

RAMSEY COUNTY DEPARTMENT OF PUBLIC WORKS SPOON LAKE EROSION CONTROL PROJECT

CONSTRUCTION PLANS FOR A SHORELINE PROTECTION WITH GABIONS,
REVET MATTRESSES, GROUDED RIPRAP, AND GEOTEXTILES, AND
RECONSTRUCTION OF BOAT RAMP FACILITIES.

KELLER-PHALEN REGIONAL PARK/SPOON LAKE
NORTH OF HWY 36, WEST OF HWY 61

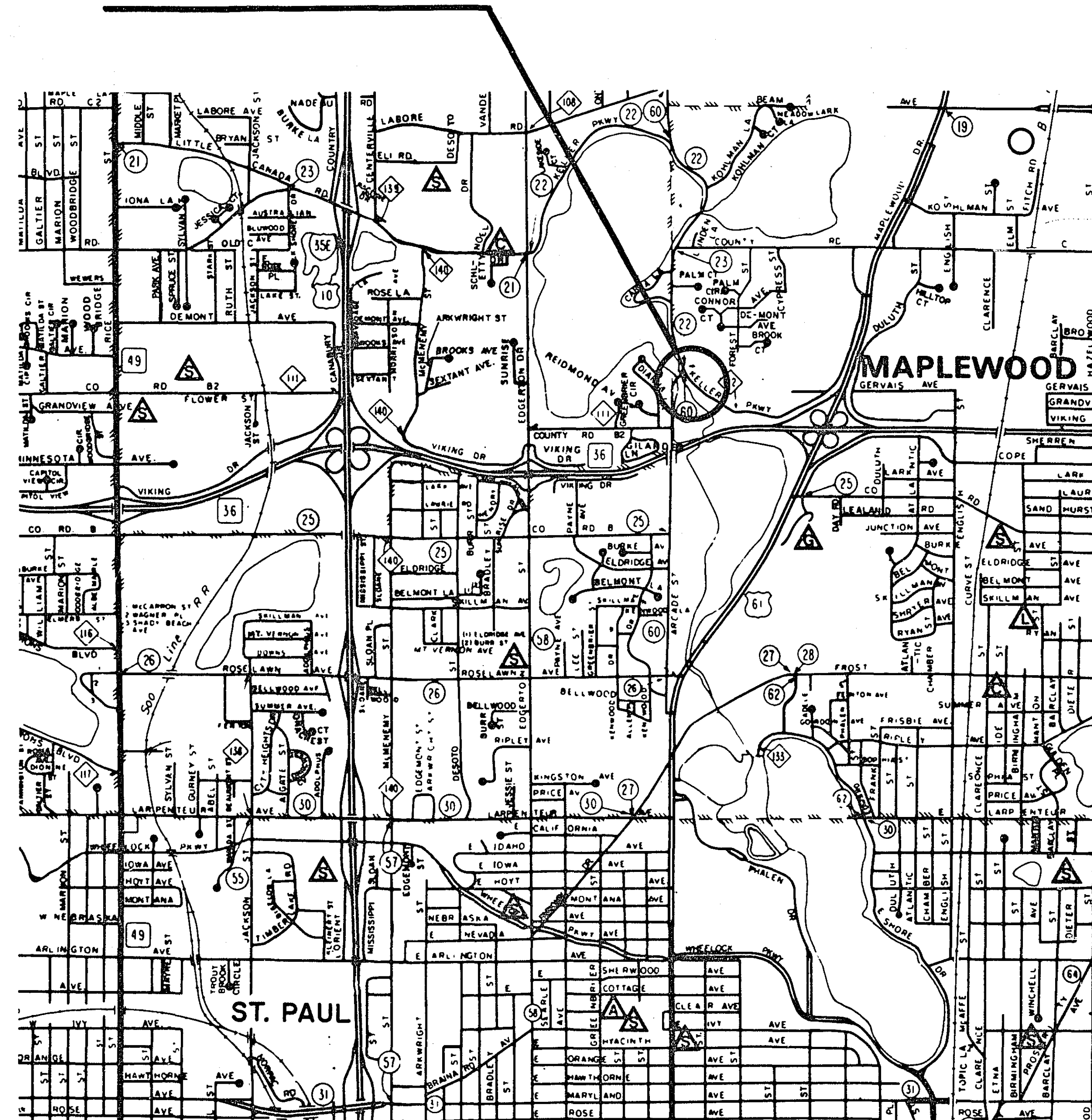
PLANS SYMBOLS

STATE LINE		SPRINGS	
COUNTY LINE		MARSH	
TOWNSHIP OR RANGE LINE		TIMBER	
SECTION LINE		ORCHARD	
QUARTER LINE		BRUSH	
SIXTEENTH LINE		NURSERY	
RIGHT-OF-WAY LINE		CATCH BASIN	C.B.
PRESENT RIGHT-OF-WAY LINE		FIRE HYDRANT	
CONTROL OF ACCESS LINE		CATTLE GUARD	
PROPERTY LINE (Except Land Lines)		OVERPASS (Highway Over)	
VACATED PLATTED PROPERTY		UNDERPASS (Highway Under)	
CORPORATE OR CITY LIMITS		BRIDGE	
TRUNK HIGHWAY CENTER LINE		BUILDING (One Story Frame)	
RETAINING WALL		F-FRAME C-CONCRETE	
RAILROAD		S-STONE T-TILE	
RAILROAD RIGHT-OF-WAY LINE		B-BRICK ST-STUCCO	
RIVER OR CREEK		IRON PIPE OR ROD	
DRY RUN		MONUMENT (STONE, CONCRETE, OR METAL)	
DRAINAGE DITCH		WOODEN HUB	
DRAIN TILE		GRAVEL PIT	
CULVERT		SAND PIT	
DROP INLET		BORROW PIT	
GUARD RAIL		ROCK QUARRY	
BARBED WIRE FENCE			
WOVEN WIRE FENCE			
CHAIN LINK FENCE			
RAILROAD SNOW FENCE			
STONE WALL OR FENCE			
HEDGE			
RAILROAD CROSSING SIGN			
RAILROAD CROSSING BELL			
ELECTRIC WARNING SIGN			
CROSSING GATE			
MEANDER CORNER			

UTILITIES SYMBOLS

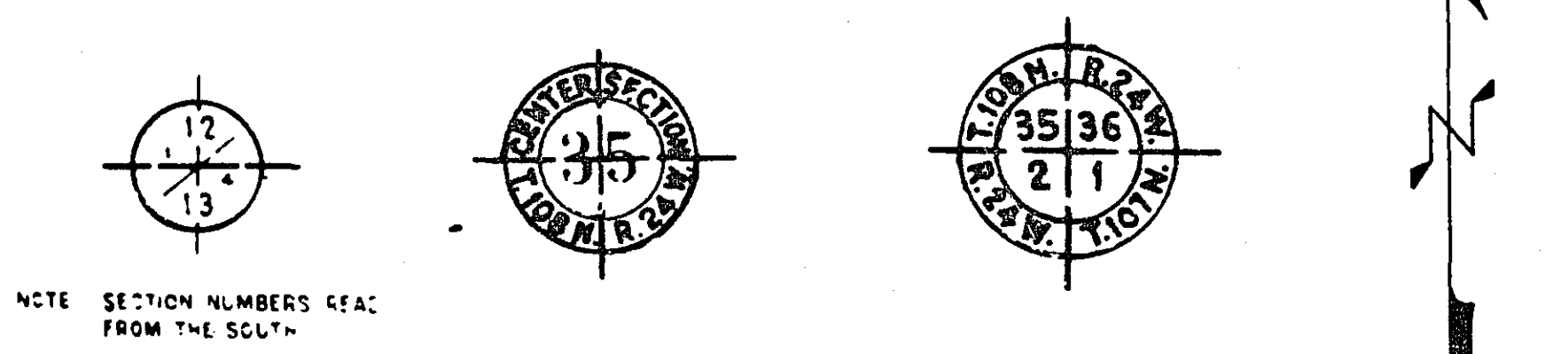
POWER POLE LINE		CONDUIT	
TELEPHONE OR TELEGRAPH POLE LINE		TELEPHONE CABLE IN CONDUIT	
JOINT TELEPHONE AND POWER ON POWER POLES		ELECTRIC CABLE IN CONDUIT	
ON TELEPHONE POLES		TELEPHONE MANHOLE	
ANCHOR		ELECTRIC MANHOLE	
STEEL TOWER		BURIED TELEPHONE CABLE	
STREET LIGHT		BURIED ELECTRIC CABLE	
PEDESTAL TELEPHONE CABLE TERMINAL		AERIAL TELEPHONE CABLE	
GAS MAIN		SEWER, (SANITARY OR STORM)	
WATER MAIN		SEWER MANHOLE	

PROJECT SITE LOCATION



INDEX

PAGE	TITLE SHEET
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3	DETAILS
4	BOAT RAMP DETAILS
5	PLAN VIEW
6,7,8	CROSS SECTIONS



PIT DATA

PIT NO. _____	Located in _____
PIT NO. _____	Located in _____

ADULT PLAN
 CONTAINING TO
 COUNTY RECORDS
 DONE BY: KMR
 DATE: 3/7/90

DESIGN SQUAD KMR _____ DATE _____
 DRAWN BY DRB RPC _____ DATE _____
 CHECKED BY KMR DRB _____ DATE _____

DATE 3/21/89 REG. NO. 16159 ENGR. *James E. Phalen*

RECOMMENDED FOR APPROVAL *DJS* DATE 3/21/89
 TRAFFIC ENGR.

RECOMMENDED FOR APPROVAL *DRB* DATE 3/21/89
 CIVIL ENGR.

RECOMMENDED FOR APPROVAL *DRB* DATE 3/21/89
 CIVIL ENGR.

RECOMMENDED FOR APPROVAL *DRB* DATE 3/21/89
 CIVIL ENGR.

RECOMMENDED FOR APPROVAL *DRB* DATE 3-21-89
 CIVIL ENGR.

RECOMMENDED FOR APPROVAL *DRB* DATE 3-23-89
 CIVIL ENGR.

RECOMMENDED FOR APPROVAL *DRB* DATE 4-25-89
 ASSISTANT CIVIL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

RECOMMENDED FOR APPROVAL *James E. Phalen* DATE 4/20/89
 COUNTY ENGINEER

APPROVED *Harold A. Ingard* DATE _____
 CHAIRMAN OF THE RAMSEY COUNTY BOARD

APPROVED *Wayne A. Mach* DATE 3-21-89
 DIRECTOR OF RAMSEY COUNTY PARKS AND REC.

APPROVED _____ DATE _____

RECOMMENDED FOR APPROVAL _____ DATE _____

RECOMMENDED FOR APPROVAL _____ DATE _____

RECOMMENDED FOR APPROVAL _____ DATE _____

APPROVAL _____ DATE _____

PLAN REVISIONS		
DATE	SHEET NO.	BY
2/12/89	1-8	KMR

THE 1988 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

CONSTRUCTION NOTES

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	CONTRACT ITEM	UNIT	ESTIMATED QUANTITIES
2021.501	MOBILIZATION	L.S.	1
2101.507	GRUBBING	TREE	3
2105.501	COMMON EXCAVATION	C.Y.	483
2105.521	GRANULAR BORROW	C.Y.	295
0105.522	BEACH SAND	C.Y.	62
2105.525	TOPSOIL BORROW	C.Y.	180
2501.511	15" C.M. PIPE SEWER	L.F.	12
2501.515	15" C.M. PIPE APRON	EACH	1
2511.507	GROUTED RIPRAP	C.Y.	330
2511.515	GEOTEXTILE FILTER IV	S.Y.	2153
0511.515	ENKAMAT	S.Y.	1673
2511.517	GABIONS	C.Y.	140
2511.519	RENET MATTRESS	C.Y.	159
2573.505	FLOTATION SILT CURTAIN	L.S.	1
2575.501	SEEDING	ACRE	0.90
2575.502	SEED, MIXTURE 600	POUND	75
2575.505	SODDING	S.Y.	1580
2575.511	MULCH MATERIAL, TYPE I	TON	2.00
2575.532	COMERCIAL FERTILIZER ANAL. 12-12-12	TON	0.20

FUNDING LIMITATIONS MAY NOT PERMIT CONSTRUCTION OF THE BOAT RAMP. IN THAT EVENT THE CONTRACT WILL BE AWARDED TO THE LOW BIDDER ON THE EROSION CONTROL PORTION OF THE PROJECT.

THE BOAT RAMP REMOVAL SHALL INCLUDE REMOVING CONCRETE PLANKS, CONCRETE ANCHOR, AND RELATED HARDWARE, 4 STEEL RAILS, AND BITUMINOUS PAVING. THE BITUMINOUS PAVING MAY BE SAWCUT OR CUT WITH A JACKHAMMER. THE CUT MUST BE CLEAN AND EVEN.

COMMON EXCAVATION INCLUDES REMOVAL OF MATERIAL TO SHAPE THE SLOPE TO THE CROSS SECTIONS SHOWN IN PLANS. COMMON EXCAVATION SHALL BE PAID FOR ACCORDING TO PLAN QUANTITY.

APPROXIMATELY 50 C.Y. OF LOOSE RIPRAP SHALL BE REMOVED AND DISPOSED OF OFFSITE, AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE INCIDENTAL TO COMMON EXCAVATION.

THE CONCRETE BOAT RAMP PLANKS SHALL INCLUDE FURNISHING AND INSTALLING CONCRETE PLANKS, CONCRETE ANCHOR, ALL RELATED HARDWARE AND STEEL RAILS (STEEL RAILS ARE OPTIONAL).

BITUMINOUS MATERIAL FOR MIXTURE AND TACK OIL SHALL BE INCIDENTAL TO PLANT-MIXED BITUMINOUS SURFACE.

FLOTATION SILT FENCE AS PROVIDED FOR IN ITEM 2573.505, SHALL BE INSTALLED PRIOR TO AND MAINTAINED THROUGH THE DURATION OF EXCAVATION OF LAKE SEDIMENT AND CONSTRUCTION AND OF EARTHEN BERMS. NO MACHINE OPERATIONS WILL BE ALLOWED WITHIN THE WATER COLUMN WITHOUT SILT FENCE IN PLACE. CERTAIN METHODS OF CONSTRUCTION WHICH DO NOT ALLOW SILT TO DISPERSE INTO THE CHANNEL, SUCH AS USE OF STEEL SHEETING, WILL ALLEVIATE THE NEED FOR A FLOTATION SILT CURTAIN.

ALL MATERIAL SUBSTITUTION REQUESTS SHALL BE SUBMITTED IN WRITING TO THE ENGINEER PRIOR TO DELIVERY TO THE SITE. REQUESTS SHALL BE MADE SO THAT THERE IS A SUFFICIENT AMOUNT OF TIME TO RESPOND TO THE REQUEST WITHOUT DELAYING WORK PROGRESS.

THE FOUNDATION FOR THE RIPRAP, GABIONS AND REVEN MATTRESSES SHALL BE EXCAVATED AND SHAPED TO THE CROSS SECTIONS AS INDICATED IN THE PLANS, UNLESS OTHERWISE STAKED BY THE ENGINEER.

ALL LOOSE FOUNDATION MATERIAL SHALL BE THOROUGHLY COMPACTED PRIOR TO PLACEMENT OF THE RIPRAP, GABIONS AND REVEN MATTRESSES, TO THE SATISFACTION OF THE ENGINEER.

GROUTED RIPRAP, REVEN MATTRESS AND GABION BASKET STONE SHALL NOT BE DROPPED FROM A HEIGHT GREATER THAN ONE FOOT

RIPRAP SHALL GENERALLY BE PLACED BY STARTING AT THE LOWEST ELEVATION AND WORKING UPWARDS.

GROUTED RIPRAP STONES SHALL BE POSITIONED IN A MANNER THAT WILL PROVIDE UNIFORM DISTRIBUTION OF THE VARIOUS SIZES OF STONE AND PRODUCE A WELL KEYS MASS OF ROCK WITH THE LEAST, PRACTICAL AMOUNT OF VOID SPACE.

STONES SHALL BE PLACED IN THE BASKETS IN A MANNER THAT ELIMINATES AS MANY OPEN POCKETS AS POSSIBLE, TO THE SATISFACTION OF THE ENGINEER.

THE LAST LAYER OF STONES PLACED IN THE BASKETS SHALL BE SLIGHTLY HIGHER THAN THE TOP OF THE BASKET TO ALLOW FOR PROPER CLOSING OF THE LID.

WELL PACKED FILLING WITHOUT UNDUE BULGING OF BASKETS, AND SECURE LACING, IS ESSENTIAL.

GRANULAR BORROW SHALL BE THOROUGHLY COMPACTED, INCLUDING UNDER AND AROUND EXPOSED TREE ROOTS, TO THE SATISFACTION OF THE ENGINEER.

STONES PLACED IN GABION BASKETS OR REVEN MATTRESSES MAY BE LIMESTONE, GRANITE OR OTHER STONE MATERIALS MEETING SPECIFIED PROPERTIES IN THE SPECIAL PROVISIONS.

STONES USED FOR GROUTED RIP RAP SHALL BE GRANITIC FIELD STONES.

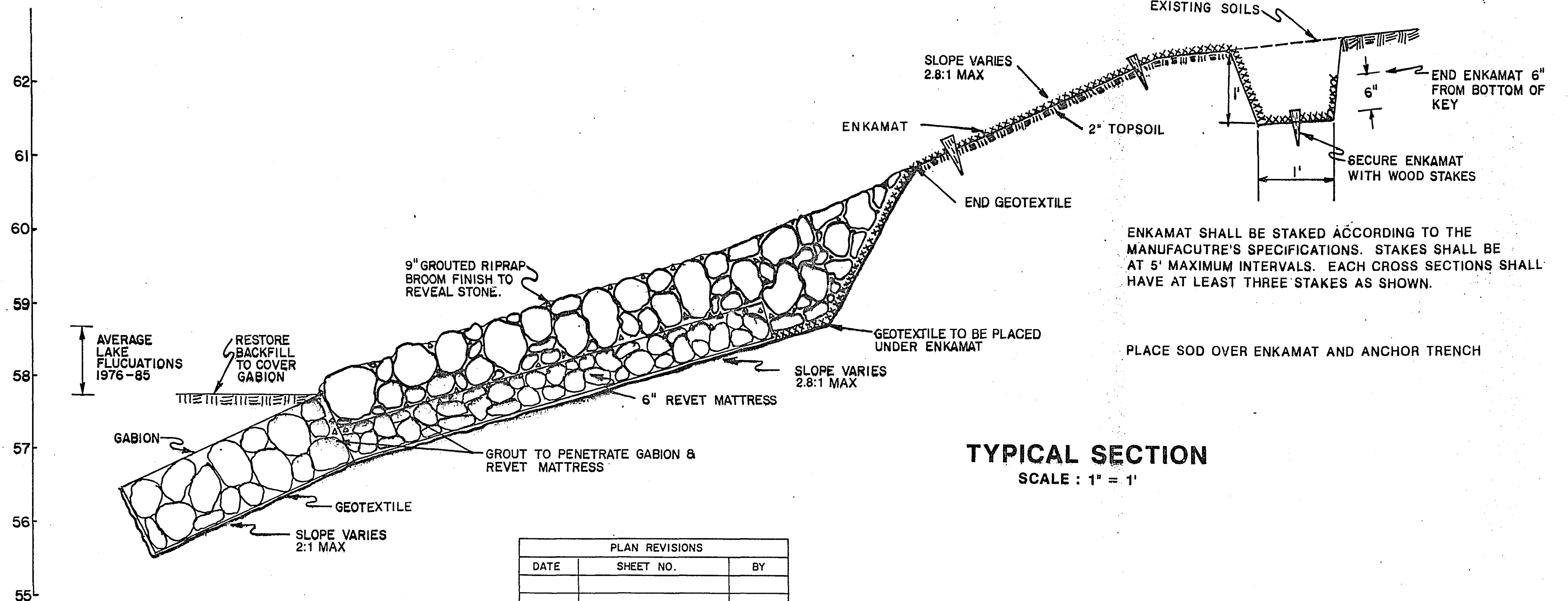
STONES FOR FILLING GABION BASKETS SHALL RANGE IN SIZE FROM A 4-INCH MINIMUM TO AN 8-INCH MAXIMUM.

STONES FOR FILLING REVEN MATTRESSES SHALL RANGE IN SIZE FROM A 3-INCH MINIMUM TO A 6-INCH MAXIMUM.

STONES USED FOR GROUTED RIP RAP SHALL RANGE IN SIZE FROM A 4-INCH MINIMUM TO A 10-INCH MAXIMUM

THE SURFACE OF THE GROUTED RIPRAP SHALL HAVE A STIFF BROOM FINISH. 70% OF THE GROUTED RIPRAP SURFACE SHALL BE EXPOSED ROCK.

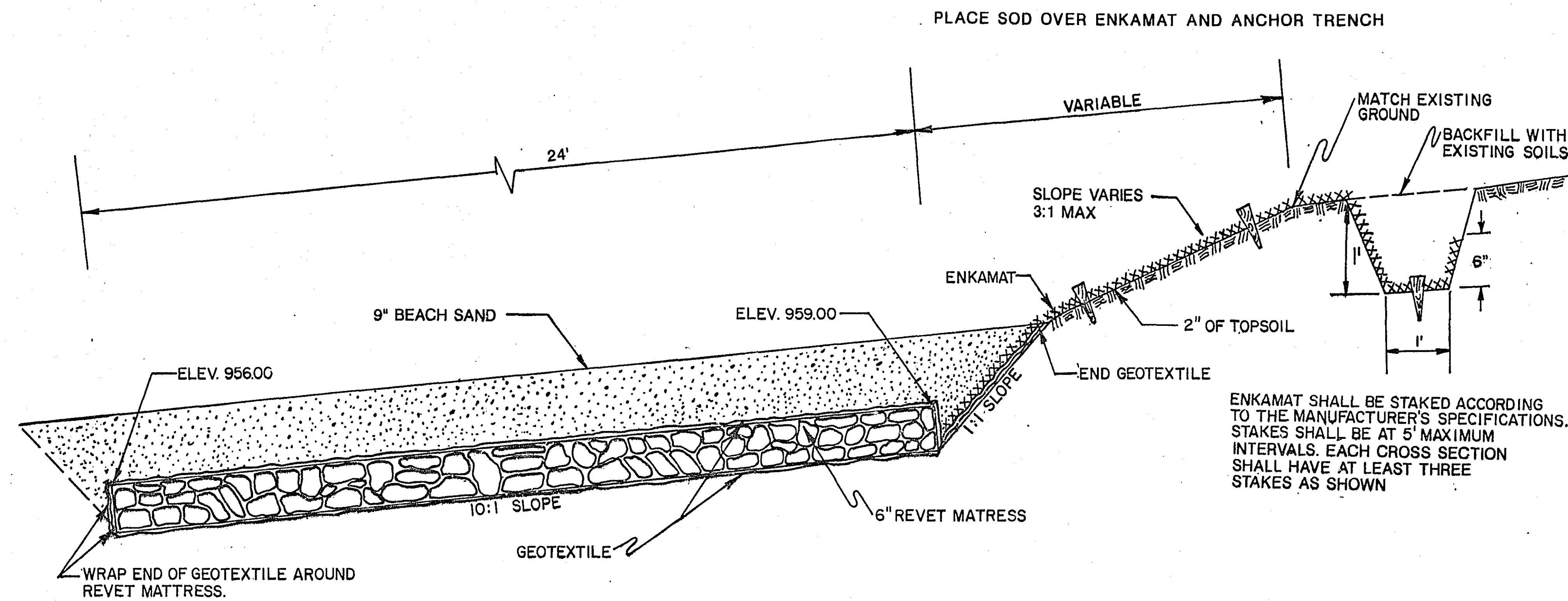
ITEM NO.	CONTRACT ITEM	UNIT	ESTIMATED QUANTITIES
2021.501	MOBILIZATION	L.S.	1
2104.509	REMOVE CONCRETE BOAT RAMP	EACH	1
2105.505	COMMON EXCAVATION	C.Y.	81
2105.541	COARSE AGGREGATE (CA-1)	C.Y.	53
2211.501	AGGREGATE BASE, CLASS 5	TON	48
2331.514	BASE COURSE MIXTURE	TON	11
2411.507	CONCRETE BOAT RAMP PLANKS	L.S.	1
2511.515	GEOTEXTILE FILTER IV	S.Y.	132
2511.519	RENET MATTRESS	C.Y.	11
0511.519	GEOWEB	S.F.	480
2535.501	BITUMINOUS CURB B6	L.F.	82



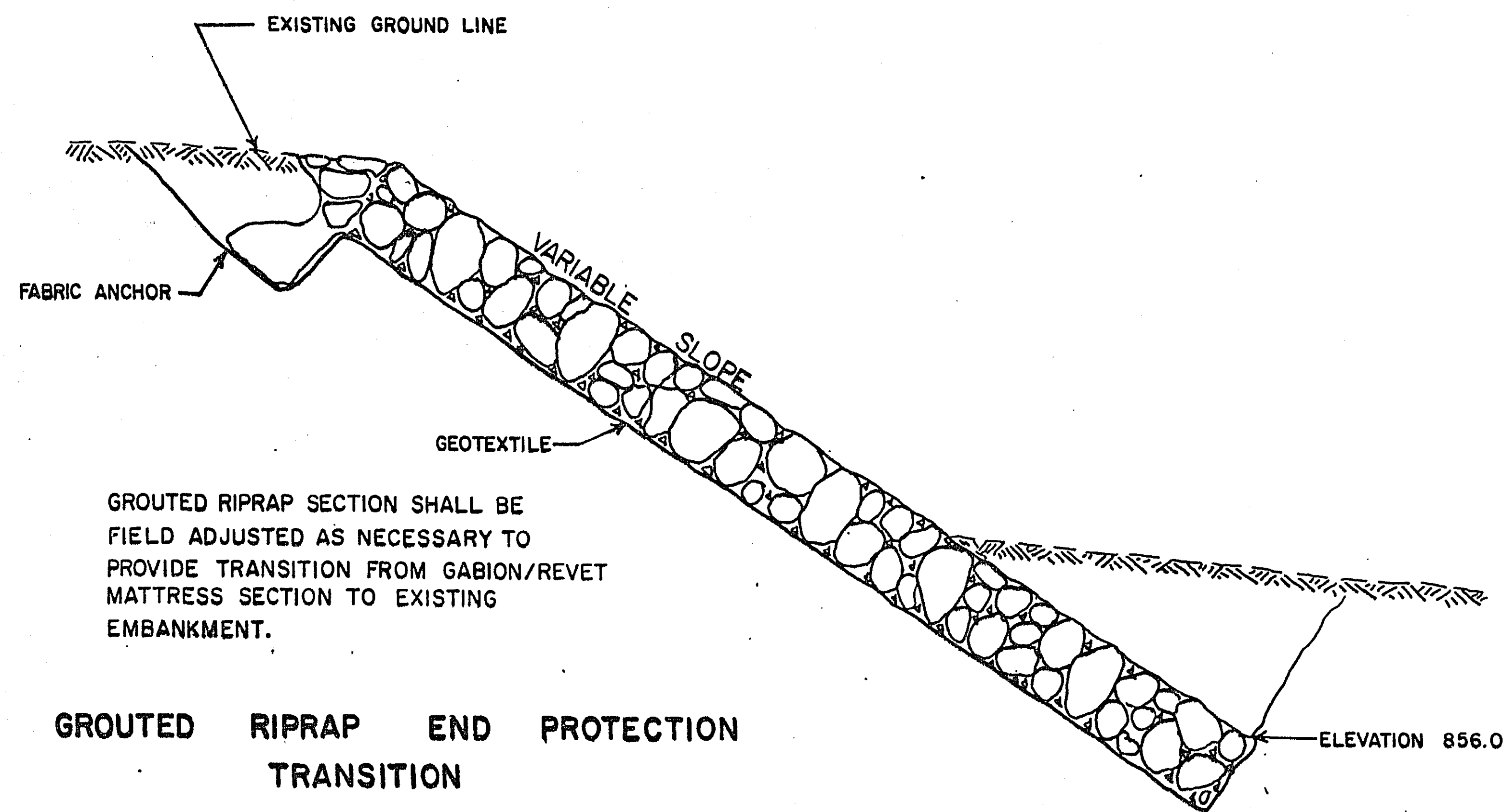
TYPICAL SECTION
SCALE: 1" = 1'

PLAN REVISIONS		
DATE	SHEET NO.	BY

ASBUILT PLAN
CONFORMING TO
CONST. RECORDS
DONE BY: KMR
DATE: 3/7/90



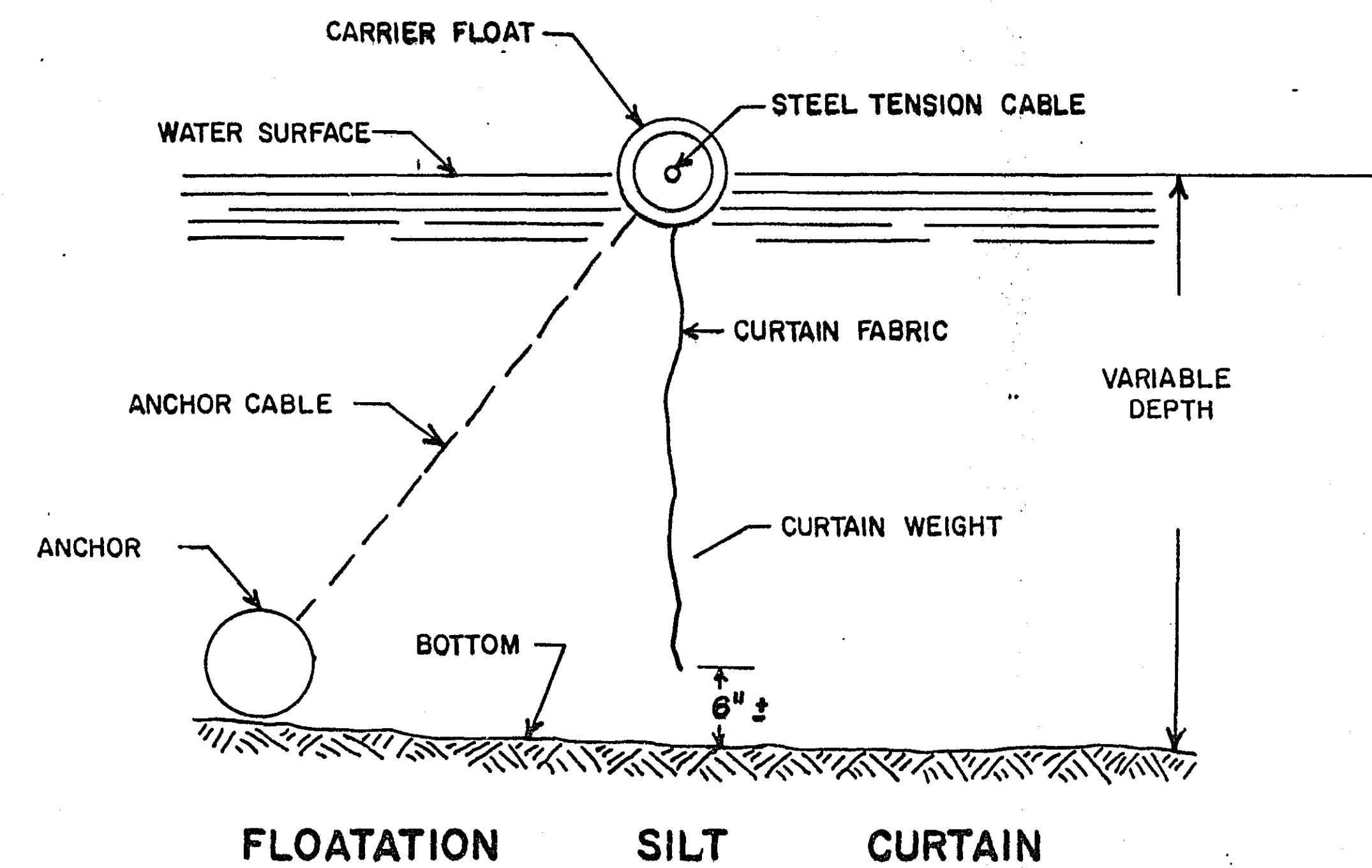
BEACH SLOPE TYPICAL SECTION



GROUTED RIPRAP SECTION SHALL BE FIELD ADJUSTED AS NECESSARY TO PROVIDE TRANSITION FROM GABIION/REVE MATTRESS SECTION TO EXISTING EMBANKMENT.

GROUTED RIPRAP END PROTECTION TRANSITION

SCALE 1" = 1'



FLOATATION SILT CURTAIN

ASBUILT PLAN
CONFORMING TO
CONST. RECORDS
DONE BY: KMR
DATE: 3/7/90

PLAN REVISIONS		
DATE	SHEET NO.	BY
6/13/89		KMR

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision, and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
James E. Johnson
Date: 6/13/89 Reg. No. 16159

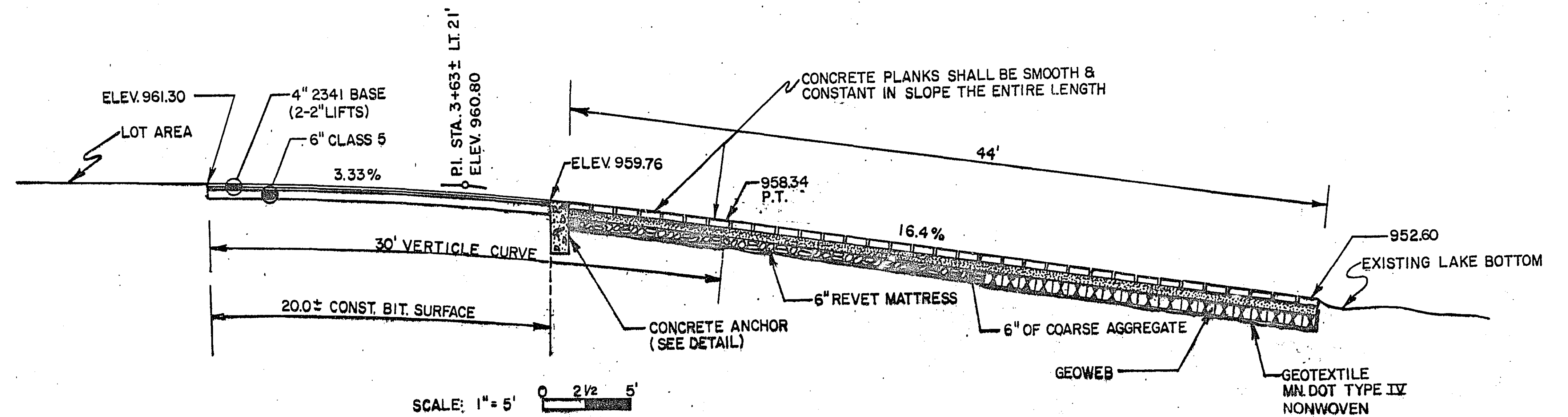
FUNDING LIMITATIONS MAY NOT PERMIT CONSTRUCTION OF THE BOAT RAMP. IN THAT CASE, ONLY THE EROSION CONTROL PORTION OF THE PROJECT WILL BE CONSTRUCTED.

THE COARSE AGGREGATE SHALL FILL AS MANY VOID SPACES AS PRACTICAL BETWEEN AND UNDERNEATH THE CONCRETE PLANKS.

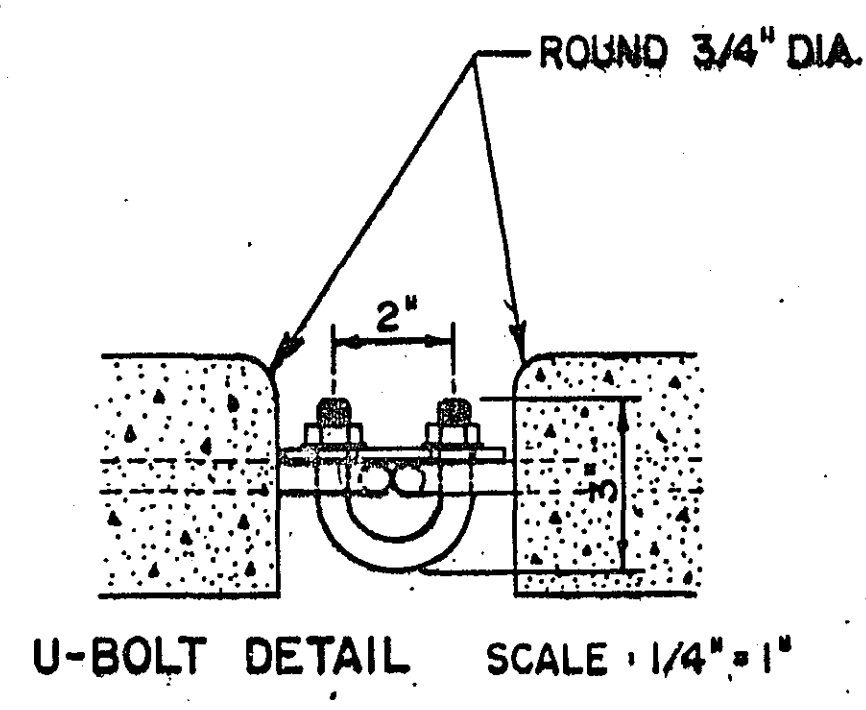
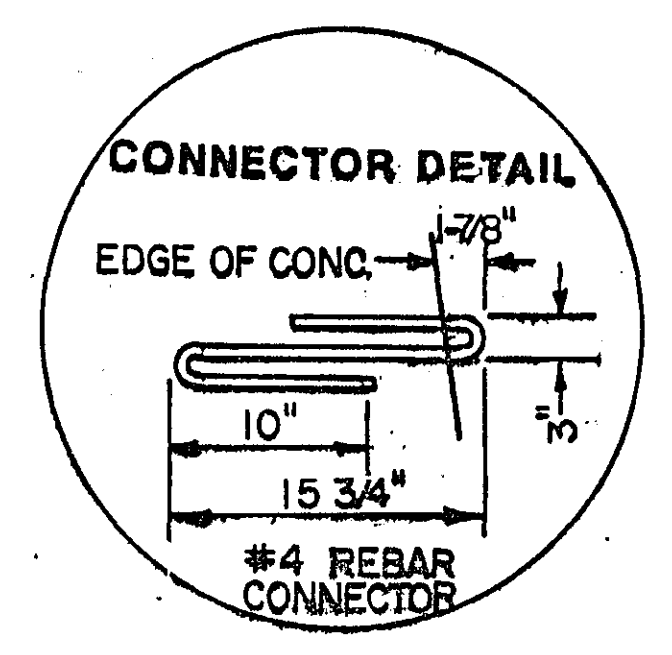
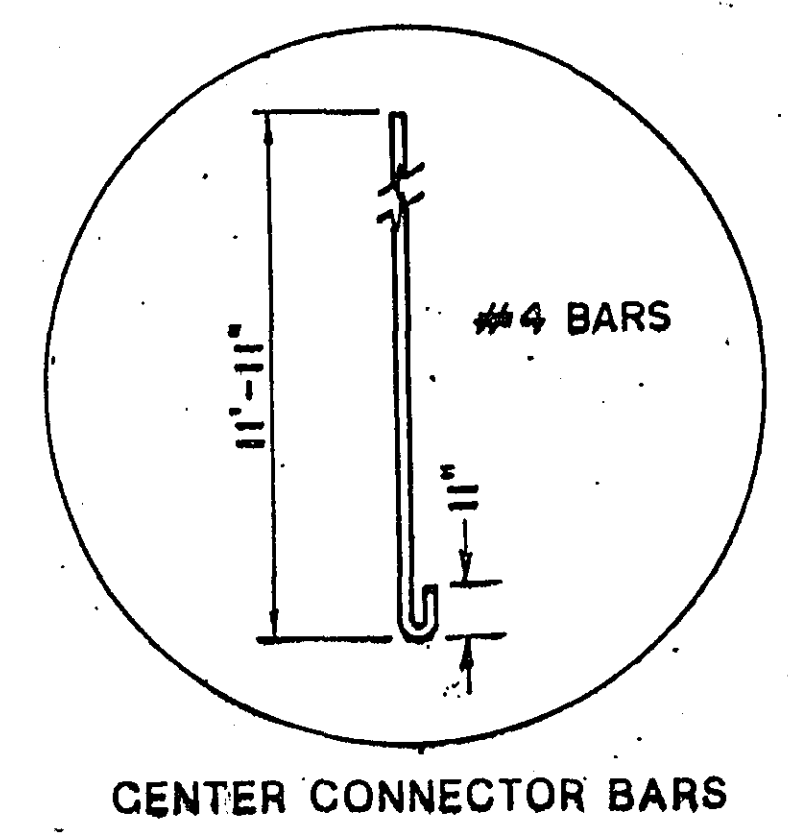
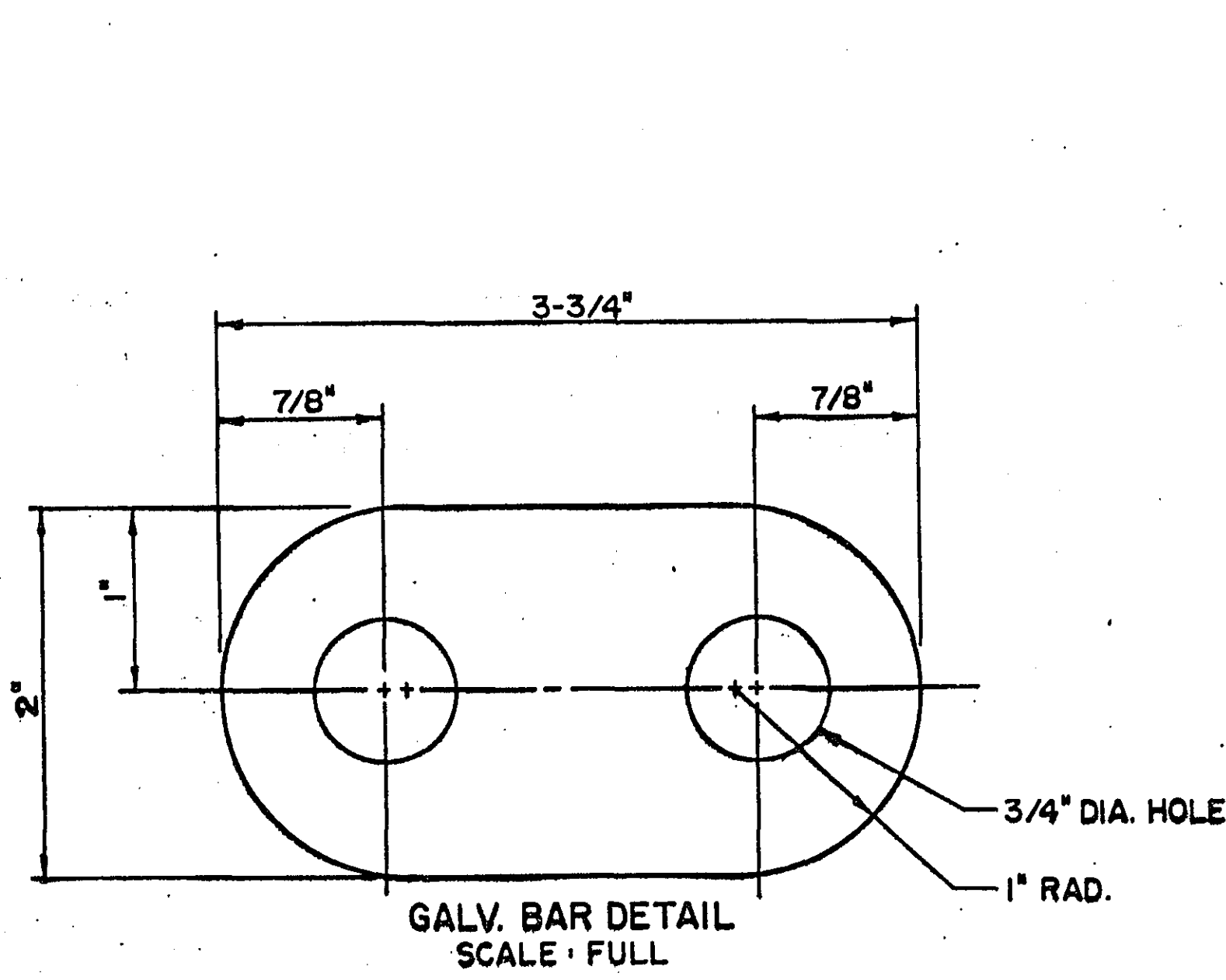
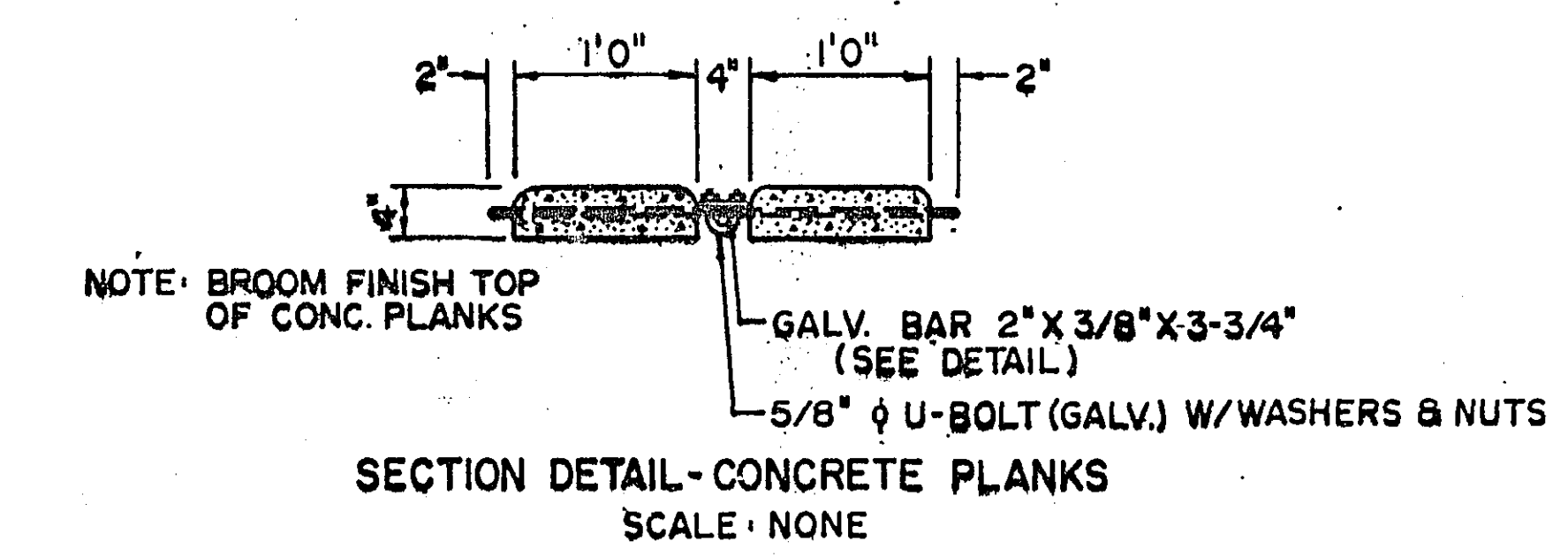
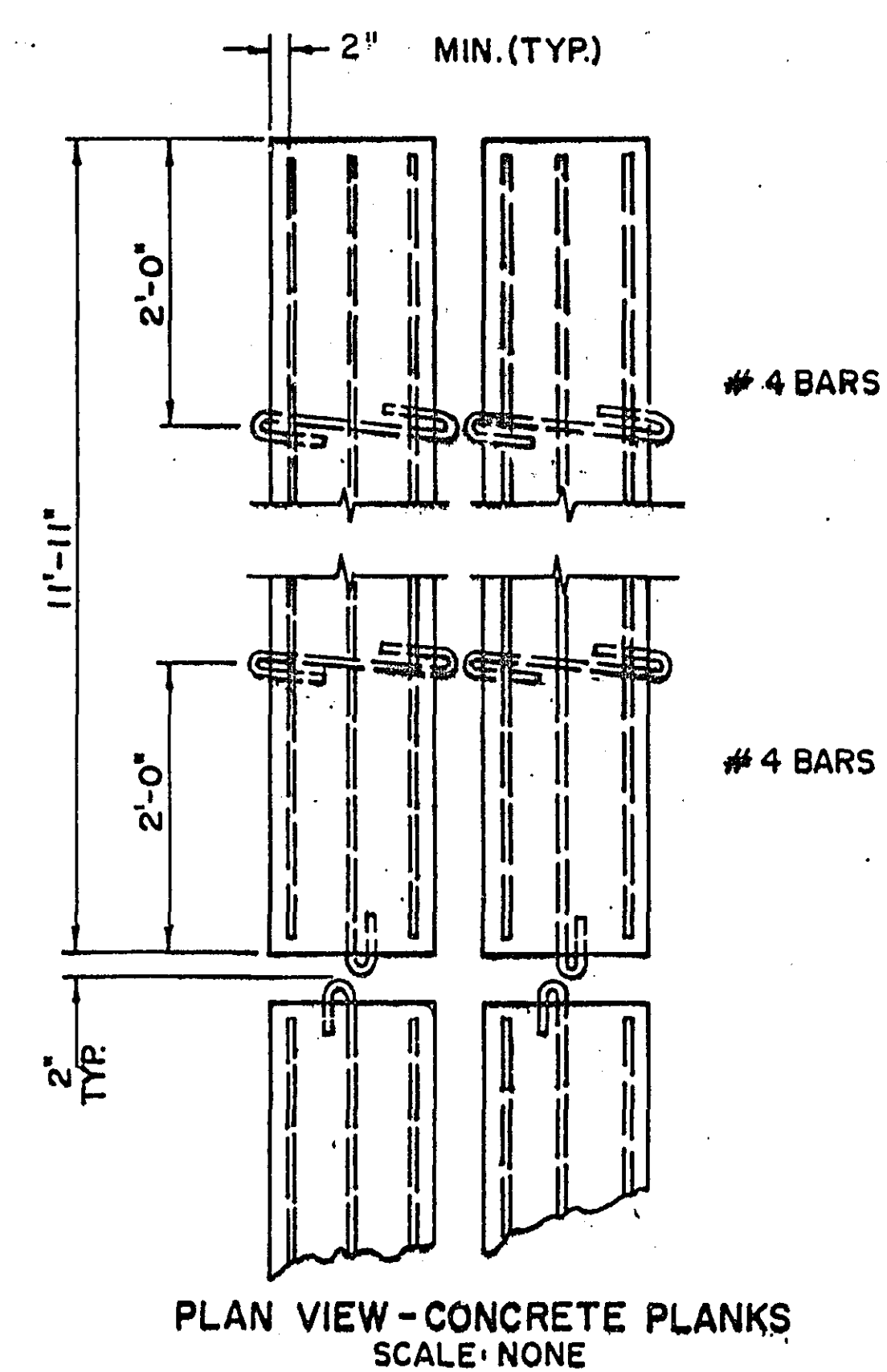
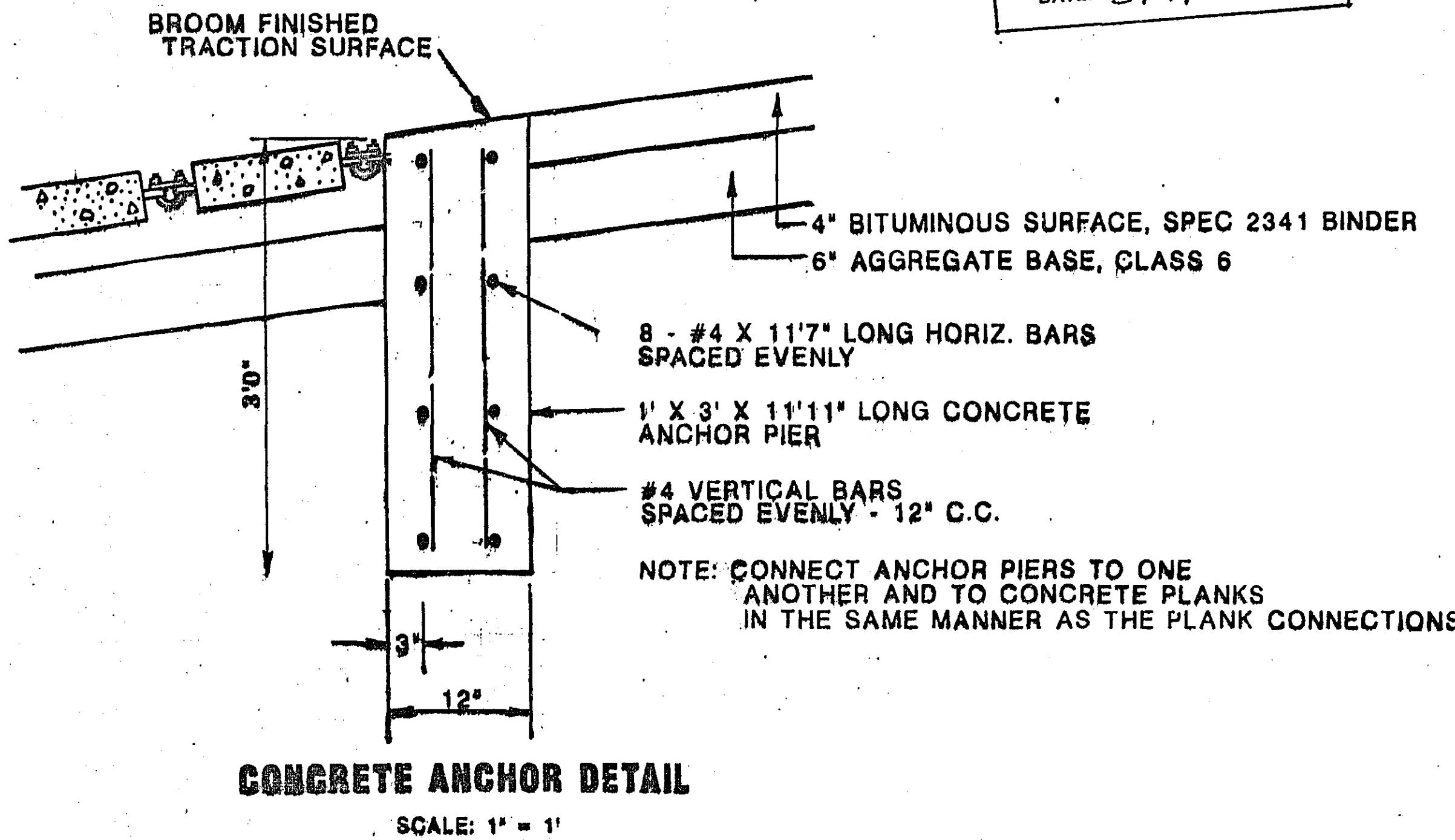
STEEL RAILS MAY BE USED TO SLIDE THE CONCRETE PLANKS INTO THE WATER TO FACILITATE CONSTRUCTION.

ADJOINING GEOWEB PANELS SHALL BE CONNECTED BY HOG RINGS AT EVERY CELL. ADJOINING GEOWEB PANELS AND REVET MATTRESSES SHALL BE WIRED TOGETHER TO THE SATISFACTION OF THE ENGINEER.

BOAT RAMP TYPICAL SECTION

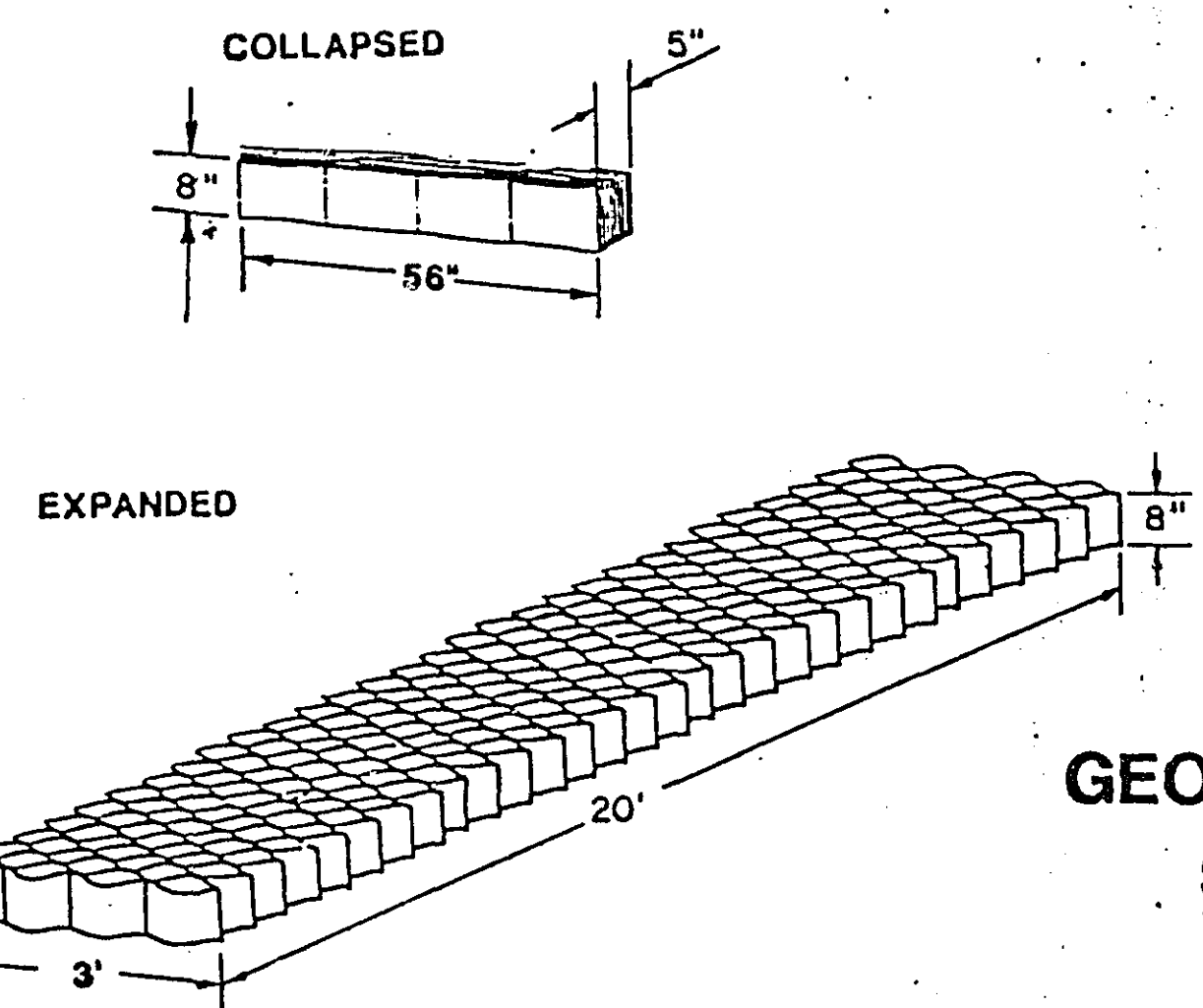


ASBUILT PLAN
 CONFORMING TO
 CONST. RECORDS
 DONE BY: **KMR**
 DATE: **3/7/90**



HARDWARE TO BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A 153
 1'-3-1/4" #5 BAR
 3-3/4" BAR
 BENT END OF 11'-11" BAR

PLAN REVISIONS		
DATE	SHEET NO.	BY
6/13/89		KMR

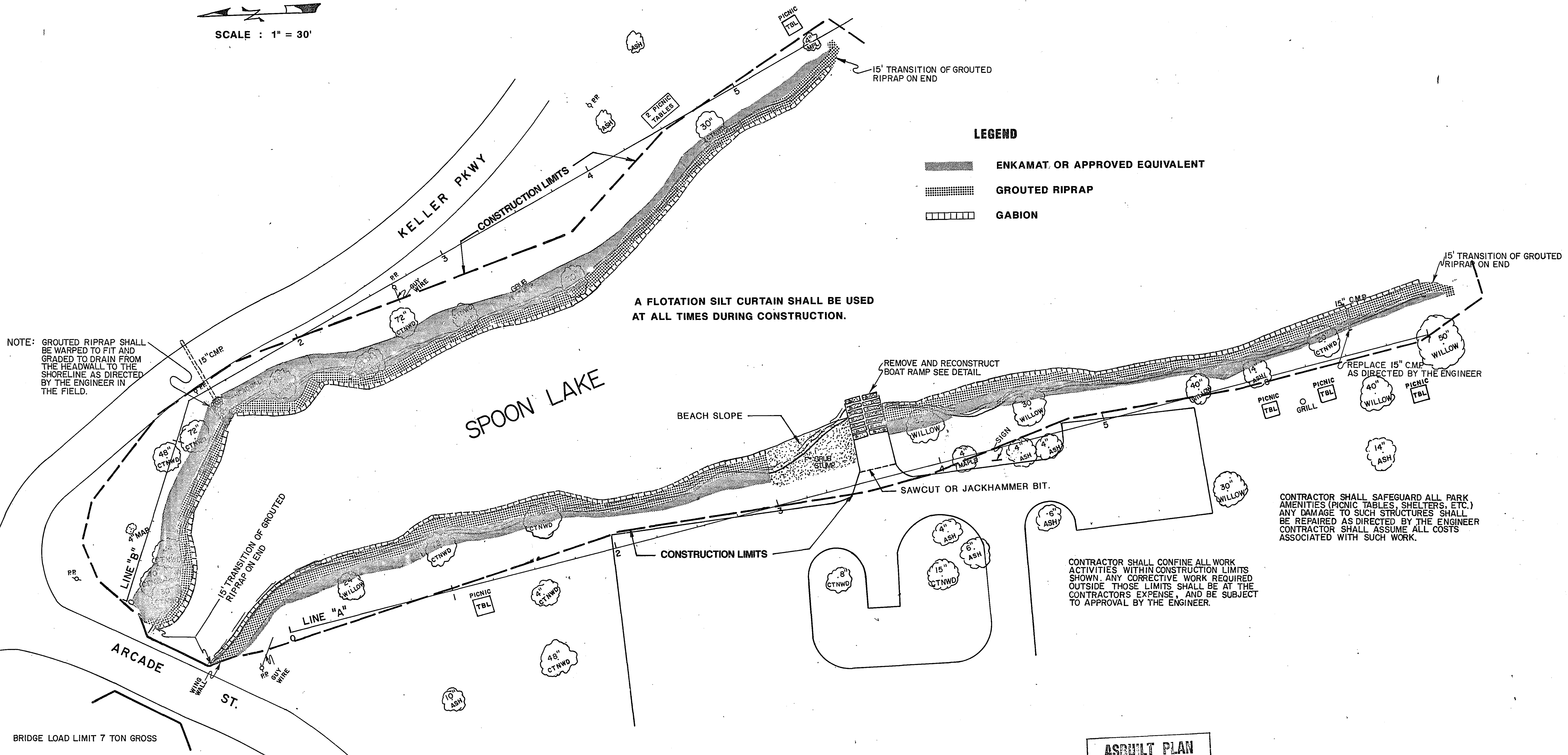


SPECIFICATIONS	
1. Expanded Dimension	3 ft. x 20 ft. x 4 in.
2. Collapsed Dimension	56 in. x 5 in. x 4 in.
3. Panel Thickness Nominal	0.047 in.
4. Weight	24 lbs.
5. Cell Area	41 in. ²
6. Cell Seam Node Pitch	13 in.
7. Welds/Seam	5
8. Seams Tensile Peel Strength	300 lbs.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
James E. Tolson
 Date: 6/13/89 Reg. No. 16157

SCALE : 1" = 30'



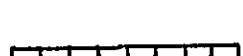
PARKING LOT



NOTE: GROUDED RIPRAP SHALL BE WARPED TO FIT AND GRADED TO DRAIN FROM THE HEADWALL TO THE SHORELINE AS DIRECTED BY THE ENGINEER IN THE FIELD.

A FLOTATION SILT CURTAIN SHALL BE USED AT ALL TIMES DURING CONSTRUCTION.

LEGEND

-  ENKAMAT OR APPROVED EQUIVALENT
-  GROUDED RIPRAP
-  GABION

CONTRACTOR SHALL SAFEGUARD ALL PARK AMENITIES (PICNIC TABLES, SHELTERS, ETC.) ANY DAMAGE TO SUCH STRUCTURES SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER CONTRACTOR SHALL ASSUME ALL COSTS ASSOCIATED WITH SUCH WORK.

CONTRACTOR SHALL CONFINE ALL WORK ACTIVITIES WITHIN CONSTRUCTION LIMITS SHOWN. ANY CORRECTIVE WORK REQUIRED OUTSIDE THOSE LIMITS SHALL BE AT THE CONTRACTORS EXPENSE, AND BE SUBJECT TO APPROVAL BY THE ENGINEER.

BRIDGE LOAD LIMIT 7 TON GROSS

PLAN REVISIONS		
DATE	SHEET NO.	BY
6/13/89		KMR

ASBUILT PLAN
CONFORMING TO
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DATE: 3/7/90

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James E. Johnson
Date: 3/21/89 Reg. No. 16159

LINE A

STA. 2+25
ELEV. 861.0

STA. 2+00
ELEV. 61.0

STA. 1+75
ELEV. 61.1

STA. 1+50
ELEV. 61.2

STA. 1+25
ELEV. 61.4

STA. 1+00
ELEV. 61.8

STA. 0+75
ELEV. 62.1

STA. 0+50
ELEV. 61.8

STA. 0+25
ELEV. 62.0

STA. 0+00
ELEV. 862.0

STA. 0+00
ELEV. 862.0

STA. 0+00
ELEV. 862.0

LINE A

STA. 4+50
ELEV. 862.6

STA. 4+25
ELEV. 62.5

STA. 4+00
ELEV. 62.2

STA. 3+75
ELEV. 61.8

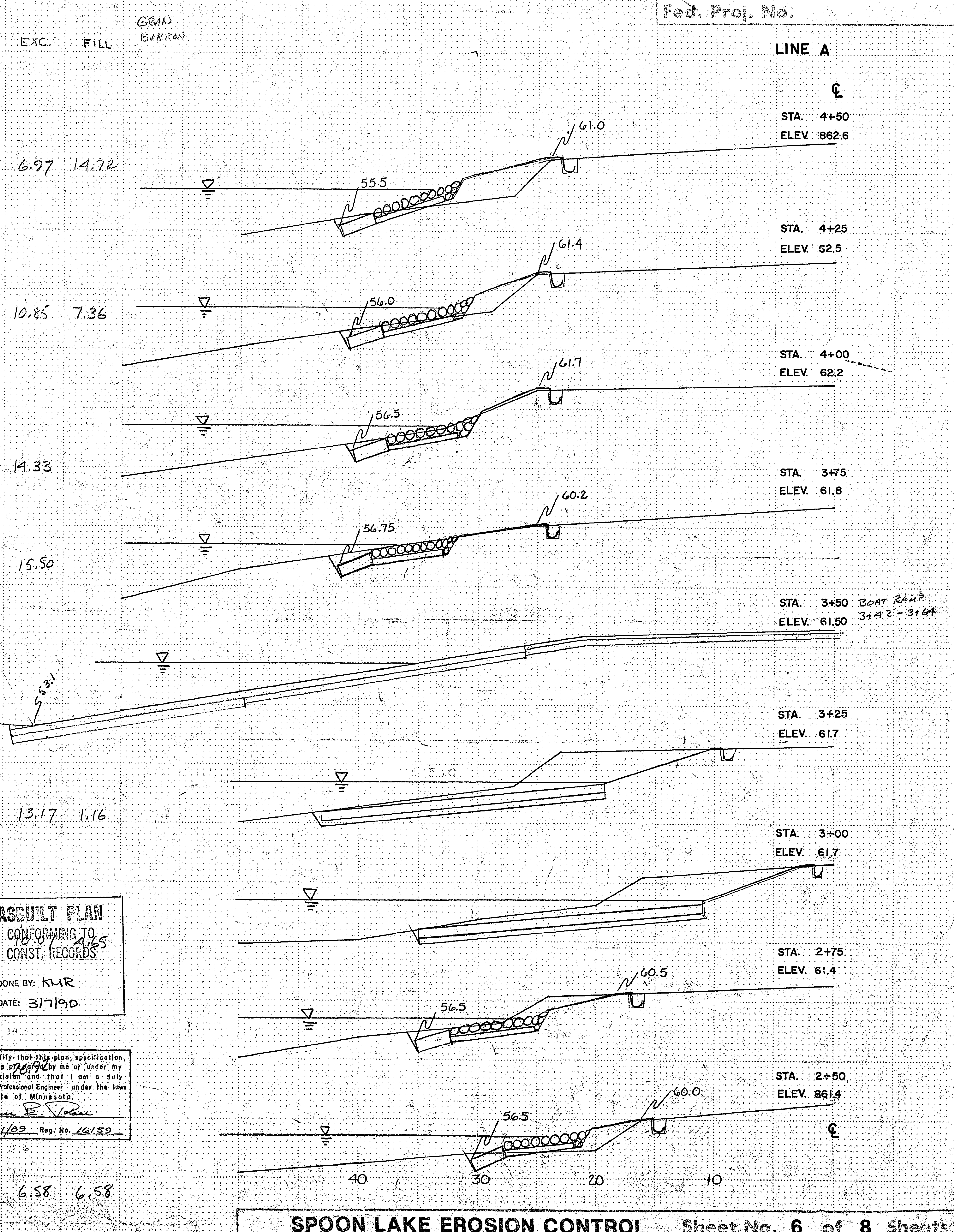
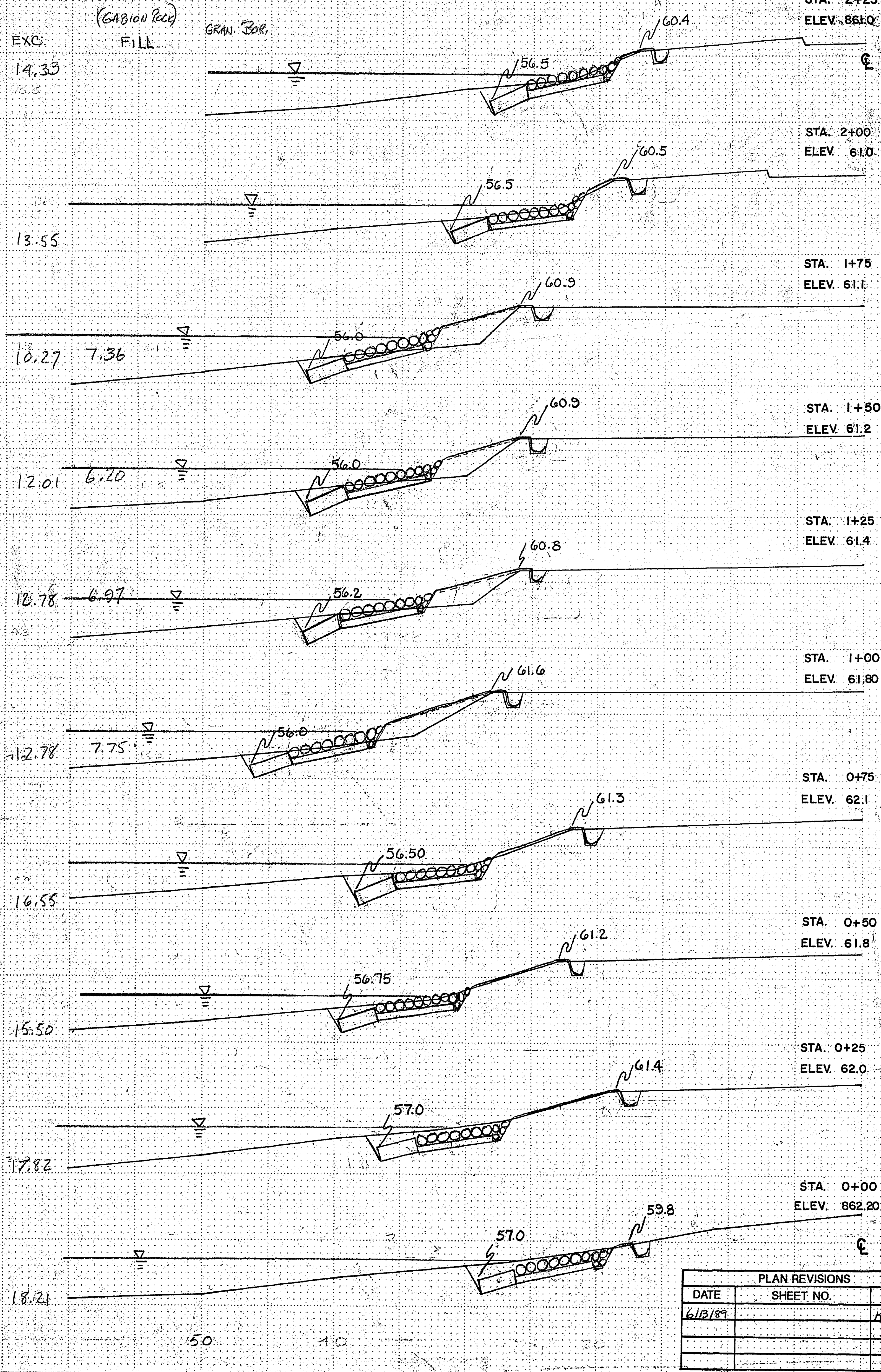
STA. 3+50 BOAT RAMP
ELEV. 61.50 3+42-3+64

STA. 3+25
ELEV. 61.7

STA. 3+00
ELEV. 61.7

STA. 2+75
ELEV. 61.4

STA. 2+50
ELEV. 861.4



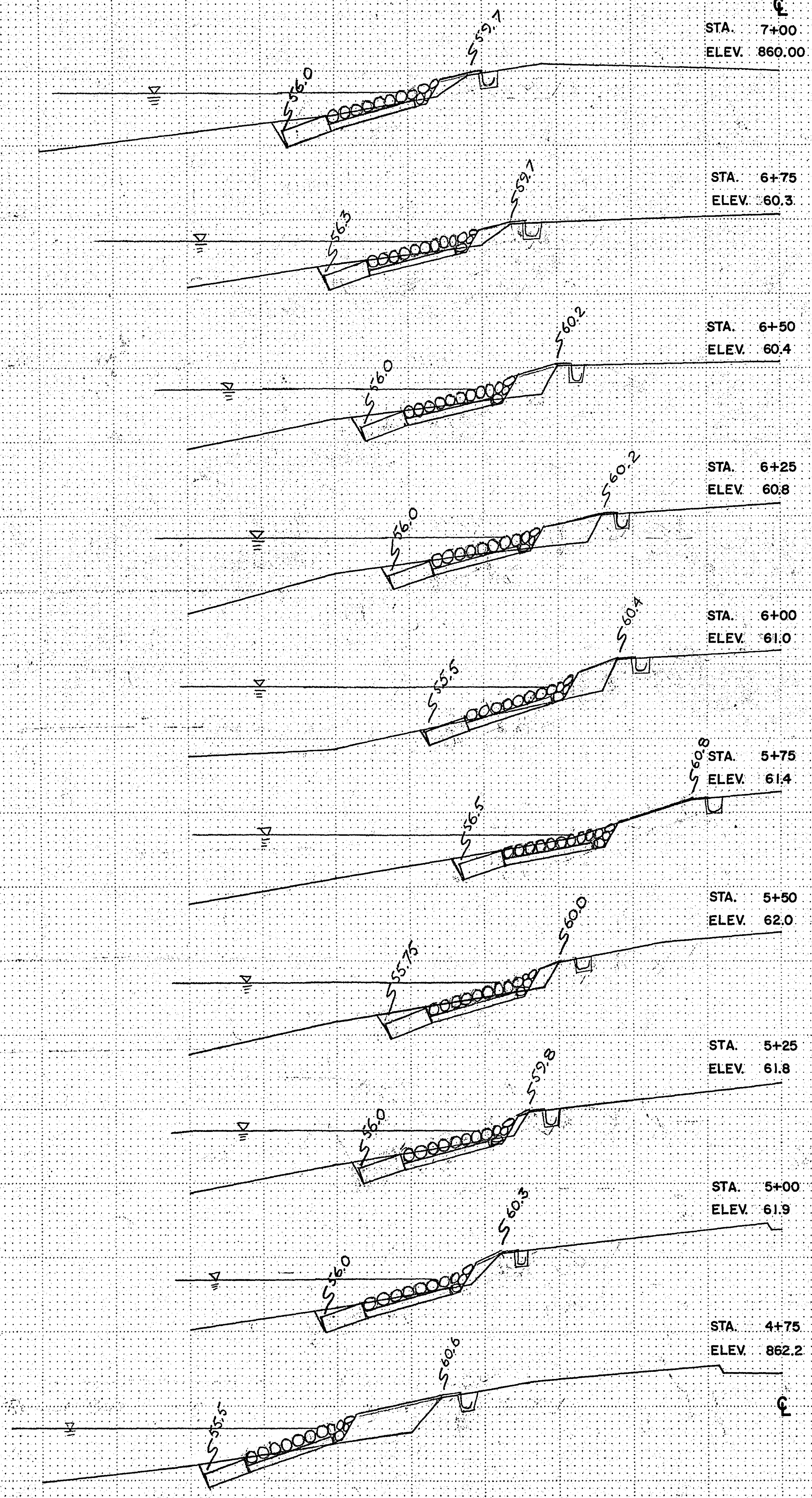
ASBUILT PLAN
CONFORMING TO
CONST. RECORDS
DONE BY: KUR
DATE: 3/7/90

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
James E. Jordan
Date 3/21/92 Reg. No. 16159

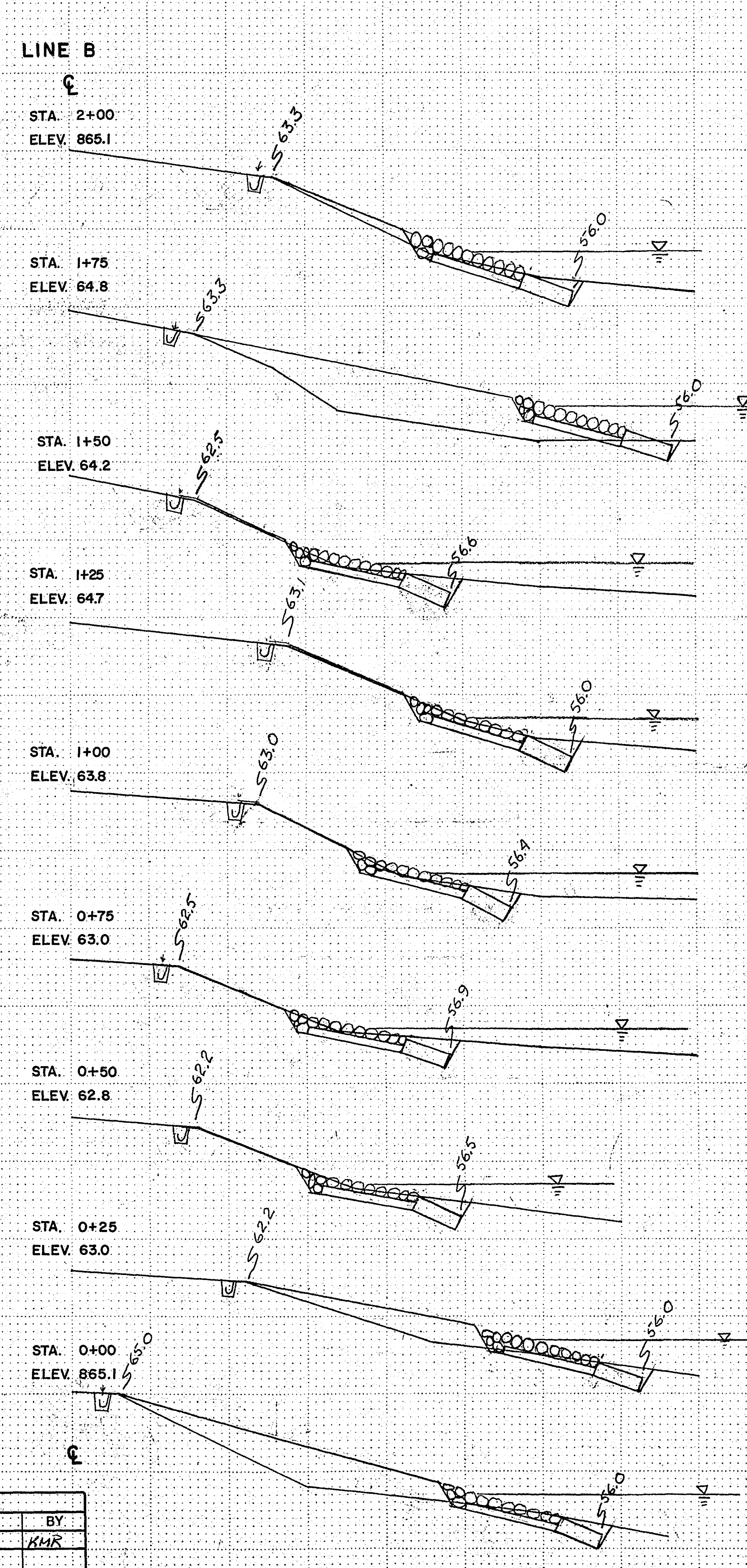
PLAN REVISIONS		
DATE	SHEET NO.	BY
6/13/89		KUR

INCLUDES
1.95 Riprap CUT
FILL
GABION REE GRAN BAR

LINE A



LINE B



Fed. Proj. No.
GRAVEL RIPRAP CUT FILL
REVEGETATION GRAN. BAR

11.62 1.93
10.85 1.55
10.85 4.46
10.65 6.59
6.58 5.22
13.75
12.01 1.93
10.46 1.55
11.23 1.55
8.52 9.68

6.2 5.2
3.9 5.0
8.9
8.9
8.3
9.1
8.9

ASBUILT PLAN
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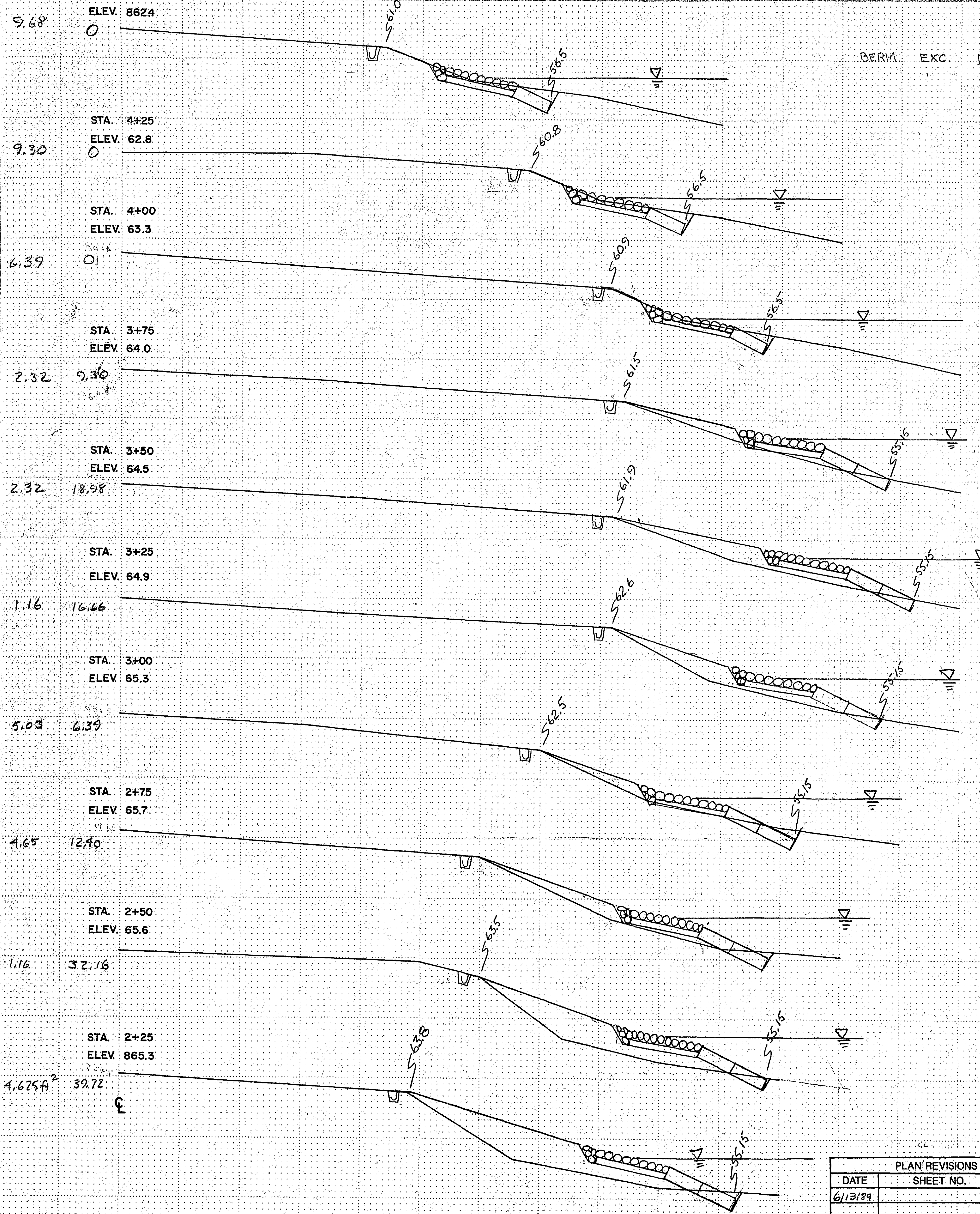
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
James E. Jones
Date: 3/21/89 Reg. No. 16159

PLAN REVISIONS		
DATE	SHEET NO.	BY
6/13/89		KMR

C F STA. 4+50

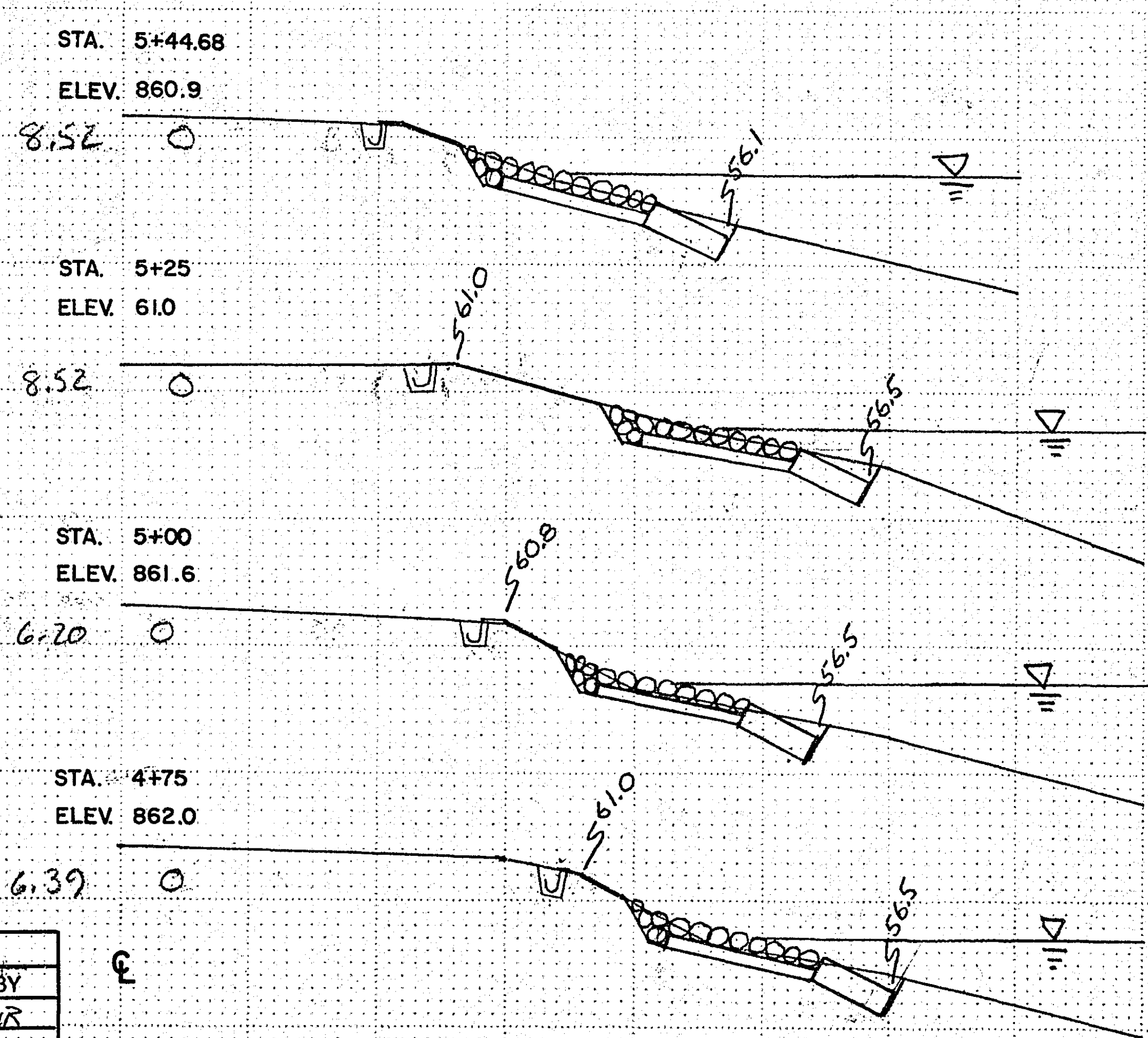
LINE B

Fed. Proj. No.



BERM EXC. FILL REVEY MATT. GRATED RIP RAP

C F LINE B



PLAN REVISIONS		
DATE	SHEET NO.	BY
6/12/89		KMR

ASBUILT PLAN
CONFORMING TO
CONST. RECORDS
DONE BY: KMR
DATE: 3/17/90

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
James E. Volker
Date: 3/21/89 Reg. No. 16152