ALLEGAN
COUNTY ROAD COMMISSION
IN CO-OPERATION WITH

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF STATE HIGHWAYS CURRENT STANDARD SPECIFICATIONS AND SUPPLEMENTAL SPECIFICATIONS

JOB NO.	COUNTY	YEAR	SHEET NO	TOTAL SHEET
26956 A	ALLEGAN	1987	1	11

MICHIGAN DEPARTMENT OF TRANSPORTATION
AND
FEDERAL HIGHWAY ADMINISTRATION

PLAN AND PROFILE OF PROPOSED

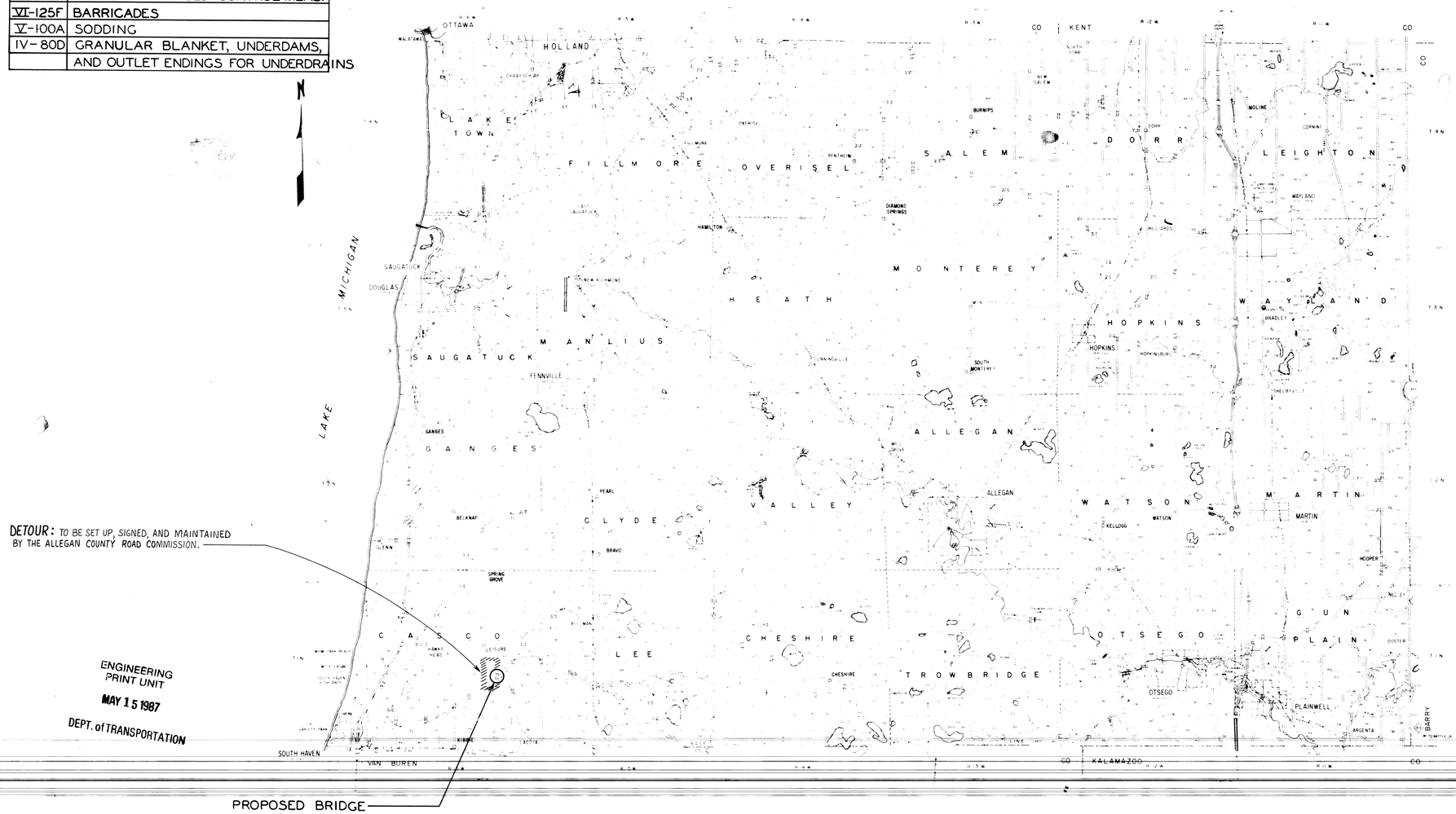
FEDERAL BRIDGE REPLACEMENT PROJECT NO. MICHIGAN BRO. 3(123)
AND
MICHIGAN CRITICAL BRIDGE PROJECT NO. MCS 03020
63RD STREET OVER THE MIDDLE BRANCH OF THE BLACK RIVER

PLAN INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	PLAN OF SITE
3	PLAN OF STRUCTURE
4	LOG OF BORINGS
5	STEEL REINFORCEMENT DETAILS
6	QUANTITY SHEET
7	ABUTMENT DETAILS
8	PIER DETAILS
9 & 10	SUPERSTRUCTURE DETAILS
11	BEAM GUARD RAIL DETAILS

STANDARD PLANS NOT TO BE PRINTED

SHEET NO	DESCRIPTION
XI-103C	MOLDING AND BEVEL DETAILS
III-60F	GUARD RAIL
III-58H	GUARD RAIL ANCHOR CABLE
V-96C	SOIL EROSION & SED. CONTROL MEAS.
VI-125F	BARRICADES
V-100A	SODDING
IV-80D	GRANULAR BLANKET, UNDERDAMS,
	AND OUTLET ENDINGS FOR UNDERDRAINS



ENGINEERING PRINT UNIT
MAY 15 1987
DEPT. of TRANSPORTATION

GENERAL NOTES:

EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS OR IN THE PROPOSAL AND SUPPLEMENTAL CONTAINED HEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, 1984 EDITION.

THE DESIGN OF THIS STRUCTURE IS BASED ON THE MICHIGAN DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR THE DESIGN OF HIGHWAY BRIDGES, 1958 EDITION, AND CURRENT AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGE HS-20-44. LIVE LOAD PLUS IMPACT DEFLECTION DOES NOT EXCEED 1/1000 OF SPAN LENGTH.

THE SOIL BORING LOGS REPRESENT POINT INFORMATION. PRESENTATION OF THIS INFORMATION IN NO WAY INFERS THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORING.

ALL EXPOSED CONCRETE CORNERS SHOWN SQUARE ON THE PLANS SHALL BE BEVELED WITH 1/2" TRIANGULAR MOLDINGS EXCEPT AS OTHERWISE NOTED.

TRAFFIC WILL BE DETOURED BY THE ALLEGAN COUNTY ROAD COMMISSION DURING CONSTRUCTION.

THE DESIGN OF THE STRUCTURAL MEMBERS IS BASED ON MATERIAL OF THE FOLLOWING GRADES AND STRESSES:

CONCRETE GRADE 35S	F'C= 3,000 P.S.I.
STEEL REINFORCEMENT	F'Y= 60,000 P.S.I.
STEEL REINFORCEMENT (STIRRUPS FOR PRESTRESSED CONC. BEAMS)	F'Y= 40,000 P.S.I.
PRESTRESSED CONCRETE	F'S= 5,000 P.S.I.
PRESTRESSING STRANDS	F'S=270,000 P.S.I.

ADT = 150 (PRESENT)
ADT = 300 (2007)
DESIGN SPEED= 40 M.P.H.
END AREA =414 SQ. FT. (338 USEABLE)

CONTRACT FOR BRIDGE AND APPROACHES

COUNTY ROAD COMMISSION APPROVAL

Bruce D. Culver, CHAIRMAN	4-15-87 DATE
Willis Ricksen, COMMISSIONER	4-15-87 DATE
Robert C Brackenridge, COMMISSIONER	4-15-87 DATE
Fred O. Neils, COUNTY HIGHWAY ENGINEER	4-15-87 DATE

PREPARED UNDER SUPERVISION OF

FRED O. NEILS 12324

ALLEGAN COUNTY ROAD COMMISSION

1308 LINCOLN RD. ALLEGAN, MI. 49010

DELWIN L. REDDER 20072
DESIGN REGISTRATION NO.

(SEAL)

© B2 OF 3-2-17 BRO 3(123) MCS 03020 JOB NO. 26156 A FED. ITEM NO. PB 0534

ALLEGAN COUNTY ROAD COMMISSION (SOUTH OF 108TH AVENUE IN SECTION 25, T3N, R13W, SAUGATUCK TWP.)

GENERAL PLAN OF SITE

N

UTILITIES:

GENERAL TELEPHONE CO. OF MI., P.O. BOX 99, THREE RIVERS, MI., PH. NO. 616-273-0298.

MISS DIG, PH. NO. 1-800-482-7171.

BM#1 ——— ELEV. 607.62
PK IN 10" POPLAR 47' RT. OF STA. 4+82.

BM#2 ——— ELEV. 608.31
PK IN 8" ASH 42' LT. OF STA. 6+59.

APPROX. 4300 CU. YDS. TO BE HAULED ACROSS THE BRIDGE FROM SOUTH TO NORTH. EARTH MOVING EQUIPMENT SHALL NOT EXCEED THE LIMIT OF THE HS-20 DESIGNED LOADING.

BASIS OF DESIGN	WATER SURFACE ELEVATION	DISCHARGE IN C.F.S. MICH. DNR HYD. SECTION	WATERWAY AREA PROVIDED IN SQ. FT.	MAXIMUM VELOCITY FT./SEC.	BACKWATER ABOVE DESIGN H.W. IN FT.	DRAINAGE AREA IN SQ. MILE
100 YEAR FLOOD	609.25	1480.0	338	5.08	0.43	66.5
DESIGN FLOOD	609.25	1480.0	338	5.08	0.43	66.5

F.H.W.A. REG. NO.	STATE	FEDERAL PROJECT	R.O.W. NO.	SHEET NO.	TOTAL SHEETS
5	MICH.	BRO 3(123)		2	11
CO. PROJECT NO.	COUNTY			JOB NO.	
LSM 6002(B)	ALLEGAN			26956A	

FINAL R.O.W.	REVISION	DATE	AUTH

OPERATION	BY	DATE
PRELIMINARY R.O.W. CHECKED		
FINAL R.O.W. CHECKED		
FINAL DESIGN CHECKED		
TRACED		
FINAL R.O.W. CHECK		
QUANTITIES		
QUANTITIES CHECKED		
SQUAD		

EXISTING STRUCTURE

THE STRUCTURE IS A 4 PANEL RIVETED WARREN TRUSS 60'-0" LONG CENTER TO CENTER OF BEARINGS, 8'-0" HIGH, AND 15'-11" WIDE BETWEEN TRUSSES. THE RAILINGS ARE OF THE ANGLE LATTICE TYPE FASTENED TO THE TRUSS VERTICALS. THE DECK IS CONCRETE JACK-ARCH SUPPORTED BY 2 ROWS OF 7" CHANNELS AND 5 ROWS OF 7" I-BEAMS. THE FLOOR BEAMS ARE 18" I-BEAMS.

PLACE 12' WIDE STRIP OF SOD IN DITCH BOTTOM FROM STA. 1+00 TO STA. 3+35. PLACE 314.0 SQ. YDS. CL. B SOD.

PLACE 70' OF 12" CL. A CSP FOR DOWNSPOUT (WEST SIDE) STA. 3+35. INCLUDED WITH THE ITEM OF 12" CLASS A CULVERT. PLACE 9 SQ. YDS. OF PLAIN RIPRAP AT THE OUTLET END.

HSE.

-2+19 26' LT. 40" MAPLE *
+66 24' LT. 53" MAPLE *
-2+16 16' RT. 12" ELM
+48 31' RT. 8" ELM
+66 37' RT. 8" ELM *
+80 17' RT. 8" ELM
-1+06 14' RT. 8" ELM
+08 26' RT. 8" ELM
+42 18' RT. TWIN 10" ELMS
+57 19' RT. 17" MAPLE
+69 19' RT. 8" ASH
+74 39' RT. 10" MAPLE
+77 21' RT. 8" ELM

0+32 14' LT. 10" CHERRY
+32 17' LT. 8" ASH
+34 23' LT. 14" STUMP
+34 30' LT. 10" ASH
+54 10' LT. 8" ASH
1+13 19' LT. 34" MAPLE
+24 42' LT. 28" BEECH *
+57 33' LT. 14" MAPLE
+84 24' LT. 24" MAPLE
+93 16' LT. 19" MAPLE
+98 25' LT. 18" MAPLE
2+05 16' LT. 30" STUMP
+15 35' LT. 12" MAPLE *
+66 39' LT. 8" MAPLE *
+99 39' LT. 37" MAPLE *
3+00 40' LT. 35" MAPLE *

EASEMENT (TYP.) 12' WIDE X 500' LONG

EXISTING ROAD

KATHERINE TADDI

PROPOSED BRIDGE

EX. 66' R/W

-2+00 -1+00 0+00 1+00 2+00 3+00 4+00

CONSTRUCTION IRON

END PAVEMENT STA. 4+84

PLACE 34' OF 12" CL A CSP FOR DOWNSPOUT (EAST SIDE) STA. 3+95. INCLUDED WITH THE ITEM OF 12" CLASS A CULVERT. PLACE 9 SQ. YDS. OF PLAIN RIPRAP AT THE OUTLET END.

PLACE BIT. SURFACE MIXTURE NO. 1100T-20A (180# MIN.) 50 LIN. FT. EACH END OF BRIDGE (TYP.) ASPHALT CEMENT PENETRATION SHALL BE 120 TO 150

30'
15' 15'
11" 16'-7" BRIDGE
10" 2' 4' 11' 11' 4' 1.65' 3.30'
0.04"/FT. PLAN GRADE
1.0N 3 1.0N 2 0.03"/FT. 12" GRANULAR SUBBASE ** 1.0N 3 3.0' 1.0N 2
6" AGG. SURFACE

TYPICAL SECTION
PROPOSED APPROACH CROSS SECTION

+93 27' RT. 12" MAPLE
+96 27' RT. 8" STUMP
1+09 27' RT. 14" MAPLE
+24 31' RT. 8" MAPLE
+39 20' RT. 8" STUMP
+44 41' RT. 8" MAPLE
+61 27' RT. 12" MAPLE
+76 27' RT. 8" MAPLE
+95 35' RT. 8" MAPLE
2+08 23' RT. 8" STUMP
+26 20' RT. 10" MAPLE
+31 23' RT. 14" MAPLE
+59 27' RT. 14" MAPLE
+77 24' RT. 10" MAPLE
+94 36' RT. 10" POPLAR
3+05 35' RT. 16" POPLAR
+11 24' RT. 8" POPLAR
+16 41' RT. 8" POPLAR
+51 25' RT. 37" MAPLE
+58 23' RT. 24" STUMP
+81 48' RT. 8" MAPLE *
+83 43' RT. 24" STUMP
+96 29' RT. 8" CHERRY
4+00 43' RT. 8" MAPLE *

ALL DISTURBED SLOPES SHALL BE FERTILIZED, SEEDED, & MULCHED.

** GRANULAR SUBBASE SHALL BE INCIDENTAL TO THE ITEM OF MACHINE GRADING-MODIFIED. STA. -2+00 TO STA. 13+50 (2510.0 CU. YDS.). LEAVE NATURAL SAND SUBBASE IN PLACE.

0.38' SASS. 22' CHERRY
+1.89 8" STUMP 34' RT. 8" MAPLE *
22' RT. 10" MAPLE

+42.39' LT. 10" ASH *
+22 15' LT. 20" ASH
+59 10' LT. 20" MAPLE
+94 11' LT. 10" WILLOW
+100 36' LT. 12" ELM
+15 22' LT. 12" POPLAR *
+19 44' LT. 10" POPLAR *
+24 38' LT. 16" POPLAR
+27 28' LT. 10" POPLAR
+40 25' LT. 8" STUMP
+59 42' LT. 8" ASH (BM#2)
+61 14' LT. 12" POPLAR
+67 36' LT. 16" POPLAR
+77 12' LT. 24" POPLAR
+92 37' LT. 8" POPLAR
7+02 14' LT. 14" POPLAR
+04 37' LT. 28" CATALPA
+20 11' LT. 16" POPLAR
+23 32' LT. 12" ASH
+35 32' LT. 14" POPLAR
+43 11' LT. 8" POPLAR
+50 32' LT. 12" POPLAR
+53 47' LT. 10" HICKORY *
+64 36' LT. 5-10" CATALPA
+92 20' LT. 20" POPLAR
8+06 24' LT. 8" APPLE

LIMITS OF CL B SOD 90 SQ. YDS.
TH #3 (STA. 5+41)
STA. 5+34
BRANCH RIVER
FLOW
LIMITS OF CL B SOD 150 SQ. YDS.
TH #2 (STA. 5+80.5)
TH #1 (STA. 6+21.5)
BITUMINOUS MIXTURE APPROACH (TYP.)
EASEMENT (TYP.) 12' WIDE X 375' LONG
DAVID E. REED
SLOPE STAKE LINE (TYP)
+43 ± C.R.A. DR.
MITCHELL C. PACWA
EASEMENT (TYP.) 10' WIDE X 100' LONG

STA. 5+70.5
LIMITS OF CL B SOD 90 SQ. YDS.
MIDDLE BLACK RIVER
LIMITS OF CL B SOD 204 SQ. YDS.
END PAVEMENT STA. 6+57
STA. 6+07
CONSTRUCTION IRON
EXISTING BRIDGE
EASEMENT (TYP.) VARIABLE WIDTH (2', 9', OR 27') X 1000' LONG

+53 44' RT. 8" ASH *
+47 46' RT. TWIN 22" MAPLE *
+53 23' RT. CLUMP 14", 12", 8" SYCAMORE
+84 33' RT. 8" STUMP
+96 33' RT. 10" STUMP
6+03 45' RT. 8" ASH
+16 33' RT. 8" POPLAR
+37 33' RT. 8" POPLAR
+37 40' RT. 8" POPLAR
+42 40' RT. 10" POPLAR
+45 29' RT. 10" POPLAR
+53 39' RT. 12" POPLAR
+69 37' RT. 14" POPLAR
+75 18' RT. 12" WILLOW
7+20 32' RT. 3-14" MAPLE
+24 41' RT. 16" ASH
+40 38' RT. 14" WILLOW
+64 17' RT. 20" POPLAR
8+40 39' RT. 8" SNAG
+40 39' RT. 8" SNAG *
+61 40' RT. 10" STUMP *
+64 41' RT. 8" SNAG *
+70 44' RT. 8" ASH *
+76 40' RT. 8" MAPLE *
+79 40' RT. 8" MAPLE *
+87 37' RT. 44" OAK *
9+05 33' RT. TRIPLE 8" OAK
+24 43' RT. 8" CHERRY *
+32 40' RT. 8" ASH *
+76 42' RT. 10" MAPLE *
10+06 41' RT. 9" MAPLE *
+45 28' RT. 8" MAPLE
+50 27' RT. 8" SNAG
+76 29' RT. 10" STUMP
+87 33' RT. 8" STUMP
+90 33' RT. 10" MAPLE *
11+32 37' RT. 9" MAPLE *
12+03 24' RT. 16" SYCAMORE
+55 46' RT. 24" SYCAMORE *
+83 48' RT. 28" SASS. *
13+20 35' RT. 8" ASH *
+50 40' RT. 8" MAPLE *
+81 41' RT. 8" MAPLE *

10-51 31' LT. 8" MAPLE
+57 36' LT. 8" ASH *
+64 29' LT. 8" MAPLE
+55 41' LT. 8" SNAG *
+72 26' LT. 8" STUMP
+81 34' LT. 16" ASH *
+81 41' LT. 16" ASH *
11+70 21' LT. 8" STUMP
12+04 32' LT. 8" MAPLE *
+04 48' LT. 18" MAPLE *
+04 25' LT. 8" STUMP
+06 45' LT. 8" PINE *
+08 39' LT. 22" MAPLE *
+16 38' LT. TWIN 12" ELM *
+16 41' LT. 8" MAPLE *
+29 17' LT. 12" POPLAR
+30 25' LT. 8" POPLAR
+48 25' LT. 20" STUMP
+52 12' LT. 8" MAPLE
+66 35' LT. 8" BEECH
+69 33' LT. 26" BEECH
+87 16' LT. 20" STUMP
+98 37' LT. 8" POPLAR
13+15 20' LT. 8" ASH
+17 24' LT. 10" POPLAR
+29 13' LT. 8" POPLAR
+40 21' LT. 8" POPLAR
+44 29' LT. 12" ASH
+57 37' LT. 8" SASS. *
+60 13' LT. 22" CHERRY *
+63 29' LT. 12" SASS. *
+75 13' LT. 8" SYCAMORE *

GRADE & SURFACE DRIVE. PLACE 18"X 40' CL. A CSP & 10 CU. YDS. CL. A APPROACHES. FLOW LINE ELEV. = 605.70

JOHN E. PALM

LEON H. BRUSH

* DENOTES TREES OR STUMPS NOT TO BE REMOVED

3' V.B. DITCH — 1 ON 3 FILL — IND. V.B. DITCH — 1 ON 2 FILL — 3' V.B. DITCH

NOTE:

THE WORK COVERED BY THESE PLANS INCLUDES REMOVAL OF THE EXISTING STRUCTURE, UNCLASSIFIED FOUNDATION EXCAVATION, CONSTRUCTION OF THE PROPOSED BRIDGE, PLACING STRUCTURE BACKFILL, SLOPE PROTECTION (HEAVY RIPRAP), AND APPROACH WORK TO LIMITS SHOWN.

CHECK DAMS (6 EA = 60 LIN FT) SHALL BE CONSTRUCTED WITH ROCK AS DIRECTED BY THE ENGINEER (SEE STANDARD SHEET V-96C REV 37)

QUANTITIES BELOW ARE FOR THE CONTRACTOR'S REFERENCE ONLY AND ARE INCIDENTAL TO MACHINE GRADING MODIFIED:

CLEARING	14.8 STA.'S
6" TO 14" TREE	102 EA
8" TO 18" STUMPS	15 EA
19" TO 34" TREE	11 EA
19" TO 34" STUMPS	4 EA
37" & OVER TREE	0 EA
EARTH EMBANKMENT	7920.0 CU YDS.
EMBANKMENT	52600 CU YDS.
SAND SUBBASE	2510.0 CU YDS.
WASTE MATERIAL	150.0 CU YDS.

QUANTITIES BELOW ARE FOR THE CONTRACTOR'S REFERENCE ONLY AND ARE INCIDENTAL TO MULCHING MODIFIED:

ROADSIDE SEEDING	124.0 LBS.
CEREAL RYE SEEDING	100.0 LBS.
CHEMICAL FERTILIZER NUTRIENT	298.0 LBS.
MULCHING	3.1 TONS
ANCHORING MULCH	1.24 ACRES

300' V.C. E=1.88 40 M.P.H. DESIGN

400' V.C. E=3.00 40 M.P.H. DESIGN

300' V.C. E=1.88 40 M.P.H. DESIGN

CROSS SECTION AT BRIDGE & ROADWAY

RT. DITCH PROFILE 22.65

LT. DITCH PROFILE 22.65

630.0 620.0 610.0 630.0 620.0 620.0 610.0

630.25 632.25 622.25 619.75 612.25 612.25 612.25 612.25 612.25 612.25 619.75

+1.0% -5.0% EXISTING ROAD GRADE PROPOSED FINISHED ROAD GRADE 0.0% +5.0%

STA. 5+34 EL. 612.25 STA. 5+70.5 EL. 612.25 STA. 6+07 EL. 612.25

(100' LT.) WEST CROSSECTION
(12' RT.) EAST CROSSECTION

EXTREME HIGH WATER ELEV. = 609.25
WATER ELEV. = 606.8
STREAM BED ELEV. = 602.5

LIMITS OF PART II BRIDGE CONSTRUCTION

POB. STA. 5+24

POB. 2+00

POE STA. 6+17

POE 13+50

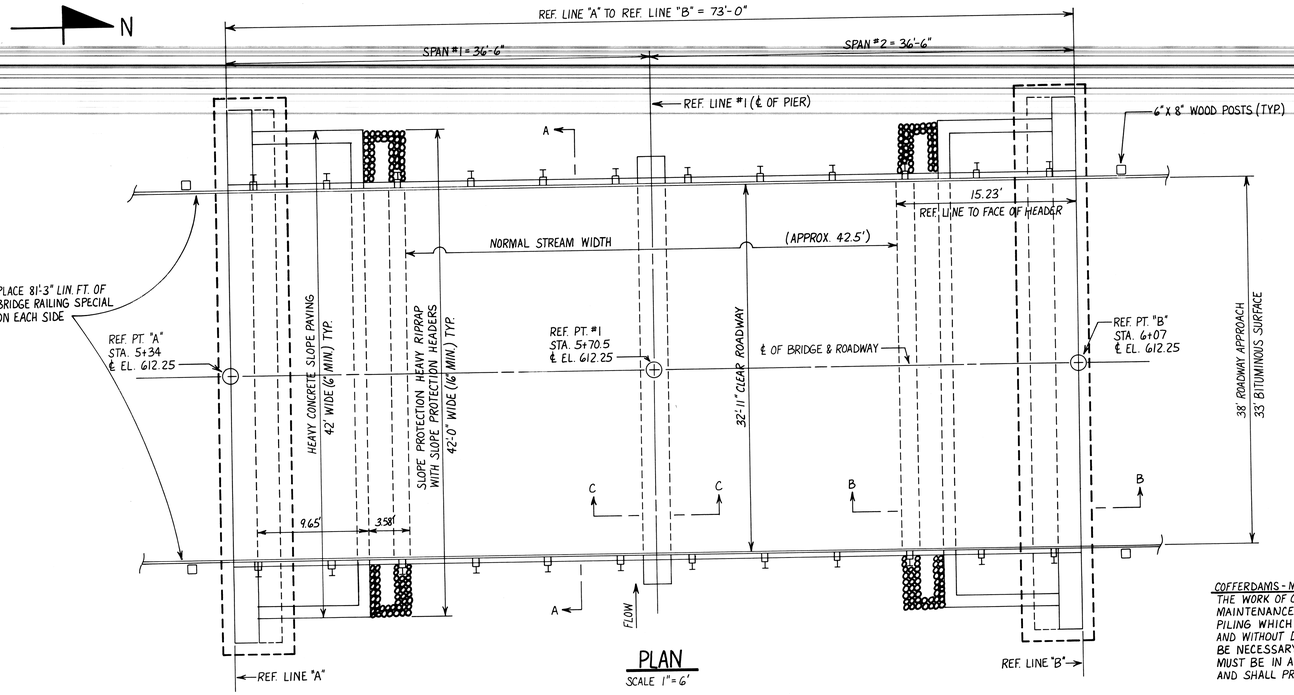
629.9 630.25 630.34 631.0 630.50 630.04 632.2 629.25 632.6 628.00 631.9 626.50 630.1 628.56 628.8 622.25 623.1 619.75 619.2 617.66 615.8 615.58 612.9 614.13 611.8 611.0 608.08 610.6 610.2 612.46 610.4 610.9 612.25 610.0 611.0 612.25 610.5 609.6 609.0 608.5 612.25 608.1 607.6 607.6 607.5 612.25 607.6 608.0 612.25 608.4 612.25 608.5 612.46 609.0 609.08 610.1 612.13 612.0 615.58 615.1 617.46 618.4 619.25 622.1 622.25 624.6

-3+00 -2+00 -1+00 0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00

627.1

CONTROL SECTION | JOB NO. | FEDERAL PROJECT | R.O.W. NO. | SHEET NO.

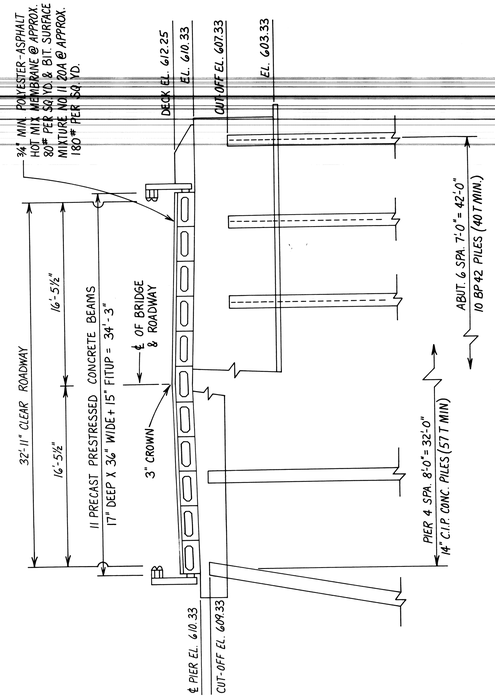
FED. ITEM NO. MCS 03020 JOB NO. 26956 A BRO 3(123) SHEET 2 OF 3-2-17



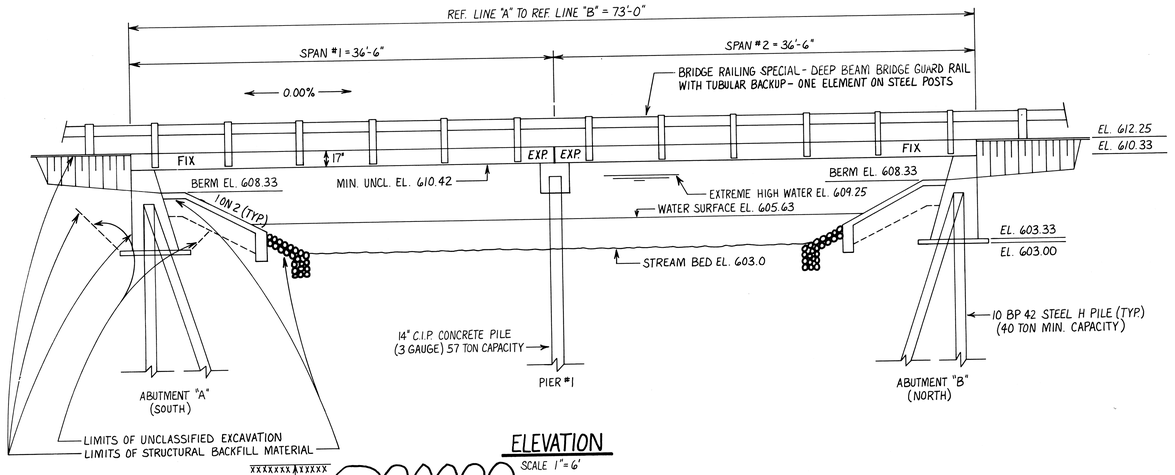
PLAN
SCALE 1"=6'

COFFERDAMS - MODIFIED

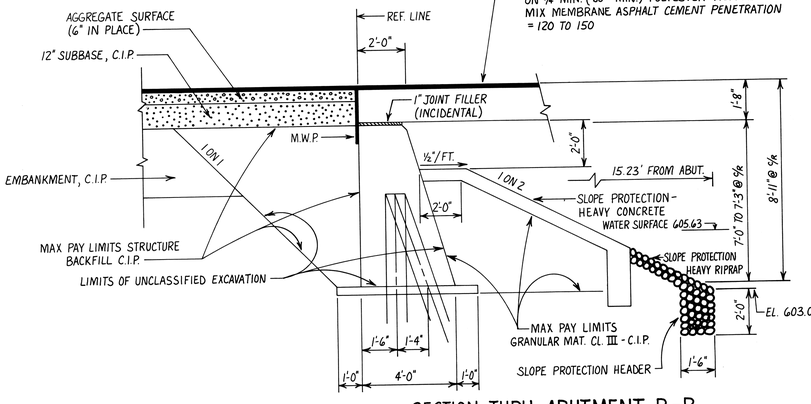
THE WORK OF COFFERDAMS - MODIFIED SHALL CONSIST OF THE DESIGN, INSTALLATION, MAINTENANCE, AND REMOVAL OF SUBSTANTIALLY WATER TIGHT STEEL SHEET PILING WHICH WILL PERMIT CONSTRUCTION OF THE SUBSTRUCTURE IN THE DRY AND WITHOUT DAMAGE TO THE WORK. A COMPLETE ENCLOSURE MAY OR MAY NOT BE NECESSARY DEPENDANT UPON TOPOGRAPHY AND SOIL TYPES. THE COFFERDAM MUST BE IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES PERMIT AND SHALL PREVENT EROSION INTO ANY ADJACENT WATERCOURSE.



SECTION A-A
SCALE 1"=6'

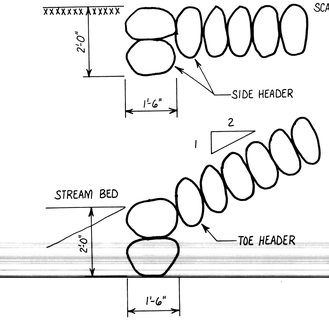


ELEVATION
SCALE 1"=6'

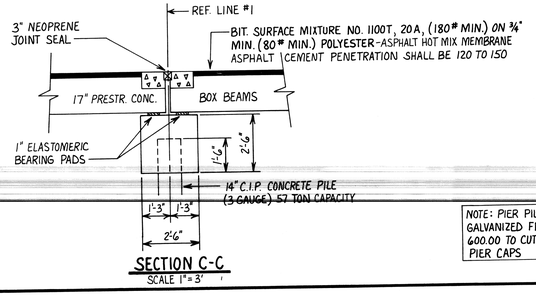


SECTION THRU ABUTMENT B-B
SCALE 1"=3'

DESIGN LIVE LOAD ON STRUCTURE - HS 20
LIVE LOAD PLUS IMPACT DEFLECTION = 1/1000
CURRENT TRAFFIC VOLUME - 150 V.P.D. (ESTIMATE)
END AREA = 414 SQ. FT. (338 SQ. FT. USEABLE)

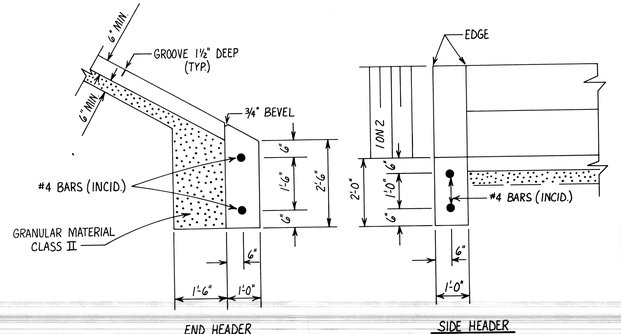


SLOPE PROTECTION HEADER DETAILS
INCIDENTAL TO HEAVY RIPRAP 96 LIN. FT.



SECTION C-C
SCALE 1"=3'

NOTE: PIER PILING TO BE GALVANIZED FROM ELEV. 600.00 TO CUT-OFF ELEV. PIER CAPS



SLOPE PROTECTION DETAILS
SCALE 1"=2'

BITUMINOUS SURFACING ON BRIDGE DECK

PLACE POLYESTER-ASPHALT HOT MIX MEMBRANE ¾" MIN. THICKNESS. 31'-3" WIDE, EST. AT 80 LBS. PER SQ. YD. OVER BOND COAT.

PLACE BITUMINOUS SURFACING MIXTURE NO. 1100T-20A, 31'-3" WIDE, EST. AT 180 LBS. PER SQ. YD. OVER BOND COAT.

NOTE: THE ASPHALT CEMENT PENETRATION SHALL BE 120 TO 150.

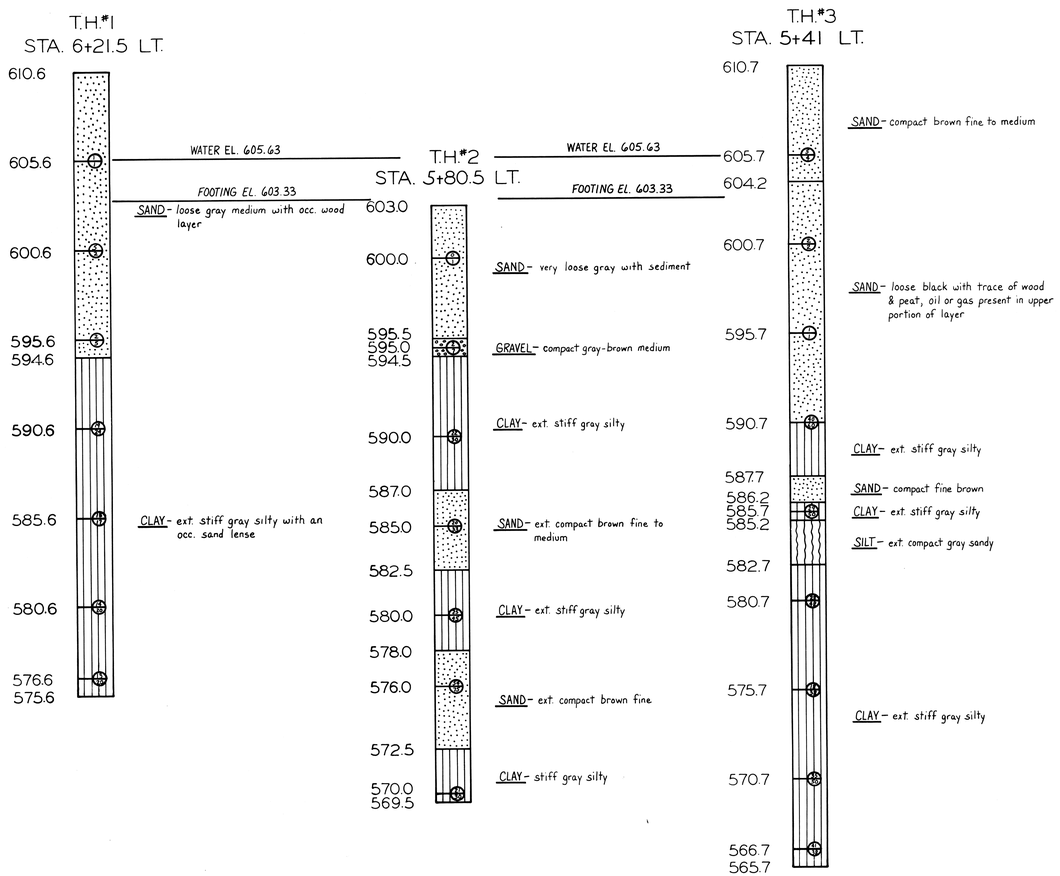
ALLEGAN COUNTY ROAD COMMISSION

BRIDGE NO. 2-15, PROJECT NO. LSM 6002(B), ON 63RD ST. APPROX. ½ OF A MILE NORTH OF 104TH AVENUE AND CROSSING THE MIDDLE BRANCH OF BLACK RIVER IN SECTION 23 OF CASCO TOWNSHIP.

GENERAL PLAN OF STRUCTURE

BRO 3(123) 26956 A	DATE: 3-11-87	DRAWN BY: R.A. HOLST	SHEET NO. 3 OF 11

B2 OF 3-2-17 BRO 3(123) MCS 03020 JOB NO. 26956 A FED. ITEM NO. PB 0534



2ND 6"
3RD 6"

NOTES:

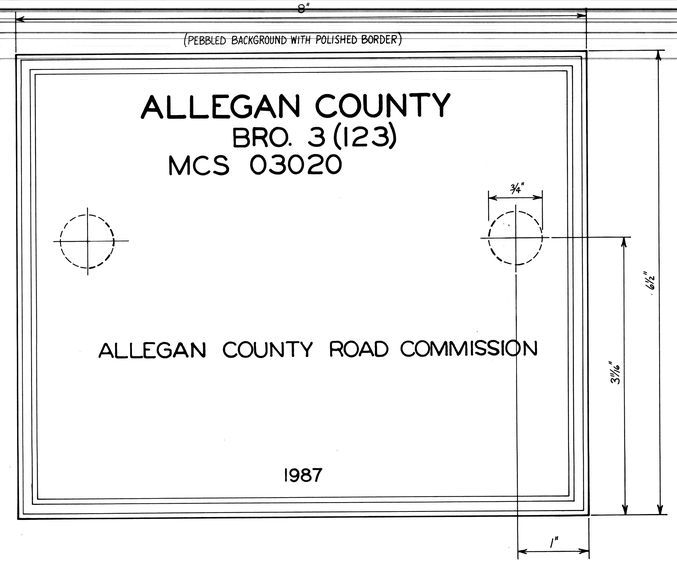
NUMBERS SHOWN IN CIRCLES IN THE BORING LOG-COLUMNS INDICATE THE NUMBER OF BLOWS DELIVERED BY A 140 LB. WEIGHT FALLING 30 INCHES REQUIRED TO DRIVE A 2" O.D. SAMPLING PIPE 18" (6" INCREMENTS).

TEST BORINGS FOR SUBSURFACE SOIL CLASSIFICATION WERE MADE BY SOILS AND STRUCTURE INC., 4382 HENRY ST., MUSKEGON, MICHIGAN 49441.

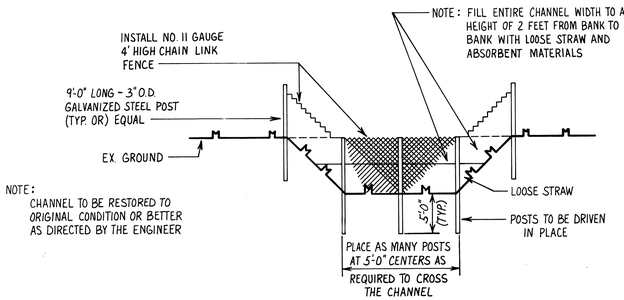
THE SOIL BORINGS REPRESENT POINT INFORMATION. PRESENTATION OF THIS INFORMATION IN NO WAY INFERS THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORING.

NOTE: ALL BORINGS WERE TAKEN 1' LEFT OF ℄ OF SECTION.

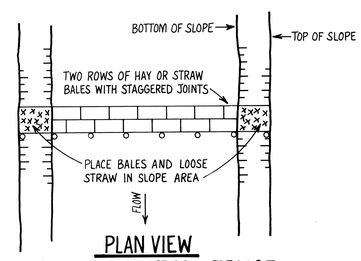
MIN. PIER PILE PENETRATION = ELEV. 593.00
MIN. ABUT. PILE PENETRATION = ELEV. 587.00
EST. PIER PILE PENETRATION = ELEV. 584.33
EST. ABUT. PILE PENETRATION
ABUTMENT A = ELEV. 580.00
ABUTMENT B = ELEV. 583.00



NAME PLATE



DETAIL OF EROSION CONTROL FENCE
NO SCALE



PLAN VIEW
EROSION CONTROL FENCE
NO SCALE

ALLEGAN COUNTY ROAD COMMISSION

BRIDGE NO. 2-15, PROJECT NO. LSM 6002(8), ON 63RD STREET APPROX. ½ MILE SOUTH OF 106TH AVENUE IN SECTION 23 OF CASCO TOWNSHIP.

LOG OF BORINGS

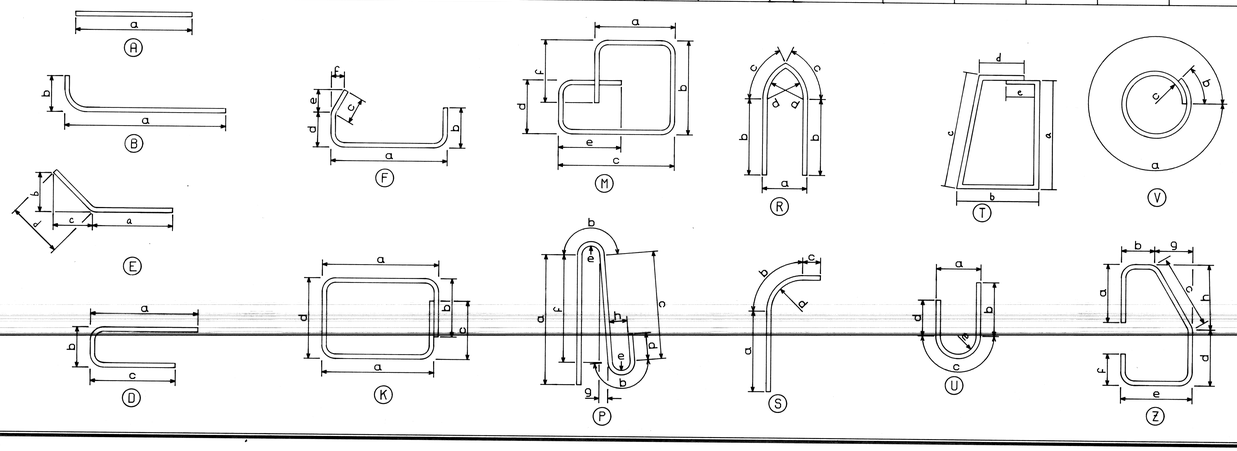
BRO. 3(123) 26956 A	DATE: 1-21-87	DRAWN BY: R.A. HOLST	SHEET NO. 4 OF 11

B2 OF 3-2-17 BRO 3(123) MCS 03020 JOB NO. 26956 A FED. ITEM NO. PB 0534

BAR	DIMENSIONS								NO. REQ'D	TOTAL WT.
	a	b	c	d	e	f	g	h		

BAR	DIMENSIONS								NO. REQ'D	TOTAL WT.
	a	b	c	d	e	f	g	h		

	BAR	DIMENSIONS						SIZE	LENGTH	NO. REQ'D	TOTAL WT.
		a	b	c	d	e	f				
ABUTMENTS	A-1	29'-0"						#8	29'-0"	10	774
	A-2	20'-6"						#8	20'-6"	10	547
	A-3	27'-2"						#6	27'-2"	16	653
	A-4	20'-6"						#6	20'-6"	16	493
	A-5	1'-11"						#4	1'-11"	8	10
	A-6	2'-6"						#4	2'-6"	8	13
	A-7	2'-11"						#4	2'-11"	24	47
	A-8	4'-0"						#4	4'-0"	8	21
	E-1	2'-6"	1'-2"	2'-3"	2'-7"			#4	5'-1"	8	27
	T-1	6'-7"	3'-6½"	6'-10"	1'-6"	1'-6"		#6	19'-10"	64	1907
									SUB-TOTAL		4492
PIER	D-51	1'-0"	36'-6"	1'-0"				#6	38'-5"	2	115
	D-52	1'-0"	36'-6"	1'-0"				#8	38'-5"	8	821
	D-53	1'-0"	1'-6"	1'-0"				#7	3'-5"	15	105
	K-51	2'-1"	1'-7"	1'-7"	2'-1"			#4	9'-4"	42	262
									SUB-TOTAL		1303
SUPERSTRUCTURE	EA-101	33'-9"						#4	33'-9"	4	90
									SUB-TOTAL		90
									TOTAL		5885



NOTES: ALL BENDS IN REINFORCING STEEL TO BE MADE ABOUT A PIN OF THE MINIMUM DIAMETER ALLOWED BY THE STANDARD SPECIFICATION.

TOLERANCES IN CUTTING AND BENDING BARS ARE AS ESTABLISHED IN MANUAL OF STANDARD PRACTICE OF THE REINFORCING STEEL INSTITUTE AND DETAILING MANUAL OF THE AMERICAN CONCRETE INSTITUTE.

WHERE FIELD CUTTING OF EPOXY BARS IS REQUIRED, THE CONTRACTOR SHALL REPAIR THE EPOXY COATING AT THE CUT END AS PROVIDED FOR IN STANDARD SPECIFICATION 8.05.03 (INCIDENTAL TO STEEL REINFORCEMENT EPOXY COATED).

STEEL REINFORCEMENT, REGULAR 5795 LBS

STEEL REINFORCEMENT, EPOXY COATED 90 LBS

BAR NUMBERS:

EPOXY COATED
BAR SHAPE
BAR SIZE
BAR LENGTH (FT)
BAR LENGTH (IN)

EA062906

WORK THIS SHEET WITH SHEET NO.

ALLEGAN COUNTY ROAD COMMISSION

BRIDGE NO. 2-15, PROJECT NO. LSM 6002(B), ON 63RD ST. APPROX. ½ OF A MILE NORTH OF 104TH AVENUE AND CROSSING THE MIDDLE BRANCH OF BLACK RIVER IN SECTION 23 OF CASCO TOWNSHIP.

STEEL REINFORCEMENT DETAILS

REVISIONS

NO.	DESCRIPTION	DATE	BY

SQUAD BOSS	
DRAWN BY	R.A. HOLST
TRACED BY	
CHECKED BY	

SHEET 5 OF 11

BRO 3(123)
26956 A

Master 10/3/18

B2 OF 3-2-17 BRO 3(123) MCS 03020 JOB NO. 26956 A FED. ITEM NO. PB 0534

ITEM	UNIT	CONTR QUANT.	FINAL QUANT.
BRIDGE PART II			
EROSION CONTROL FENCE	L. FT.	50.0	
UNCLASSIFIED FOUNDATION EXCAVATION	L.S.	1.0	
STRUCTURAL BACKFILL (C.I.P.)	L.S.	1.0	
STEEL PILE (10 BP 42) FURNISHED AND DRIVEN (10")	LIN. FT.	393.0	
TEST PILES - STEEL PILES (10")	EA.	2.0	
SPLICES - STEEL PILES (10")	EA.	8.0	
C.I.P. CONCRETE PILES (3 GAUGE) FURNISHED & DRIVEN (14")	LIN. FT.	135.0	
TEST PILES - C.I.P. CONCRETE PILES (14")	EA.	1.0	
SPLICES - STEEL SHELLS (14")	EA.	2.0	
POLYESTER - ASPHALT HOT-MIX MEMBRANE	SQ. YDS.	246.0	
BITUMINOUS MIXTURE NO. 1100T, 20 A	TONS	22.0	
SUBFOOTING CONCRETE GRADE 35S	CYD.	7.2	
SUBSTRUCTURE CONCRETE	CYD.	83.1	
PROTECTIVE SEALANT COATING FOR CONCRETE	SQ. FT.	93.0	
PREFORMED NEOPRENE JOINT SEAL (3")	LIN. FT.	34.3	
1" ELASTOMERIC BEARINGS	SQ. FT.	31.2	
17" PRESTRESSED CONCRETE DECK	SQ. FT.	2500.0	
MEMBRANE WATERPROOFING	SQ. FT.	214.0	
BRIDGE RAILING - SPECIAL	LIN. FT.	162.5	
STRUCTURAL NAME PLATE	L.S.	1.0	
STEEL REINFORCEMENT	LBS.	5795.0	
STEEL REINFORCEMENT - EPOXY COATED	LBS.	90.0	
HEAVY RIPRAP	SQ. YDS.	38.0	
HEAVY CONCRETE SLOPE PAVING	SQ. YDS.	94.0	
SLOPE PAVING HEADERS	LIN. FT.	124.0	
PILE GALVANIZATION	L.S.	1.0	
POST TENSIONING	L.S.	1.0	
COFFERDAMS (MODIFIED)	L.S.	1.0	
SEDIMENT BASIN EXCAVATION	CU. YDS.	10.0	
SEDIMENT EXCAVATION - MAINTANANCE	CU. YDS.	10.0	
APPROACHES PART I			
MACHINE GRADING (MODIFIED)	STA.	14.8	
SUBGRADE UNDERCUTTING TYPE II	CU. YDS.	650.0	
GRANULAR BLANKET	CU. YDS.	100.0	
CHECK DAMS	LIN. FT.	60.0	
HAY OR STRAW BALES	EA.	50.0	
AGGREGATE SURFACE COURSE (6")	SQ. YDS.	5206	
CLASS A APPROACHES (L.M.)	CU. YDS.	10.0	
BITUMINOUS MIXTURE NO. 1100T (20A)	TONS	33.0	
12" CLASS A CULVERT (CSP.)	LIN. FT.	104.0	
18" CLASS A CULVERT (CSP.)	LIN. FT.	40.0	
SUBGRADE UNDERDRAIN (4")	LIN. FT.	500.0	
BANK UNDERDRAIN (6")	LIN. FT.	200.0	
GALV. BEAM GUARD RAIL - TYPE B	LIN. FT.	100.0	
GUARD RAIL ANCHORAGE, CABLE	EA.	4.0	
CLASS B SODDING	SQ. YDS.	1242.0	
PLAIN RIPRAP	SQ. YDS.	18.0	
WATER	UNITS	5.0	
TOPSOIL SURFACE (3")	SQ. YDS.	6478.0	
MULCH MODIFIED	L.S.	1.0	
~~REMOVAL OF EXISTING STRUCTURE~~	~~L.S.~~	~~1.0~~	
MOBILIZATION	L.S.	1.0	
6A STONE (WASHED)	CU. YDS.	65.0	

PLAN ESTIMATE BY _____ DATE _____ DATA COMPLETED BY _____ DATE _____
CHECKED BY _____ DATE _____ HISTORY RECORDED BY _____ DATE _____
PROJ. ENG.

ALLEGAN COUNTY ROAD COMMISSION

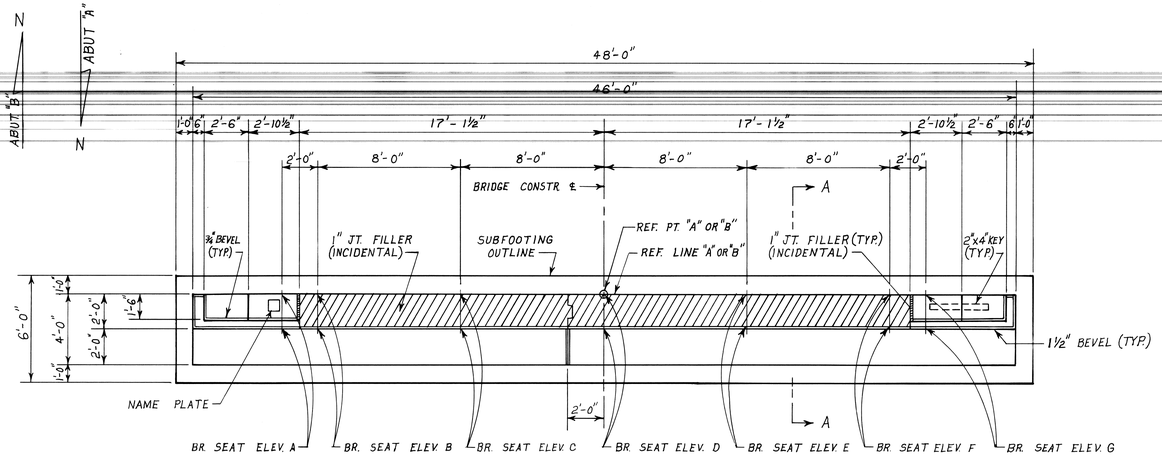
BRIDGE NO. 2-15, PROJECT NO. LSM 6002(B), ON 63RD ST. APPROX. ½ OF A MILE NORTH OF 104TH AVENUE AND CROSSING THE MIDDLE BRANCH OF BLACK RIVER IN SECTION 23 OF CASCO TOWNSHIP.

QUANTITY SHEET

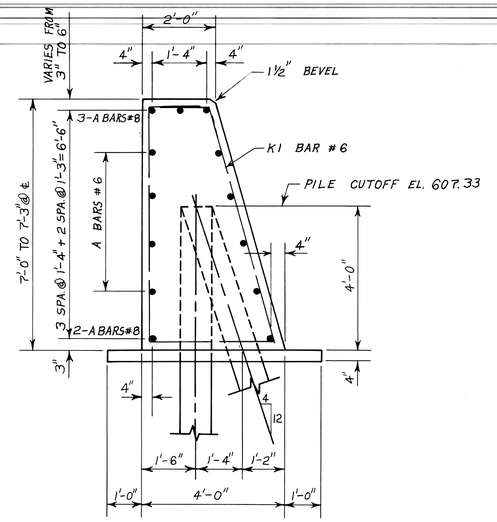
BRO. 3(123) 26956 A	DATE: 4-15-87	DRAWN BY: R.A. HOLST	SHEET NO. 6 OF 11

CONTROL SECTION	JOB NO.	FEDERAL PROJECT	R.O.W. NO.	SHEET NO.

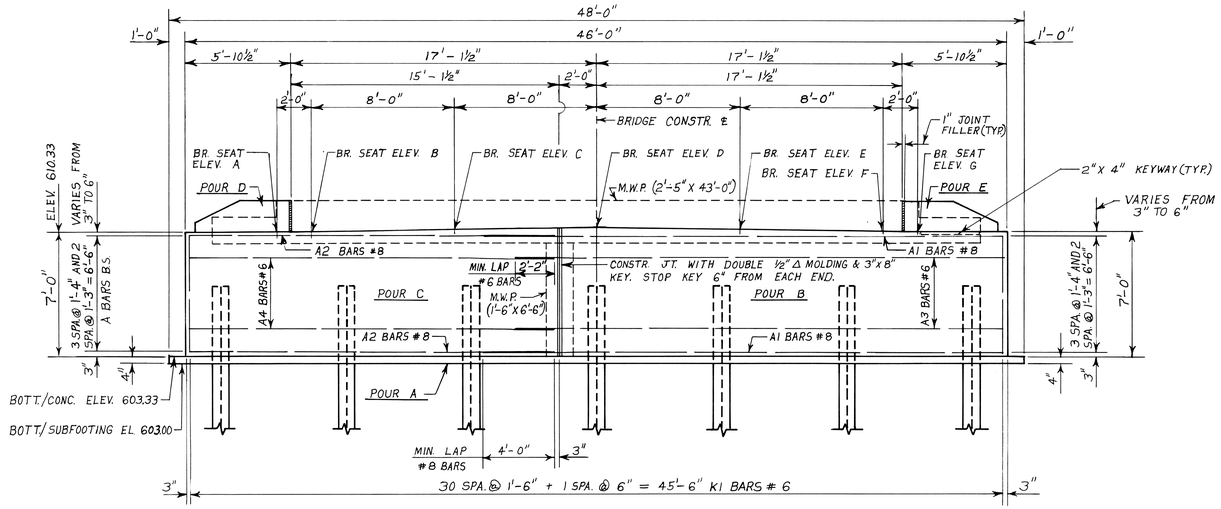
B2 OF 3-2-17 BRO. 3(123) MCS 03020 JOB NO. 26956 A FED. ITEM NO. PB 0534



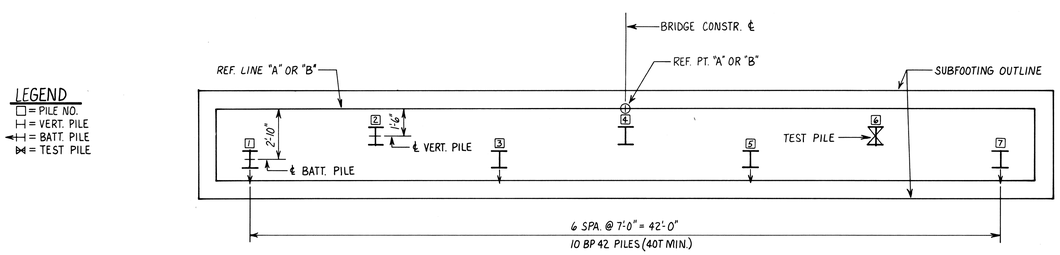
PLAN
SCALE: 1" = 4'



SECTION A-A
SCALE: 1" = 2'



ABUTMENT ELEVATION
Scale: 1" = 4'

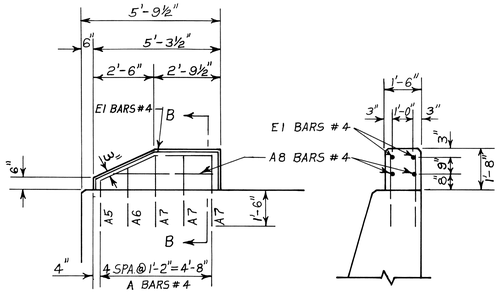


PILE LAYOUT
SCALE 1" = 4'

LEGEND
□ = PILE NO.
⊥ = VERT. PILE
⊥ = BATT. PILE
⋈ = TEST PILE

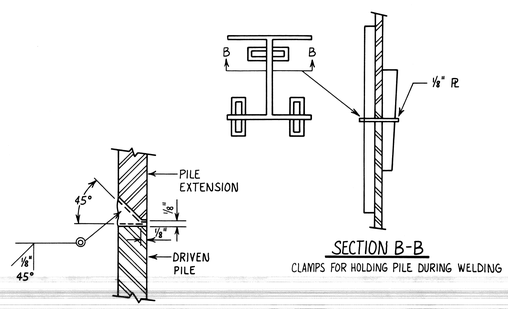
PILE PENETRATION ELEVATIONS		
	ABUT. "A"	ABUT. "B"
MINIMUM PENETRATION	587.0	587.0
ESTIMATED PENETRATION	580.0	583.0

BRIDGE SEAT ELEVATIONS		
LOCATION	ABUT "A"	ABUT "B"
A	610.33	610.33
B	610.36	610.36
C	610.47	610.47
D	610.58	610.58
E	610.47	610.47
F	610.36	610.36
G	610.33	610.33



SECTION B-B

SLOPEWALL DETAILS
Scale: 1" = 3'



WELD DETAIL

SECTION B-B
CLAMPS FOR HOLDING PILE DURING WELDING

100% BUTT-WELDED SPLICE

GENERAL NOTES:

1. WINGWALLS (POUR D & E) ARE NOT TO BE CAST UNTIL THE SUPERSTRUCTURE IS COMPLETE.
2. THE TOP OF ABUTMENT SHALL BE FINISHED WITH A WOODEN FLOAT TO A SMOOTH SURFACE, WITHOUT ANY UNEVENESS OF MORE THAN 1/16 INCH UNDER ANY BEARING PLATE, AND WITHIN 0.01 FOOT OF THE EST. ELEV.
3. ABUTMENT A & B ARE IDENTICAL EXCEPT FOR 180° ROTATION & ELEVATIONS.
4. CONSTRUCTION JOINTS ARE OPTIONAL.
5. M.W.P. DENOTES MEMBRANE WATERPROOFING.
6. ALL ABUTMENT PILES SHALL BE 10" H-SECTIONS WEIGHING 42 POUNDS PER FOOT AND DRIVEN TO A MINIMUM BEARING CAPACITY OF 40 TONS AS DETERMINED BY THE MDOT DYNAMIC BEARING FORMULA.
7. FOR LIMITS OF SLOPE PROTECTION HEADERS & SLOPE PROTECTION, SEE SHEET NO. 3.
8. EXISTING STRUCTURE IS SHOWN ON SHEET NO. 2.
9. ADJUST THE SPACING OF THE REINFORCING STEEL AS REQUIRED TO PERMIT PLACING OF POSITION DOWEL.
10. ONE TEST PILE AT THE LOCATION AS DIRECTED BY THE PROJECT ENGINEER, SHALL BE DRIVEN IN EACH ABUTMENT.
11. A.P.F.—ASSOCIATED PIPE AND FITTING COMPANY SPLICE SLEEVES IN ACCORDANCE WITH MFGRS. RECOMMENDATIONS MAY BE SUBSTITUTED FOR USE OF SPLICES AT THE OPTION OF THE CONTRACTOR.
12. STEEL PILES SHALL MEET THE REQUIREMENTS OF ASTM A36.
13. AFTER THE STEEL PILES ARE DRIVEN AND CUT-OFF THE PORTION TO BE EMBEDDED IN CONCRETE SHALL BE THROUGHLY CLEANED OF ALL PAINT, SCALE, AND DIRT TO ENSURE THAT A SATISFACTORY BOND BETWEEN THE CONCRETE AND STEEL WILL BE OBTAINED.
14. FOR BEVEL AND MOLDING DETAILS, SEE STANDARD SHEET NO. R14F.
15. PILES ARE TO BE DRIVEN TO SUCH ACCURACY THAT THE ENDS OF THE PILES TO BE EMBEDDED IN THE CONCRETE ARE WITHIN 3" OF THE LOCATIONS SHOWN ON THE PLANS.
16. POSITION DOWEL HOLES SHALL BE DRILLED INTO THE ABUTMENTS AFTER BEAM ERECTION.

PILE QUANTITIES - 10" STEEL H PILE (40T)						
	TYPE OF PILE	NO.	EST. LENGTH (EA.)(FURN. & DRIVEN)	TOTAL LENGTH (FURN. & DRIVEN)	SPLICES (EA.)	PILE POINTS (EA.)
ABUT. A	TEST PILE	1	37	37		0
	VERT.	2	27	54		0
	BATT.	4	29	116		0
ABUT. B	TEST PILE	1	34	34		0
	VERT.	2	24	48		0
	BATT.	4	26	104		0
TOTAL BOTH ABUTMENTS				393	8	0

CONCRETE QUANTITIES				
	SUBFOOTING CONCRETE		SUBSTRUCTURE CONCRETE	
POUR	ABUT. A	ABUT. B	ABUT. A	ABUT. B
A - SUBFOOTING	3.6	3.6		
B - ABUTMENT - HALF			19.8	19.8
C - ABUTMENT - HALF			16.6	16.6
D - WINGWALL			.4	.4
E - WINGWALL			.4	.4
TOTALS	3.6	3.6	37.2	37.2
TOTAL SUBFOOTING CONC. = 7.2 CU. YDS. TOTAL SUBSTRUCTURE CONC. = 74.4 CU. YDS.				

MISCELLANEOUS QUANTITIES				
ITEM	UNIT	ABUT. A	ABUT. B	TOTAL
UNCLASSIFIED FOUNDATION EXCAVATION	L.S.			1.0
STRUCTURE BACKFILL (C.I.P.)	L.S.			1.0
1" JOINT FILLER (INCIDENTAL)	SQ. FT.	64	64	128
MEMBRANE WATERPROOFING	SQ. FT.	107	107	214
MOBILIZATION	L.S.			1.0
NAME PLATE	EA.			1.0
COFFERDAMS (MODIFIED)	L.S.			1.0

QUANTITIES BELOW ARE FOR CONTRACTORS REFERENCE ONLY AND ARE INCIDENTAL TO UNCLASSIFIED FOUNDATION EXCAVATION, STRUCTURE BACKFILL (C.I.P.), AND CHANNEL EXCAVATION:

UNCLASSIFIED FOUNDATION EXCAVATION - 128 CU. YDS.
STRUCTURE BACKFILL C.I.P. - 250 CU. YDS.

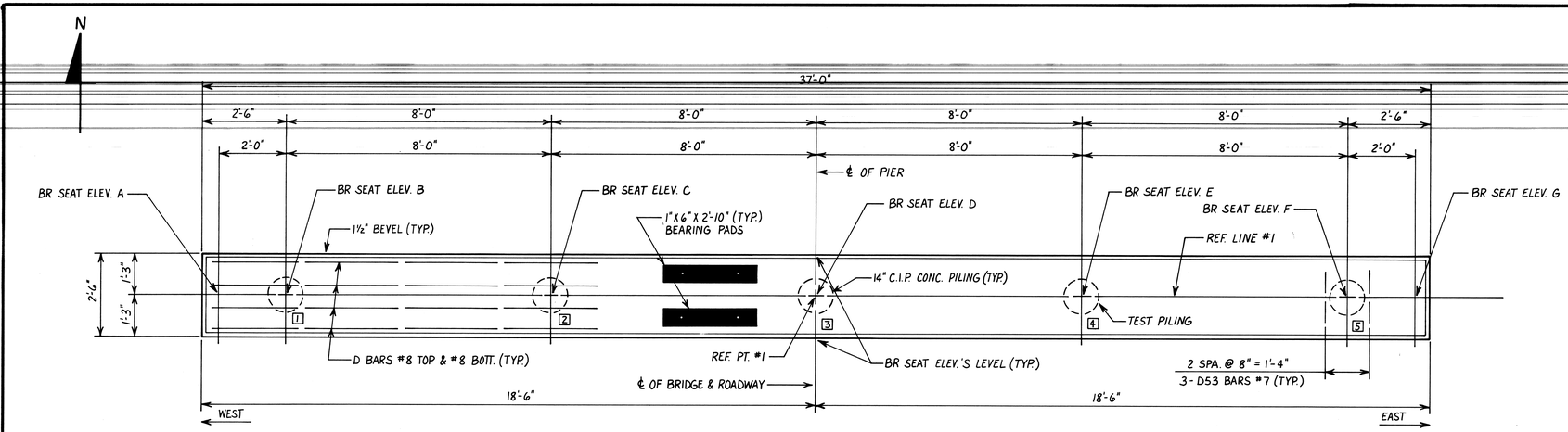
ALLEGAN COUNTY ROAD COMMISSION

BRIDGE NO. 2-15, PROJECT NO. LSM 6002(B), ON 63RD ST. APPROX. 1/2 OF A MILE NORTH OF 104TH AVENUE AND CROSSING THE MIDDLE BRANCH OF BLACK RIVER IN SECTION 23 OF CASCO TOWNSHIP.

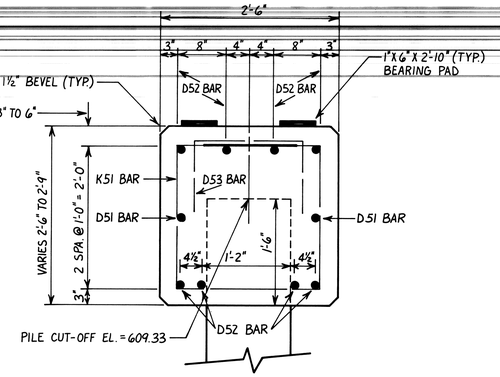
ABUTMENT DETAILS

BRO. 3(123) 26956 A	DATE: 4-2-87	DRAWN BY: DEL REDDER	SHEET NO. 7 OF 11

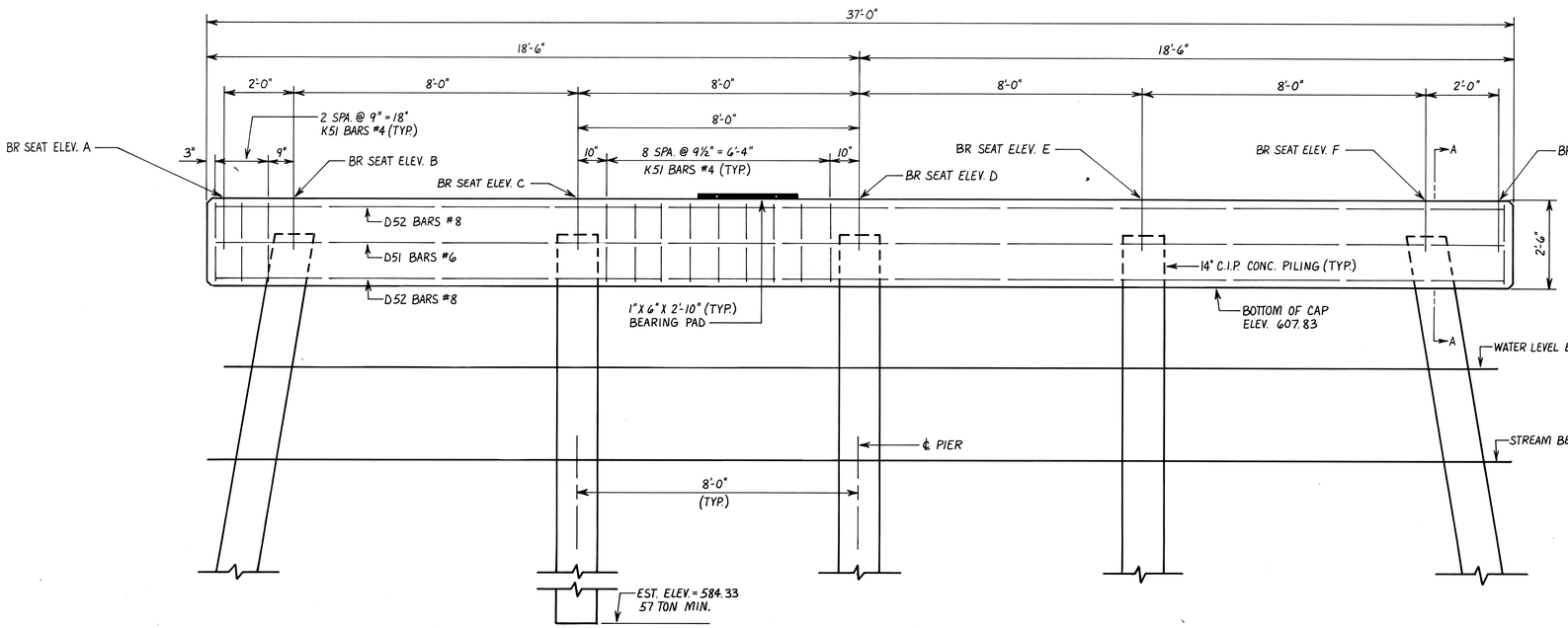
B2 OF 3-2-17 BRO. 3(123) MCS 03020 JOB NO. 26956 A FED. ITEM NO. PB 0534



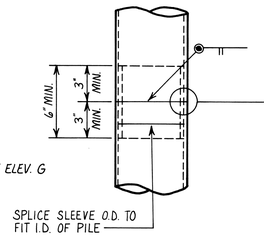
PLAN
SCALE 1"=2'

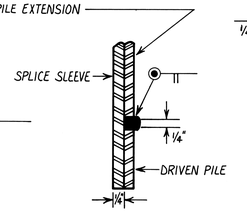


SECTION A-A
SCALE 1"=1'



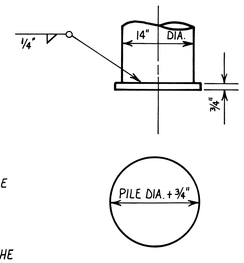
ELEVATION
SCALE 1"=2'





SPLIT CHILL RINGS ARE RECOMMENDED BY THE MANUFACTURER MAY BE SUBSTITUTED FOR SPLICE SLEEVES AT THE OPTION OF THE CONTRACTOR

STEEL PIPE SPLICE DETAILS
FOR SPIRAL WELDED AND SEAMLESS PIPE SHELLS



C.I.P. PILE POINTS DETAILS
INCIDENTAL TO C.I.P. CONCRETE PIPES, FURNISHED & DRIVEN (14")

PILE PENETRATION ELEVATION	
	PIER #1
MINIMUM PENETRATION	593.00
ESTIMATED PENETRATION	584.33

BRIDGE SEAT ELEVATIONS	
LOCATION	PIER #1
A	610.33
B	610.36
C	610.47
D	610.58
E	610.47
F	610.36
G	610.33

CONCRETE QUANTITIES	
	GRADE A (6AA)
PIER #1	8.7 CU. YDS.
TOTAL	8.7 CU. YDS.

PILE QUANTITIES						
	TYPE OF PILE	NO.	EST. LENGTH (EA.)(FURN. & DRIVEN)	TOTAL LENGTH (FURN. & DRIVEN)	SPLICES (EA.)	PILE POINT (EA.)
PIER 1	VERT.	2	25.0	50.0		2
PIER 1	BATTER	2	25.0	50.0		2
TEST PILE	TEST PILE	1	35.0	35.0		1
TOTAL PIER 1				135.0	2	5

MISCELLANEOUS QUANTITIES		
ITEM OF WORK	UNIT	QUANTITY
PROTECTIVE SEALANT COATING FOR CONCRETE	SQ. FT.	93.0
PILE GALVANIZATION	L.S.	1.0

GENERAL NOTES:

1.–THE SUBSTRUCTURE CONCRETE QUANTITY IS COMPUTED ON THE BASIS THAT THE VOLUME OF CONCRETE DISPLACED BY THE EMBEDMENT OF THE PILES IS DEDUCTED.
2.–THE TOP OF THE PIER SHALL BE FINISHED TO A TRUE PLANE WITH A WOODEN FLOAT, WITHOUT ANY UNEVENESS OF MORE THAN 1/16 INCH UNDER ANY BEARING PADS, AND WITHIN 0.01 FOOT OF THE ESTABLISHED ELEVATION.
3.–PILE SHELLS FOR CAST-IN-PLACE CONCRETE PILES DRIVEN WITHOUT A REMOVABLE CORE SHALL BE A MINIMUM OF #3 U.S. STANDARD GAGE 0.179" NORMAL THICKNESS, 14" O.D., AND MAY BE STEEL PIPE OF SEAMLESS OR SPIRAL WELDED TYPE OR FLUTED PIPE AS MANUFACTURED BY THE UNION METAL MANUFACTURING CO., OR APPROVED EQUAL. ALL PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 57 TONS AS DETERMINED BY MDOT DYNAMIC BEARING FORMULA.
4.–FOR BEVEL & MOLDING DETAILS, SEE SHEET NO. R14F.
5.–AFTER THE STEEL PILES HAVE BEEN DRIVEN AND CUT-OFF, THE PORTIONS OF THE PILES THAT ARE TO BE EMBEDDED IN CONCRETE SHALL BE THROUGHLY CLEANED OF ALL DIRT, SCALE, AND PAINT TO ENSURE THAT A SATISFACTORY BOND BETWEEN THE CONCRETE AND STEEL WILL BE OBTAINED.
6.–ADJUST THE SPACING OF THE REINFORCING STEEL AS REQUIRED TO PERMIT PLACING OF POSITION DOWELS.
7.–STEEL H-PILES SHALL NOT BE USED ON THIS PIER.
8.–PIER PILES ARE TO BE DRIVEN TO SUCH ACCURACY THAT THE ENDS OF THE PILES TO BE EMBEDDED IN THE CONCRETE ARE WITHIN 3" OF THE LOCATION SHOWN ON THE PLANS.
9.–ONE TEST PILE AT THE LOCATION AS DIRECTED BY THE PROJECT ENGINEER, SHALL BE DRIVEN IN THE PIER.
10.–THE TOP OF THE PIER SHALL BE GIVEN ONE APPLICATIONS OF PROTECTIVE SEALANT COATING FOR SUBSTRUCTURE CONCRETE AFTER THE PLACING NEOPRENE PADS.
11.–ALL STEEL REINFORCEMENT SHALL BE GRADE 60 (F's = 24,000 P.S.I.).
12.–PILE POINTS SHALL BE IN ACCORDANCE WITH THE DETAIL SHOWN ON THE PLANS. POINTS SHALL BE ATTACHED TO THE SHELLS WITH ¼" CONTINUOUS WELDS.
13.–PILES SHALL BE GALVANIZED FROM ELEV. 600.00 TO CUT-OFF ELEVATION.

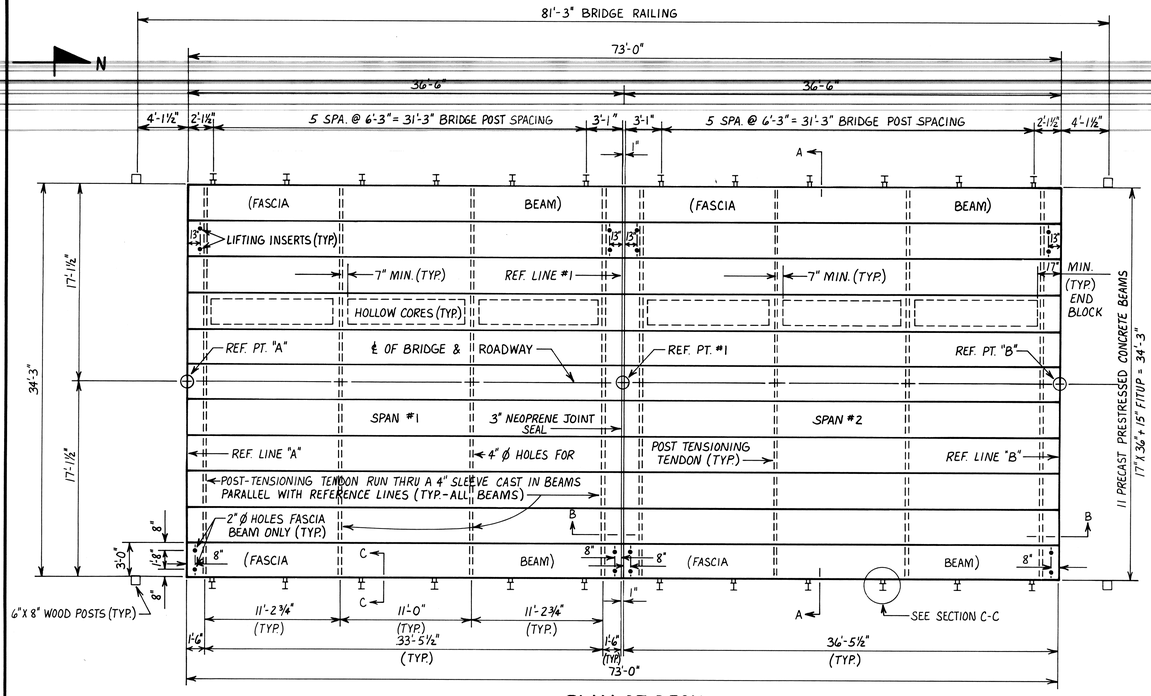
ALLEGAN COUNTY ROAD COMMISSION

BRIDGE NO. 2-15, PROJECT NO. LSM 6002(B), ON 63RD ST. APPROX. ½ OF A MILE NORTH OF 104TH AVENUE AND CROSSING THE MIDDLE BRANCH OF BLACK RIVER IN SECTION 23 OF CASCO TOWNSHIP.

PIER DETAILS

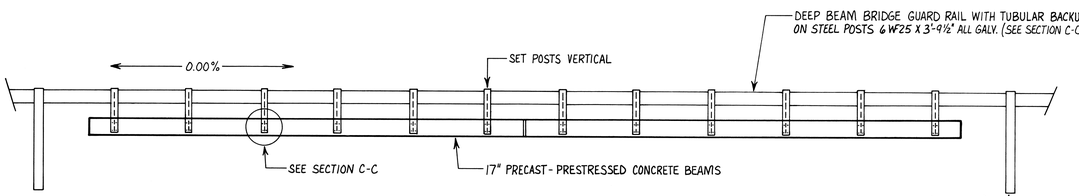
BRO. 3(123) 26956 A	DATE: 3-24-87	DRAWN BY: R.A. HOLST	SHEET NO. 8 OF 11

FED. ITEM NO. PB 0534 BRO. 3(123) MCS 03020 JOB NO. 26956 A
B2 OF 3-2-17



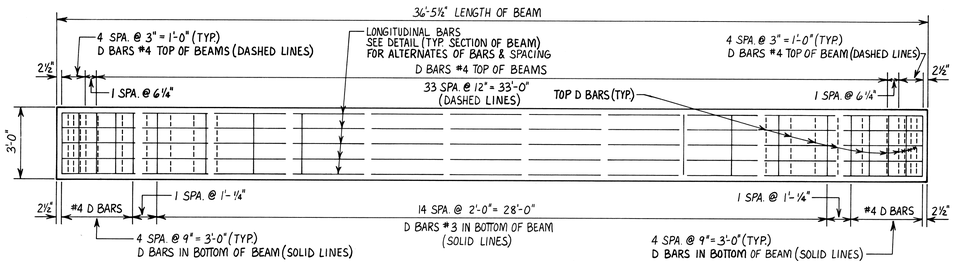
PLAN OF DECK

SCALE 1"= 6'



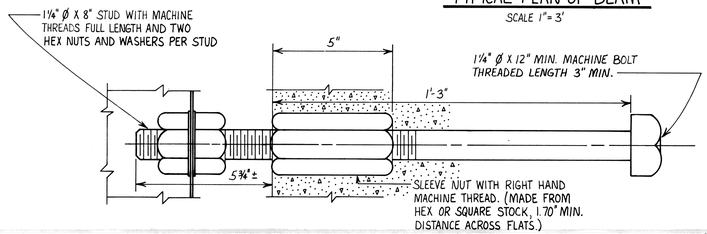
ELEVATION

SCALE 1"= 6'



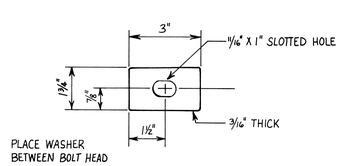
TYPICAL PLAN OF BEAM

SCALE 1"= 3'



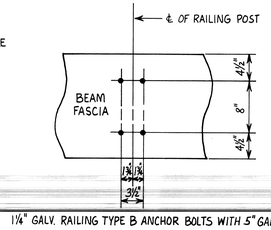
TYPE B ANCHOR DETAIL

SCALE 1"= 3"



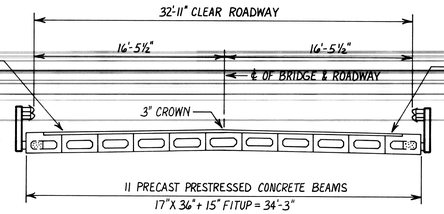
SPECIAL WASHER

SCALE 1"= 3"



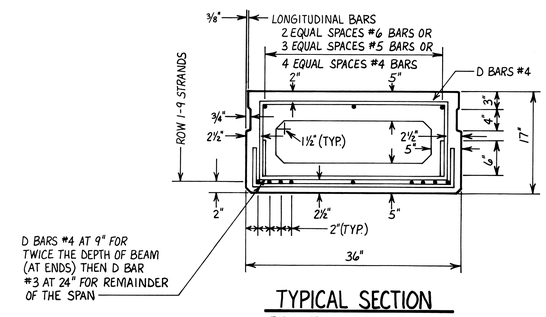
SECTION C-C

¾" MIN. POLYESTER-ASPHALT HOT MIX MEMBRANE OVER PRESTRESSED CONCRETE BOX BEAMS @ APPROX. 80# PER SQ. YD.



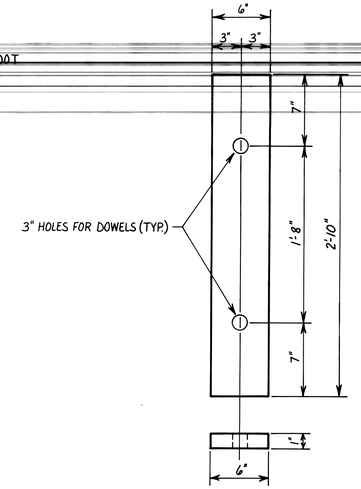
SECTION A-A

SCALE 1"= 6'



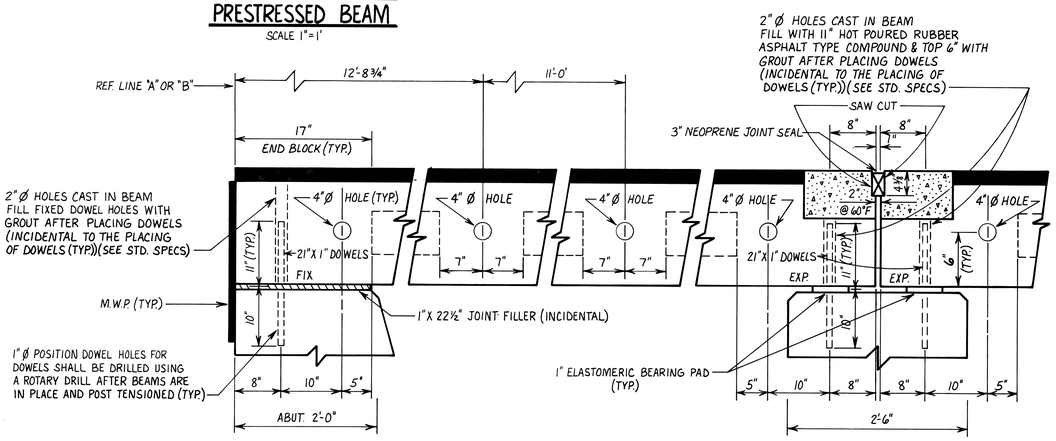
TYPICAL SECTION PRESTRESSED BEAM

SCALE 1"= 1'



ELASTOMERIC BEARING PADS

20 REQ'D



SECTION B-B

SCALE 1"= 1'

SUPERSTRUCTURE QUANTITIES

ITEM	UNIT	AMOUNT
17" PRESTRESSED CONCRETE DECK	SQ. FT.	2500
BRIDGE RAILING (SPECIAL)	LIN. FT.	162.5
GALVANIZED BEAM GUARD RAIL, TYPE B	LIN. FT.	100
POLYESTER-ASPHALT HOT MIX MEMBRANE	SQ. YDS.	246
BITUMINOUS SURFACING MIXTURE - NO. 11, 20A	TONS	22
1" ELASTOMERIC BEARING PADS	SQ. FT.	31.2
PREFORMED NEOPRENE JOINT SEAL 3"	LIN. FT.	34.3
POST TENSIONING	L.S.	1.0
GUARD RAIL ANCHORAGE-CABLE	EA.	4.0

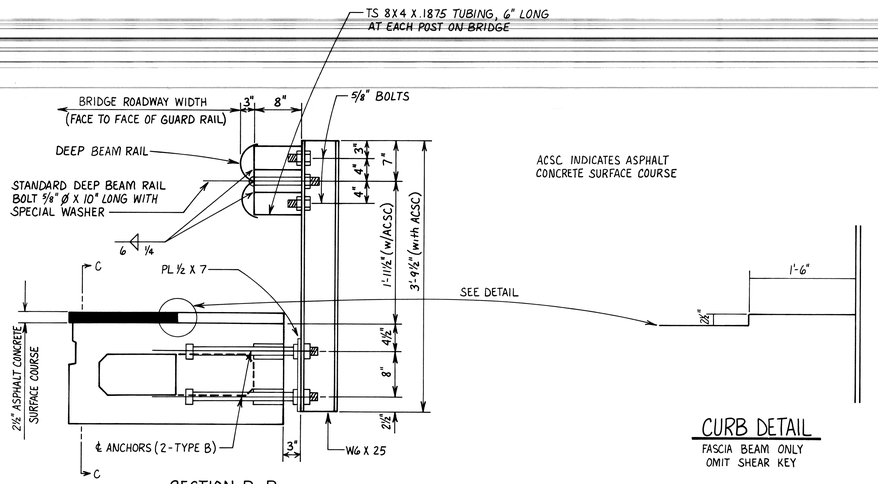
ALLEGAN COUNTY ROAD COMMISSION

BRIDGE NO. 2-15, PROJECT NO. LSM 6002(B), ON 63RD ST. APPROX. ½ OF A MILE NORTH OF 104TH AVENUE AND CROSSING THE MIDDLE BRANCH OF BLACK RIVER IN SECTION 23 OF CASCO TOWNSHIP.

SUPERSTRUCTURE DETAILS

BRO 3(123) 26956 A	DATE: 3-26-87	DRAWN BY: R.A. HOLST	SHEET NO. 9 OF 11

B2 OF 3-2-17 BRO 3(123) MCS 03020 JOB NO. 26956 A FED. ITEM NO. PB 0534



ACSC INDICATES ASPHALT CONCRETE SURFACE COURSE

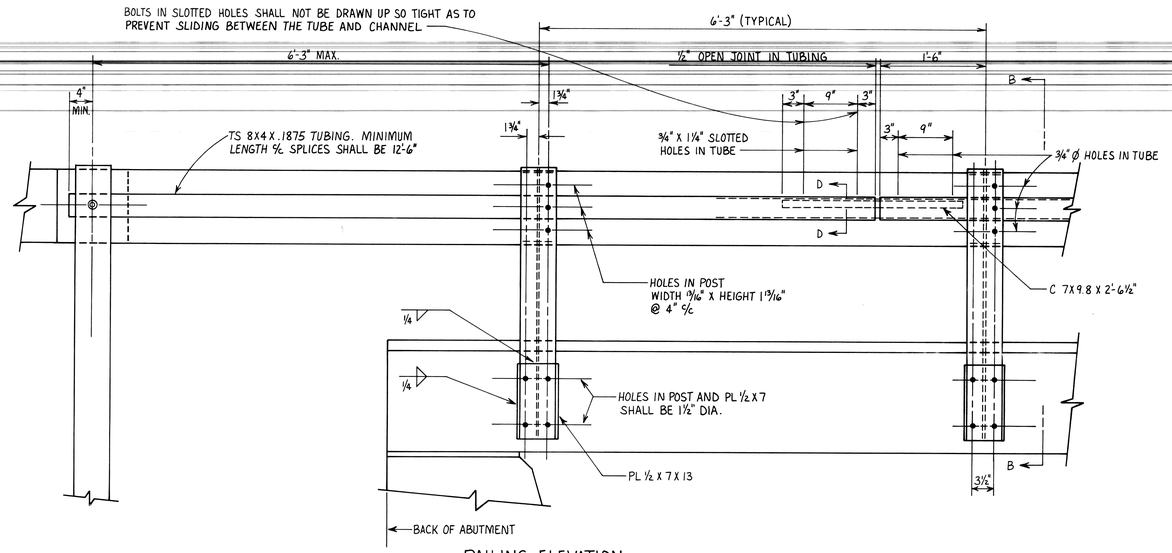
SECTION B-B TYPE I POST

SCALE 1"=1'

REFER TO PAGE 9

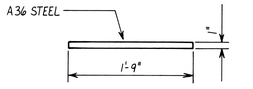
CURB DETAIL

FASCIA BEAM ONLY
OMIT SHEAR KEY



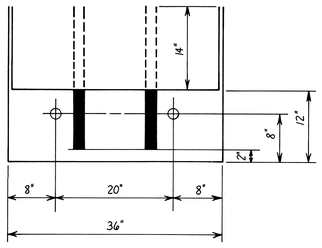
RAILING ELEVATION

SCALE 1" = 1"

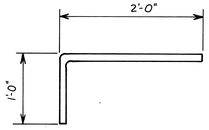


POSITION DOWEL (GALV.)

16 REQUIRED
(INCIDENTAL TO 17" BOX BEAMS)

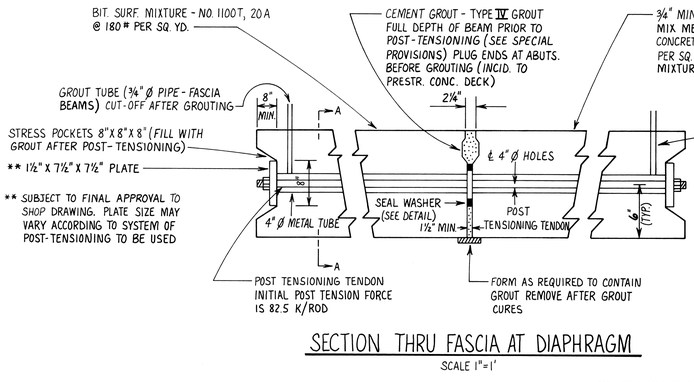


PLAN VIEW



BENT BAR #4

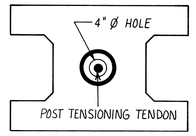
EPOXY COATED



** SUBJECT TO FINAL APPROVAL TO SHOP DRAWING. PLATE SIZE MAY VARY ACCORDING TO SYSTEM OF POST-TENSIONING TO BE USED

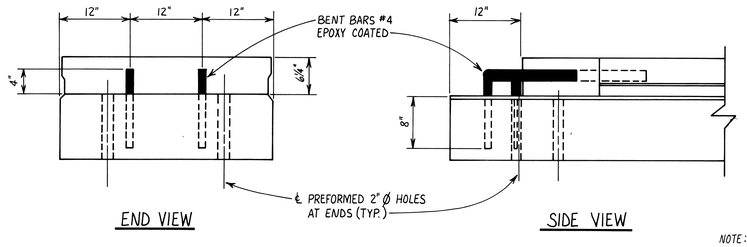
SECTION THRU FASCIA AT DIAPHRAGM

SCALE 1"=1'



SECTION A-A

SCALE 1"=1'



END VIEW — SIDE VIEW

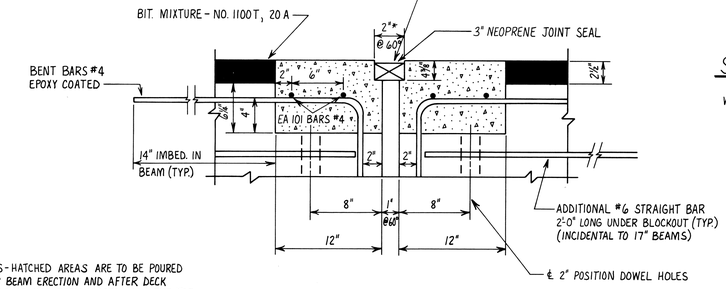
END OF BEAM DETAIL AT PIER

SCALE 1"=1'

NOTE: CROSS-HATCHED AREAS ARE TO BE POURED AFTER BEAM ERECTION AND AFTER DECK SURFACING HAS BEEN PLACED, AND THE TOP HAND-TROWELED TO A SMOOTH FINISH. ADDITIONAL CONCRETE CU. YDS. INCIDENTAL TO PRESTRESSED PRECAST CONCRETE DECK. (GRADE 45D)
(SEE SPECIAL PROVISIONS FOR "JOINT PREPARATION)

* INCREASE BY 1/16" FOR EACH 10° OF BEAM TEMPERATURE BELOW 60°F FOR EACH 70' OF BEAM LENGTH, OR DECREASE BY 1/16" FOR EACH 10° OF BEAM TEMPERATURE ABOVE 60°F FOR EACH 70' OF BEAM LENGTH (BEAM LENGTH IS MEASURED AT RT. ∠'s TO JOINT) ANOTHER METHOD OF SEALING THIS JOINT MAY BE USED IF APPROVED BY THE ENGINEER

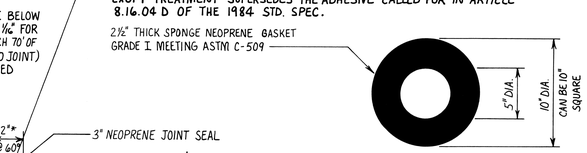
THE PERFORMED NEOPRENE JOINT SEAL IS TO BE CLEANED WITH TOLUENE AND BONDED TO THE CONCRETE WITH THE EXOPY BONDING AGENT AS DESCRIBED IN ARTICLE 8.16.07 OF THE STD. SPEC. "INCIDENTAL". THIS EXOPY TREATMENT SUPERSEDES THE ADHESIVE CALLED FOR IN ARTICLE 8.16.04 D OF THE 1984 STD. SPEC.



NOTE: INSTALLATION OF EXPANSION JOIN TO BE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS

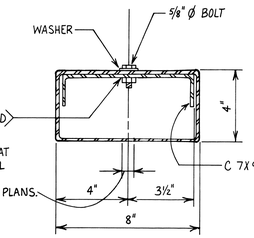
EXPANSION JOINT DETAIL AT PIERS

SCALE 1½" = 1'



SEAL WASHER DETAIL

SCALE 2"=1'
WASHER IS INCIDENTAL TO PRESTR. CONCRETE DECK



SECTION D-D

SCALE 1"=4"

SUPERSTRUCTURE NOTES:

1.–FABRICATION: MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, 1984 EDITION.
2.–DESIGN: CURRENT ASSHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGE HS 20-44 LOADING. LIVE LOAD PLUS IMPACT DEFLECTION EQUALS 1/1000 OF SPAN LENGTH
3.–THE APPROX. WEIGHT OF EACH PRESTRESSED CONCRETE BEAM IS CALULATED BY THE SUPPLIER.
4.–ALL RAILING ELEMENTS, BOLTS, AND WASHERS ARE TO BE GALV. AND TOUCHED UP IF NECESSARY AFTER FABRICATION.
5.–THE RAILING POSTS SHALL BE GALV. STEEL POSTS W6 X 25 (24 EA. – 3'-9½" POSTS).
6.–ALL MATERIAL & LABOR FOR BRIDGE RAILING ARE INCIDENTAL TO THE BID ITEM "BRIDGE RAILING SPECIAL".
7.–BEAMS WITH HONEYCOMB OF SUCH EXTENT TO AFFECT THE STRENGTH OF RESISTANCE TO DETERIORATION WILL NOT BE ACCEPTED.
8.–EACH VOID (IN BEAMS) SHALL HAVE ½" TO 1" DRAINS AT EACH END.
9.–POSITION DOWELS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION A-153 ARE INCIDENTAL TO THE PRESTRESSED CONCRETE BEAMS.
10.–PRESTRESSING STRANDS ARE TO BE ½" Ø WITH AN AREA OF 0.1531 SQ. INCHES AND SHALL BE GRADE 270 IN ACCORDANCE WITH ASTM A416 AND SUPPLEMENT. LOW RELAXATION STRANDS SHALL BE USED AS SHOWN IN TYPICAL SECTION. WHEN BOND BREAKERS ARE REQUIRED, THEY SHALL BE USED ON STRANDS IN THE BOTTOM ROWS AND PLACE SYMMETRICALLY ABOUT THE ℄ OF THE BEAM. PLACING BOND BREAKER ON PERIPHERAL STRANDS SHALL BE AVOIDED. THE NUMBER, LOCATION, AND LENGTH OF BOND BREAKERS SHALL BE AS SHOWN IS FROM END OF BEAM TO END OF BREAKER. THEY SHALL CONSIST OF TWO TUBE (ONE INSIDE THE OTHER) WITH OVERLAP TURNED IN OPPOSITE DIRECTION.
11.–THE VALUE OF "E" USED IN CALULATING STRAND ELONGATION SHALL BE AS RECOMMENDED BY STRAND MANUFACTURER. STRANDS SHALL BE PLACED SYMMETRICALLY ABOUT THE CENTERLINE OF THE BEAM.
12.–A PILOT ROD IS SUGGESTED FOR THREADING POST-TENSIONING HOLES DURING ERECTION IN ORDER TO FACILITATE INSERTION OF POST-TENSIONING ROD.
13.–ELASTOMERIC BEARING PADS TO BE MADE TO GRADE 70 DUROMETER NEOPRENE ONLY.
14.–MATERIAL: ALL ANCHOR BOLTS, NUTS, AND STUDS SHALL CONFORM TO THE PHYSICAL PROPERTIES OF ASTM-A325 EXCEPT THAT THE MINIMUM ELONGATION SHALL BE 10%. THE CHEMICAL PROPERTIES ARE WAIVED.
15.–GALVANIZING: ALL GUARD RAIL POSTS, TUBES, HARDWARE, AND ACCESSORIES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM-A123 OR ASTM-A153, EXCEPT AS OTHERWISE NOTED.

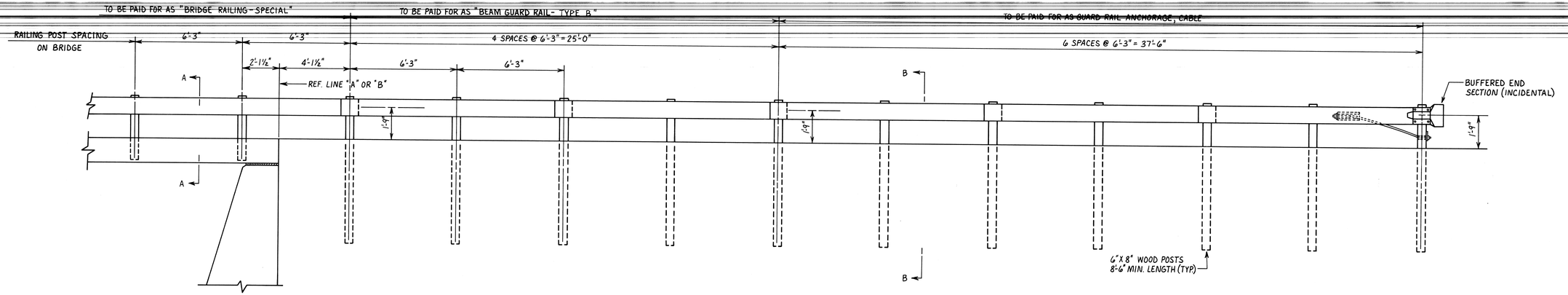
ALLEGAN COUNTY ROAD COMMISSION

BRIDGE NO. 2-15, PROJECT NO. LSM 6002(B), ON 63RD ST. APPROX. ½ OF A MILE NORTH OF 104TH AVENUE AND CROSSING THE MIDDLE BRANCH OF BLACK RIVER IN SECTION 23 OF CASCO TOWNSHIP.

SUPERSTRUCTURE DETAILS

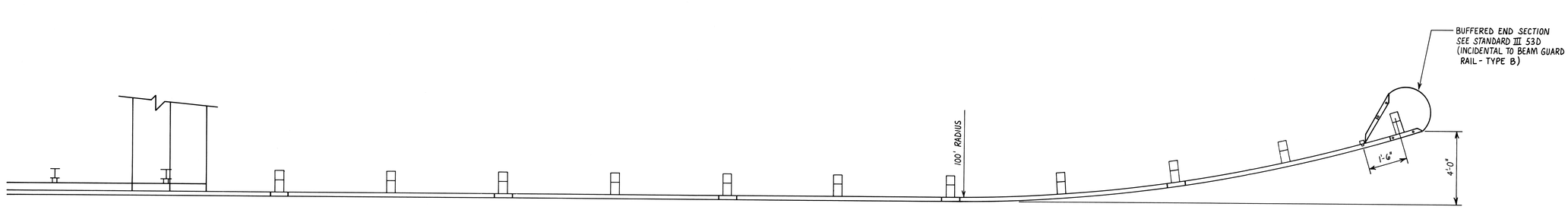
BRO. 3(123) 26956 A	DATE: 3-31-87	DRAWN BY: R.A. HOLST	SHEET NO. 10 OF 11

FED. ITEM NO. PB 0534 JOB NO. 26956 A MCS 03020 BRO. 3(123) 32 OF 3-2-17



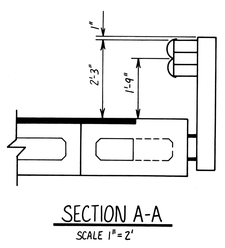
ELEVATION SHOWING APPROACH & DEPARTURE ENDS FOR BEAM GUARD RAIL

SCALE 1"=3'



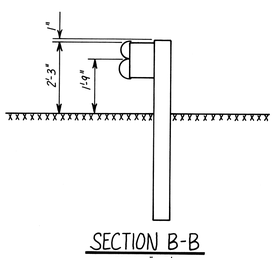
PLAN SHOWING APPROACH & DEPARTING ENDS FOR BEAM GUARD RAIL

SCALE 1"=3'



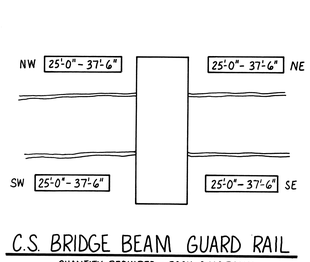
SECTION A-A

SCALE 1"=2'



SECTION B-B

SCALE 1"=2'



C.S. BRIDGE BEAM GUARD RAIL

QUANTITY REQUIRED - EACH QUADRANT

ALLEGAN COUNTY ROAD COMMISSION

BRIDGE NO. 2-15, PROJECT NO. LSM 6002(B), ON 63RD ST. APPROX. ½ OF A MILE NORTH OF 104TH AVENUE AND CROSSING THE MIDDLE BRANCH OF BLACK RIVER IN SECTION 23 OF CASCO TOWNSHIP.

BEAM GUARD RAIL DETAILS

BRO 3(123) 26956 A	DATE: 3-31-87	DRAWN BY: R.A. HOLST	SHEET NO. 11 OF 11

FED. ITEM NO. PB 0534 BRO 3(123) MCS 03020 TAR NO. 26956 A B2 OF 3-2-17