

BRIDGE

BRIDGE RATING

prepared for

THE DEPARTMENT OF PUBLIC WORKS
COMMONWEALTH OF MASSACHUSETTS

NORTHFIELD

Warwick Road over Mill Brook

N-22-9

MUN-236-009-100

MARCH , 1991

Date Of Inspection

JUNE, 1991

Date Of Rating



Submitted by
STV/SEELYE STEVENSON VALUE AND KNECHT
ENGINEERS AND PLANNERS
230 Congress Street, Boston Massachusetts 02110

AVAILABLE PLANS

NORTHFIELD

WARWICK ROAD OVER MILL BROOK

N-22-9

The following plans were made available to Seelye Stevenson Value & Knecht for their use in determining the live load capacity of the bridge.

The Commonwealth of Massachusetts

Proposed Bridge

Northfield

Warwick Road Sta. 5+04+

Over Mill Brook

October, 1936

Sheet 1 of 1

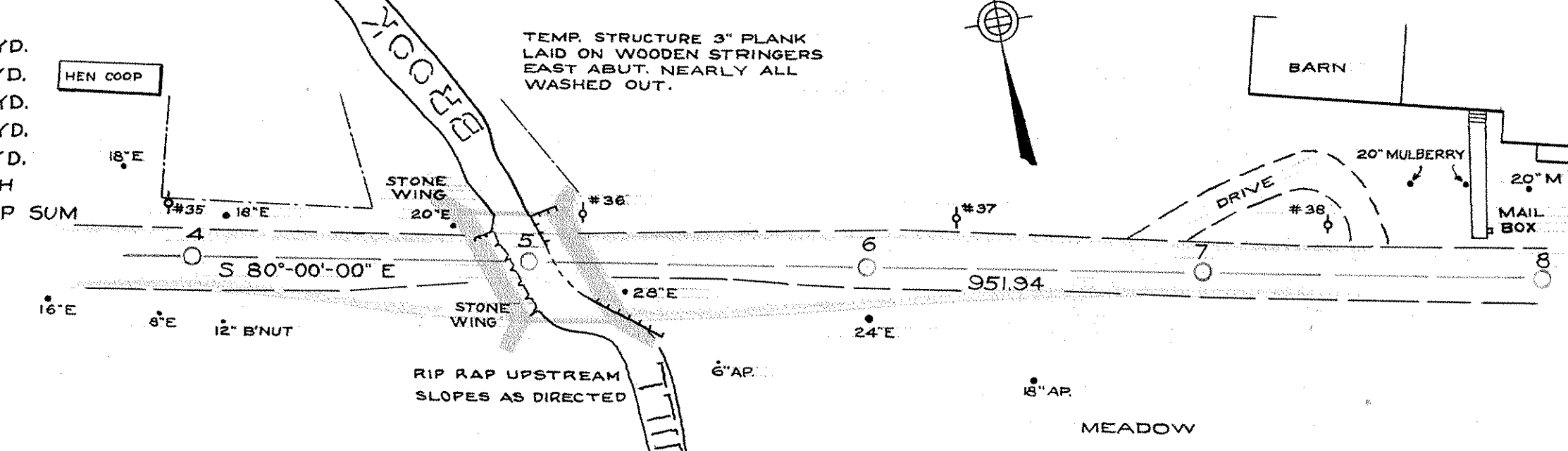
NOTE: The above referenced drawing is labeled as Bridge No. N-22-7. This designation on the drawing appears to be incorrect as all field measurements for Bridge No. N-22-9 match with this drawing.

SPONSOR'S NO
W.P.A. H.B-2-10

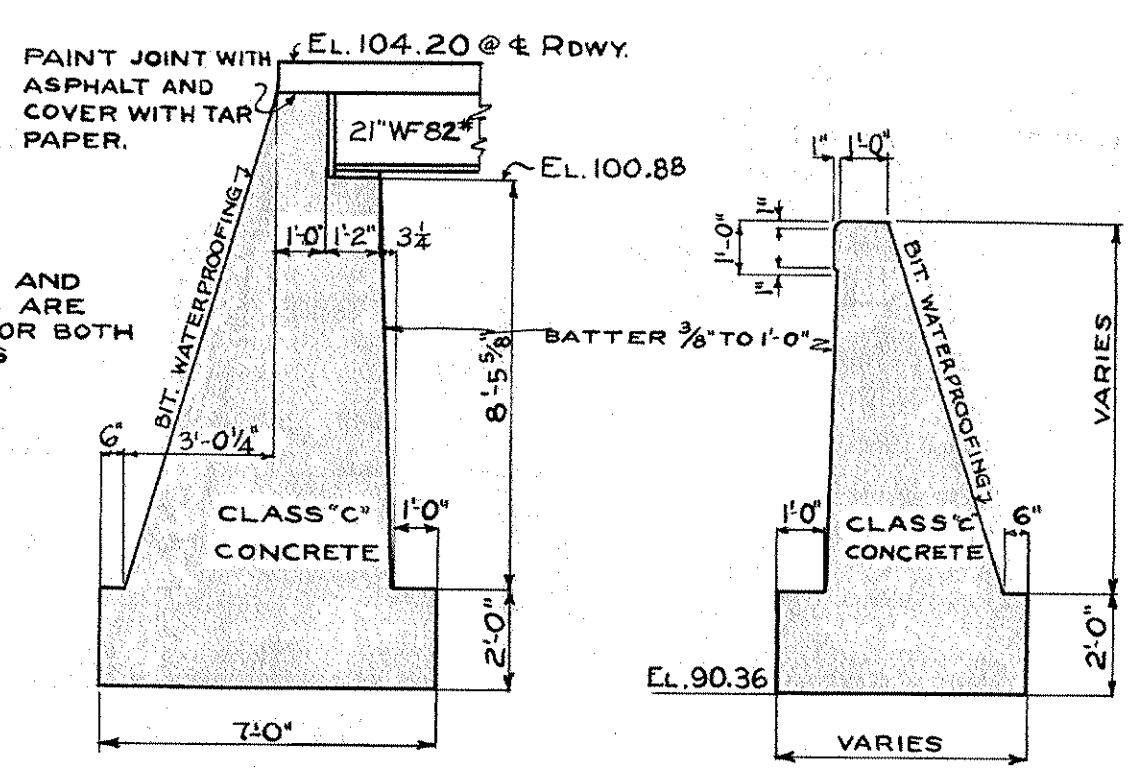
ESTIMATED QUANTITIES
(NOT GUARANTEED)

B.M. - L.O.C. TOP CONC. STEP-WHITE HOUSE 2+20± LEFT EL. 100.00 (ASSUMED)
FOR SURVEY SEE BOOK NO. 65G2

CONCRETE, CLASS "A" 29 CU. YD.
CONCRETE, CLASS "B" F. & P. 2 CU. YD.
CONCRETE, CLASS "C" 1.75 CU. YD.
STRUCTURAL STEEL 20400 LB.
REINFORCING STEEL 8500 LB.
EXCAVATION, BRIDGE 500 CU. YD.
EXCAVATION, CHANNEL 150 CU. YD.
BITUMINOUS WATERPROOFING 200 SQ. YD.
BORROW, GRAVEL 275 CU. YD.
RIPRAP 20 CU. YD.
REMOVE TREES 2 EACH
STREAM CONTROL 1 LUMP SUM

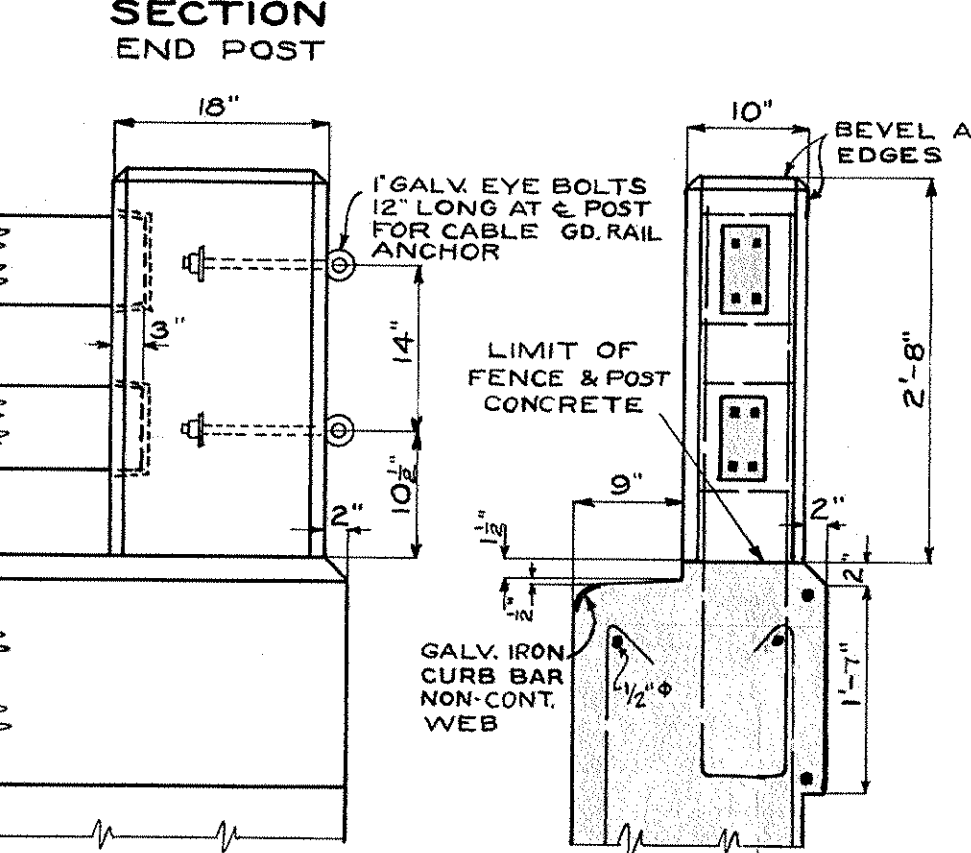
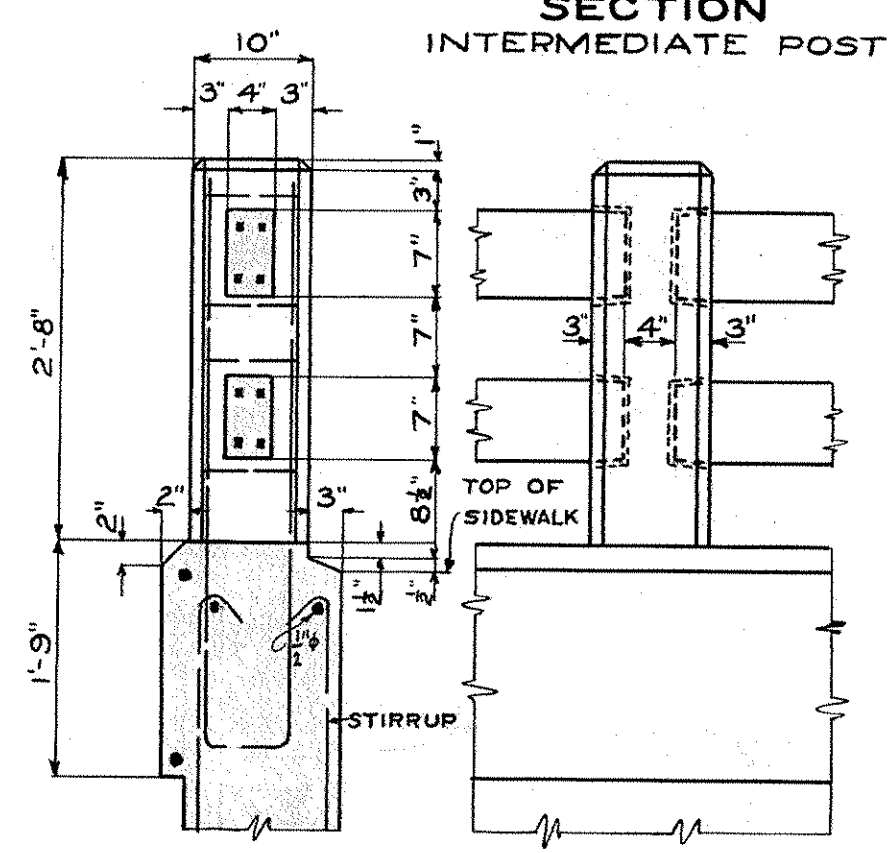


KEY PLAN & PROFILE
HORIZONTAL SCALE 1"=40'-0"
VERTICAL SCALE 1"=8'-0"



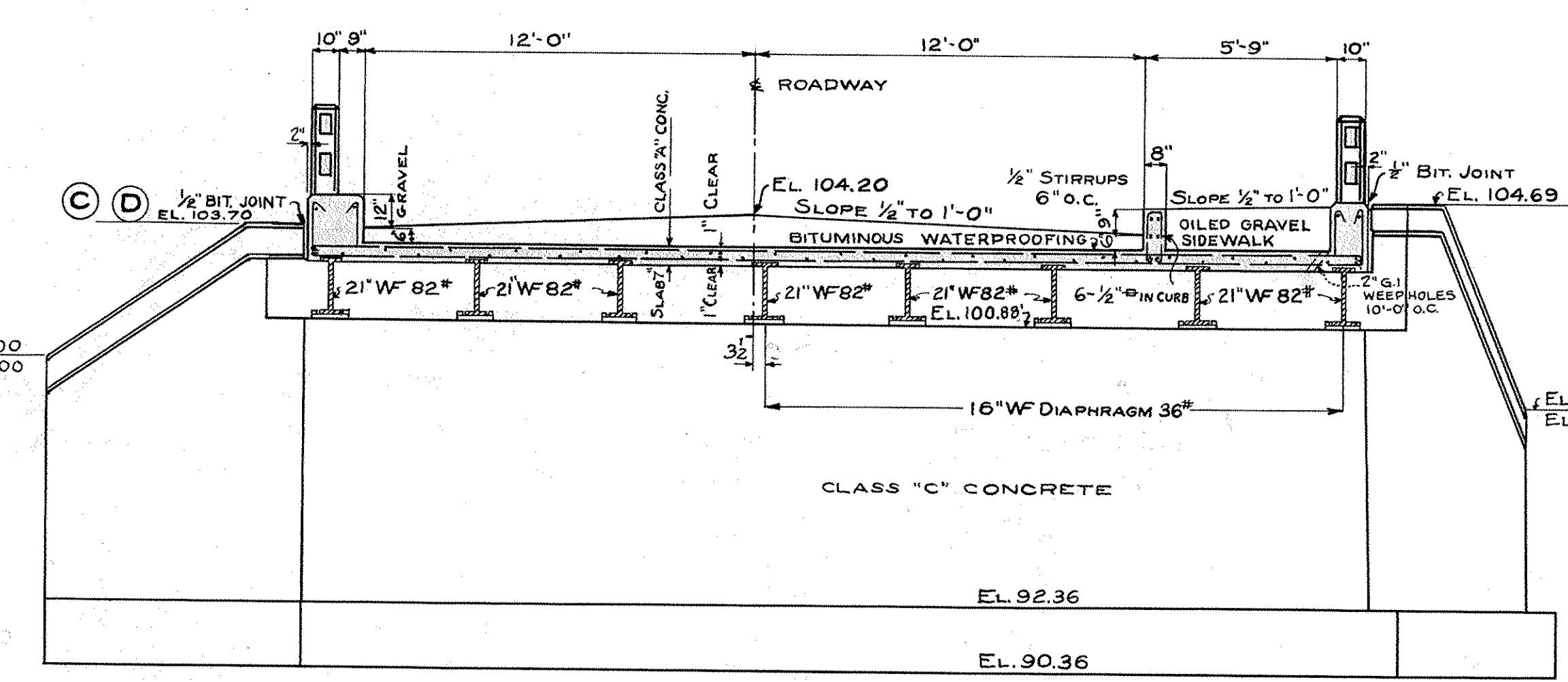
SECTION A-A SCALE 1/4"=1'-0"
SECTION B-B (TYPICAL WING SECTION) SCALE 1/4"=1'-0"

REINFORCEMENT
4-1/2" # IN EACH RAIL
1-1/2" # HORIZ. IN COPING
2-3/4" # U BARS IN 10"x10" POSTS
3-3/4" # U BARS IN 10"x18" POSTS
4-7/8" # HOOPS IN ALL POSTS



CROSS SECTION SIDEWALK SIDE
INTERMEDIATE POST
ELEVATION
END POST
CROSS SECTION CURB SIDE

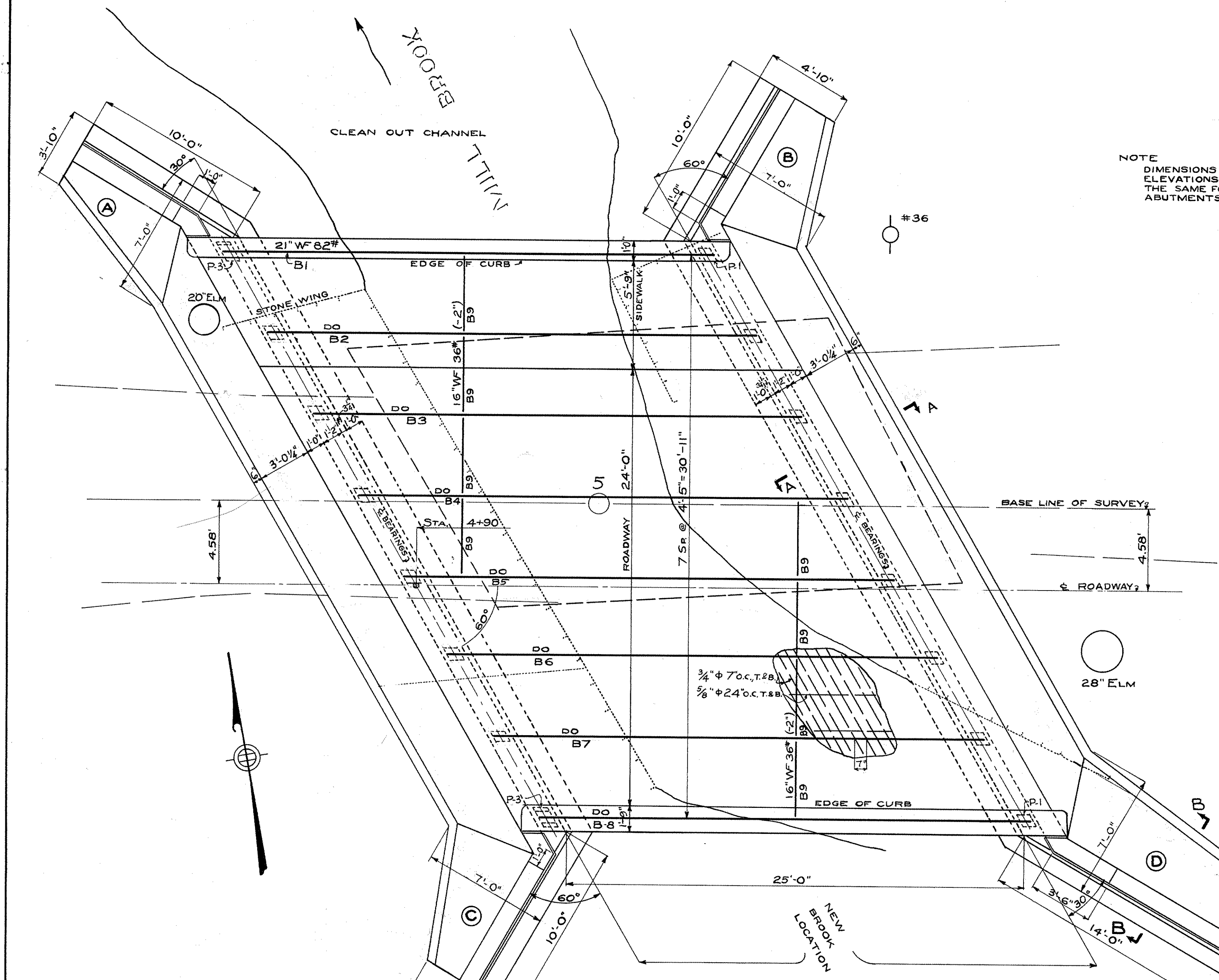
STANDARD
CONCRETE FENCE DETAILS
SCALE 3/4"=1'-0"



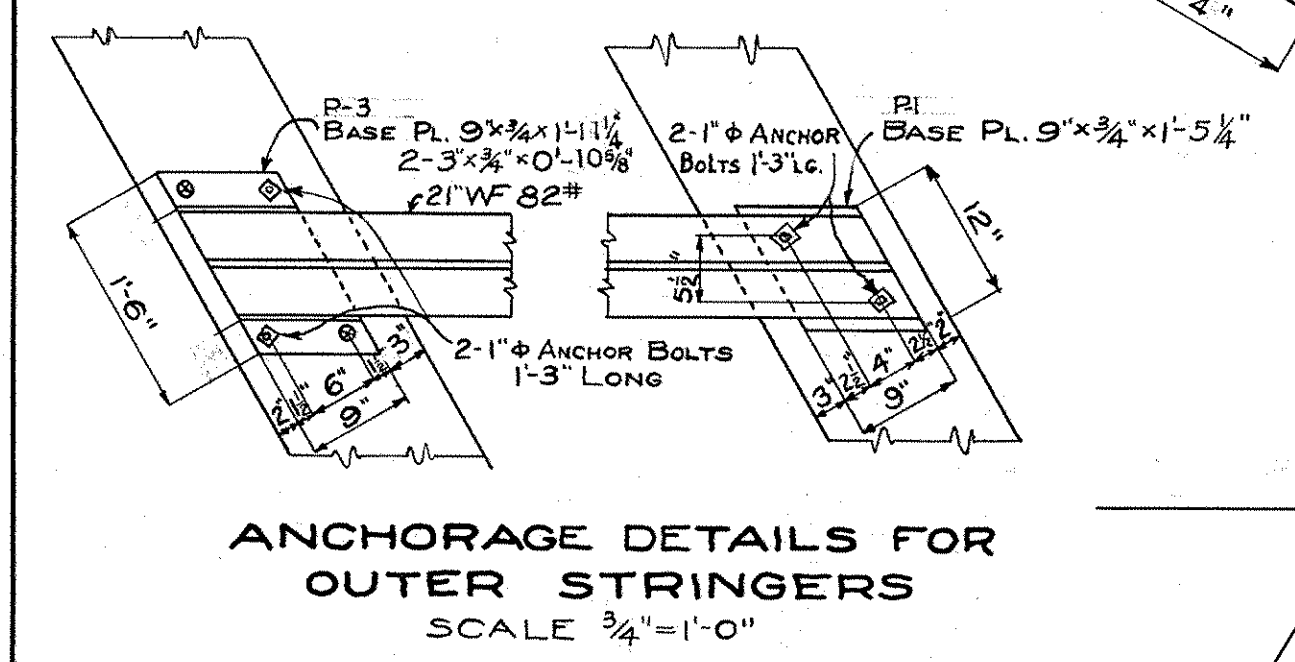
ELEVATION OF WEST ABUTMENT
SCALE 1/4"=1'-0"
GENERAL NOTES

FINISH: ALL EXPOSED CONCRETE SURFACES TO BE RUBBED WITH CORUNDUM AND LEFT SMOOTH AND FREE OF FORM MARKS AND IMPERFECTIONS. ALL MATERIALS, WORKMANSHIP, AND METHODS OF CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES OF THE COMMONWEALTH OF MASSACHUSETTS.

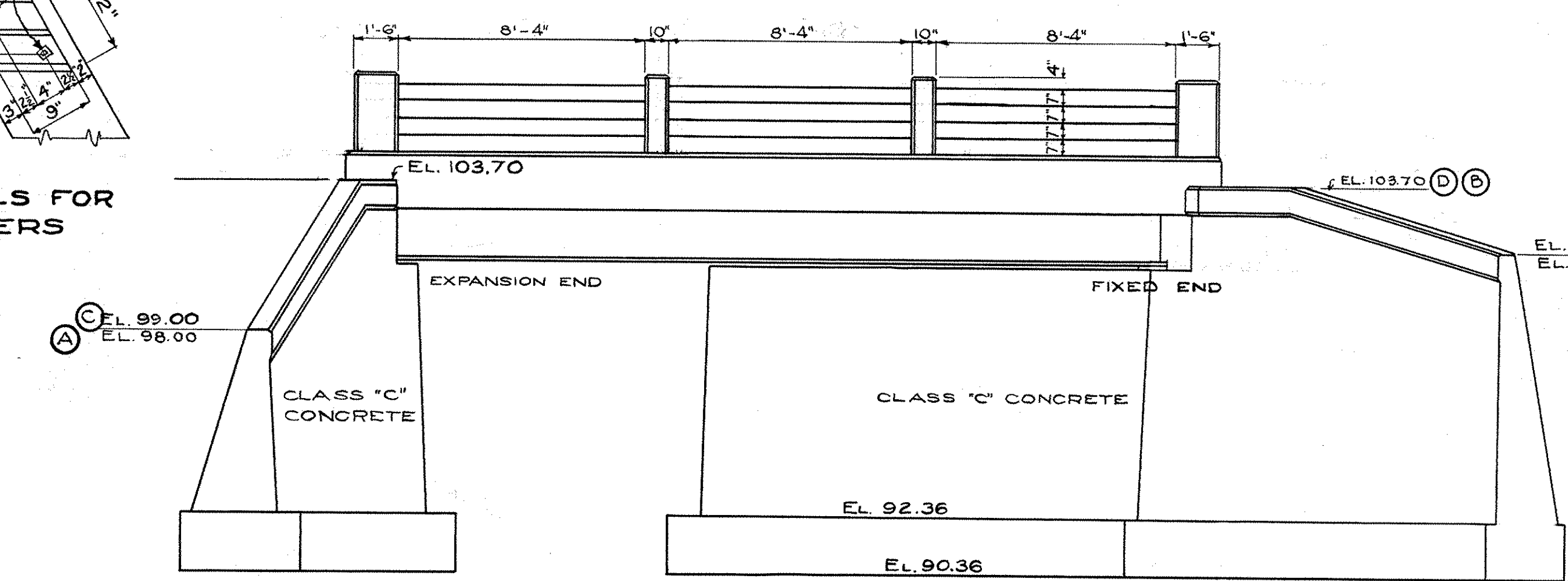
BENCH MARK: L.O.C. TOP CONCRETE STEP, WHITE HOUSE STA. 2+20± LEFT ELEV. 100.00 ASSUMED. PAINT: ALL EXPOSED STRUCTURAL STEEL TO BE PAINTED WITH STRUCTURAL GREEN PAINT. FOUNDATIONS: MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION



PLAN
SCALE 1/4"=1'-0"



ANCHORAGE DETAILS FOR OUTER STRINGERS
SCALE 3/4"=1'-0"



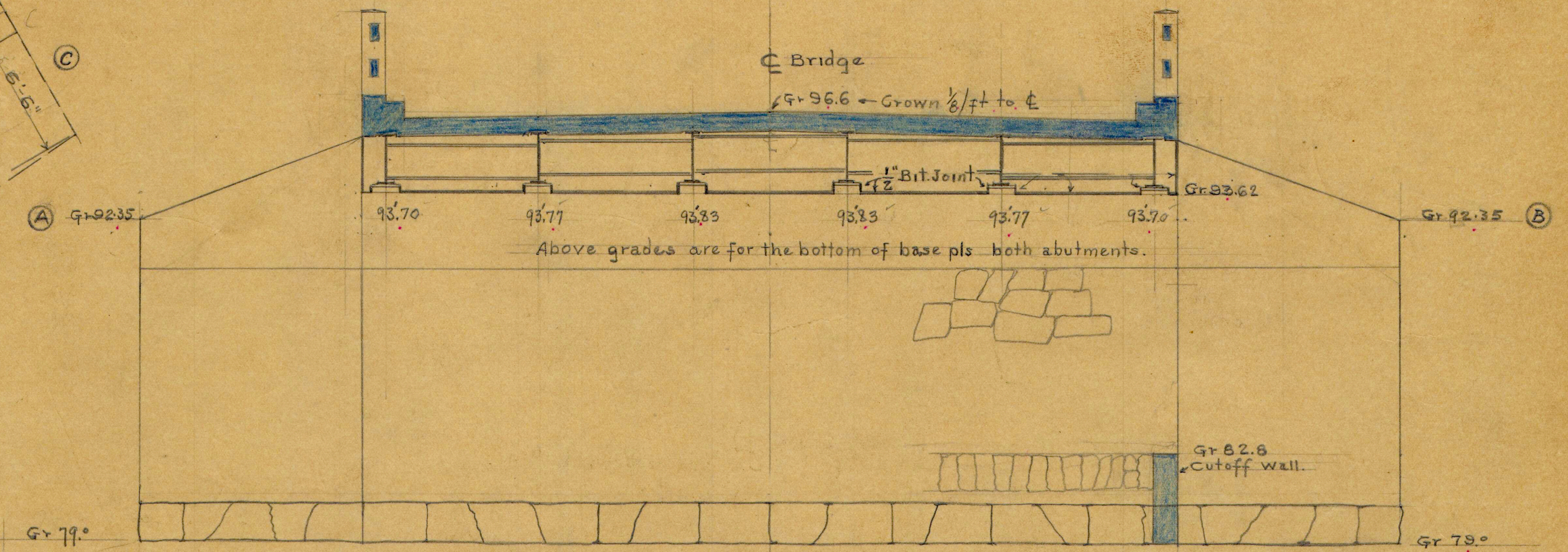
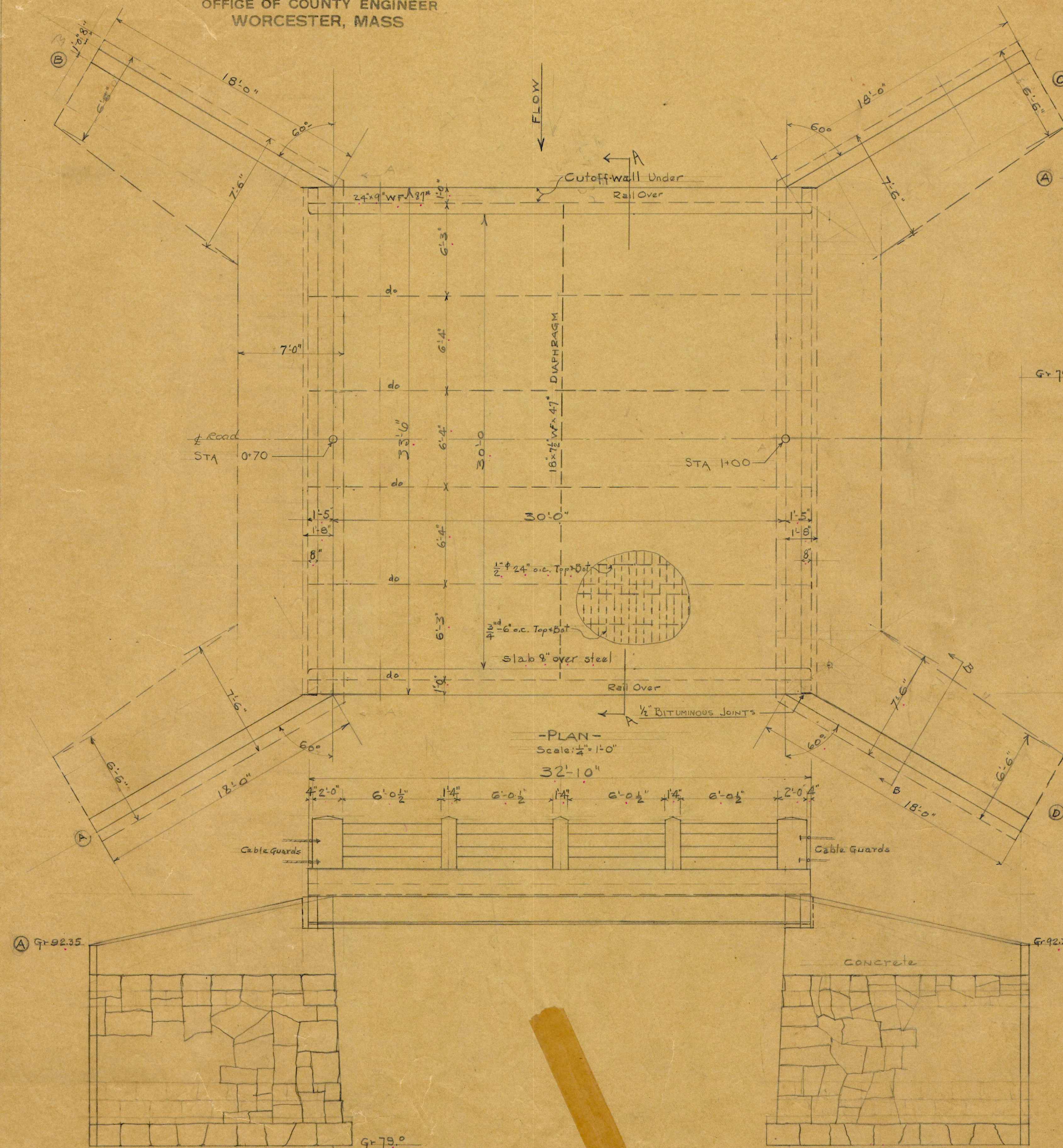
SOUTHERLY ELEVATION
SCALE 1/4"=1'-0"

H-20 CAPACITY
PREVIOUS FLOW AREA = 390 SQ. FT.
PROPOSED FLOW AREA = 667 SQ. FT.

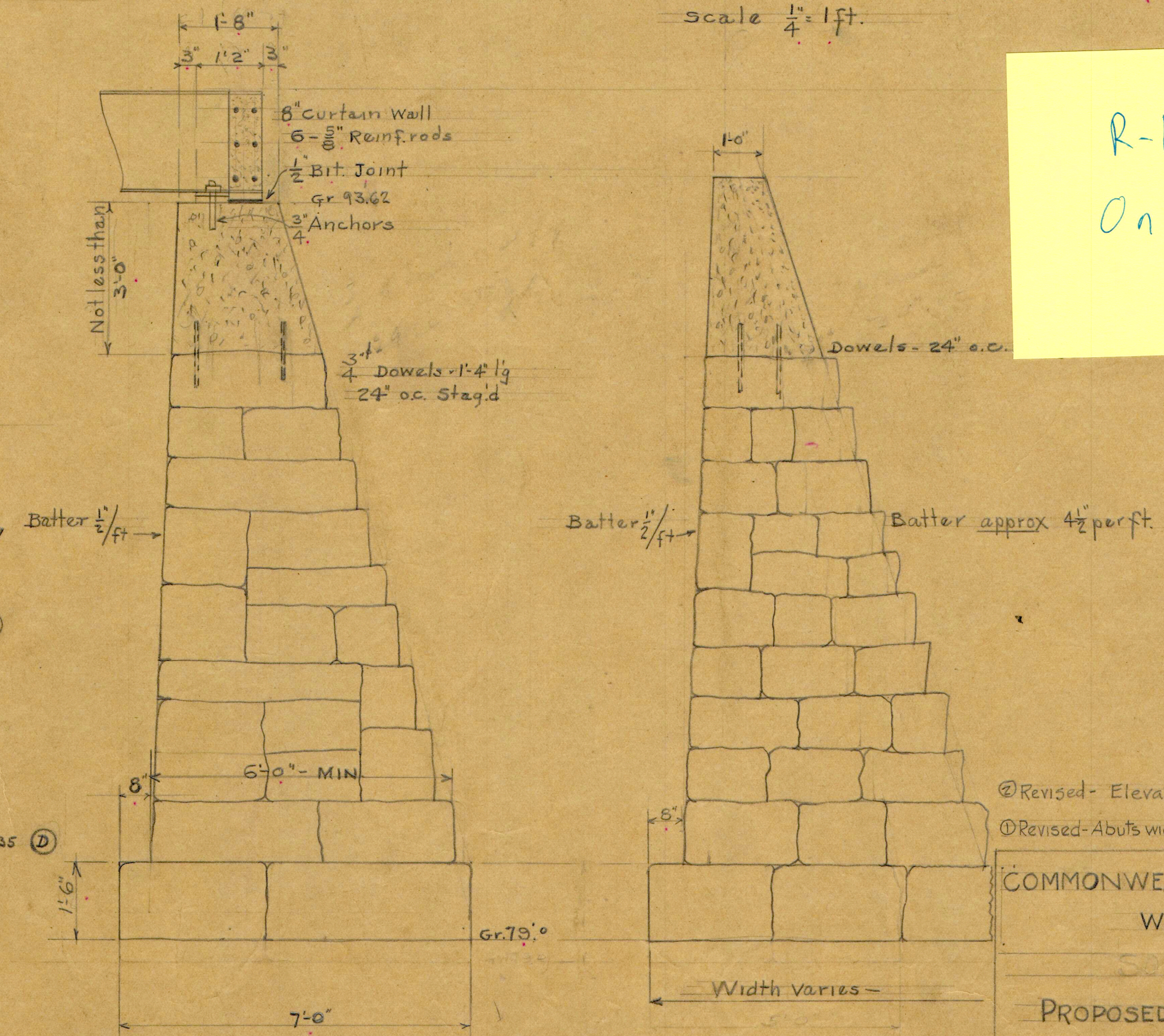
DESIGNED BY
LEROY M. HERSUM
CONSULTING ENGINEER
6 BEACON ST.
BOSTON MASS.

1-18-37	1	TRACED AND CHECKED
1-18-37	1	WING WALLS AND ABUTMENTS REVISED
DATE	SHEET NOS.	DESCRIPTION
LIST OF REVISIONS-USE ONLY PRINT OF LATEST DATE		
THE COMMONWEALTH OF MASSACHUSETTS PROPOSED BRIDGE NORTHFIELD WARWICK ROAD STA. 5+04± OVER MILL BROOK SCALES AS NOTED OFFICE OF DEPARTMENT OF PUBLIC WORKS 100 NASHUA STREET - BOSTON OCTOBER 1936		
DESIGNED BY: C.O. TRACED BY: H.C.M. CHECKED BY: A.S.C.		
DATE OF ISSUE		
PRELIMINARY	APP. BY DIST.	W.P.A. CONSTRUCTION
10-22-36	10-22-36	10-22-36

OFFICE OF COUNTY ENGINEER
WORCESTER, MASS



SECTION ON LINE A-A SHOWING WEST ABUTMENT: EAST ABUTMENT SIMILAR
Scale 1/4" = 1 ft.



TYPICAL ABUTMENT SECTION
Scale 1/2" = 1 ft

SECTION B-B
Scale 1/2" = 1 ft

② Revised - Elevation of Sole Flt. Changed. 9/11/36 F.B. C.T.P.
③ Revised - Abutts widened and Diaphragm added 5/22/36

COMMONWEALTH OF MASSACHUSETTS
WORCESTER COUNTY
ROYALSTON
PROPOSED BRIDGE ON WINCHENDON RD.
Sta. 0+85
OVER PRIEST BROOK

Scales as noted May 1936
Submitted by County Eng.
Approved by Bridge Eng. MDPW.
Approved by Chief Eng. MDPW.

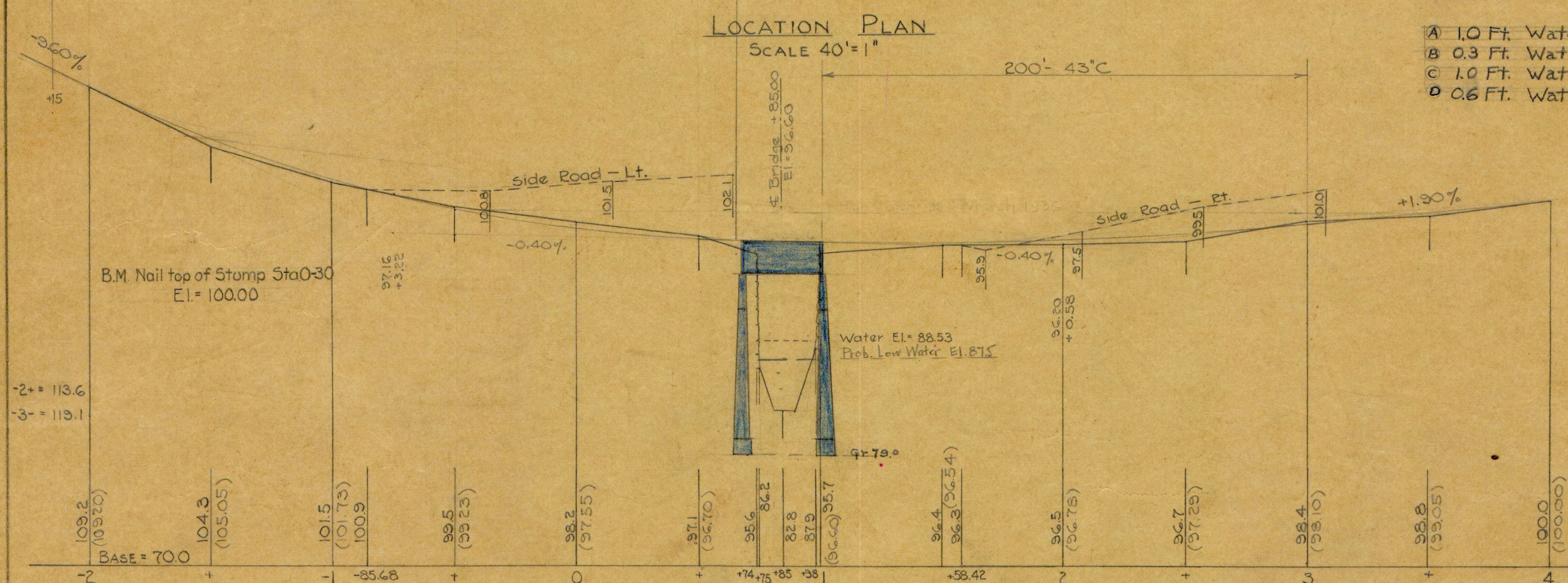
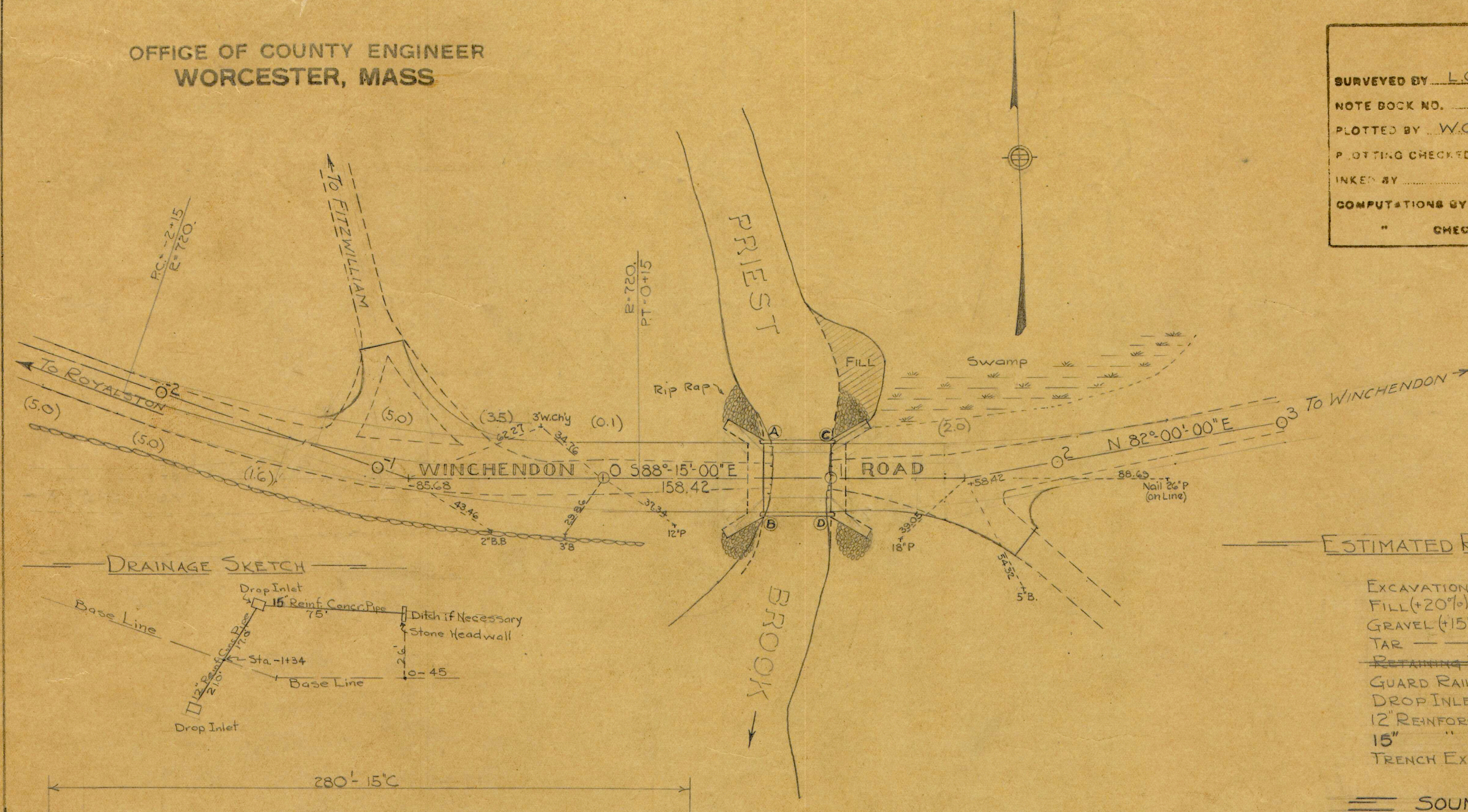
Designed by L.H. Spofford
Drawn by G.H. 5-536
Checked by H.R. Decker 6-29-36
BRIDGE N° R-12-13

R-12-13
On file

OFFICE OF COUNTY ENGINEER
WORCESTER, MASS

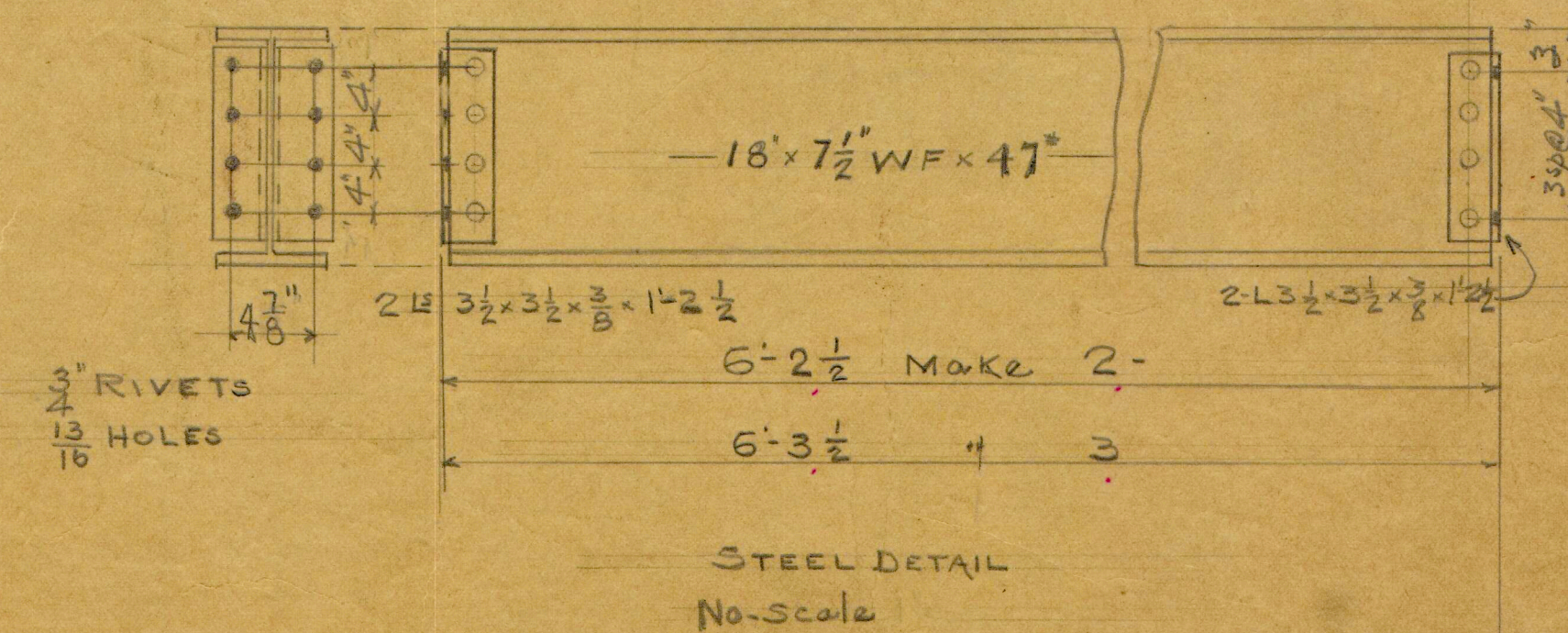
PLAN

SURVEYED BY L.C. Farrar DATE 4/22/36
NOTE BOOK NO. 67 PAGE 49
PLOTED BY W.O. Lindquist DATE April 1936
P LOTTING CHECKED BY J.C. Pondosa " 9-20-36
INKED BY " "
COMPUTATIONS BY F. J. Teir " 7/15/36
" CHECKED BY " "



PROFILE

HOR. SCALE $40' = 1''$
VERT. SCALE $8' = 1''$

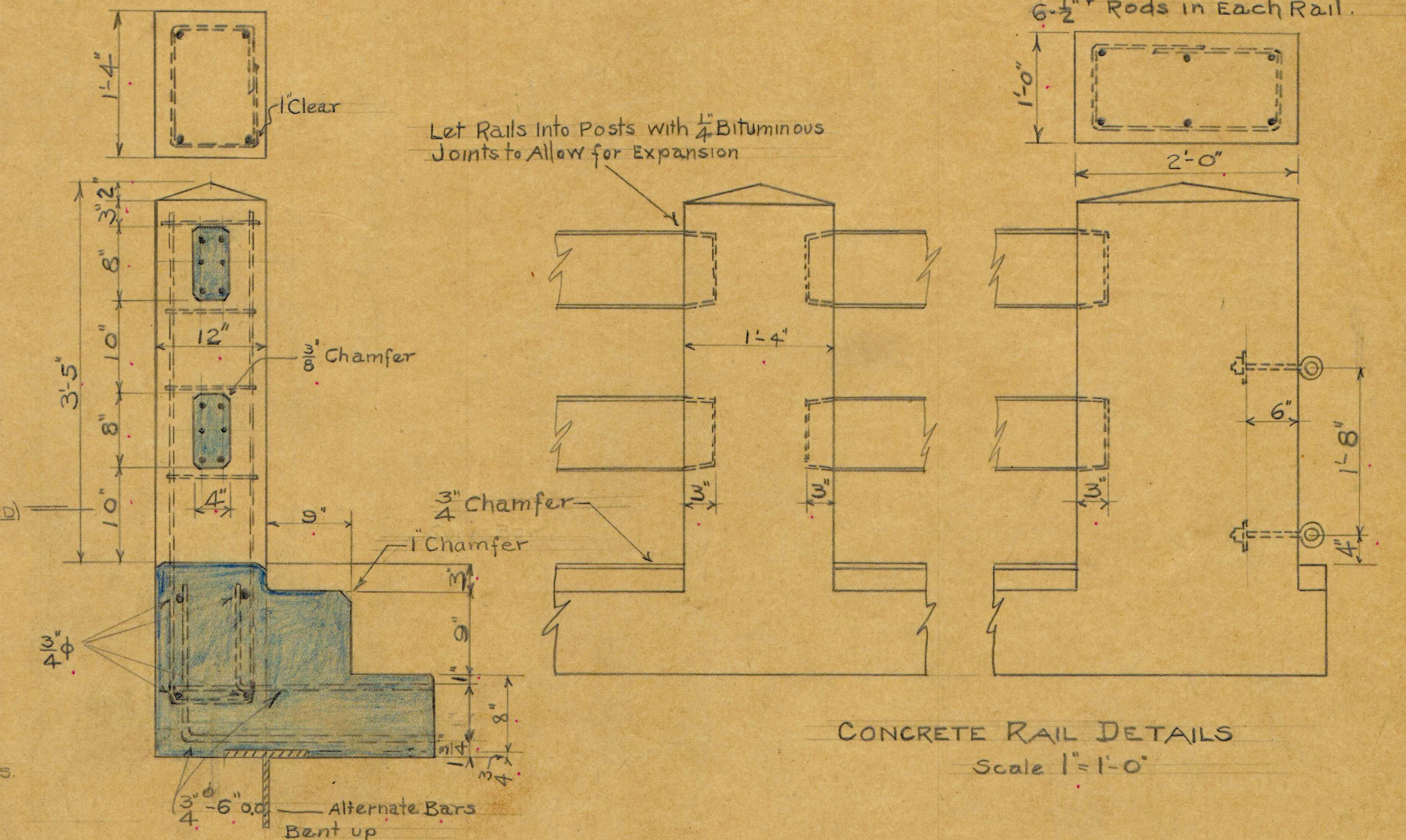


ESTIMATED ROAD QUANTITIES (NOT GUARANTEED)
STA-2+00 TO 3+00

Excavation	520 Cu Yds
Fill (+20%)	440 " "
Gravel (415%)	750 " "
Tar	965 GAL.
Retaining Wall	70 Lin Ft
Guard Rail (State Standard)	70 Lin Ft
Drop Inlets (" ")	2
12' Reinforced Concr. Pipe	38
15' " " "	75
Trench Excavation	45 Cu Yds

SOUNDING CHART

A 1.0 Ft. Water + 1.3 Ft. to Hard Bottom
B 0.3 Ft. Water + 1.7 Ft. to Hard Bottom
C 1.0 Ft. Water + 0.3 Ft. to Hard Bottom
D 0.6 Ft. Water + 1.4 Ft. to Hard Bottom



~ GENERAL NOTES ~

CONCRETE: Slab and Abutments to be 1:2:4 Mix
Posts and Rails to be 1:2:3 Class D - All Exposed
Surfaces to be Rubbed Smooth with
Carborundum Brick.

RIP RAP: Heavy Rip Rap - One Man Stones on Edge shall be
laid at wings as shown.

PAVING:- Stream Bed under Bridge shall be paved with Heavy Stone.

STRUCTURAL STEEL:- Shall have one Shop Coat of Red Lead
and Oil and one field coat of Koppers Lumsen or Equal.

REINFORCING STEEL:- Shall be Round Deformed Bars.

FOUNDATIONS:- May be Altered at Discretion of Engineer.

WEEP HOLES:- Shall be Located in Wings and Abutments
as Directed by Engineer.

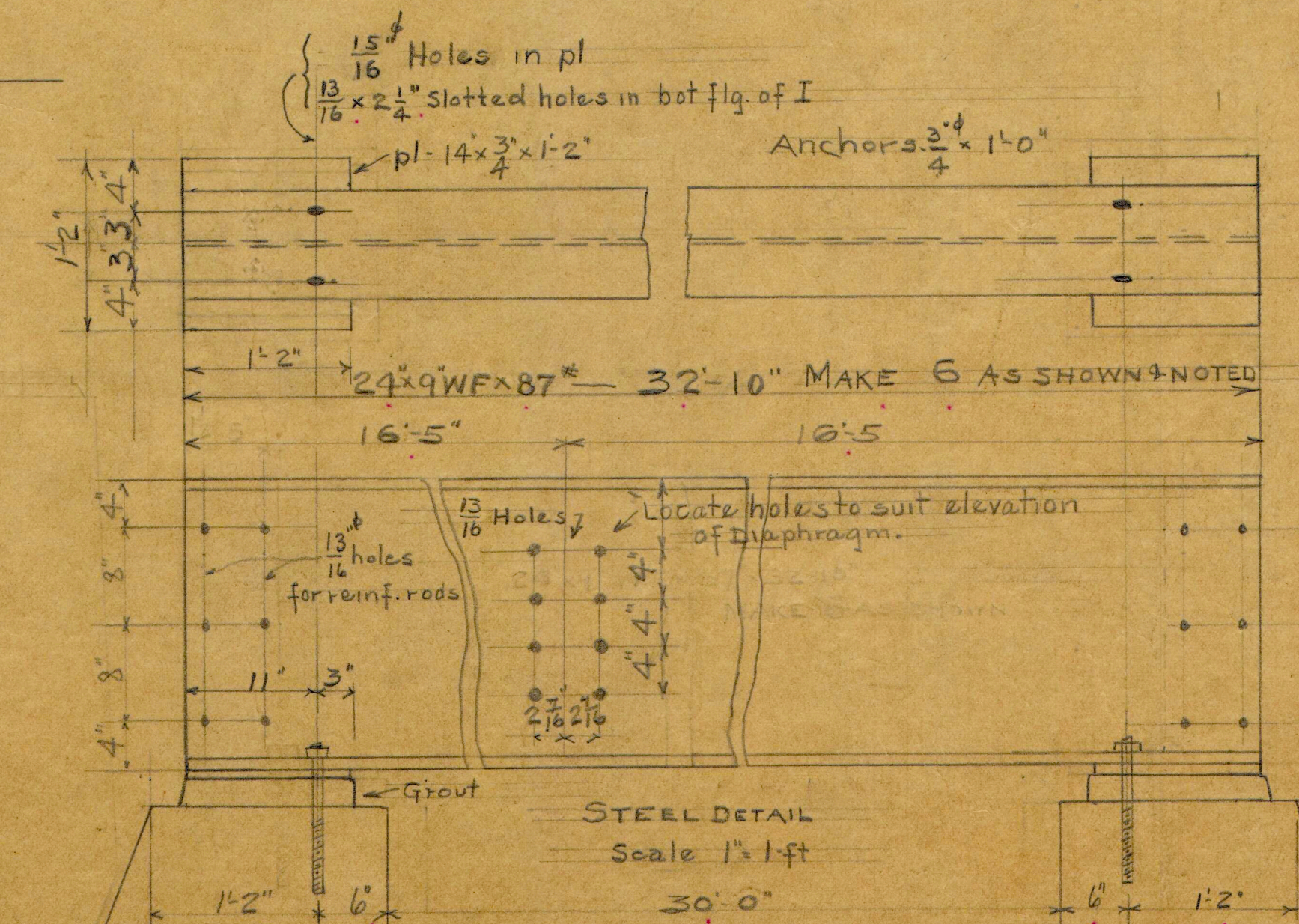
STONE MASONRY:- Shall be laid and pointed with Cement Mortar

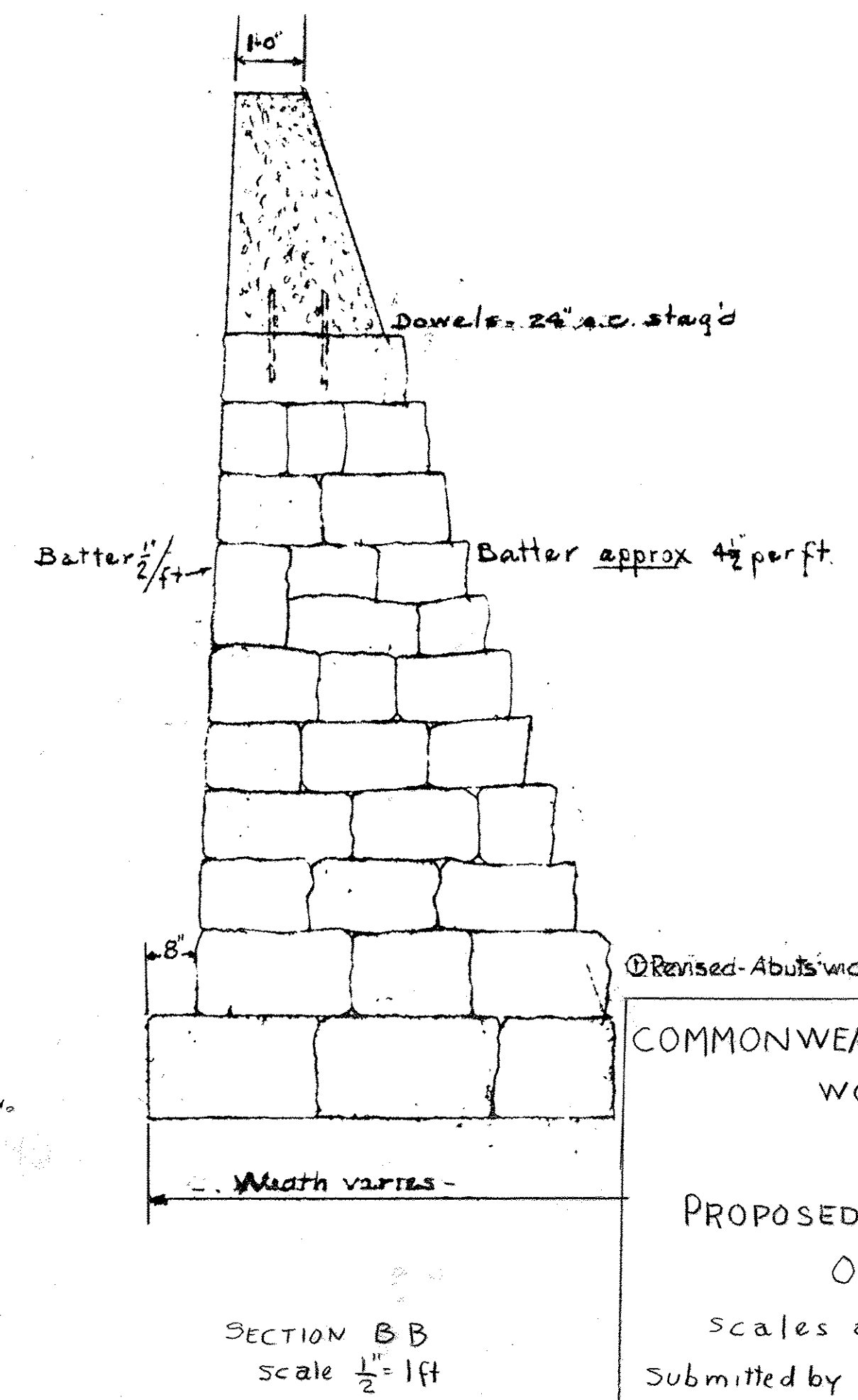
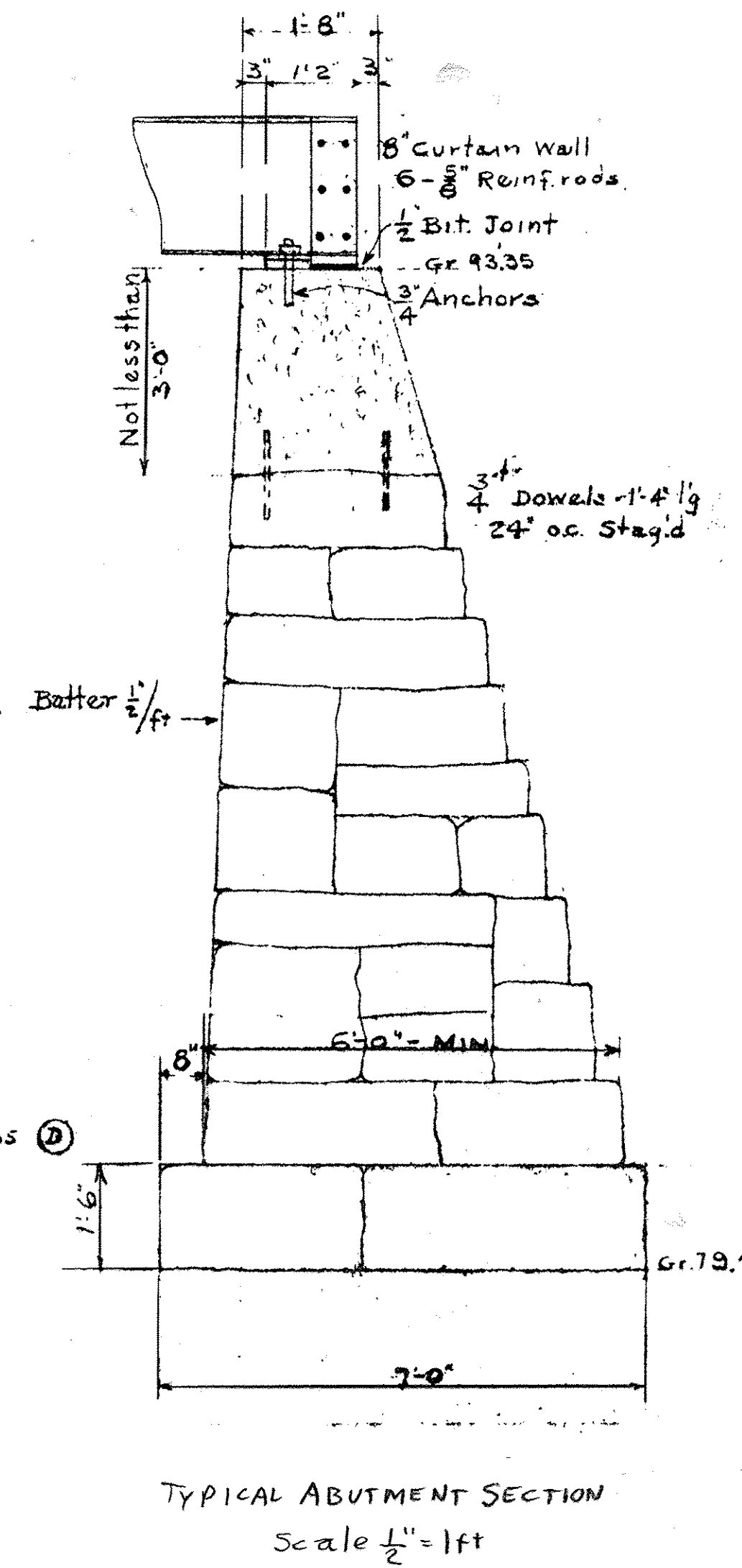
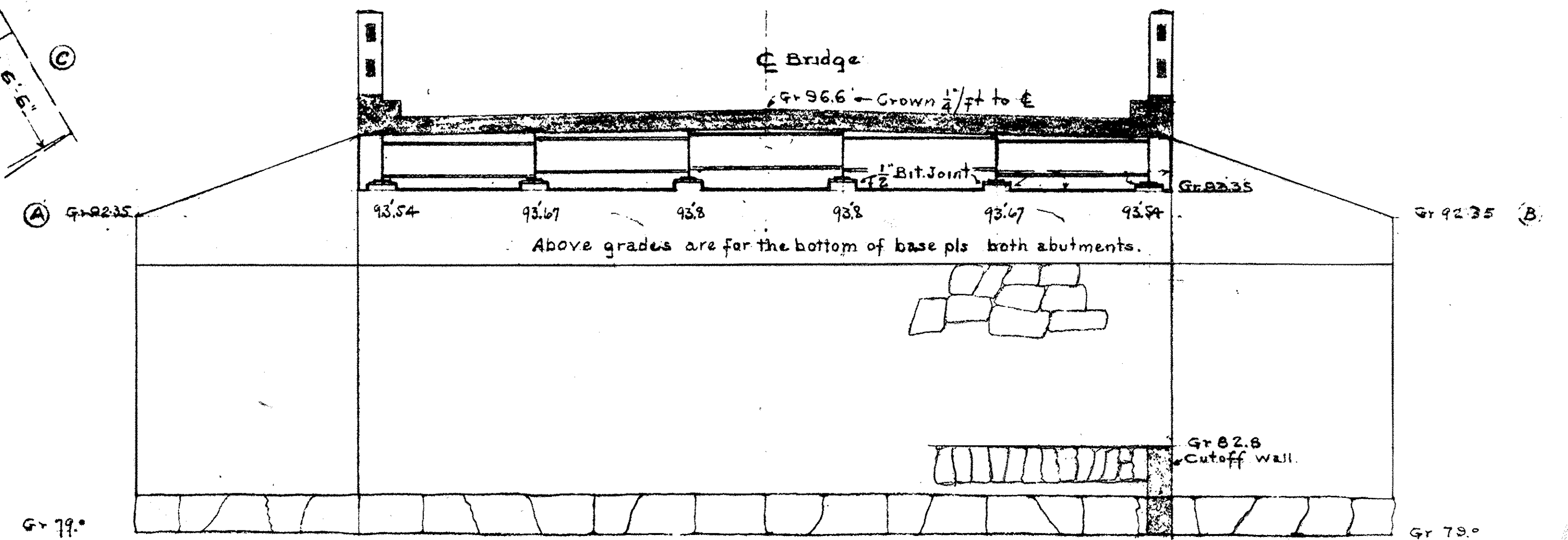
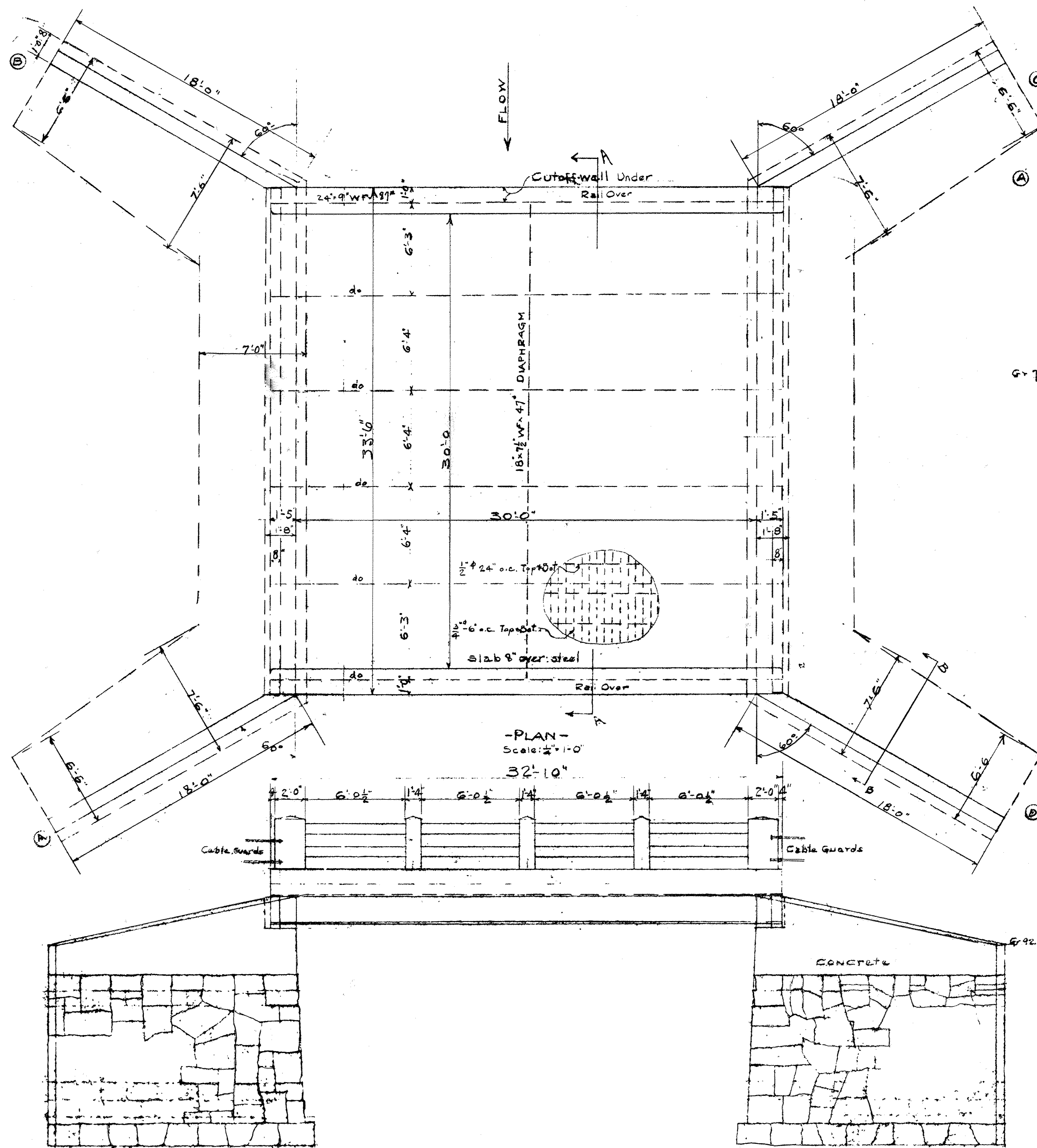
SHEETING, If Sheet piling is driven it shall be left in place.

~ ESTIMATED QUANTITIES ~

NOT GUARANTEED

CONCRETE (1:2:4) Plain	45 cu. yds
CONCRETE (1:2:4) Reinforced	40 " "
CONCRETE (1:2:3) " (Postra + Rails)	3 " "
STRUCTURAL STEEL	10 Tons
REINFORCING STEEL	4 3/4 " "
RIP RAP	40 cu. yds.
BRIDGE EXCAVATION	700 " "
CHANNEL EXCAVATION	100 " "
GRAVEL FILL	100 " "
PAVING	60 " "
STONE (ABUTMENTS + WING WALLS)	260 " "

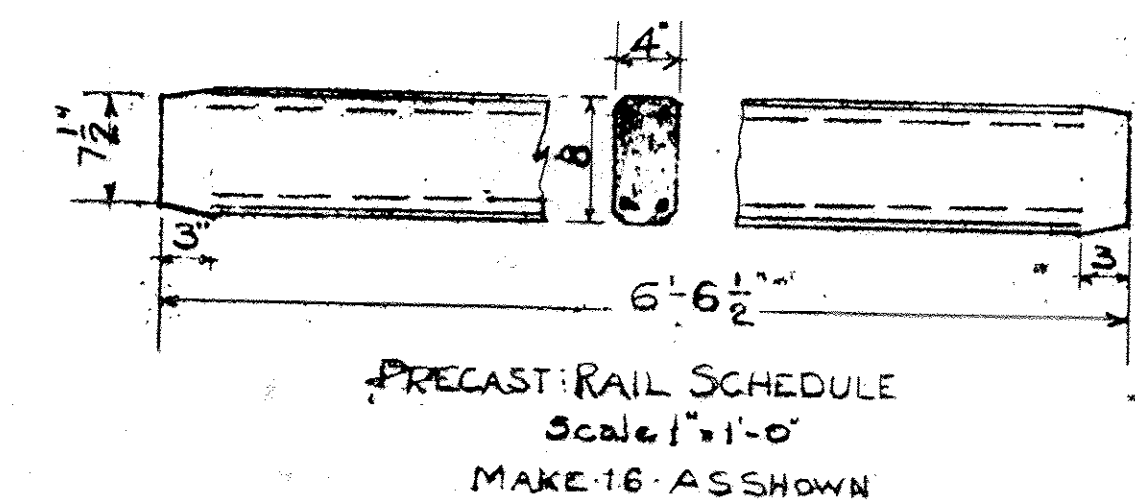
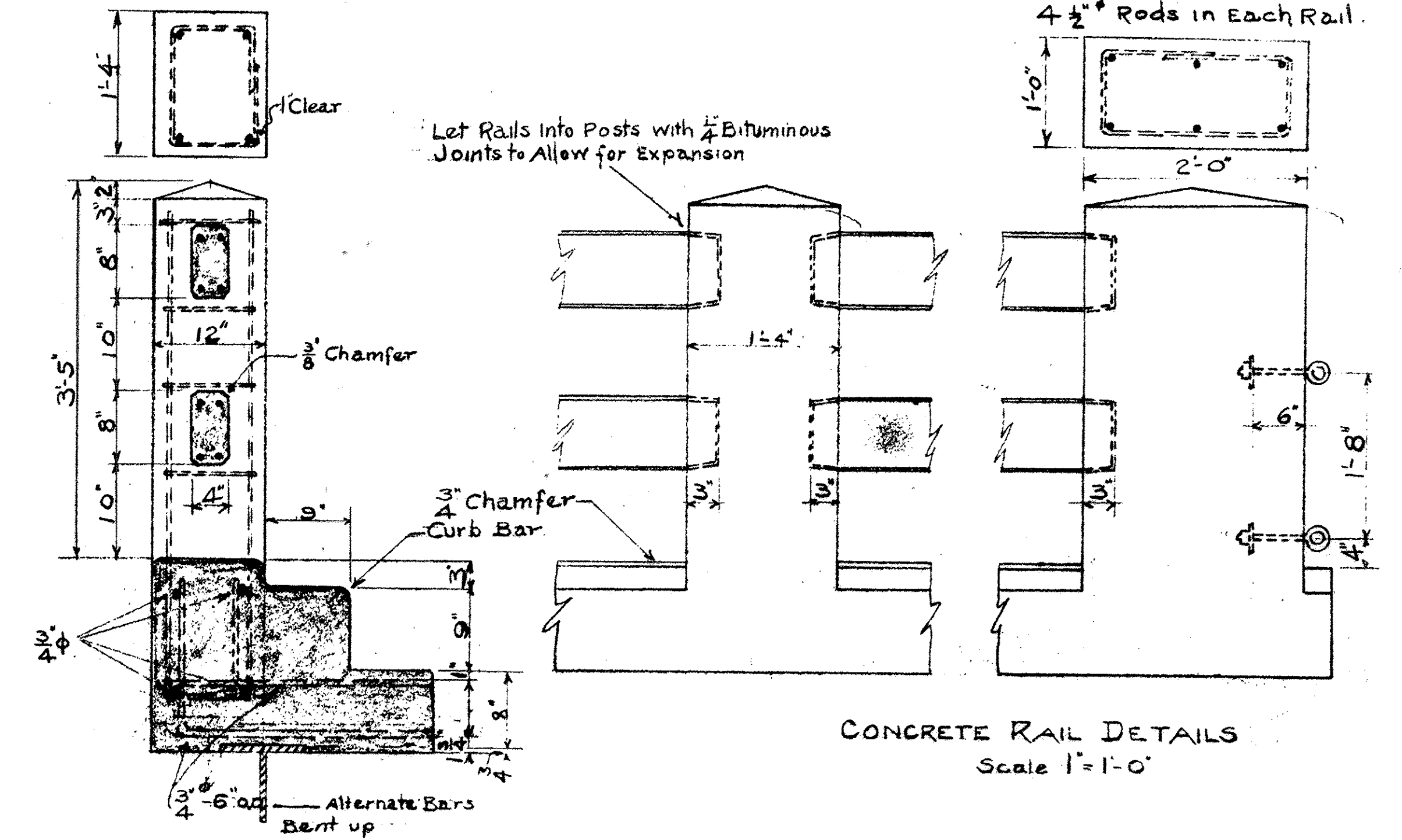
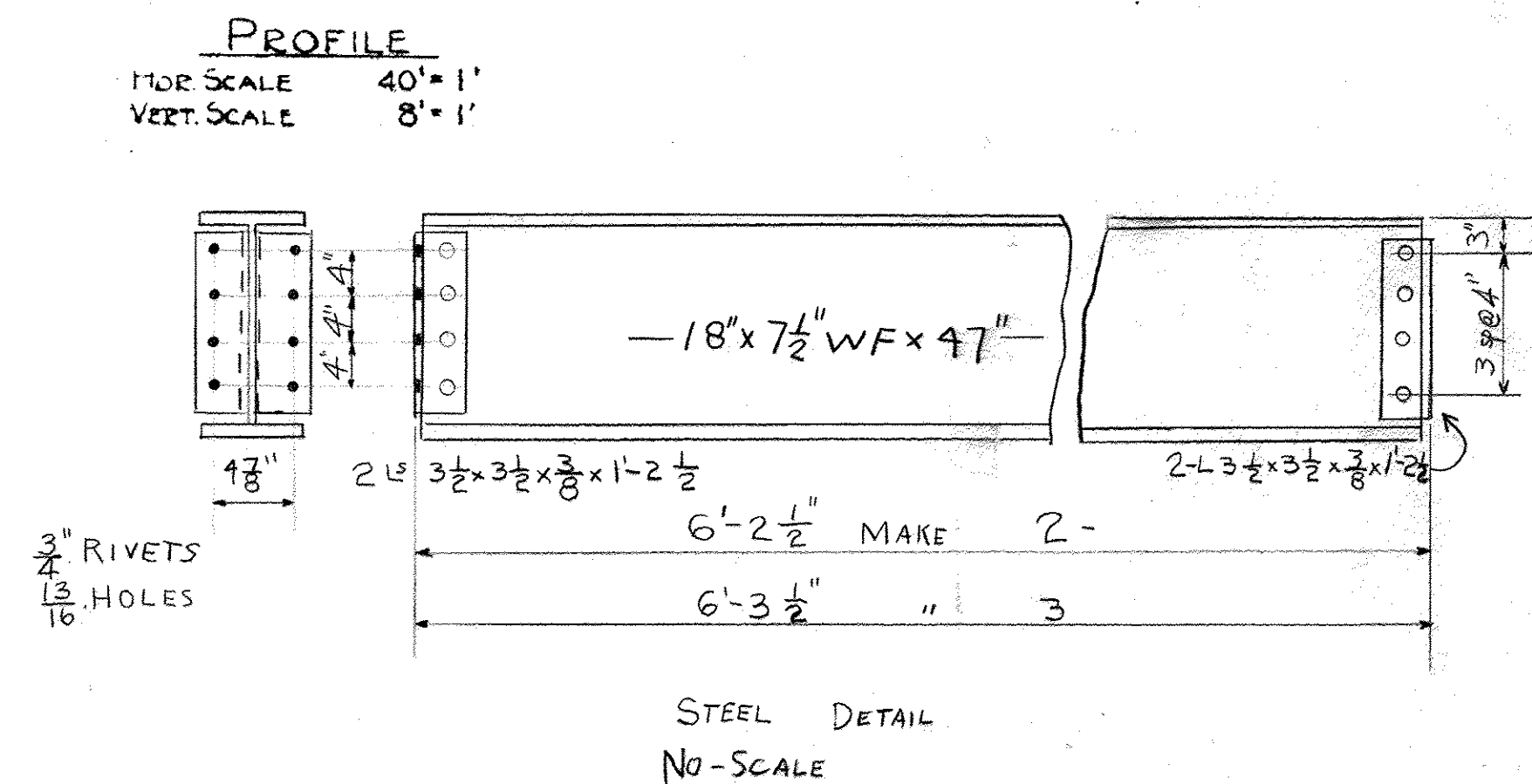
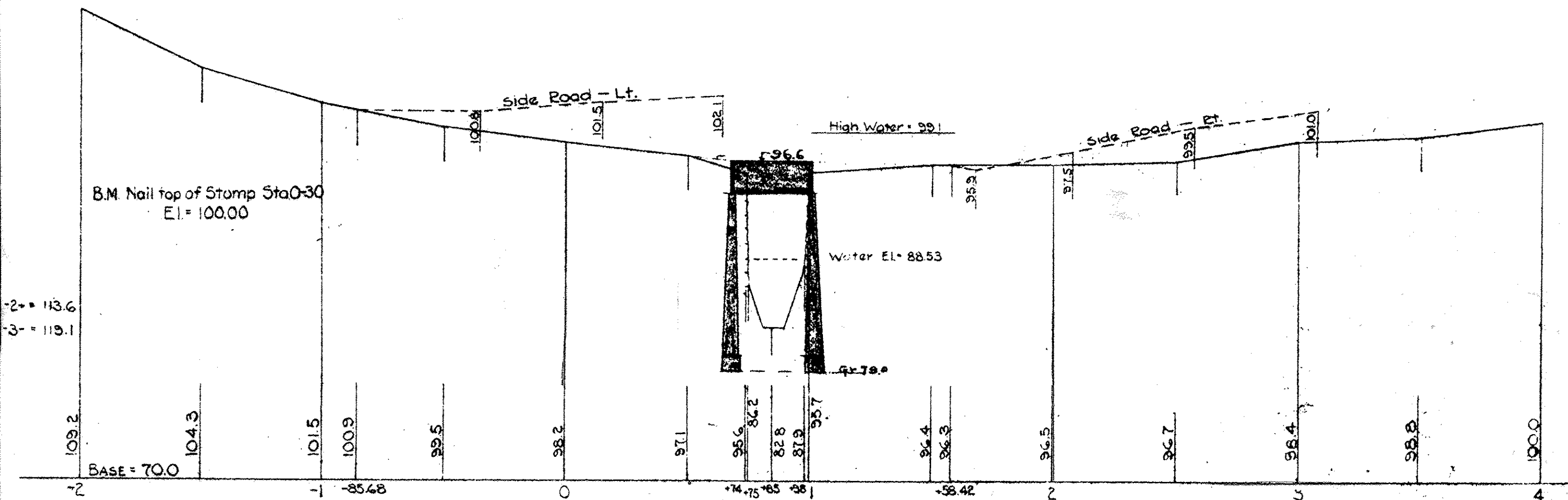
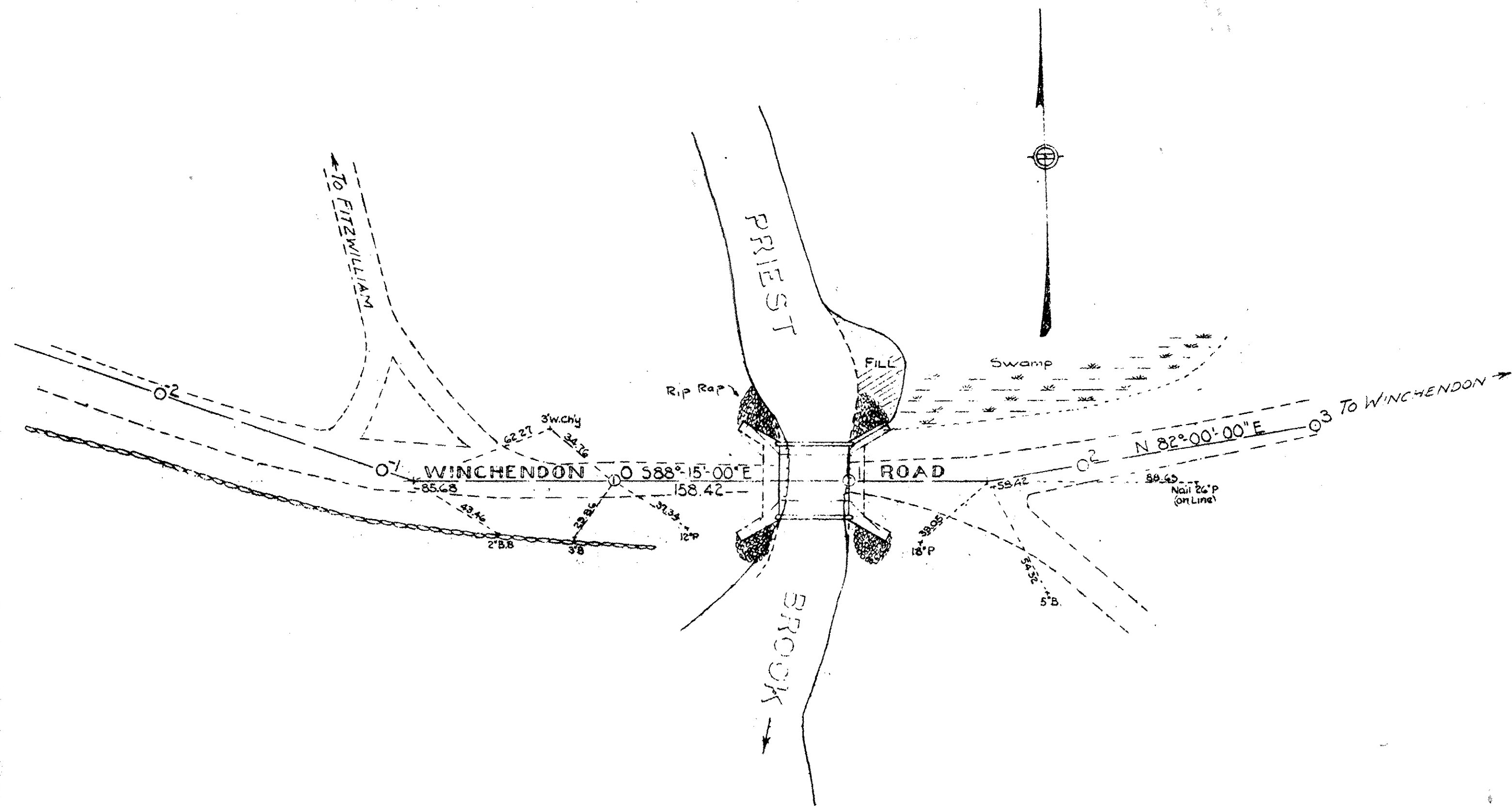




COMMONWEALTH OF MASSACHUSETTS
WORCESTER COUNTY
ROYALSTON
PROPOSED BRIDGE ON WINCHENDON RD.
OVER PRIEST BROOK
Scales as noted
Submitted by
Approved by
Approved by
May 1936
County Eng
Bridge Eng MDPW
Chief Eng MDPW

APPROVED JUNE 9, 1936
UNDER PROV. OF SECT. 35 CHAPT. 85
MASS. GEN. LAWS (TER. ED.)
DEPT. OF PUBLIC WORKS
100 NASHUA ST. BOSTON

Designed by LH Spafford
Drawn by GSH
Checked by

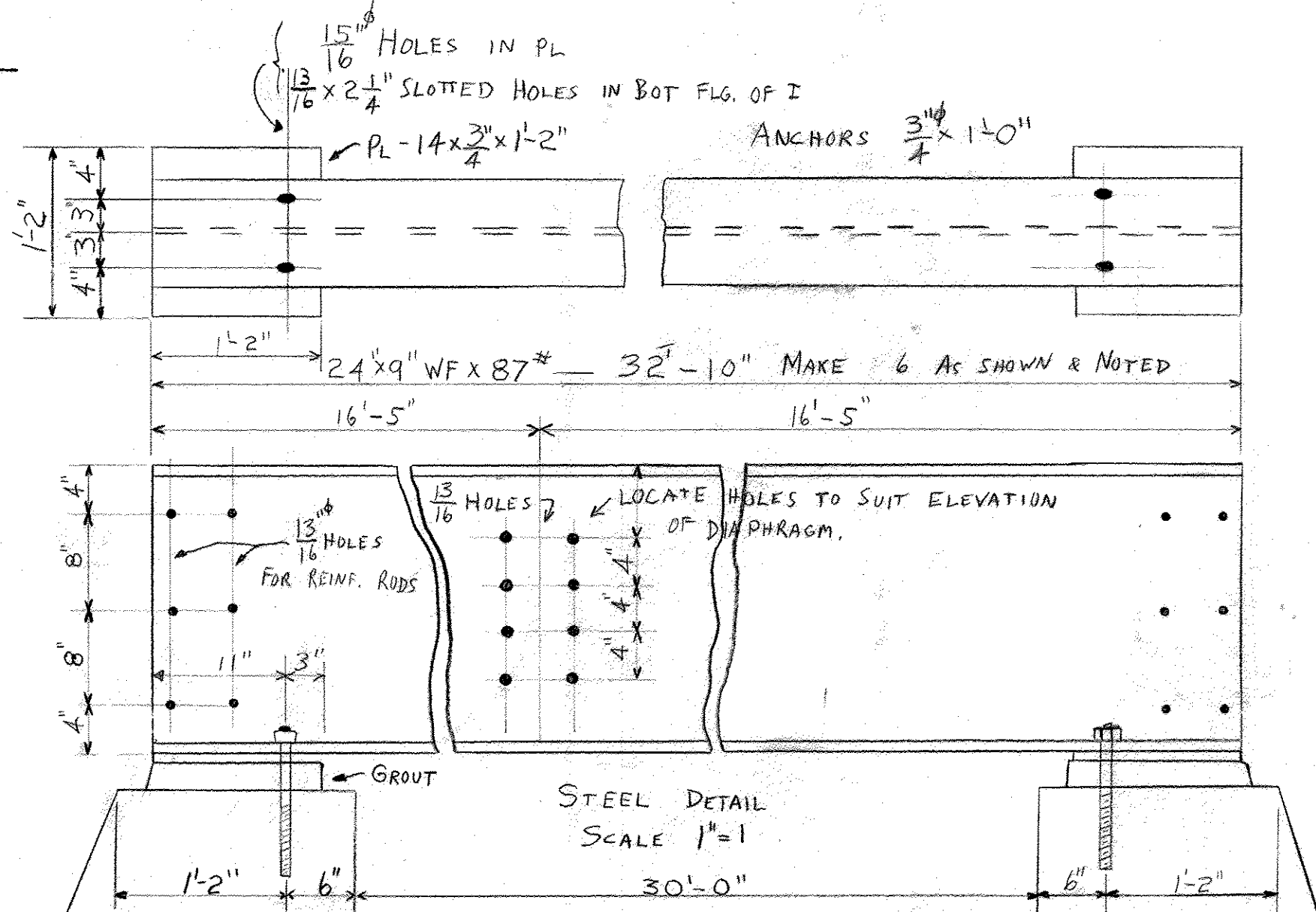


POST & RAIL REINFORCING
2-3/4 U Bars in Each 12"x16" Post
3-3/4 " " " 12"x24" "
4-3/4 Hoops in Each 12"x16" Post
4-3/4 " " " 12"x24" "
4-1/2 Rods in Each Rail

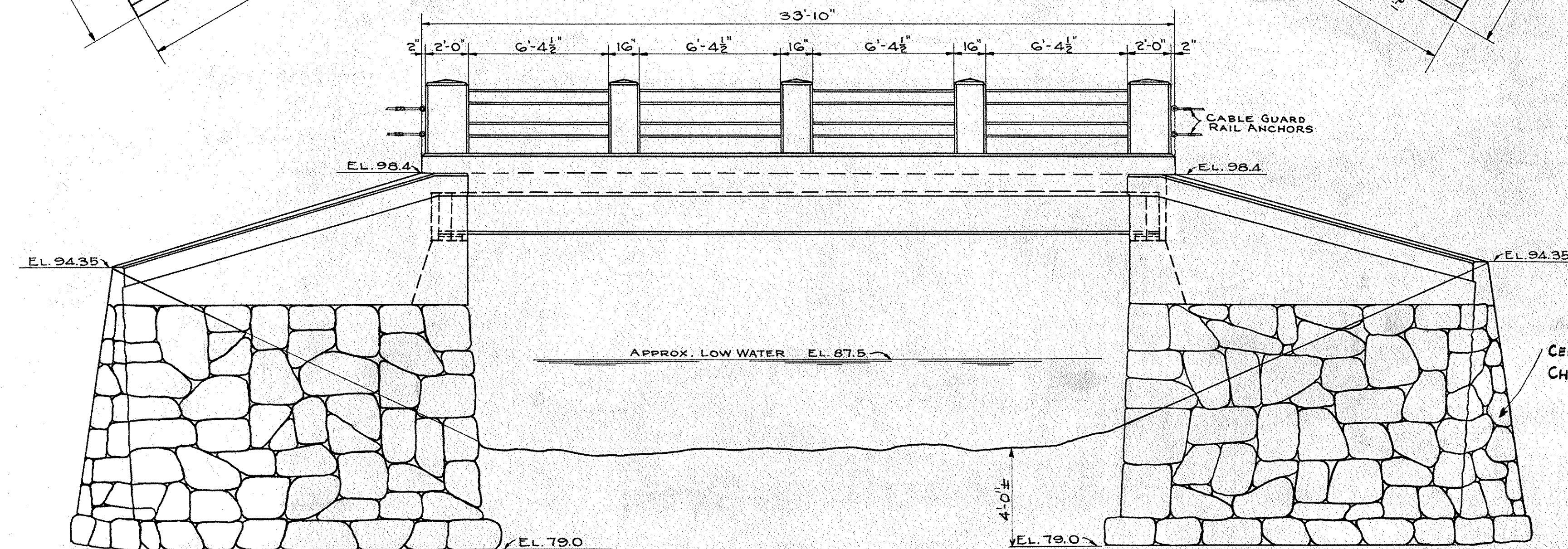
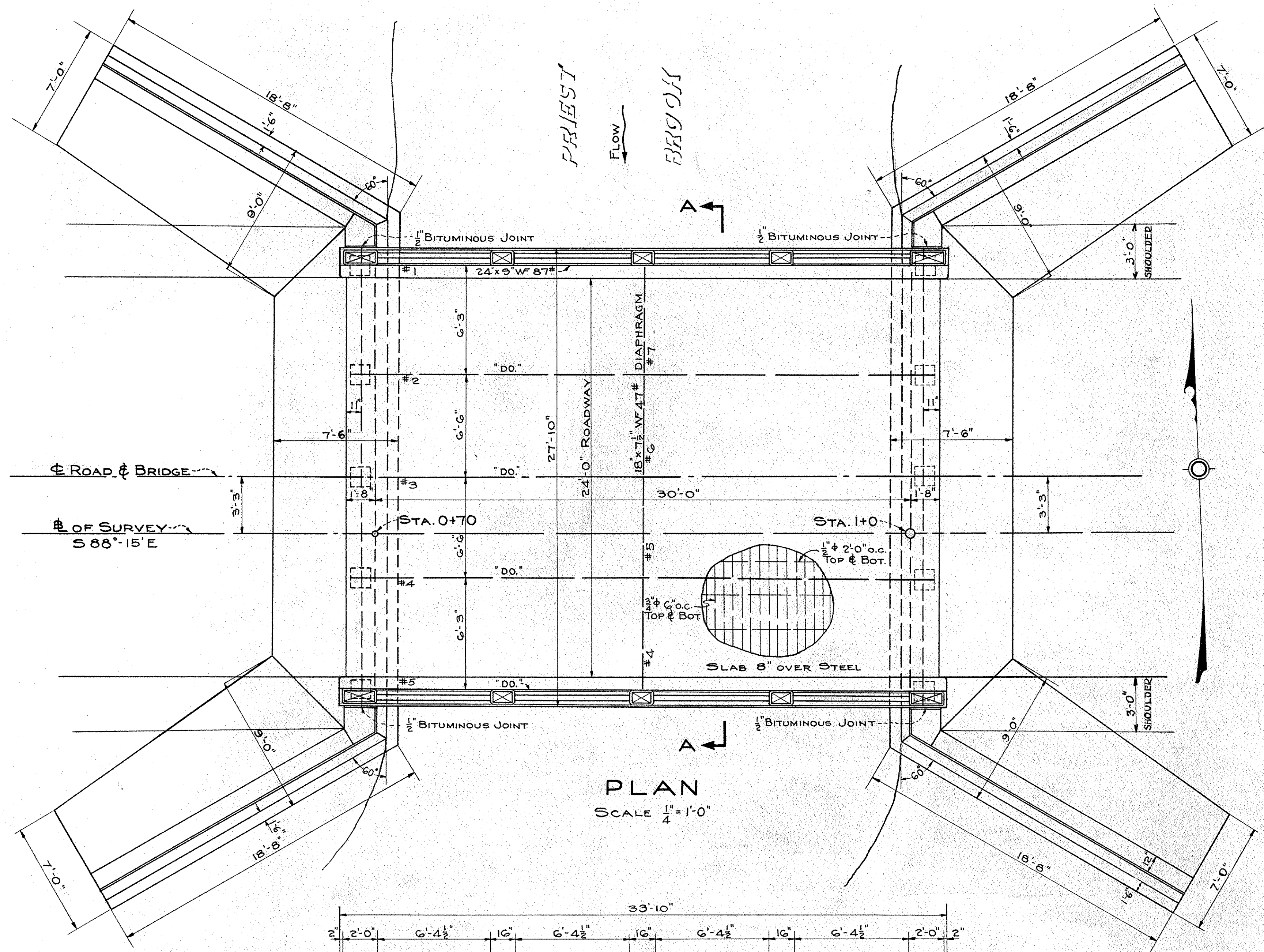
GENERAL NOTES
CONCRETE: Slab and Abutments to be 1:2:4 Mix.
Posts and Rails to be 1:2:3 Class II - All Exposed Surfaces to be Rubbed Smooth with Carbonaceous Brick.
RIE: Heavy Rip Rap One Man Stone on Edge shall be laid at wings as shown.
PAVING: Stream Bed under Bridge shall be Paved with Heavy Stone.
STRUCTURAL STEEL: Shall have one Shop Coat of Red Lead and Oil and one Field Coat of Koppers Lustrine or Equal.
REINFORCING STEEL: Shall be Round Deformed Bars.
FOUNDATIONS: May be Altered at Discretion of Engineer.
WEEP HOLES: Shall be Located in Wings and Abutments as Directed by Engineer.
STONE MASONRY: Shall be laid and pointed with Cement Mortar.
SHEETING: If sheeting is driven it shall be left in place.

ESTIMATED QUANTITIES
NOT GUARANTEED

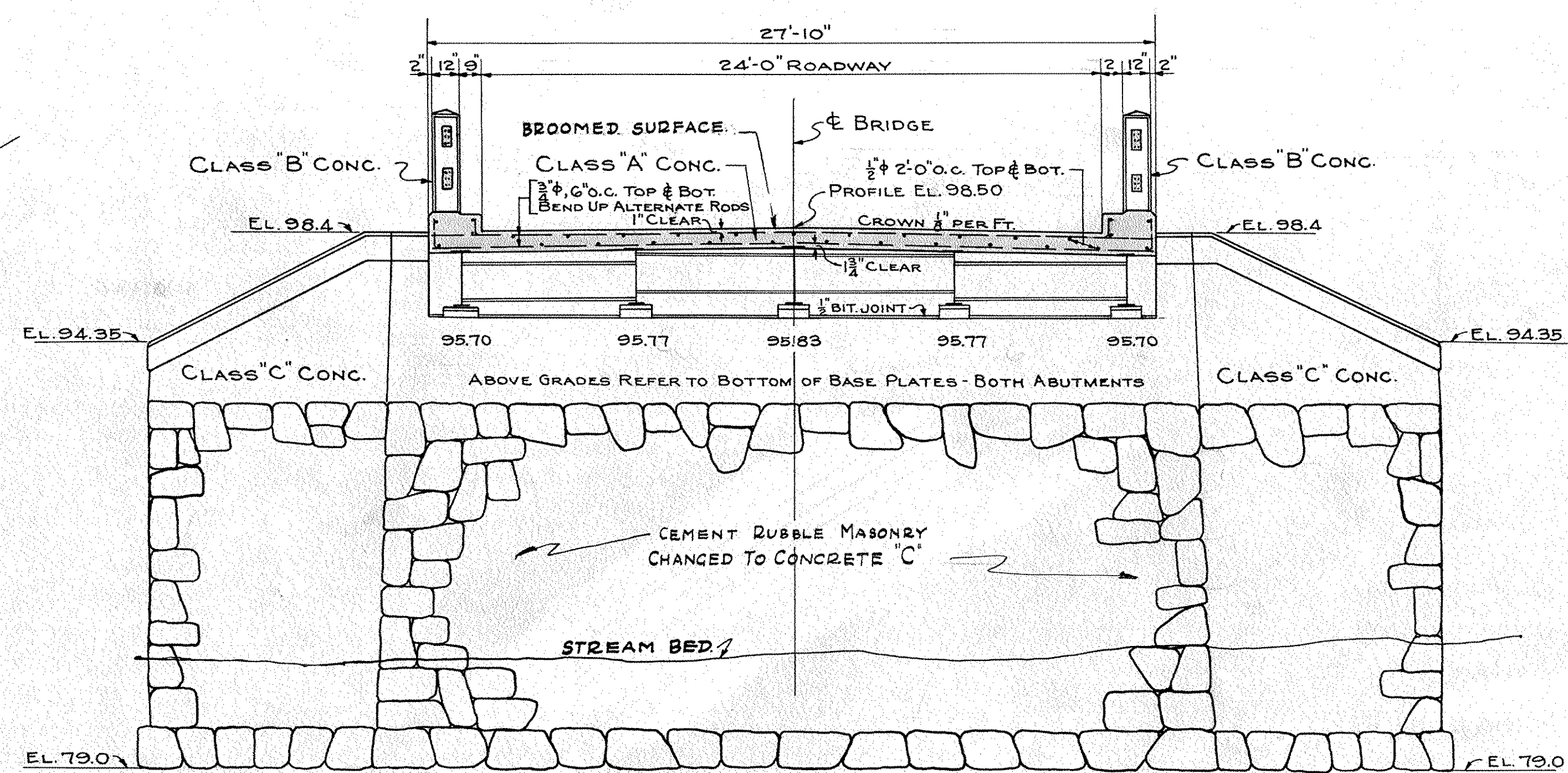
CONCRETE (1:2:4) PLAN	28	CU. YDS.
CONCRETE (1:2:4) REINFORCED	38	" "
CONCRETE (1:2:3) " (POSTS + RAILS)	3	" "
STRUCTURAL STEEL	8 1/2	" "
REINFORCING STEEL	4 1/4	" "
CURB BAR	66	LINEAL FT.
RIE RAP	33	CU. YDS.
BRIDGE EXCAVATION	13	" "
CHANNEL EXCAVATION	100	" "
GRAVEL FILL	70	" "
PAVING	52	" "
STONE (ABUTMENTS + WING WALLS)	215	" "



ROYALSTON
BRIDGE OVER PRIEST BROOK
WINCHENDON ROAD



ELEVATION
SCALE $\frac{1}{4}'' = 1'-0''$



SECTION AA
SCALE $\frac{1}{4}'' = 1'-0''$

ESTIMATED QUANTITIES
(NOT GUARANTEED)

EXCAVATION, BRIDGE	600 CU.YDS.
EXCAVATION, CHANNEL	90 CU.YDS.
CONCRETE, CLASS "A"	27 CU.YDS.
CONCRETE, CLASS "B"	3 CU.YDS.
CONCRETE, CLASS "C"	40 CU.YDS.
CEMENT RUBBLE MASONRY	270 CU.YDS.
BORROW, GRAVEL	250 CU.YDS.
STEEL, STRUCTURAL	17000 LBS.
BITUMINOUS EXPANSION JOINT	20 SQ. FT.
RIE RAP	40 CU.YDS.
STREAM CONTROL	1 LUMPSUM

NOTE: CEMENT RUBBLE MASONRY CHANGED TO CONCRETE "C" WITH PERMISSION OF W.P.A.

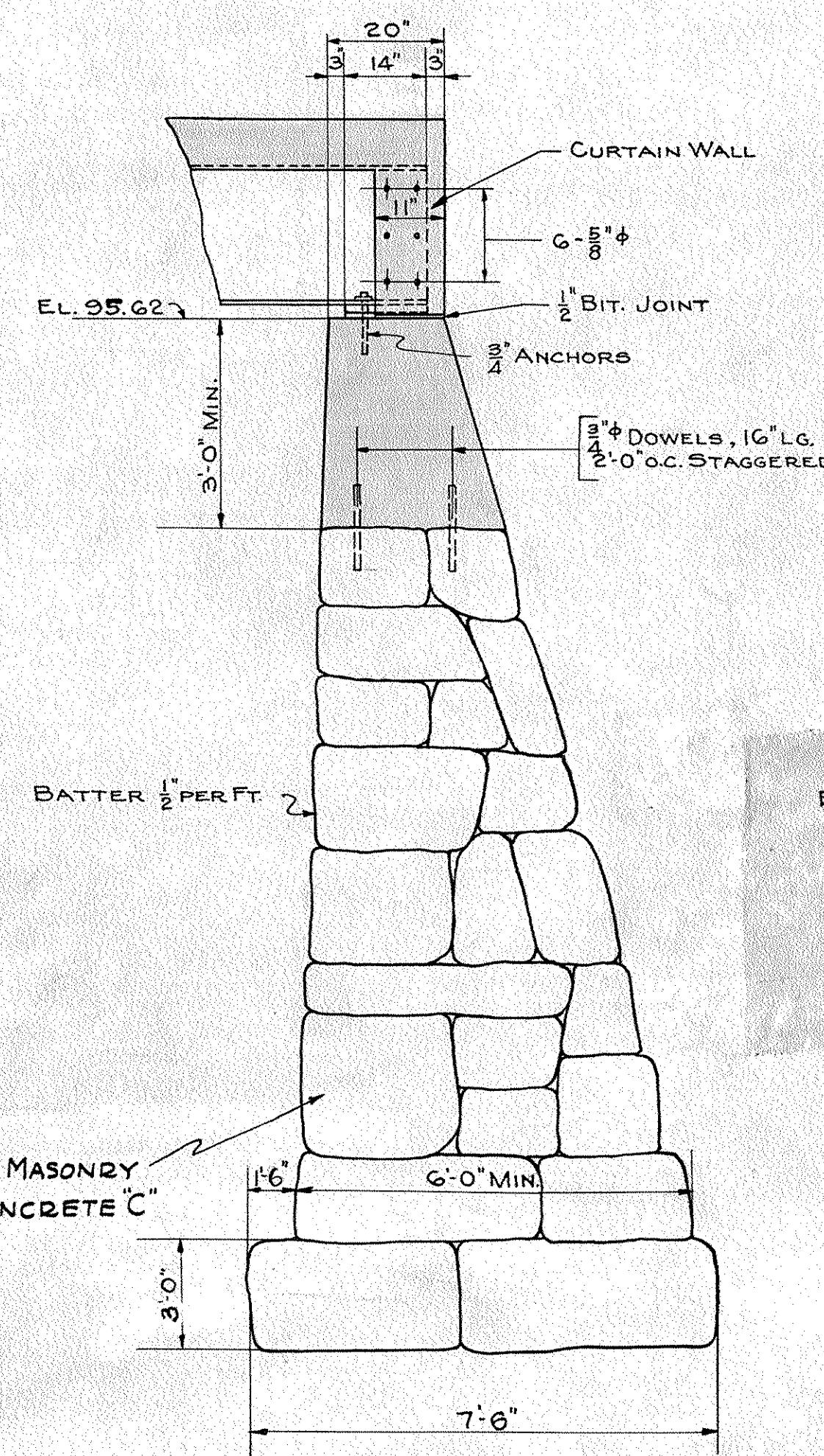
GENERAL NOTES

1. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES OF THE DEPARTMENT OF PUBLIC WORKS, COMMONWEALTH OF MASSACHUSETTS UNLESS OTHERWISE NOTED ON THE PLAN.
2. DEPTH AND WIDTH OF FOOTINGS MAY BE VARIED TO SUIT CONDITIONS.
3. ALL GRADES AND DIMENSIONS SHALL BE CHECKED IN THE FIELD.
4. ALL EXPOSED CONCRETE SURFACES SHALL BE RUBBED WITH CORUNDUM BLOCK AND LEFT SMOOTH AND FREE FROM ALL MARKS AND IMPERFECTIONS.
5. ALL STRUCTURAL STEEL TO BE GIVEN A FINISH COAT OF GREEN STRUCTURAL PAINT.
6. RIE RAP SHALL BE ONE MAN STONES PLACED ON EDGE AT WINGS AS SHOWN.
7. SHEETING, IF USED, SHALL BE DRIVEN DOWN OR CUT OFF AS DIRECTED AND LEFT IN PLACE.
8. WEAP HOLES TO BE LOCATED BY THE ENGINEER.
9. 2" DIA. DRAINS TO BE LOCATED BY THE ENGINEER.

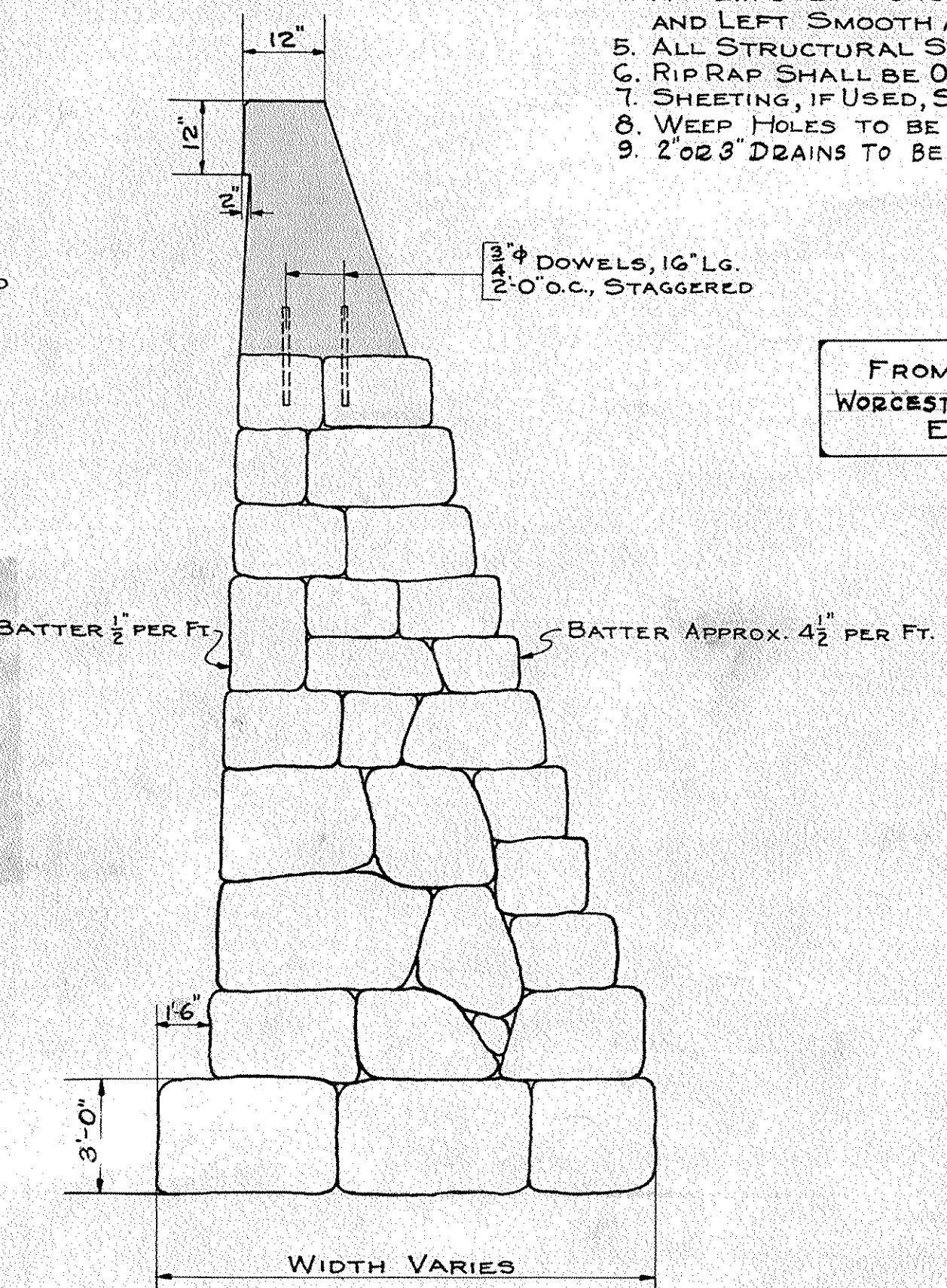
H-15 LOADING

FROM DESIGN BY
WORCESTER COUNTY
ENGINEER

REVISED BY
LE ROY M. HERSUM
CONSULTING ENGINEER
6 BEACON STREET
BOSTON MASS.



TYPICAL ABUTMENT SECTION
SCALE $\frac{1}{2}'' = 1'-0''$

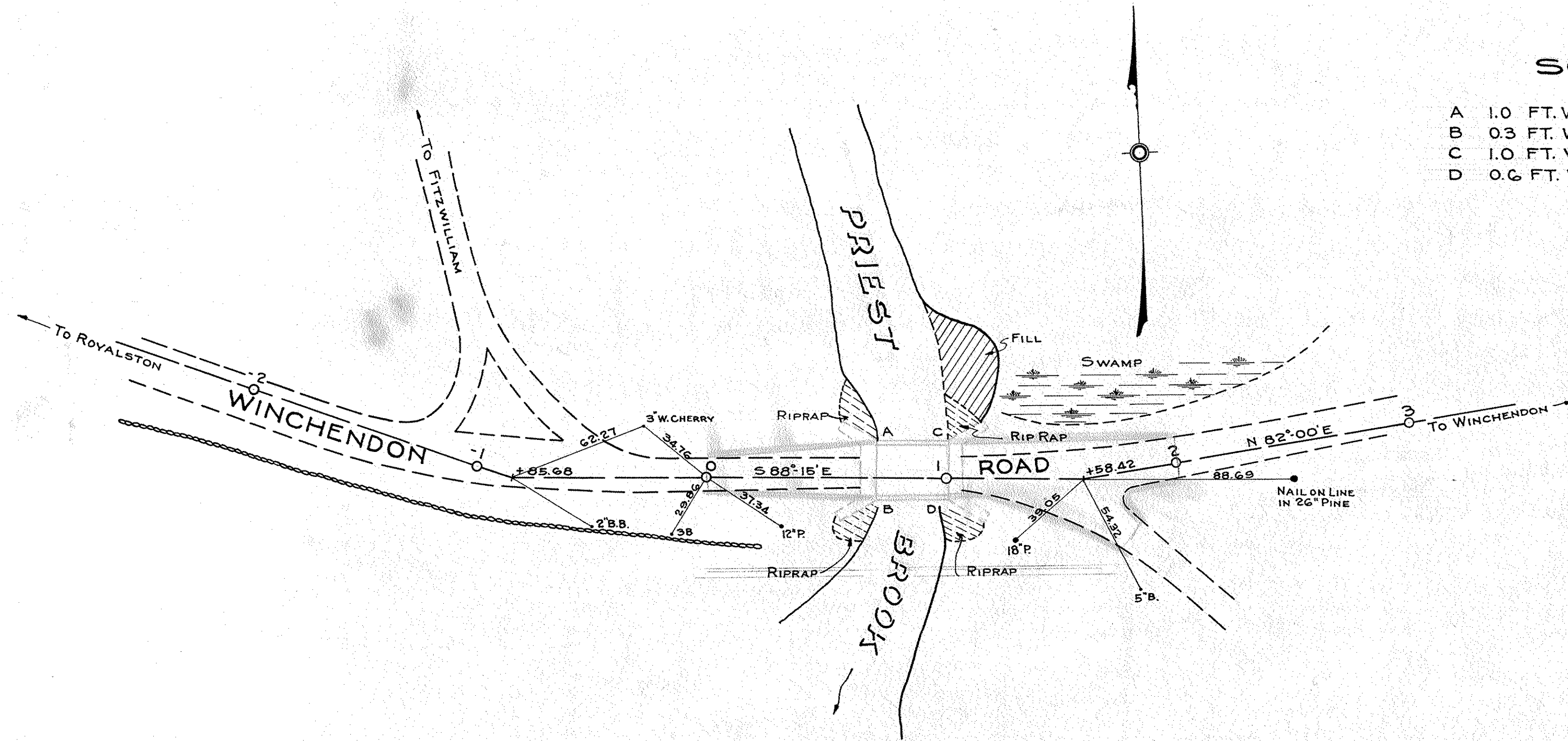


TYPICAL WING SECTION
SCALE $\frac{1}{2}'' = 1'-0''$

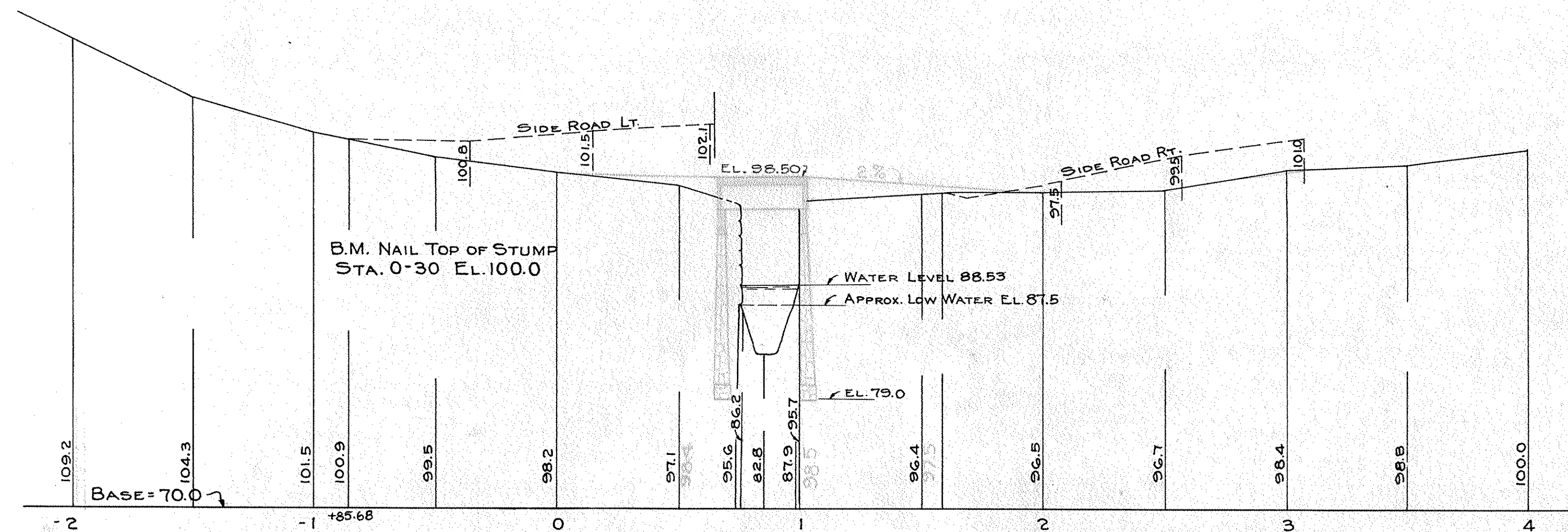
MADE 15/37	TRACED AND CHECKED
DATE SHEET NOS.	DESCRIPTION
LIST OF REVISIONS-USE ONLY PRINT OF LATEST DATE	
THE COMMONWEALTH OF MASSACHUSETTS	
PROPOSED BRIDGE	
ROYALSTON	
WINCHENDON ROAD BRIDGE	
OVER PRIEST BROOK	
SCALES AS NOTED	
OFFICE OF	
DEPARTMENT OF PUBLIC WORKS	
100 NASHUA STREET, BOSTON	
SEPTEMBER 1936	
HIGHWAY ENGINEER	
DESIGNED BY WOR. CO. ENGR. TRACED BY: R.W.S.	CHECKED BY: A.S.C.
DATE OF ISSUE	
PRELIMINARY/APPBY DIST.	W.P.A. CONSTRUCTION
	FINAL

SOUNDING CHART

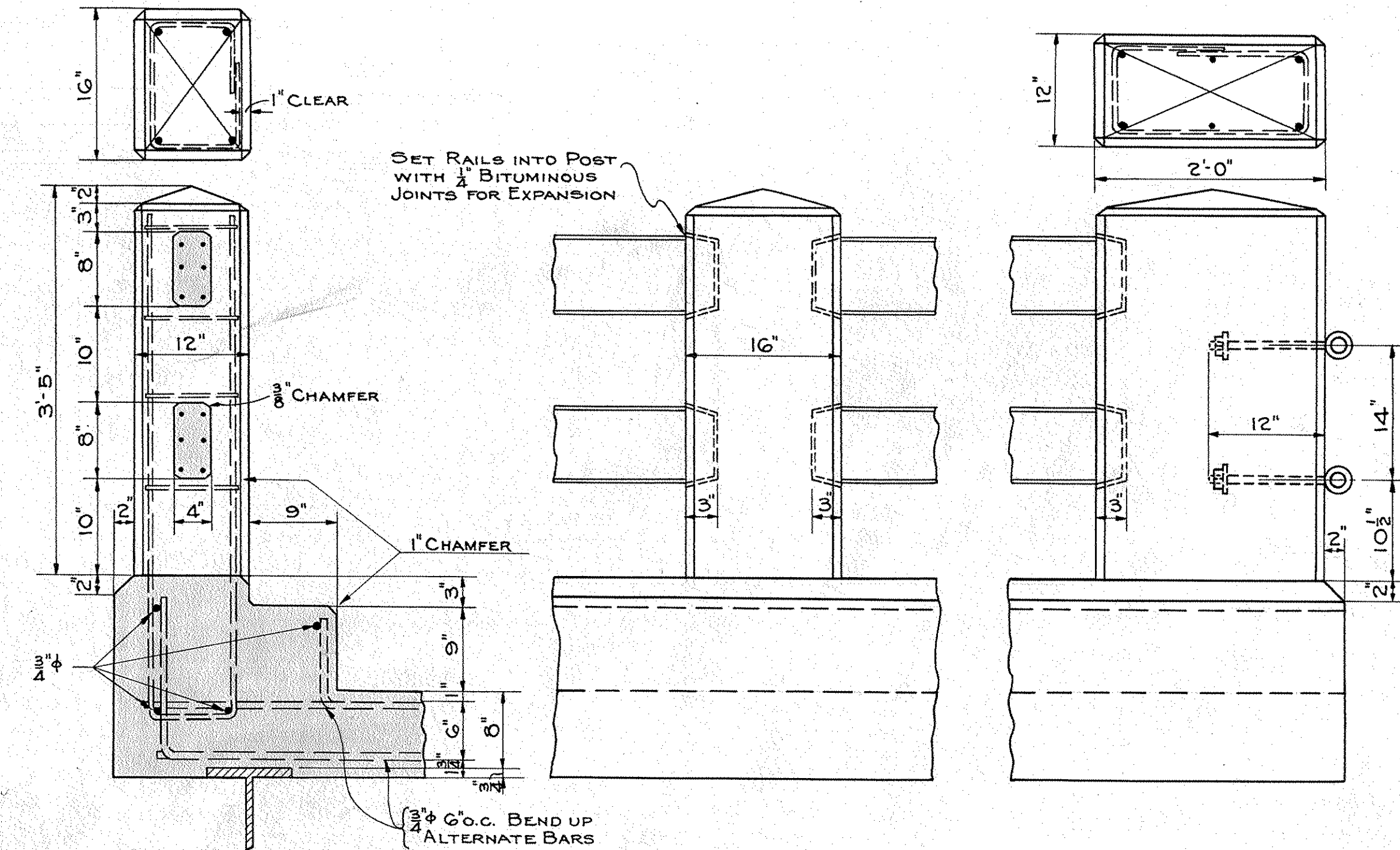
A	1.0 FT. WATER	+ 1.3 FT. TO HARD BOTTOM
B	0.3 FT. WATER	+ 1.7 FT. " " "
C	1.0 FT. WATER	+ 0.3 FT. " " "
D	0.6 FT. WATER	+ 1.4 FT. " " "



LOCATION PLAN
SCALE 1" = 40'-0"



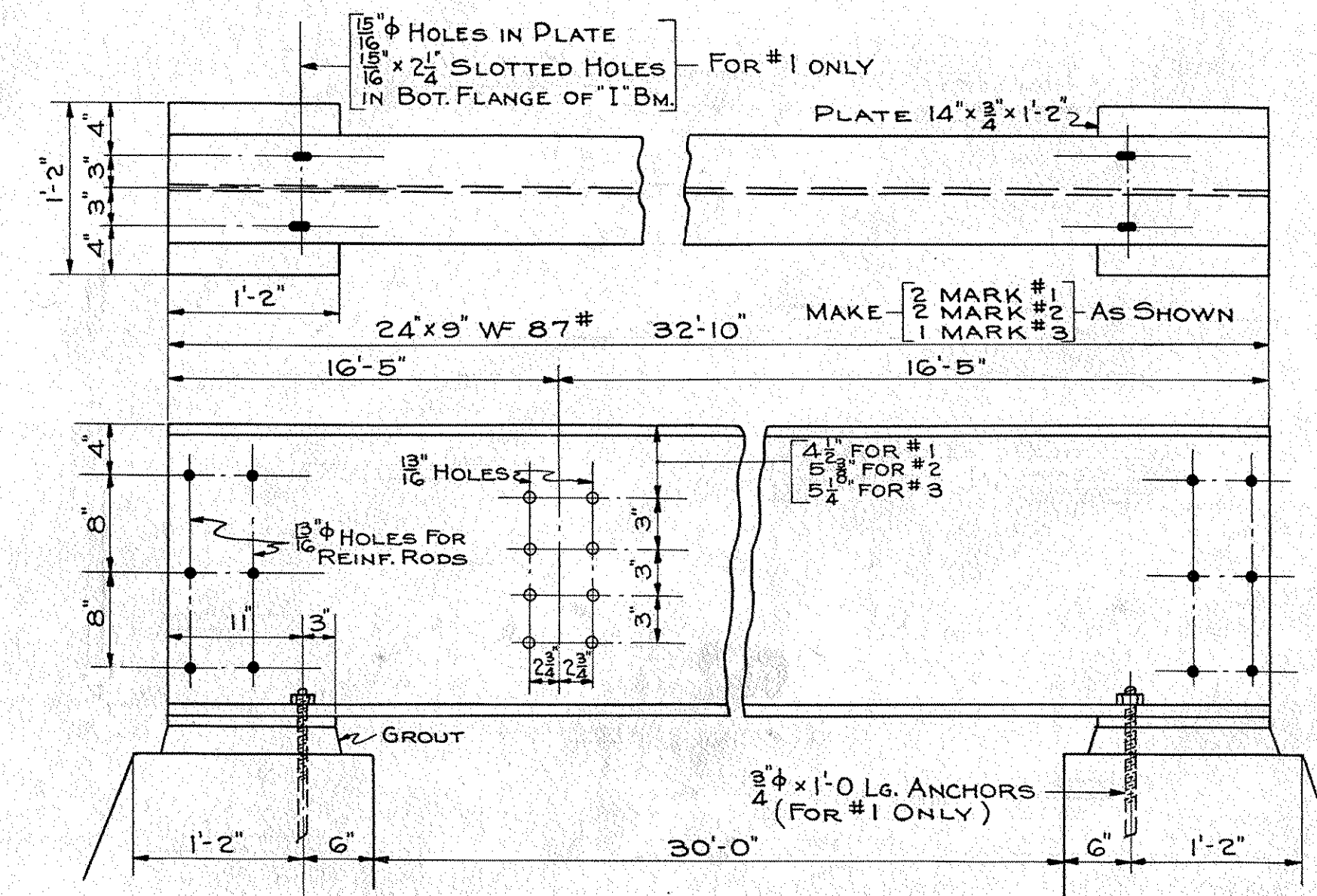
PROFILE
SCALE { HOR. 1" = 40'-0"
VERT 1" = 8'-0"



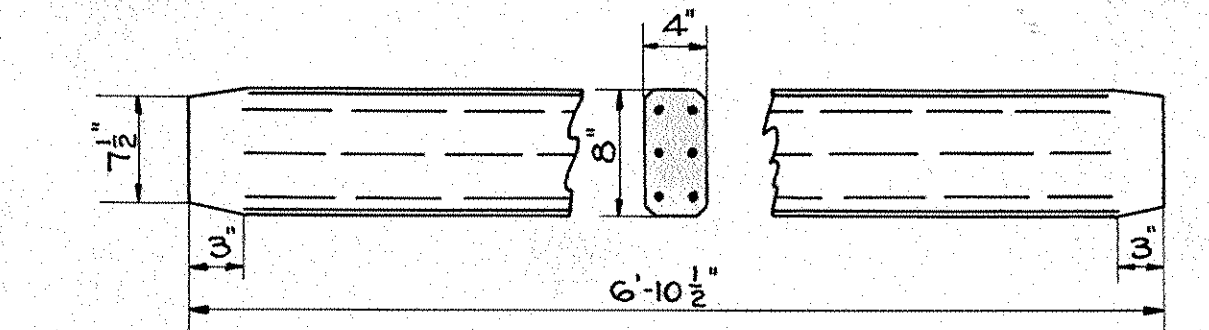
CONCRETE RAIL DETAILS
SCALE 1" = 1'-0"

POST & RAIL REINFORCING

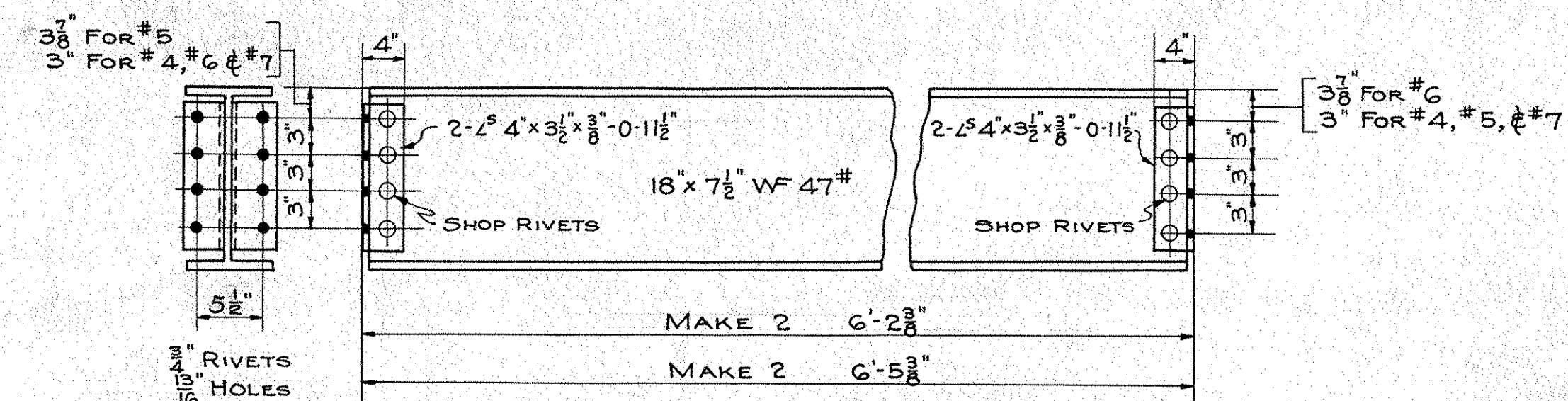
- 2-#4 U-BARS IN EACH 12" x 16" POST
- 3-#4 U-BARS IN EACH 12" x 24" POST
- 4-#4 HOOPS IN EACH 12" x 16" POST
- 4-#4 HOOPS IN EACH 12" x 24" POST
- 6-#4 RODS IN EACH RAIL



DETAIL OF STEEL STRINGERS
SCALE 1" = 1'-0"



PRE-CAST CONCRETE RAIL DETAIL
SCALE 1" = 1'-0"
MAKE 16 AS SHOWN



DIAPHRAGM DETAIL
SCALE 1" = 1'-0"

PUB. NO.	STATE	FEDERAL AID	FISCAL YEAR	TOTAL SHEETS
1	MASS.		19	

GENERAL NOTES

FOUNDATIONS:

MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED IN CONSTRUCTION.

REINFORCEMENT:

ALL REINFORCING STEEL BAR DEFORMATIONS SHALL CONFORM TO A.S.T.M. SPECIFICATION A-305. UNLESS OTHERWISE SHOWN ON THE PLANS, REINFORCING BARS SHALL BE LAPPED 20 DIAMETERS TO MAKE A SPLICE, EXCEPT THAT MAIN REINFORCING BARS NEAR THE TOP OF SLABS AND BEAMS HAVING MORE THAN 12 INCHES OF CONCRETE UNDER, THE BARS SHALL BE LAPPED 35 DIAMETERS TO MAKE A SPLICE.

BORING NOTES:

LOCATIONS OF BORINGS SHOWN ON KEY PLAN THUS: NO. 3. BORINGS TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW NATURE OF MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS OF 140 POUND HAMMER FALLING 30 INCHES, TO DRIVE A 1 1/2" I.D. SAMPLING SPOON ONE FOOT. BORING SAMPLES MAY BE SEEN AT THE DEPARTMENT'S LABORATORY IN THE MAINTENANCE BUILDING ON ROUTE NO. 9 IN WELLESLEY.

DESIGN:

IN ACCORDANCE WITH THE CURRENT SPECIFICATIONS OF THE A.S.T.M. FOR M20-44 LOADING.

BENCH MARK:

STA. 0+74 ± 67 ± LT. CUT IN SOUTH RET. WALL OF MILLERS RIVER EL. 901.11. SEA LEVEL DATUM OF 1929.

HYDRAULIC DATA:

SIZE OF DRAINAGE AREA = 62 ± SQ. MILES.
ESTIMATE DISCHARGE FOR FLOOD OF RECORD (1938) = 7500 CU. FT. PER SEC.
VELOCITY OF FLOOD FLOW = 12 ± FT. PER SEC.
IMPRACTICAL TO DESIGN BRIDGE AT THIS LOCATION TO TAKE CARE OF FLOOD OF RECORD.

SURVEY BOOKS:

11,120,11,333 AND 23,731.

DATE AND PLAQUE:

TO BE PLACED ON INSIDE FACE OF NORTHWESTERLY AND SOUTHEASTERLY END POSTS. FOR DETAILS, SEE SHEET NO. 11.

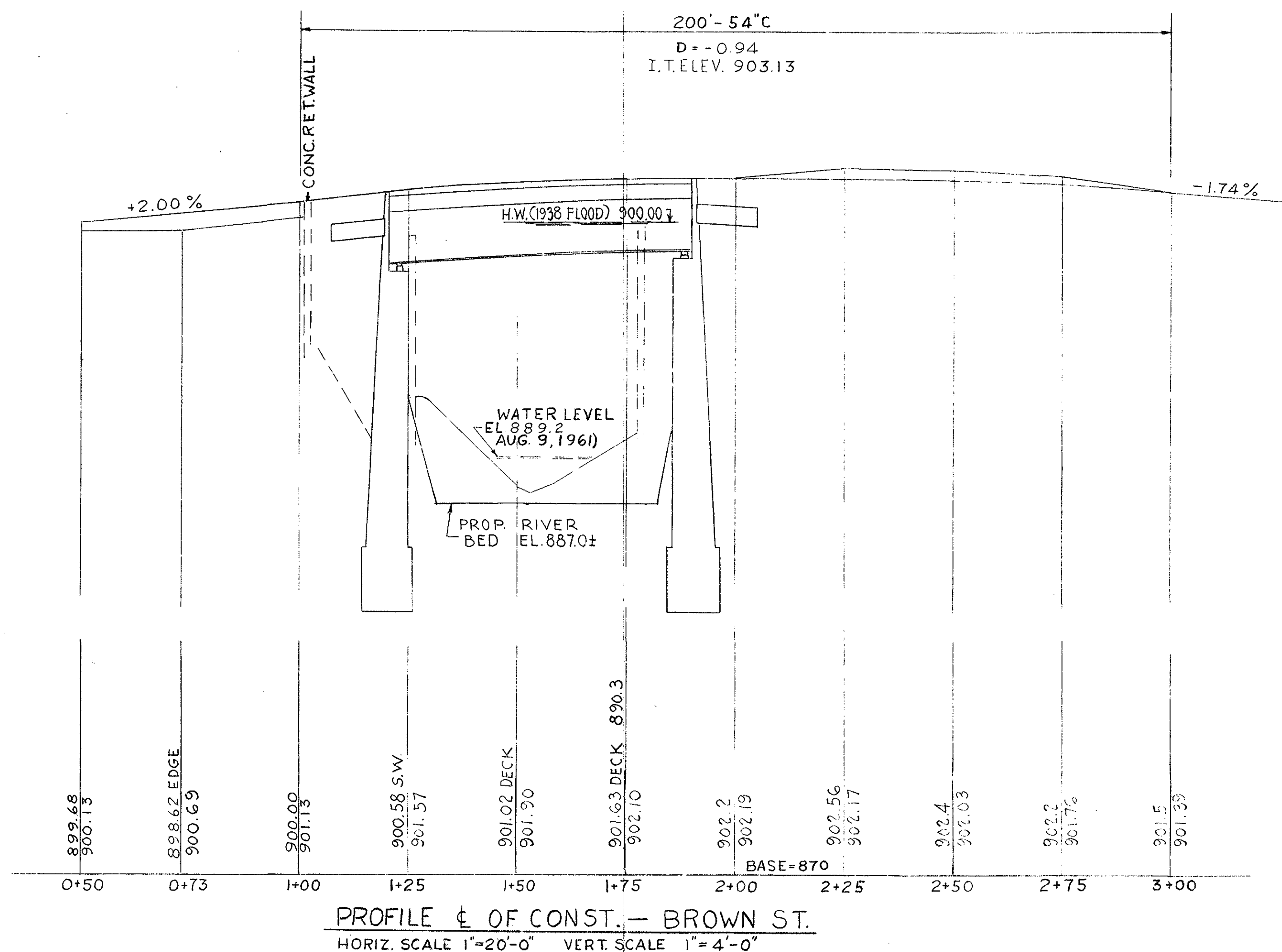
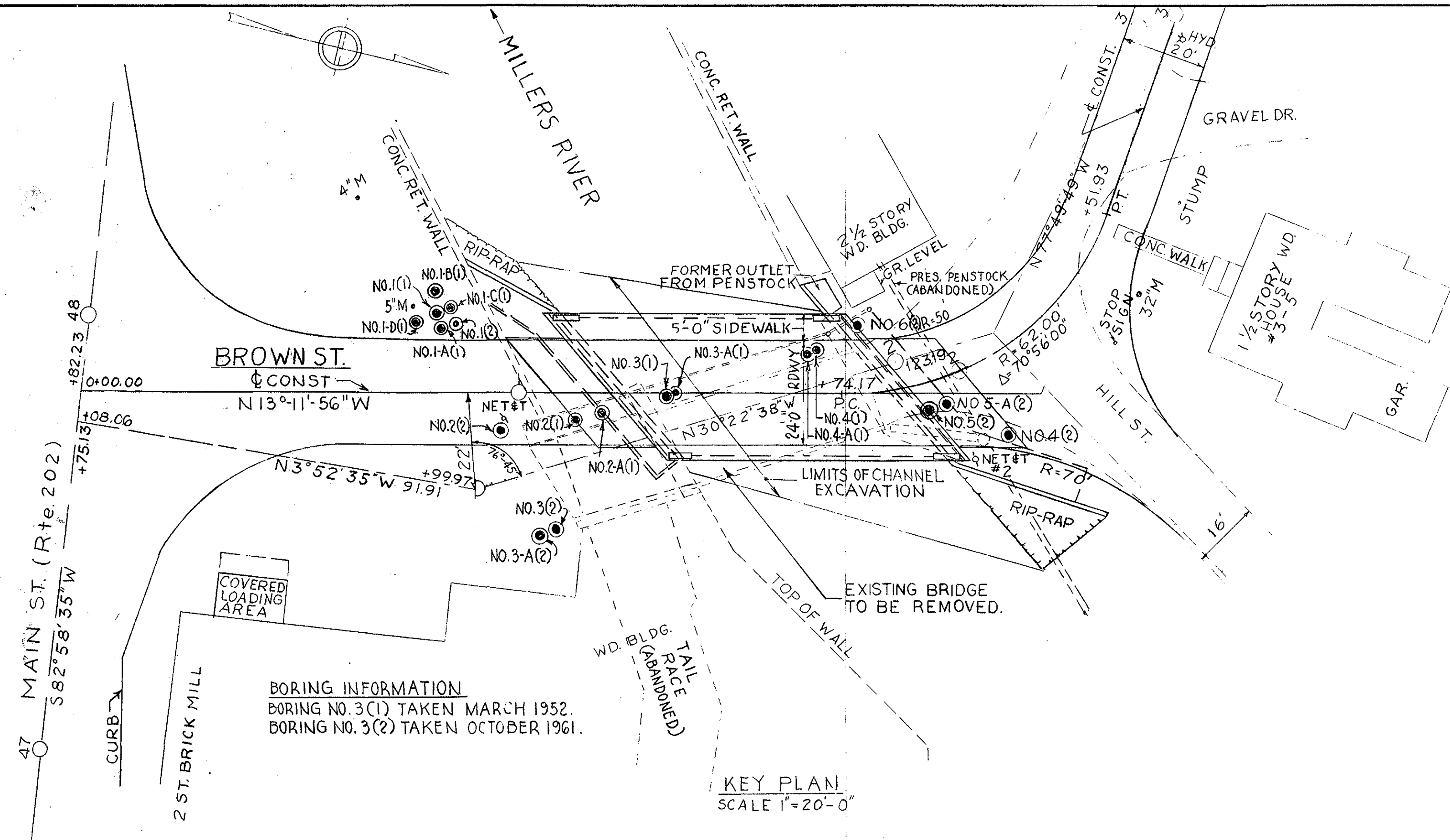
ESTIMATED QUANTITIES

NOT GUARANTEED

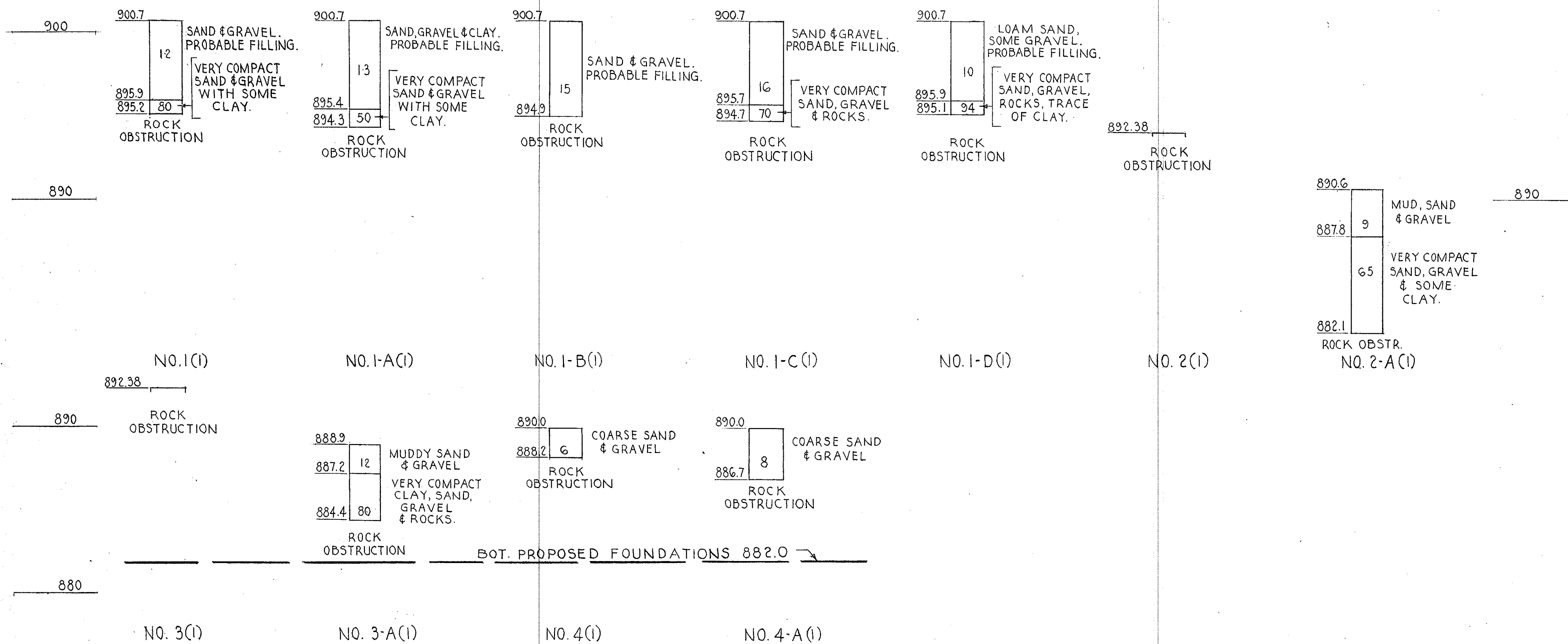
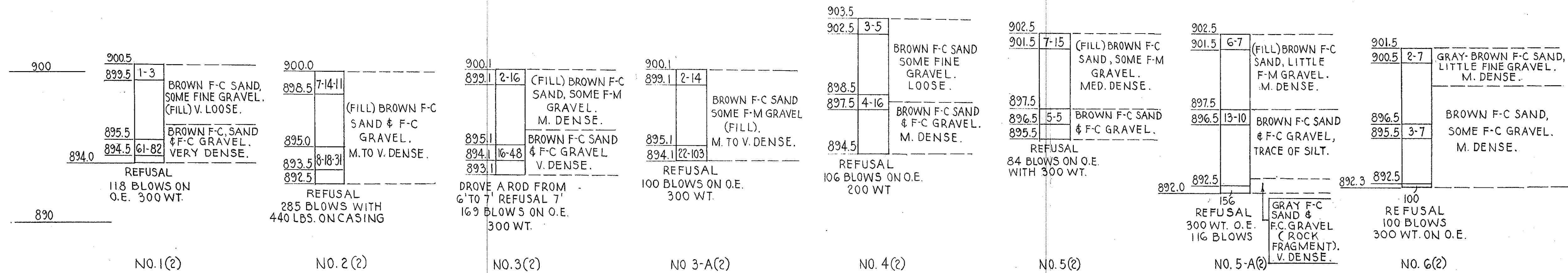
CLASS A ROCK EXCAVATION	10	C.Y.
BRIDGE EXCAVATION	1070	C.Y.
CHANNEL EXCAVATION	370	C.Y.
CLASS B ROCK EXCAVATION	60	C.Y.
GRAVEL BORROW	440	C.Y.
CLASS I BITUMINOUS CONCRETE PAVEMENT TYPE I-1	30	TONS
STEEL SHEETING	9,000	LBS.
CLASS B CEM. CONC. MASONRY	635	C.Y.
BITUMINOUS DAMP-PROOFING	300	S.Y.
RIP RAP	35	C.Y.
REMOVAL OF PRESENT SUPERSTRUCTURE	1	L.S.
CONTROL OF WATER (BR. NO. W-39-6)	1	L.S.
BRIDGE STRUCTURE (W-39-6)	1	L.S.

NOTE:

THE FOLLOWING QUANTITIES ARE PART OF LUMP SUM ITEM G15-1 BRIDGE STRUCTURE (W-39-6) AND ARE NOT GUARANTEED.
STEEL REINF. FOR STRUCTURES 27,000 LBS.
STRUCTURAL STEEL 64,000 LBS.

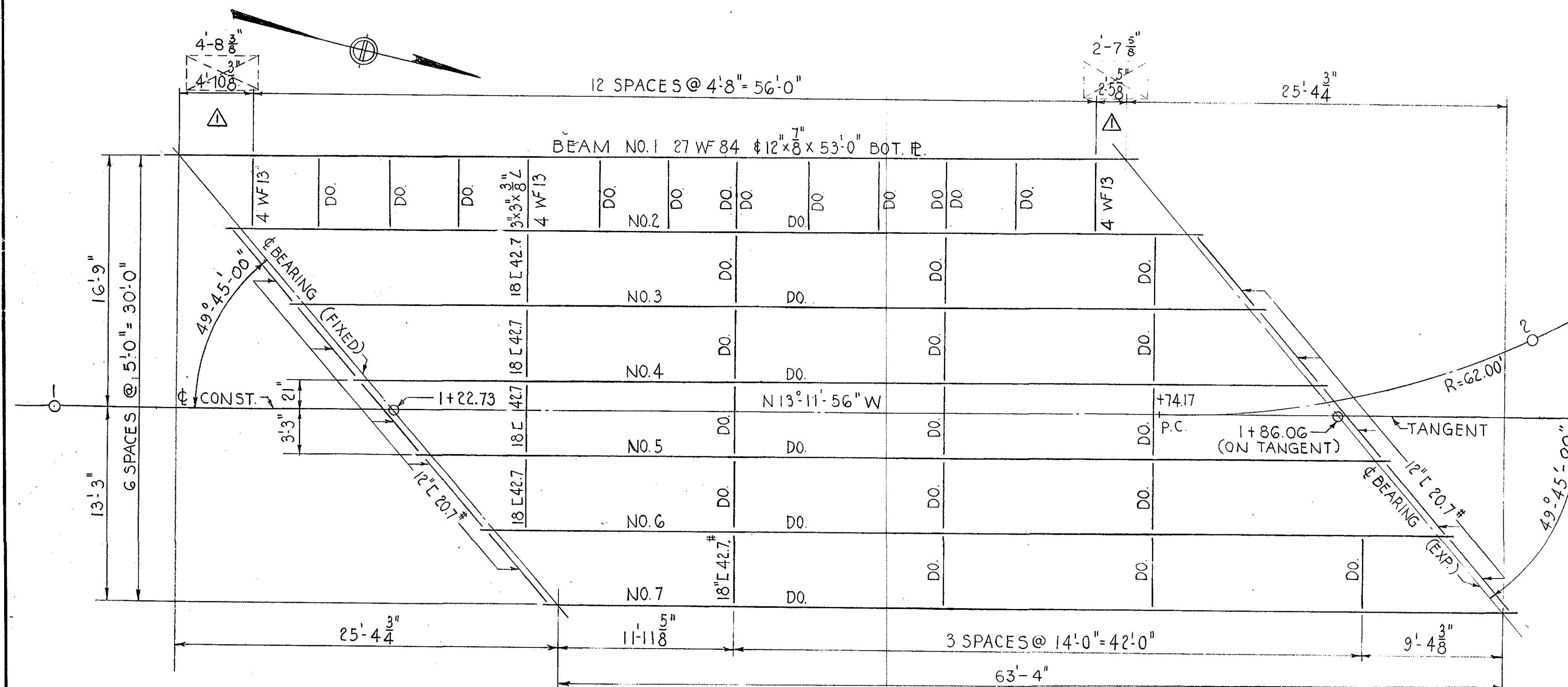


DESIGNED BY J. MULLEN J. SILS	DEC. 1, 1964	REVISION SHEET NO. 6 DIMENSIONS REVISED
DRAWN BY J. MULLEN J. SILS	AUGUST 8, 1964	ISSUED FOR CONSTRUCTION
APPROVED FOR MIHALJAN	THE COMMONWEALTH OF MASSACHUSETTS PROPOSED BRIDGE WINCHENDON BROWN ST. OVER MILLERS RIVER SCALES AS NOTED OFFICE OF DEPARTMENT OF PUBLIC WORKS 100 NASSAUA ST. BOSTON, MASS. AUG 1964	
SPECS. AHERNE	SHEET 1 OF 11 SHEETS • BRIDGE NO. W-39-6	

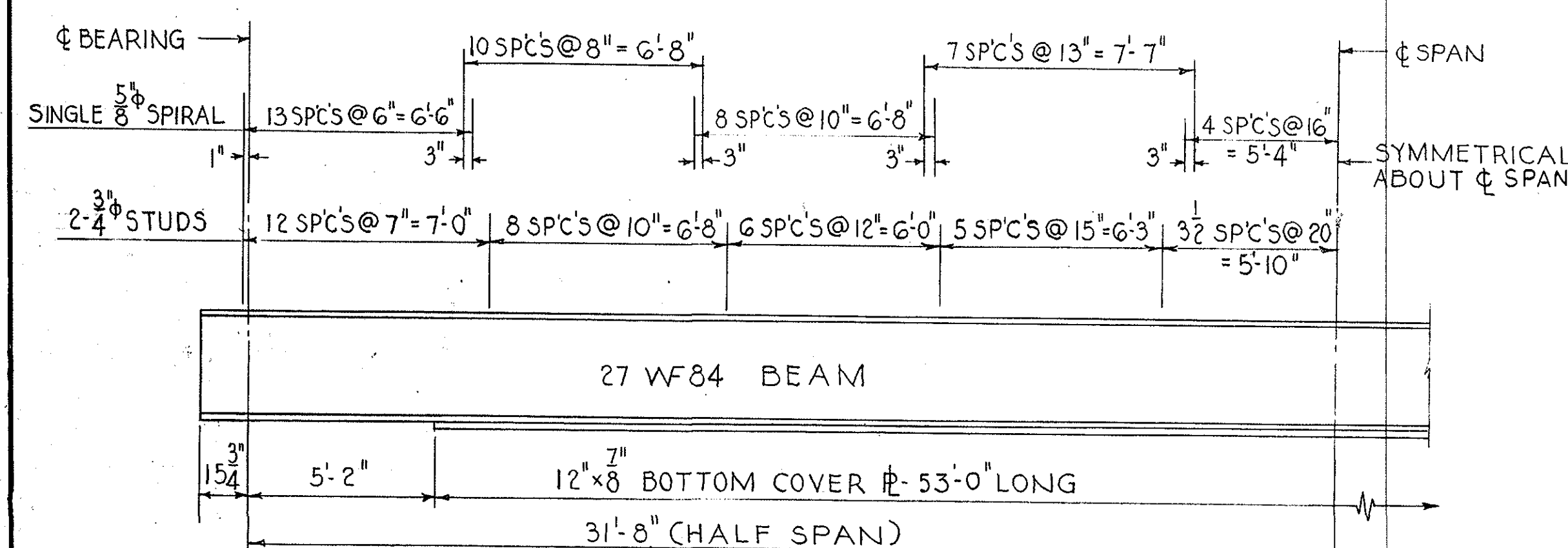


BORING DATA
SCALE 1"=4'

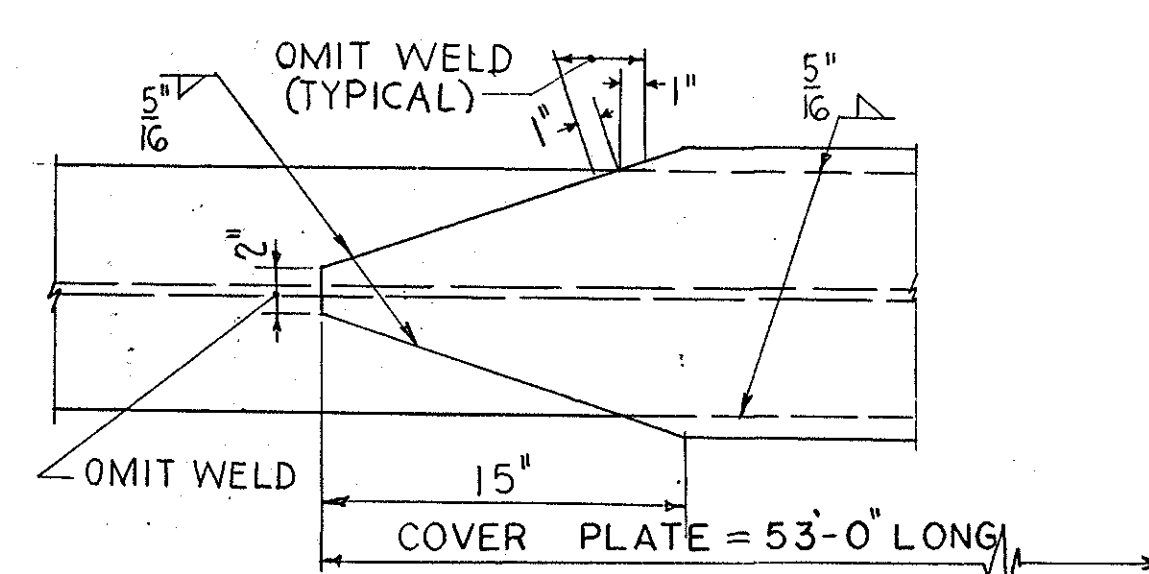
AUG. 8, 1964	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	



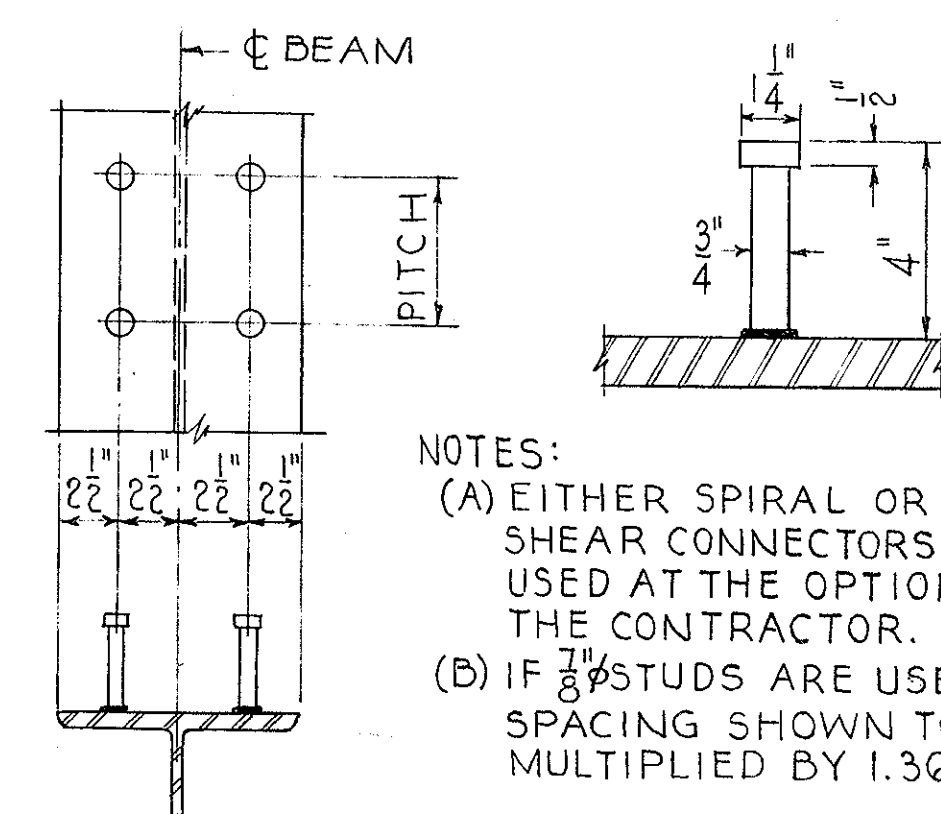
STEEL LAYOUT
SCALE $\frac{3}{16}'' = 1'-0''$



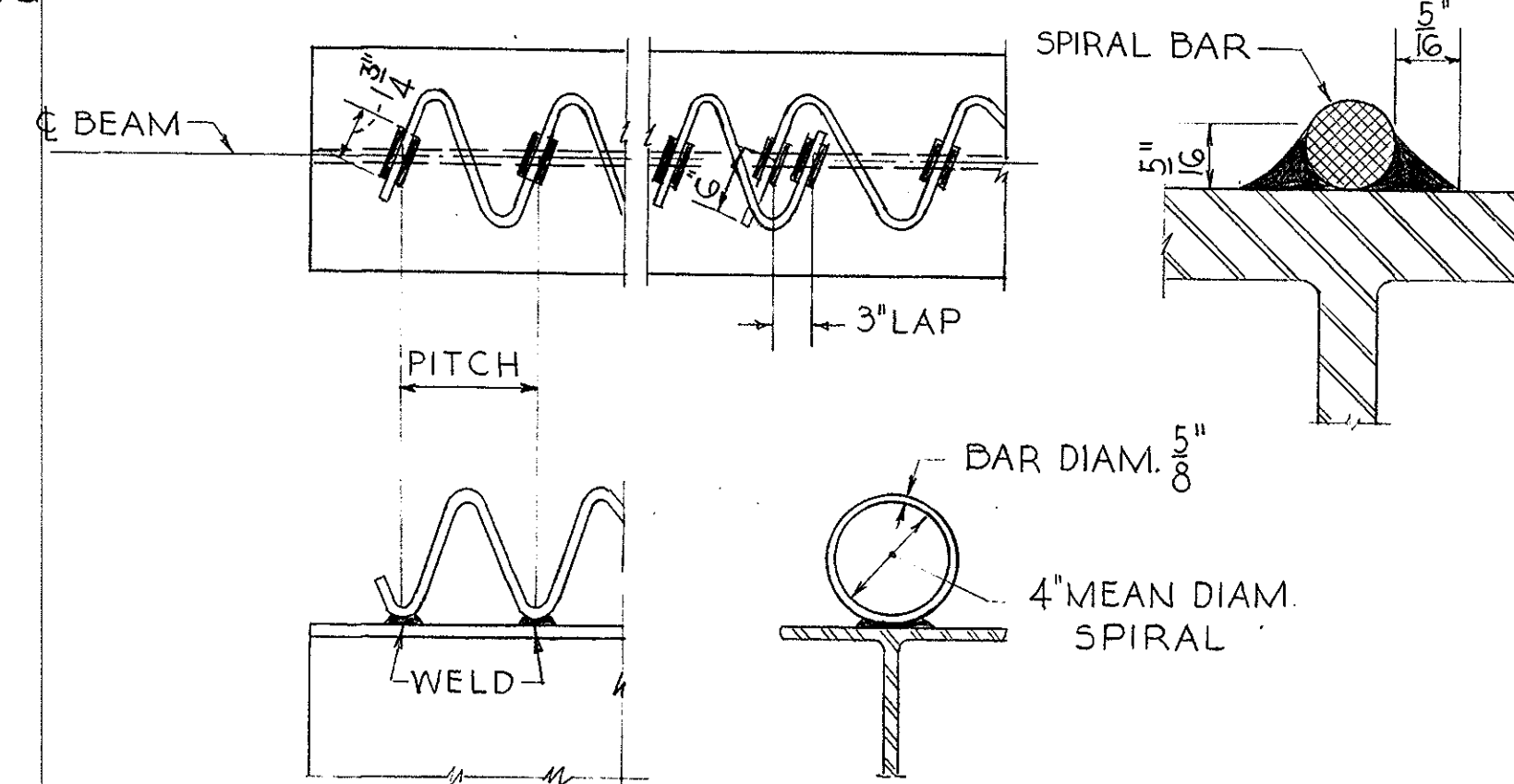
COVER ϕ AND STUD OR SPIRAL SHEAR CONNECTOR SPACING
NO SCALE



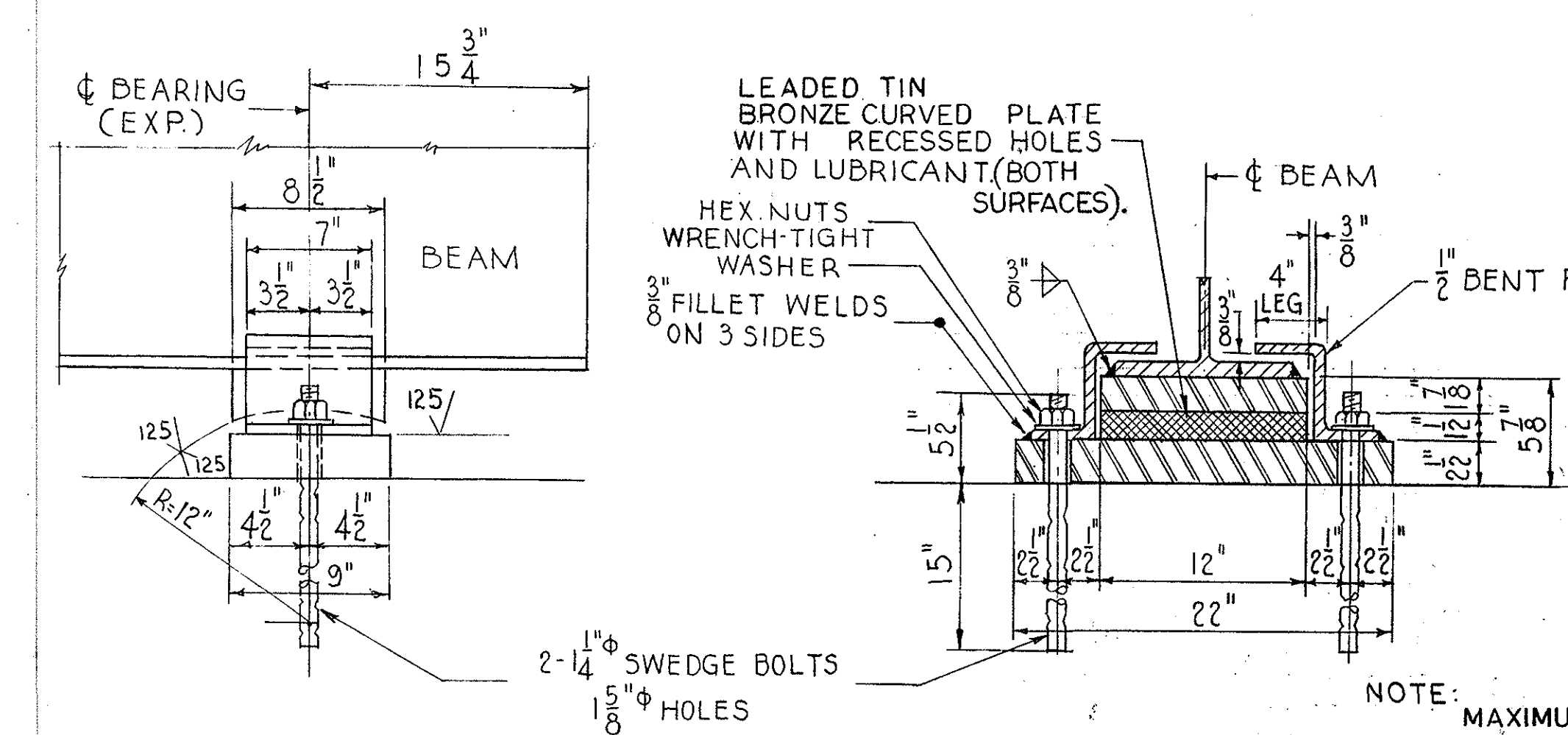
COVER PLATE DETAILS
SCALE $1\frac{1}{2}" = 1'-0"$



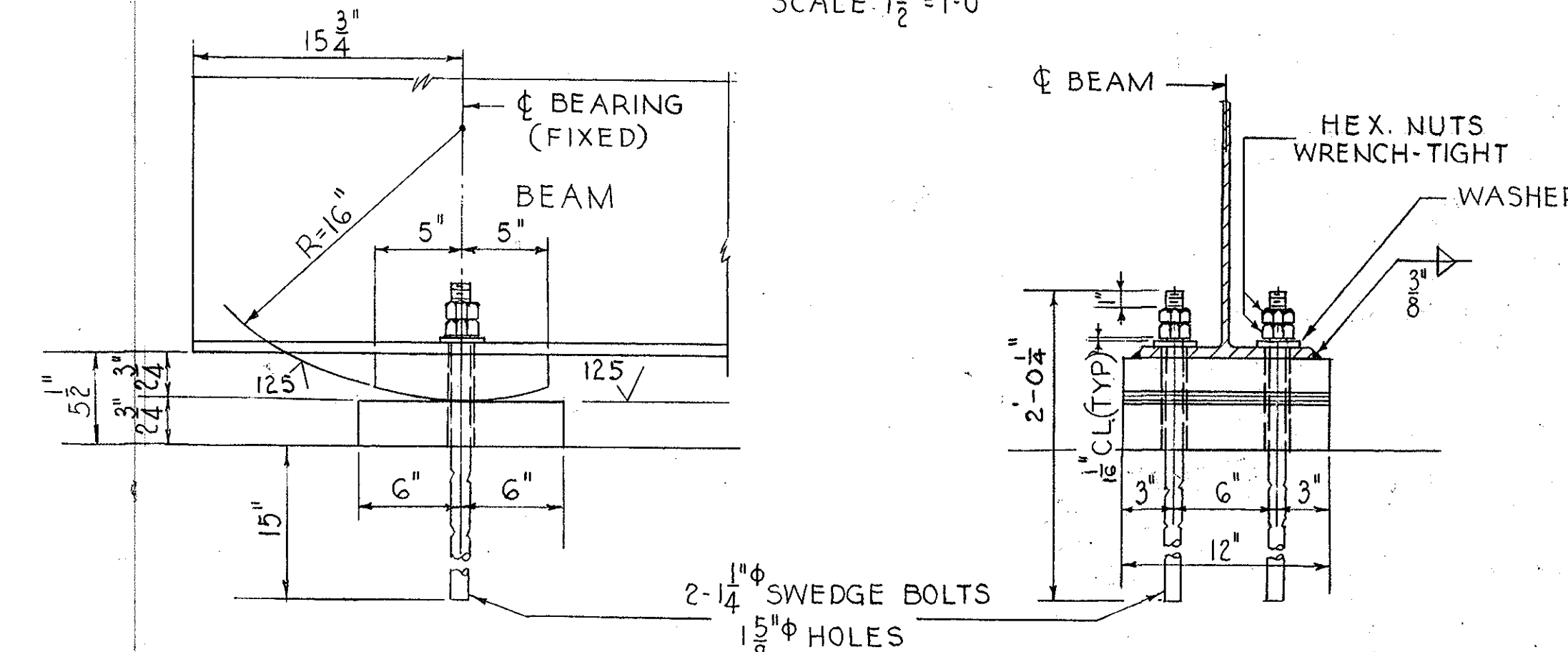
STUD SHEAR CONNECTOR DETAILS
NO SCALE



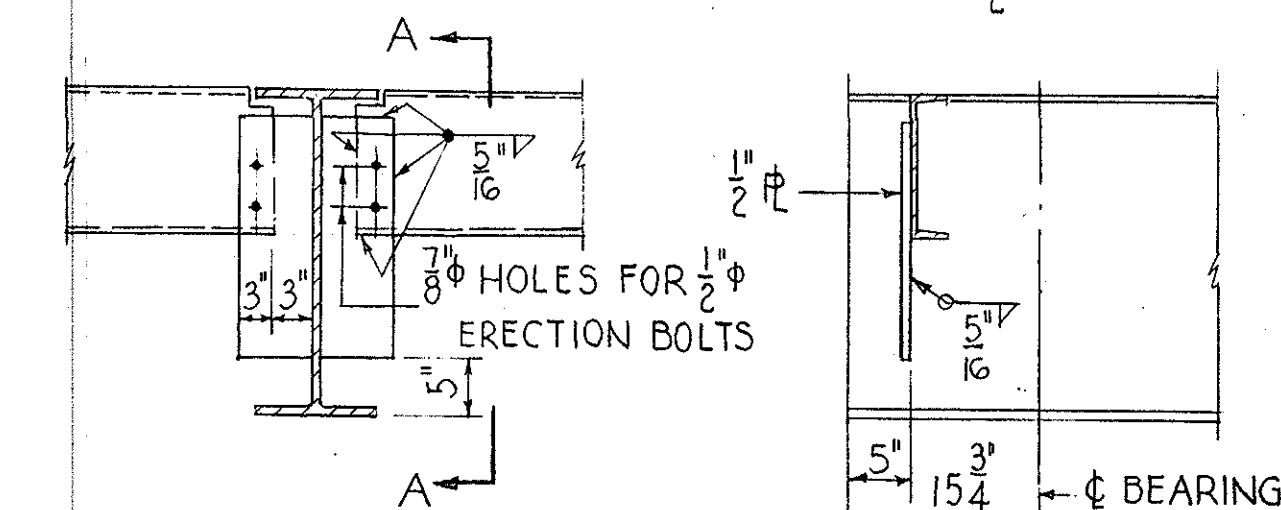
SPIRAL SHEAR CONNECTOR DETAILS
NO SCALE



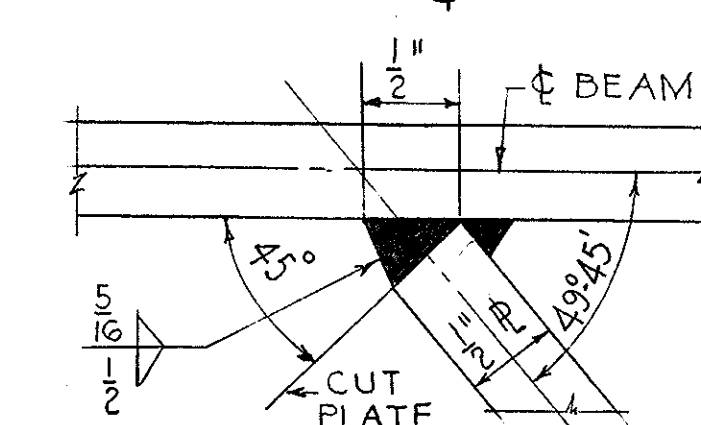
EXPANSION BEARING DETAILS
SCALE: $1\frac{1}{2}" = 1'-0"$



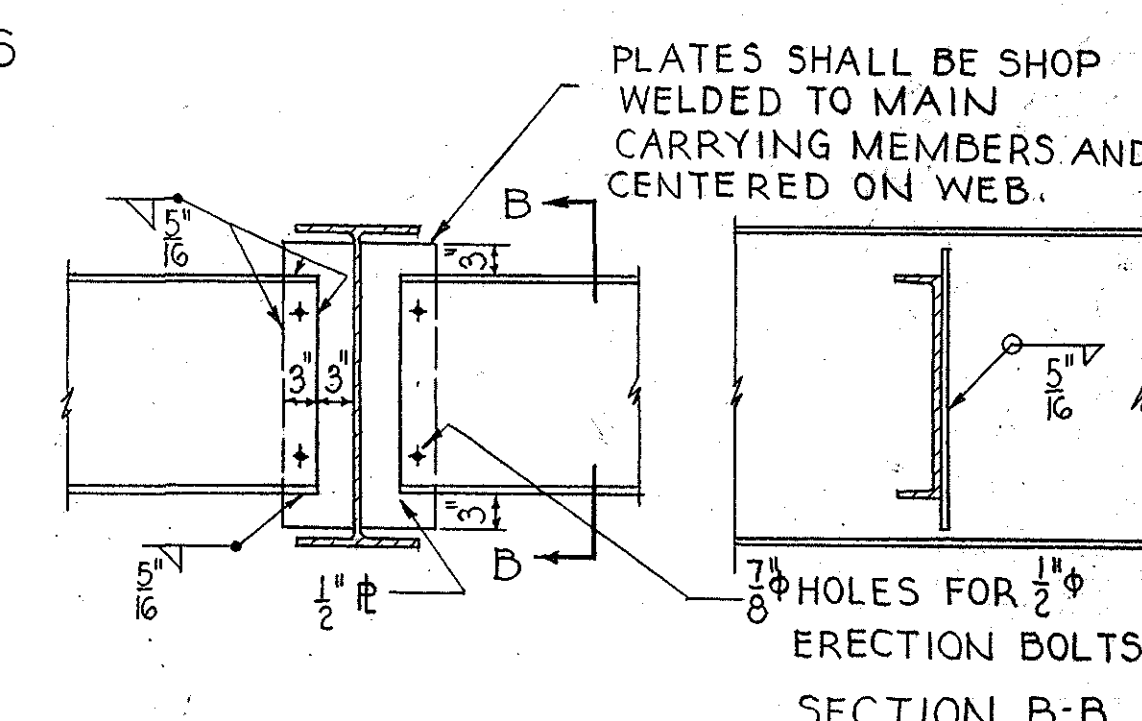
FIXED BEARING DETAILS
SCALE $1\frac{1}{2}'' = 1'-0''$



END DIAPHRAGM CONNECTION
SCALE $\frac{3}{4}'' = 1'-0''$



METHOD OF WELDING END
DIAPHRAGM CONNECTION
NO. SCALE

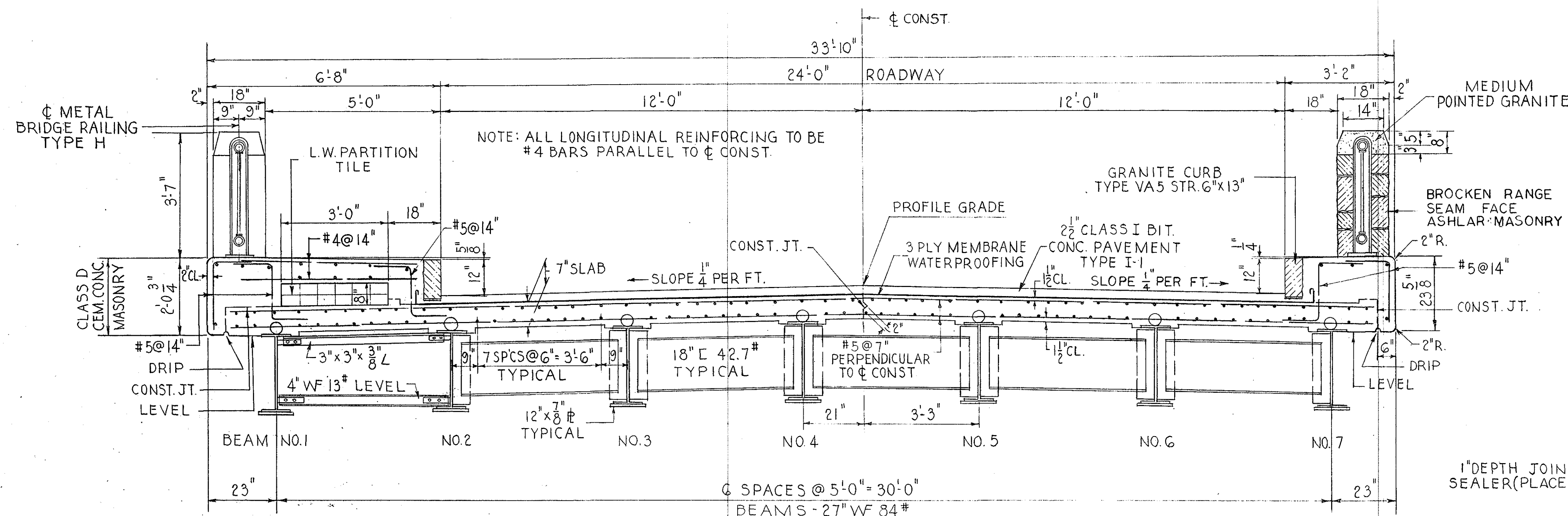


INTERIOR DIAPHRAGM CONNECTION
SCALE $\frac{3}{4}'' = 1'-0''$

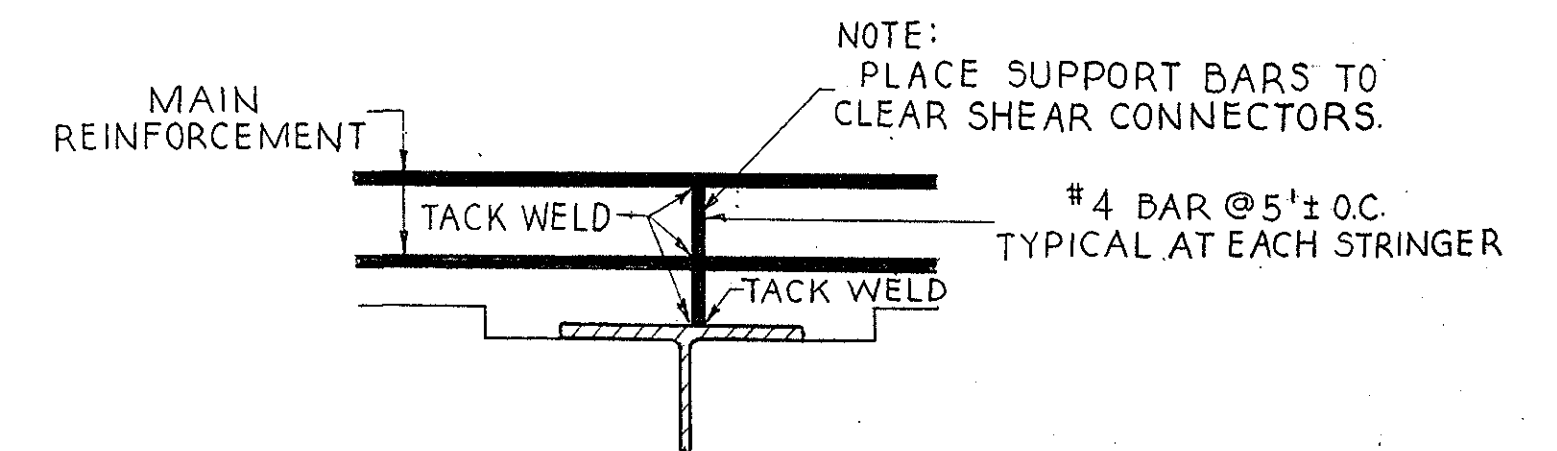
PLATES SHALL BE SHOP
WELDED TO MAIN
CARRYING MEMBERS AND
CENTERED ON WEB.

DEC.1,1964	△ REVISION-STEEL LAYOUT DIMENSIONS REVISED
AUG.8,1964	ISSUED FOR CONSTRUCTION.
DATE	* DESCRIPTION *
USE ONLY PRINTS OF LATEST DATE.	

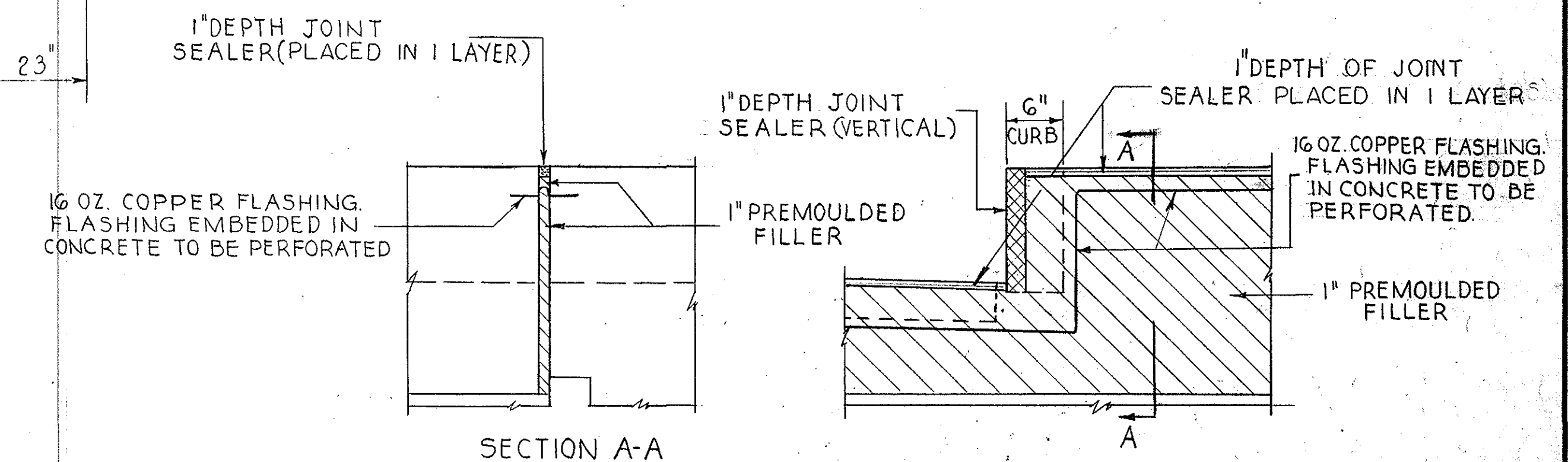
PUB. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.		19		



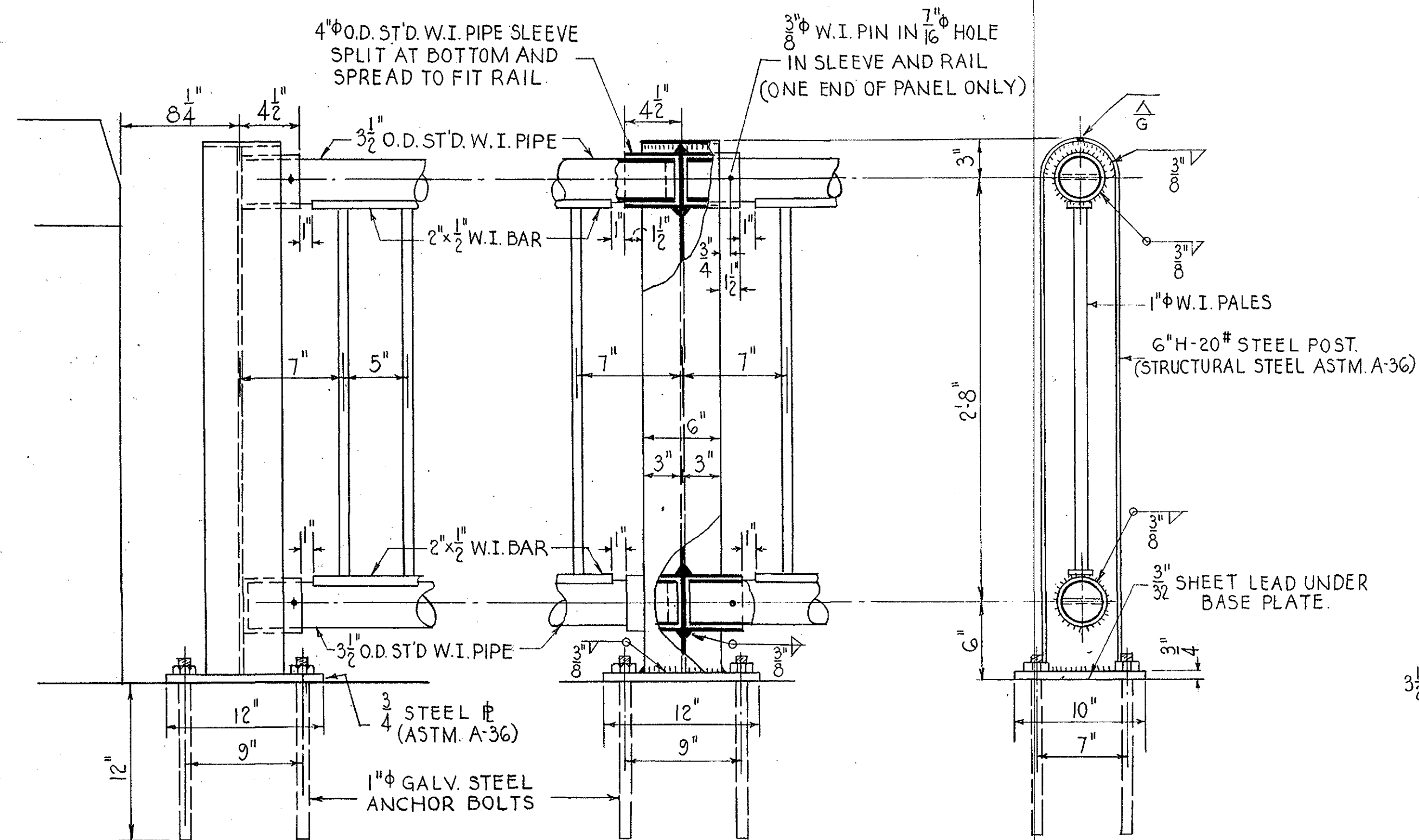
TYPICAL CROSS SECTION
SCALE $\frac{1}{2}'' = 1'-0''$



DETAIL OF SUPPORT OF REINFORCEMENT IN
SLAB DURING POURING OF CONCRETE
SCALE $\frac{1}{2}'' = 1'-0''$



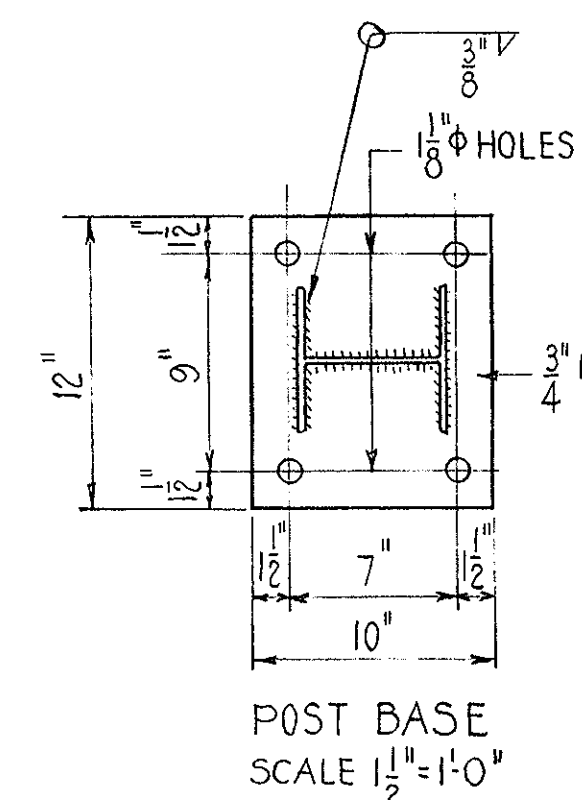
EXPANSION JOINT DETAILS AT WALKS
SCALE $1'' = 1'-0''$



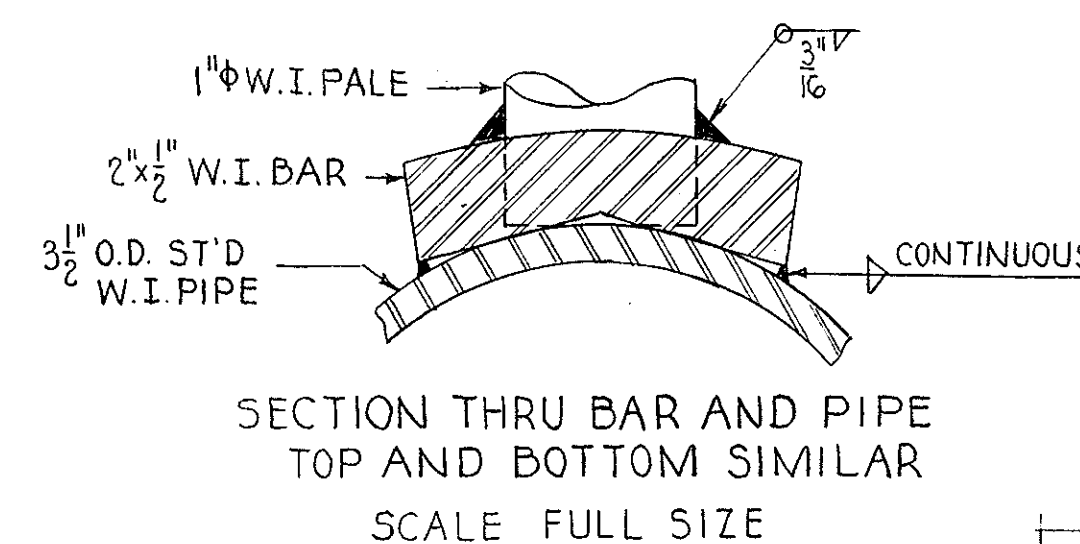
ELEVATION
SCALE $\frac{1}{2}'' = 1'-0''$

SECTION
SCALE $\frac{1}{2}'' = 1'-0''$

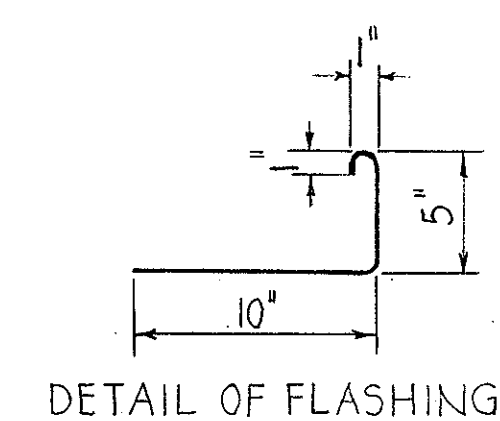
METAL BRIDGE RAILING TYPE H



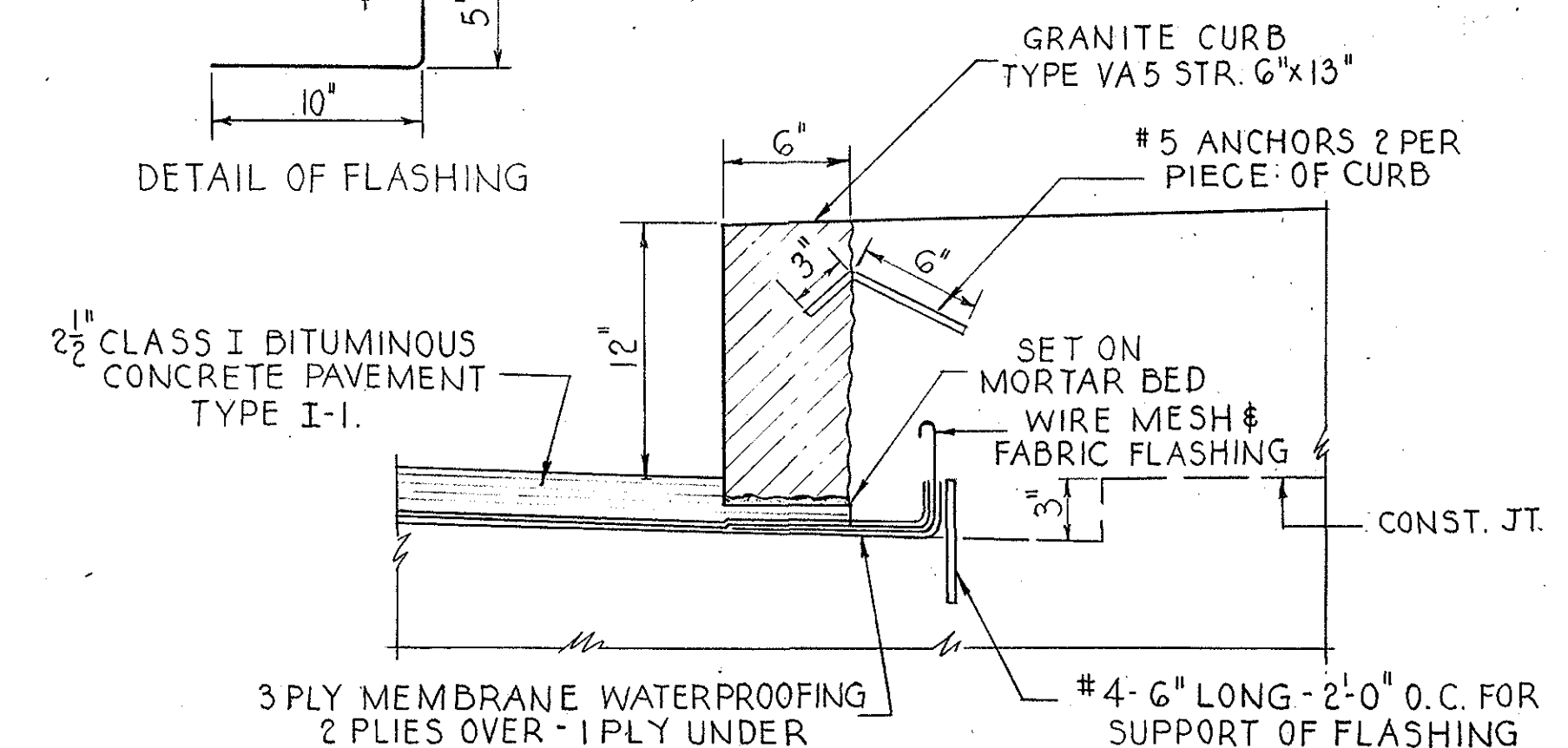
POST BASE
SCALE $\frac{1}{2}'' = 1'-0''$



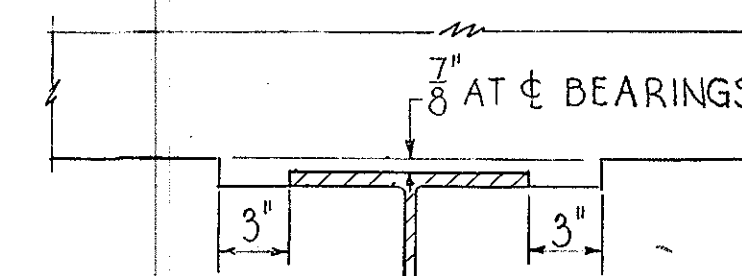
SECTION THRU BAR AND PIPE
TOP AND BOTTOM SIMILAR
SCALE FULL SIZE



DETAIL OF FLASHING

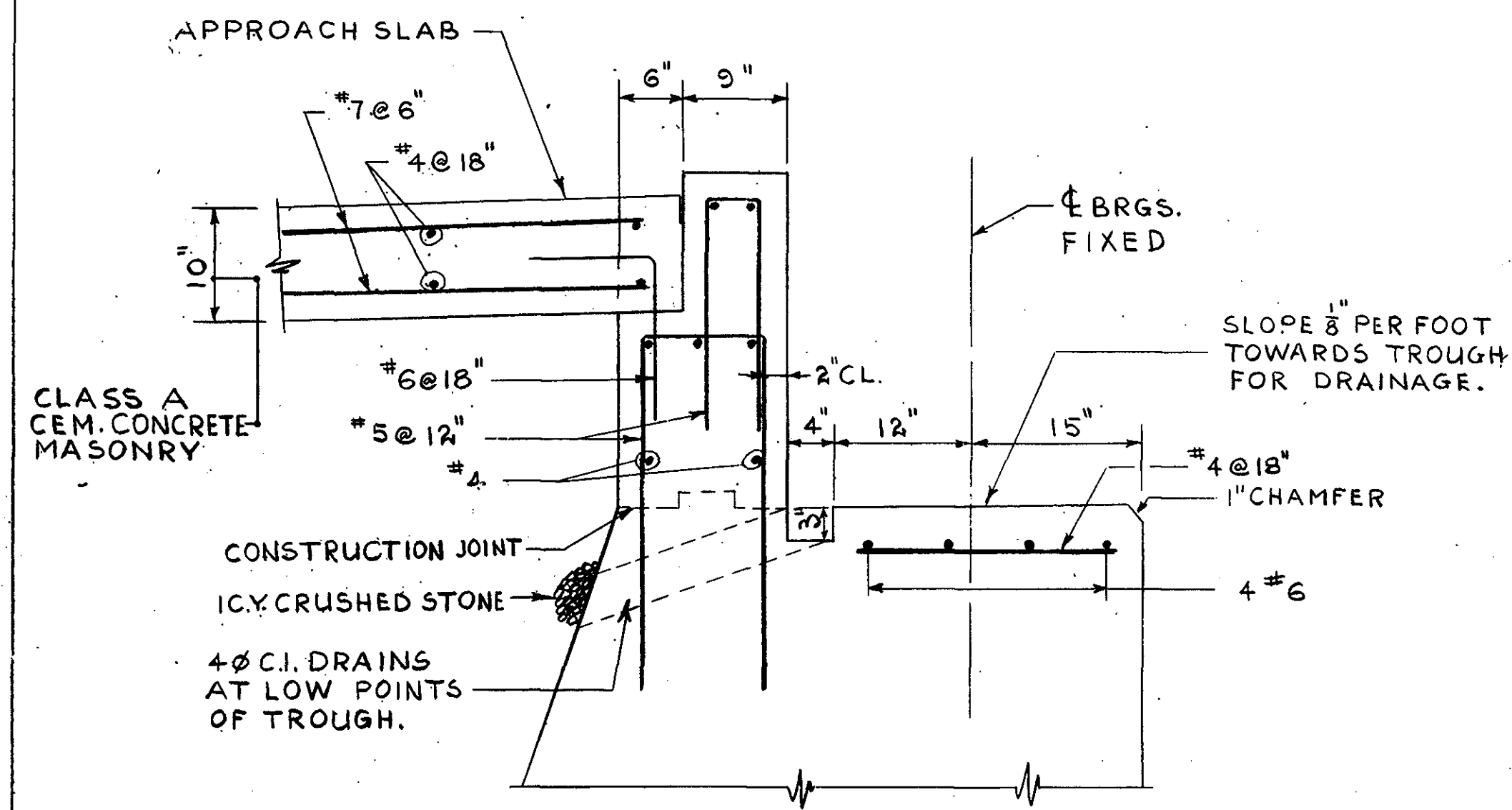


DETAIL UNDER CURB
SCALE $\frac{1}{2}'' = 1'-0''$

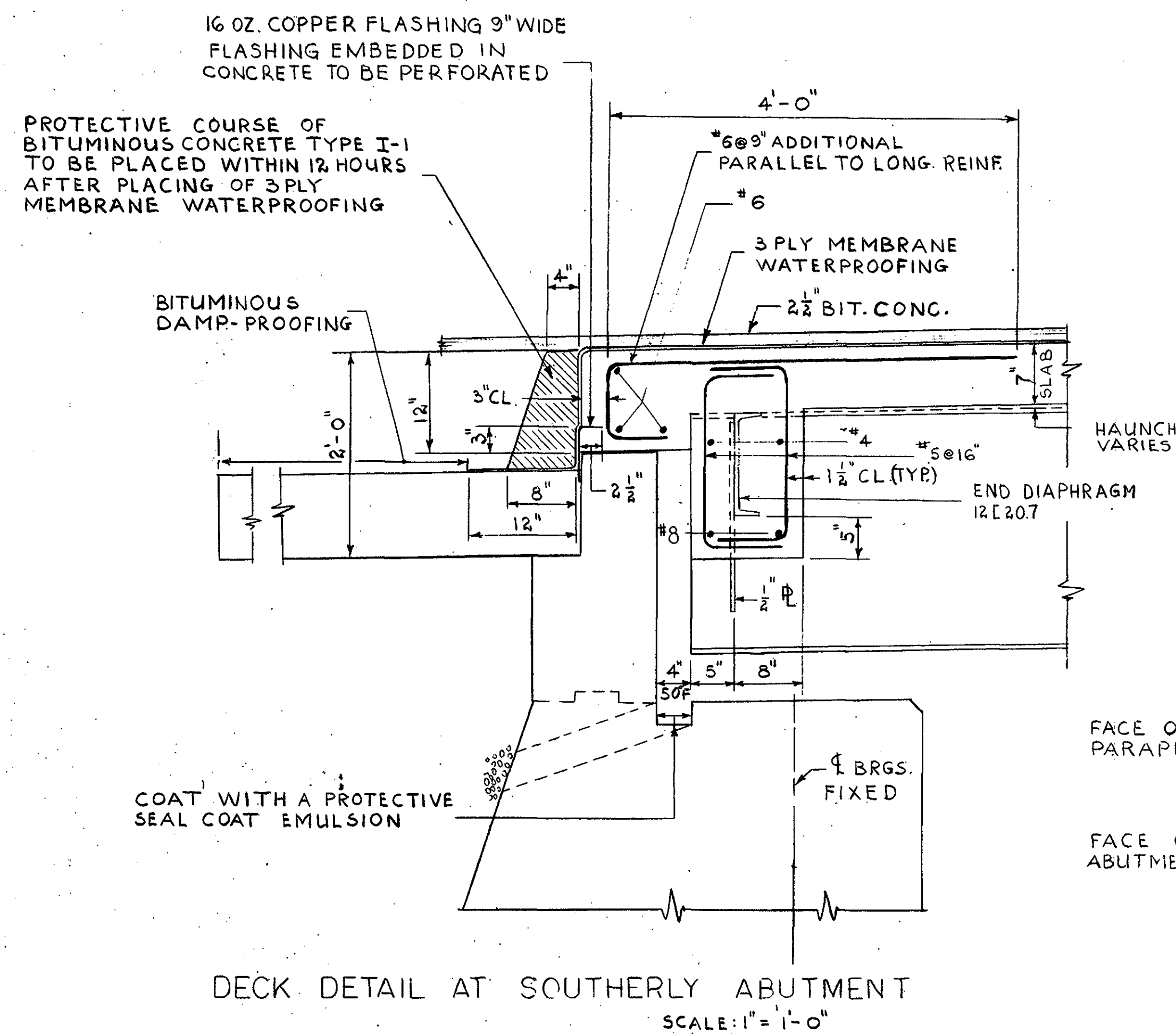


HAUNCH DETAILS
SCALE $\frac{1}{2}'' = 1'-0''$

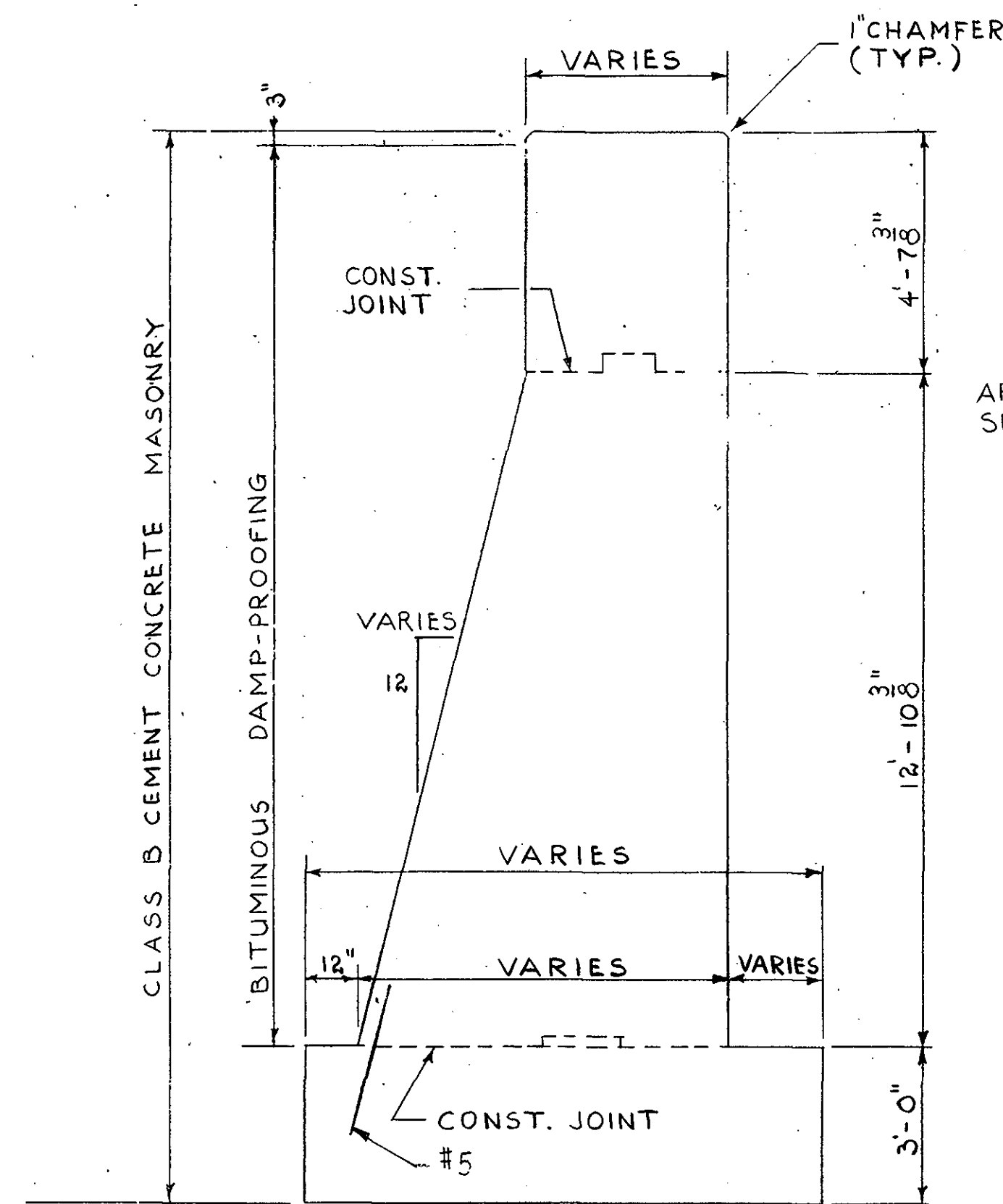
AUG. 8, 1964	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
	USE ONLY PRINTS OF LATEST DATE



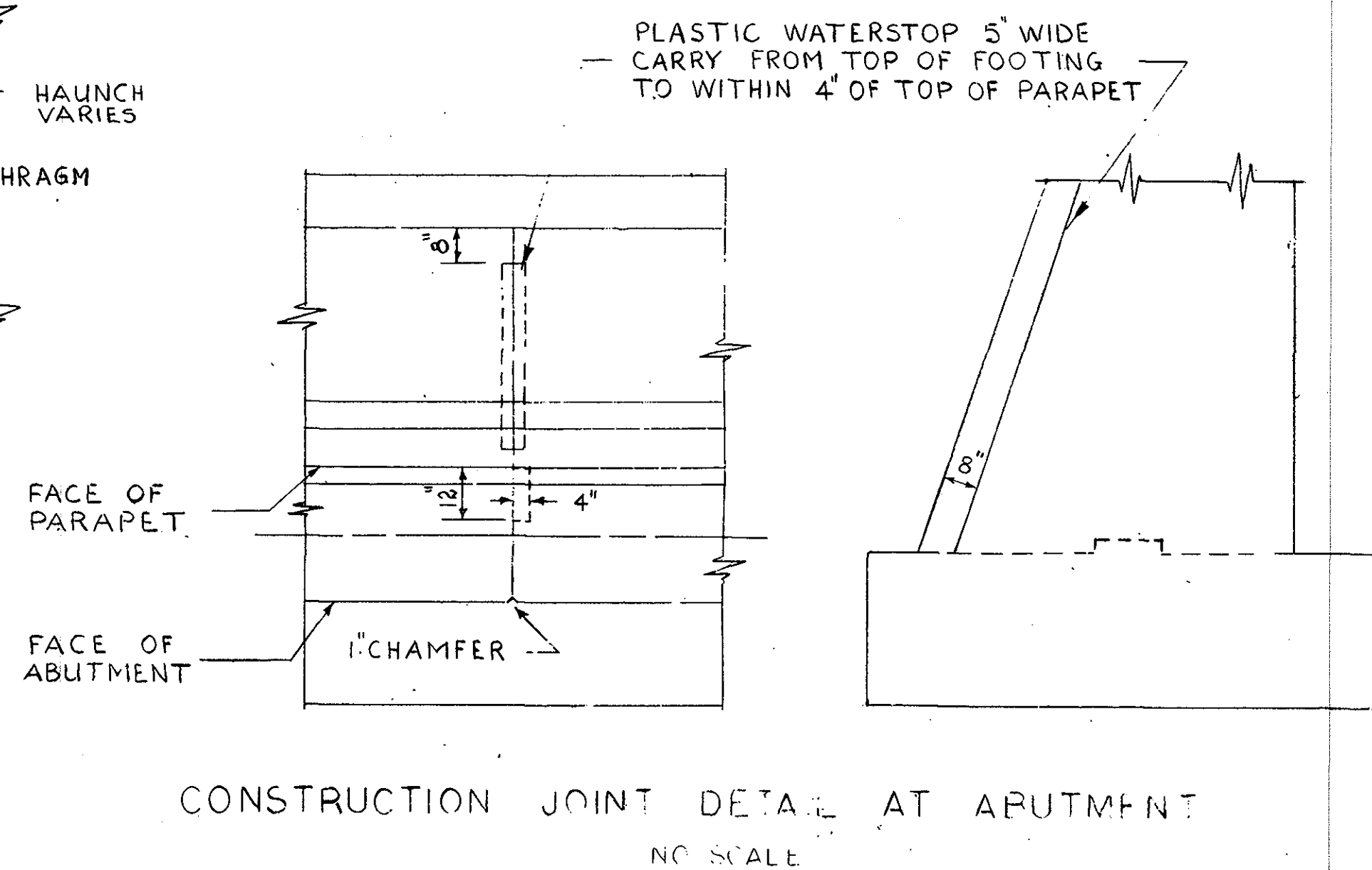
PARAPET DETAIL OF SOUTHERLY ABUTMENT
SCALE: 1" = 1'-0"



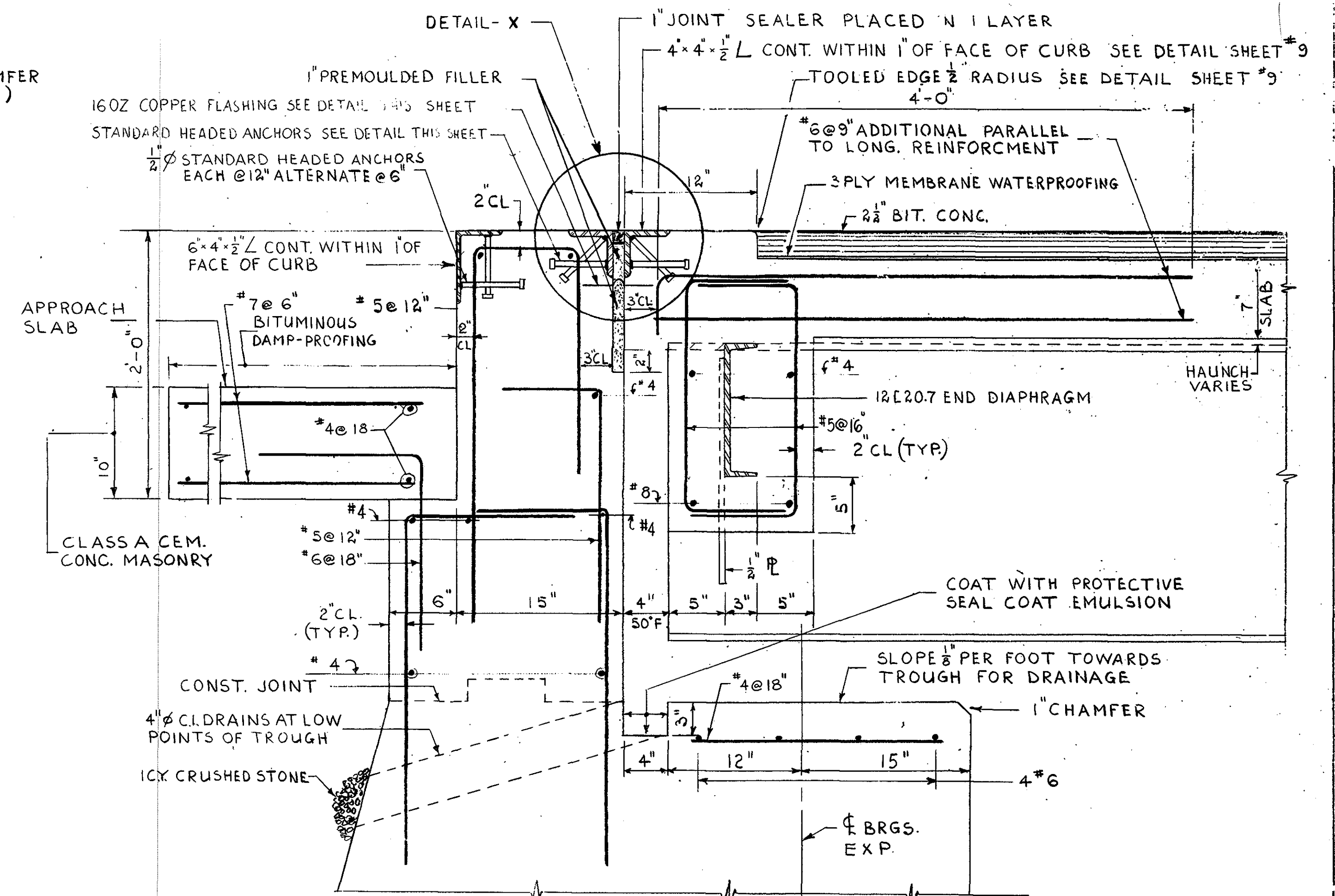
DECK DETAIL AT SOUTHERLY ABUTMENT
SCALE: 1" = 1'-0"



SECTION C-C
SCALE: 3/8" = 1'-0"

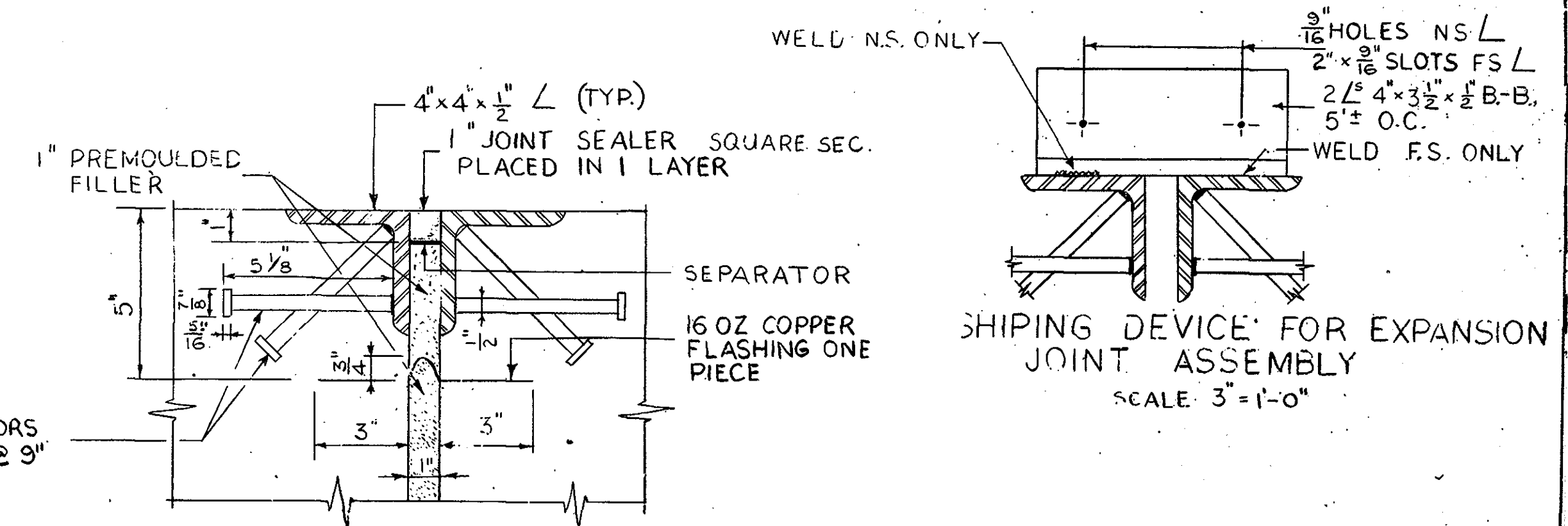
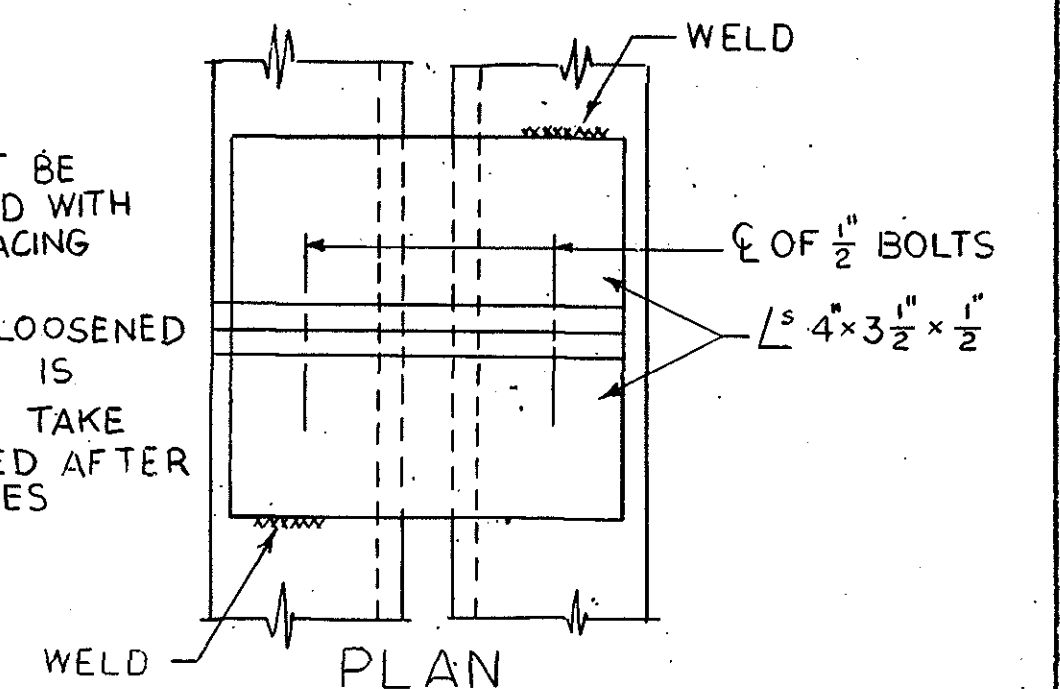


CONSTRUCTION JOINT DETAIL AT ABUTMENT
NO SCALE



DECK AND PARAPET DETAIL NORTHERLY ABUTMENT
SCALE: 1 1/2" = 1'-0"

- NOTES:
- ALL EXPANSION JOINT ASSEMBLIES MUST BE PROPERLY FITTED IN SHOP AND SHIPPED WITH DEVICE FOR MAINTAINING PROPER SPACING AND FIT.
 - BOLTS ON SHIPPING DEVICE MUST BE LOOSENED WITHIN ONE HOUR AFTER CONCRETE IS PLACED SO THAT MOVEMENT MAY TAKE PLACE. DEVICE SHALL BE REMOVED AFTER CONCRETE HAS SET ON BOTH SIDES OF ASSEMBLY.

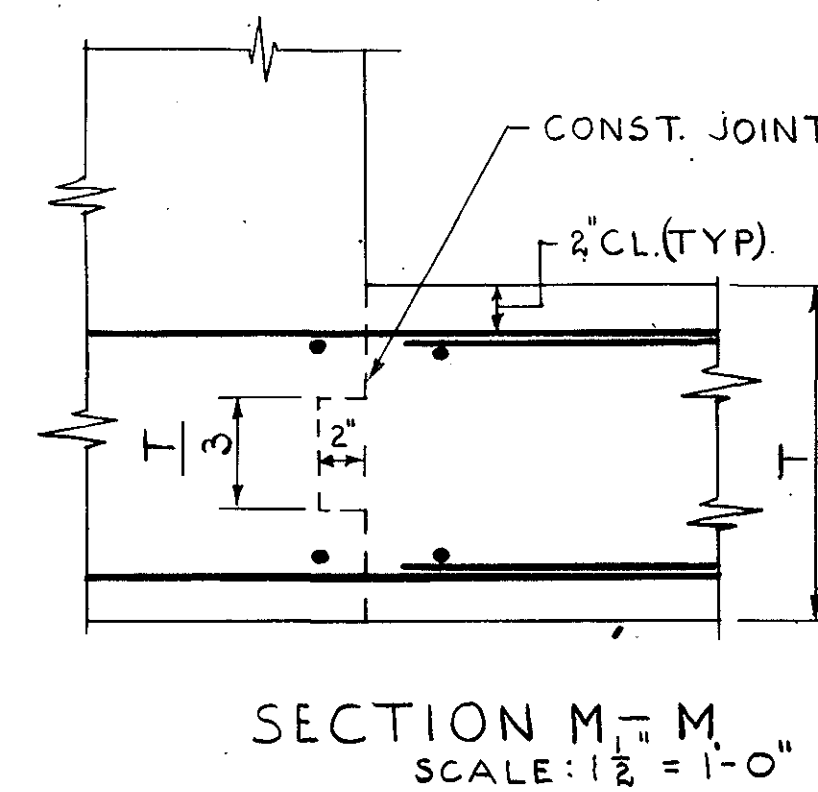
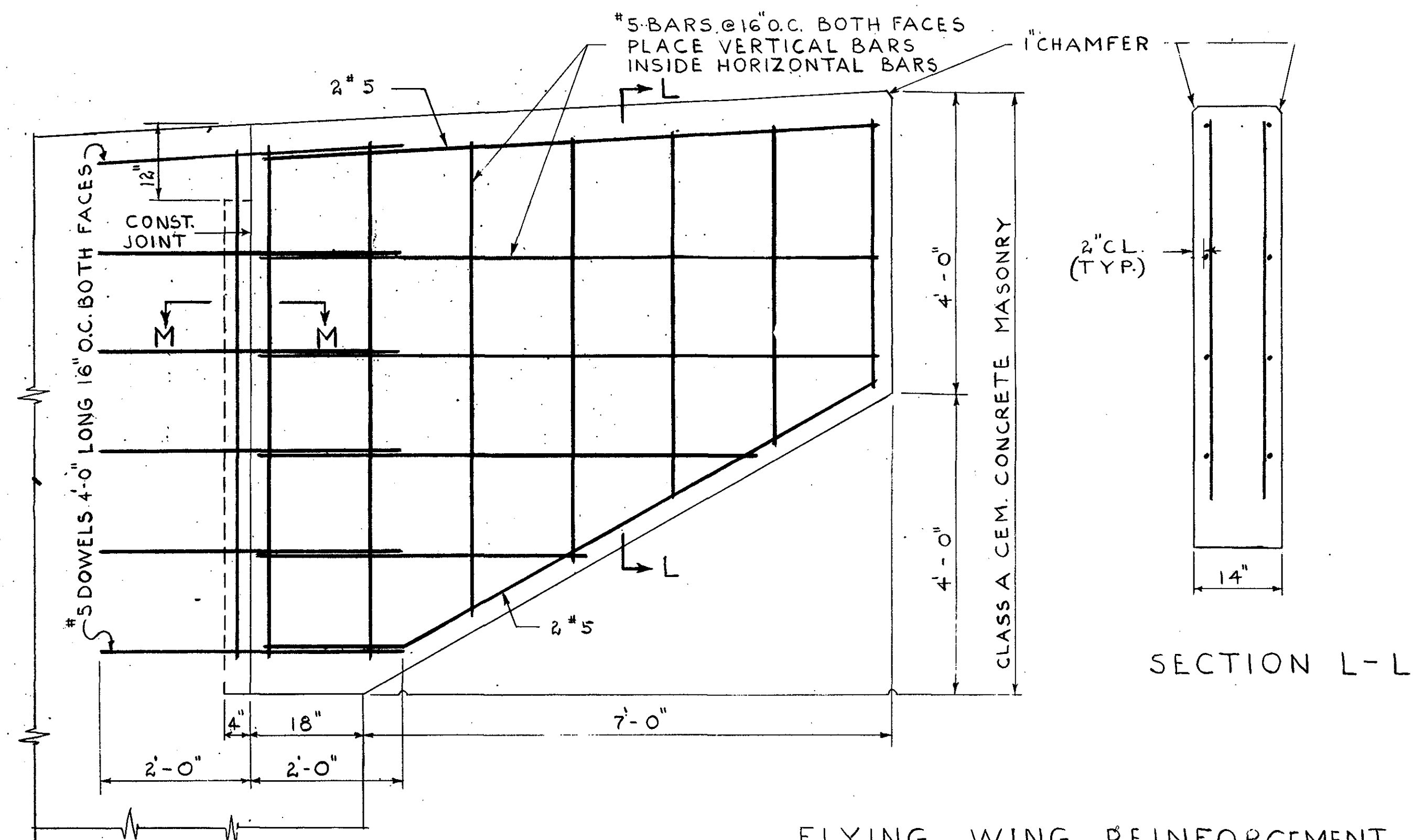


NOTE: FLASHING EMBEDDED IN CONCRETE TO BE PERFORATED

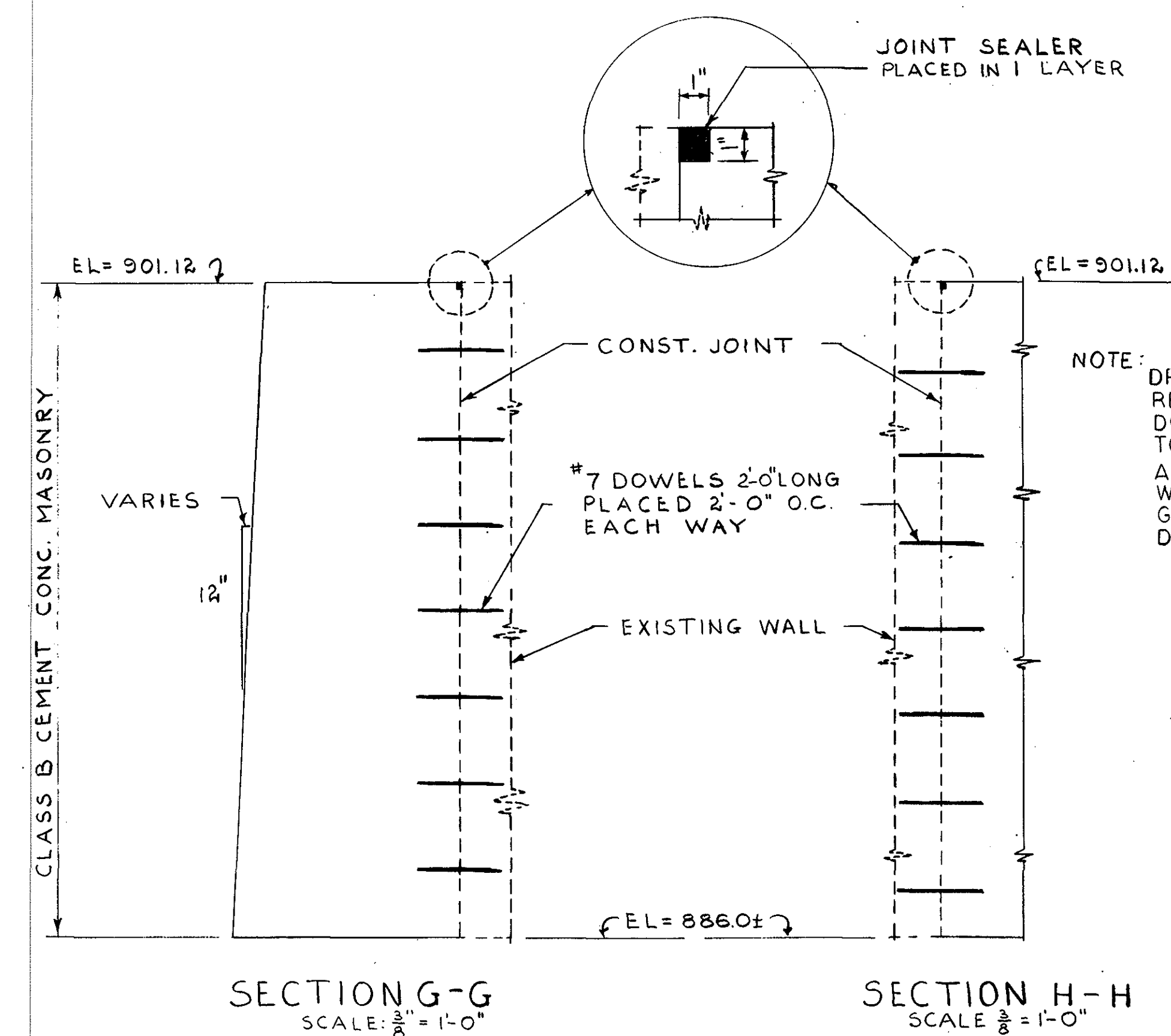
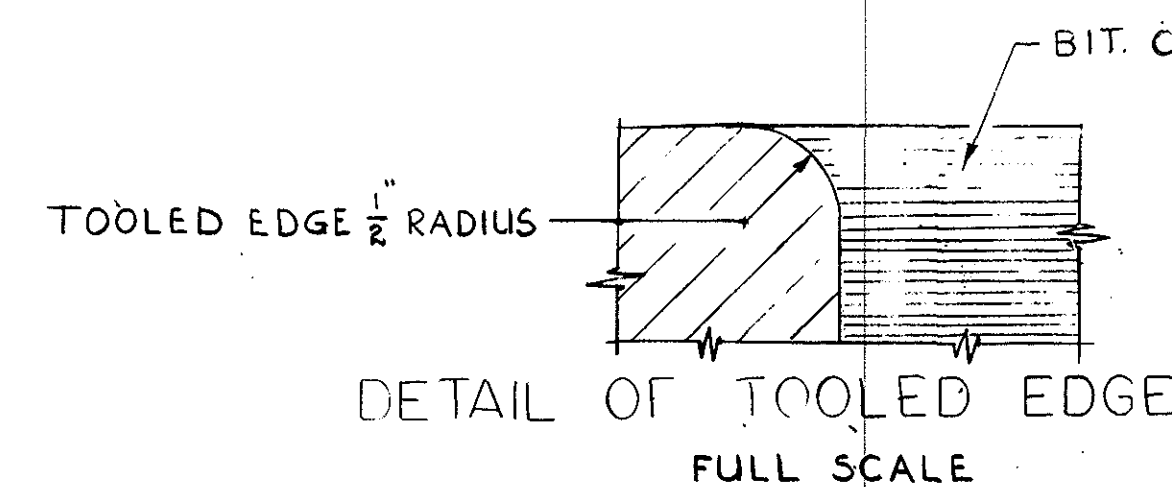
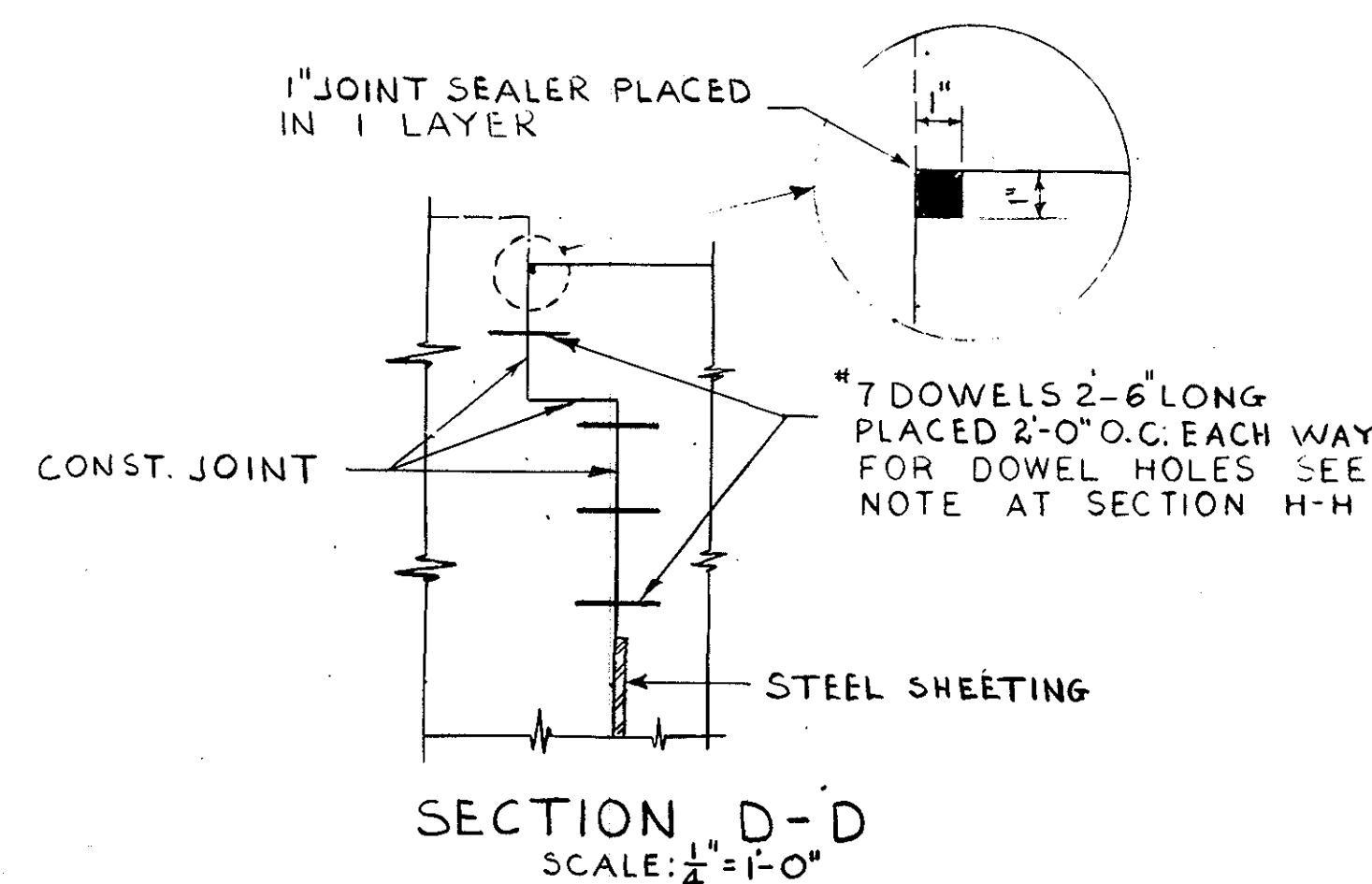
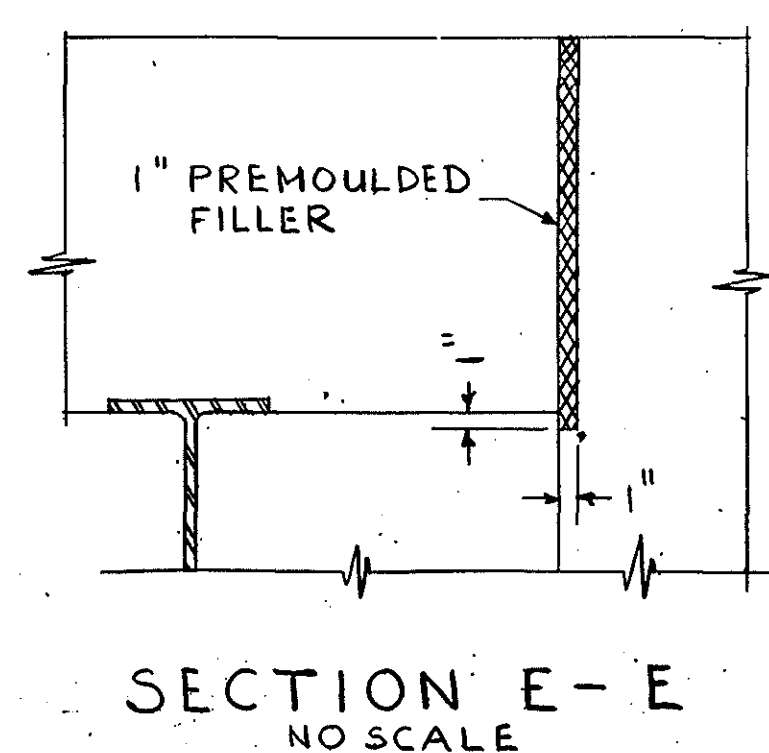
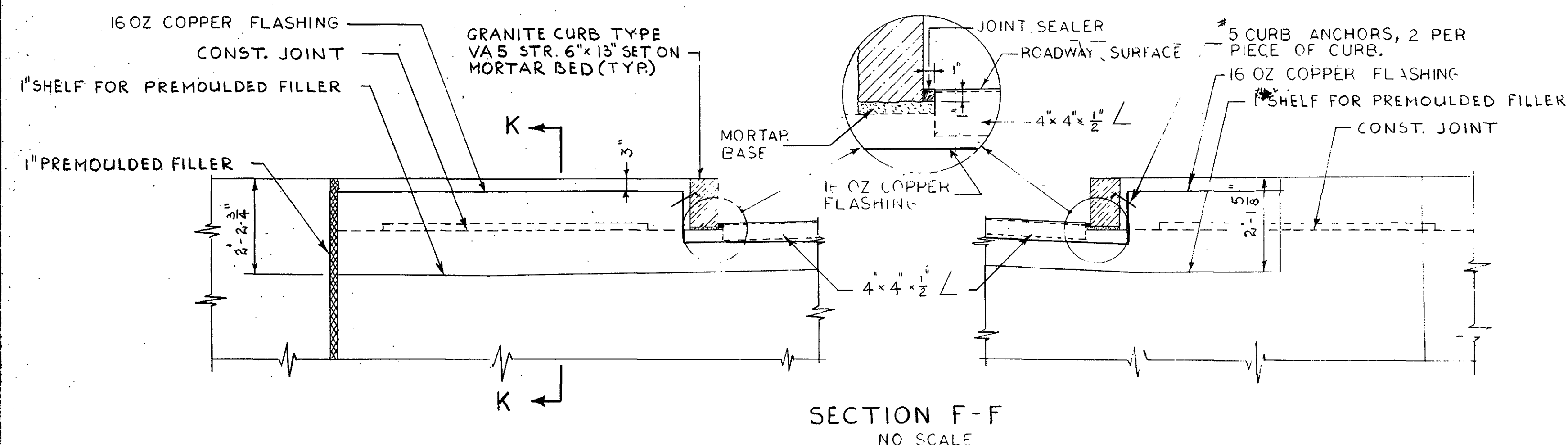
DETAIL-X
NO SCALE

AUG. 8, 1964	ISSUED	R. O.	
DATE		P.T.I.	
US	ONLY	AS IS	

W-39-6

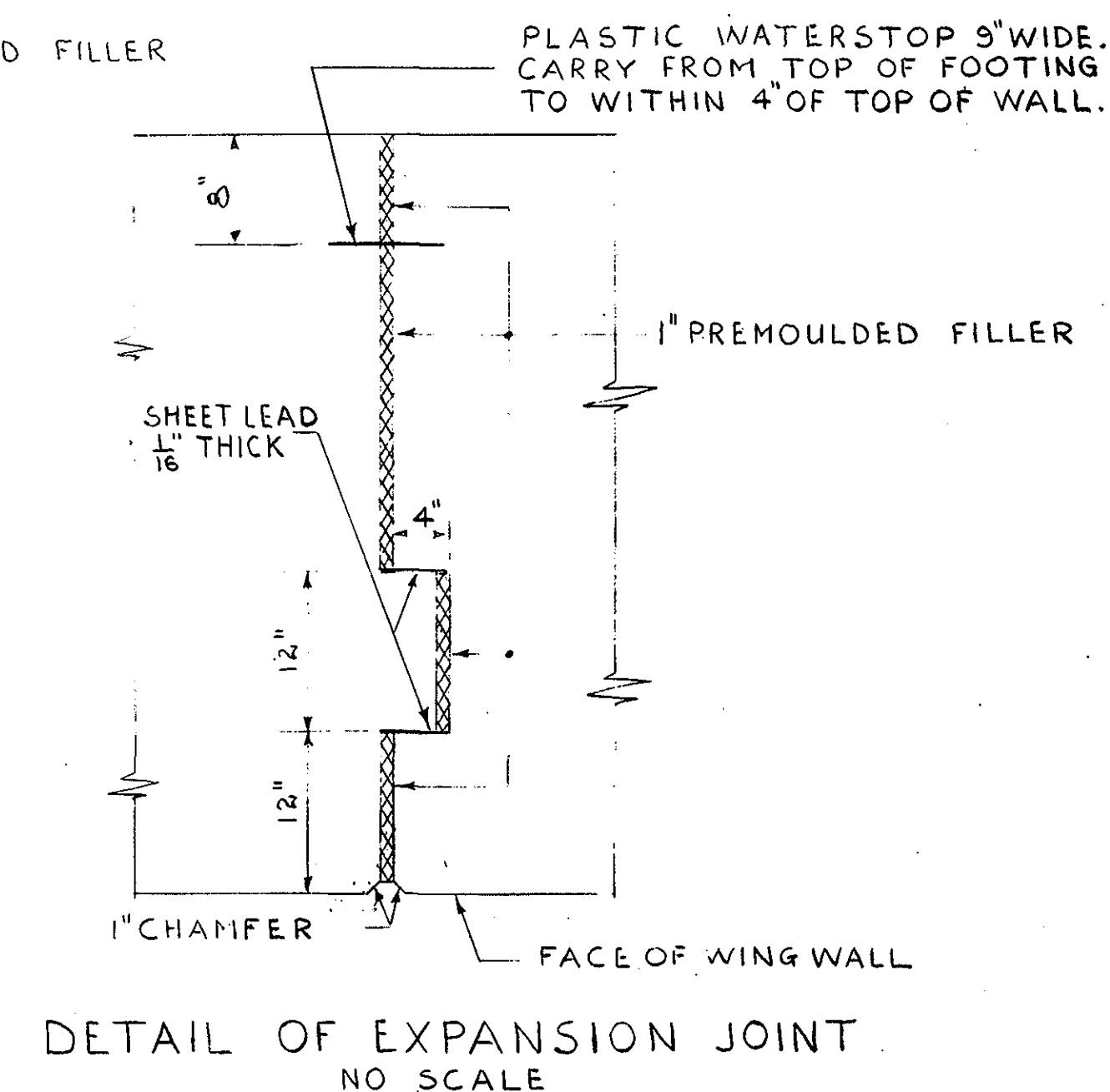
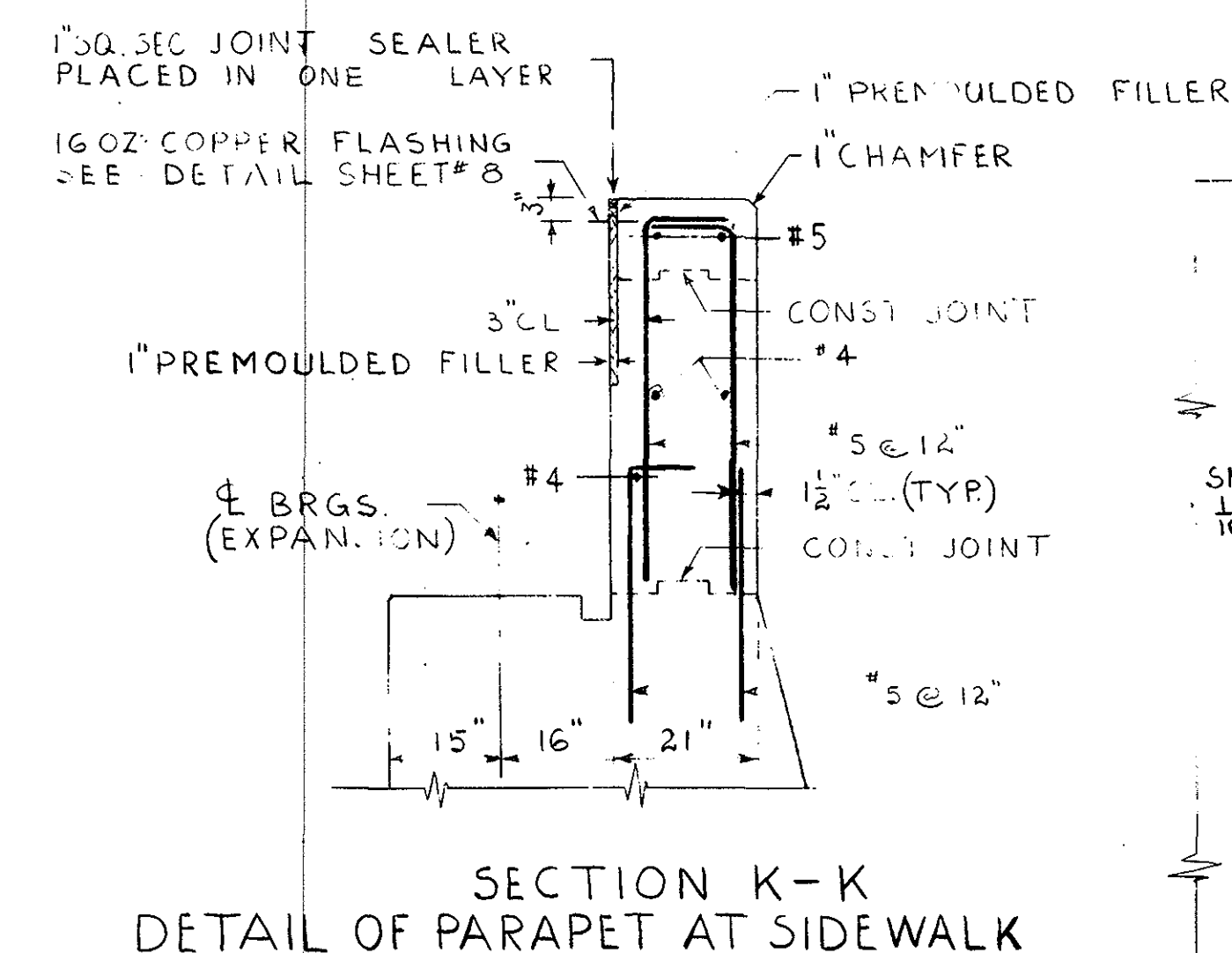


SECTION L-L

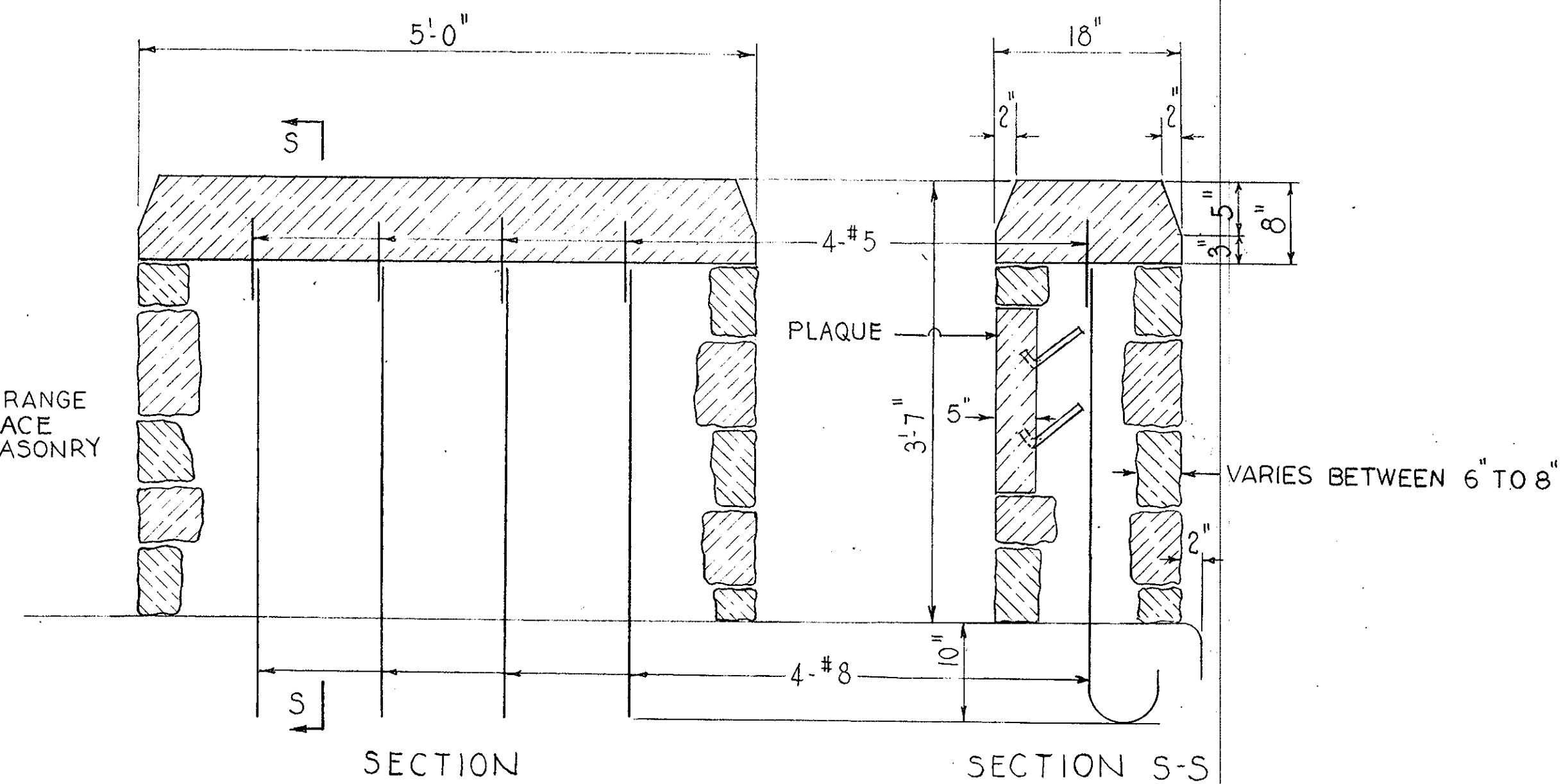
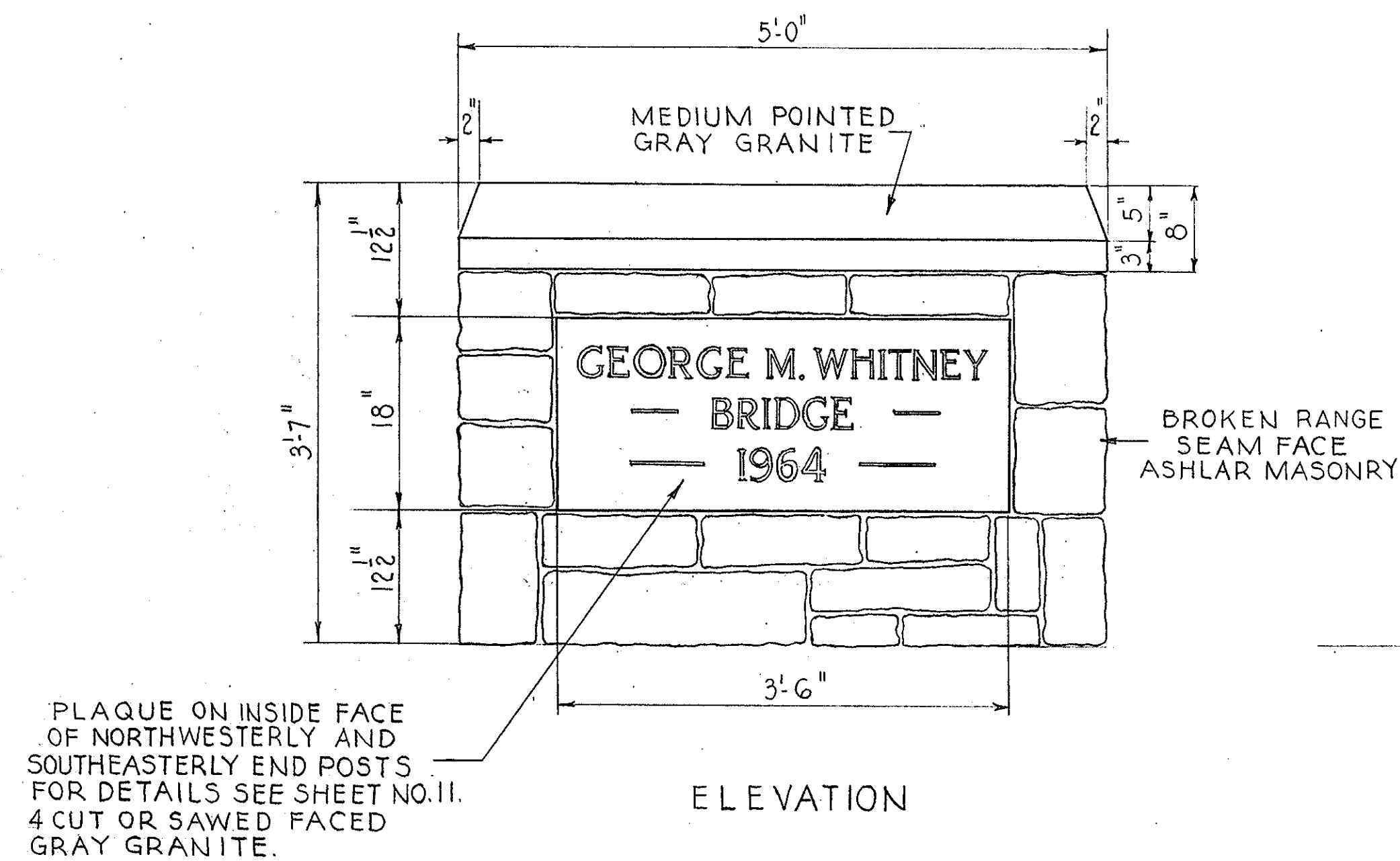


SECTION H-H
SCALE: $\frac{3}{8}$ " = 1'-0"

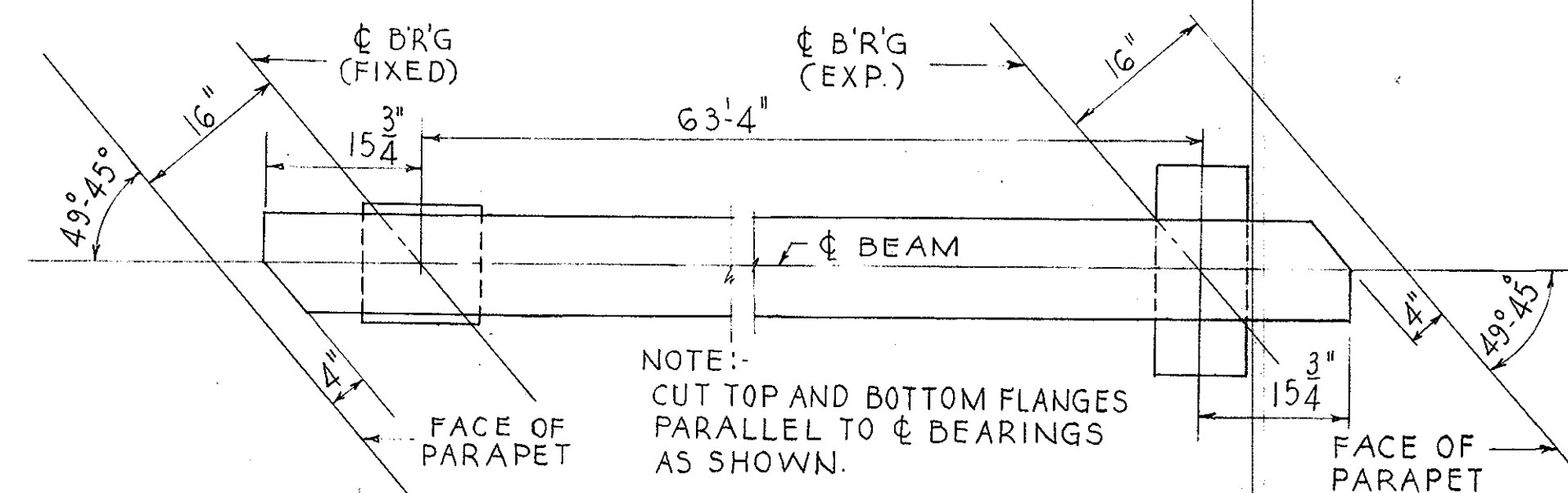
NOTE: DRILL HOLES INTO EXISTING RETAINING WALLS FOR #7 DOWELS. DIAMETER OF HOLES TO BE 2". ALL HOLES TO BE FILLED WITH NON SHRINKING CEMENT GROUT BEFORE PLACING DOWELS.



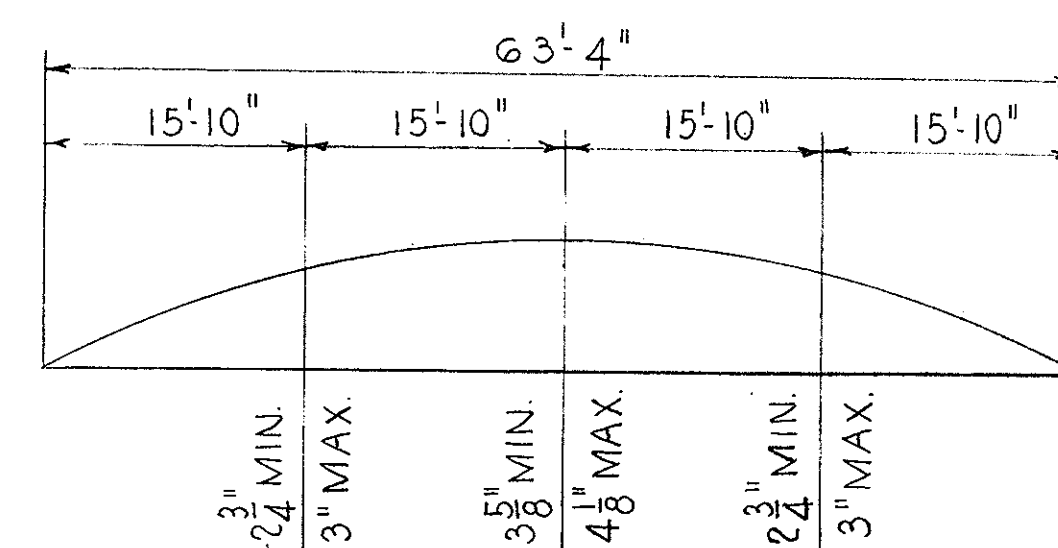
AUG. 8, 1964 ISSUED FOR CONSTRUCTION
DATE DESCRIPTION
USE ONLY PRINTS OF LATEST DATE



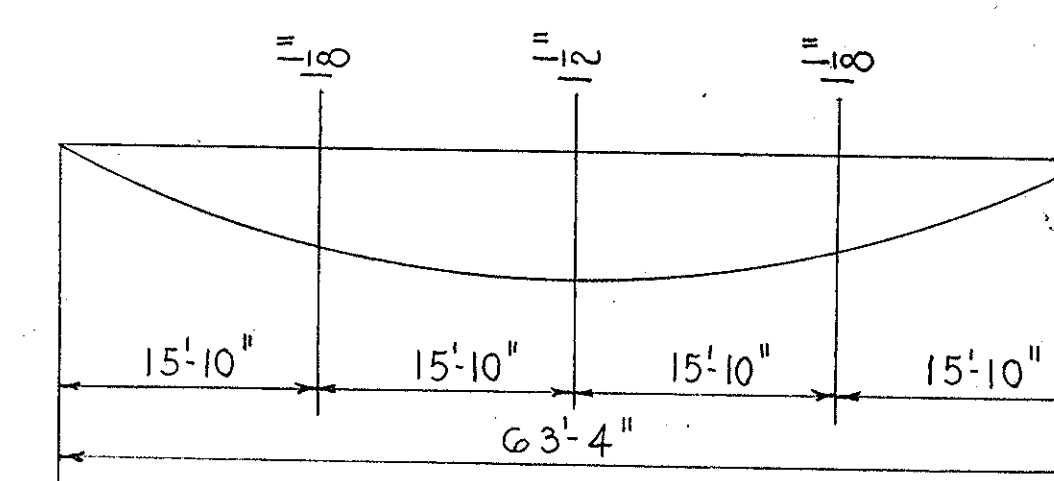
END POST DETAILS
SCALE 1"=1'-0"



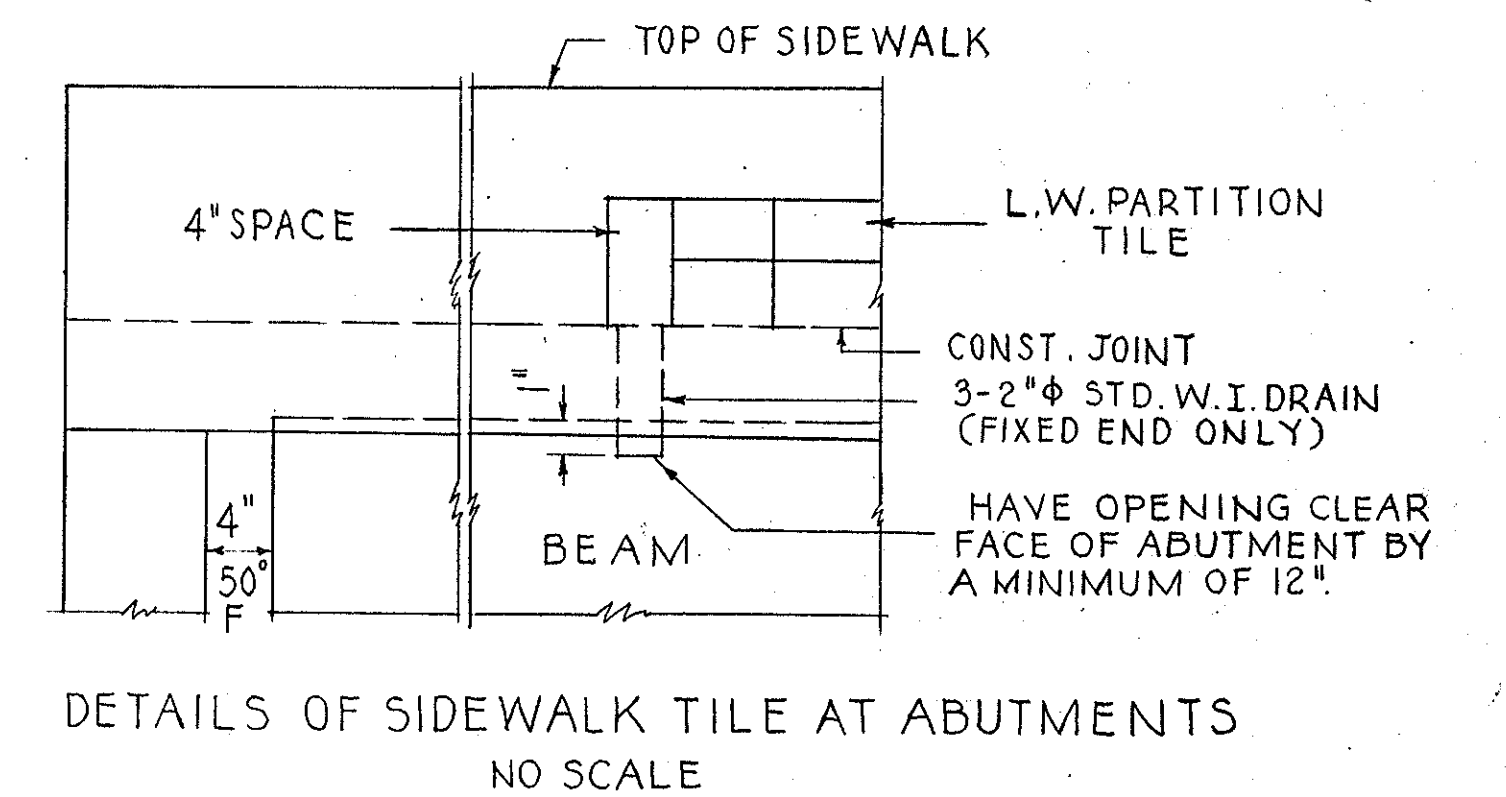
DETAIL OF BEAM ENDS
SCALE 3/4"=1'-0"



BEAM CAMBER DIAGRAM
NO SCALE



(FOR USE OF RESIDENT ENGINEER ONLY)
SLAB DEAD LOAD DEFLECTION DIAGRAM
NO SCALE



DETAILS OF SIDEWALK TILE AT ABUTMENTS
NO SCALE

BEAM NO.	¢ B'R'G FIXED ABUT.	1/4 POINT	1/2 POINT	3/4 POINT	¢ B'R'G EXP. ABUT.
1	900.06	900.46	900.73	900.86	900.85
2	900.24	900.63	900.88	901.00	900.98
3	900.42	900.79	901.03	901.14	901.10
4	900.59	900.95	901.18	901.27	901.22
5	900.63	900.98	901.20	901.27	901.21
6	900.58	900.92	901.13	901.19	901.12
7	900.54	900.87	901.06	901.11	901.02

- NOTES:-
- (A) FOR USE OF THE RESIDENT ENGINEER IN FIELD FOR COMPARISON OF ELEVATION ALONG THE TOP FLANGE OF BEAMS IN PLACE AND THE DESIGN ELEVATIONS ABOVE.
 - (B) ELEVATIONS SHOWN IN THE TABLE ABOVE ARE WITHOUT DEAD LOAD OF SLAB APPLIED AND INCLUDES DEFLECTION DUE TO DEAD LOAD OF STRUCTURAL STEEL ONLY.

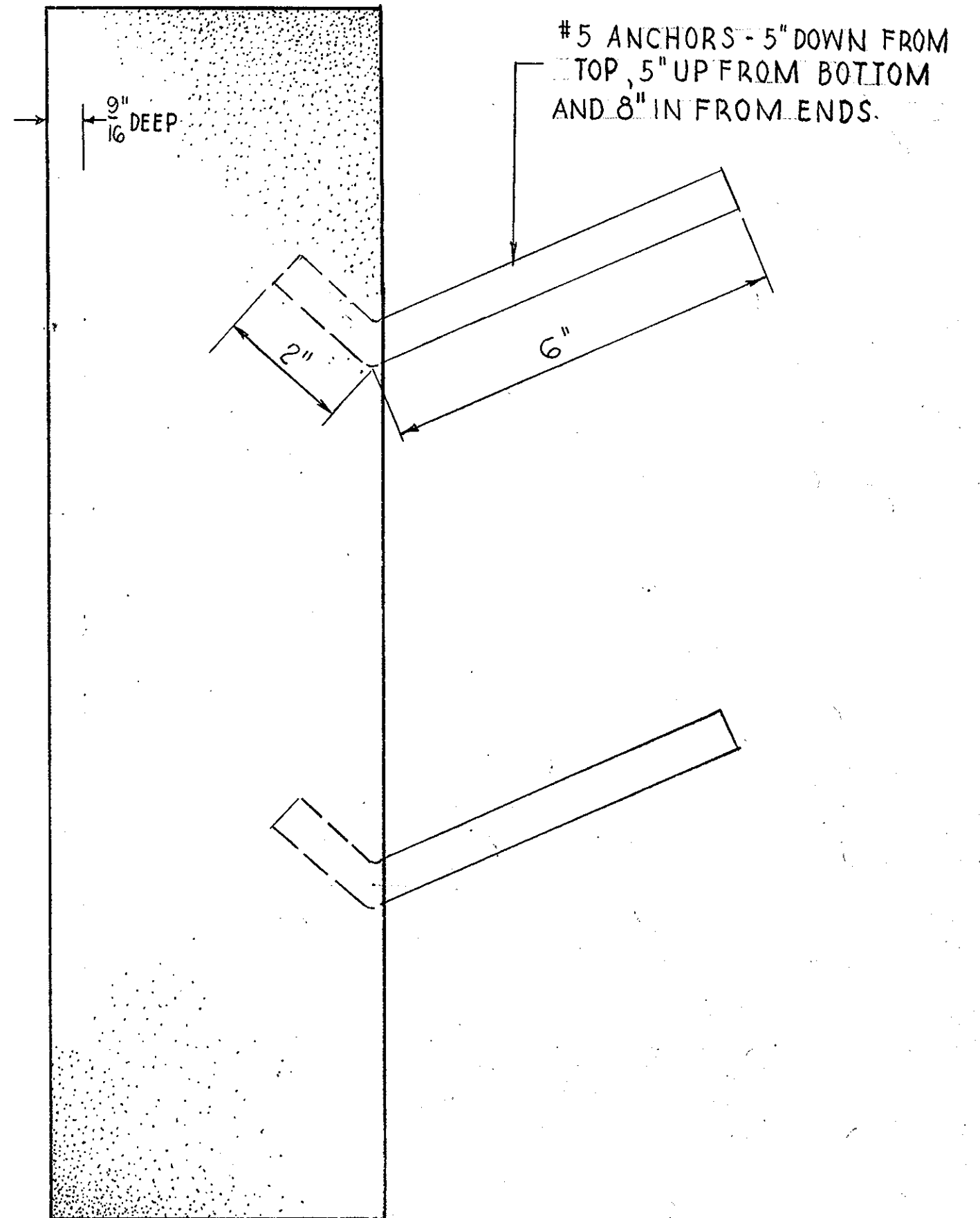
TABLE OF DESIGN ELEVATIONS ALONG TOP FLANGE OF BEAMS

PUB. AD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.		19		



4 CUT OR SAWED
FACED GRAY GRANITE

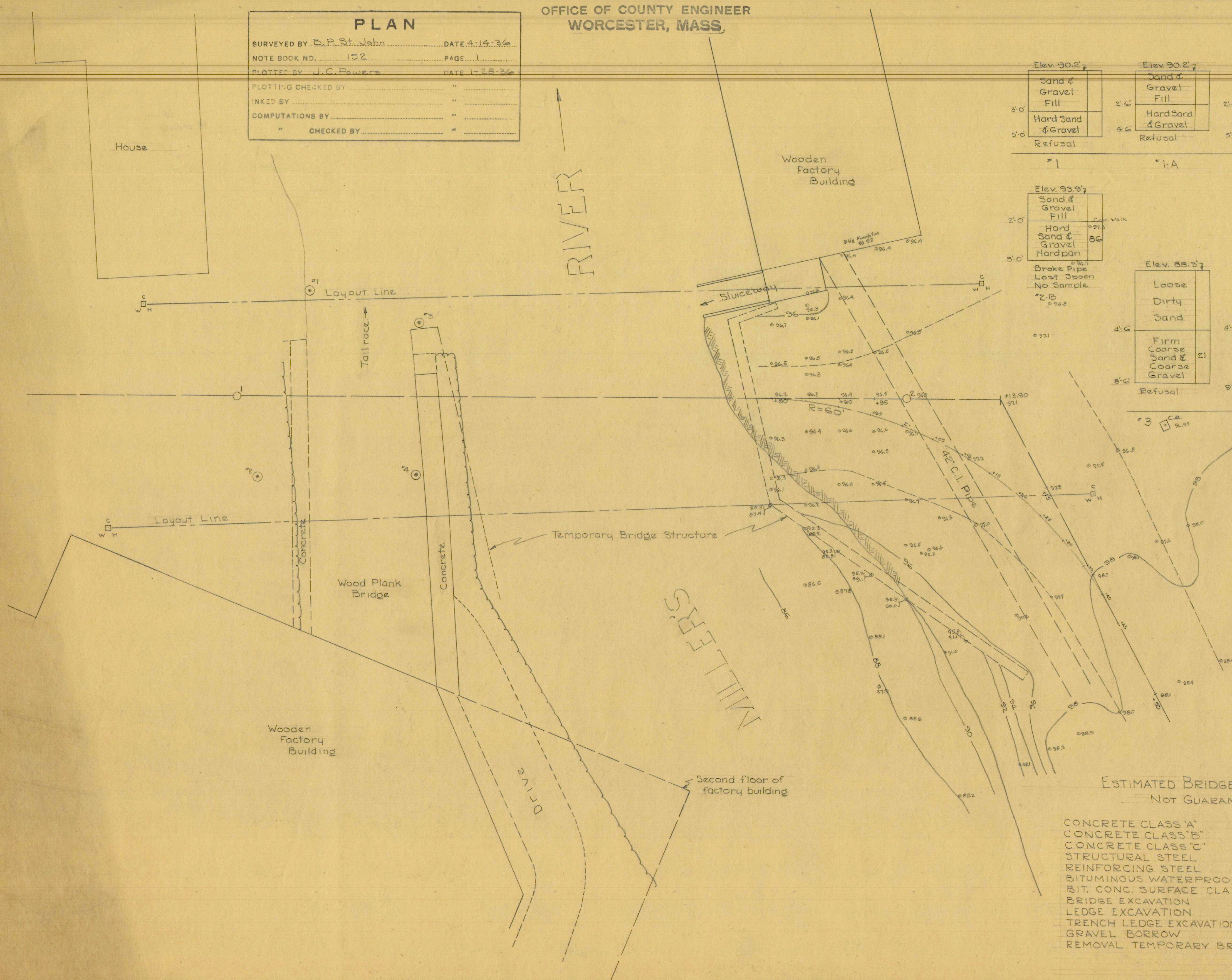
PLAQUE
HALF SIZE
2 REQUIRED



AUG. 8, 1964	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

PLAN	
SURVEYED BY B. P. St. John	DATE 4-14-36
NOTE BOOK NO. 152	PAGE 1
PLOTTED BY J. C. Powers	DATE 1-28-36
PLOTTING CHECKED BY	"
INKED BY	"
COMPUTATIONS BY	"
" CHECKED BY	"

OFFICE OF COUNTY ENGINEER
WORCESTER, MASS.



Elev. 90.27 Sand & Gravel Fill 5'-0" Hard Sand & Gravel 5'-0" Refusal	Elev. 90.27 Sand & Gravel Fill 2'-6" Hard Sand & Gravel 4'-6" Refusal	Elev. 90.27 Sand & Gravel Fill 2'-6" Hard Coarse Sand & Gravel 5'-0" Refusal	Elev. 90.27 Sand & Gravel Fill 2'-6" Hard Coarse Sand & Gravel 4'-16" Refusal	Elev. 93.97 Sand & Gravel Fill 2'-0" Hard Sand & Gravel 5'-0" Refusal	Elev. 93.97 Sand & Gravel Fill 2'-0" Hard Sand & Gravel 4'-6" Refusal
#1	#1-A	#1-B	#1-C	#2	#2-A

Elev. 93.97 Sand & Gravel Fill 2'-0" Hard Sand & Gravel 5'-0" Broke Pipe Lost Spoon No Sample #2-B	Elev. 88.37 Loose Dirty Sand 4'-6" Firm Coarse Sand & Coarse Gravel 8'-6" Refusal	Elev. 88.37 Loose Dirty Sand 4'-6" Firm Coarse Sand & Coarse Gravel 9'-0" Refusal	Elev. 87.07 Loose Dirty Sand 2'-0" Hard Coarse Sand & Coarse Gravel 5'-0" Refusal	Elev. 87.07 Loose Dirty Sand 2'-6" Hard Coarse Sand & Coarse Gravel 7'-10" Refusal	Elev. 86.77 Loose Dirty Sand 2'-6" Hard Coarse Sand & Coarse Gravel 8'-0" Refusal
#3	#3-A	#4	#4-A	#4-B	

BORING CHART.

GENERAL NOTES

- FINISH - All exposed concrete surfaces to be rubbed with corundum block and left smooth and free from form marks and imperfections.
- DATE - Date is to be located on roadway face of Northwest and Southeast end posts.
- FOUNDATIONS - May be altered if necessary to suit conditions of construction.
- REINFORCING STEEL - To be deformed bars.
- WEEP-HOLES - To be located as shown or as directed by the engineer.
- DESIGN SPECIFICATIONS - Standard specifications of the American Association of State Highway Officials (1935) for H-15 loading to govern.

ESTIMATED BRIDGE QUANTITIES
NOT GUARANTEED

CONCRETE CLASS "A"	CU. YDS.
CONCRETE CLASS "B"	CU. YDS.
CONCRETE CLASS "C"	CU. YDS.
STRUCTURAL STEEL	POUNDS
REINFORCING STEEL	POUNDS
BITUMINOUS WATERPROOFING	SQ. YDS.
RIT. CONC. SURFACE CLASS "I"	TONS
BRIDGE EXCAVATION	CU. YDS.
LEDGE EXCAVATION	CU. YDS.
TRENCH LEDGE EXCAVATION	CU. YDS.
GRAVEL BORROW	CU. YDS.
REMOVAL TEMPORARY BRIDGE	CU. YDS.
LUMP SUM	

LOCATION PLAN
Scale: 1/8" = 1'-0"

On File

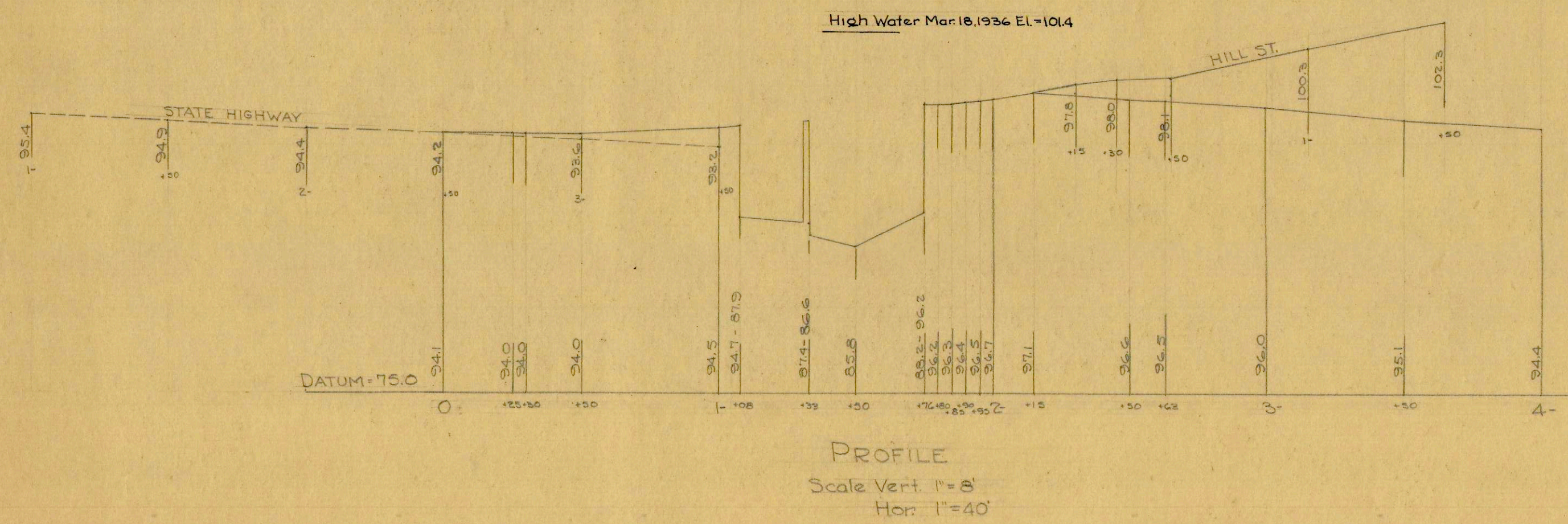
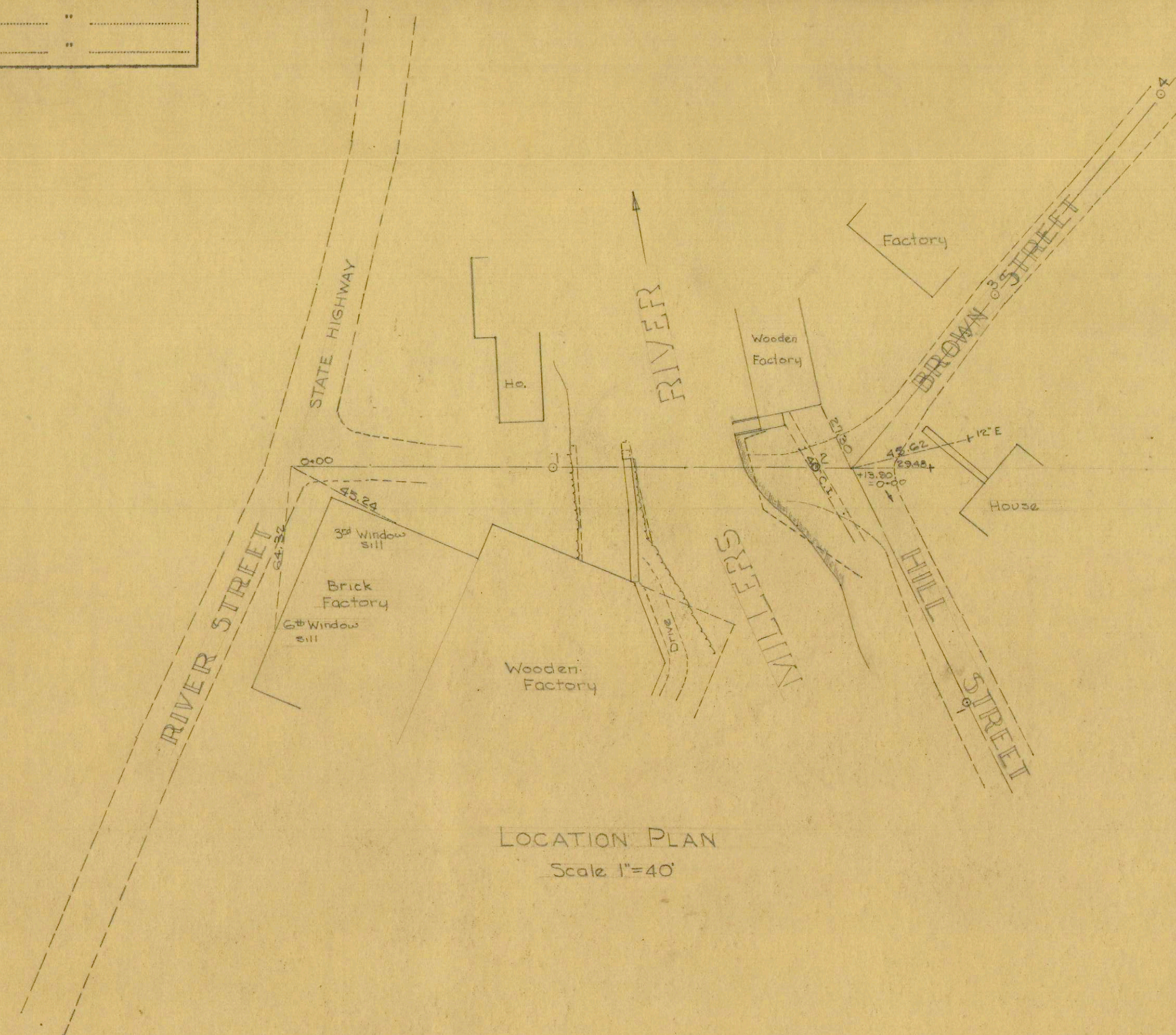
W-39-006
Sheet 1 of 4
scanned 9/30/2015

WINCHENDON
BROWN ST. BRIDGE
OVER MILLER'S RIVER

BRIDGE No W-39-6

PLAN

SURVEYED BY B.P. St. John DATE 4-14-36
 NOTE BOOK NO. 152 PAGE 1
 PLOTTER BY J.C.R. DATE 2-10-37
 PLOTTING CHECKED BY "
 INKED BY "
 COMPUTATIONS BY "
 " CHECKED BY "



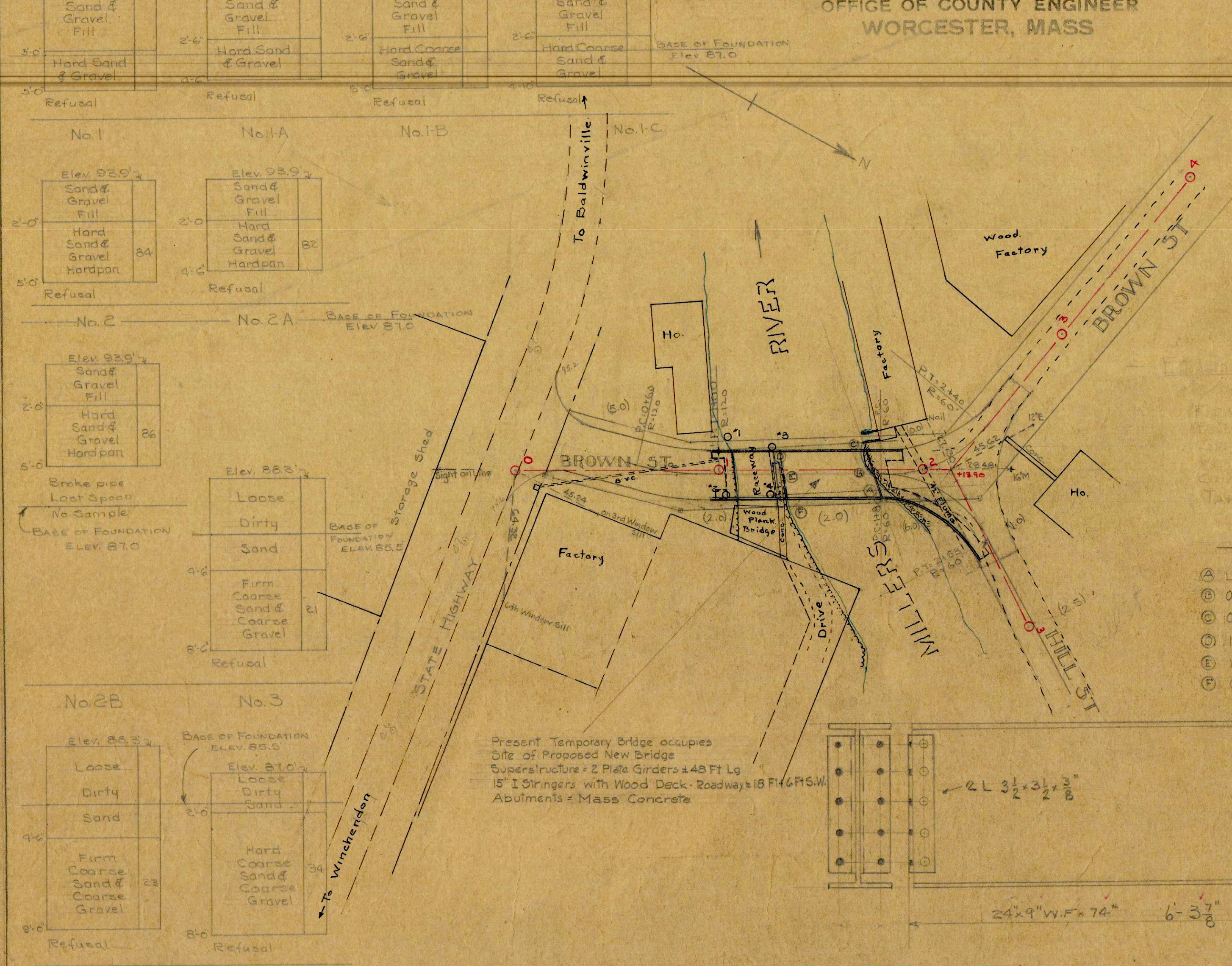
W-39-006
 sheet 2 of 4
 scanned 9/30/2025

WINCHENDON
 BROWN ST. BRIDGE
 OVER MILLER'S RIVER

BRIDGE N°W-39-6

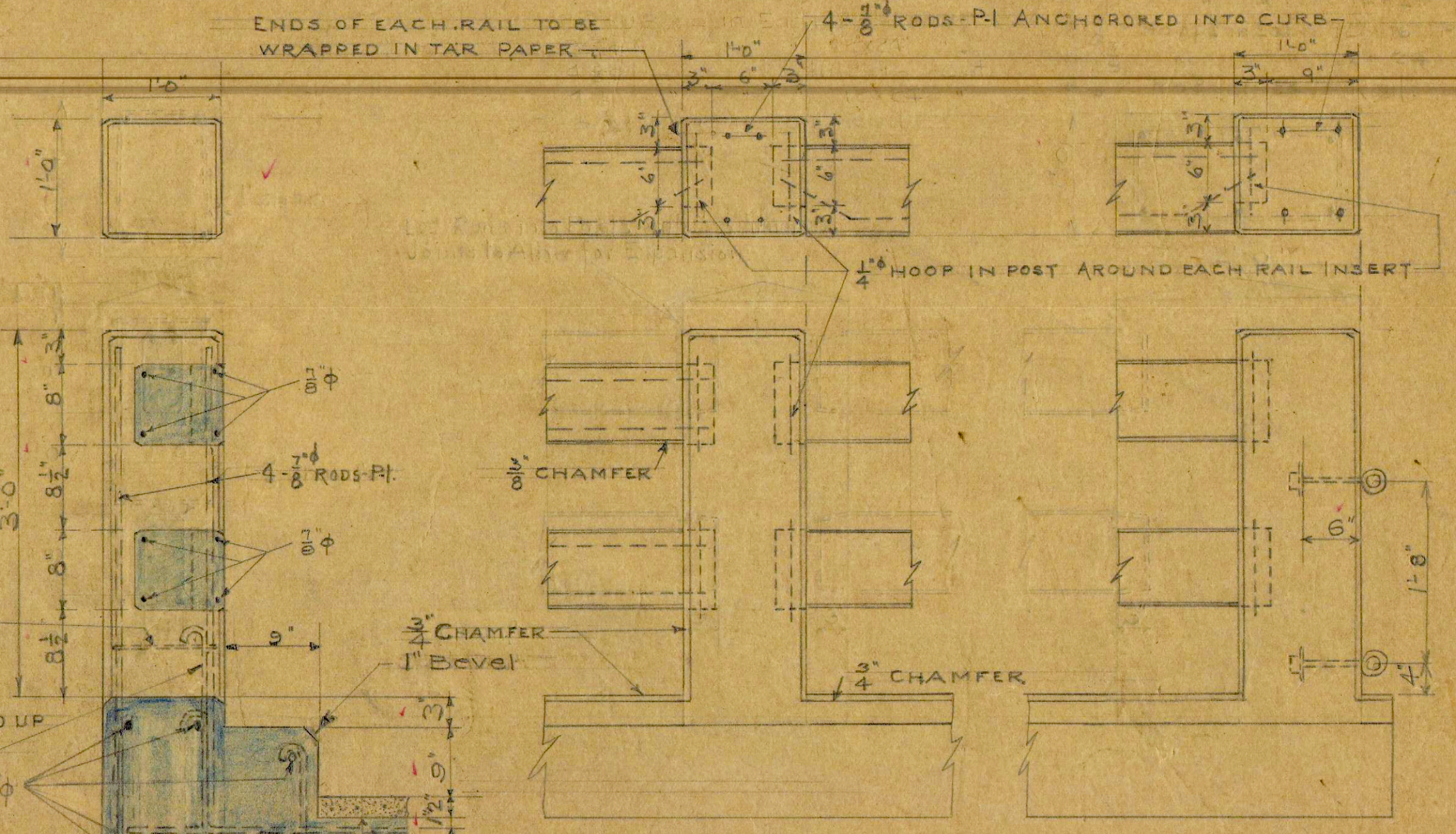
OFFICE OF COUNTY ENGINEER WORCESTER, MASS

SURVEYED BY: B.P. St. John
NOTE BOOK NO. 152
PLOTTED BY: B.P. St. John
PLOTTING CHECKED BY: J.C. Parsons
INKED BY: J.C. Parsons
COMPUTATIONS BY: E.J. T. 18
CHECKED BY: J.C. Parsons
DATE: 4-14-36
PAGE: 1
DATE: April 1936
DATE: July 1936



SOUNDING CHART

- (A) Ledge on Surface
- (B) 0.5 Ft Water + 2.0 Ft Gravel to Ledge
- (C) 0.5 Ft Water + 1.0 Ft Gravel to Ledge
- (D) 1.0 Ft Water + 3.0 Ft Rock & Gravel to Hard Bottom
- (E) 1.0 Ft Water + 4.0 Ft Rock & Gravel to Hard Bottom
- (F) 0.5 Ft Water + 3.0 Ft Gravel to Ledge



CONCRETE RAIL DETAILS
Scale 1" = 1'-0"

GENERAL NOTES

- FINISH - ALL EXPOSED CONCRETE SURFACES TO BE RUBBED WITH CORUNDUM BLOCK
- LEFT SMOOTH & FREE FROM FORM MARKS & IMPERFECTIONS.
- DATE - DATE IS TO BE LOCATED ON ROADWAY FACE OF NORTHWEST & SOUTH EAST END POSTS.
- FOUNDATIONS MAY BE ALTERED IF NECESSARY TO SUIT CONDITIONS OF CONSTRUCTION.
- REINFORCING STEEL TO BE DEFORMED BARS.
- WEEP HOLES TO BE LOCATED AS SHOWN OR AS DIRECTED BY THE ENGINEER.
- SPECIFICATIONS - STANDARD SPECIFICATIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS (1935) FOR H15 LOADINGS TO GOVERN.

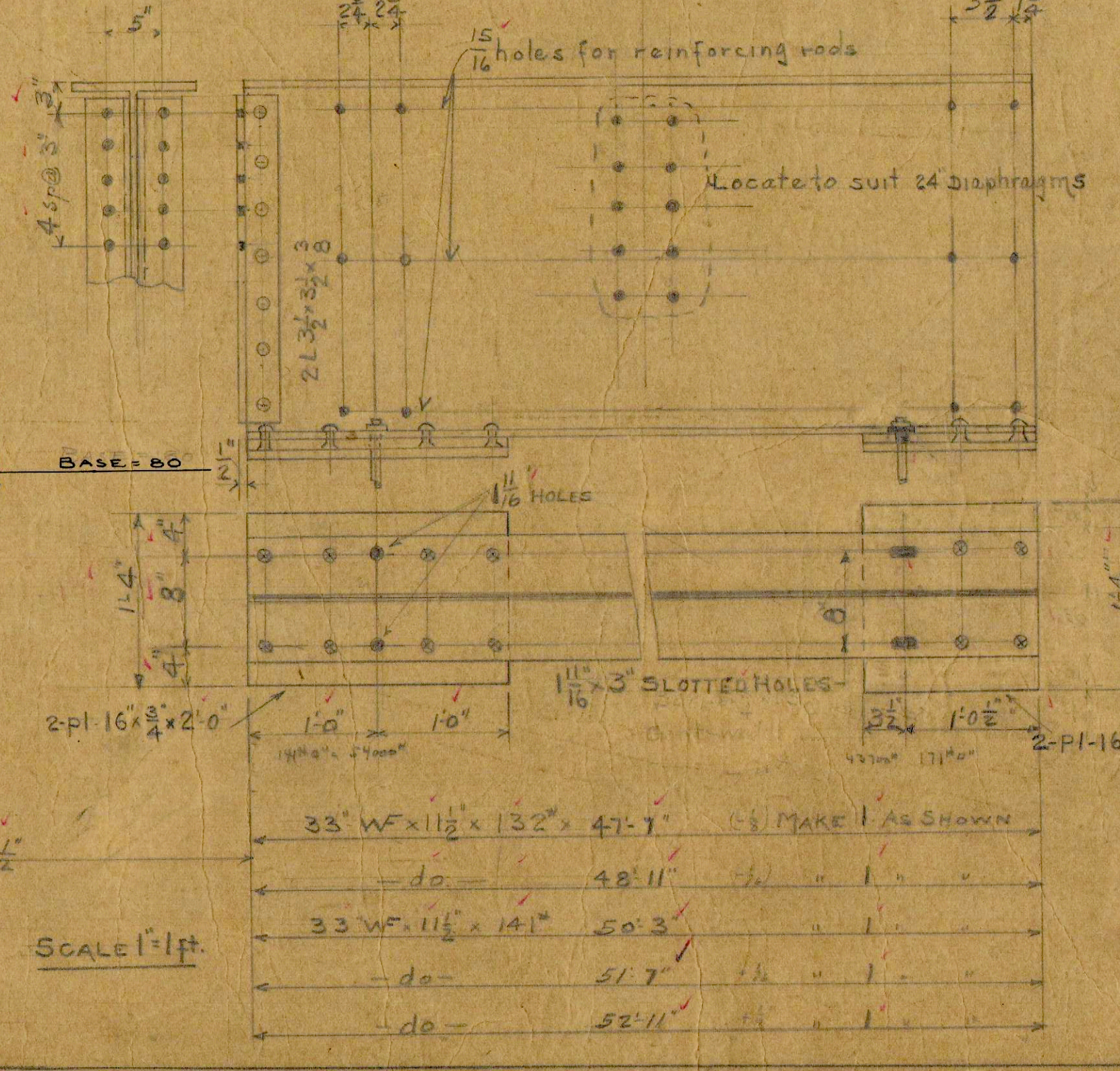
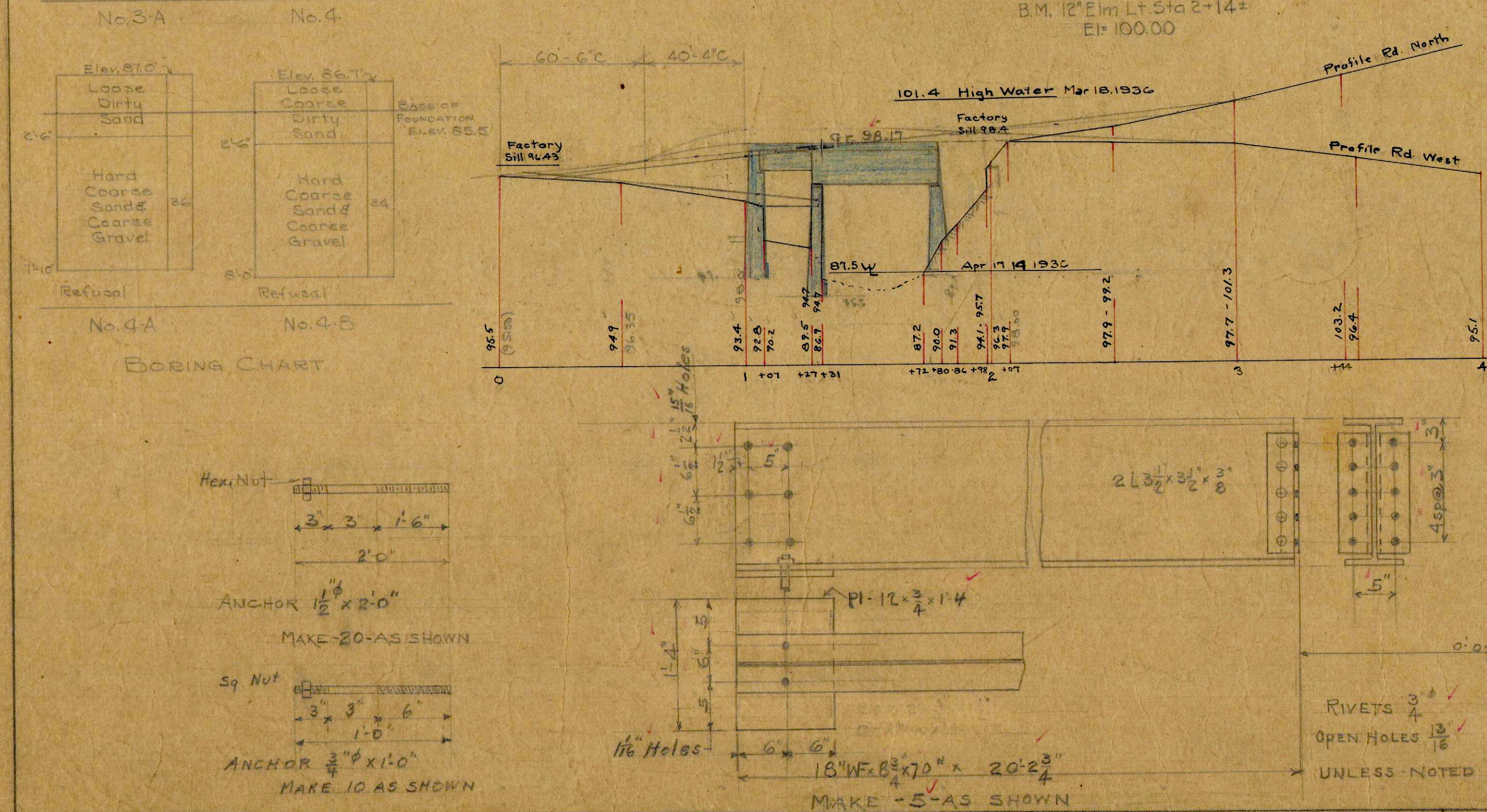
B.M. = 12' ELM - LEFT STA 2+14 ELEV. = 100.00

ESTIMATED BRIDGE QUANTITIES NOT GUARANTEED

CONCRETE CLASS "A"	66 CUYD.
CONCRETE CLASS "B"	7.5 CUYD.
CONCRETE CLASS "C"	130 CUYD.
STRUCTURAL STEEL	503.00 POUNDS
REINFORCING STEEL	171.00 POUNDS
BITUMINOUS CONC. SURFACE CLASS "I"	24 TONS
BRIDGE EXCAVATION	114 CUYD.
BORROW (GRAVEL)	135 CUYD.
BITUMINOUS WATERPROOFING	260 SQYD.
LEDGE EXCAVATION	15 CUYD.
TRENCH LEDGE EXCAVATION	5 CUYD.
REMOVAL TEMPORARY BRIDGE	LUMP SUM

CURVED WING APPROX. QUANTITIES:

CONCRETE CLASS "B"	2.85 CUYD.
CONCRETE CLASS "C"	70 CUYD.
REINFORCING STEEL	1260 POUNDS
WING EXCAVATION	85 CUYD.
BORROW (GRAVEL)	175 CUYD.
BITUMINOUS WATERPROOFING	70 SQYD.
LEDGE EXCAVATION	15 CUYD.



SCALE 1" = 1'-0"

W-39-006
sheet 3 of 4
scanned 9/30/2015

Scanned 9/30/2025

Scales $\frac{1}{4}'' = 1 \text{ Ft}$ May 1936

Submitted by L. O. Marden County Eng

Approved by Bridge Eng. MDR

Approved by Chief Eng. MDR

Designed by L.H. Spafford	BRIDGE No W-39-
Drawn by G.B.H. 5-14-36	
Checked by E.H. 7-9-36	

BRIDGE N^o W-39-