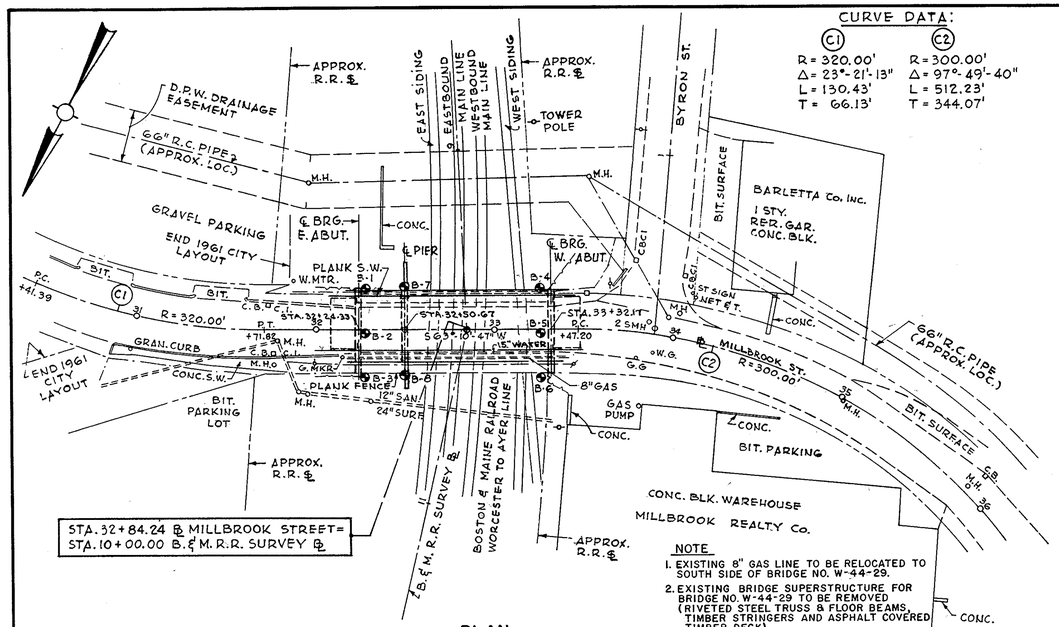
PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.			6	23

CURVE DATA:

C1	C2
R = 320.00'	R = 300.00'
Δ = 23°-21'-13"	Δ = 97°-49'-40"
L = 130.43'	L = 512.23'
T = 66.13'	T = 344.07'

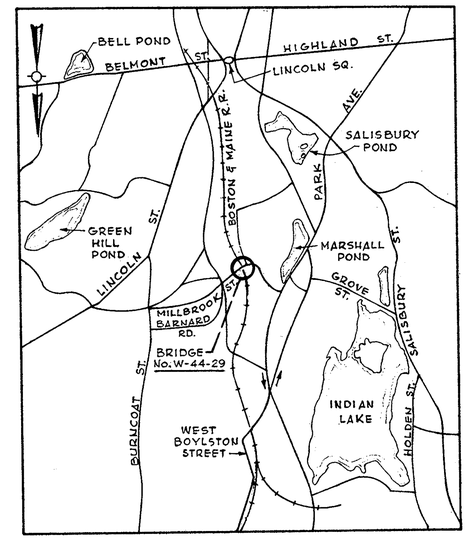


NOTE

1. EXISTING 8" GAS LINE TO BE RELOCATED TO SOUTH SIDE OF BRIDGE NO. W-44-29.
2. EXISTING BRIDGE SUPERSTRUCTURE FOR BRIDGE NO. W-44-29 TO BE REMOVED (RIVETED STEEL TRUSS & FLOOR BEAMS, TIMBER STRINGERS AND ASPHALT COVERED TIMBER DECK).
3. ⚠ EXISTING N.E. TELEPHONE LINES AND MASSACHUSETTS ELECTRIC POWER CABLES TO BE RELOCATED TO BRIDGE.

PLAN

SCALE: 1" = 40'



LOCUS PLAN

SCALE: 1" = 2000'

GENERAL NOTES

DESIGN

IN ACCORDANCE WITH THE 1969 SPECIFICATIONS (TENTH EDITION) OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICALS AND CURRENT INTERIM SPECIFICATIONS FOR HS 20-44 LOADING.

BENCH MARK

#WE-13 IRON PIN IN S.W. ABUT. R.R. BRIDGE EL.= 536.775 (U.S.C & G.S.-MEAN SEA LEVEL DATUM OF 1929)

DATE

TO BE PLACED ON THE INSIDE FACE OF THE NORTHEAST & SOUTHWEST END POSTS. A SHEET SHOWING SIZE & CHARACTER OF THE NUMERALS WILL BE FURNISHED.

SURVEY BOOKS

BASELINE 20362, BASELINE & DETAIL 21872, CROSS SECTIONS 30157.

BRIDGE RAILINGS

SEE DEPARTMENT STANDARD PLANS, DATED MARCH 1968, FOR DETAILS OF BRIDGE RAILINGS.

SCALES

SCALES NOTED ON PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALES BY 2 FOR 1/4 SIZE PRINTS.

DIMENSIONS

ALL DIMENSIONS AND DETAILS SHOWN FOR THE EXISTING STRUCTURE SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR.

FOUNDATIONS

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

UNSUITABLE MATERIAL

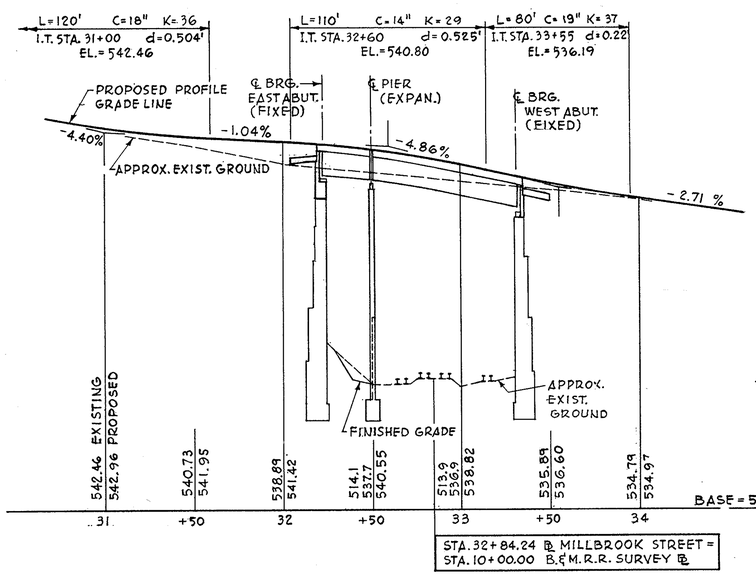
ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE.

ANCHOR BOLTS

ALL ANCHOR BOLTS SHALL BE SET BY TEMPLATE BEFORE THE CONCRETE IS PLACED, EXCEPT AT EAST ABUTMENT WHERE DRILLING AND GROUTING MAY BE USED AT THE CONTRACTOR'S OPTION.

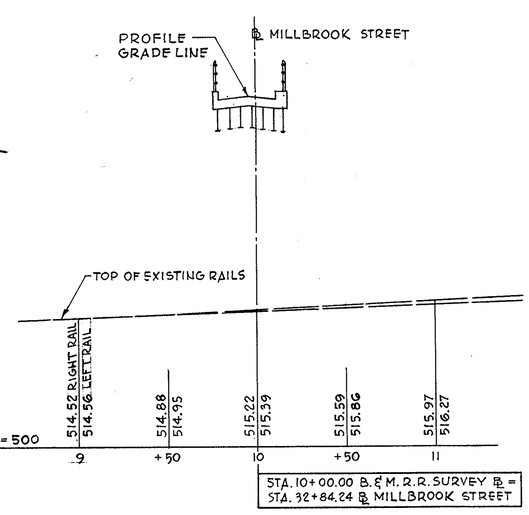
REINFORCEMENT

ALL BARS SHALL CONFORM TO A.S.T.M. SPECIFICATION A 615 GRADE 40. UNLESS OTHERWISE SHOWN ON THE PLANS, REINFORCING BARS SHALL BE LAPPED 24 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.



PROFILE - MILLBROOK STREET

SCALE: HORIZ. 1" = 40'
VERT. 1" = 8'



PROFILE - B. & M. R.R.

WORCESTER TO AYER LINE
WESTBOUND MAIN LINE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 8'

ESTIMATED QUANTITIES

(NOT GUARANTEED)

DEMOLITION OF PRESENT SUPERSTRUCTURE (BR. NO. W-44-29)	1	L.S.
EARTH EXCAVATION	90	C.Y.
BRIDGE EXCAVATION	200	C.Y.
CLASS B ROCK EXCAVATION	10	C.Y.
GRAVEL BORROW	50	C.Y.
CLASS I BIT. CONC. PAVEMENT TYPE I-1	30	TONS
CLASS I DENSE PROTECTIVE BOTTOM COURSE FOR BRIDGES	30	TONS
METAL BRIDGE RAILINGS (3 RAILS) TYPE AL-3 OR ST-3	265	L.F.
BRIDGE STRUCTURE NO. W-44-29	1	L.S.

NOTE:

THE FOLLOWING QUANTITIES ARE PART OF LUMP SUM ITEM 995.01, BRIDGE STRUCTURE NO. W-44-29 AND ARE NOT GUARANTEED.

STEEL REINFORCEMENT FOR STRUCTURES	70,000	LBS.
STRUCTURAL STEEL	159,000	LBS.

INDEX OF BRIDGE PLANS

TITLE	SHEET
GENERAL PLAN	1
BORING LOGS	2&3
EAST ABUTMENT DETAILS	4
WEST ABUTMENT DETAILS	5
PIER DETAILS	6
DECK PLAN & ELEVATION	7
DECK DETAILS	8&9
FRAMING PLAN & DETAILS	10

COMMONWEALTH OF MASSACHUSETTS — THOMAS TSOTSI — No. 10702 — REGISTERED PROFESSIONAL ENGINEER

Thomas Tsotsi

CHARLES A. MAGUIRE & ASSOCIATES
ENGINEERS
60 FIRST AVENUE
WALTHAM MASSACHUSETTS

JUNE 28, 1973	⚠ NOTE 3 ADDED SH. 1, REVISION SH. 4, 5, 7, 8 & 10
MAY 19, 1973	ISSUED FOR CONSTRUCTION

THE COMMONWEALTH OF MASSACHUSETTS
PROPOSED BRIDGE

WORCESTER

MILLBROOK STREET
OVER
B. & M. R.R.
(WORCESTER TO AYER LINE)

SCALES: AS NOTED

OFFICE OF
DEPARTMENT OF PUBLIC WORKS
100 NASHUA ST. BOSTON, MASS.
MAY 1973

J. J. Ahern Jr. — BRIDGE ENGINEER
Robert T. Fleming — CHIEF ENGINEER

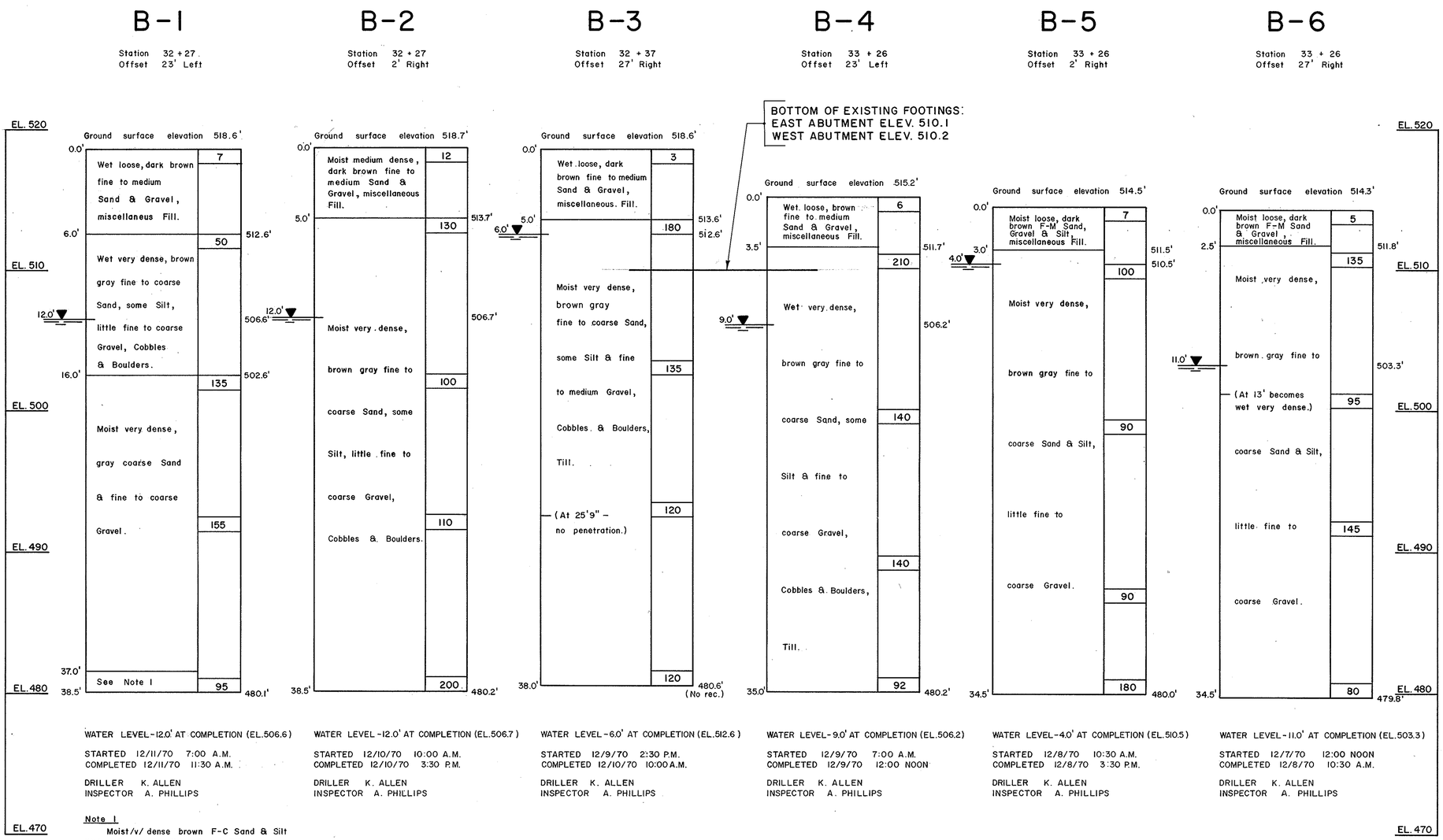
SHEET 1 OF 10 SHEETS BRIDGE NO. W-44-29

⚠

GENERAL PLAN

PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.			7	23

BOTTOM OF EXISTING FOOTINGS:
EAST ABUTMENT ELEV. 510.1
WEST ABUTMENT ELEV. 510.2



WATER LEVEL-12.0' AT COMPLETION (EL.506.6)

STARTED 12/11/70 7:00 A.M.
COMPLETED 12/11/70 11:30 A.M.

DRILLER K. ALLEN
INSPECTOR A. PHILLIPS

Note 1
Moist /v/ dense brown F-C Sand & Silt little fine to medium Gravel, Till.

WATER LEVEL-12.0' AT COMPLETION (EL.506.7)

STARTED 12/10/70 10:00 A.M.
COMPLETED 12/10/70 3:30 P.M.

DRILLER K. ALLEN
INSPECTOR A. PHILLIPS

WATER LEVEL-6.0' AT COMPLETION (EL.512.6)

STARTED 12/9/70 2:30 P.M.
COMPLETED 12/10/70 10:00 A.M.

DRILLER K. ALLEN
INSPECTOR A. PHILLIPS

WATER LEVEL-9.0' AT COMPLETION (EL.506.2)

STARTED 12/9/70 7:00 A.M.
COMPLETED 12/9/70 12:00 NOON

DRILLER K. ALLEN
INSPECTOR A. PHILLIPS

WATER LEVEL-4.0' AT COMPLETION (EL.510.5)

STARTED 12/8/70 10:30 A.M.
COMPLETED 12/8/70 3:30 P.M.

DRILLER K. ALLEN
INSPECTOR A. PHILLIPS

WATER LEVEL-11.0' AT COMPLETION (EL.503.3)

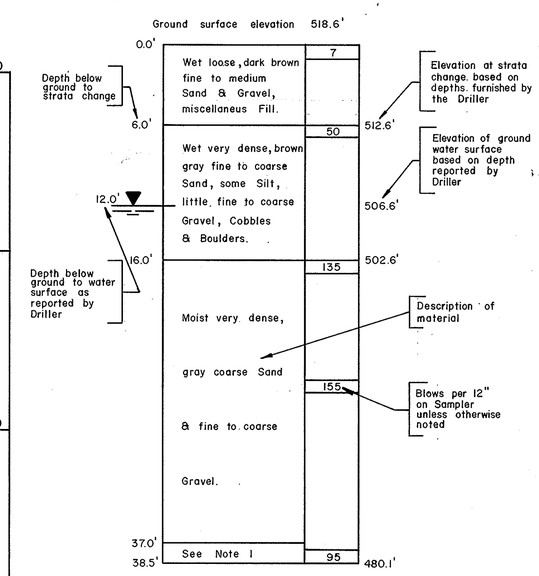
STARTED 12/7/70 12:00 NOON
COMPLETED 12/8/70 10:30 A.M.

DRILLER K. ALLEN
INSPECTOR A. PHILLIPS

LEGEND

B-1 — Boring identification number

Location of boring — Station 32+27, Offset 23' left



WATER LEVEL-12.0' COMPLETION (EL.506.6)

STARTED 12/11/70 7:00 A.M.
COMPLETED 12/11/70 11:30 A.M.

DRILLER K. ALLEN
INSPECTOR A. PHILLIPS

Note 1
Moist /v/ dense brown F-C Sand & Silt little fine to medium Gravel, Till.

BORING NOTES

1. All borings were located from the Survey Base Line.
2. Locations of borings are shown on Contract Plans thus B-1
3. Figures in the right hand column of the boring log indicate the number of hammer blows required for 12" penetration of a 2" O.D. Split-Spoon Sampler produced by a 30" fall of a 140 lb. hammer, unless otherwise noted.
4. Boring Samples may be seen at the Research and Materials Division of the Department located at 99 Worcester Street, Wellesley Hills (intersection of Routes 9 and 128).
5. All borings were made by the American Drilling & Boring Co., Inc. 100 Water Street, East Providence, R.I.
6. Borings were taken for the purpose of design and show conditions at the locations of borings only but do not necessarily show the nature of materials or ground water levels to be encountered during construction.
7. All elevations are based on U.S.C. & G.S. Mean Sea Level Datum of 1929.
8. The depth as shown on the original boring logs have been converted to elevations on these plans by the Engineer.

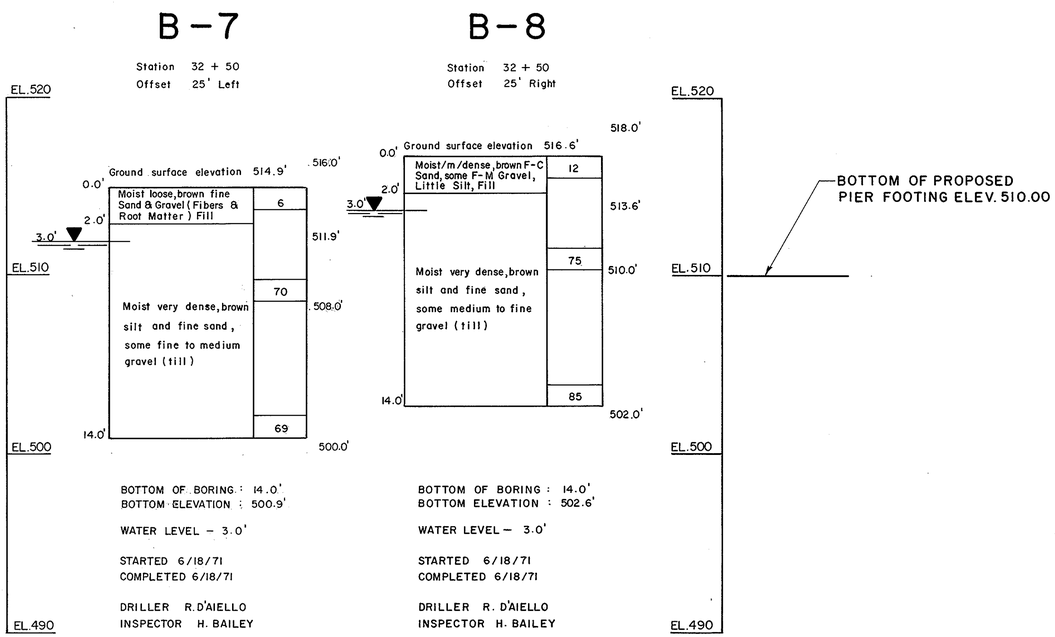
BORING DATA

VERTICAL SCALE: 1/4"=1'-0"

DATE	DESCRIPTION
MAY 19, 1973	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.			8	23



BORING DATA

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

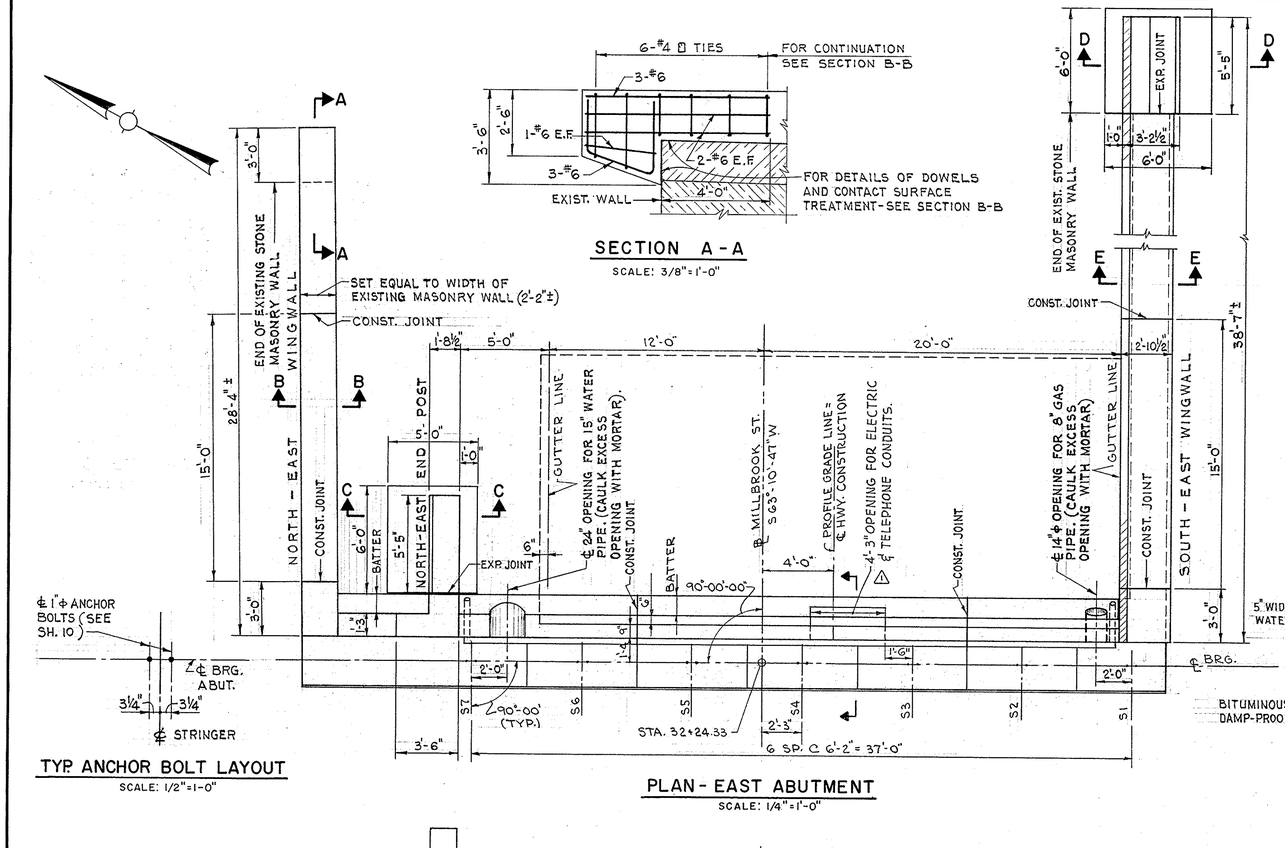
NOTE :
FOR LEGEND AND BORING NOTES SEE SH. NO. 2

DATE	DESCRIPTION
MAY 19, 1973	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

SHEET 3 OF 10 SHEETS BRIDGE NO. W-44-29

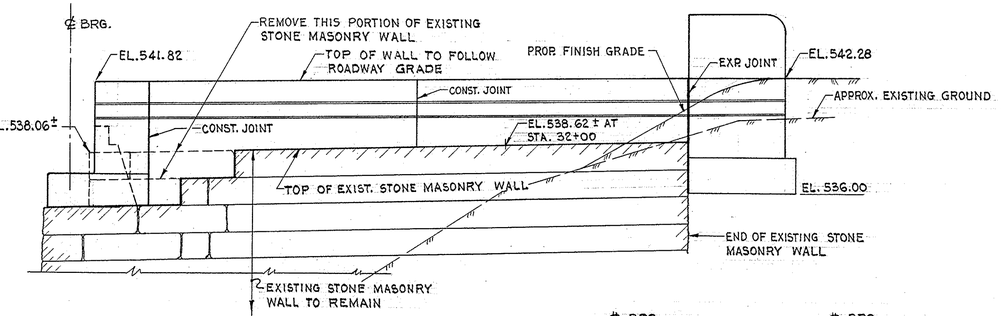
PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.			9	23



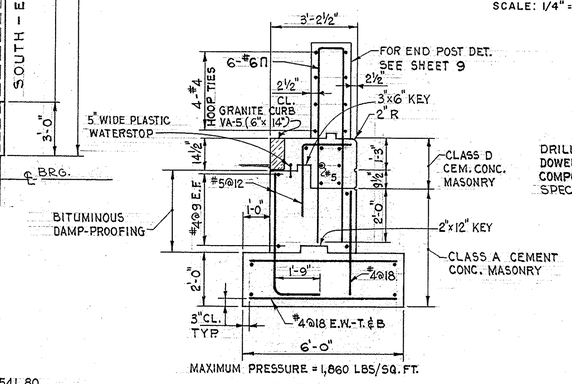
SECTION A-A
SCALE: 3/8" = 1'-0"

TYP. ANCHOR BOLT LAYOUT
SCALE: 1/2" = 1'-0"

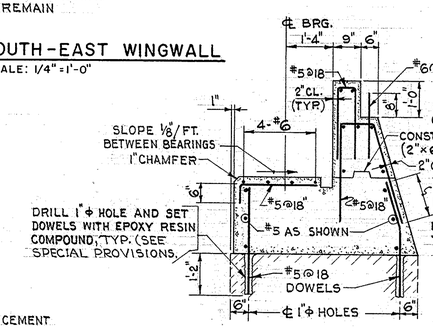
PLAN - EAST ABUTMENT
SCALE: 1/4" = 1'-0"



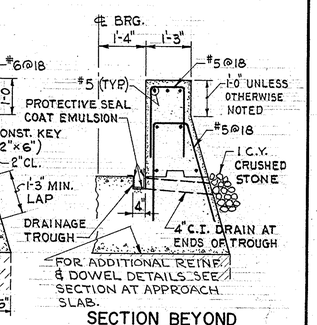
ELEVATION - SOUTH-EAST WINGWALL
SCALE: 1/4" = 1'-0"



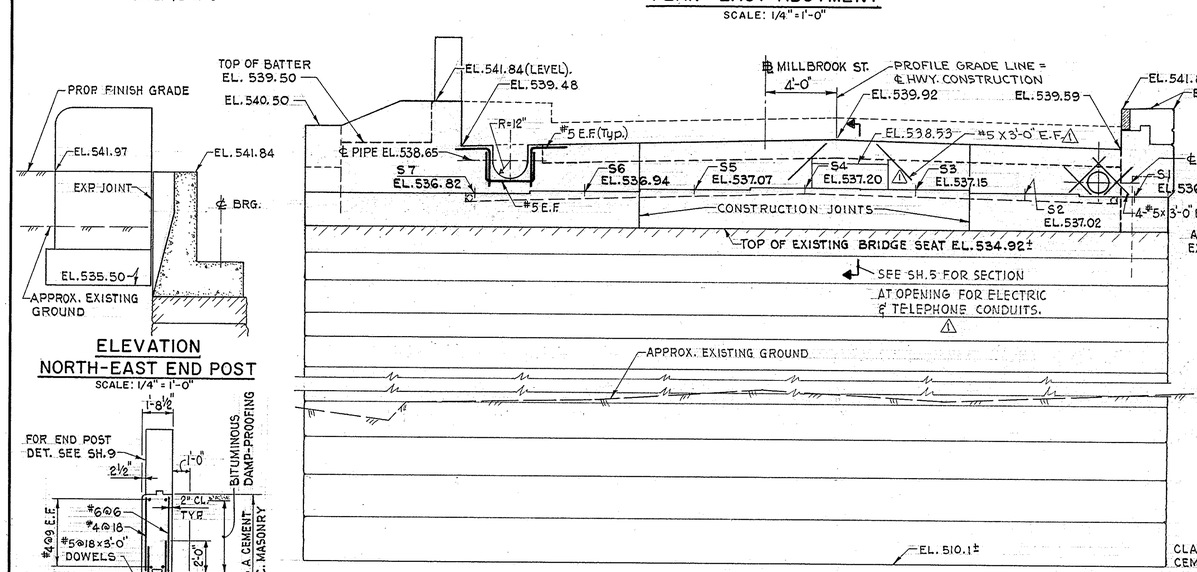
SECTION D-D
SCALE: 3/8" = 1'-0"



SECTION AT APPROACH SLAB
SCALE: 1/2" = 1'-0



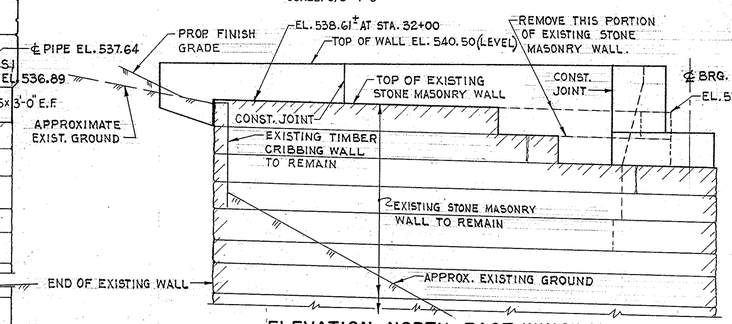
SECTION BEYOND APPROACH SLAB
SCALE: 1/2" = 1'-0"



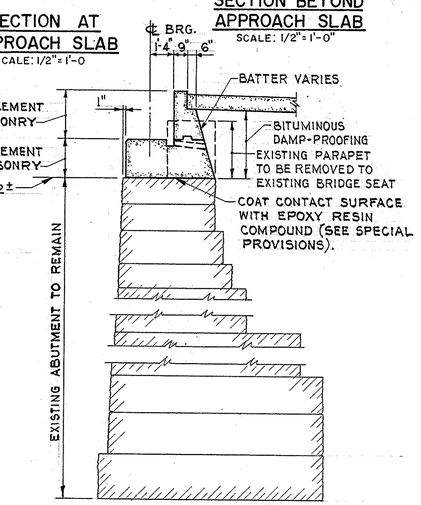
ELEVATION NORTH-EAST END POST
SCALE: 1/4" = 1'-0"

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

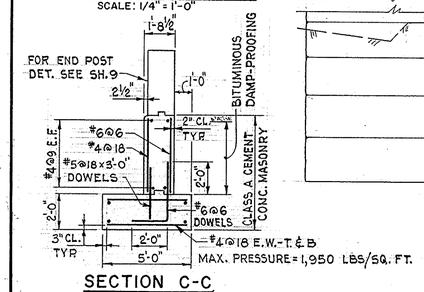
NOTES:
1. FOR EXPANSION JOINT DETAIL SEE SH. 5
2. FOR RAIL POST LOCATION SEE SH. 7
3. FOR JOINT DETAILS AT SIDEWALK AND SAFETY WALK SEE SH. 9.
4. FOR CONSTRUCTION JOINT DETAIL SEE SH. 5



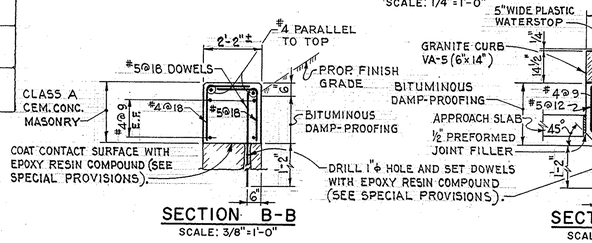
ELEVATION-NORTH-EAST WINGWALL
SCALE: 1/4" = 1'-0"



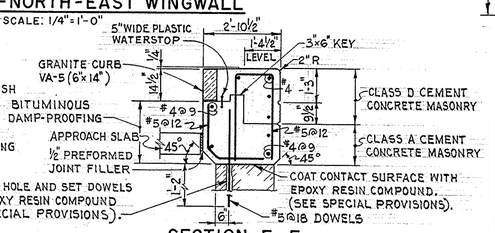
TYPICAL ABUTMENT SECTION (EAST)
SCALE: 1/4" = 1'-0"



SECTION C-C
SCALE: 1/4" = 1'-0"



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

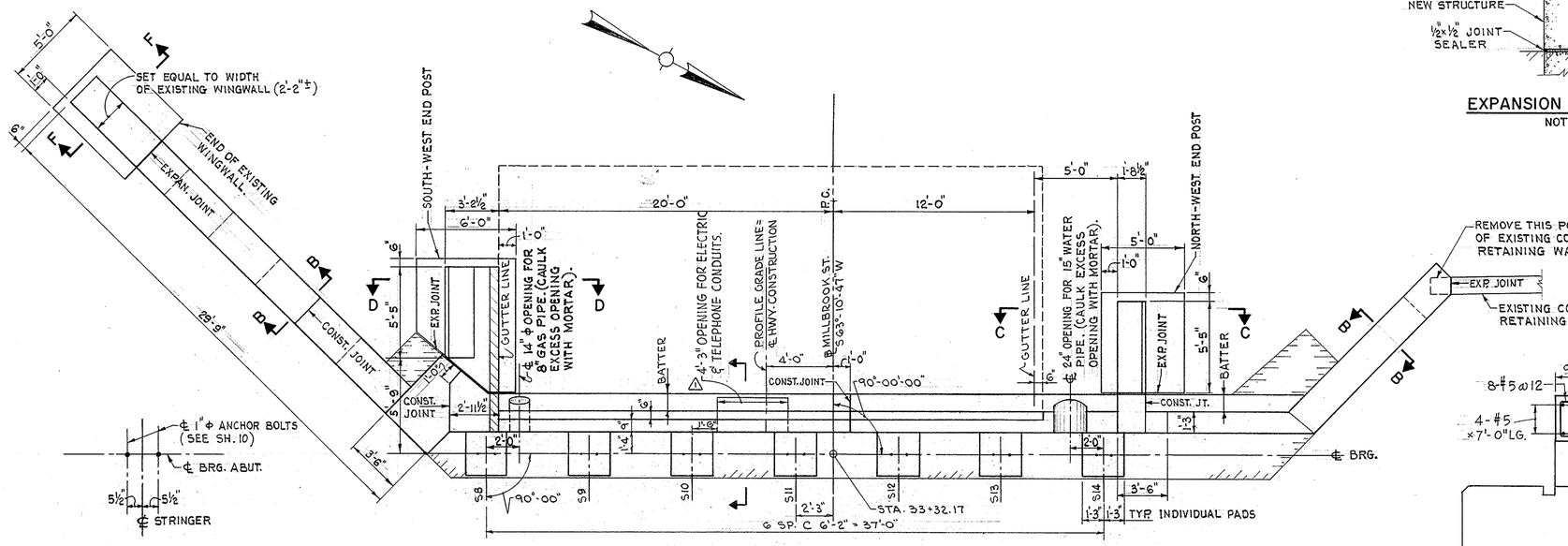


SECTION E-E
SCALE: 3/8" = 1'-0"

DATE	DESCRIPTION
JUNE 28, 73	△1 PARAPET OPENING PROVIDED FOR ELECTRIC & TELEPHONE CONDUITS
MAY 19, 1973	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.			10	23

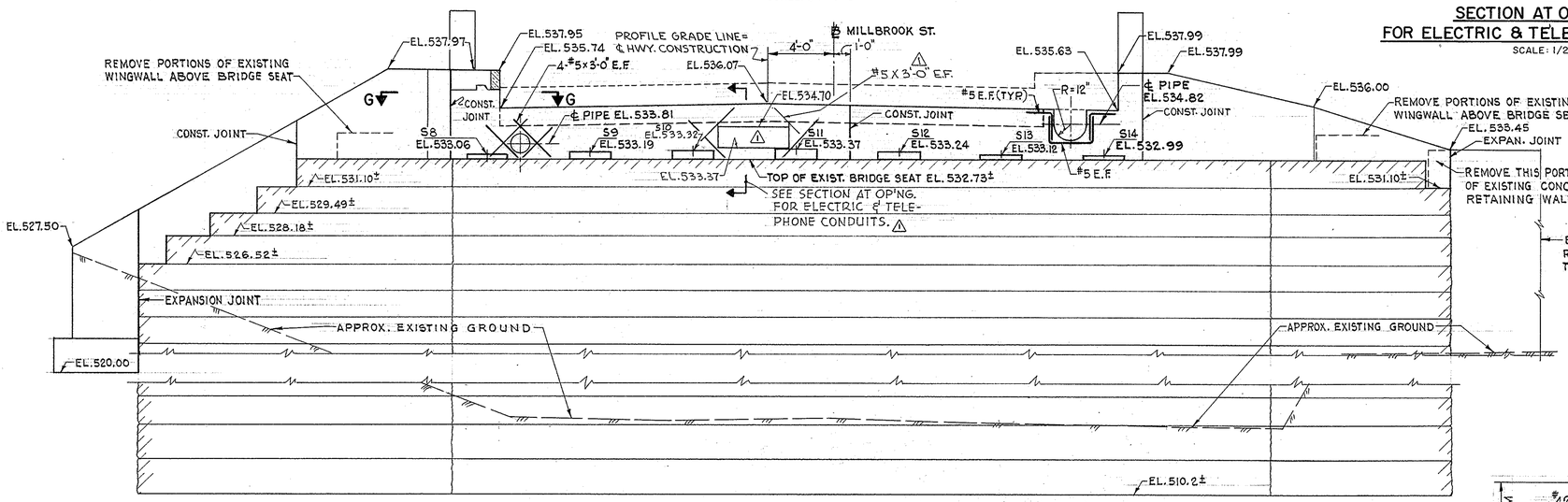


TYP ANCHOR BOLT LAYOUT

SCALE: 1/2"=1'-0"

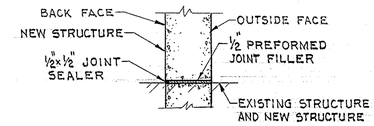
PLAN - WEST ABUTMENT

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



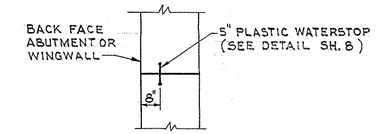
ELEVATION

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



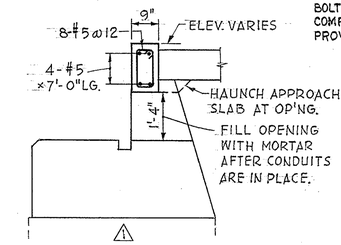
EXPANSION JOINT DETAIL

NOT TO SCALE



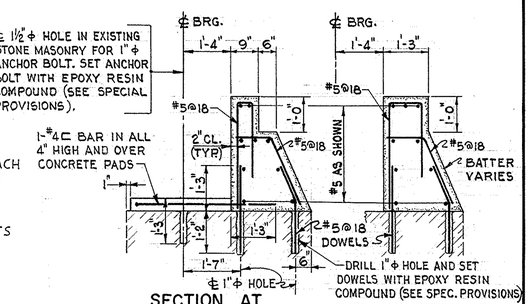
CONSTRUCTION JOINT DETAIL

NOT TO SCALE



SECTION AT OPENINGS FOR ELECTRIC & TELEPHONE CONDUITS

SCALE: 1/2"=1'-0"

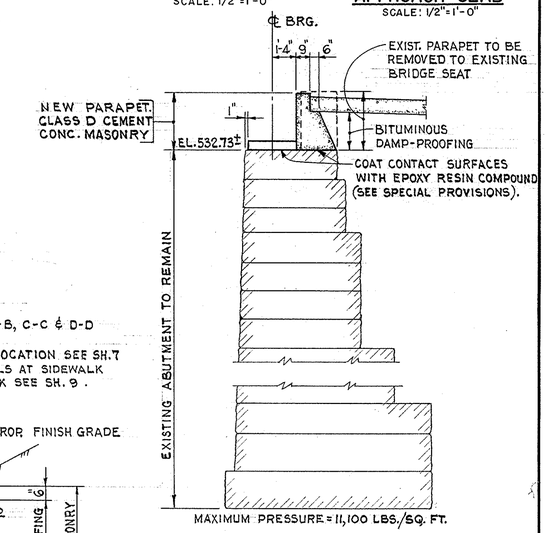


SECTION AT APPROACH SLAB

SCALE: 1/2"=1'-0"

SECTION BEYOND APPROACH SLAB

SCALE: 1/2"=1'-0"

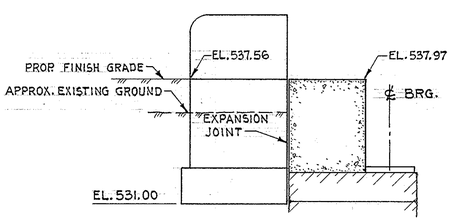


TYPICAL ABUTMENT SECTION (WEST)

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

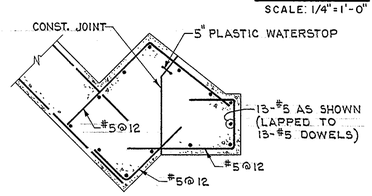
NOTES:

1. FOR SECTIONS B-B, C-C & D-D SEE SH. 4.
2. FOR RAIL POST LOCATION SEE SH. 7
3. FOR JOINT DETAILS AT SIDEWALK AND SAFETY WALK SEE SH. 9.



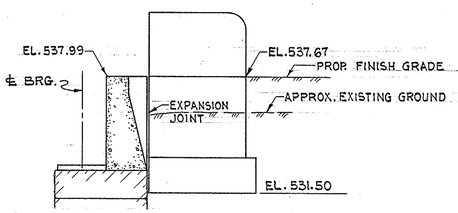
ELEVATION - SOUTH-WEST END POST

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



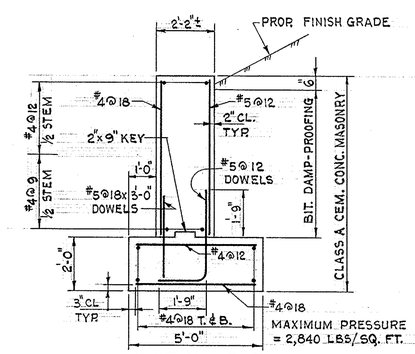
SECTION G-G

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



ELEVATION - NORTH-WEST END POST

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



SECTION F-F

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

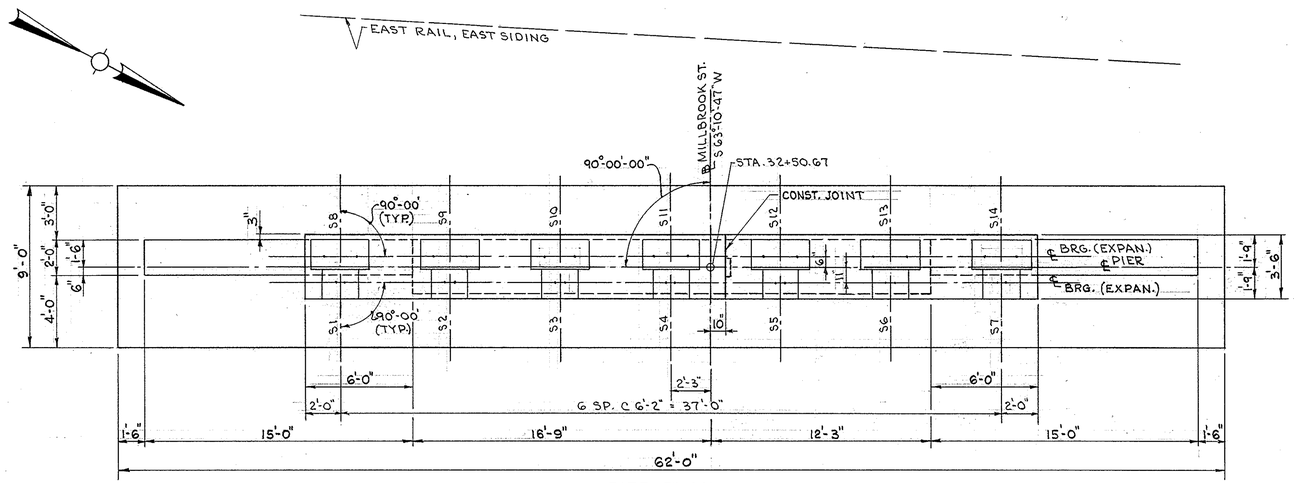
DATE	DESCRIPTION
JUNE 28, 73	1 PARAPET OPENING PROVIDED FOR ELECTRIC & TELEPHONE CONDUITS
MAY 19, 1973	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

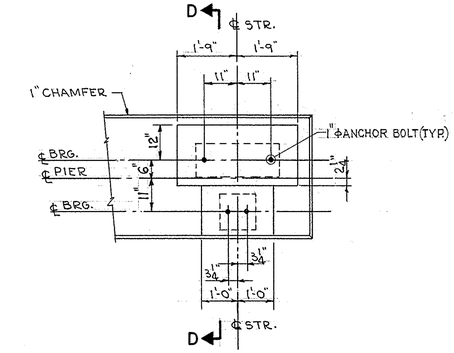
SHEET 5 OF 10 SHEETS BRIDGE NO. W-44-29

WEST ABUTMENT DETAILS

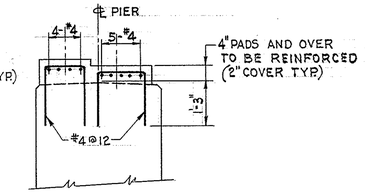
PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.			11	23



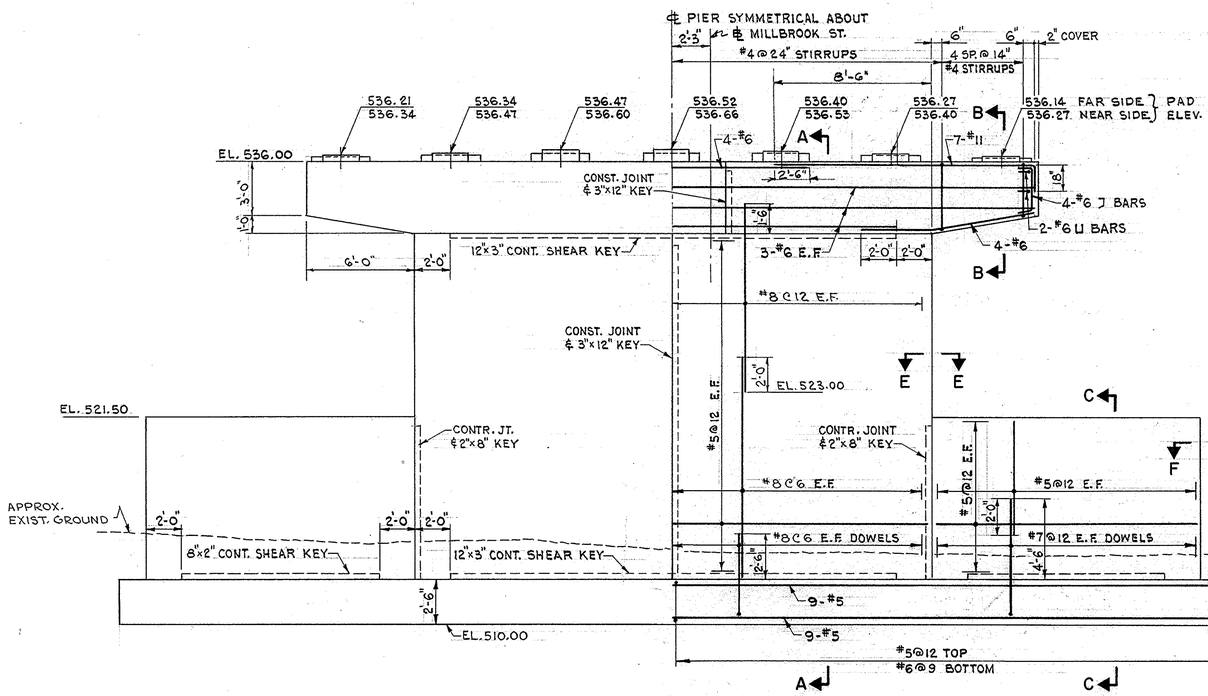
PIER PLAN
SCALE: 1/4" = 1'-0"



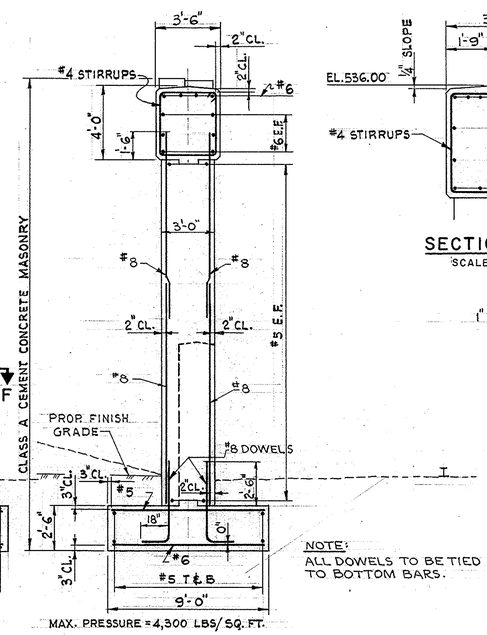
ANCHOR BOLT LAYOUT AND CONCRETE PAD DETAIL
SCALE: 1/2" = 1'-0"



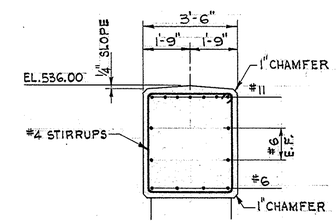
SECTION D-D
SCALE: 1/2" = 1'-0"



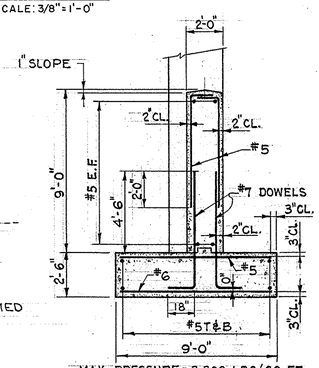
ELEVATION
SCALE: 1/4" = 1'-0"



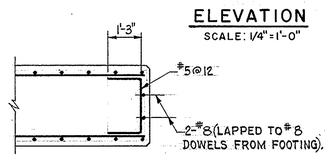
SECTION A-A
SCALE: 1/4" = 1'-0"



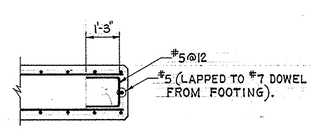
SECTION B-B
SCALE: 3/8" = 1'-0"



SECTION C-C
SCALE: 1/4" = 1'-0"



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



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

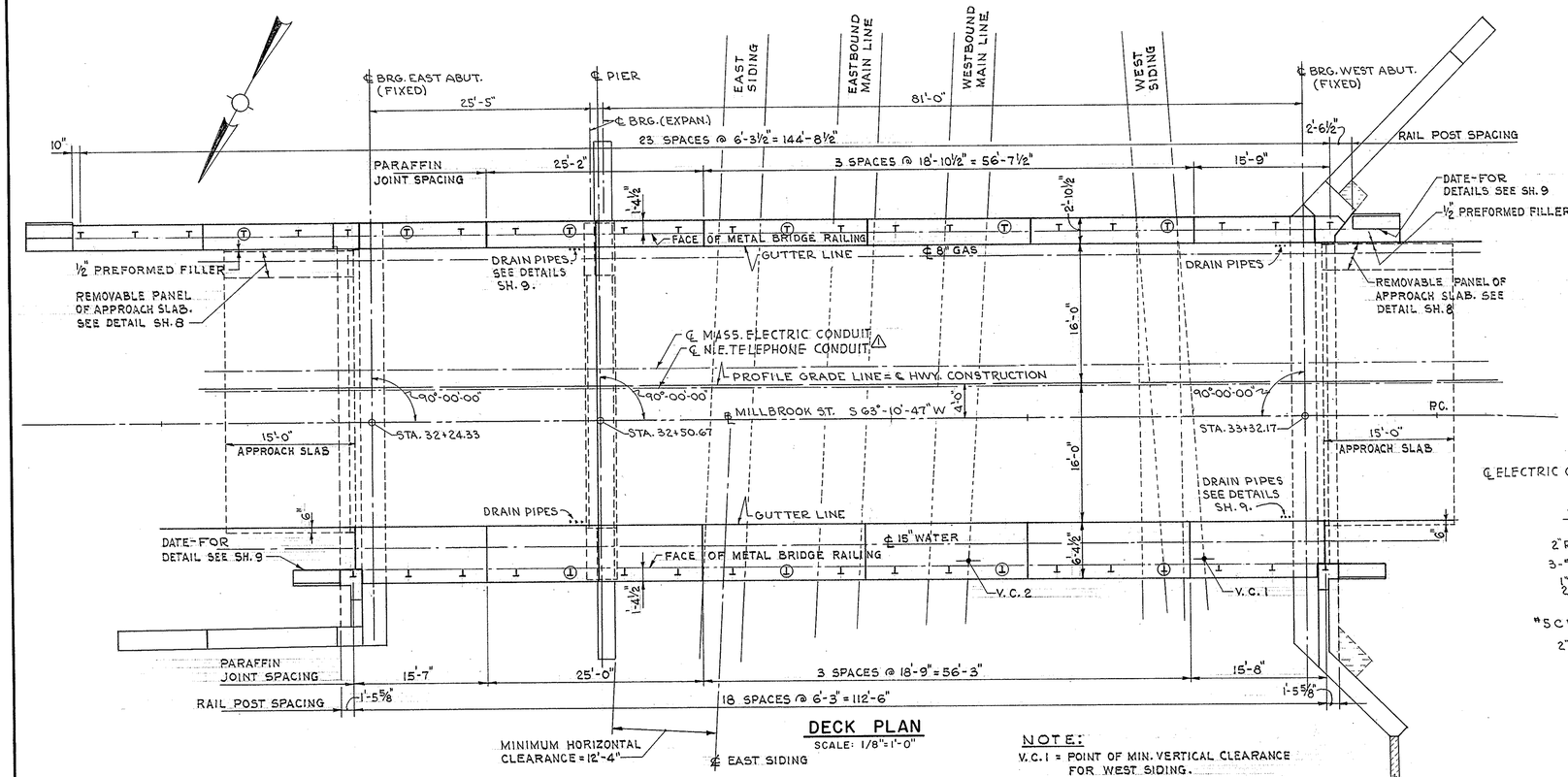
DATE	DESCRIPTION
MAY 19, 1973	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

SHEET 6 OF 10 SHEETS BRIDGE NO. W-44-29

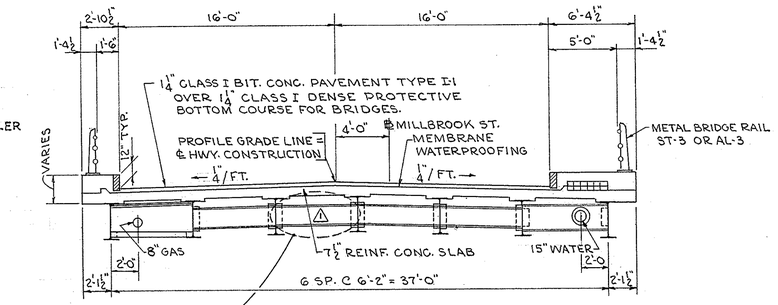
PUB. RD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.			12	23

NOTE:
ALL CONCRETE FOR DECK SLAB, SIDEWALK AND SAFETY WALK SHALL BE CLASS D CEMENT CONCRETE MASONRY.

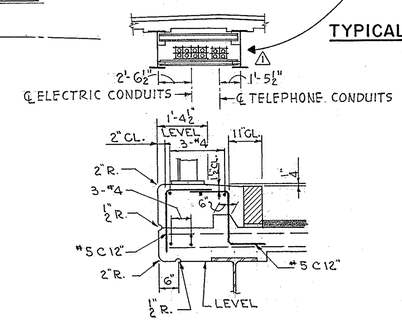


DECK PLAN
SCALE: 1/8" = 1'-0"

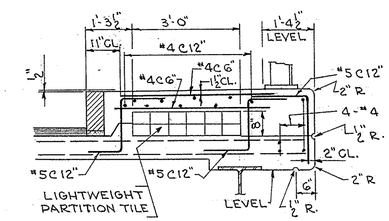
NOTE:
V.C. 1 = POINT OF MIN. VERTICAL CLEARANCE FOR WEST SIDING.
V.C. 2 = POINT OF MIN. VERTICAL CLEARANCE FOR MAIN LINE AND EAST SIDING
Ⓛ — INDICATES LOCATION OF RAIL EXPANSION JOINTS



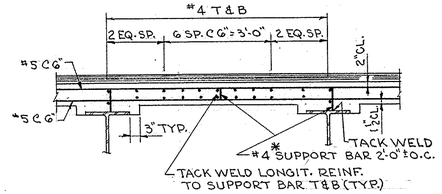
TYPICAL BRIDGE SECTION
SCALE: 3/16" = 1'-0"



SAFETY WALK DETAIL
SCALE: 1/2" = 1'-0"

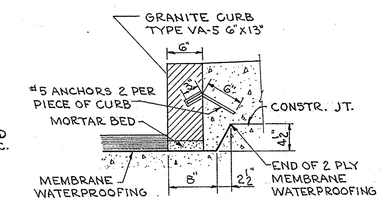


SIDEWALK DETAIL
SCALE: 1/2" = 1'-0"



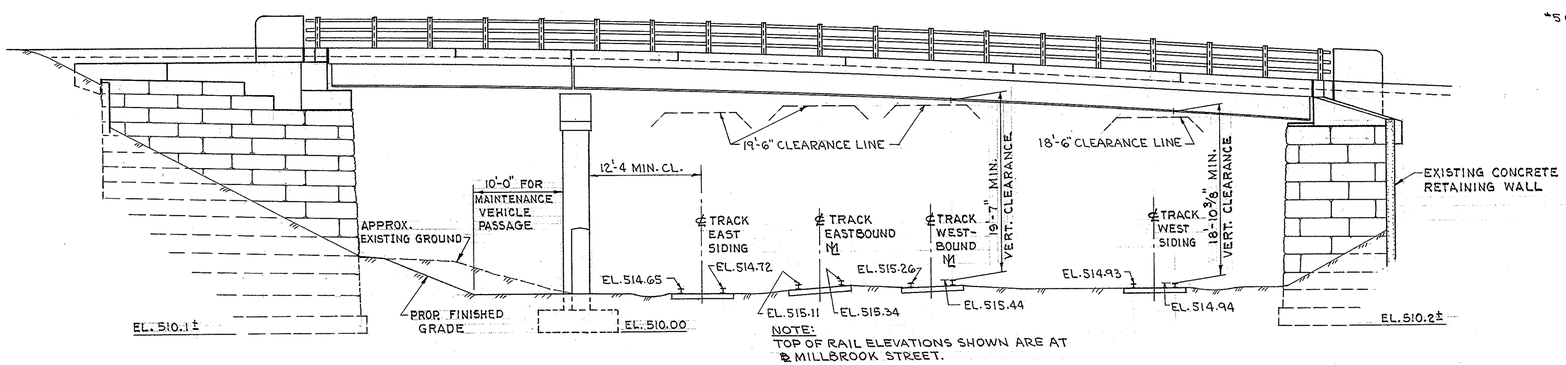
DECK REINFORCEMENT
SCALE: 1/2" = 1'-0"

*AN EQUAL DEVICE MAY BE SUBSTITUTED FOR #4 SUPPORT BAR UPON WRITTEN APPROVAL OF THE ENGINEER.



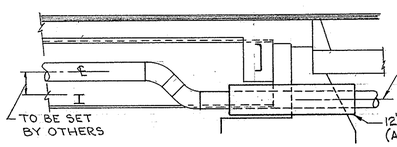
CURB DETAIL
SCALE: 1" = 1'-0"

NOTE:
JOINT IN CURB SHALL BE MORTARED NO SOONER THAN 5 DAYS AFTER CONCRETE IN SAFETY WALK OR SIDEWALK HAS BEEN PLACED.



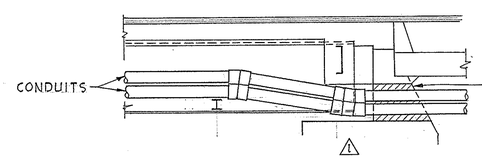
NOTE:
TOP OF RAIL ELEVATIONS SHOWN ARE AT ℄ MILLBROOK STREET.

ELEVATION
SCALE: 1/8" = 1'-0"



PROFILE - 8" GAS AT ABUTMENTS
NO SCALE

NOTE: GAS PIPE, SLEEVES AND APPURTENANCES TO BE FURNISHED BY OTHERS



NOTE:
TELEPHONE CONDUITS, ELECTRIC CONDUITS & APPURTENANCES ARE TO BE FURNISHED & PLACED BY OTHERS.

PROFILE - ELECTRIC & TELEPHONE CONDUITS AT ABUTMENTS
NO SCALE

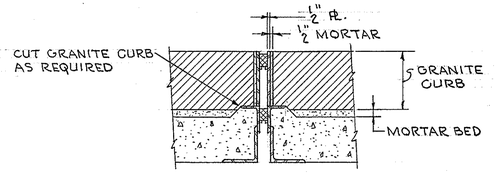
DATE	DESCRIPTION
JUNE 28-73	DECK PLAN & TYP. BRIDGE SECTION △1 REVISED, CONDUIT PROFILE ADDED.
MAY 19, 1973	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

SHEET 7 OF 10 SHEETS BRIDGE NO. W-44-29

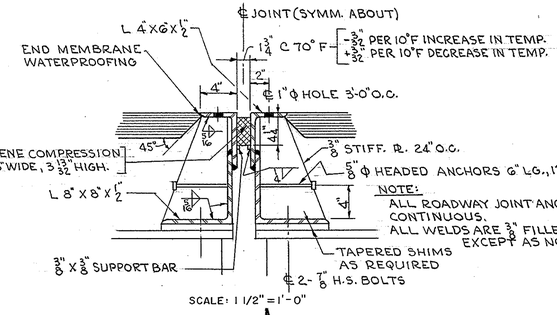
DECK PLAN & ELEVATION

PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.			13	23



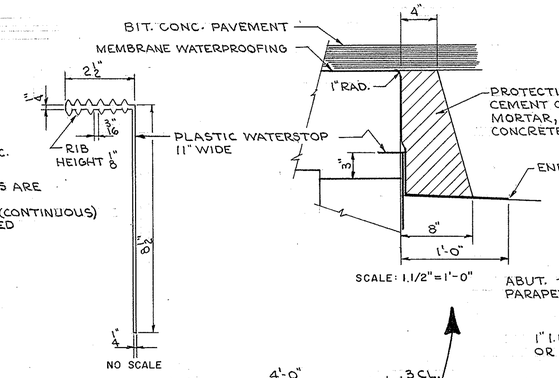
SECTION B-B

SCALE: 3/4" = 1'-0"

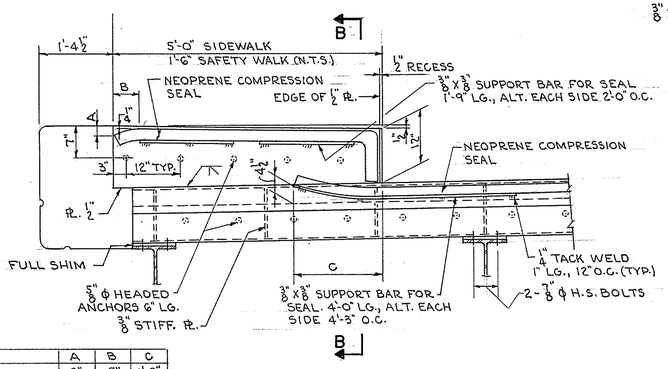


NOTE:
ALL ROADWAY JOINT ANGLES ARE CONTINUOUS.
ALL WELDS ARE 3/8" FILLETS (CONTINUOUS) EXCEPT AS NOTED

SCALE: 1 1/2" = 1'-0"



SCALE: 1 1/2" = 1'-0"

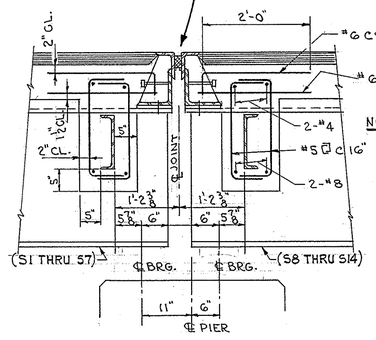


	A	B	C
SIDEWALK	2"	5"	1'-8"
SAFETY WALK	1"	3"	1'-5"

SIDEWALK SECTION AT PIER

SAFETY WALK SIMILAR

SCALE: 3/4" = 1'-0"

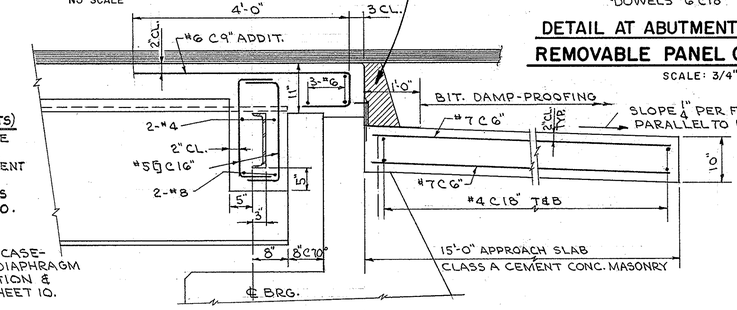


NOTE: (AT PIER & ABUTMENTS)
DIAPHRAGM D1 ONLY TO BE ENCASED IN CONCRETE. NO CONCRETE ENCASEMENT FOR END DIAPHRAGMS D3 & D5, FOR LOCATIONS & DETAILS, SEE SHEET 10.

NOTE:
⚠ NO CONCRETE ENCASEMENT FOR END DIAPHRAGM D10. FOR LOCATION & DETAILS, SEE SHEET 10.

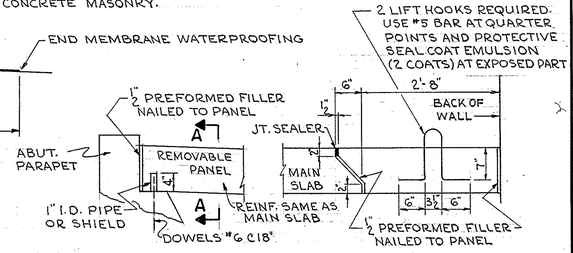
DECK DETAIL AT PIER

SCALE: 3/4" = 1'-0"



DECK DETAIL AT EAST & WEST ABUTMENTS

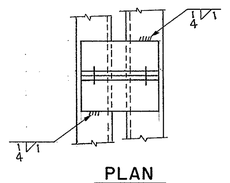
SCALE: 3/4" = 1'-0"



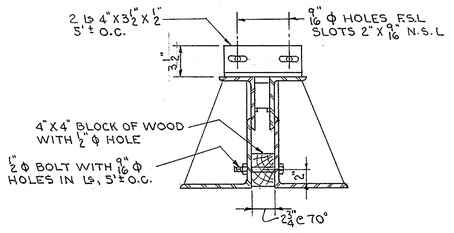
DETAIL AT ABUTMENTS — SECTION A-A

REMOVABLE PANEL OF APPROACH SLAB

SCALE: 3/4" = 1'-0"



PLAN

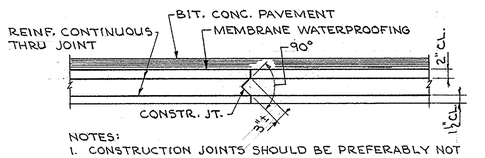


SECTION

NOTES:
1. SHOP DRAWINGS SHALL BE SUBMITTED FOR THIS DEVICE.
2. ALL ARMORED JOINT ASSEMBLIES MUST BE PROPERLY FITTED IN THE SHOP AND SHIPPED WITH THE DEVICE FOR MAINTAINING PROPER SPACING AND FIT.
3. WITH ARMORED JOINT IN PLACE, THE 1/2" BOLT, NUT AND WOOD BLOCK MUST BE REMOVED BEFORE POURING CONCRETE.
4. BOLTS ON SHIPPING ANGLES MUST BE LOOSENED WITHIN ONE HOUR AFTER CONCRETE IS PLACED SO THAT MOVEMENT MAY TAKE PLACE. ANGLES SHALL BE REMOVED AFTER CONCRETE HAS SET ON BOTH SIDES OF ASSEMBLY.
5. GRIND ARMORED JOINT SURFACE TO A SMOOTH FINISH AFTER REMOVAL OF BACK-TO-BACK ANGLES.
6. ALL EXPOSED SURFACES OF ANGLES SHALL BE FIELD PAINTED.

SHIPPING DEVICE FOR ROADWAY ARMORED JOINT

SCALE: 1 1/2" = 1'-0"

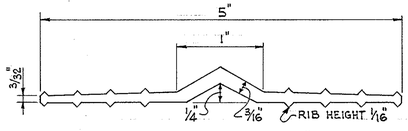


NOTES:
1. CONSTRUCTION JOINTS SHOULD BE PREFERABLY NOT MORE THAN 20 FEET APART, AND PLACED AT THE 1/4 POINT BETWEEN STRINGERS.
2. LONGITUDINAL CONSTRUCTION JOINTS IN BRIDGE DECK SLAB MAY BE OMITTED WHEN THE CONTRACTOR'S PROPOSED METHOD OF CONSTRUCTION IS APPROVED BY THE ENGINEER IN WRITING.

LONGITUDINAL JOINT DETAIL IN DECK SLAB

TYPICAL FOR TRANSVERSE JOINT

SCALE: 3/4" = 1'-0"

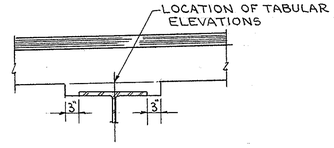


PLASTIC WATERSTOP 5" WIDE

NOT TO SCALE

TOP OF FORM ELEVATIONS FOR DECK SLAB PRIOR TO PLACEMENT OF CONCRETE									
STR. NO.	INCREASING STATIONS →								
	℄ BRG.	1/8 PT.	1/4 PT.	3/8 PT.	1/2 PT.	5/8 PT.	3/4 PT.	7/8 PT.	℄ BRG.
S1	539.90	—	539.79	—	539.66	—	539.51	—	539.35
S2	540.03	—	539.92	—	539.79	—	539.64	—	539.48
S3	540.16	—	540.05	—	539.92	—	539.77	—	539.61
S4	540.21	—	540.10	—	539.97	—	539.83	—	539.67
S5	540.08	—	539.97	—	539.84	—	539.70	—	539.54
S6	539.95	—	539.84	—	539.72	—	539.57	—	539.41
S7	539.83	—	539.71	—	539.59	—	539.44	—	539.28
S8	539.32	539.12	538.86	538.55	538.18	537.73	537.23	536.68	536.13
S9	539.44	539.25	539.01	538.70	538.33	537.88	537.37	536.81	536.26
S10	539.57	539.38	539.14	538.84	538.46	538.02	537.50	536.94	536.39
S11	539.63	539.44	539.20	538.89	538.52	538.07	537.56	537.00	536.45
S12	539.50	539.31	539.07	538.76	538.39	537.95	537.43	536.87	536.32
S13	539.37	539.18	538.94	538.63	538.25	537.81	537.30	536.74	536.19
S14	539.24	539.04	538.79	538.48	538.10	537.66	537.15	536.60	536.06

NOTE
AFTER THE STRUCTURAL STEEL IS ERECTED, BUT BEFORE THE FORMS ARE BUILT, ELEVATIONS ON THE TOP OF THE FLANGE OF THE BEAMS ARE TO BE OBTAINED AT THE POINTS INDICATED IN THE TABLE. THE DIFFERENCE BETWEEN THE ELEVATIONS OBTAINED AND THOSE SHOWN IN THE TABLE GIVES THE ACTUAL BLOCKING DISTANCE FROM THE TOP OF BEAM TO THE BOTTOM OF SLAB AT CENTERLINE OF BEAM. SEE HAUNCH DETAIL.



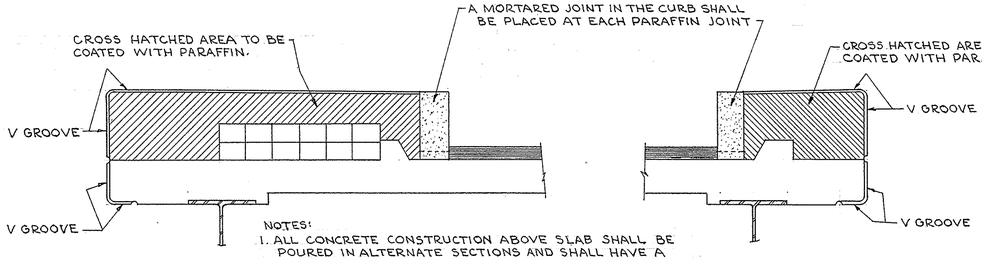
HAUNCH DETAIL

SCALE: 3/4" = 1'-0"

DATE	DESCRIPTION
JUNE 28, 73	⚠ NOTE ADDED
MAY 19, 1973	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

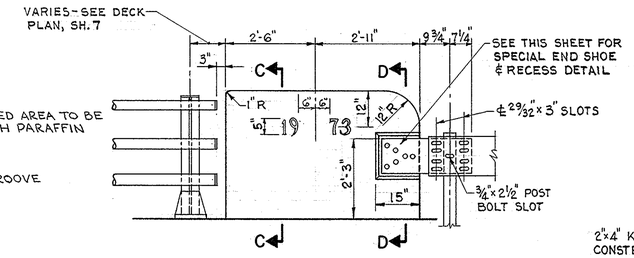
PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.			14	23



NOTES:
1. ALL CONCRETE CONSTRUCTION ABOVE SLAB SHALL BE POURED IN ALTERNATE SECTIONS AND SHALL HAVE A CURING PERIOD OF NOT LESS THAN 5 DAYS BETWEEN POURS.
2. JOINTS TO BE LOCATED AS SHOWN ON DECK PLAN, SH. 7
3. END OF BARS TO BE 2" CLEAR OF JOINT.
4. DO NOT CARRY LONGITUDINAL BARS THROUGH THE PARAFFIN JOINTS.
5. JOINTS TO BE SQUARE TO FACE OF CURB.

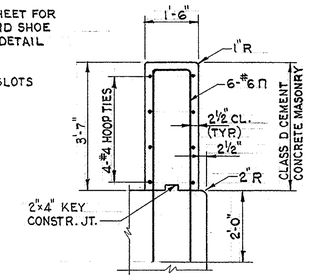
PARAFFIN JOINT DETAIL

SCALE: 3/4"=1'-0"



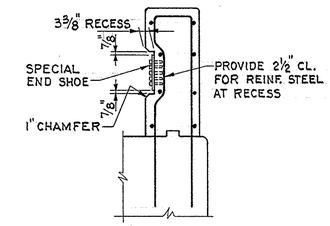
END POST ELEVATION

SCALE: 1/2"= 1'-0"



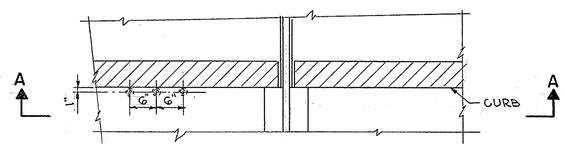
SECTION C-C

SCALE: 1/2"=1'-0"

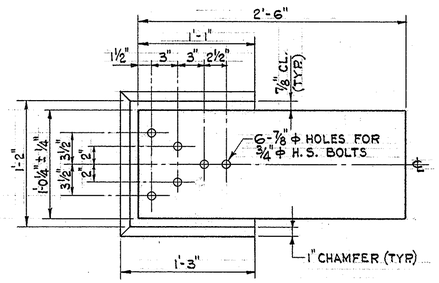


SECTION D-D

SCALE: 1/2"=1'-0"

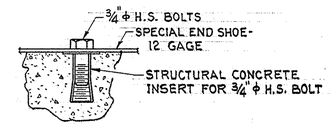


PLAN



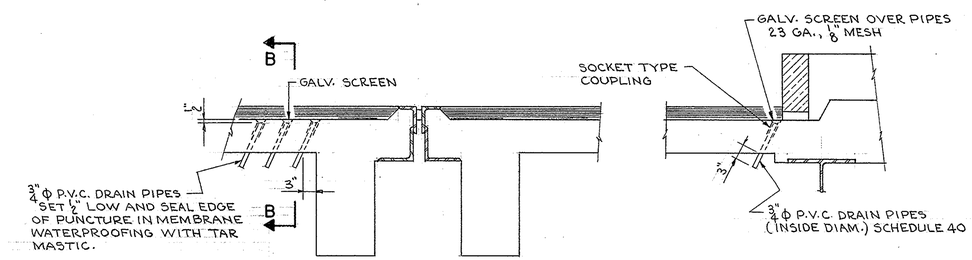
SPECIAL END SHOE & RECESS DETAIL

SCALE: 1 1/2"=1'-0"



CONNECTION DETAIL

NO SCALE

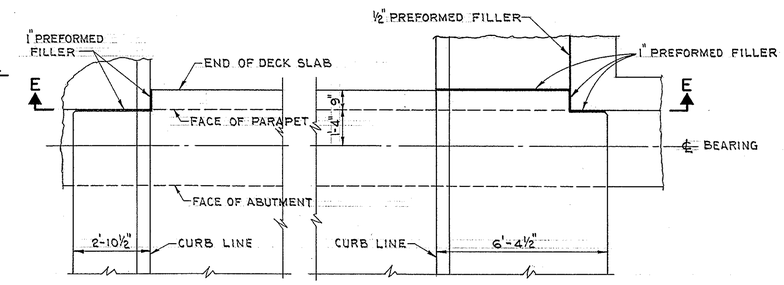


SECTION A-A

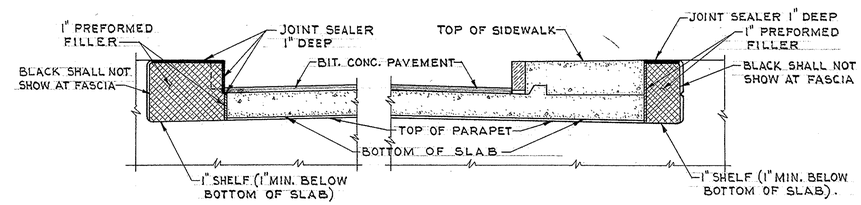
SECTION B-B

DETAIL DRAIN PIPES THRU DECK SLAB

SCALE: 3/4"=1'-0"



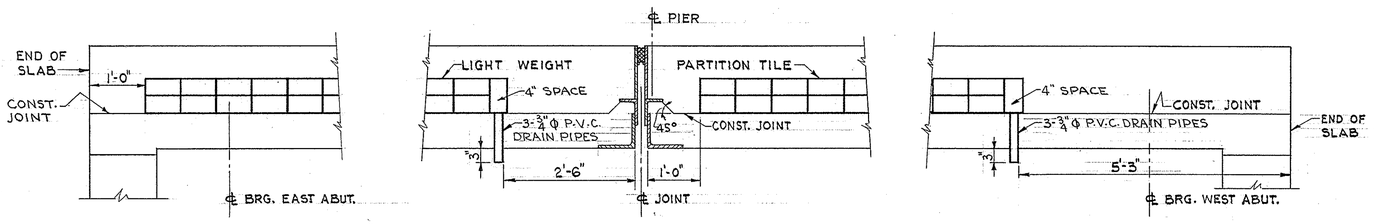
ABUTMENT PLAN AT SIDEWALK AND SAFETY WALK



SECTION E-E

PREFORMED FILLER AT ABUTMENTS

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



EAST ABUTMENT

PIER

WEST ABUTMENT

LONGITUDINAL SECTION THRU SIDEWALK SHOWING LIMITS OF PARTITION TILE

SCALE: 3/4"=1'-0"

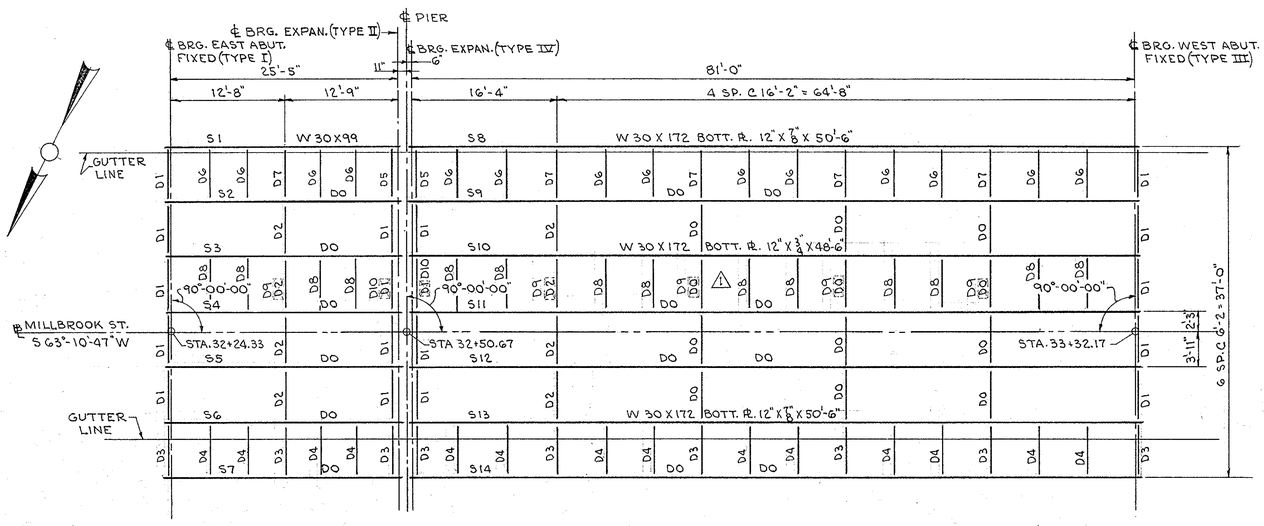
DATE	DESCRIPTION
MAY 19, 1973	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

SHEET 9 OF 10 SHEETS BRIDGE NO. W-44-29

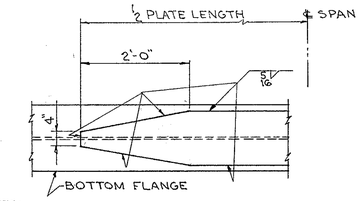
DECK DETAILS 2

PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.			15	23



FRAMING PLAN

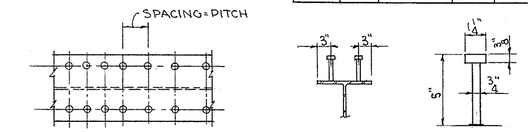
SCALE: 1/8" = 1'-0"



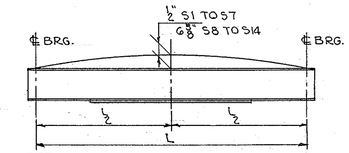
NOTES:
1. PREPARATION OF MATERIAL FOR WELDING SHALL CONFORM TO ART. 302 A.W.S. 1969. EDITION
2. ASSEMBLY OF MATERIAL FOR WELDING SHALL CONFORM TO ART. 303 A.W.S. 1969. EDITION

COVER PLATE DETAIL

SCALE: 3/4" = 1'-0"



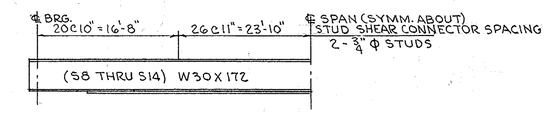
NOTES:
1. 7/8" DIA. STUDS MAY BE SUBSTITUTED FOR 3/4" DIA. STUDS BY PROVIDING AN EQUIVALENT CROSS-SECTIONAL AREA AND ADJUSTING THE PITCH ACCORDINGLY.
2. NO SHEAR CONNECTORS REQUIRED FOR STRINGERS S1 THRU S7.



NOTE:
BEAMS SHALL BE CAMBERED TO THE AMOUNT SHOWN. SEE STANDARD SPECIFICATIONS (ART. 960.40)

CAMBER DIAGRAM

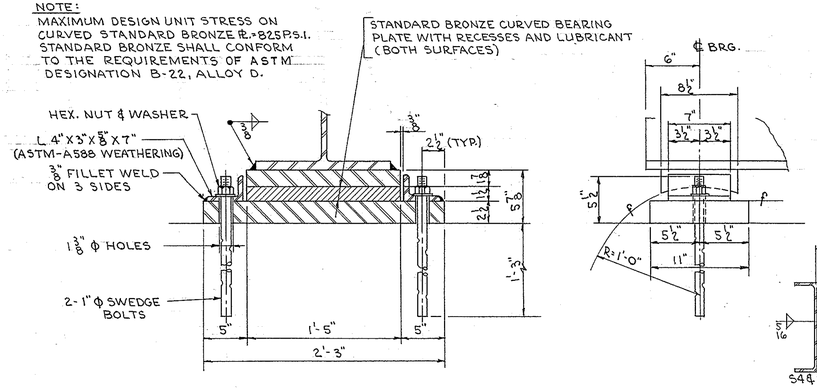
NO SCALE



STUD SHEAR CONNECTOR DETAILS

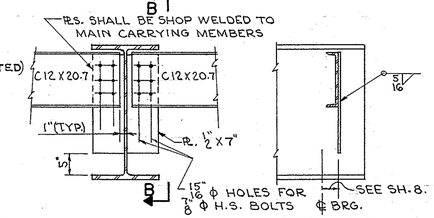
NO SCALE

NOTE:
MAXIMUM DESIGN UNIT STRESS ON CURVED STANDARD BRONZE PL. = 825 P.S.I. STANDARD BRONZE SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION B-22, ALLOY D.



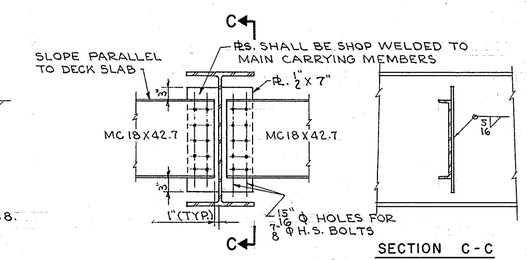
TYPE IV

NOTES:
1. UNLESS OTHERWISE NOTED ALL STRUCTURAL STEEL TO BE ASTM-A588. (WEATHERING STEEL-UNPAINTED)
2. ENDS OF STRINGERS SHALL BE FABRICATED SO THAT UNDER FULL LOAD THE ENDS WILL BE PLUMB.
3. ALL WELDING SHALL CONFORM TO "SPECIFICATIONS FOR WELDED HIGHWAY & RAILWAY BRIDGES" 1969 EDITION, OF THE AMERICAN WELDING SOCIETY. (AWS D2.0-69).



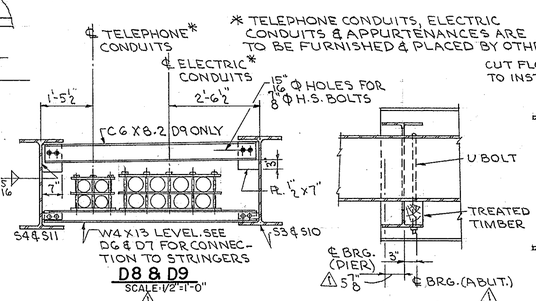
D1

SECTION B-B



D2

SECTION C-C

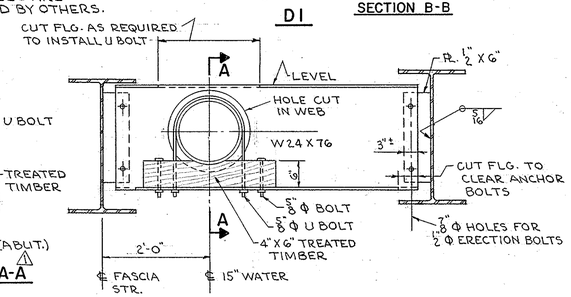


* TELEPHONE CONDUITS, ELECTRIC CONDUITS & APPURTENANCES ARE TO BE FURNISHED & PLACED BY OTHERS.

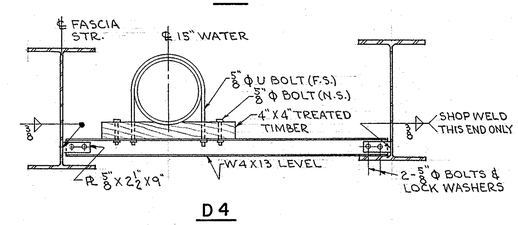
D8 & D9

SCALE: 1/2" = 1'-0"

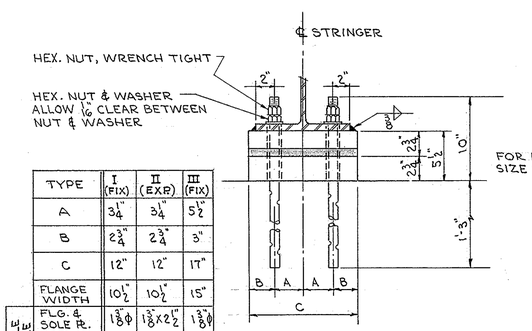
SECTION A-A



D3

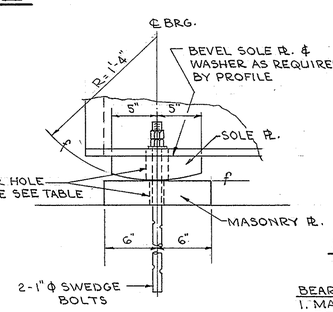


D4



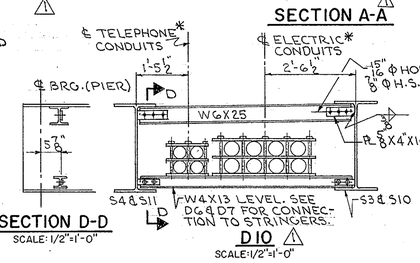
TYPE	I (FIX)	II (EXP)	III (FIX)
A	3 1/4"	3 1/4"	5 1/2"
B	2 3/4"	2 3/4"	3"
C	12"	12"	17"
FLANGE WIDTH	10 1/2"	10 1/2"	15"
HOLE SIZE: FLG. & SOLE PL.	1 3/8" Φ	1 3/8" X 2 1/2"	1 3/8" Φ
HOLE SIZE: MASONRY PL.	1 3/8" Φ	1 3/8" Φ	1 3/8" Φ

TYPES I, II & III



BEARING SHOE DETAILS

SCALE: 1 1/2" = 1'-0"



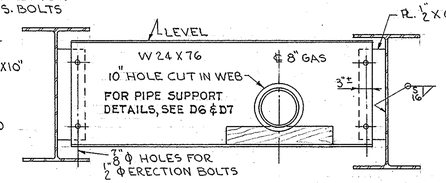
SECTION D-D

SCALE: 1/2" = 1'-0"

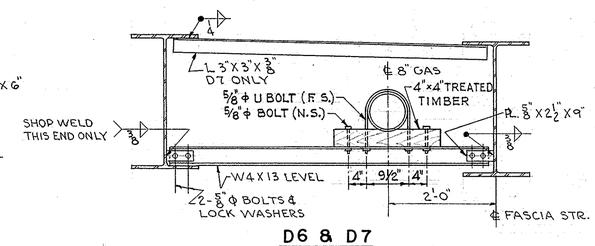
D10

SCALE: 1/2" = 1'-0"

BEARING NOTES:
1. MASONRY & SOLE PLATES TO BE ASTM-A588. (WEATHERING STEEL-UNPAINTED)
2. BOLTS, NUTS & WASHERS TO BE GALVANIZED IN ACCORDANCE WITH ASTM-A153
3. NUTS TO BE WRENCH TIGHT EXCEPT AS NOTED.
4. f = ASA FINISH 125 MICRO-INCHES OR FINER.
5. MASONRY PLATES SHALL HAVE FULL AND LEVEL BEARING BEFORE PLACING THE STRINGERS ON THE BEARING ASSEMBLY.



D5



D6 & D7

DIAPHRAGM DETAILS

SCALE: 3/4" = 1'-0"

NOTE:
TIMBER SUPPORTS AND 5/8" Φ BOLT FASTENINGS FOR 15" Φ WATER MAIN AND 8" Φ GAS PIPE ARE TO BE FURNISHED AND PLACED BY OTHERS.

DATE	DESCRIPTION
JUNE 28, 73	1 SECTION A-A REVISED DIAPHRAGMS D8, D9 & D10 ADDED
MAY 19, 1973	ISSUED FOR CONSTRUCTION

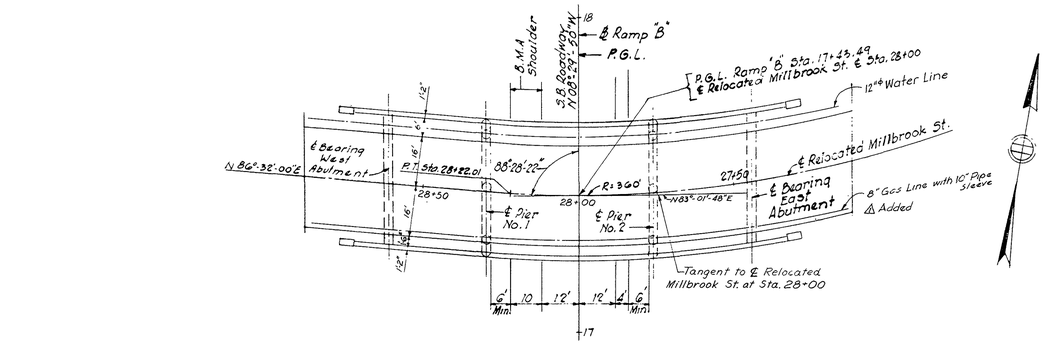
USE ONLY PRINTS OF LATEST DATE

SHEET 10 OF 10 SHEETS BRIDGE NO. W-44-29

STEEL FRAMING PLAN & DETAILS

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS	I-290-5(15)99		115	303

KEY PLAN AND PROFILES



KEY PLAN

SCALE 1" = 20'-0"

Note: Abutments and Piers to be set parallel to P.G.L. - Ramp "B"

DESIGN:
In accordance with the current specifications of the American Association of State Highway Officials (1957 Edition) for H20 - 44 loading

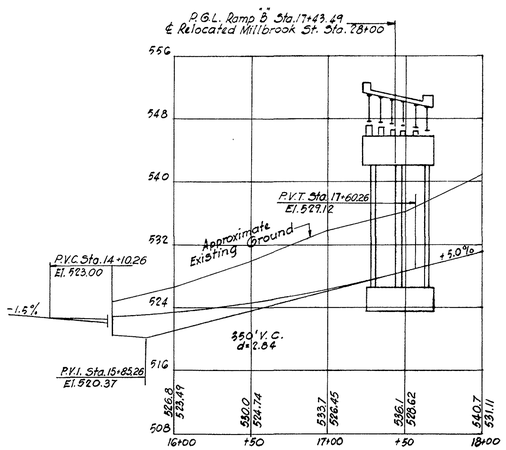
REINFORCEMENT:
All reinforcing bars shall conform to A.S.T.M. specifications A 305.
Unless otherwise shown on plans reinforcing bars shall be lapped 20 diameters to make a splice except that main reinforcing bars near top of slabs and beams having more than 12 inches of concrete under the bars shall be lapped 35 diameters to make a splice.

FOUNDATIONS:
Foundations may be altered, if necessary, to suit conditions encountered in construction.

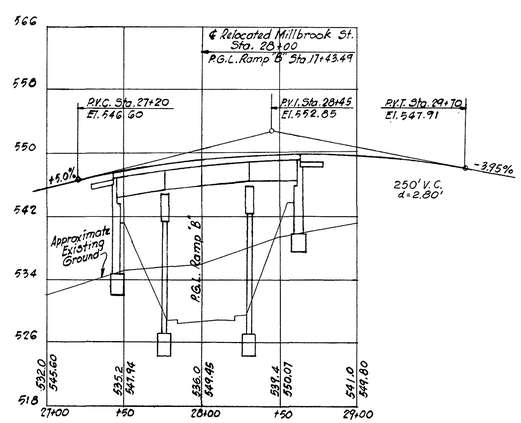
BENCH MARK
TBM M-5 "6-A" SW Corner of 1st conc. step leading from Drive to House #151 Millbrook St. - El 555.91

DATE & SEAL:
To be placed on the inside faces of the northeasterly and southwesterly end posts. A sheet showing size and character of the numerals will be furnished. Seal will be furnished by the Commonwealth and shall be placed by the contractor.

LEVEL DATUM:
U.S.C.&G.S. M.S.L. Datum 1929



PROFILE RAMP "B"



PROFILE RELOCATED MILLBROOK STREET

SCALE:
HORIZ. 1" = 40'-0"
VERT. 1" = 8'-0"

ESTIMATED QUANTITIES
(NOT GUARANTEED)

Bridge Excavation	480 cu. yds.
Class B Rock Excavation	10 cu. yds.
Gravel Borrow	180 cu. yds.
Bridge Structure (W-44-99)	1 L.S.
Estimated weight of Structural Steel	94,000 lbs.
Estimated weight of Reinforcing Steel	85,000 lbs.

These items are included in Lump Sum Bridge Structure (W-44-99)

July 12, 1962	Corrected Limit of Appr. Slab - Sect. B-B & C-C
July 12, 1962	Added Size and Spacing of Ties - Sect. R-R
July 12, 1962	8" Gas Line With 10" ϕ Pipe Sleeve Added
July 12, 1962	Revision Sheets 1, 3, 4, 5, 7, 8
JAN. 31, 1962	ISSUED FOR CONSTRUCTION

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS
BOSTON MASSACHUSETTS

RELOCATED MILLBROOK STREET
OVER RAMP B

WORCESTER

SCALE AS NOTED
JAN. 1962

OLE SINGSTAD
CONSULTING ENGINEER

BRIDGE ENGINEER

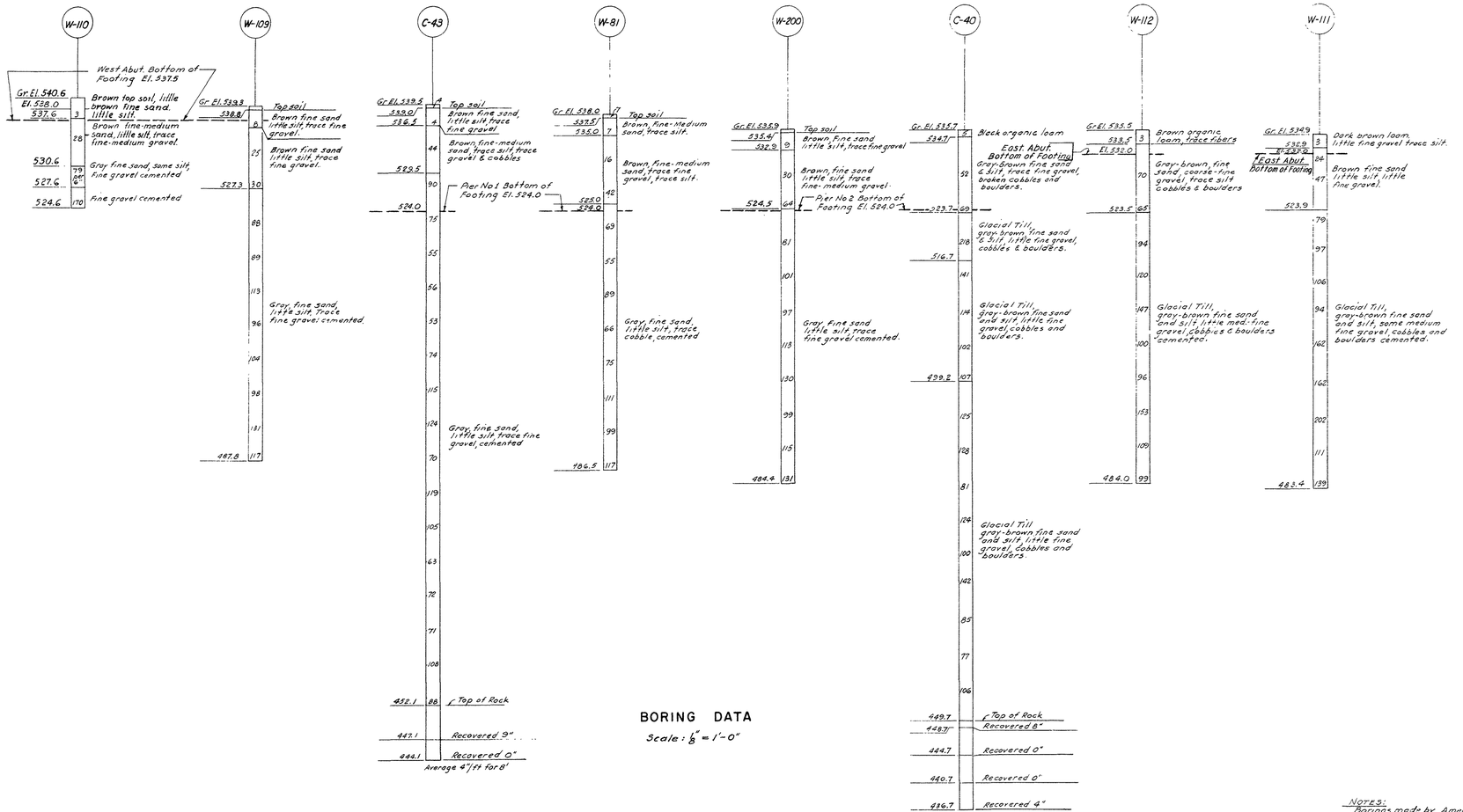
CHIEF ENGINEER

SHEET 1 OF 9 SHEETS

BRIDGE NO. W-44-99

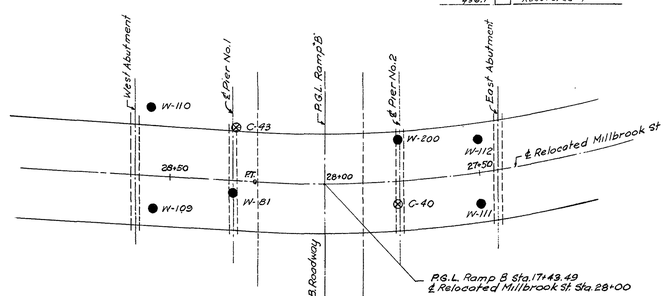
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	MASS.	F-290-5(15)99		116	303

BORING LOGS AND LOCATION PLAN



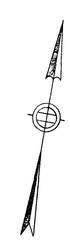
BORING DATA

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



PLAN

Scale: 1" = 20'



NOTES:

Borings made by American Drilling Co. Inc. in 1961.
Borings taken for the purpose of design and conditions of boring points only, but do not necessarily show nature of materials to be encountered during construction.
Figures in columns denote penetration blows per 12" produced by a 1 3/8" sampler pipe with a 30" drop of a 140# hammer.
Boring samples may be seen at the Department's Laboratory in the Maintenance Building on Route 9 in Wellesley on advanced notice.

LEGEND

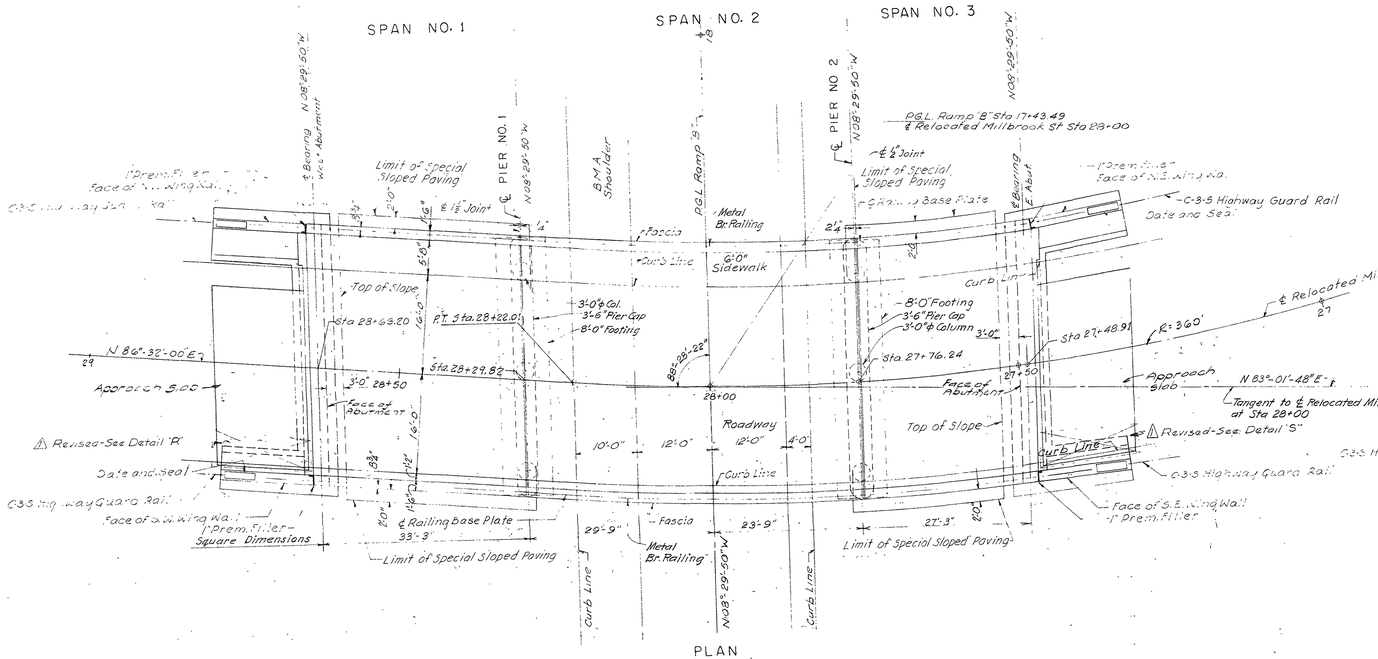
● Indicates Wash Boring
⊗ Indicates Core Preparatory Boring

DATE	DESCRIPTION
JAN. 31, 1962	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

BRIDGE NO. W-44-99

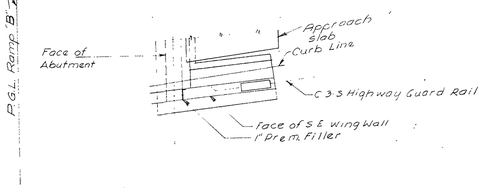
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(15)199		117	303

GENERAL PLAN AND ELEVATION

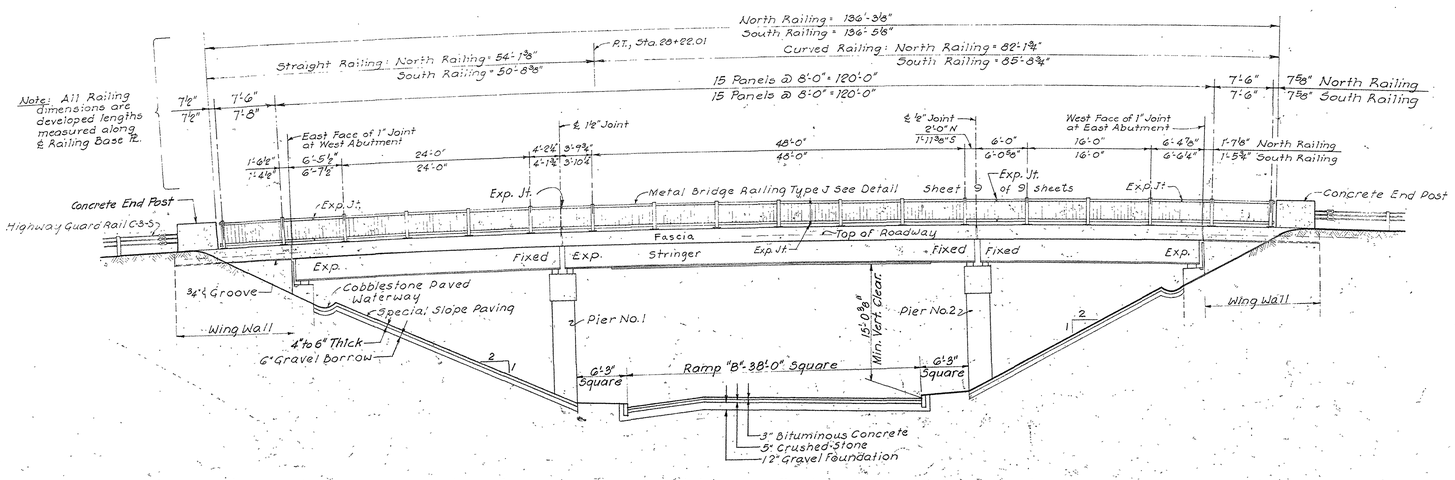


PLAN
SCALE: 1" = 10'

Detail "R"
Scale: 1" = 10'-0"



Detail "S"
Scale: 1" = 10'-0"



SOUTH ELEVATION
Scale: ⅛" = 1'-0"

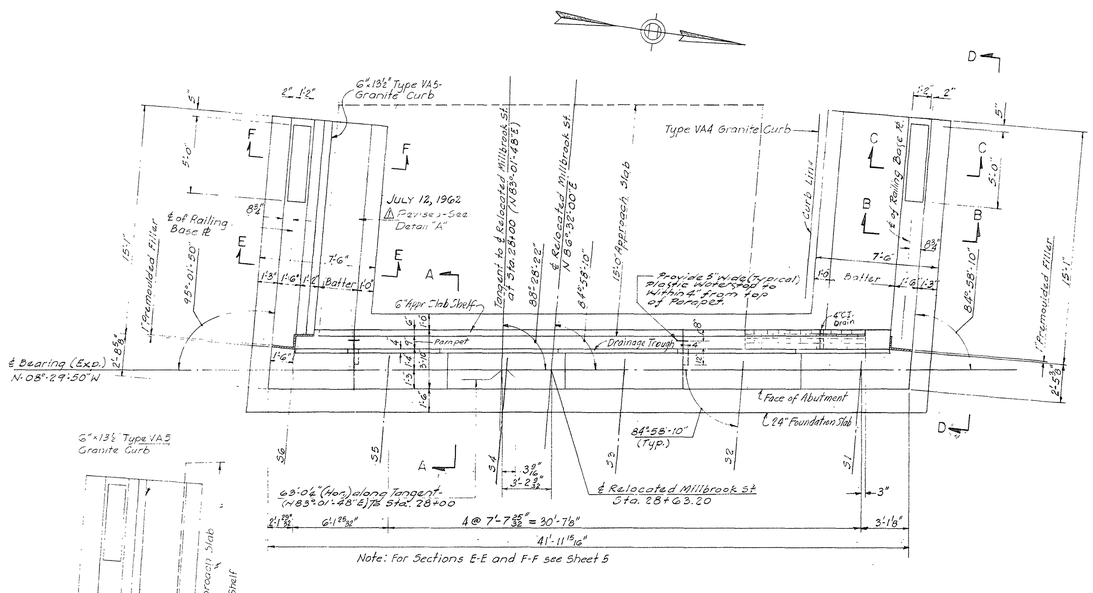
DATE	DESCRIPTION
July 12, 1962	Approach Slabs Revised
JAN. 31, 1962	ISSUED FOR CONSTRUCTION
	USE ONLY PRINTS OF LATEST DATE

SHEET 3 OF 9 SHEETS

BRIDGE NO. W-44-99

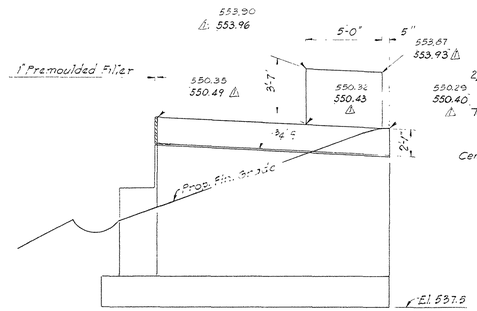
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(15)99		118	303

WEST ABUTMENT



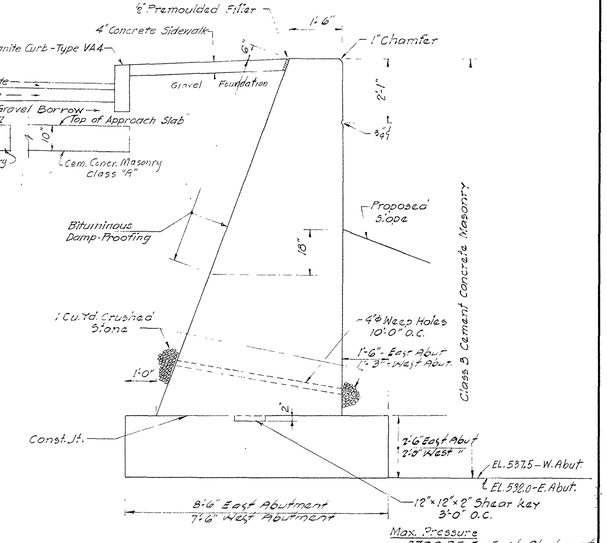
PLAN-WEST ABUTMENT

SCALE 1/4" = 1'-0"



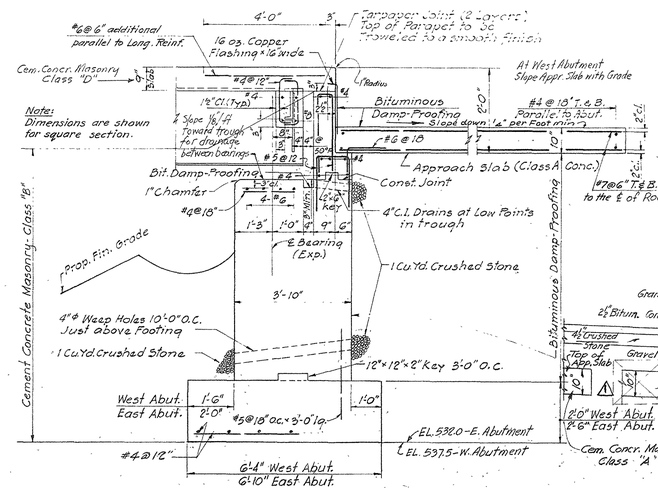
ELEVATION D-D

SCALE 1/4" = 1'-0"



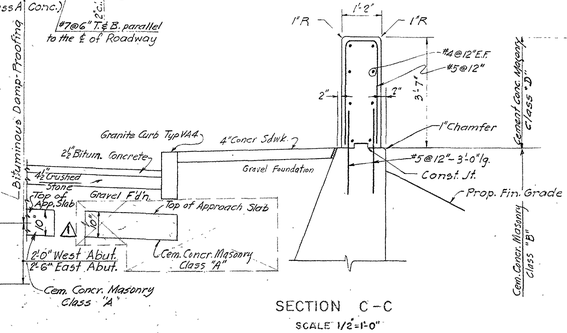
SECTION B-B

SCALE 1/2" = 1'-0"



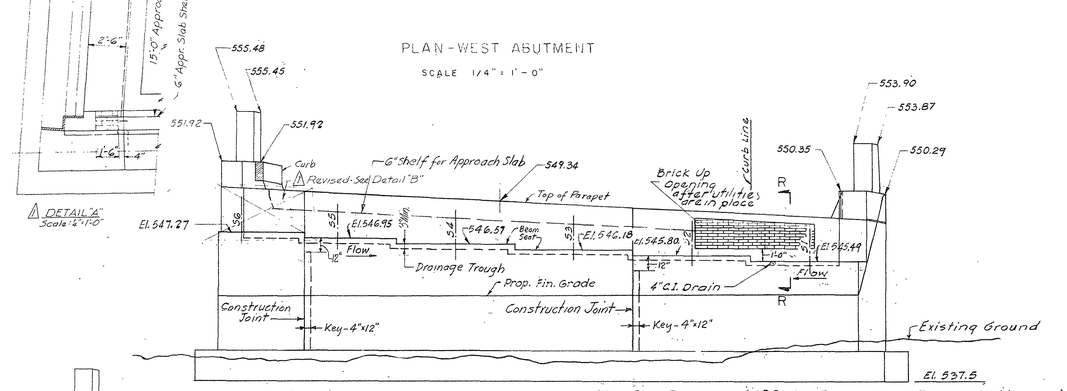
SECTION A-A

SCALE 1/2" = 1'-0"



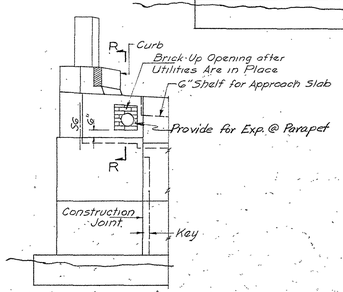
SECTION C-C

SCALE 1/2" = 1'-0"



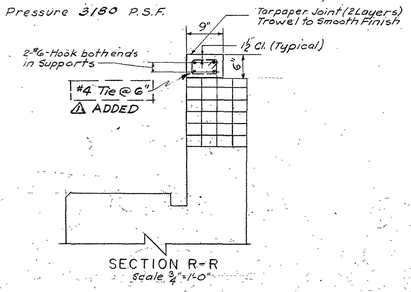
ELEVATION

SCALE 1/4" = 1'-0"



DETAIL "B"

Scale: ½" = 1'-0"



SECTION R-R

Scale ¾" = 1'-0"

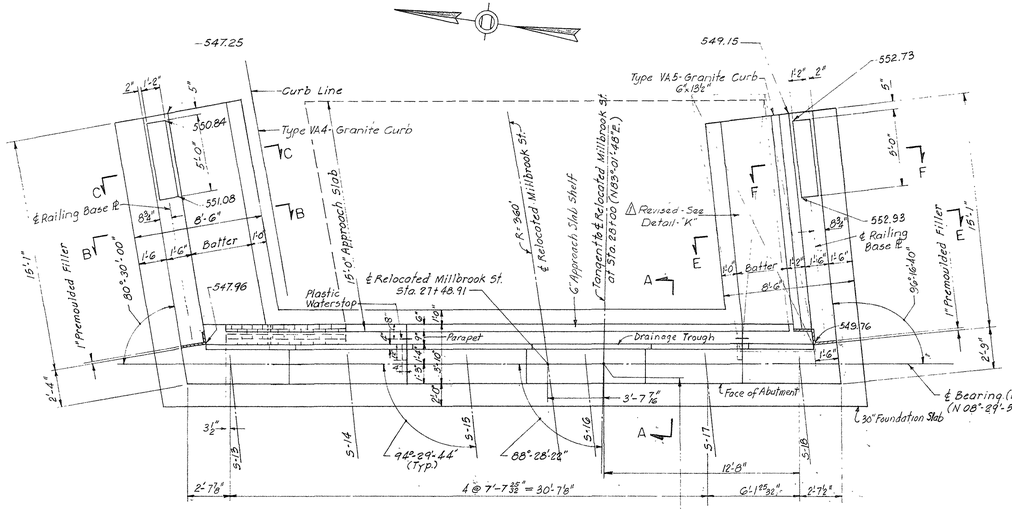
July 12, 1962	Corrected Limit of Appr. Slab-Sects. B-B & C-C
July 12, 1962	Added Size & Spcs. of Ties-Sect. R-R
July 12, 1962	Elevations Revised-Elevation D-D N. Wing Wall
July 12, 1962	Abutment Revised to Accommodate Gas Pipe
July 12, 1962	Approach Slab Revised
JAN. 31, 1962	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

USE ONLY PRINTS OF LATEST DATE

SHEET 4 OF 9 SHEETS

BRIDGE NO. W-44-99

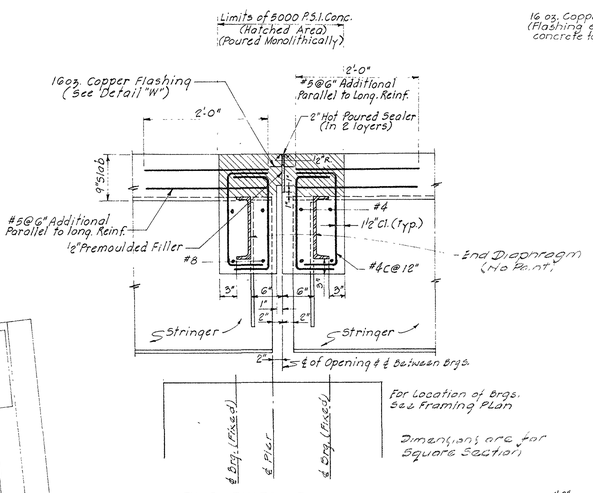
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(15)99		119	303



PLAN - EAST ABUTMENT

SCALE 1/4" = 1'-0"

Note: For Sections A-A, B-B and C-C, see Sheet 4

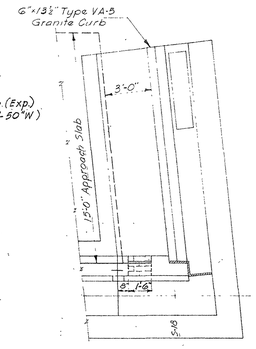


TWO FIXED BEARINGS

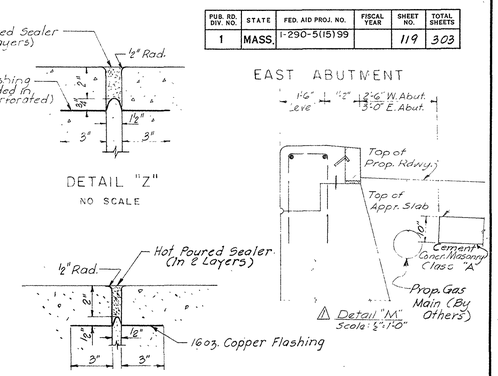
LOOKING NORTH

Note: For Details of Utility Bays
See Sheet No. 8 of 9

△ ADDED



△ Detail "K"
Scale: 1/4" = 1'-0"



EAST ABUTMENT

1'-6" Level 1'-2" 2'-6" W. Abut. 3'-0" E. Abut.

DETAIL "Z"

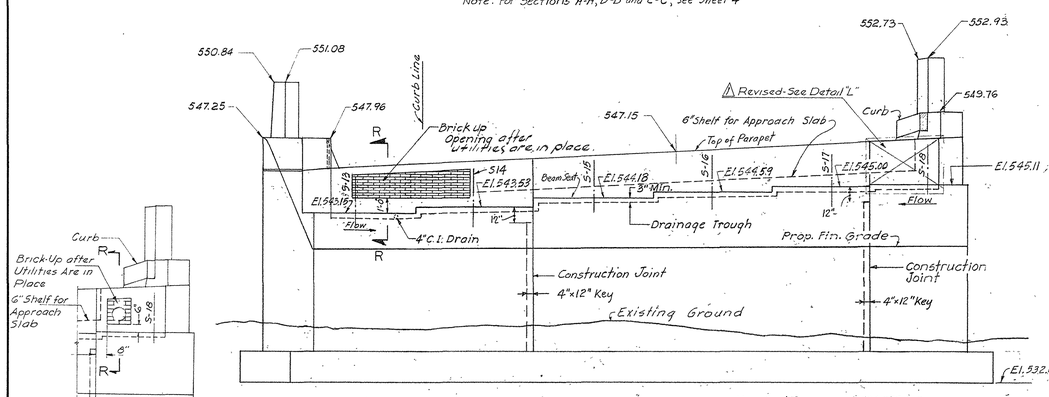
NO SCALE

△ Detail "M"
Scale: ½" = 1'-0"

DETAIL "W"

SCALE 3" = 1'-0"

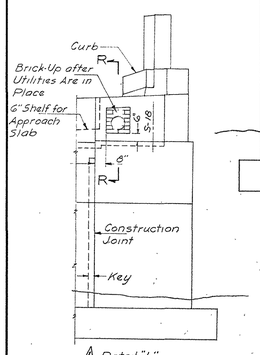
Note:
All Copper Flashing Embedded in
Concrete to be Perforated



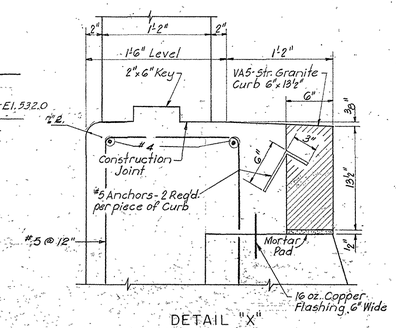
ELEVATION

SCALE 1/4" = 1'-0"

Note: For Section R-R see Sh. 4

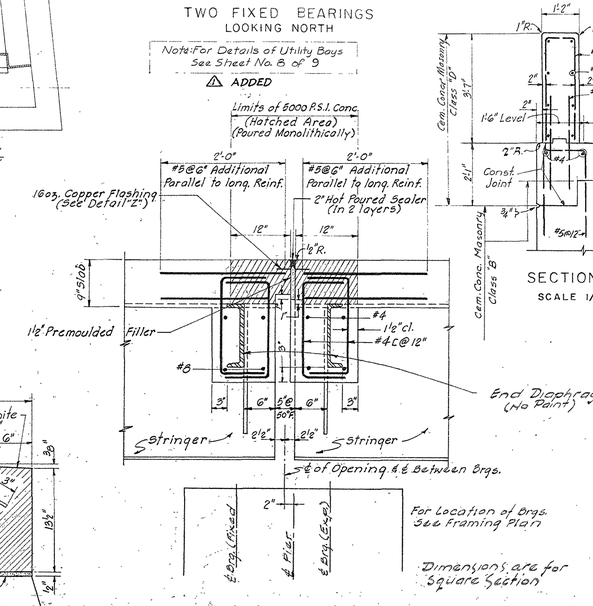


△ Detail "L"
Scale: ¼" = 1'-0"



DETAIL "X"

SCALE 1½" = 1'-0"



ONE FIXED AND ONE EXP. BEARING

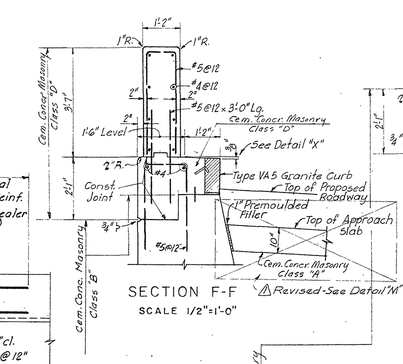
LOOKING NORTH

DECK DETAILS OVER PIERS

SCALE 1" = 1'-0"

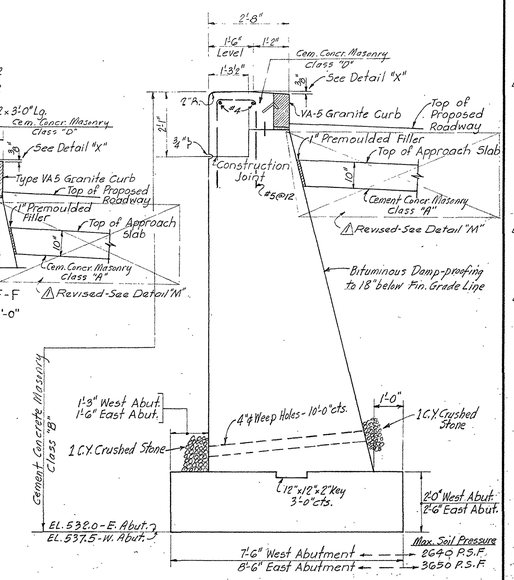
Note: For Details of Utility Bays
See Sheet No. 8 of 9

△ ADDED



SECTION F-F

SCALE 1/2" = 1'-0"



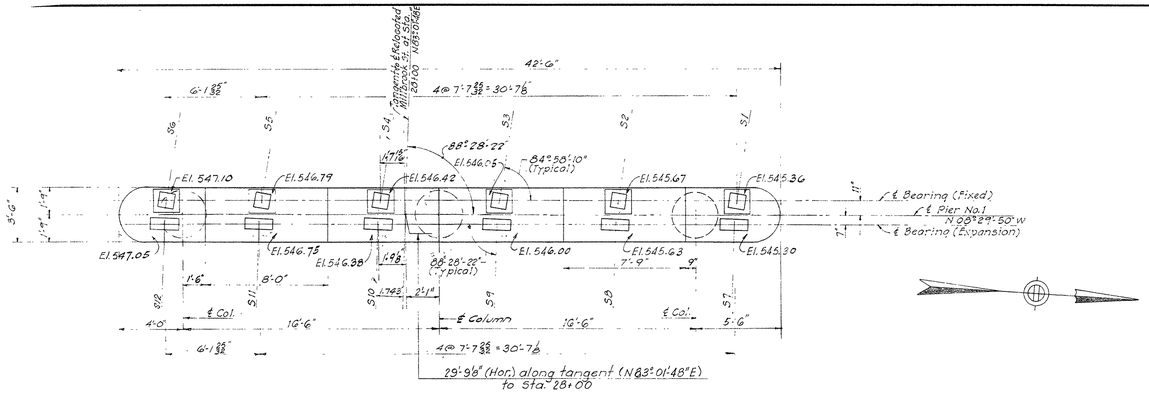
SECTION E-E

SCALE 1/2" = 1'-0"

DATE	DESCRIPTION
July 12, 1962	△ Abutment Revised to Accommodate Gas Pipe.
July 12, 1962	△ Approach Slab Revised.
JAN. 31, 1962	ISSUED FOR CONSTRUCTION

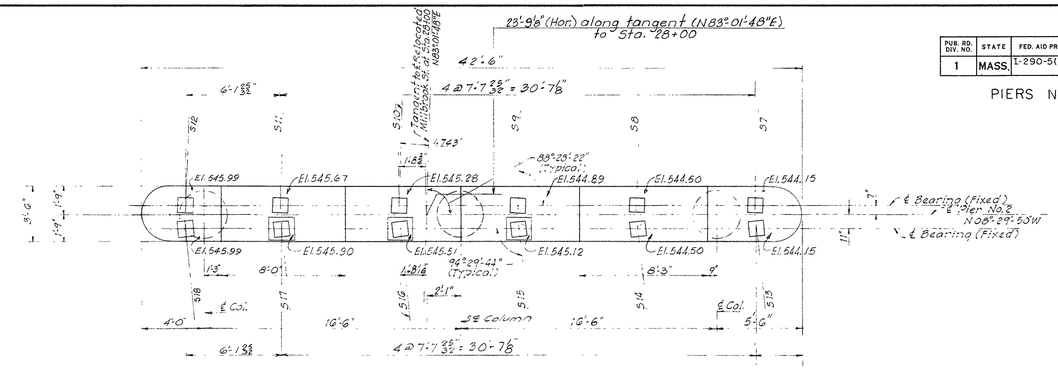
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(15)99		120	303

PIERS NO. 1 AND 2



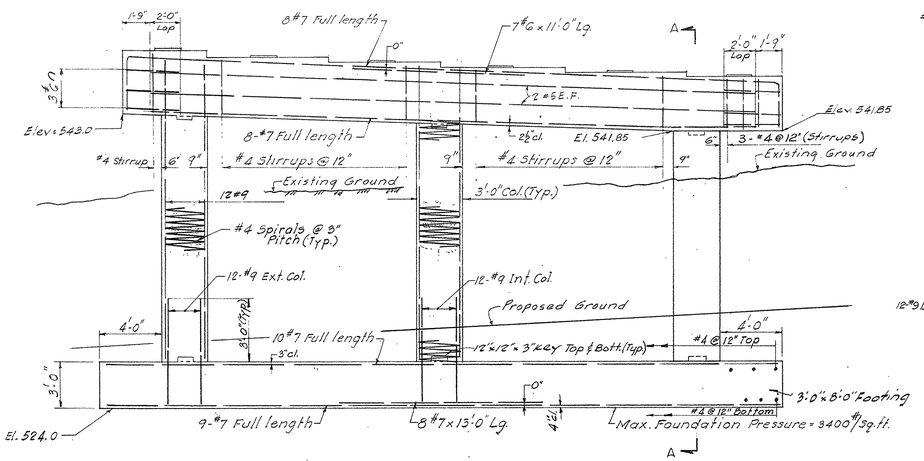
CAP PLAN - PIER NO. 1

SCALE 1/4" = 1'-0"



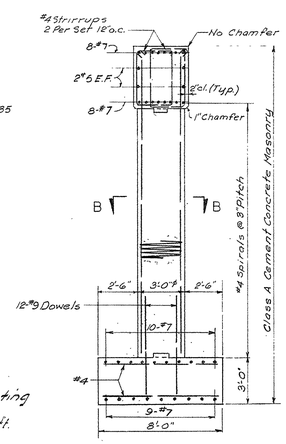
CAP PLAN-PIER NO. 2

SCALE 1/4" = 1'-0"



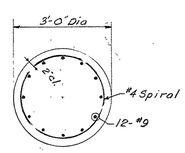
ELEVATION

SCALE 1/4" = 1'-0"



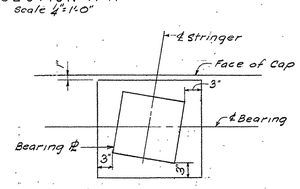
SECTION A-A

Scale 1/4" = 1'-0"



SECTION B-B

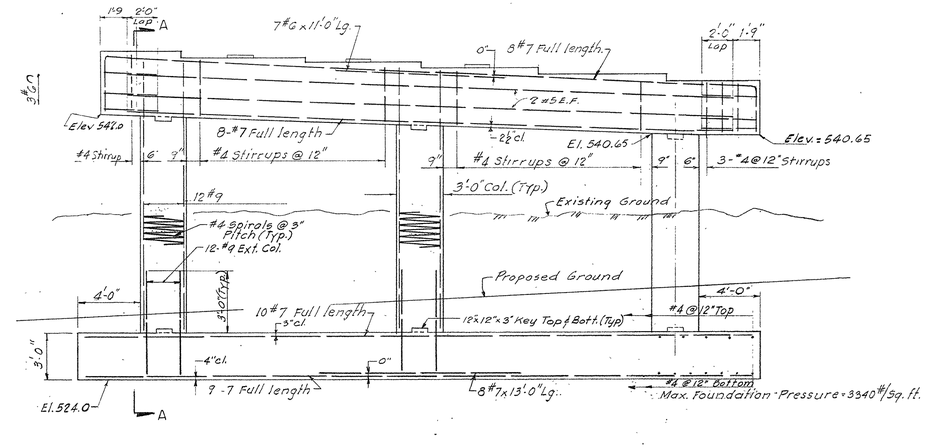
Scale 1/4" = 1'-0"



PAD DETAIL

Scale: 1" = 1'-0"

Pad To Be Poured Monolithically with Cap.



ELEVATION

SCALE 1/4" = 1'-0"

Note: All Spiral reinforcement in Columns must extend from Top of Footing to the bottom row of Reinf. Steel in the Pier Cap

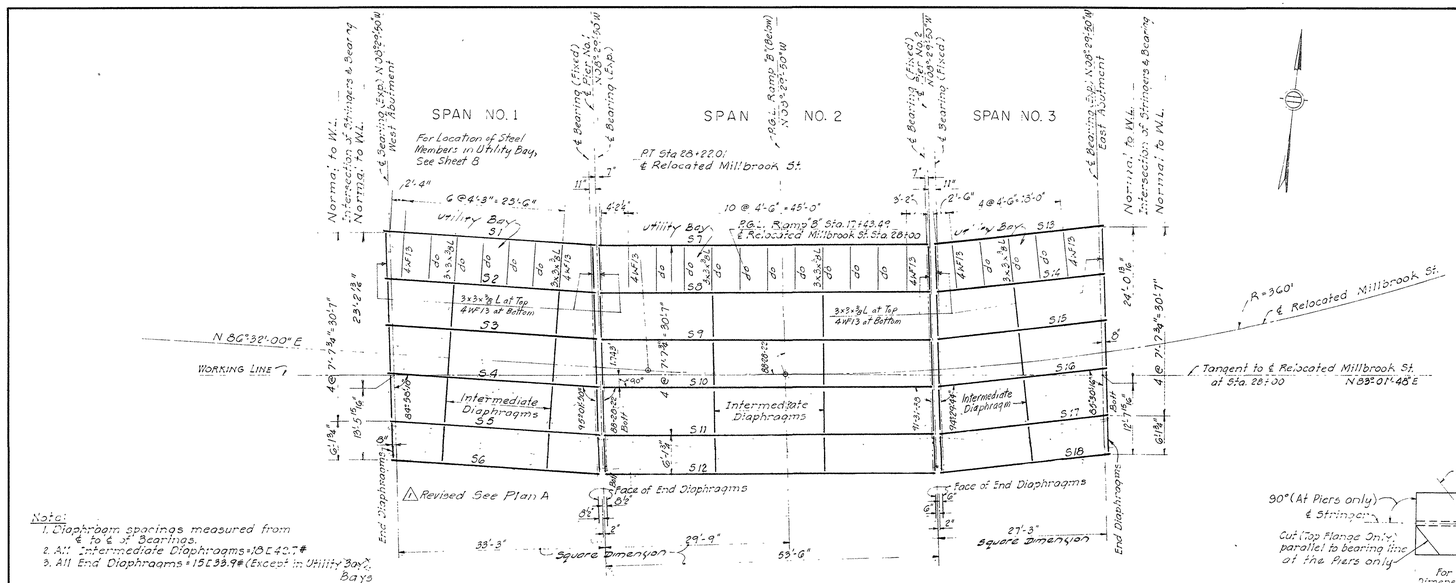
DATE	DESCRIPTION
JAN. 31, 1962	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

SHEET 6 OF 9 SHEETS

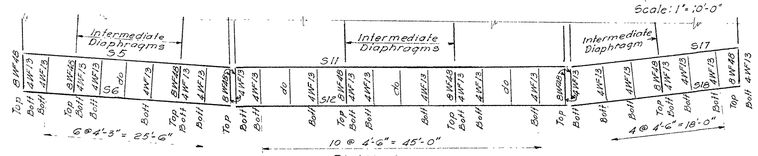
BRIDGE NO. W-44-99

FUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(15)199		121	303

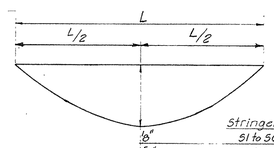


Note:
1. Diaphragm spacings measured from ℄ to ℄ of Bearings.
2. All Intermediate Diaphragms = 18 ℄ 40.7#
3. All End Diaphragms = 15 ℄ 33.9# (Except in Utility Bay Bays)

FRAMING PLAN
Scale: 1" = 10'-0"



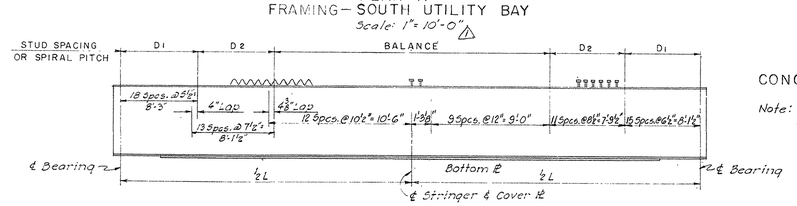
PLAN A
FRAMING - SOUTH UTILITY BAY
Scale: 1" = 10'-0"



	Stringers
1/8"	S1 to S6
5/8"	S7 ℄ S12
11/16"	S8 to S11
1/2"	S13, S14, ℄ S18
1/8"	S15 to S17

CONCRETE SLAB DEFLECTION DIAGRAM
Scale - None

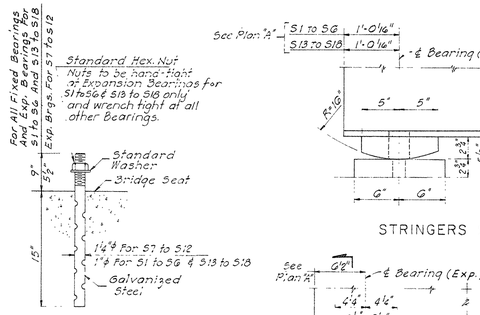
Note: Deflections shown are 80% of the computed concrete slab dead load deflections for the use of the Resident Engineer only.



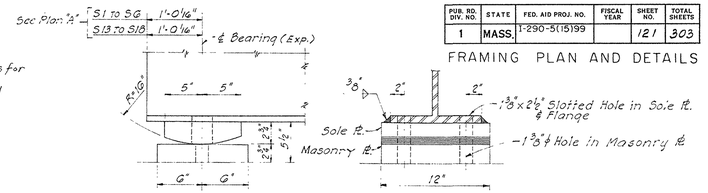
STRINGER SCHEDULE

STRINGER				STUD SPACING			SPIRAL PITCH			CAMBER						
MARK	C. TO C. BEARING	SIZE	BOTT. ℙ	D1	D2	BALANCE	D1	D2	BALANCE	STEEL	CONC. SLAB	*	L/160	VERT. CURVE	CAMBER MIN.	CAMBER MAX.
S1, ℄ S6	32'-5½"	30 WF 99	NONE							0	3/16	1/16		9/16"	13/16"	1 1/16"
S2 to S5	32'-5½"	30 WF 108	NONE							0	3/16	1/16		9/16"	13/16"	1 1/16"
S7	52'-4¼"	30 WF 99	14 x ¾ x 41'-0"	6½"	8½"	12"	5½"	7½"	10½"	1/8	3/4	1/4		1½"	2 5/8"	2 7/8"
S8	52'-4¼"	30 WF 99	14 x ¾ x 41'-0"	6½"	8½"	12"	5½"	7½"	10½"	1/8	7/8	3/16		1½"	2 11/16"	2 15/16"
S9 to S11	52'-4¼"	30 WF 99	14 x ¾ x 41'-0"	6½"	8½"	12"	5½"	7½"	10½"	1/8	7/8	1/8		1½"	2 5/8"	2 7/8"
S12	52'-4¼"	30 WF 99	14 x ⅞ x 39'-0"	6½"	8½"	12"	5½"	7½"	10½"	1/8	3/4	3/16		1½"	2 9/16"	2 13/16"
S13, S14 ℄ S18	26'-5"	30 WF 99	NONE							0	1/16	1/16		1/2"	5/8"	7/8"
S15, S16 ℄ S17	26'-5"	27 WF 84	NONE							0	1/8	1/16		1/2"	11/16"	15/16"

* Indicates camber for super-imposed loads, which include curbs, copings and railings

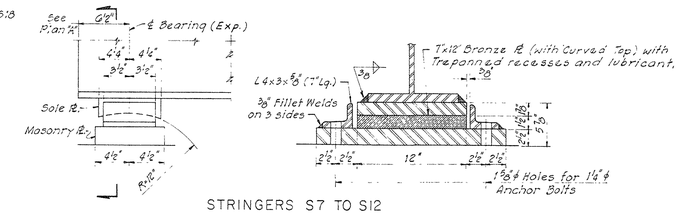


ANCHOR BOLT
Scale: 1½" = 1'-0"



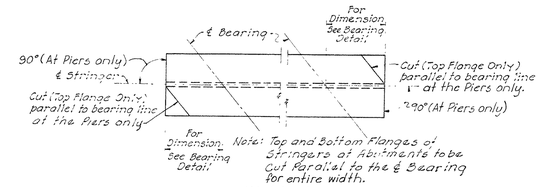
FRAMING PLAN AND DETAILS

STRINGERS S1 TO S6 & S13 TO S18

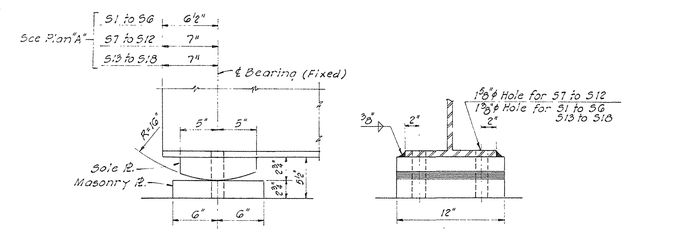


STRINGERS S7 TO S12
EXPANSION BEARING - DETAILS
Scale: 1½" = 1'-0"

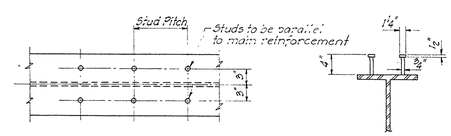
Note:
Bevel Sole Pl.s and Washers.



PLAN A
Plan at ends of Stringers (Typ.)
Not to Scale

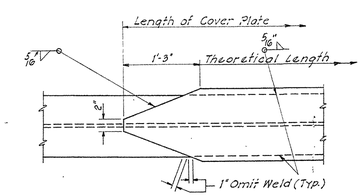


FIXED BEARING - DETAILS
Scale: 1½" = 1'-0"

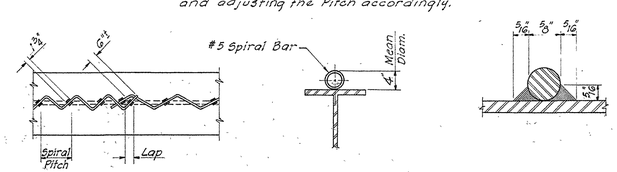


STUD SHEAR CONNECTORS - DETAILS
No Scale

Note: ⅞" ⌀ Studs may be substituted for ¾" ⌀ Studs by Providing an equivalent cross-sectional area and adjusting the Pitch accordingly.



COVER PLATE - DETAILS
Scale: 1" = 1'-0"



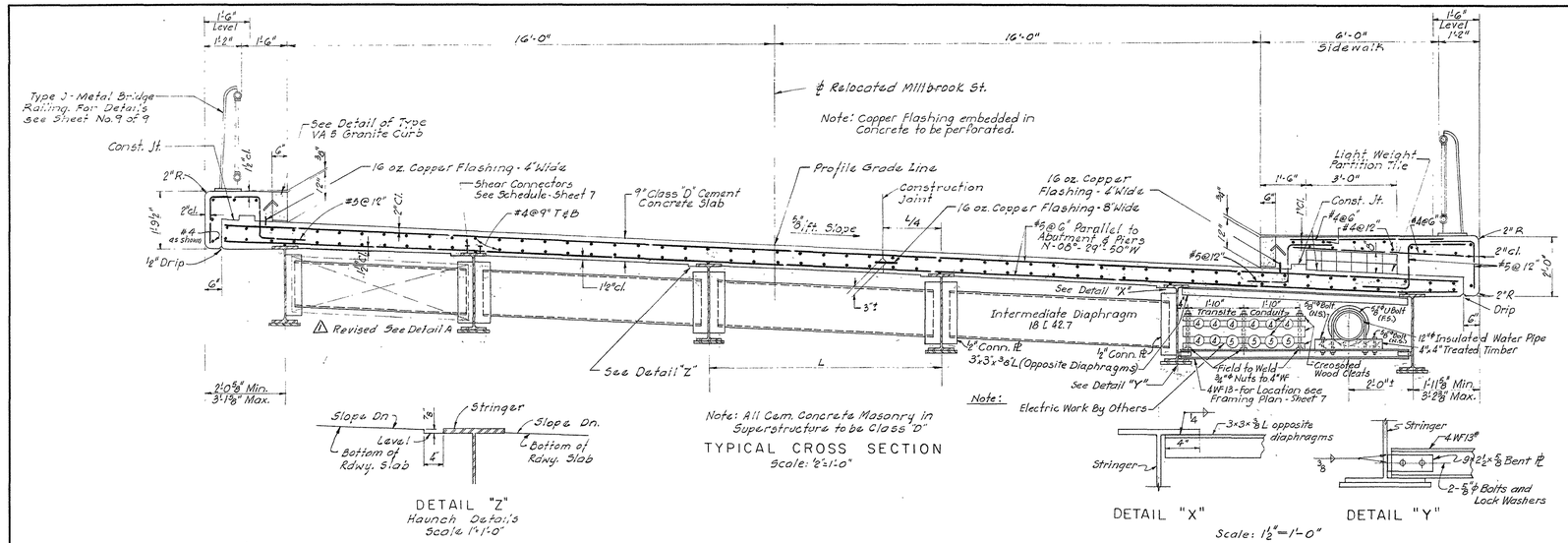
SPIRAL SHEAR CONNECTORS - DETAILS
No Scale

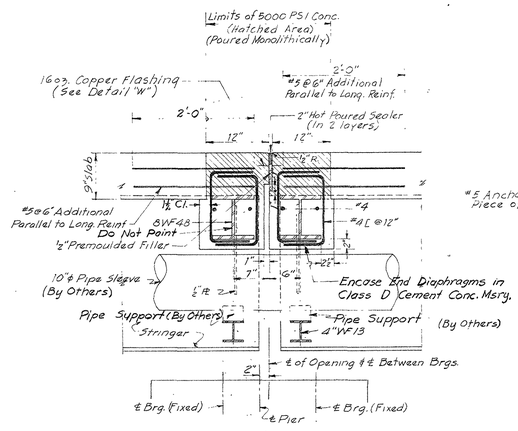
DATE	DESCRIPTION
July 12, 1962	South Bay Changed to Utility Bay
JAN. 31, 1962	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

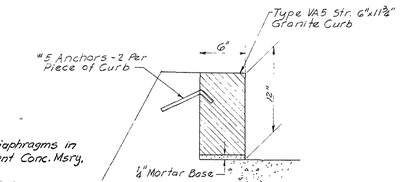
SHEET 7 OF 9 SHEETS BRIDGE NO. W-44-99

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(15)99		122	303

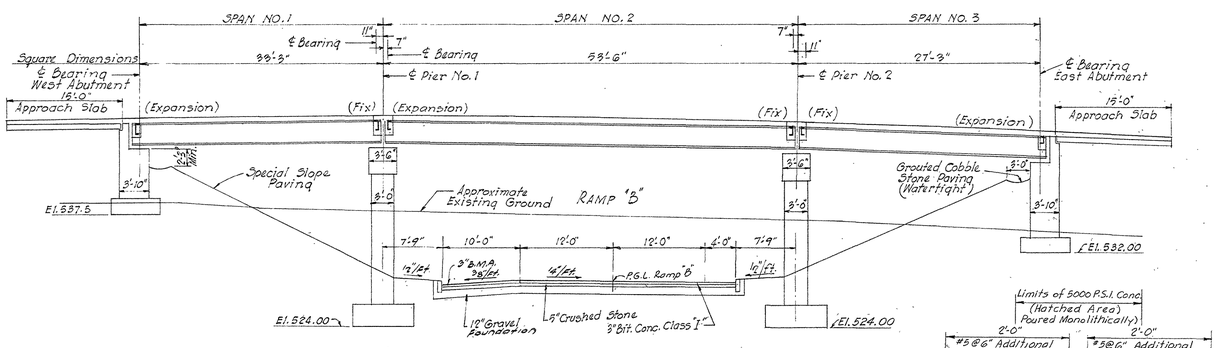
CROSS AND LONGITUDINAL SECTIONS



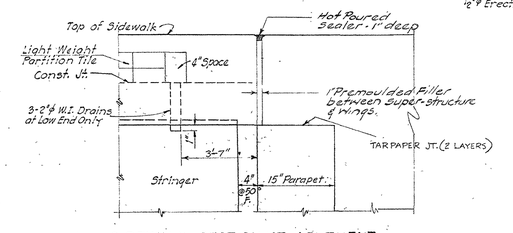


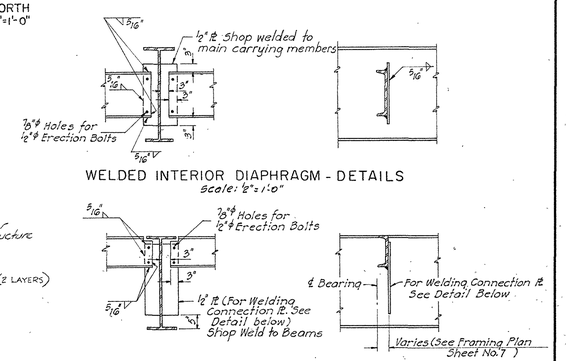


DETAIL OF GRANITE CURB
SCALE 1 1/2"=1'-0"



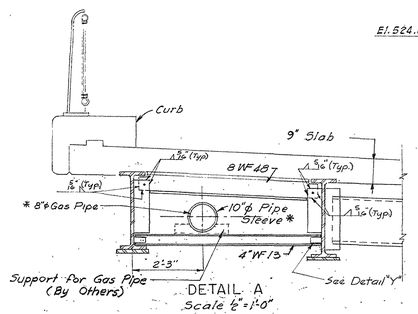
LONGITUDINAL SECTION
Scale: 1/8"=1'-0"

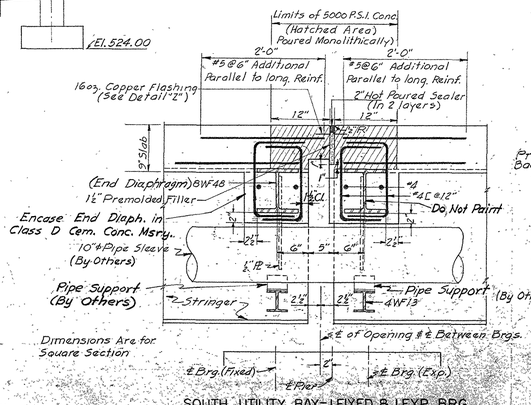


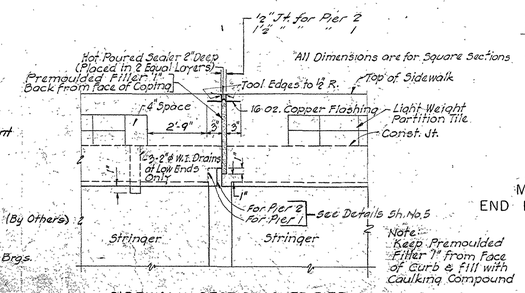


WELDED INTERIOR DIAPHRAGM - DETAILS
Scale: 1/2"=1'-0"

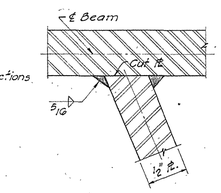
WELDED END DIAPHRAGM - DETAILS
Scale: 1/2"=1'-0"







All Dimensions are for Square Sections



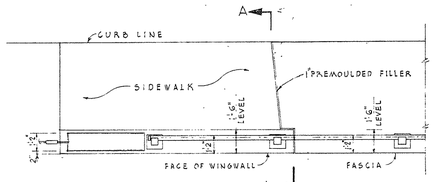
METHOD OF WELDING END DIAPHRAGM CONNECTION
Not to Scale

DATE	DESCRIPTION
July 12, 1962	South Utility Bay Details Added
July 12, 1962	South Bay Changed to Utility Bay
JAN. 31, 1962	ISSUED FOR CONSTRUCTION

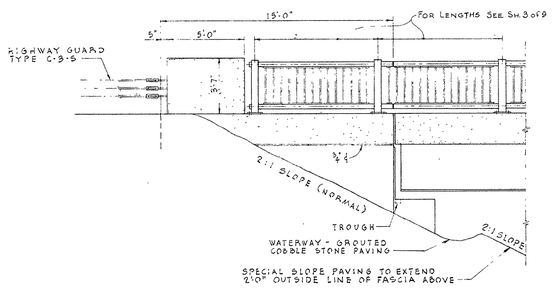
USE ONLY PRINTS OF LATEST DATE

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(15)99		123	303

DETAILS



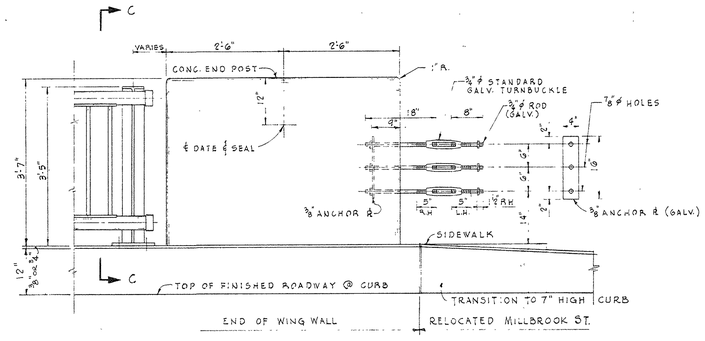
PLAN



ELEVATION

TYPICAL WING WALL

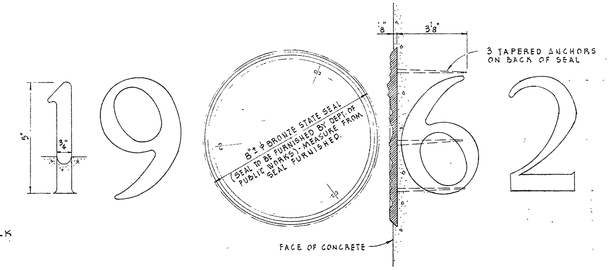
SCALE: 1/4" = 1'-0"



CONCRETE END POST

NOTE: PROVIDE ANCHOR ASSEMBLY AT S.E., N.W AND S.W. END POSTS.

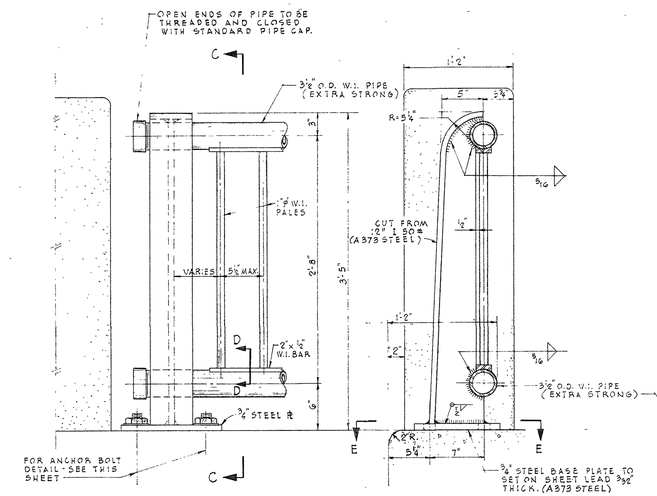
SCALE 3/4" = 1'-0"



BRIDGE DATE AND SEAL DETAIL

SEE GENERAL NOTES & SHEET 3 OF 9 FOR END POSTS TO RECEIVE DATE & SEAL

NOT TO SCALE

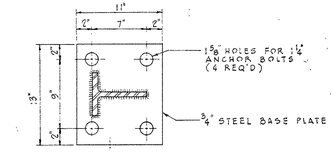


ELEVATION

SCALE: 1 1/2" = 1'-0"

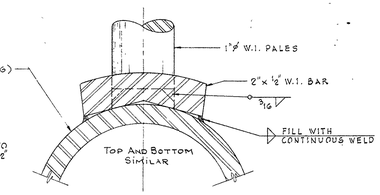
SECTION C-C

SCALE: 1 1/2" = 1'-0"



SECTION E-E

SCALE: 1 1/2" = 1'-0"

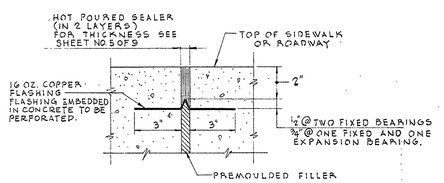


SECTION D-D

SCALE: FULL

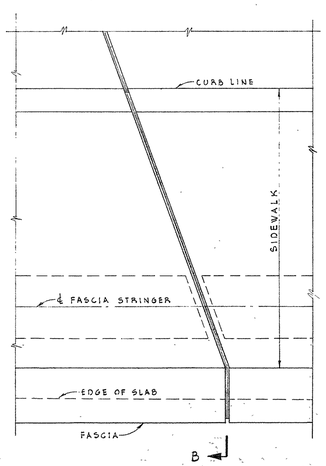
METAL BRIDGE RAILING DETAILS TYPE J

NOTE:- FOR PANEL LAYOUT, SEE SHEET 3 OF 9



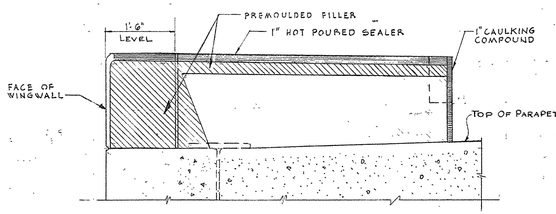
DETAIL "A"

SCALE: 3" = 1'-0"



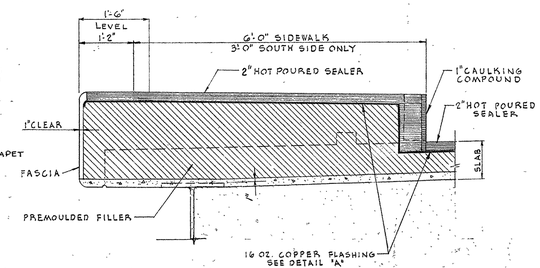
PLAN AT CENTER PIER (TYPICAL)

SCALE: 3/4" = 1'-0"



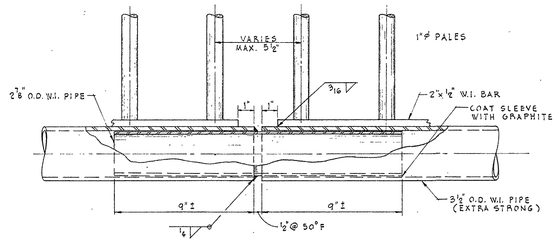
SECTION A-A

SCALE: 3/4" = 1'-0"



SECTION B-B

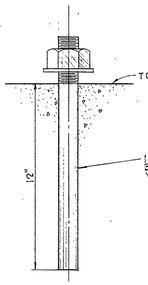
SCALE: 3/4" = 1'-0"



EXPANSION JOINT DETAILS

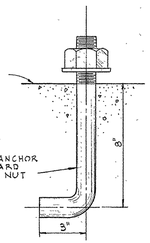
TOP AND BOTTOM RAIL

SCALE: 3" = 1'-0"



STRAIGHT ANCHOR BOLT

SCALE: 3" = 1'-0"



HOOKED ANCHOR BOLT (SOUTH SIDE ONLY)

SCALE: 3" = 1'-0"

W-44-99
9 OF 9

DATE	DESCRIPTION
JAN. 31, 1962	ISSUED FOR CONSTRUCTION

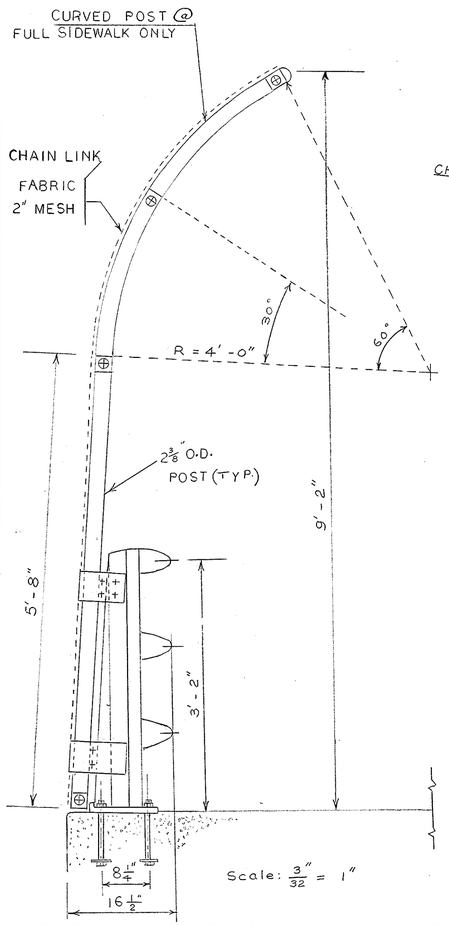
USE ONLY PRINTS OF LATEST DATE

SHEET 9 OF 9 SHEETS

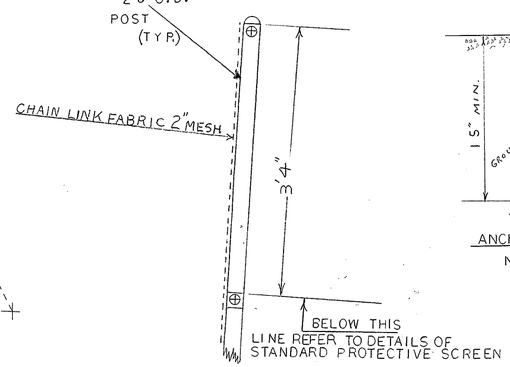
BRIDGE NO. W-44-99

PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-9(36)97		2	12

WORCESTER



SECTION - BRIDGE RAILING POST (TYPE AL-3)
ALUMINUM POST FOR PROTECTIVE SCREEN



scale 3/32" = 1"

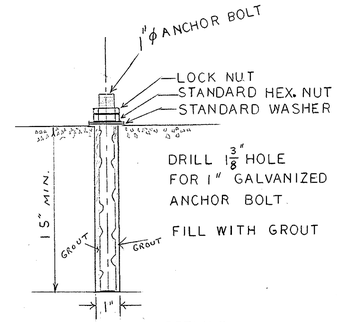
DETAIL TOP OF POST @ SAFETY WALK SIDE

Note: THIS DETAIL APPLIES FOR SCREEN INSTALLATION AT SAFETY WALK FOR ATTACHMENT TO 3-RAIL ALUMINUM BRIDGE RAIL ONLY.

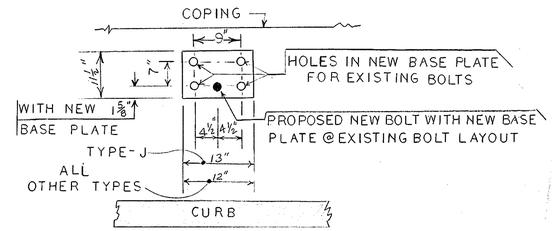
Note: (1) 6" GAUGE ALUMINUM CHAIN LINK FABRIC 2" MESH 10' WIDE.

(2) USE 6" GAUGE TIES 12" O.C. TO ALL POSTS AND TOP THREE RAILS. SPACE TIES TO BOTTOM RAIL AT 6" O.C.

(3) FOR DETAILS OF METAL BRIDGE RAILINGS TYPE AL-3; SEE STANDARDS DATED MARCH, 1968.



ANCHOR BOLT DETAILS
NO SCALE



PROPOSED BASE PLATE LAYOUT
NO SCALE

~ GENERAL NOTES ~

DIMENSIONS:

ALL DIMENSIONS AND DETAILS SHOWN FOR THE EXISTING STRUCTURES SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR.

WELDING:

WELDING SHALL BE PERFORMED BY METAL INERT GAS ("MIG") PROCESS. ALL WELDING SHALL CONFORM TO THE SPECIFICATIONS FOR STRUCTURES OF ALUMINUM ALLOYS, ALUMINUM CONSTRUCTION MANUAL, SECTION A, PUBLISHED BY THE ALUMINUM ASSOCIATION NEW YORK, N.Y.

BASE PLATE LAYOUT:

THE CONTRACTOR IS CAUTIONED THAT SOME VARIATION EXISTS BETWEEN ACTUAL FIELD DIMENSIONS AND THOSE DIMENSIONS SHOWN ON THE PLANS, CONCERNING BOLT LAYOUT FOR RAILING BASE PLATES. A FIELD CHECK SHOULD BE MADE FOR VERIFICATION. IT IS INTENDED WHERE EXISTING BOLTS ARE TO BE USED WITH NEW BASE PLATES, THAT SUFFICIENT CLEARANCE SHALL EXIST BETWEEN BOLT HOLES AND EDGES OF PLATES. ANY BASE PLATE ALIGNED SUCH THAT ITS ANCHOR BOLTS ARE NOT SECURELY IMBEDDED IN CONCRETE OR GROUT SHALL BE PROPERLY REALIGNED TO CORRECT THIS DEFICIENCY. ALSO, THE FULL THREADED SURFACE OF THE NUTS SHALL ENGAGE COMPLETELY WITH THE EXISTING AND/OR NEW BASE PLATE BOLTS, OTHERWISE THE BOLTS SHALL BE REPLACED.

PLANS:

PLANS OF ORIGINAL CONSTRUCTION ARE ON FILE AT THE OFFICE OF THE BRIDGE ENGINEER, ROOM 610, DEPT. OF PUBLIC WORKS, 100 NASHUA ST., BOSTON, MASS.

PROTECTIVE SCREEN:

SEE DEPARTMENT STANDARD PLANS DATED DECEMBER, 1971 FOR DETAILS OF STANDARD PROTECTIVE SCREEN. ALSO SEE SHEETS 1, 2 & 3.

~ TOTAL ESTIMATED QUANTITIES ~
(NOT GUARANTEED)

PROTECTIVE SCREEN (CHAIN LINK)	2576 L.F.
METAL BRIDGE RAIL (3 RAIL) TYPE AL-3 MODIFIED	2063 L.F.
CHAIN LINK PANELS (REMOVED & STACKED)	81 EA.
METAL BRIDGE RAIL (REMOVED & STACKED)	2063 L.F.
CUTTING AND GRINDING BOLTS	60 EA.
DRILLING AND GROUTING ANCHOR BOLTS	334 EA.

~ DETAIL SHEETS ~

STANDARD PROTECTIVE SCREEN ATTACHMENT TO METAL BRIDGE RAILING TYPE AL-3 (SHEET 2 & 3).

METAL BRIDGE RAIL (3 RAIL) TYPE AL 3 MODIFIED - SEE SHEET #4

~ VARIOUS BRIDGES OVER I-290 IN WORCESTER ~

NUMBER	LOCATION (STREET)	REF SHEET NO
W 44-83	HARRISON ST.	5
W 44-85	VERNON ST.	6
W 44-93	LAUREL ST.	7
W 44-94	BELMONT ST.	8
W 44-97	BURNCOAT ST.	9
W 44-99	MILLBROOK ST. - OVER RAMP "B"	10
W 44-112	MARSH AVE.	11

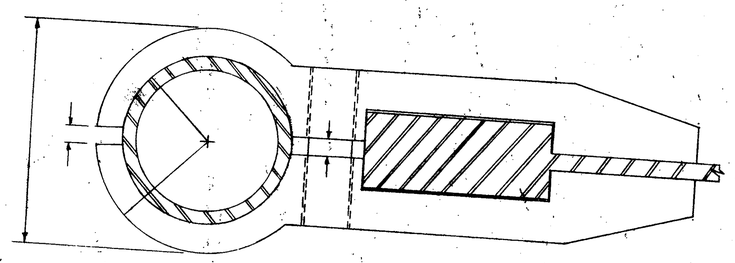
DESIGNED BY STEPANIAN	SEPT. 22, 1973 — ISSUED FOR CONSTRUCTION
DRAWN BY STEPANIAN	THE COMMONWEALTH OF MASSACHUSETTS
CHECKED BY DAIOPULOS	PROPOSED ALTERATION
APPROVED FOR DESIGN PERNA	WORCESTER
SPECS FORTE	INSTALLATION OF PROTECTIVE SCREEN ON VARIOUS BRIDGES OVER ROUTE I-290
	SCALES AS NOTED
	OFFICE OF DEPARTMENT OF PUBLIC WORKS 100 NASHUA ST., BOSTON, MASS.
	SEPT. 1973 — BRIDGE ENGINEER — CHIEF ENGINEER

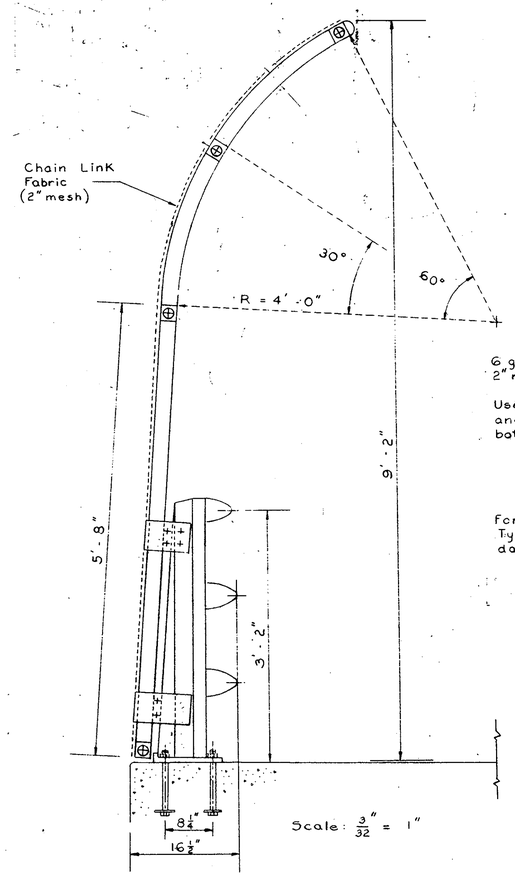
PUB. RD. OIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(36)97	19	3	12

WORCESTER

MATERIAL NOTES:

Posts, Rails, Tension Bars, Rail Splices, ~~Upper Clamps~~, Washers	ASTM B221 Alloy 6061-T6
Fabric & Ties	ASTM B211 Alloy 6061-T94 - 6 Gage
Lower Clamps	~~ASTM B221 Alloy 6061-T4~~ ASTM B26 OR B108 ALLOY 356-T-6
Tension Bands	ASTM B221 Alloy 6063-T5
Bolts	ASTM B316 Alloy 2024-T4
Nuts	ASTM B316 Alloy 6061-T6
UPPER CLAMPS	ASTM B221 ALLOY 6061-T6 OR ~~6063-T6~~





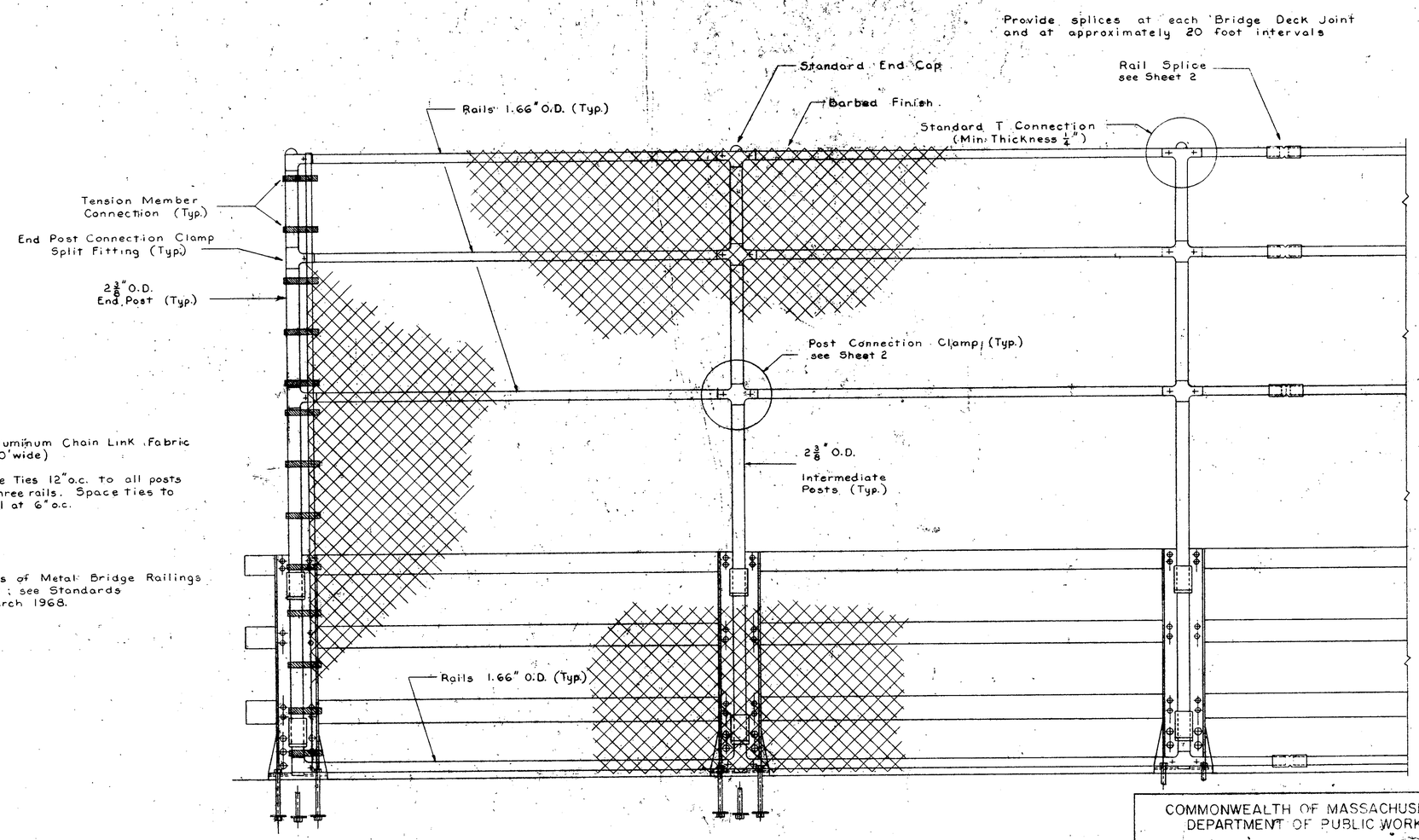
6 gauge Aluminum Chain Link Fabric 2" mesh (10' wide)

Use 6 gauge Ties 12" o.c. to all posts and top three rails. Space ties to bottom rail at 6" o.c.

For details of Metal Bridge Railings Type AL-3 ; see Standards dated March 1968.

SECTION - BRIDGE RAILING POST (TYPE AL-3)

ALUMINUM POST FOR PROTECTIVE SCREEN



MATERIAL NOTES REVISED: MAY 2, 1972

DATE	DESCRIPTION
SEPT. 22, 1973	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

SHEET NO. 2 OF 11 SHEETS

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

STANDARD PROTECTIVE SCREEN

ATTACHMENT TO METAL BRIDGE RAILING TYPE AL-3

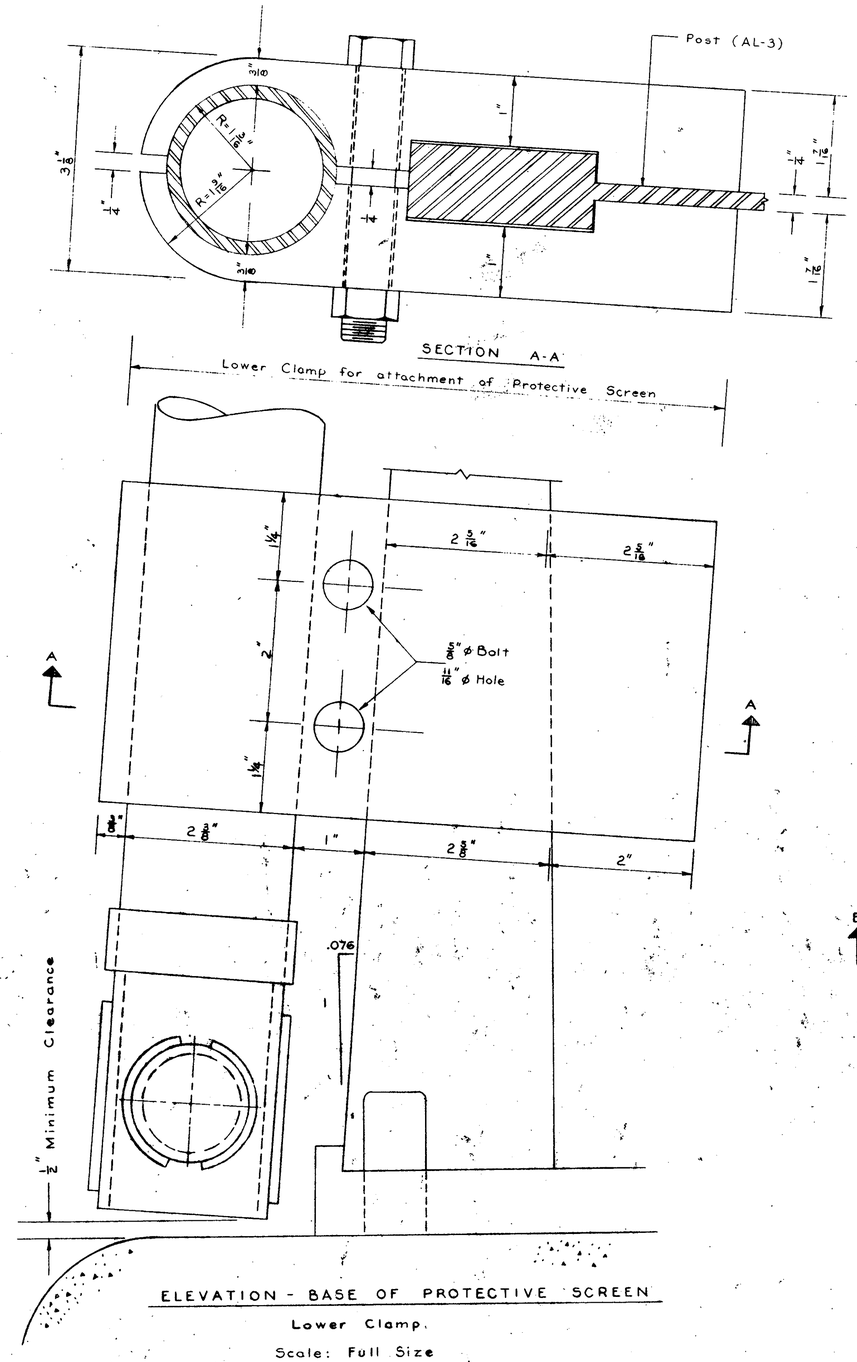
DECEMBER 1971

BRIDGE ENGINEER — P.E.

CHIEF ENGINEER — P.E.

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(36)97	19	4	12

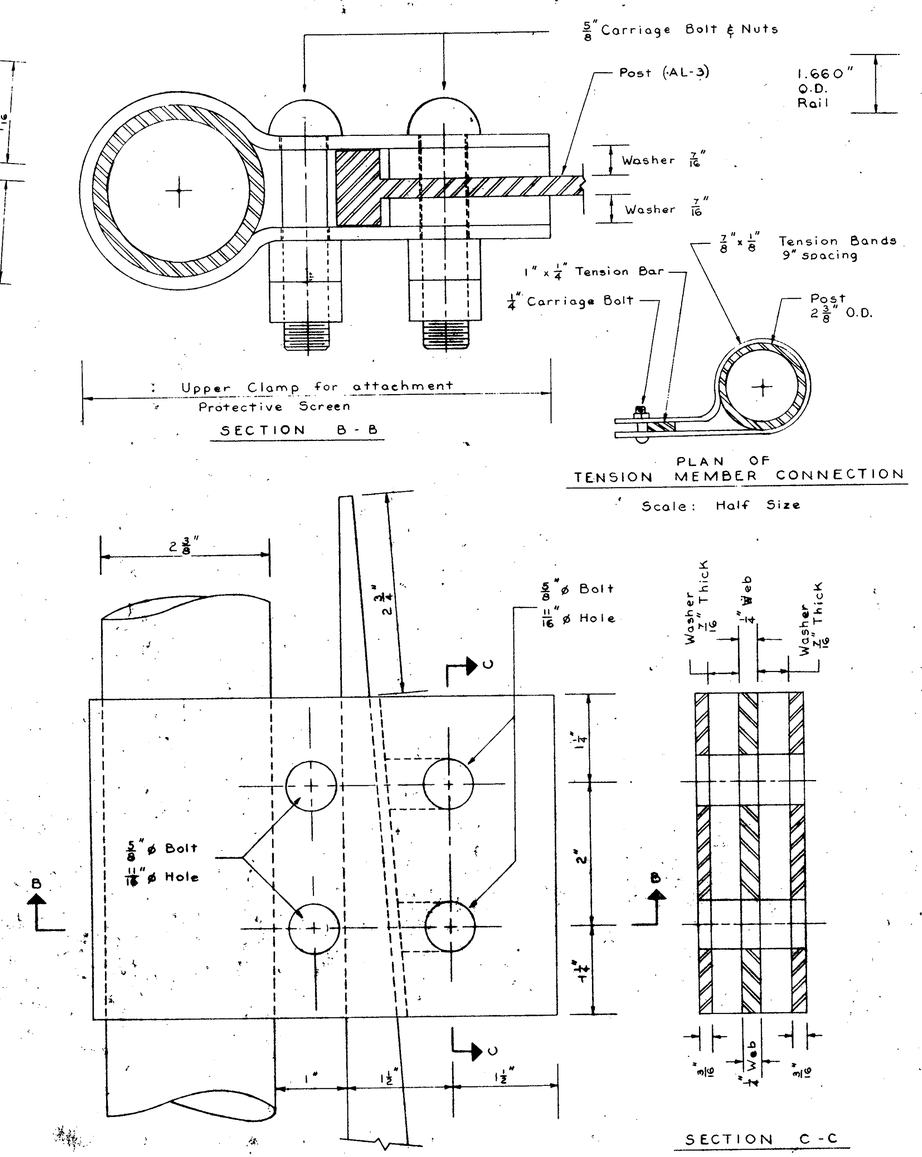
WORCESTER



ELEVATION - BASE OF PROTECTIVE SCREEN

Lower Clamp.

Scale: Full Size



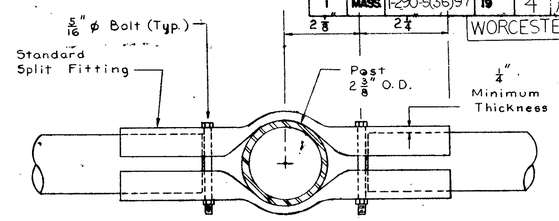
PLAN OF TENSION MEMBER CONNECTION

Scale: Half Size

ELEVATION - UPPER CLAMP

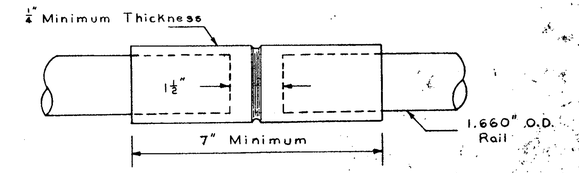
Scale: Full Size

SECTION C-C



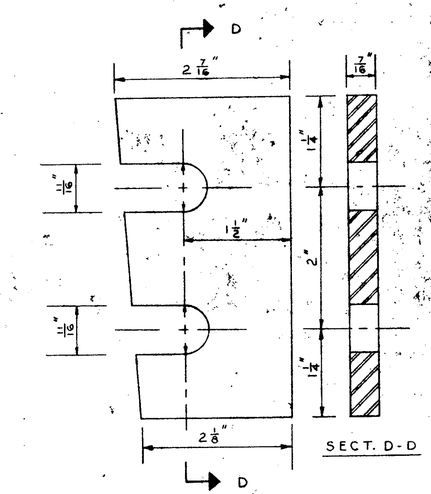
PLAN OF POST CONNECTION CLAMP

Scale: Half Size



RAIL SPLICE DETAIL

Scale: Half Size



WASHER FOR UPPER CLAMP

Scale: Full Size

DATE	DESCRIPTION
SEPT. 22, 1978	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

STANDARD PROTECTIVE SCREEN

ATTACHMENT TO METAL BRIDGE RAILING TYPE AL-3

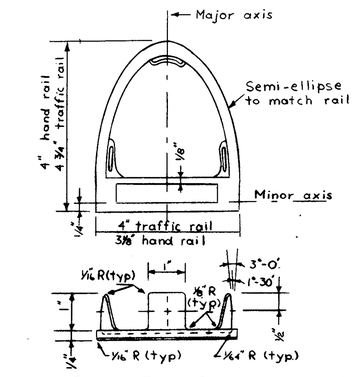
CLAMP AND CONNECTION DETAILS

DECEMBER 1971

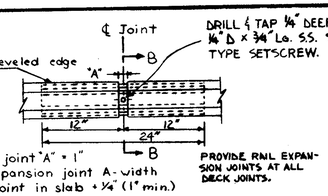
SHEET NO 3 OF 11 SHEETS

PUBLIC RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-5(36)97		5	12

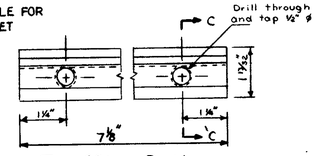
WORCESTER



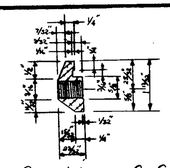
Rail End Cap
Scale 1/2" = 1"



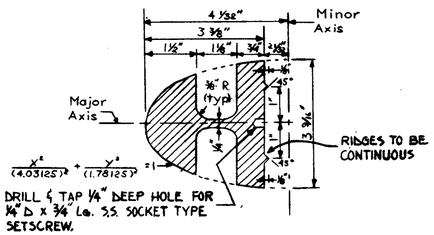
Railing Joint
NOT TO SCALE



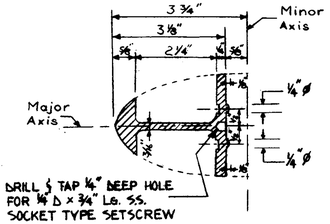
Traffic Rail
Clamp Bar Detail
Scale 1/2" = 1"



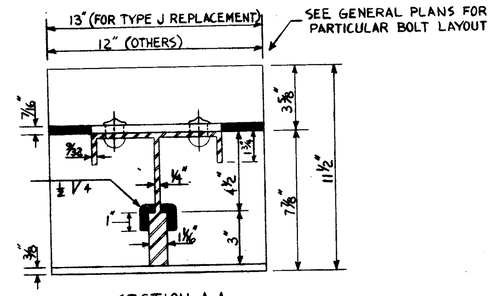
Section C-C
Scale 1/2" = 1"



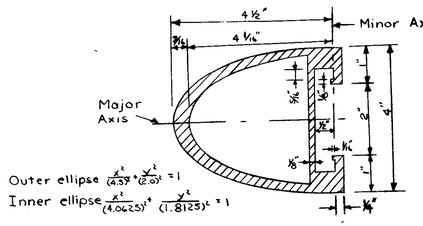
Traffic Rail Splice Extrusion
Scale 1/2" = 1"



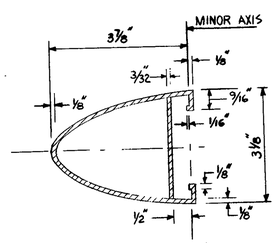
Hand Rail Splice Extrusion
Scale 1/2" = 1"



SECTION A-A
SCALE: 1/4" = 1"

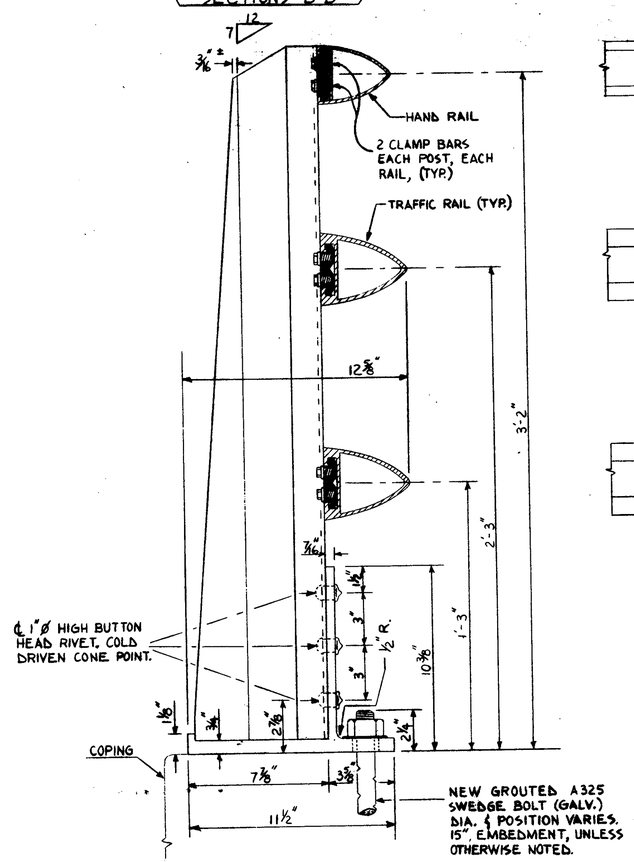


Traffic Rail Extrusion
Scale 1/2" = 1"

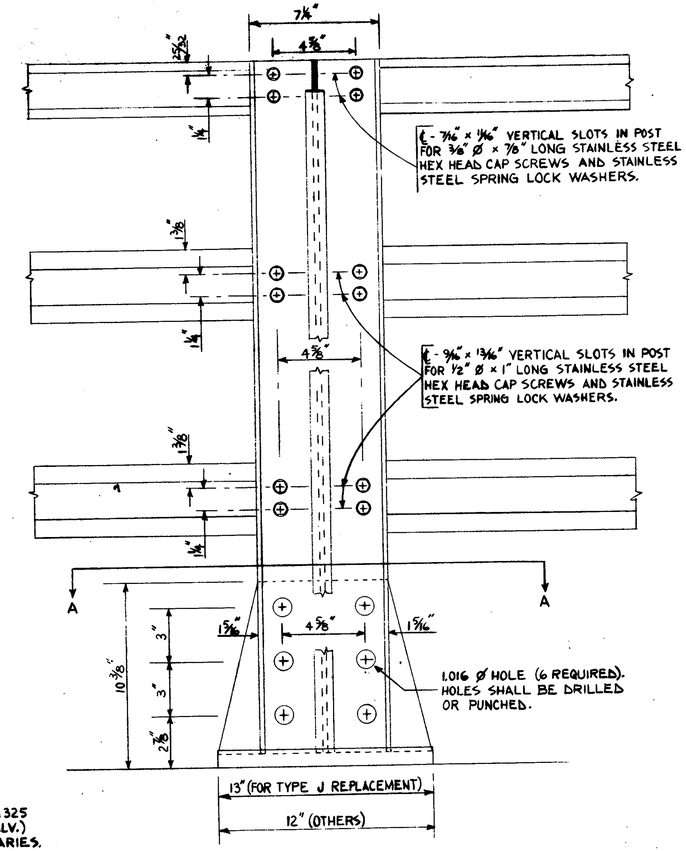


HAND RAIL EXTRUSION
SCALE: 1/2" = 1"

SECTIONS B-B



SIDE ELEVATION
SCALE: 1/4" = 1"



OUTSIDE ELEVATION
SCALE: 1/4" = 1"

NOTES:

METAL BRIDGE RAIL - - (3 RAIL) TYPE AL-3 MODIFIED:

ALL RAILING IS TO BE FABRICATED AND ERECTED SO THAT THE RAIL IS PARALLEL TO THE CURBING. SINCE THE FINISHED RAILING MUST MEET ALL REQUIREMENTS OF FIT, ALIGNMENT AND GRADE TO THE FULL SATISFACTION OF THE ENGINEER, IT IS SUGGESTED THAT COMPLETE FIELD MEASUREMENTS BE MADE BEFORE ANY SHOP FABRICATION IS PERFORMED.

ALUMINUM RAILS, POSTS, POST BASES, CLAMP BARS INCLUDING STAINLESS STEEL CAP SCREWS AND LOCK WASHERS, RAIL SPLICES, RIVETS, END CAPS, PINS, RAIL TERMINAL ENDS, ALUMINUM CAULKING COMPOUND, ANY NECESSARY SHIMS, ANY NECESSARY PAINTING OF BOLTS AND ANY NECESSARY BUSH-HAMMERING TO LEVEL THE CONCRETE UNDER THE POST BASES SHALL BE PAID FOR UNDER THE RAILING ITEM.

THE PROVISION OF ANCHOR BOLTS, NUTS AND WASHERS AND THE DRILLING AND GROUTING OF HOLES NECESSARY TO RECEIVE THE ANCHOR BOLTS SHALL BE PAID FOR UNDER A SEPERATE ITEM.

RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE POSTS.

ALUMINUM RIVETS SHALL BE COLD DRIVEN.

MATERIALS USED IN THE MANUFACTURE OF THIS RAILING SHALL CONFORM TO THE REQUIREMENTS AND/OR SPECIFICATIONS LISTED BELOW:

PIECE	ASTM DESIGNATION	COMMERCIAL ALLOY & TEMPER
ALUMINUM EXTRUSIONS (POSTS, POST BASES, RAILS, RAIL SPLICES, CLAMP BARS, AND RAIL TERMINAL ENDS)	B 221	6061-T6
ALUMINUM RIVETS	B 316	6061-T6
ALUMINUM PLATE SHIMS	B 209	1100-0
ALUMINUM RAIL END CAPS	B 26	43F OR 356F
STEEL BOLTS, NUTS AND WASHERS (GALV.)	A 325	

EXISTING BOLTS:

WHERE GALVANIZING IS DAMAGED, THE DAMAGED AREAS SHALL BE THOROUGHLY CLEANED AND GIVEN ONE COAT OF ZINC DUST-ZINC OXIDE PAINT CONFORMING TO THE REQUIREMENTS FOR TYPE III AS SPECIFIED IN FEDERAL SPECIFICATION TT-P-641B.

ANY BOLTS THAT ARE DETERMINED BY THE RESIDENT ENGINEER TO BE DAMAGED BEYOND UTILIZATION SHALL BE REMOVED AND REPLACED WITH NEW BOLTS.

NEW BOLTS:

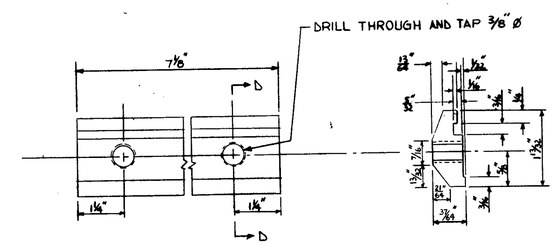
ALL NEW BOLTS TO BE DRILLED AND GROUTED SHALL BE THE SAME SIZE AS THOSE OF THE EXISTING BOLT LAYOUT UNLESS OTHERWISE NOTED. THEY SHALL BE SWEDGED THROUGHOUT THE BOTTOM 9" OF THE IMBEDDED PORTION AND CONFORM TO THE ASTM DESIGNATION INDICATED ABOVE.

SPACING:

WHERE ENTIRELY NEW BOLT LAYOUTS ARE TO BE INSTALLED, MAXIMUM POST SPACING SHALL BE 8'-0".

TRANSITION:

THE NEW RAILS SHALL BE BENT TO MAKE A SMOOTH TRANSITION WITH THE EXISTING END POSTS UNLESS INDICATED OTHERWISE.



HANDRAIL
CLAMP BAR DETAIL
NOT TO SCALE

SECTION D-D
NOT TO SCALE

DATE	DESCRIPTION
SEPT. 22, 1970	ISSUED FOR CONSTRUCTION

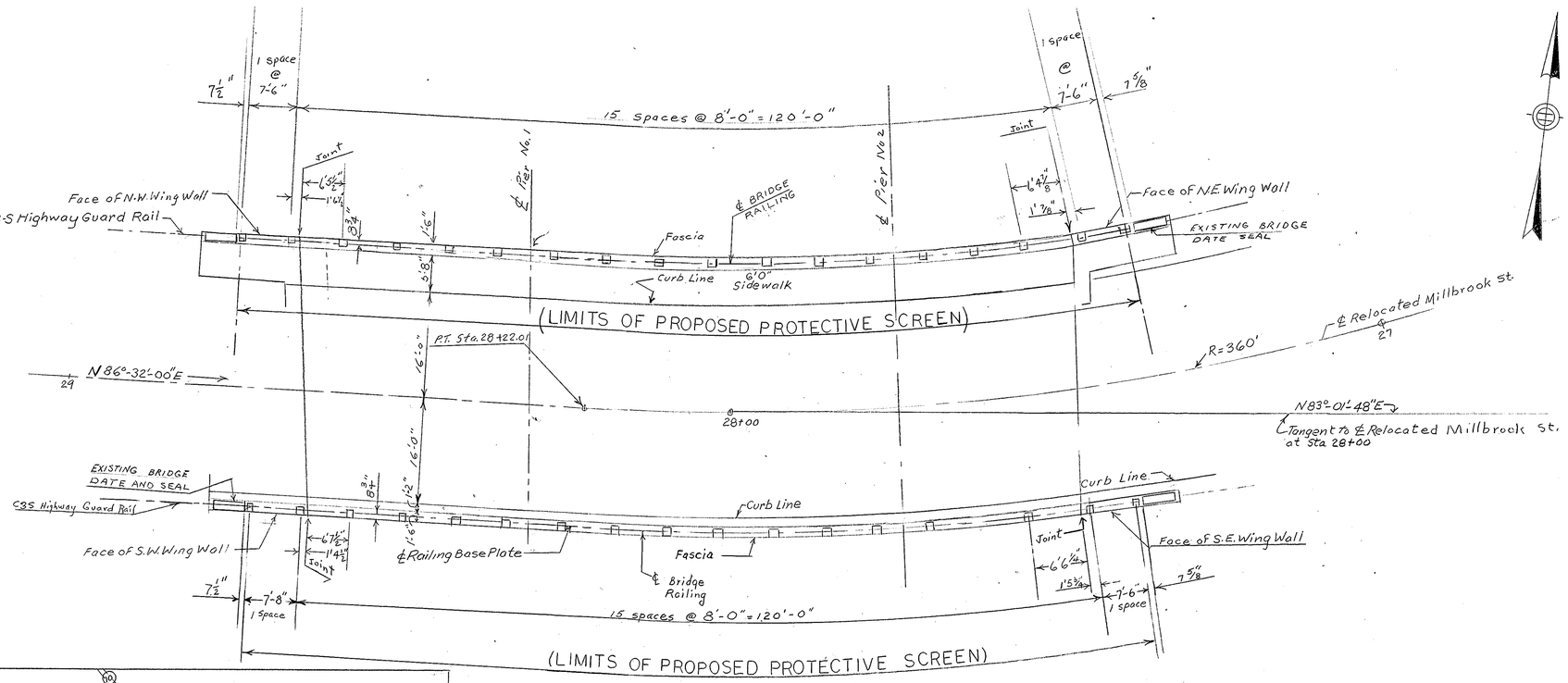
USE ONLY PRINTS OF LATEST DATE

SHEET 4 OF 11 SHEETS VARIOUS NUMBERS

METAL BRIDGE RAIL (3-RAIL) TYPE AL-3 MODIFIED

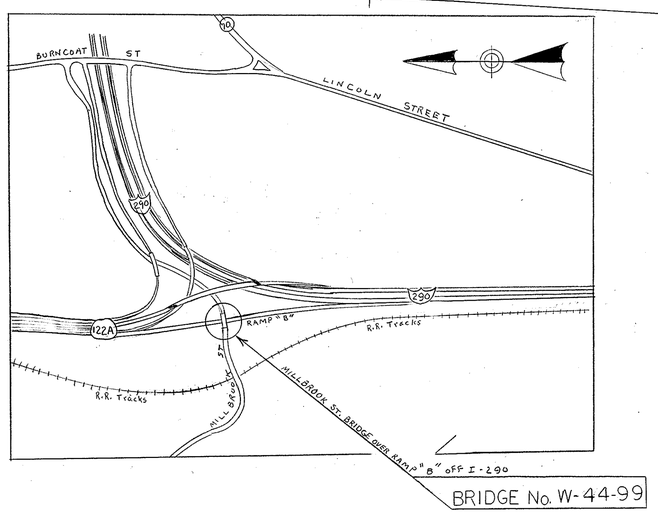
PUB. RD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-290-9(36)97		11	12

WORCESTER



PLAN
SCALE: 1" = 10'

W-44-99



LOCUS PLAN
SCALE 1" = 600'

~ESTIMATED QUANTITIES~
(NOT GUARANTEED)

PROTECTIVE SCREEN (CHAIN LINK) - - - - - - - - - 274 L.F.
METAL BRIDGE RAIL (3 RAIL) TYPE-AL-3 MODIFIED - - 274 L.F.
METAL BRIDGE RAIL (REMOVED & STACKED) - - - - 274 L.F.
CUTTING & GRINDING BOLTS - - - - - - - - - 8 EA.
DRILLING & GROUTING ANCHOR BOLTS - - - - - - 44 EA.

~GENERAL NOTES~

DIMENSIONS:

ALL DIMENSIONS AND DETAILS SHOWN FOR THE EXISTING STRUCTURE SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR.

PROTECTIVE SCREEN:

SEE DEPARTMENT STANDARD PLANS DATED DECEMBER 1971 FOR DETAILS OF STANDARD PROTECTIVE SCREEN. ALSO SEE SHEET 1, 2 & 3.

BRIDGE RAILING:

SEE SHEET #4 FOR METAL BRIDGE RAIL (3 RAIL) TYPE AL-3 MODIFIED DETAILS

EXISTING RAILING:

EXISTING METAL BRIDGE RAIL & POSTS (TYPE J) TO BE REMOVED & STACKED, SEE SHEET #1 FOR PROPOSED BASE PLATE LAYOUT.

DESIGNED BY STEPANIAN	SEPT. 22, 1973	ISSUED FOR CONSTRUCTION
DRAWN BY STEPANIAN	THE COMMONWEALTH OF MASSACHUSETTS	
CHECKED BY DAIOPULOS	PROPOSED ALTERATION	
APPROVED FOR DESIGN PERNA	WORCESTER I-290 UNDER MILLBROOK STREET (RAMP "B") INSTALLATION OF PROTECTIVE SCREEN	
SPECS FORTE	SCALES AS NOTED OFFICE OF DEPARTMENT OF PUBLIC WORKS 100 NASHUA ST., BOSTON, MASS.	

SHEET 10 OF 11 SHEETS VARIOUS NUMBERS