

LETTING DATE
10-19-04

BRIDGE REPLACEMENT - CCS
BROS-C024(67)--8J-24

CRAWFORD COUNTY

CRAWFORD COUNTY

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' REGIONAL PERMIT NO. 7.

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.

Iowa Department of Transportation
Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

**SECONDARY ROAD SYSTEM
CRAWFORD COUNTY**
PROJECT NO. BROS-C024(67)--8J-24
BRIDGE REPLACEMENT - CCS
ON LINCOLN WAY OVER
WILLOW 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.

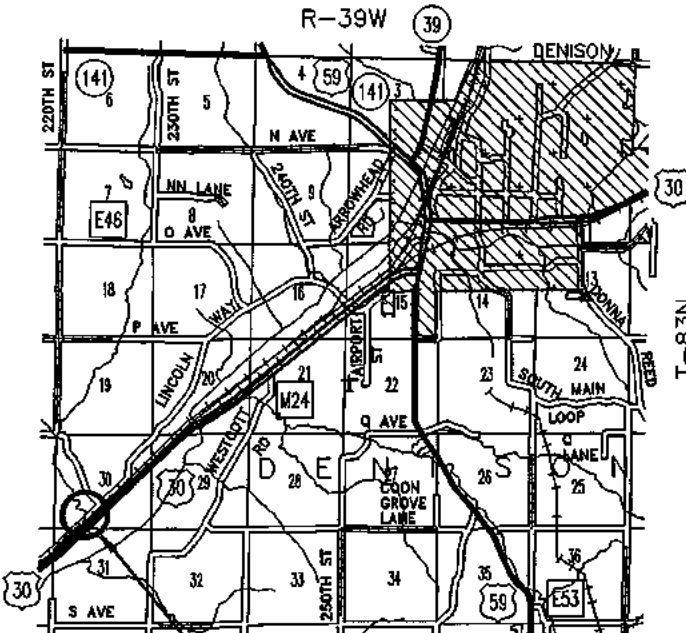
TOTAL SHEETS	19
PROJECT NUMBER	BROS-C024(67)--8J-24
R.O.W. PROJECT NUMBER	
PROJECT IDENTIFICATION NUMBER	
FHWA STRUCTURE NO.	127930

INDEX OF SHEETS	
NO.	DESCRIPTION
A1	TITLE SHEET
B1	ESTIMATE OF QUANTITIES AND GENERAL INFORMATION
C1-3	TABULATIONS, TYPICALS
D1	PLAN AND PROFILE SHEET
G1	BENCHMARK & REFERENCE INFORMATION
Q1	SOILS SHEET
U1	MODIFIED RE-69
U2-3	SPECIAL DETAILS
U4	DRAINAGE STRUCTURE DETAILS
V1	BRIDGE SITUATION PLAN
W1-3	CROSS SECTIONS - ROADWAY
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STANDARD BRIDGE PLANS		
STANDARD	ISSUED	REVISED
J24-87	JANUARY, 1987	
J24-3-87	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	8-96

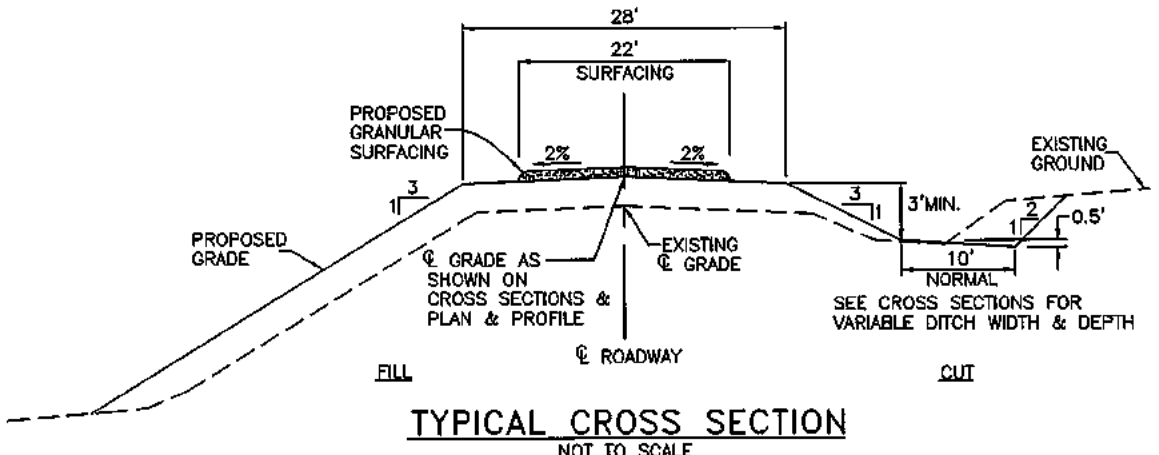
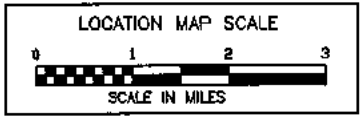
MILEAGE SUMMARY		
LOCATION	LIN. FT.	MILES
BOP STA. 106+00 TO EOP STA. 115+00	900.00	
DEDUCT BRIDGE AT STA. 110+00	103.46	
NET LENGTH OF ROADWAY	796.54	0.151

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-18A	04-20-04	RE-48A	10-19-04	RF-30C	04-30-02
RC-18B	04-20-04	RE-64B	10-19-04	RF-32	03-28-95
RE-2B	04-03-01	RE-68	10-19-04	RF-33	03-28-95
RE-7	04-15-03	RE-69C	10-19-04	RL-4	09-21-99
RE-12A	10-19-04	RE-76	10-21-03	RL-7	12-03-96
RE-12B	10-19-04	RF-7	04-15-03	RL-14	01-12-99
RE-12C	10-19-04	RF-30A	03-28-95	RS-26A	10-28-97
RE-47	10-19-04	RF-30B	10-21-03		



STA. 110+00
PROPOSED
100'-0" x 24' CCS BRIDGE
SKEW 30° L.A.
B.O.P. STA. 106+00
E.O.P. STA. 115+00

SUNDQUIST ENGINEERING, P.C.
CONSULTING ENGINEERS
HIGHWAYS • MUNICIPAL • MAPPING • SURVEYING
120 S. MAIN, P.O. BOX 220, DENISON, IOWA 51442-0220
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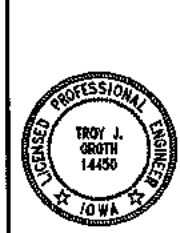


Approved
[Signatures]
BOARD OF SUPERVISORS

Approved
[Signature] 7/19/04
CRAWFORD COUNTY ENGINEER DATE

Iowa Department of Transportation
Highway Division
Accepted for Letting
[Signature] 7/28/04
DISTRICT 3 LOCAL SYSTEMS ENGINEER DATE

04-30-02	101-4	
DESIGN DATA RURAL		
2000 AADT	80	V.P.D.
2020 AADT	120	V.P.D.
201X DHV	X	V.P.H.
TRUCKS	X	%
TOTAL DESIGN ESALs		



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.
[Signature] 7/19/04
TROY J. GROTH, P.E. #14450 DATE
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2005.
PAGES OR SHEETS COVERED BY THIS SEAL:
ALL SHEETS

127931

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 DURING CONSTRUCTION.

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 IN ACCORDANCE WITH ARTICLE 1105.06 OF THE CURRENT STANDARD SPECIFICATIONS.

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.

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.

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.

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.

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.

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 68 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 4,821 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.

ESTIMATE REFERENCE INFORMATION

DATA LISTED BELOW IS FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT CONSTITUTE A BASIS FOR ANY EXTRA WORK ORDERS.

2101-0850001 CLEARING AND GRUBBING
INCLUDES CLEARING AND GRUBBING WITHIN THE LIMITS IDENTIFIED ON DRAWING SHEET D1.

2102-2710070 EXCAVATION, CLASS 10, ROADWAY AND BORROW
TYPE A COMPACTION WILL BE REQUIRED. REFER TO DRAWING SHEET C1 FOR TABULATION OF EARTHWORK QUANTITIES.

BORROW FROM SUITABLE CLASS 10 CHANNEL AND CLASS 20 EXCAVATION. ADDITIONAL NECESSARY BORROW SHALL BE PROVIDED BY THE CONTRACTOR AND MATERIAL SHALL BE APPROVED BY THE ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CLEARANCES FOR BORROW SITES IN ACCORDANCE WITH ARTICLE 2102.06

NO PAYMENT FOR OVERHAUL WILL BE ALLOWED. ALL AREAS TO RECEIVE NEW EMBANKMENT SHALL BE THOROUGHLY CLEAN OF ALL VEGETATION AND OTHER DEBRIS. EXISTING SURFACES SHALL BE PLOWED, STEPPED OR BENCHED PRIOR TO PLACEMENT OF NEW EMBANKMENT FILLS AS DIRECTED BY THE ENGINEER. SUCH WORK SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THIS ITEM.

2104-2710020 EXCAVATION, CLASS 10, CHANNEL
EXCESS MATERIAL, UNSUITABLE MATERIAL AND BROKEN CONCRETE 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.

QUANTITY INCLUDES REMOVAL OF EXISTING BROKEN CONCRETE. THIS MATERIAL MAY BE DISPOSED OF ON SITE IN THE CHANNEL AS DIRECTED BY THE ENGINEER.

QUANTITY INCLUDES EXCAVATION REQUIRED TO INSTALL THE SPECIAL REVETMENT FOR BANK STABILIZATION. ITEM INCLUDES PLACEMENT OF 1160 CY (859 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 DRAWING SHEET D1.

2312-8260081 GRANULAR SURFACING ON ROAD, CLASS D CRUSHED STONE
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.

QUANTITY INCLUDES AN ESTIMATED 30 TONS OF SURFACING TO BE PLACED ON ENTRANCE AT STA 109+27 LT.

2401-6745625 REMOVAL OF EXISTING BRIDGE
THE EXISTING BRIDGE IS A 55'X18' STEEL PONY TRUSS BRIDGE WITH CONCRETE DECK AND TIMBER HIGH ABUTMENTS. THE LUMP SUM BID FOR "REMOVAL OF EXISTING BRIDGE" SHALL INCLUDE REMOVAL OF THE EXISTING STRUCTURE IN ACCORDANCE WITH THE CURRENT STANDARD SPECIFICATIONS.

2403-0100010 STRUCTURAL CONCRETE (BRIDGE)
REFER TO TABULATION ON DRAWING 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.

2404-7775000 REINFORCING STEEL
2404-7775005 REINFORCING STEEL, EPOXY COATED
REFER TO TABULATIONS ON DRAWING SHEET C1 FOR MODIFICATIONS TO STANDARD BRIDGE PLAN J24-3-87. ALL OTHER REINFORCING DETAILS SHALL BE AS SHOWN ON THE STANDARD BRIDGE PLANS.

2414-6424120 CONCRETE OPEN RAILING
ALL OPEN RAIL CONCRETE SHALL BE CLASS C.

2417-1040042 CULVERT, CORRUGATED METAL ENTRANCE PIPE, 42 IN. DIA.
2417-1100042 CULVERT, CORRUGATED METAL ARCH ROADWAY PIPE, 42 IN. X 29 IN.
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. ALL BANDS SHALL BE 24-INCH BANDS. ALL CORRUGATED METAL PIPES 36 INCHES IN DIAMETER OR LARGER SHALL BE FURNISHED WITH 3 IN. X 1 IN. CORRUGATIONS.

2501-5425042 PILES, DRIVE STEEL BEARING, HP 10 X 42
THE REQUIRED DESIGN BEARING FOR THE HP 10 X 42 ABUTMENT PILES IS 27 TONS. THE REQUIRED DESIGN BEARING FOR THE HP 10 X 42 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.

ESTIMATED PROJECT QUANTITIES

ITEM NUMBER	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2101-0850001	CLEARING AND GRUBBING	ACRE	3.1	
2	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	2051	
3	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	1677	
4	2312-8260081	GRANULAR SURFACING ON ROAD, CLASS D CRUSHED STONE	TON	280	
5	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1	
6	2402-2720000	EXCAVATION, CLASS 20	CY	56	
7	2402-2720100	EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERT	CY	125	
8	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	193.5	
9	2404-7775000	REINFORCING STEEL	LB	21296	
10	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	22706	
11	2414-6424120	CONCRETE OPEN RAILING	LF	222.9	
12	2417-1040042	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 42 IN. DIA.	LF	40	
13	2417-1100042	CULVERT, CORRUGATED METAL ARCH ROADWAY PIPE, 42 IN. X 29 IN.	LF	104	
14	2501-5425042	PILES, DRIVE STEEL BEARING, HP 10 X 42	LF	1478	
15	2501-5475042	CONCRETE ENCASEMENT OF STEEL H PILES, HP 10 X 42 (P10A TYPE 3)	LF	266	
16	2501-5550042	PILES, FURNISH STEEL BEARING, HP 10 X 42	LF	1478	
17	2505-4008200	INSTALLATION OF GUARDRAIL	LF	137.5	
18	2505-4021690	GUARDRAIL, END ANCHORAGE, BEAM, RE-69	EACH	2	
19	2505-4021762	GUARDRAIL, TERMINAL, BEAM, FLARED, RE-78	EACH	2	
20	2507-3250005	ENGINEERING FABRIC	SY	1104	
21	2507-6850053	RETVEMENT, SPECIAL	TON	994	
22	2518-6910000	SAFETY CLOSURE	EACH	4	
23	2528-6445110	TRAFFIC CONTROL	LS	1	
24	2533-4980005	MOBILIZATION	LS	1	
25	2601-2634100	MULCHING	ACRE	1.4	
26	2601-2638043	SEEDING AND FERTILIZING (RURAL)	ACRE	1.4	
27	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	70	

CAST IN-ONE-PIECE STEEL PILE POINTS ARE REQUIRED FOR ALL PILES. PILE POINTS SHALL BE IN ACCORDANCE WITH ARTICLE 4167.02 OF THE CURRENT STANDARD SPECIFICATIONS AND MATERIALS IM 467.02.

2501-5550042 PILES, FURNISH STEEL BEARING, HP 10 X 42
INCLUDES COST OF CAP STEEL AS DETAILED ON STANDARD BRIDGE PLAN P10A.

2505-4008200 INSTALLATION OF GUARDRAIL
REFER TO TABULATION ON DRAWING SHEET C2.

2507-3250005 ENGINEERING FABRIC
MATERIAL TO CONFORM TO IOWA DOT MATERIALS IM 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 DRAWING SHEET U2.

2507-6850053 RETVEMENT, SPECIAL
THIS ITEM SHALL CONSIST OF FURNISHING AND PLACING RETVEMENT STONE, COMPLETE IN PLACE AS SHOWN ON THE DRAWINGS. REFER TO DETAILS ON DRAWING SHEET U2.

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

MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION 4130 OF THE CURRENT STANDARD SPECIFICATIONS FOR CLASS B RETVEMENT ON PRIMARY PROJECTS.

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

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 WILL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR THIS ITEM.

2518-6910000 SAFETY CLOSURE
REFER TO TABULATION ON DRAWING SHEET C2.

2602-0000030 SILT FENCE FOR DITCH CHECKS
REFER TO STANDARD ROAD PLANS RC-16A AND RC-16B AND TABULATION ON DRAWING SHEET C3 FOR DETAILS.

QUANTITY INCLUDES SILT FENCE AT CULVERT INLETS AS DETAILED ON DRAWING SHEET C3. MAXIMUM SPACING OF STEEL POSTS FOR SILT FENCE AT CULVERT INLETS SHALL BE 5 FEET.

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 A CRAWFORD COUNTY SECONDARY ROAD BRIDGE ON LINCOLN WAY OVER WILLOW CREEK.

THIS PPP COVERS APPROXIMATELY 3 ACRES WITH AN ESTIMATED 3 ACRES BEING DISTURBED. THE PORTION OF THE PPP COVERED BY THIS CONTRACT HAS 3 ACRES DISTURBED.

THE PPP IS LOCATED IN AN AREA OF ONE SOIL ASSOCIATION (KENNEBEC-NODAWAY-COLO). 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 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 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
100'-0 x 24' CCS BRIDGE

ITEM	UNIT	PIERS	SUPER STRUCTURE & ABUTMENTS	TOTAL
STRUCTURAL CONCRETE (BRIDGE)	CY	-	193.5	193.5
REINFORCING STEEL	LB	-	21296	21296
REINFORCING STEEL, EPOXY COATED	LB	-	22706	22706

BILL OF REINFORCING STEEL FOR SUPERSTRUCTURE
EPOXY - COATED BARS

LOCATION	BAR	WEIGHT
SLAB LONGITUDINAL, TOP	10b1	2646
SLAB LONGITUDINAL, TOP	9b2	2067
SLAB LONGITUDINAL, TOP	10b3	4891
SLAB LONGITUDINAL, TOP	6b4	601
SLAB LONGITUDINAL, TOP	6b5	295
SLAB LONGITUDINAL, TOP, UNDER RAIL	6b6	292
SLAB LONGITUDINAL, TOP, UNDER RAIL	9b7	517
SLAB LONGITUDINAL, TOP, UNDER RAIL	6b8	213
SLAB LONGITUDINAL, TOP, UNDER RAIL	9b9	834
SLAB LONGITUDINAL, TOP, UNDER RAIL	6b10	89
SLAB TRANSVERSE, TOP	4d1	1613
SLAB TRANSVERSE, TOP	4d2	220
SLAB TRANSVERSE, TOP, UNDER RAIL	5d3	1702
SLAB TRANSVERSE, @ ABUTMENTS	8e1	-
SLAB TRANSVERSE, @ ABUTMENTS	8e2	1307
SLAB HAIRPINS @ ABUTMENTS	6e3	653
SUB TOTAL - LBS.		17940
OPEN RAIL - SEE LIST ON STANDARD BRIDGE PLAN J24-19-87		4766
TOTAL LBS. EPOXY-COATED		22706

POINTS OF ACCESS (RL-7)

102-1
10-21-03

Refer to Detail Cross-Sections. For Pipe Culvert Details Refer to RF-30A, RF-30B, and RF-30C.

STATION	SIDE	W (ft)	TYPE	H (ft)	SIZE (Inches)	LENGTH		APRON (No.)	SURFACE MATERIAL (Tons)
						LT (Lin. Ft.)	RT (Lin. Ft.)		
108+34	R	20'	C	1.5	42	20	20		
109+27	L	22'	C						

TABULATION OF EARTHWORK QUANTITIES

STA.	CUT	ADD. CUT	FILL +35%	ADD. FILL	TOTAL CUT	TOTAL FILL+35%	BALANCE
106+00							
107+00	160		52		160	52	
108+00	315		109	115	315	224	
109+00	350		94	5	350	99	
109+50	130		47	60	130	107	
110+50							
111+00	7		279	60	7	339	
112+00	267		268	65	267	333	
112+50	241		20		241	20	
113+00	207		18		207	18	
114+00	280		55		280	55	
115+00	94		37		94	37	
TOTAL					2051	1284	

TABULATIONS, TYPICALS

TABULATION OF STEEL BEAM GUARDRAIL AT BRIDGE END POST, CONCRETE BARRIER AND RAILROAD SIGNALS

Refer to Standard Road Plans RE-48A-B, RE-63, RE-64A(1), RE-64A(2) and RE-64B

108-8A
10-19-04

LOCATION				STANDARD ROAD PLAN	LAYOUT LENGTHS					MATERIALS REQUIRED			DELINEATORS AND OBJECT MARKERS				BID ITEMS					REMARKS							
NO.	DIRECTION OF TRAFFIC	END	SIDE		STATION	L2	STS	VT1	VF	VT2	ET	STS		Posts ④	Posts ⑤	CRT Posts	Delineator	Object Marker			Installation of Guardrail		Anchorage and Terminal Systems						
												Thrie Beam (25.0')	Transition Section (6.25')					Lin. Ft.	Lin. Ft.	Lin. Ft.			Lin. Ft.	Lin. Ft.	Single White D-1W	Type 2	Type 3		STS+VT1+VF
1	EB	A	-	110+00	RE-64B	-	18.75	0	12.5	0	37.5	25.0	6.25	50	6	3	5	1	---	2	---	1	68.75	-	-	-	1*	1	*REFER TO SHEET U1 FOR MODIFIED RE-69
2	WB	A	-	110+00	RE-64B	-	18.75	0	12.5	0	37.5	25.0	6.25	50	6	3	5	1	---	2	---	1	68.75	-	-	-	1*	1	

- ① Lane(s) to which the obstacle is adjacent.
- ② Applies to Standard Road Plan RE-63 only.
- ③ Includes (1) special 12.5' section of 'W' Beam, see RE-76.
- ④ (6) 6"x8"x7' posts required when RE-63 or RE-69C is specified.
- ⑤ The last two posts of the RE-76 Terminal section are included as part of that bid item.

TABULATION OF GRADING FOR GUARDRAIL INSTALLATIONS

107-23
MODIFIED

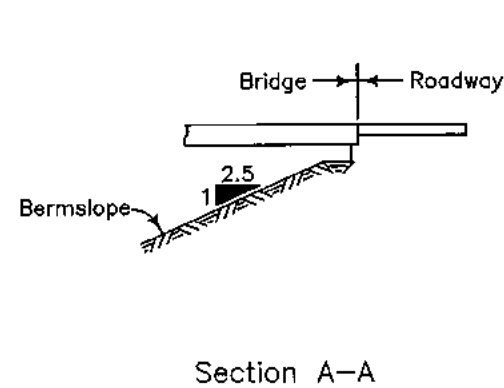
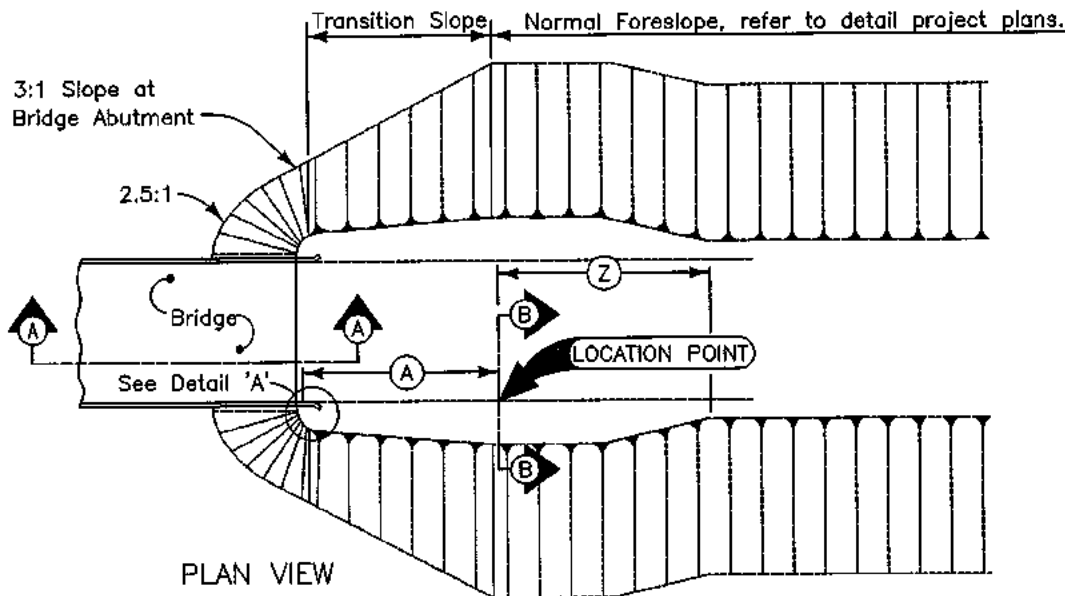
LOCATION POINT				DIMENSIONS ②						CLASS 10 EXCAV. **Cu. Yds.	EMBANK. IN PLACE Cu. Yds.	PIPE			REMARKS
NO.	Direction of Traffic	STATION	SIDE	A		B		Z				Size	Type	Length	
				Feet	Feet	Feet	Feet	Feet	Feet	Inches	Lin. Ft.				
1	EB	108+71	RT	2	72.05	8	50	60							
2	WB	111+29	LT	2	72.05	8	50	60							

** QUANTITY INCLUDED IN EXCAVATION, CLASS 10, ROADWAY AND BORROW (INCLUDES 35% SHRINKAGE).

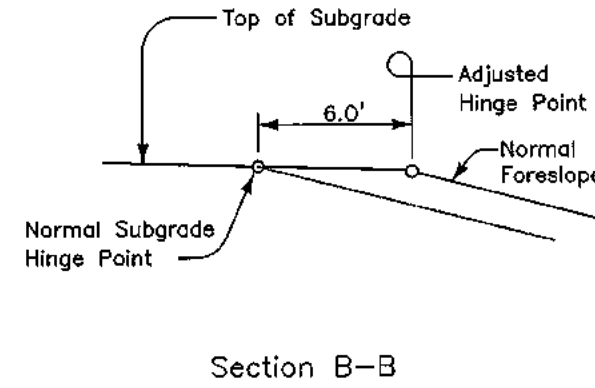
TABULATION OF SAFETY CLOSURES

108-13A
10-28-97

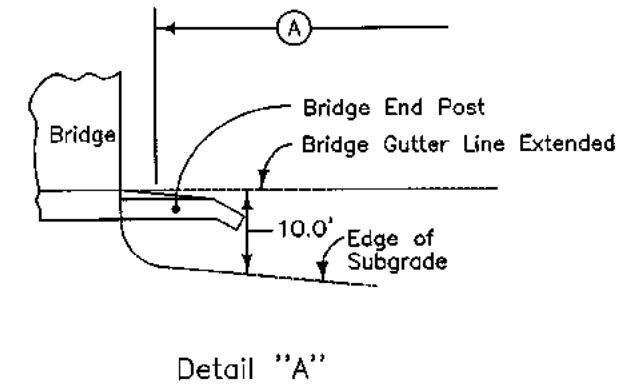
STATION	CLOSURE TYPE		REMARKS
	Road Qty.	Hazard Qty.	
105+00	1	-	WEST END
109+30	-	1	WEST END
111+00	-	1	EAST END
116+00	1	-	EAST END



Section A-A



Section B-B



Detail "A"

Note:
Refer to tabulation 107-23 for listings of Location Points and Dimensions A and Z.

FORESLOPE TRANSITION AT BRIDGE

4303
04-20-04

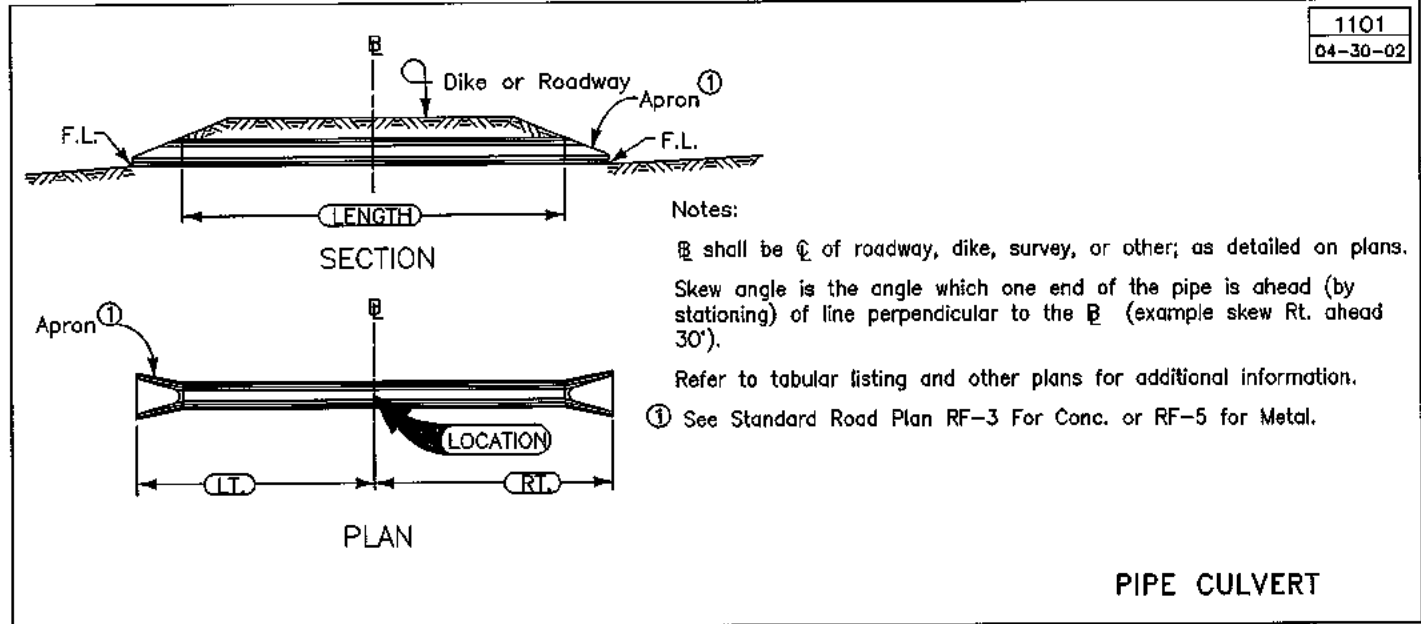
TABULATIONS, TYPICALS

DRAINAGE STRUCTURES

104-3
MODIFIED

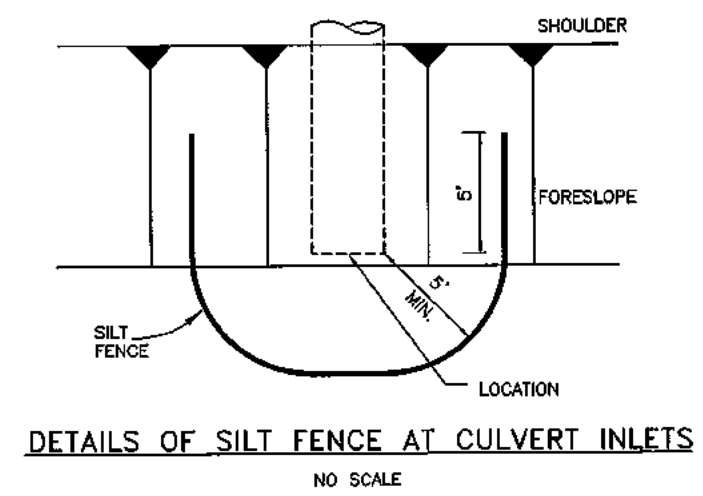
* Not a bid item

LOCATION	TYPE	SIZE Inches	KIND OF PIPE	LENGTH NEW CONST. Lin. Ft.	BEDDING CLASS	DESIGN COVER (H) 2.4	CAMBER FL	APRON NO.		ELBOW* No.	DIAPHRAGM* RF-7 No.	TEE SECTION* RF-21 No.	ADAPTORS* RF-2 Type No.		CONNECTED PIPE JOINT* RF-14 Type	FLOW LINE ELEVATIONS			DIMENSIONS Lin. Ft.				SKEW AHEAD		DIKE			CLASS 20 Cu. Yds.	REMARKS
								Inlet	Outlet				Lt.	Rt.		Other	Total		Extensions		Degrees		Rt. Lt.	Location Station	Top Elevation	Type			
													Lt.	Rt.			Lt.	Rt.	Lt.	Rt.	Lt.	Rt.							
106+09.59	1101	42x29	CMP	52	C	2.4										1141.24	1140.98		25.51	26.49								125	ARCH
106+17.16	1101	42x29	CMP	52	C	2.4										1141.24	1140.98		25.51	26.49								-	ARCH

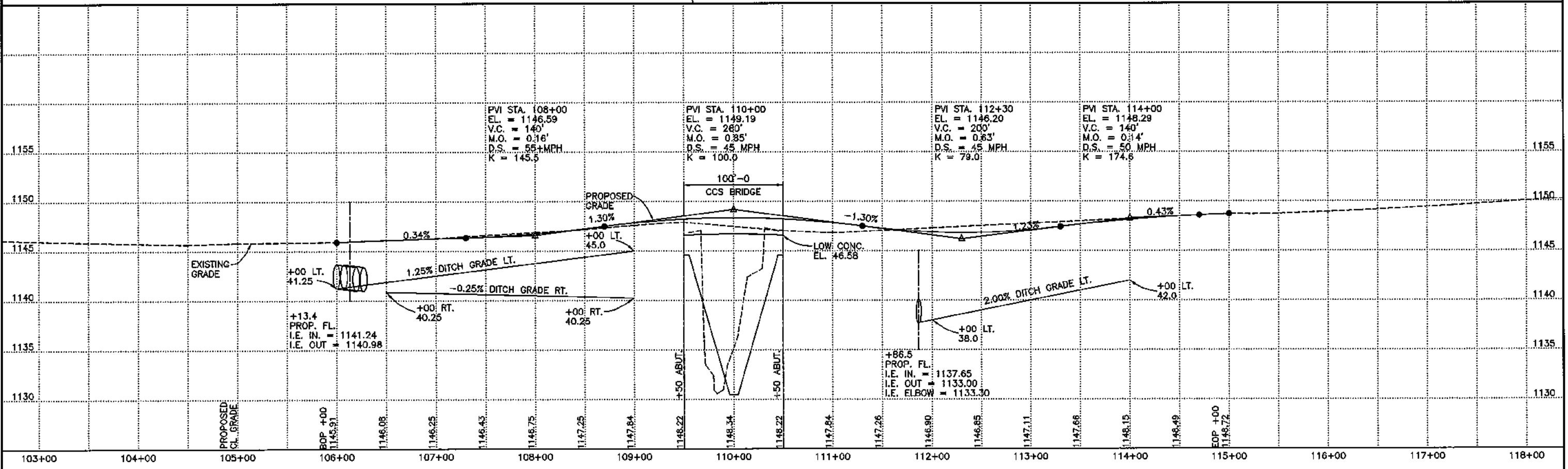
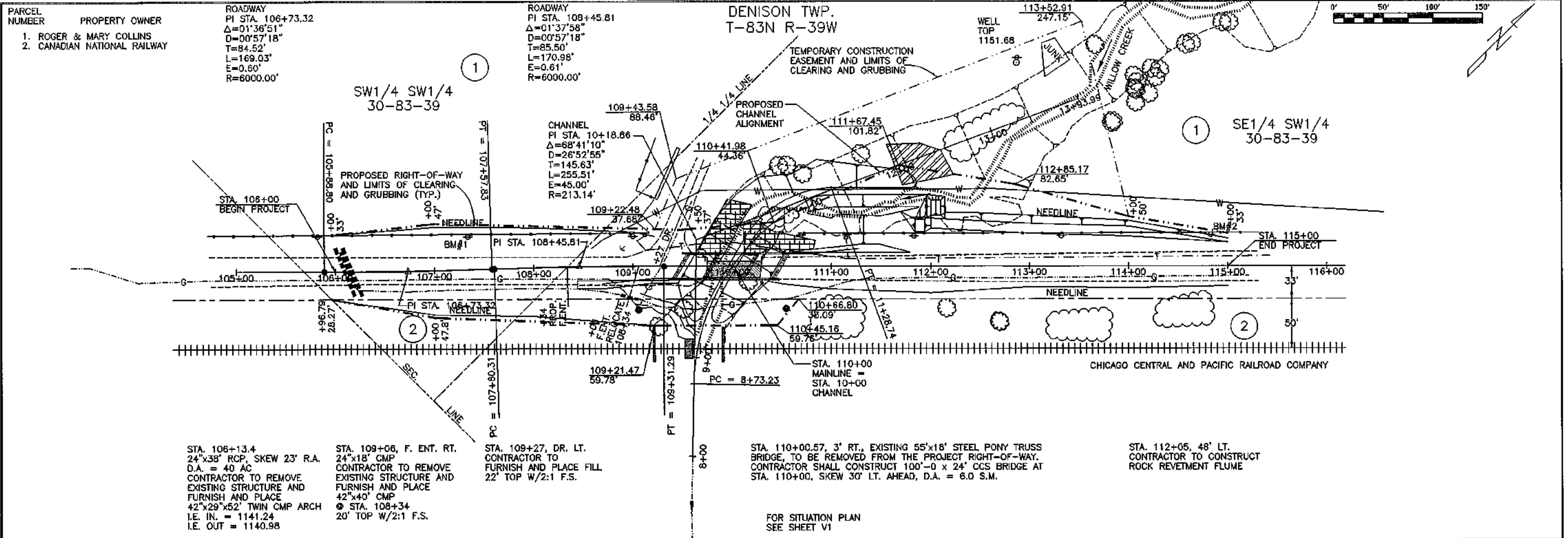


TABULATION OF EROSION CONTROL FEATURES

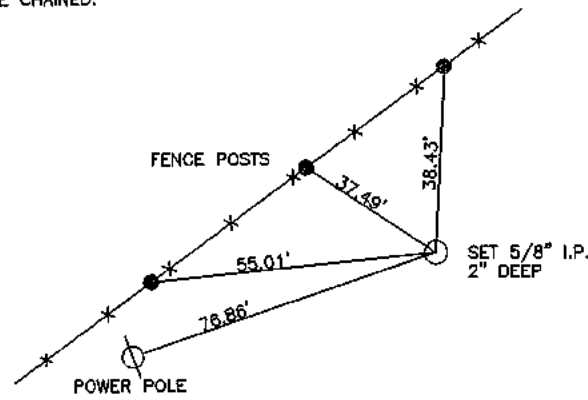
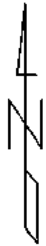
LOCATION		SPECIAL DITCH CONTROL	FOR DITCH CHECK			REMARKS
STATION TO STATION (EXACT LOCATION TO BE DETERMINED BY THE ENGINEER)	SIDE	WOOD EXCELSIOR MAT (Squares)	NO.	SPACING (Ft.)	SILT FENCE (Lin. Ft.)	
108+14	R	-	1	-	30	CULVERT INLET
112+25	L	-	1	-	20	
110+50	R	-	1	-	20	



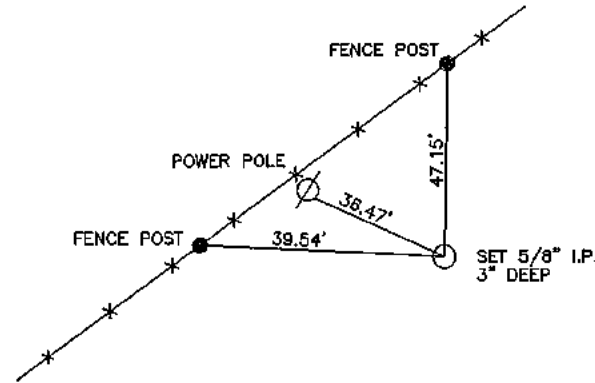
TABULATIONS, TYPICALS



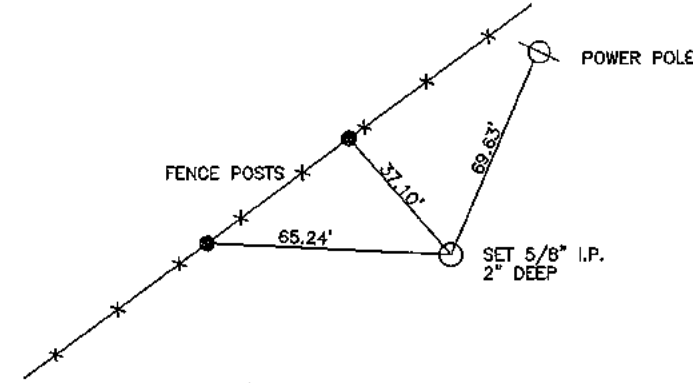
UNLESS NOTED:
ALL TIES ARE "X" NAILS AND
DISTANCES ARE SLOPE CHAINED.



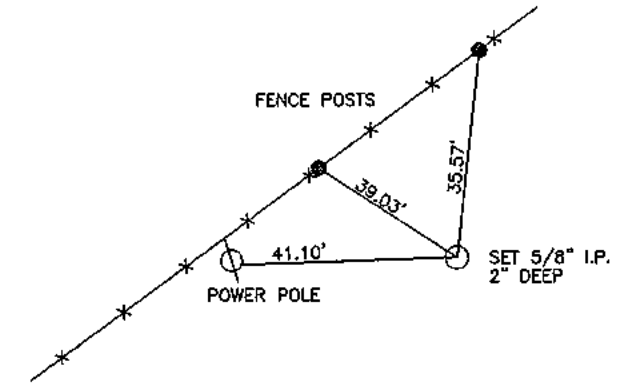
P.O.T. STA. 105+00



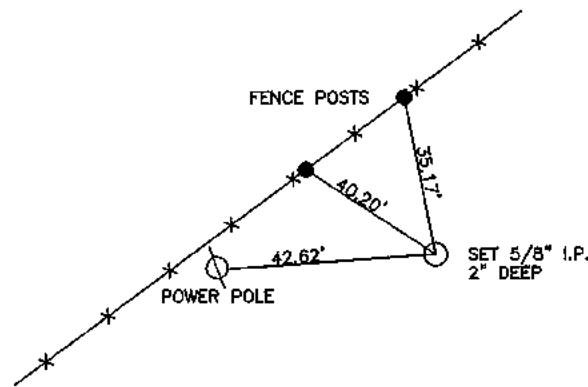
P.C. STA. 105+88.80



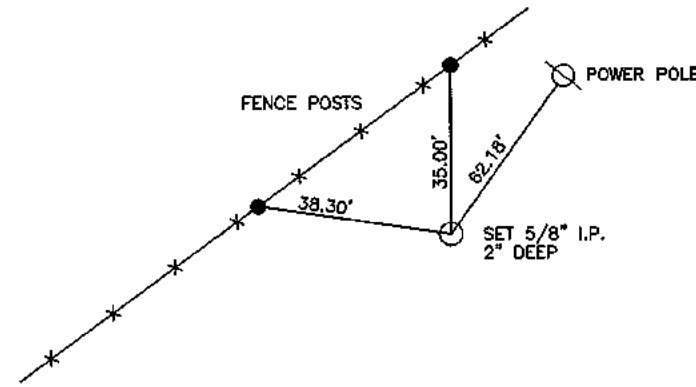
P.I. STA. 106+73.32



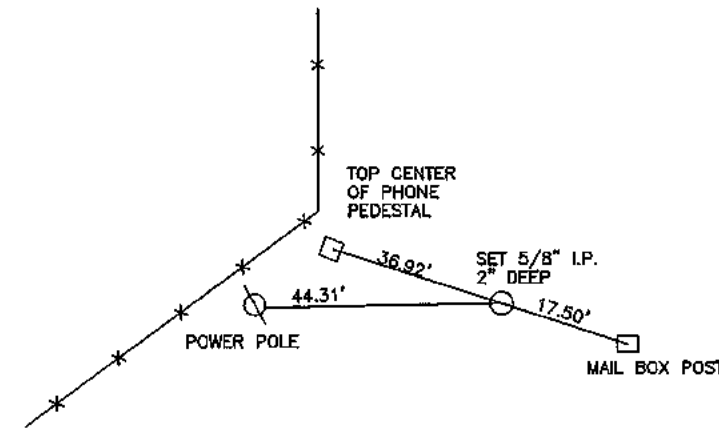
P.T. STA. 107+57.83



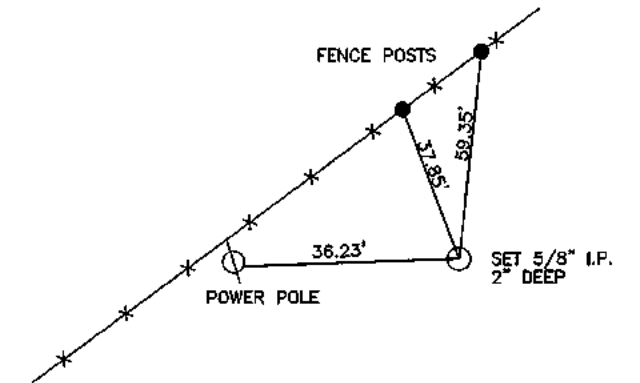
P.C. STA. 107+60.31



P.I. STA. 108+45.81



P.T. STA. 109+31.29



P.O.T. STA. 115+00

NUMBER	BENCH MARK INFORMATION DESCRIPTION	ELEVATION
1	R.R. SPIKE IN POWER POLE @ STA. 107+34.20, 33.24' LT. 1147.77	
2	R.R. SPIKE IN POWER POLE @ STA. 114+82.98, 31.63' LT. 1147.45	

REFERENCE TIES AND BENCH MARKS

LOG OF EXPLORATORY BORING												Sheet 1 of 1	
Job Number: G1217		Boring No.: B-1		Project: Collins Bridge		Boring Location: WEST ABUTMENT		Date Started: 3/22/04		Drill Type: HOLLOW STEM		Ground Elev.: 1147.8	
Depth in Feet	Sample Type	Soils	Blow Counts (SPT) (N)	Blow Counts (SPT) (F)	Blow Counts (SPT) (T)	Moisture Content (%)	Dry Density (pcf)	% Saturation	Head Penetration (PSF)	Unconfined Comp. Strength (PSF)	Liquid Limit (%)	Plasticity Index (%)	Other Tests
0-5	Standard Split Spoon	FILL ROAD GRAVEL	1-1-1	1-1-2	1-1-3								
5-12	Standard Split Spoon	STIFF SILTY CLAY, MEDIUM BROWN, MOIST	1-2-1	1-2-2	1-2-3								
12-23	Standard Split Spoon	SOFT SILTY CLAY, GRAY BROWN, WET, ALLUVIUM	1-1-1	1-1-2	1-1-3								
23-29	Standard Split Spoon	FIRM-VERY FIRM GLACIAL CLAY, GRAY, MOIST	2-1-1	2-1-2	2-1-3								
29-47	Standard Split Spoon	GLACIAL MATERIAL, SILTY SAND, VERY FINE GRAINED, GRAY	7-1-1	7-1-2	7-1-3								
47-65	Standard Split Spoon	END OF BORING AT 65 FEET FREE GROUNDWATER WAS ENCOUNTERED AT 22 FEET AT TIME OF DRILLING	3-0-1	3-0-2	3-0-3								

LOG OF EXPLORATORY BORING												Sheet 1 of 1	
Job Number: G1217		Boring No.: B-2		Project: Collins Bridge		Boring Location: WEST PIER		Date Started: 3/22/04		Drill Type: HOLLOW STEM		Ground Elev.: 1147.8	
Depth in Feet	Sample Type	Soils	Blow Counts (SPT) (N)	Blow Counts (SPT) (F)	Blow Counts (SPT) (T)	Moisture Content (%)	Dry Density (pcf)	% Saturation	Head Penetration (PSF)	Unconfined Comp. Strength (PSF)	Liquid Limit (%)	Plasticity Index (%)	Other Tests
0-7	Standard Split Spoon	FILL ROAD GRAVEL AND SAND	1-1-1	1-1-2	1-1-3								
7-24	Standard Split Spoon	SOFT SILTY CLAY, GRAY BROWN, WET, ALLUVIUM	1-1-1	1-1-2	1-1-3								
24-29	Standard Split Spoon	FIRM GLACIAL CLAY, GRAY, MOIST	1-1-1	1-1-2	1-1-3								
29-47	Standard Split Spoon	FINE SAND, GRAY, WET	1-1-1	1-1-2	1-1-3								
47-80	Standard Split Spoon	GLACIAL MATERIAL, SILTY SAND, VERY FINE GRAINED, GRAY	1-1-1	1-1-2	1-1-3								
80-66	Standard Split Spoon	COHESIVE GLACIAL MATERIAL, GRAY, MOIST	1-1-1	1-1-2	1-1-3								
66-75	Standard Split Spoon	END OF BORING AT 75 FEET FREE GROUNDWATER WAS ENCOUNTERED AT 21 FEET AT TIME OF DRILLING	1-1-1	1-1-2	1-1-3								

LOG OF EXPLORATORY BORING												Sheet 1 of 1	
Job Number: G1217		Boring No.: B-3		Project: Collins Bridge		Boring Location: EAST PIER		Date Started: 3/23/04		Drill Type: HOLLOW STEM		Ground Elev.: 1147.4	
Depth in Feet	Sample Type	Soils	Blow Counts (SPT) (N)	Blow Counts (SPT) (F)	Blow Counts (SPT) (T)	Moisture Content (%)	Dry Density (pcf)	% Saturation	Head Penetration (PSF)	Unconfined Comp. Strength (PSF)	Liquid Limit (%)	Plasticity Index (%)	Other Tests
0-20	Standard Split Spoon	DISTANCE FROM TOP OF BRIDGE TO TOP OF GROUND SURFACE											
20-27	Standard Split Spoon	SOFT SILTY CLAY, GRAY BROWN, WET, ALLUVIUM	1-1-1	1-1-2	1-1-3								
27-34	Standard Split Spoon	FIRM SILTY CLAY, GRAY BROWN, WET, ALLUVIUM	1-1-1	1-1-2	1-1-3								
34-47	Standard Split Spoon	CLAYEY SAND, GRAY, WET, ALLUVIUM	1-1-1	1-1-2	1-1-3								
47-55	Standard Split Spoon	FIRM-VERY FIRM GLACIAL CLAY, GRAY, MOIST	1-1-1	1-1-2	1-1-3								
55-63	Standard Split Spoon	GLACIAL MATERIAL, SILTY SAND, VERY FINE GRAINED, GRAY	1-1-1	1-1-2	1-1-3								
63-70	Standard Split Spoon	VERY FIRM GLACIAL CLAY, GRAY, MOIST	1-1-1	1-1-2	1-1-3								
70-70	Standard Split Spoon	END OF BORING AT 70 FEET FREE GROUNDWATER WAS ENCOUNTERED AT 20 FEET AT TIME OF DRILLING	1-1-1	1-1-2	1-1-3								

LOG OF EXPLORATORY BORING												Sheet 1 of 1	
Job Number: G1217		Boring No.: B-4		Project: Collins Bridge		Boring Location: EAST ABUTMENT		Date Started: 3/23/04		Drill Type: HOLLOW STEM		Ground Elev.: 1147.2	
Depth in Feet	Sample Type	Soils	Blow Counts (SPT) (N)	Blow Counts (SPT) (F)	Blow Counts (SPT) (T)	Moisture Content (%)	Dry Density (pcf)	% Saturation	Head Penetration (PSF)	Unconfined Comp. Strength (PSF)	Liquid Limit (%)	Plasticity Index (%)	Other Tests
0-7	Standard Split Spoon	FILL ROAD GRAVEL	1-1-1	1-1-2	1-1-3								
7-27	Standard Split Spoon	STIFF SILTY CLAY, DARK BROWN, MOIST, FILL	1-1-1	1-1-2	1-1-3								
27-33	Standard Split Spoon	SOFT SILTY CLAY, GRAY, WET, ALLUVIUM	1-1-1	1-1-2	1-1-3								
33-57	Standard Split Spoon	FINE SAND WITH GRAVEL, GRAY, WET, ALLUVIUM	1-1-1	1-1-2	1-1-3								
57-67	Standard Split Spoon	FIRM GLACIAL CLAY, GRAY, MOIST	1-1-1	1-1-2	1-1-3								
67-70	Standard Split Spoon	COARSE SAND, GRAY, WET, GLACIAL	1-1-1	1-1-2	1-1-3								
70-70	Standard Split Spoon	END OF BORING AT 70 FEET FREE GROUNDWATER WAS ENCOUNTERED AT 19 FEET AT TIME OF DRILLING	1-1-1	1-1-2	1-1-3								

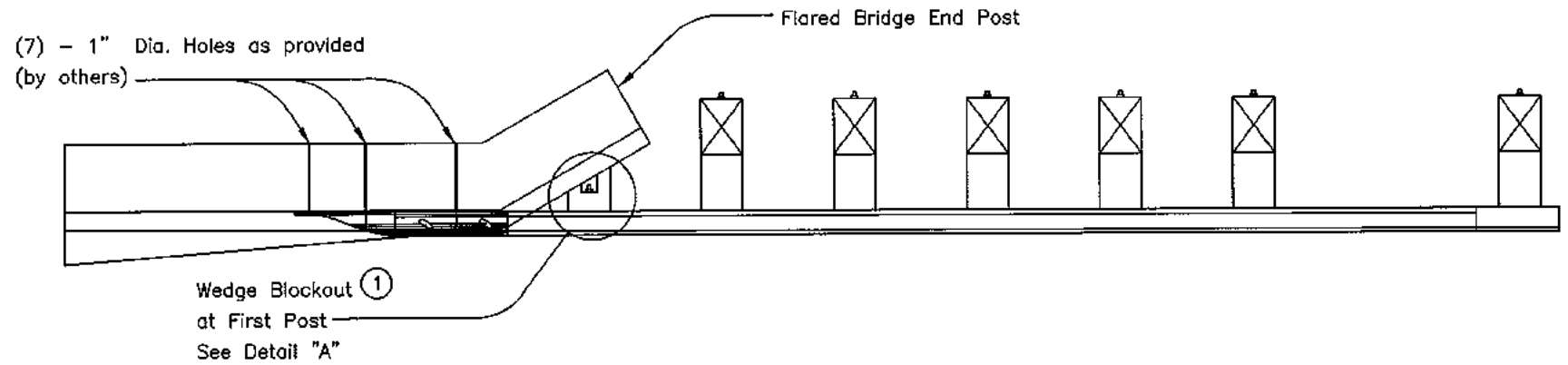
GEOTECHNICAL INFORMATION PROVIDED HERewith IS THE SOLE RESPONSIBILITY OF CERTIFIED TESTING SERVICES, INC., WHOSE GEOTECHNICAL REPORT DATED MARCH 31, 2004, COMPLETE WITH THE LICENSED ENGINEER'S SEAL AND CERTIFICATION, IS AVAILABLE FOR VIEWING.

SOUNDING DATA

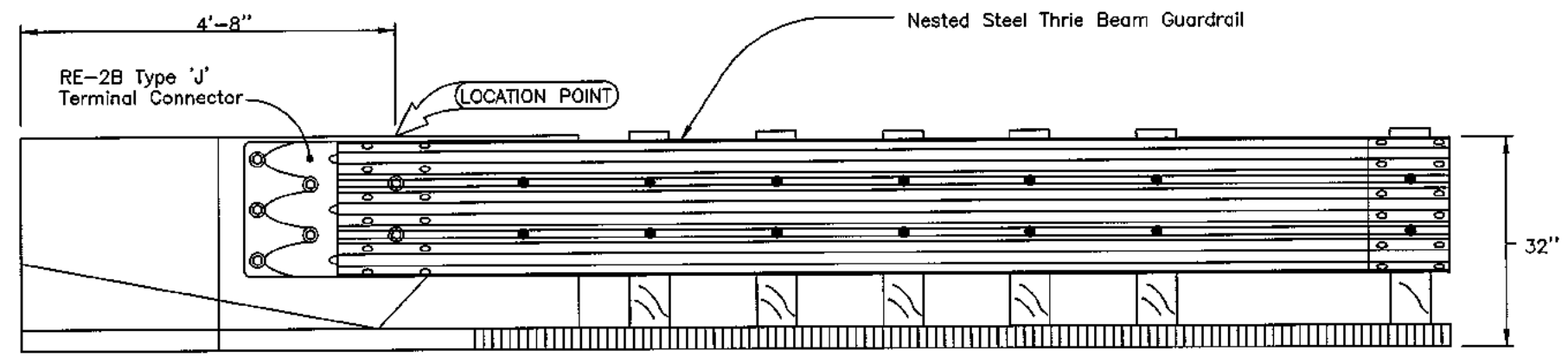
NOTE: THESE SOUNDINGS WERE MADE FOR DESIGN PURPOSES AND ARE NOT GUARANTEED FOR CONSTRUCTION.

SOUNDINGS WERE TAKEN ON MARCH 22 AND 23, 2004.

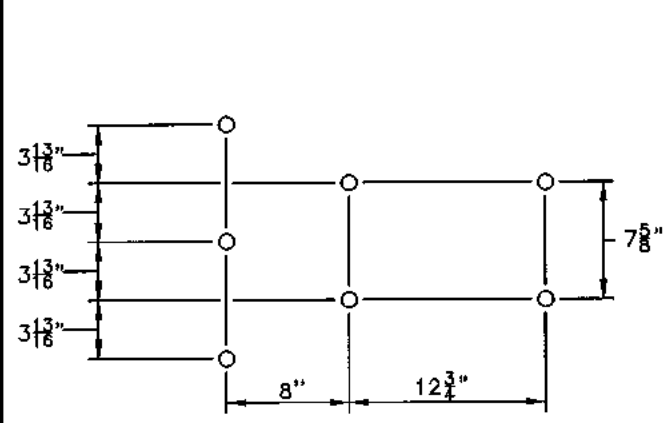
SEE SHEET V1 FOR BORING LOCATIONS.



TYPICAL PLAN

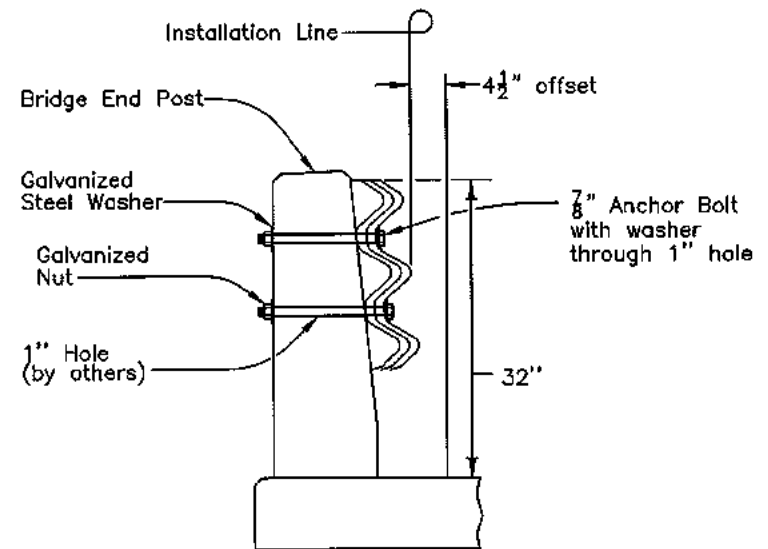


TYPICAL ELEVATION

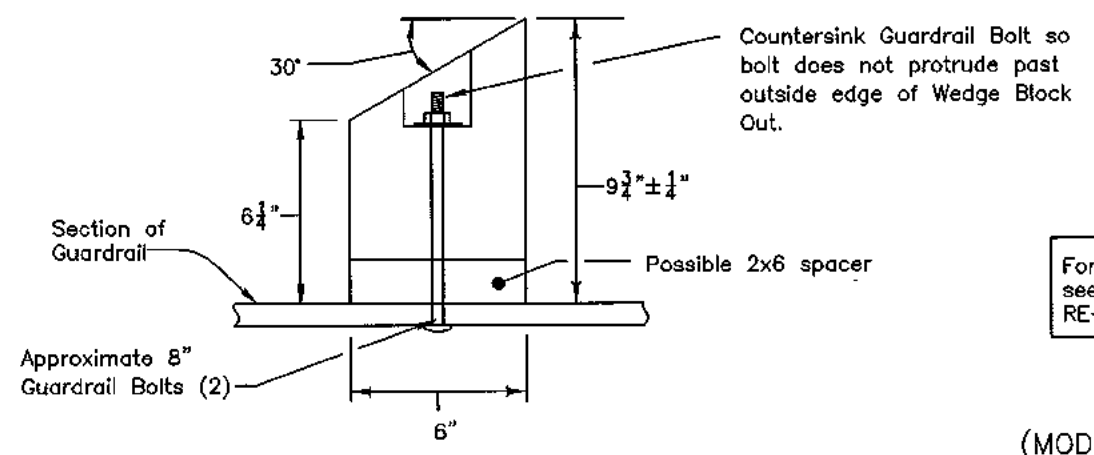


BOLT PATTERN

For RE-2B Type "J" Terminal Section



SECTION A-A



DETAIL "A"

For additional information see Standard Road Plan RE-2B and RE-68.

(MODIFIED RE-69)
 GUARDRAIL INSTALLATION
 CONNECTION TO FLARED BRIDGE
 ENDPOST OR CONCRETE BARRIER

GENERAL NOTES:

This plan illustrates the method of attaching thrie beam guard-rail to a flared bridge endpost or a flared concrete barrier end-post.

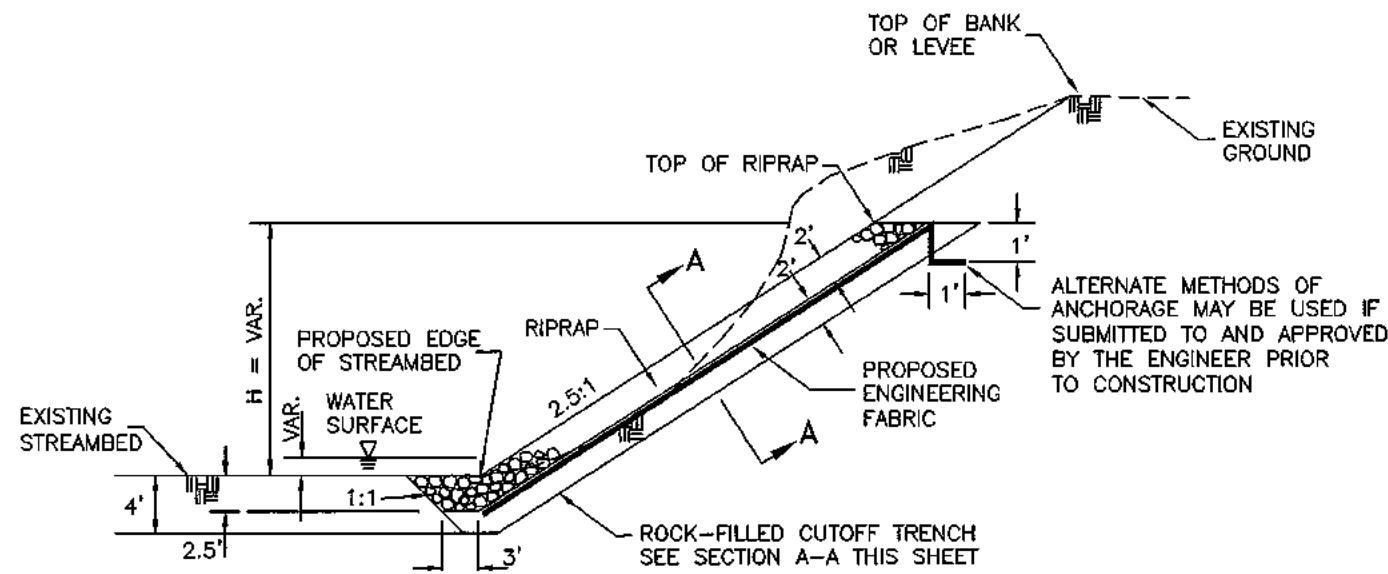
Horizontal and vertical alignment of the guardrail in the area immediately adjacent to the connection shall be adjusted to a smoothly curved line with no abrupt changes.

The anchor bolts shall conform to requirements of ASTM F-1554, Grade 55, threaded full length, and be galvanized. Threads may be chased after galvanizing. Washers shall conform to requirements of ASTM F-436 and be galvanized. Nuts shall conform to requirements of ASTM A-563 DH and be galvanized. These materials shall be galvanized in compliance with ASTM A-153, Class C.

The price bid for "Guardrail, End Anchorages, Beam, RE-69" each shall be considered full compensation for furnishing all materials listed below and the construction of the end anchorage as detailed hereon.

LIST OF MATERIALS FOR THE RE-69 END ANCHORAGE:

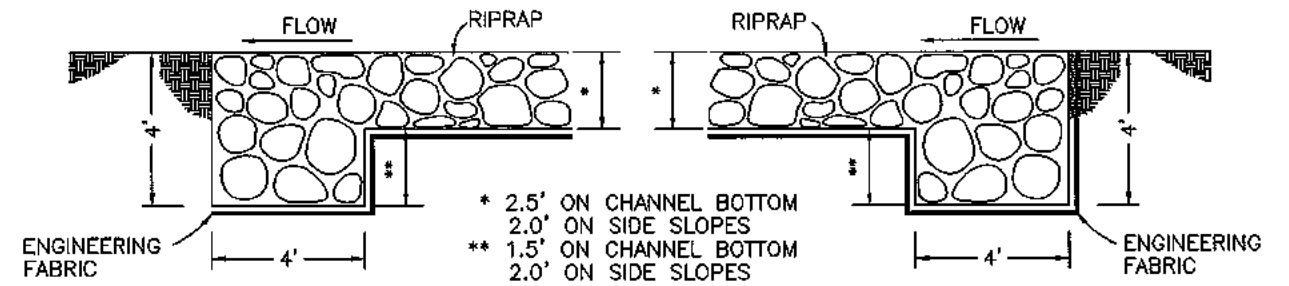
- (1) - RE-2B Type 'J' Terminal Connector.
 - (7) - Approved 7/8" x Sufficient length H.S. Hex Bolts.
 - (7) - Approved 7/8" H.S. Hex Nuts.
 - (14) - Approved 15/16" I.D., 2-1/4" O.D., 5/32" Thick Washers.
- ① First post shown on RE-68 is skipped. Only the wedge blockout is installed at this location.



TYPICAL HALF-CHANNEL BANK STABILIZATION SECTION

NOT TO SCALE
FOR TOP OF RIPRAP ELEVATIONS SEE CHANNEL CROSS SECTIONS

ALTERNATE METHODS OF ANCHORAGE MAY BE USED IF SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION



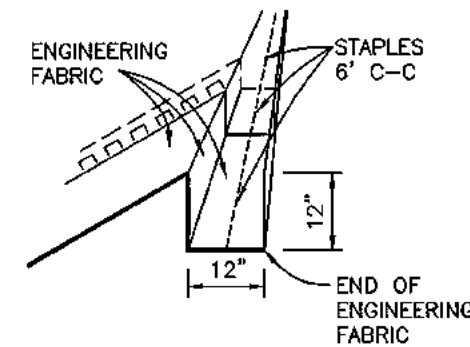
TYPICAL DOWNSTREAM

TYPICAL UPSTREAM

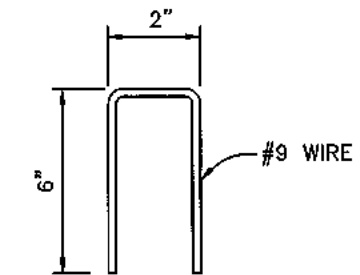
SECTION A-A

ROCK-FILLED CUTOFF TRENCH DETAILS

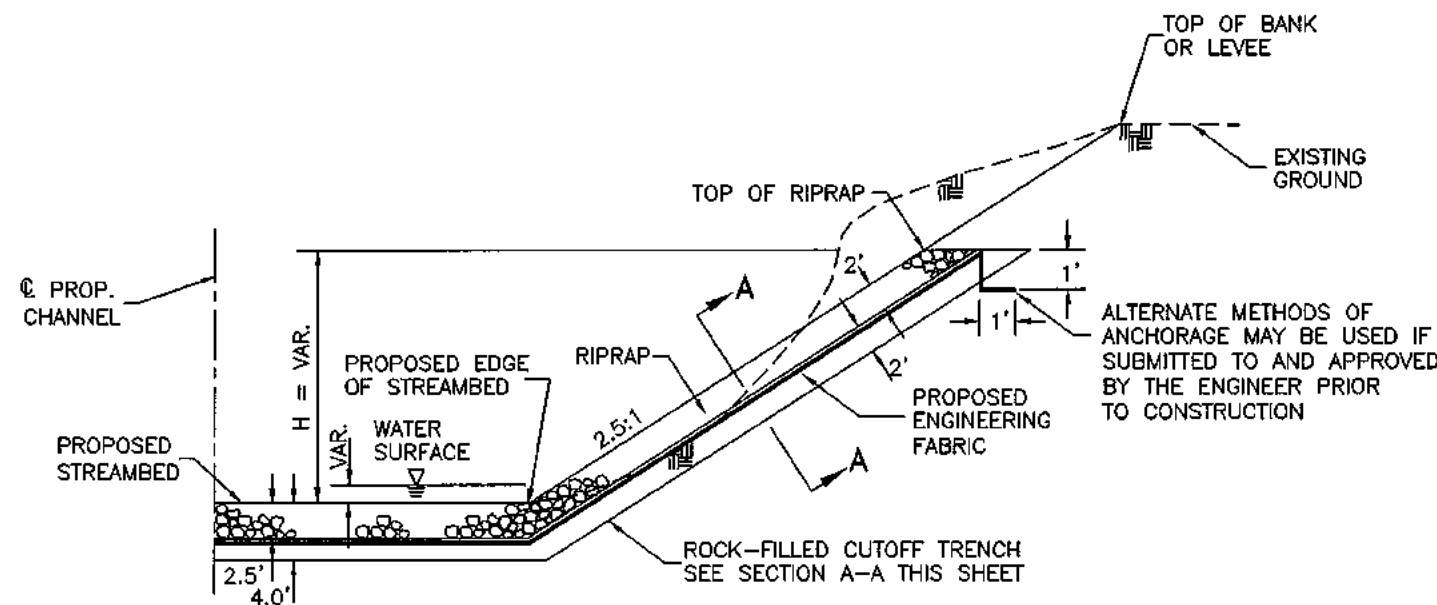
NOT TO SCALE



DETAIL OF TRENCH



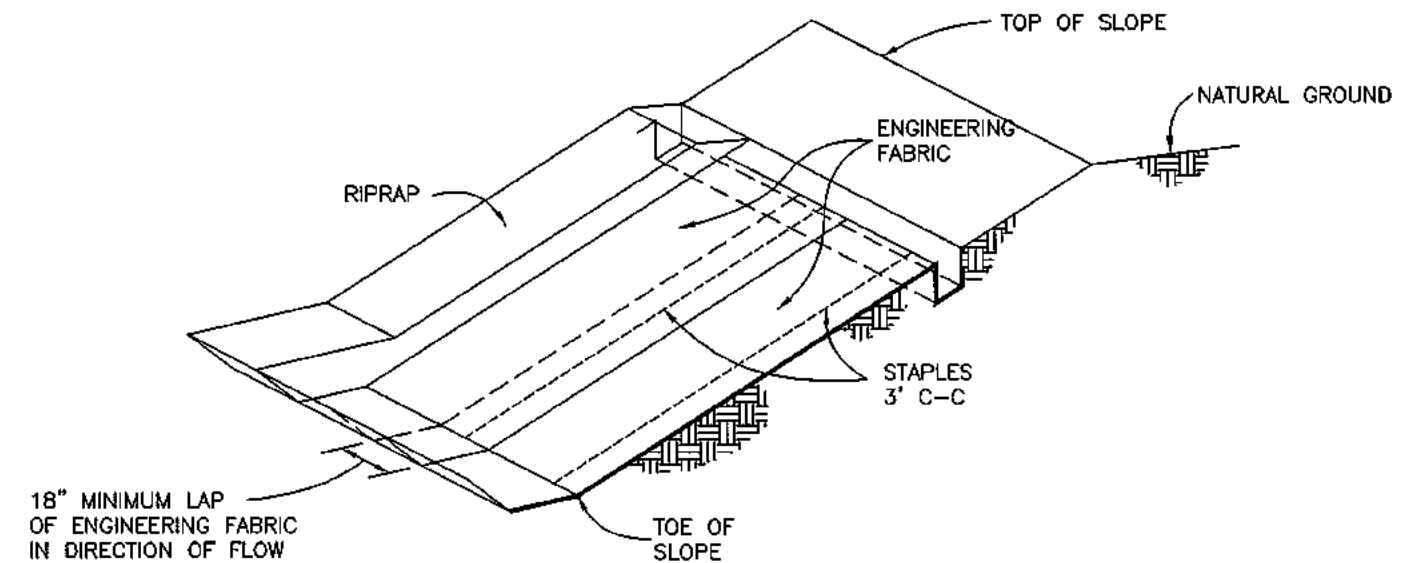
STAPLE



TYPICAL FULL-CHANNEL BANK STABILIZATION SECTION

NOT TO SCALE
FOR TOP OF RIPRAP ELEVATIONS SEE CHANNEL CROSS SECTIONS

ALTERNATE METHODS OF ANCHORAGE MAY BE USED IF SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION

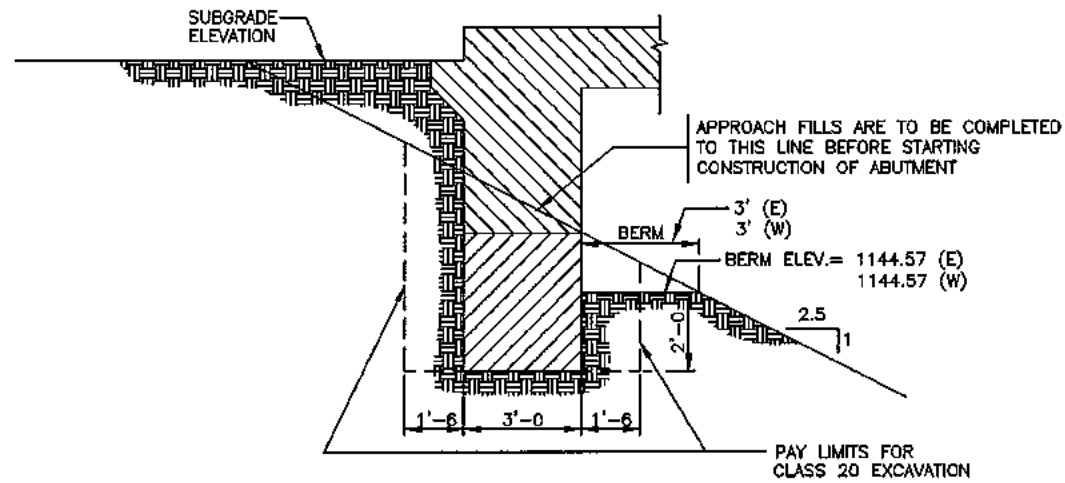


DETAILS OF PLACEMENT OF ENGINEERING FABRIC

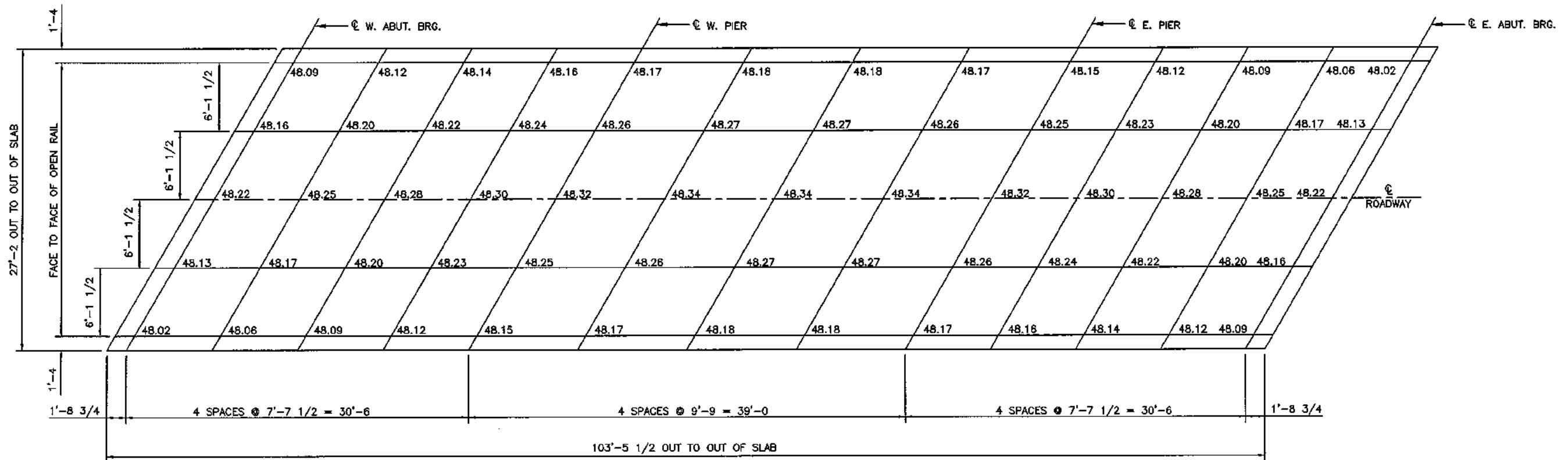
NOT TO SCALE

18" MINIMUM LAP OF ENGINEERING FABRIC IN DIRECTION OF FLOW

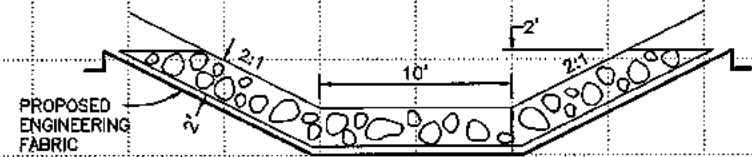
EXCAVATE 12"x12" TRENCH ALONG TOP OF RIPRAP. PLACE END OF ENGINEERING FABRIC STRIPS INTO TRENCH WITH STAPLES AS SHOWN. BACKFILL WITH THE EXCAVATED MATERIAL AND COMPACT. THE ENGINEER MAY PERMIT THE USE OF THE WHEELS OF PNEUMATIC-TIRED EQUIPMENT FOR CONSOLIDATING THE TRENCH BACKFILL MATERIAL.



CLASS 20 EXCAVATION DETAIL
NOT TO SCALE

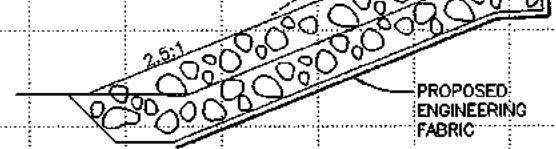


TOP OF SLAB ELEVATIONS
(ADD 1100' TO ABOVE ELEVATIONS)



SECTION B-B
NOT TO SCALE

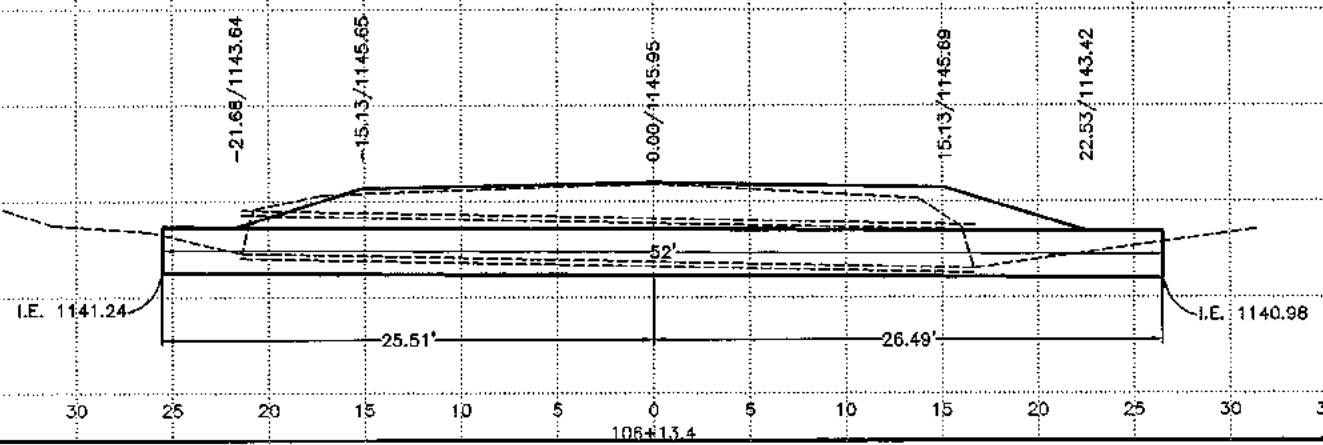
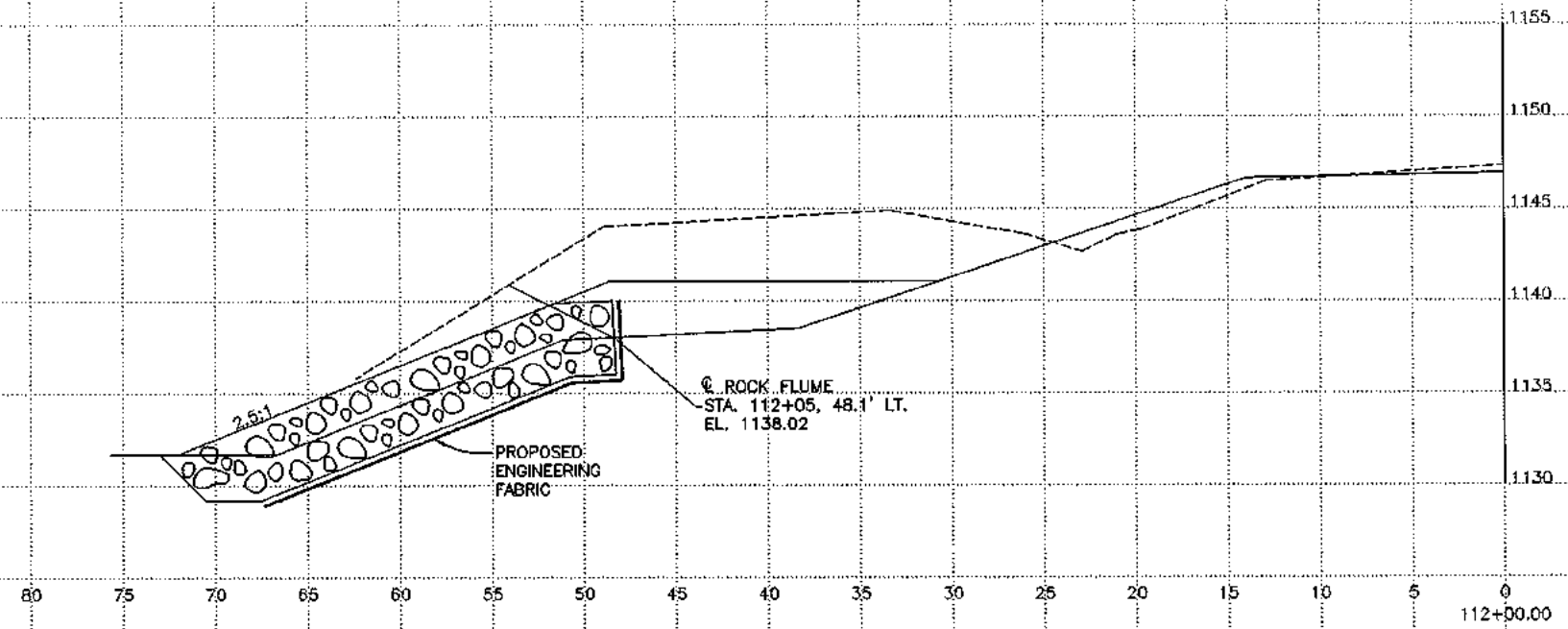
NOTE:
SEE SHEET V1 FOR LOCATION OF
SECTIONS B-B AND C-C.



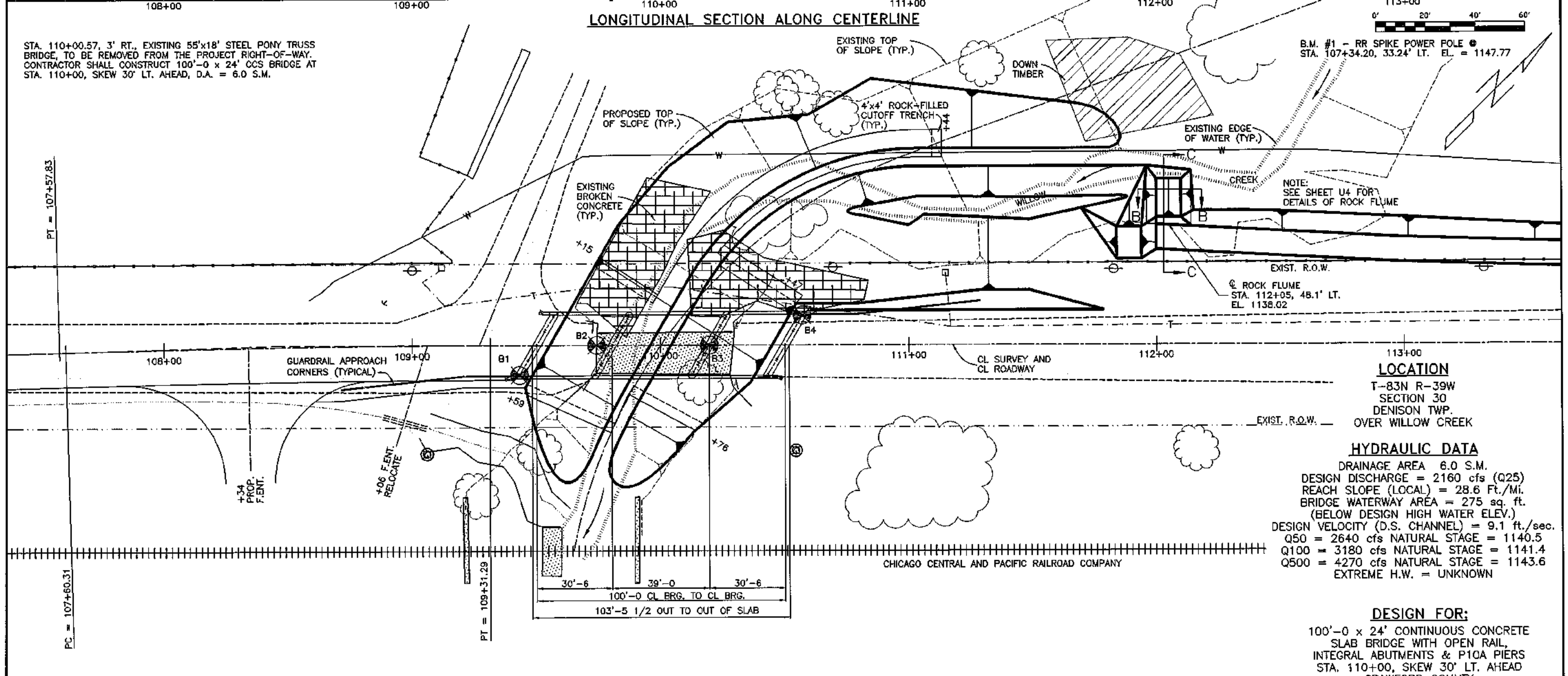
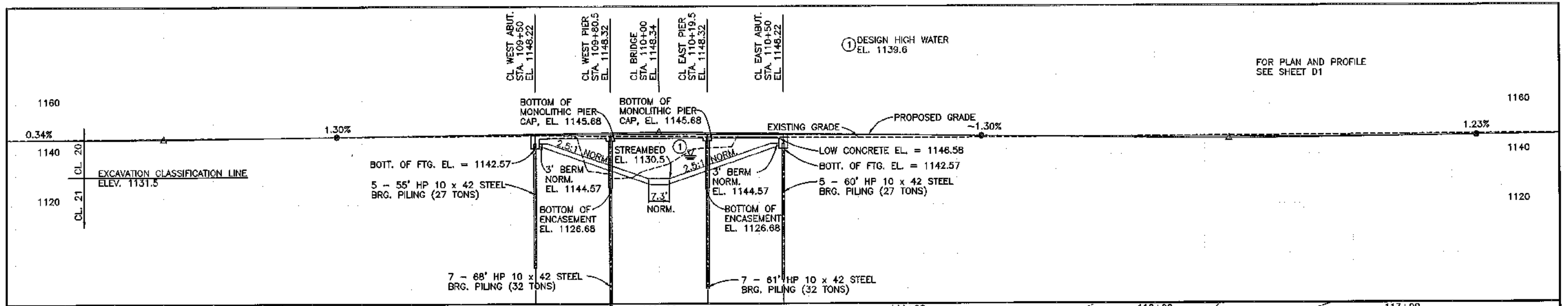
SECTION C-C

ROCK FLUME
STA. 112+05, 48.1' LT.
EL. 1138.02

ROCK FLUME DETAILS



STA. 106+13.4
24"x38" RCP, SKEW 23° R.A.
D.A. = 40 AC.
CONTRACTOR TO REMOVE
EXISTING STRUCTURE AND
FURNISH AND PLACE
42"x29"x52" TWIN CMP ARCH
CL. 20 EXCAV. = 125 C.Y.

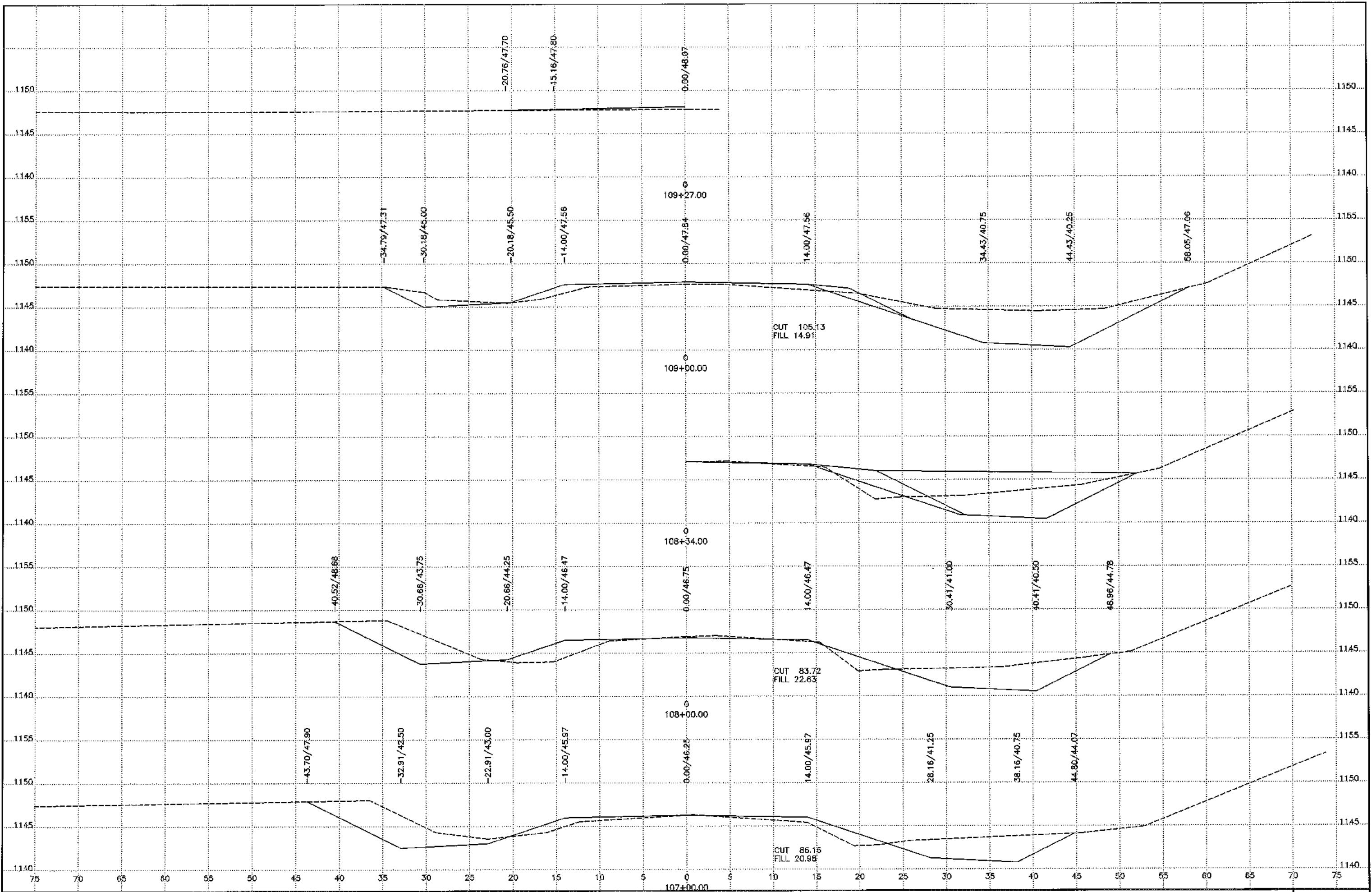


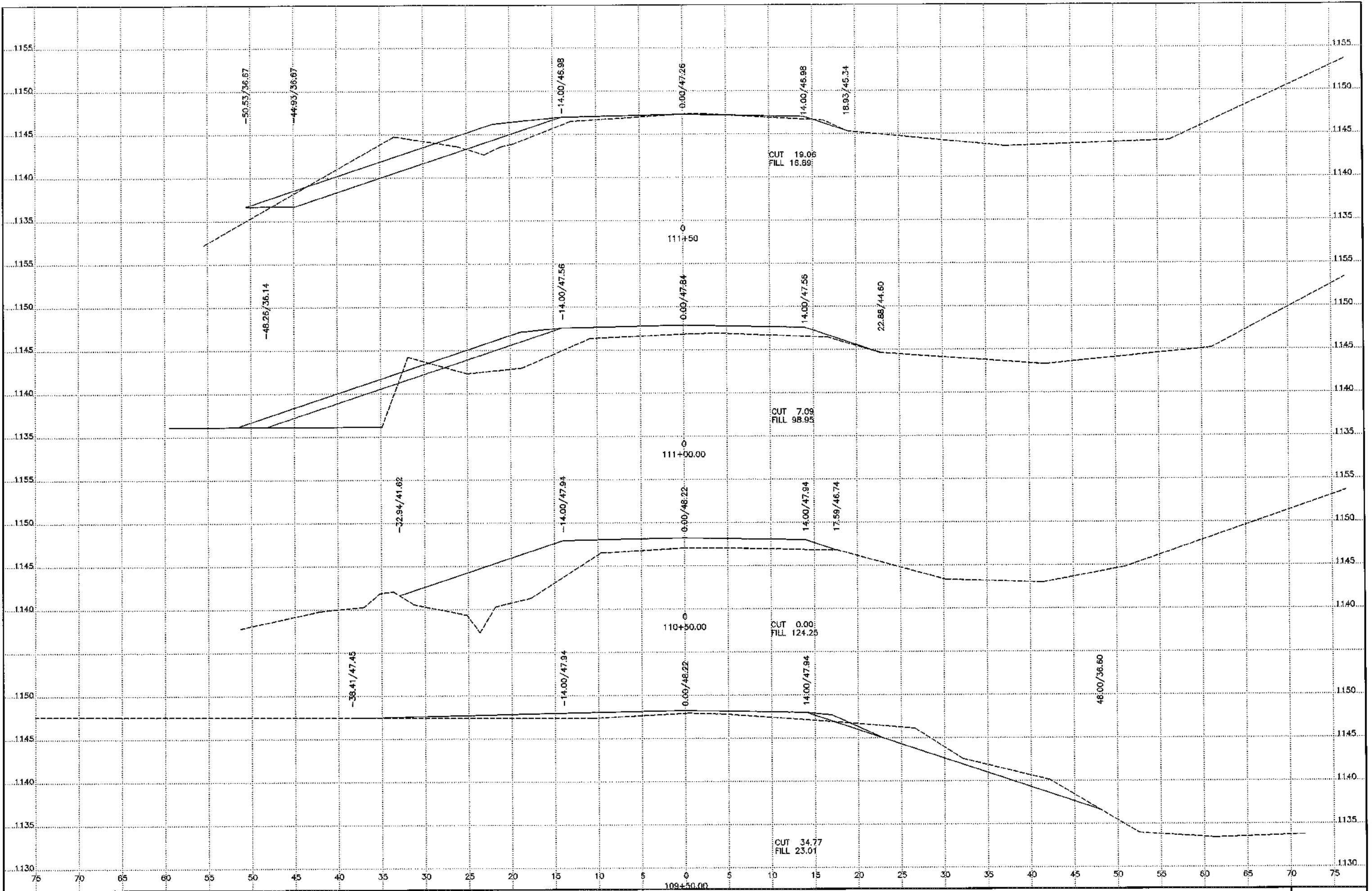
LOCATION
 T-83N R-39W
 SECTION 30
 DENISON TWP.
 OVER WILLOW CREEK

HYDRAULIC DATA
 DRAINAGE AREA 6.0 S.M.
 DESIGN DISCHARGE = 2160 cfs (Q25)
 REACH SLOPE (LOCAL) = 28.6 Ft./Mi.
 BRIDGE WATERWAY AREA = 275 sq. ft.
 (BELOW DESIGN HIGH WATER ELEV.)
 DESIGN VELOCITY (D.S. CHANNEL) = 9.1 ft./sec.
 Q50 = 2640 cfs NATURAL STAGE = 1140.5
 Q100 = 3180 cfs NATURAL STAGE = 1141.4
 Q500 = 4270 cfs NATURAL STAGE = 1143.6
 EXTREME H.W. = UNKNOWN

DESIGN FOR:
 100'-0 x 24' CONTINUOUS CONCRETE
 SLAB BRIDGE WITH OPEN RAIL,
 INTEGRAL ABUTMENTS & P10A PIERS
 STA. 110+00, SKEW 30' LT. AHEAD
 CRAWFORD COUNTY
 PROJ. NO. BROS-C024(67)-8J-24

SITUATION PLAN





REV

SE SUNDQUIST ENGINEERING, P.C.
CONSULTING ENGINEERS

HIGHWAYS • MUNICIPAL • PLANNING • SURVEYING
120 S. MAIN, P.O. BOX 220, DENISON, IOWA 51442
PHONE: (712)263-8118 FAX: (712)263-2181

SE PROJECT NO.: 02704 DATE: 06/04 DRAWN BY: TTK REVIEWED BY: SAS APPROVED BY: TJG

DESIGN NO. . FILE NO. . CRAWFORD COUNTY PROJECT NO. BROS-C024(67)-8J-24 SHEET W2

