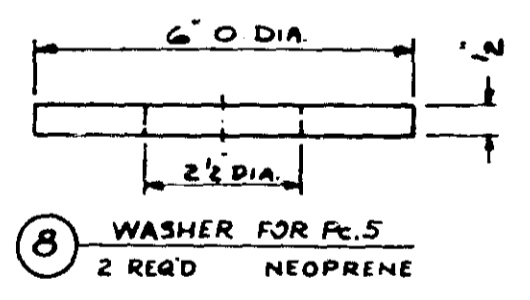


S. O. K-1020 BILL OF MATERIAL DWG. 8251 E 30

PC	NAME	QTY.	MTL.	PATT.	REMARKS
1	LOWER BEARING PLATE	2	T-1		
2	UPPER BEARING CASTING	2	C.A.S.		
3	FLANGE CASTING	2	C.A.S.		
4	DOME CASTING	2	ALLOY		
5	HOLD DOWN STUD	2	A148		SEE DETAIL
6	NUT FOR 5	2	S	HEX.	2 1/2" - 4 AM. STD. HEAVY
7	WASHER FOR 6	2	S	PLAIN	2 1/2" ID x 5 1/2" OD x 3/8" THK.
8	WASHER FOR 5	2	NEOPRENE		SEE DETAIL
9					

GENERAL NOTES:
 HOLES MARKED "RT" TO BE DRILLED 1/4" AND REAMED TO 1/2" THRU A STEEL TEMPLATE OR DRILLED 1/2" THRU A STEEL TEMPLATE (STEEL TEMPLATE FURNISHED BY OTHERS).
 WORKMANSHIP & MATERIAL MUST BE IN ACCORDANCE WITH M.H.D. SPECS. DATED JAN. 1, 1964 & SPECIAL PRIVISIONS.
 SHOP INSPECTION BY M.H.D.
 ALL BEARING MATERIAL TO BE SHOP ASSEMBLED & MATCH MARKED IN ACCORDANCE WITH M.H.D. 3329
 BRONZE CASTINGS & PLATES TO BE BOXED FOR SHIPMENT PER M.H.D. 2471.3K
 PLATES MUST BE FLAT & TRUE AFTER FABRICATION.



BID ITEM No. 84

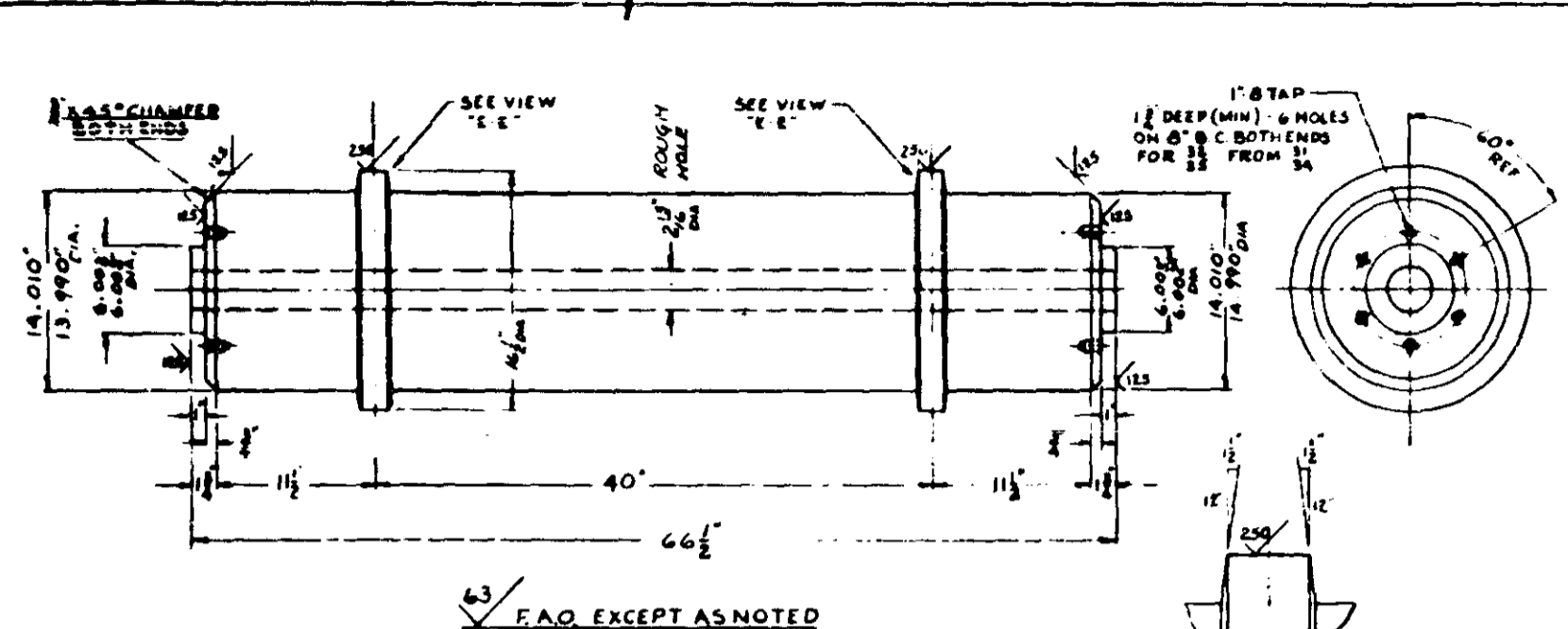
S & K-1020 CONTRACT
 EXPANSION BEARINGS DETAILS
 FOR
 PIER No. 6
 MINNESOTA BRIDGE No. 9340
 SP 2783-08 (TH 38W-394)
 MINN. PROJ. 1-16 35W-3 (S&I) 112

SPECIFICATIONS MINN. STD. SPEC. & SPECIAL PROV.
 INSPECTION MINN. HIGHWAY DEPT.

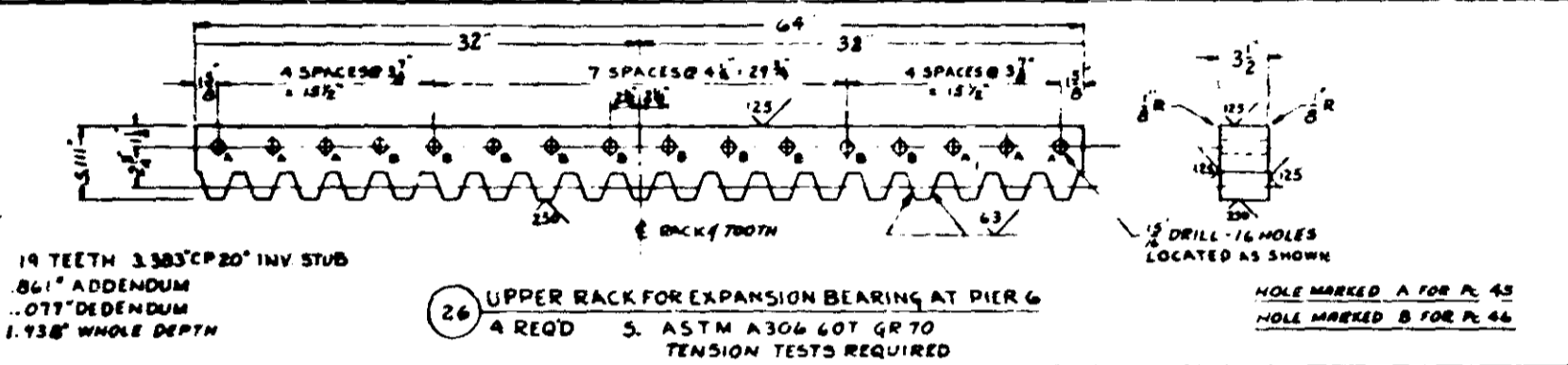
THE EARLE GEAR AND MACHINE COMPANY
 4707 TO 4718 STANTON AVENUE
 PHILADELPHIA 44, PA.

DATE: 1-7-64
 SHEET 1 OF DWG. No. 8251 E 30

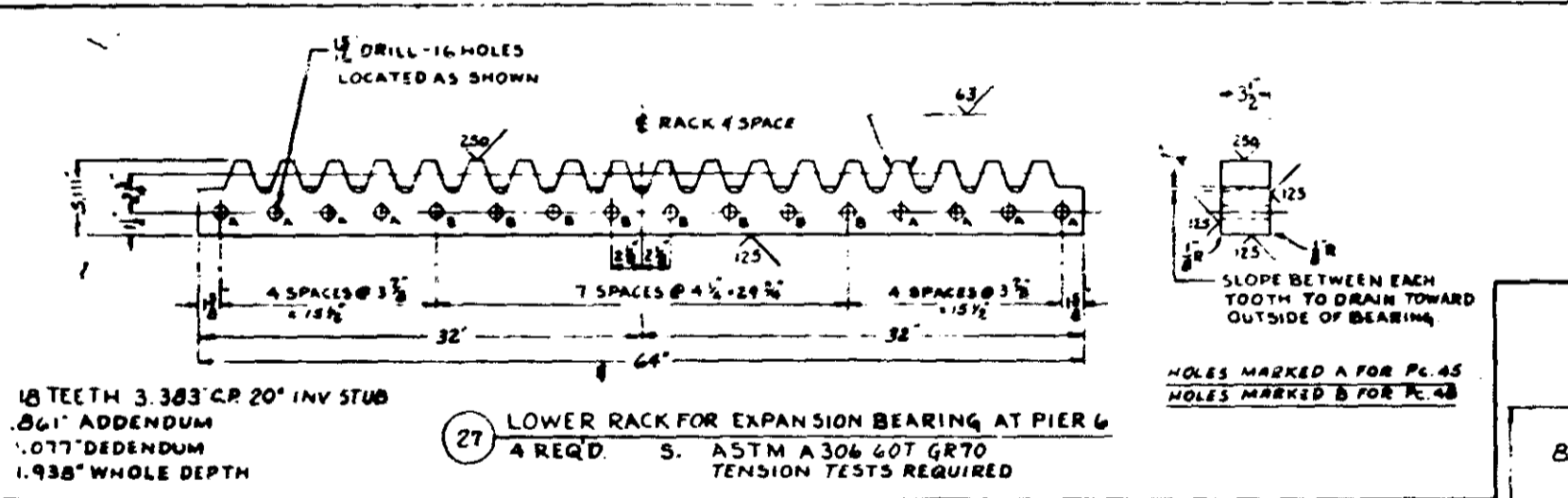
NO.	DATE	BY	REVISIONS
1	2-15-64	J.N.	CORRE IN P.C. & REVISED - P.C. WAS 16-64
2	1-21-64	J.N.	REVISED AS PER RETURNED PRINT FROM M.H.D.



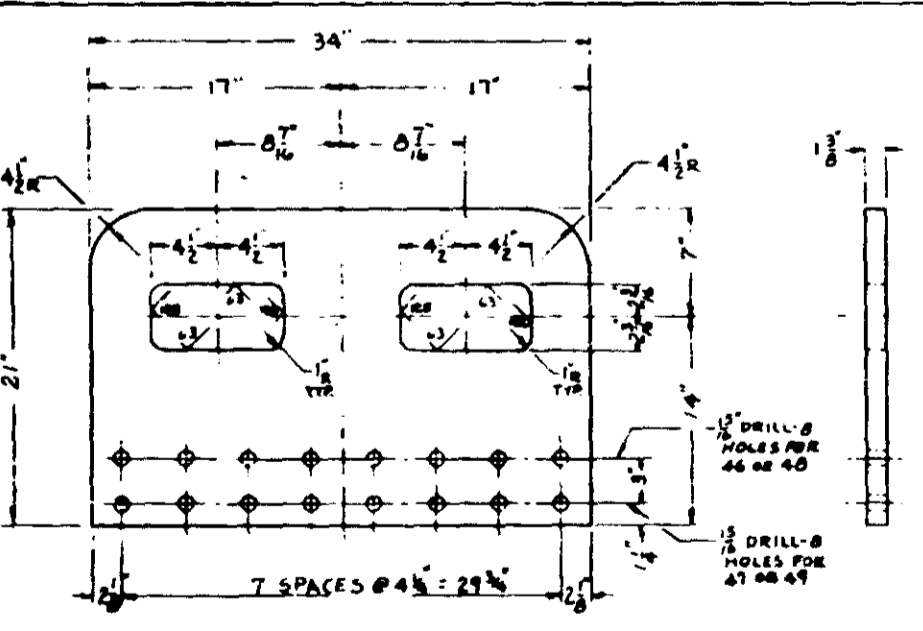
21 ROLLER FOR EXPANSION BEARING AT PIER 6
8 REQ'D. F.A.S. ASTM A237 G3T CLASS D



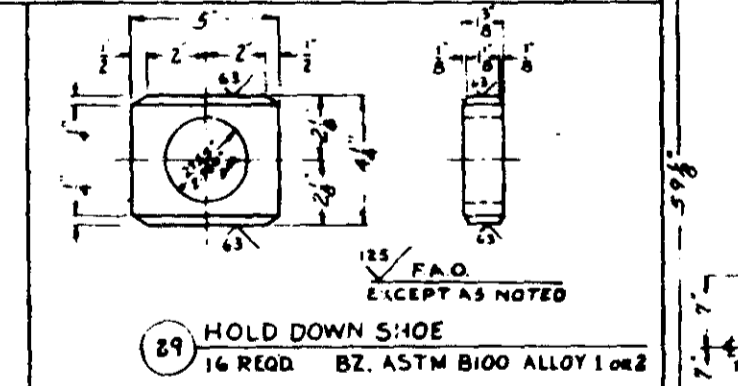
26 UPPER RACK FOR EXPANSION BEARING AT PIER 6
4 REQ'D. S. ASTM A306 60T GR 70
TENSION TESTS REQUIRED



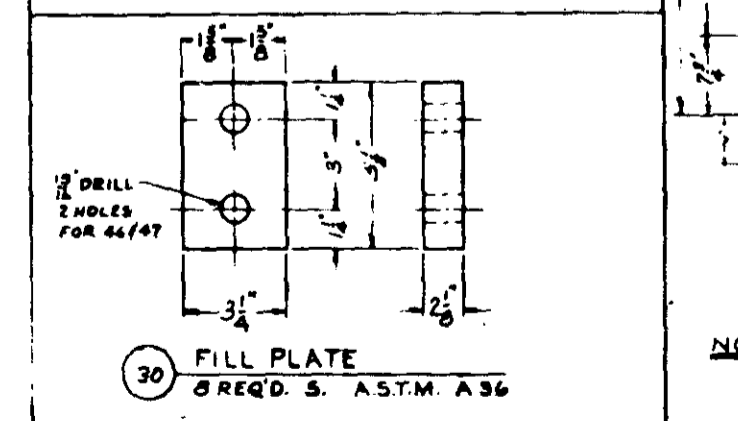
27 LOWER RACK FOR EXPANSION BEARING AT PIER 6
4 REQ'D. S. ASTM A306 60T GR 70
TENSION TESTS REQUIRED



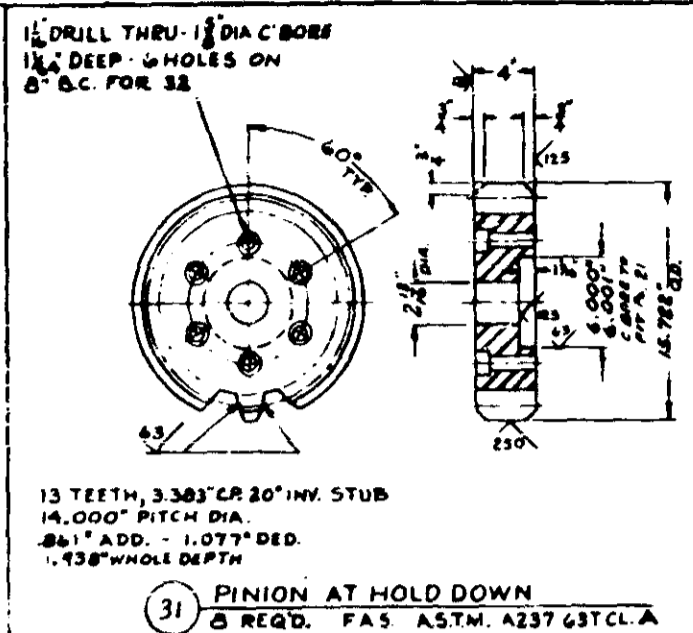
28 HOLD DOWN PLATE
8 REQ'D. S. ASTM A36



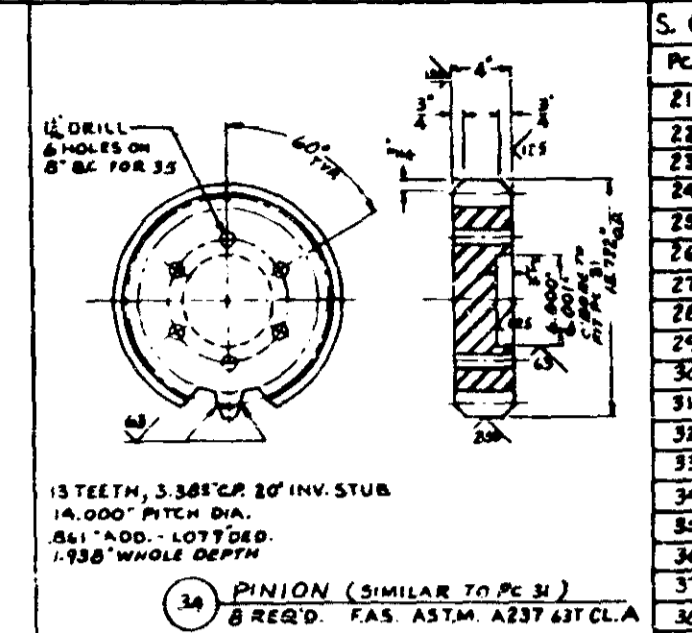
29 HOLD DOWN SHOE
16 REQ'D. BZ. ASTM B100 ALLOY 1 OR 2



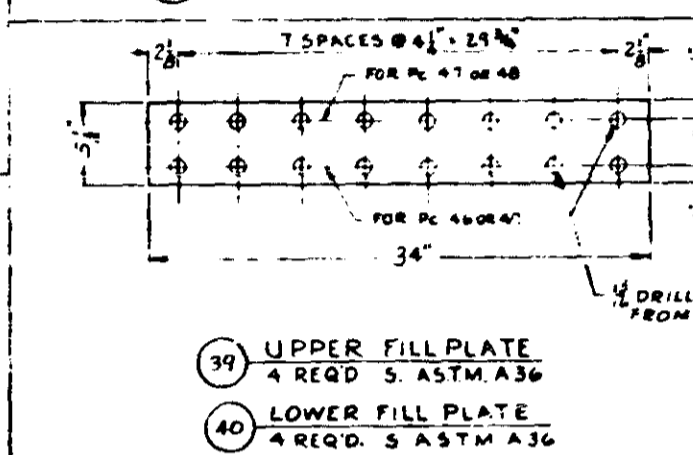
30 FILL PLATE
8 REQ'D. S. ASTM A36



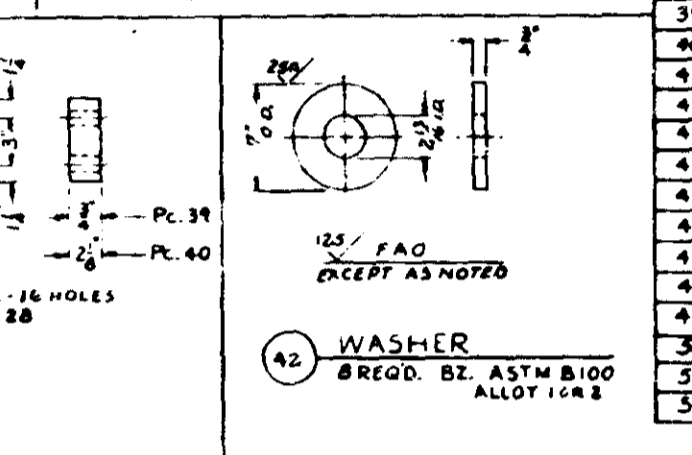
31 PINION AT HOLD DOWN
8 REQ'D. F.A.S. ASTM A237 G3T CLASS D



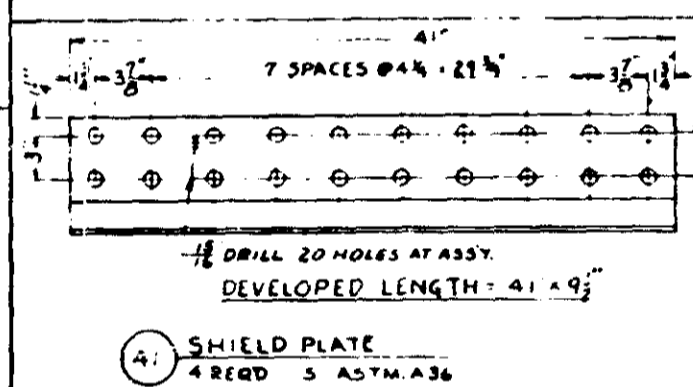
34 PINION (SIMILAR TO PC 31)
8 REQ'D. F.A.S. ASTM A237 G3T CLASS D



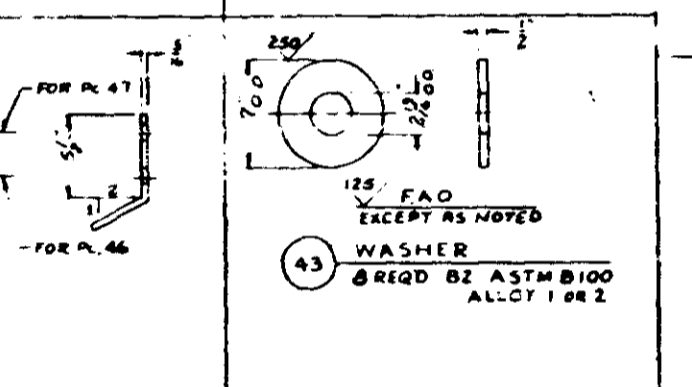
39 UPPER FILL PLATE
4 REQ'D. S. ASTM A36



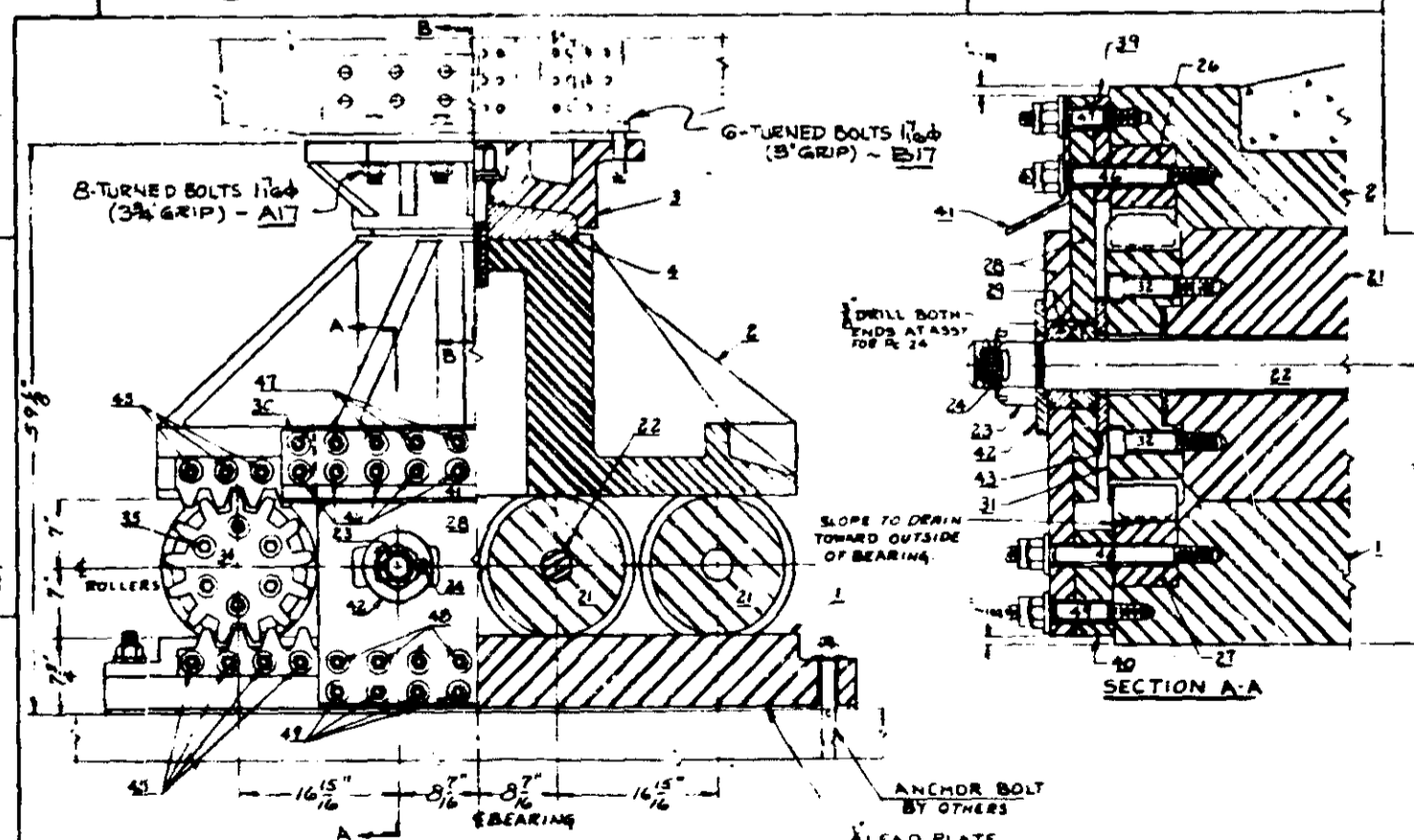
42 WASHER
8 REQ'D. BZ. ASTM B100 ALLOY 1 OR 2



41 SHIELD PLATE
4 REQ'D. S. ASTM A36



43 WASHER
8 REQ'D. BZ. ASTM B100 ALLOY 1 OR 2



EXPANSION BEARING ASSEMBLY
2 ASSEMBLIES FOR PIER 6
NOTE: ALL BEARING ASSEMBLIES SHALL BE SHOP ASSEMBLED AND MATCH MARKED.

S. O. K 1020 BILL OF MATERIAL DWG. 0232 E 30

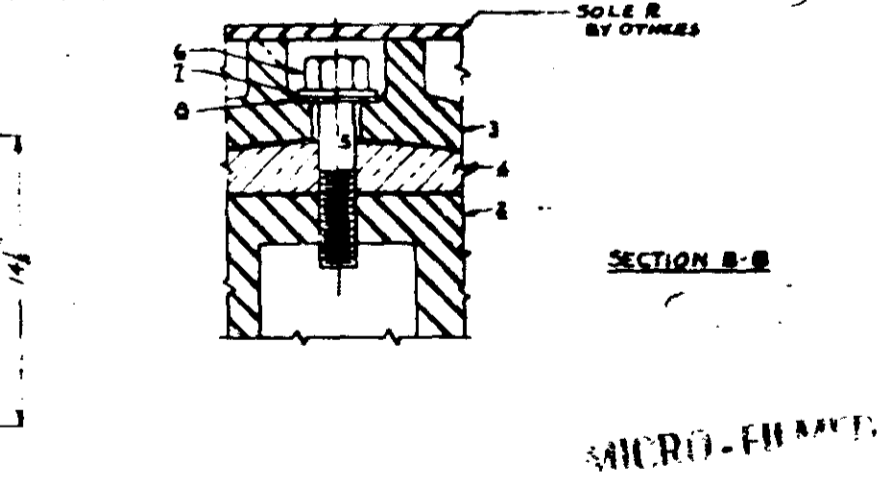
PC	NAME	QTY	MFL	PATY	REMARKS
21	ROLLER	8	F.A.S.		
22	STUD FOR 21	4	S.		STUD LIST
23	NUT FOR 22	8	S.		MEAS. 2 1/4\"/>
24	COTTER FOR 22	8	S.		1/2\"/>
25					
26	UPPER RACK	4	S.		
27	LOWER RACK	4	S.		
28	HOLD DOWN R	8	S.		
29	HOLD DOWN SHOE	16	BZ.		
30	FILL PLATE	8	S.		
31	PINION AT HOLD DOWN	8	F.A.S.		
32	CAP SCREW FOR 31	48	A193	304	1\"/>
33					
34	PINION	8	F.A.S.		
35	STUD FOR 34	4	S.		STUD LIST
36	PLAIN WASHER FOR 35	48	S.		
37	NUT FOR 35	48	S.		1\"/>
38	LOCK NUT FOR 35	48	S.		MEAS. 1\"/>
39	UPPER FILL PLATE	4	S.		
40	LOWER FILL PLATE	4	S.		
41	SHIELD PLATE	4	S.		
42	WASHER FOR 22	8	BZ.		
43	WASHER FOR 22	8	BZ.		
44					
45	STUD FOR 1, 2, 24 & 27	56	S.		STUD LIST
46	STUD FOR 2, 26, 30, 39 & 41	40	S.		STUD LIST
47	STUD FOR 1, 28, 30, 39 & 41	40	S.		STUD LIST
48	STUD FOR 1, 27, 28 & 40	32	S.		STUD LIST
49	STUD FOR 1, 28 & 40	32	S.		STUD LIST
50	PLAIN WASHER FOR 31, 34, 35 & 37	200	S.		1\"/>
51	NUT FOR 45, 46, 47, 48 & 49	200	S.		MEAS. 1\"/>
52	LOCK NUT FOR 45, 46, 47, 48 & 49	200	S.		MEAS. 1\"/>

BID ITEM No. 04
SEE DWG. 0231 E 30 FOR GENERAL NOTES

S. O. K 1020

STUD BOLT LIST

R. No.	QTY.	A	B	C	C ₁	D	E	FOR
22	4	2 1/2	7 1/2	4	4	8 1/2	2 1/2	21
35	48	1	3 1/2	1 1/2	2 1/2	7 1/2	1	21-24
45	56	7/8	3 1/2	1 1/2	2 1/2	7	7/8	21-24
46	40	7/8	5 1/2	1 1/2	2 1/2	6 1/2	7/8	21-24
47	40	7/8	5 1/2	1 1/2	2 1/2	6 1/2	7/8	21-24
48	32	7/8	6 1/2	1 1/2	2 1/2	10 1/2	7/8	21-24
49	32	7/8	3 1/2	1 1/2	2 1/2	7	7/8	21-24

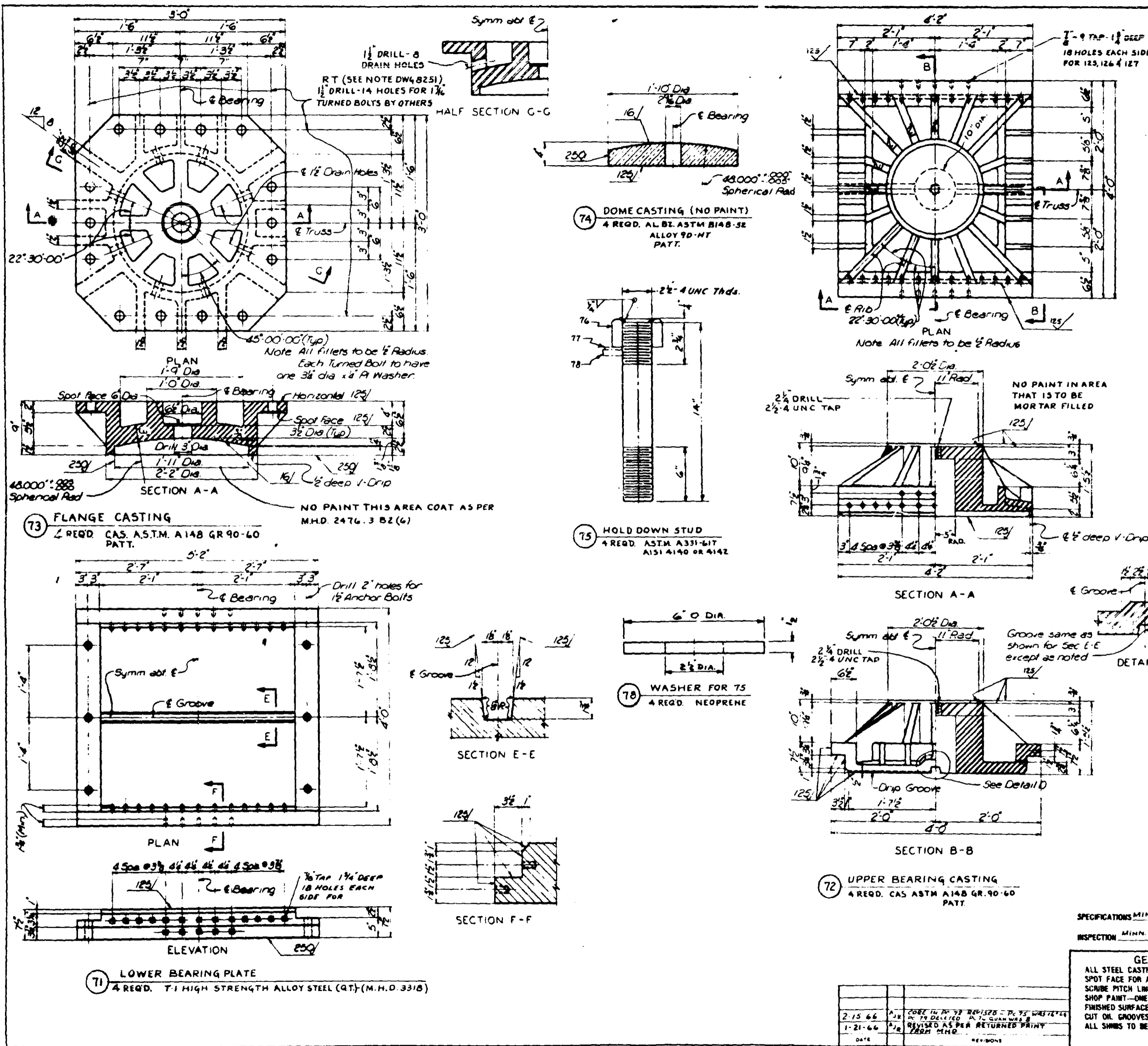


EXPANSION BEARING ASSY. DETAILS FOR PIER No. 6
MINNESOTA BRIDGE No. 9340
SP 2703-05 (TH35W-394)
MINN. PROJ. 1-16 35 W-3 (58) 112

THE EARLE GEAR AND MACHINE COMPANY
4707 TO 4716 STENOIR AVENUE
PHILADELPHIA 44, PA.

GENERAL NOTES:
ALL STEEL CASTINGS & FORGINGS TO BE ANNEALED
SPOT FACE FOR ALL BOLT HEADS & NUTS
SCRIBE PITCH LINES ON BOTH SIDES OF ALL GEARS
SHOP PAINT—ONE COAT—ORANGE PRIMER MHD 3509
FINISHED SURFACES COATED—1 SHOP COAT—OR AS NOTED
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

DATE	BY	REVISION
2-17-66	AJR	REVISED ASSEMBLY TO AGREE WITH DETAILS
1-20-66	AJR	REVISED AS PER RETURNED DRAWING FROM MANUFACTURER



S. O. K-1021 BILL OF MATERIAL DWG. 8253 E 30

NO.	NAME	QTY.	MTL.	PATT.	REMARKS
71	LOWER BEARING PLATE	4	T-1		
72	UPPER BEARING CASTING	4	C.A.S.		NEW
73	FLANGE CASTING	4	C.A.S.		NEW
74	DOME CASTING	4	A. B.		NEW
75	HOLD DOWN STUD	4	A331		SEE DETAIL
76	NUT FOR 75	4	S		HEX. 2 1/2" x 4 AN STD HEAVY
77	WASHER FOR 75	4	E.		2 1/2" ID. x 6" O.D. x 1/4" THK.
78	WASHER FOR 75	4			SEE DETAIL

SEE DWG 8251 E 30 FOR GENERAL NOTES.

BID ITEM No. 84

S. O. K-1021

EXPANSION BEARING DETAILS

FOR

PIER No. 34 No. 8

MINNESOTA BRIDGE No. 9840

SP 2783-06 (TH 35 W-294)

MINN. PROV. 1-16 35 W-3 (50) 112

THE EARLE GEAR AND MACHINE COMPANY

4787 TO 4716 STENTON AVENUE

PHILADELPHIA 44, PA.

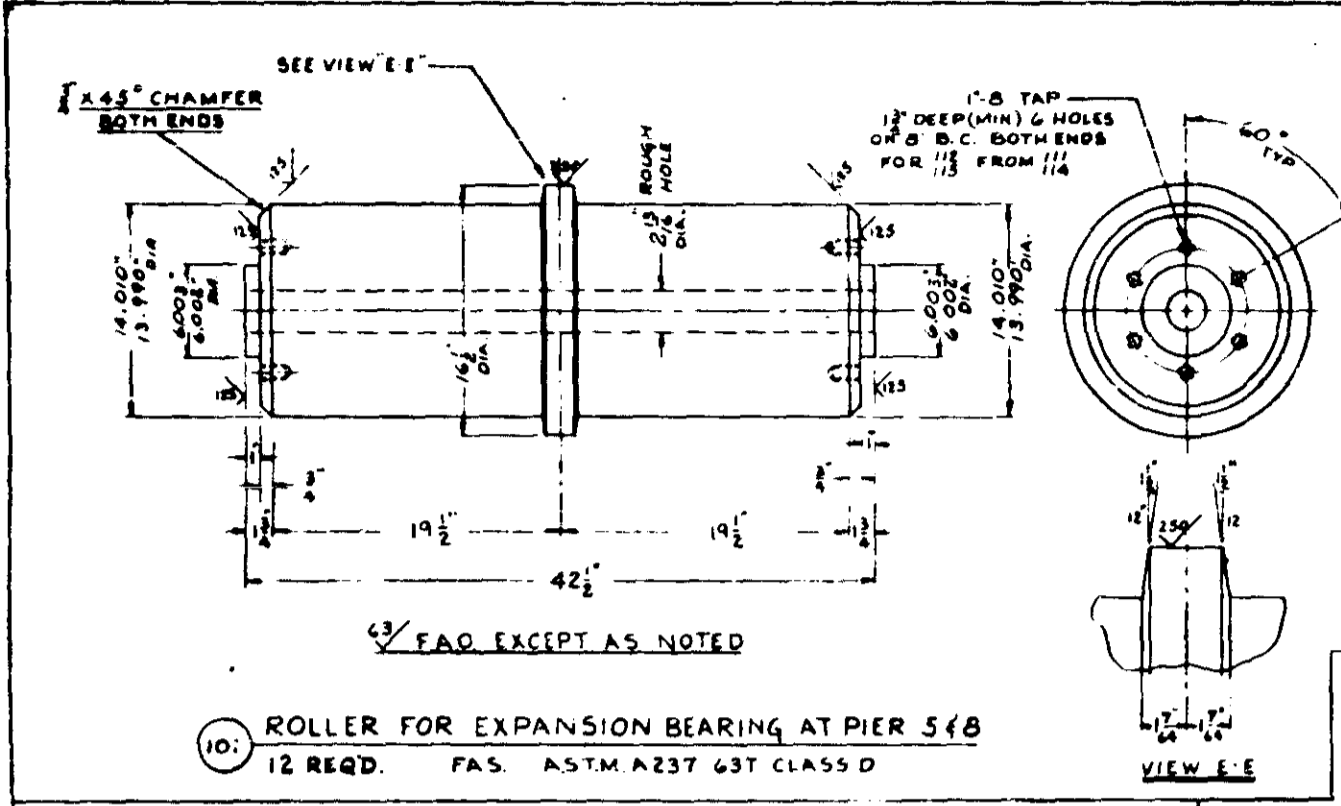
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BY: [Signature]

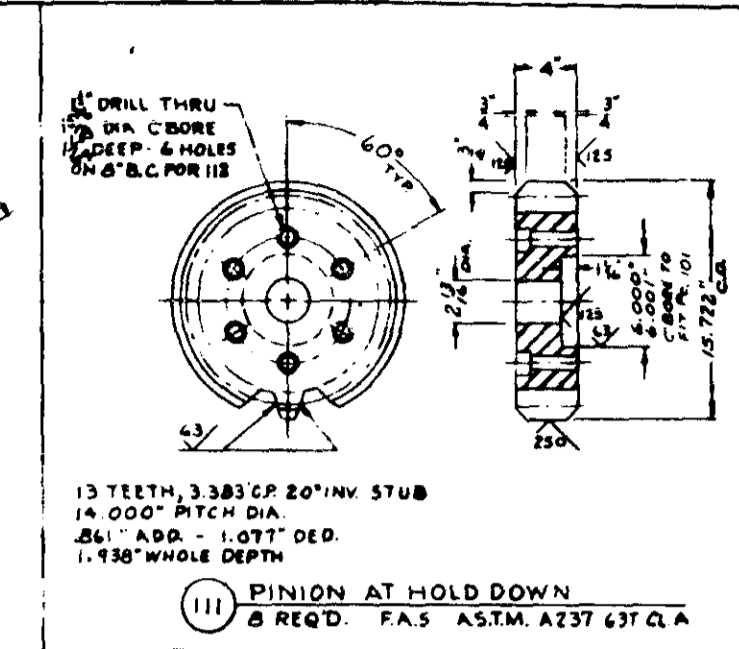
DATE: 1-7-66

BY: [Signature]

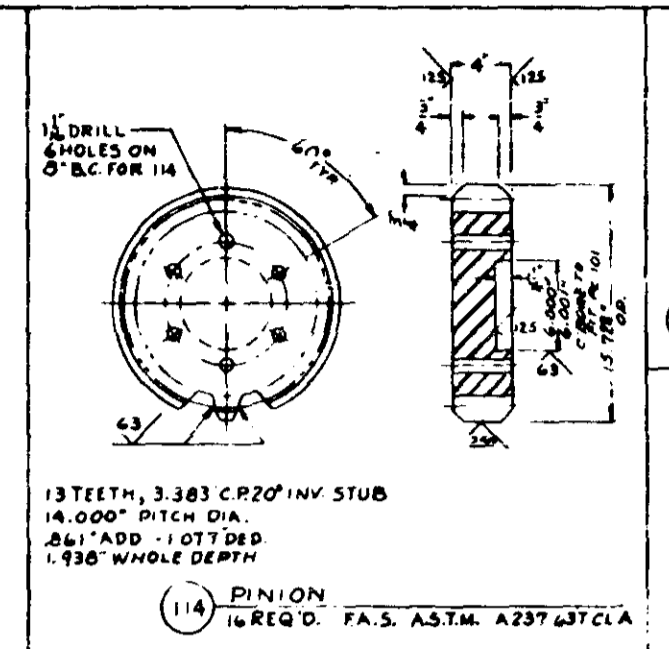
SHEET 3 OF DWG. No. 8253 E 30



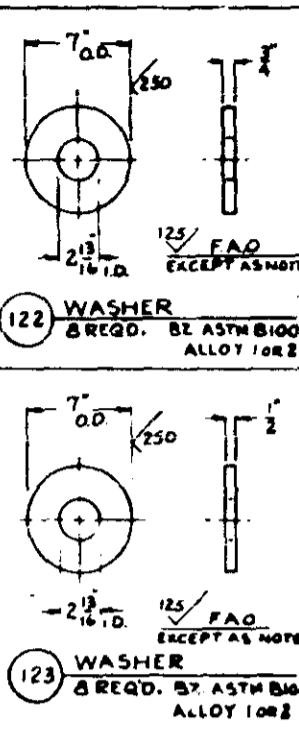
101 ROLLER FOR EXPANSION BEARING AT PIER 5f8
12 REQ'D. F.A.S. ASTM A237 63T CLASS D



111 PINION AT HOLD DOWN
8 REQ'D. F.A.S. ASTM A237 63T CL A

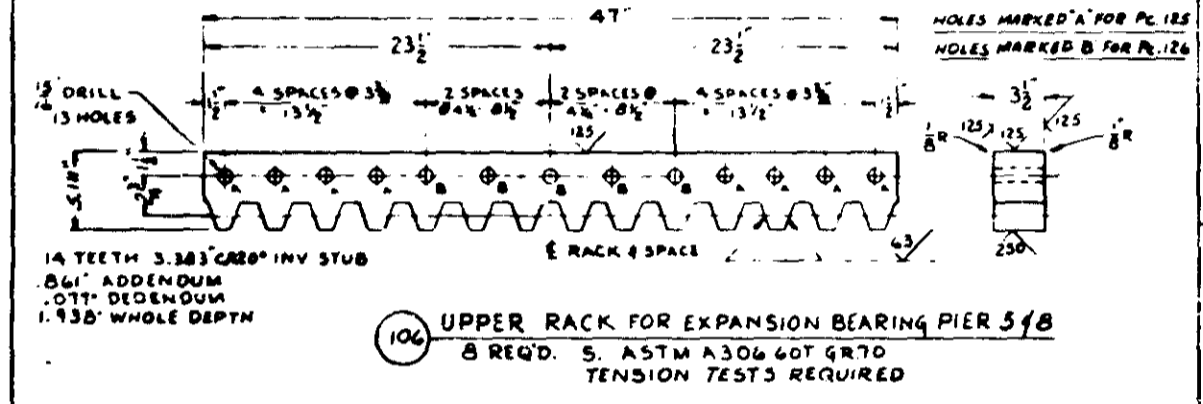


114 PINION
16 REQ'D. F.A.S. ASTM A237 63T CL A

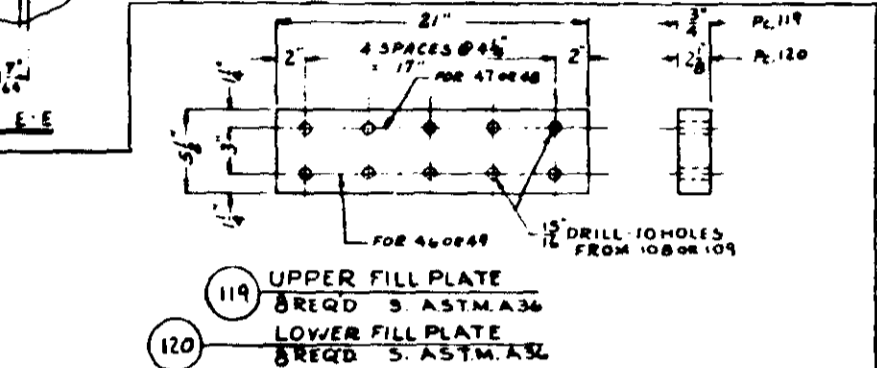


122 WASHER
8 REQ'D. S2 ASTM B100 ALLOY 1082

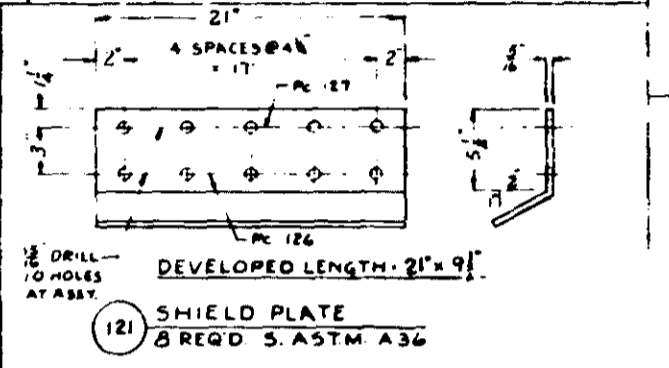
123 WASHER
8 REQ'D. S2 ASTM B100 ALLOY 1082



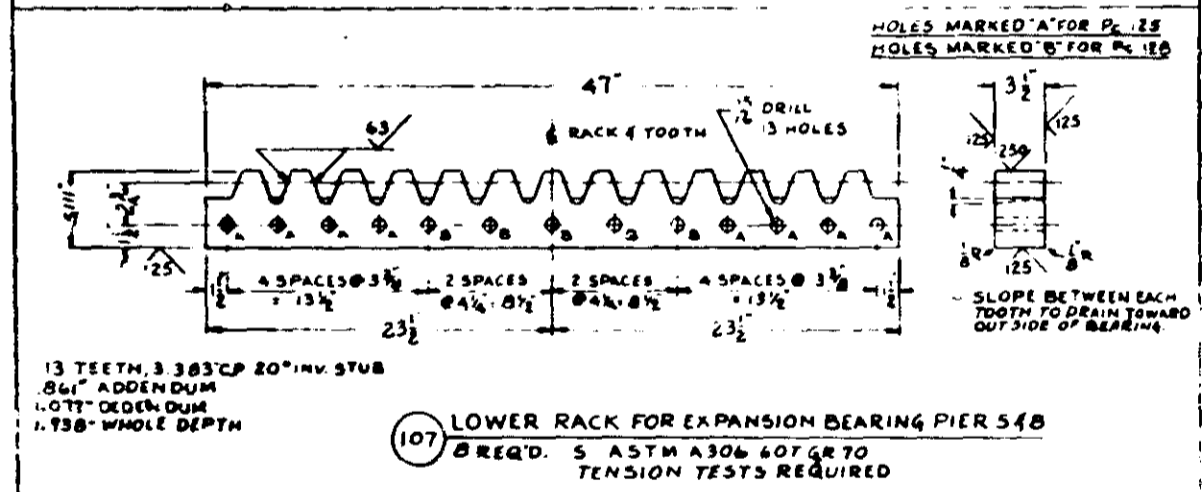
106 UPPER RACK FOR EXPANSION BEARING PIER 5f8
8 REQ'D. S. ASTM A306 407 GR70 TENSION TESTS REQUIRED



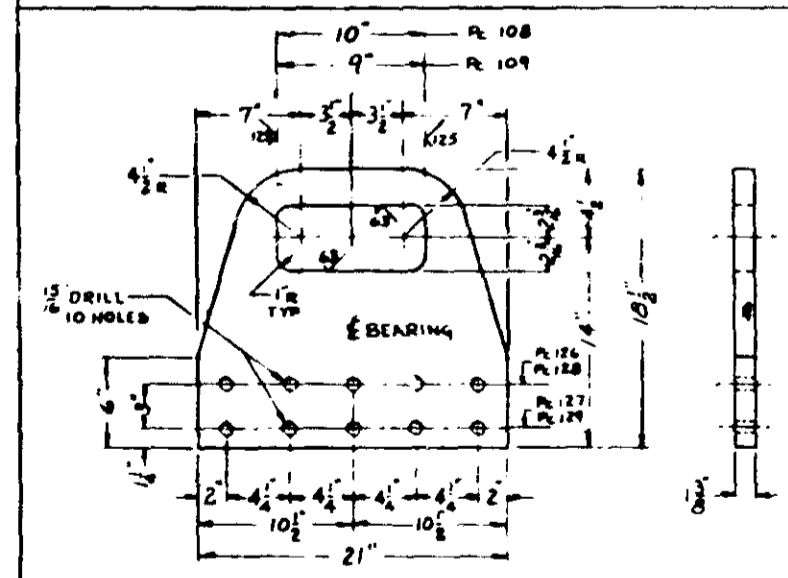
119 UPPER FILL PLATE
8 REQ'D. S. ASTM A36
120 LOWER FILL PLATE
8 REQ'D. S. ASTM A36



121 SHIELD PLATE
8 REQ'D. S. ASTM A36

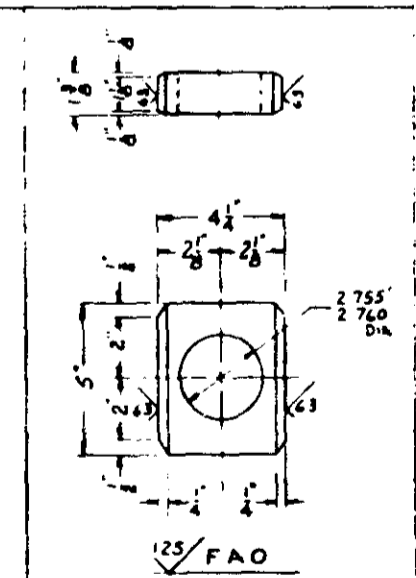


107 LOWER RACK FOR EXPANSION BEARING PIER 5f8
8 REQ'D. S. ASTM A306 407 GR70 TENSION TESTS REQUIRED

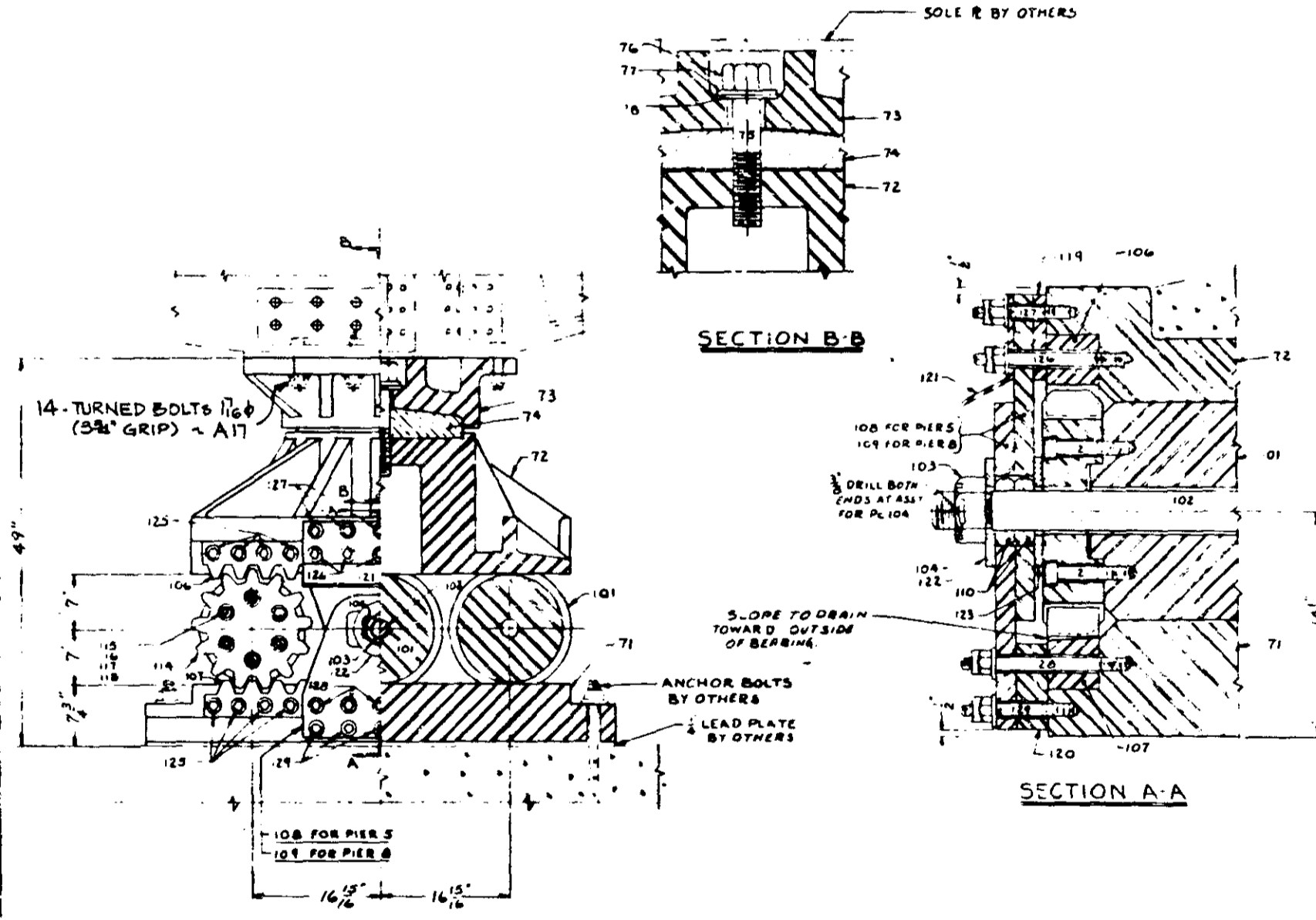


108 HOLD DOWN PLATE PIER 5
8 REQ'D. S. ASTM A36

109 HOLD DOWN PLATE PIER 8
8 REQ'D. S. ASTM A36



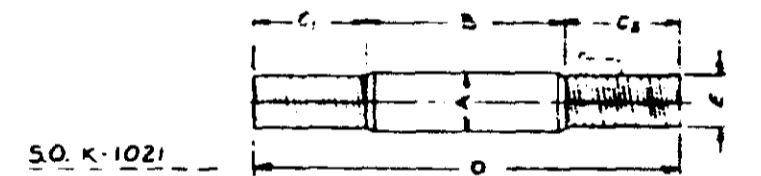
110 HOLD DOWN SHOE
16 REQ'D. S2 ASTM B100 ALLOY 1082



EXPANSION BEARING ASSEMBLY
2 ASSEMBLIES FOR PIER 5
2 ASSEMBLIES FOR PIER 8

NOTE: ALL BEARING ASSEMBLIES SHALL BE SHOP ASSEMBLED AND MATCH-MARKED

PC	NAME	QTY.	MTL.	PATT.	REMARKS
101	ROLLER	12	FAS.		
102	STUD FOR 101	4	S.		STUD LIST
103	NUT FOR 102	8	S.	HEA	2 1/2" AMER. HEAVY SLETTED
104	COTTER FOR 103	8	S.		3/8" DIA. A. S. L.G.
105					
106	UPPER RACK	8	S.		
107	LOWER RACK	8	S.		
108	HOLD DOWN R (PIER 5)	8	S.		
109	HOLD DOWN R (PIER 8)	8	S.		
110	HOLD DOWN SHOE	16	S2.		
111	PINION AT HOLD DOWN	8	FAS.		
112	CAP SCREW FOR 111	48	ASTM A307		1" x 4 1/2" L.G. S.P.S
113					
114	PINION	16	FAS.		
115	STUD FOR 114	96	S.		STUD LIST
116	PLAIN WASHER FOR 115	96	S.		
117	NUT FOR 115	96	S.		1" AMER. HEAVY
118	LOCK NUT FOR 115	96	S.	MINN. STD.	Max LEAN-Ping "1" - 852 1" HEAVY
119	UPPER FILL PLATE	8	S.		
120	LOWER FILL PLATE	8	S.		
121	SHIELD PLATE	8	S.		
122	WASHER FOR 102	8	S2.		
123	WASHER FOR 102	8	S2.		
124					
125	STUD FOR 71, 72, 106, 107	188	S.		STUD LIST
126	STUD FOR 72, 106, 107, 112	40	S.		STUD LIST
127	STUD FOR 72, 106, 109, 119, 121	40	S.		STUD LIST
128	STUD FOR 71, 107, 108, 109, 120	40	S.		STUD LIST
129	STUD FOR 71, 108, 109, 120	40	S.		STUD LIST
130	PLAIN WASHER FOR 117, 118	288	S.		1" STD.
131	NUT FOR 125, 126, 127, 128, 129	288	S.	HEA.	1" AMER. HEAVY
132	LOCKNUT FOR 125, 126, 127, 128, 129	288	S.	MINN. STD.	Max LEAN-Ping "1" - 852 1" HEAVY



STUD BOLT LIST

PC No.	QTY.	A	B	C	C2	D	E	FOR
102	4	2 1/2	5 1/2	4	4	6 3/8	2 1/2	101
115	96	1	3 1/2	1 1/2	2 1/2	7 1/2	1	101-114
125	128	3/8	3 1/2	1 1/2	2 1/2	7	3/8	71-106
126	40	3/8	5 1/2	1 1/2	2 1/2	9 1/2	3/8	71, 106, 109, 119, 121
127	40	3/8	2 1/2	1 1/2	2 1/2	6	3/8	71, 108, 109, 119, 120
128	40	3/8	6 1/2	1 1/2	2 1/2	10 1/2	3/8	71, 108, 109, 119, 120
129	40	3/8	3 1/2	1 1/2	2 1/2	7	3/8	71, 108, 109, 120

SEE DWG B251 E 30 FOR GENERAL NOTES

MICRO-FILMED

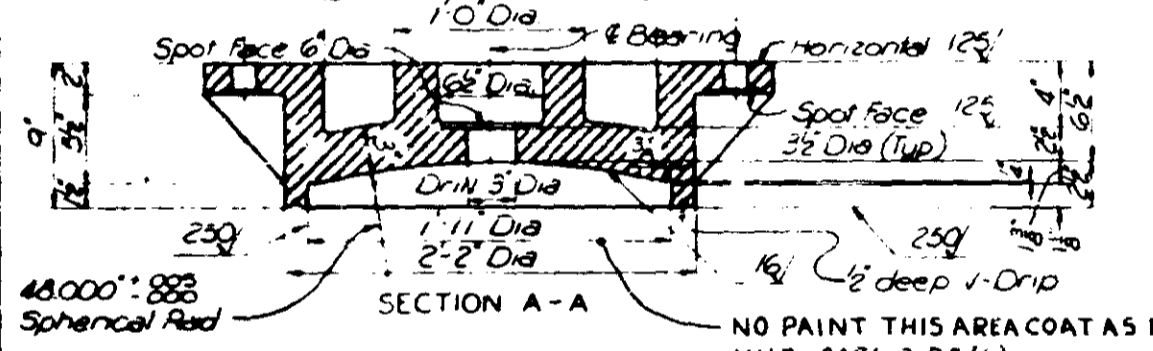
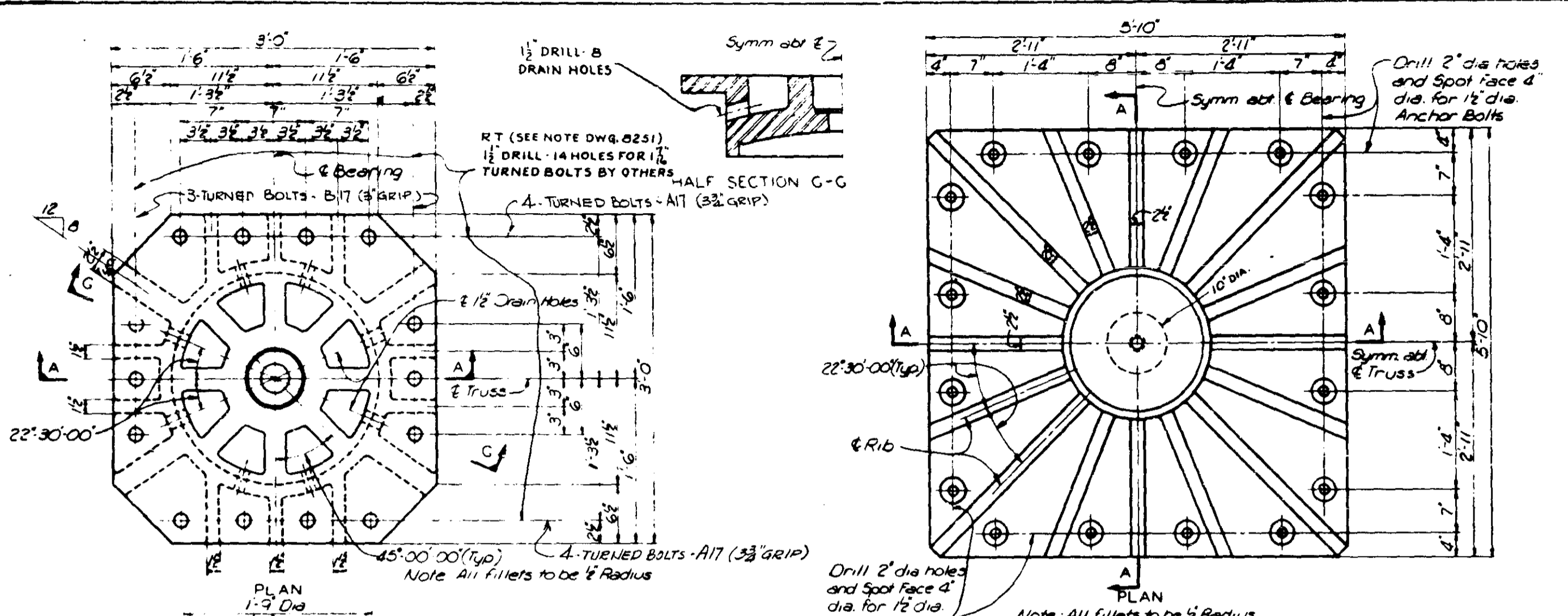
BID ITEM No. 83

S & K-1021 CONTRACT
EXPANSION BEARING ASSEMBLY DETAILS
FOR
PIER No. 5 of No. 8
MINNESOTA BRIDGE No. 9340
SP2783-08 (7-35 W-394)
MINN. PROJ. 1-16 35 W-3 (58) 112

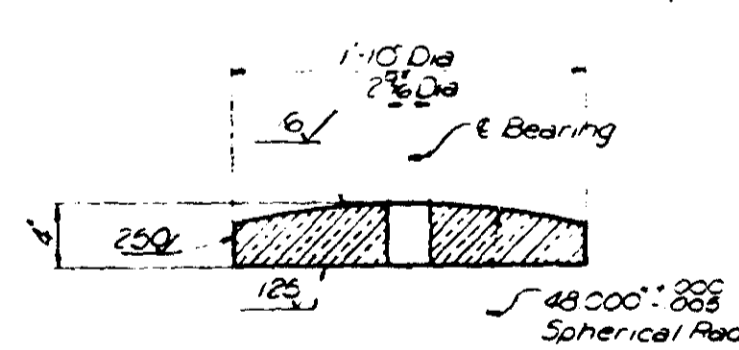
THE EARLE GEAR AND MACHINE COMPANY
4707 TO 4715 STENTON AVENUE
PHILADELPHIA 44 PA.

GENERAL NOTES
ALL STEEL CASTINGS & FORGINGS TO BE ANNEALED
SPOT FACE FOR ALL BOLT HEADS & NUTS
SCRIBE PITCH LINES ON BOTH SIDES OF ALL GEARS
SHOP PAINT—ONE COAT—ORANGE PRIMER MHD 3509
FINISHED SURFACES COATED—1 SHOP COAT OR AS NOTED
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

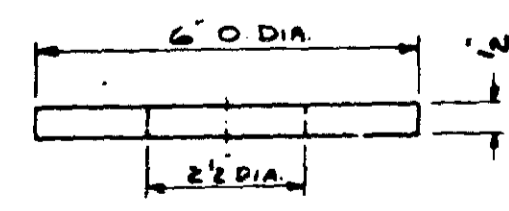
2-17-66	A	REVISED ASSEMBLY TO AGREE WITH DETAILS
1-20-66	A	REVISED DWG AS PER RETURNED DRAWING FROM MHD



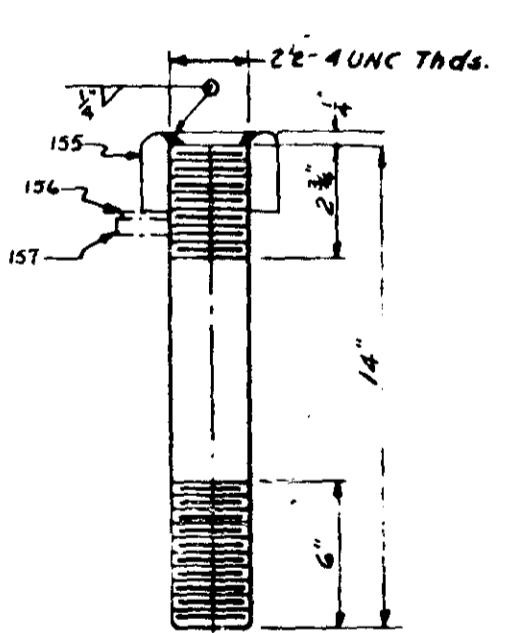
152 FLANGE CASTING
2 REQD. CAS. ASTM A148 GR 90-60
PATT.



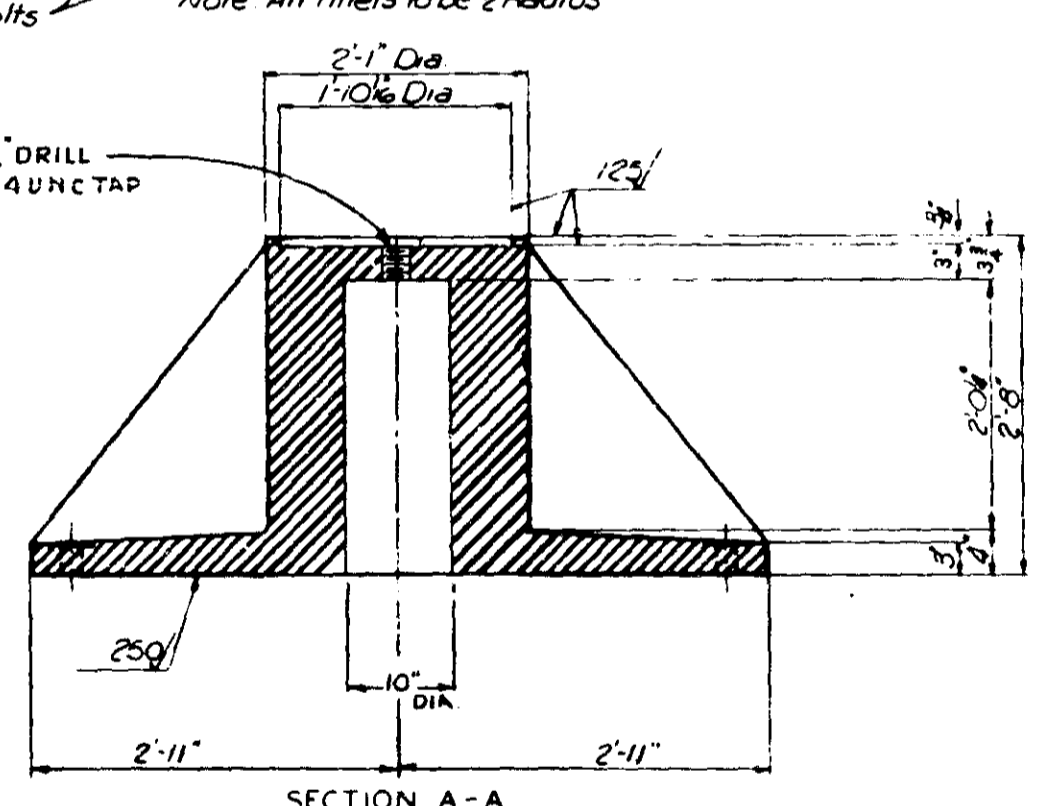
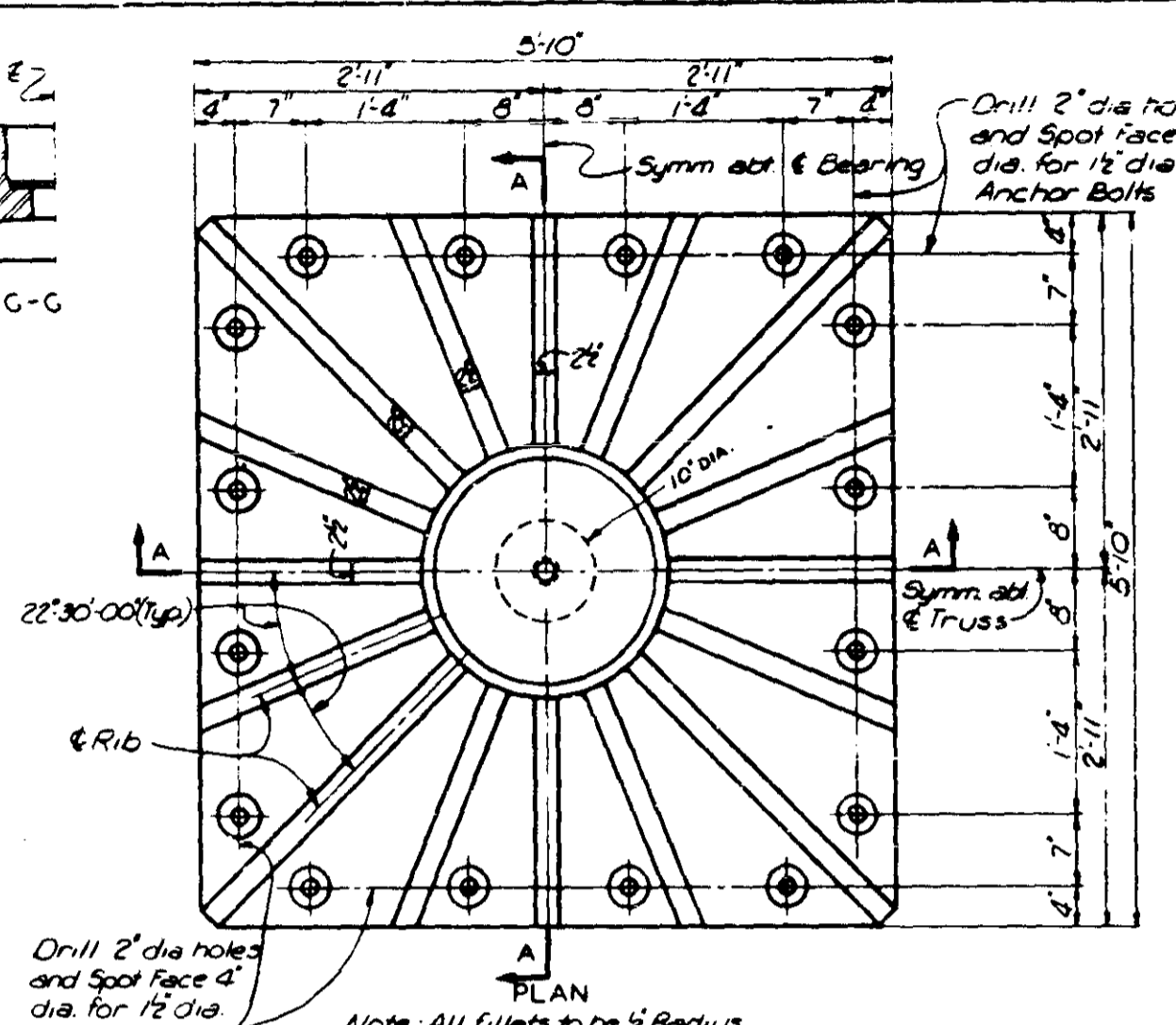
153 DOME CASTING (NO PAINT)
2 REQD. AL. 82 ASTM B148-52 ALLOY 90-NT
PATT.



157 WASHER FOR 154
2 REQD. NEOPRENE



154 HOLD DOWN STUD
2 REQD. ASTM A331-61T
AISI 4140 OR 4142



151 LOWER BEARING CASTING
2 REQD. CAS. ASTM A148 GR 90-60
PATT.

S. O. K-1022 BILL OF MATERIAL					DWG. 8255 E 30	
PC.	NAME	QTY.	MTL.	PATT.	REMARKS	
151	LOWER BRG. CASTING	2	C.A.S		NEW	
152	FLANGE CASTING	2	C.A.S		NEW	
153	DOME CASTING	2	AL 82		NEW	
154	HOLD DOWN STUD	2	ASTM		SEE DETAIL	
155	NUT FOR 154	2	S.	HEX.	2 1/2 - 4 AM. STD HEAVY	
156	WASHER FOR 154	2	S.	PLAIN	2 1/2 DIA. 6' OD. 1/4 THK	
157	WASHER FOR 154	2	NEOPRENE		SEE DETAIL	
158						

SEE DWG. 8251 E 30 FOR GENERAL NOTES

SPECIFICATIONS MINN. STD. SPEC. & SPECIAL PROV.
INSPECTION MINN. HIGHWAY DEPT.

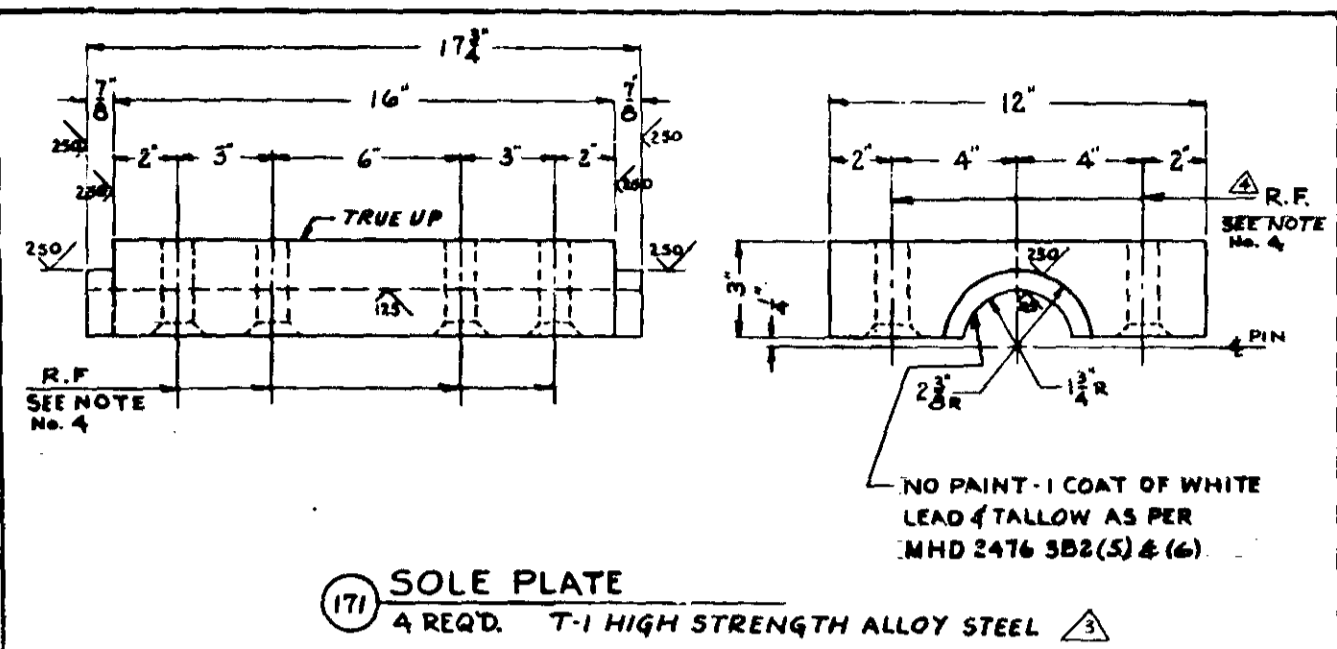
GENERAL NOTES
ALL STEEL CASTINGS & FORGINGS TO BE ANNEALED
SPOT FACE FOR ALL BOLT HEADS & NUTS
SCRIBE PITCH LINES ON BOTH SIDES OF ALL GEARS
SHOP PAINT—ONE COAT—ORANGE PRIMER MHD 3509
FINISHED SURFACES COATED—1 SHOP COAT OR AS NOTED
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

BID ITEM No. 70

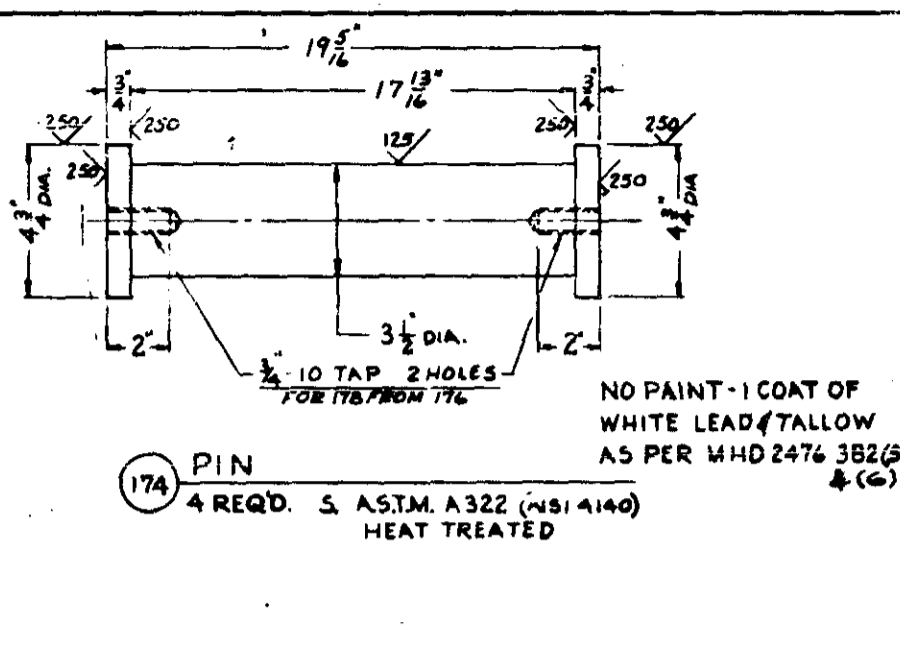
S. O. K-1022 CONTRACT
FIXED BEARING DETAILS
FOR
PIER No. 7
MINNESOTA BRIDGE No. 4340
SP 2783-08 (TH 35W-394)
MINN. PROJ. I-16 36W-2 (50)112

THE EARLE GEAR AND MACHINE COMPANY
4707 TO 47th STREET AVENUE
PHILADELPHIA 44 PA

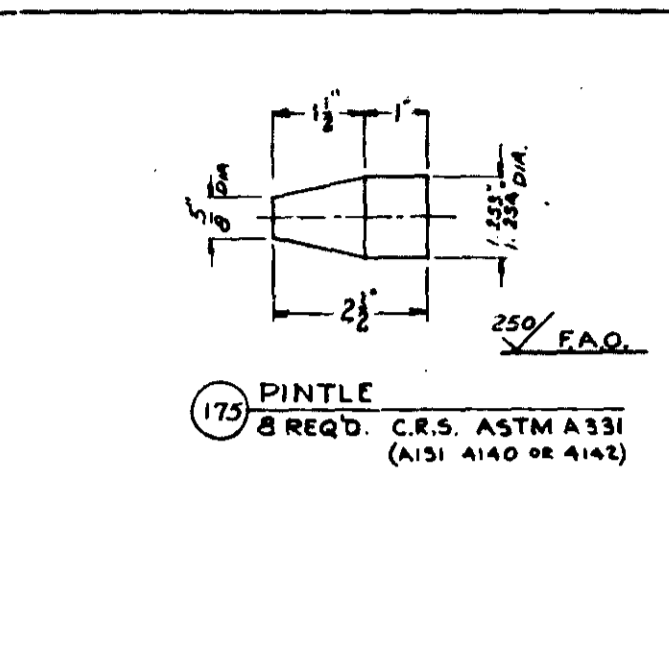
DATE: 1-7-66
DRAWN BY: S.P. 17-66
CHECKED BY: S.P. 17-66
DATE: 1-7-66
SHEET 5 OF DWG. No. 8255 E 30



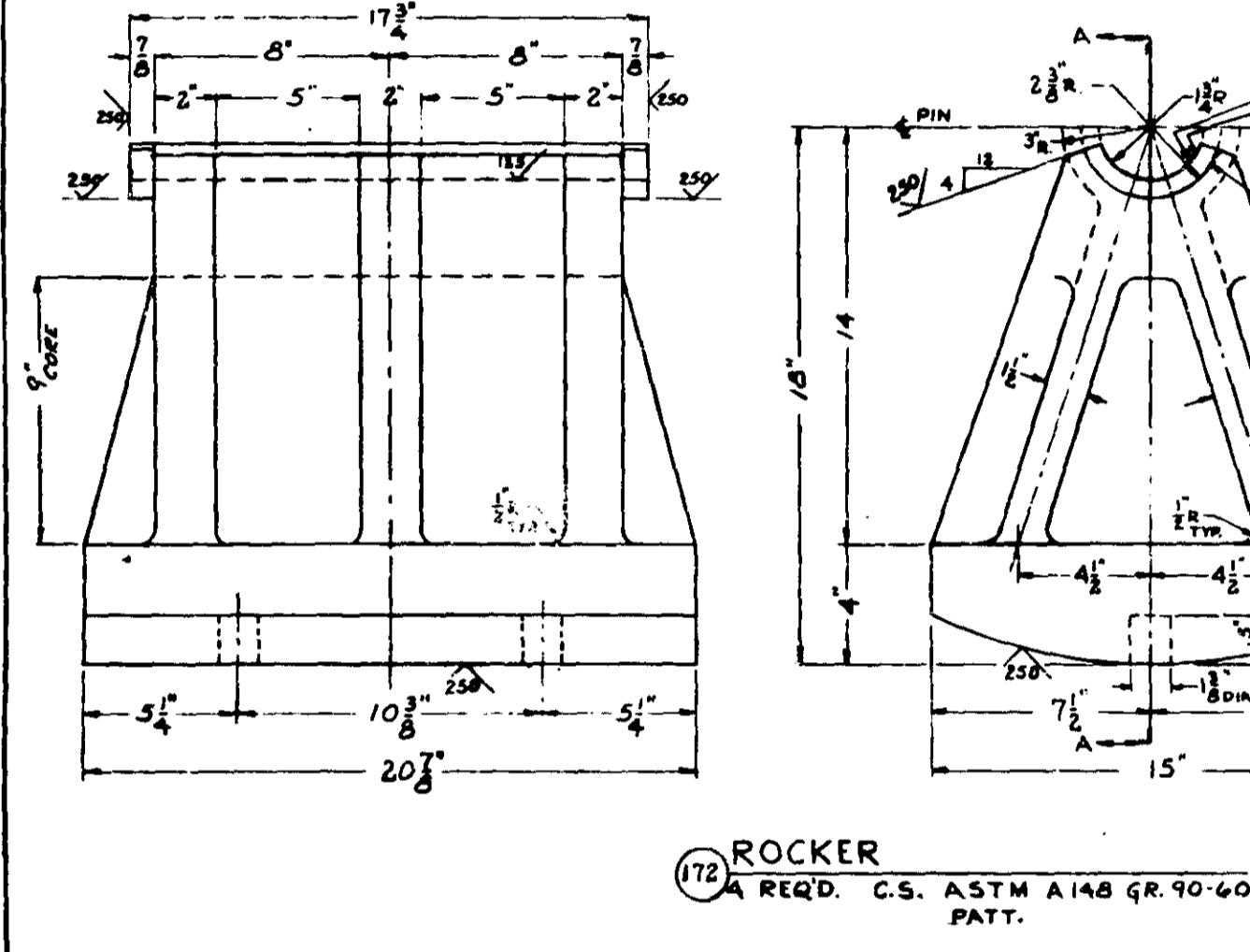
171 SOLE PLATE
4 REQ'D. T-1 HIGH STRENGTH ALLOY STEEL



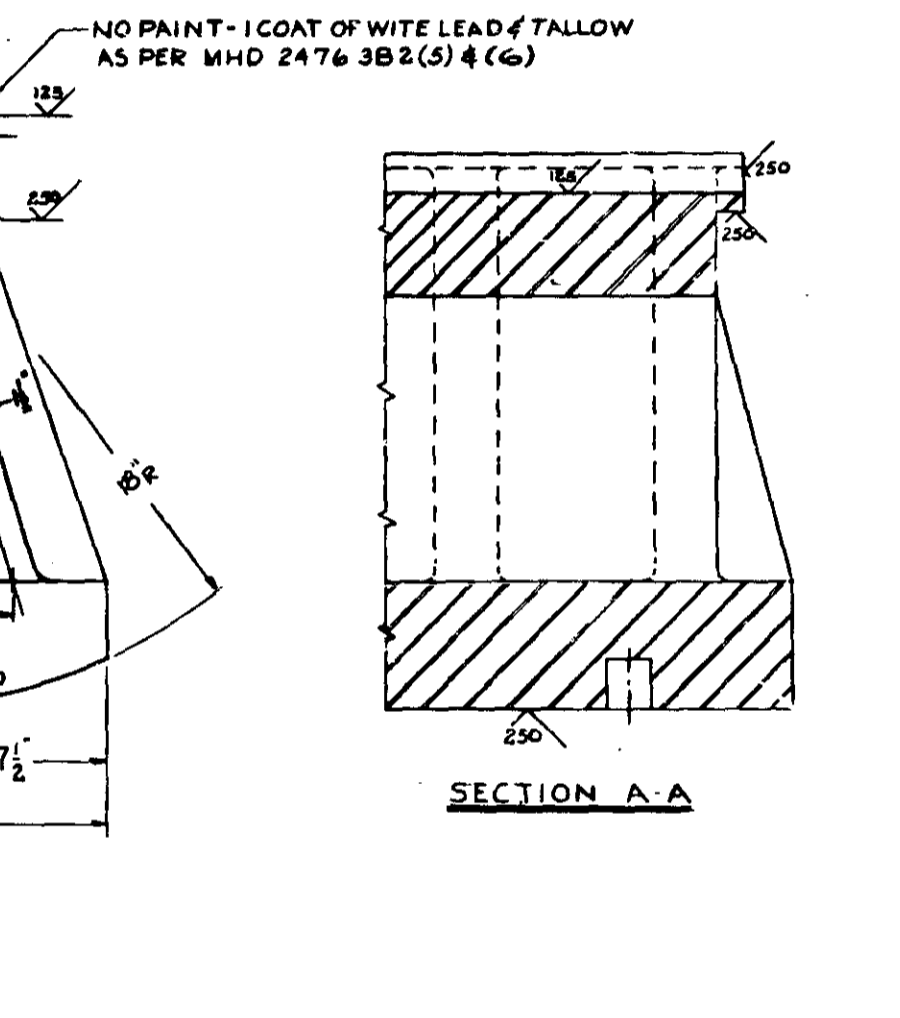
174 PIN
4 REQ'D. S. ASTM. A322 (MSI 4140) HEAT TREATED



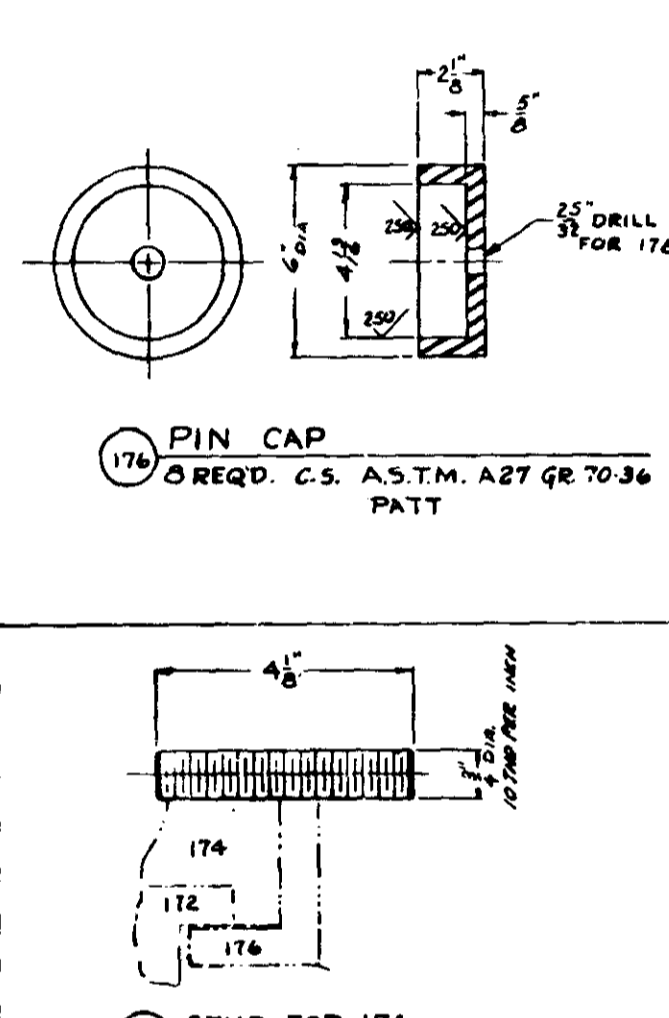
175 PINTLE
8 REQ'D. C.R.S. ASTM A 331 (AISI 4140 OR 4142)



172 ROCKER
4 REQ'D. C.S. ASTM A148 GR. 90-60 PATT.



173 ROCKER SUPPORT
4 REQ'D. C.S. ASTM. A148 GR. 90-60 PATT.

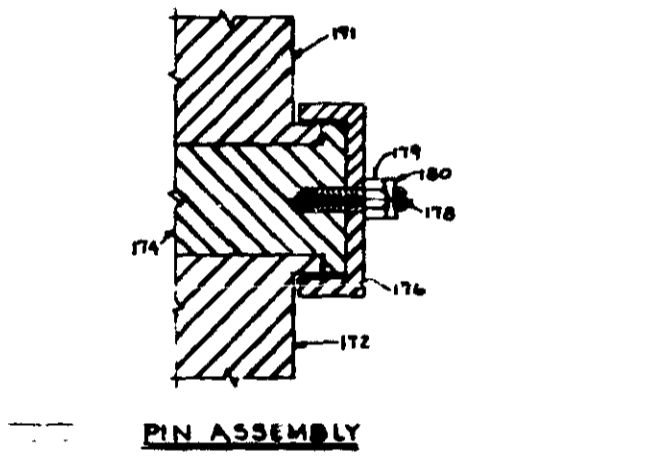


176 PIN CAP
8 REQ'D. C.S. ASTM. A27 GR 70-36 PATT

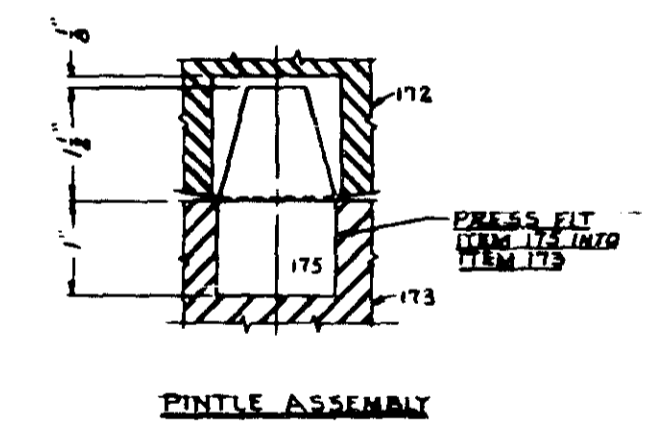
178 STUD FOR 174
8 REQ'D. S. ASTM. A307-47 GRA

S.O. K1023 BILL OF MATERIAL DWG. 8256 E 30					
PC.	NAME	QTY.	MTL.	PATT.	REMARKS
* 171	SOLE PLATE	4	S.		
* 172	ROCKER	4	C.S.	16705	NEW
* 173	ROCKER SUPPORT	4	C.S.	16706	NEW
* 174	PIN	4	S.		
* 175	PINTLE	8	C.R.S.		
* 176	PIN CAP	8	C.S.	16707	NEW
* 177	STUD FOR 174	8	S.		
* 179	NUT FOR 178	8	S.	HEX 3/4-10 AMER. HEAVY	
* 180	LOCK NUT FOR 178	8	S.	MF6 STD MAC LEAN-FOGG #1 - SEE 1/2	

* To Be SHIPPED DIRECT TO JOB SITE.
* To Be SHIPPED TO ALLIED STRUCTURAL STEEL CO.
1435 165TH STREET.
HAMMOND, INDIANA



PIN ASSEMBLY



PINTLE ASSEMBLY

- NOTES:
- SEE DWG. 8251 E 30 FOR GENERAL NOTES.
 - HOLES MARKED "RA" TO BE DRILLED .13" DIA BY E.G.F.M. AND REAMED TO 1/16" DIA. AT ASSEMBLY IN SHOP BY OTHERS.
 - RIVETS FOR ABOVE HOLES BY OTHERS.
 - HOLES MARKED "RF" TO BE DRILLED 1/16" DIA. BY E.G.F.M. AND REAMED TO 1/16" DIA. AT ASSEMBLY IN FIELD BY OTHERS.

SHOP NOTE:
PAINT ALL ROUGH AND FINISHED SURFACES EXCEPT AS NOTED.

SPECIFICATIONS MINN. STD. SPEC. SPECIAL PROV.
INSPECTION MINN. HIGHWAY DEPT.

GENERAL NOTES
ALL STEEL CASTINGS & FORGINGS TO BE ANNEALED
SPOT FACE FOR ALL BOLT HEADS & NUTS
SCRIBE PITCH LINES ON BOTH SIDES OF ALL GEARS
SHOP PAINT—ONE COAT—ORANG PRIMER (MHD 3300)
FINISHED SURFACES COATED—1 SHOP COAT—OR AS NOTED
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

BID ITEM No. 85

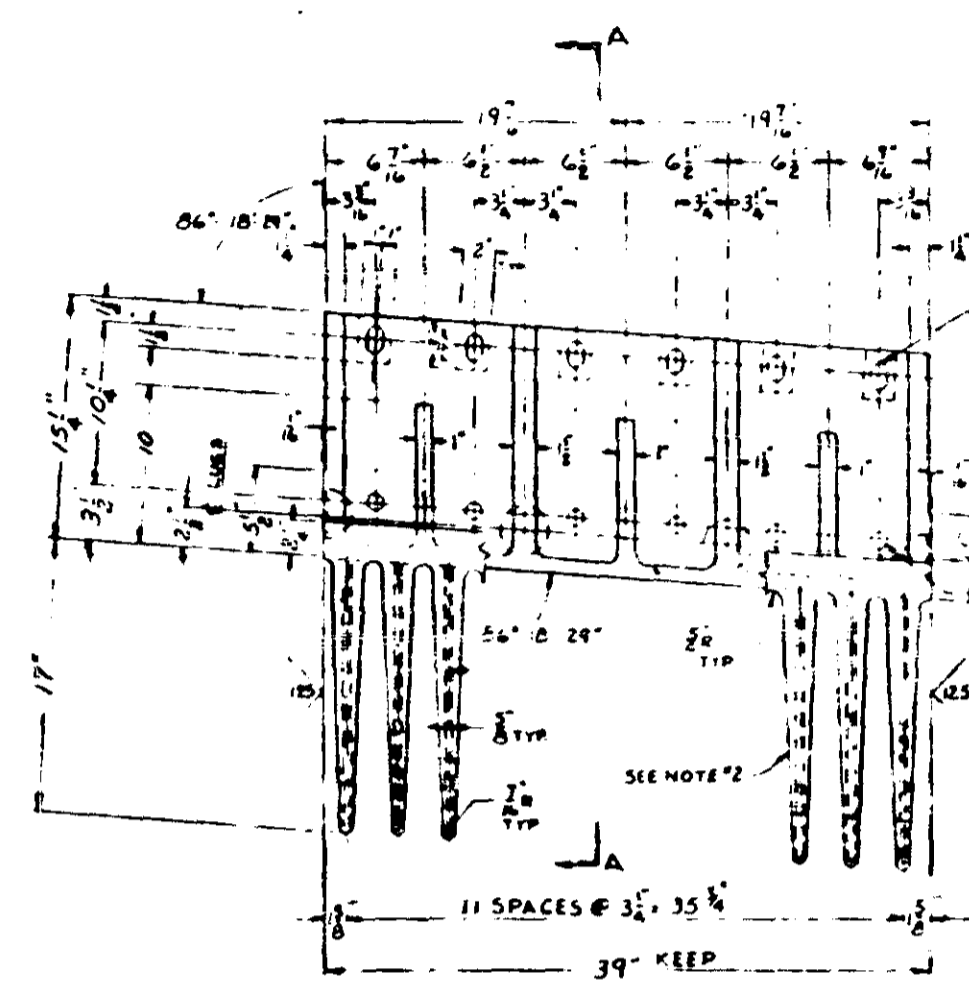
S.O. K. 1023 CONTRACT
EXPANSION BEARING ASS'Y. DETAILS
AT
PANELS UO 4 UO
MINNESOTA BRIDGE No 9340
SP 2783-08 (7435 W + 394)
MINN. PROJ. 1-16 35W-3(38)112

THE EARLE GEAR AND MACHINE COMPANY
4707 19 4715 STENTON AVENUE
PHILADELPHIA 44, PA.

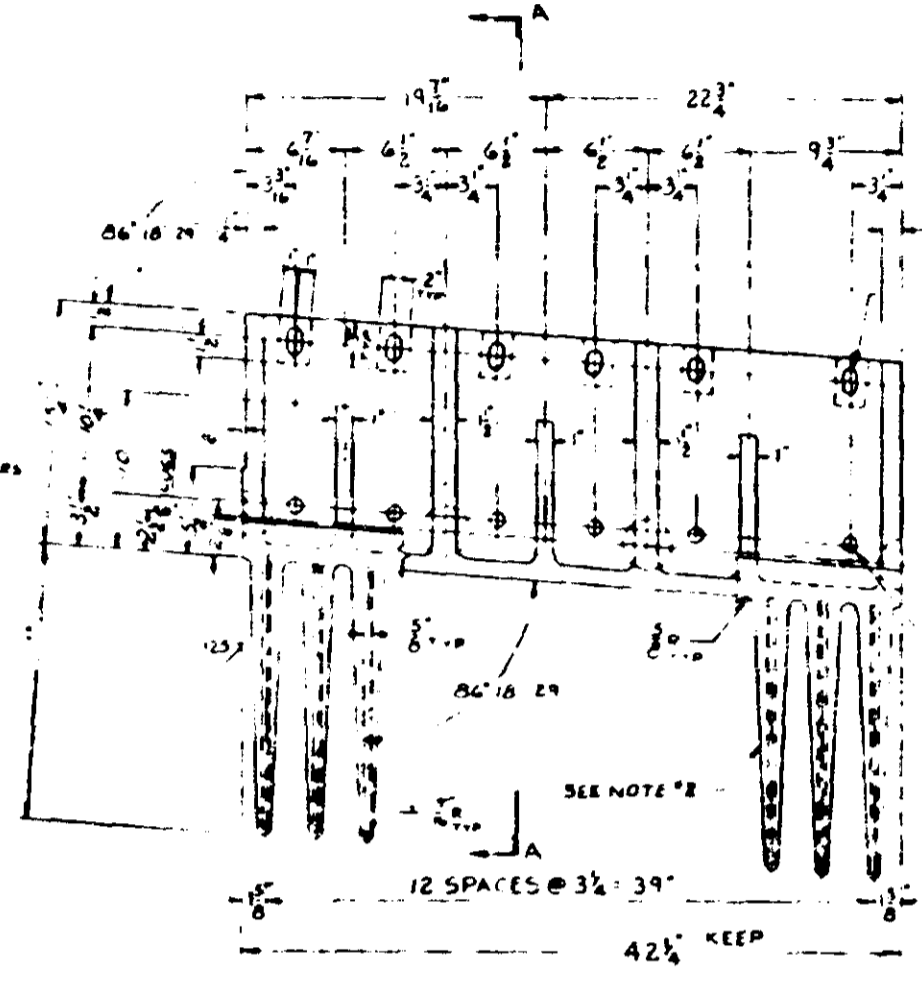
DESIGNED BY: A.J.R. 12-11-65 APPROVED BY: STATE ENGINEER, H.D. 1-21-66
CHECKED BY: G.P. 1-7-66 REV. APPROV. STATE OF MINN. H.D. 2-23-66
DATE: 1-7-65 REV. APPROV.
SHEET 6 OF 12 DWG. NO. 8256 E 30

DATE	BY	REVISIONS
7-25-66	P.J.	PC. 171 - CHANGED "RA" TO "RF" - ADDED NOTE
6-21-66	G.P.	SHOP NOTE ADDED - SEE ITEM 174
3-14-66	A.J.R.	PC. 173 ADDED 1/16" DIA. NOTE TAKE NO
1-20-66	A.J.R.	REVISED DWG AS PER RETURNED PRINT

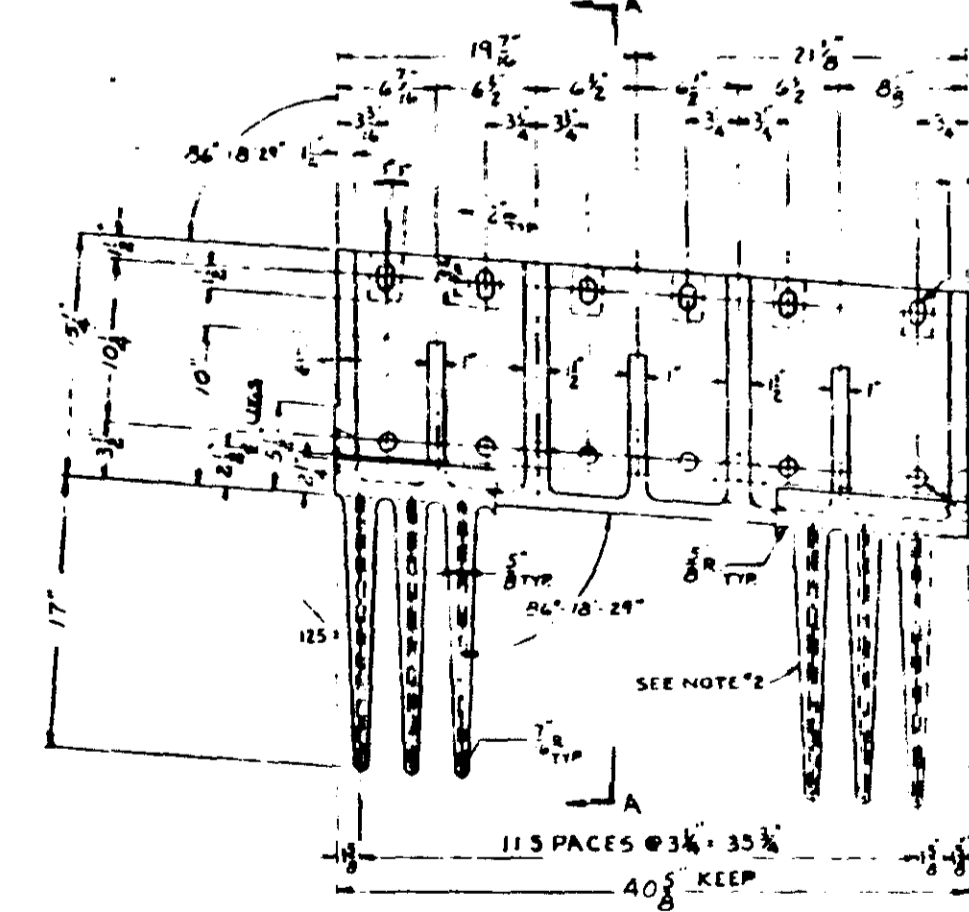
J. O. K-1025 BILL OF MATERIAL					DWG. 8258 E 30	
PC.	NAME	QTY.	MTL.	PATT.	REMARKS	
221	FINGER CASTING TYPE 5	30	C.S.	16711	NEW	
222	FINGER CASTING TYPE 6	1	C.S.	16711 WITH PC 13614	NEW	
223	FINGER CASTING TYPE 7	1	C.S.	16711 WITH PC 13	NEW	
224	FINGER CASTING TYPE 8	30	C.S.	16711	NEW	
225	FINGER CASTING TYPE 9	1	C.S.	16711 WITH PC 13614	NEW	
226	FINGER CASTING TYPE 10	1	C.S.	16711 WITH PC 13	NEW	



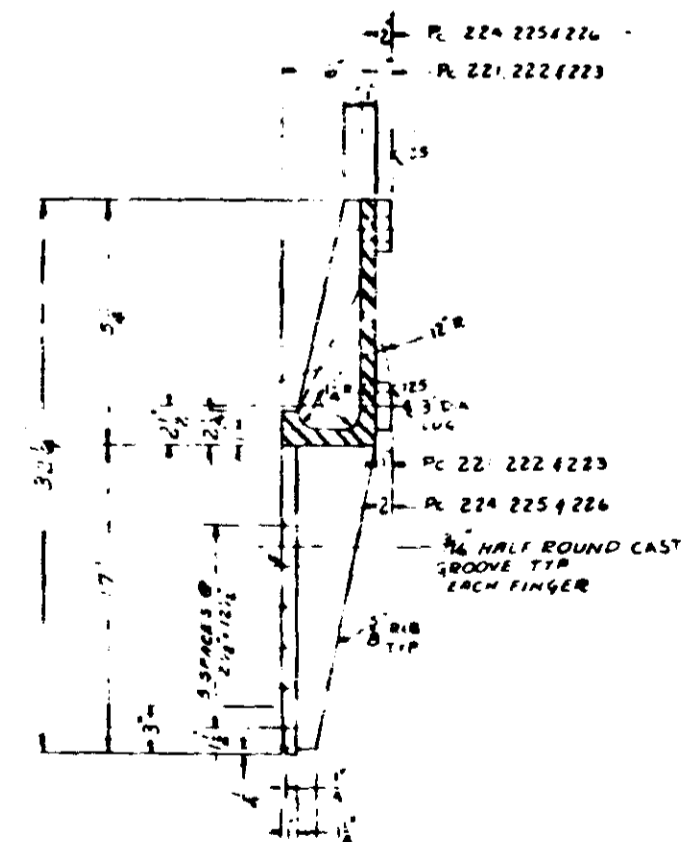
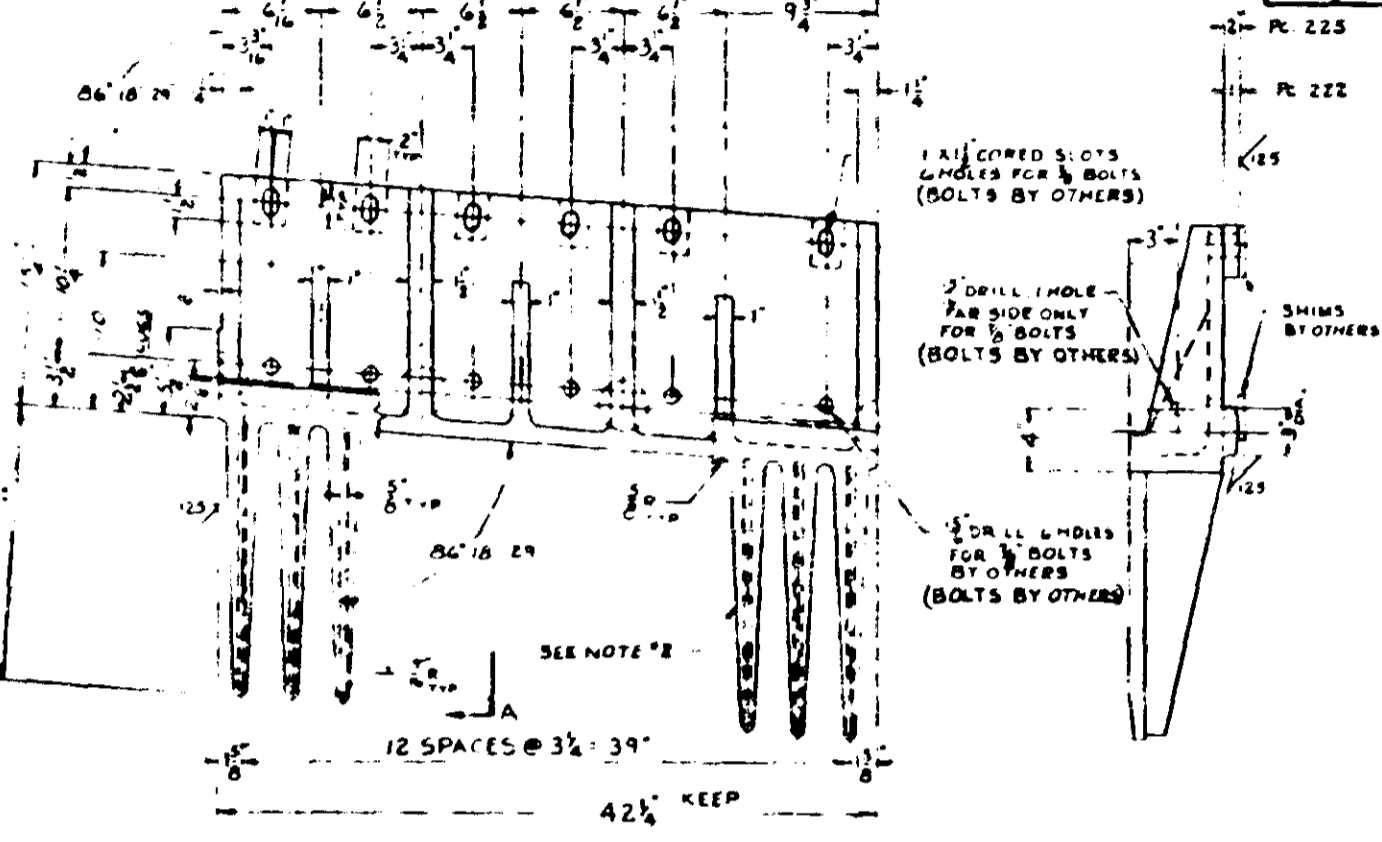
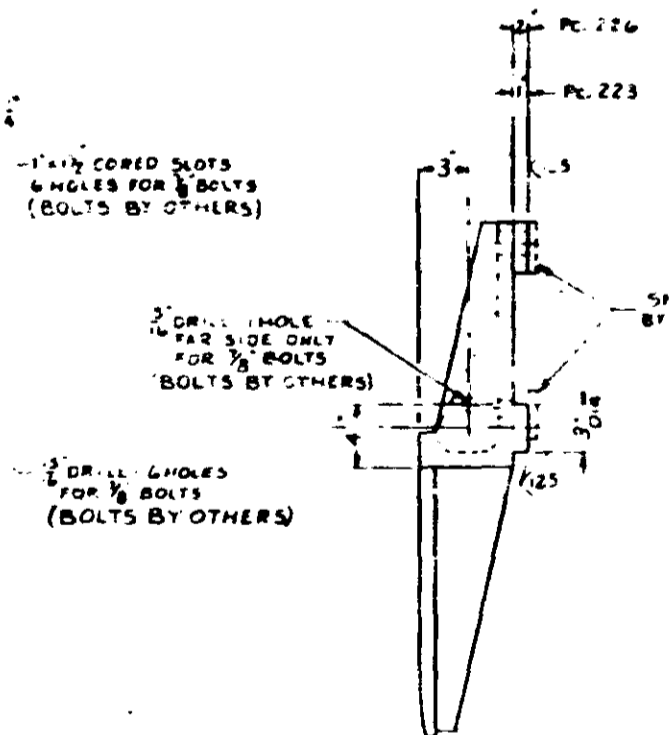
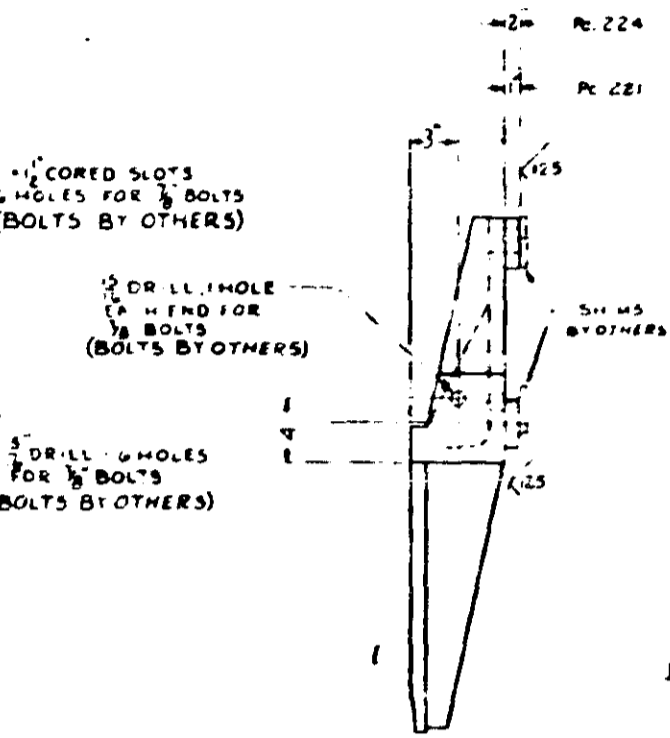
- 221 FINGER CASTING — TYPE 5
30 REQD. C.S. ASTM A27 GRADE 70-36
PATT. 16711
- 224 FINGER CASTING — TYPE 8
30 REQD. C.S. ASTM A27 GRADE 70-36
PATT. 16711



- 222 FINGER CASTING — TYPE 6
1 REQD. C.S. ASTM A27 GRADE 70-36
PATT. 16711 WITH PC 13614
- 225 FINGER CASTING — TYPE 9
1 REQD. C.S. ASTM A27 GRADE 70-36
PATT. 16711 WITH PC 13614



- 223 FINGER CASTING — TYPE 7
1 REQD. C.S. ASTM A27 GRADE 70-36
PATT. 16711 WITH PC 13
- 226 FINGER CASTING — TYPE 10
1 REQD. C.S. ASTM A27 GRADE 70-36
PATT. 16711 WITH PC 13



SECTION A-A
(TYPICAL)

- NOTES:**
1. ALL FILLETS 3/8\"/>

SPECIFICATIONS M.H.D. & SPECIAL PROVISIONS
INSPECTION MINN. HIGHWAY DEPT.

GENERAL NOTES
ALL STEEL CASTINGS & FORGINGS TO BE ANNEALED
SPOT FACE FOR ALL BOLT HEADS & NUTS
SCRIBE PITCH LINES ON BOTH SIDES OF ALL GEARS
SHOP PAINT—ONE COAT—
FINISHED SURFACES COATED— SEE DWG. 8261 E 30
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

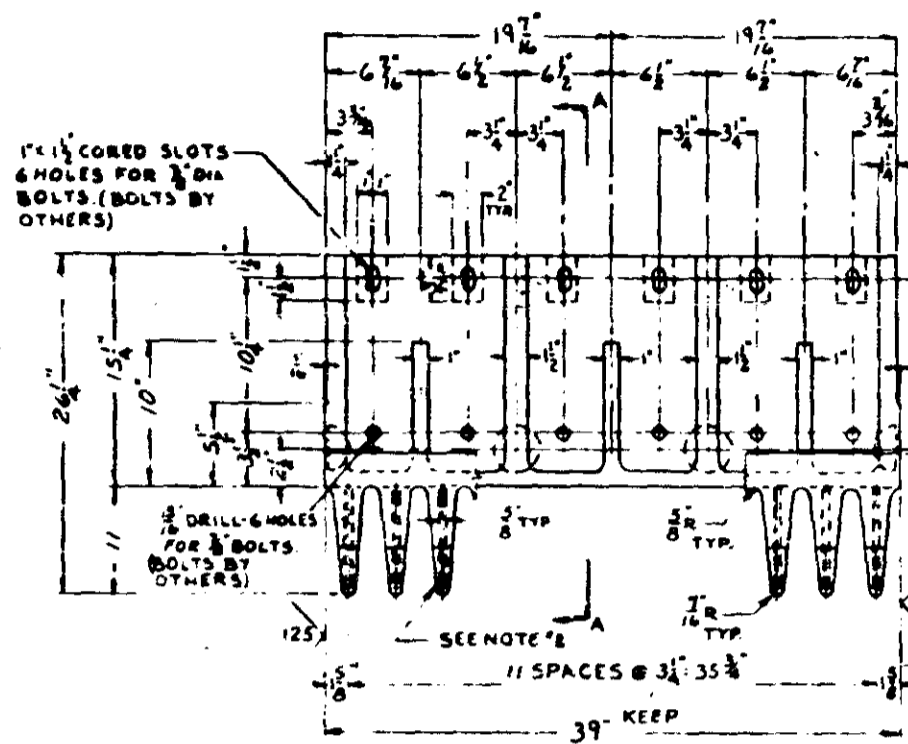
DATE	BY	REVISION
3-11-66	AJR	ADDED PATT. NO. & REVISED NOTES
2-3-66	AJR	DWG. CHANGED AS PER RETURNED PRINT FROM M.H.D.

J. O. K-1025 CONTRACT
EXPANSION DEVICE
AT
UD NEAR PIER No. 5
MINNEAPOLIS BRIDGE No. 9840
SP 2783-08 (TH 35 W - 394)
MINN. PROJ. IIG 35 W-3 (56)112

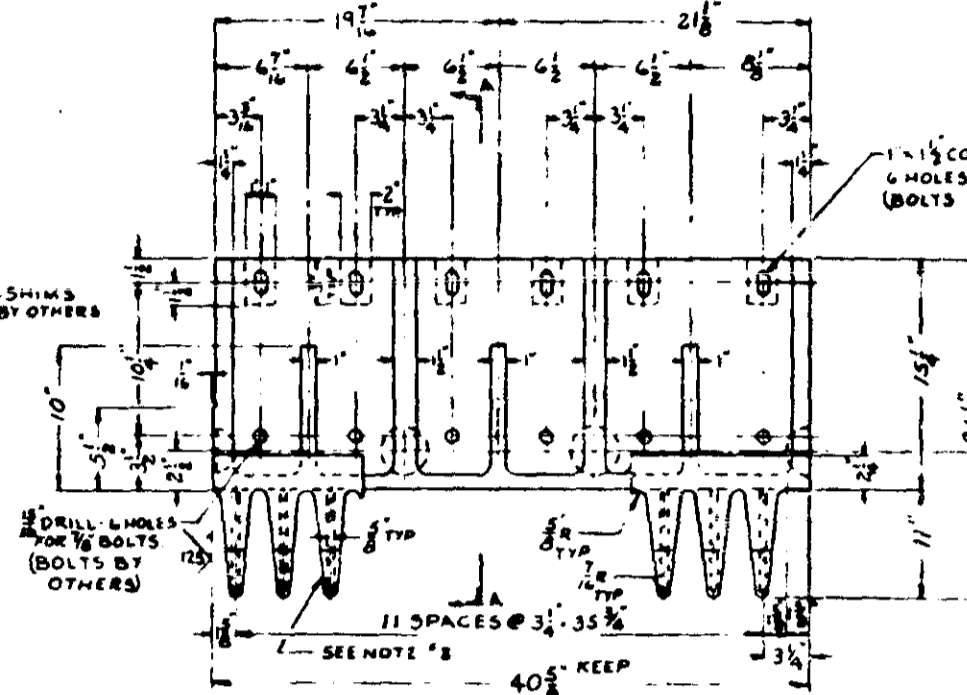
THE EARLE GEAR AND MACHINE COMPANY
4787 TO 4716 STANTON AVENUE
PHILADELPHIA 44, PA.

DATE: 1-10-66
SHEET 8 OF DWG. NO. 8258 E 30

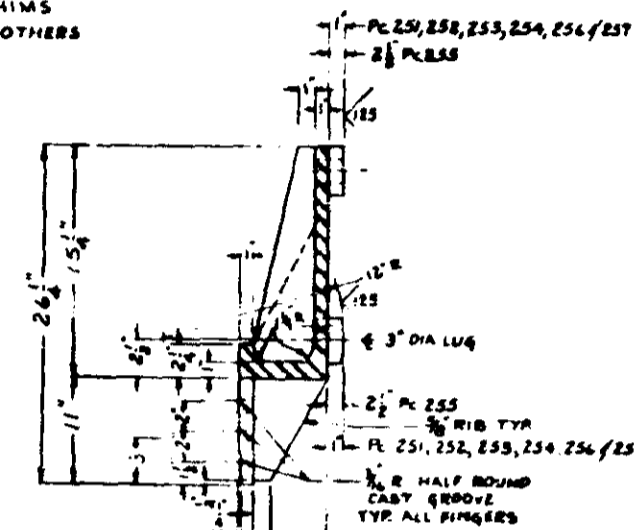
S.O. K 1026 BILL OF MATERIAL DWG. 8259 E 30					
PC.	NAME	QTY.	MTL.	PATT.	REMARKS
251	FINGER CASTING TYPE I	28	C.S.	16708	NEW
252	FINGER CASTING TYPE 2	1	C.S.	16708	NEW
253	FINGER CASTING TYPE 3	2	C.S.	16708	NEW
254	FINGER CASTING TYPE 4	1	C.S.	16708	NEW
255	FINGER CASTING TYPE II	32	C.S.	16708	NEW
256	FINGER CASTING TYPE 12	1	C.S.	16709	NEW
257	FINGER CASTING TYPE 13	1	C.S.	16709	NEW



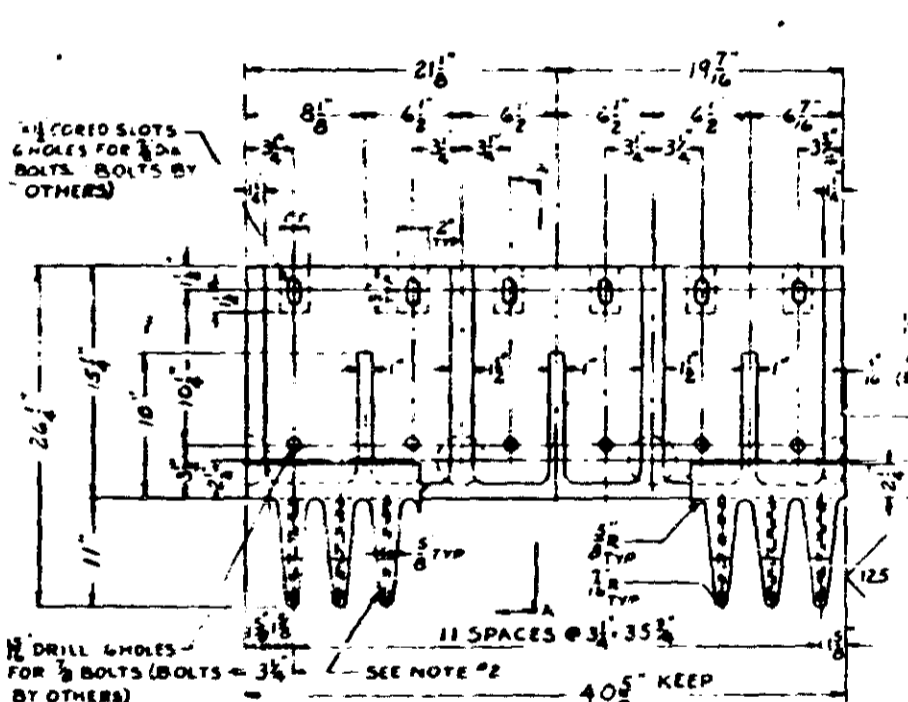
251 FINGER CASTING TYPE I (WITH 11" FINGER)
28 REQD. C.S. ASTM A27 GR. 70-36
PATT. 16708



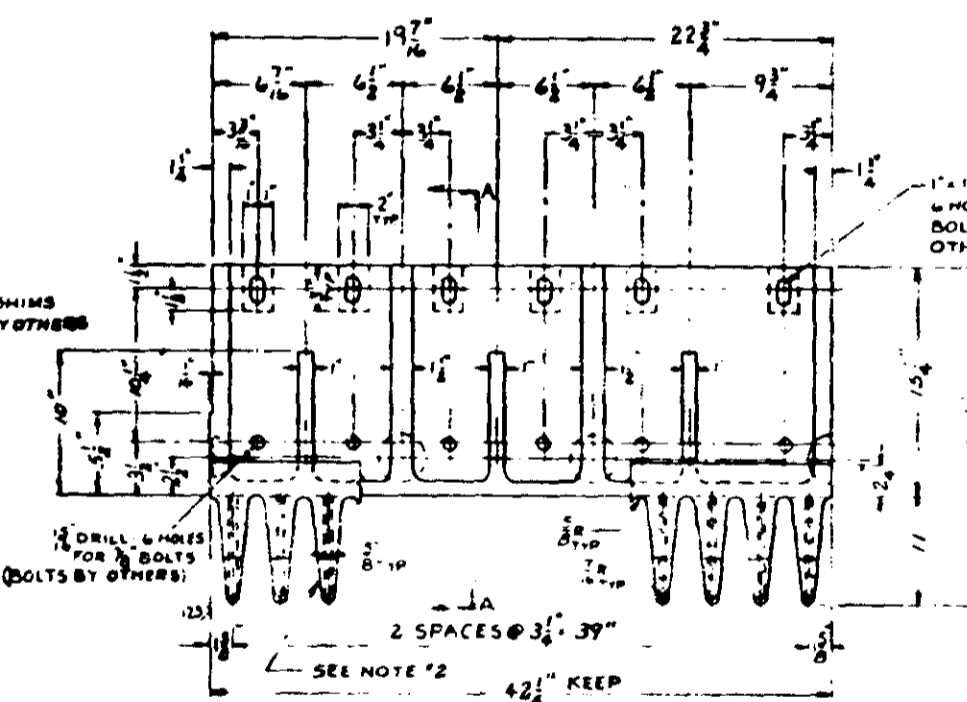
252 FINGER CASTING TYPE 2 (WITH 11" FINGER)
1 REQD. C.S. ASTM A27 GR. 70-36
PATT. 16708 WITH PL. 18



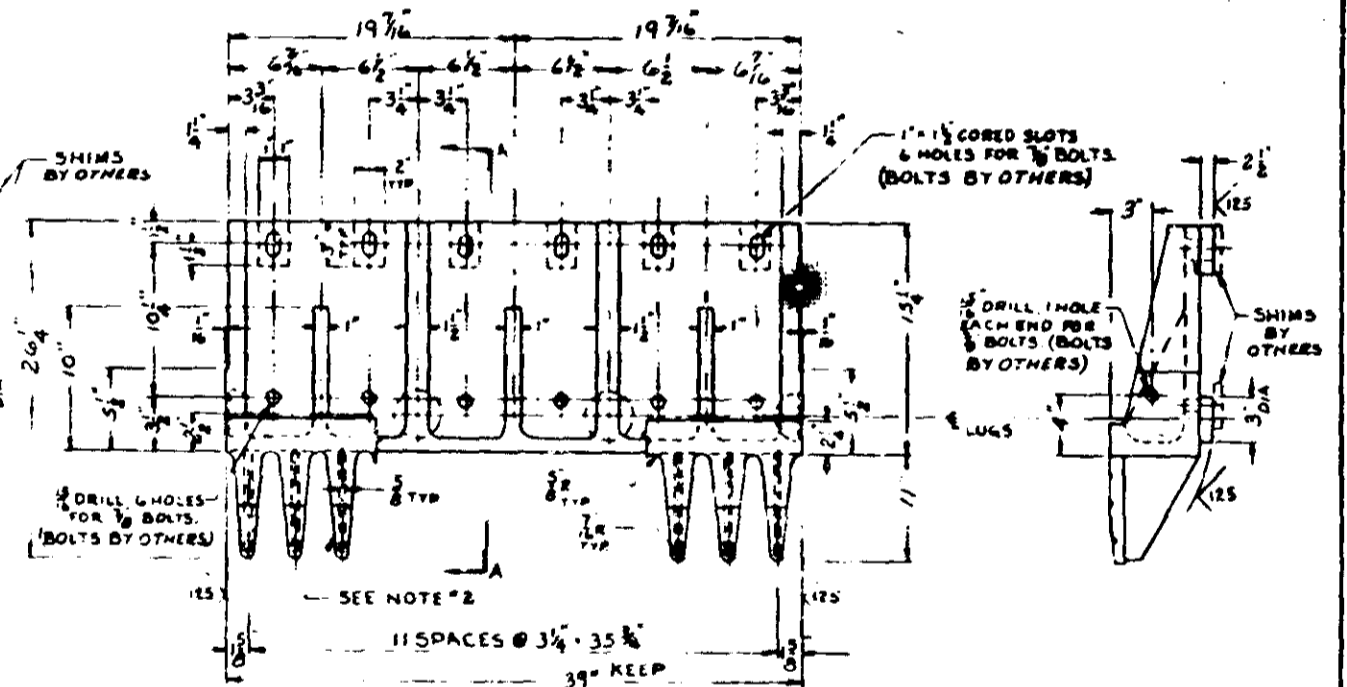
SECTION A-A
(TYPICAL)



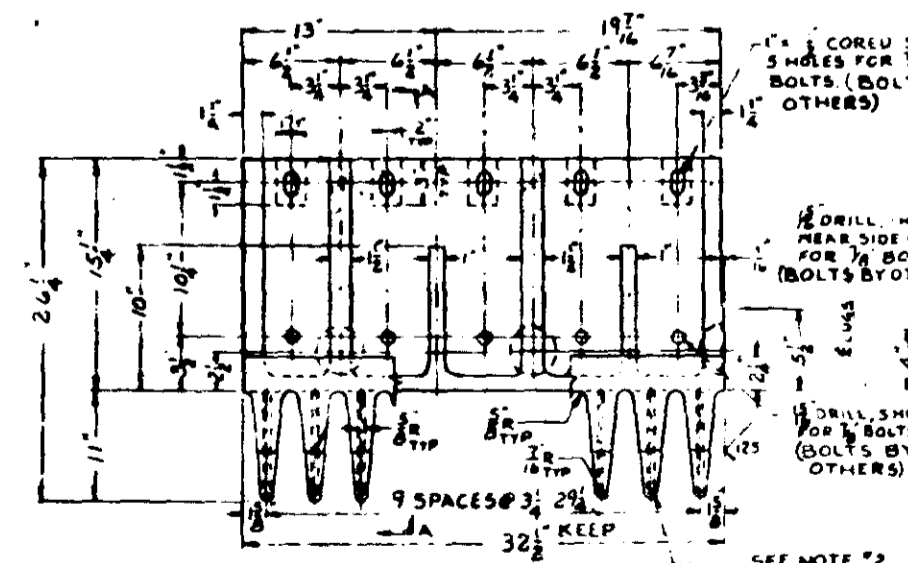
253 FINGER CASTING TYPE 3 (WITH 11" FINGER)
2 REQD. C.S. ASTM A27 GR. 70-36
PATT. 16708 WITH PL. # 19



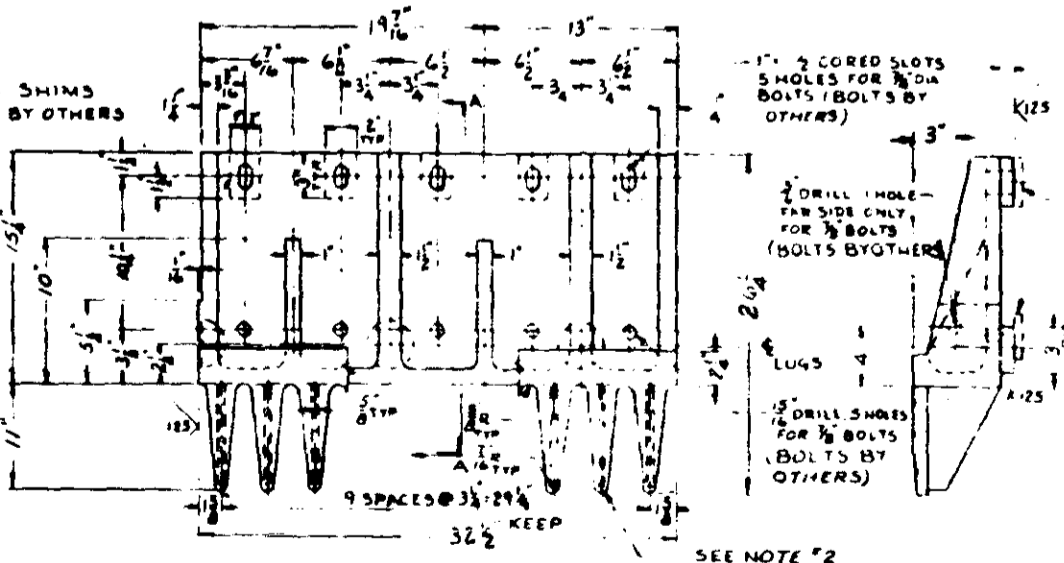
254 FINGER CASTING TYPE 4 (WITH 11" FINGER)
1 REQD. C.S. ASTM A27 GR. 70-36
PATT. 16708 WITH PL. 18/20



255 FINGER CASTING TYPE II
32 REQD. C.S. ASTM A27 GR. 70-36
PATT. 16708



256 FINGER CASTING TYPE 12
1 REQD. C.S. ASTM A27 GR. 70-36
PATT. 16709 WITH PL. # 12



257 FINGER CASTING TYPE 13
1 REQD. C.S. ASTM A27 GR. 70-36
PATT. 16709 WITH PL. # 11/12

NOTES:

1. ALL FILLETS 3/4" RADIUS EXCEPT AS SHOWN.
2. FINGERS TO BE CAST SMOOTH.
3. EXPANSION CASTINGS TO BE ASSEMBLED IN SHOP FOR CHECKING FIT & MATCHMARKING AS PER DWG. 8248 E 30
4. WORKMANSHIP & MATERIAL MUST BE IN ACCORDANCE WITH MHD SPECS DATED JAN. 1, 1964 & SPECIAL PROVISIONS.
5. FOR ADDITIONAL NOTES SEE DWG. 8262 E 30

SPECIFICATIONS MHD & SPECIAL PROVISIONS
INSPECTION MINN. HIGHWAY DEPT.

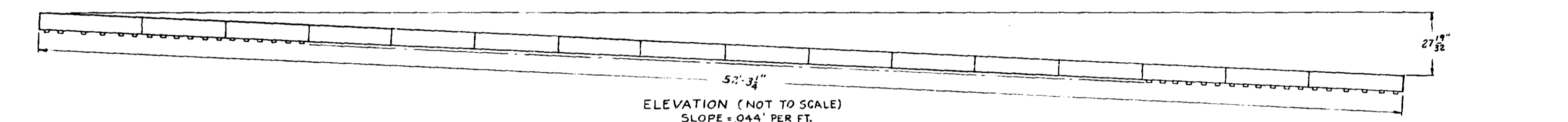
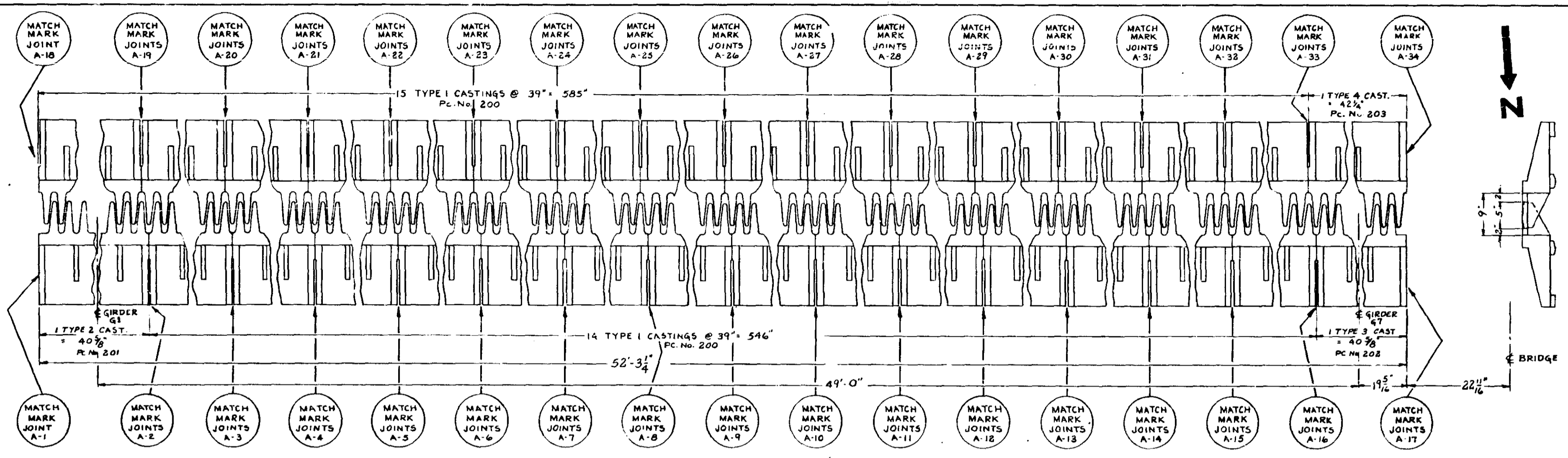
GENERAL NOTES
ALL STEEL CASTINGS & FORGINGS TO BE ANNEALED
SPOT FACE FOR ALL BOLT HEADS & NUTS
SCRIBE PITCH LINES ON BOTH SIDES OF ALL GEARS
SHOP PAINT - ONE COAT - SEE DWG. 8262 E 30
FINISHED SURFACES COATED - SEE DWG. 8262 E 30
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

3-11-66	AJR	ADDED PATT. NO. REVISED DIMS
2-3-66	JR	DWG. FINISHED AS PER RETURNED DRILL FROM NOTE

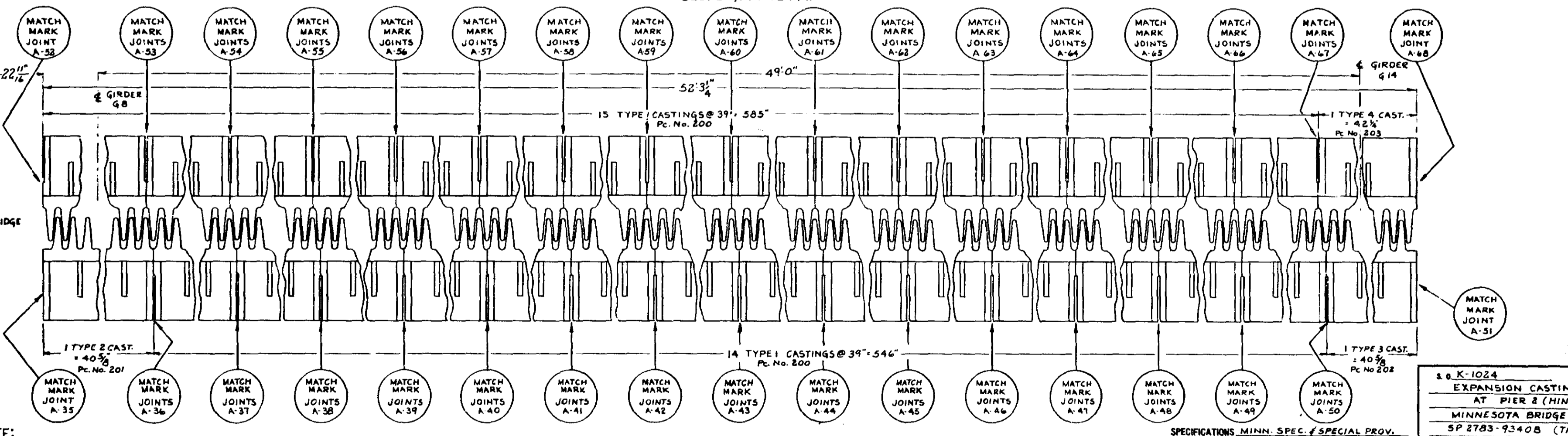
S.O. K-1026 CONTRACT
ROADWAY EXPANSION DEVICE
AT
UD NEAR PIER 8
MINNESOTA BRIDGE No. 9340
SP. 183-08 (TH. 35W-394)
MINN. PROJ. I-19 35W-3(58)118

THE EARLE GEAR AND MACHINE COMPANY
4107 W. 4715 STENTON AVENUE
PHILADELPHIA 44 PA

DATE: 1-20-66
SHEET 9 OF DWG. No. 8259 E 30



ELEVATION (NOT TO SCALE)
SLOPE = .044' PER FT.



- NOTE:
- FOR DETAILS SEE DWG. 8257 E 30.
 - EACH SUB-ASSEMBLY SHALL CONSIST OF ALL FINGER CASTINGS REQUIRED FOR ONE HALF OF WIDTH OF THE BRIDGE.
 - WHERE CLEARANCE BETWEEN MATING PARTS IS NOT OBTAINED WHEN ASSEM. ALL INTERFERING PROJECTIONS SHALL BE REMOVED.

- FINGER WARPAGE SHALL BE CORRECTED SO THAT TOP SURFACE OF FINGER CASTINGS SHALL HAVE A UNIFORM PLANE.
- AFTER SUB-ASSEMBLIES HAVE BEEN INSPECTED AND APPROVED, CASTINGS SHALL BE MATCHMARKED AS SHOWN ABOVE USING A 3/8" STEEL DIE TO A DEPTH SO PARTS CAN BE IDENTIFIED AFTER GALVANIZING.

- ALL CASTINGS SHALL BE GALVANIZED IN ACCORDANCE WITH MHD 3394 SPECIFICATION AFTER ASSEMBLY, INSPECTION AND MATCHMARKING.
- CASTINGS TO BE INSPECTED BEFORE AFTER GALVANIZING

SPECIFICATIONS MINN. SPEC. & SPECIAL PROV.
INSPECTION MINN. HIGHWAY DEPT.

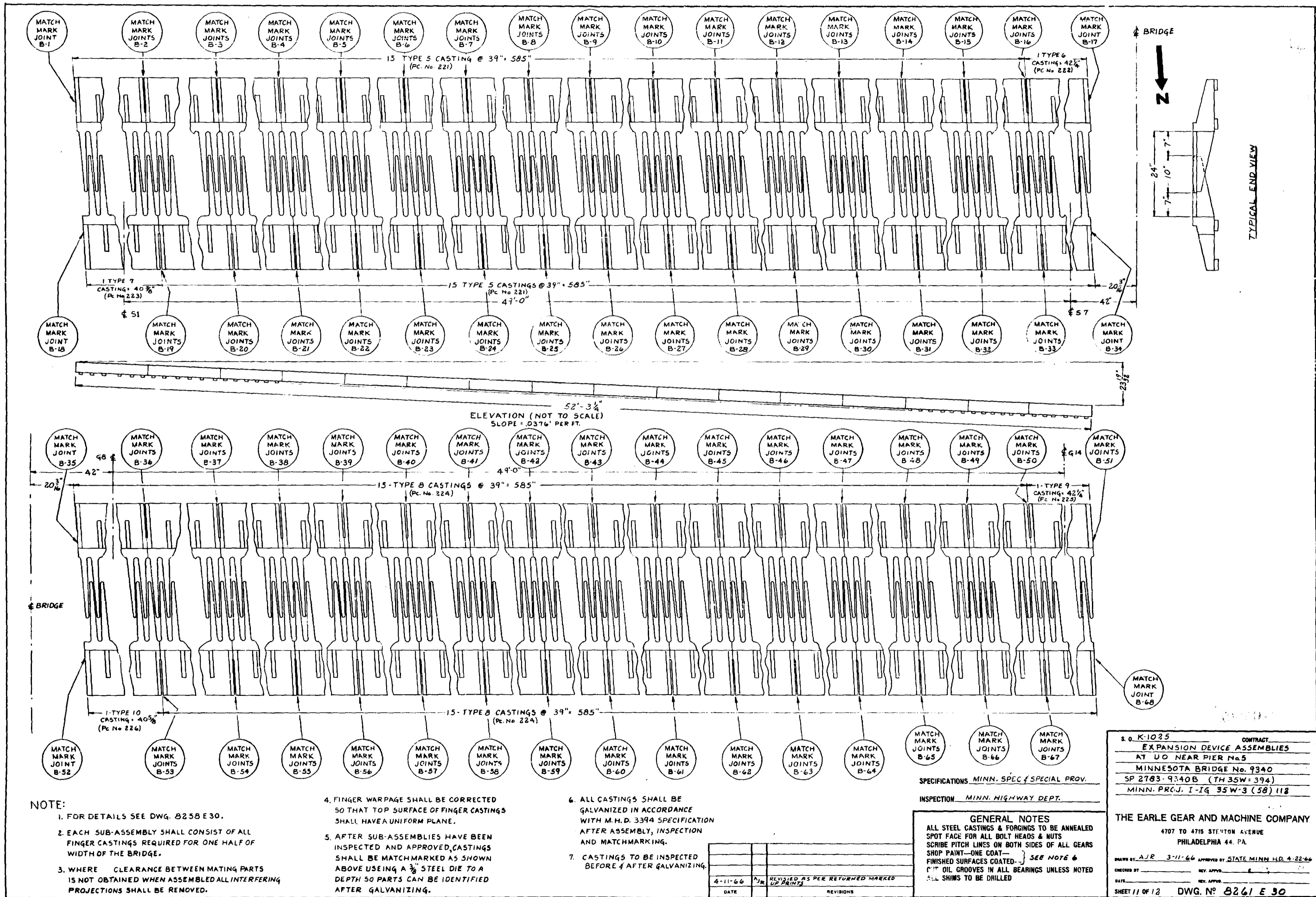
GENERAL NOTES
ALL STEEL CASTINGS & FORGINGS TO BE ANNEALED
SPOT FACE FOR ALL BOLT HEADS & NUTS
SCRIBE PITCH LINES ON BOTH SIDES OF ALL GEARS
SHOP PAINT—ONE COAT— SEE NOTE 6
FINISHED SURFACES COATED—
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

DATE	REVISIONS
8-11-66	AJR REVISED DWG AS PER RETURNED MARKED UP PRINT

S. O. K-1024 CONTRACT
EXPANSION CASTING ASSEMBLY
AT PIER 2 (HINGE)
MINNESOTA BRIDGE No. 9340
SP 2783-9340B (TH35W-394)
MINN. PROJ. I-19 35W-3 (58)118

THE EARLE GEAR AND MACHINE COMPANY
4707 TO 4715 STENTON AVENUE
PHILADELPHIA 44, PA.

DRAWN BY AJR 3-11-66 APPROVED BY STATE MINN. HD. 4-28-66
CHECKED BY _____ REV. APPROV. _____
DATE _____ REV. APPROV. _____
SHEET 10 OF 12 DWG. No. 8260 E 30



NOTE:

- FOR DETAILS SEE DWG. B258 E30.
- EACH SUB-ASSEMBLY SHALL CONSIST OF ALL FINGER CASTINGS REQUIRED FOR ONE HALF OF WIDTH OF THE BRIDGE.
- WHERE CLEARANCE BETWEEN MATING PARTS IS NOT OBTAINED WHEN ASSEMBLED ALL INTERFERING PROJECTIONS SHALL BE REMOVED.
- FINGER WARPAGE SHALL BE CORRECTED SO THAT TOP SURFACE OF FINGER CASTINGS SHALL HAVE A UNIFORM PLANE.
- AFTER SUB-ASSEMBLIES HAVE BEEN INSPECTED AND APPROVED, CASTINGS SHALL BE MATCH MARKED AS SHOWN ABOVE USING A 3/8" STEEL DIE TO A DEPTH SO PARTS CAN BE IDENTIFIED AFTER GALVANIZING.

- ALL CASTINGS SHALL BE GALVANIZED IN ACCORDANCE WITH M.H.D. 3394 SPECIFICATION AFTER ASSEMBLY, INSPECTION AND MATCH MARKING.
- CASTINGS TO BE INSPECTED BEFORE & AFTER GALVANIZING.

SPECIFICATIONS MINN. SPEC & SPECIAL PROV.
 INSPECTION MINN. HIGHWAY DEPT.

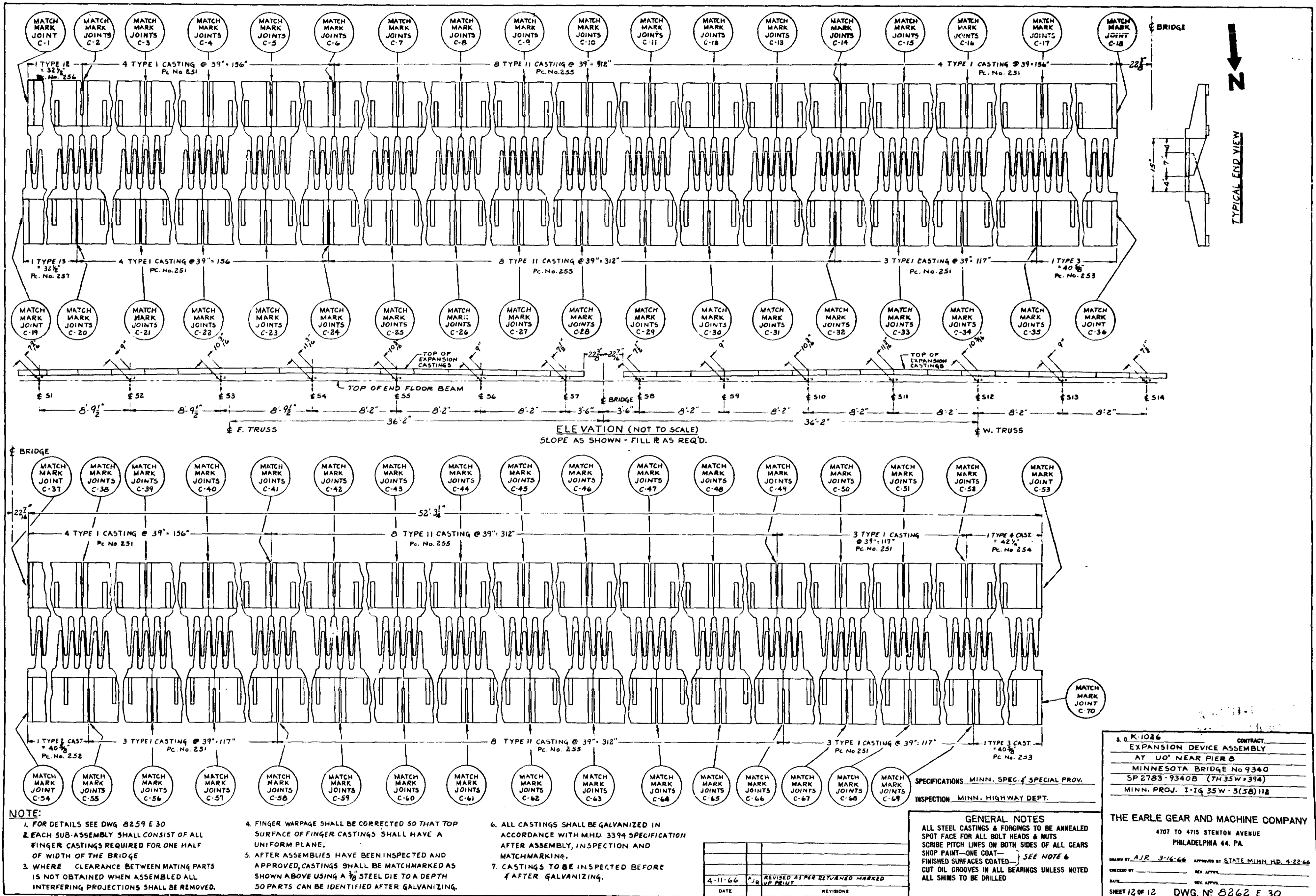
GENERAL NOTES
 ALL STEEL CASTINGS & FORGINGS TO BE ANNEALED SPOT FACE FOR ALL BOLT HEADS & NUTS SCRIBE PITCH LINES ON BOTH SIDES OF ALL GEARS SHIP PAINT—ONE COAT—FINISHED SURFACES COATED—SEE NOTE 6 CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED ALL SHIMS TO BE DRILLED

S.O. K-1025 CONTRACT
 EXPANSION DEVICE ASSEMBLIES
 AT UO NEAR PIER No. 5
 MINNESOTA BRIDGE No. 9340
 SP 2783-9340B (TH 35W-394)
 MINN. PROJ. I-IG 35W-3 (58) 118

THE EARLE GEAR AND MACHINE COMPANY
 4707 TO 4715 STENTON AVENUE
 PHILADELPHIA 44, PA.

DRAWN BY: AJR 3-11-66 APPROVED BY: STATE MINN. HD. 4-22-66
 CHECKED BY: _____ REV. APPROV. _____
 DATE: _____ REV. APPROV. _____

SHEET 11 OF 12 DWG. No. B261 E 30



TYPICAL END VIEW

ELEVATION (NOT TO SCALE)
SLOPE AS SHOWN - FILL IN AS REQ'D.

- NOTE:**
- FOR DETAILS SEE DWG. B259 E 30
 - EACH SUB-ASSEMBLY SHALL CONSIST OF ALL FINGER CASTINGS REQUIRED FOR ONE HALF OF WIDTH OF THE BRIDGE
 - WHERE CLEARANCE BETWEEN MATING PARTS IS NOT OBTAINED WHEN ASSEMBLED ALL INTERFERING PROJECTIONS SHALL BE REMOVED.
 - FINGER WARPAGE SHALL BE CORRECTED SO THAT TOP SURFACE OF FINGER CASTINGS SHALL HAVE A UNIFORM PLANE.
 - AFTER ASSEMBLIES HAVE BEEN INSPECTED AND APPROVED, CASTINGS SHALL BE MATCHMARKED AS SHOWN ABOVE USING A $\frac{3}{16}$ STEEL DIE TO A DEPTH SO PARTS CAN BE IDENTIFIED AFTER GALVANIZING.

- ALL CASTINGS SHALL BE GALVANIZED IN ACCORDANCE WITH M.H.D. 3394 SPECIFICATION AFTER ASSEMBLY, INSPECTION AND MATCHMARKING.
- CASTINGS TO BE INSPECTED BEFORE & AFTER GALVANIZING.

DATE	REVISIONS
4-11-66	REVISED AFTER RETURNED MARKED UP PRINT

GENERAL NOTES
 ALL STEEL CASTINGS & FORGINGS TO BE ANNEALED SPOT FACE FOR ALL BOLT HEADS & NUTS SCRIBE PITCH LINES ON BOTH SIDES OF ALL GEARS SHOP PAINT—ONE COAT— FINISHED SURFACES COATED— SEE NOTE 6 CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED ALL SHIMS TO BE DRILLED

S. O. K. 1026 CONTRACT
 EXPANSION DEVICE ASSEMBLY
 AT UO' NEAR PIER B
 MINNESOTA BRIDGE No 9340
 SP 2783-9340B (7H35W-394)
 MINN. PROJ. I-1G 35W-3(5B) 118

THE EARLE GEAR AND MACHINE COMPANY
 4707 TO 4715 STENTON AVENUE
 PHILADELPHIA 44, PA.

DATE: 3-16-66 APPROVED BY: STATE MINN. HD. 4-22-66
 CHECKED BY: REV. APPR.
 DATE: REV. APPR.
 SHEET 12 OF 12 DWG. No 8262 E 30