TOTAL SHEETS 21

STANDARD ROAD PLANS
STANDARD ROAD PLANS ARE LISTED ON SHEET 16.

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

BREMER COUNTY

PROJECT NO. BROSCHBP-C009(95)--NC-09

RCB CULVERT REPLACEMENT-TRIPLE BOX

ON 240TH ST, OVER CREEK, S17 T91 R14

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.

PROJECT NO. BROSCHBP-C009(95)--NC-09
FHWA NO. 079060
COUNTY BR. NO. 09-04

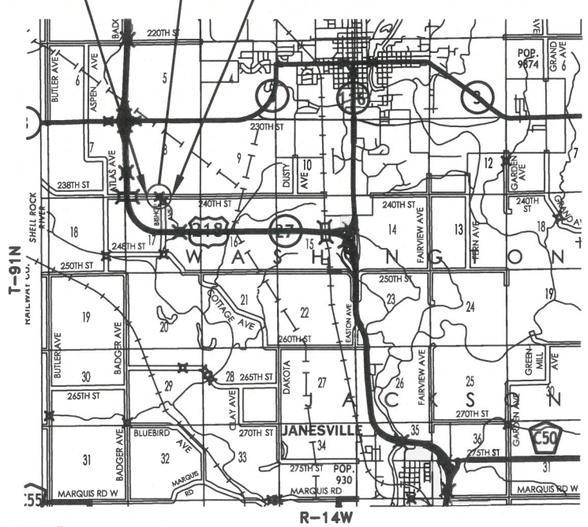
INDEX OF SHEETS

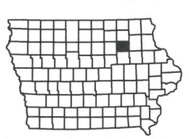
1. TITLE SHEET
2. QUANTITY SUMMARY
3. SITUATION PLAN
4. GENERAL PLAN
5. GENERAL NOTES
6. POLLUTION PREVENTION PLAN
7.-9. CULVERT BARREL DETAILS
10.-13. CULVERT HEADWALL DETAILS
14. DROP INLET WALL DETAILS
15. CULVERT QUANTITIES
16. TYPICAL SECTIONS AND TABULATIONS
17. TABULATIONS
18.-21. CROSS SECTIONS

B.O.P. STA. 20+75.00
E.O.P. STA. 26+75.00
FHWA NO. 079060
STATION 23+70.00
PROPOSED TRIPLE 14' x 7' x 62'
REINFORCED CONCRETE BOX CULVERT
30° SKEW, RT. AHEAD

B.O.P. STA. 20+75.00

E.O.P. STA. 26+75.00





PROJECT LOCATION

1 MI. 0 1 MI. 2 MI.

N

MILEAGE SUMMARY
STA. 20+75.00 TO STA. 26+75.00 = 600.00 LIN. FT. = 0.1136 MILES

2022, TRAFFIC COUNT = 196 V.P.D.

UTILITY CONTACTS

COMPANY	UTILITY	CONTACT	PHONE #	EMAIL
IOWA REGIONAL UTILITY ASSOCIATION	WATER	GARY KOPSA	641-792-7011	GKOPSA@IRUA.NET
MIDAMERICAN	ELECTRIC	JORDYN WEBER	319-291-4728	JLWEBER@MIDAMERICAN.COM
BUTLER BREMER MUTUAL TELEPHONE	TELECOM	BRAD SCHMITT	319-276-4458	BRAD@BUTLER-BREMER.BIZ
MEDIACOM	TELECOM	SCOTT LAGOW	845-544-9655	CLAGOW@MEDIACOMCC.COM

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: 7/7/26
JULI A. REDMOND, P.E.
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2026.
PAGES OR SHEETS COVERED BY THIS SEAL:
1-6 AND 10-21 OF 21

APPROVED
7/14/26
BREMER COUNTY ENGINEER DATE

Bob Baker
Corey Carter
Darryl L. Hildebrandt
BOARD OF SUPERVISORS DATE

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, FOR REVIEW AND APPROVAL.

ADDRESS : 6775 VISTA DRIVE
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. BRIDGES AND STRUCTURES BUREAU.

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

TOTAL ESTIMATED QUANTITIES:
TRIPLE 14' x 7' x 62'-0 R.C.B. CULVERT

REF. NO.	CODE NO.	ITEM	UNIT	TOTAL
1	2101-0850001	CLEARING AND GRUBBING	ACRE	0.5
2	2102-0425070	SPECIAL BACKFILL	TON	185
3	2102-2625000	EMBANKMENT-IN-PLACE	CY	1,140
4	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	790
5	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	135
6	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	1,050
7	2107-0425020	COMPACTING BACKFILL ADJACENT TO BRIDGES, CULVERTS OR STRUCTURES	CY	45
8	2312-8260051	GRANULAR SURFACING ON ROAD, CLASS A CRUSHED STONE	TON	300
9	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1
10	2402-0425040	FLOODED BACKFILL	CY	56
11	2402-0875150	COMPACTION WITH MOISTURE CONTROL (STRUCTURES)	CY	360
12	2402-2720000	EXCAVATION, CLASS 20	CY	890
13	2403-0100020	STRUCTURAL CONCRETE (RCB CULVERT)	CY	455.6
14	2404-7775000	REINFORCING STEEL	LB	65432
15	2417-1040018	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 18 IN. DIA.	LF	68
16	2417-1040024	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 24 IN. DIA.	LF	100
17	2417-1040036	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 36 IN. DIA.	LF	62
18	2418-0000010	TEMPORARY STREAM DIVERSION	EACH	1
19	2502-8215815	SUBDRAIN, TILE, 15 IN. DIA.	LF	70
20	2502-8221305	SUBDRAIN OUTLET, DR-305	EACH	1
21	2507-3250005	ENGINEERING FABRIC	SY	330
22	2507-6800061	REVETMENT, CLASS E	TON	250
23	2526-8285010	CONSTRUCTION SURVEY, MONUMENT PRESERVATION	LS	1
24	2526-8285020	CONSTRUCTION SURVEY, CONTROL POINT SURVEY	LS	1
25	2526-8285030	CONSTRUCTION SURVEY, RIGHT OF WAY	LS	1
26	2526-8285040	CONSTRUCTION SURVEY, LOCATION SURVEY	LS	1
27	2528-2518000	SAFETY CLOSURE	EACH	4
28	2528-8445110	TRAFFIC CONTROL	LS	1
29	2533-4980005	MOBILIZATION	LS	1
30	2601-2634100	MULCHING	ACRE	2.4
31	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	1.2
32	2601-2642100	STABILIZING CROP - SEEDING AND FERTILIZING	ACRE	1.2
33	2602-0000020	SILT FENCE	LF	205
34	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	221
35	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	426
36	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	235
37	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1
38	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	1

REF. NO. ESTIMATE REFERENCE INFORMATION

1. SEE GENERAL PLAN, SHEET 4, FOR LIMITS.
SELECTIVE CLEARING WILL BE REQUIRED ON THIS PROJECT. ALL DESIRABLE TREES OUTSIDE THE CONSTRUCTION AREA WILL BE SAVED. TREES AND SHRUBS WITHIN THE CONSTRUCTION LIMITS THAT DO NOT HINDER CONSTRUCTION SHALL BE SAVED UNLESS DIRECTED BY THE ENGINEER TO BE REMOVED.

2. INCLUDES MATERIAL TO IMPROVE WET AND MUDDY CONDITIONS ALONG THE BOTTOM OF THE EXCAVATION. QUANTITY IS BASED ON A SIX 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.

3. SEE TABULATIONS CBA-100 AND CBA-101 ON SHEET 17 FOR BREAKDOWN OF EXCAVATION QUANTITIES.
TYPE "A" COMPACTION WILL BE REQUIRED. QUANTITY DOES NOT COMPENSATE FOR SHRINKAGE.
AFTER ALL AVAILABLE ON SITE MATERIAL HAS BEEN DEPLETED; THE CONTRACTOR SHALL FURNISH ALL REMAINING MATERIAL REQUIRED.
THE CONTRACTOR SHALL FURNISH HIS OWN BORROW MATERIAL FOR "EMBANKMENT-IN-PLACE". THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH PROVISIONS OF IOWA LAW AS IT APPLIES TO REMOVAL AND REPLACEMENT OF TOPSOIL ON BORROW AREAS.

4. SEE TABULATIONS CBA-100 AND CBA-101 ON SHEET 17 FOR BREAKDOWN OF EXCAVATION QUANTITIES.
TYPE "A" COMPACTION WILL BE REQUIRED.
SEE STANDARD ROAD PLAN DR-111 FOR CULVERT BACKFILL DETAILS.
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".

5. SEE TABULATIONS CBA-100 AND CBA-101 ON SHEET 17 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.
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.

6. 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.

7. SEE TABULATION 104-4 ON SHEET 17 AND STANDARD ROAD PLAN DR-111

8. SURFACING TO BE FURNISHED AND PLACED BY THE CONTRACTOR IN TWO PASSES (1550 AND 650 TONS /MILE).
SEE TYPICAL SECTION CBA-503 ON SHEET 16.
INCLUDES 36 TONS FOR DRIVES. SEE TABULATION 102-3 ON SHEET 17.

9. THE EXISTING BRIDGE AT STATION 23+73 IS A 40' x 18' I-BEAM BRIDGE WITH HIGH CONCRETE ABUTMENTS, AND A CONCRETE DECK BUILT IN 1929.
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. 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.

10. SEE TABULATION 104-4 ON SHEET 17.

11. SEE TABULATION 104-4 ON SHEET 17.
QUANTITY DOES NOT COMPENSATE FOR SHRINKAGE.

12. 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.

13. 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 15.

14. ALL REINFORCING SHALL BE GRADE 60.
SEE "REINFORCING BAR LISTS" ON SHEET 15.

15-17. SEE TABULATION 102-3 ON SHEET 17, TYPICAL SECTION CBA-700 ON SHEET 16 AND STANDARD ROAD PLANS DR-101 AND DR-104.
ALL PIPE SHALL BE STANDARD CORRUGATIONS, NO HELICALLY CORRUGATED PIPE WILL BE ALLOWED. ALL CONNECTING BANDS SHALL BE 24" WIDE.

18. SEE STANDARD ROAD PLAN EW-402.

19. INCLUDES ALL COSTS REQUIRED TO CONNECT TO EXISTING TILE AND RELOCATE TO LOCATION SHOWN ON GENERAL PLAN, SHEET 4.

20. INCLUDES THE COST TO ADJUST THE 15 INCH PLASTIC FIELD TILE LINE ON THE NORTHWEST BANK TO THE PROPOSED BANK SHAPING AND INSTALL A NEW DR-305 TYPE C OUTLET.
SEE GENERAL PLAN, SHEET 4, FOR LOCATION.

21. 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.

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

23-26. 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 17, FOR FIELD TIES TO THE SITE SURVEY.

27. SEE TABULATION 108-13A ON SHEET 16.

28. SEE TRAFFIC CONTROL PLAN ON SHEET 16.

30-32. 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.

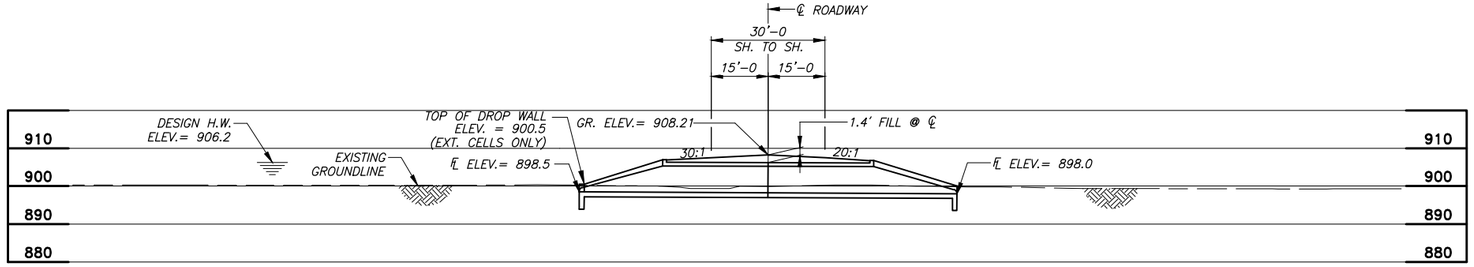
33-38. SEE POLLUTION PREVENTION PLAN, SHEET 6, AND TABULATIONS 100-17, 100-18 AND 100-19 ON SHEET 16.

TRIPLE 14' x 7' x 62'-0 REINFORCED
CONCRETE BOX CULVERT

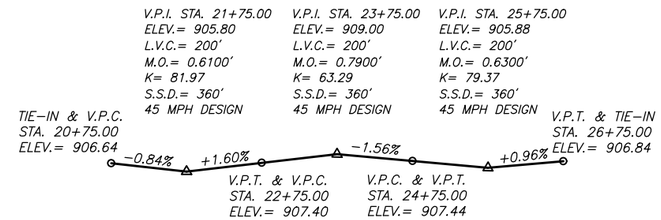
QUANTITY SUMMARY

STATION 23+70.00 — 30° SKEW, RT. AHEAD
BREMER COUNTY, — IOWA

BENCH MARK: CUT 'X' IN PCC BR RAIL, STA. 0+48, 16' LT. ELEV. = 946.81
CUT 'X' IN PCC BR RAIL, STA. 0+48, 16' RT. ELEV. = 946.69



LONGITUDINAL SECTION ALONG ℄ CULVERT



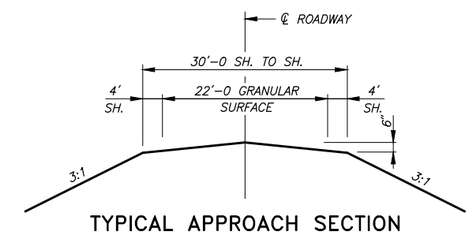
PROPOSED GRADE

LOCATION

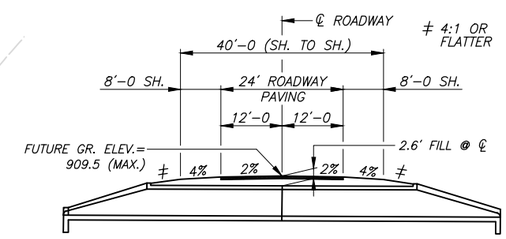
BREMER COUNTY
T-91N, R-14W
SECTION 17
WASHINGTON TOWNSHIP
OVER UNNAMED CREEK

HYDRAULIC DATA

DRAINAGE AREA = 9.6 SQ. MI.
DESIGN DISCHARGE = 2,400 C.F.S.
DESIGN HIGH WATER ELEV. = 906.2
BARREL SLOPE = 0.00434 FT./FT.
CHANNEL SLOPE = 0.00260 FT./FT.
Q25 = 1,900 C.F.S. STAGE ELEV. = 905.2
Q50 = 2,400 C.F.S. STAGE ELEV. = 906.2 (DESIGN)
Q100 = 2,800 C.F.S. STAGE ELEV. = 907.2
EXT. H.W. ELEV. = UNKNOWN



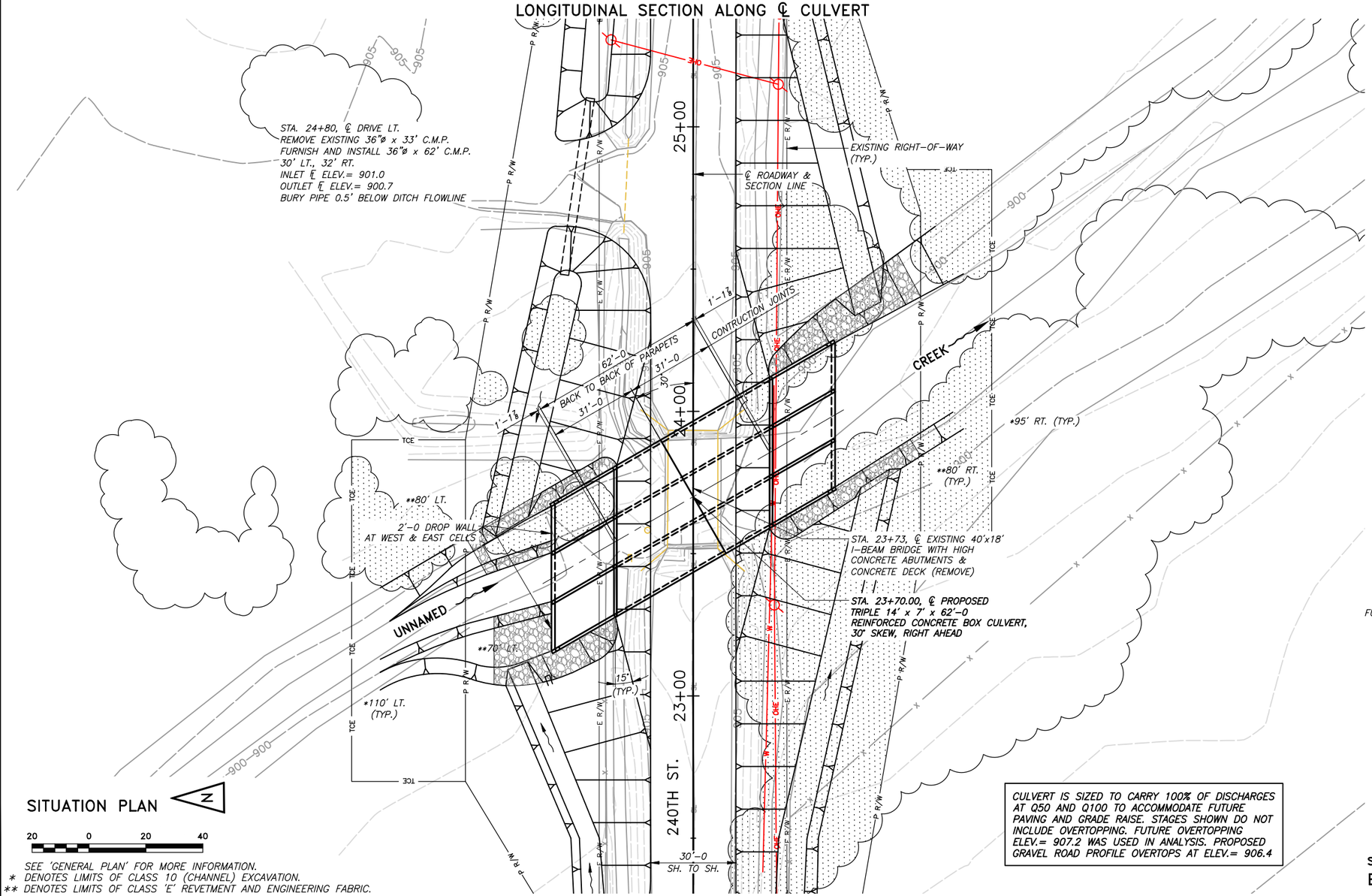
TYPICAL APPROACH SECTION



FUTURE PAVED ROAD CROSS SECTION
AT CULVERT

TRIPLE 14' x 7' x 62'-0 REINFORCED
CONCRETE BOX CULVERT

SITUATION PLAN



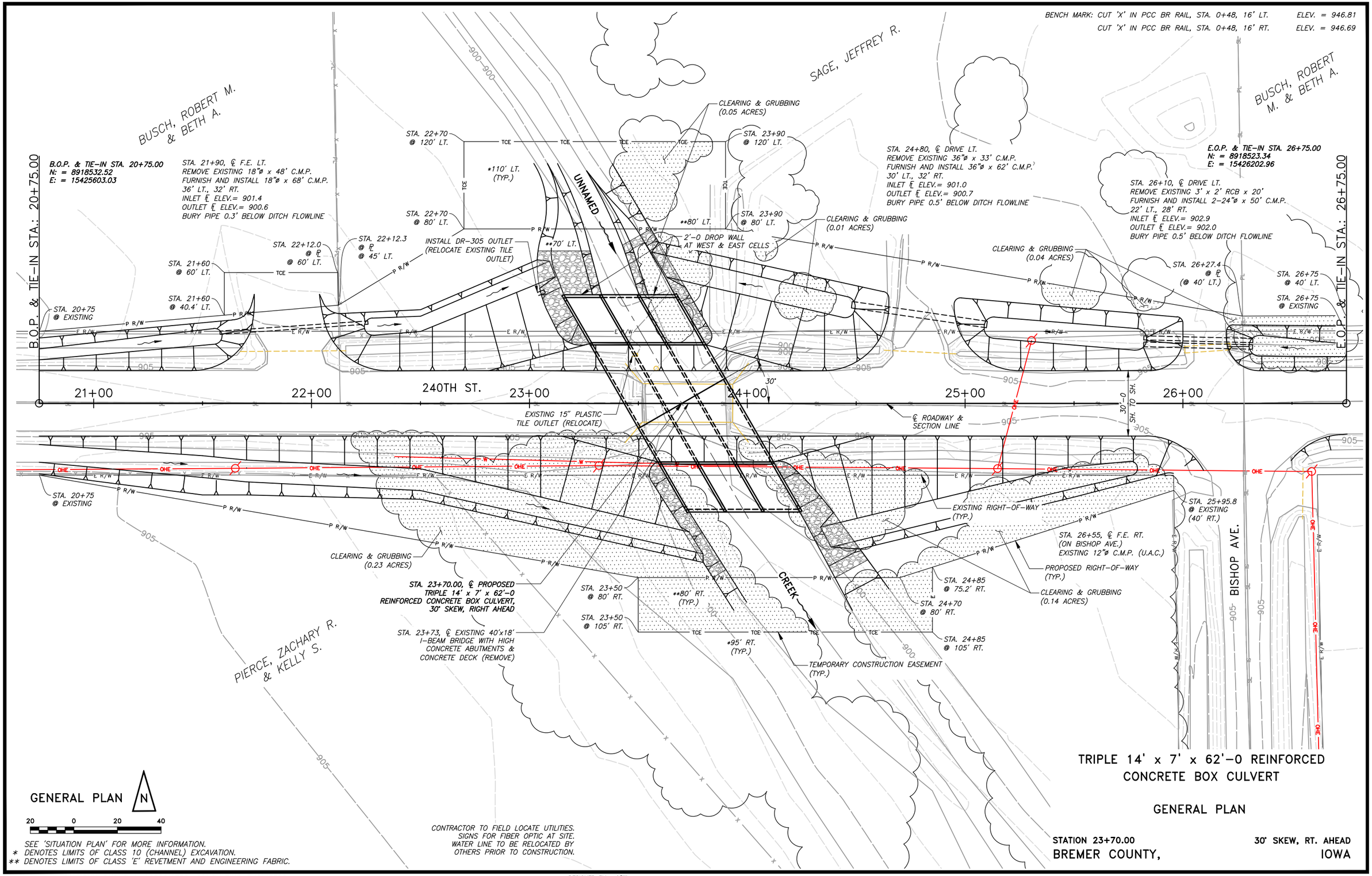
SITUATION PLAN

20 0 20 40

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

CULVERT IS SIZED TO CARRY 100% OF DISCHARGES AT Q50 AND Q100 TO ACCOMMODATE FUTURE PAVING AND GRADE RAISE. STAGES SHOWN DO NOT INCLUDE OVERTOPPING. FUTURE OVERTOPPING ELEV.= 907.2 WAS USED IN ANALYSIS. PROPOSED GRAVEL ROAD PROFILE OVERTOPS AT ELEV.= 906.4

STATION 23+70.00 30° SKEW, RT. AHEAD
BREMER COUNTY, IOWA



CALHOUN-BURNS & ASSOCIATES, CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50266 (515) 224-4344

JOB NO. 2017159

DESIGNED BY : LDW
DRAWN BY : JML
CHECKED BY : JAR

BREMER COUNTY

PROJECT NO. BROSCHBP-C009(95)--NC-09

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 TRIPLE 14' x 7' x 62'-0 REINFORCED CONCRETE BOX CULVERT ON 240TH ST OVER AN UNNAMED CREEK IN BREMER COUNTY, IOWA.

THIS CULVERT IS DESIGNED FOR HL-93 LOADING AND 1.5 FEET OF FILL (DESIGN FILL HEIGHT OF 1.0 TO 3.0 FEET. 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: 17-8740I
DATE INSPECTED: 11/29/2017
PHONE: 515-279-8042

A SCRAPE SAMPLE OF THE EXISTING PAINT WAS TAKEN FROM A STEEL I-BEAM AND RAILING 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 THE I-BEAM WAS 209,000 PART PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS <42.2 PPM. ANALYSIS OF TOTAL LEAD ON THE RAILING WAS 2,810 PART PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS <67.4 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.

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 2'-9½ 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 2½" 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.

THE VERTICAL BARS IN THE WALLS MAY BE SPLICED ABOVE THE FOOTING AT THE CONTRACTOR'S OPTION AS FOLLOWS:

BAR SIZE NUMBER	4	5	6	7	8	9
MINIMUM SPLICE LENGTH	20"	24"	29"	34"	38"	47"

THIS SPLICE, IF USED, WILL BE AT THE CONTRACTOR'S EXPENSE.

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.

TRIPLE 14' x 7' x 62'-0 REINFORCED
CONCRETE BOX CULVERT

GENERAL NOTES

STATION 23+70.00 30° SKEW, RT. AHEAD
BREMER 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 TRIPLE 14' X 7' X 62'-0 REINFORCED CONCRETE BOX CULVERT ON 240TH ST OVER AN UNNAMED CREEK IN BREMER COUNTY, IOWA.
- B. THIS PPP COVERS APPROXIMATELY 1.8 ACRES WITH AN ESTIMATED 1.8 ACRES BEING DISTURBED. THE PORTION OF THE PPP COVERED BY THIS CONTRACT HAS 1.8 ACRES DISTURBED.
- C. THE PPP IS LOCATED IN AN AREA OF TWO SOIL ASSOCIATIONS (KENYON-CLYDE-FLOYD AND SPARTA-CHELSEA). 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 AN UNNAMED 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

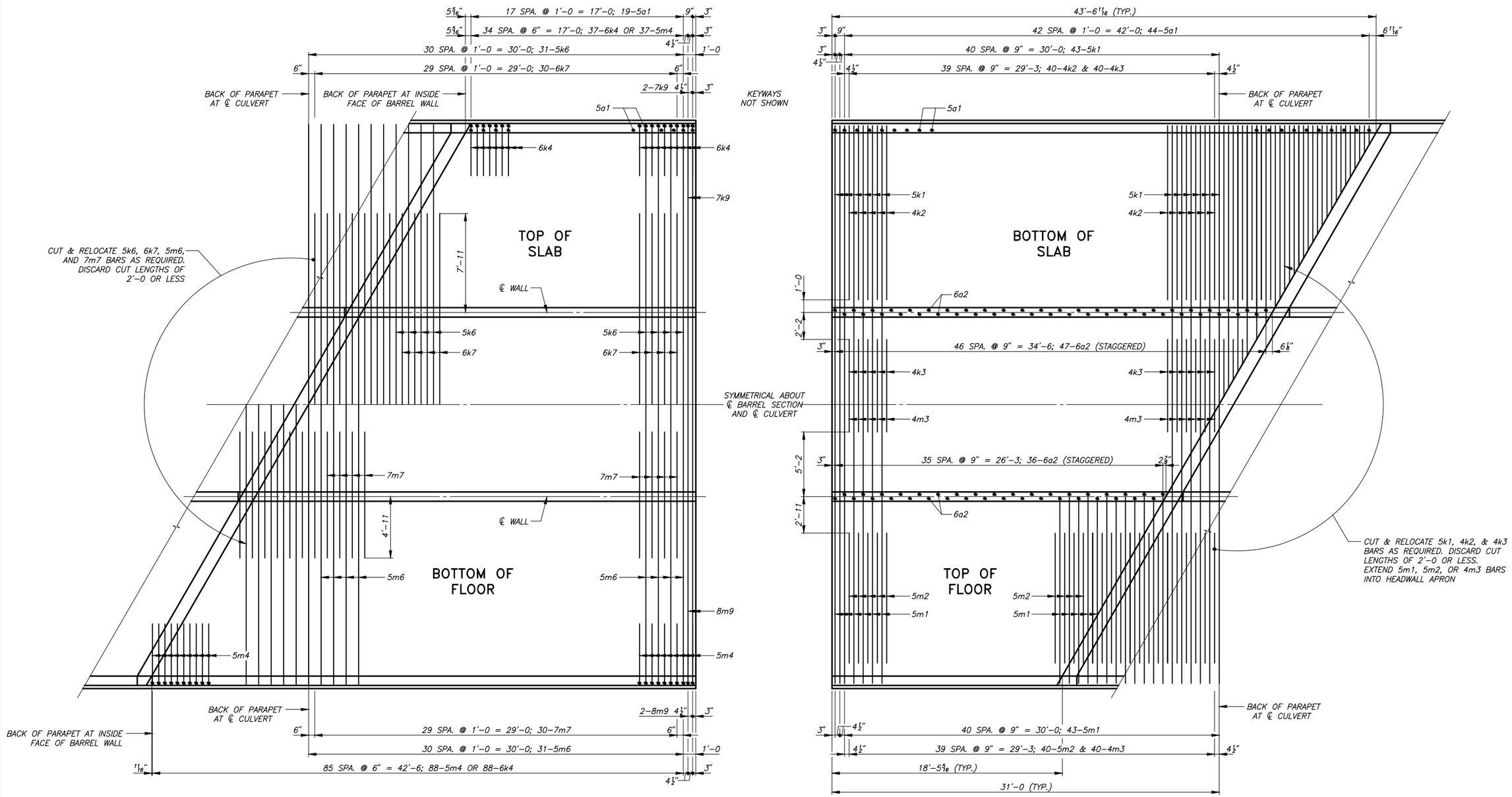
I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE 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.

SIGNATURE

LANDON MOOKE
PRINTED OR TYPED NAME

POLLUTION PREVENTION PLAN

BREMER COUNTY, IOWA



CULVERT BARREL PLAN

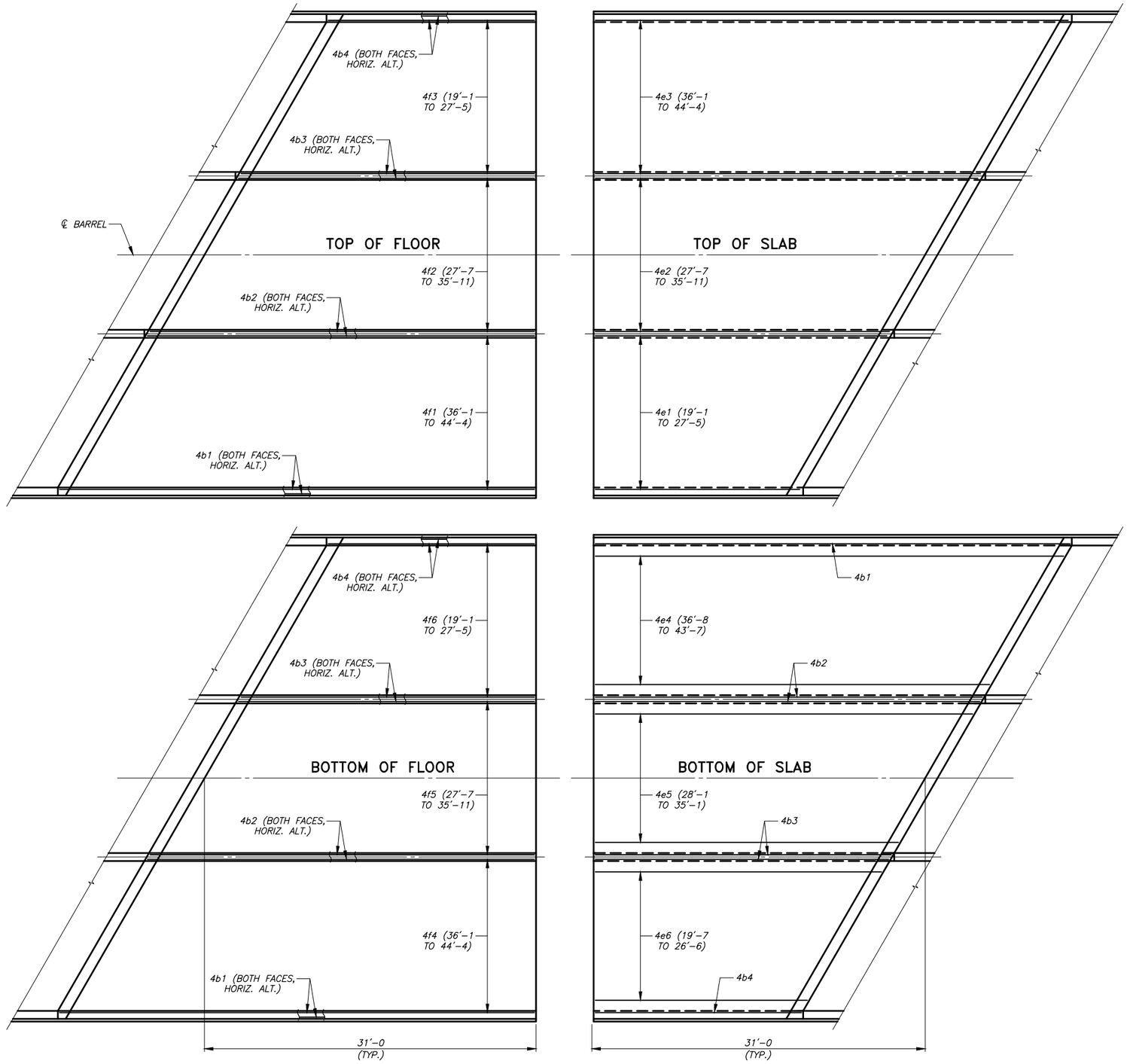
NOTES: 1. SEE SHEET 8 FOR PLAN OF LONGITUDINAL REINFORCING BARS.
2. ALL LONGITUDINAL BARREL STEEL SHALL EXTEND AT LEAST TO THE BACKFACE OF PARAPET.

TRIPLE 14' x 7' x 62'-0 REINFORCED CONCRETE BOX CULVERT

CULVERT BARREL DETAILS

STATION 23+70.00 — 30° SKEW, RT. AHEAD

BREMER COUNTY, IOWA



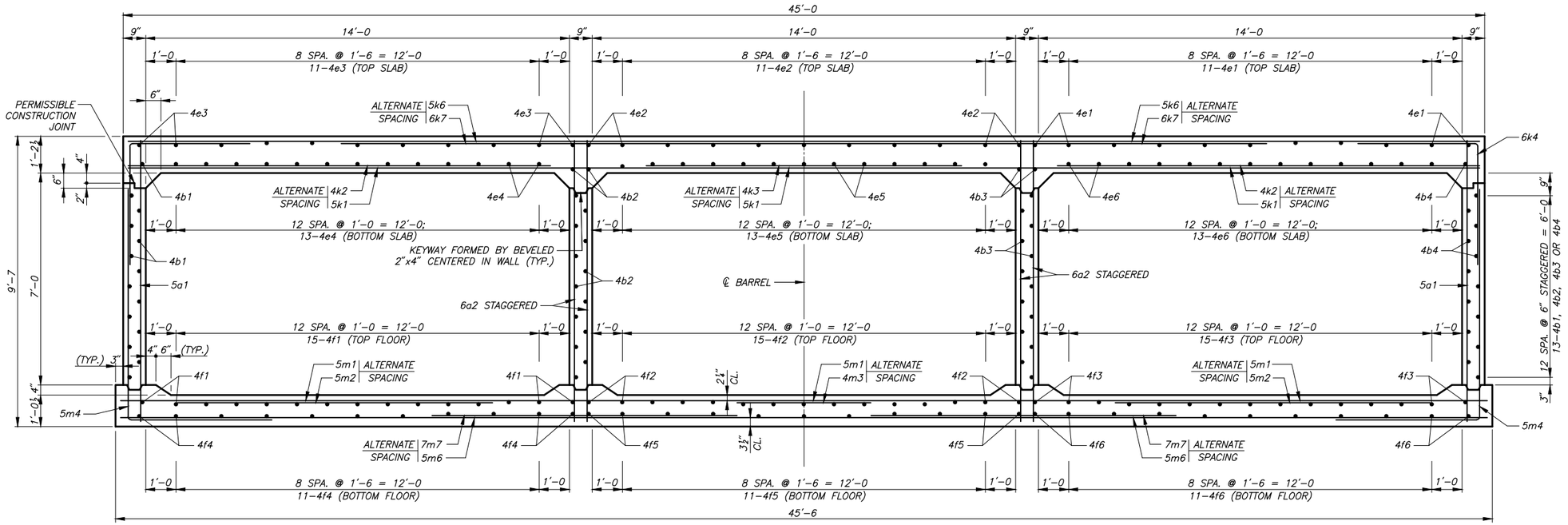
CULVERT BARREL PLAN OF LONGITUDINAL REINFORCING BARS

TRIPLE 14' x 7' x 62'-0 REINFORCED CONCRETE BOX CULVERT

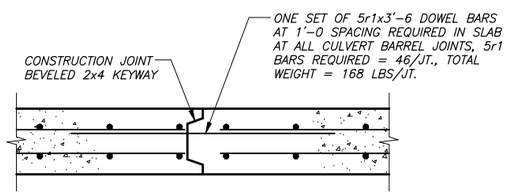
CULVERT BARREL DETAILS

STATION 23+70.00 30° SKEW, RT. AHEAD

BREMER COUNTY, IOWA



CULVERT BARREL SECTION



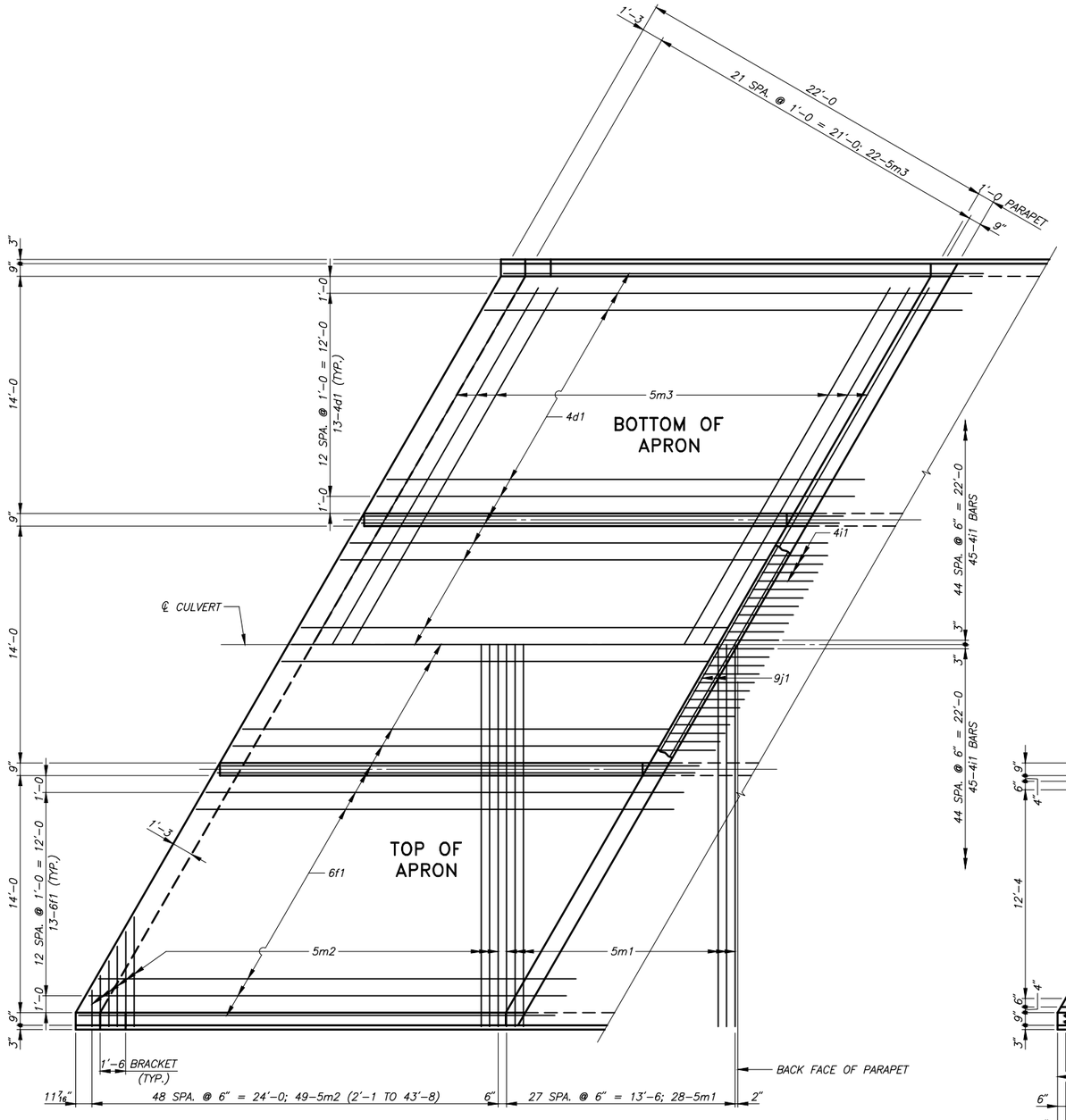
TOP SLAB CONSTRUCTION JOINT DETAIL

TRIPLE 14' x 7' x 62'-0 REINFORCED CONCRETE BOX CULVERT

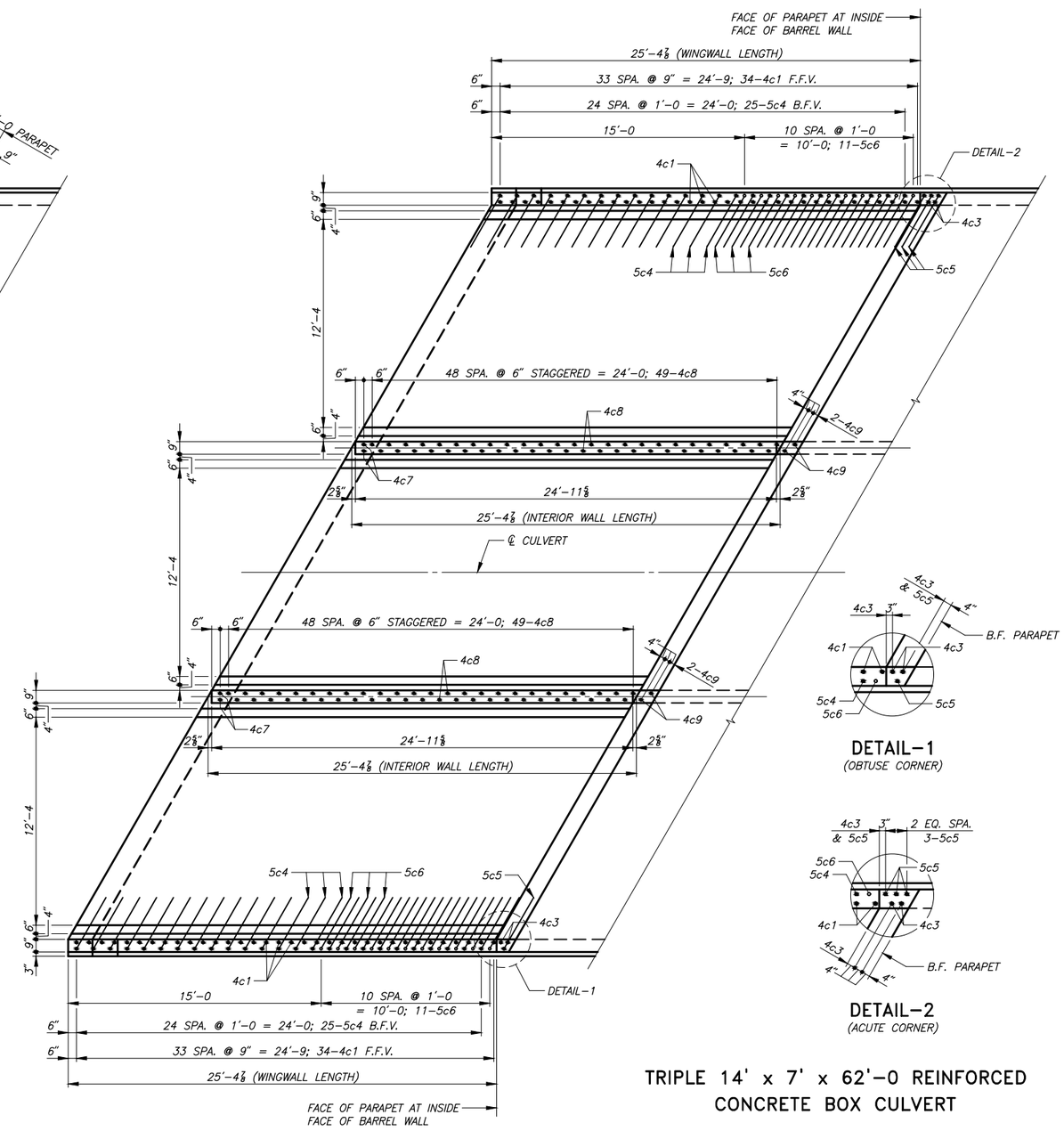
CULVERT BARREL DETAILS

STATION 23+70.00 30° SKEW, RT. AHEAD

BREMER COUNTY, IOWA



APRON PLAN



WINGWALL PLAN

DETAIL-1
(OBTUSE CORNER)

DETAIL-2
(ACUTE CORNER)

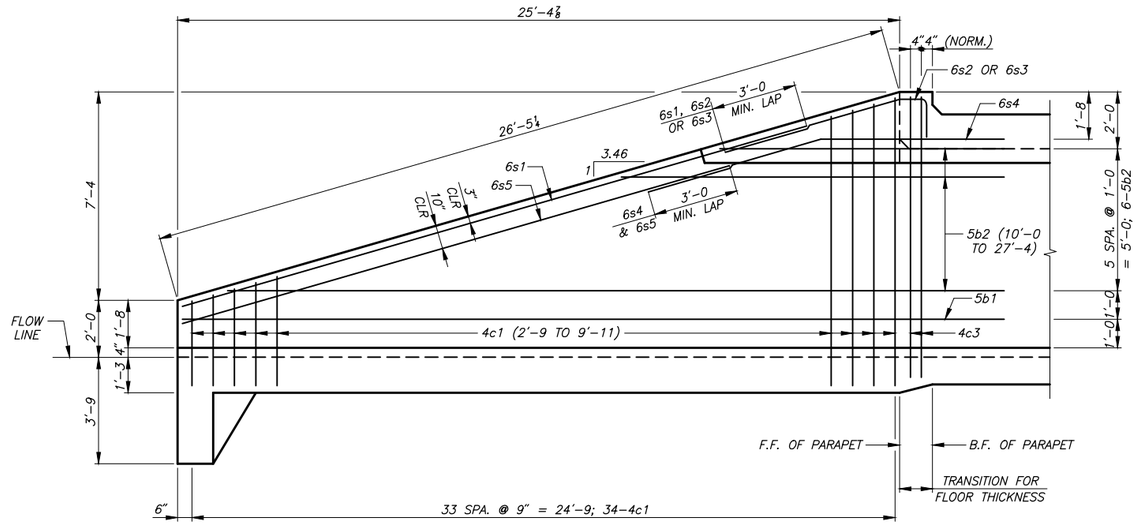
NOTE: SEE SHEET 11 FOR WINGWALL ELEVATIONS.

TRIPLE 14' x 7' x 62'-0 REINFORCED CONCRETE BOX CULVERT

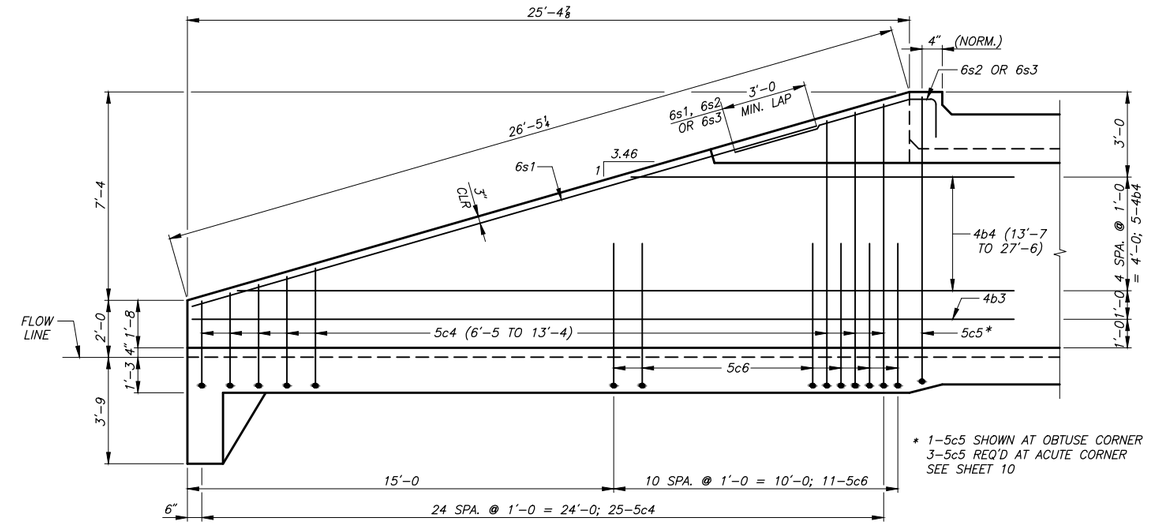
CULVERT HEADWALL DETAILS

STATION 23+70.00 — 30° SKEW, RT. AHEAD

BREMER COUNTY, IOWA

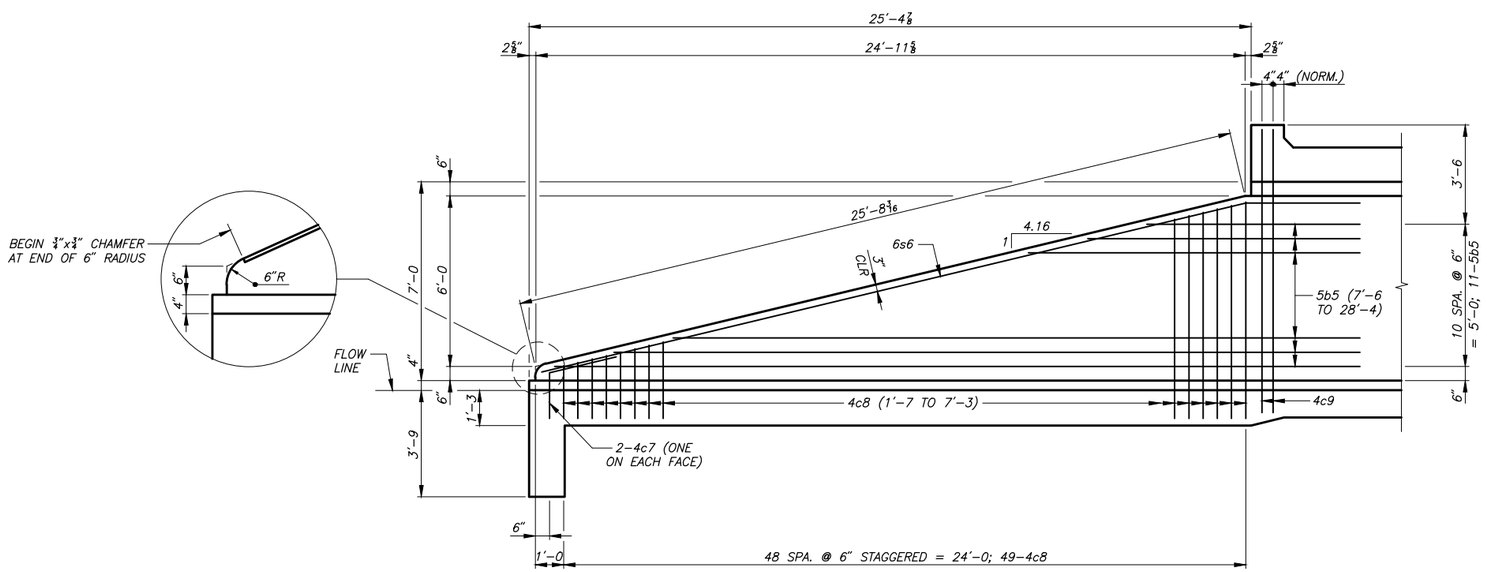


FRONT FACE WINGWALL REINFORCING



* 1-5c5 SHOWN AT OBTUSE CORNER
3-5c5 REQ'D AT ACUTE CORNER
SEE SHEET 10

BACK FACE WINGWALL REINFORCING



INTERIOR WALL REINFORCING

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.

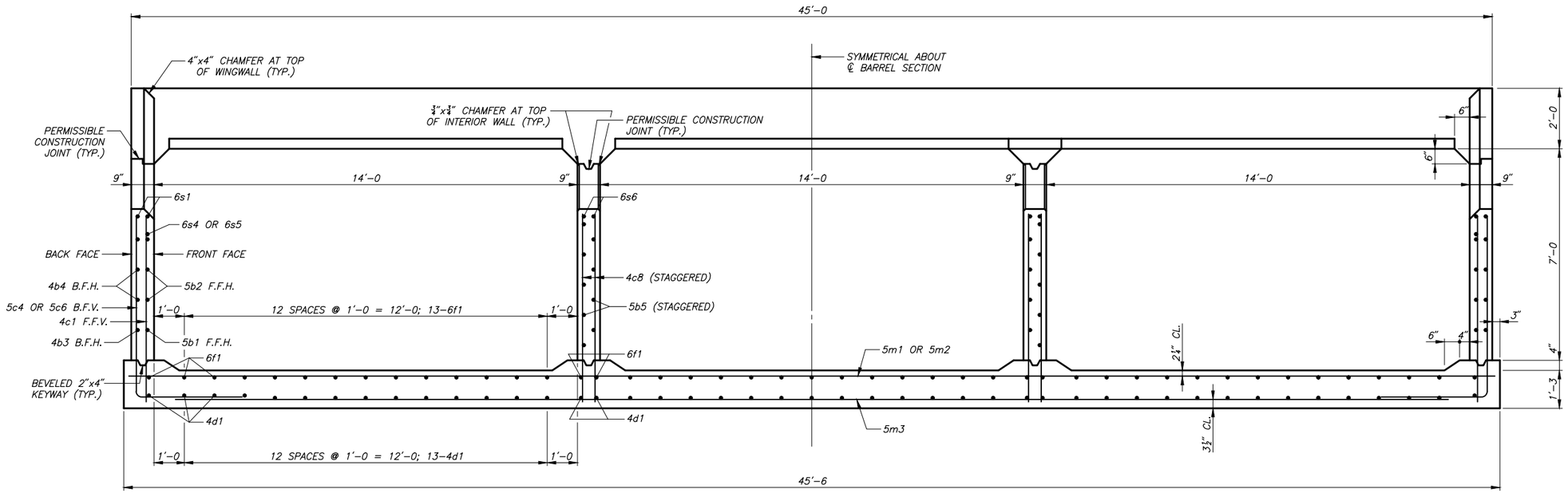
ALL APRON REINFORCING STEEL IS TO BE SUPPORTED BY BAR CHAIRS AT INTERVALS OF NOT MORE THAN 3'-0 IN EITHER DIRECTION AS OUTLINED IN THE STANDARD SPECIFICATIONS.

TRIPLE 14' x 7' x 62'-0 REINFORCED CONCRETE BOX CULVERT

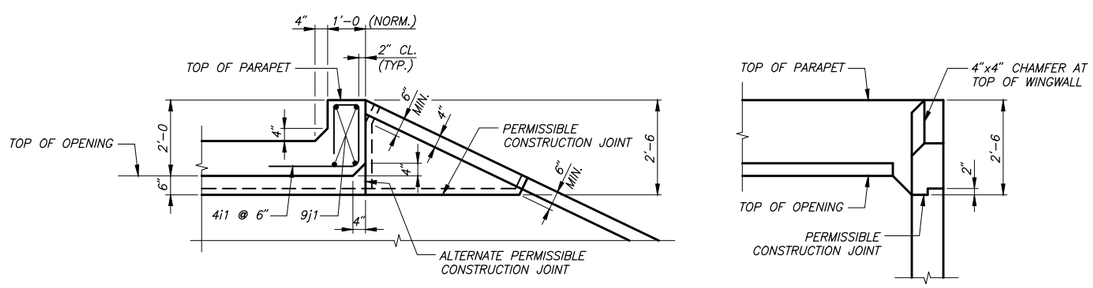
HEADWALL DETAILS

STATION 23+70.00 — 30° SKEW, RT. AHEAD

BREMER COUNTY, IOWA



HEADWALL CROSS SECTION



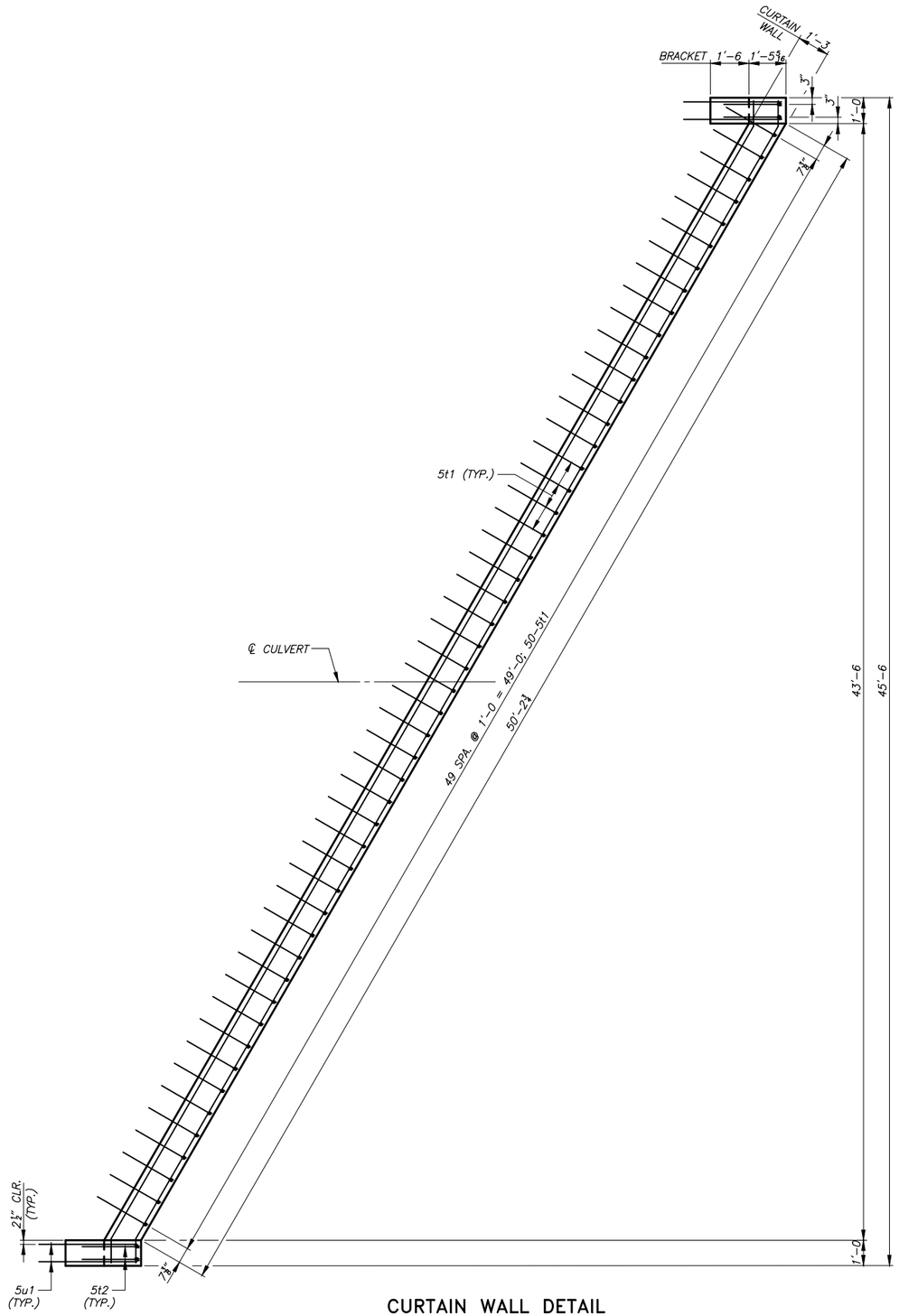
TOP OF WINGWALL DETAILS

TRIPLE 14' x 7' x 62'-0 REINFORCED CONCRETE BOX CULVERT

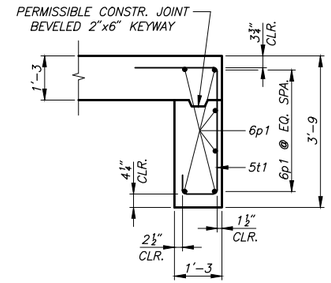
CULVERT HEADWALL DETAILS

STATION 23+70.00 30° SKEW, RT. AHEAD

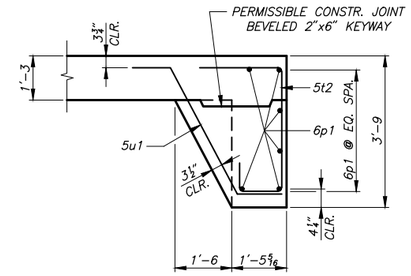
BREMER COUNTY, IOWA



CURTAIN WALL DETAIL

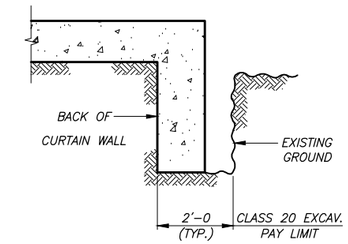


MID SECTION



END SECTION

CURTAIN WALL DETAILS

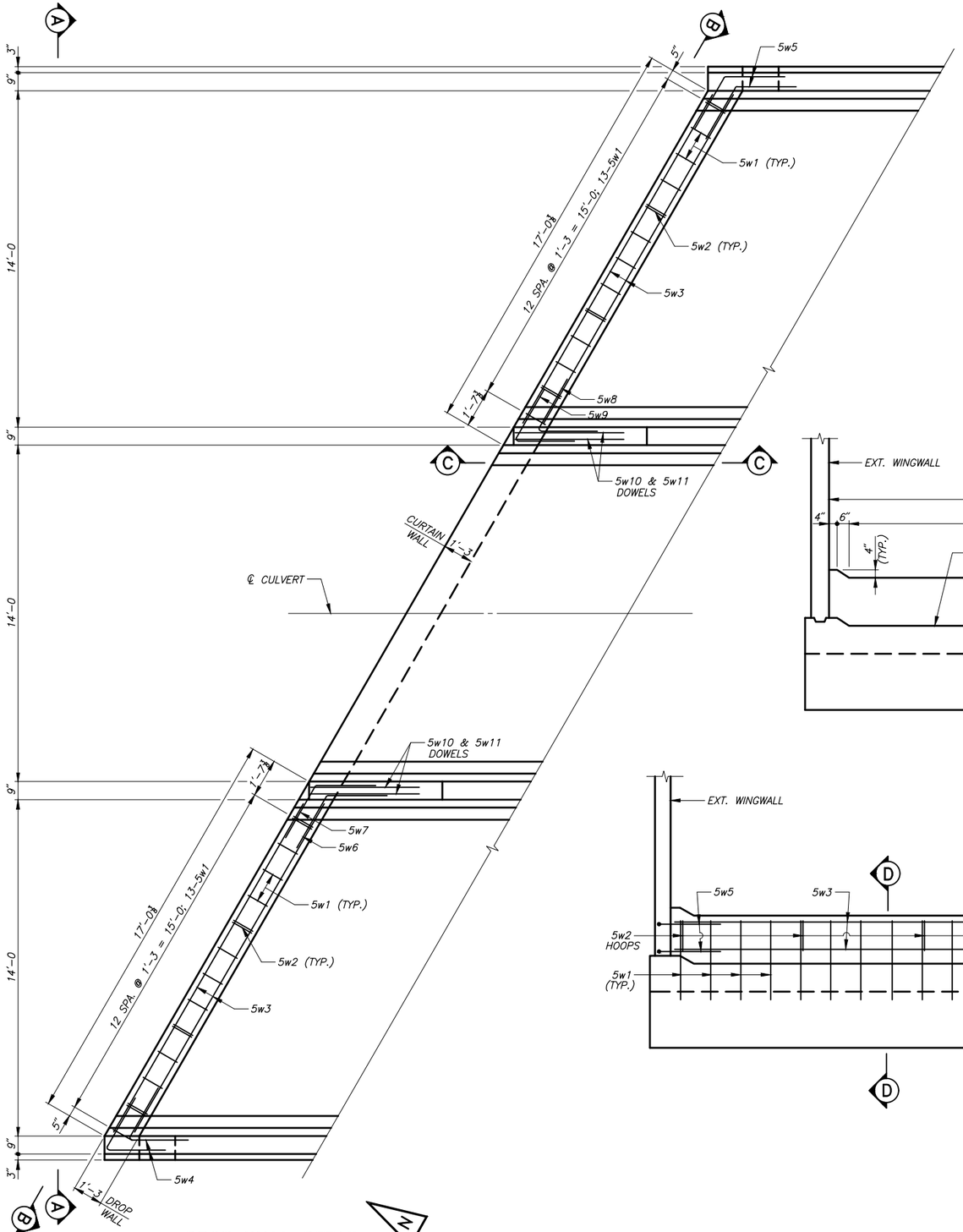


CURTAIN WALL
CLASS 20 EXCAVATION

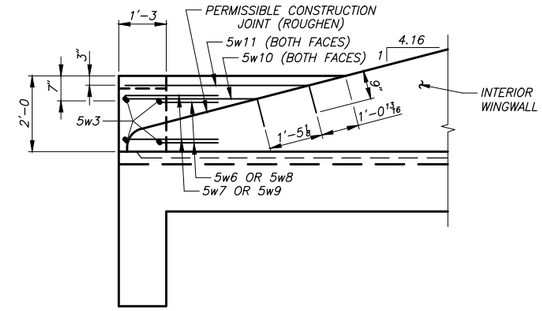
TRIPLE 14' x 7' x 62'-0 REINFORCED
CONCRETE BOX CULVERT

CULVERT HEADWALL DETAILS

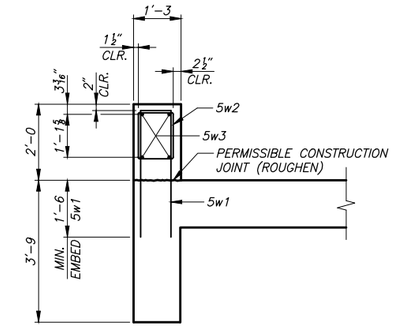
STATION 23+70.00 30° SKEW, RT. AHEAD
BREMER COUNTY, IOWA



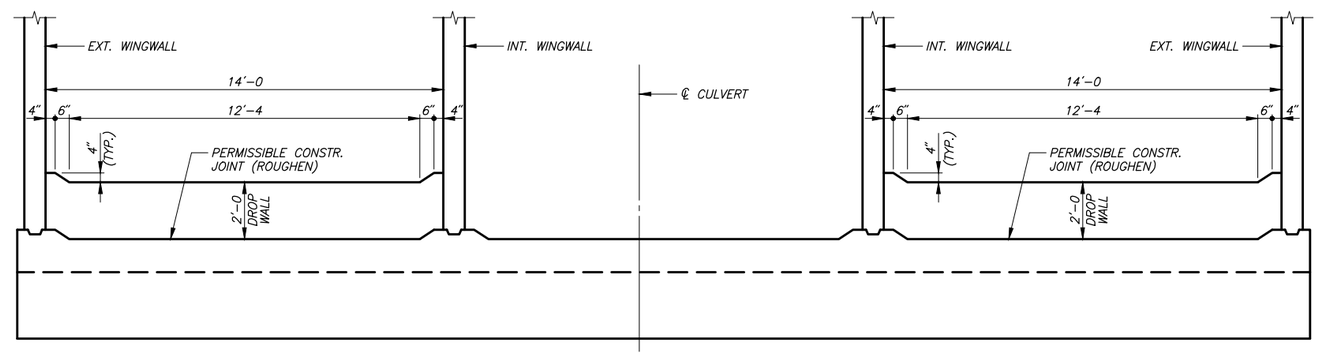
DROP WALL DETAIL



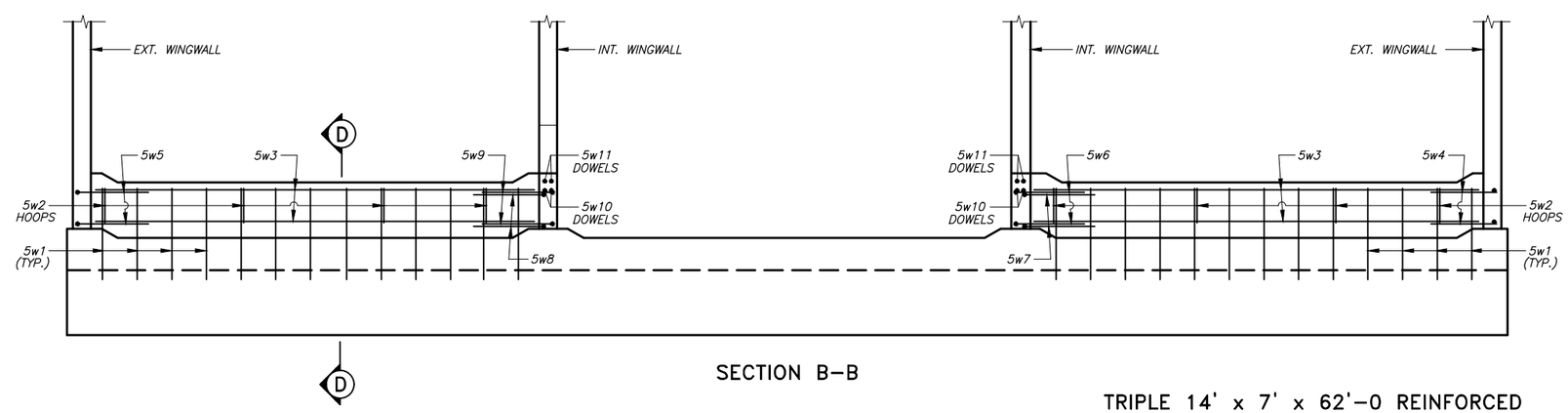
SECTION C–C



SECTION D–D



VIEW A–A



SECTION B–B

TRIPLE 14' x 7' x 62'–0 REINFORCED
CONCRETE BOX CULVERT

DROP INLET WALL DETAILS

STATION 23+70.00 30° SKEW, RT. AHEAD
BREMER COUNTY, IOWA

REINFORCING BAR LIST – BARREL

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5a1	EXT. WALLS, FRONT FACE, VERTICAL	——	126	9'–2	1,205
6a2	INT. WALLS, BOTH FACES, VERTICAL	——	166	9'–2	2,286
4b1	EXT. WALLS, HORIZ.	——	28	44'–4	829
4b2	INT. WALLS, HORIZ.	——	30	35'–11	720
4b3	INT. WALLS, HORIZ.	——	30	27'–7	553
4b4	EXT. WALLS, HORIZ.	——	28	19'–1	357
4e1	SLAB, TOP LONGIT.	——	22	VARIES	342
4e2	SLAB, TOP LONGIT.	——	22	VARIES	467
4e3	SLAB, TOP LONGIT.	——	22	VARIES	591
4e4	SLAB, BOTT. LONGIT.	——	26	VARIES	697
4e5	SLAB, BOTT. LONGIT.	——	26	VARIES	549
4e6	SLAB, BOTT. LONGIT.	——	26	VARIES	400
4f1	FLOOR, TOP LONGIT.	——	30	VARIES	806
4f2	FLOOR, TOP LONGIT.	——	30	VARIES	636
4f3	FLOOR, TOP LONGIT.	——	30	VARIES	466
4f4	FLOOR, BOTT. LONGIT.	——	22	VARIES	591
4f5	FLOOR, BOTT. LONGIT.	——	22	VARIES	467
4f6	FLOOR, BOTT. LONGIT.	——	22	VARIES	342
5k1	SLAB, BOTTOM TRANSVERSE	——	86	44'–8	4,007
4k2	SLAB, BOTTOM TRANSVERSE	——	160	13'–11	1,488
4k3	SLAB, BOTTOM TRANSVERSE	——	80	10'–5	557
6k4	SLAB, TOP CORNER	⌈	250	8'–0	3,004
5k6	SLAB, TOP TRANSVERSE	——	62	44'–8	2,889
6k7	SLAB, TOP TRANSVERSE	——	60	30'–7	2,756
7k9	SLAB, TOP TRANSVERSE	——	4	44'–8	365
5m1	FLOOR, TOP TRANSVERSE	——	86	45'–2	4,052
5m2	FLOOR, TOP TRANSVERSE	——	160	10'–5	1,739
4m3	FLOOR, TOP TRANSVERSE	——	80	4'–5	236
5m4	FLOOR, BOTTOM CORNER	⌋	250	12'–3	3,194
5m6	FLOOR, BOTTOM TRANSVERSE	——	62	45'–2	2,921
7m7	FLOOR, BOTTOM TRANSVERSE	——	120	10'–1	2,473
8m9	FLOOR, BOTTOM TRANSVERSE	——	4	45'–2	482
5r1	SLAB, DOWELS, CONSTR. JOINT	——	46	3'–6	168
				TOTAL (LBS.)	42,635

CONCRETE PLACEMENT QUANTITIES

LOCATION		‡INLET	‡OUTLET	TOTAL
△ SLAB	(2.095 C.Y./FT.)	69.5	69.5	139.0
FLOOR	(1.837 C.Y./FT.)	121.6	121.6	243.2
WALLS	(0.729 C.Y./FT.)	35.2	35.2	70.4
○ DROP WALLS	(2 @ 1.5 C.Y.)	3.0	–	3.0
	TOTAL (CU.YDS.)	229.3	226.3	455.6

△ INCLUDES HEADWALLS ABOVE CONSTRUCTION JOINTS.
‡ BACK OF PARAPET TO CONSTRUCTION JOINT.
INCLUDES CONCRETE REQUIRED FOR ONE (1) HEADWALL.
○ INCLUDES CONCRETE FOR TWO DROP WALLS AT INLET.

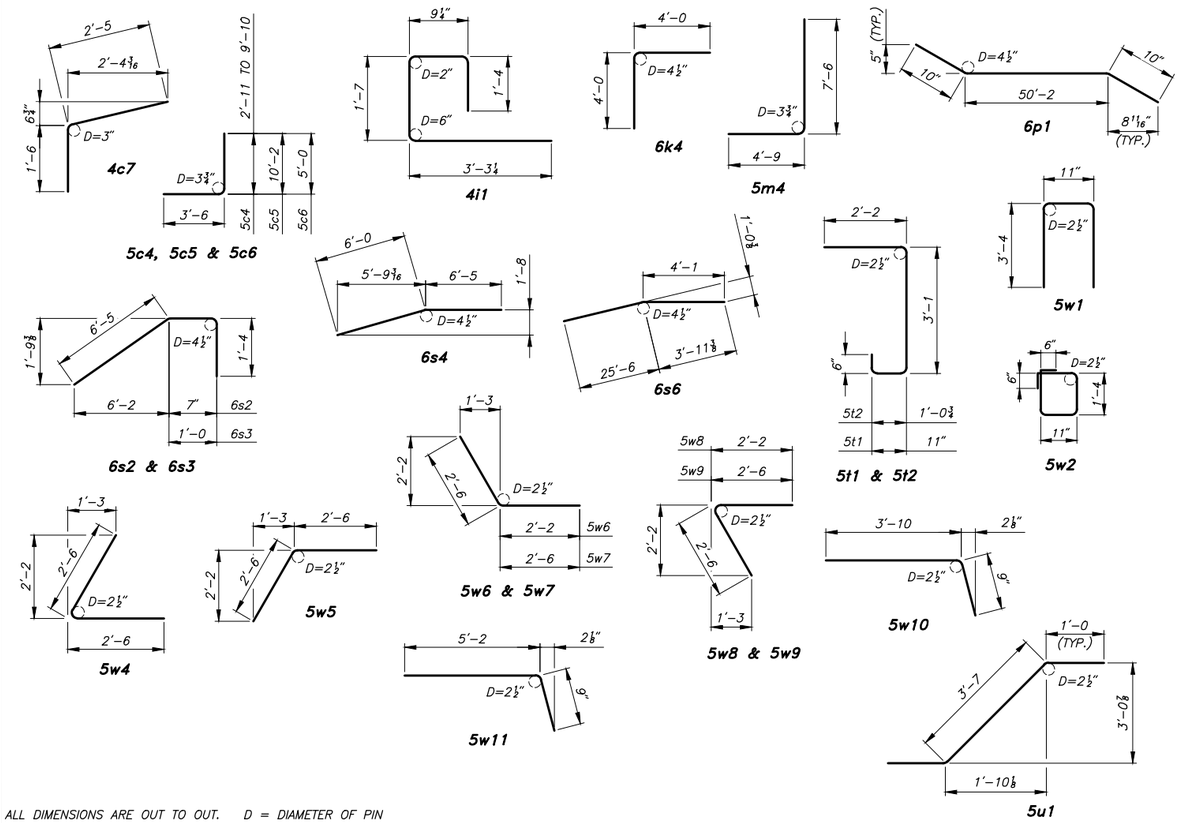
REINFORCING BAR LIST – ONE HEADWALL

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5b1	WINGWALL, FRONT FACE, HORIZ.	——	2	28'–11	60
5b2	WINGWALL, FRONT FACE, HORIZ.	——	12	VARIES	234
4b3	WINGWALL, BACK FACE, HORIZ.	——	2	29'–1	39
4b4	WINGWALL, BACK FACE, HORIZ.	——	10	VARIES	137
5b5	INTERIOR WALL, BOTH FACES, HORIZON.	——	22	VARIES	411
4c1	WINGWALL, FRONT FACE, VERTICAL	——	68	VARIES	288
4c3	WINGWALL, FRONT FACE, VERTICAL	——	4	10'–2	28
5c4	WINGWALL, BACK FACE, VERTICAL	⌋	50	VARIES	515
5c5	WINGWALL, BACK FACE, VERTICAL	⌋	4	13'–8	57
5c6	WINGWALL, BACK FACE, VERTICAL	⌋	22	8'–6	195
4c7	INTERIOR WALL, BOTH FACES, VERTICAL	⌈	4	3'–11	10
4c8	INTERIOR WALL, BOTH FACES, VERTICAL	——	98	VARIES	289
4c9	INTERIOR WALL, BOTH FACES, VERTICAL	——	4	7'–8	21
4d1	APRON, BOTTOM, LONGITUDINAL	——	45	28'–9	864
6f1	APRON, TOP, LONGITUDINAL	——	45	28'–9	1,943
4i1	PARAPET, VERICAL	⊓	90	7'–0	421
9j1	PARAPET, HORIZONTAL	——	4	51'–6	700
5m1	APRON, TOP TRANSVERSE	——	28	45'–2	1,319
5m2	APRON, TOP TRANSVERSE	——	49	VARIES	1,169
5m3	APRON, BOTTOM TRANSVERSE	——	22	48'–8	1,117
6p1	CURTAIN WALL, HORIZONTAL	⌐	6	51'–10	467
6s1	WINGSLOPE, BOTH FACES	——	4	22'–4	134
6s2	WINGSLOPE, BOTH FACES	⌒	2	8'–4	25
6s3	WINGSLOPE, BOTH FACES	⌒	2	8'–9	26
6s4	WINGSLOPE, FRONT FACE	⌒	2	12'–5	37
6s5	WINGSLOPE, FRONT FACE	——	2	19'–10	60
6s6	INTERIOR WALL, BOTH FACES	⌒	4	29'–7	178
5t1	CURTAIN, VERTICAL	⌉	50	6'–8	348
5t2	CURTAIN, VERTICAL ENDS	⌉	4	6'–10	29
5u1	BRACKET, VERTICAL	⌒	4	5'–7	23
				TOTAL (LBS.)	11,144

REINFORCING BAR LIST – TWO DROP WALLS

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5w1	DROP INLET, VERTICAL	⊓	26	7'–7	206
5w2	DROP INLET, HOOPS	⊓	8	5'–6	46
5w3	DROP INLET, LONGITUDINAL	——	8	15'–9	131
5w4	DROP INLET TO EXT. WINGWALL	∠	4	5'–0	21
5w5	DROP INLET TO EXT. WINGWALL	⌈	4	5'–0	21
5w6	DROP INLET TO INT. WINGWALL	⌊	2	4'–8	10
5w7	DROP INLET TO INT. WINGWALL	⌊	2	5'–0	10
5w8	DROP INLET TO INT. WINGWALL	⌈	2	4'–8	10
5w9	DROP INLET TO INT. WINGWALL	⌈	2	5'–0	10
5w10	DROP INLET TO INT. WINGWALL	⌐	4	4'–7	19
5w11	DROP INLET TO INT. WINGWALL	⌐	4	5'–11	25
				TOTAL (LBS.)	509

BENT BAR DETAILS



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

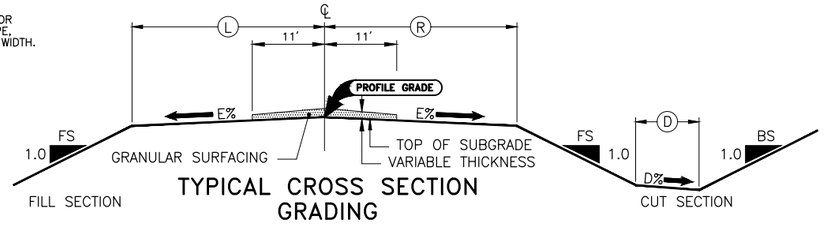
TRIPLE 14' x 7' x 62'–0 REINFORCED
CONCRETE BOX CULVERT

CULVERT QUANTITIES

STATION 23+70.00 — 30° SKEW, RT. AHEAD
BREMER COUNTY, — IOWA

CBA-503

NOTE:
SEE CROSS SECTIONS FOR VARIATIONS IN FORESLOPE, BACKSLOPE, AND DITCH WIDTH.

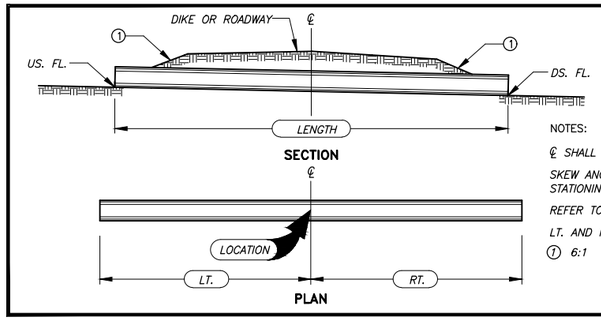


TYPICAL CROSS SECTION GRADING

NOTE:
NORMAL SECTIONS SHOWN MAY BE MODIFIED APPROPRIATELY IN AREAS OF SUPERELEVATION CURVES OR OTHER LOCATIONS SPECIFICALLY DESIGNATED BY THE ENGINEER. SEE CROSS SECTIONS AND STANDARD ROAD PLAN EW-301 FOR MODIFICATION AND/OR ADDITIONAL INFORMATION.

LOCATION			L	R	E%	FS	D%	BS	D_L	D_R
ROAD IDENT.	STATION TO STATION		Feet	Feet					Feet	Feet
240TH ST	20+75.00	21+50.00	TRANSITION FROM EXISTING							
240TH ST	21+50.00	26+30.00	15.0	15.0	3.33	3	2	VAR.	VAR.	10
240TH ST	26+30.00	26+75.00	TRANSITION TO EXISTING							

CBA-700



NOTES:

℄ SHALL BE ℄ OF ROADWAY, DIKE, SURVEY, OR OTHER; AS DETAILED ON PLANS.

SKEW ANGLE IS THE ANGLE WHICH ONE END OF THE PIPE IS AHEAD (BY STATIONING) OF LINE PERPENDICULAR TO THE ℄ (EXAMPLE SKEW RT. AHEAD 30°).

REFER TO TABULAR LISTING AND OTHER PLANS FOR ADDITIONAL INFORMATION.

LT. AND RT. ARE LOOKING TOWARD MAINLINE ON EW-501.

1 6:1

ENTRANCE PIPE CULVERT

100_17
8/15/22

TABULATION OF SILT FENCES

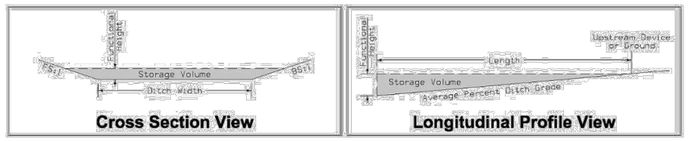
Refer to EC-201

Line No.	Station From	Station To	Side	Length (FT)	Remarks
1.0	23+00.00	23+00.00	Left	65.00	TOP OF NW CHANNEL BANK
2.0	23+80.00	23+95.00	Right	45.00	TOP OF SW CHANNEL BANK
3.0	23+40.00	23+55.00	Left	55.00	TOP OF NE CHANNEL BANK
4.0	24+55.00	24+65.00	Right	40.00	TOP OF SE CHANNEL BANK
Total:				205	

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	21+55.00	Left	19.0	19.0		3.0	3.0	7.0	1.2	740.50	NW DITCH
2.0	1	Type 1	23+00.00	Left	24.0	24.0		5.4	3.0	7.0	0.5	2674.35	NW DITCH
3.0	2	Type 1	22+30.00	Right	22.0	22.0		3.0	3.0	10.0	0.9	1460.10	SW DITCH
4.0	2	Type 1	23+70.00	Right	26.0	26.0		4.6	3.0	10.0	0.9	1571.70	SW DITCH
5.0	3	Type 1	23+70.00	Left	24.0	24.0		4.0	3.0	10.0	0.5	3109.05	NE DITCH
6.0	3	Type 1	25+10.00	Left	22.0	22.0		3.0	3.0	10.0	0.5	2967.30	NE DITCH
7.0	3	Type 1	25+60.00	Left	22.0	22.0		3.0	3.0	10.0	2.0	706.50	NE DITCH
8.0	3	Type 1	26+35.00	Left	22.0	22.0		3.0	3.0	10.0	2.0	706.50	NE DITCH
9.0	4	Type 1	24+50.00	Right	28.0	28.0		5.7	3.0	10.0	0.6	1649.20	SE DITCH
10.0	5	Type 1	26+60.00	Right	12.0	12.0		2.0	2.0	4.0	2.2	269.40	SE DITCH
Total:					221	221						15854.6	

TRAFFIC CONTROL PLAN

1. TRAFFIC CONTROL ON THE PROJECT SHALL BE IN ACCORDANCE WITH STANDARD ROAD PLAN TC-252.
2. 240TH ST. WILL BE CLOSED TO VEHICULAR AND PEDESTRIAN TRAFFIC DURING CONSTRUCTION.
3. BISHOP AVE. IS THE ONLY ACCESS FOR A RESIDENTIAL DWELLING SOUTH OF 240TH ST. ONE LANE OF TRAFFIC AT THE SOUTHEAST CORNER OF THE INTERSECTION SHALL REMAIN OPEN TO VEHICULAR TRAFFIC DURING CONSTRUCTION, WITH EXCEPTIONS AS NOTED BELOW.
4. A LIMITED NUMBER OF TEMPORARY CLOSURES OF FULL TWO LANES OF TRAFFIC AT THE 240TH ST. AND BISHOP AVE. INTERSECTION WILL BE ALLOWED FOR UP TO 8 HRS AT A TIME WITH ENGINEER'S APPROVAL. NOTICE MUST BE GIVEN TO AFFECTED LANDOWNERS OF ANY TEMPORARY CLOSURES A MINIMUM OF 48 HRS IN ADVANCE OF THE CLOSURE. IF NECESSARY, CONTRACTOR SHALL PROVIDE ACCESS FOR EMERGENCY SERVICES DURING TEMPORARY CLOSURE TO BISHOP AVE.
5. DURING LIMITED TEMPORARY INTERSECTION CLOSURES, TRAFFIC CONTROL ROAD CLOSURE SHALL BE MOVED EAST OF E.O.P. IN ADDITION TO ANY OTHER ADJUSTMENTS REQUIRED PER STANDARD ROAD PLAN TC-252.
6. A DETOUR ROUTE WILL NOT BE ESTABLISHED FOR THIS PROJECT.
7. BREMER COUNTY MAINTENANCE SHALL SALVAGE EXISTING ROAD MARKERS AFTER THE ROAD IS CLOSED.

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	23+10.00	23+30.00	Left	Perimeter and Slope	12 inch	65.00	TOE OF NW STREAM BANK
2.0	23+25.00	23+50.00	Left	Perimeter and Slope	12 inch	65.00	TOE OF NE STREAM BANK
3.0	23+75.00	24+00.00	Right	Perimeter and Slope	12 inch	50.00	TOE OF SW STREAM BANK
4.0	24+25.00	24+50.00	Right	Perimeter and Slope	12 inch	55.00	TOE OF SE STREAM BANK
Total:						235	

105_04
10/20/26

STANDARDS

The following Standards apply to construction work on this project.

Number	Date	Title
DR-101	04-18-17	Pipe Culvert (Bedding and Backfill)
DR-104	04-19-16	Depth of Cover Tables for Concrete and Corrugated Pipe
DR-111	04-17-18	Box Culvert (Backfill)
DR-305	04-19-22	Subdrain Outlets (Standard Subdrain, Pressure Release and Special)
EC-201	04-20-21	Silt Fence
EC-204	10-19-21	Perimeter, Slope and Ditch Check Sediment Control Devices
EW-402	04-18-17	Temporary Stream Diversion
EW-501	10-17-23	Rural Entrance
TC-252	10-20-26	Routes Closed to Traffic

108_13A
3/27/25

SAFETY CLOSURES

Station	Road Closure Qty.	Hazard Closure Qty.	Remarks
19+75.00	1		WEST END, 240TH ST.
25+85.00	1		EAST END, 240TH ST., W. OF BISHOP AVE.
26+30.00		1	BISHOP AVE.
27+25.00		1	EAST END, 240TH ST.

TRIPLE 14' x 7' x 62'-0 REINFORCED CONCRETE BOX CULVERT

TYPICAL SECTIONS AND TABULATIONS

STATION 23+70.00 30° SKEW, RT. AHEAD
BREMER COUNTY, IOWA

104_04
8/15/22

ROADWAY ITEMS FOR DRAINAGE STRUCTURES INSTALLED BY CULVERT CONTRACTOR

* Not a Bid Item
(1) Backfill according to DR-111

Location	Design No.	Size	Kind	Dike Lt.	Dike Rt.	Dike Station	Dike Top Elevation	Dike Type	Compacting Backfill Adjacent (CY)	Compaction w/ Moisture Control (CY)	Compaction w/ Moisture and Density (CY)	Floodable Backfill* (A) (CY)	Porous Backfill* (B) (CY)	Flooded Backfill (1) (A+B) (CY)	Excavation Type	Excavation Quantity (CY)	Revetment Type	Revetment Quantity (TONS)	Engineering Fabric (SY)	Remarks
23+70.00		TRIPLE 14' X 7'	RCB						45.0	360.0		54.0	2.0	56.0	CLASS 20	890.0	Class E	250.000	330.0	SEE DR-111, INCLUDES SUBDRAIN

102_03
10/15/24

ACCESS POINTS AND SAFETY RAMPS

Refer to Cross-Sections

Length of Unclassified Pipe calculated is based on using Corrugated Metal Pipe.
(1) Refer to MI-210.
(2) Refer to EW-501.
(3) Refer to EW-501 or EW-502.
*Predetermined for access point not constructed with this project.

Line No.	Station	Side	Access Type	Descriptor	Case	Curb Type	Curb Length (1) (LF)	Width (FT)	PR (1) (2) (FT)	SR (2) (FT)	Pipe Culvert (H) (3) (FT)	Pipe Culvert Size (3) (IN)	Culvert Length (3) (LF)	Pipe Culvert Lt. (3) (LF)	Pipe Culvert Rt. (3) (LF)	Culvert Aprons (3) (No.)	Driveway Surface Type	Driveway Surface Area (SY)	Driveway Surfacing Material (TON)	Remarks
1.0	21+90.00	Left	D					30.0		30.0	2.4	18.0	68.0	36.00	32.00		Earth			SIDE SLOPES = 6:1
2.0	24+80.00	Left	C					30.0		30.0	1.5	36.0	62.0	30.00	32.00		Granular		20.000	SIDE SLOPES = 6:1
3.0	26+10.00	Left	C					20.0		15.0	1.6	24.0	50.0	22.00	28.00		Granular		16.000	TWO 50' 24" CMP, SIDE SLOPES = 6:1
Total:																			**36**	

CBA-100

SUMMARY OF ROADWAY EXCAVATION

STATION	AREAS		RAW VOLUMES			
	CUT	FILL	CUT	ADD'L CUT	FILL	ADD'L FILL
	SF	SF	CY	CY	CY	CY
20+75	0	0				
21+50	26	28	36		39	
21+90	83	29	81		42	
22+50	28	82	123		123	125
23+00	14	174	39		237	
CULVERT	-	-	-	30	-	193
24+50	34	198	-	100	-	294
24+80	80	123	63		178	
25+50	52	69	171		249	164
26+10	48	13	111		91	
26+30	15	7	23		7	67
26+75	0	0	13		6	
SUBTOTALS			660	130	972	843
TOTALS			790		1,815	

SEE CROSS SECTIONS FOR ADDITIONAL INFORMATION.

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	790	1,815	0	790	35%	2,450	790
CLASS 10, CHANNEL	135	15	20	115	35%	20	135
CLASS 20	890	510	175	715	35%	689	890
TOTALS			195	1,620		3,159	
EMBANKMENT IN PLACE (EIP)	EIP = (3159 - 1620) / 1.35 SHRINK =						1,140

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

SURVEY CONTROL POINTS

CBA-300

Description	Northing	Easting	Approx. Station	Approx. Offset	Elevation
NW SEC. COR., 1" PIPE	*8918564.33*	*15423528.25*	*0+00*	*℄*	*949.61*
PI, PIN, ½" IRON BAR	*8918524.12*	*15426155.97*	*26+28*	*℄*	*905.72*
SEC. COR. #5 REBAR W/ AL. CAP	*8916205.49*	*15426165.44*	*26+73*	*2318' RT.*	*931.52*
NE SEC. COR., 1¼" AL. CAP	*8918498.79*	*15428779.10*	*52+51*	*℄*	*929.96*
Coordinate System				**Vertical Datum**	
(NAD83) IOWA RCS ZONE 5 (WATERLOO)				*NAVD88*	

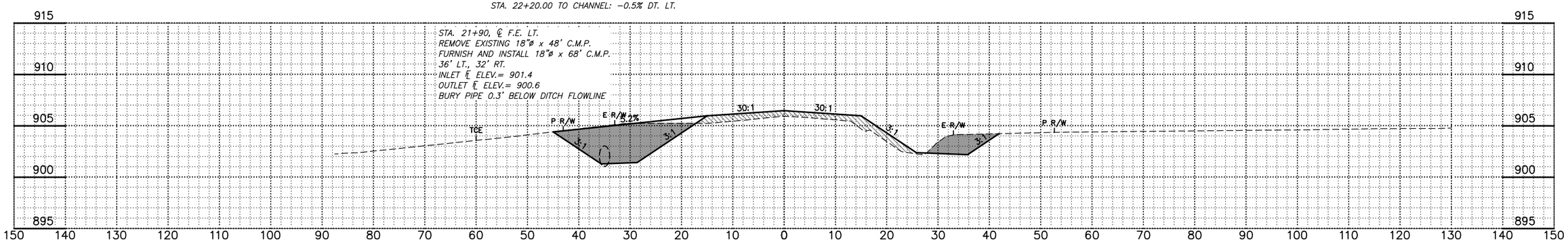
TRIPLE 14' x 7' x 62'-0 REINFORCED
CONCRETE BOX CULVERT

TABULATIONS

STATION 23+70.00 — 30° SKEW, RT. AHEAD
BREMER COUNTY, — IOWA

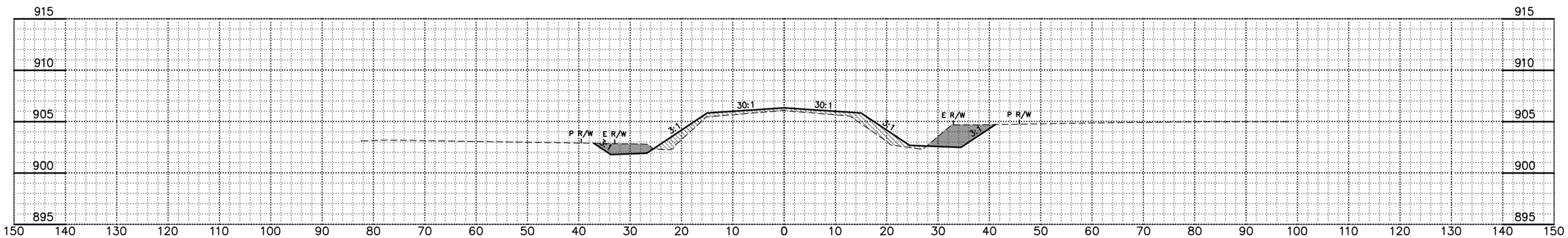
BENCH MARK: CUT 'X' IN PCC BR RAIL, STA. 0+48, 16' LT. ELEV. = 946.81
CUT 'X' IN PCC BR RAIL, STA. 0+48, 16' RT. ELEV. = 946.69

B.O.P. STA. 20+75.00 TO STA. 22+20.00: −1.2% DT. LT.
STA. 22+20.00 TO CHANNEL: −0.5% DT. LT.



21+90

℄ EL = 906.49



21+50

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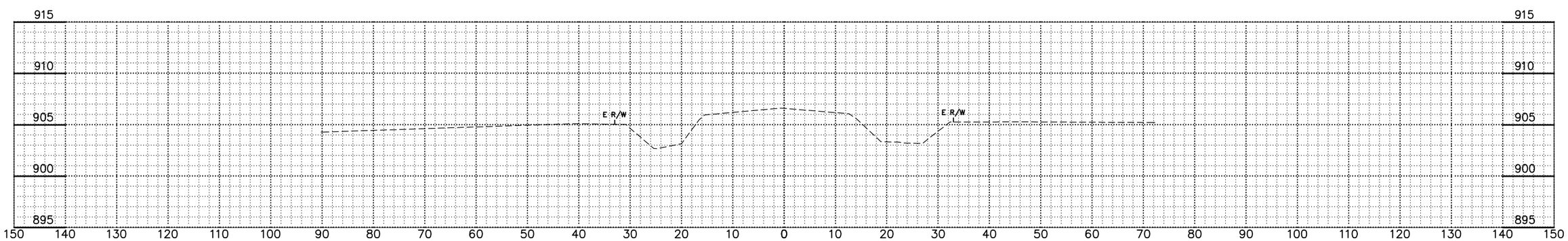


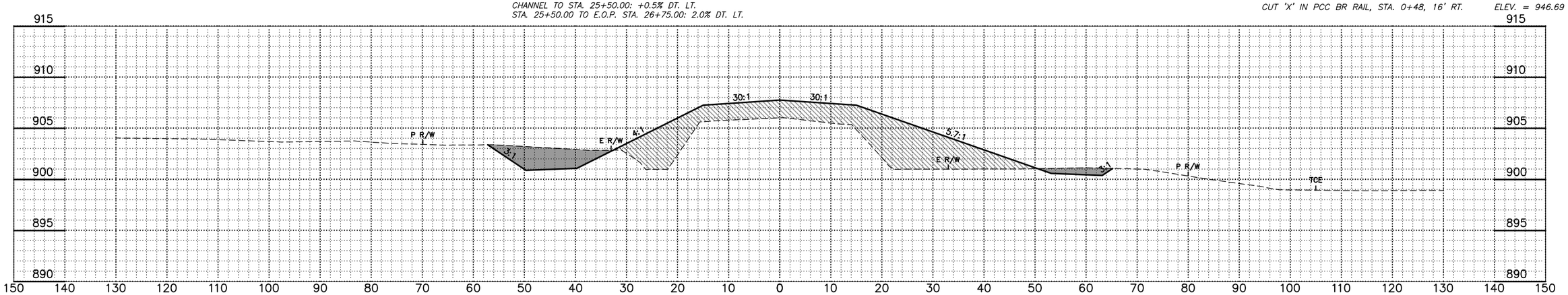
20+75

CROSS SECTIONS

BREMER COUNTY, IOWA

BENCH MARK: CUT 'X' IN PCC BR RAIL, STA. 0+48, 16' LT. ELEV. = 946.81
CUT 'X' IN PCC BR RAIL, STA. 0+48, 16' RT. ELEV. = 946.69

CHANNEL TO STA. 25+50.00: +0.5% DT. LT.
STA. 25+50.00 TO E.O.P. STA. 26+75.00: 2.0% DT. LT.



24+50
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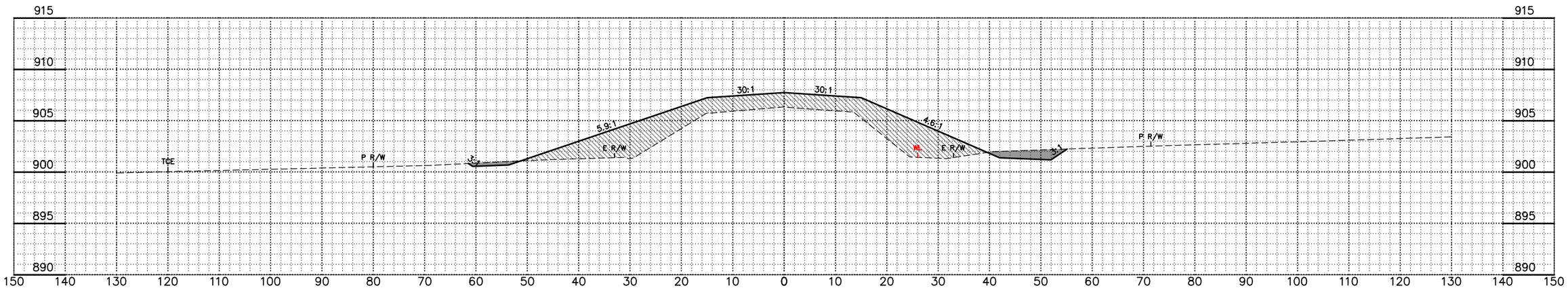

23+00
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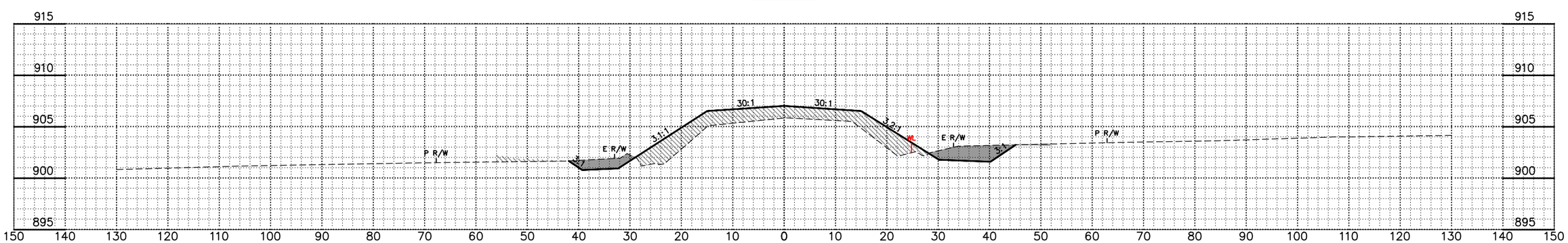
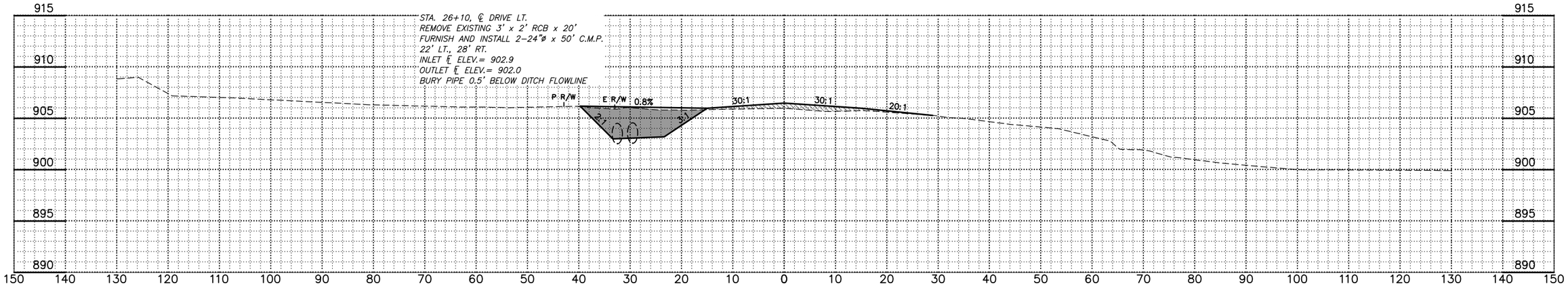


22+50
℄ EL = 907.04

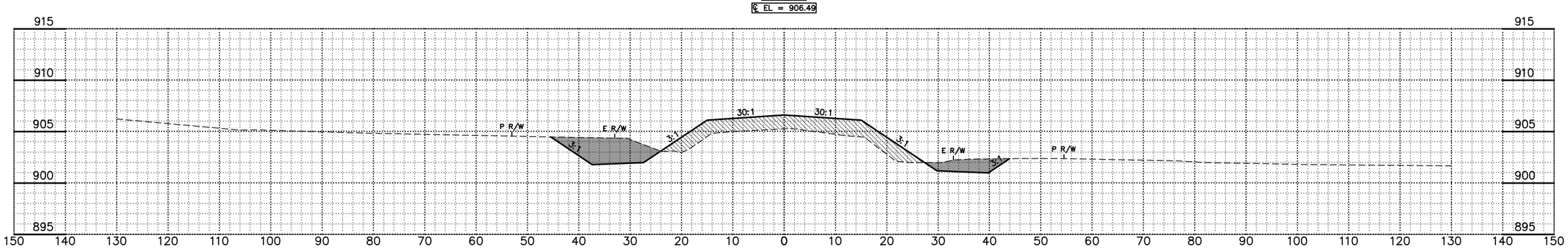
CROSS SECTIONS

BREMER COUNTY, IOWA

BENCH MARK: CUT 'X' IN PCC BR RAIL, STA. 0+48, 16' LT. ELEV. = 946.81
CUT 'X' IN PCC BR RAIL, STA. 0+48, 16' RT. ELEV. = 946.69



26+10
℄ EL = 906.49



25+50
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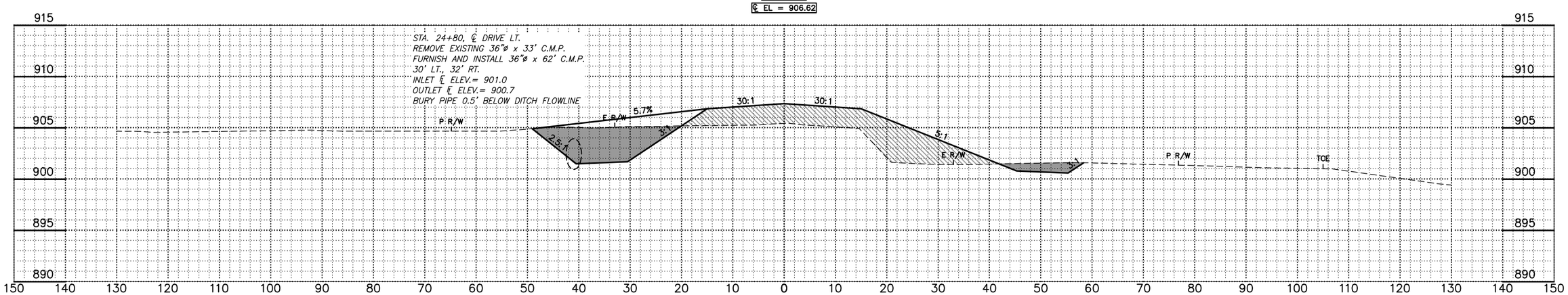
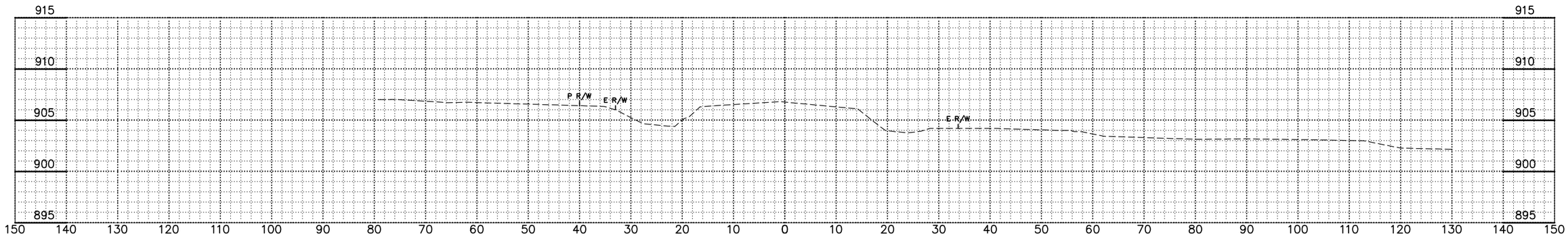


24+80
℄ EL = 907.37

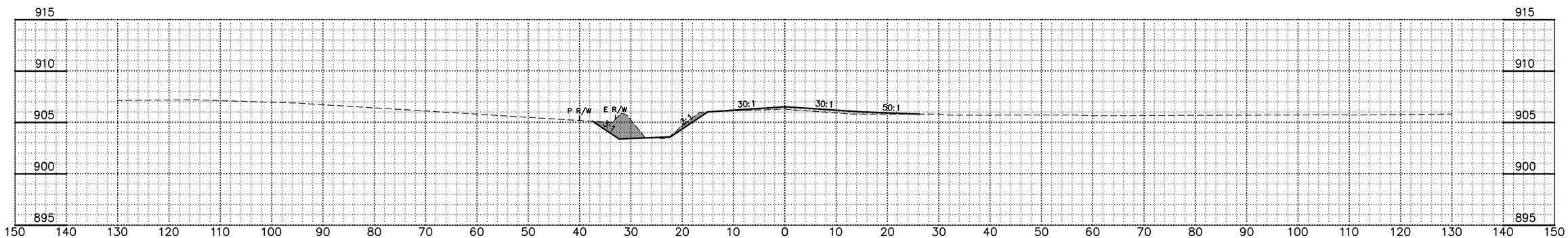
CROSS SECTIONS

BREMER COUNTY, IOWA

BENCH MARK: CUT 'X' IN PCC BR RAIL, STA. 0+48, 16' LT. ELEV. = 946.81
CUT 'X' IN PCC BR RAIL, STA. 0+48, 16' RT. ELEV. = 946.69



26+75



26+30

℄ EL = 906.54

CROSS SECTIONS

BREMER COUNTY, IOWA