

RAMSEY COUNTY DEPARTMENT OF PUBLIC WORKS WHITE BEAR BEACH EROSION CONTROL PROJECT

CONSTRUCTION PLANS FOR INSTALLATION OF A STEEL SHEET
WALL AND CONCRETE CAP OR STEEL CAP.

RAMSEY COUNTY BEACH LOCATED ON NORTH SIDE OF WHITE BEAR LAKE
AT 1300 LAKE AVE.

PROJECT SITE LOCATION



PLANS SYMBOLS

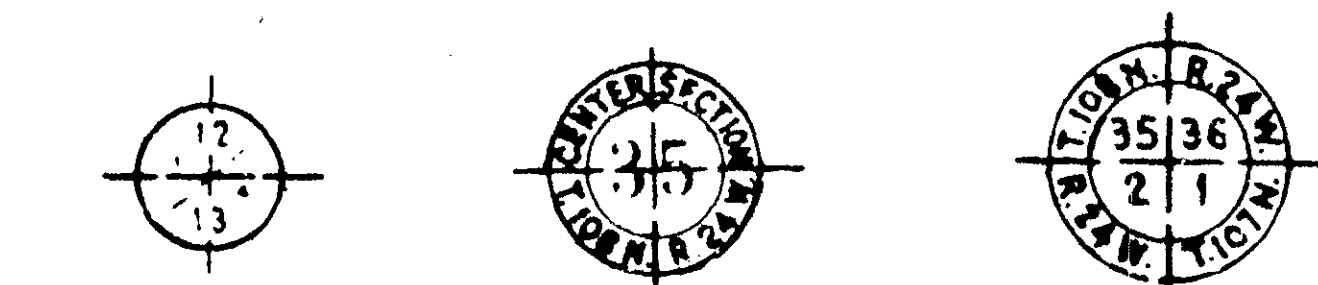
STATE LINE	SPRINGS
COUNTY LINE	MARSH
TOWNSHIP OR RANGE LINE	TIMBER
SECTION LINE	ORCHARD
QUARTER LINE	BRUSH
SIXTEENTH LINE	NURSERY
RIGHT OF WAY LINE	CATCH BASIN
PRESENT RIGHT OF WAY LINE	FIRE HYDRANT
CONTROL OF ACCESS LINE	CATTLE GUARD
PROPERTY LINE (Except Land Lines)	OVERPASS (Highway Over)
VACATED 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	
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	
SLOPE EASEMENT (CONST. LIMITS)	

UTILITIES SYMBOLS

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

INDEX OF PLAN SHEETS

SHEET NUMBER	DESCRIPTION
1	TITLE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES, WALL DETAILS, SHEETING DETAILS, GROWER/GRONET DETAILS, CONSTRUCTION NOTES
3	CONCRETE CAP, STEEL WALL CAP - DETAILS (ALTERNATES 2 AND 3)
4	PLAN/PROFILE
5-7	CROSS SECTIONS



NOTE: SECTION NUMBERS LISTED FROM THE SOUTH

PIT DATA

PIT NO. _____	Located in Dead Man
PIT NO. _____	Located in Dead Man

DESIGN SQUAD KMR, RPC DATE 8/16/88
 DRAWN BY KMR, RPC DATE 8/16/88
 CHECKED BY [Signature] DATE 8/16/88

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.

DATE 8/16/88 REG. NO. 16159 ENGR. James E. Volan

RECOMMENDED FOR APPROVAL [Signature] DATE 8/16/88
 TRAFFIC ENGR.

RECOMMENDED FOR APPROVAL [Signature] DATE 8/17/88
 COUNTY ENGINEER

RECOMMENDED FOR APPROVAL _____ DATE _____
 ENV ENGR.

APPROVED [Signature] DATE 8/17/88
 DIRECTOR OF RAMSEY COUNTY PARKS & RECREATION

RECOMMENDED FOR APPROVAL [Signature] DATE 8/16/88
 MAINT. ENGR.

APPROVED _____ DATE _____

RECOMMENDED FOR APPROVAL [Signature] DATE 8/16/88
 CIVIL ENGR.

APPROVED _____ DATE _____

RECOMMENDED FOR APPROVAL [Signature] DATE 8-18-88
 CIVIL ENGR.

APPROVED _____ DATE _____

RECOMM. [Signature] DATE 8-16-88
 COORDINATING ENGR.

APPROVED [Signature] DATE 8-17-88
 ASST. COUNTY ENGINEER

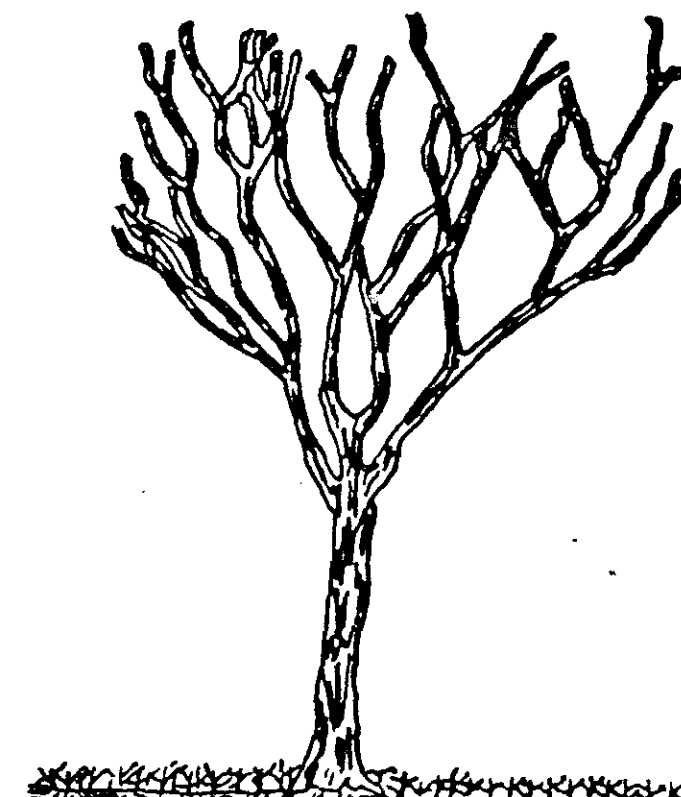
PLAN REVISIONS		
DATE	SHEET NO.	BY

ASBUILT PLAN
 CONFORMING TO
 CONST. RECORDS
 DONE BY: KMR
 DATE: 8/9/89

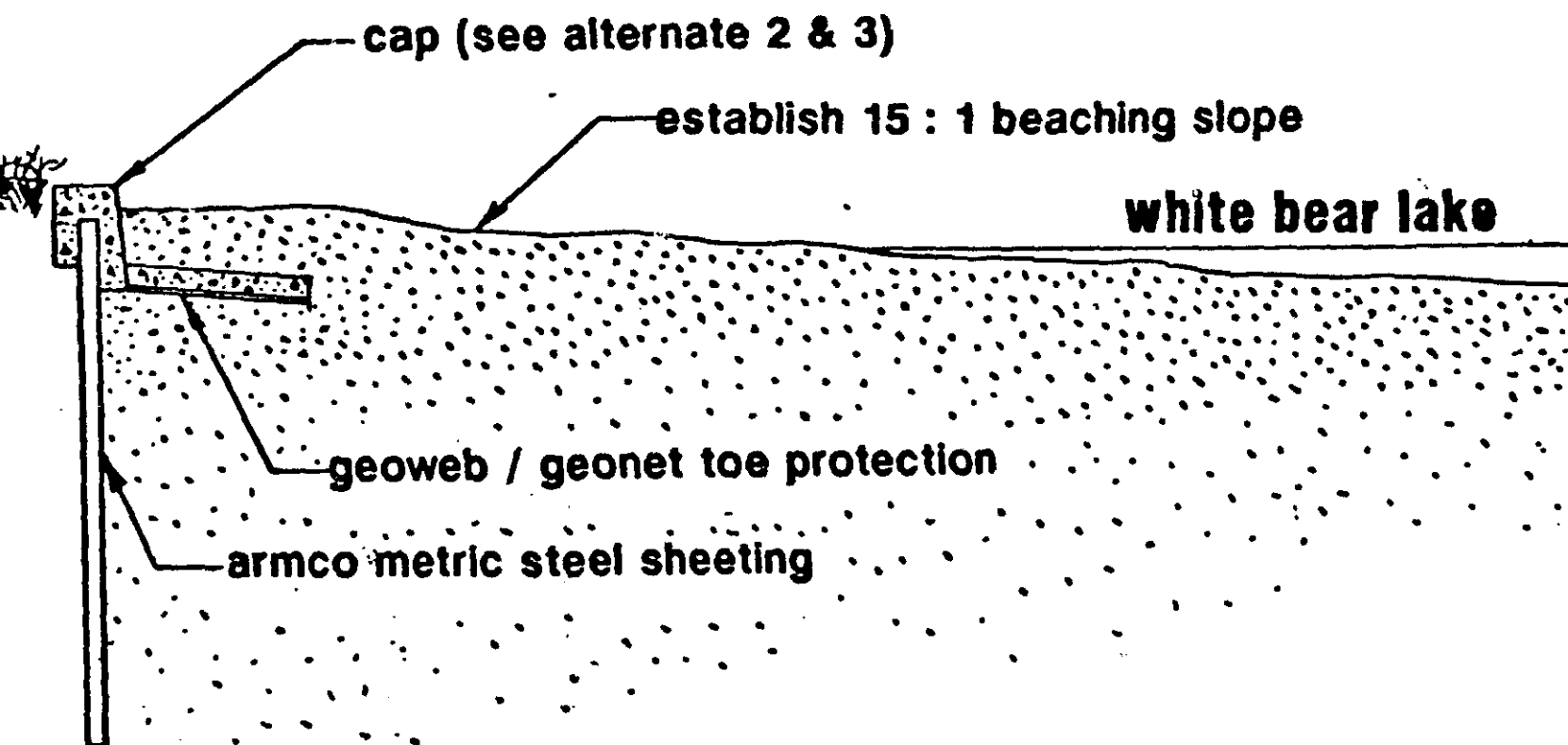
THE 1983 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

 * STATEMENT OF ESTIMATED QUANTITIES *

ITEM NO.	CONTRACT ITEM	UNIT	ESTIMATED QUANTITIES	FINAL QUANTITIES
2021.501	MOBILIZATION	L.S.	1	1
2101.507	GRUBBING	TREE	2	2
0105.521	BEACH GRADING (CV) (P)	C.Y.	1055	1055
0105.521	GRANULAR BORROW BACKFILL (CV) (P)	C.Y.	395	395
2105.525	TOPSOIL BORROW (LV)	C.Y.	185	224
2575.505	SODDING	S.Y.	600	1100
2575.503	SEEDING	ACRE	0.5	0.4
2575.502	SEED MIXTURE	POUND	43	34
2575.511	MULCH, TYPE I	TON	0.75	0.6
2575.531	COMMERCIAL FERTILIZER	TON	0.1	0
0412.603	METRIC STEEL SHEETING	S.F.	6208	6057
0411.603	GEOWEB/CONCRETE TOE PROTECTION	S.F.	2328	2313
0412.604	ALTERNATE 1: METRIC STEEL SHEETING-ALUMINIZED	S.F.	6208	
0411.603	ALTERNATE 2: CONCRETE CAP	L.F.	776	767
0412.603	ALTERNATE 3: STEEL CAP	L.F.	776	



metric steel sheeting
 erosion protection
 typical section



NOTE: THE SCOPE OF THE PROPOSED EROSION PROTECTION SYSTEM INCLUDES FURNISHING AND INSTALLING 8 FOOT LENGTHS OF STEEL SHEETING. INSTALLATION OF EITHER THE CONCRETE OR A PREFABRICATED STEEL CAP AS DIRECTED BY THE ENGINEER. INSTALLATION OF TOE PROTECTION IN THE FORM OF CONCRETE FILLED GEOWEB OVER A GEONET BASE ALONG THE LAKE SIDE OF THE WALL, AND FINAL GRADING ALONG THE WALL AS SHOWN ON THE CROSS SECTION SHEETS.

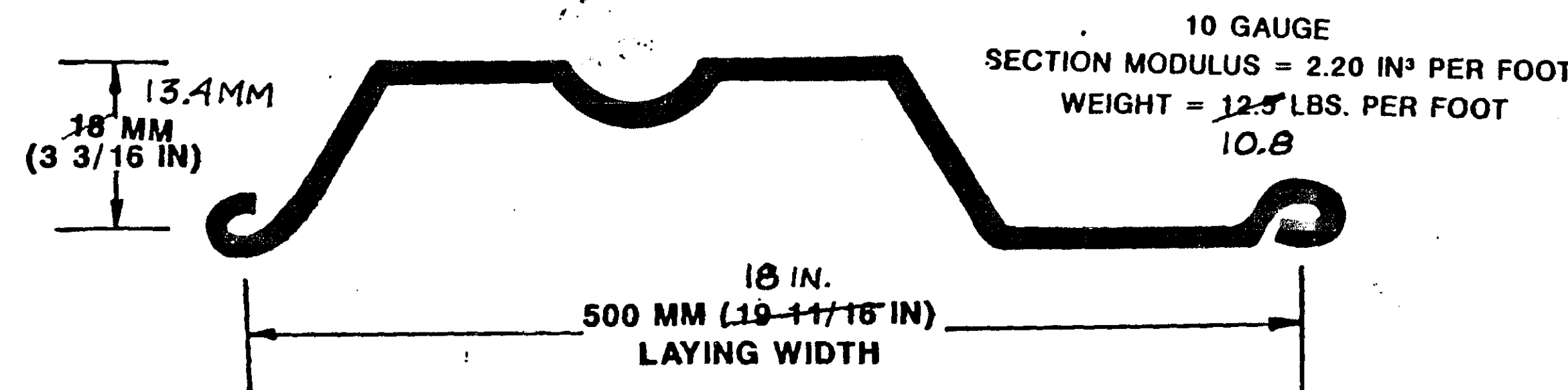
CONTRACTOR SHALL COMPLY WITH ALL PERMIT REQUIREMENTS. COUNTY WILL ACQUIRE DEPARTMENT OF NATURAL RESOURCES, ARMY CORPS OF ENGINEER, AND WHITE BEAR CONSERVATION DISTRICT PERMITS. CONTRACTOR SHALL ACQUIRE A RICE CREEK WATERSHED DISTRICT PERMIT AND POST ANY SURETIES REQUIRED.

Note: SHEETING SHALL BE FURNISHED AND INSTALLED IN 8 FOOT SECTIONS. ALTERNATE TYPES OF SHEETING WILL BE CONSIDERED, PROVIDING THEY CONFORM TO THE SPECIFICATIONS AND SUPPORTED BY SHOP DRAWINGS AND SUPPORTING STRUCTURAL COMPUTATIONS.

CONTRACTOR MAY ELECT TO DRIVE SHEETING OR PUSH INTO PLACE WITH A BACKHOE OR SIMILAR EQUIPMENT, AS WARRANTED BY SITE CONDITIONS.

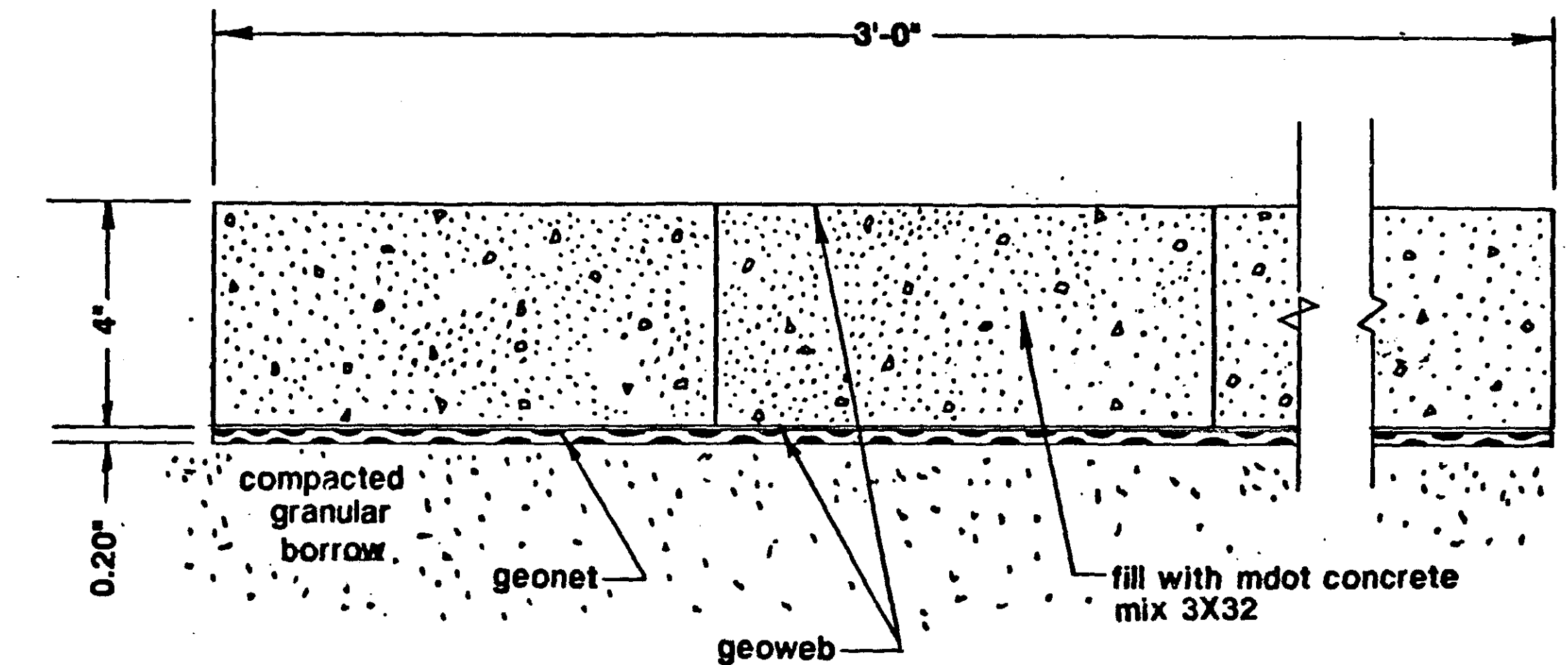
CONSTRUCTION NOTES:

- ALTERNATE 1 IN THE SPECIFICATIONS AND BID DOCUMENTATION REFERS TO FURNISHING THE METRIC STEEL SHEETING WITH AN ALUMINIZED COATING FOR CORROSION PROTECTION. IT DOES NOT CHANGE ANY OF THE QUANTITIES.
- ALTERNATES 2 AND 3 REFER TO TWO CAP SYSTEMS FOR THE STEEL SHEETING BEING CONSIDERED FOR INSTALLATION (SEE SHEET 4 OF THE PLANS). SELECTION OF THE CAP TO BE INSTALLED WILL BE MADE PRIOR TO CONTRACT AWARD.
- GEOWEB IS AVAILABLE IN 3 FOOT BY 20 FOOT PANELS AND IS SHIPPED IN A COMPRESSED FORM. EXPANSION TO ITS 3'X 20' DIMENSIONS MUST ADHERE TO MANUFACTURER'S RECOMMENDATIONS AND SHALL BE ADEQUATELY ANCHORED TO ALLOW PLACEMENT OF CONCRETE WITHOUT SHIFTING THE GEOWEB OR UNDERLYING GEONET.
- GEONET IS A THREE DIMENSIONAL SPECIALTY MATERIAL. ITS PLACEMENT BELOW THE GEOWEB GRID IS TO PROVIDE INTERLOCKING OF INDIVIDUAL SECTIONS OF CONCRETE FORMED BY THE GRID. THE BASE SHALL BE MECHANICALLY COMPACTED PRIOR TO PLACEMENT OF THE GEONET.
- CONCRETE PLACED IN THE GEOWEB GRID SHALL BE FINISHED TO A SMOOTH SURFACE ACCORDING TO GENERAL INDUSTRY STANDARDS. CONCRETE CHUNKS AND DEBRIS ADJACENT TO THE GRID AFTER COMPLETION OF FINISHING OPERATIONS WILL BE REMOVED FROM THE SITE.
- SUCCESSIVE GEOWEB GRIDS SHALL BE JOINED WITH HOG RINGS AT EACH CELL.
- SUCCESSIVE PANELS OF GEONET SHALL BE JOINED WITH HOG RINGS AT 6 INCH INTERVALS
- UNLESS SPECIFICALLY DIRECTED BY THE ENGINEER, GRADING AND COMPACTION LAKEWARD OF THE SHEET WALL WILL BE RESTRICTED TO USE OF EXISTING SOILS. SITE SOILS ARE CONSIDERED CLEAN AND GRANULAR.
- THE FIRST 6 FEET ABUTTING THE COMPLETED WALL SHALL BE SODDED IN ACCORDANCE WITH GOVERNING SPECIFICATIONS. REMAINING AREAS WILL BE SEEDED AND MULCHED.
- GRANULAR MATERIALS FOR ESTABLISHMENT OF A 15:1 BEACH SLOPE WILL BE WINDROWED BY OTHERS ALONG THE BEACH FRONTAGE APPROXIMATELY 40' LAKEWARD OF THE SHEETING ALIGNMENT. PLACEMENT OF MATERIALS BY OTHERS WILL BE COMPLETE PRIOR TO INITIATION OF CONSTRUCTION. PAYMENT SHALL BE MADE UNDER ITEM 0105.521 "BEACH GRADING" ON THE BASIS OF PLAN QUANTITY CUBIC YARDS.
- FILL AREAS SHOREWARD OF THE WALL REQUIRING LESS THAN 3" OF MATERIAL WILL BE DONE WITH TOPSOIL ONLY. OTHER AREAS WILL BE BROUGHT TO WITHIN 3" OF FINISH GRADE WITH GRANULAR BORROW MATERIAL WINDROWED BY OTHERS ALONG THE BEACH FRONTAGE, THEN DRESSED WITH 3" OF TOPSOIL. PAYMENT FOR TOPSOIL WILL BE ON A LOOSE VOLUME BASIS UNDER ITEM 2105.525 "TOPSOIL BORROW". PAYMENT FOR BACKFILL OPERATIONS WILL BE ON THE BASIS OF PLAN QUANTITY CUBIC YARDS UNDER ITEM 0105.521 "GRANULAR BORROW BACKFILL".
- CONTRACTOR SHALL CONFINE ALL WORK ACTIVITIES WITHIN IDENTIFIED CONSTRUCTION LIMITS. PARK APPURTENANCES SHALL BE SAFEGUARDED AT ALL TIMES. DAMAGE BEYOND THAT PROVIDED BY SPECIFIC PAY ITEMS SHALL BE CORRECTED OR REPAIRED AT CONTRACTOR EXPENSE.
- SHEETS SHALL BE INSTALLED TO WITHIN 1" OF PLUMB IN AN 8 FOOT SECTION. HORIZONTAL ALIGNMENT SHALL BE WITHIN 1" IN 10 FEET.
- THE ENGINEER SHALL STAKE THE ALIGNMENT AND GRADE OF THE STEEL SHEETING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MEASUREMENTS MADE BY HIM BY THE STAKES SO ESTABLISHED.



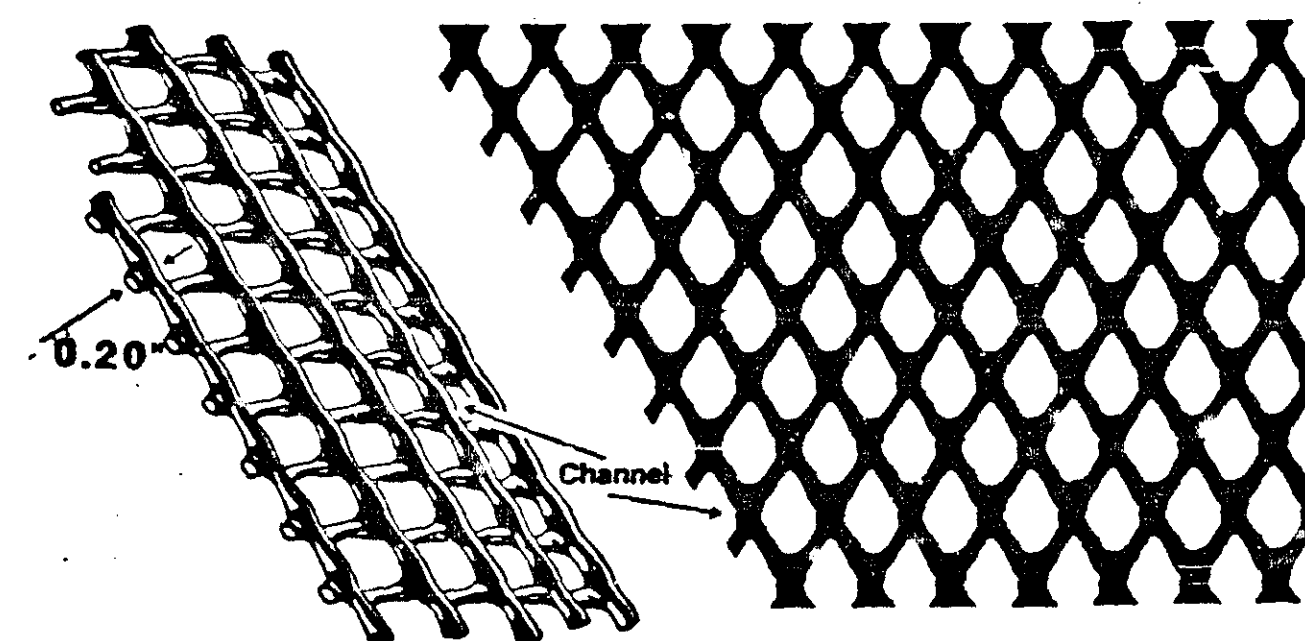
ARMCO METRIC SHEETING
 SECTIONAL VIEW

SCALE: 1" = 3"



GEOWEB / CONCRETE TOE PROTECTION
 SECTIONAL VIEW

SCALE: 1" = 3"



GEONET DETAIL

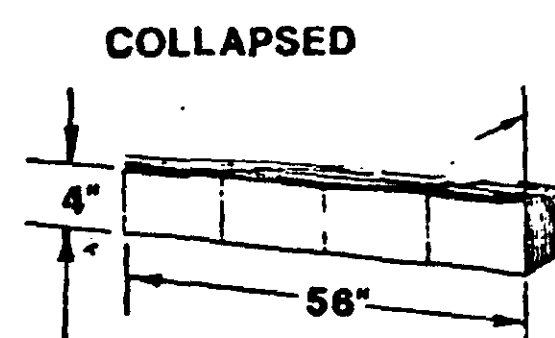
SCALE: NONE

PHYSICAL & CHEMICAL PROPERTIES
 GEONET TYPE DN2

BLACK POLYETHYLENE
 DENSITY = .928 g/cm
 MELT INDEX .2 /10min
 UV RESISTANT

STANDARD ROLL CHARACTERISTICS

LENGTH = 98.5 FT
 WIDTH = 6.33 FT
 WEIGHT = 91 LBS



ASBUILT PLAN

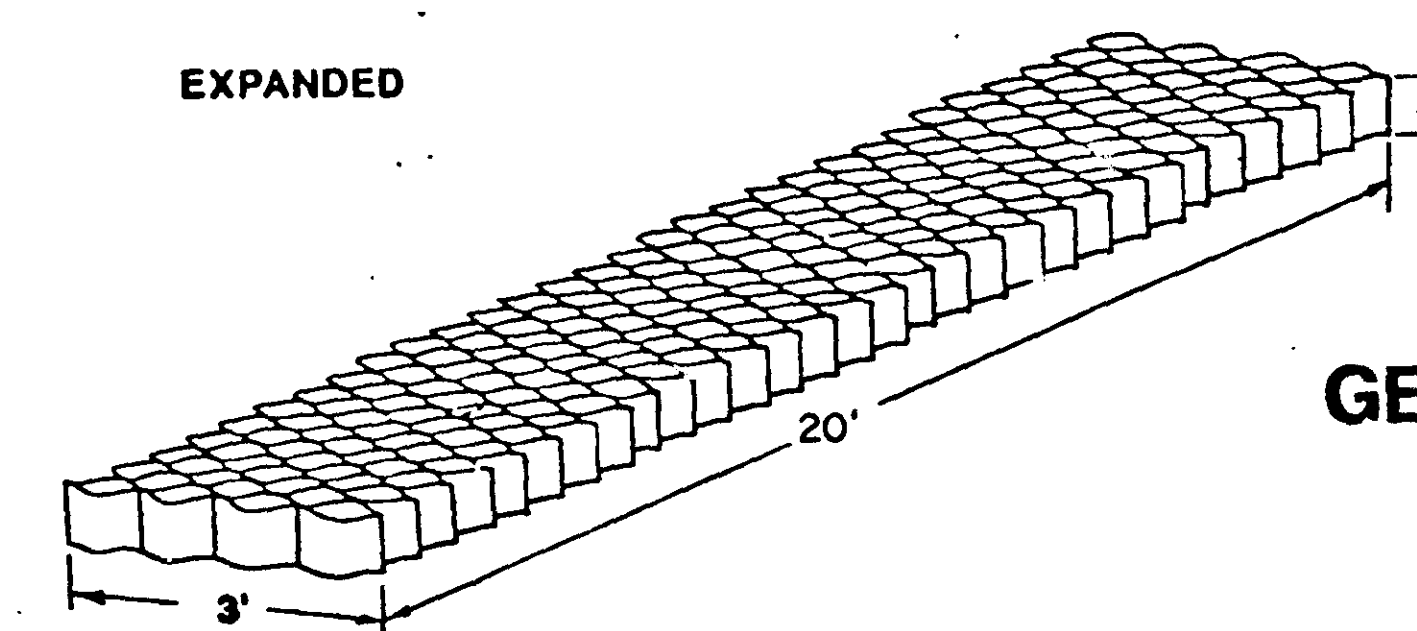
CONFORMING TO
 CONST. RECORDS

DONE BY: KMR

DATE: 8/9/89

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. |

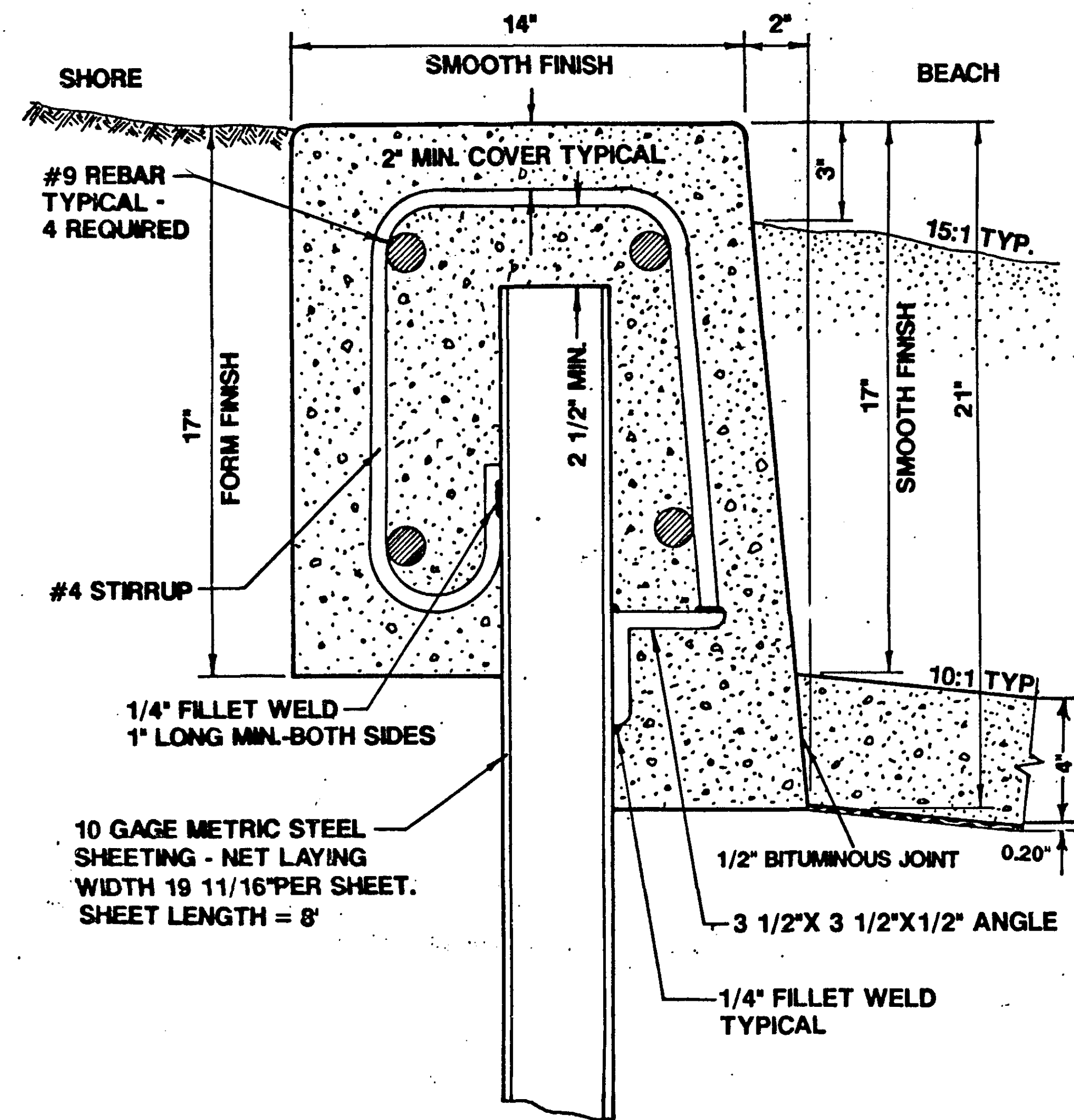


GEOWEB DETAIL

SCALE: NONE

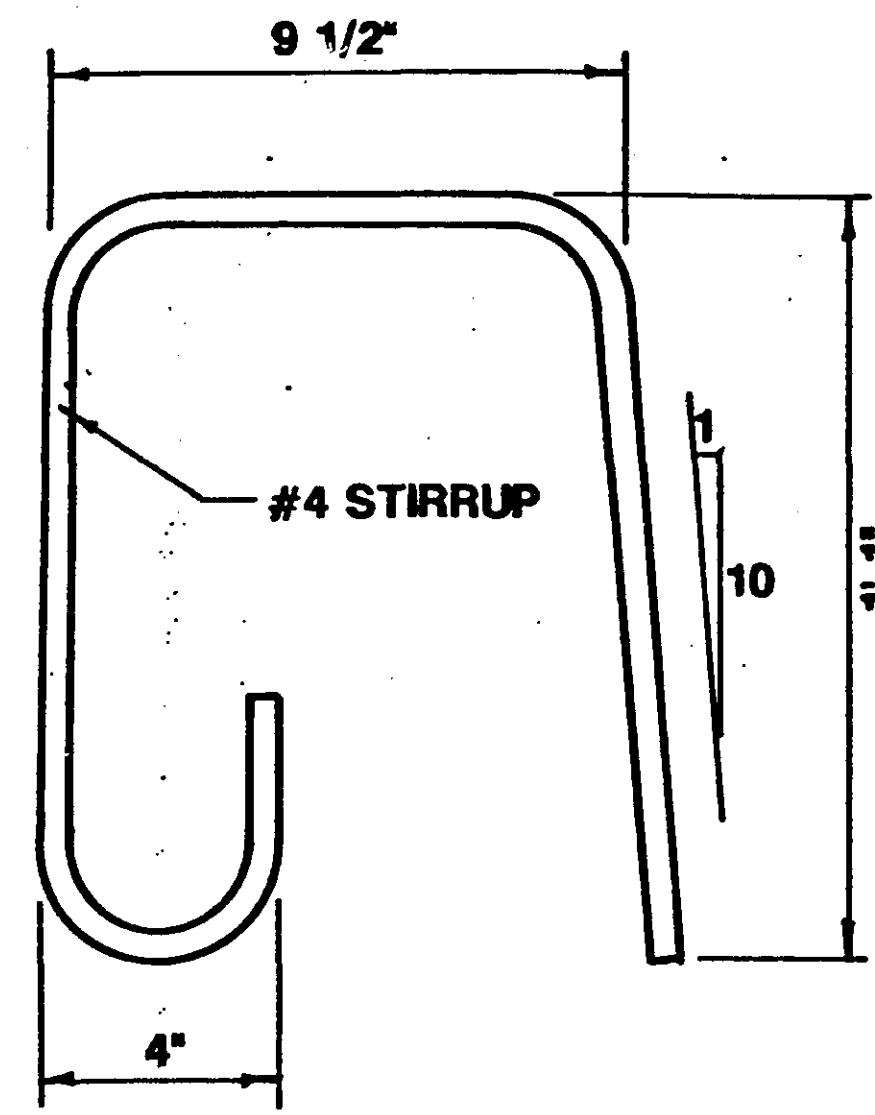
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
 Daniel P. Volz
 No. 141462 - Reg. No. 16159

ALTERNATE 2



**CONCRETE CAP
TYPICAL SECTION**

SCALE: 1" = 4"


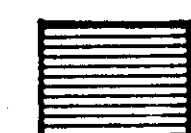
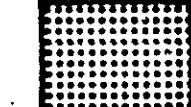


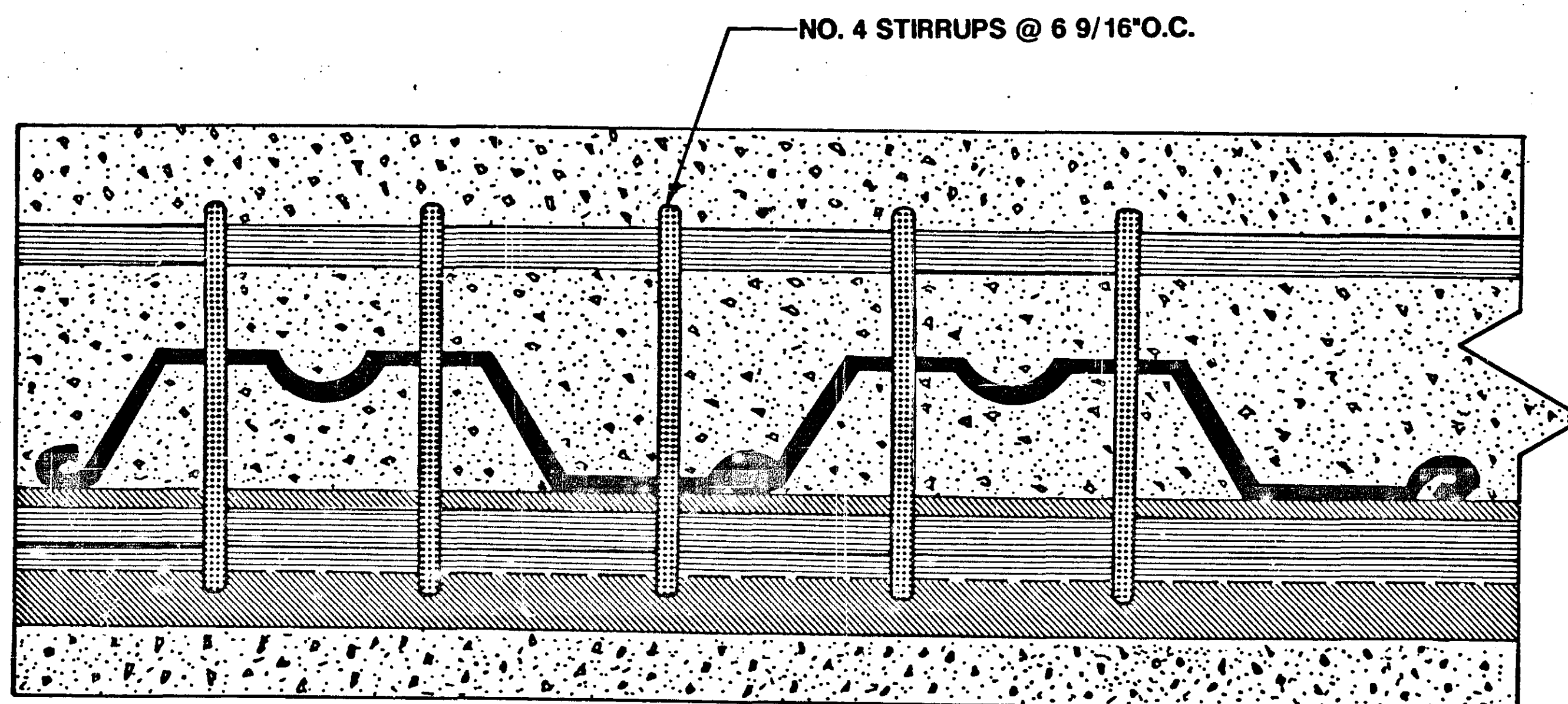
STIRRUP DETAIL

SCALE: 1" = 4"

CONSTRUCTION NOTES:

- 1) REBARS SHALL BE EPOXY COATED. ALL DAMAGED AREAS AND ENDS SHALL BE RECOATED WITH AN EPOXY REPAIR MATERIAL.
- 2) CONCRETE SHALL BE MDOT MIX 3X32.
- 3) NO CONCRETE SHALL BE PLACED UNTIL THE FORMS AND REINFORCEMENT HAS BEEN APPROVED BY THE ENGINEER.
- 4) CONTRACTOR MUST BE PREPARED TO PROVIDE APPROPRIATE PROTECTION AGAINST INCLEMENT WEATHER CONDITIONS. BACKUP PROCEDURES SHALL BE DISCUSSED WITH THE ENGINEER BEFORE PLACEMENT OF CONCRETE MATERIALS.
- 5) CONTRACTION JOINTS SHALL BE PLACED AT 10 FOOT INTERVALS. EXPANSION (CORK) JOINTS SHALL BE PLACED EVERY 30 FEET.
- 6) FILLET WELDS WILL BE CONTINUOUS IN THE LOCATIONS INDICATED. DAMAGED PROTECTIVE COATINGS SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER.
- 7) CONTRACTOR SHALL HANDLE ALL MATERIALS WITH CARE TO PREVENT DAMAGE TO THE ALUMINIZED COATING IF SELECTED AS ONE OF THE ALTERNATIVES FOR THE SHEETING. MINOR DAMAGE MAY BE REPAIRED AS DIRECTED BY THE ENGINEER OR REJECTED AT HIS OPTION IF JUDGED TO BE MAJOR.

-  METRIC SHEETING
- 3 1/2" X 3 1/2" X 1/2" ANGLE
-  NO. 9 REBAR
-  NO. 4 STIRRUP

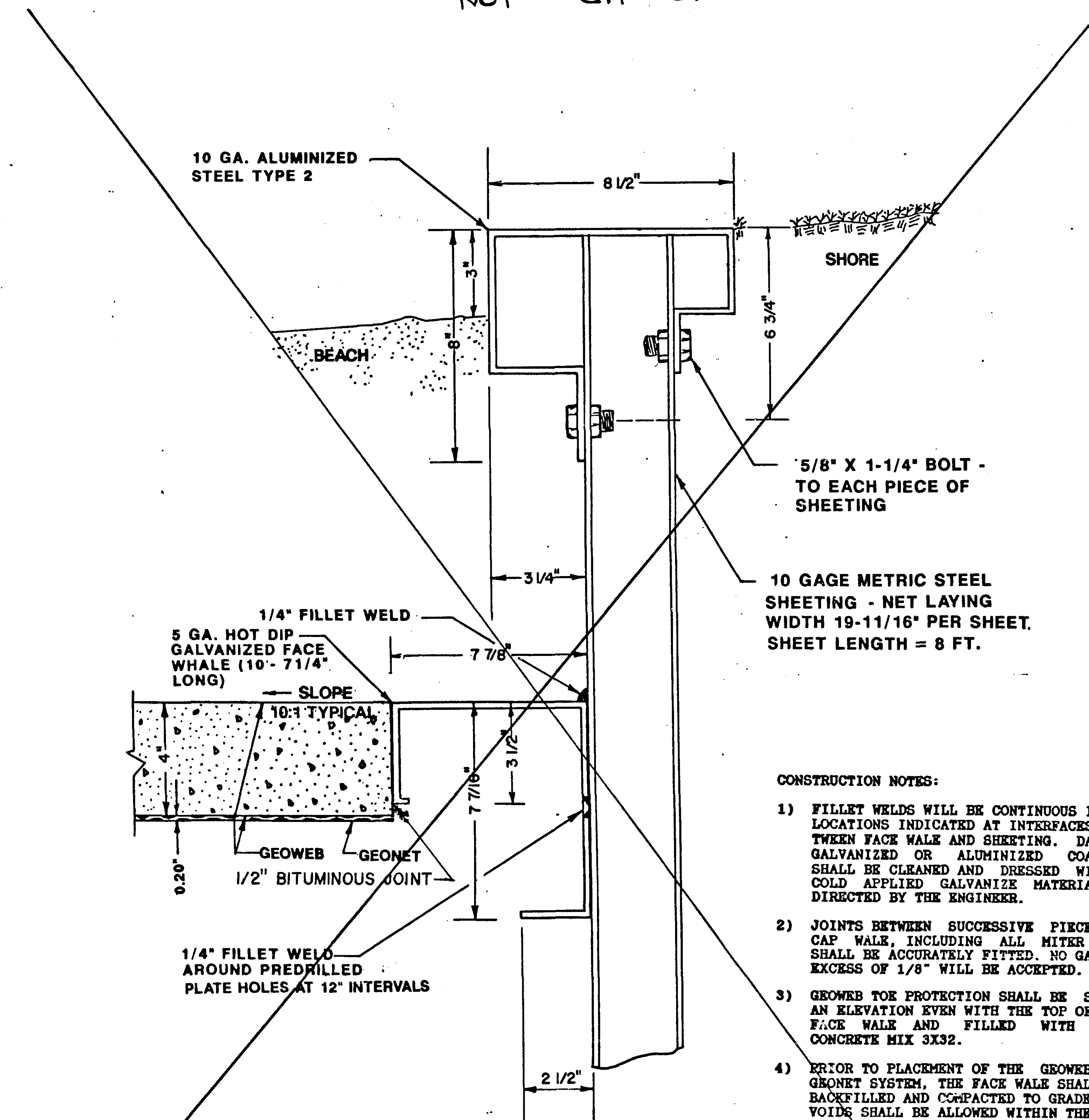


**CONCRETE CAP
TOP VIEW**

SCALE = NONE

ALTERNATE 3

NOT CHOSEN



**STEEL CAP WALE / FACE WALE
TYPICAL SECTION**

SCALE 1" = 3"

CONSTRUCTION NOTES:

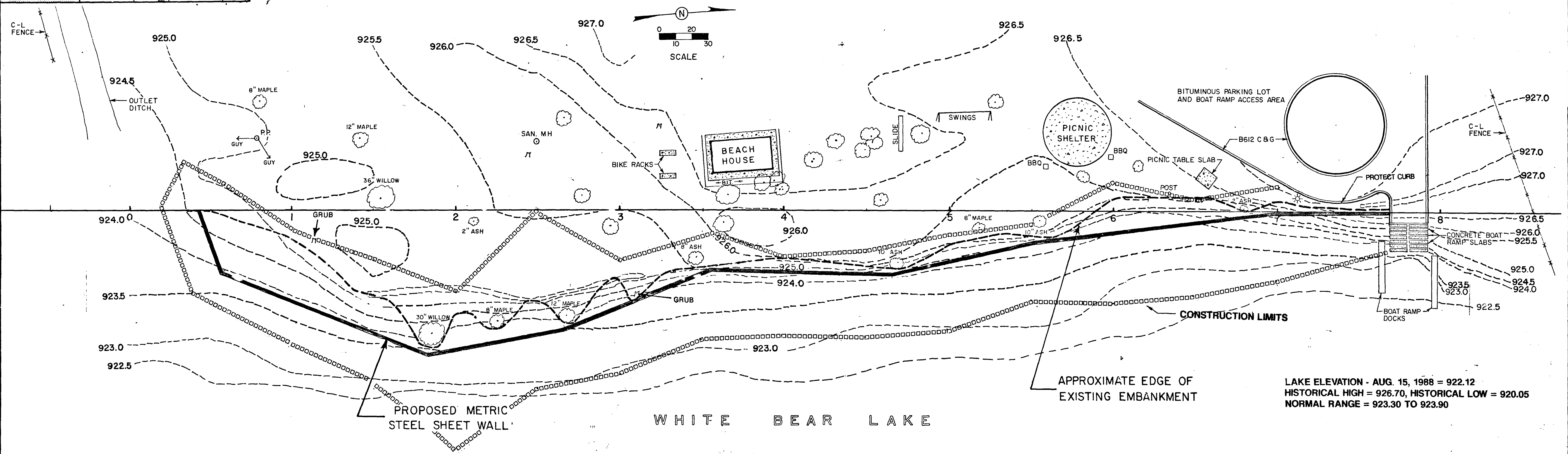
- 1) FILLET WELDS WILL BE CONTINUOUS IN THE LOCATIONS INDICATED AT INTERFACES BETWEEN FACE WALE AND SHEETING. DAMAGED GALVANIZED OR ALUMINIZED COATINGS SHALL BE CLEANED AND DRESSED WITH A COLD APPLIED GALVANIZE MATERIAL AS DIRECTED BY THE ENGINEER.
- 2) JOINTS BETWEEN SUCCESSIVE PIECES OF CAP WALE, INCLUDING ALL MITER CUTS SHALL BE ACCURATELY FITTED. NO GAPS IN EXCESS OF 1/8" WILL BE ACCEPTED.
- 3) GEOWEB PROTECTION SHALL BE SET AT AN ELEVATION EVEN WITH THE TOP OF THE FACE WALE AND FILLED WITH MDOT CONCRETE MIX 3X32.
- 4) PRIOR TO PLACEMENT OF THE GEOWEB AND GEONET SYSTEM, THE FACE WALE SHALL BE BACKFILLED AND COMPACTED TO GRADE. NO VOIDS SHALL BE ALLOWED WITHIN THE FACE WALE SECTION.
- 5) CONTRACTOR SHALL HANDLE ALL MATERIALS WITH CARE TO PREVENT DAMAGE TO THE PROTECTIVE COATINGS. MINOR DAMAGE MAY BE REPAIRED AS DIRECTED BY THE ENGINEER. THE ENGINEER MAY REJECT ANY COMPONENTS DAMAGED TO THE EXTENT PROPER FIT OR ACCEPTABLE VISIBLE APPEARANCE IS POSSIBLE.

ASBUILT PLAN
CORRECTING TO
CONST. RECORDS

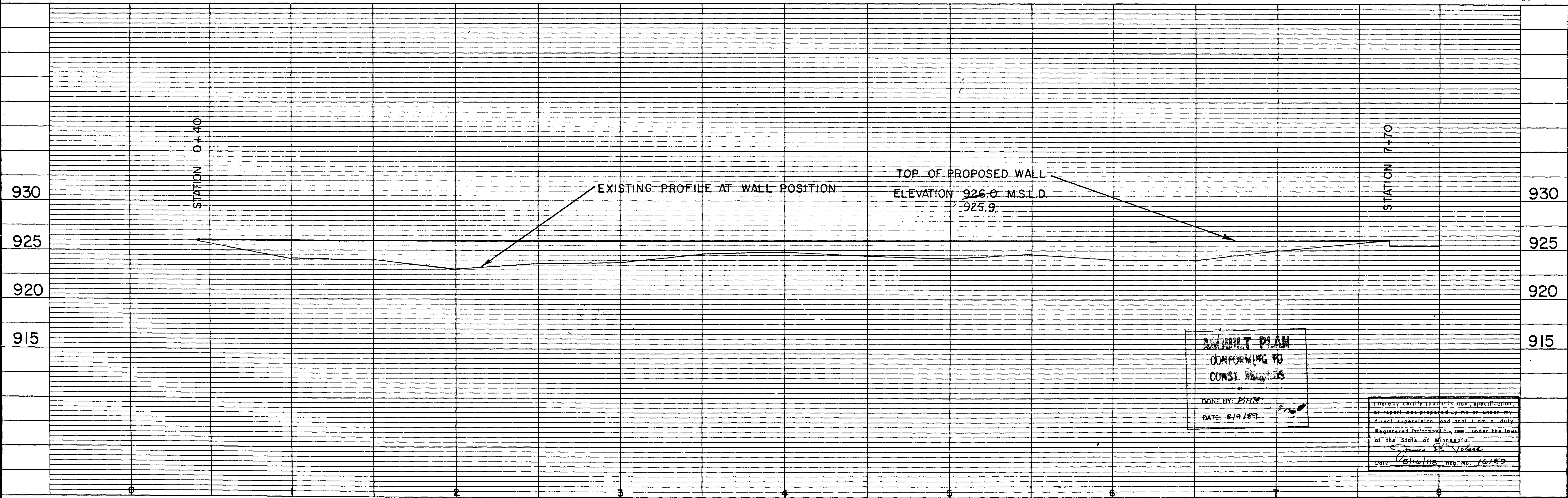
DONE BY: KHR
DATE: 8/9/89

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.
J. P. Jordan
Reg. No. 16159

TOPOGRAPHY	PLOTTED BY	DATE	CHECKED BY	DATE
UTILITIES	PLOTTED BY	DATE	CHECKED BY	DATE
PROFILE	PLOTTED BY	DATE	CHECKED BY	DATE

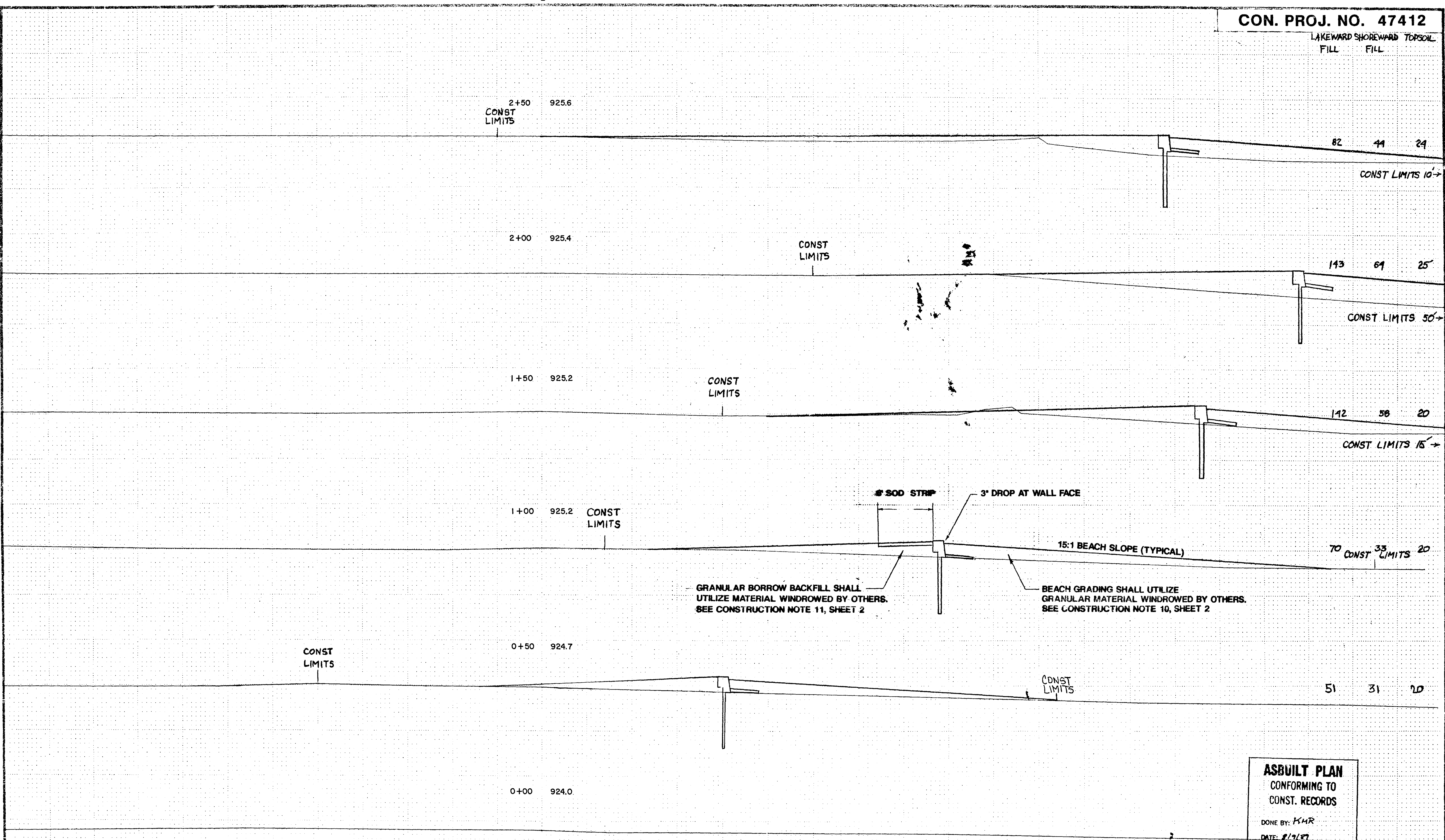


LAKE ELEVATION - AUG. 15, 1988 = 922.12
 HISTORICAL HIGH = 926.70, HISTORICAL LOW = 920.05
 NORMAL RANGE = 923.30 TO 923.90



ASBUILT PLAN
 CONFORMING TO
 CONST. PLANS
 DONE BY: MHR
 DATE: 8/9/89

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. Volz
 Date: 8/16/88 Reg. No. 16159



GRANULAR BORROW BACKFILL SHALL UTILIZE MATERIAL WINDROWED BY OTHERS. SEE CONSTRUCTION NOTE 11, SHEET 2

BEACH GRADING SHALL UTILIZE GRANULAR MATERIAL WINDROWED BY OTHERS. SEE CONSTRUCTION NOTE 10, SHEET 2

ASBUILT PLAN
 CONFORMING TO
 CONST. RECORDS

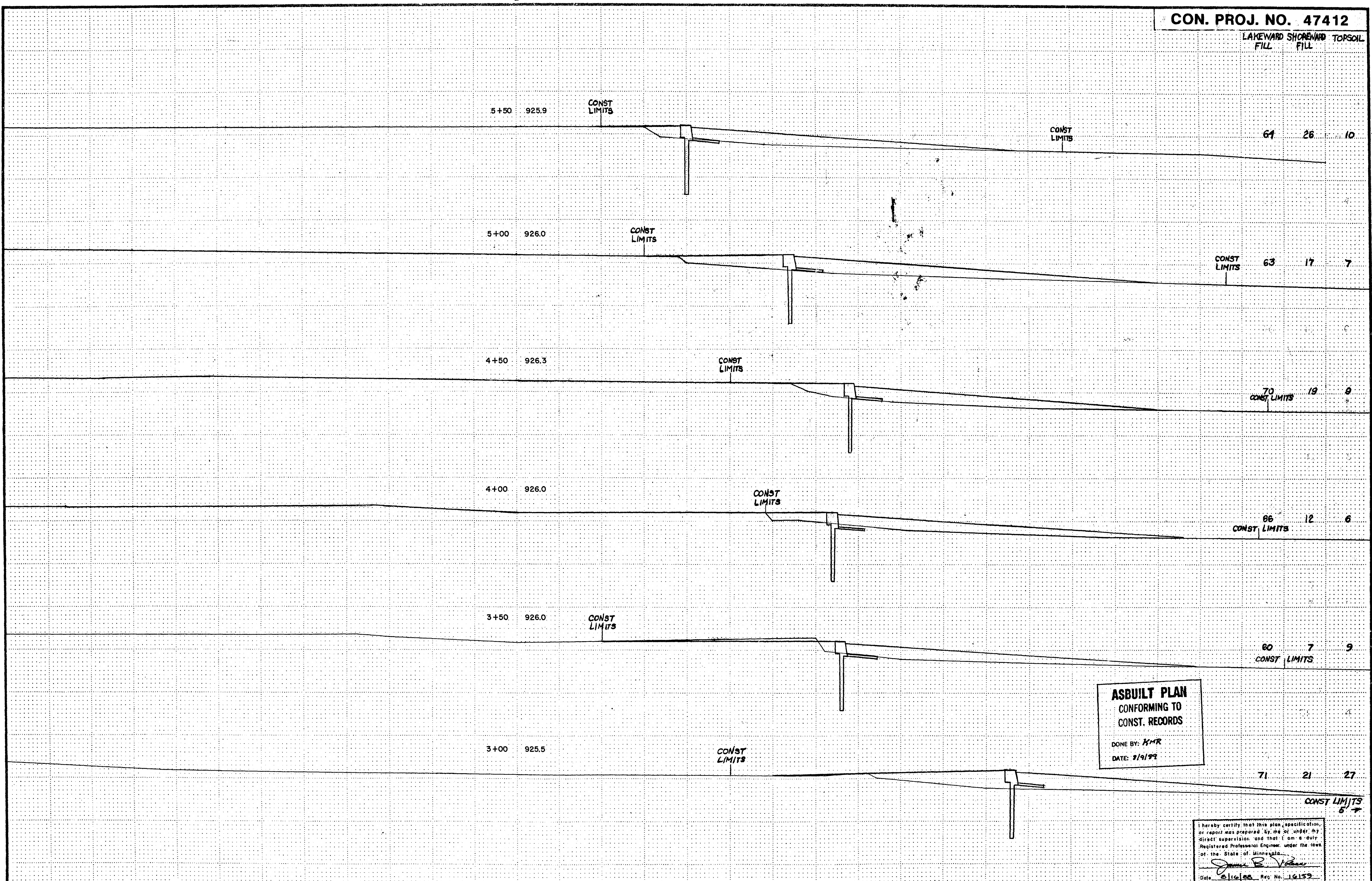
DONE BY: KMR
 DATE: 8/9/87

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 B. Preece
 Date: 8/16/88 Reg. No. 16152

HOR. & VERT. SCALE: 1" = 5'

LAKEWARD SHOREWARD FILL
TOPSOIL FILL



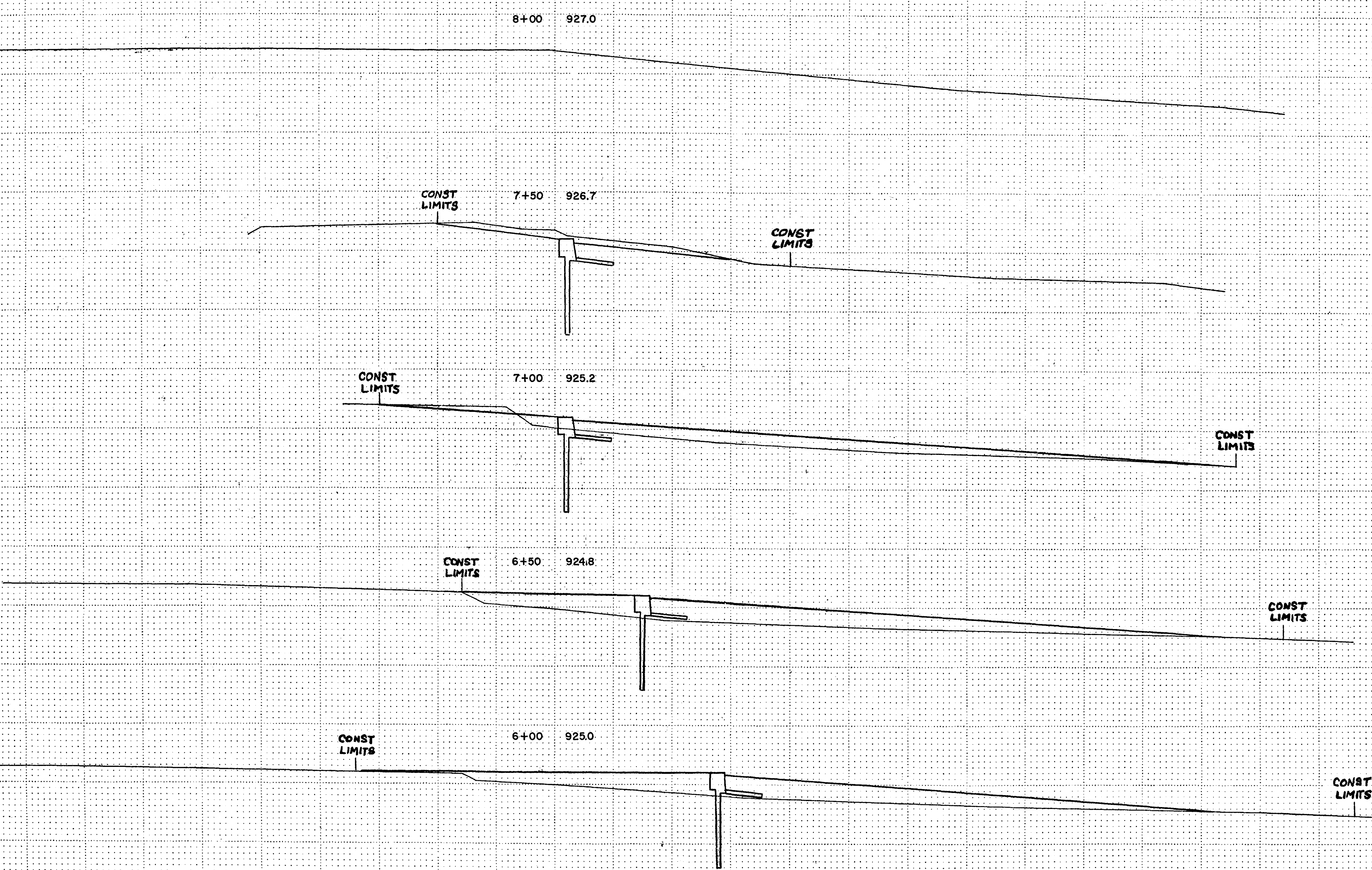
**ASBUILT PLAN
CONFORMING TO
CONST. RECORDS**

DONE BY: *KMR*
DATE: *2/9/92*

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 P. Volz
Date: *2/9/92* Reg. No. *16152*

COPY EQUIPMENT FORM #1 REV 2/84



ASBUILT PLAN
 CONFORMING TO
 CONST. RECORDS
 DONE BY: *KNR*
 DATE: 2/9/99

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: 2/10/99 Reg. No. 16159

COPY EQUIPMENT FORM #1 10/24