

STANDARD ROAD PLANS

STANDARD ROAD PLANS ARE LISTED ON SHEET 9.

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.



PLANS OF PROPOSED IMPROVEMENT ON THE
FARM TO MARKET SYSTEM
POCAHONTAS COUNTY
PROJECT NO. BROS-C076(79)--5F-76
RCB CULVERT REPLACEMENT - TWIN BOX
ON D11, OVER BR BIG CEDAR CK DD#29, S34 T90N R34W

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. 24+50.00 TO STA. 27+30.00 = 280.00 LIN. FT. = 0.0530 MILES

2022, TRAFFIC COUNT = 120 V.P.D.

UTILITY CONTACTS

COMPANY	UTILITY	CONTACT	PHONE #	EMAIL
WINDSTREAM COMMUNICATIONS	COMMUNICATIONS	LOCATE DESK	800-289-1901	locate.desk@windstream.com
-	-	-	-	-

PROJECT NO. BROS-C076(79)--5F-76
FHWA NO. 278370
COUNTY BR. NO. CEDAR 21

INDEX OF SHEETS

1. TITLE SHEET
- 2.-3. QUANTITY SUMMARY
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6. POLLUTION PREVENTION PLAN
7. PRECAST BEDDING AND BACKFILL DETAILS
8. TYPICAL SECTIONS
- 9.-10. TABULATIONS
- 11.-12. CROSS SECTIONS

TOTAL SHEETS
12

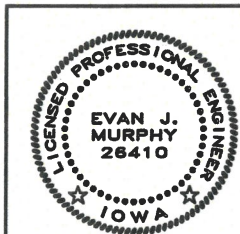
IOWA DEPARTMENT OF TRANSPORTATION
STANDARDS REQUIRED

STANDARD	LATEST REVISION
PRCB G1-20	-
PRCB G2-20	01-23
PRCB 10-20	-
PES 5-20-T3	10-21
PES 6-20-T3	01-23
PES 9-20-T3	-

INDEX OF SEALS

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

THESE SHEETS MAY BE OBTAINED AT THE ELECTRONIC REFERENCE LIBRARY WEBSITE. <http://www.iowadot.gov/erl/index.html>



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.

Evan J. Murphy DATE: 1/6/2026
EVAN J. MURPHY, P.E.

MY LICENSE RENEWAL DATE IS DECEMBER 31, 2027.

PAGES OR SHEETS COVERED BY THIS SEAL:
1-12 of 12

APPROVED

James S. Nelson
POCAHONTAS COUNTY ENGINEER

1-27-26
DATE

Louis Stant
James S. Nelson
Peter K. Schuman
Brent Allen
BOARD OF SUPERVISORS
DATE



PROJECT LOCATION

1 MI. 0 1 MI. 2 MI.



B.O.P. STA. 24+50.00
E.O.P. STA. 27+30.00
FHWA NO. 278370
STATION 26+15.00
PROPOSED SINGLE 10' x 11' x 77'-10 3/4" &
SINGLE 10' x 9' x 77'-10 3/4"
PRECAST CONCRETE BOX CULVERT
15° SKEW, RT. AHEAD

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.



TOTAL ESTIMATED QUANTITIES: SINGLE 10' x 11' x 77'-10 ³ / ₄ & SINGLE 10' x 9' x 77'-10 ³ / ₄ PRECAST R.C.B. CULVERT				
REF. NO.	CODE NO.	ITEM	UNIT	TOTAL
1	2102-2625000	EMBANKMENT-IN-PLACE	CY	1,500
2	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	250
3	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	526
4	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	525
5	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	840
6	2107-0425020	COMPACTING BACKFILL ADJACENT TO BRIDGES, CULVERTS OR STRUCTURES	CY	80
7	2115-0100000	MODIFIED SUBBASE	CY	145
8	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	100
9	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	4.0
10	2301-1033080	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 8 IN.	SY	488.9
11	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1
12	2402-0425040	FLOODED BACKFILL	CY	163
13	2402-0875150	COMPACTION WITH MOISTURE CONTROL (STRUCTURES)	CY	1,575
14	2402-2720000	EXCAVATION, CLASS 20	CY	1,600
15	2415-2111009	PRECAST CONCRETE BOX CULVERT, 10 FT. X 9 FT.	LF	74.0
16	2415-2111011	PRECAST CONCRETE BOX CULVERT, 10 FT. X 11 FT.	LF	74.0
17	2415-2201009	PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION, 10 FT. X 9 FT.; SKEWED 15 DEGREES	EACH	2
18	2415-2201011	PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION, 10 FT. X 11 FT.; SKEWED 15 DEGREES	EACH	2
19	2417-1040024	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 24 IN. DIA.	LF	298
20	2418-0000010	TEMPORARY STREAM DIVERSION	EACH	1

REF. NO. ESTIMATE REFERENCE INFORMATION

1.

SEE TABULATION CBA-101 ON SHEET 9 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.
2.

SEE TABULATION CBA-101 ON SHEET 9 FOR BREAKDOWN OF EXCAVATION QUANTITIES. TYPE "A" COMPACTION WILL BE REQUIRED IN AREAS OUTSIDE LIMITS OF MOISTURE CONTROL. 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".
3.

SEE TABULATION CBA-101 ON SHEET 9 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.
4.

SEE TABULATION CBA-101 ON SHEET 9 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 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.
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.

SEE TABULATION 104-4 ON SHEET 10 AND STANDARD ROAD PLAN DR-111.
7.

SEE TYPICAL SECTIONS CBA-501 AND CBA-611 ON SHEET 8.
8.

SEE TYPICAL SECTION CBA-640 ON SHEET 8.
9.

INCLUDES ALL WORK AND FILL MATERIAL NECESSARY TO CONSTRUCT AND SHAPE SHOULDER AREAS. SEE TYPICAL SECTION CBA-640 ON SHEET 8.
10.

SEE TYPICAL SECTION CBA-611 ON SHEET 8. DO NOT SKEW TRANSVERSE JOINTS. "CD" JOINTS ARE REQUIRED. CERTIFIED PLANT INSPECTION IS REQUIRED. ALL LONGITUDINAL PAVEMENT JOINTS SHALL BE CLEANED AND SEALED. SAWCUT WIDTH SHALL BE AS SHOWN ON IDOT STANDARD ROAD PLAN PV-101. NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR HEATING AND PROTECTION OF CONCRETE, IF NECESSARY. INCLUDES 207.8 S.Y. OF DOUBLE REINFORCED PAVEMENT OVER THE BOX CULVERT PER IDOT STANDARD ROAD PLAN PR-120.

11.

THE EXISTING BRIDGE AT STATION 26+28 IS A 45' x 28' STEEL I-BEAM BRIDGE WITH HIGH TIMBER ABUTMENTS AND A CONCRETE DECK BUILT IN 1966. 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. THE NORTH ABUTMENT SHALL BE REMOVED TO BELOW THE BOTTOM OF THE EXISTING CONCRETE CAP AT MINIMUM. 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.
12.

SEE TABULATION 104-4 ON SHEET 10 AND STANDARD ROAD PLAN DR-111.
13.

SEE TABULATION 104-4 ON SHEET 10 AND STANDARD ROAD PLAN DR-111. QUANTITY DOES NOT COMPENSATE FOR SHRINKAGE.
14.

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.
- 15-16.

SEE SHEET 5 FOR ADDITIONAL INFORMATION INCLUDING METHOD OF MEASUREMENT AND BASIS OF PAYMENT. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, FILL BETWEEN THE CELLS, SUBDRAIN AND GRANULAR LEVELING MATERIAL.
- 17-18.

SEE SHEET 5 FOR ADDITIONAL INFORMATION INCLUDING METHOD OF MEASUREMENT AND BASIS OF PAYMENT. INCLUDES FOUR PRECAST END SECTIONS, FOUR PRECAST LINTEL BEAMS AND FOUR PRECAST CURTAIN WALLS. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, FILL BETWEEN THE CELLS, SUBDRAIN AND GRANULAR LEVELING MATERIAL.
19.

SEE TABULATION 102-3 ON SHEET 10, TYPICAL SECTION CBA-700 ON SHEET 8, STANDARD ROAD PLANS DR-101 AND DR-104 AND SITUATION PLAN, SHEET 4. ALL PIPE SHALL BE STANDARD CORRUGATIONS, NO HELICALLY CORRUGATED PIPE WILL BE ALLOWED. ALL CONNECTING BANDS SHALL BE 24" WIDE.
20.

SEE STANDARD ROAD PLAN EW-402.

SINGLE 10' x 11' x 77'-10³/₄ &
SINGLE 10' x 9' x 77'-10³/₄
PRECAST CONCRETE BOX CULVERT

QUANTITY SUMMARY

STATION 26+15.00 15' SKEW, RT. AHEAD
POCAHONTAS COUNTY, IOWA

TOTAL ESTIMATED QUANTITIES: SINGLE 10' x 11' x 77'-10 ³ / ₄ & SINGLE 10' x 9' x 77'-10 ³ / ₄ PRECAST R.C.B. CULVERT				
REF. NO.	CODE NO.	ITEM	UNIT	TOTAL
21	2502-8212034	SUBDRAIN, LONGITUDINAL, (SHOULDER) 4 IN. DIA.	LF	224
22	2502-8215812	SUBDRAIN, TILE, 12 IN. DIA.	LF	250
23	2502-8221305	SUBDRAIN OUTLET, DR-305	EACH	3
24	2502-8221306	SUBDRAIN OUTLET, DR-306	EACH	1
25	2507-3250005	ENGINEERING FABRIC	SY	870
26	2507-6800061	REVTMENT, CLASS E	TON	630
27	2510-6745850	REMOVAL OF PAVEMENT	SY	378.9
28	2526-8285040	CONSTRUCTION SURVEY, LOCATION SURVEY	LS	1
29	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	3.02
30	2528-2518000	SAFETY CLOSURE	EACH	2
31	2528-8445110	TRAFFIC CONTROL	LS	1
32	2533-4980005	MOBILIZATION	LS	1
33	2601-2634100	MULCHING	ACRE	2.0
34	2601-2636015	NATIVE GRASS SEEDING	ACRE	0.4
35	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	0.6
36	2601-2642100	STABILIZING CROP -- SEEDING AND FERTILIZING	ACRE	1.0
37	2602-0000020	SILT FENCE	LF	410
38	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	154
39	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	564
40	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	270
41	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1
42	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	1

REF. NO. ESTIMATE REFERENCE INFORMATION

21. SEE TABULATION 104-9A ON SHEET 10 AND TYPICAL SECTION CBA-611 ON SHEET 8.
- 22-23. INCLUDES EXPLORATORY FIELD EXCAVATION TO DETERMINE THE LOCATION OF THE EXISTING FIELD TILES. ADJUST THE WEST FIELD TILES TO OUTLET PAST THE ENDS OF THE RCB CULVERT WITHIN PROPOSED RIGHT-OF-WAY AT A 2% GRADE AND OUTLET INTO THE DRAINAGE DITCH WITH DR-305 TYPE 'A' OUTLETS. PLACE REVETMENT BELOW TILE OUTLETS. SIZE OF TILE LINES SHALL BE FIELD VERIFIED. SEE SITUATION PLAN, SHEET 4, FOR LOCATION OF EXISTING TILE OUTLETS.
24. SEE TABULATION 104-9A ON SHEET 10.
25. SEE SITUATION 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.
26. REVETMENT IS TO BE PLACED AT A THICKNESS OF 1'-6 ON THE BANKS AND 3'-0 IN THE STREAM CHANNEL. SEE SITUATION PLAN, SHEET 4, FOR LIMITS.
27. SEE TABULATION 110-1 ON SHEET 10. EXISTING PAVEMENT CONSISTS OF PCC OF UNKNOWN THICKNESS. IN ORDER TO AVOID ANY UNNECESSARY SURFACE BREAKS OR PREMATURE SPALLING, THE CONTRACTOR IS CAUTIONED TO EXERCISE EXTREME CARE WHEN PERFORMING ANY OF THE NECESSARY SAW CUTTING OPERATIONS FOR THE PROPOSED PAVEMENT REMOVAL. SAW CUTS ARE TO BE MADE AT THE STATION INDICATED OR AT THE NEAREST TRANSVERSE PAVEMENT JOINT, AS DIRECTED BY THE ENGINEER.
28. 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 9, FOR FIELD TIES TO THE SITE SURVEY.
29. SEE TABULATION 108-22 ON SHEET 10.
30. SEE TABULATION 108-13A ON SHEET 9.
31. SEE TRAFFIC CONTROL PLAN ON SHEET 9.
- 33-36. 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", "SEEDING AND FERTILIZING (RURAL)" AND "NATIVE GRASS SEEDING". SEE POLLUTION PREVENTION PLAN, SHEET 6, FOR STABILIZING CROP REQUIREMENT. NATIVE GRASS SEEDING SHALL BE COMPLETED IN ACCORDANCE WITH ARTICLE 2601.03 OF THE STANDARD SPECIFICATIONS. THE FOLLOWING SEED MIXTURE SHALL BE APPLIED TO THE NATIVE GRASS SEEDING AREAS SHOWN ON THE SITUATION PLAN, SHEET 4, TO MATCH THE EXISTING CONDITION. PERCENTAGES ARE BY WEIGHT OF THE SEED MIXTURE. APPLICATION RATE SHALL BE 40 LBS PER ACRE.

BROME25%

ORCHARD25%

TIMOTHY25%

PERENNIAL RYE25%

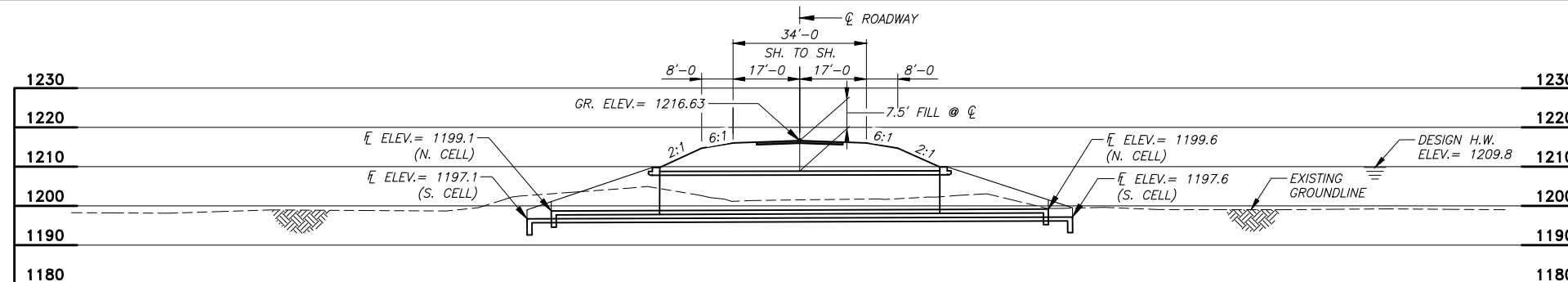
ALL REMAINING DISTURBED AREAS TO RECEIVE SEEDING SHALL BE COMPLETED USING A RURAL SEED MIX IN ACCORDANCE WITH ARTICLE 2601.03 OF THE STANDARD SPECIFICATIONS.
- 37-42. SEE POLLUTION PREVENTION PLAN, SHEET 6, AND TABULATIONS 100-17, 100-18 AND 100-19 ON SHEET 9.

SINGLE 10' x 11' x 77'-10³/₄ &
SINGLE 10' x 9' x 77'-10³/₄
PRECAST CONCRETE BOX CULVERT

QUANTITY SUMMARY

STATION 26+15.00
POCAHONTAS COUNTY,

15' SKEW, RT. AHEAD
IOWA



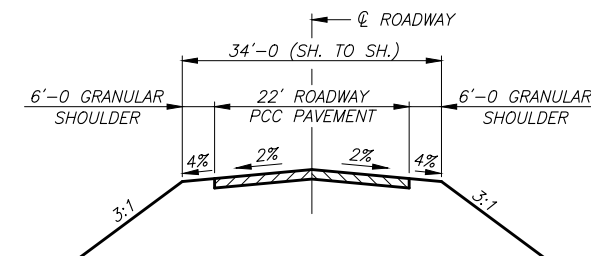
LONGITUDINAL SECTION ALONG CULVERT

TIE-IN
STA. 25+30.00
ELEV. = 1216.29

E.O.P. & TIE-IN
STA. 27+30.00
ELEV. = 1217.09

+0.400%

PROPOSED GRADE



TYPICAL APPROACH SECTION

LOCATION

POCAHONTAS COUNTY
T-90N, R-34W
SECTION 34
CEDAR TOWNSHIP
OVER DRAINAGE DITCH 29

HYDRAULIC DATA

DRAINAGE AREA = 15.2 SQ. MI.
DESIGN DISCHARGE = 1,100 C.F.S.
DESIGN HIGH WATER ELEV. = 1209.8
BARREL SLOPE = 0.00360 FT./FT.
MANNING SLOPE = 0.00098 FT./FT.
Q10 = 650 C.F.S. STAGE ELEV. = 1207.1
Q25 = 950 C.F.S. STAGE ELEV. = 1209.0
Q50 = 1,100 C.F.S. STAGE ELEV. = 1209.8 (DESIGN)
Q100 = 1,350 C.F.S. STAGE ELEV. = 1211.2

SINGLE 10' x 11' x 77'-10³/₄ &
SINGLE 10' x 9' x 77'-10³/₄
PRECAST CONCRETE BOX CULVERT

SITUATION PLAN

STATION 26+15.00
POCAHONTAS COUNTY,
15' SKEW, RT. AHEAD
IOWA

KENDALL LAND
COMPANY

LEGEND

NATIVE GRASS SEEDING

TEMPORARY CONSTRUCTION EASEMENT
(TYP.)

STA. 26+55, C.F.E. LT.
REMOVE EXISTING 24" x 55' C.M.P.
FURNISH AND INSTALL 24" x 86' C.M.P.
INLET ELEV. = 1207.1
OUTLET ELEV. = 1204.1

EXISTING 12" FIELD TILE
RE-ROUTE TO END OF R.C.B.
AND INSTALL NEW DR-305
(TYPE 'A' OUTLET)

EXISTING DRAINAGE DITCH EASEMENT
(TYP.)

SITUATION PLAN



* DENOTES LIMITS OF CLASS 10 (CHANNEL) EXCAVATION.
** DENOTES LIMITS OF CLASS 'E' RETENTION AND ENGINEERING FABRIC.

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:
BAR REINFORCEMENT IN ACCORDANCE WITH AASHTO LRFD SECTION 5, GRADE 60.
WELDED WIRE REINFORCEMENT IN ACCORDANCE WITH AASHTO LRFD SECTION 5.
CONCRETE IN ACCORDANCE WITH LRFD AASHTO SECTION 5, F'C FOR BARREL SECTIONS AS NOTED ON CULVERT BARREL DETAIL STANDARDS, FOR END SECTION DESIGN F'C=5,000 PSI.

GENERAL NOTES

THIS DESIGN IS FOR A 10' x 11' x 77'-10 3/4 & 10' x 9' x 77'-10 3/4 PRECAST CONCRETE BOX CULVERT ON BUSBEE ROAD OVER DRAINAGE DITCH 29 IN POCAHONTAS COUNTY, IOWA.
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: 25-132551
DATE INSPECTED: 05/23/2025
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 RAIL WAS 222,000 PART PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THE I-BEAM WAS 22,300 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."

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.

PRECAST CULVERT NOTES

THE PRECAST R.C.B. CULVERT SECTIONS ARE DESIGNED FOR HL-93 LIVE LOAD AND EARTH FILLS OF 7.5 FEET (DESIGN FILL HEIGHT OF 2 TO 9 FEET FOR THE 10' x 11' CULVERT AND 2 TO 11 FEET FOR THE 10' x 9' CULVERT). THE CULVERT SECTIONS ARE DESIGNED FOR CLASS 2 EXPOSURE.
THE PRECAST R.C.B. BARREL AND END SECTIONS SHALL CONFORM TO IOWA D.O.T. SINGLE PRECAST R.C.B. CULVERT STANDARDS. AT THE CONTRACTOR'S OPTION, PRECAST BARREL SECTIONS MAY CONFORM TO ASTM C1577.
THE LENGTH IN LINEAR FEET OF PRECAST REINFORCED CONCRETE BOX CULVERT WILL BE BASED ON THE PLAN QUANTITY. FOR THE NUMBER OF LINEAR FEET GIVEN IN THE PLAN, THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE PER LINEAL FOOT. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR THE BID ITEMS "PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION", "CLASS 20, EXCAVATION", "CLASS E REVETMENT", "COMPACTING BACKFILL ADJACENT TO BRIDGES, CULVERTS OR STRUCTURES", "FLOODED BACKFILL" AND "COMPACTION WITH MOISTURE CONTROL (STRUCTURES)".
FOR EACH PRECAST BOX CULVERT STRAIGHT END SECTION INSTALLED THE CONTRACTOR WILL BE PAID THE CONTRACT PRICE FOR EACH. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL (INCLUDING LINTEL BEAMS AND CURTAIN WALLS), LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR BID ITEMS "PRECAST CONCRETE BOX CULVERT", "CLASS 20, EXCAVATION", "CLASS E REVETMENT", "COMPACTING BACKFILL ADJACENT TO BRIDGES, CULVERTS OR STRUCTURES", "FLOODED BACKFILL" AND "COMPACTION WITH MOISTURE CONTROL (STRUCTURES)".
THE CURTAIN WALL AND THE TYPE 3 LINTEL BEAM OR TYPE 1 PARAPET SHALL BE PRECAST.
THE CONTRACTOR SHALL FURNISH AND INSTALL CULVERT TIES FOR ALL JOINTS. THE MAIN SECTION JOINTS WILL HAVE ONE TIE ON EACH SIDE OF THE BARREL AND THE LAST BARREL SECTION WILL BE ATTACHED TO THE END SECTION WITH TWO TIES PER SIDE. THE END SECTION JOINTS WILL HAVE TWO TIES PER SIDE.
CULVERT TIES SHALL BE INCLUDED IN THE COST FOR PRECAST CONCRETE BOX CULVERT. TIE RODS WILL BE IN ONE INCH DIAMETER STEEL AND SHALL MEET REQUIREMENTS OF ASTM A 709 GRADE 36 OR EQUAL. SEE STANDARD SHEET PRCB G2-20 FOR DETAILS.
CULVERT TIE ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION.
THE LIMITS FOR EXCAVATION FOR THE PRECAST CONCRETE BOX CULVERT SHALL BE AS SHOWN ON THE "GRANULAR LEVELING MATERIAL DETAIL", SHEET 7.
A MINIMUM OF 6 INCHES OF GRANULAR LEVELING MATERIAL SHALL BE USED AS BEDDING FOR THE PRECAST CONCRETE BOX CULVERT. THE BEDDING SHALL BE SHAPED TO A FLAT BASE USING A TEMPLATE. ALL COSTS INCLUDING MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE GRANULAR LEVELING MATERIAL SHALL BE INCLUDED IN THE BID ITEMS "PRECAST CONCRETE BOX CULVERT" AND "PRECAST BOX CULVERT STRAIGHT END SECTION".
THE GRANULAR LEVELING MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION 4117 OF THE STANDARD SPECIFICATIONS.
THE PRECAST BOX CULVERT SHALL BE BUILT TO THE DIMENSIONS AND SPECIFICATIONS SHOWN IN THESE PLANS.

THE CONTRACTOR SHALL SUBMIT DETAILS OF THE PROPOSED PRECAST CONCRETE BOX SECTIONS FOR THIS PROJECT TO THE ENGINEER FOR APPROVAL. THE DETAILS SHALL INCLUDE THE FOLLOWING AS FOUND ON THE "SUBMITTAL SHOP DRAWING" STANDARD SHEET:
A. A SITUATION PLAN DRAWING SHOWING THE BACK-TO-BACK PARAPET DIMENSION FOR THE LINE OF THE CULVERT SECTIONS.
B. DIMENSION THE NUMBER OF PRECAST SECTIONS AND SECTION LENGTHS.
C. A DETAIL OF THE PRECAST CULVERT BARREL SECTIONS SHOWING A CROSS SECTION VIEW OF THE SECTION, STEEL LOCATIONS, DIMENSIONS, ETC.
D. A DETAIL OF THE PRECAST CULVERT END SECTION SHOWING A CROSS SECTION VIEW OF THE SECTIONS, STEEL LOCATIONS, DIMENSIONS, ETC., SIMILAR TO THE END SECTION DETAILS SHOWN IN THE I.D.O.T. STANDARDS.
THE CONTRACTOR SHALL PROVIDE ALL INFORMATION SHOWN ON THE SUBMITTAL SHOP DRAWING SHEET. THE SUBMITTAL SHOP DRAWING SHEET IS AVAILABLE AT THE IOWA D.O.T. BRIDGE WEBSITE AT: <https://iowadot.gov/consultants-contractors/bridges-structures/bridge-culvert-standards/lrfd-precast-culvert-standards>
ANY DETAILS AND/OR STRUCTURAL DESIGN/RATING THAT DEVIATES FROM IOWA D.O.T. SINGLE PRECAST R.C.B. STANDARDS OR ASTM C1577 SHALL BE CERTIFIED BY AN ENGINEER LICENSED IN THE STATE OF IOWA.
THE CONTRACTOR SHALL ALLOW THIRTY DAYS FOR THE ENGINEER'S REVIEW OF SUBMITTALS.

INSTALLATION NOTES

PRECAST CONCRETE BOX CULVERT SECTIONS SHALL BE LAID WITH THE GROOVE END OF EACH SECTION UP-GRADE AND THE SECTIONS SHALL BE TIGHTLY JOINED. CONCRETE TIES TO BE USED ONLY TO HOLD BOX SECTIONS TOGETHER, NOT FOR PULLING SECTIONS TIGHT. JOINT OPENINGS BETWEEN SECTIONS SHOULD BE AS TIGHT AS PRACTICABLE AND LIMITED TO A MAXIMUM OF 3/4 INCH OPENINGS. THE JOINT ON THE BOTTOM OF THE CULVERT SHALL BE SEALED WITH A FLEXIBLE WATER TIGHT ONE INCH BUTYL ROPE GASKET AS PER MATERIALS I.M.491.09.
BUTYL ROPE GASKET SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER AND SHALL EXTEND VERTICALLY SIX INCHES ABOVE THE BOTTOM FILLET. ALL JOINTS SHALL BE TRIMMED CLEAN ON THE INSIDE AFTER SEALING.
THE CONTRACTOR SHALL PLACE A TWO FOOT WIDE PIECE OF ENGINEERING FABRIC AROUND THE TOP AND SIDES OF EACH PRECAST JOINT. THE FABRIC SHALL BE CENTERED WITH ONE FOOT ON EACH SIDE OF THE JOINT, THE FABRIC SHALL BE ATTACHED TO THE WALLS AND TOP OF EACH SECTION TO PREVENT THE FABRIC FROM SLIPPING OFF THE JOINT DURING BACKFILLING OPERATIONS. ATTACHMENT METHODS SHALL BE APPROVED BY THE ENGINEER.
ALL COSTS INCLUDING MATERIAL AND LABOR ASSOCIATED WITH PROVIDING THE ENGINEERING FABRIC AND INSTALLING IT AS REQUIRED SHALL BE INCLUDED IN THE BID ITEMS "PRECAST CONCRETE BOX CULVERT" AND "PRECAST BOX CULVERT STRAIGHT END SECTION".
THE ENGINEERING FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01,B,3, OF THE STANDARD SPECIFICATIONS.
DURING BACKFILLING THE COMPACTION ADJACENT TO THE BOTTOM CORNER RADII OR CHAMFER SHALL BE ACCOMPLISHED WITH A MECHANICAL HAND COMPACTOR.
THE CONTRACTOR SHALL FURNISH AND INSTALL LIFTING HOLE PLUGS FOR EACH SECTION. LIFTING HOLES SHALL BE PLUGGED WITH A PRECAST CONCRETE PLUG, OR PLASTIC PLUG APPROVED BY THE ENGINEER, SEALED AND COVERED WITH A 2'-0 X 2'-0 PIECE OF ENGINEERING FABRIC CENTERED OVER THE HOLE AND ATTACHED TO THE SECTION TO PREVENT THE FABRIC FROM SLIPPING.
ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

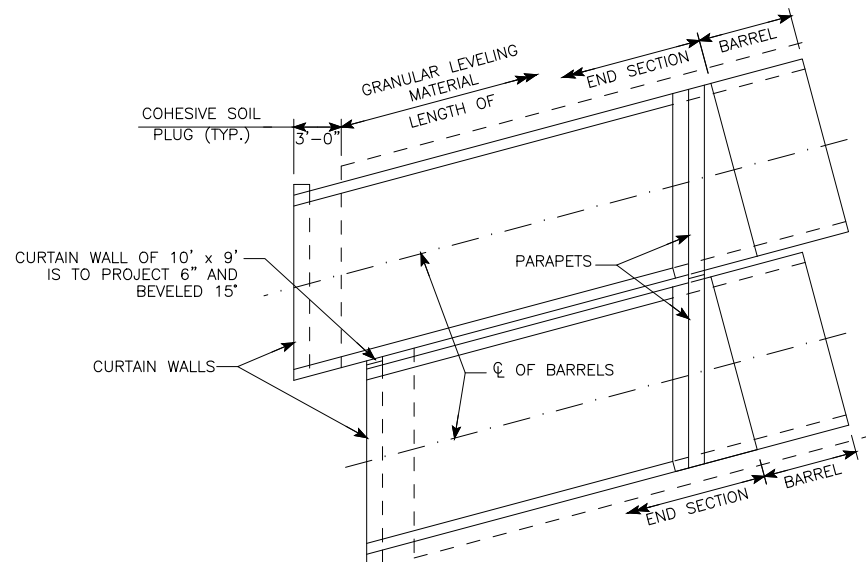
SINGLE 10' x 11' x 77'-10³/₄ &

SINGLE 10' x 9' x 77'-10³/₄

PRECAST CONCRETE BOX CULVERT

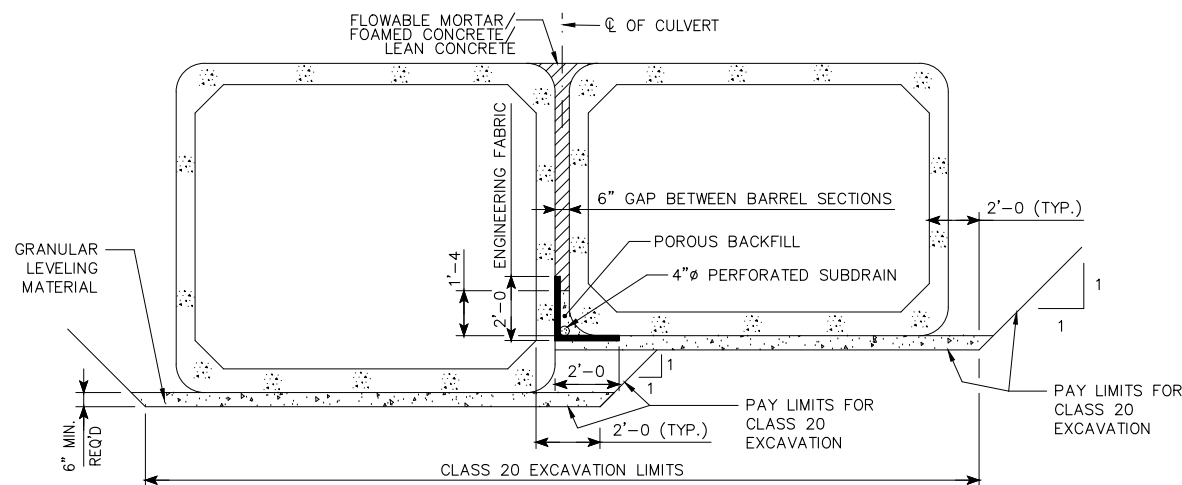
GENERAL NOTES

STATION 26+15.00 15' SKEW, RT. AHEAD
POCAHONTAS COUNTY, IOWA



TYPICAL PLAN VIEW - SKEWED EXAMPLE

GRANULAR LEVELING MATERIAL SHALL TERMINATE 3'-0 SHORT OF THE PRECAST CURTAIN WALL.

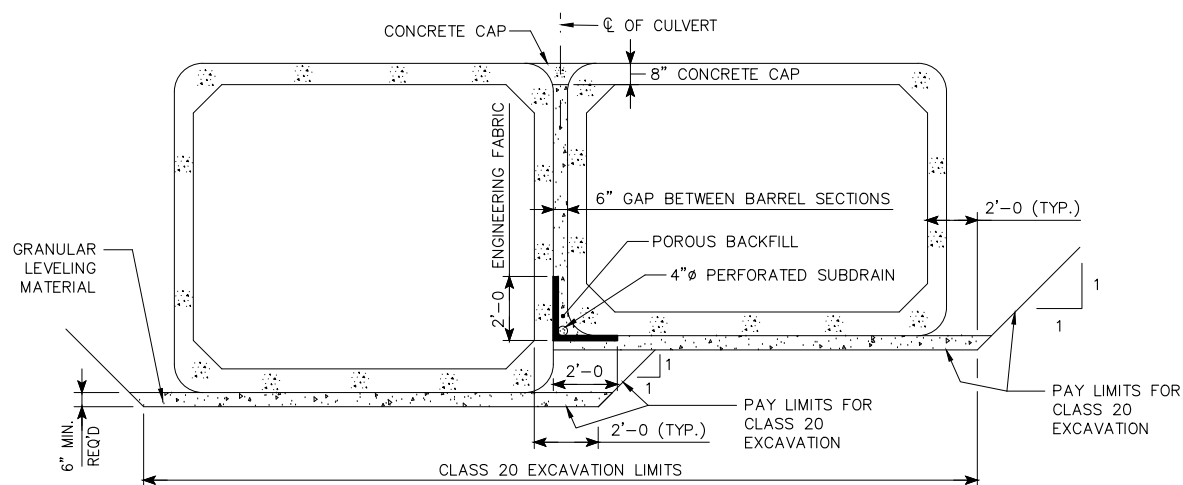


GRANULAR LEVELING MATERIAL DETAILS/FLOWABLE MORTAR OPTION

BARREL SECTION DISPLAYED. END SECTION DETAILS NOT SHOWN

THE POROUS BACKFILL SHALL BE PLACED BETWEEN THE PRECAST BARREL WALLS AS SHOWN ON THE GRANULAR LEVELING MATERIAL DETAIL. POROUS BACKFILL SHALL ALSO BE PLACED BETWEEN THE END SECTIONS UP TO 16 INCHES FROM THE BOTTOM OF THE END SECTIONS AND 3 FEET SHORT OF THE END OF THE APRON OF THE END SECTION. THE POROUS BACKFILL SHALL BE IN ACCORDANCE WITH SECTION 4131, OF THE STANDARD SPECIFICATIONS.

FLOWABLE MORTAR SHALL BE PLACED ON TOP OF THE POROUS BACKFILL BETWEEN THE PRECAST CULVERTS TO THE TOP OF THE BARREL SLABS, THE TOP OF THE END SECTION WALLS, AND TO A 3'-0 DEPTH AT THE ENDS OF THE APRON END SECTIONS.

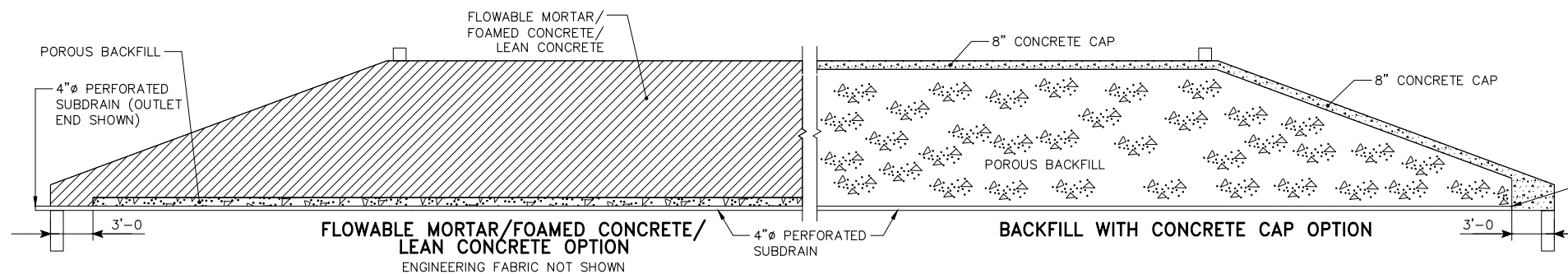


GRANULAR LEVELING MATERIAL DETAILS/CONCRETE CAP OPTION

BARREL SECTION DISPLAYED. END SECTION DETAILS NOT SHOWN

POROUS BACKFILL SHALL BE PLACED BETWEEN THE PRECAST BARREL WALLS UP TO 8 INCHES FROM THE TOP OF THE BARREL SLABS. POROUS BACKFILL SHALL ALSO BE PLACED BETWEEN THE END SECTIONS UP TO 8 INCHES FROM THE TOP OF THE WALLS AND 3'-0 SHORT OF THE END OF THE APRON OF THE END SECTION. THE POROUS BACKFILL SHALL BE IN ACCORDANCE WITH SECTION 4131 OF THE STANDARD SPECIFICATIONS.

A CONCRETE CAP SHALL BE PLACED ON TOP OF THE POROUS BACKFILL BETWEEN THE PRECAST CULVERTS FOR A DEPTH OF 8 INCHES FROM THE TOP OF THE BARREL SLABS, THE TOP OF THE END SECTION WALLS, AND TO A 3'-0 DEPTH AT THE ENDS OF THE APRON OF THE END SECTIONS. THE CONCRETE SHALL BE CLASS C CONCRETE IN ACCORDANCE WITH SECTION 2403 OF THE STANDARD SPECIFICATIONS. THE CONCRETE CAP, APPROXIMATELY 0.03 CU. YDS. PER FOOT, INCLUDING MATERIAL AND LABOR IS INCLUDED IN THE BID ITEMS "PRECAST CONCRETE BOX CULVERT" AND "PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION".



FLOWABLE MORTAR/FOAMED CONCRETE/LEAN CONCRETE OPTION
ENGINEERING FABRIC NOT SHOWN

BACKFILL WITH CONCRETE CAP OPTION

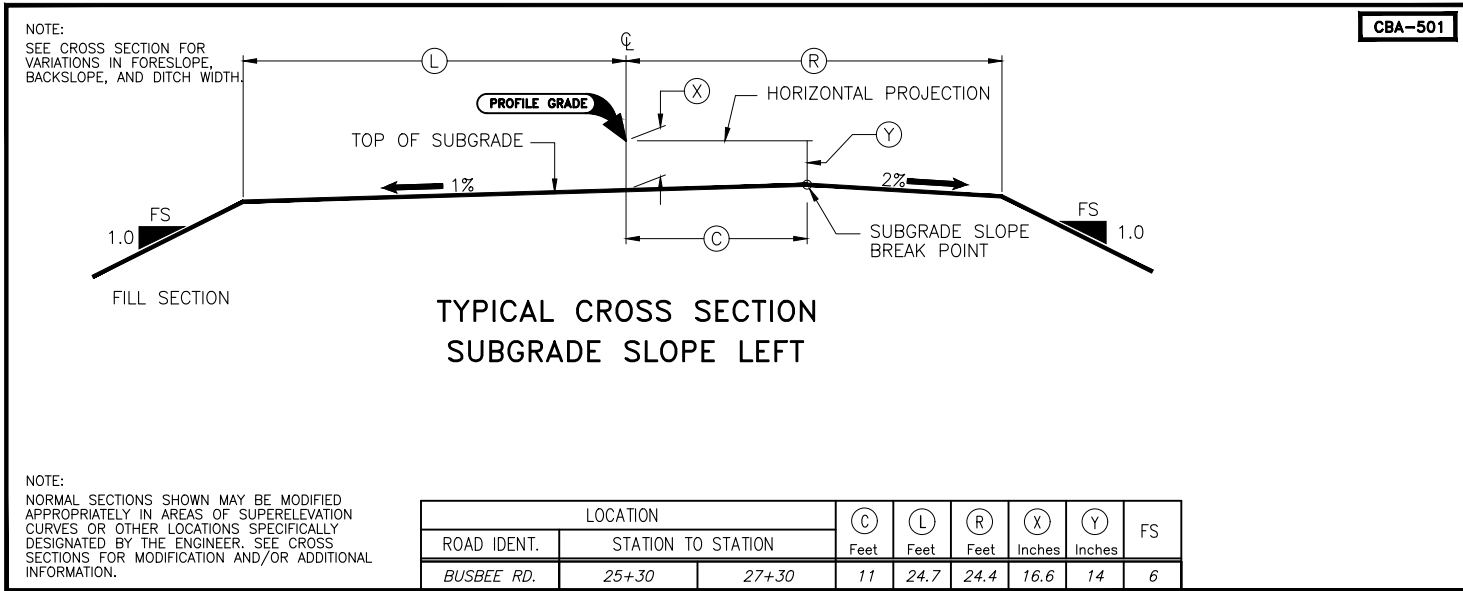
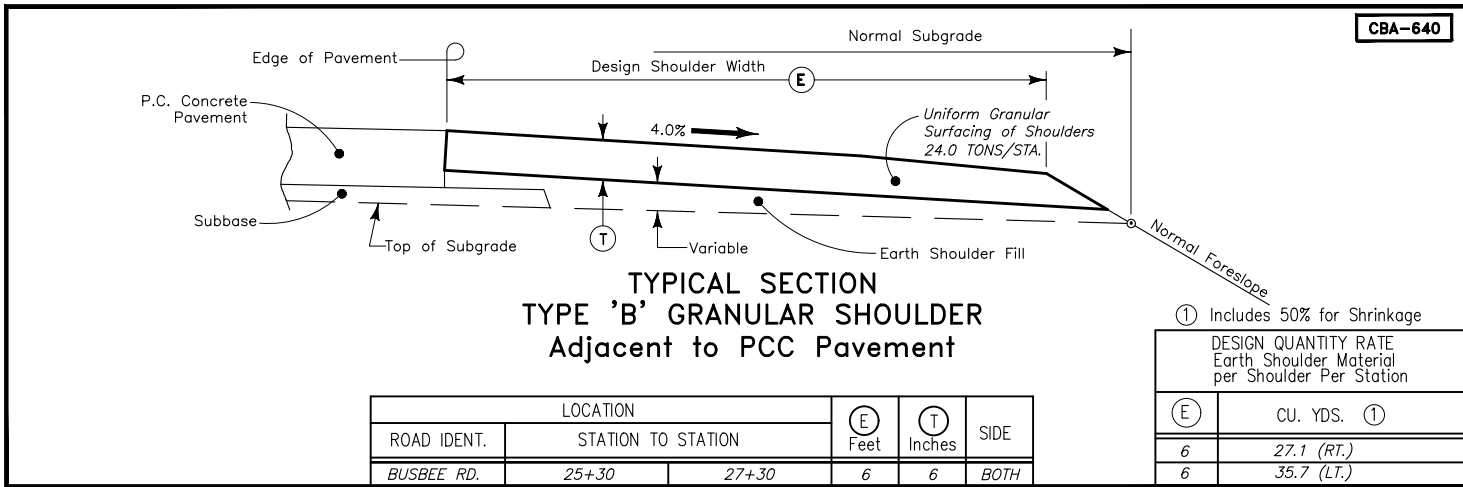
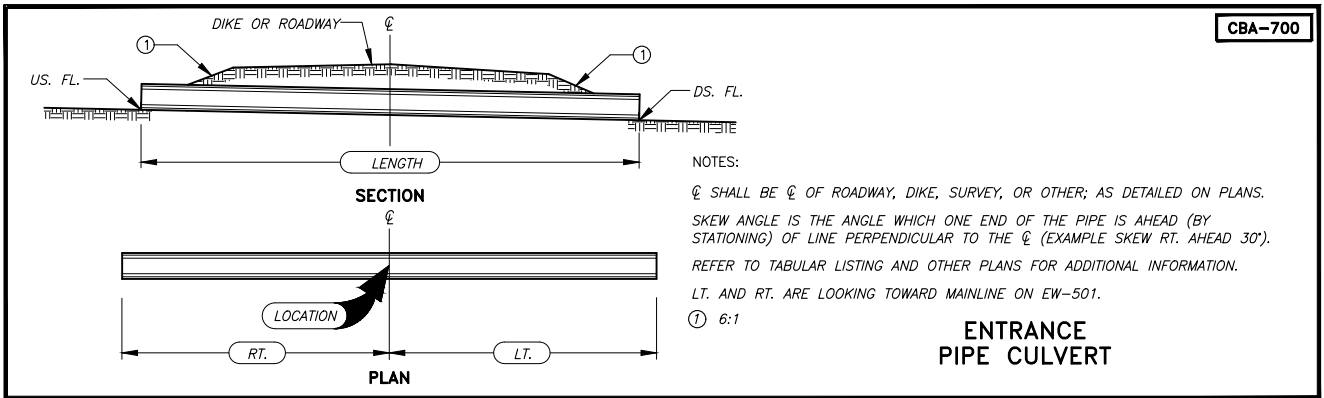
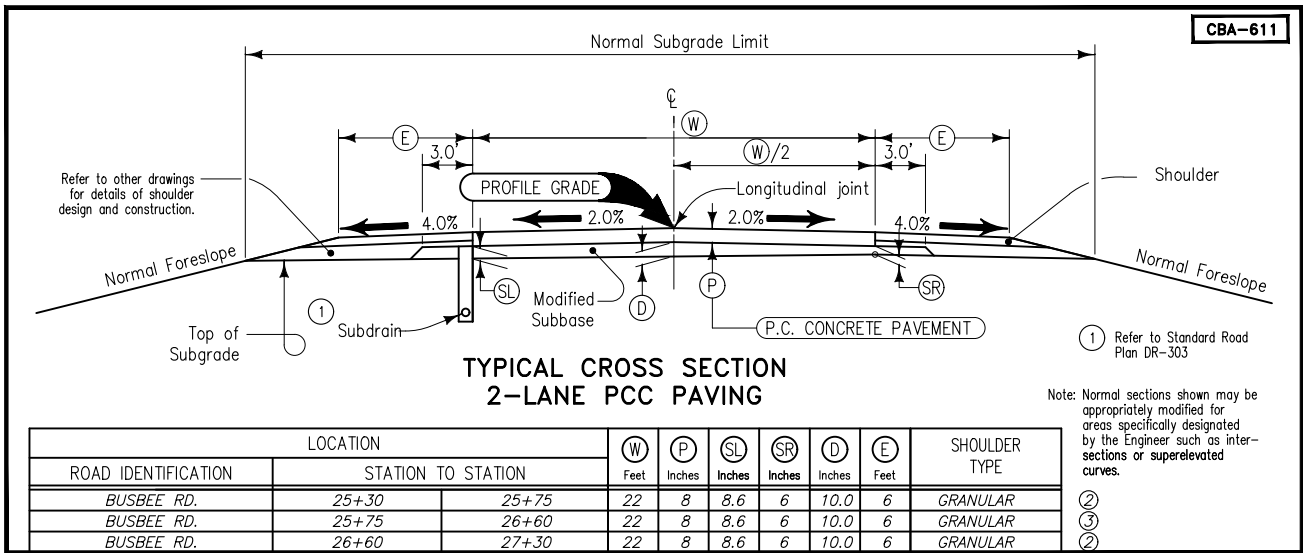
MODIFIED IDOT SHEET 1082P

**SINGLE 10' x 11' x 77'-10³/₄ &
SINGLE 10' x 9' x 77'-10³/₄
PRECAST CONCRETE BOX CULVERT**

PRECAST BEDDING AND BACKFILL DETAILS

STATION 26+15.00
POCAHONTAS COUNTY,

15' SKEW, RT. AHEAD
IOWA

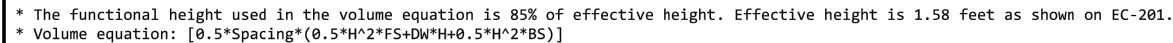


SINGLE 10' x 11' x 77'-10³/₄ &
SINGLE 10' x 9' x 77'-10³/₄
PRECAST CONCRETE BOX CULVERT

TYPICAL SECTIONS

STATION 26+15.00 15' SKEW, RT. AHEAD
POCAHONTAS COUNTY, IOWA

Possible Standard: EC-201



Line No.	Basin No.	Type	Station	Side	Installation (LF)	Maintenance (LF)	Removal (LF)	Foreslope (F5:1)	Backslope (B5:1)	Ditch Width (FT)	Avg. % Slope Ditch Grade	Volume (CF)	Remarks
1.0	1	Type 3	24+70.00	Left	22.0	22.0		3.0	3.0	10.0	5.1	282.60	SW DITCH
2.0	2	Type 1	25+00.00	Right	22.0	22.0		3.0	3.0	10.0	3.6	376.80	SE DITCH
3.0	2	Type 3	25+25.00	Right	22.0	22.0		3.0	3.0	10.0	3.6	376.80	SE DITCH
4.0	3	Type 3	27+05.00	Left	22.0	22.0		3.0	3.0	10.0	3.5	423.90	NW DITCH
5.0	3	Type 1	27+30.00	Left	22.0	22.0		3.0	3.0	10.0	3.5	423.90	NW DITCH
6.0	4	Type 3	26+95.00	Right	22.0	22.0		3.0	3.0	10.0	4.1	329.70	NE DITCH
7.0	4	Type 1	27+20.00	Right	22.0	22.0		3.0	3.0	10.0	4.1	329.70	NE DITCH
Total:					154	154						2543.4	

Refer to EC-201

Line No.	Station From	Station To	Side	Length (FT)	Remarks
1.0	25+35.00	25+90.00	Left	85.00	TOP OF SW STREAM BANK
2.0	25+75.00	26+30.00	Left	120.00	TOP OF NW STREAM BANK
3.0	26+00.00	26+25.00	Right	120.00	TOP OF SE STREAM BANK
4.0	26+35.00	26+65.00	Right	85.00	TOP OF NE STREAM BANK
Total:				410	

CBA-101

EXCAVATION TYPE	RAW CUT	RAW FILL	WASTE **	USABLE CUT	SHRINKAGE FACTOR	FILL +35% SHRINKAGE	PAYMENT QUANTITY
	CY	CY	CY	CY		CY	CY
CLASS 10, ROADWAY AND BORROW	250	1,000	25	225	35%	1,350	250
CLASS 10, CHANNEL	525	75	150	375	35%	101	525
CLASS 20	1,600	1,795	351	1,249	35%	2,423	1,600
TOTALS			526	1,849		3,874	
EMBANKMENT IN PLACE (EIP)			EIP = (3874 - 1849) / 1.35 SHRINK =				1,500

Possible Standards: EC-204

[illegible]

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-303	10-17-17	Subdrains (Longitudinal)
DR-305	04-19-22	Subdrain Outlets (Standard Subdrain, Pressure Release and Special)
DR-306	10-17-23	Precast Concrete Headwall for Subdrain Outlets
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
PM-110	10-15-24	Line Types
PR-120	04-21-20	Double Reinforced Pavement Over Box Culverts
PV-101	01-01-26	Joints
TC-252	10-21-25	Routes Closed to Traffic

Refer to Section 2528 of the Standard Specifications

Station	Road Closure Qty.	Hazard Closure Qty.	Remarks
23+00.00	1		SOUTH END
28+00.00	1		NORTH END

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. TRAFFIC WILL BE MAINTAINED ON A DETOUR ROUTE. POCAHONTAS COUNTY WILL PROVIDE, MAINTAIN AND REMOVE DETOUR ROUTE.
4. POCAHONTAS COUNTY MAINTENANCE SHALL SALVAGE EXISTING ROAD MARKERS AFTER THE ROAD IS CLOSED.

CBA-300

Description	Northing	Easting	Approx. Station	Approx. Offset	Elevation
CP #11, 1/2" REBAR W/BLUE CAP STAMPED "DGR"	3674092.83	4558810.73	24+54	18' LT.	1214.58
CP #10, 1/2" REBAR W/BLUE CAP STAMPED "DGR"	3674427.24	4558813.96	27+89	19' LT.	1215.64
Coordinate System				Vertical Datum	
(NAD83) US STATE PLANE, IOWA NORTH ZONE, NAD 1983 (2011) EPOCH 2010.00, US SURVEY FOOT				NAVD88	

TABULATIONS

STATION 26+15.00
POCAHONTAS COUNTY.

15' SKEW, RT. AHEAD
IOWA

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	25+10.00	Left	C					30.0		15.0	5.1	24.0	104.0	66.00	38.00					SIDE SLOPES = 6:1
2.0	25+75.00	Right	C					30.0		15.0	4.2	24.0	72.0	38.00	34.00					SIDE SLOPES = 6:1
3.0	26+55.00	Left	C					30.0		15.0	5.6	24.0	86.0	46.00	40.00					SIDE SLOPES = 6:1

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
26+15.00		10x11 & 10x9	PRECAST RCB CULVERT						80.0	1575.0		160.0	3.0	163.0	CLASS 20	1600.0	Class E	630.000	870.0	SEE DR-111

NOTE: EARTH FILL VOLUMES DO NOT INCLUDE 35% FOR SHRINKAGE AND ARE INCLUDED IN TOTAL VOLUME OF RAW FILL REQUIRED IN TABULATION CBA-101, SHEET 9.
(2) INCLUDES FILLING BEYOND CLASS 20 EXCAVATION LIMIT TO FACE OF NORTH ABUTMENT.

104_09A
5/6/24

LONGITUDINAL SUBDRAIN SHOULDER

* Not a bid item.

Line No.	Road or Lane Identification	Station From	Station To	Side	Depth (IN) (D)	Subdrain Size (IN)	Length (FT)	Outlet Station	Outlet Type	Porous Backfill* (CY)	Remarks
1.0	BUSBEE RD	25+30.00	27+30.00	Left	36.0	4.0	224.0	25+30.00	DR-306	17.3	CAP UPSTREAM END AT STA 27+30

110_01
4/5/24

REMOVAL OF PAVEMENT

* Not a bid item.

Line No.	Station From	Station To	Side	Pavement Type	Area (SY)	Saw Cut* (LF)	Remarks
1.0	25+30.00	26+05.00		PCC	183.3	22.0	BUSBEE RD. S END BOTH LT. AND RT.
2.0	26+50.00	27+30.00		PCC	195.6	22.0	BUSBEE RD. N END BOTH LT. AND RT.
Total:					378.9		

108_22
10/21/25

PAVEMENT MARKING LINE TYPES

Line factors based on 6-inch wide continuous line.
*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - Estimating purposes only. No Passing Zone Lines will be located in the field.
***MNV6 - Factor of 1.00 includes number of 6-inch passes to cover median nose area.
BCY4: Broken Centerline (Yellow) @ 0.17
CBW6: Crosswalk Bar (White) @ 10.00
CLW6: Crosswalk Line (White) @ 2.00
DLW4: Dotted Line (White) @ 0.22
ELW6: Edge Line Right (White) @ 1.00
MNV6: Median Nose (Yellow) @ 1.00
RLY4: Ramp Edge Line Left (Yellow) @ 0.67
SPW4: Sloped Curb 4" (White) @ 2.16
STY6: Standard Curb 6" (Yellow) @ 2.03
BCY6: Broken Centerline (Yellow) @ 0.25
CHW8: Channelizing Line (White) @ 1.33
DCY4: Double Centerline (Yellow) @ 1.34
DLW6: Dotted Line (White) @ 0.33
ELY4: Edge Line Left (Yellow) @ 0.67
NPY4: No Passing Zone Line (Yellow) @ 0.84
RLY6: Ramp Edge Line Left (Yellow) @ 1.00
SPW6: Sloped Curb 6" (White) @ 2.28
YLW2: Yield Line (White) @ 1.15
BLC6: Broken Line Contrast (White/Black) @ 0.50
CHW10: Channelizing Line (White) @ 1.67
DCY6: Double Centerline (Yellow) @ 2.00
DLY4: Dotted Line (Yellow) @ 0.22
ELY6: Edge Line Left (Yellow) @ 1.00
NPY6: No Passing Zone Line (Yellow) @ 1.25
SLW2: Stop Line (White) @ 4.00
SPY4: Sloped Curb 4" (Yellow) @ 2.16
BLW4: Broken Lane Line (White) @ 0.17
CHY8: Channelizing Line (Yellow) @ 1.33
DDY4: Double Dotted Line (Yellow) @ 0.44
DLY6: Dotted Line (Yellow) @ 0.33
LDW8: Lane Drop (White) @ 0.33
RLW4: Ramp Edge Line Right (White) @ 0.67
SLW4: Solid Lane Line (White) @ 0.67
SPY6: Sloped Curb 6" (Yellow) @ 2.28
BLW6: Broken Lane Line (White) @ 0.25
CHY10: Channelizing Line (Yellow) @ 1.67
DDY6: Double Dotted Line (Yellow) @ 0.67
ELW4: Edge Line Right (White) @ 0.67
LDW10: Lane Drop (White) @ 0.42
RLW6: Ramp Edge Line Right (White) @ 1.00
SLW6: Solid Lane Line (White) @ 1.00
STW6: Standard Curb 6" (Yellow) @ 2.03

Line No.	Road ID	Station From	Station To	Lane	Marking Type	Left	Center	Right	BCY4* (STA)	BCY4* Factored (STA)	ELW4 (STA)	ELW4 Factored (STA)	Remarks
1.0	BUSBEE RD.	25+30.00	27+30.00	Both	Waterborne/Solvent Paint			X			4.00	2.68	
2.0	BUSBEE RD.	25+30.00	27+30.00	NB	Waterborne/Solvent Paint	X			2.00	0.34			
3.0													TOTAL = 3.02 STA

SINGLE 10' x 11' x 77'-10³/₄ &
SINGLE 10' x 9' x 77'-10³/₄
PRECAST CONCRETE BOX CULVERT
TABULATIONS
STATION 26+15.00
POCAHONTAS COUNTY,
15' SKEW, RT. AHEAD
IOWA

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

DESIGNED BY : JLM
DRAWN BY : JLM
CHECKED BY : EJM

POCAHONTAS COUNTY

PROJECT NO. BROS-C076(79)--5F-76

102_03
10/15/24

104_04
8/15/22

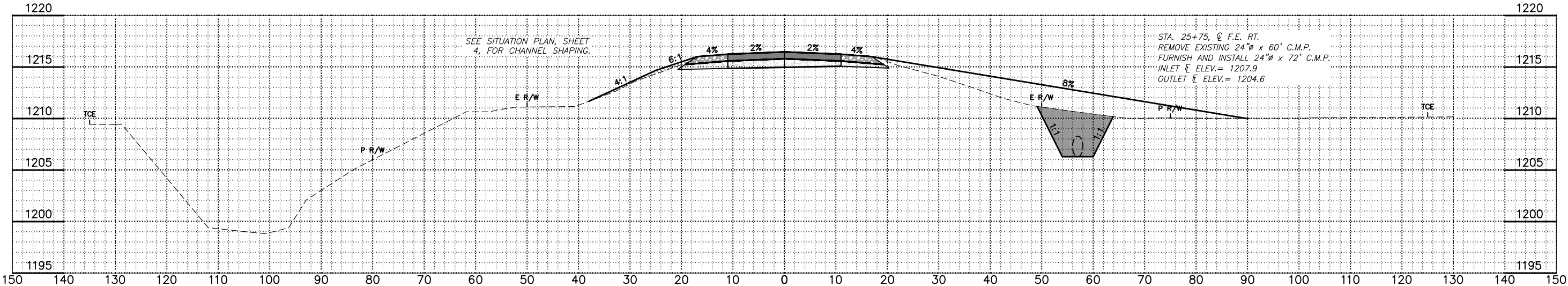
104_09A
5/6/24

110_01
4/5/24

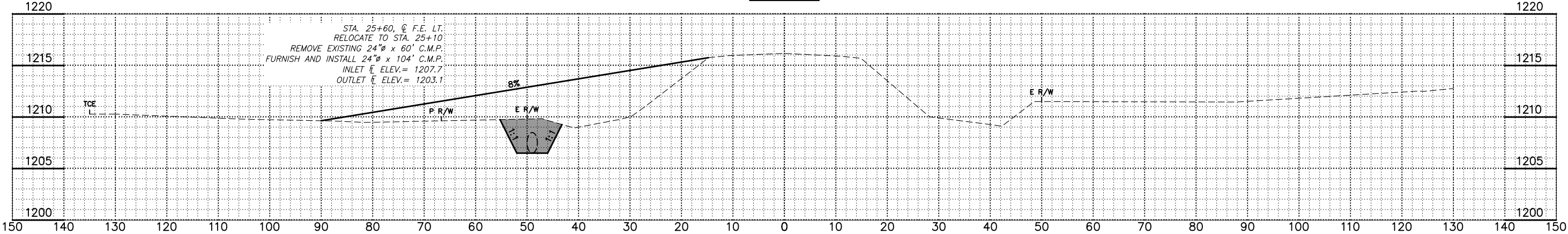
108_22
10/21/25

JOB NO. 2023233

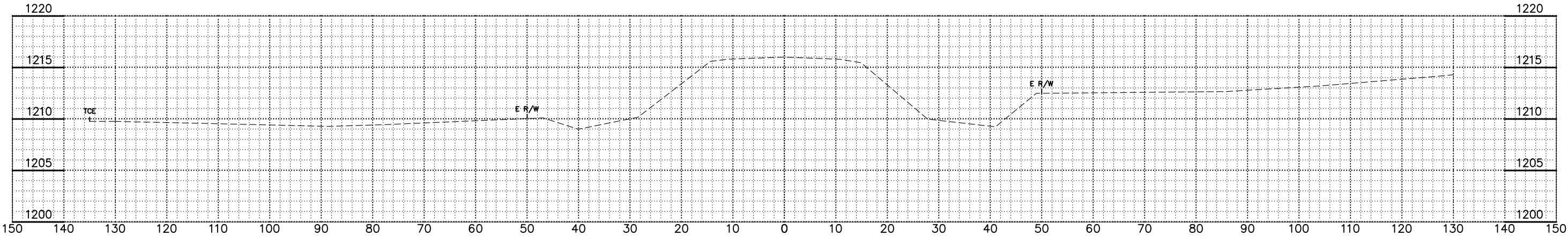
SHEET 10 OF 12



25+75
@ EL = 1216.47



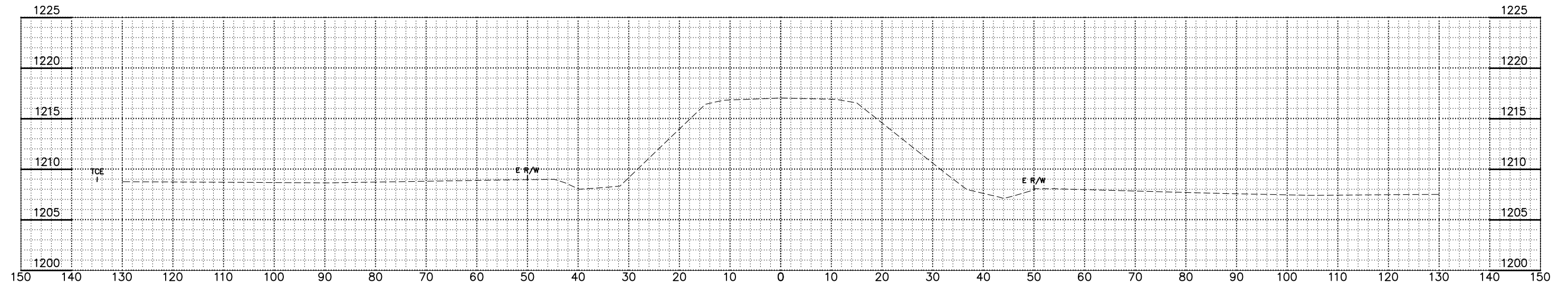
25+00



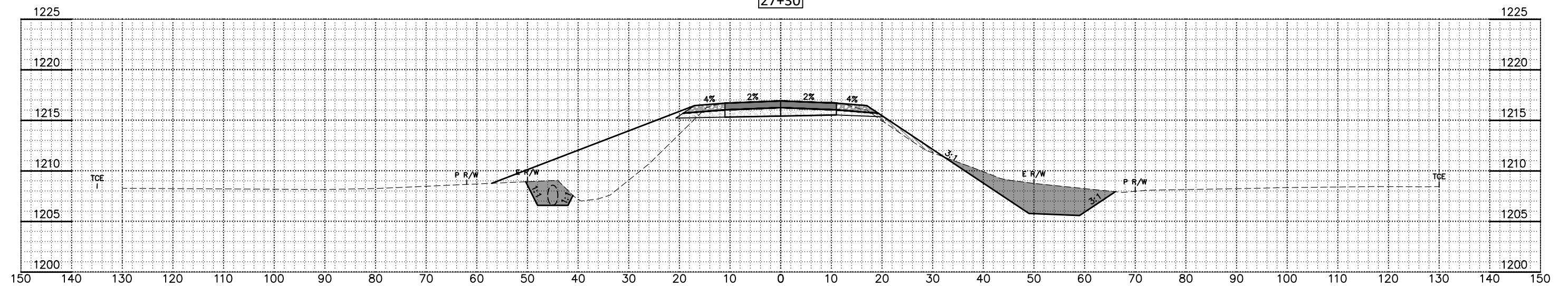
24+50

CROSS SECTIONS

POCAHONTAS COUNTY, IOWA

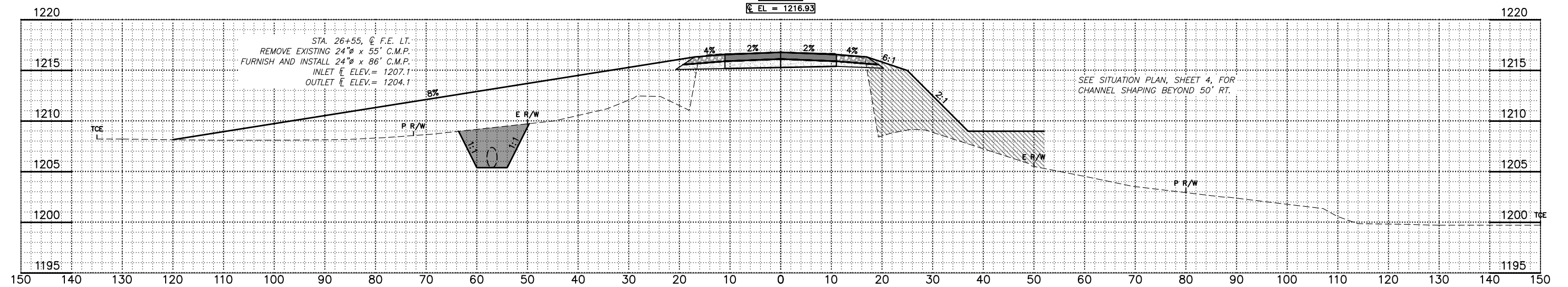


27+30



26+90

C EL = 1216.93



26+55

C EL = 1216.79

CROSS SECTIONS

POCAHONTAS COUNTY,

IOWA