST OF A LENGTH OF PIPE WITH A REMOVABLE RODENT GUARD AS DETAILED ON THIS SHEET. THE LENGTH OF THE OUTLET PIPE SHALL BE DETERMINED BY THE REVETMENT AND IT'S PLACEMENT LOCATION. THE CONTRACTOR IS TO INSURE THE OUTLET PIPE IS ADEQUATELY STRONG ENOUGH AND WILL NOT BE DAMAGED WHEN REVETMENT IS PLACED. A CHECK WILL BE MADE AT THE SUBDRAIN OUTLET TO INSURE THAT THE SUBDRAIN IS NOT DAMAGED AND IS DRAINING PROPERLY DURING THE BACKFILL FLOODING PROCESS. IF A METAL OUTLET PIPE IS USED, IT SHALL BE 6 INCHES IN DIAMETER AND COUPLED TO THE 4 INCH DIAMETER SUBDRAIN IN ONE OF THE TWO FOLLOWING WAYS.

1. USE AN INSIDE FIT REDUCER COUPLER ( COUPLER MUST BE INSERTED A MINIMUM OF 1'-0 INTO THE METAL OUTLET PIPE ).
2. INSERT 1'-0 OF THE 4"Φ SUBDRAIN INTO THE 6"Φ METAL OUTLET PIPE, THEN FULLY SEAL THE ENTIRE OPENING WITH GROUT.

THE COST OF FURNISHING AND PLACING SUBDRAIN ( INCLUDING EXCAVATION ), GRANULAR BACKFILL, POROUS BACKFILL, AND SUBDRAIN OUTLET IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE ( BRIDGE )". NO EXTRA PAYMENT WILL BE MADE.

THE DIMENSIONS SHOWN FOR THE PROPOSED SUBDRAINS ARE BASED ON THE PROPOSED GRADING LAYOUT OF BRIDGE BERMS. THE DIMENSIONS SHOWN ARE FOR ESTIMATING ONLY. REQUIRED LENGTHS AND GENERAL LOCATIONS OF SUBDRAINS ARE SUBJECT TO CHANGE DUE TO FIELD ADJUSTMENTS OF THE GRADING LAYOUT.




TYPICAL SECTION OF SUBDRAIN OUTLET




REMOVABLE RODENT GUARD DETAILS

## EROSION STONE (EMBEDDED) OUTLET DETAILS

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SUBDRAIN DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

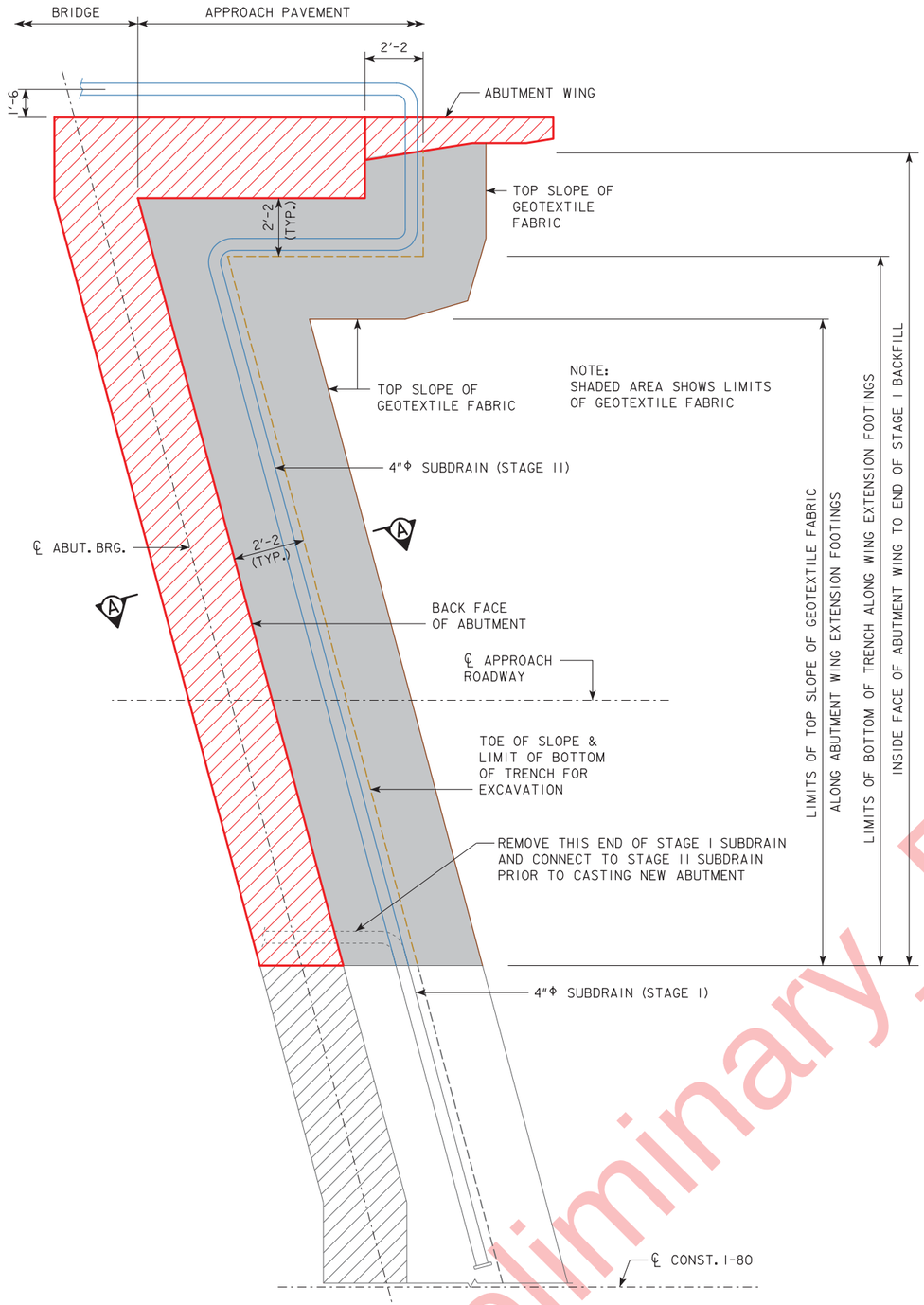
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 36 OF 38 FILE NO. 30864 DESIGN NO. 718

REVISED 10-14 - TWO ADDITIONAL FORESLOPE PROTECTION DETAILS WERE ADDED OUTSIDE OF THE BORDER TO SHOW REVETMENT UP TO BACK OF ABUTMENT FOOTING.
ENGLISHFORESLOPEPROTECTIONBRIDGES.DGN I007C - THIS SHEET ISSUED 06-02 FOR WATER CROSSINGS.



| DESIGN TEAM HNTB | SUBDRAIN DETAILS ( WATER CROSSING ) | MODIFIED STANDARD SHEET I007A | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 84 |
|---|---|---|---|---|---|




## ABUTMENT PLAN WITH WING EXTENSION

(EAST ABUTMENT SHOWN, WEST ABUTMENT SIMILAR)

## ABUTMENT BACKFILL PROCESS:

THE BASE OF THE EXCAVATION SUBGRADE BEHIND THE ABUTMENT IS TO BE GRADED WITH A 4% SLOPE AWAY FROM THE ABUTMENT FOOTING AND A 2% CROSS SLOPE IN THE DIRECTION OF THE SUBDRAIN OUTLET. THIS EXCAVATION SHAPING IS TO BE DONE PRIOR TO BEGINNING INSTALLATION OF THE GEOTEXTILE AND BACKFILL MATERIAL.

AFTER THE SUBGRADE HAS BEEN SHAPED, THE GEOTEXTILE FABRIC SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN. THE FABRIC IS INTENDED TO BE INSTALLED IN THE BASE OF THE EXCAVATION AND EXTENDED VERTICALLY UP THE ABUTMENT BACKWALL, ABUTMENT WING WALL, AND EXCAVATION FACE TO A HEIGHT THAT WILL BE APPROXIMATELY 1 TO 2 FOOT HIGHER THAN THE HEIGHT OF THE POROUS BACKFILL PLACEMENT AS SHOWN IN THE "BACKFILL DETAILS" ON THIS SHEET. THE STRIPS OF THE FABRIC PLACED SHALL OVERLAP APPROXIMATELY 1 FOOT AND SHALL BE PINNED IN PLACE. THE FABRIC SHALL BE ATTACHED TO THE ABUTMENT BY USING LATH FOLDED IN THE FABRIC AND SECURED TO THE CONCRETE WITH SHALLOW CONCRETE NAILS. THE FABRIC PLACED AGAINST THE EXCAVATION FACE SHALL BE PINNED.

WHEN THE FABRIC IS IN PLACE, THE SUBDRAIN SHALL BE INSTALLED DIRECTLY ON THE FABRIC AT THE TOE OF THE REAR EXCAVATION SLOPE. A SLOT WILL NEED TO BE CUT IN THE FABRIC AT THE POINT WHERE THE SUBDRAIN EXITS THE FABRIC NEAR THE END OF THE ABUTMENT WING WALL.

POROUS BACKFILL IS THEN PLACED AND LEVELED, NO COMPACTION IS REQUIRED.

THE REMAINING WORK INVOLVES BACKFILLING WITH FLOODABLE BACKFILL, SURFACE FLOODING, AND VIBRATORY COMPACTION. THE FLOODABLE BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE FLOODABLE BACKFILL SHALL BE PLACED IN INDIVIDUAL LIFTS, SURFACE FLOODED, AND COMPACTED WITH VIBRATORY COMPACTION TO ENSURE FULL CONSOLIDATION. LIMIT THE LOOSE LIFTS TO NO MORE THAN 2 FEET OF THICKNESS.

START SURFACE FLOODING FOR EACH FLOODABLE BACKFILL LIFT AT THE HIGH POINT OF THE SUBDRAIN AND PROGRESS TO THE LOW POINT WHERE THE SUBDRAIN EXITS THE FABRIC. TO ENSURE UNIFORM SURFACE FLOODING, WATER RUNNING FULL IN A 2-INCH DIAMETER HOSE SHOULD BE SPRAYED IN SUCCESSIVE 6-FOOT TO 8-FOOT INCREMENTS FOR 5 MINUTES WITHIN EACH INCREMENT.

FLOODABLE BACKFILL LIFT PLACEMENT, FLOODING, AND COMPACTION SHALL PROGRESS UNTIL THE REQUIRED FULL THICKNESS OF THE ABUTMENT BACKFILL HAS BEEN COMPLETED.

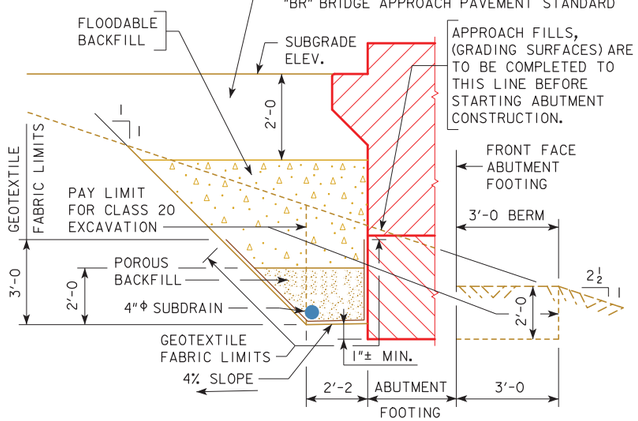
WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS WILL NOT BE MEASURED SEPARATELY FOR PAYMENT.

THE COST OF WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR STRUCTURAL CONCRETE.

## NOTE:

SUBDRAIN SHALL SLOPE DOWNWARD 2% FROM HIGH END WHEN OUTLETTING AT ONE END OF THE ABUTMENT.

THE GEOTEXTILE FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 6 OF THE STANDARD SPECIFICATIONS. IF THE ENGINEERING FABRIC IS LAPPED THE LAPS SHALL BE A MINIMUM OF ONE FOOT IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.




SECTION A-A

## BACKFILL DETAILS

NOTE: GEOTEXTILE FABRIC WILL BE ATTACHED TO FACE OF ABUTMENT FOOTING AND WING.

NOTE:
SEE SUBDRAIN DETAILS SHEET FOR DETAILS NOT SHOWN ON THIS SHEET WHICH ARE PERTINENT TO THIS STRUCTURE.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## ABUTMENT BACKFILL DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

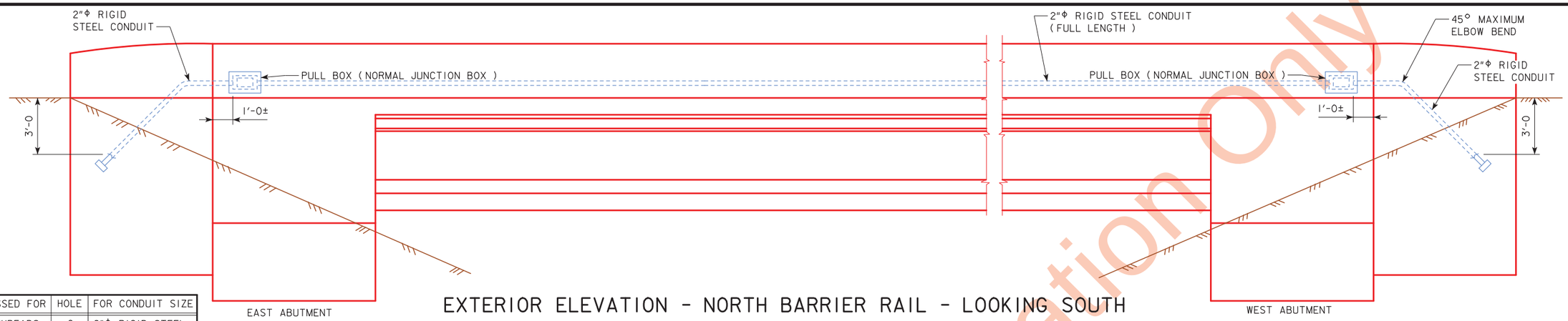
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 37 OF 38 FILE NO. 30864 DESIGN NO. 718

| DESIGN TEAM HNTB | ABUTMENT BACKFILL DETAILS ( WING EXTENSION ABUTMENTS ) | MODIFIED STANDARD SHEET 1007E | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 85 |
|---|---|---|---|---|---|

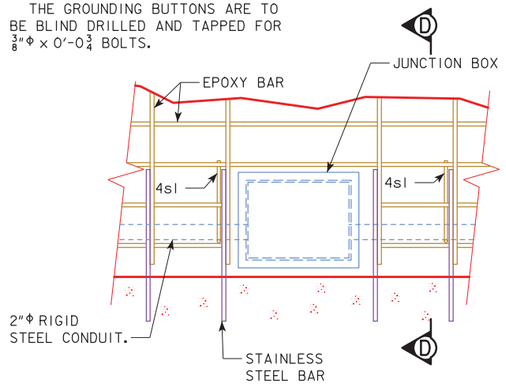
REVISED 09-14 - THE TECHNICAL DATA INFORMATION TABLE WAS REMOVED AND IS LOCATED IN THE STANDARD SPECIFICATIONS. CHANGED SURFACE FLOODING TIME TO 5 MINUTE INCREMENTS.
REVISED 09-2016 - CHANGED THE BRIDGE APPROACH PAVEMENT STANDARD TO "BR" (WAS "RK").
ENGLISHFORESLOPEPROTECTIONBRIDGES.DGN - 1007E - THIS SHEET ISSUED 08-07.




## EXTERIOR ELEVATION - NORTH BARRIER RAIL - LOOKING SOUTH

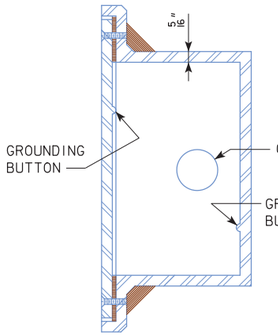
| BOSSED FOR | HOLE | FOR CONDUIT SIZE |
|---|---|---|
| 5 THREADS | C | 2"Φ RIGID STEEL |
| NONE | E | $\frac{1}{2}$"Φ COPPER PIPE |

NOTE:
THE GROUNDING BUTTONS ARE TO BE BLIND DRILLED AND TAPPED FOR $\frac{3}{8}$"Φ x 0'-0$\frac{3}{4}$ BOLTS.

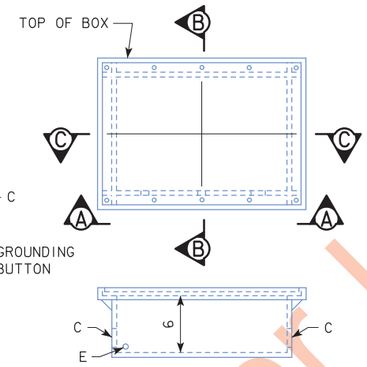



## CONDUIT SUPPORT - RAIL ELEV. DETAIL

ADJUST REINFORCING TO CLEAR JUNCTION BOX.



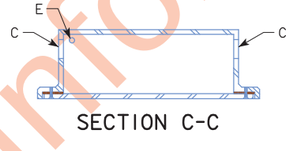

SECTION B-B



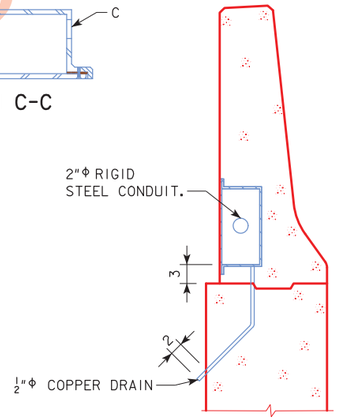

VIEW A-A

## LI-104 JUNCTION BOX

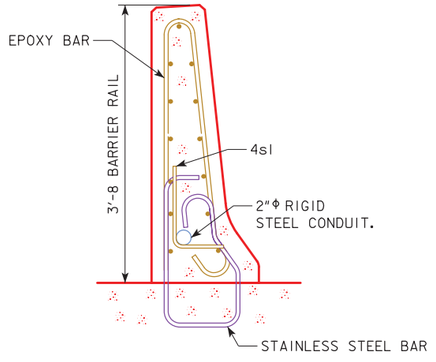
WATERTIGHT, CAST IRON - FLUSH MOUNT




SECTION C-C




## SECTION THRU JUNCTION BOX




## SECTION D-D CONDUIT SUPPORT

USE 3'-0 SPACING. GALVANIZED CONDUIT SHALL NOT COME INTO CONTACT WITH THE STAINLESS STEEL REINFORCING.

( 88 REQUIRED )

CONDUIT AND JUNCTION BOXES SHALL BE PLACED IN NORTH BARRIER RAIL.

### LIGHTING NOTES:

SEE LI-104 STANDARD ROAD PLAN FOR ADDITIONAL INFORMATION ON JUNCTION BOXES.

CONSTRUCTION SHALL CONFORM TO THE CURRENT IOWA D.O.T. STANDARD AND SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

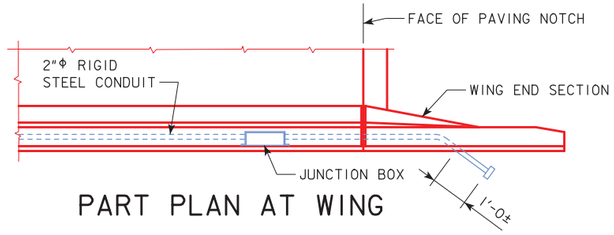
CONDUIT INSTALLATION SHALL BE IN ACCORDANCE WITH ARTICLE 2523.03, N, OF THE STANDARD SPECIFICATIONS.

ALL "C" ENTRANCE HOLES IN JUNCTION BOXES SHALL BE DRILLED AND TAPPED FOR THE SPECIFIED CONDUIT SIZE. ALL OTHER HOLES SHALL HAVE A CONCRETE - TIGHT SLIP FIT. CONDUIT ENDS SHALL NOT PROTRUDE INTO JUNCTION BOX MORE THAN $\frac{1}{4}$". DRAIN PIPE END SHALL BE FLUSH WITH INSIDE SURFACE OF BOX. GROUNDING BUTTONS SHALL BE LOCATED APPROXIMATELY 3" FROM THE INSIDE SURFACE OF THE BOX WALL, AND NOT CLOSER THAN 3" TO THE EDGE OF ANY HOLE IN THE BOX FLOOR. HOLES FOR DRAIN PIPE SHALL BE PLACED IN THE LOW CORNER OF THE BOX, WITH A MINIMUM CLEARANCE OF 1" BETWEEN THE EDGE OF THE HOLE AND THE INSIDE SURFACE OF THE BOX WALL. TYPICAL DETAILS ARE SHOWN ON THIS SHEET.

THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

ALL REINFORCING STEEL IS TO BE EPOXY COATED AND GRADE 60.

STAINLESS-STEEL REINFORCEMENT SHALL NOT BE ALLOWED TO BE IN CONTACT WITH THE UNCOATED REINFORCEMENT, BARE METAL FORMING HARDWARE, OR TO GALVANIZED ATTACHMENTS OR GALVANIZED CONDUIT.

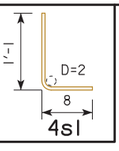



## PART PLAN AT WING

## EPOXY REINFORCING STEEL-ONE RAIL

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| 4sl | RAIL CONDUIT | ⌐¬ | 88 | 1'-9 | 103 |
| | | | | TOTAL WEIGHT (LBS.) | 103 |

NOTE: ALL DIMENSIONS ARE OUT TO OUT.
D = PIN DIAMETER.




DESIGN FOR 10° SKEW (RA)

## 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## LIGHTING DETAILS

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 38 OF 38 FILE NO. 30864 DESIGN NO. 718

REVISION 05-11 - ADDED THE WORD 'MINIMUM' TO THE 3½ INCH DIMENSION FOR THE LOCATION OF THE 2 INCH CONDUIT IN THE BARRIER RAIL.
REVISED 09-2016 - ADDED CONDUIT SUPPORT RAIL DETAIL TO KEEP CONDUIT ISOLATED FROM THE STAINLESS STEEL REINFORCING.
ENGLISHDECKRAILBRIDGES.DGN 1030AS2 - THIS SHEET ISSUED 09-03.

# ESTIMATED BRIDGE QUANTITIES - DESIGN NO. 121

| ITEM NO. | ITEM CODE | ITEM | UNIT | TOTAL | AS-BUILT QUANTITY |
|---|---|---|---|---|---|
| 1 | 2104-2710020 | EXCAVATION, CLASS 10, CHANNEL | CY | 571.9 | |
| 2 | 2401-6745625 | REMOVAL OF EXISTING BRIDGE | LS | 1.00 | |
| 3 | 2402-2720000 | EXCAVATION, CLASS 20 | CY | 520 | |
| 4 | 2402-2721000 | EXCAVATION, CLASS 21 | CY | 184 | |
| 5 | 2403-0100010 | STRUCTURAL CONCRETE (BRIDGE) | CY | 344.4 | |
| 6 | 2403-7000210 | HIGH PERFORMANCE STRUCTURAL CONCRETE | CY | 530.4 | |
| 7 | 2403-7303000 | STRUCTURAL CONCRETE COATING | SY | 219.1 | |
| 8 | 2404-7775000 | REINFORCING STEEL | LB | 18,562 | |
| 9 | 2404-7775005 | REINFORCING STEEL, EPOXY COATED | LB | 147,064 | |
| 10 | 2404-7775009 | REINFORCING STEEL, STAINLESS STEEL | LB | 4,538 | |
| 11 | 2407-0563065 | BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTC65 | EACH | 14 | |
| 12 | 2407-0563115 | BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTC115 | EACH | 7 | |
| 13 | 2408-7800000 | STRUCTURAL STEEL | LB | 7,457 | |
| 14 | 2414-6424119 | CONCRETE BARRIER RAIL, AESTHETIC | LF | 780.1 | |
| 15 | 2499-2300001 | DECK DRAINS | LS | 1.00 | |
| 16 | 2501-0201057 | PILES, STEEL, HP 10x57 | LF | 1,215 | |
| 17 | 2501-0201489 | PILES, STEEL, HP 14x89 | LF | 2,160 | |
| 18 | 2501-6335010 | PREBORED HOLES | LF | 180 | |
| 19 | 2507-2638650 | BRIDGE WING ARMORING - EROSION STONE | SY | 11.3 | |
| 20 | 2507-3250005 | ENGINEERING FABRIC | SY | 1026.8 | |
| 21 | 2507-6800061 | REVETMENT, CLASS E | TON | 816.3 | |
| 22 | 2507-8029000 | EROSION STONE | TON | 98.8 | |
| 23 | 2526-8285000 | CONSTRUCTION SURVEY | LS | 1.00 | |
| 24 | 2533-4980005 | MOBILIZATION | LS | 1.00 | |
| 25 | 2536-6745045 | REMOVAL OF ASBESTOS | LS | 1.00 | |

| ITEM NO. | ESTIMATE REFERENCE INFORMATION |
|---|---|
| 5 | INCLUDES THE CONCRETE FOR THE PIERS AND ABUTMENT FOOTINGS. INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), FLOODABLE BACKFILL, POROUS BACKFILL, GEOTEXTILE FABRIC, WATER FLOODING, AND SUBDRAIN OUTLET AT ABUTMENTS AND TOE OF BERM. |
| 6 | INCLUDES THE CONCRETE FOR THE DECK, ABUTMENT DIAPHRAGMS, PIER DIAPHRAGMS, MASKWALLS, AND WINGWALLS. INCLUDES ALL COSTS ASSOCIATED WITH CONCRETE TEXTURING AND RUSTICATION AT THE ABUTMENT WINGS. INCLUDES ALL PREFORMED EXPANSION JOINT FILLER REQUIRED. REFER TO THE DEVELOPMENTAL SPECIFICATION FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES" FOR ADDITIONAL INFORMATION. INCLUDES FURNISHING AND PLACING 3 INCH DIAMETER PVC PLASTIC PIPE AND EXPANDING FOAM IN THE ABUTMENT WINGS. |
| 7 | REFER TO THE "CONCRETE PAINTING NOTES" ON DESIGN SHEET 17 FOR MORE INFORMATION. |
| 11,12 | INCLUDES PIER AND ABUTMENT BEARING MATERIAL. INCLUDES FURNISHING AND PLACING COIL RODS. NONSTANDARD STIRRUP LENGTHS ARE USED FOR THESE BEAMS. INCLUDES CONTRACTOR FILLING OUT BEAM NUMBERS BY LOCATION AND BEAM SEAT ELEVATIONS IN "PPC BEAM DATA SPREADSHEET" AND FORWARDING ELECTRONIC SPREADSHEET TO THE ENGINEER. |
| 13 | INCLUDES ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS. |
| 14 | IF PLACEMENT OF CONCRETE IS DONE BY THE SLIP-FORMING METHOD, CLASS BR CONCRETE IS REQUIRED. CAST-IN-PLACE BARRIER RAILS SHALL USE CLASS C MIX. PRICE BID FOR THIS ITEM SHALL INCLUDE THE COST OF CAST-IN-PLACE FORMS IF REQUIRED FOR PLACEMENT OF CONCRETE. INCLUDES ALL COSTS ASSOCIATED WITH INTEGRALLY COLORED CONCRETE AND BARRIER RUSTICATION. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS. INCLUDES 276 FT. OF 2" DIAMETER RIGID STEEL CONDUIT. |
| 15 | INCLUDES ALL NEW DECK DRAINS. REFER TO DESIGN SHEETS 22 AND 35 FOR LOCATION, MATERIALS AND THE DETAILS OF THEIR CONSTRUCTION. MEASUREMENT WILL BE THE LUMP SUM FOR ALL DECK DRAINS REQUIRED AS SPECIFIED IN THE PLANS. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EQUIPMENT AND LABOR AND FOR PERFORMANCE OF ALL WORK NECESSARY FOR FABRICATING AND INSTALLING THE DECK DRAINS AS PER PLAN. |
| 16,17 | INCLUDES FURNISHING AND INSTALLING STEEL PILE POINTS. |
| 19 | INCLUDES FURNISHING AND PLACING ENGINEERING FABRIC, EROSION STONE, AND ALL REQUIRED EXCAVATING, SHAPING AND COMPACTING FOR WING ARMORING. |
| 20 | ENGINEERING FABRIC SHALL BE MATERIAL AS SPECIFIED FOR EMBANKMENT EROSION CONTROL IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS. |
| 21,22 | ESTIMATED AT 1.6 TON/CY. |
| 25 | INCLUDES THE REMOVAL, TRANSPORTATION AND DISPOSAL OF APPROXIMATELY 1.0 SQ. FT. AT AN APPROVED DISPOSAL SITE. |

## DESIGN HISTORY AT THIS SITE
(INCLUDES THIS DESIGN)

| DES. NO. | TYPE OF WORK |
|---|---|
| 2361 | ORIGINAL DESIGN |
| 884 | E.B. BRIDGE REPAIR & FLOOR OVERLAY |
| 396 | W.B. & E.B. BRIDGE WIDENING |
| 920 | E.B. BRIDGE WIDENING |
| 1317 | STAGE 1 - E.B. RECONSTRUCTION |

NOTE: ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## ESTIMATED BRIDGE QUANTITIES

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 39 FILE NO. 30864 DESIGN NO. 121

## SUMMARY OF CONCRETE QUANTITIES

| LOCATION | STRUCTURAL CONCRETE | HPC STRUCT. CONCRETE |
|---|---|---|
| WEST ABUTMENT FOOTING | 30.0 | ----- |
| EAST ABUTMENT FOOTING | 30.0 | ----- |
| BRIDGE DECK + ABUT. & PIER DIAPHAGMS | ----- | 520.0 |
| ABUTMENT WINGWALLS AND MASKWALLS | ----- | 10.4 |
| PIER NO. 1 | 143.7 | ----- |
| PIER NO. 2 | 140.7 | ----- |
| TOTAL (CU. YDS.) | 344.4 | 530.4 |

## SUMMARY OF REINFORCING STEEL

| LOCATION | NON-COATED REINFORCING STEEL | STAINLESS STEEL REINFORCING STEEL | EPOXY COATED REINFORCING STEEL |
|---|---|---|---|
| BRIDGE DECK + ABUTMENT FOOTING ** | 186 | ----- | 128,101 |
| ABUTMENT WINGWALLS & MASKWALLS | ----- | ----- | 1,640 |
| | | | |
| SOUTH BARRIER RAIL | ----- | 1,657 | 7,449 |
| SOUTH BARRIER RAIL END SECTIONS | ----- | 384 | 644 |
| MEDIAN BARRIER RAILS (E.B. & W.B.) | ----- | 2,497 | 9,127 |
| RAIL CONDUIT - SOUTH BARRIER RAIL | ----- | ----- | 103 |
| | | | |
| PIER NO. 1 | 9,304 | ----- | ----- |
| PIER NO. 2 | 9,072 | ----- | ----- |
| ** INCLUDES ABUTMENT AND PIER DIAPHRAGMS | | | |
| TOTAL (LBS.) | 18,562 | 4,538 | 147,064 |

## SUMMARY OF EXCAVATION

| LOCATION | CLASS 20 EXCAVATION | CLASS 21 EXCAVATION |
|---|---|---|
| WEST ABUTMENT | 78 | ----- |
| EAST ABUTMENT | 78 | ----- |
| PIER 1 | 165 | 92 |
| PIER 2 | 199 | 92 |
| TOTAL (CU. YDS.) | 520 | 184 |

## SUMMARY OF FOUNDATIONS

| LOCATION | SUBSTRUCTURE TYPE | FOUNDATION TYPE | NUMBER | LENGTH (LIN. FT.) | TOTAL (LIN. FT.) |
|---|---|---|---|---|---|
| WEST ABUTMENT | INTEGRAL ABUTMENT | HP 10x57 | 9 | 65 | 585 |
| EAST ABUTMENT | INTEGRAL ABUTMENT | HP 10x57 | 9 | 70 | 630 |
| PIER 1 | PILE BENT PIER | HP 14x89 | 16 | 65 | 1,040 |
| PIER 2 | PILE BENT PIER | HP 14x89 | 16 | 70 | 1,120 |

## SUMMARY OF STRUCTURAL STEEL

| LOCATION | TOTAL (LBS.) |
|---|---|
| INTERMEDIATE DIAPHRAGMS | 7,457 |
| TOTAL (LBS.) | 7,457 |

## SUMMARY OF BEARINGS

| LOCATION | BEARING TYPE | NUMBER | ASSOCIATED BID ITEM |
|---|---|---|---|
| WEST ABUTMENT | 3x3x2'-4½ BAR | 7 | INCIDENTAL ITEM |
| EAST ABUTMENT | 3x3x2'-4½ BAR | 7 | INCIDENTAL ITEM |
| PIER 1 | PLAIN NEOPRENE 1" | 14 | INCIDENTAL ITEM |
| PIER 2 | PLAIN NEOPRENE 1" | 14 | INCIDENTAL ITEM |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SUMMARY QUANTITIES SHEET

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 39 FILE NO. 30864 DESIGN NO. 121





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# GENERAL NOTES:

THIS DESIGN INVOLVES THE CONSTRUCTION OF A 249'-0 x 60'-0 PRESTRESSED CONCRETE BEAM BRIDGE FOR THE EASTBOUND I-80 OVER CLEAR CREEK. THIS CONTRACT REPRESENTS STAGE II CONSTRUCTION FOR THE REPLACEMENT OF THE EXISTING 159'-2 x 73'-2 PRESTRESSED CONCRETE BEAM BRIDGE (ORIGINAL DESIGN NO. 2361 AND WIDENING DESIGNS NO. 396 AND 920).

ELECTRONIC COPIES OF ORIGINAL DESIGN PLANS ARE AVAILABLE TO THE CONTRACTOR AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS.

THE LUMP SUM BID FOR "REMOVAL OF EXISTING BRIDGE" SHALL INCLUDE REMOVAL OF EXISTING SUPERSTRUCTURE, ABUTMENTS, PIERS AND TEMPORARY SHORING PLACED IN STAGE I (DESIGN NO. 1317) THAT CONFLICTS WITH STAGE II CONSTRUCTION AND EXISTING RAMP BRIDGE, DESIGN 1168.

REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS.

A SCRAPE SAMPLE WAS TAKEN FROM AN AREA OF THIS BRIDGE TO GET AN INDICATION OF THE EXISTENCE OF AND LEVEL OF TOTAL LEAD AND TOTAL CHROMIUM. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WAS 1900 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 84 PPM. THESE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER CONSTITUENTS WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE IOWA DOT'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

LABORATORY ANALYSIS HAS IDENTIFIED ASBESTOS AT THIS SITE. ASBESTOS SHALL BE REMOVED PRIOR TO BRIDGE DEMOLITION OPERATIONS. REMOVAL, TRANSPORT, AND DISPOSAL SHALL BE IN ACCORDANCE WITH SECTION 2536, OF THE STANDARD SPECIFICATIONS. REQUIRED DNR INFORMATION INCLUDES:

| | |
|---|---|
| YEAR CONSTRUCTED | 1970 |
| ASBESTOS LOCATION | TAR SEALANT IN JOINT BETWEEN END OF WEST APPROACH SLAB CURB AND BRIDGE RAILING |
| FHWA NUMBER (EXISTING) | INFORMATION PROVIDED ELSEWHERE IN PLANS |
| ROAD/ROUTE (CITY) | INFORMATION PROVIDED ELSEWHERE IN PLANS |
| COUNTY | INFORMATION PROVIDED ELSEWHERE IN PLANS |
| DIRECTIONS TO BRIDGE | INFORMATION PROVIDED ELSEWHERE IN PLANS |
| BRIDGE SIZE | INFORMATION PROVIDED ELSEWHERE IN PLANS |
| NUMBER OF DECKS | 1 |
| ASBESTOS INSPECTOR/AMOUNTS | INFORMATION PROVIDED BY ENGINEER |

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

THIS BRIDGE IS DESIGNED FOR HL-93 LOADING, PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

404 PERMIT INFORMATION AND THE POLLUTION PREVENTION PLAN ARE INCLUDED IN THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52.

DURING CONSTRUCTION OF THIS PROJECT THE BRIDGE CONTRACTOR WILL BE REQUIRED TO COORDINATE OPERATIONS WITH THOSE OF OTHER CONTRACTORS WORKING WITHIN THE SAME AREA. SEE THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52, FOR THE LIST OF OTHER WORK IN THE AREA.

UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE BRIDGE CONTRACTOR OF THE STARTING DATE.

THE BRIDGE CONTRACTOR IS TO CLEAR AND/OR SHAPE THE CHANNEL WITHIN THE APPROXIMATE LIMITS OF THE AREAS AS SHOWN ON THE "SITUATION PLAN" AND "LONGITUDINAL SECTION ALONG CENTERLINE ROADWAY" ON DESIGN SHEET 5.

IT SHALL BE THE BRIDGE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

TEMPORARY SHORING PLACED IN STAGE I SHALL BE REMOVED PRIOR TO BEGINNING CONSTRUCTION OF THE STAGE II ABUTMENTS, AS NEEDED. IN ADDITION TO THE REQUIREMENTS NOTED ABOVE, ARTICLE 1107.07 OF THE STANDARD SPECIFICATIONS APPLIES. ALL REMOVED SHORING MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

# GENERAL NOTES, CONT'D:

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

CONCRETE BARRIERS PLACED USING THE SLIPFORM METHOD WILL REQUIRE THE USE OF A CLASS BR CONCRETE IN ACCORDANCE WITH ARTICLE 2513.03, A, 2, OF THE STANDARD SPECIFICATIONS. CAST-IN-PLACE BARRIER RAILS SHALL USE CLASS C MIX. CLASS D CONCRETE IS NOT PERMITTED FOR CONCRETE BARRIER RAILS (CAST-IN-PLACE OR SLIPFORMED METHOD).

THE APPROACH FILLS AS SHOWN ARE NOT A PART OF THIS CONTRACT, BUT ARE TO BE IN PLACE BEFORE ABUTMENT PILES ARE DRIVEN. THE BRIDGE CONTRACTOR IS TO LEVEL OFF AND SHAPE THE BERMS TO THE ELEVATIONS AND DIMENSIONS SHOWN. DRESSING OF SLOPES OUTSIDE THE BRIDGE AREA NOT DISTURBED BY THE BRIDGE CONTRACTOR SHALL BE PAID FOR AS EXTRA WORK.

THE BRIDGE CONTRACTOR SHALL PREBORE HOLES FOR ABUTMENT PILES. HOLES SHALL BE BORED TO THE ELEVATIONS SHOWN ON THE "LONGITUDINAL SECTION ALONG CENTERLINE ROADWAY" ON DESIGN SHEET 5. PILES SHALL BE DRIVEN THROUGH THE HOLES TO AT LEAST THE SPECIFIED DESIGN BEARING.

CAST IN-ONE-PIECE STEEL PILE POINTS ARE REQUIRED FOR ALL ABUTMENT AND PIER PILES IN ACCORDANCE WITH ARTICLE 4167.02 OF THE CURRENT STANDARD SPECIFICATIONS AND MATERIALS IM 468.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING STABILITY OF PRESTRESSED CONCRETE BEAMS DURING ERECTION AND CONSTRUCTION UP THROUGH THE CONCRETE BRIDGE DECK REACHING ITS FULL 28-DAY STRENGTH. THE CONTRACTOR SHALL PROVIDE SUFFICIENT TEMPORARY ANCHOR BRACING AT BEAM ENDS AND TEMPORARY INTERMEDIATE BRACING AS NEEDED TO ENSURE PRESTRESSED BEAM STABILITY. PARTIALLY OR FULLY INSTALLED PERMANENT BRACING AS SHOWN IN THESE DESIGN PLANS SHALL NOT BE ASSUMED SUFFICIENT TO BRACE PRESTRESSED BEAMS DURING ERECTION AND CONSTRUCTION. TEMPORARY BRACING SHALL NOT BE WELDED TO PRESTRESSED BEAM STIRRUPS.

GUARDRAIL IS TO BE PLACED BY PROJECT NO. NHS-080-6(372)239--11-52.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5a) is $\frac{5}{8}$ inch diameter bar). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

| ENGLISH SIZE | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|
| BAR DESIGNATION | 10 | 13 | 16 | 19 | 22 | 25 | 29 | 32 | 36 |

## BRIDGE DECK DIMENSIONS TABLE

| | ITEM | UNITS | QUANTITY |
|---|---|---|---|
| 1 | DECK LENGTH | L.F. | 252.1 |
| 2 | MINIMUM DECK WIDTH | L.F. | 61.6 |
| 3 | MAXIMUM DECK WIDTH | L.F. | 61.6 |
| 4 | DECK AREA | S.F. | 15,522 |

1. DECK LENGTH IS MEASURED FROM FACE-TO-FACE OF PAVING NOTCHES ALONG THE CENTERLINE OF THE ROADWAY.
2, 3. DECK WIDTHS ARE MEASURED FROM OUT-TO-OUT OF DECK PERPENDICULAR TO THE CENTERLINE OF ROADWAY.
4. DECK AREA IS TO BE BASED ON THE FACE-TO-FACE PAVING NOTCH DISTANCE AND OUT-TO-OUT DECK DIMENSIONS.

# SPECIFICATIONS:

DESIGN:
AASHTO LRFD 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

CONSTRUCTION:
IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.
- "DEVELOPMENTAL SPECIFICATIONS FOR HIGH PERFORMANCE CONCRETE FOR STRUCTURES"
- "DEVELOPMENTAL SPECIFICATIONS FOR CONCRETE SURFACE PREPARATION AND TESTING PRIOR TO COATING APPLICATION"
- "DEVELOPMENTAL SPECIFICATIONS FOR STRUCTURAL CONCRETE COATING"
- "SPECIAL PROVISIONS FOR PROGRESS SCHEDULING (CRITICAL PATH METHOD)"
- "SPECIAL PROVISIONS FOR AESTHETIC TREATMENT OF CONCRETE BARRIER"
- "SPECIAL PROVISIONS FOR E-BUILDER"

# DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

REINFORCING STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 5, GRADE 60 FOR EPOXY COATED AND NON-COATED, AND GRADE 60 OR 75 FOR STAINLESS.

CONCRETE IN ACCORDANCE WITH AASHTO LRFD SECTION 5, f'c = 4.0 KSI, EXCEPT PRESTRESSED BEAM CONCRETE AS NOTED.

PRESTRESSED CONCRETE BEAMS, SEE DESIGN SHEET 28.

BRIDGE DECK CONCRETE f'c = 4.0 KSI

STRUCTURAL STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 6. ASTM A709 GRADE 36, GRADE 50, AND GRADE 50W (AASHTO M270 GRADE 36, GRADE 50, AND GRADE 50W).

## SHOP DRAWING SUBMITTALS

SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS SHOWN IN THE TABLE BELOW. (NOTE ADDITIONAL SHOP DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS.)

SUBMITTAL REQUIREMENTS FOR SHOP DRAWINGS SHOULD BE IN ACCORDANCE WITH ARTICLE 1105.03, OF THE STANDARD SPECIFICATIONS, FOR HIGHWAY AND BRIDGE CONSTRUCTION OF THE IOWA DEPARTMENT OF TRANSPORTATION.

SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION:
(Paren)_County_DesignNumber_SubmittalDescription.pdf
Example: (090)_BlackHawk_Design915_DeckDrains.pdf

| | |
|---|---|
| 1 | INTERMEDIATE STEEL DIAPHRAGMS |
| 2 | DECK DRAINS |
| 3 | FORMWORK FOR AESTHETIC TREATMENT AT ABUTMENTS |

## TRAFFIC CONTROL PLAN

THE ROADWAY WILL BE OPEN TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN INCLUDED IN THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## GENERAL NOTES

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 39 FILE NO. 30864 DESIGN NO. 121





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# GENERAL NOTES FOR TEXTURED CONCRETE FORM LINERS:

SEE INDIVIDUAL DESIGN SHEETS FOR SPECIFIC NOTES AND DETAILS DESCRIBING THE FEATURES WHICH INCORPORATE TEXTURED CONCRETE. WORK PERFORMED TO CREATE TEXTURED CONCRETE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR FORMWORK AND THE FOLLOWING:

FORM THE TEXTURED CONCRETE SURFACE USING A FORM LINER SYSTEM MADE OF HIGH-STRENGTH URETHANE ELASTOMER, PLASTIC OR FLEXIBLE FOAM MATERIALS CAPABLE OF WITHSTANDING ANTICIPATED CONCRETE POUR PRESSURES WITHOUT LEAKAGE OR CAUSING PHYSICAL DEFECTS. FORM LINERS SHALL EASILY ATTACH TO FORMS AND BE REMOVABLE WITHOUT CAUSING CONCRETE SURFACE DAMAGE. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR ATTACHING FORM LINERS TO THE CONCRETE FORMS. IF RECOMMENDED BY THE FORM LINER MANUFACTURER, USE STRUCTURAL BACKERS TO PREVENT DEFORMATION OF THE LINER DURING LOADING OF THE FORMS. THE LINERS SHALL BE DESIGNED TO FORM SURFACES CONFORMING TO THE DESIGN INTENT INCLUDING THE SHAPE, LINES AND DIMENSIONS SHOWN IN THE PLANS AND TO AVOID VISIBLE PATTERN REPEATS. MATCH PATTERN FEATURES AT FORM LINER JOINTS TO MINIMIZE PATTERN REPEATS AND MAKE THE FORMED CONCRETE SURFACE APPEAR UNIFORM AND CONTINUOUS WITHOUT VISIBLE SEAMS AND FORM MARKS. WHEN JOINTS ARE UNAVOIDABLE, MAKE JOINTS ALONG MAIN FEATURES OF THE PATTERN IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. DO NOT MIX FORM LINERS FROM DIFFERENT MANUFACTURERS WHEN FORMING ANY INDIVIDUAL TEXTURE ON THE PROJECT.

FORM LINER EDGES FOLLOWING CURVES ARE TO BE CUT CLEANLY AND PARALLEL TO THE CURVE. USE ADEQUATE BLOCKING, SEALING AND OTHER MEANS IN ORDER TO MAINTAIN THE APPROPRIATE DEPTH AND CHARACTER OF TEXTURE AT CUT EDGES OF LINERS AND TO PREVENT MORTAR LEAKAGE.

DURING LOADING OF FORMS WITH CONCRETE, TAKE EXTRA CARE TO ADEQUATELY VIBRATE CONCRETE IN ORDER TO MAINTAIN ALL INTENDED FEATURES OF THE FORM LINER IN THE FINAL SURFACE AND TO PREVENT VOIDS. FOLLOWING REMOVAL OF FORMS, FINISH MINOR DEFECTS TO BLEND WITH THE BALANCE OF THE SURFACE TEXTURE. THE COMPLETED SURFACE SHALL BE FREE OF BLEMISHES, SURFACE VOIDS AND CONSPICUOUS FORM MARKS TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL CORRECT ANY SURFACE DEFECTS AT NO ADDITIONAL COST TO THE PROJECT.

VERIFY THAT RELEASE AGENTS USED ARE COMPATIBLE WITH FORM LINER MATERIAL, AND ARE NON-STAINING. APPLY RELEASE AGENT IN ACCORDANCE WITH THE FORM LINER MANUFACTURER'S RECOMMENDATIONS.

IF USED, FORM TIES SHALL BE MADE OF NON-CORROSIVE MATERIALS WHEN THE PORTION PERMANENTLY EMBEDDED IN THE CONCRETE IS LESS THAN $1\frac{1}{2}$ INCHES FROM THE FINISHED SURFACE. POSITION FORM TIES AND ACCESSORIES IN STONE PATTERN MORTAR JOINTS IF APPLICABLE AND AT HIGH POINTS OF FINISHED WALL.

STRIP FORMWORK USING TECHNIQUES IN ACCORDANCE WITH LINER MANUFACTURER'S RECOMMENDATIONS AFTER THE CONCRETE HAS ACHIEVED THE STRENGTHS AND CURE TIMES REQUIRED BY THE PLANS AND APPLICABLE SPECIFICATIONS. CLEAN AND REPAIR FORM LINER SURFACES PRIOR TO USE. DO NOT USE SPLIT, FRAYED, DELAMINATED OR OTHERWISE DAMAGED FORM LINERS.

ALL COSTS ASSOCIATED WITH CONCRETE TEXTURING AND FORM LINERS ARE TO BE INCLUDED IN THE BID ITEM, "HIGH PERFORMANCE STRUCTURAL CONCRETE".

# TEXTURED CONCRETE MOCKUP PANEL NOTES:

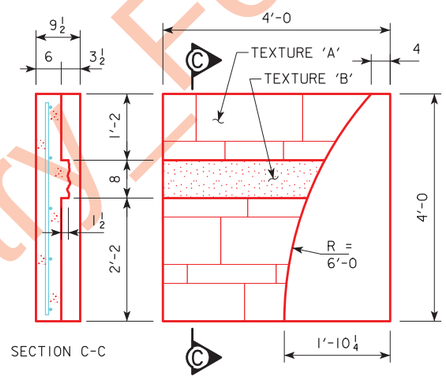
PRIOR TO BEGINNING ANY PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE, A TEXTURED CONCRETE MOCKUP PANEL MUST BE REVIEWED AND APPROVED BY THE ENGINEER.

CONSTRUCT A 4-FOOT HIGH, BY 6-INCH WIDE (MIN.), BY 4-FOOT LONG MOCKUP PANEL IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND THESE PLANS. SEE MOCKUP PANEL DETAILS ON THIS DESIGN SHEET.

CAST THE MOCKUP PANEL(S) ON SITE, USING THE SAME FORMING METHODS, PROCEDURES, FORM LINERS, AND CONCRETE MIXTURE(S) AS ARE PROPOSED FOR THE PRODUCTION WORK. TEXTURED FACES SHALL BE VERTICAL DURING THE CASTING PROCESS. A SINGLE MAT OF NO. 5 REINFORCING BARS IN TWO DIRECTIONS SHALL BE SET 2 INCHES CLEAR TO THE BOTTOM OF THE TEXTURED FACE. IF THE MOCKUP PANEL IS REJECTED, CONSTRUCT A NEW MOCKUP PANEL AS DIRECTED BY THE ENGINEER. BEGIN TEXTURED CONCRETE PRODUCTION WORK ONLY AFTER THE MOCKUP HAS BEEN APPROVED BY THE ENGINEER.

AFTER ALL PRODUCTION TEXTURED CONCRETE WORK IS COMPLETE, THE MOCKUP PANEL(S) SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.

ALL COSTS ASSOCIATED WITH THE TEXTURED CONCRETE MOCKUP PANEL(S) SHALL BE INCLUDED IN THE PRICE BID FOR "HIGH PERFORMANCE STRUCTURAL CONCRETE".




MOCKUP PANEL DETAILS

# GENERAL NOTES FOR CONCRETE RUSTICATION:

STRIPS AND PANELS USED AS INSERTS WITHIN CONCRETE FORMS TO CREATE THE RUSTICATION FEATURES MAY BE MADE OF WOOD, STEEL, NYLON, PLASTIC OR OTHER NONPOROUS MATERIAL CAPABLE OF WITHSTANDING ANTICIPATED CONCRETE POUR PRESSURES WITHOUT PHYSICAL DEFECTS. WOOD INSERTS, IF USED, SHALL BE FREE OF WARP, TWIST, CHECKS OR CRACKS, AND SHALL BE PRESOAKED PRIOR TO PLACEMENT OF CONCRETE IN THE FORMS.

RUSTICATION INSERTS SHALL EASILY ATTACH TO FORMS AND SHALL NOT ALLOW LEAKAGE OF CONCRETE BETWEEN THE FORM AND THE INSERT. WHEN STEEL FORMS ARE USED, RUSTICATION STRIPS MAY BE RIGIDLY ATTACHED TO THE INSIDE SURFACES OF THE FORMS. WHEN STEEL FORMS ARE NOT USED, RUSTICATION STRIPS AND OTHER INSERTS FOR SMALL RECESSES ON EXPOSED CONCRETE SURFACES SHALL BE FASTENED TO THE FORMS IN A MANNER THAT WILL PERMIT THEM TO REMAIN IN PLACE WHEN THE FORMS ARE REMOVED. LEAVE INSERTS IN PLACE UNTIL THEY CAN BE REMOVED WITHOUT DAMAGE TO THE SURROUNDING CONCRETE.

THE INSERTS SHALL BE DESIGNED TO FORM SURFACES AND FEATURES CONFORMING TO THE DESIGN INTENT INCLUDING THE SHAPE, LINES, DEPTHS AND DIMENSIONS SHOWN IN THE PLANS. CREATE INSERTS USING A MINIMUM NUMBER OF SPLICE JOINTS IN THEIR LENGTH. SPLICES, IF USED, SHALL BE TIGHTLY JOINED SO AS NOT TO ALLOW GAPS OR LEAKS, AND SHALL NOT CREATE ANY CHANGE IN ALIGNMENT OR SHAPE OF THE RUSTICATION FEATURE. DO NOT LOCATE FORM TIES WITHIN CONCRETE RUSTICATIONS.

FOR RUSTICATION FEATURES FOLLOWING THE PERIMETER OF ROUNDED SURFACES, IT MAY BE NECESSARY TO USE MULTIPLE LAYERS OF INSERT MATERIAL IN ORDER TO ACHIEVE THE RADIUS CURVE. THIS IS ACCEPTABLE, PROVIDED THAT THE FINAL SHAPE, LINE, DEPTH, AND DIMENSION OF THE FEATURES ARE MAINTAINED IN THE FINAL RESULT.

DURING LOADING OF FORMS WITH CONCRETE, TAKE EXTRA CARE TO ENSURE PROPER CONSOLIDATION OF CONCRETE AROUND ALL RUSTICATION INSERTS TO PRESERVE THE SHAPE, LINE AND DEPTH OF ALL INTENDED FEATURES IN THE FINAL CONCRETE SURFACE. FOLLOWING REMOVAL OF FORMS, REPAIR ALL DEFECTS TO ACHIEVE THE RUSTICATION FEATURES AS SPECIFIED IN THE PLANS. PATCH VOIDS, HONEYCOMB AREAS, ETC., IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. IF SURFACES WILL NOT RECEIVE A COATING, ADD WHITE CEMENT TO THE PATCHING MORTAR TO LIGHTEN IT IN ORDER TO MATCH OR BE SLIGHTLY LIGHTER THAN SURROUNDING CONCRETE WHEN DRY. COMPLETED SURFACE SHALL BE FREE FROM BLEMISHES, SURFACE VOIDS AND CONSPICUOUS FORM MARKS TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL CORRECT ANY SURFACE DEFECTS TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE PROJECT.

ALL COSTS ASSOCIATED WITH CONCRETE RUSTICATION ARE TO BE INCLUDED IN THE BID ITEM "HIGH PERFORMANCE STRUCTURAL CONCRETE".

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## GENERAL NOTES

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 39 FILE NO. 30864 DESIGN NO. 121





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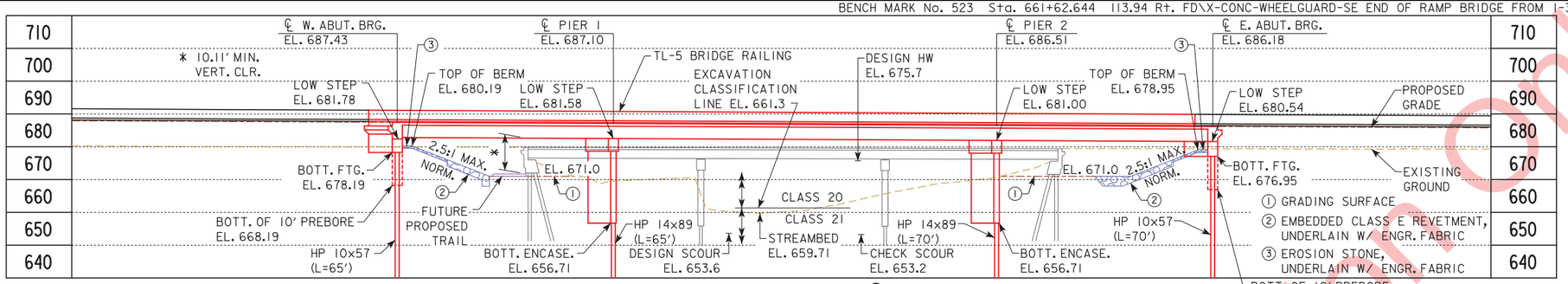
BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334




NOTE: TOP OF BRIDGE DECK AT CENTERLINE ROADWAY IS +0.99' ABOVE THE PROFILE GRADE TO ACCOUNT FOR DECK CROSS SLOPE AND PARABOLIC CROWN.

## LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

-2.9780% -0.5000% +0.6672%

VPI STA = 652+25.00
VPI ELEV = 690.01
VC = 450'

VPI STA = 672+00.00
VPI ELEV = 680.14
VC = 400'

## PROPOSED PROFILE GRADE I-80

## HYDRAULIC DATA

DRAINAGE AREA = 81.0 SQ. MI.
STREAM SLOPE = 3.7 FT./MI.
AVG. LOW WATER STAGE = 661.3

$Q_{50}$ = 8,700 CFS
STAGE = 675.7
BACKWATER = 1.2 FT.
AVG. BRIDGE VELOCIT = 5.6 FPS

$Q_{100}$ = 10,500 CFS
STAGE = 676.5
BACKWATER = 1.5 FT.
AVG. BRIDGE VELOCITY = 6.1 FPS

$Q_{200}$ = 13,400 CFS
STAGE = 677.6
CALCULATED DESIGN SCOUR = 653.6

$Q_{500}$ = 15,000 CFS
STAGE = 678.2
CALCULATED CHECK SCOUR = 653.2

ROADWAY OVERTOP 681.72
STA. 671+71

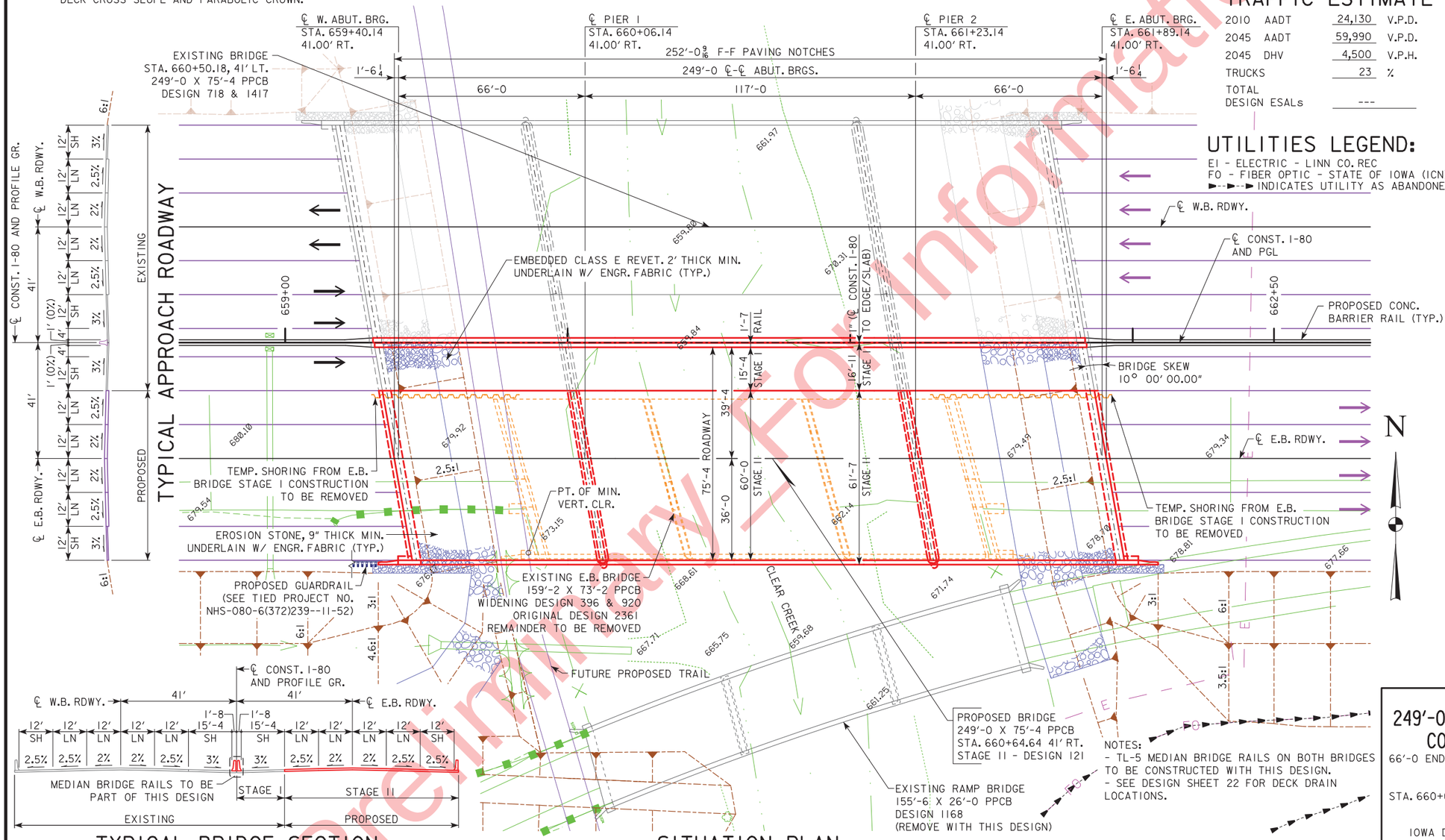
50, 100 & 500 YR. STAGES AND DISCHARGES FROM JOHNSON COUNTY F.I.S., DATED FEBRUARY 16, 2007.
F.I.S. DATUM - 0.10 FT = PROJECT DATUM.

## TRAFFIC ESTIMATE

| | | | |
|---|---|---|---|
| 2010 | AADT | 24,130 | V.P.D. |
| 2045 | AADT | 59,990 | V.P.D. |
| 2045 | DHV | 4,500 | V.P.H. |
| TRUCKS | | 23 | % |
| TOTAL DESIGN ESALs | | --- | |

## UTILITIES LEGEND:

EI - ELECTRIC - LINN CO. REC
FO - FIBER OPTIC - STATE OF IOWA (ICN)
►--►--► INDICATES UTILITY AS ABANDONED




## TYPICAL APPROACH ROADWAY




## TYPICAL BRIDGE SECTION




## SITUATION PLAN

NOTES:
- TL-5 MEDIAN BRIDGE RAILS ON BOTH BRIDGES TO BE CONSTRUCTED WITH THIS DESIGN.
- SEE DESIGN SHEET 22 FOR DECK DRAIN LOCATIONS.

## HYDRAULIC DESIGN

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

David R. Claman 11571 — Licensed Professional Engineer — Iowa

Signature David R. Claman Date
Printed or Typed Name
My license renewal date is December 31, 2020
Pages or sheets covered by this seal: SHEETS 91 & 92

## LOCATION

E.B. I-80 OVER CLEAR CREEK
T-80N R-7W
SECTION 35
CLEAR CREEK TOWNSHIP
JOHNSON COUNTY
FHWA NO. 31991
BRIDGE MAINT. NO. 5239.4R080
LATITUDE 41.694234°
LONGITUDE -91.632336°

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## SITUATION PLAN

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

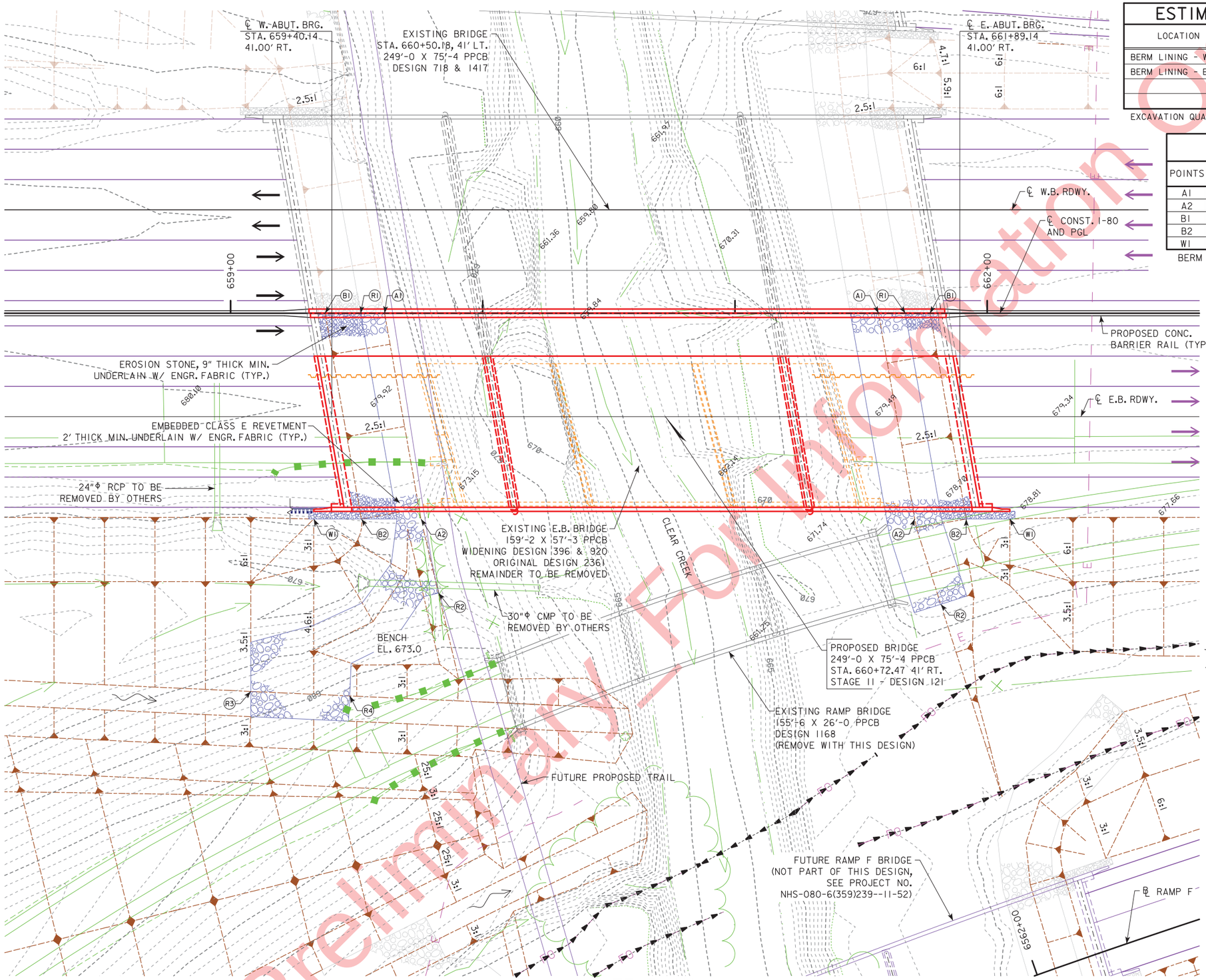
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 39 FILE NO. 30864 DESIGN NO. 121

DESIGN TEAM HNTB | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 91

BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334




SITE PLAN

## ESTIMATED BERM ARMORING QUANTITIES

| LOCATION | REVETMENT CL. E (TON) | EROSION STONE (TON) | ENGINEERING FABRIC (SY) | EXCAVATION (CY) |
|---|---|---|---|---|
| BERM LINING - WEST ABUTMENT | 442.6 | 55.6 | 588.4 | 311.4 |
| BERM LINING - EAST ABUTMENT | 373.7 | 43.2 | 438.4 | 260.5 |
| | | | | |
| TOTALS | 816.3 | 98.8 | 1026.8 | 571.9 |

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

## BERM SLOPE LOCATION TABLE

| POINTS | WEST ABUTMENT | | | EAST ABUTMENT | | |
|---|---|---|---|---|---|---|
| | STATION | OFFSET | ELEV. | STATION | OFFSET | ELEV. |
| A1 | 659+60.81 | 0.00' | 671.00 | 661+57.16 | 0.00' | 671.00 |
| A2 | 659+75.19 | 81.58' RT | 671.00 | 661+71.54 | 81.58' RT | 671.00 |
| B1 | 659+37.48 | 0.00' | 680.19 | 661+77.34 | 0.00' | 678.95 |
| B2 | 659+51.86 | 81.58' RT | 680.19 | 661+91.72 | 81.58' RT | 678.95 |
| W1 | 659+32.99 | 81.58' RT | 686.50 | 662+08.99 | 81.58' RT | 685.12 |

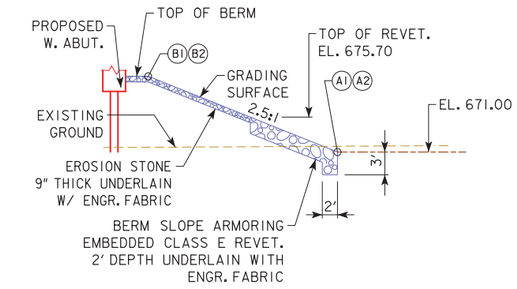
BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE

REVETMENT LIMITS - WEST

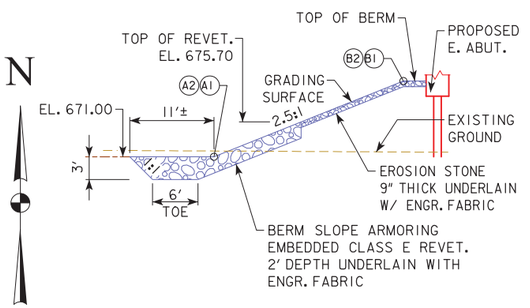
- (R1) 659+48.88, 0.00' RT
- (R2) 659+82.40, 111.01' RT
- (R3) 659+07.99, 150.00' RT
- (R4) 659+47.22, 151.78' RT

REVETMENT LIMITS - EAST

- (R1) 661+69.09, 0.00' RT
- (R2) 661+81.59, 115.43' RT




## EMBEDDED BERM REVETMENT
(WEST ABUTMENT)




## EMBEDDED BERM REVETMENT
(EAST ABUTMENT)

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SITUATION PLAN - SITE

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 39 FILE NO. 30864 DESIGN NO. 121





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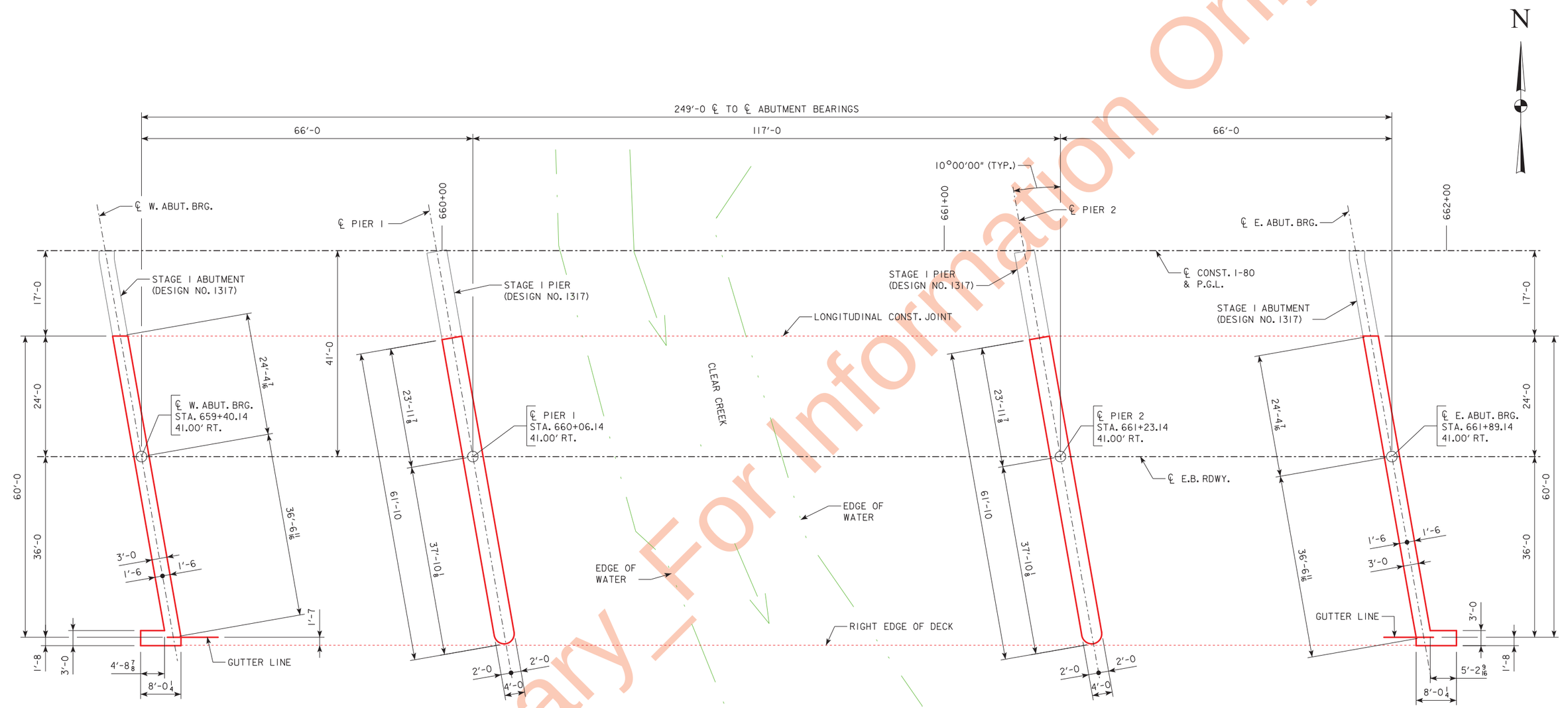


STAKING DIAGRAM

## BRIDGE COORDINATES

| LOCATION | ℄ W. ABUT. BRG. | ℄ PIER 1 | ℄ PIER 2 | ℄ E. ABUT. BRG. |
|---|---|---|---|---|
| LONGITUDINAL CONST. JOINT | E=2150323.662<br>N=622775.670 | E=2150389.645<br>N=622777.163 | E=2150506.615<br>N=622779.809 | E=2150572.599<br>N=622781.302 |
| ℄ E.B. ROADWAY | E=2150328.436<br>N=622751.772 | E=2150394.419<br>N=622753.265 | E=2150511.389<br>N=622755.911 | E=2150577.372<br>N=622757.404 |
| RIGHT EDGE OF DECK | E=2150335.911<br>N=622714.348 | E=2150401.894<br>N=622715.841 | E=2150518.864<br>N=622718.487 | E=2150584.847<br>N=622719.980 |

NOTE: AN ELECTRONIC FILE CONTAINING THE BRIDGE COORDINATE DATA IS AVAILABLE AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL VERIFY THESE COORDINATES WITH THE PROJECT HORIZONTAL CONTROL INFORMATION PROVIDED IN THE ROAD PLANS.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## STAKING DIAGRAM

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 39 FILE NO. 30864 DESIGN NO. 121

DESIGN TEAM HNTB | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 93

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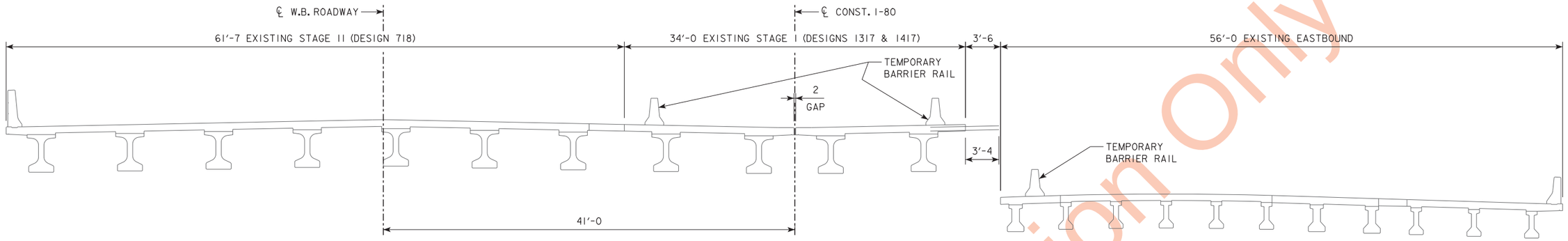
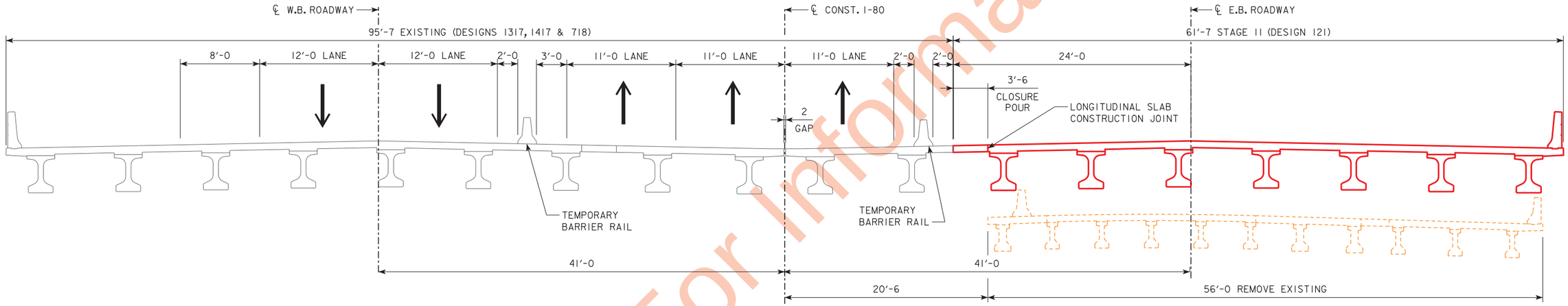


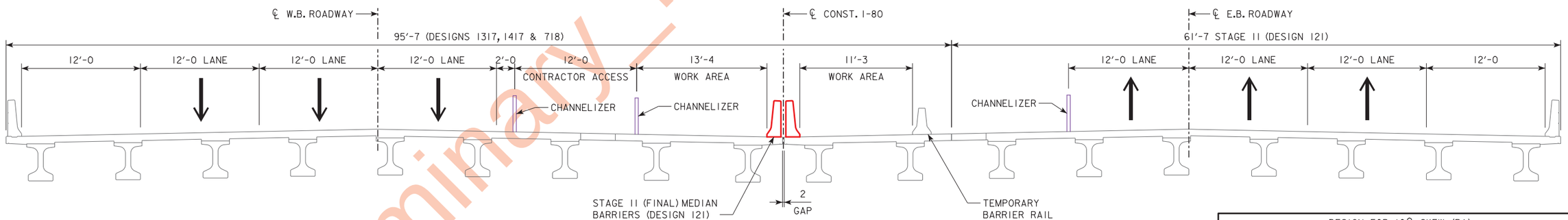

## EXISTING CROSS SECTION

(LOOKING EAST)




## CROSS SECTION - STAGE II

(LOOKING EAST)




## CROSS SECTION - STAGE II (FINAL)

(LOOKING EAST)

NOTE:
SEE TRAFFIC CONTROL PLAN IN THE TIED ROAD PLANS, PROJECT NO. NHS-080-6(372)239--11-52 FOR LOCATION OF LANES AND TEMPORARY SAFETY BARRIER DURING AND AFTER THE CONSTRUCTION OF DESIGN 121.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## STAGED CONSTRUCTION PLAN

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 39 FILE NO. 30864 DESIGN NO. 121





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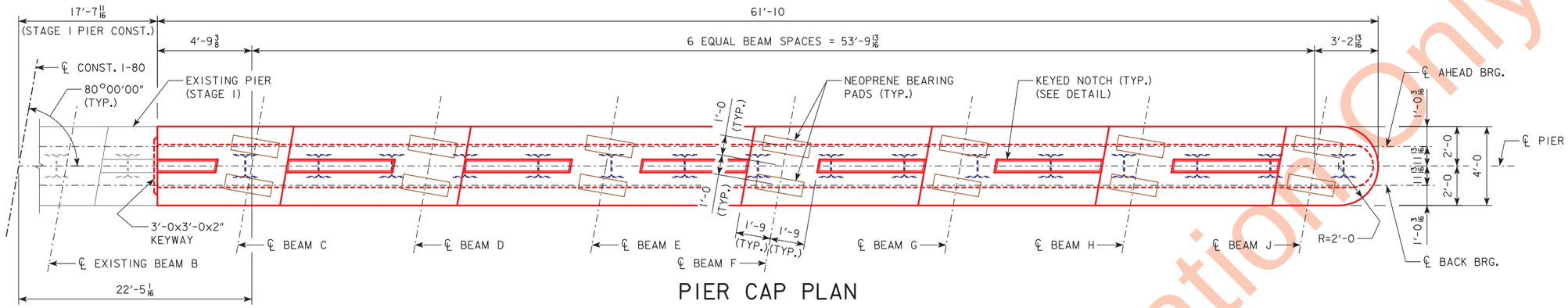
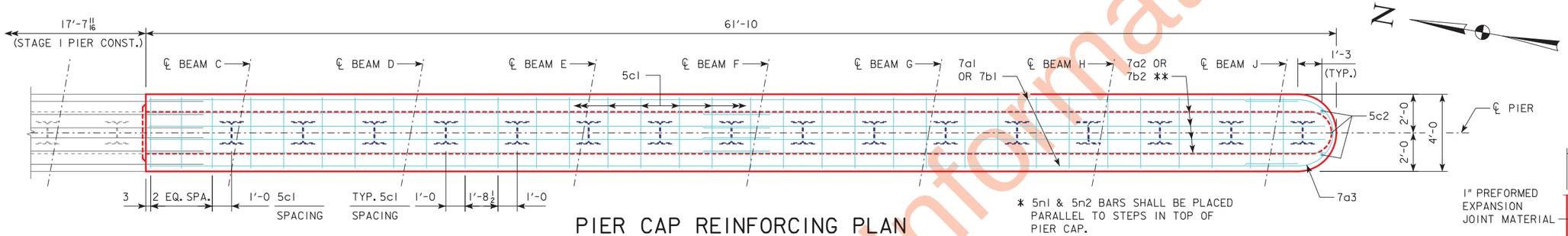
BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334




## PIER CAP PLAN

| TABLE OF VARIABLES | | |
|---|---|---|
| VARIABLE | PIER 1 | PIER 2 |
| ELEV. D | 677.99 | 677.41 |
| ELEV. E | 681.93 | 681.35 |
| ELEV. F | 682.21 | 681.63 |
| ELEV. G | 682.37 | 681.78 |
| ELEV. H | 682.24 | 681.66 |
| ELEV. J | 682.04 | 681.45 |
| ELEV. K | 681.81 | 681.22 |
| ELEV. L | 681.58 | 681.00 |
| A | 21 | 20 |
| B | 21'-3 3/8 | 20'-8 3/8 |
| C | 5'-5 3/4 | 5'-5 3/16 |
| D | 63'-4 1/4 | 63'-3 11/16 |

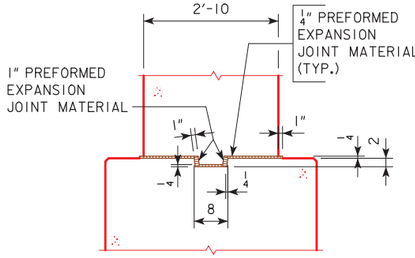



## PIER CAP REINFORCING PLAN

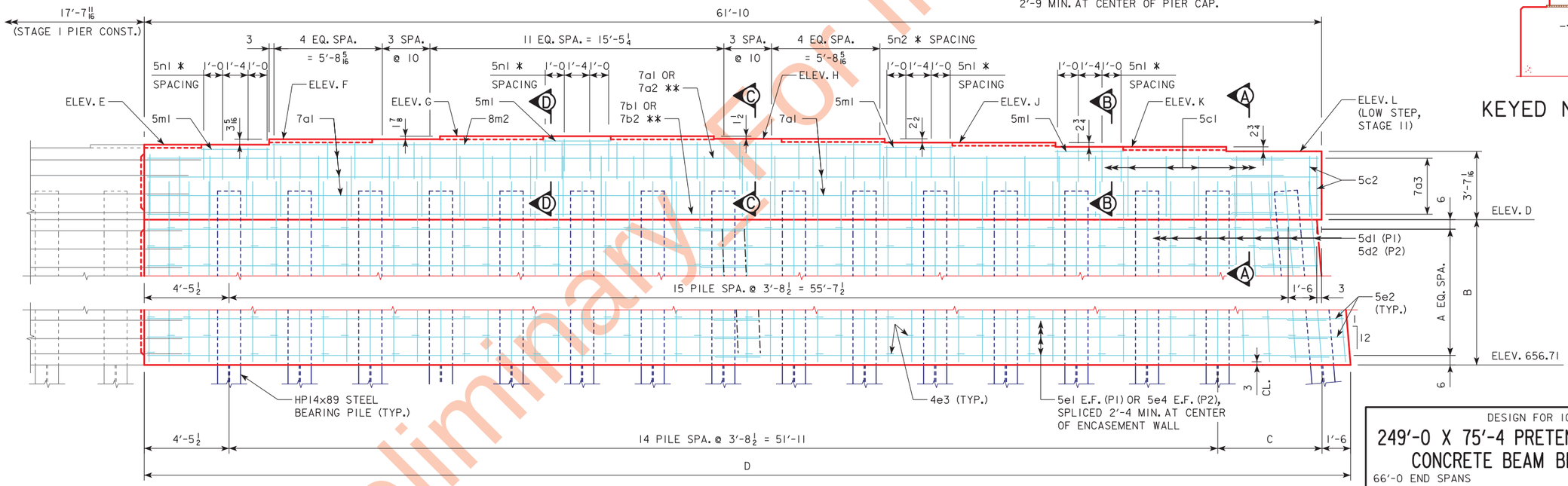
(PIER CAP STEPS AND KEYED NOTCHES NOT SHOWN FOR CLARITY.)

* 5n1 & 5n2 BARS SHALL BE PLACED PARALLEL TO STEPS IN TOP OF PIER CAP.

** 7a2 & 7b2 BARS TO BE SPLICED 2'-9 MIN. AT CENTER OF PIER CAP.




## KEYED NOTCH DETAIL




## PIER ELEVATION

NOTES:
SEE DESIGN SHEET 10 FOR SECTIONS A-A THRU D-D, ENCASEMENT PLAN, PILE BENT NOTES, AND QUANTITIES.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

# PILE BENT PIER DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 39 FILE NO. 30864 DESIGN NO. 121





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# PILE BENT NOTES:

16 - HP 14x89 STEEL BEARING PILING REQUIRED AT PIER 1.
16 - HP 14x89 STEEL BEARING PILING REQUIRED AT PIER 2.

STEEL PILE POINTS ARE REQUIRED FOR THE STEEL H-PILES AT THE PIERS.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.

PIER 1:
THE CONTRACT LENGTH OF 65 FEET FOR THE PIER 1 PILES IS BASED ON A MIXED SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 255 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PILE ENCASEMENT. DESIGN SCOUR (200-YEAR) WAS ASSUMED TO AFFECT THE UPPER 3 FEET OF EMBEDDED PILE LENGTH AND CAUSE 11 KIPS OF DRIVING RESISTANCE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 1 PILES IS 194 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

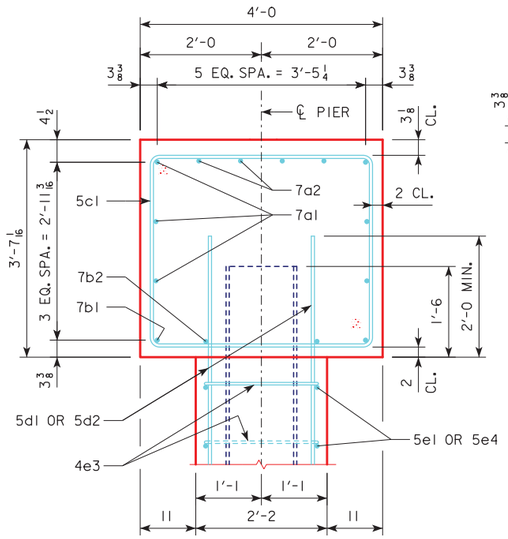
THE WEAP ANALYSIS WILL BE PERFORMED ON THE BASIS THAT ALL EXCAVATION IS COMPLETED BEFORE DRIVING PILES. IF THIS WILL NOT BE THE CASE, PLEASE INFORM THE OFFICE OF CONSTRUCTION TO ACCOUNT FOR ADDITIONAL PILE CAPACITY.

PIER 2:
THE CONTRACT LENGTH OF 70 FEET FOR THE PIER 2 PILES IS BASED ON A NON-COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 255 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING.

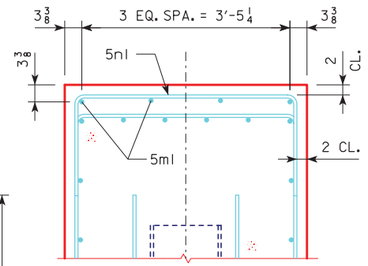
THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A NON-COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PILE ENCASEMENT. DESIGN SCOUR (200-YEAR) WAS ASSUMED TO AFFECT THE UPPER 3 FEET OF EMBEDDED PILE LENGTH AND CAUSE 5 KIPS OF DRIVING RESISTANCE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR PIER 2 PILES IS 198 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

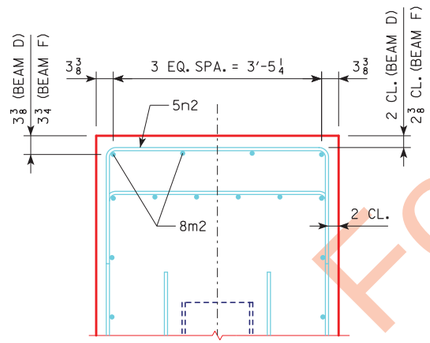
THE WEAP ANALYSIS WILL BE PERFORMED ON THE BASIS THAT ALL EXCAVATION IS COMPLETED BEFORE DRIVING PILES. IF THIS WILL NOT BE THE CASE, PLEASE INFORM THE OFFICE OF CONSTRUCTION TO ACCOUNT FOR ADDITIONAL PILE CAPACITY.



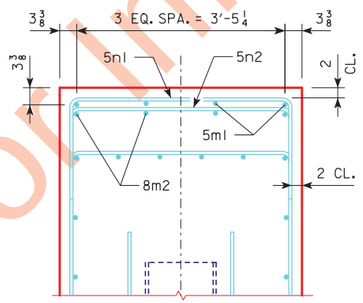

SECTION A-A




SECTION B-B



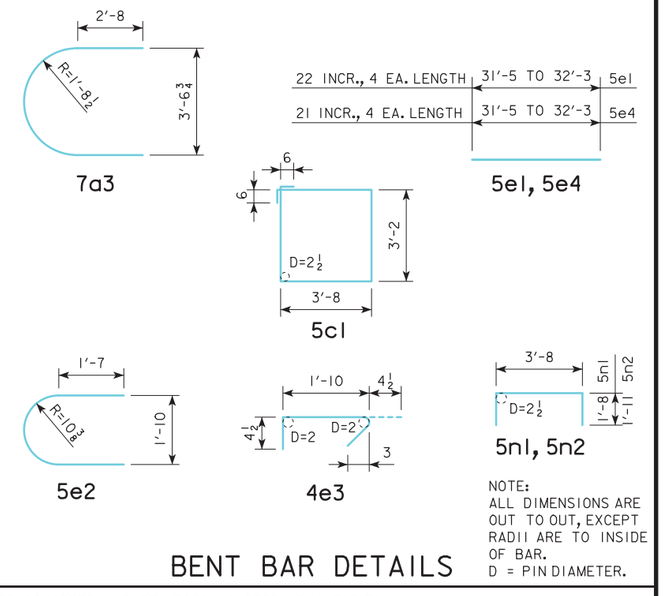

SECTION C-C




SECTION D-D

# REINFORCING BAR LIST AND ESTIMATED QUANTITIES

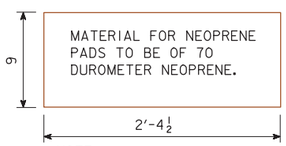
| BAR | LOCATION | SHAPE | PIER 1 NO. | PIER 1 LENGTH | PIER 1 WEIGHT | PIER 2 NO. | PIER 2 LENGTH | PIER 2 WEIGHT |
|---|---|---|---|---|---|---|---|---|
| 7a1 | PIER CAP, HORIZONTAL, TOP & SIDES | | 6 | 59'-8 | 732 | 6 | 59'-8 | 732 |
| 7a2 | PIER CAP, HORIZONTAL, TOP | | 8 | 32'-3 | 527 | 8 | 32'-3 | 527 |
| 7a3 | PIER CAP, END | | 4 | 10'-10 | 89 | 4 | 10'-10 | 89 |
| 7b1 | PIER CAP, HORIZONTAL, BOTTOM | | 2 | 59'-8 | 244 | 2 | 59'-8 | 244 |
| 7b2 | PIER CAP, HORIZONTAL, BOTTOM | | 4 | 32'-3 | 264 | 4 | 32'-3 | 264 |
| 5c1 | PIER CAP, HOOPS | | 33 | 14'-8 | 505 | 33 | 14'-8 | 505 |
| 5c2 | PIER CAP, VERTICAL, END | | 3 | 3'-3 | 10 | 3 | 3'-3 | 10 |
| 5d1 | ENCASEMENT, VERTICAL | | 103 | 23'-2 | 2,489 | - | - | - |
| 5d2 | ENCASEMENT, VERTICAL | | - | - | - | 103 | 22'-7 | 2,426 |
| 5e1 | ENCASEMENT, HORIZONTAL | | 88 | VARIES | 2,922 | - | - | - |
| 5e2 | ENCASEMENT, ENDS | | 22 | 6'-0 | 138 | 21 | 6'-0 | 131 |
| 4e3 | ENCASEMENT, TIES | | 385 | 2'-7 | 664 | 368 | 2'-7 | 635 |
| 5e4 | ENCASEMENT, HORIZONTAL | | - | - | - | 84 | VARIES | 2,789 |
| 5m1 | PIER CAP STEPS, HORIZONTAL | | 16 | 3'-6 | 58 | 16 | 3'-6 | 58 |
| 8m2 | PIER CAP STEPS, HORIZONTAL | | 4 | 32'-0 | 342 | 4 | 32'-0 | 342 |
| 5n1 | PIER CAP STEPS, TRANSVERSE | | 16 | 7'-0 | 117 | 16 | 7'-0 | 117 |
| 5n2 | PIER CAP STEPS, TRANSVERSE | | 26 | 7'-6 | 203 | 26 | 7'-6 | 203 |
| | | | | | | | | |
| | | | | | | | | |
| REINFORCING STEEL - TOTAL (LBS.) | | | | | 9,304 | | | 9,072 |
| STRUCTURAL CONCRETE (CY) | | | | | 143.7 | | | 140.7 |
| HP14x89 STEEL PILE (LF) | | | | | 1,040 | | | 1,120 |




NOTE:
ALL DIMENSIONS ARE OUT TO OUT, EXCEPT RADII ARE TO INSIDE OF BAR.
D = PIN DIAMETER.

BENT BAR DETAILS

NOTE: CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

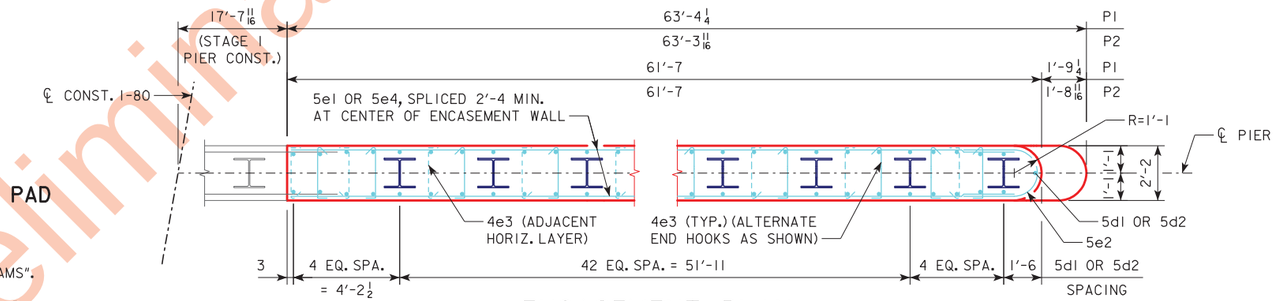




PLAIN NEOPRENE PAD

NOTE:
COST OF NEOPRENE PADS SHALL BE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".

FIXED PIER BEARING DETAILS




ENCASEMENT PLAN

NOTES:
SEE DESIGN SHEET 9 FOR LOCATIONS OF SECTIONS A-A THRU D-D.

DESIGN FOR 10° SKEW (RA)

## 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## PILE BENT PIER DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 39 FILE NO. 30864 DESIGN NO. 121





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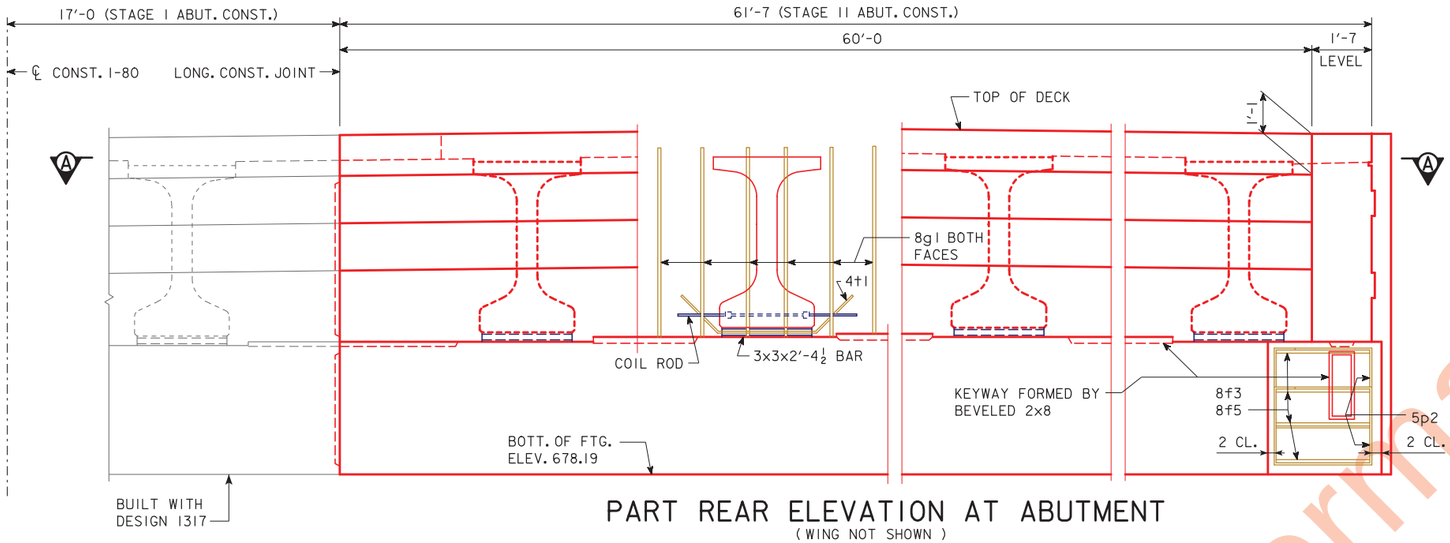
BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334




## PART REAR ELEVATION AT ABUTMENT

( WING NOT SHOWN )

NOTE: SEE DESIGN SHEET 15 FOR ABUTMENT STEP DIAGRAM.

## ABUTMENT CONCRETE QUANTITY

| LOCATION | QUANTITY |
|---|---|
| WEST ABUTMENT FOOTING | 30.0 |
| | |
| TOTAL (CU. YDS.) | 30.0 |

NOTE: CONCRETE QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

NOTE: 9 - HP 10 x 57 STEEL BEARING PILING REQUIRED AT WEST ABUTMENT.

NOTE: BARRIER RAIL NOT SHOWN IN DETAILS.

## ABUTMENT NOTES:

STEEL PILE POINTS ARE REQUIRED FOR THE STEEL H-PILES AT THE ABUTMENT.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

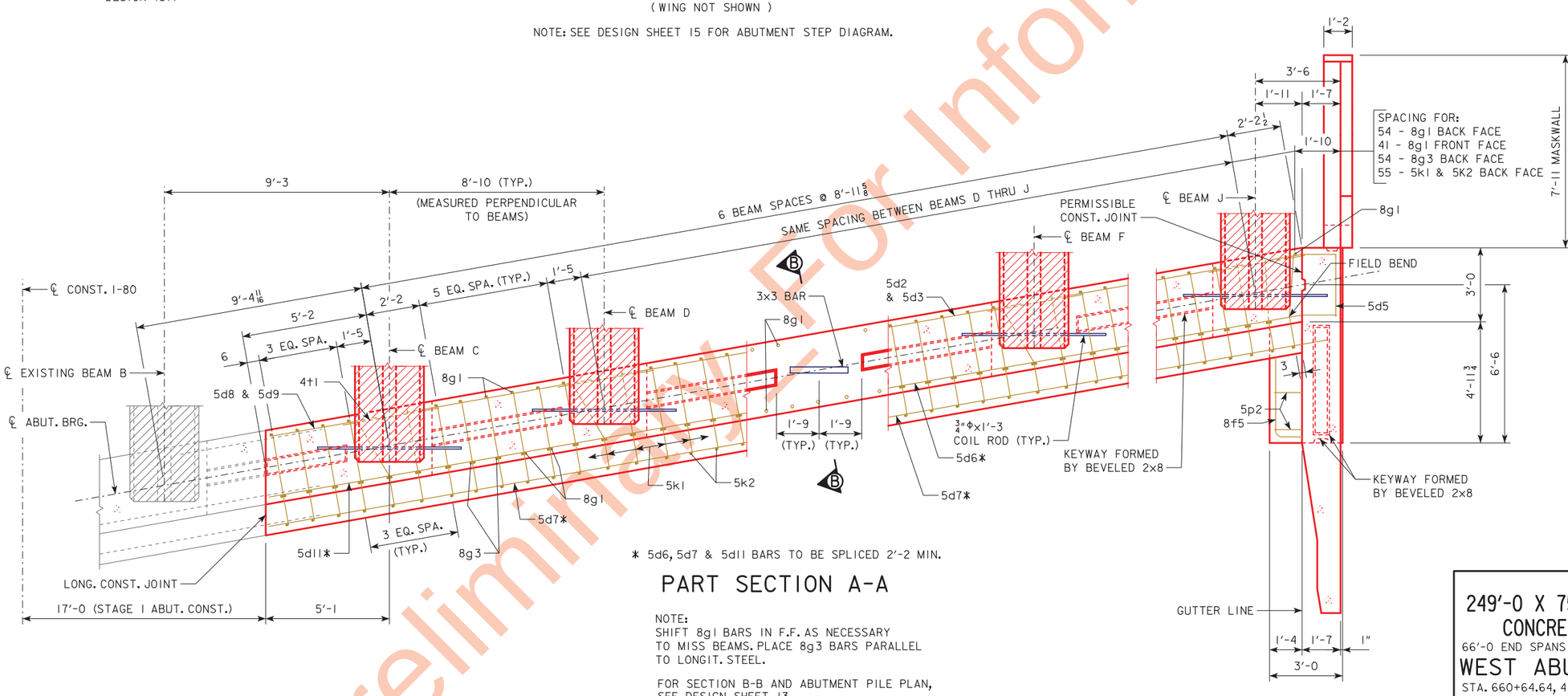
IF NECESSARY TO PREVENT DAMAGE TO THE END OF THE BRIDGE DECK OR BACKWALL FROM CONSTRUCTION EQUIPMENT, AN APPROPRIATE METHOD OF PROTECTION APPROVED BY THE ENGINEER SHALL BE PROVIDED BY THE BRIDGE CONTRACTOR AT NO EXTRA COST TO THE STATE.

## WEST ABUTMENT PILING NOTES:

THE CONTRACT LENGTH OF 65 FEET FOR THE WEST ABUTMENT PILES IS BASED ON A NON-COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 174 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A NON-COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.55 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PREBORE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE WEST ABUTMENT PILES IS 137 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.




* 5d6, 5d7 & 5d11 BARS TO BE SPLICED 2'-2 MIN.

## PART SECTION A-A

NOTE:
SHIFT 8g1 BARS IN F.F. AS NECESSARY TO MISS BEAMS. PLACE 8g3 BARS PARALLEL TO LONGIT. STEEL.

FOR SECTION B-B AND ABUTMENT PILE PLAN, SEE DESIGN SHEET 13.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

# WEST ABUTMENT FOOTING DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

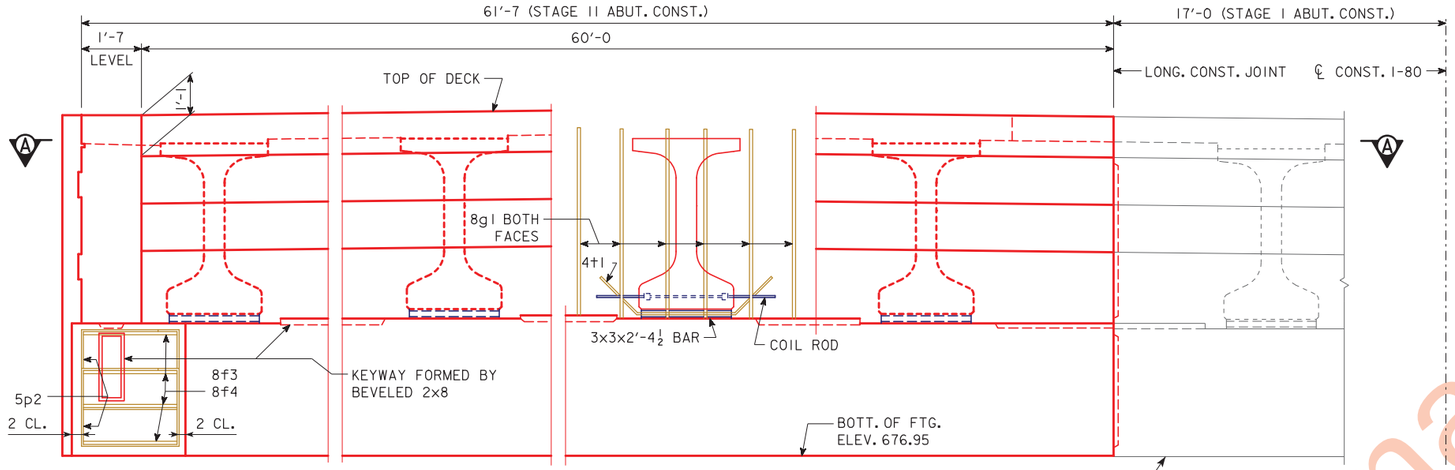
DESIGN SHEET NO. 11 OF 39 FILE NO. 30864 DESIGN NO. 121

| DESIGN TEAM HNTB | "BTC" OR "BTD" BEAMS - INTEGRAL ABUT. DETAILS - ( R. A. ) 7°31' - 15° SKEW | MODIFIED STANDARD SHEET 2090-BTCD | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 97 |
|---|---|---|---|---|---|



CORRECTION 04-14 - ADDED CONCRETE QUANTITY TABLE & REFERRAL NOTE TO SUMMARY QUANTITY SHEET. REMOVED DESIGN BEARING NOTE FOR ABUT. PILING FROM ABUTMENT NOTES.
ENGLISHBTINTEGRALBRIDGES.DGN - 2090-BTCD - THIS SHEET ISSUED 02-08.

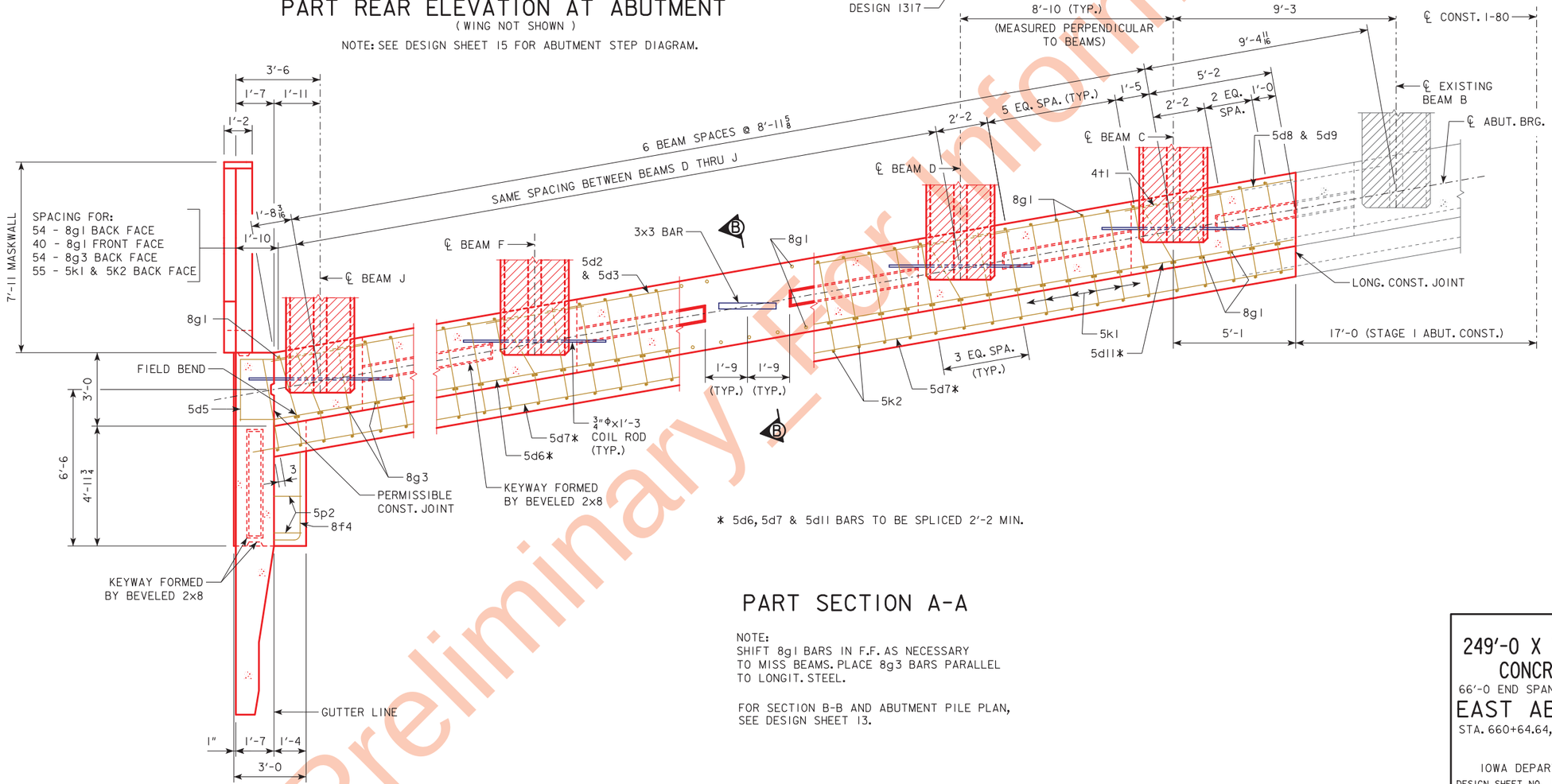
BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334




## PART REAR ELEVATION AT ABUTMENT

( WING NOT SHOWN )

NOTE: SEE DESIGN SHEET 15 FOR ABUTMENT STEP DIAGRAM.




* 5d6, 5d7 & 5d11 BARS TO BE SPLICED 2'-2 MIN.

## PART SECTION A-A

NOTE:
SHIFT 8g1 BARS IN F.F. AS NECESSARY TO MISS BEAMS. PLACE 8g3 BARS PARALLEL TO LONGIT. STEEL.

FOR SECTION B-B AND ABUTMENT PILE PLAN, SEE DESIGN SHEET 13.

## ABUTMENT CONCRETE QUANTITY

| LOCATION | QUANTITY |
|---|---|
| EAST ABUTMENT FOOTING | 30.0 |
| | |
| TOTAL (CU. YDS.) | 30.0 |

NOTE: CONCRETE QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.
NOTE: 9 - HP 10 x 57 STEEL BEARING PILING REQUIRED AT EAST ABUTMENT.

NOTE: BARRIER RAIL NOT SHOWN IN DETAILS.

## EAST ABUTMENT PILING NOTES:

THE CONTRACT LENGTH OF 70 FEET FOR THE EAST ABUTMENT PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 196 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. TO ACCOUNT FOR SOIL CONSOLIDATION UNDER THE NEW FILL, THE FACTORED AXIAL LOAD INCLUDES A FACTORED DOWNDRAG LOAD OF 22 KIPS.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A MIXED SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL AND 0.7 FOR ROCK END BEARING. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF PREBORE.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE EAST ABUTMENT PILES IS 155 TONS AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

# EAST ABUTMENT FOOTING DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

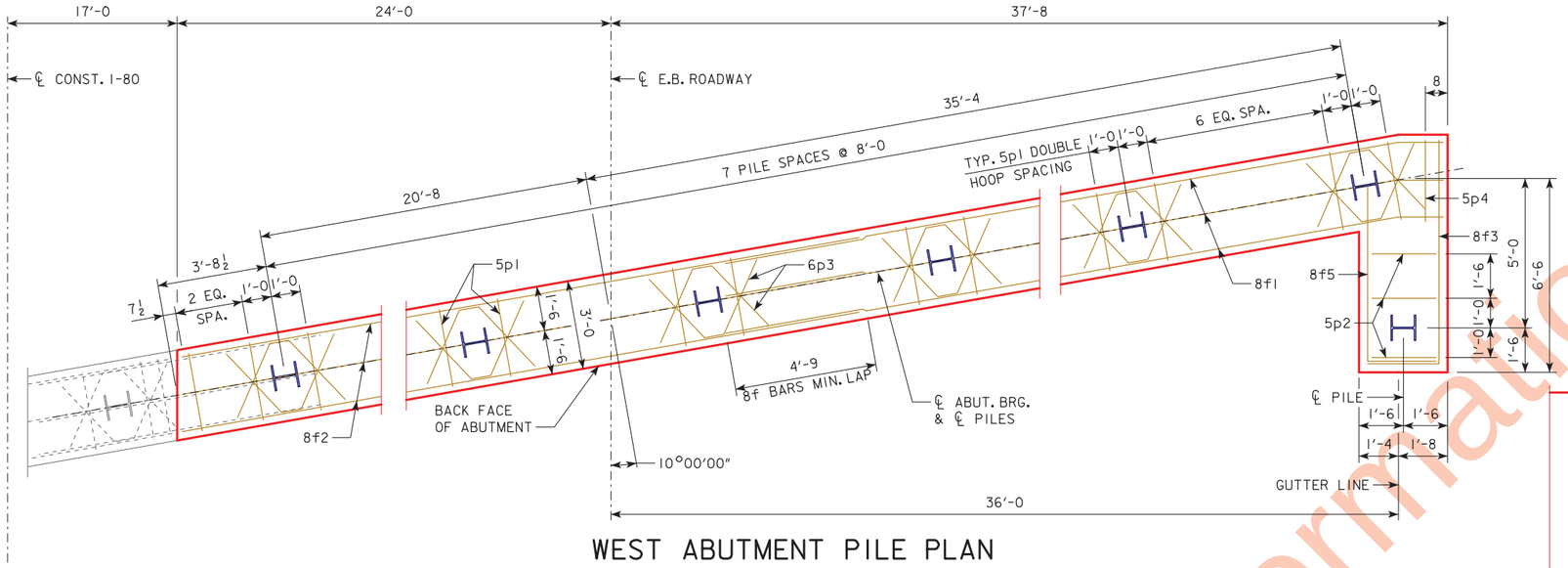
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 12 OF 39 FILE NO. 30864 DESIGN NO. 121

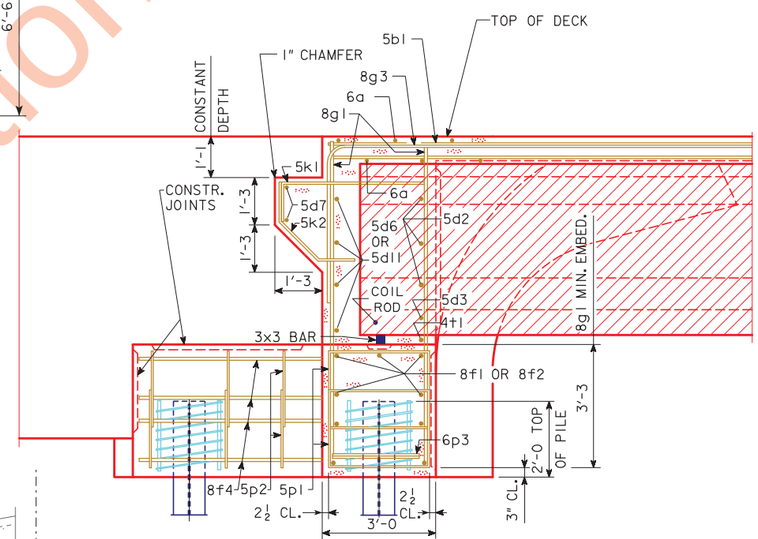
| DESIGN TEAM HNTB | "BTC" OR "BTD" BEAMS - INTEGRAL ABUT. DETAILS - (R.A.) 7°31' - 15° SKEW | MODIFIED STANDARD SHEET 2090-BTCD | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 98 |
|---|---|---|---|---|---|

CORRECTION 04-14 - ADDED CONCRETE QUANTITY TABLE & REFERRAL NOTE TO SUMMARY QUANTITY SHEET. REMOVED DESIGN BEARING NOTE FOR ABUT. PILING FROM ABUTMENT NOTES.
ENGLISHBTINTEGRALBRIDGES.DGN - 2090-BTCD - THIS SHEET ISSUED 02-08.

CORRECTION 04-14 - ADDED CONCRETE QUANTITY TABLE & REFERRAL NOTE TO SUMMARY QUANTITY SHEET. REMOVED DESIGN BEARING NOTE FOR ABUT. PILING FROM ABUTMENT NOTES.
ENGLISHBTINTEGRALBRIDGES.DGN - 2090-BTCD - THIS SHEET ISSUED 02-08.



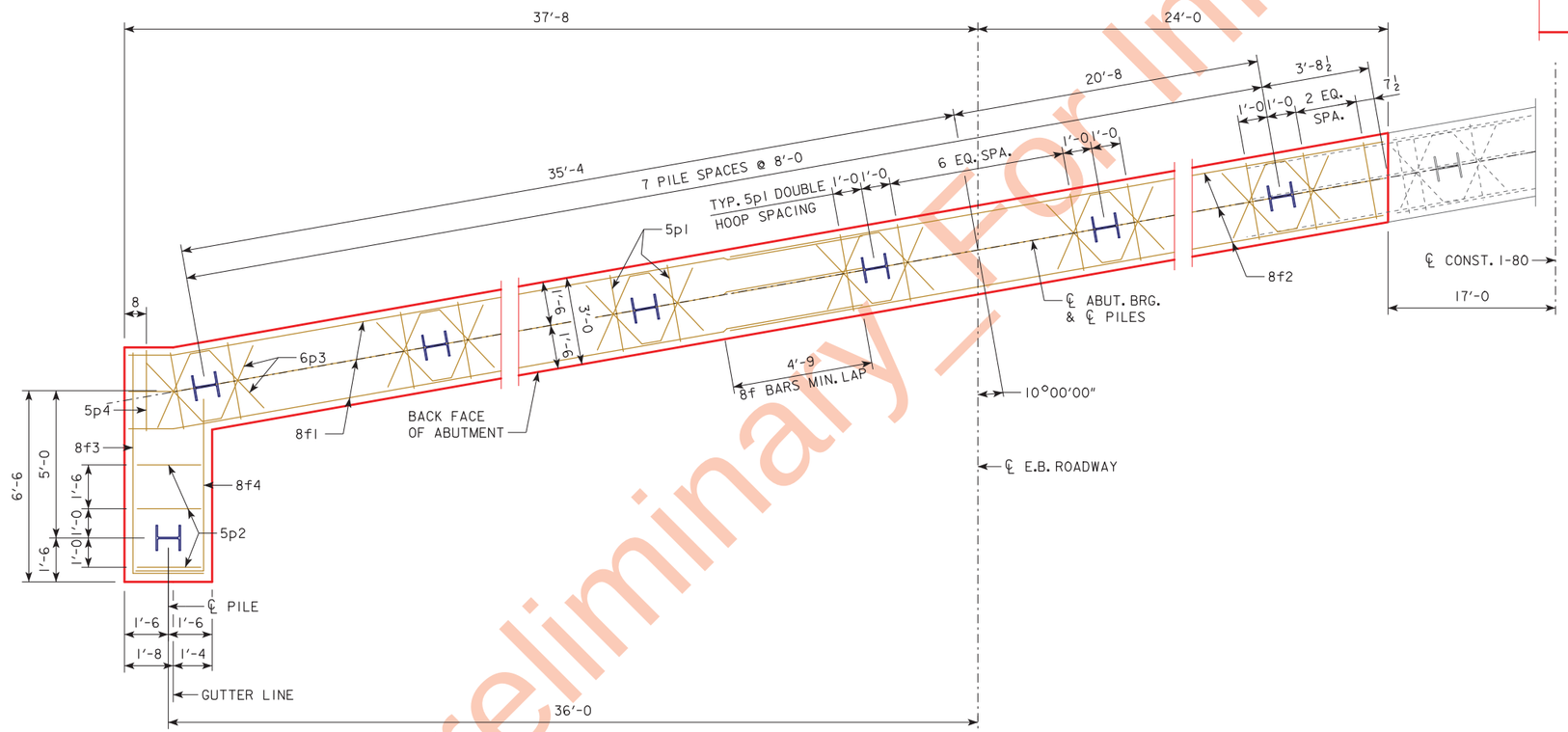

WEST ABUTMENT PILE PLAN




PART SECTION B-B
(EAST ABUTMENT SHOWN, WEST ABUTMENT SIMILAR)

NOTE:
THE SPIRAL AT THE TOP OF EACH PILE TO BE 7 TURNS OF No. 2 BAR, 21" DIAMETER, 3" PITCH WITH 3 - L 7/8 × 7/8 × 1/8 SPACERS PUNCHED TO HOLD SPIRAL.

NOTE: ABUTMENT DIAPHRAGM, WING EXTENSION AND WING SURFACES INCLUDE CONCRETE TEXTURE AND PAINT. SEE DESIGN SHEETS 16 AND 17 FOR DETAILS.




EAST ABUTMENT PILE PLAN

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## ABUTMENT FOOTING DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

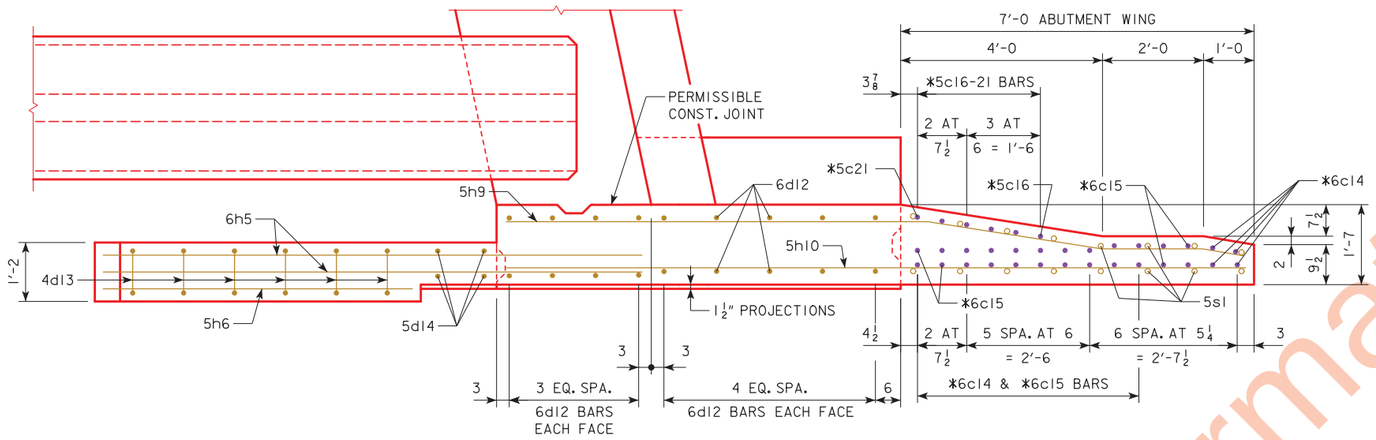
DESIGN SHEET NO. 13 OF 39 — FILE NO. 30864 — DESIGN NO. 121

| DESIGN TEAM HNTB | "BTC" OR "BTD" BEAMS - INTEGRAL ABUT. DETAILS - (R.A.) 7°31' - 15° SKEW | MODIFIED STANDARD SHEET 2090-BTCD | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 99 |
|---|---|---|---|---|---|

BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334

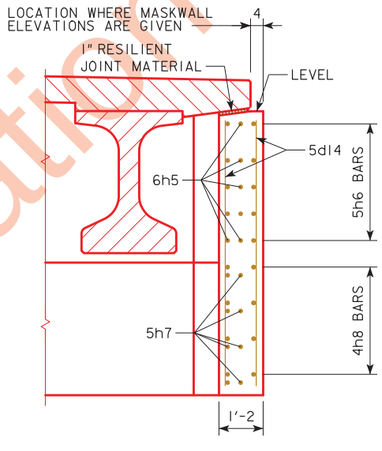
## TABLE OF MASKWALL VARIABLES

| ABUTMENT | WING | ELEV. A | ELEV. B | DIM. "C" | DIM. "D" | DIM. "E" |
|---|---|---|---|---|---|---|
| WEST | SOUTH | 685.73 | 685.77 | 7'-6 1/2 | 2'-0 3/4 | 1'-5 1/2 |
| EAST | SOUTH | 684.57 | 684.54 | 7'-7 7/16 | 2'-1 11/16 | 1'-3 7/8 |



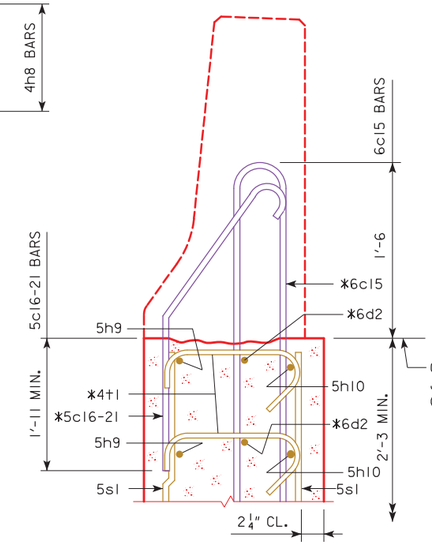

## PART PLAN VIEW B-B

(DECK NOT SHOWN FOR CLARITY)




## PART SECTION A-A

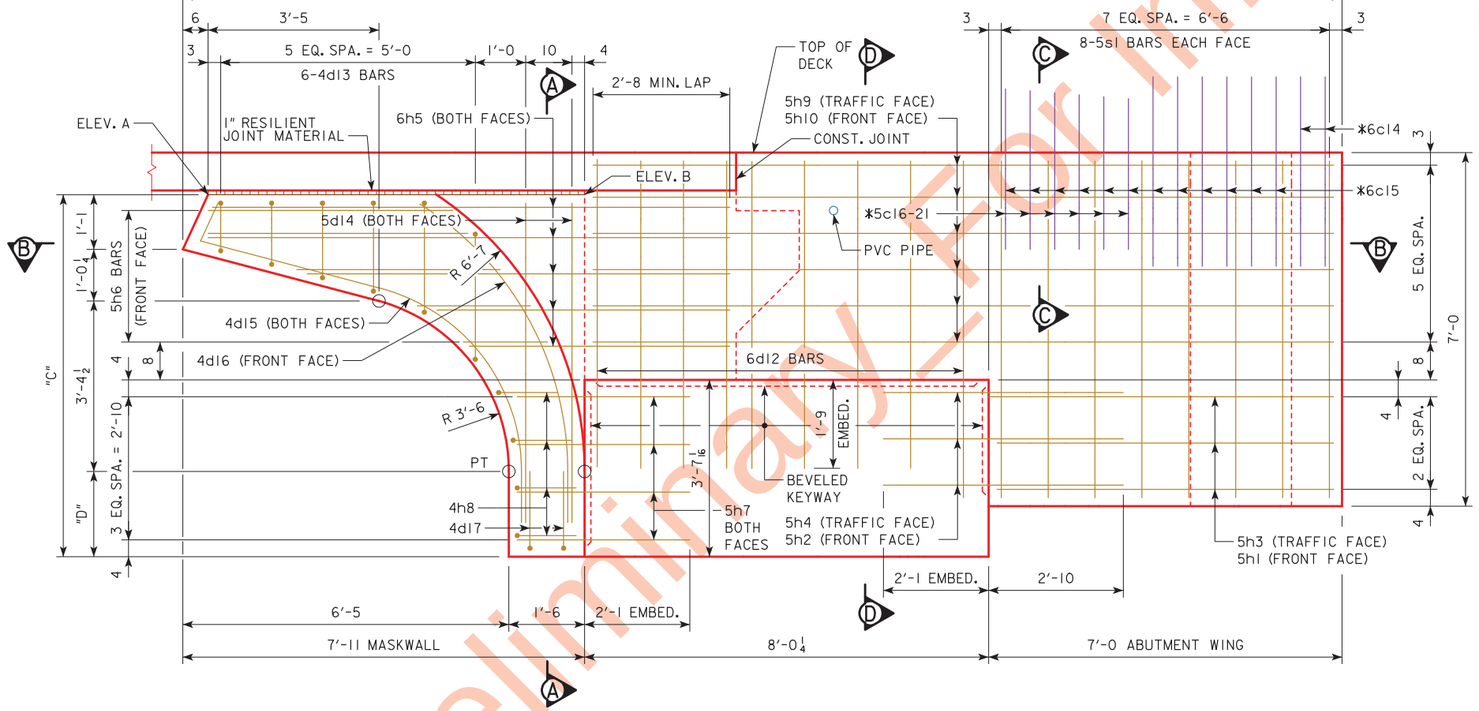
(BARRIER RAIL NOT SHOWN)



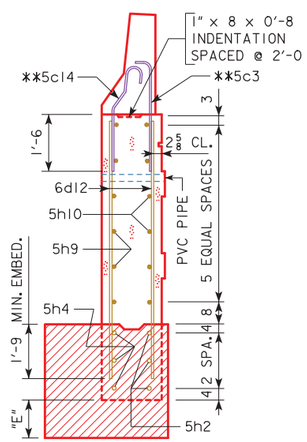

## SECTION C-C

* BARRIER RAIL END SECTION BARS TO BE PLACED WITH ABUTMENT WING.

SEE BARRIER RAIL END SECTION SHEET IN THESE PLANS FOR DETAILS OF REINFORCING BARS 6c14, 6c15, 5c16-21, 6d2 & 4t1.




## ABUTMENT WINGWALL & MASKWALL ELEVATION




## SECTION D-D

FIELD BEND 5h4 BAR AS NECESSARY TO AVOID PILE IN ABUTMENT WING.

**NOTE: SEE DESIGN SHEETS 31 THRU 34 FOR DETAILS OF BARRIER RAIL. REINFORCING BARS 5c3 AND 5c14 ARE INCLUDED IN SUBSTRUCTURE QUANTITIES.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## ABUTMENT DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 14 OF 39 FILE NO. 30864 DESIGN NO. 121





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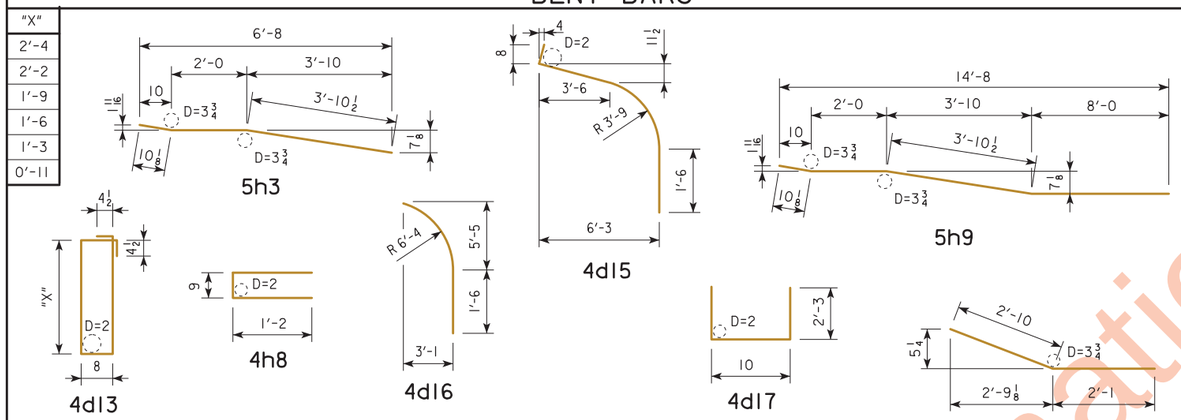
BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334

## BENT BARS

| "X" |
|---|
| 2'-4 |
| 2'-2 |
| 1'-9 |
| 1'-6 |
| 1'-3 |
| 0'-11 |




## BENT BAR DETAILS

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

## REINFORCING BAR LIST-ONE WINGWALL & MASKWALL

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| 6d12 | WINGWALL, VERTICAL, BOTH FACES | | 18 | 6'-4 | 171 |
| 4d13 | MASKWALL, VERTICAL, HOOPS | | 6 | VARIES | 52 |
| 5d14 | MASKWALL, VERTICAL | | 4 | 7'-0 | 29 |
| 4d15 | MASKWALL, VERTICAL, CURVED, BOTH FACES | | 2 | 10'-10 | 14 |
| 4d16 | MASKWALL, VERTICAL, CURVED, FRONT FACE | | 1 | 8'-0 | 5 |
| 4d17 | MASKWALL, VERTICAL | | 2 | 5'-4 | 7 |
| | | | | | |
| 5h1 | WINGWALL, HORIZONTAL, FRONT FACE | | 3 | 6'-8 | 21 |
| 5h2 | ABUT. TO WING ANCHOR | | 3 | 4'-11 | 15 |
| 5h3 | WINGWALL, HORIZONTAL, TRAFFIC FACE | | 3 | 6'-9 | 21 |
| 5h4 | ABUT. TO WING ANCHOR | | 3 | 4'-11 | 15 |
| 6h5 | MASKWALL, HORIZONTAL, BOTH FACES | | 10 | VARIES | 122 |
| 5h6 | MASKWALL, HORIZONTAL, FRONT FACE | | 5 | VARIES | 18 |
| 5h7 | ABUT. TO MASKWALL ANCHOR | | 8 | 3'-4 | 28 |
| 4h8 | MASKWALL, HORIZONTAL | | 4 | 3'-1 | 8 |
| 5h9 | WINGWALL, HORIZONTAL, TRAFFIC FACE | | 6 | 14'-9 | 92 |
| 5h10 | WINGWALL, HORIZONTAL, FRONT FACE | | 6 | 14'-8 | 92 |
| | | | | | |
| 5s1 | WINGWALL, VERTICAL, BOTH FACES | | 16 | 6'-7 | 110 |
| | | | | | |
| | REINFORCING STEEL, EPOXY COATED - TOTAL (LBS.) | | | | 820 |

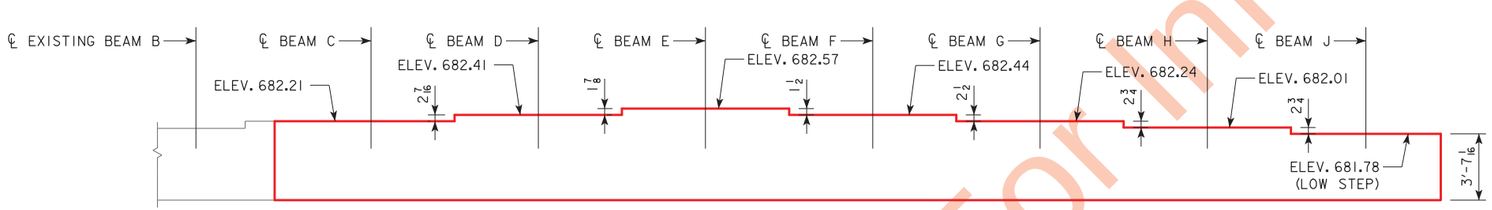
## VARIABLE BAR LENGTHS

| BAR | NUMBER | TOTAL LENGTH | | | | | |
|---|---|---|---|---|---|---|---|
| 6h5 | 2 EACH LENGTH | 5'-6 | 6'-9 | 8'-0 | 10'-0 | 10'-6 | --- |
| 5h6 | 1 EACH LENGTH | 1'-6 | 2'-0 | 3'-5 | 5'-6 | 4'-6 | --- |
| 4d13 | 1 EACH LENGTH | 6'-9 | 6'-5 | 5'-7 | 5'-1 | 4'-7 | 3'-11 |

## CONCRETE PLACEMENT SUMMARY

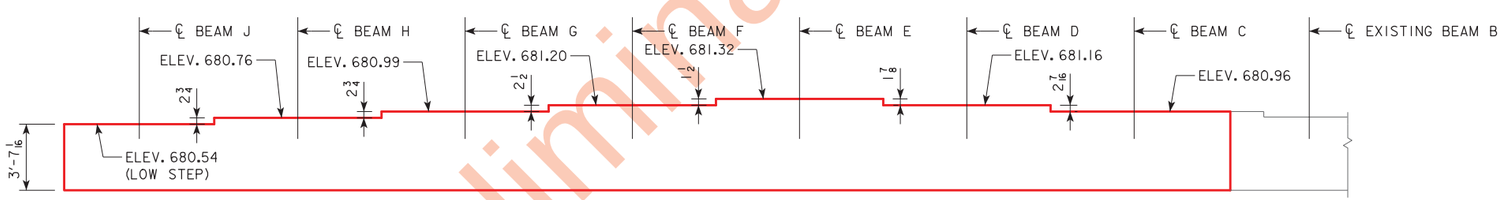
| CONCRETE | TOTAL |
|---|---|
| ONE ABUTMENT WINGWALL & MASKWALL (WEST ABUTMENT) | 5.2 |
| ONE ABUTMENT WINGWALL & MASKWALL (EAST ABUTMENT) | 5.2 |
| TWO ABUTMENT WINGWALLS & MASKWALLS - TOTAL (CU. YDS.) | 10.4 |

CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.




## WEST ABUTMENT STEP DIAGRAM

( REAR ELEVATION )




## EAST ABUTMENT STEP DIAGRAM

( REAR ELEVATION )

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## ABUTMENT DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 15 OF 39 FILE NO. 30864 DESIGN NO. 121



DESIGN TEAM HNTB | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 101

# ABUTMENT CONCRETE TEXTURE NOTES

THIS WORK CONSISTS OF APPLYING TEXTURED FINISHES ON ALL DESIGNATED CONCRETE SURFACES OF THE ABUTMENTS SHOWN IN THIS PLAN. SEE 'GENERAL NOTES FOR TEXTURED CONCRETE FORM LINERS' ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING THE USE OF FORM LINERS. THE TEXTURED CONCRETE MOCKUP PANEL MUST BE REVIEWED AND APPROVED BY THE ENGINEER BEFORE BEGINNING PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE.

THE FORM LINER USED TO PRODUCE TEXTURE 'A' AS SHOWN IN THE PLAN DETAILS SHALL PRODUCE A TEXTURED EFFECT OF ALTERNATING 10-INCH AND 4-INCH TALL COURSES OF CUT STONE IN RANDOM LENGTHS WITH SIMULATED MORTAR JOINTS. DEPTH OF TEXTURE SHALL BE 0.3125 INCH.

OBTAIN TEXTURE 'A' FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURERS:

1. CUSTOM ROCK INTERNATIONAL (PATTERN NO. 12008)
2. FITZGERALD FORMLINERS (PATTERN NO. 17003)
3. SUBMIT ALL OTHER MANUFACTURERS AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORM LINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, OFFICE OF BRIDGES AND STRUCTURES, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORM LINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

THE FORM LINER USED TO PRODUCE TEXTURE 'B' AS SHOWN IN THE PLAN DETAILS SHALL PRODUCE A TEXTURED EFFECT OF A REALISTIC FRACTURED ROCK FACE WITH NO SIMULATED MASONRY JOINTS. DEPTH OF TEXTURE SHALL BE 1 INCH.

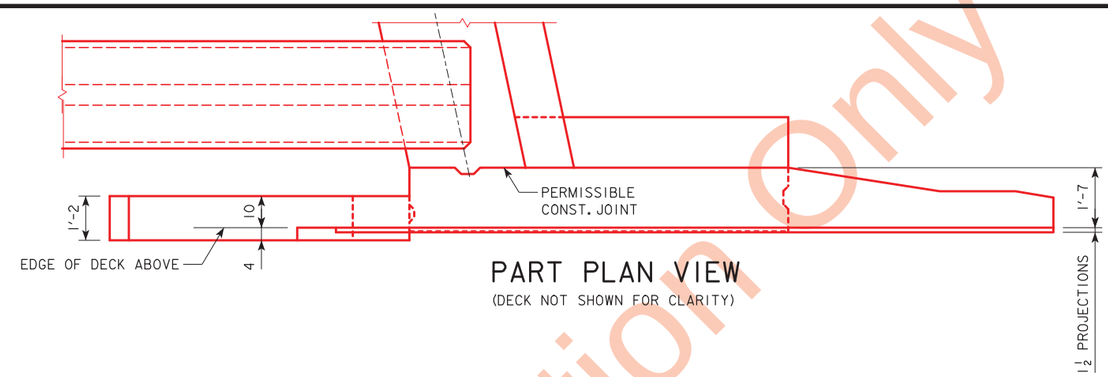
OBTAIN TEXTURE 'B' FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURERS:

1. CUSTOM ROCK INTERNATIONAL (PATTERN NO. T325)
2. FITZGERALD FORMLINERS (PATTERN NO. 17030)
3. SUBMIT ALL OTHER MANUFACTURERS AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORM LINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, OFFICE OF BRIDGES AND STRUCTURES, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORM LINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

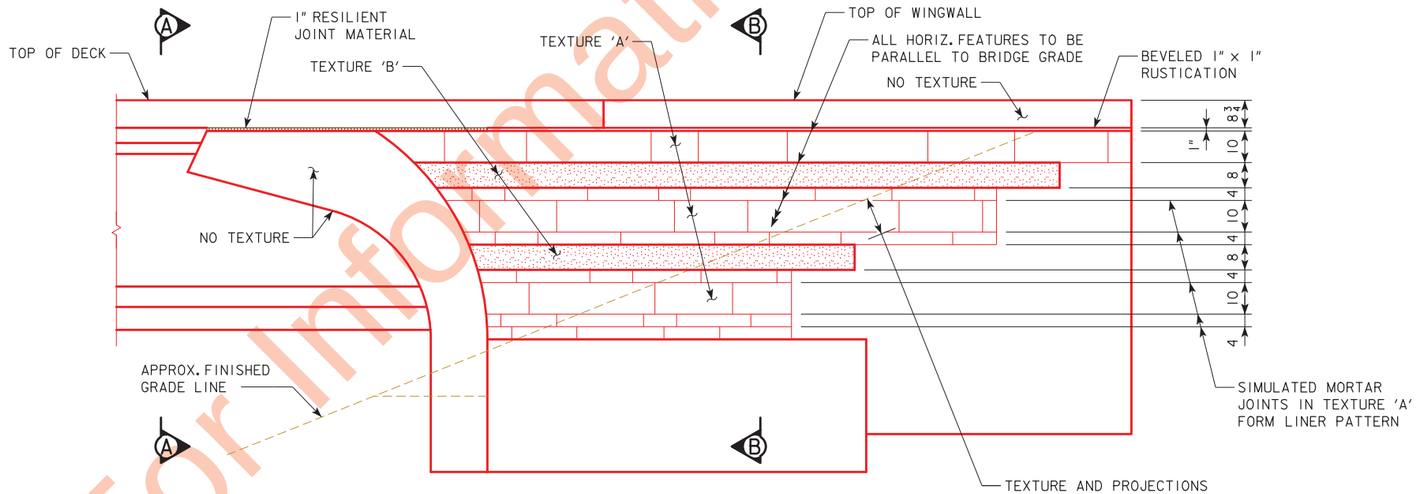
PRIOR TO BEGINNING ANY PRODUCTION CONCRETE WORK THAT INCLUDES TEXTURE, SUBMIT MANUFACTURER'S CUT SHEETS FOR FORM LINERS.

THE ABUTMENT SURFACES AS DESIGNATED IN THE PLANS SHALL ALSO RECEIVE CONCRETE RUSTICATION. SEE 'GENERAL NOTES FOR CONCRETE RUSTICATION' ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING APPROVED TECHNIQUES AND METHODS OF CONCRETE RUSTICATION.

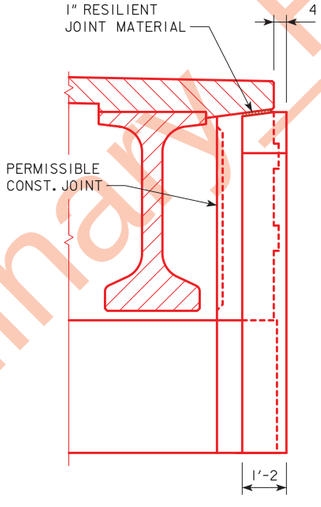
ALL COSTS ASSOCIATED WITH CONCRETE TEXTURES AND FORM LINERS AT THE ABUTMENTS SHALL BE INCLUDED IN THE BID ITEM, HIGH PERFORMANCE STRUCTURAL CONCRETE.



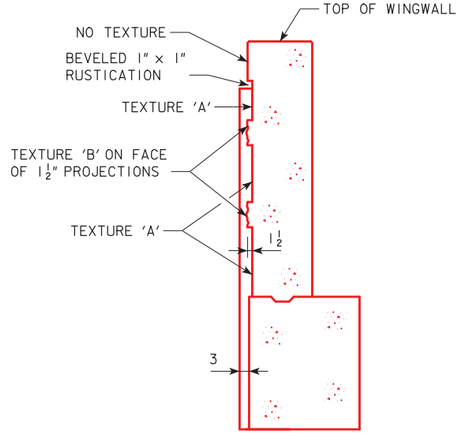

PART PLAN VIEW
(DECK NOT SHOWN FOR CLARITY)




ABUTMENT SIDE ELEVATION
(BARRIER RAIL NOT SHOWN)




PART SECTION A-A




SECTION B-B

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## ABUTMENT AESTHETIC DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 16 OF 39 — FILE NO. 30864 — DESIGN NO. 121





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# CONCRETE PAINTING NOTES

THE TEXTURED SURFACES OF THE ABUTMENT WINGS AND MASK WALLS AND THE FASCIA BEAM SURFACES AS NOTED AND SHOWN IN THE PLANS SHALL BE FINISHED WITH MINERAL SILICATE PAINT CHOSEN FROM THE FOLLOWING LISTED PRODUCTS:

1. KEIM MINERAL COATINGS OF AMERICA: CONCRETAL MINERAL COATING
2. EDISON COATINGS, INC.: EVERKOTE 300 MINERAL COATING
3. CATHEDRAL STONE PRODUCTS: MASONRE MINERAL COATING
4. BEECK MINERAL PAINTS: BEECKO-SOL OR RENOSIL COATING
5. APPROVED EQUAL

PRIOR TO BEGINNING PRODUCTION PAINTING, DEMONSTRATE SURFACE PREPARATION METHODS AND PAINT APPLICATION ON THE TEXTURED CONCRETE MOCKUP PANEL LOCATED AT THE BRIDGE SITE. NO PRODUCTION CONCRETE PAINTING MAY BEGIN UNTIL FINAL APPROVAL OF PAINTING RESULTS ON THE MOCKUP. APPROVED MOCKUP SHALL REMAIN IN PLACE NEAR THE BRIDGE FOR COMPARISON TO PRODUCTION PAINTING UNTIL WORK IS COMPLETED.

VEGETATION IN THE GRADE AREAS IMMEDIATELY ADJACENT TO THE ABUTMENT WINGS AND PIER COLUMNS SHALL BE THOROUGHLY MOWED PRIOR TO SURFACE PREPARATION AND COATING APPLICATION. ALL COSTS FOR MOWING SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM, "STRUCTURAL CONCRETE COATING".

PRIOR TO CONCRETE COATING APPLICATION, PREPARE SURFACES IN ACCORDANCE WITH THE "DEVELOPMENTAL SPECIFICATIONS FOR CONCRETE SURFACE PREPARATION AND TESTING PRIOR TO COATING APPLICATION". APPLY MINERAL SILICATE PAINT IN ACCORDANCE WITH THE "DEVELOPMENTAL SPECIFICATIONS FOR STRUCTURAL CONCRETE COATING".

THERE ARE TWO COLOR FINISH TYPES TO BE USED ON THE BRIDGE. "COLOR NO. 1" SHALL BE USED ONLY ON THE COURSED STONE TEXTURE 'A' SURFACES, AND "COLOR NO. 2" SHALL BE USED ON THE PROJECTED, FRACTURED FACE TEXTURE 'B' SURFACES AND ON THE FASCIA BEAMS. SEE DETAILS ON THIS DESIGN SHEET FOR SPECIFIC COLOR LOCATIONS AND LIMITS. "COLOR NO. 1" SHALL BE A FULL RANGE OF NATURAL LIMESTONE COLORS INCLUDING SUBTLE COLOR VARIATIONS, MINERAL OXIDATION AND STAINING. THE FINAL COLORATION OF THE CONCRETE SURFACE SHALL ACCURATELY SIMULATE THE APPEARANCE OF REAL STONE INCLUDING THE MULTIPLE COLOR SHADES THAT ARE APPARENT IN REAL CUT LIMESTONE. USE AT LEAST THREE COLOR SHADES TO SIMULATE THE APPEARANCE OF STONE. BEGIN WITH A BASE COLOR APPLICATION OF LIGHT OR MEDIUM BUFF. APPLY A SLIGHTLY LIGHTER OR DARKER BASE COLOR TO RANDOM STONES PRIOR TO ADDING THE COLOR VARIATIONS. "COLOR NO. 2" SHALL BE A SINGLE DARK GREY-BROWN COLOR TO MATCH SAE AMS-STD-595 COLOR NUMBER 30099. SUBMIT PRODUCT SPECIFICATION SHEETS AND COLOR SAMPLES AS DESCRIBED IN THE DEVELOPMENTAL SPECIFICATIONS.

COATED SURFACE AREA TABULATION (SY):

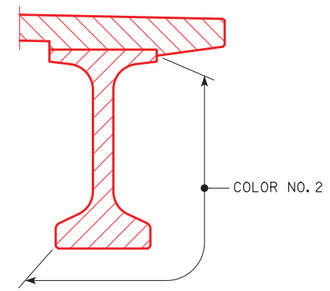
COLOR NO. 1
ABUTMENT WINGS AND MASK WALLS: 7.8 SY

TOTAL COLOR NO. 1: 7.8 SY

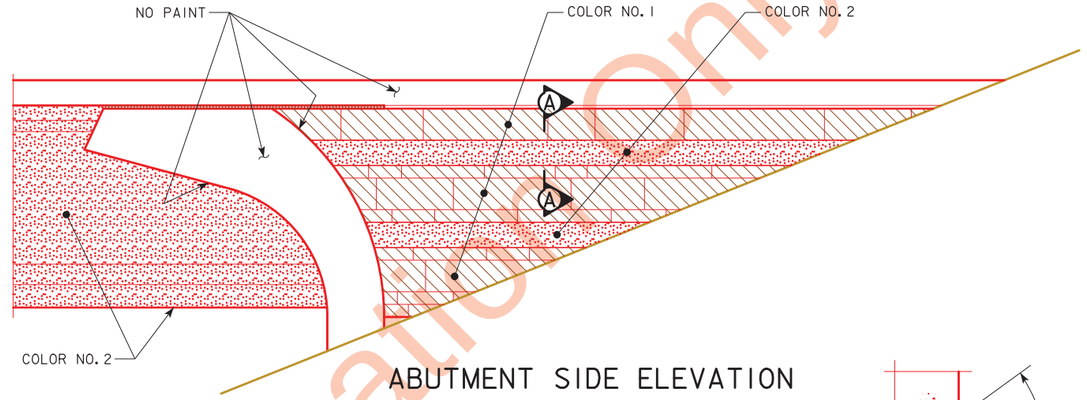
COLOR NO. 2
ABUTMENT WINGS AND MASK WALLS: 3.8 SY
FASCIA BEAMS: 207.5 SY

TOTAL COLOR NO. 2: 211.3 SY

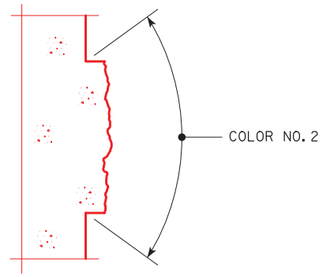
WHEN ALL PRODUCTION CONCRETE PAINTING IS COMPLETE, THE CONCRETE MOCKUP PANEL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.
ALL COSTS ASSOCIATED WITH SURFACE PREPARATION AND APPLICATION OF MINERAL SILICATE PAINT SHALL BE INCLUDED IN THE BID ITEM, "STRUCTURAL CONCRETE COATING".



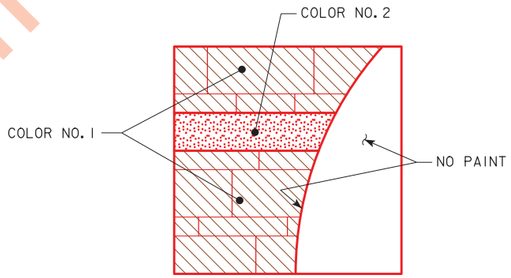

PART SECTION
AT FASCIA BEAM




ABUTMENT SIDE ELEVATION




PART SECTION A-A




MOCKUP PANEL PAINTING DETAILS
(FOR MOCKUP PANEL DETAILS SEE DES. SHT. 4)

## CONCRETE PAINT QUANTITY

| LOCATION | UNIT | QUANTITY |
|---|---|---|
| ABUTMENTS (2 CORNERS) | SY | 11.6 |
| FASCIA BEAMS (1) | SY | 207.5 |
| | | |
| TOTAL | SY | 219.1 |

DESIGN FOR 10° SKEW (RA)

249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

CONCRETE PAINTING DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 17 OF 39 FILE NO. 30864 DESIGN NO. 121





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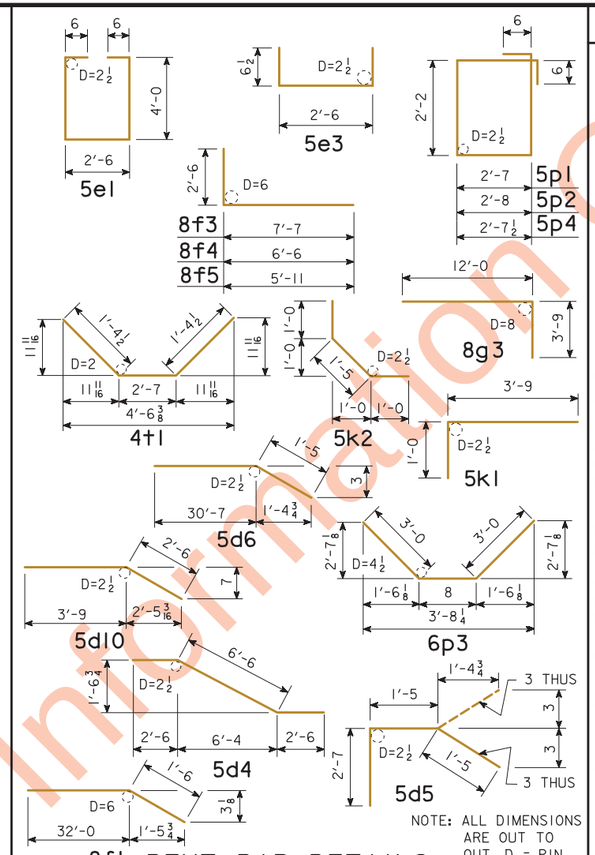
REVISED 07-2015 - CHANGED CONCRETE PLACEMENT NOTE TO ACCOUNT FOR THE POSSIBLE ADDITION OF A RETARDING ADMIXTURE TO THE CONCRETE.
ENGLISHINTEGRALBRIDGES.DGN 4520-BTCD - THIS SHEET ISSUED 02-08




## BENT BAR DETAILS

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

## CONCRETE PLACEMENT QUANTITIES

| LOCATION | QUANTITY |
|---|---|
| SECTION 1, DECK & WEST ABUT. DIAPH. | 113.8 |
| SECTION 2, DECK | 132.3 |
| SECTION 3, DECK & EAST ABUT. DIAPH. | 113.6 |
| SECTION 4, DECK & PIER 1 DIAPH. | 69.5 |
| SECTION 5, DECK & PIER 2 DIAPH. | 69.5 |
| SECTION 6, CLOSURE POUR | 21.3 |
| TOTAL (CU. YDS.) | 520.0 |

NOTE:
CONCRETE AND REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

## REINFORCING BAR LIST

### EPOXY COATED REINFORCING

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| 6a1 | DECK TRANSV. TOP | | 275 | 35'-2 | 14,526 |
| 6a2 | DECK TRANSV. TOP | | 275 | 27'-11 | 11,531 |
| 6a3 | DECK TRANSV. TOP END | | 24 | VARIES | 1,164 |
| 6a4 | DECK TRANSV. BOTT. | | 246 | 32'-4 | 13,404 |
| 6a5 | DECK TRANSV. BOTT. | | 276 | 30'-9 | 12,747 |
| 6a6 | DECK TRANSV. BOTT. END | | 22 | VARIES | 1,066 |
| 5a7 | DECK TRANSV. AT DECK DRAINS | | 20 | 3'-0 | 63 |
| 5b1 | DECK LONGIT. TOP & BOTT. | | 805 | 37'-8 | 31,626 |
| 8b2 | DECK LONGIT. TOP & BOTT. AT PIERS | | 256 | 29'-0 | 19,822 |
| 5d2 | PIER & ABUT. DIAPH. LONGIT. | | 108 | 8'-0 | 900 |
| 5d3 | PIER & ABUT. DIAPH. LONGIT. | | 36 | 6'-1 | 228 |
| 5d4 | PIER DIAPH. LONGIT. | | 12 | 11'-6 | 144 |
| 5d5 | ABUT. DIAPH. ENDS | | 6 | 5'-5 | 34 |
| 5d6 | ABUT. DIAPH. LONGIT. B.F. | | 8 | 32'-0 | 268 |
| 5d7 | PAVING NOTCH LONGIT. | | 8 | 32'-4 | 270 |
| 5d8 | PIER & ABUT. DIAPH. LONGIT. | | 18 | 4'-6 | 84 |
| 5d9 | PIER & ABUT. DIAPH. LONGIT. | | 6 | 3'-6 | 22 |
| 5d10 | PIER DIAPH. LONGIT. | | 2 | 6'-3 | 14 |
| 5d11 | ABUT. DIAPH. LONGIT. B.F. | | 8 | 32'-4 | 270 |
| 5e1 | PIER. DIAPH. HOOPS | | 80 | 11'-6 | 960 |
| 5e3 | PIER DIAPH. TIES | | 80 | 3'-7 | 298 |
| 8f1 | ABUT. FOOTING LONGIT. BOTH. F. | | 18 | 33'-6 | 1,610 |
| 8f2 | ABUT. FOOTING LONGIT. BOTH F. | | 18 | 33'-6 | 1,610 |
| 8f3 | ABUT. EXTENSION LONGIT. | | 18 | 10'-1 | 216 |
| 8f4 | ABUT. EXTENSION LONGIT. | | 4 | 9'-0 | 96 |
| 8f5 | ABUT. EXTENSION LONGIT. | | 4 | 8'-6 | 91 |
| 8g1 | ABUT. VERT. BOTH F. | | 189 | 7'-11 | 3,995 |
| 8g3 | ABUT. DIAPH. VERT. B.F. | | 108 | 15'-9 | 4,542 |
| 6j1 | TOP OF DECK TRANSV. (AT RAIL) | | 287 | 6'-3 | 2,694 |
| 5k1 | PAVING NOTCH | | 110 | 4'-9 | 544 |
| 5k2 | PAVING NOTCH | | 110 | 3'-5 | 392 |
| 5p1 | ABUT. HOOPS | | 212 | 10'-6 | 2,322 |
| 5p2 | ABUT. EXTENSION HOOPS | | 12 | 10'-8 | 134 |
| 6p3 | ABUT. BOTT. AT PILES | | 32 | 6'-8 | 320 |
| 5p4 | ABUT. HOOPS AT ENDS | | 4 | 10'-7 | 44 |
| 4t1 | UNDER BEAMS AT ABUTMENTS | | 14 | 5'-4 | 50 |
| | REINFORCING STEEL, EPOXY COATED - TOTAL (LBS.) | | | | 128,101 |

### NON-COATED

| | | | | | |
|---|---|---|---|---|---|
| #2 | PILE SPIRAL | | 18 | 38'-6 | 116 |
| | SPIRAL SPACERS, $L\frac{7}{8} \times \frac{7}{8} \times \frac{1}{8} \times 0.70$ | | 54 | 1'-10 | 70 |
| | REINFORCING STEEL - TOTAL (LBS.) | | | | 186 |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## DECK, ABUTMENT & DIAPHRAGM QUANTITIES

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

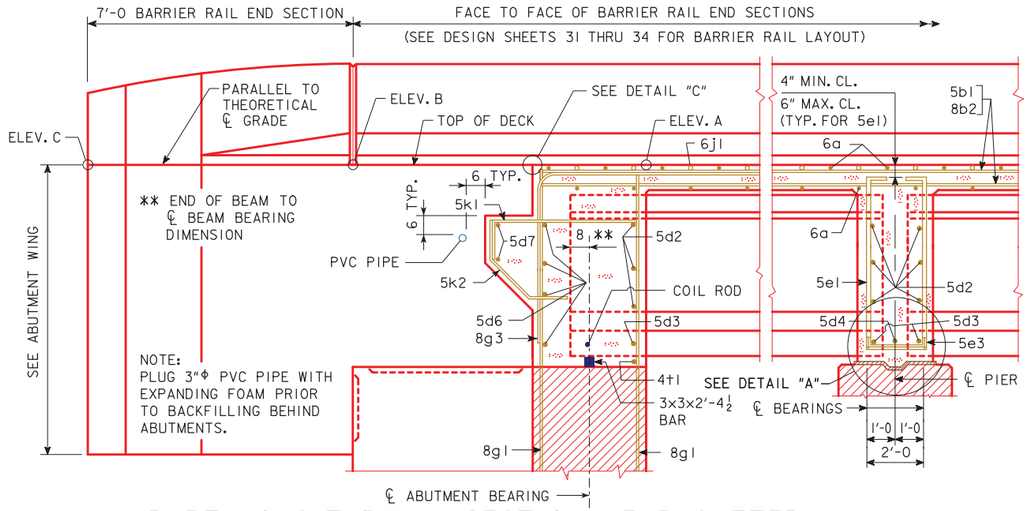
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 18 OF 39 — FILE NO. 30864 — DESIGN NO. 121

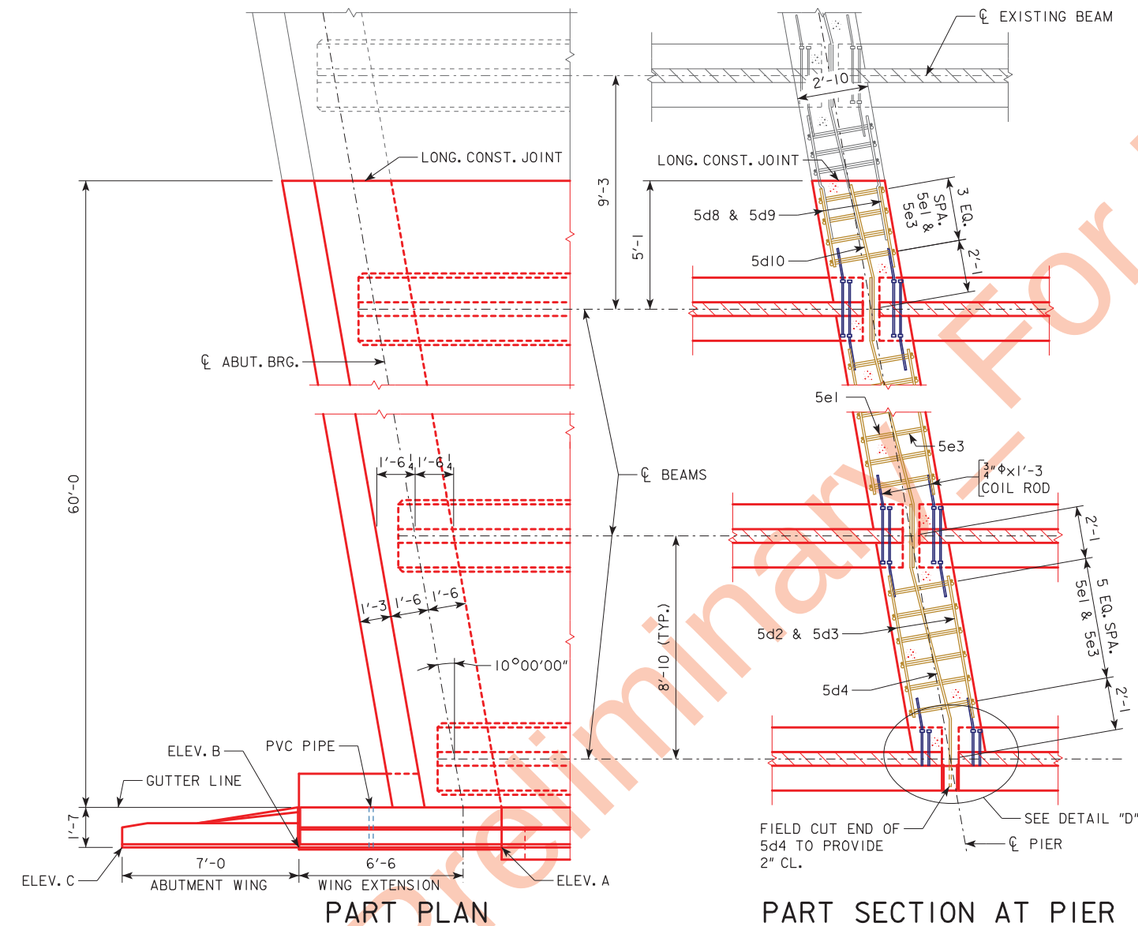
BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334

| TABLE OF WINGWALL ELEVATIONS | | | |
|---|---|---|---|
| LOCATION | ELEV. A | ELEV. B | ELEV. C |
| S.W. CORNER | 686.58 | 686.62 | 686.65 |
| S.E. CORNER | 685.35 | 685.31 | 685.27 |



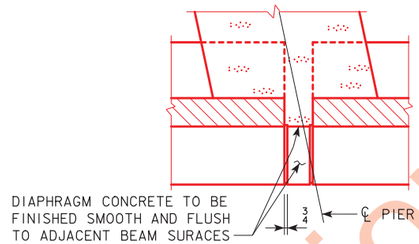

## PART LONGITUDINAL SECTION NEAR GUTTER

(FOR DETAILS OF INTERMEDIATE DIAPHRAGM SEE DESIGN SHEET 27)



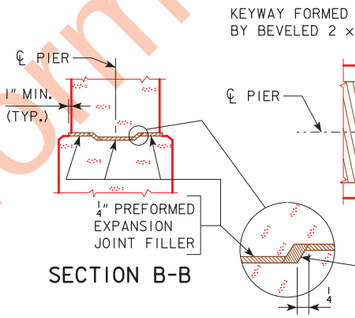

## PART PLAN

## PART SECTION AT PIER

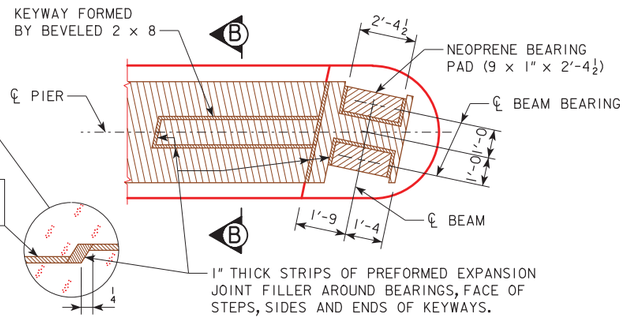



## DETAIL "D"

NOTE: THE EXTERIOR SURFACES OF THE EXTERIOR BEAM ENDS OVER THE PIER SHALL NOT BE ROUGHENED.

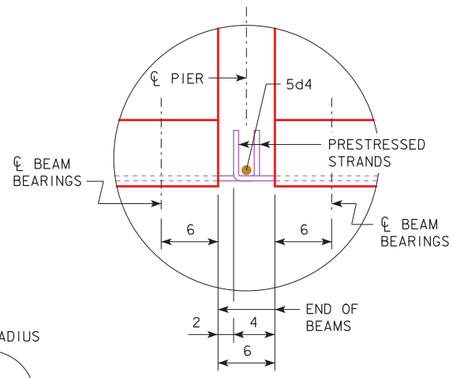



## SECTION B-B

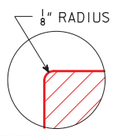



## PART PLAN

## TOP OF PIER DETAILS




## DETAIL "A"




## DETAIL "C"

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## ABUTMENT & PIER DIAPHRAGM DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 19 OF 39 FILE NO. 30864 DESIGN NO. 121

REVISED 01-12 - ADDED FIELD BEND 5h4 BAR TO AVOID PILE IN ABUTMENT WING NOTE.
ENGLISHBTINTEGRALBRIDGES.DGN - 4512-BTCD - THIS SHEET ISSUED 02-08.

| DESIGN TEAM HNTB | "BTC" OR "BTD" BULB TEE BEAMS - PART PLAN & LONGIT. SECTION - (R.A.) 7°31'-15° SKEW | MODIFIED STANDARD SHEET 4512-BTCD | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 105 |
|---|---|---|---|---|---|

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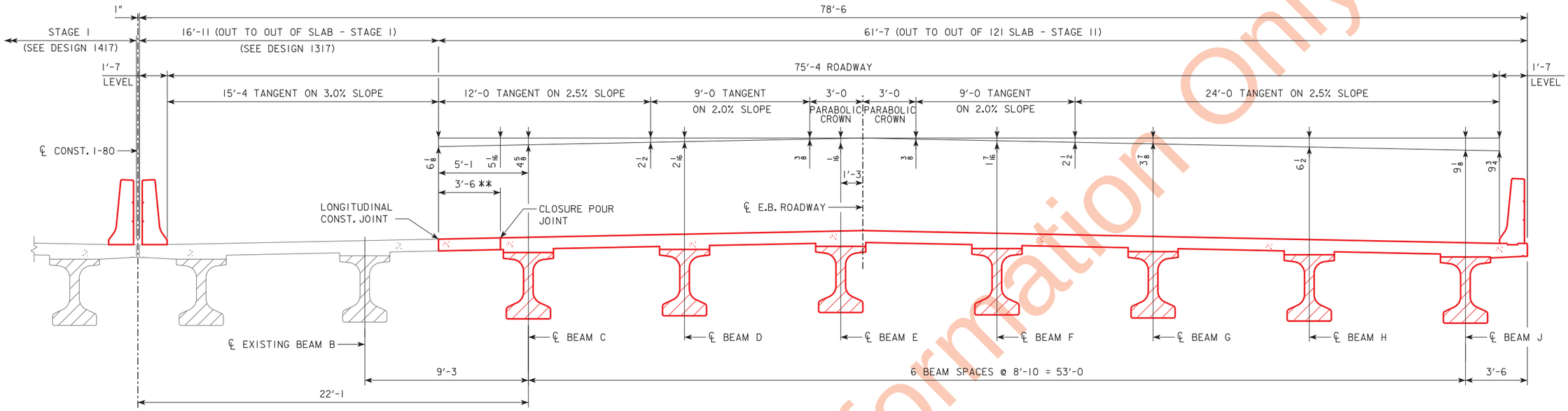



## TYPICAL SECTION

** CLOSURE POUR (DECK ONLY)

DECK AREA = 38.90 SQ.FT.
CLOSURE POUR AREA = 2.33 SQ.FT.
DECK AREA DOES NOT INCLUDE THE HAUNCH.

NOTE: FOR DETAILS OF INTERMEDIATE DIAPHRAGMS SEE DESIGN SHEET 27.

## SUPERSTRUCTURE NOTES:

THE BRIDGE DECK AS SHOWN INCLUDES ½" INTEGRAL WEARING SURFACE.

THE PIER AND ABUTMENT DIAPHRAGM CONCRETE IS TO BE PLACED MONOLITHICALLY WITH THE BRIDGE DECK.

COST OF ALL PREFORMED EXPANSION JOINT FILLER MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "HIGH PERFORMANCE STRUCTURAL CONCRETE".

ALL BEAMS ARE TO BE SET VERTICAL.

FORMS FOR THE DECK AND BARRIER RAIL ARE TO BE SUPPORTED BY THE PRESTRESSED CONCRETE BEAMS.

CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.

ALL DECK AND DIAPHRAGM REINFORCING IS TO BE WIRED IN PLACE AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS PLACED.

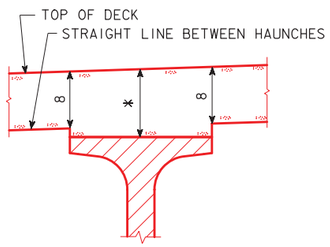
TOP TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 2½" CLEAR BELOW TOP OF DECK. BOTTOM TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 1" CLEAR ABOVE BOTTOM OF DECK. TOP AND BOTTOM REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL BAR CHAIRS SPACED AT NOT MORE THAN 3'-0 CENTERS LONGITUDINALLY AND TRANSVERSELY, OR BY CONTINUOUS ROWS OF BAR HIGH CHAIRS OR DECK BOLSTERS SPACED 4'-0 APART. I.M. 451.01 REQUIREMENTS SHALL APPLY FOR BAR CHAIRS, BAR HIGH CHAIRS, AND DECK BOLSTERS.

COST OF BEARING MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "PRETENSIONED PRESTRESSED CONCRETE BEAMS".

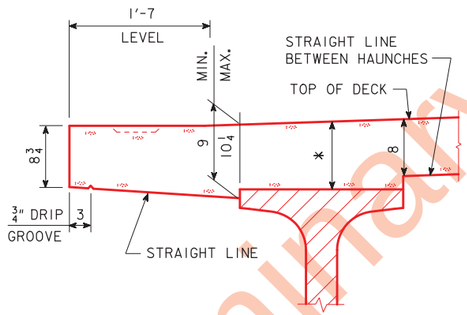
TRANSVERSE DECK REINFORCING MAY BE SPLICED WITH ONE LAP LOCATED AS FOLLOWS:

TOP BAR - LAP MIDWAY BETWEEN BEAMS (MIN. LAP = 1'-10).
BOTTOM BARS - LAP OVER BEAMS (MIN. LAP = 1'-10).

PAYMENT FOR REINFORCING BARS SHALL BE BASED ON NO SPLICES, AND NO ALLOWANCE SHALL BE MADE FOR THE ADDITIONAL LENGTH OF BAR REQUIRED FOR THE USE OF SPLICES.



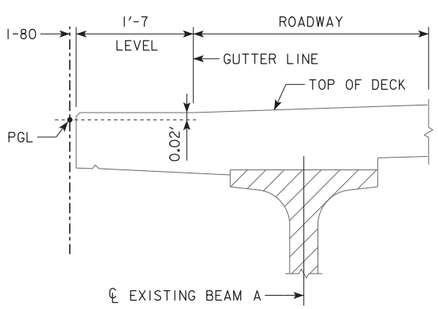

INTERIOR BEAMS




EXTERIOR BEAMS

## TYPICAL DECK AND HAUNCH DETAIL

* FOR DECK THICKNESS OVER BEAMS SEE HAUNCH AND CAMBER DETAILS ON DESIGN SHEET 24.




## PGL DETAIL

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BRIDGE DECK CROSS SECTION

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

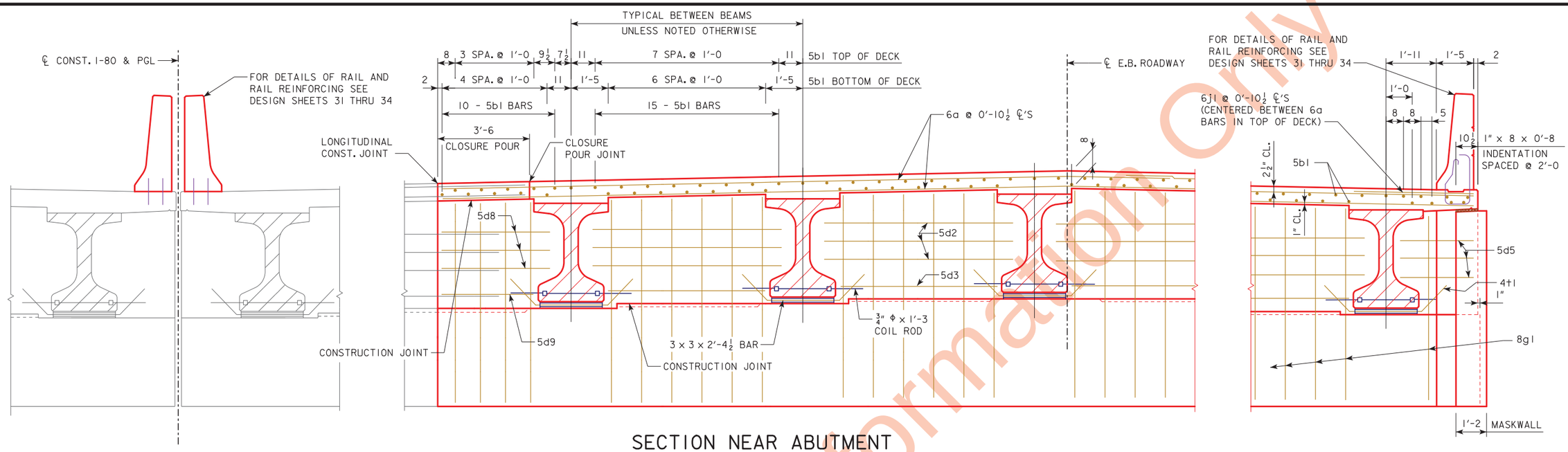
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 20 OF 39 FILE NO. 30864 DESIGN NO. 121

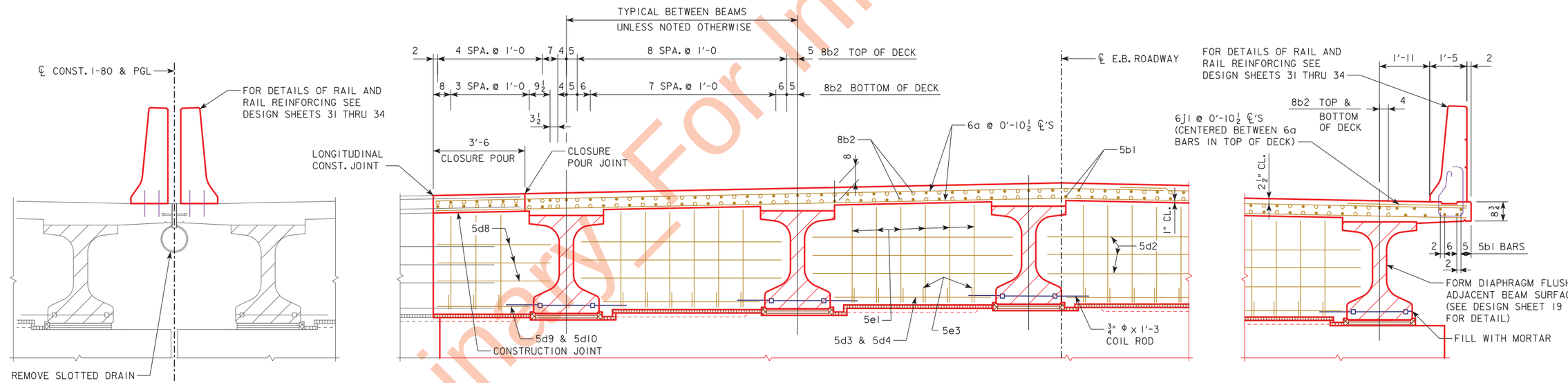


CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET FOR THE DRAIN WEIGHT. NOTE ABOUT CHOICE OF EPOXY OR STAINLESS STEEL DECK TO BARRIER RAIL BARS.
ENGLISHBTINTEGRALBRIDGES.DGN - 4384-BTC-6 - THIS SHEET ISSUED 02-08.

CORRECTION 04-14 - ADDED REFERRAL NOTE TO SUMMARY QUANTITIES SHEET FOR THE DRAIN WEIGHT. NOTE ABOUT CHOICE OF EPOXY OR STAINLESS STEEL DECK TO BARRIER RAIL BARS.
ENGLISHBTINTEGRALBRIDGES.DGN - 4384-BTC-6 - THIS SHEET ISSUED 02-08.




## SECTION NEAR ABUTMENT




## SECTION NEAR PIER

NOTE: FOR SUPERSTRUCTURE NOTES SEE DESIGN SHEET 20.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BRIDGE DECK CROSS SECTION

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

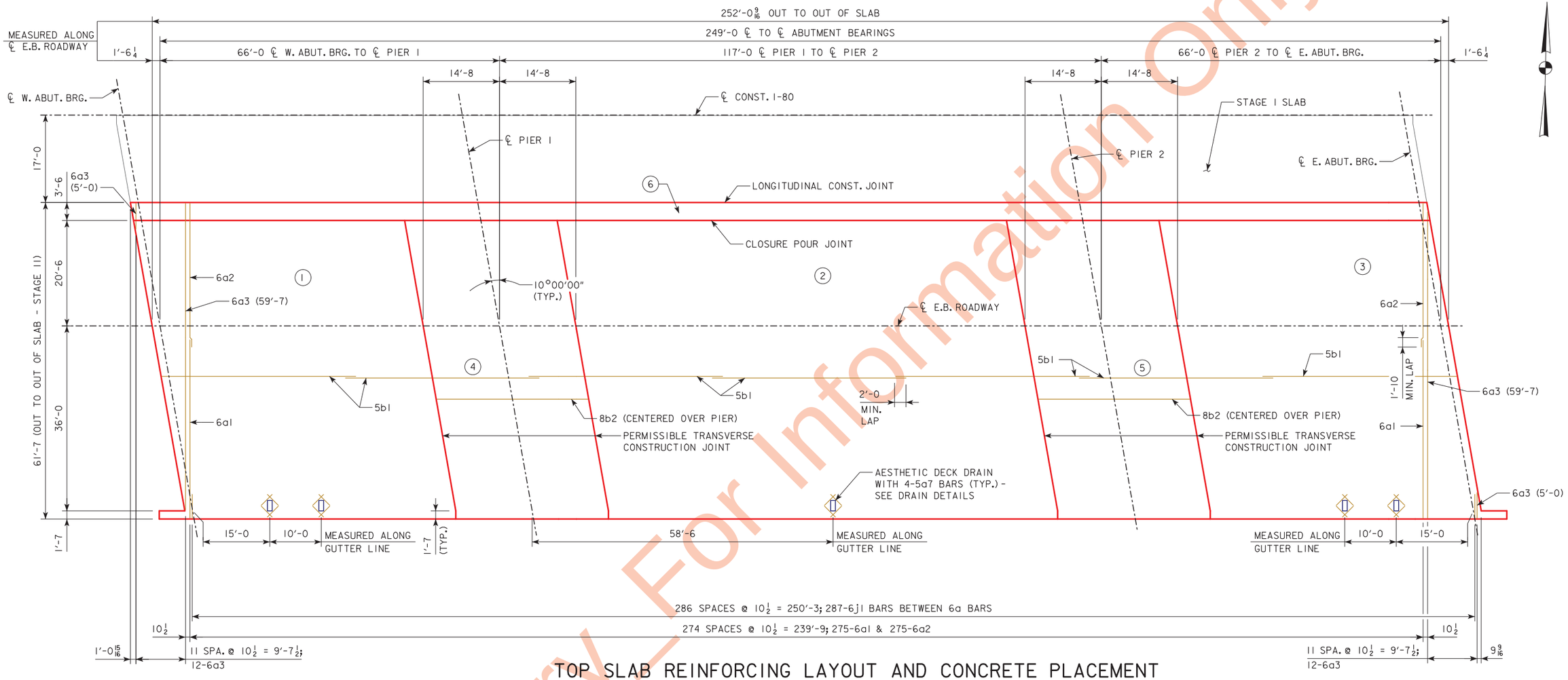
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 21 OF 39 FILE NO. 30864 DESIGN NO. 121

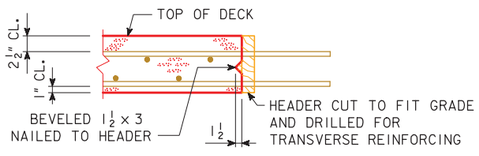


| DESIGN TEAM HNTB | 44' RDWY. PPCB (BTC BEAMS - INTEGRAL ABUT.) CROSS SECTION ( SPANS 30' - 120' ) | MODIFIED STANDARD SHEET 4384-BTC-6 | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 107 |
|---|---|---|---|---|---|



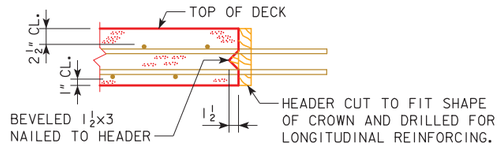

## TOP SLAB REINFORCING LAYOUT AND CONCRETE PLACEMENT

NOTES:
ALL LONGITUDINAL DIMENSIONS ARE ALONG ℄ E.B. ROADWAY UNLESS NOTED OTHERWISE.
ALL TRANSVERSE DIMENSIONS ARE NORMAL TO ℄ E.B. ROADWAY.
ALL TRANSVERSE BARS SHALL BE PLACED NORMAL TO ℄ E.B. ROADWAY.
FOR CONCRETE PLACEMENT QUANTITIES, SEE DESIGN SHEET 18.
LAP 6a BARS WITH STAGE I BARS.




### LONGITUDINAL SLAB CONSTRUCTION JOINT

NOTE: CONCRETE DECK SHALL BE PLACED IN SECTIONS AND SEQUENCES INDICATED. (AN APPROVED ALTERNATE PROCEDURE IS TO PLACE THE CONCRETE DECK IN ONE CONTINUOUS POUR BEGINNING AT ONE END OF THE BRIDGE.) ALTERNATE PROCEDURES FOR PLACING DECK CONCRETE MAY BE SUBMITTED FOR APPROVAL TOGETHER WITH A STATEMENT OF THE PROPOSED METHOD AND EVIDENCE THAT THE CONTRACTOR POSSESSES THE NECESSARY EQUIPMENT AND FACILITIES TO ACCOMPLISH THE REQUIRED RESULTS. THE BRIDGE ENGINEER SHALL REVIEW ANY ALTERNATE PROCEDURES. THE COST OF ANY ADDITIONAL ANALYSIS AND PLAN MODIFICATIONS SHALL BE PAID FOR BY THE CONTRACTOR. THE ENGINEER SHALL DETERMINE IF A RETARDING ADMIXTURE IS REQUIRED TO MAINTAIN PLASTICITY OF THE CONCRETE DECK DURING PLACEMENT.




### PERMISSIBLE TRANSVERSE DECK CONSTRUCTION JOINT

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## SUPERSTRUCTURE DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 22 OF 39 FILE NO. 30864 DESIGN NO. 121





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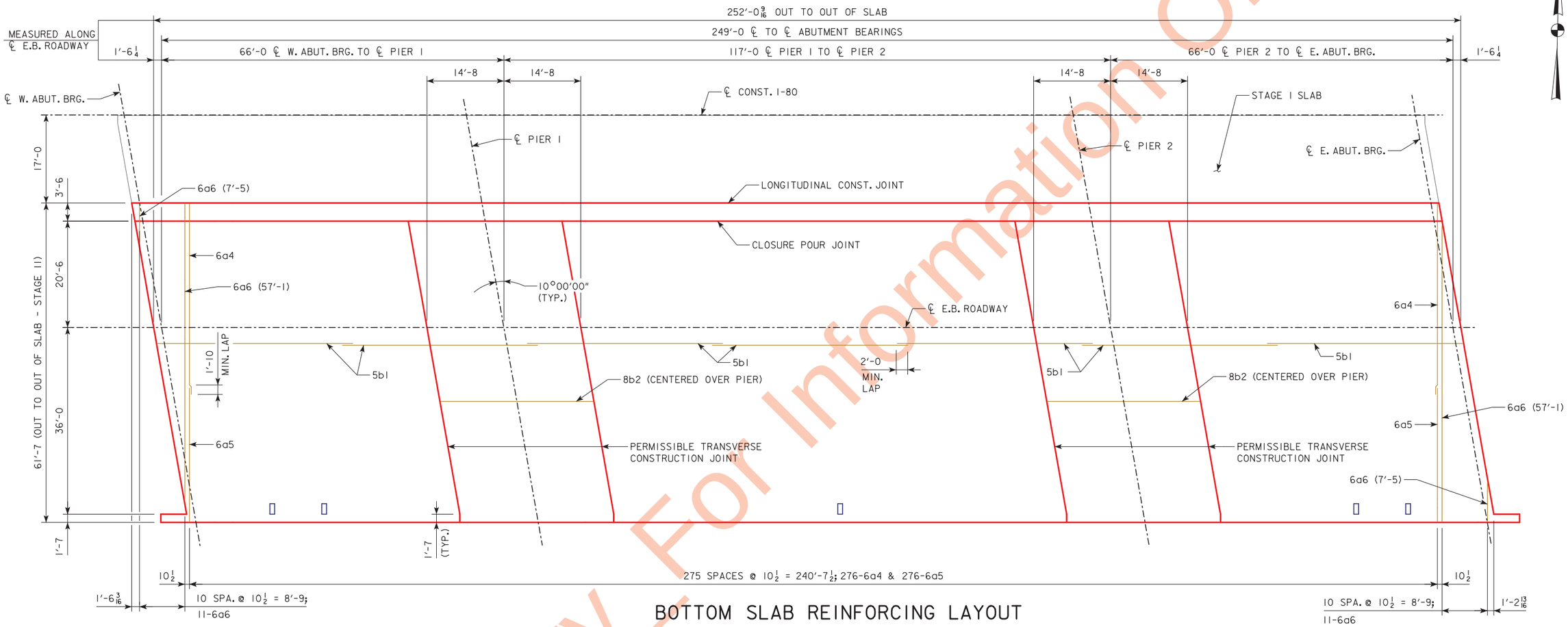


## BOTTOM SLAB REINFORCING LAYOUT

NOTES:
ALL LONGITUDINAL DIMENSIONS ARE ALONG ℄ E.B. ROADWAY.
ALL TRANSVERSE DIMENSIONS ARE NORMAL TO ℄ E.B. ROADWAY.
ALL TRANSVERSE BARS SHALL BE PLACED NORMAL TO ℄ E.B. ROADWAY.
LAP 6a BARS WITH STAGE I BARS.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## SUPERSTRUCTURE DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 23 OF 39 FILE NO. 30864 DESIGN NO. 121





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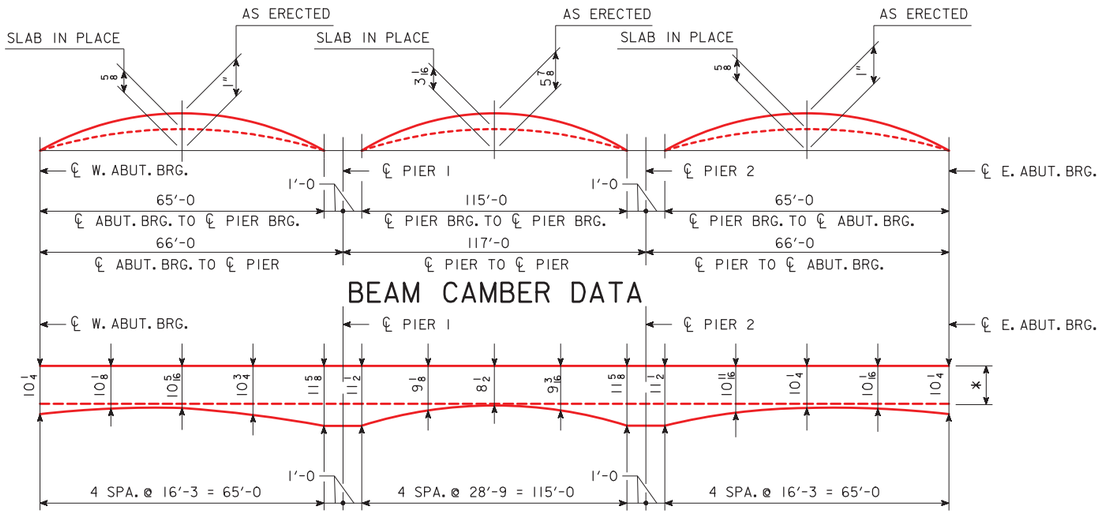
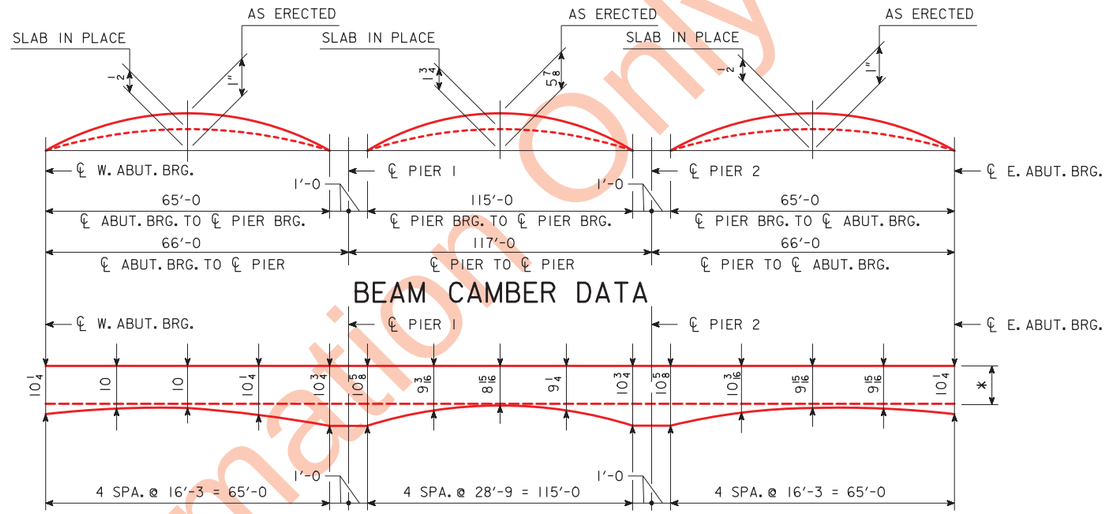
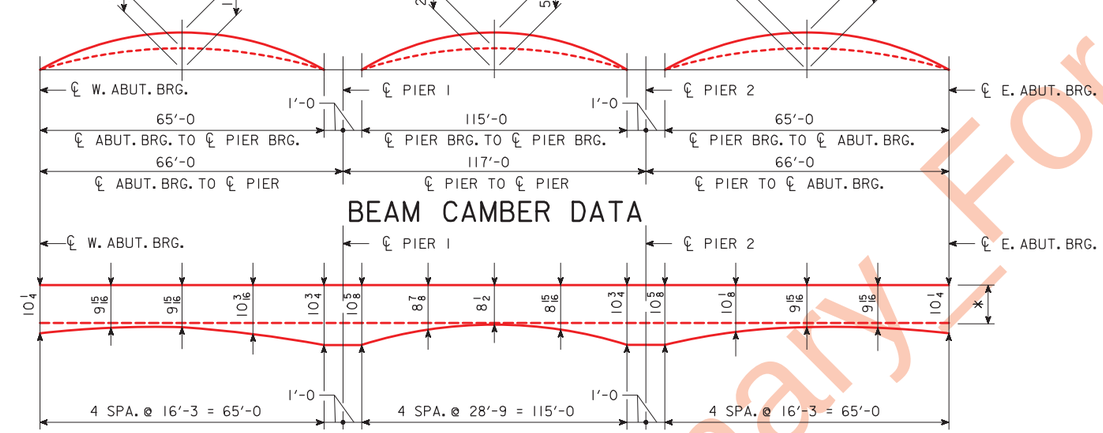



SLAB THICKNESS AT BEAMS (T)
FOR BEAM LINE C

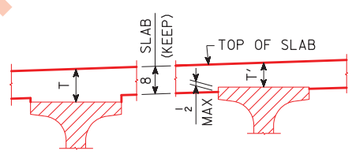
*NOMINAL SLAB THICKNESS AT BEAMS INCLUDES 8" SLAB + HAUNCH = T




SLAB THICKNESS AT BEAMS (T)
FOR BEAM LINE D THRU H




SLAB THICKNESS AT BEAMS (T)
FOR BEAM LINE J




SLAB THICKNESS DETAILS

NOTE: THE SLAB THICKNESS (T) AT BEAMS IS BASED ON THE ANTICIPATED BEAM CAMBER AND DEFLECTIONS. THESE VALUES ARE USED BY THE DESIGNER TO SET BEAM ELEVATIONS AND ESTIMATE CONCRETE QUANTITIES. REFER TO THE HAUNCH DATA DETAILS SHEET FOR ADDITIONAL INFORMATION TO AID THE CONTRACTOR IN SETTING THE FIELD HAUNCHES REQUIRED FOR CONSTRUCTION.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## SLAB THICKNESS DETAILS

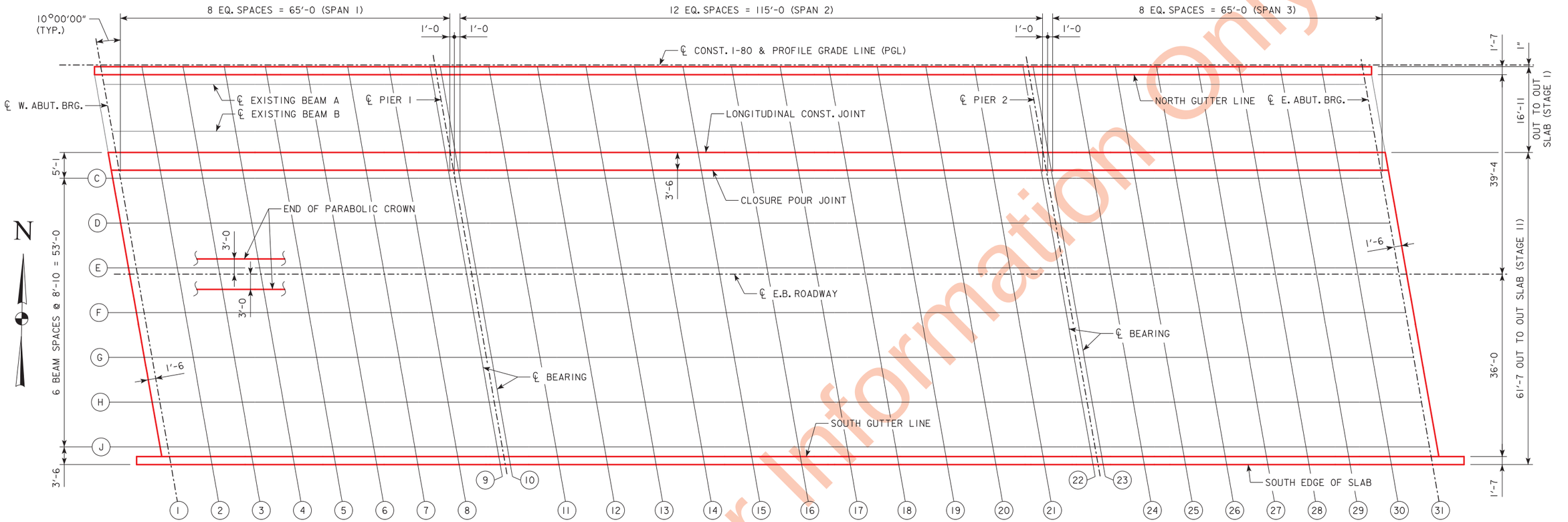
STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 24 OF 39 FILE NO. 30864 DESIGN NO. 121

BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334




## TOP OF SLAB ELEVATION PLAN

## TOP OF SLAB ELEVATIONS

| | ℄ W. ABUT. BEARING | | | | | | | | ℄ PIER 1 BEARINGS | | | | | | | | | | | | | ℄ PIER 2 BEARINGS | | | | | | | | ℄ E. ABUT. BEARING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| LONG. CONST. JOINT | 686.94 | 686.90 | 686.86 | 686.82 | 686.78 | 686.73 | 686.69 | 686.65 | 686.61 | 686.60 | 686.56 | 686.51 | 686.46 | 686.41 | 686.36 | 686.32 | 686.27 | 686.22 | 686.17 | 686.12 | 686.08 | 686.03 | 686.02 | 685.98 | 685.94 | 685.90 | 685.86 | 685.81 | 685.77 | 685.73 | 685.69 |
| CLOSURE POUR JOINT | 687.02 | 686.98 | 686.94 | 686.90 | 686.86 | 686.82 | 686.78 | 686.74 | 686.70 | 686.69 | 686.64 | 686.59 | 686.54 | 686.50 | 686.45 | 686.40 | 686.35 | 686.30 | 686.26 | 686.21 | 686.16 | 686.11 | 686.10 | 686.06 | 686.02 | 685.98 | 685.94 | 685.90 | 685.86 | 685.82 | 685.78 |
| BEAM C | 687.06 | 687.02 | 686.98 | 686.94 | 686.90 | 686.86 | 686.82 | 686.78 | 686.74 | 686.73 | 686.68 | 686.63 | 686.58 | 686.53 | 686.49 | 686.44 | 686.39 | 686.34 | 686.29 | 686.25 | 686.20 | 686.15 | 686.14 | 686.10 | 686.06 | 686.02 | 685.98 | 685.94 | 685.90 | 685.86 | 685.82 |
| BEAM D | 687.26 | 687.22 | 687.18 | 687.14 | 687.10 | 687.06 | 687.02 | 686.98 | 686.94 | 686.93 | 686.88 | 686.83 | 686.79 | 686.74 | 686.69 | 686.64 | 686.59 | 686.55 | 686.50 | 686.45 | 686.40 | 686.35 | 686.34 | 686.30 | 686.26 | 686.22 | 686.18 | 686.14 | 686.10 | 686.06 | 686.02 |
| BEAM E | 687.42 | 687.38 | 687.34 | 687.30 | 687.26 | 687.22 | 687.18 | 687.14 | 687.10 | 687.09 | 687.04 | 686.99 | 686.94 | 686.90 | 686.85 | 686.80 | 686.75 | 686.70 | 686.66 | 686.61 | 686.56 | 686.51 | 686.50 | 686.46 | 686.42 | 686.38 | 686.34 | 686.30 | 686.26 | 686.22 | 686.18 |
| ℄ E.B. ROADWAY | 687.43 | 687.39 | 687.35 | 687.31 | 687.26 | 687.22 | 687.18 | 687.14 | 687.10 | 687.09 | 687.04 | 687.00 | 686.95 | 686.90 | 686.85 | 686.80 | 686.76 | 686.71 | 686.66 | 686.61 | 686.56 | 686.52 | 686.51 | 686.47 | 686.43 | 686.39 | 686.34 | 686.30 | 686.26 | 686.22 | 686.18 |
| BEAM F | 687.30 | 687.26 | 687.22 | 687.18 | 687.14 | 687.10 | 687.05 | 687.01 | 686.97 | 686.96 | 686.92 | 686.87 | 686.82 | 686.77 | 686.72 | 686.68 | 686.63 | 686.58 | 686.53 | 686.48 | 686.44 | 686.39 | 686.38 | 686.34 | 686.30 | 686.26 | 686.22 | 686.18 | 686.13 | 686.09 | 686.05 |
| BEAM G | 687.09 | 687.05 | 687.01 | 686.97 | 686.93 | 686.89 | 686.85 | 686.81 | 686.77 | 686.76 | 686.71 | 686.66 | 686.61 | 686.57 | 686.52 | 686.47 | 686.42 | 686.37 | 686.33 | 686.28 | 686.23 | 686.18 | 686.17 | 686.13 | 686.09 | 686.05 | 686.01 | 685.97 | 685.93 | 685.89 | 685.85 |
| BEAM H | 686.86 | 686.82 | 686.78 | 686.74 | 686.70 | 686.66 | 686.62 | 686.58 | 686.54 | 686.53 | 686.48 | 686.43 | 686.38 | 686.34 | 686.29 | 686.24 | 686.19 | 686.15 | 686.10 | 686.05 | 686.00 | 685.95 | 685.94 | 685.90 | 685.86 | 685.82 | 685.78 | 685.74 | 685.70 | 685.66 | 685.62 |
| BEAM J | 686.63 | 686.59 | 686.55 | 686.51 | 686.47 | 686.43 | 686.39 | 686.35 | 686.31 | 686.30 | 686.25 | 686.20 | 686.16 | 686.11 | 686.06 | 686.01 | 685.96 | 685.92 | 685.87 | 685.82 | 685.77 | 685.72 | 685.71 | 685.67 | 685.63 | 685.59 | 685.55 | 685.51 | 685.47 | 685.43 | 685.39 |
| SOUTH GUTTER LINE | 686.59 | 686.54 | 686.50 | 686.46 | 686.42 | 686.38 | 686.34 | 686.30 | 686.26 | 686.25 | 686.20 | 686.15 | 686.11 | 686.06 | 686.01 | 685.96 | 685.91 | 685.87 | 685.82 | 685.77 | 685.72 | 685.68 | 685.67 | 685.62 | 685.58 | 685.54 | 685.50 | 685.46 | 685.42 | 685.38 | 685.34 |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SLAB ELEVATIONS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 25 OF 39 FILE NO. 30864 DESIGN NO. 121





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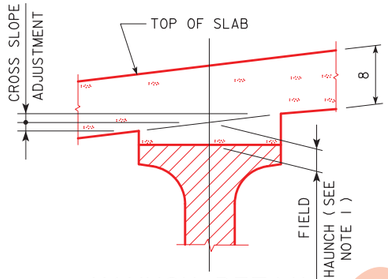
BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334

## TABLE OF BEAM LINE SLAB HAUNCH ELEVATIONS

| BEAM LINE | ℄ W. ABUT. BEARING | | | | | | | | ℄ PIER 1 BEARINGS | | | | | | | | | | | | | ℄ PIER 2 BEARINGS | | | | | | | | ℄ E. ABUT. BEARING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LINE 1 | LINE 2 | LINE 3 | LINE 4 | LINE 5 | LINE 6 | LINE 7 | LINE 8 | LINE 9 | LINE 10 | LINE 11 | LINE 12 | LINE 13 | LINE 14 | LINE 15 | LINE 16 | LINE 17 | LINE 18 | LINE 19 | LINE 20 | LINE 21 | LINE 22 | LINE 23 | LINE 24 | LINE 25 | LINE 26 | LINE 27 | LINE 28 | LINE 29 | LINE 30 | LINE 31 |
| C | 686.39 | 686.37 | 686.33 | 686.30 | 686.26 | 686.22 | 686.17 | 686.12 | 686.07 | 686.06 | 686.07 | 686.08 | 686.08 | 686.07 | 686.04 | 686.00 | 685.95 | 685.88 | 685.79 | 685.70 | 685.59 | 685.48 | 685.47 | 685.45 | 685.41 | 685.38 | 685.34 | 685.30 | 685.25 | 685.20 | 685.15 |
| D | 686.60 | 686.57 | 686.55 | 686.52 | 686.48 | 686.44 | 686.39 | 686.33 | 686.27 | 686.26 | 686.30 | 686.34 | 686.36 | 686.37 | 686.35 | 686.32 | 686.26 | 686.18 | 686.08 | 685.96 | 685.83 | 685.69 | 685.68 | 685.65 | 685.63 | 685.60 | 685.56 | 685.52 | 685.47 | 685.41 | 685.35 |
| E | 686.76 | 686.73 | 686.71 | 686.68 | 686.64 | 686.59 | 686.54 | 686.49 | 686.43 | 686.42 | 686.46 | 686.50 | 686.52 | 686.53 | 686.51 | 686.48 | 686.42 | 686.34 | 686.23 | 686.12 | 685.98 | 685.85 | 685.84 | 685.81 | 685.79 | 685.76 | 685.72 | 685.67 | 685.62 | 685.57 | 685.51 |
| F | 686.63 | 686.61 | 686.58 | 686.55 | 686.51 | 686.47 | 686.42 | 686.36 | 686.31 | 686.30 | 686.34 | 686.37 | 686.40 | 686.40 | 686.39 | 686.35 | 686.29 | 686.21 | 686.11 | 685.99 | 685.86 | 685.72 | 685.71 | 685.69 | 685.66 | 685.63 | 685.59 | 685.55 | 685.50 | 685.44 | 685.39 |
| G | 686.43 | 686.40 | 686.38 | 686.34 | 686.31 | 686.26 | 686.21 | 686.16 | 686.10 | 686.09 | 686.13 | 686.17 | 686.19 | 686.20 | 686.18 | 686.15 | 686.09 | 686.01 | 685.90 | 685.78 | 685.65 | 685.52 | 685.51 | 685.48 | 685.46 | 685.42 | 685.39 | 685.34 | 685.29 | 685.24 | 685.18 |
| H | 686.20 | 686.17 | 686.15 | 686.12 | 686.08 | 686.03 | 685.98 | 685.93 | 685.87 | 685.86 | 685.90 | 685.94 | 685.96 | 685.97 | 685.95 | 685.92 | 685.86 | 685.78 | 685.67 | 685.56 | 685.42 | 685.29 | 685.28 | 685.25 | 685.23 | 685.20 | 685.16 | 685.11 | 685.06 | 685.01 | 684.95 |
| J | 685.97 | 685.94 | 685.92 | 685.88 | 685.85 | 685.80 | 685.75 | 685.70 | 685.64 | 685.63 | 685.67 | 685.69 | 685.71 | 685.71 | 685.69 | 685.65 | 685.59 | 685.52 | 685.42 | 685.31 | 685.19 | 685.06 | 685.05 | 685.02 | 685.00 | 684.96 | 684.93 | 684.88 | 684.83 | 684.78 | 684.72 |

## MISCELLANEOUS DATA TABLE

| | BEAM LINE | ℄ W. ABUT. BEARING | | | | | | | | ℄ PIER 1 BEARINGS | | | | | | | | | | | | | ℄ PIER 2 BEARINGS | | | | | | | | ℄ E. ABUT. BEARING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LINE 1 | LINE 2 | LINE 3 | LINE 4 | LINE 5 | LINE 6 | LINE 7 | LINE 8 | LINE 9 | LINE 10 | LINE 11 | LINE 12 | LINE 13 | LINE 14 | LINE 15 | LINE 16 | LINE 17 | LINE 18 | LINE 19 | LINE 20 | LINE 21 | LINE 22 | LINE 23 | LINE 24 | LINE 25 | LINE 26 | LINE 27 | LINE 28 | LINE 29 | LINE 30 | LINE 31 |
| ANTICIPATED DEFLECTION DUE TO SLAB (IN.) | C | 0 | 1/8 | 1/4 | 5/16 | 3/8 | 5/16 | 1/4 | 1/8 | 0 | 0 | 3/4 | 1 7/16 | 2 | 2 7/16 | 2 11/16 | 2 13/16 | 2 11/16 | 2 7/16 | 2 | 1 7/16 | 3/4 | 0 | 0 | 1/8 | 1/4 | 5/16 | 3/8 | 5/16 | 1/4 | 1/8 | 0 |
| | D - H | 0 | 3/16 | 3/8 | 1/2 | 9/16 | 1/2 | 3/8 | 3/16 | 0 | 0 | 1 1/16 | 2 1/16 | 2 15/16 | 3 9/16 | 4 | 4 1/8 | 4 | 3 9/16 | 2 15/16 | 2 1/16 | 1 1/16 | 0 | 0 | 3/16 | 3/8 | 1/2 | 9/16 | 1/2 | 3/8 | 3/16 | 0 |
| | J | 0 | 3/16 | 5/16 | 7/16 | 1/2 | 7/16 | 5/16 | 3/16 | 0 | 0 | 1 | 1 1/8 | 2 5/8 | 3 3/16 | 3 9/16 | 3 11/16 | 3 9/16 | 3 3/16 | 2 5/8 | 1 7/8 | 1 | 0 | 0 | 3/16 | 5/16 | 7/16 | 1/2 | 7/16 | 5/16 | 3/16 | 0 |
| CROSS SLOPE ADJUSTMENTS (IN.) | C | 7/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D | 5/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | E | (+)1/16 (-)1/4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | F | 5/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | G - J | 7/16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ALLOWABLE FIELD HAUNCH IN. & (FT.) | MAX. ALL | 4 (0.333) | 4 (0.333) | 3 1/2 (0.292) | 3 1/2 (0.292) | 3 (0.250) | 3 1/2 (0.292) | 3 1/2 (0.292) | 4 (0.333) | 4 (0.333) | 4 (0.333) | 3 1/2 (0.292) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 2 1/2 (0.208) | 3 1/2 (0.292) | 4 (0.333) | 4 (0.333) | 4 (0.333) | 3 1/2 (0.292) | 3 1/2 (0.292) | 3 (0.250) | 3 1/2 (0.292) | 3 1/2 (0.292) | 4 (0.333) | 4 (0.333) |
| | MIN. C | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) |
| | MIN. D | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) |
| | MIN. E | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | -1/4 (-0.023) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) |
| | MIN. F | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | -3/16 (-0.013) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) |
| | MIN. G-J | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | -1/16 (-0.006) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) | 1 (0.083) | 1/2 (0.042) | 1/2 (0.042) | 0 (0.000) | 1/2 (0.042) | 1/2 (0.042) | 1 (0.083) | 1 (0.083) |




HAUNCH DETAIL

NOTE:
HAUNCH LOCATIONS ARE AT THE SAME LOCATION AS THE ENCIRCLED LETTERS AND NUMBERS SHOWN ON SLAB ELEVATIONS SHEET.

NOTE:
BRIDGE SEAT ELEVATIONS ARE SET BASED ON THEORETICAL CAMBER AND BEAM DEFLECTIONS. THESE BRIDGE SEATS WILL PROVIDE A THEORETICAL BEAM HAUNCH WITHIN DESIGN PARAMETERS. FIELD HAUNCHES ARE DETERMINED USING SURVEYED TOP OF BEAM ELEVATIONS AND "BEAM LINE HAUNCH ELEVATION" DATA. ALLOWABLE MAXIMUM AND MINIMUM "FIELD HAUNCH" VALUES ARE GIVEN IN INCHES AND DECIMALS OF FEET IN THE "MISCELLANEOUS DATA" TABLE. "CROSS SLOPE ADJUSTMENT" VALUES WILL AID THE CONTRACTOR IN DETERMINING ACTUAL FORMED HAUNCH DIMENSIONS AT THE EDGES OF THE TOP FLANGE.

NOTE 1:
TO CALCULATE FIELD HAUNCH REQUIRED AT EACH LOCATION, SURVEY THE BEAM TOPS CONSISTENT WITH THE SPACINGS SHOWN ON THE "TOP OF SLAB ELEVATIONS LAYOUT". SUBTRACT THE SURVEYED BEAM SHOT FROM THE "BEAM LINE HAUNCH ELEVATION". THIS VALUE WILL BE THE HAUNCH NEEDED (SEE "FIELD HAUNCH" IN HAUNCH DETAIL). THE "BEAM LINE HAUNCH ELEVATION" INCLUDES ADJUSTMENTS FOR SLAB THICKNESSES AND ANTICIPATED DEFLECTIONS. NO ADDITIONAL CALCULATIONS ARE REQUIRED. IF THE FIELD HAUNCH EXCEEDS THE MAXIMUMS AND MINIMUMS SHOWN IN INCHES AND DECIMALS OF FEET IN THE MISCELLANEOUS DATA TABLE, ADJUSTMENTS TO THE GRADE OR ADDITIONAL HAUNCH REINFORCEMENT WILL BE REQUIRED.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SLAB HAUNCH DATA DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 26 OF 39 FILE NO. 30864 DESIGN NO. 121

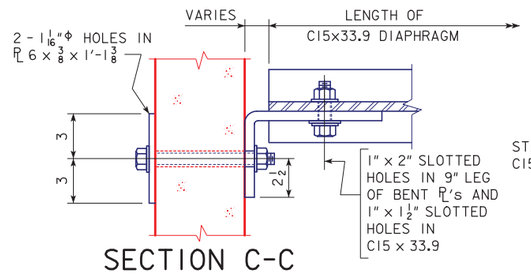
| DESIGN TEAM HNTB | SLAB HAUNCH DATA DETAILS | STANDARD SHEET 1066 | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 112 |
|---|---|---|---|---|---|

REVISED 06-12 - THE ALLOWABLE FIELD HAUNCH MAX. & MIN. WAS CHANGED TO INCHES & DECIMALS OF FEET. NOTE & NOTE 1 WERE CHANGED. THE SLAB HAUNCH LOCATIONS EXAMPLE WAS REPLACED WITH A NOTE.
ENGLISH\MISCELLANEOUSBRIDGES.DGN - 1066 - THIS SHEET ISSUED 02-08.

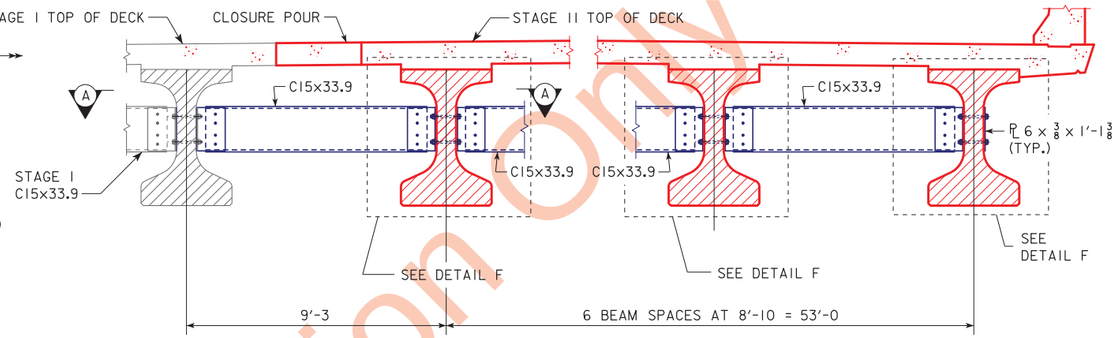
# BULB TEE "C" BEAM INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL

| ONE BEAM CONNECTION DETAIL "F" | | NO. OF BEAM CONNECTIONS | WEIGHT |
|---|---|---|---|
| 2 - $\frac{7}{8}$"Φ x 9$\frac{1}{4}$" H.S. BOLTS WITH NUTS & WASHERS = 4.8 LBS. | | 42 | 202 |
| | | | |
| | | | |
| ONE DETAIL "F" | 1 - BACKING PL 6 x $\frac{3}{8}$ x 1'-1$\frac{3}{8}$ = 8.5 LBS. | 42 | 357 |
| | 1 - BENT PL 9 x 6 x $\frac{1}{2}$ x 1'-1$\frac{3}{8}$ = 28.5 LBS. | 42 | 1,197 |
| **ONE DIAPHRAGM** | | | |
| | | NUMBER OF DIAPHRAGMS | |
| 8 - $\frac{7}{8}$"Φ x 2$\frac{3}{4}$" H.S.BOLTS WITH NUTS & WASHERS = 10.3 LBS. | | 21 | 216 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | LENGTH OF MEMBER | | |
| 1 - C15 x 33.9 = 33.9 LBS./FT. | 8'-0$\frac{3}{4}$ | 3 | 820 |
| 1 - C15 x 33.9 = 33.9 LBS./FT. | 7'-7$\frac{3}{4}$ | 18 | 4,665 |
| | | | |
| | | | |
| | | | |
| INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL - TOTAL (LBS.) | | | 7,457 |

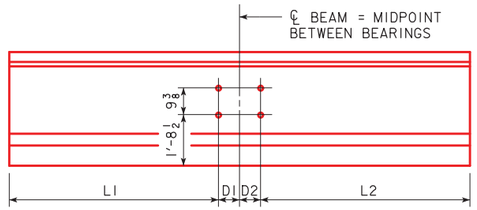
| TABLE OF VARIABLES | | | | | |
|---|---|---|---|---|---|
| | BEAM | L1 | L2 | D1 | D2 |
| BTC 65 | C | 32'-4$\frac{3}{16}$ | 32'-4$\frac{5}{8}$ | 9$\frac{13}{16}$ | 9$\frac{3}{8}$ |
| | D-J | 32'-4$\frac{5}{8}$ | 32'-4$\frac{5}{8}$ | 9$\frac{3}{8}$ | 9$\frac{3}{8}$ |
| BTC 115 | C | 57'-4$\frac{3}{16}$ | 57'-4$\frac{5}{8}$ | 9$\frac{13}{16}$ | 9$\frac{3}{8}$ |
| | D-J | 57'-4$\frac{5}{8}$ | 57'-4$\frac{5}{8}$ | 9$\frac{3}{8}$ | 9$\frac{3}{8}$ |



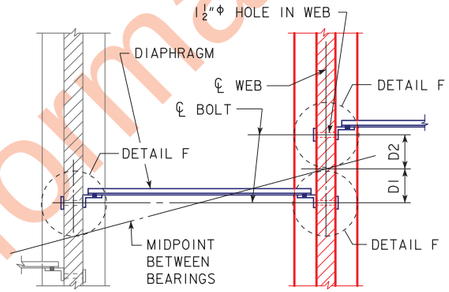

SECTION C-C




SECTION SHOWING INTERMEDIATE DIAPHRAGM



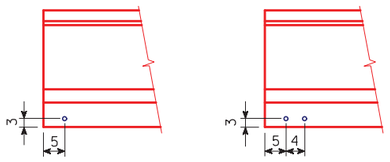

INTERMEDIATE DIAPHRAGM BOLT HOLE LOCATIONS




PART SECTION A-A

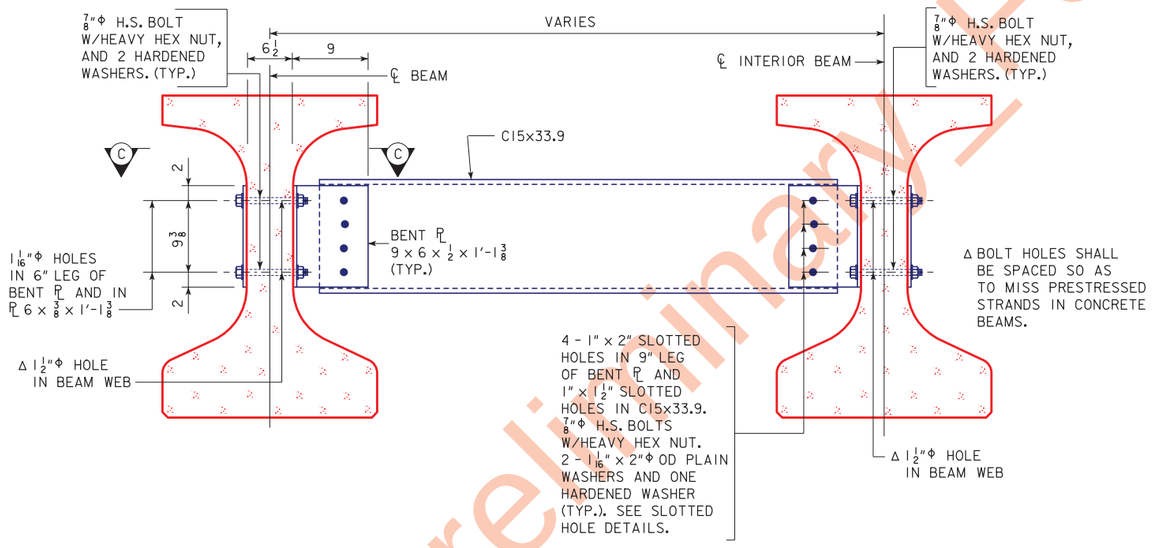
| STRUCTURAL STEEL | |
|---|---|
| WEIGHT | 7,457 LBS. |

NOTE: STRUCTURAL STEEL WEIGHT IS INCLUDED ON THE SUMMARY QUANTITIES SHEET.

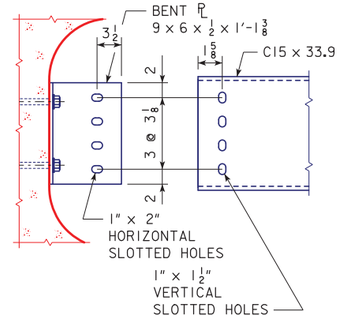



INTEGRAL ABUT. FIXED PIER

BEAM COIL TIE LOCATIONS




DETAIL F




SLOTTED HOLE DETAILS

## NOTES:

ALL DIAPHRAGM MATERIALS, INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.

SHOP DRAWINGS OF THE STEEL DIAPHRAGMS SHOWING LAYOUT AND DETAILS OF THE DIAPHRAGMS SHALL BE SUBMITTED FOR APPROVAL.

ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS SHALL BE INCLUDED IN THE PRICE BID FOR STRUCTURAL STEEL.

THE 1$\frac{1}{2}$"Φ HOLES FOR THE $\frac{7}{8}$"Φ H.S. BOLTS SHALL BE CAST INTO THE WEB. DRILLING IS NOT ALLOWED.

THE $\frac{7}{8}$"Φ H.S. BOLTS THROUGH THE WEB SHALL HAVE A THREAD LENGTH OF 3" MIN. AND 4" MAX. AND SHALL MEET THE REQUIREMENTS OF ASTM A449.

ALL BOLTS ARE TO BE TIGHTENED PRIOR TO PLACING BRIDGE FLOOR CONCRETE WITH THE FOLLOWING EXCEPTION: BOLTS IN DIAPHRAGMS LOCATED UNDER LONGITUDINAL BRIDGE FLOOR CONSTRUCTION JOINTS SHALL NOT BE TIGHTENED UNTIL STAGE II OF THE BRIDGE FLOOR HAS BEEN PLACED.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

# INTERMEDIATE DIAPHRAGM DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 27 OF 39 FILE NO. 30864 DESIGN NO. 121



ENGLISHBEAMS.DGN - I036-2-BTC - THIS SHEET ISSUED 06-14. SHEET 2 OF 2.

| DESIGN TEAM HNTB | STEEL INTERM. DIAPHS. FOR "BTC" BEAM BRIDGES | MODIFIED STANDARD SHEETS I036-1-BTC & I036-2-BTC | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 113 |
|---|---|---|---|---|---|

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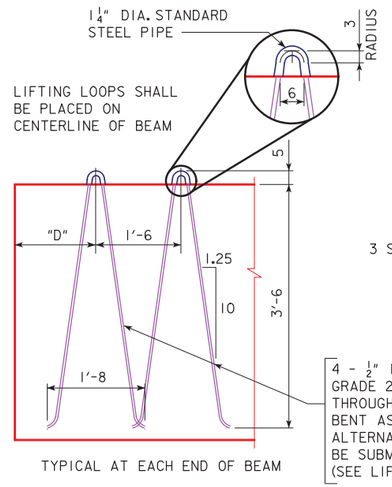
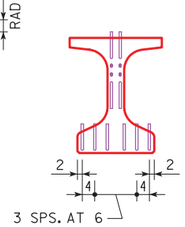


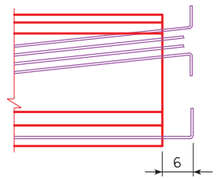

TYPICAL AT EACH END OF BEAM

4 - ½" NOMINAL DIA. GRADE 270 STRANDS THREADED THROUGH EACH PIPE SLEEVE BENT AS SHOWN AFTER THREADING. ALTERNATE LIFTING DEVICES MAY BE SUBMITTED FOR APPROVAL (SEE LIFTING LOOP TABLE).

## LIFTING LOOP DETAIL




THE TOP AND BOTTOM ROWS OF THE DEFLECTED STRANDS ARE TO BE CUT WITH 1'-6 PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN. THE REMAINING TOP DEFLECTED STRANDS ARE TO BE CUT WITH 5" PROJECTIONS.
SIX BOTTOM STRANDS ARE TO BE CUT WITH 1'-6 PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN. THE REMAINING BOTTOM STRANDS ARE TO BE CUT OFF REASONABLY FLUSH WITH THE CONCRETE.




TYPICAL AT BOTH BEAM ENDS

## STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS

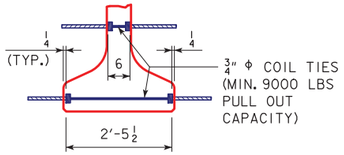
## LIFTING LOOP AND OVERHANG TABLE

| BEAMS | LIFTING LOOPS EACH END | # OF STRANDS PER LOOP | D | BEAM OVERHANG (FT) |
|---|---|---|---|---|
| BTC65 | 1 | 4 | 2'-0 | ** |
| BTCII5 | 2 | 4 | 8'-3 | 14 |

** IN ACCORDANCE WITH ARTICLE 2407.03, K OF THE STANDARD SPECIFICATIONS.

LIFTING LOOPS SHALL CARRY LOADS EQUALLY.

NUMBER AND EXACT LOCATION OF COIL TIES TO BE AS DETAILED ON INTERMEDIATE DIAPHRAGM DETAILS SHEET.




## COIL TIE DETAIL

## DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE TO BE IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2007.
REINFORCING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 5.
PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 270.

## SPECIFICATIONS:

CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, CURRENT SERIES, WITH CURRENT APPLICABLE SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.
DESIGN: AASHTO LRFD, SERIES OF 2007, WITH MINOR MODIFICATIONS.

## ALTERNATE BAR NOTES:

ALTERNATE BARS SHOWN IN BENT BAR DETAILS MAY BE USED IN LIEU OF REINFORCING BARS SHOWN IN BAR LIST. NO ADDITIONAL PAYMENT SHALL BE MADE FOR USE OF ALTERNATE BARS.

## BTC BEAM DATA

| BTC BEAM | SPAN LENGTH ℄ - ℄ BEARING | OVERALL BEAM LENGTH (L) | CONCRETE STRENGTH f'ci (ksi) | CONCRETE STRENGTH f'c (ksi) | STRAND SIZE DIA. (in) | NO. OF STRAND STRAIGHT | NO. OF STRAND DEFLECTED | TOTAL INITIAL PRESTRESS ③ kips | HOLD DOWN FORCE-kips | CAMBER (in) AT RELEASE | CAMBER (in) AFTER LOSSES | DEFLECTION (in) $\Delta_D$ IMMEDIATE ① (ELASTIC) $\Delta_I$ STEEL DIAPHRAGM | DEFLECTION (in) $\Delta_D$ TIME ② (PLASTIC) $\Delta_T$ STEEL DIAPHRAGM | PERMISSIBLE MAXIMUM SPACING HL-93 LOADING STEEL DIAPHRAGM | WEIGHT (TONS) | CONCRETE (CU YD.) | REINFORCING STEEL (WEIGHT-LBS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BTC65 | 65'-0 | 66'-4 | 5.00 | 6.00 | 0.60 | 14 | 2 | 681 | 11.5 | 0.57 | 1.01 | 0.47 | 0.12 | 9'-3 | 23.9 | 11.8 | 1,695 |
| BTCII5 | 115'-0 | 116'-4 | 8.00 | 9.00 | 0.60 | 38 | 10 | 2042 | 27.7 | 3.32 | 5.86 | 3.83 | 0.96 | 9'-3 | 41.9 | 20.7 | 2,916 |

① DEFLECTIONS AT MID-SPAN DUE TO WEIGHT OF SLAB AND DIAPHRAGM. THE DEFLECTIONS SHOWN ARE FOR A SLAB ( 8 in ) AND HAUNCH ( 1.5 in ) WEIGHT OF:
0.98 kips/ft FOR 9'-3 BEAM SPACING
AND ONE STEEL DIAPHRAGM ( 0.500 kips ) AT ℄ OF SPAN.
FOR DIFFERENT SLAB AND DIAPHRAGM WEIGHTS, DEFLECTIONS WILL BE DIRECTLY PROPORTIONAL.
② DEFLECTIONS DUE TO THE COMBINED EFFECT OF CREEP DUE TO WEIGHT OF SLAB AND SHRINKAGE OF SLAB.
TOTAL BEAM DEFLECTIONS AT ℄ OF SPAN, $\Delta_D$ , DUE TO WEIGHT OF SLAB AND DIAPHRAGMS FOR DETAILING PURPOSE:
(A) $\Delta_D = \Delta_I + \Delta_T$ FOR SIMPLE SPAN.
(B) $\Delta_D = \Delta_I + \frac{3}{4}\Delta_T$ FOR END SPANS OF CONTINUOUS BRIDGE.
(C) $\Delta_D = \Delta_I + \frac{1}{2}\Delta_T$ FOR INTERIOR SPANS OF CONTINUOUS BRIDGE.
③ TOTAL INITIAL PRESTRESS IS BASED ON 72.6% f's, f's. = 270 ksi. AND As = 0.217 $in^2$.

CALCULATED DESIGN CAMBERS HAVE BEEN REDUCED FROM THEIR THEORETICAL VALUES BY 15% TO AID CONSTRUCTABILITY.

## BEAM NOTES:

THESE BEAMS ARE DESIGNED FOR AASHTO LIVE LOADS AS INDICATED IN ABOVE TABLE WITH AN ALLOWANCE OF 20 LBS PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.
ALL PPC BEAMS SHALL USE HIGH PERFORMANCE CONCRETE ( HPC ) IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
HOLD DOWN POINTS FOR DEFLECTED STRANDS MAY BE MOVED TOWARD ENDS OF BEAM A DISTANCE OF 0.05 L MAXIMUM AT PRODUCER'S OPTION.
ALL PRESTRESSING STRANDS EXCEPT LIFTING LOOP STRANDS SHALL BE 0.60 in. NOMINAL DIAMETER (NOMINAL STEEL AREA = 0.217 $in^2$) AND CONFORM TO ASTM A416 GRADE 270 LOW RELAXATION STRANDS. MINIMUM STRAND BREAKING STRENGTH SHALL BE 58.6 kips.
TOPS OF BEAMS ARE TO BE STRUCK OFF LEVEL AND FINISHED AS PER MATERIALS IM570.
BEARINGS SHALL BE AS DETAILED ON OTHER DESIGN SHEETS.
BEAMS TO BE USED IN BRIDGES MADE CONTINUOUS BY THE POURED IN PLACE FLOOR, ARE TO BE AT LEAST 28 DAYS OLD BEFORE THE FLOOR IS PLACED UNLESS A SHORTER CURING TIME IS APPROVED BY THE BRIDGE ENGINEER.
THE PORTIONS OF THE PRESTRESSED BEAMS THAT ARE TO BE EMBEDDED IN THE ABUTMENT AND PIER DIAPHRAGMS SHALL BE ROUGHENED FOR A DISTANCE OF 10" FROM THE BEAM END BY SANDBLASTING OR OTHER APPROVED METHODS TO PROVIDE SUITABLE BOND BETWEEN THE BEAM AND THE DIAPHRAGM IN ACCORDANCE WITH ARTICLE 2403.03, I, OF THE STANDARD SPECIFICATIONS.
ALL BEAMS ARE TO BE INCREASED IN LENGTH TO COMPENSATE FOR ELASTIC SHORTENING, CREEP AND SHRINKAGE.
FOR TRANSPORTING, THE ALLOWABLE OVERHANG IS SHOWN IN THE LIFTING LOOP AND OVERHANG TABLE.
THE CONTRACTOR SHALL ASSURE THE LATERAL STABILITY OF THE BTCII5 BEAMS DURING HANDLING, TRANSPORTING AND ERECTION BY PROVIDING TEMPORARY BRACING AS NEEDED.
HOLES MUST BE CAST IN THE WEB TO ACCOMMODATE THE STEEL DIAPHRAGM ATTACHMENTS AS DETAILED ON THE STEEL DIAPHRAGM DETAIL SHEET.
MINIMUM CONCRETE f'c (AT 28 DAYS) AND MINIMUM f'ci AT RELEASE ARE LOCATED IN THE BTC BEAM DATA TABLE ABOVE.
FOUR 0.60 IN. DIAMETER STRANDS STRESSED TO NOT MORE THAN 5000 lbs EACH MAY BE USED IN LIEU OF BARS 5a1 AND 5a2 IN THE TOP FLANGE.
FOR MODIFIED STIRRUP EXTENSIONS SEE "BENT BAR DETAILS" AND BEAM DETAILS FOR DIMENSIONS AND LOCATIONS.
FASCIA BEAM LINE J SHALL BE PAINTED. SEE DESIGN SHEET I7 FOR DETAILS.

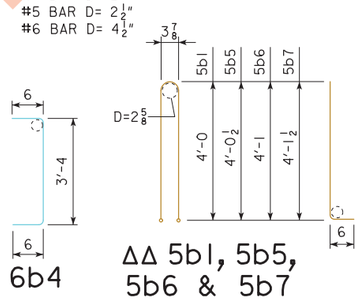
ΔΔ 5b1, 5b5, 5b6, 5b7 AND 6b3 BARS TO BE EPOXY COATED
* 6b3 AND 6b4 BARS TO BE USED IN PAIRS

## REINFORCING BAR LIST

| | BEAM | | BTC65 | | BTCII5 | |
|---|---|---|---|---|---|---|
| | BAR | SHAPE | NO. | LENGTH | NO. | LENGTH |
| | 5a1 | | 12 | 34'-2 | 12 | 21'-4 |
| | 5a2 | | — | — | 12 | 40'-0 |
| ΔΔ | 5b1 | | — | — | 63 | 9'-2 |
| ΔΔ | 5b5 | | 7 | 9'-3 | — | — |
| ΔΔ | 5b6 | | 22 | 9'-4 | 26 | 9'-4 |
| ΔΔ | 5b7 | | 18 | 9'-5 | 4 | 9'-5 |
| ΔΔ * | 6b3 | | 32 | 5'-1 | 36 | 5'-1 |
| * | 6b4 | | 8 | 4'-4 | 24 | 4'-4 |
| | 4c1 | | 83 | 2'-7 | 149 | 2'-7 |
| | 4d1 | | 67 | 6'-5 | 113 | 6'-5 |
| | 4e1 | | 24 | 3'-2 | 24 | 3'-2 |
| | 4h1 | | 6 | 8'-0 | 6 | 8'-0 |

## BENT BAR DETAILS

NOTE: ALL BAR DIMENSIONS ARE OUT TO OUT
D = PIN DIAMETER FOR BENDING
(UNLESS OTHERWISE SHOWN)
#4 BAR D= 2"
#5 BAR D= 2½"
#6 BAR D= 4½"




DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BTC BEAM DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 28 OF 39 FILE NO. 30864 DESIGN NO. 121

CORRECTION 12-13 - COIL TIE DETAIL WAS CHANGED TO REFLECT THE DISTANCE BETWEEN COIL TIE ANCHORS EMBEDDED ¼ INCH.
ENGLISHBEAMS.DGN 4700 - THIS SHEET ISSUED 05-04.





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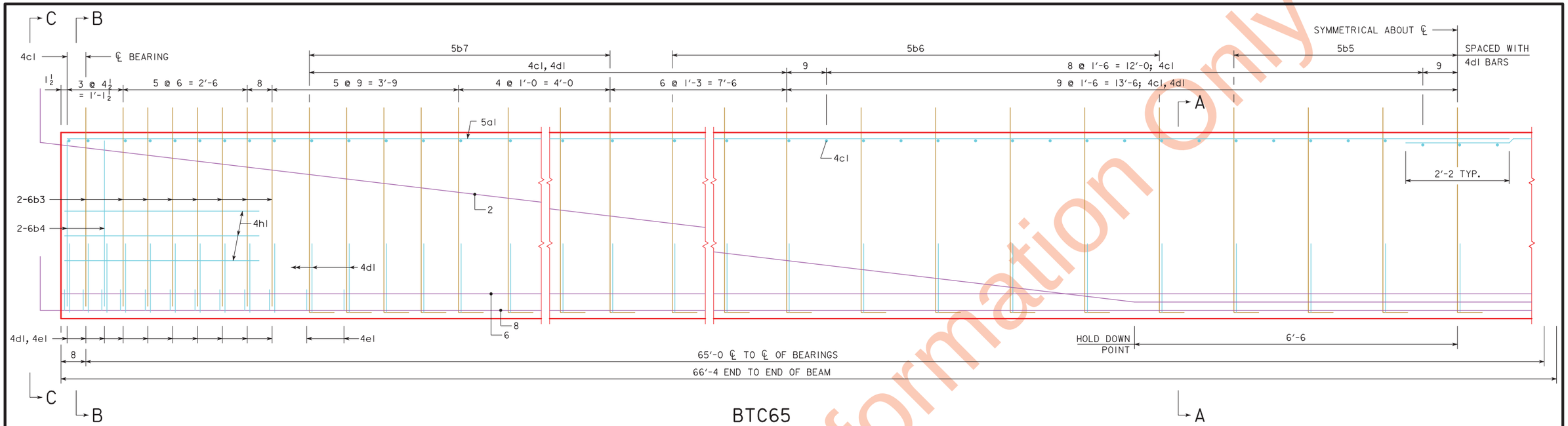
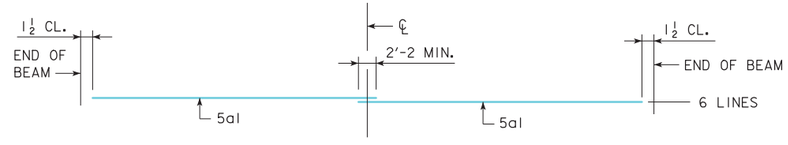
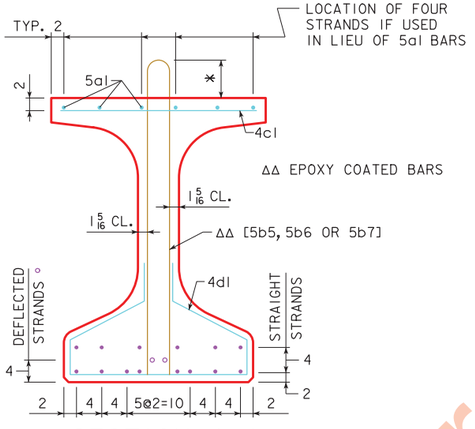



BTC65

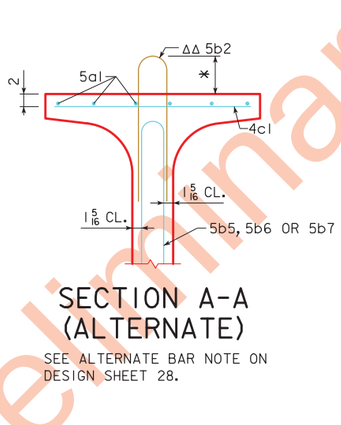



## TOP FLANGE LONGITUDINAL BAR LAYOUT

NOTE STIRRUP EXTENSION
*HEIGHT = 5½ FOR ΔΔ5b2 AND ΔΔ5b5
*HEIGHT = 6 FOR ΔΔ5b2 AND ΔΔ5b6
*HEIGHT = 6½ FOR ΔΔ5b2 AND ΔΔ5b7

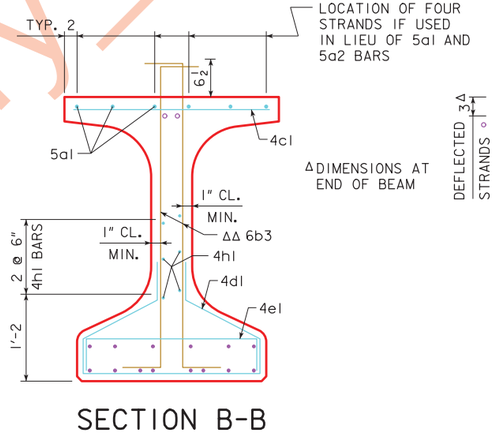



## SECTION A-A

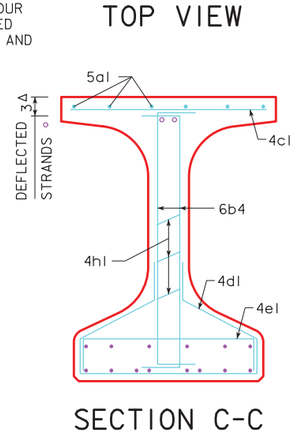



## SECTION A-A (ALTERNATE)

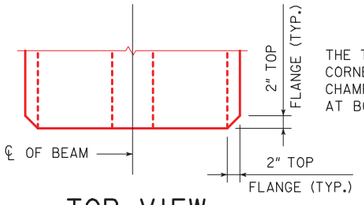
SEE ALTERNATE BAR NOTE ON DESIGN SHEET 28.




## SECTION B-B

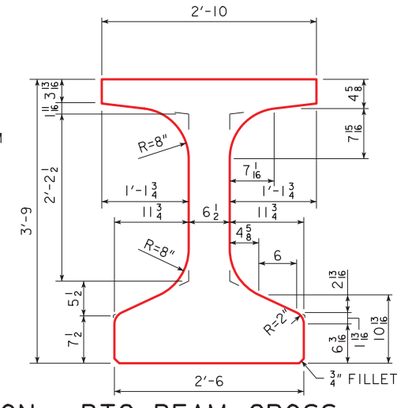



## SECTION C-C




## TOP VIEW

THE TOP FLANGE BEAM CORNERS ARE TO BE CHAMFERED 2" AS SHOWN AT BOTH ENDS OF THE BEAM




AREA = 691.8 in²
$\bar{y}_b$ = 20.74 in.
I = 178,971 in⁴

## BEAM SECTION PROPERTIES

## BTC BEAM CROSS SECTION

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

# BTC65 BEAM DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

# JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 29 OF 39 FILE NO. 30864 DESIGN NO. 121

REVISED 10-07 - 5b2 BAR DELETED. 5b1 BAR LENGTHENED TO EXTEND 5 INCHES ABOVE BEAM TOP. ALTERNATE SECTION A-A ADDED.
ENGLISHBEAMS.DGN 4708 - THIS SHEET ISSUED 05-04.





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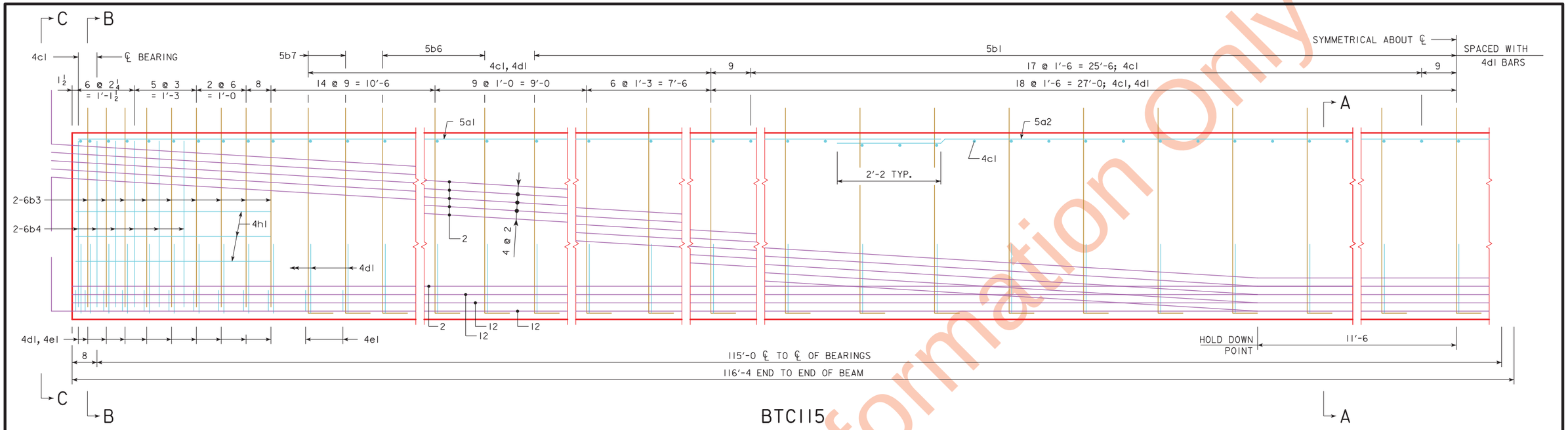
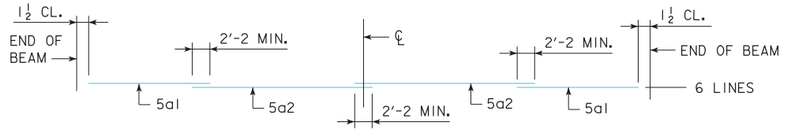
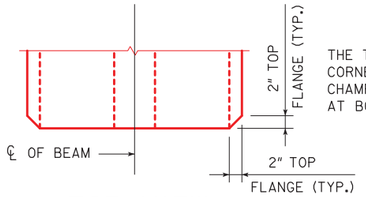


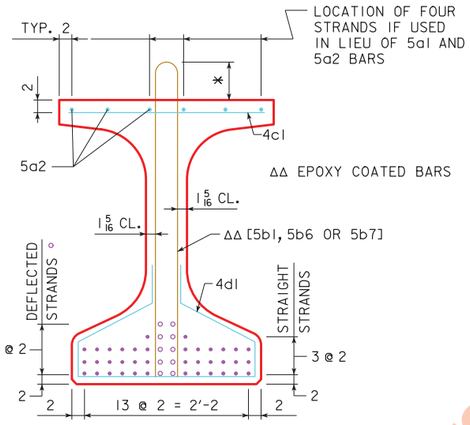

## TOP FLANGE LONGITUDINAL BAR LAYOUT

NOTE STIRRUP EXTENSION
*HEIGHT = 5 FOR ΔΔ5b2 AND ΔΔ5b1
*HEIGHT = 6 FOR ΔΔ5b2 AND ΔΔ5b6
*HEIGHT = 6½ FOR ΔΔ5b2 AND ΔΔ5b7

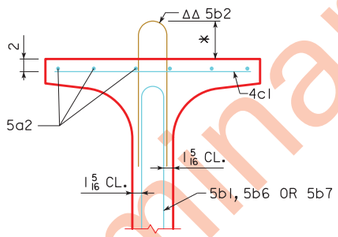



THE TOP FLANGE BEAM CORNERS ARE TO BE CHAMFERED 2" AS SHOWN AT BOTH ENDS OF THE BEAM

## TOP VIEW

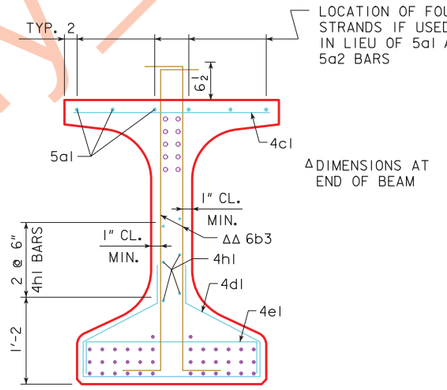



## SECTION A-A

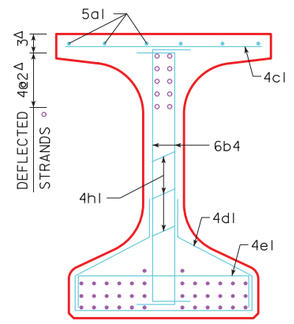



## SECTION A-A (ALTERNATE)

SEE ALTERNATE BAR NOTE ON DESIGN SHEET 28.



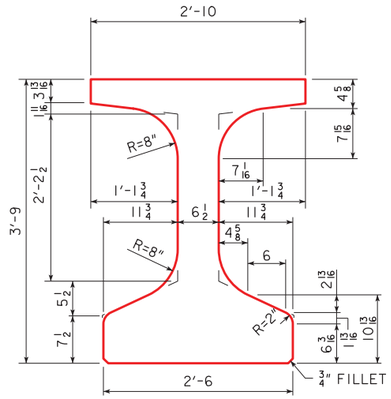

## SECTION B-B




## SECTION C-C

AREA = 691.8 in²
ȳb = 20.74 in.
I = 178,971 in⁴

## BEAM SECTION PROPERTIES




## BTC BEAM CROSS SECTION

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## BTC115 BEAM DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 30 OF 39 — FILE NO. 30864 — DESIGN NO. 121

REVISED 10-07 - 5b2 BAR DELETED. 5b1 BAR LENGTHENED TO EXTEND 5 INCHES ABOVE BEAM TOP. ALTERNATE SECTION A-A ADDED.
ENGLISHBEAMS.DGN 4718 - THIS SHEET ISSUED 05-04.





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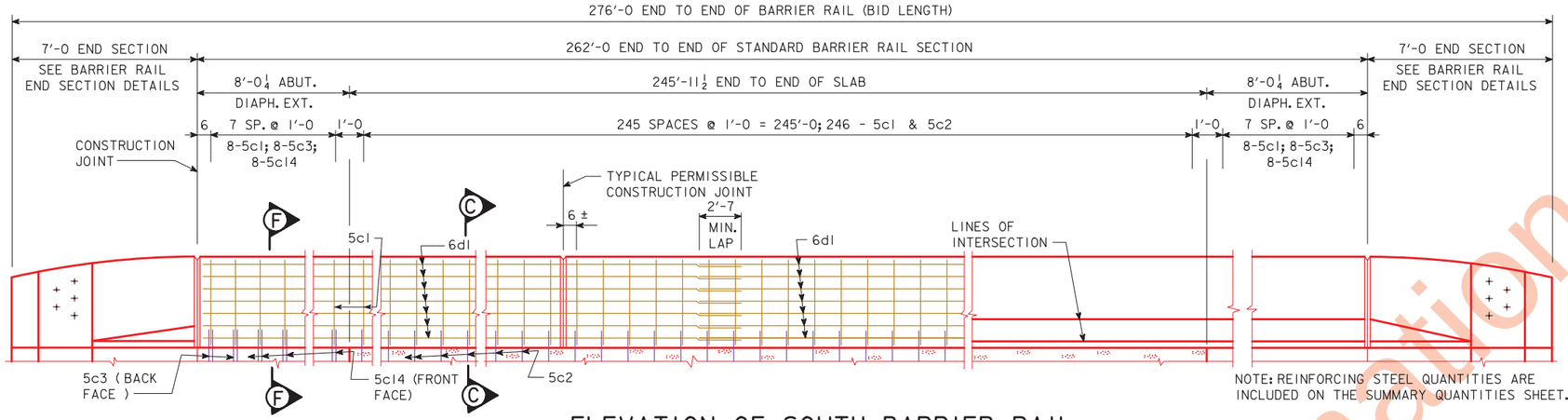
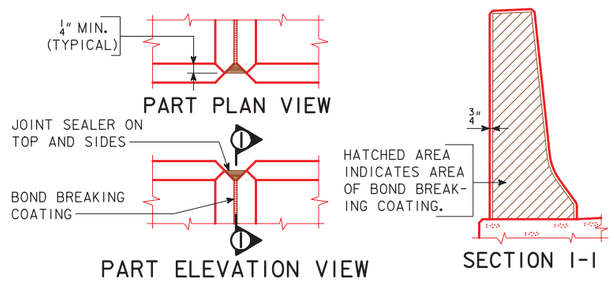



## ELEVATION OF SOUTH BARRIER RAIL

(ALL DIMENSIONS ARE ALONG GUTTERLINE)
(LOOKING SOUTH)




## BARRIER RAIL JOINT DETAILS

## BARRIER AESTHETIC TREATMENT NOTES:

THE BARRIER RAIL SHALL UTILIZE HORIZONTAL RUSTICATIONS WHERE DESIGNATED IN THE PLANS AND INTEGRALLY COLORED CONCRETE.

SEE "GENERAL NOTES FOR CONCRETE RUSTICATION" ON DESIGN SHEET 4 FOR MORE INFORMATION REGARDING APPROVED TECHNIQUES AND METHODS OF CONCRETE RUSTICATION.

NO PRODUCTION BARRIER WORK MAY PROCEED UNTIL FINAL APPROVAL OF THE BARRIER MOCKUP BY THE ENGINEER.

ALL COSTS ASSOCIATED WITH HORIZONTAL RUSTICATIONS, INTEGRAL CONCRETE COLOR, AND CONSTRUCTING THE BARRIER MOCKUP PANEL ARE TO BE INCLUDED IN THE BID ITEM, "CONCRETE BARRIER RAILING, AESTHETIC".

## BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.

COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.

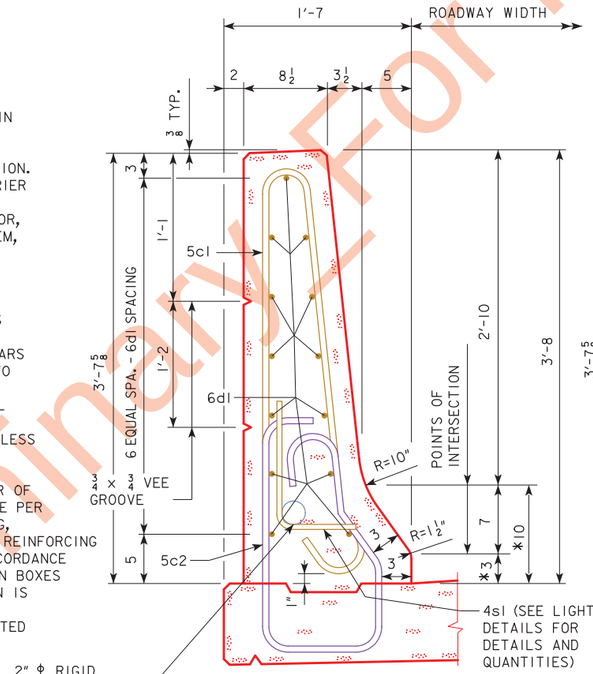
THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR "CONCRETE BARRIER RAILING, AESTHETIC" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

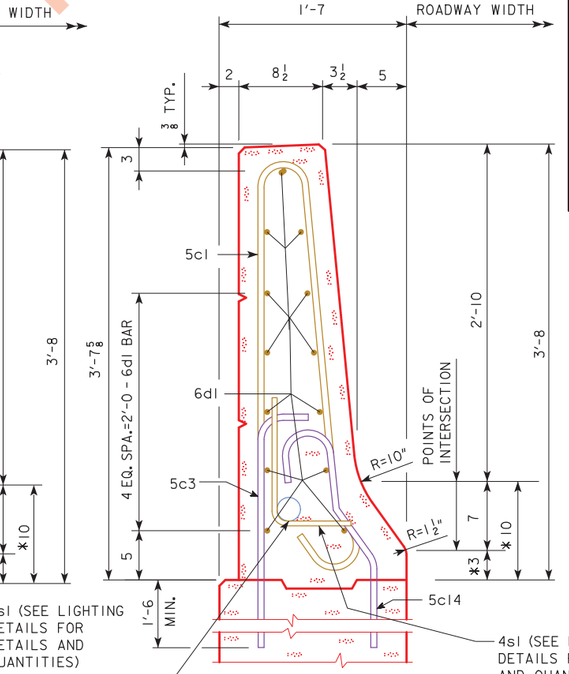
TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL ℄ GRADE, EXCEPT AT THE END SECTIONS.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET EXCEPT AT THE END SECTIONS.

* DENOTES THE MAXIMUM VALUE FOR THIS DIMENSION. THIS DIMENSION MAY VARY DUE TO CONSTRUCTION INACCURACIES.




PART SECTION C-C




PART SECTION F-F

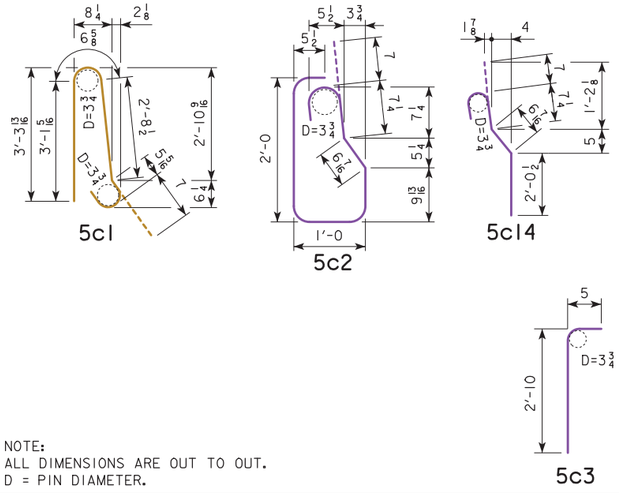
## EPOXY COATED REINF. STEEL - SOUTH RAIL

| SECTION | BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|---|
| STANDARD SECTIONS | 5c1 | RAIL, VERTICAL | | 262 | 7'-5 | 2,027 |
| | 6d1 | RAIL, LONGITUDINAL | | 91 | 39'-8 | 5,422 |
| | | | | | EPOXY STEEL TOTAL (LBS.) | 7,449 |

## STAINLESS STEEL REINF. STEEL - SOUTH RAIL

| SECTION | BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|---|
| STANDARD SECTIONS | 5c2 | RAIL, VERTICAL | | 246 | 6'-0 | 1,539 |
| | 5c3 | RAIL, VERTICAL | | 16 | 3'-3 | 54 |
| | 5c14 | RAIL, VERTICAL | | 16 | 3'-10 | 64 |
| | | | | | STAINLESS STEEL TOTAL (LBS.) | 1,657 |

## BENT BAR DETAILS




NOTE:
ALL DIMENSIONS ARE OUT TO OUT.
D = PIN DIAMETER.

## CONCRETE PLACEMENT SUMMARY

| SECTION | | TOTAL |
|---|---|---|
| STANDARD SECTION | 262'-0 @ 0.1281 CU. YD. PER FT. | 33.6 |
| BARRIER RAIL END SECTION | 2 @ 0.77 CU. YD. | 1.5 |
| | TOTAL ( CU. YD. ) | 35.1 |

## CONCRETE BARRIER RAIL QUANTITIES

| ITEM | UNIT | QUANTITY |
|---|---|---|
| CONCRETE BARRIER RAILING, AESTHETIC | L.F. | 276.0 |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

# SOUTH BARRIER RAIL DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

# JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 31 OF 39 — FILE NO. 30864 — DESIGN NO. 121

REVISED 09-2016 - CHANGED 5c1 BAR LENGTH TO 7'-5 (IT WAS 5'-11 IN ERROR).
ENGLISHDECKRAILBRIDGES.DGN 1020SF - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 5c2, 5c3, 5c14 BARS TO STAINLESS STEEL.





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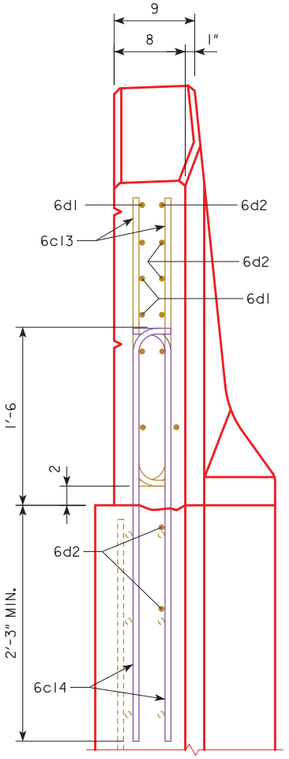
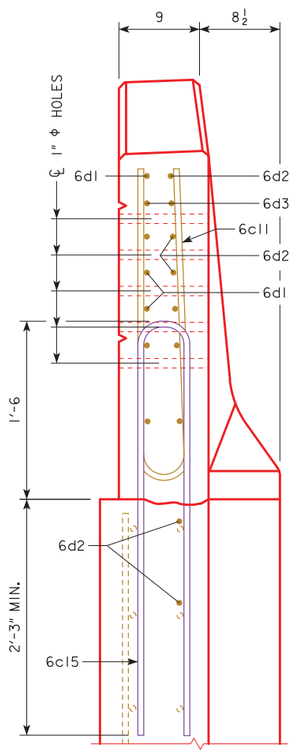
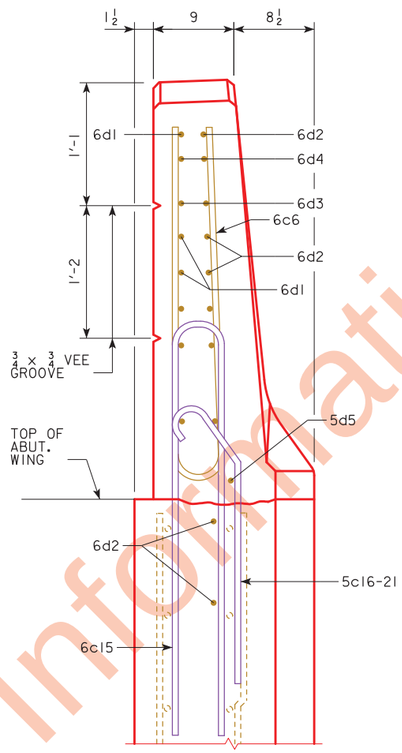


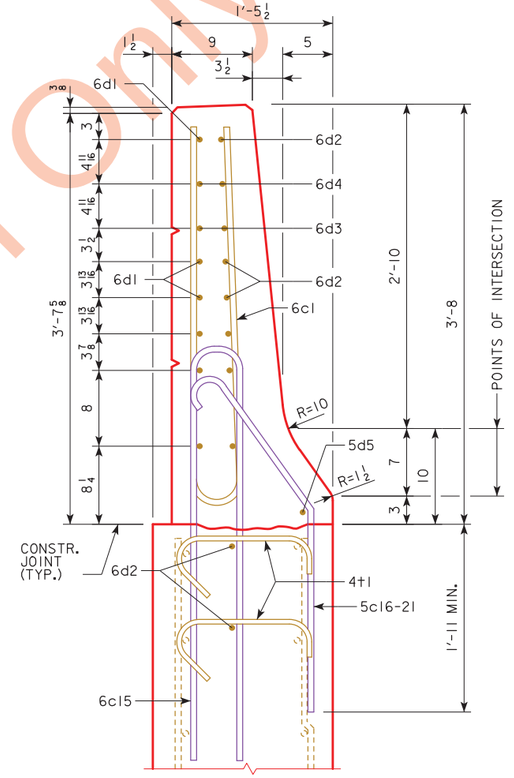

VIEW A-A




SECTION B-B

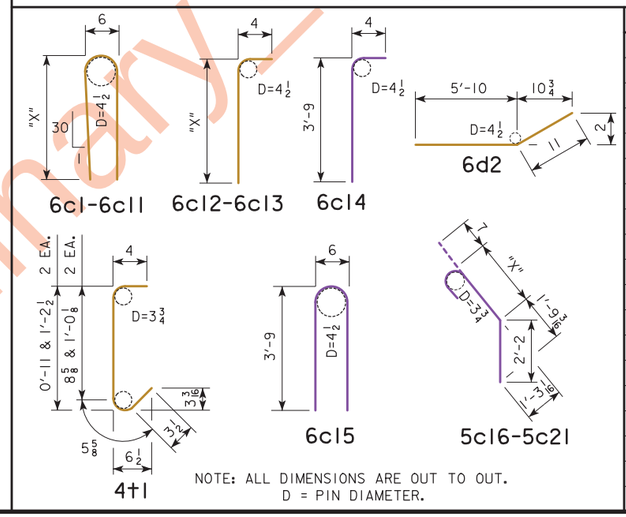



SECTION C-C




SECTION D-D

## BENT BAR DETAILS




NOTE: ALL DIMENSIONS ARE OUT TO OUT.
D = PIN DIAMETER.

| BAR | "X" |
|---|---|
| 6c1 | 3'-4 |
| 6c2 | 3'-3½ |
| 6c3 | 3'-3 |
| 6c4 | 3'-2½ |
| 6c5 | 3'-2 |
| 6c6 | 3'-1½ |
| 6c7 | 3'-0½ |
| 6c8 | 3'-0 |
| 6c9 | 2'-11 |
| 6c10 | 2'-10 |
| 6c11 | 2'-9 |
| 6c12 | 2'-8 |
| 6c13 | 2'-6 |
| 5c16 | 0'-6½ |
| 5c17 | 0'-8½ |
| 5c18 | 0'-10¼ |
| 5c19 | 1'-0¼ |
| 5c20 | 1'-2 |
| 5c21 | 1'-4 |

NOTE:
CONSTRUCTION JOINT BETWEEN TOP OF WING AND BARRIER RAIL IS ROUGHENED CONCRETE.

NOTE:
THE 10" RADIUS AND 1½" RADIUS ARE TYPICAL AND SHALL BE USED WHEN CONSTRUCTING THE CORNERS FOR VIEW A-A, SECTION B-B, SECTION C-C AND SECTION D-D.

NOTE:
DASHED LINES BELOW THE TOP OF WING ARE THE ABUTMENT WING REINFORCING STEEL. SEE WING ABUTMENT SHEET FOR PLACEMENT.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

# SOUTH BARRIER RAIL END SECTION

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 32 OF 39 FILE NO. 30864 DESIGN NO. 121





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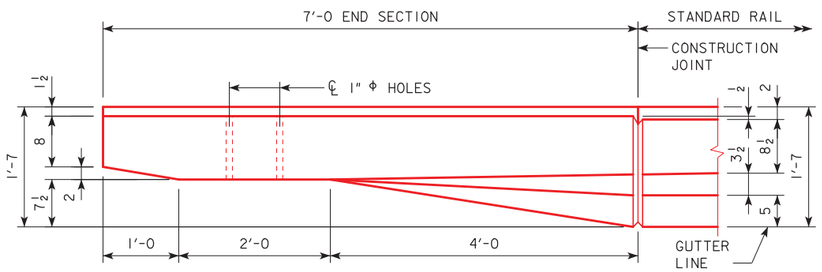
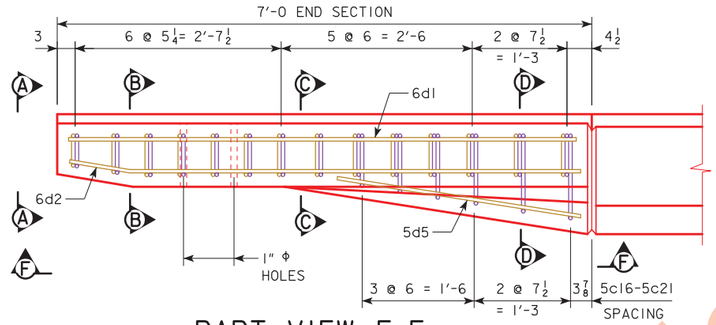
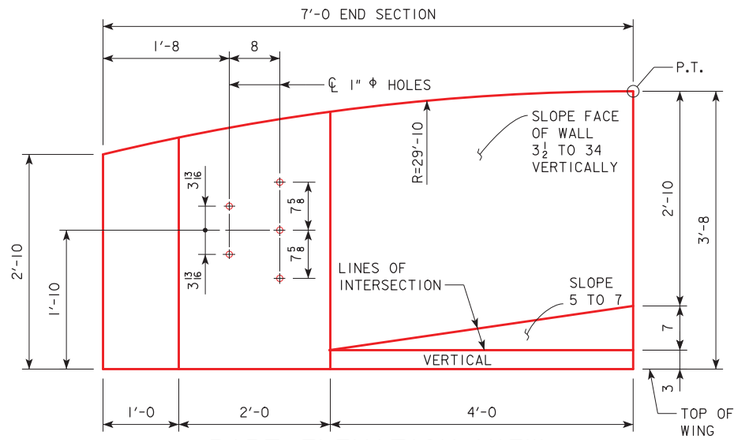



PART PLAN VIEW

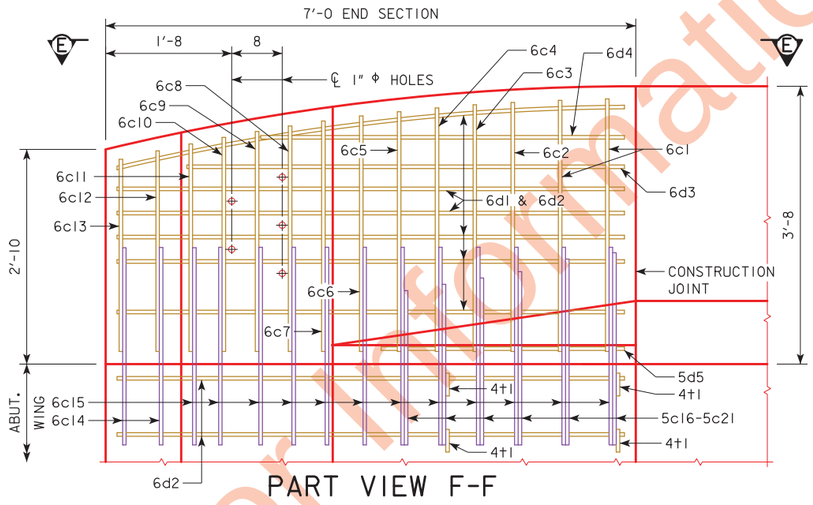



PART VIEW E-E




PART ELEVATION VIEW

PROVIDE 5 HOLES FORMED WITH 1"Φ PLASTIC CONDUIT. COST TO BE INCLUDED IN PRICE BID FOR CONCRETE BARRIER RAILING.




PART VIEW F-F

## EPOXY COATED REINF. STEEL - ONE END SECT.

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| 6c1 | RAIL, VERTICAL | ⊓ | 2 | 7'-2 | 22 |
| 6c2 | RAIL, VERTICAL | ⊓ | 1 | 7'-1 | 11 |
| 6c3 | RAIL, VERTICAL | ⊓ | 1 | 7'-0 | 11 |
| 6c4 | RAIL, VERTICAL | ⊓ | 1 | 6'-11 | 10 |
| 6c5 | RAIL, VERTICAL | ⊓ | 1 | 6'-10 | 10 |
| 6c6 | RAIL, VERTICAL | ⊓ | 1 | 6'-9 | 10 |
| 6c7 | RAIL, VERTICAL | ⊓ | 1 | 6'-7 | 10 |
| 6c8 | RAIL, VERTICAL | ⊓ | 1 | 6'-6 | 10 |
| 6c9 | RAIL, VERTICAL | ⊓ | 1 | 6'-4 | 10 |
| 6c10 | RAIL, VERTICAL | ⊓ | 1 | 6'-2 | 9 |
| 6c11 | RAIL, VERTICAL | ⊓ | 1 | 6'-0 | 9 |
| 6c12 | RAIL, VERTICAL | ⌐ | 2 | 3'-0 | 9 |
| 6c13 | RAIL, VERTICAL | ⌐ | 2 | 2'-10 | 9 |
| | | | | | |
| 6d1 | RAIL, HORIZONTAL | — | 6 | 6'-8 | 60 |
| 6d2 | RAIL, HORIZONTAL | ⌒ | 8 | 6'-9 | 81 |
| 6d3 | RAIL, HORIZONTAL | — | 2 | 5'-8 | 17 |
| 6d4 | RAIL, HORIZONTAL | — | 2 | 5'-1 | 15 |
| 5d5 | RAIL, HORIZONTAL | — | 1 | 3'-9 | 4 |
| | | | | | |
| 4t1 | RAIL, ABUTMENT WING TIE BARS | ⊐ | 4 | VARIES | 5 |
| | | | | | |
| | | | EPOXY REINF. TOTAL WEIGHT (LBS.) | | 322 |

## STAINLESS STEEL REINF. STEEL - ONE END SECT.

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| 6c14 | RAIL, VERTICAL | ⌐ | 4 | 4'-1 | 25 |
| 6c15 | RAIL, VERTICAL | ⊓ | 12 | 8'-0 | 144 |
| 5c16-21 | RAIL, VERTICAL | ⌐ | 6 | VARIES | 23 |
| | | | | | |
| | | STAINLESS STEEL TOTAL WEIGHT (LBS.) | | | 192 |

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.

## CONCRETE PLACEMENT SUMMARY

| SECTION | TOTAL |
|---|---|
| BARRIER RAIL ONE END SECTION | 0.77 CU. YD. |
| | |

NOTE:
FIELD BEND 6d1 AND 6d2 BARS AS NEEDED.

NOTE:
4t1 PLACEMENT- 2 BARS EACH LEVEL OF 6d2 IN WING FOOTING.

NOTE:
FOR SOUTH BARRIER RAIL END SECTION VIEW A-A, SECTION B-B, SECTION C-C, SECTION D-D AND BENT BAR DETAILS SEE DESIGN SHEET 32.

NOTE:
THE 6c14, 6c15, 5c16-21, 2 - 6d2 AND 4t1 BARS ARE TO BE PLACED WITH THE ABUTMENT WING. THE DETAILS FOR PLACEMENT ARE SHOWN ON THE WING ABUTMENT SHEET.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## SOUTH BARRIER RAIL END SECTION

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 33 OF 39 — FILE NO. 30864 — DESIGN NO. 121

ENGLISHDECKRAILBRIDGES.DGN 1017S - THIS SHEET ISSUED 04-14 - ADDED STAINLESS STEEL REINFORCING BAR LIST AND CHANGED 6c3, 6c4 & 5c5-10 BARS TO STAINLESS STEEL.





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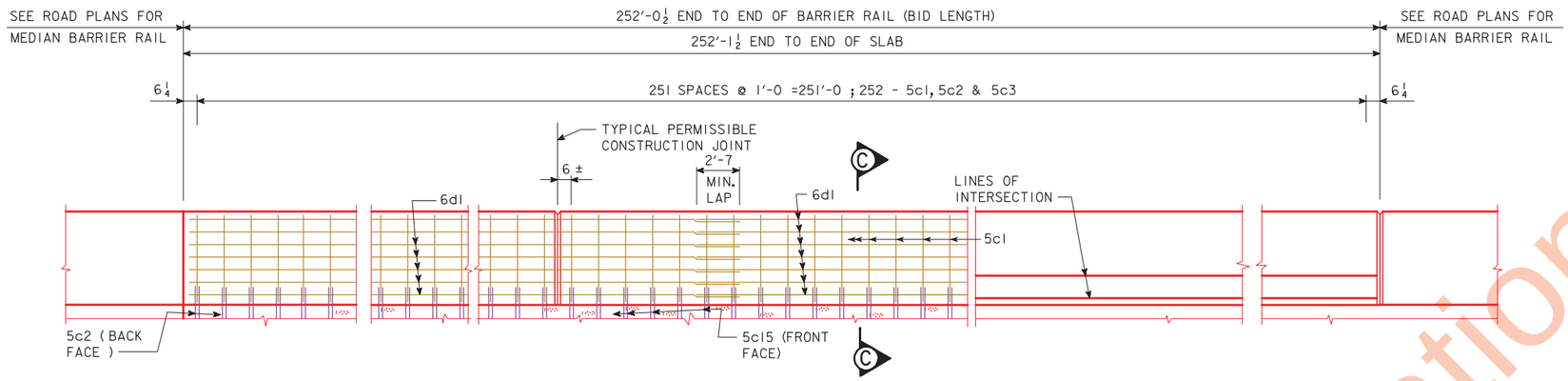
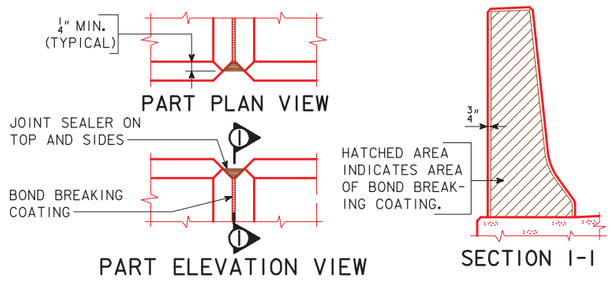


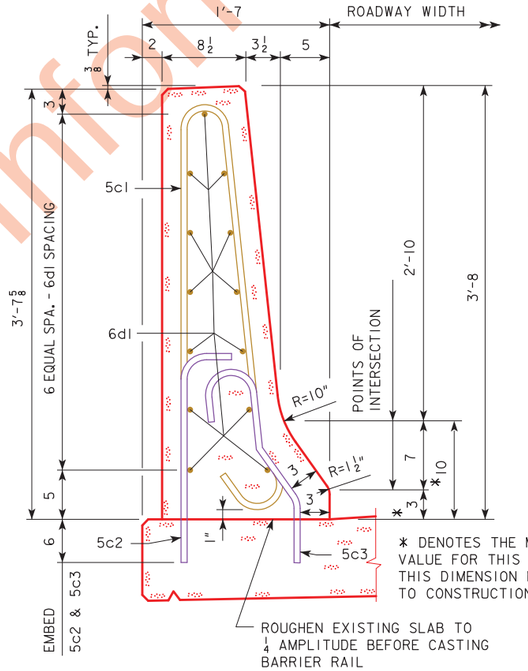

## ELEVATION OF MEDIAN BARRIER RAIL

SOUTH BARRIER RAIL - WESTBOUND BRIDGE - LOOKING SOUTH
NORTH BARRIER RAIL - EASTBOUND BRIDGE - LOOKING NORTH

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED ON THE SUMMARY QUANTITIES SHEET.




## BARRIER RAIL JOINT DETAILS




## PART SECTION C-C

## BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.

COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

ALL BARRIER RAIL REINFORCING STEEL IS TO BE EITHER EPOXY COATED. OR STAINLESS STEEL AS SHOWN. THE STAINLESS STEEL REINFORCING STEEL SHALL BE DEFORMED BAR GRADE 60 MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.

THE CONCRETE BARRIER RAIL IS TO BE BID ON A LINEAL FOOT BASIS. THE NUMBER OF LINEAL FEET OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR "CONCRETE BARRIER RAILING, AESTHETIC" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS. IF CONDUIT IS REQUIRED IN THIS PLAN THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL ℄ GRADE.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 3.46 SQUARE FEET.

## DOWEL SETTING NOTE:

THE 5c2 AND 5c3 BARS SHALL BE SET AS DOWELS IN DRILLED HOLES. THE HOLES ARE TO BE 6" DEEP. THE DOWELS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE FOLLOWING SYSTEMS SHALL BE USED.

POLYMER GROUT SYSTEM IN ACCORDANCE WITH STANDARD SPECIFICATIONS ARTICLE 2301 AND CURRENT SUPPLEMENTAL SPECIFICATIONS.

THE CONTRACTOR SHALL ATTEMPT TO AVOID BOTH THE LONGITUDINAL AND TRANSVERSE DECK STEEL WHEN SETTING DOWEL BARS. DUE TO THE LARGE QUANTITY OF STEEL IN THE BRIDGE DECK, THE CONTRACTOR SHALL UTILIZE A REBAR LOCATOR CAPABLE OF LOCATING BAR LOCATION AND SIZE TO LOCATE LONGITUDINAL AND TRANSVERSE STEEL. DOWEL LOCATIONS CAN BE SHIFTED SLIGHTLY TO AVOID DECK STEEL.

THE PRICE BID FOR "CONCRETE BARRIER RAILING, AESTHETIC" SHALL INCLUDE THE COSTS OF LOCATING EXISTING BARS AND SETTING DOWELS IN THE DECK.

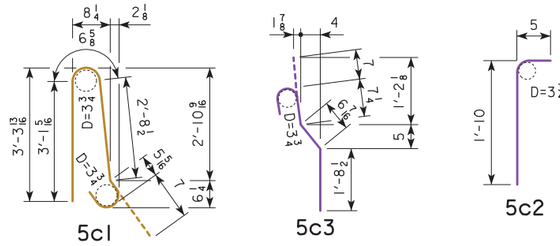
## EPOXY COATED REINF. STEEL - TWO RAILS

| SECTION | BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|---|
| STANDARD SECTIONS | 5c1 | RAIL, VERTICAL | | 504 | 7'-5 | 3,899 |
| | 6d1 | RAIL, LONGITUDINAL | | 91 | 38'-3 | 5,228 |
| | | | | | EPOXY STEEL TOTAL WEIGHT (LBS.) | 9,127 |

## STAINLESS STEEL - TWO RAILS

| | | | | | |
|---|---|---|---|---|---|
| 5c2 | RAIL, VERTICAL | | 504 | 2'-3 | 1,183 |
| 5c3 | RAIL, VERTICAL | | 504 | 2'-6 | 1,314 |
| | | | | STAINLESS STEEL TOTAL WEIGHT (LBS.) | 2,497 |

## BENT BAR DETAILS




NOTE:
ALL DIMENSIONS ARE OUT TO OUT.
D = PIN DIAMETER.

## CONCRETE PLACEMENT SUMMARY

| SECTION | | TOTAL |
|---|---|---|
| STANDARD SECTION | 504'-1 @ 0.1281 CU. YD. PER FT. | 65 |
| | | |
| | | |
| | TOTAL ( CU. YD. ) | 65 |

## CONCRETE BARRIER RAIL QUANTITIES

| ITEM | UNIT | QUANTITY |
|---|---|---|
| CONCRETE BARRIER RAILING, AESTHETIC | L.F. | 504.1 |
| | | |

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## MEDIAN BARRIER RAIL DETAILS

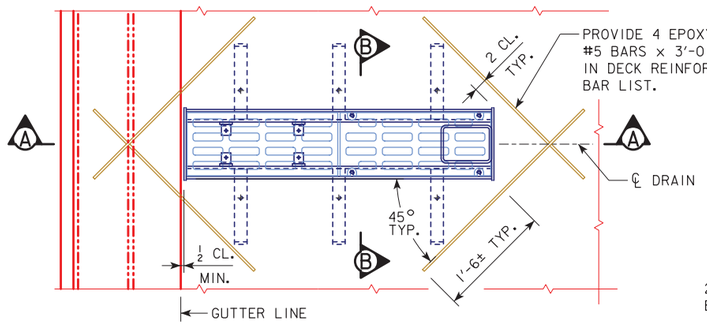
STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

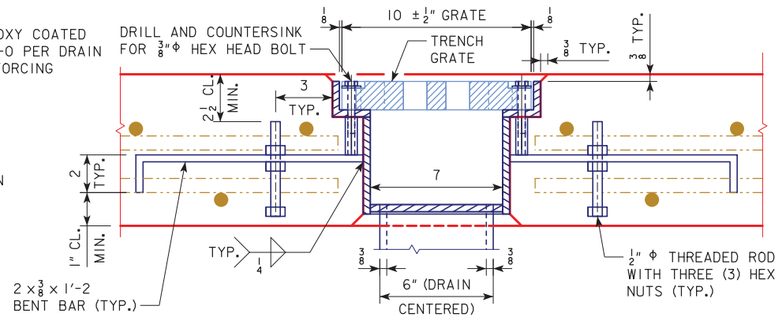
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 34 OF 39 — FILE NO. 30864 — DESIGN NO. 121

| DESIGN TEAM HNTB | 3'-8 BARRIER RAIL -- INTEGRAL ABUTMENTS | MODIFIED STANDARD SHEET 1020SD | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 120 |
|---|---|---|---|---|---|

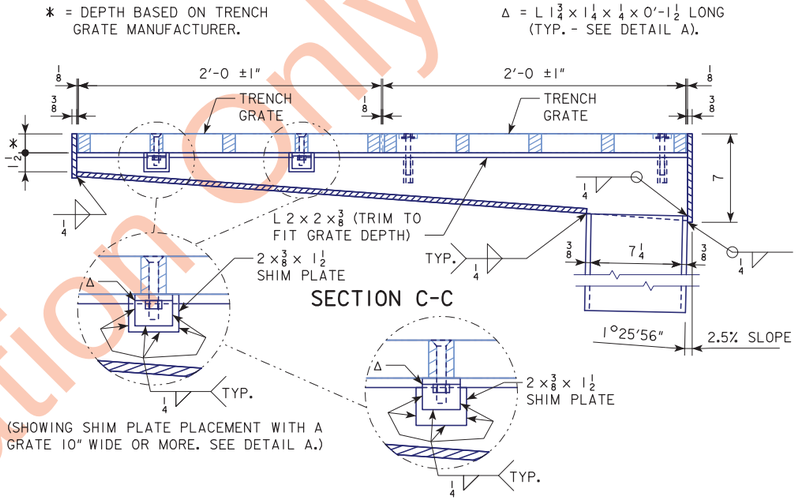


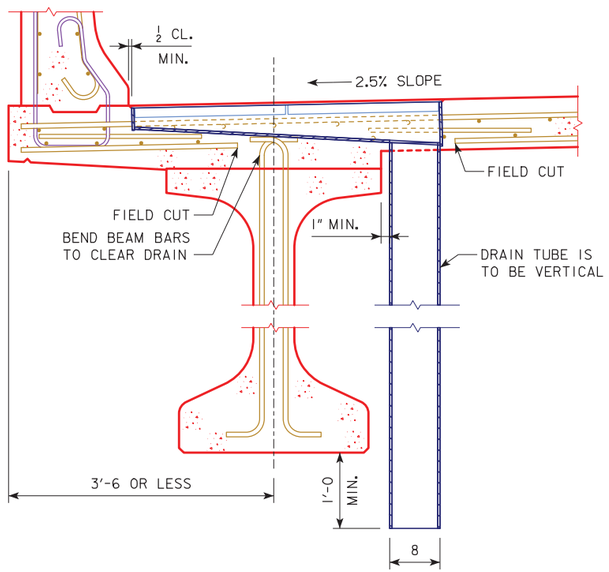

PART PLAN AT DRAIN




PART SECTION B-B - SHOWING DTL. B OPTION

(DETAIL IS SHOWN USING 10" WIDE GRATE)




PART SECTION A-A

## DRAIN NOTES

THE DRAINS SHALL BE ⅜ INCH THICK STEEL. THE DRAIN ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION. THE BID ITEM "DECK DRAIN" SHALL INCLUDE ALL COSTS ASSOCIATED WITH FABRICATING AND INSTALLING THE DECK DRAINS AS PER PLAN.

THE DRAIN TRENCH GRATES SHALL BE FERROUS CASTINGS. METAL USED IN THE MANUFACTURE OF CASTINGS SHALL CONFORM TO ASTM A48-83 CLASS 35B OR BETTER GRAY IRON CASTINGS IN ACCORDANCE WITH CURRENT IOWA D.O.T. STANDARD SPECIFICATIONS. FINISH OF CASTINGS SHALL BE SMOOTH AND FREE OF DEFECTS. TRENCH GRATES SHALL BE CAPABLE OF CARRYING AASHTO HL-93 LOADING. GALVANIZING OF THE TRENCH GRATES IS NOT REQUIRED.

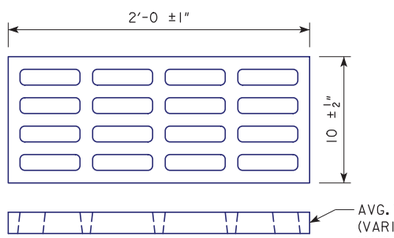
DRAINS SHALL BE CENTERED OVER THE NEAREST BOTTOM TRANSVERSE SLAB REINFORCING BAR FROM THE LOCATION DESIGNATED ON THE SLAB LAYOUT. THE BOTTOM TRANSVERSE SLAB REINFORCING BAR SHALL BE CUT OFF TO PROVIDE 1 INCH CLEARANCE FROM THE DRAIN. THE TOP TRANSVERSE SLAB REINFORCING BARS ON EACH SIDE OF THE DRAIN, SHALL BE SPACED AS NECESSARY TO PROVIDE 1 INCH CLEARANCE FROM THE DRAIN. LONGITUDINAL SLAB REINFORCING BARS THAT CONFLICT WITH THE DRAIN SHALL BE CUT OFF TO PROVIDE 2 INCH CLEARANCE FROM THE DRAIN. ALL CUT ENDS OF BARS SHALL BE COATED WITH EPOXY PATCHING MATERIAL SUPPLIED BY THE MANUFACTURER OF THE EPOXY COATING. LONGITUDINAL SLAB REINFORCING BARS SHALL BE SHIFTED AS NECESSARY TO ACCOMMODATE ANCHOR BARS.

## MATERIALS

PLATES, BARS, THREADED RODS AND ANGLES SHALL MEET THE REQUIREMENTS ASTM A709 GRADE 36. THE TUBE STEEL SHALL MEET THE REQUIREMENTS ASTM A500 GRADE B.

⅜"Φ MECHANICALLY GALVANIZED STEEL FLAT HEAD SCREW SHALL MEET THE REQUIREMENTS OF ASTM B695-04 (2009) AND ASTM F835-12.

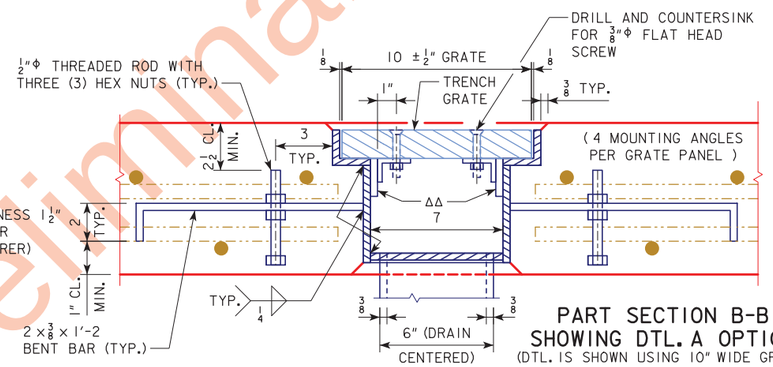
⅜"Φ MECHANICALLY GALVANIZED STEEL HEX HEAD BOLT AND HEX NUT SHALL MEET THE REQUIREMENTS OF ASTM B695-04 (2009) AND ASTM A307-12 GRADE A.




DRAIN TRENCH GRATE DETAILS

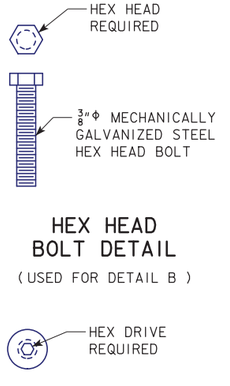
( 2 GRATES REQUIRED PER DRAIN )

NOTE: PATTERN AND DIRECTION OF GRATE OPENINGS SHALL BE SIMILAR TO THE PATTERN SHOWN.




PART SECTION B-B SHOWING DTL. A OPTION

(DTL. IS SHOWN USING 10" WIDE GRATE)



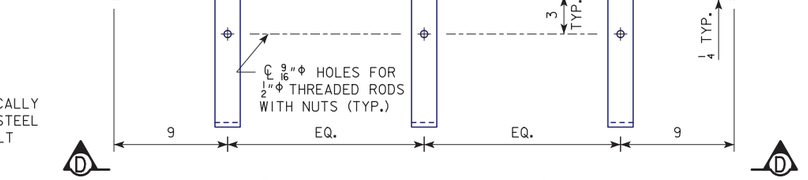

HEX HEAD BOLT DETAIL

( USED FOR DETAIL B )

FLAT HEAD SCREW DETAIL

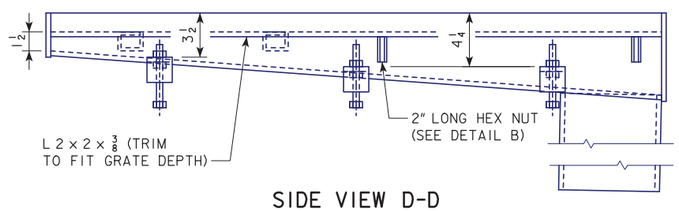
( USED FOR DETAIL A )

ΔΔ = ADJUST SHIM PLATE ACCORDING TO WIDTH OF GRATE.




PLAN VIEW OF DRAIN TRENCH

( GRATE TIE DOWNS SHOW BOTH DETAIL A AND DETAIL B )




SIDE VIEW D-D

NOTE: 5 DRAINS REQUIRED. SEE SLAB LAYOUT FOR LOCATIONS.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS — 117'-0 INTERIOR SPAN

## AESTHETIC DECK DRAIN

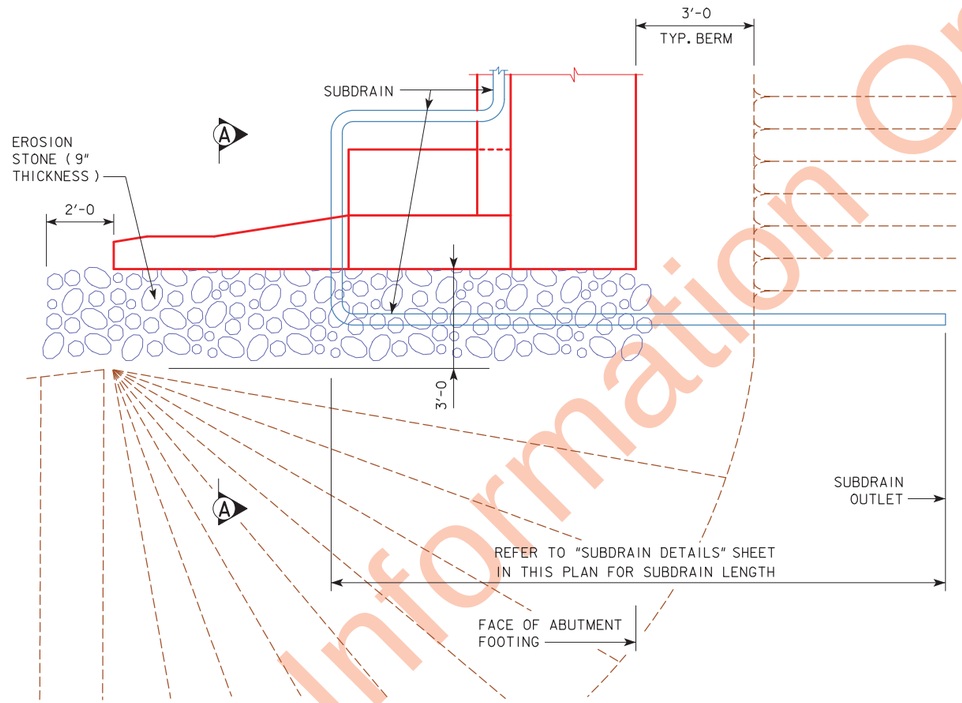
STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 — APRIL 2020

## JOHNSON COUNTY

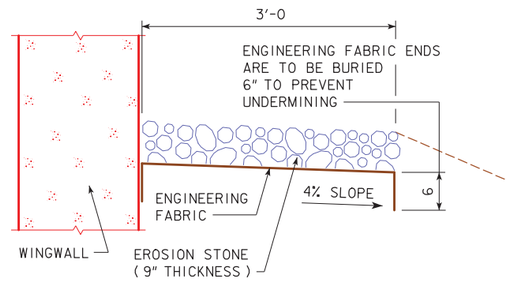
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 35 OF 39 — FILE NO. 30864 — DESIGN NO. 121

REVISED 07-13 - THE STAINLESS STEEL ⅜" CAP SCREWS AND HEX HEAD BOLT WERE CHANGED TO MECHANICALLY GALANIZED.
REVISED 10-2016 - ADDED ¼" FILLET WELD CALLOUT TO DRAIN TUBE IN "PART SECTION A-A" STEEL BEAM DETAIL.
REVISED 06-2017 - SHEET IS REDRAWN TO ACCOMODATE THE USE OF A 6" x 8" x ⅜" DRAIN TUBE. (WAS 8" DIA. x ⅜" STRUCTURAL DRAIN TUBE MAY BE SUBSTITUTED WITH A 8" x 8" x ⅜" STRUCTURAL TUBE).
ENGLISH\MISCELLANEOUSBRIDGES.DGN 1054 - THIS SHEET REDRAWN 11-00.

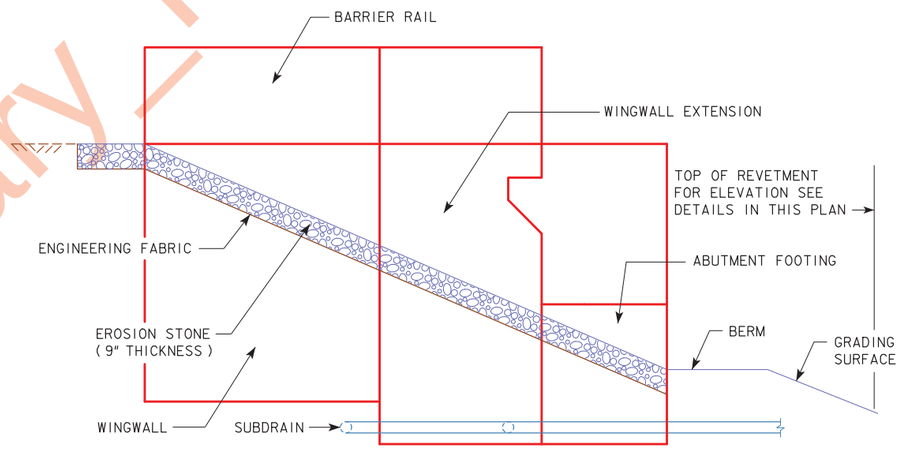



TOP VIEW OF WING ARMORING WITH WING EXTENSION




SECTION A-A

A CHECK SHALL BE MADE AT THE SUBDRAIN OUTLET TO INSURE THAT IT IS DRAINING PROPERLY DURING THE BACKFILL FLOODING PROCESS.




PROFILE VIEW OF WING ARMORING WITH WING EXTENSION

( INTEGRAL ABUTMENT WITH WING EXTENSIONS )

## GENERAL NOTES:

EROSION STONE SHALL BE PLACED ALONG THE SIDES OF THE WINGS AND ABUTMENT FOOTING AS SHOWN IN SECTION A-A. THIS IS TYPICAL AT EACH CORNER OF THE BRIDGE UNLESS OTHERWISE NOTED IN THE PLANS. THE EROSION STONE AT THESE LOCATIONS SHALL BE UNDERLAYED WITH ENGINEERING FABRIC IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.

THE EROSION STONE SHALL BE IN ACCORDANCE WITH SECTION 4130, OF THE STANDARD SPECIFICATIONS. MATERIAL PASSING THE 3 INCH SCREEEN BUT 100% RETAINED ON A 1 INCH SCREEN MAY BE USED AS CHOKE STONE.

THE EROSION STONE SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM 9" DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

PAYMENT FOR THE BRIDGE WING ARMORING WILL BE BID PER SQUARE YARD. COST WILL INCLUDE ENGINEERING FABRIC, EROSION STONE, EXCAVATION, SHAPING, AND COMPACTION TO DIMENSIONS SHOWN IN THESE PLANS. BID ITEM SHALL BE "BRIDGE WING ARMORING - EROSION STONE".

DESIGN FOR 10° SKEW (RA)

249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

# BRIDGE WING ARMORING

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

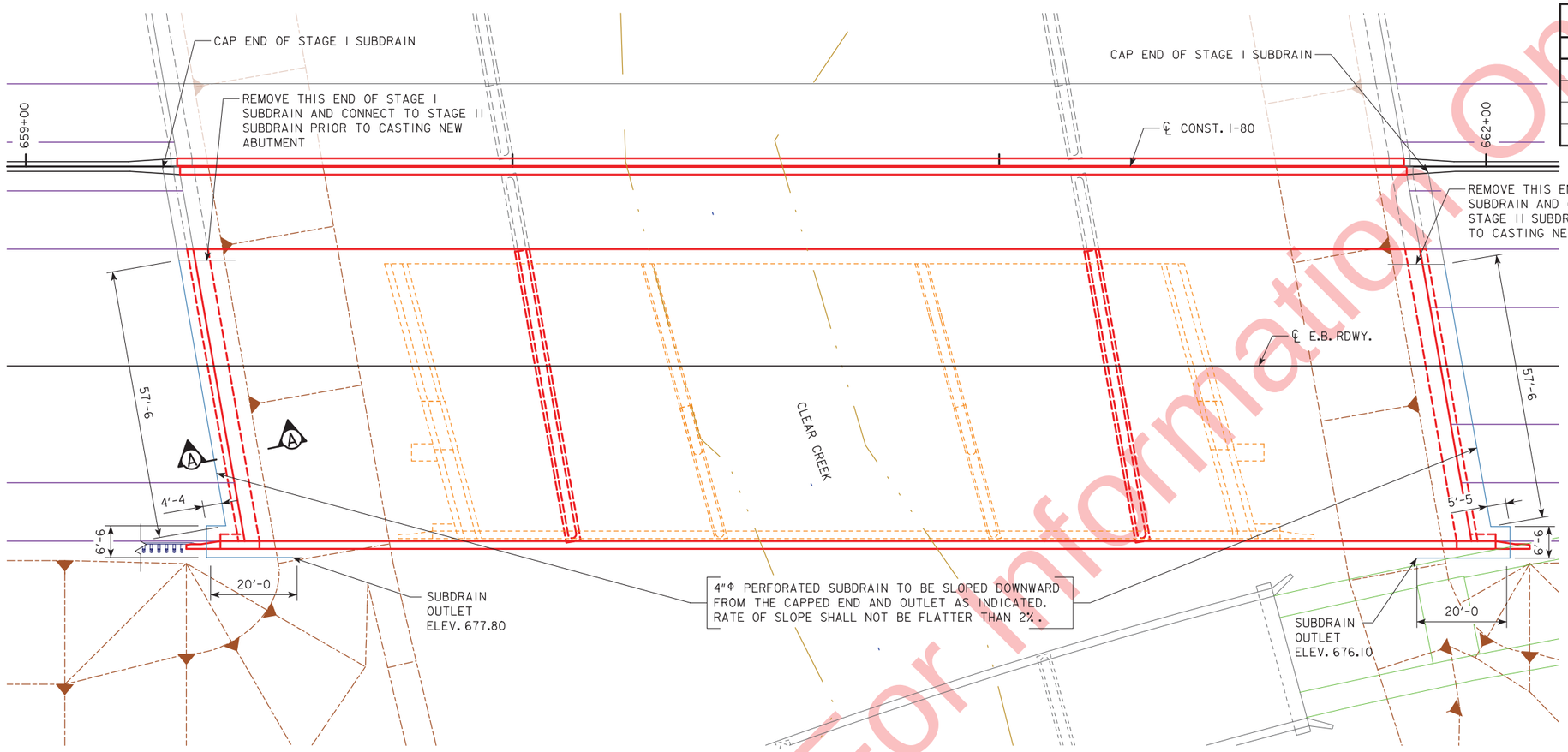
DESIGN SHEET NO. 36 OF 39 FILE NO. 30864 DESIGN NO. 121

REVISED 06-14 - ADDED 2 FEET OF LENGTH OF EROSION STONE IN FRONT OF THE BRIDGE WING.
ENGLISHFORESLOPEPROTECTIONBRIDGES.DGN 1005A - THIS SHEET ISSUED 06-02.



| DESIGN TEAM HNTB | BRIDGE WING ARMORING - WATER CROSSING | STANDARD SHEET 1005A | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 122 |
|---|---|---|---|---|---|

BENCH MARK No. 523 Sta. 661+62.644 113.94 Rt. FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- 678.334




| SUBDRAIN OUTLET ELEVATIONS | |
|---|---|
| LOCATION | ELEVATION |
| WEST ABUTMENT | 677.80 |
| | |
| EAST ABUTMENT | 676.10 |
| | |

NOTE:
SECTION A-A IS SHOWN ON ABUTMENT BACKFILL DETAILS SHEET.

## SITUATION PLAN

SHOWING SUBDRAIN LOCATIONS

## SUBDRAIN NOTES :

THIS PLAN SHEET SHOWS DETAILS FOR PLACING ALL SUBDRAINS AND SUBDRAIN OUTLETS REQUIRED FOR THIS STRUCTURE.

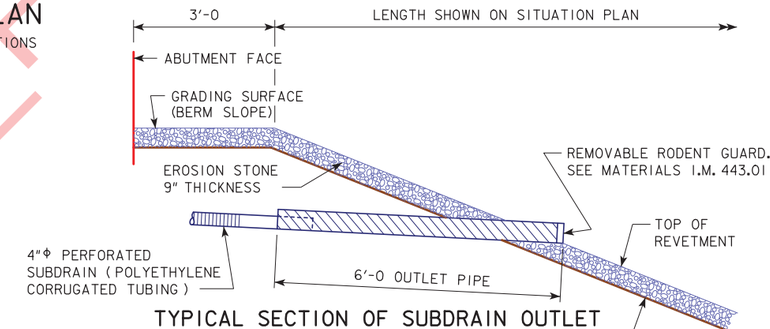
THE SUBDRAINS SHALL BE 4" IN DIAMETER AND SHALL BE IN ACCORDANCE WITH ARTICLE 4143.01, B, OF THE STANDARD SPECIFICATIONS.

THE SUBDRAIN OUTLET SHALL CONSIST OF A LENGTH OF PIPE WITH A REMOVABLE RODENT GUARD AS DETAILED ON THIS SHEET. THE LENGTH OF THE OUTLET PIPE SHALL BE DETERMINED BY THE REVETMENT AND IT'S PLACEMENT LOCATION. THE CONTRACTOR IS TO INSURE THE OUTLET PIPE IS ADEQUATELY STRONG ENOUGH AND WILL NOT BE DAMAGED WHEN REVETMENT IS PLACED. A CHECK WILL BE MADE AT THE SUBDRAIN OUTLET TO INSURE THAT THE SUBDRAIN IS NOT DAMAGED AND IS DRAINING PROPERLY DURING THE BACKFILL FLOODING PROCESS. IF A METAL OUTLET PIPE IS USED, IT SHALL BE 6 INCHES IN DIAMETER AND COUPLED TO THE 4 INCH DIAMETER SUBDRAIN IN ONE OF THE TWO FOLLOWING WAYS.

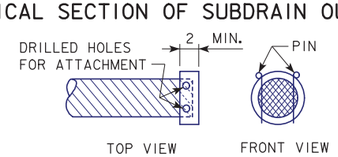
1. USE AN INSIDE FIT REDUCER COUPLER ( COUPLER MUST BE INSERTED A MINIMUM OF 1'-0 INTO THE METAL OUTLET PIPE ).
2. INSERT 1'-0 OF THE 4"Φ SUBDRAIN INTO THE 6"Φ METAL OUTLET PIPE, THEN FULLY SEAL THE ENTIRE OPENING WITH GROUT.

THE COST OF FURNISHING AND PLACING SUBDRAIN ( INCLUDING EXCAVATION ), GRANULAR BACKFILL, POROUS BACKFILL, AND SUBDRAIN OUTLET IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE ( BRIDGE )". NO EXTRA PAYMENT WILL BE MADE.

THE DIMENSIONS SHOWN FOR THE PROPOSED SUBDRAINS ARE BASED ON THE PROPOSED GRADING LAYOUT OF BRIDGE BERMS. THE DIMENSIONS SHOWN ARE FOR ESTIMATING ONLY. REQUIRED LENGTHS AND GENERAL LOCATIONS OF SUBDRAINS ARE SUBJECT TO CHANGE DUE TO FIELD ADJUSTMENTS OF THE GRADING LAYOUT.




TYPICAL SECTION OF SUBDRAIN OUTLET




REMOVABLE RODENT GUARD DETAILS

## EROSION STONE (EMBEDDED) OUTLET DETAILS

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SUBDRAIN DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

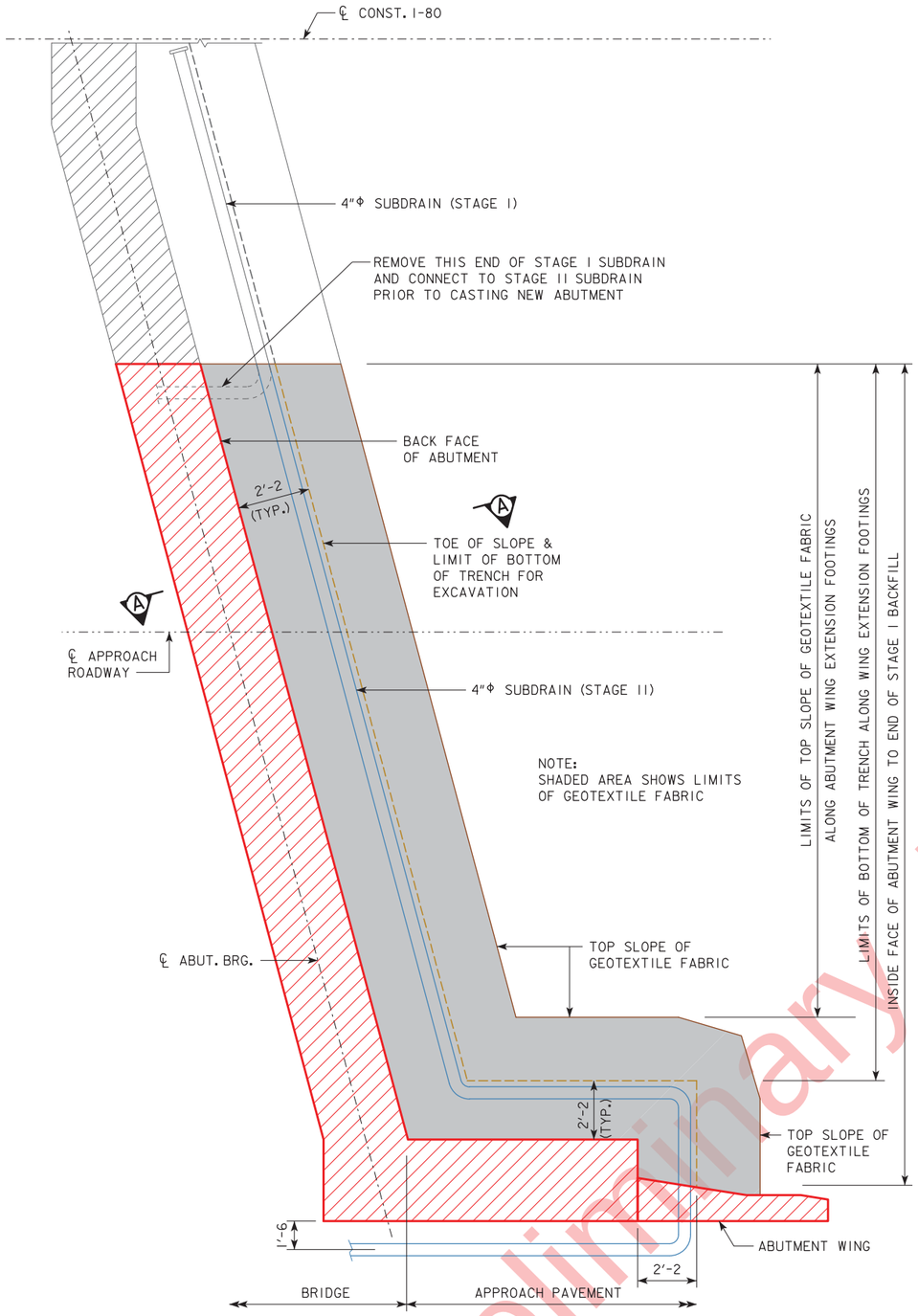
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 37 OF 39 FILE NO. 30864 DESIGN NO. 121

| DESIGN TEAM HNTB | SUBDRAIN DETAILS ( WATER CROSSING ) | MODIFIED STANDARD SHEET 1007A | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER 123 |
|---|---|---|---|---|---|

REVISED 10-14 - TWO ADDITIONAL FORESLOPE PROTECTION DETAILS WERE ADDED OUTSIDE OF THE BORDER TO SHOW REVETMENT UP TO BACK OF ABUTMENT FOOTING.
ENGLISHFORESLOPEPROTECTIONBRIDGES.DGN 1007C - THIS SHEET ISSUED 06-02 FOR WATER CROSSINGS.




## ABUTMENT PLAN WITH WING EXTENSION

(EAST ABUTMENT SHOWN, WEST ABUTMENT SIMILAR)

## ABUTMENT BACKFILL PROCESS:

THE BASE OF THE EXCAVATION SUBGRADE BEHIND THE ABUTMENT IS TO BE GRADED WITH A 4% SLOPE AWAY FROM THE ABUTMENT FOOTING AND A 2% CROSS SLOPE IN THE DIRECTION OF THE SUBDRAIN OUTLET. THIS EXCAVATION SHAPING IS TO BE DONE PRIOR TO BEGINNING INSTALLATION OF THE GEOTEXTILE AND BACKFILL MATERIAL.

AFTER THE SUBGRADE HAS BEEN SHAPED, THE GEOTEXTILE FABRIC SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN. THE FABRIC IS INTENDED TO BE INSTALLED IN THE BASE OF THE EXCAVATION AND EXTENDED VERTICALLY UP THE ABUTMENT BACKWALL, ABUTMENT WING WALL, AND EXCAVATION FACE TO A HEIGHT THAT WILL BE APPROXIMATELY 1 TO 2 FOOT HIGHER THAN THE HEIGHT OF THE POROUS BACKFILL PLACEMENT AS SHOWN IN THE "BACKFILL DETAILS" ON THIS SHEET. THE STRIPS OF THE FABRIC PLACED SHALL OVERLAP APPROXIMATELY 1 FOOT AND SHALL BE PINNED IN PLACE. THE FABRIC SHALL BE ATTACHED TO THE ABUTMENT BY USING LATH FOLDED IN THE FABRIC AND SECURED TO THE CONCRETE WITH SHALLOW CONCRETE NAILS. THE FABRIC PLACED AGAINST THE EXCAVATION FACE SHALL BE PINNED.

WHEN THE FABRIC IS IN PLACE, THE SUBDRAIN SHALL BE INSTALLED DIRECTLY ON THE FABRIC AT THE TOE OF THE REAR EXCAVATION SLOPE. A SLOT WILL NEED TO BE CUT IN THE FABRIC AT THE POINT WHERE THE SUBDRAIN EXITS THE FABRIC NEAR THE END OF THE ABUTMENT WING WALL.

POROUS BACKFILL IS THEN PLACED AND LEVELED, NO COMPACTION IS REQUIRED.

THE REMAINING WORK INVOLVES BACKFILLING WITH FLOODABLE BACKFILL, SURFACE FLOODING, AND VIBRATORY COMPACTION. THE FLOODABLE BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE FLOODABLE BACKFILL SHALL BE PLACED IN INDIVIDUAL LIFTS, SURFACE FLOODED, AND COMPACTED WITH VIBRATORY COMPACTION TO ENSURE FULL CONSOLIDATION. LIMIT THE LOOSE LIFTS TO NO MORE THAN 2 FEET OF THICKNESS.

START SURFACE FLOODING FOR EACH FLOODABLE BACKFILL LIFT AT THE HIGH POINT OF THE SUBDRAIN AND PROGRESS TO THE LOW POINT WHERE THE SUBDRAIN EXITS THE FABRIC. TO ENSURE UNIFORM SURFACE FLOODING, WATER RUNNING FULL IN A 2-INCH DIAMETER HOSE SHOULD BE SPRAYED IN SUCCESSIVE 6-FOOT TO 8-FOOT INCREMENTS FOR 5 MINUTES WITHIN EACH INCREMENT.

FLOODABLE BACKFILL LIFT PLACEMENT, FLOODING, AND COMPACTION SHALL PROGRESS UNTIL THE REQUIRED FULL THICKNESS OF THE ABUTMENT BACKFILL HAS BEEN COMPLETED.

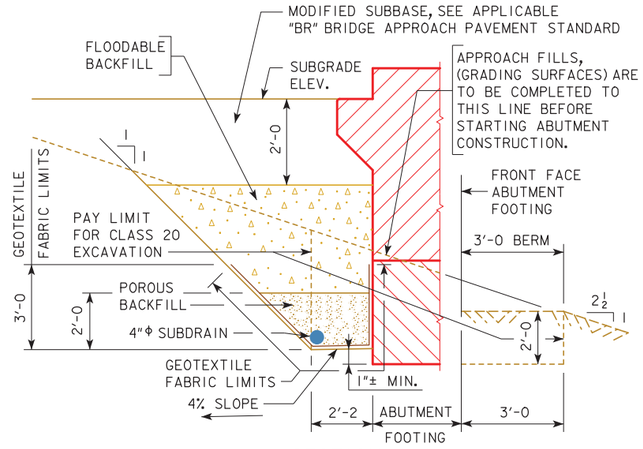
WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS WILL NOT BE MEASURED SEPARATELY FOR PAYMENT.

THE COST OF WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, FLOODABLE BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR STRUCTURAL CONCRETE.

### NOTE:

SUBDRAIN SHALL SLOPE DOWNWARD 2% FROM HIGH END WHEN OUTLETTING AT ONE END OF THE ABUTMENT.

THE GEOTEXTILE FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 6 OF THE STANDARD SPECIFICATIONS. IF THE ENGINEERING FABRIC IS LAPPED THE LAPS SHALL BE A MINIMUM OF ONE FOOT IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.




## SECTION A-A

## BACKFILL DETAILS

NOTE: GEOTEXTILE FABRIC WILL BE ATTACHED TO FACE OF ABUTMENT FOOTING AND WING.

NOTE:
SEE SUBDRAIN DETAILS SHEET FOR DETAILS NOT SHOWN ON THIS SHEET WHICH ARE PERTINENT TO THIS STRUCTURE.

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## ABUTMENT BACKFILL DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 38 OF 39 FILE NO. 30864 DESIGN NO. 121

REVISED 09-14 - THE TECHNICAL DATA INFORMATION TABLE WAS REMOVED AND IS LOCATED IN THE STANDARD SPECIFICATIONS. CHANGED SURFACE FLOODING TIME TO 5 MINUTE INCREMENTS.
REVISED 09-2016 - CHANGED THE BRIDGE APPROACH PAVEMENT STANDARD TO "BR" (WAS "RK").
ENGLISHFORESLOPEPROTECTIONBRIDGES.DGN - 1007E - THIS SHEET ISSUED 08-07.





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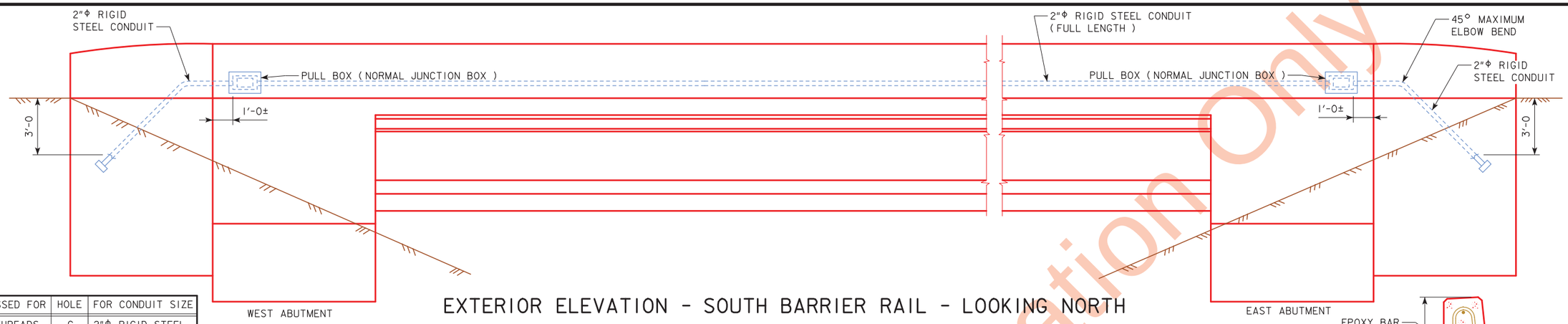
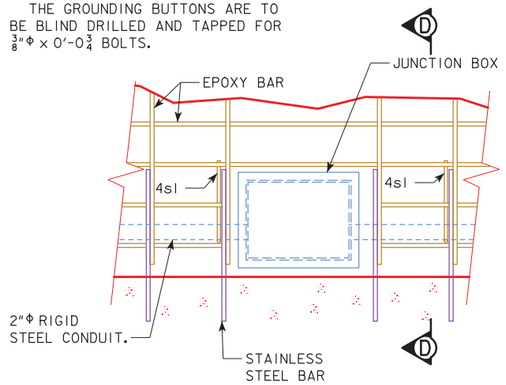



## EXTERIOR ELEVATION - SOUTH BARRIER RAIL - LOOKING NORTH

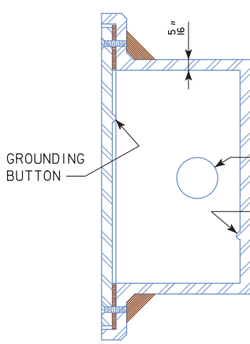
| BOSSED FOR | HOLE | FOR CONDUIT SIZE |
|---|---|---|
| 5 THREADS | C | 2"Φ RIGID STEEL |
| NONE | E | $\frac{1}{2}$"Φ COPPER PIPE |

NOTE:
THE GROUNDING BUTTONS ARE TO BE BLIND DRILLED AND TAPPED FOR $\frac{3}{8}$"Φ x 0'-0$\frac{3}{4}$ BOLTS.

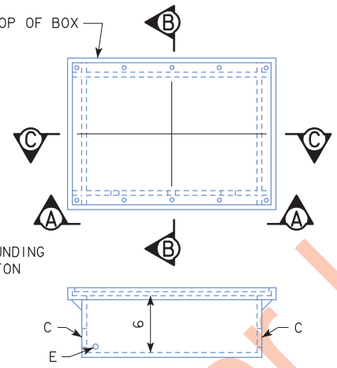



## CONDUIT SUPPORT - RAIL ELEV. DETAIL

ADJUST REINFORCING TO CLEAR JUNCTION BOX.




## SECTION B-B

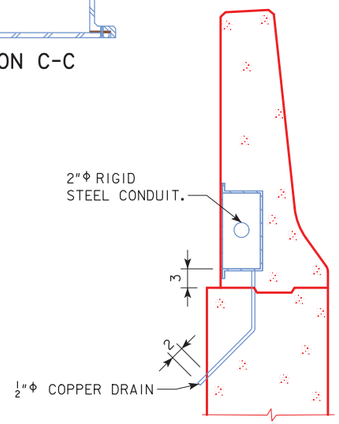



## VIEW A-A

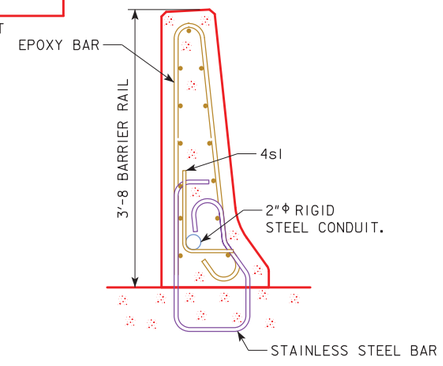
## LI-104 JUNCTION BOX

WATERTIGHT, CAST IRON - FLUSH MOUNT


## SECTION C-C




## SECTION THRU JUNCTION BOX




## SECTION D-D
## CONDUIT SUPPORT

ONLY USED IN RAIL WITH CONDUIT, USE 3'-0 SPACING. GALVANIZED CONDUIT SHALL NOT COME INTO CONTACT WITH THE STAINLESS STEEL REINFORCING.

( 88 REQUIRED )

CONDUIT AND JUNCTION BOXES SHALL BE PLACED IN THE EB SOUTH BARRIER RAIL.

## LIGHTING NOTES:

SEE LI-104 STANDARD ROAD PLAN FOR ADDITIONAL INFORMATION ON JUNCTION BOXES.

CONSTRUCTION SHALL CONFORM TO THE CURRENT IOWA D.O.T. STANDARD AND SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

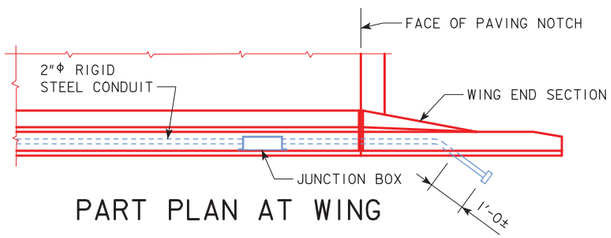
CONDUIT INSTALLATION SHALL BE IN ACCORDANCE WITH ARTICLE 2523.03, N, OF THE STANDARD SPECIFICATIONS.

ALL "C" ENTRANCE HOLES IN JUNCTION BOXES SHALL BE DRILLED AND TAPPED FOR THE SPECIFIED CONDUIT SIZE. ALL OTHER HOLES SHALL HAVE A CONCRETE - TIGHT SLIP FIT. CONDUIT ENDS SHALL NOT PROTRUDE INTO JUNCTION BOX MORE THAN $\frac{1}{4}$". DRAIN PIPE END SHALL BE FLUSH WITH INSIDE SURFACE OF BOX. GROUNDING BUTTONS SHALL BE LOCATED APPROXIMATELY 3" FROM THE INSIDE SURFACE OF THE BOX WALL, AND NOT CLOSER THAN 3" TO THE EDGE OF ANY HOLE IN THE BOX FLOOR. HOLES FOR DRAIN PIPE SHALL BE PLACED IN THE LOW CORNER OF THE BOX, WITH A MINIMUM CLEARANCE OF 1" BETWEEN THE EDGE OF THE HOLE AND THE INSIDE SURFACE OF THE BOX WALL. TYPICAL DETAILS ARE SHOWN ON THIS SHEET.

THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF THE RAILING.

ALL REINFORCING STEEL IS TO BE EPOXY COATED AND GRADE 60.

STAINLESS-STEEL REINFORCEMENT SHALL NOT BE ALLOWED TO BE IN CONTACT WITH THE UNCOATED REINFORCEMENT, BARE METAL FORMING HARDWARE, OR TO GALVANIZED ATTACHMENTS OR GALVANIZED CONDUIT.

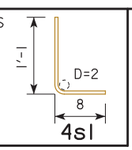



## PART PLAN AT WING

## EPOXY REINFORCING STEEL-ONE RAIL

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| 4sl | RAIL CONDUIT | ⌟ | 88 | 1'-9 | 103 |
| | | | | | |
| | | | | TOTAL WEIGHT (LBS.) | 103 |

NOTE: ALL DIMENSIONS ARE OUT TO OUT.
D = PIN DIAMETER.




DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE II

66'-0 END SPANS 117'-0 INTERIOR SPAN

## LIGHTING DETAILS

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 APRIL 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 39 OF 39 FILE NO. 30864 DESIGN NO. 121

REVISION 05-11 - ADDED THE WORD 'MINIMUM' TO THE 3½ INCH DIMENSION FOR THE LOCATION OF THE 2 INCH CONDUIT IN THE BARRIER RAIL.
REVISED 09-2016 - ADDED CONDUIT SUPPORT RAIL DETAIL TO KEEP CONDUIT ISOLATED FROM THE STAINLESS STEEL REINFORCING.
ENGLISHDECKRAILBRIDGES.DGN 1030AS2 - THIS SHEET ISSUED 09-03.

## GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
Justin D. Humke
23230
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

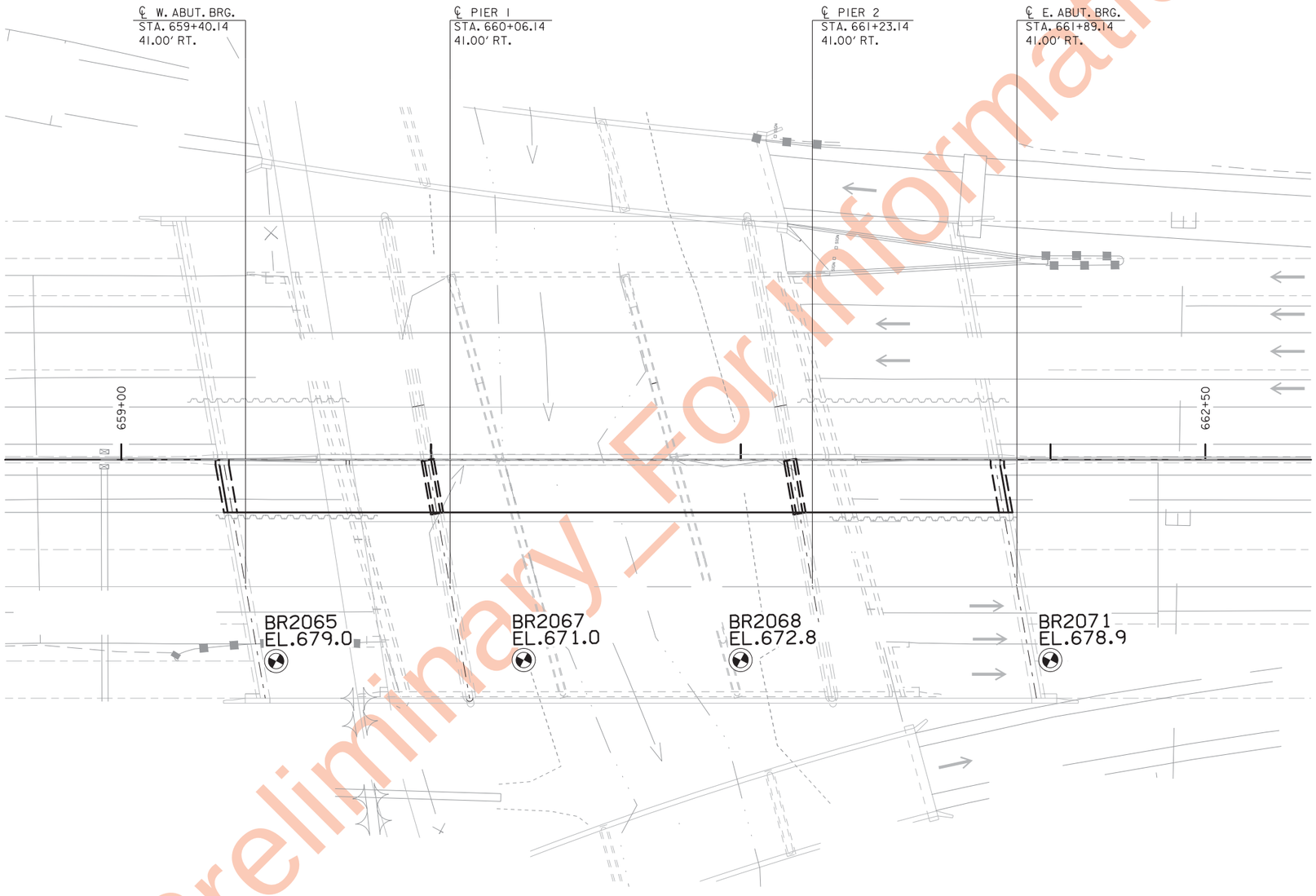
Signature: X Justin D. Humke — Date: 3-15-2019

Printed or Typed Name

My license renewal date is December 31, 2019

Pages or sheets covered by this seal: SPS.1 thru SPS.4

PRELIMINARY
NOT FOR CONSTRUCTION




THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

0 ENGLISH 40
SCALE IN FEET

N

### LOCATION

E.B. I-80 OVER CLEAR CREEK
T-80N R-7W
SECTION 35
CLEAR CREEK TOWNSHIP
JOHNSON COUNTY
FHWA NO. 31991
BRIDGE MAINT. NO. 5239.4R080
LATITUDE 41.694234°
LONGITUDE -91.632364°

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SOIL PROFILE SHEET

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 JULY 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 4 FILE NO. 30864 DESIGN NO. 1317

| FILE NO. 30864 | ENGLISH | DESIGN TEAM Braun Intertec | JOHNSON COUNTY | PROJECT NUMBER IM-080-6(348)239--13-52 | SHEET NUMBER SPS.1 |
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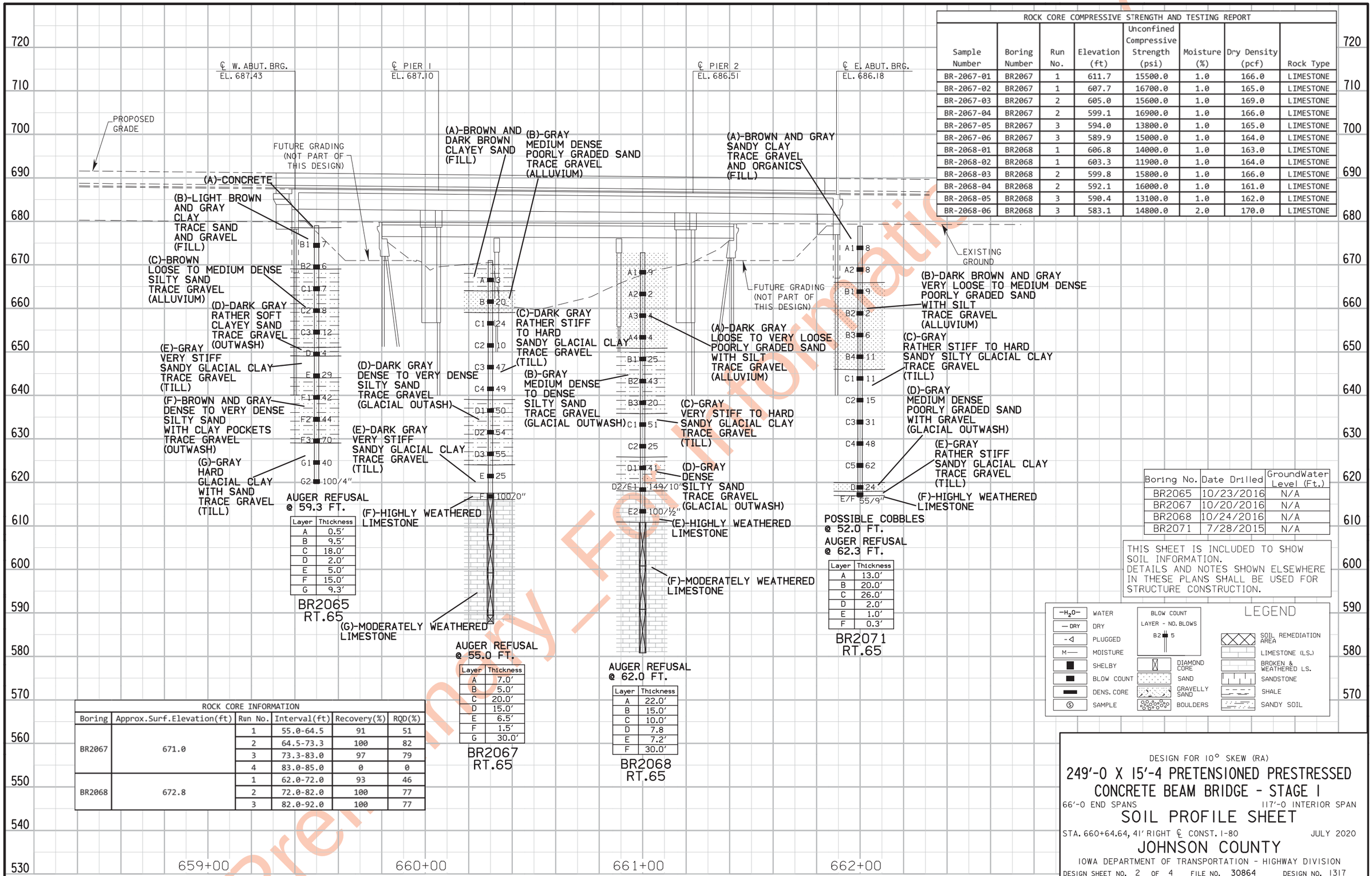


| Layer | Thickness |
|---|---|
| A | 0.5′ |
| B | 9.5′ |
| C | 18.0′ |
| D | 2.0′ |
| E | 5.0′ |
| F | 15.0′ |
| G | 9.3′ |

| Layer | Thickness |
|---|---|
| A | 7.0′ |
| B | 5.0′ |
| C | 20.0′ |
| D | 15.0′ |
| E | 6.5′ |
| F | 1.5′ |
| G | 30.0′ |

| Layer | Thickness |
|---|---|
| A | 22.0′ |
| B | 15.0′ |
| C | 10.0′ |
| D | 7.8 |
| E | 7.2′ |
| F | 30.0′ |

| Layer | Thickness |
|---|---|
| A | 13.0′ |
| B | 20.0′ |
| C | 26.0′ |
| D | 2.0′ |
| E | 1.0′ |
| F | 0.3′ |

ROCK CORE INFORMATION

| Boring | Approx.Surf.Elevation(ft) | Run No. | Interval(ft) | Recovery(%) | RQD(%) |
|---|---|---|---|---|---|
| BR2067 | 671.0 | 1 | 55.0-64.5 | 91 | 51 |
| | | 2 | 64.5-73.3 | 100 | 82 |
| | | 3 | 73.3-83.0 | 97 | 79 |
| | | 4 | 83.0-85.0 | 0 | 0 |
| BR2068 | 672.8 | 1 | 62.0-72.0 | 93 | 46 |
| | | 2 | 72.0-82.0 | 100 | 77 |
| | | 3 | 82.0-92.0 | 100 | 77 |

ROCK CORE COMPRESSIVE STRENGTH AND TESTING REPORT

| Sample Number | Boring Number | Run No. | Elevation (ft) | Unconfined Compressive Strength (psi) | Moisture (%) | Dry Density (pcf) | Rock Type |
|---|---|---|---|---|---|---|---|
| BR-2067-01 | BR2067 | 1 | 611.7 | 15500.0 | 1.0 | 166.0 | LIMESTONE |
| BR-2067-02 | BR2067 | 1 | 607.7 | 16700.0 | 1.0 | 165.0 | LIMESTONE |
| BR-2067-03 | BR2067 | 2 | 605.0 | 15600.0 | 1.0 | 169.0 | LIMESTONE |
| BR-2067-04 | BR2067 | 2 | 599.1 | 16900.0 | 1.0 | 166.0 | LIMESTONE |
| BR-2067-05 | BR2067 | 3 | 594.0 | 13800.0 | 1.0 | 165.0 | LIMESTONE |
| BR-2067-06 | BR2067 | 3 | 589.9 | 15000.0 | 1.0 | 164.0 | LIMESTONE |
| BR-2068-01 | BR2068 | 1 | 606.8 | 14000.0 | 1.0 | 163.0 | LIMESTONE |
| BR-2068-02 | BR2068 | 1 | 603.3 | 11900.0 | 1.0 | 164.0 | LIMESTONE |
| BR-2068-03 | BR2068 | 2 | 599.8 | 15800.0 | 1.0 | 166.0 | LIMESTONE |
| BR-2068-04 | BR2068 | 2 | 592.1 | 16000.0 | 1.0 | 161.0 | LIMESTONE |
| BR-2068-05 | BR2068 | 3 | 590.4 | 13100.0 | 1.0 | 162.0 | LIMESTONE |
| BR-2068-06 | BR2068 | 3 | 583.1 | 14800.0 | 2.0 | 170.0 | LIMESTONE |

| Boring No. | Date Drilled | GroundWater Level (Ft.) |
|---|---|---|
| BR2065 | 10/23/2016 | N/A |
| BR2067 | 10/20/2016 | N/A |
| BR2068 | 10/24/2016 | N/A |
| BR2071 | 7/28/2015 | N/A |

THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

LEGEND

WATER, DRY, PLUGGED, MOISTURE, SHELBY, BLOW COUNT, DENS. CORE, SAMPLE
BLOW COUNT LAYER - NO. BLOWS (B2 5)
DIAMOND CORE, SAND, GRAVELLY SAND, BOULDERS
SOIL REMEDIATION AREA, LIMESTONE (LS.), BROKEN & WEATHERED LS., SANDSTONE, SHALE, SANDY SOIL

DESIGN FOR 10° SKEW (RA)

# 249′-0 X 15′-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66′-0 END SPANS 117′-0 INTERIOR SPAN

## SOIL PROFILE SHEET

STA. 660+64.64, 41′ RIGHT ℄ CONST. I-80 JULY 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 4 FILE NO. 30864 DESIGN NO. 1317



| FILE NO. 30864 | ENGLISH | DESIGN TEAM Braun Intertec | JOHNSON COUNTY | PROJECT NUMBER IM-080-6(348)239--13-52 | SHEET NUMBER SPS.2 |
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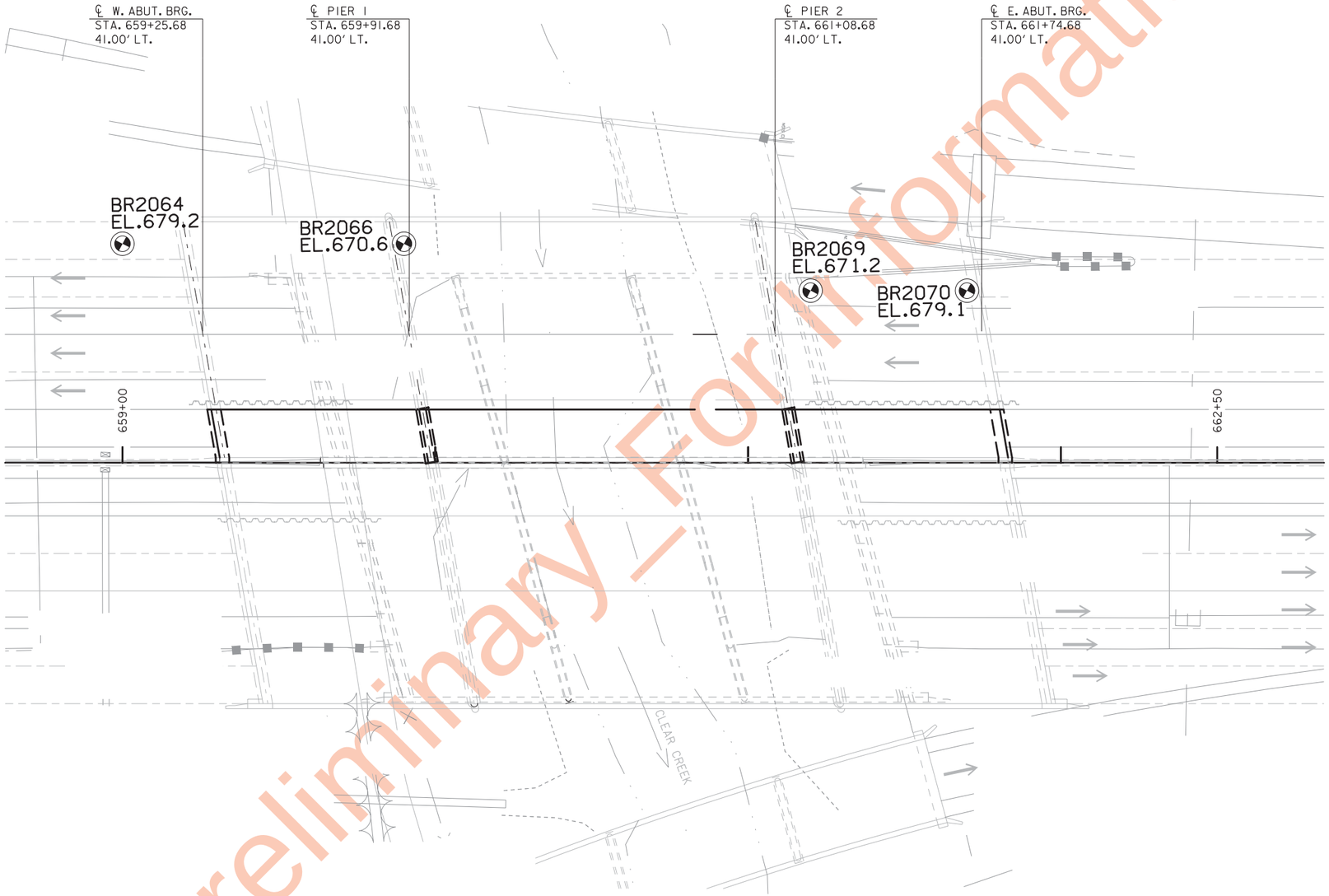




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DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

0 ENGLISH 40
SCALE IN FEET

N

## LOCATION

W.B. I-80 OVER CLEAR CREEK
T-80N R-7W
SECTION 35
CLEAR CREEK TOWNSHIP
JOHNSON COUNTY
FHWA NO. 32001
BRIDGE MAINT. NO. 5239.4L080
LATITUDE 41.694459°
LONGITUDE -91.632418°

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 15'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SITUATION PLAN

STA. 660+50.18, 41' LEFT ℄ CONST. I-80 JULY 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 4 FILE NO. 30864 DESIGN NO. 1417

| FILE NO. 30864 | ENGLISH | DESIGN TEAM Braun Intertec | JOHNSON COUNTY | PROJECT NUMBER IM-080-6(348)239--13-52 | SHEET NUMBER SPS.3 |
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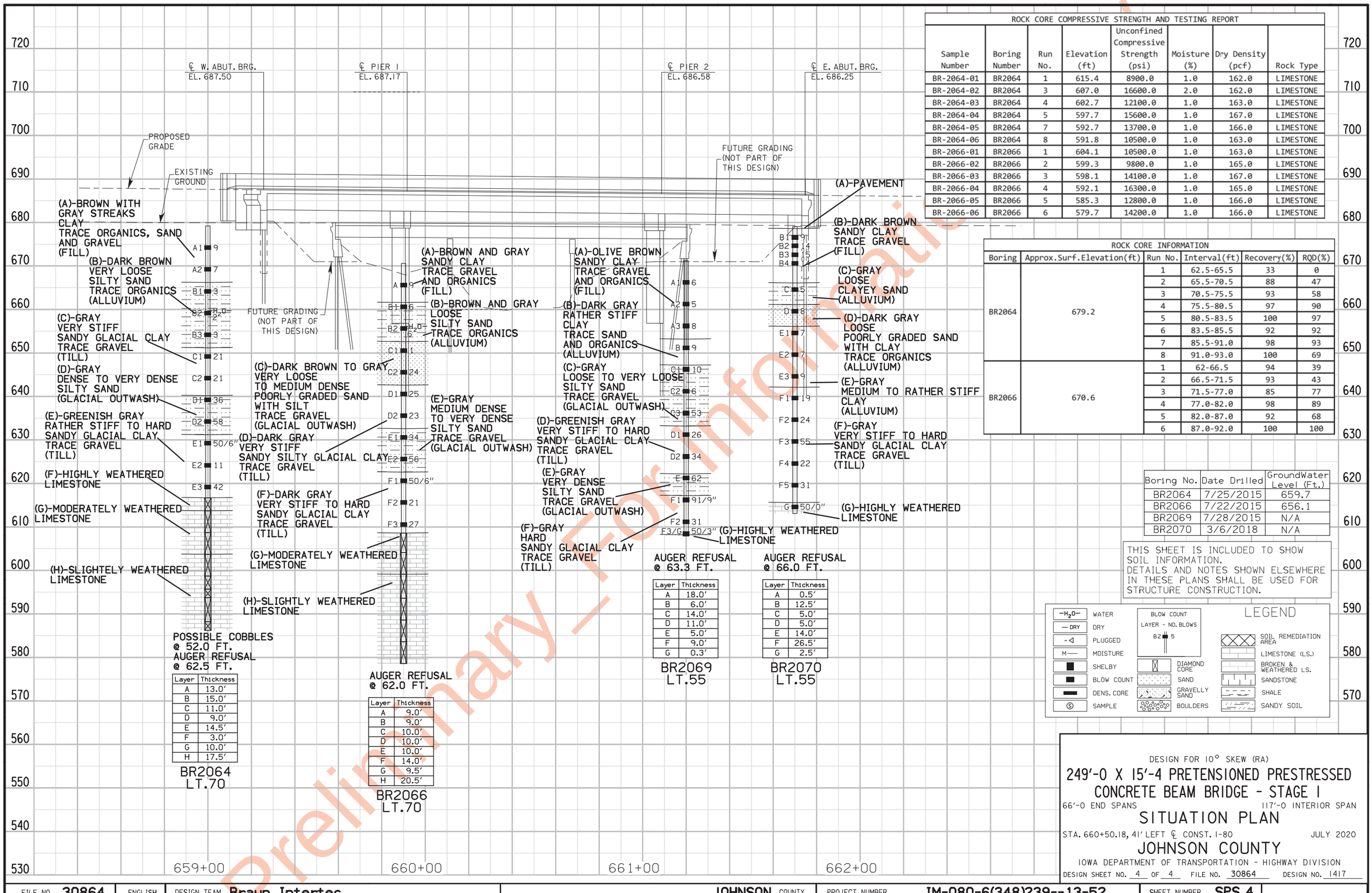



ROCK CORE COMPRESSIVE STRENGTH AND TESTING REPORT

| Sample Number | Boring Number | Run No. | Elevation (ft) | Unconfined Compressive Strength (psi) | Moisture (%) | Dry Density (pcf) | Rock Type |
|---|---|---|---|---|---|---|---|
| BR-2064-01 | BR2064 | 1 | 615.4 | 8900.0 | 1.0 | 162.0 | LIMESTONE |
| BR-2064-02 | BR2064 | 3 | 607.0 | 16600.0 | 2.0 | 162.0 | LIMESTONE |
| BR-2064-03 | BR2064 | 4 | 602.7 | 12100.0 | 1.0 | 163.0 | LIMESTONE |
| BR-2064-04 | BR2064 | 5 | 597.7 | 15600.0 | 1.0 | 167.0 | LIMESTONE |
| BR-2064-05 | BR2064 | 7 | 592.7 | 13700.0 | 1.0 | 166.0 | LIMESTONE |
| BR-2064-06 | BR2064 | 8 | 591.8 | 10500.0 | 1.0 | 163.0 | LIMESTONE |
| BR-2066-01 | BR2066 | 1 | 604.1 | 10500.0 | 1.0 | 163.0 | LIMESTONE |
| BR-2066-02 | BR2066 | 2 | 599.3 | 9800.0 | 1.0 | 165.0 | LIMESTONE |
| BR-2066-03 | BR2066 | 3 | 598.1 | 14100.0 | 1.0 | 167.0 | LIMESTONE |
| BR-2066-04 | BR2066 | 4 | 592.1 | 16300.0 | 1.0 | 165.0 | LIMESTONE |
| BR-2066-05 | BR2066 | 5 | 585.3 | 12800.0 | 1.0 | 166.0 | LIMESTONE |
| BR-2066-06 | BR2066 | 6 | 579.7 | 14200.0 | 1.0 | 166.0 | LIMESTONE |

ROCK CORE INFORMATION

| Boring | Approx.Surf.Elevation(ft) | Run No. | Interval(ft) | Recovery(%) | RQD(%) |
|---|---|---|---|---|---|
| BR2064 | 679.2 | 1 | 62.5-65.5 | 33 | 0 |
| | | 2 | 65.5-70.5 | 88 | 47 |
| | | 3 | 70.5-75.5 | 93 | 58 |
| | | 4 | 75.5-80.5 | 97 | 90 |
| | | 5 | 80.5-83.5 | 100 | 97 |
| | | 6 | 83.5-85.5 | 92 | 92 |
| | | 7 | 85.5-91.0 | 98 | 93 |
| | | 8 | 91.0-93.0 | 100 | 69 |
| BR2066 | 670.6 | 1 | 62-66.5 | 94 | 39 |
| | | 2 | 66.5-71.5 | 93 | 43 |
| | | 3 | 71.5-77.0 | 85 | 77 |
| | | 4 | 77.0-82.0 | 98 | 89 |
| | | 5 | 82.0-87.0 | 92 | 68 |
| | | 6 | 87.0-92.0 | 100 | 100 |

| Boring No. | Date Drilled | GroundWater Level (Ft.) |
|---|---|---|
| BR2064 | 7/25/2015 | 659.7 |
| BR2066 | 7/22/2015 | 656.1 |
| BR2069 | 7/28/2015 | N/A |
| BR2070 | 3/6/2018 | N/A |

THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

LEGEND

WATER, DRY, PLUGGED, MOISTURE, SHELBY, BLOW COUNT, DENS. CORE, SAMPLE
BLOW COUNT: LAYER - NO. BLOWS (B2 5)
DIAMOND CORE, SAND, GRAVELLY SAND, BOULDERS
SOIL REMEDIATION AREA, LIMESTONE (LS.), BROKEN & WEATHERED LS., SANDSTONE, SHALE, SANDY SOIL

DESIGN FOR 10° SKEW (RA)

# 249′-0 X 15′-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE I

66′-0 END SPANS 117′-0 INTERIOR SPAN

## SITUATION PLAN

STA. 660+50.18, 41′ LEFT ℄ CONST. I-80 JULY 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 4 FILE NO. 30864 DESIGN NO. 1417



| FILE NO. 30864 | ENGLISH | DESIGN TEAM Braun Intertec | JOHNSON COUNTY | PROJECT NUMBER IM-080-6(348)239--13-52 | SHEET NUMBER SPS.4 |
|---|---|---|---|---|---|

1:17:32 PM 3/12/2019 BryanMcNelis pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5208001002\Soils\SPS\brg files from HNTB\52080235_1317.sht

## GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
Justin D. Humke
23230
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

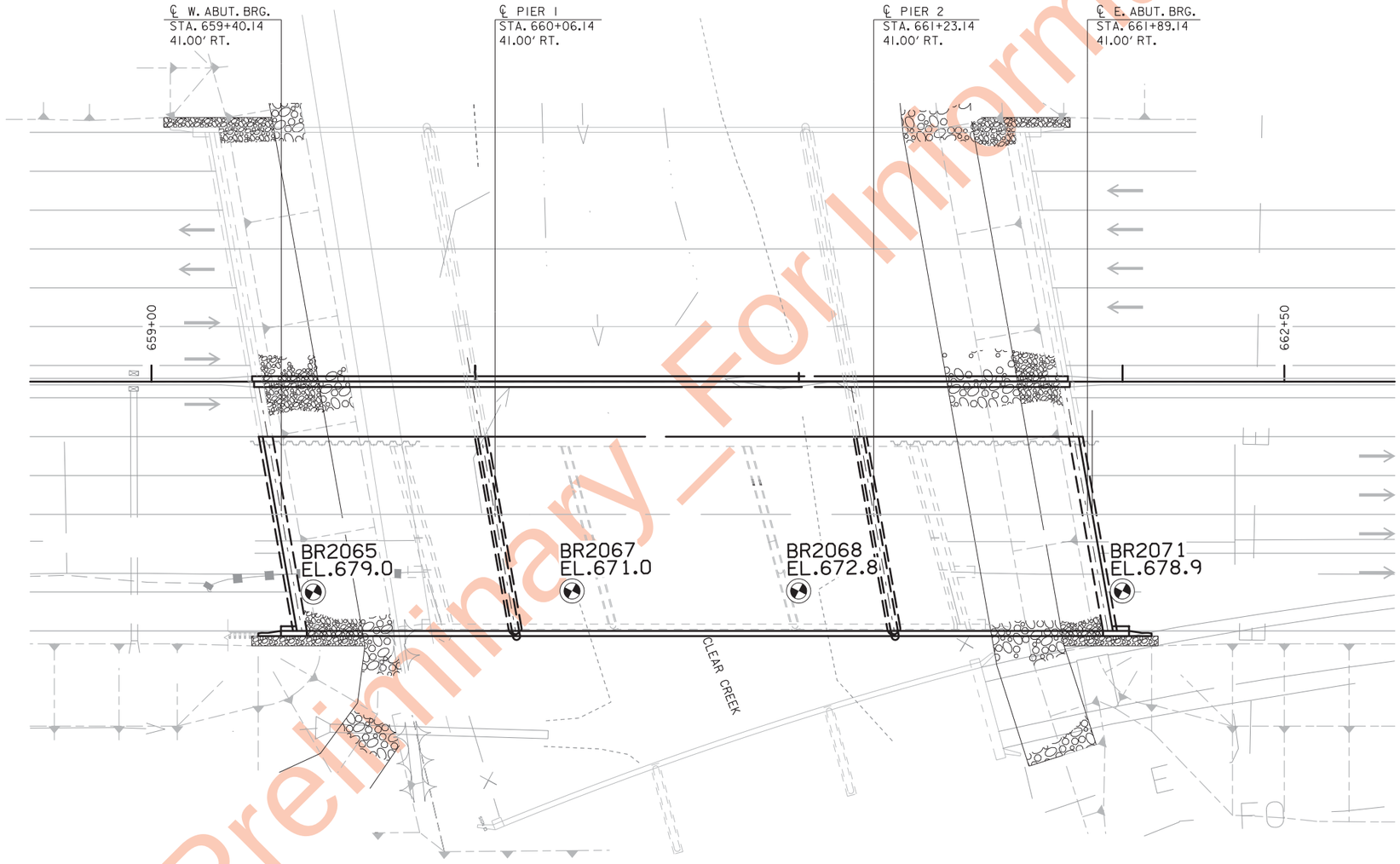
Signature X Justin D. Humke — Date 3-15-2019

Printed or Typed Name

My license renewal date is December 31, 2019

Pages or sheets covered by this seal: SPS.1 thru SPS.2

PRELIMINARY NOT FOR CONSTRUCTION




THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

0 ENGLISH 40
SCALE IN FEET

N

### LOCATION

E.B. I-80 OVER CLEAR CREEK
T-80N R-7W
SECTION 35
CLEAR CREEK TOWNSHIP
JOHNSON COUNTY
FHWA NO. 31991
BRIDGE MAINT. NO. 5239.4R080
LATITUDE 41.694234°
LONGITUDE -91.632364°

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 2

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SOIL PROFILE SHEET

STA. 660+64.64, 41' RIGHT ℄ CONST. I-80 JULY 2020

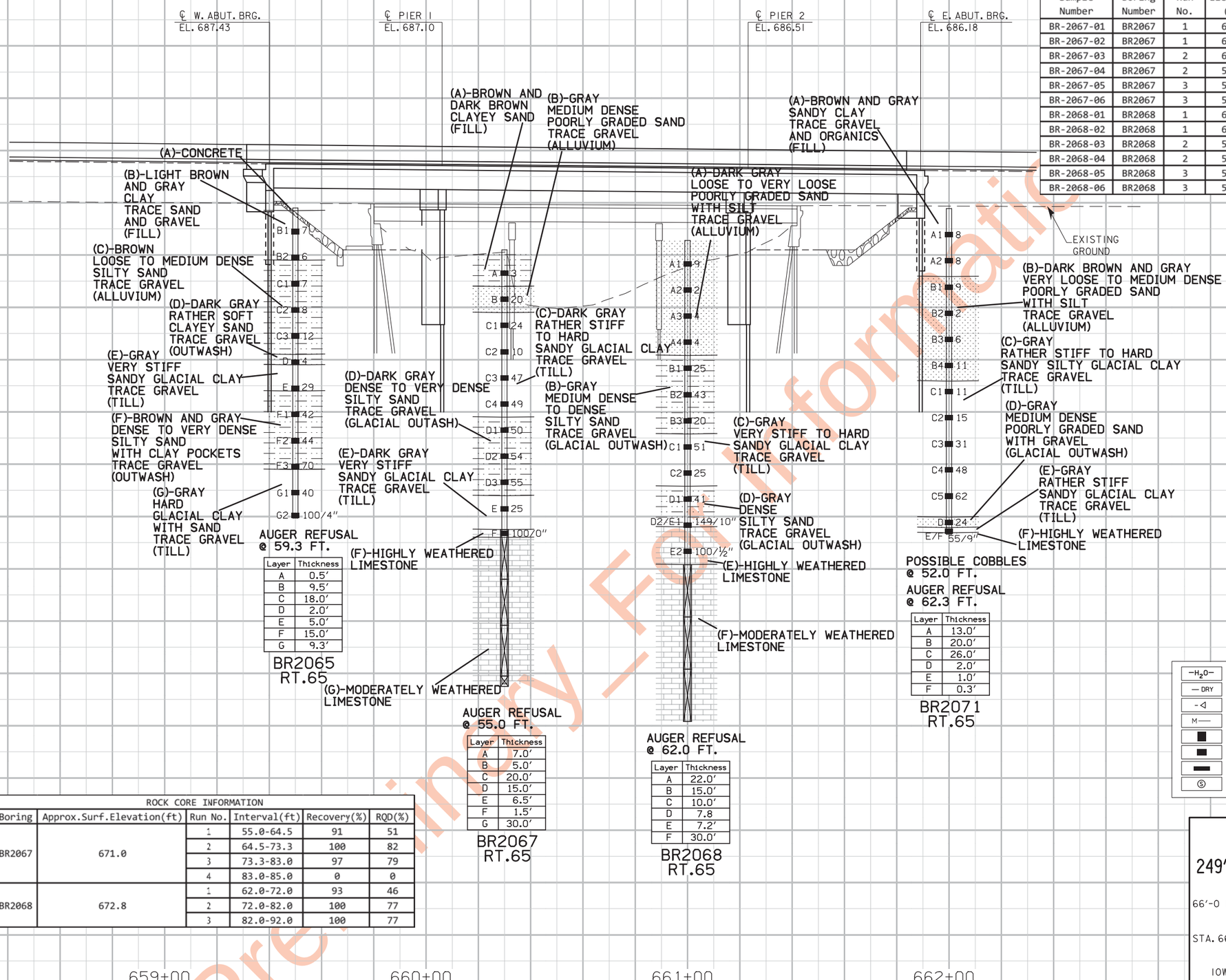
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 2 FILE NO. 30864 DESIGN NO. 121



| FILE NO. 30864 | ENGLISH | DESIGN TEAM Braun Intertec | JOHNSON COUNTY | PROJECT NUMBER IM-080-6(349)239--13-52 | SHEET NUMBER SPS.1 |
|---|---|---|---|---|---|




| Layer | Thickness |
|---|---|
| A | 0.5′ |
| B | 9.5′ |
| C | 18.0′ |
| D | 2.0′ |
| E | 5.0′ |
| F | 15.0′ |
| G | 9.3′ |

| Layer | Thickness |
|---|---|
| A | 7.0′ |
| B | 5.0′ |
| C | 20.0′ |
| D | 15.0′ |
| E | 6.5′ |
| F | 1.5′ |
| G | 30.0′ |

| Layer | Thickness |
|---|---|
| A | 22.0′ |
| B | 15.0′ |
| C | 10.0′ |
| D | 7.8 |
| E | 7.2′ |
| F | 30.0′ |

| Layer | Thickness |
|---|---|
| A | 13.0′ |
| B | 20.0′ |
| C | 26.0′ |
| D | 2.0′ |
| E | 1.0′ |
| F | 0.3′ |

ROCK CORE COMPRESSIVE STRENGTH AND TESTING REPORT

| Sample Number | Boring Number | Run No. | Elevation (ft) | Unconfined Compressive Strength (psi) | Moisture (%) | Dry Density (pcf) | Rock Type |
|---|---|---|---|---|---|---|---|
| BR-2067-01 | BR2067 | 1 | 611.7 | 15500.0 | 1.0 | 166.0 | LIMESTONE |
| BR-2067-02 | BR2067 | 1 | 607.7 | 16700.0 | 1.0 | 165.0 | LIMESTONE |
| BR-2067-03 | BR2067 | 2 | 605.0 | 15600.0 | 1.0 | 169.0 | LIMESTONE |
| BR-2067-04 | BR2067 | 2 | 599.1 | 16900.0 | 1.0 | 166.0 | LIMESTONE |
| BR-2067-05 | BR2067 | 3 | 594.0 | 13800.0 | 1.0 | 165.0 | LIMESTONE |
| BR-2067-06 | BR2067 | 3 | 589.9 | 15000.0 | 1.0 | 164.0 | LIMESTONE |
| BR-2068-01 | BR2068 | 1 | 606.8 | 14000.0 | 1.0 | 163.0 | LIMESTONE |
| BR-2068-02 | BR2068 | 1 | 603.3 | 11900.0 | 1.0 | 164.0 | LIMESTONE |
| BR-2068-03 | BR2068 | 2 | 599.8 | 15800.0 | 1.0 | 166.0 | LIMESTONE |
| BR-2068-04 | BR2068 | 2 | 592.1 | 16000.0 | 1.0 | 161.0 | LIMESTONE |
| BR-2068-05 | BR2068 | 3 | 590.4 | 13100.0 | 1.0 | 162.0 | LIMESTONE |
| BR-2068-06 | BR2068 | 3 | 583.1 | 14800.0 | 2.0 | 170.0 | LIMESTONE |

ROCK CORE INFORMATION

| Boring | Approx.Surf.Elevation(ft) | Run No. | Interval(ft) | Recovery(%) | RQD(%) |
|---|---|---|---|---|---|
| BR2067 | 671.0 | 1 | 55.0-64.5 | 91 | 51 |
| | | 2 | 64.5-73.3 | 100 | 82 |
| | | 3 | 73.3-83.0 | 97 | 79 |
| | | 4 | 83.0-85.0 | 0 | 0 |
| BR2068 | 672.8 | 1 | 62.0-72.0 | 93 | 46 |
| | | 2 | 72.0-82.0 | 100 | 77 |
| | | 3 | 82.0-92.0 | 100 | 77 |

| Boring No. | Date Drilled | GroundWater Level (Ft.) |
|---|---|---|
| BR2065 | 10/23/2016 | N/A |
| BR2067 | 10/20/2016 | N/A |
| BR2068 | 10/24/2016 | N/A |
| BR2071 | 7/28/2015 | N/A |

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LEGEND

WATER, DRY, PLUGGED, MOISTURE, SHELBY, BLOW COUNT, DENS. CORE, SAMPLE
BLOW COUNT LAYER - NO. BLOWS (B2 5)
DIAMOND CORE, SAND, GRAVELLY SAND, BOULDERS
SOIL REMEDIATION AREA, LIMESTONE (LS.), BROKEN & WEATHERED LS., SANDSTONE, SHALE, SANDY SOIL

DESIGN FOR 10° SKEW (RA)

# 249′-0 X 75′-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 2

66′-0 END SPANS 117′-0 INTERIOR SPAN

## SOIL PROFILE SHEET

STA. 660+64.64, 41′ RIGHT ℄ CONST. I-80 JULY 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 2 FILE NO. 30864 DESIGN NO. 121



| FILE NO. 30864 | ENGLISH | DESIGN TEAM Braun Intertec | JOHNSON COUNTY | PROJECT NUMBER IM-080-6(349)239--13-52 | SHEET NUMBER SPS.2 |
|---|---|---|---|---|---|

1:24:20 PM 3/12/2019 BryanMcNelis pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5208001002\Soils\SPS\brg files from HNTB\52080235_121.sht

## GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
Justin D. Humke
23230
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

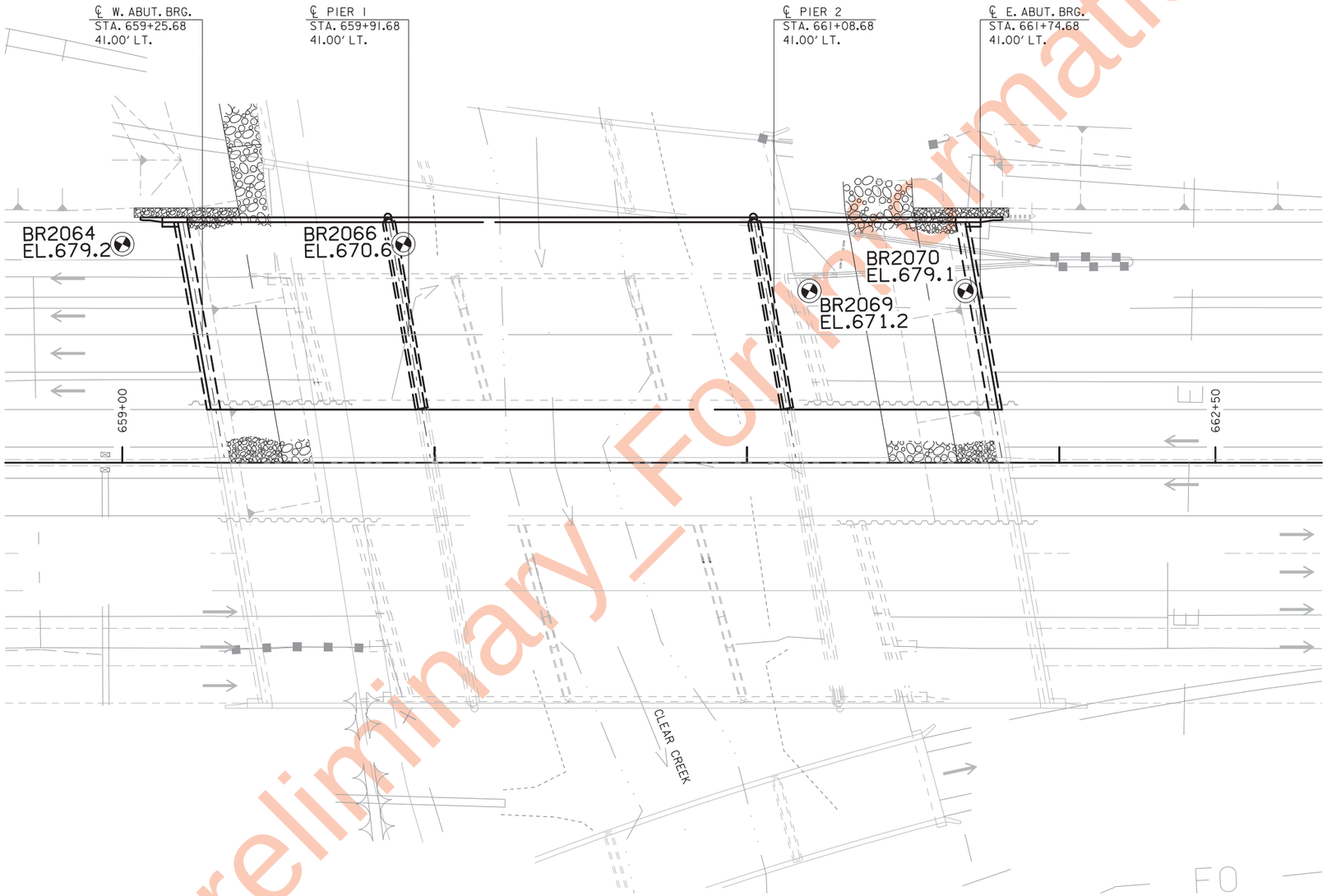
Signature: Justin D. Humke — 3-15-2019 (Date)

Printed or Typed Name

My license renewal date is December 31, 2019

Pages or sheets covered by this seal: SPS.1 thru SPS.2

PRELIMINARY NOT FOR CONSTRUCTION

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0 ENGLISH 40
SCALE IN FEET

N

## LOCATION

W.B. I-80 OVER CLEAR CREEK
T-80N R-7W
SECTION 35
CLEAR CREEK TOWNSHIP
JOHNSON COUNTY
FHWA NO. 32001
BRIDGE MAINT. NO. 5239.4L080
LATITUDE 41.694459°
LONGITUDE -91.632418°

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 2

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SOIL PROFILE SHEET

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 JUNE 2020

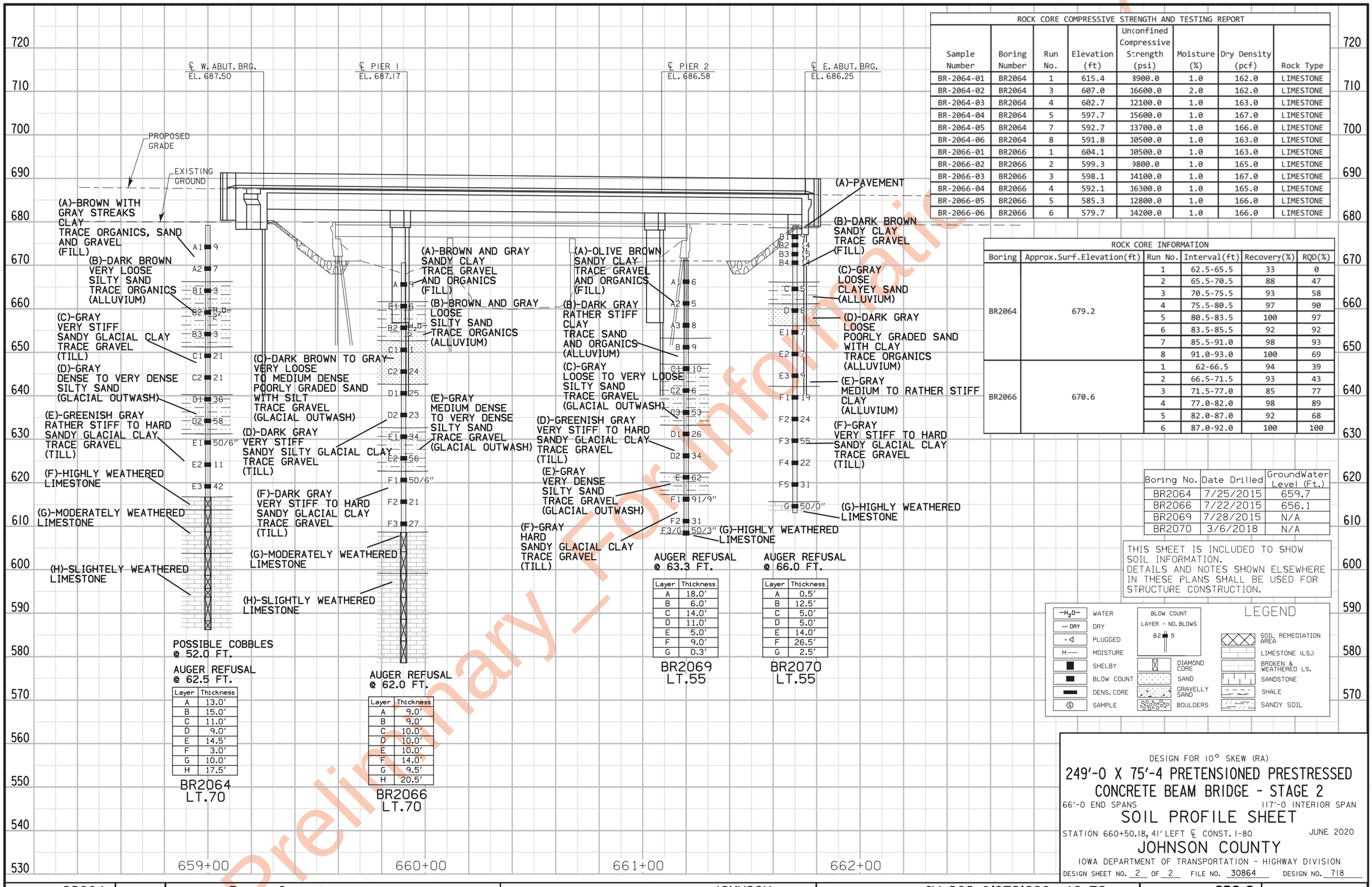
## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 2 FILE NO. 30864 DESIGN NO. 718



| FILE NO. 30864 | ENGLISH | DESIGN TEAM Braun Intertec | JOHNSON COUNTY | PROJECT NUMBER IM-080-6(350)239--13-52 | SHEET NUMBER SPS.1 |
|---|---|---|---|---|---|




ROCK CORE COMPRESSIVE STRENGTH AND TESTING REPORT

| Sample Number | Boring Number | Run No. | Elevation (ft) | Unconfined Compressive Strength (psi) | Moisture (%) | Dry Density (pcf) | Rock Type |
|---|---|---|---|---|---|---|---|
| BR-2064-01 | BR2064 | 1 | 615.4 | 8900.0 | 1.0 | 162.0 | LIMESTONE |
| BR-2064-02 | BR2064 | 3 | 607.0 | 16600.0 | 2.0 | 162.0 | LIMESTONE |
| BR-2064-03 | BR2064 | 4 | 602.7 | 12100.0 | 1.0 | 163.0 | LIMESTONE |
| BR-2064-04 | BR2064 | 5 | 597.7 | 15600.0 | 1.0 | 167.0 | LIMESTONE |
| BR-2064-05 | BR2064 | 7 | 592.7 | 13700.0 | 1.0 | 166.0 | LIMESTONE |
| BR-2064-06 | BR2064 | 8 | 591.8 | 10500.0 | 1.0 | 163.0 | LIMESTONE |
| BR-2066-01 | BR2066 | 1 | 604.1 | 10500.0 | 1.0 | 163.0 | LIMESTONE |
| BR-2066-02 | BR2066 | 2 | 599.3 | 9800.0 | 1.0 | 165.0 | LIMESTONE |
| BR-2066-03 | BR2066 | 3 | 598.1 | 14100.0 | 1.0 | 167.0 | LIMESTONE |
| BR-2066-04 | BR2066 | 4 | 592.1 | 16300.0 | 1.0 | 165.0 | LIMESTONE |
| BR-2066-05 | BR2066 | 5 | 585.3 | 12800.0 | 1.0 | 166.0 | LIMESTONE |
| BR-2066-06 | BR2066 | 6 | 579.7 | 14200.0 | 1.0 | 166.0 | LIMESTONE |

ROCK CORE INFORMATION

| Boring | Approx.Surf.Elevation(ft) | Run No. | Interval(ft) | Recovery(%) | RQD(%) |
|---|---|---|---|---|---|
| BR2064 | 679.2 | 1 | 62.5-65.5 | 33 | 0 |
| | | 2 | 65.5-70.5 | 88 | 47 |
| | | 3 | 70.5-75.5 | 93 | 58 |
| | | 4 | 75.5-80.5 | 97 | 90 |
| | | 5 | 80.5-83.5 | 100 | 97 |
| | | 6 | 83.5-85.5 | 92 | 92 |
| | | 7 | 85.5-91.0 | 98 | 93 |
| | | 8 | 91.0-93.0 | 100 | 69 |
| BR2066 | 670.6 | 1 | 62-66.5 | 94 | 39 |
| | | 2 | 66.5-71.5 | 93 | 43 |
| | | 3 | 71.5-77.0 | 85 | 77 |
| | | 4 | 77.0-82.0 | 98 | 89 |
| | | 5 | 82.0-87.0 | 92 | 68 |
| | | 6 | 87.0-92.0 | 100 | 100 |

| Boring No. | Date Drilled | GroundWater Level (Ft.) |
|---|---|---|
| BR2064 | 7/25/2015 | 659.7 |
| BR2066 | 7/22/2015 | 656.1 |
| BR2069 | 7/28/2015 | N/A |
| BR2070 | 3/6/2018 | N/A |

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LEGEND

WATER, DRY, PLUGGED, MOISTURE, SHELBY, BLOW COUNT, DENS. CORE, SAMPLE
BLOW COUNT: LAYER - NO. BLOWS (B2 5)
DIAMOND CORE, SAND, GRAVELLY SAND, BOULDERS
SOIL REMEDIATION AREA, LIMESTONE (LS.), BROKEN & WEATHERED LS., SANDSTONE, SHALE, SANDY SOIL

DESIGN FOR 10° SKEW (RA)

# 249'-0 X 75'-4 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE - STAGE 2

66'-0 END SPANS 117'-0 INTERIOR SPAN

## SOIL PROFILE SHEET

STATION 660+50.18, 41' LEFT ℄ CONST. I-80 JUNE 2020

## JOHNSON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 2 FILE NO. 30864 DESIGN NO. 718



| FILE NO. 30864 | ENGLISH | DESIGN TEAM Braun Intertec | JOHNSON COUNTY | PROJECT NUMBER IM-080-6(350)239--13-52 | SHEET NUMBER SPS.2 |
|---|---|---|---|---|---|

## INDEX OF SHEETS





## ROADWAY DESIGN

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature — Date: XX-XX-XXXX

Typed Name

My license renewal date is December 31, 20XX

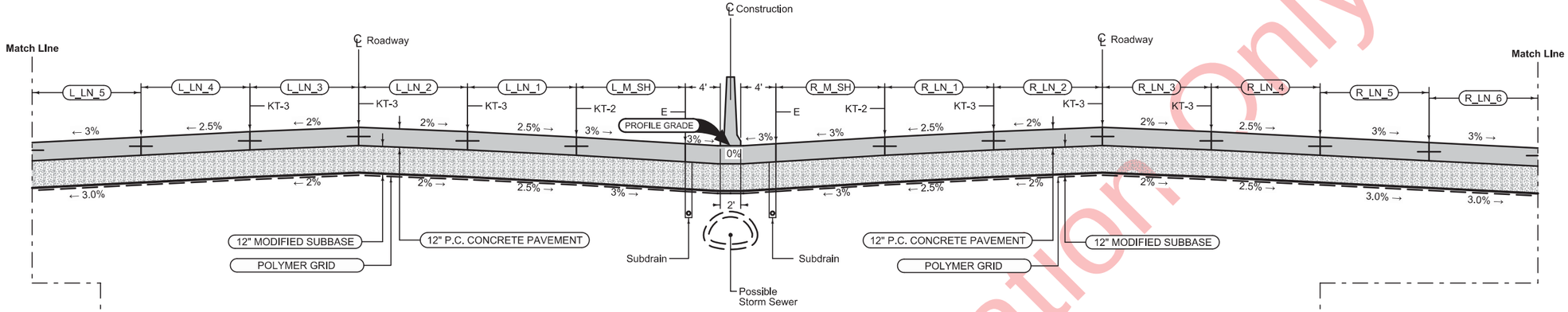
Pages or sheets covered by this seal: X

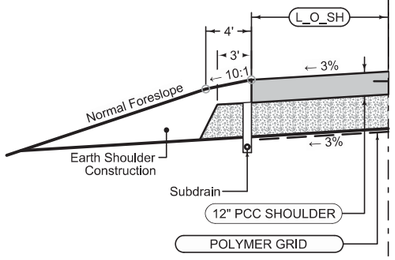
X

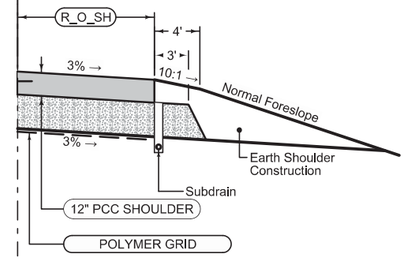
PRELIMINARY NOT FOR CONSTRUCTION

| FILE NO. 30864 | ENGLISH | DESIGN TEAM HOLST | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER A.1 |
|---|---|---|---|---|---|

8:25:14 AM 11/14/2019 wmcnama pw:\\ntPwIntl.dot.int.lan:PWMain\Documents\Projects\5208001002\Design_LETTING_FOLDERS_Bridge_348_I80_Median_Over_Clear_Creek\CADD_Files\Sheet_Files\SHT_52080348_A01.sht




Mainline Jointing:
Transverse joints: CD at 17' spacing
Refer to L and U-Sheets for additional transverse jointing details

8DP_Closed_

| BEGIN STATION | END STATION | L_LN_5 Feet | L_LN_4 Feet | L_LN_3 Feet | L_LN_2 Feet | L_LN_1 Feet | L_M_SH Feet | R_M_SH Feet | R_LN_1 Feet | R_LN_2 Feet | R_LN_3 Feet | R_LN_4 Feet | R_LN_5 Feet | R_LN_6 Feet |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 557+90.00 | 564+40.00 | -- | -- | -- | 12 | 12 | 20-12 | 20-12 | 12 | 12 | -- | -- | -- | -- |
| 564+40.00 | 571+00.00 | -- | -- | 0 - 9.43 | 12 | 12 | 12 | 12 | 12 | 12 | -- | -- | -- | -- |
| 571+00.00 | 572+80.00 | -- | -- | 9.43 - 12 | 12 | 12 | 12 | 12 | 12 | 12 | 0 - 12 | -- | -- | -- |
| 572+80.00 | 582+79.40 | -- | -- | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- | -- | -- |
| 582+79.40 | 583+11.79 | -- | -- | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- | -- |
| 583+11.79 | 587+00.00 | -- | -- | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- | -- |
| 587+00.00 | 590+00.00 | -- | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- | -- |
| 590+00.00 | 596+70.00 | -- | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- | -- |
| 596+70.00 | 598+50.00 | -- | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 0 - 12 | -- |
| 598+50.00 | 600+00.00 | -- | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- |
| 600+00.00 | 603+00.00 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- |
| 603+00.00 | 609+00.00 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- |
| 609+00.00 | 613+50.00 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- |
| 613+50.00 | 619+00.00 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- | -- |
| 619+00.00 | 620+70.60 | -- | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- | -- |
| 620+70.60 | 623+28.43 | -- | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- | -- |
| 623+28.43 | 668+16.04 | -- | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- | -- |
| 668+16.04 | 668+77.78 | -- | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- | -- |
| 668+77.78 | 671+60.12 | -- | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | -- | -- |
| 671+60.12 | 672+25.00 | -- | 12 | 12 | 12 | 12 | 12 - 11.9 | 12 | 12 | 12 | 12 | 12 | 12 | -- |
| 672+25.00 | 677+26.98 | -- | 12 | 12 | 12 | 12 | 11.9 - 8.82 | 12 - 9.77 | 12 | 12 | 12 | 12 | 12 | 12 |
| 677+26.98 | 677+79.76 | 12 | 12 | 12 | 12 | 12 | 8.82 - 8.48 | 9.77 - 9.43 | 12 | 12 | 12 | 12 | 12 | 12 |
| 677+79.76 | 680+75.12 | 12 | 12 | 12 | 12 | 12 | 8.48 - 8 | 9.43 - 8 | 12 | 12 | 12 | 12 | 12 | 12 |
| 680+75.12 | 683+75.00 | 12 | 12 | 12 | 12 | 12 | 8 | 8 | 12 | 12 | 12 | 12 | 12 | 12 |
| 683+75.00 | 687+00.00 | 12 | 12 | 12 | 12 | 12 | 8 | 8 | 12 | 12 | 12 | 12 | 12 | 12 - 5.47 |

## Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: L-2 or KT-2
Transverse joints: CD at 17' spacing

6D_Closed_P_FullPCC_ MODIFIED

| BEGIN STATION | END STATION | L_O_SH Feet |
|---|---|---|
| | | |
| 557+90.00 | 582+79.40 | 12 |
| Ramp Taper | | |
| 590+00.00 | 600+00.00 | 12 |
| 600+00.00 | 603+00.00 | 12-6 |
| 603+00.00 | 609+00.00 | 6 |
| Ramp Taper | | |
| 623+28.43 | 668+16.04 | 12 |
| Ramp Taper | | |
| 677+26.98 | 687+00.00 | 12 |
| | | |
| | | |
| | | |

## Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: L-2 or KT-2
Transverse joints: CD at 17' spacing

6D_Closed_P_FullPCC_ MODIFIED

| BEGIN STATION | END STATION | R_O_SH Feet |
|---|---|---|
| | | |
| 557+90.00 | 583+11.79 | 12 |
| Ramp Taper | | |
| 587+00.00 | 596+70.00 | 12 |
| 596+70.00 | 598+50.00 | 12-6 |
| 598+50.00 | 613+50.00 | 6 |
| Ramp Taper | | |
| 620+70.60 | 668+77.78 | 12 |
| Ramp Taper | | |
| 672+25.00 | 686+75.06 | 6 |
| 686+75.06 | 687+00.00 | 6 - 6.53 |
| | | |
| | | |

See Tab 100-24 for pavement quantities.
Shoulder quantities included with mainline pavement.

**INTERSTATE 80 PCC PAVING**

# ESTIMATED ROADWAY QUANTITIES
# (1 DIVISION PROJECT)

| Item No. | Item Code | Item | Unit | Total | As Built Qty. |
|---|---|---|---|---|---|
| 1 | 2122-5190501 | PAVED SHOULDER, PORTLAND CEMENT CONCRETE (PAVED SHOULDER PAN EL FOR BRIDGE END DRAIN) | SY | 60.4 | |
| 2 | 2301-0690203 | BRIDGE APPROACH, BR-203 | SY | 2,191.2 | |
| 3 | 2412-0000100 | LONGITUDINAL GROOVING IN CONCRETE | SY | 5,974.8 | |
| 4 | 2503-0500401 | BRIDGE END DRAIN, DR-401 | EACH | 2 | |
| 5 | 2518-6910000 | SAFETY CLOSURE | EACH | 8 | |
| 6 | 2602-0000020 | SILT FENCE | LF | 250.0 | |
| 7 | 2602-0000071 | REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS | LF | 250.0 | |
| 8 | 2602-0000101 | MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK | LF | 125.0 | |
| 9 | 2602-0000312 | PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA. | LF | 200.0 | |
| 10 | 2602-0000320 | PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA. | LF | 200.0 | |
| 11 | 2602-0000350 | REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE | LF | 400.0 | |



# ESTIMATE REFERENCE INFORMATION

| Item No. | Item Code | Description |
|---|---|---|
| 1 | 2122-5190501 | **PAVED SHOULDER, PORTLAND CEMENT CONCRETE (PAVED SHOULDER PAN EL FOR BRIDGE END DRAIN)** |
| | | Refer to Tab. 104-8 on C Sheets for location and details. |
| - | - | - |
| 2 | 2301-0690203 | **BRIDGE APPROACH, BR-203** |
| | | Refer to Tab. 112-6 on C Sheets for location and details. |
| - | - | - |
| 3 | 2412-0000100 | **LONGITUDINAL GROOVING IN CONCRETE** |
| | | Refer to Tab. 100-28 on C Sheets for location and details. |
| - | - | - |
| 4 | 2503-0500401 | **BRIDGE END DRAIN, DR-401** |
| | | Refer to Tab. 104-8A on C Sheets for location and details. |
| - | - | - |
| 5 | 2518-6910000 | **SAFETY CLOSURE** |
| | | Refer to Tab. 108-13A on C Sheets for location and details. |
| - | - | - |
| 6 | 2602-0000020 | **SILT FENCE** |
| | | Item is for placement of "Silt Fence" to address erosion encountered during construction. |
| | | Verify the specific locations with the Engineer prior to beginning placement. |
| - | - | - |
| 7 | 2602-0000071 | **REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS** |
| | | Item is included for silt fence and silt fence for ditch check removal required for staging reasons, removal to allow for replacement (replacement to be paid separately), or for areas that have achieved 70% permanent growth. |
| - | - | |
| 8 | 2602-0000101 | **MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK** |
| | | Item is included for clean-out and repair of the silt fence and silt fence for ditch checks during the project. |
| - | - | - |
| 9 | 2602-0000312 | **PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.** |
| 10 | 2602-0000320 | **PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.** |
| 11 | 2602-0000350 | **REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE** |
| | | Item is included for temporary sediment control, inlet protection, and water velocity reduction on slopes at locations to be determined during construction. |
| | | |
| | | Verify specific locations with the Engineer prior to beginning placement. |
| | | |
| | | Use Perimeter and Slope Sediment Control Devices fabricated with wood excelsior. |
| - | - | - |

105-4
10-18-11

## STANDARD ROAD PLANS

The following Standard Road Plans apply to construction work on this project.

| Number | Date | Title |
|---|---|---|
| BR-203 | 10-17-17 | Double Reinforced 12" Approach |
| BR-211 | 10-17-17 | Bridge Approach (Abutting PCC or Composite Pavement) |
| BR-213 | 04-21-15 | Bridge Approach (Abutting Pavement) |
| DR-401 | 10-15-19 | Scour Protection for Bridge End Drain |
| EC-101 | 04-19-16 | Wood Excelsior Mat for Ditch Protection |
| EC-104 | 04-17-18 | Turf Reinforced Mat (TRM) |
| EC-105 | 04-17-18 | Transition Mat |
| EC-201 | 10-15-19 | Silt Fence |
| EC-204 | 04-21-20 | Perimeter and Slope Sediment Control Devices |
| PV-101 | 04-21-20 | Joints |
| TC-1 | 10-15-19 | Work Not Affecting Traffic (Two-Lane or Multi-Lane) |

DR-303
DR-306

100-28
10-19-10

## LONGITUDINAL GROOVING

| Location | Total SY | Remarks |
|---|---|---|
| 660+64.64 | 112.4 | East Approach Pavement |
| 660+64.64 | 371.9 | Bridge Design #1317 |
| 660+64.64 | 97.0 | West Approach Pavement |
| 660+50.18 | 97.0 | East Approach Pavement |
| 660+50.18 | 371.9 | Bridge Design #1417 |
| 660+50.18 | 112.4 | West Approach Pavement |
| 660+64.64 | 386.0 | East Approach Pavement |
| 660+64.64 | 1617.8 | Bridge Design #121 |
| 660+64.64 | 402.3 | West Approach Pavement |
| 660+50.18 | 402.3 | East Approach Pavement |
| 660+50.18 | 1617.8 | Bridge Design #718 |
| 660+50.18 | 386.0 | West Approach Pavement |
| TOTALS: | 5974.8 | |

108-13A
08-01-08

## SAFETY CLOSURES

Refer to Section 2518 of the Standard Specifications

| Station | Closure Type: Road Qty. | Closure Type: Hazard Qty. | Remarks |
|---|---|---|---|
| 658+50.00 | | x | Bridge Design No. 718 |
| 662+50.00 | | x | |
| 658+50.00 | | x | Bridge Design No. 1417 |
| 662+50.00 | | x | |
| 658+60.00 | | x | Bridge Design No. 1317 |
| 662+70.00 | | x | |
| 658+60.00 | | x | Bridge Design No. 121 |
| 662+70.00 | | x | |
| | Total: | 8 | |

232-3A
04-16-19

## EROSION CONTROL (RURAL SEEDING)

Following the completion of work in a disturbed area and according to the seeding dates in Section 2601 of the Standard Specifications, place seed, fertilizer, and mulch on the disturbed area lying 8 feet adjacent to shoulder and median as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,3 and Section 4169 of the Standard Specifications.

Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed, furnishing and applying seed, fertilizer, and mulch are all incidental to mobilization and will not be paid for separately.

232-11
04-16-19

## EROSION CONTROL (STABILIZING CROP SEEDING)

If outside of permanent seeding dates in Section 2601 of the Standard Specifications, or if required by a storm water permit, place stabilizing crop, fertilizer, and mulch on the disturbed area as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,1 and Section 4169 of the Standard Specifications.

Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

Preparing the seedbed, furnishing and applying seed, fertilizer, and mulch are incidental to mobilization and will not be paid for separately.

262-5
10-18-05

## UTILITIES (POINT 25 PROJECT)

This is a POINT 25 project and is subject to the provisions of IAC 761-115.25.

281-1
10-18-16

## SECTION 404 PERMIT AND CONDITIONS

Construct this project according to the requirements of U.S. Army Corps of Engineers Individual Permit No. 2017-1049. A copy of this permit is available from the Iowa DOT website (http://www.envpermits.iowadot.gov/). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

# BRIDGE APPROACH SECTION

Refer to the BR Series.

* Not a bid item

| Location | | | | Approach Pavement | | | | | Standard Road Plans BR Series | | | Subdrain | | | | | * Modified Subbase | * Polymer Grid | * Special Backfill | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bridge Station | End | Skew Ahead Degrees LEFT | Skew Ahead Degrees RIGHT | (T) Thickness | Pay Length | Non-Reinf. Pavement Area | Single-Reinf. Pavement Area | Double-Reinf. Pavement Area | Approach | Fixed or Movable Abutment | Abutting Pavement | * Perforated Subdrain 4" | * Subdrain Outlet | | * Porous Backfill | * Class 'A' Crushed Stone Backfill | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | Inches | FT | SY | SY | SY | | | | LF | STA | Side | CY | CY | TON | SY | TON | |
| 660+51.18 | West | | 10 | 12.0 | 71.3 | 160.0 | 106.7 | 136.2 | BR-203 | Movable | BR-211 | 78.0 | 658+62.81 | LT | 2.2 | 0.3 | 367.061 | 418.2 | | Bridge Design #718 |
| 660+51.18 | East | | 10 | 12.0 | 71.9 | 160.0 | 106.7 | 156.6 | BR-203 | Movable | BR-211 | 78.0 | 662+38.14 | LT | 2.2 | 0.3 | 387.226 | 445.4 | | |
| 660+64.64 | West | | 10 | 12.0 | 71.9 | 160.0 | 106.7 | 156.6 | BR-203 | Movable | BR-211 | 78.0 | 658+76.68 | RT | 2.2 | 0.3 | 387.226 | 445.4 | | Bridge Design #121 |
| 660+64.64 | East | | 10 | 12.0 | 71.3 | 160.0 | 106.7 | 136.2 | BR-203 | Movable | BR-211 | 78.0 | 662+52.01 | RT | 2.2 | 0.3 | 367.061 | 418.2 | | |
| 660+51.18 | West | | 10 | 12.0 | 77.1 | 56.4 | 37.6 | 50.9 | BR-203 | Movable | BR-211 | 16.9 | 658+62.81 | LT | 0.5 | | 146.529 | 181.3 | | Bridge Design #1417 |
| 660+51.18 | East | | 10 | 12.0 | 66.2 | 56.4 | 37.6 | 30.5 | BR-203 | Movable | BR-211 | 16.9 | 662+38.14 | LT | 0.5 | | 123.678 | 153.9 | | |
| 660+64.64 | West | | 10 | 12.0 | 66.2 | 56.4 | 37.6 | 30.5 | BR-203 | Movable | BR-211 | 16.9 | 658+76.68 | RT | 0.5 | | 123.678 | 153.9 | | Bridge Design #1317 |
| 660+64.64 | East | | 10 | 12.0 | 77.1 | 56.4 | 37.6 | 50.9 | BR-203 | Movable | BR-211 | 16.9 | 662+52.01 | RT | 0.5 | | 146.529 | 181.3 | | |
| | | | | **Total:** | | **865.6** | **577.2** | **748.4** | | | | | | | | | | | | |



# SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN

Refer to Standard Road Plan DR-401 and DR-402

| Location | | | Bid Items | | PCC Paved Shoulder | | | Scour Protection (DR-401) | | | Rock Flume (DR-402) | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bridge Station | Bridge Corner | Distance DI-1 or DI-2 | PCC Paved Shoulder | Bridge End Drain | Panels Required | Polymer Grid | Modified Subbase | Special Ditch Control, Wood Excelsior Mat EC-101 | Turf Reinforced Mat (TRM), Type 2 EC-104 | Transition Mat EC-105 | Macadam Stone Base | Engineering Fabric | Erosion Stone | |
| | | FT | SY | TYPE | A B C or D | SY | TONS | SQ | SQ | SF | TONS | SY | TONS | |
| 660+50.18 | NE | 35.3 | 30.2 | DR-401 | A | 30.2 | 19.026 | 1.2 | 1.6 | 33 | | | | |
| 660+64.64 | SE | 14.8 | 30.2 | DR-401 | B | 30.2 | 19.026 | 4.7 | 5.1 | 33 | | | | |
| | | Totals: | 60.4 | | | | | | | | | | | |

# SURVEY SYMBOLS

- TDC Tree Deciduous
- D Centerline Draw or Stream (Down)
- EG Edge of Gravel Road
- Linn County REC
- BNK Stream Bank
- EP Edge of Paved Roads (ML or SR)
- EW Edge of Water
- ENU Edge Unpaved Entrance & Parking
- TEV Evergeen Tree
- HDG Hedge Row
- SNP Unpaved Shoulder
- WM Wind Mill
- SI Sign
- TV Satelite TV Dish
- IN Storm Sewer Intake
- MH Utility Access (Manhole)
- LUM Luminaire
- LP Tank
- GP Guard Post (Less Than 4 Posts)
- SCR Section Corner
- DU Centerline Draw or Stream (Up)
- OUT Tile Outlet
- FW Wire Fence
- ROW Right of Way Rail
- DIK Centerline of Dike or Dam
- RIP Rip-Rap
- GDL Guard Rail Steel
- PRISER Power Riser Pole
- INB Storm Sewer Beehive Intake
- LC Lot Corner
- ITC Midwest (Formerly Alliant Energy)
- SWP Swamp or Marsh
- ENT Centerline BL of Entrance
- FHD Fire Hydrants
- RET Retaining Walls
- STP Stump
- WV Water Valve
- FCL Chain Link and Security Fence
- WEL Well
- TPA Telephone Pole Co. 1
- FWD Wood Fence
- RR Centerline of Railroad Tracks
- MidAmerican Energy
- BM Bench Mark
- C Centerline BL of Road (ML or SR)
- BIN Grain Bin
- SI Sign
- TFR Tree Fruit
- SHR Shrub
- MM Mile Marker Post
- GP Guard Post (Less Than 4 Posts)
- FLG Flag Poles
- EB Electrical Box
- TPD Telephone Pedestal
- WHD Water Hydrant
- SL Speed Limit Sign
- SNK Sink Hole
- CIS Cistern
- SEP Septic Tank
- Central Iowa Power Coop (CIPCO)
- TP Telephone Pole
- TVP TVP TV Pedestal Symbol
- WV Water Valve
- WH Water Hydrant
- GUY Guy Wire
- TPED Telephone Pedestal
- EB Electrical Box
- UB Utility Box
- LUM Luminaire
- INT Storm Sewer Intake
- HT Highline Tower
- INTBH Intake (Beehive)
- INTBH Storm Sewer Intake (Beehive)
- MH Electrical Manhole
- MH Storm Sewer Manhole
- MH Sanitary Sewer Manhole
- MH Fiber Optic Manhole
- MH Manhole

# UTILITY LEGEND

| | | |
|---|---|---|
| E1 | Linn County REC<br>Josh Pfannebecker<br>319-377-1587 Ext. 607<br>jpfannebecker@linncountyrec.com | Electrical Service / Buried Electrical Lines |
| E2 | ITC Midwest<br>Chad Levi<br>319-297-6765<br>clevi@itctransco.com | Overhead Electrical Transmission |
| E3 | Iowa DOT<br>Timothy Zelmet<br>319-626-2386<br>Timothy.Zelmet@iowadot.us | Buried Electrical Lines |
| E4 | MidAmerican Energy<br>Nate Johnson<br>563-333-8648<br>NLJohnson@midamerican.com | Overhead Electrical Transmission |
| E5 | Central Iowa Power Coop (CIPCO)<br>Dan Ketchum<br>319-734-4313<br>Dan.ketchum@cipco.net | Overhead Electrical Transmission |
| E6 | Unclaimed | Buried Electrical Lines |
| G | MidAmerican<br>Joe Retek<br>319-341-4457<br>jjretek@midamerican.com | Buried Gas - Intermediate Pressure |
| GHP | MidAmerican<br>Steven DellaBetta<br>319-298-5163<br>amdellabetta@midamerican.com | Buried Gas - Hi-Pressure Gas |
| G2HP | Magellan<br>Bill Saehler<br>319-330-0959<br>Bill.Saehler@magellanlp.com | Underground HI-Pressure Gas |
| FO | Iowa Communications Network (ICN)<br>Timothy Flickinger<br>515-725-4699<br>timothy.flickinger@iowa.gov | Fiber Optic |
| FO2 | South Slope COOP<br>Randy Cline (Primary)<br>319-626-2211<br>randy@southslope.com | Fiber Optic |
| FO3 | Century Link (Formerly Qwest)<br>Bob Wegener (Primary)<br>815-382-3605<br>bwegener@terratechllc.net | Fiber Optic |
| FO4 | Transmission Windstream/PAETEC<br>Dave Harris<br>515-297-8391<br>Dharris@pearce-services.com | Fiber Optic |
| FO5 | Local Windstream<br>Brian Otto<br>402-436-5200<br>brian.otto@windstream.com | Fiber Optic |
| FO6 | Aureon Formerly INS<br>Jeff Klocko<br>515-830-0445<br>jeff.klocko@aureon.com | Fiber Optic |
| FO7 | University of Iowa<br>Chris Hatland (Primary)<br>319-335-1357<br>chris-hatland@uiowa.edu | Fiber Optic |
| FO8 | Unite Private Network/IM ON<br>Dan Hogan (Primary UPN)<br>515-326-4237<br>dan.hogan@upnfiber.com<br>Randy Schoon (Primary IMON)<br>319-261-4640<br>randys@lmon.net | Fiber Optic |
| FO9 | City of Coralville<br>Ryan Foley<br>319-248-1720<br>rfoley@coralville.org | Fiber Optic |
| FO10 | Mediacom<br>Darwin Driscoll (Primary)<br>845-204-5742<br>ddriscoll@mediacomcc.com | Fiber Optic |
| FO11 | Unclaimed | Fiber Optic |
| SAN.2 | City of Coralville<br>Ryan Foley<br>319-248-1720<br>rfoley@coralville.org | Sanitary Sewer |
| ST S | Iowa DOT<br>Timothy Zelmet<br>319-626-2386<br>Timothy.Zelmet@iowadot.us | Storm Sewer |
| T1 | Windstream<br>Brian Otto<br>402-436-5200<br>brian.otto@windstream.com | Telephone |
| T2 | South Slope COOP<br>Mark Ditch<br>319-626-2211<br>mark@southslope.com | Telephone |
| TV | Mediacom<br>Darwin Driscoll (Primary)<br>845-204-5742<br>ddriscoll@mediacomcc.com | Buried Television Cable |
| W2 | City of Coralville<br>Dan Holderness<br>319-248-1720<br>dholderness@coralville.com | Water |
| W4 | City of Tiffin<br>Benjamin A. Carhoff, P.E.<br>319-545-7215<br>bcarhoff@hart-frederick.com | Water |

# PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

| LINEWORK | Design Color No. | |
|---|---|---|
| Green | (2) | Existing Topographic Features and Labels |
| Blue | (1) | Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation |
| Magenta | (5) | Existing Utilities |
| **SHADING** | **Design Color No.** | |
| Yellow | (4) | Highlight for Critical Notes or Features |
| Red | (3) | Delineates Restricted Areas |
| Lavender | (9) | Temporary Pavement Shading |
| Gray, Light | (48) | Proposed Pavement Shading |
| Gray, Med | (80) | Proposed Granular Shading |
| Gray, Dark | (112) | Proposed Grade and Pave Shading "In conjunction with a paving project" |
| Brown, Light | (236) | Grading Shading |
| Tan | (8) | Proposed Sidewalk Shading |
| Blue, Light | (230) | Proposed Sidewalk Landing Shading |
| Pink | (11) | Proposed Sidewalk Ramp Shading |

# PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

| LINEWORK | Design Color No. | |
|---|---|---|
| Green | (2) | Existing Ground Line Profile |
| Blue | (1) | Proposed Profile and Annotation |
| Magenta | (5) | Existing Utilities |
| Blue, Light | (230) | Proposed Ditch Grades, Left |
| Black | (0) | Proposed Ditch Grades, Median |
| Rust | (14) | Proposed Ditch Grades, Right |

- Reference Point / Station — Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

# RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- C/A Access Control
- Property Line

# PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

**(COVERS SHEET SERIES D, E, F, & K)**



| FILE NO. | ENGLISH | DESIGN TEAM | | PROJECT NUMBER | SHEET NUMBER |
|---|---|---|---|---|---|
| 30864 | | HOLST | JOHNSON COUNTY | NHS-080-6(348)239--11-52 | D.1 |

Need to look at reference sequence...

STA. 662+62.00
END CONSTRUCTION

STA. 658+52.81
BEGIN CONSTRUCTION

Clear Creek

Ramp A

Ramp G

Ramp E

Ramp F

Ramp D

340th St

INTERSTATE 80

655 660 665 670 675 680 685

SAN. 2

ST S

ST

E3 E2 E1 F0

PI Sta 676+17.64

PC Sta 673+07.90

PT Sta 679+27.34

Curve Data
Δ = 1° 32' 54.91" (RT)
T = 309.74
L = 619.43
R = 22,918.31
E = 2.09

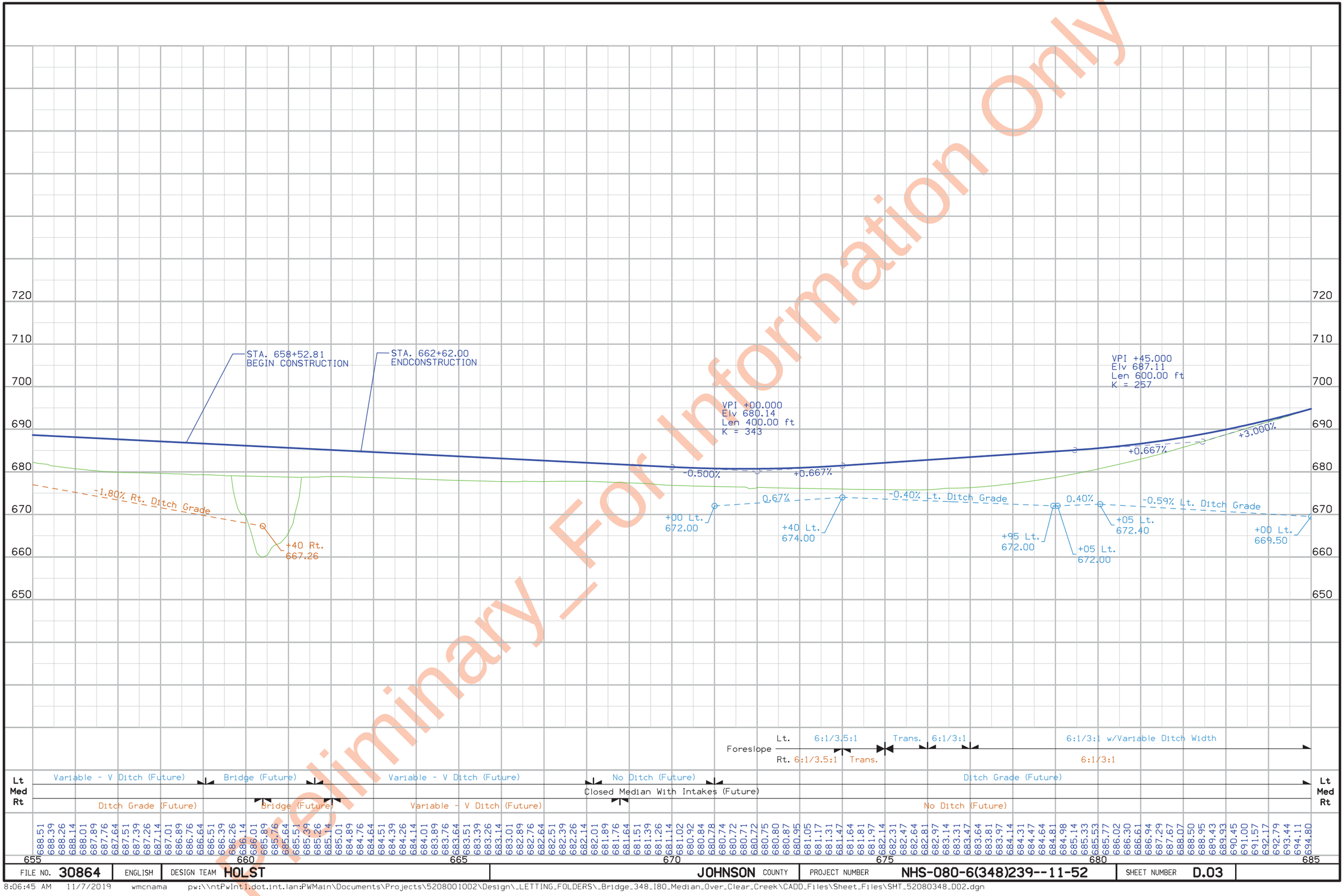
0 100
FEET

I-80



| FILE NO. 30864 | ENGLISH | DESIGN TEAM HOLST | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER D.02 |
|---|---|---|---|---|---|

8:06:45 AM 11/7/2019 wmcnama pw:\\ntPwIntl.dot.int.lan:PWMain\Documents\Projects\5208001002\Design_LETTING_FOLDERS_Bridge_348_I80_Median_Over_Clear_Creek\CADD_Files\Sheet_Files\SHT_52080348_D02.dgn




| FILE NO. 30864 | ENGLISH | DESIGN TEAM HOLST | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER D.03 |
|---|---|---|---|---|---|

8:06:45 AM 11/7/2019 wmcnama pw:\\ntPwIntl.dot.int.lan:PWMain\Documents\Projects\52080001002\Design_LETTING_FOLDERS_Bridge_348_I80_Median_Over_Clear_Creek\CADD_Files\Sheet_Files\SHT_52080348_D02.dgn

# Survey Information

Johnson County
IMN-080-6(235)2390E-52
I-80/I-380/US-218 Interchange near
Iowa City
PIN 02-52-080-010
Sap-0411.4
Sap-0411.5

## 2003 Vertical Control Information

This survey is relative to NAVD88 vertical datum. Three wire bench level loops were run throughout this project. All bench loops originated and closed on one project benchmark #566 a 3rd order USGS mark called 26FDR 1964 682. Note the vertical datum difference between NGVD 88 and NAVD 29 is 0.10 feet in this area. The 29 datum is 0.10 higher than 88. Benchmark elevations were validated in the 2013/2014 survey. A few updates were needed.

Vertical equations to the project datum Bench Marks and other benches along this survey are as follows:

BM # 566 This survey EL=682.046
= BM # 566 Johnson County 2000 survey EL=682.046
= USGS BM #26 26FDR 1964 682 EL=682.046

BM #625 This survey El=685.519
=BM #14 1986 AB plan F-518-4(26)--20-52
EL=685.56
=BM # 1 Paving plan I-IG-380-6(19)243--04-52
EL=685.56

BM #517 This survey El=737.314
=BM # 3 Paving plan I-IG-380-6(19)243--04-52
EL=737.37

BM #520 This survey El=699.144
=BM # 19 Paving plan I-IG-380-6(19)243--04-52
EL=699.26

BM #536 This survey El=691.494
=BM # 22 Paving plan I-IG-380-6(19)243--04-52
EL=691.61

BM #636 This survey EL=691.493
=BM #521 2000 Carlson survey IMN-80-6(21)240--0O-52 (88 Datum)
EL=691.493
=BM # 22 Paving plan I-IG-380-6(19)243--04-52 (29 Datum)
EL=691.61
=BM #22 1986 AB Plan F-518-4(12)--20-52 (29 Datum)
EL=691.61

BM #608 This survey EL=804.915
=BM # 37 1986 AB Plan F-518-4(12)--20-52 (29 Datum)
EL=804.85

BM #582 This survey EL=758.068
=BM # 39 1986 AB Plan F-518-4(12)--20-52 (29 Datum)
EL=758.03

BM #502 This survey EL=738.113
=BM #502 2000 Carlson survey IMN-80-6(21)240--0O-52 (88 Datum)
EL=738.113
=BM # 51A I-80-6(12)238 Grading Plan (29 Datum)
EL=738.36

BM #512 This survey EL=789.582
=BM #512 2000 Carlson survey IMN-80-6(21)240--0O-52 (88 Datum)
EL=789.582
=BM # 60A I-80-6(12)238 Grading Plan (29 Datum)
EL=789.74
=BM # 500 IM-80-6(171)240--13-52 Plan (29 Datum)
EL=789.96

BM #633 This survey EL=684.221
=BM # 21A F-289(6) 1970 AB PLAN (Datum unknown)
EL=703.62

BM #634 This survey EL=682.904
=BM # 21B F-289(6) 1970 AB PLAN (Datum unknown)
EL=702.26

## General Information

Measurement units for this survey are US survey feet. This survey is for proposed reconstruction of the systems interchange. This field survey including mobile lidar pavement survey is supplemented with aerial survey to create the entire dtm. As of Jan. 2015 the entire surface model tin is located at
pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5208001002\Photo\52080243.tin
The 2013/2014 survey was made to update previous surveys to current mapping standards and to check previous survey control, drainage structures, existing pavement and utilities.
Survey file locations in ProjectWise as of Jan 2015
Year 2000 2006 I-80 SAP 321 files (SDMS Data collection)
pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5208001098\Photo\SURVEY\
Year 2003 I-380 SAP 411.0 to SAP 411.3 files (SDMS Data collection)
pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5208001002\PrelimSurvey\0411\OLD\102913\2003 SDMS Survey\
Year 2013/2014 SAP 411.4 files (Current standards)
pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5208001002\PrelimSurvey\04114\
Year 2013 SAP 411.5 files (Mobile lidar)
pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5208001002\PrelimSurvey\04115\

## Date(s) of Survey(s)

I-80
SAP 321 Aug. 2000
SAP 321.1 Aug. 2001 Additional Survey
SAP 321.2 April 2006 Additional Survey-Dubuque St.
SAP 411.4 2013-2014 Update survey to current standards and building floor elev. survey
SAP 411.5 Fall 2013 Mobile Lidar pavement survey (R.E.Y.)

I-380/US-218
SAP 411,411.1,411.2,411.3- April 2003
SAP 411.4 2013-2014 Update survey to current standards and building floor elev. survey
SAP 411.5 Fall 2013 Mobile Lidar pavement survey (R.E.Y.)

## 2003 Horizontal Control

The GPS Network along this project was collected by IDOT Preliminary Survey Crews. Information about that network can be found in the 0411gpspoints.doc file included with this survey in NAD83(1996) Modified State Plane Project Coordinates.
As of Jan. 2015 see control report at:
pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5208001002\PrelimSurvey\0411\OLD\102913\2003 SDMS Survey\0411gpspoints.doc

Twelve section corners were found and included in this survey. None of the section corners coded as SCR in this survey have been certified by District 6 office. This survey was measured in English Units.

This survey intersects a 2000 Preliminary Survey along I-80. The 2000 survey data used Sap 0321. A revised GPS network was observed in 2002 for this project that includes all 2000 network control with approximately fourteen additional points added along the I-380 corridor north and south of I-80. The project control for this project is identical to the 2000 network control survey. Station equations to all as-built PI points are in the Horizontal datum information included below. Project control was validated in 2013/2014 survey.

## Alignment Information

The mainline alignment of the I 80 survey is a retrace of GRADING PLANS NO. 80-6(12)238.

2000 survey stationing relates to the Grading Plans as follows:
PI-676+17.64-THIS-SURVEY=
PI 676+17.60 ORLINS FEB
1995 SURVEY PROJ. NUMBER IM-80-6(171)240--13-52 =
PI 670+17.6 GRADING PLANS PROJ NO 80-6(12)238
FOUND IRON PIN
The mainline alignment of the I 380 survey is a retrace of the as-built plans # F -518-4(12) 20-52 1986 AB plans (centerline of median).

2003 Survey stationing relates to as built plan stationing as follows:
BOP POT Sta 11082+95.29 this survey =
POT Sta 1684+00.22 F-518-4(12)--20-52 As-Built Plans

CP Point 11097+51.08, 0.14 feet right this survey =
=PC Sta 1698+56.76 F-518-4(12)--20-52 As-Built Plans Back
=PC Sta 1698+60.00 F-518-4(12)--20-52 As-Built Plans Ahead

PI Sta 11109+54.89 this survey =
PI Sta 1710+60.76 F-518-4(12)--20-52 As-Built Plans

PI Sta 11127+45.33 this survey =
=POT Sta.1127+45.33 IMN-80-6(211)2400E-52 2000 Preliminary Survey
=POT Sta 1728+54.9 F-518-4(12)--20-52 As-Built Plans Back
=POT Sta 1127+44.85 F-518-4(12)--20-52 As-Built Plans Ahead

POT Sta 11163+54.20 This Survey I-380 Stationing (Not Set in Field)
=POT Sta. 644+59.06 This Survey I-80 Stationing
=POT Sta. 644+59.06 IMN-80-6(211)2400E-52 2000 Preliminary Survey I-80 Stationing
=POT Sta. 644+50.24 IM-80-6(167)24013-52 Feb 1996 Grading Plan I-80 Stationing
=POT Sta. 638+56.24 F-518-4(12)--20-52 As-Built Plans I-80 Stationing
=POT Sta. 638+56.24 I-IG-380-6(19)243-04-52 As-Built Plans I-80 Stationing
=POT Sta 1163+53.95 F-518-4(12)--20-52 As-Built Plans I-380 Stationing
=POT Sta 1163+53.95 I-IG-380-6(19)243-04-52 As-Built Plans I-380 Stationing

POT Sta 11183+81.20 This survey
= TS Sta 1183+81.20 F-518-4(12)--20-52 As-Built Plans
= TS Sta 1183+81.20 I-IG-380-6(19)243-04-52 As-Built Plans
= TS Sta 1183+81.20 IMN-80-6(211)2400E-52 2000 Preliminary Survey

PI Sta 11191+13.01 this survey =
PI Sta 1191+12.08 I-IG-380-6(19)243-04-52 As-Built Plans

PI Sta 11271+13.95 this survey =
PI Sta 1271+13.52 I-IG-380-6(19)243-04-52 As-Built Plans

PI Sta 11324+10.95 this survey =
PI Sta 1324+11.21 I-IG-380-6(19)243-04-52 As-Built Plans

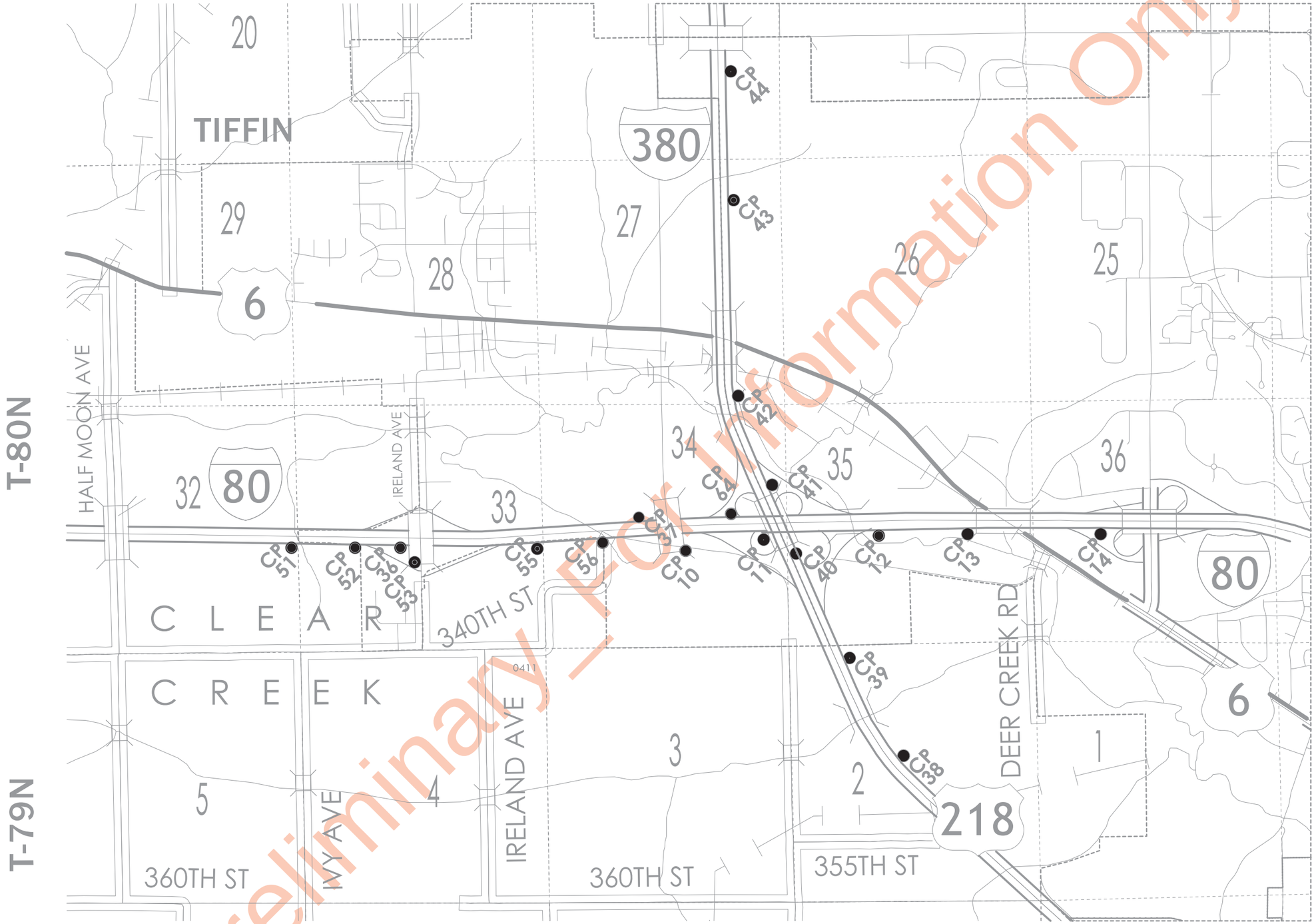
POT Sta 11404+97.20 this survey =
PC Sta 1404+96.91 I-IG-380-6(19)243-04-52 As-Built Plans

## Utility Information

Sub-Surface Utility Mapping Quality Level is in accordance with CI/ASCE 38-02 *Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data*.

The 2013/2014 utility survey information is too extensive to be reported in this index. For complete utility survey information as of Jan. 2015 see:
pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5208001002\PrelimSurvey\04114\ 04114 Dewey\UtilityInfo\

# GPS BASE STATION CONTROL POINT VICINITY MAP - SEE REF. SHEETS FOR MORE INFO.






| FILE NO. 30864 | ENGLISH | DESIGN TEAM HOLST | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER G.3 |
|---|---|---|---|---|---|

9:03:47 AM 10/30/2019 wmcnama pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\5208001002\Design_LETTING_FOLDERS_Bridge_348_I80_Median_Over_Clear_Creek\CADD_Files\Sheet_Files\SHT_52080348_G01.sht

## I - 80 Benchmarks

| BENCHMARKS | | | | | ELEVATION |
|---|---|---|---|---|---|
| No. 500 | Sta. | 524+24.82 | 275.01 Rt. | CUT-X-NW-CORNER-CONC-SLAB OF THE EAST MOST HISTORICAL MONUMENT---------- | 725.532 |
| No. 501 | Sta. | 541+26.76 | 95.72 Rt. | FD\IHC-BM-ON-INLET-HDWL 6.0 X 6.0 RCB---------- | 716.211 |
| No. 502 | Sta. | 557+55.03 | 100.54 Lt. | FD\IHC-BM-ON-INLET-HDWL 4.0 X 4.0 RCB = BM 51A ELEV = 738.36 GRADING PLANS PROJECT NO. I-80-6(12)238---------- | 738.113 |
| No. 503 | Sta. | 567+54.01 | 112.27 Rt. | FD\IHC-BM-SE-WING-BRIDGE = BM 51C ELEV = 768.83 GRADING PLANS PROJECT NO. I-80-6(12)238---------- | 768.519 |
| No. 504 | Sta. | 568+71.96 | 664.93 Rt. | FD\IHC-BM-ON-INLET-HDWL 6.0 X 4.0 RCB = BM 51B ELEV = 760.19 GRADING PLANS PROJECT NO. I-80-6(12)238---------- | 759.878 |
| No. 505 | Sta. | 572+43.12 | 232.39 Lt. | FD\IHC-BM-ON-INLET-HDWL 5.0 X 5.0 RCB = BM 56B ELEV = 736.39 GRADING PLANS PROJECT NO. I-80-6(12)238---------- | 736.150 |
| No. 506 | Sta. | 576+04.56 | 174.78 Lt. | FD\IHC-BM-ON-OUTLET-HDWL 42" CIR RCB W\ FLUME = BM 56A ELEV = 736.54 GRADING PLANS PROJECT NO. I-80-6(12)238---------- | 736.266 |
| No. 507 | Sta. | 582+71.85 | 157.29 Rt. | SET\RR-SPK-N-SIDE-FE-POST------ | 741.725 |
| No. 508 | Sta. | 593+92.17 | 141.09 Lt. | SET\RR-SPK-S-SIDE-P-POLE------- | 741.525 |
| No. 509 | Sta. | 607+05.87 | 79.46 Rt. | FD\IHC-BM-ON-INLET-HDWL 5.0 X 5.0 RCB = BM 58A ELEV = 738.31 GRADING PLANS PROJECT NO. I-80-6(12)238---------- | 738.221 |
| No. 510 | Sta. | 615+76.60 | 326.96 Rt. | FD\RR-SPK-E-SIDE-P-POLE-------- | 759.073 |
| No. 511 | Sta. | 620+62.57 | 65.33 Rt. | FD\X-SOUTH-CONC-BASE-OF OVERHEAD SIGN= BM # 501 PROJECT NUMBER IM-80-6(171)240--13-52 ELEVATION=768.539---------- | 768.176 |
| No. 512 | Sta. | 621+03.40 | 106.71 Lt. | FD\IHC-BM-NW-WING-BRIDGE = BM 60A ELEV = 789.74 GRADING PLANS PROJECT NO.I-80-6(12)238=BM # 500 PROJECT NUMBER IM-80-6(171)240--13-52 ELEVATION=789.96---------- | 789.582 |
| No. 514 | Sta. | 628+04.84 | 138.29 Rt. | FD-X-NORTH-SIDE-CONC-BASE LIGHT POLE = BM # 502 PROJECT NUMBER IM-80-6(171)240--13-52 ELEVATION=759.83---------- | 759.429 |
| No. 513 | Sta. | 630+59.60 | 585.67 Rt. | SET\RR-SPK-N-SIDE-P-POLE------- | 799.211 |
| No. 521 | Sta. | 635+58.50 | 2288.24 Lt. | FD\IHC-BM-SW-WING-N-BOUND I-380 BRIDGE OVER CLEAR CREEK = BM 22 ELEV. = 691.61 PAVING PLANS PROJECT NO. I-IG-380-6(19)243--04-52------- | 691.493 |
| No. 520 | Sta. | 638+65.25 | 1150.14 Lt. | FD\X-E-BOLT-LIGHT-POLE BASE = BM 19 ELEV = 699.26 PAVING PLANS PROJECT NO. I-IG-380-6(19)243--04-52 NO.---------- | 699.144 |
| No. 519 | Sta. | 643+13.57 | 149.65 Lt. | FD\IHC-BM-NW-WING-S-BOUND I-380 BRIDGE OVER I-80--------- | 737.910 |
| No. 515 | Sta. | 643+29.80 | 85.69 Rt. | CUT-X-S-SIDE-OF-THE-SOUTH CONC BASE OVERHEAD SIGN-------- | 717.715 |
| No. 518 | Sta. | 646+13.45 | 174.79 Rt. | FD\IHC-BM-SE-WING-N-BOUND I-380 BRIDGE OVER I-80--------- | 746.360 |
| No. 517 | Sta. | 650+98.04 | 1260.64 Rt. | FD\X-NW-BOLT-L-LIGHT-POLE = BM 3 ELEV. = 737.37 PAVING PLANS PROJECT NO. I-IG-380-6(19)243--04-52------- | 737.313 |
| No. 516 | Sta. | 654+99.08 | 2289.74 Rt. | CUT-X-CL-S-EDGE-EAST-CONC BASE OVERHEAD SIGN---------- | 741.143 |
| No. 522 | Sta. | 659+46.08 | 96.58 Lt. | FD\IHC-BM-SW-WING-RAMP BRG FROM I-80 W.BOUND TO I-380 N.BOUND---------- | 683.510 |
| No. 523 | Sta. | 661+62.64 | 113.94 Rt. | FD\X-CONC-WHEELGUARD-SE END OF RAMP BRIDGE FROM I-380 N.BOUND TO I-80 EAST BOUND---------- | 678.333 |
| No. 524 | Sta. | 678+73.49 | 137.92 Rt. | SET\RR-SPK-N-SIDE-WOOD FENCE POST---------- | 668.615 |
| No. 525 | Sta. | 691+40.06 | 60.42 Rt. | FD\IHC-BM-SW-WING-I-80 E.BOUND BR. OVER HWY 6--------- | 713.964 |

## I - 80 Benchmarks

| BENCHMARKS | | | | | ELEVATION |
|---|---|---|---|---|---|
| No. 526 | Sta. | 693+80.06 | 69.22 Lt. | FD\IHC-BM-ON-INLET-HDWL 8.0 X 8.0 RCB = BM 115B ELEV. = 678.77 PCC PAVING PROJECT PLANS NO. I-IG-80-6(5)245---------- | 678.693 |
| No. 527 | Sta. | 697+44.64 | 61.02 Rt. | FD\IHC-BM-SE-WING-I-80 E.BOUND BRIDGE OVER HWY 6------ | 716.522 |
| No. 528 | Sta. | 710+29.21 | 67.34 Rt. | CUT-X-S-SIDE-CONC-BASE LIGHT POLE IN BETWEEN RAMP & I-80 E.BOUND---------- | 732.764 |
| No. 530 | Sta. | 724+64.11 | 15.45 Lt. | FD\IHC-BM-SW-WING-I-80 W.BOUND BRG OVER HWY 965 = 119A ELEV. = 734.10 PCC PAVING PROJECT PLANS NO.I-IG-80-6(5)245---------- | 733.923 |
| No. 529 | Sta. | 725+22.02 | 792.31 Rt. | CUT-X-N.SIDE-CONC-BASE TRAFFIC SIGNAL SW QUAD HWY 965 & WEST ENTRANCE INTO MALL---------- | 714.224 |
| No. 531 | Sta. | 727+10.65 | 340.80 Lt. | CUT-X-ON-INLET-HDWL 6.0 X 6.0 RCB---------- | 705.436 |
| No. 532 | Sta. | 730+69.65 | 374.01 Lt. | FD\IHC-BM-ON-INLET-HDWL 6.0 X 4.0 RCB = BM 180-3 ELEV. = 719.61 PCC PAVEMENT-GRADE/NEW PROJECT PLANS NO. STPN-965-0(4)--25-52---------- | 719.458 |
| No. 533 | Sta. | 741+85.18 | 66.23 Lt. | CUT-X-S-SIDE-CONC-BASE LIGHT IN BETWEEN W.BOUND I-80 @ RAMP---------- | 756.604 |

## I - 380 Benchmarks

| BENCHMARKS | | | | | ELEVATION |
|---|---|---|---|---|---|
| No. 624 | Sta. | 11111+94.255 | 79.87 Lt. | 2-10OD NAILS IN WD.SI.POS------ | 714.060 |
| No. 625 | Sta. | 11118+31.923 | 151.22 Lt. | IHC BM INLET HDWL.TRIPLE 10 X 12 RCB BM#625 ELEV.= 685.519(E) THIS SURVEY =BM# 1 ELEV.= 685.56(E) F-518-4(12)--20-52 1986 AB PLAN---------- | 685.519 |
| No. 626 | Sta. | 11128+02.043 | 110.86 Rt. | CUT"X"NW.SIDE W.CONC.SIGN BASE---------- | 730.221 |
| No. 516 | Sta. | 11138+40.798 | 85.63 Rt. | CUT-X-CL-S-EDGE-EAST-CONC BASE OVERHEAD SIGN---------- | 741.143 |
| No. 517 | Sta. | 11149+45.044 | 108.49 Rt. | FD\X-NW-BOLT-L-LIGHT-POLE = BM 3 ELEV. = 737.37 PAVING PLANS PROJECT NO. I-IG-380-6(19)243--04-52------- | 737.314 |
| No. 518 | Sta. | 11161+33.669 | 75.84 Rt. | FD\IHC-BM-SE-WING-N-BOUND I-380 BRIDGE OVER I-80--------- | 746.360 |
| No. 515 | Sta. | 11163+24.440 | 152.20 Lt. | CUT-X-S-SIDE-OF-THE-SOUTH CONC BASE OVERHEAD SIGN------ | 717.715 |
| No. 519 | Sta. | 11165+48.102 | 77.23 Lt. | FD\IHC-BM-NW-WING-S-BOUND I-380 BRIDGE OVER I-80--------- | 737.910 |
| No. 520 | Sta. | 11176+43.987 | 109.01 Lt. | FD\X-E-BOLT-LIGHT-POLE BASE = BM 19 ELEV = 699.26 PAVING PLANS PROJECT NO. I-IG-380-6(19)243--04-52 NO.---------- | 699.144 |
| No. 567 | Sta. | 11187+84.421 | 65.27 Rt. | FD\IHC BM SE WING N.BOUND I-380 BRIDGE OVER CLEAR CREEK---------- | 690.972 |
| No. 636 | Sta. | 11188+16.120 | 22.87 Rt. | FD\IHC-BM-SW-WING-N-BOUND I-380 BRIDGE OVER CLEAR CREEK = BM 22 ELEV. = 691.61 PAVING PLANS PROJECT NO. I-IG-380-6(19)243--04-52------- | 691.494 |
| No. 521 | Sta. | 11188+16.200 | 22.77 Rt. | FD.IHC SW.WING NB.BRIDGE I-380 OVER CLEAR CREEK BM#521 ELEV.= 691.493(E) THIS SURVEY =BM#521 ELEV.= 691.493(E) IMN-80-6(21)240--00-52 2000 W.CARLSON SURVEY =BM#22 ELEV.= 691.61(E) F-518-4(12)--20-52 1986 AB PLAN---------- | 691.493 |
| No. 568 | Sta. | 11188+39.041 | 64.91 Lt. | FD\IHC BM SW WING S.BOUND I-380 BRIDGE OVER CLEAR CREEK---------- | 695.024 |
| No. 569 | Sta. | 11189+63.986 | 64.82 Rt. | FD.DOT BUTTON NE.WING BR.------ | 694.617 |
| No. 570 | Sta. | 11198+34.501 | 65.02 Rt. | FD.DOT BUTTON SE.WING BR.------ | 714.922 |

## I - 380 Benchmarks

| BENCHMARKS | | | | | ELEVATION |
|---|---|---|---|---|---|
| No. 632 | Sta. | 11199+30.780 | 142.78 Lt. | CUT"X"N.SIDE 48"CONC.P.PO -LE BASE S.RR.TRACKS JUST W. 380 OVERPASS---------- | 680.741 |
| No. 572 | Sta. | 11200+25.396 | 23.34 Lt. | CUT"X"NE.WING SB.BRIDGE-------- | 716.012 |
| No. 571 | Sta. | 11200+34.418 | 65.35 Lt. | CUT"X"NW.WING SB.BRIDGE------- | 715.783 |
| No. 573 | Sta. | 11204+64.485 | 22.95 Lt. | CUT"X" SE.WING SB.BR.HWY6------ | 713.595 |
| No. 574 | Sta. | 11204+75.377 | 65.13 Lt. | FD.DOT BUTTON SW.WING BR.------ | 713.436 |
| No. 575 | Sta. | 11206+88.793 | 64.63 Rt. | FD.DOT BUTTON NE.WING BR.------ | 712.079 |
| No. 627 | Sta. | 11206+90.470 | 216.20 Lt. | SET RR.SPK.S.SIDE P.POLE N.SIDE HWY 6,JUST W.OF 380 OVERPASS---------- | 685.435 |
| No. 576 | Sta. | 11218+97.892 | 85.21 Rt. | CUT"X"INLET 24" RCP E.SID------ | 732.351 |
| No. 577 | Sta. | 11235+00.075 | 16.06 Lt. | CUT"X"E.SIDE OVERHEAD SGN------ | 752.765 |
| No. 578 | Sta. | 11248+47.438 | 194.26 Rt. | SET 60D NAIL WD.FENCE POS------ | 745.111 |
| No. 579 | Sta. | 11261+23.666 | 152.27 Rt. | SET 60D NAIL WD.FENCE POS------ | 783.326 |
| No. 608 | Sta. | 11270+93.677 | 134.86 Rt. | FD.IHC SE.COR.WHLGD.BRIDG BM#608 ELEV.= 804.915(E) THIS SURVEY =BM#37 ELEV.= 804.85(E) F-518-4(12)--20-52 1986 AB PLAN---------- | 804.915 |
| No. 607 | Sta. | 11271+31.826 | 130.49 Lt. | CUT"X"NW.COR.WHLGD.BRIDGE------ | 804.763 |
| No. 580 | Sta. | 11272+23.924 | 148.34 Rt. | SET RR.SPK.W.SIDE FE.POST------ | 779.049 |
| No. 581 | Sta. | 11287+68.335 | 98.68 Rt. | CUT"X"INLET 42"RCP S.10F2------ | 764.010 |
| No. 582 | Sta. | 11303+75.126 | 105.25 Rt. | FD.IHC INLET HDWL.TWIN8X8 BM#582 ELEV.= 758.068(E) THIS SURVEY =BM#39 ELEV.= 758.03(E) F-518-4(12)--20-52 1986 AB PLAN---------- | 758.068 |
| No. 583 | Sta. | 11319+99.239 | 100.54 Rt. | CUT"X"NW.W.CONC.SIGN BASE------ | 767.172 |
| No. 606 | Sta. | 11324+44.101 | 150.98 Lt. | SET RR.SPK.SE.SIDE P.POLE------ | 780.252 |
| No. 584 | Sta. | 11332+00.705 | 107.52 Rt. | CUT"X"E.SIDEW.CONC.SGN.BA------ | 775.672 |
| No. 585 | Sta. | 11343+50.252 | 109.94 Rt. | CUT"X"NE.SIDEW.CONC.SGN.B------ | 788.481 |
| No. 586 | Sta. | 11356+00.495 | 116.53 Rt. | CUT"X"W.SIDEW.CONC.SGN.BA------ | 795.758 |
| No. 587 | Sta. | 11375+75.327 | 149.09 Rt. | SET RR.SPK.W.SIDE P.POLE------- | 798.873 |
| No. 592 | Sta. | 11377+19.336 | 135.71 Lt. | CUT"X"SW.WING CO.RD.F28 B------ | 816.985 |
| No. 593 | Sta. | 11377+53.473 | 133.56 Rt. | FD.DOT BUTTON NE.WING BR.------ | 817.034 |
| No. 588 | Sta. | 11389+34.201 | 160.47 Rt. | SET RR.SPK.W.SIDE FE.POST------ | 789.830 |
| No. 589 | Sta. | 11403+67.224 | 180.83 Rt. | SET RR.SPK.NW.SIDE P.POLE------ | 762.153 |

## SW Kansas Ave. South of I 80 Benchmarks

| | | | | | |
|---|---|---|---|---|---|
| No. 622 | Sta. | 20572+00.606 | 33.65 Rt. | SET RR.SPK.SW.SIDE P.POLE------ | 764.688 |
| No. 621 | Sta. | 20578+73.257 | 31.20 Rt. | SET RR.SPK..W.SIDE P.POLE------ | 763.973 |
| No. 620 | Sta. | 20591+97.150 | 53.93 Rt. | SET RR.SPK.SW.SIDE FE.PST------ | 740.677 |
| No. 619 | Sta. | 20602+54.671 | 63.25 Lt. | SET RR.SPK.N.SIDE P.POLE------- | 786.486 |
| No. 513 | Sta. | 20608+06.706 | 35.16 Lt. | SET\RR-SPK-N-SIDE-P-POLE------- | 799.211 |
| No. 510 | Sta. | 20622+90.521 | 33.39 Lt. | FD\RR-SPK-E-SIDE-P-POLE-------- | 759.074 |

## Jasper Ave. Benchmarks

| | | | | | |
|---|---|---|---|---|---|
| No. 511 | Sta. | 30620+64.760 | 67.37 Lt. | FD\X-SOUTH-CONC-BASE-OF OVERHEAD SIGN= BM # 501 PROJECT NUMBER IM-80-6(171)240--13-52 ELEVATION=768.539---------- | 768.176 |
| No. 512 | Sta. | 30622+33.605 | 14.88 Lt. | FD\IHC-BM-NW-WING-BRIDGE = BM 60A ELEV = 789.74 GRADING PLANS PROJECT NO.I-80-6(12)238=BM # 500 PROJECT NUMBER IM-80-6(171)240--13-52 ELEVATION=789.96---------- | 789.582 |
| No. 617 | Sta. | 30634+79.709 | 15.80 Rt. | SET RR.SPK.W.SIDE TEL.POL ON JASPER AVE.---------- | 778.994 |
| No. 616 | Sta. | 30639+48.147 | 43.04 Rt. | SET RR.SPK.W.SIDE P.POLE ON JASPER AVE.---------- | 758.301 |
| No. 615 | Sta. | 30653+45.242 | 17.13 Rt. | FD.SQ.SE.COR.HNDRL.BRIDGE OVER CLEAR CREEK,JASPER A------ | 686.896 |
| No. 614 | Sta. | 30655+23.641 | 16.15 Lt. | CUT"X"NW.COR.HNDRL.BRG.OV ER CLEAR CREEK ON JASPER AVE. JUST S.RR.TRACKS---------- | 687.721 |
| No. 633 | Sta. | 30664+43.666 | 29.41 Rt. | FD.IHC INLET HDWL 4X2 RCB BM# 633 ELEV.= 684.221(E) THIS SURVEY =BM#21A ELEV.=703.62 F-289(6) 197O AB PLAN---------- | 684.221 |
| No. 596 | Sta. | 30677+73.777 | 27.86 Lt. | SET RR.SPK.E.SIDE P.POLE------- | 717.410 |
| No. 597 | Sta. | 30686+97.621 | 16.19 Rt. | FD.BOLT INLET HDWL.8X6RCB------ | 709.220 |
| No. 598 | Sta. | 30698+38.006 | 33.23 Lt. | SET RR.SPK.W.SIDE P.POLE------- | 733.159 |
| No. 599 | Sta. | 30711+77.883 | 32.92 Lt. | SET RR.SPK.W.SIDE P.POLE------- | 780.071 |
| No. 600 | Sta. | 30719+26.238 | 33.12 Lt. | SET RR.SPK.W.SIDE P.POLE------- | 808.144 |
| No. 601 | Sta. | 30728+10.453 | 42.91 Rt. | SET RR.SPK.SW.SIDE P.POLE------ | 797.156 |
| No. 602 | Sta. | 30740+44.218 | 32.72 Rt. | SET RR.SPK.W.SIDE GATEPOS------ | 760.080 |
| No. 603 | Sta. | 30753+47.152 | 26.22 Rt. | SET RR.SPK.W.SIDE P.POLE------- | 757.608 |
| No. 604 | Sta. | 30766+58.868 | 30.99 Rt. | SET RR.SPK.W.SIDE P.POLE------- | 768.523 |

## US 6 Benchmarks

| BENCHMARKS | | | | | ELEVATION |
|---|---|---|---|---|---|
| No. 633 | Sta. | 51192+29.509 | 33.19 Lt. | FD.IHC INLET HDWL 4X2 RCB BM# 633 ELEV.= 684.221(E) THIS SURVEY =BM#21A ELEV.=703.62 F-289(6) 197O AB PLAN---------- | 684.221 |
| No. 634 | Sta. | 51200+72.371 | 24.25 Lt. | FD.IHC INLET HDWL 4X2 RCB BM# 634 ELEV.= 682.904(E) THIS SURVEY =BM#21B ELEV.=702.26 F-289(6) 197O AB PLAN---------- | 682.904 |
| No. 627 | Sta. | 51203+52.358 | 60.83 Lt. | SET RR.SPK.S.SIDE P.POLE N.SIDE HWY 6,JUST W.OF 380 OVERPASS---------- | 685.435 |
| No. 574 | Sta. | 51205+48.360 | 121.48 Rt. | FD.DOT BUTTON SW.WING BR.------ | 713.436 |
| No. 573 | Sta. | 51205+96.470 | 120.17 Rt. | CUT"X" SE.WING SB.BR.HWY6------ | 713.595 |
| No. 575 | Sta. | 51206+11.957 | 120.14 Lt. | FD.DOT BUTTON NE.WING BR.------ | 712.079 |
| No. 628 | Sta. | 51220+41.072 | 38.97 Rt. | FD.DOT BUTTON OUTLET HDWL 12.0 X 6.0 RCB,S.SIDE RD.------ | 692.107 |

## Forever Green Rd. Benchmarks

| | | | | | |
|---|---|---|---|---|---|
| No. 601 | Sta. | 61258+19.677 | 73.21 Lt. | SET RR.SPK.SW.SIDE P.POLE------ | 797.156 |
| No. 607 | Sta. | 61269+81.203 | 16.29 Lt. | CUT"X"NW.COR.WHLGD.BRIDGE------ | 804.763 |
| No. 608 | Sta. | 61272+47.430 | 15.13 Rt. | FD.IHC SE.COR.WHLGD.BRIDG BM#608 ELEV.= 804.915(E) THIS SURVEY =BM#37 ELEV.= 804.85(E) F-518-4(12)--20-52 1986 AB PLAN---------- | 804.915 |
| No. 580 | Sta. | 61272+57.419 | 115.97 Lt. | SET RR.SPK.W.SIDE FE.POST------ | 779.049 |

## Kansas Ave. N. of Forever Green Rd. Benchmarks

| | | | | | |
|---|---|---|---|---|---|
| No. 609 | Sta. | 71285+24.573 | 36.52 Lt. | SET RR.SPK.W.SIDE P.POLE------- | 782.709 |
| No. 610 | Sta. | 71300+33.158 | 43.78 Rt. | SET RR.SPK.E.SIDE P.POLE------- | 777.704 |
| No. 611 | Sta. | 71313+91.962 | 33.55 Lt. | SET RR.SPK.W.SIDE P.POLE------- | 794.997 |
| No. 612 | Sta. | 71324+43.867 | 33.77 Lt. | SET RR.SPK.E.SIDE P.POLE------- | 777.635 |

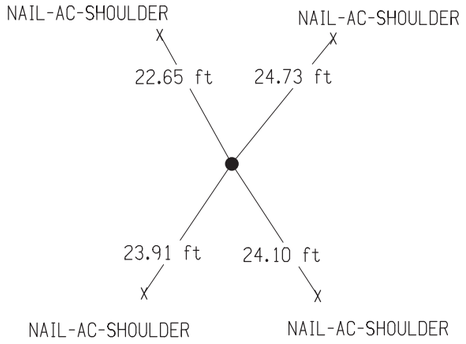
## 270th. Ave. Benchmarks

| | | | | | |
|---|---|---|---|---|---|
| No. 605 | Sta. | 81312+32.522 | 26.41 Lt. | SET RR.SPK.S.SIDE P.POLE------- | 778.045 |
| No. 606 | Sta. | 81322+59.298 | 30.49 Lt. | SET RR.SPK.SE.SIDE P.POLE------ | 780.252 |
| No. 613 | Sta. | 81339+01.184 | 31.48 Lt. | SET RR.SPK.S.SIDE P.POLE------- | 764.142 |

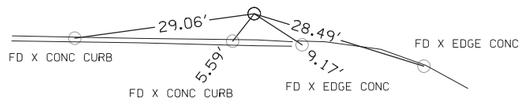
## Co. Rd. F 28 Benchmarks

| | | | | | |
|---|---|---|---|---|---|
| No. 590 | Sta. | 91359+26.297 | 34.25 Rt. | ARROWHEAD ON SW.SIDE FHD------ | 788.696 |
| No. 591 | Sta. | 91365+45.283 | 23.04 Rt. | ARROWHEAD ON NE.SIDE FHD------ | 792.288 |
| No. 592 | Sta. | 91376+00.766 | 16.91 Rt. | CUT"X"SW.WING CO.RD.F28 B------ | 816.985 |
| No. 593 | Sta. | 91378+70.104 | 16.70 Lt. | FD.DOT BUTTON NE.WING BR.------ | 817.034 |
| No. 587 | Sta. | 91378+85.282 | 161.48 Rt. | SET RR.SPK.W.SIDE P.POLE------ | 798.873 |
| No. 594 | Sta. | 91393+35.495 | 28.53 Rt. | ARROWHEAD ON W.SIDE FHD------- | 788.677 |
| No. 595 | Sta. | 91400+06.045 | 28.37 Rt. | ARROWHEAD ON W.SIDE FHD.------ | 785.191 |

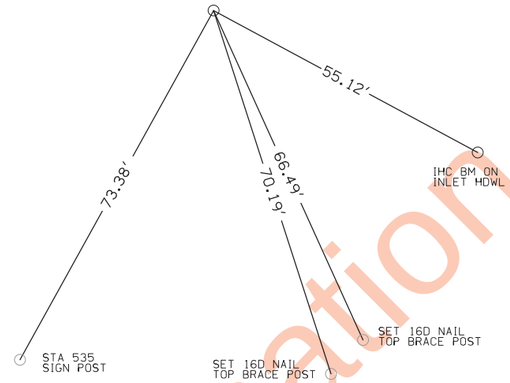
## POT 488+00.88
POINT # 50
FD-IRON-PIN---16"DEEP
XC=2133198.794, YC=622563.994



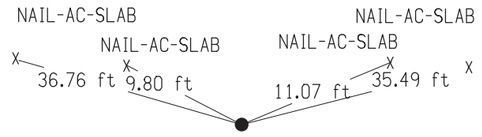

## CP STA. 524+92.56, 112.25' RT
CP NO. G035, FD FENO MONUMENT
N=622395.920, E=2136888.350



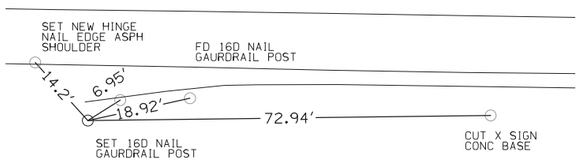

## CP STA.540+77.82, 70.37' RT
CP NO. 51, FD 1/2" IRON PIN
N=622413.816, E=2138474.065



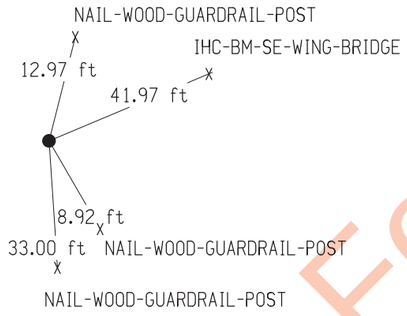

## CP 550+08.12, 65.86 RT.
POINT # 52
SET-IRON-PIN---6"DEEP
XC=2139404.330, YC=622404.257



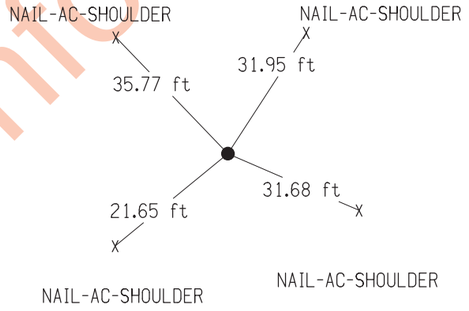

## CP STA.565+60.58, 68.86' RT
CP NO. G036, FD 5/8" RE-ROD
N=622377.780, E=2140956.560



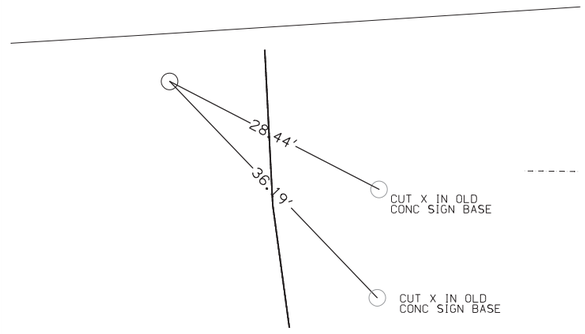

## CP 567+15.66, 129.38 RT.
POINT # 53
SET-IRON-PIN---8"DEEP
XC=2141110.705, YC=622314.914



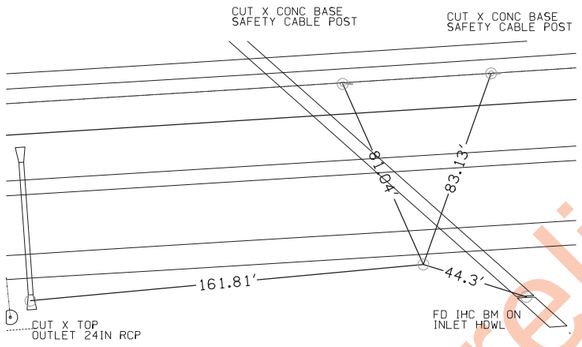

## PI 579+28.07
POINT # 54
FOUND IRON-PIN--10"DEEP
XC=2142324.940, YC=622425.944



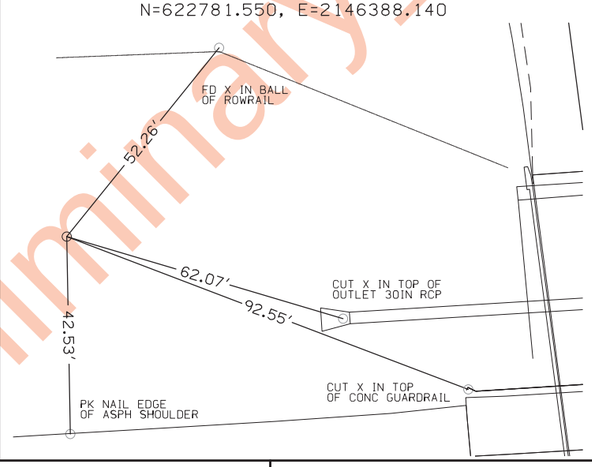

## CP STA. 592+79.39, 65.13' RT
CP NO. 55, FD 1/2" IRON PIN
N=622445.384, E=2143678.017



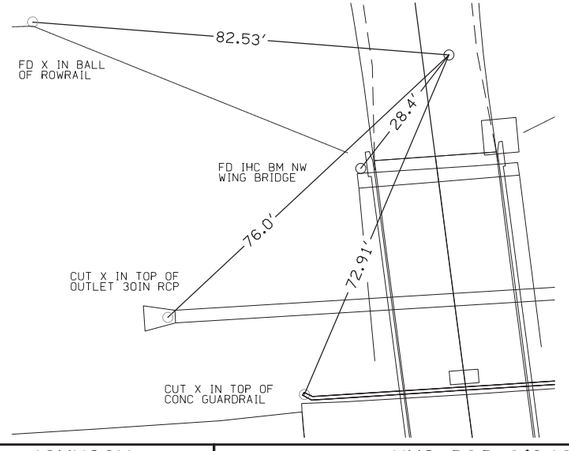

## CP STA.606+64.52, 63.57' RT
CP NO. 56, FD 1/2" IRON PIN
N=622533.473, E=2145060.352



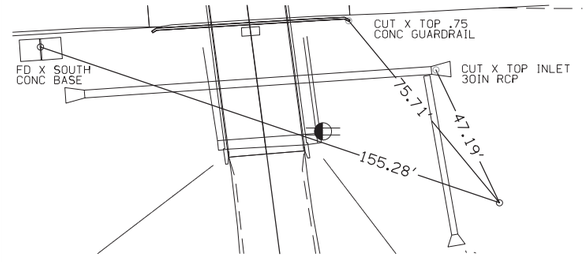

## CP STA.620+05.22, 101.08' LT
CP NO. G037, FD 5/8" RE-ROD
N=622781.550, E=2146388.140




## CP STA.621+22.20, 128.00' LT
CP NO. 57, FD 1/2" IRON PIN
N=622815.726, E=2146503.210



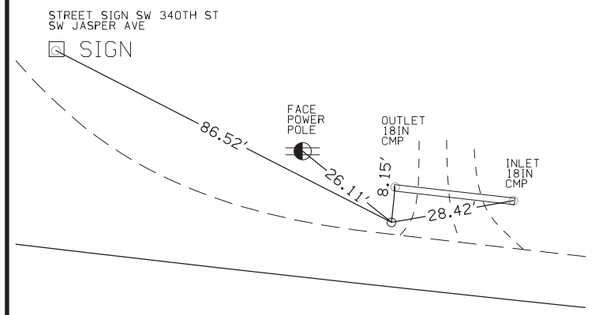

## CP STA.622+06.63, 124.20' RT
CP NO. G010, FD FENO MONUMENT
N=622569.130, E=2146602.820



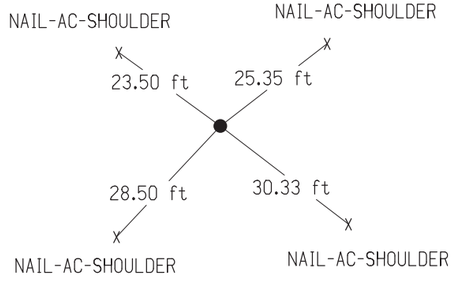



| FILE NO. 30864 | ENGLISH | DESIGN TEAM HOLST | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER G.5 |
|---|---|---|---|---|---|

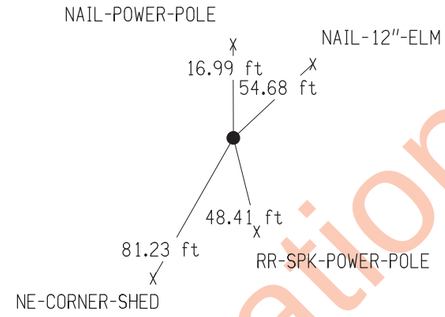
## CP STA.622+69.02, 422.05', RT
CP NO. 58, FD 1/2" IRON PIN
N=622275.331, E=2146681.540



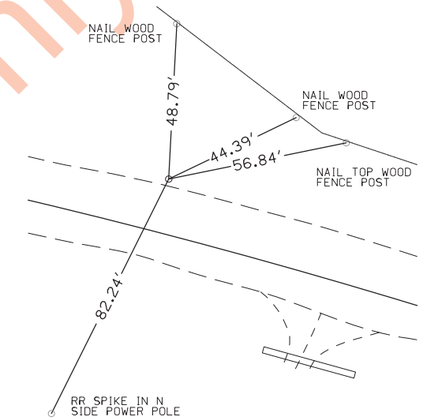

## PI 625+84.74
POINT # 49
FD-IRON-PIN---5"DEEP
XC=2146972.845, YC=622716.871



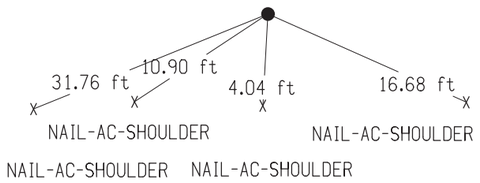

## CP 630+48.78, 538.33 RT
POINT # 59
SET-IRON-PIN---6"DEEP
XC=2147449.066, YC=622189.177



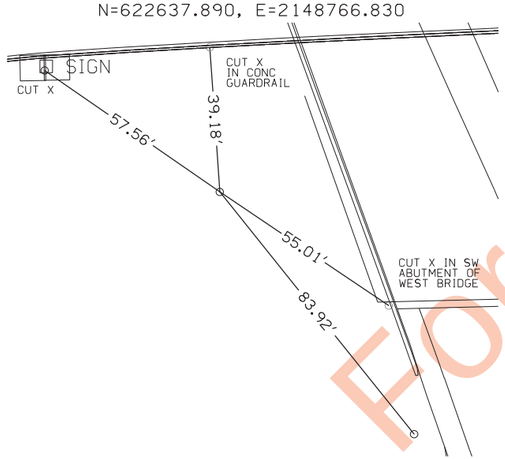

## CP STA.636+29.98, 628.91' RT
CP NO. 60, FD 1/2" IRON PIN
N=622111.768, E=2148032.168



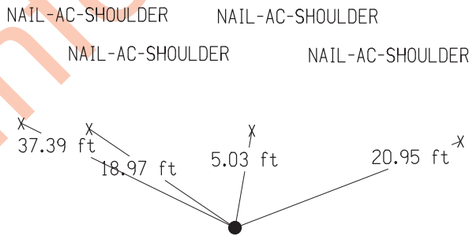

## CP 636+43.43, 62.48 LT.
POINT # 64
SET-IRON-PIN---6"DEEP
XC=2148029.975, YC=622803.284



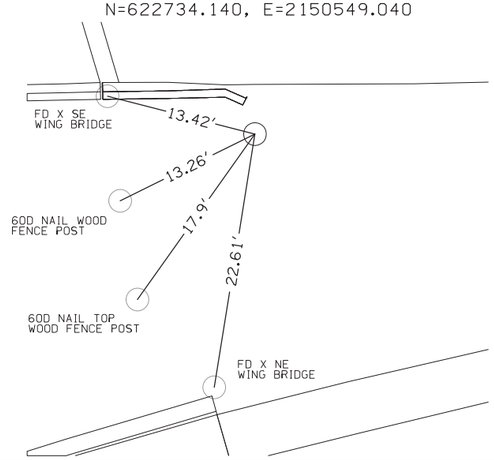

## CP STA.643+76.36, 119.54' RT
CP NO. G011, FD FENO MONUMENT
N=622637.890, E=2148766.830



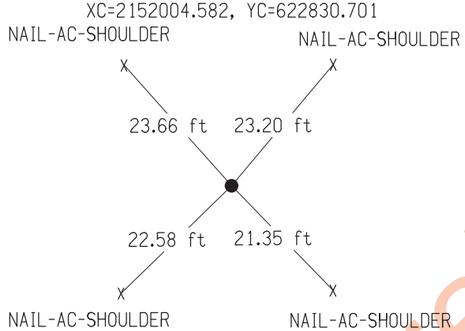

## CP 653+78.73, 64.05 RT.
POINT # 67
SET-IRON-PIN---5"DEEP
XC=2149767.696, YC=622716.034



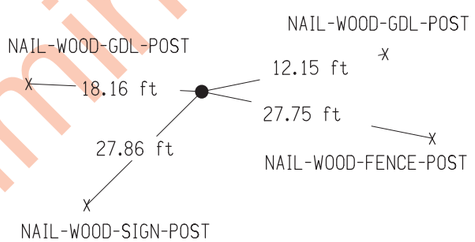

## CP STA.661+60.29, 63.62' RT
CP NO. G012, 5/8" RE-ROD
N=622734.140, E=2150549.040



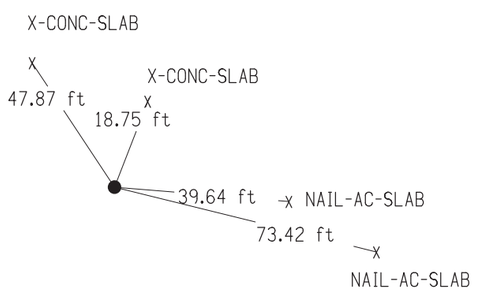

## PI 676+17.64
POINT # 47
FD-IRON-PIN---5"DEEP
XC=2152004.582, YC=622830.701



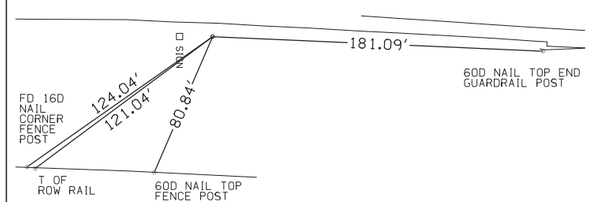

## GPS 691+03.90, 63.64 RT.
POINT # G013
FD-REBAR---5"DEEP
XC=2153490.580, YC=622760.510




## CP 696+27.39, 182.54 RT.
POINT # 68
SET-IRON-PIN---4"DEEP
XC=2154013.542, YC=622639.299

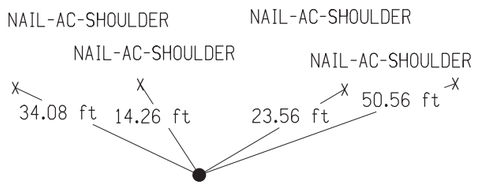



## CP STA.702+45.98, 67.96' RT
CP NO. 69, FD FENO MONUMENT
N=622751.154, E=2154632.637



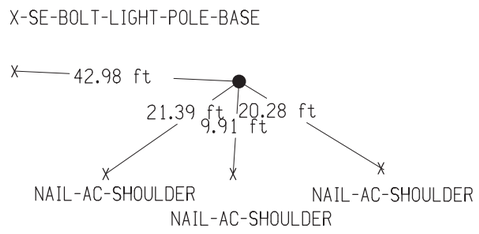
## GPS 714+90.54, 70.59 RT.

POINT # G014
FD-REBAR---7"DEEP
XC=2155877.170, YC=622743.040



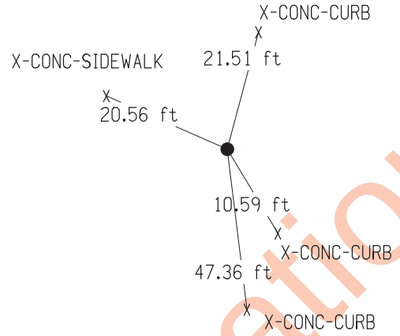

## CP 723+72.19, 74.01 LT.

POINT # 70
SET-IRON-PIN---4"DEEP
XC=2156759.449, YC=622883.747



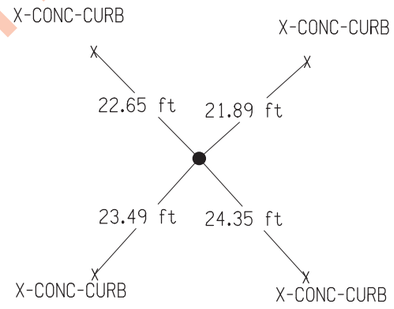

## CP 725+28.79, 849.21 RT

POINT # 71
SET-IRON-PIN---4"DEEP
XC=2156911.976, YC=621959.843



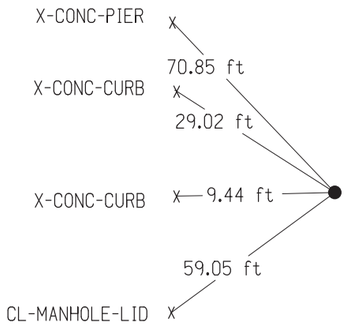

## CP 725+70.68, 892.11 LT

POINT # 73
SET-IRON-PIN---4"DEEP
XC=2156961.548, YC=623700.957




## CP 726+50.69, 130.32 RT.

POINT # 72
SET-IRON-PIN---4"DEEP
XC=2157037.044, YC=622678.188



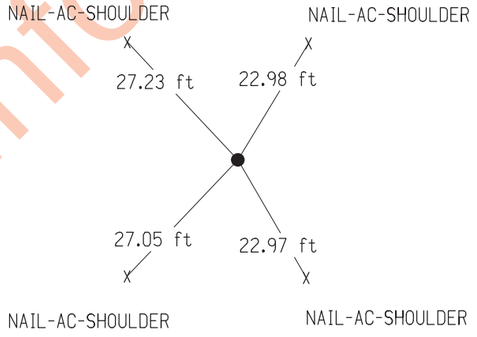

## CP 733+40.52, 62.80 RT.

POINT # 74
SET-IRON-PIN---6"DEEP
XC=2157727.165, YC=622742.670



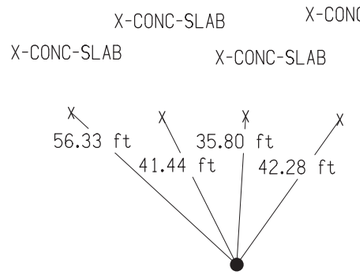

## CP 740+38.90, 0.76 RT

POINT # 1
FD-REBAR---1"DEEP
XC=2158425.814, YC=622801.630



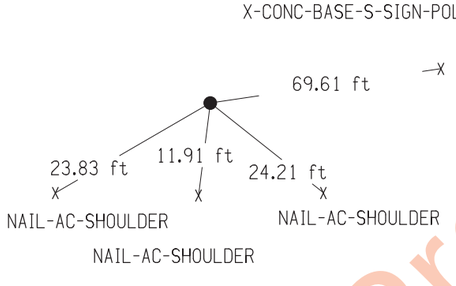

## GPS 744+32.20, 104.94 RT.

POINT # G015
FD-REBAR---8"DEEP
XC=2158811.110, YC=622682.600



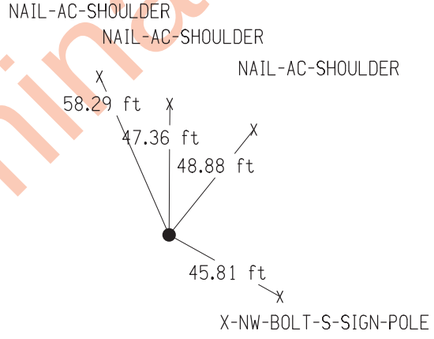

## PI 749+37.94

POINT # 46
FD/CONC MONU---4"DEEP
XC=2159324.850, YC=622798.423



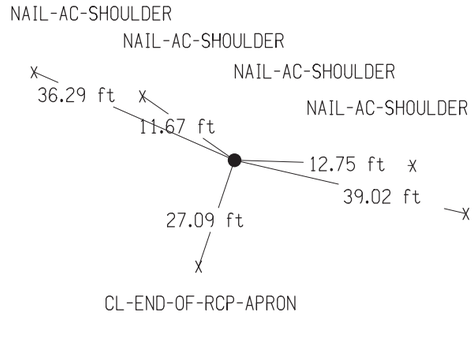

## CP 755+99.57, 104.09 RT.

POINT # 75
SET-IRON-PIN---4"DEEP
XC=2159937.950, YC=622484.594



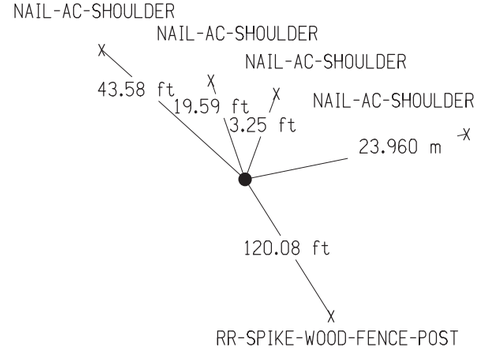

## GPS 764+95.39, 62.39 RT

POINT # G016
FD-REBAR---8"DEEP
XC=2160799.980, YC=622251.780

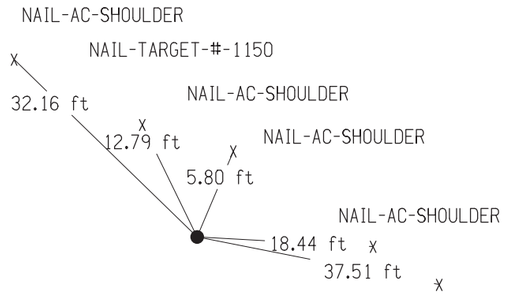



## CP 775+01.71, 62.29 RT

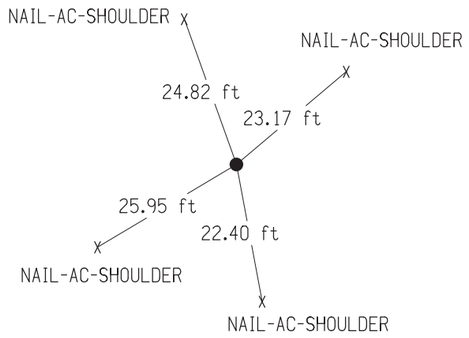
POINT # 76
SET-IRON-PIN---5"DEEP
XC=2161756.755, YC=621939.895



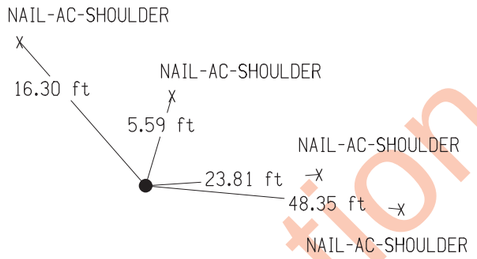
## GPS 783+42.19, 63.51 RT
POINT # G017
FD-REBAR---8"DEEP
XC=2162555.440, YC=621678.170



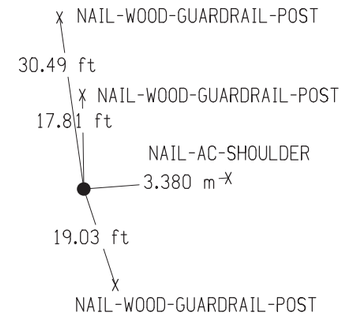

## CP 784+42.93, 0.20 RT
POINT # 3
FD-REBAR---14"DEEP
XC=2162670.850, YC=621707.128



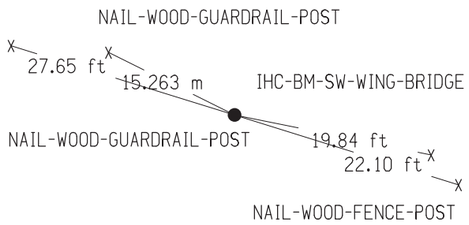

## CP 791+34.67, 61.62 RT
POINT # 77
SET-IRON-PIN---4"DEEP
XC=2163309.464, YC=621434.275



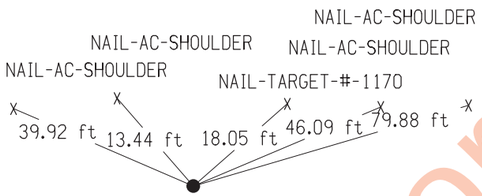

## CP 800+78.11, 125.02 LT
POINT # 78
SET-IRON-PIN---4"DEEP
XC=2164264.285, YC=621319.237



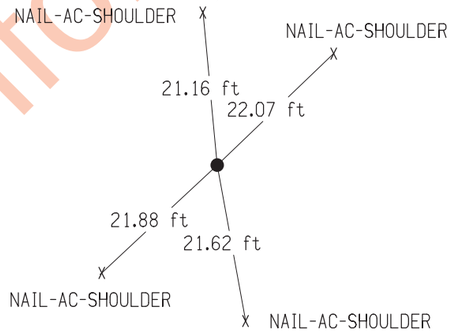

## GPS 804+02.83, 62.15 RT
POINT # G018
FD-REBAR---9"DEEP
XC=2164514.980, YC=621040.620



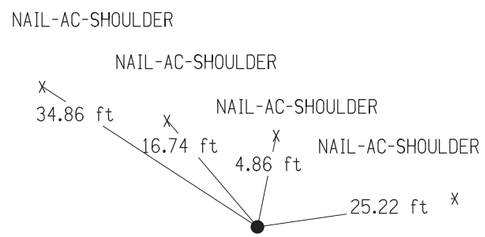

## CP 813+57.46, 62.01 RT
POINT # 79
SET-IRON-PIN---3"DEEP
XC=2165422.619, YC=620744.800



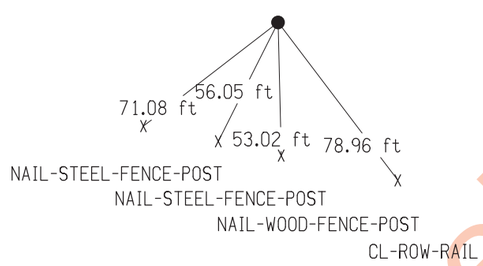

## POST 820+22.36
POINT # 4
FD-REBAR---10"DEEP
XC=2166073.977, YC=620597.619



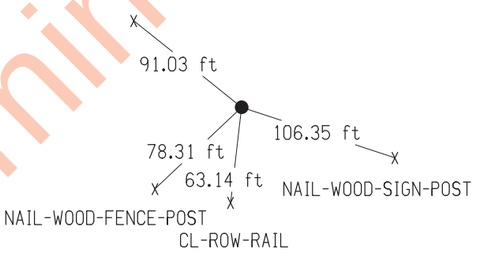

## GPS 823+04.29, 63.52 RT
POINT # G019
FD-REBAR---6"DEEP
XC=2166324.940, YC=620452.790



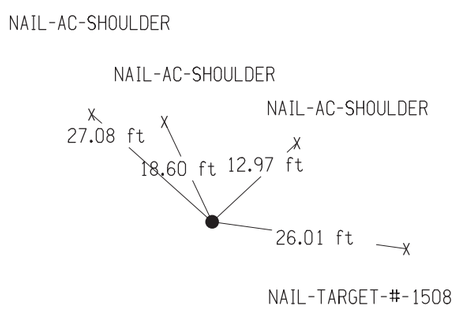

## PI 839+10.31
POINT # 9
SET-IRON-PIN---4"DEEP
XC=2167868.913, YC=620012.313



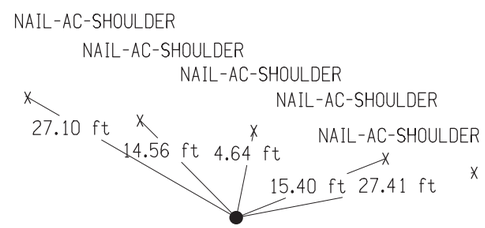

## POST 839+47.97, 146.41 RT
POINT # 45
FD-IRON-PIN---2"DEEP
XC=2167924.978, YC=620013.005




## CP 839+53.58, 120.32 RT
POINT # 80
SET-IRON-PIN---4"DEEP
XC=2167934.390, YC=620037.983




## GPS 841+51.48, 63.59 RT
POINT # G020
FD-REBAR---7"DEEP
XC=2168139.770, YC=620066.830



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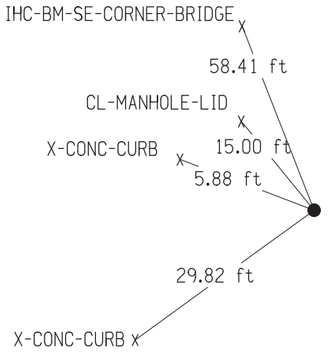
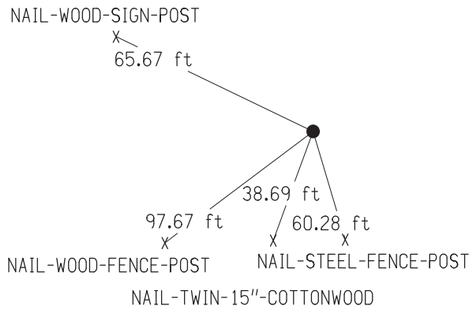
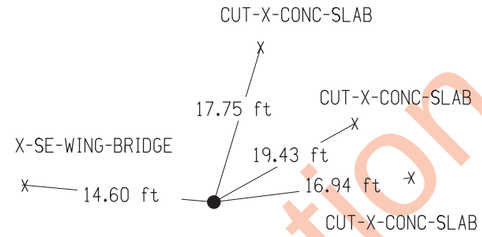
## CP 850+37.65, 162.30 RT
POINT # 81
SET-IRON-PIN---4"DEEP
XC=2169021.930, YC=619887.959



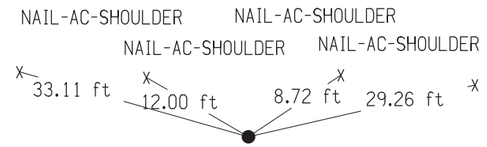

## CP 860+12.24, 119.66 RT
POINT # 82
SET-IRON-PIN---6"DEEP
XC=2170006.079, YC=619919.014



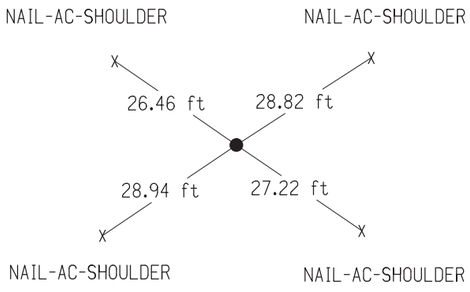

## GPS 872+79.25, 69.39 RT
POINT # G021
FD-REBAR-8"DEEP
XC=2171272.370, YC=619984.900



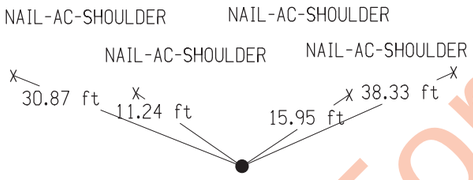

## CP 884+13.63, 63.09 RT
POINT # 83
SET-IRON-PIN---7"DEEP
XC=2172406.582, YC=620005.198



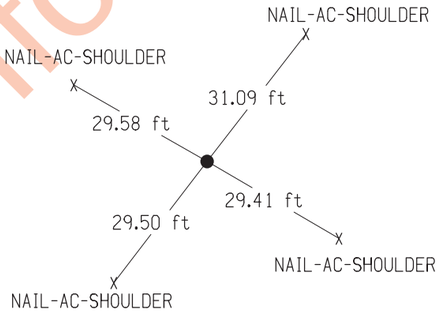

## POST 889+89.37
POINT # 44
FD-REBAR---6"DEEP
XC=2172981.506, YC=620075.383



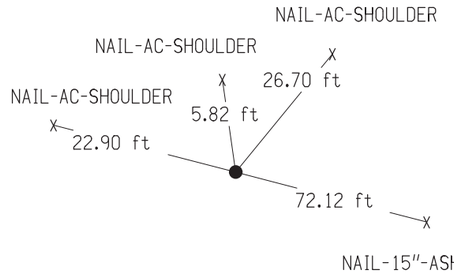

## PI 895+41.62
POINT # 111
SET-HINGE-NAIL
XC=2173533.713, YC=620082.195



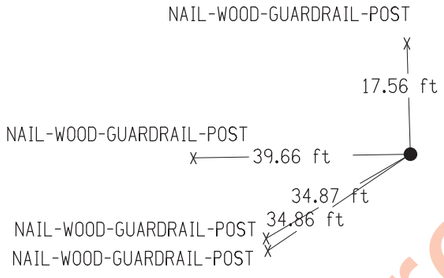

## POT 900+92.24
POINT # 43
FD-IRON-PIN---4"DEEP
XC=2174076.154, YC=620194.995



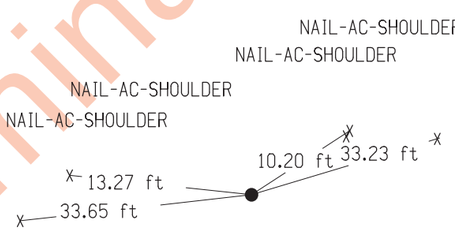

## GPS 910+12.51, 63.26RT
POINT # G022
FD-REBAR-6"-DEEP
XC=2174990.030, YC=620320.420



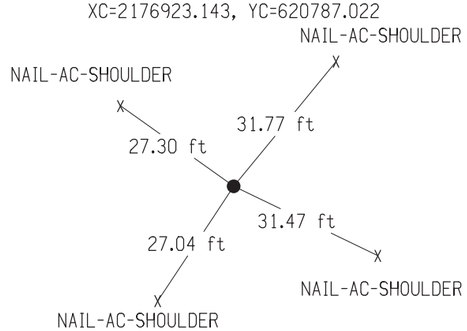

## CP 917+95.14, 127.06 LT
POINT # 84
SET-IRON-PIN---4"DEEP
XC=2175717.520, YC=620666.093



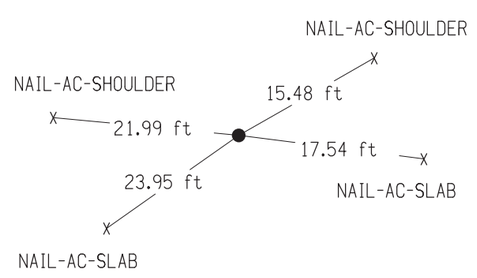

## CP 925+15.16, 61.69 RT
POINT # 85
SET-IRON-PIN---4"DEEP
XC=2176460.891, YC=620627.886




## PC 930+00.13
POINT # 103
SET-IRON-PIN---8"DEEP
XC=2176923.143, YC=620787.022




## GPS 932+86.52, 63.74 RT
POINT # G023
FD-REBAR-6"-DEEP
XC=2177214.720, YC=620775.320



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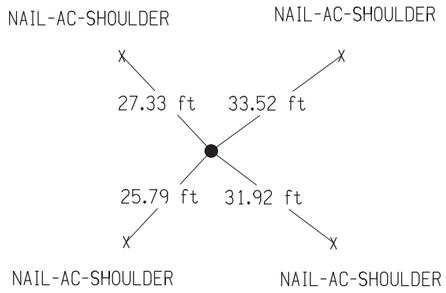
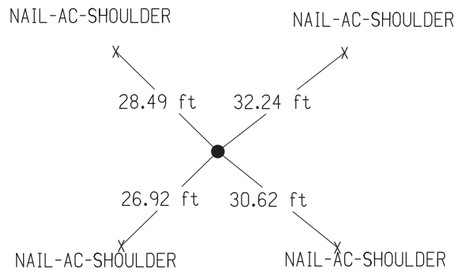
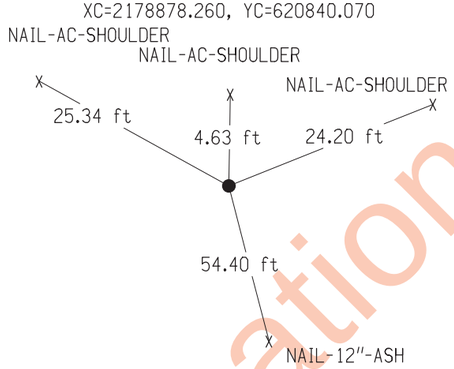
## PT 942+21.91
POINT # 105
SET-IRON-PIN---6"DEEP
XC=2178136.704, YC=620906.832



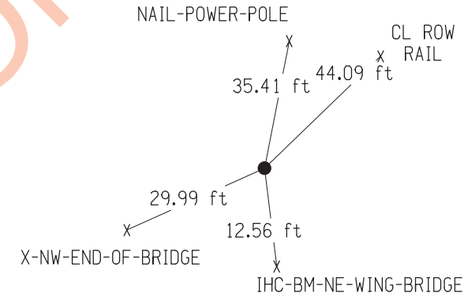

## POT 942+23.53
POINT # 42
FD-REBAR-3"-DEEP
XC=2178138.331, YC=620906.818



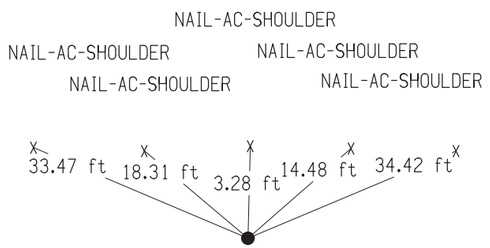

## GPS 949+63.99, 60.67 RT
POINT # G024
FD-REBAR-8"-DEEP
XC=2178878.260, YC=620840.070



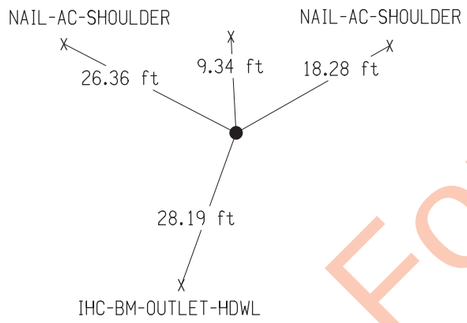

## CP 960+42.86, 122.56 LT
POINT # 86
SET-IRON-PIN---6"DEEP
XC=2179958.600, YC=621014.436



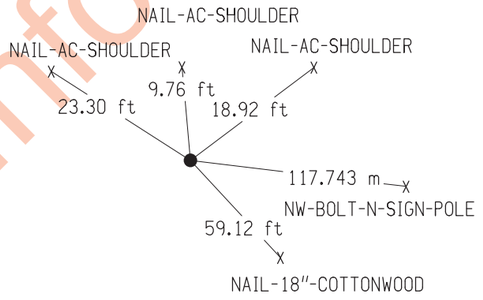

## CP 966+18.31, 60.60 RT
POINT # 87
SET-IRON-PIN---5"DEEP
XC=2180532.527, YC=620826.554



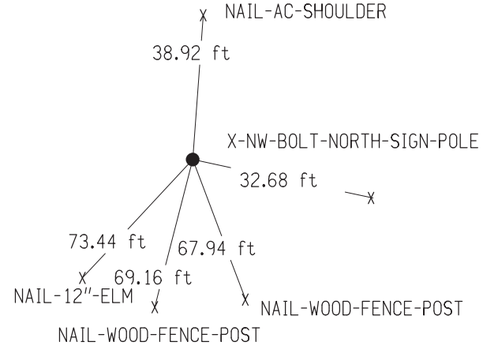

## CP 977+54.38, 66.74 RT
POINT # 88
SET-IRON-PIN---5"DEEP
XC=2181668.512, YC=620811.082



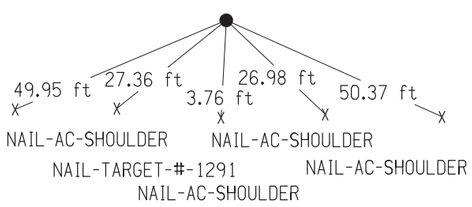

## GPS 986+64.53, 67.25 RT
POINT # G025
FD-REBAR-6"-DEEP
XC=2182578.630, YC=620803.100



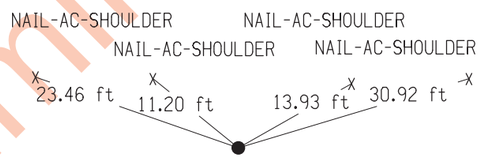

## CP 995+73.44, 97.14 RT
POINT # 89
SET-IRON-PIN---6"DEEP
XC=2183487.263, YC=620765.738



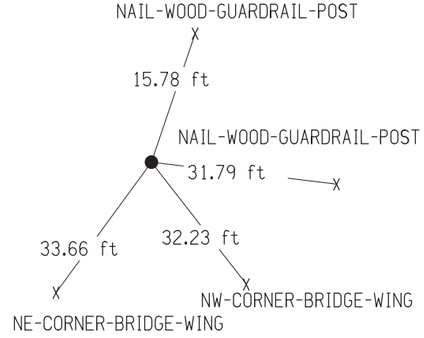

## CP 1011+08.02, 62.78 LT
POINT # 90
SET-IRON-PIN---6"DEEP
XC=2185023.099, YC=620913.049



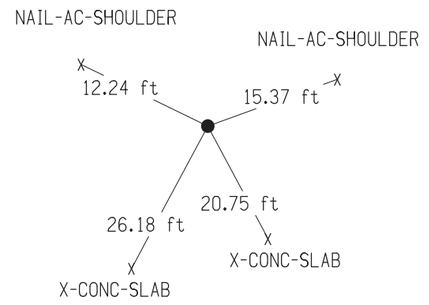

## GPS 1018+29.48, 64.44 RT
POINT # G026
FD-REBAR---8"DEEP
XC=2185743.490, YC=620779.910




## CP 1029+52.64, 134.67 LT
POINT # 91
SET-IRON-PIN---5"DEEP
XC=2186868.254, YC=620969.789

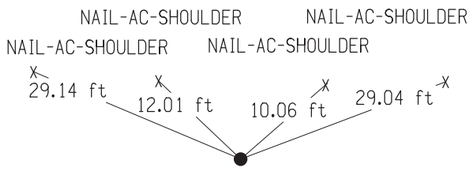



## CP 1039+73.96, 62.62 RT
POINT # 92
SET-IRON-PIN---5"DEEP
XC=2187887.913, YC=620764.114



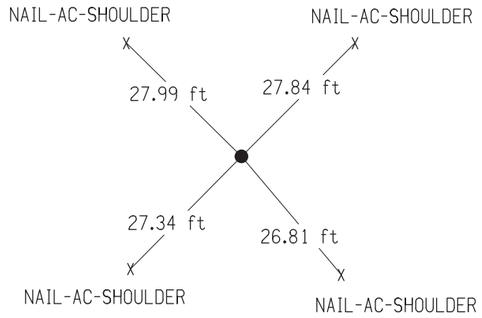
## GPS 1049+99.14, 64.43 RT

POINT # G027
FD-REBAR---8"DEEP
XC=2188913.050, YC=620753.890



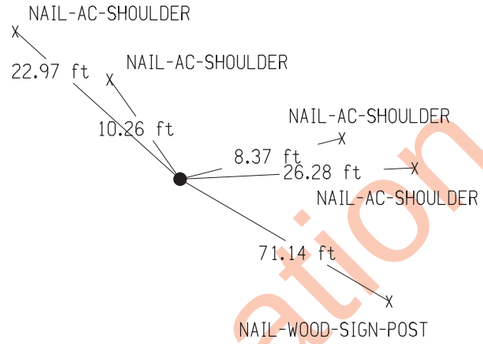

## POST 1054+10.67

POINT # 93
FD-REBAR---6"DEEP
XC=2189325.090, YC=620814.936



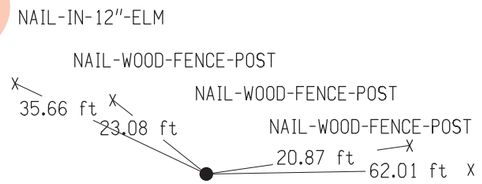

## GPS 1065+84.20, 61.90 RT

POINT # G028
FD-REBAR---8"DEEP
XC=2190476.310, YC=620625.020



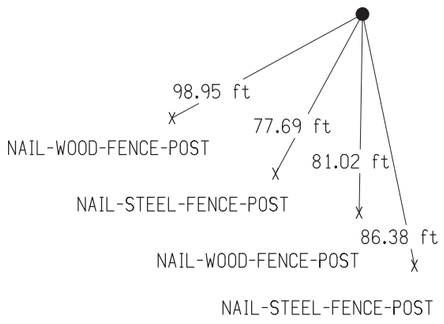

## PI 1066+45.52

POINT # 100
SET-IRON-PIN---5"DEEP
XC=2190559.895, YC=620804.794



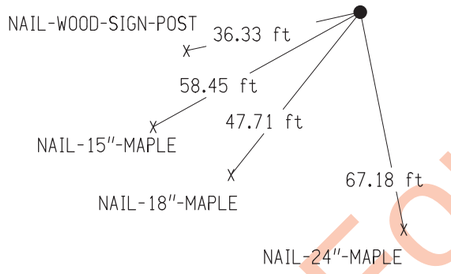

## CP 1071+34.39, 61.20 RT

POINT # 94
SET-IRON-PIN---6"DEEP
XC=2191002.120, YC=620485.238



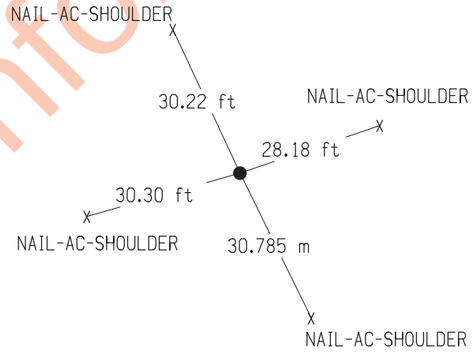

## GPS 1076+49.17, 61.80 RT

POINT # G029
FD-REBAR---8"DEEP
XC=2191479.420, YC=620308.180



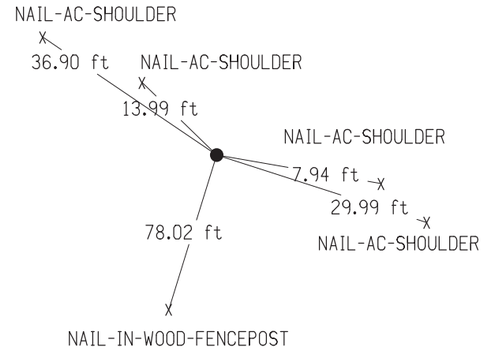

## POT 1078+44.97

POINT # 41
FD-REBAR---2"DEEP
XC=2191682.508, YC=620285.996



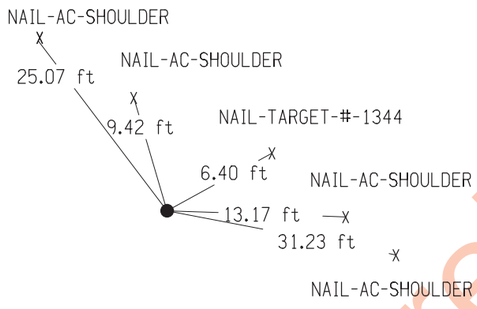

## CP 1088+94.23, 61.10 RT

POINT # 95
SET-IRON-PIN---4"DEEP
XC=2192609.348, YC=619790.364



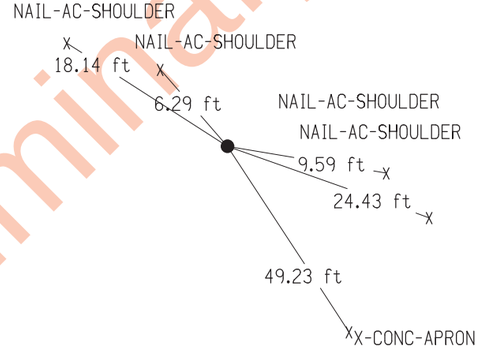

## GPS 1100+29.11, 63.50 RT

POINT # G030
FD-REBAR---8"DEEP
XC=2193638.530, YC=619312.100



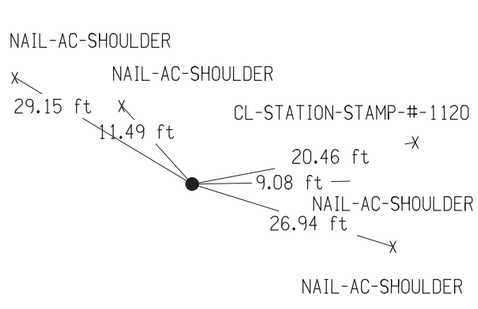

## CP 1110+21.59, 60.28 RT

POINT # 96
SET-IRON-PIN---5"DEEP
XC=2194540.809, YC=618898.673



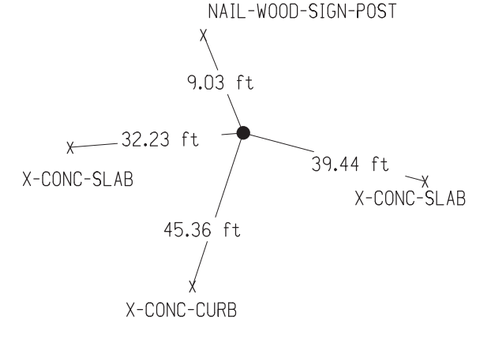

## CP 1121+55.38, 61.23 RT

POINT # 97
SET-IRON-PIN---6"DEEP
XC=2195569.617, YC=618422.175




## POT 1127+45.33

POINT # 61
FD-REBAR---17"DEEP
XC=2150301.567, YC=619456.592



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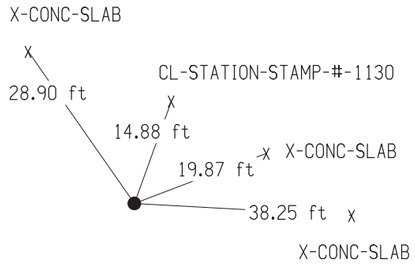
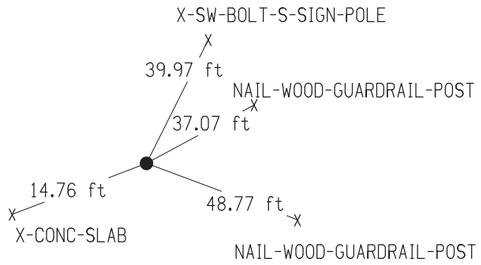
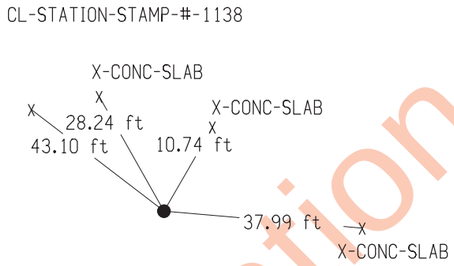
## GPS 1131+73.12, 64.73 RT
POINT # G031
FD-REBAR---9"DEEP
XC=2196492.000, YC=617992.060



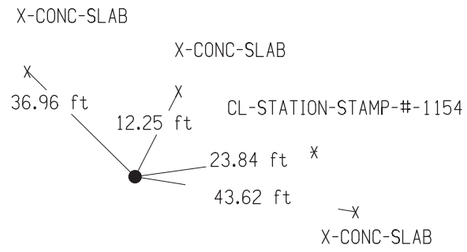

## CP 1138+11.57, 16.44 LT
POINT # 62
SET-IRON-PIN---6"DEEP
XC=2149856.717, YC=620425.741



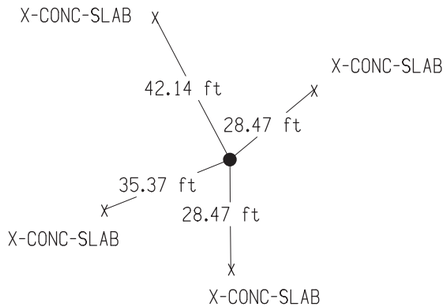

## CP 1140+14.50, 61.20 RT
POINT # 98
SET-IRON-PIN---6"DEEP
XC=2197257.252, YC=617642.293



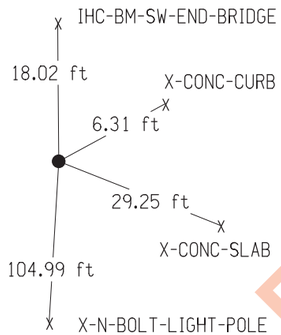

## GPS 1155+51.73, 62.61 RT
POINT # G032
FD-REBAR---6"DEEP
XC=2198652.080, YC=616996.140



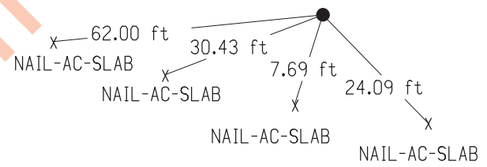

## POT 1155+97.06
POINT # 39
FD-IRON-PIN---4"DEEP
XC=2198719.495, YC=617033.962



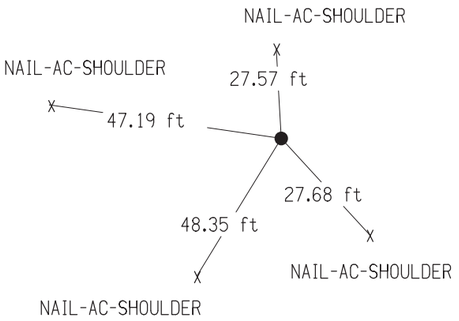

## CP 1161+94.29, 100.45 LT
POINT # 63
SET-IRON-PIN---5"DEEP
XC=2148819.348, YC=622572.435



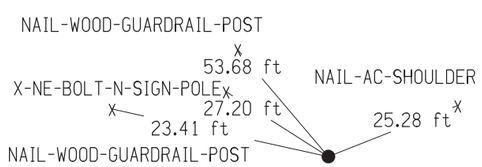

## CP 1167+66.68, 471.49 RT
POINT # 66
SET-IRON-PIN---5"DEEP
XC=2149112.026, YC=623326.805



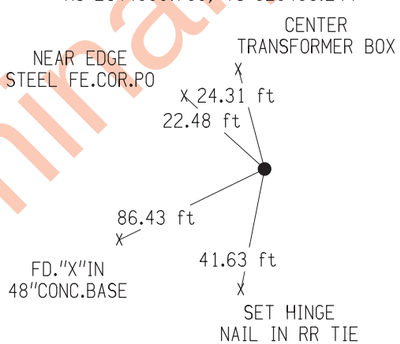

## CP 1180+19.46, 15.10 RT
POINT # 65
SET-IRON-PIN---6"DEEP
XC=2148189.359, YC=624289.321



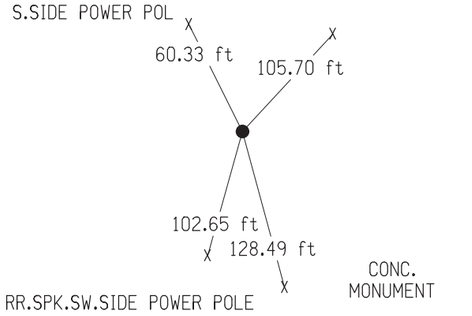

## TS 1183+81.20
POINT # 48
FD-ROW-RAIL---12"DEEP
XC=2148029.718, YC=624614.281



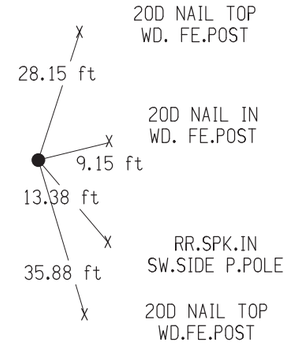

## CP STA
CP,SET IRON PIN 0.4' DEEP
CP NO. 368
XC=2149688.768, YC=625463.294




## CP STA
CP,SET IRON PIN 0.5' DEEP
CP NO. 367
XC=2149842.545, YC=625965.820




## CP STA
CP,SET IRON PIN 0.6' DEEP
CP NO. 359
XC=2149158.353, YC=619695.551



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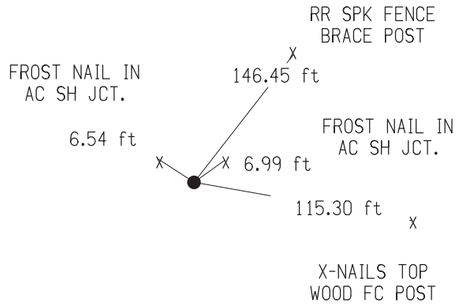
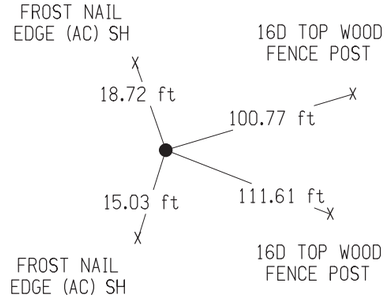
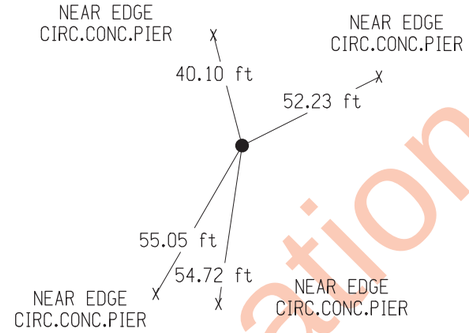
## CP STA1138819.46 69.52 RT
CP POINT 328
SET IRON PIN
XC=2147370.319, YC=645001.916



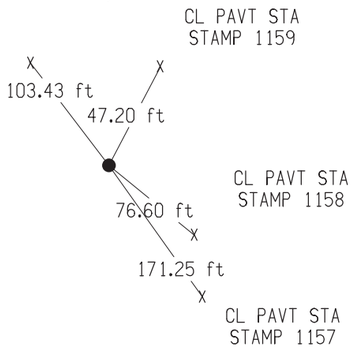

## GPS STA
GPS POINT G051
FD RE-BAR
XC=2147352.230, YC=646825.440



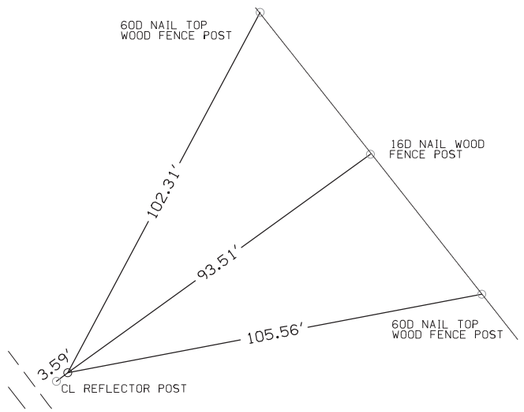

## PI STA
PI,FD.HINGE NAIL
PI NO. 203
XC=2147685.529, YC=626785.566



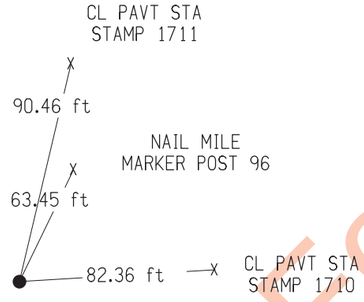

## GPS STA1158+67.81 18.37RT
GPS POINT G040
FD REBAR 6" DEEP
XC=2149059.690, YC=622321.550



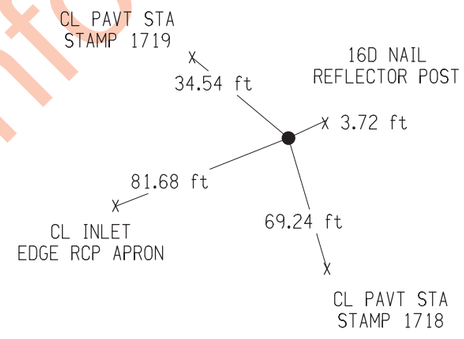

## CP STA.11107+07.24, 75.97' RT
CP NO. G038, FD 5/8" RE-ROD
N=617721.960, E=2151337.400



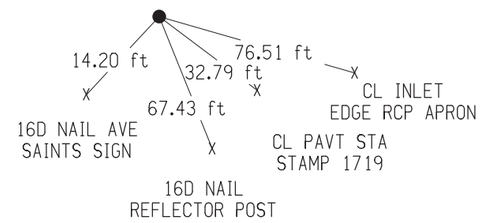

## PI STA11109+54.89 125.04L
PI POINT 117
FOUND REBAR (OLD P.I.)
XC=2151037.868, YC=617786.796



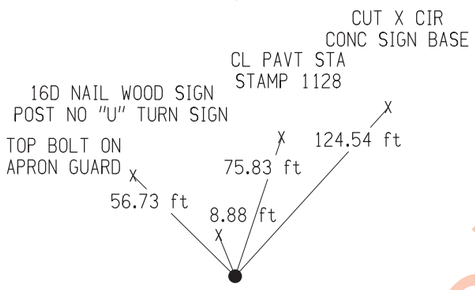

## CP STA11117+61.69 67.32RT
CP POINT 362
SET IRON PIN
XC=2150768.562, YC=618592.409



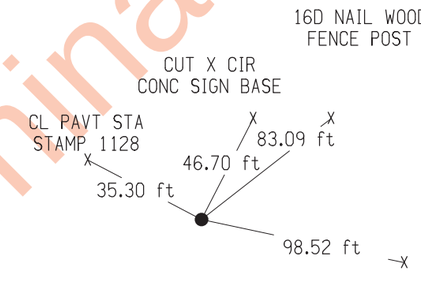

## CP STA11118+23.46 68.31LT
CP POINT 361
SET IRON PIN
XC=2150619.686, YC=618585.593



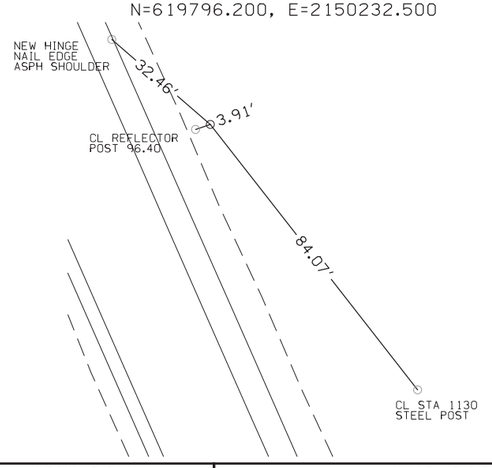

## PI STA 11127+45.33
PI POINT 61
FOUND REBAR
XC=2150301.567, YC=619456.592



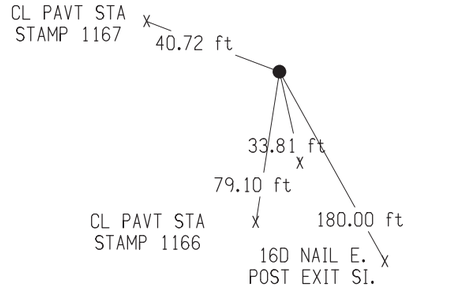

## CP STA11127+71.82 75.24RT
CP POINT 363
SET IRON PIN
XC=2150359.742, YC=619511.171




## CP STA.11130+83.96, 73.48' RT
CP NO. G039, FD 5/8" RE-ROD
N=619796.200, E=2150232.500




## GPS STA11166+73.04 83.17R
GPS POINT G041
FOUND REBAR 4" DEEP
XC=2148794.400, YC=623084.580



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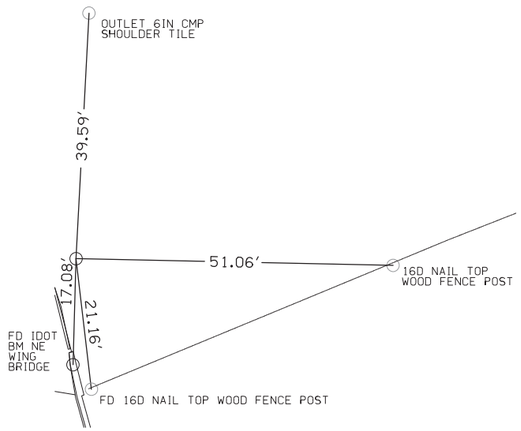
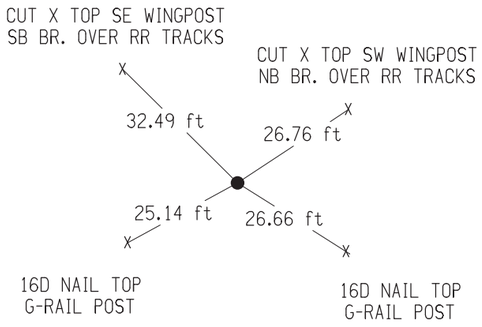
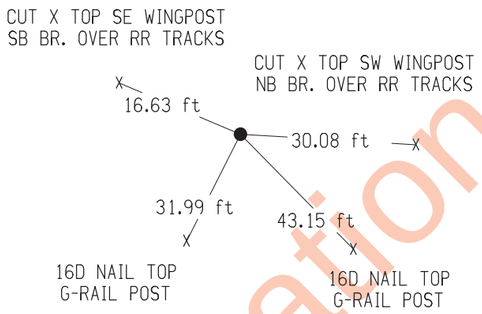
## CP STA.11189+80.71, 69.65′ RT
CP NO. G042, FD 5/8″ RE-ROD
N=625195.400, E=2147894.800



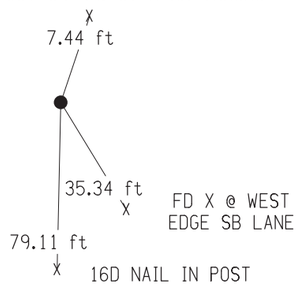

## POST STA 11198+25.80
POST POINT 119
42″ DEEP (OLD ST)
XC=2147720.353, YC=626013.868



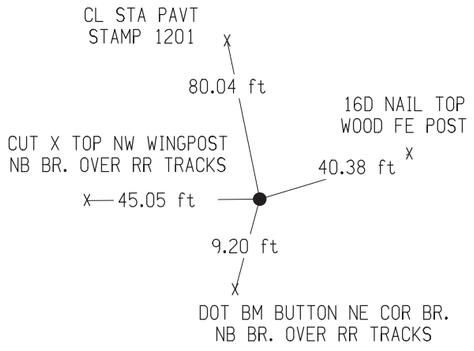

## CP STA11198+42.48 7.38LT.
CP POINT 310
SET IRON PIN
XC=2147712.647, YC=626030.407



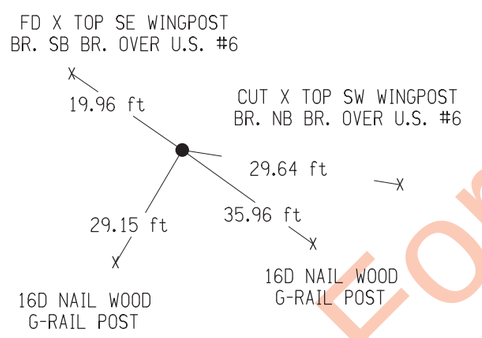

## CP STA11198+50.88 67.60LT
CP POINT 311
SET IRON PIN
XC=2147652.273, YC=626037.618
DOT BM BUTTON SW
WINGPOST SB BR. OVER RR TRACKS*



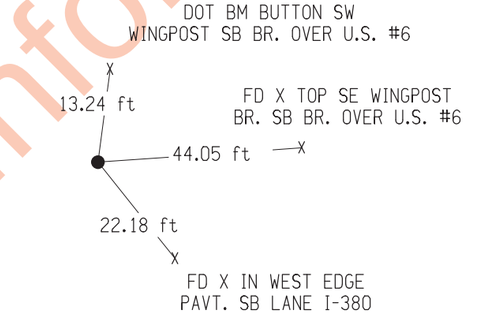

## CP STA11200+20.55 67.59RT
CP POINT 312
SET IRON PIN
XC=2147784.094, YC=626209.915



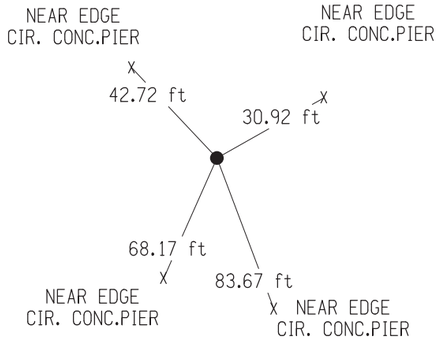

## CP STA11204+52.93 6.70LT.
CP POINT 313
SET IRON PIN
XC=2147701.314, YC=626640.752



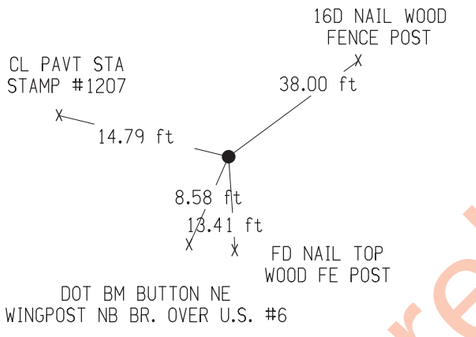

## CP STA11204+62.26 66.96LT
CP POINT 314
SET IRON PIN
XC=2147640.880, YC=626648.888
DOT BM BUTTON SW
WINGPOST SB BR. OVER U.S. #6



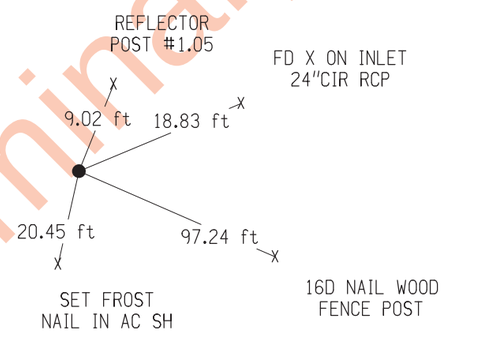

## CP STA 11206+05.7,0.355RT
CP,SET IRON PIN 0.4′DEEP
CP NO. 365
XC=2147705.357, YC=626793.642



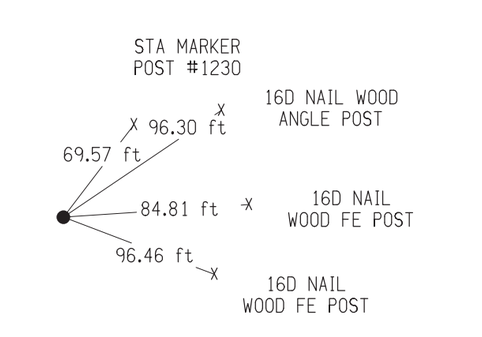

## CP STA11206+96.97 67.11RT
CP POINT 315
SET IRON PIN
XC=2147770.306, YC=626886.194



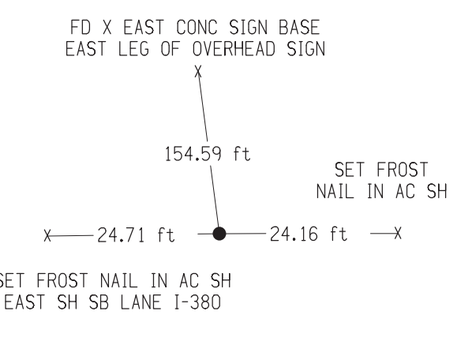

## CP STA11218+91.13 67.56RT
CP POINT 316
SET IRON PIN
XC=2147747.250, YC=628080.126




## GPS STA11229+46.68 69.07R
GPS POINT G043
FD REBAR
XC=2147727.980, YC=629135.510

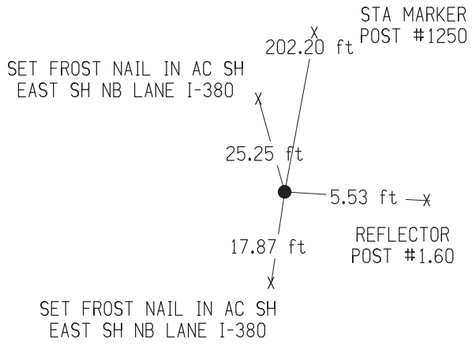



## CP STA11233+46.29
CP POINT 120
FOUND REBAR
XC=2147650.826, YC=629533.678



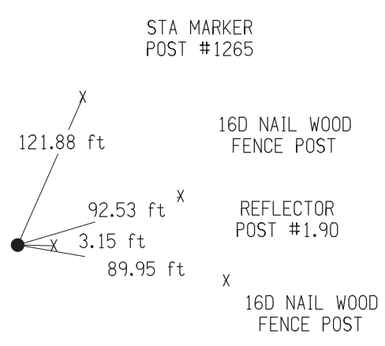
## CP STA11248+00.08 66.09RT

CP POINT 319
SET IRON PIN
XC=2147688.519, YC=630988.491



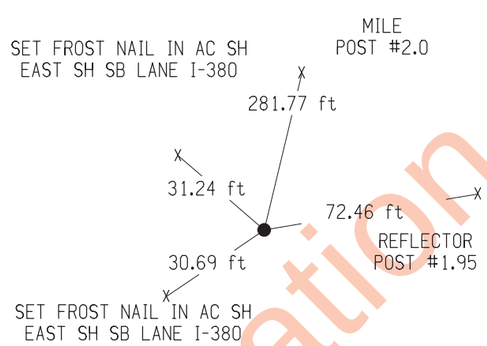

## GPS STA11263+84.92 68.10R

GPS POINT G044
FD REBAR
XC=2147659.340, YC=632573.060



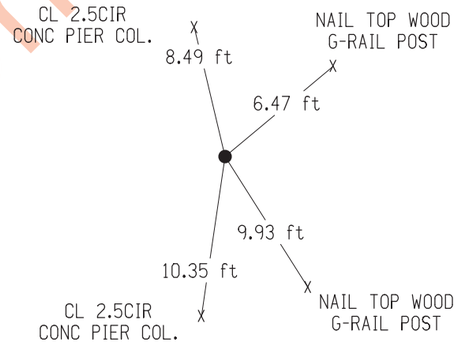

## POT STA 11266+42.81

POT POINT 126
FD REBAR
XC=2147586.174, YC=632829.561



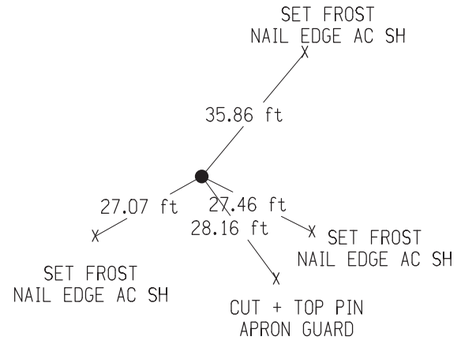

## CP STA11271+13.17 3.91RT.

CP POINT 320
SET IRON PIN
XC=2147578.713, YC=633299.901



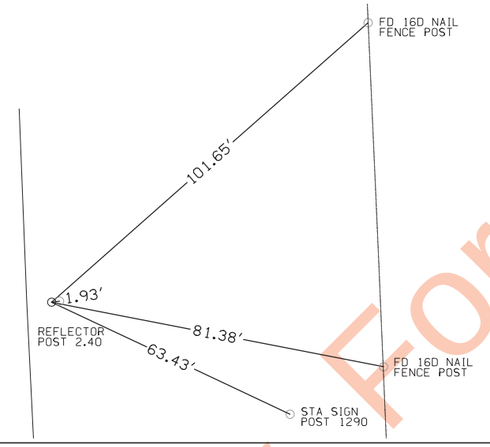

## POT STA 11274+97.73

POT POINT 131
FD REBAR
XC=2147560.834, YC=633684.089



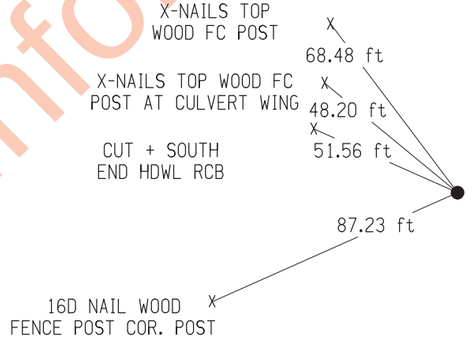

## CP STA. 11290+26.94, 70.00' RT

CP NO. G045, FD 5/8" RE-ROD
N=635214.890, E=2147566.840



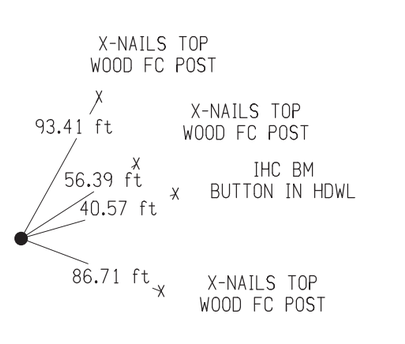

## CP STA11302+79.45 66.70LT

CP POINT 321
SET IRON PIN
XC=2147377.746, YC=636460.574




## CP STA11303+63.40 66.41RT

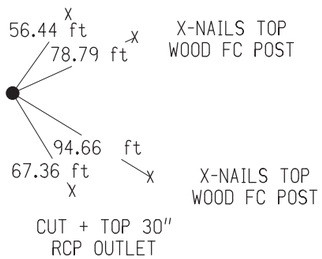
CP POINT 322
SET IRON PIN
XC=2147507.233, YC=636550.025




## CP STA11319+54.64 65.97RT

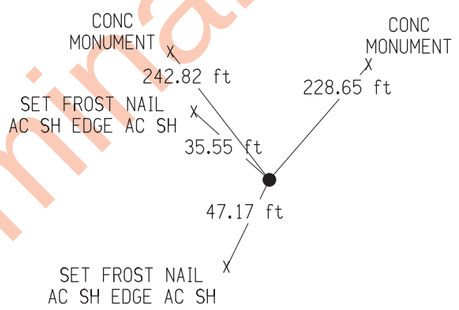
CP POINT 323
SET IRON PIN
XC=2147440.180, YC=638139.847

+ CUT WEST LEG SIGN
BASE CONC SIGN BASE



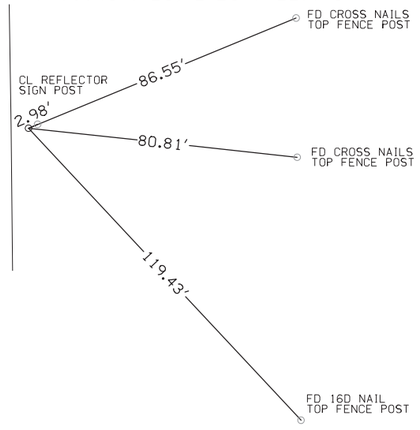

## PI STA 11324+10.95

PI POINT 133
FD REBAR
XC=2147355.166, YC=638593.002



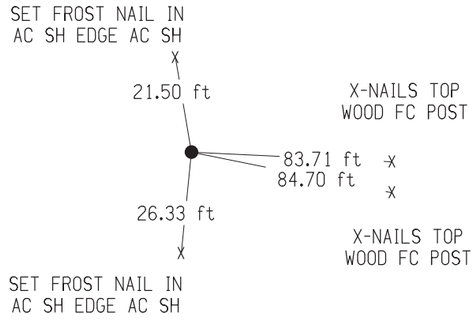

## CP STA. 11327+21.80, 69.80' RT

CP NO. G046, FD 5/8" RE-ROD
N=638904.720, E=2147422.440




## CP STA11335+13.07 66.44RT

CP POINT 324
SET IRON PIN
XC=2147412.252, YC=639695.711



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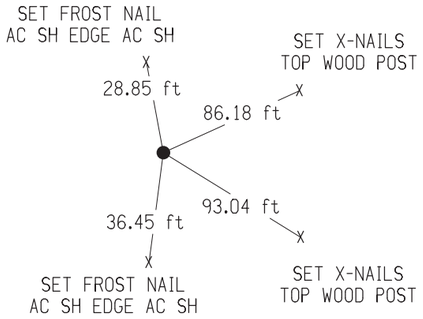
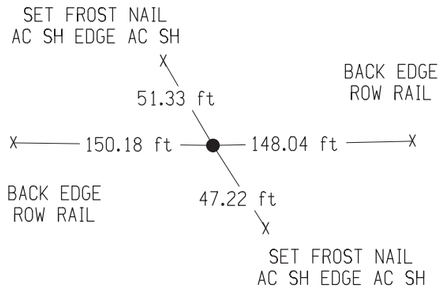
## CP STA11348+34.75 67.93RT

CP POINT 325
SET IRON PIN
XC=2147402.529, YC=641017.354



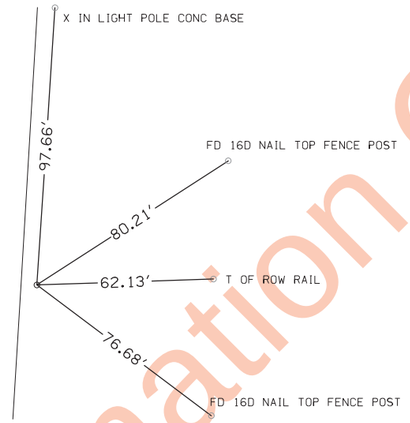

## CP STA11350+68.00

CP POINT 134
FD REBAR/HIGH PIN OF 2 FD
XC=2147332.596, YC=641250.020



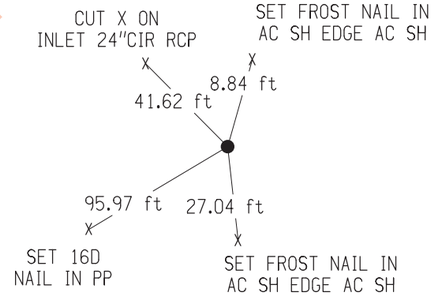

## CP STA. 11359+98.30, 79.57' RT

CP NO. G047, FD 5/8" RE-ROD
N=642180.970, E=2147404.300



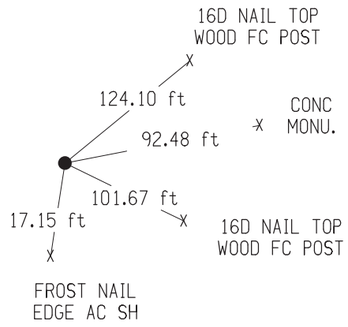

## CP STA11376+37.76 66.54LT

CP POINT 326
SET IRON PIN
XC=2147244.286, YC=643819.129



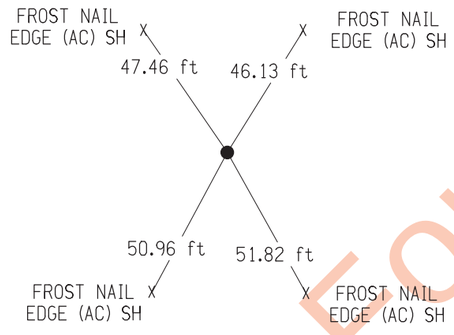

## CP STA11401+12.35 66.02RT

CP POINT 329
SET IRON PIN
XC=2147355.848, YC=646294.755



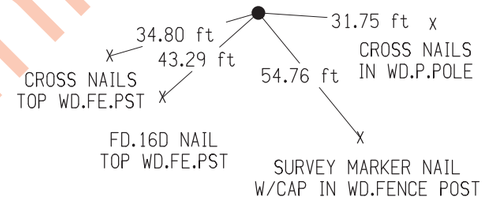

## CP STA 11404+97.20

CP POINT 136
H0411001.ALI
XC=2147286.571, YC=646679.028



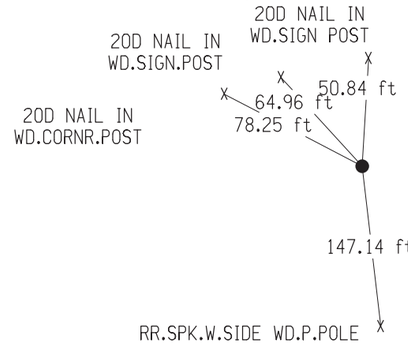

## PI STA.20576+03.82

PI,FD.IRON PIN 1.1' DEEP
PI NO. 161,SCR NO. 161
XC=2149125.621, YC=620087.690



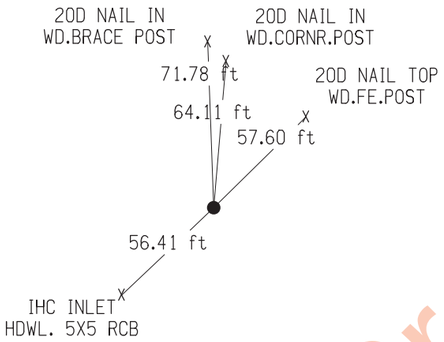

## CP STA.20580+19.75,17.9RT

CP,SET IRON PIN 0.6' DEEP
CP NO. 358
XC=2149132.853, YC=620503.941



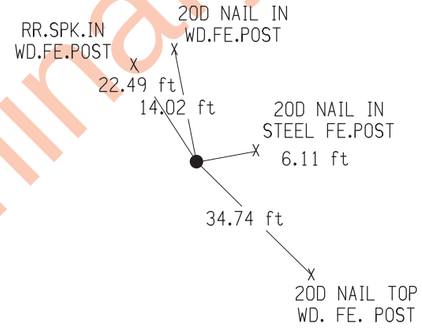

## PI STA. 20589+66.53

PI,SET IRON PIN 0.5' DEEP
PI NO. 164
XC=2149090.582, YC=621449.945



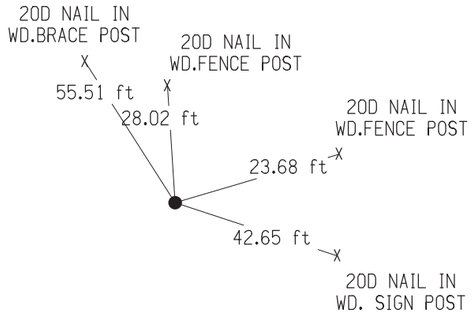

## CP STA.20591+76.66,49.5RT

CP,SET IRON PIN 0.7' DEEP
CP NO. 357
XC=2149003.559, YC=621660.301



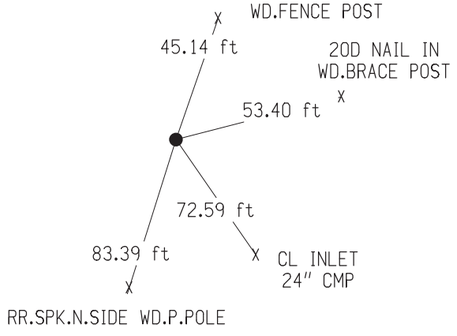

## PI STA.20593+49.34

PI,SET IRON PIN 0.5' DEEP
PI NO. 165
XC=2148865.863, YC=621772.416




## PI STA.20602+51.57

PI,SET IRON PIN 0.4' DEEP
PI NO. 169
XC=2148020.426, YC=622117.836



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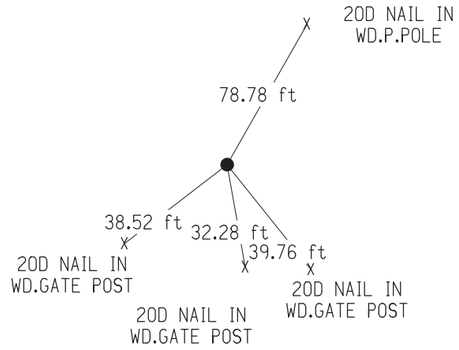
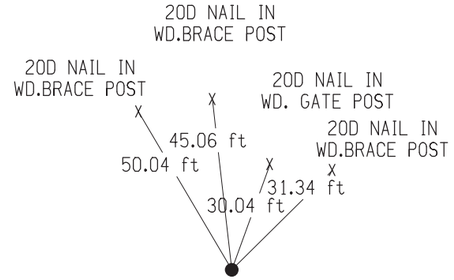
## PI STA.20618+52.05

PI,SET IRON PIN 0.4' DEEP
PI NO. 175
XC=2146425.222, YC=622287.830



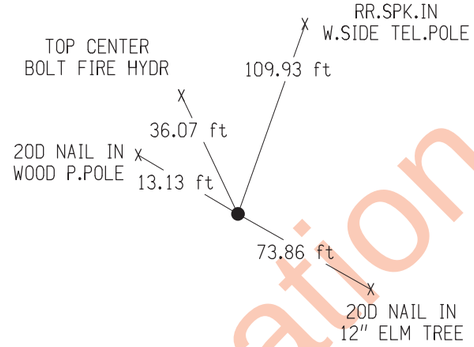

## CP STA.20627+75.09

CP,SET IRON PIN 0.4' DEEP
CP NO. 178
XC=2145514.771, YC=622440.773



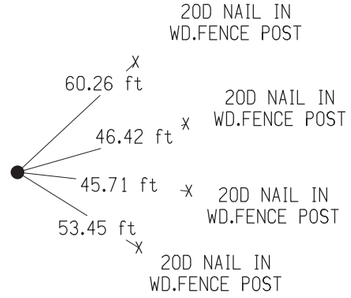

## CP STA.30633+76.9,23.11LT

CP,SET IRON PIN 0.5' DEEP
CP NO. 356
XC=2146372.147, YC=623932.054



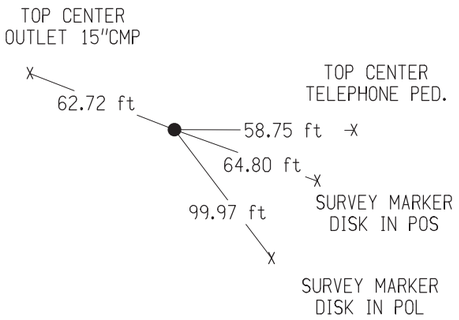

## CP STA 30640+58.79,14.8RT

CP,SET IRON PIN 0.5' DEEP
CP NO. 355
XC=2146392.195, YC=624614.693



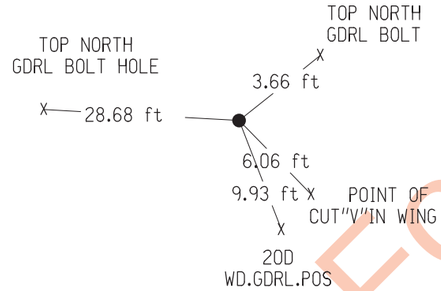

## PI STA 30648+00.546

SCR,FD.5/8"REBAR .6'DEEP
PI NO. 185
XC=2146357.977, YC=625355.806



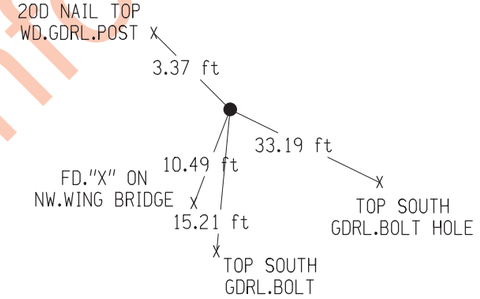

## CP STA 30653+49.6,12.87RT

CP,SET IRON PIN 0.6' DEEP
CP NO 354
XC=2146361.885, YC=625905.030



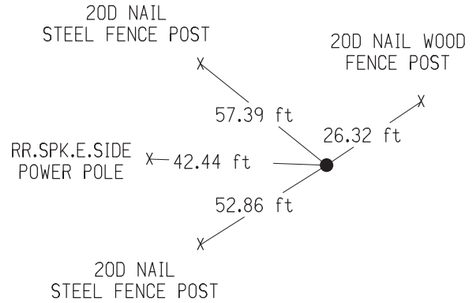

## CP STA 30655+33.8,13.84RT

CP,SET IRON PIN 0.6' DEEP
CP NO. 353
XC=2146332.170, YC=626088.784



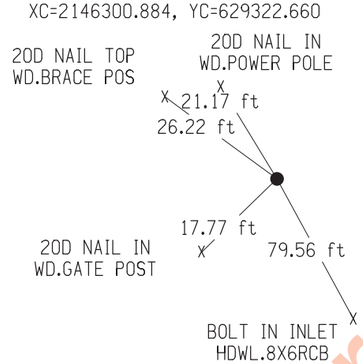

## CP STA 30677+72.2,14.55RT

CP,SET IRON PIN 0.5' DEEP
CP NO. 336
XC=2146350.445, YC=628327.347



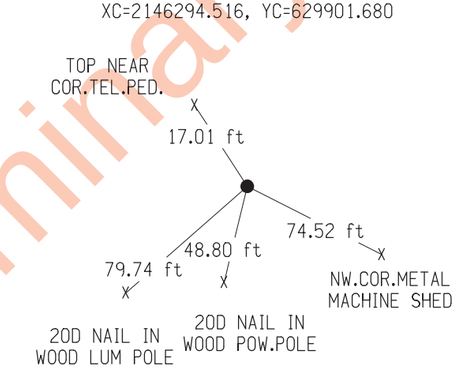

## CP STA 30687+67.9,20.99LT

CP,FD.BOLT IN YELLOW CAP
CP NO. 337
XC=2146300.884, YC=629322.660



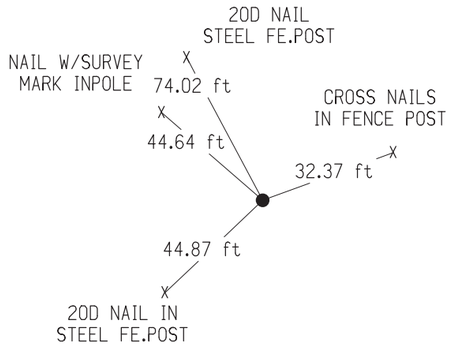

## CP STA 30693+47.0,19.18LT

CP,SET IRON PIN 0.5' DEEP
CP NO. 338
XC=2146294.516, YC=629901.680



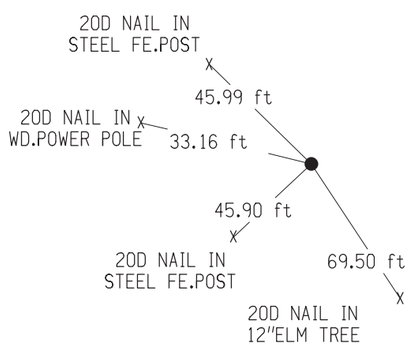

## SCR,PI,STA 30700+86.417

SCR,PI,FD.CONC.MONU.1DEEP
SCR NO.211, PI NO. 222
XC=2146303.247, YC=630641.318




## CP STA 30709+17.69,13.9RT

CP,SET IRON PIN 0.5' DEEP
CP NO. 339
XC=2146303.463, YC=631472.702



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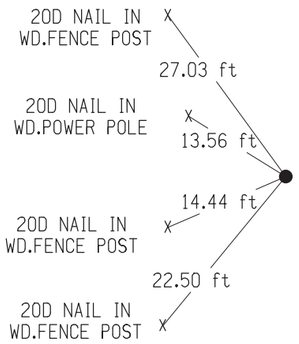
|---|---|---|---|---|---|

9:03:54 AM 10/30/2019 wmcnama pw:\\ntPwIntl.dot.int.lan:PWMain\Documents\Projects\5208001002\Design_LETTING_FOLDERS_Bridge_348_I80_Median_Over_Clear_Creek\CADD_Files\Sheet_Files\SHT_52080348_G01.sht

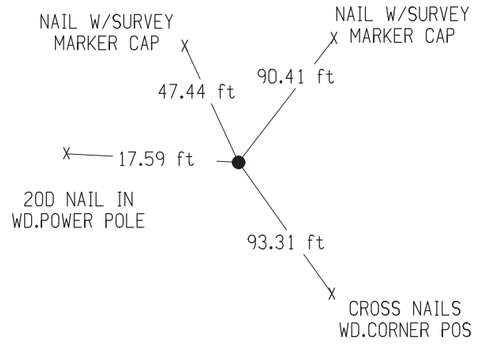
## CP STA 30721+82.12,13.5LT

CP,SET IRON PIN 1.0' DEEP
CP NO. 340
XC=2146249.399, YC=632736.009



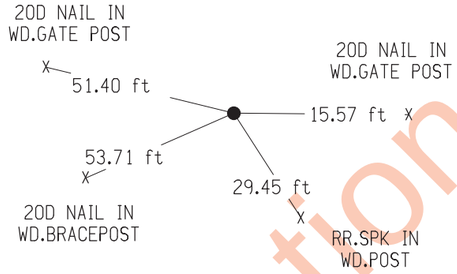

## CP STA 30727+39.61,13.0LT

CP,SET IRON PIN 0.8' DEEP
CP NO. 341
XC=2146227.007, YC=633293.419



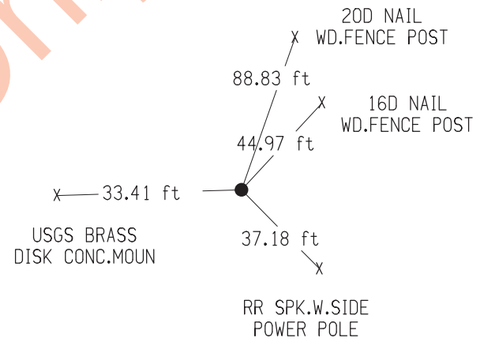

## CP STA 30740+69.31,17.3RT

CP,SET IRON PIN 0.5' DEEP
CP NO. 342
XC=2146240.250, YC=634623.400



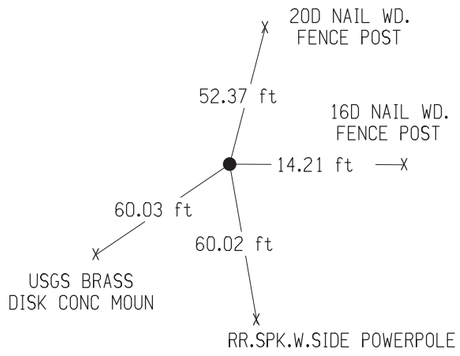

## SCR STA 30753+73.552

PI,FD.5/8" REBAR
SCR,PI, NO.218
XC=2146206.162, YC=635927.312



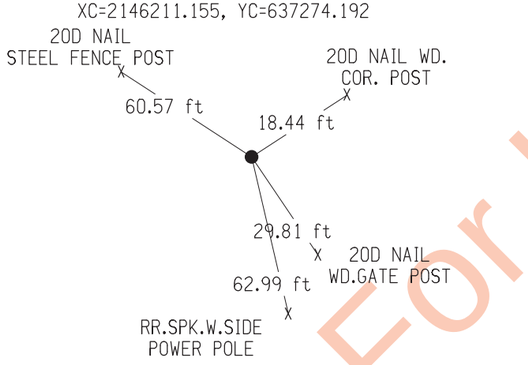

## CP STA 30754+06.49,16.6RT

CP SET IRON PIN 0.6' DEEP
CP NO. 343
XC=2146222.458, YC=635960.400



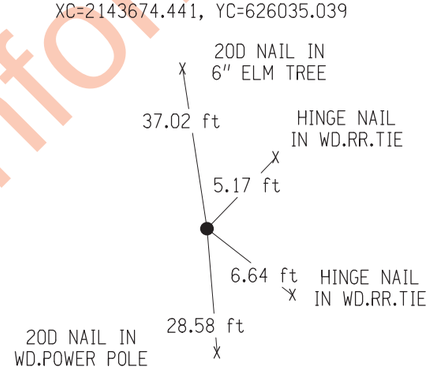

## CP STA 30767+20.33,17.2RT

CP,SET IRON PIN 0.6' DEEP
CP NO. 344
XC=2146211.155, YC=637274.192



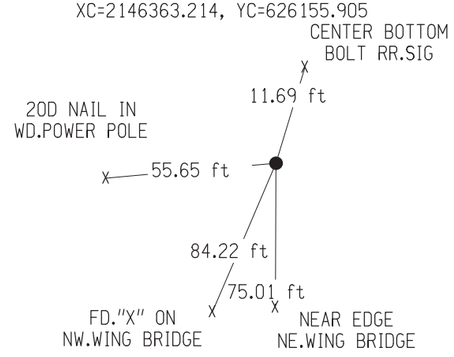

## CP STA 41158+82.185

CP,SET HINGE NAIL CL RR.
CP NO. 187
XC=2143674.441, YC=626035.039



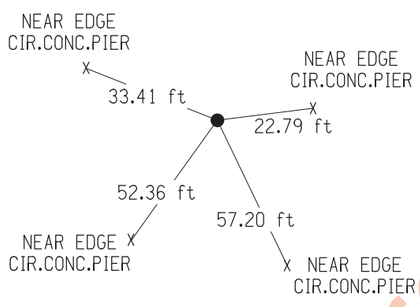

## CP STA 41185+73.6,27.66RT

CP,SET IRON PIN 0.5' DEEP
CP NO. 371
XC=2146363.214, YC=626155.905



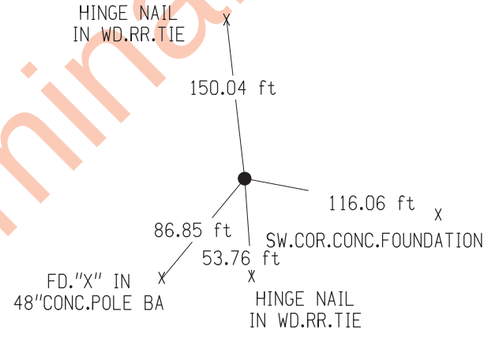

## CP STA 41199+34.8,19.15LT

CP,SET IRON PIN 0.5' DEEP
CP NO. 370
XC=2147721.817, YC=626141.182



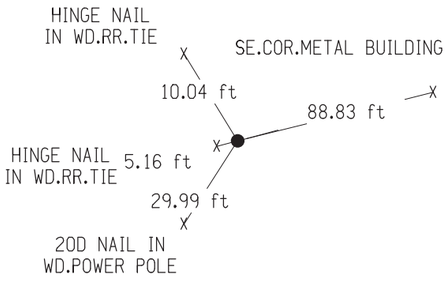

## CP STA 41210+54.0,55.25LT

CP,SET IRON PIN 0.5' DEEP
CP NO. 369
XC=2148818.137, YC=625887.760



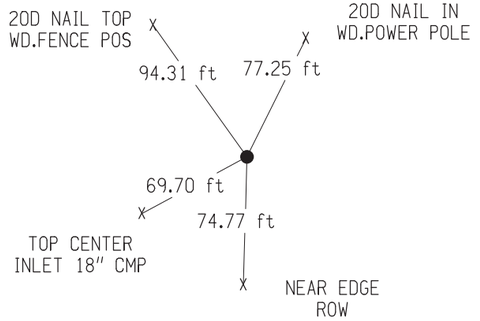

## CP STA 41238+20.068

CP,SET HINGE NAIL CL RR.
CP NO. 195
XC=2151181.050, YC=624444.083



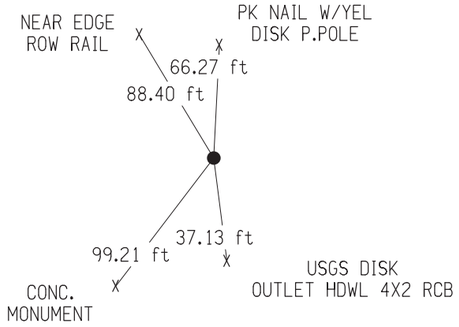

## POT STA 51184+89.902

POT,SET HINGE NAIL
POT NO. 200
XC=2145627.561, YC=626994.742



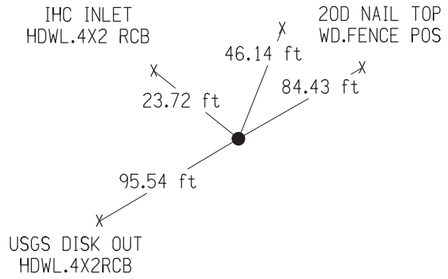
## PI STA 51191+66.729

PI,FD.HINGE NAIL
PI NO. 201
XC=2146304.091, YC=626974.693



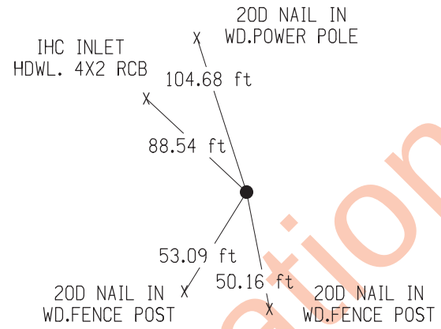

## CP STA 51192+50.8,23.57LT

CP,SET IRON PIN 0.5' DEEP
CP NO. 335
XC=2146390.750, YC=626986.615



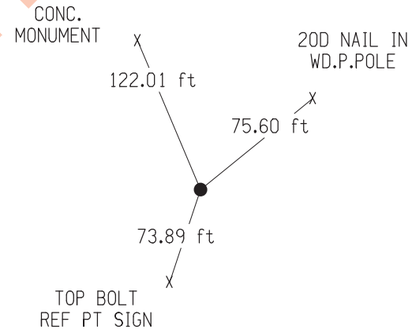

## CP STA 51201+44.79,26.7RT

CP,SET IRON PIN 0.5' DEEP
CP NO. 364
XC=2147269.652, YC=626815.535



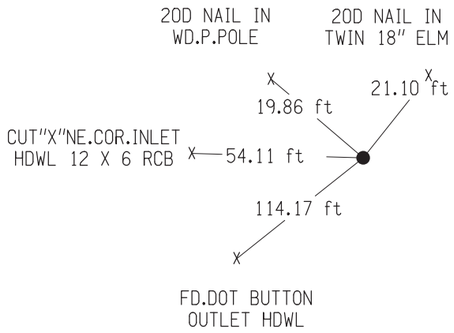

## PI STA 51218+08.004

PI,FD. HINGE NAIL
PI NO. 206
XC=2148848.994, YC=626332.676



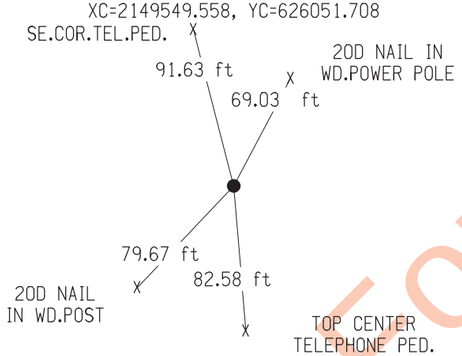

## CP STA 51220+97.47,60.3LT

CP,SET IRON PIN 0.5' DEEP
CP NO. 366
XC=2149140.092, YC=626280.871



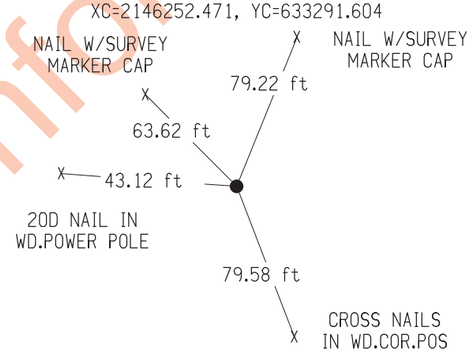

## POT STA

POT,SET HINGE NAIL
POT NO. 207
XC=2149549.558, YC=626051.708



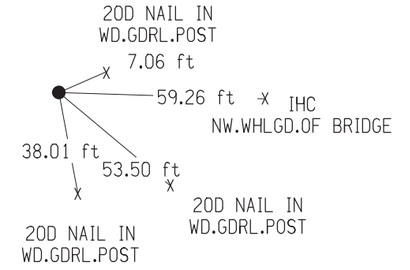

## SCR STA 61257+89.762

SCR,FD.1/2"REBAR .7' DEEP
SCR NO. 215
XC=2146252.471, YC=633291.604



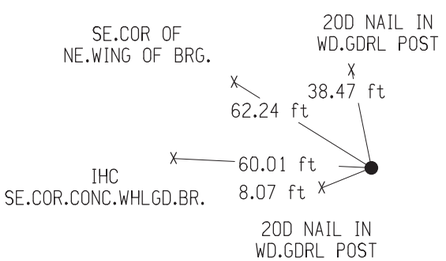

## CP STA 61269+21.57,17.6LT

CP,SET IRON PIN 0.6' DEEP
CP NO. 346
XC=2147384.169, YC=633315.360



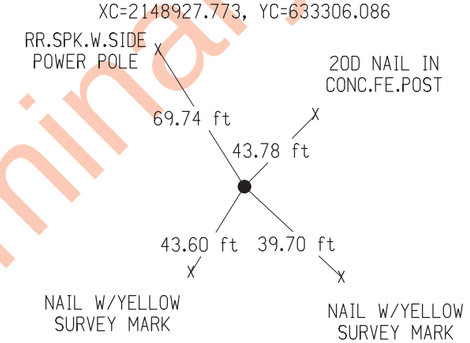

## CP STA 61273+07.39,17.6RT

CP,SET IRON 0.7' DEEP
CP NO. 347
XC=2147770.169, YC=633282.244



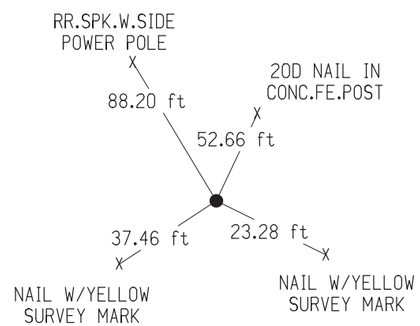

## PI,SCR,STA 61284+65.103

SCR,FD.CONC.MONU.0.1'DEEP
SCR,PI, NO. 233
XC=2148927.773, YC=633306.086



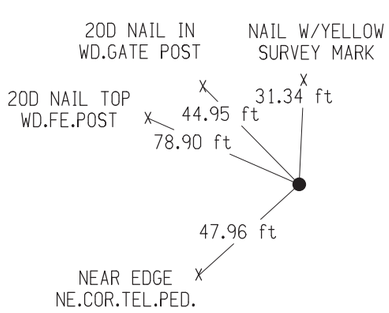

## CP STA 61284+73.18,16.6RT

CP,SET IRON PIN 0.7' DEEP
CP NO. 348
XC=2148936.108, YC=633289.571



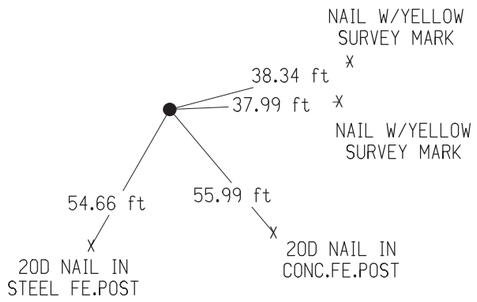

## SCR,PI,STA 61311+27.232

SCR,FD.5/8"REBAR 0.6'DEEP
SCR,PI, NO. 234
XC=2151589.583, YC=633347.296



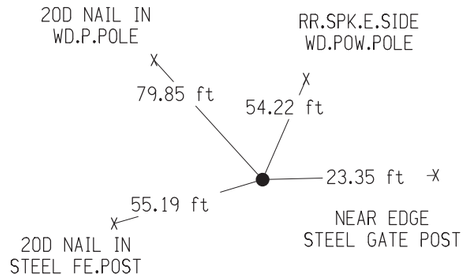
## CP STA 71297+91.37,3.97LT

SCR FD.I.P.W/CAP STAMPED
#8165
XC=2148909.133, YC=634632.231



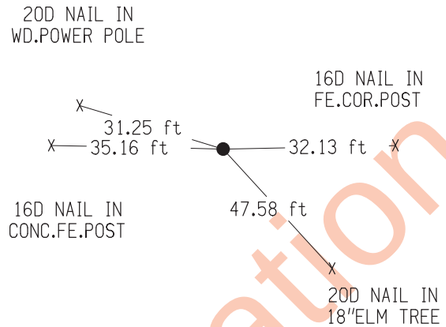

## CP STA 71299+83.64,21.7RT

CP,SET IRON PIN 0.8' DEEP
CP NO. 349
XC=2148932.657, YC=634824.774



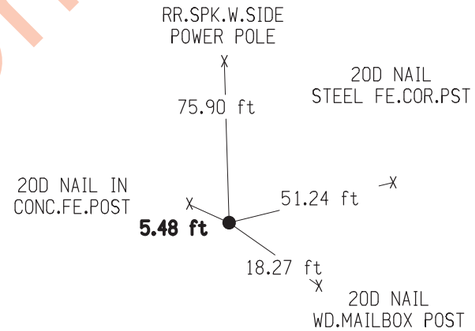

## PI,SCR STA 71311+17.641

PI,SCR,FD.BRASS CAP CON.
MONU.
XC=2148890.691, YC=635958.341



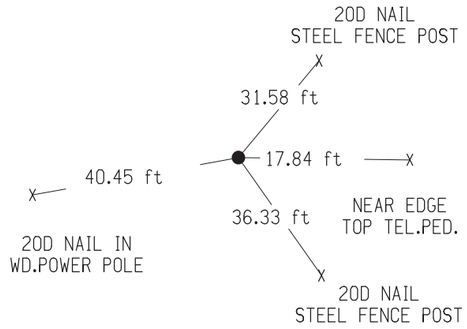

## CP STA 71313+16.08,32.3LT

CP,SET IRON PIN 1.0'DEEP
CP NO. 350
XC=2148855.659, YC=636156.322



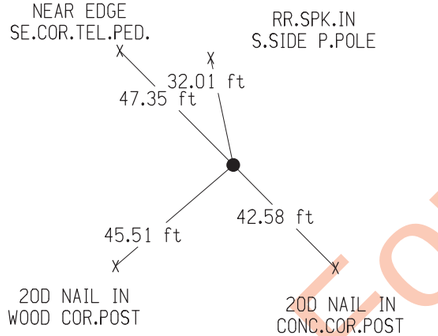

## CP STA 71322+40.24,6.60RT

CP,SET IRON PIN 0.8'DEEP
CP NO. 351
XC=2148882.089, YC=637080.925



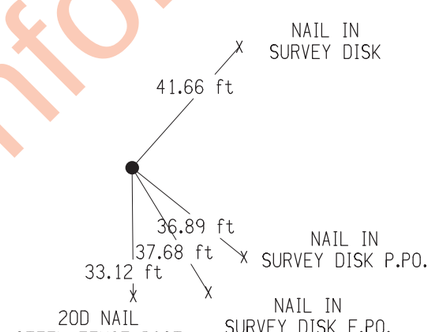

## SCR,PI STA 71337+73.367

SCR,PI FD.1/2"REBAR.3DEEP
SCR,PI NO. 238
XC=2148854.737, YC=638613.824



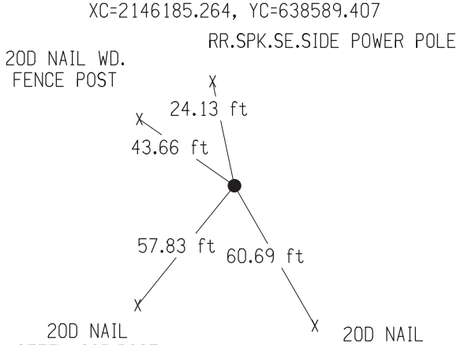

## SCR,PI STA 81285+54.765

SCR,PI FD.BRASS DISK.9'DE
SCR,PI NO. 221
XC=2143502.302, YC=638571.775



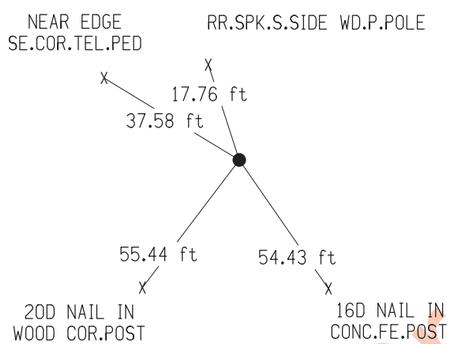

## CP STA 81312+37.78,2.85LT

CP,SET IRON PIN 0.5' DEEP
CP NO. 345
XC=2146185.264, YC=638589.407



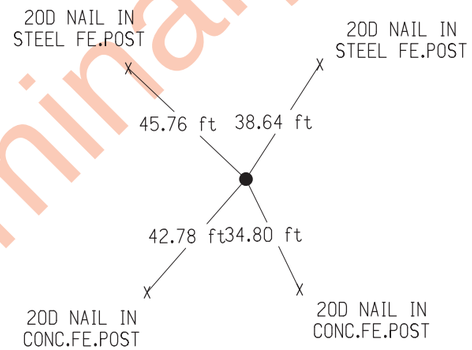

## CP STA 81339+06.59,14.5LT

CP,SET IRON PIN 0.8' DEEP
CP NO. 352
XC=2148853.726, YC=638628.315



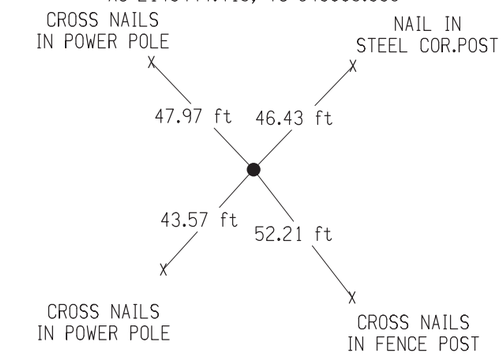

## CP STA 81349+77.496

CP,SET IRON PIN 0.5' DEEP
CP NO. 239
XC=2149924.573, YC=638637.272



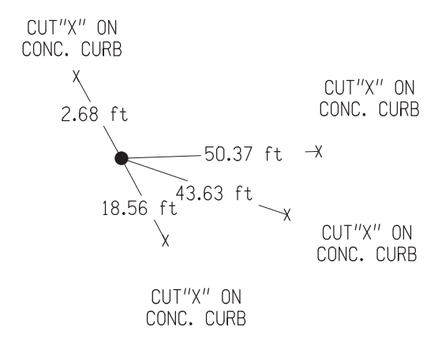

## SCR STA. 91338+70.774

SCR,FOUND PIPE 0.8' DEEP
SCR NO.222
XC=2143444.415, YC=643885.336




## GPS STA 91358+40.4,30.0RT

GPS,FD.REBAR 0.4' DEEP
GPS POINT G048
XC=2145414.040, YC=643875.420

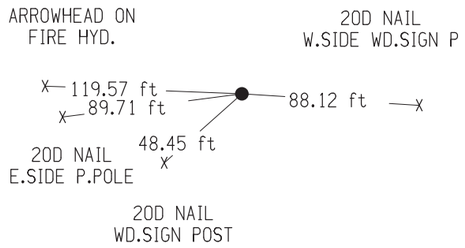





| FILE NO. 30864 | ENGLISH | DESIGN TEAM HOLST | JOHNSON COUNTY | PROJECT NUMBER NHS-080-6(348)239--11-52 | SHEET NUMBER G.20 |
|---|---|---|---|---|---|

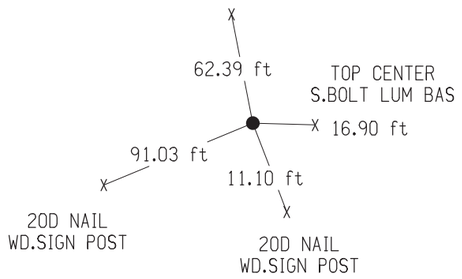
## CP STA 91366+64.64,27.4RT

CP SET IRON PIN 0.5'DEEP
CP NO.330
XC=2146238.248, YC=643880.691



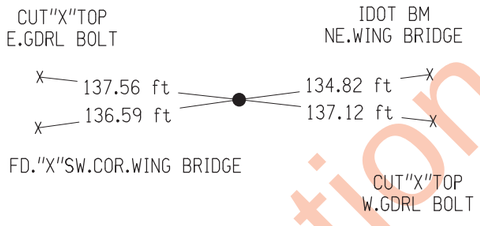

## CP STA 91372+20.93,25.3RT

CP,SET IRON PIN 0.5 DEEP
CP NO.331
XC=2146794.698, YC=643887.714



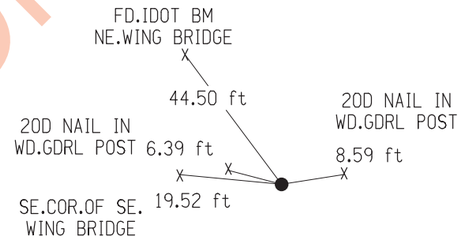

## CP STA 91377+36.352,.25RT

CP,FD."X"
CP NO. 135
XC=2147309.832, YC=643918.189



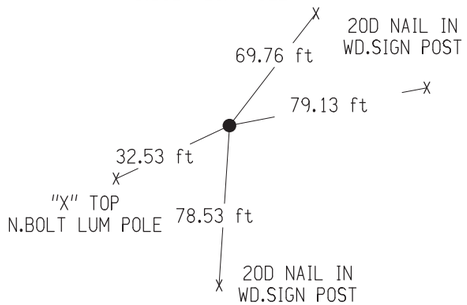

## CP STA 91378+96.34,19.3RT

CP,SET IRON PIN 0.7' DEEP
CP NO. 332
XC=2147470.011, YC=643900.838



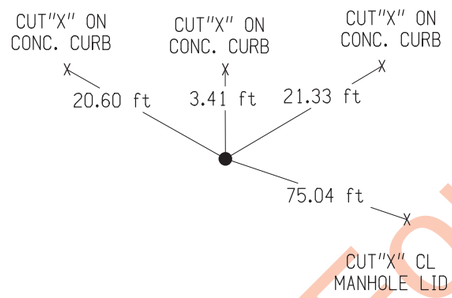

## CP STA 91382+66.99,42.1LT

CP,SET IRON PIN 0.6'DEEP
CP NO. 333
XC=2147840.000, YC=643966.070
"X" TOP
S.BOLT LUM POLE



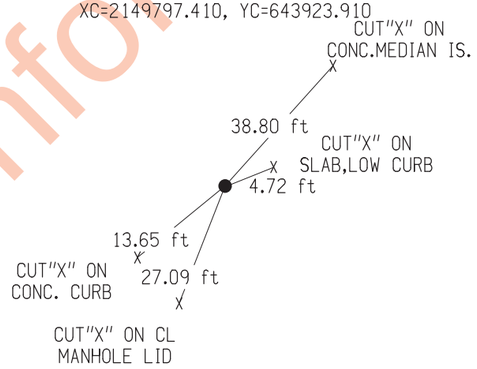

## CP STA 91390+81.48,29.9RT

CP,SET IRON PIN 0.4' DEEP
CP NO. 334
XC=2148655.339, YC=643905.841



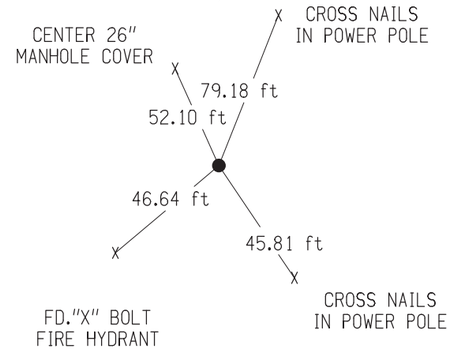

## GPS STA 91402+23.8,28.0RT

GPS,FD.REBAR 0.3' DEEP
GPS POINT G050
XC=2149797.410, YC=643923.910




## SCR STA 91445+18.268

SCR,FD.PK NAIL IN CONC.
SCR NO. 245
XC=2154091.106, YC=644011.067



# ALIGNMENT COORDINATES

| Name | Location | Point on Tangent | | | Begin Spiral | | | Begin Curve | | | Simple Curve PI or Master PI of SCS | | | End Curve | | | End Spiral | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Station | Coordinates | | Station | Coordinates | | Station | Coordinates | | Station | Coordinates | | Station | Coordinates | | Station | Coordinates | |
| | | | Y (Northing) | X (Easting) | | Y (Northing) | X (Easting) | | Y (Northing) | X (Easting) | | Y (Northing) | X (Easting) | | Y (Northing) | X (Easting) | | Y (Northing) | X (Easting) |
| ML080 | | | | | | | | | | | | | | | | | | | |
| ML0801 | | 488+00.88 | 622563.99 | 2133198.79 | | | | | | | | | | | | | | | |
| ML080_3 | | | | | | | | 575+94.28 | 622430.99 | 2141991.19 | 579+28.07 | 622425.94 | 2142324.94 | 582+61.53 | 622446.80 | 2142658.08 | | | |
| ML080_6 | | | | | | | | 621+27.54 | 622688.31 | 2146516.54 | 625+84.74 | 622716.87 | 2146972.85 | 630+41.82 | 622727.21 | 2147429.93 | | | |
| ML080_9 | | | | | | | | 673+07.90 | 622823.70 | 2151694.93 | 676+17.64 | 622830.70 | 2152004.58 | 679+27.34 | 622829.34 | 2152314.32 | | | |
| ML080_12 | | | | | | | | 740+40.31 | 622802.38 | 2158427.23 | 749+37.94 | 622798.42 | 2159324.85 | 758+21.07 | 622520.14 | 2160178.25 | | | |
| ML080_15 | | | | | | | | 820+16.60 | 620599.40 | 2166068.53 | 839+10.29 | 620012.31 | 2167868.91 | 857+70.06 | 620035.67 | 2169762.46 | | | |
| ML080_18 | | | | | | | | 889+87.87 | 620075.36 | 2172980.02 | 895+41.60 | 620082.20 | 2173533.71 | 900+91.90 | 620194.93 | 2174075.85 | | | |
| ML080_21 | | | | | | | | 930+00.11 | 620787.02 | 2176923.14 | 936+13.32 | 620911.87 | 2177523.51 | 942+21.88 | 620906.83 | 2178136.70 | | | |
| ML080_21 | | | | | | | | 1054+10.24 | 620814.94 | 2189324.68 | 1066+45.49 | 620804.79 | 2190559.90 | 1078+43.53 | 620286.60 | 2191681.20 | | | |
| ML08026 | | 1155+97.03 | 617033.96 | 2198719.50 | | | | | | | | | | | | | | | |



# SPIRAL OR CIRCULAR CURVE DATA

| Name | Location | ΔSCS | Horizontal Alignment Data | | | | | | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Spiral Data | | | | | | | | Curve Data | | | | | |
| | | | θS | Ls | Ts | Es | Xc | Yc | L.T. | S.T. | ΔC | T | L | R | E | |
| ML080 | | | | | | | | | | | | | | | | |
| ML080_3 | | | | | | | | | | | 4^26'53.8442" (LT) | 333.7894 | 667.2435 | 8594.367 | 6.4794 | |
| ML080_6 | | | | | | | | | | | 2^17'08.5313" (RT) | 457.2013 | 914.2813 | 22918.312 | 4.5599 | |
| ML080_9 | | | | | | | | | | | 1^32'54.9090" (RT) | 309.7360 | 619.4343 | 22918.312 | 2.0929 | |
| ML080_12 | | | | | | | | | | | 17^48'28.2471" (RT) | 897.6299 | 1780.7621 | 5729.5780 | 69.8878 | |
| ML080_15 | | | | | | | | | | | 18^46'02.1219" (LT) | 1893.6870 | 3753.4512 | 11459.1560 | 155.4170 | |
| ML080_18 | | | | | | | | | | | 11^02'25.3963" (LT) | 553.7338 | 1104.0388 | 5729.5780 | 26.6955 | |
| ML080_21 | | | | | | | | | | | 12^13'03.8853" (RT) | 613.2127 | 1221.7746 | 5729.5780 | 32.7214 | |
| ML080_24 | | | | | | | | | | | 24^19'57.7085" (RT) | 1235.2566 | 2433.2697 | 5729.5780 | 131.6440 | |

108-25
10-21-14

## 511 TRAVEL RESTRICTIONS

| Route | Direction | County | Location Description | Feature Crossed | Object Type | Maint. Bridge No., Structure ID, or FHWA No. | Type of Restriction | Existing Measurement | Construction Measurement | Construction Measurement as Signed | Projected As Built Measurement | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Refer to NHS-080-6(372)239--11-52 for Travel Restrictions. | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

108-23A
08-01-08

## TRAFFIC CONTROL PLAN

Refer to NHS-080-6(372)239--11-52 for Traffic Control Plan.