



Iowa Department of Transportation  
Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

**SECONDARY ROAD SYSTEM  
CRAWFORD COUNTY**

PROJECT NO. BROS-C024(79)--8J-24  
BRIDGE REPLACEMENT - CCS  
ON H AVENUE OVER  
MIDDLE SOLDIER RIVER

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	21
PROJECT NUMBER	BROS-C024(79)--8J-24
R.O.W. PROJECT NUMBER	
PROJECT IDENTIFICATION NUMBER	
FHWA STRUCTURE NO.	129630

INDEX OF SHEETS	
NO.	DESCRIPTION
A1	TITLE SHEET
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D1	PLAN AND PROFILE SHEET - MAINLINE
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W1-4	CROSS SECTIONS - ROADWAY
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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	8-96

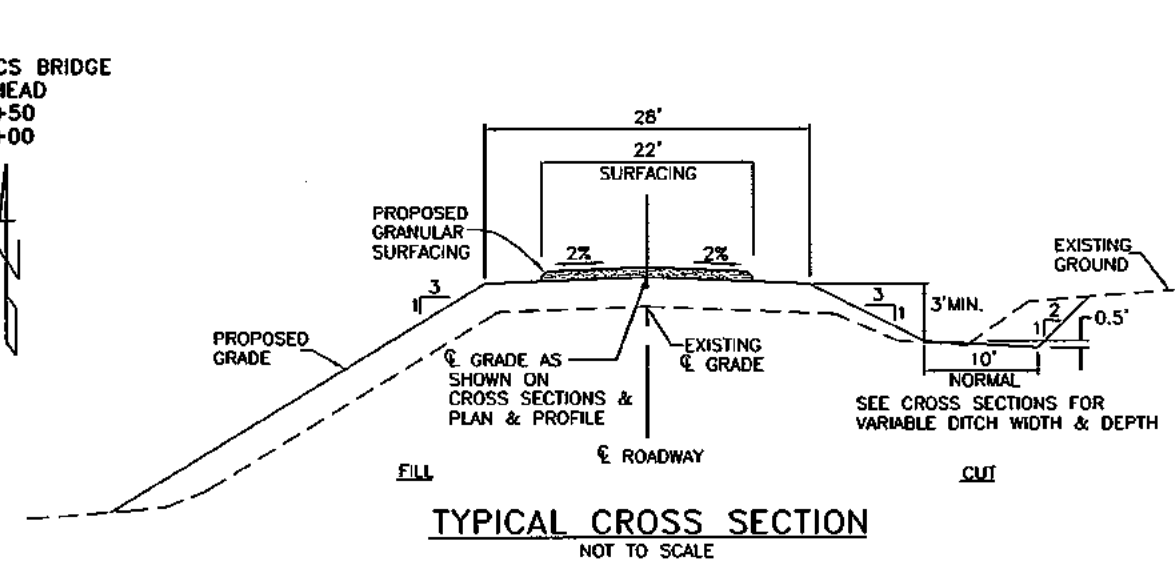
MILEAGE SUMMARY		
LOCATION	LIN. FT.	MILES
BOP STA. 100+50 TO EOP STA. 111+00	1050.00	
DEDUCT BRIDGE AT STA. 105+50.5	128.46	
NET LENGTH OF ROADWAY	921.54	0.175

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-16A	04-20-04	RE-64B	04-19-05	RF-30B	10-21-03
RC-16B	04-20-04	RE-68	10-19-04	RF-30C	04-30-02
RE-2B	04-03-01	RE-69C	04-19-05	RF-31	03-28-95
RE-7	04-15-03	RE-76	04-19-05	RF-32	03-28-95
RE-12A	10-19-04	RF-1	04-03-01	RL-4	09-21-99
RE-12B	10-19-04	RF-5	10-03-00	RL-7	12-03-96
RE-12C	10-19-04	RF-7	04-15-03	RL-14A(2)	10-18-05
RE-47	10-19-04	RF-14	10-18-05	RS-26A	10-18-05
RE-48A	10-19-04	RF-30A	10-18-05		

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.

*Troy J. Groth* 12/15/05  
TROY J. GROTH, P.E. #14450 DATE

MY LICENSE RENEWAL DATE IS DECEMBER 31, 2005.  
PAGES OR SHEETS COVERED BY THIS SEAL:  
ALL SHEETS



**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 NO. 14.

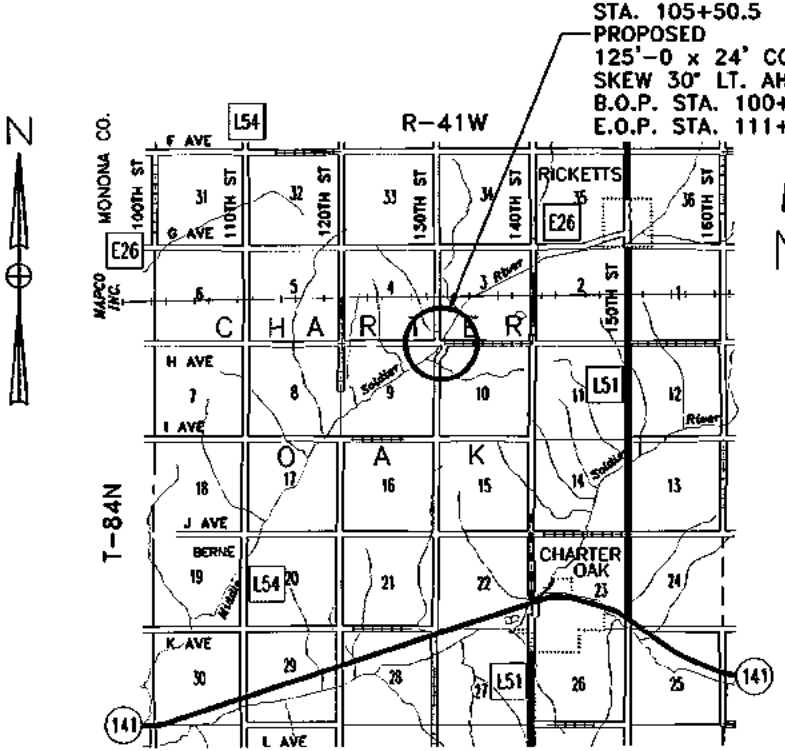
THIS PROJECT IS COVERED BY THE IOWA DEPARTMENT OF NATURAL RESOURCES NPDES GENERAL PERMIT NO. 2. THE CONTRACTOR SHALL CARRY OUT THE TERMS AND CONDITIONS OF GENERAL PERMIT NO. 2 AND THE STORM WATER POLLUTION PREVENTION PLAN WHICH IS A PART OF THESE CONTRACT DOCUMENTS. REFER TO SECTION 2602 OF THE STANDARD SPECIFICATIONS FOR ADDITIONAL INFORMATION.

**DRAWING APPROVAL**

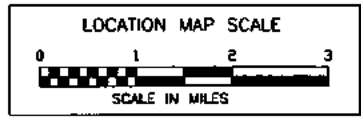
ALL SHOP DRAWINGS THAT REQUIRE APPROVAL SHALL BE APPROVED BY SUNDQUIST ENGINEERING, P.C.

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.



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



Approved

*Steve Wagner*  
*Mark Soyback*  
*A. Dean Hargens*  
*Robert Lohman*  
*Daniel J. Altman*

BOARD OF SUPERVISORS

Approved

*[Signature]* 12/19/05  
CRAWFORD COUNTY ENGINEER DATE

04-30-02 101-4

**DESIGN DATA RURAL**

2000 AADT	25	V.P.D.
2026 AADT	35	V.P.D.
201X DHV	X	V.P.H.
TRUCKS	X	%
TOTAL		
DESIGN ESALs		

BRIDGE REPLACEMENT - CCS  
BROS-C024(79)--8J-24

CRAWFORD COUNTY

129630

## ESTIMATE REFERENCE INFORMATION

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

2102-2710070 EXCAVATION, CLASS 10, ROADWAY AND BORROW  
TYPE A COMPACTION WILL BE REQUIRED. REFER TO PLAN 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.

CLEARING AND GRUBBING NECESSARY TO COMPLETE THE WORK ON THIS PROJECT SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THIS ITEM.

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, FOR GROUTED RIPRAP FLUME, AND FOR PREFORMED SCOUR HOLE. ITEM INCLUDES PLACEMENT OF 293 CY (217 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 V1.

2312-8260201 GRANULAR SURFACING ON ROAD, CLASS C GRAVEL  
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 97'x17' STEEL STRINGER BRIDGE WITH A TIMBER APPROACH SPAN, TIMBER 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.

CONTRACTOR SHALL COORINATE WITH COUNTY FOR REMOVAL OF TIMBER DECKING PLANK. COUNTY FORCES SHALL REMOVE DECKING. REMAINDER OF STRUCTURE SHALL BE REMOVED BY CONTRACTOR. EXISTING STEEL STRINGERS SHALL REMAIN THE PROPERTY OF THE COUNTY AND SHALL BE NEATLY STACKED WITHIN THE RIGHT-OF-WAY 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. ITEMS INCLUDE CERTIFIED PCC PLANT INSPECTION IN ACORDANCE WITH SECTION 2521.

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

## ESTIMATED PROJECT QUANTITIES

100-1A  
07-15-97

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	4397	
2	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	973	
3	2312-8260201	GRANULAR SURFACING ON ROAD, CLASS C GRAVEL	TON	469	
4	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1	
5	2402-2720000	EXCAVATION, CLASS 20	CY	61	
6	2402-2720100	EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERT	CY	285	
7	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	261.0	
8	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	61570	
9	2414-6424120	CONCRETE OPEN RAILING	LF	272.9	
10	2416-1180036	CULVERT, CONCRETE ROADWAY PIPE, 36 IN. DIA.	LF	114	
11	2417-0225036	APRONS, METAL, 36 IN. DIA.	EACH	1	
12	2417-1040024	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 24 IN. DIA.	LF	38	
13	2417-1040036	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 36 IN. DIA.	LF	86	
14	2501-5425042	PILES, DRIVE STEEL BEARING, HP 10 X 42	LF	550	
15	2501-5425053	PILES, DRIVE STEEL BEARING, HP 12 X 53	LF	1125	
16	2501-5475053	CONCRETE ENCASEMENT OF STEEL H PILES, HP 12x53 (P10A TYPE 3)	LF	360	
17	2501-5550042	PILES, FURNISH STEEL BEARING, HP 10 X 42	LF	550	
18	2501-5550053	PILES, FURNISH STEEL BEARING, HP 12 X 53	LF	1125	
19	2502-8215136	SUBDRAIN, CORRUGATED METAL PIPE, 36 IN. DIA.	LF	48	
20	2505-4008200	INSTALLATION OF GUARDRAIL	LF	137.5	
21	2505-4021690	GUARDRAIL, END ANCHORAGE, BEAM, RE-69	EACH	2	
22	2505-4021762	GUARDRAIL TERMINAL, BEAM, FLARED, RE-76	EACH	2	
23	2507-3250005	ENGINEERING FABRIC	SY	909	
24	2507-4011100	CONCRETE GROUT FOR REVETMENT OR GABION	CY	33.6	
25	2507-6850053	REVETMENT, SPECIAL	TON	907	
26	2518-6910000	SAFETY CLOSURE	EACH	6	
27	2528-8445110	TRAFFIC CONTROL	LS	1	
28	2533-4980005	MOBILIZATION	LS	1	
29	2601-2634100	MULCHING	ACRE	2.1	
30	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	2.1	
31	2602-0000020	SILT FENCE	LF	132	
32	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	280	

2404-7775005 REINFORCING STEEL, EPOXY COATED  
REFER TO TABULATION ON PLAN SHEET C1. ALL REINFORCING STEEL, INCLUDING CAP STEEL AND PIER ENCASEMENT STEEL, SHALL BE EPOXY COATED.

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

2416-1180036 CULVERT, CONCRETE ROADWAY PIPE, 36 IN. DIA.  
INCLUDES THREE TYPE 3 CONNECTED PIPE JOINTS AT EACH END OF EACH CONCRETE ROADWAY PIPE CULVERT.

2417-1040024 CULVERT, CORRUGATED METAL ENTRANCE PIPE, 24 IN. DIA.  
2417-1040036 CULVERT, CORRUGATED METAL ENTRANCE PIPE, 36 IN. DIA.  
2502-8215136 SUBDRAIN, CORRUGATED METAL PIPE, 36 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. 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  
2501-5425053 PILES, DRIVE STEEL BEARING, 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.

2505-4008200 INSTALLATION OF GUARDRAIL  
ALL POSTS SHALL BE WOOD POSTS, STEEL POSTS WILL NOT BE ALLOWED. REFER TO TABULATION ON PLAN 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 PLAN SHEET U1.

## ESTIMATED PROJECT QUANTITIES AND GENERAL INFORMATION

## ESTIMATE REFERENCE INFORMATION (CONTINUED)

## GENERAL NOTES

### 2507-401100 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. QUANTITY INCLUDES 7.6 CY OF GROUT FOR PREFORMED SCOUR HOLE AT STA. 25 + 86, 52' LT. AND 26.0 CY OF GROUT FOR GROUTED RIPRAP FLUME.

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.

### 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 WILL 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 C2.

### 2602-0000020 SILT FENCE

REFER TO STANDARD ROAD PLANS RC-16A AND RC-16B AND TABULATION ON PLAN SHEET C3 FOR DETAILS.

### 2602-0000030 SILT FENCE FOR DITCH CHECKS

REFER TO STANDARD ROAD PLANS RC-16A AND RC-16B AND TABULATION ON PLAN SHEET C3 FOR DETAILS.

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

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 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 172,925 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 11,323 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 A CRAWFORD COUNTY SECONDARY ROAD BRIDGE ON H AVENUE OVER MIDDLE SOLDIER RIVER.

THIS PPP COVERS APPROXIMATELY 4 ACRES WITH AN ESTIMATED 4 ACRES BEING DISTURBED. THE PORTION OF THE PPP COVERED BY THIS CONTRACT HAS 4 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 66.

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 MIDDLE SOLDIER RIVER.

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	SUPER STRUCTURE & ABUTMENTS	TOTAL
STRUCTURAL CONCRETE (BRIDGE)	CY	-	261.0	261.0
REINFORCING STEEL, EPOXY COATED	LB	-	61570	61570

POINTS OF ACCESS (RL-7)

102-1

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

10-21-03

LOCATION (RL-7)		SIZE (Inches)	LENGTH (No.)	APRON (No.)	SURFACE MATERIAL (Tons)				
STATION	SIDE								
102+85	R	30'	C	2.4	36	23	23		
107+07	L	30'	C	1	24	19	19		
107+72	R	30'	C	1	36	20	20		

TABULATION OF EARTHWORK QUANTITIES

STA.	CUT	ADD. CUT	FILL +35%	ADD. FILL	TOTAL CUT	TOTAL FILL+35%	BALANCE
100+50							
101+00	0		21		0	21	
102+00	62		66		62	66	
102+85	317		22	190	317	212	
103+00	92		0		92	0	
103+59.17	279		160		279	160	
103+89.17	114		166		114	166	
104+09.17	91	890	111	202	981	313	
104+59.09	265		350	90	265	440	
104+77.63	87		174		87	174	
104+88	23		158		23	158	
106+13							
106+23.37	20		41		20	41	
106+41.91	67		41		67	41	
106+91.8	192		100		192	100	
107+21.8	95	256	57	372	351	429	
107+51.8	113		35		113	35	
108+00	240		18	175	240	193	
109+00	457		20		457	20	
110+00	472		8		472	8	
111+00	265		6		265	6	
TOTAL					4397	2583	

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  
04-19-05

NO.	LOCATION			STANDARD ROAD PLAN	LAYOUT LENGTHS					MATERIALS REQUIRED					DELINEATORS AND OBJECT MARKERS				BID ITEMS				REMARKS					
	DIRECTION OF TRAFFIC	END	SIDE		STATION	CASE	STS (18.75')	VT1	VF	VT2	ET Terminal (37.5')	Thrie Beam (25.0')	Transition Section (6.25')	'W' BEAM (VT1+VF)+ (VT2+ET)	Posts ③ 6"x 8"x 7' with 6"x8" Spacer Blocks (6 or 7)	Posts ④ 6"x 8"x 6' with 6"x8" Spacer Blocks	CRT Posts 6"x 8"x 6' with 6"x8" Spacer Blocks (5)	Delineator Type Single White D-1W	Object Marker		Installation of Guardrail (STS+VT1+VF)+ (VT2+ET)	Anchorage and Terminal Systems						
																			Type 2	Type 3		RE-69A		RE-69B	RE-69C	RE-76		
1	EB	A	-	105+50.5	A	RE-64B	18.75	0	12.5	0	37.5	25.0	6.25	50	6	3	5	1	---	2	1	1	68.75	-	-	1	1	
2	WB	A	-	105+50.5	A	RE-64B	18.75	0	12.5	0	37.5	25.0	6.25	50	6	3	5	1	---	2	1	1	68.75	-	-	1	1	

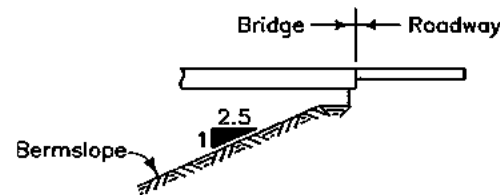
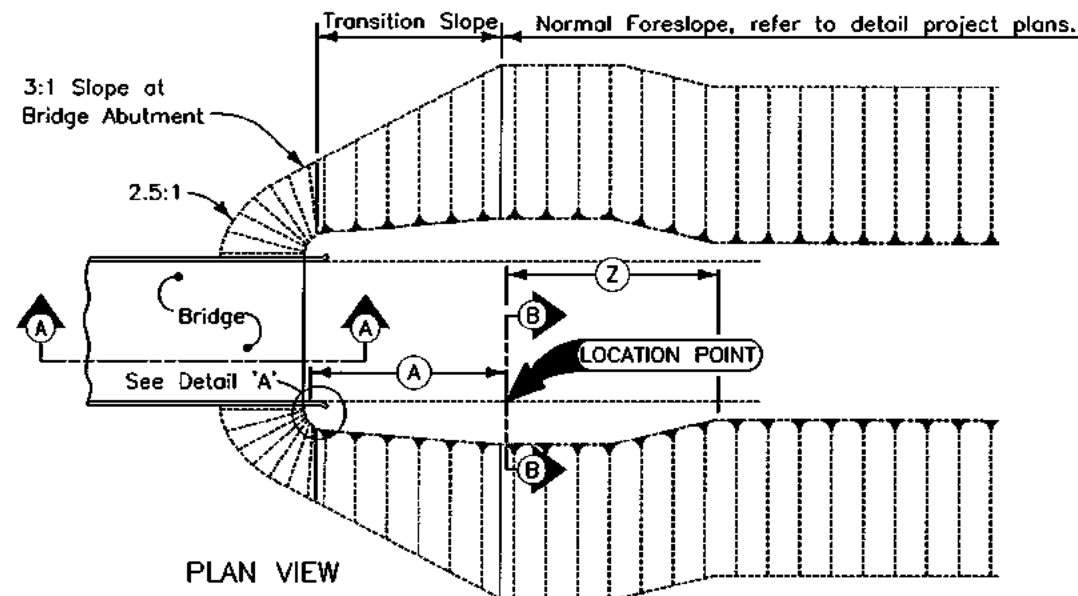
- ① Lane(s) to which the obstacle is adjacent.
- ② Includes (1) special 12.5' section of 'W' Beam, see RE-76.
- ③ (6) 6"x8"x7' posts required when RE-69C is specified.
- ④ The last two posts of the RE-76 Terminal section are included as part of that bid item.

GRADING FOR GUARDRAIL INSTALLATIONS  
Refer to Standard Road Plans RL-12, RL-14A(1), RL-14A(2), RL-14B, and Typicals 4303.

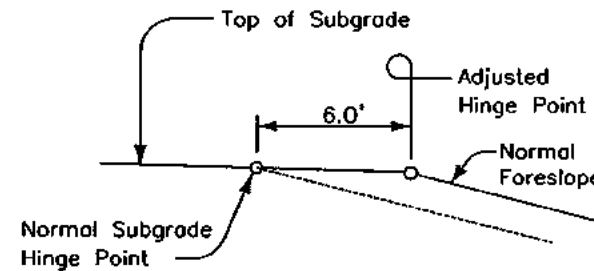
107-23  
04-19-05

NO.	DIRECTION OF TRAFFIC	STATION	SIDE	TYPE	DIMENSIONS (FEET)								CLASS 10 EXCAV. **Cu. Yds.	EMBANK. IN PLACE Cu. Yds.	PIPE			REMARKS										
					BY		Z		X1	Y1	X2	Y2			X3	Y3	X4		Y4	Size	Type	Length						
1	A	104+09.17	RT	3	A	T	A	T																				
2	A	106+91.80	LT	3	8		60		16.5	2.4									24	CMP	38	PIPE TABULATED IN POINTS OF ACCESS						

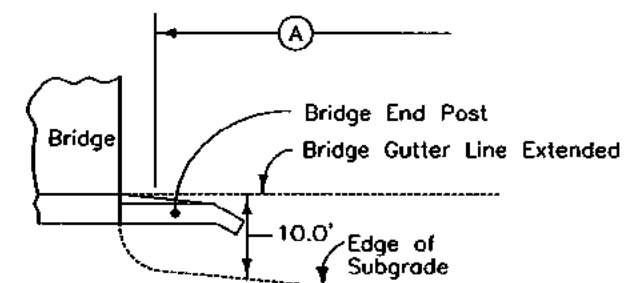
\*\* QUANTITY INCLUDED IN EXCAVATION, CLASS 10, ROADWAY AND BORROW (INCLUDES 35% SHRINKAGE).



Section A-A



Section B-B



Detail "A"

FORESLOPE TRANSITION AT BRIDGE

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

4303  
04-20-04

TABULATION OF SAFETY CLOSURES  
Refer to Section 2518 of the S't.d. Specifications

108-13A  
10-28-97

STATION	CLOSURE TYPE		REMARKS
	Road Qty.	Hazard Qty.	
99+00	1	-	WEST END
104+50	-	1	WEST END
106+50	-	1	EAST END
112+00	1	-	EAST END
8+00	1	-	NORTH END
24+00	1	-	SOUTH END

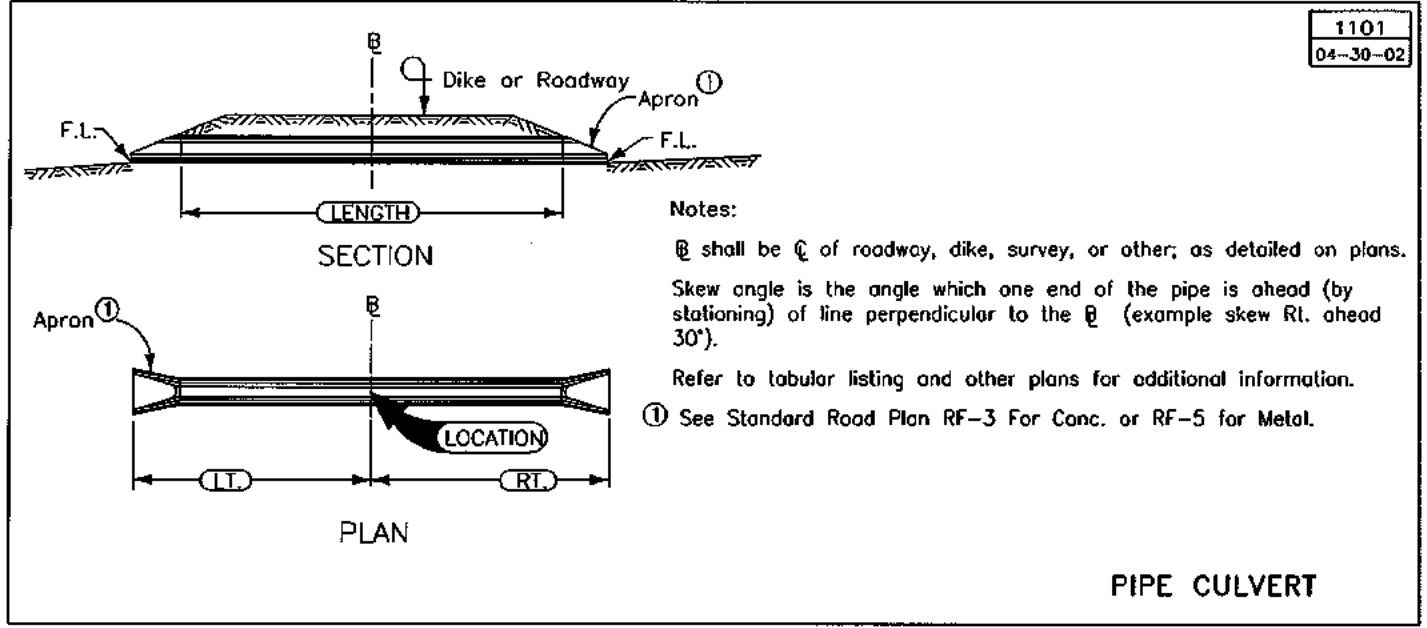
TABULATIONS, TYPICALS

DRAINAGE STRUCTURES

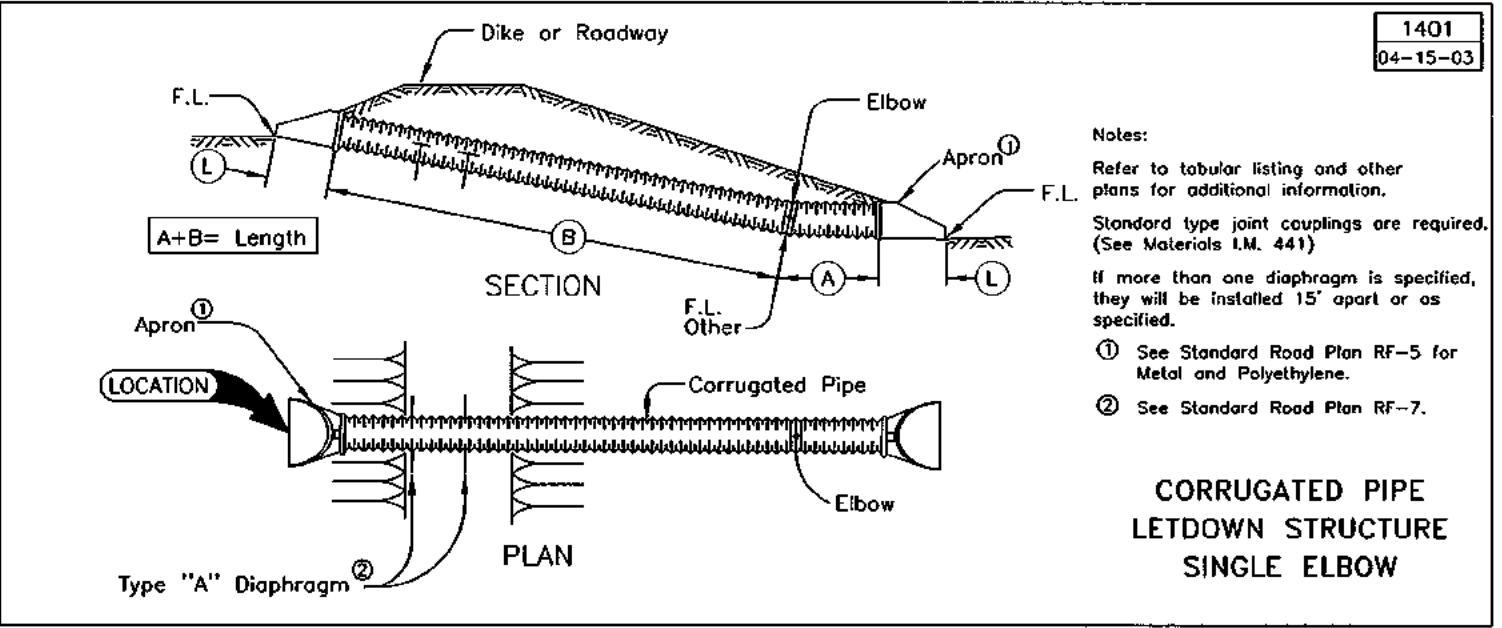
104-3  
MODIFIED

\* 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 Degrees		DIKE				CLASS 20 Cu. Yds.	REMARKS
									Inlet	Outlet				Type	No.		Lt.	Rt.	Other	Total	Extensions		Degrees		Rt.	Location Station	Top Elevation	Type			
																	Lt.	Rt.		Lt.	Rt.	Lt.	Rt.	Lt.					Rt.		
17	102+25	1101	36	RCP	50	C	2.0									3	435.50	434.95		24.17	25.82									105	
30	26+03	1101	36	RCP	64	C	3.8									3	430.00	434.70		38.94	24.89								180		
18	104+48.49	1401	36	CMP	48	C	-	1		1	1						430.00	421.50	421.80	A=12	B=36			RT.	104+65	435.0	F	-	SUBDRAIN		



PIPE CULVERT



CORRUGATED PIPE LETDOWN STRUCTURE SINGLE ELBOW

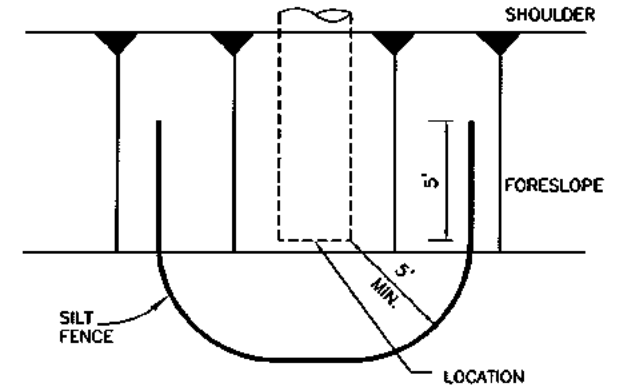
**TABULATION OF EROSION CONTROL FEATURES**

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.)
102+50 - 104+00	R	-	-	2	150	40	
104+00 - 105+00	L	-	-	2	100	40	
104+48.49	R	-	-	1	-	30	SUBDRAIN INLET
106+50 - 110+50	L	-	-	3	200	60	
108+50 - 110+50	R	-	-	2	200	40	
25+50	L&R	-	-	1	-	40	
25+86	R	-	-	1	-	30	CULVERT INLET
<b>TOTAL</b>						280	

**TABULATION OF SILT FENCES**

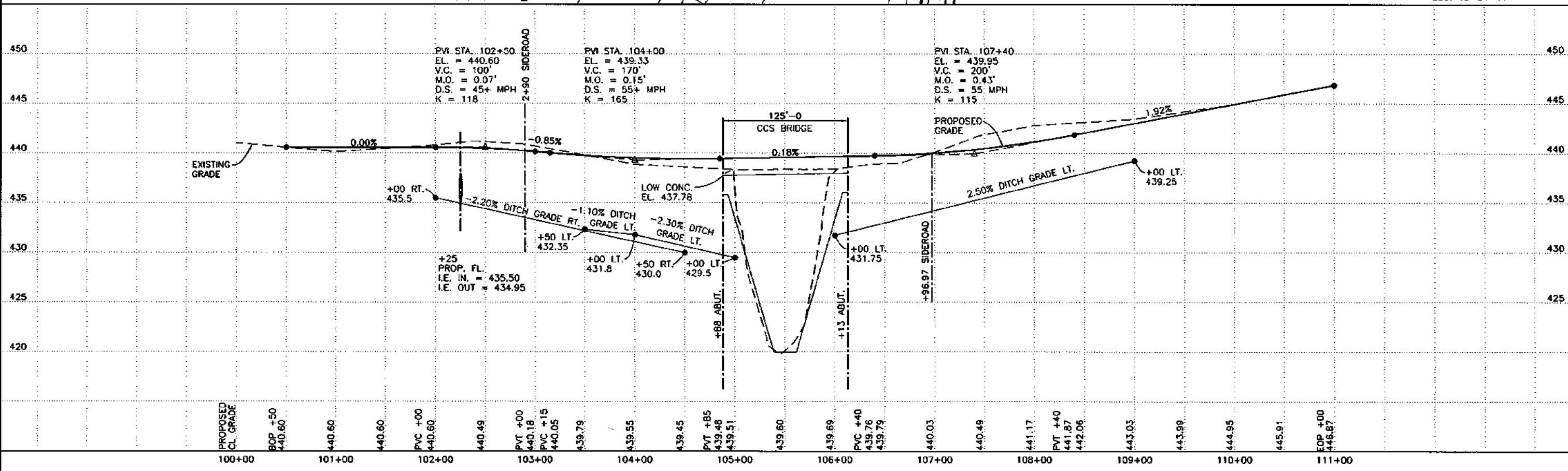
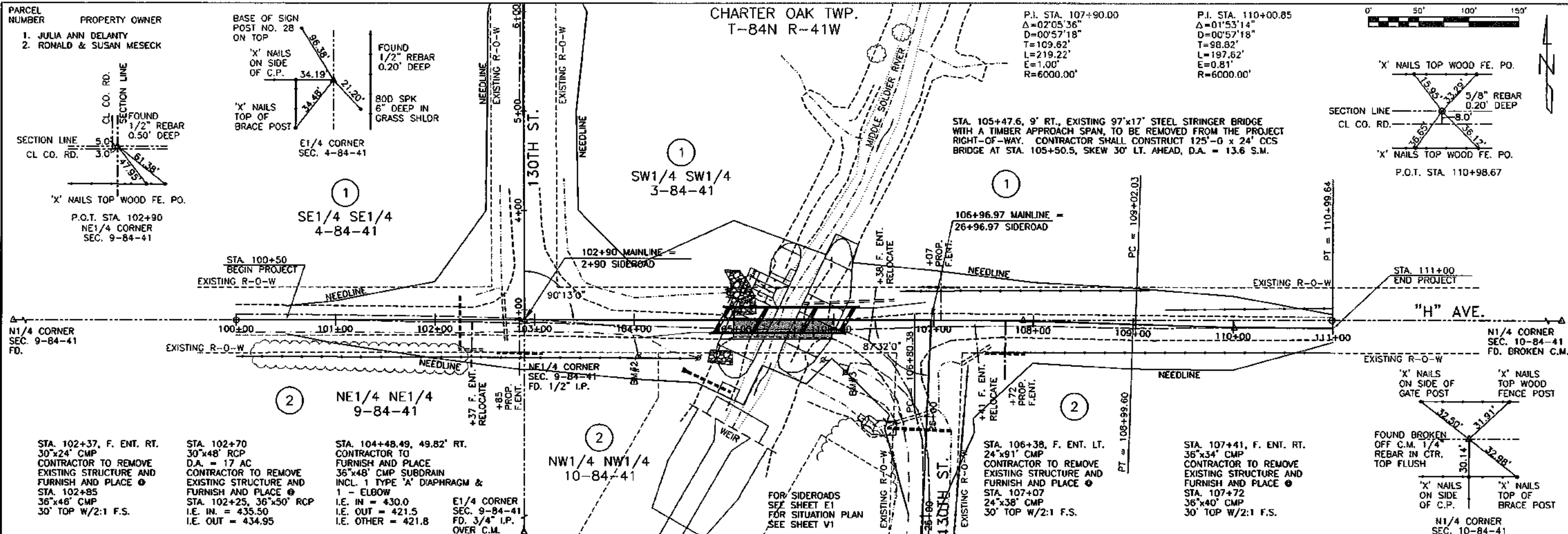
LOCATION		LENGTH (Lin. Ft.)	REMARKS
STATION TO STATION	SIDE		
105+81	25+86	RT.	132
<b>TOTAL</b>			132

100-17  
11-10-83



DETAILS OF SILT FENCE AT CULVERT INLETS  
NO SCALE

TABULATIONS, TYPICALS



PARCEL NUMBER PROPERTY OWNER  
 1. JULIA ANN DELANTY  
 2. RONALD & SUSAN MESECK

P.I. STA. 22+99.26  
 $\Delta = 44'42.00"$   
 $D = 11'59'57"$   
 $T = 196.32'$   
 $L = 372.53'$   
 $E = 38.78'$   
 $R = 472.50'$

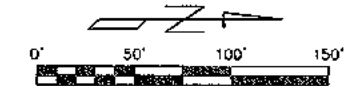
CHARTER OAK TWP.  
 T-84N R-41W

NE1/4 NE1/4  
 9-84-41 (2)

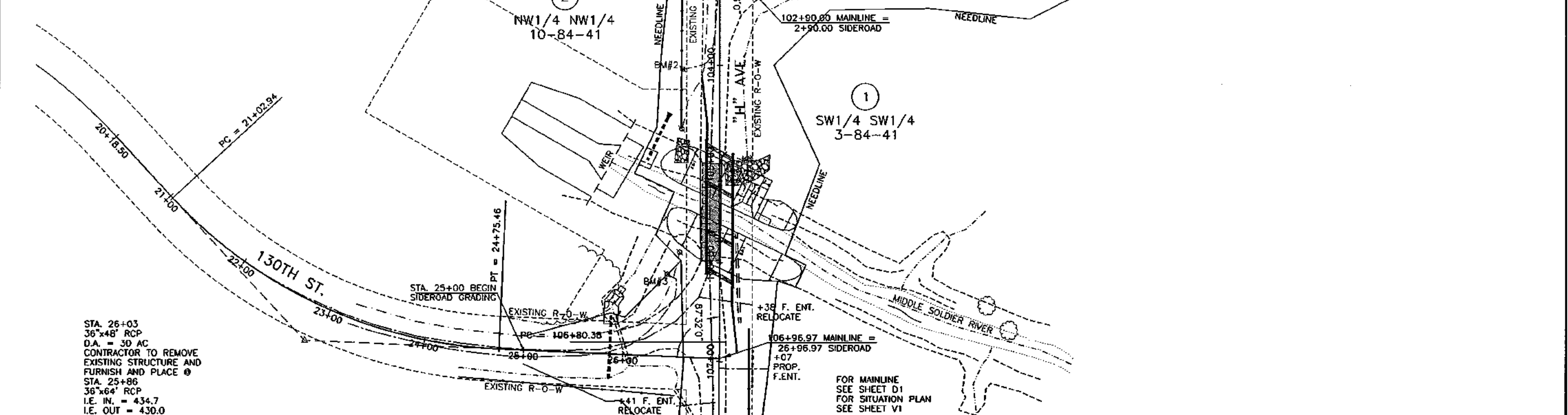
NE1/4 CORNER  
 SEC. 9-84-41  
 FD. 1/2" I.P.

SE1/4 SE1/4  
 4-84-41 (1)

NEEDLINE  
 EXISTING R-O-W

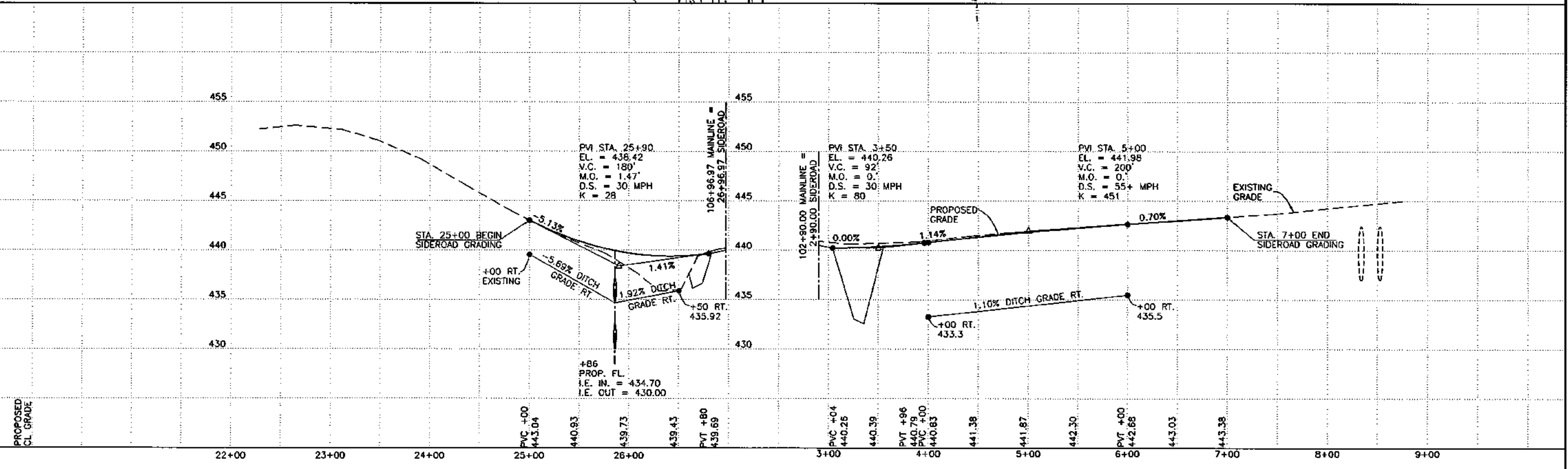


E1/4 CORNER  
 SEC. 9-84-41  
 FD. 3/4 I.P.  
 OVER C.M.



STA. 26+03  
 36"x48" RCP  
 D.A. = 30 AC  
 CONTRACTOR TO REMOVE  
 EXISTING STRUCTURE AND  
 FURNISH AND PLACE @  
 STA. 25+86  
 36"x64" RCP  
 I.E. IN. = 434.7  
 I.E. OUT = 430.0

FOR MAINLINE  
 SEE SHEET D1  
 FOR SITUATION PLAN  
 SEE SHEET V1



PROPOSED  
 CL. GRADE



**LOG OF EXPLORATORY BORING** Sheet 1 of 1

Job Number: G1552 Boring No.: B-1  
 Project: Delaney's South Bridge Boring Location: West Abutment  
 Date Started: 9/27/05 Drill Type: Hollow Stem  
 Date Completed: 9/27/05 Ground Elev.: 439.0

Depth in Feet	Graphic Log	Sample Type	USCS	Blow Counts (SPT) (N)	Moisture Content (%)	Dry Density (pcf)	% Solution	Penetration (NSF)	Unconfined Comp. Strength (NSF)	Liquid Limit (%)	Plastic Limit (%)	Shrinkage (%)	Other Tests
0-5	FILL			4-5 N=9									
5-10	SOFT SILTY CLAY, Gray Brown, Very Moist (Medium Brown)		CL	2-2 N=2									
10-15	(Dark Brown, Some Sand)			1-1 N=1									
15-20				2-1 N=1									
20-25				1-2 N=1									
25-30	GRANULAR MATERIAL		SW	1-3 N=1									
30-35	FIRM GLACIAL CLAY, Dark Gray, Wet		CH	2-3 N=1									
35-40	VERY FIRM GLACIAL CLAY, Dark Gray, Wet		CH	4-7 N=1									
40-45				7-12 N=1									
45-50				4-7 N=1									
50-55				4-6 N=1									
55-60				4-7 N=1									
60-66.5				8-12 N=1									
END OF BORING AT 66.5 FEET FREE GROUNDWATER WAS ENCOUNTERED AT 23 FEET AT THE TIME OF DRILLING													

**LOG OF EXPLORATORY BORING** Sheet 1 of 1

Job Number: G1552 Boring No.: B-2  
 Project: Delaney's South Bridge Boring Location: West Pier  
 Date Started: 9/27/05 Drill Type: Hollow Stem  
 Date Completed: 9/27/05 Ground Elev.: 438.8

Depth in Feet	Graphic Log	Sample Type	USCS	Blow Counts (SPT) (N)	Moisture Content (%)	Dry Density (pcf)	% Solution	Penetration (NSF)	Unconfined Comp. Strength (NSF)	Liquid Limit (%)	Plastic Limit (%)	Shrinkage (%)	Other Tests
0-5	(BRIDGE DECK)												
5-10	VOID												
10-15													
15-20													
20-25	SOFT SILTY CLAY, Dark Brown, Wet		CL	1-1 N=1									
25-30	GRAVELLY SAND, Medium Brown, Wet		SW	3-5 N=1									
30-35	FIRM SILTY GLACIAL CLAY, Dark Gray, Wet		CH	7-25 N=1									
35-40				3-4 N=1									
40-45	VERY FIRM GLACIAL CLAY, Dark Gray, Wet (Very Moist)		CH	8-15 N=1									
45-50				4-8 N=1									
50-55				6-10 N=1									
55-60				4-7 N=1									
60-66.5				5-9 N=1									
END OF BORING AT 66.5 FEET FREE GROUNDWATER WAS ENCOUNTERED AT 21.5 FEET AT THE TIME OF DRILLING													

**LOG OF EXPLORATORY BORING** Sheet 1 of 1

Job Number: G1552 Boring No.: B-3  
 Project: Delaney's South Bridge Boring Location: East Pier  
 Date Started: 9/28/05 Drill Type: Hollow Stem  
 Date Completed: 9/28/05 Ground Elev.: 438.6

Depth in Feet	Graphic Log	Sample Type	USCS	Blow Counts (SPT) (N)	Moisture Content (%)	Dry Density (pcf)	% Solution	Penetration (NSF)	Unconfined Comp. Strength (NSF)	Liquid Limit (%)	Plastic Limit (%)	Shrinkage (%)	Other Tests
0-5	(BRIDGE DECK)												
5-10	VOID												
10-15													
15-20	SILTY SAND, Medium Brown, Wet		SM	3-1 N=1									
20-25	SOFT SILTY CLAY, Medium Brown, Wet		CL										
25-30	GRAVELLY SAND, Yellow Brown, Wet		SW	7-10 N=1									
30-35	VERY FIRM GLACIAL CLAY, Dark Gray, Wet (Very Moist)		CH	4-5 N=1									
35-40				6-10 N=1									
40-45				5-13 N=1									
45-50				6-7 N=1									
50-55				4-8 N=1									
55-60				3-5 N=1									
60-66.5				5-8 N=1									
66.5-71.5				4-8 N=1									
END OF BORING AT 71.5 FEET FREE GROUNDWATER WAS ENCOUNTERED AT 16 FEET AT THE TIME OF DRILLING													

**LOG OF EXPLORATORY BORING** Sheet 1 of 1

Job Number: G1552 Boring No.: B-4  
 Project: Delaney's South Bridge Boring Location: East Abutment  
 Date Started: 9/28/05 Drill Type: Hollow Stem  
 Date Completed: 9/28/05 Ground Elev.: 438.8

Depth in Feet	Graphic Log	Sample Type	USCS	Blow Counts (SPT) (N)	Moisture Content (%)	Dry Density (pcf)	% Solution	Penetration (NSF)	Unconfined Comp. Strength (NSF)	Liquid Limit (%)	Plastic Limit (%)	Shrinkage (%)	Other Tests
0-5	FILL, Firm Silty Clay, Medium Brown, Moist (With Gravel)		CL	6-8 N=1									
5-10	STIFF SILTY CLAY, Medium Brown, Moist		CL	3-1 N=1									
10-15				1-1 N=1									
15-20	SILTY SAND, Dark Gray, Wet		SM	2-3 N=1									
20-25				12-15 N=1									
25-30	GRANULAR MATERIAL, Yellow Brown, Wet		SW	4-22 N=1									
30-35	FIRM - VERY FIRM GLACIAL CLAY, Dark Gray, Wet		CH	4-7 N=1									
35-40				4-7 N=1									
40-45	VERY FIRM GLACIAL CLAY, Dark Gray, Wet (Very Moist)		CH	9-8 N=1									
45-50				6-7 N=1									
50-55				7-13 N=1									
55-60				6-7 N=1									
60-66.5				6-7 N=1									
END OF BORING AT 61.5 FEET FREE GROUNDWATER WAS ENCOUNTERED AT 16 FEET AT THE TIME OF DRILLING													

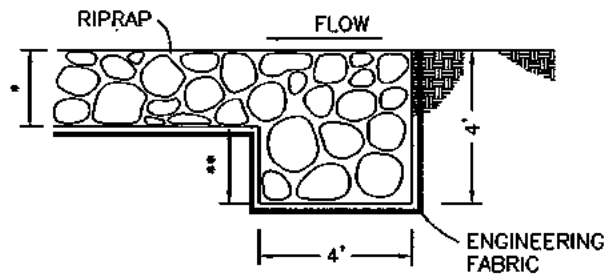
GEOTECHNICAL INFORMATION PROVIDED HERewith IS THE SOLE RESPONSIBILITY OF CERTIFIED TESTING SERVICES, INC., WHOSE GEOTECHNICAL REPORT DATED OCTOBER 6, 2005, COMPLETE WITH THE LICENSED ENGINEER'S SEAL AND CERTIFICATION, IS AVAILABLE FOR VIEWING.

**SOUNDING DATA**

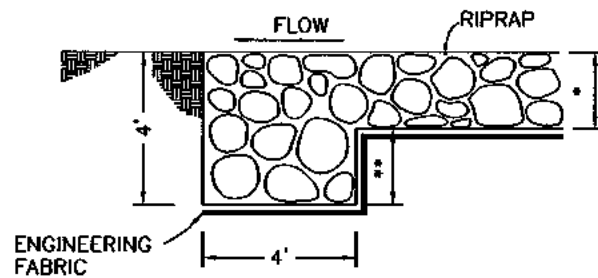
NOTE: THESE SOUNDINGS WERE MADE FOR DESIGN PURPOSES AND ARE NOT GUARANTEED FOR CONSTRUCTION.

SOUNDINGS WERE TAKEN ON SEPTEMBER 27 AND 28, 2005.

SEE SHEET V1 FOR BORING LOCATIONS.



TYPICAL UPSTREAM



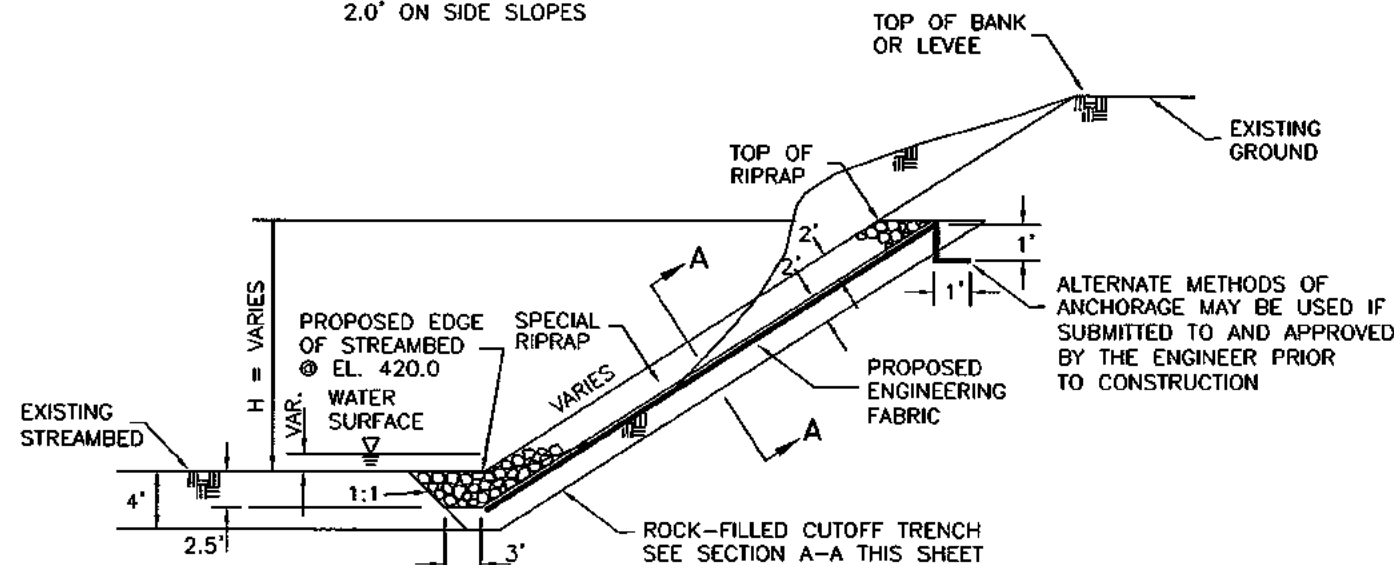
TYPICAL DOWNSTREAM

**SECTION A-A**

**ROCK-FILLED CUTOFF TRENCH DETAILS**

NOT TO SCALE

- \* 2.5' ON CHANNEL BOTTOM
- 2.0' ON SIDE SLOPES
- \*\* 1.5' ON CHANNEL BOTTOM
- 2.0' ON SIDE SLOPES

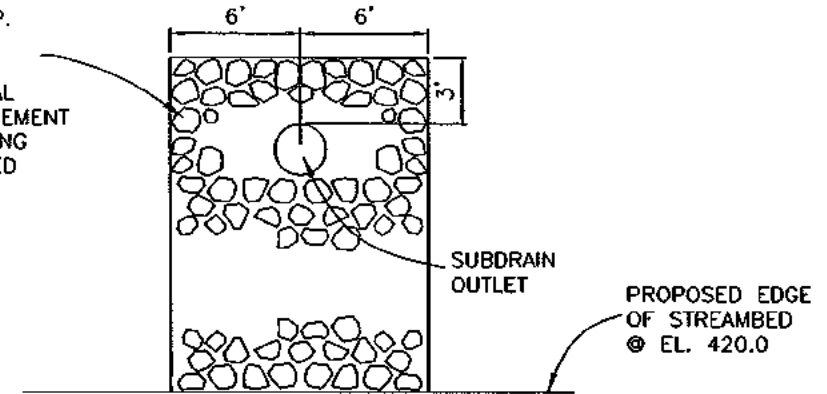


**TYPICAL BANK STABILIZATION SECTION**

NOT TO SCALE

FOR H DIMENSION AND CHANNEL SLOPE SEE CHANNEL CROSS SECTIONS

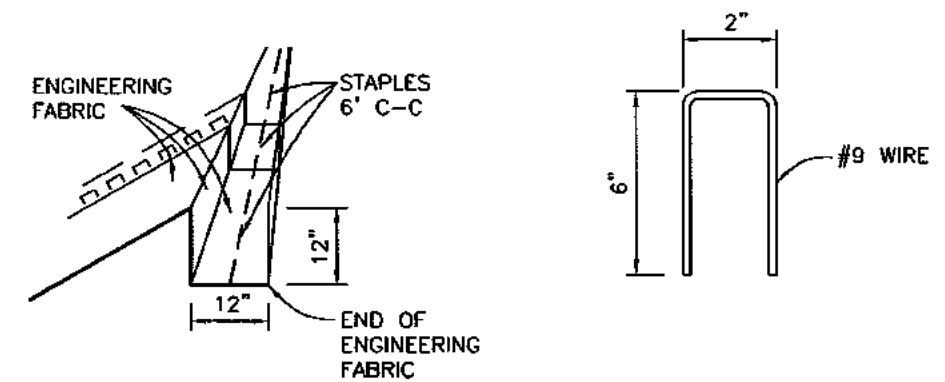
PROPOSED SPECIAL RIPRAP. REFER TO TYPICAL BANK STABILIZATION SECTION ON THIS SHEET FOR ADDITIONAL DETAILS CONCERNING PLACEMENT OF RIPRAP AND ENGINEERING FABRIC. OMIT ROCK-FILLED CUTOFF TRENCH.



**SUBDRAIN OUTLET SLOPE PROTECTION**

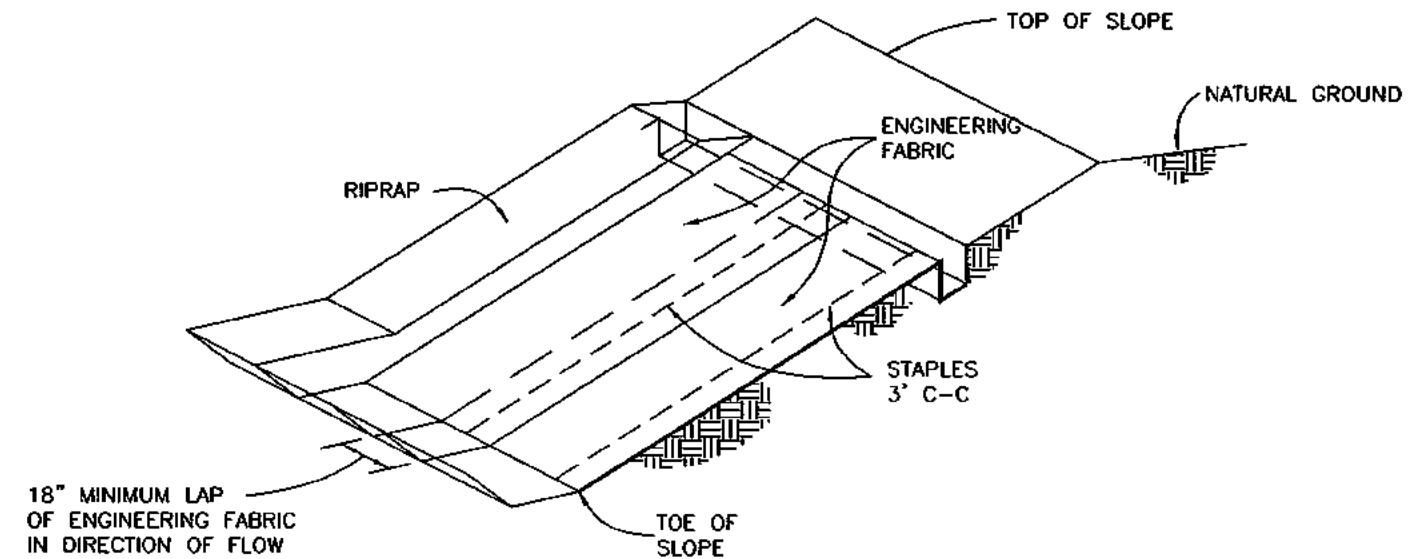
NOT TO SCALE

STA. 104+96.06, 72.45' RT.



DETAIL OF TRENCH

STAPLE

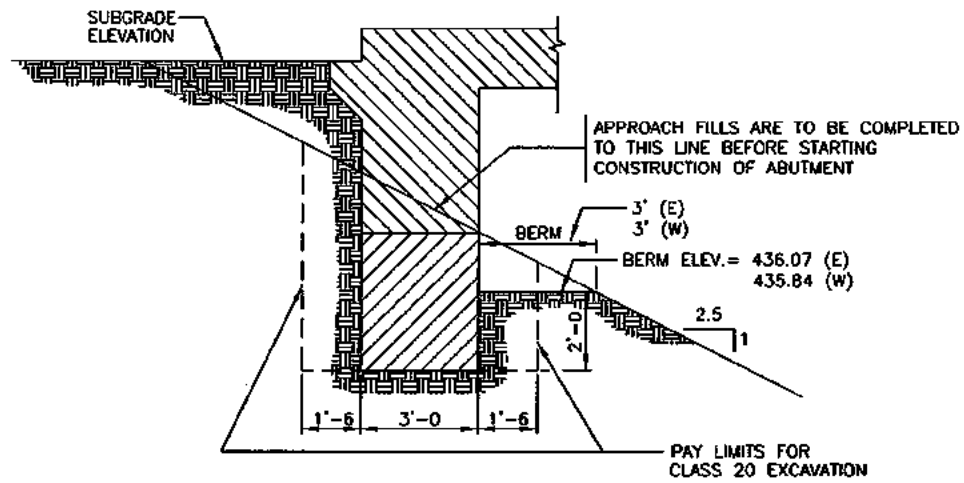


EXCAVATE 12"x12" TRENCH ALONG TOP OF RIPRAP. PLACE END OF ENGINEERING FABRIC STRIPS INTO TRENCH WITH STAPLES AS SHOWN. BACKFILL WITH THE EXCAVATED MATERIAL AND COMPACT. THE ENGINEER MAY PERMIT THE USE OF THE WHEELS OF PNEUMATIC-TIRED EQUIPMENT FOR CONSOLIDATING THE TRENCH BACKFILL MATERIAL.

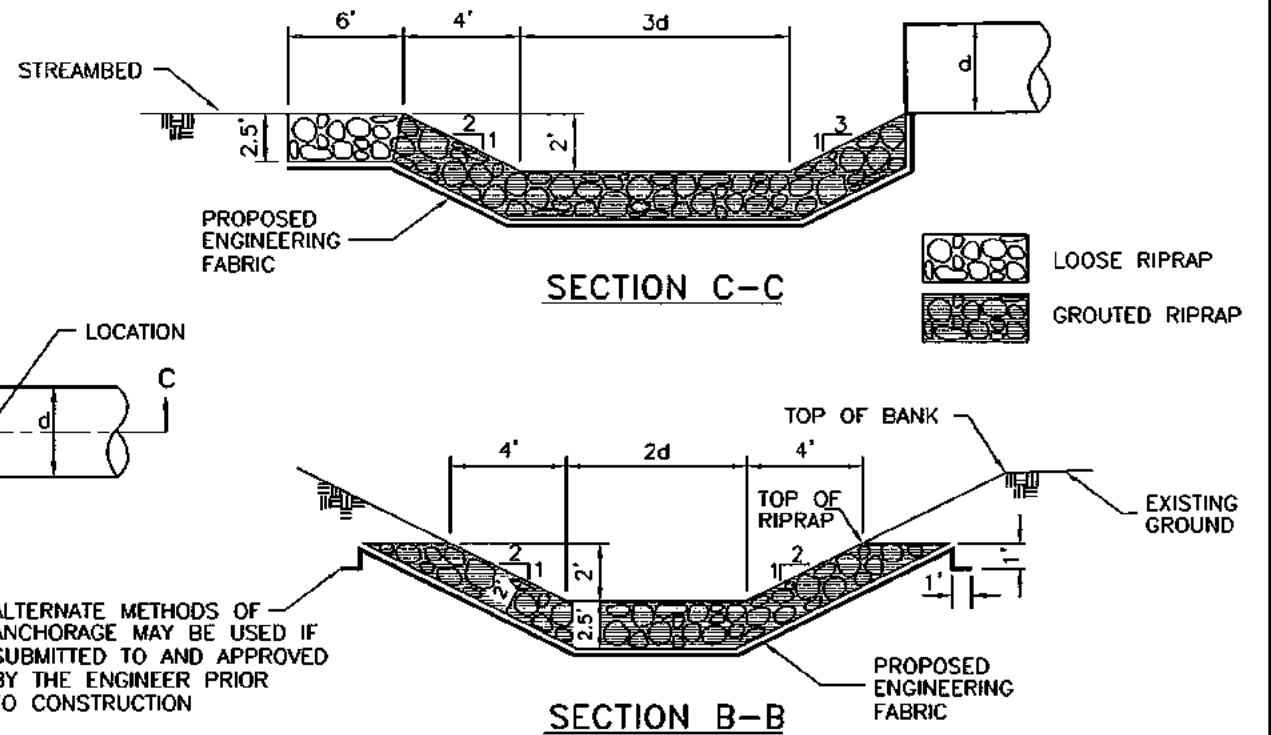
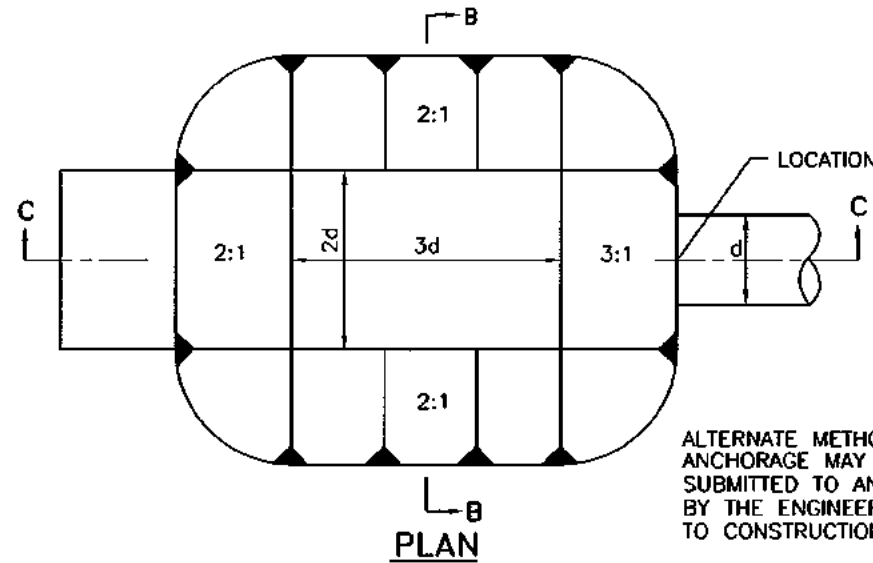
**DETAILS OF PLACEMENT OF ENGINEERING FABRIC**

NOT TO SCALE

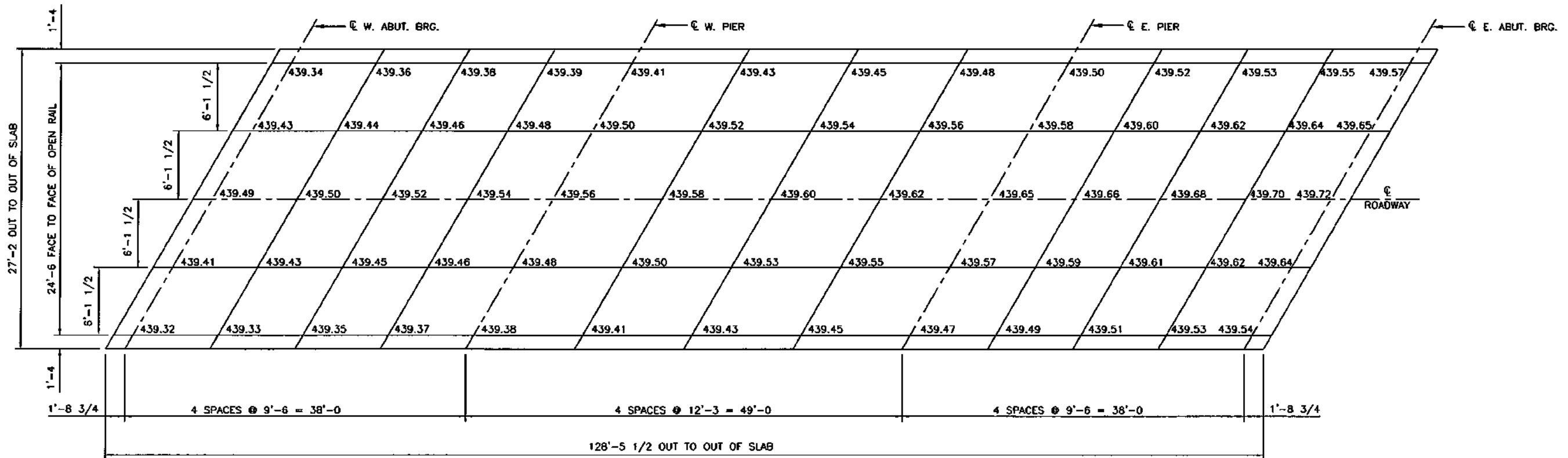
REV:



**CLASS 20 EXCAVATION DETAIL**  
NOT TO SCALE

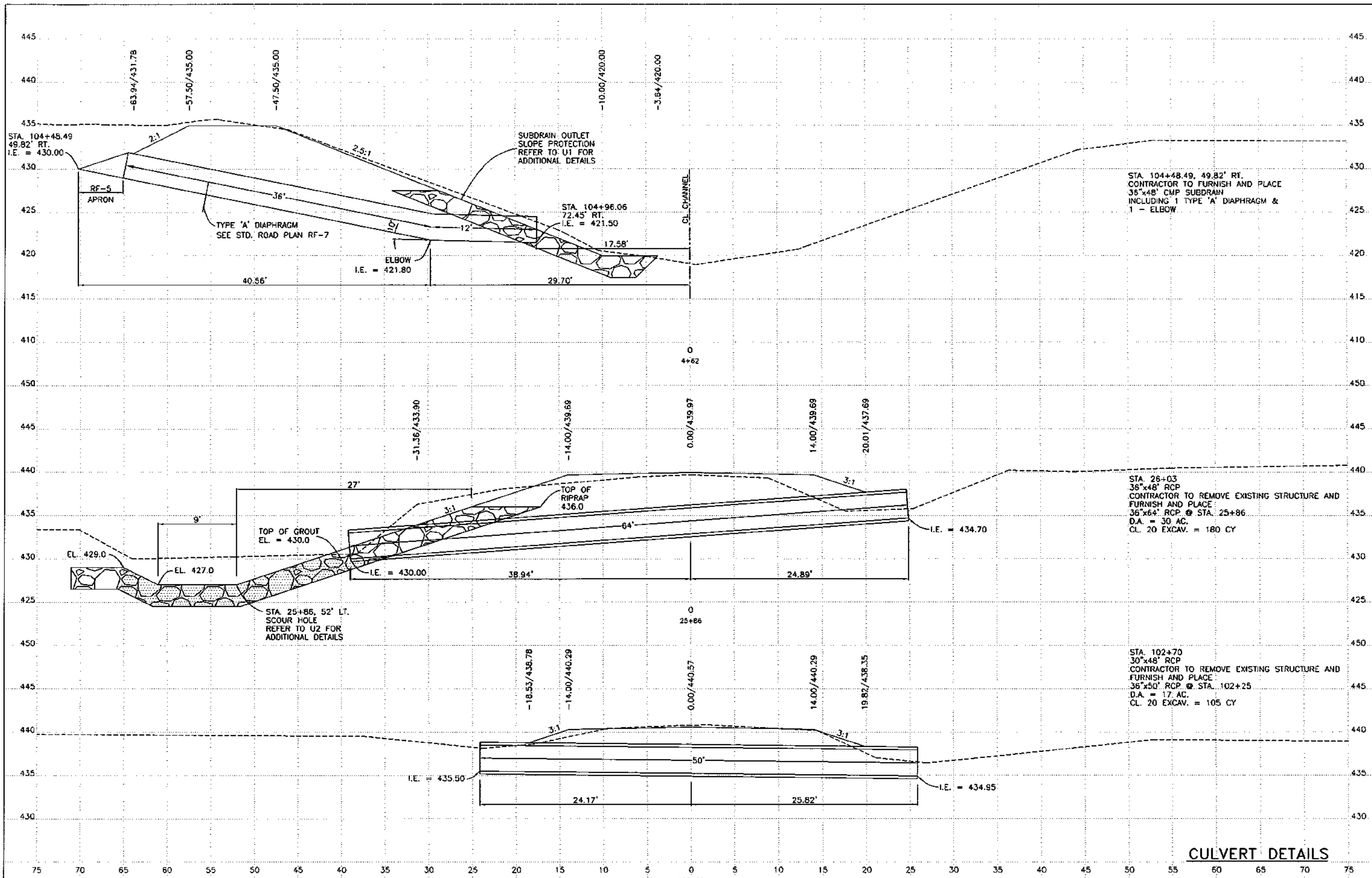


**DETAILS OF PREFORMED SCOUR HOLE**  
NOT TO SCALE



**TOP OF SLAB ELEVATIONS**  
NOT TO SCALE

SPECIAL DETAILS

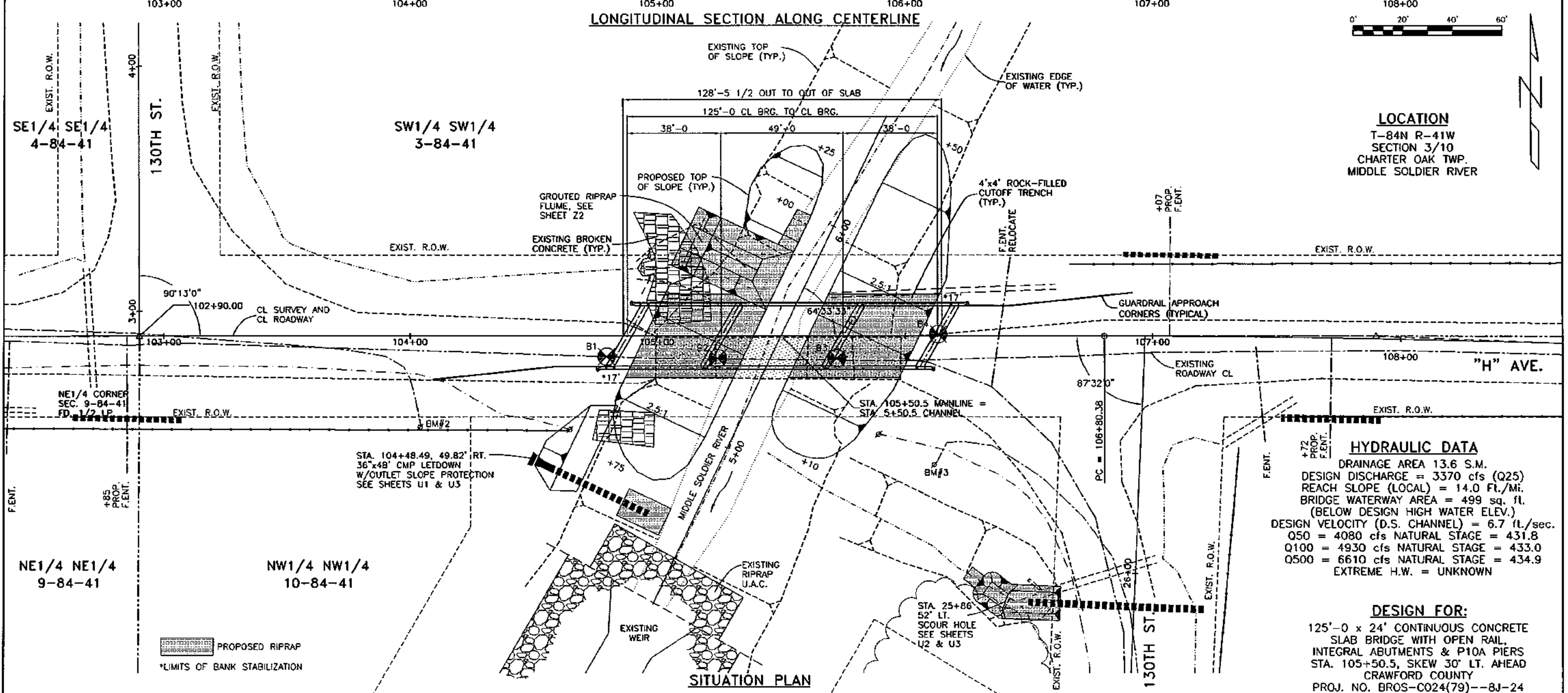
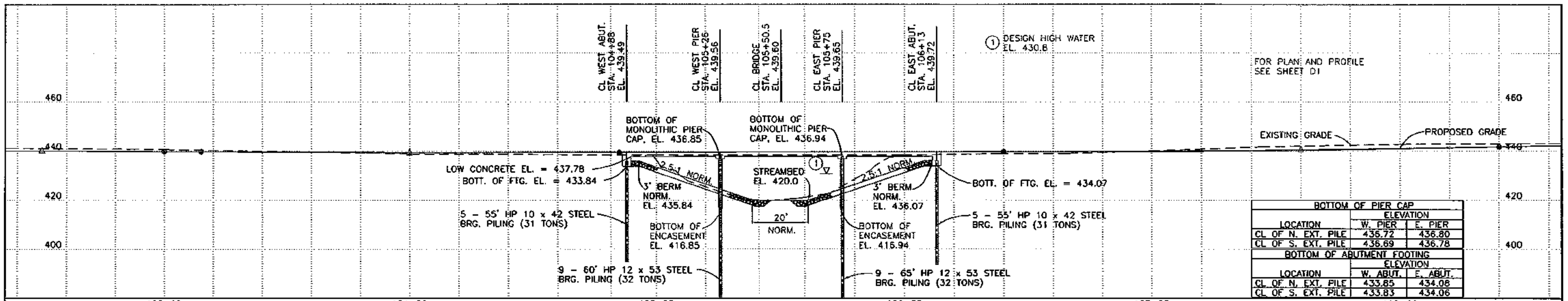


STA. 104+48.49, 49.82' RT.  
 CONTRACTOR TO FURNISH AND PLACE  
 36"x48" CMP SUBDRAIN  
 INCLUDING 1 TYPE 'A' DIAPHRAGM &  
 1 - ELBOW.

STA. 26+03  
 36"x48" RCP  
 CONTRACTOR TO REMOVE EXISTING STRUCTURE AND  
 FURNISH AND PLACE  
 36"x64" RCP @ STA. 25+86.  
 D.A. = 30 AC.  
 CL. 20 EXCAV. = 180 CY

STA. 102+70  
 30"x48" RCP  
 CONTRACTOR TO REMOVE EXISTING STRUCTURE AND  
 FURNISH AND PLACE  
 36"x50" RCP @ STA. 102+25  
 D.A. = 17 AC.  
 CL. 20 EXCAV. = 105 CY

**CULVERT DETAILS**



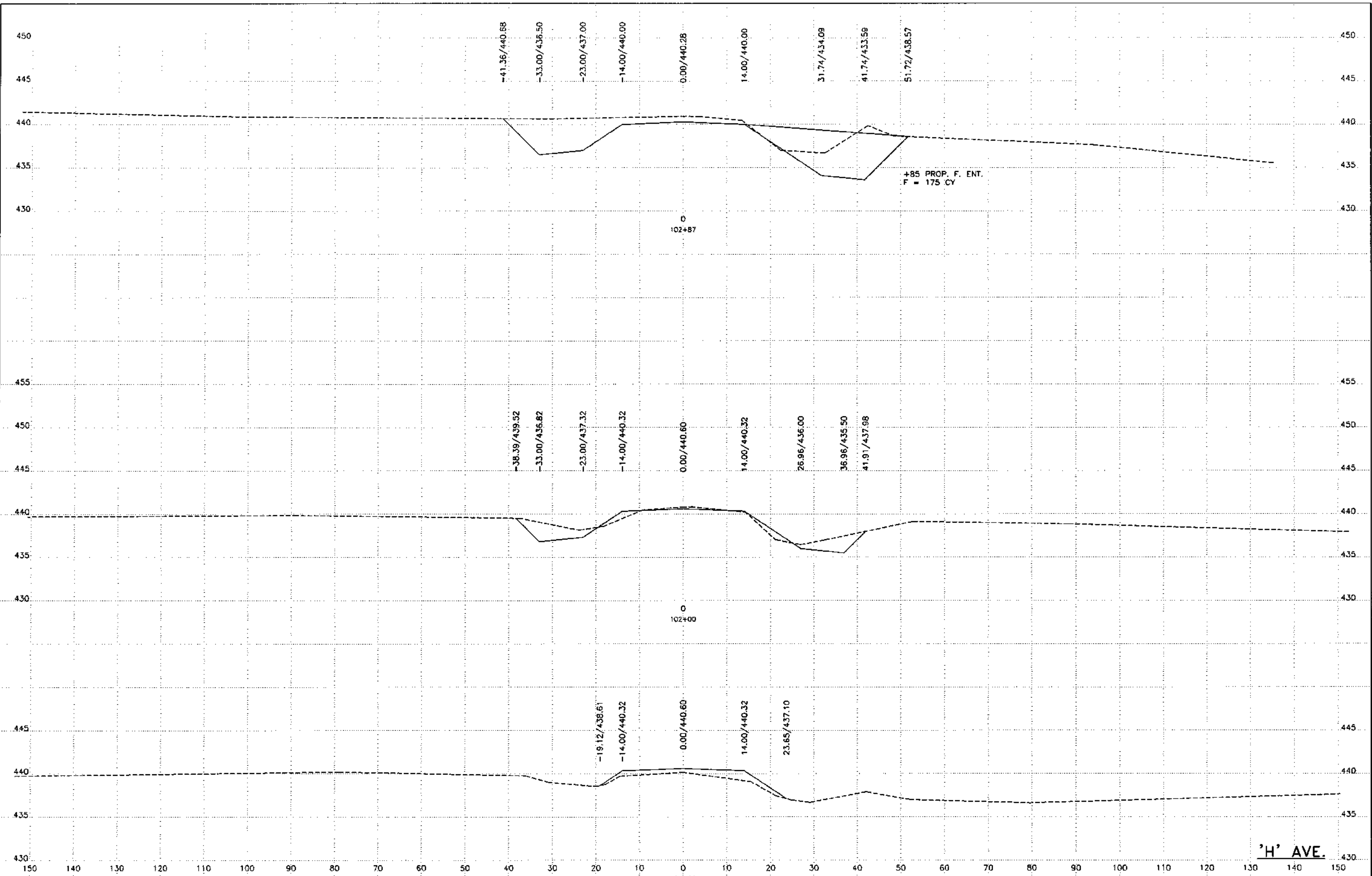
BOTTOM OF PIER CAP		
LOCATION	ELEVATION	
W. PIER	436.80	
E. PIER	436.80	
CL OF N. EXT. PILE	436.72	
CL OF S. EXT. PILE	436.69	
BOTTOM OF ABUTMENT FOOTING		
LOCATION	ELEVATION	
W. ABUT.	434.08	
E. ABUT.	434.08	
CL OF N. EXT. PILE	433.85	
CL OF S. EXT. PILE	433.83	



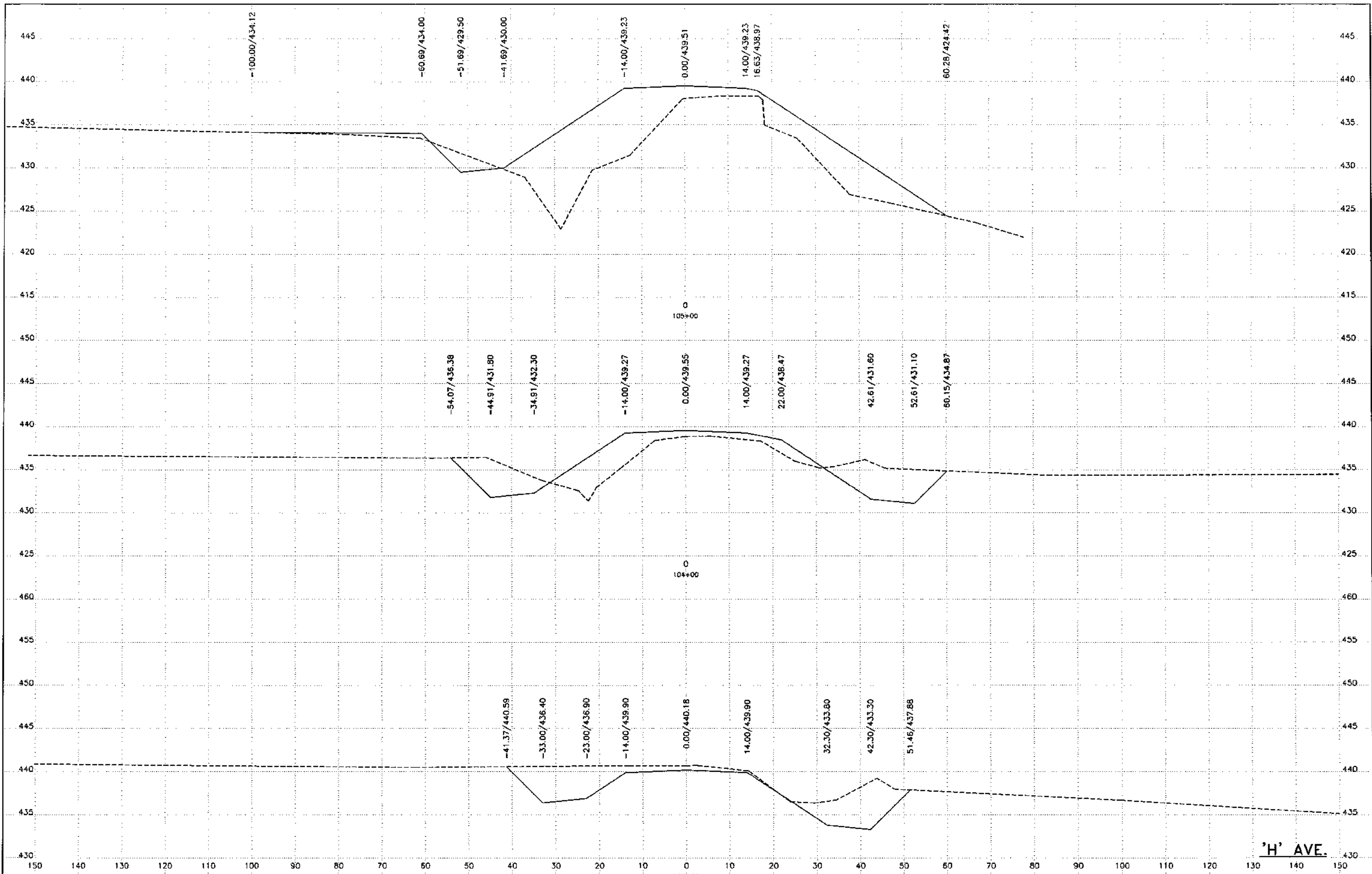
**LOCATION**  
 T-84N R-41W  
 SECTION 3/10  
 CHARTER OAK TWP.  
 MIDDLE SOLDIER RIVER

**HYDRAULIC DATA**  
 DRAINAGE AREA 13.6 S.M.  
 DESIGN DISCHARGE = 3370 cfs (Q25)  
 REACH SLOPE (LOCAL) = 14.0 Ft./Mi.  
 BRIDGE WATERWAY AREA = 499 sq. ft.  
 (BELOW DESIGN HIGH WATER ELEV.)  
 DESIGN VELOCITY (D.S. CHANNEL) = 6.7 ft./sec.  
 Q50 = 4080 cfs NATURAL STAGE = 431.8  
 Q100 = 4930 cfs NATURAL STAGE = 433.0  
 Q500 = 6610 cfs NATURAL STAGE = 434.9  
 EXTREME H.W. = UNKNOWN

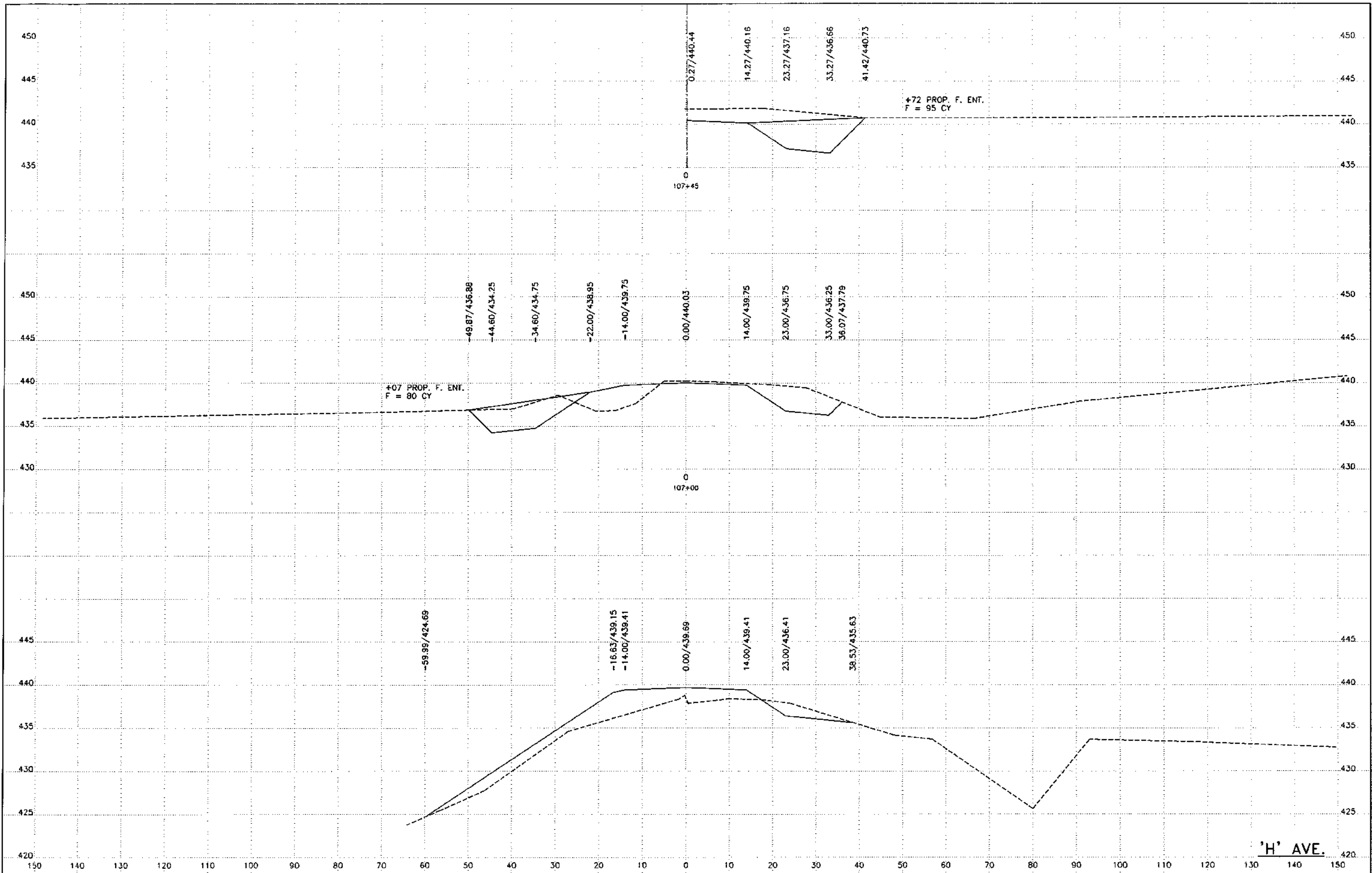
**DESIGN FOR:**  
 125'-0" x 24' CONTINUOUS CONCRETE  
 SLAB BRIDGE WITH OPEN RAIL,  
 INTEGRAL ABUTMENTS & P10A PIERS  
 STA. 105+50.5, SKEW 30' LT. AHEAD  
 CRAWFORD COUNTY  
 PROJ. NO. BROS-C024(79)--8J-24



'H' AVE.

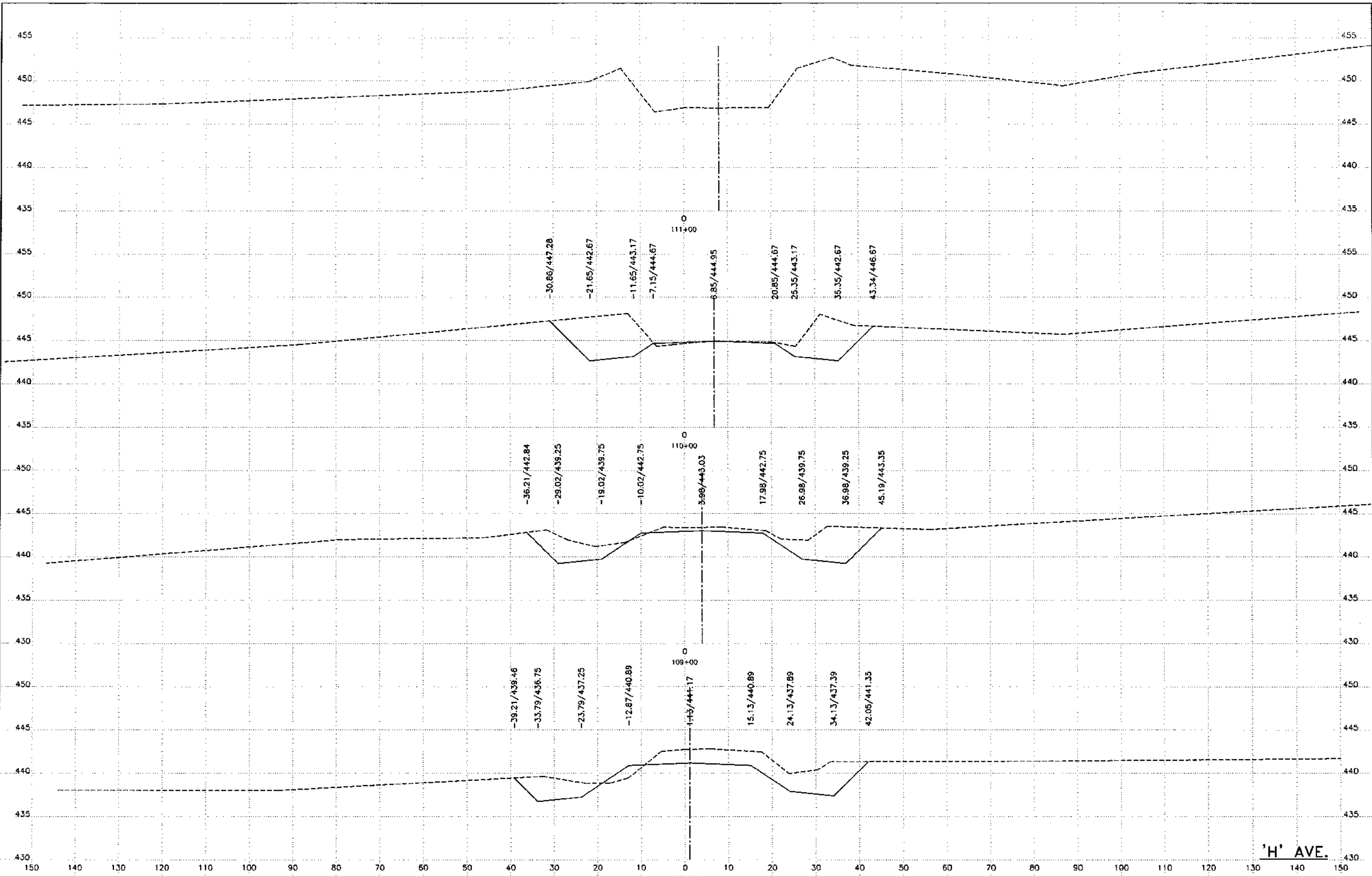


'H' AVE.

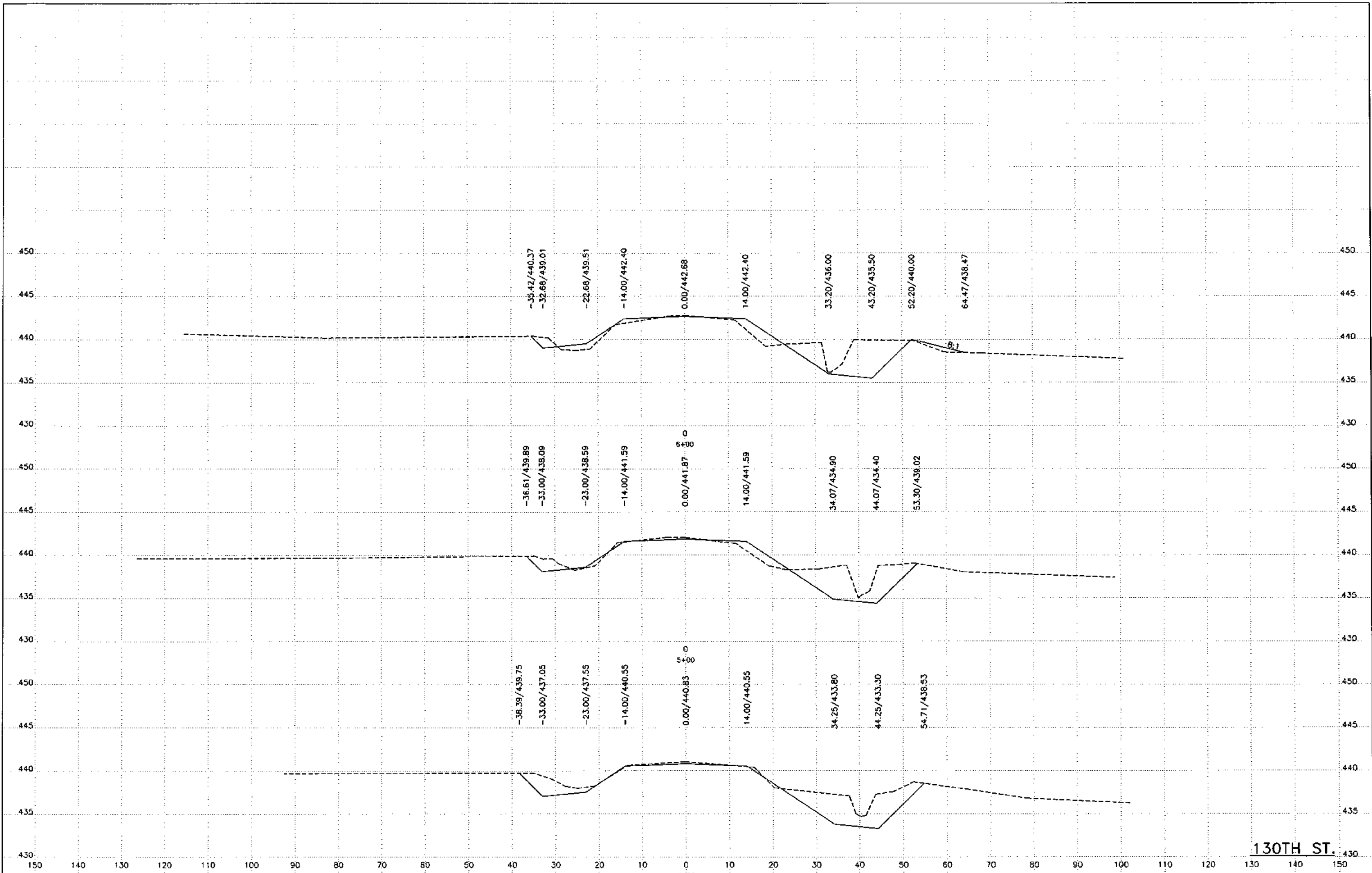


'H' AVE.

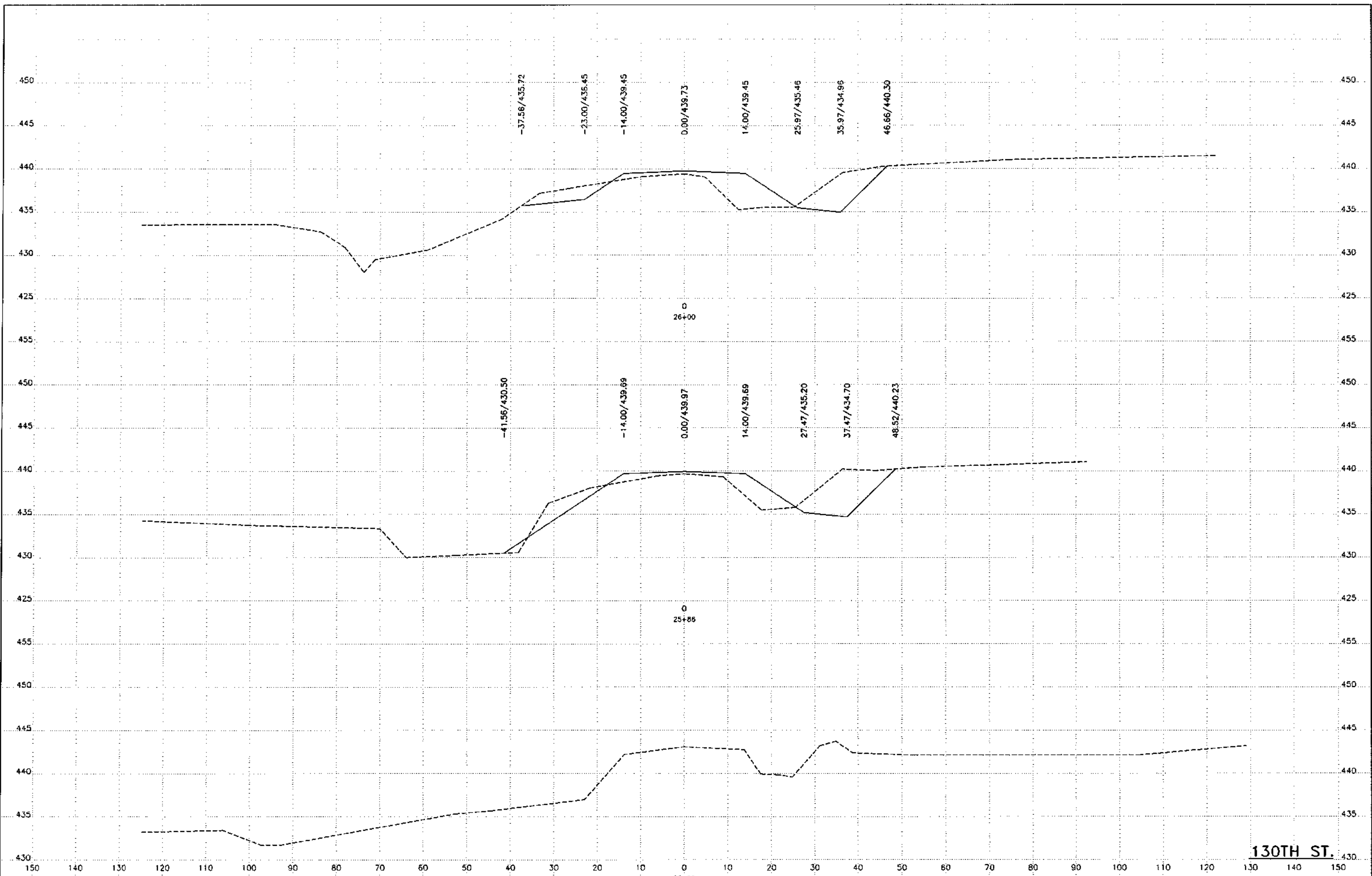




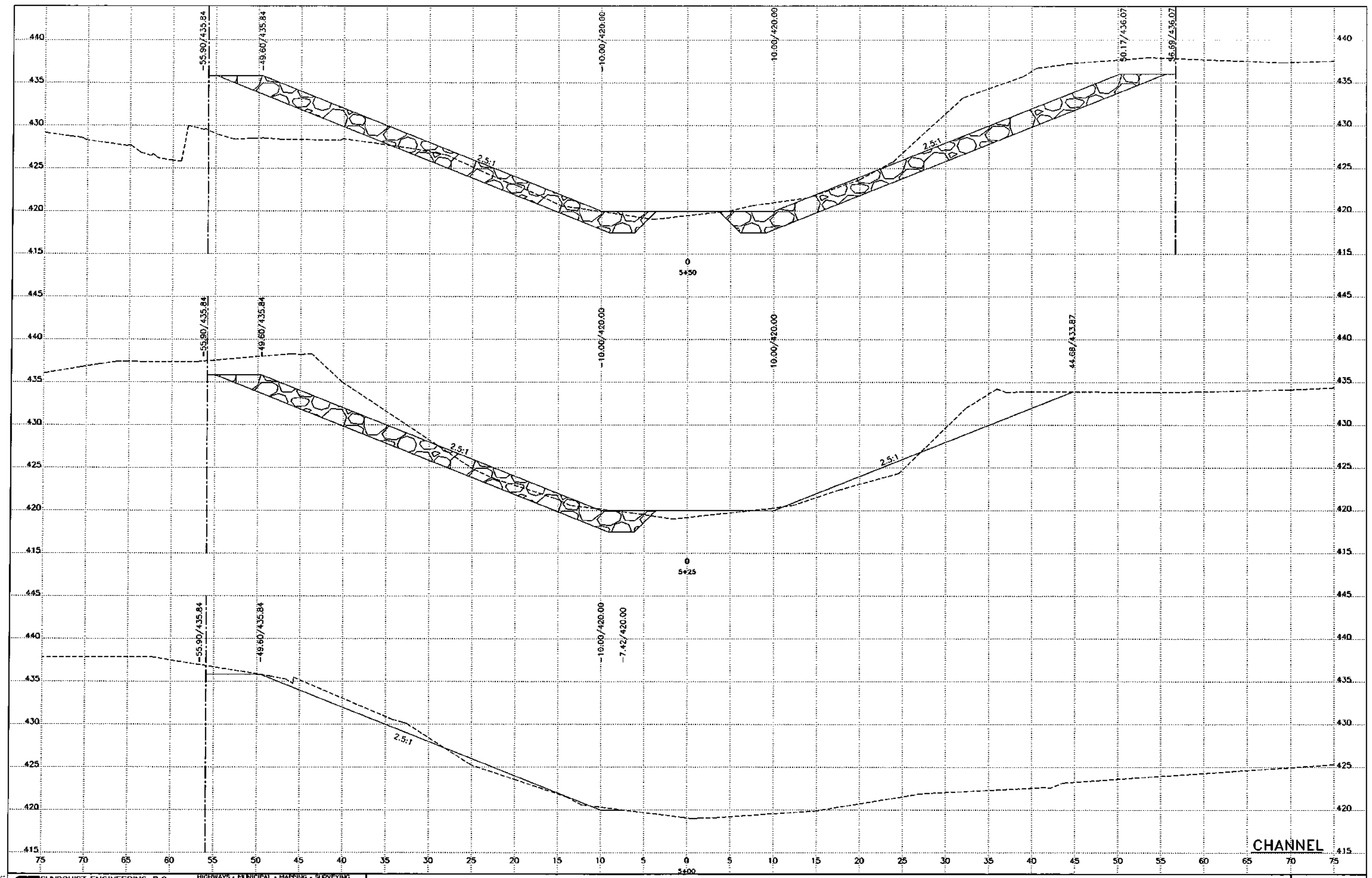
'H' AVE.

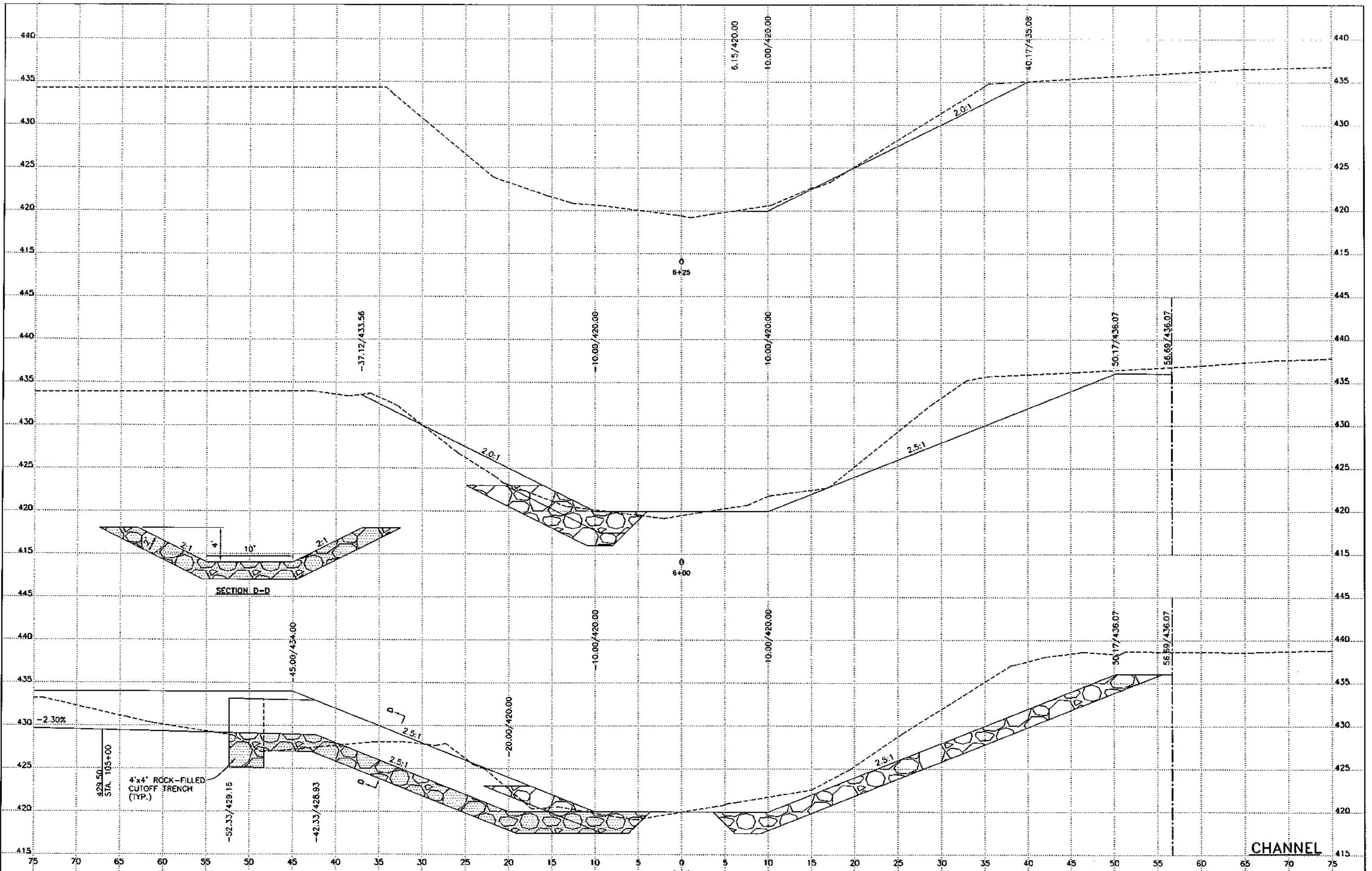


130TH ST.



130TH ST.





REV:

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

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

SE PROJECT NO. 09304

DATE: 10/05

DRAWN BY: TKK

REVIEWED BY: SAS

APPROVED BY: TJG

DESIGN NO. .

FILE NO. .

CRAWFORD COUNTY

PROJECT NO. BROS-C024(79)-BJ-24

SHEET Z2