



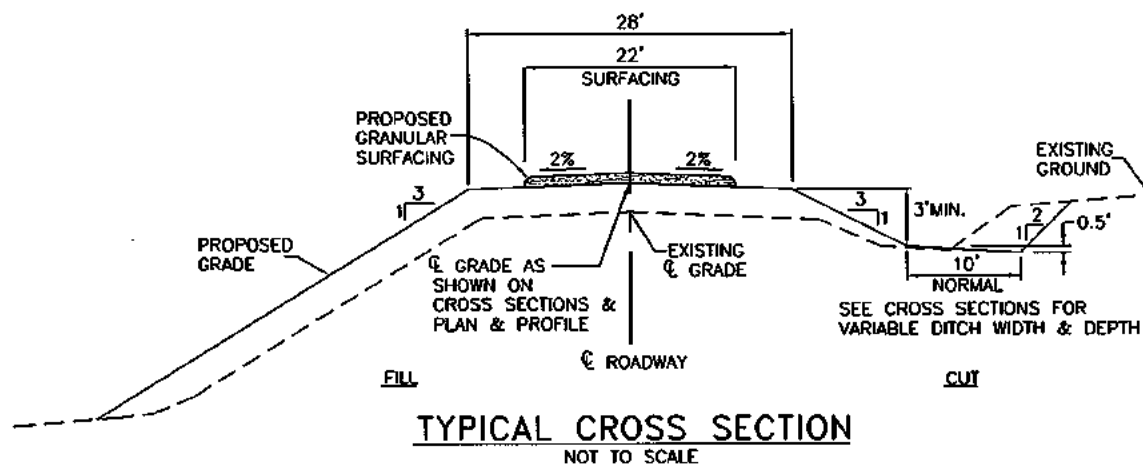
Iowa Department of Transportation  
Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

**SECONDARY ROAD SYSTEM**  
**CRAWFORD COUNTY**  
PROJECT NO. BROS-C024(82)--8J-24  
BRIDGE REPLACEMENT - CCS  
ON T AVENUE OVER  
BUCK CREEK

SCALES: AS NOTED

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



**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 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."

**PERMITS**  
THIS PROJECT IS COVERED BY U.S. ARMY CORPS OF ENGINEERS' NATIONWIDE PERMIT NOS. 13, 14 & 41.  
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.

**DRAWING APPROVAL**  
ALL SHOP DRAWINGS THAT REQUIRE APPROVAL SHALL BE APPROVED BY SUNDQUIST ENGINEERING, P.C.  
ADDRESS: 120 SOUTH MAIN, P.O. BOX 220  
DENISON, IOWA 51442-0220  
TELEPHONE: (712)263-8118  
THESE SHOP DRAWINGS SHALL NOT BE SENT TO IOWA D.O.T. OFFICE OF BRIDGE DESIGN.

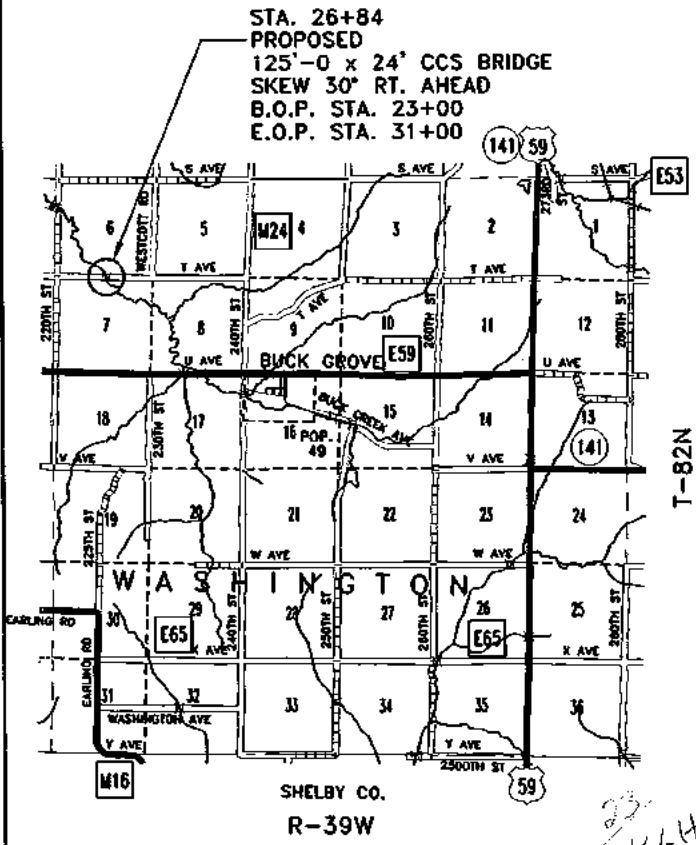
TOTAL SHEETS	17
PROJECT NUMBER	BROS-C024(82)--8J-24
R.O.W. PROJECT NUMBER	
PROJECT IDENTIFICATION NUMBER	
FHWA STRUCTURE NO.	126600

INDEX OF SHEETS	
NO.	DESCRIPTION
A1	TITLE SHEET
B1-2	ESTIMATE OF QUANTITIES AND GENERAL INFORMATION
C1-2	TABULATIONS, TYPICALS
D1	PLAN AND PROFILE SHEET
O1	SOILS SHEET
U1-2	SPECIAL DETAILS
U3	DRAINAGE STRUCTURE DETAILS
V1	BRIDGE SITUATION PLAN
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Z1-3	CROSS SECTIONS - CHANNEL

STANDARD BRIDGE PLANS		
STANDARD	ISSUED	REVISED
J24-87	JANUARY, 1987	
J24-5-87	JANUARY, 1987	
J24-6-87	JANUARY, 1987	
J24-7-87	JANUARY, 1987	
J24-8-87	JANUARY, 1987	
J24-16-87	JANUARY, 1987	
J24-19-87	JANUARY, 1987	6-89
P10A	AUGUST, 1988	09-06

MILEAGE SUMMARY		
LOCATION	LIN. FT.	MILES
BOP STA. 23+00 TO EOP STA. 31+00	800.00	
DEDUCT BRIDGE AT STA. 26+84	128.46	
NET LENGTH OF ROADWAY	671.54	0.127

STANDARD ROAD PLANS					
The following Standard Road Plans shall be considered applicable to construction work on this project.					
NUMBER	DATE	NUMBER	DATE	NUMBER	DATE
RC-17	04-18-06	RF-7	04-15-03	RL-4	09-21-99
RE-47	10-19-04	RF-30A	10-17-06	RL-7	12-03-96
RE-48A	10-19-04	RF-32	04-18-06	TC-252	10-17-06



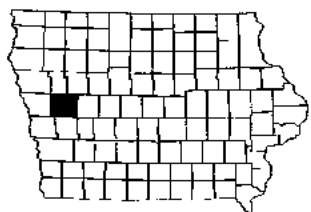
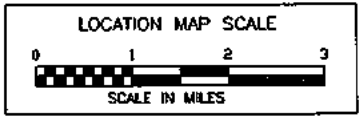
**IOWA ONE CALL**  
Call Before You Dig!  
1.800.292.8989  
Call the toll-free number at least 48 hours prior to ALL excavations in Iowa.

04-30-02	101-4	
DESIGN DATA RURAL		
2004 AADT	45	V.P.D.
2026 AADT	70	V.P.D.
201X DHV	X	V.P.H.
TRUCKS	X	%
TOTAL DESIGN ESALS		

Approved  
*Robert Johnson*  
*Mark Schaub*  
*Steve Wilson*  
*Dan W. Muller*  
BOARD OF SUPERVISORS

Approved  
*Troy J. Groth*  
CRAWFORD COUNTY ENGINEER  
DATE  
*11/19/06*  
TROY J. GROTH, P.E. #14450  
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.  
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2007.  
PAGES OR SHEETS COVERED BY THIS SEAL:  
ALL SHEETS

**SUNDQUIST ENGINEERING, P.C.**  
CONSULTING ENGINEERS  
HIGHWAYS • MUNICIPAL • MAPING • SURVEYING  
120 S. MAIN, P.O. BOX 220, DENISON, IOWA 51442-0220  
PHONE: (712)263-8118 FAX: (712)263-2181



BRIDGE REPLACEMENT - CCS  
BROS-C024(82)--8J-24  
CRAWFORD COUNTY

126600

## ESTIMATE REFERENCE INFORMATION

### 2102-2710070 EXCAVATION, CLASS 10, ROADWAY AND BORROW

TYPE A COMPACTION WILL BE REQUIRED. REFER TO PLAN SHEET C1 FOR TABULATION OF EARTHWORK QUANTITIES.

SUITABLE MATERIAL FROM CHANNEL EXCAVATION AND CLASS 20 EXCAVATION MAY BE USED FOR EMBANKMENT MATERIAL. ADDITIONAL NECESSARY BORROW SHALL BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR--SELECTED BORROW SITE AND MATERIAL SHALL BE APPROVED BY THE ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CLEARANCES FOR BORROW SITES IN ACCORDANCE WITH ARTICLE 2102.06.

OVERHAUL IS INCIDENTAL TO THE PRICE BID FOR THIS ITEM. THE HAUL ROUTE DESIGNATION SHALL BE IN ACCORDANCE WITH ARTICLE 1105.13 EXCEPT THE CONTRACTOR SHALL SUBMIT THE HAUL ROAD REQUEST TO THE ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR INVESTIGATING WHICH POTENTIAL COUNTY HAUL ROADS ARE EMBARGOED AND WHEN THE EMBARGO IS IN EFFECT.

FILL MATERIALS SHALL CONTAIN NO SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS. FILL SHALL NOT BE PLACED UPON A FROZEN SURFACE, NOR SHALL SNOW, ICE OR FROZEN MATERIAL BE INCORPORATED IN THE FILL.

FILL PLACEMENT SHALL TAKE PLACE ON NEAR HORIZONTAL SURFACES. THE EXISTING SURFACES SHALL BE BENCHED PRIOR TO PLACEMENT OF FILL UPON THEM. NEAR VERTICAL BENCHES AT 3 TO 5 FEET IN HEIGHT SHALL BE REQUIRED IN ORDER TO EFFECT A GOOD BOND BETWEEN THE FILL AND THE EXISTING SURFACES. NO SEPARATE PAYMENT WILL BE MADE FOR BENCHING OF THE EXISTING SURFACES. SUCH BENCHING SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM.

PAYMENT SHALL BE BASED ON PLAN QUANTITY. CROSS SECTIONS SHALL NOT BE TAKEN AFTER EXCAVATION FOR THE PURPOSE OF DETERMINING ACTUAL QUANTITIES.

### 2104-2710020 EXCAVATION, CLASS 10, CHANNEL

EXCESS MATERIAL AND UNSUITABLE MATERIAL NOT DESIRABLE TO BE INCORPORATED INTO THE WORK INVOLVED ON THIS PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE HAULED FROM THE SITE. THE COST OF HAULING AND DISPOSING OF THIS MATERIAL SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR CLASS 10 CHANNEL EXCAVATION. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED.

AT CONTRACTOR'S OPTION, EXISTING BROKEN CONCRETE MAY BE DISPOSED OF ON THE CHANNEL SLOPES AS DIRECTED BY THE ENGINEER OR DISPOSED OF OFF SITE IN ACCORDANCE WITH DISPOSAL REQUIREMENTS FOR EXCESS MATERIAL.

QUANTITY INCLUDES EXCAVATION REQUIRED TO INSTALL THE SPECIAL REVETMENT FOR BANK STABILIZATION. ITEM INCLUDES PLACEMENT OF 1701 CY (1260 X 1.35) OF FILL ON THE CHANNEL BANKS.

QUANTITY INCLUDES EXCAVATION REQUIRED TO TRANSITION PROPOSED CHANNEL SLOPES INTO EXISTING SLOPES WITHIN THE LIMITS SHOWN ON PLAN SHEET D1.

PAYMENT SHALL BE BASED ON PLAN QUANTITY. CROSS SECTIONS SHALL NOT BE TAKEN AFTER EXCAVATION FOR THE PURPOSE OF DETERMINING ACTUAL QUANTITIES.

2312-8260201 GRANULAR SURFACING ON ROAD, CLASS C GRAVEL  
MATERIAL SHALL MEET THE REQUIREMENTS OF CLASS C GRAVEL IN ACCORDANCE WITH SECTION 4120 EXCEPT THAT IT SHALL MEET THE FOLLOWING GRADATION:

STD. SIEVE SIZE	PERCENT PASSING
1 1/2"	100
3/4"	85-98
#4	50-65
#8	35-50
#30	10-28
#200	0-7

MATERIAL SHALL BE SPREAD BY THE CONTRACTOR AND THE CONTRACT UNIT PRICE PER TON SHALL INCLUDE THE COST OF SPREADING GRANULAR SURFACING ON ROADWAY SURFACE. RATE OF APPLICATION SHALL BE 1650 TONS PER MILE.

### 2401-6745625 REMOVAL OF EXISTING BRIDGE

THE EXISTING BRIDGE IS A 90' X 22' TWO-SPAN STEEL BEAM BRIDGE WITH TIMBER AND STEEL TRESTLE PILES, TIMBER HIGH ABUTMENTS, AND TIMBER DECK.

CONTRACTOR SHALL COORDINATE WITH COUNTY FOR REMOVAL OF TIMBER DECKING PLANK AND STEEL BEAMS. THESE MATERIALS SHALL BE REMOVED BY COUNTY FORCES AND REMAIN THE PROPERTY OF THE COUNTY. REMAINDER OF STRUCTURE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.

### 2403-0100010 STRUCTURAL CONCRETE (BRIDGE)

REFER TO TABULATION ON PLAN SHEET C1. ALL STRUCTURAL CONCRETE SHALL BE CLASS C. CLASS D WILL NOT BE ALLOWED. ITEM INCLUDES CERTIFIED PCC PLANT INSPECTION IN ACCORDANCE WITH SECTION 2521.

NO HEAVY CONSTRUCTION EQUIPMENT WILL BE PERMITTED ON THE NEWLY CONSTRUCTED BRIDGE UNLESS LOADED ON A LEGAL TRAILER.

### 2404-7775005 REINFORCING STEEL, EPOXY COATED

REFER TO TABULATION ON PLAN SHEET C1.

### 2414-6424120 CONCRETE OPEN RAILING

ALL OPEN RAIL CONCRETE SHALL BE CLASS C.

### 2501-0201042 PILES, STEEL, HP 10 X 42

2501-0201253 PILES, STEEL, HP 12 X 53  
THE REQUIRED DESIGN BEARING FOR THE HP 10 X 42 ABUTMENT PILES IS 31 TONS. THE REQUIRED DESIGN BEARING FOR THE HP 12 X 53 P10A TYPE 3 PIER PILES IS 32 TONS. WAVE EQUATION ANALYSIS WILL BE USED AT THE TIME OF PILE DRIVING TO DETERMINE PILE BEARING. THE CONTRACTOR SHALL SUBMIT ADEQUATE HAMMER INFORMATION SO THAT PROPER ANALYSIS CAN BE PERFORMED.

CAST-IN-ONE-PIECE STEEL PILE POINTS ARE REQUIRED FOR ALL PILES. PILE POINTS SHALL BE IN ACCORDANCE WITH ARTICLE 4167.02 AND MATERIALS I.M. 467.02.

### 2502-8215124 SUBDRAIN, CORRUGATED METAL PIPE, 24 IN. DIA.

ALL CORRUGATED METAL PIPE LARGER THAN 12 INCHES IN DIAMETER SHALL BE ANNULAR, RIVETED PIPE. "SPIRAL" PIPE WILL NOT BE ALLOWED FOR PIPE DIAMETERS LARGER THAN 12 INCHES.

## ESTIMATED PROJECT QUANTITIES

100-1A  
07-15-97

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2101-0850002	CLEARING AND GRUBBING	UNIT	1672.2	
2	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	1613	
3	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	3125	
4	2312-8260201	GRANULAR SURFACING ON ROAD, CLASS C GRAVEL	TON	210	
5	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1	
6	2402-2720000	EXCAVATION, CLASS 20	CY	70	
7	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	260.3	
8	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	61433	
9	2414-6424120	CONCRETE OPEN RAILING	LF	272.9	
10	2501-0201042	PILES, STEEL, HP 10 X 42	LF	550	
11	2501-0201253	PILES, STEEL, HP 12 X 53	LF	1260	
12	2501-5475053	CONCRETE ENCASEMENT OF STEEL H PILES, HP 12 X 53 (P10A TYPE 3)	LF	396	
13	2502-8215124	SUBDRAIN, CORRUGATED METAL PIPE, 24 IN. DIA.	LF	166	
14	2507-3250005	ENGINEERING FABRIC	SY	1038	
15	2507-4011100	CONCRETE GROUT FOR REVETMENT OR GABION	CY	7.8	
16	2507-6850053	RETVEMENT, SPECIAL	TON	865	
17	2518-6910000	SAFETY CLOSURE	EACH	4	
18	2524-9100030	OBJECT MARKER, TYPE 3	EACH	4	
19	2528-8445110	TRAFFIC CONTROL	LS	1	
20	2533-4980005	MOBILIZATION	LS	1	
21	2601-2634100	MULCHING	ACRE	1.4	
22	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	1.4	
23	2602-0000020	SILT FENCE	LF	745	
24	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	136	

ALL BANDS SHALL HAVE ANNULAR CORRUGATIONS AND SHALL BE THE SAME THICKNESS AS THE PIPE. BANDWIDTHS SHALL BE IN ACCORDANCE WITH MATERIALS I.M. 441 EXCEPT THAT NO BAND SHALL BE LESS THAN 24 INCHES IN WIDTH.

REFER TO PLAN SHEET U3 FOR DEGREE OF ELBOWS. ELBOWS AND DIAPHRAGMS ARE NOT BID ITEMS. REFER TO TABULATION ON PLAN SHEET C2.

### 2507-3250005 ENGINEERING FABRIC

MATERIAL SHALL CONFORM TO IOWA DOT MATERIALS I.M. 496.01 APPENDIX A, EMBANKMENT EROSION CONTROL (ARTICLE 4196.01, C). MATERIAL SHALL BE JOINED BY OVERLAPPING A MINIMUM OF 18 INCHES. REFER TO DETAILS ON PLAN SHEET U1.

### 2507-4011100 CONCRETE GROUT FOR REVETMENT OR GABION

GROUTING OPERATION SHALL NOT BE PERFORMED EXCEPT IN THE PRESENCE OF THE ENGINEER.

THE AVERAGE RATE OF GROUT APPLICATION SHALL BE 5.4 CUBIC FEET OF GROUT PER SQUARE YARD OF SURFACE AREA.

THE GROUT SHALL BE CONSOLIDATED INTO THE VOIDS WITH THE USE OF A CONCRETE VIBRATOR.

METHOD OF MEASUREMENT: THE ENGINEER WILL COMPUTE TO THE NEAREST 0.1 CUBIC YARD THE VOLUME OF CONCRETE GROUT FOR REVETMENT OR GABION FURNISHED AND ACCEPTABLY PLACED WITHIN THE SPECIFIED LIMITS, FROM THE NOMINAL VOLUME OF EACH BATCH AND A COUNT OF BATCHES. GROUT UNUSED OR WASTED, INCLUDING ANY PARTIAL BATCH REMAINING AT THE COMPLETION OF THE OPERATION, WILL BE ESTIMATED AND DEDUCTED BY THE ENGINEER. METHOD OF MEASUREMENT IN THE CURRENT STANDARD SPECIFICATIONS SHALL NOT APPLY.

## ESTIMATED PROJECT QUANTITIES AND GENERAL INFORMATION

ESTIMATE REFERENCE INFORMATION (CONTINUED)

2507-6850053 REVETMENT, SPECIAL

THIS ITEM SHALL CONSIST OF FURNISHING AND PLACING REVETMENT STONE, COMPLETE IN PLACE AS SHOWN ON THE DRAWINGS. REFER TO DETAILS ON PLAN SHEET U1.

MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION 4130 FOR CLASS B REVETMENT ON PRIMARY PROJECTS.

DEWATERING REQUIRED TO INSTALL REVETMENT SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR THIS ITEM.

RIPRAP WILL NOT BE ALLOWED TO BE DUMPED OVER THE RAILING OF THE NEWLY CONSTRUCTED BRIDGE.

THE CONTRACTOR WILL BE RESPONSIBLE FOR REMOVAL OF ALL REMNANTS OF RIPRAP STOCKPILES FROM FARM FIELDS UTILIZED BY CONTRACTOR IN THE PROJECT AREA. THIS WORK SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR THIS ITEM.

SPECIAL REVETMENT PLACED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS WILL BE MEASURED IN TONS TO THE NEAREST 0.1 TON. FOR THE QUANTITY OF SPECIAL REVETMENT FURNISHED AND PLACED, THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE PER TON.

2518-6910000 SAFETY CLOSURE

REFER TO TABULATION ON PLAN SHEET C1.

2524-9100030 OBJECT MARKER, TYPE 3

REFER TO TABULATION ON PLAN SHEET C1.

2602-0000020 SILT FENCE

REFER TO STANDARD ROAD PLAN RC-17 AND TABULATION ON PLAN SHEET C2 FOR DETAILS.

SILT FENCE MAY BE PLACED UP TO A MAXIMUM SEGMENT LENGTH OF 200 FEET. FOR EVERY SEGMENT OF SILT FENCE PLACED, A 20-FOOT SEGMENT SHALL BE PLACED AT THE LOWER END SKEWED TOWARDS THE FORESLOPE TO INTERCEPT RUNOFF.

2602-0000030 SILT FENCE FOR DITCH CHECKS

REFER TO STANDARD ROAD PLAN RC-17 AND TABULATION ON PLAN SHEET C2 FOR DETAILS.

QUANTITY INCLUDES SILT FENCE AT CULVERT INLETS AS DETAILED ON PLAN SHEET C2. MAXIMUM SPACING OF STEEL POSTS FOR SILT FENCE AT CULVERT INLETS SHALL BE 5 FEET.

GENERAL NOTES

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE ALL NECESSARY ARRANGEMENTS WITH ADJACENT PROPERTY OCCUPANTS FOR RESTRAINING LIVESTOCK FROM ENTERING THE RIGHT-OF-WAY.

CONTRACTOR IS TO USE DUE CAUTION IN WORKING OVER AND AROUND ALL TILE LINES. BREAKS IN THE TILE LINE DUE TO THE CONTRACTOR'S CARELESSNESS ARE TO BE REPLACED AT CONTRACTOR'S EXPENSE WITHOUT COST TO THE CONTRACTING AUTHORITY. ANY TILE LINES BROKEN OR DISTURBED BY CUT LINES WILL BE REPLACED AS DIRECTED BY THE ENGINEER IN CHARGE OF CONSTRUCTION AND AT THE CONTRACTING AUTHORITY'S EXPENSE.

ALL BORROW AREAS, STOCKPILE AREAS, HAUL ROADS AND AREAS FOR MANEUVERING EQUIPMENT ON THIS PROJECT WILL REQUIRE SUBSOIL TILLAGE TO AN AVERAGE DEPTH OF 18 TO 24 INCHES. SUCH TILLAGE SHALL BE ACCOMPLISHED ON MAXIMUM OF THREE FOOT CENTERS. SUCH AREAS SHALL BE DESIGNATED BY THE ENGINEER.

WHERE PUBLIC UTILITY FIXTURES ARE SHOWN AS EXISTING ON THE PLANS OR ENCOUNTERED WITHIN THE CONSTRUCTION AREA, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE OWNERS OF THOSE UTILITIES PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. THE CONTRACTOR SHALL AFFORD ACCESS TO THESE FACILITIES FOR NECESSARY MODIFICATION OF SERVICES. UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. IT IS POSSIBLE THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN OR SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR EXISTENCE AND EXACT LOCATION AND TO AVOID DAMAGE THERETO. NO CLAIMS FOR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR ANY INTERFERENCE OR DELAY CAUSED BY SUCH WORK.

CONTRACTOR SHALL NOTIFY ONE-CALL (1-800-292-8989) FOR UTILITY LOCATES PRIOR TO COMMENCING WORK.

CONSTRUCTION STAKING SHALL BE PROVIDED BY THE OWNER IN ACCORDANCE WITH ARTICLE 1105.06 OF THE CURRENT STANDARD SPECIFICATIONS. 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.

THE CONTRACTOR IS ENCOURAGED TO CONDUCT CONSTRUCTION ACTIVITIES DURING A PERIOD OF LOW FLOW. ANY TEMPORARY CROSSINGS SHALL INCLUDE ENOUGH CULVERTS TO ACCOMMODATE LOW FLOWS AND MUST BE REMOVED AFTER COMPLETION OF WORK ON THIS PROJECT. THE CONTRACTOR IS REQUIRED TO REMOVE ALL FILL MATERIAL USED AS A TEMPORARY CROSSING TO AN UPLAND, NON-WETLAND SITE AND TO IMPLEMENT APPROPRIATE MEASURES TO INSURE SEDIMENTS ARE NOT INTRODUCED INTO WATERS OF THE UNITED STATES DURING CONSTRUCTION OF THIS PROJECT. THE COST OF INSTALLATION, MAINTENANCE AND REMOVAL OF TEMPORARY CROSSINGS, INCLUDING CULVERTS, SHALL BE INCIDENTAL TO THE PROJECT.

01-20-84 212-1  
SOUNDING AND TEST BORING DATA SHOWN ON PLANS WERE ACCUMULATED FOR DESIGNING AND ESTIMATING PURPOSES. THEIR APPEARANCE ON THE PLAN DOES NOT CONSTITUTE A GUARANTEE THAT CONDITIONS OTHER THAN THOSE INDICATED WILL NOT BE ENCOUNTERED.

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.

10-27-98 213-4  
THE CONTRACTOR SHALL APPLY NECESSARY MOISTURE TO THE CONSTRUCTION AREA AND HAUL ROADS TO PREVENT THE SPREAD OF DUST. REFER TO ARTICLE 1107.07 OF THE CURRENT STANDARD SPECIFICATIONS FOR ADDITIONAL DETAILS.

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 47,000 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 1820 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 CONTRACTING AUTHORITY'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

ESTIMATED PROJECT QUANTITIES AND GENERAL INFORMATION

**POLLUTION PREVENTION PLAN**

110-12A

ALL CONTRACTORS/SUBCONTRACTORS SHALL CONDUCT THEIR OPERATIONS IN A MANNER THAT MINIMIZES EROSION AND PREVENTS SEDIMENTS FROM LEAVING THE HIGHWAY 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 CRAWFORD COUNTY SECONDARY ROAD BRIDGE ON T AVENUE OVER BUCK CREEK.

THIS PPP COVERS APPROXIMATELY 2 ACRES WITH AN ESTIMATED 2 ACRES BEING DISTURBED. THE PORTION OF THE PPP COVERED BY THIS CONTRACT HAS 2 ACRES DISTURBED.

THE PPP IS LOCATED IN AN AREA OF ONE SOIL ASSOCIATION (MONONA-IDA-HAMBURG). THE ESTIMATED AVERAGE NRCS RUNOFF CURVE NUMBER FOR THIS PPP AFTER COMPLETION WILL BE 64.

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 BUCK 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 THIS 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 BE 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**

AT LOCATIONS WHERE RUNOFF CAN MOVE OFFSITE, SILT FENCE SHALL BE PLACED ALONG THE PERIMETER OF THE AREAS TO BE DISTURBED PRIOR TO BEGINNING GRADING, EXCAVATION OR CLEARING AND GRUBBING OPERATIONS. VEGETATION IN AREAS NOT NEEDED FOR CONSTRUCTION SHALL BE PRESERVED. AS AREAS REACH THEIR FINAL GRADE, ADDITIONAL SILT FENCES, SILT BASINS, INTERCEPTING DITCHES, SOD FLUMES, LETDOWNS, BRIDGE END DRAINS, AND EARTH DIKES SHALL BE INSTALLED AS SPECIFIED IN THE PLANS AND/OR AS REQUIRED BY THE PROJECT ENGINEER. THIS WILL INCLUDE USING SILT FENCE AS DITCH CHECKS AND TO PROTECT INTAKES. TEMPORARY STABILIZING SEEDING SHALL BE COMPLETED AS THE DISTURBED AREAS ARE CONSTRUCTED. 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 B.

AS THE WORK PROGRESSES, ADDITIONAL EROSION CONTROL ITEMS MAY BE REQUIRED AS DETERMINED BY THE ENGINEER AFTER FIELD INVESTIGATION. THESE MAY BE ITEMS SUCH AS LETDOWN STRUCTURES, SOIL STABILIZATION MATS, AND OTHER APPROPRIATE MEASURES SHALL BE INSTALLED BY CONTRACTOR, AS DIRECTED BY THE ENGINEER. THE CONTRACTOR WILL COMPLETE THE CONSTRUCTION WITH THE ESTABLISHMENT OF PERMANENT PERENNIAL VEGETATION OF ALL DISTURBED AREAS.

**POLLUTION PREVENTION PLAN**

110-12A

**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 ARE ENCOUNTERED, 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 CLEANING, REPAIRING, OR REPLACING THEM THROUGHOUT THE CONTRACT PERIOD. CLEANING OF SILT CONTROL DEVICES SHALL BEGIN WHEN THE FEATURES HAVE LOST 50% OF THEIR CAPACITY.

**5. INSPECTIONS**

INSPECTIONS SHALL BE MADE JOINTLY BY THE CONTRACTOR AND THE CONTRACTING AUTHORITY EVERY SEVEN CALENDAR DAYS AND AFTER EACH RAIN EVENT THAT IS ONE HALF INCH OR GREATER. THE CONTRACTOR SHALL IMMEDIATELY BEGIN CORRECTIVE ACTION OF ALL DEFICIENCIES FOUND. THE FINDINGS OF THIS INSPECTION SHALL BE RECORDED IN THE PROJECT DIARY. THIS PPP MAY BE REVISED BASED ON THE 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 SUBSURFACE DRAINS (I.E. LONGITUDINAL AND STANDARD SUBDRAINS), SLOPE DRAINS AND BRIDGE END DRAINS. THE VELOCITY OF THE DISCHARGE FROM THESE FEATURES MAY BE CONTROLLED BY THE USE OF PATIO BLOCKS, CLASS A STONE OR EROSION STONE.

**PLACEMENT OF QUANTITIES  
125'-0 x 24' CCS BRIDGE**

ITEM	UNIT	PIERS	SUPERSTRUCTURE & ABUTMENTS	TOTAL
STRUCTURAL CONCRETE (BRIDGE)	CY	0	260.3	260.3
REINFORCING STEEL, EPOXY COATED	LB	0	61433	61433

**TABULATION OF EARTHWORK QUANTITIES**

STA.	CUT	ADD. CUT	FILL +35%	ADD. FILL	TOTAL CUT	TOTAL FILL+35%	BALANCE
23+00							
24+00	0		281		0	281	
25+00	2		448	10	2	458	
26+00	229		167	40	229	207	
26+21.5	130		68		130	68	
27+46.5							
28+00	224		3	85	224	88	
29+00	409		6		409	6	
30+00	432		5		432	5	
31+00	187		5		187	5	
TOTAL					1613	1118	

**POINTS OF ACCESS (RL-7)**

Refer to Detail Cross-Sections

102-1  
10-21-03

STATION	SIDE	LOCATION (RL-7)	TYPE	SIZE (Inches)	LENGTH		APRON (No.)	SURFACE MATERIAL (Tons)
					LT (Lin. Ft.)	RT (Lin. Ft.)		
25+85	R	24'	C					
26+05	L	24'	C					
27+66	L	24'	C					

**TABULATION OF SAFETY CLOSURES**

108-13A  
10-28-97

Refer to Section 2518 of the S't.d. Specifications

STATION	CLOSURE TYPE		REMARKS
	Road Qty.	Hazard Qty.	
22+00	1	-	WEST END
25+00	-	1	WEST END
28+50	-	1	EAST END
32+00	1	-	EAST END
TOTAL	2	2	

**TABULATION OF DELINEATORS AND OBJECT MARKERS**

108-17  
04-28-92

Refer to Standard Plan RE-48A-B \* and RE-29C \*\* Not a Bid Item

Station	Type*	DELINEATOR Single White D-1W Number	OBJECT MARKER				REMARKS
			Type 2 OM2-3YV Number	Type 3		Offset Brackets ** Number	
				OM-3L Number	OM-3R Number		
26+84	1	-	-	1	1	-	WEST END
26+84	1	-	-	1	1	-	EAST END

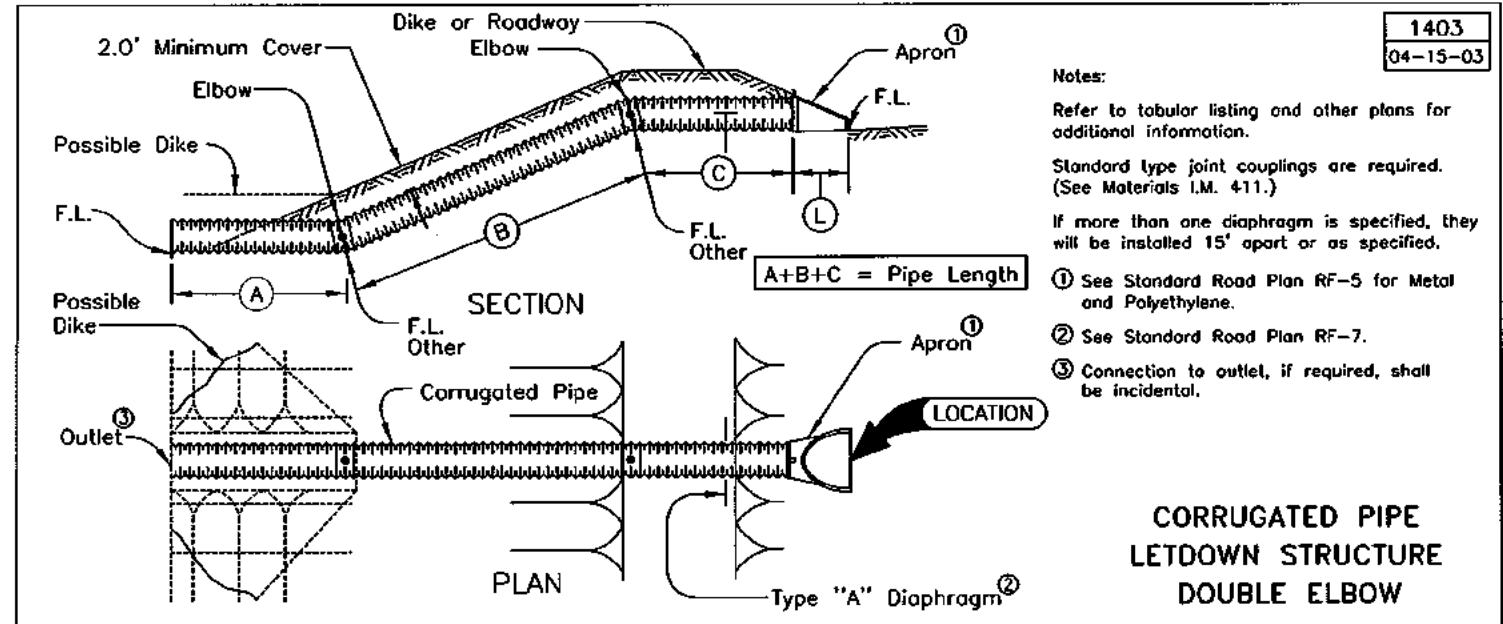
**TABLATIONS, TYPICALS**

**DRAINAGE STRUCTURES**

104-3  
MODIFIED

\* Not a bid item

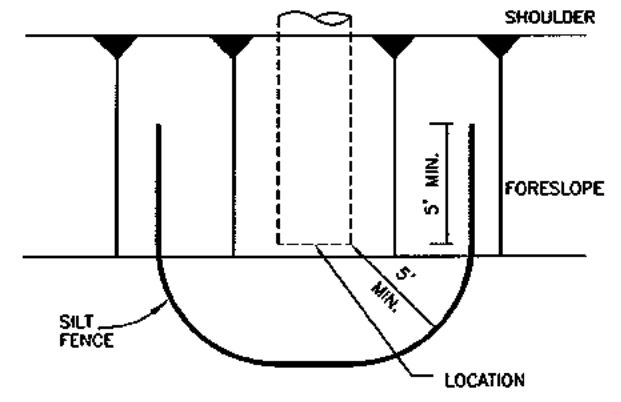
DRAINAGE AREA (Acres)	LOCATION	TYPE	SIZE Inches	KIND OF PIPE	LENGTH NEW CONST. Lin. Ft.	BEDDING CLASS	DESIGN COVER (ft)	CAMBER Ft.	APRON NO.		ELBOW* No.	DIAPHRAGM RF-7* No.	TEE SECTION* RF-21 No.	ADAPTORS* RF-2			CONNECTED PIPE JOINT RF-14* Type	FLOW LINE ELEVATIONS				DIMENSIONS Lin. Ft.			SKEW AHEAD		DIKE				CLASS 20 Cu. Yds.	REMARKS
									Inlet	Outlet				Type	No.	Lt.		Rt.	Other	Other	Total			Degrees		Rt. Lt.	Location Station	Top Elevation	Type			
																A		B	C	Lt.	Rt.											
0.4	27+69.3	1403	24	CMP	88	C	1				2	1					1165.00	1149.50	1163.21	1150.08	12	38	38									SEE SHEET U3 FOR DETAILS
2.0	27+88.4	1403	24	CMP	78	C	1				2	1					1165.00	1149.50	1159.84	1150.10	12	28	38			37°RT.	27+79.5	1168.00	F		SEE SHEET U3 FOR DETAILS	



**Notes:**  
 Refer to tabular listing and other plans for additional information.  
 Standard type joint couplings are required. (See Materials I.M. 411.)  
 If more than one diaphragm is specified, they will be installed 15' apart or as specified.  
 ① See Standard Road Plan RF-5 for Metal and Polyethylene.  
 ② See Standard Road Plan RF-7.  
 ③ Connection to outlet, if required, shall be incidental.

LOCATION (EXACT LOCATION TO BE DETERMINED BY THE ENGINEER)	SIDE	SPECIAL DITCH CONTROL WOOD EXCELSIOR MAT (Squares)	FOR DITCH CHECK			REMARKS
			NO.	SPACING (Ft.)	SILT FENCE (Lin. Ft.)	
27+69.3	L	-	1	-	28	CULVERT INLET
27+88.4	R	-	1	-	28	CULVERT INLET
28+00 - 30+00	L	-	2	200	40	
28+00 - 30+00	R	-	2	200	40	
<b>TOTAL</b>					<b>136</b>	

LOCATION		LENGTH (Lin. Ft.)	REMARKS
STATION TO STATION	SIDE		
23+00 - 26+15	L	355	
23+00 - 26+50	R	390	
<b>TOTAL</b>		<b>745</b>	

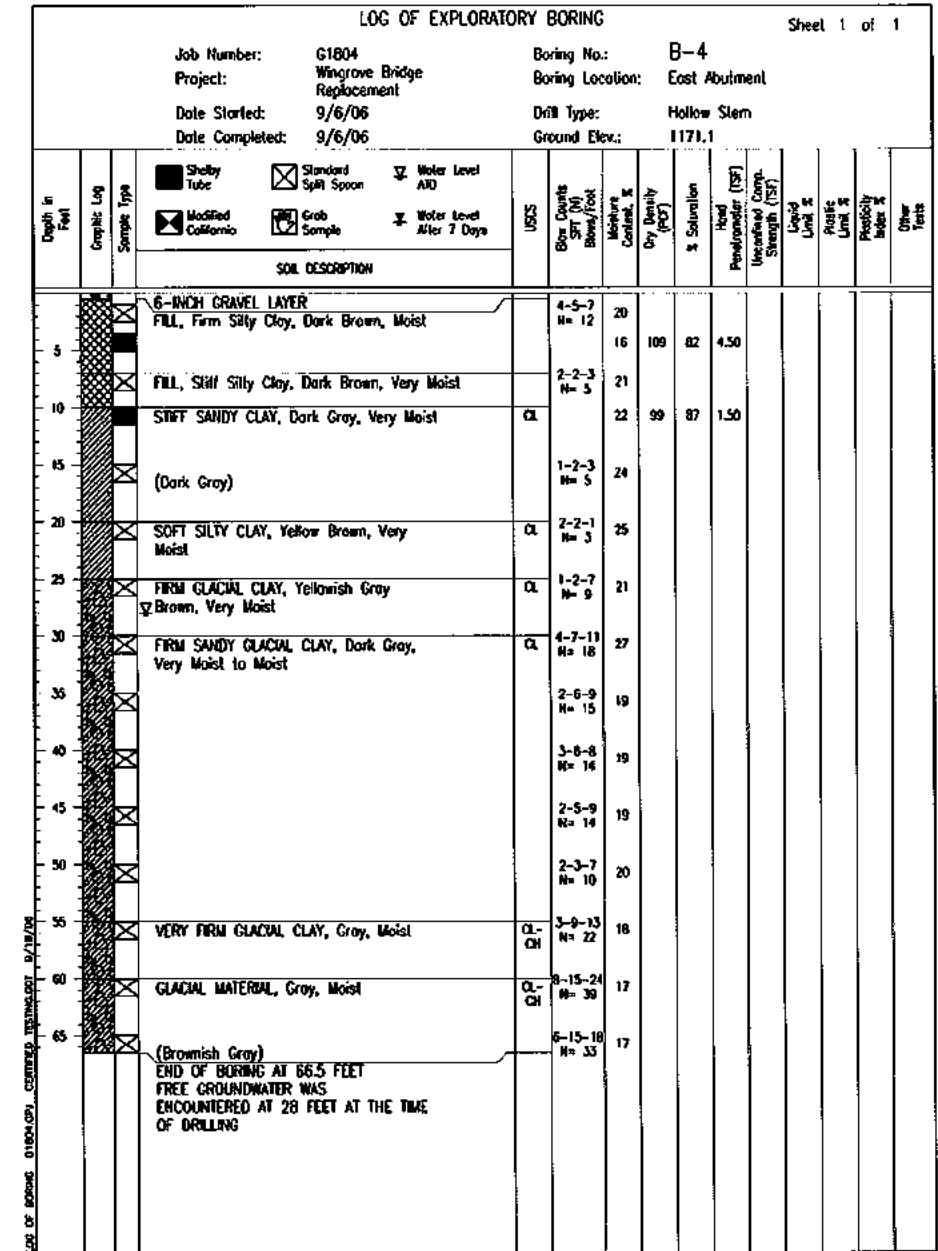
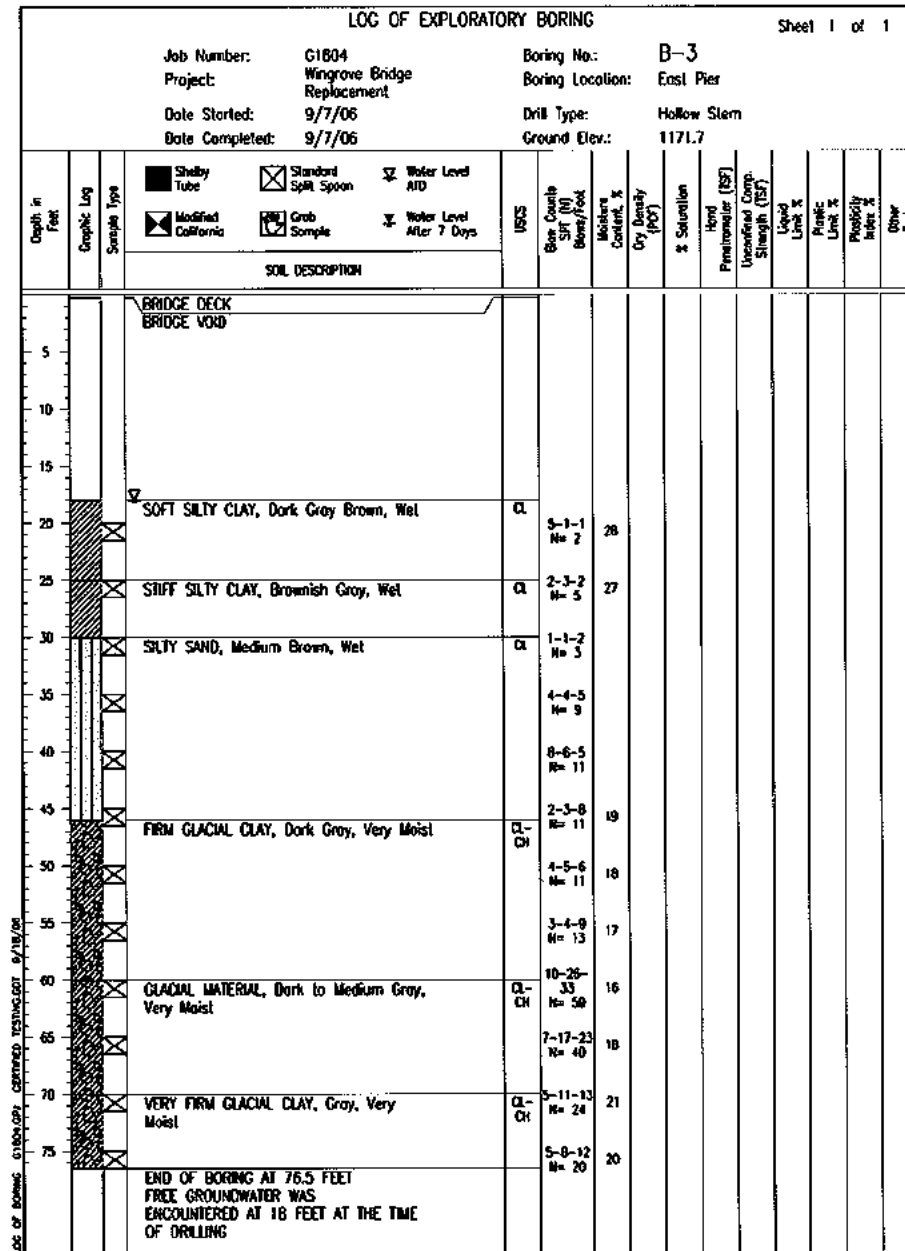
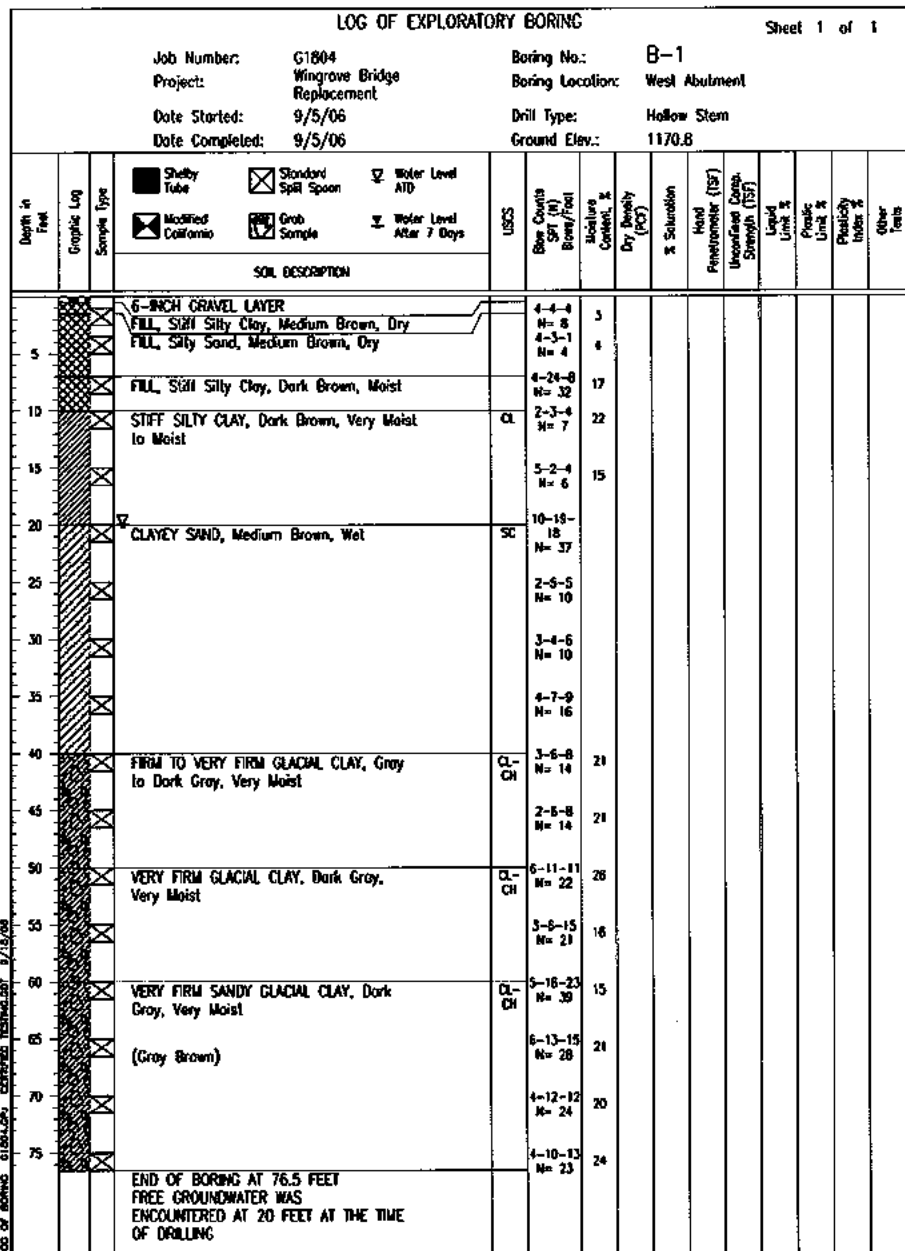


**DETAILS OF SILT FENCE AT CULVERT INLETS**  
NO SCALE

**TABLATIONS, TYPICALS**







GEOTECHNICAL INFORMATION PROVIDED HEREWITH IS THE SOLE RESPONSIBILITY OF CERTIFIED TESTING SERVICES, INC., WHOSE GEOTECHNICAL REPORT DATED SEPTEMBER 15, 2006, COMPLETE WITH THE LICENSED ENGINEER'S SEAL AND CERTIFICATION, IS AVAILABLE FOR VIEWING.

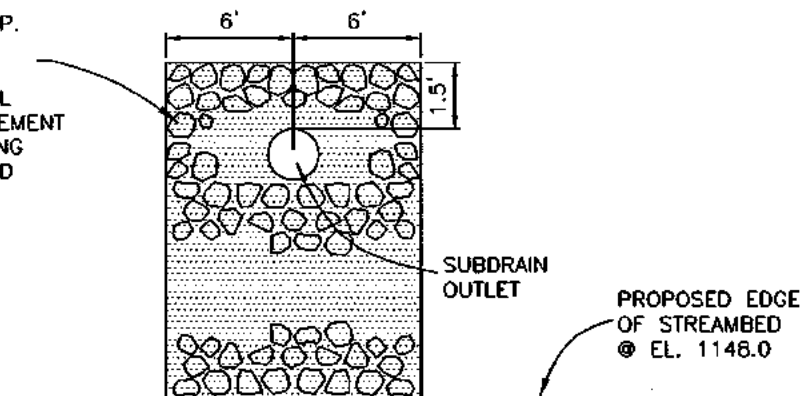
### SOUNDING DATA

NOTE: THESE SOUNDINGS WERE MADE FOR DESIGN PURPOSES AND ARE NOT GUARANTEED FOR CONSTRUCTION.

SOUNDINGS WERE TAKEN ON SEPTEMBER 5, 6, 7, 2006.

SEE SHEET V1 FOR BORING LOCATIONS.

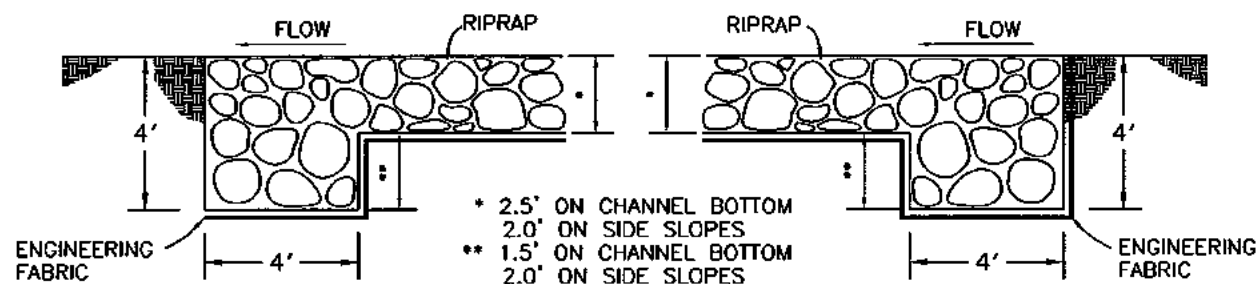
PROPOSED GROUDED RIPRAP. REFER TO TYPICAL BANK STABILIZATION SECTION ON THIS SHEET FOR ADDITIONAL DETAILS CONCERNING PLACEMENT OF RIPRAP AND ENGINEERING FABRIC. OMIT ROCK-FILLED CUTOFF TRENCH.



### SUBDRAIN OUTLET SLOPE PROTECTION

NOT TO SCALE

STA. 26+83.66, 32' LT.  
STA. 27+12.57, 32' RT.



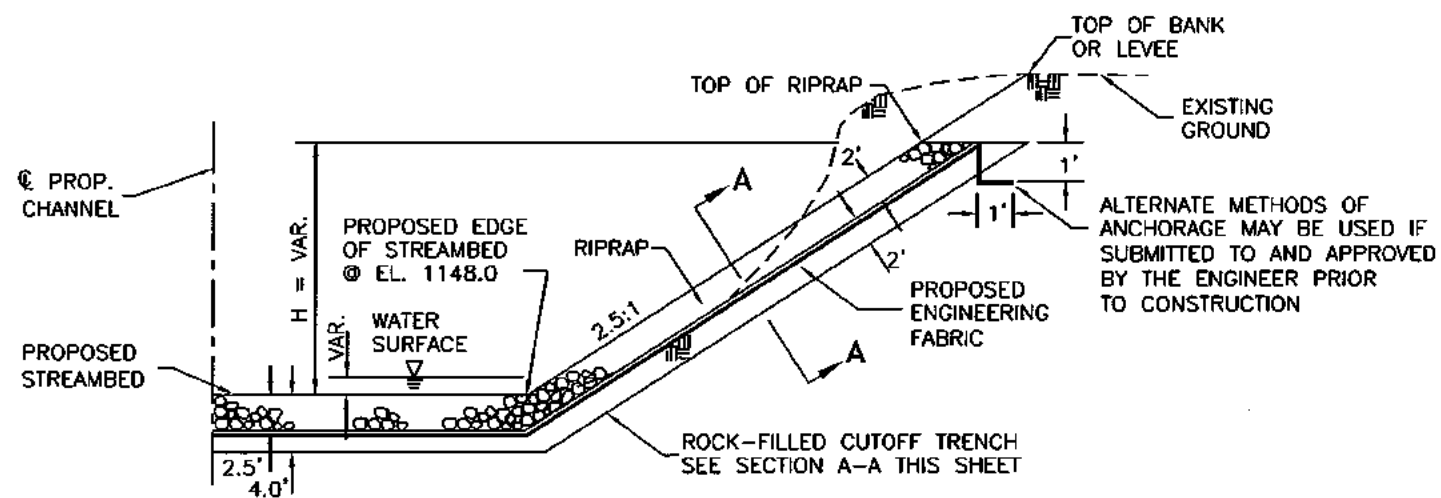
TYPICAL DOWNSTREAM

TYPICAL UPSTREAM

### SECTION A-A

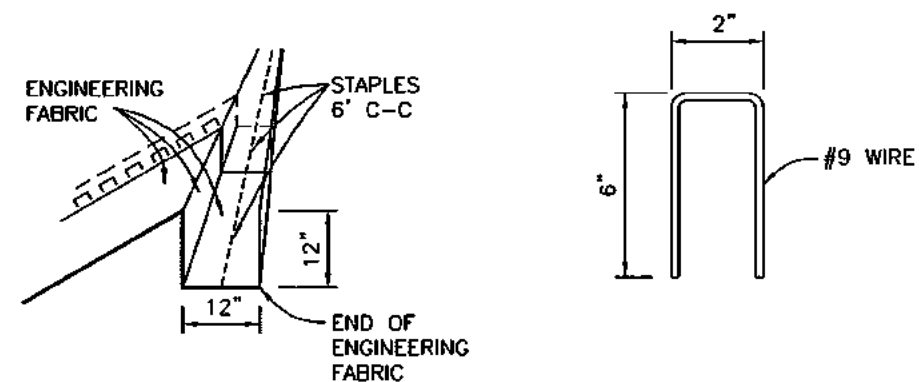
### ROCK-FILLED CUTOFF TRENCH DETAILS

NOT TO SCALE



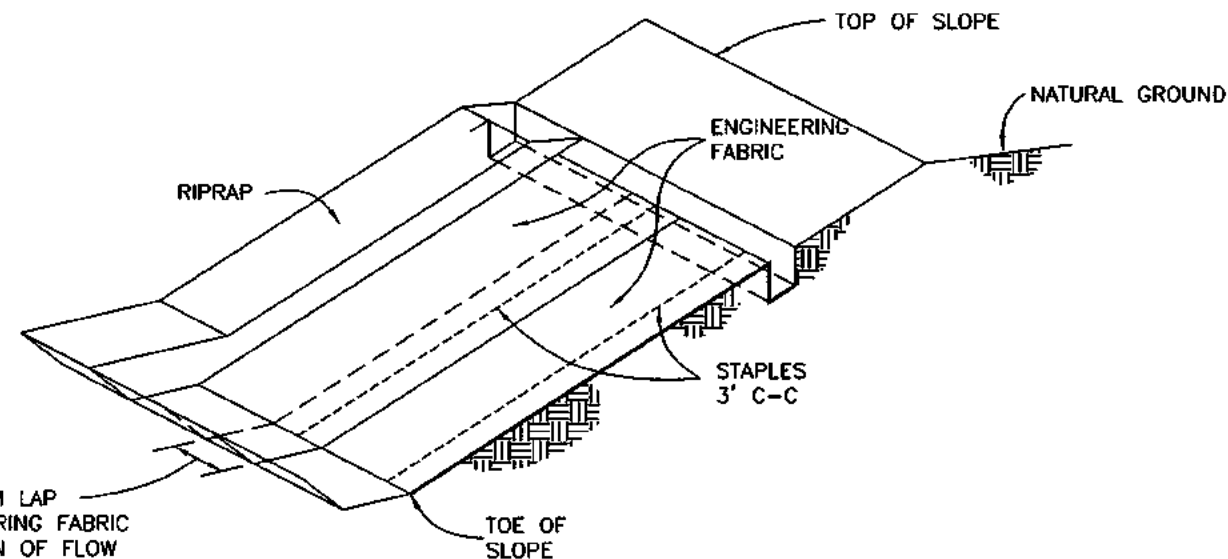
### TYPICAL FULL-CHANNEL BANK STABILIZATION SECTION

NOT TO SCALE



DETAIL OF TRENCH

STAPLE



18" MINIMUM LAP OF ENGINEERING FABRIC IN DIRECTION OF FLOW

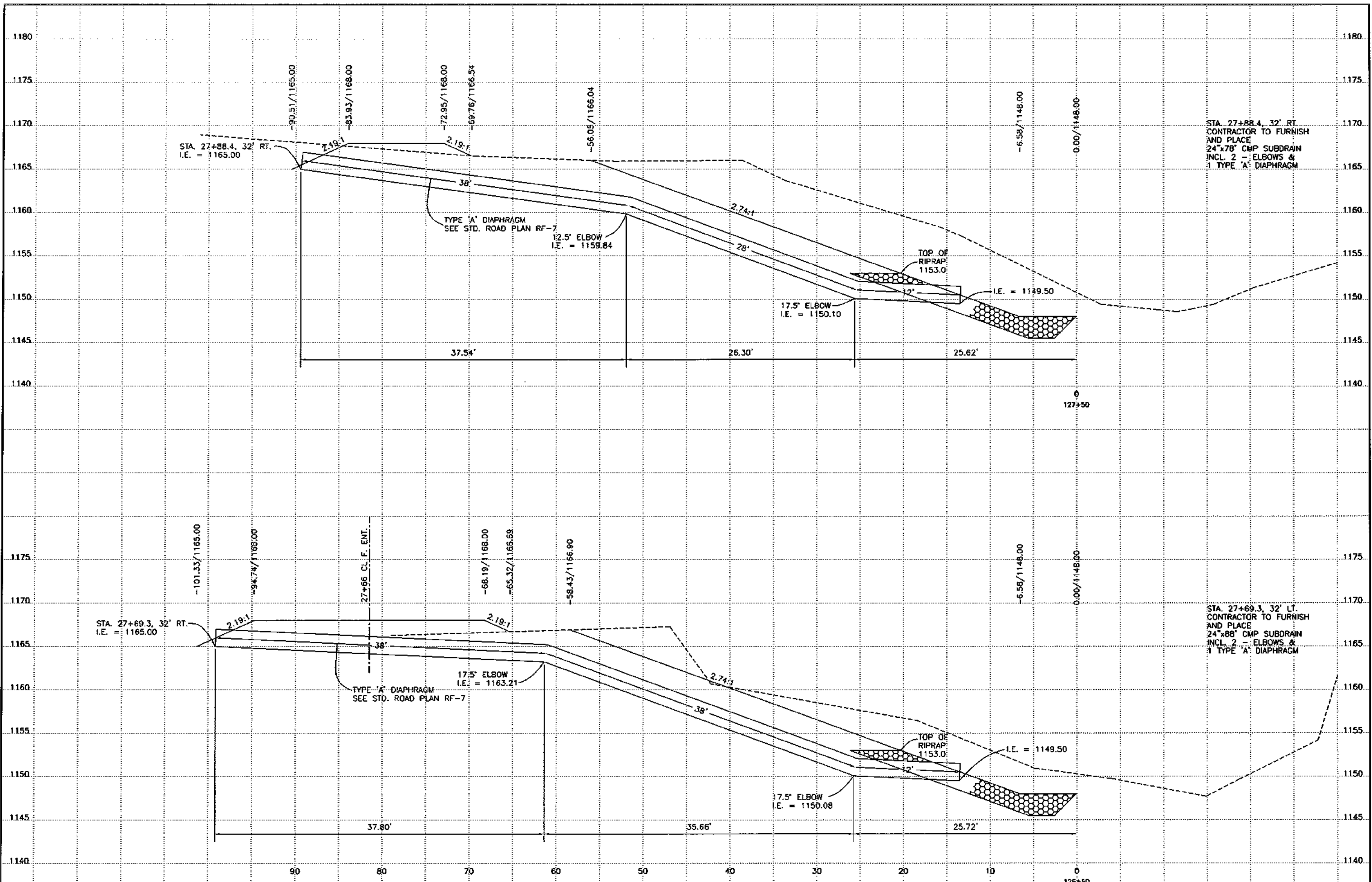
EXCAVATE 12"x12" TRENCH ALONG TOP OF RIPRAP. PLACE END OF ENGINEERING FABRIC STRIPS INTO TRENCH WITH STAPLES AS SHOWN. BACKFILL WITH THE EXCAVATED MATERIAL AND COMPACT. THE ENGINEER MAY PERMIT THE USE OF THE WHEELS OF PNEUMATIC-TIRED EQUIPMENT FOR CONSOLIDATING THE TRENCH BACKFILL MATERIAL.

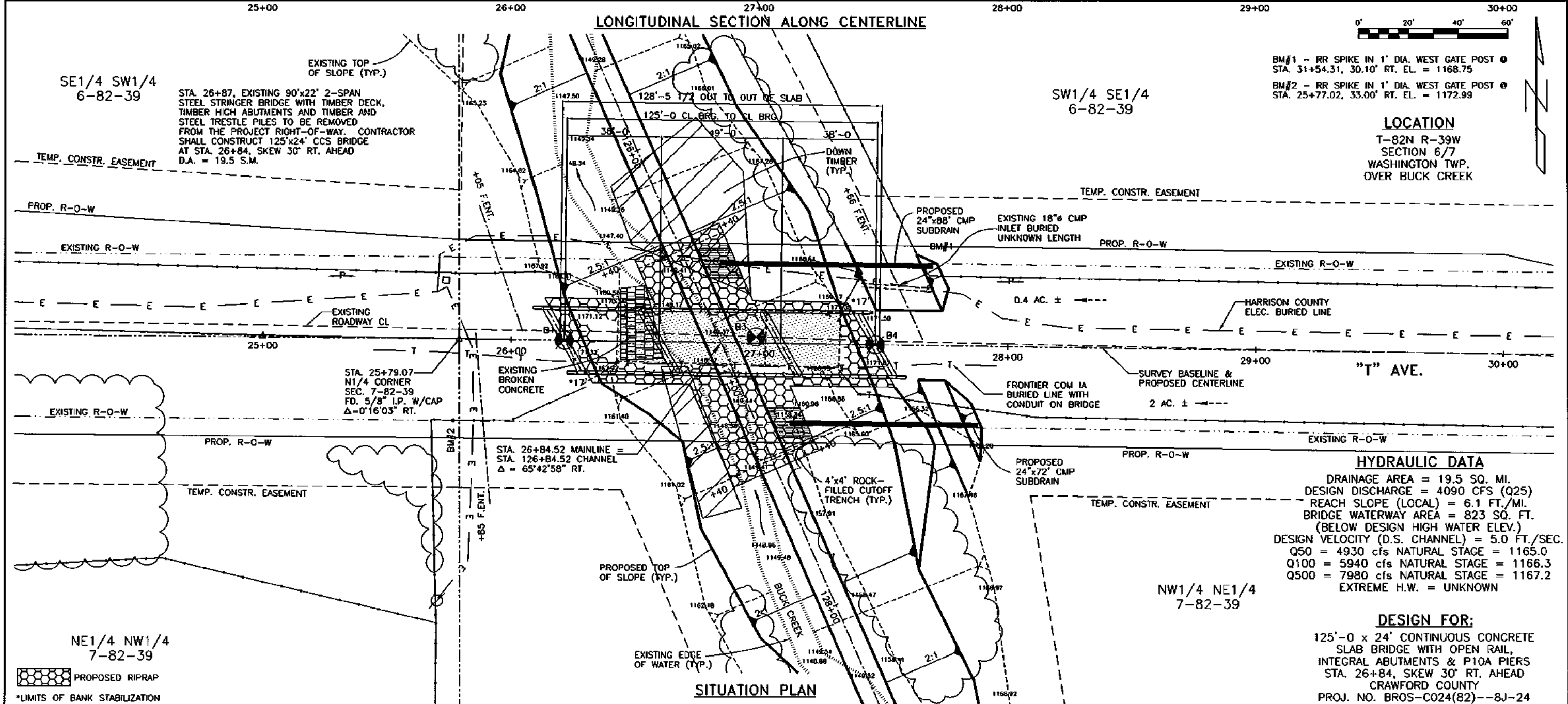
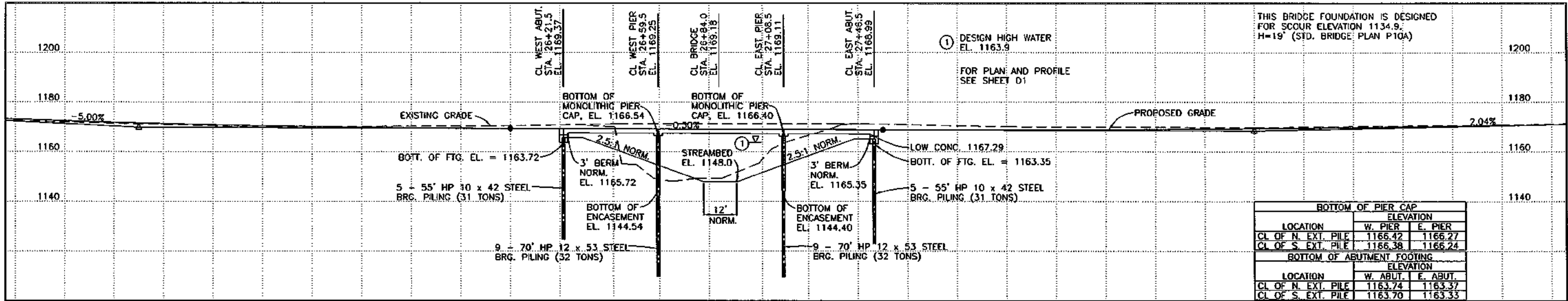
### DETAILS OF PLACEMENT OF ENGINEERING FABRIC

NOT TO SCALE







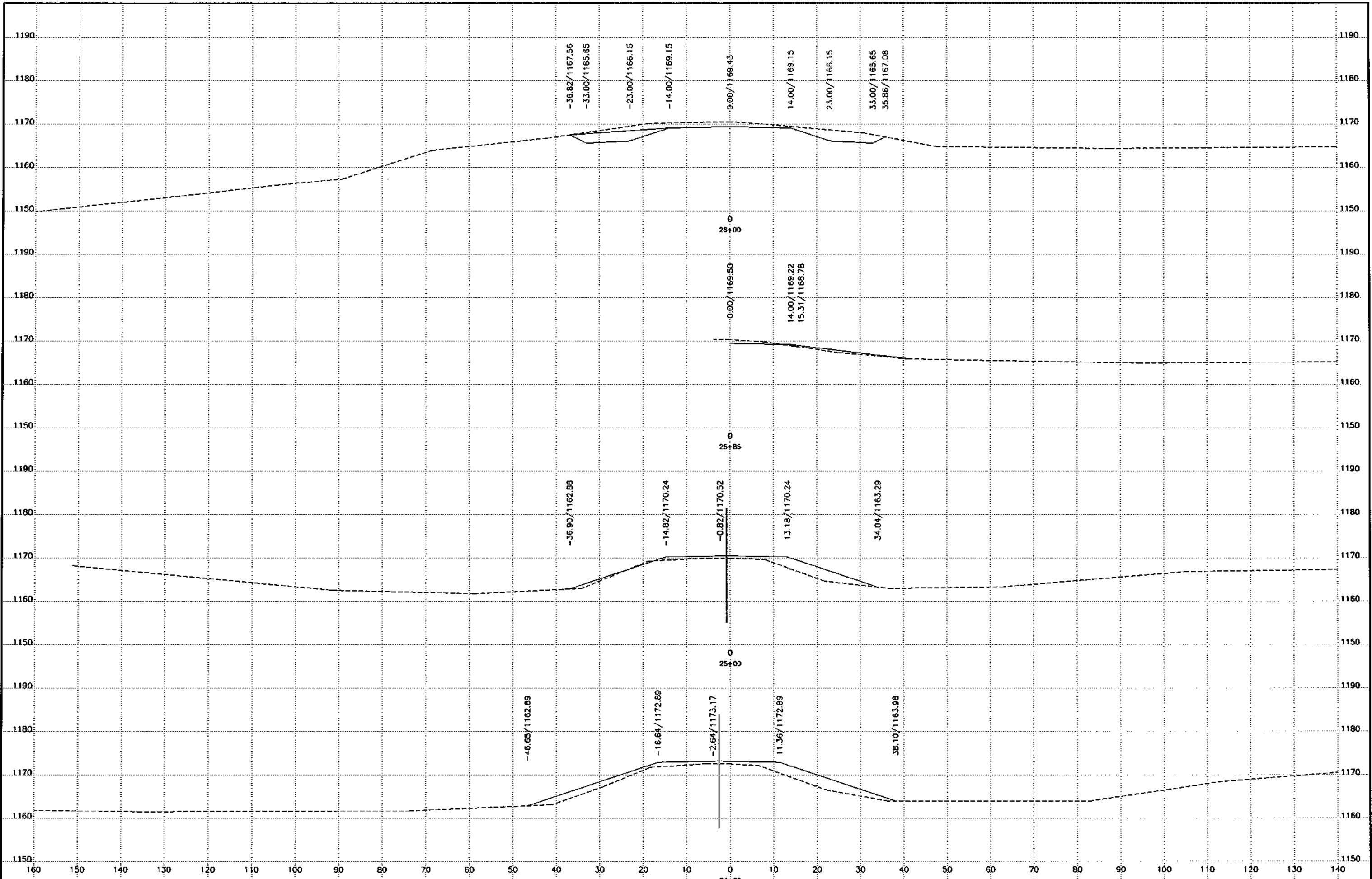


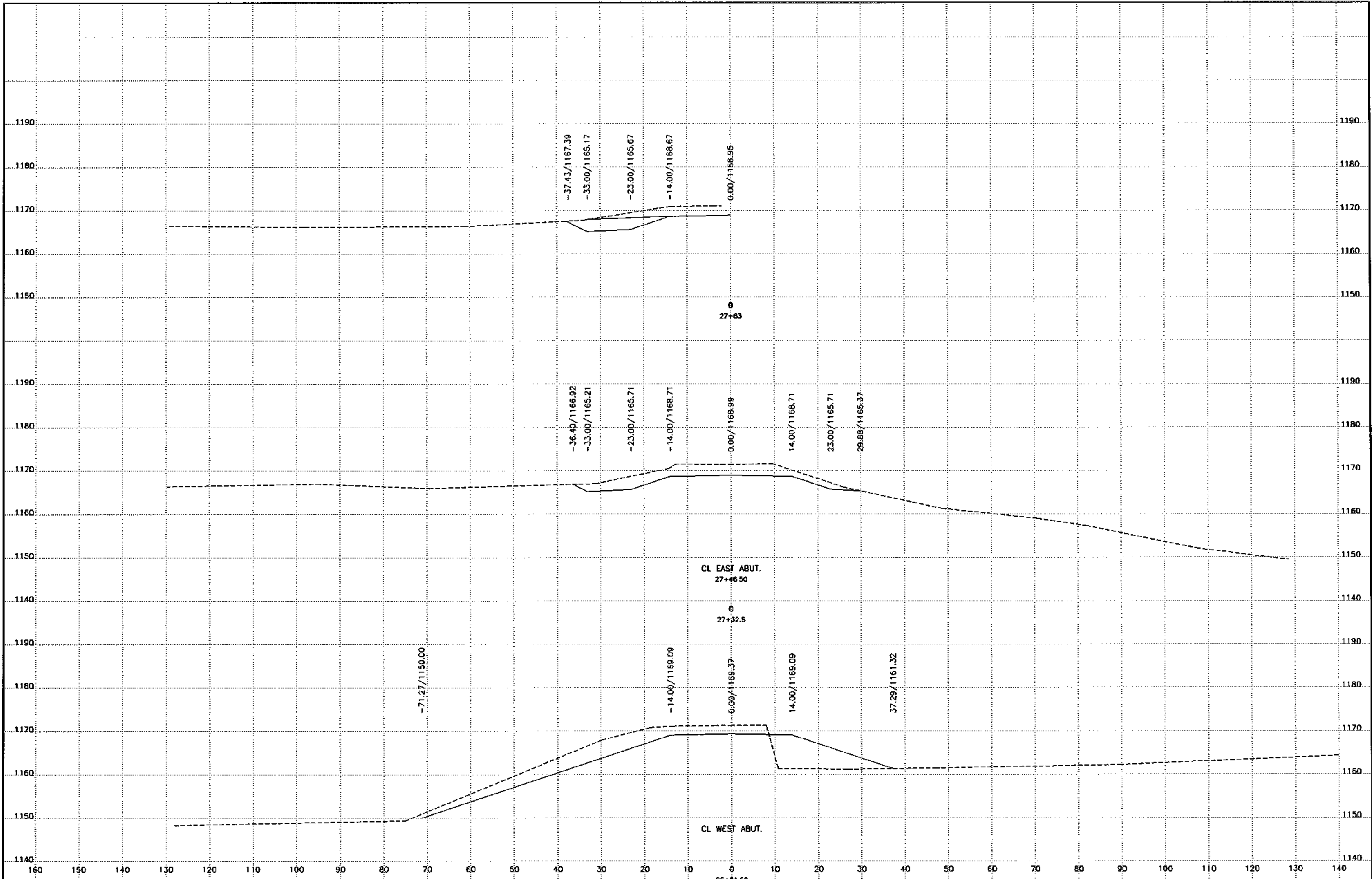
BM#1 - RR SPIKE IN 1" DIA. WEST GATE POST @ STA. 31+54.31, 30.10' RT. EL. = 1168.75  
 BM#2 - RR SPIKE IN 1" DIA. WEST GATE POST @ STA. 25+77.02, 33.00' RT. EL. = 1172.99

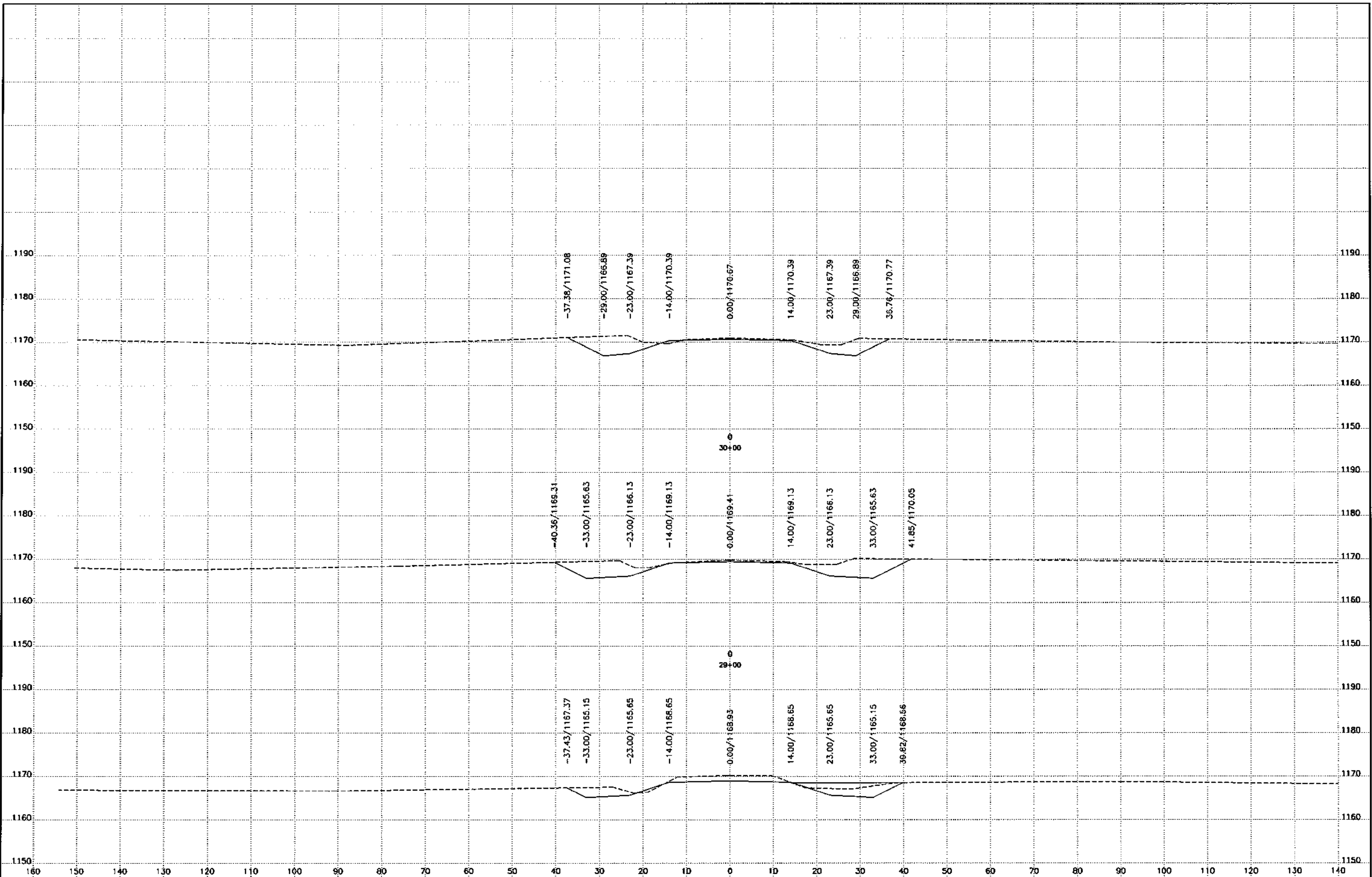
**LOCATION**  
 T-82N R-39W  
 SECTION 6/7  
 WASHINGTON TWP.  
 OVER BUCK CREEK

**HYDRAULIC DATA**  
 DRAINAGE AREA = 19.5 SQ. MI.  
 DESIGN DISCHARGE = 4090 CFS (Q25)  
 REACH SLOPE (LOCAL) = 6.1 FT./MI.  
 BRIDGE WATERWAY AREA = 823 SQ. FT. (BELOW DESIGN HIGH WATER ELEV.)  
 DESIGN VELOCITY (D.S. CHANNEL) = 5.0 FT./SEC.  
 Q50 = 4930 cfs NATURAL STAGE = 1165.0  
 Q100 = 5940 cfs NATURAL STAGE = 1166.3  
 Q500 = 7980 cfs NATURAL STAGE = 1167.2  
 EXTREME H.W. = UNKNOWN

**DESIGN FOR:**  
 125'-0" x 24' CONTINUOUS CONCRETE SLAB BRIDGE WITH OPEN RAIL, INTEGRAL ABUTMENTS & P10A PIERS  
 STA. 26+84, SKEW 30° RT. AHEAD  
 CRAWFORD COUNTY  
 PROJ. NO. BROS-C024(82)--8J-24







REV:

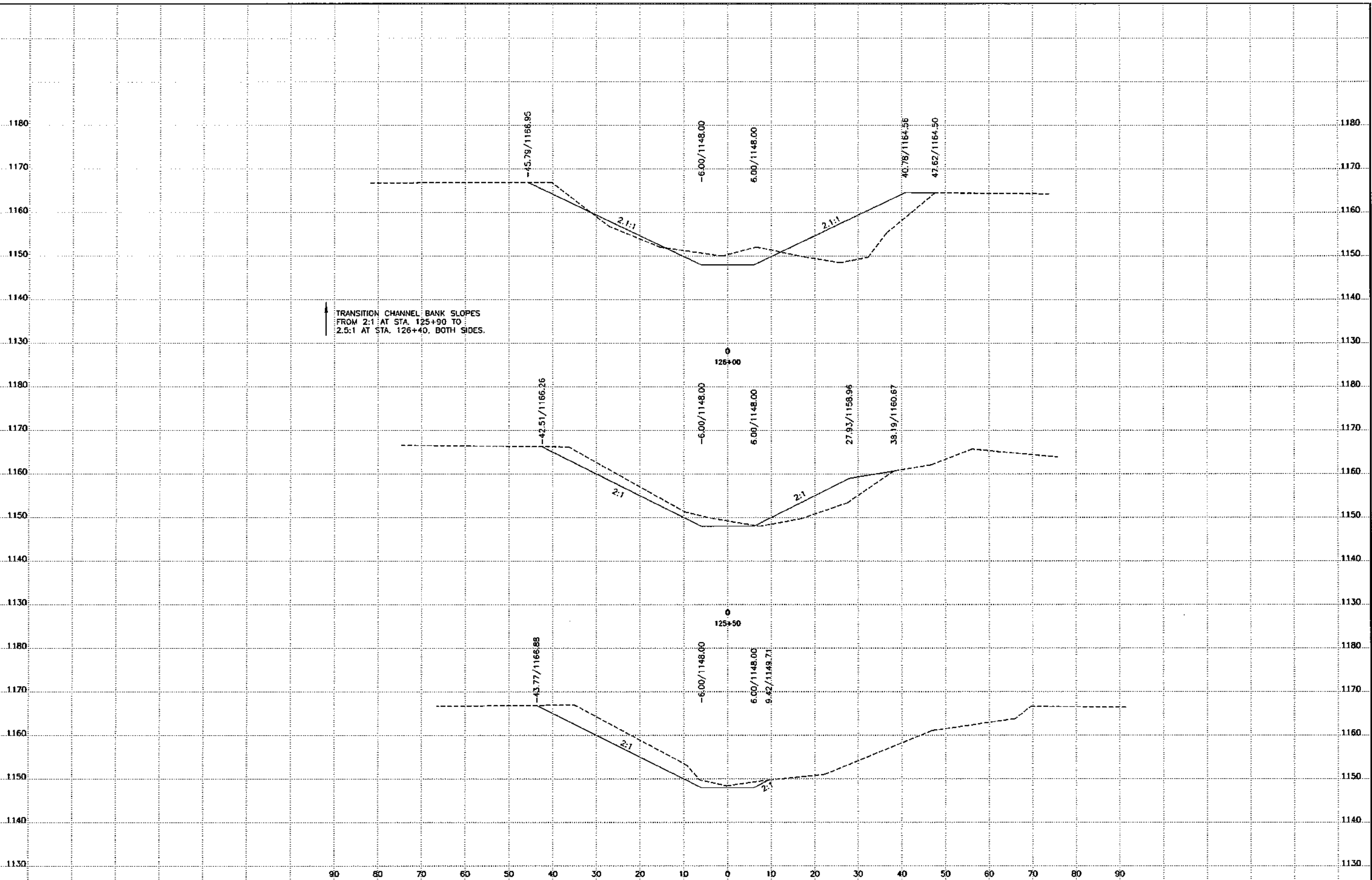
**SUNDQUIST ENGINEERING, P.C.**  
CONSULTING ENGINEERS

HIGHWAYS • MUNICIPAL • MAPPING • SURVEYING  
120 S. MAIN, P.O. BOX 220, DENISON, IOWA 51442  
PHONE: (712)263-8119 FAX: (712)263-2181

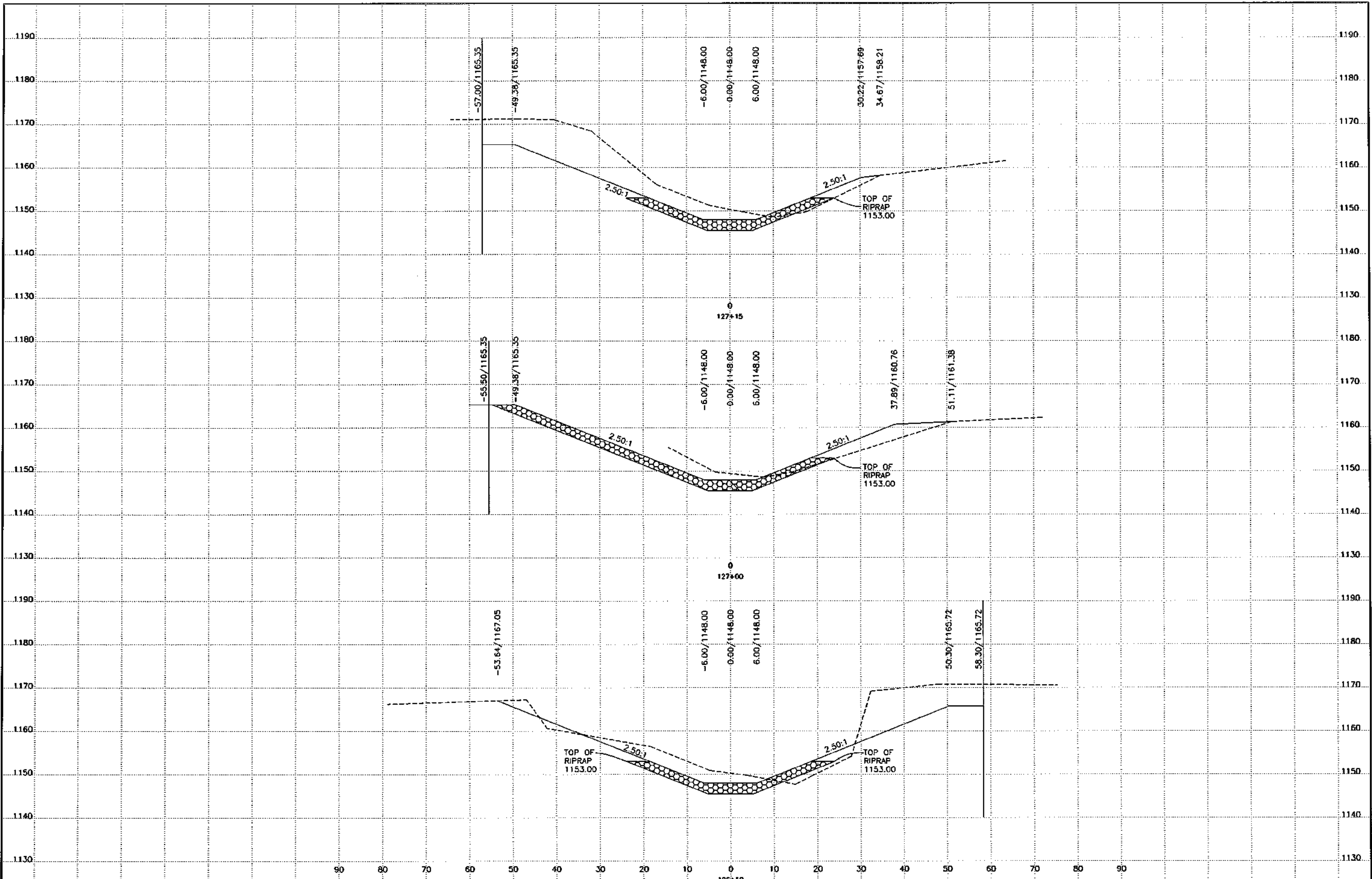
SE PROJECT NO. 03406 DATE: 10/06 DRAWN BY: TKK REVIEWED BY: SAS APPROVED BY: TJG

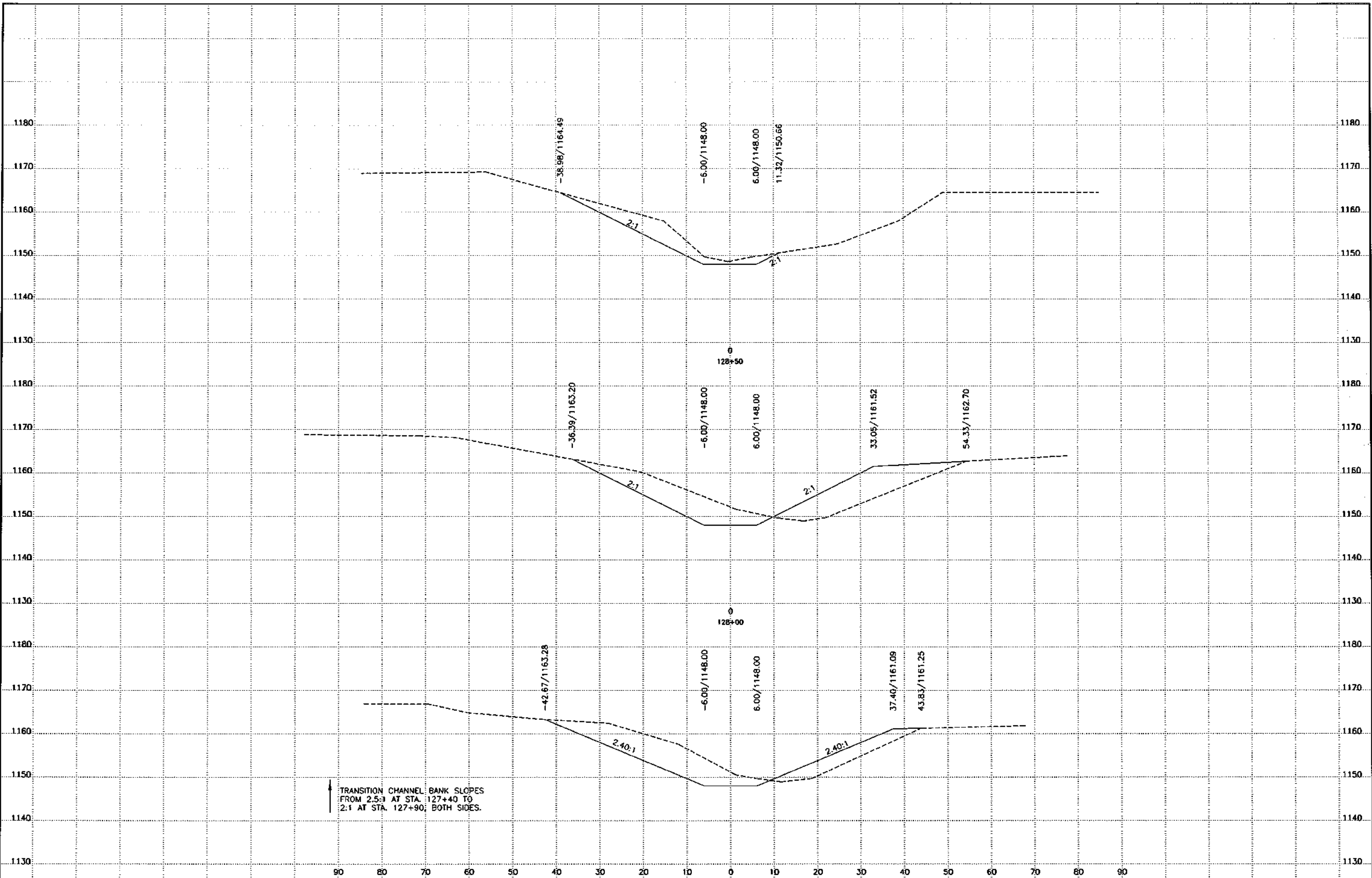
CRAWFORD COUNTY PROJECT NO. BROS-C024(82)-8J-24

SHEET W3









↑ TRANSITION CHANNEL BANK SLOPES  
 FROM 2.5:1 AT STA. 127+40 TO  
 2:1 AT STA. 127+90; BOTH SIDES.