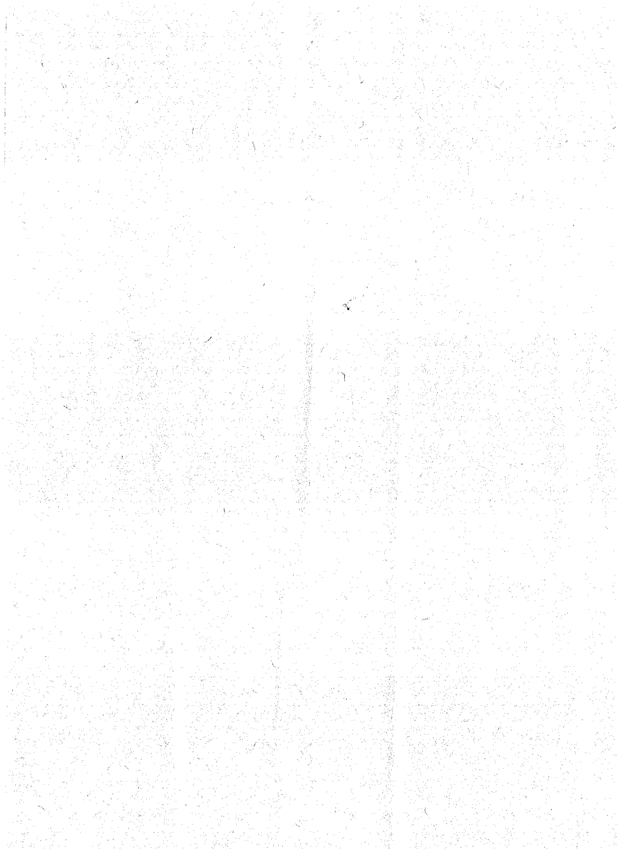


A P P R O V A L

SHARON

4/25/51

PURCHASER-LAMBERT CONSTRUCTION CO.,INC.

C@: 128

G@: RU-3707-R ITEM 1 S.O. 1435064

APPARATUS-(ONE) TYPE AJR TRANS. 10 KVA 240 to 240/120 NO TAPS SINGLE PHASE 3 WIRE.

11-C-2326 SUB 2 OUTLINE
39006 SUB H INSTR. PLATE

J.V. HASTINGS

RUTLAND, VT. SALES

14 COPIES

SHARON@S.D.

MR. JOHO

680196

GRAND ISLAND NORTH MERO BRIDGE SPECIFICATION NO.

APPARATUS

TWO CLASS 12-BCE DRUM CONTROLLERS FOR 80 H.P. 220 VOLT TYPE CI MOTOR SEC. VOLT 187 SEC. AMPS 85.

TO HAVE DRIFT POINT & SIX POWER POINTS IN EACH DIRECTION.

TO HAVE 8 AUXILIARY SWITCHES PER DEVELOPMENT ON DIA 33-A-6799.

TO BE COMPLETE WITH CONDUIT BOX & HORIZONTAL HANDLE DESIGNED FOR SEPARATE MOUNTING.

OPERATE HANDLE CLOCKWISE FOR RAISE.

OPERATE HANDLE COUNTER CLOCKWISE FOR LOWER

TO BE FINISHED INSIDE & OUTSIDE IN MACHINE TOOL GREY LACQUER.

CC TO CONTROL VAULT TO BE FILED WITH 10-8-929

DIMENSION SHEET 30-230

CIRCUIT PROTECTIVE EQUIPMENT
NOFUZE "DE-ION" CIRCUIT BREAKERS
ENCLOSED TYPE AB-I

CONDUIT PIPE TAP SIZES • WIRING SPACE WITHIN ENCLOSURES

CAST IRON WATER AND DUST-TIGHT ENCLOSURES (NEMA TYPES 3, 4 AND 5) AND CAST IRON ENCLOSURES FOR HAZARDOUS LOCATIONS—CLASS II, GROUP G—(NEMA TYPE 9)

100 Amperes F and G Frames—2 and 3 Poles—Voltages to 600 A-C; 250 D-C
225 Amperes K Frames—2 and 3 Poles—Voltages to 600 A-C; 250 D-C

BOTTOM VIEW

LINE NO.	BREAKER FRAME	AMPERES	DIMENSIONS IN INCHES									STANDARD PIPE TAP FOR CONDUIT		MAXIMUM SIZE OF CONDUIT POSSIBLE
			A	B	C	D	E	F	G	H	J	K	CA	CB	CC	
1	F Frame Non-Interchangeable Trip	15 to 50	16½	6⅜	7½	7⅝	15 15/16	1⅛	1 15/16	3 5/16	⅜	¼	1¼	...	1¼	1½
2	F Frame Non-Interchangeable Trip	70-80-100	16⅝	6⅜	7½	7⅝	15 15/16	1½	1 15/16	3 5/16	⅜	¼	2	...	2	2
3	G Frame Interchangeable Trip	50 to 100	19⅝	12 13/16	7½	11⅝	18 15/16	2⅛	1 15/16	3 15/16	⅝	⅜	1½	1½	1½	2
4	K Frame Interchangeable Trip	70 to 225	30	17	9 11/16	15⅝	28 5/16	3⅝	2 5/16	4⅝	1 5/16	½	2½	2½	2½	2½

LINE NO.	NO. OF POLES	*WIRING SPACE WITHIN ENCLOSURES				
		SA	SB	SC	SD	SE
1	2	2½	2½	2 5/16	1 1/16	2⅜
	3	2½	2½	1 1/16	1 1/16	2⅜
2	2	3⅜	3⅜	2 5/16	1 1/16	2⅜
	3	3⅜	3⅜	1 1/16	1 1/16	2⅜
3	2	3 15/16	3 15/16	2½	2½	2⅜
	3	3 15/16	3 15/16	1⅜	1⅜	2⅜
4	2	4¼	7¼	3⅜	5⅜	3⅜
	3	4¼	7¼	3⅜	3⅜	3⅜

*Distance from breaker to walls of enclosure.

NOTES ON CONDUITS

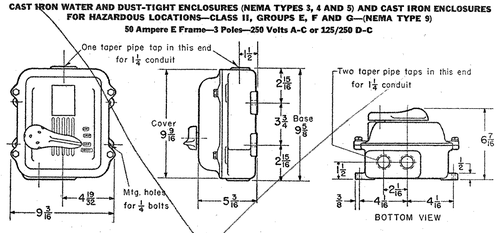
Side holes can be drilled and tapped same size as end holes.
Box may be turned end for end if desirable to have conduit openings in reversed location.
When smaller conduits are required, a reducer must be used. (Furnished by the customer.)

DA-3707-E

NOT TO BE USED FOR CONSTRUCTION PURPOSES UNLESS IDENTIFIED.

WESTINGHOUSE ELECTRIC CORPORATION • BEAVER PLANT • STD. CONTROL DIV. • BEAVER, PA.
Printed in U.S.A.

CAST IRON WATER AND DUST-TIGHT ENCLOSURES (NEMA TYPES 3, 4 AND 5) AND CAST IRON ENCLOSURES FOR HAZARDOUS LOCATIONS—CLASS II, GROUPS E, F AND G—(NEMA TYPE 9)
50 Ampere E Frame—3 Poles—250 Volts A-C or 125/250 D-C



LINE NO.	ENCLOSURE	E FRAME THERMAL TRIP AMPS.	CONDUIT SIZE
1	Class II, Group G	15-20-25-35-50	1¼
2	Water and Dust Tight	15-20-25-35-50	1¼

*WIRING SPACE WITHIN ENCLOSURES

NO. OF POLES	TOP	BOTTOM	LEFT SIDE	RIGHT SIDE
1	1⅛	1⅛	1½	1⅜
2	1⅛	1⅛	1½	1⅜

*Distance from breaker to walls of enclosure.

NOTES ON CONDUITS
Box may be turned end for end if desirable to have conduit openings in reversed location.
Maximum size of conduit possible is 1¼ inches.
When smaller conduits are required, a reducer must be used. (Furnished by the customer.)
Conduit drilling for sides of these enclosures not available.

NOT TO BE USED FOR CONSTRUCTION PURPOSES UNLESS IDENTIFIED.

Supersedes D.S. 30-230, pages 7 and 8, dated October, 1948

EFFECTIVE NOVEMBER, 1949

WESTINGHOUSE ELECTRIC CORPORATION • BEAVER PLANT • STD. CONTROL DIV. • BEAVER, PA.

E42-2H; D65-2D; C20-3, C26-2B; CH.
Classified File

Printed in U.S.A.

NEW-IMPROVED

CLARK COOPER CO.

ELECTRO PHONIC

EP

ELECTRIC AIR HORN

- MORE VOLUME OF SOUND
- LESS CURRENT CONSUMPTION
- LOWER PRICE

PRICES F.O.B. PALMYRA, N. J.

Model	Voltage						Diaphragm	Lengths	Watts	Weight Pounds
	6	12	24	32	110	220				
EP6							6"	12"-16"	2300	48
EP8							8"	16"-24"	4000	115

ADDITIONAL MODELS ARE AVAILABLE UPON REQUEST

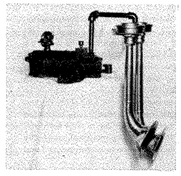


FIG. EP2-H20C

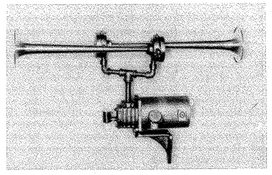


FIG. EP-D — Duplex

Fig. EP2-H20C, assembly illustrated utilizes the "CLARK COOPER TYPE H HORN units described in bulletin H2IC for deep resonant two note chime, indicative to marine and similar uses can be supplied. Straight and curved projectors are supplied for sizes from 12" to 21" long for pitch ranges from 136-230 c.p.s. The projectors may be turned in any position desired. All sizes are interchangeable. This horn is usually attached to vertical surface and the power unit located inside, connected by short piece of pipe. All parts are weather-proof and may be placed in exposed places. Horns are of bronze construction. Adjustable bracket is furnished to facilitate mounting in several ways. Compressor or power unit is of novel design and consists of a rotary piston placed eccentric to the cylinder and directly connected to electric motor for 6-12-32 or 110 volt current. The unit has its own oil supply and requires only occasional refilling.

A Few Uses of Clark Cooper Electro-Phonic Air Signals

NAVIGATION SIGNALS - FIRE ALARMS - INDUSTRIAL SIGNALS - AIRPORT ALARM - LIFE BOATS
SIGNAL TOWERS - FOG SIGNALS - RAILROAD YARDS - REFINERY STILL ALARMS
GENERATING ROOMS - EMERGENCY MAINTENANCE CREWS - PIERS - BARGES
LIGHTERS - CROSSING ALARMS - PUMP STATION SIGNALS - MOVEABLE BRIDGES - WARNINGS TO TRACK CREWS - CALL SYSTEMS - LEVEL ALARMS - PROCESS SIGNALS
START-STOP SIGNALS - SPRINKLER SYSTEMS
INTERIOR COMMUNICATION

CLARK COOPER CO.

PALMYRA, NEW JERSEY

BULLETIN NO. EP1147

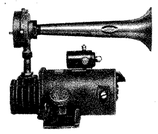
CLARK COOPER ELECTRO-PHONIC WHISTLES

Established 1914

CLARK COOPER CO
PALMYRA, N. J.

ELECTRO-PHONIC AIR SIGNAL

U. S. Patents 1600785 - 1662668



NEW IMPROVED

FIG. EP-S1F #1-F

The CLARK COOPER Co. Electro-Phonic Air Signal is a very powerful electrically controlled alarm. It is operated on compressed air produced by its own built-in air compressor directly driven by high torque motor. This horn does not require the installation of an air compressor, tanks, and valves. It is being used in many places where a powerful alarm signal is required, but where compressed air is not available for the use of our regular high power CLARK COOPER diaphram air horns. It has all the inherent advantages of the CLARK COOPER standard compressed air whistles, although it produces its own air supply. Aside from the uses listed below, this signal has distinguished itself for emergency stand-by services aboard ship, for fog signaling in place of the regular navigating whistle usually operated from the engine starting air tanks. The starting air can thus be conserved for its regular duty. Where air starting is not used the CLARK COOPER Electro-Phonic Air Signal fills the requirement for a powerful air whistle. This signal is well adapted for use at isolated places where expense of compressor equipment or pipe lines would be objectionable. One or more horn units can be furnished and pointed in various directions to meet varied requirements. Tone combinations can be furnished where desired, and in sizes and power from small size horns audible half mile to several miles. Local conditions govern audible range.

The standard horn produces a medium tone, well suited for general signaling purposes. Clear cut, short and long blasts can be sounded in rapid succession with no change in frequency. Merely press the button and the signal emits its powerful commanding note. Control may be from marine type push button, telephone, code box or similar remote point. Prices include magnetic starting control for 6 - 12 - 24 and 32 volt. They are available for higher voltage if desired at slightly extra cost.

ELECTRO-PHONIC AIR SIGNALS

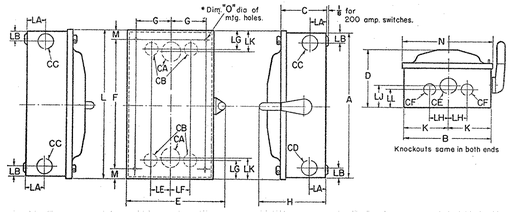
Model	Horn Size	Net Wt. Lbs.	6 DC	12 DC	24 DC	32 DC	110 AC-DC	220 AC-DC
EP-SO		13						
EP-S1C	3" x 6½"	23						
EP-S1F	3" x12"	25						
EP-H10*	3½"x15"	32						
EP-D Duplex	3" x20"	28						
EP2-S2C	4" x11"	41						
EP2-S2F	4" x14"	45						
EP2-H20 Duplex	3½"x15"	50						

***For additional data regarding horn unit used here see bulletin H82C. This patented design horn unit requires less power per decibel of sound than any other signal device and is the most efficient signal made. It has been in continuous service for past 20 years. Projectors of these horns are interchangeable, therefore various frequencies or chime combinations are available.**

SAFETY SWITCHES
DOUBLE THROW

DIMENSION SHEET
30-130

200, 400, AND 600 AMPERES



LINE NO.	DIMENSIONS IN INCHES											KNOCKOUT LOCATIONS							CONDUIT SIZES			
	A	B	C	E	F	G	H	K	L	M	N	LA	LB	LE LF LH	LG	LJ	LK	LL	CA CB CC	CE	CF
1	27⅛	13⅜	9	17⅛	25¼	5⅜	13⅝	6⅞	27⅛	1⅛	14¼	1⅜	3½	¾	2⅝	2⅜	2⅜	½	2	1½	2	1½
2	36⅛	13⅜	9	17⅛	34¼	5⅜	13⅝	6⅞	36⅛	1⅛	14¼	2¼	2½	¾	2⅝	2⅜	2½	½	2	1½	2	1½
3	44⅛	13⅜	9	17⅛	42	5⅜	13⅝	6⅞	44⅛	1⅛	14¼	2¼	3½	†	2⅝	2½	....	½	....	1½	2	1½
4	27⅛	17¼	9	20⅝	25⅛	7⅝	13⅝	8⅜	27⅛	1⅛	17¾	1⅜	3½	4	2½	3	2½	½	2¾	2	2½	2
5	36⅛	17¼	9	20⅝	34⅛	7⅝	13⅝	8⅜	36⅛	1⅛	17¾	2⅛	2½	4	2½	3	2½	½	2¾	2	2½	2
6	44⅛	17¼	9	20⅝	42	7⅝	13⅝	8⅜	44⅛	1⅛	17¾	2¼	2½	4	2½	2¾	2½	½	2¾	2	2½	2
7	27⅛	21⅛	9	24⅜	25⅛	9⅛	13⅝	10⅜	27⅛	1⅛	22	1⅜	3½	4	2½	3	2½	½	2¾	2	2½	2
8	36⅛	21⅛	9	24⅜	34⅛	9⅛	13⅝	10⅜	36⅛	1⅛	22	2⅛	2½	4	2½	3	2½	½	2¾	2	2½	2
9	44⅛	21⅛	9	24⅜	43	9⅝	13⅝	10⅜	44⅛	1⅛	22	2¼	2½	4	2½	2¾	2½	½	2¾	2	2½	2
10	32⅞	18⅛	11⅛	18⅝	30	6½	14⅛	7⅜	32⅞	1⅛	15¾	3	3½	4¼	3½	3⅝	3½	3	3	2½	3	2½
11	50⅞	18⅛	11⅛	18⅝	48	6½	14⅛	7⅜	50⅞	1⅛	15¾	3	3½	4¼	3½	3⅝	3½	3	3	2½	3	2½
12	56⅞	18⅛	11⅛	18⅝	54	6½	14⅛	7⅜	56⅞	1⅛	15¾	3	3½	4¼	3½	3⅝	3½	3	3	2½	3	2½
13	32⅞	20¼	11¼	23⅜	30	9	14⅛	10⅛	32⅞	1⅛	20⅜	3	3½	4¼	3½	3⅝	3½	3	3	2½	3	2½
14	50⅞	20¼	11¼	23⅜	48	9	14⅛	10⅛	50⅞	1⅛	20⅜	3	3½	4¼	3½	3⅝	3½	3	3	2½	3	2½
15	56⅞	20¼	11¼	23⅜	54	9	14⅛	10⅛	56⅞	1⅛	20⅜	3	3½	4¼	3½	3⅝	3½	3	3	2½	3	2½
16	32⅞	24¼	11¼	27⅞	30	11	14⅛	12⅛	32⅞	1⅛	24¾	3½	3½	5	3½	3⅝	4½	3½	3½	3	3½	3
17	50⅞	24¼	11¼	27⅞	48	11	14⅛	12⅛	50⅞	1⅛	24¾	3½	3½	5	3½	3⅝	4½	3½	3½	3	3½	3
18	56⅞	28⅛	11¼	28⅝	54	11½	14⅛	12⅝	56⅞	1⅛	28⅝	3½	3½	5	6½	3⅝	4½	3½	3½	3	3½	3
19	42⅛	18¼	13½	21⅝	40	8	18⅛	9⅛	42⅛	1⅛	18⅝	3½	3½	2¾	3½	....	3½	3	....	3	....	3½
20	63⅛	18¼	13½	21⅝	61	8	18⅛	9⅛	64	1½	19⅛	3½	3⅜	2¾	3⅜	....	....	3½	....	3	....	3½
21	42⅛	23¼	13½	25⅝	40	10	18⅞	11⅛	42⅛	1⅛	22⅜	3½	3½	5	3½	3⅝	4½	3½	3½	3	3½	3
22	63⅛	23¼	13½	25⅝	61	10	18⅞	11⅛	63⅛	1⅛	22½	3½	3⅜	5	3⅜	3⅝	4	3½	3½	3	3½	3
23	42⅛	26⅛	13½	29⅝	40	12	18⅞	13⅛	42⅛	1⅛	26⅝	3½	3½	5	3½	3⅝	4½	3½	3½	3	3½	3
24	63⅛	26⅛	13½	29⅝	61	12	18⅞	13⅛	63⅛	1⅛	26½	3½	3⅜	5	3⅜	3⅝	4	3½	3½	3	3½	3

*O =Mounting hole dimension ⅝. †1⅝ for LE and LF. 3¼ for LH.

NOT TO BE USED FOR CONSTRUCTION PURPOSES UNLESS IDENTIFIED. 44-3707-E

Supersedes D.S. 30-130, Page 11, dated February, 1943; Page 12 is New Information

EFFECTIVE JANUARY, 1951

WESTINGHOUSE ELECTRIC CORPORATION • BEAVER PLANT • STD. CONTROL DIV. • BEAVER, PA.

E42-2H; D63-2D; C-26-2E; CHH; Classified File

DIMENSION SHEET
30-130

SAFETY SWITCHES
DOUBLE THROW

30, 60 AND 100 AMPERE

LINE NO.	DIMENSIONS IN INCHES													
	A	B	C	D	E	F	G	H	K	L	M	N	R	S
1	11⅞	7⅝	3⅝	8½	8	9⅝	8⅜	7⅛	3⅜	11⅛	1	8	8¼	2⅝
2	11⅞	10¼	3⅝	8½	10½	9⅝	8⅜	7⅛	3⅜	11⅛	1	10½	10⅜	2⅝
3	11⅞	13	3⅝	8½	13¼	9⅝	11	7⅛	3⅜	11⅛	1	13¼	13⅛	2⅝
4	19⅛	7⅝	3⅝	8½	8	13⅛	9⅝	7⅛	3⅜	18⅜	1	8	8¼	2⅝
5	18⅛	10¼	3⅜	8⅛	10½	13⅛	8¼	7⅛	3⅛	18⅜	1	10½	10⅜	2⅝
6	19⅛	13	3⅜	8⅛	13¼	13⅛	11	7⅛	3⅛	18⅜	1	13¼	13⅛	2⅝
7	26⅝	12⅝	3⅜	8⅛	12⅛	20⅛	10⅜	8⅛	3⅛	25⅜	1	12⅛	12⅛	2⅝
8	21	10¼	3⅜	8⅛	10½	15⅞	9¼	7⅛	3⅛	21¼	1	10½	10⅜	2⅝
9	21	13	3⅜	8⅛	13¼	15⅞	11	7⅛	3⅛	21⅛	1	13¼	13⅛	2⅝
10	18⅛	9⅛	4⅞	8⅛	9¾	13⅛	7⅛	8⅛	4⅜	18⅜	1	9¾	9⅝	2⅝
11	18⅛	12⅛	4⅞	8⅛	12¼	13⅛	10⅛	8⅛	4⅜	18⅜	1	12¼	12⅛	2⅝
12	18⅛	14⅜	4⅞	8⅛	15	13⅛	12⅜	8⅛	4⅜	18⅜	1	15	14⅞	2⅝
13	21⅝	9⅛	4⅞	8⅛	9¾	16⅝	7⅛	8⅛	4⅜	21⅝	1	9¾	9⅝	2⅝
14	21⅝	12⅛	4⅞	8⅛	12¼	16⅝	10⅛	8⅛	4⅜	21⅝	1	12¼	12⅛	2⅝
15	21⅝	14⅜	4⅞	8⅛	15	16⅝	12⅜	8⅛	4⅜	21⅝	1	15	14⅞	2⅝
16	18⅛	12¼	4¾	6¼	12⅜	13⅛	10⅜	8⅝	6⅜	15⅞	1	15⅛	12⅝	2⅛
17	28⅝	14⅜	4¾	6¼	15¼	24⅝	12⅝	10⅛	7⅜	26⅜	1	15⅛	15⅛	2⅛
18	28⅝	10¼	4⅞	6⅛	10¼	26⅛	8¼	10	8⅛	28⅜	1	10¼	10⅛	2⅛
19	28⅝	13½	4⅞	6⅛	13¾	26⅛	11⅛	10	8⅛	28⅜	1	13⅜	13⅞	2⅛
20	28⅝	17⅛	4⅞	6⅛	17¾	26⅛	15⅛	10	8⅛	28⅜	1	17⅜	17⅞	2⅛
21	39⅝	13½	4⅞	6⅛	13¾	37⅝	11⅛	10	8⅛	39⅜	1	13⅜	13⅞	2⅛
22	39⅝	17⅛	4⅞	6⅛	17¾	37⅝	15⅛	10	8⅛	39⅜	1	17⅜	17⅞	2⅛
23	33⅝	13½	4⅞	6⅛	13¾	31⅝	11⅛	10	8⅛	33⅜	1	13⅜	13⅞	2⅛
24	33⅝	17⅛	4⅞	6⅛	17¾	31⅝	15⅛	10	8⅛	33⅜	1	17⅜	17⅞	2⅛

LINE NO.	KNOCKOUT LOCATIONS						CONDUIT SIZES IN INCHES					
	LA	LB	LE	LG	LH	LL	CA	CB	CC	CD	CE	CF
1, 2, 3	1⅜	1⅜	1⅜	1¼	2½	1⅜	...	½- ¾-1	½-¾-1-1¼		½-¾-1-1¼	¾-1
4, 5, 6	1⅜	1⅜	1⅜	1¼	2¼	1⅜	...	½- ¾-1	½-¾-1-1¼	½-¾-1-1¼	½-¾-1-1¼	¾-1
7	2	1⅜	1⅜	1¼	3	1⅜	...	¾-1	¾-1	¾-1	1 -1¼-1½	¾-1
8, 9	2	1⅜	1⅜	1¼	2¼	1⅜	...	¾- ¾-1-1¼	¾-1	¾-1	¾-¾-1-1¼	¾-1
10, 11, 12	2	1⅜	1⅜	1¼	3	1⅜	...	¾-1 -1¼	¾-1 -1¼	¾-1 -1¼	1 -1¼-1½	¾-1 -1¼
13, 14, 15	2	1⅜	1⅜	1¼	3	1⅜	...	¾-1 -1¼	¾-1 -1¼	¾-1 -1¼	1 -1¼-1½	¾-1 -1¼
16	2	1⅜	1⅜	1¼	3	1⅜	...	¾-1 -1¼	¾-1 -1¼	¾-1 -1¼	1 -1¼-1½	¾-1 -1¼
17	2	1⅜	1⅜	1¼	3	1⅜	...	¾-1 -1¼	¾-1 -1¼	¾-1 -1¼	1 -1¼-1½	¾-1 -1¼
18	2½	2½	1⅜	1½	3	1⅜	...	¾-1 -1¼	1¼-1½	1¼-1½	1¼-1½	¾-1 -1¼
19, 20, 21	2½	2½	2½	1½	3½	1⅜	2	1¼-1½	1¼-1½-2	1¼-1½-2	1¼-1½-2	1¼-1½
22, 23, 24	2½	2½	2½	1½	3½	1⅜	2	1¼-1½	1¼-1½-2	1¼-1½-2	1¼-1½-2	1¼-1½

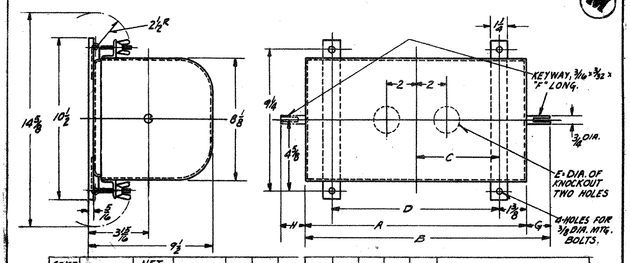
NOT TO BE USED FOR CONSTRUCTION PURPOSES UNLESS IDENTIFIED.

WESTINGHOUSE ELECTRIC CORPORATION • BEAVER PLANT • STD. CONTROL DIV. • BEAVER, PA.

Printed in U.S.A.

WESTINGHOUSE ELECTRIC & MFG. CO., EAST PITTSBURGH, PA., U. S. A.

DIMENSIONS IN INCHES — CAM TYPE LIMIT SWITCH. — WEATHER PROOF OUTLINE — DWG. NO. 28-D-860



CONTR. NO.	TYPE	NET WT.		A	B	C	D	E	F	G	H	REMARKS
1	A-6W	60 LBS.		14 3/8	17 3/8	6	12	1 3/32	2 3/8	2 3/8	—	80 R.P.M. MAX.
2	A-9W	70 "		19 3/8	22 1/2	8 3/32	16 3/16	1 3/32	2 1/4	2 1/2	—	" "
3	A-3W	45 "		11 1/2	13 3/8	4 3/32	8 1/16	1 3/32	2 3/8	2 3/8	—	" "
4	A-12W	85 "		22 1/4	24 1/8	9 3/32	19 1/16	1 3/32	2 3/8	2 3/8	—	" "
5	A-6W	60 "	DOUBLE SHAFT END	14 3/8	17 3/8	6	12	1 3/32	2 3/8	2 3/8	2 3/8	" "
6	A-9W	70 "	"	19 3/8	22 1/4	8 3/32	16 3/16	1 3/32	2 1/2	2 1/2	2 1/2	" "
7	A-3W	45 "	"	11 1/4	13 3/8	4 3/32	8 1/16	1 3/32	2 3/8	2 3/8	2 3/8	" "
8	A-12W	85 "	"	22 1/4	24 1/8	9 3/32	19 1/16	1 3/32	2 3/8	2 3/8	2 3/8	" "

28-D-860

7-18-51

LAMBERT CONSTRUCTION CO.

MDST. NO. NU-3707 ITEM 1-501

S.O. 10-S-27

GRAND ISLAND NEBRASKA HERO SPITDOL SPECIFICATION ITEM
M-14-R

ELEVATOR

TWO ROTATING CAM LIMIT SWITCHES CLASS 15-S-D
ONE LEAF POSITION LIMIT SWITCH TO BE TYPE A-C-R

OUTLINE DWG. 20-0-850 COMB. 2

TO RUTLAND VERMONT J. W. HASTINGS

CC BU. CON. ENG. W. E. THOMAS

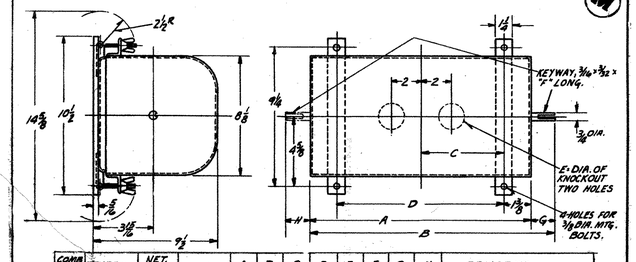
CC TO BU. E & S H. E. THOMAS

CC TO R. A. ZIEGLER COS

CC TO CONTROL VAULT TO BE FILED WITH 10-S-27

WESTINGHOUSE ELECTRIC & MFG. CO., EAST PITTSBURGH, PA., U. S. A.

DIMENSIONS IN INCHES — CAM TYPE LIMIT SWITCH. —WEATHER PROOF OUTLINE — DWG. NO. 28-D-860



COMB. NO.	TYPE	NET WT.		A	B	C	D	E	F	G	H	REMARKS
1	A-6W	60 LBS.		14 3/4	17 3/8	6	12	1 13/32	2 5/8	2 5/8	—	80-R.P.M. MAX.
2	A-9W	70 "		19 5/8	22 1/4	8 3/32	16 7/16	1 13/32	2½	2½	—	" "
3	A-3W	45 "		11 1/4	13 5/8	4 3/32	8 1/16	1 13/32	2 5/8	2 5/8	—	" "
4	A-12W	85 "		22 1/4	24 7/8	9 3/32	19 1/16	1 13/32	2 5/8	2 5/8	—	" "
5	A-6W	60 "	DOUBLE SHAFT EXT.	14 3/4	17 3/8	6	12	1 13/32	2 5/8	2 5/8	2 5/8	" "
6	A-9W	70 "	"	19 5/8	22 1/4	8 3/32	16 7/16	1 13/32	2½	2½	2½	" "
7	A-3W	45 "	"	11 1/4	13 5/8	4 3/32	8 1/16	1 13/32	2 5/8	2 5/8	2 5/8	" "
8	A-12W	85 "	"	22 1/4	24 7/8	9 3/32	19 1/16	1 13/32	2 5/8	2 5/8	2 5/8	" "

28-D-860

Letter Size

BUFFALO WORK 5-2-51
7-13-51

LAMBERT CONSTRUCTION

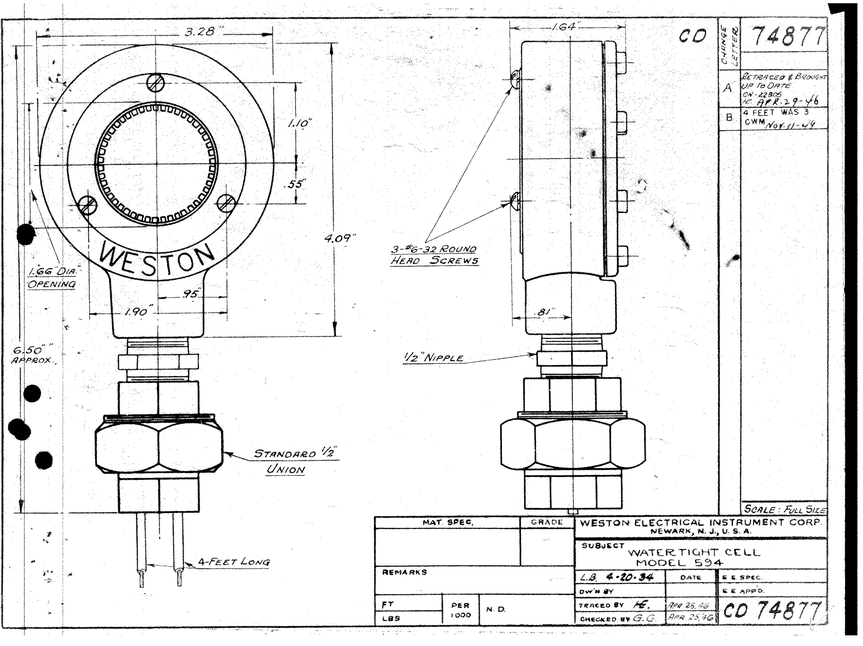
WEST. GO. RU-3707 ITEM 1-504
S O 10-S-930

GRAND ISLAND NORTH HERO BRIDGE SPECIFICATION
ITEM LB 9R

APPARATUS - ONE ROTATING LIMIT SWITCH CLASS 15-085 FOR LOCK LIMIT SWITCH. TO BE TYPE A-6-W.

28-D-860 COMB. 1

8 TO RUTLAND VERMONT OFFICE J. W. HASTINGS
2 CC BU. MKS. CON. ENG. W. E. THOMAS
1 CC E. ESN. & S CL J. C. MURPHY
CC TO R. . EDWARDS COS
CC TO CONTROL VAULT TO BE FILED WITH 10-S-930



CO

CHANGE LETTER	
	74877
A	RETRACED & BROUGHT UP TO DATE CH. 22835 DR. APR. 29-46
B	4 FEET WAS 3 CHM. NOV. 11-47

SCALE: FULL SIZE

MAT. SPEC.	GRADE

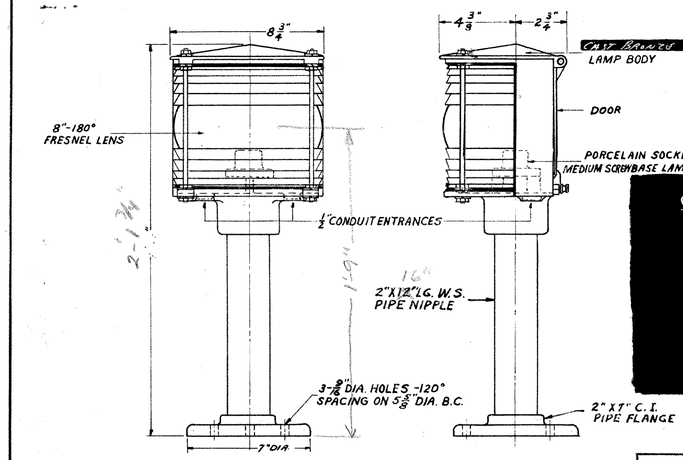
WESTON ELECTRICAL INSTRUMENT CORP.
NEWARK, N. J., U. S. A.

REMARKS

SUBJECT
WATERTIGHT CELL
MODEL 594

L.B. 4-20-34	DATE	E. E. SPEC.	
DWN BY		E. E. APPD.	
TRACED BY H.E.	APR 25 48	CD 74877	
CHECKED BY G.C.	APR 25 48		

FT
LBS
PER 1000
N. D.



NOTE:
[redacted] AS SHOWN WITH RIGID MOUNTED SOCKET.
[redacted] AS SHOWN WITH SPRING MOUNTED SOCKET.
COLOR OF LENS TO BE AS SPECIFIED ON PURCHASE ORDER.

[redacted]
Certified On Back

WESTERN RAILROAD SUPPLY CO.
CHICAGO
FIG. No. 1 PIER LAMP
WITH 180° FRESNEL LENS

SCALE: 3"=12"
DRW. J.S. 3-25-46

[redacted] SP01A-2308X

CORRECT FOR

Westinghouse Electric Corp. CO #TU-3707-3

Our #B-76022 Date 9-14-51

Apparatus#

5 - #5901-250DX Cast Bronze Pier Lamp with 8"-120 degree red [illegible]anel lens seated on cork gasket and sealed with a plastic compound. Gasketed doors and brass fittings. 1'-8" from bottom of lamp to center of lens. For Lights No. 2,3,4, 5 and 6.

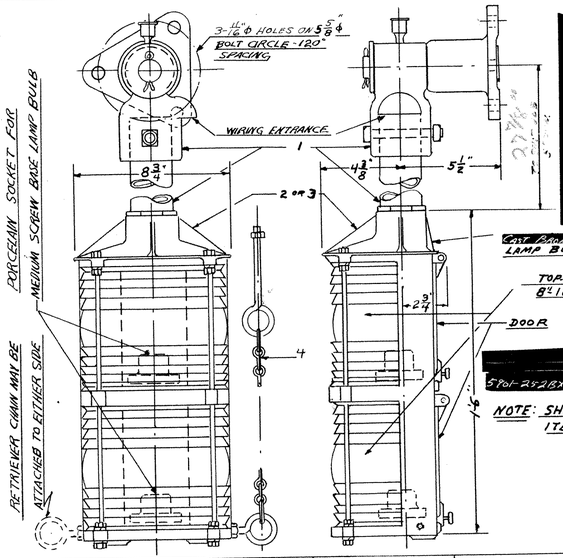
For: Lambert Construction Co.
North Hero, Vermont

Signed: WESTERN RAILROAD SUPPLY CO.

By: C. L. Hurlbut
Electrical Engineer

REVISED

[redacted]
Certified On Back



NOTE: SHIPMENT TO BE MADE AS THREE SEPARATE ITEMS, VIZ: ITEMS No 1, 2 OR 3 AND 4.

ITEM NO	DESCRIPTION	DWG NO.	No. REQUIRED FOR [redacted]	No. REQUIRED FOR 5901-252BX	REMARKS
1	PIVOT SUPPORT ASSEMBLY	5901-15	1	1	SEE S.O. FOR LENGTH OF PIPE
2	RED & GREEN BRIDGE LAMP ASSEM.	5901-[redacted]	1	0	WITH RIGID MOUNTED SOCKET
3	" " " " "	5901-V252BX	0	1	WITH SPRING MOUNTED SOCKET
4	RETRIEVER CHAIN ASSEMBLY	5901-16	1	1	SEE S.O. FOR LENGTH OF CHAIN

WESTERN RAILROAD SUPPLY CO.

CHICAGO

ASSEMBLY OF

FIG. NO. 2 PIVOT TYPE RED & GREEN NAVIGATION LAMP FOR BASCULE AND LIFT BRIDGES

SCALE: 3" 1 FT

DRW. NMS - 4-21-50

5901A-252BX

CORRECT FOR

Westinghouse Electric Corp. CO #RU-3707-S

Our #B-73022 Date 9-14-51

Apparatus:

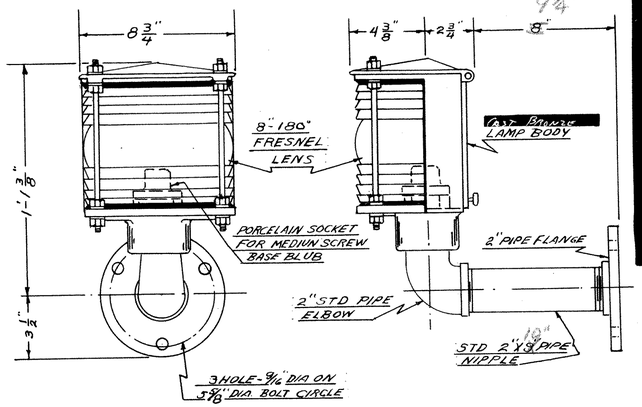
4 - #5901-252BX Pivot type cast bronze bascule bridge lamps with 8"-180 degree red and green fresnel lens seated on cork gasket and sealer with a plastic compound gasketed doors, brass fittings, 2 x 27-7/8" pivot stem and 8 ft. retriever chain to be installed in field so that the adjacent lamps cannot swing toward each other. For lights No. 7, 8, 9 and 10.

For Use on: Lambert Construction Co.
North Hero, Vermont

Signed: WESTERN RAILROAD SUPPLY COMPANY

By: C. L. Hurlbut,
Electrical Engineer

Certified On Back



NOTE

[redacted] AS SHOWN WITH RIGID MOUNTED SOCKET

5701-2601BX AS SHOWN WITH SPRING MOUNTED SOCKET

COLOR OF LENS TO BE AS SPECIFIED ON PURCHASE ORDER

WESTERN RAILROAD SUPPLY

CHICAGO ILL

FIG Nº 1A PIER LAMP

WITH 180° FRESNEL LENS

SCALE 3" = 1FT

DRW. HMS-8830

[redacted] 5701A-2601BX

CORRECT FOR

Westinghouse Electric Corp. CO #RU-3709-S

Our #B-76022 Date 8-14-51

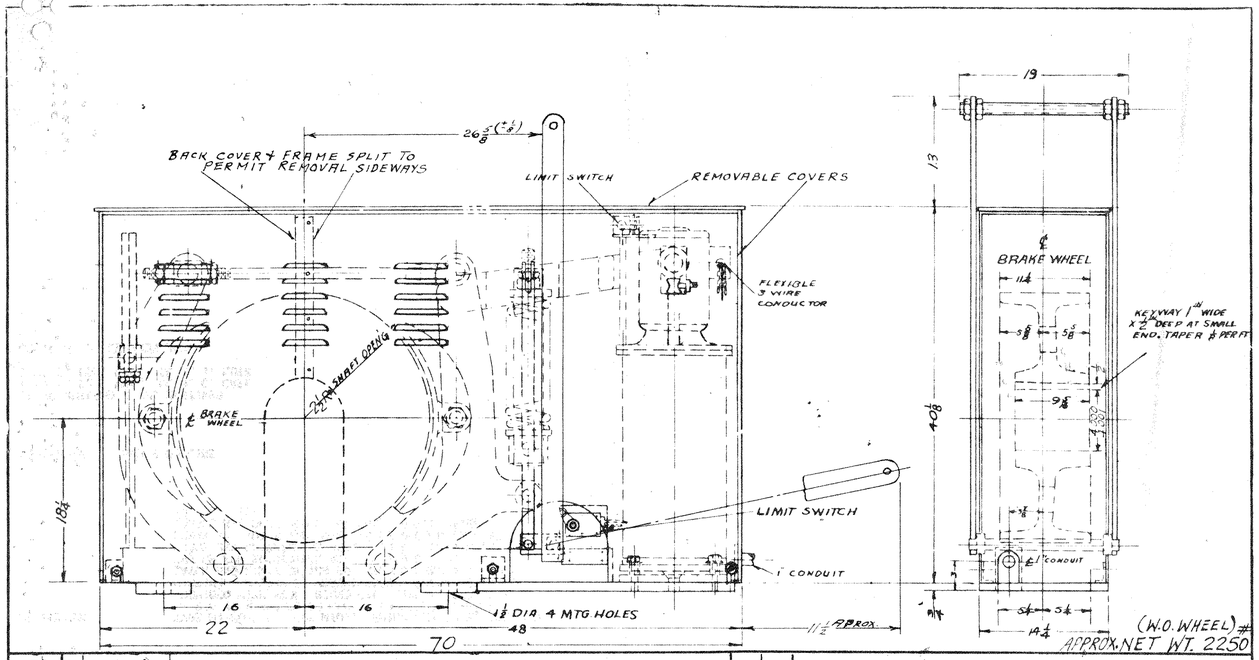
Apparatus:

1 - #5901-260BX Cast bronze bracket type pier lamp with 8"-1800 red lens. Seated on cork gasket and sealed with a plastic compound. Gasketed door and brass fittings. For Light No. 1 at Control House.

FOR USE ON: Lambert Construction Co.
North Hero, Vermont

Signed: WESTERN RAILROAD SUPPLY CO.

By: C. H. Hurlbut,
Electrical Engineer



S.O.S.-N-3718 | 1

D. | CHANGE | 2

3.06.N-3718 ENLARGE TO INCLUDE HOLES FOR 1" CONDUIT & SHIFT 1" CONDUIT

WESTINGHOUSE ELECTRIC CORPORATION

TITLE HI-2811 BRAKE WITH HAND RELEASE & WEATHER PROOF COVER

DIMENSIONS IN INCHES—SCALE NTS

DFTM B M Poole	7-11-61	APPD		11/20/61
CHKD	7/19/61	APPD		11/20/61
DIV & PLANT LOCATION				

16-C-2831

MOTOR DIVISION BUFFALO N.Y. U.S.A.

TOOL RDG DWG | ENG RDG DWG

PITTSBURGH PENCIL TRACING CLOTH

ENG. DEPT. FORM NO. 18 — 2 A

BUFFALO WORKS 9-12-51

LAMBERT CONSTRUCTION CO., INC.
WHITE RIVER JUNCTION, VERMONT

ORDER NO. LATER

WEST. GO. RV-3707-L3 ITEM 4

S O 8-N-3718

APPARATUS - TYPE H1-2811 F FLOOR MTD., SPRING SET SHOE, RELEASED BY 220 V. 3 PHASE, 60 CYCLE, THRUSTOR OPERATED, PROVIDED WITH YEAR AROUND OIL, WITH CORROSION RESISTING FITTINGS, WEATHERPROOF ENCLOSURES LATCH AND LIMIT SWITCH FOR MANUAL RELEASE, LIMIT SWITCH FOR ELECTRICAL RELEASE INDICATION. BRAKE WHEELS SHALL BE BORED FOR 4" SHAFT WITH KEWAY 1" WIDE X 1/2" DEEP TO BE USED WITH A 1" SQUARE KEY SUPPLIED BY OTHER. TORQUE RATED 6000LB. FEET.

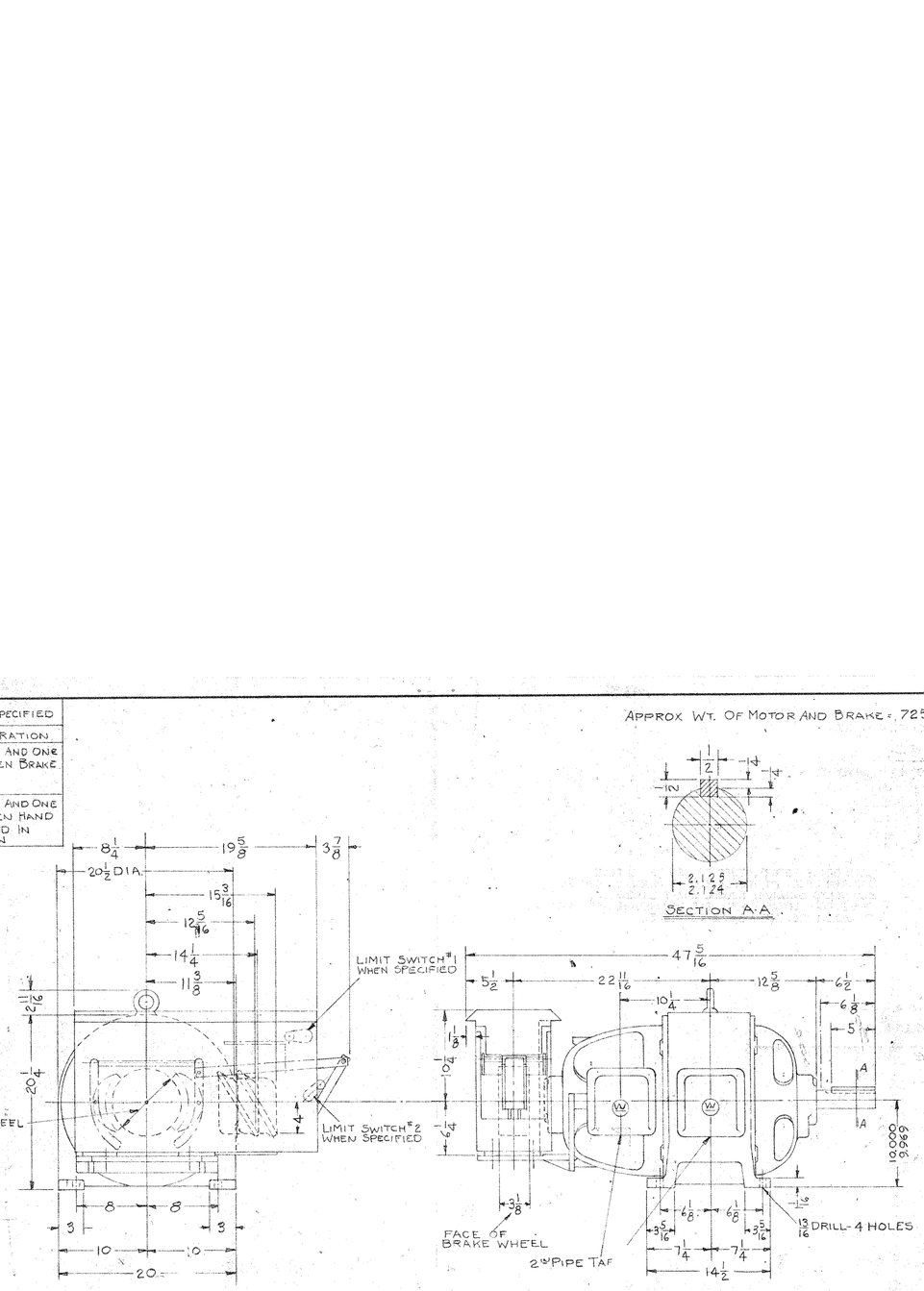
16-C-2838 SUB 2 OUTLINE

1 TO RUTLAND J. W. HASTINGS
1 TO E. PGH. WKS. 10L W. C. CARL
1 TO E. PGH. WKS. 12L K. I. LUTZ

CC TO R. H. EDWARDS MOT.

LIMIT SWITCHES WHEN SPECIFIED	
NO.	DESCRIPTION OF OPERATION
1	ONE CIRCUIT OPENED AND ONE CIRCUIT CLOSED WHEN BRAKE IS RELEASED
2	ONE CIRCUIT OPENED AND ONE CIRCUIT CLOSED WHEN HAND RELEASE IS LATCHED IN RELEASED POSITION

APPROX WT. OF MOTOR AND BRAKE = 725 LBS.



SECTION A-A

S.O. NO. 3716
D.O. NO. 489506-C
IT.
CHANGE
1

TOOL REF. DWG.
DIG. REF. DWG.
25-B-1019

WESTINGHOUSE ELECTRIC CORPORATION

TITLE MOTOR A.C. FRAME # 404 "CI" WITH "HI-83" BRAKE - WEATHER PROOF & HAND RELEASE - OUTLINE

DIMENSIONS IN INCHES—SCALE 1:8

DFTM		APPD.	
		APPD.	
CHKD.		APPD. M. Gelmess	10-1250

DIV. & PLANT LOCATION MOTOR

BUFFALO DIVISIONS, BUFFALO, N.Y., U.S.A.

15-C-3645

7-13-51

BUFFALO WORKS

LANDERS CONSTRUCTION CO. INC.

ORDER NO. LATER

WEST. CO. RU-3707-L3 ITEM 2

S O 8N3716

APPARATUS - MAIN DRIVE MOTORS, TYPE C1, 20 HP, 8 POLE
870 RPM SPEC. #1 INSULATION, 3 PHASE 60 CYCLES,
220 VOLTS STRAIGHT DOUBLE SHAFT EXTENSION,
FRAME 404, TOTALLY ENCLOSED NON-VENTILATED, 1/2 HP.
55 DEG. RISE, WITH BRAKE ADAPTERS.

19-C-36W

TO J. W. HASTINGS RUTLAND VT

CC TO R. A. ZIEGLER MDS

CC TO MOTOR VAULT TO BE FILED WITH 8N3716

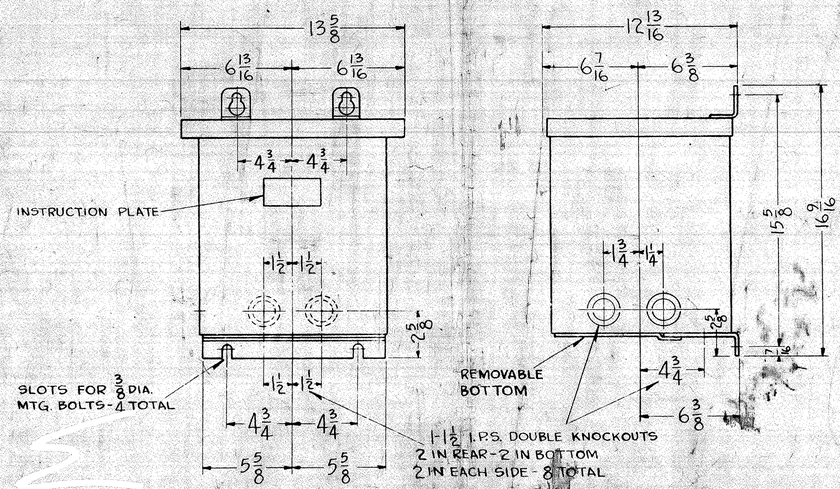
THIS OUTLINE IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION. IT IS PROPERLY DIMENSIONED FOR ERECTION PURPOSES ONLY

WESTINGHOUSE ELECTRIC & MFG. CO. SHARON WORKS, SHARON, PA. U.S.A.

APPARATUS TRANSFORMER TYPE "AJR" 10-24-C CORE

TITLE OUTLINE DWG 11-C-2326 SUB. 12 DIMENSIONS IN INCHES SCALE N.T.S.

APPROX. WT. = 148 LBS.



					12	ISSUED 4-24-46 4 3/4 DIM. FOR UPPER MTG. SLOTS WAS NOT ON	
						DRAWN	

11-C-2326

FORM NO. 10078-B

A P P R O V A L

SHARON

4/25/51

PURCHASER-LAMBERT CONSTRUCTION CO.,INC.

CO: 128

GO: RU-3707-R ITEM 1 S.O. 1235064

APPARATUS-(ONE) TYPE AJH TRANS. 10 KVA 240 to 240/120 NO TAPS SINGLE PHASE 3 WIRE.

11-C-2326 SUB 2 OUTLINE
39006 SUB H INSTR. PLATE

J.W. HASTINGS

RUTLAND, VT. SALES

14 COPIES

SHAFONO,S.D,

MR. JOHO

APPARATUS GRAND ISLAND - NORTH HERO BRIDGE STATE OF VERMONT — SHEET 3
CONTROL CUBICLE - GEN'L. ASS'Y.

DWG. 23-B-9041 — SUB. 1 2 3 — FINISH CHART 10052

	DESCRIPTION-MATERIAL-REF.DWG. DIMENSIONS IN INCHES	STYLE NO.	PAT. NO.	REQ.	TOOL RECORD SPACE
46	TYPE CT-5 TRANSF. 300/5A.	150A366		2	
47	TYPE CD DISTRIBUTION TRANSF. 1PH-3W-7.5KVA 2200/110-220V. : IT.1 OF I.S.			1	
48	MAIN TERMINALS 1/2 IN.	1288077		3	
49	MOTOR TERMINALS 3/8 IN.	1288076		6	7/16 DIA. HOLES
50	CONTROL TERMINALS (25A.)	1502542		140	
51	MTG. FOR IT.50 LINE 4 DWG.7-C-9105			2	
52	MAIN CONN. 500 IN. OF #2+0.2040DIA.CU.WIRE#7410-1			1	
53	CONTROL CONN. 2500 IN. OF #10-0.1020DIA.CU.WIRE#7419-1			1	
54	NAMEPLATE #43E55A			1	
55	NAMEPLATE #23568(1X3)LINES N1-N51 OF N.P.TABLE DWG. 33-A-2795			50	
56	RESISTOR FOR IT.9 400 10IN.TUBE	190569		1	
57	MTG. FOR IT.56 DWG.54-D-465 COMB.1			1	D.P.54-D-465 COMB.1
58	SPACE HEATER (650W.) 160 11IN.	12J9046		2	
59	MTG. FOR IT.58 LINE 4 DWG.5-B-3770 10" APART 2-7/16 HOLES			2	2-7/16 DIA.HOLES
60	PANEL SPACERS	976924		16	
61	TERM. BLK. HOLDER	1477691		6	
62	MTG. FOR IT.15.19-20 LINE 2 } DWG.			2	
63	MTG. FOR IT.5.21 TO 24 LINE 3 } 31-A-6448			7	
64	MTG. FOR IT.25 LINE 1			11	
65	MTG. FOR IT.5.889 LINE 2 DWG.22-D-3891			3	
66	SCREWS FOR ASB. PANEL	11E6483		58	
67	SCREWS FOR STL. PANEL	11E6482		46	
68	SIDE (1.288 DWG.25-A-8881 (1 OF IT.)			REF.	P.S.23-B-9041-A-6R
69	TERM.BLK. 5 PT.	1156116		2	
70	WIRING DIA. 33-A-6797			REF	
71	GEN. ASS'Y DWG 33-A-6795			REF	
72	MAIN CONN. 300 OF #2 0.162 DIA. CWIRE #7419-1			1	
73	MTG FOR IT.50 LINE 5 DWG 7-C-9105			1	

CONTINUED ON SHEET 4

APPARATUS GRAND ISLAND - NORTH HERO BRIDGE STATE OF VERMONT — SHEET 4
CONTROL CUBICLE - GEN'L. ASS'Y.

DWG. 23-B-9041 — SUB. 1 2 3 — FINISH CHART 10052

FINISH - INSIDE & OUTSIDE - CHECCAT ZINC CHROMATE PRIMER(YELLOW)PLUS TWO COATS LIGHT GREY (MACH.TOOL)LACQUER.

* PUR.FR EAGLE SIGNAL CORP. MOLINE, ILL.

☑ ORDERED BY ENG. ON INTERWORKS REQ.

LTR. NO.	DESCRIPTION	ITEMS THIS DWG.	REQ.
1	CONTROL CUBICLE COMPL.	1 TO 73	1

APPARATUS GRAND ISLAND - NORTH HERO BRIDGE STATE OF VERMONT — SHEET 1
CONTROL CUBICLE - BILL OF MATERIAL

DWG. 23-B-9041 — SUB. 1 2 3 — FINISH CHART 10052

STYK.	ITEM	DESCRIPTION — MATERIAL — REF. DWG. DIMENSIONS IN INCHES	ITEM CH.	STYLE No.	PAT. NO.	REQ.	TOOL RECORD SPACE
	1	CABINET LINE 1 DWG.25-A-4084				1	
	2	PANEL 1 1/2X16X40 \ X 1/4 DEV.EB.	15			1	T-23-B-9041-A-2
	3	PANEL 1 1/2X28X24 \ ASB.A-7412-1	15			1	T-23-B-9041-A-3
	4	PANEL 1 1/2X24X28 P.S.185421	35			1	T-23-B-9041-A-4
	5	PANEL 1 1/2X32X40	15			1	T-23-B-9041-A-5
	6	COVER IT. 5 DWG.35-A-4084		(PART OF IT. 11		REF.	P.S.23-B-9041-A-6
	7	COVER IT. 5 DWG.35-A-4084		(PART OF IT. 11		REF.	P.S.23-B-9041-A-7
☑	8	TYPE AB BREAKER K FRAME 3 P. 225A.					
		250V. WITH UV TRIP			MAIN LINE	1	D.P. FIG.#2 DWG.22-D-3891
	9	TYPE AB BREAKER K FRAME 3 P. 125A.					
		250V.		1210872	LEAF MOTOR	2	
	10	STUDS FOR -8 & 9 #1/2-3 1/4"		1241345		18	
	11	SCREENS FOR IT.8 & 9		1241365		18	
	12	NR-330 CONTACTOR		1490470		4	D.P.21-D-2105
	13	COIL FOR IT.12 220V. 60CY.		1490640		4	
	14	L-60 (NTLK.(M)FOR IT.12 LINE 3 DWG.30-A-5346				4	
	15	L-60 (NTLK.(B)FOR IT.12 LINE 8 DWG.30-A-5346				4	
	16	M-28 MECH.INTLK.FOR IT.12 COMB.1 DWG.22-D-3829				2	D.P.FIG.#1 DWG.22-D-3829
	17	KNSP OVERLOAD RELAY 2P. AUTO RESET		841350		2	D.P.877667A2
	18	COIL FOR IT.17(AMP.)COIL DET.STUD		742702		4	
	19	TYPE AB BREAKER E FRAME 2P-15A-250V.		999085	CONTROL	1	D.P. FIG. #2 DWG. 31-A-6448
	20	TYPE AB BREAKER E FRAME 2P-50A-250V.		999086	LIGHTING	1	D.P.
	21	TYPE AB BREAKER E FRAME 3P-20A-250V.		999024	BRAKE	2	D.P.
	22	TYPE AB BREAKER E FRAME 3P-25A-250V.		999074	GATE	2	D.P. FIG. #3 DWG. 31-A-6448
	23	TYPE AB BREAKER E FRAME 3P-50A-250V.		999025	M.BRAKE	2	D.P.
	24	TYPE AB BREAKER E FRAME 3P-50A-250V.		999021	LOCK	1	D.P.
	25	TYPE AB BREAKER E FRAME 1P-15A-250V.		999002	LIGHTING	11	D.P. FIG. #1 DWG.31-A-6448
	26	STUDS FOR IT.19-25		(PART OF IT.G2-G3 OF)		REF.	
	27	FUSE 3A.-250V.		37154		8	D.P.GB-C-820RT
	28	FUSE HOLDER		1115238		12	
	29	TYPE CP REVERSE PHASE RELAY 220V.60CY.		1056286		1	D.P.23-D-301 CO.3
	30	RESISTOR FOR IT.29		1056286		REF.	D.P.PER FIG.#2
	31	N-130 CONTACTOR WITH 220V. COIL		1577230	BRAKES	4	D.P.22-D-7870

CONTINUED ON SHEET 2

APPARATUS GRAND ISLAND - NORTH HERO BRIDGE STATE OF VERMONT — SHEET 2
CONTROL CUBICLE - GEN'L. ASS'Y.

DWG. 23-B-9041 — SUB. 1 2 3 — FINISH CHART 10052

32	L-51 INTLK.(B)FOR IT.31		1314885		4	
33	N-130 REVER. LINESTARTER WITH 220V.COIL		1578110	GATES	2	D.P.14-C-6670
34	L-51 INTLK.(B)FOR IT.33		1314885		4	
35	HEATER FOR IT.33 (2.6 AMPS)		966478		6	
36	N-130 REVER.LINESTARTER WITH 220V.COIL		1578110	LOCK	1	D.P.14-C-6670
37	L-51 INTLK.(E)FOR IT.36		1314885		2	
38	HEATER FOR IT.36 (14.5 AMPS)		966494		4	
39	N-020 CONTACTOR WITH 220V. COIL		1587672	LT. SEATING	4	D.P.23-D-5875
40	L-50 INTLK.(M)FOR IT.39		1314880		4	
41	N-040 CONTACTOR WITH 220V. COIL		1578094	TRAFFIC	1	D.P.23-D-5947
42	L-50 INTLK.(B)FOR IT.41		1314881		1	
43	TYPE AM TIMING RELAY (T.D.WHEN ENERGIZED)		1502403		1	D.P.18-D-8745
☑ 44	TYPE 700 PHOTO-ELECTRIC CONTROLLER			NAVIG. LIGHTS	1	
* 45	TYPE HT-11 SIGNAL LIGHT FLASHER RELAY 220V.				1	D.P.PER FIG.#1

REF DWG
CONT DESK 33-A-6794
PANEL DR. 33-A-6795
DESK DIM. 33-A-6796
INTERCONN. DIAGRAM 33-A-6795
ELEM. DIAGRAM 33-A-6792
33-A-6795

WESTINGHOUSE ELECTRIC CORPORATION

TITLE GRAND ISLAND - NORTH HERO BRIDGE STATE OF VERMONT
CONTROL CUBICLE - GEN'L. ASSY ON 33-A-6795

DIMENSIONS IN INCHES--SCALE — BILL OF MATERIAL

DFTM. W.F.SELKE 11/3/50 APPD. E.S.Thomas 11/4/50
APPD.
CHKD. A.C.S. 11/4/50 APPD. [illegible] 11/5/50

DIV. & PLANT LOCATION BUFFALO DIVISIONS, BUFFALO, N.Y., U.S.A.

23-B-9041

ENG. DEPT. FORM NO. 181678

SHEET #1 OF B. OF M. MUST NOT EXTEND BELOW THIS SPACE. SEE GTOS BOOK IF MORE SHEETS ARE NEEDED.

S.O. 25 924 1
CHA Z 2
ADD 20 10 5 926
WAS 7-C-9105
DEL 3
SO 10 5 926
WAS 27 25 5 160 42
ADD 27 25 5 160 42
CHANGES AS NOTED
WAS 4 REQ.
ADD 4 REQ.
SEE DWG 33-A-6795
7 CHECKED 1-12-51
W.F.S. 1-12-51
E.S.T. 1-16-51
1-17-51
ITEMS 42, 43 & 44 ARE NEW ITEMS
WAS 4 ST. LTG.
ADD 1 ST. LTG.
2-2-51
2-2-51
2/5/51

PITTSBURGH PENCIL TRACING CLOTH

WEST. GO. RU-3707 ITEM 1

S O 10-S-926

APPARATUS - CONTROL APPARATUS FOR GRAND ISLAND NORTH HERO BRIDGE FOR STATE OF VERMONT.

CONTROL DESK	33-A-6794	SUB	GENERAL ASSEMBLY
CONTROL CUB.	33-A-6795		GENERAL ASSEMBLY
CONTROL CUBICLE	23-B-9041	3	BILL OF MATERIAL
CONTROL CUBICLE	33-A-6797	SUB 2	WIRING DIAGRAM

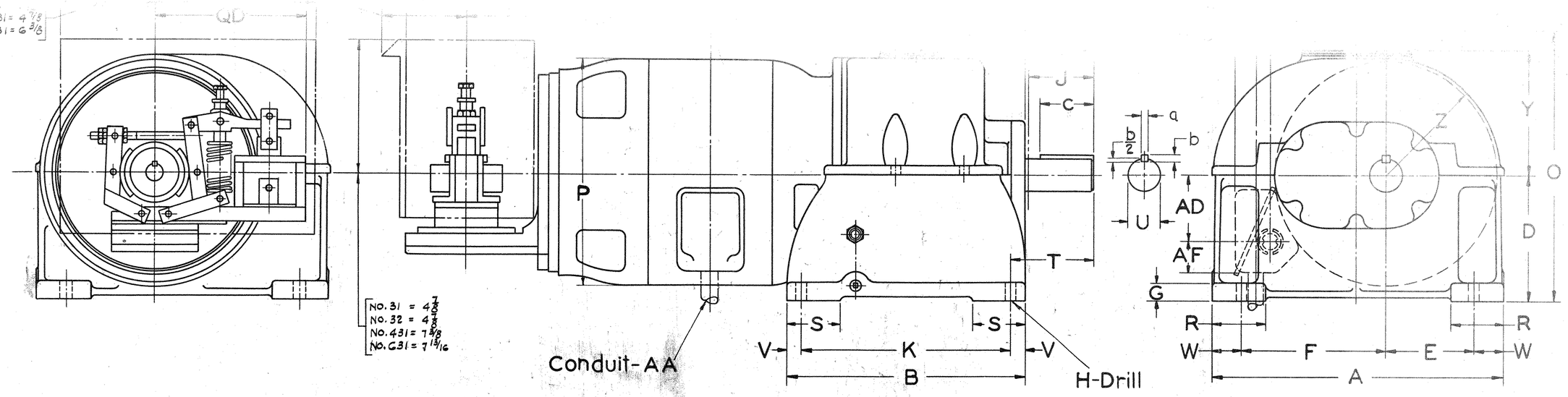
8 TO RUTLAND VERMONT J. W. HASTINGS

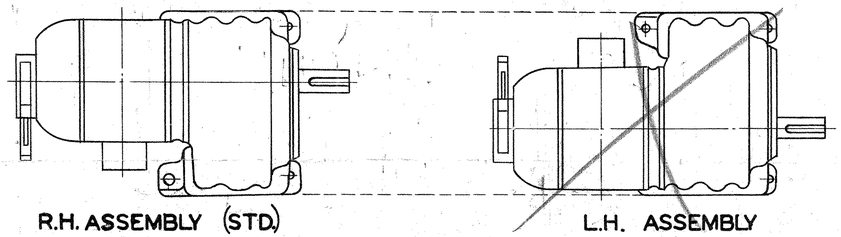
CC TO BUFFALO WKS. IND. CONTROL ENG. W. E. THOMAS

CC TO R. A. ZIEGLER COS

CC TO CONTROL VAULT TO BE FILED WITH 10-S-926

NO. 32
NO. 431 = 4 7/8
NO. 631 = 6 3/8





DIMENSIONS FOR REFERENCE ONLY, UNLESS CERTIFIED.

DIMENSIONS CORRESPONDING TO LETTERS GIVEN IN OUTLINE VIEWS - INCHES

UNIT	U●	KEY a	KEY b	KEY c	A	B	D◉	E	F	G	H	J	K	M	N	O	P	R	S	T	V	W	Y	Z	AA▲	AB	AC	AD	AE	AF	BRAKE #31 C	BRAKE #31 QA	BRAKE #31 QB	BRAKE #31 QD	BRAKE #32 C	BRAKE #32 QA	BRAKE #32 QB	BRAKE #32 QD	BRAKE #431 C	BRAKE #431 QA	BRAKE #431 QB	BRAKE #431 QD	BRAKE #631 C	BRAKE #631 QA	BRAKE #631 QB	BRAKE #631 QD	APPROX. WT. GEARMOTOR-BRAKE #31	#32	#431	#631
EK*224	2 3/4	5/8	7/16	4 1/2	19 3/4	15 1/2	7 1/2	5 1/2	10 1/2	1 3/8	13/16	5 3/8	13 1/2	23 5/16	5 1/2	16 13/16	10 1/8	3 1/4	3 1/2	6 1/2	1	1 7/8	—	7	1/2-3/4	7 3/16	6	2 15/16	5 7/16	1 3/8	35 9/16	12 1/4	10 1/2	6 5/16	36 9/16	13 1/4	11 1/32	6 5/16	37 13/16	14 1/2	11 5/16	10 5/8	—	—	—	—	528	533	—	—
EK*225	2 3/4	5/8	7/16	4 1/2	19 3/4	15 1/2	7 1/2	5 1/2	10 1/2	1 3/8	13/16	5 3/8	13 1/2	23 1/16	5 1/2	16 13/16	10 1/8	3 1/4	3 1/2	6 1/2	1	1 7/8	—	7	1/2-3/4	7 3/16	6	2 15/16	5 7/16	1 3/8	35 5/16	12 5/8	10 7/8	6 5/16	37 5/16	13 5/8	11 1/32	6 5/16	38 9/16	14 7/8	11 11/16	10 5/8	—	—	—	—	543	548	590	—
EK*254	2 3/4	5/8	7/16	4 1/2	19 3/4	15 1/2	7 1/2	5 1/2	10 1/2	1 3/8	13/16	5 3/8	13 1/2	24 3/8	5 1/2	16 13/16	11 1/2	3 1/4	3 1/2	6 1/2	1	1 7/8	—	7	1/2-3/4-1	7 3/4	6	3 3/8	5 15/16	1 5/8	37 7/8	13 1/2	11 3/4	6 5/16	38 7/8	14 1/2	12 9/32	6 5/16	40 1/8	15 3/4	12 9/16	10 5/8	—	15 7/8	12 7/8	12 5/8	580	555	627	650
EK*284	2 3/4	5/8	7/16	4 1/2	19 3/4	15 1/2	7 1/2	5 1/2	10 1/2	1 3/8	13/16	5 3/8	13 1/2	25 7/16	5 1/2	16 13/16	11 1/2	3 1/4	3 1/2	6 1/2	1	1 7/8	—	7	1/2-3/4-1	7 3/4	6	3 3/8	5 15/16	1 5/8	39 3/4	14 5/16	12 9/16	6 5/16	40 3/4	15 5/16	13 3/32	6 5/16	42	16 9/16	13 3/8	10 5/8	42 1/8	16 11/16	13 1/16	12 5/8	610	615	658	682
EL*225	3 1/8	3/4	1/2	5 1/4	23 1/2	19	8 1/2	6 3/8	12 5/8	1 3/8	15/16	6 1/8	16 3/4	26 15/16	6 1/4	18 13/16	10 1/8	4	4	7 3/8	1 1/8	2 1/4	—	8	1/2-3/4	7 3/16	6	2 15/16	5 7/16	1 3/8	39 7/16	12 5/8	10 7/8	6 5/16	40 7/16	13 5/8	11 13/32	6 5/16	41 13/16	14 7/8	11 11/16	10 5/8	—	—	—	—	763	768	810	—
EL*254	3 1/8	3/4	1/2	5 1/4	23 1/2	19	8 1/2	6 3/8	12 5/8	1 3/8	15/16	6 1/8	16 3/4	27 5/8	6 1/4	18 13/16	11 1/2	4	4	7 3/8	1 1/8	2 1/4	—	8	1/2-3/4-1	7 3/4	6 9/16	3 3/8	5 15/16	1 5/8	41 1/8	13 1/2	11 3/4	6 5/16	42 1/8	14 1/2	12 9/32	6 5/16	43 3/8	15 3/4	12 9/16	10 5/8	43 1/2	15 7/8	12 7/8	12 5/8	800	805	847	870
EL*284	3 1/8	3/4	1/2	5 1/4	23 1/2	19	8 1/2	6 3/8	12 5/8	1 3/8	15/16	6 1/8	16 3/4	28 1/16	6 1/4	18 13/16	11 1/2	4	4	7 3/8	1 1/8	2 1/4	—	8	1/2-3/4-1	7 3/4	6 9/16	3 3/8	5 15/16	1 5/8	43	14 5/16	12 9/16	6 5/16	44	15 5/16	13 3/32	6 5/16	45 1/4	16 9/16	13 3/8	10 5/8	45 3/8	16 11/16	13 1/16	12 5/8	830	835	878	902
EL*324	3 1/8	3/4	1/2	5 1/4	23 1/2	19	8 1/2	6 3/8	12 5/8	1 3/8	15/16	6 1/8	16 3/4	29 1/16	6 1/4	18 13/16	14 1/2	4	4	7 3/8	1 1/8	2 1/4	—	8	1/2-3/4-1	9 3/16	8	4 5/16	7 3/8	1 5/8	—	—	—	—	—	—	—	—	—	—	—	—	47 1/4	17 13/16	14 5/8	12 5/8	—	—	935	957
EL*326	3 1/8	3/4	1/2	5 1/4	23 1/2	19	8 1/2	6 3/8	12 5/8	1 3/8	15/16	6 1/8	16 3/4	30 1/16	6 1/4	18 13/16	14 1/2	4	4	7 3/8	1 1/8	2 1/4	—	8	1/2-3/4-1	9 3/16	8	4 5/16	7 3/8	1 5/8	—	—	—	—	—	—	—	—	—	—	—	—	48 3/4	18 1/16	15 3/8	12 5/8	—	—	955	977
EM*254	3 1/2	3/4	1/2	5 1/2	27 1/2	21	10	7 5/16	15 5/16	1 3/8	1 1/16	6 7/8	18 1/2	30 1/16	7	21 3/4	11 1/2	4 5/8	5	8 1/4	1 1/4	2 7/16	9 7/16	9	1/2-3/4-1	7 3/4	6 9/16	3 3/8	5 15/16	1 5/8	43 15/16	13 1/2	11 3/4	6 5/16	44 15/16	14 1/2	12 9/32	6 5/16	46 3/16	15 3/4	12 9/16	10 5/8	46 5/16	15 7/8	12 7/8	12 5/8	1105	1110	1152	1175
EM*284	3 1/2	3/4	1/2	5 1/2	27 1/2	21	10	7 5/16	15 5/16	1 3/8	1 1/16	6 7/8	18 1/2	31 1/2	7	21 3/4	11 1/2	4 5/8	5	8 1/4	1 1/4	2 7/16	9 7/16	9	1/2-3/4-1	7 3/4	6 9/16	3 3/8	5 15/16	1 5/8	45 5/16	14 5/16	12 1/16	6 5/16	46 3/16	15 5/16	13 3/32	6 5/16	48 1/16	16 1/16	13 3/8	10 5/8	48 3/16	16 11/16	13 1/16	12 5/8	1130	1135	1178	1202
EM*324	3 1/2	3/4	1/2	5 1/2	27 1/2	21	10	7 5/16	15 5/16	1 3/8	1 1/16	6 7/8	18 1/2	32 1/4	7	21 3/4	14 1/2	4 5/8	5	8 1/4	1 1/4	2 7/16	9 7/16	9	1/2-3/4-1	9 3/16	8	4 5/16	7 3/8	1 5/8	—	—	—	—	—	—	—	—	—	—	—	—	50 1/16	17 13/16	14 5/8	12 5/8	—	—	1240	1262
EM*326	3 1/2	3/4	1/2	5 1/2	27 1/2	21	10	7 5/16	15 5/16	1 3/8	1 1/16	6 7/8	18 1/2	33	7	21 3/4	14 1/2	4 5/8	5	8 1/4	1 1/4	2 7/16	9 7/16	9	1/2-3/4-1	9 3/16	8	4 5/16	7 3/8	1 5/8	—	—	—	—	—	—	—	—	—	—	—	—	51 9/16	18 9/16	15 3/8	12 5/8	—	—	1260	1282
EN*324	4 1/4	1	3/4	7	33	24	11	9	18 1/4	2	1 5/16	8 3/8	21	36	8 1/2	24 1/16	14 1/2	5 1/4	6	10	1 1/2	2 7/8	10 3/4	10 1/4	1/2-3/4-1	9 3/16	8	4 5/16	7 3/8	1 5/8	—	—	—	—	—	—	—	—	—	—	—	—	53 3/16	17 13/16	14 5/8	12 5/8	—	—	1615	1637
EN*326	4 1/4	1	3/4	7	33	24	11	9	18 1/4	2	1 5/16	8 3/8	21	36 3/4	8 1/2	24 1/16	14 1/2	5 1/4	6	10	1 1/2	2 7/8	10 3/4	10 1/4	1/2-3/4-1	9 3/16	8	4 5/16	7 3/8	1 5/8	—	—	—	—	—	—	—	—	—	—	—	—	55 1/16	18 1/16	15 3/8	12 5/8	—	—	1635	1657
EP*326	4 11/16	1	3/4	8	40	28	13	11 1/4	21	2 3/8	1 5/8	9 1/4	24	39 1/4	9 3/8	28 1/16	14 1/2	7 3/8	8	11 3/8	2	3 7/8	12 3/4	12 1/4	1/2-3/4-1	9 3/16	8	4 5/16	7 3/8	1 5/8	—	—	—	—	—	—	—	—	—	—	—	—	57 13/16	18 9/16	15 3/8	12 5/8	—	—	2125	2147

● TOLERANCE +.000 -.001

▲ CONDUIT BOX FURNISHED WITH KNOCKOUTS AT BOTTOM AND BOTH SIDES FOR CONDUIT SIZES SPECIFIED. CONDUIT BOX MAY BE TURNED 180° FOR CONNECTION AT TOP.

* WHEN IDENTIFYING DIMENSIONS, BE SURE TO ADD THIRD LETTER OF PREFIX :- FOR CLASS I UNITS "A"; CLASS II UNITS "B"; CLASS III UNITS "C."

◉ THIS DIMENSION WILL NEVER BE EXCEEDED, WHEN EXACT DIMENSION IS REQUIRED, SHIMS UP TO 1/32" MAY BE NECESSARY.

Westinghouse
ELECTRIC & MANUFACTURING CO.

TITLE TYPE "E" GEARMOTORS WITH CSP LIFE LINE, OPEN, SPLASH PROOF, ENCL. MOTORS WITH TYPE AT BRAKES.

DIMENSIONS IN INCHES--SCALE

DFTM H.C.M. J.M.E. 3-3-47 CHKD. APPD. 8-19-47

10-A-4507

IDENTIFICATION LABEL

WESTINGHOUSE ELECTRIC CORPORATION

OUTLINE ☐ WIRING ☐ SCHEMATIC ☐ ☐

DRAWING	SUB	DATE
10A-4507	1	8-18-50

PURCHASER

Lambert Construction Co. Inc.

ULTIMATE CUSTOMER

PURCHASE ORDER NO.	GENERAL ORDER NO.	STYLE OR S.O.
Later	IT. 1 RO-3707-0	

LOCATION OR STATION | APPLICATION

APPARATUS

EMA-284 Gearmotor RH
5 HP 3 Phase 60 Cycles 220 Volts
785 RPM CSP LL Hoist TENV Motor
with A1-421 Motor mounted Weather-
proof Brake.

Ratio 47.3 to 1 Output Speed 16.5 RPM

WORKS OR DISTRICT OFFICE	ENGINEER
Nuttall	J. H. Campbell

NOTICE TO PURCHASER: MANUFACTURE IS PROCEEDING. ANY CHANGES REQUIRED IN THE APPARATUS CONSTRUCTION WILL DELAY SHIPMENT.

THIS DRAWING IS THE PROPERTY OF WESTINGHOUSE ELECTRIC CORPORATION SUBJECT TO RECALL AT ANY TIME.

FORM 10628 N PRINTED IN U.S.A.

WESTINGHOUSE ELECTRIC CORPORATION

TITLE ELEMENTARY CONTROLLER DIAGRAM

SEWARD ISLAND - NORTH HERO BRIDGE, STATE OF VERMONT

POWER AND LIGHTING CIRCUITS

DFTM. Wm. Lewis	9-5-51	APPD. W. E. Thomas	9-10-51	33-A-6792
		APPD.		
CHKD. W. E. Thomas	9-10-51	APPD.		

CHANGE		
1	10	

ENG. REF. DWGS.

ELEM. CONTROLLER DIAG.	33-A-6792
CUBICLE GEN. ARR'T.	33-A-6795
DESK ARR'T.	33-A-6796
CUBICLE WIRING DIAG.	33-A-6797
DESK WIRING DIAG.	33-A-6798
EXT. WIRING DIAG.	33-A-6799
BILL OF MATERIAL	33-P-9041

BUFFALO WORKS

7-18-51

LAMBERT CONSTRUCTION CO.

WEST. GO. RV-3707 ITEM 1

S O 24-S-84

APPARATUS: CONTROL APPARATUS FOR GRAND ISLAND NORTH HERO BRIDGE FOR STATE OF VERMONT.

ALL APPARATUS 33-A-6792 SUB 2 1 ELEMENTARY DIAG. POWER CIRCUIT
ALL APPARATUS 33-A-6793 1 ELEMENTARY DIAG. CONTROL CIRCUITS
CONTROL CUBICLE 33-A-6797 1 WIRING DIAG.
CONTROL DESK 33-A-6795 SUB 2 WIRING DIAG.
ALL APPARATUS 33-A-6798 1 INTERCONNECTION DIAG.

8 TO RUTLAND VERMONT J. W. HASTINGS

CC TO R. A. ZIEGLER COS

CC TO CONTROL VAULT TO BE FILED WITH 24-S-84

CC TO W. E. THOMAS CONT. ENG. BUFFALO

SOUTH TRAFFIC GATE LIMIT SWITCH

TO SOUTH TRAFFIC GATE WARNING SIGNAL DIAG. 33-A-6792

SEE DIAG. 33-A-6792 FOR CONTROL CIRCUIT

TRAFFIC SIGNAL CONTACTOR DIAG. 33-A-6792

NORTH TRAFFIC WARNING SIGNAL DIAG. 33-A-6792

NORTH TRAFFIC GATE LIMIT SWITCH

GATE CONTROL BY PASS SW.

TO IND. LIGHTS DIAG. 33-A-6792

BRIDGE LOCK LIMIT SWITCH

DISENGAGE

ENGAGE

LOCK BY PASS SWITCH

SOUTH LEAF FULLY CLOSED LIMIT SWITCH

NORTH LEAF FULLY CLOSED LIMIT SWITCH

TO IND. LIGHTS DIAG. 33-A-6792

TO IND. LIGHTS DIAG. 33-A-6792

SET BRAKE HIGH PRESSURE LOW LIMIT

SOUTH LEAF LIMIT SWITCH

TO IND. LIGHTS DIAG. 33-A-6792

TO NAVIGATION LIGHTS DIAG. 33-A-6792

JET RELEASED

LOWER

RAISE

SOUTH SEATING SWITCH

EMERG. OP. LT.

TO SECONDARY CONTROL DIAG. 33-A-6792

RELEASE SET

RAISE

LOWER

NORTH SEATING SWITCH

EMERG. OP. LT.

NORTH BRAKE MAN. RELEASE LIMIT SW.

TO IND. LIGHTS DIAG. 33-A-6792

TO NAVIGATION LIGHTS DIAG. 33-A-6792

TO SECONDARY CONTROL DIAG. 33-A-6792

ENG. REF. DWG.

ELEM. DIAG.	33-A-6791
DOUBLE LEAF DIAG.	33-A-6793
DESK PANEL	33-A-6794
TERMINAL WIRING DIAG.	33-A-6795
JACK WIRING DIAG.	33-A-6796
EXT. WIRING DIAG.	33-A-6797
BILL OF MATERIAL	33-A-6798

SOUTH LEAF CONTROLLER

NORTH LEAF CONTROLLER

S.O.	1	CHANGE			
D.					
IT.					

TOOL REF. DWG. | MFG. REF. DWG.

WESTINGHOUSE ELECTRIC CORPORATION

TITLE: ELEMENTARY DOUBLE LEAF BRIDGE
UNDER CONTROL NORTH AND SOUTH LEAF CONTROLLERS
UNITOOL CONTROL

DFTM.		APPD.		33-A-6793
CHKD.		APPD.		
DIV. & PLANT LOCATION	BUFFALO, N.Y. U.S.A.			

PITTSBURGH PENCIL TRACING CLOTH

ENG DEPT. FORM NO. 18166-A

BUFFALO WORKS

7-18-51

LAMBERT CONSTRUCTION CO.

WEST. GO. RV-3707 ITEM 1

S O 24-S-84

APPARATUS: CONTROL APPARATUS FOR GRAND ISLAND NORTH HERO BRIDGE FOR STATE OF VERMONT

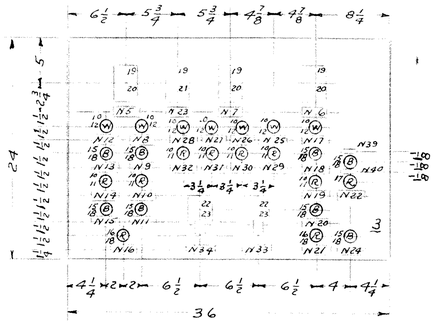
ALL APPARATUS 33-A-6792 SUB 1 - 1 ELEMENTARY DIAG. POWER CIRCUIT
ALL APPARATUS 33-A-6793 - 1 ELEMENTARY DIAG. CONTROL CIRCUITS
CONTROL CUBICLE 33-A-6797 - 3 WIRING DIAG.
CONTROL DESK 33-A-6795 SUB 2 WIRING DIAG.
ALL APPARATUS 33-A-6798 - 1 INTERCONNECTION DIAG.

8 TO RUTLAND VERMONT J. W. HASTINGS

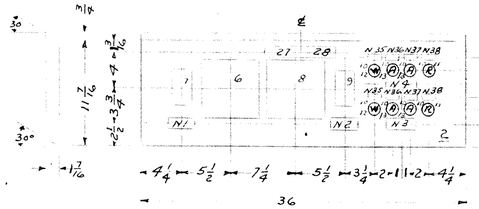
CC TO R. A. ZIEGLER CO'S

CC TO CONTROL VAULT TO BE FILED WITH 24-S-84

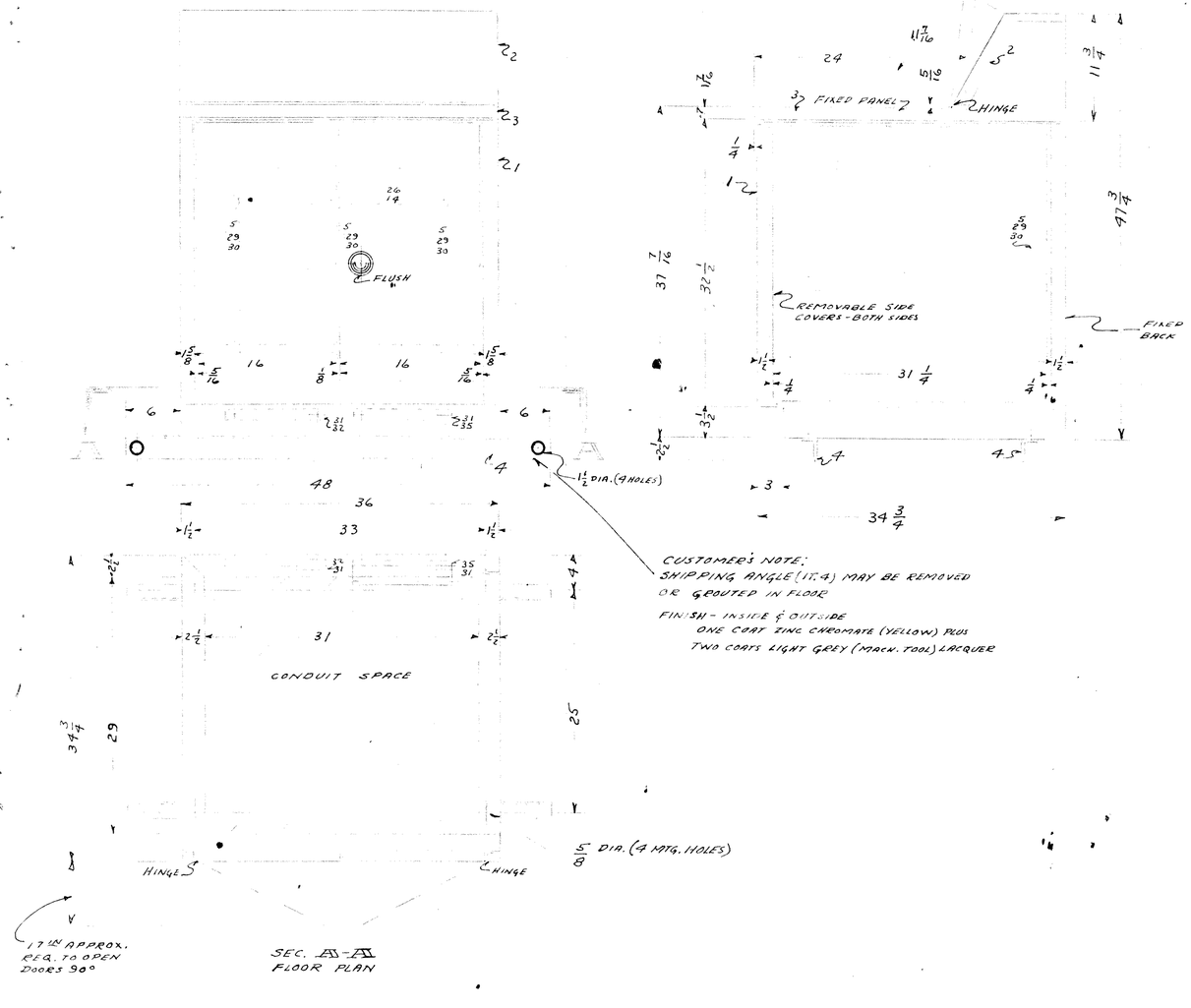
CC TO W. E. THOMAS CONT. ENG. BUFFALO



VIEW IB



VIEW C



SYM.	FIRST USE	SECOND USE	THIRD USE	EXCEPTIONS PER DWG. T-D-1832 FIG. NO.	REQ.
	[illegible]				
	[illegible]				
	[illegible]				
	[illegible]	FAIL-SAFE			
	[illegible]	POSITION			
	[illegible]	PASS			
	[illegible]	EXPASS			
	[illegible]	SHIFT			2
	[illegible]	RELEASE			3
	[illegible]	LEVEL			2
	[illegible]	LEVEL			2
	[illegible]	LEVEL			3
	[illegible]	RAIL			2
	[illegible]	[illegible]			1
	[illegible]	CLAMP			1
	[illegible]	STOP			1
	[illegible]	[illegible]			1
	[illegible]	[illegible]			1
	[illegible]	[illegible]

S O 10-S-926

APPARATUS - CONTROL APPARATUS FOR GRAND ISLAND PORTS VERRAZANO BRIDGE FOR STATE OF VERMONT.

CONTROL DESK	33-A-6794	SUB	GENERAL ASSEMBLY
CONTROL CUB.	33-A-6795		GENERAL ASSEMBLY
CONTROL CUBICLE	33-B-9041	3	BILL OF MATERIAL
CONTROL CUBICLE	33-A-6797	SUB 2	WIRING DIAGRAM

8 TO RUTLAND VERMONT J. W. HASTINGS

CC TO BUFFALO WKS. IND. CONTROL ENG. W. E. THOMAS

CC TO R. A. ZIEGLER COS

CC TO CONTROL VAULT TO BE FILED WITH 10-S-926

LINE NO.	FIRST LINE	SECOND LINE	THIRD LINE	ENGRAVED DWG. 1-D-1032 FIG. NO.	REQ
N1	MAIN LINE				1
N2	SOUTH LEAF MOTOR				1
N3	NORTH LEAF MOTOR				1
N4	LIGHTING SUPPLY				1
N5	CONTROL CIRCUIT	SUPPLY			2
N6	SOUTH MOTOR BRAKES				1
N7	NORTH MOTOR BRAKES				1
N8	SOUTH MACHINERY	BRAKES			2
N9	NORTH MACHINERY	BRAKES			2
N10	SOUTH TRAFFIC GATE	MOTOR			2
N11	NORTH TRAFFIC GATE	MOTOR			2
N12	BRIDGE LOCK MOTOR				1
N13	SOUTH LEAF	RAISE			2
N14	SOUTH LEAF	LOWER			2
N15	NORTH LEAF	RAISE			2
N16	NORTH LEAF	LOWER			2
N17	SOUTH MOTOR	OVERLOAD RELAY			2
N18	NORTH MOTOR	OVERLOAD RELAY			2
N19	SOUTH LEAF	LV RELAY			2
N20	NORTH LEAF	LV RELAY			2
N21	VOLTMETER FUSES	3 AMP.			2
N22	REVERSE PHASE RELAY	FUSES - 3 AMP.			2
N23	REVERSE PHASE RELAY				1
N24	SOUTH MOTOR BRAKE	RELEASE			2
N25	NORTH MOTOR BRAKE	RELEASE			2
N26	SOUTH MACHINERY	BRAKES RELEASE			2
N27	NORTH MACHINERY	BRAKES RELEASE			2
N28	SOUTH TRAFFIC GATE	LOWER			2
N29	SOUTH TRAFFIC GATE	RAISE			2
N30	NORTH TRAFFIC GATE	LOWER			2
N31	NORTH TRAFFIC GATE	RAISE			2
N32	BRIDGE LOCK	PULL			2
N33	BRIDGE LOCK	DRIVE			2
N34	SOUTH LEAF	SEATING RELAY			2
N35	NORTH LEAF	SEATING RELAY			2
N36	TRAFFIC GATE LIGHT	FLASHER RELAY			2
N37	TRAFFIC SIGNAL LIGHT	RELAY			2
N38	TRAFFIC SIGNAL	CONTROL RELAY			2
N39	NAVIGATION LIGHT	CONTROLLER			2
N40					
N41	INDICATING LIGHTS				1
N42	SPACE HEATERS	DESK/CUBICLE			2
N43	TRAFFIC SIGNALS				1
N44	NAVIGATION SIREN				1
N45	NAVIGATION AND	PIER LIGHTS			2
N46	SERVICE LIGHTING	CIRCUIT 1			2
N47	SERVICE LIGHTING	CIRCUIT 2			2
N48	SERVICE LIGHTING	CIRCUIT 3			2
N49	SERVICE LIGHTING	CIRCUIT 4			2
N50	SERVICE LIGHTING	CIRCUIT 5			2
N51	SERVICE LIGHTING	CIRCUIT 6			2

PLAN VIEW (TOP REMOVED)

FRONT VIEW

FIG #1 (DR. FOR IT 48)
½ SCALE

FIG #2 (DR. 1004/T 50)
½ SCALE

SECT A-A FRONT VIEW OF PANELS

BILL OF MATERIAL ON DWG 23-B-3041

S.O. 1
D. 1
IT.

CHANGE

S.O. 10-S-926 3
LIN. Nos. N6, N7
FIRST LINE & LIN. Nos.
N8, N9, N26 & N27
SECOND LINE
SPECIFIED THE WORD
BRAKE - - - - -
V.H. Schmidt 5-8-57
J.C. Homan 5-9-57
5/14/57 W.C. Immman

J.C. Homan 11-7-57
W.C. Immman

TOOL DWG.
ENG. REF. DWG.

WESTINGHOUSE ELECTRIC CORPORATION

TITLE WRENTHAM ISLAND NORTH HERD BRIDGE
SWITCHBOARD CONTROL CUBICLE
DIMENSIONS IN INCHES—SCALE GEN 14-5-V

DFTM. T.B.C.K.E.N. APPD. J. Homan 11-6-57
APPD.
CHKD. [illegible] 11/6/57 APPD. W.C. Immman 11/15/57

DIV. & PLANT LOCATION BUFFALO DIVISIONS, BUFFALO, N.Y., U.S.A.

33A6795

PITTSBURGH PENCIL TRACING CLOTH

ENG. DEPT. FORM NO. 18166-A

BUFFALO WORKS 7-18-51

LAMBERT CONSTRUCTION CO.

WEST. GO. RU-3707 ITEM 1
S O 10-S-926

APPARATUS - CONTROL APPARATUS FOR GRAND ISLAND NORTH HERO BRIDGE FOR STATE OF VERMONT.

CONTROL DESK	33-A-6794	SUB	GENERAL ASSEMBLY
CONTROL CUB.	33-A-6795		GENERAL ASSEMBLY
CONTROL CUBICLE	33-B-9041	3	BILL OF MATERIAL
CONTROL CUBICLE	33-A-6797	SUB 2	WIRING DIAGRAM

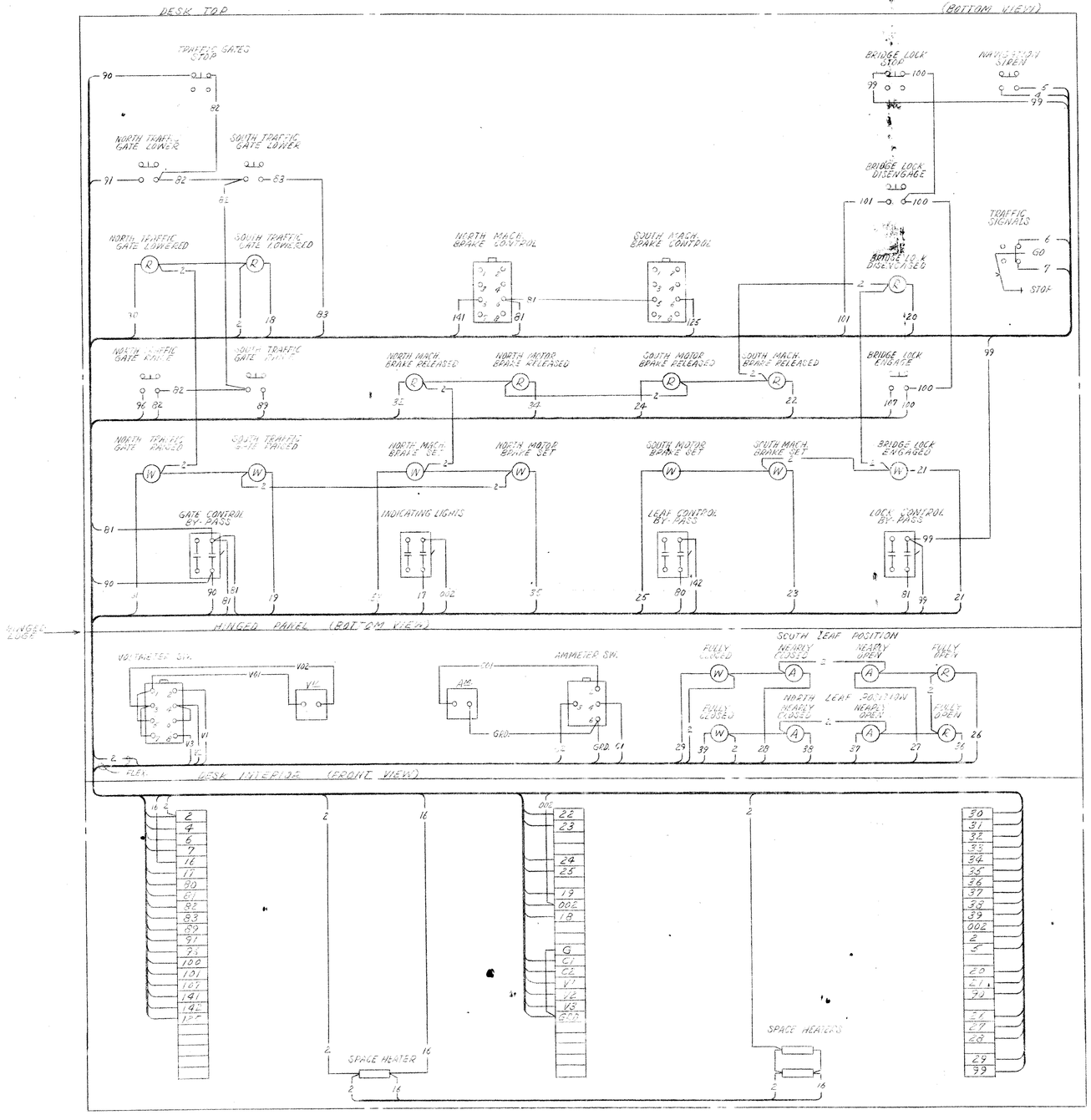
8 TO RUTLAND VERMONT J. W. HASTINGS

CC TO BUFFALO WKS. IND. CONTROL ENG. W. E. THOMAS

CC TO R. A. ZIEGLER COS

CC TO CONTROL VAULT TO BE FILED WITH 10-S-926

CONTROL DESK



VOLTMETER SWITCH

CONTACT	POSITION			
	OFF	1	2	3
1-2		X		X
3-4		X		
5-6			X	
7-8			X	X

NP (V.)

AMMETER SWITCH

CONTACT	POSITION			
	OFF	1	2	3
3-4-6	X			
2-3		X		
4-6		X		
2-5-4			X	
2-4				X
5-6				X

NP (A.)

MACHINE BRAKE CONTROL SWITCH

CONTACT	POSITION	
	SET	REL.
1-2		X
3-4	X	
5-6		X
7-8	X	

NP (F.V.)

WIRE LEGEND.

FLEX: 105 - .010 DIA. C. WIRE # 7419-1
ALL WIRE NOT SPECIFIED TO BE
#10 (.102 DIA.) C. WIRE # 7419-1

ENG. REF. DWG.

ELEM. DIAGRAM (POWER CKTS.)	33-A-6792
ELEM. DIAGRAM (CONTROL CKTS.)	33-A-6793
CUBICLE ASSY. DWG.	33-A-6795
DESK ASSY. DWG.	33-A-6794
BILL OF MATERIAL DWG.	23-B-3041
EXTER. WIRING DIAG.	33-A-6797
CUBICLE WIRING DIAG.	33-A-6797

S.O. 24-S-64 | 1
D. | 2
IT.

CHANGE.

W. C. Ford
TEST. [illegible]
MULTIPOINT MACH.
BAT. CONTR. SWITCH
[illegible]

W. C. Ford 9/4/64

WESTINGHOUSE ELECTRIC CORPORATION

TITLE CONTROLLER WIRING DIAGRAM
GRAND ISLAND - NORTH HERO BRIDGE - STATE OF VERMONT
DESK WIRING

DFTM. [illegible]	7/4/64	APP'D. T. E. Thomas	7/4/64
CHKD. Mac Killop	9/10/64	APP'D. [illegible]	7/22/64

33-A-6796

DIV. & PLANT LOCATION IND. CONTROL — BUFFALO DIVISIONS, BUFFALO, N.Y. U.S.A.

TOOL DWG. | ENG. REF. DWG.

PENCIL TRACING CLOTH

ENG. DEPT. FORM NO. 10-1

BUFFALO WORKS

7-18-51

LAMBERT CONSTRUCTION CO.

WEST. GO. RV-3707 ITEM 1

S O 24-S-84

APPARATUS: CONTROL APPARATUS FOR GRAND ISLAND NORTH HERO BRIDGE FOR STATE OF VERMONT

ALL APPARATUS 33-A-5792 SUB 3 1 ELEMENTARY DIAG. POWER CIRCUIT
ALL APPARATUS 33-A-5793 1 ELEMENTARY DIAG. CONTROL CIRCUITS
CONTROL CUBICLE 33-A-5797 3 WIRING DIAG.
CONTROL DESK 33-A-5796 SUB 2 WIRING DIAG.
ALL APPARATUS 33-A-5798 1 INTERCONNECTION DIAG.

8 TO RUTLAND VERMONT J. W. HASTINGS

CC TO R. A. ZIEGLER COS

CC TO CONTROL VAULT TO BE FILED WITH 24-S-84

CC TO W. E. THOMAS CONT. ENG. BUFFALO

RIGHT SIDE OF CAR (REAR VIEW) CABINET (REAR VIEW)

SHOP INTEST

CONTROL PANEL (REAR VIEW)

SEE SHEET 2

SEE SHEET 3

SEE SHEET 4

SEE SHEET 5

SEE SHEET 6

SEE SHEET 7

SEE SHEET 8

SEE SHEET 9

SEE SHEET 10

SEE SHEET 11

SEE SHEET 12

SEE SHEET 13

SEE SHEET 14

SEE SHEET 15

SEE SHEET 16

ENG. DEPT. DATA

S.O. 10 D. 6 IT. 1

CHANGE

TOOL REF. DWG.

REF. DWG.

WESTINGHOUSE ELECTRIC CORPORATION

TITLE CONTROLLER WIRING DIAGRAM
SERIES MULTIPLE UNIT CONTROL EQUIPMENT
CONTROL CABINET

DFTM.	4/15	APPD. E. Thomas	4-16
CHKD. Mac Miller	4/15/30	APPD. R. Zimmerman	4/22/30
DIV. & PLANT LOCATION			

33-A-6797

BUFFALO DIVISIONS, BUFFALO N.Y. U.S.A.

PITTSBURGH PENCIL TRACING CLOTH

ENG. DEPT. FORM NO. 3166-A

BUFFALO NIAGARA

7-18-51

LAMBERT CONSTRUCTION CO.

WEST. GO. RV-3707 ITEM 1

S O 24-8-8

APPARATUS: CONTROL APPARATUS FOR GRAND ISLAND NORTH MAIN PRIMARY FOR STATE OF VERMONT

ALL APPARATUS 33-A-6792 SUB 3 ELEMENTARY DIAG. POWER CIRCUIT
ALL APPARATUS 33-A-6793 1 ELEMENTARY DIAG. CONTROL CIRCUITS
CONTROL CUBICLE 33-A-5797 3 WIRING DIAG.
CONTROL DESK 33-A-6796 SUB 2 WIRING DIAG.
ALL APPARATUS 33-A-6798 1 INTERCONNECTION DIAG.

8 TO RUTLAND VERMONT C. M. HASTINGS

CC TO R. A. ZIEGLER COS

CC TO CONTROL VAULT TO BE FILED WITH 24-8-8

CC TO W. E. THOMAS CONT. ENG. BUFFALO

CONTROL HOUSE

TO POWER CO. METERING EQUIPMENT

TO GAS ENGINE CONTROL CIRCUIT 60 V. A.C.

CONTROL PANELS (REAR VIEW)

SOUTH LEAF

NAVIGATION LIGHTS

CHANNEL

NORTH LEAF

CONTROL HOUSE

CONTROL DESK INTERIOR (FRONT VIEW)

SUBMARINE CABLE

44 CONDUCTOR #16 SOLID

ENG. REF. DWG.

ELEM. DIAGRAM (LIMIT SWITCH)	
ELEM. DIAGRAM (MOTOR)	
CONTROL WIRING DIAGRAM	
CONTROL DESK DIAGRAM	
CONDUIT RUN	
CABLE REEL ASSY.	
BILL OF MATERIAL	

S.O.	CHANGE	IT.		
1				
2				

WESTINGHOUSE ELECTRIC CORPORATION

TITLE ELEMENTARY CONTROL DIAGRAM OF ELECTRICAL EQUIPMENT - NORTH AND SOUTH SPANS OF VERTICAL LIFT BRIDGE

DFTM.	APPD.		33-A-6798
CHKD.	APPD.		
CIV. & PLANT LOCATION	BUFFALO DIVISIONS, BUFFALO, N. Y., U.S.A.		

TOOL REF. DWG. ENG. REF. DWG.

PITTSBURGH PENCIL TRACING CLOTH

ENG. DEPT. FORM NO. 18161 A

LAMBERT CONSTRUCTION CO. 7-18-51

WEST. 30. PV-3707 ITEM 1

S O 24-S-8L

APPARATUS: CONTROL APPARATUS FOR GRAND ISLAND NORTH NERO BRIDGE FOR STATE OF VERMONT

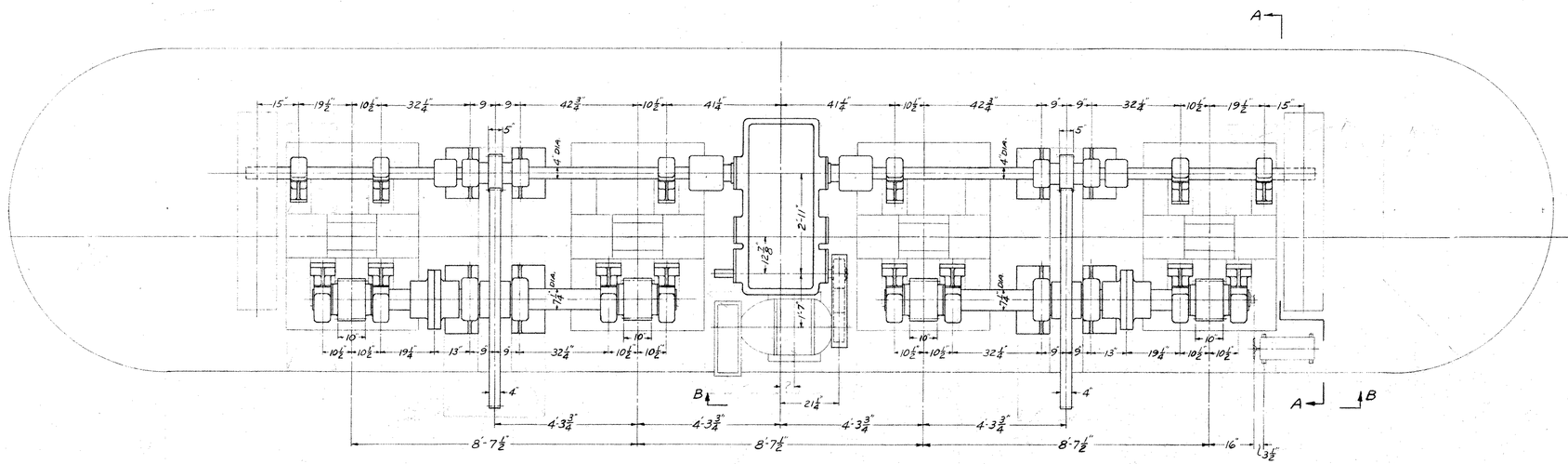
ALL APPARATUS 33-A-6792 SUB 3-ELEMENTARY DIAG. POWER CIRCUIT
ALL APPARATUS 33-A-6793 1 ELEMENTARY DIAG. CONTROL CIRCUITS
CONTROL CUBICLE 33-A-6797 3-WIRING DIAG.
CONTROL DESK 33-A-5795 SUB 2 WIRING DIAG.
ALL APPARATUS 33-A-6793 1 INTERCONNECTION DIAG.

8 TO RUTLAND VERMONT J. W. HASTINGS

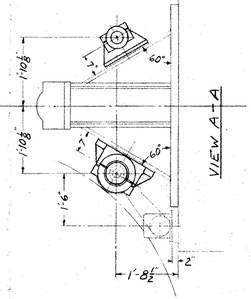
CC TO R. A. ZIEGLER COS

CC TO CONTROL VAULT TO BE FILED WITH 24-S-8L

CC TO W. E. THOMAS CONT. ENG. BUFFALO

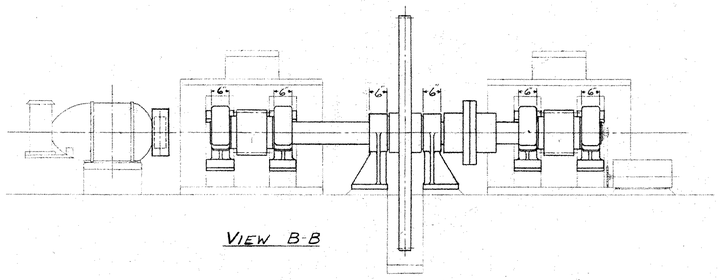


PLAN



VIEW A-A

NOTE :- MACHINERY ON PIER #2 SHOWN
MACHINERY ON PIER #3 SAME HAND



VIEW B-B

SPECIFICATIONS _____

INSPECTION _____

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—
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

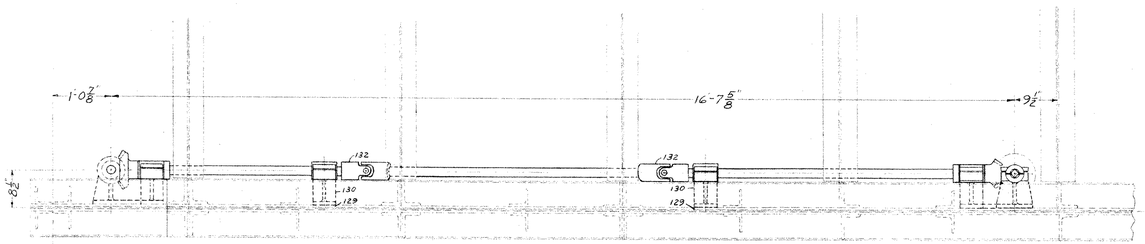
DATE	REVISIONS

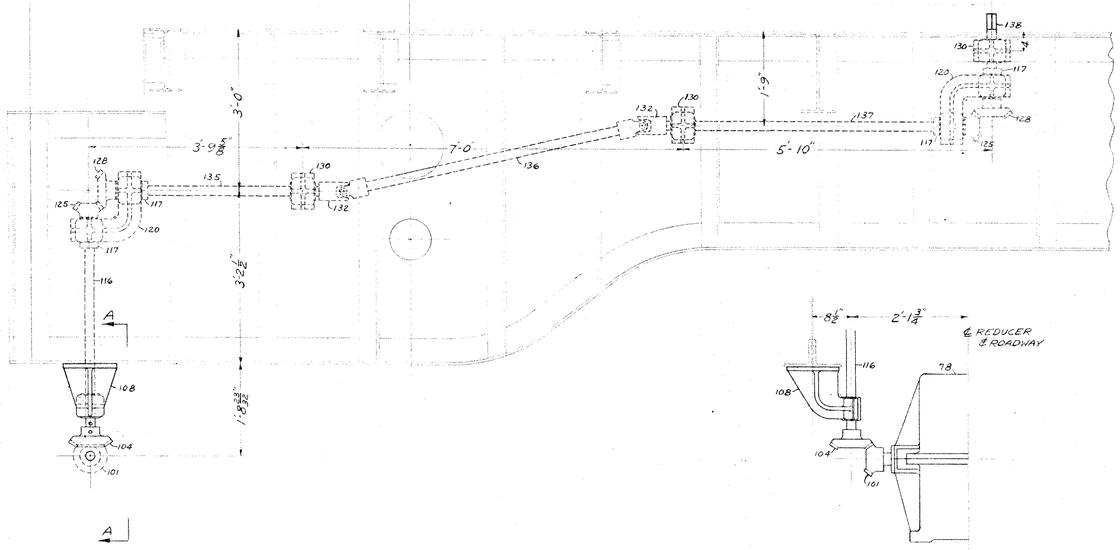
S. O. D-610 CONTRACT _____

GRAND ISLE - NORTH HERO BASCULE BRIDGE VERMONT

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

DRAWN BY R.W.D APPROVED BY _____
CHECKED BY _____ REV. APPVD. _____
DATE 4-6-51 REV. APPVD. _____
SHEET _____ OF _____ DWG. Nº 5620 E-30





VIEW A-A

SPECIFICATIONS

INSPECTION

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—
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

DATE	REVISIONS

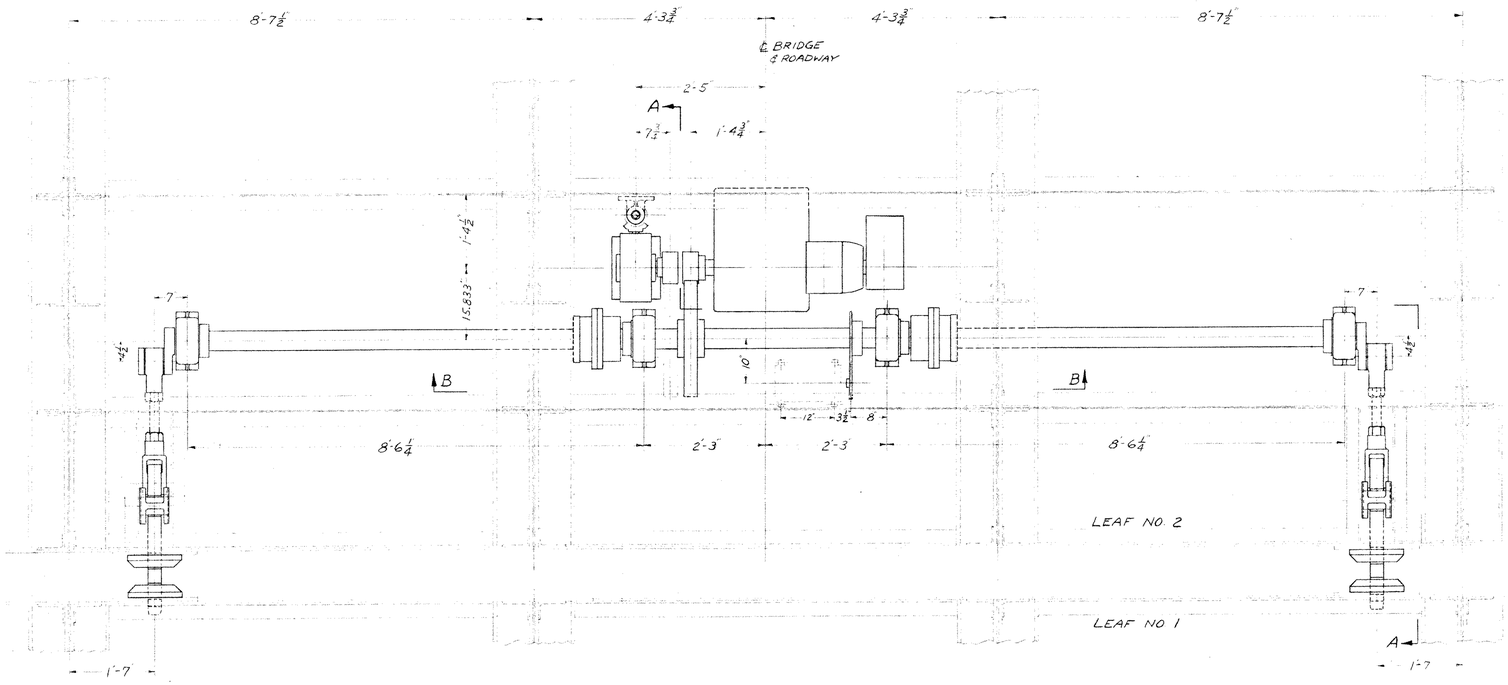
S. O. D-610 CONTRACT

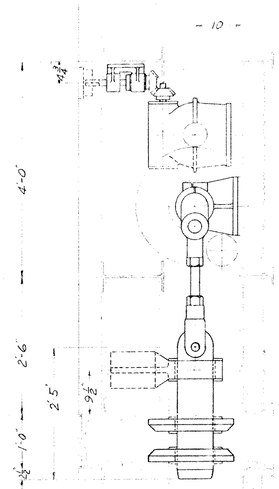
GRAND ISLE - NORTH HERO BASCULE BRIDGE VERMONT

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

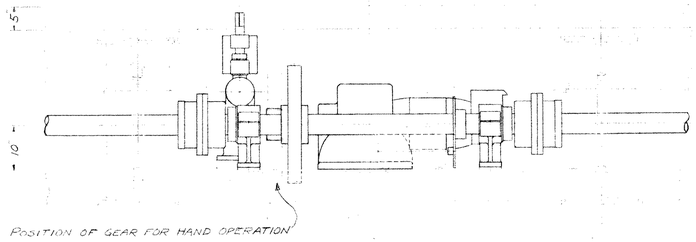
DRAWN BY R.W.D. APPROVED BY
CHECKED BY REV. APPVD.
DATE 8-28-51 REV. APPVD.
SHEET 2 OF DWG. Nº 5621 E-30

* 2nd submission 10/17





VIEW A-A



VIEW B-B

SPECIFICATIONS

INSPECTION

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—
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

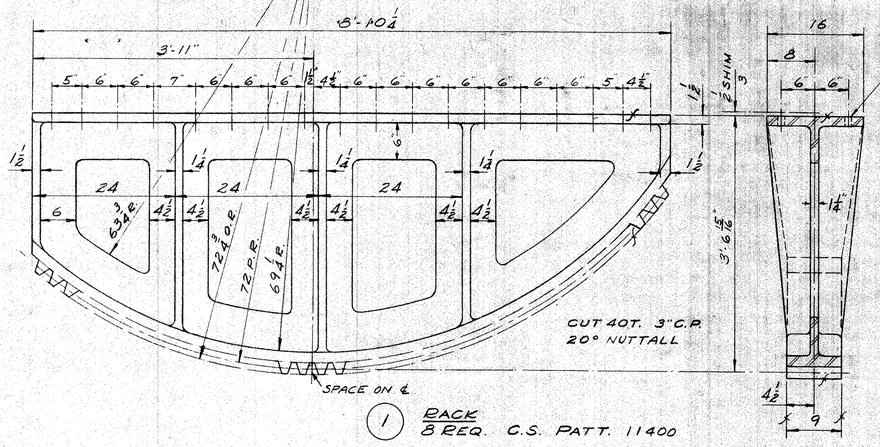
DATE		REVISIONS

S. O. D-610 CONTRACT

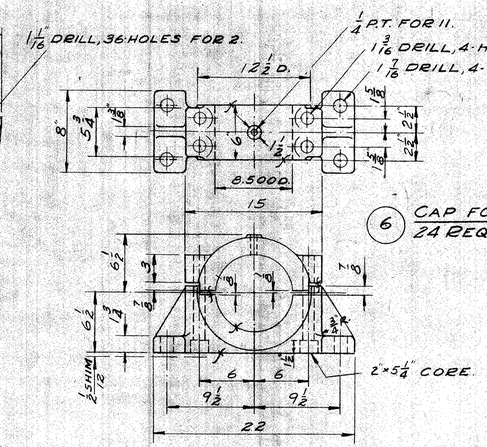
GRAND ISLE-NORTH HERO BASCULE BRIDGE, VERMONT

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

DRAWN BY R.W.D. APPROVED BY
CHECKED BY REV. APPVD.
DATE 7-18-51 REV. APPVD.
SHEET OF DWG. Nº 5622 E-30

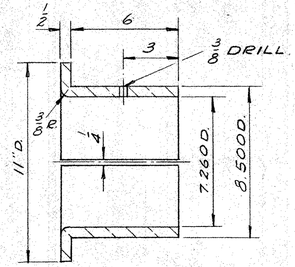


(1) RACK
8 REQ. C.S. PATT. 11400

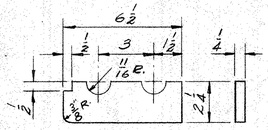


(6) CAP FOR 5 & 14
24 REQ. C.S. PATT. 11402

(5) RACK PINION BEARING
16 REQ. C.S. PATT. 11401

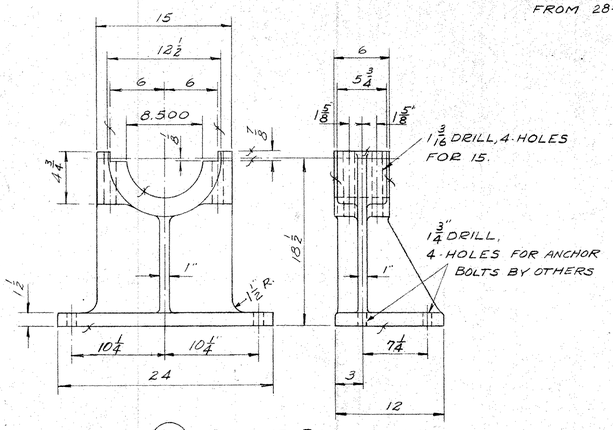


(9) BUSHING FOR 5 & 14
24 REQ. BZ. GR. C
PATT. 11403



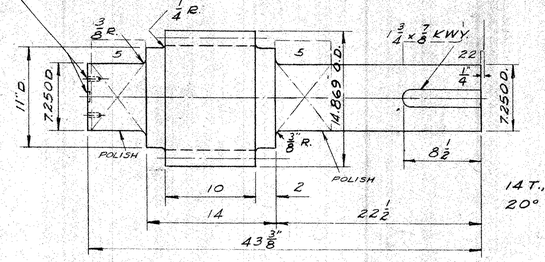
(10) LINER FOR 5 & 14
48 REQ. FIBRE

PC.	NAME	Q.	MAT.	PATT.	REMARKS
1	RACK	8	C.S.	11400	
2	BOLT FOR 1	288	S.		T.B. LIST
3	SHIM FOR 1	8	S.		16"×8"-10¼" 1/4, 1/8, 1/8, 1/16, 1/32
4					
5	RACK PINION BRG.	16	C.S.	11401	
6	CAP FOR 5 & 14	24	C.S.	11402	
7	BASE BOLT FOR 5	64	S.		T.B. LIST
8	BOLT FOR 5 & 6	64	S.		T.B. LIST
9	BUSH. FOR 5 & 14	24	BZ.	11403	
10	LINER FOR 5 & 14	48	FIBRE		
11	LUB. FTG. FOR 6	24			ALEMITE A-1186
12	SHIM FOR 5	16	S.		8×22 1/4, 1/8, 1/8, 1/16, 1/32
13					
14	BEARING BASE	8	C.S.	11404	
15	BOLT FOR 6 & 14	32	S		T.B. LIST
16					
17	OUTSIDE PIN. SHAFT	4	F.S.		
18					
19	INSIDE PIN. SHAFT	4	F.S.		
20					
21	MALE COUP. HALF	4	C.S.	4835	
22	FEMALE COUP. HALF	4	C.S.	4835	
23	KEY FOR 21 & 22	8	S.		KEY LIST
24	BOLT FOR 21 & 22	24	S.		T.B. LIST
25					
26	DRIVE GEAR G-2	4	C.S.	9547	ALT.
27	KEY FOR 26	4	S.		KEY LIST
28	STUB SHAFT	2	S.		
29	BOLT FOR 28	8	S.		½×1½ CAP, NO NUT
30					



(14) BEARING BASE
8 REQ. C.S. PATT. 11404

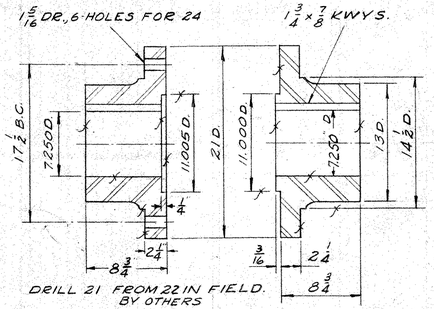
NOTE :- ON 2 SHAFTS ONLY COUNTERBORE 1" DIA. × ¼" DEEP AT CENTER & ½ TAP 1¼ DEEP 4 HOLES FOR 29 FROM 28



14T., 3"C.P., 13.369" P.D.
20° NUTTALL

F.A.O.

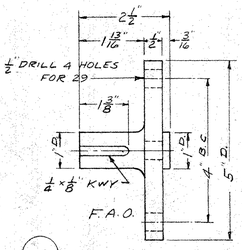
(17) OUTSIDE PINION SHAFT
4 REQ. F.S.



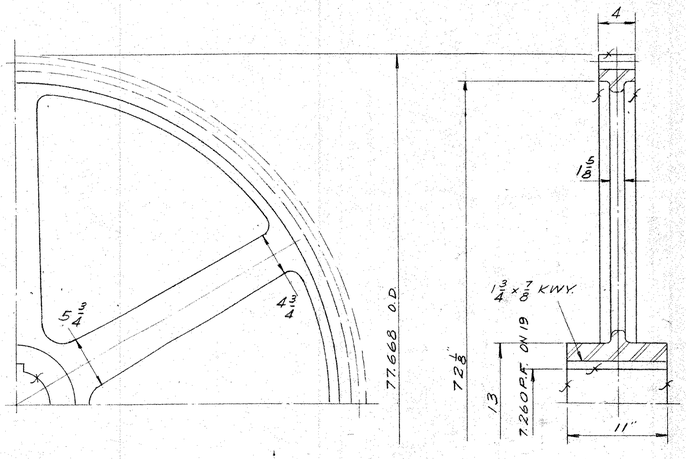
(22) FEMALE COUPLING
4 REQ. C.S.

(21) MALE COUPLING
4 REQ. C.S.

PATT. 4835

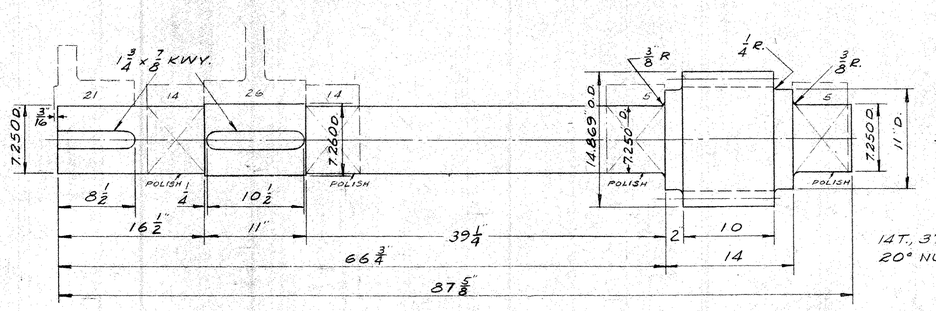


(28) STUB SHAFT FOR LIMIT SWITCH SPROCKET
2 REQ'D. S.



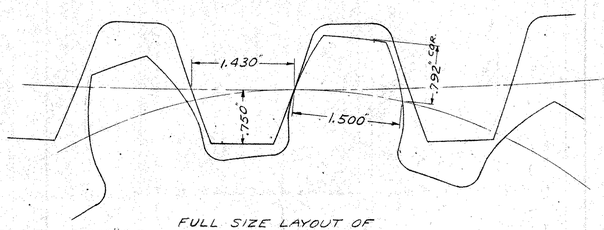
120T., 2"C.P., 76.394" P.D.
20° INV.

(26) DRIVE GEAR G-2
4 REQ. C.S. PATT. 9547 ALT.



(19) INSIDE PINION SHAFT
4 REQ. F.S.

F.A.O.



14T., 3"C.P., 13.369" P.D.
20° NUTTALL

FULL SIZE LAYOUT OF RACK AND PINION TEETH PCS. 1, 17, & 19

APPROVED VERMONT DEPT. OF HIGHWAYS 11/5/51

S. O. D-610 CONTRACT

OPERATING MACHINERY FOR
NORTH HERO BASCULE BRIDGE
GRAND ISLE, VERMONT
AS APPLIES TO AMERICAN BRIDGE CO.S.
CONTRACT J-3754-8

SPECIFICATIONS

INSPECTION

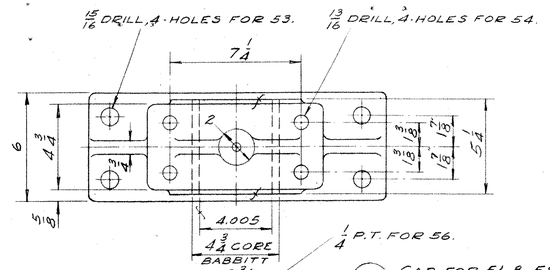
GENERAL NOTES

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—
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED
SCRIBE ℄S. ON ALL BEARINGS, SPEED REDUCERS, ETC.

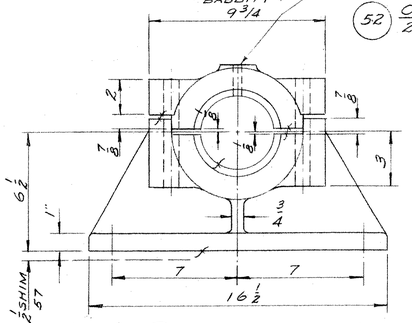
DATE		REVISIONS
6-18-52		ADDED PCS. 28, 29.
12-3-51		PC 14 BASE BOLT HOLES WERE 1 3/16 DIA. & DIMENSIONS WERE 10½ & 7½

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

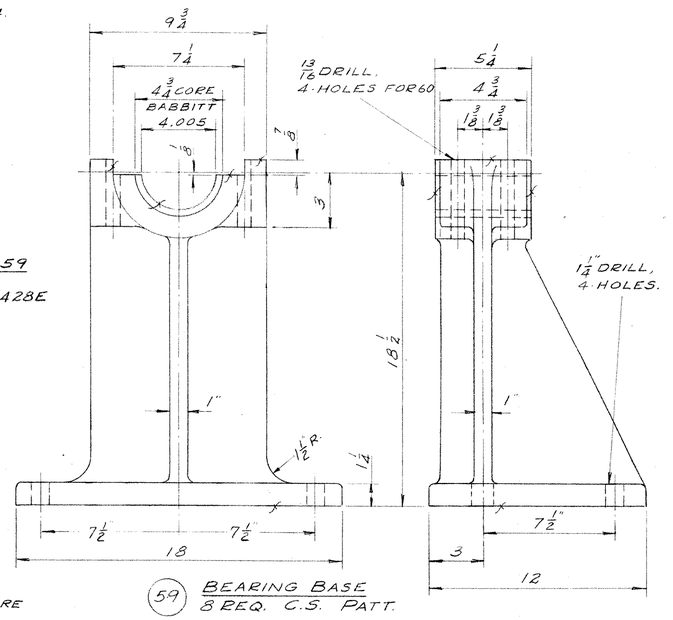
DRAWN BY E.M.L. APPROVED BY
CHECKED BY R.W.D. REV. APPVD.
DATE 12-3-51 REV. APPVD.
SHEET 4 OF 9 DWG. Nº 5623 E-30



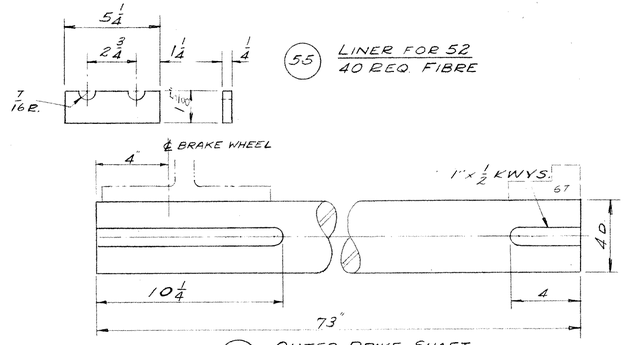
(52) CAP FOR 51 & 59
20 REQ. C.S.
PATT. 4428E



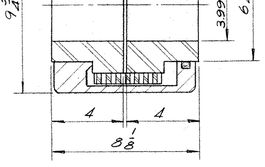
(51) DRIVE SHAFT BEARING
12 REQ. C.S. PATT 3696 ALT. CORE



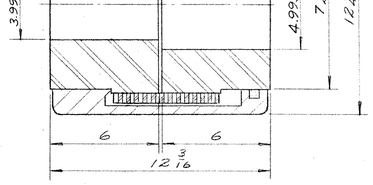
(59) BEARING BASE
8 REQ. C.S. PATT.



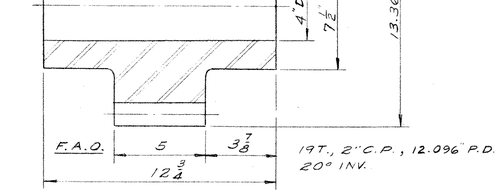
S.O. D-610	BILL OF MATERIAL				DWG. 5624 E-30
PC.	NAME	Q.	MAT.	PATT.	REMARKS
51	DRIVE SHAFT BRG.	12	C.S	3696	ALT. CORE
52	CAP FOR 51 & 59	20	C.S.	4428E	" "
53	BASE BOLT FOR 51	48	S.		T.B. LIST
54	BOLT FOR 51 & 52	48	S.		T.B. LIST
55	LINER FOR 52	40	FIBRE		
56	LUB. FTG. FOR 52	20			ALEMITE A-1186
57	SHIM FOR 51	12	S.		6 x 16 1/2 1/4, 1/8, 1/8, 1/16, 1/32
58					
59	BEARING BASE	8	C.S.		
60	BOLT FOR 52 & 59	32	S.		T.B. LIST
61					
62	OUTER DRIVE SHAFT	4	T.P.S.		
63	KEY FOR 62	4	S.		KEY LIST
64					
65	INNER DRIVE SHAFT	4	T.P.S.		
66					
67	COUPLING FOR 62	4			MORSE SA 1-24
68	KEY FOR 67	8	S.		KEY LIST
69					
70	COUPLING FOR 65	4			MORSE SA 1 1/2-20
71	KEY FOR 70	4	S.		KEY LIST
72	KEY FOR 70	4	S.		KEY LIST
73					
74	DRIVE PINION G-3	4	F.S.		
75	SET SCR. FOR 74	4			7/8 x 1 1/4 HOL. CUP PT.
76	KEY FOR 74	4	S.		KEY LIST
77					
78	SPEED REDUCER	2			EARLE 8TD
79					
80	SPROCKET FOR 78	2	C.S.		MORSE SILENT, TYPE C
81	SET SCR. FOR 80	2			1/2 x 3/4 HOL. CUP PT.
82	KEY FOR 80	2	S.		KEY LIST
83					
84	MOTOR SPROCKET	2	C.S.		MORSE SILENT, TYPE C
85	SET SCR. FOR 84	2			1/2 x 3/4 HOL. CUP PT.
86	KEY FOR 84	2	S.		KEY LIST
87	CHAIN FOR 80 & 84	2			MORSE CENTER GUIDE 3/4" PITCH, 4" FACE 94 PITCHES, 70 1/2" LONG.
88	CHAIN CASE	2	S.		MORSE TYPE #3 "ALL-WEATHER"
89	SUPPORT FOR 88	4	S.		
90	SHIM FOR 88, 89	4	S.		2 1/2 x 7 - 1/8, 1/8, 1/16, 1/32
91	BOLT FOR 88, 89	8	S.		1/2 x 1 3/4 U.H., H.H. MACH., I.N., I.L.W.
92					
93	COLLAR FOR 62	8	S.		
94	SET SCREW FOR 93	16	S.		7/8 x 1 1/2 HOL. CUP PT.



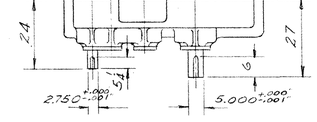
(67) COUPLING FOR 62
4 REQ. MORSE SA 1-24

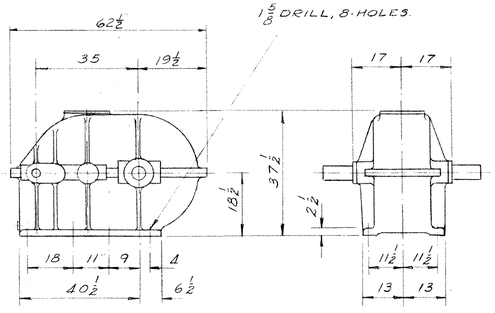


(70) COUPLING FOR 65
4 REQ. MORSE SA 1 1/2 · 20

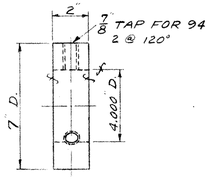


(74) DRIVE PINION G-3
4 REQ. F.S.

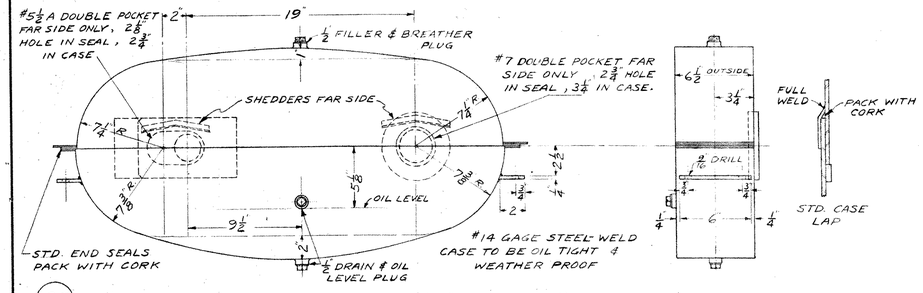




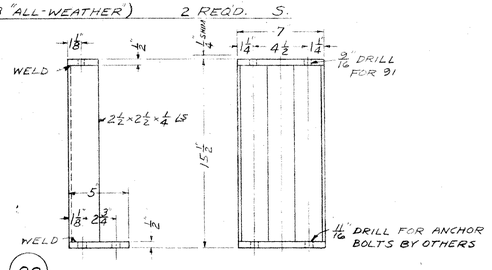
(78) SPEED REDUCER
2 REQ. EARLE 8TD 140:1
S.O. D-611



(93) COLLAR FOR 62
8 REQD. S.



(88) CHAIN CASE (MORSE CHAIN CO. TYPE #3 "ALL-WEATHER") 2 REQD. S.



(80) SPROCKET FOR 78
2 REQ. SEMI-STEEL MORSE SILENT, TYPE C
"A" = 2.748 +.000 -.001, "B" = 5/8 x 5/16

(84) MOTOR SPROCKET
2 REQ. SEMI-STEEL MORSE SILENT, TYPE C
"A" = 2.123 +.000 -.001 "B" = 1/2 x 1/4

(89) SUPPORT FOR 88 4 REQD. S.

SPECIFICATIONS

INSPECTION

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—
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

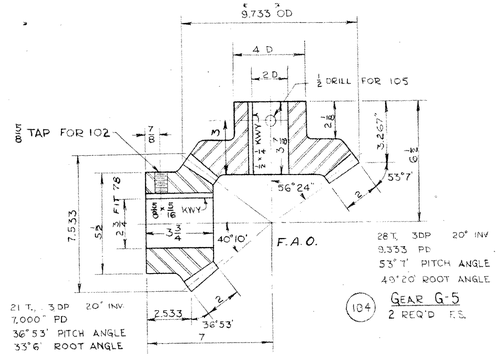
DATE	REVISIONS

S. O. D-610 CONTRACT

OPERATING MACHINERY FOR
NORTH HERO BASCULE BRIDGE
GRAND ISLE, VERMONT

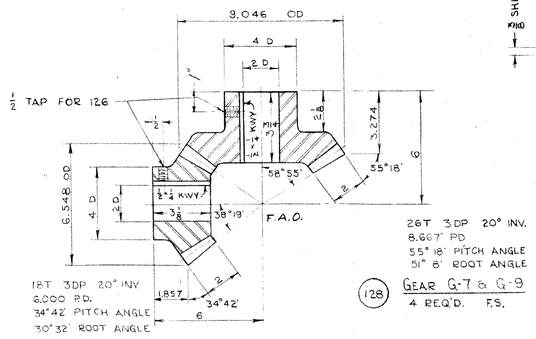
THE EARLE GEAR AND MACHINE COMPANY
4707 TO 4715 STENTON AVENUE
PHILADELPHIA 44, PA.

DRAWN BY E. M. L. APPROVED BY
CHECKED BY R. W. D. REV. APPVD.
DATE 7/10/51 REV. APPVD.
SHEET OF DWG. Nº 5624 E-30



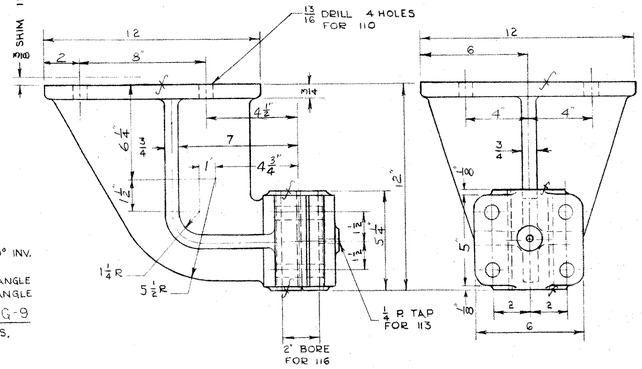
(101) PINION G-4
2 REQ'D F.S.

(104) GEAR G-5
2 REQ'D F.S.

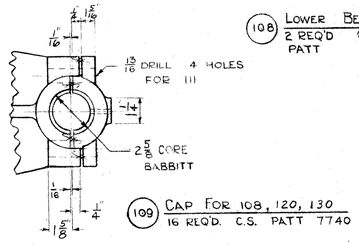


(125) PINION G-6 & G-8
4 REQ'D. F.S.

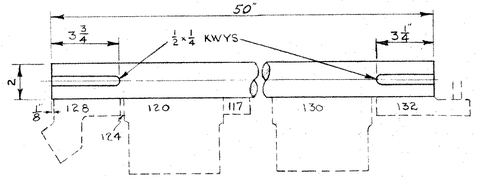
(128) GEAR G-7 & G-9
4 REQ'D. F.S.



(108) LOWER BEARING
2 REQ'D C.S. PATT

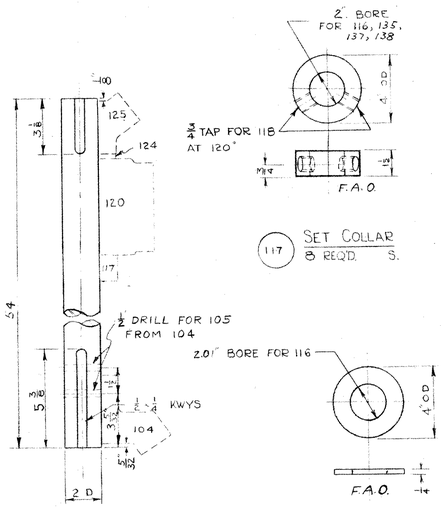


(109) CAP FOR 108, 120, 130
16 REQ'D. C.S. PATT 7740



(135) LOWER SHAFT
2 REQ'D. T.P.S.

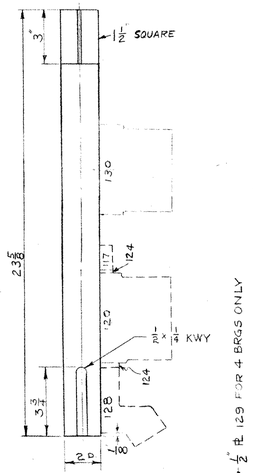
S.O. D-610	BILL OF MATERIAL			DWG. 5625E-30	
PC	NAME	Q.	MAT.	PATT.	REMARKS
101	PINION G-4	2	F.S.		
102	SET SCREW FOR 101	2			5/8 x 1 3/8 HOL. CUP POINT
103	KEY FOR 101	2	S		KEY LIST
104	GEAR G-5	2	F.S.		
105	BOLT FOR 104	2	F.S.		1/2 x 5 HEX CAP BOLT & NUT
106	KEY FOR 104	2	S		KEY LIST
107					
108	LOWER BEARING	2	C.S.		
109	CAP FOR 108, 120, 130	16	C.S.	7740	
110	BASE BOLT FOR 108	8	S		TURNED BOLT LIST
111	BOLT FOR 109	64	S		TURNED BOLT LIST
112	LINER FOR 109	32	FIBER		1/16 x 1 x 5 1/2
113	LUB. FITTING FOR 109	16			ALEMITE A-1186
114	SHIM FOR 108	2	S		12 x 12 x 1/4, 1/8, 1/16, 1/32
115					
116	VERTICAL SHAFT	2	T.P.S.		
117	SET COLLAR	8	S		
118	SET SCREW FOR 117	16			3/4 x 1" HOLLOW CUP POINT
119					
120	UNION BEARING	4	C.S.		
121	BASE BOLT FOR 120	32	S		TURNED BOLT LIST
122	SHIM FOR 120	4	S		1/4, 1/8, 1/16, 1/32
123					
124	THRUST WASHER	10	BZ CL. C.		
125	PINION G-6 & G-8	4	F.S.		
126	SET SCREW FOR 125 & 128	8	S		1/2 x 3/4 HOLLOW CUP POINT
127	KEY FOR 125 & 128	8	S		KEY LIST
128	GEAR G-7 & G-9	4	F.S.		
129	PLATE FOR 130	4	S.		5 x 10 x 1/2
130	BEARING BASE	6	C.S.		
131	SHIM FOR 130	6	S		5 x 10 x 1/4, 1/8, 1/16, 1/32
132	UNIVERSAL JOINT FOR 136	4			BOSTON J-400 B
133	KEY FOR 132	8			KEY LIST
134	SET SCREW FOR 132	8	S		1/2 x 3/4 HOLLOW CUP POINT
135	LOWER SHAFT	2	T.P.S.		
136	CONNECTING SHAFT	2	T.P.S.		
137	UPPER SHAFT	2	T.P.S.		
138	CAPSTAN SHAFT	2	T.P.S.		
139					
140	CAPSTAN LEVER	2	F.S.		
141	BASE BOLT FOR 130	24	S.		TURNED BOLT LIST
142	CAPSTAN PAVING FRAME	3	C.S.	2307	
143	COVER FOR 142	3	C.S.	2308	
144	LIFTER FOR 143	2	S		



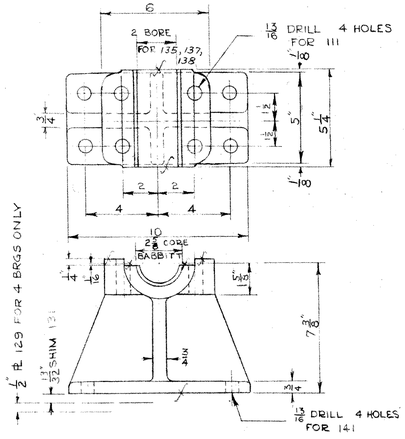
(117) SET COLLAR
8 REQ'D. S.

(116) VERTICAL SHAFT
2 REQ'D T.P.S.

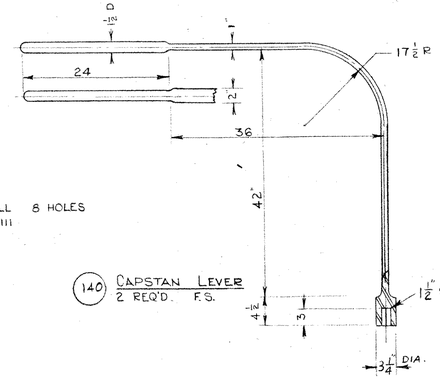
(124) THRUST WASHER
10 REQ'D. BZ. CL. C



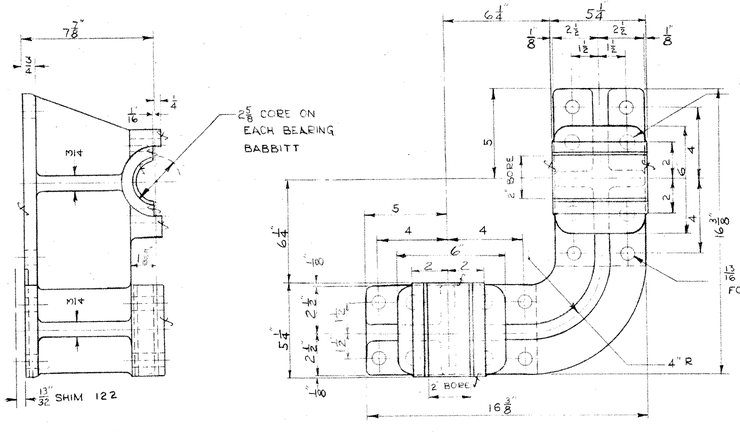
(138) CAPSTAN SHAFT
2 REQ'D T.P.S.



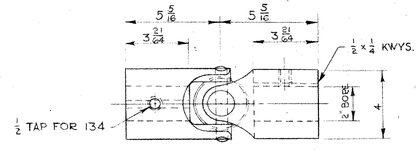
(130) BEARING BASE
6 REQ'D C.S. PATT



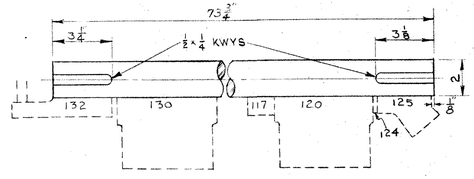
(140) CAPSTAN LEVER
2 REQ'D. F.S.



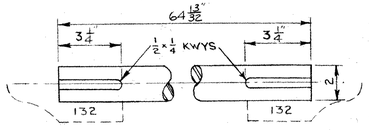
(120) UNION BEARING
4 REQ'D. C.S. PATT



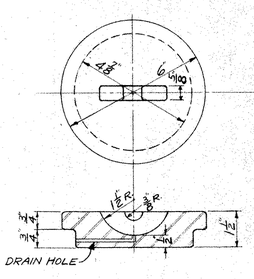
(132) UNIVERSAL JOINT FOR 136
4 REQ'D. BOSTON J 400 B



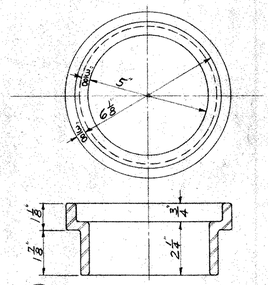
(137) UPPER SHAFT
2 REQ'D T.P.S.



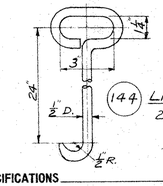
(136) CONNECTING SHAFT
2 REQ'D. T.P.S.



(143) COVER FOR 142
3 REQ'D. C.S. PATT. 2308



(142) CAPSTAN PAVING FRAME
3 REQ'D. C.S. PATT. 2307



(144) LIFTER FOR 143
2 REQ'D. S.

SPECIFICATIONS

INSPECTION

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—
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

DATE	REVISIONS

S. O. D-610 CONTRACT

HAND OPERATING MECHANISM FOR
NORTH HERO BASCULE BRIDGE
GRAND ISLE, VERMONT

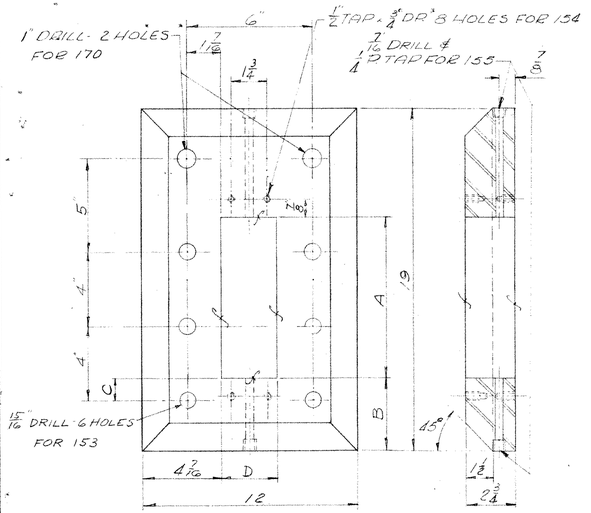
THE EARLE GEAR AND MACHINE COMPANY
4707 TO 4715 STENTON AVENUE
PHILADELPHIA 44, PA.

DRAWN BY G.H.M. APPROVED BY
CHECKED BY R.W.D. REV. APPVD.
DATE 8/24/51 REV. APPVD.
SHEET 6 OF DWG. Nº 5625E-30

2nd submission 10/17

S.O. D-610 BILL OF MATERIAL DWG-5626E-30

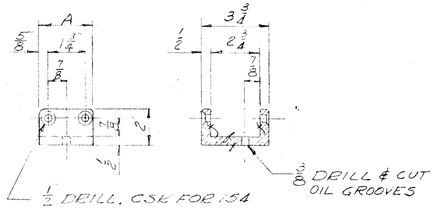
PC.	NAME	Q	MTL.	PAT.	REMARKS
151	LOCK BAR GUIDE	2	C.S.		
152	GUIDE SHOE FOR 151, 156	8	Bz. CL C		
153	BOLT FOR 151 & 156	24	S		T.B. LIST
154	SCREW FOR 152 & 158	48	S		½ x 1 FLAT HEAD CAP
155	LUB. FTG. FOR 151, 156 & 157	12			ALEMITE A-1186
156	LOCK BAR GUIDE	2	C.S.		
157	LOCK BAR BEARING	2	C.S.		
158	GUIDE SHOE FOR 157	4	Bz. CL C		
159	BOLT FOR 157	16	S		T.B. LIST
160	SHIM FOR 157	4	S.		8 x 10½ x ¼ - ⅛ - 1/16 - 1/32
161	LOCK BAR	2	F.S.		
162	LOCK BAR CLEVIS	2	C.S.	9091	
163	CLEVIS PIN	2	T.R.S.		
164	COTTER PIN FOR 163	4	S		⅜ D. x 3"
165	LOCK BAR ROD END	2	C.S.		
166	BUSHING FOR 165	2	Bz. CL C		
167	LUB. FTG. FOR 165	2			ALEMITE A-1186
168	CONNECTING ROD	2	T.R.S.		
169	NUT FOR 168	4	S		2" - 4½ HEX.
170	BOLT FOR 151 & 156	8	S		1" HEX HD CAP, 5" U.H., T.F.W., N.N.
171	BEARING BASE	4	C.S.		
172	CAP FOR 171	4	C.S.		
173	BUSHING FOR 171	4	Bz. CL C		
174	BASE BOLT FOR 171	16	S		T.B. LIST
175	BOLT FOR 172	16	S		T.B. LIST
176	LINER FOR 172	8	FIBRE		1/4 x 2 x 5 3/8
177	LUB. FTG. FOR 172	4			ALEMITE A-1186
178	SHIM FOR 171	4	S.		5 x 13 1/4, 1/8, 1/16, 1/32
179	THRUST WASHER FOR 201	2	Bz. C.C.		



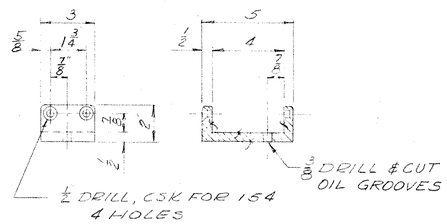
LOCK BAR GUIDE
C.S. PATT.

(151) 2 REQD. A = 9⅛", B = 3 15/16", C = 15/16", D = 3⅝"

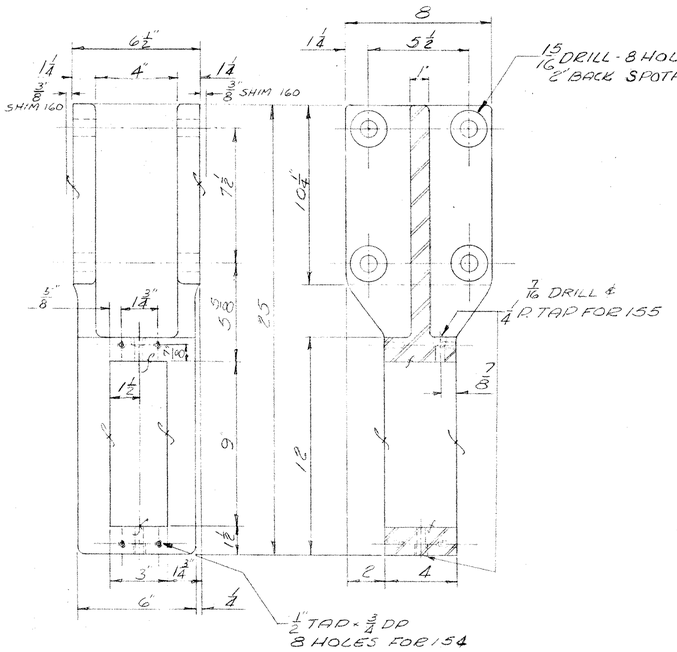
(156) 2 REQ'D A = 9", B = 4", C = 1", D = 3"



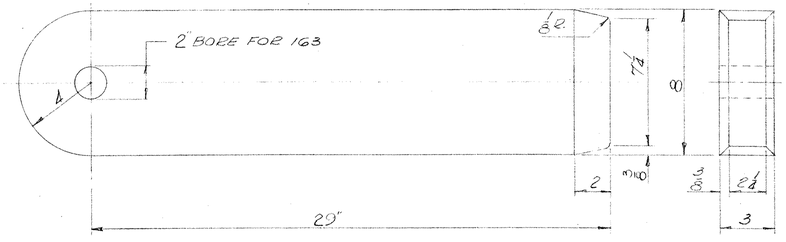
(152) GUIDE SHOE FOR 151, 156
Bz CL C
4 REQD A = 3⅛
4 REQD A = 3"



(158) GUIDE SHOE FOR 157
4 REQ BZ. CL C.

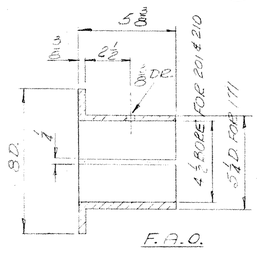


(157) LOCK BAR BEARING
2 REQ C.S PATT.

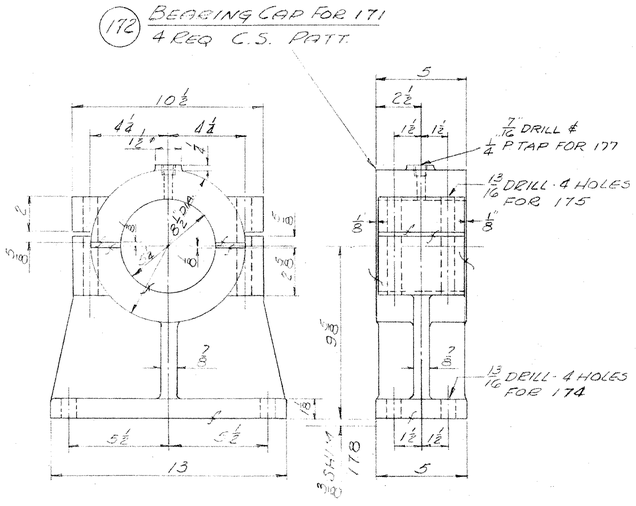


(161) LOCK BAR
2 REQ. F.S.

F.A.O.

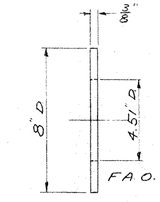


(173) BUSHING FOR 171
4 REQ. Bz. CL. C.

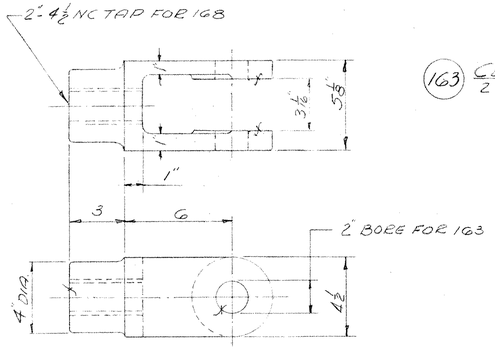


(172) BEARING CAP FOR 171
4 REQ C.S. PATT.

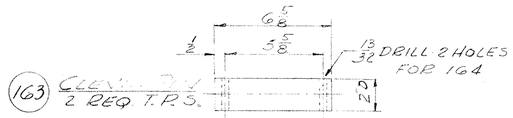
(171) BEARING BASE
4 REQ C.S. PATT.



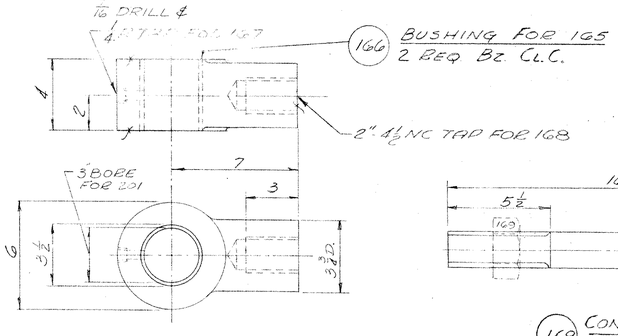
(179) THRUST WASHER FOR 201
2 REQD. Bz. CL C



(162) LOCK BAR CLEVIS
2 REQ C.S. PATT. 9091

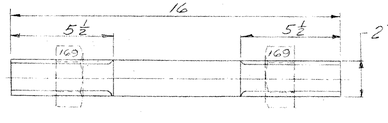


(163) CLEVIS PIN
2 REQ. T.R.S.



(166) BUSHING FOR 165
2 REQ. Bz. CL C.

(165) LOCK BAR ROD END
2 REQ. C.S. PATT.



(168) CONNECTING ROD
2 REQ. T.R.S.

SPECIFICATIONS

INSPECTION

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—
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

DATE	REVISIONS

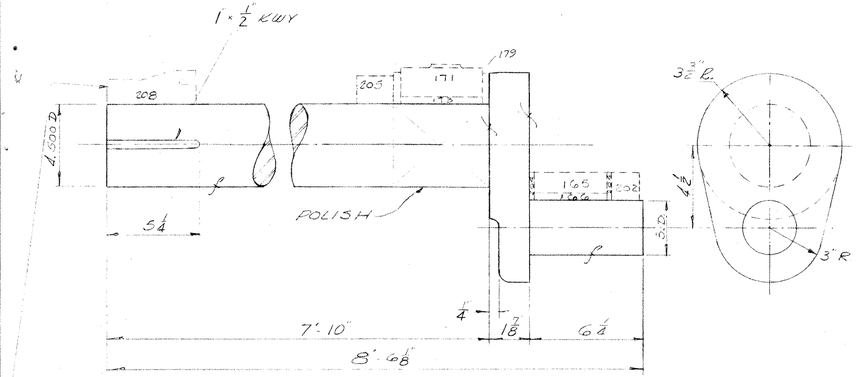
S. O. D-610 CONTRACT

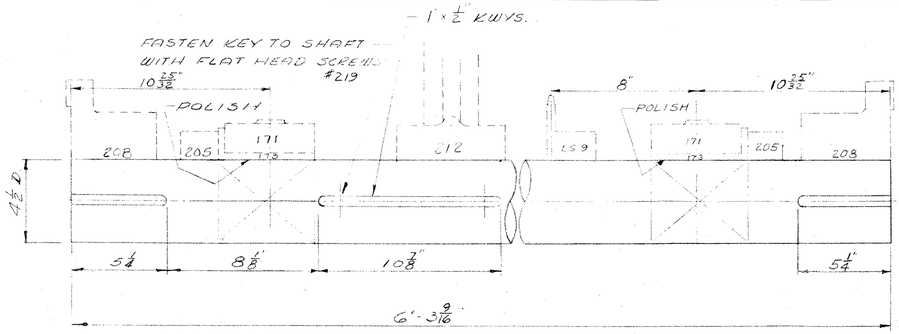
GRAND ISLE-NORTH HERO
BASCULE BRIDGE, VERMONT

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

DRAWN BY MCD APPROVED BY
CHECKED BY R.W.D. REV. APPVD.
DATE 10-16-51 REV. APPVD.
SHEET 7 OF DWG. Nº 5626E-30

2nd submission 10/17

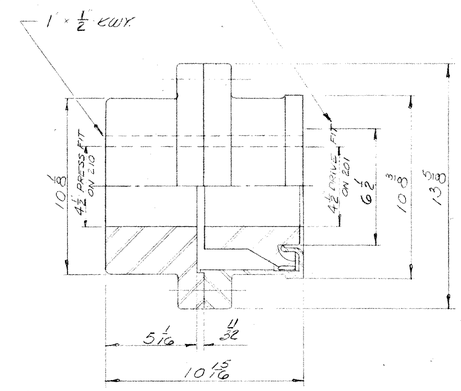


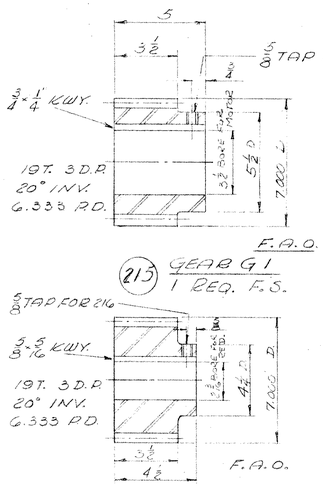


(210) CENTER SHAFT
1 REQ. T.P.S.

NOTE - SHIP THIS HALF OF COUPLING LOOSE - TO BE DRIVEN ON IN FIELD AFTER SHAFT HAS BEEN PASSED THROUGH GIRDER

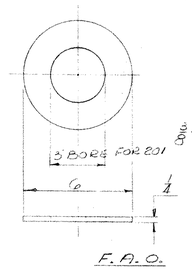
(201) CRANKSHAFT
2 REQ. F.S.



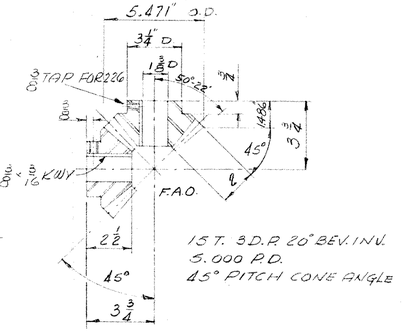


(215) GEAR G1
1 REQ. F.S.

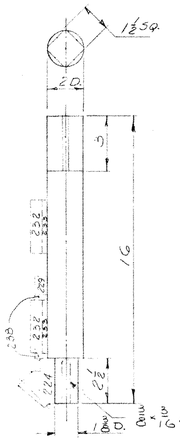
(217) GEAR G3
1 REQ. F.S.



(204) THRUST WASHER
4 REQ. BZ. CL. C.

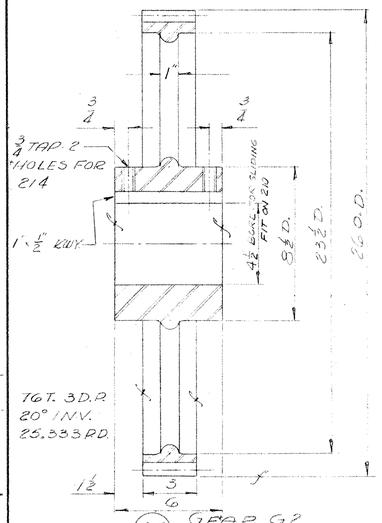


(224) MITER GEARS G4 & G5
2 REQ F. S.

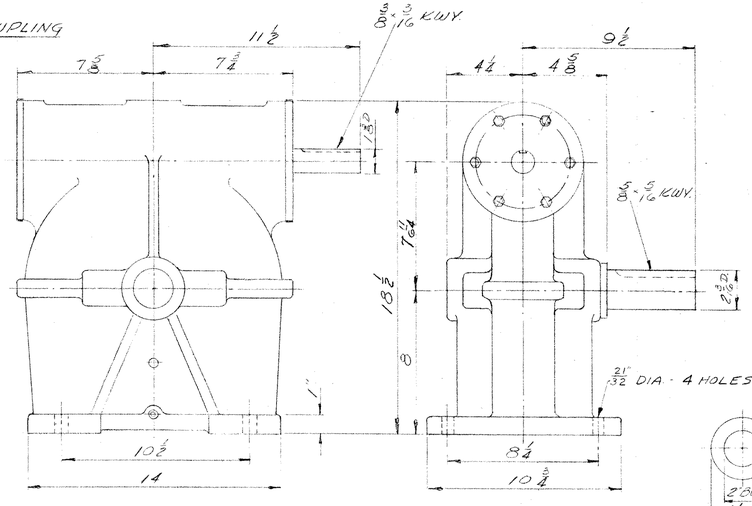


S.O. D-610	BILL OF MATERIAL				DWG. 5627E-30
PC.	NAME	Q	MAT.	PAT T.	REMARKS
201	CRANKSHAFT	2	F.S.		
202	ROD END COLLAR	2	S.		
203	SET SCREW FOR 202	4			3/4 - 1 1/2 HOL. CUP PT.
204	THRUST WASHER	4	BZ. CL.C.		
205	SHAFT COLLAR	4	S.		
206	SET SCREW FOR 205	8	S.		1" × 1 1/2" HOL. CUP PT.
207					
208	SINGLE ENG. COUPLING	2			FAST NO. 4 1/2
209	KEY FOR 208	4	S.		KEY LIST
210	CENTER SHAFT	1	T.P.S.		
211					
212	GEAR G2	1	C.S.		
213	KEY FOR 212	1	S.		KEY LIST
214	SET SCR. FOR 212	2	S.		3/4 × 1 1/2 HOL. CUP PT.
215	GEAR G1	1	F.S.		
216	SET SCR. FOR 215 & 217	2			5/8 × 3/4 HOL. CUP PT.
217	GEAR G3	1	F.S.		
218	KEY FOR 217	1	S.		KEY LIST
219	SCREW FOR 213	2	S.		3/8 × 1 1/2 FLAT HD. MACH.
220	LOCK SPEED RED.	1			D.O. JAMES NO. 10MT.
221	BASE BOLT FOR 220	4	S.		T.B. LIST
222					
223	KEY FOR 215	1	S.		KEY LIST
224	MITER GEARS G4 & G5	2	F.S.		
225	KEY FOR 224	2	S.		KEY LIST
226	SET SCREW FOR 224	2			3/8 - 3/4 HOL. CUP PT.
227					
228	CAPSTAN SHAFT	1	T.P.S.		
229	COLLAR FOR 228	1	S.		
230	SET SCREW FOR 229	2	S.		3/8 × 3/4 HOL. CUP PT.
231					
232	CAPSTAN BRG. BASE	1	C.S.		
233	BUSHING FOR 232	2	BZ. CL.C.		
234	BASE BOLT FOR 232	4	S.		T.B. LIST
235	LUB. FTG FOR 232	2			ALEMITE A-1186
236	SHIM FOR 232	1	S.		7 3/4 - 8 1/4 1/4, 1/8, 1/8, 1/16, 1/32
237					
238	THRUST WASHER	2	BZ. CL.C.		

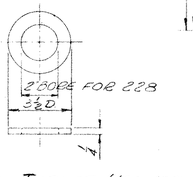
(208) SINGLE ENGAGEMENT COUPLING
2 REQ. FAST NO. 4 1/2



(212) GEAR G2
1 REQ. C.S. PATT.

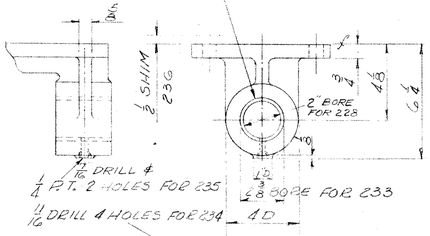


(220) LOCK SPEED REDUCER
1 REQ. D.O. JAMES #10MT
RATIO 8.50 TO 1



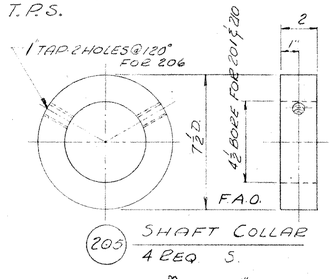
(238) THRUST WASHER
2 REQ. BZ. CL. C.

(233) BUSHING FOR 232
2 REQ. BZ. CL. C.

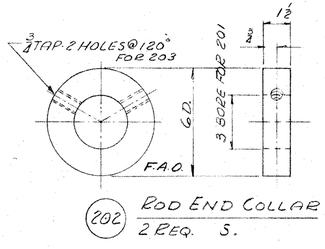


(232) CAPSTAN BRG. BASE
1 REQ. C.S. PATT.

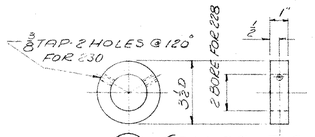
(228) CAPSTAN SHAFT
1 REQ. T.P.S.



(205) SHAFT COLLAR
4 REQ. S.



(202) ROD END COLLAR
2 REQ. S.



(229) COLLAR FOR 228
1 REQ. S.

DATE	REVISIONS

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—
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

S. O. D-610 CONTRACT

GRANDISLE - NORTH HERO
BASCULE BRIDGE, VERMONT

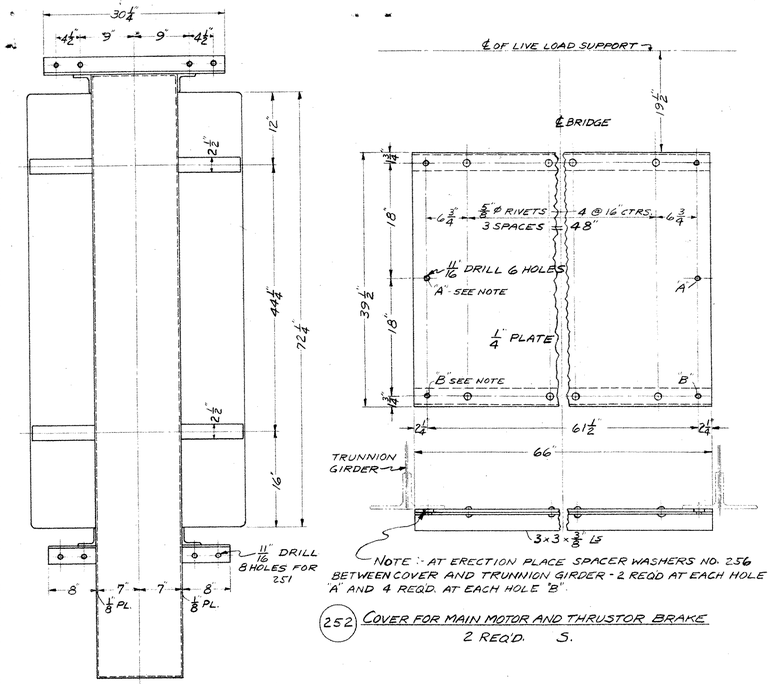
SPECIFICATIONS

INSPECTION

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

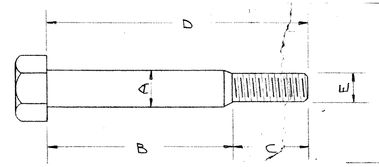
DRAWN BY M.C.D. APPROVED BY
CHECKED BY R.W.D. REV. APPVD.
DATE 10-16-51 REV. APPVD.

SHEET 8 OF DWG. Nº 5627E-30



NOTE: AT ERECTION PLACE SPACER WASHERS NO. 256 BETWEEN COVER AND TRUNNION GIRDER - 2 REQD AT EACH HOLE "A" AND 4 REQD. AT EACH HOLE "B".

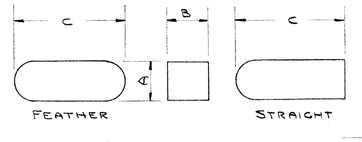
(252) COVER FOR MAIN MOTOR AND THRUSTOR BRAKE
2 REQ'D. S.



TURNED BOLT LIST

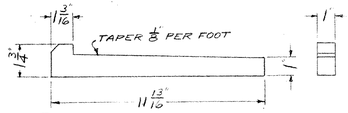
Pc. No.	HEAD	QTY.	A	B	C	D	E	FOR	HEX NUT	L.W.	B.W.	C.W.
2	HEX	288	1 1/16	3 3/8	1 7/8	5 1/4	1"	1	288	288	—	576
7	"	64	1 3/16	3 1/8	2 1/8	5 1/4	1 3/8	5	64	64	—	128
8	SQUARE	64	1 3/16	8 5/8	3	11 5/8	1 1/8	5 & 6	128	—	—	—
15	HEX	32	1 3/16	7 1/2	3"	10 1/2	1 1/8	6 & 14	64	—	—	—
24	"	24	1 5/16	4 3/4	2"	6 3/8	1 1/4	21 & 22	24	24	—	—
53	"	48	15/16	2 3/8	1 1/2	3 1/8	7/8	51	48	48	—	96
54	"	48	1 3/16	5 5/8	2 1/8	7 3/4	3/4	51 & 52	96	—	—	—
60	"	32	1 3/16	5 5/8	2 1/8	7 3/4	3/4	52 & 59	64	—	—	—
110	"	8	1 3/16	1 1/2	1 3/8	2 7/8	3/4	108	8	8	—	24
111	"	64	1 3/16	3"	2"	5"	3/4	109	128	—	—	—
121	"	32	1 3/16	1 1/2	1 3/8	2 1/8	3/4	120	32	32	—	64
141	"	24	1 3/16	2"	1 3/8	3 3/8	3/4	130	24	24	—	48
153	"	24	1 5/16	3 1/8	1 1/2	5 3/8	7/8	151 & 156	24	24	—	—
159	"	16	1 5/16	1 7/8	1 3/8	3 1/2	7/8	157	16	16	—	32
174	"	8	1 3/16	1 1/8	1 3/8	3 1/4	3/4	171	8	8	—	16
174	"	8	1 3/16	2 1/8	1 3/4	3 3/8	3/4	171	8	8	8	16
175	"	16	1 3/16	5 1/4	2"	7 1/4	3/4	172	32	—	—	—
221	"	4	2 1/32	1 1/4	1 1/8	2 3/8	5/8	220	4	4	—	—
234	"	4	1 1/16	1 1/2	1 1/8	2 5/8	5/8	232	4	4	—	16
259	"	32	1 3/16	1 1/8	1 5/8	3 1/2	3/4	257	32	32	32	—
260	"	32	1 3/16	2 3/4	1 3/8	4 1/8	3/4	258	32	32	—	—

← Check



KEY LIST

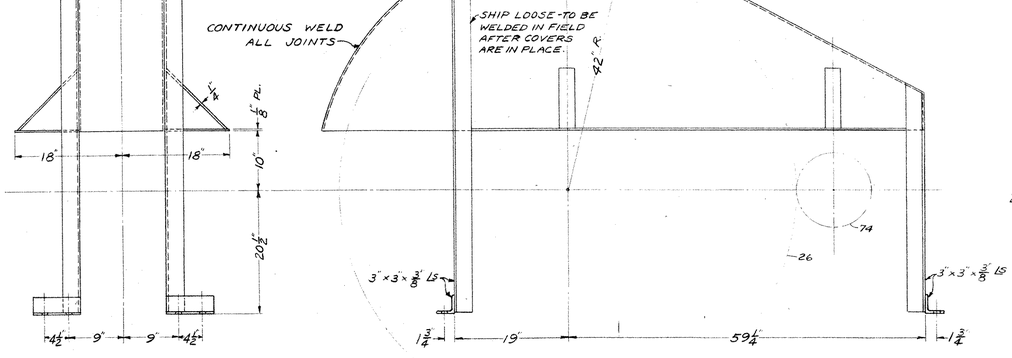
Pc. No.	KIND	QTY	A	B	C	FOR	ON
23	STRAIGHT	8	1 3/4	1 3/4	8 1/2	21 & 22	17 & 19
27	FEATHER	4	1 3/4	1 3/4	10 1/2	26	19
63	GIB	4	SEE DETAIL			BRAKE WHEEL	62
68	STRAIGHT	8	1"	1"	4"	67	62 & 65
71	STRAIGHT	4	1"	1"	6"	70	65
72	STRAIGHT	4	1¼	1¼	6"	70	78
76	FEATHER	4	1"	1"	12¼	74	65
82	STRAIGHT	2	⅝	⅝	5¼	80	78
86	STRAIGHT	2	½	½	5"	84	MOTOR
103	STRAIGHT	2	⅝	⅝	5¼	101	78
106	STRAIGHT	2	½	½	5⅜	104	116
127	STRAIGHT	4	½	½	3½	125	116 & 137
127	STRAIGHT	4	½	½	3¾	128	135 & 138
133	STRAIGHT	8	½	½	3¼	132	137, 138 & 137
209	STRAIGHT	4	1"	1"	5¼	208	201 & 210
213	FEATHER	1	1"	1"	10⅞	212	210
218	STRAIGHT	1	⅝	⅝	4¾	217	220
225	STRAIGHT	2	⅜	⅜	2½	224	204 & 208
223	STRAIGHT	1	¾	¾	5½	215	MOTOR



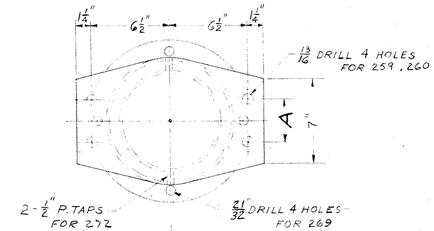
(63) KEY FOR BRAKE WHEEL

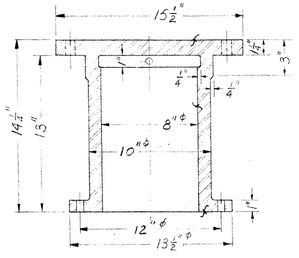
S.O. D-610 BILL OF MATERIAL DWG. 5628 E-30

Pc. No.	NAME	QTY.	MAT'L	PATT.	REMARKS
250	COVER FOR GEARS 26 & 74	4	S.		
251	EXPANSION BOLT FOR 250	32		MADDOCK	#3645 SHIELD & 5/8" HEX HD MACH BOLT & U.H.
252	COVER FOR MOTOR & BRAKE	2	S.		
253	BOLT FOR 252	4	S.		⅝ HEX HD MACH., 2 U.H., 1 N., 1 L.W.
254	BOLT FOR 252 (AT "A")	4	S.		⅝ " " " , 2¼ U.H., 1 N., 1 L.W.
255	BOLT FOR 252 (AT "B")	4	S.		⅝ " " " , 2½ U.H., 1 N., 1 L.W.
256	SPACER WASHER	24	S.		⅝ COMMON
257	BUFFER CYLINDER	8	C.S.		
258	BUFFER CYLINDER	8	C.S.		
259	BASE BOLT FOR 257	32	S.		T.B. LIST
260	BASE BOLT FOR 258	32	S.		T.B. LIST
261	PISTON ROD GUIDE	16	C.S.		
262	BUSHING FOR 261	16	GRAPH PHOS. BZ		
263	PISTON ROD	16	C.R.S.		
264	NUT FOR 263	16	S.		1½ HEX JAM
265	FOLLOWER PLATE	16	S.		
266	PISTON HEAD	16	S.		
267	PISTON PACKING	16			
268	ADJUSTING NUT	16	S.		
269	BOLT FOR 261	64	S.		
270	CHECK VALVE FOR 257 258	16			½" R.P.&C. FIG. 212 HORIZ SWING
271	NEEDLE VALVE FOR 257 258	16			½" R.P.&C. FIG. 1040A GLOBE
272	PIPE NIPPLE FOR 270 271	32			½" x 1½" BLACK



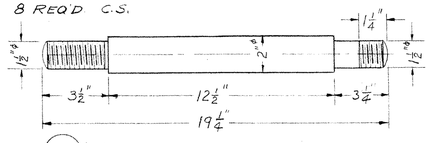
(250) COVER FOR GEARS 26 & 74 4 REQ'D. S.



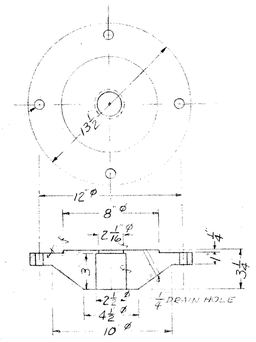


(257) BUFFER CYLINDER A = 3½"
8 REQ'D. C.S.

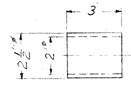
(258) BUFFER CYLINDER A = 5"
8 REQ'D C.S.



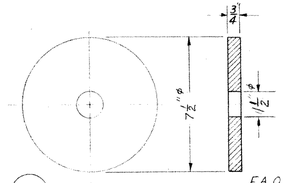
(263) PISTON ROD
16 REQ'D. C.R.S.



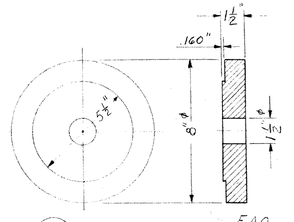
(261) PISTON ROD GUIDE
16 REQ'D. C.S.



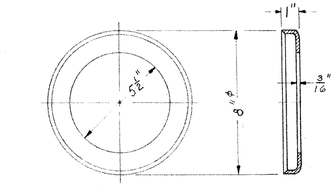
(262) BUSHING FOR 261
16 REQ'D GRAPH. PHOS. BZ.



(265) FOLLOWER PLATE
16 REQ'D. S.

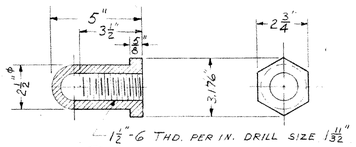


(266) PISTON HEAD
16 REQ'D. S.



GARLOCK "813 COMPOSITION ASBESTOS CUP WITH MOLDED IN EXPANSION SPRING.

(267) PISTON PACKING
16 REQ'D



(268) ADJUSTING NUT
16 REQ'D. S.

S.O. D-610 CONTRACT

GRAND ISLE - NORTH HERO BASCULE BRIDGE - VERMONT

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

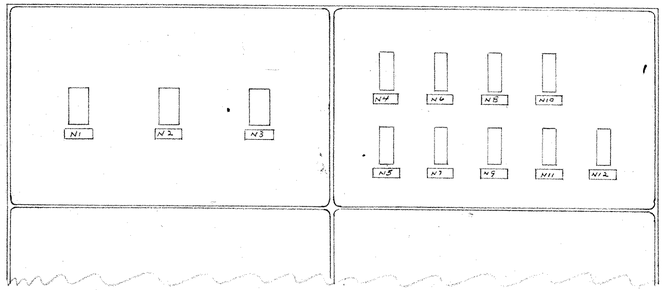
DRAWN BY G.P. APPROVED BY
CHECKED BY R.W.D. REV. APPVD.
DATE 10/10/51 REV. APPVD.
SHEET 9 OF DWG. Nº 5628 E-30

SPECIFICATIONS

INSPECTION

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—
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

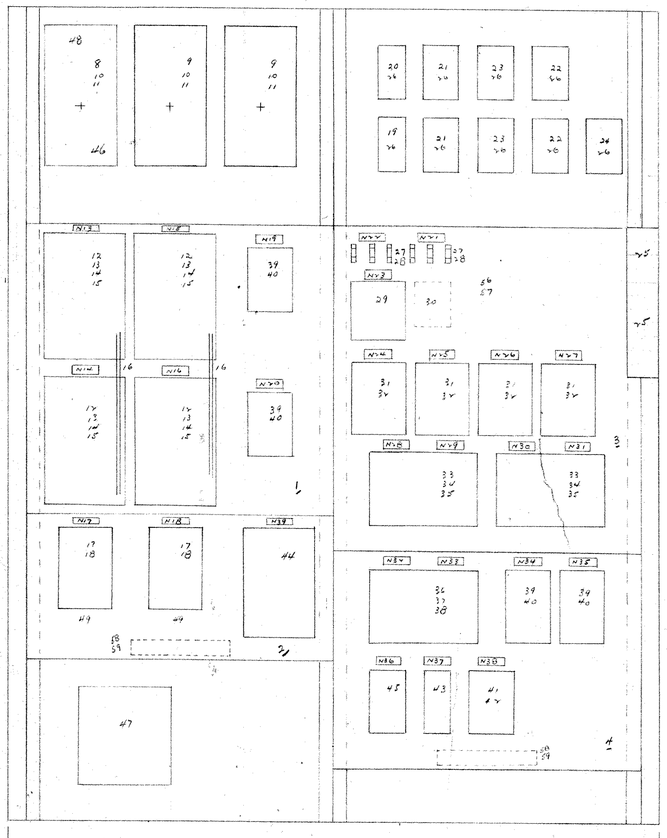
DATE		REVISIONS



FRONT VIEW SHOWING BREAKER COVERS IN PLACE

72x90x30/1728 = 75 cu ft
= 650 W.

$\frac{325\,W}{220\,V}$ = 1.5A
= 150 Ω



FRONT VIEW - SECTION A-A - SHOWING DOORS & BREAKER COVERS REMOVED

RIGHT SIDE VIEW

LINE NO	FIRST LINE	SECOND LINE	THIRD LINE	1-D-1183V FIG. 1	REQ'D
N1	MAIN LINE				1
N2	SOUTH LEAF MOTOR				1
N3	NORTH LEAF MOTOR				1
N4	LIGHTING SUPPLY				1
N5	CONTROL CIRCUIT	SUPPLY			1
N6	SOUTH MOTOR BRAKE				1
N7	NORTH MOTOR BRAKE				1
N8	SOUTH MACHINERY	BRAKE			1
N9	NORTH MACHINERY	BRAKE			1
N10	SOUTH TRAFFIC GATE	MOTOR			1
N11	NORTH TRAFFIC GATE	MOTOR			1
N12	BRIDGE LOCK MOTOR				1
N13	SOUTH LEAF	RAISE			1
N14	SOUTH LEAF	LOWER			1
N15	NORTH LEAF	RAISE			1
N16	NORTH LEAF	LOWER			1
N17	SOUTH MOTOR	OVERLOAD RELAY			1
N18	NORTH MOTOR	OVERLOAD RELAY			1
N19	SOUTH LEAF	LV. RELAY			1
N20	NORTH LEAF	LV. RELAY			1
N21	VOLTMETER FUSES	3 AMP			1
N22	REVERSE PHASE RELAY	FUSES - 3 AMP			1
N23	REVERSE PHASE RELAY				1
N24	SOUTH MOTOR BRAKE	RELEASE			1
N25	NORTH MOTOR BRAKE	RELEASE			1
N26	SOUTH MACHINERY	BRAKE RELEASE			1
N27	NORTH MACHINERY	BRAKE RELEASE			1
N28	SOUTH TRAFFIC GATE	LOWER			1
N29	SOUTH TRAFFIC GATE	RAISE			1
N30	NORTH TRAFFIC GATE	LOWER			1
N31	NORTH TRAFFIC GATE	RAISE			1
N32	BRIDGE LOCK	PULL			1
N33	BRIDGE LOCK	DRIVE			1
N34	SOUTH LEAF	SEATING RELAY			1
N35	NORTH LEAF	SEATING RELAY			1
N36	TRAFFIC GATE LIGHT	FLASHER RELAY			1
N37	TRAFFIC SIGNAL LIGHT	RELAY			1
N38	TRAFFIC SIGNAL	CONTROL RELAY			1
N39	NAVIGATION LIGHT	CONTROLLER			1
N40					
N41	INDICATING LIGHTS				1
N42	SPACE HEATERS	DESK - CUBICLE			1
N43	TRAFFIC SIGNALS				1
N44	NAVIGATION SIREN				1
N45	NAVIGATION LIGHTS AND	PIER LIGHTS			1
N46	SERVICE LIGHTING	CIRCUIT 1			1
N47	SERVICE LIGHTING	CIRCUIT 2			1
N48	SERVICE LIGHTING	CIRCUIT 3			1
N49	SERVICE LIGHTING	CIRCUIT 4			1
N50	SERVICE LIGHTING	CIRCUIT 5			1
N51	SERVICE LIGHTING	CIRCUIT 6			1

ITEM	APPARATUS	STYLE NO.		REQ'D	REMARKS
1	CABINET LINE ___ DWG ___			1	
2	PANEL - EB. ASB. 1½ x 30 x			1	T-
3	PANEL - EB. ASB 1½ x 30 x			1	T-
4	PANEL - EB. ASB. 1½ x 30 x			1	T-
5	PANEL - EB. ASB. 1½ x 30 x			1	T-
6					
7					
X 8	TYPE AB BREAKER - K FRAME - 3 P. 225A - 250V WITH UV TRIP		MAIN LINE	1	
9	TYPE AB BREAKER - K FRAME - 3P-125A-250V	1310879	LEAF MOTOR	2	
10	STUDS for IT. 8 & 9 (½ - 3¼)	1241345		18	
11	SCREENS for IT. 8 & 9	1241365		18	
12	NR 330 CONTACTOR	1490470		4	
13	COIL for IT. 12 - 220 V - 60 CY	1490646		4	
14	L-60 INTLK (M) for IT. 12 LINE 3 DWG. 30-A-5346			4	
15	L-60 INTLK (B) for IT. 12 LINE 8 DWG. 30-A-5346			4	
16	M-28 MECH. INTLK for IT. 12 CMB 1 DWG. 22-D-7829			2	
17	KNSP OVERLOAD RELAY - 2P - AUTO RESET	841350		2	
18	COIL for IT. 17 (AMP)	LATER		4	
19	TYPE AB BREAKER - E FRAME - 2P. 35A - 250 V	999085	CONTROL	1	
20	TYPE AB BREAKER - E FRAME - 2P. 50A - 250 V	999086	LIGHTING	1	
21	" " " " " " 3P - 25A - 250V	999024	BRAKE	2	
22	" " " " " " 3P - 25A - 250V.	999024	GATE	2	
23	" " " " " " 3P - 50A - 250V.	999026	M. BRAKE	2	
24	" " " " " " 3P - 50A - 250V.	999026	LOCK	1	
25	" " " " " " 1P - 15A - 250V.	999002	LIGHTING	11	
26	STUDS for IT. 19 - 25			72	
27	FUSE - 3A - 250V	37154		6	
28	FUSE HOLDER	1115338		12	
29	TYPE CP REVERSE PHASE RELAY - 220V - 60 CY.	1056486		1	
30	RESISTOR for IT. 29	1056486		REF.	
31	N-130 CONTACTOR WITH 220V COIL	1577430	BRAKES	4	
32	L-51 INTLK (B) for IT. 31	"		4	
33	N-130 REVER. LINESTARTER WITH 220 V. COIL	1578110	GATES	2	
34	L-51 INTLK (B) for IT. 33	"		4	
35	HEATER for IT. 33	"		4	
36	N-130 REVER. LINESTARTER WITH 220 V COIL	1578110	LOCK	1	
37	L-51 INTLK (B) for IT. 36	"		2	
38	HEATER for IT. 36	"		4	
39	N-030 CONTACTOR WITH 220 V. COIL	"	LV. SEATING	4	
40	L-51 INTLK (M) for IT. 39			4	
41	N-040 CONTACTOR WITH 220V COIL	1578094	TRAFFIC	1	
42	L-51 INTLK (B) for IT. 41	"		1	
43	TYPE AM TIMING RELAY (T.D. WHEN ENERGIZED)	1502493		1	
✲ 44	TYPE 709 PHOTO-ELECTIC CONTROLLER		NAVIG. LIGHTS	1	
⊕ 45	TYPE HT-11 SIGNAL LIGHT FLASHER RELAY - 220V.			1	
46	TYPE CT-5 TRANSF. 300/5 A.	1608366		2	
47	TYPE CD DISTRIBUTION TRANSF. 1PH-3W-7.5KVA 220/110-220V. IT. 1 of T.S.			1	
48	MAIN TERMINALS ¼"	1589077		3	
49	MOTOR TERMINALS 3/8"	1589076		6	
50	CONTROL TERMINALS (12A) EST. 75				
51	MTG. for IT. 50				
52	MAIN CONN. - 500" of #4-0.204 DIA Cu. WIRE	#7419-1		1	
53	CONTROL CONN. - 2500" of #10-0.102 DIA Cu. WIRE	#7619-1		1	
✱ 54	NAMEPLATE - #473655 A			1	
55	NAMEPLATE - #3568 (1X3) LINES N1 - N51 of NP TABLE.				
56	RESISTOR for IT. 8 - 400Ω 10"	180569		1	
57	MTG. for IT. 56				
58	SPACE HEATER (650 W.) 160Ω - 11"	1739076		2	
59	MTG. for IT. 58			2	

CONSTRUCTION NOTES:
1. PAINT-TYPE COVERS & DOORS ON FRONT, FLAT PLATE-TYPE COVERS ON REAR.
2. FINISH - INSIDE & OUTSIDE - ONE COAT ZnC CHROMATE PRIMER (YELLOW) PLUS TWO COATS LIGHT GREY (MACH. TOOL) LACQUER.

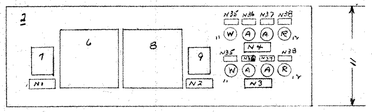
DWG ROOM
REFERENCE DWGS: GEN. ASSY 30-A-9756
DIAG 30-A-9760

CUBICLE - DWG. 33-A-6795
DIAG 33-A-6797

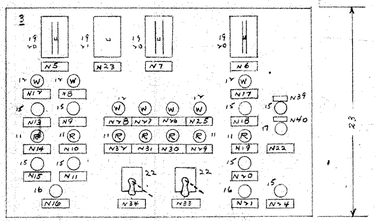
TELEPHONE COMPANY PRINT

GRAND ISLAND - NO. HERO BRIDGE G.O. RU-3707
STATE of VERMONT

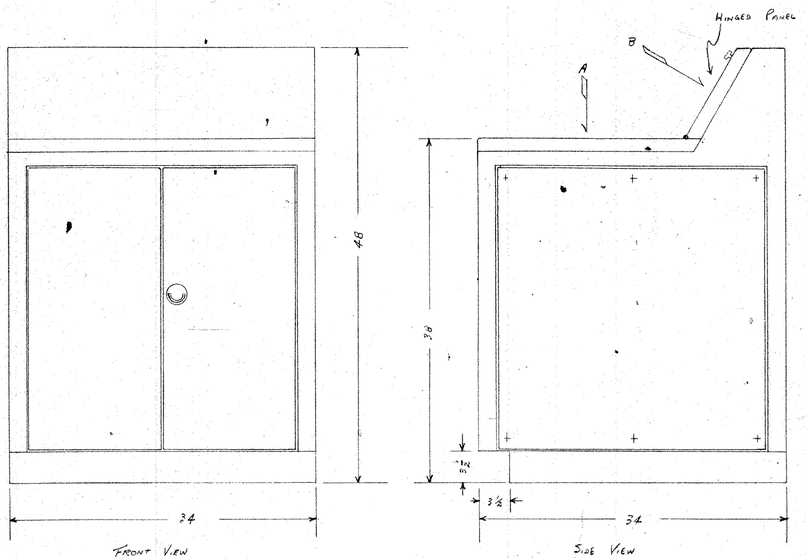
CONTROL CUBICLE - GEN'L ASS'Y S.O. 10-5-956



View in Direction of Arrow "B"



View in Direction of Arrow "A"



Nameplate Table

Line No	First Line	Second Line	Third Line	Dwg 11-D-1637 Fig. No.	Quant.
N1	Voltmeter Switch			1	1
N2	Ammeter Switch			1	1
N3	South Leaf	Position		2	1
N4	North Leaf	Position			1
N5	Gate Control	Bypass			1
N6	Lock Control	Bypass			1
N7	Leaf Control	Bypass			1
N8	South Traffic Gate	Raised			1
N9	South Traffic Gate	Raise			1
N10	South Traffic Gate	Lowered			1
N11	South Traffic Gate	Lower			1
N12	North Traffic Gate	Raised			1
N13	North Traffic Gate	Raise			1
N14	North Traffic Gate	Lowered			1
N15	North Traffic Gate	Lower			1
N16	Traffic Gates	Stop			1
N17	Bridge Lock	Engaged			1
N18	Bridge Lock	Engage			1
N19	Bridge Lock	Disengaged			1
N20	Bridge Lock	Disengage			1
N21	Bridge Lock	Stop		2	1
N22	Traffic Signals			1	1
N23	Indicating Lights			1	1
N24	Navigation Siren			1	1
N25	South Machinery	Brake Set		2	1
N26	South Motor	Brake Set			1
N27	North Motor	Brake Set			1
N28	North Machinery	Brake Set			1
N29	South Machinery	Brake Released			1
N30	South Motor	Brake Released			1
N31	North Motor	Brake Released			1
N32	North Machinery	Brake Released			1
N33	South Machinery	Brake Control			1
N34	North Machinery	Brake Control		2	1
N35	Fully Closed			4	2
N36	Nearly Closed			4	2
N37	Nearly Open			4	2
N38	Fully Open			4	2
N39	GO			4	1
N40	STOP			4	1

Item	Apparatus	Style No.		Quant	
1	Desk Line ___ Dwg ___			1	
2	Panel - 1/8 S.St - 16x34			Ref.	PS-
3	Panel - 1/8 S. St - 23x34			Ref	PS-
4					
5					
6	KA-25 Voltmeter 0-300 V. Item 1 of M.S.			1	
7	Type W Voltmeter Switch 3b	1173014		1	
8	KA-25 Ammeter - 0-300 A - Item 2 of M.S.			1	
9	Type W Ammeter Switch - 3p	1040745		1	
10	Type OT Indicating Light Assy - 110 V.	1513107		22	
11	Red Lens for It. 10	1513158		9	
12	White Lens for It. 10	1577476		9	
13	Amber Lens for It. 10	1513156		4	
14					
15	Type OT PB Operator - Std. Black	1470133		8	
16	Type OT PB Operator - Std. Red	1470134		2	
17	Type OT PB Operator - Red Maintained-contact	1470877		1	
18	Type OT Contact Block for It. 15, 16, 17.	1420011		10	
19	Tumbler Switch - 2P-ST- 20A-250V It. 7-Dwg. 50-C-25			4	
20	Seralable Cover for It 19 - Line 1 Dwg. 50-C-75			3	
21	Coverplate for It. 19 - It. 6 Dwg. 50-C-75			1	
22	Type W Switch	1530055	Brakes	2	
23	Nameplate for It. 22			2	
24	NP - #28569 (1x3) Engrave per Lines N1 to N34 of NP Table			1	
25	NP - #28518 (5/8 x 3/4) - Engrave per Lines N35 to N40 of NP Table			1	
26	Nameplate #43655			1	
27	Dress Nameplate - 6"			1	
28	Self-tapping Screws			As Req.	
29	Terminal Block (Est. 50)				
30	Mtg. for It. 29				
31	Space Heater 32 w 375 watt	1239009		1	
32	Mtg. for It. 31				
33	Control Conn - 400 " of #12-.081 Dia. CWLR "74/19"			1	
34	Flexible Conn. - 200 " of #1-.010 Cable - "74/19"			1	

Construction Notes:

1. Hinged Doors with Flush Ring-type Latches on Front.
2. Removable Covers on Both Ends.
3. To Be Constructed of 1/8" Stretcher Level Sheet Steel.
3. Finish - Inside & Outside - One Coat Zinc Chromate (Yellow) Plus , Two Coats Light Grey (Mach. Tool) Lacquer.
4. All Wiring and Terminals to Be Accessible from Front.
5. Nameplates to Be Black Anodized Aluminum.

Dwg From -
Reference Dwgs - Gen'l Assy 30-A-9457
Diag - 30-A-9461

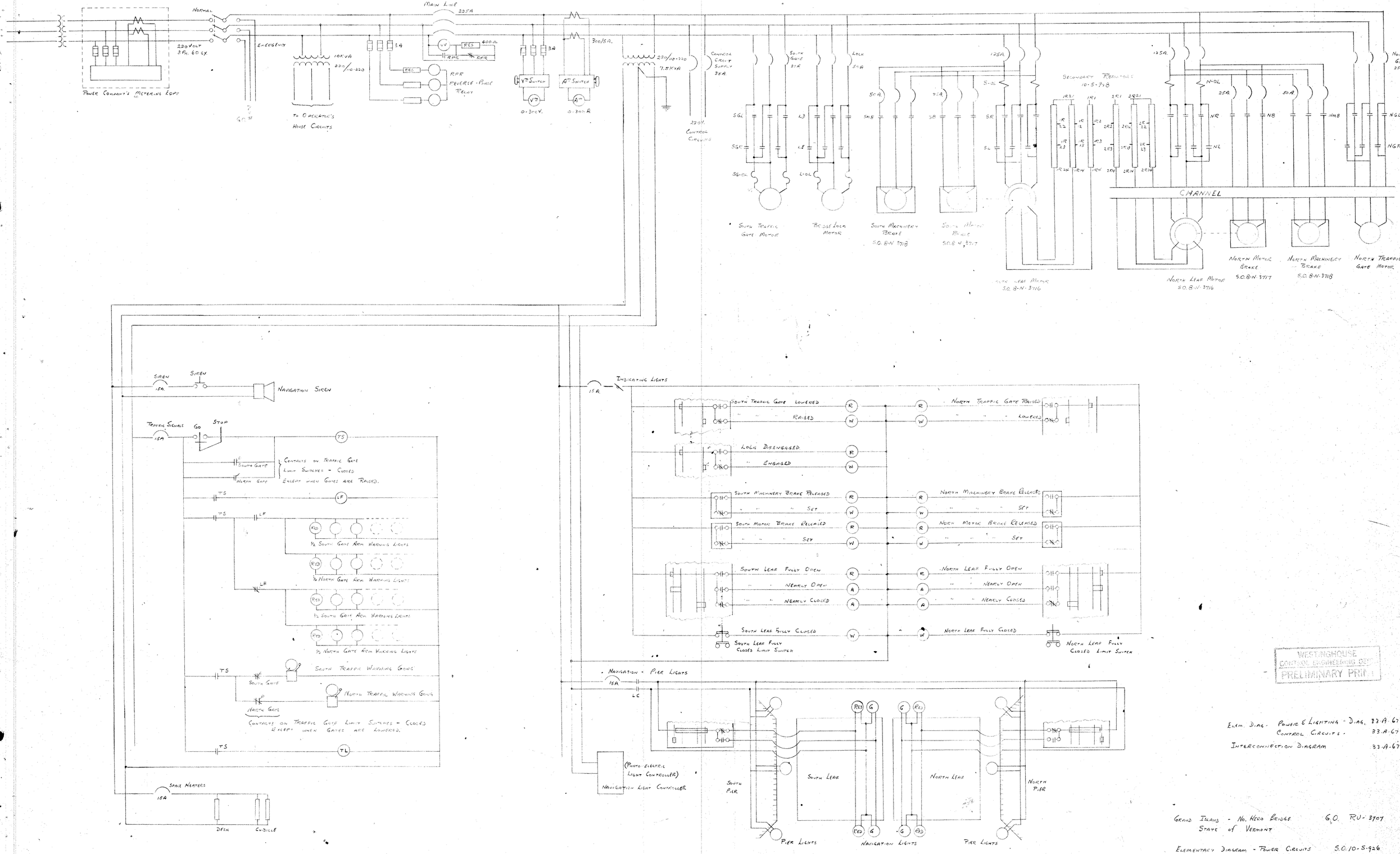
Desk Dwg. 33-A-6794
Diag. 33-A-6796

Westinghouse
St. Louis
Preliminary Print

Grand Island - North Hero Bridge G.O. RU-3707
State of Vermont

Control Desk - Gen'l Assy SO. 24-5-84

W.E. Forman 10/21/50



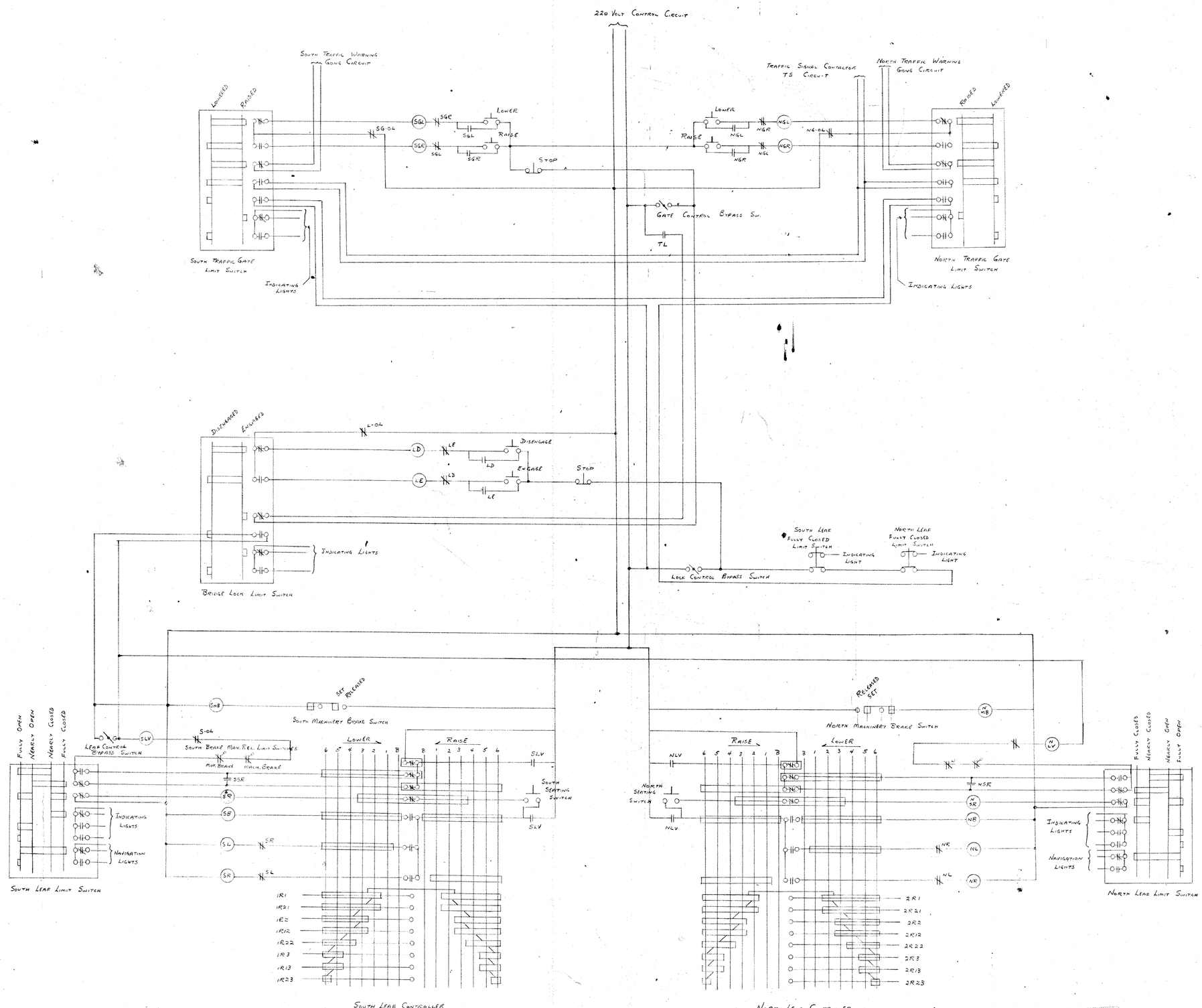
WESTINGHOUSE
CONTROL ENGINEERING DEPT.
PRELIMINARY PRINT

Elem. Diag. - Power & Lighting - Diag. 33-A-6794
Control Circuits - 33-A-6793
Interconnection Diagram 33-A-6798

Grand Island - No. Hero Bridge G.O. RU-3707
State of Vermont

Elementary Diagram - Power Circuits S.O. 10-S-926

W.E. Thomas 10/11/60



Elem. Diag. - Power & Lighting Diag 33-A-6792
Control Circuits 33-A-6793
Interconnection Diagram 33-A-6798

WESTINGHOUSE ELECTRIC CORPORATION
PRELIMINARY PRINT

Grand Island - North Hero Bridge G.O. RU-3707
State of Vermont
Elementary Diagram - Control Circuits S.O. 10-S-926

W.E. Thomas 10/11/50

CABLE ADDRESS
"EARLEGEAR"

TELEPHONES
Millmore 4-4707-08

SALES OFFICE
149 BROADWAY
NEW YORK 6, N. Y.

THE EARLE GEAR AND MACHINE COMPANY

4707 TO 4[illegible] STENTON AVENUE

PHILADELPHIA 44, PA.

GEAR CUTTING AND
GEAR MANUFACTURING OF
EVERY DESCRIPTION
GENERAL MACHINE WORK

DESIGNERS AND MANUFACTURERS
OF OPERATING MACHINERY FOR
MOVABLE BRIDGES, LOCKS, GATES,
DRYDOCKS, ETC.

SEPT. 23, 1952.

A. D. BISHOP, BRIDGE ENGINEER,
STATE OF VERMONT,
MONTPELIER, VT.

GENTLEMEN:

YOU WILL FIND ENCLOSED INSTRUCTION SHEETS FOR "FASTS" COUPLINGS FURNISHED WITH THE OPERATING MACHINERY FOR THE ABOVE SUBJECT ORDER. THE KOPPERS COMPANY HAS REQUESTED THAT THESE SHEETS BE FORWARDED TO THE PERSON RESPONSIBLE FOR THE OPERATION OF THE UNITS ON WHICH THE COUPLINGS ARE INSTALLED.

VERY TRULY YOURS,

THE EARLE GEAR AND MACHINE CO.

Charles Goodman

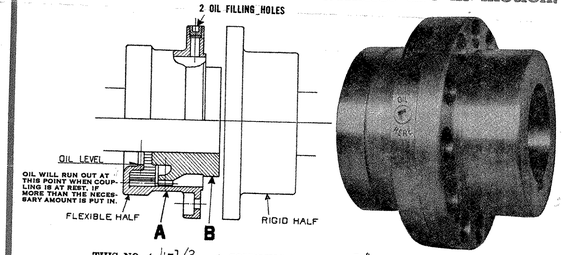
CHARLES GOODMAN

CG:EGB
ENC.
CC AMERICAN BR. CO.
NEW YORK 6, N.Y.

—IMPORTANT—

DO NOT FAIL to put oil in Coupling before putting machines in operation.

DO NOT FAIL to replace the oil plugs tight enough so that the oil cannot throw out of the coupling when machines are in motion.



THIS NO. (4-1/2) COUPLING HOLDS (3/4) PINTS OF OIL

"FAST'S" FLOATING SHAFT COUPLINGS

A flexible Rigid Coupling is not a universal joint. The same care should be taken in the alignment of equipment using flexible Rigid couplings as if solid couplings were to be used.

INSTRUCTIONS FOR INSTALLING

The sleeve (A) should be entered over shaft end before the hub (B) is forced on and keyed. The key must fit on its sides for the entire length of the hub. It must not bear on top or bottom.

The hubs of this No. (4-1/2) Floating Shaft Coupling must be separated (11/32 "). This dimension will be found stamped on the alignment faces of the flexible hubs. The faces of the Flexible and Rigid Half Couplings should be parallel. The driving and driven hubs should then be lined up by some convenient method.

The flange of the sleeve of the flexible half and the flange of the Rigid Hub should be cleaned and gaskets examined to insure an oil seal and then bolted solidly together.

Through one of the two holes provided in the flange of the coupling, put in (3/4) pints of any good fluid lubricant, no lighter than heavy engine oil (S.A.E. 70) or heavier than heavy gear oil. (1000 seconds Saybolt viscosity at 212°F.) DO NOT USE GREASE. At the point marked "Oil Level" on the above sketch, oil will run out when the coupling is at rest if more than the necessary amount is put in. Be sure to replace plugs tightly, using wrench provided with the coupling for that purpose.

Coupling should be checked periodically to insure that proper amount of oil is maintained at all times.

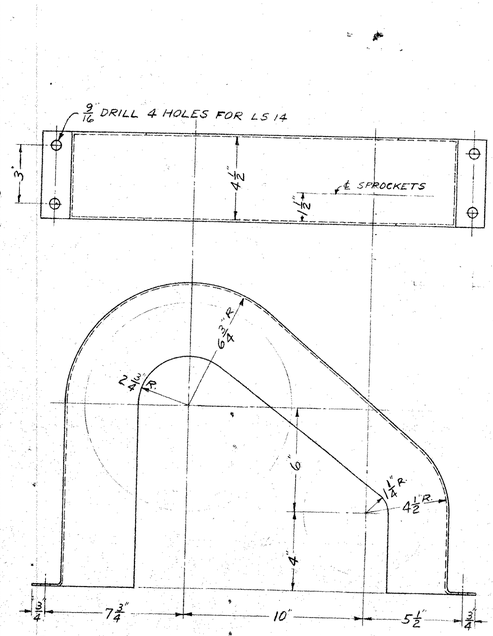
"KEEP COUPLINGS OILED"

KOPPERS

This Coupling Serial No. 435538-39 Connects ..... and .....

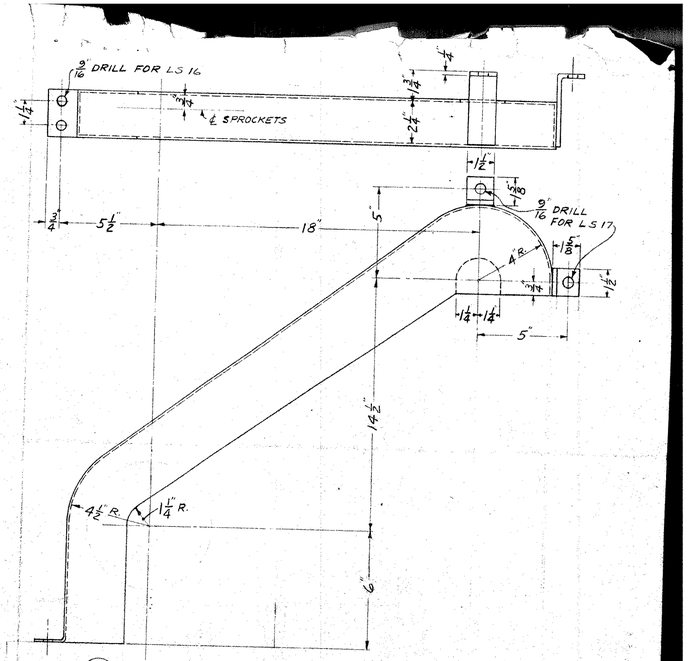
257307 KOPPERS COMPANY, INC.
FAST'S COUPLING DEPARTMENT
BALTIMORE - 3, MD.

PRINTED IN U. S. A.



(LS 13) LOCK LIMIT SWITCH SPROCKET COVER

1 REQ'D. , 12 GA. S.



(LS 15) LEAF LIMIT SWITCH SPROCKET COVER

2 REQ'D. , 12 GA. S.

GRAND ISLE-NO. HERO BRIDGE , VERMONT

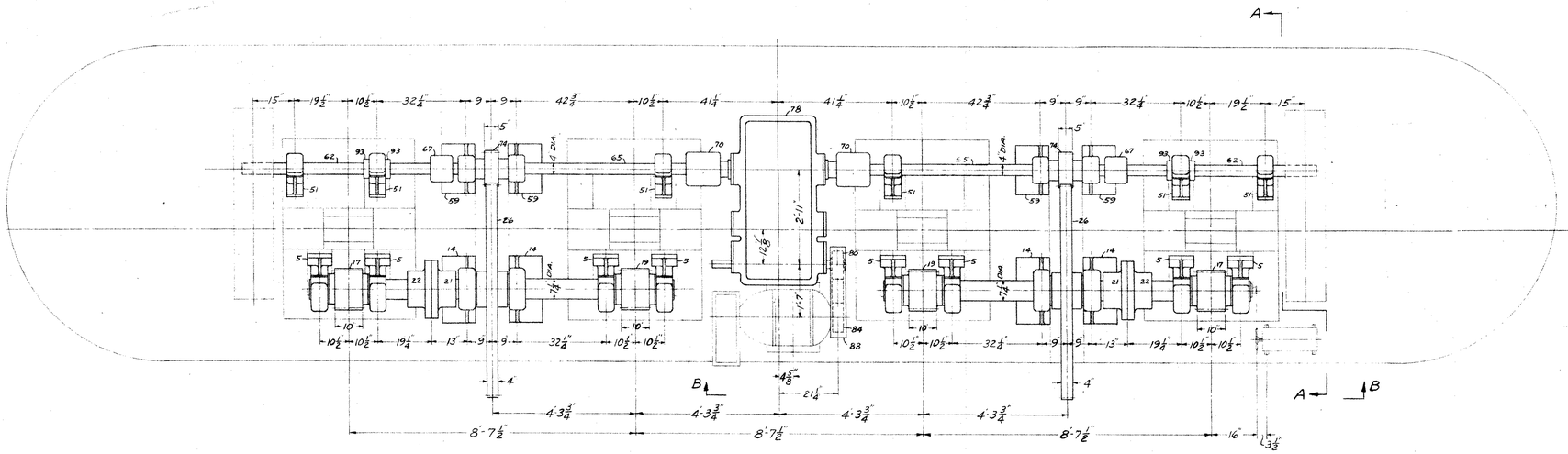
NOTE:-SEE DWG 5528 C-22 FOR BILL OF MATERIAL

THE EARLE GEAR & MACHINE CO.
4707-15 STENTON AVE.
PHILADELPHIA, PA.

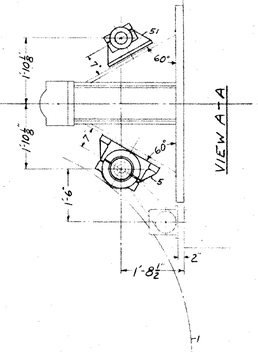
DATE OF PRINT 4/11/51

DRAWN BY R.W.D.

DWG. No. 5529 C-22

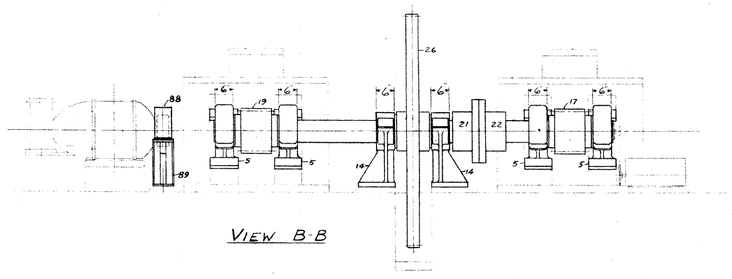


PLAN



VIEW A-A

NOTE: MACHINERY ON PIER #2 SHOWN
MACHINERY ON PIER #3 SAME HAND



VIEW B-B

APPROVED VERMONT DEPT. OF HIGHWAYS 11/5/51

S. O. D-610 CONTRACT

GRAND ISLE - NORTH HERO BASCULE BRIDGE VERMONT

AS APPLIES TO AMERICAN BRIDGE CO.
CONTRACT J-9754-B

SPECIFICATIONS

INSPECTION

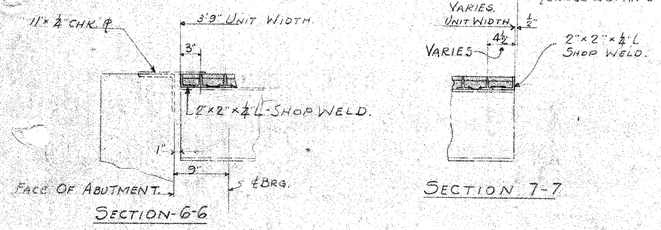
GENERAL NOTES

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—
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

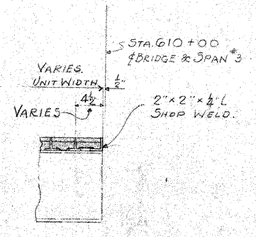
DATE		REVISIONS

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

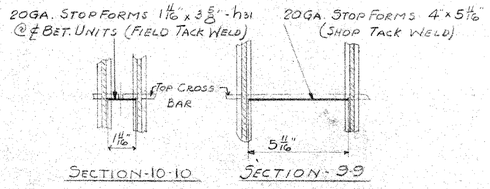
DRAWN BY R.W.D APPROVED BY
CHECKED BY REV. APPVD.
DATE 4-6-51 REV. APPVD.
SHEET 1 OF 9 DWG. Nº 5620 E-30



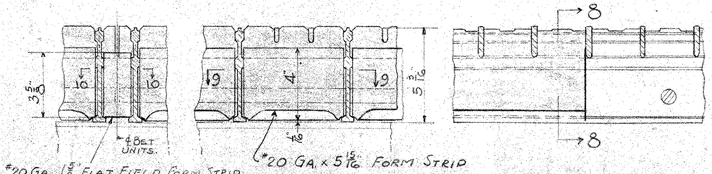
SECTION-6-6



SECTION 7-7



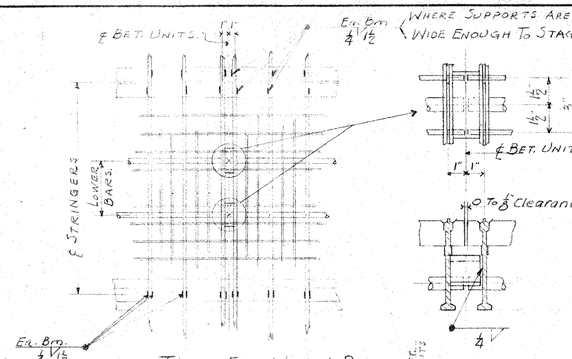
SECTION-10-10 SECTION-9-9



SECTION-8-8

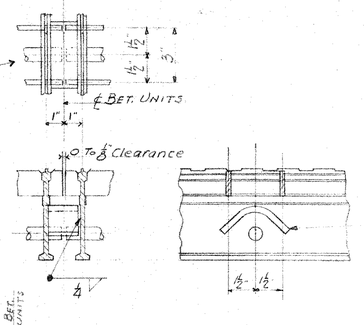
PL. TYPE SHOWN
TR. TYPE SIMILAR

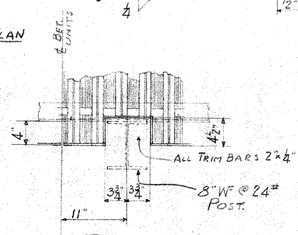
FORMS FOR CONCRETE FILLED PORTION.



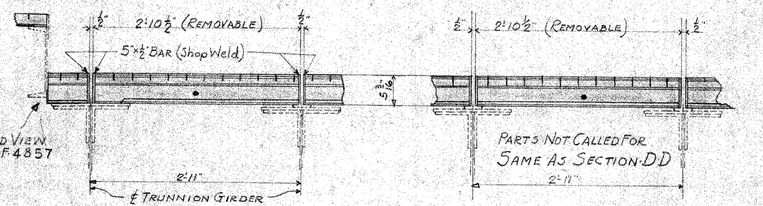
TYPICAL FIELD WELDING PLAN
TR. TYPE SHOWN
PL. TYPE SIMILAR

SEE STD. ERECTION FOLDER FOR FIELD WELDING FOR 2" TEE-TYPE (H) SIDEWALK.



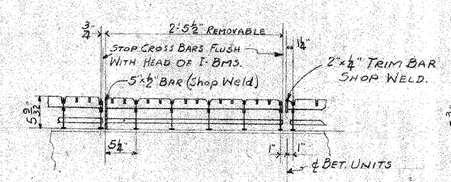


TYPICAL CUT-OUT AT H.R POST.

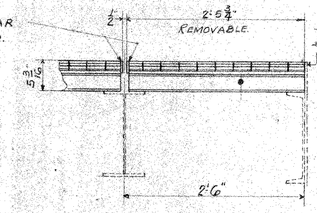


SECTION-DD

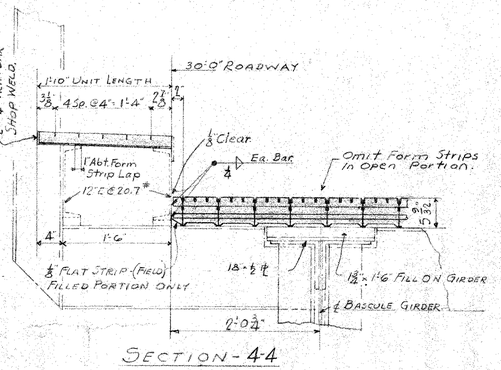
SECTION-EE



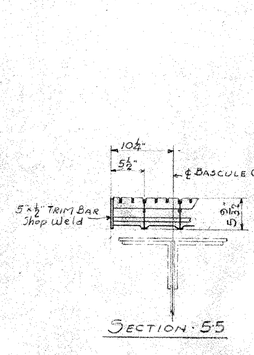
SECTION-2-2



SECTION-3-3

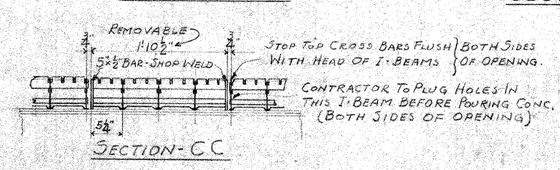


SECTION-4-4

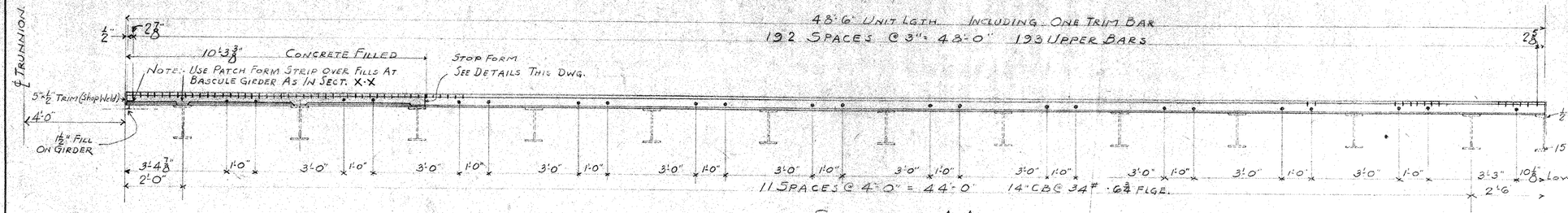


SECTION-5-5

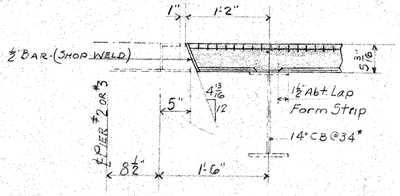
NOTE:- PROVISIONS FOR HOLDING DOWN REMOVABLE SECTIONS NOT INCLUDED IN I-BEAM-LOK CONTRACT.
PROVISIONS FOR HOLE IN FLOORING, FOR CAPSTANS, NOT INCLUDED IN I-BEAM-LOK CONTRACT.



SECTION-CC



SECTION-A-A
F-4857 & F-4858



SECTION-BB

FOR GEN. NOTES & PLANS SEE F-4857 & F-4858

5" I BEAM LOK OPEN (TR & PL TYPE) SECTIONS
2" TEE-TYPE SIDEWALK (H) SECTIONS.
DOUBLE LEAF BASCULE SPAN.
GRAND ISLE - NORTH HERO BRIDGE.
COUNTY OF GRAND ISLE, VERMONT.
AMERICAN BRIDGE DIV. ORDER J-9757. CONTR.

REVISED			

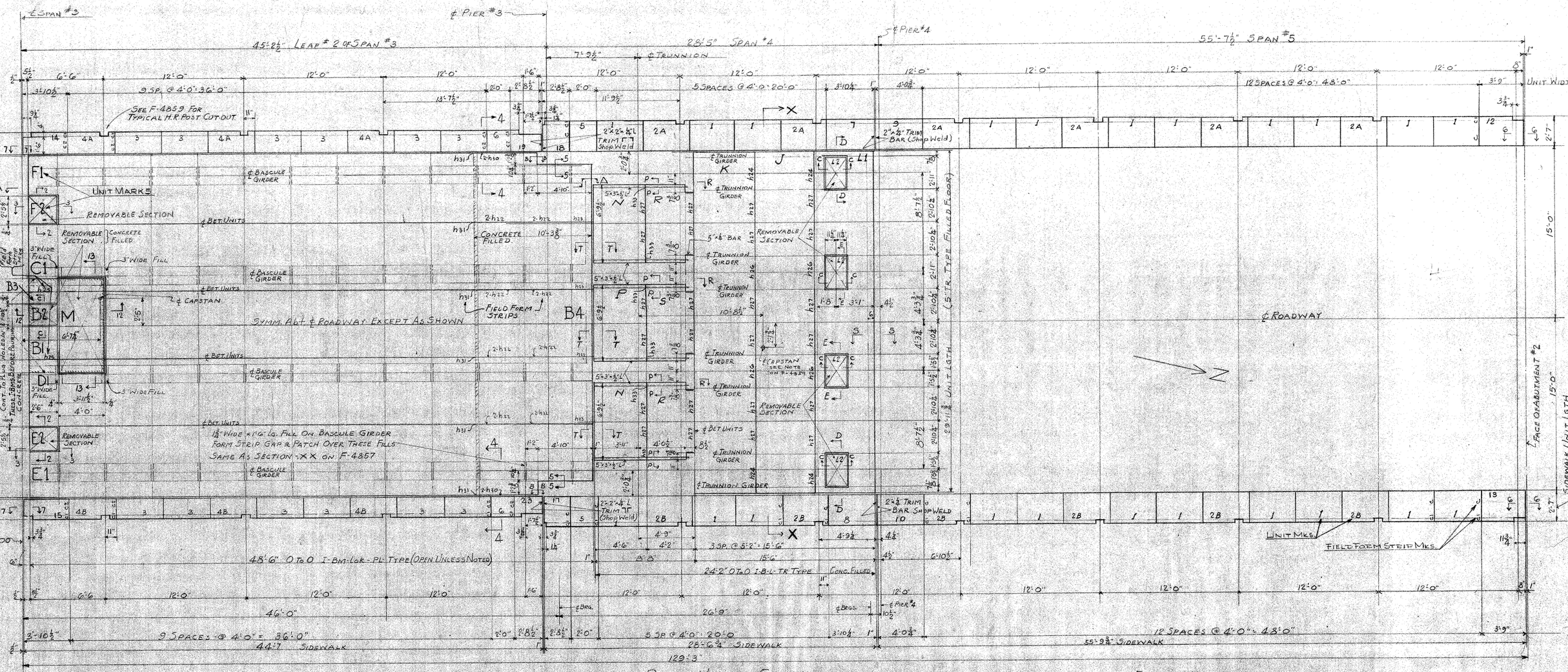
G 13650-REV-1-81

UNITED STATES STEEL COMPANY
SPECIALTY PRODUCTS DIVISION
PITTSBURGH, PENNA.

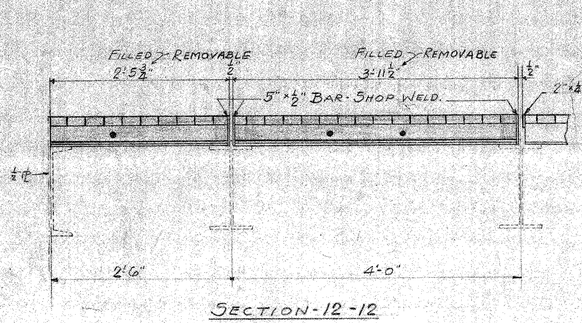
DRAWN BY T.H.H	CHECKED BY E.W.B	DATE 1-16-52
SHEET 3 OF 17	DWG. NO. F-4858	

MILL NO. GP-2192-A-B

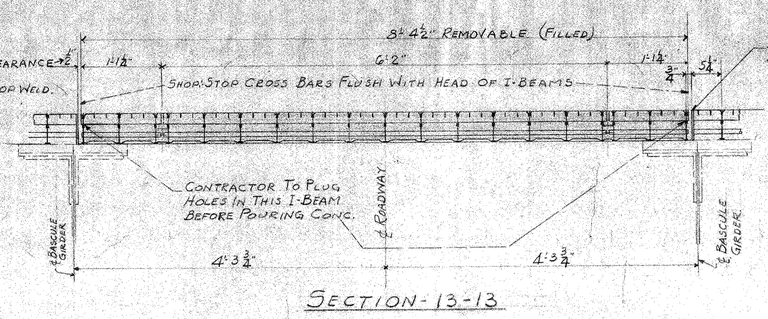
KEUFFEL & ESSER CO. TRACING PAPER R. K. ELLIOTT CO. PITTSBURGH PA



PLAN - NORTH SPAN



SECTION - 12 - 12



SECTION - 13 - 13

ERECTION NOTE:

PLACE UNITS, WITH MARKED END OF UNITS, LOCATED AS SHOWN ON PLAN.

DURING ERECTION OF UNITS, CARE MUST BE EXERCISED TO PLACE EACH UNIT IN ITS PROPER LOCATION, MEASURING IN ALL CASES FROM SOME FIXED POINT, AS OTHERWISE A CUMULATIVE ERROR IN SPACING WILL APPEAR, CAUSING THE SPACE FOR THE FINAL UNITS TO BE MORE OR LESS THAN THE ACTUAL WIDTH OF UNITS.

FOR GEN. NOTES & ADDITIONAL PLANS: F-4857
FOR SECTIONS SEE F-4857 & F-4859

5" I-BEAM-LOK OPEN (TR & PL TYPE) FLOORING PLAN
2" TEE-TYPE SIDEWALK (H) PLAN
DOUBLE LEAF BASCULE SPAN (NORTH)
GRAND ISLE - NORTH HERO BRIDGE.
COUNTY OF GRAND ISLE, VT.
AMERICAN BRIDGE DIV. ORDER J-9757 CONT.

REVISED △ MARKS ADDED 4-25-52

G 13609-REV.-1-51

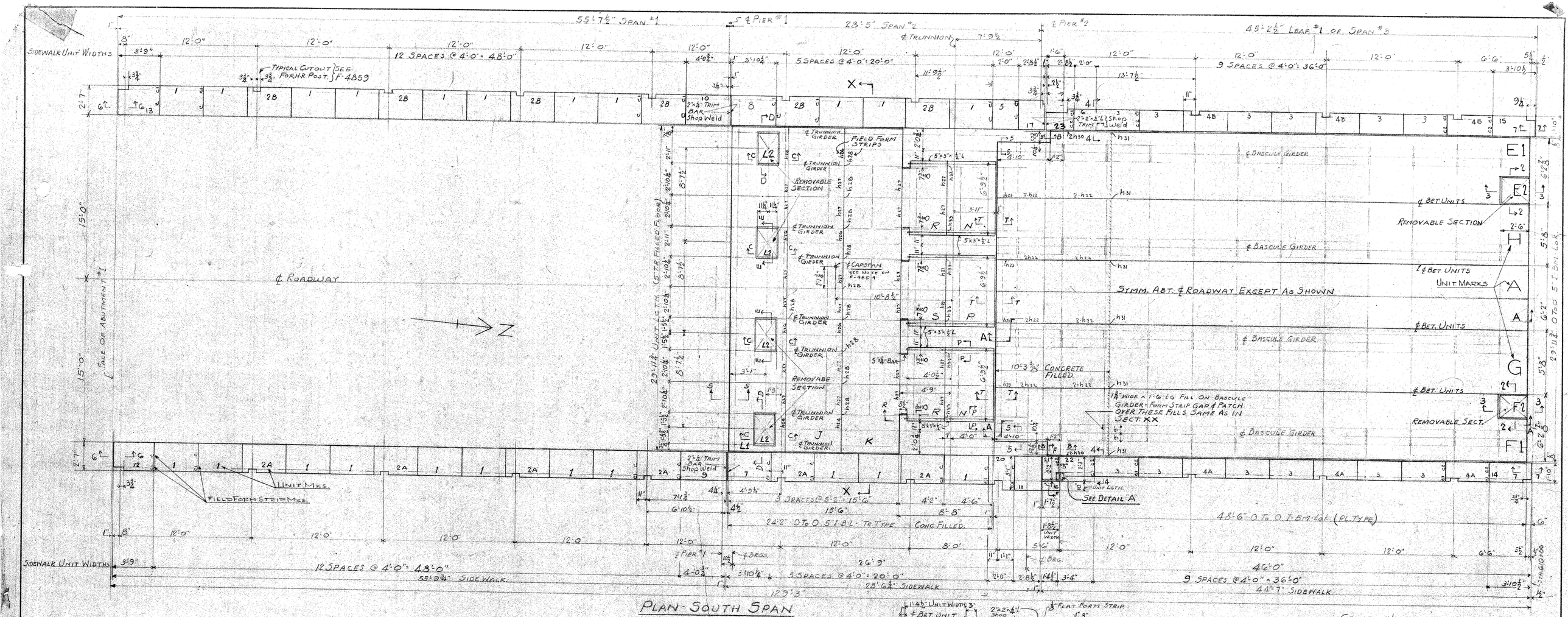
UNITED STATES STEEL COMPANY
SPECIALTY PRODUCTS DIVISION
PITTSBURGH, PENNA.

DRAWN BY T-H-H,	CHECKED BY F.W.B.	DATE 1-16-52
SHEET 2 OF 17	DWG. NO. F-4858	

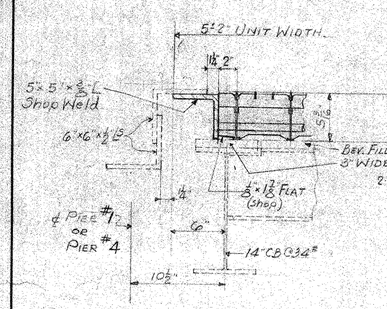
MILL NO. GP-2192-A&B

NO 7018 KELLOGG TRACING PAPER H. S. ELLIOTT CO. PITTSBURGH PA.

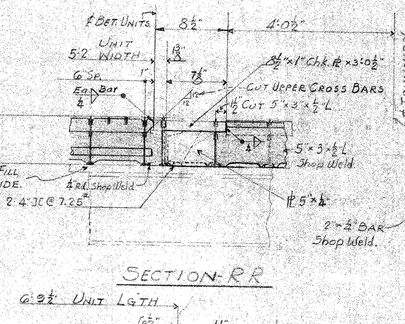
PLAN - SOUTH SPAN



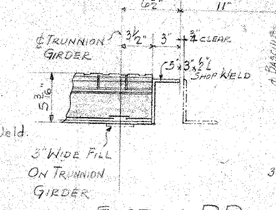
SECTION - SS



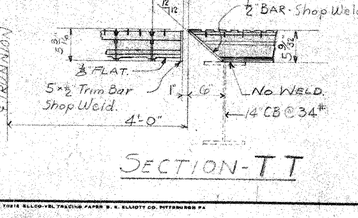
SECTION - RR



SECTION - PP



SECTION - TT

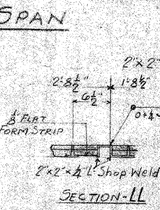


ERECTION NOTE:

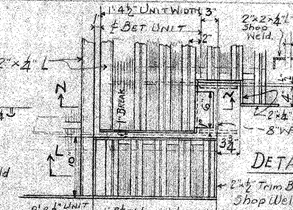
PLACE UNITS, WITH MARKED END OF UNITS, LOCATED AS SHOWN ON PLAN.

DURING ERECTION OF UNITS, CARE MUST BE EXERCISED TO PLACE EACH UNIT IN ITS PROPER LOCATION, MEASURING IN ALL CASES FROM SOME FIXED POINT, AS OTHERWISE A CUMULATIVE ERROR IN SPACING WILL APPEAR, CAUSING THE SPACE FOR THE FINAL UNITS TO BE MORE OR LESS THAN THE ACTUAL WIDTH OF UNITS.

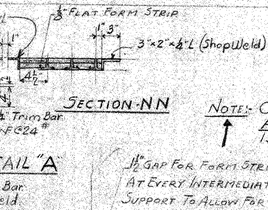
SECTION - LL



SECTION - NN

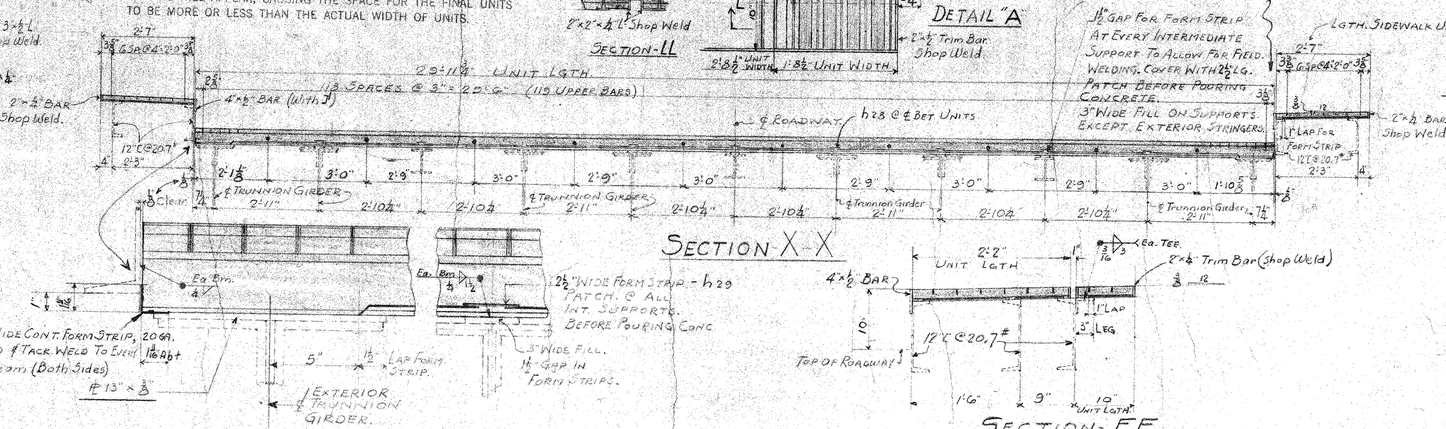


DETAIL 'A'

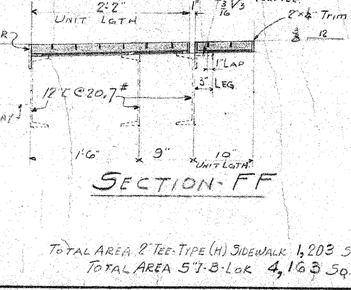


NOTE:- CURB TO BE ERECTED AFTER TR. TYPE FLOORING IS IN PLACE.

SECTION - XX



SECTION - FF



GENERAL NOTES:

INSPECTION:- MILL.

I-BEAM-LOK UNITS TO BE FURNISHED FLAT; ANY CAMBERING REQ'D. TO CONFORM TO SUPPORTING STRUCTURAL STEEL IS TO BE DONE IN FIELD.

MATERIAL SHOWN IN DOT & DASH LINES NOT INCLUDED IN I-BEAM-LOK CONTRACT.

SHOP PAINT:- OPEN PORTION OF FLOORING TO HAVE ONE DIP COAT OF DUPONT DULUX RED LEAD PRIMER.

FILLED PORTION TO HAVE ONE COAT OF DUPONT DULUX RED LEAD PRIMER ON UNDERSIDE OF UNITS & ON OUTSIDE FACE OF TRIM MAT'L.

FOR NOTES ABOUT FORM STRIPS, SEE SHOP DETAILS.

FOR FIELD WELDING 2" (H) TEE-TYPE SIDEWALK, SEE STD. ERECTION FOLDER.

FOR SHOP DETAILS OF 5" I-BEM-LOK SEE SHEETS # F-5376 THRU # F-5384.

FOR TEE-TYPE SIDEWALK, # F-5385 THRU # F-5389.

BEAM PUNCH SHT. # 15-351 & 15-352. FOR SHOP BAR PUNCH SHT. # 15-353 & 15-354 USE ONLY.

FOR ADDITIONAL PLANS & SECT. SEE F-4858 & 9

5" I-BEAM-LOK OPEN (TR & PL TYPE) FLOORING PLAN
2" TEE-TYPE SIDEWALK (H) PLAN.
DOUBLE LEAF BASCULE SPAN. (SOUTH)
GRAND ISLE - NORTH HERO BRIDGE.
COUNTY OF GRAND ISLE, VERMONT.
AMERICAN BRIDGE DIV., ORDER J-9757 - CONT.

REVISED △ MARKS ADDED 4-23-52

TOTAL AREA 2" TEE-TYPE (H) SIDEWALK 1,203 SQ. FT. MILL NO. GP-2192-B
TOTAL AREA 5" I-B-LOK 4,163 SQ. FT. MILL NO. GP-2192A

UNITED STATES STEEL COMPANY
SPECIALTY PRODUCTS DIVISION
PITTSBURGH, PENNA.

DRAWN BY T.H.H	CHECKED BY F.W.B.	DATE 1-16-52
SHEET 1 OF 17	DWG. NO. F-4857	

KEUFFEL & ESSER CO. 11X16 ELLED-VEL TRACING PAPER U. S. ELLIOTT CO. PITTSBURGH PA