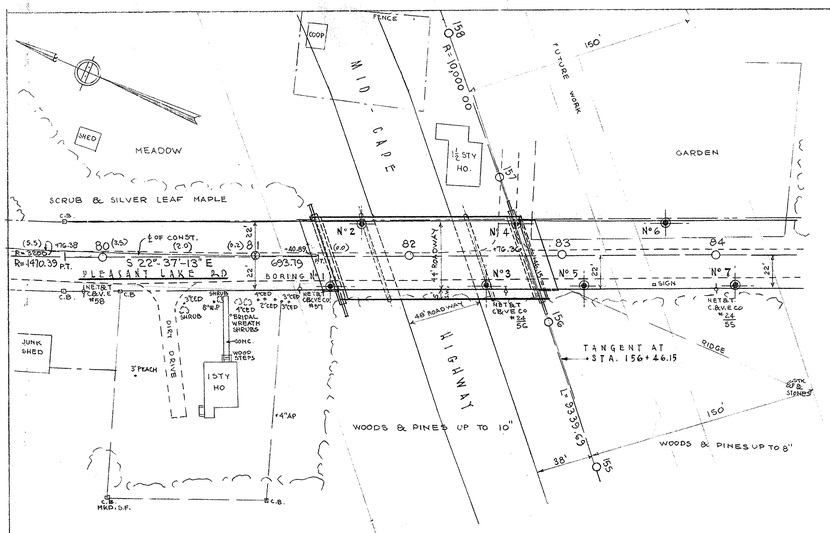
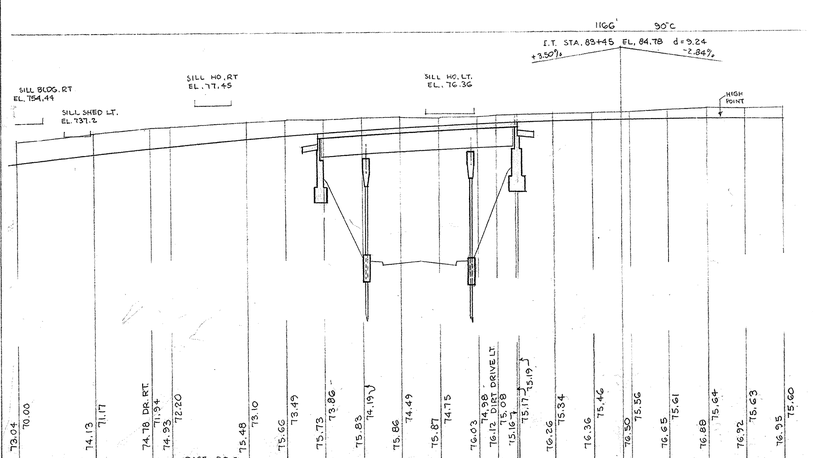
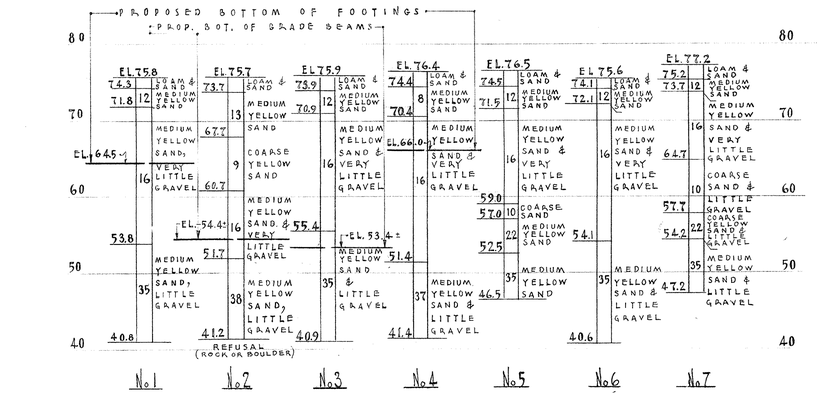


KEY PLAN
SCALE 1" = 40'-0"



PROFILE PLEASANT LAKE ROAD.
HORZ. SCALE 1"=40'-0" VERT. SCALE 1"=8'-0"

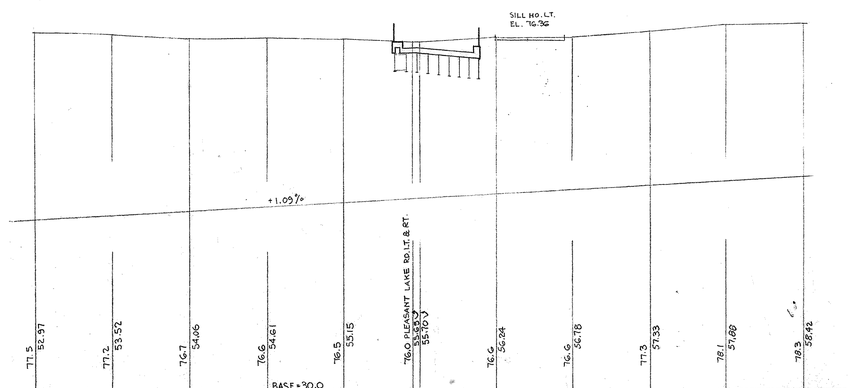


BORING DATA

SCALE 1" = 8'-0" ~ BORINGS TAKEN JAN. 1955 BY CARR-DEE TEST BORING & CONST. CO.

BORING NOTES

LOCATION OF BORINGS SHOWN ON KEY PLAN THUS:- ⊕ -N° 1. 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 BLOWS PER FOOT ON ONE INCH ϕ PIPE PRODUCED BY 30 INCH FALL OF 140 POUND HAMMER. BORING SAMPLES MAY BE SEEN AT THE OFFICE OF THE BRIDGE ENGINEER, MR. J.C. RUNDLETT ROOM 609, 100 NASHUA STREET, BOSTON, MASSACHUSETTS.



PROFILE MID-CAPE HIGHWAY
HORZ. SCALE 1"=40'-0" VERT. SCALE 1"=8'-0"

FED. ROAD DIV. NO	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	F328(9)		110	1225

GENERAL NOTES

DATE & SEAL:
DATE TO BE CUT THROUGH STEEL PLATE; PLATE TO BE WELDED TO BRIDGE RAILS AT NORTHWESTERLY AND SOUTHEASTERLY CORNERS OF BRIDGE, AS SHOWN IN DETAIL ON SHEET 6. SEAL TO BE FURNISHED BY THE COMMONWEALTH.

DESIGN:
ACCORDING TO SPECIFICATIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS (1953 ED.) FOR H 20-44 LOADING.

BENCH MARK:
B.M. 140 B STA. 87+93 RT. 24.9 FT, STD. TRAV. DISK SET IN 10" DIAM. MON. (PLEASANT LAKE ROAD ϕ) EL. 74.74 SEA LEVEL DATUM OF 1929.

REINFORCEMENT:
ALL BARS SHALL HAVE DEFORMATIONS CONFORMING TO A.S.T.M. DESIGNATION A305. UNLESS OTHERWISE SHOWN ON 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.

ESTIMATED QUANTITIES
(NOT GUARANTEED)

BRIDGE EXCAVATION	500 CU. YDS.
CLASS B ROCK EXCAVATION	5 CU. YDS.
CLASS A CEM. CONC. MASONRY	129 CU. YDS.
CLASS B CEM. CONC. MASONRY	160 CU. YDS.
CLASS D CEM. CONC. MASONRY	200 CU. YDS.
STEEL REINF. FOR STRUCTURES	61,000 POUNDS
STRUCTURAL STEEL	153,500 POUNDS
BITUMINOUS DAMP-PROOFING	200 SQ. YDS.
BRIDGE RAILINGS	258 LIN. FT.
16" CAST-IN-PLACE CONC. PILES	550 LIN. FT.
GRANITE CURB TYPE VA 5 STR. (6"×9½")	260 LIN. FT.

DES. J.J.R.
DR. J.J.R. N.R.B.
CHK. L.G.
APPROVED FOR
DES.
ARCH.
SPECS.

4-23-55 ISSUED FOR CONSTRUCTION

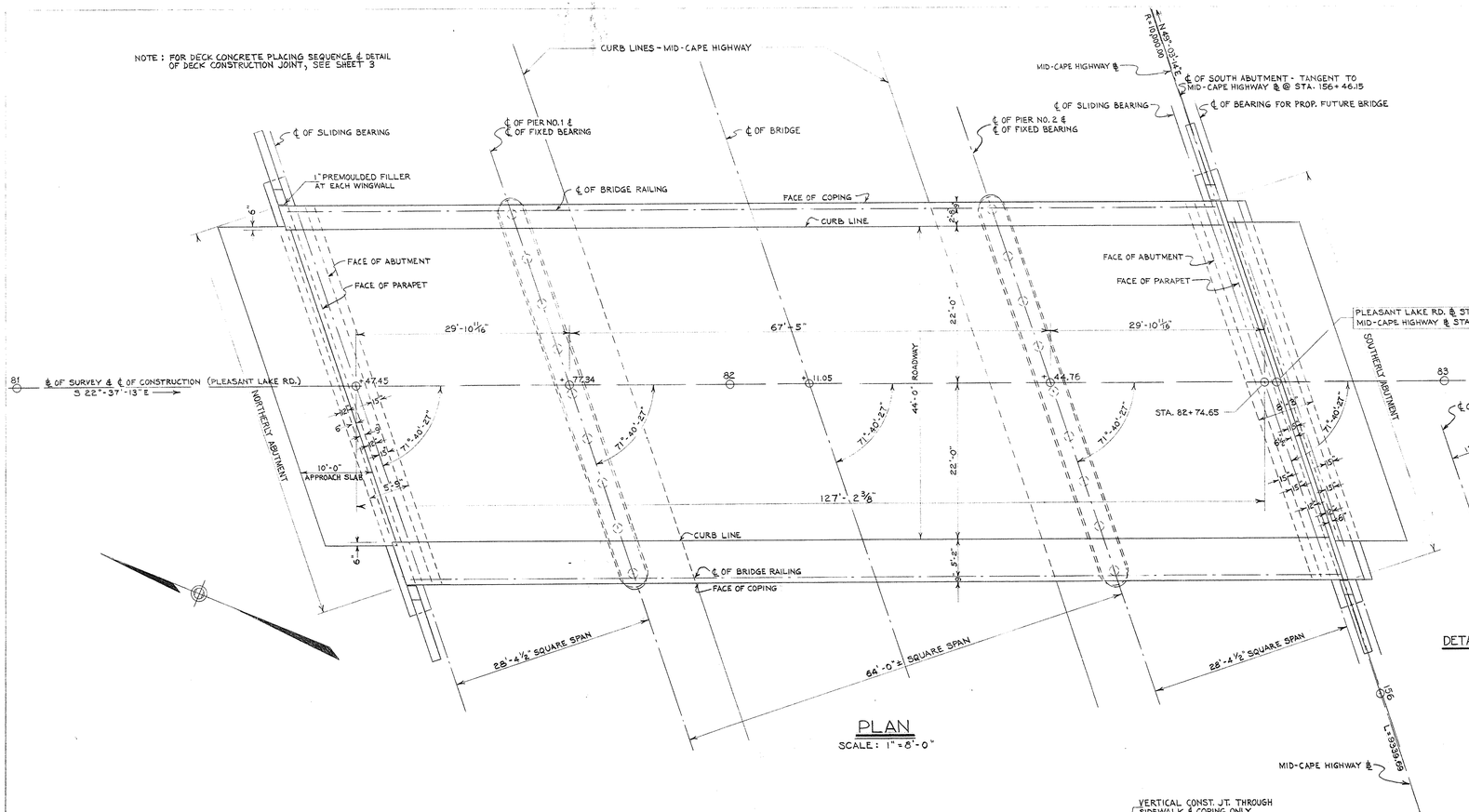
THE COMMONWEALTH OF MASSACHUSETTS
PROPOSED BRIDGE
HARWICH
MID-CAPE HIGHWAY (STA. 156+46.15)
UNDER PLEASANT LAKE ROAD (RTE 24)
SCALES AS NOTED
OFFICE OF
DEPARTMENT OF PUBLIC WORKS
100 NASHUA ST, ~ BOSTON, MASS.
APRIL 1955

J.C. Rundlett — BRIDGE ENGINEER
A. G. Hoyt — CHIEF ENGINEER

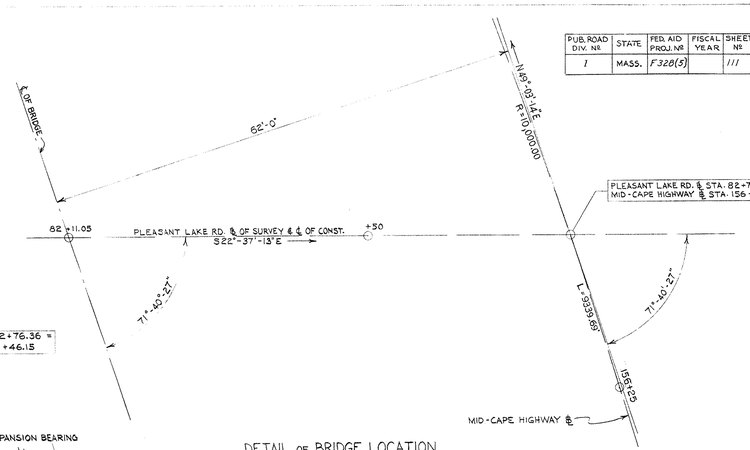
SHEET 1 OF 6 SHEETS BRIDGE N° H-10-13

PUB. ROAD DIV. NR	STATE	FED. AID PROJ. NR	FISCAL YEAR	SHEET NR	TOTAL SHEETS
1	MASS.	F 328(5)		111	1225

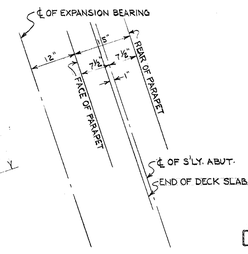
NOTE : FOR DECK CONCRETE PLACING SEQUENCE & DETAIL OF DECK CONSTRUCTION JOINT, SEE SHEET 3



PLAN
SCALE : 1" = 8'-0"

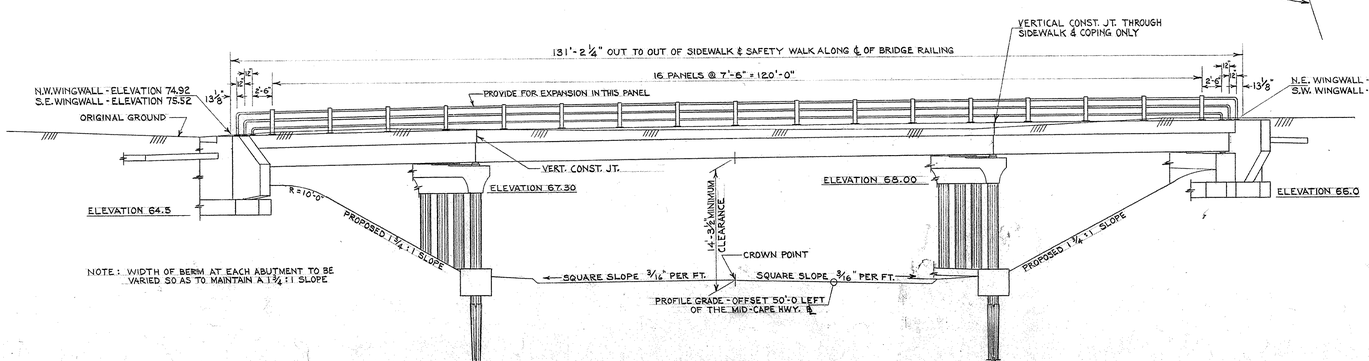


DETAIL OF BRIDGE LOCATION
NO SCALE

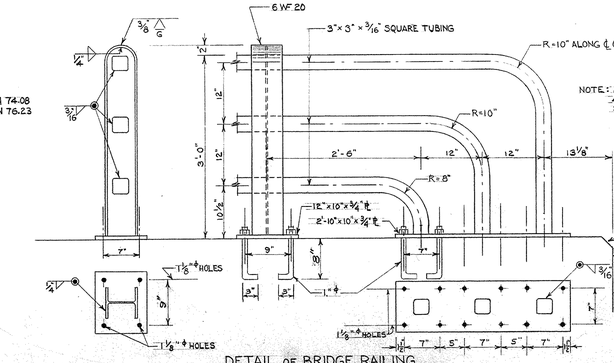


DETAIL OF SOUTHERLY PARAPET
SCALE : 3/4" = 1'-0"

DETAIL OF EXPANSION SLEEVE
SCALE : 1" = 1'-0"



WESTERLY ELEVATION
SCALE : 1" = 8'-0"
NOTE : EASTERLY ELEVATION SIMILAR BUT OPPOSITE HAND

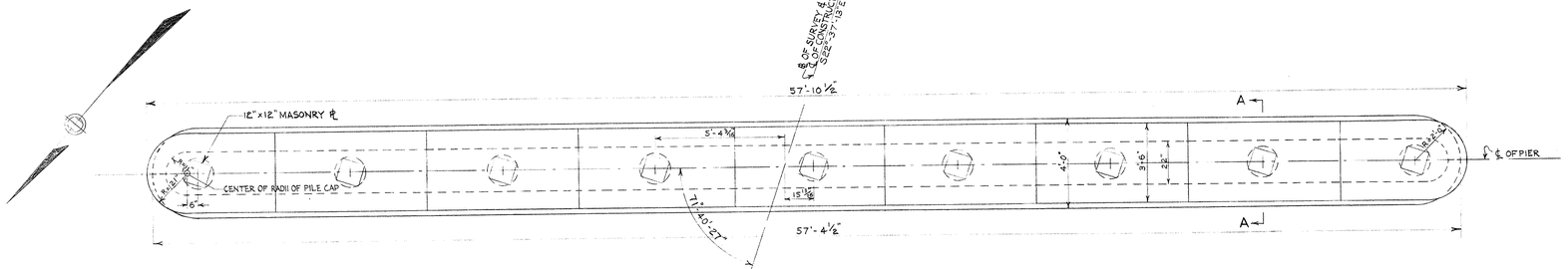


DETAIL OF BRIDGE RAILING
SCALE : 1" = 1'-0"

DATE	DESCRIPTION
4-23-55	ISSUED FOR CONSTRUCTION

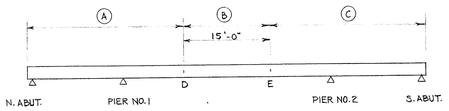
USE ONLY PRINTS OF LATEST DATE

PUB. ROAD DIV. NR	STATE	FED AID PROJ. Nº	FISCAL YEAR	SHEET NR	TOTAL SHEETS
1	MASS.	F 328(9)		112	1225



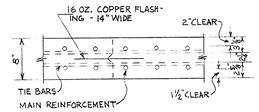
PLAN - PIER NO. 1

PIER NUMBER 2 SIMILAR
SCALE : 3/8" = 1'-0"



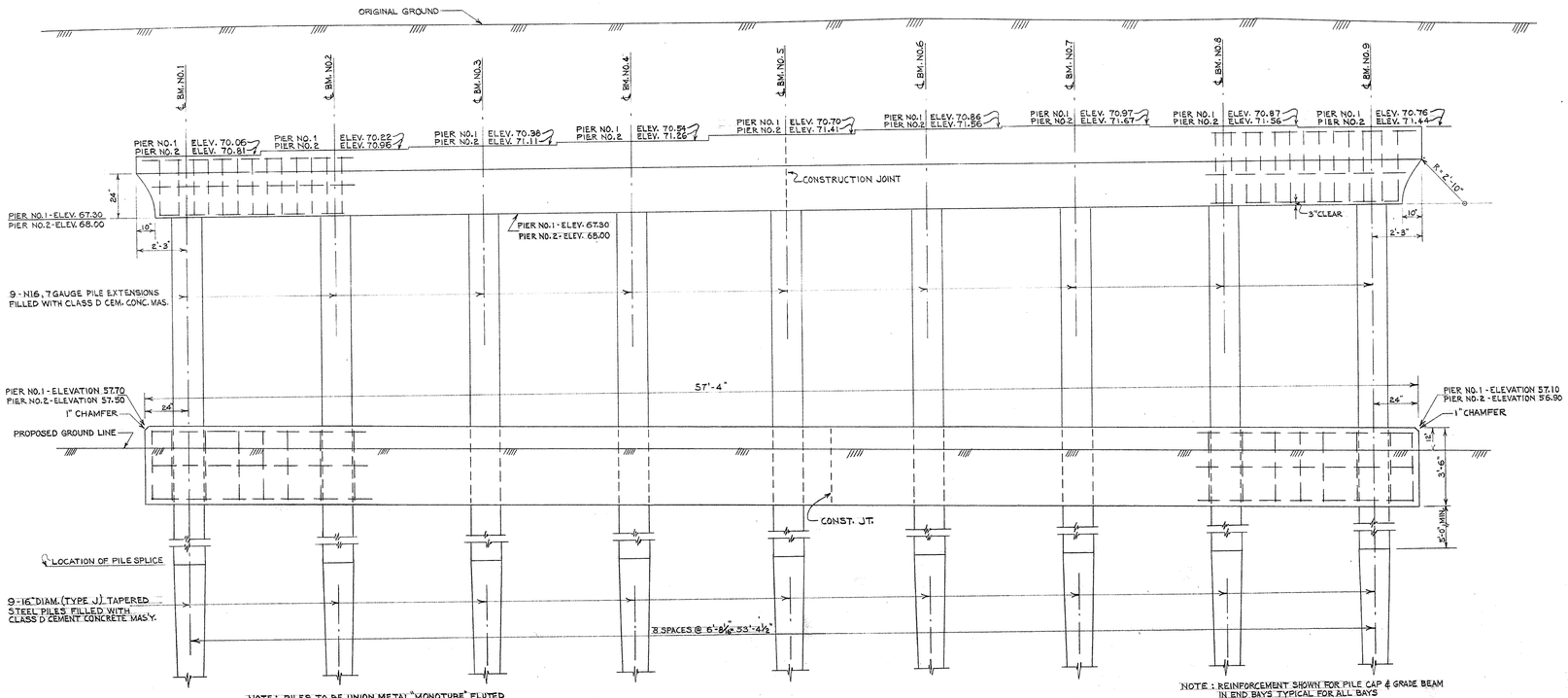
PLACING SEQUENCE FOR DECK CONCRETE

NOTE : PLACE CONCRETE IN SECTIONS Ⓐ & Ⓒ SIMULTANEOUSLY STARTING AT N. ABUT. FOR SECTION Ⓐ & AT POINT E FOR SECTION Ⓒ. PROCEED AT UNIFORM RATE TOWARD POINT D & THE S. ABUT. RESPECTIVELY. PLACE CONCRETE IN SECTION Ⓑ NO EARLIER THAN TWO FULL DAYS AFTER PLACING CONCRETE IN SECTIONS Ⓐ & Ⓒ.



DETAIL OF SLAB CONSTRUCTION JOINT

SCALE : 1" = 1'-0"

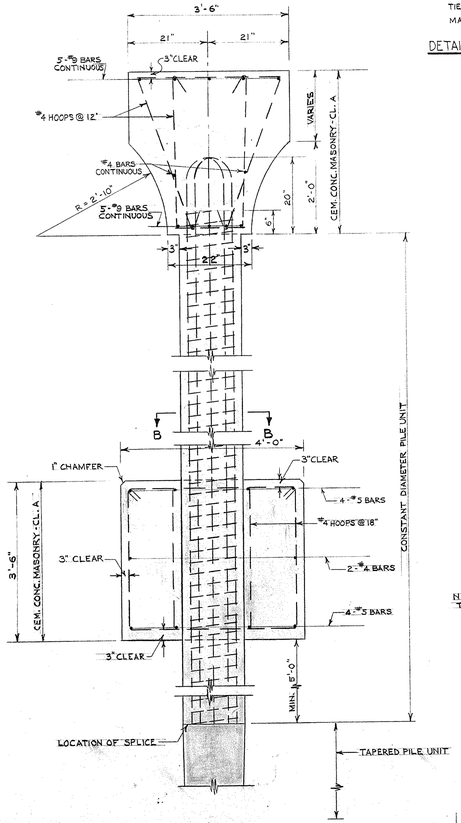


NOTE : PILES TO BE UNION METAL "MONOTUBE" FLUTED STEEL PILES OR THE EQUIVALENT, TO BE DRIVEN TO A CAPACITY OF 50 TONS PER PILE.

NOTE : REINFORCEMENT SHOWN FOR PILE CAP & GRADE BEAM IN END BAYS TYPICAL FOR ALL BAYS

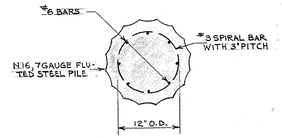
ELEVATION

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



SECTION A-A

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



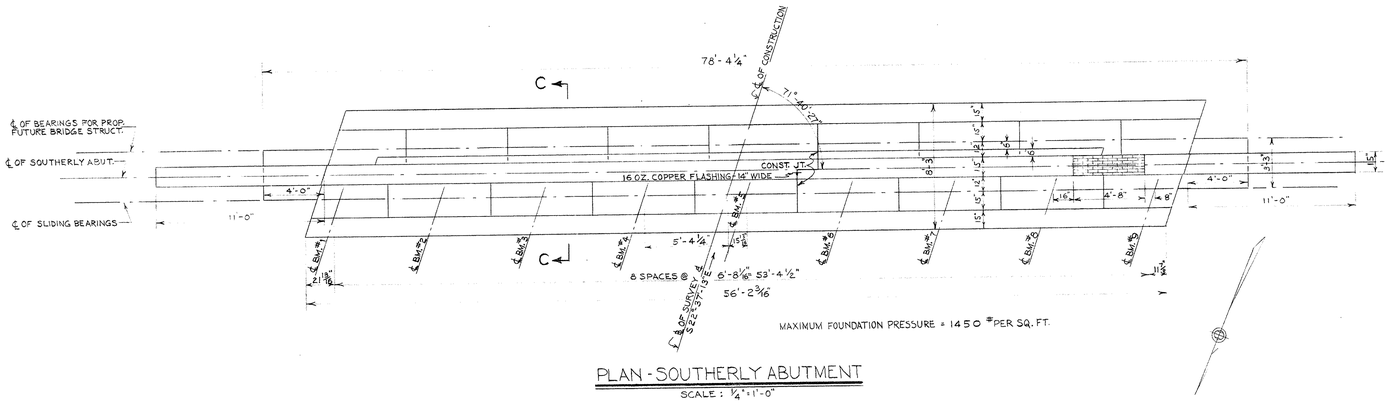
SECTION B-B

SCALE : 1" = 1'-0"

DATE	DESCRIPTION
4-23-55	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

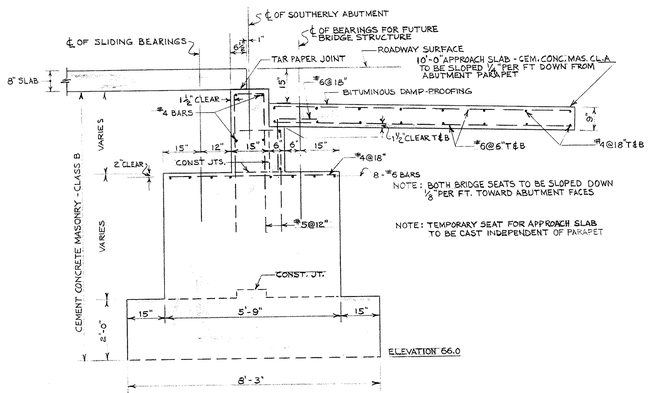
SHEET 3 OF 6 SHEETS BRIDGE Nº H-10-13

PUB. ROAD DIV. Nº	STATE	FED. AID PROJ. Nº	FISCAL YEAR	SHEET Nº	TOTAL SHEETS
1	MASS.	F 328(5)		113	1225



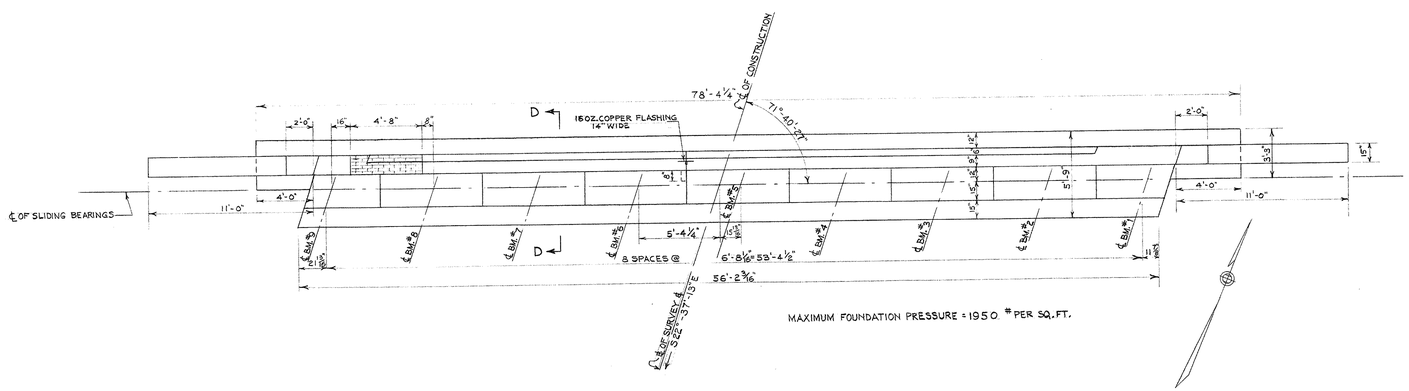
PLAN - SOUTHERLY ABUTMENT

SCALE : ¼"=1'-0"



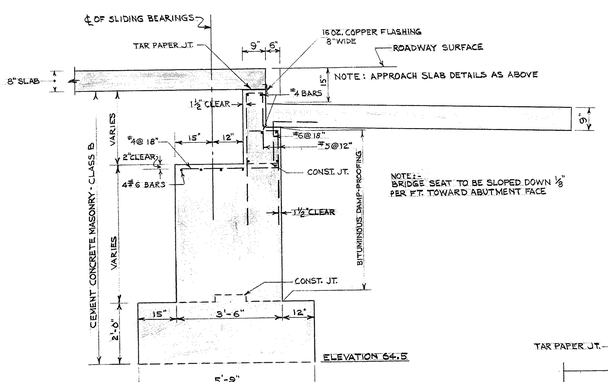
SECTION C-C

SCALE : ½"=1'-0"



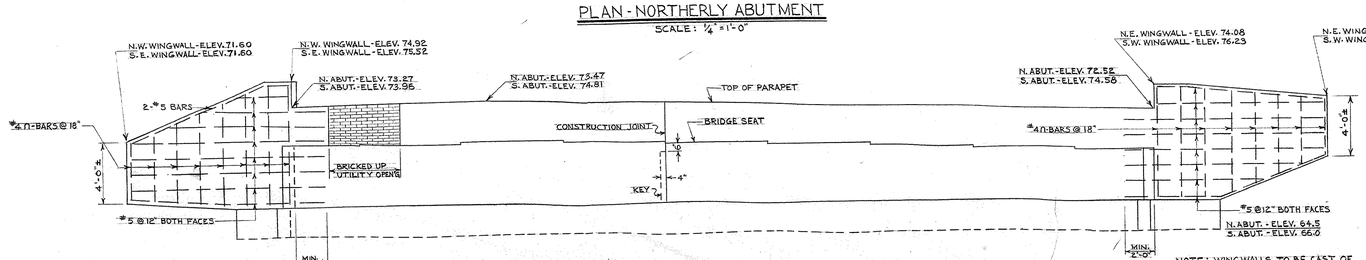
PLAN - NORTHERLY ABUTMENT

SCALE : ¼"=1'-0"



SECTION D-D

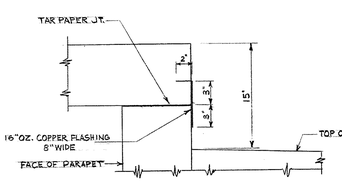
SCALE : ½"=1'-0"



ELEVATION

SOUTHERLY ABUTMENT ELEVATION SIMILAR BUT OF OPPOSITE HAND
SCALE : ¼"=1'-0"

BRIDGE SEAT ELEVATIONS		
BEAM NO.	N'LY. ABUT.	S'LY. ABUT.
1	69.87	71.27
2	70.03	71.42
3	70.19	71.57
4	70.35	71.71
5	70.51	71.86
6	70.67	72.00
7	70.79	72.11
8	70.69	71.99
9	70.59	71.87



DETAIL of FLASHING

SCALE : 1½"=1'-0"

DATE	DESCRIPTION
4-23-55	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

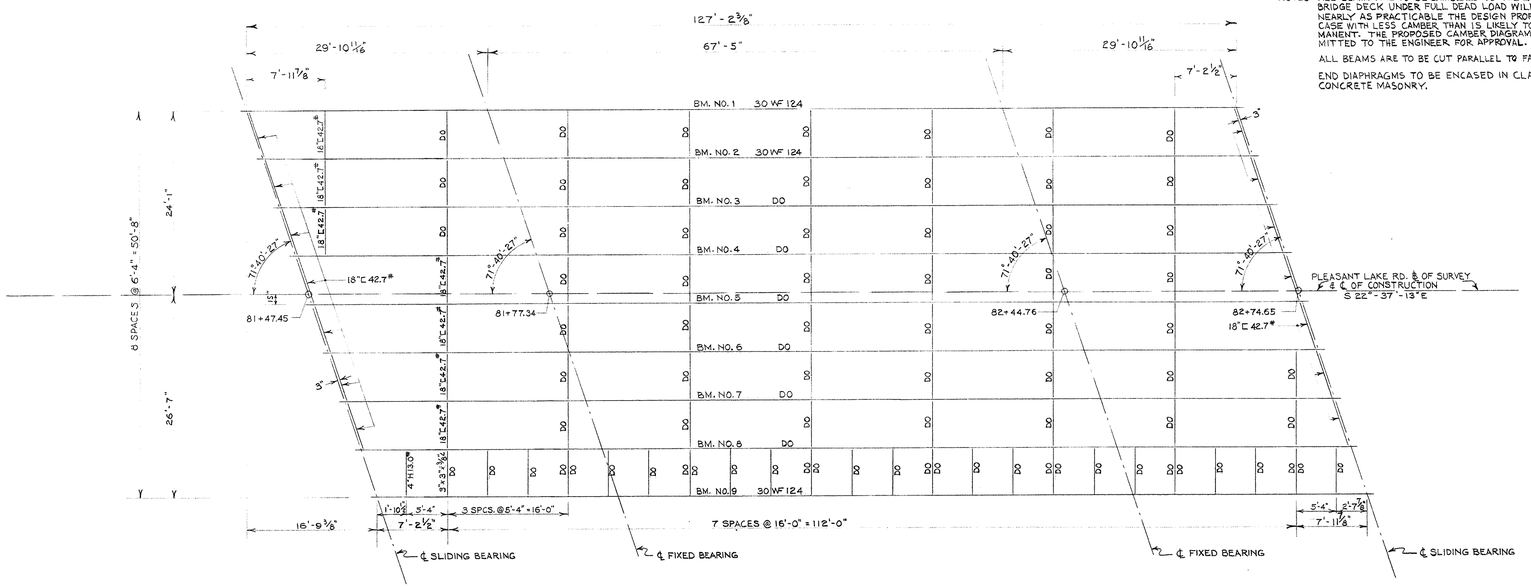
SHEET 4 OF 6 SHEETS BRIDGE Nº H-10-13

PUB. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	F328(5)		114	1225

NOTES: ALL BEAMS ARE TO BE CAMBERED TO THE EXTENT THAT THE BRIDGE DECK UNDER FULL DEAD LOAD WILL FOLLOW AS NEARLY AS PRACTICABLE THE DESIGN PROFILE, AND IN NO CASE WITH LESS CAMBER THAN IS LIKELY TO REMAIN PERMANENT. THE PROPOSED CAMBER DIAGRAM SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

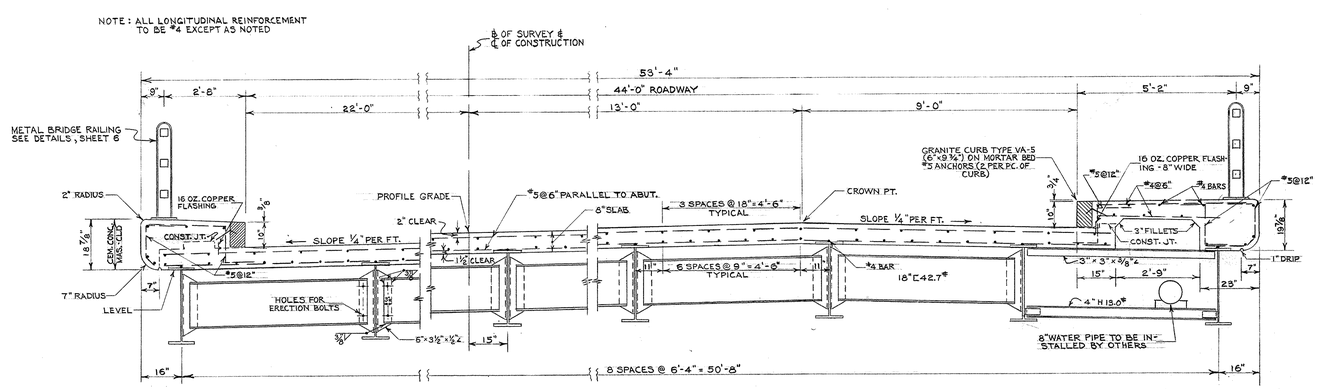
ALL BEAMS ARE TO BE CUT PARALLEL TO FACE OF PARAPET.

END DIAPHRAGMS TO BE ENCASED IN CLASS D CEMENT CONCRETE MASONRY.



STEEL LAYOUT PLAN

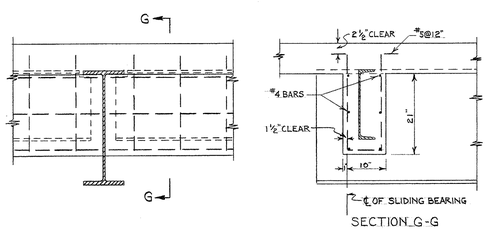
SCALE: 1/8" = 1'-0"



TYPICAL SQUARE DECK SECTION

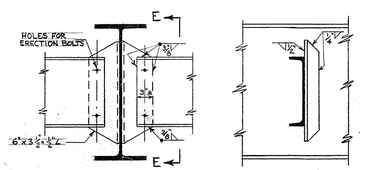
SCALE: 1/2" = 1'-0"

NOTE: ENCASEMENT OF END DIAPHRAGMS TO BE CLASS D CEM. CONC. MAS'Y.



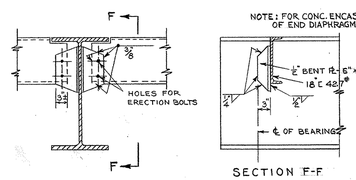
DETAIL OF END DIAPHRAGM CONCRETE ENCASEMENT

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



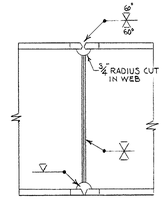
WELDED DIAPHRAGM CONNECTION

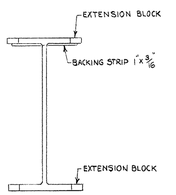
NO SCALE

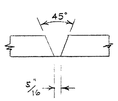


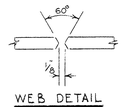
WELDED END DIAPHRAGM CONNECTION

NO SCALE







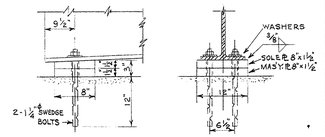


DETAILS OF WELDED SPLICE

NO SCALE

NOTE: STRINGERS TO BE SPLICED BOTH PIERS AT BEARINGS

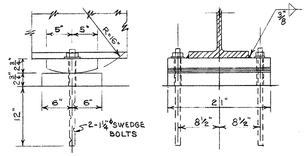
HOLES IN SOLE PL'S AND FLANGES TO BE 1 5/8"x 2" SLOTS. NUTS TO BE HAND TIGHT.



EXPANSION BEARING DETAIL

NO SCALE

HOLES IN SOLE PL'S AND FLANGES TO BE 1 5/8" ϕ. NUTS TO BE HAND TIGHT.



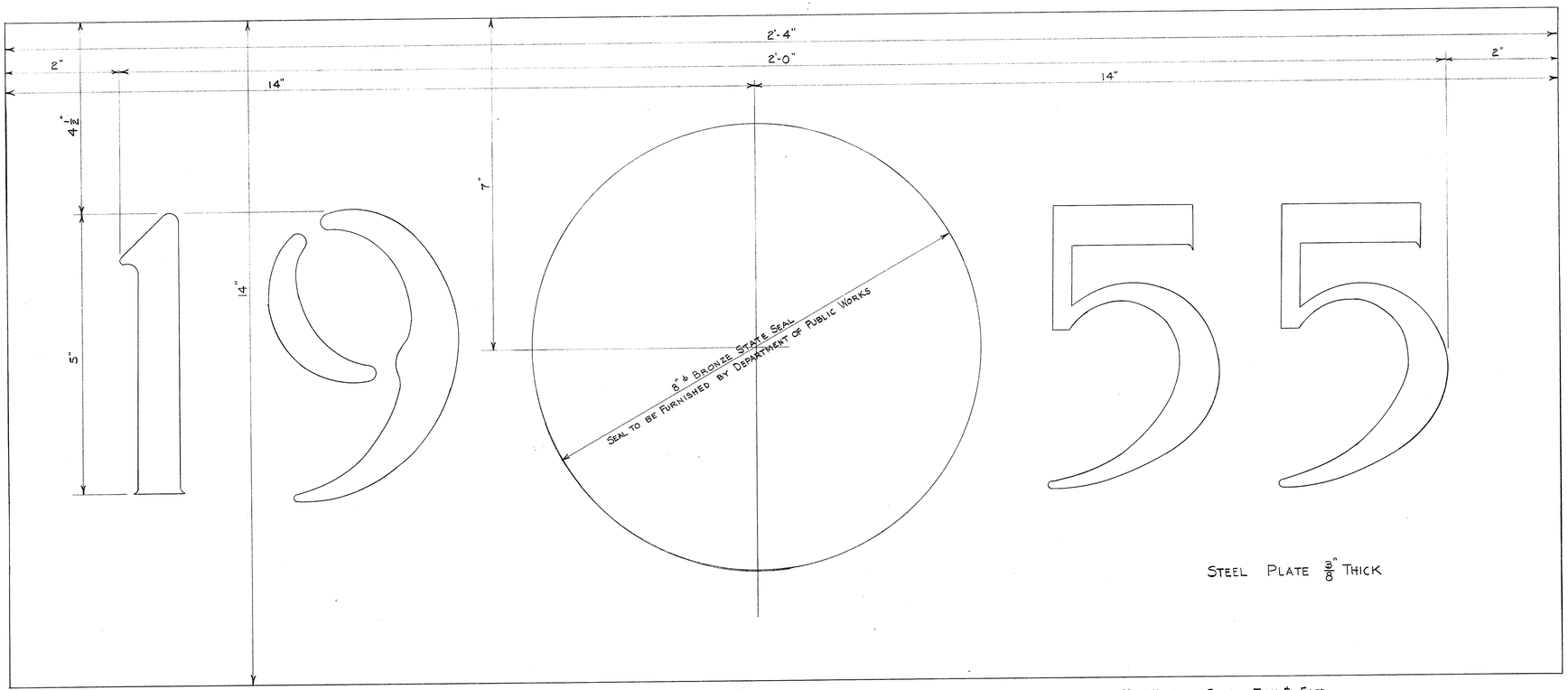
FIXED BEARING DETAIL

NO SCALE

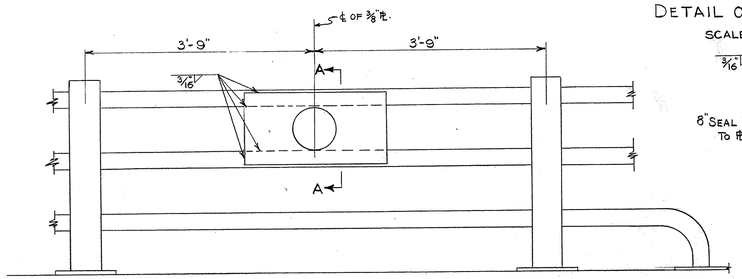
DATE	DESCRIPTION
4-23-35	ISSUED FOR CONSTRUCTION
	USE ONLY PRINTS OF LATEST DATE

SHEET 5 OF 6 SHEETS BRIDGE N° H-10-13

PUB ROAD DIV. Nº	STATE	FED AID PROJ. Nº	FISCAL YEAR	SHEET Nº	TOTAL SHEETS
1	MASS.	F 328(5)		115	1225

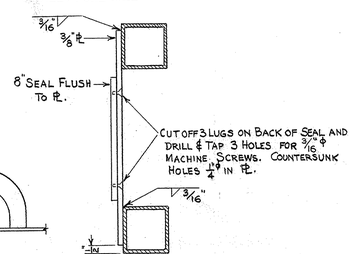


NOTE: NUMERALS BURNED THRU PL., FILED AND GROUND SMOOTH TO EXACT SHAPE AND DIMENSIONS. PL WELDED TO RAILING.



LOCATION OF DATE & SEAL
NORTHWESTERLY & SOUTHEASTERLY CORNERS
SCALE: 1"=1'-0"

DETAIL OF DATE & SEAL
SCALE: FULL SIZE



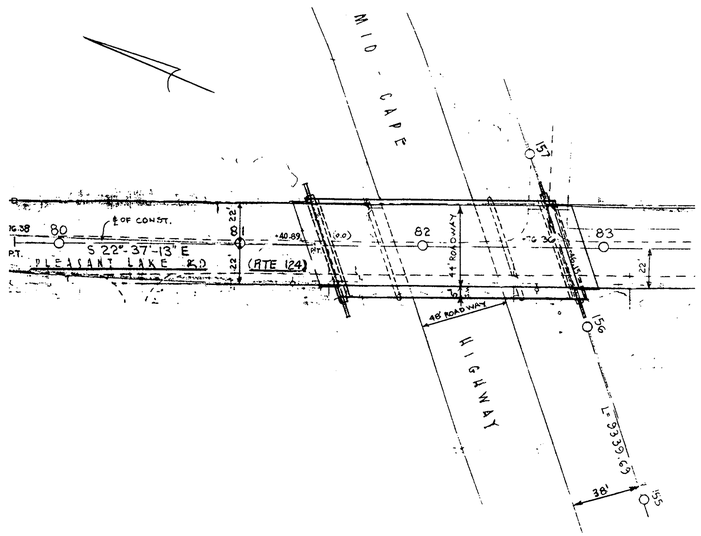
SECTION A-A
SCALE: 3"=1'-0"

DATE	DESCRIPTION
4-23-55	ISSUED FOR CONSTRUCTION
	USE ONLY PRINTS OF LATEST DATE

SHEET 6 OF 6 SHEETS BRIDGE Nº H-10-13

BREWSTER - HARWICH

PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.		1993	4	9



KEY PLAN
H-10-013 RTE 124/RTE 6

GENERAL NOTES

PLANS

PLANS FOR THE EXISTING BRIDGE MAY BE SEEN AT THE OFFICE OF THE BRIDGE ENGINEER, DEPARTMENT OF PUBLIC WORKS, TEN PARK PLAZA, BOSTON, MASSACHUSETTS.

EXISTING CONDITIONS

DIMENSIONS SHOWN ON EXISTING DETAILS ARE TAKEN FROM ORIGINAL DESIGN DRAWINGS AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND EXISTING DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD MEASUREMENTS AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY AND ADEQUACY THEREOF, AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL HE HAS MADE THE REQUIRED MEASUREMENTS ON THE ACTUAL STRUCTURE AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.

REINFORCED CONCRETE EXCAVATION

EXISTING DECK SLAB, ROADWAY AREA, SHALL BE EXCAVATED TO ONE INCH (1") BELOW THE TOP LAYER OF REINFORCING STEEL. THE CONTRACTOR SHALL EXCAVATE ANY OTHER CONCRETE AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER.

CONCRETE MIX

THE FOLLOWING CONCRETE MIX SHALL BE USED:

(1)	(2)	(3)
4000	3/8	705 *
4000	3/4	610

(1) 28 DAY COMPRESSIVE STRENGTH (PSI)
(2) MAXIMUM AGGREGATE SIZE (INCHES)
(3) CEMENT CONTENT (LB / CY)

* LIGHTWEIGHT AGGREGATE SHALL BE USED.

SEALS

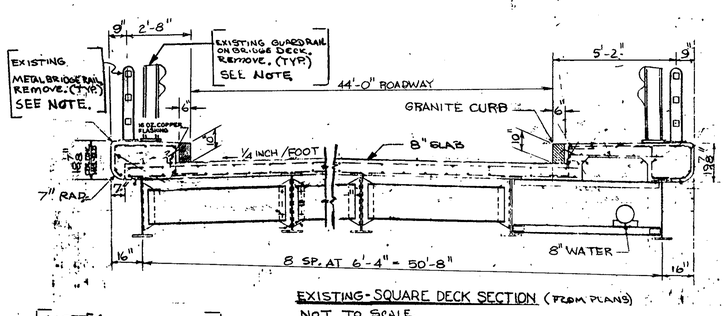
THE EXISTING SEALS SHALL BE REMOVED FROM THE EXISTING NORTHWEST AND SOUTHEAST END POSTS AND SHALL BE RESET BY THE CONTRACTOR ON THE INSIDE FACES OF THE CORRESPONDING NEW END POSTS.

BRIDGE RAILING

SEE DEPARTMENT STANDARD PLANS DATED OCTOBER 1978 FOR DETAILS OF BRIDGE RAILINGS.

PROTECTIVE SCREEN

SEE DEPARTMENT STANDARD PLANS DATED JANUARY 1975 FOR DETAILS OF PROTECTIVE SCREEN.

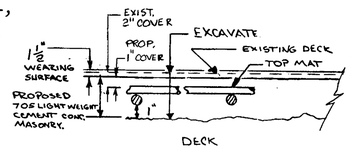


EXISTING-SQUARE DECK SECTION (FROM PLANS)
NOT TO SCALE.
PARTIAL SECTIONS AND DETAILS REMOVED FOR CLARITY. REFER TO BRIDGE PLANS FOR ADDITIONAL INFORMATION.
CHANGES FOR CONTRACT NOTED WITH 'BRACKETS.[ ].

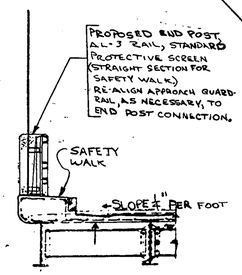
NOTE:
GRIND FLUSH ALL ANCHOR BOLTS - THEN PAINT WITH EPOXY.

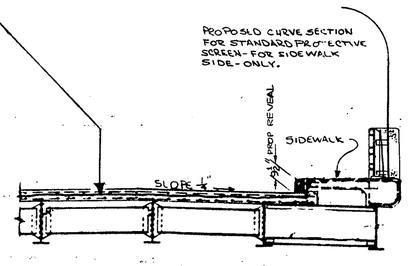
H-10-013 RTE 124/RTE 6

EXCAVATE TO 1" BELOW TOP MAT REINFORCING STEEL, BY WATER MILLING.
PLACE 705 LIGHTWEIGHT CEMENT CONCRETE MASONRY ON EXCAVATED DECK. (APPROX. 3" DEPTH).
PLACE 1 1/2" WEARING SURFACE OF LATEX MODIFIED MORTAR AND CONCRETE OVERLAYMENT.



DECK
DETAIL PROPOSED EXCAVATION, REPAIR





NOTES PROVIDE FOR SPLICE IN AL-3 PANEL OVER ALL PIERS AND JOINTS.
FOR OTHER NOTES ON AL-3 INCLUDING SPACING, SEE DWG. "STANDARD METAL BRIDGE RAILINGS TYPE AL-3."

H-10-013 RTE 124 / RTE 6
PROPOSED RECONSTRUCTION
TYPICAL SQUARE DECK SECTION
NOT TO SCALE

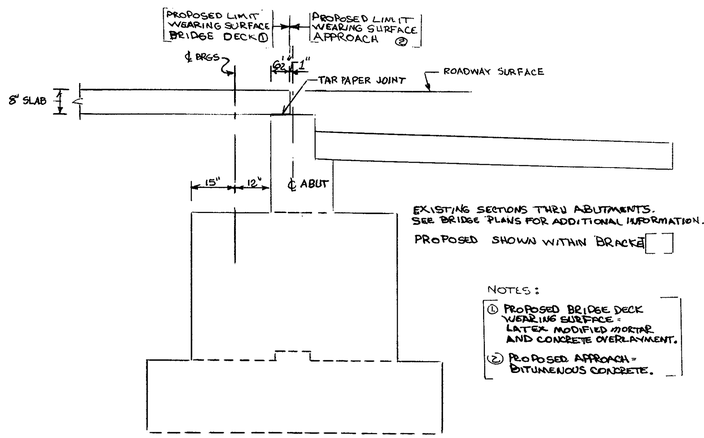
8/27/92 D.P.

DESIGNED BY	ISSUED FOR CONSTRUCTION
DRAWN BY	THE COMMONWEALTH OF MASSACHUSETTS PROPOSED BRIDGE BETTERMENT
CHECKED BY	**HARWICH**
	ROUTE 124 OVER ROUTE 6
APPROVED FOR DESIGN	SCALES AS NOTED OFFICE OF MASS. HIGHWAY DEPARTMENT TEN PARK PLAZA BOSTON, MASS.
SPECS.	S Butnicki 11/19/92 MAINTENANCE ENGINEER DATE

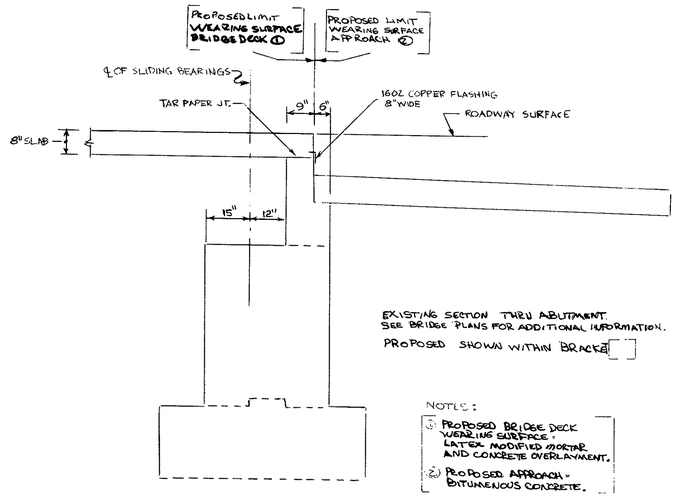
SHEET 1 OF 3 SHEETS BRIDGE NO. H-10-13

BREWSTER - HARWICH

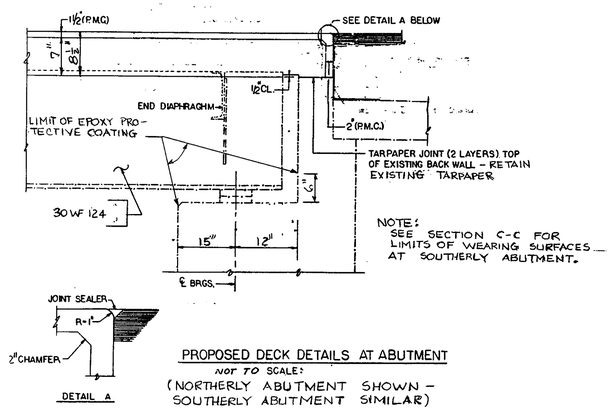
PUB. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.		1993	5	9



EXISTING CONDITIONS
SOUTHERLY ABUTMENT
SECTION C-C
SCALE: ½"=1'-0"



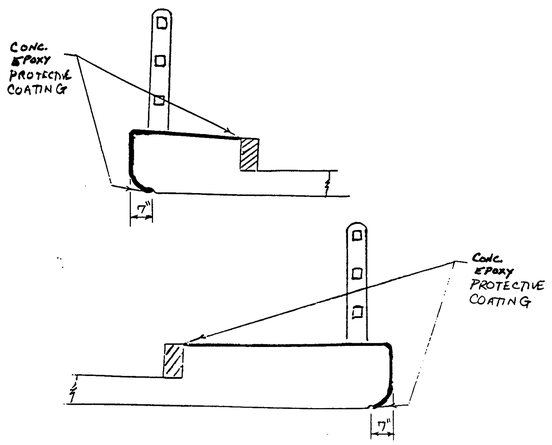
NORTHERLY ABUTMENT
SECTION D-D
SCALE: ½"=1'-0"



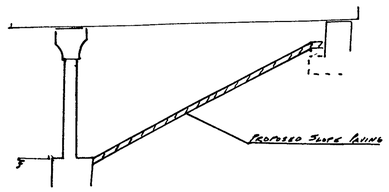
NOTE:
SEE SECTION C-C FOR LIMITS OF WEARING SURFACES AT SOUTHERLY ABUTMENT.

PROPOSED DECK DETAILS AT ABUTMENT
NOT TO SCALE:
(NORTHERLY ABUTMENT SHOWN - SOUTHERLY ABUTMENT SIMILAR)

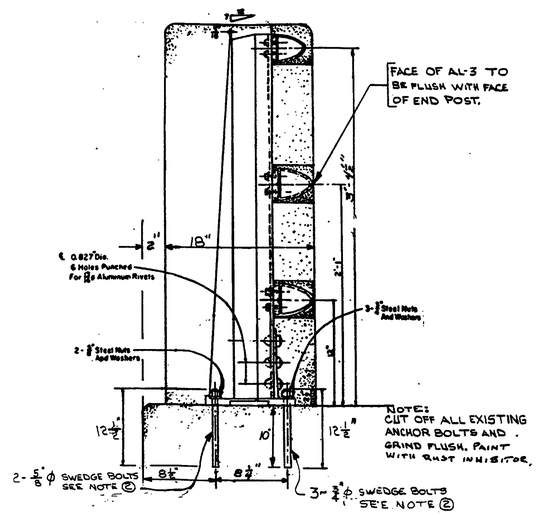
ITEM 964.2 EPOXY PROTECTIVE COATING
LIMITS AT SIDEWALK & SAFETY WALK



ITEM 987.2 SPECIAL SLOPE PAVING UNDER BRIDGE
(PRE-CAST PAVING BLOCKS)



TYPICAL PLACEMENT OF SLOPE PAVEMENT
(FROM FASCIA STRINGER TO FASCIA STRINGER OR AS DIRECTED BY THE ENGINEER.)



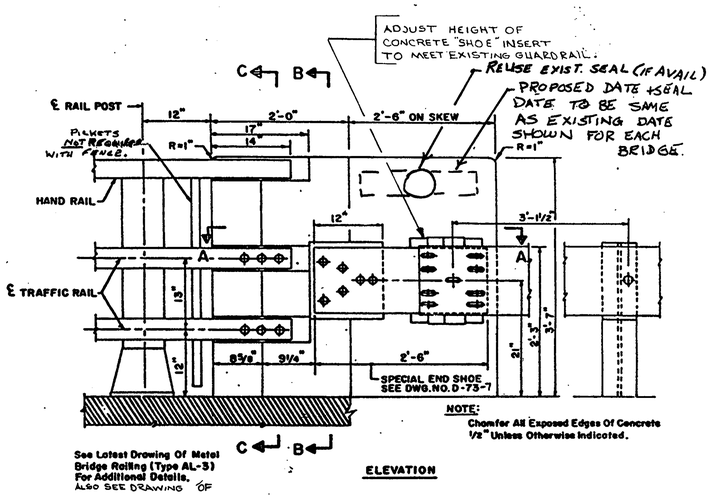
AL-3 AND END POST
SIDE ELEVATION

NOTES:
① FOR DETAILS ON AL-3 SEE DRAWING STANDARD METAL BRIDGE RAILINGS TYPE AL-3 (ALUMINUM) LATEST DNG. EXCEPT AS NOTED
② TO BE DRILLED AND GROUTED 1½"ø CORE, EPOXY GROUT, (MIN. 10" DEEP).
③ ALL SWEDGE BOLTS, NUTS AND WASHERS TO BE ASTM A-325 STEEL (GALV.)

	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
	USE ONLY PRINTS OF LATEST DATE

BREWSTER - HARWICH

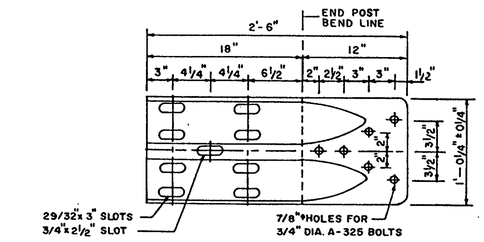
PUB. RD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.		1993	6	9



ELEVATION

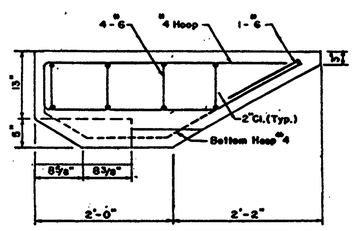
END POST-LOCAL ROAD

SCALE: 1" = 1'-0"



SPECIAL END SHOE (TYPE SS)

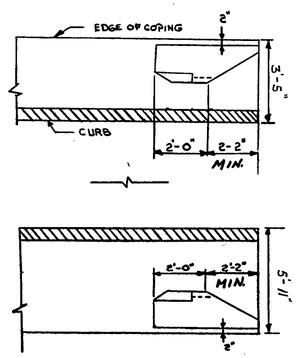
SCALE: 1 1/2" = 1'-0"



SECTION A-A

END POST-LOCAL ROAD

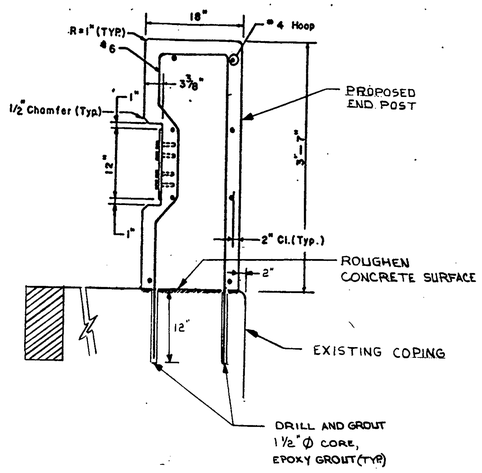
SCALE: 1" = 1'-0"



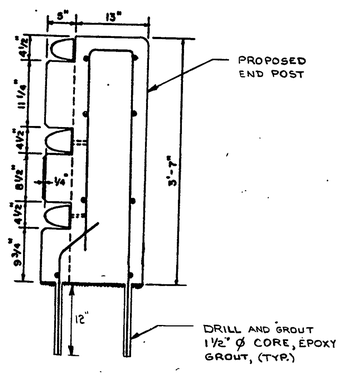
NOTE: BRIDGE DECK CONSTRUCTED ON SLIGHT SKEW

END POST-LOCAL ROAD

NOT TO SCALE

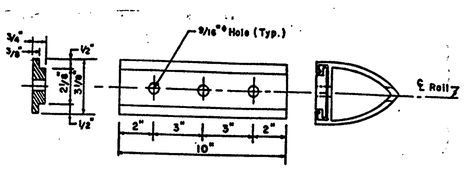


SECTION B-B



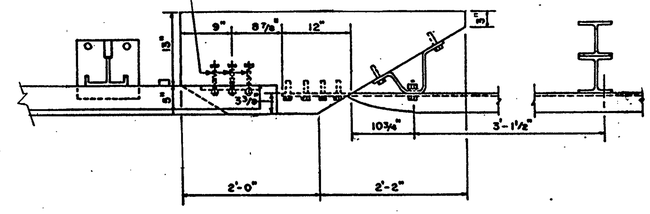
SECTION C-C

NOT TO SCALE



CLAMP BAR

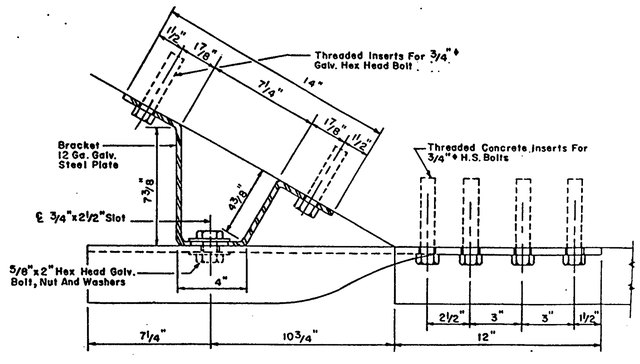
SCALE: 3" = 1'-0"



PLAN

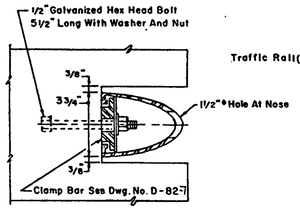
END POST-LOCAL ROAD

SCALE: 1" = 1'-0"



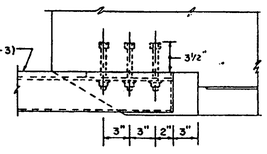
DETAIL OF CONNECTIONS FOR SPECIAL END SHOE

SCALE: 3" = 1'-0"



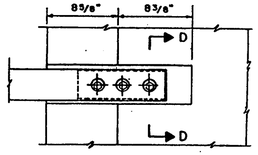
SECTION D-D

SCALE: 3" = 1'-0"



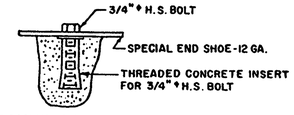
PLAN

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



ELEVATION

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



CONNECTION DETAIL

NO SCALE

NOTE:
Concrete Insert Shall Be Prequalified As Capable Of Developing 11,000 Pounds Of Shear In The Bolt. The Test Shall Be Certified By A Testing Agency Acceptable To The D.P.W.

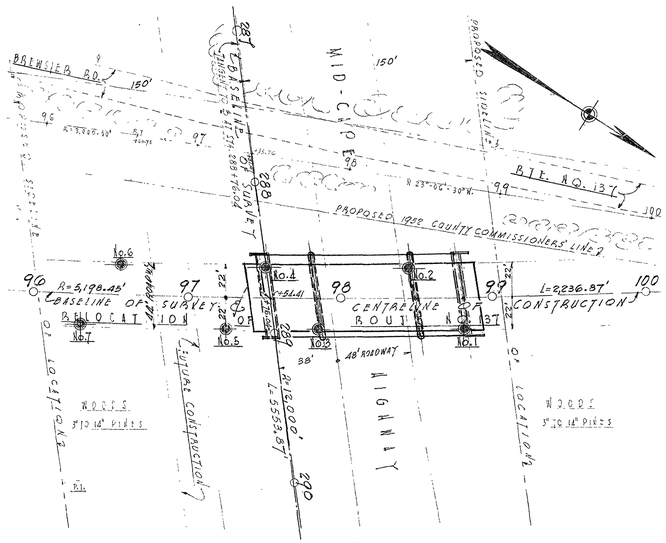
NOTE:
The threaded insert for H.S. Bolts shall be cast-in-place.

END POST-LOCAL ROAD RAIL ATTACHMENT

DATE	DESCRIPTION
	ISSUED FOR CONSTRUCTION
	USE ONLY PRINTS OF LATEST DATE

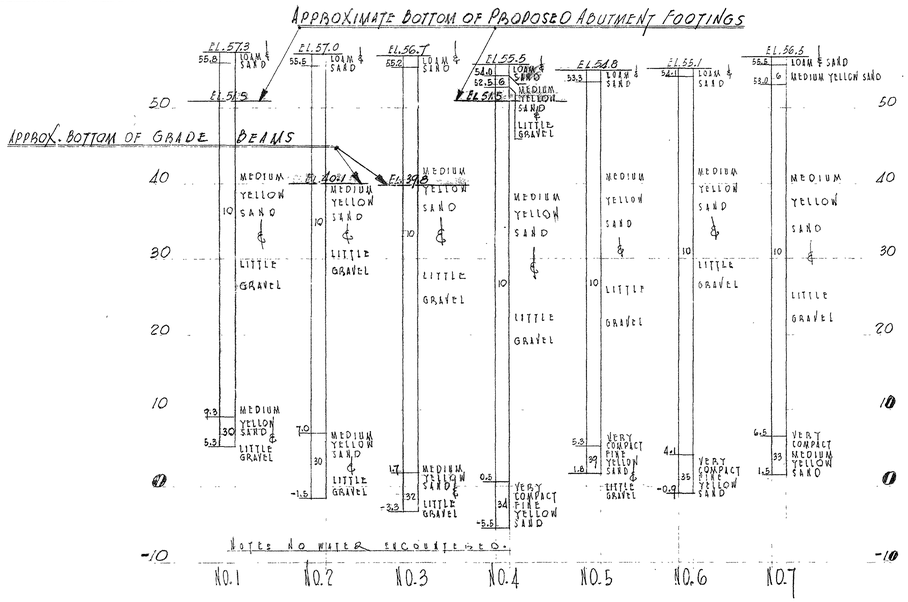
SHEET 3 OF 3 SHEETS BRIDGE NO. H-10-13

CHARLETTE



PLAN

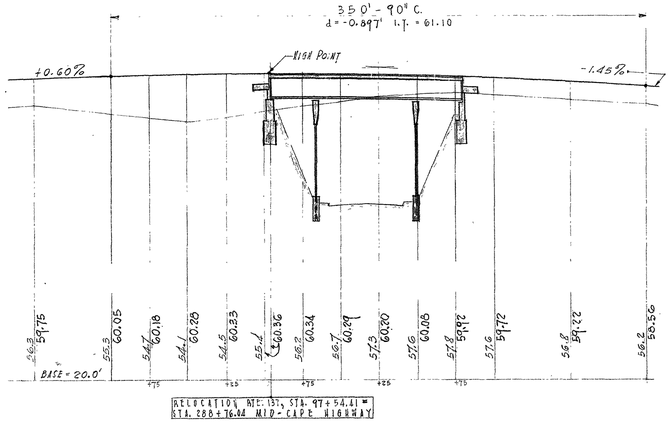
SCALE 1" = 40'-0"



BORING DATA

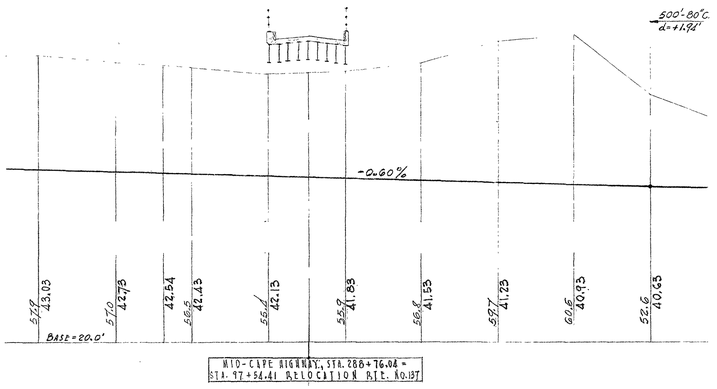
BORINGS TAKEN JAN. 1955 BY CARR-DEE TEST BORING & CONST'N CORP'N SCALE 1" = 8'-0"

BORING NOTES: LOCATIONS OF BORINGS SHOWN ON KEY PLAN THUS: —◉— NO.1. 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 BLOWS PER FOOT ON 1⅜" PIPE PRODUCED BY 30" FALL OF 140 LB. HAMMER. BORING SAMPLES MAY BE SEEN AT THE OFFICE OF THE BRIDGE ENGINEER, MR. JOHN C. RUNDLETT, ROOM NO. 609.



PROFILE OF RELOCATION OF ROUTE NO. 137

HORIZONTAL SCALE 1" = 40'-0" VERTICAL SCALE 1" = 8'-0"



PROFILE OF MID-CAPE HIGHWAY

HORIZONTAL SCALE 1" = 40'-0" VERTICAL SCALE 1" = 8'-0"

FOR ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	F328(5)		116	1225

GENERAL NOTES

DATE & SEAL:
DATE TO BE CUT THRU STEEL PLATE; PLATE TO BE WELDED TO BRIDGE RAILS AT NORTHWESTERLY AND SOUTHEASTERLY CORNERS OF BRIDGE, AS SHOWN IN DETAIL ON SHEET NO. 6. SEAL TO BE FURNISHED BY THE COMMONWEALTH.

DESIGN:
ACCORDING TO SPECIFICATIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS (1953 EDITION) FOR H20-44 LOADING.

BENCH MARK:
STA. 97 (50' RIGHT), SPIKE IN 14" ϕ PINE, EL. 55.045 SEA LEVEL DATUM OF 1929.

REINFORCEMENT:
ALL BARS SHALL HAVE DEFORMATIONS CONFORMING TO A.S.T.M. DESIGNATION A305. 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 36 DIAMETERS TO MAKE A SPLICE.

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

ESTIMATED QUANTITIES

NOT GUARANTEED

BRIDGE EXCAVATION	300	C.Y.
CLASS D ROCK EXCAVATION	10	C.Y.
CLASS A CEM. CONC. MASONRY	112	C.Y.
CLASS B CEM. CONC. MASONRY	167	C.Y.
CLASS D CEM. CONC. MASONRY	190	C.Y.
STEEL REINF. FOR STRUCTURES	57,000	LBS.
STRUCTURAL STEEL	166,000	LBS.
BITUMINOUS DAMP-PROOFING	180	S.Y.
BRIDGE RAILINGS	247	L.F.
16"ϕ CAST-IN-PLACE CONCRETE PILES	900	L.F.
GRANITE CURB-TYPE VA6-STR-6"x9¾"	250	L.F.

DES. A.C.
DR. A.C. R.F.H.
CHK. R.F.M.
APPROVED FOR
DES.
DRGS.
SPECS.

4-23-55 ISSUED FOR CONSTRUCTION

THE COMMONWEALTH OF MASSACHUSETTS

PROPOSED BRIDGE

HARWICH

MID-CAPE HIGHWAY - STATION 288+76.04

UNDER RELOCATION OF ROUTE NO. 137

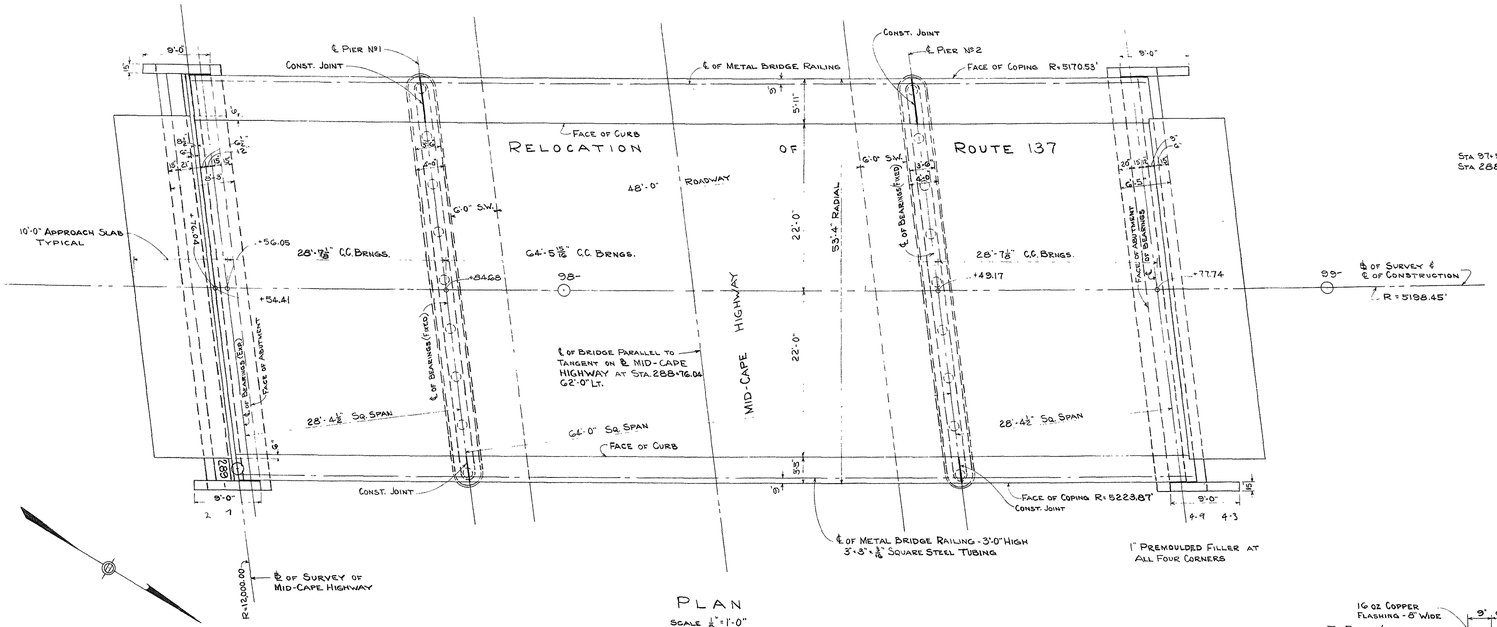
SCALES AS NOTED

OFFICE OF
DEPARTMENT OF PUBLIC WORKS
100 NASHUA ST. BOSTON, MASS.
APRIL 1955

J.C. Rundlett — BRIDGE ENGINEER
H.J. Gray — CHIEF ENGINEER

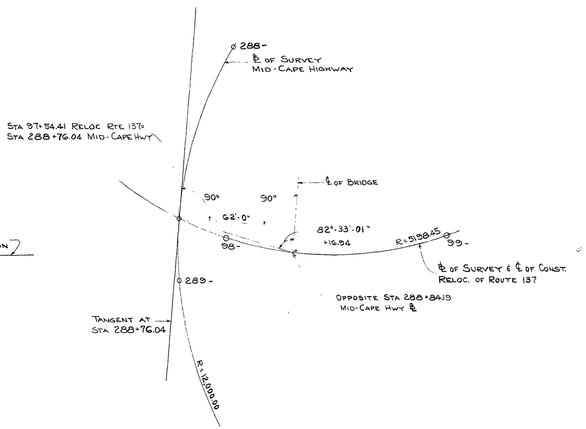
SHEET 1 OF 6 SHEETS BRIDGE NO. H-10-14

PUB. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	F 328(5)		117	1225



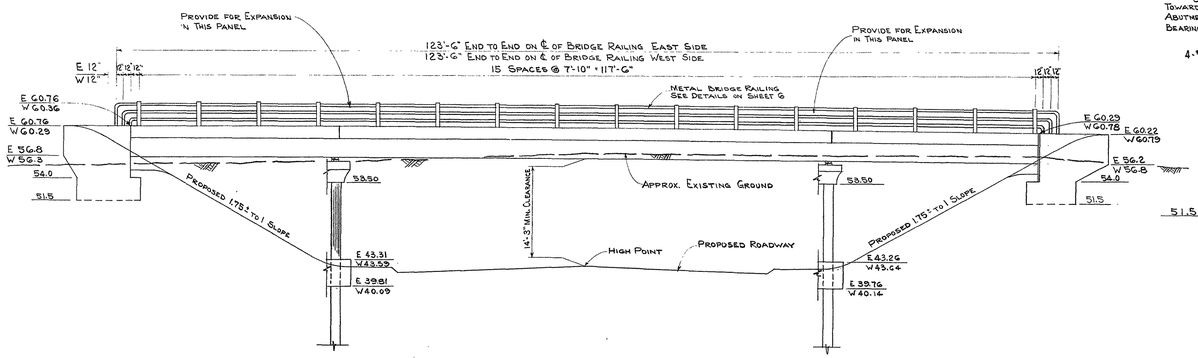
PLAN

SCALE ⅛" = 1'-0"



RELATION BETWEEN ℄ OF BRIDGE AND BASE LINES

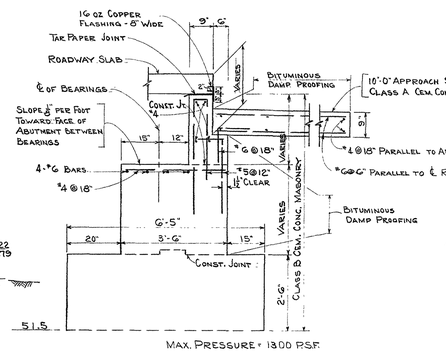
NO SCALE



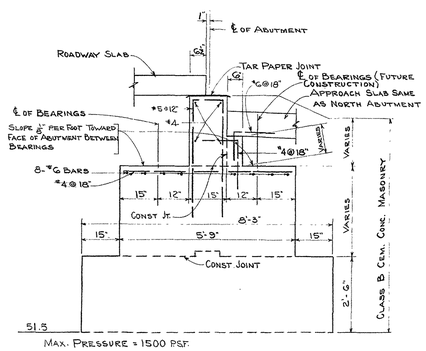
EAST ELEVATION

WEST ELEVATION SIMILAR EXCEPT AS NOTED

SCALE ⅛" = 1'-0"



NORTH



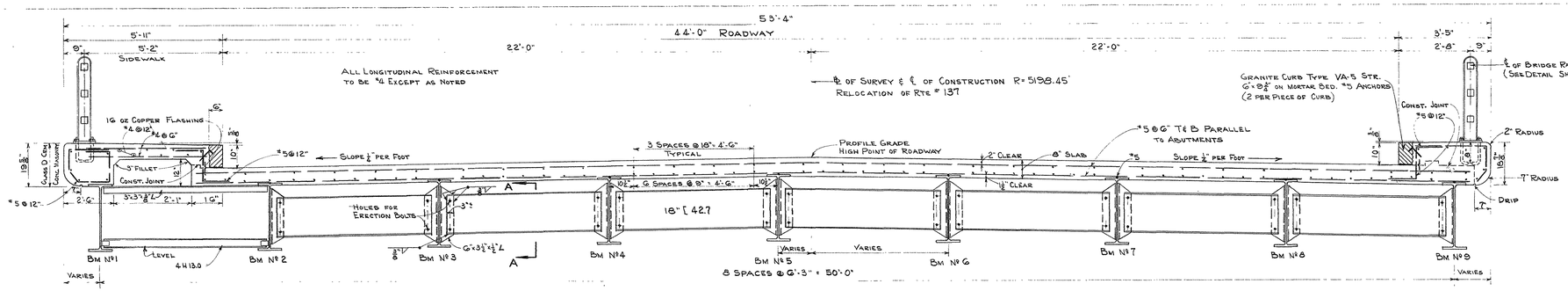
SOUTH

SQUARE SECTION OF ABUTMENTS

SCALE ½" = 1'-0"

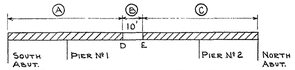
DATE	DESCRIPTION
4-23-55	ISSUED FOR CONSTRUCTION
	USE ONLY PRINTS OF LATEST DATE

PUB ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	F328(3)		118	1225



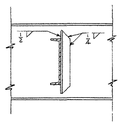
TYPICAL CROSS SECTION

SCALE ½"=1'-0"



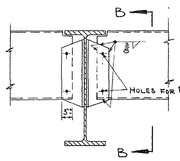
POURING SEQUENCE FOR DECK CONCRETE

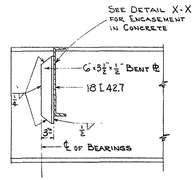
PLACE CONCRETE ON SECTION (A) & (C) SIMULTANEOUSLY STARTING AT SOUTH ABUT. FOR SECTION (A) AND AT POINT E FOR SECTION (C) PROCEED AT A UNIFORM RATE TOWARD POINT D AND NORTH ABUTMENT RESPECTIVELY. PLACE CONCRETE ON SECTION (B) NO EARLIER THAN TWO FULL DAYS AFTER PLACING CONCRETE ON SECTION (A) & (C).



SECTION A-A

SCALE ½"=1'-0"

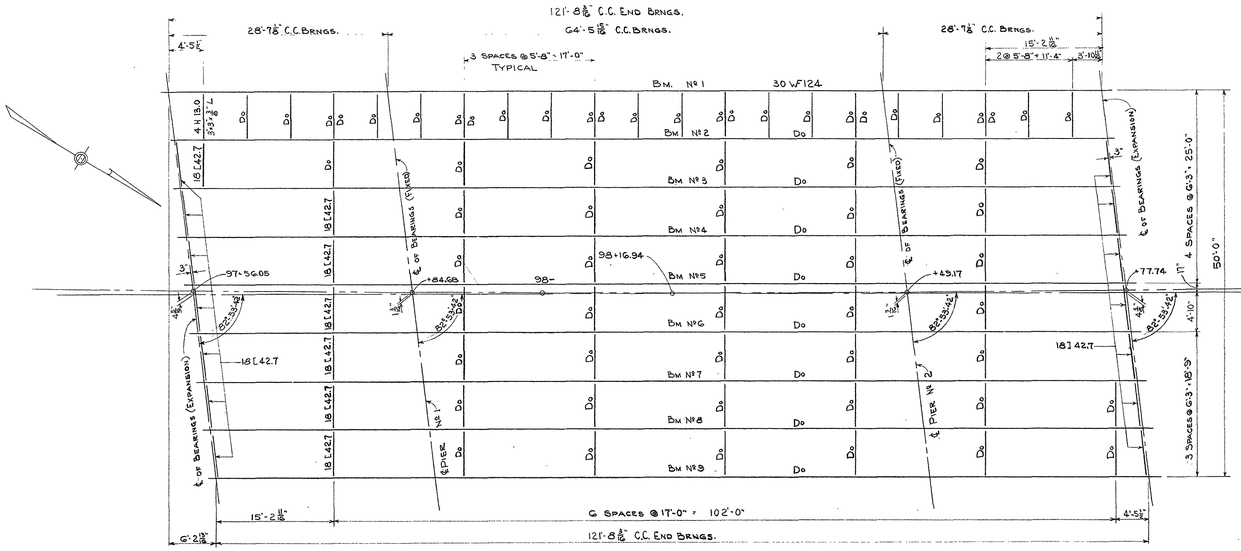




SECTION B-B

WELDED END DIAPHRAGM CONNECTION

SCALE ½"=1'-0"

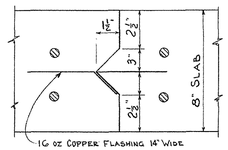


STEEL LAYOUT PLAN

SCALE ⅛"=1'-0"

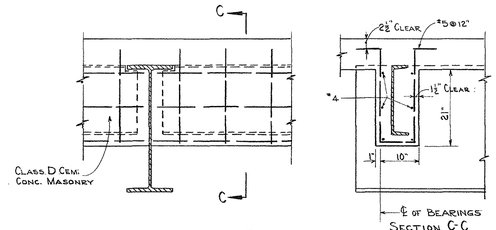
℄ OF SURVEY & ℄ OF CONST. RELOCATION OF RTE 137
R=5198.45'
TANGENT TO ℄ OF SURVEY AT STA 98+16.94
N 32°-32'-24" W

ALL BEAMS ARE TO BE CAMBERED TO THE EXTENT THAT THE BRIDGE DECK UNDER FULL DEAD LOAD WILL FOLLOW AS NEARLY AS PRACTICABLE THE DESIGN PROFILE, AND IN NO CASE WITH LESS CAMBER THAN IS LIKELY TO REMAIN PERMANENT. THE PROPOSED CAMBER DIAGRAM SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.



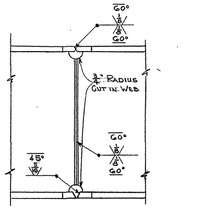
CONSTRUCTION JOINT DETAIL IN ROADWAY SLAB

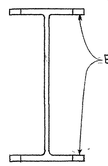
SCALE 3"=1'-0"



DETAIL X-X

SCALE ½"=1'-0"

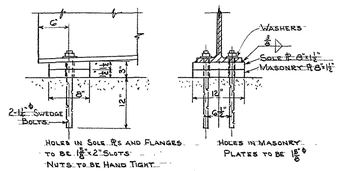




STRINGER SPLICE DETAIL

SPLICES TO BE LOCATED OVER BEARINGS ON PIERS

SCALE 1"=1'-0"



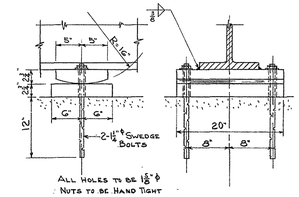
HOLES IN SOLE ℄S AND FLANGES TO BE 1⅛"×2" SLOTS
NUTS TO BE HAND TIGHT

HOLES IN MASONRY PLATES TO BE 1⅝" ϕ

EXPANSION BEARING DETAILS

NORTH & SOUTH ABUTMENTS

SCALE 1"=1'-0"



ALL HOLES TO BE 1⅝" ϕ
NUTS TO BE HAND TIGHT

FIXED BEARING DETAILS

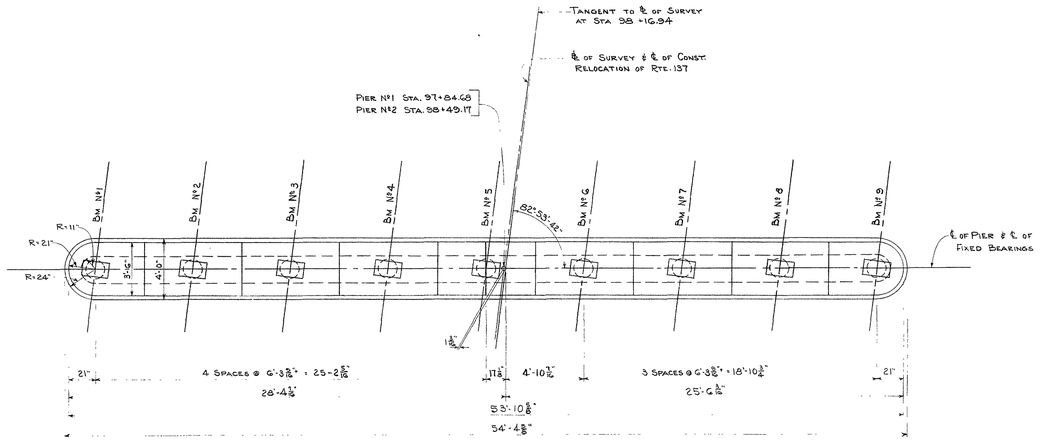
PIER Nº1 & Nº2

SCALE 1"=1'-0"

DATE	DESCRIPTION
4-23-55	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

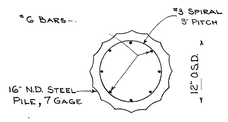
PUB. ROAD DIV. Nº	STATE	FED. AID PROJ. Nº	FISCAL YEAR	SHEET Nº	TOTAL SHEETS
1	MASS.	F 328(6)		119	1225



PLAN - PIER Nº1

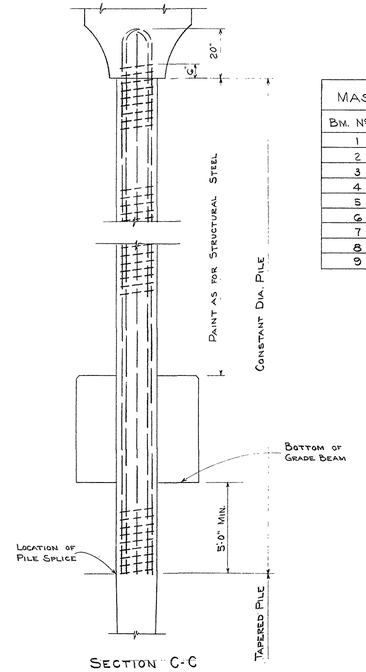
PIER Nº2 SIMILAR

SCALE 1/4" = 1'-0"



SECTION B-B

SCALE 1"=1'-0"

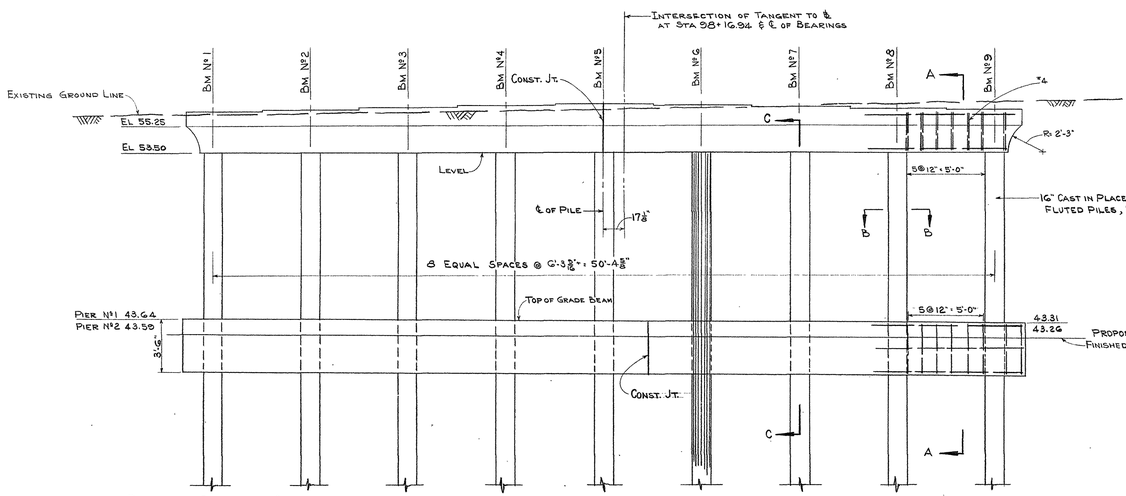


SECTION C-C

SCALE 3/4"=1'-0"

MASONRY ELEVATIONS AT BEARINGS

Bm. Nº	South Abut.	Pier Nº1	Pier Nº2	North Abut.
1	56.46	56.22	55.93	56.02
2	56.53	56.35	56.12	56.14
3	56.72	56.48	56.24	56.27
4	56.85	56.61	56.37	56.35
5	56.98	56.74	56.50	56.52
6	56.90	56.66	56.41	56.43
7	56.77	56.53	56.27	56.30
8	56.64	56.39	56.14	56.16
9	56.51	56.26	56.00	56.02



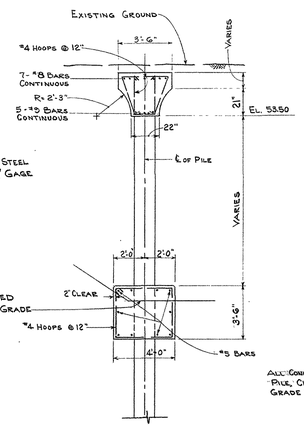
Piles to be Driven to a Capacity of Not Less than 50 Tons.

SOUTHERLY ELEVATION - PIER Nº1

PIER Nº2 SIMILAR EXCEPT AS NOTED.

SCALE 1/4" = 1'-0"

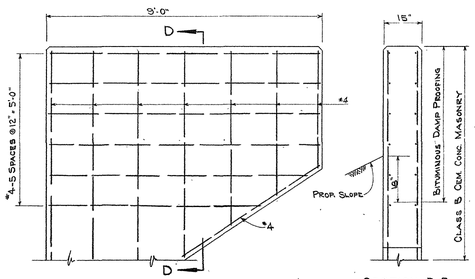
Nº Piles Required	
Pier Nº1	9
Pier Nº2	9
Total	18



SECTION A-A

SCALE 3/4"=1'-0"

All Concrete to be Class D in Pile, Class A in Pile Cap and Grade Beam.



WING REINFORCEMENT DETAIL

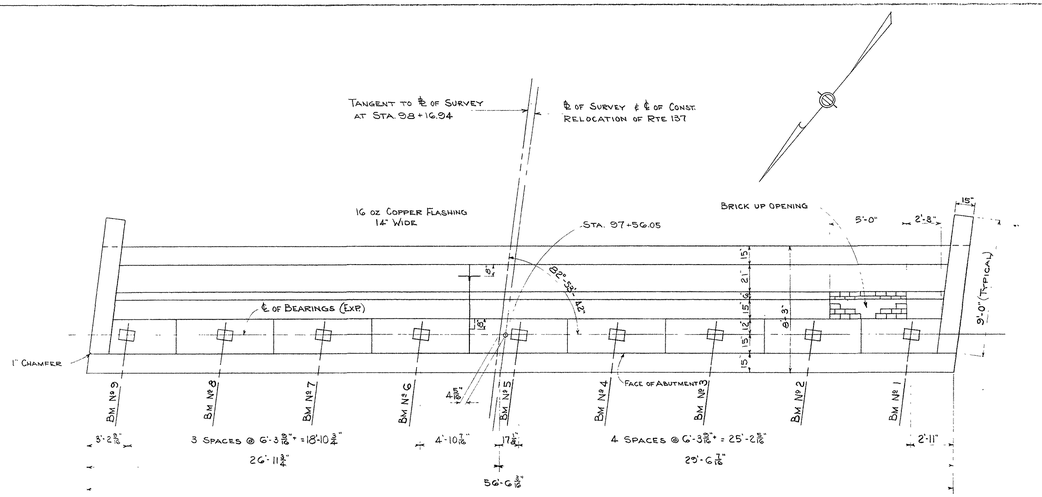
No Scale

SECTION D-D

4-23-75	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

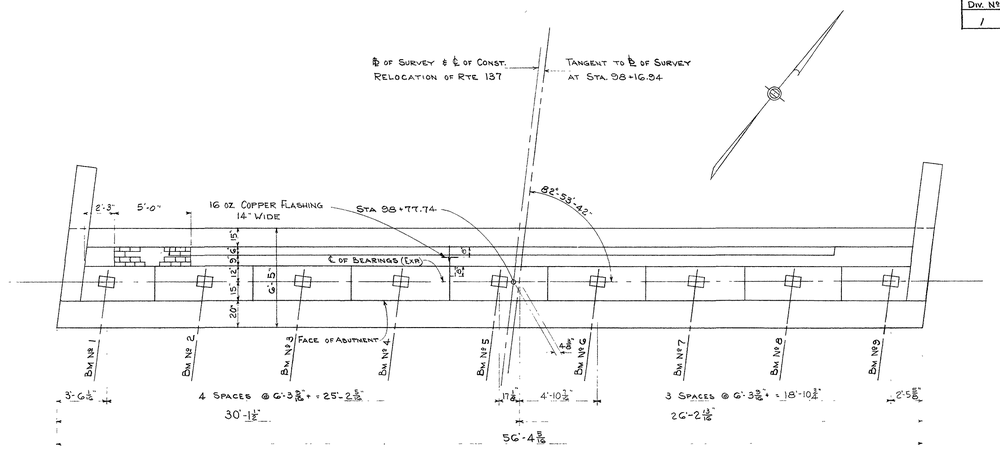
USE ONLY PRINTS OF LATEST DATE

PUB. ROAD DIV. Nº	STATE	FED AID PROJ. Nº	FISCAL YEAR	SHEET Nº	TOTAL SHEETS
1	MASS.	F328(5)		120	1225



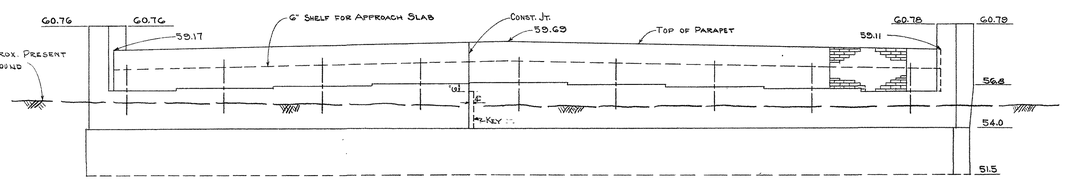
PLAN - SOUTH ABUTMENT

SCALE 1/4" = 1'-0"



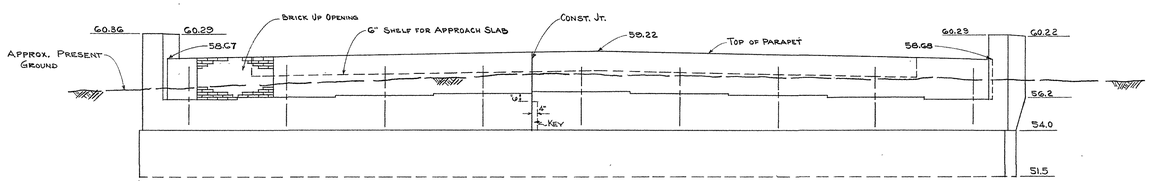
PLAN - NORTH ABUTMENT

SCALE 1/4" = 1'-0"



ELEVATION – SOUTH ABUTMENT

SCALE 1/4" = 1'-0"

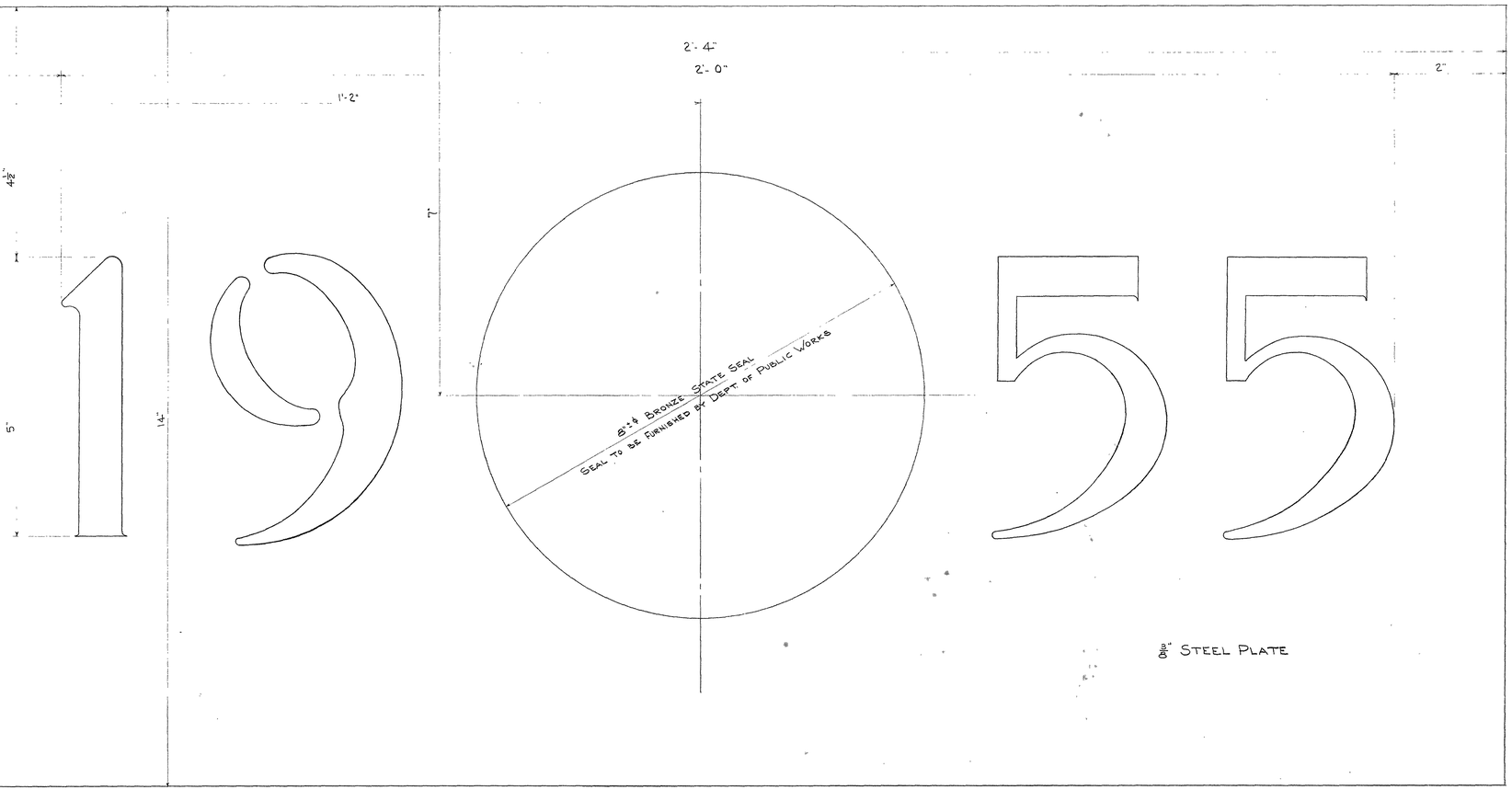


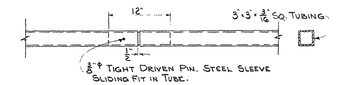
ELEVATION - NORTH ABUTMENT

SCALE 1/4" = 1'-0"

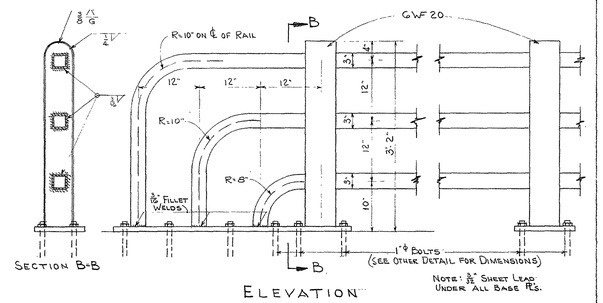
DATE	DESCRIPTION
4-23-55	ISSUED FOR CONSTRUCTION
	USE ONLY PRINTS OF LATEST DATE

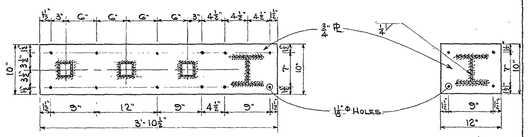
PUB ROAD DIV. Nº	STATE	FED AID PROJ. Nº	FISCAL YEAR	SHEET Nº	TOTAL SHEETS
1	MASS.	F 328(6)		121	1225





EXPANSION SLEEVE DETAIL





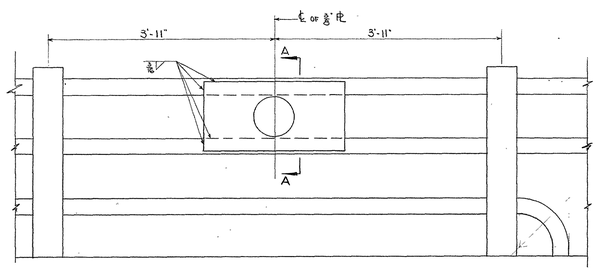
END POST BASE — POST BASE

BASE PLATE DETAILS

ANCHOR BOLT DETAIL
SCALE 1"=1'-0"

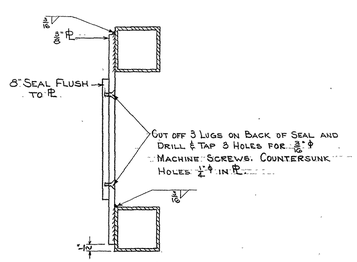
RAILS 3x3x¼ STEEL SQ TUBING. ELBOWS MAY BE FABRICATED FROM ℄ ALL JOINTS TO BE GROUND TO A 45° V. BEFORE WELDING & GROUND SMOOTH AFTER WELDING. PROVIDE EXPANSION SLEEVES WHERE INDICATED ON SHEET Nº 2.

METAL BRIDGE RAILING DETAILS
SCALE 1"=1'-0"



LOCATION OF DATE & SEAL
NORTHWESTERLY & SOUTHEASTERLY CORNERS
SCALE 1"=1'-0"

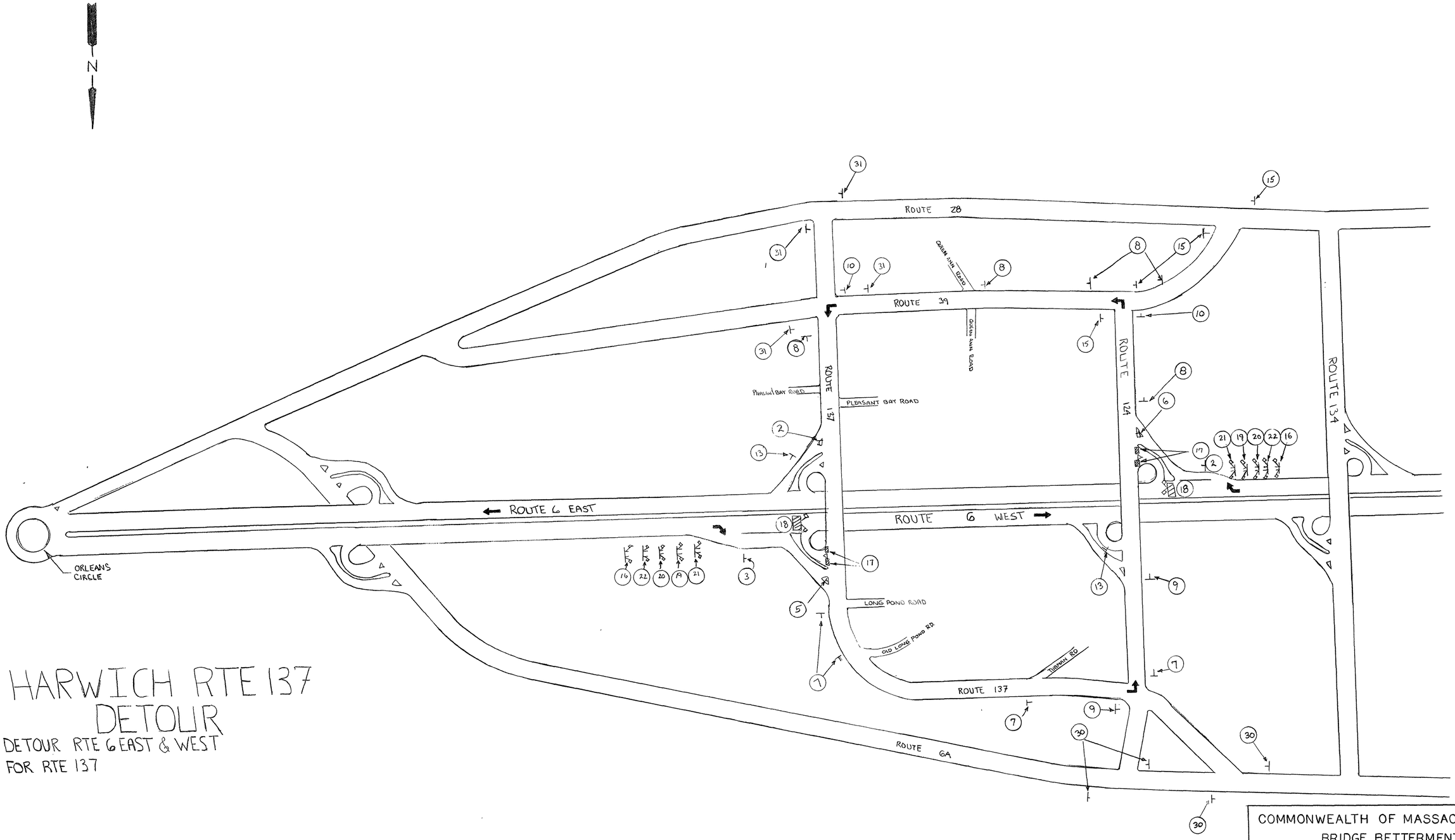
DETAIL OF DATE & SEAL
FULL SCALE



SECTION A-A
SCALE 3"=1'-0"

NOTE: NUMERALS BURNED THRU Pl, FILED AND GROUND SMOOTH TO EXACT SHAPE AND DIMENSIONS. Pl WELDED TO RAILING.

DATE	DESCRIPTION
4-23-55	ISSUED FOR CONSTRUCTION
	USE ONLY PRINTS OF LATEST DATE



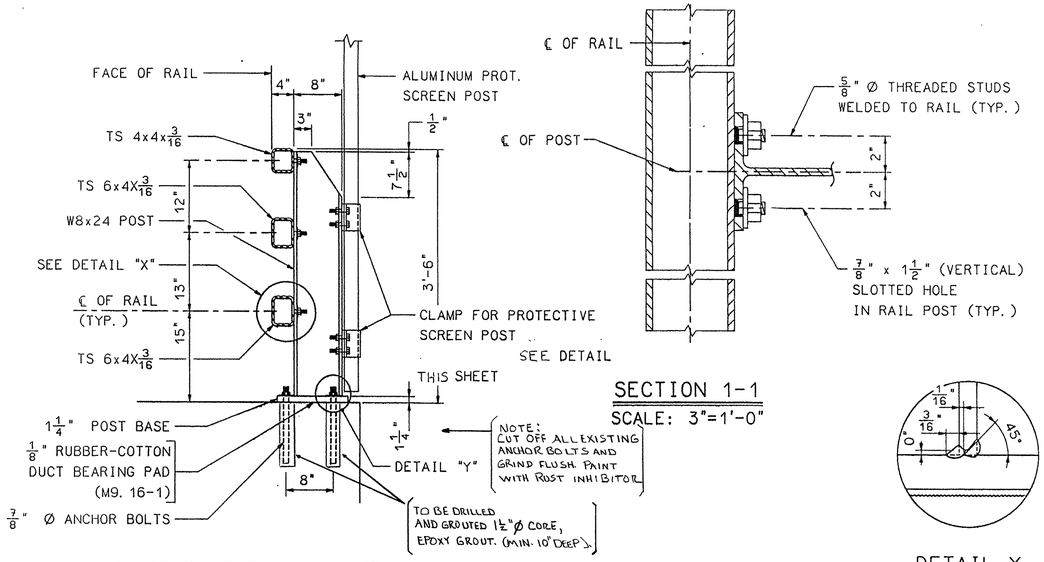
HARWICH RTE 137 DETOUR

DETOUR RTE 6 EAST & WEST FOR RTE 137

COMMONWEALTH OF MASSACHUSETTS
BRIDGE BETTERMENT
HARWICH
ROUTE 137 OVER ROUTE 6

Warren W. McCausland Jr. — HIGHWAY OPERATIONS ENGR.
12-23-93 — DATE

H-10-14



SECTION THRU RAILING

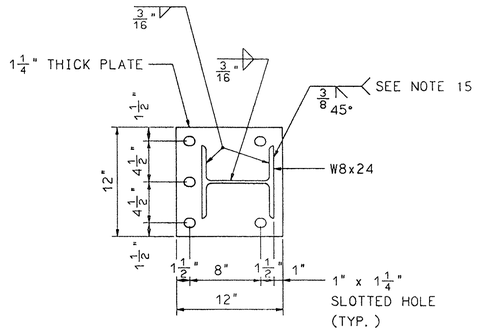
SCALE: 1"=1'-0"

SECTION 1-1

SCALE: 3"=1'-0"

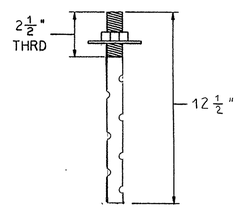
DETAIL Y

NOT TO SCALE



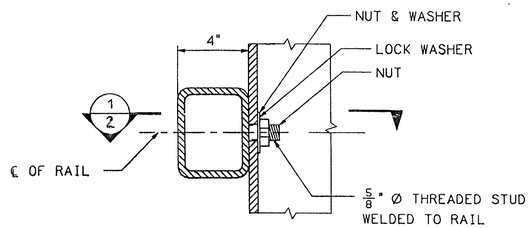
POST BASE

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



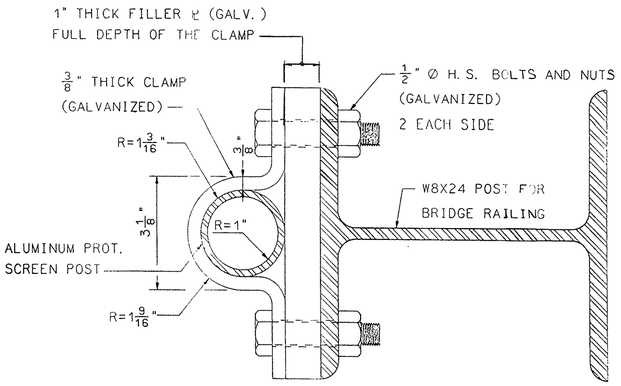
ANCHOR BOLTS- SWEDGE

SCALE: 3" = 1'-0"



DETAIL X

SCALE: 3" = 1'-0"

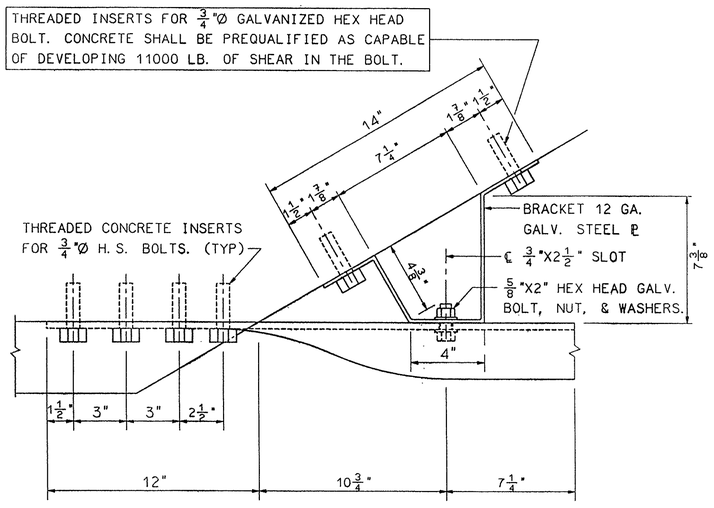


DETAIL OF CLAMP FOR PROTECTIVE SCREEN POST

NOT TO SCALE

NOTE:

PROTECTIVE SCREEN AND POSTS SHALL BE AS SHOWN ON THE MASS. HIGHWAY DEPARTMENT STANDARD DRAWINGS, DATED JANUARY 1975 EXCEPT FOR THE CLAMP WHICH SHALL BE AS SHOWN ON THIS SHEET.



DETAIL OF CONNECTION FOR SPECIAL END SHOE

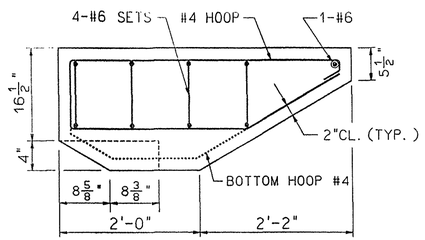
SCALE: 3"=1'-0"

RAILING NOTES:

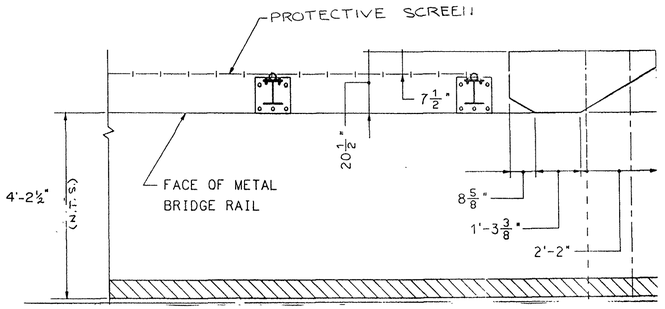
1. ANCHOR BOLTS SHALL BE SET BY MEANS OF TEMPLATES.
2. RAIL POST, BASE PLATES, AND SPLICE TUBES SHALL BE STEEL CONFORMING TO THE REQUIREMENTS OF AASHTO M270 GRADE 50.
3. HOLLOW STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE C.
4. BACKING PANELS SHALL BE STEEL CONFORMING TO THE REQUIREMENTS OF ASTM A36.
5. ANCHOR BOLTS AND THEIR NUTS AND WASHERS SHALL BE HIGH STRENGTH ASTM A449 FASTENERS AS DESCRIBED IN THE SPECIAL PROVISIONS.
6. ALL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
7. NUTS FOR 7/8" DIA. THREADED ANCHOR BOLTS CONNECTING THE BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.
8. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF FOUR (4) POSTS WITHOUT SPLICES, WHERE POSSIBLE.
9. RAILS SHALL BE SPLICED IN A PANEL OVER EXPANSION JOINTS.
10. ENDS OF TUBE SECTIONS SHALL BE SAWED OR MILLED.
11. GRIND ALL EDGES SMOOTH.
12. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
13. ALL POSTS TO BE PLUMB WHEN PROFILE GRADE EXCEEDS 1.5%. FOR PROFILE GRADE LESS THAN 1.5%, POSTS SHALL BE SET PERPENDICULAR TO GRADE.
14. EACH ANCHOR BOLT TO PROTRUDE A MINIMUM OF 1/4" AND A MAXIMUM OF 1/2" ABOVE NUT.
15. POST FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING. WELD SHALL BE BACK GOUGED ON BACK SIDE. WELD IS THE SAME ON BOTH FLANGES.

S3-PL2 BRIDGE RAILING DETAILS

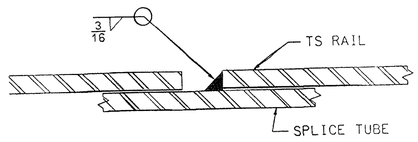
HARWICH



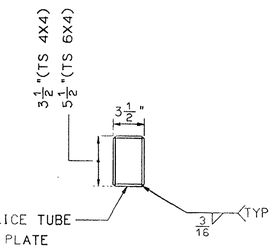
SECTION 1-1
SCALE: 1"=1'-0"

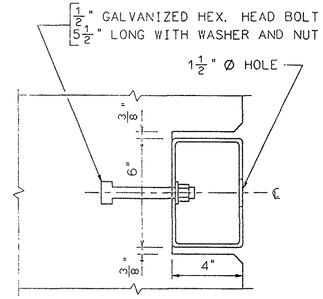


PLAN
SCALE ½" = 1'-0"



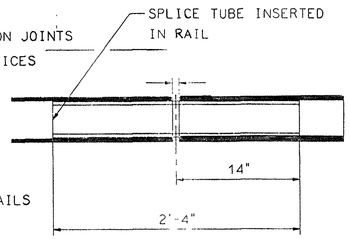
SPLICE DETAIL
NOT TO SCALE





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

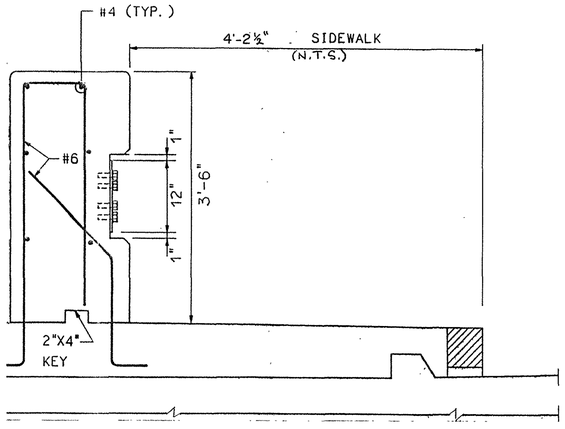
2" @ 70° F AT BRIDGE EXPANSION JOINTS
¾" @ 70° F AT OTHER RAIL SPLICES



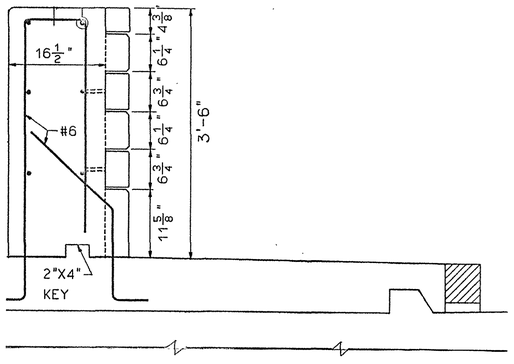
TYPICAL SPLICE
SCALE: 1½" = 1'-0"

NOTE:
END POSTS SHALL BE THREATED WITH CONCRETE PENETRANT.

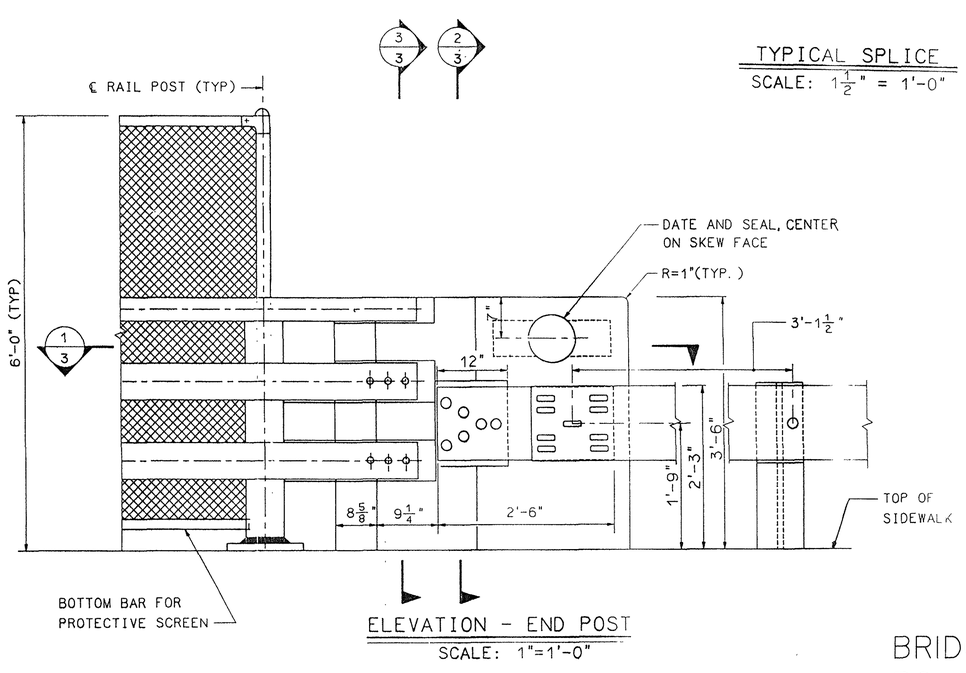
NOTE
PROVIDE ½" Ø DRAIN HOLES IN LOW END OF ALL RAILS CLEAR OF SPLICE TUBE



SECTION 2-2
SCALE 1"= 1'-0"

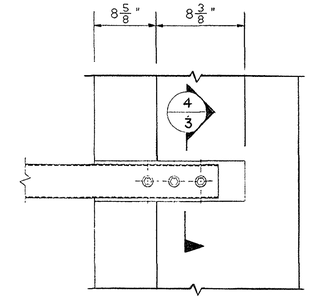


SECTION 3-3
SCALE 1"= 1'-0"

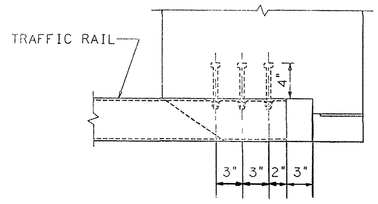


ELEVATION - END POST
SCALE: 1"=1'-0"

NOTE
RAIL POST SPACING 6'-6" MAX



ELEVATION
SCALE: 1½"=1'-0"

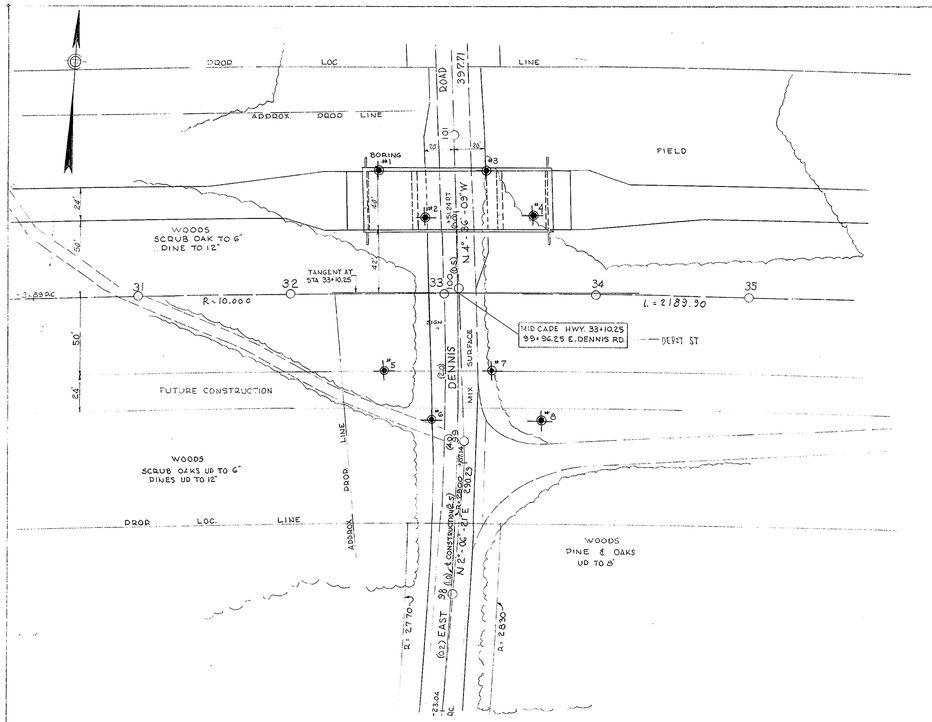


PLAN
SCALE: 1½"=1'-0"

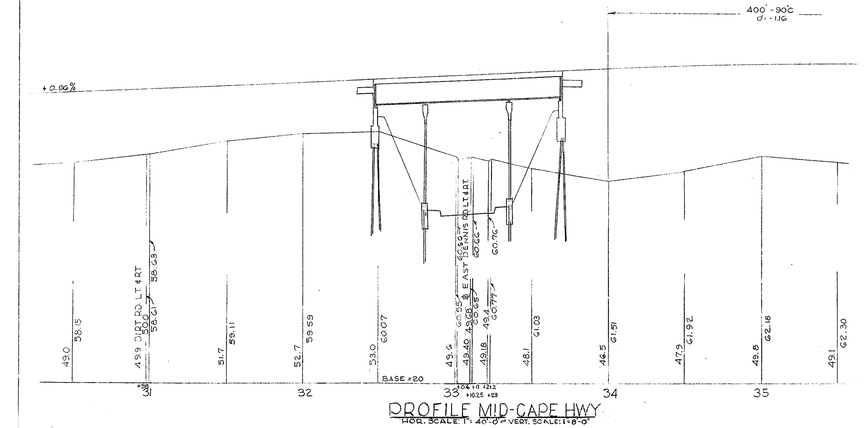
END POST-LOCAL ROAD
RAIL ATTACHMENT

BRIDGE H-10-14
ROUTE 137 / ROUTE 6
SHEET 3 OF 3

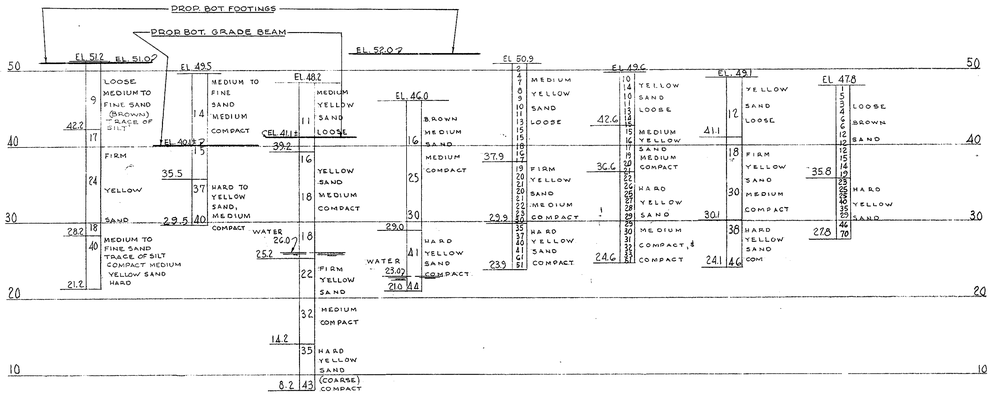
DUB ROAD DIV. NO	STATE	FED. AID PROJ. NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
1	MASS.	F 328(9)		104	1225



KEY PLAN
SCALE: 1" = 200'-0"



PROFILE MID-CAPE HWY
HOR. SCALE: 1" = 40'-0" VERT. SCALE: 1" = 8'-0"

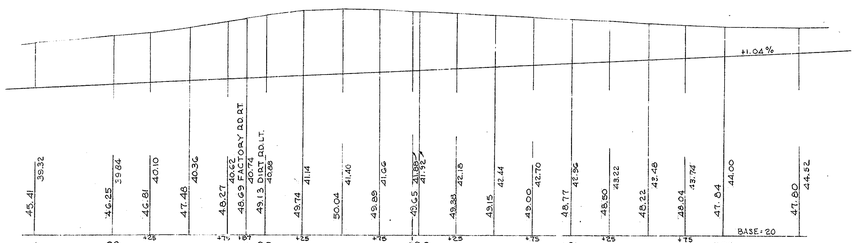


BORING DATA

SCALE: 1"=8'-0" - BORINGS TAKEN NOVEMBER, 1954 BY AMERICAN DRILLING CO., INC.

BORING NOTES

LOCATION OF BORINGS SHOWN ON KEY PLAN THUS —⊕— No. 1. 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 BLOWS PER FOOT ON ONE INCH ϕ PIPE PRODUCED BY 30 INCH FALL OF 140 POUND HAMMER. BORING SAMPLES MAY BE SEEN AT THE OFFICE OF THE BRIDGE ENGINEER, MR J.C RUNDLETT, ROOM 609, 100 NASHUA ST, BOSTON, MASS.



PROFILE EAST DENNIS ROAD
HOR. SCALE: 1" = 40'-0" VERT. SCALE: 1" = 8'-0"

GENERAL NOTES

DATE & SEAL

DATE TO BE CUT THROUGH STEEL PLATE; PLATE TO BE WELDED TO BRIDGE RAILS AT NORTHEASTERLY AND SOUTHWESTERLY CORNERS OF BRIDGE, AS SHOWN IN DETAIL ON SHEET No 4. SEAL TO BE FURNISED BY THE COMMONWEALTH.

DESIGN:

ACCORDING TO SPECIFICATIONS OF AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS (1953 ED) FOR H 20-44 LOADING

BENCH MARK:

B.M. #1 STA 33+29 RT 13' RR SPIKE 10" PINE EL. 49.56 SEA LEVEL DATUM OF 1929

REINFORCEMENT:

ALL BARS SHALL HAVE DEFORMATIONS CONFORMING TO A.S.T.M. DESIGNATION A305. UNLESS OTHERWISE SHOWN ON 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.

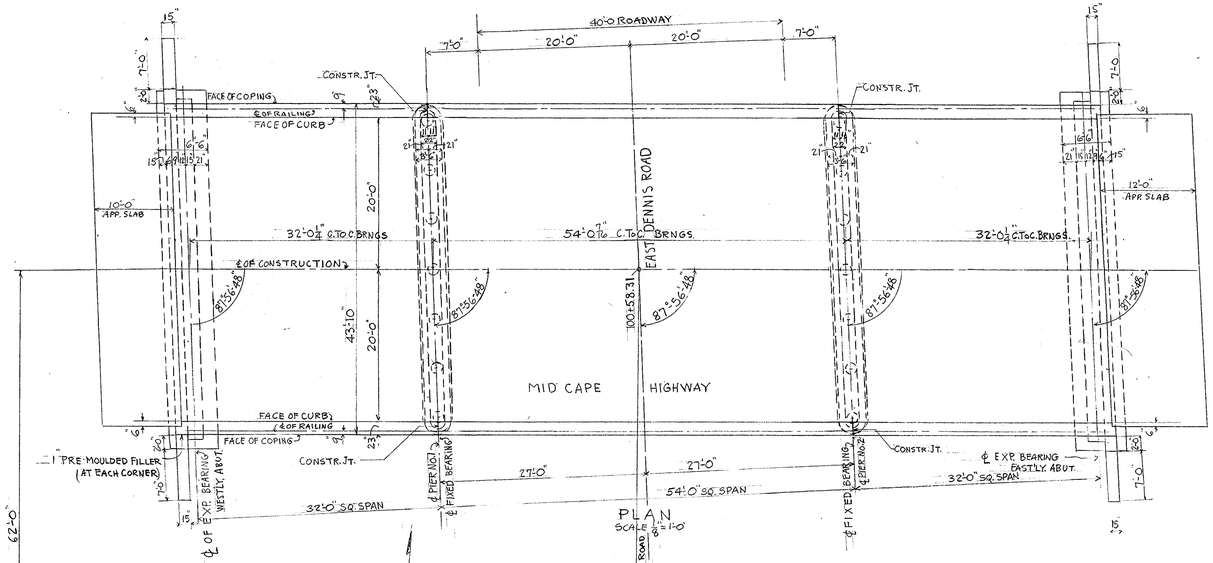
ESTIMATED QUANTITIES
(NOT GUARANTEED)

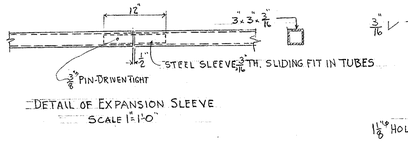
BRIDGE EXCAVATION	210 CU. YDS.
CLASS B ROCK EXCAVATION	5 CU. YDS.
CLASS A CEM. CONC. MASONRY	50 CU. YDS.
CLASS B CEM CONC MASONRY	162 CU. YDS.
CLASS D CEM. CONC. MASONRY	140 CU. YDS.
STEEL REINF. FOR STRUCTURES	51,000 POUNDS
STRUCTURAL STEEL	96,800 POUNDS
BITUMINOUS DAMP-PROOFING	160 SQ. YDS.
BRIDGE RAILINGS	242 LIN. FT.
12" ϕ CAST-IN-PLACE CONCRETE PILES	600 LIN. FT.
16" ϕ CAST-IN-PLACE CONCRETE PILES	500 LIN. FT.
GRANITE CURB-TYPE VA5 STR. (6"×9¾")	244 LIN. FT.

DES J.R.B.	4-23-55	ISSUED FOR CONSTRUCTION
DR. J.R.B. MST	THE COMMONWEALTH OF MASSACHUSETTS	
CHK B.F.J.	PROPOSED BRIDGE	
APPROVED FOR	HARWICH	
DES —	MID-CAPE HIGHWAY STA 33+	
ARCH. —	OVER EAST DENNIS ROAD ← DEPOT ST	
SPECS —	SCALES AS NOTED	
	OFFICE OF DEPARTMENT OF PUBLIC WORKS 100 NASHUA ST — BOSTON, MASS APRIL 1955	
	J.C. Rundlett BRIDGE ENGINEER	H. G. Gray CHIEF ENGINEER

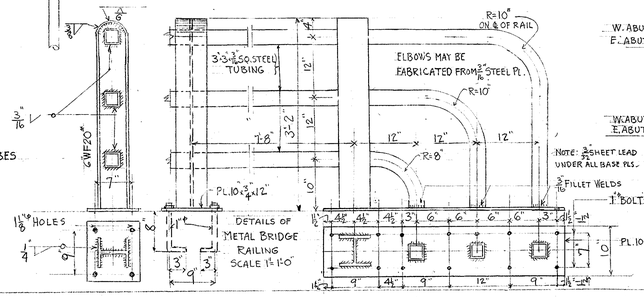
SHEET 1 OF 4 SHEETS BRIDGE No H-10-16

PUB. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	F 328(5)		105	1225

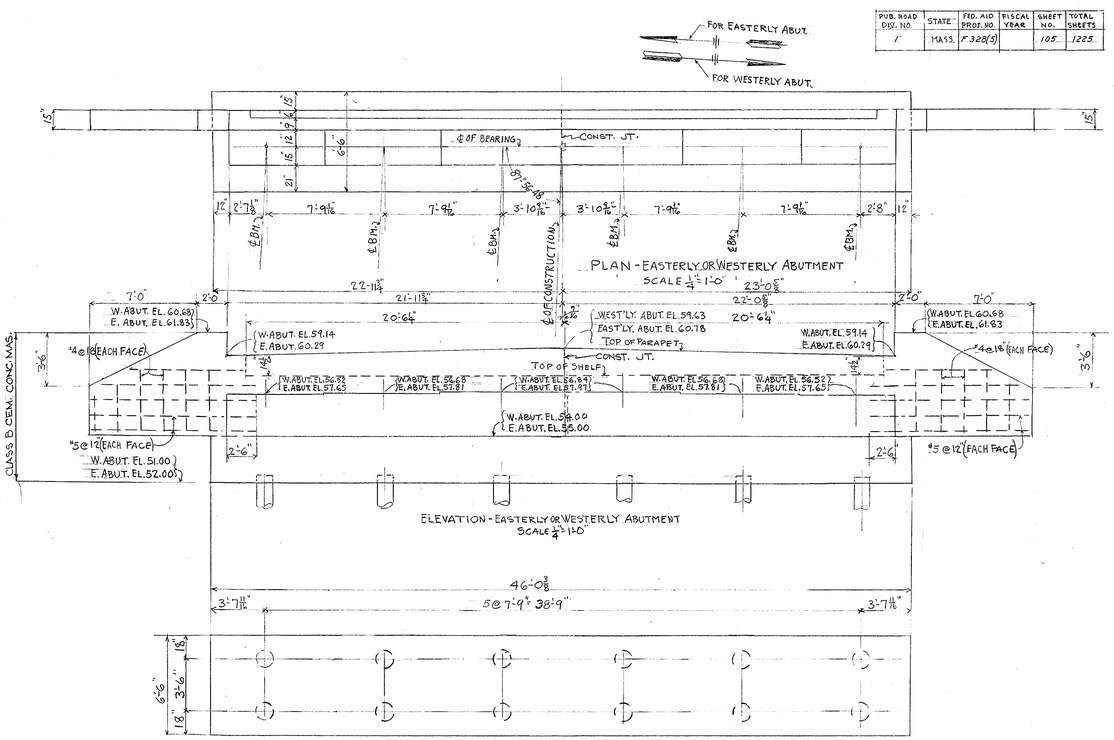




DETAIL OF EXPANSION SLEEVE
SCALE 1" = 1'-0"

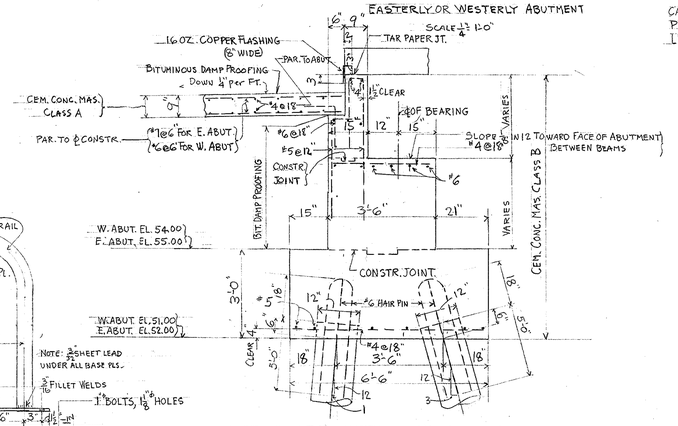


DETAILS OF METAL BRIDGE RAILING
SCALE 1" = 1'-0"



PILING PLAN
EASTERLY OR WESTERLY ABUTMENT
SCALE ¼" = 1'-0"

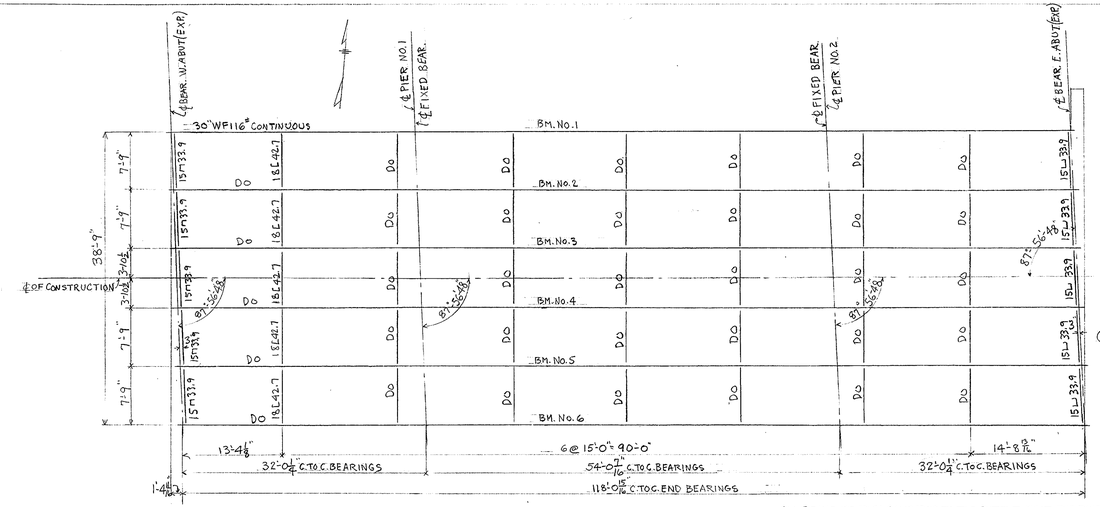
NOTE:
CAST IN PLACE CONCRETE PILES
PILES SHALL BE DRIVEN TO A CAPACITY OF NOT LESS THAN 30 TONS.



SECT. THRU EASTERLY OR WESTERLY ABUTMENT
SCALE ½" = 1'-0"

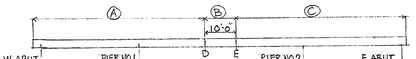
DATE	DESCRIPTION
4-23-55	ISSUED FOR CONSTRUCTION
	USE ONLY PRINTS OF LATEST DATE

PUB. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	F 328(9)		106	1225



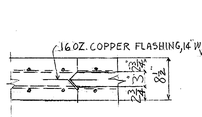
STRUCTURAL STEEL LAYOUT
SCALE 1/8" = 1'-0"

ALL BEAMS ARE TO BE CAMBERED TO THE EXTENT THAT THE BRIDGE DECK UNDER FULL DEAD LOAD WILL FOLLOW AS NEARLY AS PRACTICABLE THE DESIGN PROFILE, AND IN NO CASE WITH LESS CAMBER THAN IS LIKELY TO REMAIN PERMANENT. THE PROPOSED CAMBER DIAGRAM SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

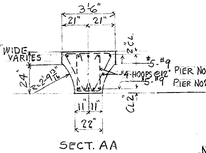


POURING SEQUENCE FOR DECK CONCRETE

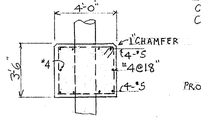
PLACE CONCRETE IN SECTION (A) & (C) SIMULTANEOUSLY STARTING AT W. ABUT. FOR SECTION (A) AND AT POINT E FOR SECT. (C) PROCEED AT A UNIFORM RATE TOWARD POINT D AND E ABUT. RESPECTIVELY. PLACE CONCRETE IN SECTION (B) NO EARLIER THAN TWO FULL DAYS AFTER PLACING CONCRETE IN SECIONS (A) & (C).



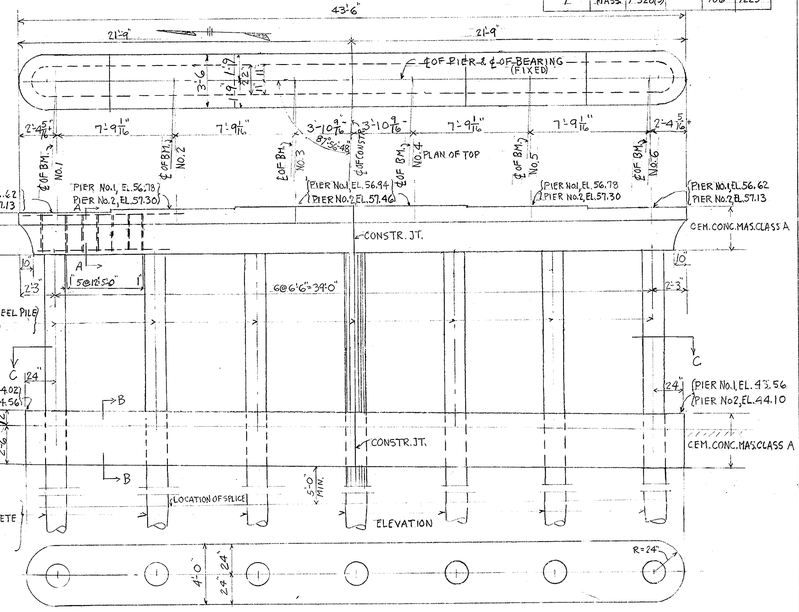
CONSTRUCTION JOINT DETAIL IN SLAB
SCALE 1" = 1'-0"



SECT. AA
SCALE 1/2" = 1'-0"

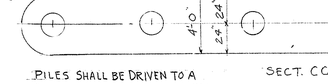


SECT. BB
SCALE 1/2" = 1'-0"

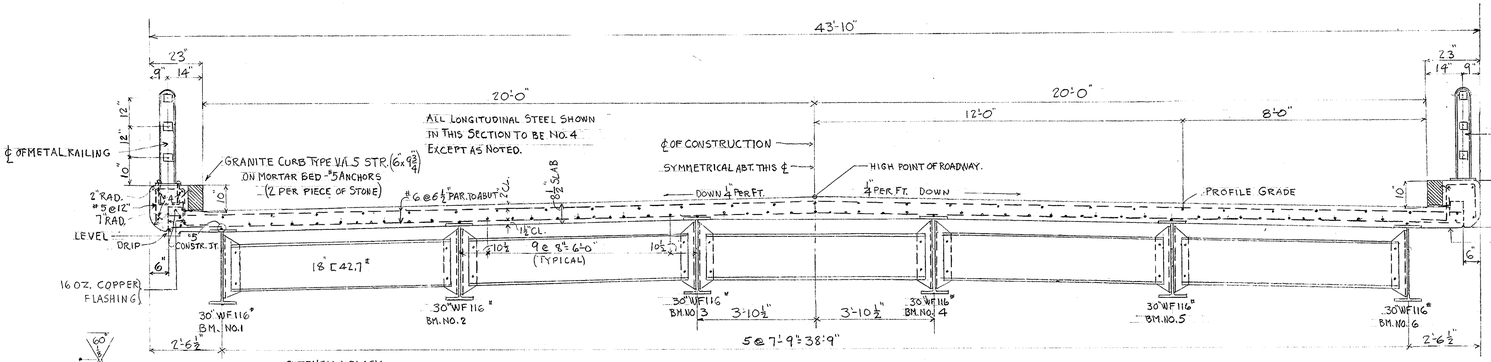


16" DIA. FLUTED STEEL PILE FILLED WITH CLASS D CONCRETE CAST IN PLACE TAPERED

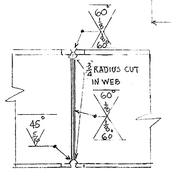
PILES SHALL BE DRIVEN TO A CAPACITY OF NOT LESS THAN 50 TONS.



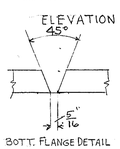
SECT. CC



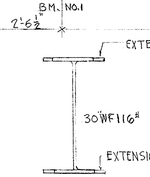
CROSS SECTION
SCALE 1/2" = 1'-0"



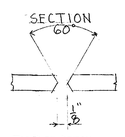
ELEVATION



BOTT. FLANGE DETAIL

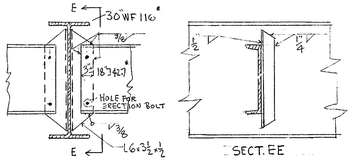


SECTION

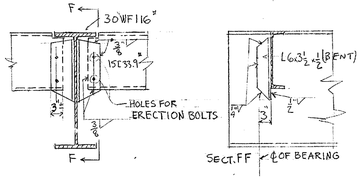


TOP FLGE. DETAIL
WEB DETAIL

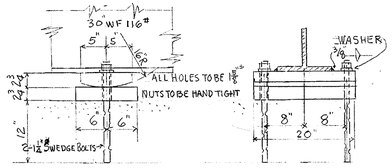
WELDED STRINGER SPLICE AT PIER No.2
ONLY ONE SPLICE PER STRINGER



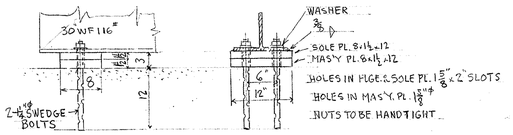
WELDED DIAPHRAGM CONNECTION
SCALE 3/4" = 1'-0"



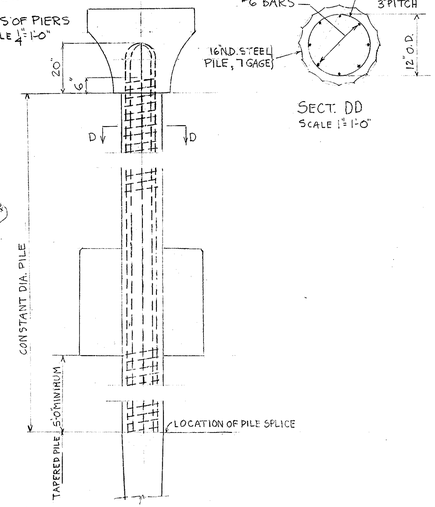
WELDED END DIAPHRAGM CONNECTION
SCALE 3/4" = 1'-0"



DETAIL OF BEARING AT PIERS
SCALE 1" = 1'-0"

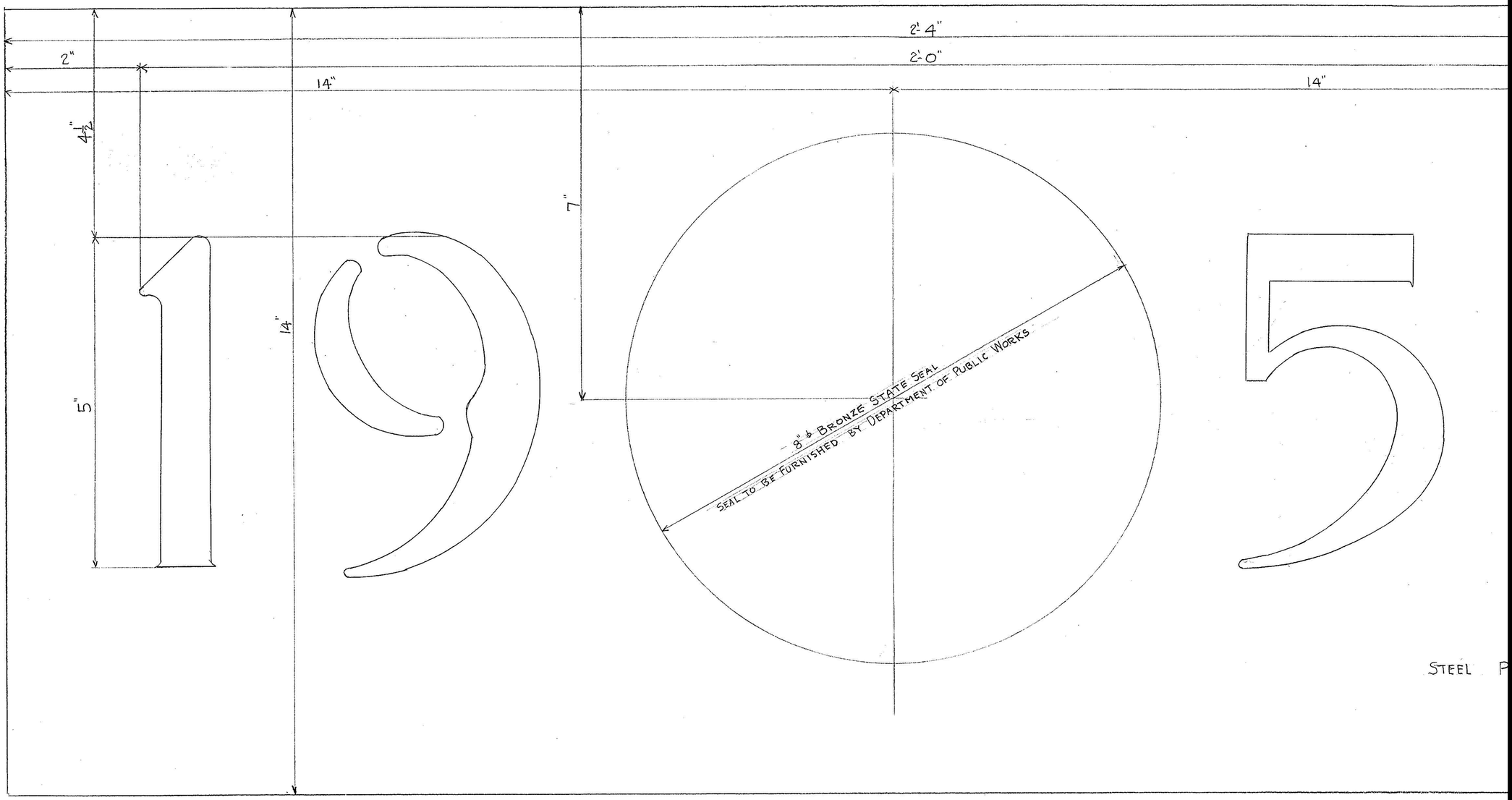


DETAIL OF BEARING AT ABUTMENTS
SCALE 1" = 1'-0"



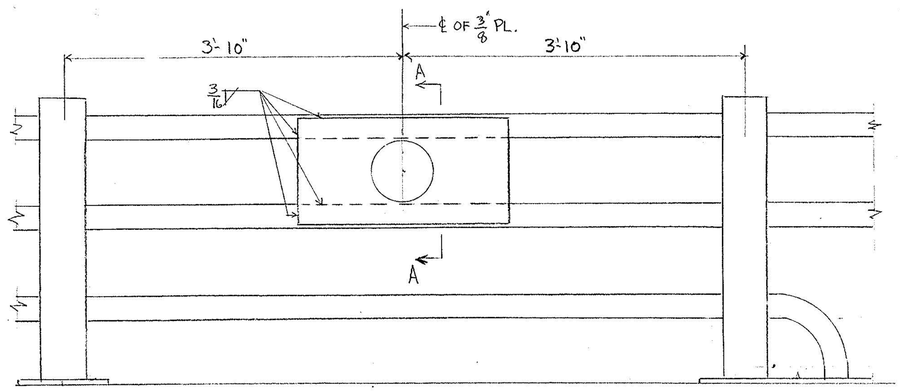
VERT. SECT. THRU PILE
SCALE 1/2" = 1'-0"

DATE	DESCRIPTION
4-23-55	ISSUED FOR CONSTRUCTION
	USE ONLY PRINTS OF LATEST DATE



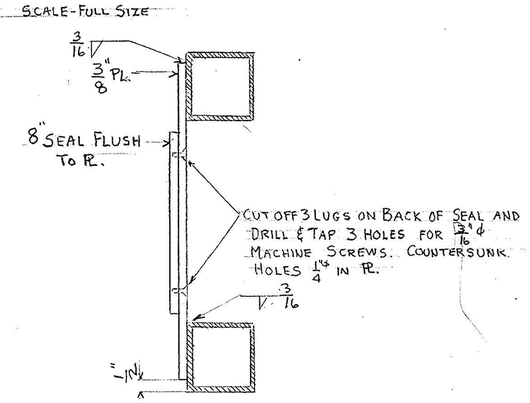
STEEL P

NOTE: NUMERALS BURNED THRU
AND GROUND SMOOTH TO EXA
AND DIMENSIONS. PL WELDED TO

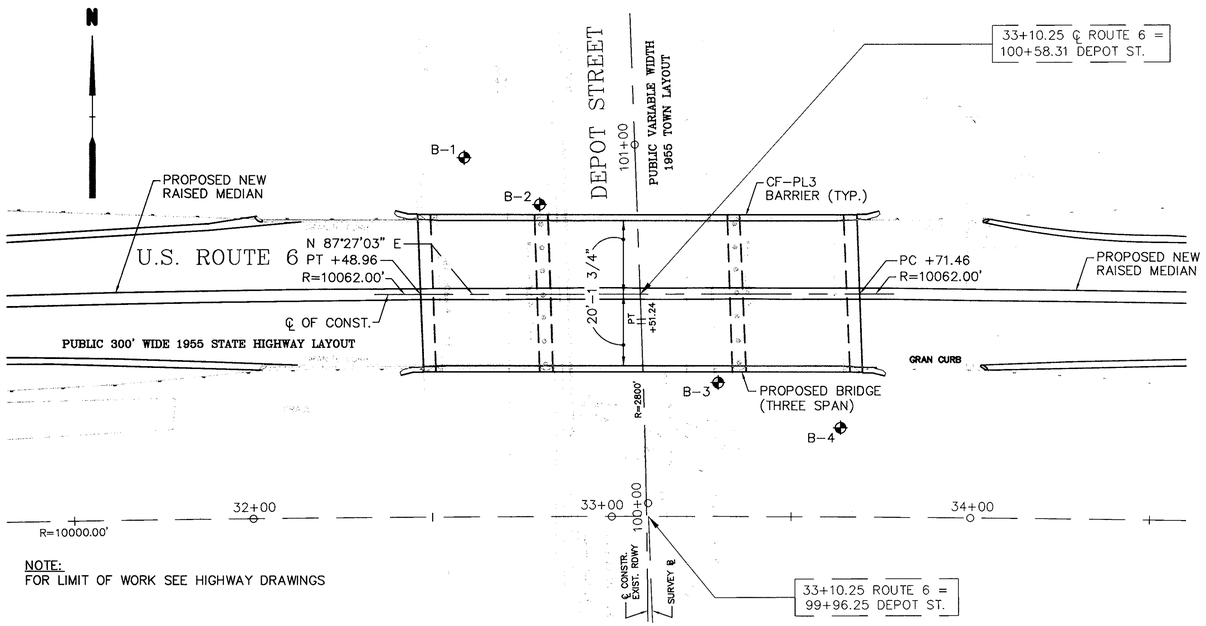


LOCATION OF DATE & SEAL
NORTHEASTERLY & SOUTHWESTERLY CORNERS
SCALE 1½"=1'-0"

DETAIL OF DATE & SEAL
SCALE-FULL SIZE



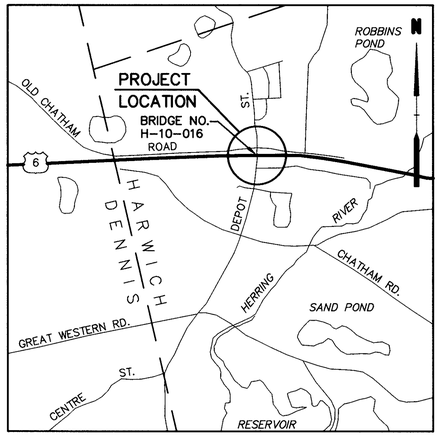
SECTION A-A
SCALE 3"=1'-0"



NOTE:
FOR LIMIT OF WORK SEE HIGHWAY DRAWINGS

PLAN OF PROPOSED BRIDGE

SCALE: 1"= 20'-0"



PROJECT LOCUS MAP

NOT TO SCALE

ESTIMATED QUANTITIES

NOT GUARANTEED

ITEM	UNIT	QUANTITY
DEMOLITION OF BRIDGE STRUCTURE NO. H-10-016	L.S.	1
BRIDGE EXCAVATION	C.Y.	80
CLASS I BITUMINOUS CONCRETE PAVEMENT TYPE I-1	TON	47
CLASS I DENSE BINDER COURSE FOR BRIDGES	TON	47
ANCHOR SUPPORT FOR TEMPORARY PRECAST MEDIAN BARRIER	EA	10
BRIDGE STRUCTURE NO. H-10-016	L.S.	1

HARWICH

ROUTE 6 OVER DEPOT STREET

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	N.F.A.	2001	13	26
PROJECT FILE NO. 600756				

BRIDGE NO. H-10-016

GENERAL NOTES

BENCH MARKS:
BENCH MARK #1 STONE BOUND/ESCUTCHEON PIN IN LEAD PLUG ELEV. = 46.24

DESIGN:
IN ACCORDANCE WITH THE 1992 SPECIFICATIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) FIFTEENTH EDITION WITH CURRENT INTERIM SPECIFICATIONS THROUGH 1995, FOR HS20-44 LOADING.

DATUM ELEVATIONS:
ALL ELEVATIONS REFER TO N.G.V.D. (NATIONAL GEODETIC VERTICAL DATUM) FORMERLY REFERED TO AS SEA LEVEL DATUM OF 1929.

SCALES:
SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALES BY 2 FOR 1/2 SIZE PRINTS (11" x 18").

UNSUITABLE MATERIAL:
ALL UNSUITABLE MATERIALS SHALL BE REMOVED WITHIN THE LIMITS OF THE EXCAVATIONS OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.

ANCHOR BOLTS:
ALL ANCHOR BOLTS SHALL BE SET BY TEMPLATE BEFORE THE CONCRETE IS PLACED. ANCHOR BOLTS SHALL BE ASTM A449, GALVANIZED.

REINFORCEMENT:
ALL REINFORCING STEEL BARS SHALL BE DEFORMED BARS CONFORMING TO THE REQUIREMENTS OF ASTM A615 GRADE 60. UNLESS OTHERWISE SHOWN ON THE PLANS, ALL #4 BARS SHALL BE LAPPED 24" AND ALL #5 BARS SHALL BE LAPPED 30". FOR HORIZONTAL BARS WITH 12" OR MORE OF CONCRETE BELOW THE BAR, THE LAP LENGTHS SHALL BE 33" FOR #4 BARS AND 42" FOR #5 BARS. IF THE ABOVE BARS ARE SPACED 6" OR MORE ON CENTER, THE LAP LENGTH SHALL BE 80% OF THE LAP LENGTH GIVEN ABOVE. ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE PLANS.

STRUCTURAL STEEL:
ALL STURCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M270 (ASTM A709) WITH GRADES AS NOTED ON PLANS OR IN SPECIAL PROVISIONS. ALL WELDING, THE PREPARATION AND ASSEMBLY OF MATERIALS FOR WELDING SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, ALL INTERIM PROVISIONS PUBLISHED BY AASHTO AS OF THE BID OPENING DATE AND THE AASHTO / AWS BRIDGE WELDING CODE (ANSI / AASTO / AWA D1.5).

BORING NOTES:
SEE SHEET 3 OF 10 STRUCTURAL DRAWINGS FOR BORING NOTES. SAMPLES MAY BE SEEN AT THE RESEARCH AND MATERIALS DIVISION (SOIL & FOUNDATION UNIT), MASSACHUSETTS HIGHWAY DEPARTMENT WITH ADVANCE APPOINTMENT.

EPOXY COATED BARS:
ALL REINFORCING BARS AND SUPPORTING DEVICES SHALL BE EPOXY COATED.

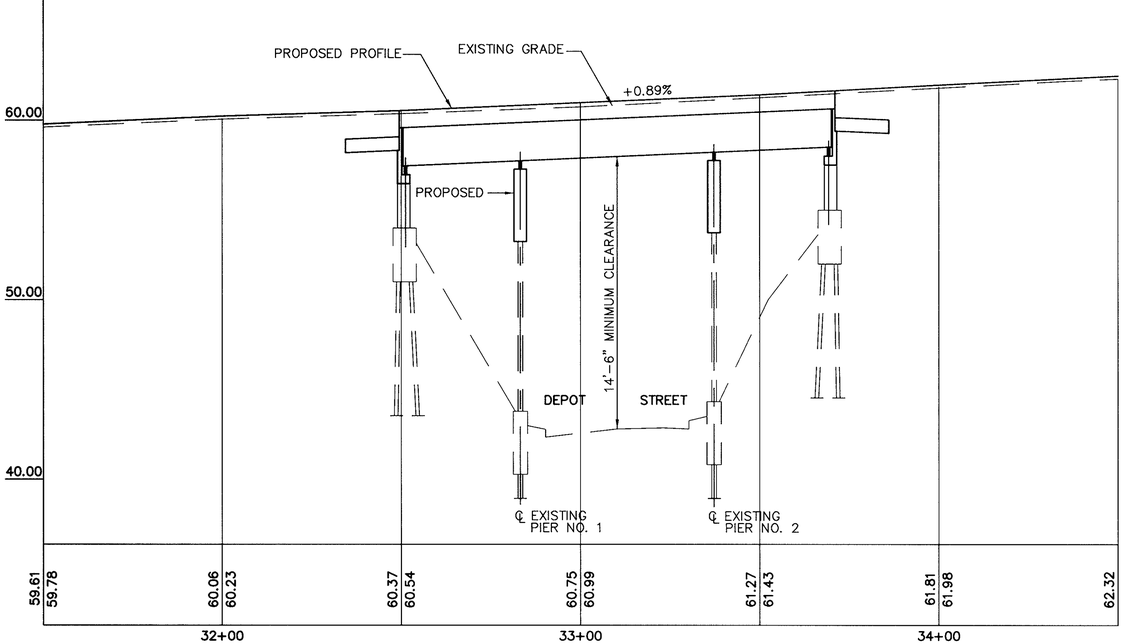
CONCRETE MIXES:

(1)	(2)	(3)
4,000	1 1/2	565
3,500	1 1/2	520
4,000	3/4	610
5,000	3/8	660

(1) 28 DAY COMPRESSIVE STRENGTH (P.S.I.)
(2) MAXIMUM AGGREGATE SIZE (IN.)
(3) CEMENT CONTENT (LB./CU. YD.)
MODIFIED WITH SILICA FUME ADDITIVE

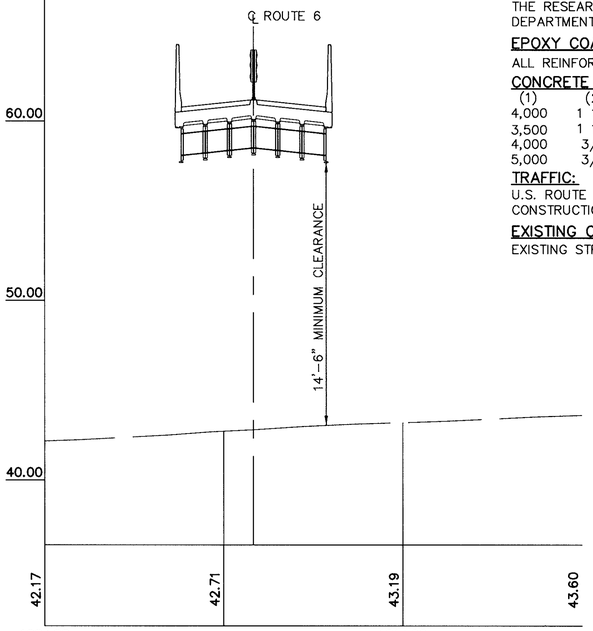
TRAFFIC:
U.S. ROUTE 6, WITHIN THE PROJECT LIMITS, WILL BE OPEN TO TRAFFIC DURING THE STAGE CONSTRUCTION OF THE BRIDGE.

EXISTING CONDITIONS:
EXISTING STRUCTURE IS SHOWN THUS: — — — , EXCEPT WHERE NOTED.



PROFILE U.S. ROUTE 6 OVER DEPOT STREET

HORZ. SCALE: 1" = 20'-0"
VERT. SCALE: 1" = 4'-0"



PROFILE DEPOT STREET

HORZ. SCALE: 1" = 20'-0"
VERT. SCALE: 1" = 4'-0"

FEB 8, 2002 ⚠1 SHEET 9 REVISED
JUNE 2, 2001 ISSUED FOR CONSTRUCTION

PO-SHANG CHEN STRUCTURAL No. 35908 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
Po-Shang Chen

C&C
Consulting Engineers, LLC
214 LINCOLN STREET
BOSTON, MA 02134

MASS HIGHWAY

PROPOSED SUPERSTRUCTURE REPLACEMENT
HARWICH
ROUTE 6
OVER DEPOT STREET

THE COMMONWEALTH OF MASSACHUSETTS
MASSACHUSETTS HIGHWAY DEPARTMENT
10 PARK PLAZA, BOSTON, MASS

Alexander K. Bardow P.E. BRIDGE ENGINEER
Thomas J. Buckley, P.E. CHIEF ENGINEER

SHEET 1 OF 12 SHEETS BRIDGE NO. H-10-016 (46T)

J:\PROJ\HARWICH\20040\HAR1.DWG PLOT 1=20

BORING B–1

STATION 100+97.0 OFFSET 47.5' LT.
GROUND SURFACE ELEVATION 50.7

SAMPLE NO.	SAMPLE DEPTHS	BLOWS PER 6" ON SAMPLER 0–6	6–12	12–18	FIELD IDENTIFICATION OF SOIL	DEPTH	
							(50.7)
1	0'–1.5'	2	2	4	Dry, Loose, Brown, FINE SAND, Some Loam Fill	2'–0"	(48.7)
2	2'–3.5'	7	15	16	Dry, Dense, Yellow FINE SAND, Trace Coarse Sand Fill	4'–6"	(46.2)
3	5'–6.5'	12	13	15	Dry, Medium Dense, Yellow FINE SAND, Trace Fine Gravel	10'–0"	(40.7)
4	10'–11.5'	8	10	17	Wet, Medium Dense, Yellow FINE AND COARSE SAND		
5	15'–16.5'	7	13	10		20'–0"	(30.7)
6	20'–21.5'	15	21	30	Wet, Very Dense, Yellow FINE AND COARSE SAND	24'–0"	(26.7)
7	25'–26.5'	18	22	29	Wet, Very Dense, Yellow FINE SAND	30'–0"	(20.7)
8	30'–31.5'	15	16	20	Wet, Dense, Yellow FINE SAND		
9	35'–36.5'	18	22	23		40'–0"	(10.7)
10	40'–41.5'	10	15	13	Moist, Medium Dense, Yellow FINE SAND		▽ W(8.7)
11	45'–46.5'	12	14	14		48'–6"	(2.2)
12	49'–50.5'	6	12	13	Wet, Medium Dense, Gray INORGANIC SILT	54'–0"	(–3.3)
13	54'–55.5'	32	43	56	Wet, Very Dense, Gray FINE SAND	59'–0"	(–8.3)
14	59'–60.5'	19	21	31	Wet, Very Dense, Yellow FINE AND COARSE SAND		
15	64'–65.5'	28	31	40		65'–6"	(–14.8)

WATER LEVEL: 42'–0"
SIZE OF CASING: NW, DEPTH 30'–0"
STARTED: 6/13/95 9:30 a.m.
FINISHED: 6/14/95 9:30 a.m.
TOTAL HOURS: 7.0
DRILLER: JOSEPH DESIMONE
INSPECTOR: DAIRE LYNCH

NOTE: CHANGED STATION FROM 100+33, OFFSET 55' LEFT, TO STATION 100+97, OFFSET 47.5' LEFT, CHANGE ELEVATION FROM 55.6 TO ELEVATION 50.7, DUE TO ACCESS FOR DRILLING MACHINE.

BORING B–2

STATION 100+84.5 OFFSET 27.0' LT.
GROUND SURFACE ELEVATION 44.0

SAMPLE NO.	SAMPLE DEPTHS	BLOWS PER 6" ON SAMPLER 0–6	6–12	12–18	FIELD IDENTIFICATION OF SOIL	DEPTH	
							(44.0)
1	0'–1.5'	1	1	3	Dry, Loose, Brown, COARSE SAND, Trace Of Roots	4'–0"	(40.0)
2	5'–6.5'	7	8	10	Dry, Medium Dense, Yellow FINE SAND		
3	10'–11.5'	8	8	10		19'–0"	(25.0)
4	15'–16.5'	12	12	14			▽ W(24.5)
5	20'–21.5'	12	18	19	Wet, Dense Brown Fine SAND, Some Inorganic Silt	25'–0"	(19.0)
6	25'–26.5'	11	11	14	Wet, Medium Dense, Yellow COARSE SAND, Trace Of Inorganic Silt		
7	30'–31.5'	12	14	16		35'–0"	(9.0)
8	35'–36.5'	19	29	33	Wet, Very Dense, Brown COARSE SAND, Trace Of Inorganic Silt	40'–0"	(10.7)
9	40'–41.5'	16	30	29	Wet, Very Dense, Brown FINE SAND, Some Inorganic Silt	44'–0"	(0.0)
10	45'–46.5'	28	30	37	Wet, Very Dense, Gray FINE SAND, Some Inorganic Silt	50'–0"	(–6.0)
11	50'–51.5'	15	15	23	Wet, Dense, Gray, FINE SAND, Some Inorganic Silt	55'–0"	(–11.0)
12	55'–56.5'	12	16	17	Wet, Dense, to Very Dense Brown COARSE SAND, Trace Of Fine Sand, Trace of Inorganic Silt		
13	60'–61.5'	23	39	51			
14	65'–66.5'	32	43	47		70'–0"	(–26.0)
15	70'–71.5'	18	25	29	Wet, Hard, Gray, INORGANIC SILT, Trace Of Fine Sand		
16	75'–76.5'	32	51	67			
17	80'–81.5'	27	30	32			
18	85'–86.5'	17	22	31			
19	90'–91.5'	36	41	50			
20	95'–96.5'	34	36	39			
21	98.5'–100'	45	81	167		100'–0"	(–56.0)

BORING B–3

STATION 100+31.5 OFFSET 21.0' RT.
GROUND SURFACE ELEVATION 42.8

SAMPLE NO.	SAMPLE DEPTHS	BLOWS PER 6" ON SAMPLER 0–6	6–12	12–18	FIELD IDENTIFICATION OF SOIL	DEPTH	
							(42.8)
1	0'–1.5'	2	3	3	Dry, Very Loose, Brown, COARSE SAND, Trace Of Fine Gravel	1–6"	(41.3)
2	1.5'–3'	6	6	6	Dry, Medium Dense, Yellow, COARSE SAND, Trace Of Fine Gravel	5'–0"	(37.8)
3	5'–6.5'	2	2	2	Dry, Loose, Yellow, COARSE SAND	9'–0"	(33.8)
4	10'–11.5'	14	16	20	Dry, Dense, Yellow FINE SAND		
5	15'–16.5'	12	11	23		20'–0"	▽ W(24.8) (22.8)
6	20'–21.5'	10	11	9	Wet, Medium Dense, Yellow FINE SAND, Trace Of Inorganic Silt		
7	25'–26.5'	12	11	13		29'–0"	(13.8)
8	30'–31.5'	19	22	23	Wet, Dense, Yellow FINE SAND, Some Inorganic Silt	35'–0"	(7.8)
9	35'–36.5'	21	31	39	Wet, Very Dense, Yellow, FINE SAND, Some Inorganic Silt	40'–0"	(2.8)
10	40'–41.5'	12	18	18	Wet, Dense, Yellow FINE SAND, Some Inorganic Silt		
11	45'–46.5'	18	21	23		50'–0"	(–7.2)
12	50'–51.5'	24	26	22	Wet, Hard, Gray, INORGANIC SILT, Trace Of Fine Sand	55'–0"	(–12.2)
13	55'–56.5'	24	41	31	Wet, Very Dense, Gray FINE SAND, Trace Of Inorganic Silt		
14	60'–61.5'	25	34	48		65'–0"	(–22.2)
15	65'–66.5'	24	27	30	Wet, Very Dense, Yellow, FINE SAND Trace Of Inorganic Silt	69'–0"	(–26.2)
16	70'–71.5'	48	35	39	Moist, Very Dense, Gray, INORGANIC SILT, Some Clay, Trace of Fine Sand	75'–0"	(–32.2)
17	75'–76.5'	18	21	29	Moist, Hard, Gray, INORGANIC SILT Trace Of Fine Sand		
18	80'–81.5'	16	16	18			
19	85'–86.5'	13	19	44			
19	90'–91.5'	17	52	51			
20	95'–96.5'	31	51	56			
21	98.5'–100'	56	66	68		100'–0"	(–57.2)

HARWICH
ROUTE 6 OVER DEPOT STREET

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	N.F.A.	2001	14	26
PROJECT FILE NO. 600756				

BORING LOG

BORING B–2
WATER LEVEL: 19'–6"
SIZE OF CASING: NW, DEPTH 35'–0"
STARTED: 6/7/95 1:00 p.m.
FINISHED: 6/9/95 10:30 a.m.
TOTAL HOURS: 14.0
DRILLER: FRED WINGERTER
INSPECTOR: DAIRE LYNCH

NOTE: CHANGED STATION FROM 100+86, OFFSET 27' LEFT TO STATION 100+84.5, OFFSET 27' LEFT, DUE TO EMBANKMENT. CHANGED ELEVATION FROM 44.2 TO ELEVATION 44.0

BORING B–3
WATER LEVEL: 18'–0"
SIZE OF CASING: NW, DEPTH 35'–0"
STARTED: 6/5/95 9:30 a.m.
FINISHED: 6/7/95 12:00 p.m.
TOTAL HOURS: 18.0
DRILLER: FRED WINGERTER
INSPECTOR: DAIRE LYNCH

NOTE: CHANGED STATION FROM 100+30, OFFSET 27' RIGHT, TO STATION 100+31.5, OFFSET 21' RIGHT, DUE TO EMBANKMENT. CHANGED ELEVATION FROM 44.3 TO ELEVATION 42.8

FOR BORING NOTES SEE SHEET 3 OF 12

DATE	DESCRIPTION
JUNE 2, 2001	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

J:\PROJ\HARWICH\20040\HAR2.DWG PLOT 1 = 6

HARWICH

ROUTE 6 OVER DEPOT STREET

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	N.F.A.	2001	15	26
PROJECT FILE NO. 600756				

BORING LOG

BORING B–4

STATION 100+19.5 OFFSET 55.0' RT.
GROUND SURFACE ELEVATION 54.5

SAMPLE NO.	SAMPLE DEPTHS	BLOWS PER 6" ON SAMPLER 0–6	6–12	12–18	FIELD IDENTIFICATION OF SOIL	DEPTH	
							(54.5)
1	0'–1.5'	1	2	2	Dry, Loose, Brown, FINE AND COARSE SAND, Fill	3'–0"	(51.5)
2	3.5'–5'	6	7	10	Dry, Medium Dense, Yellow, FINE AND COARSE SAND, Fill	5'–0"	(49.5)
3	5'–6.5'	10	18	13			
4	10'–11.5'	17	18	19	Dry, Dense, Orange FINE AND COARSE SAND	15'–0"	(39.5)
5	15'–16.5'	12	13	18	Wet, Dense, Yellow FINE AND COARSE SAND	19'–0"	(35.5)
6	20'–21.5'	21	19	30			
7	25'–26.5'	28	41	57	Wet, Very Dense, Yellow, FINE SAND		
8	30'–31.5'	13	28	32			
9	35'–36.5'	13	21	14		35'–0"	(19.5)
10	40'–41.5'	12	19	24			▽ W (14.5)
11	45'–46.5'	21	22	25	Wet, Dense, Yellow, FINE SAND		
12	50'–51.5'	19	22	23			
13	55'–55.5'	13			Moist, Medium Dense, Yellow FINE SAND, Some Inorganic Silt	54'–0"	(0.5)
13A	55.5'–56.5'	18	22			55'–6"	(–1.0)
					Moist, Dense, Yellow, FINE SAND, Some Fine Gravel	58'–6"	(–4.0)
14	60'–61.5'	23	25	31	Moist, Very Dense, Yellow, FINE SAND, Some Fine Gravel	61'–6"	(–7.0)

60
50
40
30
20
10
0
–10
–20

WATER LEVEL: 40'–0"
SIZE OF AUGERS: 3 3/4" I.D., DEPTH 20'–0"
STARTED: 6/14/95 10:00 a.m.
FINISHED: 6/14/95 3:00 p.m.
TOTAL HOURS: 5.0
DRILLER: JOSEPH DESIMONE
INSPECTOR: DAIRE LYNCH

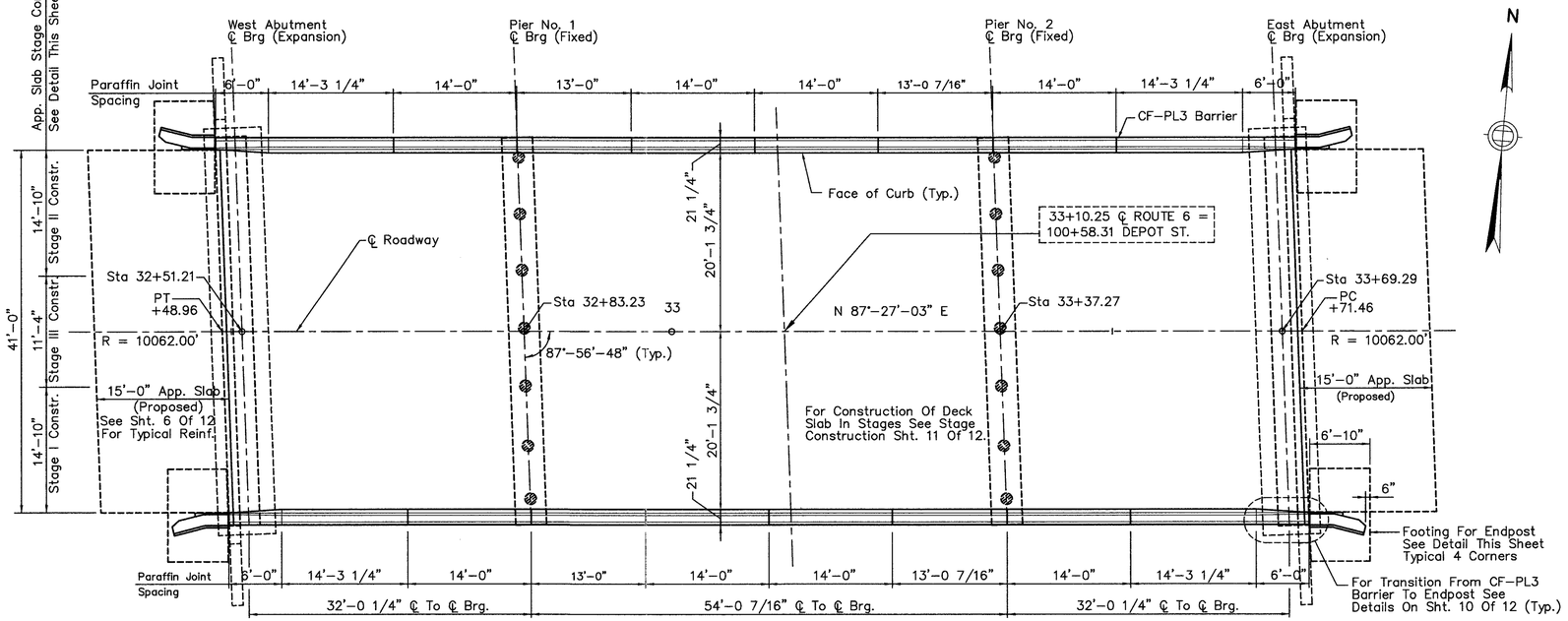
NOTE: CHANGED STATION FROM 100+83, OFFSET 55' RIGHT, TO STATION 100+19.5, OFFSET 55' RIGHT, DUE TO OBTAINING ACCESS FOR DRILL RIG. CHANGED ELEVATION FROM 55.0 TO ELEVATION 54.5.

BORING NOTES:

1. LOCATION OF BORINGS SHOWN ON THE PLAN THUS: B–2 ⊕
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. W = WATER SURFACE BELOW STARTING GRADE IN FEET AT COMPLETION OF BORING WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
4. BLOWS PER 6" ON SAMPLER FIGURES INDICATE THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2" O.D., SPLIT SPOON SAMPLER 6" WITH A 140 POUND WEIGHT FALLING 30".
5. BORING SAMPLES ARE STORED AT A STORAGE FACILITY LOCATED AT 219 WINTHROP AVENUE IN LAWRENCE, MA. THE CONTRACTOR MAY LOOK AT THE SAMPLES OR EXAMINE THE SAMPLES BY CONTACTING MASSHIGHWAY DEPARTMENT GEOTECHNICAL SECTION AT 10 PARK PLAZA, ROOM 6210, BOSTON, MA 02116 AT (617) 973–8836.
6. ALL BORINGS WERE MADE IN JUNE 1995.
7. BORINGS WERE MADE BY CARR DEE CORP., 37 LINDEN STREET, MEDFORD, MA 02155–0001
8. MEAN SEA LEVEL DATUM (1929) IS USED THROUGHOUT (NGVD).
9. THE DEPTHS AS SHOWN ON THE ORIGINAL BORING LOGS HAVE BEEN CONVERTED TO ELEVATIONS BY THE ENGINEER.
10. SAMPLER TYPE: SPLIT SPOON
    SAMPLER OD: 2" ID: 1.375"
    INSIDE LENGTH OF SAMPLER: 24"
    CASING ID: 3 3/4" I.D.
    WEIGHT OF HAMMER: 140 LB
    HAMMER FALL: 30"

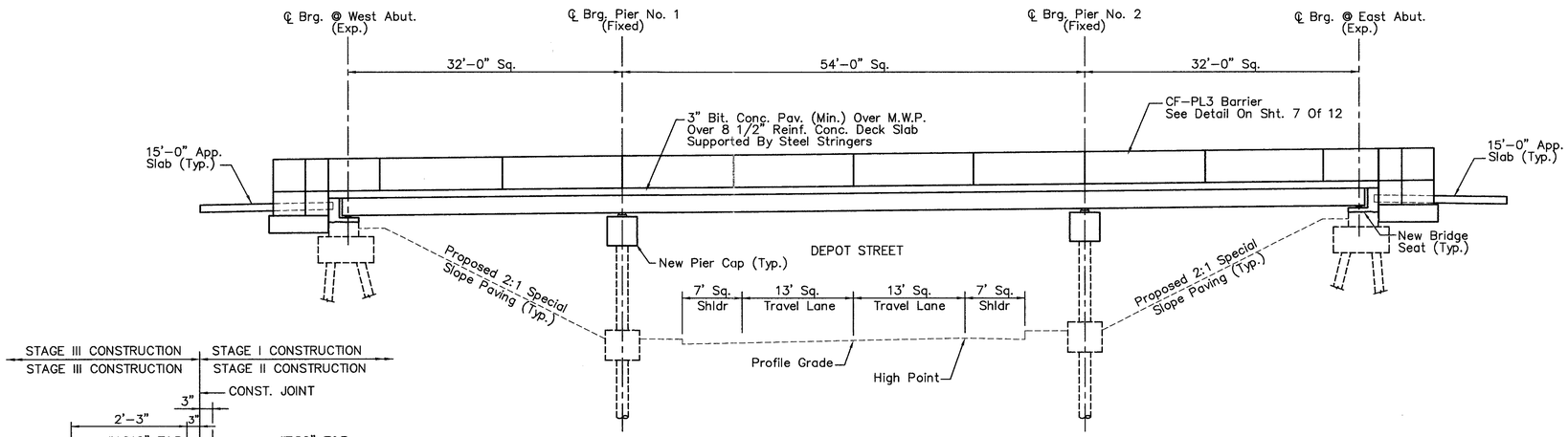
DATE	DESCRIPTION
JUNE 2, 2001	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

J:\PROJ\HARWICH\20040\HAR3.DWG PLOT 1 = 6



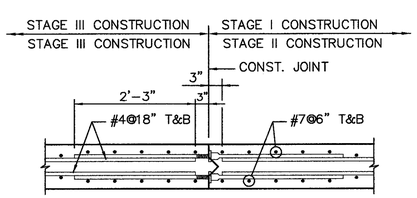
PROPOSED PLAN

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



PROPOSED SQUARE LONGITUDINAL SECTION

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



NOTE: REBAR SPLICE SHALL DEVELOPE A MIN. OF 125% YIELD STRENGTH OF THE BAR.

APPROACH SLAB REBAR SPLICE DETAIL

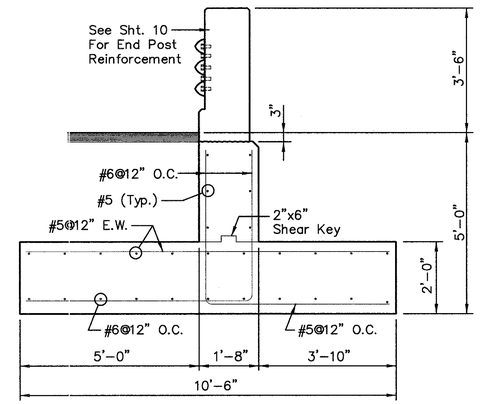
SCALE: 3/4" = 1'-0"

HARWICH

ROUTE 6 OVER DEPOT STREET

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	N.F.A.	2001	16	26
PROJECT FILE NO. 600756				

PLAN AND ELEVATION

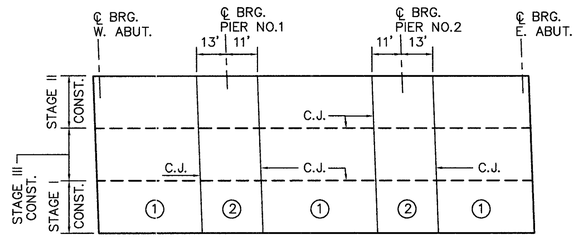


Notes:

1. End Post Reinforcement Not Shown For Clarity.
2. Concrete Below End Post Shall Be 3500 psi, 1 1/2 in, 520 lbs Cement Concrete Masonry.

END POST FOOTING

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



DECK POUR SEQUENCE DIAGRAM

N.T.S.

DECK POUR SEQUENCE NOTES:

1. FOR EACH CONSTRUCTION PHASE THE DECK SHALL BE PLACED IN ACCORDANCE WITH THE DECK POUR SEQUENCE DIAGRAM.
2. THE THREE SLAB AREA (1) POURS SHALL BE PLACED SIMULTANEOUSLY OR CONSECUTIVELY WITH THE CONCRETE REMAINING PLASTIC THROUGHOUT PLACEMENT.
3. A 24 HOUR CURING PERIOD SHALL BE OBSERVED BETWEEN POUR (1) AND POUR (2)
4. AN ALTERNATE SEQUENCE MAY BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL AT LEAST TWO WEEKS PRIOR TO CONCRETE PLACEMENT.

DATE	DESCRIPTION
JUNE 2, 2001	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

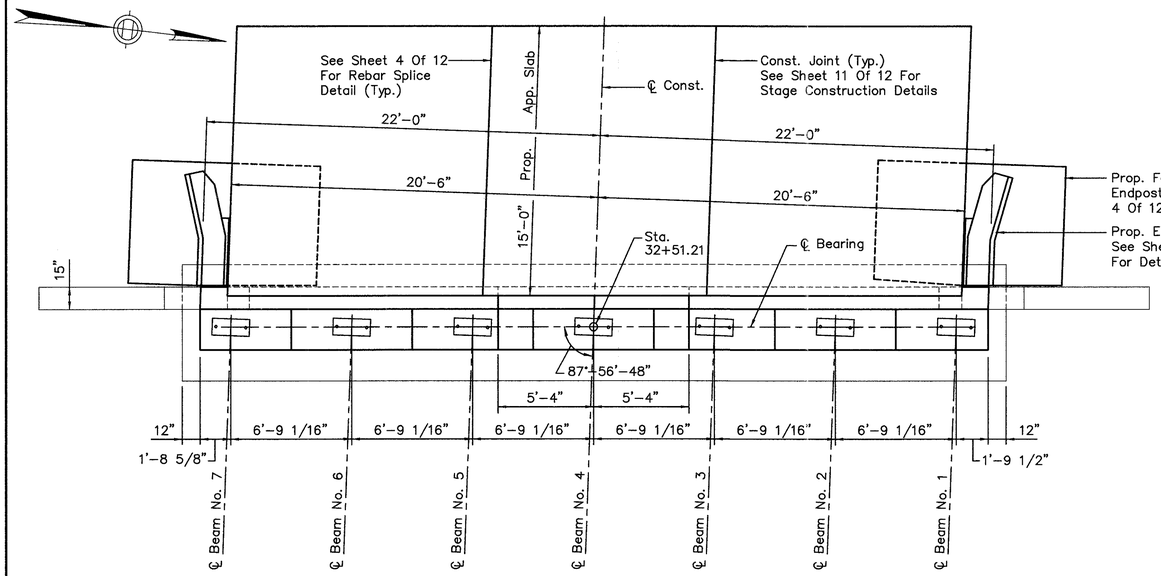
J:\PROJ\HARWICH\20040\HAR4.DWG PLOT 1 =96

HARWICH

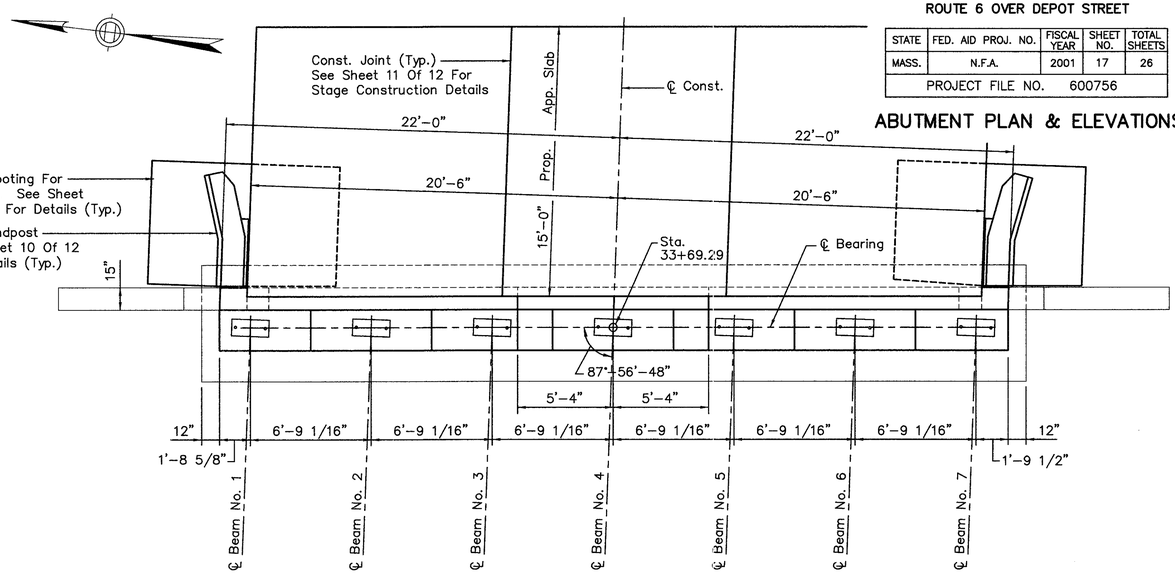
ROUTE 6 OVER DEPOT STREET

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	N.F.A.	2001	17	26
PROJECT FILE NO. 600756				

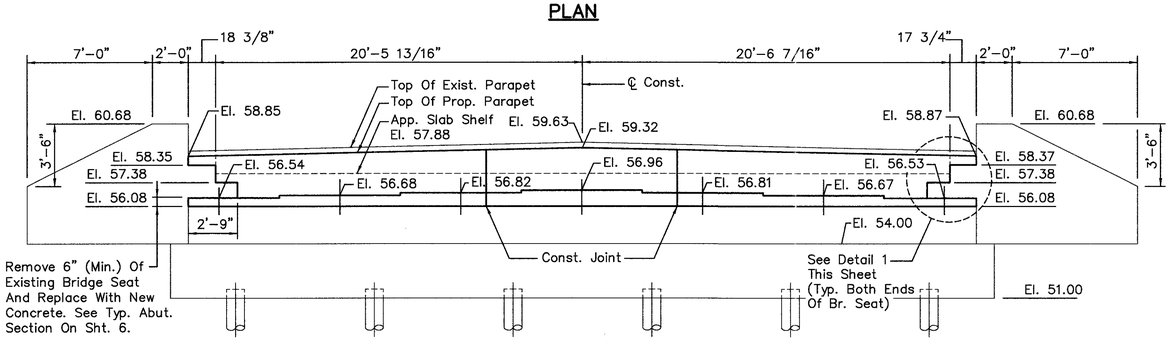
ABUTMENT PLAN & ELEVATIONS



PLAN



PLAN

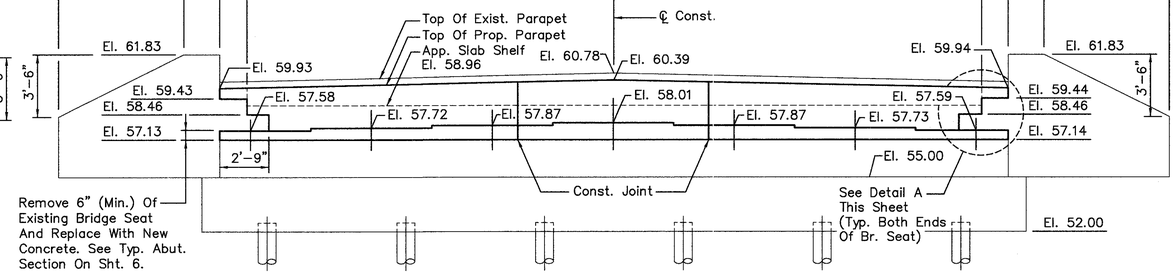


NOTE: ENDPOSTS NOT SHOWN IN ELEVATION FOR CLARITY

ELEVATION

REHABILITATION WEST ABUTMENT

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

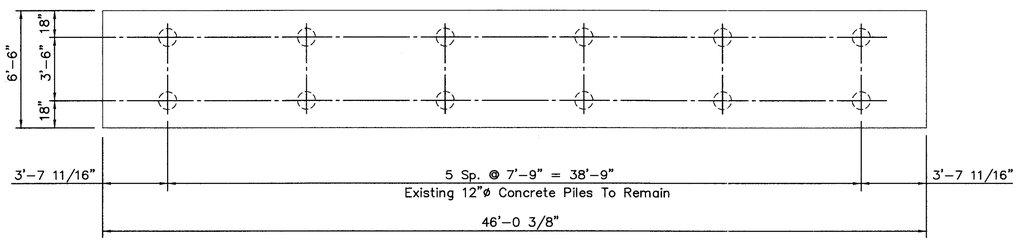


NOTE: ENDPOSTS NOT SHOWN IN ELEVATION FOR CLARITY

ELEVATION

REHABILITATION EAST ABUTMENT

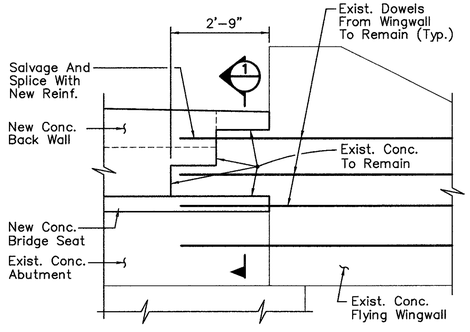
SCALE: 1/4" = 1'-0"



EXISTING PILING PLAN

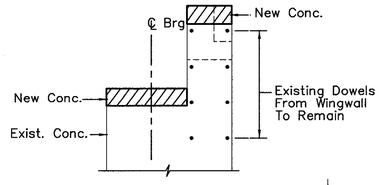
WEST ABUTMENT & EAST ABUTMENT

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



DETAIL A

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

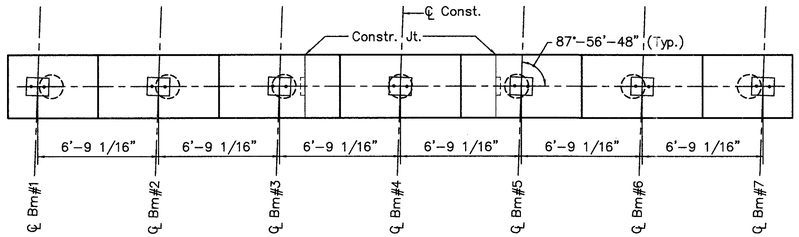


SECTION 1

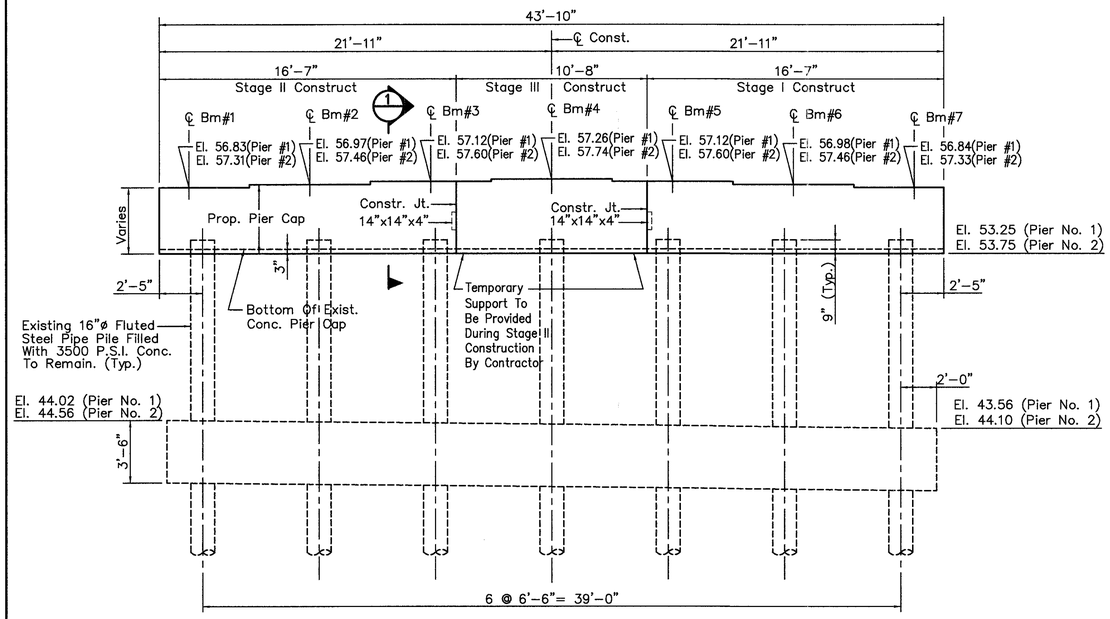
SCALE: 1/2" = 1'-0"

DATE	DESCRIPTION
JUNE 2, 2001	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

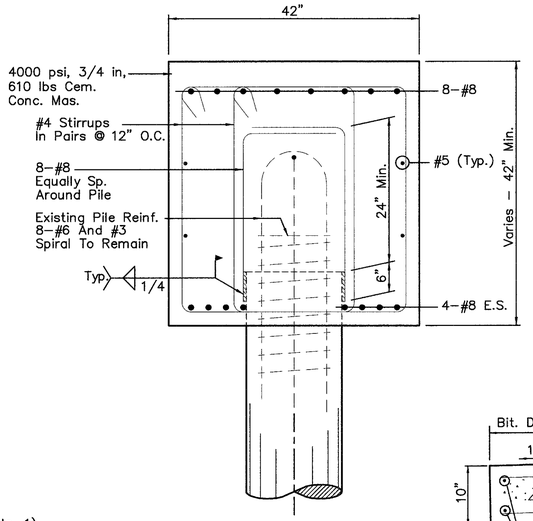
J:\PROJ\HARWICH\20040\HAR5.DWG PLOT 1 = 48



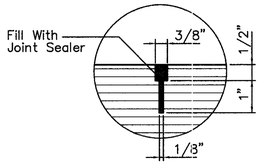
TYPICAL PIER PLAN
SCALE: 1/4" = 1'-0"



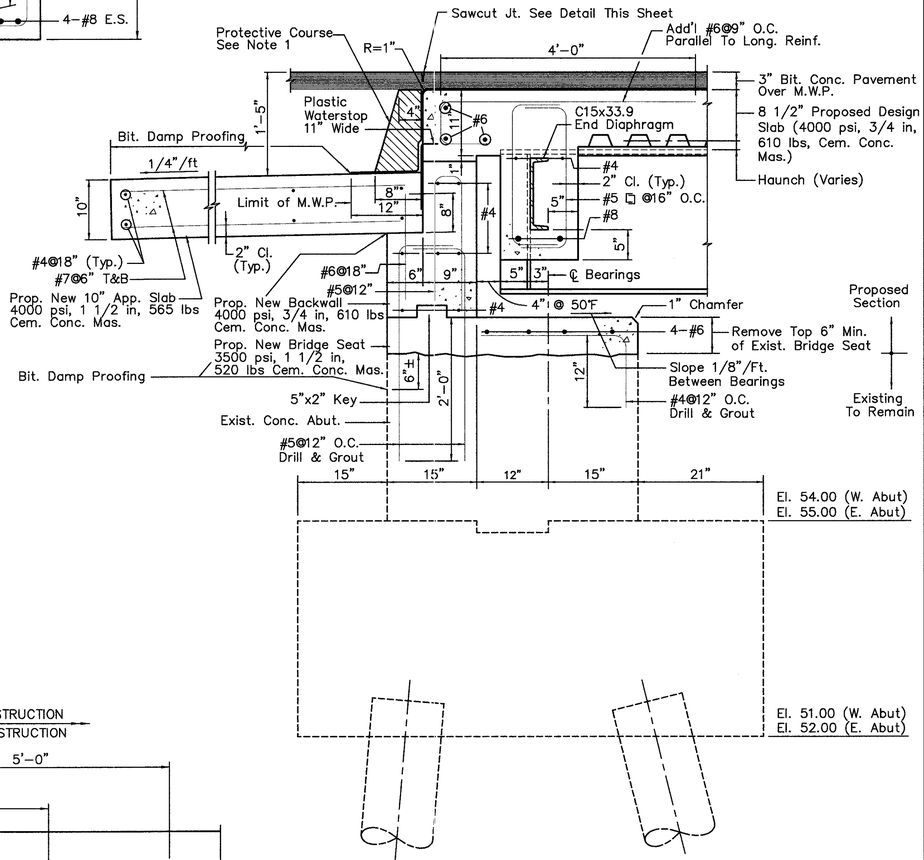
TYPICAL PIER ELEVATION
SCALE: 1/4" = 1'-0"

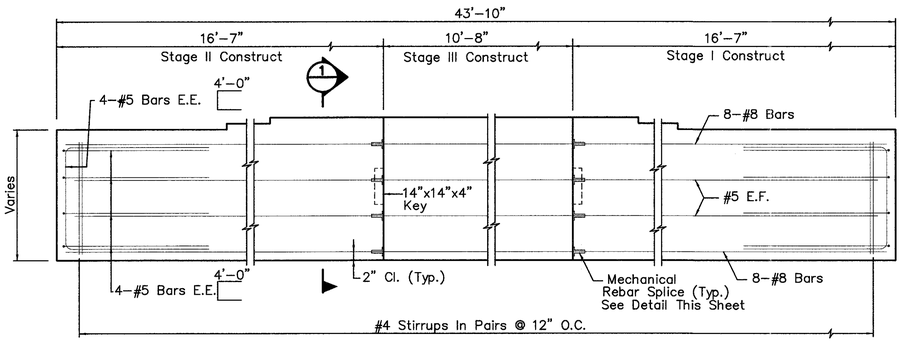


SECTION 1
SCALE: 1" = 1'-0"

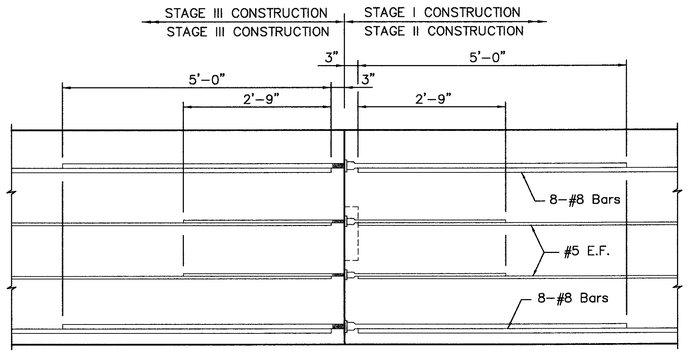


PAVEMENT SAWCUT DETAIL
NOT TO SCALE





PIER CAP ELEVATION
SCALE: 1/2" = 1'-0"



NOTE: REBAR SPLICE SHALL DEVELOP A MIN. OF 125% YIELD STRENGTH OF THE BAR.

REBAR SPLICE DETAIL
SCALE: 3/4" = 1'-0"

NOTES:
1. BRICK OR 8"x16"x2" 4000 psi, 3/4 in, 610 lbs CEMENT CONCRETE MASONRY BLOCKS LAID IN MORTAR, OR POURED IN PLACE 4000 psi, 3/4 in, 610 lbs CEMENT CONCRETE CONCRETE MASONRY.
2. ALL CONCRETE IN ABUTMENTS ABOVE BEAMS SEAT SHALL BE 4000 psi, 3/4 in, 610 lbs CEMENT CONCRETE MASONRY.
3. CLEAR COVER TO ALL REINFORCEMENT TO BE 2" UNLESS OTHERWISE NOTED.

TYPICAL ABUTMENT SECTION
SCALE: 1" = 1'-0"

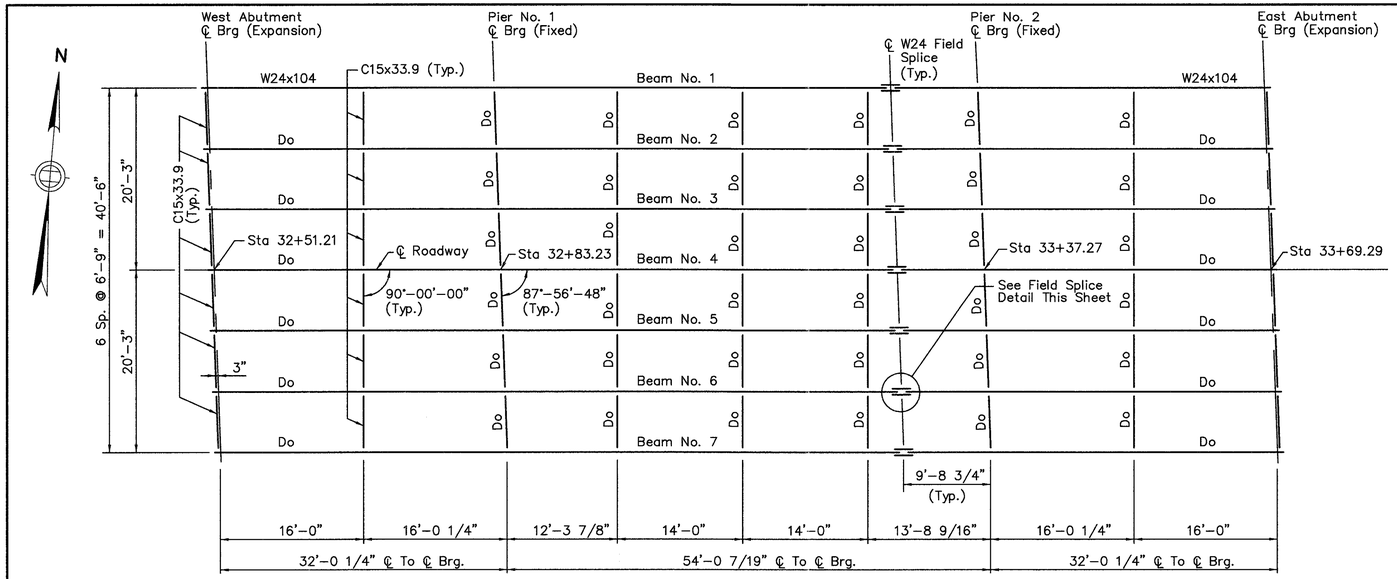
HARWICH
ROUTE 6 OVER DEPOT STREET

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	N.F.A.	2001	18	26
PROJECT FILE NO. 600756				

ABUTMENT & PIER DETAILS

DATE	DESCRIPTION
JUNE 2, 2001	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

J:\PROJ\HARWICH\20040\HAR6.DWG PLOT 1 = 12

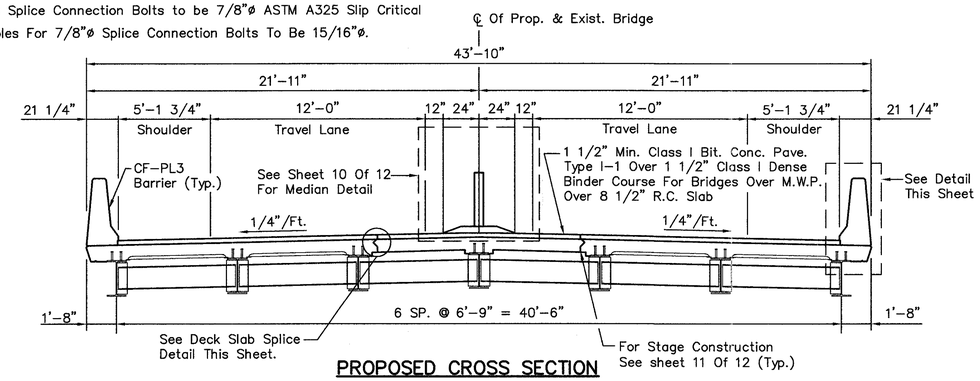


PROPOSED FRAMING PLAN

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

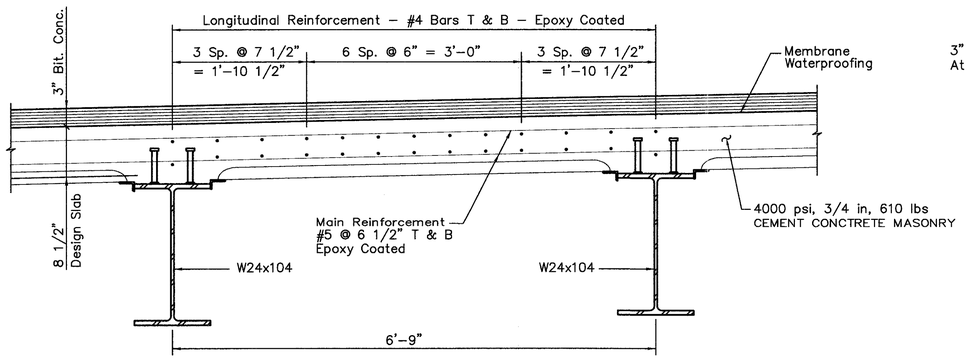
NOTES:

1. All Steel Stringers, Diaphragms, Connection Plates And Splice Plates To Be M 270 Grade 50 W.
2. All Splice Connection Bolts to be 7/8"ø ASTM A325 Slip Critical
3. Holes For 7/8"ø Splice Connection Bolts To Be 15/16"ø.



PROPOSED CROSS SECTION

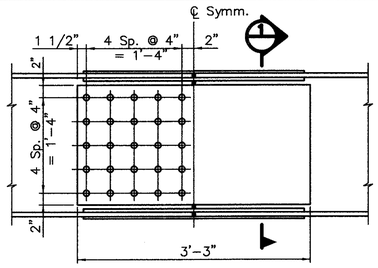
SCALE: 1/4" = 1'-0"



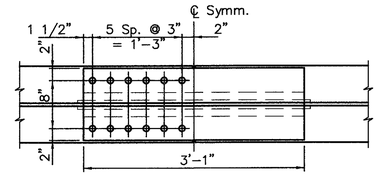
See Stay In Place Form Detail For Clear Cover To Reinforcement

TYPICAL SLAB REINFORCEMENT

SCALE: 1" = 1'-0"



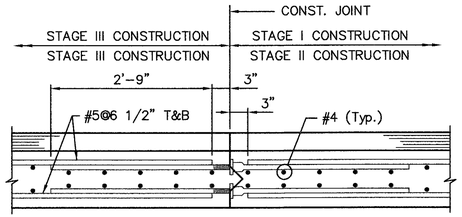
ELEVATION



PLAN

FIELD SPLICE DETAILS

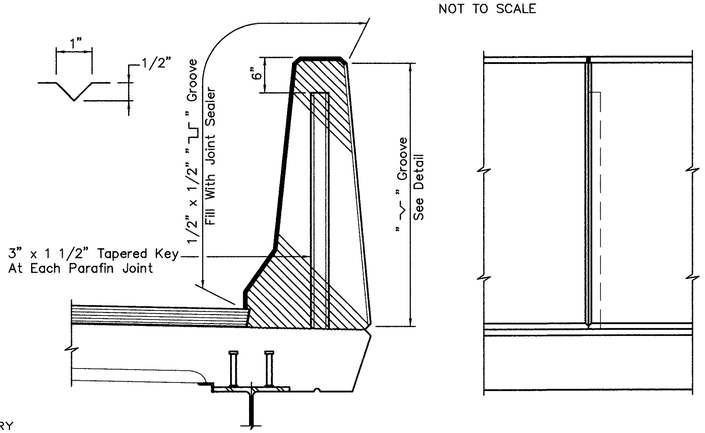
SCALE: 1" = 1'-0"



NOTE: REBAR SPLICE SHALL DEVELOP A MIN. OF 125% YIELD STRENGTH OF THE BAR.

DECK SLAB REBAR SPLICE DETAIL

NOT TO SCALE

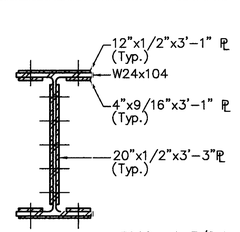


Notes:

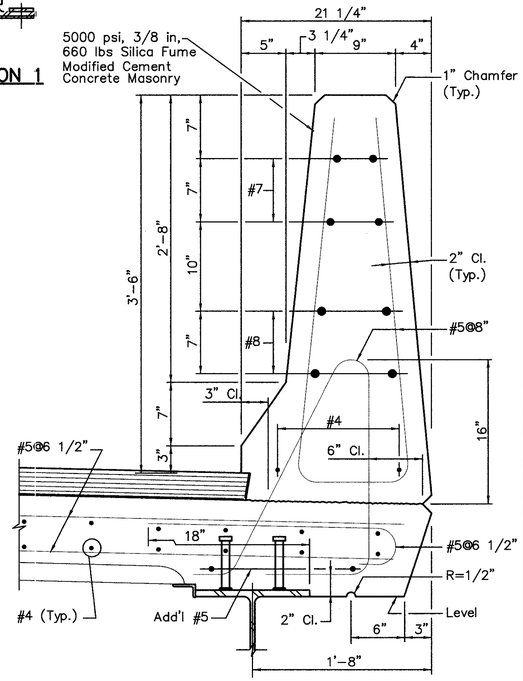
1. All Concrete Construction Above Slab Shall Be Poured In Alternate Sections And Shall Have A Curing Period Of Not Less Than 3 Days Between Pours.
2. Do Not Carry Longitudinal Bars Through The Paraffin Joints. End The Reinforcement 2" Clear Of Joint.
3. Joint Shall Be Square To Face Of Curb.
4. Joint Sealer To Be Same Color As Concrete.

PARAFIN JOINT DETAILS

SCALE: 1" = 1'-0"



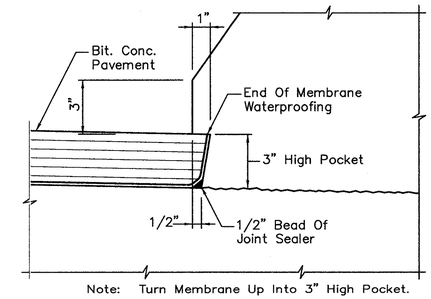
SECTION 1



NOTE: ALL REINFORCEMENT TO BE EPOXY COATED.

CF-PL3 BARRIER TYPICAL SECTION

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



Note: Turn Membrane Up Into 3" High Pocket.

FACE OF CF-PL3 BARRIER DETAILS

SCALE: 3" = 1'-0"

HARWICH

ROUTE 6 OVER DEPOT STREET

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	N.F.A.	2001	19	26
PROJECT FILE NO. 600756				

FRAMING PLAN & DETAILS

DATE	DESCRIPTION
JUNE 2, 2001	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

SHEET 7 OF 12 SHEETS BRIDGE NO. H-10-016 (46T)

J:\PROJ\HARWICH\20040\HAR7.DWG PLOT 1 = 96

HARWICH
ROUTE 6 OVER DEPOT STREET

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	N.F.A.	2001	20	26
PROJECT FILE NO. 600756				

DECK SLAB & DETAILS

TOP OF FORM ELEVATIONS FOR DECK SLAB PRIOR TO PLACEMENT OF CONCRETE

SPAN 1

BEAM NO.	INCREASING STATIONS → W. ABUT.	1/8 PT.	1/4 PT.	3/8 PT.	1/2 PT.	5/8 PT.	3/4 PT.	7/8 PT.	PIER # 1
1	59.164	59.201	59.238	59.273	59.307	59.341	59.375	59.410	59.449
2	59.307	59.344	59.380	59.416	59.450	59.484	59.517	59.553	59.592
3	59.449	59.487	59.523	59.559	59.593	59.626	59.660	59.695	59.735
4	59.592	59.630	59.666	59.701	59.736	59.769	59.803	59.838	59.878
5	59.454	59.491	59.528	59.563	59.597	59.630	59.664	59.700	59.739
6	59.315	59.353	59.389	59.425	59.459	59.492	59.526	59.561	59.601
7	59.177	59.214	59.251	59.286	59.320	59.354	59.387	59.423	59.462

SPAN 2

BEAM NO.	INCREASING STATIONS → PIER # 1	1/8 PT.	1/4 PT.	3/8 PT.	1/2 PT.	5/8 PT.	3/4 PT.	7/8 PT.	PIER # 2
1	59.449	59.526	59.606	59.682	59.748	59.802	59.847	59.888	59.931
2	59.592	59.669	59.749	59.825	59.891	59.945	59.990	60.030	60.074
3	59.735	59.814	59.896	59.974	60.041	60.095	60.137	60.175	60.217
4	59.878	59.957	60.039	60.117	60.184	60.238	60.280	60.318	60.360
5	59.739	59.818	59.901	59.979	60.046	60.099	60.142	60.180	60.221
6	59.601	59.680	59.763	59.842	59.909	59.962	60.004	60.042	60.083
7	59.462	59.541	59.624	59.702	59.769	59.822	59.865	59.903	59.944

SPAN 3

BEAM NO.	INCREASING STATIONS → PIER # 2	1/8 PT.	1/4 PT.	3/8 PT.	1/2 PT.	5/8 PT.	3/4 PT.	7/8 PT.	E. ABUT.
1	59.931	59.964	60.000	60.037	60.075	60.112	60.148	60.183	60.217
2	60.074	60.106	60.142	60.180	60.218	60.255	60.291	60.326	60.360
3	60.217	60.249	60.285	60.322	60.360	60.398	60.434	60.469	60.503
4	60.360	60.392	60.427	60.465	60.503	60.541	60.577	60.611	60.645
5	60.221	60.253	60.289	60.327	60.365	60.402	60.438	60.473	60.507
6	60.083	60.115	60.151	60.189	60.227	60.264	60.300	60.335	60.369
7	59.944	59.976	60.012	60.050	60.088	60.125	60.161	60.196	60.230

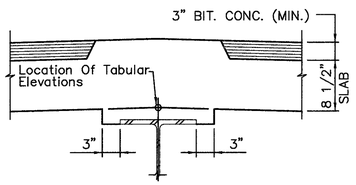
NOTES:

1. ABOVE ELEVATIONS CALCULATED ASSUMING THAT DEAD LOAD DEFLECTIONS FROM STRUCTURAL STEEL WEIGHT ONLY HAVE OCCURED.
2. AFTER THE BEAMS ARE 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 THE CENTER LINE OF BEAM.

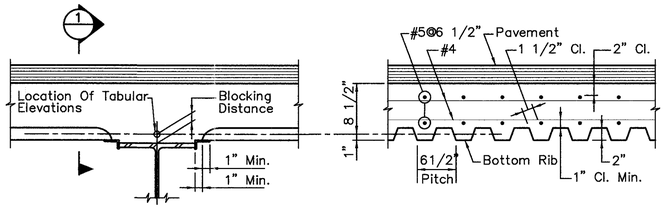
CAMBER AT 1/8 POINTS OF EACH SPAN

LOCATION	DEAD LOAD DEFL. STEEL	DEAD LOAD DEFL. OTHER	SUPER DEAD LOAD DEFL.	TOTAL DEAD LOAD DEFL.	VERTICAL CURVE ORDINATE CAMBER	EXTRA CAMBER	TOTAL CAMBER (inches)
EXTERIOR BEAMS (BEAMS 1 & 7)							
W. ABUT.	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1/8	0.002	0.011	0.007	0.020	0.000	0.088	0.108
1/4	0.003	0.017	0.011	0.031	0.000	0.150	0.181
3/8	0.002	0.013	0.012	0.027	0.000	0.188	0.215
1/2	0.000	0.001	0.008	0.009	0.000	0.200	0.209
5/8	−0.003	−0.016	0.002	−0.017	0.000	0.188	0.171
3/4	−0.005	−0.030	−0.008	−0.043	0.000	0.150	0.107
7/8	−0.005	−0.030	−0.011	−0.046	0.000	0.088	0.042
PIER#1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1/8	0.020	0.126	0.074	0.220	0.000	0.148	0.368
1/4	0.045	0.281	0.150	0.476	0.000	0.253	0.729
3/8	0.065	0.409	0.207	0.681	0.000	0.316	0.998
1/2	0.073	0.457	0.228	0.758	0.000	0.338	1.095
5/8	0.065	0.409	0.207	0.681	0.000	0.316	0.998
3/4	0.045	0.281	0.150	0.476	0.000	0.253	0.729
7/8	0.020	0.126	0.074	0.220	0.000	0.148	0.368
PIER#2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1/8	−0.005	−0.030	−0.011	−0.046	0.000	0.088	0.042
1/4	−0.005	−0.030	−0.008	−0.043	0.000	0.150	0.107
3/8	−0.003	−0.016	0.002	−0.017	0.000	0.188	0.171
1/2	0.000	0.001	0.008	0.009	0.000	0.200	0.209
5/8	0.002	0.013	0.012	0.027	0.000	0.188	0.215
3/4	0.003	0.017	0.011	0.031	0.000	0.150	0.181
7/8	0.002	0.011	0.007	0.020	0.000	0.088	0.108
E. ABUT.	0.000	0.000	0.000	0.000	0.000	0.000	0.000
INTERIOR BEAMS (BEAMS 2, 3, 4, 5 & 6)							
W. ABUT.	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1/8	0.002	0.014	0.004	0.020	0.000	0.088	0.108
1/4	0.003	0.021	0.007	0.030	0.000	0.150	0.180
3/8	0.002	0.016	0.007	0.025	0.000	0.188	0.213
1/2	0.000	0.001	0.005	0.006	0.000	0.200	0.206
5/8	−0.003	−0.020	0.001	−0.021	0.000	0.188	0.166
3/4	−0.005	−0.037	−0.004	−0.046	0.000	0.150	0.104
7/8	−0.005	−0.037	−0.006	−0.048	0.000	0.088	0.040
PIER#1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1/8	0.022	0.156	0.041	0.219	0.000	0.148	0.366
1/4	0.049	0.347	0.084	0.480	0.000	0.253	0.733
3/8	0.071	0.504	0.115	0.690	0.000	0.316	1.007
1/2	0.080	0.563	0.126	0.769	0.000	0.338	1.107
5/8	0.071	0.504	0.115	0.690	0.000	0.316	1.007
3/4	0.049	0.347	0.084	0.480	0.000	0.253	0.733
7/8	0.022	0.156	0.041	0.219	0.000	0.148	0.366
PIER#2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1/8	−0.005	−0.037	−0.006	−0.048	0.000	0.088	0.040
1/4	−0.005	−0.037	−0.004	−0.046	0.000	0.150	0.104
3/8	−0.003	−0.020	0.001	−0.021	0.000	0.188	0.166
1/2	0.000	0.001	0.005	0.006	0.000	0.200	0.206
5/8	0.002	0.016	0.007	0.025	0.000	0.188	0.213
3/4	0.003	0.021	0.007	0.030	0.000	0.150	0.180
7/8	0.002	0.014	0.004	0.020	0.000	0.088	0.108
E. ABUT.	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SIGN CONVENTION: POSITIVE DEFLECTION IS DOWNWARD
NEGATIVE DEFLECTION IS UPWARD



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



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

SECTION 1
SCALE: 1" = 1'-0"

REMOVABLE FORMS

STAY IN PLACE FORMS

REMOVABLE FORM NOTE

1. 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 ELEVATION 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.

STAY IN PLACE FORM NOTES

1. FOR TWO (2) INCH SIP FORM SET BOTTOM OF FORM ONE (1) INCH BELOW ELEVATIONS GIVEN IN TABLES.
2. FORM ENDS SHALL BE CRIMPED CLOSED IN A TAPERED MANNER. SEPARATE END CLOSER PIECES WILL NOT BE ALLOWED.
3. SUPPORT ANGLES SHALL BE PLACED IN THE "LEG DOWN" POSITION WHERE POSSIBLE. WHERE LEG UP POSITION IS NECESSARY THE UPPER MOST PORTION OF THE ANGLE SHALL NOT PROJECT MORE THAN ONE (1) INCH ABOVE THE TOP FLANGE. THE CONTRACTOR SHALL HAVE AN ASSORTMENT OF ANGLES OF VARIOUS SIZES AVAILABLE ON THE SITE TO CONFORM TO THIS REQUIREMENT.
4. ALL MAIN STEEL REINFORCEMENT IN THE LOWER MAT SHALL BE CENTERED OVER THE VALLEY OF THE SIP FORM.
5. THE DECK REINFORCEMENT MATS SHALL BE TIED DOWN SUFFICIENTLY TO PREVENT MOVEMENT DURING CONCRETE PLACEMENT OPERATIONS.
6. STAY IN PLACE (SIP) FORMS SHALL BE USED IN ALL AREAS EXCEPT AT SLAB OVERHANGS, AT END DIAPHRAGMS AND AT LOCATIONS NOTED OTHERWISE.

DATE	DESCRIPTION
JUNE 2, 2001	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

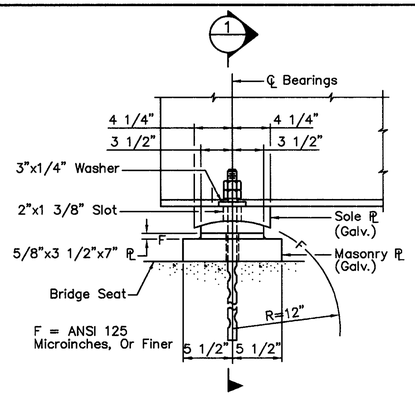
J:\PROJ\HARWICH\20040\HARB.DWG PLOT 1 = 12

HARWICH

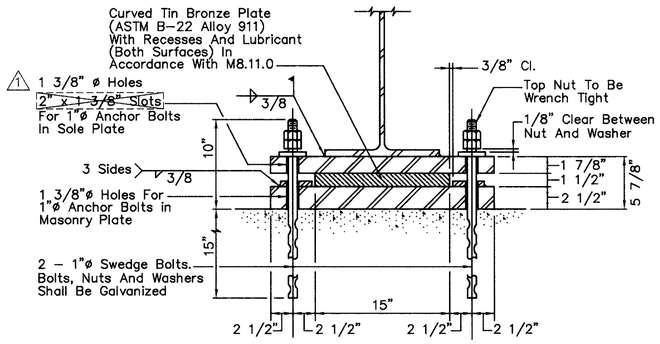
ROUTE 6 OVER DEPOT STREET

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	N.F.A.	2001	21	26
PROJECT FILE NO. 600756				

STRUCTURAL STEEL DETAILS



ELEVATION

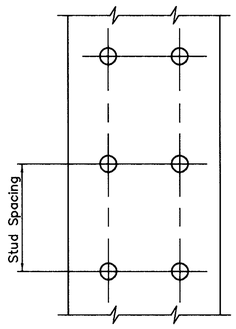


SECTION 1

FIXED △1 PIERS △1

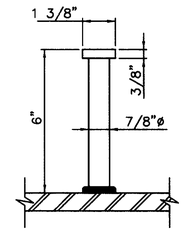
EXPANSION BEARINGS AT ABUTMENTS

SCALE: 1 1/2" = 1'–0"



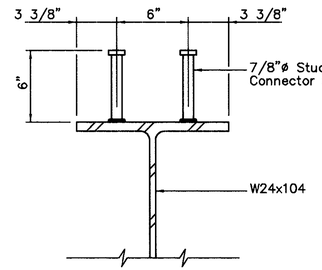
PLAN

SCALE: 2" = 1'–0"



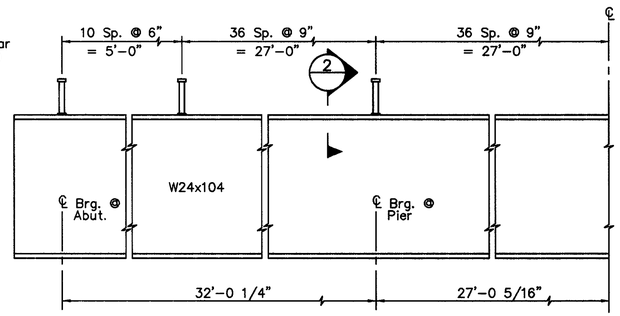
STUD SHEAR CONNECTOR

SCALE: 4" = 1'–0"



SECTION 2

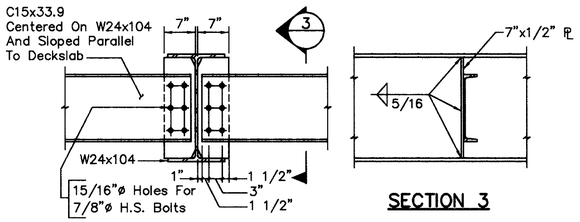
SCALE: 2" = 1'–0"



SHEAR CONNECTOR LAYOUT

BEAM ELEVATION

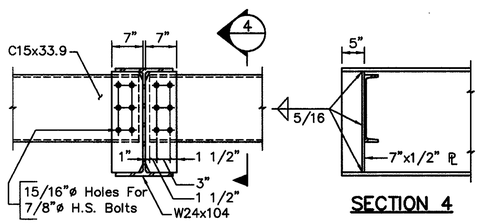
SCALE: 1" = 1'–0"



SECTION 3

INTERIOR DIAPHRAGM CONNECTION

SCALE: 3/4" = 1'–0"

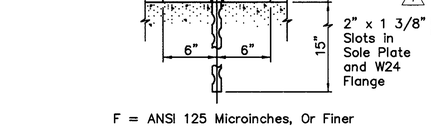


SECTION 4

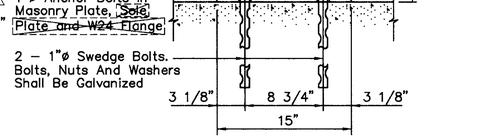
END DIAPHRAGM CONNECTION

AT ABUTMENTS AND PIERS

SCALE: 3/4" = 1'–0"



ELEVATION

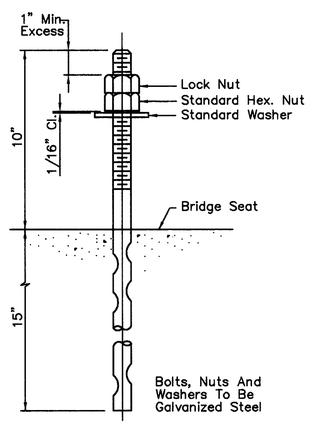


END ELEVATION

EXPANSION ABUTMENTS

△1 FIXED BEARING AT PIERS △1

SCALE: 1 1/2" = 1'–0"



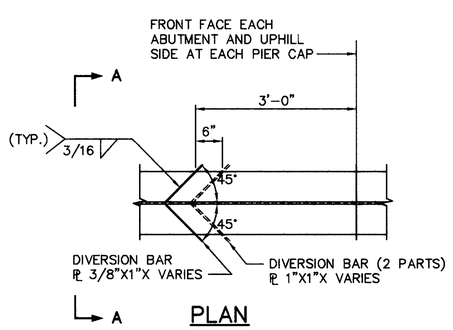
ANCHOR BOLT FOR

PIER AND ABUTMENT BEARINGS

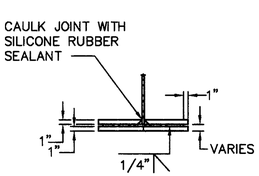
SCALE: 3" = 1'–0"

BEARING NOTES

1. Sole Plates For Fixed Bearings At Pier No. 2 Shall Be Delivered To The Job Site Shop Welded. Sole Plates For Fixed Bearings At Pier No. 1 And Sole Plates For Expansion Bearings At Both Abutments Shall Be Delivered To The Job Site Tack Welded.
2. The Expansion End Sole Plates Are To Be Adjusted In The Field As Necessary To Center Over The Masonry Plate At 50° F. And Then Field Welded To The Bottom Flange.
3. Surfaces Indicated F Shall Be ANSI Finish 125 Microinches Or Finer.
4. Masonry Plates And Sole Plates To Be ASTM A709 Grade 36 Steel Galvanized Per ASTM A123.
5. Maximum Design Unit Stress = 1240 PSI On Curved Bronze Plate.
6. Anchor Bolts At All Bearings To Be ASTM A449.



PLAN



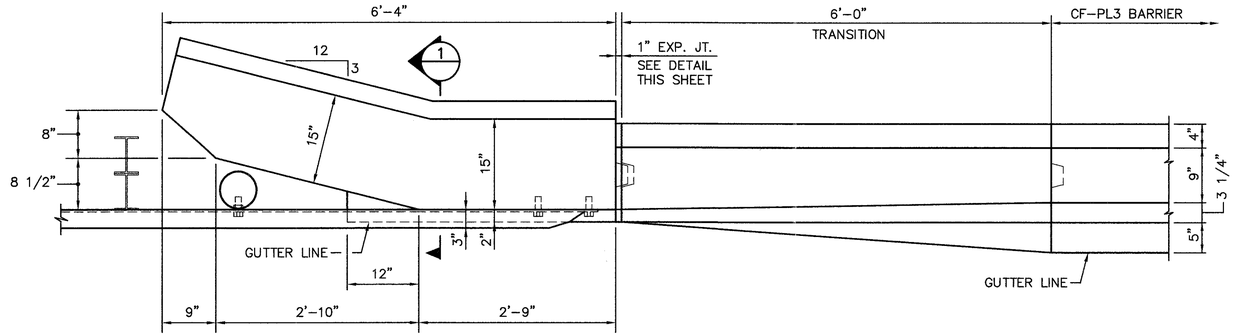
DETAIL A

STAIN PROTECTION DIVERSION BARS

NOT TO SCALE

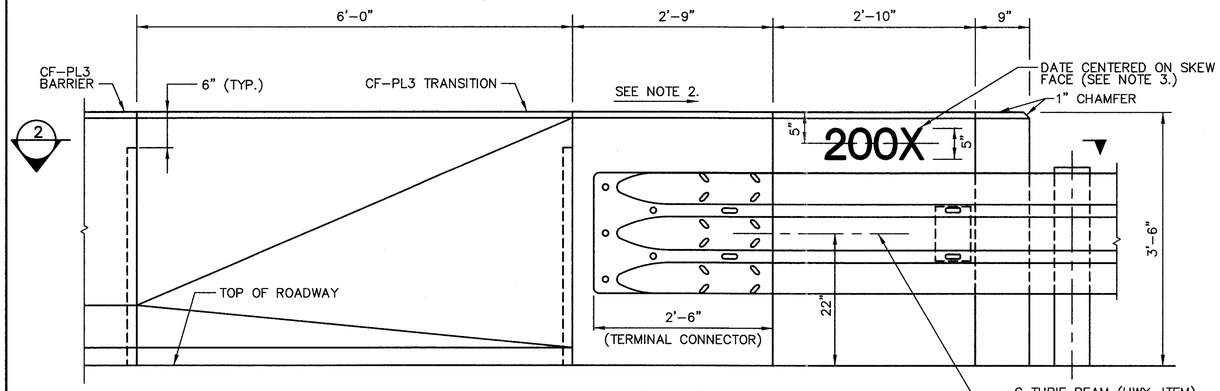
DATE	DESCRIPTION
FEB 8, 2002	△1 TITLES AND BOLT HOLE SIZES FOR BEARING DETAILS REVISED
JUNE 2, 2001	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

J:\PROJ\HARWICH\20040\HAR9.DWG PLOT 1 = 8



ENDPOST & TRANSITION PLAN

SCALE: 1" = 1'-0"



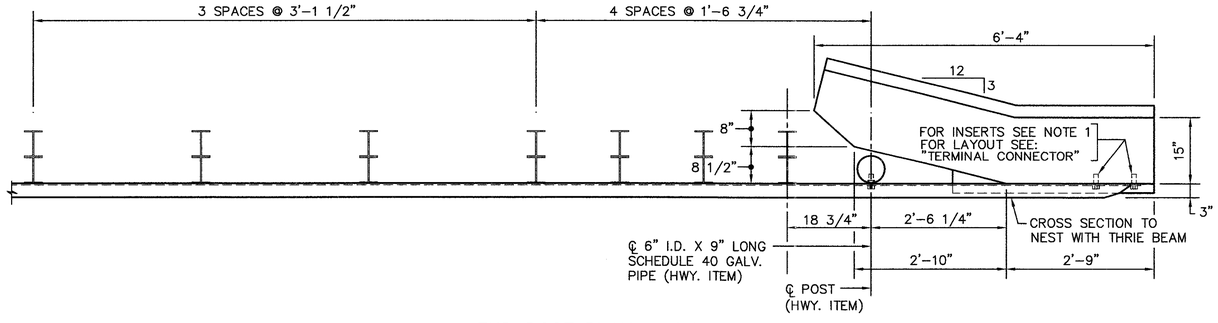
ELEVATION

SCALE: 1" = 1'-0"

END POST AND TRANSITION TO CF-PL3 BARRIER

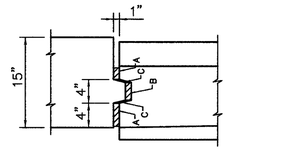
NOTES:

1. THREADED INSERTS SHALL BE PREQUALIFIED BY THE MANUFACTURER AS BEING CAPABLE OF DEVELOPING AN ULTIMATE SHEAR CAPACITY OF 20.4 KIPS PER 7/8" DAI. AASHTO-M164 BOLT. INSERTS FOR 7/8" DIA. BOLTS SHALL BE CAST-IN-PLACE AND GALVANIZED.
2. TOP OF GUARDRAIL TRANSITION SHALL BE SLOPED TO MATCH THE PROFILE GRADE.
3. USE LATEST CONTRACT COMPLETION DATE IN EFFECT WHEN THE FIRST GUARDRAIL TRANSITION IS CAST. USE THIS DATE FOR BOTH GUARDRAIL TRANSITIONS.
4. ALL CONCRETE FOR THE HIGHWAY GUARDRAIL TRANSITION SHALL BE 5000 PSI, 3/8", 660 LBS SILICA FUME MODIFIED CEMENT CONCRETE MASONRY.
5. TERMINAL CONNECTOR MAY HAVE ADDITIONAL UNUSED BOLT HOLES.



END POST PLAN & GUARD RAIL POST SPACING

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



A – 1" PREFORMED FILLER
(IN ACCORDANCE WITH M9.14.0 CORK)

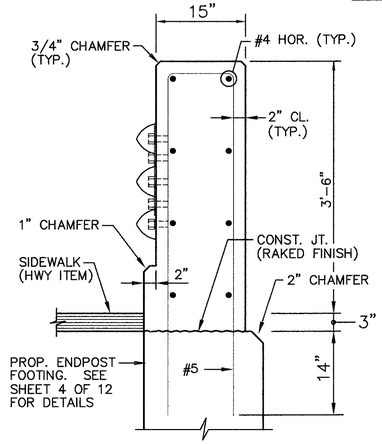
B – 1" PREFORMED FILLER
(IN ACCORDANCE WITH M3.05.3
BITUMINOUS JOINT FILLER)

C – SHEET LEAD 1/8" THICK

NOTE: ALL REINFORCEMENT TO
BE 2" CLEAR OF JOINT.

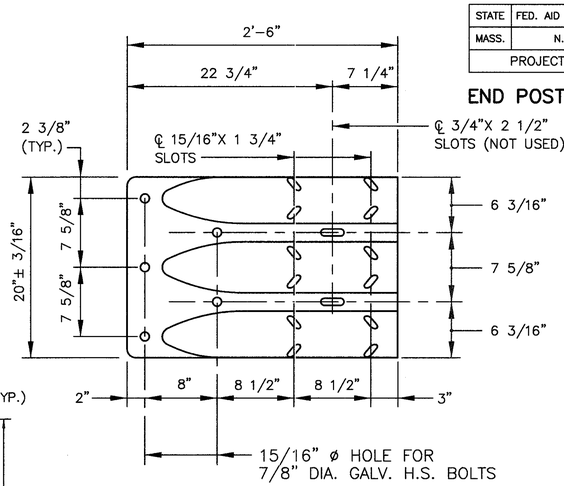
EXPANSION JOINT DETAIL

SCALE 1/2" = 1'-0"



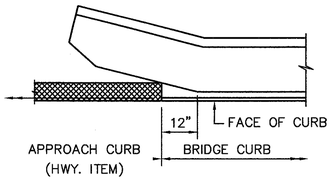
SECTION 1

SCALE: 1" = 1'-0"



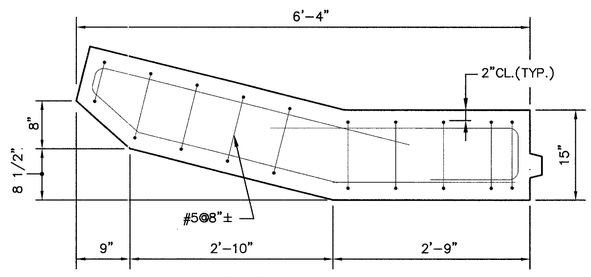
TERMINAL CONNECTOR

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



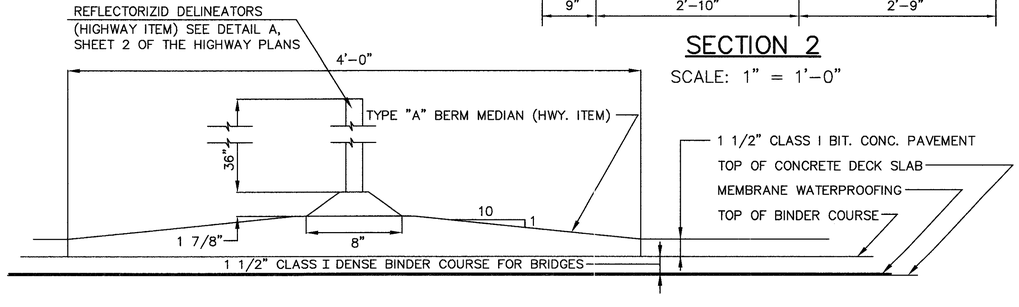
APPROACH CURB DETAIL

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



SECTION 2

SCALE: 1" = 1'-0"



DETAIL OF MEDIAN

NOT TO SCALE

HARWICH

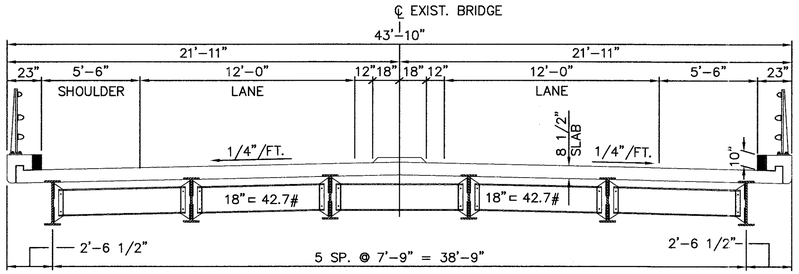
ROUTE 6 OVER DEPOT STREET

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	N.F.A.	2001	22	26
PROJECT FILE NO. 600756				

END POST & MEDIAN DETAILS

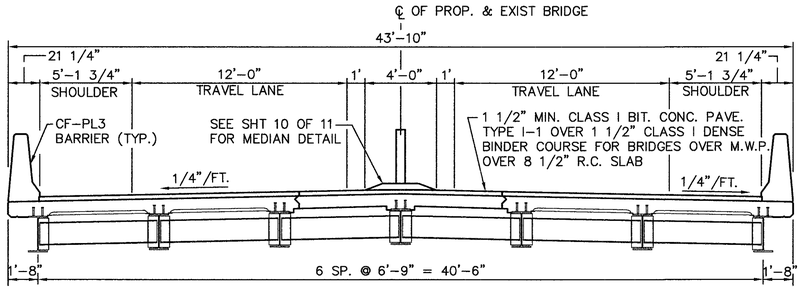
DATE	DESCRIPTION
JUNE 2, 2001	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

J:\PROJ\HARWICH\20040\HAR10.DWG PLOT 1 = 12



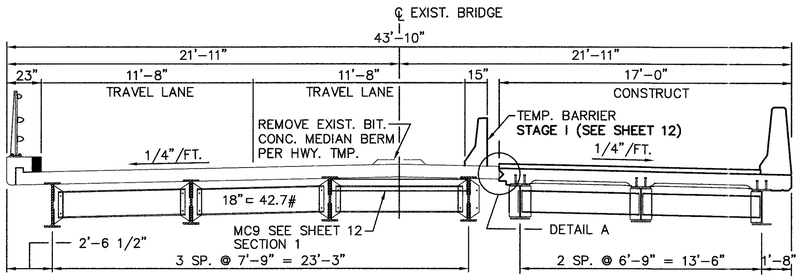
EXISTING CROSS SECTION

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



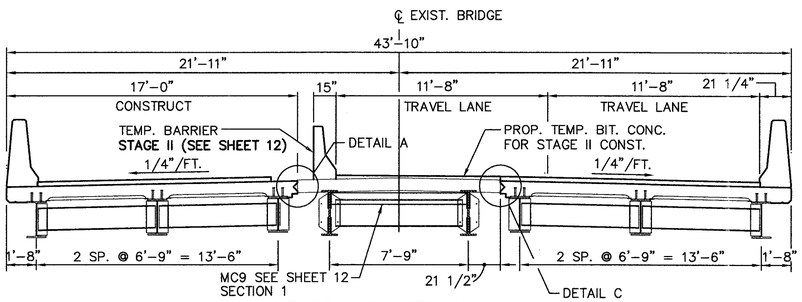
PROPOSED CROSS SECTION

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



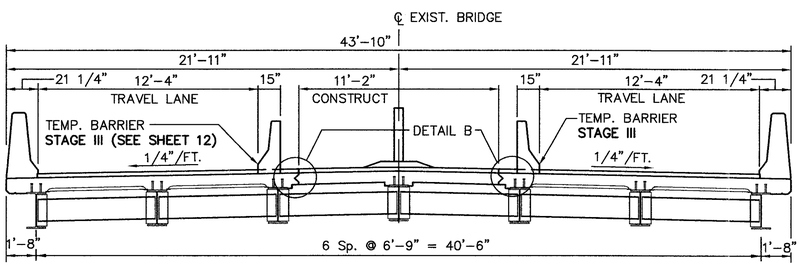
STAGE I CONSTRUCTION

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



STAGE II CONSTRUCTION

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

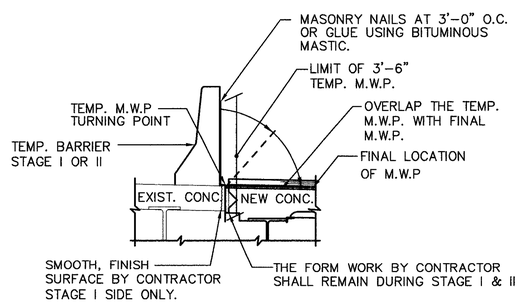


STAGE III CONSTRUCTION

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

STAGE CONSTRUCTION NOTES

1. REMOVE EXISTING 3'-0" BITUMINOUS CONCRETE MEDIAN PER HIGHWAY T.M.P.
2. PLACE AND ANCHOR A 15" TEMPORARY BARRIER 17'-3" AWAY FORM THE SOUTH FASCIA OF THE EXISTING STRUCTURE. (SEE BRIDGE SHEET 12 FOR ANCHOR DETAILS)
3. REMOVE THE 17'-0" SECTION FROM THE SOUTH SIDE OF THE EXISTING BRIDGE SUPERSTRUCTURE ALLOWING FOR STAGE I CONSTRUCTION. LEAVE THE REMAINDER OF THE EXISTING BRIDGE OPEN TO TRAFFIC. PROVIDE 2 TRAVEL LANES 11'-8" WIDE EACH (SEE STAGE I CONSTRUCTION).
4. CONSTRUCT STAGE I OF PROPOSED BRIDGE REHABILITATION INCLUDING SECTION OF APPROACH SLAB. PLACE THE PERMANENT CF-PL3 BARRIER ON THE NEWLY CONSTRUCTED STRUCTURE.
5. REMOVE THE TEMPORARY BARRIER USED IN STAGE I. PLACE THIS BARRIER 23'-4" AWAY FROM THE NEW PERMANENT CF-PL3 BARRIER. PLACE LEVELING COURSE TO MATCH NEW ADJACENT SURFACE. (SEE STAGE II CONSTRUCTION).
6. REMOVE THE 17'-0" SECTION FROM THE NORTH SIDE OF THE BRIDGE SUPERSTRUCTURE ALLOWING FOR STAGE II CONSTRUCTION (SEE STAGE II CONSTRUCTION).
7. CONSTRUCT STAGE II OF PROPOSED BRIDGE REHABILITATION INCLUDING SECTION OF APPROACH SLAB. PLACE THE PERMANENT CF-PL3 BARRIER ON THE NEWLY CONSTRUCTED STRUCTURE. PLACE AND ANCHOR ANOTHER 15" TEMPORARY BARRIER ON THE NEWLY CONSTRUCTED SLAB 12'-4" AWAY FROM THE NEW PERMANENT CF-PL3 BARRIER. REMOVE THE TEMP. BARRIER FROM STAGE II CONSTRUCTION, PLACE & ANCHOR IT 12'-4" AWAY FROM THE NEW PERMANENT CF-PL3 BARRIER PLACED DURING STAGE I CONSTRUCTION. PLACE THE TRAFFIC ON THE NEWLY CONSTRUCTED SIDES OF THE BRIDGE (SEE STAGE III CONSTRUCTION).
8. REMOVE THE MIDDLE SECTION OF THE EXISTING SUPERSTRUCTURE FOR STAGE III CONSTRUCTION. CONSTRUCT STAGE III OF THE PROPOSED BRIDGE REHABILITATION INCLUDING THE LAST SECTION OF THE APPROACH SLAB & THE MEDIAN THRIE BEAM ANCHOR CAGE WITH PLASTIC CAPS.
9. REMOVE THE TEMPORARY JERSEY BARRIERS, COMPLETE THE PAVEMENT WORK.
10. COMPLETE THE PROPOSED HIGHWAY WORK REQUIRED ON BOTH SIDES OF BRIDGE BY THIS CONTRACT.
11. INSTALL THE MEDIAN THRIE BEAM GUARD RAIL IN CONJUNCTION WITH ROADWAY THRIE BEAM GUARDRAIL.

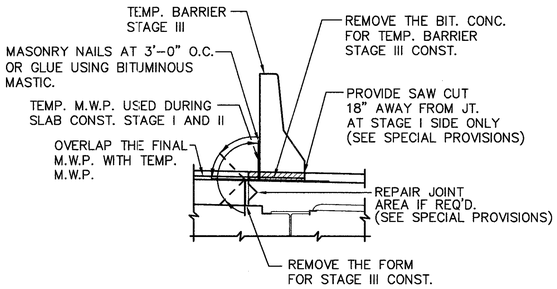


NOTE:

1. 3'-6" OF M.W.P. TO BE PLACED BY THE CONTRACTOR DURING STAGE I AND II CONSTRUCTION. THE M.W.P. IS USED FOR JOINT PROTECTION.
2. THE 3'-6" OF M.W.P. WILL BE OVERLAPED WITH FINAL M.W.P.

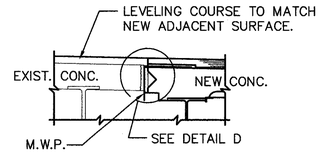
DETAIL A STAGE I AND II

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



DETAIL B STAGE III

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

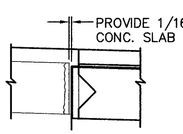


SCALE: 1/2"=1'-0"

NOTE:

1. THE FORM WORK SHALL BE REMOVED PRIOR TO STAGE III CONST.

DETAIL C



DETAIL D

SCALE: 1"=1'-0"

HARWICH

ROUTE 6 OVER DEPOT STREET

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	N.F.A.	2001	23	26
PROJECT FILE NO. 600756				

STAGE CONSTRUCTION

DATE	DESCRIPTION
JUNE 2, 2001	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

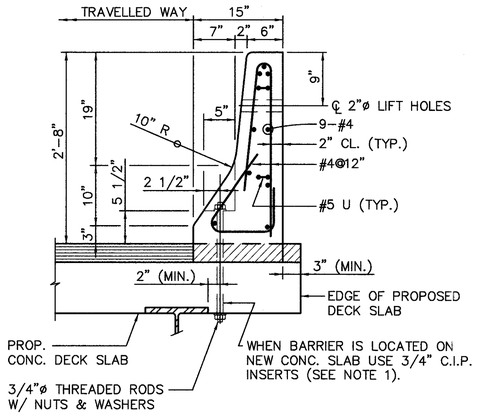
J:\PROJ\HARWICH\20040\HAR11.DWG PLOT 1 = 1

HARWICH

ROUTE 6 OVER DEPOT STREET

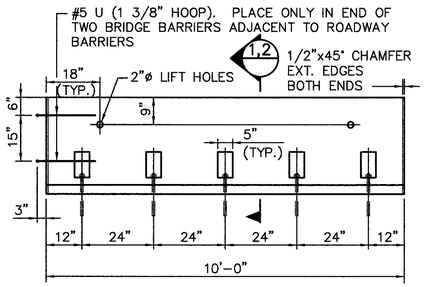
STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	N.F.A.	2001	24	26
PROJECT FILE NO. 600756				

STAGE CONSTRUCTION



SECTION 2 STAGE III

SCALE: 1" = 1'-0"



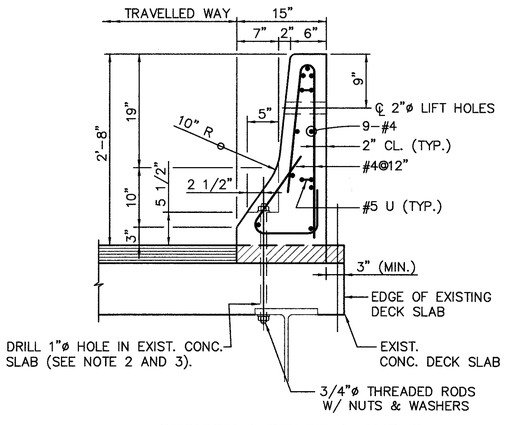
ELEVATION

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

NOTES

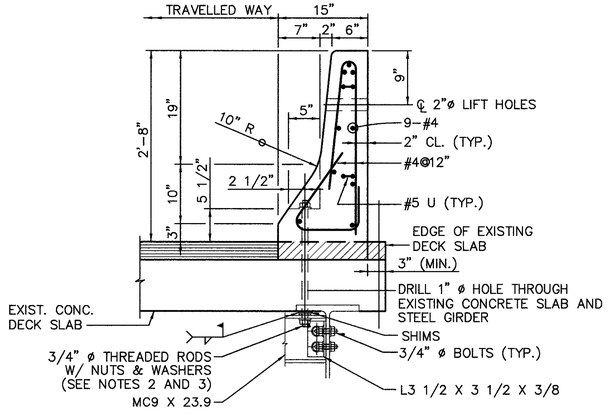
1. IN NEW CONCRETE SLAB FILL HOLES SOLID WITH EPOXY BEFORE PLACING THE MEMBRANE WATERPROOFING AND BIT. CONC. WEARING SURFACE.
2. IF THE THICKNESS OF THE EXISTING STEEL GIRDER FLANGE IS EQUAL TO OR GREATER THAN 1/2". THE CONTRACTOR SHALL INSTALL THE DETAIL SHOWN ON SECTION 1 OF THIS SHEET. IF THE FLANGE THICKNESS IS LESS THAN 1/2", THE DETAIL SHOWN ON SECTION 1A SHALL BE USED.
3. SEE SPECIAL PROVISION, SECTION 853.22 FOR PAYMENT ITEM.

TEMPORARY PRECAST CONCRETE BARRIER ON BRIDGE



SECTION I STAGE 1 AND II

SCALE: 1" = 1'-0"



SECTION IA STAGE 1 AND II

SCALE: 1" = 1'-0"

DATE	DESCRIPTION
JUNE 2, 2001	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

SHEET 12 OF 12 SHEETS BRIDGE NO. H-10-016 (46T)

J:\PROJ\HARWICH\20040\HAR12.DWG PLOT 1 = 1