

PLAN SYMBOLS

STATE LINE	---
COUNTY LINE	---
TOWNSHIP OR RANGE LINE	---
SECTION LINE	---
QUARTER LINE	---
SIXTEENTH LINE	---
EXISTING RIGHT OF WAY LINE	---
PROPOSED RIGHT OF WAY LINE	---
PROPERTY LINE	---
CORPORATE OR CITY LIMITS	---
RAILROAD	---
RAILROAD RIGHT-OF-WAY	---
RIVER OF CREEK	---
CULVERT	---
GUARDRAIL	---
WOOD FENCE	---
BARBED WIRE FENCE	---
WOVEN WIRE FENCE	---
CHAIN LINK FENCE	---
TIMBER WALL	---
STONE WALL	---
HEDGE	---
RAILROAD CROSSING SIGN	---
CROSSING GATE	---
MEANDER CORNER	---
SLOPE EASEMENT (CONST. LIMITS)	---
MARSH	---
DECIDUOUS TREE	---
CONIFEROUS TREE	---
BUSH OR SHRUB	---
WOODS	---
CATCH BASIN	---
BRIDGE	---
IRON PIPE OR ROD	---
MONUMENT (STONE, CONCRETE OR METAL)	---
WOODEN HUB	---

UTILITY SYMBOLS

UTILITY POLE	---
GUY OR ANCHOR	---
STREET LIGHT	---
TELEPHONE PEDESTAL	---
GAS MAIN	---
WATER MAIN	---
TELEPHONE VAULT	---
ELECTRIC VAULT	---
TELEPHONE CABLE	---
ELECTRIC CABLE	---
STORM SEWER	---
SANITARY SEWER	---
SEWER MANHOLE	---
GATE VALVE	---
CONTROLLER CABINET	---
EXISTING HYDRANT	---
CABLE TELEVISION-BURIED	---
FIBER OPTIC CABLE	---
TRAFFIC SIGNAL LINE	---
TRAFFIC SIGNAL HAND HOLE	---

FOR PLANS AND UTILITIES SYMBOLS SEE
MN/DOT TECHNICAL MANUAL.

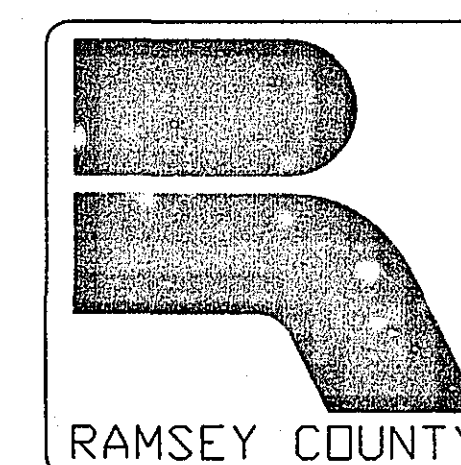
-GOVERNING SPECIFICATIONS-

THE 1988 EDITION OF THE MINNESOTA DEPARTMENT
OF TRANSPORTATION "STANDARD SPECIFICATION
FOR CONSTRUCTION" AS AMENDED BY THE MAY
2, 1994 "SUPPLEMENTAL SPECIFICATIONS" SHALL
GOVERN. ALL TRAFFIC CONTROL DEVICES AND SIGNING
SHALL CONFORM TO THE MMUTCD, INCLUDING FIELD
MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE
LAYOUTS, APRIL 1995.

SCALES IN FEET

PLAN	0 20 40 60
PROFILE HORIZ.	0 10 20 30 40 50 60
PROFILE VERT.	0 5 10
CROSS SECTIONS	0 10 20

GROSS LENGTH	78.5 FEET	0.015 MILES
BRIDGE LENGTH	----	----
EXCEPTIONS	----	----
NET LENGTH	78.5 FEET	0.015 MILES



RAMSEY COUNTY

DEPARTMENT OF PUBLIC WORKS
CONSTRUCTION PLAN FOR: GRADING, & STORM SEWER

PIKE LAKE CHANNEL (COUNTY DITCH NO. 2) SPECIAL DRAINAGE STRUCTURE

LOCATION: NW1/4 OF THE SW1/4 SEC. 20,
TOWNSHIP 30, RANGE 23

BETWEEN: PIKE LAKE AND LONG LAKE
BEGINNING: NEAR THE WEST END OF THE NORTH BOX CULVERT

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES
3	DETAIL SHEET
4	BARREL DETAILS
5	PLAN
6	SITE PLAN
7	CROSS-SECTIONS & PROFILE

THIS PLAN CONTAINS 7 SHEETS

DESIGN SQUAD T.L. DATE 4/96
DRAWN BY T.L. DATE 4/96
CHECKED BY DATE

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

David J. Rhall REG. NO. 14257 DATE 6-14-96

RAMSEY COUNTY
RECOMMENDED FOR APPROVAL CONST. ENGR. DATE 6-14-96
RECOMMENDED FOR APPROVAL DESIGN ENGR. DATE 6-14-96
RECOMMENDED FOR APPROVAL ENVIRONMENTAL DATE 6-18-96
RECOMMENDED FOR APPROVAL MAINT. ENGR. DATE 6-19-96
RECOMMENDED FOR APPROVAL COORDINATING ENGR. DATE 6-18-96
RECOMMENDED FOR APPROVAL R.O.W. ENGR. DATE 6-18-96
RECOMMENDED FOR APPROVAL TRAFFIC ENGR. DATE 6/14/96
RECOMMENDED PROJECT ENGINEER DATE 6-14-96

RECOMMENDED FOR APPROVAL COUNTY ENGINEER DATE 6/19/96
APPROVED CHAIR OF THE RAMSEY COUNTY BOARD DATE
APPROVED CITY OF NEW BRIGHTON DATE 7-12-96
APPROVED DATE

PLAN REVISIONS		
DATE	SHEET NO. & DESCRIPTION	BY

ASBUILT PLAN CONFORMING TO CONST. RECORDS

DONE BY: JLC
DATE: 6-14-96

28-142

G:\DWGS\PIKE LAKE\PIKE2 6/13/96

STATEMENT OF ESTIMATED QUANTITIES					
ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITIES	TOTAL FINAL QUANTITIES	
2021.501	MOBILIZATION	LS	1		
2101.502	CLEARING	TREE	13		
2101.507	GRUBBING	TREE	9		
2104.501	REMOVE FLAGSTONE WALL	LF	22		
2104.509	REMOVE STAIRS	EACH	1		
2104.509	REMOVE METAL APRON	EACH	1		
2433.507	REMOVE BOX CULVERT END SECTION	EACH	1		
0104.605	SALVAGE RANDOM RIPRAP	CY	5		
2105.523	COMMON BORROW (LV)	CY	70		
2105.525	TOPSOIL BORROW (LV)	CY	43		
0411.601	PRECAST CONC. BOX CULVERT SPECIAL	LS	1		
2412.511	10' x 5' PRECAST CONC. BOX CULVERT	LF	10		
0411.601	CONSTRUCT STEPS	LS	1		
2451.509	AGGREGATE BEDDING (LV)	CY	84		
0501.602	57" SPAN CS PIPE-ARCH CULVERT SPECIAL W/ TEE	EACH	1		
2501.521	58" SPAN RC PIPE-ARCH CULVERT CL IIA	LF	36		
0503.602	CONNECT TO EXISTING CM PIPE-ARCH	LS	1		
0501.602	57" SPAN CS PIPE-ARCH MITERED BEND	EACH	1		
0501.602	CS PIPE-ARCH TO SPAN RC PIPE-ARCH ADAPTER	EACH	1		
2511.501	RANDOM RIPRAP CL. II	CY	15		
0511.602	INSTALL SALVAGED RANDOM RIPRAP	CY	5		
2511.515	GEOTEXTILE FILTER TYPE IV	SY	47		
2573.505	FLOTATION SILT CURTAIN	LF	40		
2575.505	SODDING TYPE LAWN	SY	340		

STANDARD DETAIL PLATES	
THE FOLLOWING STANDARD PLATES, APPROVED BY THE DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT.	
PLATE NO.	DESCRIPTION
0005 A	SPECIFICATION REFERENCE TO STANDARD PLATES
3000 L	REINFORCED CONCRETE PIPE
3006 K	GASKET JOINT FOR R.C. PIPE
3040 F	CORRUGATED METAL PIPE CULVERT
3133 B	RIPRAP AT RCP OUTLETS
3145 E	CONCRETE PIPE TIES
3221 C	C.S. PIPE COUPLING BAND
4101 C	RING CASTING FOR MANHOLE OR CATCH BASIN
4110 D	COVER CASTING FOR MANHOLE

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 LAWS OF THE STATE OF MINNESOTA
David L. Rhall
REG. NO. 14251 DATE 6-14-96

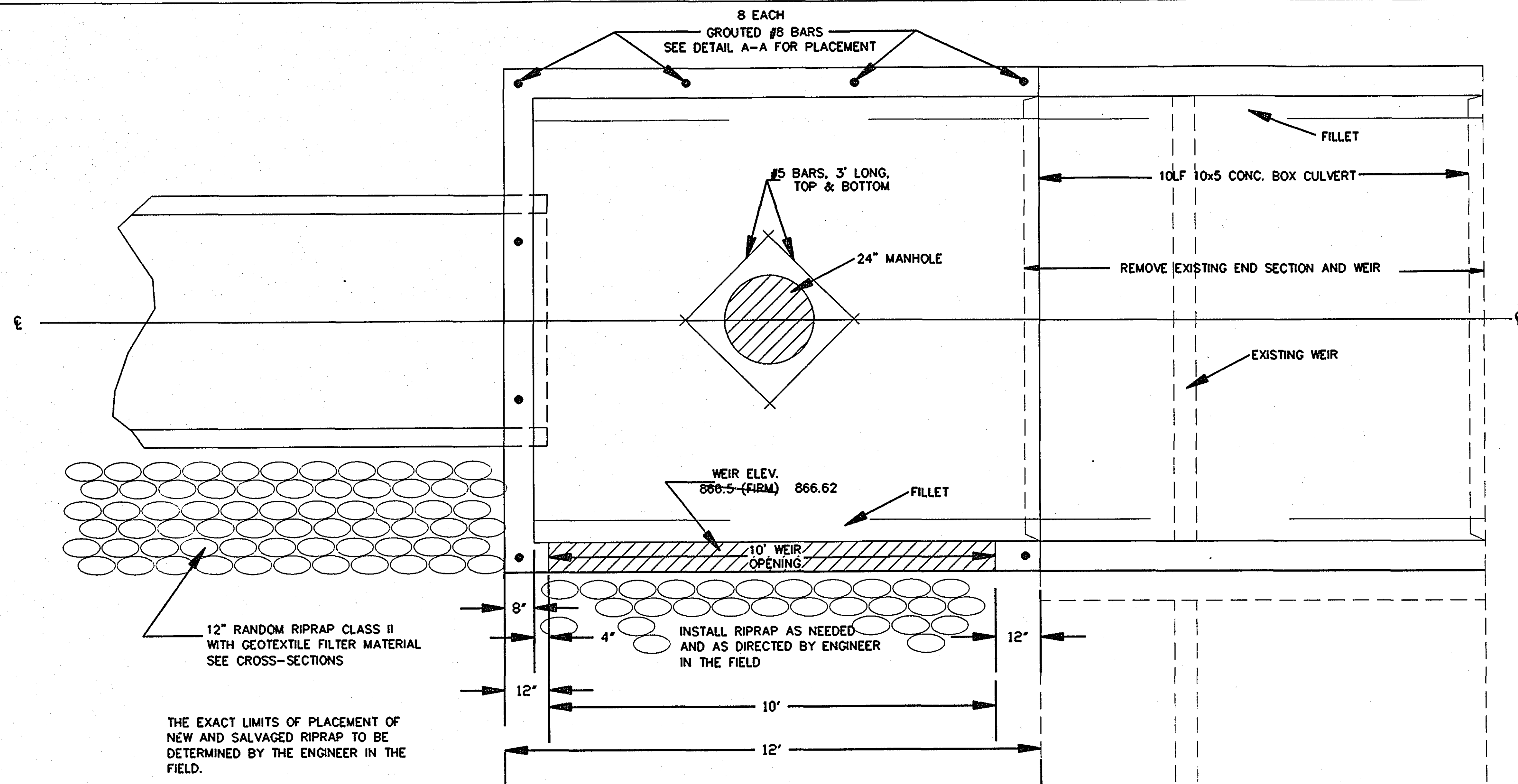
28-142

STATEMENT OF ESTIMATED QUANTITIES

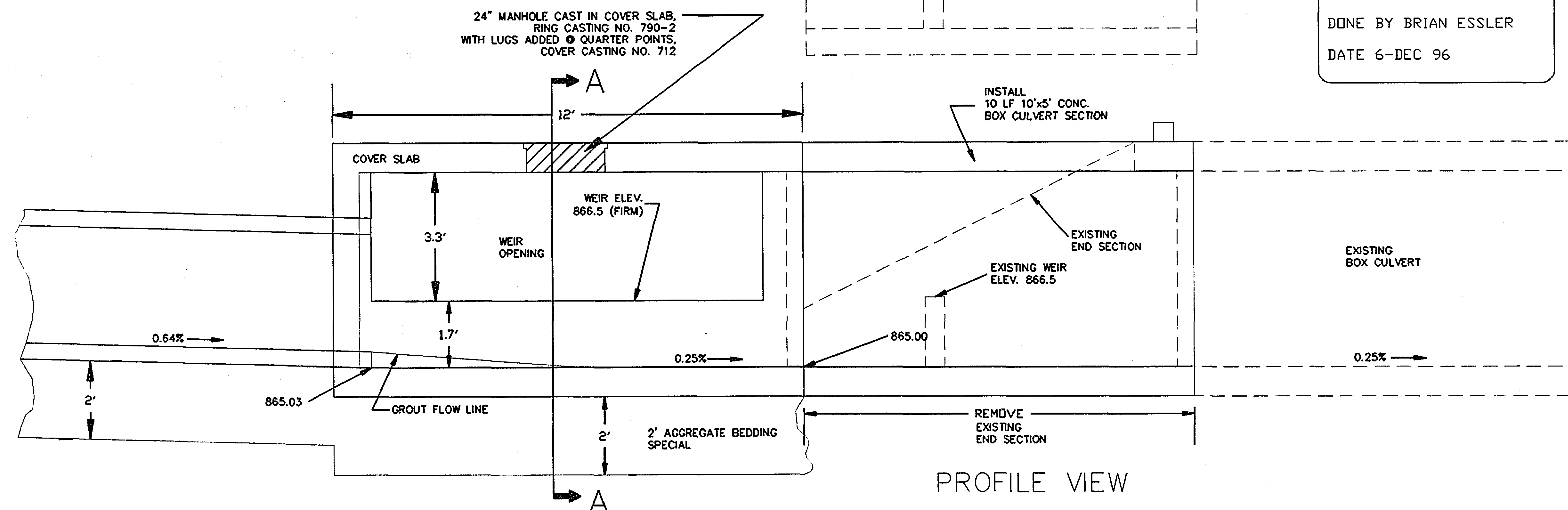


PIKE LAKE CHANNEL

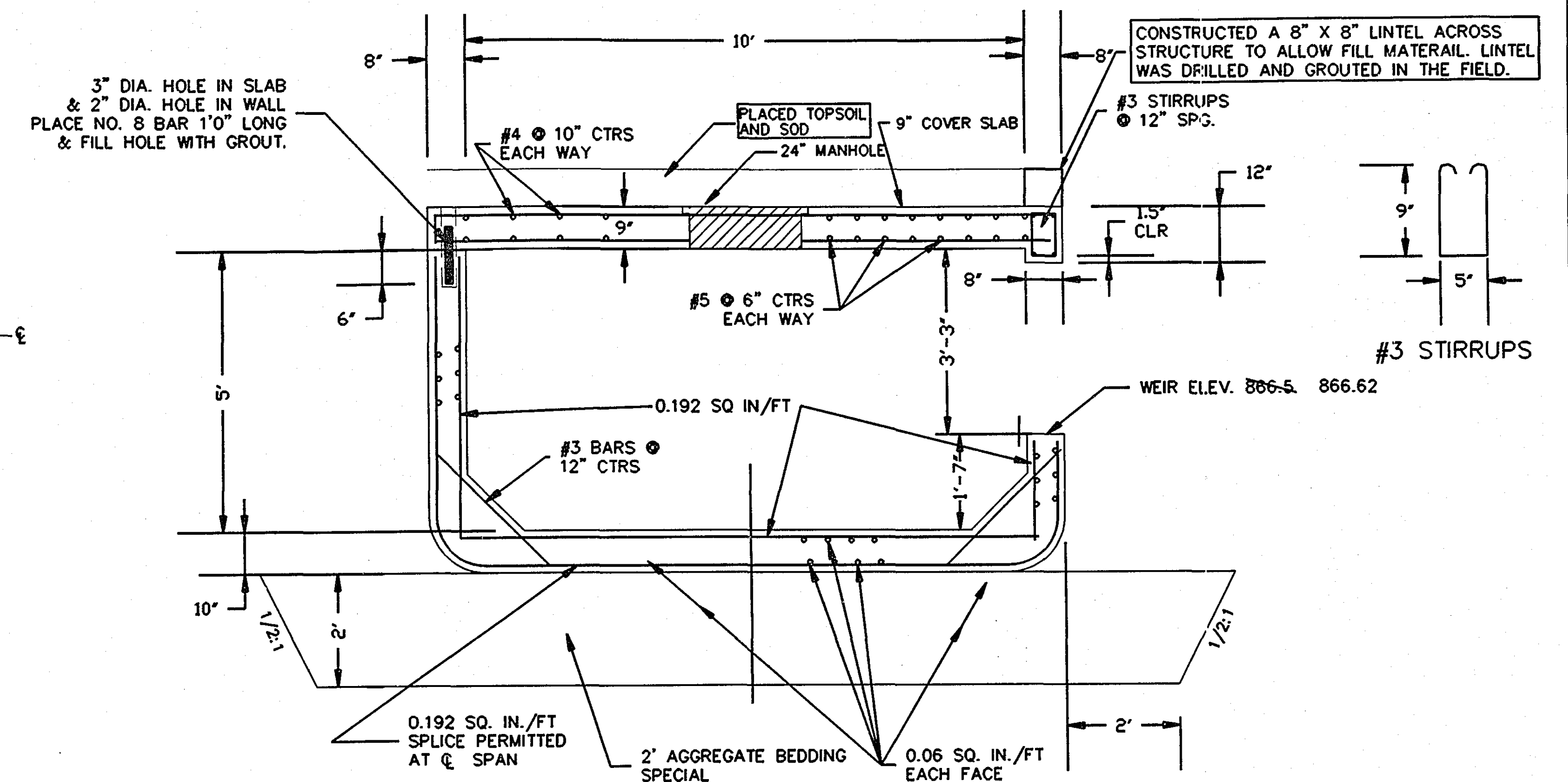
SHEET NO. 2 OF 7 SHEETS



PLAN VIEW



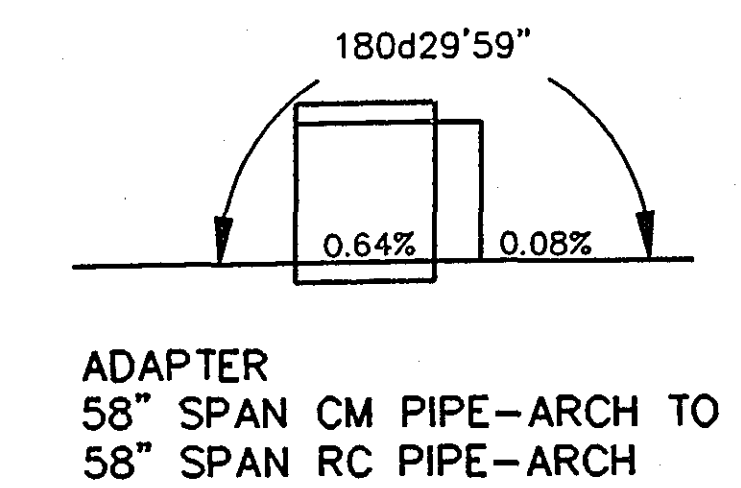
PROFILE VIEW



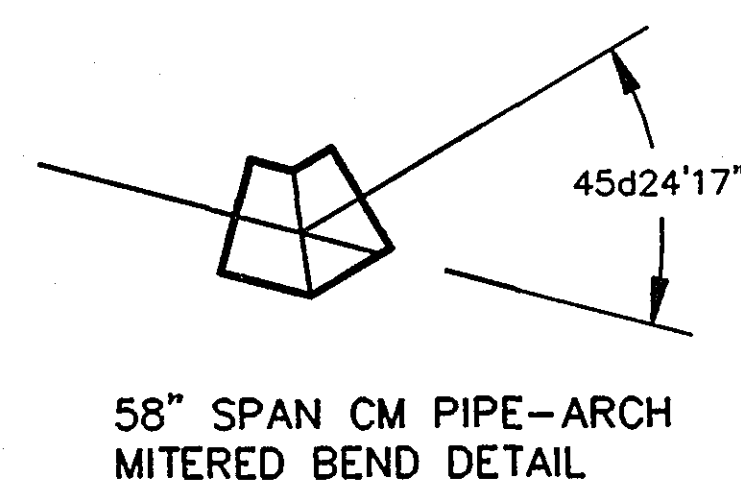
DETAIL A-A

ASBUILT PLAN
CONFORMING TO
CONST. RECORDS

DONE BY BRIAN ESSLER
DATE 6-DEC 96



ADAPTER
58" SPAN CM PIPE-ARCH TO
58" SPAN RC PIPE-ARCH

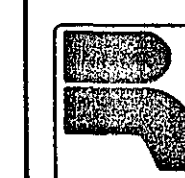


58" SPAN CM PIPE-ARCH
MITERED BEND DETAIL

SPECIAL PIPE DETAILS

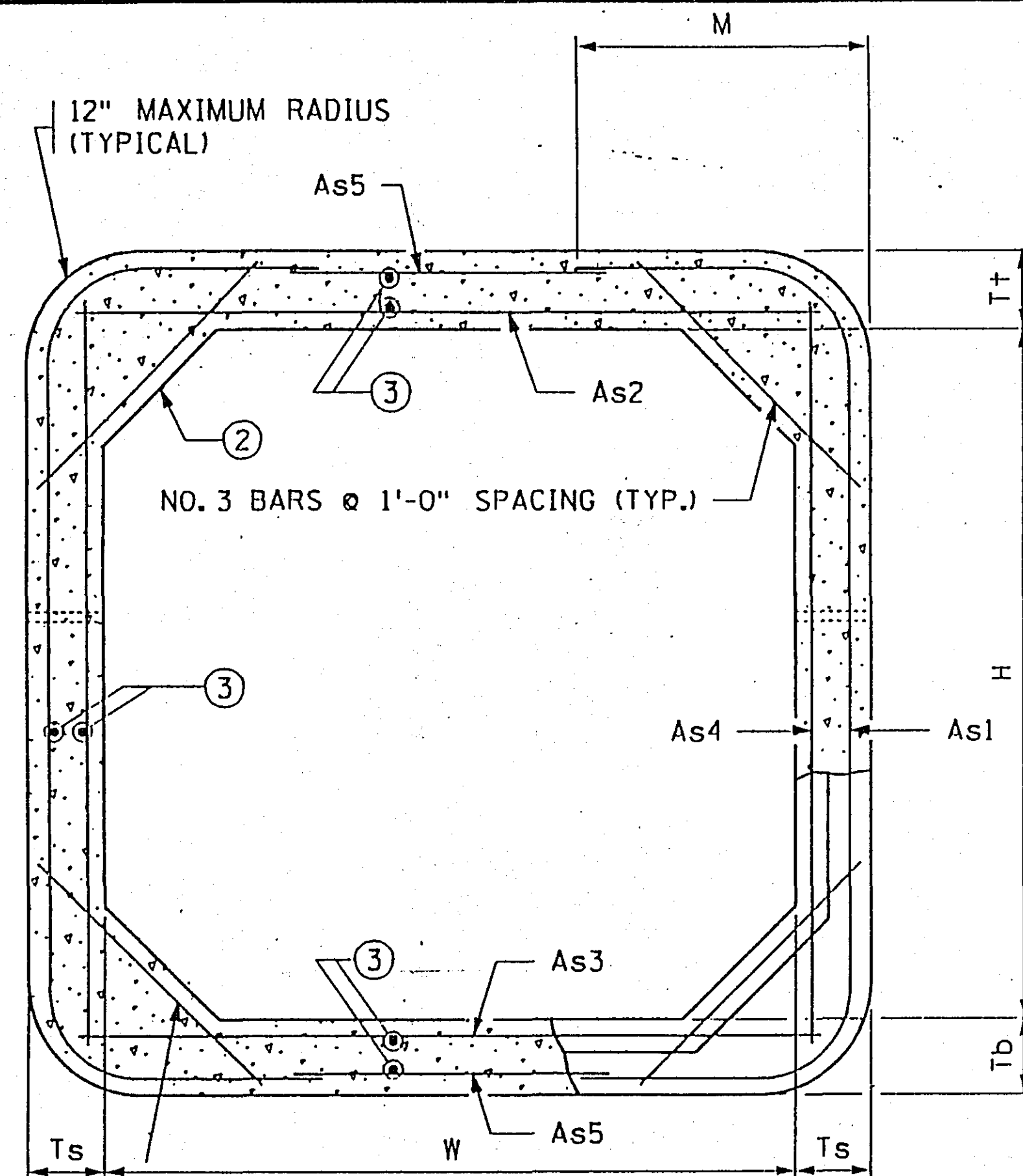
28-142
DETAIL SHEET

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David L. Rholl
REG. NO. 14257 DATE 6-14-96

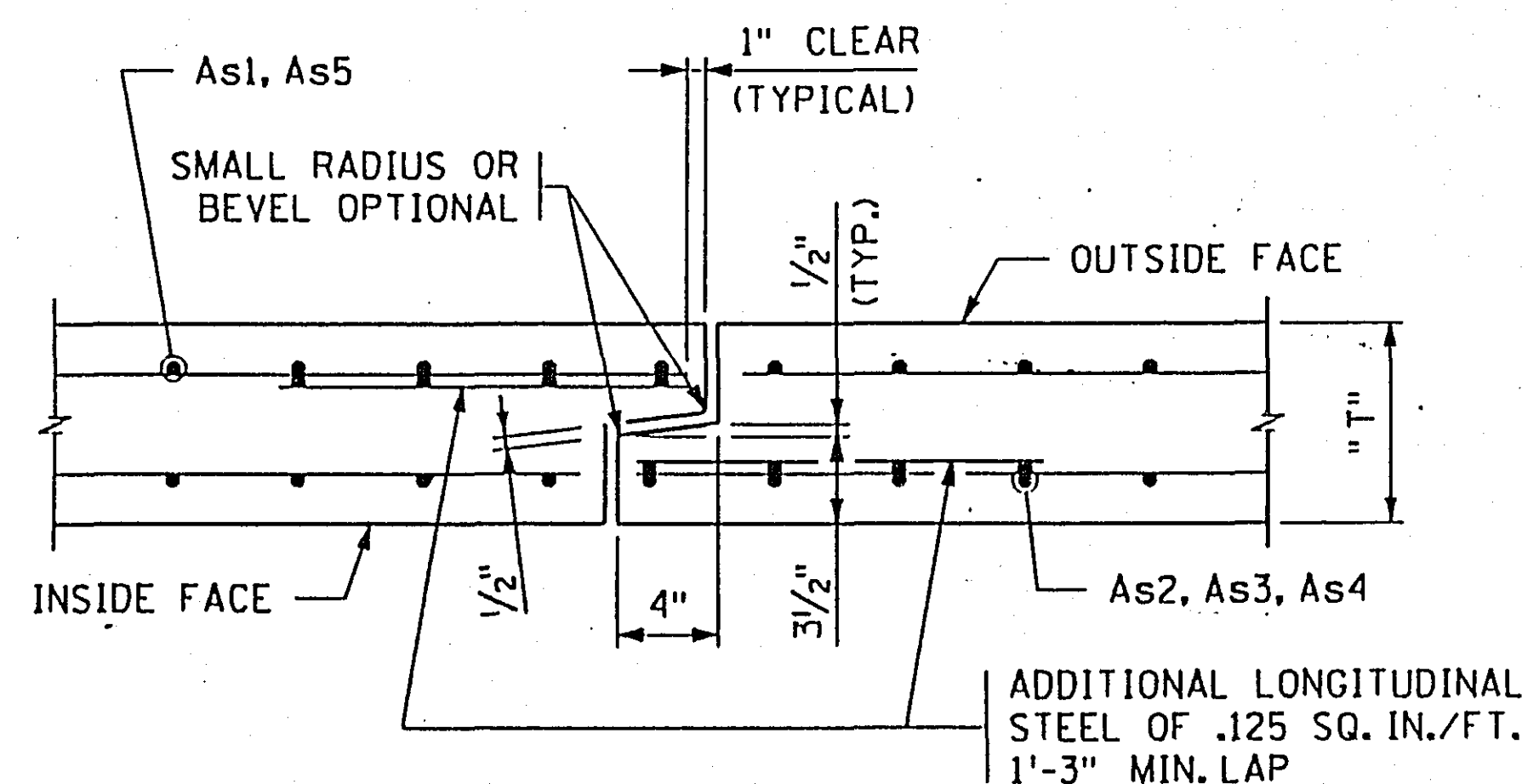


PIKE LAKE CHANNEL

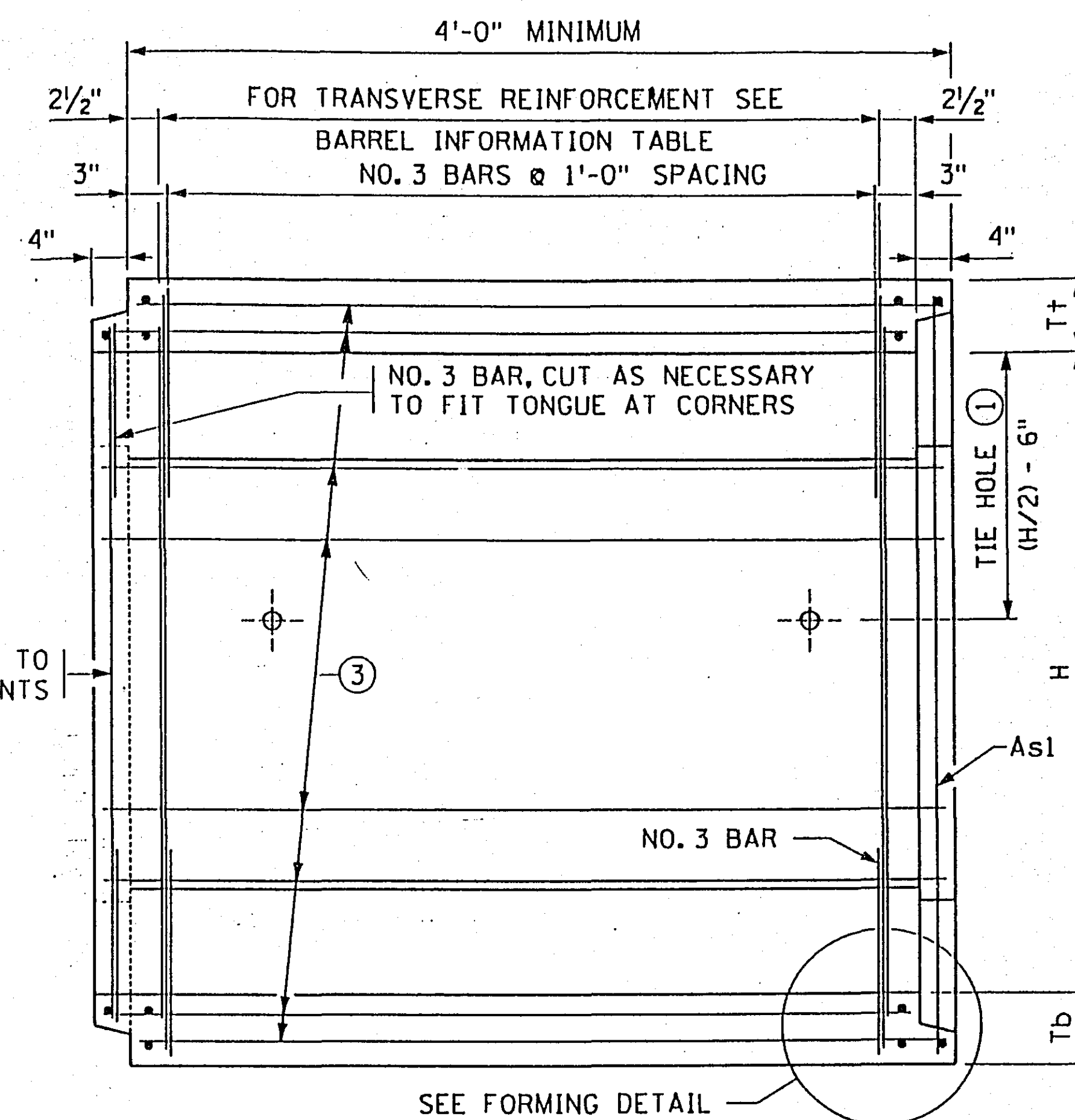
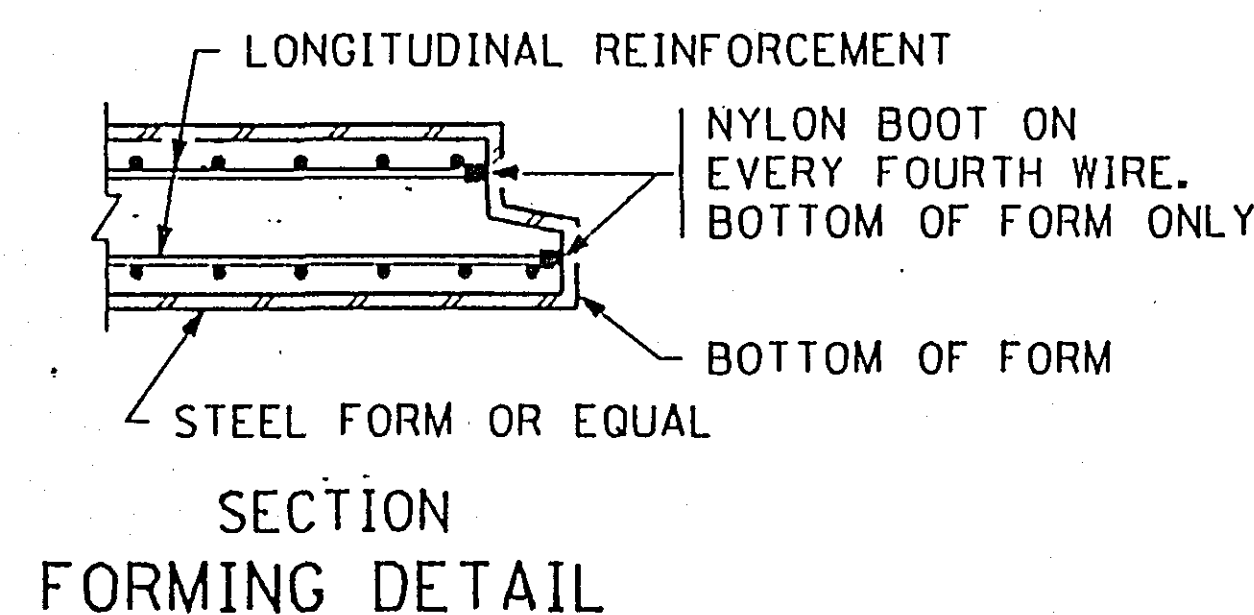
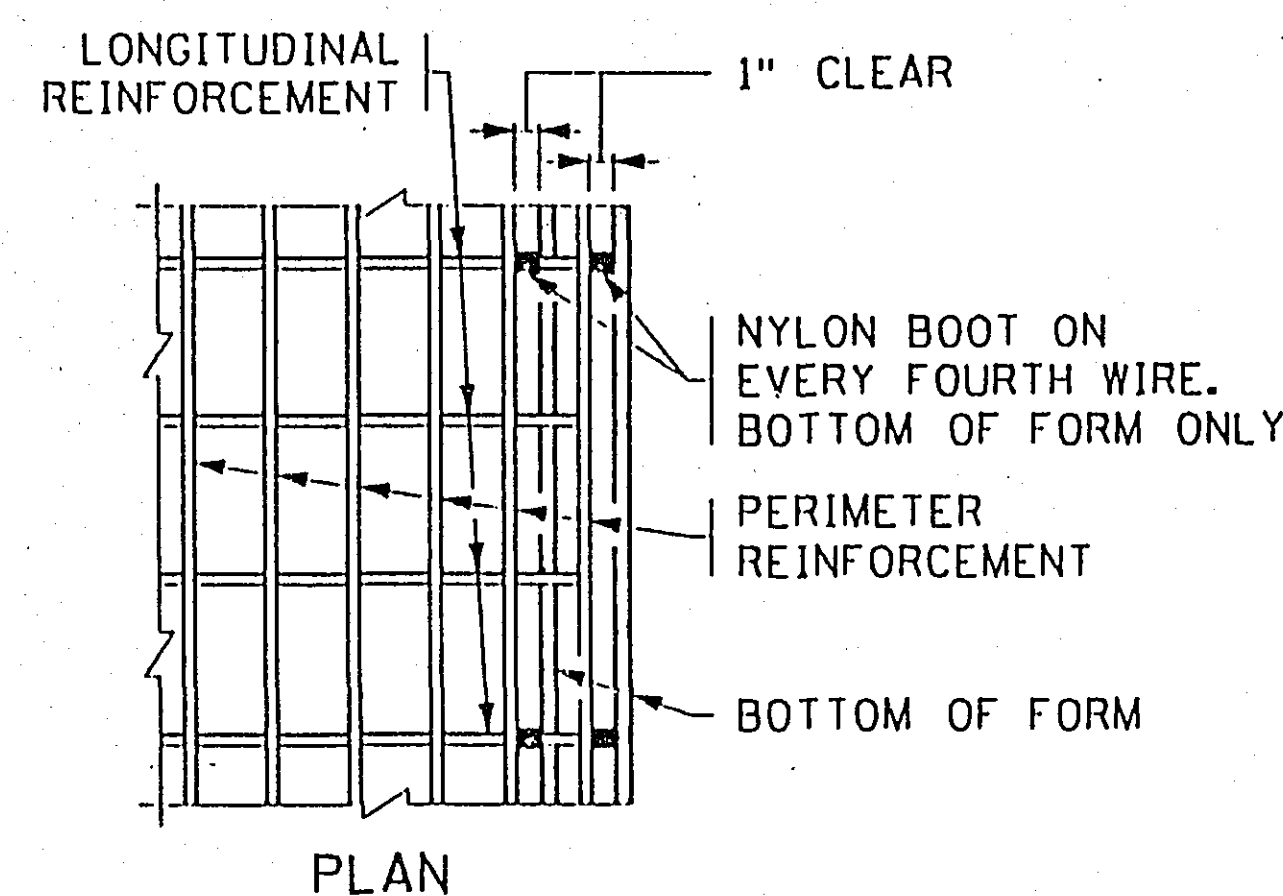
SHEET NO. 3 OF 7 SHEETS



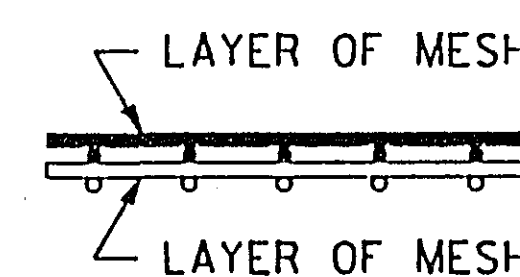
TRANSVERSE BARREL SECTION
(BAR REINFORCEMENT OPTION SHOWN)



TONGUE AND GROOVE JOINT DETAIL



LONGITUDINAL BARREL SECTION
(BAR REINFORCEMENT OPTION SHOWN)



FABRIC LAYER DETAIL

WHEN MORE THAN ONE LAYER OF STEEL FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE STEEL FABRIC SHALL BE PLACED AS SHOWN

CONSTRUCTION NOTES:

CULVERTS TO BE CONSTRUCTED AS PER SPEC. 2412 EXCEPT AS NOTED.

THE STEEL FABRIC, SHEAR REINFORCEMENT AND REINFORCEMENT BARS SHALL CONFORM TO APPLICABLE REQUIREMENTS OF AASHTO M259.

1/2" MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT, EXCEPT FOR TONGUE AND GROOVE DETAIL.

ANY OF THE FOLLOWING COMBINATIONS OF STEEL REINFORCEMENT MAY BE USED:

- (a) 1 OR 2 LAYERS OF MESH OR
- (b) 1 LAYER OF MESH AND 1 LAYER OF REINFORCEMENT BARS OR
- (c) 1 LAYER OF REINFORCEMENT BARS.

THE REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES". IF BAR REINFORCEMENT IS SUBSTITUTED FOR WIRE MESH, THE AREAS OF REINFORCEMENT SHALL BE INCREASED BY 8%.

THE MAXIMUM SIZE OF REINFORCEMENT BARS SHALL BE NO. 6. THE MAXIMUM MESH SIZE SHALL BE 1/2" DIA. PER LAYER (MAXIMUM OF 2 LAYERS).

THE SPACING CENTER TO CENTER OF THE TRANSVERSE WIRES SHALL NOT BE LESS THAN 2 INCHES NOR MORE THAN 4 INCHES. THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8 INCHES.

WELDING WILL NOT BE ALLOWED ON REINFORCEMENT BARS OR STEEL FABRIC, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE WIRE FABRIC IS ACCEPTABLE.

WHEN REINFORCEMENT IS CUT, ADDITIONAL REINFORCEMENT SHALL BE ADDED ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT STEEL.

BARREL SECTIONS WHICH ARE CAST WITH A DRAFT IN THE FORMS SHALL BE LAID WITH THE NARROWEST PART OF THE SECTION DOWNSTREAM.

CONCRETE SHALL BE MIX NO. 3W36 WITH NO CALCIUM CHLORIDE ALLOWED.

- ① CULVERT TIES ARE TO BE 1" DIAMETER RODS. SEE STANDARD PLATE NO. 3145 FOR CONNECTION DETAILS.
- ② HAUNCH SIZE AS FOLLOWS:
6 AND 8 FT. WIDTHS - 6 TO 12 INCHES
10 FT. WIDTH - 10 TO 12 INCHES
12 FT. WIDTH - 12 INCHES
- ③ MINIMUM LONGITUDINAL STEEL SHALL BE 0.06 SQ. IN. /FT.

BARREL INFORMATION

BARREL INFORMATION																					
LOCATION	SIZE	CLASS	f'c (P.S.I.)	FILL HEIGHT RANGE (FT.)	DIMENSIONS					WEIGHT (LBS./FT.)	STEEL FABRIC REINFORCEMENT										
											As1			As2		As3		As4		As5	
					W (FT.)	H (FT.)	T+ (IN.)	Tb (IN.)	Ts (IN.)		AREA (IN. ² /FT.)	LENGTH (FT.)	M (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)
	10'x5'	2	5000	2'-8'	10'	5'	9"	10"	8"	3860	0.48	10'7"	2'8"	0.75	10'8"	0.68	10'8"	0.20	5'8"	0.06	8'0"

28-1A2

CERTIFIED BY *David L. B. Hall*
PROFESSIONAL ENGINEER
REG. NO. 14257 June 14, 1996

DES: _____ DR: _____
CHK: _____ CHK: _____

APPROVED:

STANDARD SHEET NO.
5-297.420

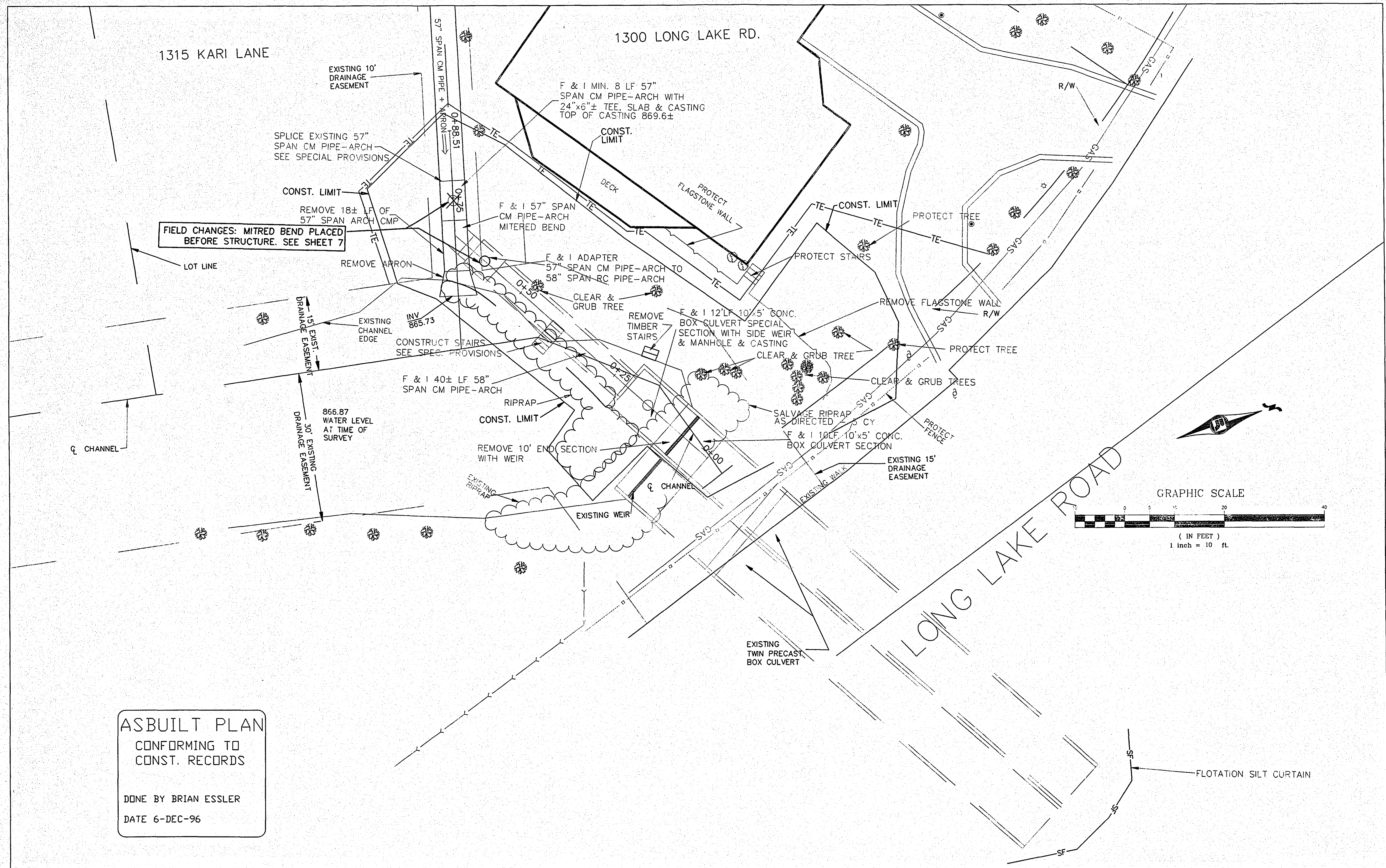
STATE BRIDGE ENGINEER APPROVAL:
AUGUST 10, 1995

PIKE LAKE CHANNEL

BARREL DETAILS

SHEET NO. 4 OF 7 SHEETS

G:\DWGS\PIKE LAKE\PIKE2 12/6/96



PLAN



PIKE LAKE CHANNEL

SHEET NO. 5 OF 7 SHEETS

ASBUILT PLAN
CONFORMING TO
CONST. RECORDS

DONE BY BRIAN ESSLER
DATE 6-DEC-96

28-142

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REGISTERED PROFESSIONAL ENGINEER UNDER
LAWS OF THE STATE OF MINNESOTA
David A. Phall
REG. NO. 14257 DATE 6-14-96

PIKE LAKE CHANNEL ADD.

BLOCK 1

lot 1
1300 LONG LAKE RD.

1315 KARI LANE

EXISTING 10'
DRAINAGE
EASEMENT

lot 5

FIELD CHANGES: MITRED BEND PLACED
BEFORE STRUCTURE. SEE SHEET 7

lot 6

LOT LINE

CONST. LIMIT

PROPOSED 5'
DRAINAGE
EASEMENT

CONST.
LIMIT

DECK

PROTECT
FLAGSTONE WALL

CONST. LIMIT

EXISTING CONTOURS

PROPOSED CONTOURS

R/W

LONG LAKE ROAD

PROTECT FENCE

EXISTING 15'
DRAINAGE
EASEMENT

EXISTING WALK

EXISTING
TWIN PRECAST
BOX CULVERT

EXISTING WEIR

EXISTING
RIPRAP

RIPRAP
CONST. LIMIT

STAIRS

PROPOSED
CHANNEL
EDGE

EXISTING
CHANNEL
EDGE

15' EXIST.
DRAINAGE EASEMENT

30' EXISTING
DRAINAGE EASEMENT

866.87
WATER LEVEL
AT TIME OF
SURVEY

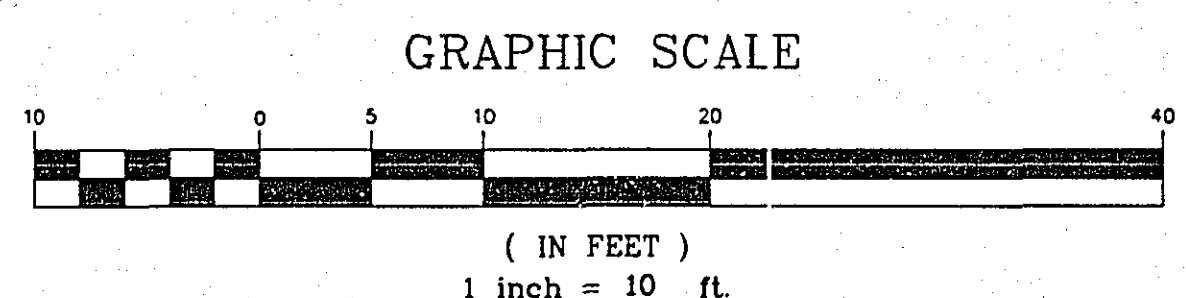
CHANNEL

ASBUILT PLAN
CONFORMING TO
CONST. RECORDS

DONE BY BRIAN ESSLER
DATE 6-DEC-96

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LAWS OF THE STATE OF MINNESOTA.
Nancy L. Kroll
REG. NO. 14257 DATE 6-14-96

CONTOUR INTERVAL = 1 FOOT
[Symbol] = PROPOSED DRAINAGE EASEMENT

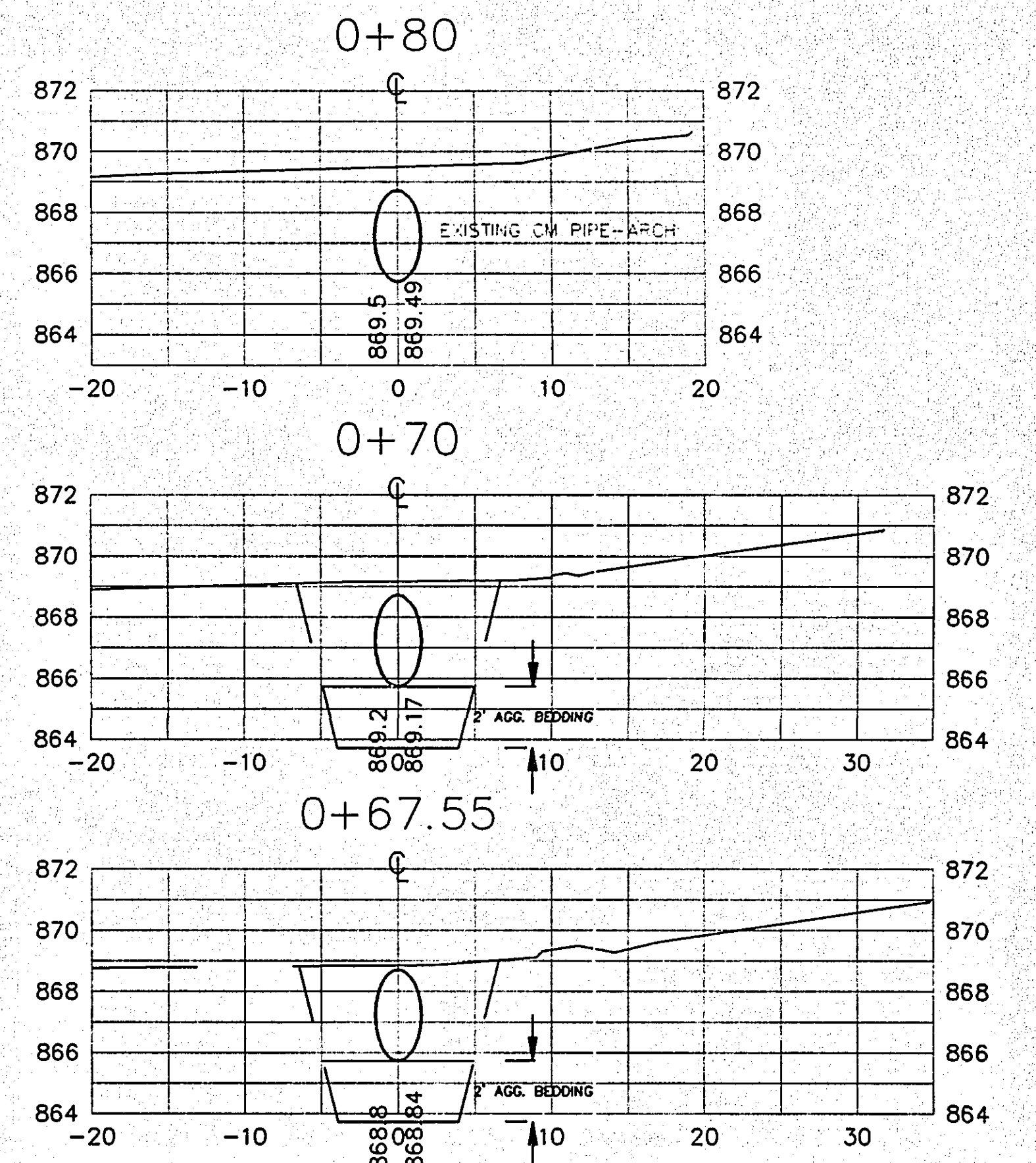
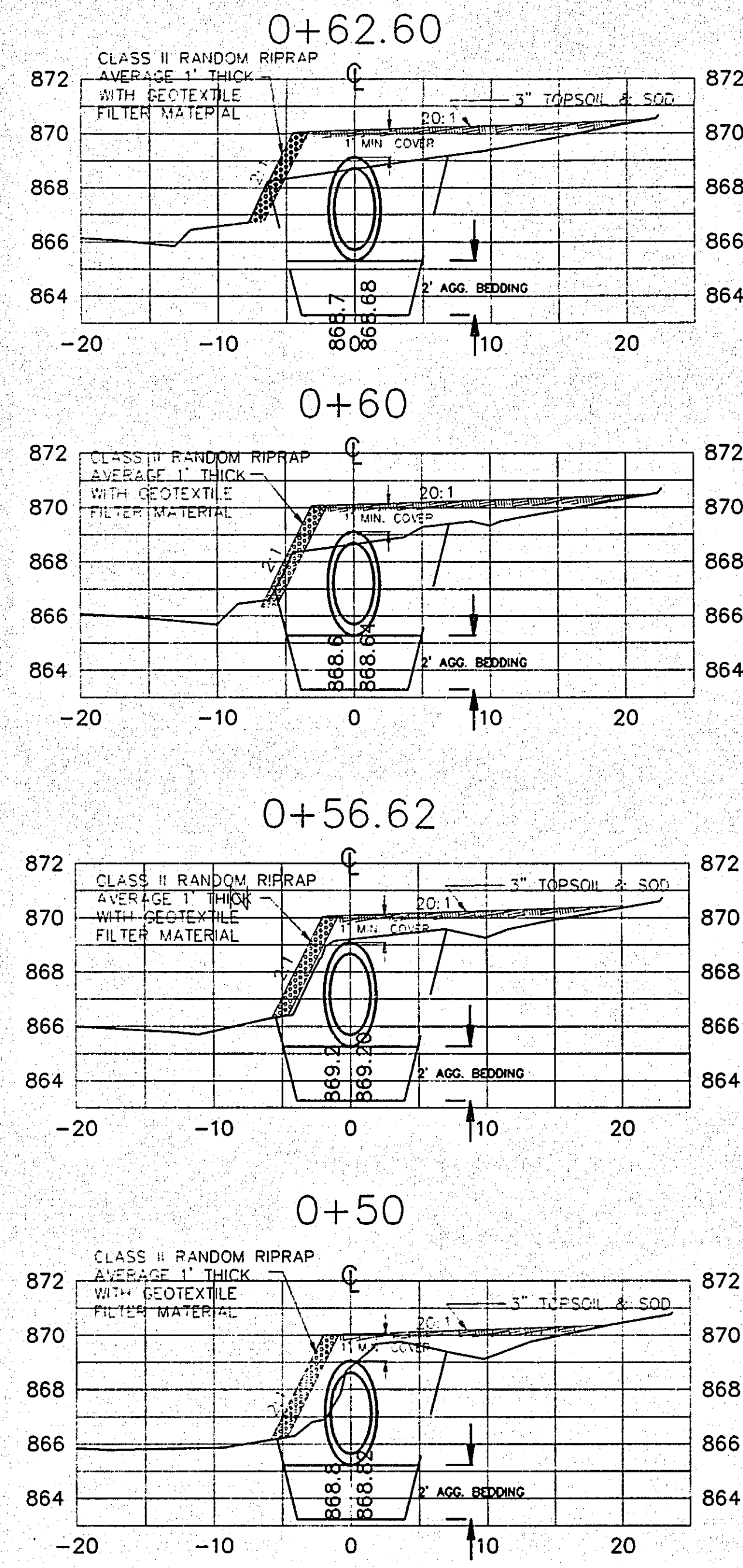
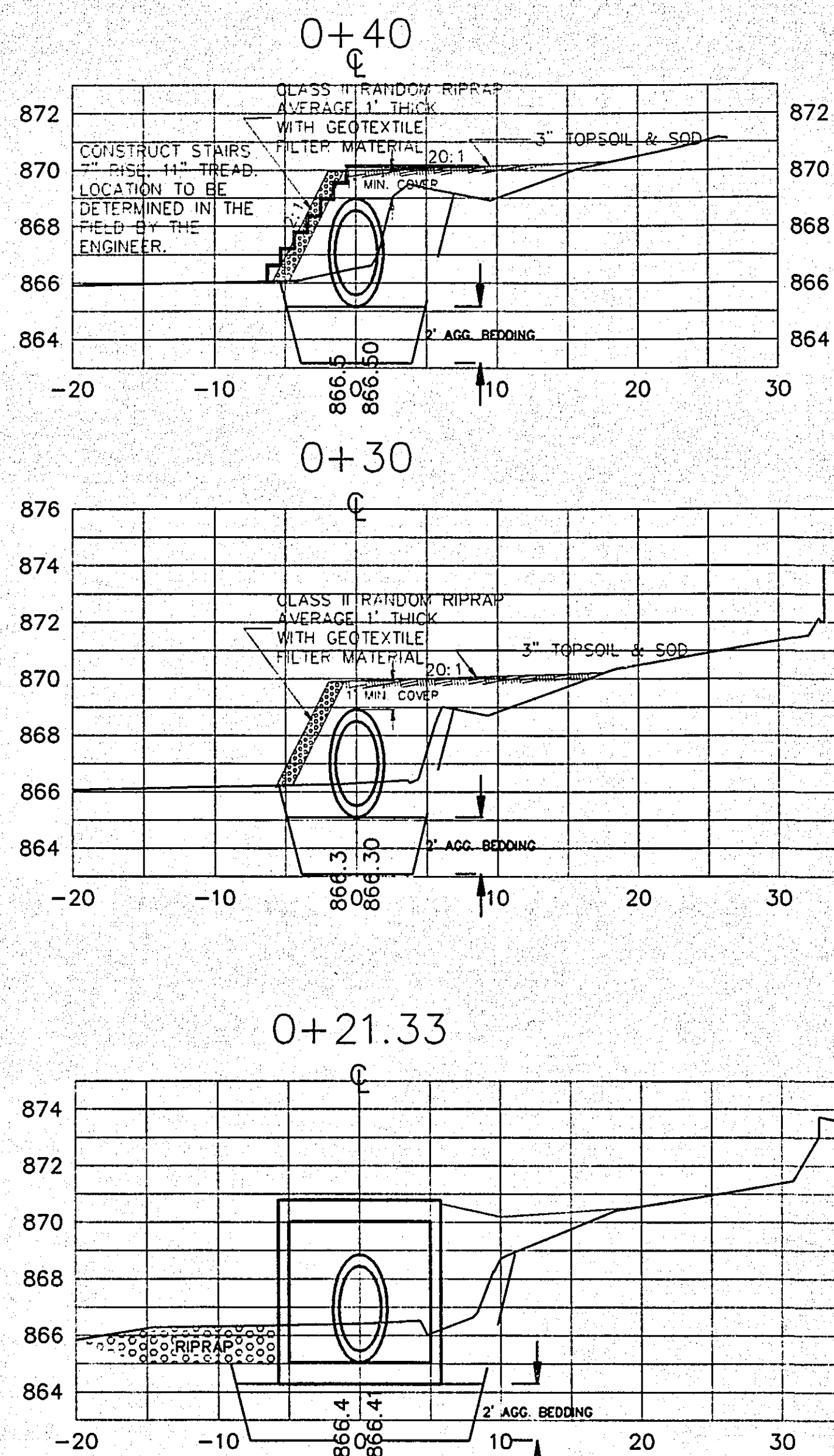
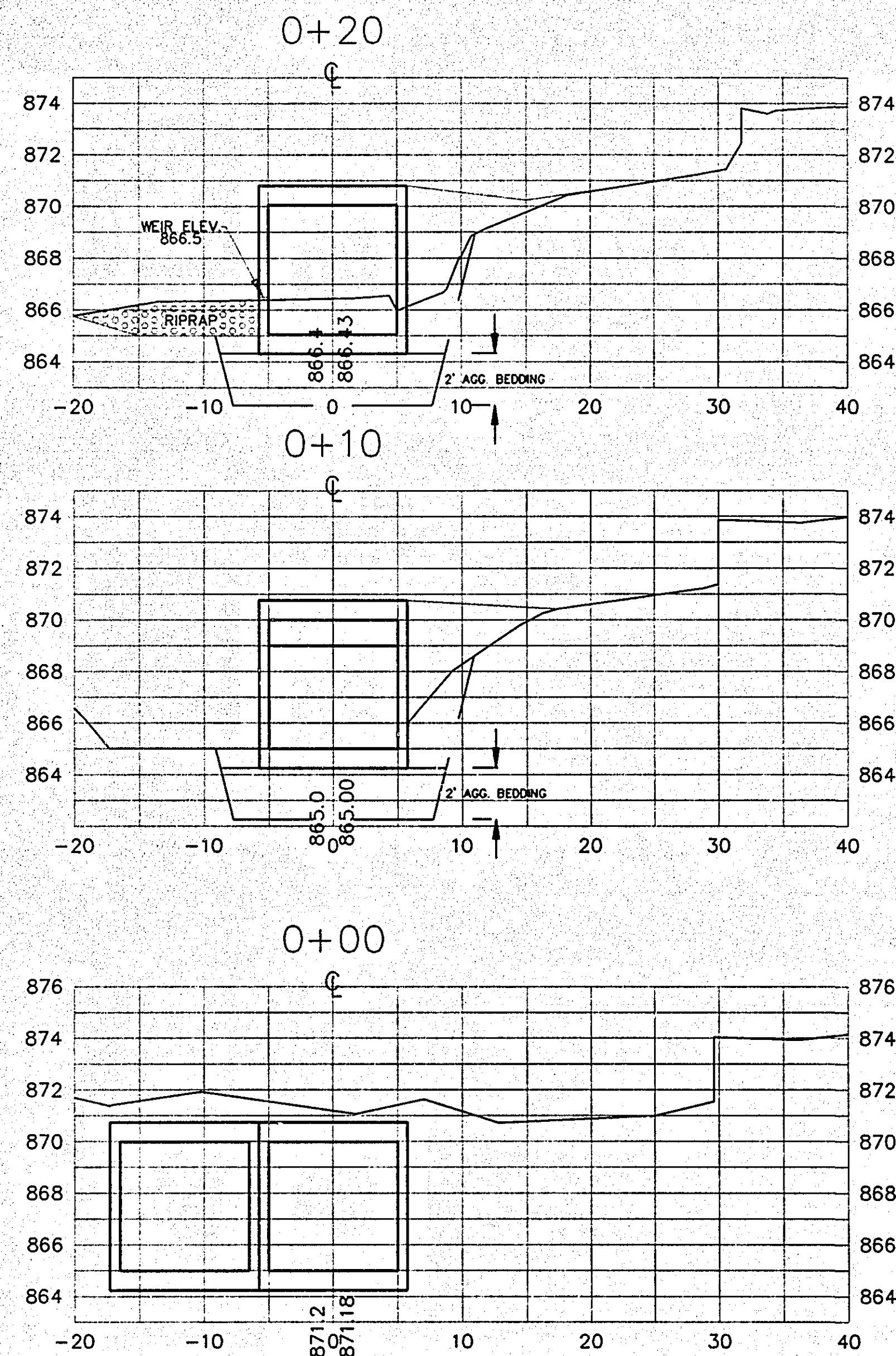


SITE PLAN

28-142

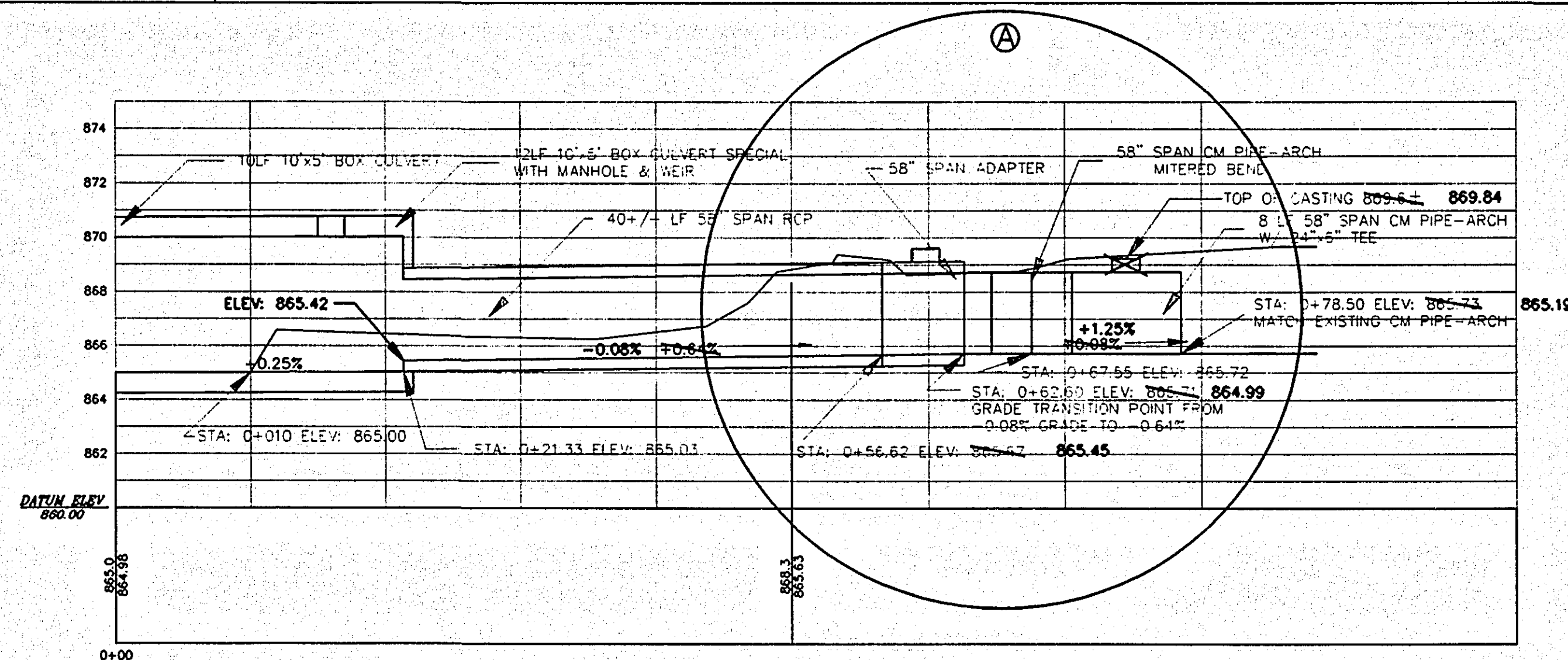
PIKE LAKE CHANNEL

SHEET NO. 6 OF 7 SHEETS



ASBUILT PLAN
CONFORMING TO
CONST. RECORDS

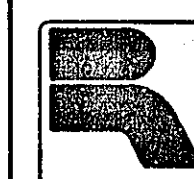
DONE BY BRIAN ESSLER
DATE 6-DEC-96



NOTE: (A)
EXISTING CMP APRON WAS REMOVED AND MH/CLEANOUT
WAS CONSTRUCTED DOWNSTREAM OF MITRED BEND
MH WAS CONSTRUCTED WITH A 0.54% SLUMP BECAUSE
EXISTING PIPE GRADE WAS NOT AS SHOWN. PIPE
SETTLED AFTER IT WAS ORIGINALLY INSTALLED

28-142

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LAWS OF THE STATE OF MINNESOTA
David L. Rhell
REG. NO. 14257 DATE 6-14-96



PIKE LAKE CHANNEL

SHEET NO. 7 OF 7 SHEETS