BENTON COUNTY — PROJECT NO. BROS-C006(126)--8J-06 — RCB CULVERT REPLACEMENT - TWIN BOX — LETTING DATE: DECEMBER 15, 2026

STANDARD ROAD PLANS
STANDARD ROAD PLANS ARE LISTED ON SHEET 11.

SECTION 404 PERMIT AND CONDITIONS	281-1 MODIFIED
CONSTRUCT THIS PROJECT ACCORDING TO THE REQUIREMENTS OF U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT 14. NATIONWIDE PERMIT 14 CONDITIONS CAN BE FOUND AT http://www.mvr.usace.army.mil/Missions/Regulatory/Permits/. THE U.S. ARMY CORPS OF ENGINEERS RESERVES THE RIGHT TO VISIT THE SITE WITHOUT PRIOR NOTICE.	

IOWA | DOT

PLANS OF PROPOSED IMPROVEMENT ON THE

SECONDARY ROAD SYSTEM

BENTON COUNTY

PROJECT NO. BROS-C006(126)--8J-06

RCB CULVERT REPLACEMENT - TWIN BOX

ON 16 AVE, OVER SPRING CK, S30 T86 R11

TOTAL SHEETS: 14

PROJECT NO. BROS-C006(126)--8J-06
FHWA NO. 073465
COUNTY BR. NO. CE 0047

INDEX OF SHEETS

1. TITLE SHEET
2. QUANTITY SUMMARY
3. SITUATION PLAN
4. GENERAL PLAN
5. GENERAL NOTES
6. POLLUTION PREVENTION PLAN
7.-9. CULVERT HEADWALL DETAILS
10. DROP INLET DETAILS
11.-12. TABULATIONS
13.-14. CROSS SECTIONS

REFER TO THE PROPOSAL FORM FOR LIST OF APPLICABLE SPECIFICATIONS.

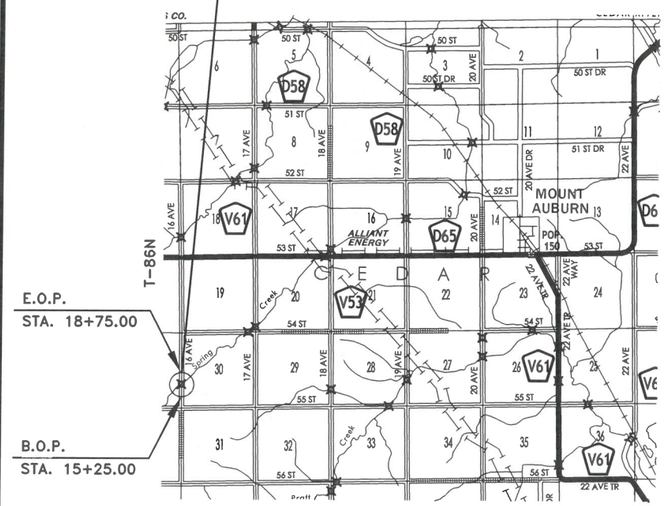
THIS PROJECT IS COVERED BY THE IOWA DEPARTMENT OF NATURAL RESOURCES NPDES GENERAL PERMIT NO. 2. THE CONTRACTOR SHALL CARRY OUT THE TERMS AND CONDITIONS OF GENERAL PERMIT NO. 2 AND THE STORM WATER POLLUTION PREVENTION PLAN WHICH IS A PART OF THESE CONTRACT DOCUMENTS. REFER TO SECTION 2602 OF THE STANDARD SPECIFICATIONS FOR ADDITIONAL INFORMATION.

MILEAGE SUMMARY

STA. 15+25.00 TO STA. 18+75.00 = 350.00 LIN. FT. = 0.0663 MILES

2021, TRAFFIC COUNT = 26 V.P.D.

B.O.P. STA. 15+25.00
E.O.P. STA. 18+75.00
FHWA NO. 073465
STATION 16+70.00
PROPOSED TWIN 10' x 8' x 46'-0 REINFORCED CONCRETE BOX CULVERT, 15° SKEW, RT. AHEAD





PROJECT LOCATION

1 MI. 0 1 MI. 2 MI.

N

UTILITY CONTACTS				
COMPANY	UTILITY	CONTACT	PHONE #	EMAIL
LA PORTE CITY TELEPHONE COMPANY	TELECOM	DAVID POWELL	319-342-3369	lpctel@netins.net
POWESHIEK WATER ASSOCIATION	WATER	RICK ANDERSON	641-522-7416	rick@poweshiekwater.com

DRAWING APPROVAL

ALL SHOP DRAWINGS AND FALSEWORK DRAWINGS THAT REQUIRE APPROVAL SHALL BE SUBMITTED TO AND APPROVED BY THE CONTRACTOR, WHO SHALL STAMP, CERTIFY OR PROVIDE OTHER SUCH EVIDENCE ON THE DRAWINGS THAT THEY HAVE RECEIVED CONTRACTOR APPROVAL. THE APPROVED DRAWINGS SHALL THEN BE SUBMITTED TO CALHOUN-BURNS AND ASSOCIATES, INC., FOR REVIEW AND APPROVAL.

ADDRESS : 1500 30TH STREET
WEST DES MOINES, IOWA 50266
TELEPHONE : (515) 224-4344
FAX : (515) 224-1385

SHOP DRAWINGS SHALL BE INDEPENDENT DRAWINGS WITH ADEQUATE DIMENSIONING FOR FABRICATION OF INDIVIDUAL PIECES OF EACH COMPONENT. PHOTOCOPIES OF PLAN DRAWINGS AND NON-CONTRACTOR APPROVED PLANS WILL BE REJECTED.

THESE DRAWINGS SHALL NOT BE SENT TO IOWA D.O.T. OFFICE OF BRIDGES AND STRUCTURES.

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

IOWA DEPARTMENT OF TRANSPORTATION STANDARDS REQUIRED	
STANDARD	LATEST REVISION
TWRCB G1-20	-
TWRCB G2-20	-
TWRCB G3-20	-
TWRCB 10-8-20	-

THESE SHEETS MAY BE OBTAINED AT THE ELECTRONIC REFERENCE LIBRARY WEBSITE. http://erl.iowadot.gov

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
CULVERT STANDARDS	JAMES S. NELSON	STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER — JULI A. REDMOND 17384 — IOWA

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Juli Redmond DATE: 9/11/26
JULI A. REDMOND, P.E.

MY LICENSE RENEWAL DATE IS DECEMBER 31, 2026.

PAGES OR SHEETS COVERED BY THIS SEAL: 1-14 OF 14

APPROVED
Myron Parizek 10-8-2024
BENTON COUNTY ENGINEER — DATE

Gary Bierschbach
Tracy Keenan 9-8-2024
BOARD OF SUPERVISORS — DATE

TOTAL ESTIMATED QUANTITIES: TWIN 10' x 8' x 46'–0 R.C.B. CULVERT

REF. NO.	CODE NO.	ITEM	UNIT	TOTAL
1	2102–0425070	SPECIAL BACKFILL	TON	80
2	2102–2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	1,225
3	2102–2710090	EXCAVATION, CLASS 10, WASTE	CY	1,075
4	2104–2710020	EXCAVATION, CLASS 10, CHANNEL	CY	600
5	2105–8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	750
6	2312–8260051	GRANULAR SURFACING ON ROAD, CLASS A CRUSHED STONE	TON	135
7	2401–6745625	REMOVAL OF EXISTING BRIDGE	LS	1
8	2402–2720000	EXCAVATION, CLASS 20	CY	750
9	2403–0100020	STRUCTURAL CONCRETE (RCB CULVERT)	CY	174.8
10	2404–7775000	REINFORCING STEEL	LB	25,213
11	2418–0000010	TEMPORARY STREAM DIVERSION	EACH	1
12	2502–8221305	SUBDRAIN OUTLET, DR–305	EACH	2
13	2507–3250005	ENGINEERING FABRIC	SY	650
14	2507–4011100	CONCRETE GROUT FOR REVETMENT OR GABION	CY	24
15	2507–6800061	REVETMENT, CLASS E	TON	475
16	2526–8285020	CONSTRUCTION SURVEY, CONTROL POINT SURVEY	LS	1
17	2526–8285030	CONSTRUCTION SURVEY, RIGHT OF WAY	LS	1
18	2526–8285040	CONSTRUCTION SURVEY, LOCATION SURVEY	LS	1
19	2528–2518000	SAFETY CLOSURE	EACH	2
20	2528–8445110	TRAFFIC CONTROL	LS	1
21	2533–4980005	MOBILIZATION	LS	1
22	2601–2634100	MULCHING	ACRE	1.8
23	2601–2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	0.9
24	2601–2642100	STABILIZING CROP – SEEDING AND FERTILIZING	ACRE	0.9
25	2602–0000020	SILT FENCE	LF	380
26	2602–0000030	SILT FENCE FOR DITCH CHECKS	LF	132
27	2602–0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	512
28	2602–0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	410
29	2602–0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1
30	2602–0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	1

REF. NO. ESTIMATE REFERENCE INFORMATION

1. INCLUDES MATERIAL TO IMPROVE WET AND MUDDY CONDITIONS ALONG THE BOTTOM OF THE EXCAVATION. QUANTITY IS BASED ON A SIX (6) INCH THICKNESS. THE ACTUAL THICKNESS SHALL BE DETERMINED BY THE ENGINEER BASED ON SITE CONDITIONS AT THE TIME OF CONSTRUCTION. PRICE BID FOR "SPECIAL BACKFILL" SHALL INCLUDE THE COST FOR ANY NECESSARY OVER EXCAVATION. MACADAM STONE MAY BE SUBSTITUTED FOR SPECIAL BACKFILL AT THE CONTRACTOR'S OPTION. IF MACADAM STONE IS SUBSTITUTED, BASE MATERIAL (I.D.O.T. STANDARD SPECIFICATION GRADATION NO. 13A) SHALL BE TOPPED WITH CHOKE STONE LAYER (MACADAM STONE GRADATION NO. 13B OR SPECIAL BACKFILL MATERIAL). NO ADDITIONAL PAYMENT WILL BE MADE FOR MATERIAL SUBSTITUTION.
   RECLAIMED ASPHALT PAVEMENT (RAP) AND RECLAIMED HMA SHALL NOT BE USED FOR THE SPECIAL BACKFILL.

2. SEE TABULATION CBA-101 ON SHEET 12 FOR BREAKDOWN OF EXCAVATION QUANTITIES.
   TYPE "A" COMPACTION WILL BE REQUIRED.
   NO PAYMENT FOR OVERHAUL SHALL BE MADE ON THIS PROJECT.
   EXCEPT WHERE NOTED OTHERWISE ON THE PLANS, ALL ENTRANCE AND ROADWAY CULVERTS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AS PART OF "EXCAVATION, CLASS 10, ROADWAY AND BORROW".
   MOISTURE SHALL BE APPLIED, AS NECESSARY, TO THE CONSTRUCTION AREA TO PREVENT THE SPREAD OF DUST NEAR RESIDENTIAL AREAS AND INDIVIDUAL HOMES. REFER TO ARTICLE 1107.07 OF THE STANDARD SPECIFICATIONS FOR ADDITIONAL DETAILS.

3. SEE TABULATION CBA-101 ON SHEET 12 FOR BREAKDOWN OF EXCAVATION QUANTITIES.
   INCLUDES ALL COST TO REMOVE UNSUITABLE OR EXCESS MATERIAL FROM SITE. THE UNSUITABLE OR EXCESS MATERIAL SHALL BE WASTED AT A LOCATION PROVIDED BY THE CONTRACTOR AND NOTED TO THE ENGINEER.
   NO PAYMENT FOR OVERHAUL SHALL BE MADE ON THIS PROJECT.

4. SEE TABULATION CBA-101 ON SHEET 12 FOR BREAKDOWN OF EXCAVATION QUANTITIES.
   INCLUDES COSTS TO CLEAR THE CHANNEL TO THE SHAPE, DEPTH, AND EXTENT SHOWN IN THE "LONGITUDINAL SECTION ALONG CENTERLINE OF CULVERT" AND THE LIMITS SHOWN ON THE SITUATION PLAN, SHEET 3, AND GENERAL PLAN, SHEET 4.
   INCLUDES COST OF USING SUITABLE MATERIAL FOR CONSTRUCTION ELSEWHERE ON THIS PROJECT. SUITABLE SOILS SHALL BE AS DEFINED BY ARTICLE 2102.02, D, 2 OF THE STANDARD SPECIFICATIONS.
   APPROXIMATELY 380 C.Y. OF CLASS 10 CHANNEL MATERIAL SHALL BE USED TO FILL THE EXISTING CHANNEL. ALL MATERIAL CUT FROM THE PROPOSED CHANNEL ALIGNMENT, SHALL BE USED TO FILL THE EXISTING CHANNEL ALIGNMENT. PRICE BID FOR THIS ITEM SHALL INCLUDE ALL COSTS ASSOCIATED WITH EXCAVATION, TRANSPORTATION AND PLACEMENT OF CLASS 10 CHANNEL MATERIAL. FILL MATERIAL PLACED OUTSIDE OF THE RIGHT-OF-WAY SHALL BE CONSTRUCTED IN MAXIMUM 8 INCH LIFTS WITH A MINIMUM OF TWO PASSES WITH A COMPACTION ROLLER BETWEEN LIFTS.

5. IN ORDER TO MEET NPDES PERMIT REQUIREMENTS TOPSOIL STRIP, SALVAGE AND SPREAD SHALL BE REQUIRED ON THIS PROJECT. QUANTITY PERTAINS TO WORK WITHIN THE PROJECT LIMITS. SIX INCHES OF TOPSOIL SHALL BE STRIPPED FROM WITHIN THE PROJECT LIMITS AND SPREAD UNIFORMLY (6" TARGET WITH 4" MIN. DEPTH) OVER ALL AREAS THAT ARE NOT COVERED BY PAVEMENT OR GRANULAR MATERIAL. AREAS SHALL BE UNDERCUT PRIOR TO PLACING TOPSOIL. CROSS-SECTIONS SHOW FINISHED GRADELINE.

6. SURFACING TO BE FURNISHED AND PLACED BY THE CONTRACTOR IN TWO PASSES (1400 AND 600 TONS /MILE).

7. THE EXISTING BRIDGE AT STATION 16+87 IS A 25' x 24' CONCRETE SLAB BRIDGE WITH HIGH TIMBER ABUTMENTS, STEEL CAPS, AND A CONCRETE DECK BUILT IN 1971. THE STRUCTURE CURRENTLY POSTED "3 TONS".
   AN INSPECTION FOR THE PRESENCE OF ASBESTOS CONTAINING MATERIALS WAS COMPLETED AND NO SUSPECT MATERIALS WERE FOUND. IF ADDITIONAL MATERIALS SUSPECTED OF CONTAINING ASBESTOS ARE DISCOVERED DURING DEMOLITION OF THE BRIDGE, WORK SHALL BE STOPPED IMMEDIATELY AND THE ENGINEER NOTIFIED.
   THE LUMP SUM BID FOR "REMOVAL OF EXISTING BRIDGE" SHALL INCLUDE REMOVAL AND DISPOSAL OF THE EXISTING STRUCTURE, AND THE EXISTING CONCRETE RETAINING WALL LETDOWN STRUCTURE ON THE UPSTREAM SIDE OF THE BRIDGE. ALL SALVAGEABLE MATERIAL AND UNSALVAGEABLE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR. THE EXISTING STRUCTURE SHALL BE REMOVED TO AN ELEVATION AT LEAST 1 FOOT BELOW FINISHED GROUNDLINE AND TO THE EXTENT THAT IT WILL NOT INTERFERE WITH THE NEW CONSTRUCTION.
   BROKEN CONCRETE FROM THE EXISTING BRIDGE WITH SIMILAR GRADATION TO CLASS 'E' REVETMENT MAY BE PLACED ON THE BANKS OUTSIDE THE LIMITS SHOWN FOR CLASS 'E' REVETMENT, AS DIRECTED BY THE ENGINEER. ALL REINFORCING SHALL BE CUT OFF FLUSH WITH THE CONCRETE. H.M.A. MATERIAL IS SPECIFICALLY EXCLUDED. ALTERNATELY, THE CONTRACTOR MAY DISPOSE OF THE BROKEN CONCRETE OFF SITE AT A LOCATION PROVIDED BY THE CONTRACTOR AND NOTED TO THE ENGINEER.
   SEE HAZARDOUS MATERIALS NOTES ON SHEET 5 FOR PAINT SCRAPE SAMPLE RESULTS.

8. INCLUDES ALL LABOR, EQUIPMENT AND INCIDENTALS REQUIRED FOR THE EXCAVATION RELATING TO CULVERT CONSTRUCTION. THE QUANTITY SHOWN IS BASED ON EXISTING UNDISTURBED CONDITIONS.
   INCLUDES COSTS OF USING SUITABLE CLASS 20 EXCAVATION TO BACKFILL THE CULVERT IN ACCORDANCE WITH SECTION 2107 OF THE STANDARD SPECIFICATIONS AND/OR FOR CONSTRUCTION ELSEWHERE ON THIS PROJECT. SUITABLE SOILS SHALL BE AS DEFINED BY ARTICLE 2102.02, D, 2 OF THE STANDARD SPECIFICATIONS.

9. CERTIFIED PLANT INSPECTION IS REQUIRED.
   NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR HEATING AND PROTECTION OF CONCRETE, IF NECESSARY.
   SEE "CONCRETE PLACEMENT QUANTITIES" ON SHEET 9.

10. ALL REINFORCING SHALL BE GRADE 60.
    SEE "REINFORCING STEEL SUMMARY" ON SHEET 9.

12. INCLUDES THE COST TO ADJUST THE 12 INCH AND 18 FIELD TILE LINES IN THE CONCRETE RETAINING WALL LETDOWN STRUCTURE TO THE PROPOSED BANK SHAPING AND INSTALL A NEW DR-305 TYPE A AND C OUTLETS.
    SEE GENERAL PLAN, SHEET 4, FOR LOCATION.

13. SEE SITUATION PLAN, SHEET 3, AND GENERAL PLAN, SHEET 4, FOR LIMITS.
    ENGINEERING FABRIC SHALL BE LAPPED FOR FIELD SPLICING, THE LAPS SHALL BE A MINIMUM OF TWO FEET IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP. THE CONTRACTOR SHALL PROVIDE A MEANS TO SECURE THE LAP DURING THE PLACEMENT OF THE REVETMENT.

14. QUANTITY IS FOR GROUTING OF THE REVETMENT ON THE OUTLET SIDE OF THE CULVERT ONLY. SEE SITUATION PLAN, SHEET 3, AND GENERAL PLAN, SHEET 4, FOR AREAS.

15. REVETMENT IS TO BE PLACED AT A THICKNESS OF 1'-6. SEE SITUATION PLAN, SHEET 3, AND GENERAL PLAN, SHEET 4, FOR LIMITS.

16. – 18. THE CONTRACTOR IS RESPONSIBLE FOR CONDUCTING AN INDEPENDENT CHECK OF ALL CONSTRUCTION STAKES PLACED FOR THE PROJECT. THIS INDEPENDENT CHECK SHALL BE SUFFICIENT TO UNDERSTAND THE PLACEMENT AND INTENT OF THE STAKES.
    SEE TABULATION CBA-300 ON SHEET 11, FOR FIELD TIES TO THE SITE SURVEY.
    THE BID PRICE FOR CONSTRUCTION SURVEY SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, DATA PREPARATION, COORDINATION, FILE CONVERSION, AND OTHER INCIDENTAL WORK NECESSARY TO PERFORM THE REQUIRED CONSTRUCTION SURVEY. ANY DIGITAL TERRAIN MODELING, SURFACE PREPARATION, OR OTHER MODELING NEEDED BY THE CONTRACTOR FOR MACHINE CONTROL GRADING SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION SURVEY BID ITEM AND SHALL BE INCLUDED IN THE BID PRICE. NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR SUCH MODELING. SEE GENERAL NOTES FOR ADDITIONAL INFORMATION.

19. SEE TABULATION 108-13A ON SHEET 12.

20. SEE TRAFFIC CONTROL PLAN ON SHEET 12.

22. – 24. THE CONTRACTOR IS TO RESHAPE, FERTILIZE, SEED AND MULCH ANY AREAS DISTURBED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION. THIS SHALL BE INCLUDED IN THE PRICES BID FOR "MULCHING" AND "SEEDING AND FERTILIZING (RURAL)". SEE POLLUTION PREVENTION PLAN, SHEET 6 FOR STABILIZING CROP REQUIREMENT.

25. – 30. SEE TABULATIONS 100-17, 100-18 AND 100-19 ON SHEET 11.

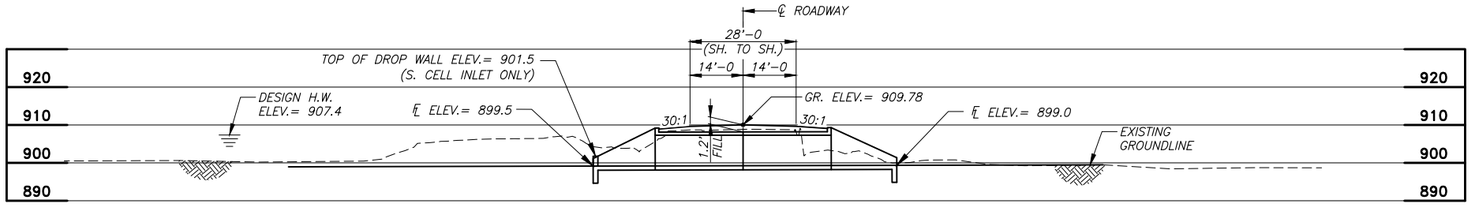
TWIN 10' x 8' x 46'–0 REINFORCED CONCRETE BOX CULVERT

QUANTITY SUMMARY

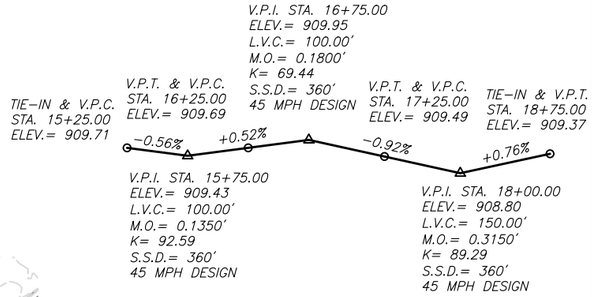
STATION 16+70.00 — 15° SKEW, RT. AHEAD

BENTON COUNTY, IOWA

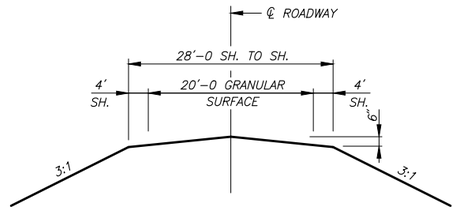
BENCH MARK: SFP CUT 'X', STA. 19+47, @ 28 LT. ELEV.= 907.56



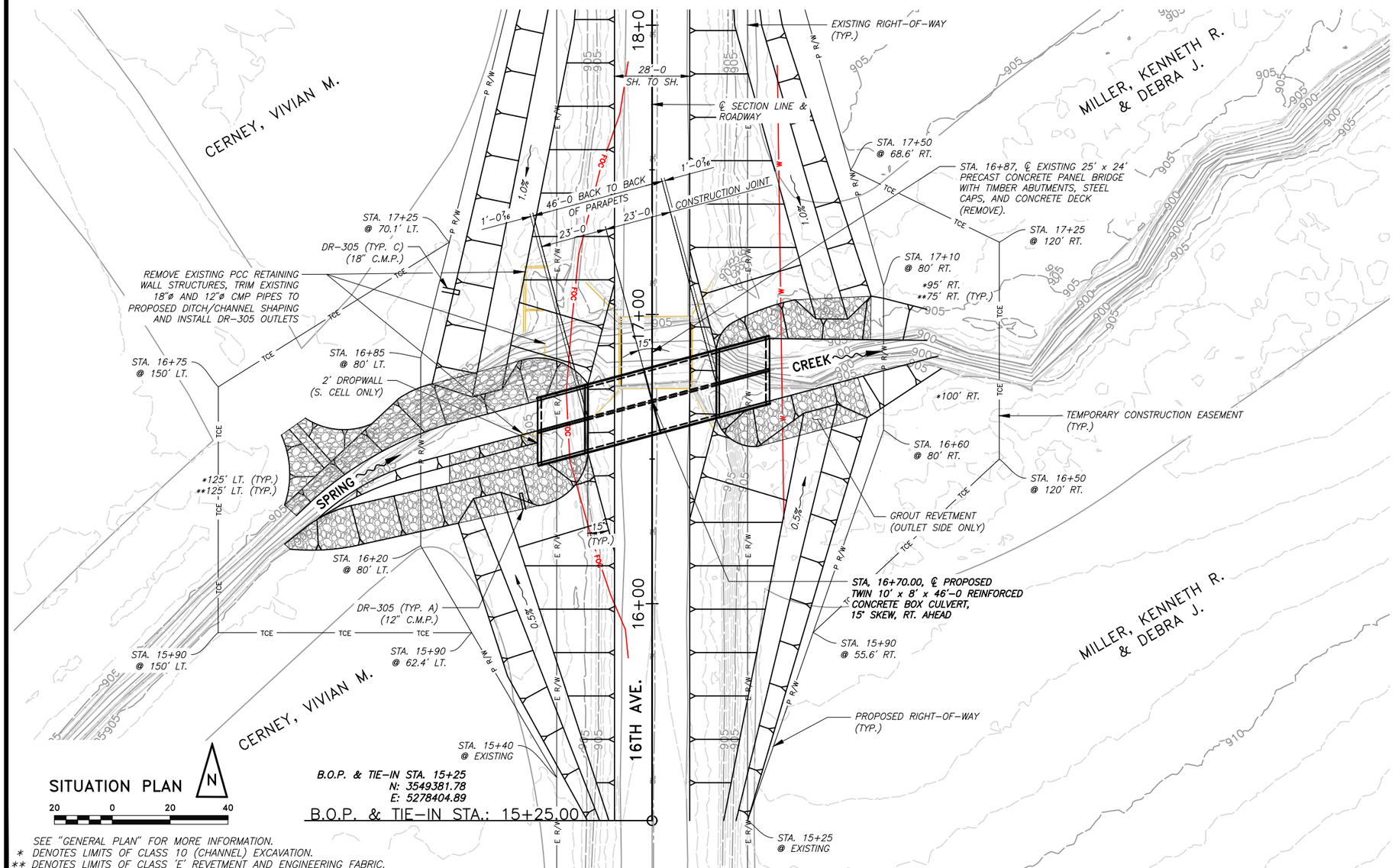
LONGITUDINAL SECTION ALONG ℄ CULVERT



PROPOSED GRADE



TYPICAL APPROACH SECTION



SITUATION PLAN

SEE "GENERAL PLAN" FOR MORE INFORMATION.
* DENOTES LIMITS OF CLASS 10 (CHANNEL) EXCAVATION.
** DENOTES LIMITS OF CLASS 'E' REVETMENT AND ENGINEERING FABRIC.

LOCATION

BENTON COUNTY
T-86N, R-11W
SECTION 30
CEDAR TOWNSHIP
OVER SPRING CREEK

HYDRAULIC DATA

DRAINAGE AREA = 1.83 SQ. MI.
DESIGN DISCHARGE = 725 C.F.S.
DESIGN HIGH WATER ELEV. = 907.4
BARREL SLOPE = 0.00605 FT./FT.
CHANNEL SLOPE = 0.00381 FT./FT.
Q10 = 625 C.F.S. STAGE ELEV. = 906.9
Q25 = 725 C.F.S. STAGE ELEV. = 907.4 (DESIGN)
Q50 = 900 C.F.S. STAGE ELEV. = 908.0
Q100 = 1,075 C.F.S. STAGE ELEV. = 908.7
EXT. H.W. ELEV. = UNKNOWN

TWIN 10' x 8' x 46'-0 REINFORCED CONCRETE BOX CULVERT

SITUATION PLAN

STATION 16+70.00 — 15° SKEW, RT. AHEAD
BENTON COUNTY, — IOWA

BENCH MARK: SFP CUT 'X', STA. 19+47, @ 28 LT. ELEV.= 907.56

E.O.P. & TIE–IN STA.: 18+75.00

E.O.P. & TIE–IN STA. 18+75.00
N: 3549731.77
E: 5278402.36

STA. 18+75 @ EXISTING

STA. 18+75 @ EXISTING

28'–0 SH. TO SH.

18+00

17+00

16+00

16TH AVE.

EXISTING RIGHT–OF–WAY (TYP.)

℄ SECTION LINE & ROADWAY

CERNEY, VIVIAN M.

MILLER, KENNETH R. & DEBRA J.

STA. 17+50 @ 68.6' RT.

STA. 16+87, ℄ EXISTING 25' x 24' PRECAST CONCRETE PANEL BRIDGE WITH TIMBER ABUTMENTS, STEEL CAPS, AND CONCRETE DECK (REMOVE).

STA. 17+25 @ 120' RT.

STA. 17+25 @ 70.1' LT.

DR–305 (TYP. C) (18" C.M.P.)

℄ = 902.7

STA. 17+10 @ 80' RT.

*95' RT.
**75' RT. (TYP.)

STA. 16+75 @ 150' LT.

℄ = 902.7

STA. 16+85 @ 80' LT.

2' DROPWALL (S. CELL ONLY)

CREEK

*100' RT.

TEMPORARY CONSTRUCTION EASEMENT (TYP.)

STA. 16+60 @ 80' RT.

℄ = 902.3

STA. 16+50 @ 120' RT.

*125' LT. (TYP.)
**125' LT. (TYP.)

SPRING

GROUT REVETMENT (OUTLET SIDE ONLY)

STA. 16+20 @ 80' LT.

℄ = 903.2

DR–305 (TYP. A) (12" C.M.P.)

STA, 16+70.00, ℄ PROPOSED TWIN 10' x 8' x 46'–0 REINFORCED CONCRETE BOX CULVERT, 15° SKEW, RT. AHEAD

STA. 15+90 @ 150' LT.

STA. 15+90 @ 62.4' LT.

STA. 15+90 @ 55.6' RT.

PROPOSED RIGHT–OF–WAY (TYP.)

STA. 15+40 @ EXISTING

B.O.P. & TIE–IN STA. 15+25
N: 3549381.78
E: 5278404.89

B.O.P. & TIE–IN STA.: 15+25.00

STA. 15+25 @ EXISTING

GENERAL PLAN

N

20 0 20 40

SEE "SITUATION PLAN" FOR MORE INFORMATION..
* DENOTES LIMITS OF CLASS 10 (CHANNEL) EXCAVATION.
** DENOTES LIMITS OF CLASS 'E' REVETMENT AND ENGINEERING FABRIC.

TWIN 10' x 8' x 46'–0 REINFORCED CONCRETE BOX CULVERT

GENERAL PLAN

STATION 16+70.00 — 15° SKEW, RT. AHEAD

BENTON COUNTY, IOWA

SPECIFICATIONS

DESIGN: AASHTO LRFD 8TH EDITION, SERIES OF 2017.

CONSTRUCTION: THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2023, PLUS GENERAL SUPPLEMENTAL SPECIFICATIONS; AND APPLICABLE SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, AND SPECIAL PROVISIONS, SHALL APPLY TO THE CONSTRUCTION ON THIS PROJECT.

DESIGN STRESSES

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, SERIES 2017.

REINFORCING STEEL IN ACCORDANCE WITH LRFD AASHTO SECTION 5, GRADE 60.

CONCRETE IN ACCORDANCE WITH LRFD AASHTO SECTION 5, F'C=4,000 PSI.

GENERAL NOTES

THIS DESIGN IS FOR A TWIN 10' x 8' REINFORCED CONCRETE BOX CULVERT ON 16th AVE OVER SPRING CREEK IN BENTON COUNTY, IOWA.

THIS CULVERT IS DESIGNED FOR HL-93 LOADING AND 1.2 FEET OF FILL (DESIGN FILL HEIGHT OF 1 FOOT). THE CULVERT SECTIONS ARE DESIGNED FOR CLASS 1 EXPOSURE CONDITION.

ACCESS SHALL BE MAINTAINED TO INDIVIDUAL PROPERTIES DURING CONSTRUCTION. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

THE PRIME CONTRACTOR SHALL EMPLOY CONTROLS TO REDUCE THE EROSIVENESS OF LAND ADJACENT TO SURFACE WATERS AND WETLANDS, INCLUDING ESTABLISHMENT AND MAINTENANCE OF EROSION CONTROL DURING AND AFTER CONSTRUCTION AND REVEGETATION OF ALL DISTURBED AREAS UPON PROJECT COMPLETION. THE PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF ALL EROSION CONTROL MEASURES.

STANDARD ROAD PLANS ARE AVAILABLE FROM THE IOWA DEPARTMENT OF TRANSPORTATION WEBSITE: http://erl.iowadot.gov.

UTILITY NOTES

SEE SECTION 1107.15 OF THE STANDARD SPECIFICATION REGARDING UTILITY COORDINATION.

WASTE AND DISPOSAL NOTES

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE WASTE AREAS OR DISPOSAL SITES FOR EXCESS MATERIAL (EXCAVATED MATERIAL OR BROKEN CONCRETE) WHICH IS NOT DESIRABLE TO BE INCORPORATED INTO THE WORK INVOLVED ON THIS PROJECT. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT AREAS (INCLUDING HAUL ROADS) SELECTED FOR WASTE OR DISPOSAL NOT IMPACT 1) CULTURALLY SENSITIVE SITES OR GRAVES OR 2) WETLANDS OR "WATERS OF THE U.S.", INCLUDING STREAMS OR STREAM BANKS BELOW THE "ORDINARY HIGH WATER MARK", WITHOUT AN APPROVED U.S. ARMY CORPS OF ENGINEERS SECTION 404 PERMIT. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES. NO MATERIAL SHALL BE PLACED WITHIN THE RIGHT-OF-WAY, UNLESS SPECIFICALLY STATED IN THE PLANS OR APPROVED BY THE ENGINEER.

HAZARDOUS MATERIALS NOTES

AN INSPECTION FOR THE PRESENCE OF ASBESTOS CONTAINING MATERIALS WAS COMPLETED BY:
SCOTT BROWN OF IOWA ENVIRONMENTAL SERVICES
IA LICENSE NUMBER: 21-7115
DATE INSPECTED: 11/2/2022
PHONE: 515-279-8042

A SCRAPE SAMPLE OF THE EXISTING PAINT WAS TAKEN FROM THE RED BOLTS/SPACERS OF THIS BRIDGE TO GET AN INDICATION OF THE EXISTENCE AND OF THE LEVEL OF TOTAL CHROMIUM AND TOTAL LEAD. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WAS 196,000 PART PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 35,200 PPM. THESE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER CONSTITUENTS WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE COUNTY'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

THE CONTRACTOR SHALL CONDUCT THEIR OPERATIONS IN SUCH A MANNER THAT ANY PAINT REMOVED DURING REMOVAL IS CONTAINED, COLLECTED, AND DISPOSED OF IN ACCORDANCE WITH SECTION 2508 OF THE STANDARD SPECIFICATIONS.

BEFORE DELIVERY OF ANY SCRAP STEEL THE CONTRACTOR SHALL PROVIDE A WRITTEN NOTICE TO THE RECEIVING FACILITY. THIS NOTICE SHALL AT A MINIMUM INCLUDE:

1. A NOTICE THAT THE SCRAP STEEL IS COATED WITH PAINT THAT HAS REGULATED MATERIALS AT LEVELS THAT COULD BE HAZARDOUS TO EMPLOYEES OR THE ENVIRONMENT.
2. A COPY OF THE SCRAPE SAMPLE PROVIDED IN THE CONTRACT DOCUMENTS.
3. A SIGNATURE BLOCK FOR THE RECEIVING FACILITY TO CONFIRM THEIR RECEIPT OF THIS INFORMATION.

A COPY OF THIS NOTICE, SIGNED BY THE RECEIVING FACILITY, SHALL BE RETURNED TO THE ENGINEER BEFORE ANY SCRAP STEEL IS REMOVED FROM THE PROJECT.

ALL COSTS ASSOCIATED WITH COMPLIANCE WITH THE ABOVE REMOVAL AND DISPOSAL REQUIREMENTS WILL BE INCIDENTAL TO "REMOVAL OF EXISTING BRIDGE."

CONCRETE AND REINFORCING STEEL NOTES

ALL REINFORCING STEEL SHALL BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED. BAR CHAIRS SPACED AT NOT MORE THAN 3'-0 CENTERS IN EITHER DIRECTION SHALL BE USED TO SUPPORT ALL REINFORCING IN ACCORDANCE WITH THE SECTION 2404 OF THE STANDARD SPECIFICATIONS.

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

ALL EXPOSED CORNERS 90 DEGREES OR SHARPER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.

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

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 THE VERTICAL.

CULVERT NOTES

THE CONTRACTOR SHALL SUBMIT A PLAN FOR TEMPORARY STREAM DIVERSION PRIOR TO CONSTRUCTION OF THE CULVERT. THE PLAN IS TO BE REVIEWED AND APPROVED BY THE ENGINEER. ANY TEMPORARY STREAM CROSSINGS SHALL HAVE PIPE CULVERTS TO ACCOMMODATE LOW FLOWS.

THE CULVERT FLOOR SHALL BE FINISHED SMOOTH. SIDES OF THE FOOTING SHALL BE FORMED TO ENSURE CORRECT LINE AND GRADE.

THE PERMISSIBLE CONSTRUCTION JOINT AT THE TOP OF THE WALLS MAY BE LOWERED 1'-8 1/2 AT THE CONTRACTOR'S OPTION.

KEYWAYS IN CONSTRUCTION JOINTS ARE TO BE FORMED WITH BEVELED 2 X 4s UNLESS OTHERWISE NOTED.

BOTTOM OF FLOOR IS TO BE TAPERED 2" IN 12" TO ACCOMMODATE DIFFERENCE IN FLOOR THICKNESS BETWEEN BARREL FLOOR AND APRON OF HEADWALL. TAPER IS TO BE DIRECTLY BELOW AND PARALLEL TO PARAPET.

LONGITUDINAL REINFORCING SHALL NOT EXTEND THROUGH CONSTRUCTION JOINTS, EXCEPT FOR 5r1 SLAB DOWEL BARS.

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

WHEN DE-WATERING PRESENTS A PROBLEM FOR PLACING THE CURTAIN WALLS AS DETAILED, ALTERNATE METHODS SUCH AS STEEL SHEET PILE AND PRECAST CONCRETE WALLS MAY BE APPROVED BUT AT NO ADDITIONAL COST. THE CULVERT CONTRACTOR IS TO SUBMIT TO THE ENGINEER FOR APPROVAL, COMPLETE DRAWINGS OF THE PROPOSED CURTAIN WALL ALTERNATE BEFORE BEGINNING CONSTRUCTION.

CONTRACTOR'S WORK AREA

THE CONTRACTOR'S WORK AND MATERIAL STORAGE AREA SHALL BE DEFINED BY THE CONTRACTOR AND NOTED TO THE ENGINEER. THE CONTRACTOR SHALL SHAPE, FERTILIZE, AND SEED THIS CONTRACTOR'S AREA IN ORDER TO RETURN IT TO ITS ORIGINAL CONDITION. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR "SEEDING AND FERTILIZING (RURAL)" AND "MULCHING" BID ITEMS. AREAS OUTSIDE THE CONTRACTOR'S AREA DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED TO THEIR ORIGINAL CONDITION, AS DETERMINED BY THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE AUTHORIZED FOR THIS WORK.

ELECTRONIC FILES

AFTER AWARD OF THE CONTRACT, AN ELECTRONIC VERSION OF THE CIVIL 3D AND LAND XML FILES WILL BE AVAILABLE, UPON REQUEST, FOR THE SUCCESSFUL BIDDER'S USE DURING CONSTRUCTION. ANY ELECTRONIC VERSIONS PROVIDED ARE FOR INFORMATION ONLY. THE CERTIFIED PLAN SET SHALL GOVERN OVER ANY ELECTRONIC FILES PROVIDED.

THE ELECTRONIC FILE, IF REQUESTED, WILL BE PROVIDED IN THE 2026 VERSION OF CIVIL 3D. PRIOR TO RELEASE OF THE ELECTRONIC FILES, THE CONTRACTOR WILL BE REQUIRED TO SIGN AN ELECTRONIC MEDIA TRANSFER AGREEMENT AS PROVIDED BY CALHOUN-BURNS AND ASSOCIATES.

THE LIMITED MODELING WITHIN THE CIVIL 3D FILE HAS BEEN COMPLETED FOR THE PREPARATION OF THE PLAN SET. ADDITIONAL MANIPULATION BY THE CONTRACTOR MAY BE REQUIRED TO CREATE A MODEL ADEQUATE FOR CONSTRUCTION USE.

TWIN 10' x 8' x 46'-0 REINFORCED
CONCRETE BOX CULVERT

GENERAL NOTES

STATION 16+70.00 15° SKEW, RT. AHEAD
BENTON COUNTY, IOWA

POLLUTION PREVENTION PLAN

THIS PROJECT IS REGULATED BY THE REQUIREMENTS OF THE IOWA DEPARTMENT OF NATURAL RESOURCES (DNR) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT NO. 2 OR AN IOWA DEPARTMENT OF NATURAL RESOURCES (DNR) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) INDIVIDUAL STORM WATER PERMIT. THE CONTRACTOR SHALL CARRY OUT THE TERMS AND CONDITIONS OF THIS PERMIT AND THE POLLUTION PREVENTION PLAN (PPP).

THIS BASE PPP INCLUDES INFORMATION ON ROLES AND RESPONSIBILITIES, PROJECT SITE DESCRIPTION, CONTROLS, MAINTENANCE PROCEDURES, INSPECTION REQUIREMENTS, NON-STORM WATER CONTROLS, POTENTIAL SOURCES OF OFF RIGHT-OF-WAY POLLUTION, AND DEFINITIONS. THIS PLAN REFERENCES OTHER DOCUMENTS RATHER THAN REPEATING THE INFORMATION CONTAINED IN THE DOCUMENTS. A COPY OF THIS BASE POLLUTION PREVENTION PLAN, AMENDED AS NEEDED DURING CONSTRUCTION, WILL BE READILY AVAILABLE FOR REVIEW.

ALL CONTRACTORS SHALL CONDUCT THEIR OPERATIONS IN A MANNER THAT CONTROLS POLLUTANTS, MINIMIZES EROSION, AND PREVENTS SEDIMENTS FROM ENTERING WATERS OF THE STATE AND LEAVING THE HIGHWAY RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE AND IMPLEMENTATION OF THE PPP FOR THEIR ENTIRE CONTRACT. THIS RESPONSIBILITY SHALL BE FURTHER SHARED WITH SUBCONTRACTORS WHOSE WORK IS A SOURCE OF POTENTIAL POLLUTION AS DEFINED IN THIS PPP.

I. ROLES AND RESPONSIBILITIES
- A. DESIGNER:
  1. PREPARES BASE PPP INCLUDED IN THE PROJECT PLAN.
- B. OWNER
  1. PREPARES NOTICE OF INTENT (NOI) SUBMITTED TO IOWA DNR.
  2. IS SIGNATURE AUTHORITY ON THE BASE PPP.
- C. CONTRACTOR:
  1. SIGNS A CO-PERMITTEE CERTIFICATION STATEMENT ADHERING TO THE REQUIREMENTS OF THE NPDES PERMIT AND THIS PPP. ALL CO-PERMITTEES ARE LEGALLY REQUIRED UNDER THE CLEAN WATER ACT AND THE IOWA ADMINISTRATIVE CODE TO ENSURE COMPLIANCE WITH THE TERMS AND CONDITIONS OF THIS PPP.
  2. DESIGNATES A WATER POLLUTION CONTROL MANAGER (WPCM), WHO HAS THE DUTIES AND RESPONSIBILITIES AS DEFINED IN SPECIFICATIONS SECTION 2602 OF THE STANDARD SPECIFICATIONS.
  3. SUBMITS AN EROSION CONTROL IMPLEMENTATION PLAN (ECIP) AND ECIP UPDATES ACCORDING TO SPECIFICATIONS SECTION 2602 OF THE STANDARD SPECIFICATIONS.
  4. INSTALLS AND MAINTAINS APPROPRIATE CONTROLS. THIS WORK MAY BE SUBCONTRACTED AS DOCUMENTED THROUGH SUBCONTRACTOR REQUEST FORMS (FORM 830231).
  5. SUPERVISES AND IMPLEMENTS GOOD HOUSEKEEPING PRACTICES ACCORDING TO PARAGRAPH III, C, 2.
  6. CONDUCTS JOINT REQUIRED INSPECTIONS OF THE SITE WITH INSPECTION STAFF. WHEN CONTRACTOR IS NOT MOBILIZED ON SITE, CONTRACTOR MAY DELEGATE THIS RESPONSIBILITY TO A TRAINED OR CERTIFIED SUBCONTRACTOR. CONTRACTING AUTHORITY ALSO MAY WAIVE JOINT INSPECTION REQUIREMENT DURING WINTER SHUTDOWN. IN BOTH CIRCUMSTANCES, WPCM (OR TRAINED OR CERTIFIED DELEGATE FROM THE CONTRACTOR) IS STILL RESPONSIBLE TO REVIEW AND SIGN INSPECTION REPORTS.
  7. COMPLIES WITH TRAINING AND CERTIFICATION REQUIREMENTS OF SECTION 2602 OF THE STANDARD SPECIFICATIONS.
  8. SUBMITS AMENDED PPP SITE MAP ACCORDING TO SECTION 2602 OF THE STANDARD SPECIFICATIONS.
- D. SUBCONTRACTORS:
  1. SIGN A CO-PERMITTEE CERTIFICATION STATEMENT ADHERING TO THE REQUIREMENTS OF THE NPDES PERMIT AND THIS PPP IF RESPONSIBLE FOR SEDIMENT OR EROSION CONTROLS; INVOLVED IN LAND DISTURBING ACTIVITIES; OR PERFORMING WORK THAT IS A SOURCE OF POTENTIAL POLLUTION AS DEFINED IN THIS PPP. SUBCONTRACTED WORK ITEMS ARE IDENTIFIED IN SUBCONTRACTOR REQUEST FORMS (FORM 830231). ALL CO-PERMITTEES ARE LEGALLY REQUIRED UNDER THE CLEAN WATER ACT AND THE IOWA ADMINISTRATIVE CODE TO ENSURE COMPLIANCE WITH THE TERMS AND CONDITIONS OF THIS PPP.
  2. IMPLEMENT GOOD HOUSEKEEPING PRACTICES ACCORDING TO PARAGRAPH III, C, 2.
- E. RCE/PROJECT ENGINEER:
  1. IS PROJECT STORM WATER MANAGER.
  2. TAKES ACTIONS NECESSARY TO ENSURE COMPLIANCE WITH STORM WATER REQUIREMENTS INCLUDING, WHERE APPROPRIATE, ISSUING STOP WORK ORDERS, AND DIRECTING ADDITIONAL INSPECTIONS AT CONSTRUCTION PROJECT SITES THAT ARE EXPERIENCING PROBLEMS WITH ACHIEVING PERMIT COMPLIANCE.
  3. ORDERS THE TAKING OF MEASURES TO CEASE, CORRECT, PREVENT, OR MINIMIZE THE CONSEQUENCES OF NON-COMPLIANCE WITH THE STORM WATER REQUIREMENTS OF THE APPLICABLE PERMIT.
  4. SUPERVISES ALL WORK NECESSARY TO MEET STORM WATER REQUIREMENTS AT THE PROJECT, INCLUDING WORK PERFORMED BY CONTRACTORS AND SUBCONTRACTORS.
  5. REQUIRES EMPLOYEES, CONTRACTORS, AND SUBCONTRACTORS TO TAKE APPROPRIATE RESPONSIVE ACTION TO COMPLY WITH STORM WATER REQUIREMENTS, INCLUDING REQUIRING ANY SUCH PERSON TO CEASE OR CORRECT A VIOLATION OF STORM WATER REQUIREMENTS, AND TO ORDER OR RECOMMEND SUCH OTHER ACTIONS AS NECESSARY TO MEET STORM WATER REQUIREMENTS.
  6. IS FAMILIAR WITH THE PROJECT PPP AND STORM WATER SITE MAP.
  7. IS THE POINT OF CONTACT FOR THE PROJECT FOR REGULATORY OFFICIALS, INSPECTOR, CONTRACTORS, AND SUBCONTRACTORS REGARDING STORM WATER REQUIREMENTS.
  8. IS SIGNATURE AUTHORITY ON NOTICE OF DISCONTINUATION.
  9. MAINTAINS AN UP-TO-DATE RECORD OF CONTRACTORS, SUBCONTRACTORS, AND SUBCONTRACTED WORK ITEMS THROUGH SUBCONTRACTOR REQUEST FORMS (FORM 830231).
  10. MAKES INFORMATION TO DETERMINE PERMIT COMPLIANCE AVAILABLE TO THE DNR UPON THEIR REQUEST.
- F. INSPECTOR:
  1. UPDATES PPP THROUGH FIELDBOOK ENTRIES AND STORM WATER SITE INSPECTION REPORTS IF THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE WHICH HAS A SIGNIFICANT EFFECT ON THE DISCHARGE OF POLLUTANTS FROM THE PROJECT.
  2. MAKES INFORMATION TO DETERMINE PERMIT COMPLIANCE AVAILABLE TO THE DNR UPON THEIR REQUEST.
  3. CONDUCTS JOINT REQUIRED INSPECTIONS OF THE SITE WITH THE CONTRACTOR/SUBCONTRACTOR.
  4. COMPLETES AN INSPECTION REPORT AFTER EACH INSPECTION.
  5. IS SIGNATURE AUTHORITY ON STORM WATER INSPECTION REPORTS.

II. PROJECT SITE DESCRIPTION
- A. THIS POLLUTION PREVENTION PLAN (PPP) IS FOR THE CONSTRUCTION OF A TWIN 10' X 8' X 46'-0 REINFORCED CONCRETE BOX CULVERT ON 16TH AVE OVER SPRING CREEK IN BENTON COUNTY, IOWA.
- B. THIS PPP COVERS APPROXIMATELY 1.3 ACRES WITH AN ESTIMATED 1.3 ACRES BEING DISTURBED. THE PORTION OF THE PPP COVERED BY THIS CONTRACT HAS 1.3 ACRES DISTURBED.
- C. THE PPP IS LOCATED IN AN AREA OF ONE SOIL ASSOCIATION(S) (DINSDALE - KLINGER). THE ESTIMATED WEIGHTED AVERAGE RUNOFF COEFFICIENT NUMBER FOR THIS PPP AFTER COMPLETION WILL BE 0.24.
- D. STORM WATER SITE MAP - MULTIPLE SOURCES OF INFORMATION COMPRISE THE BASE STORM WATER SITE MAP INCLUDING:
  1. DRAINAGE PATTERNS – SITUATION PLAN AND GENERAL PLAN.
  2. PROPOSED SLOPES – CROSS SECTIONS.
  3. AREAS OF SOIL DISTURBANCE – CONSTRUCTION LIMITS SHOWN ON SITUATION PLAN AND GENERAL PLAN.
  4. LOCATION OF STRUCTURAL CONTROLS – TABULATIONS.
  5. LOCATIONS OF NON-STRUCTURAL CONTROLS – TABULATIONS.
  6. LOCATIONS OF STABILIZATION PRACTICES – GENERALLY WITHIN CONSTRUCTION LIMITS SHOWN ON SITUATION PLAN AND GENERAL PLAN.
  7. SURFACE WATERS (INCLUDING WETLANDS) – PROJECT LOCATION MAP AND SITUATION PLAN AND GENERAL PLAN.
  8. LOCATIONS WHERE STORM WATER IS DISCHARGED – SITUATION PLAN AND GENERAL PLAN.
- E. THE BASE STORM WATER SITE MAP IS AMENDED BY CONTRACT MODIFICATIONS AND PROGRESS PAYMENTS (FIELDBOOK ENTRIES) OF COMPLETED EROSION CONTROL WORK. ALSO, DUE TO PROJECT PHASING, EROSION AND SEDIMENT CONTROLS SHOWN ON PROJECT PLANS MAY NOT BE INSTALLED UNTIL NEEDED, BASED ON SITE CONDITIONS. FOR EXAMPLE, SILT FENCE DITCH CHECKS WILL TYPICALLY NOT BE INSTALLED UNTIL THE DITCH HAS BEEN INSTALLED. INSTALLED LOCATIONS WILL BE DOCUMENTED BY FIELDBOOK ENTRIES AND AMENDED PPP SITE MAP.
- F. RUNOFF FROM THIS WORK WILL FLOW INTO SPRING CREEK.

III. CONTROLS
- A. THE CONTRACTOR'S ECIP SPECIFIED IN ARTICLE 2602.03 OF THE STANDARD SPECIFICATIONS FOR ACCOMPLISHMENT OF STORM WATER CONTROLS SHOULD CLEARLY DESCRIBE THE INTENDED SEQUENCE OF MAJOR ACTIVITIES AND FOR EACH ACTIVITY DEFINE THE CONTROL MEASURE AND THE TIMING DURING THE CONSTRUCTION PROCESS THAT THE MEASURE WILL BE IMPLEMENTED.
- B. PRESERVE VEGETATION IN AREAS NOT NEEDED FOR CONSTRUCTION.
- C. SECTIONS 2601 AND 2602 OF THE STANDARD SPECIFICATIONS DEFINE REQUIREMENTS TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES. ACTUAL QUANTITIES USED AND INSTALLED LOCATIONS MAY VARY FROM THE BASE PPP AND AMENDMENT OF THE PLAN WILL BE DOCUMENTED VIA FIELDBOOK ENTRIES, AMENDED PPP SITE MAP, OR BY CONTRACT MODIFICATION. ADDITIONAL EROSION AND SEDIMENT CONTROL ITEMS MAY BE REQUIRED AS DETERMINED BY THE INSPECTOR AND/OR CONTRACTOR DURING STORM WATER SITE INSPECTIONS. IF THE WORK INVOLVED IS NOT APPLICABLE TO ANY CONTRACT ITEMS, THE WORK WILL BE PAID FOR ACCORDING TO ARTICLE 1109.03 PARAGRAPH B OF THE STANDARD SPECIFICATIONS.
  1. EROSION AND SEDIMENT CONTROLS
     - a. STABILIZATION PRACTICES
       1) SITE PLANS WILL ENSURE THAT EXISTING VEGETATION OR NATURAL BUFFERS ARE PRESERVED WHERE ATTAINABLE AND DISTURBED PORTIONS OF THE SITE WILL BE STABILIZED.
       2) INITIALIZE STABILIZATION OF DISTURBED AREAS IMMEDIATELY AFTER CLEARING, GRADING, EXCAVATING, OR OTHER EARTH DISTURBING ACTIVITIES HAVE:
          a) PERMANENTLY CEASED ON ANY PORTION OF THE SITE, OR
          b) TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS.
       3) STAGED PERMANENT AND/OR TEMPORARY STABILIZING SEEDING AND MULCHING SHALL BE COMPLETED AS THE DISTURBED AREAS ARE COMPLETED. INCOMPLETE AREAS SHALL BE STABILIZED ACCORDING TO PARAGRAPH III, C, 1, a, 2, b ABOVE.
       4) PERMANENT AND TEMPORARY STABILIZATION PRACTICES TO BE USED FOR THIS PROJECT ARE LOCATED IN THE ESTIMATED PROJECT QUANTITIES AND ESTIMATE REFERENCE INFORMATION LOCATED IN THE PLANS. TYPICAL DRAWINGS DETAILING CONSTRUCTION OF THE PRACTICES TO BE USED ON THIS PROJECT ARE REFERENCED IN THE STANDARD ROAD PLANS TABULATION.
       5) PRESERVATION OF EXISTING VEGETATION WITHIN RIGHT-OF-WAY OR EASEMENTS WILL ACT AS VEGETATIVE BUFFER STRIPS.
       6) PRESERVATION OF TOPSOIL: BID ITEMS TO BE USED FOR THIS PROJECT ARE LOCATED IN THE ESTIMATED PROJECT QUANTITIES AND ESTIMATE REFERENCE INFORMATION LOCATED IN THE PLANS. ADDITIONAL INFORMATION MAY BE FOUND IN TABULATIONS OF THE PLANS OR IS REFERENCED IN STANDARD SECTION 2105 OF THE STANDARD SPECIFICATIONS.
     - b. STRUCTURAL PRACTICES
       1) STRUCTURAL PRACTICES WILL BE IMPLEMENTED TO DIVERT FLOWS FROM EXPOSED SOILS AND DETAIN OR OTHERWISE LIMIT RUNOFF AND THE DISCHARGE OF POLLUTANTS FROM EXPOSED AREAS OF THE SITE. ADDITIONALLY, STRUCTURAL PRACTICES MAY INCLUDE: SILT BASINS THAT PROVIDE 3600 CUBIC FEET OF STORAGE PER ACRE DRAINED OR EQUIVALENT SEDIMENT CONTROLS, OUTLET STRUCTURES THAT WITHDRAW WATER FROM SURFACE WHEN DISCHARGING BASINS, AND CONTROLS TO DIRECT STORM WATER TO VEGETATED AREAS.
       2) STRUCTURAL PRACTICES TO BE USED FOR THIS PROJECT ARE LOCATED IN THE ESTIMATED PROJECT QUANTITIES AND ESTIMATE REFERENCE INFORMATION, AS WELL AS ALL OTHER ITEM SPECIFIC TABULATIONS. TYPICAL DRAWINGS DETAILING CONSTRUCTION OF THE DEVICES TO BE USED ON THIS PROJECT CAN BE FOUND IN THE PLANS OR ARE REFERENCED IN THE STANDARD ROAD PLANS TABULATION.
     - c. STORM WATER MANAGEMENT
       1) MEASURES SHALL BE INSTALLED DURING THE CONSTRUCTION PROCESS TO CONTROL POLLUTANTS IN STORM WATER DISCHARGES THAT WILL OCCUR AFTER CONSTRUCTION OPERATIONS HAVE BEEN COMPLETED. THIS MAY INCLUDE VELOCITY DISSIPATION DEVICES AT DISCHARGE LOCATIONS AND ALONG LENGTH OF OUTFALL CHANNEL AS NECESSARY TO PROVIDE A NON-EROSION VELOCITY FLOW FROM STRUCTURE TO WATER COURSE. IF INCLUDED WITH THIS PROJECT, THESE ITEMS ARE LOCATED IN THE ESTIMATED PROJECT QUANTITIES AND ESTIMATE REFERENCE INFORMATION, AS WELL AS ALL OTHER ITEM SPECIFIC TABULATIONS. TYPICAL DRAWINGS DETAILING CONSTRUCTION OF THE PRACTICES TO BE USED ON THIS PROJECT ARE REFERENCED IN THE STANDARD ROAD PLANS TABULATION. THE INSTALLATION OF THESE DEVICES MAY BE SUBJECT TO SECTION 404 OF THE CLEAN WATER ACT.
  2. OTHER CONTROLS
     - a. CONTRACTOR DISPOSAL OF UNUSED CONSTRUCTION MATERIALS AND CONSTRUCTION MATERIAL WASTES SHALL COMPLY WITH APPLICABLE STATE AND LOCAL WASTE DISPOSAL, SANITARY SEWER, OR SEPTIC SYSTEM REGULATIONS. IN THE EVENT OF A CONFLICT WITH OTHER GOVERNMENTAL LAWS, RULES AND REGULATIONS, THE MORE RESTRICTIVE APPLICABLE LAWS, RULES OR REGULATIONS SHALL APPLY.
       1) VEHICLE ENTRANCES AND EXITS - CONSTRUCT AND MAINTAIN ENTRANCES AND EXITS TO PREVENT TRACKING OF SEDIMENTS ONTO ROADWAYS.
       2) MATERIAL DELIVERY, STORAGE AND USE - IMPLEMENT PRACTICES TO PREVENT DISCHARGE OF CONSTRUCTION MATERIALS DURING DELIVERY, STORAGE, AND USE.
       3) STOCKPILE MANAGEMENT - INSTALL CONTROLS TO REDUCE OR ELIMINATE POLLUTION OF STORM WATER FROM STOCKPILES OF SOIL AND PAVING.
       4) WASTE DISPOSAL - DO NOT DISCHARGE ANY MATERIALS, INCLUDING BUILDING MATERIALS, INTO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.
       5) SPILL PREVENTION AND CONTROL - IMPLEMENT CHEMICAL SPILL AND LEAK PREVENTION AND RESPONSE PROCEDURES TO CONTAIN AND CLEAN-UP SPILLS AND PREVENT MATERIAL DISCHARGES TO THE STORM DRAIN SYSTEM AND WATERS OF THE STATE.
       6) CONCRETE RESIDUALS AND WASHOUT WASTES - WASTE SHALL NOT BE DISCHARGED TO A SURFACE WATER AND IS NOT ALLOWED TO ADVERSELY AFFECT A WATER OF THE STATE. DESIGNATE TEMPORARY CONCRETE WASHOUT FACILITIES FOR RINSING OUT CONCRETE TRUCKS. PROVIDE DIRECTIONS TO TRUCK DRIVERS WHERE DESIGNATED WASHOUT FACILITIES ARE LOCATED. DESIGNATED WASHOUT AREAS SHOULD BE LOCATED AT LEAST 50 FEET AWAY FROM STORM DRAINS, STREAMS OR OTHER WATER BODIES. CARE SHOULD BE TAKEN TO ENSURE THESE FACILITIES DO NOT OVERFLOW DURING STORM EVENTS.
       7) CONCRETE GROOVING/GRINDING SLURRY – DO NOT DISCHARGE SLURRY TO A WATERBODY OR STORM DRAIN. SLURRY MAY BE APPLIED ON FORESLOPES OR REMOVED FROM THE PROJECT.
       8) VEHICLE AND EQUIPMENT STORAGE AND MAINTENANCE AREAS - PERFORM ON SITE FUELING AND MAINTENANCE IN ACCORDANCE WITH ALL ENVIRONMENT LAWS SUCH AS PROPER STORAGE OF ONSITE FUELS AND PROPER DISPOSAL OF USED ENGINE OIL OR OTHER FLUIDS ON SITE. EMPLOY WASHING PRACTICES THAT PREVENT CONTAMINATION OF SURFACE AND GROUND WATER FROM WASH WATER. WASH WATERS MUST BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDES EQUIVALENT OR BETTER TREATMENT PRIOR TO DISCHARGE.
       9) LITTER MANAGEMENT - ENSURE EMPLOYEES PROPERLY DISPOSE OF LITTER. MINIMIZE EXPOSURE OF TRASH IF EXPOSURE TO PRECIPITATION OR STORM WATER WOULD RESULT IN A DISCHARGE OF POLLUTANTS.
       10) DEWATERING – PROPERLY TREAT WATER TO REMOVE SUSPENDED SEDIMENT BEFORE IT RE-ENTERS A WATERBODY OR DISCHARGES OFF-SITE. MEASURES ARE ALSO TO BE TAKEN TO PREVENT SCOUR EROSION AT DEWATERING DISCHARGE POINT.
  3. APPROVED STATE OR LOCAL PLANS
     DURING THE COURSE OF THIS CONSTRUCTION, IT IS POSSIBLE THAT SITUATIONS WILL ARISE WHERE UNKNOWN MATERIALS WILL BE ENCOUNTERED. WHEN SUCH SITUATIONS ARE ENCOUNTERED, THEY WILL BE HANDLED ACCORDING TO ALL FEDERAL, STATE, AND LOCAL REGULATIONS IN EFFECT AT THE TIME.

IV. MAINTENANCE PROCEDURES
THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES IN PROPER WORKING ORDER, INCLUDING CLEANING, REPAIRING, OR REPLACING THEM THROUGHOUT THE CONTRACT PERIOD. THIS SHALL BEGIN WHEN THE FEATURES HAVE LOST 50% OF THEIR CAPACITY.

V. INSPECTION REQUIREMENTS
- A. INSPECTIONS SHALL BE MADE JOINTLY BY THE CONTRACTOR AND THE CONTRACTING AUTHORITY AT LEAST ONCE EVERY SEVEN CALENDAR DAYS. STORM WATER SITE INSPECTIONS WILL INCLUDE:
  1. DATE OF THE INSPECTION.
  2. SUMMARY OF THE SCOPE OF THE INSPECTION.
  3. NAME AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION.
  4. REVIEW OF EROSION AND SEDIMENT CONTROL MEASURES WITHIN DISTURBED AREAS FOR THE EFFECTIVENESS IN PREVENTING IMPACTS TO RECEIVING WATERS.
  5. MAJOR OBSERVATIONS RELATED TO THE IMPLEMENTATION OF THE PPP.
  6. IDENTIFICATION OF CORRECTIVE ACTIONS REQUIRED TO MAINTAIN OR MODIFY EROSION AND SEDIMENT CONTROL MEASURES.
- B. INCLUDE STORM WATER SITE INSPECTION REPORTS IN THE AMENDED PPP. INCORPORATE ANY ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES DETERMINED AS A RESULT OF THE INSPECTION. IMMEDIATELY BEGIN CORRECTIVE ACTIONS ON ALL DEFICIENCIES FOUND WITHIN 3 CALENDAR DAYS OF THE INSPECTION AND COMPLETE WITHIN 7 CALENDAR DAYS FOLLOWING THE INSPECTION. IF IT IS DETERMINED THAT MAKING THE CORRECTIONS LESS THAN 72 HOURS AFTER THE INSPECTION IS IMPRACTICABLE, IT SHOULD BE DOCUMENTED WHY IT IS IMPRACTICABLE AND INDICATE AN ESTIMATED DATE BY WHICH THE CORRECTIONS WILL BE MADE.

VI. NON-STORM WATER DISCHARGES
THIS INCLUDES SUBSURFACE DRAINS (I.E. LONGITUDINAL AND STANDARD SUBDRAINS) AND SLOPE DRAINS. THE VELOCITY OF THE DISCHARGE FROM THESE FEATURES MAY BE CONTROLLED BY THE USE OF HEADWALLS OR BLOCKS, CLASS A STONE, EROSION STONE OR OTHER APPROPRIATE MATERIALS. THIS ALSO INCLUDES UNCONTAMINATED GROUNDWATER FROM DEWATERING OPERATIONS, WHICH WILL BE CONTROLLED AS DISCUSSED IN SECTION III OF THE PPP.

VII. POTENTIAL SOURCES OF OFF RIGHT-OF-WAY (ROW) POLLUTION
SILTS, SEDIMENT, AND OTHER FORMS OF POLLUTION MAY BE TRANSPORTED ONTO HIGHWAY RIGHT-OF-WAY (ROW) AS A RESULT OF A STORM EVENT. POTENTIAL SOURCES OF POLLUTION LOCATED OUTSIDE HIGHWAY ROW ARE BEYOND THE CONTROL OF THIS PPP. POLLUTION WITHIN HIGHWAY ROW WILL BE CONVEYED AND CONTROLLED PER THIS PPP.

VIII. DEFINITIONS
- A. BASE PPP - INITIAL POLLUTION PREVENTION PLAN.
- B. AMENDED PPP – BASE PPP AMENDED DURING CONSTRUCTION. MAY INCLUDE PLAN REVISIONS OR CONTRACT MODIFICATIONS FOR NEW ITEMS, STORM WATER SITE INSPECTION REPORTS, FIELDBOOK ENTRIES MADE BY THE INSPECTOR, AMENDED PPP SITE MAP BY THE CONTRACTOR, ECIP, NOI, CO-PERMITTEE CERTIFICATIONS, AND SUBCONTRACTOR REQUEST FORMS. ITEMS AMENDING THE PPP ARE STORED ELECTRONICALLY AND ARE READILY AVAILABLE UPON REQUEST.
- C. FIELDBOOK ENTRIES – THIS CONTAINS THE INSPECTOR'S DAILY DIARY AND BID ITEM POSTINGS.
- D. CONTROLS - METHODS, PRACTICES, OR MEASURES TO MINIMIZE OR PREVENT EROSION, CONTROL SEDIMENTATION, CONTROL STORM WATER, OR MINIMIZE CONTAMINANTS FROM OTHER TYPES OF WASTE OR MATERIALS. ALSO CALLED BEST MANAGEMENT PRACTICES (BMPS).
- E. SIGNATURE AUTHORITY - REPRESENTATIVE AUTHORIZED TO SIGN VARIOUS STORM WATER DOCUMENTS.

CERTIFICATION STATEMENT

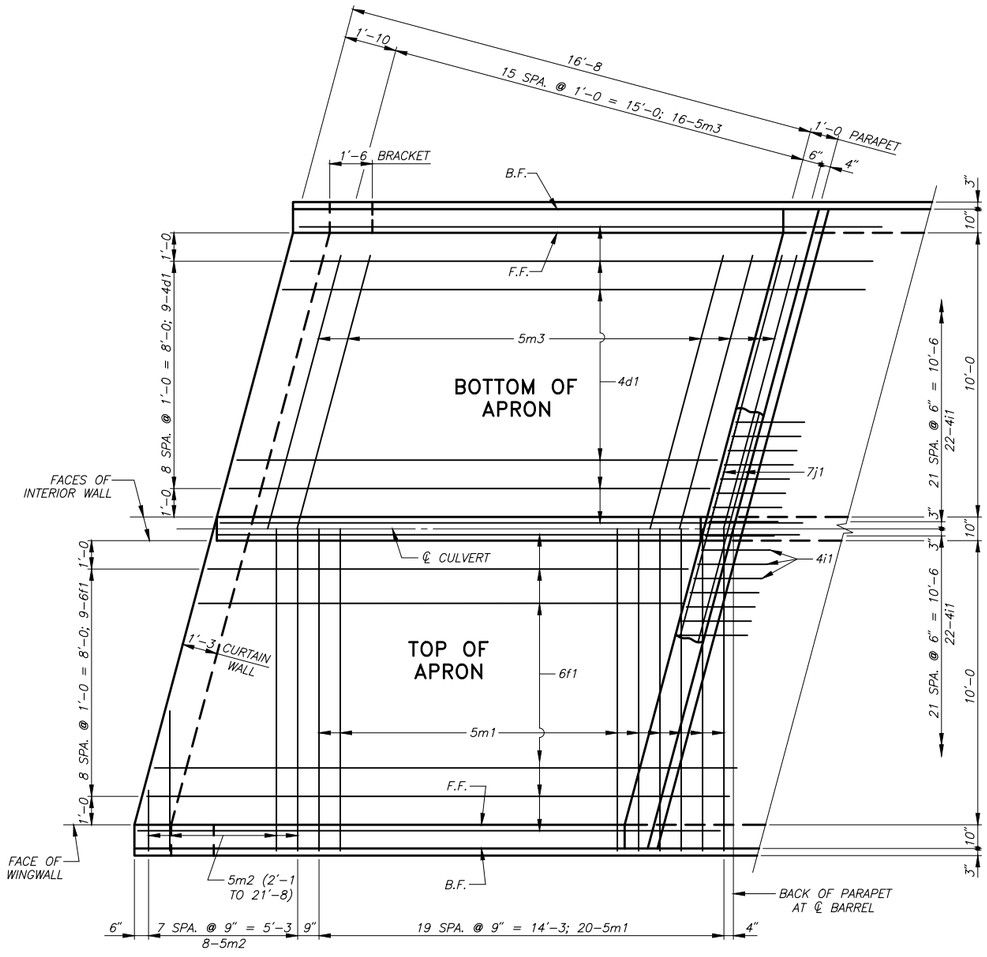
I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.

Myron L Parizek
SIGNATURE

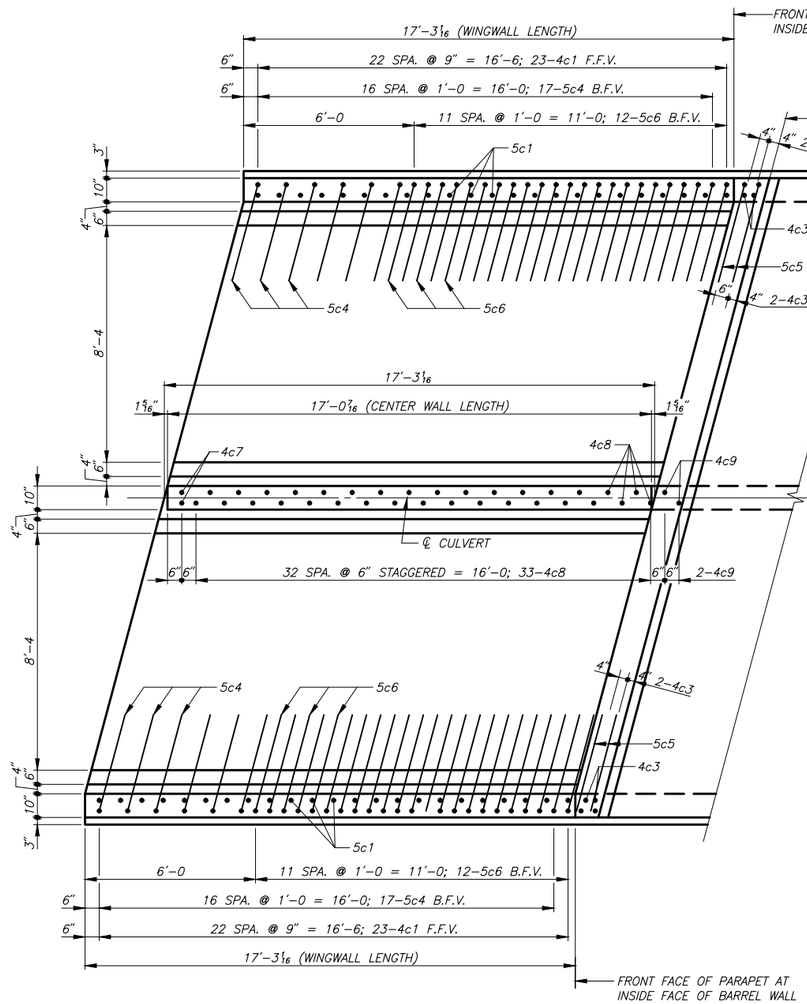
MYRON L. PARIZEK
PRINTED OR TYPED NAME

POLLUTION PREVENTION PLAN

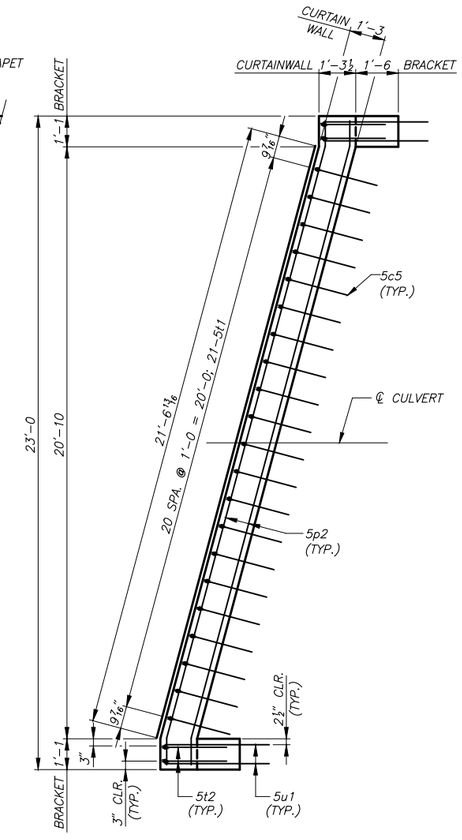
BENTON COUNTY, IOWA



APRON PLAN – REINFORCING



WINGWALL PLAN – REINFORCING



CURTAIN WALL PLAN

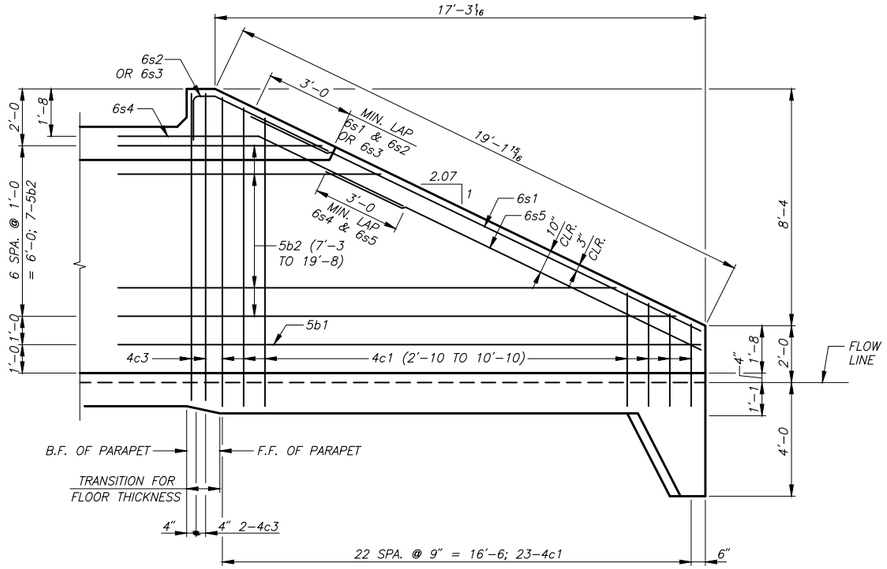
NOTE: SEE SHEET 8 FOR CURTAIN WALL DETAILS.

TWIN 10' x 8' x 46'-0 REINFORCED CONCRETE BOX CULVERT

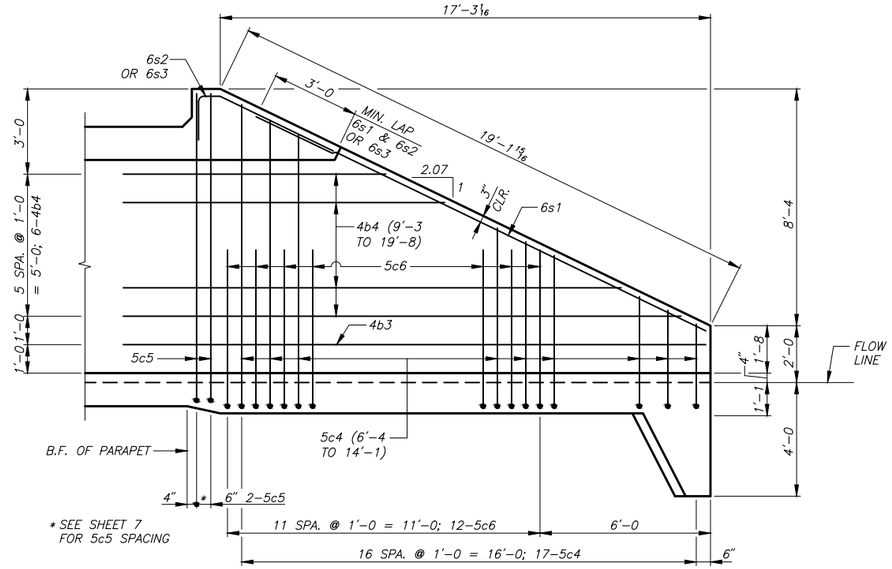
CULVERT HEADWALL DETAILS

STATION 16+70.00 — 15° SKEW, RT. AHEAD

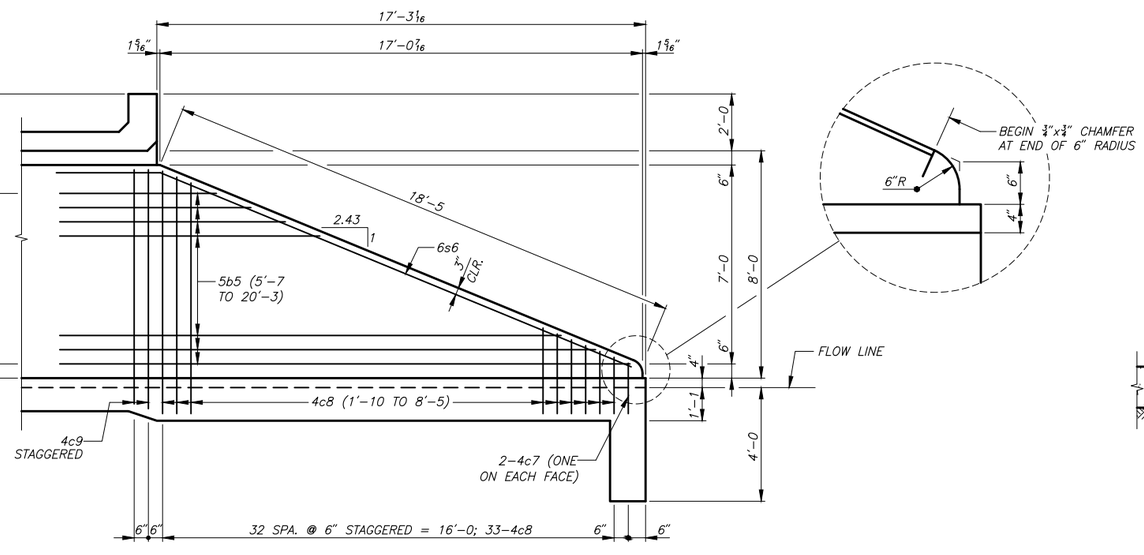
BENTON COUNTY, — IOWA



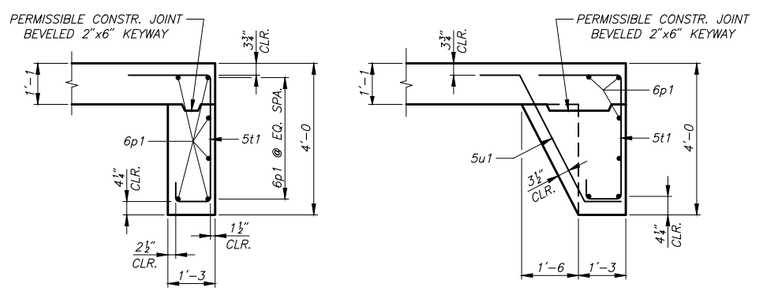
EXTERIOR WINGWALL REINFORCING – FRONT FACE



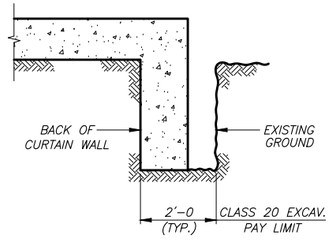
EXTERIOR WINGWALL REINFORCING – BACK FACE



INTERIOR WALL REINFORCING – BOTH FACES
(@ CENTER OF WALL)



CURTAIN WALL DETAILS



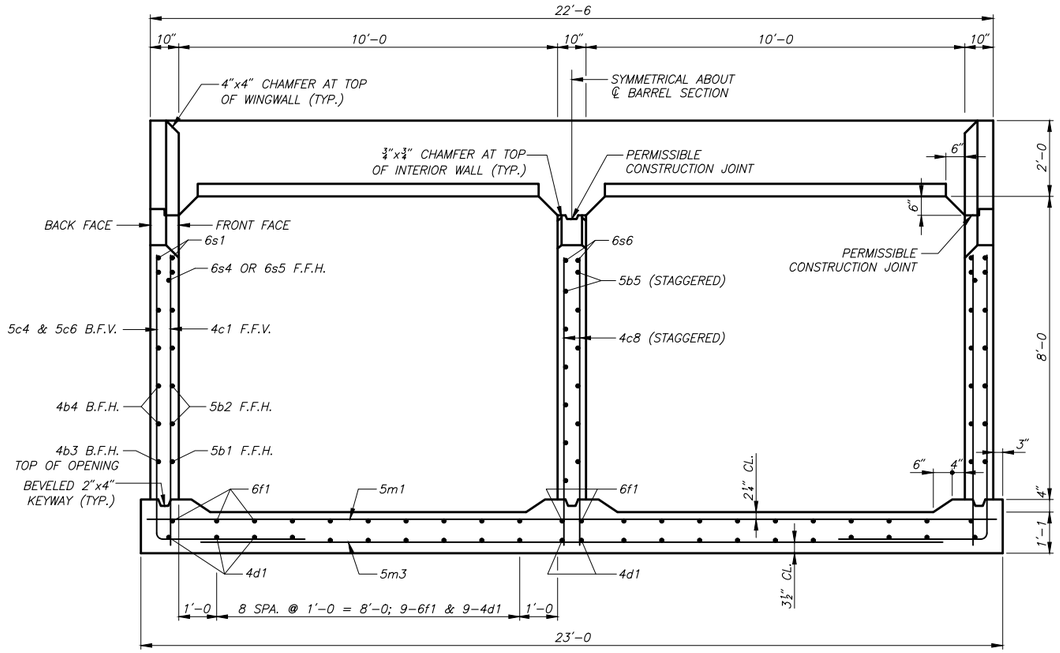
CURTAIN WALL
CLASS 20 EXCAVATION

TWIN 10' x 8' x 46'-0 REINFORCED CONCRETE BOX CULVERT

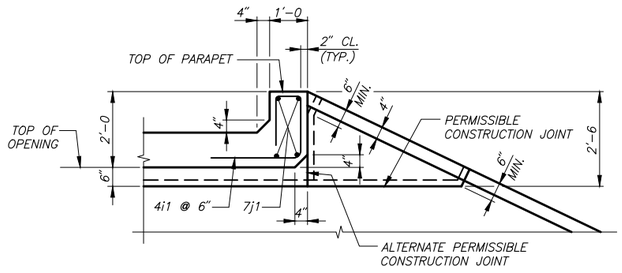
CULVERT HEADWALL DETAILS

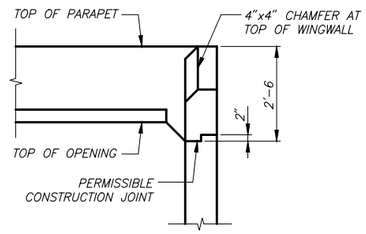
STATION 16+70.00 — 15° SKEW, RT. AHEAD

BENTON COUNTY, IOWA



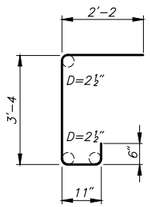
PART SECTION THROUGH HEADWALL



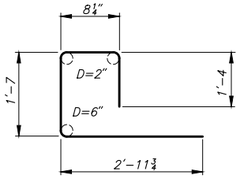


TOP OF WINGWALL DETAILS

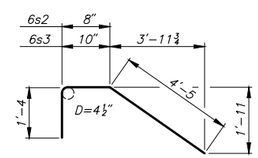
BENT BAR DETAILS



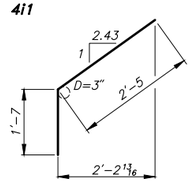
5t1 & 5t2



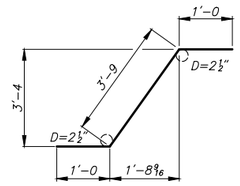
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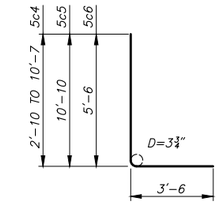
6s2 OR 6s3



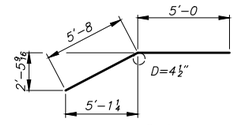
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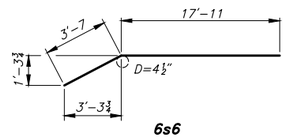
5u1



5c4, 5c5 & 5c6



6s4



6s6

6p1

ALL DIMENSIONS ARE OUT TO OUT. D = DIAMETER OF PIN

REINFORCING BAR LIST – ONE HEADWALL

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5b1	WINGWALL, FRONT FACE, HORIZONTAL	——	2	20'-7	43
5b2	WINGWALL, FRONT FACE, HORIZONTAL	——	14	VARIES	197
4b3	WINGWALL, BACK FACE, HORIZONTAL	——	2	20'-7	27
4b4	WINGWALL, BACK FACE, HORIZONTAL	——	12	VARIES	116
5b5	INTERIOR WALLS, BOTH FACES, HORIZ.	——	13	VARIES	175
4c1	WINGWALL, FRONT FACE, VERTICAL	——	46	VARIES	210
4c3	WINGWALL, FRONT FACE, VERTICAL	——	4	10'-10	29
5c4	WINGWALL, BACK FACE, VERTICAL	⌐	34	VARIES	362
5c5	WINGWALL, BACK FACE, VERTICAL	⌐	4	14'-4	60
5c6	WINGWALL, BACK FACE, VERTICAL	⌐	24	9'-0	225
4c7	INTERIOR WALLS, BOTH FACES, VERTICAL	⌐	2	4'-0	5
4c8	INTERIOR WALLS, BOTH FACES, VERTICAL	——	33	VARIES	113
4c9	INTERIOR WALLS, BOTH FACES, VERTICAL	——	2	8'-4	11
4d1	APRON, LONGITUDINAL, BOTTOM	——	22	20'-7	302
6f1	APRON, LONGITUDINAL, TOP	——	22	20'-7	680
4i1	PARAPET, VERTICAL	⌐—	44	6'-7	193
7j1	PARAPET, HORIZONTAL	——	4	22'-2	181
5m1	APRON, TRANSVERSE, TOP	——	21	22'-8	497
5m2	APRON, TRANSVERSE, TOP	——	8	VARIES	99
5m3	APRON, TRANSVERSE, BOTTOM	——	17	20'-2	358
6p1	CURTAIN WALL, HORIZONTAL	⌐	6	23'-4	210
6s1	WINGWALL SLOPE, BOTH FACES	——	4	17'-6	105
6s2	WINGWALL SLOPE, BOTH FACES	⌐	2	6'-5	19
6s3	WINGWALL SLOPE, BOTH FACES	⌐	2	6'-7	20
6s4	WINGWALL SLOPE, FRONT FACE	⌐	2	10'-8	32
6s5	WINGWALL SLOPE, FRONT FACE	——	2	14'-8	44
6s6	INTERIOR WALLS, BOTH FACES	⌐	2	21'-6	65
5t1	CURTAIN WALL, VERTICAL	⌐	21	6'-11	152
5t2	CURTAIN WALL, VERTICAL, ENDS	⌐	4	6'-11	29
5u1	CURTAIN WALL, STRUTS	⌐	4	5'-9	24
				TOTAL (LBS.)	4,519

REINFORCING STEEL SUMMARY

ITEM	TOTAL
± INLET (343.08 LB./FT.)	12,480
± OUTLET (343.08 LB./FT.)	12,480
5r1 BARS (80 LBS.)	80
DROP WALL (SEE SHEET 10.)	173
TOTAL (LBS.)	25,213

± INCLUDES STEEL REQUIRED FOR ONE (1) HEADWALL AND ONE (1) END SECTION.

CONCRETE PLACEMENT QUANTITIES

ITEM		‡INLET*		‡OUTLET	TOTAL
△SLAB	(0.915 C.Y./FT.)	23.2		23.2	46.4
FLOOR	(0.831 C.Y./FT.)	40.5		40.5	81.0
WALLS	(0.632 C.Y./FT.)	24.2		24.2	47.4
	TOTAL(CU.YDS.)	87.9		87.9	174.8

△ INCLUDES HEADWALLS ABOVE CONSTRUCTION JOINTS.
‡ BACK OF PARAPET TO CONSTRUCTION JOINT (23').
INCLUDES CONCRETE REQUIRED FOR ONE (1) HEADWALL.
* INCLUDES CONCRETE REQUIRED FOR ONE (1) DROP INLET WALL (INLET ONLY).

HEADWALL NOTES

THE APRON FLOOR SHALL BE FINISHED SMOOTH. SIDES OF THE FOOTING SHALL BE FORMED TO ENSURE CORRECT LINE AND GRADE.

KEYWAYS IN CONSTRUCTION JOINTS ARE TO BE FORMED WITH BEVELED 2 X 4s UNLESS OTHERWISE NOTED.

BOTTOM OF FLOOR IS TO BE TAPERED TO ACCOMMODATE DIFFERENCE IN FLOOR THICKNESS BETWEEN BARREL FLOOR AND APRON OF HEADWALL. TAPER IS TO BE DIRECTLY BELOW AND PARALLEL TO PARAPET.

CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN. CLEARANCE TO THE BOTTOM OF VERTICAL BARS SHALL BE 3".

WHEN DE-WATERING PRESENTS A PROBLEM FOR PLACING THE CURTAIN WALLS AS DETAILED, ALTERNATE METHODS SUCH AS STEEL SHEET PILE AND PRECAST CONCRETE WALLS MAY BE APPROVED BUT AT NO ADDITIONAL COST. THE CULVERT CONTRACTOR IS TO SUBMIT TO THE ENGINEER FOR APPROVAL, COMPLETE DRAWINGS OF THE PROPOSED CURTAIN WALL ALTERNATE BEFORE BEGINNING CONSTRUCTION.

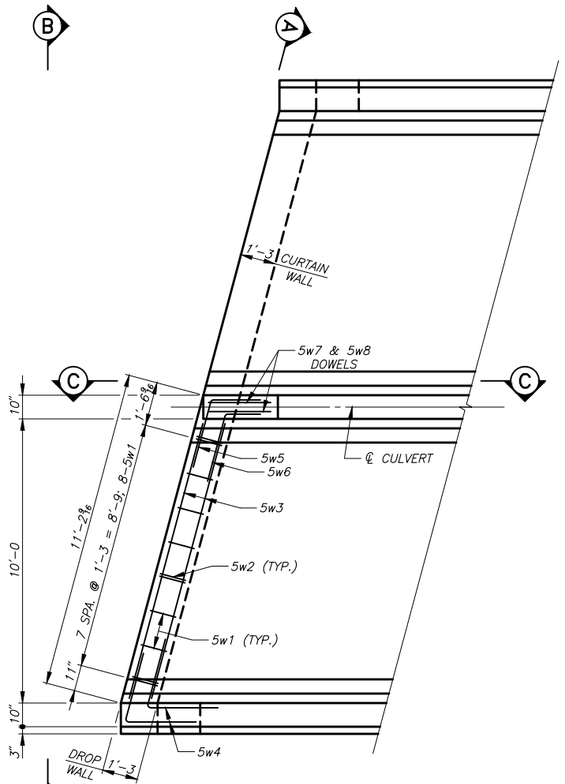
ALL APRON REINFORCING STEEL IS TO BE SUPPORTED BY BAR CHAIRS AT INTERVALS OF NOT MORE THAN 3'-0 IN EITHER DIRECTION AS OUTLINED IN THE STANDARD SPECIFICATIONS.

TWIN 10' x 8' x 46'–0 REINFORCED CONCRETE BOX CULVERT

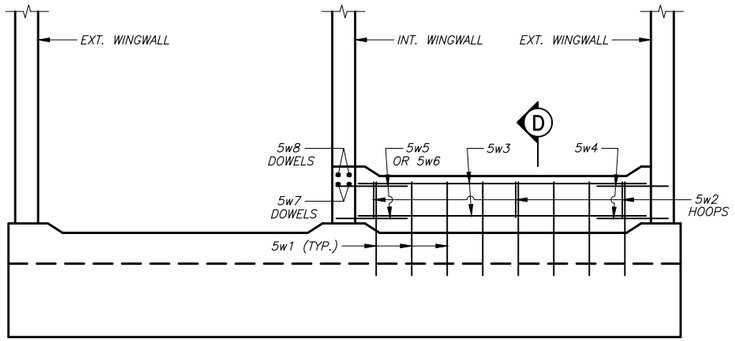
CULVERT HEADWALL DETAILS

STATION 16+70.00 **15° SKEW, RT. AHEAD**

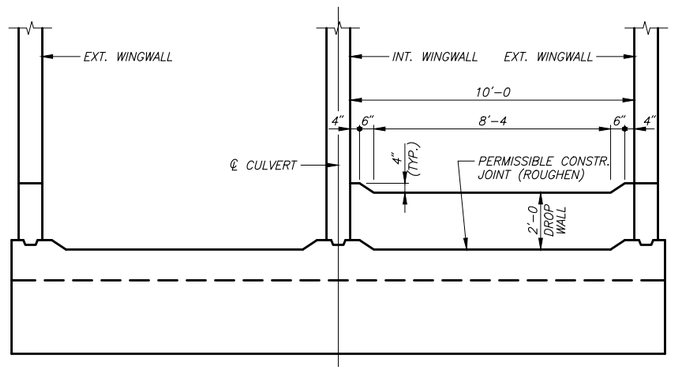
BENTON COUNTY, **IOWA**



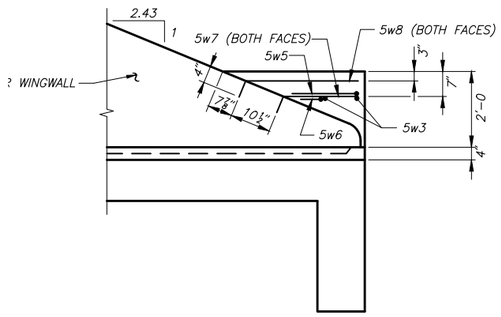
DROP WALL PLAN



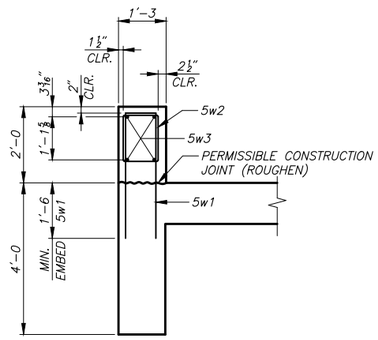
SECTION A–A



VIEW B–B



SECTION C–C

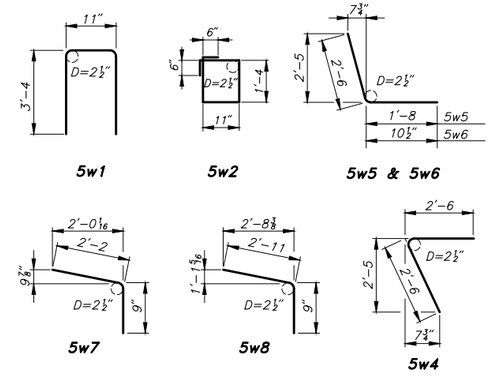


SECTION D–D

REINFORCING BAR LIST – DROP WALL

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5w1	DROP INLET, VERTICAL		8	7'–7	63
5w2	DROP INLET, HOOPS		3	5'–6	17
5w3	DROP INLET, LONGITUDINAL		4	10'–0	42
5w4	DROP INLET TO EXT. WINGWALL		4	5'–0	21
5w5	DROP INLET TO INT. WINGWALL		2	4'–2	9
5w6	DROP INLET TO INT. WINGWALL		2	3'–4	7
5w7	DROP INLET TO INT. WINGWALL		2	2'–11	6
5w8	DROP INLET TO INT. WINGWALL		2	3'–8	8
				TOTAL (LBS.)	181

BENT BAR DETAILS



ALL DIMENSIONS ARE OUT TO OUT. D = DIAMETER OF PIN

TWIN 10' x 8' x 46'–0 REINFORCED CONCRETE BOX CULVERT

DROP INLET DETAILS

STATION 16+70.00 — 15° SKEW, RT. AHEAD

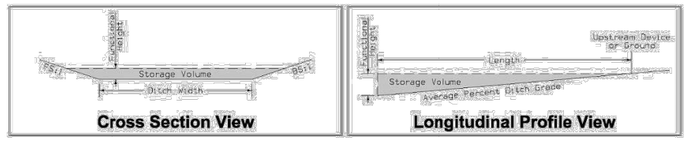
BENTON COUNTY, IOWA

BENCH MARK: SFP CUT 'X', STA. 19+47, @ 28 LT. ELEV.= 907.56

100_18
8/15/22

SILT FENCES FOR DITCH CHECKS

Possible Standard: EC-201



* The functional height used in the volume equation is 85% of effective height. Effective height is 1.58 feet as shown on EC-201.
* Volume equation: [0.5*Spacing*(0.5*H^2*FS+DW*H+0.5*H^2*BS)]

Line No.	Basin No.	Type	Station	Side	Installation (LF)	Maintenance (LF)	Removal (LF)	Foreslope (FS:1)	Backslope (BS:1)	Ditch Width (FT)	Avg. % Slope Ditch Grade	Volume (CF)	Remarks
1.0	1	Type 1	16+25.00	Left	22.0	22.0		3.0	3.0	10.0	0.5	2967.30	SW DITCH
2.0	2	Type 1	16+60.00	Right	22.0	22.0		3.0	3.0	10.0	0.5	2967.30	
3.0	3	Type 1	16+85.00	Left	22.0	22.0		3.0	3.0	10.0	1.0	1460.10	NW DITCH
4.0	4	Type 1	17+10.00	Right	22.0	22.0		3.0	3.0	10.0	1.0	1460.10	NE DITCH
5.0	3	Type 1	17+30.00	Left	22.0	22.0		3.0	3.0	10.0	1.0	1460.10	NW DITCH
6.0	4	Type 1	17+90.00	Right	22.0	22.0		3.0	3.0	10.0	1.0	1460.10	NE DITCH
Total:					**132**	**132**							

100_17
8/15/22

TABULATION OF SILT FENCES

Refer to EC-201

Line No.	Station From	Station To	Side	Length (FT)	Remarks
1.0	16+00.00	16+25.00	Left	90.00	TOP SW BANK
2.0	16+20.00	16+75.00	Left	115.00	TOP NW BANK
3.0	16+70.00	16+75.00	Right	50.00	TOP SE BANK
4.0	17+00.00	17+05.00	Right	45.00	TOP NE BANK
Total:				**300**	

100_19
10/15/24

PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE

Possible Standards: EC-204

Line No.	Station From	Station To	Side	Sediment Control Device Type	Diameter Size	Length (LF)	Remarks
1.0	16+00.00	16+50.00	Left	Perimeter and Slope	12 inch	125.00	TOE SW BANK
2.0	16+15.00	16+70.00	Left	Perimeter and Slope	12 inch	125.00	TOE NW BANK
3.0	16+65.00	16+80.00	Right	Perimeter and Slope	12 inch	80.00	TOE SE BANK
4.0	16+80.00	16+90.00	Right	Perimeter and Slope	12 inch	80.00	TOE NE BANK
Total:						**410**	

105_04
10/15/24

STANDARDS

The following Standards apply to construction work on this project.

Number	Date	Title
DR-305	04-19-22	Subdrain Outlets (Standard Subdrain, Pressure Release and Special)
EC-204	10-19-21	Perimeter, Slope and Ditch Check Sediment Control Devices
EC-201	04-20-21	Silt Fence
EW-402	04-18-17	Temporary Stream Diversion
TC-252	10-20-26	Routes Closed to Traffic

SURVEY CONTROL POINTS

CBA-300

Description	Northing	Easting	Approx. Station	Approx. Offset	Elevation
CP #103, SET 5/8" REBAR X 24" LONG WITH PINK PLASTIC CAP	*3549042.73*	*5278443.18*	*11+86*	*36' RT.*	*914.54*
CP #104, SET 5/8" REBAR X 24" LONG WITH PINK PLASTIC CAP	*3549045.01*	*5278373.99*	*11+88*	*33' LT.*	*912.66*
CP #101, SET 5/8" REBAR X 24" LONG WITH PINK PLASTIC CAP	*3550039.21*	*5278369.27*	*21+83*	*31' LT.*	*909.78*
CP #102, SET 5/8" REBAR X 24" LONG WITH PINK PLASTIC CAP	*3550040.73*	*5278430.94*	*21+84*	*31' RT.*	*908.36*
Coordinate System				**Vertical Datum**	
(NAD83) IOWA STATE PLANES, NORTH ZONE, US FOOT				*NAVD88*	

THE COORDINATE BASIS FOR THIS SURVEY AND THE SUBSEQUENT BASIS OF BEARING IS THE IOWA STATE PLANE COORDINATE SYSTEM NORTH ZONE (1401), HORIZONTAL CONTROL NAD 83 (2011), VERTICAL CONTROL NAVD88 (GEOID 12A). CONTROL WAS ACQUIRED BY LOCALIZING INTO THE BENTON COUNTY GPS CONTROL SYSTEM

TWIN 10' x 8' x 46'-0 REINFORCED CONCRETE BOX CULVERT

TABULATIONS

STATION 16+70.00 — 15° SKEW, RT. AHEAD

BENTON COUNTY, IOWA

108_13A
10/4/23

SAFETY CLOSURES

Refer to Section 2518 of the Standard Specifications

Station	Road Closure Qty.	Hazard Closure Qty.	Remarks
14+00.00	1		SOUTH END
20+00.00	1		NORTH END
Total:	**2**		

CBA-101

SUMMARY OF EARTHWORK QUANTITIES

EXCAVATION TYPE	RAW CUT CY	RAW FILL CY	WASTE ** CY	USABLE CUT CY	SHRINKAGE FACTOR	FILL +35% SHRINKAGE CY	PAYMENT QUANTITY CY
CLASS 10, ROADWAY AND BORROW	1,119	377	119	1,000	35%	509	1,119
CLASS 10, CHANNEL	675	100	175	500	35%	135	675
CLASS 20	850	775	150	700	35%	0	850
TOTALS			444	2,200		644	

*** ASSUMES SOME MATERIAL WILL BE UNSUITABLE AND WILL NEED TO BE WASTED OFF SITE.*

TRAFFIC CONTROL PLAN

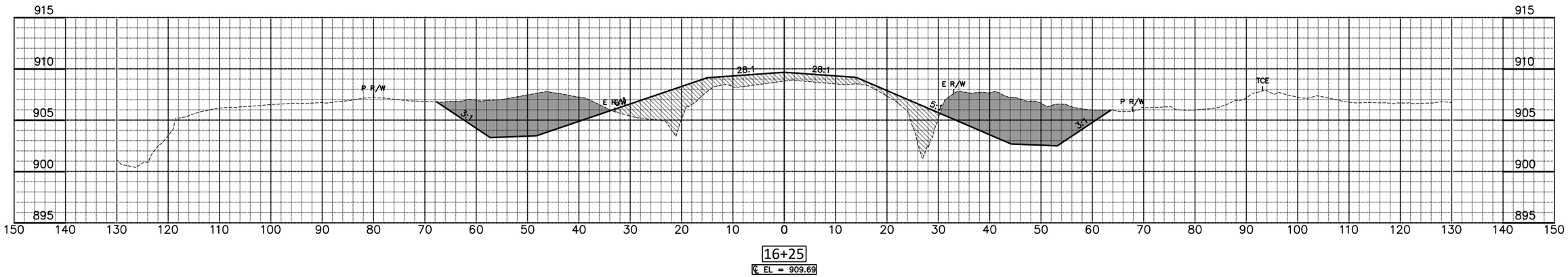
1. ROUTE WILL BE CLOSED TO VEHICULAR AND PEDESTRIAN TRAFFIC DURING CONSTRUCTION.
2. TRAFFIC CONTROL ON THE PROJECT SHALL BE IN ACCORDANCE WITH STANDARD ROAD PLAN TC-252.
3. A DETOUR ROUTE WILL NOT BE ESTABLISHED FOR THIS PROJECT.
4. BENTON COUNTY MAINTENANCE SHALL SALVAGE EXISTING ROAD MARKERS AFTER THE ROAD IS CLOSED.

TWIN 10' x 8' x 46'-0 REINFORCED
CONCRETE BOX CULVERT

TABULATIONS

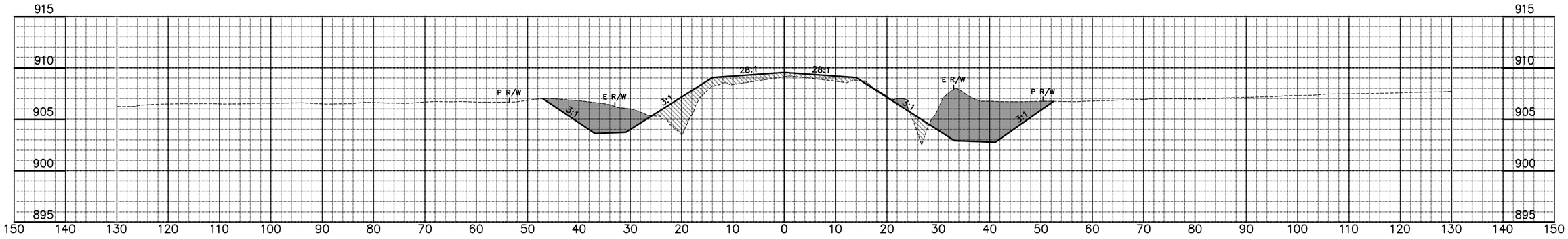
STATION 16+70.00 15° SKEW, RT. AHEAD
BENTON COUNTY, IOWA

BENCH MARK: SFP CUT 'X', STA. 19+47, @ 28 LT. ELEV.= 907.56



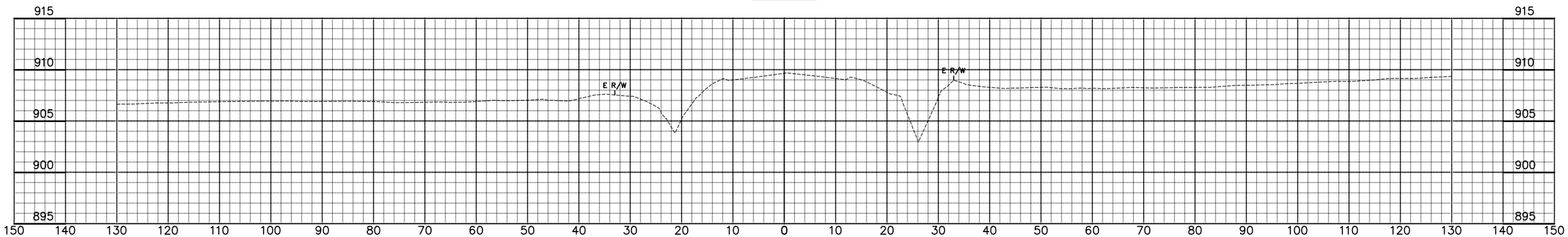
16+25

℄ EL = 909.69



15+75

℄ EL = 909.56

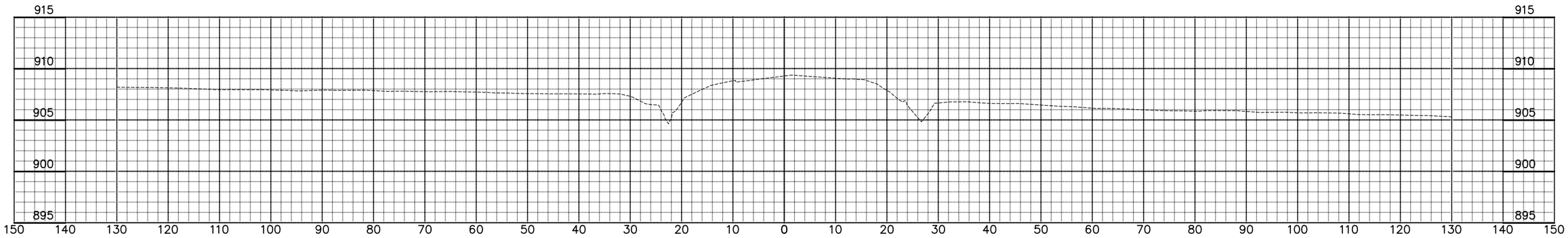


15+25

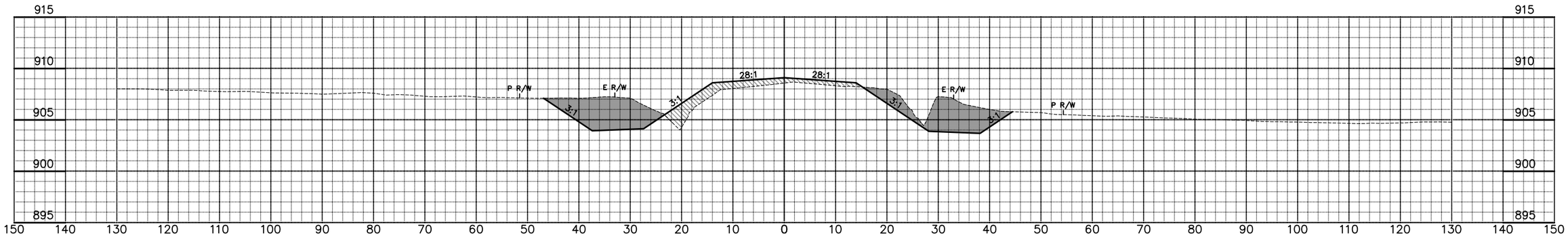
CROSS SECTIONS

BENTON COUNTY,

BENCH MARK: SFP CUT 'X', STA. 19+47, @ 28 LT. ELEV.= 907.56

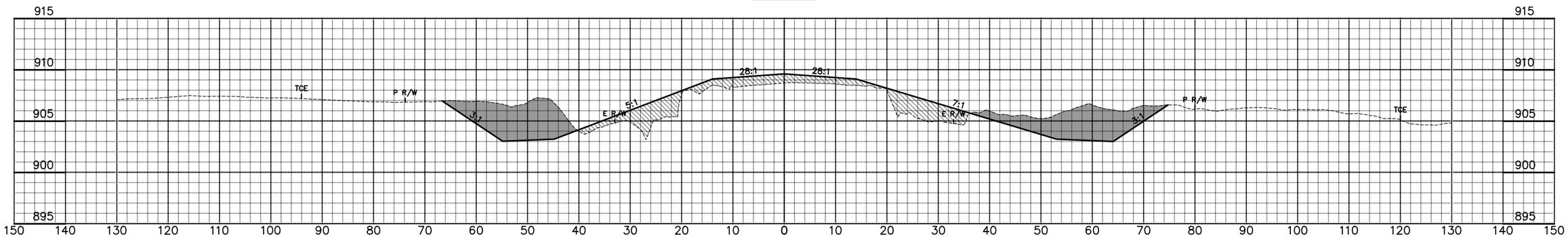


18+75



18+00

℄ EL = 909.11



17+10

℄ EL = 909.60

CROSS SECTIONS

BENTON COUNTY,