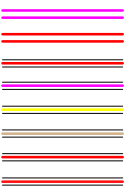
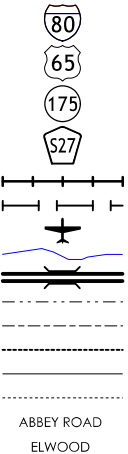


LEGEND

INTERSTATE HIGHWAY
PRIMARY HIGHWAY-DIVIDED
PRIMARY HIGHWAY
PORTLAND CEMENT CONCRETE ROAD
ASPHALT ROAD
BITUMINOUS ROAD
GRAVEL ROAD
EARTHEN ROAD



INTERSTATE HIGHWAY
UNITED STATES HIGHWAY
STATE HIGHWAY
COUNTY HIGHWAY
RAILROAD
PIPELINE
AIRPORT
HYDROLOGY
BRIDGE
STATE BOUNDARY
COUNTY BOUNDARY
CORPORATE BOUNDARY
TOWNSHIP LINE
SECTION LINE
ROAD NAMES
UNINCORPORATED PLACE



PLANS OF PROPOSED IMPROVEMENTS ON THE

PRIMARY ROAD SYSTEM

WOODBURY COUNTY

RECONSTRUCTION - BRIDGE DECK REPLACEMENT

1A-141 OVER WOLF CREEK DITCH

1.8 MI. E. OF CO. RD. K64

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.

REVISIONS



1-800-292-8989

www.iowaonecall.com



STANDARD ROAD PLANS

STANDARD ROAD PLANS ARE LISTED ON SHEET NUMBER C.2

DESIGN DATA RURAL

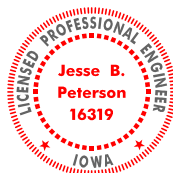
2018 AADT 1750 V.P.D.

TRUCKS 20 %
Total Design ESALs 1,000,000

INDEX OF SEALS

| SHEET NO. | NAME | TYPE |
|-----------|-------------------|-------------------|
| I | JESSE B. PETERSON | STRUCTURAL DESIGN |
| C.I | DUNG T. TA | ROADWAY DESIGN |
| RC.I | SEANA K. GOLDBERG | LANDSCAPE DESIGN |
| | | |
| | | |
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| | | |
| | | |

STRUCTURAL DESIGN

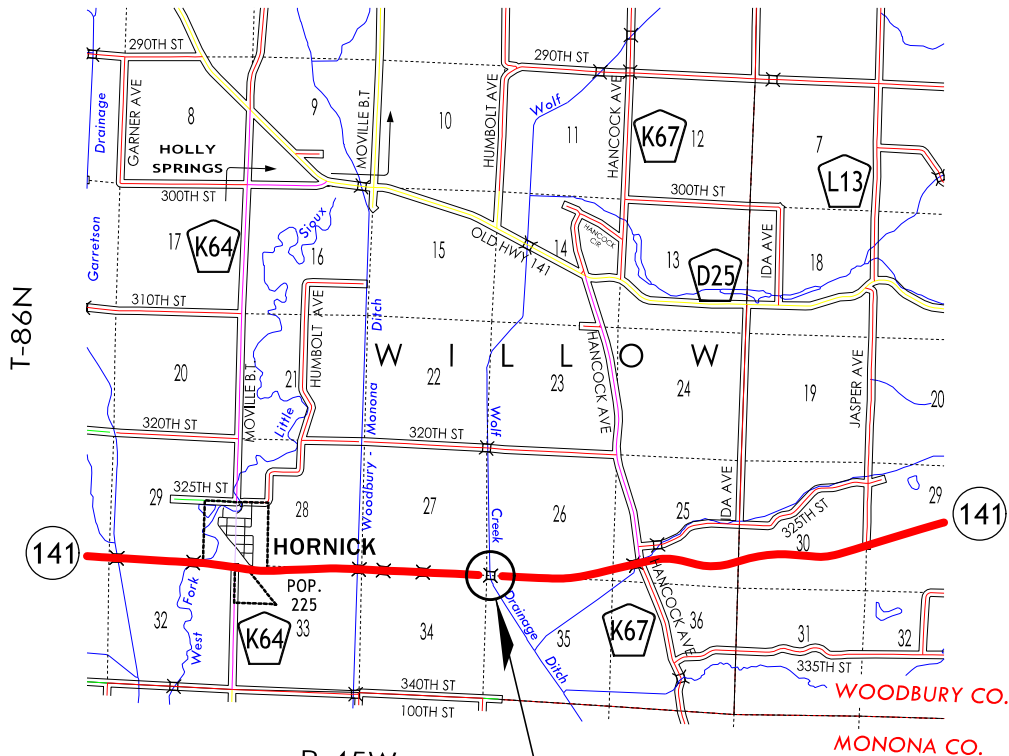


I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature Jesse B. Peterson Date 9-3-2019
Printed or Typed Name Jesse B. Peterson

My license renewal date is December 31, 2019

Pages or sheets covered by this seal: SHEETS I THRU 26 OF 26



LOCATION MAP

PROJECT DIRECTORY NAME: 9714101015

| ESTIMATED BRIDGE QUANTITIES | | | | | |
|-----------------------------|--------------|------------------------------------|------|--------|----------------|
| ITEM NO. | ITEM CODE | ITEM | UNIT | TOTAL | AS BUILT QUAN. |
| 1 | 2401-6750001 | REMOVALS, AS PER PLAN | LS | 1.00 | |
| 2 | 2403-0100010 | STRUCTURAL CONCRETE (BRIDGE) | CY | 262.2 | |
| 3 | 2404-7775005 | REINFORCING STEEL, EPOXY COATED | LB | 53,022 | |
| 4 | 2404-7775009 | REINFORCING STEEL, STAINLESS STEEL | LB | 3,503 | |
| 5 | 2408-7800000 | STRUCTURAL STEEL | LB | 792 | |
| 6 | 2414-6424110 | CONCRETE BARRIER RAILING | LF | 441.0 | |
| 7 | 2426-6772013 | REPAIR BEAM ENDS | EACH | 16 | |
| 8 | 2426-6772016 | CONCRETE REPAIR | SF | 18 | |
| 9 | 2507-8029000 | EROSION STONE | TON | 90.0 | |
| 10 | 2533-4980005 | MOBILIZATION | LS | 1.00 | |

ESTIMATE REFERENCE INFORMATION

| ITEM NO. | ITEM CODE | DESCRIPTION |
|----------|--------------|--|
| 1 | 2401-6750001 | REMOVALS, AS PER PLAN Includes all work for removal and off-site disposal of concrete rubble and reinforcing bars. 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. |
| 2 | 2403-0100010 | STRUCTURAL CONCRETE (BRIDGE) Includes cost of furnishing and placing splash basins (including excavation, erosion stone or Class E revetment, and engineering fabric). Includes all resilient joint filler required. Includes furnishing and placing subdrain (including excavation), floodable backfill, porous backfill, geotextile fabric, water flooding, and subdrain outlet at abutments and toe of berm. Includes furnishing and installation of 4 - $\frac{3}{4}$ " x 1'-3 coil rods. |
| 3 | 2404-7775005 | REINFORCING STEEL, EPOXY COATED -- |
| 4 | 2404-7775009 | REINFORCING STEEL, STAINLESS STEEL -- |
| 5 | 2408-7800000 | STRUCTURAL STEEL Includes 8 drains at 99 lb each. |
| 6 | 2414-6424110 | CONCRETE BARRIER RAILING Concrete barrier rail, rectangular shaped, 1'-0 x 2'-10. Includes furnishing and installing 1" diameter plastic conduit. Incudes 46.4 CY of class C or class BR structural concrete. If placement of concrete is done by the slipforming 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 the concrete. |
| 7 | 2426-6772013 | REPAIR BEAM ENDS -- |
| 8 | 2426-6772016 | CONCRETE REPAIR Includes repair of areas of deteriorated concrete at existing abutment and pier caps as shown in plans. Includes cost of all concrete anchors and welded wire fabric required. |
| 9 | 2507-8029000 | EROSION STONE Estimated at 1.6 ton/cu yd. Includes furnishing and placing engineering fabric, erosion stone, timber edging, steel pins and all required excavating, shaping and compacting for wing and berm armoring as shown in plans. |
| 10 | 2533-4980005 | MOBILIZATION -- |

DESIGN FOR 25° SKEW

212'-6 x 33'-8 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

70'-7½ END SPANS71'-3 INTERIOR SPAN

ESTIMATED QUANTITIES

STA. 655+00 (± 1A-141)OCTOBER, 2019

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 25FILE NO. 31587DESIGN NO. 220

GENERAL NOTES:

THIS DESIGN IS FOR REPAIRS TO THE EXISTING 212'-6 x 30'-0 PRESTRESSED CONCRETE BEAM BRIDGE LOCATED IN WOODBURY COUNTY ON IA-141 OVER WOLF CREEK DITCH. 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. 12358, DECK REPAIR DESIGN NO. 477 AND RETROFIT BARRIER RAILS DESIGN NO. 391).

REPAIRS SHALL CONSIST OF:

- 1. REMOVING THE EXISTING CONCRETE DECK AND BARRIER RAIL AND CONSTRUCT A NEW DECK AND BARRIER RAILS WITH A 33'-8 ROADWAY WIDTH.
- 2. REMOVING THE EAST AND WEST ABUTMENT BACKWALLS AND CONSTRUCT NEW SEMI-INTEGRAL ABUTMENTS.
- 4. MISC. CONCRETE REPAIRS TO EXISTING ABUTMENT FOOTINGS, PIER CAPS AND CONCRETE BEAMS.
- 5. CONSTRUCT NEW APPROACH SLABS. SEE ROAD PLANS.

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

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

HEAVY CONSTRUCTION EQUIPMENT WILL NOT BE ALLOWED ON THE BRIDGE DURING CONSTRUCTION UNLESS PRIOR WRITTEN APPROVAL OF THE ENGINEER IS OBTAINED. APPROVAL SHALL BE OBTAINED BY SUBMITTING A WRITTEN REQUEST TO THE ENGINEER. THIS REQUEST SHALL INCLUDE THE FOLLOWING:

- 1. A DETAILED PLAN ADEQUATELY DESCRIBING THE EQUIPMENT AND HOW IT IS PROPOSED TO BE USED. THIS PLAN SHALL CONTAIN, AS A MINIMUM, THE FOLLOWING INFORMATION:
 - A. THE CONFIGURATION AND WEIGHT OF THE EQUIPMENT PROPOSED TO BE PLACED ON THE BRIDGE.
 - B. THE PROPOSED LOCATION(S) OF THE EQUIPMENT ON THE BRIDGE DURING ALL LIFTING OPERATIONS.
 - C. THE WEIGHT OF ALL PROPOSED LIFTS TO BE MADE BY THE EQUIPMENT.
 - D. THE LOAD TO ALL WHEELS/AXLES/OUTRIGGERS/CRAWLERS RESULTING FROM THE PROPOSED LIFTING OPERATIONS, DURING ALL CRITICAL PHASES OF THE LIFTING OPERATIONS.
- 2. THE NECESSARY CALCULATIONS TO VERIFY THAT NO COMPONENT OF THE BRIDGE WILL BE OVERSTRESSED DURING THE PROPOSED USE OF THE EQUIPMENT ON THE BRIDGE. THE CALCULATIONS SHALL BE CERTIFIED BY A PROFESSIONAL ENGINEER CURRENTLY LICENSED TO PRACTICE ENGINEERING IN THE STATE OF IOWA.

IT IS THE INTENT OF THIS DESIGN TO USE THE EXISTING PRESTRESSED CONCRETE BEAMS AS CONSTRUCTED.

CONCRETE BARRIER RAILS 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).

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 SHALL DRESS UP THE SLOPES AROUND THE WINGS WHICH ARE DISTURBED DURING CONSTRUCTION. THIS WORK SHALL BE CONSIDERED INCIDENTAL AND NO EXTRA PAYMENT WILL BE MADE.

ALL ALIGNMENT, STATIONING, CONNECTING DIMENSIONS, AND ELEVATIONS USED IN THE NEW DETAILS IN THESE PLANS WERE DEVELOPED BASED ON THE EXISTING BRIDGE PLANS. THE BRIDGE CONTRACTOR SHALL FIELD VERIFY THESE DETAILS BEFORE STARTING CONSTRUCTION.

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 COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), FLOODABLE BACKFILL AND POROUS BACKFILL IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE".

THE COST OF ALL RESILIENT JOINT FILLER MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)".

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

404 PERMIT INFORMATION IS INCLUDED ELSEWHERE IN THE INCLUDED ROAD PLANS.

REMOVAL NOTES:

THE LUMP SUM BID FOR "REMOVALS AS PER PLAN" INCLUDES ALL COSTS ASSOCIATED WITH REMOVAL OF THE EXISTING CONCRETE DECK, ABUTMENT BACKWALLS, PIER DIAPHRAGMS AND BARRIER RAILS AS NOTED AND SHOWN IN THESE PLANS.

CONCRETE REMOVAL SHALL BE INITIATED WITH A ¾" SAW CUT WHEREVER POSSIBLE.

REMOVALS SHALL BE IN ACORDANCE 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.

IT IS THE INTENT OF THESE PLANS TO REUSE THE EXISTING STEEL SHEAR STIRRUPS ON TOP OF THE BEAMS. THE CONTRACTOR SHALL EXERCISE CARE NOT TO DAMAGE THESE STIRRUPS DURING THE CONCRETE DECK REMOVAL OPERATION. ANY REPLACEMENT OF DAMAGED SHEAR STIRRUPS WILL BE AS DIRECTED BY THE ENGINEER AND REPAIRED AT NO COST TO THE STATE.

THESE PLANS SHOWS DETAILS OF THE SUPERSTRUCTURE REMOVAL ON THE EXISTING BRIDGE. ALL PARTIAL REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS. ALL SUCH REMOVALS SHALL BE TO NEAT SAW CUTS TO PROVIDE CLEAN STRAIGHT SURFACES AT INTERFACES BETWEEN NEW CONCRETE AND REMAINING CONCRETE. THE REMOVAL SHALL BE DONE IN A MANNER WHICH WILL PREVENT ANY DAMAGE TO THE EXISTING STRUCTURE TO REMAIN. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE CAUSED, AND SHALL REPAIR ANY DAMAGED AREA TO ITS ORIGINAL CONDITION, AS DIRECTED BY THE ENGINEER, AT THE CONTRACTOR'S EXPENSE. ANY EXISTING REINFORCING STEEL WHICH IS TO BE "SAVED" THAT IS EXPOSED DURING REMOVAL OPERATIONS IS TO BE CAREFULLY PROTECTED, CLEANED AND INCORPORATED INTO NEW CONSTRUCTION UNLESS NOTED OTHERWISE.

THE BRIDGE CONTRACTOR IS TO USE EXTREME CARE WHEN REMOVING THE DECK CONCRETE AT THE PRESTRESSED BEAM LOCATIONS TO AVOID DAMAGING THE TOP FLANGE OF THE BEAM. PRIOR TO COMMENCING ANY DECK REMOVAL WORK, THE CONTRACTOR SHALL SUBMIT A DEMOLITION PLAN TO THE ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF THE START DATE FOR DECK REMOVAL WORK IN ORDER TO DEMONSTRATE THE REMOVAL PROCEDURE ON A SMALL PORTION OF THE DECK WHILE THE INSPECTOR IS PRESENT. FOR DETAILS, SEE "ALLOWABLE DAMAGE DETAIL FOR EXISTING PRESTRESSED BEAMS" ON THIS SHEET.

ONCE THE DECK CONCRETE OVER THE BEAM IS REMOVED, THE TOP SURFACE OF THE BEAM ALONG THE ENTIRE SPAN SHALL BE CLEANED BY SANDBLASTING OR OTHER APPROVED METHODS TO PROVE A SUITABLE BOND BETWEEN THE BEAM AND CONCRETE DECK IN ACCORDANCE WITH ARTICLE 2403.14 OF THE STANDARD SPECIFICATIONS.

IN THE EVENT THAT ONE OR MORE OF THE EXISTING PRESTRESSED BEAMS IS DAMAGED DURING THE DECK REMOVAL, THE CONTRACTOR SHALL REPLACE THE DAMAGED BEAM OR BEAMS DEEMED UNACCEPTABLE. BEARINGS SHALL ALSO BE REPLACED. ALL MATERIAL, LABOR, EQUIPMENT AND TRAFFIC CONTROL REQUIRED FOR THE REMOVAL AND REPLACEMENT OF THE DAMAGED BEAM OR BEAMS, AND BEARING PADS SHALL BE CONSIDERED INCIDENTAL TO THE LUMP SUM BID FOR "REMOVALS, AS PER PLAN". ANY DAMAGED BEAMS, WHICH ARE NOT TO BE REUSED, SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING STABILITY OF PRESTRESSED CONCRETE BEAMS DURING DECK DEMOLITION 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 DEMOLITION AND CONSTRUCTION. TEMPORARY BRACING SHALL NOT BE WELDED TO PRESTRESSED BEAM STIRRUPS.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5G1 IS ¾ 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 |

TRAFFIC CONTROL PLAN

NOTE: THE ROADWAY WILL BE CLOSED TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN SHOWN ELSEWHERE IN THESE PLANS.

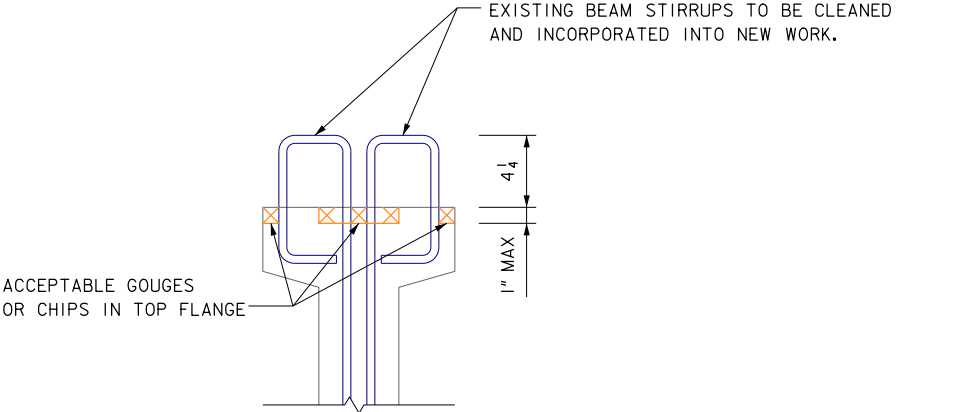
NOTE: ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

SPECIFICATIONS:

DESIGN: AASHTO SERIES OF 2002.
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.

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2002. REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60. CONCRETE IN ACCORDANCE WITH SECTION 8, f'c = 4,000 PSI.



TYPICAL ALLOWABLE DAMAGE DETAIL FOR EXISTING PRESTRESSED BEAMS

| DESIGN HISTORY AT THIS SITE (INCLUDES THIS DESIGN) | |
|--|------------------------|
| DES. NO. | TYPE OF WORK |
| 12358 | ORIGINAL DESIGN |
| 477 | DECK REPAIR |
| 391 | RETROFIT BARRIER RAILS |
| 220 | DECK REPLACEMENT |

DESIGN FOR 25° SKEW

212'-6 x 33'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

70'-7½ END SPANS71'-3 INTERIOR SPAN

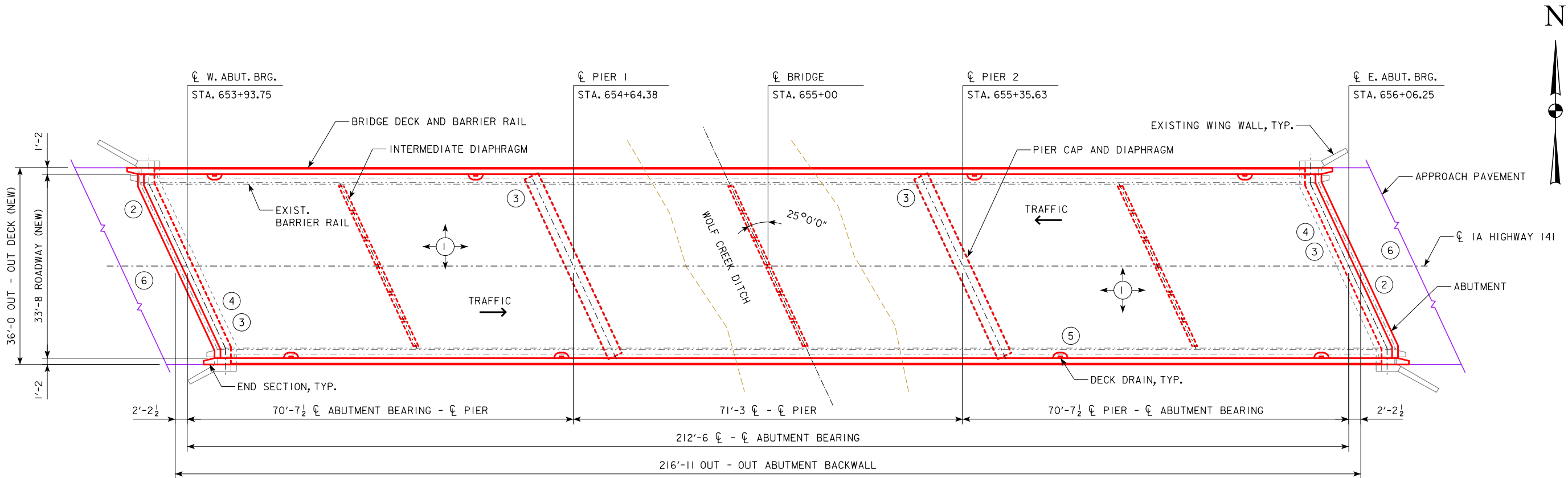
GENERAL NOTES

STA. 655+00 (E 1A-141)OCTOBER, 2019

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 25FILE NO. 31587DESIGN NO. 220



SITUATION PLAN

REPAIR DESCRIPTION / LOCATIONS:

- ① REMOVE EXIST. DECK, BARRIER RAIL, END SECTIONS, PIER DIAPHRAGMS, INTERMEDIATE DIAPHRAGMS, ABUTMENT DIAPHRAGMS AND ABUTMENT BACKWALLS PER PLANS. CONSTRUCT NEW DECK, BARRIER RAIL, END SECTIONS, PIER DIAPHRAGMS, INTERMEDIATE DIAPHRAGMS AND SEMI-INTREGAL ABUTMENTS PER PLANS.
- ② INSTALL NEW SUBDRAINS, WING ARMORING AND BERM RECONSTRUCTION/ARMORING AT BOTH ABUTMENTS, PER PLANS.
- ③ PERFORM CONCRETE REPAIRS TO ABUTMENT FOOTINGS, PIER CAPS AND CONCRETE BEAMS PER PLANS.
- ④ CLEAN ALL BEAM ENDS AND BEARINGS, BEFORE INCORPORATING INTO NEW SEMI-INTEGRAL ABUTMENT AND PIER DIAPHRAGMS.
- ⑤ INSTALL 8 DECK DRAINS PER PLANS.
- ⑥ REMOVE EXISTING APPROACH PAVEMENT AND REPLACE WITH NEW 70' APPROACH PER PLANS. SEE ROAD PLANS.

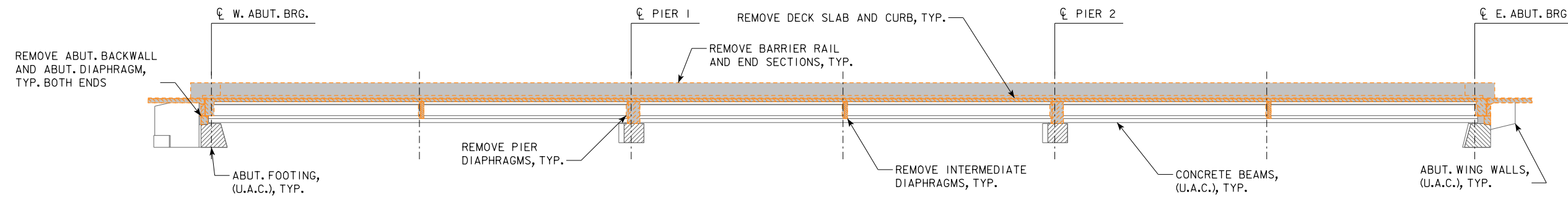
LOCATION

ON IA-141
OVER WOLF CREEK DITCH
T-86N R-45W
SECTION 26 & 35
WILLOW TOWNSHIP
WOODBURY COUNTY
FHWA NO. 53300
BRIDGE MAINT. NO. 9709.2S141
LATITUDE 42.22669384°
LONGITUDE -96.05825397°

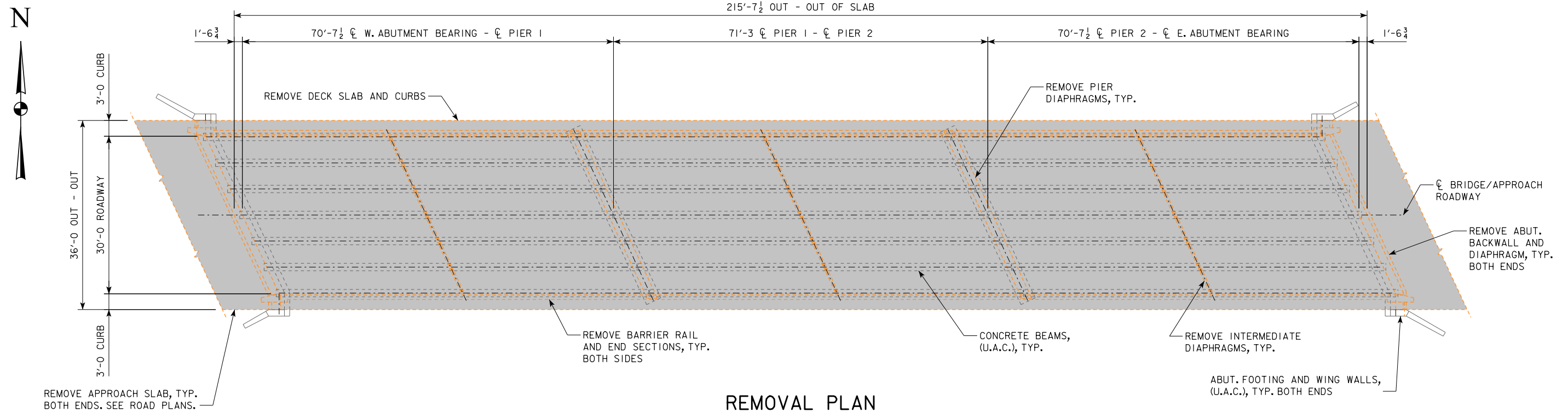
DESIGN FOR 25° SKEW
212'-6 x 33'-8 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE
70'-7 1/2' END SPANS 71'-3' INTERIOR SPAN
SITUATION PLAN
STA. 655+00 (CL IA-141) OCTOBER, 2019
WOODBURY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 3 OF 25 FILE NO. 31587 DESIGN NO. 220

REMOVAL NOTES:

SHADED AREAS INDICATE CONCRETE REMOVAL.



LONGITUDINAL SECTION NEAR GUTTER LINE



REMOVAL PLAN

DESIGN FOR 25° SKEW

212'-6 x 33'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

70'-7 1/2' END SPANS 71'-3' INTERIOR SPAN

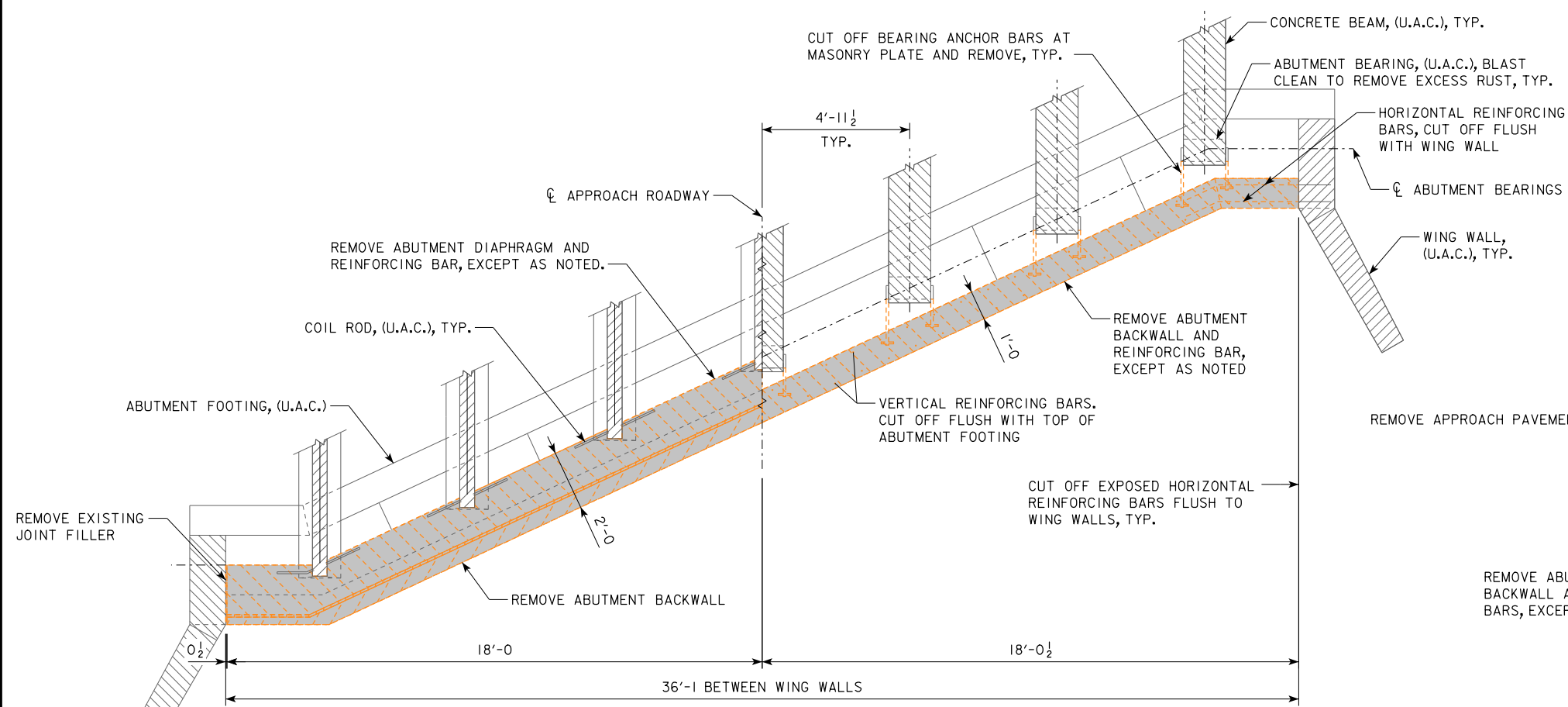
REMOVAL PLAN

STA. 655+00 (C 1A-141) OCTOBER, 2019

WOODBURY COUNTY

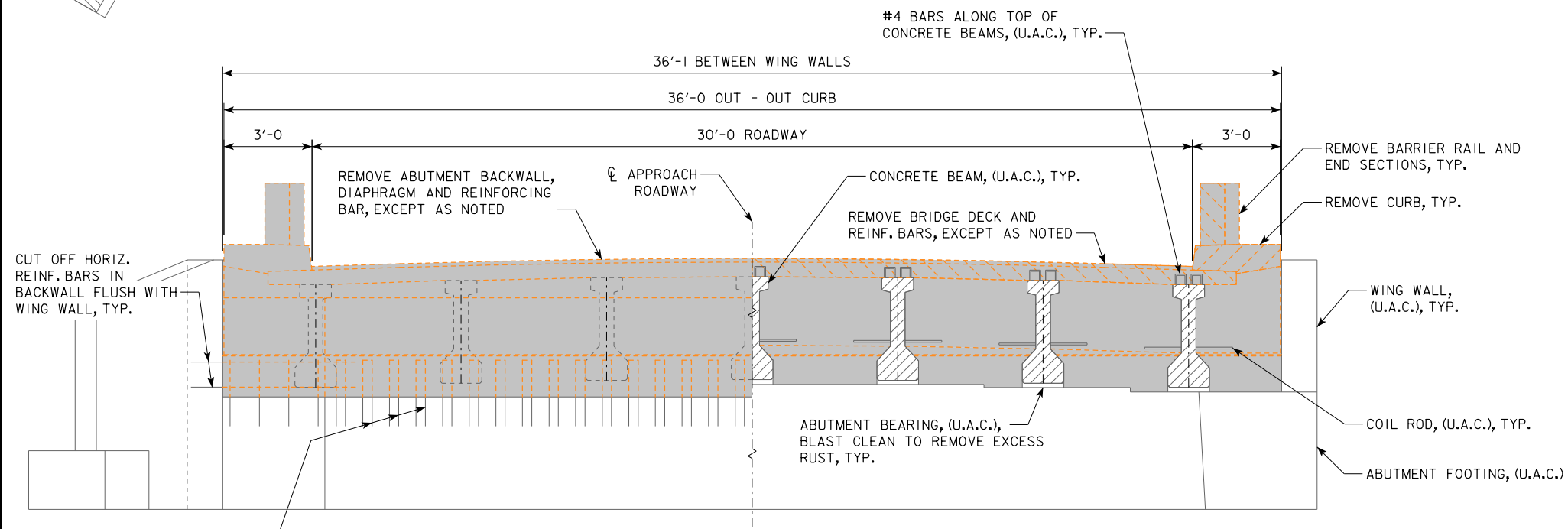
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 25 FILE NO. 31587 DESIGN NO. 220



PARTIAL PLAN VIEW
THRU ABUTMENT DIAPHRAGM

PARTIAL PLAN VIEW
@ ABUTMENT SEAT



HALF ELEVATION
@ ABUTMENT BACKWALL

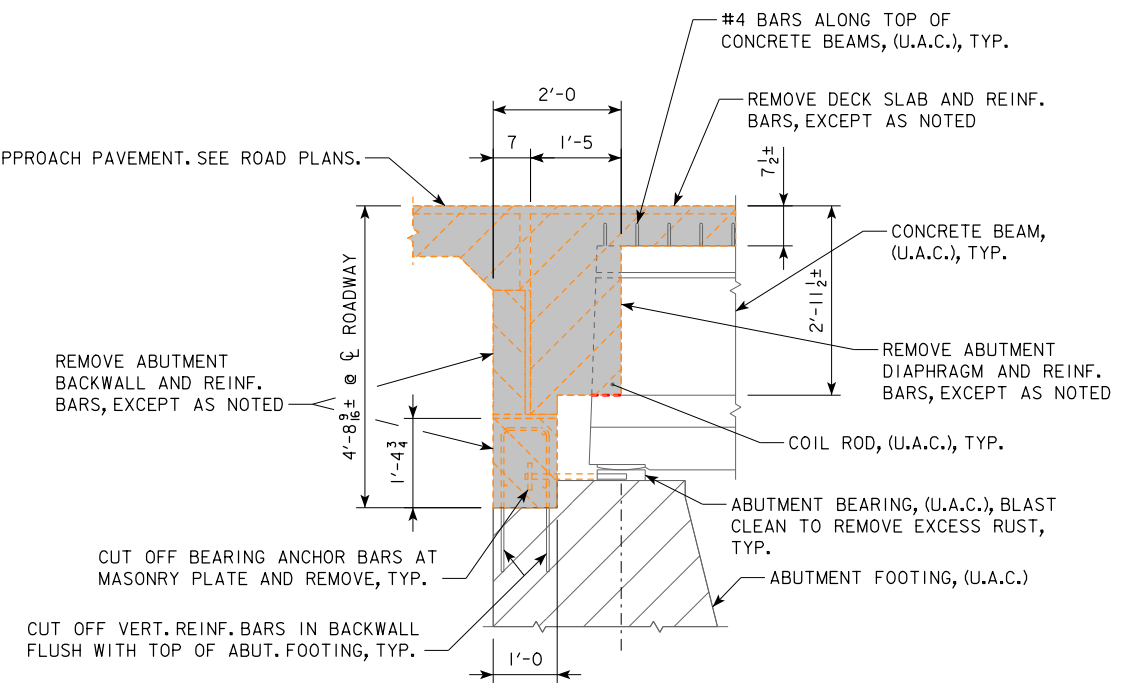
HALF SECTION
@ ABUTMENT FRONT FACE

REMOVAL NOTES:

SHADED AREAS INDICATE CONCRETE REMOVAL.

EXIST. COIL RODS THAT ARE NOTED (U.A.C.), SHALL BE CAREFULLY EXPOSED, THEN CLEANED, STRAIGHTENED AND INCORPORATED INTO NEW WORK.

HORIZONTAL AND VERTICAL REINFORCING BARS, CUT OFF FLUSH WITH WING WALLS AND TOP OF ABUTMENT FOOTING ARE TO HAVE EXPOSED ENDS PAINTED WITH 2-COATS OF ZINC RICH PAINT.



SECTION @ ABUTMENT

DESIGN FOR 25° SKEW

212'-6 x 33'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

70'-7 1/2' END SPANS 71'-3' INTERIOR SPAN

ABUTMENT REMOVAL DETAILS

STA. 655+00 (CL 1A-141) OCTOBER, 2019

WOODBURY COUNTY

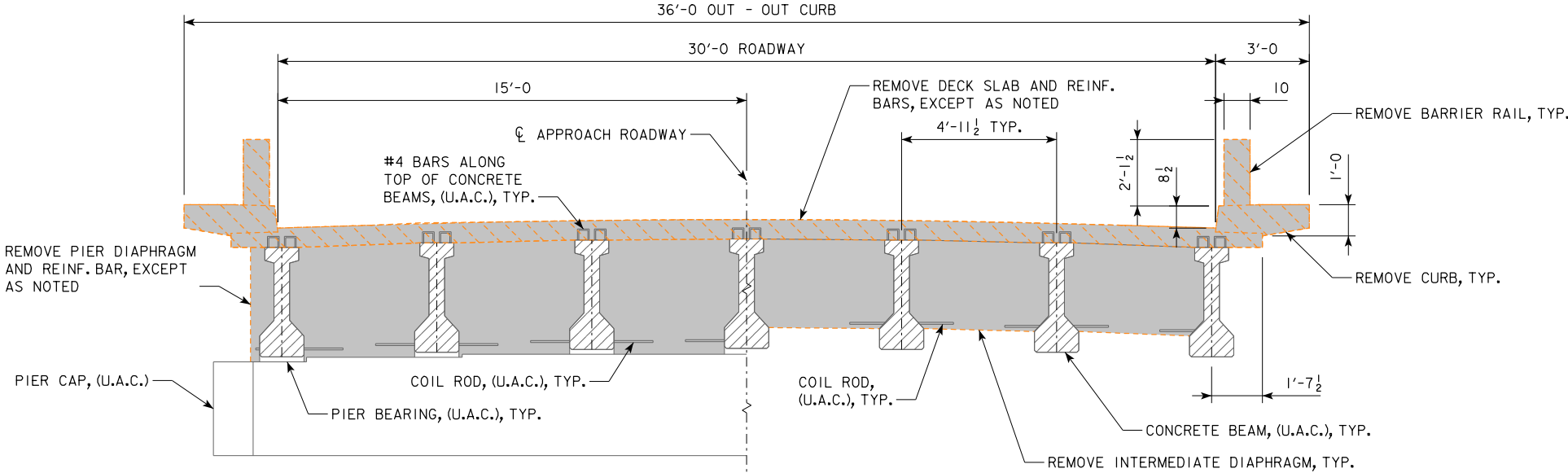
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 25 FILE NO. 31587 DESIGN NO. 220

REMOVAL NOTES:

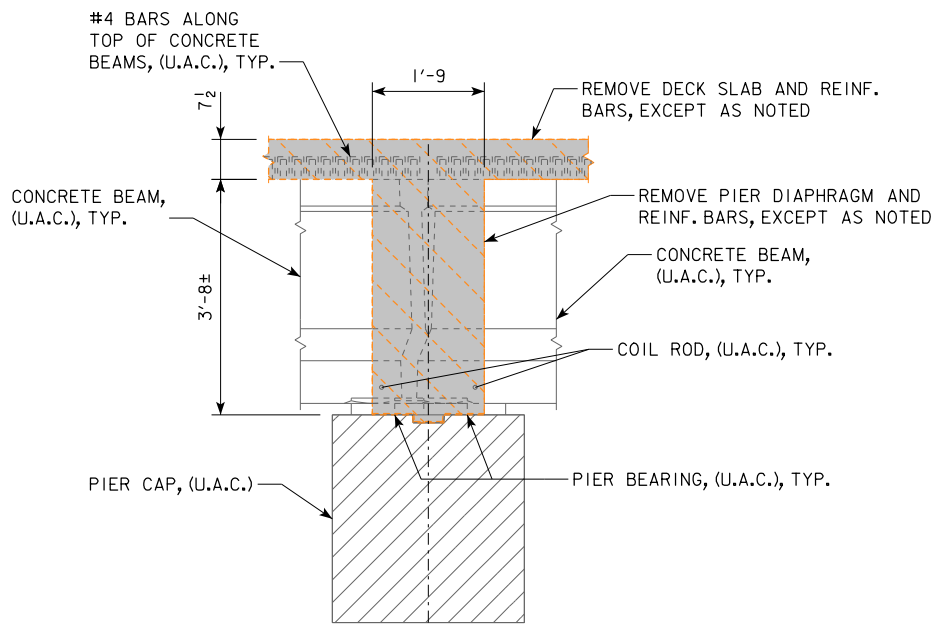
SHADED AREAS INDICATE CONCRETE REMOVAL.

EXIST. COIL RODS AND REINF. BARS THAT ARE NOTED (U.A.C.), SHALL BE CAREFULLY EXPOSED, THEN CLEANED, STRAIGHTENED AND INCORPORATED INTO NEW WORK.

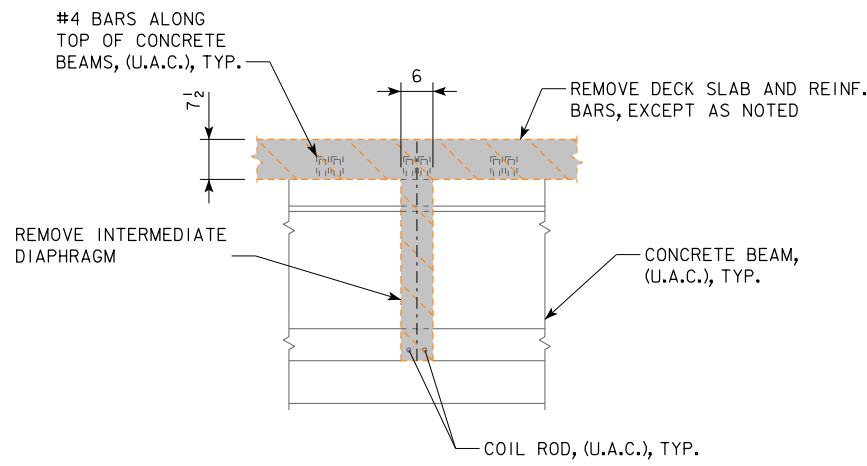


HALF SECTION
NEAR PIER

HALF SECTION
NEAR MIDSPAN



SECTION @ PIER



SECTION @ MIDSPAN

DESIGN FOR 25° SKEW
212'-6 x 33'-8 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE
70'-7 1/2' END SPANS 71'-3' INTERIOR SPAN
DECK REMOVAL DETAILS
STA. 655+00 (± 1A-141) OCTOBER, 2019
WOODBURY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 6 OF 25 FILE NO. 31587 DESIGN NO. 220

BEAM END REPAIR NOTES:

IT IS ESTIMATED THAT 16 BEAM END WILL BE REPAIRED. THE FINAL QUANTITY AND LIMITS OF BEAM END AREAS SHALL BE DETERMINED BY THE ENGINEER.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN CONCRETE REMOVALS ARE COMPLETE BY EACH LOCATION TO ALLOW INSPECTION BY THE ENGINEER PRIOR TO PLACEMENT OF CONCRETE OR REPAIR MORTAR.

THE CONTRACTOR SHALL REPORT TENDON OR REINFORCING BAR SECTION LOSS, EXPOSED DURING REMOVAL WORK, TO THE ENGINEER PRIOR TO PERFORMING ANY REPAIR WORK. THE ENGINEER SHALL BE GIVEN ADEQUATE TIME (7 DAYS MAX.) TO DETERMINE WHETHER BEAM REINFORCING IS REQUIRED. THE CONTRACTOR SHALL INCORPORATE THIS TIME INTO THE CONSTRUCTION SCHEDULE WITH WORK IN OTHER AREAS OF THE PROJECT IN ORDER TO NOT DELAY THE PROJECT.

REMOVAL TOOLS SHALL BE LIMITED TO 15 LB. CHIPPING HAMMERS AND TO HAND TOOLS WITHOUT POWER.

THE CONTRACTOR SHALL PERFORM THE CONCRETE REPAIR WORK IN ACCORDANCE WITH THE FOLLOWING PROCEDURES AND/OR AS DIRECTED BY THE ENGINEER:

1. INITIATE REMOVAL OF UNSOUND CONCRETE WITH 1/2" SAW CUTS AT PERIMETER. DO NOT CROSS CUT AT CORNERS. STOP SAW CUTS SHORT OF CORNERS AND REMOVE CONCRETE BY HAND. ADJUST DEPTH OF SAW CUT AS REQUIRED TO PREVENT CUTTING OF EXISTING REINFORCING STEEL OR STRANDS. EXTREME CARE SHALL BE EXERCISED DURING CONCRETE REMOVAL SO THAT EXPOSED STRANDS AND REINFORCING BARS ARE NOT DAMAGED. ANY DAMAGE DONE TO THE STRANDS OR BARS BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE.

2. REMOVE DETERIORATED AREAS TO SOUND CONCRETE AND CHIP SQUARE. BOUNDARIES TO BE SQUARE WITH NO FEATHERED EDGES. SANDBLAST CONCRETE SURFACES IN THE REPAIR AREA AND THE EXPOSED STEEL TO BARE METAL. REMOVE ALL DUST AND DEBRIS RESULTING FROM CHIPPING AND BLASTING BY USING CLEAN COMPRESSED AIR.

3. IF CONCRETE REMOVAL RESULTS IN MORE THAN HALF THE DIAMETER OF ANY REINFORCING BAR OR PRESTRESSING STRAND BEING EXPOSED, THEN REMOVAL SHALL CONTINUE TO A MINIMUM OF 3/4" BEHIND THE FIRST INTERIOR STRAND. IF REMOVALS COULD EXCEED THE 5" MAXIMUM HORIZONTAL DEPTH, CONTACT THE ENGINEER PRIOR TO REMOVAL.

4. REPORT TO THE ENGINEER, PRIOR TO REPAIR, SECTION LOSS OF TENDONS OR REINFORCING STEEL EXPOSED DURING REMOVALS.

5. APPLY TWO COATS OF PROTECTIVE COATING/BONDING AGENT (PRODUCTS ARE LISTED IN THE TABLE ON THIS SHEET) TO EXPOSED PRESTRESSING STRANDS AND REINFORCING BARS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

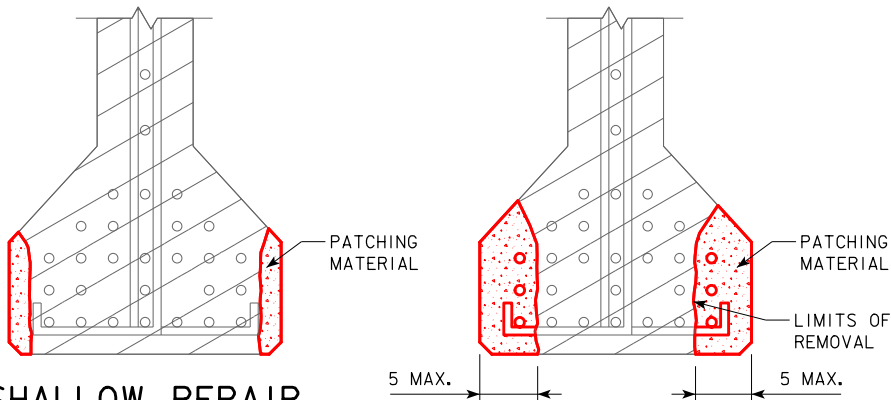
6. APPLY PATCHING MATERIAL. TYPE OF MATERIAL AND APPLICATION OF MATERIAL DEPENDS UPON THE EXTENT OF CONCRETE REMOVAL AND THE TWO TYPES OF REPAIR ARE TO BE AS FOLLOWS:

A. SHALLOW REPAIR:
SHALLOW REPAIR AREAS ARE THOSE WHERE CONCRETE REMOVAL DID NOT RESULT IN REINFORCING BARS OR PRESTRESSING STRANDS BEING EXPOSED FOR MORE THAN HALF THEIR DIAMETERS. PATCHING MATERIAL SHALL BE AS LISTED IN THE TABLE ON THIS SHEET. PATCHING MATERIALS CONTAIN CORROSION INHIBITORS. APPLY PATCHING MATERIAL TO MATCH ORIGINAL BEAM SURFACE. PATCH NEED NOT BE FORMED. FOLLOW MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS FOR MIXING, PLACING AND CURING.

B. REGULAR REPAIR:
REGULAR REPAIR AREAS ARE THOSE WHERE CONCRETE REMOVAL EXTENDED BEHIND THE REINFORCING BARS AND/OR PRESTRESSING STRANDS. THESE AREAS ARE TO BE PLACED USING FORMS TO MATCH THE ORIGINAL BEAM SURFACE. PATCHING MATERIAL SHALL BE ONE OF THE GROUTS AS LISTED IN THE TABLE ON THIS SHEET. PATCHING MATERIALS CONTAIN CORROSION INHIBITORS. FOLLOW MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS FOR MIXING, PLACING AND CURING. FORMS ARE TO REMAIN IN PLACE FOR SEVEN DAYS.

7. SANDBLAST ENDS OF THE BEAMS SHOWN TO NEED REPAIRED ON THIS SHEET ONLY TO THE EXTENT THAT WILL BE ENCASE IN NEW CONCRETE. THE SANDBLASTING SHALL BE A LIGHT BLAST JUST ENOUGH TO EXPOSE THE FINE AGGREGATES. DO NOT SANDBLAST PATCHING MATERIAL. ALL COSTS ASSOCIATED WITH SANDBLASTING ARE TO BE INCLUDED IN THE PRICE BID FOR "REPAIR BEAM ENDS".

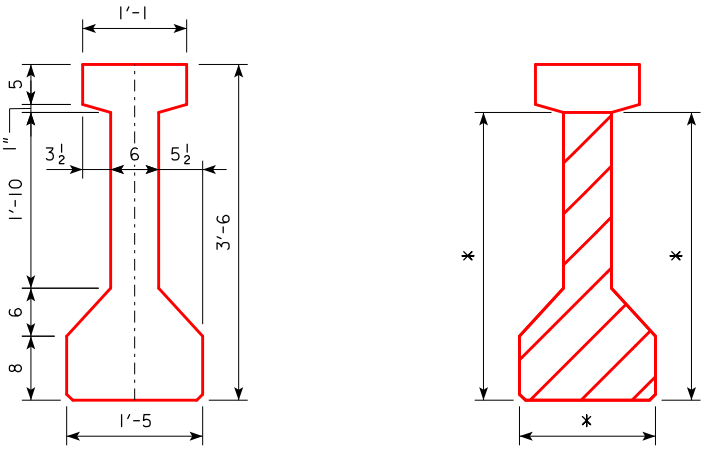
ALL COSTS INCLUDE EQUIPMENT AND MATERIALS REQUIRED TO REPAIR DETERIORATED BEAM ENDS AS DETAILED IN THESE PLANS. THESE DETAILS SHALL BE INCLUDED IN THE PRICE BID FOR "REPAIR BEAM ENDS". THE ENGINEER WILL COUNT EACH END OF EACH BEAM PROPERLY REPAIRED, AND THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE PER EACH REPAIR.



SHALLOW REPAIR AREAS

REGULAR REPAIR AREAS

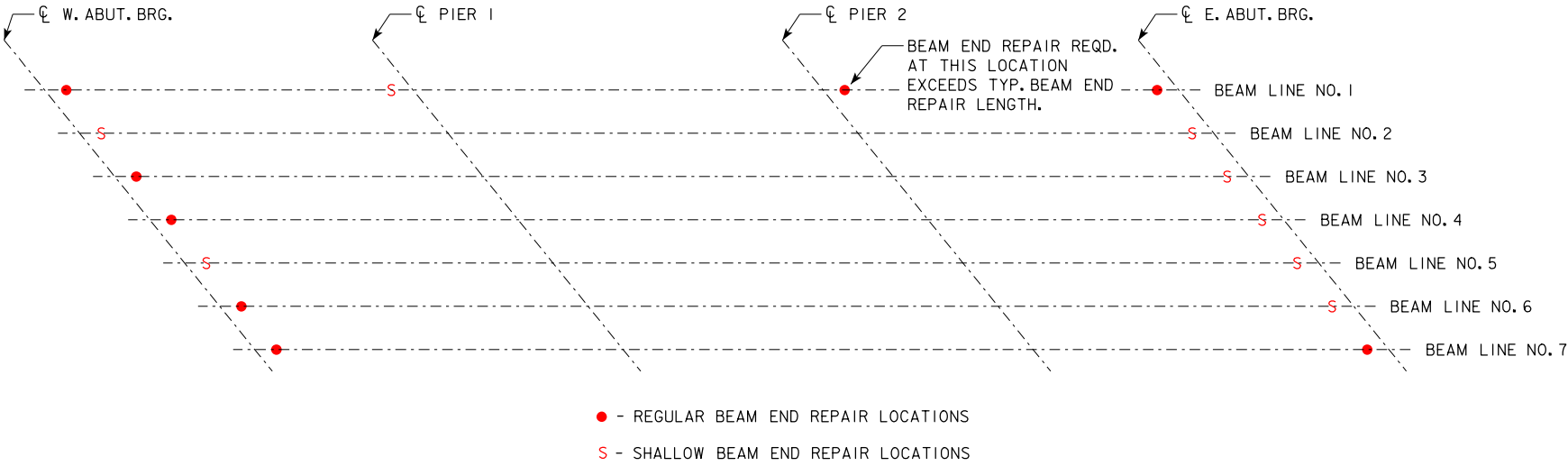
NOTE: THE REPAIR AREAS SHOWN ARE SCHEMATIC ONLY. THE ACTUAL AREA TO BE REPAIRED WILL BE DETERMINED BY THE ENGINEER. FOR LOCATION OF BEAM ENDS TO BE REPAIRED SEE BEAM LAYOUT BELOW.



BEAM SECTION

LIMITS OF SANDBLASTING

* SANDBLAST THE SURFACES OF THE BOTTOM FLANGE AND WEB WITHIN THE LIMITS SHOWN TO 6 FEET OF THE BEAM ENDS.



BEAM LAYOUT



| TABLE OF MANUFACTURERS | | | |
|------------------------|-------------------------|----------------------|---------------------|
| MANUFACTURER | BONDING AGENT | SHALLOW REPAIR | REGULAR REPAIR |
| BASF | MASTEREMACO P 124 | MASTEREMACO N 350 CI | MASTEREMACO S 477CI |
| EUCLID | DURALPREP A.C. | VERTICOAT SUPREME | EUCOREPAIR SCC |
| SIKA | SIKA ARMATEC 110 EPOCEM | SIKATOP 123 PLUS | SIKATOP 111 PLUS |

DESIGN FOR 25° SKEW

212'-6 x 33'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

70'-7 1/2' END SPANS 71'-3' INTERIOR SPAN

BEAM END REPAIR DTLS. & NOTES

STA. 655+00 (CL 1A-141) OCTOBER, 2019

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

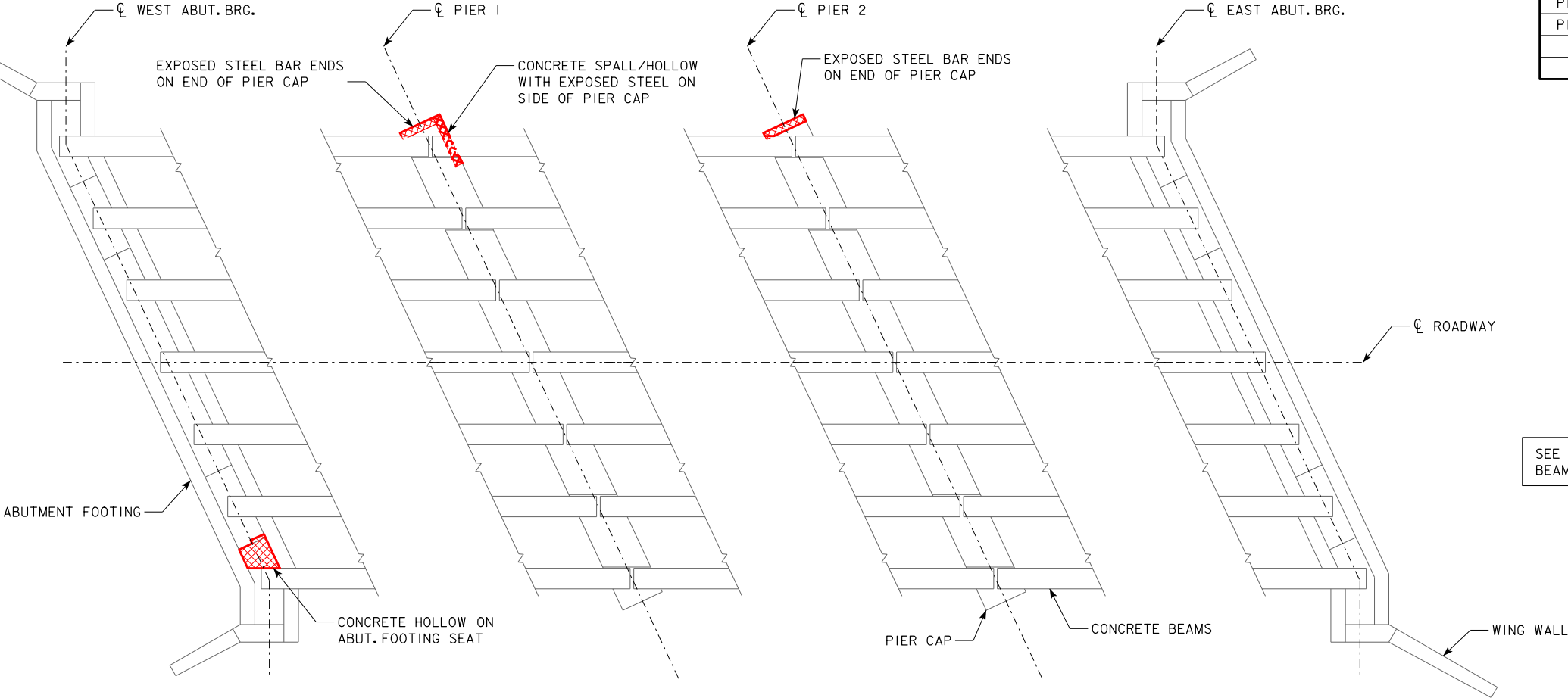
DESIGN SHEET NO. 7 OF 25 FILE NO. 31587 DESIGN NO. 220

ENGLISHREPAIRRETROFITBRIDGES.DGN 1055 - THIS SHEET ISSUED 03-01-2017.



CONCRETE REPAIR QUANTITIES



| LOCATION | TYPE | |
|-----------------|---------|---------|
| | SHALLOW | REGULAR |
| WEST ABUTMENT | | 4.0 |
| PIER 1 | | 11.0 |
| PIER 2 | | 3.0 |
| TOTAL (SQ. FT.) | | 18.0 |



SEE DESIGN SHEET 7 FOR
BEAM END REPAIR DETAILS.

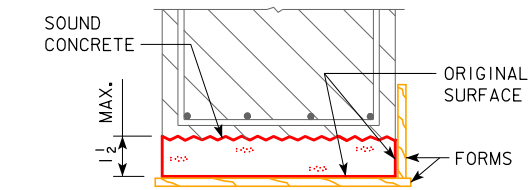
CONCRETE REPAIR PLAN

LEGEND

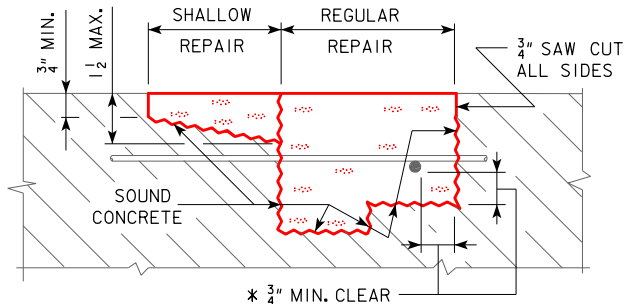
| | |
|---|--------------------------|
|  | INDICATES SHALLOW REPAIR |
|  | INDICATES REGULAR REPAIR |

DESIGN FOR 25° SKEW
212'-6 x 33'-8 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE
70'-7 1/2' END SPANS 71'-3' INTERIOR SPAN
CONCRETE REPAIR DETAILS
STA. 655+00 (CL 1A-141) OCTOBER, 2019
WOODBURY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 8 OF 25 FILE NO. 31587 DESIGN NO. 220

REVISED 10-14 - DELETED ALL REFERENCES TO GROUT. SECTION 2426 COVERS THIS REQUIREMENT AND DOESN'T NEED TO STATED ON THE PLANS.
ENGLISHREPAIRRETR011BRIDGES.DGN 1045 - THIS SHEET REDRAWN 9-27-90.

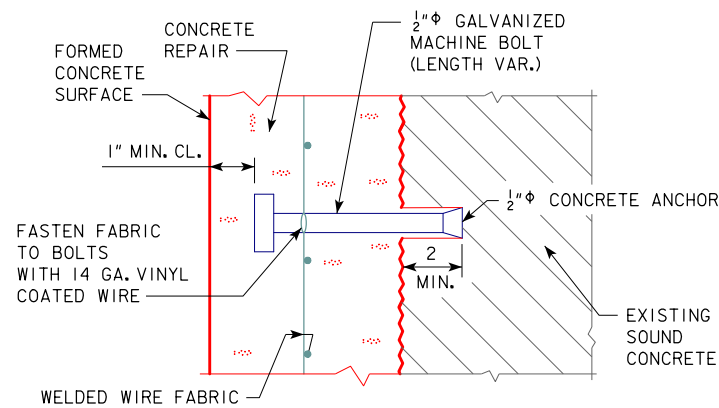


SHALLOW REPAIR
BOTTOM SURFACE



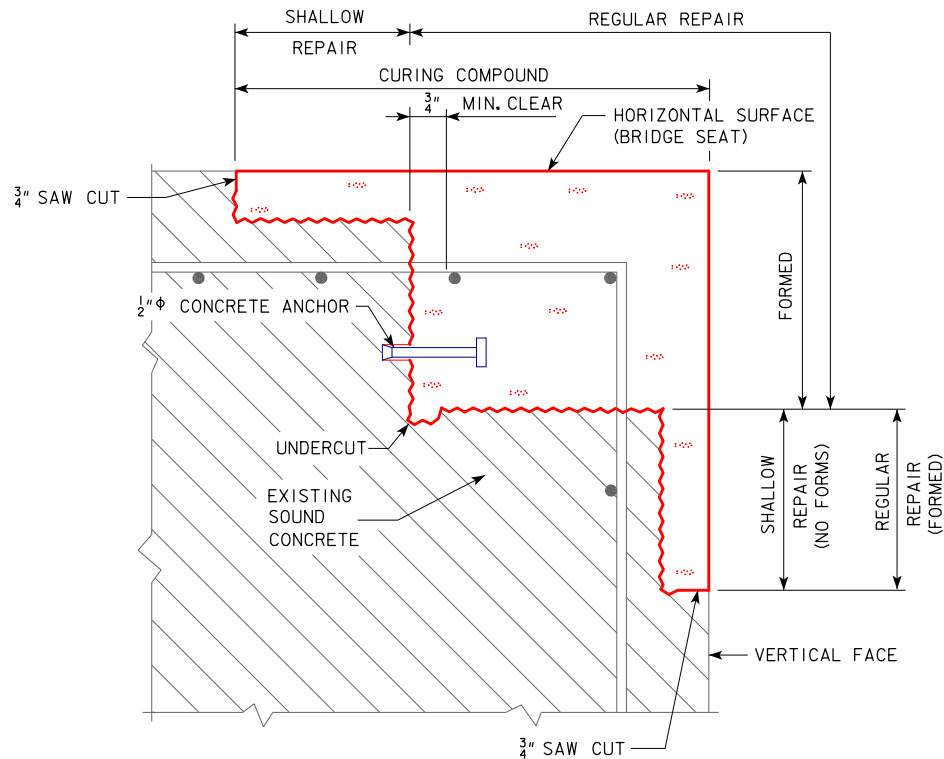
REPAIR DEFINITION

* INDICATES CLEARANCE FOR AN UN-BONDED REBAR.

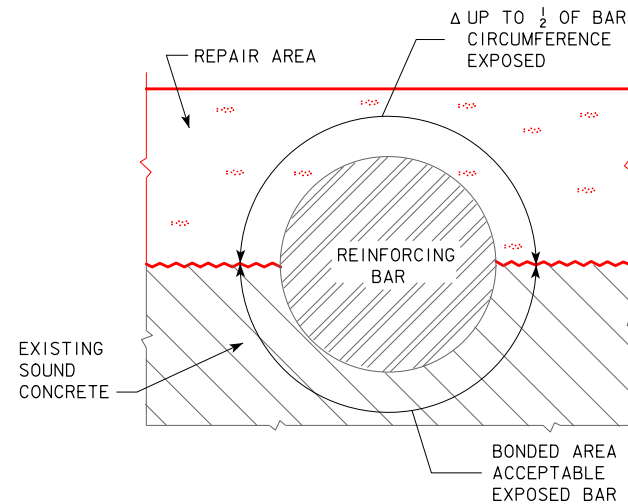


ANCHOR DETAIL

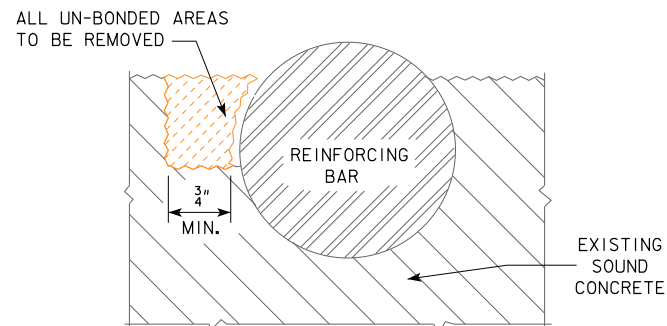
FOR SPACING AND USE OF CONCRETE ANCHORS
AND WWF SEE THE REPAIR NOTES.



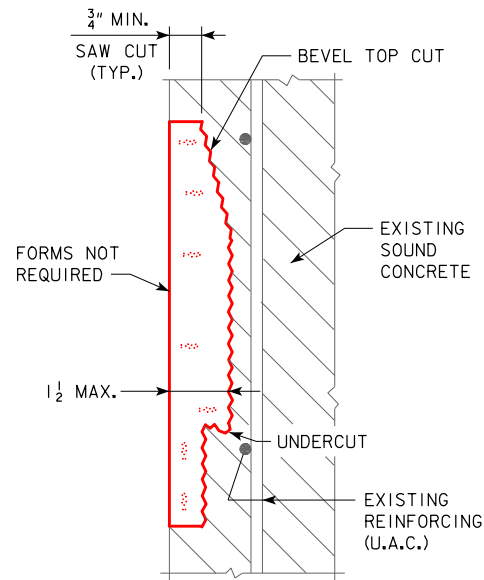
CORNER REPAIR



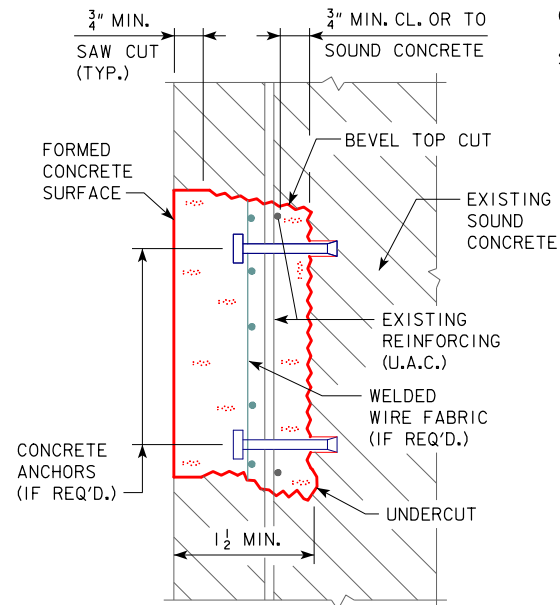
Δ IF MORE THAN 1/2 OF THE REBAR IS EXPOSED IT
SHALL BE TREATED AS AN UN-BONDED REBAR.



CONCRETE REMOVAL
ADJACENT TO REINFORCING



SHALLOW REPAIR
VERTICAL FACE



REGULAR REPAIR
VERTICAL FACE

REPAIR NOTES:

THE SPALLED AND HOLLOW AREAS OF THIS BRIDGE AS NOTED AND SHOWN IN THESE PLANS SHALL BE REPAIRED AS FOLLOWS:

ALL THE COSTS OF EQUIPMENT AND MATERIALS REQUIRED TO REPAIR THE SPALLED AND HOLLOW AREAS OF THIS BRIDGE SHALL BE INCLUDED IN THE PRICE BID FOR "CONCRETE REPAIR".

THE PRICE BID FOR "CONCRETE REPAIR" SHALL INCLUDE THE COST OF ALL CONCRETE ANCHORS AND WELDED WIRE FABRIC REQUIRED BY THE PLANS.

THE ENGINEER SHALL DETERMINE AND OUTLINE BY VISUAL AND AUDIBLE INSPECTION THE ACTUAL AREAS OF THE CONCRETE REPAIRS. THE CONTRACTOR SHALL BE PAID FOR THE ACTUAL AMOUNT OF REPAIRS MADE ON A SQUARE FOOT BASIS BASED ON THE PRICE BID PER SQUARE FOOT.

ALL EXISTING REINFORCING BARS THAT ARE EXPOSED BY CONCRETE REMOVAL SHALL BE CLEANED AND CAREFULLY INCORPORATED INTO THE NEW WORK, EXCEPT BADLY DETERIORATED EXISTING REINFORCING WHICH SHALL BE REPLACED AS DIRECTED BY THE ENGINEER.

THE CONCRETE ANCHORS REQUIRED SHALL HAVE A MINIMUM PULL OUT OF 5000 LBS. BASED ON 4000 PSI CONCRETE. AN ANCHOR MEETING THE REQUIREMENTS OF IOWA D.O.T. MATERIALS I.M. 453.09 AND THE PULL OUT LOAD ABOVE IS REQUIRED. THE ANCHORS SHALL BE GALVANIZED AND SHALL BE INSTALLED ACCORDING TO RECOMMENDATIONS OF THE MANUFACTURER. THE COST OF FURNISHING AND INSTALLING THE CONCRETE ANCHORS SHALL BE INCLUDED IN THE PRICE BID FOR "CONCRETE REPAIR".

THE WELDED WIRE FABRIC SHALL BE ASTM A185 AND GALVANIZED AS PER ASTM A-641. THE WWF WIRES SHALL BE SPACED 3 x 3 OR 4 x 4 AND THE WIRES SHALL HAVE A NOMINAL AREA OF 0.014 TO 0.029 SQUARE INCHES INCLUSIVE, EXAMPLE "WWF 3 x 3 - W1.4 x W2.9".

WHERE REINFORCEMENT HAS BEEN EXPOSED AND CLEARANCE AROUND THE PERIPHERY OF THE EXISTING BAR IS PROVIDED NO SUPPLEMENTAL REINFORCING IS REQUIRED, EXCEPT WHERE EXISTING REINFORCEMENT DENSITY AND PATTERN ARE SUCH THAT INDIVIDUAL OPEN SPACES BETWEEN BARS ARE OF 1.5 SQUARE FOOT OR LARGER. FOR THIS CONDITION 1/2 CONCRETE ANCHORS AND WELDED WIRE FABRIC SHALL BE INSTALLED AT THE RATE OF ONE CONCRETE ANCHOR WITH WWF PER EACH 1.5 SQUARE FEET OF AREA WITHIN EACH OPEN SPACE.

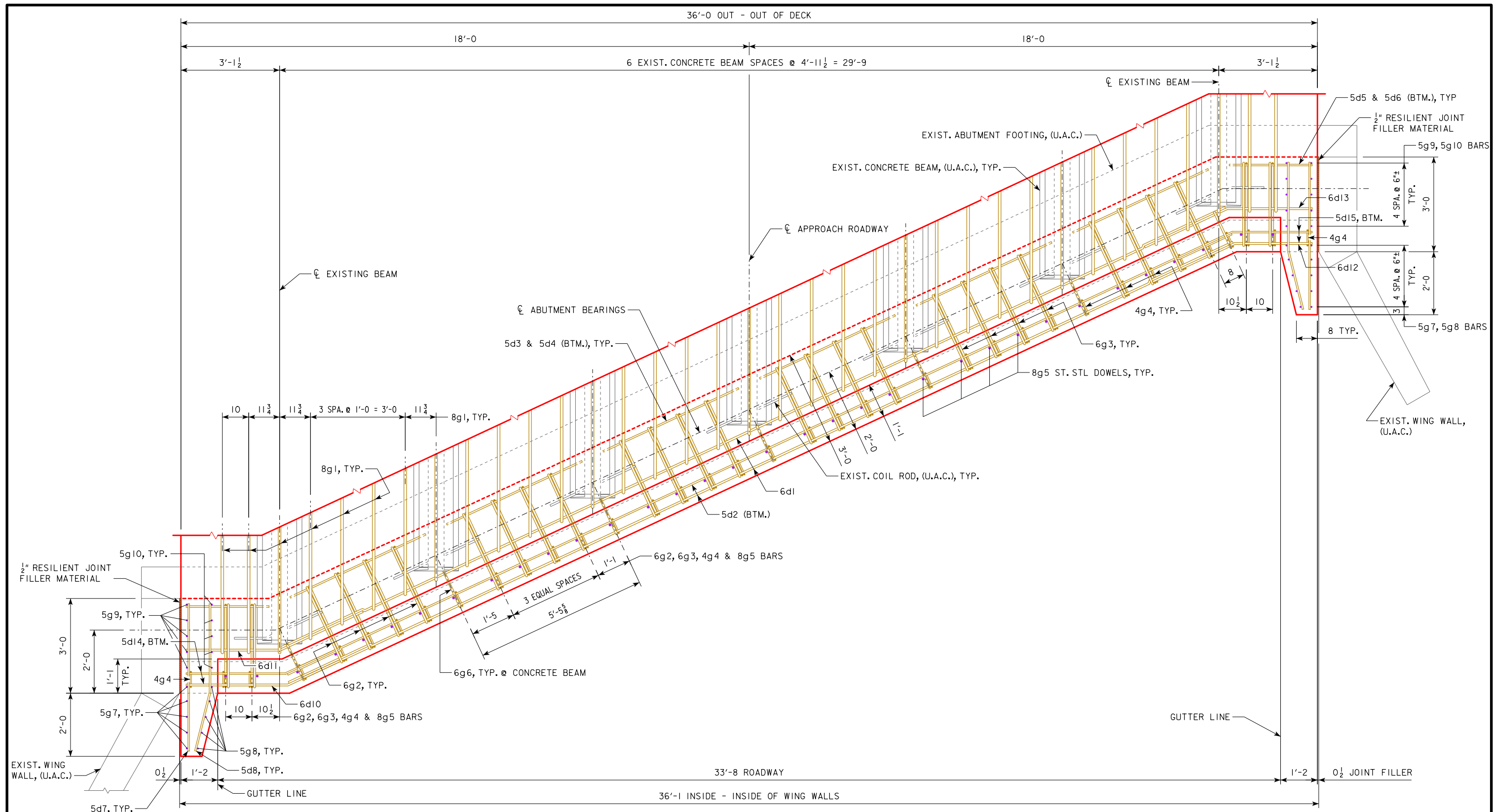
REPAIRING THE STRUCTURAL CONCRETE SHALL BE IN ACCORDANCE WITH SECTION 2426, OF THE STANDARD SPECIFICATIONS.

CONCRETE PLACEMENT QUANTITIES

| MARK | TYPE | UNITS | QUANTITY |
|-----------------|----------------|---------|----------|
| ① | SHALLOW REPAIR | SQ. FT. | - |
| ② | REGULAR REPAIR | SQ. FT. | 18.0 |
| TOTAL (SQ. FT.) | | | 18.0 |

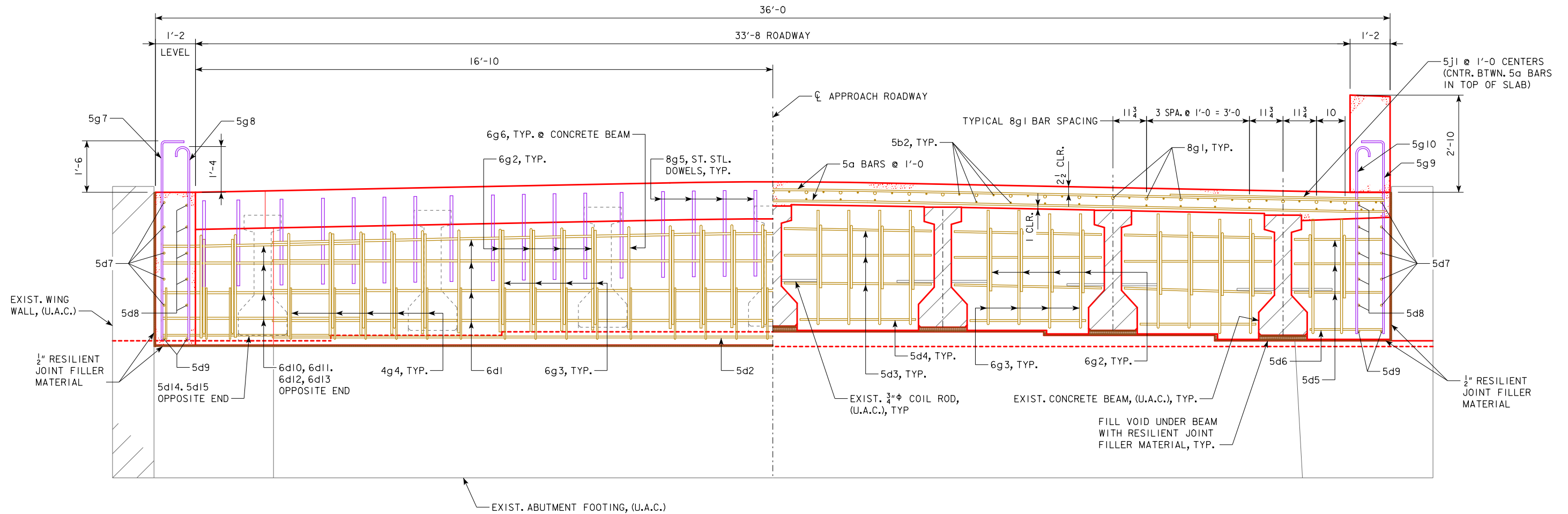
SEE DESIGN SHEET 8 FOR SUMMARY
OF CONCRETE REPAIR QUANTITIES.

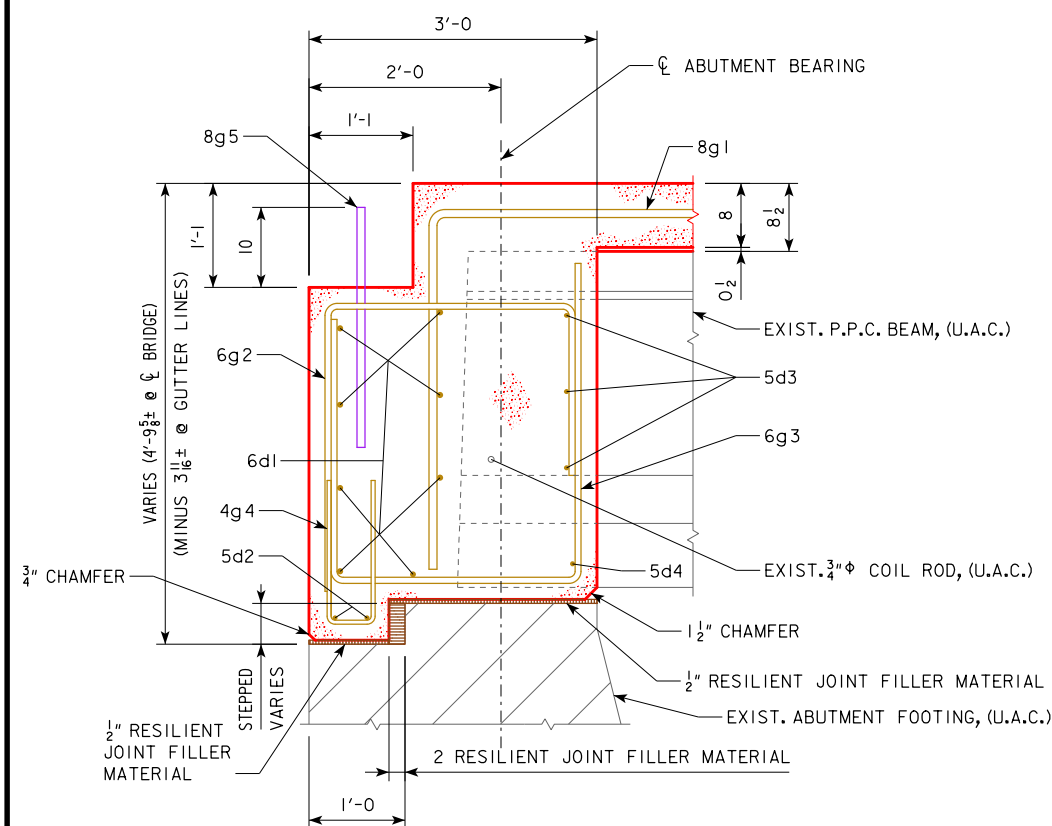
DESIGN FOR 25° SKEW
212'-6 x 33'-8 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE
70'-7 1/2 END SPANS 71'-3 INTERIOR SPAN
CONCRETE REPAIRS
STA. 655+00 (± 1A-141) OCTOBER, 2019
WOODBURY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 9 OF 25 FILE NO. 31587 DESIGN NO. 220



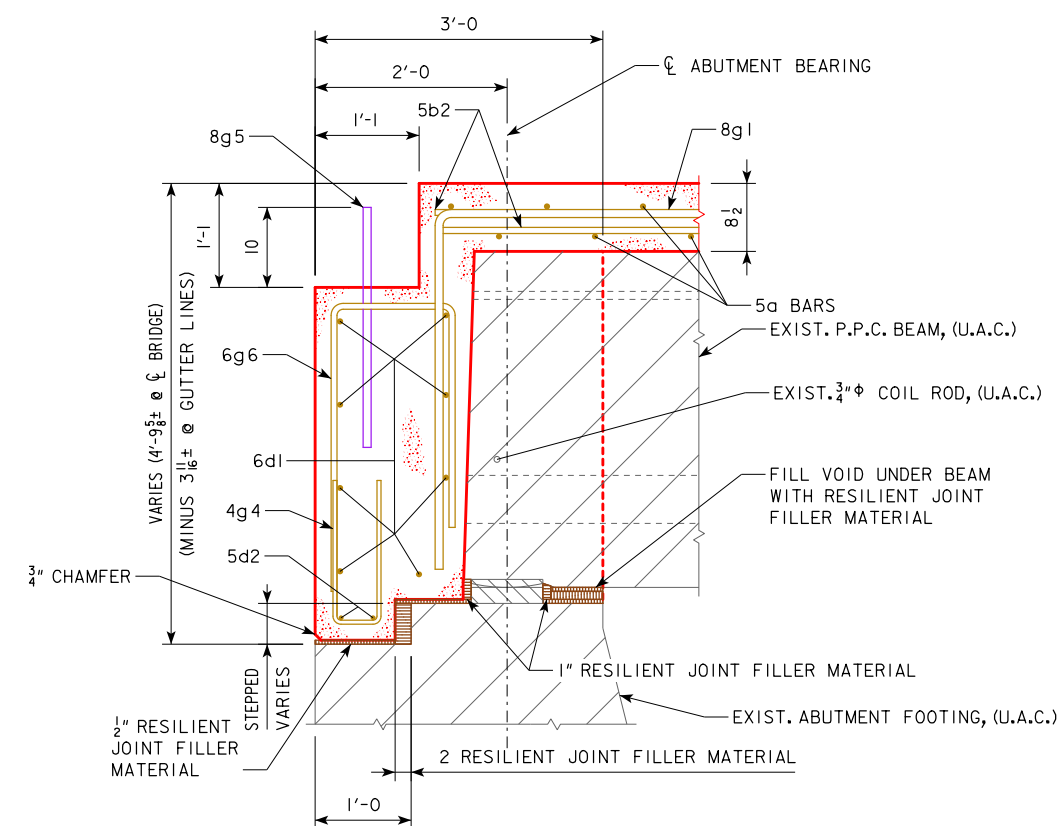
ABUTMENT PLAN
(END SECTION/BARRIER RAIL NOT SHOWN FOR CLARITY,
SLAB REINFORCEMENT NOT SHOWN FOR CLARITY)

| | |
|---|--|
| DESIGN FOR 25° SKEW 212'-6 x 33'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE 70'-7½ END SPANS 71'-3 INTERIOR SPAN ABUTMENT DETAILS STA. 655+00 (CL 1A-141) OCTOBER, 2019 WOODBURY COUNTY IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION DESIGN SHEET NO. 10 OF 25 FILE NO. 31587 DESIGN NO. 220 | |
|---|--|

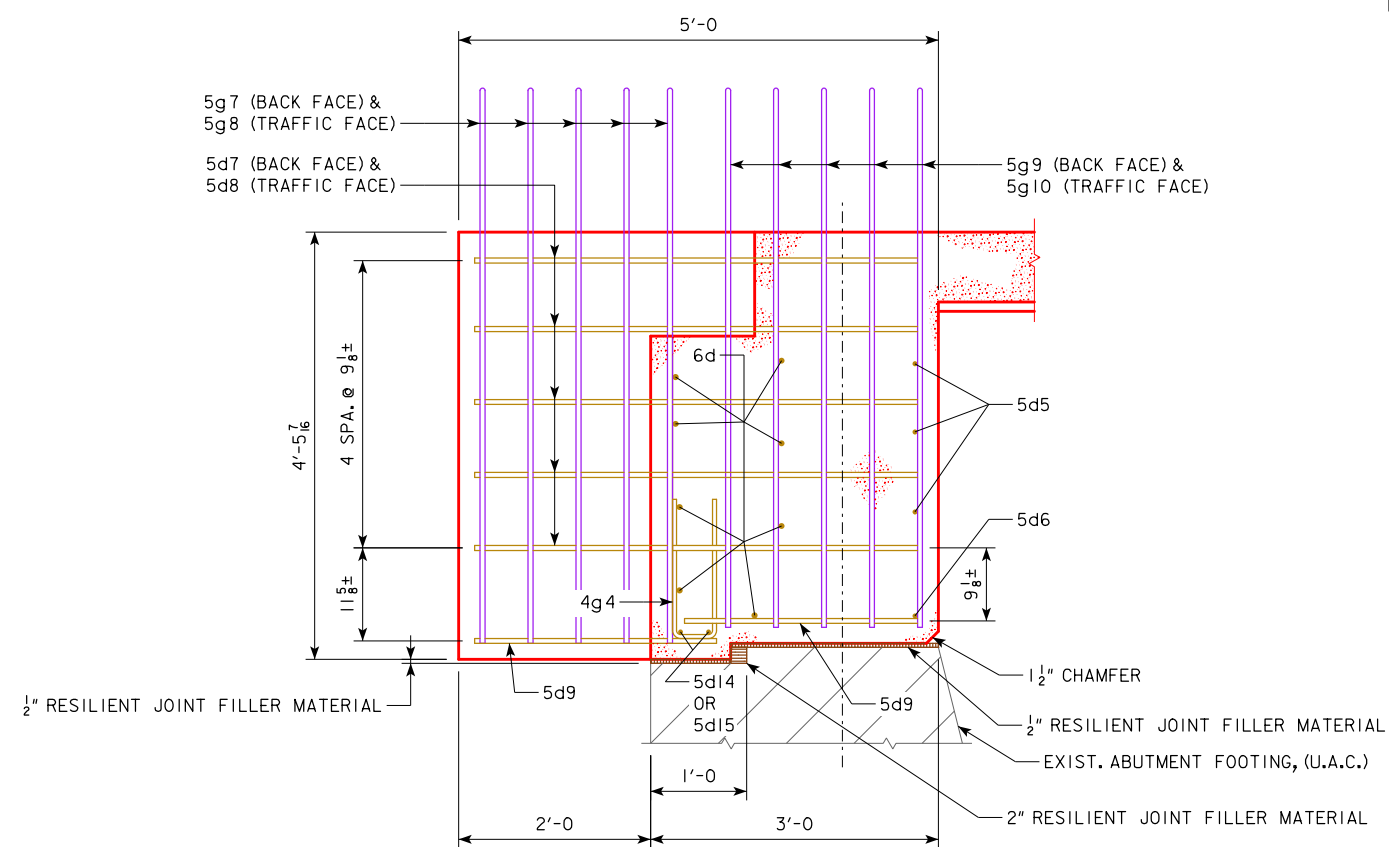




**TYP. SECTION @ ABUTMENT
BETWEEN BEAMS**
(DECK SLAB STEEL NOT SHOWN FOR CLARITY)

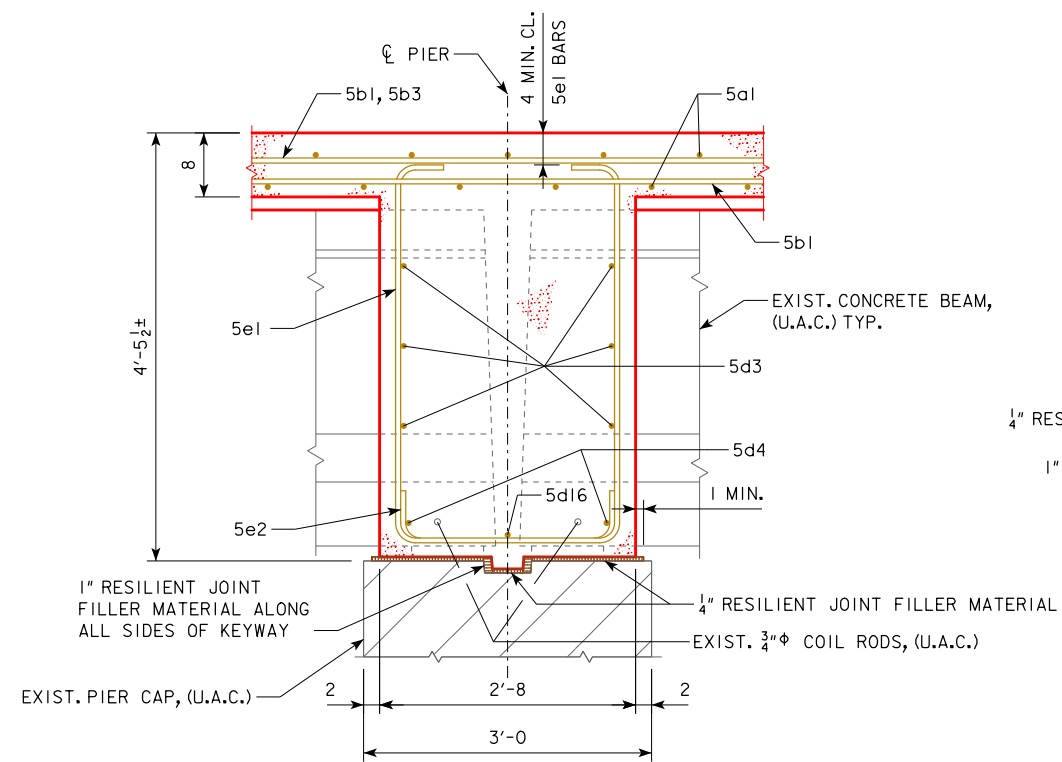


**TYP. SECTION @ ABUTMENT
@ CL OF BEAMS**

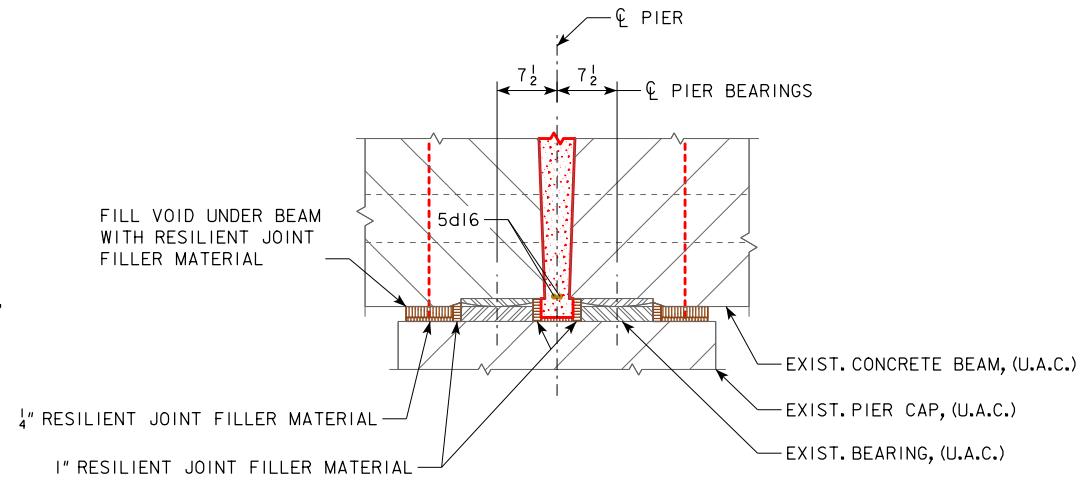


SECTION NEAR CURB
(DECK SLAB STEEL NOT SHOWN FOR CLARITY)

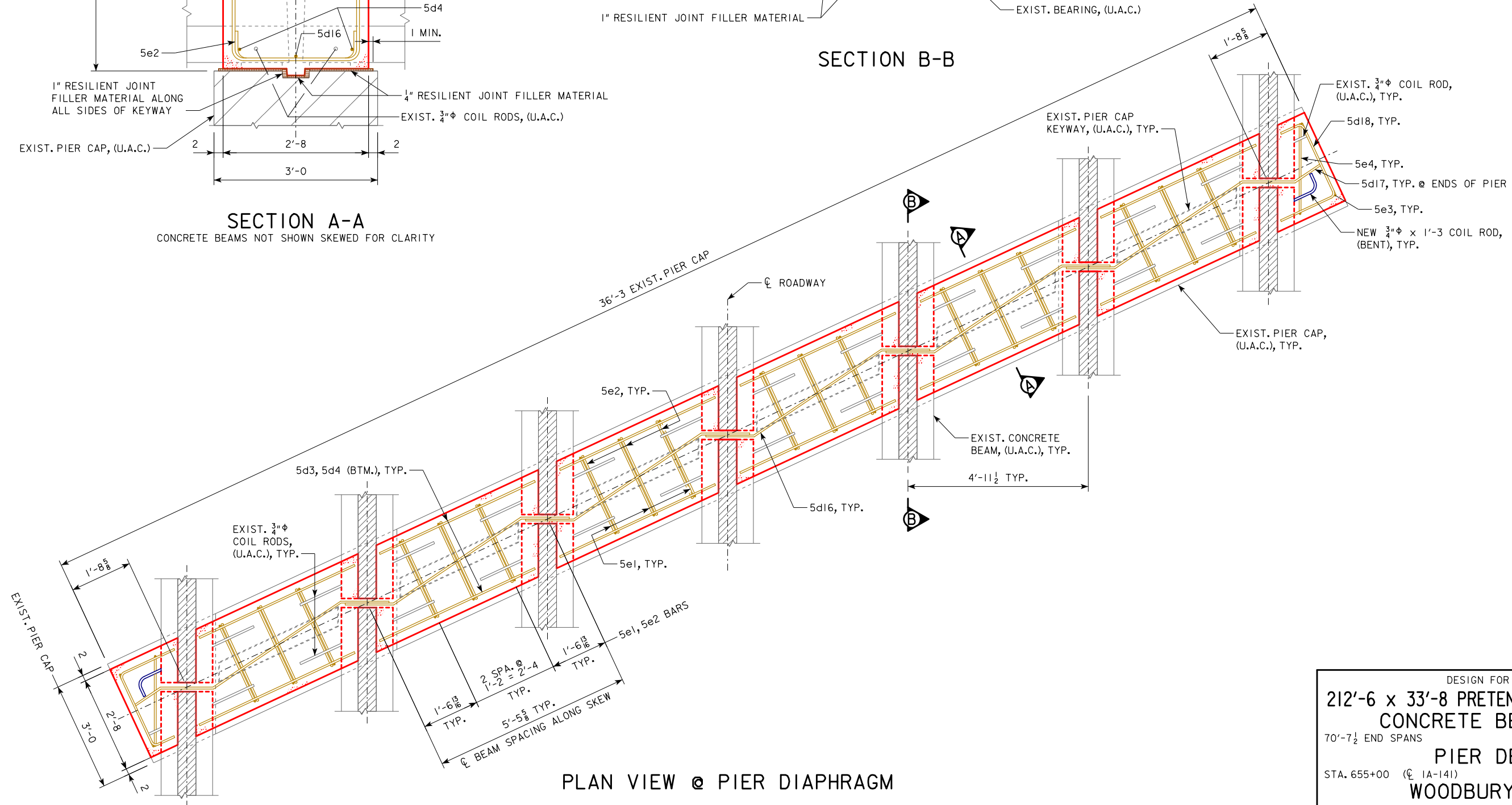
DESIGN FOR 25° SKEW
**212'-6 x 33'-8 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE**
 70'-7 1/2' END SPANS 71'-3' INTERIOR SPAN
ABUTMENT DETAILS
 STA. 655+00 (CL 1A-141) OCTOBER, 2019
WOODBURY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 12 OF 25 FILE NO. 31587 DESIGN NO. 220



SECTION A-A
CONCRETE BEAMS NOT SHOWN SKEWED FOR CLARITY

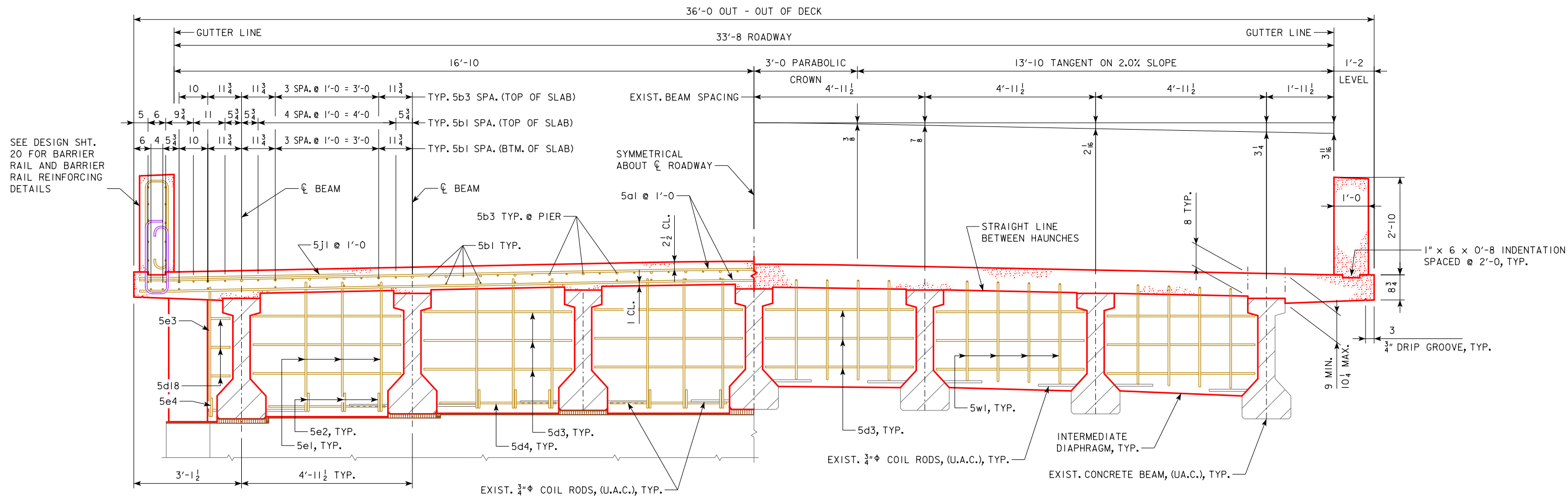


SECTION B-B



PLAN VIEW @ PIER DIAPHRAGM

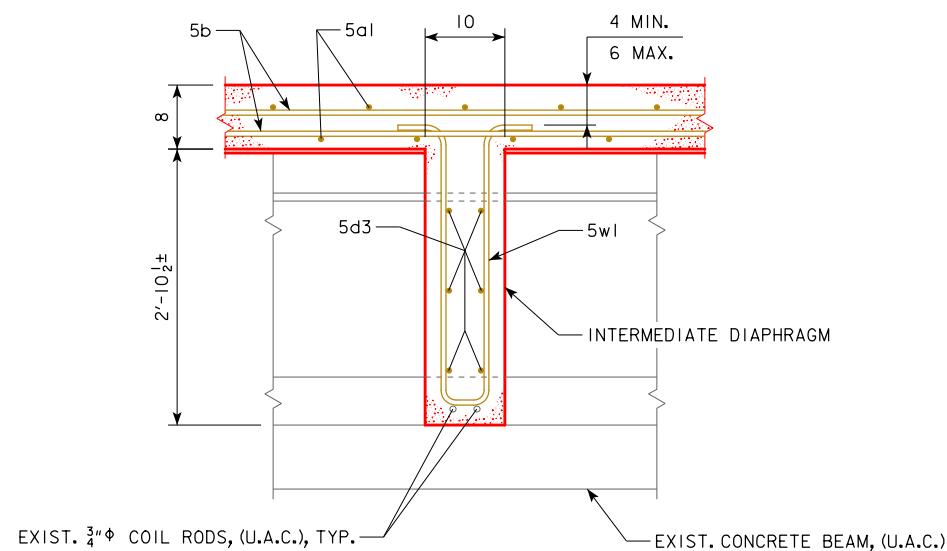
DESIGN FOR 25° SKEW
212'-6 x 33'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
 70'-7 1/2' END SPANS 71'-3' INTERIOR SPAN
PIER DETAILS
 STA. 655+00 (CL 1A-141) OCTOBER, 2019
WOODBURY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 13 OF 25 FILE NO. 31587 DESIGN NO. 220



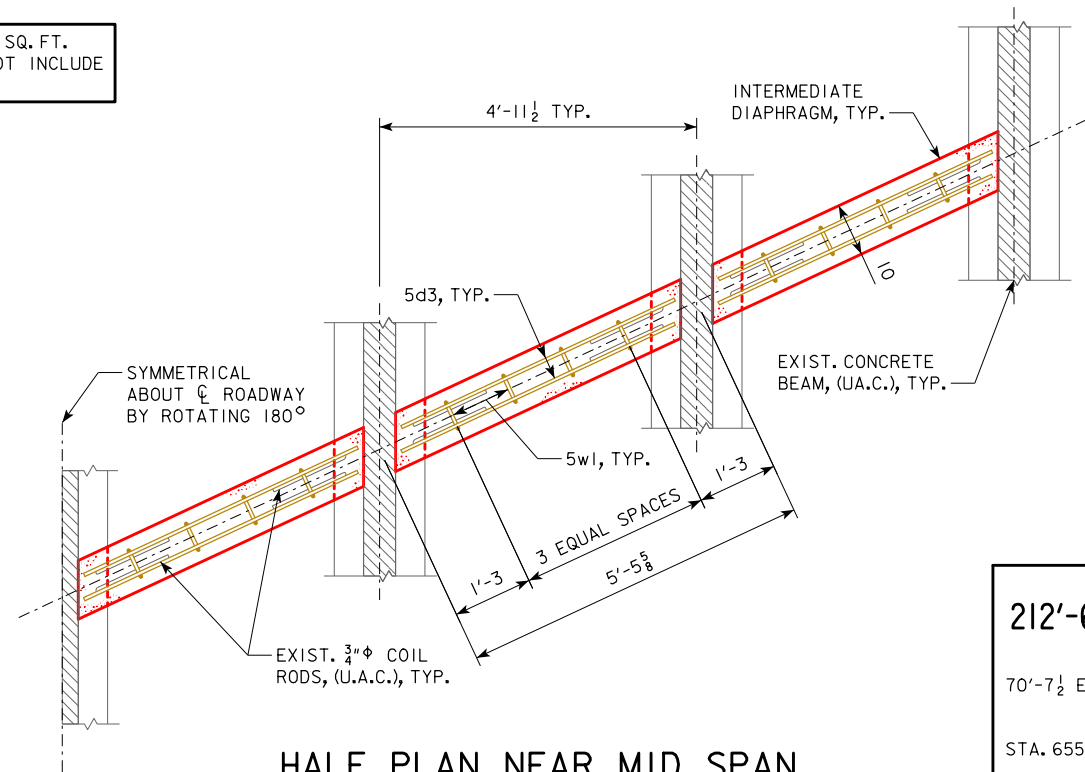
HALF SECTION NEAR PIER

HALF SECTION NEAR MID SPAN
(SLAB AND BARRIER RAIL STEEL NOT SHOWN FOR CLARITY)

SLAB AREA = 24.65 SQ. FT.
SLAB AREA DOES NOT INCLUDE THE HAUNCH.



TYP. SECTION @ INTERMEDIATE DIAPHRAGM



HALF PLAN NEAR MID SPAN

DESIGN FOR 25° SKEW

212'-6 x 33'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

70'-7 1/2" END SPANS 71'-3" INTERIOR SPAN

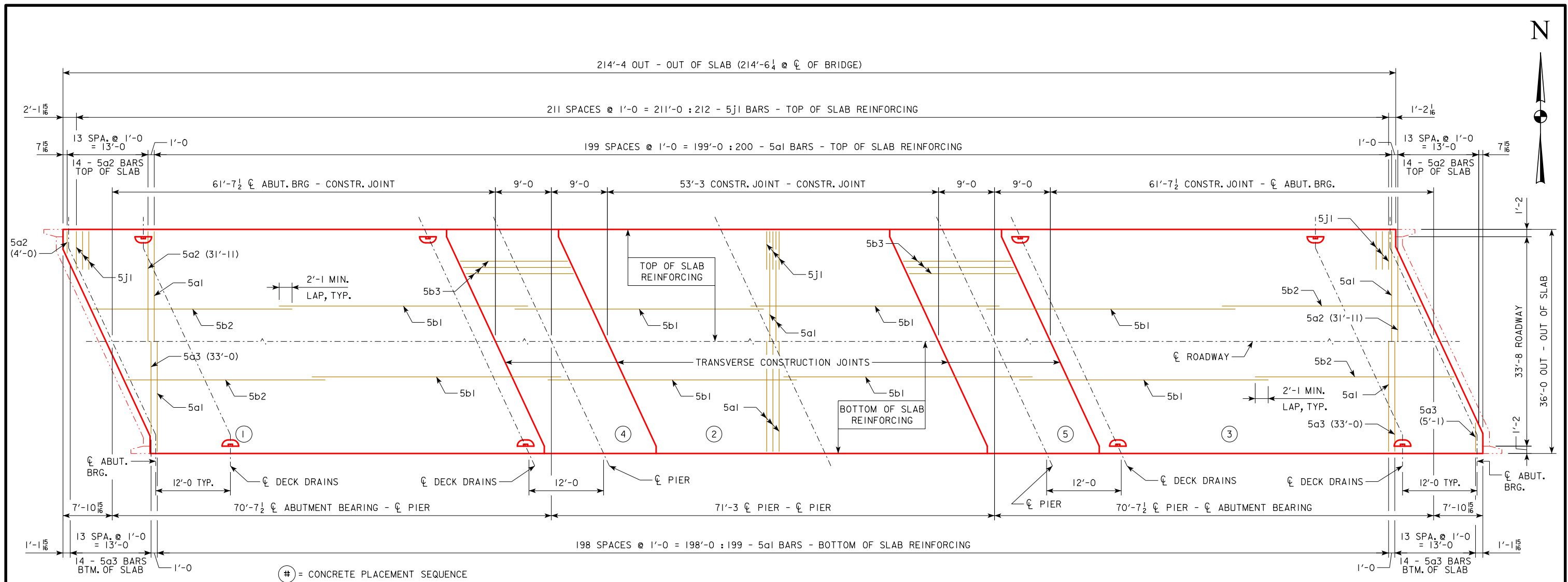
PIER DETAILS

STA. 655+00 (CL 1A-141) OCTOBER, 2019

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 14 OF 25 FILE NO. 31587 DESIGN NO. 220



SLAB LAYOUT

NOTES:

CONCRETE DECK SLAB SHALL BE PLACED IN SECTIONS AND SEQUENCES INDICATED. ALTERNATE PROCEDURES FOR PLACING SLAB 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.

DESIGN FOR 25° SKEW

212'-6" x 33'-8" PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

70'-7½" END SPANS 71'-3" INTERIOR SPAN

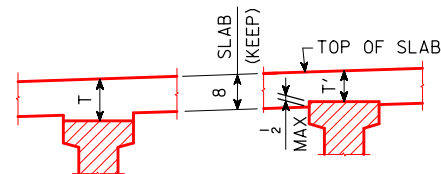
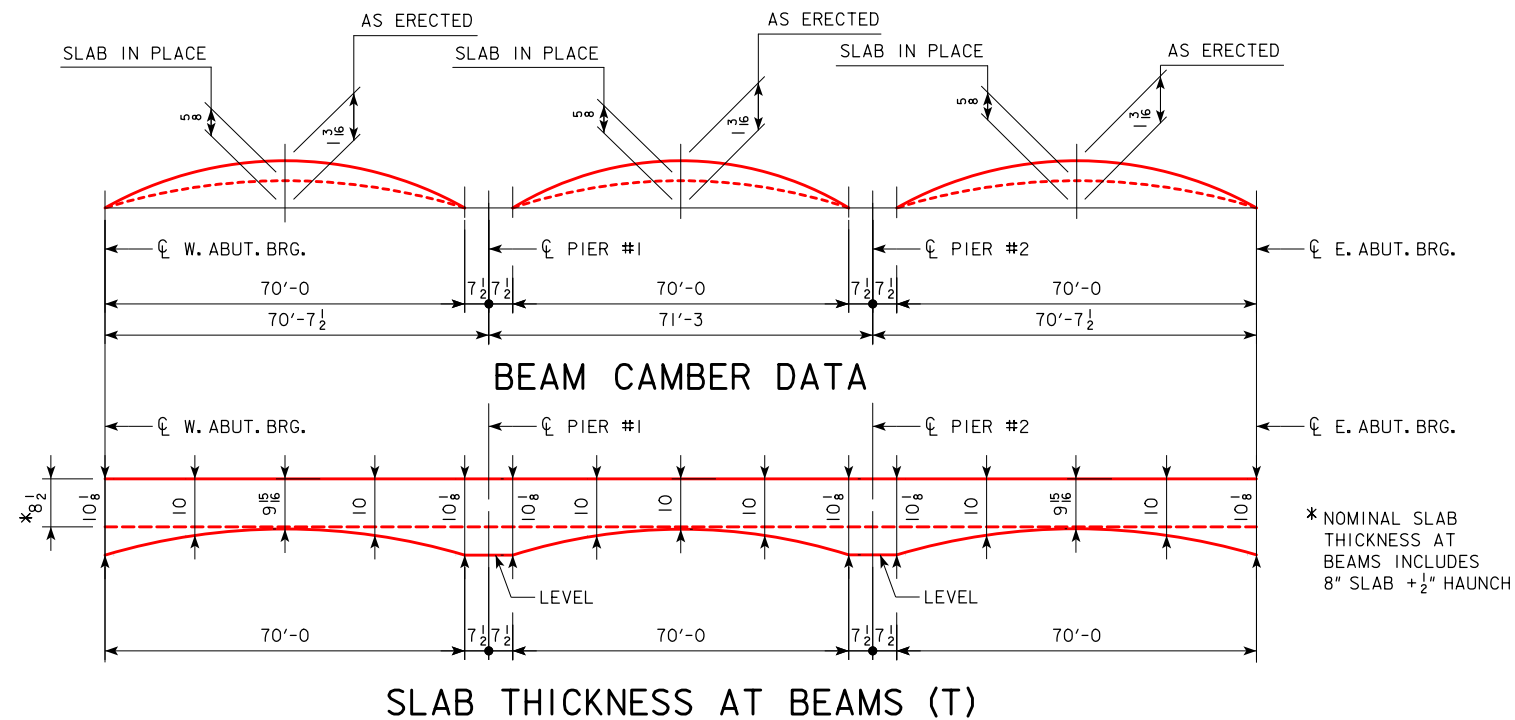
SLAB DETAILS

STA. 655+00 (C 1A-141) OCTOBER, 2019

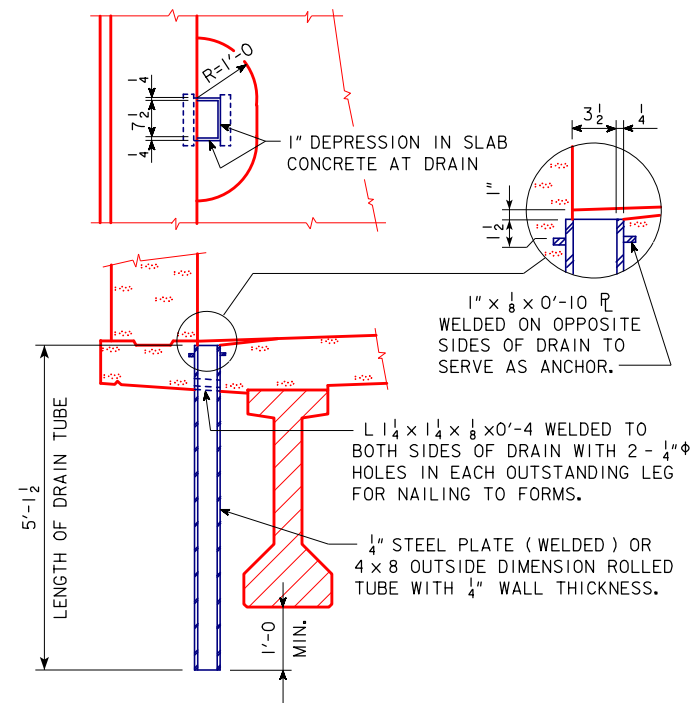
WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 15 OF 25 FILE NO. 31587 DESIGN NO. 220

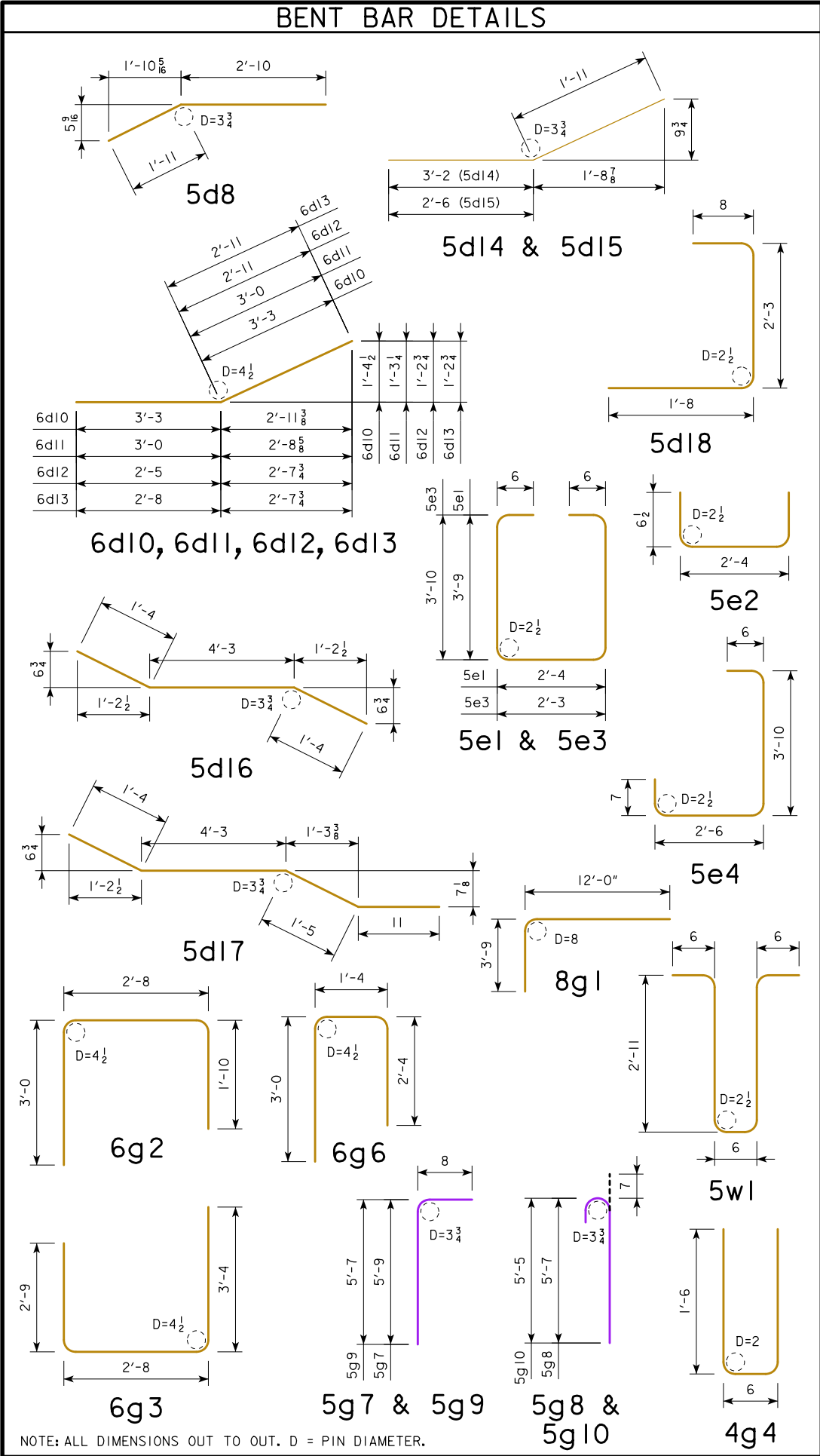


NOTE: THE SLAB THICKNESS (T) AT BEAMS IS BASED ON THE ANTICIPATED BEAM CAMBER AND DEFLECTIONS. THESE VALUES ARE USED BY THE DESIGNER TO SET BEAM ELEVATIONS AND ESTIMATE CONCRETE QUANTITIES. REFER TO THE HAUNCH DATA DETAILS SHEET FOR ADDITIONAL INFORMATION TO AID THE CONTRACTOR IN SETTING THE FIELD HAUNCHES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



NOTE :
DRAINS ARE TO BE GALVANIZED. 8 DRAINS REQUIRED.
SEE DESIGN SHEET 15 FOR LOCATION OF DRAINS.
WEIGHT OF DRAINS IS INCLUDED IN THE QUANTITY FOR "STRUCTURAL STEEL".
WEIGHT IS BASED ON ROLLED TUBE.
WEIGHT OF ONE FLOOR DRAIN = 99 LBS..

DESIGN FOR 25° SKEW
212'-6 x 33'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
70'-7 1/2' END SPANS 71'-3' INTERIOR SPAN
SUPERSTRUCTURE DETAILS
STA. 655+00 (CL 1A-141) OCTOBER, 2019
WOODBURY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 16 OF 25 FILE NO. 31587 DESIGN NO. 220



| STAINLESS STEEL REINF. BAR LIST TWO ABUTMENTS | | | | | |
|--|----------------------------|-------|-----|--------|--------|
| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
| 8g5 | PAVING NOTCH, DOWEL | | 68 | 2'-6 | 454 |
| 5g7 | ABUT., VERT. @ END SECTION | | 20 | 6'-5 | 134 |
| 5g8 | ABUT., VERT. @ END SECTION | | 20 | 6'-2 | 129 |
| 5g9 | ABUT., VERT. @ END SECTION | | 20 | 6'-3 | 130 |
| 5g10 | ABUT., VERT. @ END SECTION | | 20 | 6'-0 | 125 |
| TOTAL (LBS.) | | | | | 972 |

| CONCRETE PLACEMENT SUMMARY | |
|---|-------|
| SECTION | TOTAL |
| SECTION 1, SLAB, WEST ABUTMENT & MID SPAN DIAPHRAGM | 75.6 |
| SECTION 2, SLAB & MID SPAN DIAPHRAGM | 52.2 |
| SECTION 3, SLAB, EAST ABUTMENT & MID SPAN DIAPHRAGM | 75.6 |
| SECTION 4, SLAB & PIER DIAPHRAGM | 29.4 |
| SECTION 5, SLAB & PIER DIAPHRAGM | 29.4 |
| | |
| TOTAL (CU. YDS.) | 262.2 |

NOTES:

THE FLOOR SLAB AS SHOWN INCLUDES 1/2" INTEGRAL WEARING SURFACE.

THE PIER AND ABUTMENT DIAPHRAGM CONCRETE IS TO BE PLACED MONOLITHICALLY WITH THE FLOOR SLAB.

FORMS FOR THE SLAB 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 SLAB 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 2 1/2" CLEAR BELOW TOP OF SLAB. BOTTOM TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 1" CLEAR ABOVE BOTTOM OF SLAB.

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 SLAB BOLSTERS SPACED 4'-0 APART. I.M. 451.01 REQUIREMENTS SHALL APPLY FOR BAR CHAIRS, BAR HIGH CHAIRS, AND SLAB BOLSTERS.

TRANSVERSE SLAB 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.

STAINLESS STEEL REINFORCING BAR SHALL BE DEFORMED BAR, GRADE 60, MEETING THE REQUIREMENTS OF MATERIALS I.M. 452.

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.

| EPOXY COATED REINF. BAR LIST TWO ABUTMENTS & SUPERSTRUCTURE | | | | | |
|--|--------------------------------------|-------|-----|--------|--------|
| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
| 5a1 | SLAB, TRANSV., TOP & BTM. | | 399 | 35'-8 | 14843 |
| 5a2 | SLAB, TRANSV., TOP, ENDS | | 28 | VARIES | 524 |
| 5a3 | SLAB, TRANSV., BTM., ENDS | | 28 | VARIES | 556 |
| 5b1 | SLAB, LONGIT., TOP & BTM. | | 280 | 40'-0 | 11682 |
| 5b2 | SLAB, LONGIT., TOP & BTM., ENDS | | 140 | 32'-4 | 4721 |
| 5b3 | SLAB, LONGIT., TOP @ PIERS | | 70 | 17'-8 | 1290 |
| 6d1 | ABUT. DIAPH., LONGIT. | | 16 | 33'-0 | 793 |
| 5d2 | ABUT. DIAPH., LONGIT. | | 4 | 33'-0 | 138 |
| 5d3 | PIER, ABUT. & INTER. DIAPH., LONGIT. | | 216 | 4'-8 | 1051 |
| 5d4 | PIER & ABUT. DIAPH., LONGIT., BTM. | | 36 | 3'-8 | 138 |
| 5d5 | ABUT. DIAPH., LONGIT., ENDS | | 12 | 2'-7 | 32 |
| 5d6 | ABUT. DIAPH., LONGIT., ENDS, BTM. | | 4 | 2'-2 | 9 |
| 5d7 | ABUT. DIAPH., @ END SECTION | | 20 | 4'-8 | 97 |
| 5d8 | ABUT. DIAPH., @ END SECTION | | 20 | 4'-9 | 99 |
| 5d9 | ABUT. DIAPH., @ END SECTION, BTM. | | 16 | 2'-6 | 42 |
| 6d10 | ABUT. DIAPH., LONGIT., ENDS | | 8 | 6'-6 | 78 |
| 6d11 | ABUT. DIAPH., LONGIT., ENDS | | 8 | 6'-0 | 72 |
| 6d12 | ABUT. DIAPH., LONGIT., ENDS | | 8 | 5'-4 | 64 |
| 6d13 | ABUT. DIAPH., LONGIT., ENDS | | 8 | 5'-7 | 67 |
| 5d14 | ABUT. DIAPH., LONGIT., ENDS | | 4 | 5'-1 | 21 |
| 5d15 | ABUT. DIAPH., LONGIT., ENDS | | 4 | 4'-5 | 18 |
| 5d16 | PIER DIAPH., LONGIT. | | 8 | 6'-11 | 58 |
| 5d17 | PIER DIAPH., LONGIT., ENDS | | 4 | 7'-11 | 33 |
| 5d18 | PIER DIAPH., TIE., @ ENDS | | 12 | 4'-7 | 57 |
| 5e1 | PIER DIAPH., HOOP | | 36 | 10'-10 | 407 |
| 5e2 | PIER DIAPH., TIE | | 36 | 3'-5 | 128 |
| 5e3 | PIER DIAPH., HOOP, ENDS | | 4 | 10'-11 | 46 |
| 5e4 | PIER DIAPH., TIE, ENDS | | 4 | 7'-5 | 31 |
| 8g1 | ABUT. DIAPH., VERT. | | 70 | 15'-9 | 2944 |
| 6g2 | ABUT. DIAPH., VERT. | | 56 | 7'-6 | 631 |
| 6g3 | ABUT. DIAPH., VERT. | | 56 | 8'-9 | 736 |
| 4g4 | ABUT. DIAPH., VERT., NOTCH | | 74 | 3'-6 | 173 |
| 6g6 | ABUT. DIAPH., VERT. @ BEAM | | 14 | 6'-8 | 140 |
| 5j1 | SLAB, TRANSV., TOP @ GUTTERLINE | | 424 | 6'-3 | 2764 |
| 5w1 | INTERMEDIATE DIAPH., HOOP | | 72 | 7'-4 | 551 |
| TOTAL (LBS.) | | | | | 45,034 |

DESIGN FOR 25° SKEW

212'-6 x 33'-8 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

70'-7 1/2 END SPANS 71'-3 INTERIOR SPAN

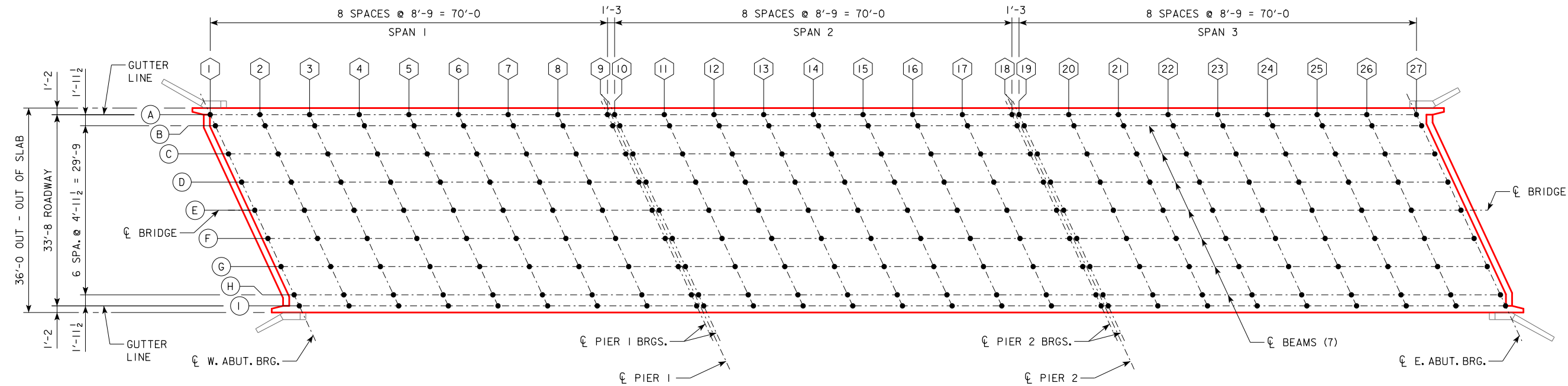
SUPERSTRUCTURE BAR DETAILS

STA. 655+00 (± 1A-141) OCTOBER, 2019

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 17 OF 25 FILE NO. 31587 DESIGN NO. 220



PLAN VIEW



TOP OF SLAB ELEVATIONS

| LOCATION | CL W. ABUT. BRG. | SPAN 1 | | | | | | | CL PIER 1 BRGS. | | SPAN 2 | | | | | | | CL PIER 2 BRGS. | | SPAN 3 | | | | | | | CL E. ABUT. BRG. | | 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 | | |
| LT. GUTTER LINE | (A) | 84.15 | 84.19 | 84.22 | 84.26 | 84.28 | 84.31 | 84.33 | 84.35 | 84.37 | 84.37 | 84.39 | 84.40 | 84.40 | 84.41 | 84.41 | 84.40 | 84.40 | 84.39 | 84.39 | 84.38 | 84.36 | 84.34 | 84.32 | 84.29 | 84.26 | 84.23 | 84.20 | (A) | LT. GUTTER LINE |
| BEAM LINE | (B) | 84.18 | 84.22 | 84.26 | 84.29 | 84.32 | 84.34 | 84.37 | 84.39 | 84.40 | 84.40 | 84.42 | 84.43 | 84.43 | 84.44 | 84.44 | 84.43 | 84.43 | 84.42 | 84.42 | 84.40 | 84.39 | 84.37 | 84.35 | 84.32 | 84.29 | 84.26 | 84.22 | (B) | BEAM LINE |
| BEAM LINE | (C) | 84.27 | 84.30 | 84.34 | 84.37 | 84.40 | 84.42 | 84.45 | 84.46 | 84.48 | 84.48 | 84.49 | 84.50 | 84.51 | 84.51 | 84.51 | 84.51 | 84.50 | 84.49 | 84.49 | 84.47 | 84.46 | 84.44 | 84.41 | 84.39 | 84.36 | 84.32 | 84.29 | (C) | BEAM LINE |
| BEAM LINE | (D) | 84.35 | 84.39 | 84.42 | 84.45 | 84.48 | 84.50 | 84.53 | 84.54 | 84.56 | 84.56 | 84.57 | 84.58 | 84.58 | 84.59 | 84.58 | 84.58 | 84.57 | 84.56 | 84.56 | 84.54 | 84.53 | 84.51 | 84.48 | 84.45 | 84.42 | 84.39 | 84.35 | (D) | BEAM LINE |
| BEAM LINE & CL BRIDGE | (E) | 84.41 | 84.45 | 84.48 | 84.51 | 84.54 | 84.56 | 84.58 | 84.60 | 84.61 | 84.61 | 84.63 | 84.63 | 84.64 | 84.64 | 84.64 | 84.63 | 84.62 | 84.61 | 84.61 | 84.59 | 84.57 | 84.55 | 84.53 | 84.50 | 84.47 | 84.43 | 84.39 | (E) | BEAM LINE & CL BRIDGE |
| BEAM LINE | (F) | 84.37 | 84.41 | 84.44 | 84.47 | 84.49 | 84.52 | 84.54 | 84.55 | 84.56 | 84.57 | 84.58 | 84.58 | 84.59 | 84.59 | 84.58 | 84.58 | 84.57 | 84.55 | 84.55 | 84.54 | 84.52 | 84.49 | 84.47 | 84.44 | 84.41 | 84.37 | 84.33 | (F) | BEAM LINE |
| BEAM LINE | (G) | 84.30 | 84.34 | 84.37 | 84.40 | 84.42 | 84.45 | 84.47 | 84.48 | 84.49 | 84.49 | 84.50 | 84.51 | 84.51 | 84.51 | 84.51 | 84.50 | 84.49 | 84.48 | 84.47 | 84.46 | 84.44 | 84.41 | 84.39 | 84.36 | 84.32 | 84.29 | 84.25 | (G) | BEAM LINE |
| BEAM LINE | (H) | 84.24 | 84.27 | 84.30 | 84.33 | 84.36 | 84.38 | 84.40 | 84.41 | 84.42 | 84.42 | 84.43 | 84.44 | 84.44 | 84.44 | 84.43 | 84.42 | 84.41 | 84.40 | 84.40 | 84.38 | 84.36 | 84.33 | 84.30 | 84.27 | 84.24 | 84.20 | 84.16 | (H) | BEAM LINE |
| RT. GUTTER LINE | (I) | 84.21 | 84.25 | 84.28 | 84.31 | 84.33 | 84.35 | 84.37 | 84.38 | 84.39 | 84.39 | 84.40 | 84.41 | 84.41 | 84.41 | 84.40 | 84.39 | 84.38 | 84.37 | 84.36 | 84.35 | 84.32 | 84.30 | 84.27 | 84.24 | 84.21 | 84.17 | 84.13 | (I) | RT. GUTTER LINE |

NOTE: ADD 1000.00 TO ALL ELEVATIONS

DESIGN FOR 25° SKEW

212'-6 x 33'-8 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

70'-7 1/2' END SPANS71'-3' INTERIOR SPAN

TOP OF SLAB ELEVATIONS

STA. 655+00 (CL 1A-141)OCTOBER, 2019

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

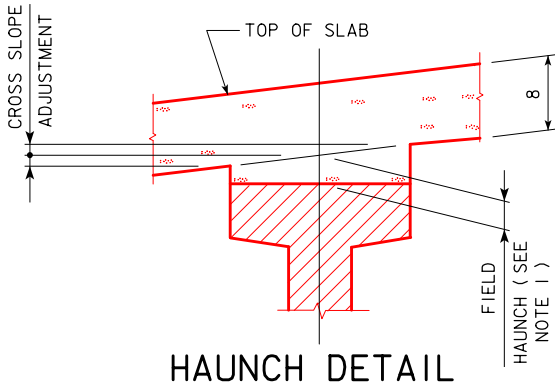
DESIGN SHEET NO. 18 OF 25FILE NO. 31587DESIGN NO. 220

| TABLE OF BEAM LINE SLAB HAUNCH ELEVATIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|-----------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------------------|-------|--------|-------|-------|-------|-------|-------|-------|-------------------|-------|--------|-------|-------|-------|-------|-------|-------|-----|-----------------------|----------|--|
| LOCATION | | ℄ W. ABUT. BRG. | SPAN 1 | | | | | | | | ℄ PIER 1 BRGS. | | SPAN 2 | | | | | | | ℄ PIER 2 BRGS. | | SPAN 3 | | | | | | | | ℄ E. ABUT. BRG. | LOCATION | |
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | 9 | 10 | 11 | 12 | 13 | 14 | 15 | | | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | |
| BEAM LINE | (B) | 83.51 | 83.58 | 83.63 | 83.67 | 83.71 | 83.73 | 83.74 | 83.74 | 83.74 | 83.74 | 83.77 | 83.80 | 83.82 | 83.83 | 83.82 | 83.81 | 83.78 | 83.75 | 83.75 | 83.76 | 83.76 | 83.76 | 83.74 | 83.71 | 83.67 | 83.61 | 83.56 | (B) | BEAM LINE | | |
| BEAM LINE | (C) | 83.60 | 83.66 | 83.71 | 83.76 | 83.79 | 83.81 | 83.82 | 83.82 | 83.81 | 83.82 | 83.85 | 83.88 | 83.90 | 83.90 | 83.90 | 83.88 | 83.86 | 83.82 | 83.82 | 83.83 | 83.83 | 83.82 | 83.81 | 83.77 | 83.73 | 83.68 | 83.62 | (C) | BEAM LINE | | |
| BEAM LINE | (D) | 83.68 | 83.74 | 83.80 | 83.84 | 83.87 | 83.89 | 83.90 | 83.90 | 83.89 | 83.89 | 83.93 | 83.95 | 83.97 | 83.98 | 83.97 | 83.95 | 83.93 | 83.89 | 83.89 | 83.90 | 83.90 | 83.89 | 83.87 | 83.84 | 83.80 | 83.75 | 83.69 | (D) | BEAM LINE | | |
| BEAM LINE & ℄ BRIDGE | (E) | 83.75 | 83.80 | 83.86 | 83.90 | 83.93 | 83.95 | 83.96 | 83.96 | 83.95 | 83.95 | 83.98 | 84.01 | 84.02 | 84.03 | 84.02 | 84.00 | 83.98 | 83.94 | 83.94 | 83.95 | 83.95 | 83.94 | 83.92 | 83.89 | 83.84 | 83.79 | 83.73 | (E) | BEAM LINE & ℄ BRIDGE | | |
| BEAM LINE | (F) | 83.70 | 83.76 | 83.81 | 83.85 | 83.88 | 83.90 | 83.91 | 83.91 | 83.90 | 83.90 | 83.93 | 83.96 | 83.97 | 83.98 | 83.97 | 83.95 | 83.92 | 83.89 | 83.89 | 83.89 | 83.89 | 83.88 | 83.86 | 83.83 | 83.78 | 83.73 | 83.67 | (F) | BEAM LINE | | |
| BEAM LINE | (G) | 83.64 | 83.70 | 83.75 | 83.79 | 83.82 | 83.83 | 83.84 | 83.84 | 83.83 | 83.83 | 83.86 | 83.88 | 83.90 | 83.90 | 83.89 | 83.87 | 83.84 | 83.81 | 83.81 | 83.81 | 83.81 | 83.80 | 83.78 | 83.74 | 83.70 | 83.64 | 83.58 | (G) | BEAM LINE | | |
| BEAM LINE | (H) | 83.57 | 83.63 | 83.68 | 83.72 | 83.75 | 83.76 | 83.77 | 83.77 | 83.75 | 83.76 | 83.79 | 83.81 | 83.82 | 83.83 | 83.82 | 83.80 | 83.77 | 83.73 | 83.73 | 83.73 | 83.73 | 83.72 | 83.70 | 83.66 | 83.61 | 83.56 | 83.50 | (H) | BEAM LINE | | |

NOTE: ADD 1000.00 TO ALL ELEVATIONS

| MISCELLANEOUS DATA TABLE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------|-----------------|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----|--|-----------------------|
| | | BEAM LINE | ℄ W. ABUT. BRG. | SPAN 1 | | | | | | | | ℄ PIER 1 BRGS. | | SPAN 2 | | | | | | | ℄ PIER 2 BRGS. | | SPAN 3 | | | | | | | | ℄ E. ABUT. BRG. |
| | | | 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 | | |
| ANTICIPATED DEFLECTION DUE TO SLAB (in) | | ALL | 0 | ¼ | ½ | ⅝ | ⅞ | ⅝ | ½ | ¼ | 0 | 0 | ¼ | ½ | ⅝ | ⅞ | ⅝ | ½ | ¼ | 0 | 0 | ¼ | ½ | ⅝ | ⅞ | ⅝ | ½ | ¼ | 0 | | |
| CROSS SLOPE ADJUSTMENTS (in) | | B-D & F-H | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | ± ⅟ ₁₆ | | | |
| CROSS SLOPE ADJUSTMENTS (in) | | E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| ALLOWABLE FIELD HAUNCH (in) | MAX. | ALL | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | 2½ | | |
| | MIN. | ALL | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | -½ | | |

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 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 THE MISCELLANEOUS DATA TABLE, ADJUSTMENTS TO THE GRADE OR ADDITIONAL HAUNCH REINFORCEMENT WILL BE REQUIRED.

DESIGN FOR 25° SKEW

212'-6 x 33'-8 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

70'-7½ END SPANS71'-3 INTERIOR SPAN

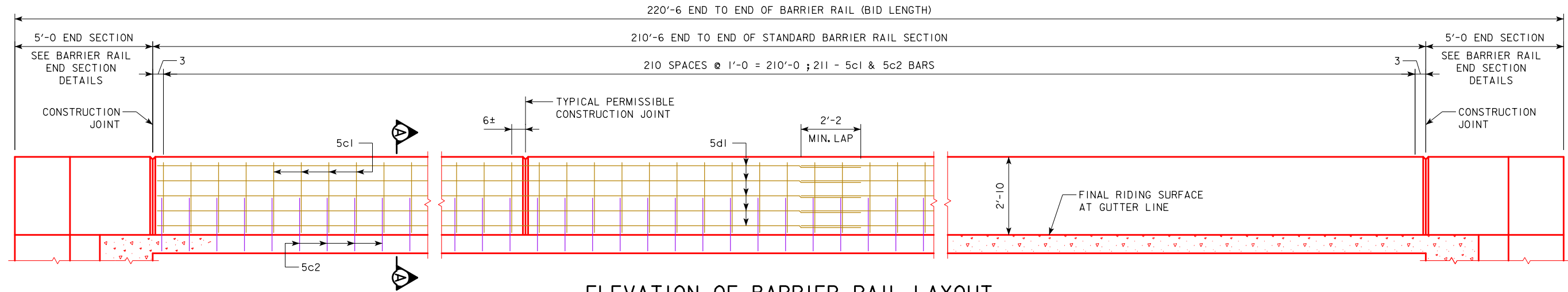
SLAB HAUNCH DATA DETAILS

STA. 655+00 (℄ 1A-141)OCTOBER, 2019

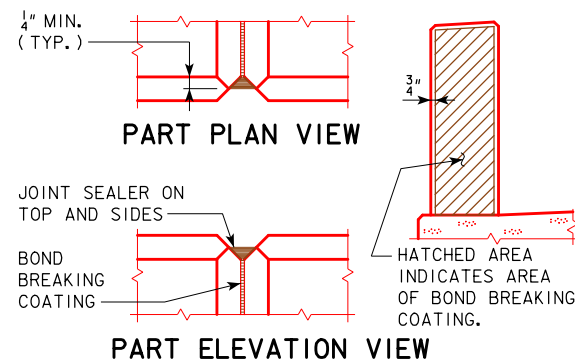
WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

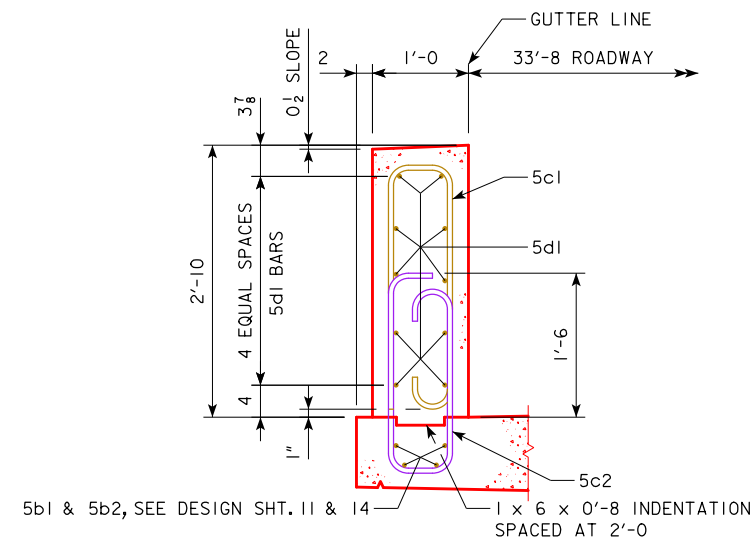
DESIGN SHEET NO. 19 OF 25FILE NO. 31587DESIGN NO. 220



ELEVATION OF BARRIER RAIL LAYOUT



BARRIER RAIL CONSTRUCTION JOINT DETAILS



SECTION A-A

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.

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 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.

ALL BARRIER RAIL REINFORCING STEEL IS TO BE INCLUDED WITH THE SUPERSTRUCTURE REINFORCING STEEL.

THE JOINT SEALER SHALL BE LIGHT GRAY NONSAG LATEX CAULKING SEALER MARKETING FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

TOP OF THE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL ϕ GRADE.

CROSS SECTIONAL AREA OF THE STANDARD SECTION OF THE BARRIER RAIL = 2.83 SQUARE FEET.

CONCRETE BARRIER RAILS PLACED USING THE SLIPFORM METHOD WILL REQUIRE THE USE OF A CLASS BR CONCRETE IN ACCORDANCE WITH ARTICLE 2513.03B OF THE STANDARD SPECIFICATION. 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).

DESIGN FOR 25° SKEW

212'-6 x 33'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

70'-7½ END SPANS 71'-3 INTERIOR SPAN

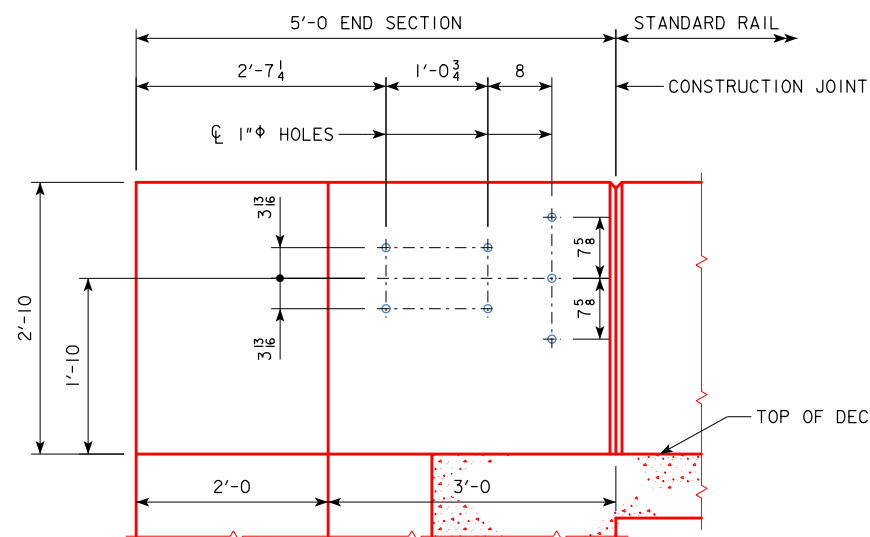
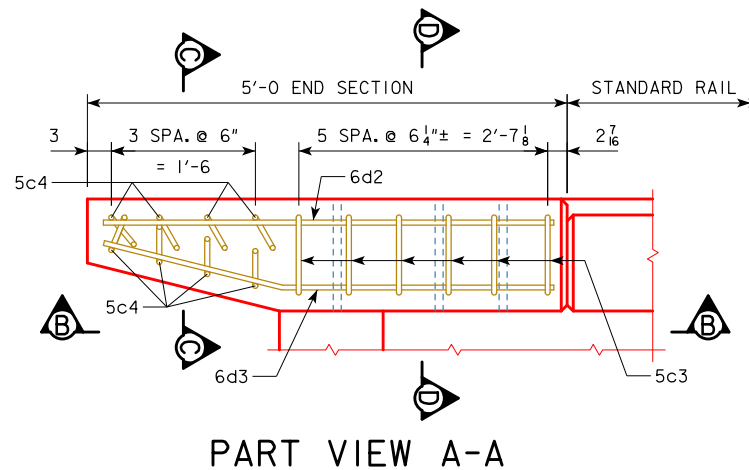
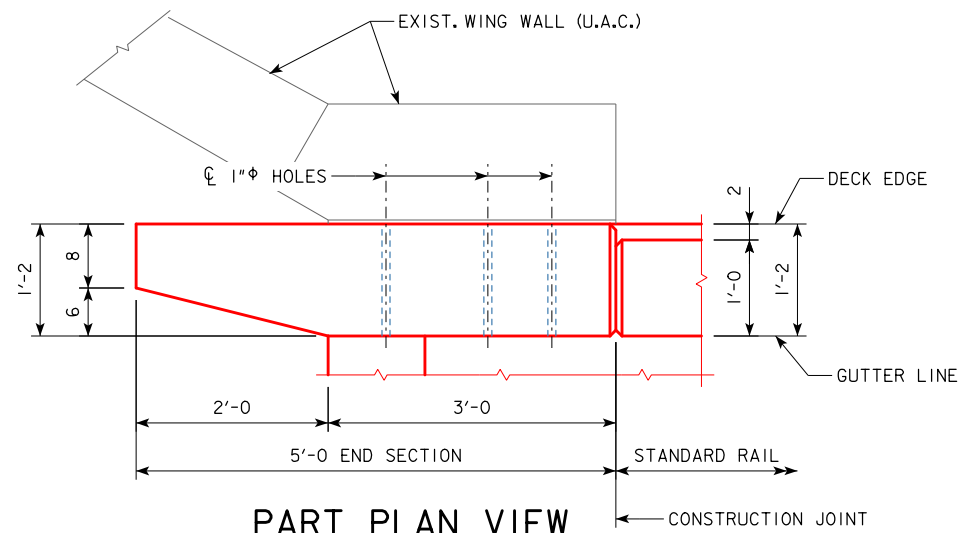
BARRIER RAIL DETAILS

STA. 655+00 (± 1A-141) OCTOBER, 2019

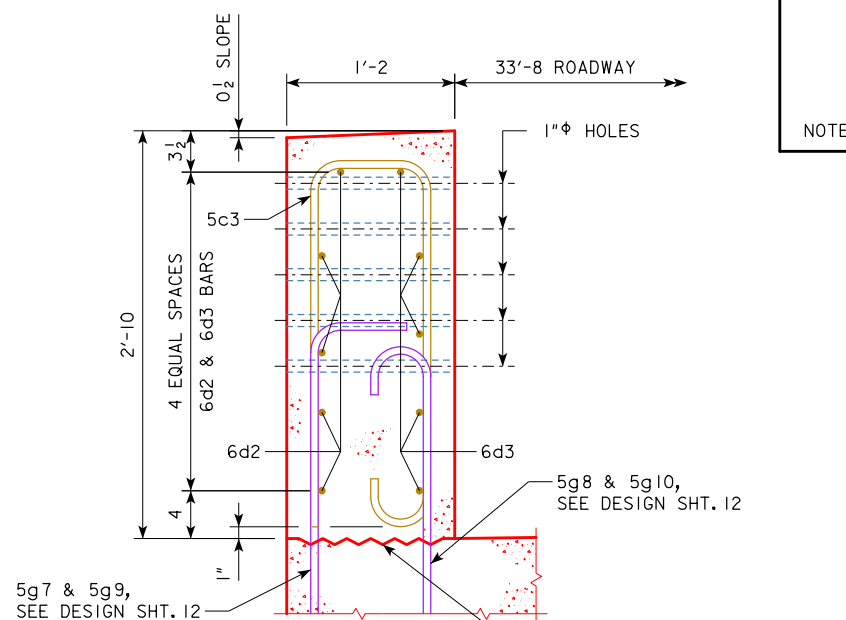
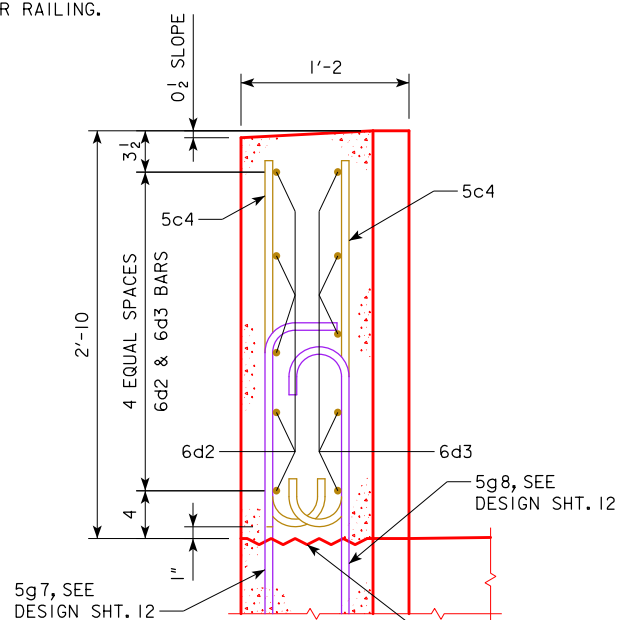
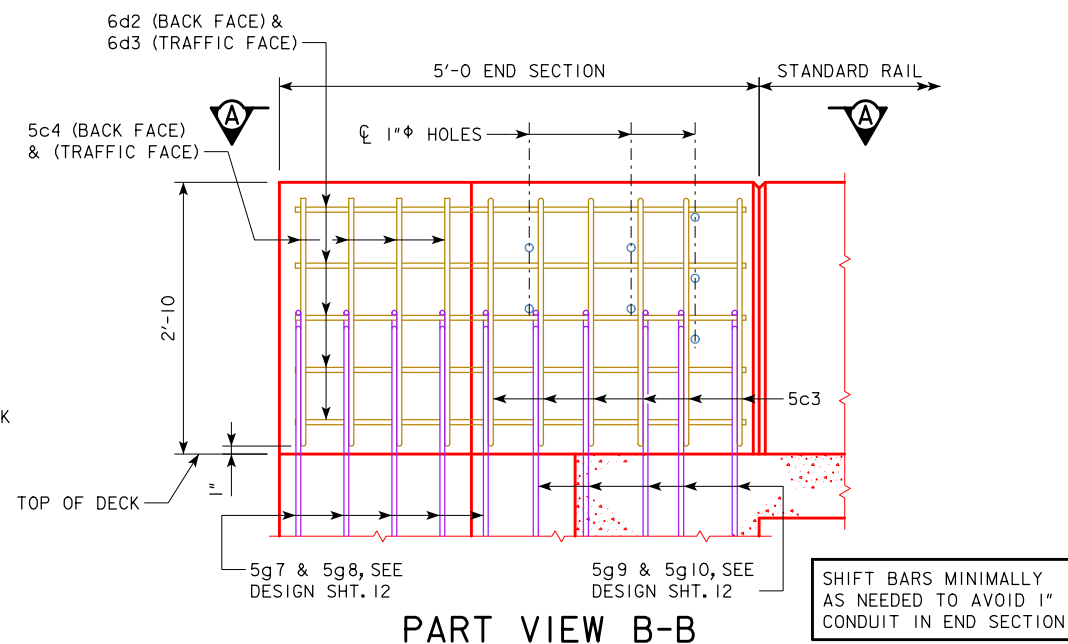
WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 20 OF 25 FILE NO. 31587 DESIGN NO. 220



PROVIDE 7 HOLES FORMED WITH 1" PLASTIC CONDUIT. COST TO BE INCLUDED IN PRICE BID FOR CONCRETE BARRIER RAILING.



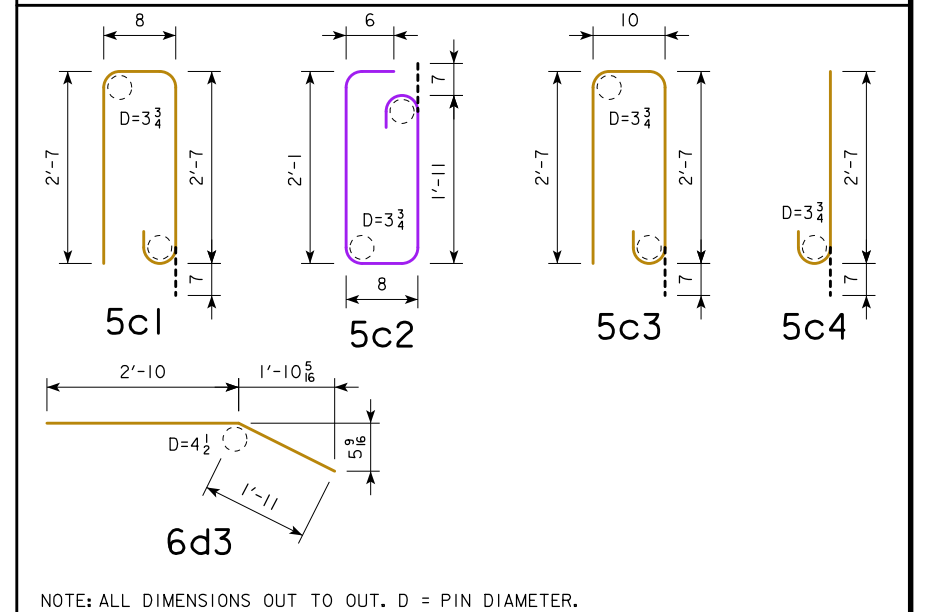
EPOXY COATED REINF. BAR LIST TWO BARRIER RAILS & FOUR END SECTIONS

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|--------------|----------------------------|-------|-----|--------|--------|
| 5c1 | BARRIER RAIL, VERTICAL | | 422 | 6'-5 | 2824 |
| 5c3 | END SECTION, VERTICAL | | 24 | 6'-7 | 165 |
| 5c4 | END SECTION, VERTICAL | | 32 | 3'-2 | 106 |
| 5d1 | BARRIER RAIL, LONGIT. | | 120 | 36'-10 | 4610 |
| 6d2 | END SECTION, LONGIT., B.F. | | 20 | 4'-8 | 140 |
| 6d3 | END SECTION, LONGIT., F.F. | | 20 | 4'-9 | 143 |
| TOTAL (LBS.) | | | | | 7,988 |

STAINLESS STEEL REINF. BAR LIST TWO BARRIER RAILS & FOUR END SECTIONS

| BAR | LOCATION | SHAPE | NO. | LENGTH | WEIGHT |
|--------------|------------------------|-------|-----|--------|--------|
| 5c2 | BARRIER RAIL, VERTICAL | | 422 | 5'-9 | 2531 |
| TOTAL (LBS.) | | | | | 2,531 |

BENT BAR DETAILS



CONCRETE PLACEMENT SUMMARY

| SECTION | TOTAL |
|--|-------|
| STANDARD SECTION 2 x 210'-6 @ 0.1049 CU. YD. PER FT. | 44.2 |
| END SECTION 4 @ 0.56 CU. YD | 2.2 |
| TOTAL (CU. YDS.) | 46.4 |

DESIGN FOR 25° SKEW

212'-6 x 33'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

70'-7 1/2' END SPANS 71'-3' INTERIOR SPAN

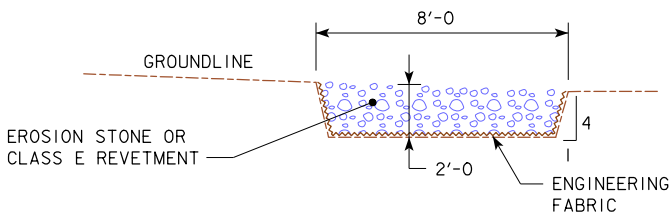
END SECTION DETAILS

STA. 655+00 (± 1A-141) OCTOBER, 2019

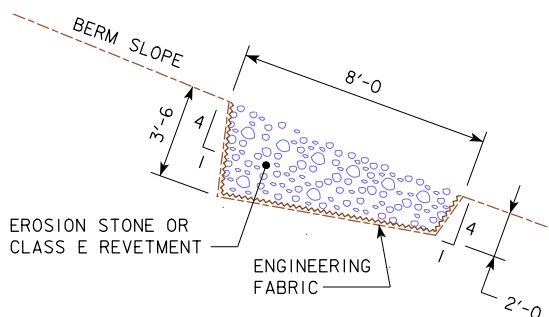
WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 21 OF 25 FILE NO. 31587 DESIGN NO. 220



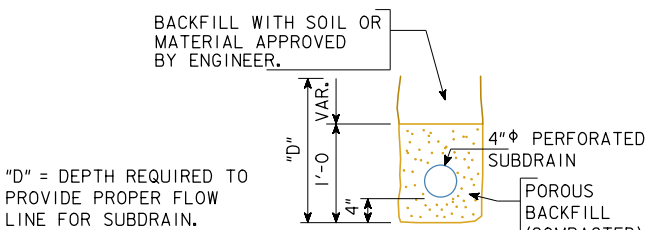
SPLASH BASIN UNDER BRIDGE DRAIN
TYPICAL SECTION FOR EXISTING GRADES



SPLASH BASIN UNDER BRIDGE DRAIN
TYPICAL SECTION FOR BERM SLOPES

SPLASH BASIN NOTES :

THE COST OF FURNISHING AND PLACING SPLASH BASINS (INCLUDING EXCAVATION, EROSION STONE OR CLASS E REVETMENT, AND ENGINEERING FABRIC) IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)". NO EXTRA PAYMENT WILL BE MADE. TOTAL NUMBER OF SPLASH BASINS = 4.



TYP. SECTION @ SUBDRAIN
(OUTSIDE OF ABUTMENT BACKFILL AREA)

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 ITS 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.

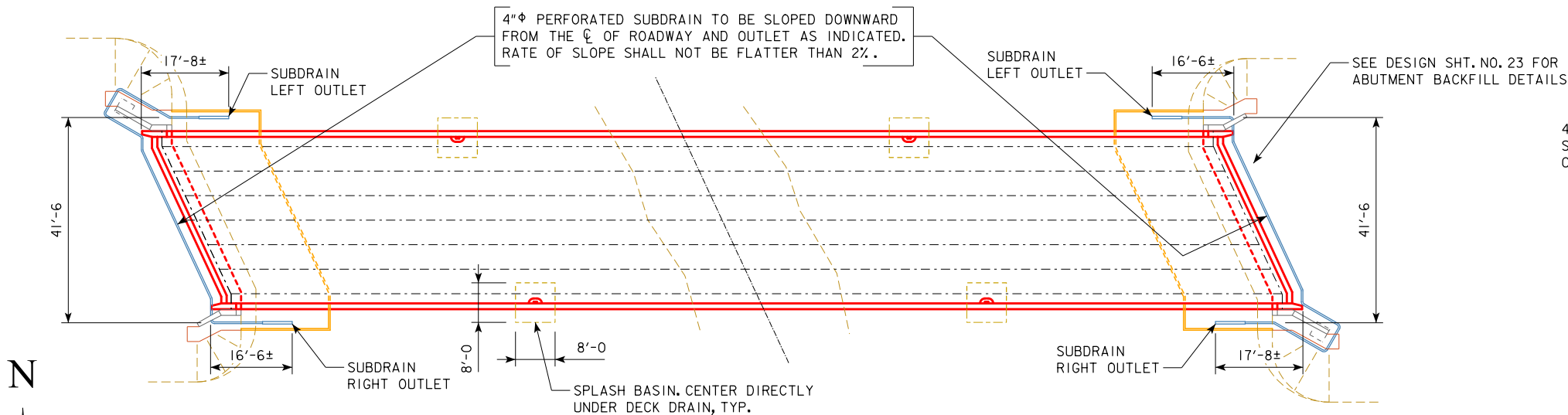
1. USE AN INSIDE FIT REDUCER COUPLER (COUPLER MUST BE INSERTED A MINIMUM OF 1'-0" INTO THE METAL OUTLET PIPE).
2. INSERT 1'-0" OF THE 4" SUBDRAIN INTO THE 6" METAL OUTLET PIPE, THEN FULLY SEAL THE ENTIRE OPENING WITH GROUT.

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.

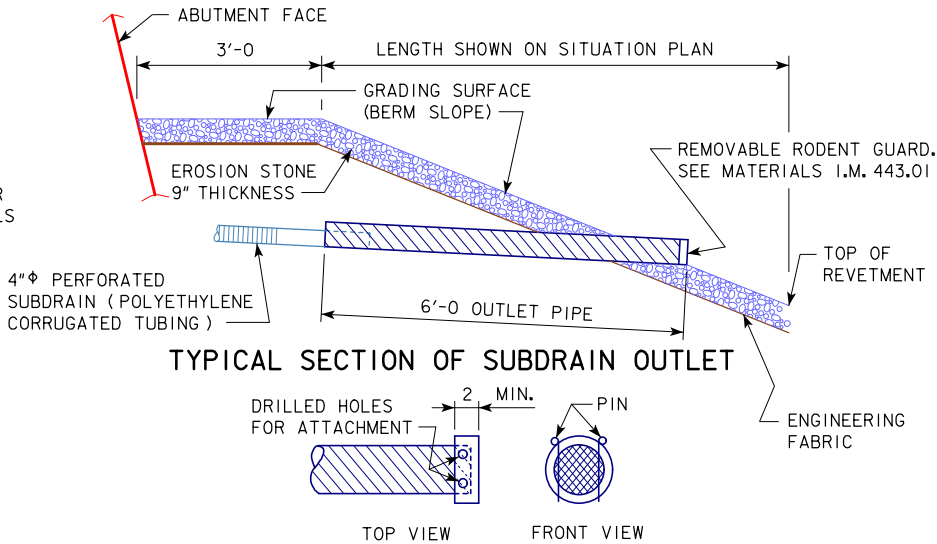
THE DIMENSIONS SHOWN FOR THE PROPOSED SUBDRAINS ARE BASED ON THE EXISTING PLANS GRADING LAYOUT OF BRIDGE BERMS. THE DIMENSIONS SHOWN ARE FOR ESTIMATING ONLY. REQUIRED LENGTHS AND GENERAL LOCATIONS OF SUBDRAINS ARE SUBJECT TO CHANGE DUE TO THE EXISTING BERM LAYOUT.

SUBDRAIN OUTLET ELEVATIONS

| LOCATION | ELEVATION |
|-----------------------|-----------|
| WEST ABUTMENT - RIGHT | 1074.77± |
| WEST ABUTMENT - LEFT | 1074.37± |
| EAST ABUTMENT - RIGHT | 1074.37± |
| EAST ABUTMENT - LEFT | 1074.77± |



SITUATION PLAN
SHOWING SUBDRAIN LOCATIONS



REMOVABLE RODENT GUARD DETAILS
EROSION STONE (EMBEDDED) OUTLET DETAILS

DESIGN FOR 25° SKEW
212'-6 x 33'-8 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE
70'-7½ END SPANS 71'-3 INTERIOR SPAN
SUBDRAIN DETAILS
STA. 655+00 (± 1A-141) OCTOBER, 2019
WOODBURY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 22 OF 25 FILE NO. 31587 DESIGN NO. 220

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").
ENGLISHFORSLOPEPROTECTIONBRIDGES.DGN - 1007D - THIS SHEET ISSUED 08-07.

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 WALLS, 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 (BRIDGE)".

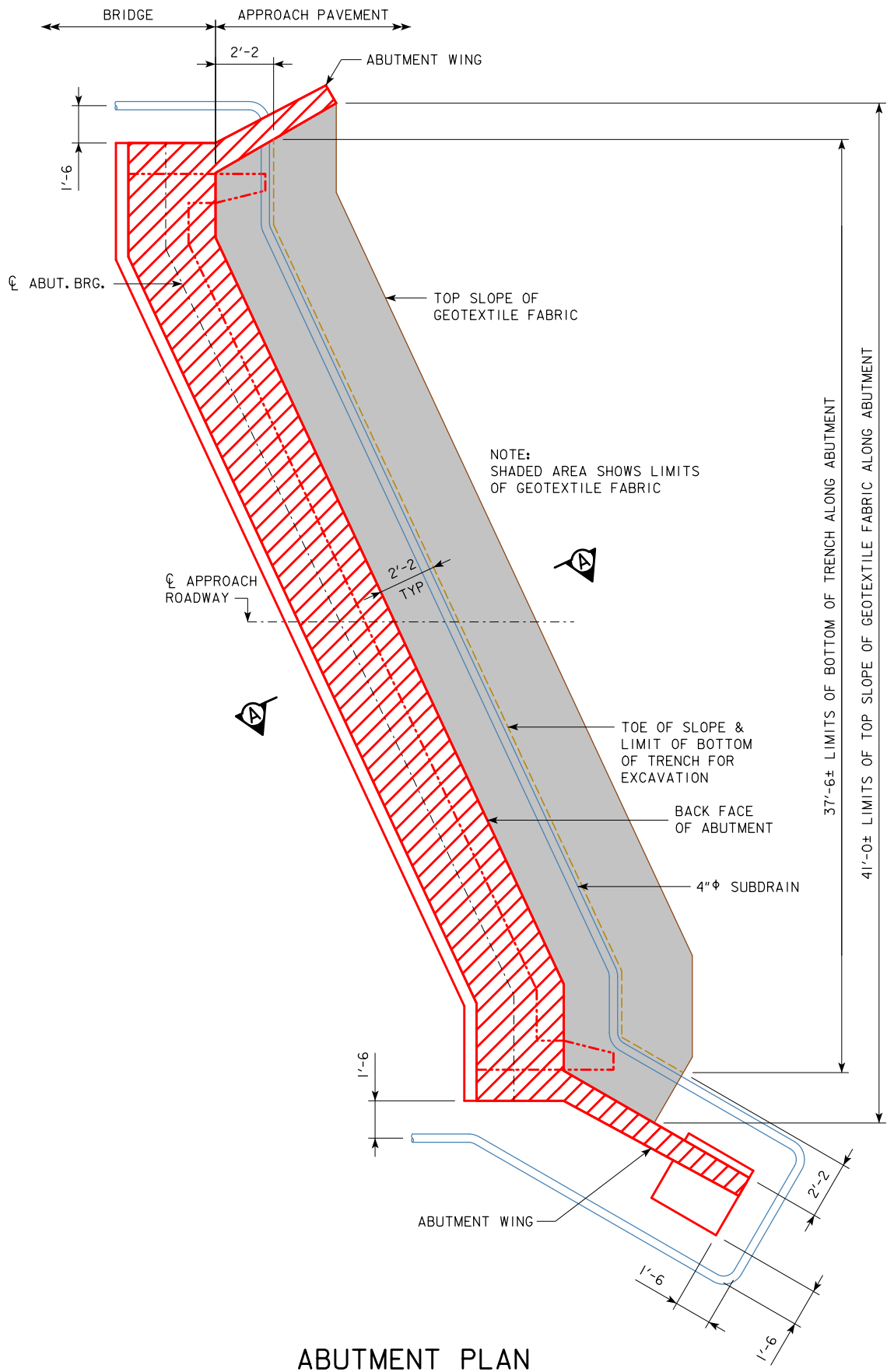
NOTE:
THERE ARE SEVERAL AREAS OF UNDERMINING OF THE ABUTMENT FOOTING THAT NEED REPAIRED BEFORE OR DURING INSTALLATION OF SUBDRAIN.

NOTE:
SEE SUBDRAIN DETAILS SHEET FOR DETAILS NOT SHOWN ON THIS SHEET WHICH ARE PERTINENT TO THIS STRUCTURE.

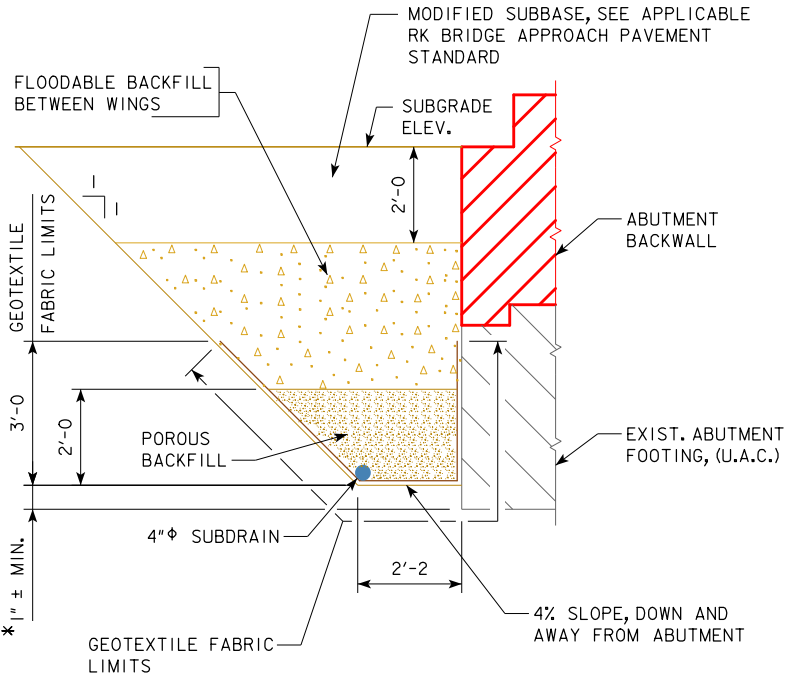
NOTE:

SUBDRAIN SHALL SLOPE DOWNWARD 2% FROM ϕ APPROACH ROADWAY WHEN OUTLETTING BOTH SIDES 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.



ABUTMENT PLAN



SECTION A-A
BACKFILL DETAILS

NOTE: GEOTEXTILE FABRIC WILL BE ATTACHED TO FACE OF ABUTMENT FOOTING/BACKWALL AND WINGS.

* DIMENSION VARIES DUE TO 2% SUBDRAIN SLOPE.

DESIGN FOR 25° SKEW

212'-6 x 33'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

70'-7 1/2' END SPANS 71'-3' INTERIOR SPAN

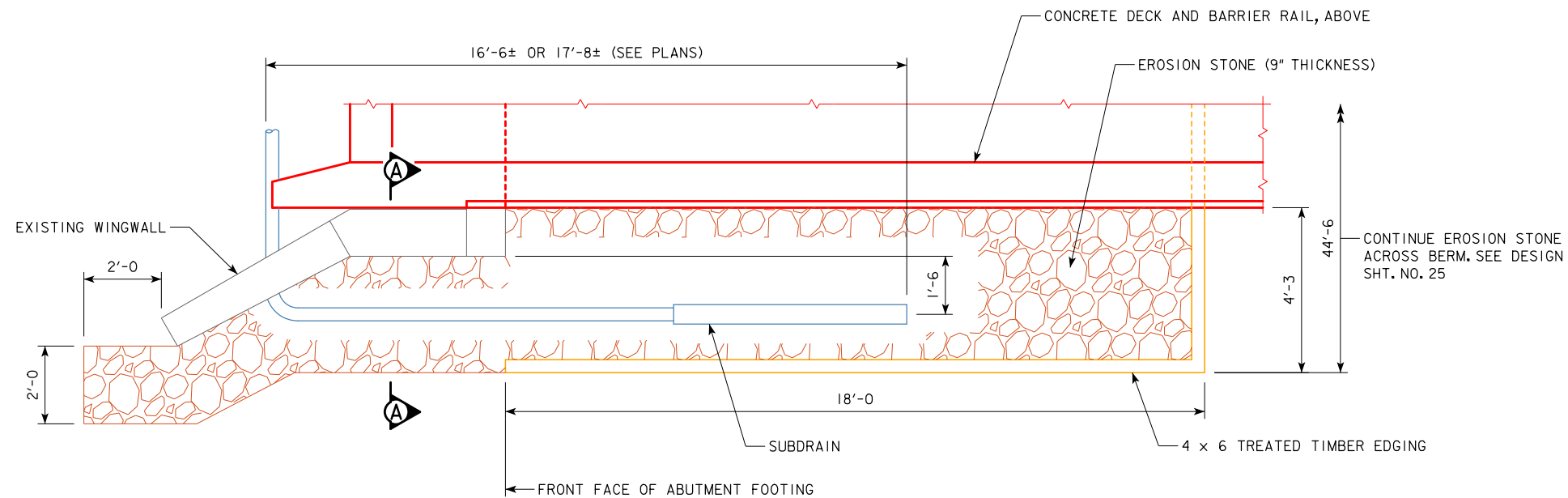
ABUTMENT BACKFILL DETAILS

STA. 655+00 (ϕ 1A-141) OCTOBER, 2019

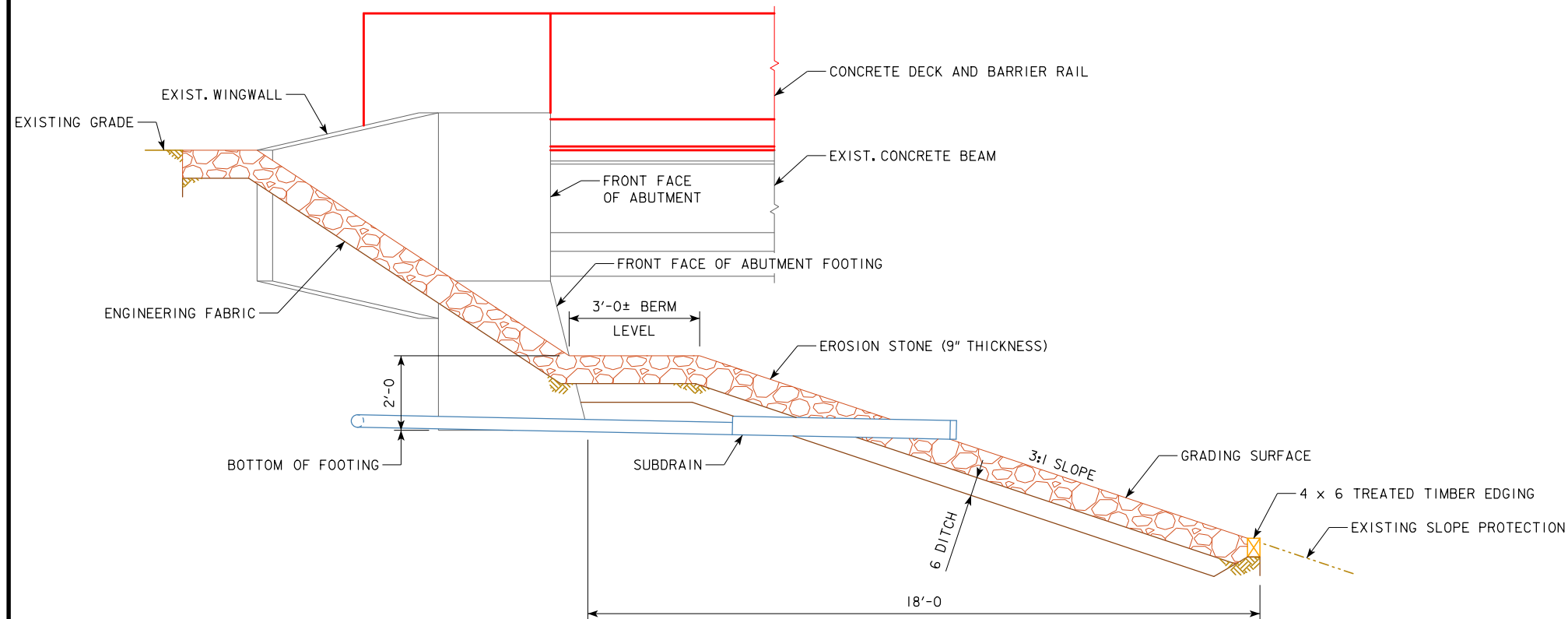
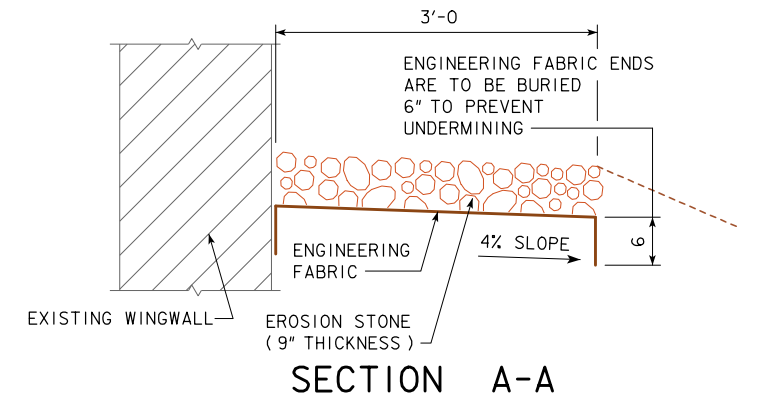
WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 23 OF 25 FILE NO. 31587 DESIGN NO. 220



TOP VIEW OF WING ARMORING



WING ARMORING ELEVATION

GENERAL NOTES:

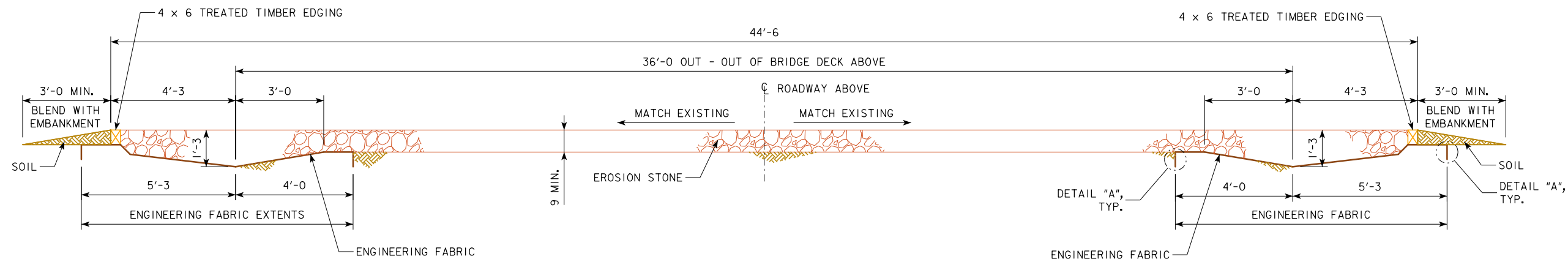
EROSION STONE SHALL BE PLACED ALONG THE SIDES OF THE WINGS AND ABUTMENT FOOTING AS SHOWN IN SECTION A-A. THIS IS TYPICAL AT EACH CORNER OF THE BRIDGE UNLESS OTHERWISE NOTED IN THE PLANS. THE EROSION STONE AT THESE LOCATIONS SHALL BE UNDERLAYED WITH ENGINEERING FABRIC IN ACCORDANCE WITH ARTICLE 4196.01, 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 SCREEN 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 TON. COST WILL INCLUDE ENGINEERING FABRIC, EROSION STONE, EXCAVATION, SHAPING, AND COMPACTION TO DIMENSIONS SHOWN IN THESE PLANS. BID ITEM SHALL BE "EROSION STONE".

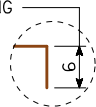
| | |
|---|---------------------|
| DESIGN FOR 25° SKEW | |
| 212'-6 x 33'-8 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE | |
| 70'-7½ END SPANS | 71'-3 INTERIOR SPAN |
| WING ARMORING DETAILS | |
| STA. 655+00 (± 1A-141) | OCTOBER, 2019 |
| WOODBURY COUNTY | |
| IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION | |
| DESIGN SHEET NO. 24 OF 25 | FILE NO. 31587 |
| DESIGN NO. 220 | |



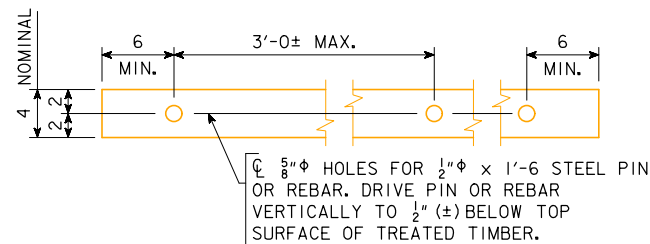
BERM CROSS SECTION

NOTE:
THERE ARE SEVERAL AREAS OF UNDERMINING OF THE ABUTMENT FOOTING THAT NEED REPAIRED BEFORE OR DURING RECONSTRUCTION OF THE BERM SLOPE.

ENGINEERING FABRIC ENDS ARE TO BE BURIED 6" TO PREVENT UNDERMINING



DETAIL "A"



4" x 6" TREATED TIMBER EDGING DETAILS

GENERAL NOTES:

THIS PLAN SHEET SHOWS DETAILS FOR PLACING AN "EROSION STONE" UNDER THE STRUCTURE.

THE BRIDGE BERM FORESLOPE SHALL BE COMPACTED AND SHAPED AS SHOWN ON THIS SHEET AND DESIGN SHEET 24. SHAPING WILL INCLUDE EXCAVATION, SHAPING AND COMPACTION AS DIRECTED BY THE ENGINEER AND SHALL BE INCIDENTAL TO THE "EROSION STONE" BID ITEM AND THE PLACING OF THE EROSION STONE. THE BERM FORESLOPE SHALL BE FIRM WHEN THE ENGINEERING FABRIC AND EROSION STONE ARE PLACED.

THE ENGINEERING FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, 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.

THE EROSION STONE SHALL BE IN ACCORDANCE WITH SECTION 4130, OF THE STANDARD SPECIFICATIONS, COARSE MATERIAL (NO CHOKE STONE IS ALLOWED).

WOOD PRESERVATIVE TREATMENT FOR THE TIMBER EDGING SHALL MEET THE REQUIREMENTS FOR GUARDRAIL POSTS, SAWED FOUR SIDES, IN ACCORDANCE WITH SECTION 4161, OF THE STANDARD SPECIFICATIONS.

THE EROSION STONE SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

PAYMENT FOR "EROSION STONE" WILL BE MADE ON A PER TON BASIS FOR SLOPE PROTECTION CONSTRUCTED. THE UNIT PRICE BID PER TON SHALL INCLUDE ALL COSTS FOR MATERIAL AND LABOR REQUIRED TO CONSTRUCT THE SLOPE PROTECTION SHOWN ON THESE PLANS.

THE BERM FORESLOPE SHAPING AND COMPACTING AND THE DISPOSAL OF EXCESS SOIL FROM SHAPING OR TRENCHING SHALL BE CONSIDERED INCIDENTAL TO PLACING THE EROSION STONE.

WHERE EROSION CONTROL WORK HAS BEEN COMPLETED THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PLANT MATERIALS DESTROYED ADJACENT TO THE SLOPE PROTECTION AREA. THE CONTRACTOR SHALL REPLANT, RESEED AND REMULCH ALL DISTURBED AREAS, DESIGNATED BY THE ENGINEER, IN ACCORDANCE WITH SECTION 2601, OF THE STANDARD SPECIFICATIONS, AT THE CONTRACTOR'S EXPENSE.

ESTIMATED QUANTITIES

| DESCRIPTION | LOCATION | QUANTITY |
|---|------------|----------|
| EROSION STONE (INCLUDES WING ARMORING) | WEST ABUT. | 45 |
| EROSION STONE (INCLUDES WING ARMORING) | EAST ABUT. | 45 |
| TOTAL (TONS) | | 90 |

ITEMS TO BE INCLUDED IN "EROSION STONE SLOPE PROTECTION":
EXCAVATING, SHAPING AND COMPACTING
ENGINEERING FABRIC
EROSION STONE
4" x 6" TREATED TIMBER EDGING
1/2" STEEL PINS (OR REBARS)

DESIGN FOR 25° SKEW

212'-6 x 33'-8 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

70'-7 1/2' END SPANS 71'-3' INTERIOR SPAN

BERM EROSION CONTROL DETAILS

STA. 655+00 (± 1A-141) OCTOBER, 2019

WOODBURY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 25 OF 25 FILE NO. 31587 DESIGN NO. 220

100-0A
10-28-97

100-4A
10-29-02

100-4A
10-29-02

100-4A
10-29-02

100-4A
10-29-02

REFER TO RC SHEETS FOR ADDITIONAL BID ITEMS AND QUANTITIES.

| | | |
|---|----------|---|
| 105-4 10-18-11 | | |
| STANDARD ROAD PLANS | | |
| The following Standard Road Plans apply to construction work on this project. | | |
| Number | Date | Title |
| DR-306 | 10-16-18 | Precast Concrete Headwall for Subdrain Outlets |
| PM-110 | 10-16-18 | Line Types |
| PM-520 | 10-15-19 | Two-Lane Roadway with no Turn Lanes (Two-Way Stop Condition) |
| PM-620 | 10-15-19 | Two-Lane Roadway with no Turn Lanes (Four-Way Stop Condition) |
| PV-10 | 04-16-19 | Rumble Strip Panel for Intersection Approach |
| PV-101 | 04-16-19 | Joints |
| TC-1 | 10-15-19 | Work Not Affecting Traffic (Two-Lane or Multi-Lane) |
| TC-202 | 04-21-15 | Work Within 15 ft of Traveled Way |
| TC-213 | 10-15-19 | Lane Closure with Flaggers |
| TC-252 | 04-19-16 | Routes Closed to Traffic |
| | | |
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|----------------------|---|-----------|
| 111-25 10-18-11 | | |
| INDEX OF TABULATIONS | | |
| Tabulation | Tabulation Title | Sheet No. |
| C Sheets | | |
| 100-0A | ESTIMATED ROADWAY QUANTITIES (1 DIVISION PROJECT) | C.1 |
| 100-4A | ESTIMATE REFERENCE INFORMATION | C.1 |
| 100-17 | TABULATION OF SILT FENCES | C.2 |
| 102-5 | EXISTING PAVEMENT | C.3 |
| 102-11 | PARTIAL DEPTH REGULAR HMA FINISH PATCHES | C.3 |
| 105-4 | STANDARD ROAD PLANS | C.2 |
| 108-22 | PAVEMENT MARKING LINE TYPES | C.4 |
| 108-30 | CRASH CUSHIONS | C.4 |
| 110-1 | REMOVAL OF PAVEMENT | C.3 |
| 111-25 | INDEX OF TABULATIONS | C.2 |
| 112-6 | BRIDGE APPROACH SECTION | C.3 |
| 112-7 | RUMBLE STRIP PANELS | C.3 |
| 112-9 | SHOULDERS | C.3 |
| | | |
| | | |

| |
|--|
| 262-6 10-18-05 |
| UTILITIES (NOT A POINT 25 PROJECT) |
| This is NOT a POINT 25 project and is not subject to the provisions of IAC 761-115.25. |

| 102-5 04-18-17 | | | | | | | | | | | | | | | | | | | | | |
|-------------------|----------|--------|----------------|----------------------|--------------------|------|------|----------------|---------|-------|------|-------|---------|-------|---------|-------|------------------|--------|------------------|---------------|---------|
| EXISTING PAVEMENT | | | | | | | | | | | | | | | | | | | | | |
| No. | Location | | | | | Year | Type | Project Number | Surface | | Base | | Subbase | | Removal | | Coarse Aggregate | | | Reinforcement | Remarks |
| | County | Route | Dir. of Travel | Begin Ref. Loc. Sign | End Ref. Loc. Sign | | | | Type | Depth | Type | Depth | Type | Depth | Type | Depth | Source | Type | Durability Class | Type | |
| | | | | | | | | | | | | | | | | | | | | | |
| 1 | 97 | IA 141 | 1 | 7.36 | 10.5 | 1961 | | F-1083 | PCC | 10 | | | | | | | CORRECTIONVILLE | GRAVEL | 2 | | |
| | | | | | | | | | | | | | | | | | | | | | |

112-6
04-18-17

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 | | <div>T</div> Thickness | Pay Length | Non-Reinf. Pavement Area | Single-Reinf. Pavement Area | Double-Reinf. Pavement Area | | | | Perforated Subdrain 4" | Subdrain Outlet | | Porous Backfill | | | | | Class 'A' Crushed Stone Backfill |
| | | Degrees | | | | | | | Approach | Fixed or Movable Abutment | Abutting Pavement | | CY | CY | | | | | | |
| | | LEFT | RIGHT | | | | | | | | | | | | | Inches | FT | SY | | |
| 655+00.00 | West | -- | 25 | 12.0 | 74.6 | 80.0 | 79.5 | 118.7 | Mod. BR-205 | Fixed | BR-211 | 44.7 | 653+26.90 | Right | 1.3 | 0.2 | 284.400 | 325.8 | | |
| 655+00.00 | East | -- | 25 | 12.0 | 74.6 | 80.0 | 79.5 | 118.7 | Mod. BR-205 | Fixed | BR-211 | 44.7 | 656+73.10 | Right | 1.3 | 0.2 | 284.400 | 325.8 | | |
| | | | Total= | | | 160.0 | 159.0 | 237.4 | | | | | | | | | | | | |
| | | | overall= | | | | 556.4 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

| 110-1 04-16-13 | | | | | | |
|---------------------------|-------------|------|---------------|-------|----------|---------|
| REMOVAL OF PAVEMENT | | | | | | |
| Refer to Tabulation 102-5 | | | | | | |
| * Not a Bid Item | | | | | | |
| Begin Station | End Station | Side | Pavement Type | Area | Saw Cut* | Remarks |
| | | | | SY | LF | |
| 653+20.20 | 653+70.20 | West | Composite | 133.3 | 72.0 | |
| 653+70.20 | 653+92.19 | West | Composite | 73.3 | 63.1 | |
| | | | | | | |
| 656+07.81 | 656+29.80 | East | Composite | 73.3 | 63.1 | |
| 656+29.80 | 656+79.80 | East | Composite | 133.3 | 72.0 | |
| | | | | | | |
| | | | Total= | 413.3 | | |
| | | | | | | |
| | | | | | | |

| | | | | | | | | | |
|--|---------|-------------------------|--------|--------------------|---|------|----------------------|--------|--|
| 102-11 04-18-17 | | | | | | | | | |
| PARTIAL DEPTH REGULAR HMA FINISH PATCHES | | | | | | | | | |
| Location | | | | Dimension Of Patch | | | Estimated Quantities | | Remarks |
| No. | Station | Reference Location Sign | Lane | Length x Width | | | SY | TON | |
| | | | | FT | | | | | |
| 1 | * | * | EB | 30.0 | x | 12.0 | 40.0 | 9.788 | * Refer to J.2 for location and details. |
| 2 | * | * | EB | 30.0 | x | 12.0 | 40.0 | 9.788 | |
| | | | | | | | | | |
| 3 | * | * | WB | 30.0 | x | 12.0 | 40.0 | 9.788 | |
| 4 | * | * | WB | 30.0 | x | 12.0 | 40.0 | 9.788 | |
| | | | | | | | | | |
| | | | Total= | | | | 160.0 | 39.152 | |
| | | | | | | | | | |

| 112-7 10-19-10 | | | | | |
|------------------------------------|---------|------|----------|----------|---|
| RUMBLE STRIP PANELS | | | | | |
| Refer to Standard Road Plan PV-10. | | | | | |
| Location | | | Pavement | | Remarks |
| Road Ident. | Station | Side | New | Existing | |
| Co. Rd. D25 | * | Rt. | | 2 | * Refer to J.2 for location and details |
| Co. Rd. D25 | * | Lt. | | 2 | |
| | | | | | |

112-9

10-15-13

SHOULDERS

1

Lane(s) to which the shoulder is adjacent.

2

Bid Item

3

Applies only for Paved Shoulders constructed on project with existing granular shoulders.

4

Does not include shrink.

Calculations assume a HMA unit weight (lbs/cf) of 0, a Special Backfill unit weight (lbs/cf) of 140, and a Granular Shoulder unit weight (lbs/cf) of 140.

| Road Identification | 1 Direction Of Traffic | Location | | | Side | P Width FT | G Width FT | L Length FT | Class 13 Excavation CY 2 | Hot Mix Asphalt TON TON/STA | | Binder TONS | Paved Shoulder SY 2 | Reinforced Paved Shoulder SY 2 | Quantities | | | | Modified Subbase CY 2 | Granular Shoulder TON 2 TON/STA | | Earth Shoulder Construction Alternates | | | Remarks | | |
|---------------------|---------------------------|--------------------|-----------|-----|------|------------------|------------------|-------------------|--------------------------------|--------------------------------|--|----------------|---------------------------|---|------------------|--|--|--------|-----------------------------|------------------------------------|--|--|--|------|---------|------|--|
| | | Station to Station | | | | | | | | | | | | | Special Backfill | | Earth Shoulder Construction Alternates | | | | | | | | | | |
| | | | | | | | | | | | | | | | HMA Alternate | | PCC Alternate | | | | | STA 2 | | HMA | | PCC | |
| | | | | | | | | | | | | | | | TON 2 TON/STA | | TON 2 TON/STA | | | | | | | CY 4 | | CY 4 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IA 141 | EB | 653+46.90 | 653+83.92 | Lt. | | 3.0 | 37.0 | 5.1 | | | | | | | | | | 3.887 | 10.500 | 0.4 | | | | | | | |
| IA 141 | EB | 656+01.46 | 656+53.10 | Lt. | | 3.0 | 51.6 | 7.2 | | | | | | | | | | 5.422 | 10.500 | 0.5 | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IA 141 | EB | 653+46.90 | 653+98.54 | Rt. | | 3.0 | 51.6 | 7.2 | | | | | | | | | | 5.422 | 10.500 | 0.5 | | | | | | | |
| IA 141 | EB | 656+16.08 | 656+53.10 | Rt. | | 3.0 | 37.0 | 5.1 | | | | | | | | | | 3.887 | 10.500 | 0.4 | | | | | | | |
| | | | Total= | | | | | 24.6 | | | | | | | | | | 18.619 | | 1.8 | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |

***MNY4 - Factor of 1.00 as value includes number of 4-inch passes to cover median nose area.

****NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.**

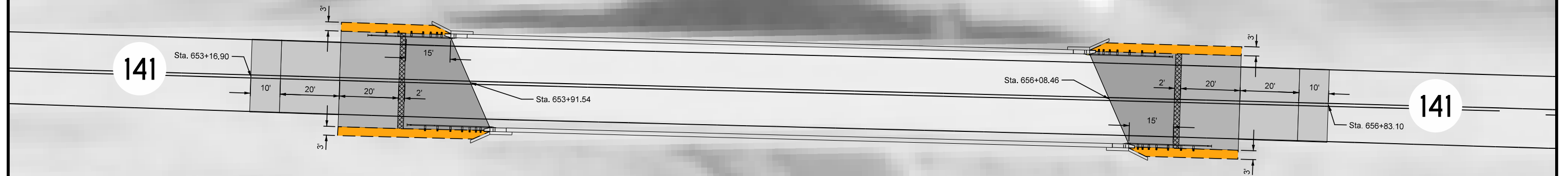
ELW4: Edge Line Right (White) @ 1.00

SLW2: Stop Line (White) @ 6.00

CRASH CUSHIONS

(2) Complete this section when using the Temporary Crash Cushion bid item and Earthwork is needed for Sand Barrel placement. Refer to BA-500

| | | | | | | | | | |
|----------|--------------|---------|-------------|---------------|-----------------|----------------|------------------------------|--------------|------------|
| FILE NO. | 31587 | ENGLISH | DESIGN TEAM | Ta\Tap | WOODBURY COUNTY | PROJECT NUMBER | BRFN-141-1(40)--39-97 | SHEET NUMBER | C.4 |
|----------|--------------|---------|-------------|---------------|-----------------|----------------|------------------------------|--------------|------------|



Legend

- Granular Shoulder
- Non-reinforced Approach Pavement
- Single Reinforced Approach Pavement
- Double Reinforced Approach Pavment
- Sleeper Slab
- Permanent Crash Cushion

0 FEET 20

IA 141 Over
Wolf Creek Ditch
Plan View

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic on IA 141 shall be maintained via an off-site detour. Refer to J.3 for the detour route.

The Contractor shall place pavement markings on the detour route prior to closing IA 141 and using the detour.

Detour signing and signing at the K-67 and D-25 intersection will be completed by DOT Maintenance.

The Contractor shall maintain and remove PDMS boards for detour. Refer to J.3 for approximate PDMS locations.

The Contractor shall contact the Iowa DOT Highway Maintenance Supervisor approximately 10 days in advance of the IA 141 closure and rumble strip placement on D-25 for the coordination of the detour signing.

The Contractor shall also contact the Highway Maintenance Supervisor approximately 10 days in advance of the rumble strip removal for the coordination of returning the intersection of D-25 and K-67 to a 2-way stop condition.

Contact information:

Highway Maintenance Supervisor
Ron Gleiser
(712)-261-0199

111-01
04-17-12

COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

| Project | Type of Work |
|---------------|--------------|
| None Provided | |
| | |
| | |

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 |
|--------|-----------|----------|-----------------------------|-----------------|-------------|--|------------------------|-------------------------|-----------------------------|--|--------------------------------------|---------|
| IA 141 | EB/WB | Woodbury | No Restrictions Anticipated | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

FILE NO. 31587

ENGLISH

DESIGN TEAM TA\TAP

WOODBURY COUNTY

PROJECT NUMBER BRFN-141-1(40)--39-97

SHEET NUMBER J.1

8/27/2019

3:45:05 PM

ctap

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Legend

Road Closure

Detour Route

Portable Dynamic Message Sign



Detour Route for
IA 141 Traffic
Using K64 and K67

100-1A
07-15-97

ESTIMATED PROJECT QUANTITIES
(1 DIVISION PROJECT)

| Item No. | Item Code | Item | Unit | Total | As Built Qty. |
|----------|--------------|--|------|-------|---------------|
| 1 | 2601-2638352 | SLOPE PROTECTION, WOOD EXCELSIOR MAT | SQ | 42.0 | |
| 2 | 2601-2643110 | WATERING FOR SOD, SPECIAL DITCH CONTROL, OR SLOPE PROTECTION | MGAL | 8.40 | |
| 3 | 2601-2643300 | MOBILIZATION FOR WATERING | EACH | 3 | |
| 4 | 2602-0000020 | SILT FENCE | LF | 200.0 | |
| 5 | 2602-0000071 | REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS | LF | 200.0 | |
| 6 | 2602-0000101 | MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK | LF | 200.0 | |
| 7 | 2602-0000150 | STABILIZED CONSTRUCTION ENTRANCE, EC-303 | LF | 200.0 | |
| 8 | 2602-0000312 | PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA. | LF | 260.0 | |
| 9 | 2602-0000320 | PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA. | LF | 285.0 | |
| 10 | 2602-0000350 | REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE | LF | 545.0 | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

| Item No. | Item Code | Description |
|----------|--------------|---|
| 1 | 2601-2638352 | SLOPE PROTECTION, WOOD EXCELSIOR MAT Refer to Tab. 100-22 for locations. Refer to Standard Road Plan EC-103. ----- Prepare seedbed according to Article 2601.03, B, 4, of the Standard Specifications prior to seeding and fertilizing under the slope protection. |
| - | - | - |
| 2 | 2601-2643110 | WATERING FOR SOD, SPECIAL DITCH CONTROL, OR SLOPE PROTECTION Estimate for watering Special Ditch Control, Slope Protection Areas, Turf Reinforcement Mat, or Transition Mat is based on a total of four waterings at a rate of 50 gallons per square. |
| - | - | - |
| 3 | 2601-2643300 | MOBILIZATION FOR WATERING - - |
| - | - | - |
| 4 | 2602-0000020 | SILT FENCE Refer to Standard Road Plan EC-201. Silt Fence" is included to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. |
| - | - | - |
| 5 | 2602-0000071 | REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS This 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. |
| - | - | - |
| 6 | 2602-0000101 | MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK This item is included for clean-out and repair of the silt fence and silt fence for ditch checks during the project. |
| - | - | - |
| 7 | 2602-0000150 | STABILIZED CONSTRUCTION ENTRANCE, EC-303 Refer to Standard Road Plan EC-303. Verify specific locations with the Engineer prior to beginning placement. |
| - | - | - |
| 8 | 2602-0000312 | PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA. Refer to Tab. 100-19. Refer to Standard Road Plan EC-204. The tabulation includes estimated locations for placement of "Perimeter and Slope Sediment Control Device, 12 in. dia." to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 25% additional quantity for field adjustments and replacements. Use Perimeter and Slope Sediment Control Devices fabricated using wood excelsior. |
| - | - | - |
| 9 | 2602-0000320 | PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA. Refer to Tab. 100-19. Refer to Standard Road Plan EC-204. The tabulation includes estimated locations for placement of "Perimeter and Slope Sediment Control Device, 20 in. dia." to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 25% additional quantity for field adjustments and replacements. Use Perimeter and Slope Sediment Control Devices fabricated using wood excelsior. |
| - | - | - |
| 10 | 2602-0000350 | REMOVAL OF PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE Item is included for the removal of all perimeter and slope protection devices. |

100-4A
10-29-02

ESTIMATE REFERENCE INFORMATION

| Item No. | Item Code | Description |
|----------|-----------|---|
| | | All material will become the property of the Contractor and shall be removed within 24 hours. |
| - | - | - |
| | | |
| | | |
| | | |
| | | |

LANDSCAPE DESIGN

STATE OF IOWA

Seana K. Godbold

LANDSCAPE ARCHITECT

NO. 508

PROFESSIONAL LANDSCAPE ARCHITECT

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly licensed professional landscape architect under the laws of the state of Iowa.

Signature

8/14/2019

Date

Printed or Typed Name

My license renewal date is June 30, 2021

Pages or sheets covered by this seal:

RC.1 - RC.2 ; RR.1 - RR.2

FILE NO. 31587

ENGLISH

DESIGN TEAM

GODBOLD\BULTMAN\MCDONALD

WOODBURY COUNTY

PROJECT NUMBER

BRFN-141-1(40) -- 39-97

SHEET NUMBER

RC.1

8/14/2019

2:06:21 PM

jbulmta

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| | | | |
|---|----------|--|-------------------|
| STANDARD ROAD PLANS | | | 105-4 10-18-11 |
| The following Standard Road Plans apply to construction work on this project. | | | |
| Number | Date | Title | |
| EC-103 | 04-21-15 | Wood Excelsior Mat for Slope Protection | |
| EC-201 | 10-15-19 | Silt Fence | |
| EC-204 | 04-18-17 | Perimeter and Slope Sediment Control Devices | |
| EC-303 | 04-16-19 | Stabilized Construction Entrance | |
| EC-502 | 04-21-15 | Seeding in Rural Areas | |
| | | | |
| | | | |

| | | | | | | |
|---|-------------|------|------------------------|-------------|-------------|--------------------|
| PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE | | | | | | 100-19 04-19-16 |
| Possible Standards: EC-204 | | | | | | |
| Location | | | Length of Installation | | | Remarks |
| Begin Station | End Station | Side | 9 inch Dia | 12 inch Dia | 20 inch Dia | |
| | | | LF | LF | LF | |
| 653+47.00 | 653+92.00 | Lt | | 45.0 | | |
| 653+47.00 | 654+06.00 | Rt | | 59.0 | | |
| 654+04.00 | 654+80.00 | M | | | 115.0 | |
| 655+76.00 | 655+92.00 | M | | | 110.0 | |
| 655+94.00 | 656+53.00 | Lt | | 59.0 | | |
| 656+07.00 | 656+53.00 | Rt | | 45.0 | | |
| PSSCD Tab Totals: | | | | 208.0 | 225.0 | |
| 12 inch PSSCD Bid Totals: | | | | 260.0 | | 125% of Tab Total |
| 20 inch PSSCD Bid Totals: | | | | | 285.0 | 125% of Tab Total |
| PSSCD Removal Totals: | | | | | 545.0 | 100% of Bid Total |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| ROLLED EROSION CONTROL | | | | | | | | | | | | 100-22 04-21-15 |
|------------------------------------|------------------|----------------|------|----|----|---------------------------------------|---------|---------|---------|------------------------------|-----------------------------------|--------------------|
| Refer to EC-101, EC-103 and EC-104 | | | | | | | | | | | | |
| Location | | | | L | W | Turf Reinforcement Mat (TRM) (EC-104) | | | | Slope Protection (EC-103) | Special Ditch Control (EC-101) | Remarks |
| Road Identification | Begin Station | End Station | Side | | | Type 1 | Type 2 | Type 3 | Type 4 | | | |
| | | | | FT | FT | Squares | Squares | Squares | Squares | Squares | Squares | |
| | 653+47.00 | 653+92.00 | Lt | 45 | 20 | | | | | 9 | | |
| | 653+47.00 | 654+06.00 | Rt | 59 | 20 | | | | | 12 | | |
| | +42.00 | 656+53.00 | Lt | 59 | 20 | | | | | 12 | | |
| | 656+07.00 | 656+53.00 | Rt | 45 | 20 | | | | | 9 | | |
| | | TOTAL | | | | | | | | 42 | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| | | |
|--|--|--------------------|
| EROSION CONTROL (RURAL SEEDING) | | 232-3A 04-16-19 |
| 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. | | |

| | | |
|---|--|--------------------|
| EROSION CONTROL (STABILIZING CROP SEEDING) | | 232-11 04-16-19 |
| 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. | | |








| | | |
|--|--|-------------------|
| SECTION 404 PERMIT AND CONDITIONS | | 281-1 10-18-16 |
| Construct this project according to the requirements of U.S. Army Corps of Engineers Nationwide, Permit No. 3. 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. | | |

| | | |
|--|--|-------------------|
| STORM WATER BEST MANAGEMENT PRACTICES | | 281-3 10-17-17 |
| Storm water storage volumes are not calculated for this project. The following best management practices are used in place of storm water detention: Undisturbed foreslope and ditches will act as vegetated buffers. Silt fence is placed downstream of disturbed areas in ditches where drainage leaves the ROW and at roadway culverts. | | |

| | | |
|--|--|--------------------|
| EROSION CONTROL (NATIVE GRASS SEEDING) | | 232-3C 04-16-19 |
| Following the completion of work in a disturbed area and according to the seeding dates in Section 2601 of the Standard Specifications, place seed and mulch on the disturbed area lying 8 feet or more beyond the shoulder as follows: | | |
| SEED MIX: Big bluestem (Andropogon gerardii) 6 lbs. PLS/Acre (7.0 kg/ha) Indiangrass (Sorghastrum nutans) 6 lbs. PLS/Acre (7.0 kg/ha) Little bluestem (Schizachyrium scoparium) 6 lbs. PLS/Acre (7.0 kg/ha) Partridge Pea (Chamaecrista fasciculata) 4 lbs. PLS/Acre (4.5 kg/ha) Sideoats grama (Bouteloua curtipendula) 4 lbs. PLS/Acre (4.5 kg/ha) Canada wildrye (Elymus canadensis) 2 lbs. PLS/Acre (2.2 kg/ha) Switchgrass (Panicum virgatum) 1 lbs. PLS/Acre (1.1 kg/ha) Oats (Avena sativa) 32 lbs./Acre (36.0 kg/ha) | | |
| Furnish Big bluestem, Indiangrass, Canada wildrye and Little bluestem that is bearded or equal to facilitate the application of seed. | | |
| Furnish seed certified as Source Identified Class (Yellow Tag) Source G0-Iowa. Oats are excluded from this requirement. | | |
| Place seed according to the requirements of Article 4169.02 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 and mulch are incidental to mobilization and will not be paid for separately. | | |

| LINE STYLE LEGEND OF EROSION CONTROL SHEETS | |
|---|---|
| | Silt Fence |
| | Perimeter and Slope Sediment Control Device (9") |
| | Perimeter and Slope Sediment Control Device (12") |
| | Perimeter and Slope Sediment Control Device (20") |
| | Open-Throat Curb Intake Sediment Filter |
| | Concentrated Flow |
| | Sheet Flow |

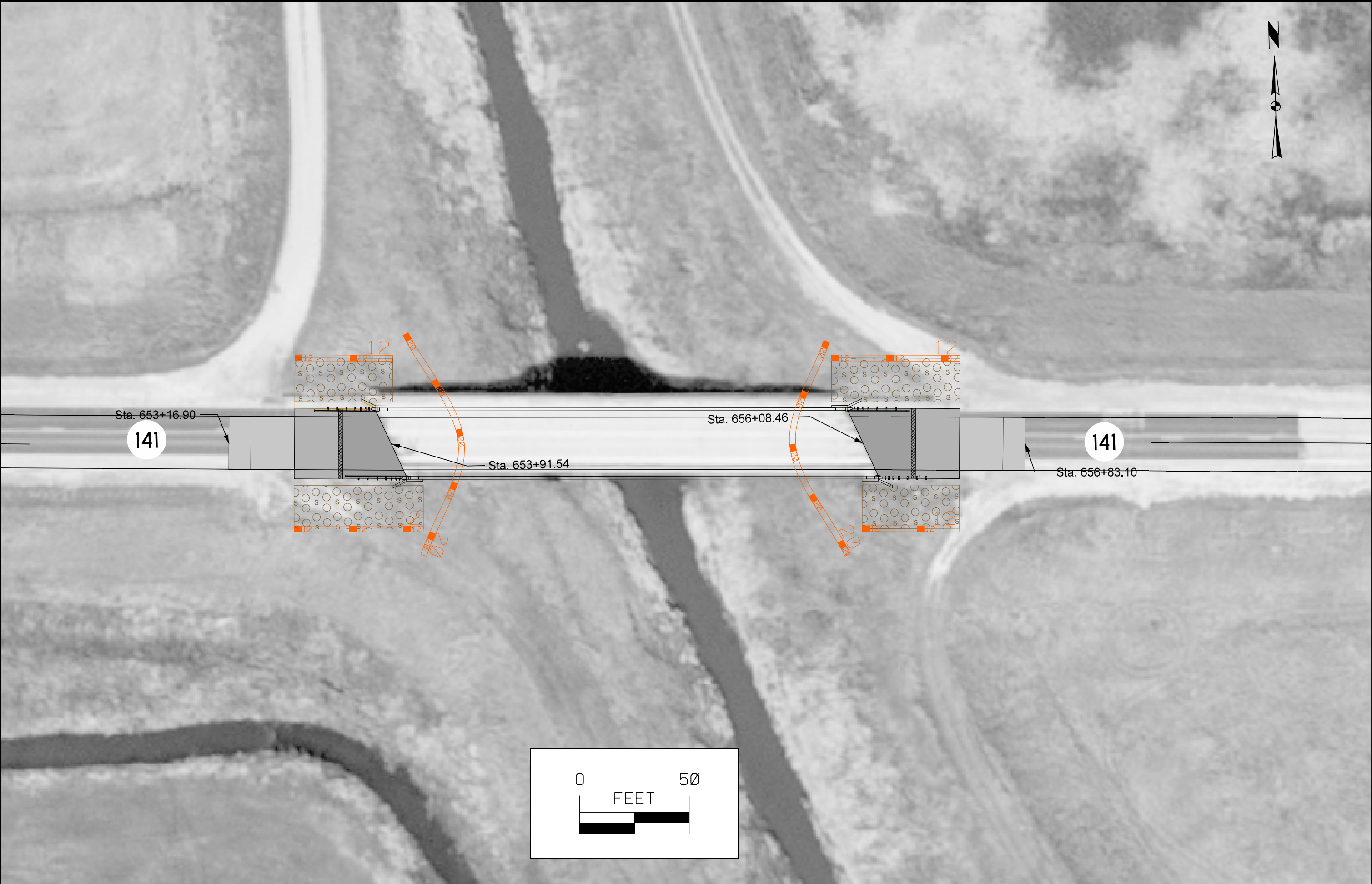
| CELL LEGEND OF EROSION CONTROL SHEETS | |
|---------------------------------------|--|
| | Temporary Sediment Control basin |
| | Erosion Control for Circular Intake or Manhole Well |
| | Erosion Control for Rectangular Intake or Manhole Well |
| | Grate Intake Sediment Filter Bag |
| | Silt Basin |
| | Silt Fence Tail |
| | Stormwater Drainage Basin Discharge Point |

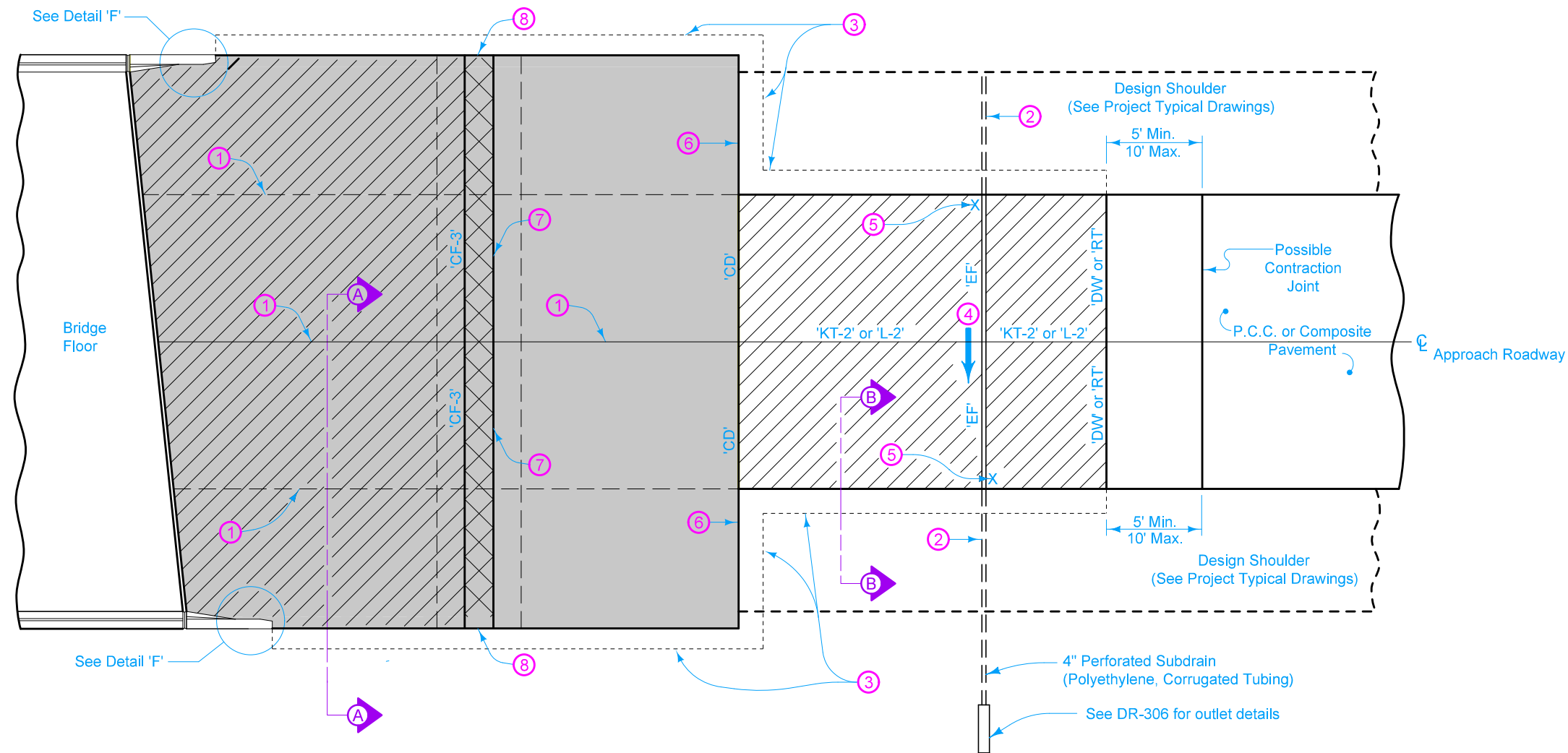
| PLAN VIEW COLOR LEGEND OF EROSION CONTROL SHEETS | | | | |
|--|------------------|---|---|-----|
| LINEWORK | Design Color No. | | | |
| Green | (2) |  | Existing Topographic Features and Labels | |
| Blue | (1) |  | Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation | |
| Magenta | (5) |  | Existing Utilities | |
| Black | (0) |  | Permanent Erosion Control Features | |
| Blaze Orange | (222) |  | Temporary Erosion Control Features | |
| SHADING | Design Color No. | | Transparency | |
| Citron | (234) |  | Mulching, All Types | 50% |
| Light Brown | (238) |  | Special Ditch Control, Wood Excelsior Mat | 0% |

| PATTERN LEGEND OF EROSION CONTROL SHEETS | |
|--|--------------------------------------|
| | Seeding and Fertilizing |
| | Seeding and Fertilizing (Rural) |
| | Seeding and Fertilizing (Urban) |
| | Native Grass Seeding |
| | Salt Tolerant Seeding |
| | Wetland Grass Seeding |
| | Wildflower Seeding |
| | Sodding |
| | Turf Reinforcement Mat Type 1 |
| | Turf Reinforcement Mat Type 2 |
| | Turf Reinforcement Mat Type 3 |
| | Turf Reinforcement Mat Type 4 |
| | Slope Protection, Wood Excelsior Mat |
| | Transition Mat |
| | Rock Features, Permanent |
| | Rock Features, Temporary |

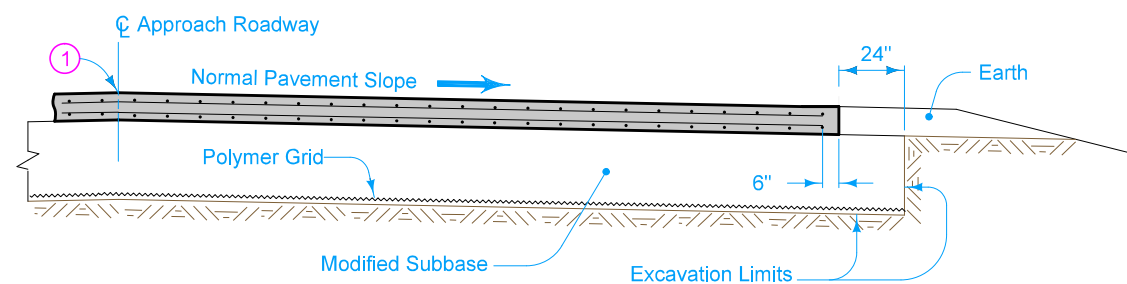
EROSION CONTROL LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES R)

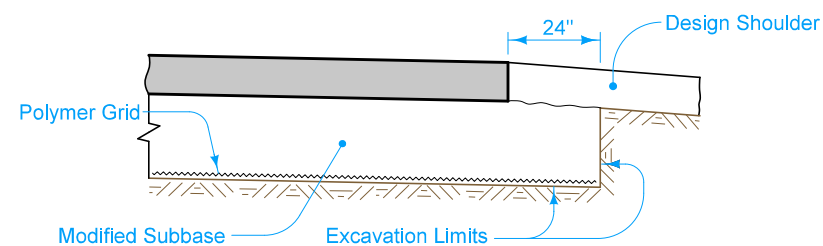




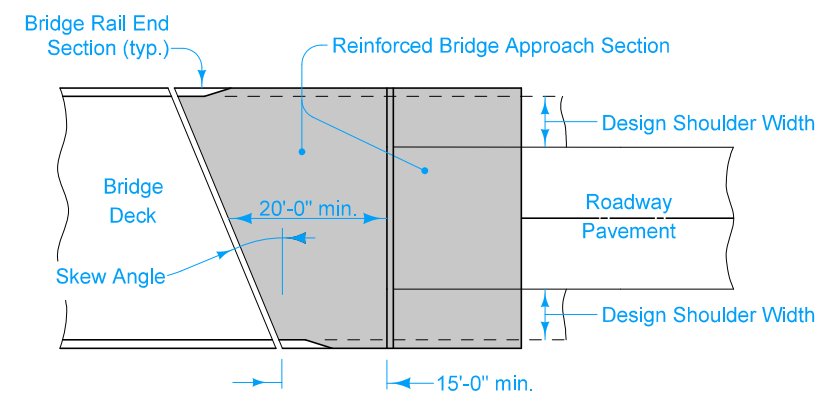
PLAN VIEW



SECTION A-A



SECTION B-B



APPROACH PAVEMENT LAYOUT AT A SKEW

For joint details, see PV-101.

All transverse bars are #5.

Use epoxy coated bars for all reinforcement.

Quantities for both the 1'-9" top part of the sleeper slab and the 6'-3" portion under the approach pavement have been included in the double reinforced section quantities.

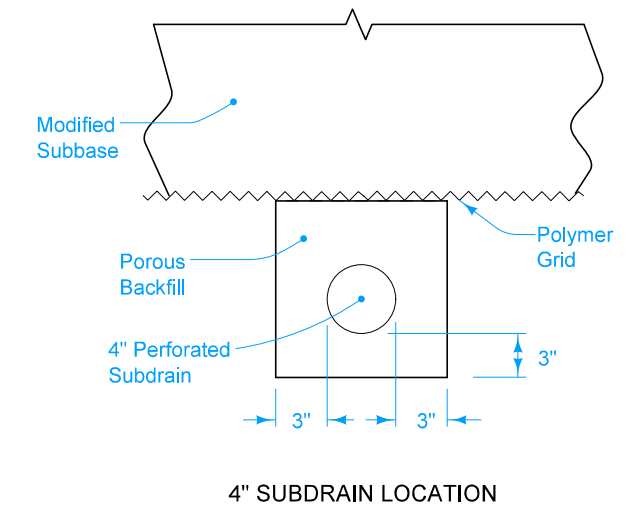
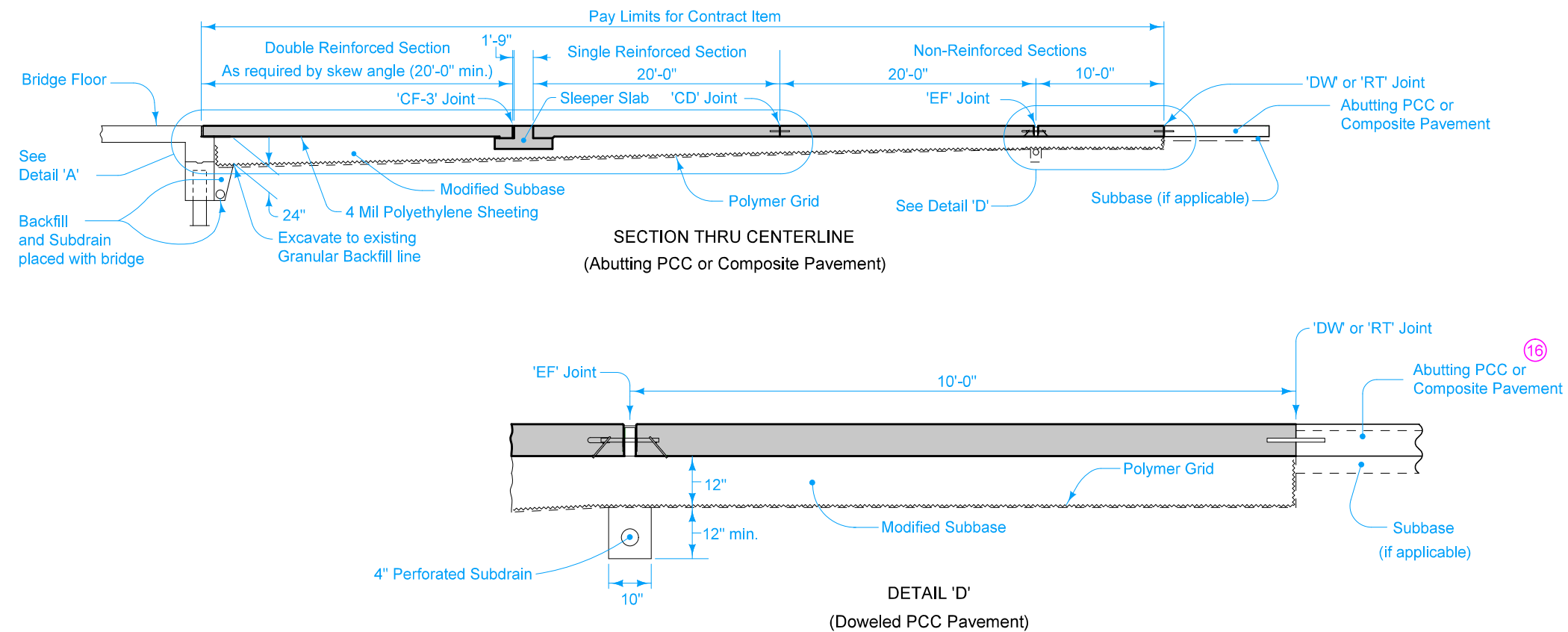
- ① Longitudinal Joint (PV-101):
Single Pour - Saw cut joint per Detail B.
Two Pours - Use 'KS-1' joint (Single Reinforced Section).
Use 'KS-2' joint (Double Reinforced Section).
- ② Extend 'CD' and 'EF' joints where PCC Shoulder.
- ③ Polymer Grid and excavation limits of Modified Subbase 2 feet outside of pavement edge.
- ④ Slope subdrain to drain.
- ⑤ Place an "X" in the plastic concrete near the 'EF' joint at the outside edge of pavement.
- ⑥ Place 'RD' Joint where PCC shoulder. Place 'B' joint otherwise.
- ⑦ ¼ inch Preformed Joint Filler and seal top.
- ⑧ See Detail 'C'.

Tabulation:
112-6

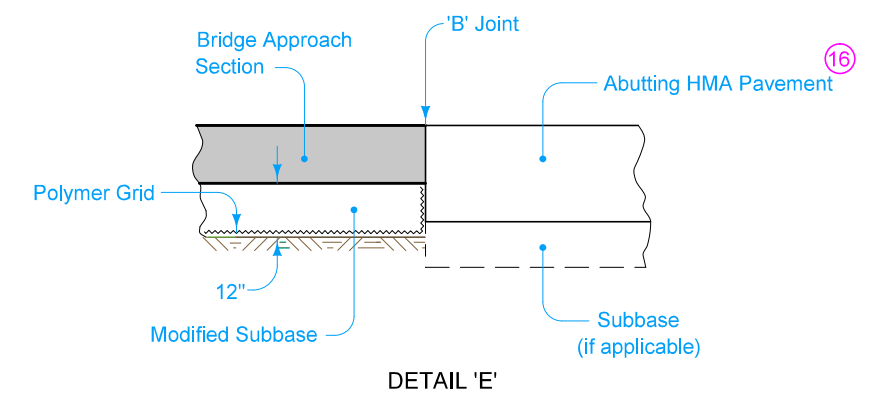
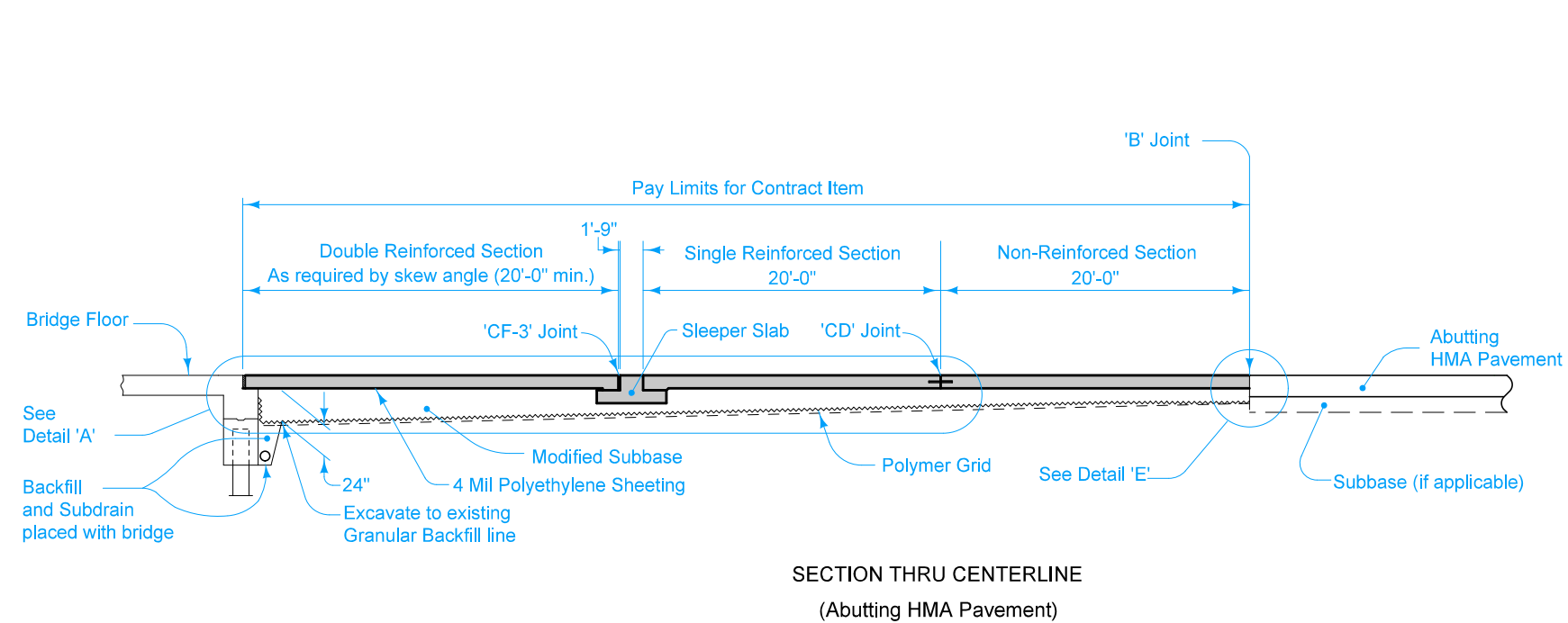
| MODIFIED STANDARD ROAD PLAN | REVISION | |
|---|----------|----------|
| | 5 | 10-15-19 |
| BR-205 | | |
| SHEET 1 of 4 | | |
| MODIFICATIONS: Removed curb. | | |
| APPROVED BY DESIGN METHODS ENGINEER | | |
| DOUBLE REINFORCED 12" APPROACH (SLAB BRIDGE) | | |

Pay limits for contract item
include the following areas:

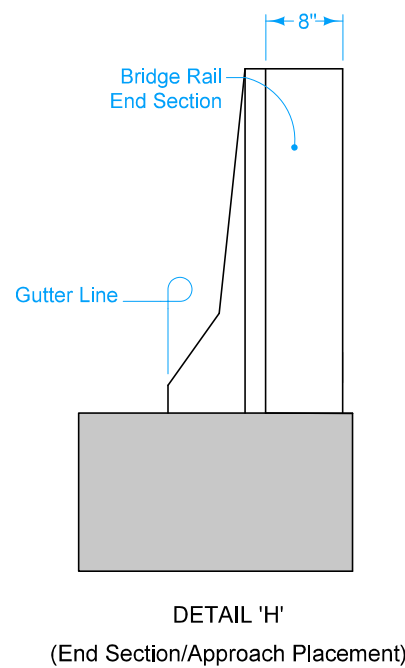
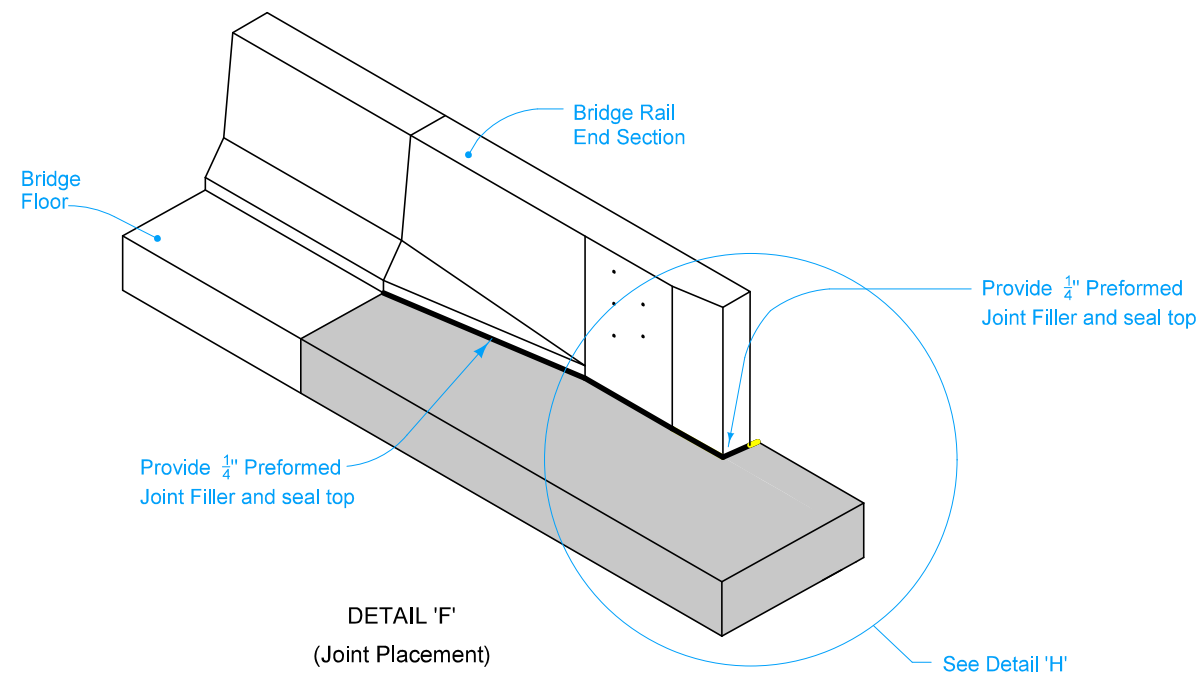
- Double Reinforced Section
- Sleeper Beam Section
- Single Reinforced Section
- Non-Reinforced Section



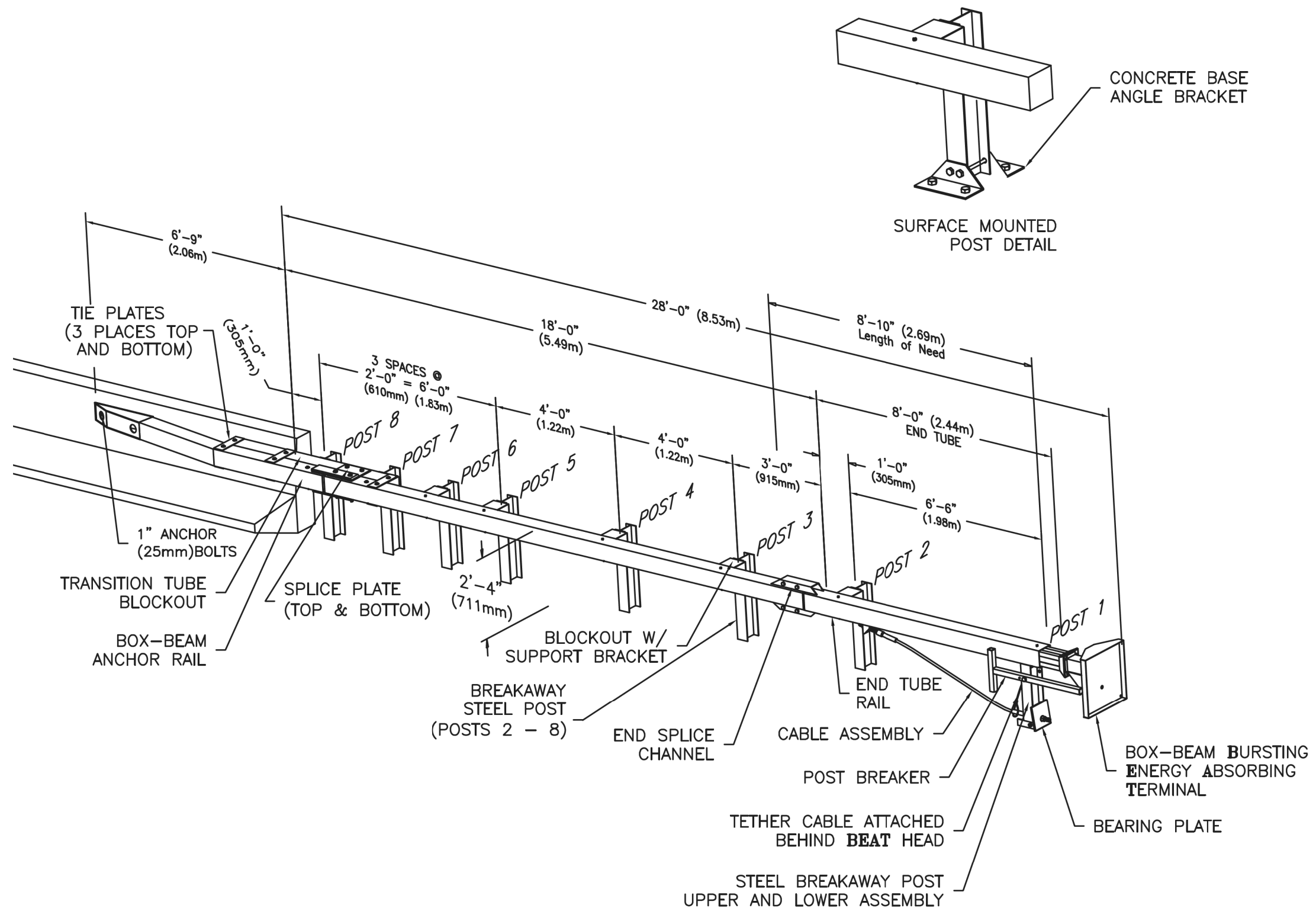
16 If abutting pavement (PCC or HMA) is not in place, refer to BR-213.



| | | | |
|---|--|---------------|----------|
| MODIFIED | | REVISION | |
| | | 5 | 10-15-19 |
| STANDARD ROAD PLAN | | BR-205 | |
| | | SHEET 3 of 4 | |
| MODIFICATIONS: Removed curb. | | | |
| | | | |
| APPROVED BY DESIGN METHODS ENGINEER | | | |
| DOUBLE REINFORCED 12" APPROACH (SLAB BRIDGE) | | | |



| | | | |
|---|--|---------------|----------|
| MODIFIED | | REVISION | |
| | | 5 | 10-15-19 |
| STANDARD ROAD PLAN | | BR-205 | |
| | | SHEET 4 of 4 | |
| MODIFICATIONS: Removed curb. | | | |
| | | | |
| APPROVED BY DESIGN METHODS ENGINEER | | | |
| | | | |
| DOUBLE REINFORCED 12" APPROACH (SLAB BRIDGE) | | | |



NOTES:

1. SYSTEM CAN BE INSTALLED WITH GROUND MOUNTED POSTS IN THE SOIL OR SURFACE MOUNTED POSTS WITH ANCHOR BOLTS.

SCI13a Driven Posts
SCI13b Surface Mounted Posts

2. CAN BE ATTACHED TO SAFETY SHAPE BARRIER OF VERTICAL WALL.

