

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5	1976	1	4
PROJECT NUMBER				
SN - 2380(2)--51-24				
R.O.W. PROJECT NUMBER				

IOWA
DEPARTMENT OF TRANSPORTATION
Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

FARM TO MARKET SYSTEM

CRAWFORD COUNTY

150' X 24' CONTINUOUS I-BEAM BRIDGE
30° SKEW
PROJECT NO. SN-2380(2)--51-24

SCALES: AS NOTED
IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS SERIES 1972 PLUS CURRENT SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION--HIGHWAY DIVISION SHALL APPLY TO WORK ON THIS PROJECT.

INDEX OF SHEETS

SHEET NO.	ITEM
1	TITLE SHEET, INCLUDING ESTIMATE OF QUANTITIES, CONVENTIONAL SIGNS, MILEAGE SUMMARY, LOCATION MAP, REMOVALS AND TYPICAL CROSS SECTION.
2	PLAN AND PROFILE & CULVERT DETAILS
3	BRIDGE DETAILS
4	STANDARD RF-5

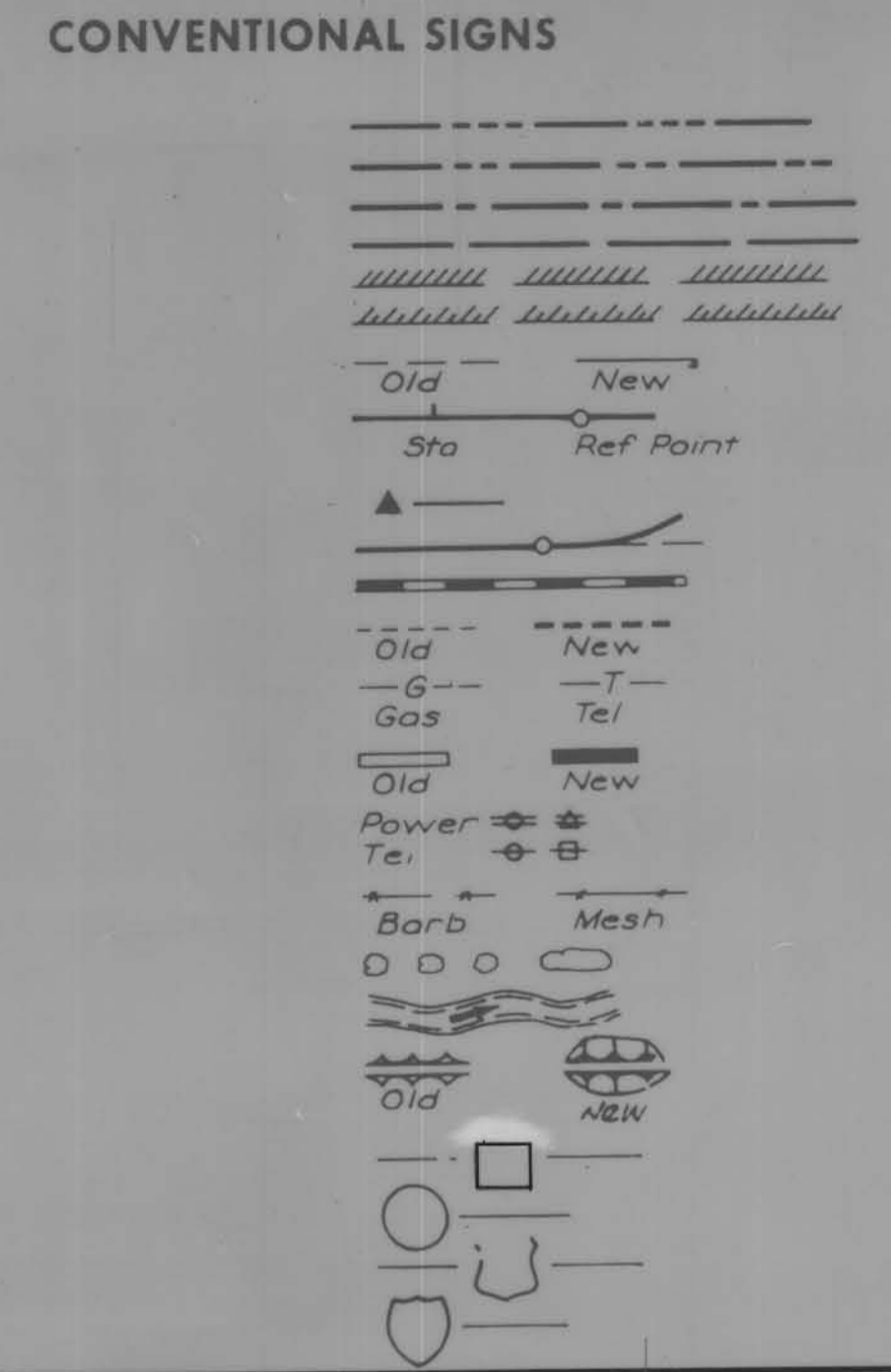
CROSS SECTIONS AVAILABLE AT COUNTY ENGINEER'S OFFICE

MILEAGE SUMMARY

STA. 8+75.0 TO STA. 22+00.0	1325.000 FT. = 0.251 MI.
DEDUCT BRIDGE STA. 16+00	154.229 FT. = 0.029 MI.
TOTAL NET MILEAGE	1170.771 FT. = 0.222 MI.

REMOVALS
REMOVALS INCLUDE DISPOSITION OF:
60' X 20' PONY TRUSS
32' X 20' WOOD APPROACH
32' X 20' WOOD APPROACH

- State Line
- Co. Line
- Twp. Line
- Sec. Line
- Corp. Line
- Urban Bdry.
- R.O.W. Lines
- Survey Line
- Sec. Corner
- Profile Grade
- Railroad
- Field Tile
- Underground Lines
- Culverts
- Utility Poles
- Fenc. s
- Trees Or Brush
- Streets
- Dike
- County Road No
- Primary Road No
- U. S. Road No
- Interstate Road No



IOWA STATE HIGHWAY COMMISSION STANDARDS REQUIRED (MAY BE OBTAINED AT BRIDGE DESIGN SERVICES)

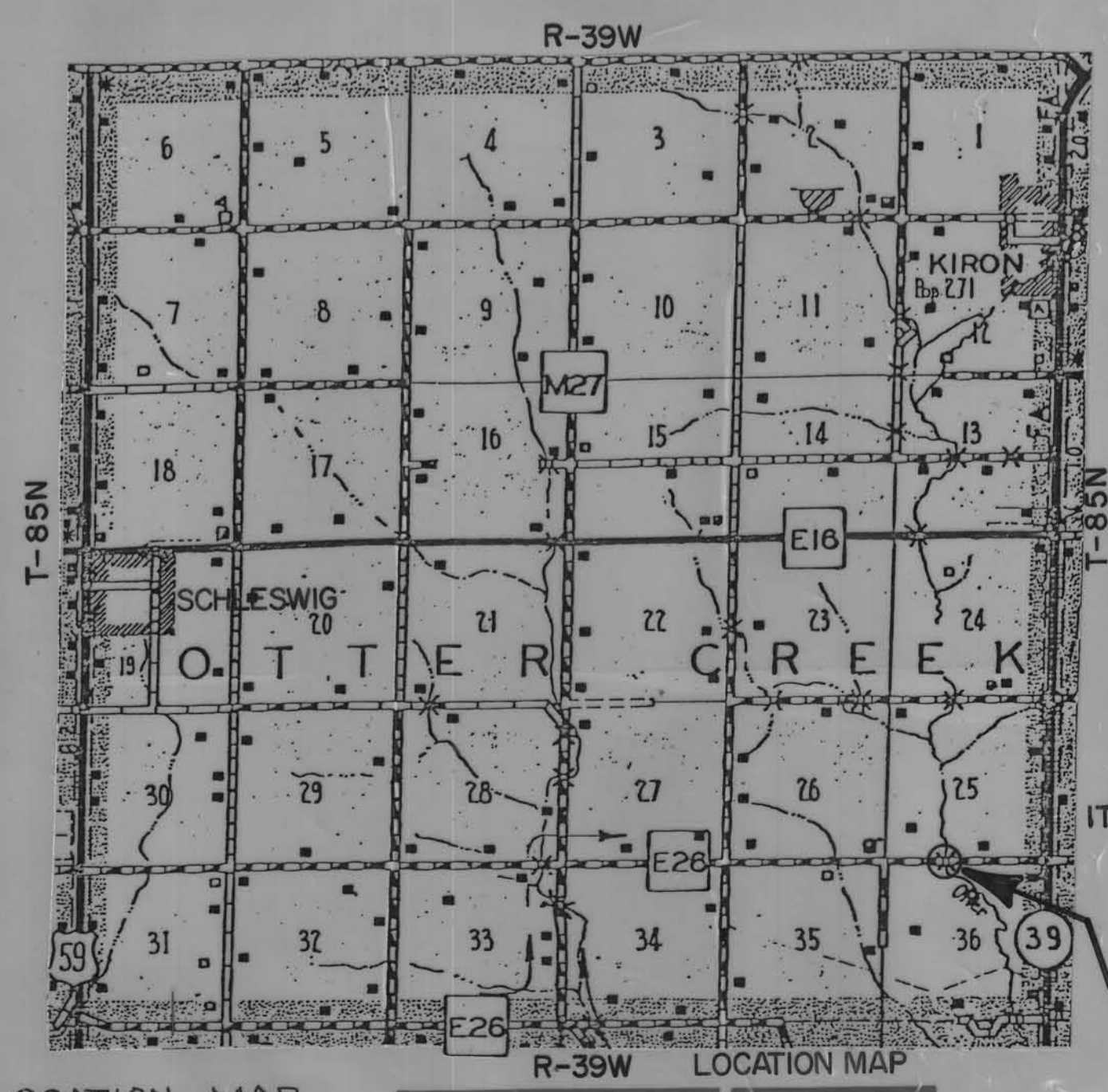
STANDARD	ISSUED	REVISED
VI2-2-64		6-28-68
VI2-7-64		6-28-68
VI2-8-64		8-27-68
VI2-8A-64	AUGUST 1967	4-25-68 6-28-68 10-18-72 3-6-74
VI2-9-64	APRIL 1963	6-28-68
VI2-10-64		6-28-68
VI2-11-64		6-28-68
VI2-30-64 P 10A	JUNE 1959	6-28-68 6-12-72

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM	UNIT	ABUTMENTS	PIERS	SUPERSTRUCTURE	TOTALS
1	CONCRETE, STRUCTURAL	CU.YDS.	48.3	15.4	94.6	158.3
2	STEEL, REINFORCING	LBS.	3726	2200	27888	33814
3	STEEL, STRUCTURAL	LBS.			66635	66635
4	HANDRAIL, ALUMINUM	LIN.FT.			302.9	302.9
5	STEEL H PILING HPIOX42	FURNISH 18@45' DRIVE 18@45'	LIN.FT. 810			810
6	STEEL H PILING HP12X53	FURNISH 10@60' DRIVE 10@60' ENCASE 10@21'	LIN.FT. 600 210			600 600 210
7	CULVERT, CORR. METAL ENTRANCE PIPE 60IN.DIA.	LIN.FT.				60
8	EXCAVATION, CLASS 10, CHANNEL	CU.YDS.				12,760
9	EXCAVATION, CLASS 20	CU.YDS.	48			48
10	EXCAVATION, CLASS 10, ROADWAY & BORROW	CU.YDS.				11,728
11	REVEMENT, CLASS D-RIP RAP	TONS				295
12	REMOVAL OF EXISTING STRUCTURE	L.S.				LUMP SUM

Revised 8-4-76
Alum. Handrail quantity corrected.

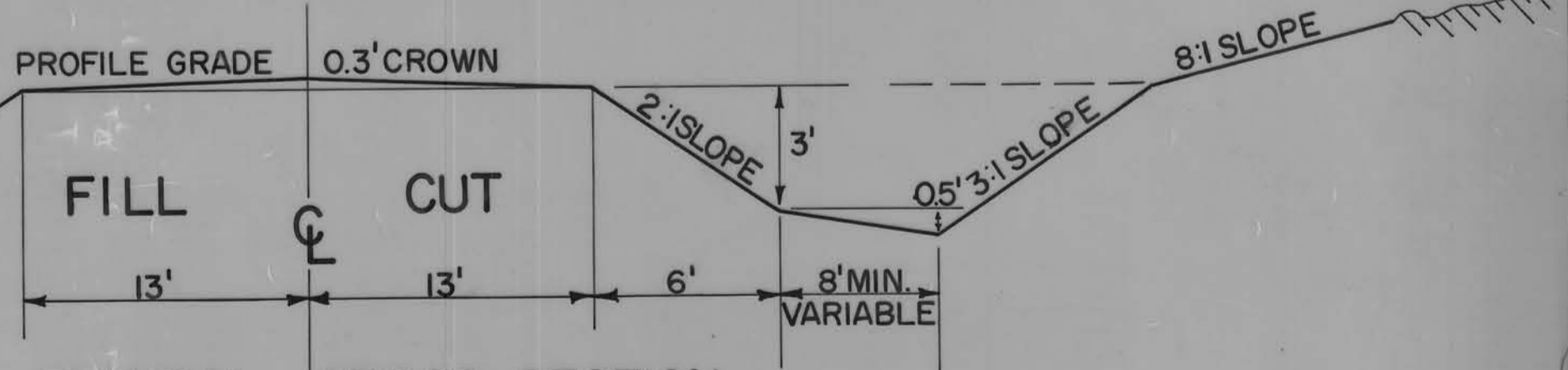
REV. -35-



- ITEM NO. 1
1.3 CU.YDS. ADDED IN ABUTMENT QUANTITIES FOR STEEL H PILING. THE FLOOR, CURBS, AND WING POSTS (95.4 CU.YDS.) ARE TO BE CLASS "D" CONCRETE. THE REMAINDER (66.2) CU.YDS. ARE TO BE CLASS "C" CONCRETE. INCLUDES 3.3 CU.YDS. TO BE USED IN CONSTRUCTION OF CONCRETE HEADWALL FOR CORRUGATED METAL ENTRANCE PIPE.
- ITEM NO. 2
INCLUDES 420 LBS. TO BE USED IN CONSTRUCTION OF CONCRETE HEADWALL FOR CORRUGATED METAL ENTRANCE PIPE.
- ITEM NO. 7
2-23° ELBOWS (FABRICATION ONLY) TO BE CONSIDERED INCIDENTAL TO 60" C.M.P. 10-HOOK BOLTS AND PUNCHING OF HOLES FOR SAME SHALL BE CONSIDERED INCIDENTAL TO FURNISHING & PLACING CORR. METAL ENTRANCE PIPE.
- ITEM NO. 10
TYPE "A" COMPACTION WILL BE REQUIRED. NO OVERHAUL ALLOWED. BORROW TO BE FURNISHED BY CONTRACTOR. BORROW SITE TO BE APPROVED BY ENGINEER. PLANNED QUANTITIES WILL BE USED AS PAYMENT ON THIS ITEM. QUANTITIES FIGURED AT A SHRINK FACTOR OF 25%.
- ITEM NO. 11
CLASS 21 EXCAVATION (22 CU.YDS.) SHALL BE CONSIDERED INCIDENTAL TO COST OF REVEMENT.
- ITEM NO. 12
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE WASTE AREAS OR DISPOSAL SITES FOR EXCESS MATERIAL WHICH IS NOT DESIRABLE TO BE INCORPORATED IN THE WORK INVOLVED ON THIS PROJECT. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES. SALVAGE MATERIAL SHALL REMAIN THE PROPERTY OF CRAWFORD COUNTY. CONTRACTOR TO REMOVE AND PLACE BROKEN CONCRETE AS DIRECTED BY ENGINEER, AND AS SHOWN ON SHEET NO. 2.

STA. 16+00 C 150' X 24' CONTINUOUS I-BEAM BRIDGE
30° SKEW DESIGN NO. 776

- APPROVED
- Eileen Seider*
- Don Hansen*
- Charles J. Smith*
- Vern Ruser*
- LeRoy A. Hansohn*
- BOARD OF SUPERVISORS



DISTRICT PLANNING ENGINEER
IOWA DEPT. OF TRANSPORTATION
HIGHWAY DIVISION

APPROVED _____ DATE _____

DEPARTMENT OF TRANSPORTATION
IOWA
Highway Division

APPROVED *D. McLean* 5/20/76
DEPUTY CHIEF ENGINEER DATE

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT ENGINEERING DECISIONS WITH REGARD TO THE DESIGN WERE MADE BY ME OR BY OTHER DULY REGISTERED PROFESSIONAL ENGINEERS UNDER THE LAWS OF THE STATE OF IOWA.

H. Dale Wright March 3, 1976
IOWA REGISTRATION NUMBER 5798 DATE

APPROVED
U.S. DEPT. OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

DIVISION ENGINEER DATE

MASTERS PRINTED

BRIDGE

PROJECT NO. SN-2380(2)--51-24

CRAWFORD COUNTY

LETTING DATE: JUNE 22, 1976

(1971) TRAFFIC COUNT 41 V.P.D.

DESIGN NO. 776

FILE NO. 50419

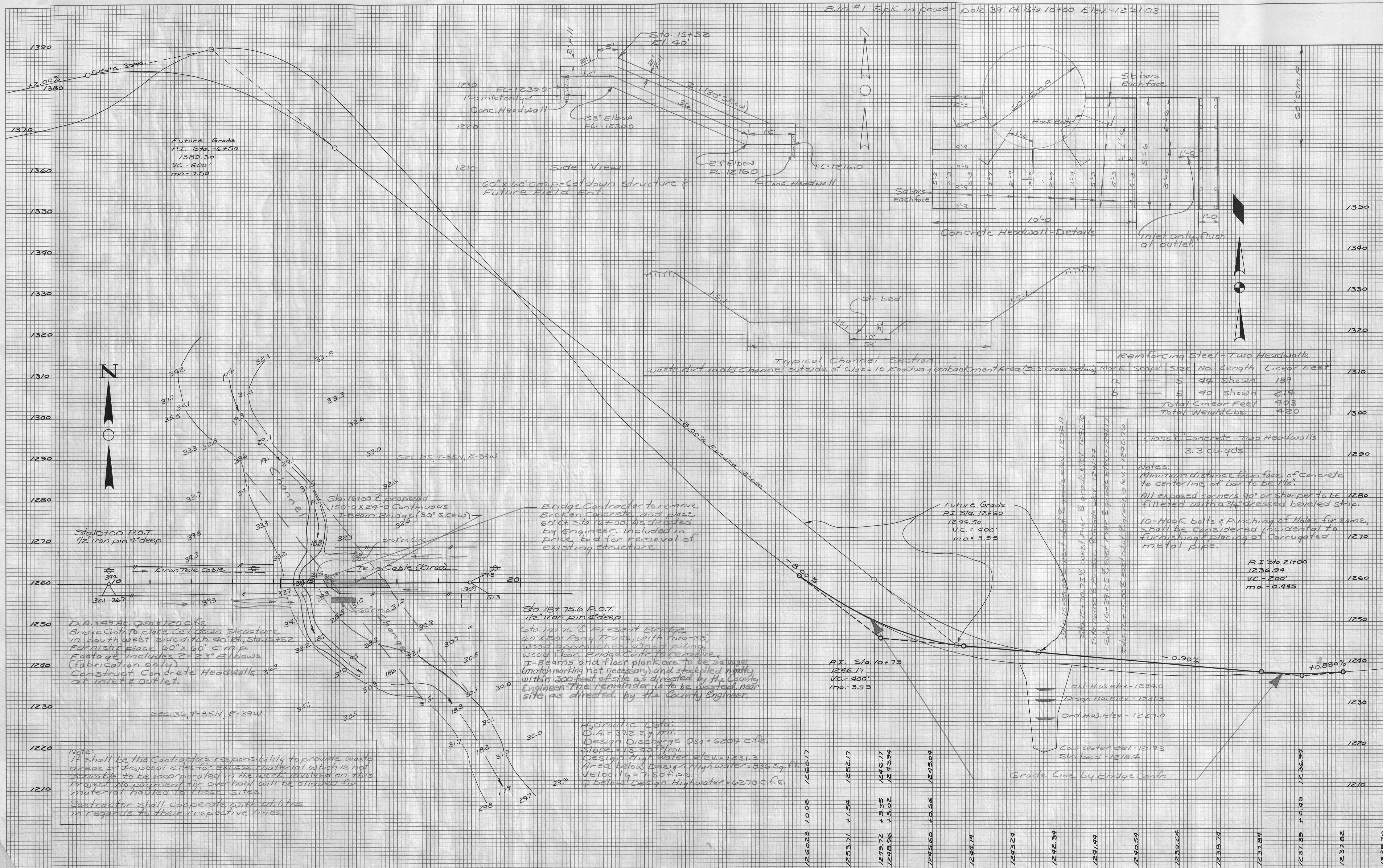
CRAWFORD COUNTY

PROJECT NO. SN-2380(2)--51-24

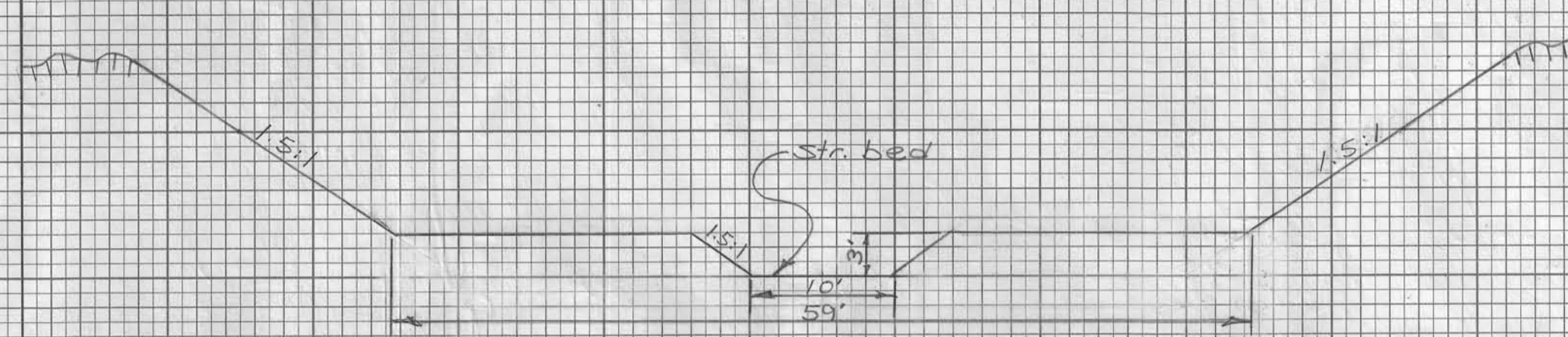
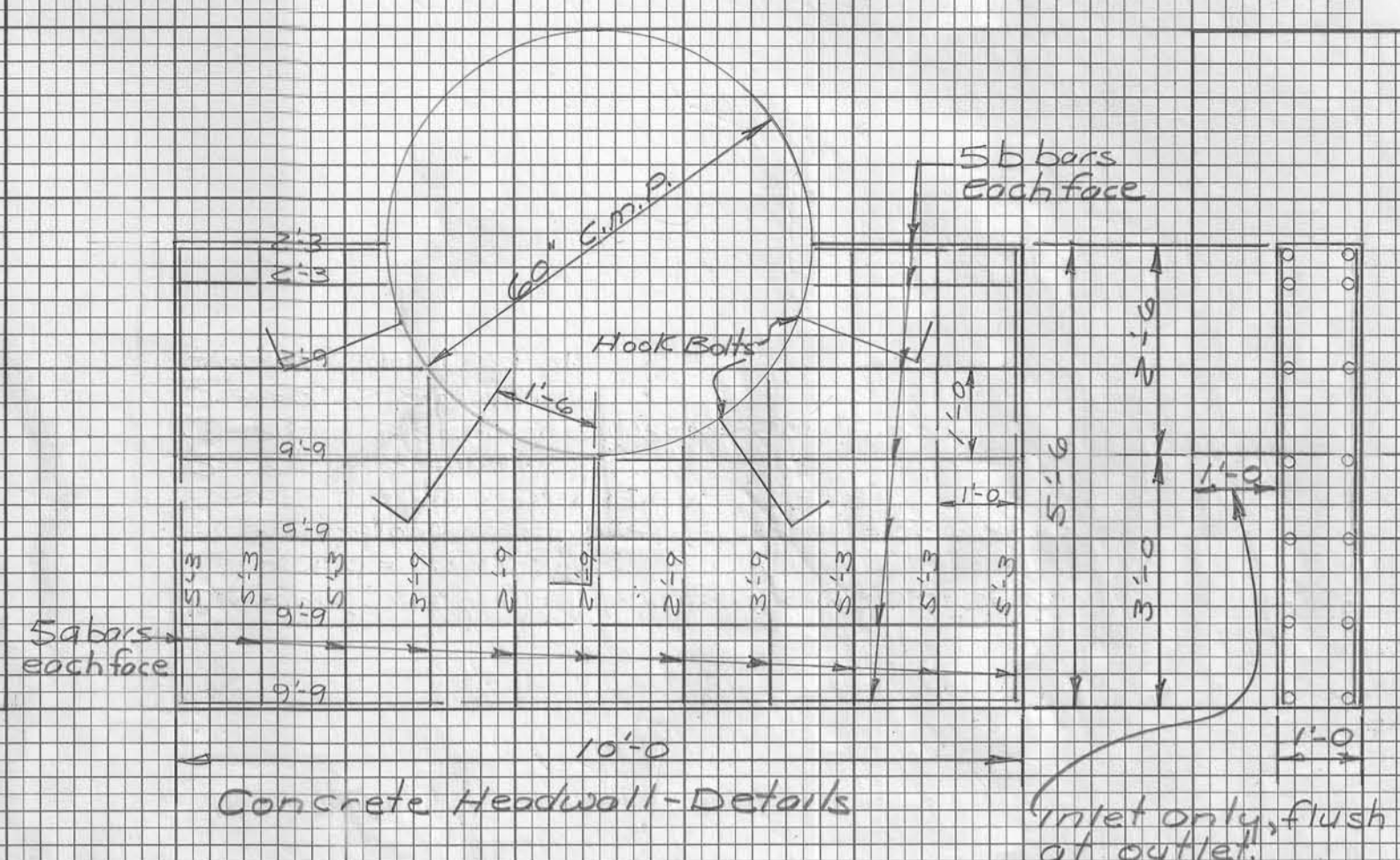
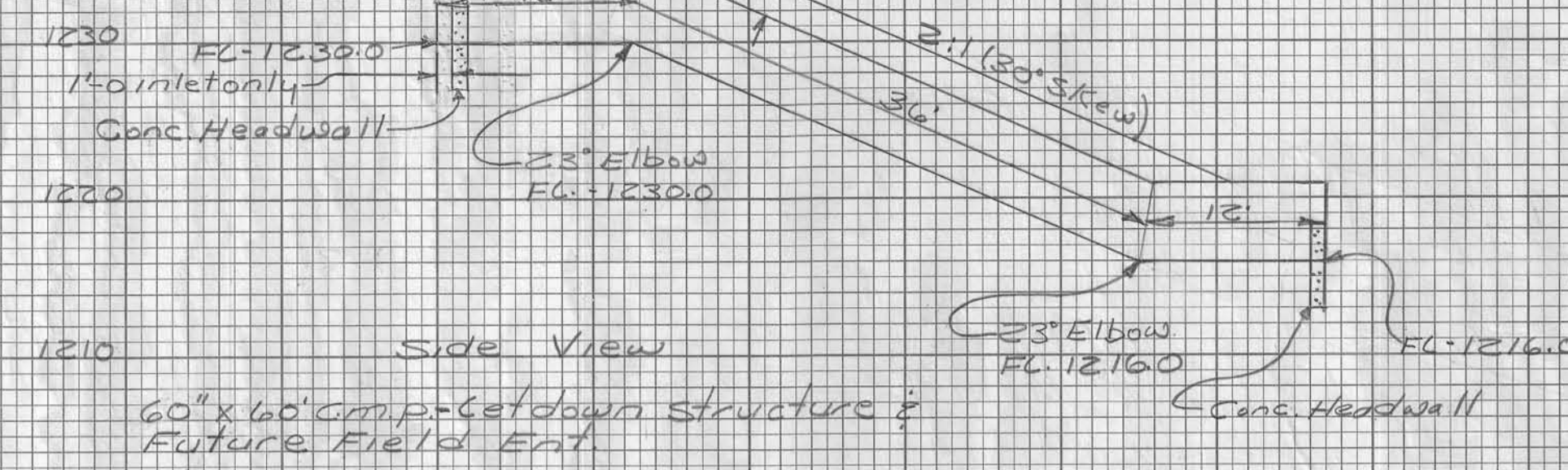
SHEET NO. 1 of 4

DATE _____ BY _____
 SURVEYED _____
 FINAL SURVEY _____
 NOTE BOOK _____
 NO. _____

DATE _____ BY _____
 SURVEYED _____
 ORIGINAL SURVEY _____
 NOTE BOOK _____
 NO. _____



Future Grade
 P.I. Sta. 6150
 1389.30
 VC = 600'
 mo = 7.50



Reinforcing Steel - Two Headwalls

Mark	Shape	Size	No.	Length	Linear Feet
a	—	5	44	Shown	139
b	—	5	40	Shown	214
Total Linear Feet					353
Total Weight Lbs.					420

Class C Concrete - Two Headwalls
 3.3 cu. yds.

Notes:
 Minimum distance from face of concrete to centerline of bar to be 12a.
 All exposed corners 90° or sharper to be 12B filled with a 3/4" dressed beveled strip.
 10-Hook bolts & Punching of Holes for same, shall be considered incidental to furnishing & placing of Corrugated metal pipe.

P.I. Sta. 2100
 1236.94
 VC = 200'
 mo = 0.445

Bridge Contractor to remove Broken Concrete, and place 60' of Sta. 16+00. As directed by Engineer. Included in price bid for removal of existing structure.

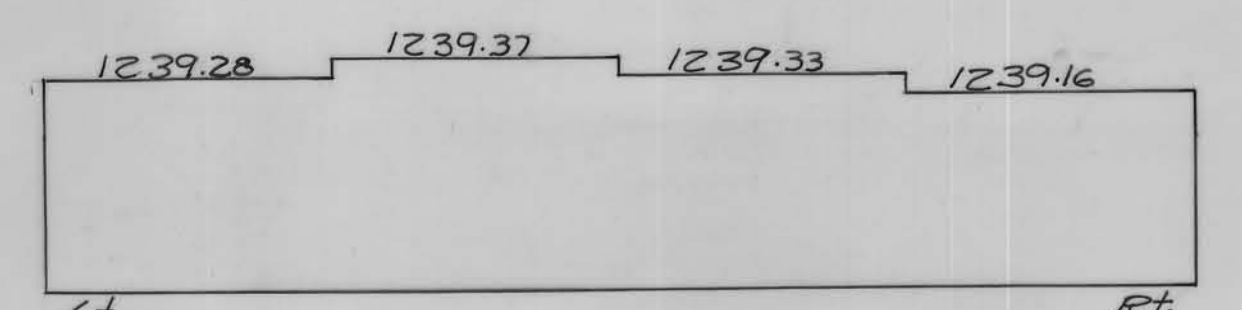
Sta. 18+75.6 P.O.T. 1/2" iron pin 4" deep
 Sta. 14+76.8 Present Bridge 60' x 20' Pony Truss, with two 32' wood approaches, wood pilings, wood floor. Bridge Contr. to remove I-Beams and floor planks to be salvaged (match marking not necessary) and stockpiled nearby within 300 feet of site as directed by the County Engineer. The remainder is to be wasted near site as directed by the County Engineer.

Hydraulic Data:
 D.A. = 312 Sq. ft.
 Design Discharge Q₅₀ = 6204 c.f.s.
 Slope = 13.40 ft/mi.
 Design High Water elev. = 1231.3
 Area below Design High Water = 836 sq. ft.
 Velocity = 7.50 f.p.s.
 Q below Design High Water = 6270 c.f.s.

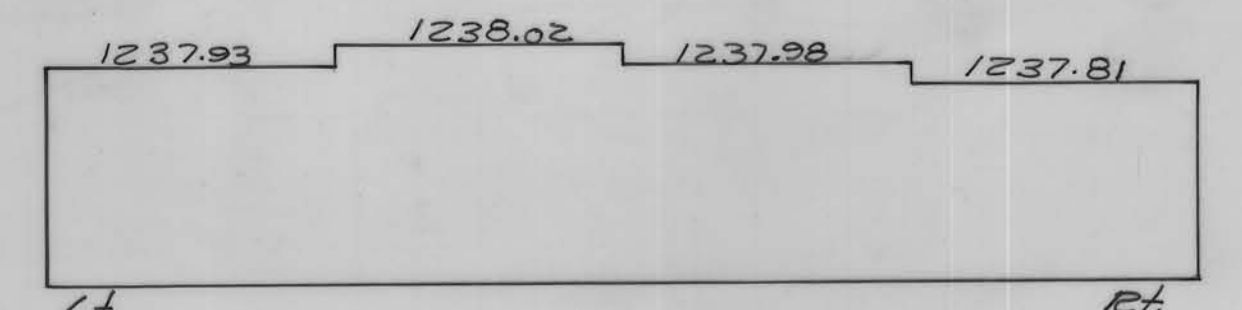
D.A. = 49 Ac. Q₅₀ = 120 c.f.s.
 Bridge Contr. to place Catdown Structure in south west side ditch, 40' R.H. Sta. 15+52. Furnish & place 60' x 60' C.M.P. Footage includes 2-23° Elbows (fabrication only). Construct Concrete Headwalls at inlet & outlet.

Note:
 It shall be the Contractor's responsibility to provide waste areas or disposal sites for excess material which is not desirable to be incorporated in the work involved on this Project. No payment for over haul will be allowed for material hauled to these sites.
 Contractor shall cooperate with utilities in regards to their respective lines.

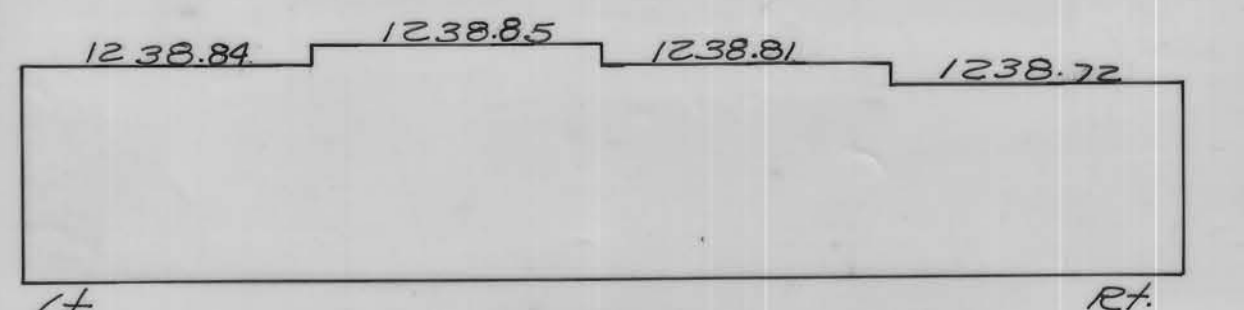
NOTE:
The County will supply the Contractor with the necessary bridge floor elevations.



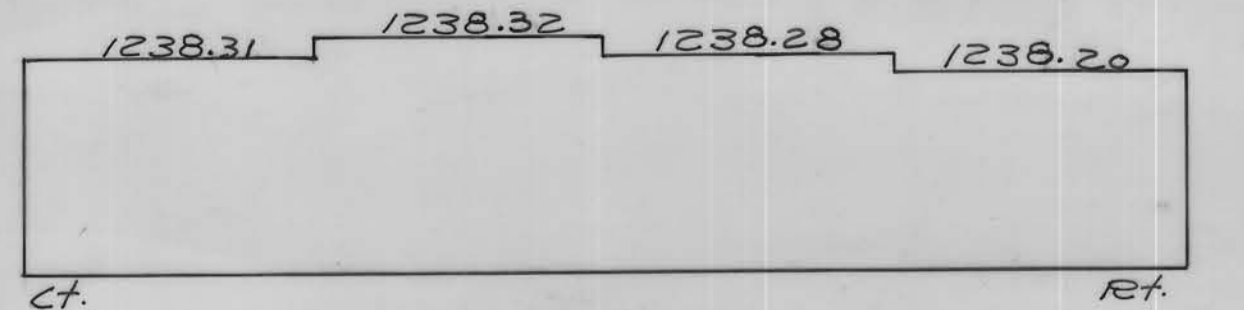
Sta. 15+25.00 West abut. Step diagram, Looking East



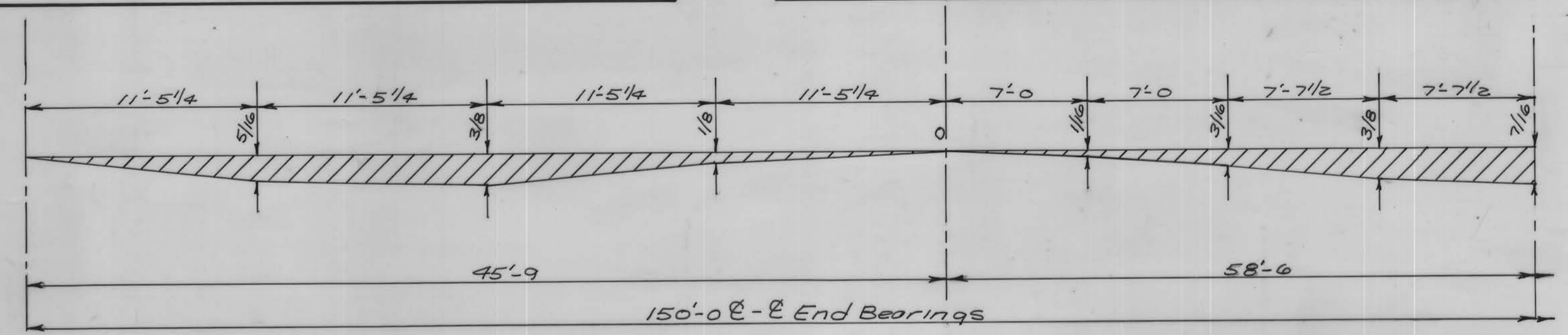
Sta. 16+75.00 East abut. Step diagram, Looking East



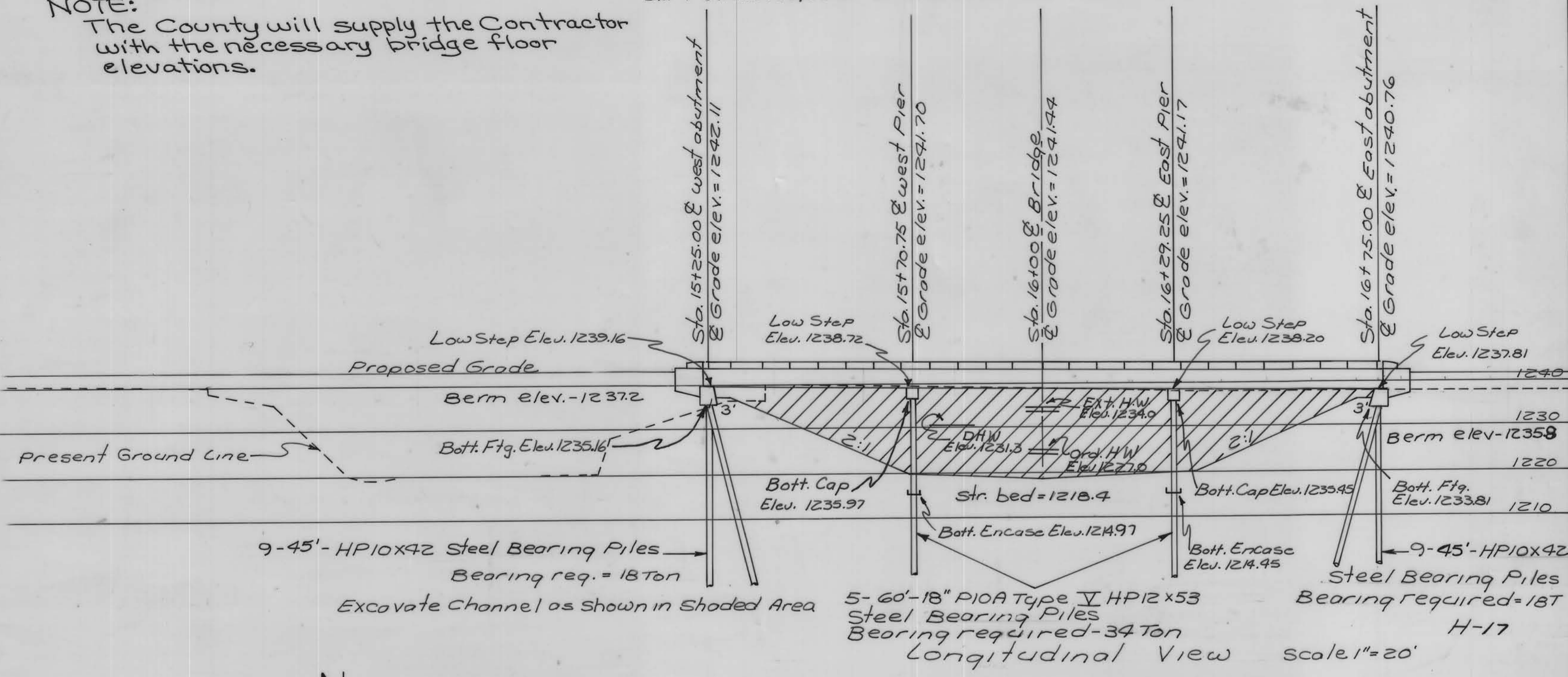
Sta. 15+70.75 West Pier Step diagram, Looking East



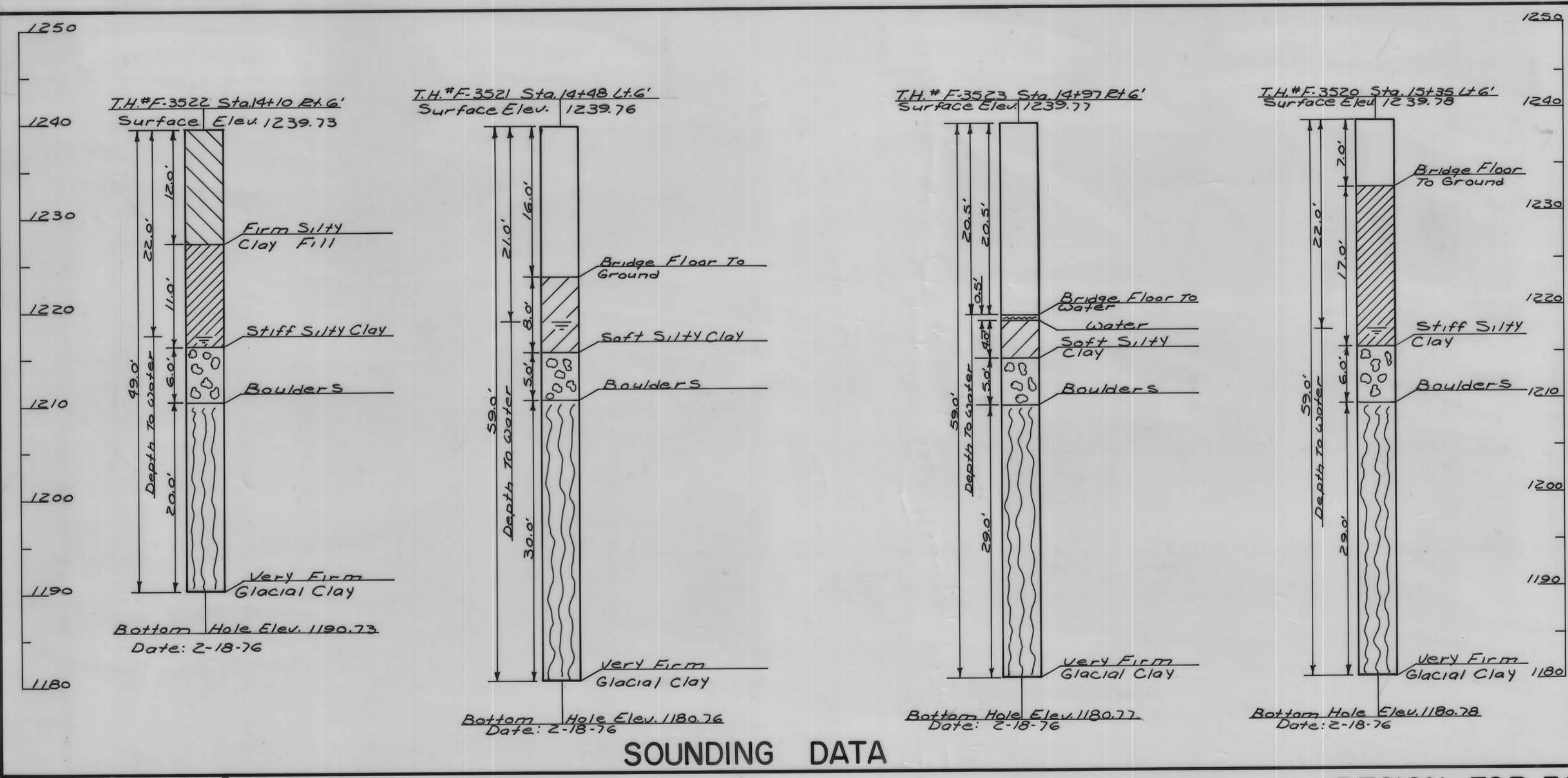
Sta. 16+29.25 East Pier Step diagram, Looking East



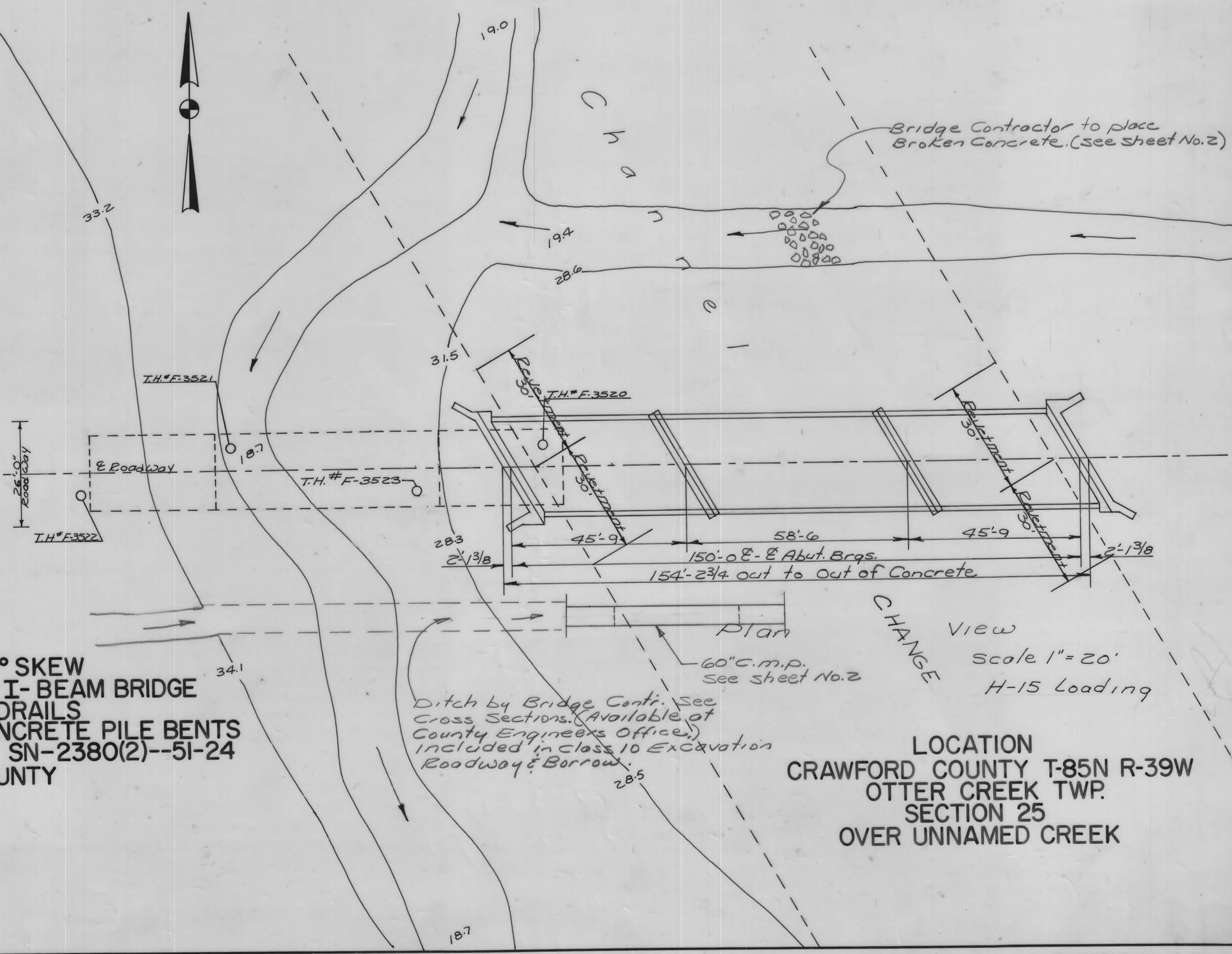
SLAB THICKENING DIAGRAM



LONGITUDINAL VIEW scale 1"=20'



SOUNDING DATA



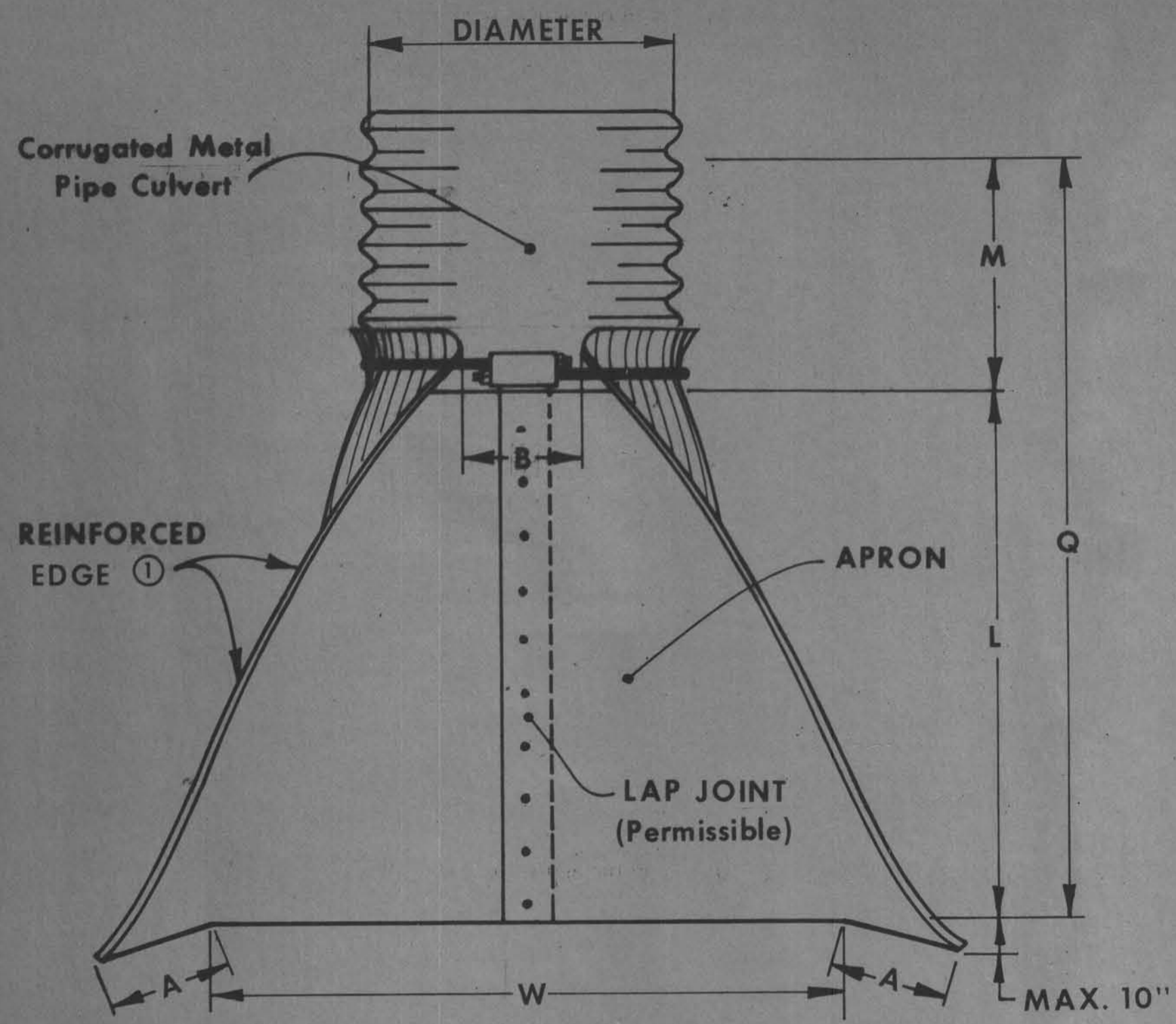
Plan View scale 1"=20' H-15 Loading

DESIGN FOR 30° SKEW
150'-0" x 24'-0" CONTINUOUS I-BEAM BRIDGE
ALUMINUM HANDRAILS
STUB ABUTMENTS AND CONCRETE PILE BENTS
STA. 16+00 PROJECT NO. SN-2380(2)--51-24
CRAWFORD COUNTY

LOCATION
CRAWFORD COUNTY T-85N R-39W
OTTER CREEK TWP.
SECTION 25
OVER UNNAMED CREEK

Revetment Diagram
295 Tons Class D Rip Rap
Class 21 Excavation 22cu yds. Shall be considered incidental to cost of revetment.

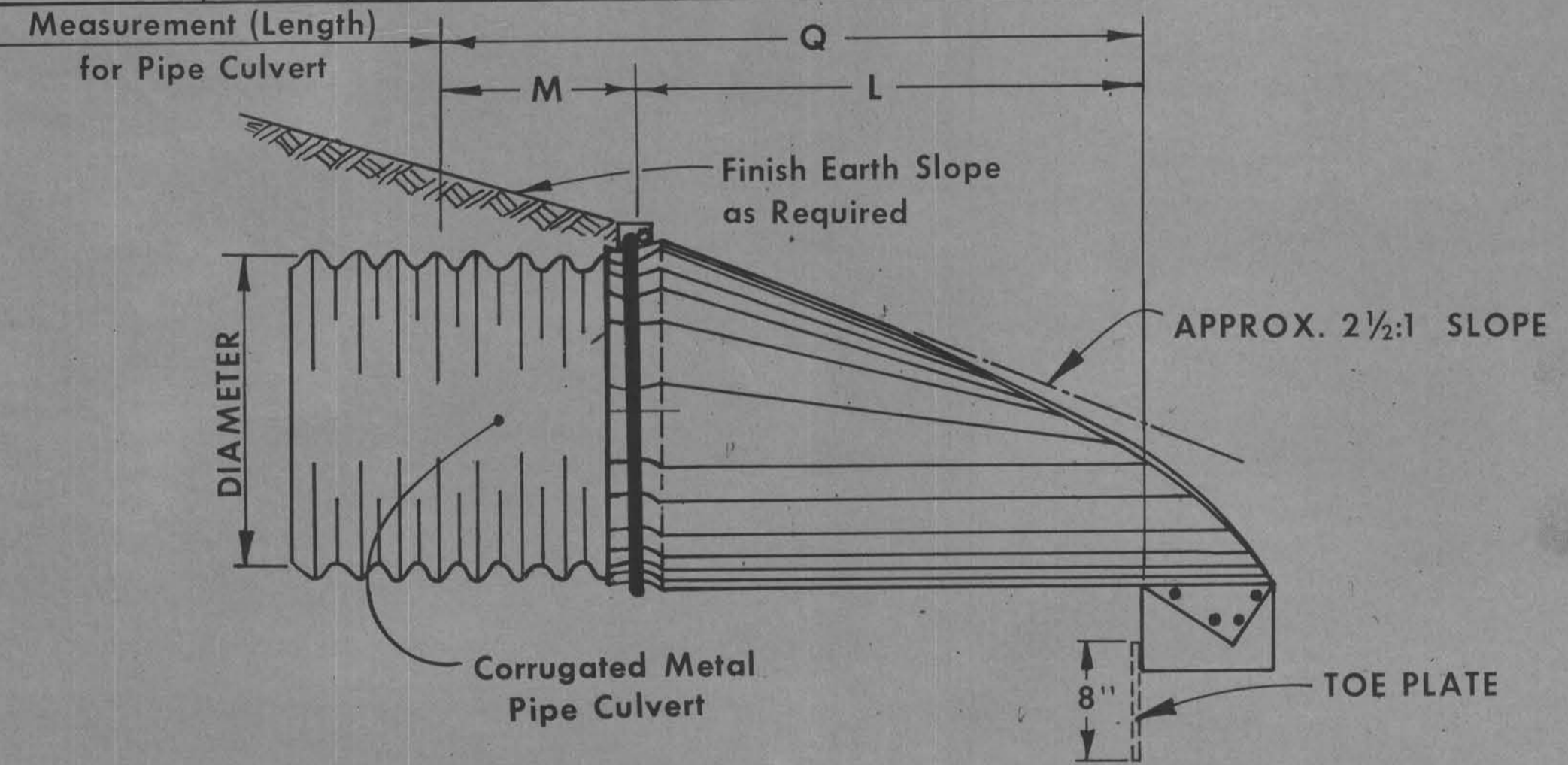
Class 21 Excavation 22cu yds.



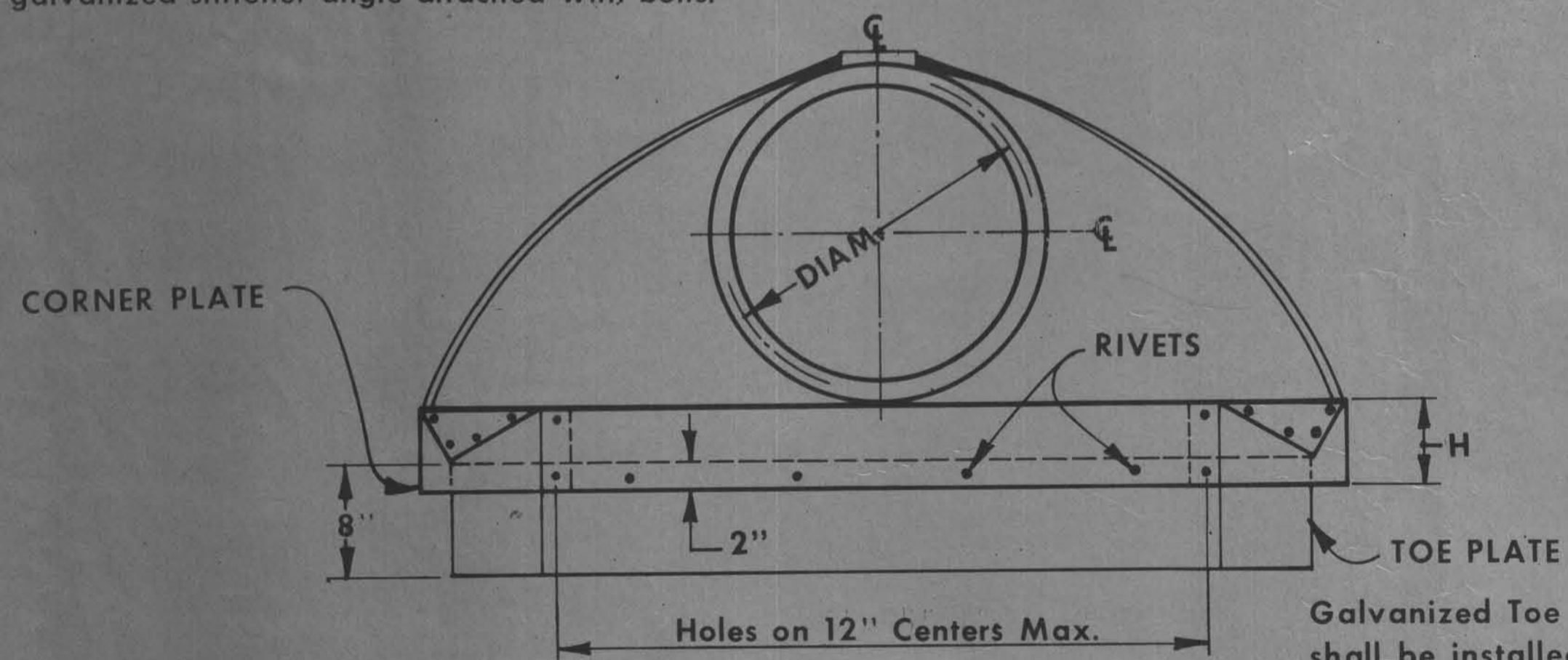
PLAN

① On sizes 60" and larger the reinforced edge should be supplemented with a galvanized stiffener angle attached with bolts.

PIPE DIAM.	DIMENSIONS						
	A 1"±	B MAX.	H 1"±	L 1½"±	W 2"±	M*	Q
12"	4¾"	6"	6"	21"	24"	48"	69"
15"	6"	8"	6"	26"	30"	48"	74"
18"	7"	9"	6"	31"	36"	48"	79"
21"	8¼"	11"	6"	36"	42"	48"	84"
24"	9½"	12"	6"	42"	48"	36"	78"
30"	12"	15"	7½"	52½"	60"	24"	76½"
36"	14"	18"	9"	63"	72"	48"	111"
42"	16"	21"	10½"	73½"	84"	48"	121½"
48"	18"	27"	12"	84"	90"	36"	120"
54"	18"	30"	12"	84"	102"	36"	120"
60"	18"	33"	12"	87"	114"	36"	123"
66"	18"	36"	12"	87"	120"	36"	123"
72"	18"	39"	12"	87"	126"	36"	123"
78"	18"	42"	12"	87"	132"	36"	123"
84"	18"	45"	12"	87"	138"	36"	123"



SIDE VIEW



END VIEW

Galvanized Toe Plate (Same gage metal as apron) shall be installed on all aprons 24" diameter and larger.

GENERAL NOTES:
Metal pipe aprons and hardware shall be constructed of galvanized steel in conformance with the requirements of current standard specifications for Corrugated Metal Culverts and essentially as indicated hereon. Refer to appropriate other standard road plans as well as project plans for additional details of individual culvert installations. Alternate design details may be submitted to the engineer for approval.

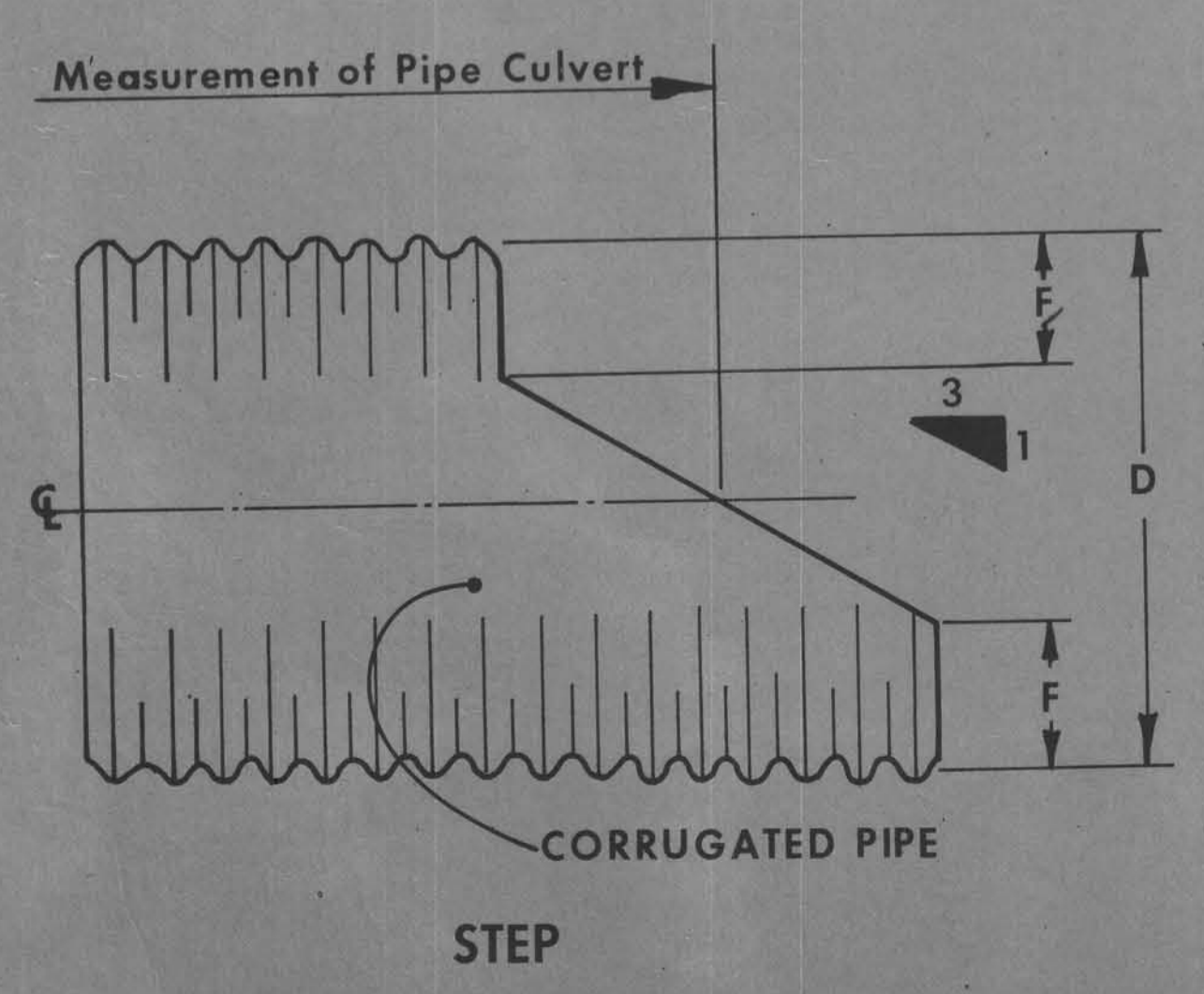
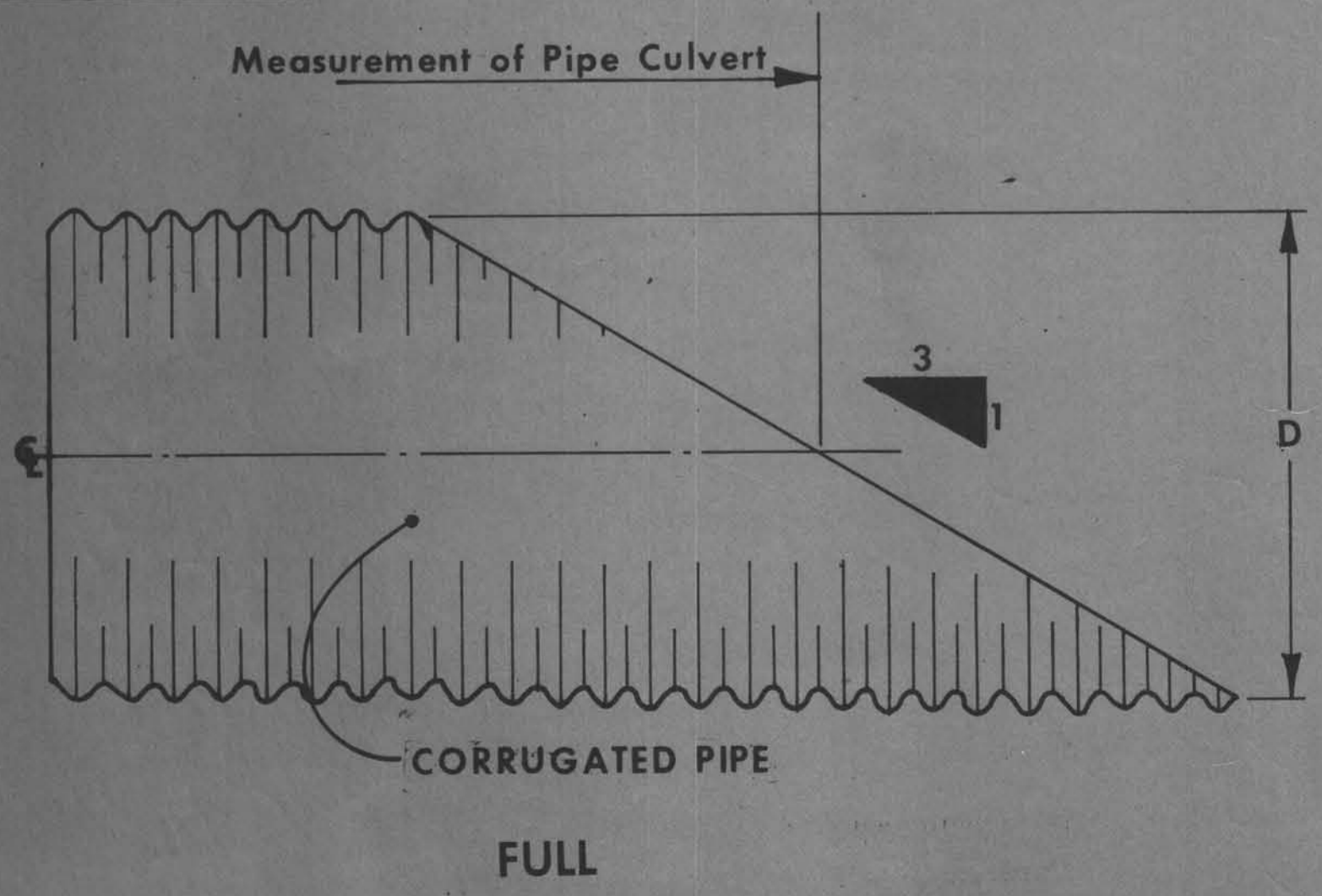
- Apron may be attached to culvert pipe as follows:
- A. If normal culvert is of circumferential corrugation type:
 1. Use an approved bolt or clamp to fasten apron directly to culvert.
 2. If apron is fabricated with "M" dimension of annular corrugated pipe as an integral part of apron, use a standard connecting band to fasten the two pieces together.
 - B. If normal culvert is of helical corrugation type:
 1. Use an approved sizing ring securely fastened to inside diameter of apron to connect to the culvert pipe using special dimple band connector.
 2. If the apron is fabricated with "M" dimension of annular pipe as an integral part of apron, connect the two with a dimple band.
 3. "Dimple" bands shall be approved by the engineer.

Any damage to Spelter Coat resulting from installation of culvert shall be repaired as directed by the engineer.

Price bid for "Metal Aprons" shall be considered full compensation for fabrication and installation of metal aprons as indicated hereon.

* **SPECIAL NOTE:**
Corrugated metal pipe of length "M" (See table of Dimensions) shall be furnished and installed in addition to specified length of corrugated metal pipe culvert. This length "M" shall be considered an integral part of the Apron and shall not be measured or paid for as culvert pipe but shall be considered incidental to the item of "Metal Aprons". Dimension "Q" shall be considered the "Length" of the apron.

Where the corrugated metal apron is to be used with bituminous coated corrugated metal pipe culverts, the pipe portion (Dimension "M") of this apron shall be bituminous coated, same as the culvert.



BEVELED ENDS FOR CORRUGATED METAL PIPE

BEVEL 3:1	
D	F
54"	3"
60"	6"
66"	9"
72"	12"
78"	15"
84"	18"

NOTE:
When specifically required as part of detail project plans, ends of pipe culverts may be provided with beveled ends as shown. Either Full Bevel or Step Bevel may be used unless one type is specified. Unless specified otherwise the slope of the bevel shall be 3:1.

Beveled ends will not be paid for separately but when required shall be considered incidental to the price bid for the culvert.

ADD PIPE DIAMETERS 66" THRU 84"	NO.	1-9-76	DATE	
	LAST REVISION	3		
	Highway Division STANDARD ROAD PLAN RF-5			
RECOMMENDED	 JOHN C. HOOKER ASST. ROAD DESIGN ENGINEER		DATE	12-30-75
APPROVED	 ROAD DESIGN ENGINEER		DATE	12-30-75
	 DEPUTY CHIEF ENGINEER		DATE	12-30-76
METAL PIPE APRONS AND BEVELED ENDS				