FHWA STRUCTURE #127020

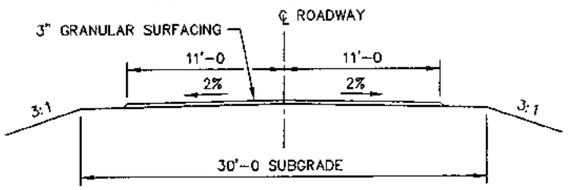
Project Number: BROS-C024(77)--5F-24

LETTING DATE APRIL 18, 2006

RCB CLUVERT – TWIN BOX

CRAWFORD COUNTY BROS-C024(77)--5F-24

DESIGN SPEED 40 MPH



TYPICAL ROADWAY SECTION

TRAFFIC CONTROL PLAN

THIS ROAD WILL BE CLOSED TO THROUGH TRAFFIC DURING CONSTRUCTION. LOCAL TRAFFIC TO ADJACENT PROPERTIES WILL BE MAINTAINED AS PROVIDED FOR IN ARTICLE 1107.08 OF THE CURRENT STANDARD SPECIFICATIONS. TRAFFIC CONTROL DEVICES, PROCEDURES, LAYOUTS, SIGNING, AND PAVEMENT MARKINGS INSTALLED WITHIN THE LIMITS OF THE THIS PROJECT SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AS ADOPTED BY THE DEPARTMENT PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC) CHAPTER 130.

A DETOUR ROUTE WILL BE MARKED AND MAINTAINED BY CRAWFORD COUNTY.

ALL SAFETY CLOSURES SHALL BE FURNISHED, ERECTED, MAINTAINED AND REMOVED BY THE CONTRACTOR.

MAINTENANCE OF SIGNS, BARRICADES AND SAFETY CLOSURES AS STATED IN ARTICLE 1107.09 SHALL APPLY ON THIS PROJECT.

ROAD CLOSURES ON THIS PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE IN ACCORDANCE WITH ROAD STANDARD RS-27.

IOWA
DEPARTMENT OF TRANSPORTATION

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

FARM-TO-MARKET SYSTEM
CRAWFORD COUNTY
RCB CULVERT - TWIN BOX

BROS-C024(77)--5F-24

SOUTH WEST 1/4 OF SECTION 5-T82N-R41W,

BOYER TOWNSHIP, COUNTY ROAD L54(110th St.), OVER SOUTH WILLOW CREEK

The Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, series 2001, plus applicable General Supplemental Specifications, Developmental Specifications, Supplemental Specifications, and Special Provisions, shall apply to construction work on this project.

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.

Scales: As Noted

04-20-02		101-4
DESIGN DATA RURAL		
2004 AADT	10	V.P.D.
2020 AADT	NA	V.P.D.
20 DHV	NA	V.P.H.
TRUCKS	NA	%
Total Design ESALs	NA	

INDEX OF SHEETS

NO.	DESCRIPTION
A.01	COVER SHEET AND LOCATION MAP
C.01	ESTIMATED QUANTITIES
C.02	GENERAL NOTES
C.03	TABULATIONS
C.04	POLLUTION PREVENTION PLAN
V.01	SITUATION PLAN, LONGITUDINAL SECTION AND HYDRAULICS FOR TWIN REINFORCED CONCRETE BOX CULVERT
V.02	SHAPING PLAN
W.01-W.05	CHANNEL CROSS SECTIONS
X.01-X.03	ROADWAY CROSS SECTIONS
Y.01	CMP PROFILES
Y.02	48" CMP CROSS SECTIONS

MILEAGE SUMMARY

105-1
09-27-94

DIV.	LOCATION	LIN. FT.	MILES
	STA. 10+00.00 TO 12+00.00 L54	200.00	0.038

ROAD STANDARD PLANS

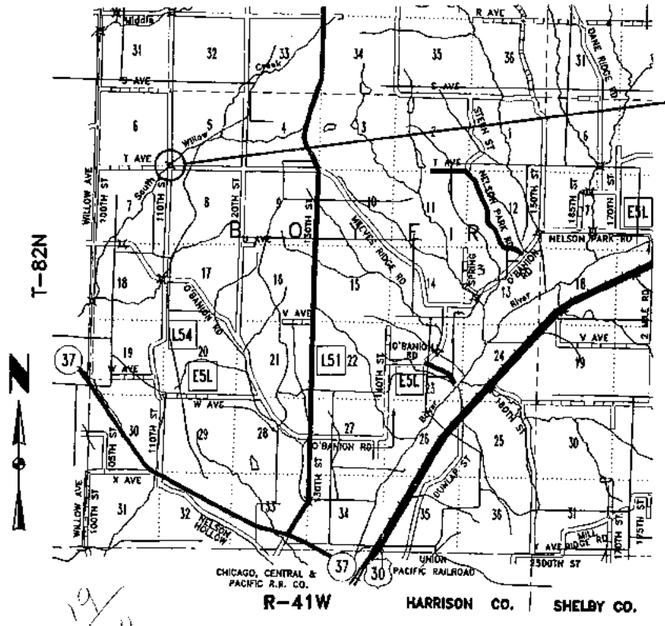
The following Standard Plans shall be considered applicable to construction work on this project.

NUMBER	DATE	NUMBER	DATE	NUMBER	DATE
RF-2	09-21-99	RF-32	03-28-95		
RF-5	10-03-00	RS-27	10-28-97		
RF-14	10-18-05				
RF-30A	10-18-05				
RF-30C	04-30-02				

RCB STANDARDS

(May be obtained at Bridge Design Services)

Standard	Date Issued	Date Revised	Standard	Date Issued	Date Revised
TWCBJ 2-87	JULY, 1987	APRIL, 2002	TWH 45-5-87	JULY, 1987	JAN., 1998
TWH 45-1-87	JULY, 1987	DEC., 1996	TWH 45-6-87	JULY, 1987	JAN., 1998
TWH 45-2-87	JULY, 1987		TWRCB-C1-87	JULY, 1987	APRIL, 2002
TWH 45-3-87	JULY, 1987		TWRCB 12-12-87	JULY, 1987	DEC., 1996
TWH 45-4-87	JULY, 1987	JAN., 1998			



PROJECT LOCATION
STA. 0+91.35
FHWA STR. NO. 127020

Location Map Scale
0 1 miles 2 3

Approved:
Paul Assman, P.E., PLS
Crawford County Engineer
Date

D. Dean Hargens

Steve Hemer

Dan W. Mobley

Approved
Board of Supervisors

Mark Segebart

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.

STEPHEN W. MOFFITT 13124

1-20-xx

STEPHEN W. MOFFITT IOWA REG. NO. 13124 DATE
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2007.

PAGES OR SHEETS COVERED BY THIS SEAL:
A.01, C.01, C.02, C.03, C.04, V.01, V.02, W.01-W.05, X.01-X.03, Y.01, Y.02

hgm ASSOCIATES INC.
ENGINEERING ARCHITECTURE SURVEYING
council bluffs omaha

19
KEH
100

24-C024-077

IDNR FLOOD PLAIN CONSTRUCTION PERMIT NOT REQUIRED

THIS PROJECT IS COVERED BY THE U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NO. 14

12202

ESTIMATE REFERENCE INFORMATION

Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.

ITEM NO.	ITEM CODE	DESCRIPTION
0010	2101-0850001	BID ITEM IS BASED ON ITEMS WITHIN THE PROJECT CONSTRUCTION LIMITS.
0020	2102-2710070	TYPE "A" COMPACTION IS REQUIRED. PAYMENT FOR OVERHAUL SHALL NOT BE ALLOWED. QUANTITY INCLUDES AN ALLOWANCE OF 40% FOR SHRINKAGE. SUMMARY OF EARTHWORK IS BASED ON CROSS SECTIONS FROM STA. 10+00 TO 12+00. BORROW SHALL BE CONTRACTOR FURNISHED AS APPROVED BY THE ENGINEER. 1,326.0 C.Y. (CUT) 2,437.0 C.Y. (FILL + 40%) 1,111.0 C.Y. (BORROW) QUANTITY IS BASED ON NEW 48" CMP CROSS SECTIONS. 47.0 C.Y. (FILL + 40%) 47.0 C.Y. (BORROW)
0030	2104-2710020	BID ITEM IS FOR BANK SHAPING AT RCB INLET AND OUTLET. PAYMENT FOR OVERHAUL SHALL NOT BE ALLOWED. QUANTITY INCLUDES AN ALLOWANCE OF 40% FOR SHRINKAGE. SUMMARY OF EARTH WORK IS BASED ON CHANNEL CROSS SECTIONS. IF EXCESS EXCAVATED MATERIAL IS DETERMINED BY THE ENGINEER TO BE SUITABLE FOR USE AS CLASS 10 ROADWAY AND BORROW IT MAY BE USED AS SUCH. UNUSED MATERIAL SHALL BE DISPOSED OF OFF THE PROJECT SITE ACCORDING TO APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS. 4,731.0 C.Y. (CUT) 3,276.0 C.Y. (FILL + 40%) 1,455.0 C.Y. (CUT)
0040	2113-0001100	CONTRACTOR TO FOLLOW IDOT 2001 STANDARD SPECIFICATIONS ON PLACEMENT AND TYPE OF POLYMER GRID.
0050	2115-0100000	STANDARD SPECIFICATION SECTION 4123 "MODIFIED SUBBASE MATERIAL" GRADATION NO. 14.
0060	2312-8260201	3" GRANULAR SURFACING SHALL BE APPLIED IN TWO 22' WIDE 1½" LIFTS FOR THE FULL LENGTH OF THE PROJECT AND SHALL BE MECHANICALLY COMPACTED. APPLY ALONG CURVE AT BEGINNING OF ROADWAY SECTION. INCLUDES ROADWAY SECTION WHERE THE EXISTING 48" CMP IS REMOVED AND THE NEW 48" CMP IS PLACED.
0070	2401-6745625	BID ITEM INCLUDES THE REMOVAL AND DISPOSAL OF THE EXISTING BRIDGE SUPERSTRUCTURE AND SUBSTRUCTURE. THE BRIDGE IS A 3-SPAN STRUCTURE. IT IS 20.0' WIDE AND 77.0' IN LENGTH. THE BRIDGE SUPERSTRUCTURE CONSISTS OF TIMBER PLANKS ON STEEL STRINGERS. THE BRIDGE SUBSTRUCTURE IS A VERTICAL ABUTMENT WITH A TIMBER CAP RESTING ON TIMBER PILE WITH TIMBER BACKING PLANK. THERE ARE FLARED WINGS AND 2 OPEN TIMBER PILE PIER SUPPORTS. STEEL STRINGERS SHALL BE SALVAGED AND STOCKPILED ON SITE FOR RETRIEVAL BY CRAWFORD COUNTY FORCES. REMAINING DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT SITE.
0080	2402-2720000	QUANTITY OF EXCAVATION BASED ON CROSS SECTIONS IS 1,473.7 CU. YDS. (CUT). IF EXCESS EXCAVATED MATERIAL IS DETERMINED BY THE ENGINEER TO BE SUITABLE FOR USE AS CLASS 10 ROADWAY AND BORROW IT MAY BE USED AS SUCH. UNUSED MATERIAL SHALL BE DISPOSED OF OFF THE PROJECT SITE ACCORDING TO APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
0090	2402-2720100	QUANTITY FOR THE 48" CMP IS 554.0 C.Y.. QUANTITY FOR THE 30" CMP PIPE EXTENSION IS 62.0 C.Y..
0100	2403-0100020	STANDARD SPECIFICATION SECTION 2521 "CERTIFIED PLANT INSPECTION" SHALL APPLY.
0120	2417-0225048	STANDARD ROADWAY PLAN RF-5 SHALL APPLY.
0130	2417-1060024	STANDARD ROADWAY PLANS RF-2 AND RF-14 SHALL APPLY.
0140	2417-1060030	STANDARD ROADWAY PLANS RF-2 AND RF-14 SHALL APPLY.
0160	2518-6910000	THIS ITEM SHALL INCLUDE FURNISHING, INSTALLING, MAINTAINING AND REMOVING SAFETY CLOSURES AT THE LOCATIONS IN THE TABLE ON SHEET C.03 AS PER THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AS ADOPTED BY THE DEPARTMENT PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC) CHAPTER 130 AND IDOT STANDARD SPECIFICATION SECTION 2518.
0200	2601-2636043	PERMANENT SEEDING SHALL MEET THE REQUIREMENTS SET FORTH IN IDOT 2001 STANDARD SPECIFICATIONS AND ANY APPLICABLE SUPPLEMENTAL SPECIFICATIONS. THE CONTRACTOR SHALL VERIFY WITH THE ENGINEER ALL AREAS TO BE SEEDED PRIOR TO COMMENCING ANY WORK ON THIS ITEM.

ESTIMATED PROJECT QUANTITIES

100-1A
07-15-97

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
0010	2101-0850001	CLEARING AND GRUBBING	ACRE	1.7	
0020	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CU. YDS.	1,158.0	
0030	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CU. YDS.	1,455.0	
0040	2113-0001100	SUBGRADE STABILIZATION MATERIAL, POLYMER GRID	SQ. YD.	820.6	
0050	2115-0100000	MODIFIED SUBBASE	CU. YDS.	890.9	
0060	2312-8260201	GRANULAR SURFACING ON ROAD, CLASS "C" GRAVEL	TON	110.0	
0070	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1.0	
0080	2402-2720000	EXCAVATION, CLASS 20	CU. YDS.	1,473.7	
0090	2402-2720100	EXCAVATION, CLASS 20, RDWY PIPE CULV	CU. YDS.	616.0	
0100	2403-0100020	STRUCTURAL CONCRETE (RCB CULVERT)	CU. YDS.	509.6	
0110	2404-7775000	REINFORCING STEEL	LBS.	64,246	
0120	2417-0225048	APRONS, METAL, 48 INCH DIAMETER	EACH	2.0	
0130	2417-1060024	CULVERT, CORRUGATED METAL ROADWAY PIPE, 24 INCH DIA.	FT	33.0	
0140	2417-1060030	CULVERT, CORRUGATED METAL ROADWAY PIPE, 30 INCH DIA.	FT	51.0	
0150	2417-1060048	CULVERT, CORRUGATED METAL ROADWAY PIPE, 48 INCH DIA.	FT	116.0	
0160	2518-6910000	SAFETY CLOSURE	EACH	4.0	
0170	2528-8445110	TRAFFIC CONTROL	LS	1.0	
0180	2533-4980005	MOBILIZATION	LS	1.0	
0190	2601-2634100	MULCHING	ACRE	1.7	
0200	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	1.7	

CONCRETE AND REINFORCING STEEL QUANTITIES FOR TWIN 12' X 12' RCB CULVERT

LOCATION	CONCRETE QUANTITIES, C.Y.				REINFORCING STEEL, LBS.
	FLOOR	WALLS	SLAB	TOTAL	
TWIN 12' X 12' HEADWALL, 45°	91.9	41.9	4.0	137.8	14,660
TWIN 12' X 12', 35'-0" BARREL	34.8	45.2	25.8	105.8	15,909
*TWIN 12' X 12', 38'-0" BARREL	43.2	52.5	32.5	128.2	19,017
TWIN 12' X 12' HEADWALL, 45°	91.9	41.9	4.0	137.8	14,660
TOTAL	261.8	181.5	66.3	509.6	64,246

* INCLUDES CONCRETE AND REINFORCING STEEL QUANTITIES FOR ONE TWCBJ 2-87 BELL JOINT.

hgm ASSOCIATES INC.

DESIGNED BY SRO CHECKED BY SWM
DETAILED BY FWS CADD FILE 76085C01.dwg

CRAWFORD COUNTY | PROJECT NUMBER HGM No. 76085 | BROS-C024(77)--5F-24

STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7	2006	C.01	--

ESTIMATED QUANTITIES

GENERAL NOTES

CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND MAINTAINING SAFETY CLOSURES, ROAD CLOSED SIGNS AND ORANGE MESH SAFETY FENCE BARRICADES AT THE PROJECT SITE IN ACCORDANCE WITH REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AS ADOPTED BY THE DEPARTMENT PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC) CHAPTER 130.

CONTRACTOR SHALL CONFINE WORK TO EXISTING R.O.W. AND/OR EASEMENTS.

THE ENGINEER MAKES NO GUARANTEE THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE ENGINEER FURTHER DOES NOT WARRANT THAT THE UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL CONTACT IOWA ONE-CALL AT 1-800-292-8989 FOR UTILITY LOCATES.

THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES (PUBLIC AND PRIVATE) AT LEAST 72 HOURS IN ADVANCE OF THE ACTUAL STARTING DATE OF CONSTRUCTION. THE CONTRACTOR IS TO DETERMINE ACTUAL LOCATION OF UTILITIES IN THE FIELD. THE CONTRACTOR IS TO USE DUE CAUTION IN WORKING OVER AND AROUND UTILITY LINES. BREAKS IN THE UTILITY LINES DUE TO THE CONTRACTOR'S ACTIVITIES ARE TO BE REPAIRED OR REPLACED WITHOUT COST TO THE OWNER OR ENGINEER.

OTHER EXISTING UNDERGROUND INSTALLATIONS AND STRUCTURES ARE INDICATED ON THE DRAWINGS. THE ENGINEER DOES NOT GUARANTEE THE ACCURACY OF SUCH INFORMATION. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO LOCATE ALL EXISTING UNDERGROUND INSTALLATIONS AND STRUCTURES IN THE VICINITY OF THE WORK TO BE DONE BY PROSPECTING IN ADVANCE OF EXCAVATION.

DEWATERING SHALL BE CONSIDERED AS INCIDENTAL TO THE CONSTRUCTION, AND ALL COSTS THEREOF SHALL BE INCLUDED IN VARIOUS UNIT CONTRACT PRICES IN THE PROPOSAL, UNLESS OTHERWISE PROVIDED FOR IN THE SPECIAL PROVISIONS.

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

CONTRACTOR SHALL PROVIDE THE COUNTY AND 911 OPERATOR WITH THE NAME AND PHONE NUMBER OF THEIR REPRESENTATIVE TO BE CONTACTED DURING WORKING AND NON-WORKING HOURS AS NECESSARY.

ALL RUBBLE FROM THE REMOVAL OF EXISTING STRUCTURES SHALL BE DISPOSED OF BY THE CONTRACTOR IN COMPLIANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL REQUIREMENTS, AS APPROVED BY THE ENGINEER.

SCHEDULE OF OPERATION

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER, PRIOR TO THE PRECONSTRUCTION CONFERENCE, A WRITTEN SCHEDULE FOR PERFORMANCE OF THE WORK ITEMS. THE SCHEDULE SHALL BE IN THE FORM OF A BAR GRAPH OR CHART SHOWING STARTING AND COMPLETION DATES FOR THE ITEMS. THE CONTRACTOR SHALL THEN MAKE EVERY EFFORT TO CONFORM TO THE ACCEPTED SCHEDULE

CULVERT GENERAL NOTES

THE TWIN 2-12' x 12' BARREL SECTIONS STANDARD USED SHALL BE FOR A FILL HEIGHT OF 5.0' TO 7.0'.

THE PERMISSIBLE CONSTRUCTION JOINT AT THE TOP OF THE WALLS MAY BE LOWERED 2'-3" AT THE CONTRACTOR'S OPTION.

SPECIFICATIONS

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION SPECIFICATION, SERIES OF 2001, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

DESIGN STRESSES: DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1996.
REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 8, f'c = 3,500 psi.

DRAWING APPROVAL

ALL WORKING DRAWINGS WHICH REQUIRE REVIEW BY THE CONTRACTING AUTHORITY SHALL BE REVIEWED BY HGM ASSOCIATES, INC.,

ADDRESS: STEPHEN W. MOFFITT
HGM ASSOCIATES INC.
5022 S.114th STREET, SUITE 200
OMAHA, NEBRASKA 68137-2330
TELEPHONE: (402) 346-7559

01-20-84 204-2
All holes resulting from operations of the contractor, including removal of guardrail posts, fence posts, utility poles, or foundation studies, shall be filled and consolidated to finished grade as directed by the engineer to prevent future settlement. The voids shall be filled as soon as practical - preferably the day created and not later than the following day. Any portion of the right-of-way or project limits (including borrow areas and operation sites) disturbed by any such operations shall be restored to an acceptable condition. This operation shall be considered incidental to other bid items in project.

10-29-02 213-1
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. These areas shall not impact wetlands or "Waters Of The U.S." 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.

06-22-84 213-3
All borrow areas, stockpile areas, haul roads and areas used for equipment on this project will require subsoil tillage to an average depth of 16 inches to 20 inches prior to placement of topsoil and/or stabilizing crop seeding. Such tillage shall be accomplished on maximum of three foot centers and at right angles to the finished slope of the borrow.

Equipment used to accomplish the tillage shall be equipped with an arrowhead-type shoe so as to provide lateral displacement and limit the movement of the subsoil to the surface. It shall be approved by the engineer for the use intended. This work will be considered incidental to other work on the project and no payment will be allowed.

It is intended that following subsoil tillage, the area remains in a "loosened" condition. Additional compaction or the operation of heavy equipment, other than required for topsoil placement and shaping shall not be allowed on areas which have received subsoil tillage.

01-20-84 232-5
The contractor shall not disturb desirable grass areas and desirable trees outside the construction limits. The contractor will not be permitted to park or service vehicles and equipment or use these areas for storage of materials. Storage, parking and service area(s) will be subject to the approval of the resident engineer.

06-07-94 232-8
The top six (6) inches of the disturbed areas shall be free of rock and debris and shall be suitable for the establishment of vegetation, subject to the approval of the Engineer.

10-28-97 232-10
The contractor is expected to have materials, equipment, and labor available on a daily basis to install and maintain erosion control features on the project. This may involve seeding, silt fence, rock ditch checks, silt basins, or silt dikes.

01-19-88 251-1
The contractor shall be responsible to maintain access to individual properties during construction.

Relocated access shall be completed to individual properties prior to removal of existing access.

If the permanent access cannot be completed prior to removal of the existing access, the contractor shall provide and maintain an alternate access. Temporary Granular Surfacing will be paid for as a contract item or by extra work.

09-27-94 271-9
A scrape sample was taken from one area of this bridge to get an indication of the existence of the level of total Chromium and total Lead. Analysis of total Lead on this sample was 36,287 parts per million (PPM). Analysis of total Chromium on this sample was 52 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 Department's testing and analysis for any purpose other than as an indication of the existence of these two toxic constituents.

10-18-05 281-4
SECTION 404 PERMIT CONDITIONS

1. Equipment for handling and conveying materials during construction shall be operated to prevent dumping or spilling the material into waterbodies, streams or wetlands except as approved herein and in the 404 permit.
2. Construction activities shall be conducted during low to normal flows. Low to normal flows shall be determined in consultation with the project engineer and are defined as flows at or below the ordinary high water mark. The ordinary high water mark is that line on the shore of a stream or waterbody established by the fluctuations of water and best indicated by the line impressed on the bank containing vegetation above and bare soil below.

   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 distubed areas upon project completion. The prime contractor shall be responsible for installation of all erosion control measures.
3. Care shall be taken to prevent any petroleum products, chemicals, or other deleterious materials from entering waterbodies, streams or wetlands.
4. All Construction debris shall be disposed of at an upland, non-wetland location, in such a manner that it connot enter a waterway or wetland.
5. Construction equipment, activities, and materials shall be kept out of streams and wetlands to the maximum extent possible.
6. Clearing and grubbing of vegetation, including trees located in or immediatly adjacent to wetlands and streams, shall be limited to that which is absolutely necessary for construction of the project. All vegetative material removed from CITY right of way shall be disposed of at an upland, non-wetland location.

NOTIFICATION FOR COMPLETE REMOVAL OF BRIDGES

The Contractor shall notify the Engineer, in writing, of the intended starting and completion dates for complete removal of a bridge. Notification shall be not less than 25 calendar days prior to the start of bridge demolition. If the Contractor is unable to begin work on the intended start date, the Contractor shall notify the Engineer, in writing, of the new intended start date. Notification of the inability to commence work on the intended start date shall be made no later than 1 working day prior to the original intended start date. Failure to commence work on the intended start date, or failure to notify the Engineer of a change in start date 1 working day prior to the original intended start date, will result in the need for a new 25 calendar day notification to the Engineer.

When the Contractor is required to start work in 60 calendar days or less following the letting the following shall apply:

The Contractor will not be required to provide initial notification of demolition to the Engineer. The starting date for demolition will be the starting date identified in the proposal form. The Contractor shall start demolition on that date, or provide written notice to the Engineer and follow the procedures as previously noted.

RCBC BACKFILL OPERATIONS

Backfill on both sides of the culvert shall be performed in alternating lifts. The level of fill on one side of the culvert shall not be more than 8" above the opposing side. The top of slab elevation on each side of the culvert at culvert centerline shall be monitored during backfilling operations. If differential settlement is indicated, backfilling operations shall cease and the Engineer shall be notified.

hgm ASSOCIATES INC.

GENERAL NOTES

DESIGNED BY	SRO	CHECKED BY	SWM	CRAWFORD COUNTY	PROJECT NUMBER	BROS-C024(77)--5F-24	STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
DETAILED BY	FWS	CADD FILE	76085C02.dwg		HGM No. 76085		IOWA	7	2006	C.02	--

DRAINAGE STRUCTURES BY CONTRACTOR

104-4
04-30-96

LOCATION	DESIGN NUMBER	SIZE Ft.	KIND	LGTH. NEW CONST. Lin. Ft.	NO. OF APRONS	FLOW LINE ELEVATION				DIMENSIONS – Lin. Ft.				SKEW AHEAD Degrees		BY CONTRACTOR					REMARKS
										Total		Extensions				DIKE				COMP. BACKFILL Cu. Yds.	
						Left	Right	Other	Other	Left	Right	Left	Right	Left	Right	LT. Rt.	LOCATION STATION	TOP ELEV.	TYPE		
10+91.35, 0.00' LT	N/A	TWIN 12' x 12'	RCB	73'-0"	N/A	1274.75	1275.75			38'-0"	35'-0"				45						
11+22.39, 107.87' LT	N/A	4.0'	CMP	116'-0"	2	1285.61	1275.03			36'-0"	80'-0"			45							SEE SHEETS V.02 AND Y.01
9+67.65, 71.35' LT	N/A	2.0'	CMP	33'-0"	0	1279.50						33'-0"									SEE SHEETS V.02 AND Y.01
8+98.82, 163.88' LT	N/A	2.5'	CMP	51'-0"	0	1278.00						51'-0"									SEE SHEETS V.02 AND Y.01

TABULATION OF EROSION CONTROL DETAILS

100-11
10-27-98

LOCATION		OVER-SEEDING and FERTILIZING Acres	SEEDING and FERTILIZING Acres	MULCHING Acres	SPECIAL DITCH CONTROL		SOD Squares	CROWN-VETCH SEEDING Acres	SEEDING SPECIAL AREAS Acres	DITCH RESHAPING Station	MOWING Acres
Station to Station					Wood Excelsior Mat Squares						
8+34	12+59		1.7	1.7							

* TABULATION OF SAFETY CLOSURES

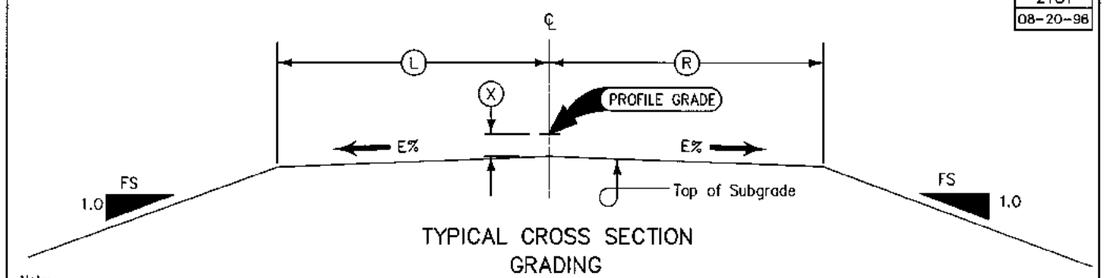
108-13A
10-28-97

Refer to Section 2518 of the Standard Specifications

STATION	CLOSURE TYPE		REMARKS
	Road Qty.	Hazard Qty.	
10+00, 0.00' LT		1	SOUTH HAZARD CLOSURE
12+00, 0.00' LT		1	NORTH HAZARD CLOSURE
10+97.96, 120.25' LT		1	SOUTH HAZARD CLOSURE
11+72.46, 82.88' LT		1	NORTH HAZARD CLOSURE
TOTALS		4	

* CONTRACTOR CAN NOT SHUT DOWN BOTH ROADS AT THE SAME TIME. CONTRACTOR SHALL INFORM THE ENGINEER OF CLOSING SCHEDULES.

2101
08-20-98



TYPICAL CROSS SECTION
GRADING
(Secondary Roads)

Note:

Normal sections shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

See appropriate Typical Sections in this plan for details of ditches and backslopes.

LOCATION			(L)	(R)	(X)	FS	E%
ROAD IDENTIFICATION	STATION TO STATION		Feet	Feet	Inches		
COUNTY ROAD L54	10+00, 0.00' LT	12+00, 0.00' LT	15.0	15.0	3	3	2
T AVENUE	10+97.96, 120.25' LT	11+72.46, 82.88' LT	11.0	11.0	3	3	2

hgm ASSOCIATES INC.

TABULATIONS

DESIGNED BY	SRO	CHECKED BY	SWM							
DETAILED BY	FWS	CADD FILE	76085C03.dwg	CRAWFORD COUNTY	PROJECT NUMBER HGM No. 76085	BROS-C024(77)--5F-24	STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
							IOWA	7	2006	C.03	---

POLLUTION PREVENTION PLAN

110-12A
10-21-03

All contractors/subcontractors shall conduct their operations in a manner that minimizes erosion and prevents sediments from leaving the road right-of-way. The prime contractor shall be responsible for compliance and implementation of the Pollution Prevention Plan (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.

1. SITE DESCRIPTION

This Pollution Prevention Plan (PPP) is for the construction of a reinforced concrete box culvert located on 110th Street between S Avenue and T Avenue in Crawford County.

This PPP covers approximately 1.7 acres with an estimated 1.7 acres being disturbed.

The PPP is located in an area of one soil association (NKB — Napier-Kennebec-Nodaway). The estimated average NRCS runoff curve number for this PPP after completion will be 75.

Refer to the project plans for locations of typical slopes, ditch grades, and major structural and non-structural controls. A copy of this plan will be on file at the project engineer's office. Runoff from this work will flow into South Willow Creek.

POTENTIAL SOURCES OF POLLUTION
Site sources of pollution generated as a result of this work relate to silts and sediment which may be transported as a result of a storm event. However this PPP provides conveyance for other (non-project related) operations. These other operations have storm water runoff, the regulation of which is beyond the control of the PPP. Potentially this runoff can contain various pollutants related to site-specific land uses. Examples are:

Rural Agricultural Activities:
Runoff from agricultural land use can potentially contain chemicals including herbicides, pesticides, fungicides and fertilizers.

Commercial and Industrial Activities:
Runoff from commercial and industrial land use may contain constituents associated with the specific operation. Such operations are subject to potential leaks and spills, which could commingled with run-off from the facility. Pollutants associated with commercial and industrial activities are not readily available since they are typically proprietary.

2. CONTROLS

It is not anticipated that silt fence will be required for this project. If it is determined during construction that there are locations where runoff may move off site, silt fence will be ordered as an additional pay item to ensure the disturbed soil stays on site. Vegetation in areas not needed for construction shall be preserved. As areas reach their final grade intercepting ditches, letdowns and bridge edge drains shall be constructed as illustrated in the plans. If construction activity is not planned to occur in a disturbed area for at least 21 days, the area shall be stabilized by temporary seeding or mulching within 14 days. Other stabilizing methods shall be used outside the seeding time period.

This work shall be done in accordance with Section 2602 of the Standard Specifications. If the work involved is not applicable to any contract items, the work shall be paid for according to Article 1109.03 paragraph 8.

As work progresses, additional erosion control items may be required as determined by the engineer after field investigation. These may be items such as straw bales, silt fence, additional revetment and other appropriate measures shall be installed by the contractor as directed by the engineer. The contractor will complete the construction with establishment of permanent perennial vegetation and mulch of all the disturbed areas.

3. OTHER CONTROLS

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 laws, rules or regulations shall apply.

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 occur, they will be handled according to all federal, State, and Local regulations in effect at the time.

4. MAINTENANCE

The contractor is required to maintain all temporary erosion control measures in proper working order, including, repairing, or replacing them throughout the contract period. Cleaning the silt control devices shall begin when features have lost 50% of their capacity.

5. INSPECTIONS

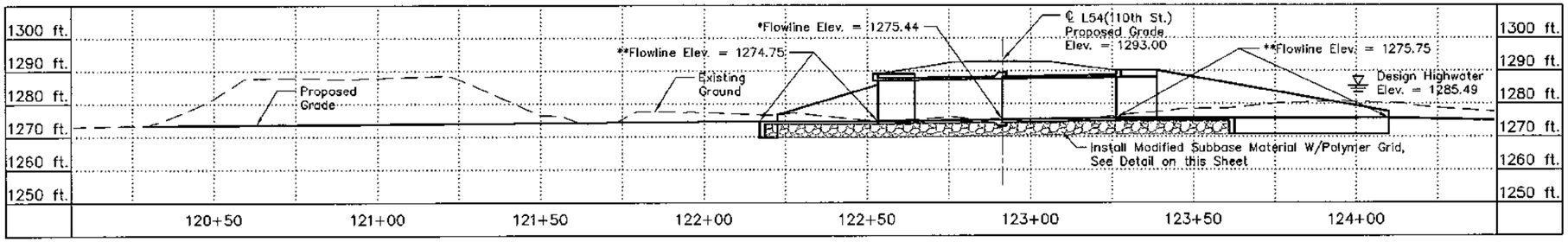
Inspections shall be made jointly by the contractor and the contracting authority every seven days and after each rain event that is one half inch or greater. The contractor shall immediately begin corrective action on all deficiencies found. The findings of this inspection shall be recorded in the project diary. This PPP may be revised based on findings of the inspection. The contractor shall implement all revisions. All corrective actions shall be completed within 3 calendar days of the inspection.

6. NON-STORM DISCHARGES

This includes bridge end drains. The velocity of the discharge from these features may be controlled by use of patio block, Class A stone or erosion stone.

hgm ASSOCIATES INC.

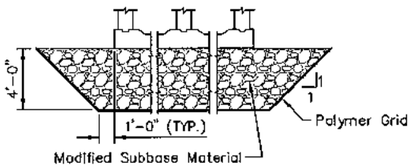
DESIGNED BY SRO	CHECKED BY SWM								
DETAILED BY FWS	CADD FILE 76085C04.dwg	CRAWFORD COUNTY	PROJECT NUMBER HGM No. 76085	BROS-C024(77)--5F-24	STATE IOWA	FHWA REGION 7	FISCAL YEAR 2008	SHEET NO. C.04	TOTAL SHEETS --



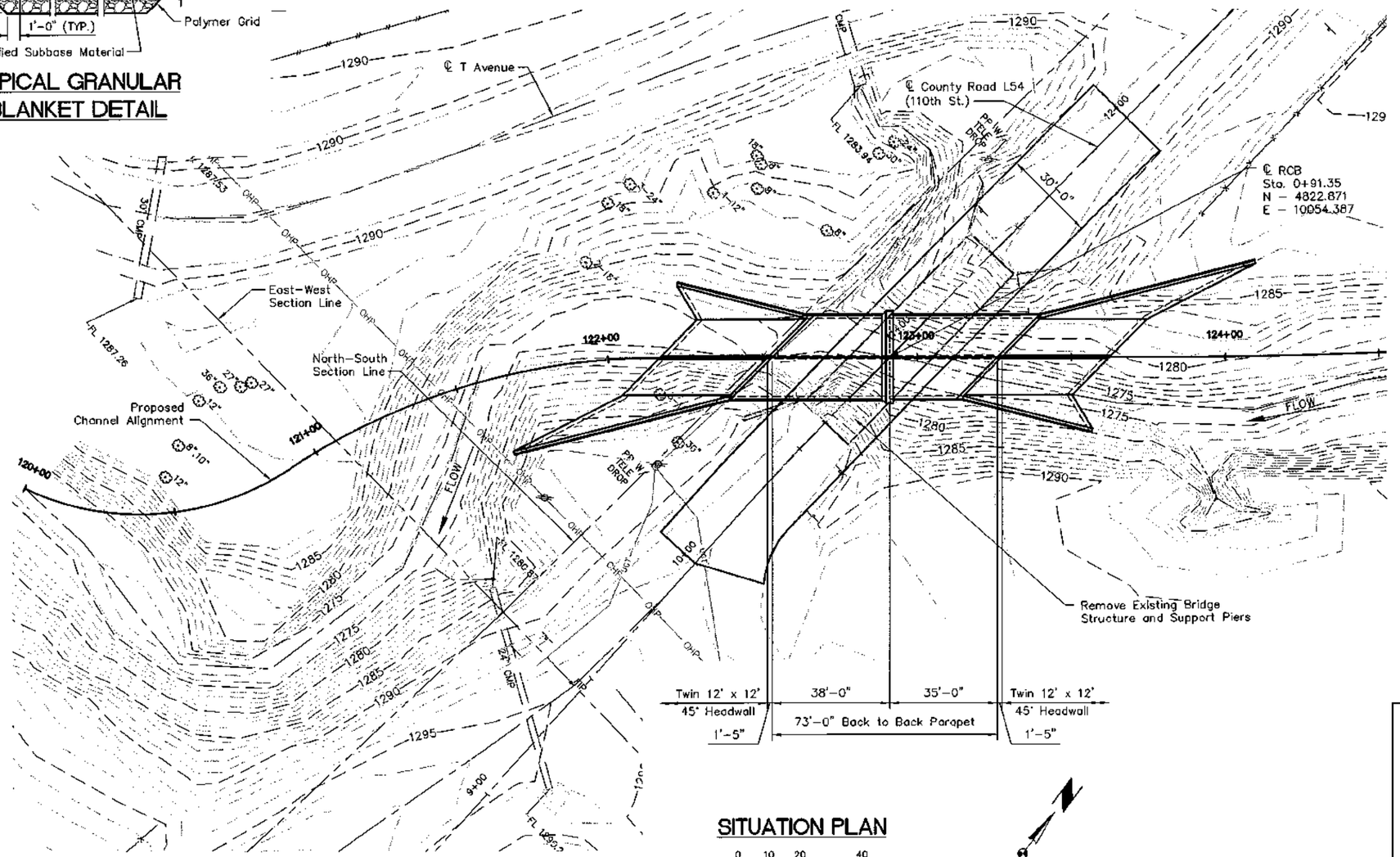
LONGITUDINAL SECTION ALONG CENTERLINE OF CULVERT

* NOTE – Flowline Elevation Includes an Allowance of 0.42 Feet for Structure Settlement.

** NOTE – Flowline Elevation Includes an Allowance of 0.25 Feet for Structure Settlement.



TYPICAL GRANULAR BLANKET DETAIL



SITUATION PLAN

0 10 20 40
FEET

HYDRAULIC DATA

DRAINAGE AREA	4.23 mi^2
REACH SLOPE	33.54 ft/mi
DESIGN DISCHARGE	2260.00 cfs
D.H.W. ELEVATION	1285.49 ft
D.H.W. DEPTH	10.49 ft
Q_{25}	2260.00 cfs
Q_{25}HW (NATURAL STAGE)	1285.49 ft
Q_{100}	3485.00 cfs
Q_{100} HW (NATURAL STAGE)	1289.26 ft

BENCHMARKS:

CP#6 – ⅝" ø Rebar, East Side of 110th Street, North of Existing Bridge.
N – 5070.013
E – 10061.256
Elevation = 1292.17

LOCATION:

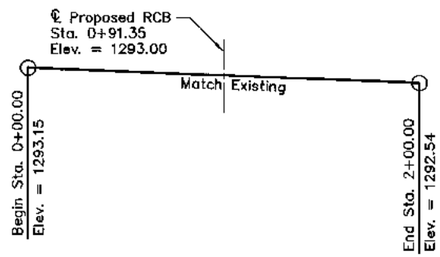
SECTION 5, T82N – R41W
COUNTY ROAD L54 OVER
SOUTH WILLOW CREEK
BOYER TOWNSHIP
CRAWFORD COUNTY

TRAFFIC ESTIMATE:

A.D.T. = 10 VPD 2004

NOTE: ALL DIMENSIONS ON THESE PLANS ARE IN FEET UNLESS OTHERWISE NOTED. ALL STATIONS AND ELEVATIONS ARE IN FEET.

PROPOSED PROFILE GRADE:



DESIGN FOR 45° SKEW (RHA)

TWIN 12' x 12' x 73'-0 R.C.B. CULVERT

SITUATION PLAN

STATION: 0+91.35 DECEMBER, 2005

CRAWFORD COUNTY

IOWA DEPARTMENT OF TRANSPORTATION--HIGHWAY DIVISION

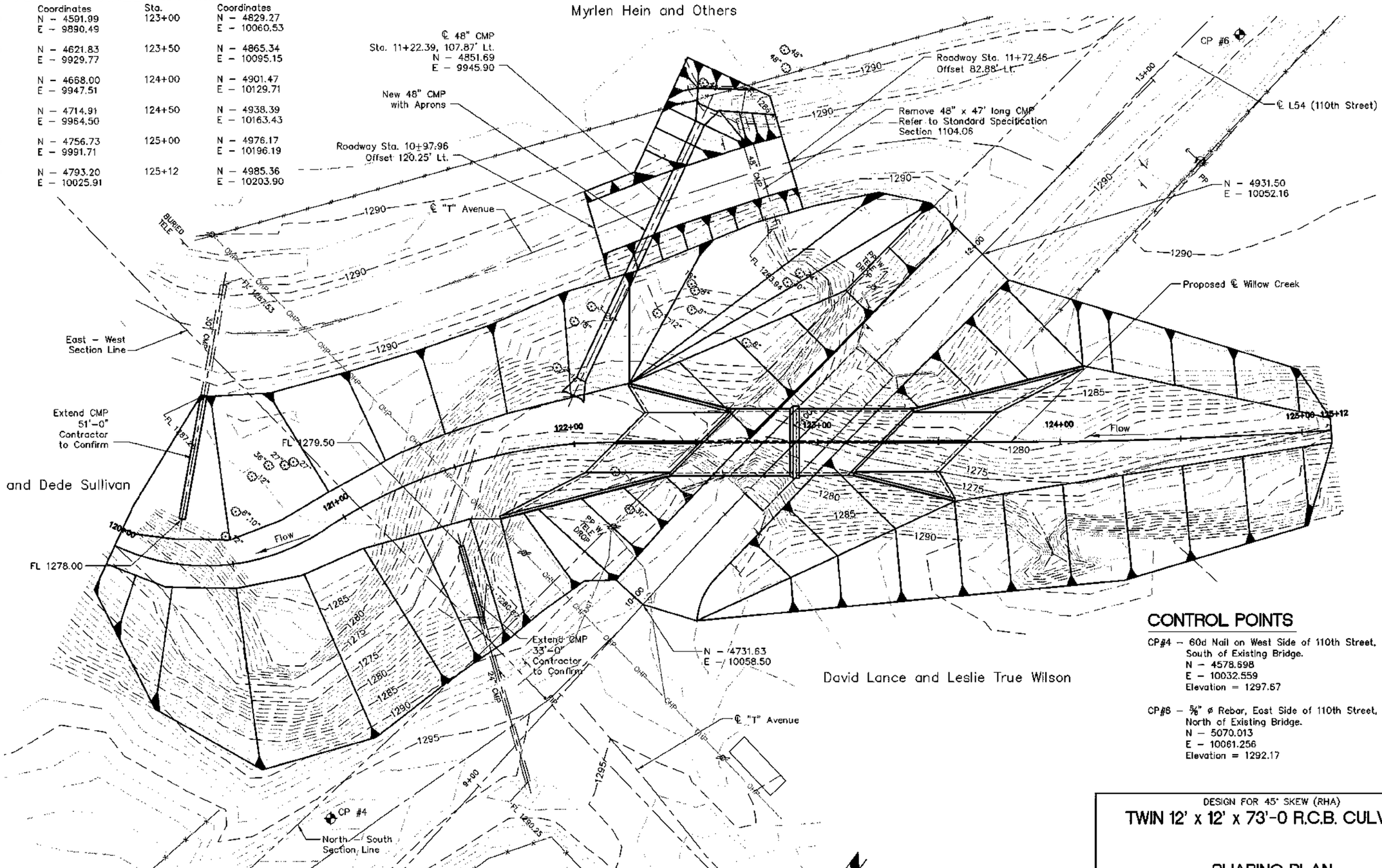
DESIGN SHEET NO. X OF XX FILE NO. XXXX DESIGN NO. XXX

hgm ASSOCIATES INC

DESIGNED BY SRO DETAILED BY FWS/CAP	CHECKED BY SWM CADD FILE 76085V01-V02.dwg	CRAWFORD COUNTY	PROJECT NUMBER HGM No. 76085	BROS-C024(77)--5F-24	STATE IOWA	FHWA REGION 7	FISCAL YEAR 2006	SHEET NO. V.01	TOTAL SHEETS --

PROPOSED CHANNEL ALIGNMENT

Sta.	Coordinates	Sta.	Coordinates
120+00	N – 4591.99 E – 9890.49	123+00	N – 4829.27 E – 10060.53
120+50	N – 4621.83 E – 9929.77	123+50	N – 4865.34 E – 10095.15
121+00	N – 4658.00 E – 9947.51	124+00	N – 4901.47 E – 10129.71
121+50	N – 4714.91 E – 9964.50	124+50	N – 4938.39 E – 10163.43
122+00	N – 4756.73 E – 9991.71	125+00	N – 4976.17 E – 10196.19
122+50	N – 4793.20 E – 10025.91	125+12	N – 4985.36 E – 10203.90



SHAPING PLAN

0 10 20 40
FEET

CONTROL POINTS

CP#4 – 60d Nail on West Side of 110th Street,
South of Existing Bridge.
N – 4578.698
E – 10032.559
Elevation = 1297.67

CP#6 – ⅝" ø Rebar, East Side of 110th Street,
North of Existing Bridge.
N – 5070.013
E – 10061.256
Elevation = 1292.17

DESIGN FOR 45° SKEW (RHA)

TWIN 12' x 12' x 73'-0 R.C.B. CULVERT

SHAPING PLAN

STATION: 0+91.35

DECEMBER, 2005

CRAWFORD COUNTY

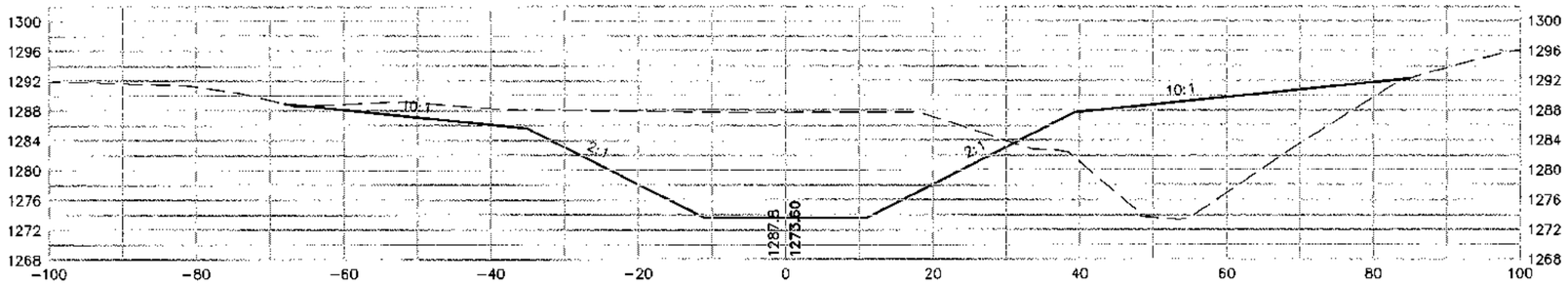
IOWA DEPARTMENT OF TRANSPORTATION--HIGHWAY DIVISION

DESIGN SHEET NO. X OF XX FILE NO. XXXX DESIGN NO. XXX

hgm ASSOCIATES INC

DESIGNED BY SRO DETAILED BY FWS/CAP	CHECKED BY SWM CADD FILE 76085V01_V02.dwg	CRAWFORD COUNTY	PROJECT NUMBER HGM No. 76085	BROS-C024(77)--5F-24	STATE IOWA	FHWA REGION 7	FISCAL YEAR 2006	SHEET NO. V.02	TOTAL SHEETS —

120+75



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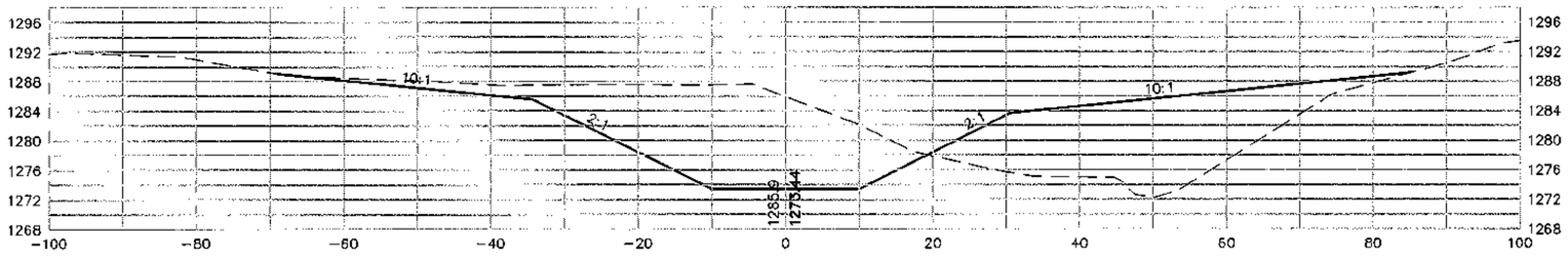

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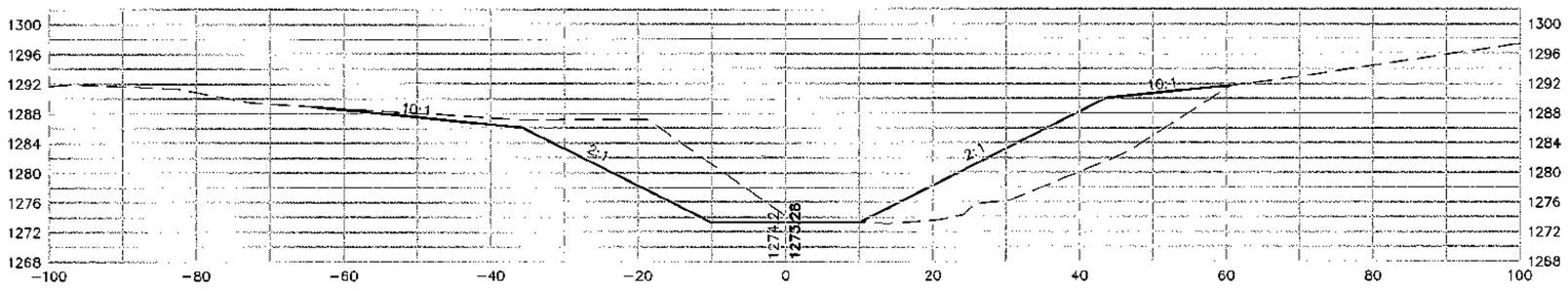

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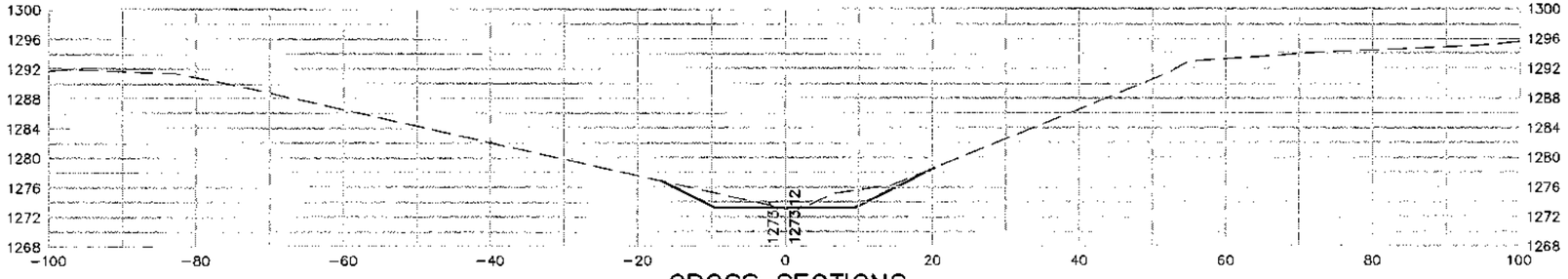


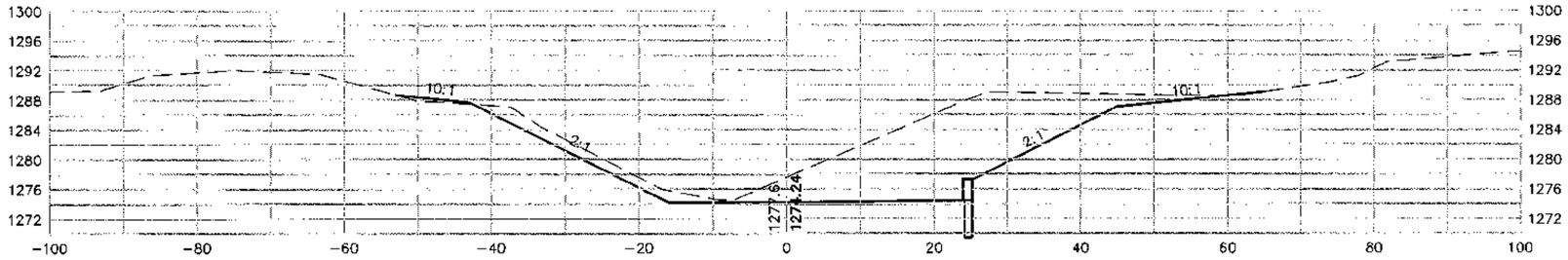
CROSS SECTIONS

SCALE: 1" = 20'-0"

hgm ASSOCIATES INC.

CHANNEL CROSS SECTIONS

121+75



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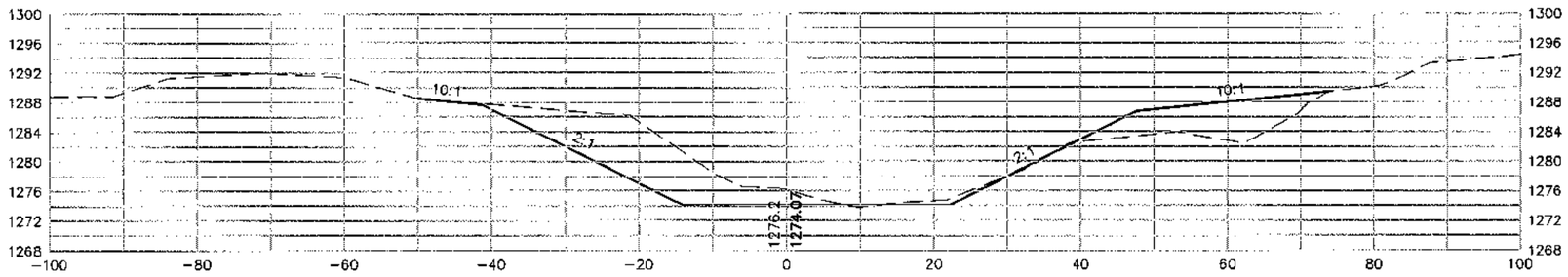

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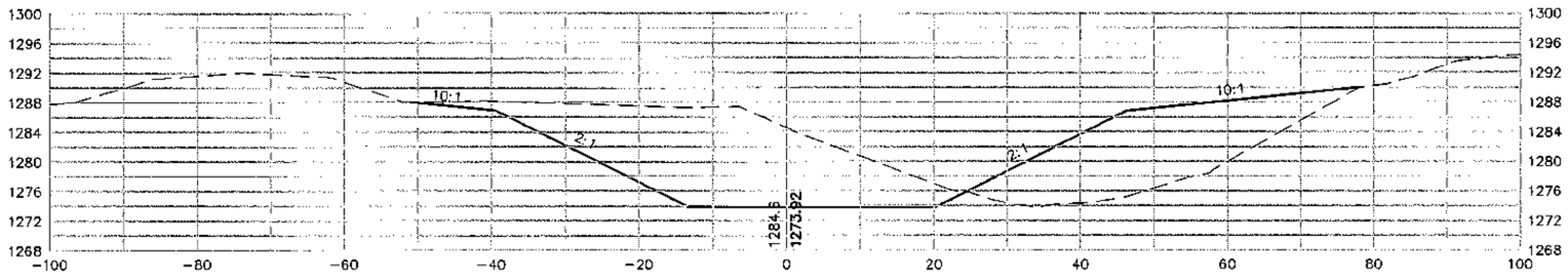
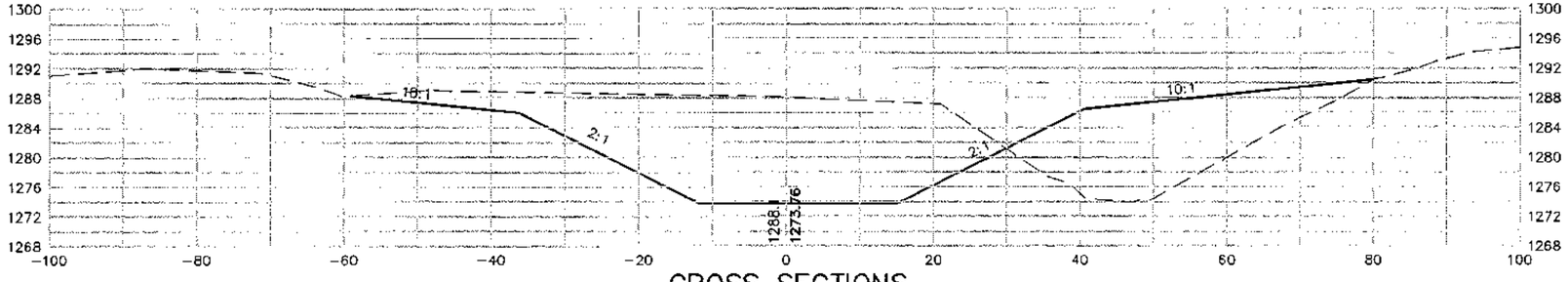


121+00



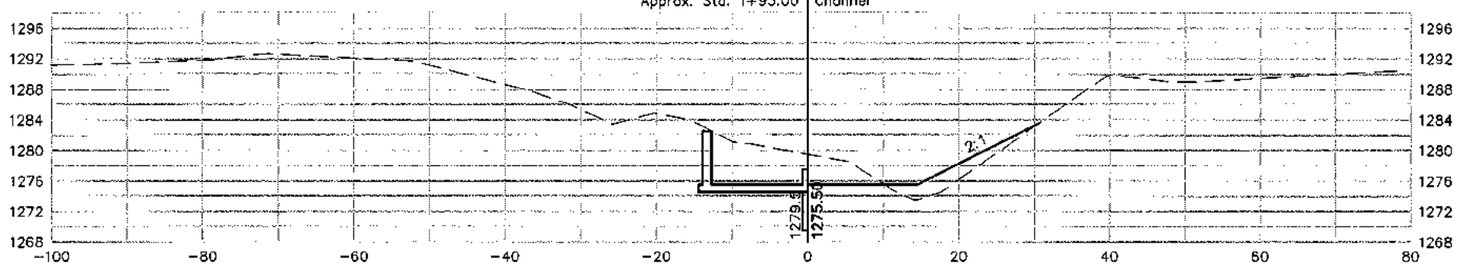
CROSS SECTIONS

SCALE: 1" = 20'-0"

hgm ASSOCIATES INC.

CHANNEL CROSS SECTIONS

123+62.43



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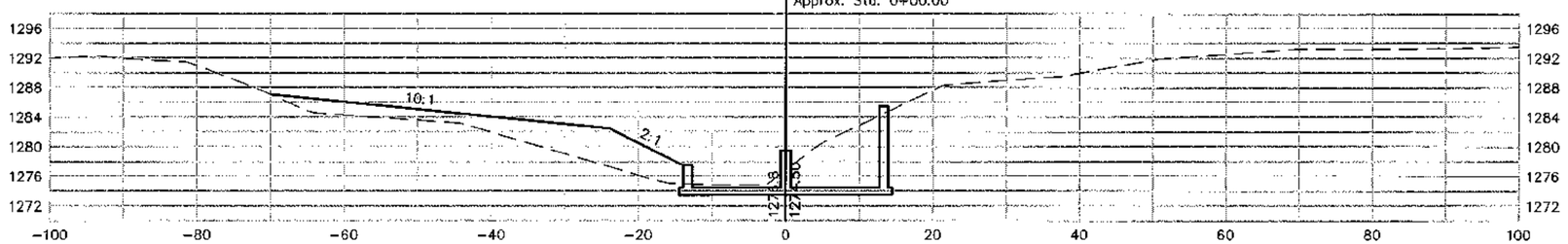
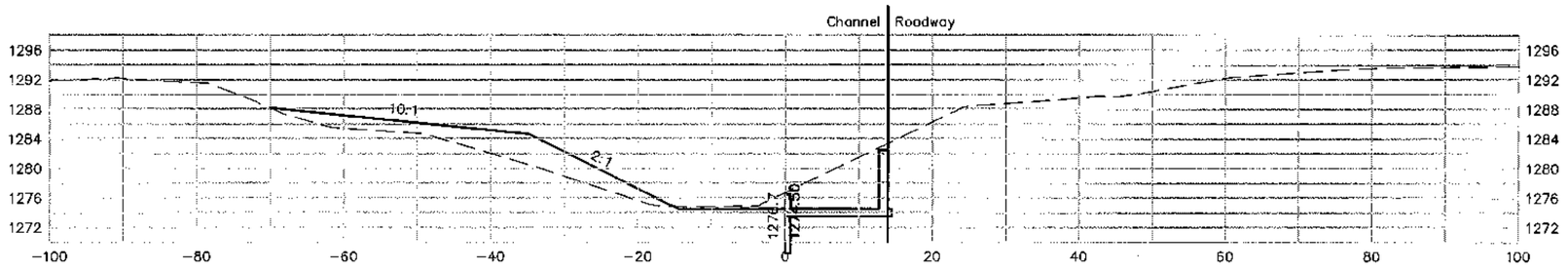


122+16.83



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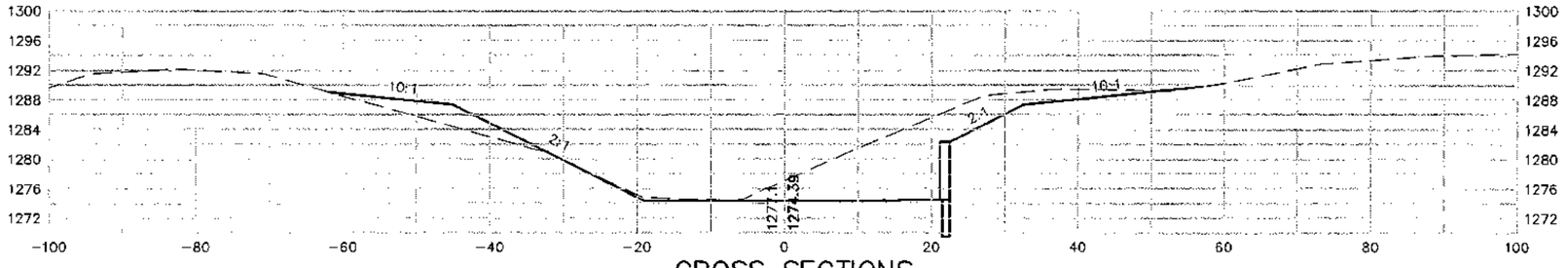


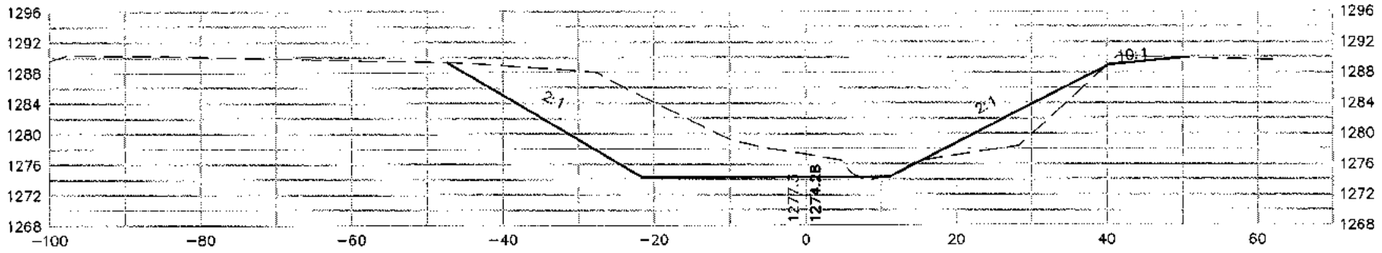
CROSS SECTIONS

SCALE: 1" = 20'-0"

hgm ASSOCIATES INC.

CHANNEL CROSS SECTIONS

124+50



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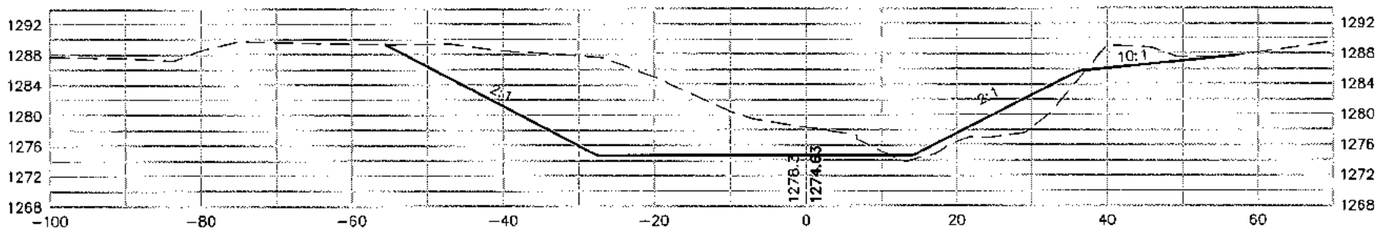

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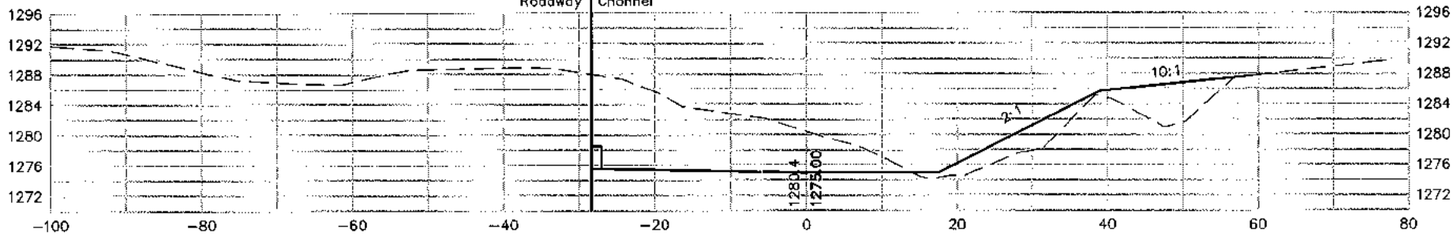

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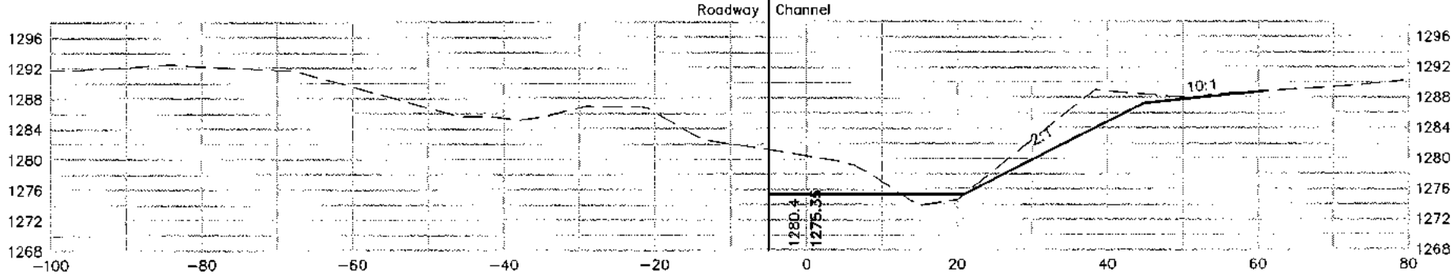


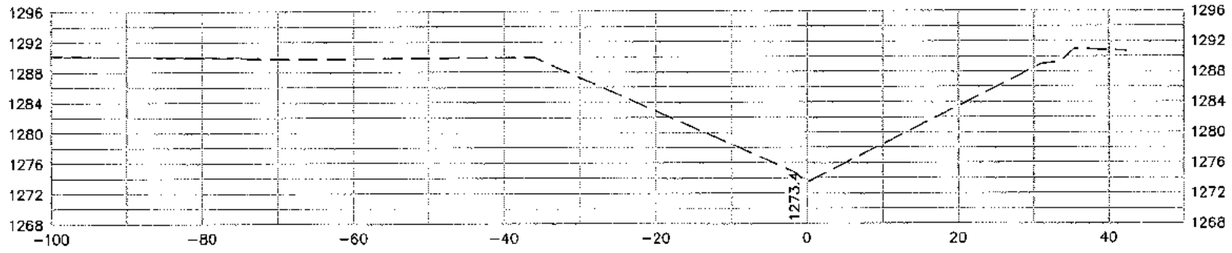
hgm ASSOCIATES INC.

CROSS SECTIONS

SCALE: 1" = 20'-0"

CHANNEL CROSS SECTIONS

125+12



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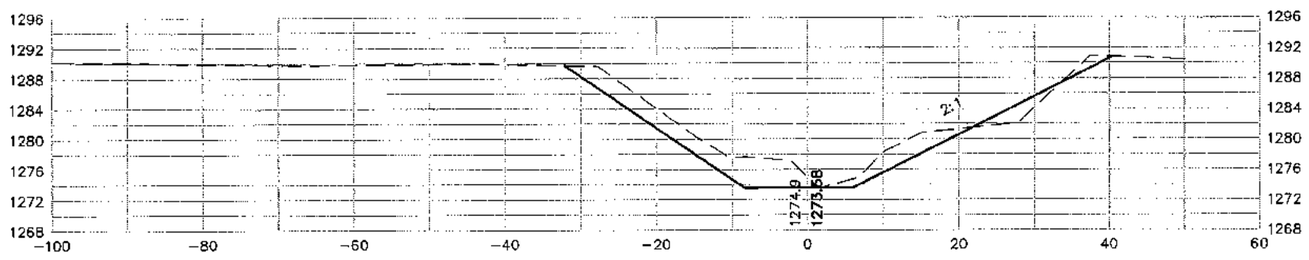

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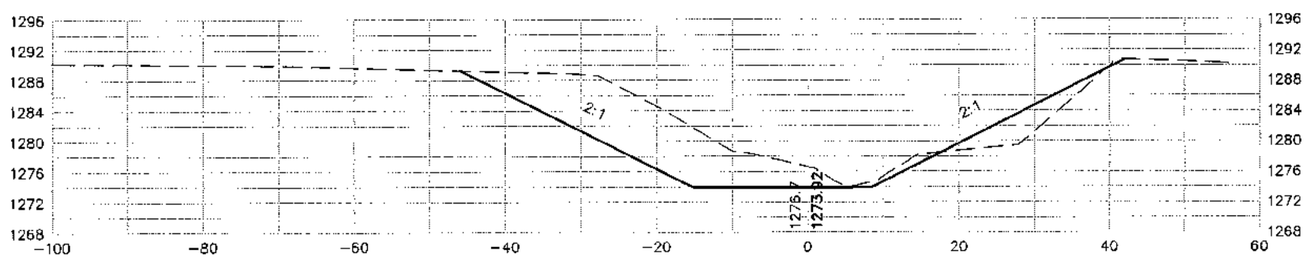


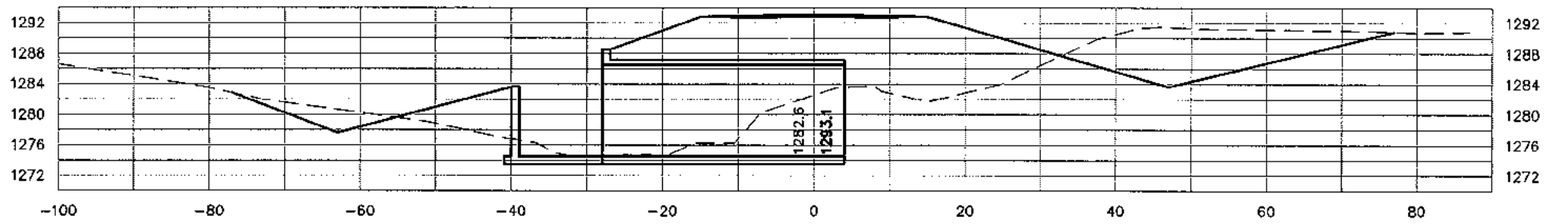
hgm ASSOCIATES INC.

CROSS SECTIONS

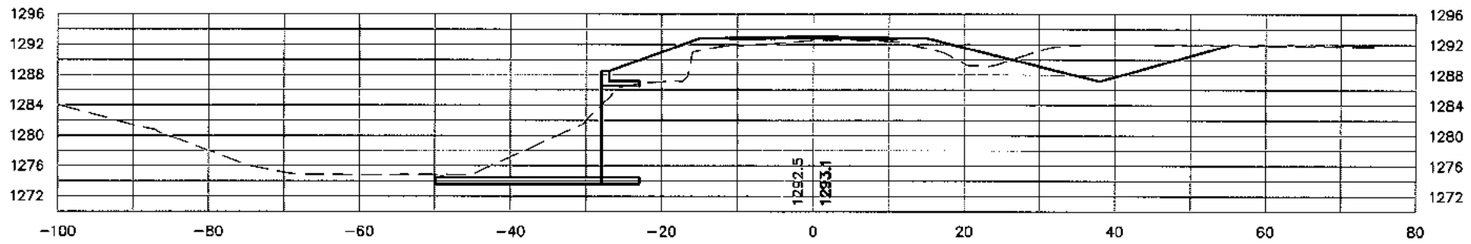
SCALE: 1" = 20'-0"

CHANNEL CROSS SECTIONS

10+75

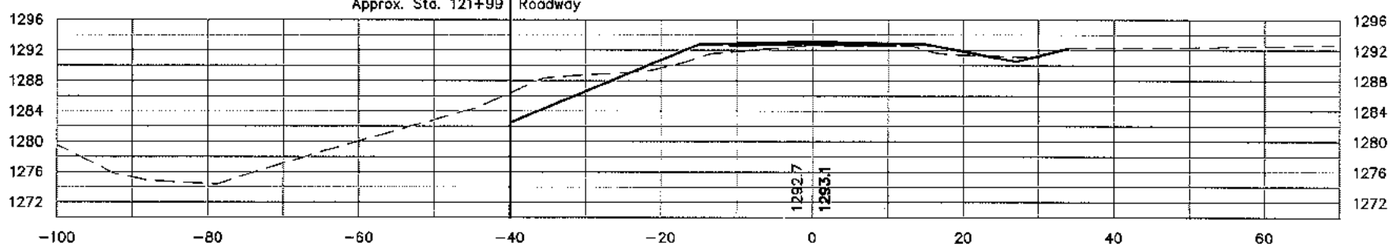


10+50



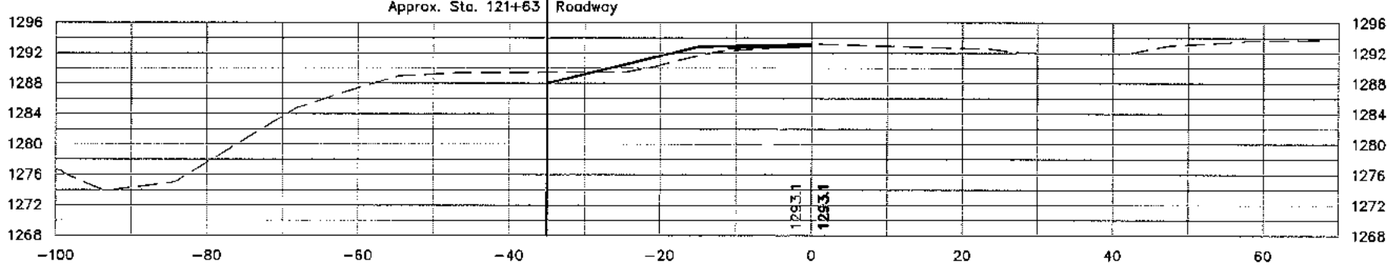
Channel
Approx. Sta. 121+99 Roadway

10+25



Channel
Approx. Sta. 121+63 Roadway

10+00



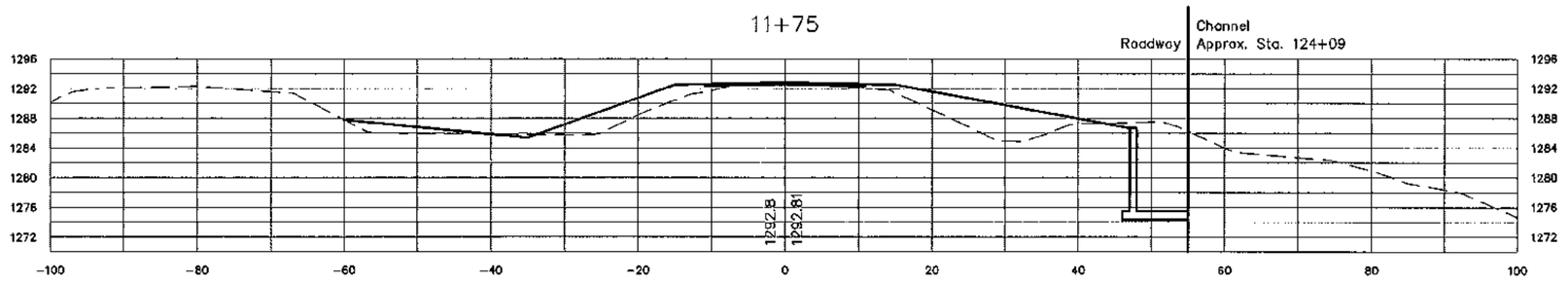
hgm ASSOCIATES INC.

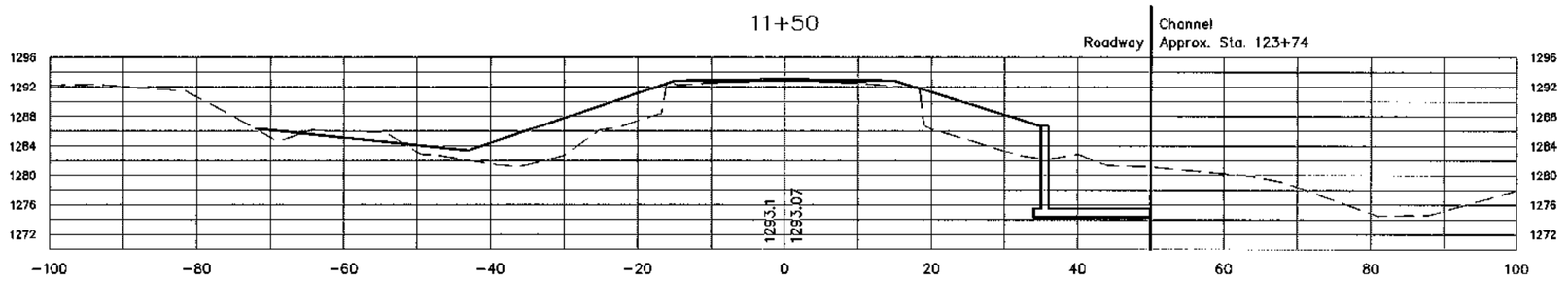
CROSS SECTIONS

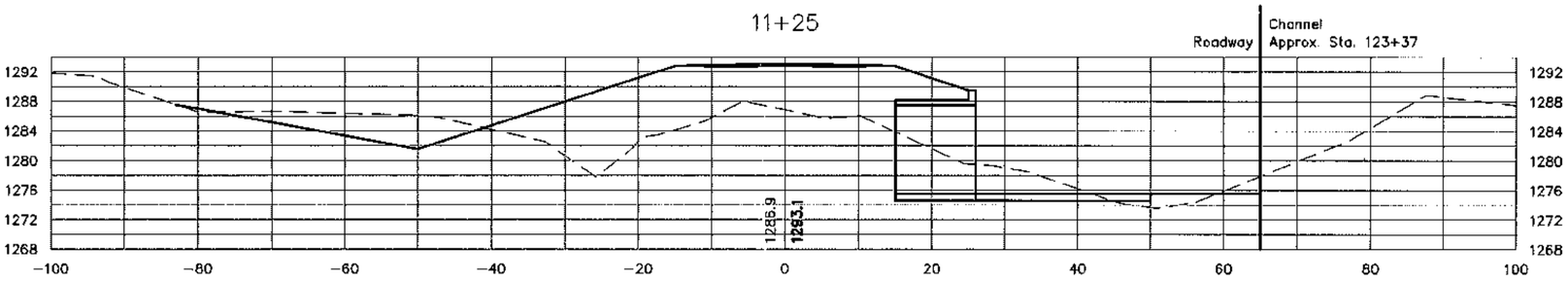
SCALE: 1" = 20'-0"

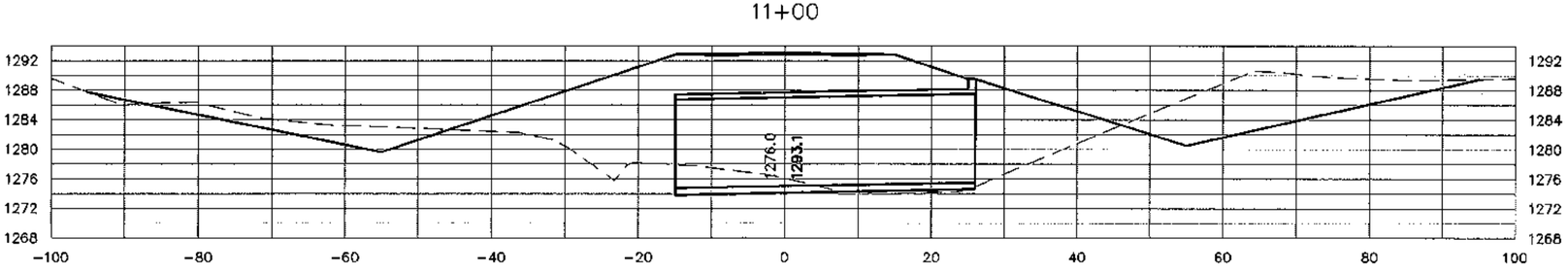
ROADWAY CROSS SECTIONS

DESIGNED BY BLK	CHECKED BY SWM		CRAWFORD COUNTY	PROJECT NUMBER	BROS-C024(77)--5F-24	STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
DETAILED BY FWS	CADD FILE 76085X01-X03.dwg			HGM No. 76085		IOWA	7	2005	X.01	--









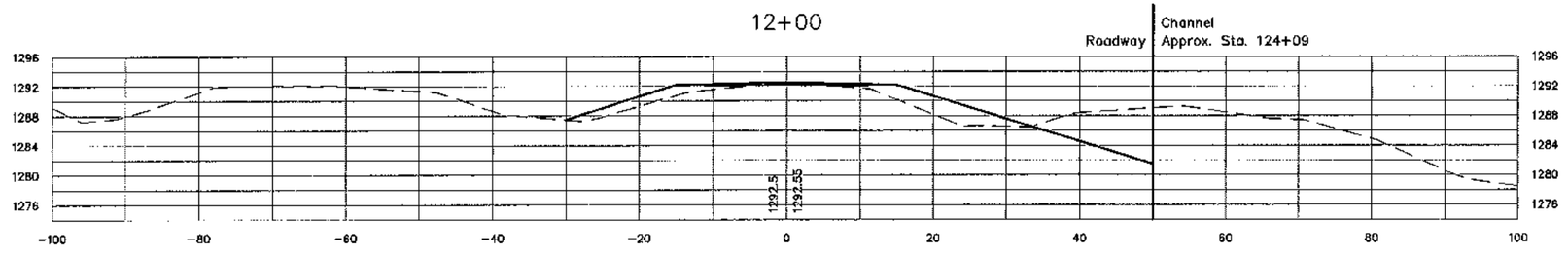
hgm ASSOCIATES INC.

CROSS SECTIONS

SCALE: 1" = 20'-0"

ROADWAY CROSS SECTIONS

DESIGNED BY BLK	CHECKED BY SWM		CRAWFORD COUNTY	PROJECT NUMBER	BROS-C024(77)--5F-24	STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
DETAILED BY FWS	CADD FILE 76085X01-X03.dwg			HGM No. 76085		IOWA	7	2005	X.02	--



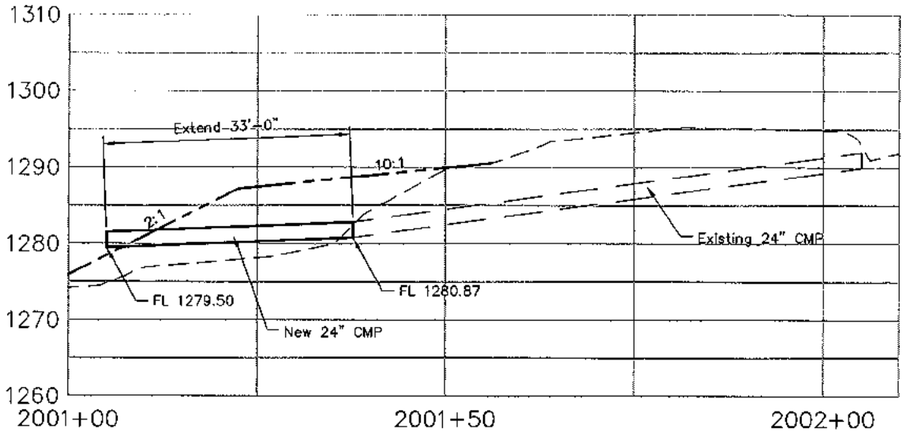
CROSS SECTIONS

SCALE: 1" = 20'-0"

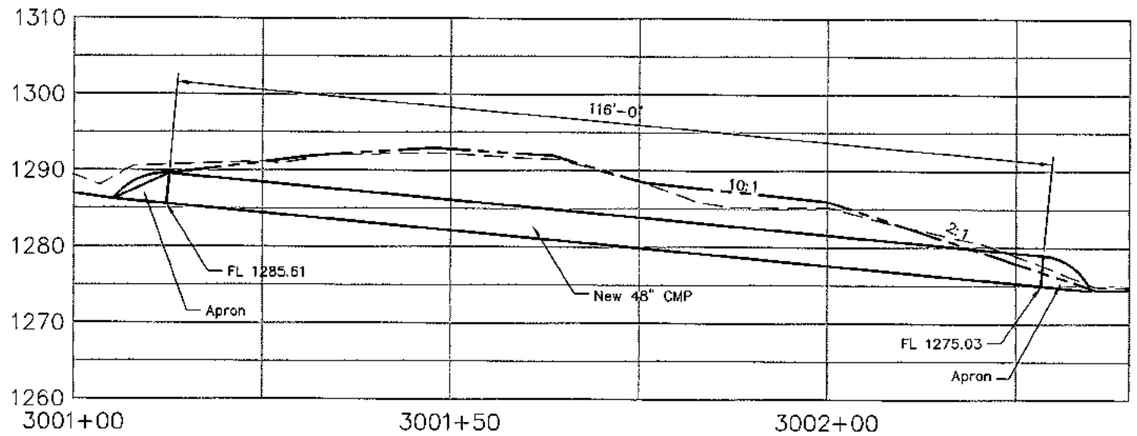
hgm ASSOCIATES INC.

ROADWAY CROSS SECTIONS

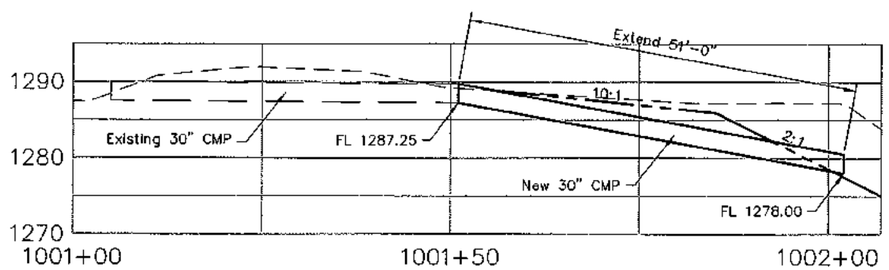
DESIGNED BY BLK	CHECKED BY SWM		CRAWFORD COUNTY	PROJECT NUMBER	BROS-C024(77)--5F-24	STATE	ENGR. REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
DETAILED BY FWS	CADD FILE 76085X01-X03.dwg			HGM No. 76085		IOWA	7	2005	X.03	--



24" PIPE



48" PIPE



30" PIPE

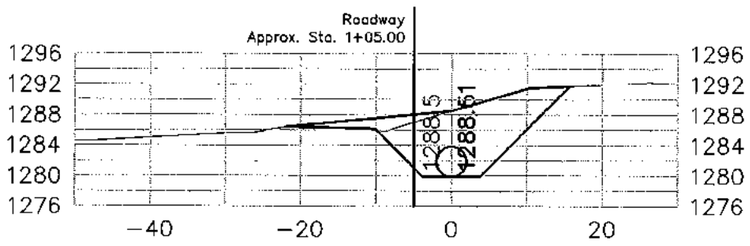
hgm ASSOCIATES INC.

PROFILES
SCALE: 1" = 20'-0"

CMP PROFILES

DESIGNED BY	BLK	CHECKED BY	SWM								
DETAILED BY	CAP	CADD FILE	76085Y01_Y02.dwg	CRAWFORD COUNTY	PROJECT NUMBER HGM No. 76085	BROS-C024(77)--5F-24	STATE IOWA	FHWA REGION 7	FISCAL YEAR 2005	SHEET NO. Y.01	TOTAL SHEETS --

3001+75



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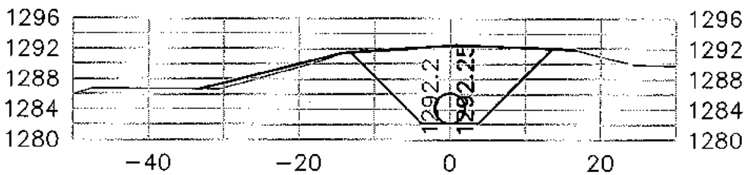

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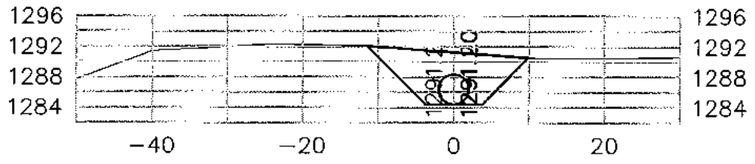

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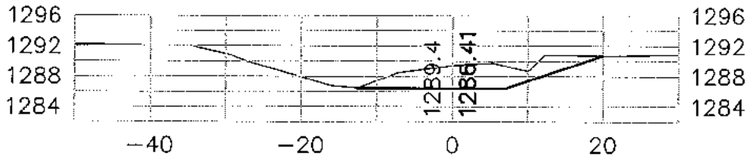
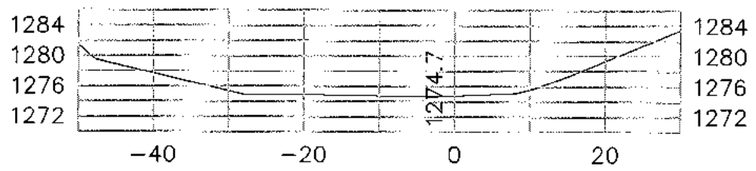


3002+40



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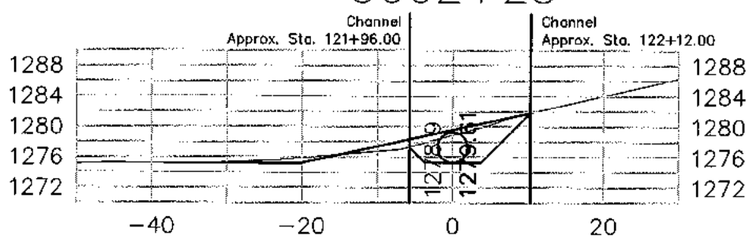
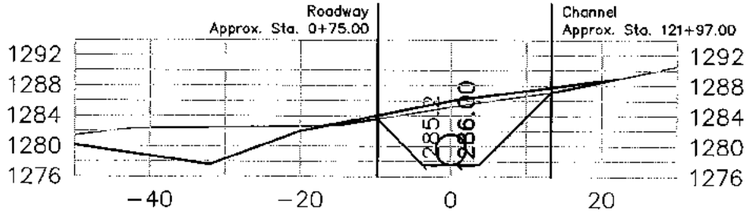


3002+00



hgm ASSOCIATES INC.

DESIGNED BY BLK CHECKED BY SWM
DETAILED BY CAP CADD FILE 76085Y01_Y02.dwg

CROSS SECTIONS
SCALE: 1" = 20'-0"

CRAWFORD COUNTY

PROJECT NUMBER
HGM No. 76085

BROS-C024(77)--5F-24

STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7	2005	Y.02	--

48' PIPE CROSS SECTIONS