

31377

GERRY PAGE
STRUCTURE DESIGN
OFFICE COPY

NORTHEAST CAPE FEAR RIVER BRIDGE

OPERATING MACHINERY

(フェアリバー橋、開閉機)

SHOP DRAWING

BRIDGE DEPARTMENT
DO NOT REMOVE FROM THIS OFFICE

当所納入期日

- 1. アンカ関係 : 昭和52年11月30日 (図番 H-100,120,122,123,131,132,150)
- 2. 橋体付関係 : 昭和53年1月20日 (図番 H-110,111,112,113,114,115,126,128,129,130,133,135,136,140,151)
- 3. 開閉機本体 : 昭和53年2月28日 (図番 H-105,115,116,117,118,119,121,124,125,127,134,137,138,140,152, H-160~172)



141

鉄構部 水内鉄管設計課

Original

DRAWING SCHEDULE

SHEET 1 OF
REV. DATE

NORTHEAST CAPE FEAR RIVER BRIDGE

EQUIPMENT DRAWING
MANUFACTURE M.H.I.

MANUFACTURE'S DWG. NO.	TITLE	PAGE
H - 100	LAYOUT OF ANCHOR	4
H - 101	-	
H - 102	-	
H - 103	-	
H - 104	-	
H - 105	GENERAL ARRANGEMENT	5
H - 106	-	
H - 107	-	
H - 108	-	
H - 109	-	
H - 110	RACK SUPPORT	6
H - 111	ASSEMBLY TRUNNION & BEARING	7
H - 112	TRUNNION SHAFT	8
H - 113	ACCESSORIES OF TRUNNION SHAFT	9
H - 114	TRUNNION BEARING DETAIL	10
H - 115	RACK AND GEARS	11

DRAWING SCHEDULE

SHEET 2 OF
REV. DATE

NORTHEAST CAPE FEAR RIVER BRIDGE

EQUIPMENT DRAWING
MANUFACTURE M.H.I.

MANUFACTURE'S DWG. NO.	TITLE	PAGE
H - 116	PINION AND SHAFT	12
H - 117	SHAFT AND OTHERS	13
H - 118	PINION MOUNTS AND SHIMS	14
H - 119	PINION BEARING	15
H - 120	PINION ANCHORAGE	16
H - 121	BASE OF MOTOR AND BRAKE	-
H - 122	REDUCER ANCHORAGE	18
H - 123	LIST OF BOLTS (FOR ANCHOR)	19
H - 124	MACHINERY COVER	20
H - 125	DRIP PAN	21
H - 126	TRUNNION BRONZE BUSHING	22,23
H - 127	GEAR COUPLING	24~26
H - 128	CENTER LOCK DEVICE	27
H - 129	CENTERING DEVICE	28
H - 130	LIVE LOAD BEARING	29

DRAWING SCHEDULE

SHEET 3 OF _____
REV. _____ DATE _____

NORTHEAST CAPE FEAR RIVER BRIDGE

EQUIPMENT DRAWING
MANUFACTURE M.H.I.

MANUFACTURE'S DWG. NO.	TITLE	PAGE
H - 131	LIVE LOAD BEARING OPERATOR SUPPORT	30
H - 132	LIVE LOAD BEARING SUPPORT BRACKET	31
H - 133	POWER CYLINDER FOR CENTER LOCK AND LIVE LOAD BEARING	32
H - 134	PINION BEARING BUSHING	34-38
H - 135	AIR BUFFER	39
H - 136	DETAIL OF LIVE LOAD BEARING	40
H - 137	PILLOW BLOCK	41-42
H - 138	BRAKE WHEEL COUPLING	43-44
H - 139	-	
H - 140	BOLTS AND NUTS (FOR OPERATING DEVICE)	45
H - 141	BOLTS AND NUTS (WITH BASCULE LEAF)	46
H - 142	MISCELLANEOUS MACHINERY	—
H - 143	-	
H - 144	-	
H - 145	-	

DRAWING SCHEDULE

SHEET 4 OF _____
REV. _____ DATE _____

NORTHEAST CAPE FEAR RIVER BRIDGE

EQUIPMENT DRAWING
MANUFACTURE M.H.I.

MANUFACTURE'S DWG. NO.	TITLE	PAGE
H - 146	-	
H - 147	-	
H - 148	-	
H - 149	-	
H - 150	LIST OF PARTS (ANCHOR)	47
H - 151	LIST OF PARTS (WITH BASCULE LEAF)	48
H - 152	LIST OF PARTS (OPERATING DEVICE)	49
H - 153	-	
H - 154	-	
H - 155	-	
H - 156	-	
H - 157	-	
H - 158	-	
H - 159	-	

DRAWING SCHEDULE

SHEET 5 OF _____
REV. _____ DATE _____

NORTHEAST CAPE FEAR RIVER BRIDGE

EQUIPMENT DRAWING
MANUFACTURE M.H.I.

MANUFACTURE'S DWG. NO.	TITLE	PAGE
H - 160	OUTLINE OF GEAR REDUCER	50
H - 161	ASSEMBLY OF GEAR REDUCER	51
H - 162	GEAR REDUCER PARTS DETAIL 1/10	52
H - 163	GEAR REDUCER PARTS DETAIL 2/10	53
H - 164	GEAR REDUCER PARTS DETAIL 3/10	54
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H - 166	GEAR REDUCER PARTS DETAIL 5/10	56
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H - 168	GEAR REDUCER PARTS DETAIL 7/10	58
H - 169	GEAR REDUCER PARTS DETAIL 8/10	59
H - 170	GEAR REDUCER PARTS DETAIL 9/10	60
H - 171	GEAR REDUCER PARTS DETAIL 10/10	61

DRAWING SCHEDULE

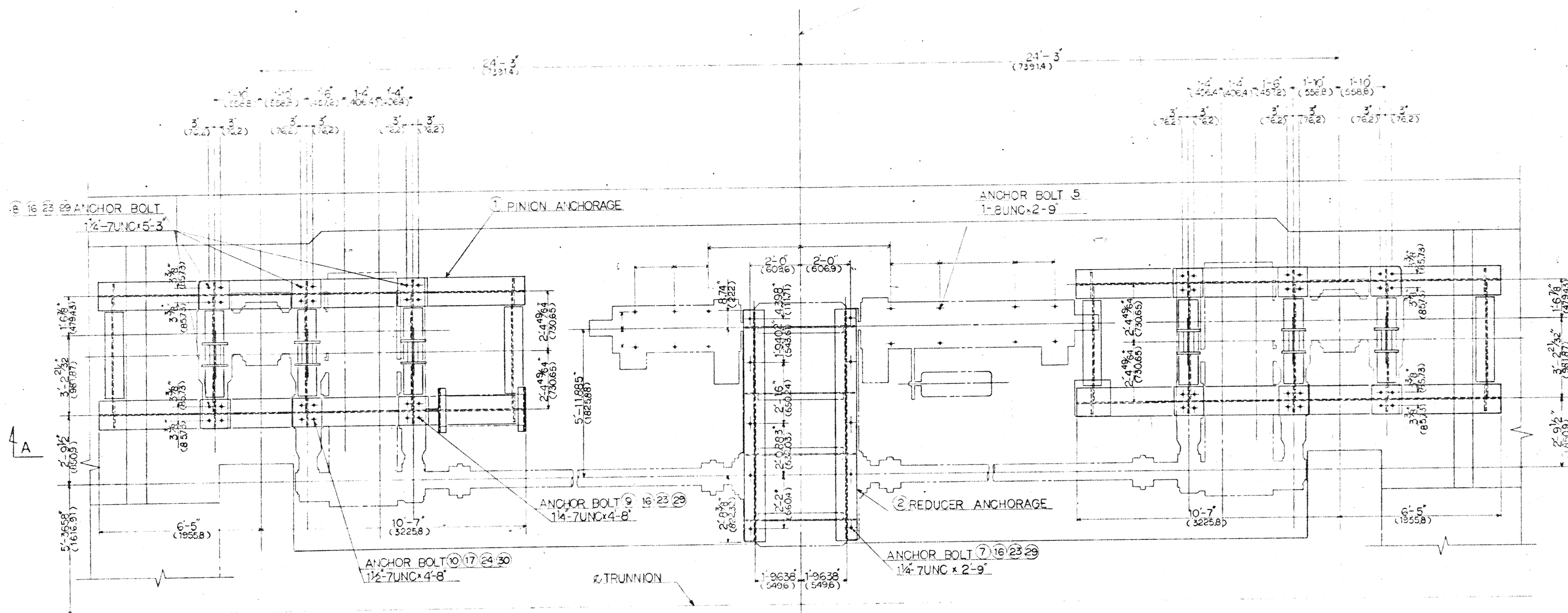
SHEET 6 OF _____
REV. _____ DATE _____

NORTHEAST CAPE FEAR RIVER BRIDGE

EQUIPMENT DRAWING
MANUFACTURE M.H.I.

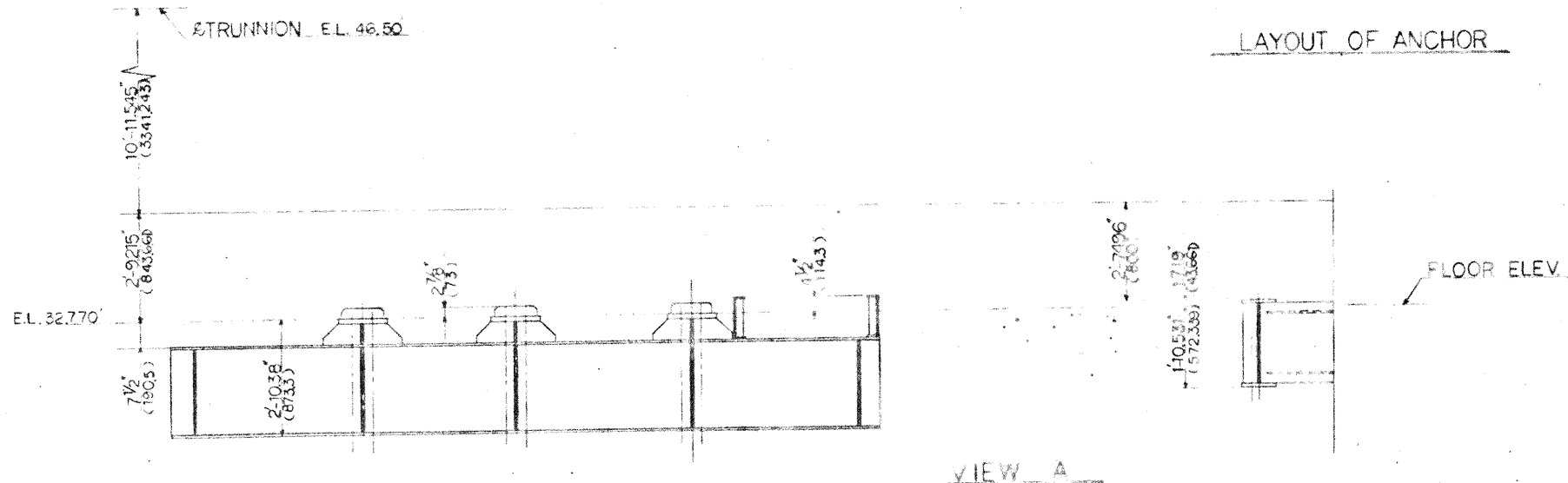
MANUFACTURE'S DWG. NO.	TITLE	PAGE
H - 180	DRAWING LIST	—
H - 181	INSPECTION PROCEDURE	—
H - 182	COMPARISION TABLE	—

SYMMETRICAL ABOUT κ BRIDGE



LAYOUT OF ANCHOR

NOTES
1 REF DWG NO H-120, H-122, H-123.



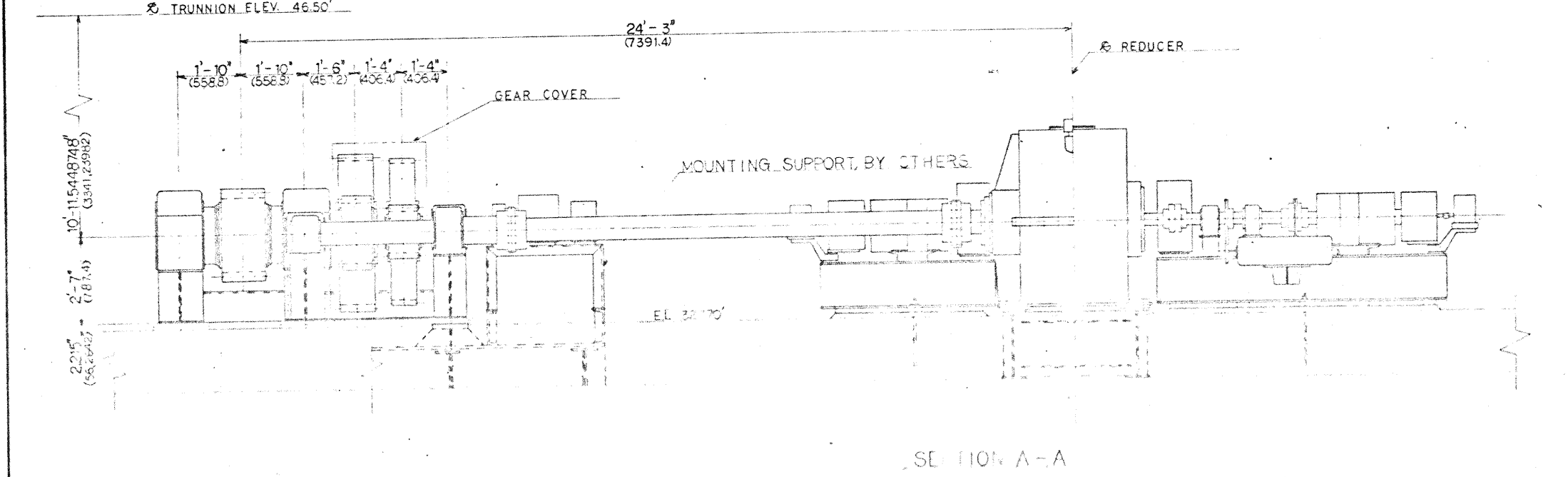
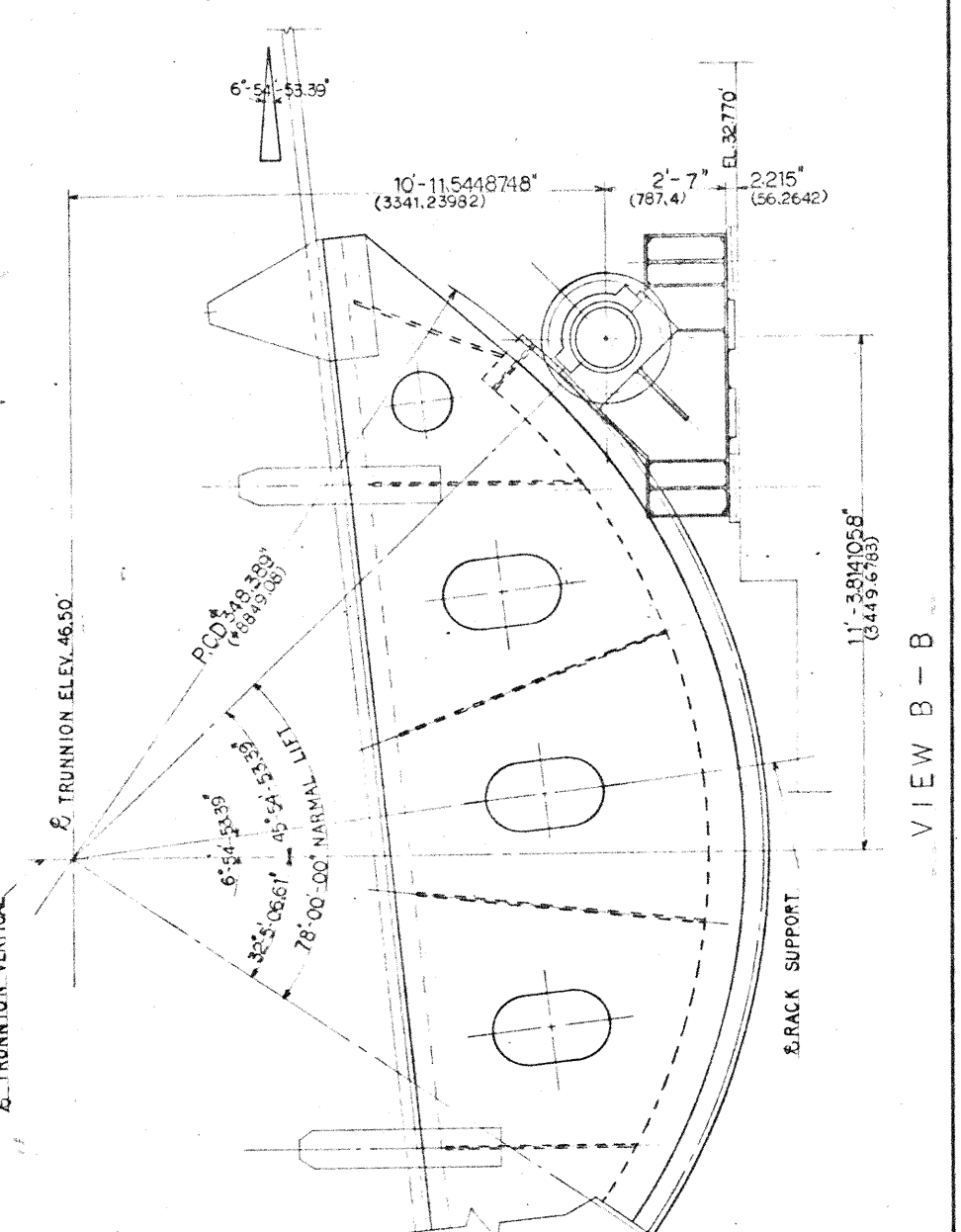
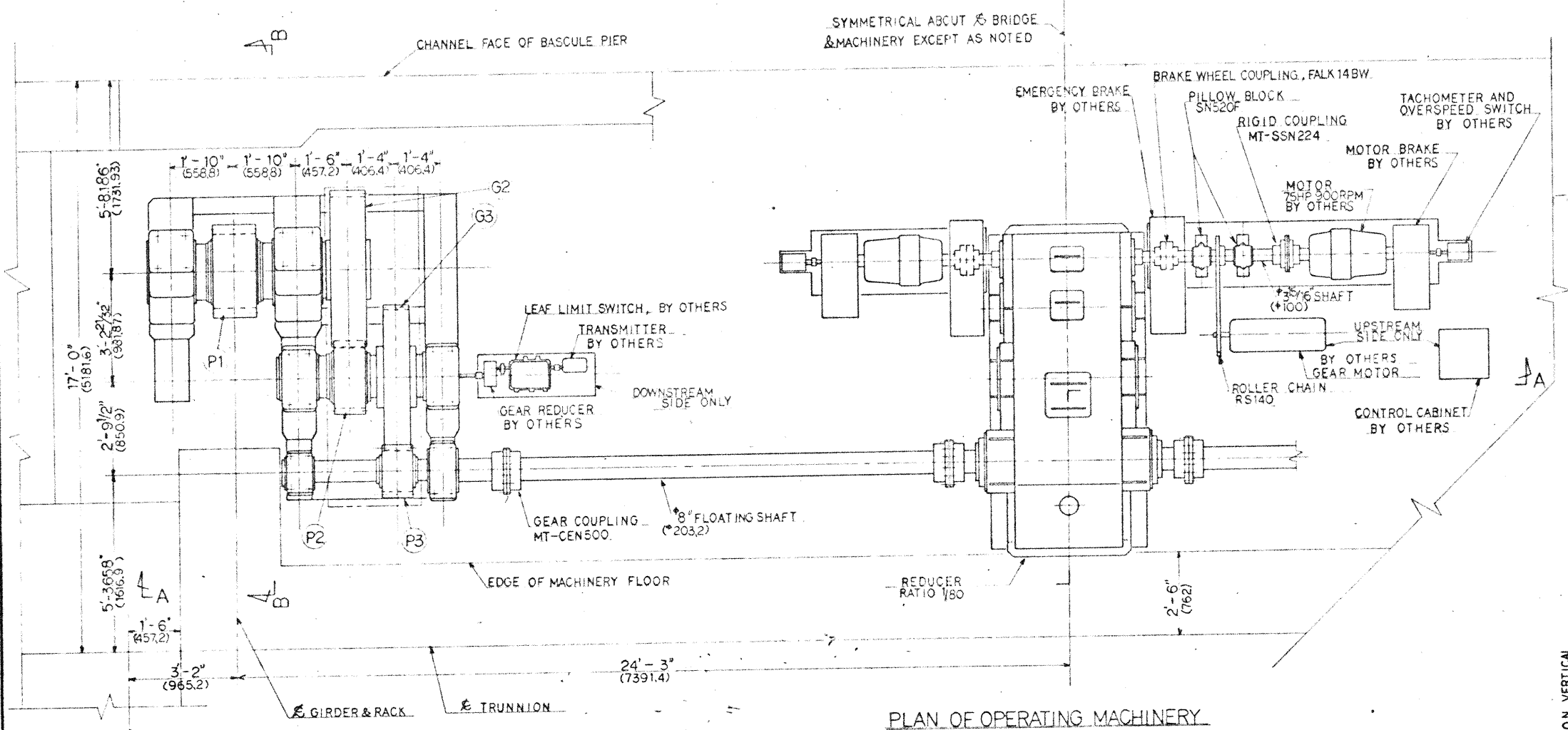
PROJECT NO. 81355402 NEW HANOVER COUNTY
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
NORTHEAST CAPE FEAR RIVER BRIDGE
US 117-NC 193 AT WILMINGTON, N.C.
OPERATING MACHINERY
LAYOUT OF ANCHOR

REVISIONS		
NO.	DESCRIPTION	BY

NORTHEAST CAPE FEAR RIVER BRIDGE	TAB NO.	313.7.7
OPERATING MACHINERY	NO.	
LAYOUT OF ANCHOR	DATE	
DESIGNED BY: <i>A. Ferguson</i>	SCALE	AS SHOWN
DRAWN BY: <i>A. Ferguson</i>	TEMP.	
CHECKED BY: <i>A. Ferguson</i>	NO.	H-100
DATE	BY	

配布先
第 9
橋主 /
鉄工 /
鉄板 /
計 1/34

REVISIONS			
NO.	DATE	DESCRIPTION	BY



PROJECT NO. 81375402 NEW HANOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTHEAST CAPE FEAR RIVER BRIDGE
 US 117-NC 133 AT WILMINGTON, N.C.

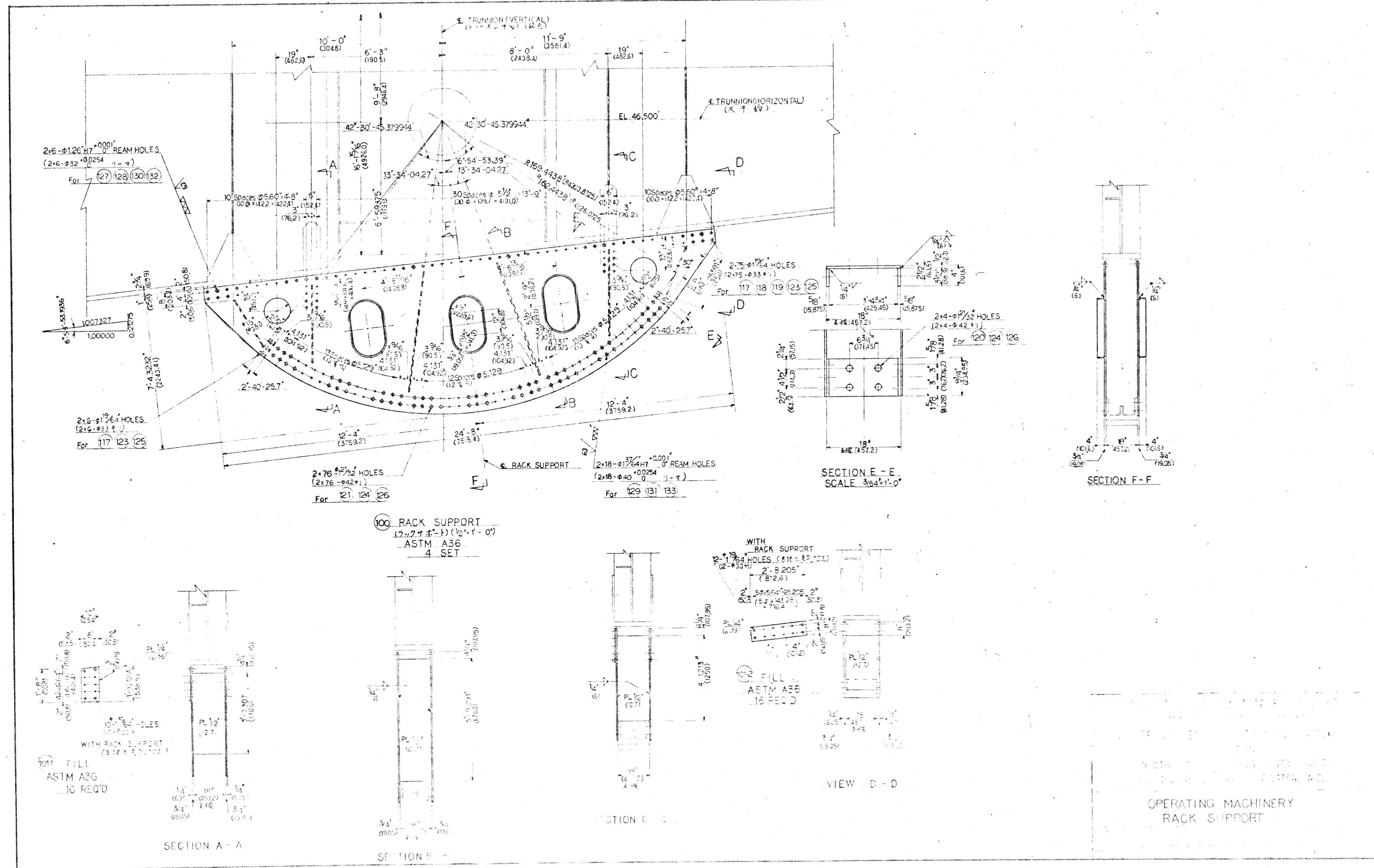
OPERATING MACHINERY
 GENERAL ARRANGEMENT

DATE _____ SCALE _____ DWG. NO. _____

PROJECT NO.	81375402
STATE	NORTH CAROLINA
DEPARTMENT	TRANSPORTATION
CITY	RALEIGH
BRIDGE NO.	NORTHEAST CAPE FEAR RIVER BRIDGE
LOCATION	US 117-NC 133 AT WILMINGTON, N.C.
TITLE	OPERATING MACHINERY GENERAL ARRANGEMENT
DATE	11-10-05
DRAWN BY	...
CHECKED BY	...
APPROVED BY	...

REVISIONS

NO.	DESCRIPTION



NORTHEAST CASE FEAR (A-1)
NEVER USE CASE 31377

OPERATING MACHINERY
RACK SUPPORT

As shown
H-110

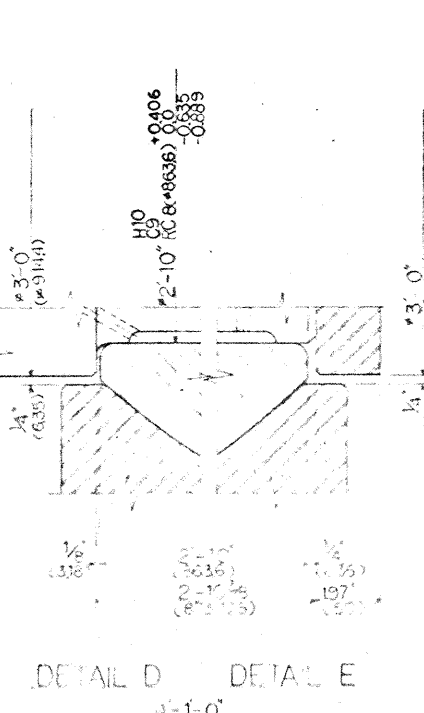
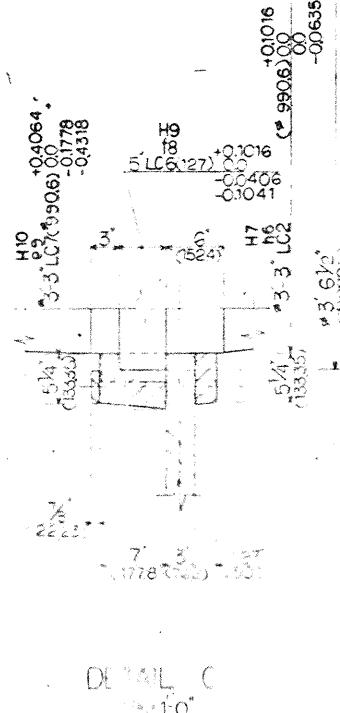
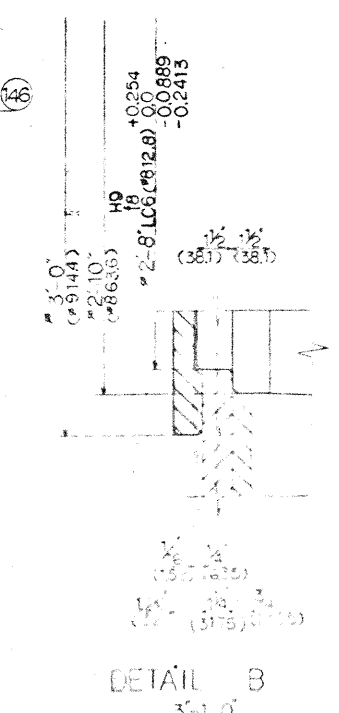
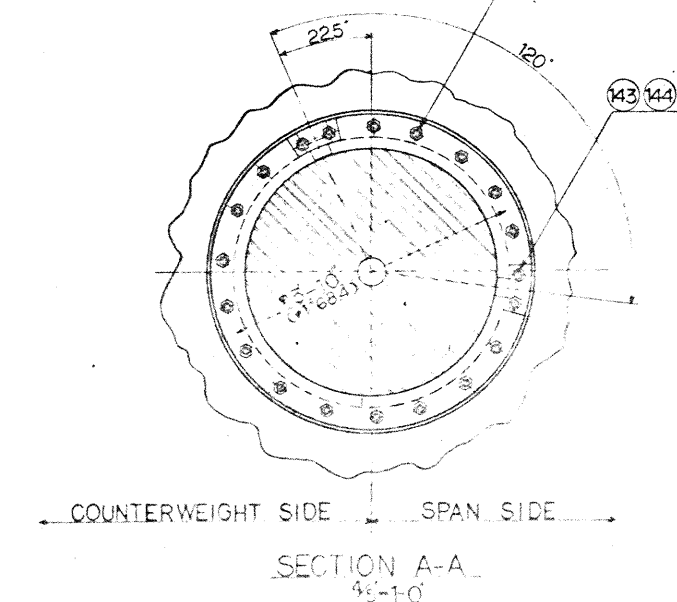
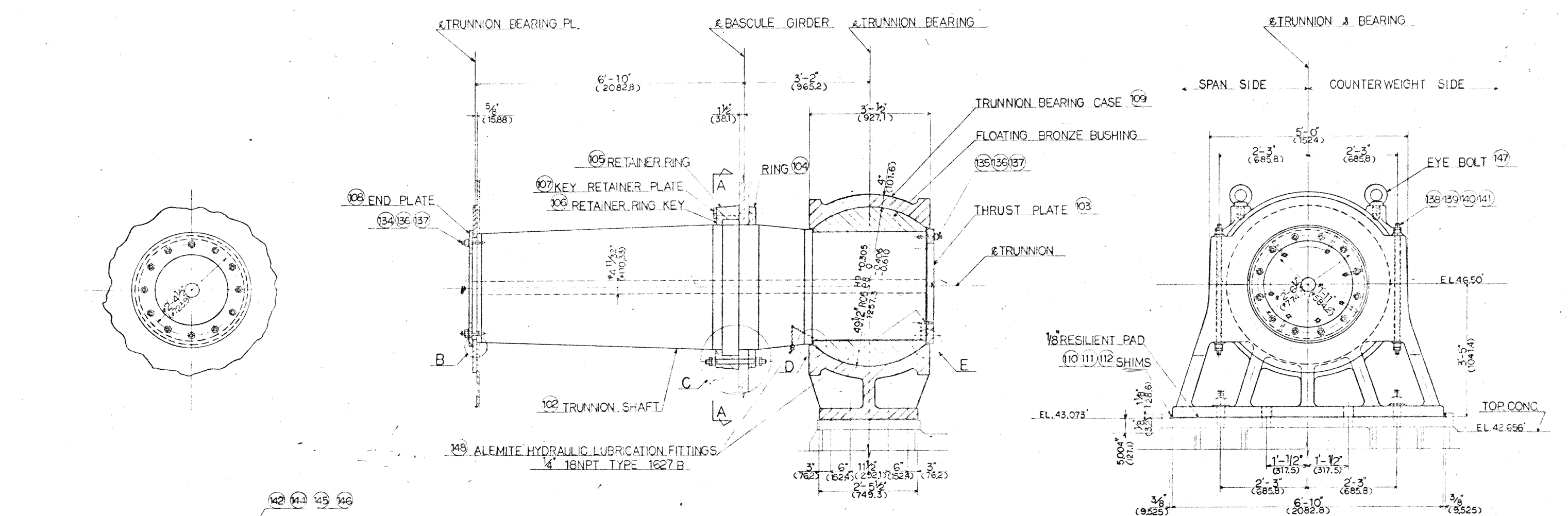
31377

31377

31377

31377

REVISIONS			
NO	DATE	DESCRIPTION	BY

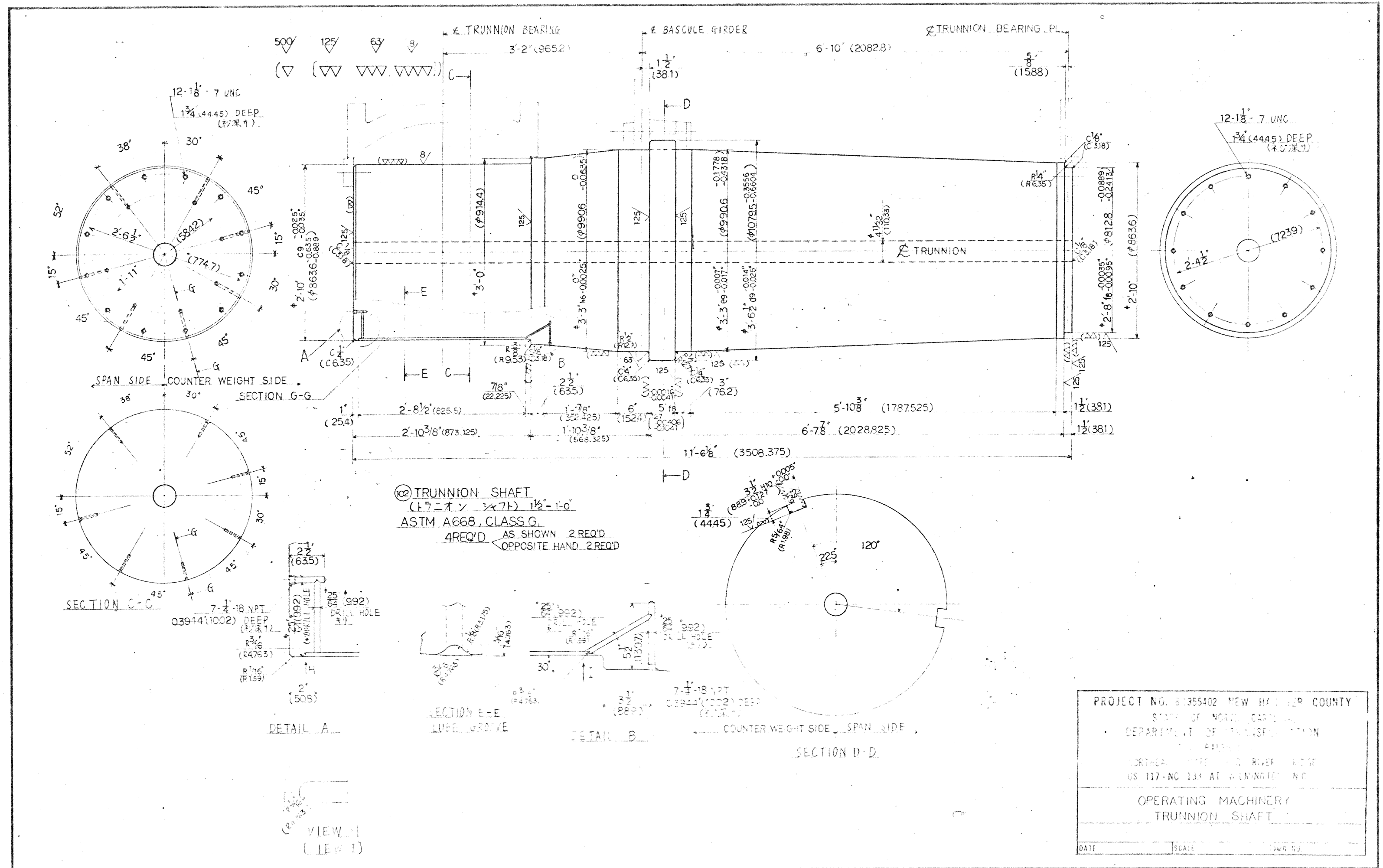


TRUNNION & BEARING
 (トランニオンとベアリング) 4 1/2"-1'-0"
 4 REQ'D AS SHOWN 2 REQ'D
 OPPOSITE HAND 2 REQ'D

PROJECT NO. 813554-2 NEW HANOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTHEAST CAPE FEAR RIVER BRIDGE
 US 117-NC 133 AT WILMINGTON, N.C.
 OPERATING MACHINERY
 ASSEMBLY OF TRUNNION & BEARING

DATE	SCALE	DWG NO

DATE: 11-11-11
 DRAWN: J. J. ...
 CHECKED: ...
 APPROVED: ...



REVISIONS			
NO	DATE	DESCRIPTION	BY

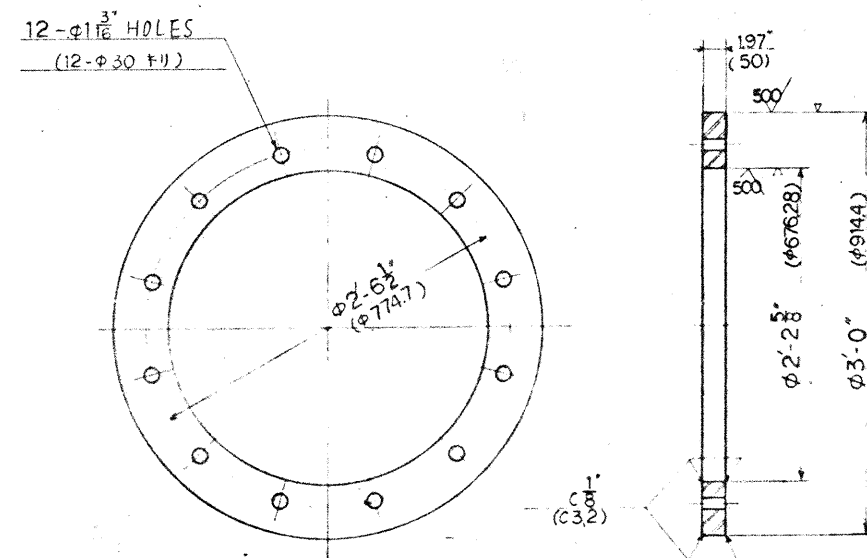
PROJECT NO. 3355402 NEW HAMPSHIRE COUNTY
 STATE OF NEW HAMPSHIRE
 DEPARTMENT OF TRANSPORTATION
 PORTLAND
 NORTHVALE BRIDGE OVER RIVER ROAD
 US 117-NC 134 AT WILMINGTON, NC

OPERATING MACHINERY
 TRUNNION SHAFT

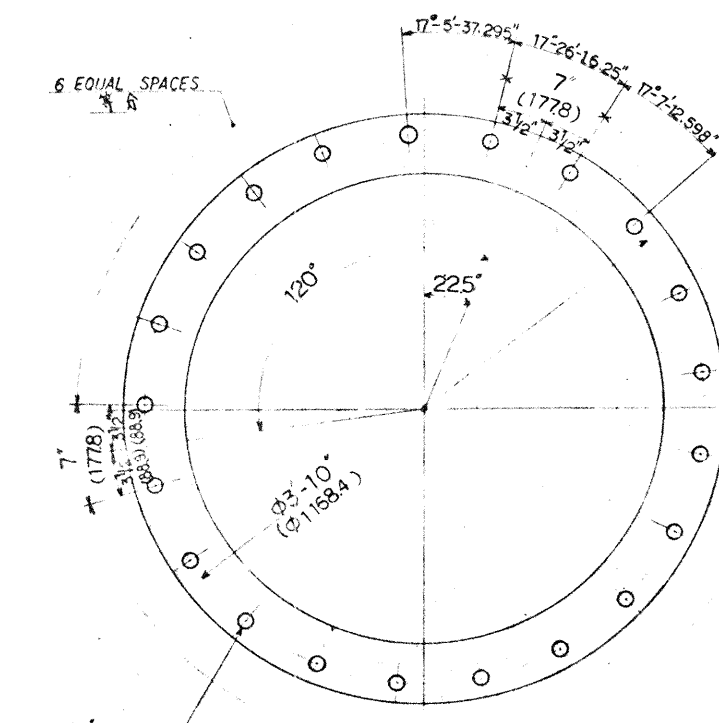
DATE: _____ SCALE: _____ DWG. NO. _____

NO. OF SHEETS	31377
TOTAL SHEETS	31377
OPERATING MACHINERY	
TRUNNION SHAFT	
DATE	10/27/27
PROJECT NO.	3355402
PROJECT NAME	NEW HAMPSHIRE COUNTY
PROJECT LOCATION	US 117-NC 134 AT WILMINGTON, NC

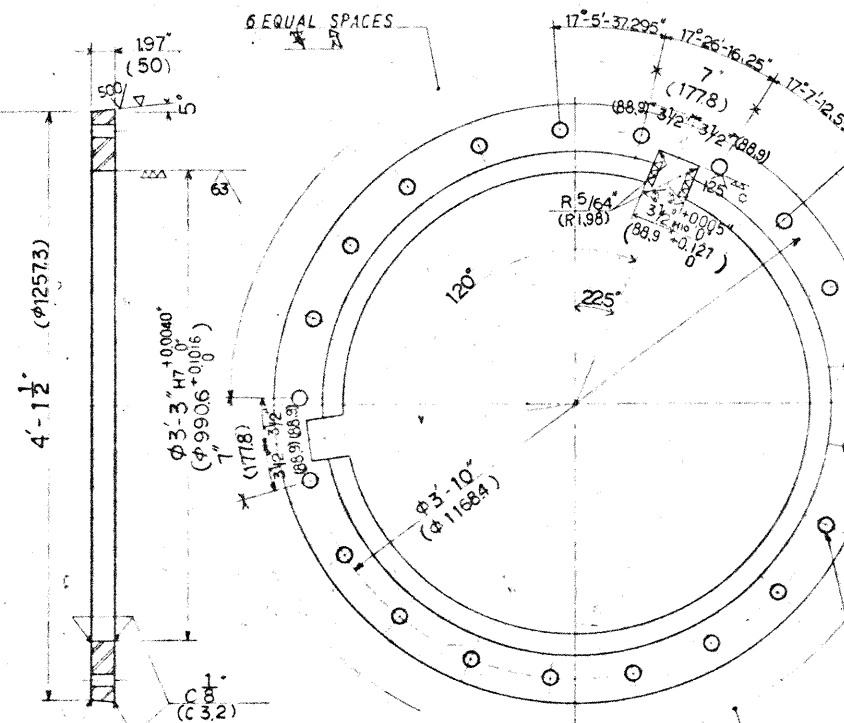
配管先
 実先 ?
 橋梁 /
 鉄工 /
 配 / 14
 計 / 14



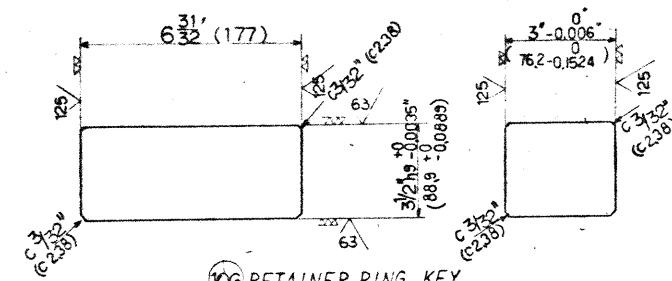
103 THRUST PLATE
(スラストプレート) S1-0-1 1/2"
ASTM A36
4 REQ'D



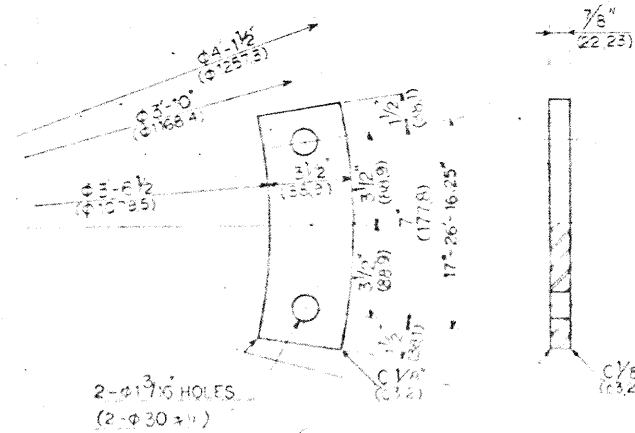
21- ϕ 3/16 HOLES
(21- ϕ 30 * 1)
SPAN SIDE
COUNTER WEIGHT SIDE
13 EQUAL SPACES
104 RING
(リング) S1-0-1 1/2"
ASTM A36
4 REQ'D AS SHOWN 2 REQ'D
OPPOSITE HAND 2 REQ'D



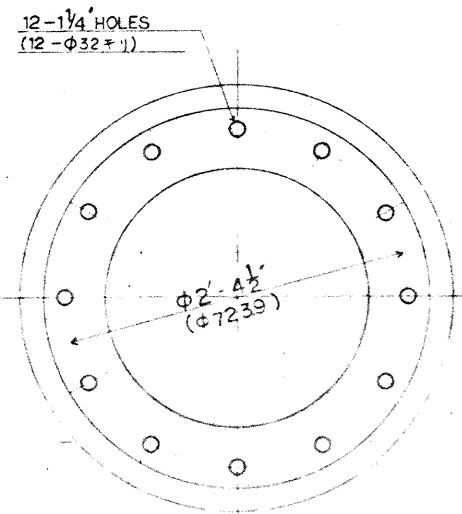
13 EQUAL SPACES
105 RETAINER RING
(リタイナリング) (1 1/2"-1-0")
ASTM A668, CLASS G
4 REQ'D AS SHOWN 2 REQ'D
OPPOSITE HAND 2 REQ'D



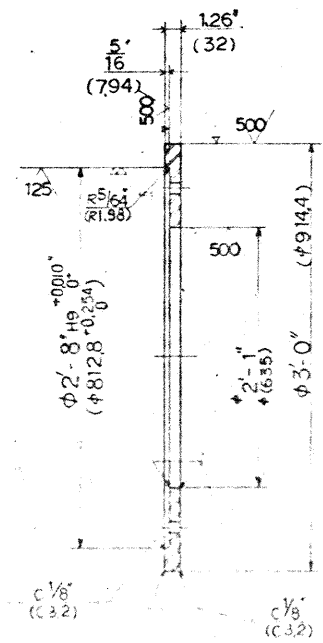
106 RETAINER RING KEY
(リタイナリングキー) S1-0-4"
ASTM A568, CLASS G
8 REQ'D



107 KEY RETAINER PLATE
(キーリテーナプレート) S1-0-1 1/2"
ASTM A36
8 REQ'D



108 END PLATE
(エンドプレート) S1-0-1 1/2"
ASTM A36
4 REQ'D

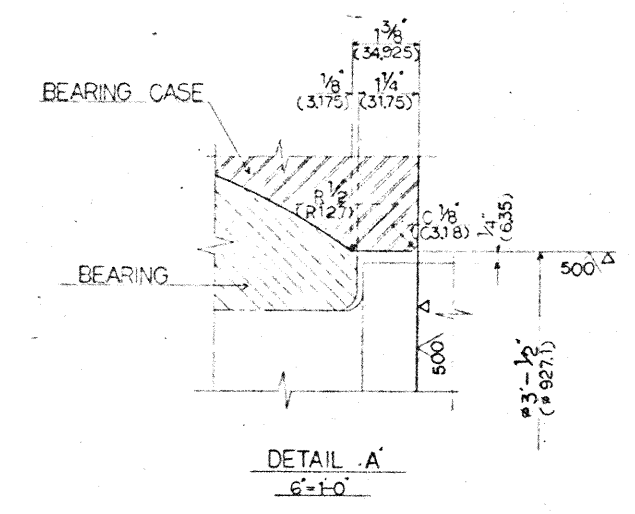
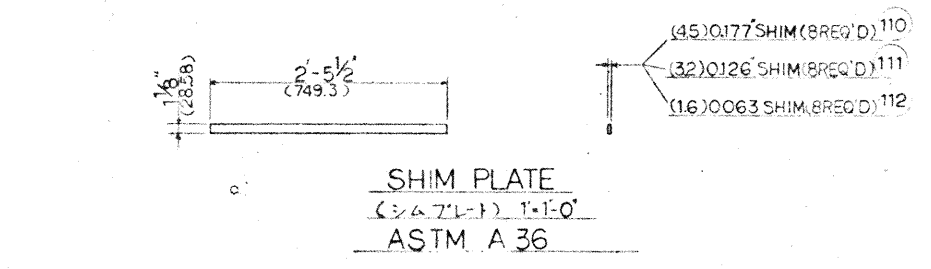
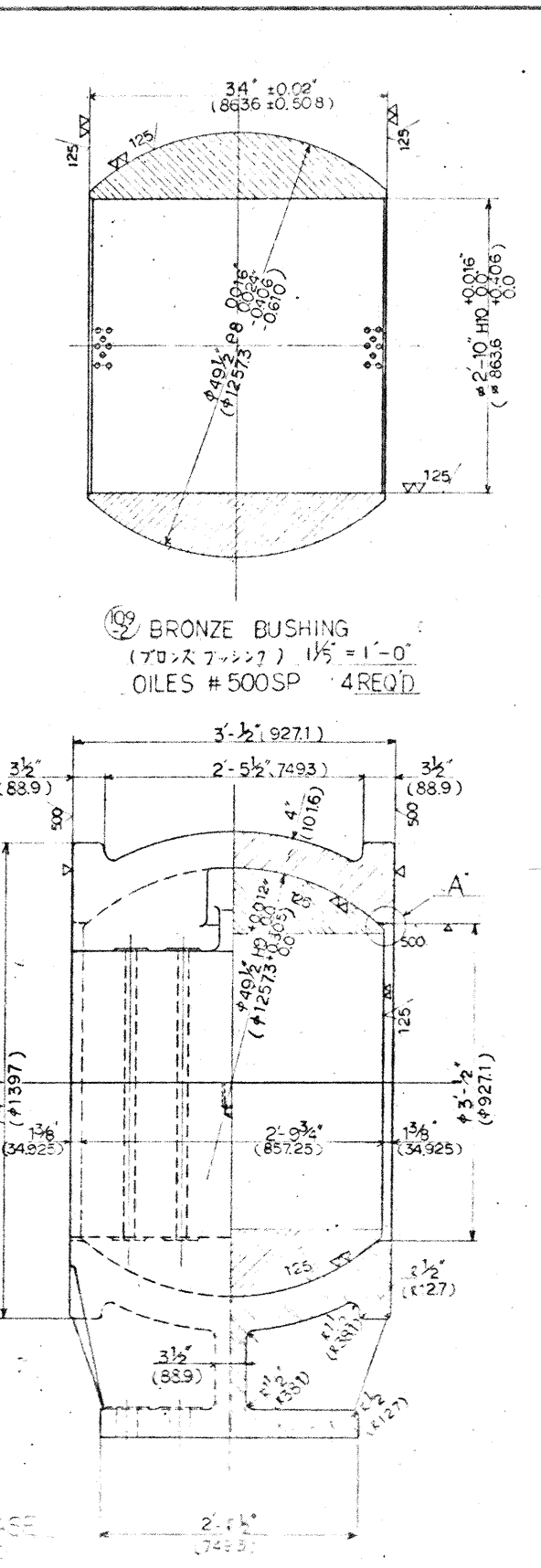
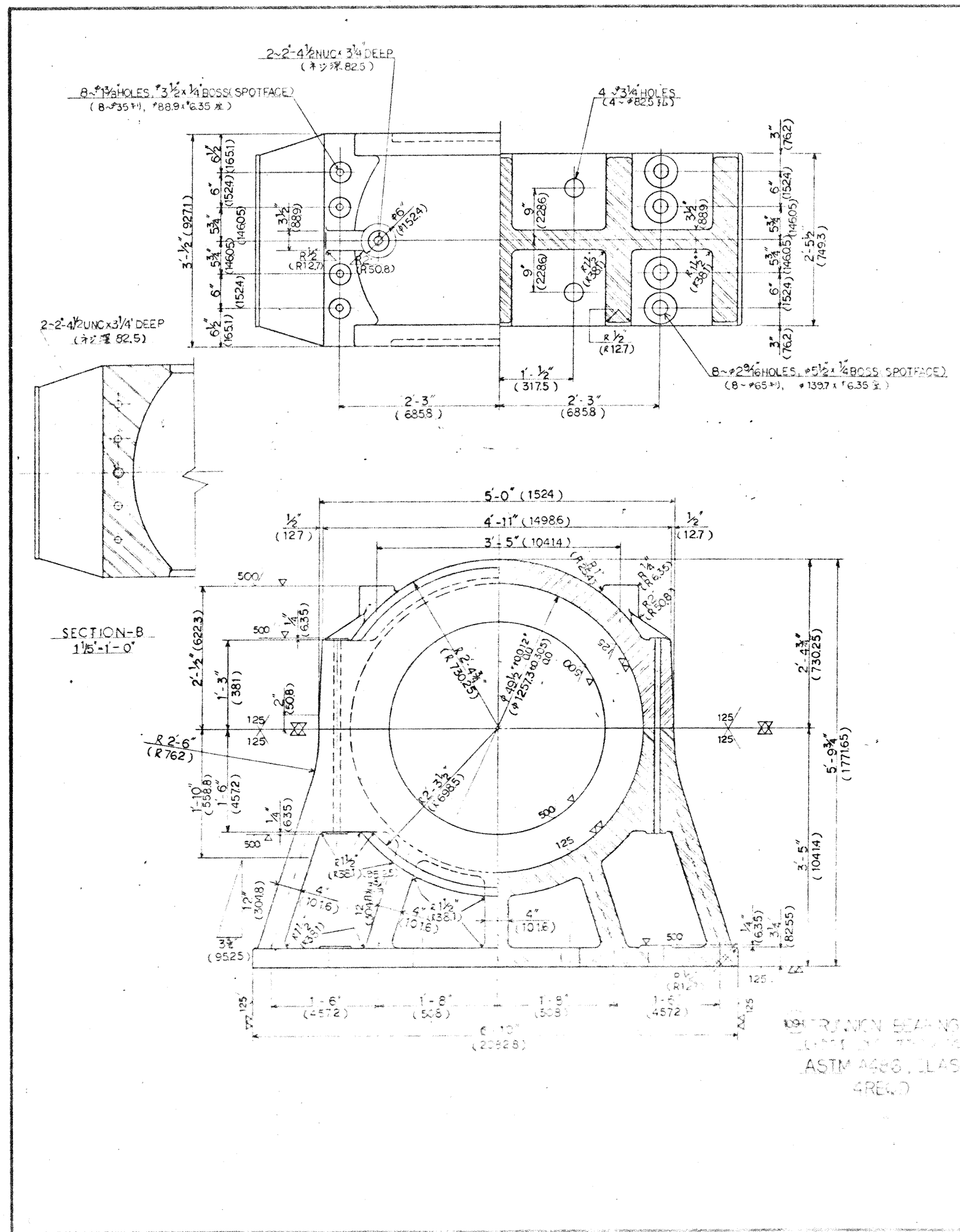


PROJECT NO. 81355402 NEW HANOVER COUNTY
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
NORTHEAST CAPE FEAR RIVER BRIDGE
US 117-NC 133 AT WILMINGTON, NC
OPERATING MACHINERY
ACCESSORIES OF TRUNNION SHAFT

DATE: _____ SCALE: _____ DWG. NO. _____

REVISIONS			
NO.	DATE	DESCRIPTION	BY

PROJECT NO.	81355402
TITLE	OPERATING MACHINERY ACCESSORIES OF TRUNNION SHAFT
DATE	11-11-13
SCALE	AS SHOWN
DRAWN BY	
CHECKED BY	
APPROVED BY	



BRONZE BEARING CASE
ASTM A486, CLASS B
4REQD

PROJECT NO. 6135472 NEW WATKINS COUNTY
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
NORTHEAST CORNER FERRIS RIVER BRIDGE
US 117-NC 133 AT WILKINSON, NC

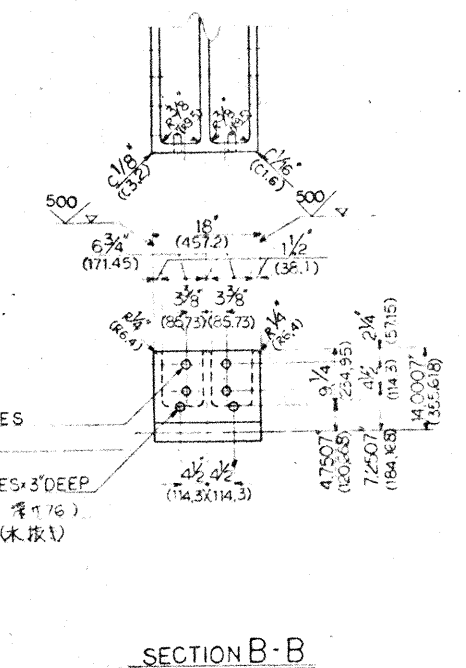
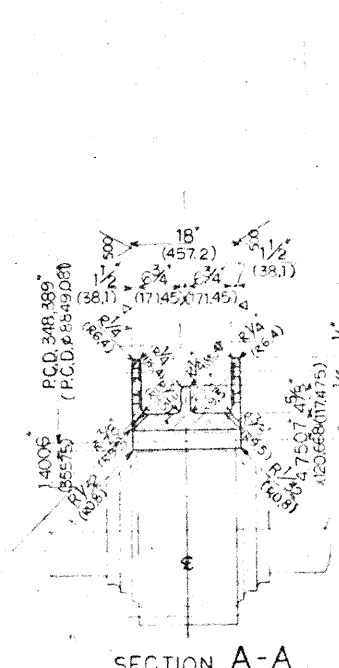
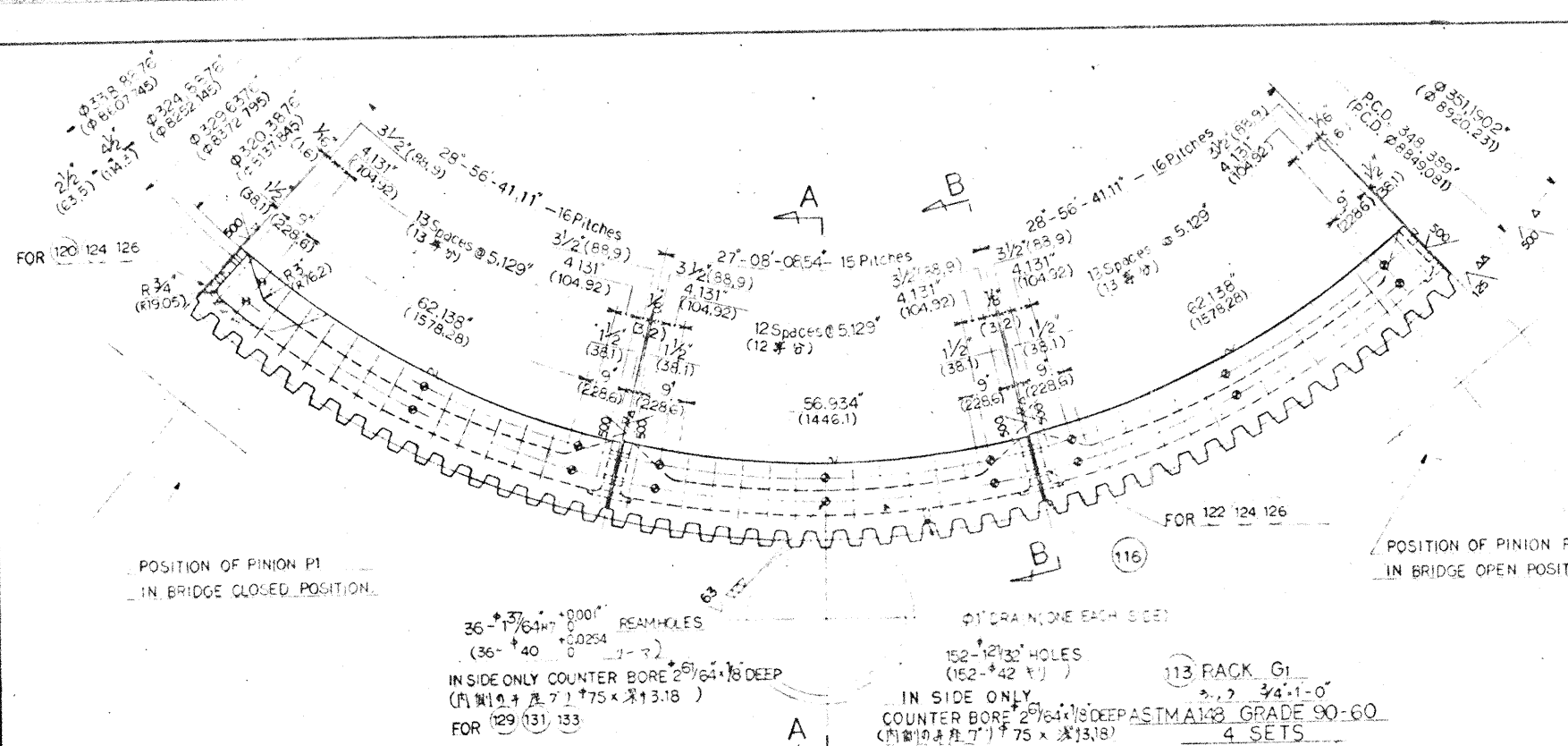
OPERATING MACHINERY
TRUNNION BEARING DETAIL

DATE 12/11 DWG. NO.

REVISIONS			
NO.	DATE	DESCRIPTION	BY

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
OPERATING MACHINERY
TRUNNION BEARING DETAIL
SCALE: AS SHOWN
DATE: 12/11
DWG. NO.: H-114

監理者
設計者
検査者
製図者
計測者



POSITION OF PINION P1
IN BRIDGE CLOSED POSITION.

POSITION OF PINION P1
IN BRIDGE OPEN POSITION.

26-1 7/8" (68.4) REAM HOLES
(Ø 36" x 40")

INSIDE ONLY COUNTER BORE 2 5/8" (64.8) DEEP
(Ø 111.0 x 71.75 x 13.18)
FOR 129, 131, 133

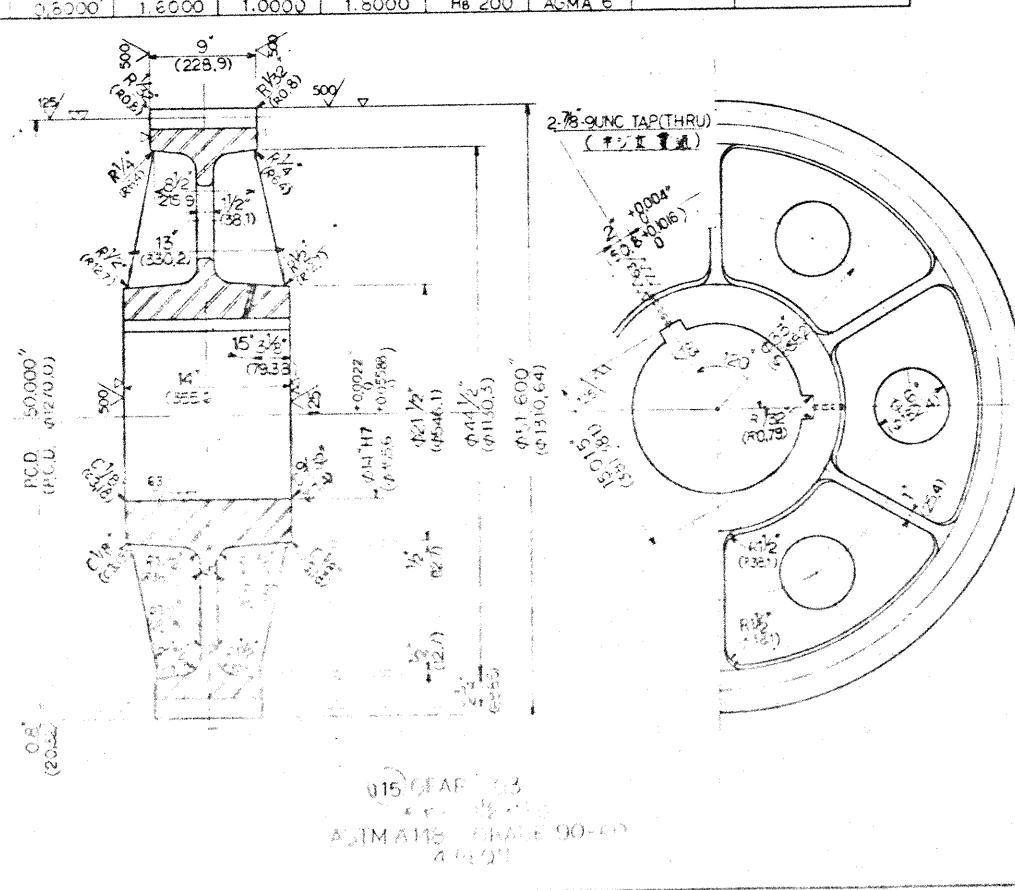
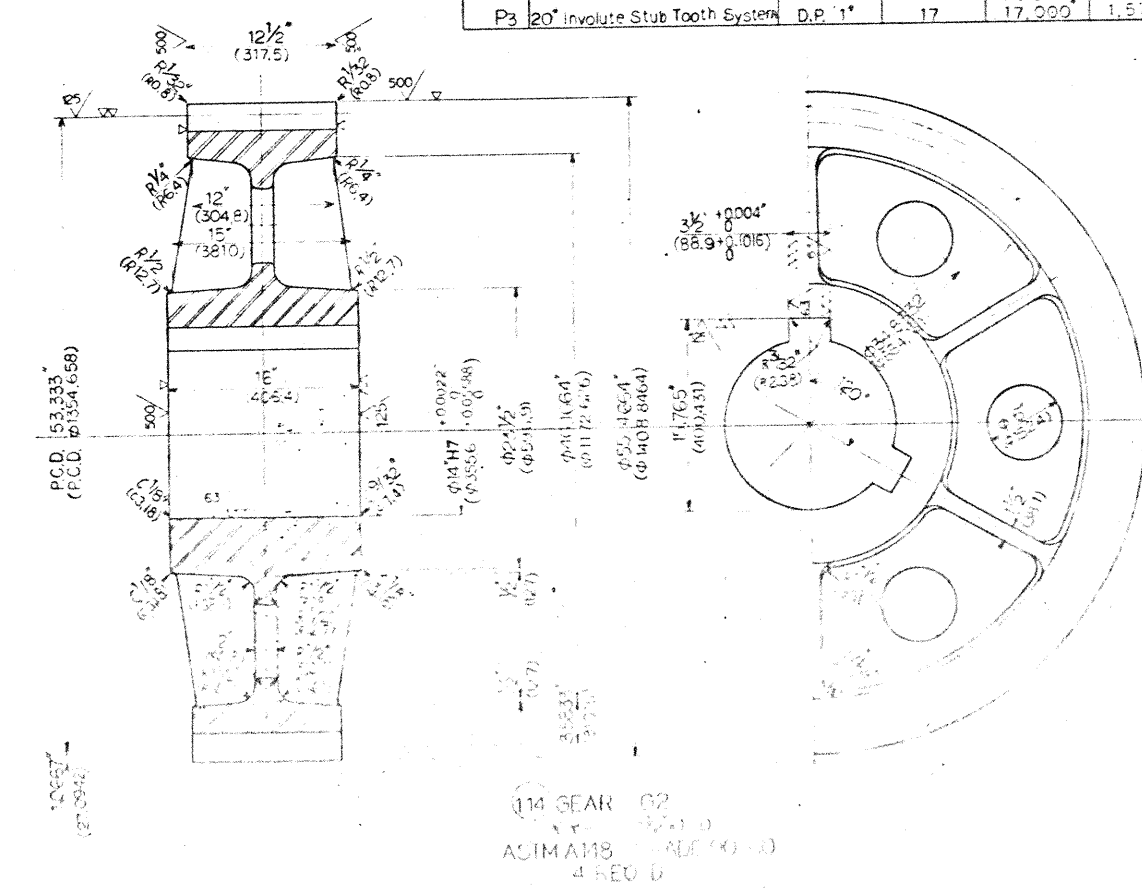
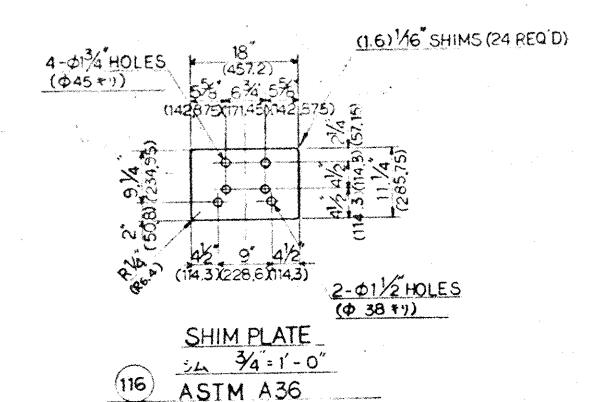
Ø 1" DRAIN HOLES EACH SIDE
(152-124.3) HOLES
(Ø 152" x 42")

113 RACK G1
Ø 34.1" - 0"

INSIDE ONLY COUNTER BORE 2 5/8" (64.8) DEEP ASTM A36 GRADE 90-10
(Ø 111.0 x 71.75 x 13.18)
FOR 129, 131, 133

Table of Gear

System	Diometrical Pitch	Number of tooth	Pitch Circular Diameter	Standard Addendum	Standard Dedendum	Whole Depth of tooth	Hardness of tooth (Min.)	Accuracy of tooth	Note
RACK G1	20° Involute Stub Tooth System	46	29.7619	2.75	1.4006	2.5011	He 180	AGMA 6	
P1	"	17	29.7619	2.75	1.4006	2.5011	He 200	AGMA 6	
G2	D.P. 3/4"	40	53.333	2.0944	1.0467	2.1334	He 180	"	
P2	"	18	24.000	2.0944	1.0467	2.1334	He 200	"	
G3	D.P. 1"	50	50.000	1.9708	0.9800	1.8000	He 180	"	
P3	20° Involute Stub Tooth System	17	17.000	1.5708	0.5000	1.6000	He 200	AGMA 6	



PROJECT NO. 81355402 NEW HANCOVER COUNTY
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
NORTHEAST RIVER BRIDGE
US 117-NC 133 AT WILKINSON, N.C.

OPERATING MACHINERY
RACK AND GEARS

DATE: _____ DRAWN BY: _____

REVISIONS

NO.	DATE	DESCRIPTION	BY

OPERATING MACHINERY
RACK AND GEARS

DATE: _____ DRAWN BY: _____

REVISIONS			
NO.	DATE	DESCRIPTION	BY

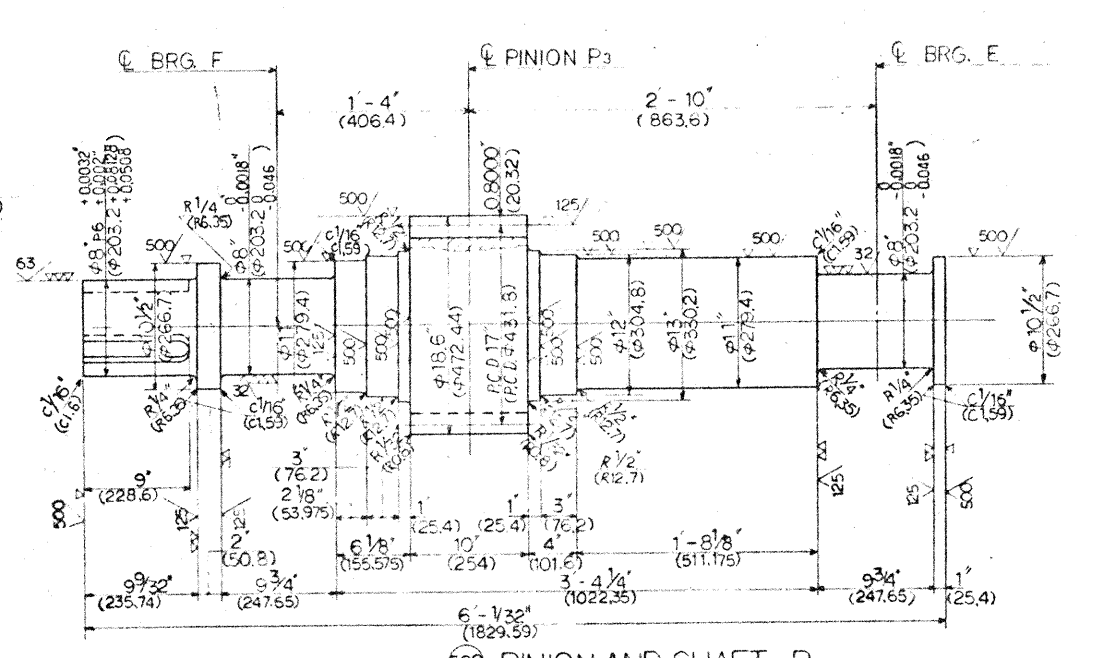
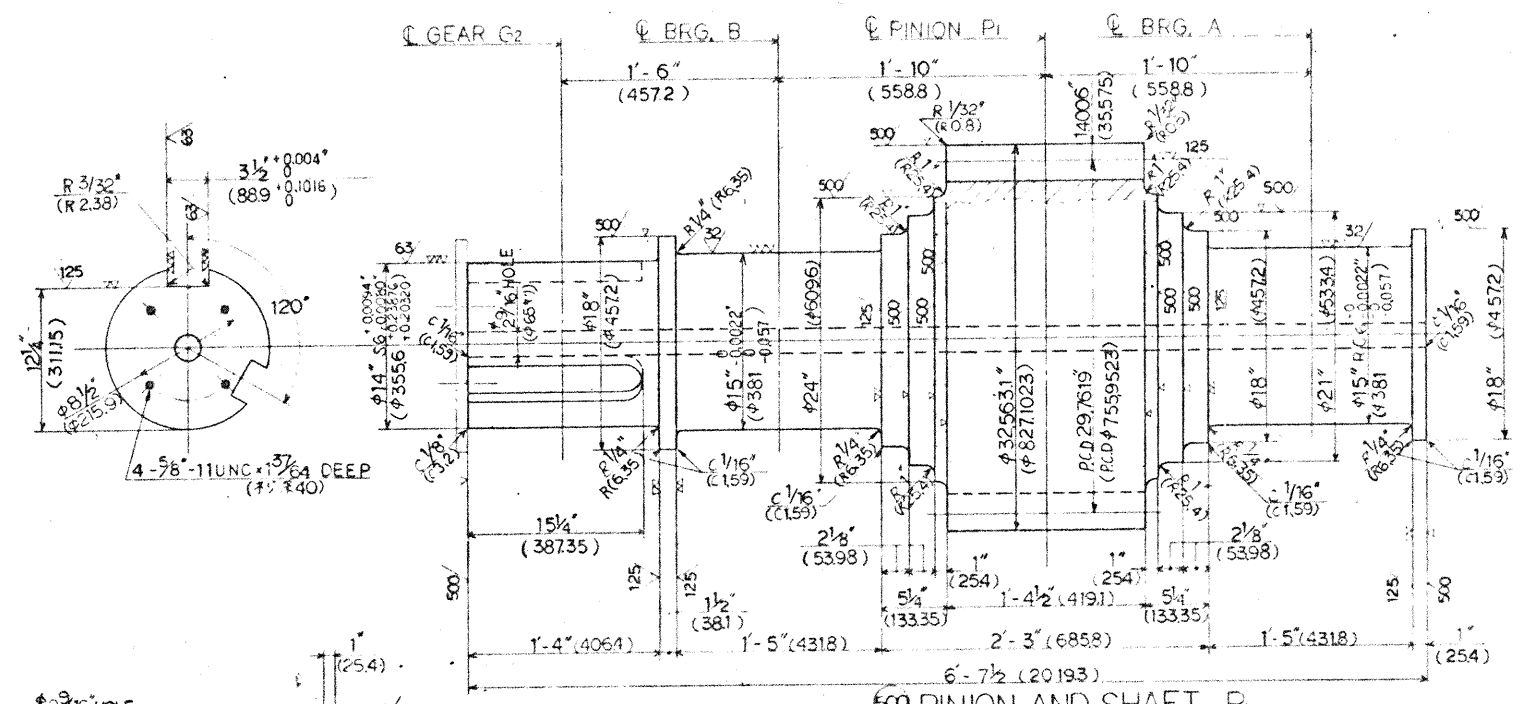
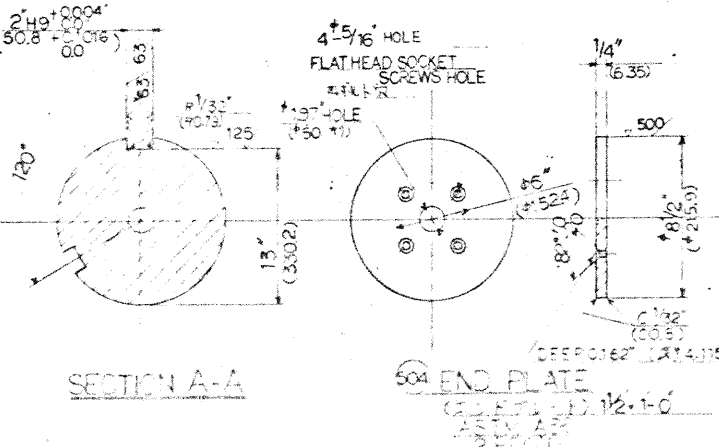
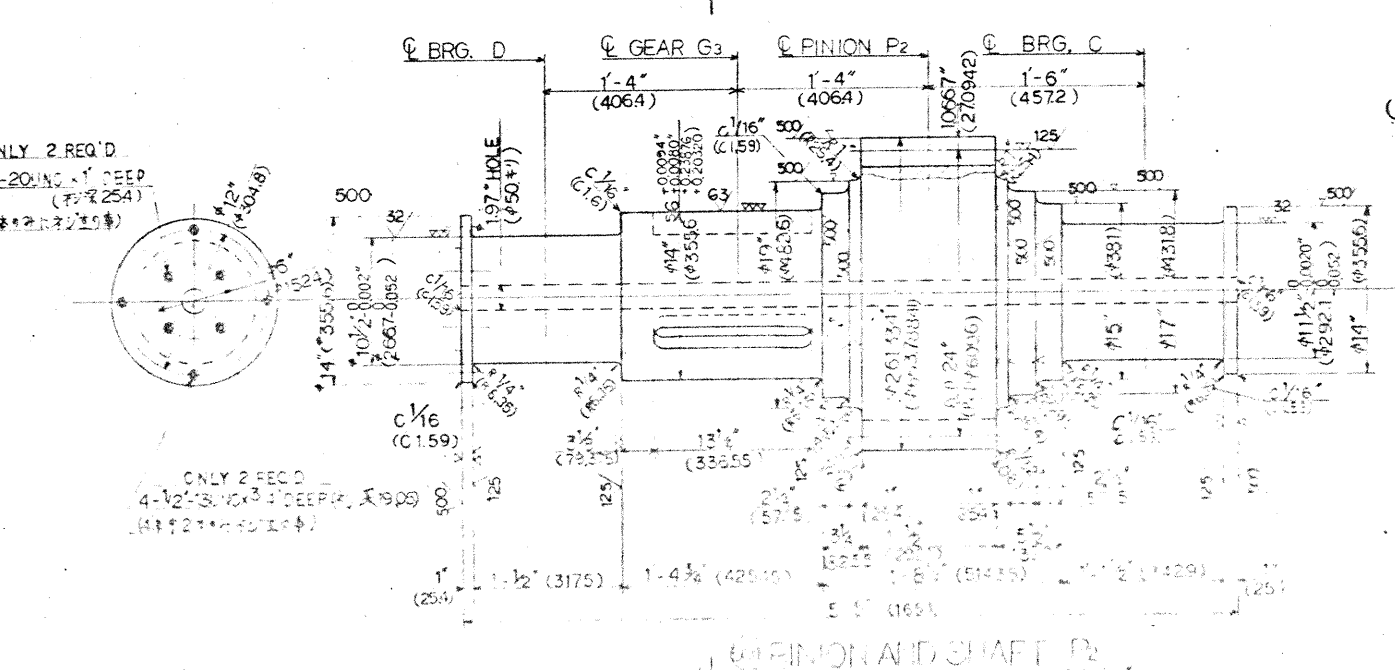
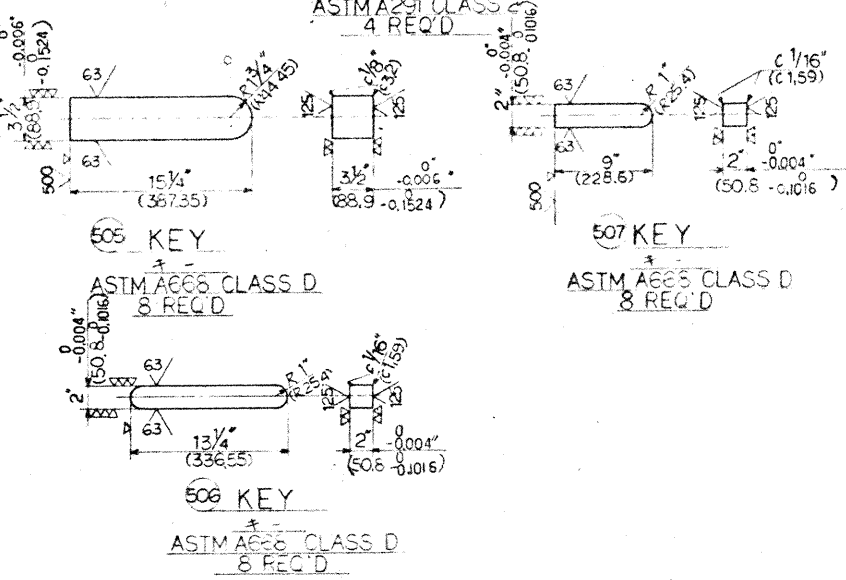
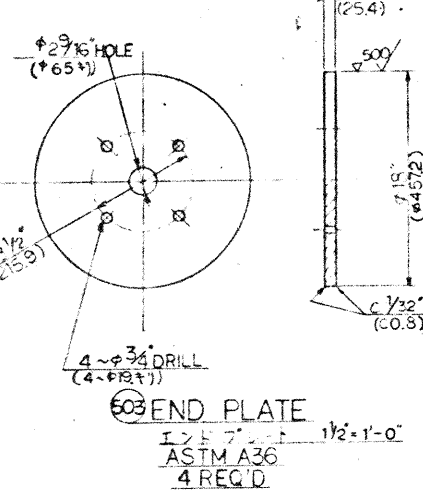


Table of Gear

Part	System	Diametral Pitch	Number of Teeth	Pitch Circle Diameter	Standard Circular Thickness	Standard Addendum	Whole Depth	Start Dia. of Gear	Whole Dia. of Gear	Pressure Angle	Accuracy of Teeth	Note
BRG. C1	20° Involute Stub Tooth System	D.P. 0.5712	46	(264.9006)	(.6965)	(.115724)	(.714794)	(44.46778)	(80.04502)	14.5°	AGMA 6	
P1		D.P. 0.5712	17	(9.7096)	(.2465)	(.039524)	(.0411)	(2.60778)	(5.1512)	14.5°	AGMA 6	
G2		D.P. 3/4	40	(135.4582)	(.339776)	(.0519416)	(.5418236)	(33.85562)	(60.96)	14.5°	AGMA 6	
P2		D.P. 3/4	18	(24.000)	(.06096)	(.00944)	(.11334)	(2.4200)	(4.896)	14.5°	AGMA 6	
G3		D.P. 1	50	(50.000)	(.1270)	(.01992)	(.254)	(1.6000)	(3.2000)	14.5°	AGMA 6	
P3	20° Involute Stub Tooth System	D.P. 1	17	(17.000)	(.4318)	(.06832)	(.0884)	(1.6000)	(3.2000)	14.5°	AGMA 6	



PROJECT NO. 81355402 NW HANOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 PALOIGN
 NORTHEAST CAMP FEAR RIVER BRIDGE
 US 117 NC 133 AT WILMINGTON, N.C.

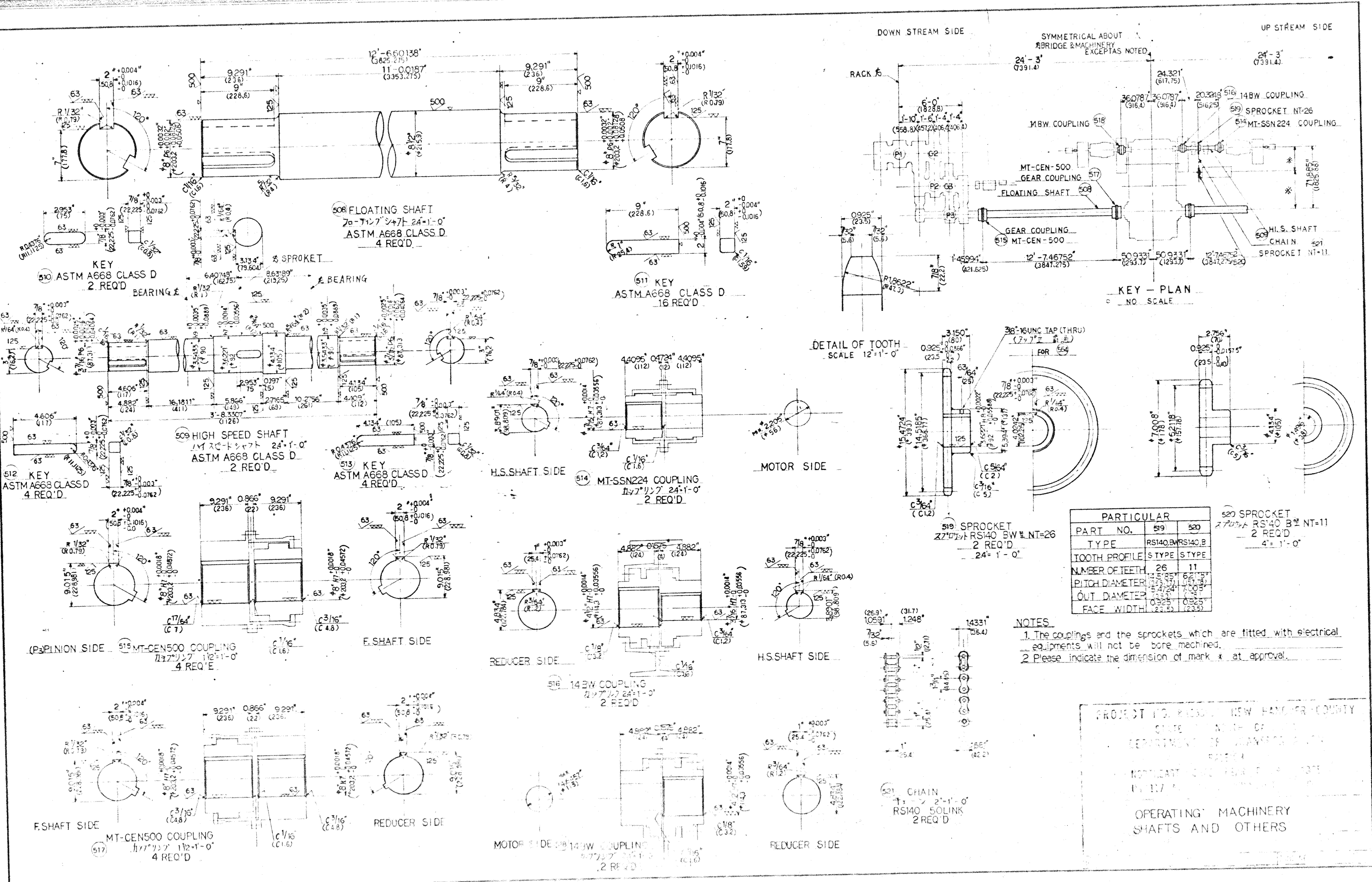
OPERATING MACHINERY
 PINION AND SHAFT

DATE: _____ SCALE: _____

OPERATING MACHINERY
 PINION AND SHAFT

31377

DATE: 11-11-16



508 FLOATING SHAFT
 7a-7i-7j-7k-24-1'-0"
 ASTM A668 CLASS D
 4 REQ'D

509 HIGH SPEED SHAFT
 7m-7n-7o-24-1'-0"
 ASTM A668 CLASS D
 2 REQ'D

515 MT-CEN500 COUPLING
 7p-7q-27-12-1'-0"
 4 REQ'D

517 MT-CEN500 COUPLING
 7r-7s-27-12-1'-0"
 4 REQ'D

510 KEY
 ASTM A668 CLASS D
 2 REQ'D

512 KEY
 ASTM A668 CLASS D
 4 REQ'D

513 KEY
 ASTM A668 CLASS D
 4 REQ'D

516 14BW COUPLING
 27-28-24-1'-0"
 2 REQ'D

511 KEY
 ASTM A668 CLASS D
 16 REQ'D

514 MT-SSN224 COUPLING
 28-29-24-1'-0"
 2 REQ'D

518 14BW COUPLING
 27-28-24-1'-0"
 2 REQ'D

519 CHAIN
 RS140 SOLINK
 2 REQ'D

PARTICULAR

PART NO.	519	520
TYPE	RS140.B	RS140.B
TOOTH PROFILE	S	S
NUMBER OF TEETH	26	11
PITCH DIAMETER	11.41	6.21
OUT DIAMETER	12.44	7.00
FACE WIDTH	0.32	0.32

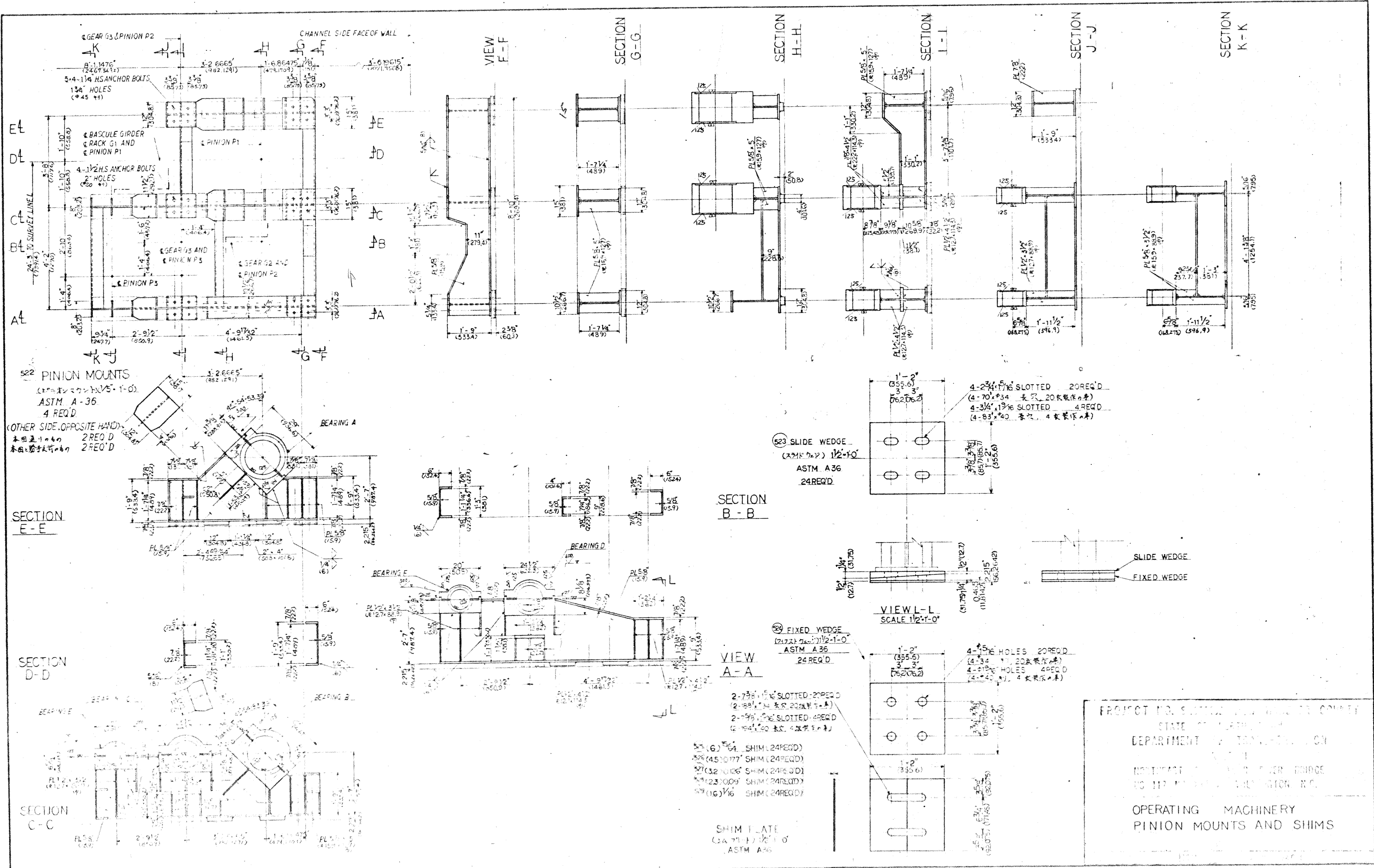
520 SPROCKET
 27-28-24-1'-0"
 2 REQ'D
 4'-1'-0"

- NOTES
- The couplings and the sprockets which are fitted with electrical equipments will not be bore machined.
 - Please indicate the dimension of mark x at approval.

PROJECT NO. 81330 NEW HAMPSHIRE COUNTY
 STATE OF NEW HAMPSHIRE
 DEPARTMENT OF HIGHWAYS
 ROUTE 101
 CONTOUR
 OPERATING MACHINERY
 SHAFTS AND OTHERS

REVISIONS		
NO.	DESCRIPTION	BY

NORTHEAST CAFE FEAR 31377
 RIVER BRIDGE
 OPERATING MACHINERY
 SHAFTS AND OTHERS
 H-117



REVISIONS

31377

NORTHEAST CAPE FEAR RIVER BRIDGE

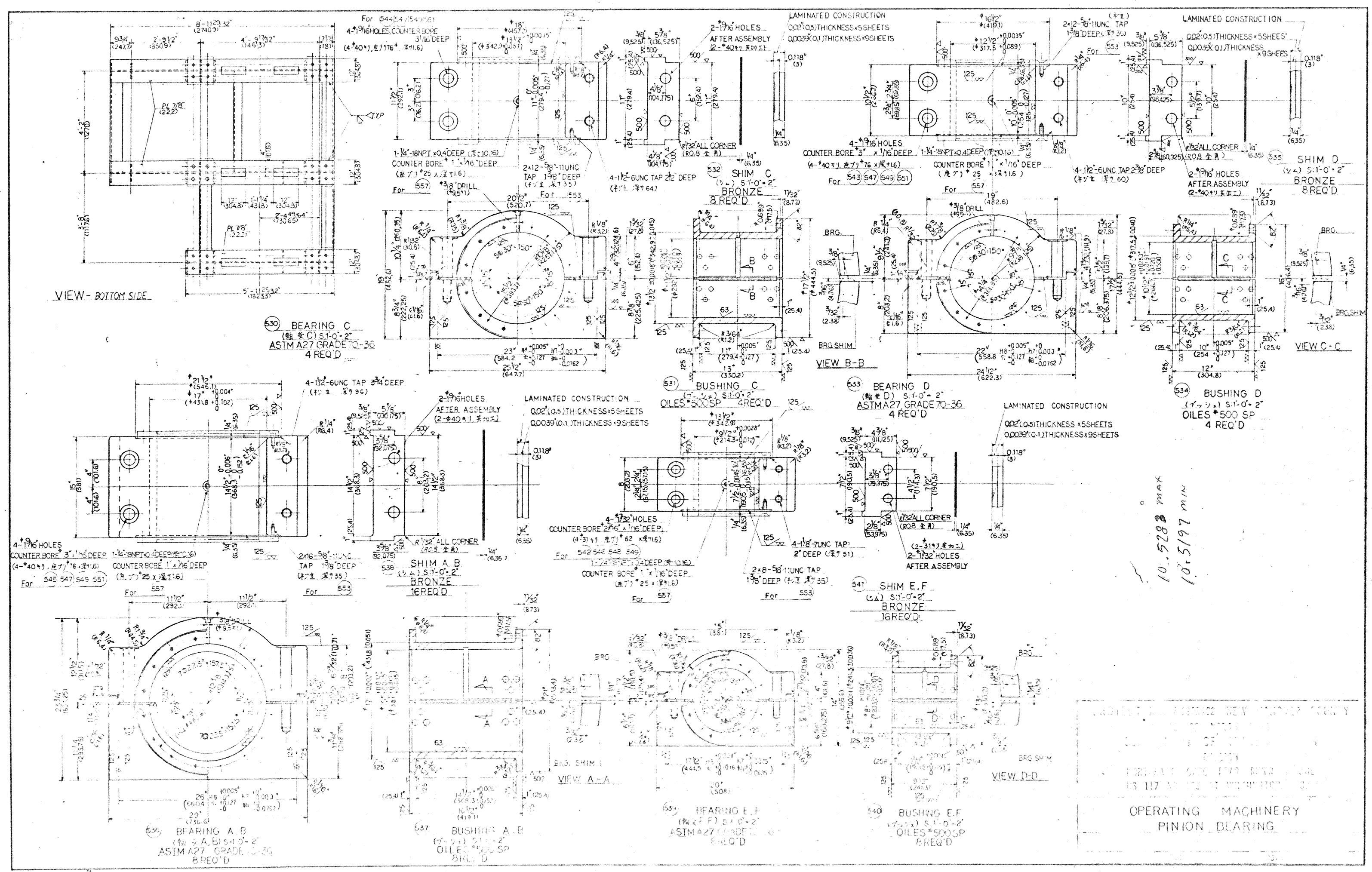
OPERATING MACHINERY PINION MOUNTS AND SHIMS

PROJECT NO. 51122 NEW HANCE COUNTY STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

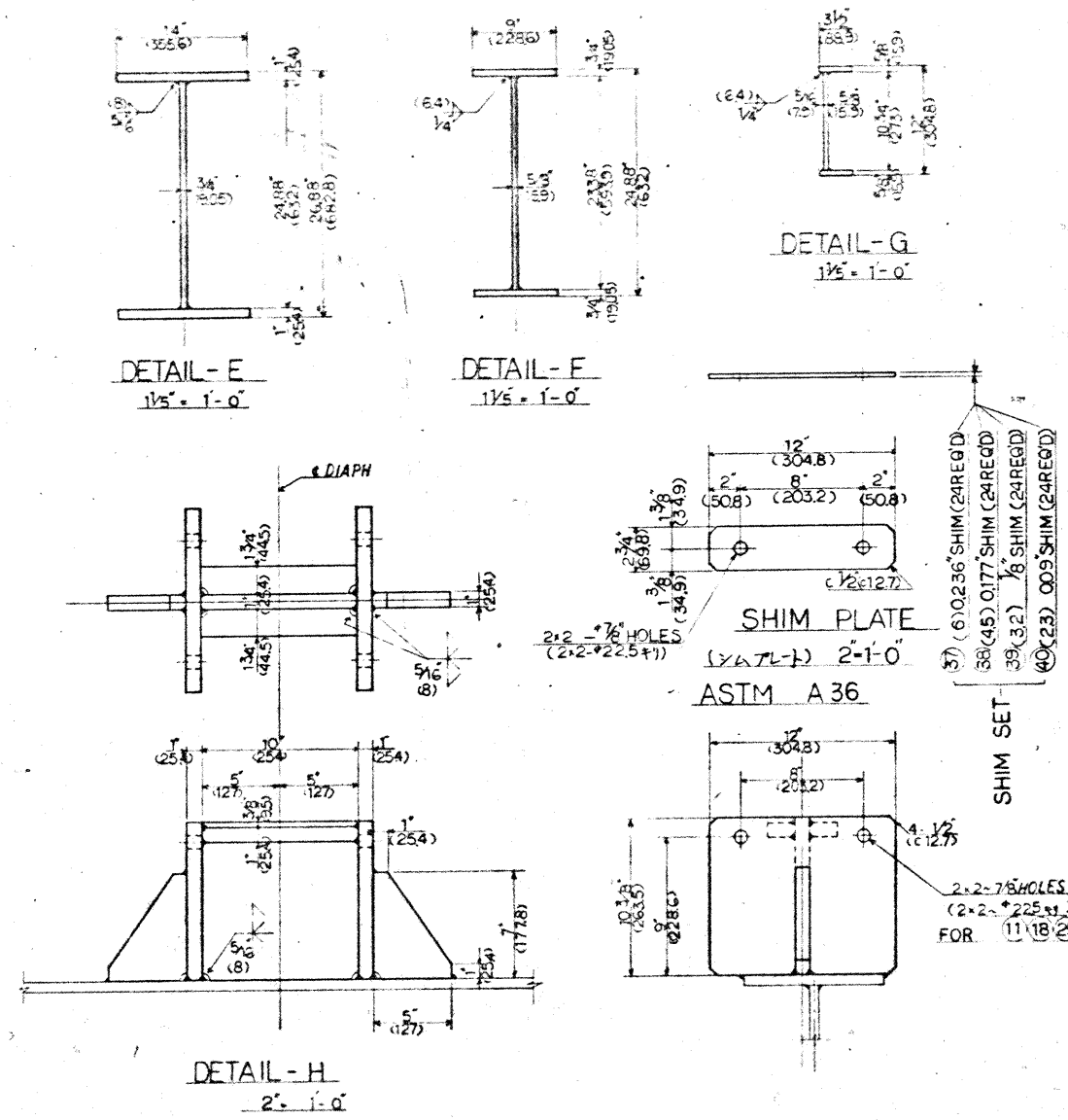
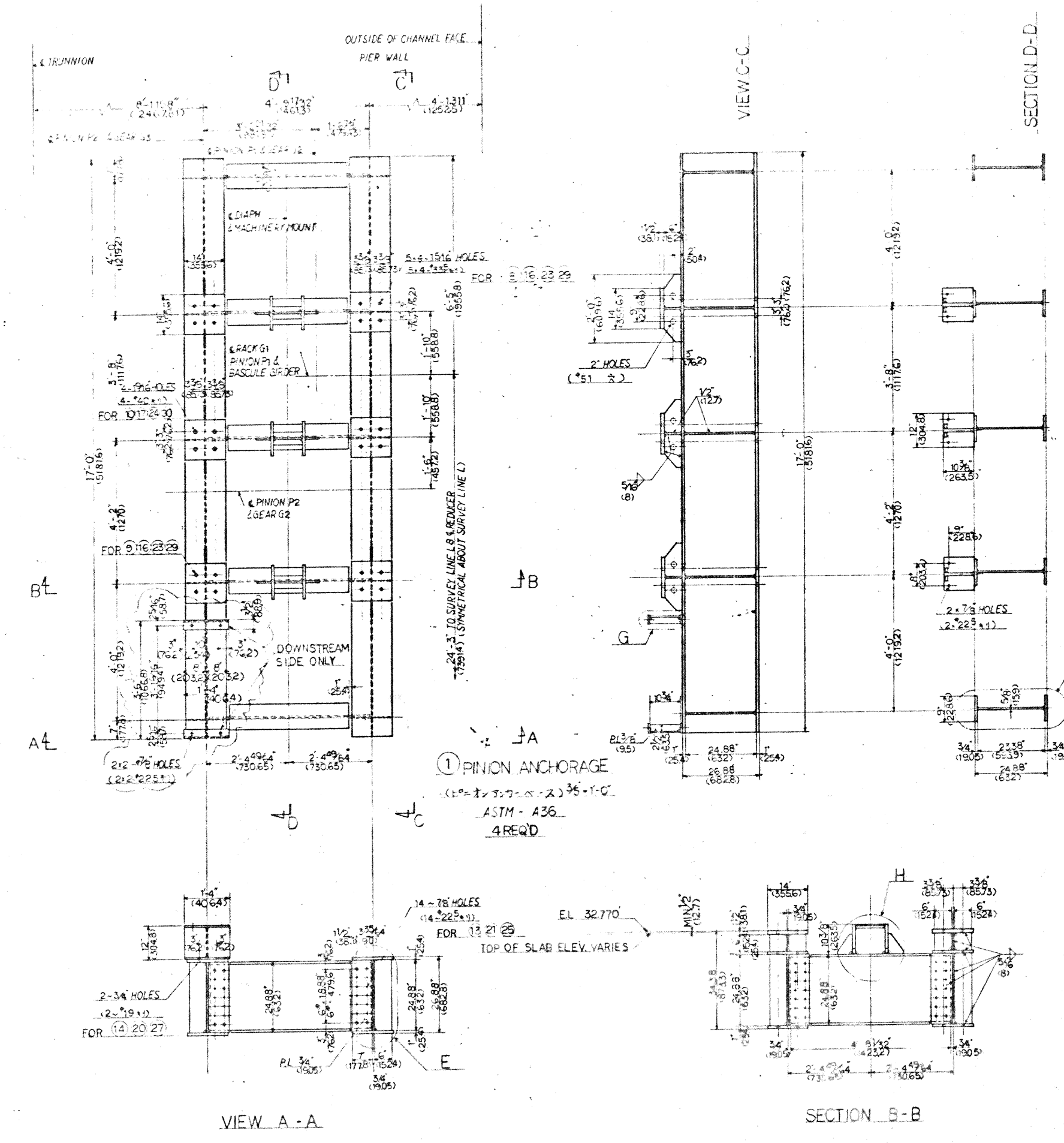
OPERATING MACHINERY PINION MOUNTS AND SHIMS

DATE 4-77 As shown

H-118



NORTHEAST CAPE FEAR, N.C. 31377
 OPERATING MACHINERY
 PINION BEARING
 H-119
 As shown
 8/12



NOTES

- All welds to be $\frac{1}{4}$ " except as noted.
- All scallops to be R $\frac{1}{4}$ " except as noted.

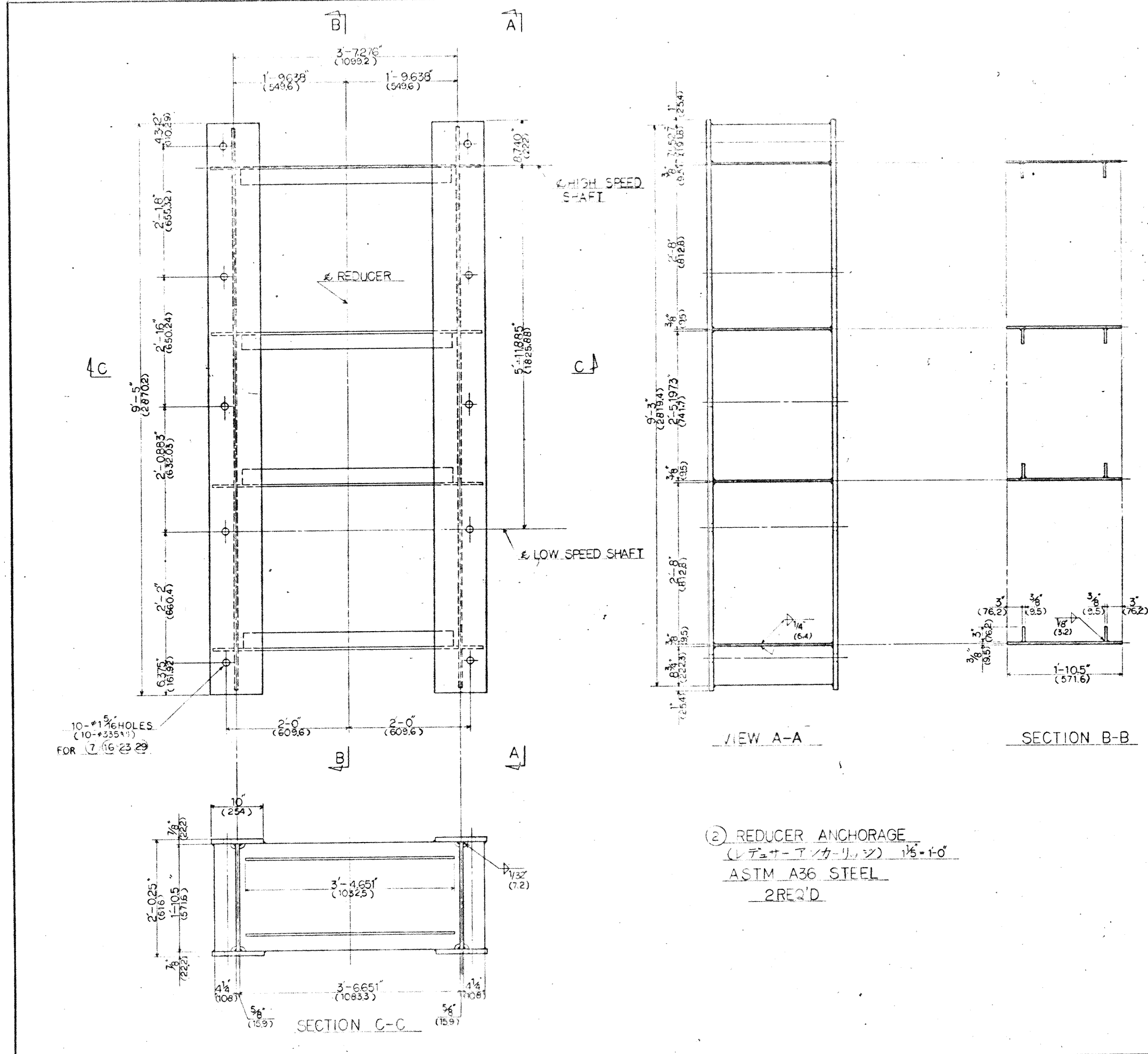
PROJECT NO. 81355402 NEW HANOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTHEAST CAPE FEAR RIVER BRIDGE
 17-NC 143 AT WILMINGTON, N.C.

**OPERATING MACHINERY
 PINION ANCHORAGE**

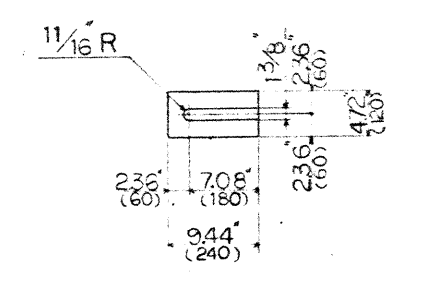
REVISIONS		
NO.	DATE	DESCRIPTION

NORTHEAST CAPE FEAR RIVER BRIDGE	WARD NO. 31377
OPERATING MACHINERY PINION ANCHORAGE	
DATE SEP 15 1977 SCALE As shown	ITEM H-120
配布光 零件 9 鋼板 1 鉄柱 1 鉄骨 1 釘 13	

REVISIONS		
NO.	DESCRIPTION	BY



- 3 (23.008" SHIM (20REQ'D))
- 4 (32.0126" SHIM (20REQ'D))



NOTES
 1. ALL scallops to be R^{3/4}(19) except as noted.

② REDUCER ANCHORAGE
 (レダサ-アソカ-リソソ) 1 1/2 - 1 - 0
 ASTM A36 STEEL
 2REQ'D

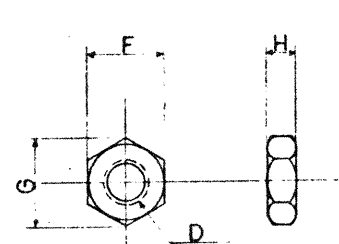
PROJECT NO. 81355402 NEW HANOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTHEAST CAPE FEAR RIVER BRIDGE
 US 117-NC 133 AT WILMINGTON, N.C.

OPERATING MACHINERY
 REDUCER ANCHORAGE

NORTHEAST CAPE FEAR RIVER BRIDGE APPROACH FOOTING	YARD NO	3.13.77
OPERATING MACHINERY	ITEM NO	H-122
REDUCER ANCHORAGE	DESCRIPTION	REDUCER ANCHORAGE
SCALE: 1/4" = 1'-0"	DATE	SEP 15 1977
DESIGNED BY: J. G. Williams	CHECKED BY: S. W. Hargrave	DRAWN BY: [unclear]

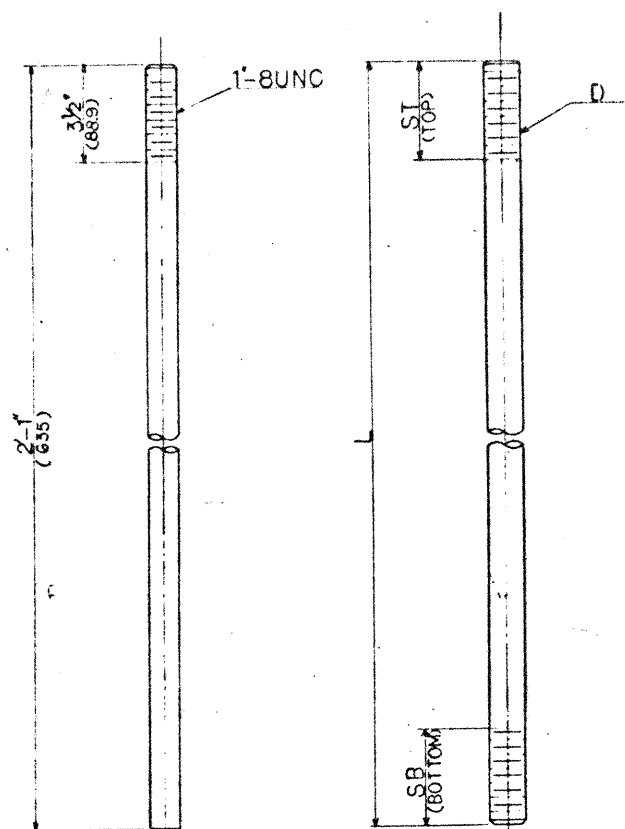
既而先
 客先 9
 鋼鉄 1
 鉄生 1
 鉄板 1
 計 13.4

REVISIONS		
NO	DATE	DESCRIPTION



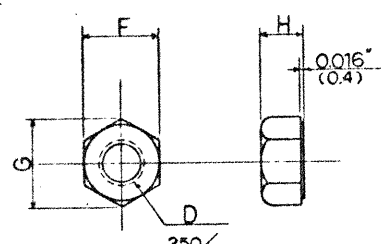
250
JAM NUT
(ジャムナット)
JIS G4051 S25C N

LIST OF JAM NUT					
PART NO.	NO. REQ'D	D	F	G	H
23	100	1 1/4"-7UNC	(50.8) (57.4)	(18.3) (23.2)	
24	40	1 1/2"-6UNC	(60.3) (68.6)	(21.4) (27.2)	



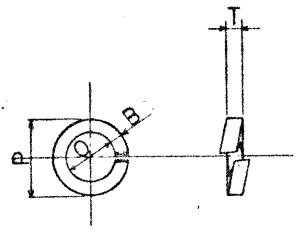
250
ANCHOR BOLT
(アンカーボルト)
JIS G4051 S25C N
28REQ'D

250
ANCHOR BOLT
(アソカボルト)
JIS G4051 S25C N



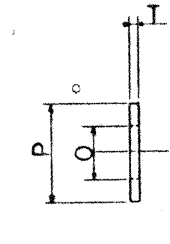
250
NUT
(ナット)

LIST OF NUT						
PART NO.	NO. REQ'D	D	F	G	H	MATERIAL
15	28	1"-8UNC	(41.3) (45.7)	(15.8) (1.8)	(63.6)	JIS G4051 S25C N
16	300	1 1/4"-7UNC	(50.8) (57.4)	(31) (2.25)	(17.3)	
17	120	1 1/2"-6UNC	(60.3) (68.6)	(37.3) (2.7)	(15.2)	
18	48	3/4"-10UNC	(31.8) (35.8)	(18.7) (1.4)	(47.6)	JIS G4051 S25C N
19	32	1"-8UNC	(41.3) (45.7)	(25) (1.8)	(63.6)	JIS G4105 SCM3
20	8	5/8"-11UNC	(27) (30.5)	(15.5) (12)	(39.6)	JIS G4051 S25C N
21	560	3/4" 10UNC	(31.8) (35.8)	(18.7) (1.4)	(47.6)	JIS G4051 S25C N



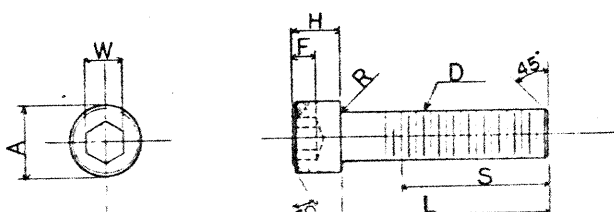
250
SPRING LOCK WASHER
(バネ座金)

LIST OF SPRING LOCK WASHER					
PART NO.	NO. REQ'D	O	P	B	T
22	44	(26) (10.2)	(42.8) (16.8)	(7.5) (0.29)	(6.4) (0.25)
25	608	(19.5) (7.6)	(32.7) (12.8)	(5.9) (0.23)	(4.8) (0.19)
26					
27	8	(16.2) (6.3)	(28) (11.0)	(5.2) (0.20)	(4) (0.15)



250
WASHER
(平丸座金)

LIST OF WASHER				
PART NO.	NO. REQ'D	O	P	T
28	28	(27) (10.6)	(63.5) (25)	(4.5) (0.17)
29	300	(33.2) (13.1)	(76.2) (30)	(6) (0.23)
30	120	(39.7) (15.6)	(88.9) (35)	(6) (0.23)

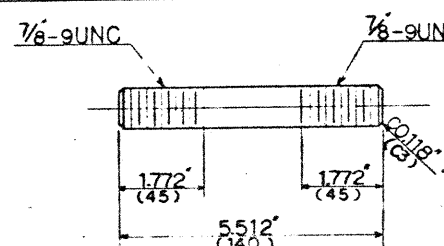


250
SOCKET HEAD CAP SCREW
(六角頭付ネジ)
UNBRAKO or JIS G4051 S25C N

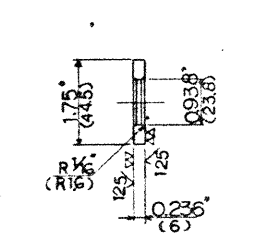
LIST OF SOCKET HEAD CAP SCREWS									
PART NO.	NO. REQ'D	D	L	S	H	A	W	F	R
11	48	3/4"-10UNC	(76.2) (3)	(50.8) (2)	(82.5) (3.4)	(128.3) (5.1)	(15.2) (0.6)	(0.37)	(0.33)
12									
13	560	3/4"-10UNC	(76.2) (3)	(50.8) (2)	(105) (4.1)	(29.6) (1.2)	(15.2) (0.6)	(0.37)	(0.33)
14	8	5/8"-11UNC	(69.9) (2.8)	(50.8) (2)	(170) (6.7)	(23.7) (0.9)	(12.7) (0.5)	(0.37)	(0.33)

LIST OF ANCHOR BOLT					
PART NO.	NO. REQ'D	D	L	ST	SB
6	24	1 1/2"-6UNC	(596.9) (1-11'2")	(63.5) (2 1/2)	(63.5) (2 1/2)
7	20	1 1/4"-7UNC	(838.2) (2-9')	(88.9) (3 1/2)	(127) (5)
8	64		(1600.2) (5-3')	(127) (5)	(152.4) (6)
9	16	1 1/4"-7UNC	(1422.4) (4-8')		
10	16	1 1/2"-6UNC	(1422.4) (4-8')	(127) (5)	(152.4) (6)

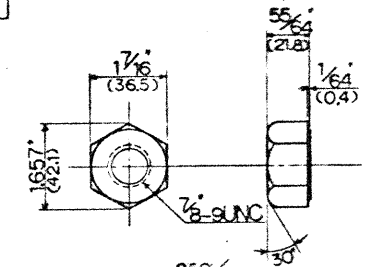
NOTES
1. All bolts 3/8 inches in diameter and over will be double end threads type.



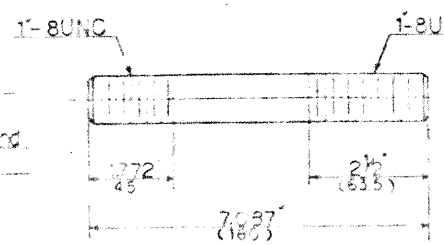
250
31 H.S. BOLT
(高力ボルト)
JIS G4105 SCM3
72REQ'D



250
32 WASHER
ワッシャー
144REQ'D



250
33 NUT
ナット
JIS G4105 SCM3
144REQ'D



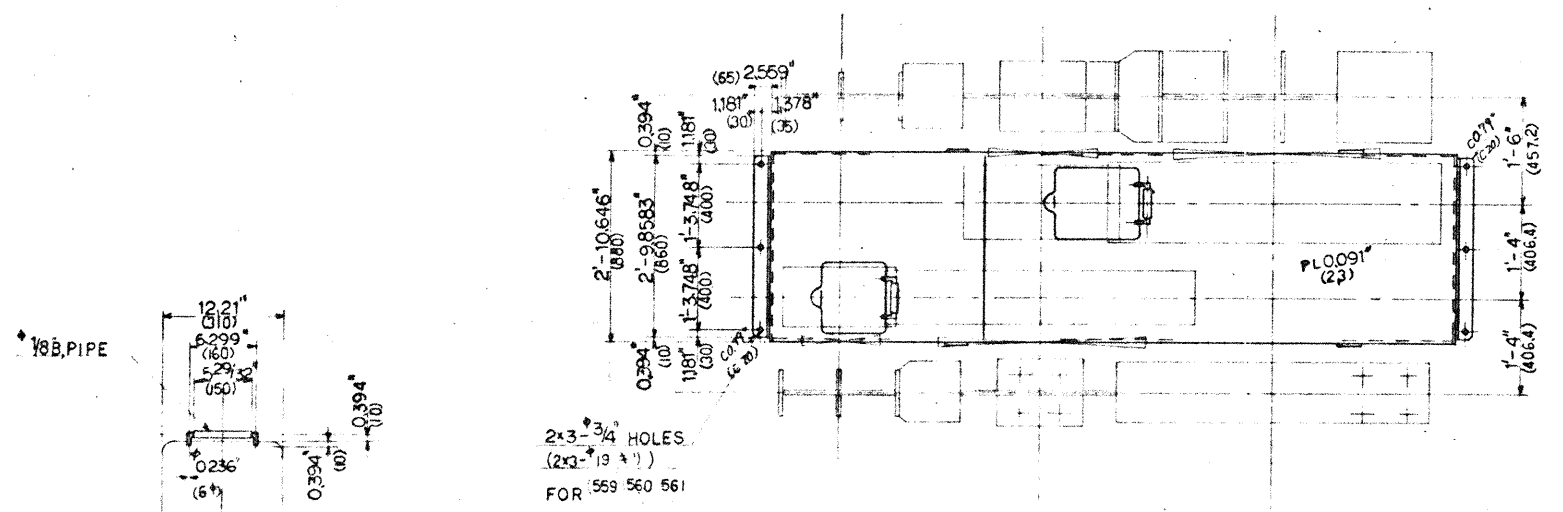
250
34 STUD BOLT
(植込ボルト)
JIS G4105 SCM3
10REQ'D

PROJECT NO. 31355-02 NEW HANOVER COUNTY
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
NORTHWEST CAPE FEAR RIVER BRIDGE
US 117-NC 133 AT WILMINGTON, NC

OPERATING MACHINERY
LIST OF BOLTS
(FOR ANCHOR)

NORTHWEST CAPE FEAR RIVER BRIDGE 31377
OPERATING MACHINERY
LIST OF BOLTS
(FOR ANCHOR)

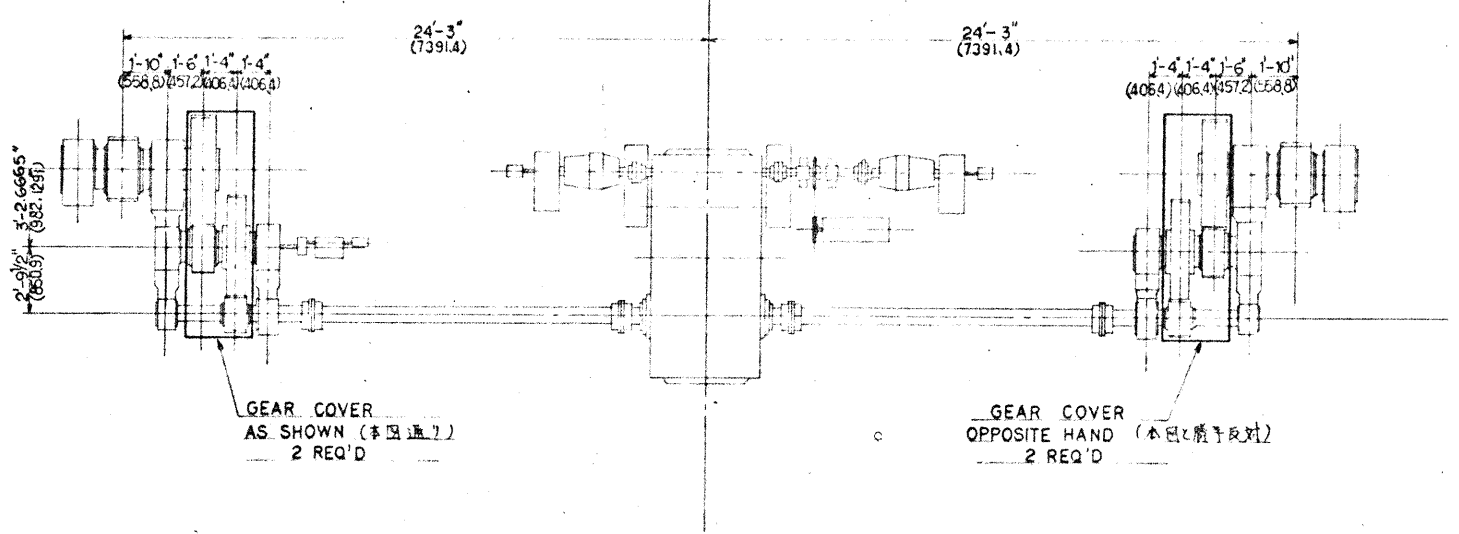
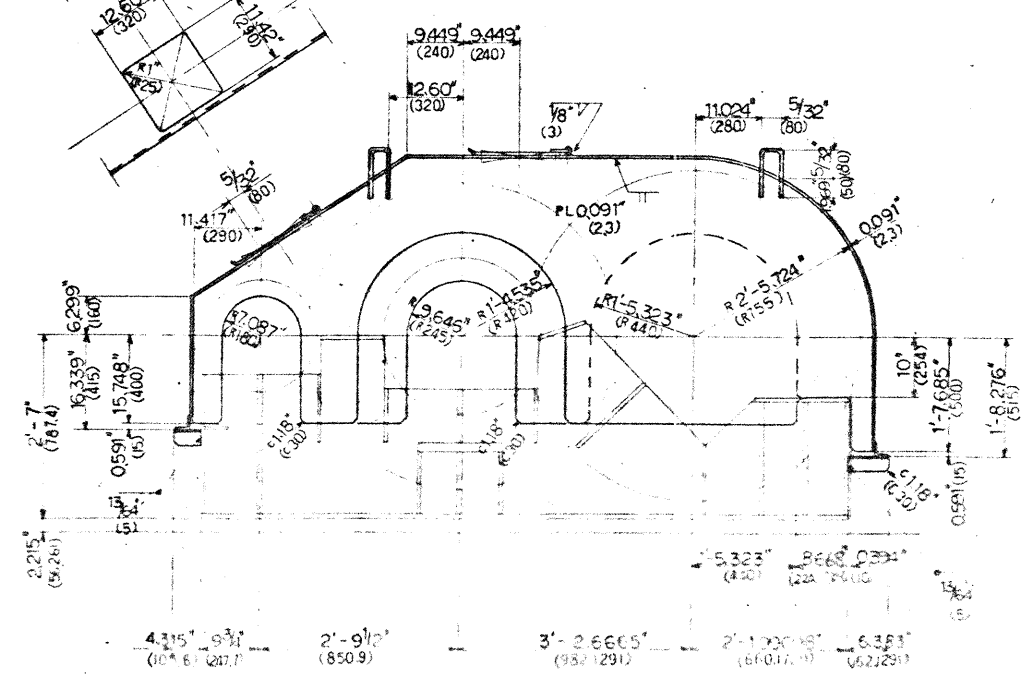
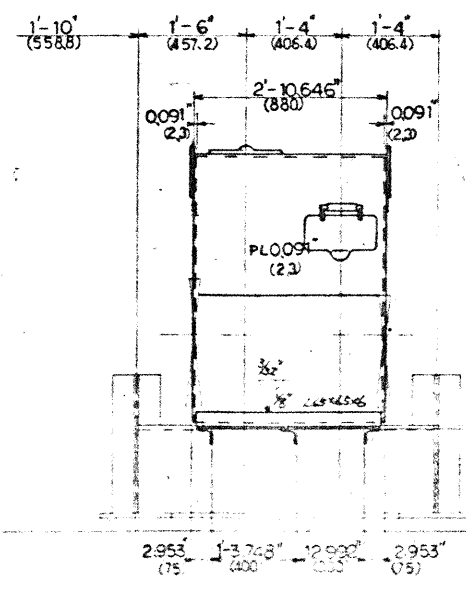
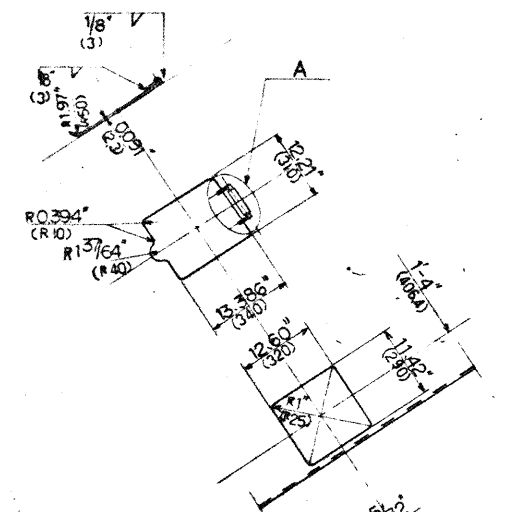
SEP 15 1972
As shown on drawing H-123



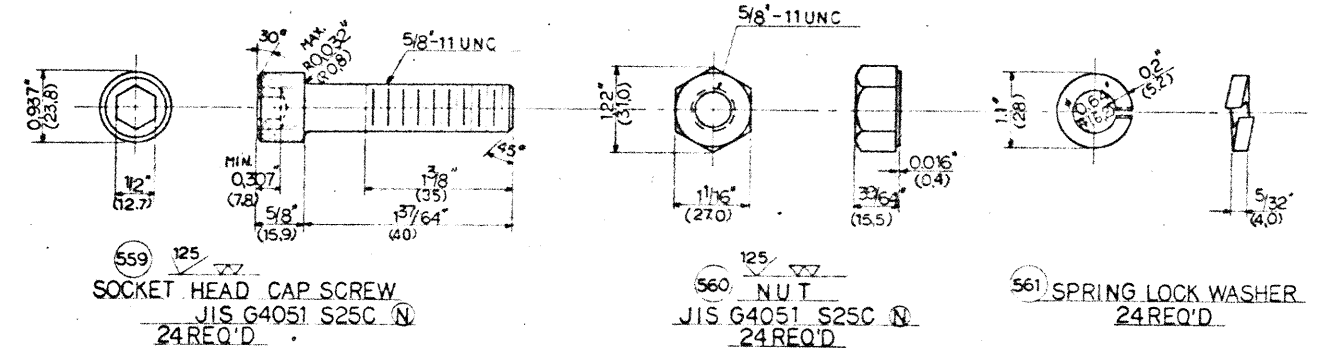
DETAIL - A
SCALE 12" = 1'-0"

2x3-3/4 HOLES
(2x3-19 x 1)
FOR 559 560 561

GEAR COVER 558
3/4" x 1-1/2" x 3/4" x 1'-0"
JIS G3101 SS41 AS SHOWN 2 REQ'D
4 REQ'D OPPOSITE HAND 2 REQ'D



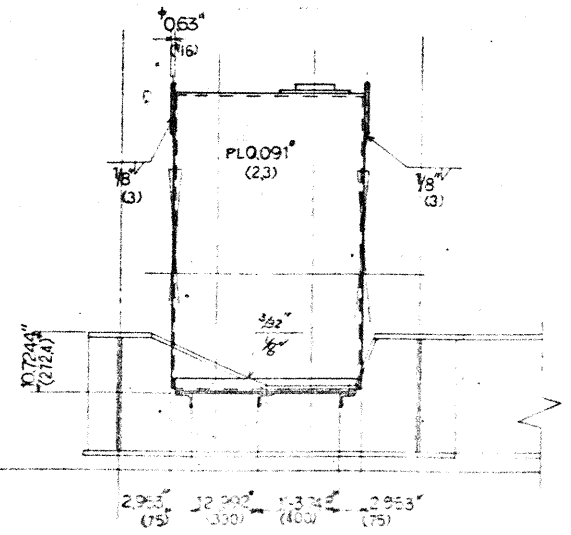
KEY - PLAN
NO. SCALE



559 125 SOCKET HEAD CAP SCREW
JIS G4051 S25C N
24 REQ'D

560 125 NUT
JIS G4051 S25C N
24 REQ'D

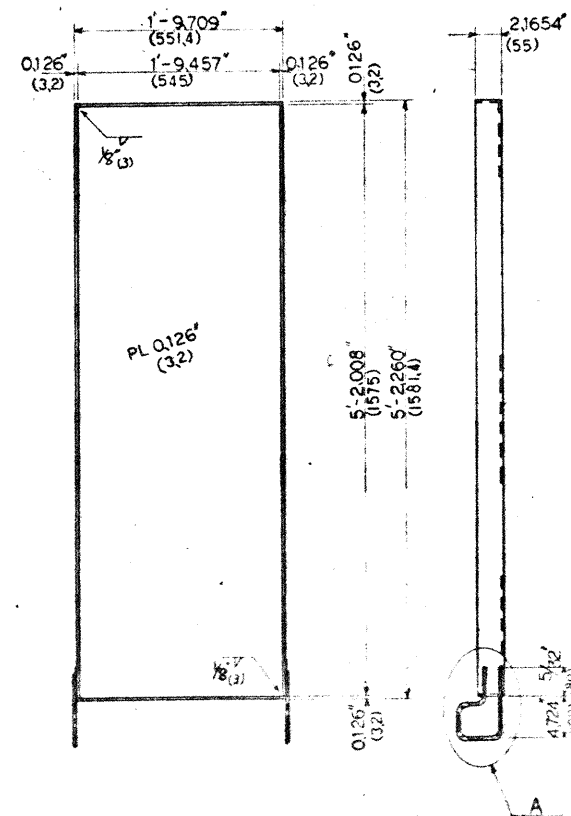
561 SPRING LOCK WASHER
24 REQ'D



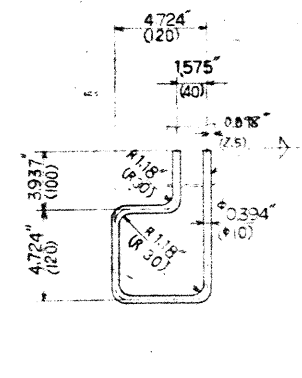
PROJECT NO. 51377 NEW HAVEN COUNTY
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
NORTHEAST CAFE FEAR RIVER BRIDGE
US 117 AC 135 AT WILMINGTON, N.C.
OPERATING MACHINERY
MACHINERY COVER

REVISIONS			
NO.	DATE	DESCRIPTION	BY

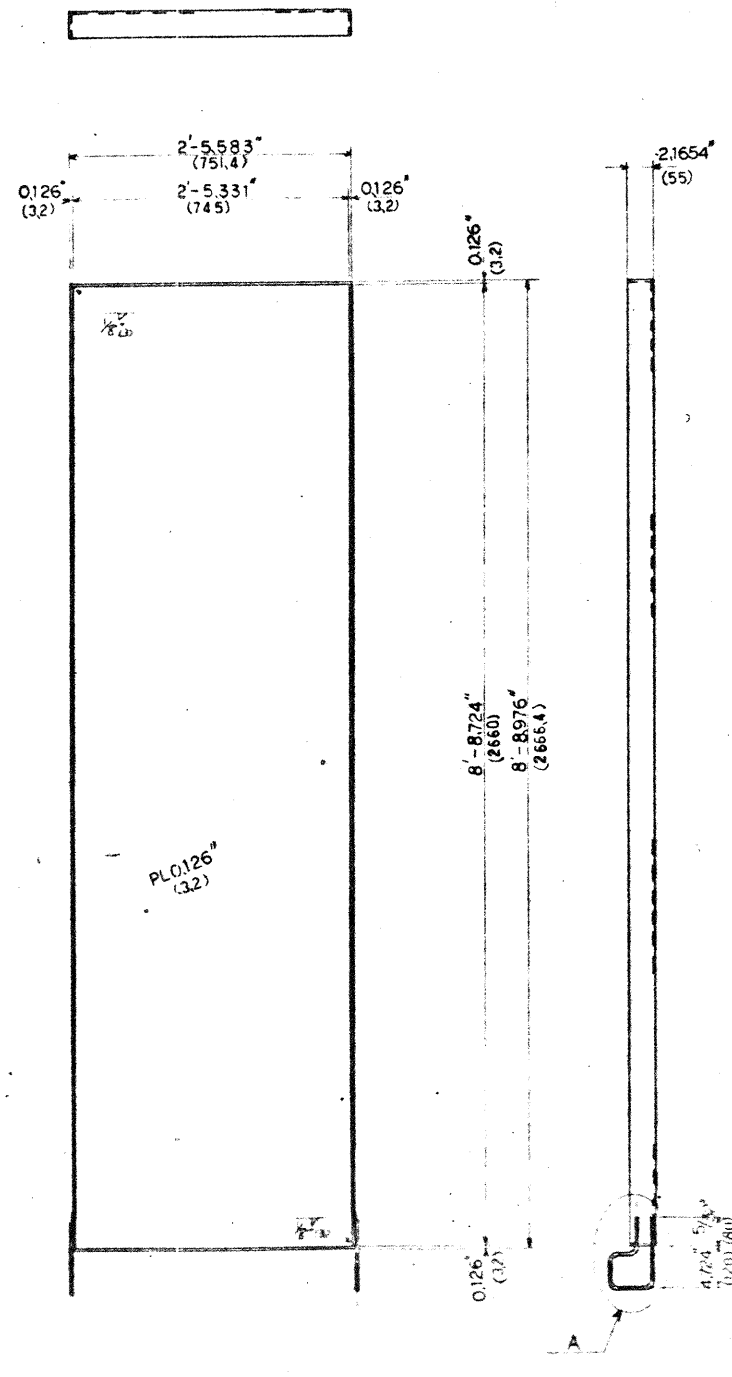
PROJECT NO. 51377
OPERATING MACHINERY
MACHINERY COVER
1" = 4" H-124
DATE 11-77 BY AS SHOWN, T.V. L. WILSON
DESIGNED BY T.V. L. WILSON
CHECKED BY T.V. L. WILSON
DRAWN BY T.V. L. WILSON



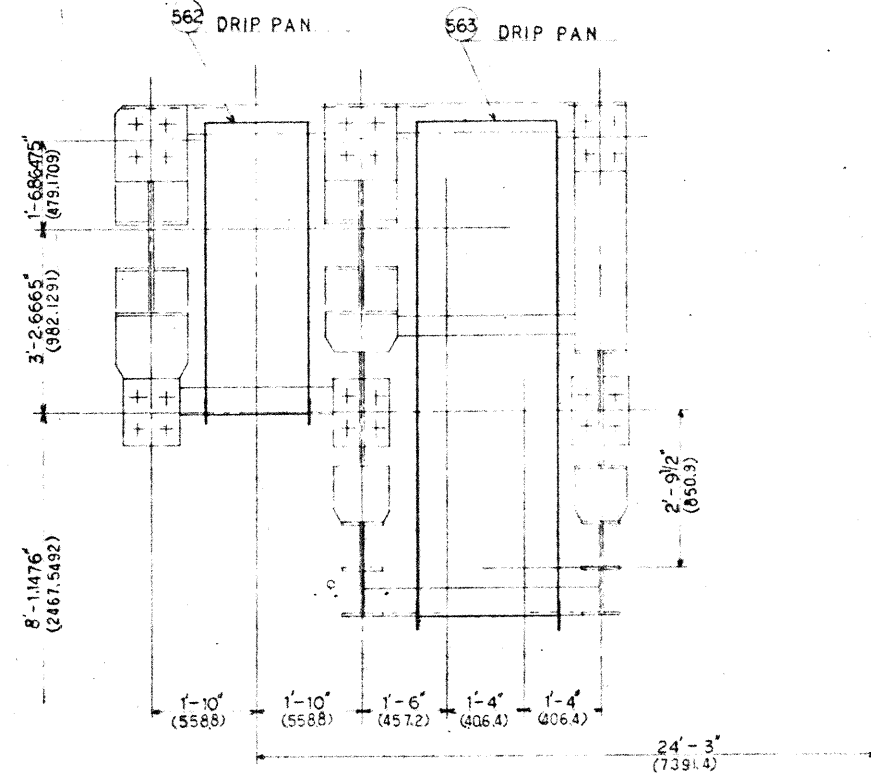
562 DRIP PAN
 油盆 12' x 1'-0"
 JIS G3101 SS41 GALVANIZED STEEL
 4 REQ'D



DETAIL - A
 SCALE 2 1/2\"/>



563 DRIP PAN
 油盆 12' x 1'-0"
 JIS G3101 SS41 GALVANIZED STEEL
 4 REQ'D



KEY - PLAN
 SCALE 1/5\"/>

PROJECT NO. 81355403 NEW JERSEY COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 FEDERAL AID
 NORTHHEAD AND FEAR RIVER BRIDGE
 US 117 N. 117 AT WILMINGTON, NC
 OPERATING MACHINERY
 DRIP PAN

REVISIONS		
NO	DATE	DESCRIPTION

31377
 OPERATING MACHINERY
 DRIP PAN
 H-125
 SEE AS SHOWN IN
 H-125



We submit the shop drawing of Trunnion Bronze Bushing for Engineer's final approval.

Concerning the material, it was already approved to substitute OILES 500 SP for ASTM B22 Alloy 911 on the discussion on Thursday, April 28, 1977 at NCDOT and have already ordered this material in order to keep delivery schedule.

We attach catalogue of OILES "SPECIFICATION OF OILES 500 SP-G" for your better information.

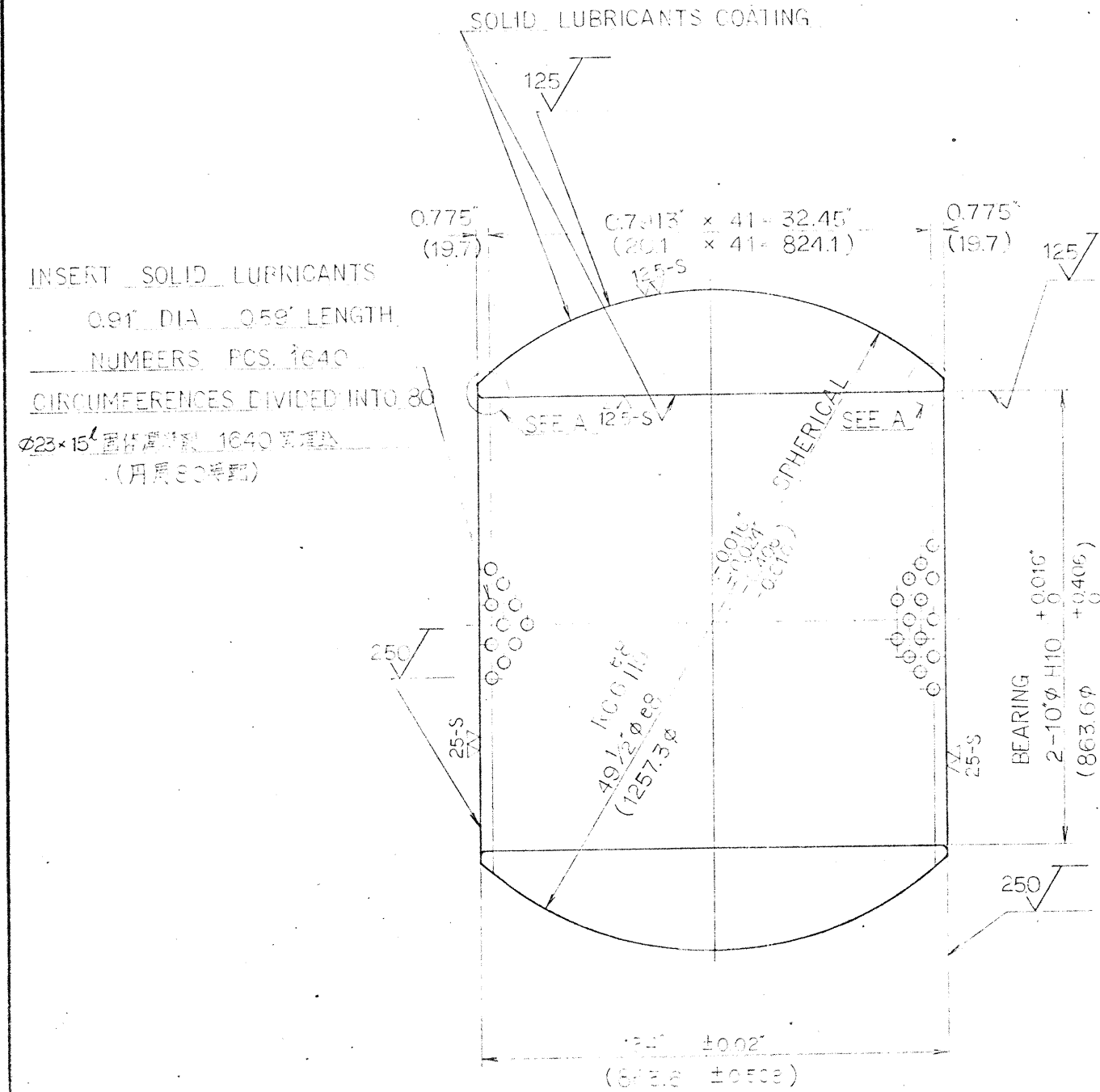
The symbol "-G" of 500 SP-G means the type of lubricating insert and there is no difference in basic metal.

We will be much appreciated if you give us your kind approval as soon as possible.

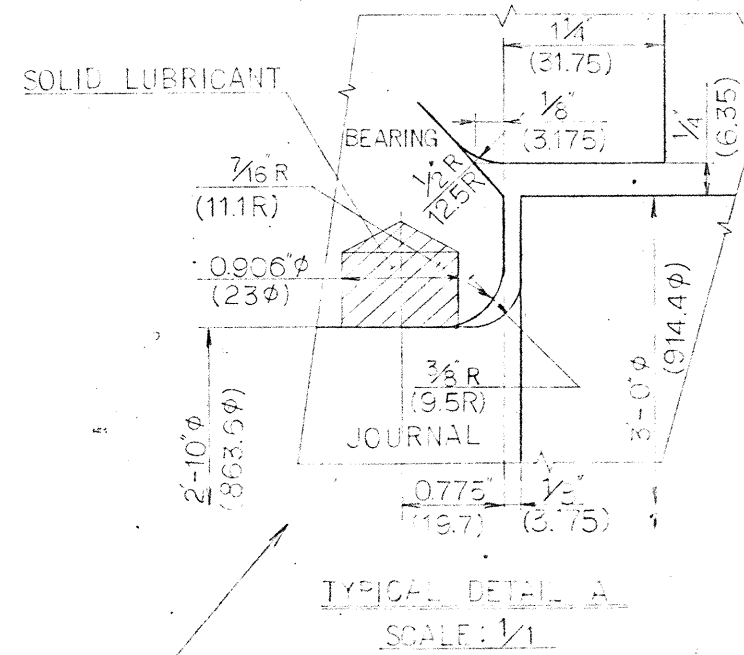
鉄板 1
本資(鑽攻) 1
計 2

NORTHEAST CAPE FEAR RIVER BRIDGE		YARD No	31377
HYDRAULIC STRUCTURE DESIGNING SECTION		OPERATING MACHINERY	
APPROVED <i>A. Yamaguchi</i>		FOR APPROVAL	
CHECKED <i>S. Haraguchi</i>		TRUNNION BRONZE BUSHING	
DRAWN _____			
TRACED _____			
DATE Oct. 3, '77	SCALE	ITEM	DRAWING No H 126
YOKOHAMA SHIP YARD & ENGINE WORKS, MITSUBISHI HEAVY-INDUSTRIES, LTD.			

LET	REVISION RECORD	DATE	DWG	CHECK



INSERT SOLID LUBRICANTS
 0.91" DIA 0.58" LENGTH
 NUMBERS PCS. 1640
 CIRCUMFERENCES DIVIDED INTO 80
 φ23×15 潤滑剤挿入 1640 個
 (円周80等分)



NOTE. It is necessary to arrange the lubricating inserts in order to be touched with whole bearing length of the shaft. Therefore, lubricating inserts must be inserted at the round edges of both ends.

MATERIAL
 OILES 500SP-G
 BASE METAL: ASTM B-22 ALLOY 863
 SOLID LUBRICANTS: OILES G-LUBRICANT

NO.	NAME OF PART	MATERIAL	QTY	REMARKS

OILES INDUSTRY CO., LTD オイレス工業株式会社				
REF				
APPR'D	CHECK	DES'D	DWG. NO.	DATE
				18. AUG 1977
NAME	TRUNNION BRONZE BUSHING			3RD ANGLE PROJECTION
DWG. NO.	G177-0762-30			



1. Description

We submit the drawing of Gear Coupling for Engineer's final approval.

Concerning the Couplings, it was already approved to substitute MITSUBISHI'S Gear Coupling for FALK'S Rigid Coupling and Gear Coupling specified on the Contract drawing, on the discussion on thursday, April 28, 1977 at NCDOT.

Here we prepared drawings, calculation data and catalogue of MITSUBISHI'S Gear Coupling, and each drawing corresponds as follows.

Your specification	Our proposal
FALK'S Gear Coupling TYPE G52, SIZE 70G	MITSUBISHI'S Gear Coupling MT-CEN 500 (DWG. NO. CO-42311)
FALK'S Rigid Coupling TYPE G81, SIZE 20G	MITSUBISHI'S Gear Coupling MT-SSN 224 (DWG. NO. CO- 42312)

The material of coupling is based on JIS standard, but each material has sufficient enough strength to function as a coupling.

In case of replacement in future, this coupling can easily be replaced with the coupling purchased in U.S.A.

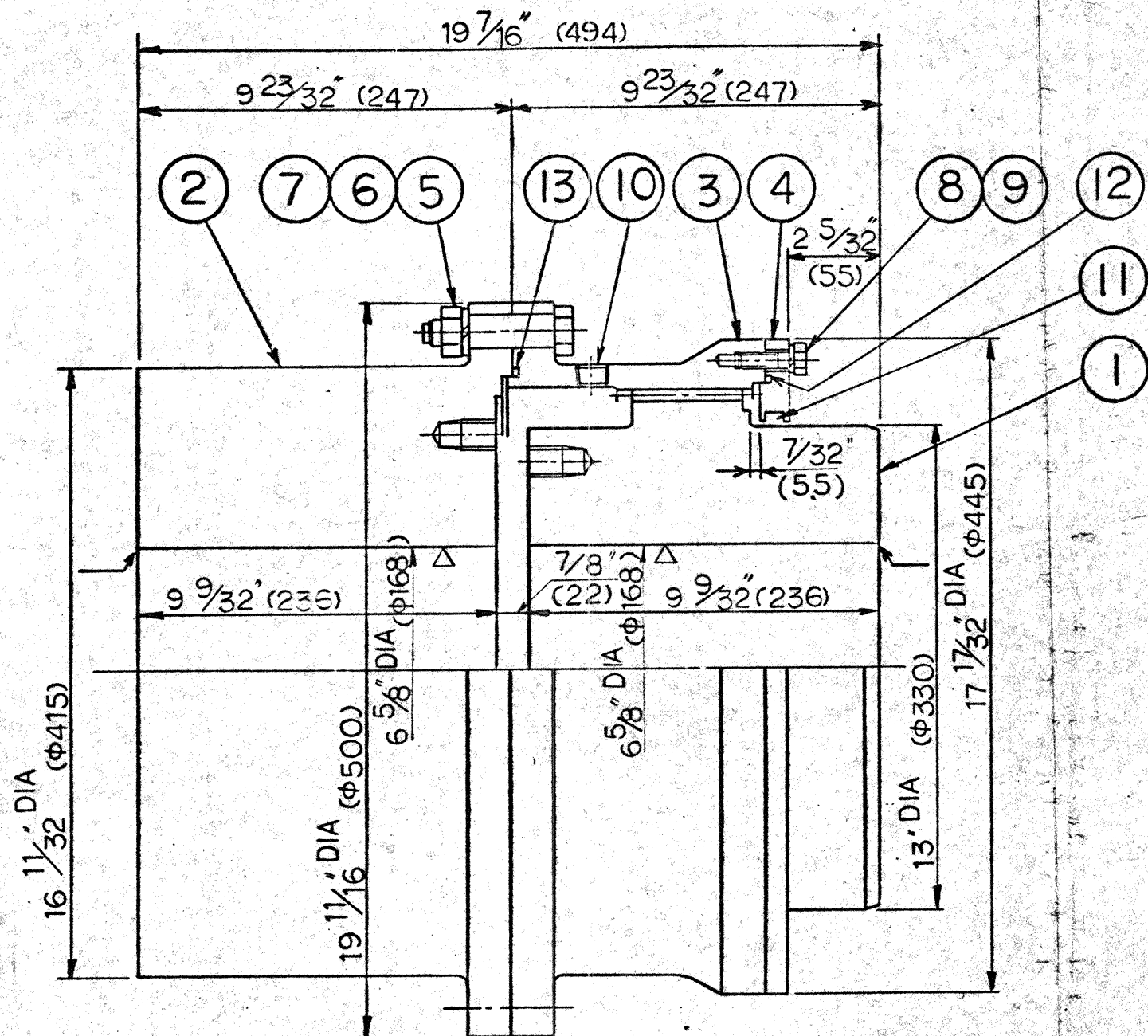
We will be much appreciate if you give us your kind approval as soon as possible.



客先 9
鉄線 1
本資(蹟岐) 1
控 1
計 12

NORTHEAST CAPE FEAR RIVER BRIDGE		YARD NO	31377
HYDRAULIC STRUCTURE DESIGNING SECTION APPROVED <i>A. Yamana</i>		OPERATING MACHINERY FOR APPROVAL GEAR COUPLING	
CHECKED <i>J. Mitani</i>			
DRAWN <i>S. Horaguchi</i>			
TRACED			
DATE Oct. 6. 77	SCALE	ITEM	DRAWING NO H-127
YOKOHAMA SHIP YARD & ENGINE WORKS, MITSUBISHI HEAVY-INDUSTRIES, LTD.			

加工出来の寸法	最小	最大
ハブ	170	236
固定フランジ	170	265



ストック品 ②
再加工品 ③
別途製作品 ④

3rd ANGLE PROJECTION

PLAN RECORD

ISO METRIC SCREW THREADS

OWNER NO ETD10007-0
31377

FOR APPROVAL

8	13	O RING φ403 x 4	RUBBER	1					
8	12	O RING φ390 x 4	RUBBER	1					
8	11	O RING φ330 x φ13	RUBBER	1					
16	10	PLUG PT 1/2	SCM3	2					
128	9	SPRING WASHER M12	SWRH62B	16					
128	8	BOLT M12 x 40	SS41	16					
128	7	SPRING WASHER M20	SWRH62B	16					
128	6	NUT M20	SS41	16					
128	5	REAMER BOLT M20 x 8.5	SCM3	16					
8	4	SIDE COVER	SS41	1					91-22150-01 ②
8	3	SLEEVE	S450④	1					91-22120-01 ②
8	2	FLANGE	SF55	1					91-22140-01 ②
8	1	HUB	SF55	1					91-22110-01 ②

SP. WORK	REF.	NAME OF PART	MATERIAL	TEST	WORK	SP.	PIECE	REMARK	種別
8 SET	No.			PIECE	No.	REQ'D	WEIGHT		

6-258203 0100 6-9-74 2/4

ENGINEERING DEPARTMENT
BLOWER & MACHINERY DESIGNING SECTION

FEAR RIVER BRIDGE (横船)

APPROVED BY: *[Signature]*
CHECKED BY: *[Signature]*
DESIGNED BY: *[Signature]*
DRAWN BY: *[Signature]*

MT-CEN 500TYPE
GEAR COUPLING

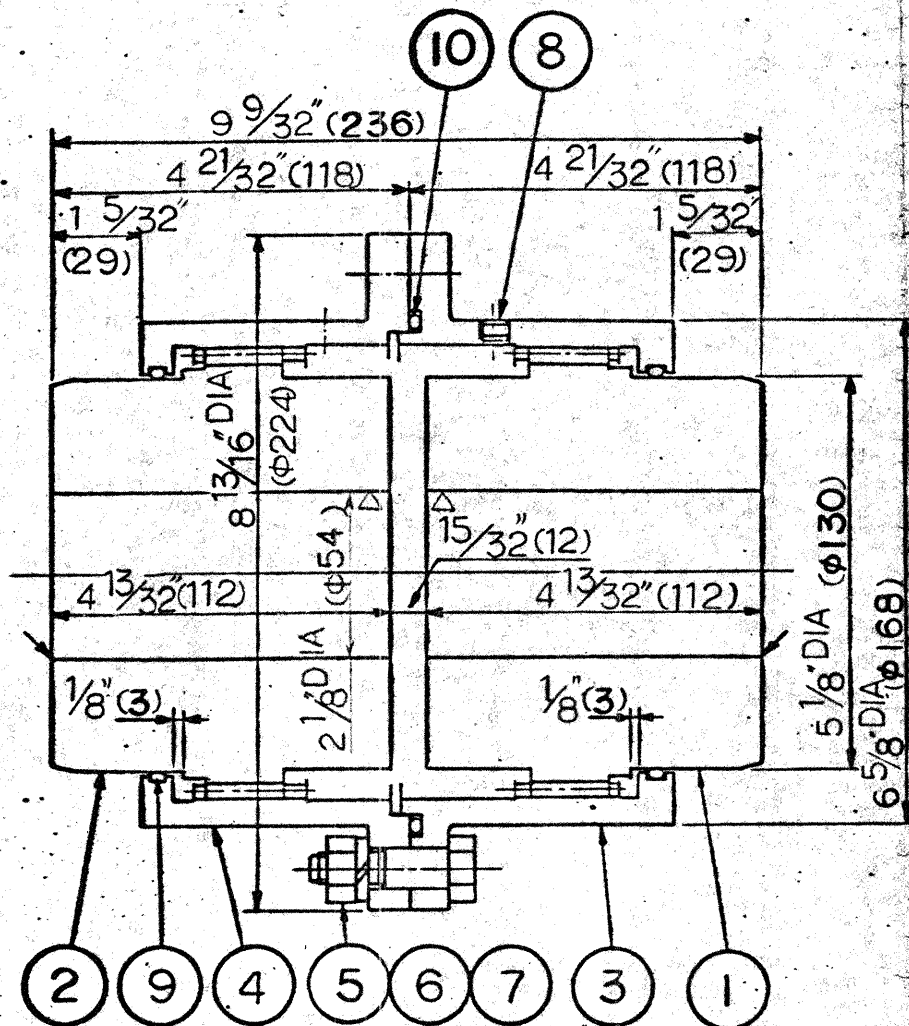
SCALE: 1:1 1:2 1:4 1:8 1:16 1:32

OWNER: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

CO-42311 R-0

CHANGE RECORD

加工出来の寸法	最小	最大
ハブ	56	93
固定フランジ		



3rd ANGLE PROJECTION

PLAN RECORD
ISO METRIC SCREW THREADS
OWNER NO. ETD10007-0
31377

FOR APPROVAL

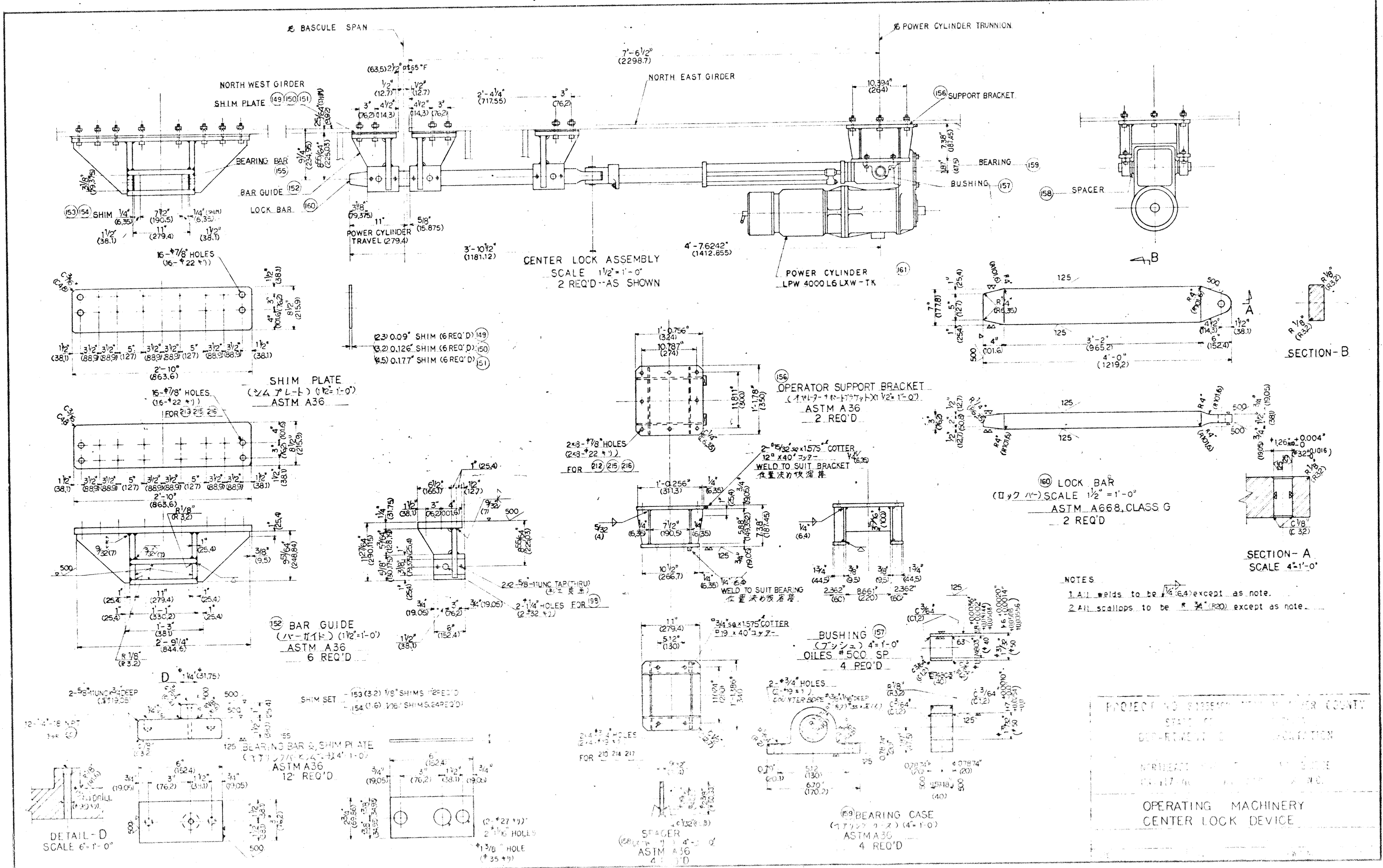
SP. WORK	REF. No.	NAME OF PART	MATERIAL	TEST PIECE	WORK No.	SP. REQ'D	PIECE WEIGHT	REMARK	検別
	2	10	O RING G165	RUBBER	1				①
	4	9	O RING P130	RUBBER	2				②
	8	8	PLUG PT 1/8	SCM3	4				③
	16	7	SPRING WASHER M12	SWRH62B	8				④
	16	6	NUT M12	SS41	8				⑤
	16	5	REAMER BOLT M12x50	S45C ⊕	8				⑥
	2	4	SLEEVE	S48C ⊕	1			91-07230 -01	⑦
	2	3	SLEEVE	S48C ⊕	1			91-07220 -01	⑧
	2	2	HUB	S48C ⊕	1			91-07210 -01	⑨
	2	1	HUB	S48C ⊕	1			91-07210 -01	⑩

6-258203 6-258203 0200	DATE 7/27	REFERENCE ENGINEERING DEPARTMENT BLOWER & MACHINERY DESIGNING SECTION	FEAR RIVER BRIDGE (横船)
OWNER	DATE OF ISSUE	APPROVED BY <i>[Signature]</i>	MT-SSN 224TYPE GEARCOUPLING
FACTORY		CHECKED BY <i>[Signature]</i>	
		DESIGNED BY <i>[Signature]</i>	
		DRAWN BY <i>[Signature]</i>	
SCALE			CO-423/2 R-0

CHANGE RECORD

REVISIONS		
NO.	DATE	DES. / MOD. / BY

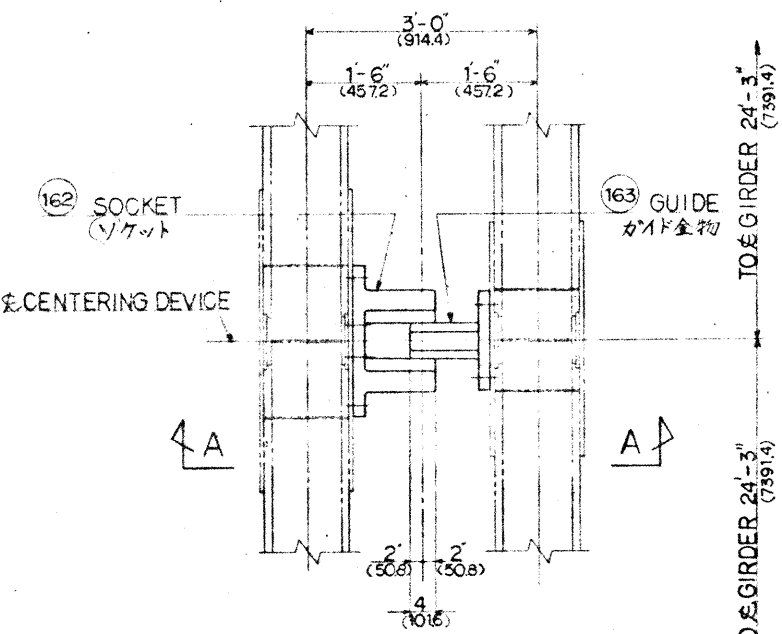
4-2234



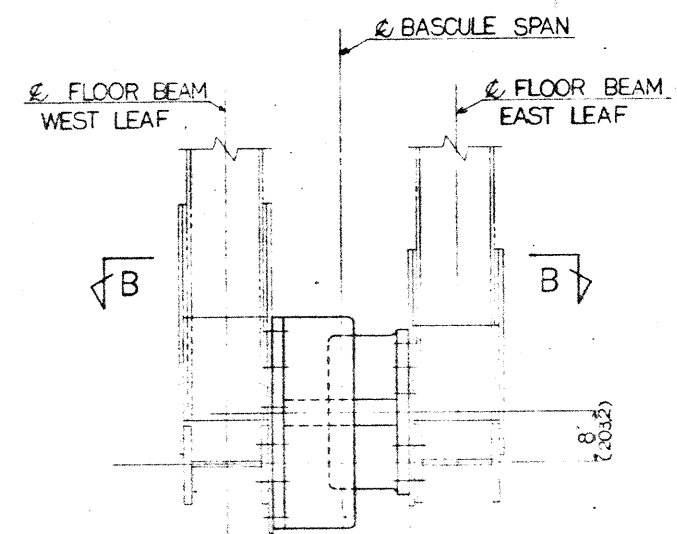
NOTES
 1. All welds to be 1/4" (6.4) except as note.
 2. All scallops to be R 1/8" (3.2) except as note.

PROJECT NO. 81888-1000
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 NORTHEAST RIVER BRIDGE
 OPERATING MACHINERY
 CENTER LOCK DEVICE

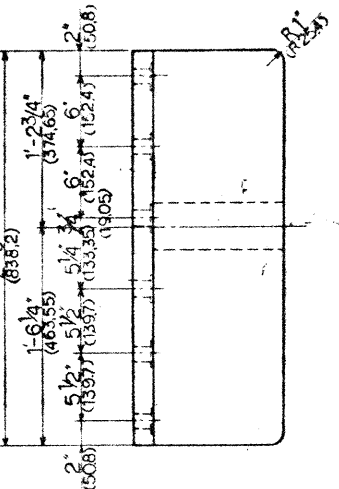
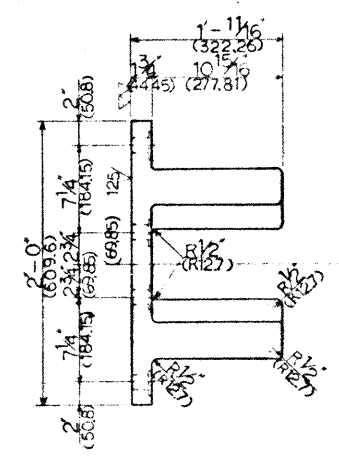
NORTHEAST CAPE FEAR RIVER BRIDGE
 31377
 OPERATING MACHINERY
 CENTER LOCK DEVICE
 H-128



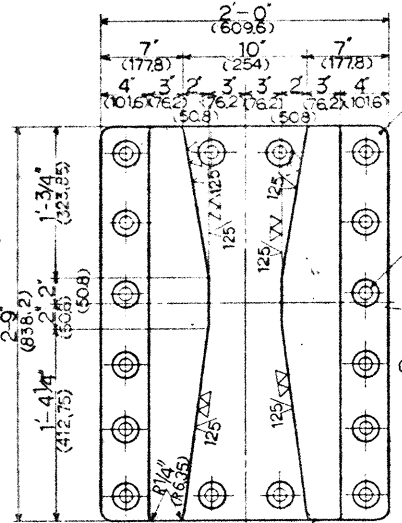
PLAN SECTION B~B



SECTIONAL ELEV. A~A ASSEMBLY 45'-10"

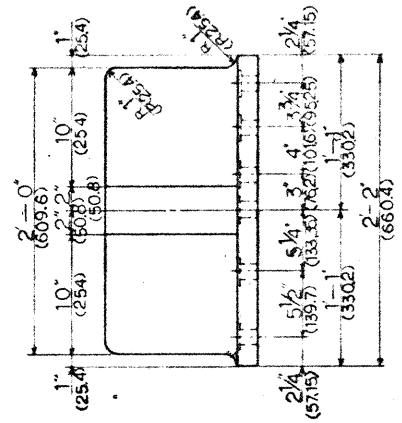
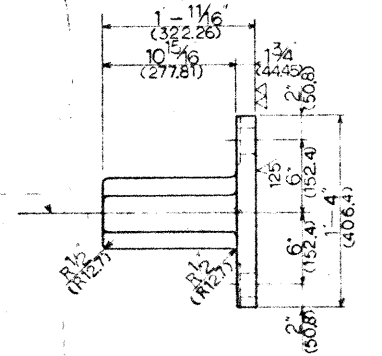


162 SOCKET (ソケット) 1 1/2'-1'-0" ASTM A27 GRADE 70-36 1 REQ'D



COUNTER BORE 2 3/16" x 1/16" DEEP (厚 7/16" x 56 x 深 1.6)
 16-#1/8 HOLES (16-28.6 x 1.6) FOR 200 (20) 204 (20)
 COUNTER BORE 2 3/16" x 1/16" DEEP (厚 7/16" x 56 x 深 1.6)
 12-1/8" x 2.28" SLOTTED HOLES (12-28.6 x 58 x 2.28) FOR 200 (20) 204 (20)

163 GUIDE (ガイド金物) 1 1/2'-1'-0" ASTM A27 GRADE 70-36 1 REQ'D



PROJECT I.O. BRIDGE NEW LINCOLN COUNTY
 STATE OF MISSISSIPPI
 DEPARTMENT OF TRANSPORTATION
 MISSISSIPPI
 POLYMER COFFER DAM BRIDGE
 US 101 NO. 101 AT LINCOLN, MS
 OPERATING MACHINERY
 CENTERING DEVICE

REVISIONS		
DATE	DESCRIPTION	BY

NORTHEAST CAPE FEAR RIVER BRIDGE 31377

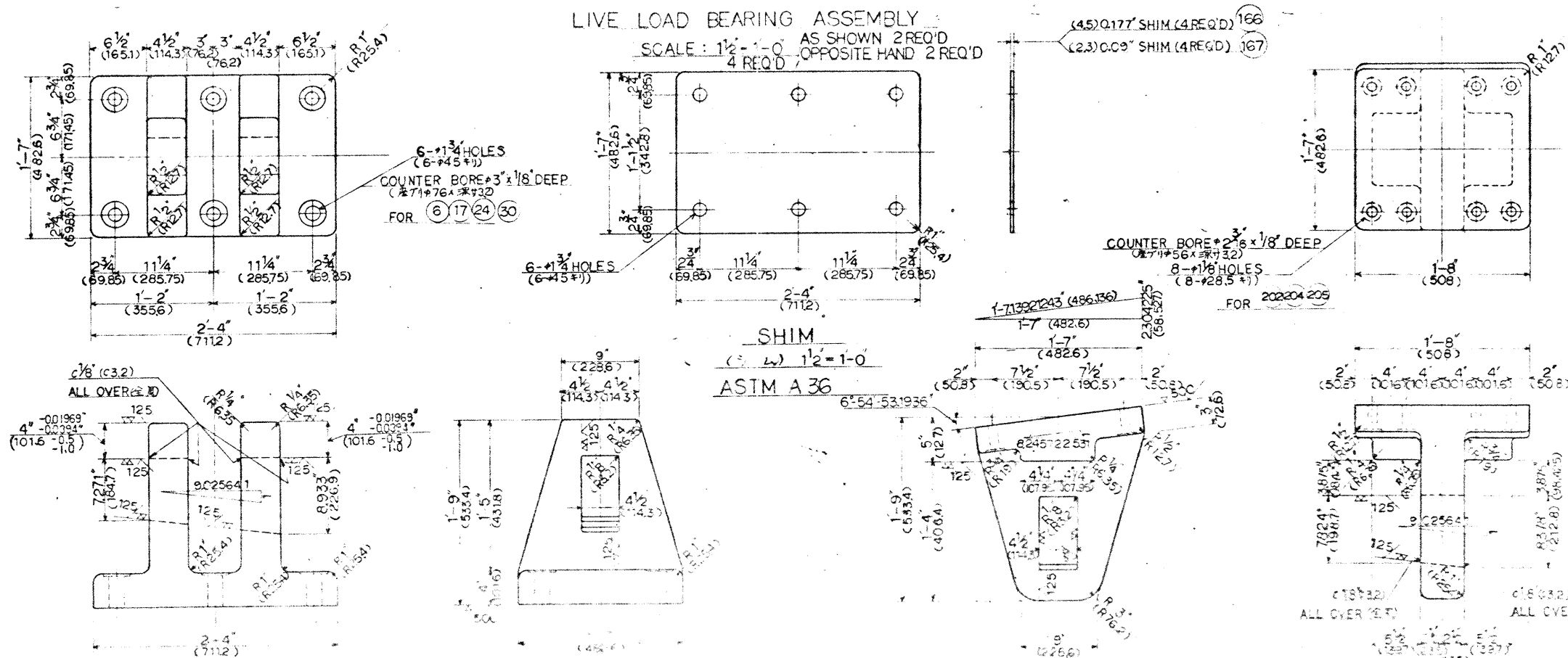
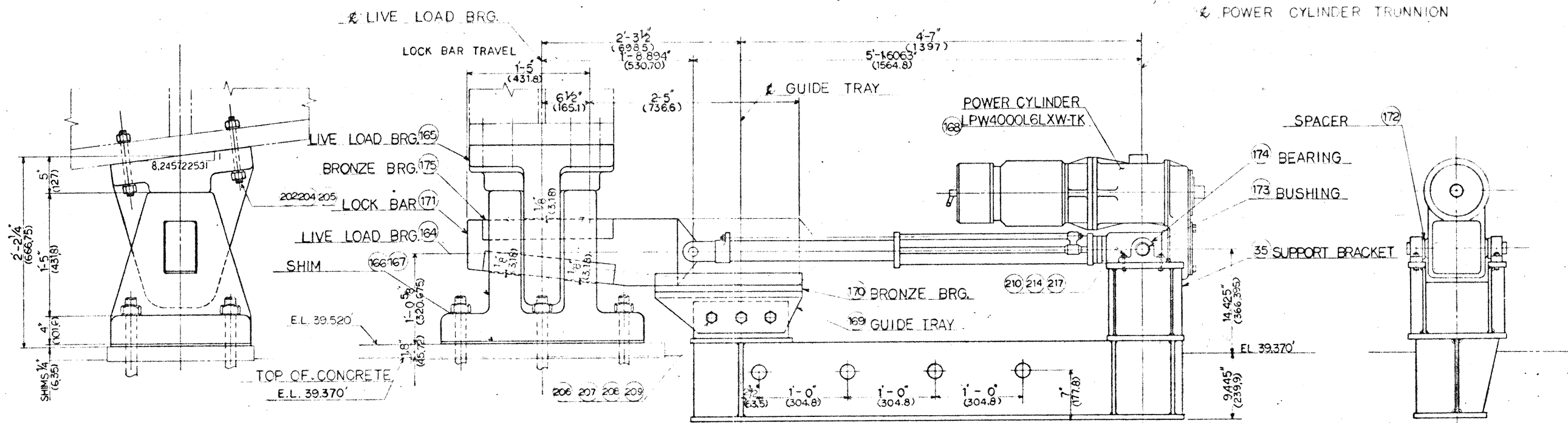
OPERATING MACHINERY CENTERING DEVICE

REV H-129

DATE 04-77

BY [Signature]

9
1
1
12A



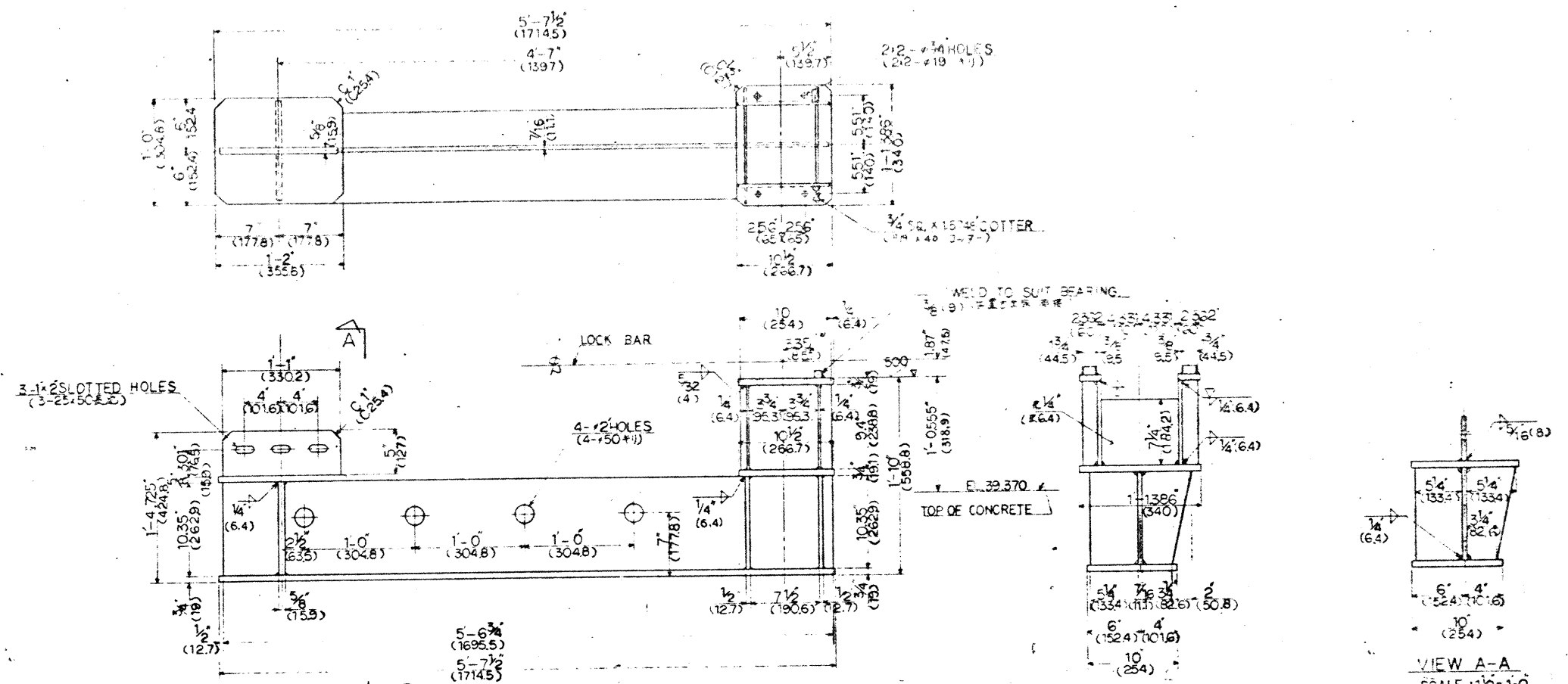
164 LIVE LOAD BEARING
 (171 D-F-X-Y-Z) SCALE 1/2"=1'-0"
 ASTM A27 GRADE 70-80
 4 REQ'D AS SHOWN 2 REQ'D
 OPPOSITE HAND 2 REQ'D

165 LIVE LOAD BEARING
 (171 D-F-X-Y-Z) SCALE 1/2"=1'-0"
 ASTM A27 GRADE 70-80
 4 REQ'D AS SHOWN 2 REQ'D
 OPPOSITE HAND 2 REQ'D

PROJECT NO. 8133000 NEW HANOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTH-EAST CREEK RIVER BRIDGE
 US 17/NC 127 AT WILMINGTON, N.C.
 OPERATING MACHINERY
 LIVE LOAD BEARING

REVISIONS		
NO.	DESCRIPTION	BY

NORTH-EAST CREEK RIVER BRIDGE
 31377
 OPERATING MACHINERY
 LIVE LOAD BEARING
 H-130
 DWG NO.



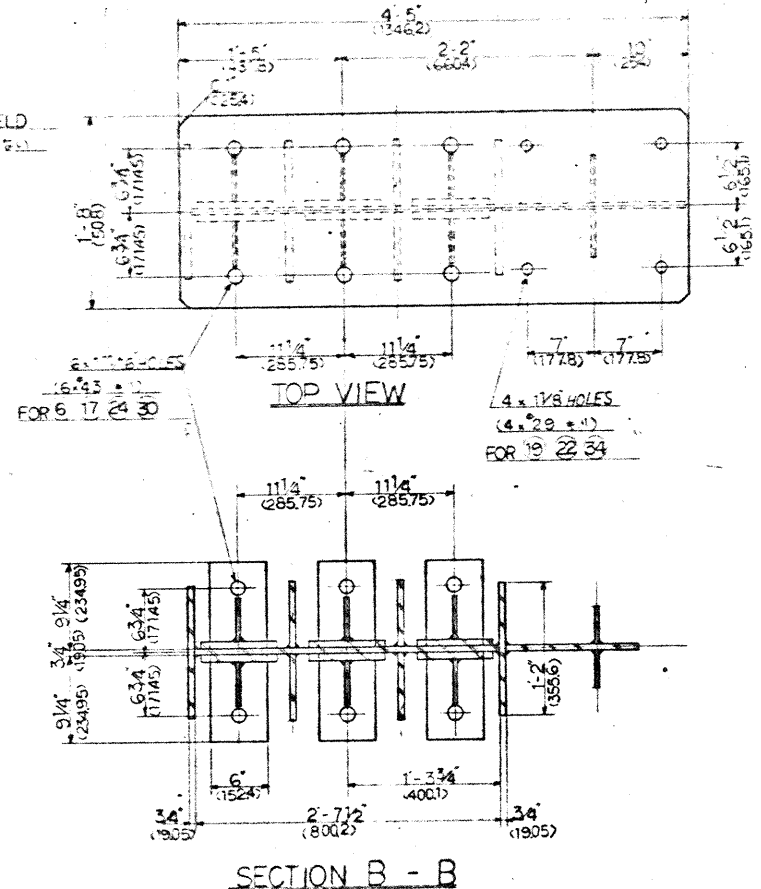
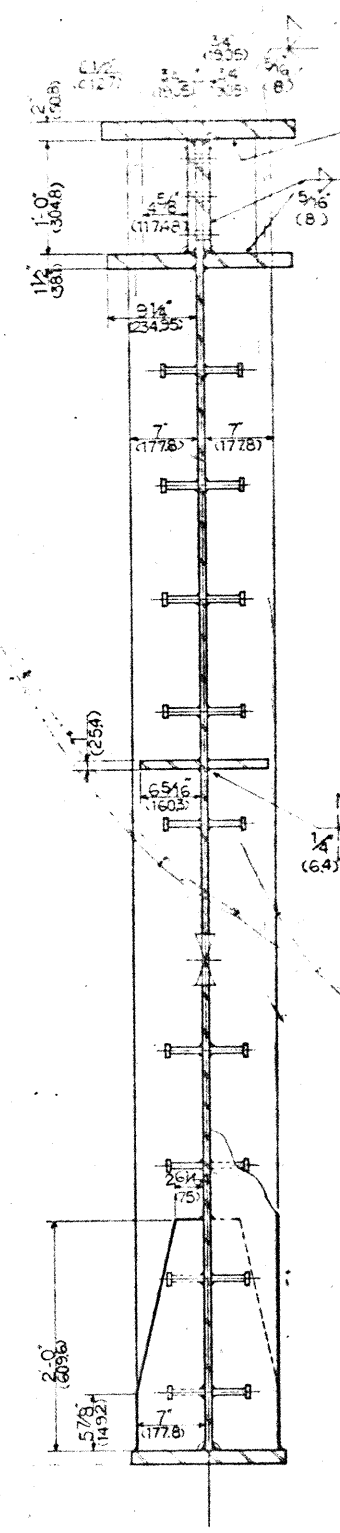
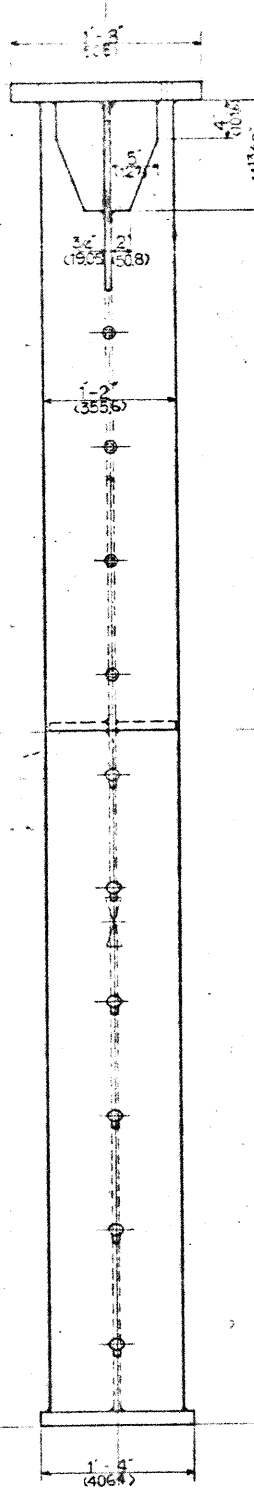
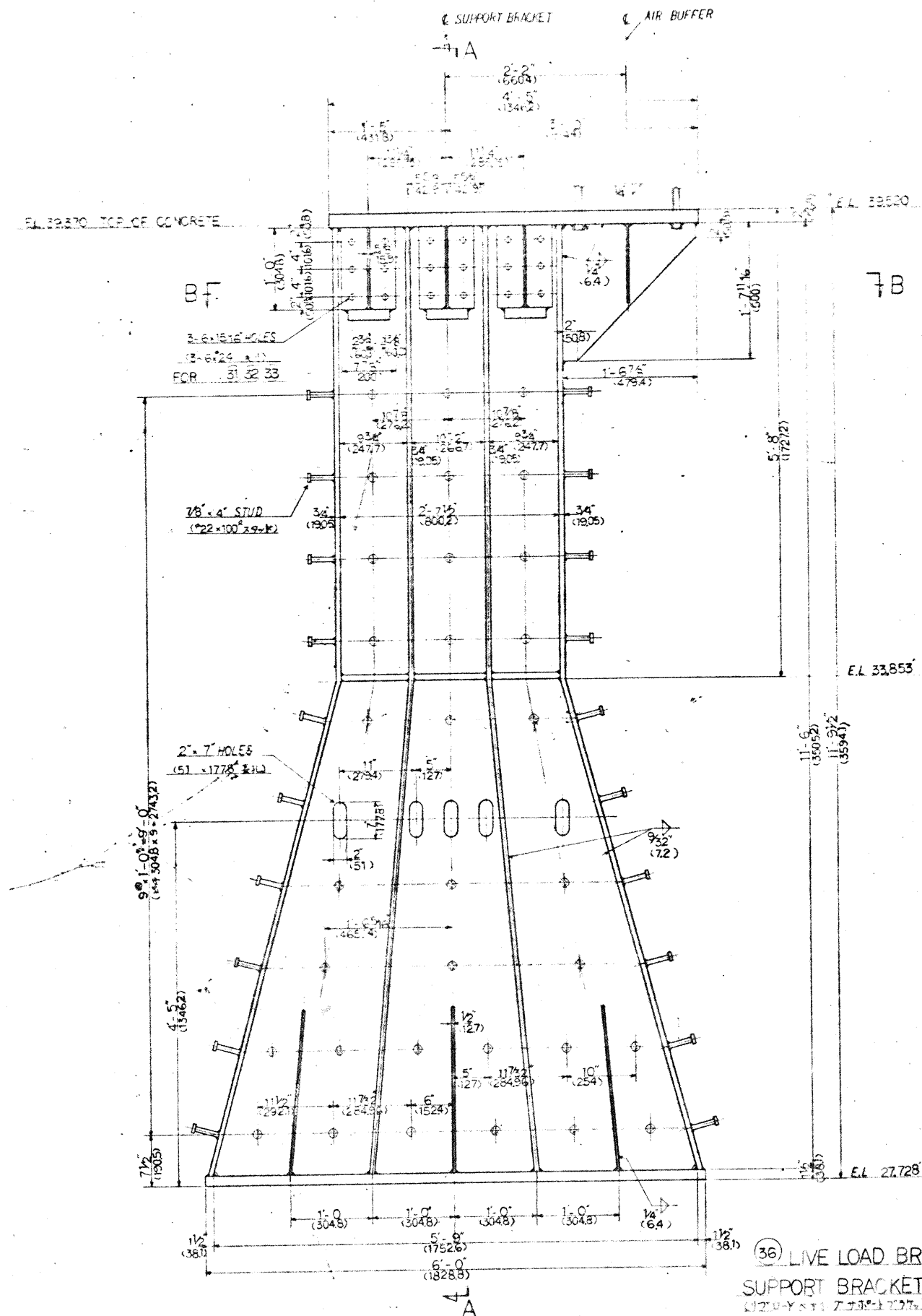
35 GUIDE TRAY AND LOCK BAR OPERATOR
 SUPPORT BRACKET
 (サポートブラケット) 1/2-1-0
 ASTM A36 STEEL
 4REQ'D (as shown)
 2REQ'D (opposite hand)

- NOTES
- All welds to be $\frac{1}{4}$ " except as noted.
 - All scallops to be $\frac{1}{4}$ "R except as noted.

PROJECT NO. 8.1355402 NEW HANOVER COUNTY		
STATE OF NORTH CAROLINA		
DEPARTMENT OF TRANSPORTATION		
RALEIGH		
NORTHEAST CAPE FEAR RIVER BRIDGE		
US 117-NC 133 AT WILMINGTON, N.C.		
OPERATING MACHINERY		
LIVE LOAD BEARING, OPERATOR SUPPORT		
DATE	SCALE	DWG NO

NORTHEAST CAPE FEAR RIVER BRIDGE	YARD NO	31377
OPERATING SECTION	OPERATING MACHINERY	
APPROVED	LIVE LOAD BEARING	
CHECKED	OPERATOR SUPPORT	
DRAWN	ITEM	000000H-131
DATE	SCALE	AS SHOWN
TOKUJIMA SHIP YARD & ENGINE WORKS, MITSUBISHI HEAVY INDUSTRIES, LTD.		

図面
 第 9
 種
 第 1
 図
 第 14



NOTES
 1. All welds to be $\frac{1}{4}$ " except as noted.
 2. All scallops to be $R\frac{1}{4}$ " except as noted.

PROJECT NO. 81355 OF NEW HANOVER
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 NORTHEAST CAROLINA FREE ZONE
 US 17-NC 101 AT WASHINGTON, N.C.
 OPERATING MACHINERY
 LIVE LOAD BEARING SUPPORT BRACKET

DATE	DESCRIPTION	BY

NORTHEAST CARE FEAR RIVER BRIDGE	YARD NO. 31377
OPERATING MACHINERY	
LIVE LOAD BEARING	
SUPPORT BRACKET	

SCALE AS SHOWN
 H-132
 1/32" = 1'-0"

配布完
 卷完 9
 箭数 1
 张数 1
 张主 1
 計 13 张

1). Description

We submit the drawing of Power Cylinder for Engineer's final approval.

Concerning the Power Cylinder, it was already approved to substitute TSUBAKIMOTO CHAIN CO. Power Cylinder for EARLE GEAR MACHINE CO. Lock Bar Operator on the Contract drawing, on the discussion on April 28, 1977 at NCDOT.

Here we prepared catalogue and drawing of TSUBAKIMOTO Power Cylinder.

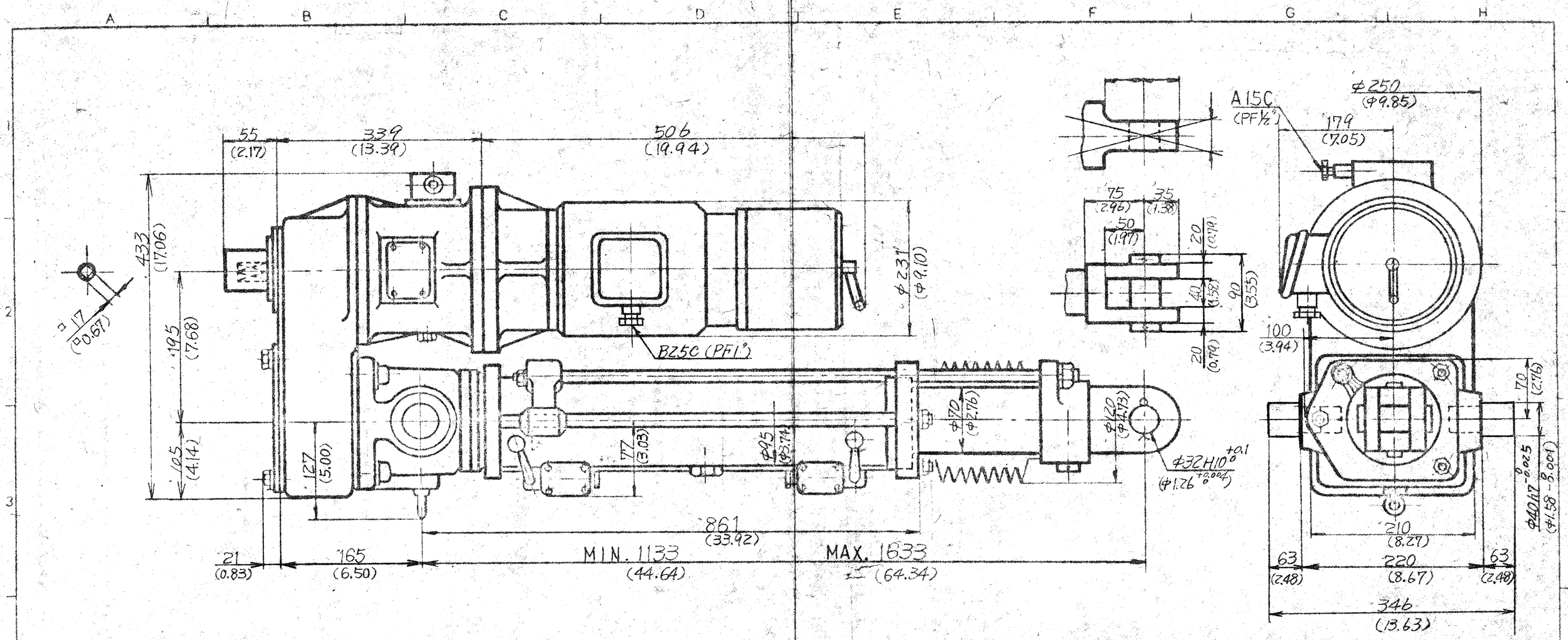
As TSUBAKIMOTO CHAIN CO. has an Agency in U.S.A, you can expect good after-service for Power Cylinder.

But we will provide one more Power Cylinder as a spare part, which was required by NCDOT.

We would very much appreciate if you would give us kind approval for this matter.

提出 9
 本質(讀取) 1
 控 2
 計 12

NORTHEAST CAPE FEAR RIVER BRIDGE		YARD No	31377
HYDRAULIC STRUCTURE DESIGNING SECTION APPROVED <i>A. Yamaguchi</i> <i>J. Matsui</i>		OPERATING MACHINERY FOR APPROVAL	
CHECKED <i>S. Haraguchi</i> DRAWN TRACED		POWER CYLINDER FOR CENTER LOCK AND LIVE LOAD BEARING	
DATE Oct. 20, '77	SCALE	ITEM	DRAWING No H-133
YOKOHAMA SHIP YARD & ENGINE WORKS, MITSUBISHI HEAVY-INDUSTRIES, LTD.			



DIMENSIONS IN MM. (INCH. 16)

CAM TYPE POWER SOURCE CUTOFF APPARATUS:

THE PRE-DETERMINED VALUE CORRESPONDS TO 125~150% OF THE RATED VALUE.

SPECIFICATION	
TYPE	LPW4000H6LWX-TK
RATED LOAD	4000 KG (8820 lb)
SPEED	72 MM/S (2.84 INCH/S)
STROKE	500 MM (19.7 INCH)
MOTOR	4P - 3.7 KW (5HP)
POWER SOURCE	460 V, 50 HZ
BRAKE TORQUE	4.0 KG·M (350 lb-INCH) ABOVE
POWER SOURCE	460 V, 50 HZ
WEIGHT	ABOUT 184 KG (405.72 lb)

DATE		REVISIONS	BY	PROJECTION	TITLE 図面
Mitsubishi Heavy Industries, LTD.				第一角法	LPW4000H6LWX-TK
WORKING NO. 77-P-297				SCALE 尺度	POWER CYLINDER
CUSTOMER 納入先				SCALE 尺度	SEP. 9 '77
Mitsubishi Heavy Industries, LTD.				FREE QUANTITY 数量	SEP. 9 '77
77-P-297				6 SET	
TSUBAKIMOTO CHAIN CO.					
株式会社エイン					
チェーン事業部					
DRAWING NO. 図番		DRAWN 製図		CHECKED 検査	
KEP77297.01		I		I	

We submit the shop drawing of Pinion Bearing Bushing for Engineer's final approval.

Concerning the material it was already ^a approved to substitute OILES 500 SP for ASTM B22 Alloy 911 on the discussion on Thursday, April 28, 1977 at NCDO^a and we have already ^a ordered this material in order to keep delivery schedule.

The specification of OILES 500 SP-G is referred to the Catalogue attached to the Dwg. No.H-126 "Trunnion Bronze Bushing".

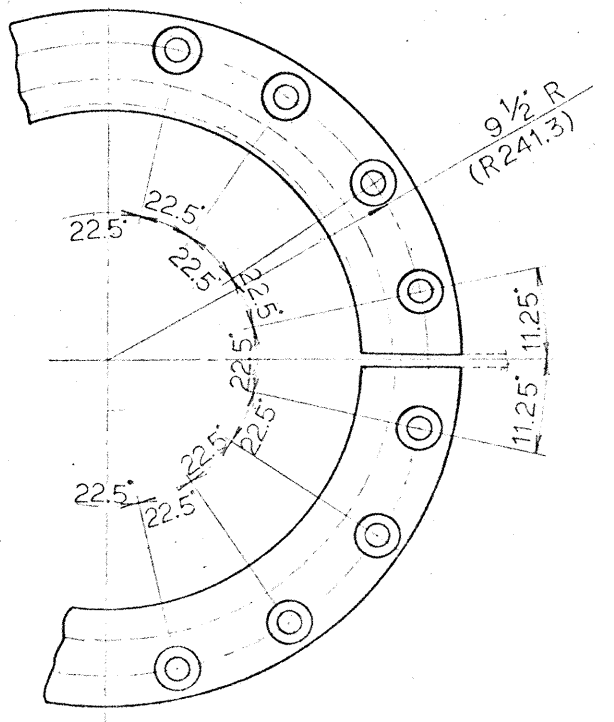
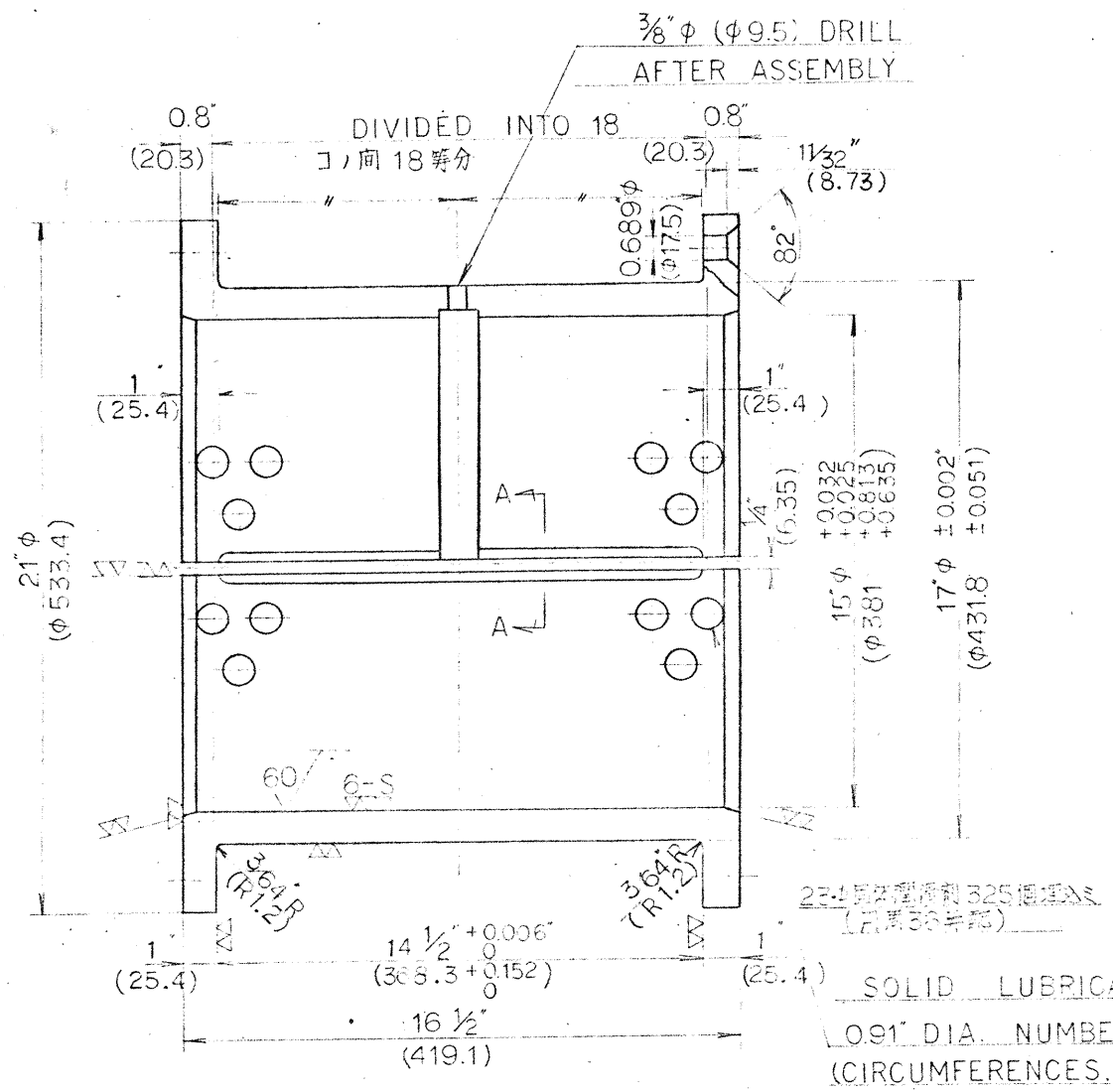
The symbol "-G" of OILES 500 SP-G means the type of lubricating insert and there is no difference in basic metal.

We will be much appreciated if you give us your kind approval as soon as possible.

客先 9
 鉄接 1
 本質(銅接) 1
 控 1
 計 12

NORTHEAST CAPE FEAR RIVER BRIDGE		YARD No	31377
HYDRAULIC STRUCTURE DESIGNING SECTION APPROVED <i>A. Yamaguchi</i> <i>Y. Mitani</i>		OPERATING MACHINERY FOR APPROVAL	
CHECKED <i>S. Haraguchi</i> DRAWN TRACED		PINION BEARING BUSHING	
DATE Oct. 3, '77	SCALE	ITEM	DRAWING No H-134
YOKOHAMA SHIP YARD & ENGINE WORKS, MITSUBISHI HEAVY-INDUSTRIES, LTD.			

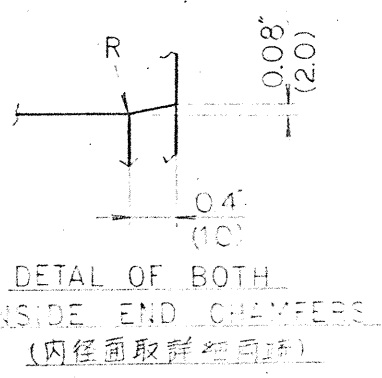
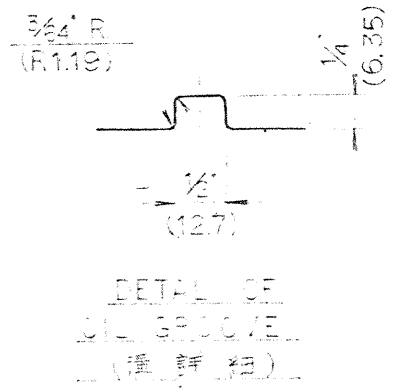
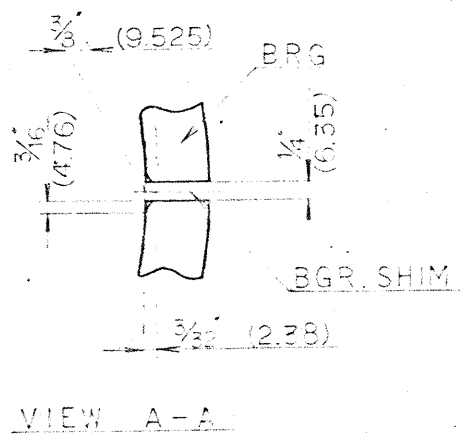
REV.	REVISION RECORD	DATE	DWG	CHEK'D



MATERIAL : OILES 500SP-G

BASE METAL : ASTM B22 ALLOY 863

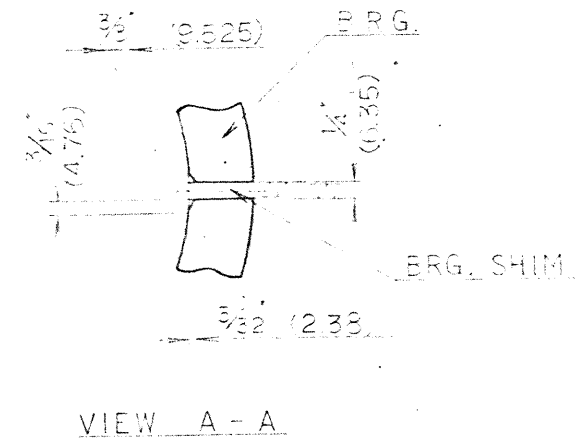
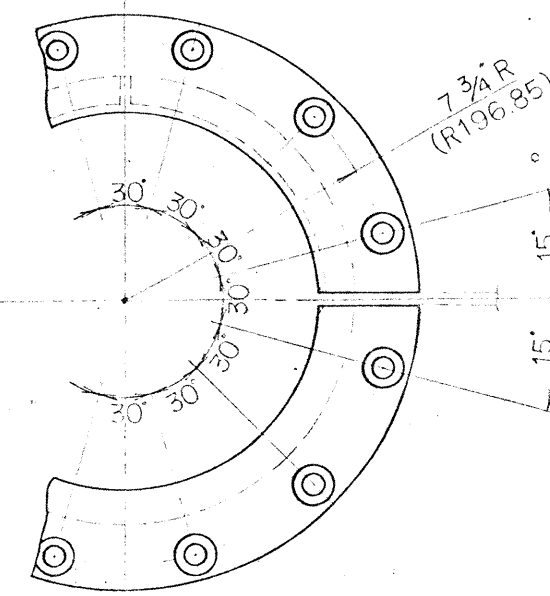
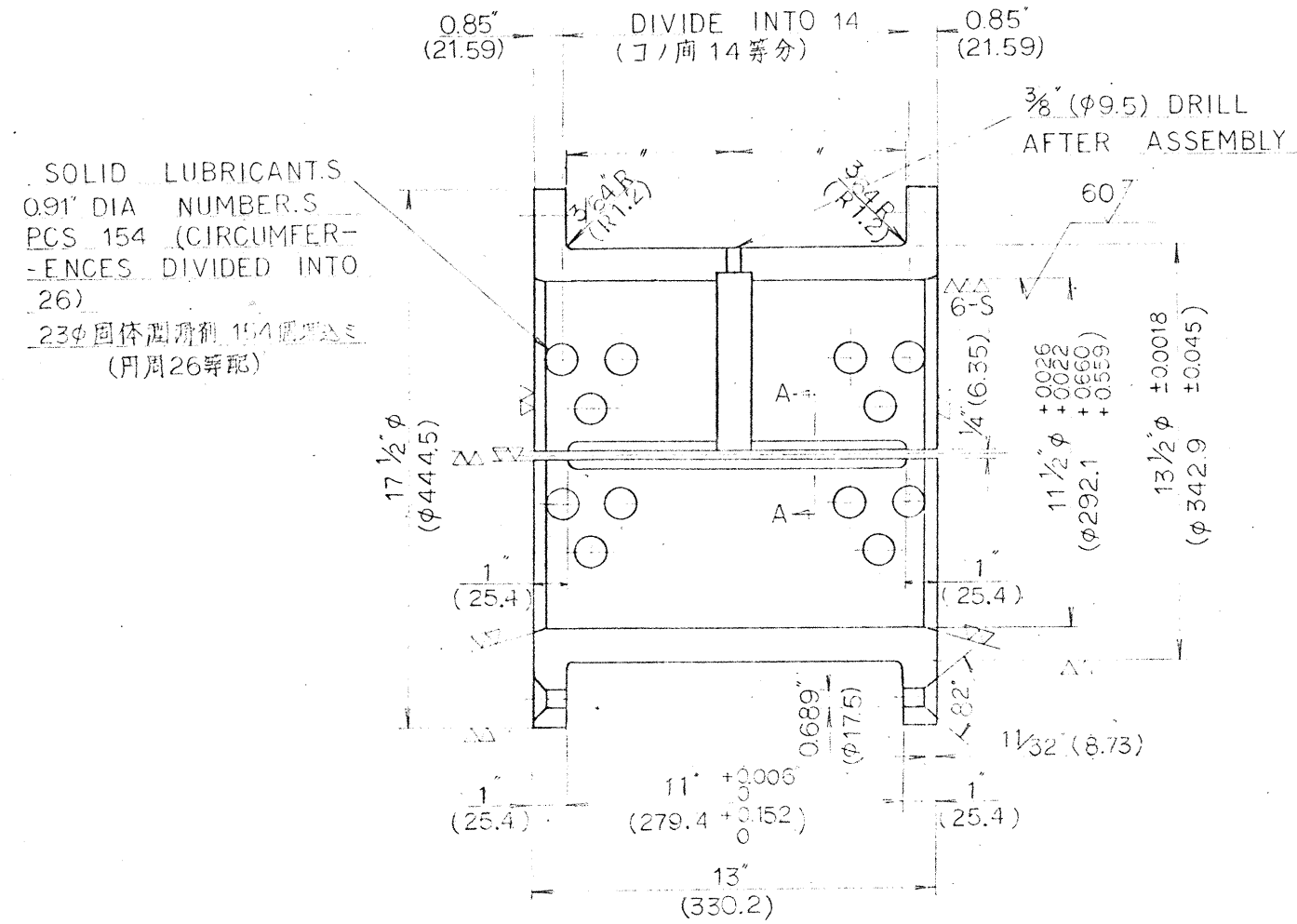
SOLID LUBRICANTS : OILES LUBRICANT-G



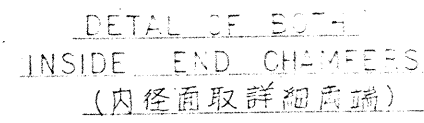
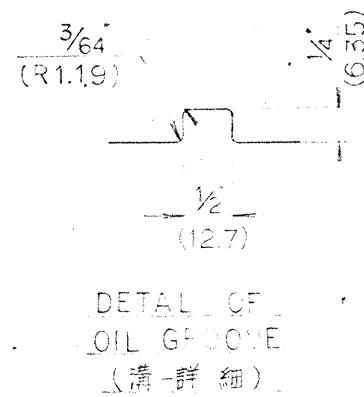
NO.	NAME OF PARTS	MATERIAL	QTY	REMARKS
OILES INDUSTRY CO., LTD オイレス工業株式会社				
REF				
APPR'D	CHEK'D & S.	DESIGN	DWG. NO.	DATE
				19 AUG 1977
	K. DEKI			1/4 X
NAME	OILES BEARING A, B			
DWG. NO.	G177-1156-10			

USER'S NAME

REV.	REVISION RECORD	DATE	DWG.	CHECKD.



VIEW A-A



MATERIAL : OILES 500SP-G

BASE METAL : ASTM B22 ALLOY 863
SOLID LUBRICANTS : OILES LUBRICANT-3

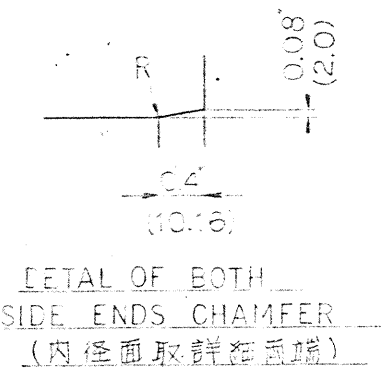
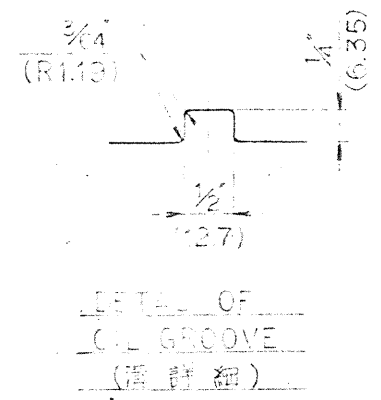
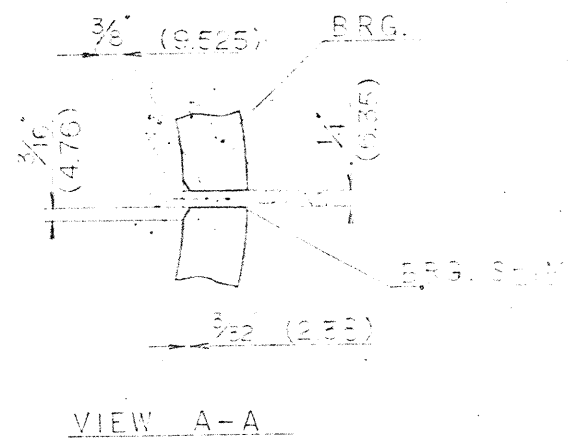
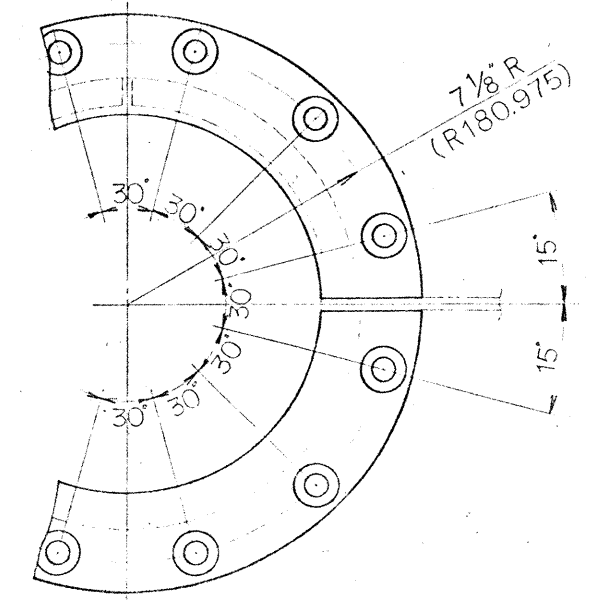
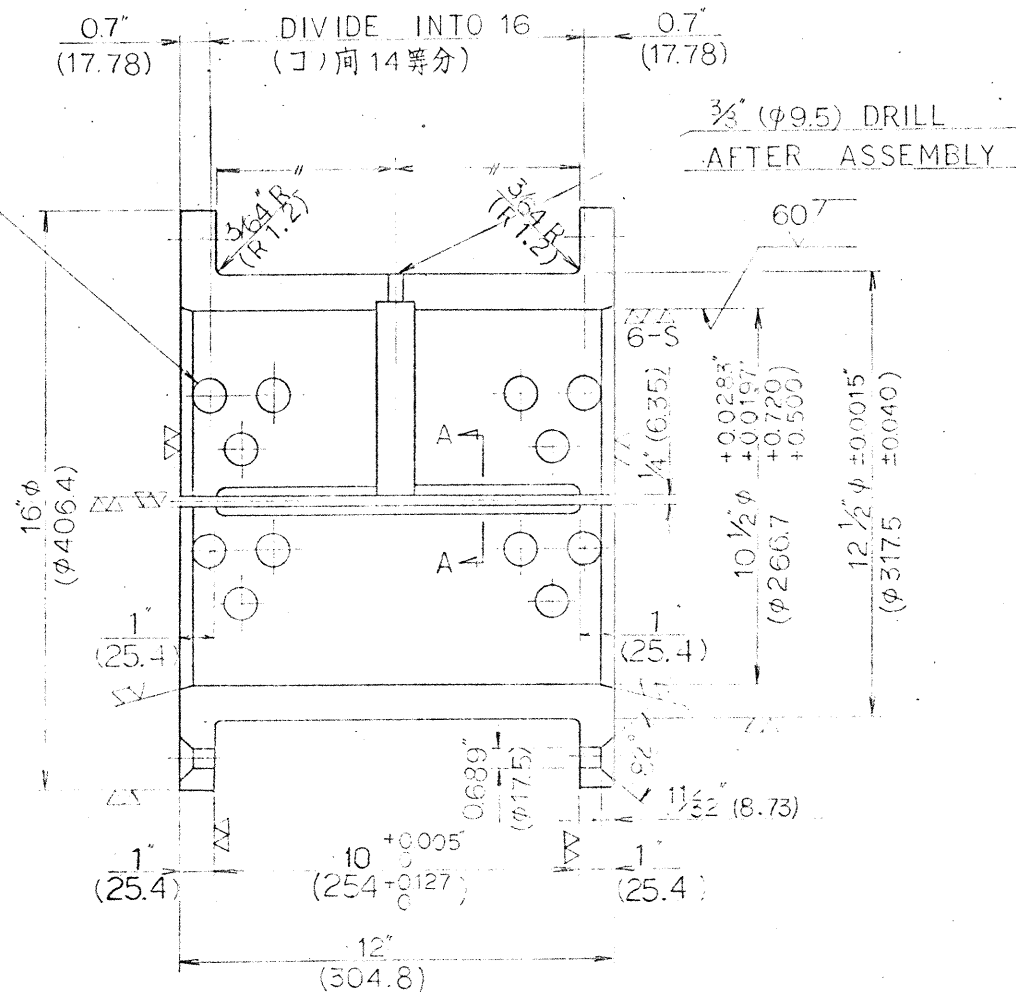
NO.	NAME OF PARTS	MATERIAL	QTY	REMARKS

OILES INDUSTRY CO., LTD. オイルス工業株式会社	
REF	
APPRD. & CHKD. & DESG. & DWG. NO. & DATE & SCALE & 1RD ANGLE PROJECTION	
NAME 氏名 DWG. NO. 図番	
NAME 氏名 DWG. NO. 図番	OILES BEARING C G177-1157-10
DATE & SCALE & 1RD ANGLE PROJECTION	19.AUG 1977 1/4 1

USER'S NAME

LET	REVISION RECORD	DATE	DWG	CHEK'D

SOLID LUBRICANTS
 0.79 DIA. NUMBERS
 PCS 198. (CIRCUMFER-
 ENCES DIVIDED INTO
 26)
 20φ固體潤滑剤 198個埋込
 (円周26等分)



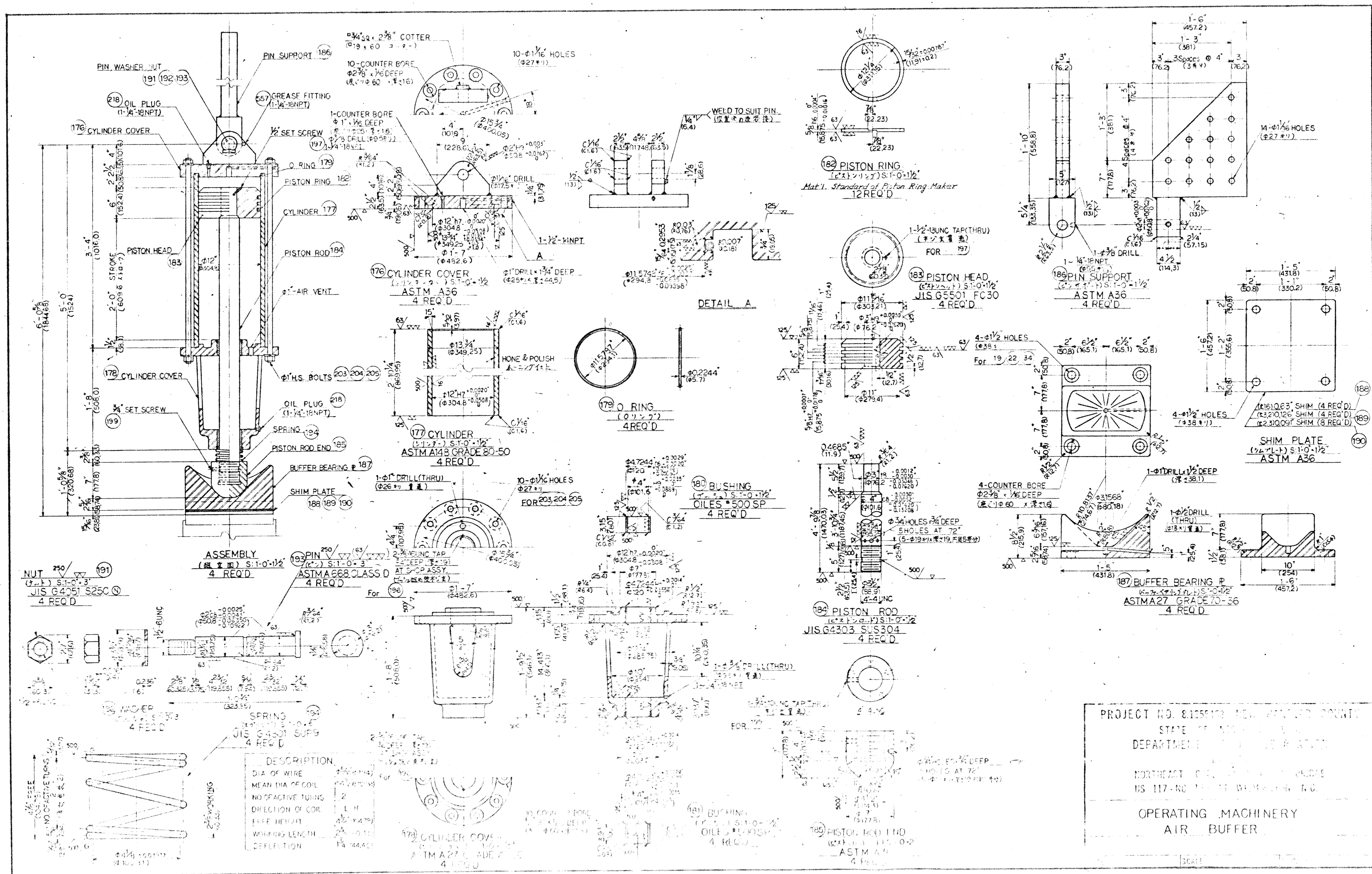
MATERIAL : OILES 500SP-G

BASE METAL : ASTM B22. ALLOY 863

SOLID LUBRICANTS : OILES LUBRICANT-G

No.	NAME OF PARTS	MATERIAL	QTY	REMARKS
OILES INDUSTRY CO., LTD オイレス工業株式会社				
REF				
APPR'D	CHEK'D	DES'D	DWG	DATE
				18 AUG 1977
NAME	OILES BEARING Ø			
DWG. NO.	G177-1158-10			

USER'S NAME

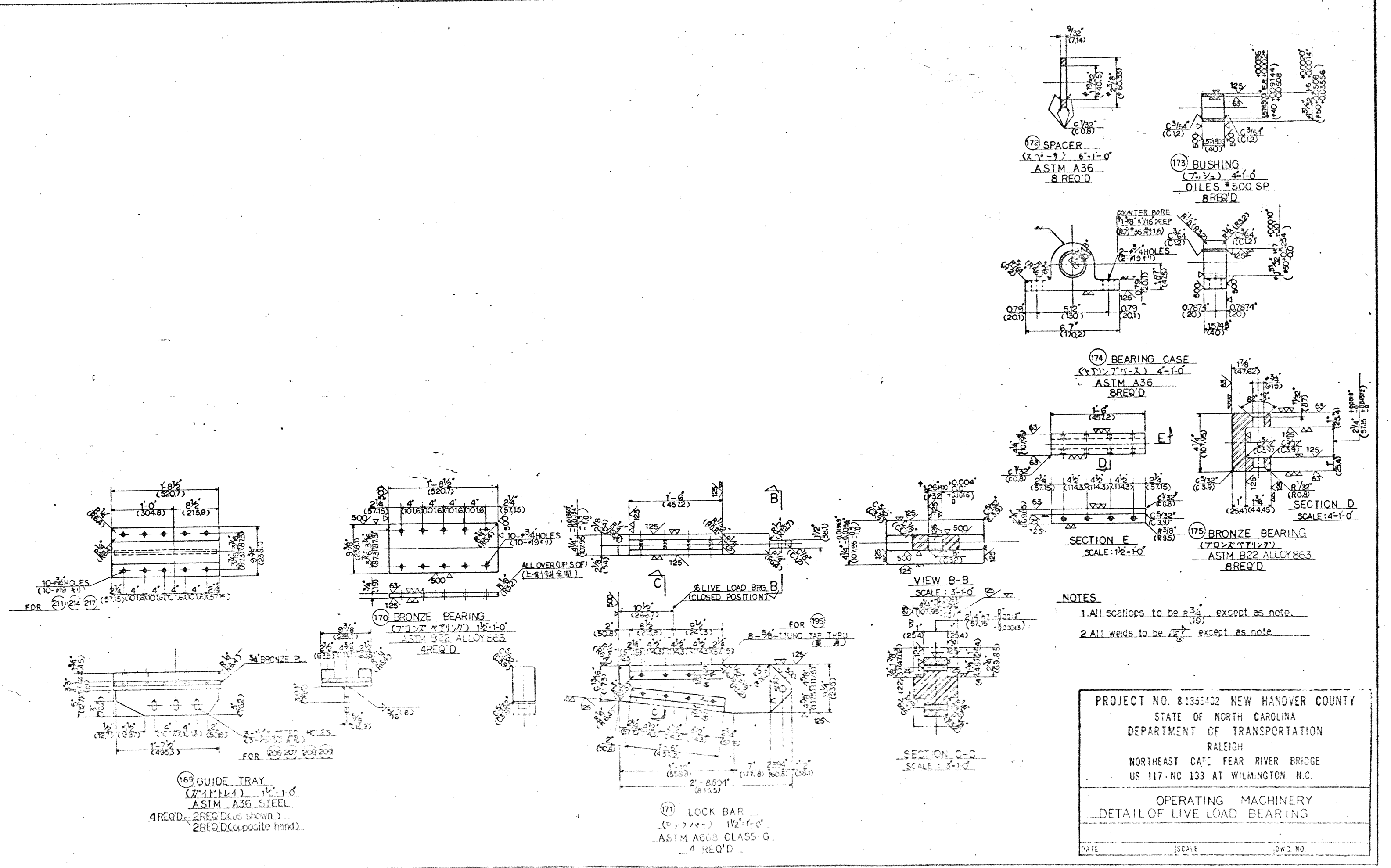


PROJECT NO. 81056172 NEW HAMPSHIRE COUNTY
 STATE OF NEW HAMPSHIRE
 DEPARTMENT OF TRANSPORTATION
 NORTHEAST REGIONAL OFFICE
 US 117-NORTH WELLS R.D.
 OPERATING MACHINERY
 AIR BUFFER

SCALE

NORTHEAST CAPE FEAR
 RIVER BRIDGE
 OPERATING MACHINERY
 AIR BUFFER
 H-135
 31377
 11/14

REVISIONS			
NO	DATE	DESCRIPTION	B Y



PROJECT NO. 81355402 NEW HANOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTHEAST CAPE FEAR RIVER BRIDGE
 US 117-NC 133 AT WILMINGTON, N.C.

OPERATING MACHINERY
 DETAIL OF LIVE LOAD BEARING

DATE _____ SCALE _____ DWG. NO. _____

NORTHEAST CAPE FEAR RIVER BRIDGE	YARD NO. 31377
OPERATING MACHINERY	
DETAIL OF LIVE LOAD BEARING	
DESIGNED BY	DATE
DRAWN BY	SCALE
CHECKED BY	SCALE AS SHOWN
TRACED	ITEM NO. H-136
PROJECT NO. 81355402 BY NAME HEREIN WITH BRIDGE HEAVY INDUSTRIES, LTD.	



1. Description

We submit the drawing of Pillow Block for Enginner's final approval.

Concerning the Pillow Block, it was already approved to substitute NSK Pillow Block for Torrington Co. Pillow Block on the Contract drawing, on the discussion on April 28, 1977 at NCDOT.

Here we prepared catalogue and drawing of NSK Pillow Block.

The material of Pillow Block is based on JIS standard, but each material has sufficient enough strength to function as a Pillow Block.

In case of replacement in future, this Pillow Block can easily be replaced with the Pillow Block purchased in U. S. A.

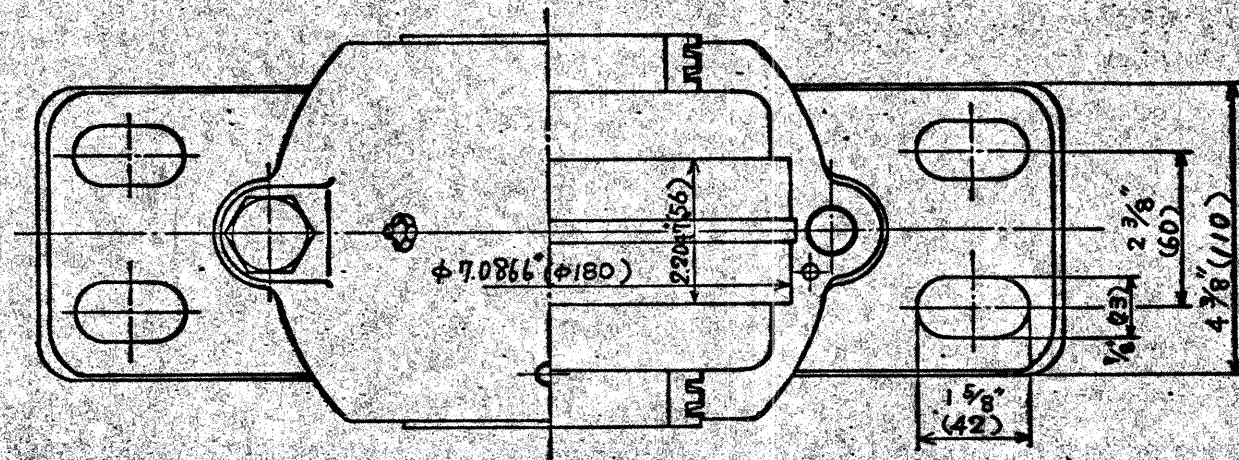
We would very much appreciate if you would give us kind approval for this matter.



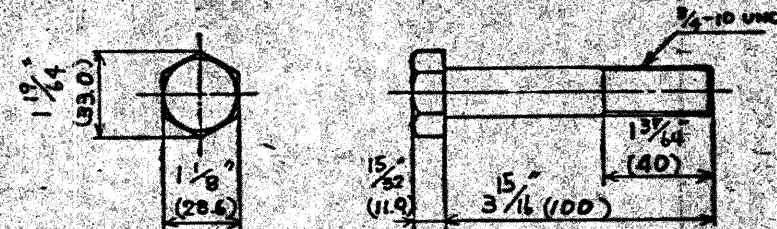
客先 9
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 本費(鑽版) 1
 控 1
 計 12

NORTHEAST CAPE FEAR RIVER BRIDGE		YARD NO	31377
HYDRAULIC STRUCTURE DESIGNING SECTION		OPERATING MACHINERY FOR APPROVAL PILLOW BLOCK	
APPROVED <i>A. Yamaguchi</i>			
CHECKED <i>J. Mitomi</i>			
DRAWN <i>S. Haraguchi</i>			
TRACED			
DATE Oct. 11, '77	SCALE	ITEM	DRAWING No H-137
YOKOHAMA SHIP YARD & ENGINE WORKS, MITSUBISHI HEAVY-INDUSTRIES, LTD.			

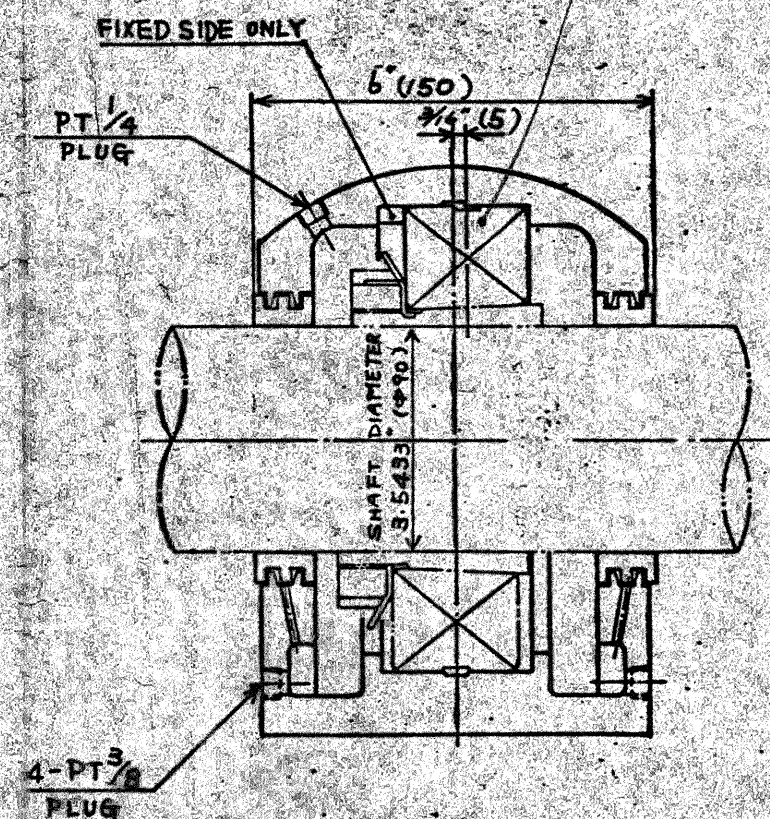
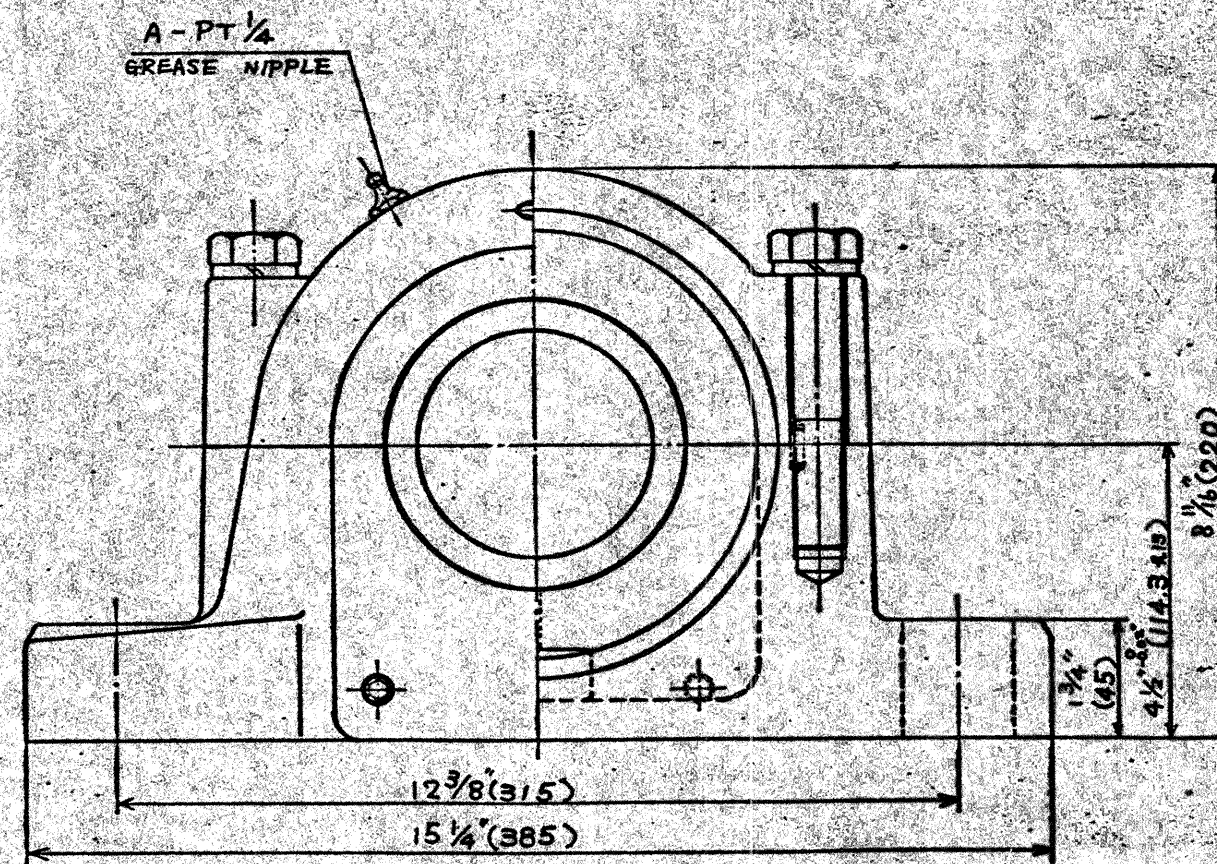
DESCRIPTION	MATERIAL	NO. REQ'D	REMARKS
BEARING BOX	SC 46	1	
BINDER BOLT	SS 41	2	3/4 - 10 UNC
SLINGER	SS 41 or S 25 C	2	
STABILIZING RING	FC 20	1	SR 180 x 10
		0	



BEARING NO.
 NSK 22220CDKE4+ H320
 C = 29100 kgf
 C₀ = 28400 kgf



Spherical Roller Bearing.



DRAWING NO. HR 1902A IS SUPERSEDED BY THIS ONE

CUSTOMER
 MITSUBISHI HEAVY INDUSTRIES, LTD.
 YOKOHAMA SHIPYARD AND ENGINE WORKS.

SCALE 1/3 3 RD ANGLE PROJECTION

DATE OCT. - 4, 1977

DRAWN BY *M. Ito* DESIGNED BY *T. Yoshikawa*

CHECKED BY *T. Sumoto* APPROVED BY *K. Uchida*

NAME
PON90-43G-SC (FIXED SIDE)
PON90-43-SC (FREE SIDE)

NSK
 NIPPON SEIKO K.K. (TOKYO, JAPAN)

DRAWING NO.
 HR 5077A

NO.	DATE	REMARKS
		REVISIONS

1). Description

We submit the drawing of Brake Wheel Coupling for Engineer's final approval.

Concerning the Brake Wheel Coupling, it was already approved to substitute OSAKA CHAIN AND MACHINERY LTD. SF Coupling for FALK Steelflex Brake Wheel Coupling on the Contract drawing, on the discussion on April 28, 1977 at NCDOT.

Here we prepared catalogue and drawing of Brake Wheel Coupling.

The material of Brake Wheel Coupling is based on JIS standard, but each material has sufficient enough strength to function as a Brake Wheel Coupling.

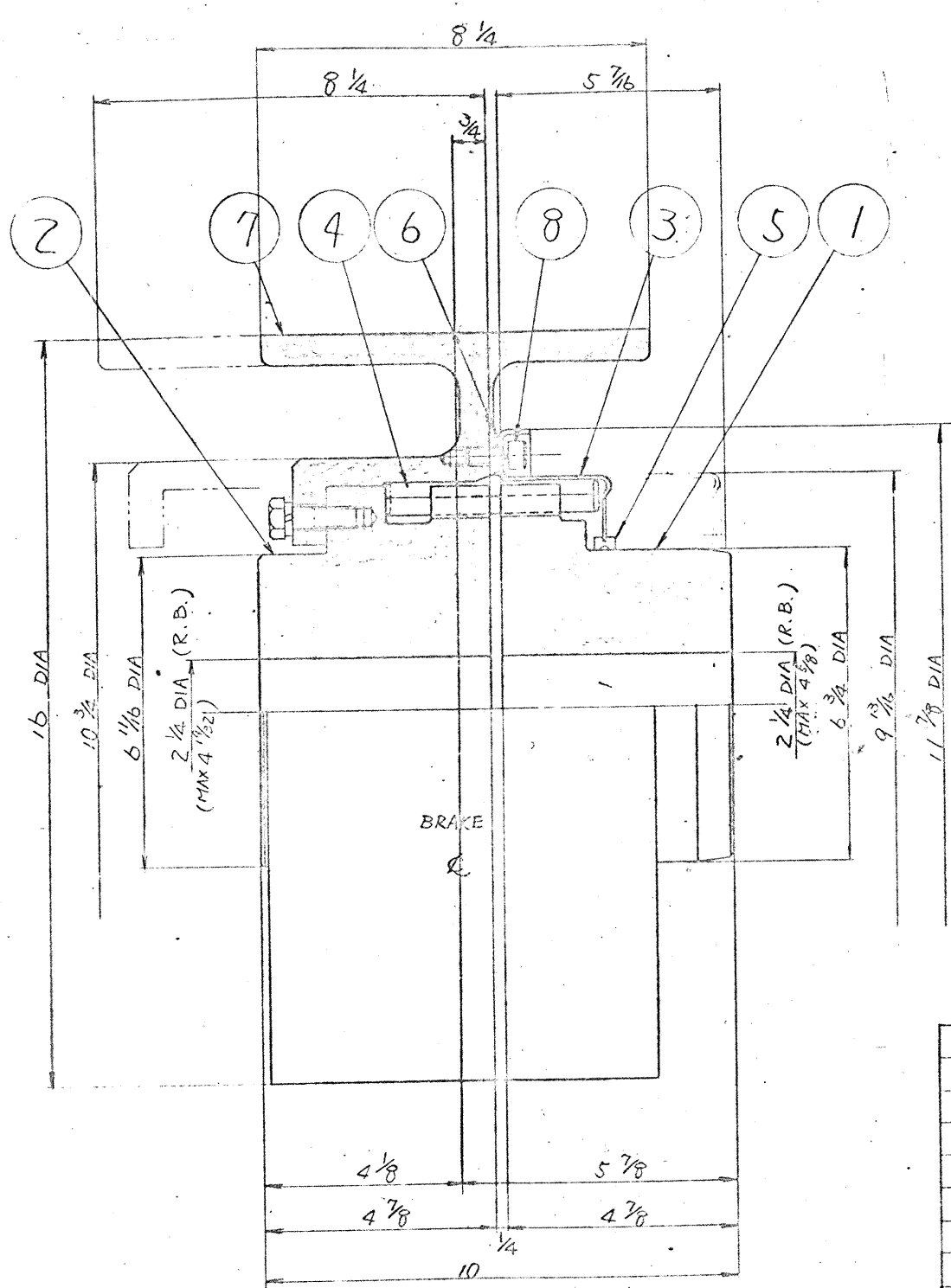
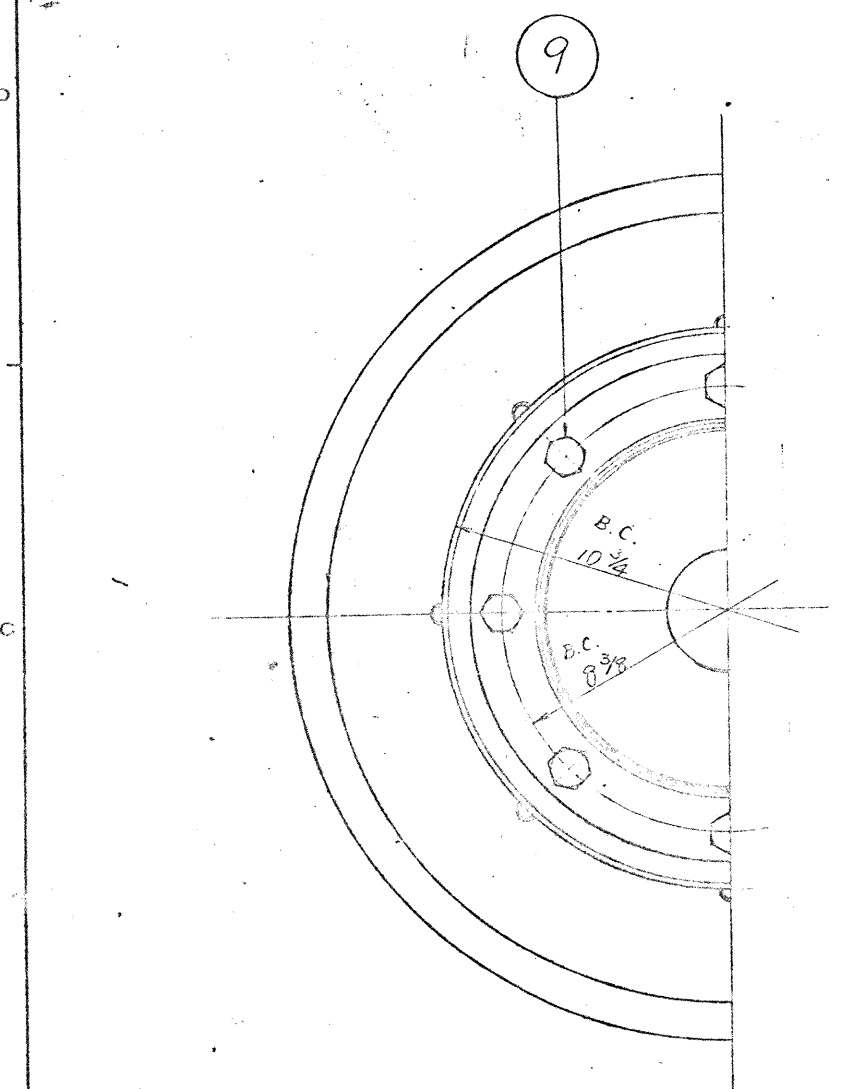
All dimensions are same as FALK Steelflex Brake Wheel Coupling 14BW.

We would very much appreciate if you would give us kind approval for this matter.

提出 9
 本頁(額設) 1
 控 2
 計 12

NORTHEAST CAPE FEAR RIVER BRIDGE		YARD No	31377
HYDRAULIC STRUCTURE DESIGNING SECTION		OPERATING MACHINERY FOR APPROVAL BRAKE WHEEL COUPLING	
APPROVED <i>A. Yokoyama</i> <i>J. Mitani</i>			
CHECKED <i>S. Haraguchi</i>			
DRAWN TRACED			
DATE Oct. 20, '77	SCALE	ITEM	DRAWING No H-138
YOKOHAMA SHIP YARD & ENGINE WORKS, MITSUBISHI HEAVY-INDUSTRIES, LTD.			

C. W. KEYWORD			
DATE	BY	CHKD	APPD



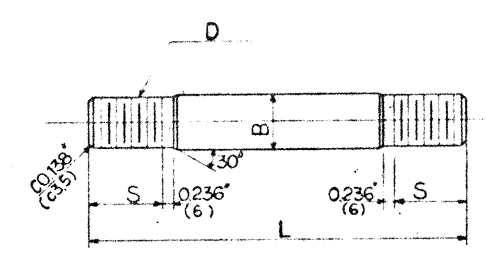
ITEM NO.	DESCRIPTION	MATERIAL	QTY	REVISION
1	HEX. HD. BOLT	S45C	5	8
2	HEX. SOCK. HD. BOLT	SCM3	5	8
3	BRAKE WHEEL	FC30	1	
4	GASKET	FIBER FLEX	1	t=1.6
5	SEALRING	NEOPRENE	1	
6	GRIDMEMBER	Cr-V	1	
7	F-COVER	SPH-C	1	
8	BW-HUB	S45C	1	
9	B-HUB	S45C	1	

ITEM NO.	DESCRIPTION	QTY	REVISION
1	HEX. HD. BOLT	5	8
2	HEX. SOCK. HD. BOLT	5	8
3	BRAKE WHEEL	1	
4	GASKET	1	t=1.6
5	SEALRING	1	
6	GRIDMEMBER	1	
7	F-COVER	1	
8	BW-HUB	1	
9	B-HUB	1	

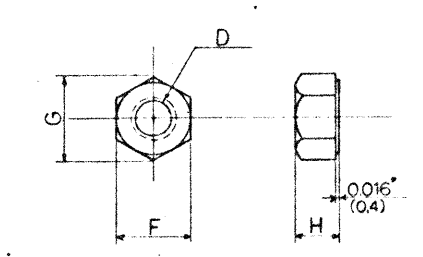
THE REVISION AND QUANTITY LIST INDICATES ONE UNIT SET

DATE	BY	CHKD	APPD	WORK NO.	7:7-8F8137
				CUSTOMER	MITSUBISHI HEAVY INDUSTRIES, LTD.
DRAWN BY	DESIGNED BY	CHECKED BY	DATE	SF CPLG. 14 BW	
				ASSEMBLY	
©大日本製鋼所株式会社 DAI NIPPON STEEL & PIPE CO., LTD.			DATE	F0801648	

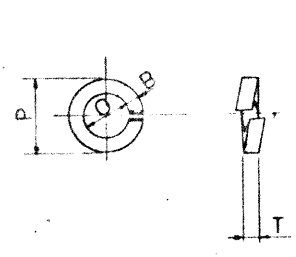
REVISIONS		
DATE	DESCRIPTION	BY



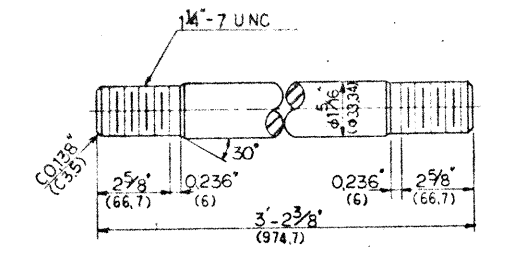
250/ H.S. TURNED BOLT
JIS G4105 SCM3



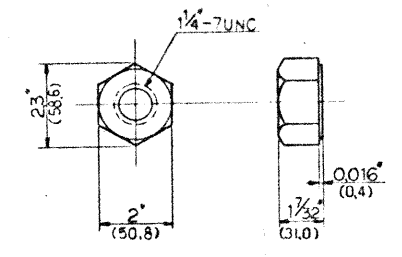
250/ NUT
(ナット)
JIS G4105 SCM3



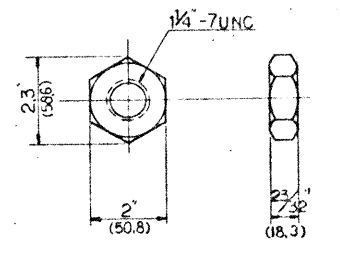
SPRING LOCK WASHER
(心平垫金)



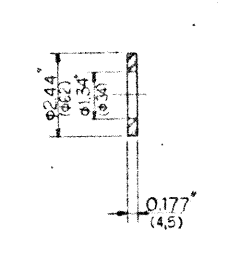
250/ H.S. TURNED BOLT
JIS G4105 SCM3
32 REQ'D



250/ NUT
(ナット)
JIS G4105 SCM3
64 REQ'D



250/ JAM NUT
(ジャムナット)
JIS G4105 SCM3
64 REQ'D

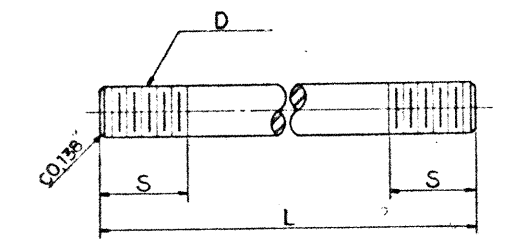


250/ WASHER
(平丸垫金)
64 REQ'D

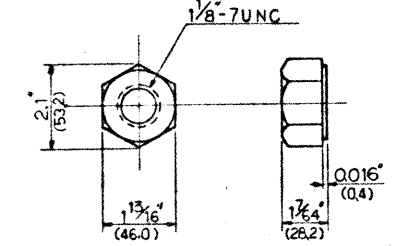
PART NO.	NO. REQ'D	D	B	L	S
117	280	1/2"-7 UNC	30.16 (120.7)	4.34 (14.5)	1 3/4 (36.5)
118	272	"	53.2	"	"
119	96	1/8"-7 UNC	30.16 (120.7)	6 (19.2)	1 3/4 (36.5)
120	32	1/2"-6 UNC	33.83 (133.5)	6 (19.2)	2 1/4 (57.2)
121	608	"	19.16 (75.5)	6 (19.2)	2 1/4 (57.2)
122	32	1/2"-6 UNC	33.83 (133.5)	7 1/2 (191.2)	2 1/4 (57.2)

PART NO.	NO. REQ'D	D	F	G	H
123	1296	1/8"-7 UNC	46.0 (181.2)	2.1 (5.3)	2.4 (6.1)
124	1344	1/2"-6 UNC	2.7 (6.9)	2.7 (6.9)	1.2 (3.0)

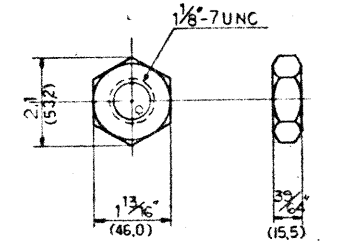
PART NO.	NO. REQ'D	O	P	B	T
125	1296	1.15 (29.3)	1.89 (47.8)	0.327 (8.3)	0.260 (6.6)
126	1244	1.56 (39.5)	2.48 (62.5)	0.421 (10.7)	0.374 (9.5)



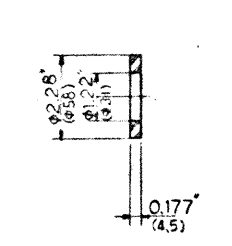
250/ H.S. REAMER BOLT
JIS G4105 SCM3



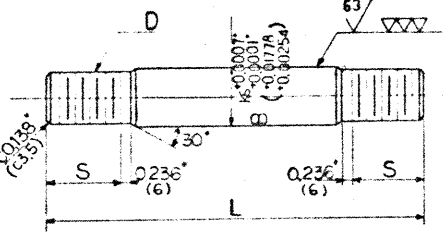
250/ NUT
(ナット)
JIS G4105 SCM3
160 REQ'D



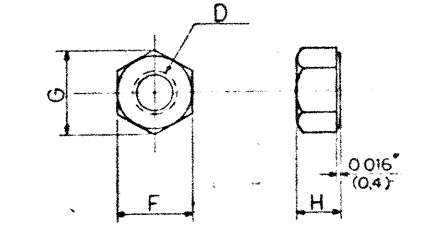
250/ JAM NUT
(ジャムナット)
JIS G4105 SCM3
160 REQ'D



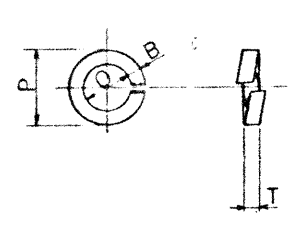
250/ WASHER
(平丸垫金)
160 REQ'D



250/ H.S. REAMER BOLT
JIS G4105 SCM3



250/ NUT
(ナット)
JIS G4105 SCM3



SPRING LOCK WASHER
(心平垫金)

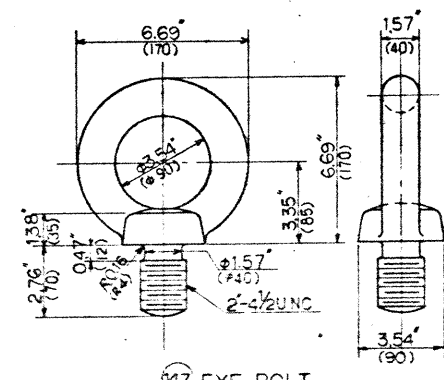
PART NO.	NO. REQ'D	D	L	S
142	64	1/8"-7 UNC	16 7/8 (432.2)	2 1/4 (57.2)
143	16	1/8"-7 UNC	17 1/4 (438.2)	2 1/4 (57.2)

NOTES
1. All bolts 7/8 inches in diameter and over will be double-end threads type.

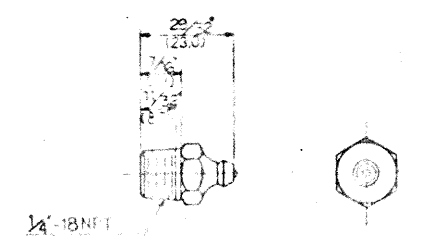
PART NO.	NO. REQ'D	D	B	L	S
127	16	1/8"-7 UNC	12.6 (32)	4.34 (11.0)	1 3/4 (36.5)
128	32	1/8"-7 UNC	2.6 (6.6)	6 (15.2)	1 3/4 (36.5)
129	144	1/2"-6 UNC	3.6 (9.1)	6 (15.2)	2 1/4 (57.2)

PART NO.	NO. REQ'D	D	F	G	H
130	96	1/8"-7 UNC	46.0 (181.2)	2.1 (5.3)	2.4 (6.1)
131	288	1/2"-6 UNC	2.7 (6.9)	2.7 (6.9)	1.2 (3.0)

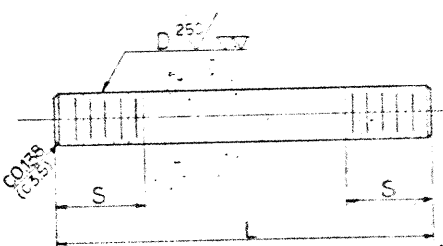
PART NO.	NO. REQ'D	O	P	B	T
132	96	1.15 (29.3)	1.89 (47.8)	0.327 (8.3)	0.260 (6.6)
133	288	1.56 (39.5)	2.48 (62.5)	0.421 (10.7)	0.374 (9.5)



147 EYE BOLT
(アイボルト)
8 REQ'D

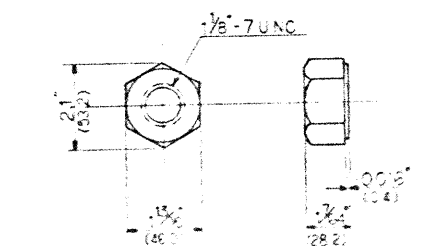


1/4 GREASE NIPPLE (TYPE 1627 B)
ALEMITE HYDRAULIC LUBRICATION FITTING
16 REQ'D

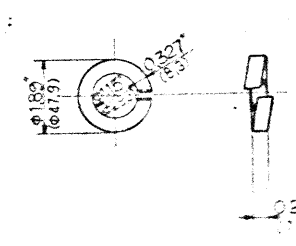


BOLT
(ボルト)
JIS G4051 S25C B

PART NO.	NO. REQ'D	D	L	S
134	48	1/8"-7 UNC	4.34 (11.0)	1 3/4 (36.5)
135	48	1/8"-7 UNC	4.34 (11.0)	1 3/4 (36.5)



250/ NUT
(ナット)
JIS G4051 S25C B
96 REQ'D

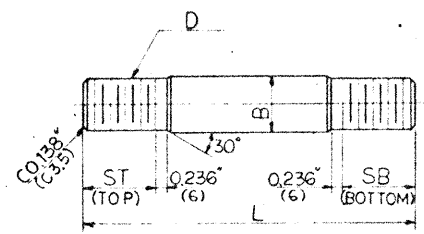


137 SPRING LOCK WASHER
(心平垫金)
96 REQ'D

PROJECT NO. 51377
DEPARTMENT OF TRANSPORTATION
OPERATING MACHINERY
BOLTS AND NUTS (FOR OPERATING DEVICE)

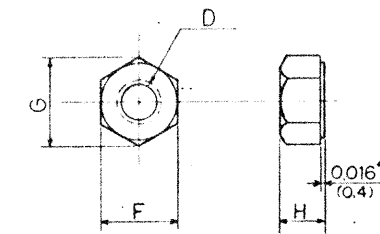
51377
OPERATING MACHINERY
BOLTS AND NUTS
(FOR OPERATING DEVICE)

NO.	DESCRIPTION	BY



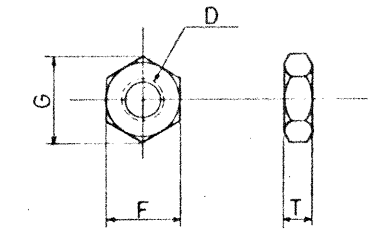
250
H.S. TURNED BOLT
JIS G 4105 SCM3

PART NO.	REQ'D	D	B	L	ST	SB
642	32	1 1/8"-7UNC	1 1/8"	2 1/4"	2 1/4"	2 1/4"
643	16	1 1/2"-6UNC	1 1/2"	2 7/8"	2 7/8"	2 7/8"
644	16	1 1/2"	1 1/2"	2 7/8"	2 7/8"	2 7/8"
645	32	1 1/2"-6UNC	1 1/2"	2 7/8"	2 7/8"	2 7/8"



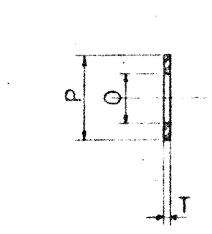
250
NUT
JIS G 4105 SCM3

PART NO.	REQ'D	D	F	G	H
546	32	1 1/8"-7UNC	1 1/8"	2 1"	1 7/8"
547	64	1 1/2"-6UNC	2 3/8"	2 7"	1 5/8"



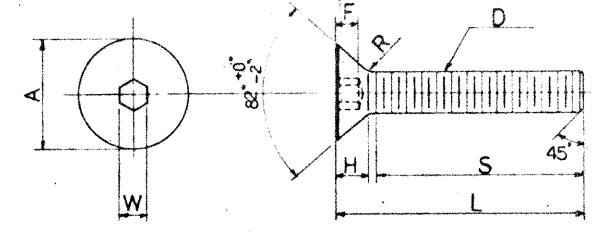
250
JAM NUT
JIS G 4105 SCM3

PART NO.	REQ'D	D	F	G	T
548	32	1 1/8"-7UNC	1 1/8"	2 1"	3 9/16"
549	64	1 1/2"-6UNC	2 3/8"	2 7"	2 7/32"



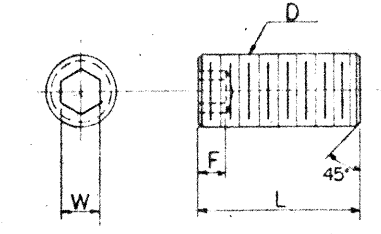
250
WASHER

PART NO.	REQ'D	O	P	T
550	32	1 1/8"	2 2 3/8"	0.177"
551	64	1 1/2"	2 8 3/8"	0.197"



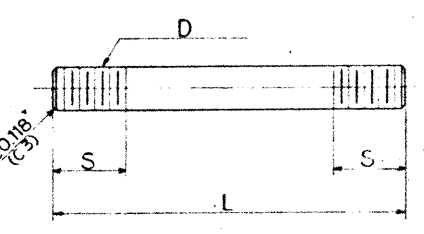
250
FLAT HEAD SOCKET SCREW
UNBRAKO or JIS G 4051 S25C @

PART NO.	REQ'D	D	L	S	H	A	W	F	R
552	8	1/4"-20UNC	(25.4)	(21.3)	(4.1)	(13.5)	(4.0)	(2.8)	(0.64)
553	32	5/8"-11UNC	(38.1)	(29.2)	(8.2)	(30.2)	(8.5)	(6.6)	(1.3)
554	512	5/8"-11UNC	(38.1)	(29.2)	(8.2)	(30.2)	(8.5)	(6.6)	(1.3)



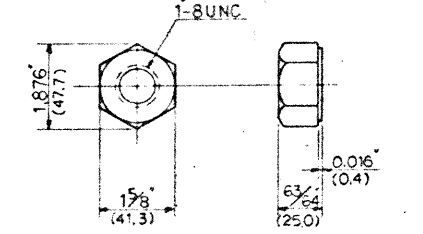
250
SOCKET SET SCREW
UNBRAKO or JIS G 4051 S25C @

PART NO.	REQ'D	D	L	W	F
196	16	3/8"-16UNC	(15.9)	(4.8)	(3.8)
197	4	1/2"-13UNC	(12.7)	(3.5)	(2.5)
198	24	5/8"-11UNC	(15.9)	(4.8)	(3.8)
199	4	3/4"-10UNC	(19.0)	(4.8)	(3.8)
554	2	3/8"-16UNC	(12.7)	(3.5)	(2.5)

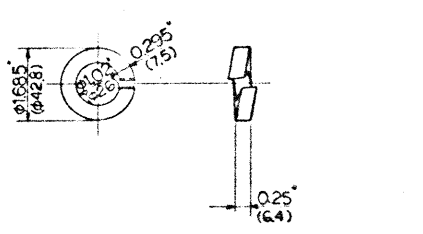


250
H.S. BOLT
JIS G 4105 SCM3

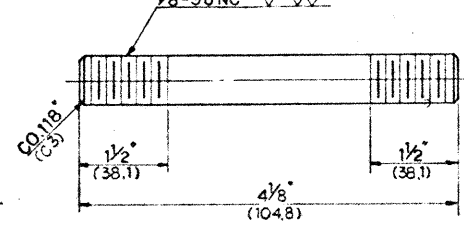
PART NO.	REQ'D	D	L	S
200	18	1"-8UNC	(25.4)	(1.5)
201	10	1"	(25.4)	(1.5)
202	32	1"	(25.4)	(1.5)
203	40	1"-8UNC	(25.4)	(1.5)



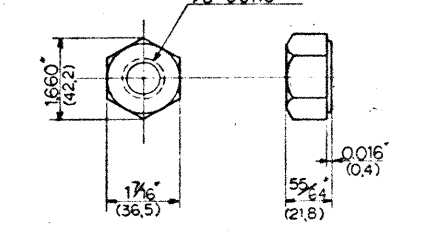
250
NUT
JIS G 4105 SCM3
200 REQ'D



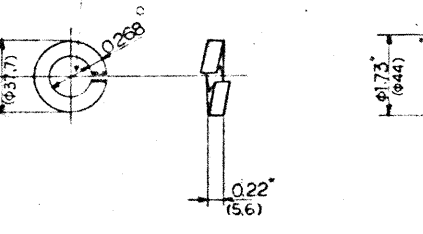
209 SPRING LOCK WASHER
200 REQ'D



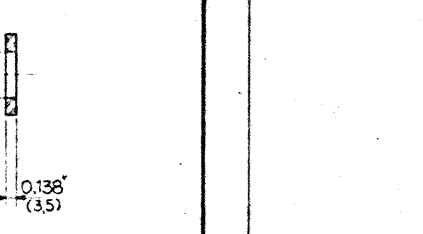
206 BOLT
JIS G 4051 S25C @
12 REQ'D



207 NUT
JIS G 4051 S25C @
24 REQ'D



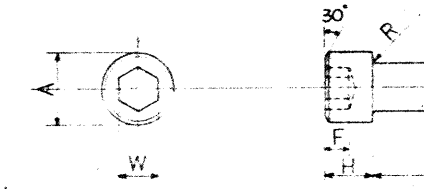
209 SPRING LOCK WASHER
24 REQ'D



209 WASHER
24 REQ'D

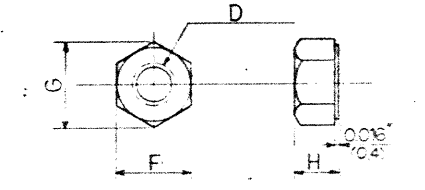
NOTES

- All bolts 7/8 inches in diameter and over will be double-end threads type.
- All bolts 3/4 inches in diameter and under will be UNBRAKO socket head cap screw or will be of JIS G 4051 (S25C N).
- All flat head socket screws and socket set screws will be UNBRAKO Standard or will be of JIS G 4051 (S25C N).



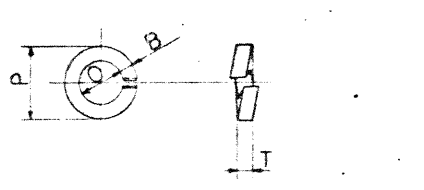
250
SOCKET HEAD CAP SCREW
UNBRAKO or JIS G 4051 S25C @

PART NO.	REQ'D	D	L	S	H	A	W	F	R
200	18	1"-8UNC	(25.4)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)
201	10	1"	(25.4)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)
202	32	1"	(25.4)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)
203	40	1"-8UNC	(25.4)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)



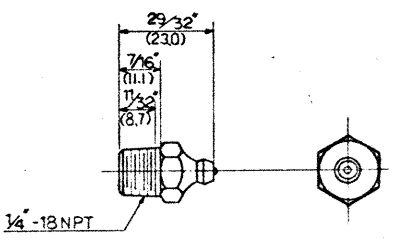
250
NUT
JIS G 4051 S25C @

PART NO.	REQ'D	D	F	G	H
204	64	5/8"-11UNC	(15.9)	(4.8)	(3.8)
205	112	3/4"-10UNC	(19.0)	(4.8)	(3.8)

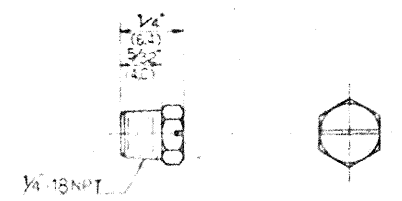


SPRING LOCK WASHER

PART NO.	REQ'D	O	P	T
206	16	1 1/8"	2 2 3/8"	0.177"
207	112	1 1/2"	2 8 3/8"	0.197"



557 GREASE NIPPLE (TYPE 1627B)
ALEMITE HYDRAULIC LUBRICATION FITTINGS
40 REQ'D



558 OIL PLUG
ALEMITE HYDRAULIC LUBRICATION FITTINGS
8 REQ'D

PROJECT NO. 81355102 MEMPHIS COUNTY
DEPARTMENT OF HIGHWAYS
NORTH 1ST C. ...
US 117 NO 100 ...
OPERATING MACHINERY
BOLTS AND NUTS (WITH BASCULE LEAF)

NORTHEAST TAPE FEAR... 31377
OPERATING MACHINERY
BOLTS AND NUTS
(WITH BASCULE LEAF)
644-77
H-141

PART NO.	NO. REQ'D	PART NAME	DWG. NO.	MATERIAL	MATL. REF. NO.	REMARKS
100	4	RACK SUPPORT	H-110	STEEL	ASTM A36	
101-1	16	FILL	H-110	"	ASTM A36	
101-2	16					
102	4	TRUNNION SHAFT	H-112	"	ASTM A668 CLASS G	
103	4	THRUST PLATE	H-113	"	ASTM A36	
104	4	RING	"	STEEL	ASTM A36	
105	4	RETAINER RING	"	FORGED STEEL	ASTM A668, CLASS G	
106	8	RETAINER RING KEY	"	FORGED STEEL	ASTM A668, CLASS G	
107	8	KEY RETAINER PLATE	"	STEEL	ASTM A36	
108	4	END PLATE	H-113	STEEL	ASTM A36	
109-1	4	TRUNNION BEARING CASE	H-114	CAST STEEL	ASTM A486 CLASS 90	
109-2	4					
110	8	SHIM PLATE	"	STEEL	ASTM A36	
111	8	"	"	"	"	
112	8	SHIM PLATE	H-114	STEEL	ASTM A36	
113	4	RACK G1	H-115	CAST STEEL	ASTM A148 GRADE 90-60	
114	4	GEAR G2	"	"	"	
115	4	GEAR G3	"	CAST STEEL	ASTM A148 GRADE 90 60	
116	24	SHIM PLATE	H-115	STEEL	ASTM A36	
117	280	H.S. TURNED BOLT	H-140	"	JIS G4105 SCM3	
118	272	"	"	"	"	
119	96	"	"	"	"	
120	32	"	"	"	"	
121	608	"	"	"	"	
122	32	H.S. TURNED BOLT	"	"	"	
123	1296	NUT	"	"	"	
124	1344	NUT	"	"	JIS G4105 SCM3	
125	1296	SPRING LOCK WASHER	"	"	"	
126	1344	SPRING LOCK WASHER	"	"	"	
127	16	H.S. REAMER BOLT	"	"	JIS G4105 SCM3	
128	32	"	"	"	"	
129	144	H.S. REAMER BOLT	"	"	"	
130	96	NUT	"	"	"	
131	288	NUT	"	"	JIS G4105 SCM3	
132	96	SPRING LOCK WASHER	"	"	"	
133	288	SPRING LOCK WASHER	"	"	"	
134	48	BOLT	"	"	JIS G4051 S25C N	
135	48	BOLT	"	"	"	
136	96	NUT	"	"	JIS G4051 S25C N	
137	96	SPRING LOCK WASHER	"	"	"	
138	32	H.S. TURNED BOLT	"	"	JIS G4105 SCM3	
139	64	NUT	"	"	"	
140	64	JAM NUT	"	"	JIS G4105 SCM3	
141	64	WASHER	"	"	"	
142	64	H.S. BOLT	"	"	JIS G4105 SCM3	
143	16	H.S. BOLT	"	"	"	
144	160	NUT	"	"	"	
145	160	JAM NUT	"	"	JIS G4105 SCM3	
146	160	WASHER	"	"	"	
147	8	EYE BOLT	"	"	"	
148	56	GREASE NIPPLE	H-140	"	"	
149	6	SHIM PLATE	H-118	STEEL	ASTM A36	

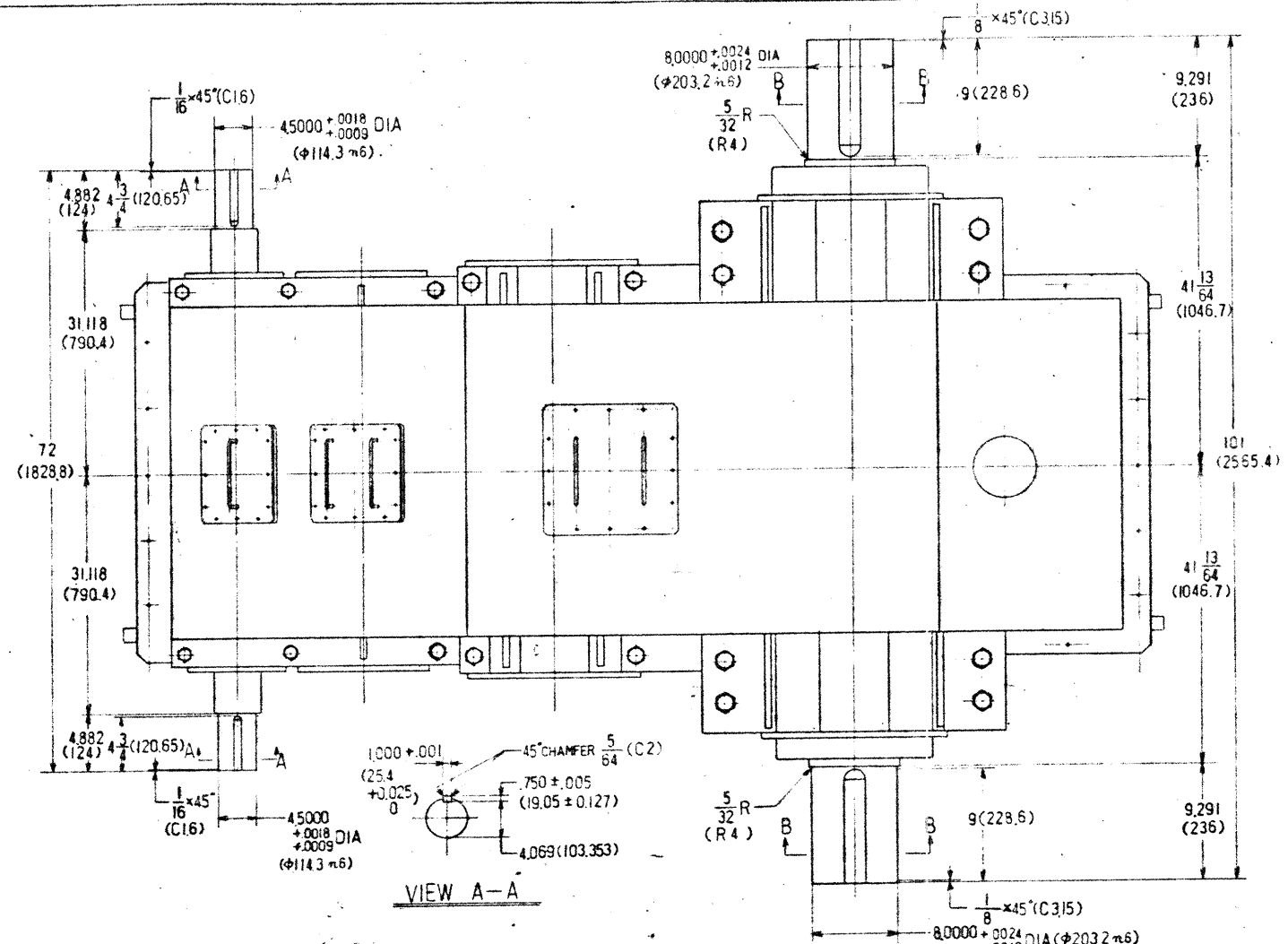
PART NO.	NO. REQ'D	PART NAME	DWG. NO.	MATERIAL	MATL. REF. NO.	REMARKS
150	6	SHIM PLATE	H-128	STEEL	ASTM A36	
151	6	SHIM PLATE	"	"	"	
152	6	BAR GUIDE	"	"	"	
153	12	SHIM PLATE	"	"	"	
154	24	SHIM PLATE	"	"	"	
155	12	BEARING BAR	"	"	"	
156	2	OPERATOR SUPPORT BRACKET	"	STEEL	ASTM A36	
157	4	BUSHING	"	BRONZE CASTING	OILES #500 SP	
158	4	SPACER	"	STEEL	ASTM A36	
159	4	BEARING CASE	"	STEEL	ASTM A36	
160	2	LOCK BAR	"	FORGED STEEL	ASTM A668, CLASS G	
161	2	POWER CYLINDER	H-128	"	"	
162	1	SOCKET	H-129	CAST STEEL	ASTM A27 GRADE 70-36	
163	1	GUIDE	H-129	"	"	
164	4	LIVE LOAD BEARING	H-130	"	"	
165	4	LIVE LOAD BEARING	"	CAST STEEL	ASTM A27 GRADE 70-36	
166	4	SHIM PLATE	"	STEEL	ASTM A36	
167	4	SHIM PLATE	"	STEEL	ASTM A36	
168	4	POWER CYLINDER	H-130	"	"	
169	4	GUIDE TRAY	H-136	STEEL	ASTM A36	
170	4	BRONZE BEARING	"	BRONZE CASTING	ASTM B 22, ALLOY 963	
171	4	LOCK BAR	"	STEEL	ASTM A668, CLASS G	
172	8	SPACER	"	STEEL	ASTM A36	
173	8	BUSHING	"	BRONZE CASTING	OILES #500 SP	
174	8	BEARING	"	STEEL	ASTM A36	
175	8	BRONZE BEARING	H-136	BRONZE CASTING	ASTM B 22, ALLOY 963	
176	4	CYLINDER COVER	H-135	STEEL	ASTM A36	
177	4	CYLINDER	"	CAST STEEL	ASTM A148 GRADE 80-50	
178	4	CYLINDER COVER	"	CAST STEEL	ASTM A27 GRADE 70-36	
179	4	O RING	"	"	"	
180	4	BUSHING	"	BRONZE CASTING	OILES # 500 SP	
181	4	BUSHING	"	BRONZE CASTING	OILES # 500 SP	
182	12	PISTON RING	"	"	Standard of Piston Ring Maker	
183	4	PISTON HEAD	"	CAST IRON	JIS G5501 FC30	
184	4	PISTON ROD	"	STAINLESS STEEL	JIS G4303 S.S.304	
185	4	PISTON ROD END	"	STEEL	ASTM A36	
186	4	PIN SUPPORT	"	STEEL	ASTM A36	
187	4	BUFFER BEARING R.	"	CAST STEEL	ASTM A27 GRADE 70-36	
188	4	SHIM PLATE	"	STEEL	ASTM A36	
189	4	"	"	"	"	
190	8	SHIM PLATE	"	"	ASTM A36	
191	4	NUT	"	"	JIS G4051 S25C N	
192	4	WASHER	"	"	"	
193	4	PIN	"	FORGED STEEL	ASTM A486 CLASS D	
194	4	"	"	"	"	
195	32	FEAT HEAD SOCKET	"	STEEL	JIS G4801 SUP9 UNBRAKO or JIS G4051 S25C N	
196	16	SOCKET SET SCREW	"	"	"	
197	4	"	"	"	"	
198	24	"	"	"	"	
199	4	"	"	"	"	
200	4	"	"	"	"	
201	4	"	"	"	"	
202	4	"	"	"	"	
203	4	"	"	"	"	
204	4	"	"	"	"	
205	4	"	"	"	"	
206	4	"	"	"	"	
207	4	"	"	"	"	
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210	4	"	"	"	"	
211	4	"	"	"	"	
212	4	"	"	"	"	
213	4	"	"	"	"	
214	4	"	"	"	"	
215	4	"	"	"	"	
216	4	"	"	"	"	
217	4	"	"	"	"	
218	4	"	"	"	"	

PART NO.	NO. REQ'D	PART NAME	DWG. NO.	MATERIAL	MATL. REF. NO.	REMARKS
200	18	H.S. BOLT	H-141	STEEL	JIS G4105 SCM3	
201	10	"	"	"	"	
202	32	"	"	"	"	
203	40	H.S. BOLT	"	"	"	
204	200	NUT	"	"	JIS G4105 SCM3	
205	200	SPRING LOCK WASHER	"	"	"	
206	12	BOLT	"	"	JIS G4051 S25C N	
207	24	NUT	"	"	JIS G4051 S25C N	
208	24	SPRING LOCK WASHER	"	"	"	
209	24	WASHER	"	"	"	
210	24	SOCKET HEAD CAP SCREW	"	"	UNBRAKO or JIS G4051 S25C N	
211	40	"	"	"	"	
212	16	"	"	"	"	
213	96	SOCKET HEAD CAP SCREW	"	"	UNBRAKO or JIS G4051 S25C N	
214	64	NUT	"	"	JIS G4051 S25C N	
215	112	NUT	"	"	JIS G4051 S25C N	
216	112	SPRING LOCK WASHER	"	"	"	
217	64	SPRING LOCK WASHER	"	STEEL	"	
218	8	OIL PLUG	H-141	"	"	

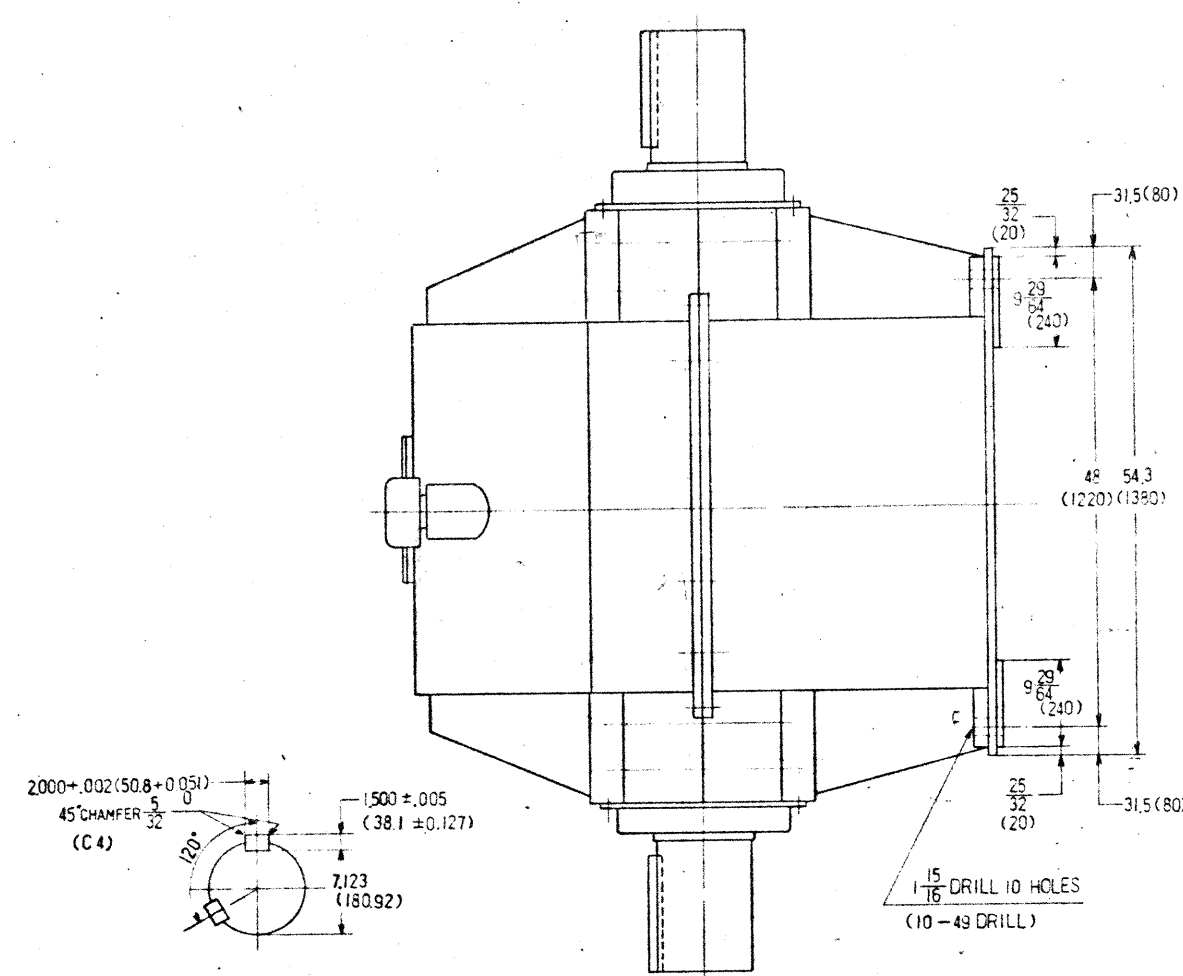
REVISIONS		
DATE	DESCRIPTION	P.Y.

PROJECT NO. 91055400 NEW HANCOCK COUNTY
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RAILROAD
NORTHEAST COAST LINE RAILROAD
US 117-NC 100 AT WILMINGTON, N.C.
OPERATING MACHINERY
LIST OF PARTS (WITH BASCULE LEAF)

NORTHEAST COAST LINE RAILROAD
OPERATING MACHINERY
LIST OF PARTS
(WITH BASCULE LEAF)
H-151



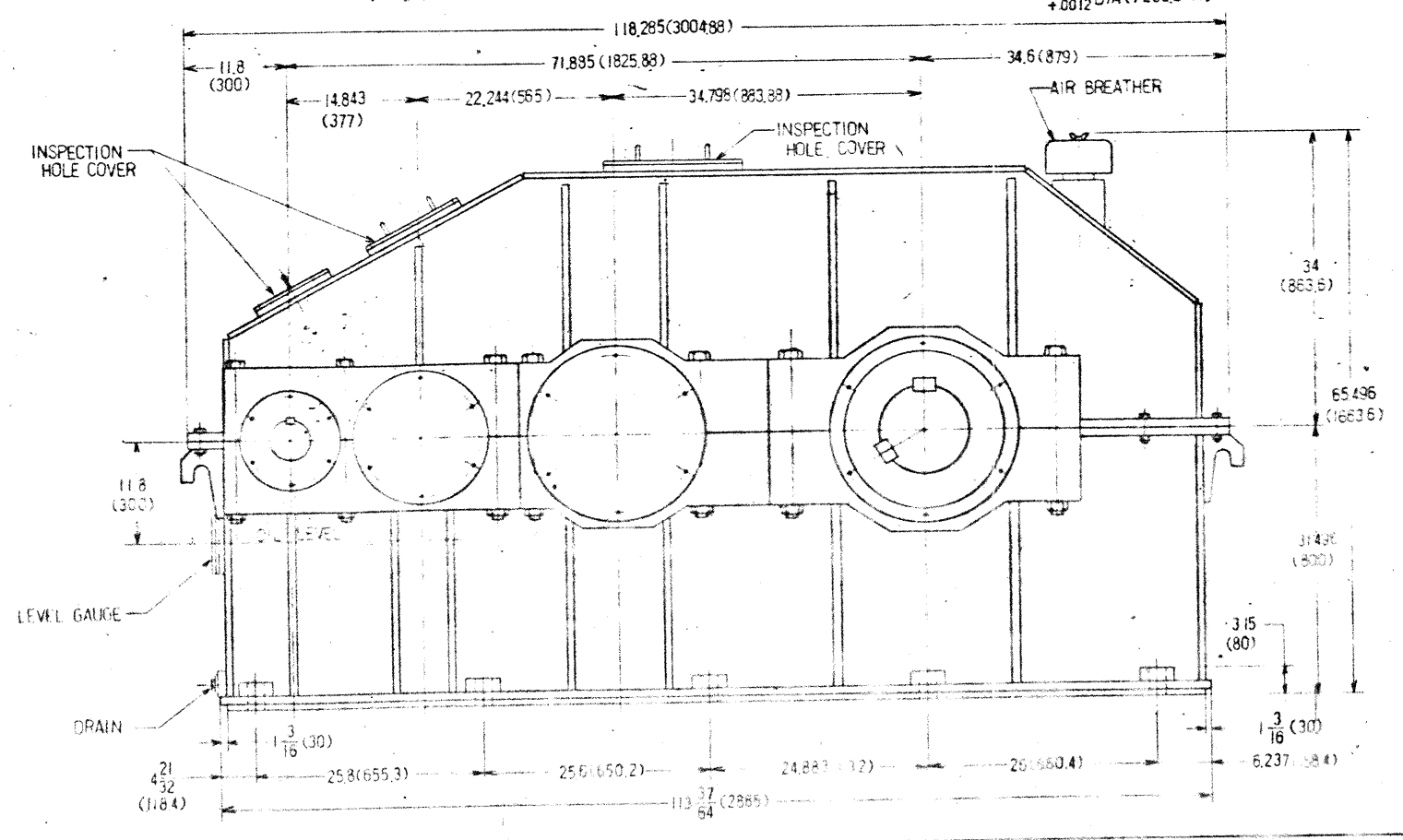
VIEW A-A



VIEW B-B

SPECIFICATION OF REDUCTION GEARS	
TORQUE CAPACITY	1680 KIPS
INPUT SHAFT SPEED	720 R.P.M.
OUTPUT SHAFT SPEED	9 R.P.M.
RATIO	1/60

NOTE
 1. STRENGTH AND DURABILITY OF THE GEAR SHALL BE CALCULATED ACCORDING TO AGMA STANDARD.
 2. GEARS AND BEARINGS ARE LUBRICATED BY SPLASH METHOD DURING THE OPERATION WITHOUT MECHANICAL DEVICES.
 3. DIMENSIONS — INCH (MILLIMETER).

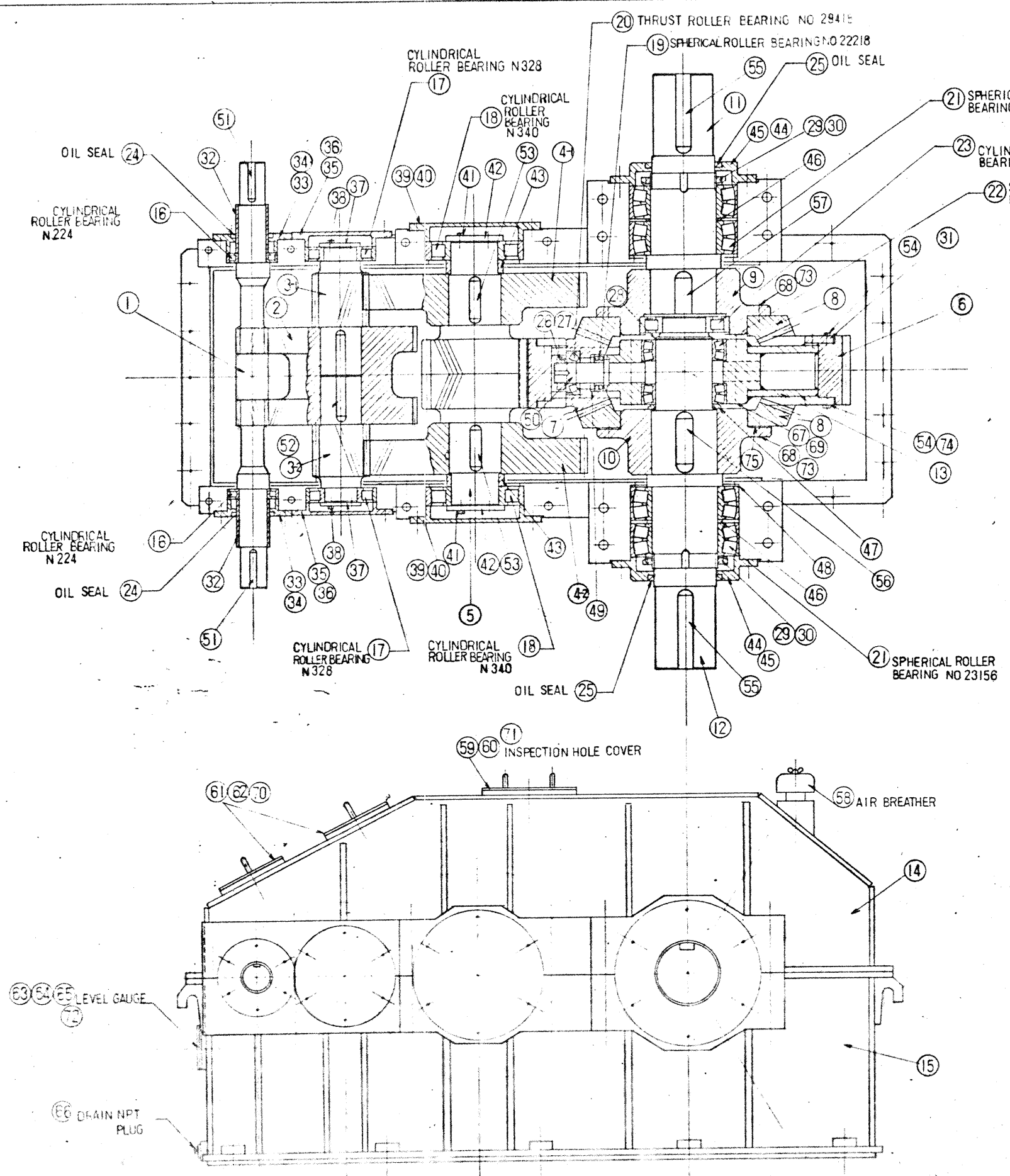


PROJECT NO. 81055400 NEW HANOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTHEAST CAPE FEAR RIVER BRIDGE
 US 117-NC 133 AT WILMINGTON, N.C.
 OPERATING MACHINERY
 OUTLINE OF GEAR REDUCER

NORTHEAST CAPE FEAR RIVER BRIDGE	YARD NO.	31377
RYAN'S STRUCTURE	OPERATING MACHINERY	
DESIGN SECTION	OUTLINE OF GEAR REDUCER	
DESIGNED BY: <i>[Signature]</i>		
DRAWN BY: <i>[Signature]</i>		
DATE: 2-7-77	SCALE: 1/160	ITEM: H-160
CONTRACT NO. 77-140		
DRAWING NO. 160		

REVISIONS			
NO.	DATE	DESCRIPTION	BY

NO.	NAME OF PART	MATERIAL	QTY	REMARKS
71	SHIM	BSF	1	
72	PIN	S45C	9	
73	PIN	S45C	16	
74	PART OF GEAR CASE	SS41	1	
75	PART OF GEAR CASE	SS41	2	
76	PART OF GEAR CASE	SS41	2	
77	WASHER	SFC1	6	
78	WASHER	SFC1	16	
79	PIN	S45C	3	
80	PLUG	FC20	1	
81	GASKET	ASBESTO	2	
82	ACRYLIC PLATE	ACRYL	1	
83	HOLDER PLATE	SS41	1	
84	GASKET	ASBESTO	2	
85	HOLE COVER	SS41	2	
86	GASKET	ASBESTO	1	
87	HOLE COVER	SS41	1	
88	AIR BREATHER	S45C	1	
89	KEY	S45C	2	
90	KEY	S45C	2	
91	KEY	S45C	2	
92	KEY	S45C	4	
93	WASHER	SC	36	
94	KEY	S45C	2	
95	KEY	S45C	2	
96	KEY	S45C	2	
97	KEY	S45C	2	
98	SHAFT	S45C	3	
99	COLLAR	SS41	2	
100	COLLAR	SS41	2	
101	COLLAR	SS41	1	
102	COLLAR	SS41	2	
103	COLLAR	SS41	2	
104	GASKET	ASBESTO	2	
105	COVER	SC46	2	
106	COLLAR	SS41	2	
107	HOLDER PLATE	SS41	2	
108	WASHER	SFC1	2	
109	GASKET	ASBESTO	2	
110	COVER	SC46	2	
111	WASHER	SFC1	2	
112	HOLDER PLATE	SS41	2	
113	GASKET	ASBESTO	2	
114	COVER	SC46	2	
115	GASKET	ASBESTO	2	
116	COVER	SC46	2	
117	COLLAR	S45C	2	
118	HOLDER PLATE	SS41	3	
119	SHAFT WASHER	SS41	2	
120	SHAFT NUT	SS41	2	
121	SNAP RING	SWP	1	
122	SHAFT WASHER	SS41	3	
123	SHAFT NUT	S45C	3	
124	OIL SEAL	CRW1	2	
125	OIL SEAL	CRW1	2	
126	LEVEL GAUGE	SC46	1	
127	DRAIN NPT PLUG	SC46	1	
128	LEVEL GAUGE	SC46	1	
129	LEVEL GAUGE	SC46	1	
130	LEVEL GAUGE	SC46	1	
131	LEVEL GAUGE	SC46	1	
132	LEVEL GAUGE	SC46	1	
133	LEVEL GAUGE	SC46	1	
134	LEVEL GAUGE	SC46	1	
135	LEVEL GAUGE	SC46	1	
136	LEVEL GAUGE	SC46	1	
137	LEVEL GAUGE	SC46	1	
138	LEVEL GAUGE	SC46	1	
139	LEVEL GAUGE	SC46	1	
140	LEVEL GAUGE	SC46	1	
141	LEVEL GAUGE	SC46	1	
142	LEVEL GAUGE	SC46	1	
143	LEVEL GAUGE	SC46	1	
144	LEVEL GAUGE	SC46	1	
145	LEVEL GAUGE	SC46	1	
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196	LEVEL GAUGE	SC46	1	
197	LEVEL GAUGE	SC46	1	
198	LEVEL GAUGE	SC46	1	
199	LEVEL GAUGE	SC46	1	
200	LEVEL GAUGE	SC46	1	



NOTE. All materials is based on JIS standard, but each material has sufficient enough strength to function as a gear reducer.

SPECIFICATION OF REDUCTION GEARS	
TORQUE CAPACITY	1680 KIPS
INPUT SHAFT SPEED	720 R.P.M
OUTPUT SHAFT SPEED	9 R.P.M
RATIO	1/80

	GEAR DATA			
	1 ST	2 ND	3 RD	DIFFERENTIAL GEAR
TYPE OF GEAR	DOUBLE HELICAL	SINGLE HELICAL	HERRING BONE	STRAIGHT BEVEL
	PINION GEAR	PINION GEAR	PINION GEAR	PINION GEAR
CUTTER TOOTH FORM	FULL DEPTH TEETH	FULL DEPTH TEETH	SUNDERLAND	STRAIGHT BEVEL
DIA METRAL PITCH	4 (6.35)	2.25 (11.28)	1.25 (20.3)	15 (16.9)
NUMBER OF TEETH	17 92	17 75	20 67	22 222 54
PRESSURE ANGLE	20	20	20	20
PITCH CIRCLE	4.630 25.055	8.221 36.267	15.999 53.597	14.666 35.999
HELIX ANGLE	23°22'	23°12'	22°30'	22°10' 67°50'
FACE WIDTH	4.3 (110)	5.9 (150)	14.56 (370)	5.9 (150)
MATERIAL (JIS)	SCM4 S45C	SCM4 S45C	SCM4 S45C	SCM4 SCM4
HEAT TREATMENT	QUENCHING TEMPERING	QUENCHING TEMPERING	QUENCHING TEMPERING	QUENCHING TEMPERING
ROCKWELL HARDNESS	HRC 30 HRC 22	HRC 30 HRC 22	HRC 26 HRC 23	HRC 30 HRC 24

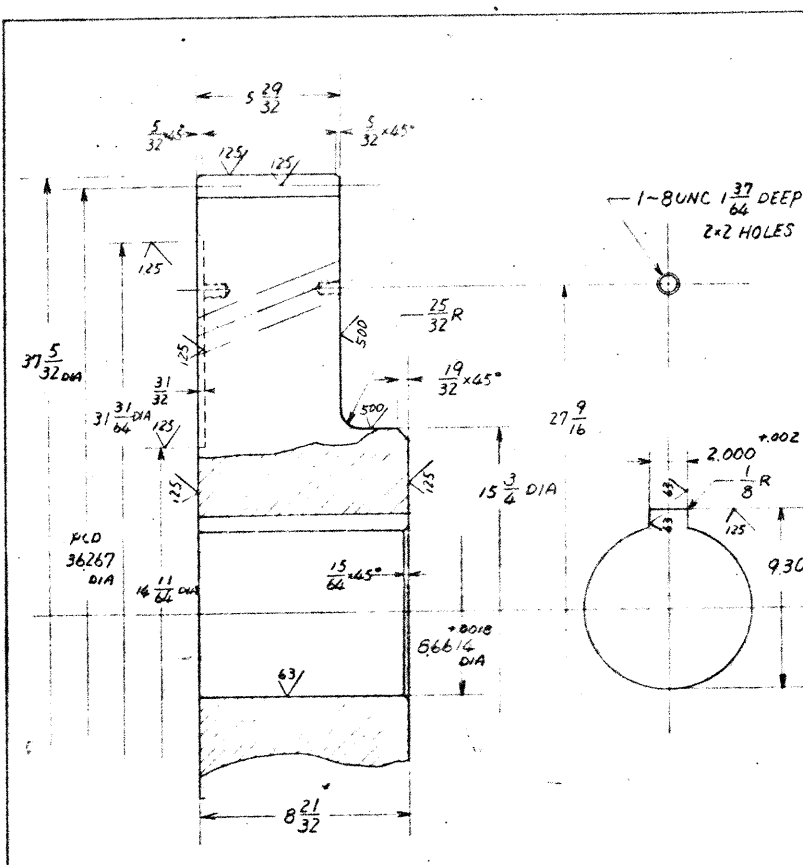
PROJECT N.J. 8.1355402 NEW HAROVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTHEAST CAPE FEAR RIVER BRIDGE
 US 117-NC 133 AT WILMINGTON - N.C.

OPERATING MACHINERY
 ASSEMBLY OF GEAR REDUCER

DATE _____ SCALE _____ DWG NO _____

NORTHEAST CAPE FEAR RIVER BRIDGE
 PROJECT NO. 8.1355402
 DRAWING NO. 31377
 OPERATING MACHINERY ASSEMBLY OF GEAR REDUCER
 SCALE 1:10
 DATE 11/27/58
 DRAWN BY [Signature]
 CHECKED BY [Signature]

配布先
 寄先 9
 荷役 1
 検査 1
 計 1/2

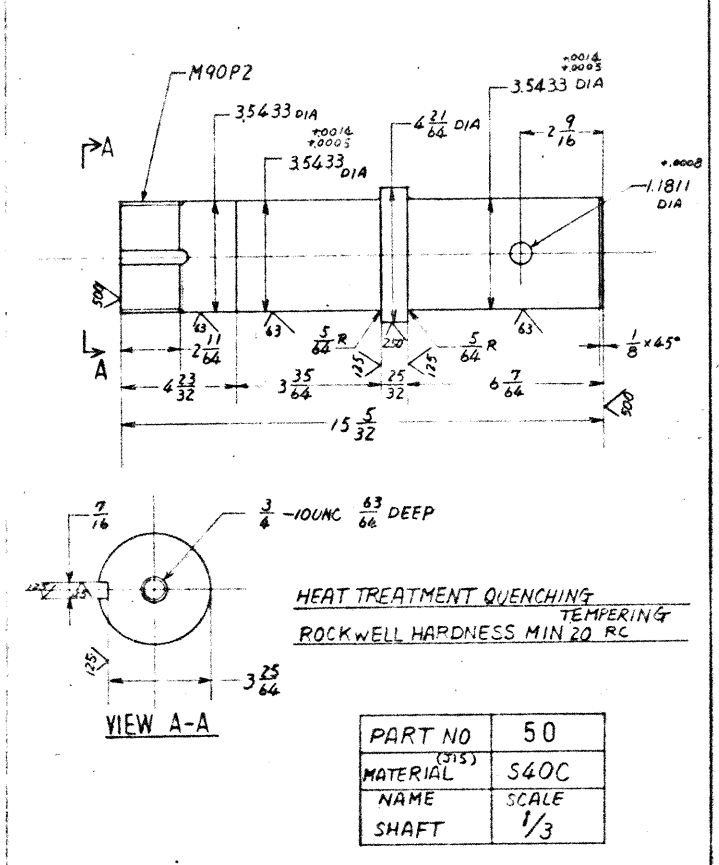
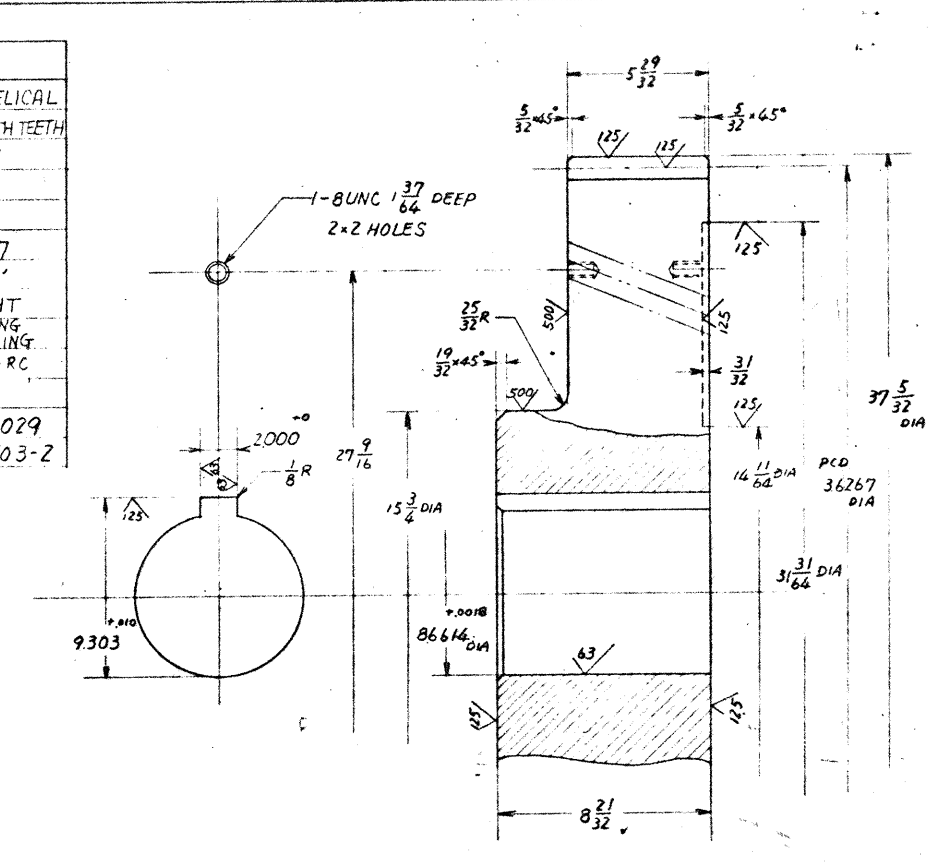


GEAR DATA	
TYPE OF GEAR	SINGLE HELICAL
CUTTER TOOTH FORM	FULL DEPTH TEETH
DIAMETRAL PITCH	2.25
CUTTER PRESSURE ANGLE	20°
NUMBER OF TEETH	75
GENERATING P.C.D.	36.267
HELIX ANGLE	23° 12'
DIRECTION OF HELIX	LEFT
HEAT TREATMENT	QUENCHING TEMPERING
ROCKWELL HARDNESS	MIN 22 RC
CLASS	JIS 4
BACKLASH	.007 - .029
PARTNER	PART NO 3-1

PART NO	4-1
MATERIAL (JIS)	S45C
NAME	GEAR
SCALE	1/4

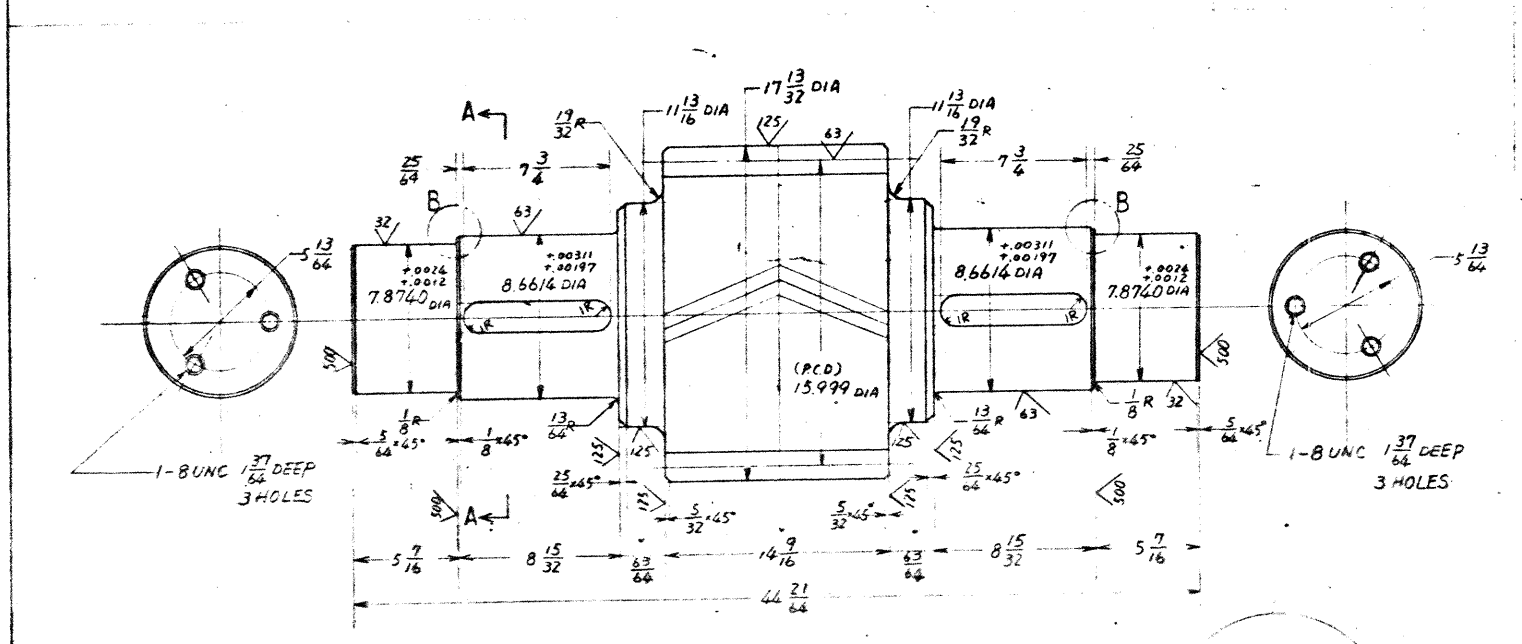
GEAR DATA	
TYPE OF GEAR	SINGLE HELICAL
CUTTER TOOTH FORM	FULL DEPTH TEETH
DIAMETRAL PITCH	2.25
CUTTER PRESSURE ANGLE	20°
NUMBER OF TEETH	75
GENERATING P.C.D.	36.267
HELIX ANGLE	23° 12'
DIRECTION OF HELIX	RIGHT
HEAT TREATMENT	QUENCHING TEMPERING
ROCKWELL HARDNESS	MIN 22 RC
CLASS	JIS 4
BACKLASH	.007 - .029
PARTNER	PART NO 3-2

PART NO	4-2
MATERIAL (JIS)	S45C
NAME	GEAR
SCALE	1/4



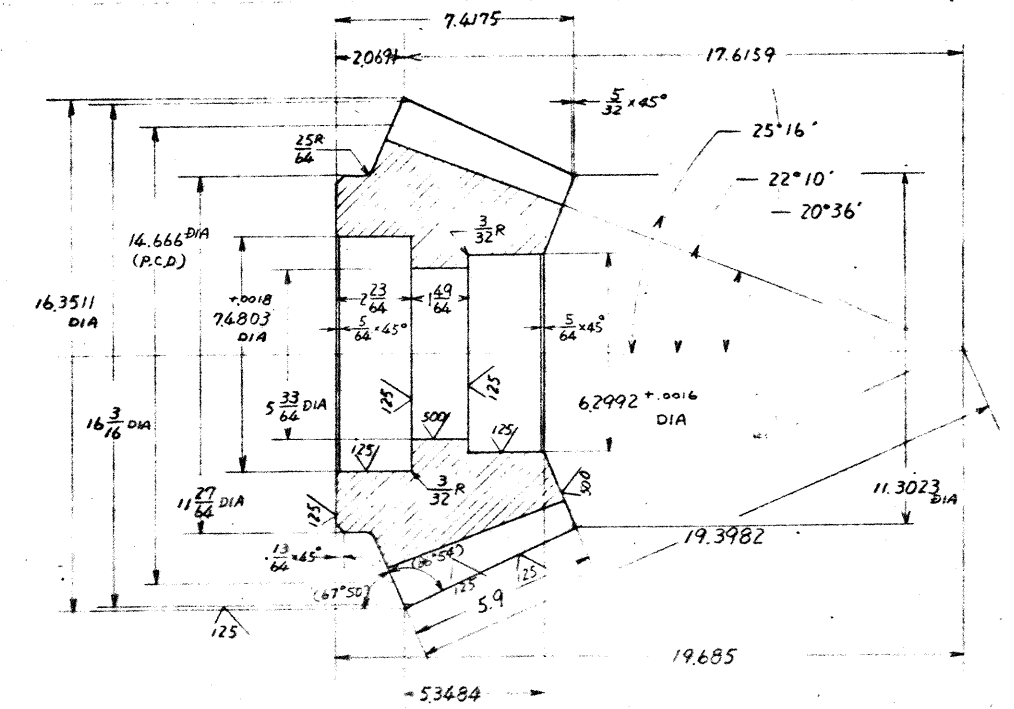
PART NO	50
MATERIAL (JIS)	S40C
NAME	SHAFT
SCALE	1/3

REVISIONS		
NO	DATE	DESCRIPTION



GEAR DATA	
TYPE OF GEAR	STRAIGHT BEVEL
CUTTER TOOTH FORM	GLEASON
DIAMETRAL PITCH	1.5
CUTTER PRESSURE ANGLE	20°
NUMBER OF TEETH	22
GENERATING P.C.D.	14.666
PITCH ANGLE	22° 10'
MATERIAL (JIS)	SCM4
HEAT TREATMENT	QUENCHING TEMPERING
ROCKWELL HARDNESS	MIN 27 RC
CLASS	JIS 4
BACKLASH	.007 - .0362
PARTNER	PART NO 12

PART NO	5
MATERIAL (JIS)	SCM4
NAME	BEVEL PINION
SCALE	1/3



GEAR DATA	
TYPE OF GEAR	STRAIGHT BEVEL
CUTTER TOOTH FORM	GLEASON
DIAMETRAL PITCH	1.5
CUTTER PRESSURE ANGLE	20°
NUMBER OF TEETH	22
GENERATING P.C.D.	14.666
PITCH ANGLE	22° 10'
MATERIAL (JIS)	SCM4
HEAT TREATMENT	QUENCHING TEMPERING
ROCKWELL HARDNESS	MIN 27 RC
CLASS	JIS 4
BACKLASH	.007 - .0362
PARTNER	PART NO 12

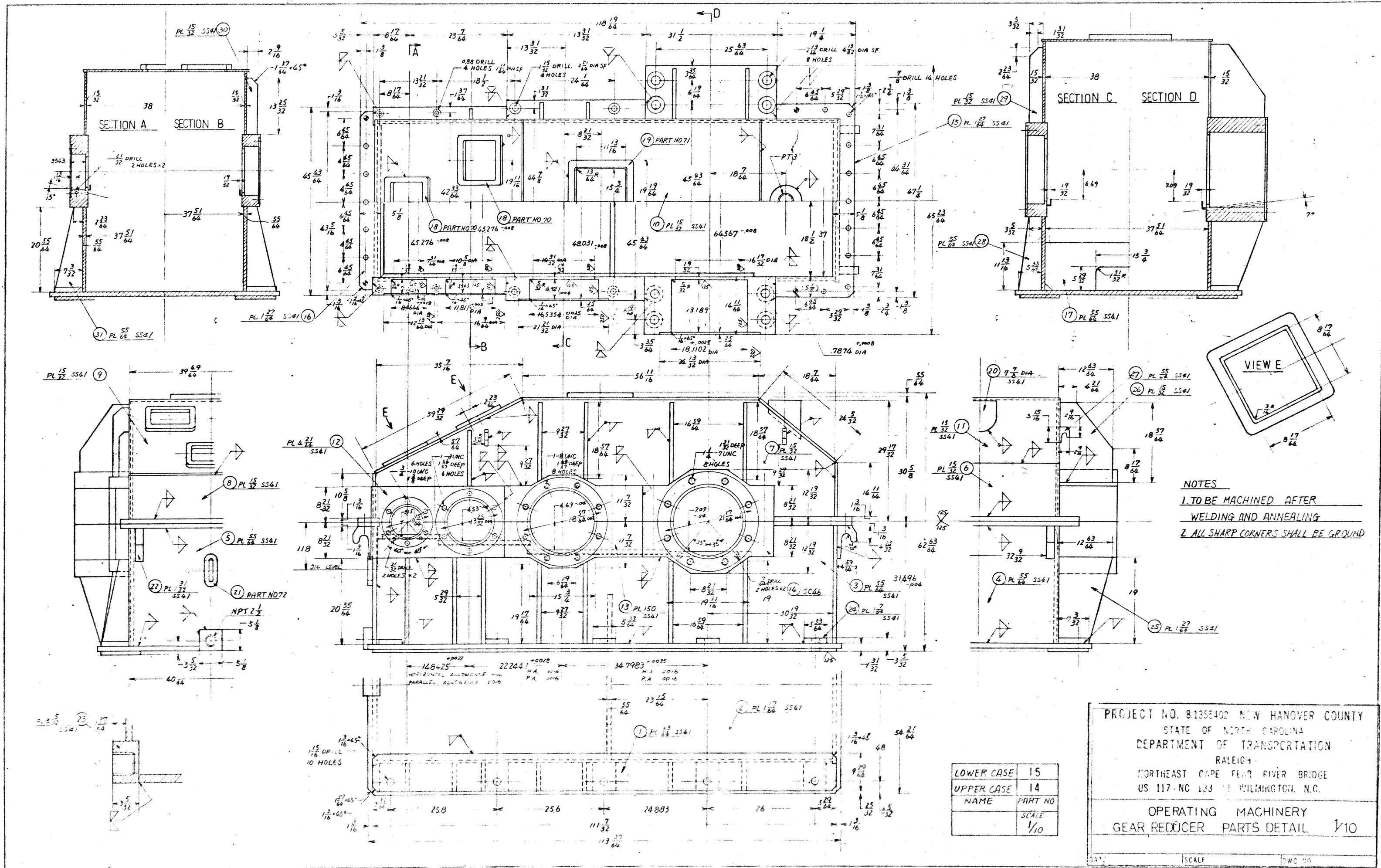
PART NO	7
MATERIAL (JIS)	SCM4
NAME	BEVEL PINION
SCALE	1/3

PROJECT NO. 81355402 NEW HANOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTHEAST CAPE FEAR RIVER BRIDGE
 US 117-NC 133 AT WILMINGTON, N.C.

OPERATING MACHINERY
 GEAR REDUCER PARTS DETAIL 2/10

NORTHEAST CAPE FEAR RIVER BRIDGE SECTION	31377
OPERATING MACHINERY	
GEAR REDUCER	
PARTS DETAIL	2/10
DATE	04.27.77
SCALE	AS SHOWN
DESIGNED BY	
DRAWN BY	
CHECKED BY	
DATE	04.27.77
SCALE	AS SHOWN
DESIGNED BY	
DRAWN BY	
CHECKED BY	

REVISIONS			
NO	DATE	DESCRIPTION	BY



NOTES
 1. TO BE MACHINED AFTER WELDING AND ANNEALING
 2. ALL SHARP CORNERS SHALL BE GROUND

LOWER CASE	15
UPPER CASE	14
NAME	PART NO
	SCALE
	1/10

PROJECT NO. 81355402 NEW HANOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTHEAST CAPE FEAR RIVER BRIDGE
 US 117-NC 133 WILMINGTON, N.C.

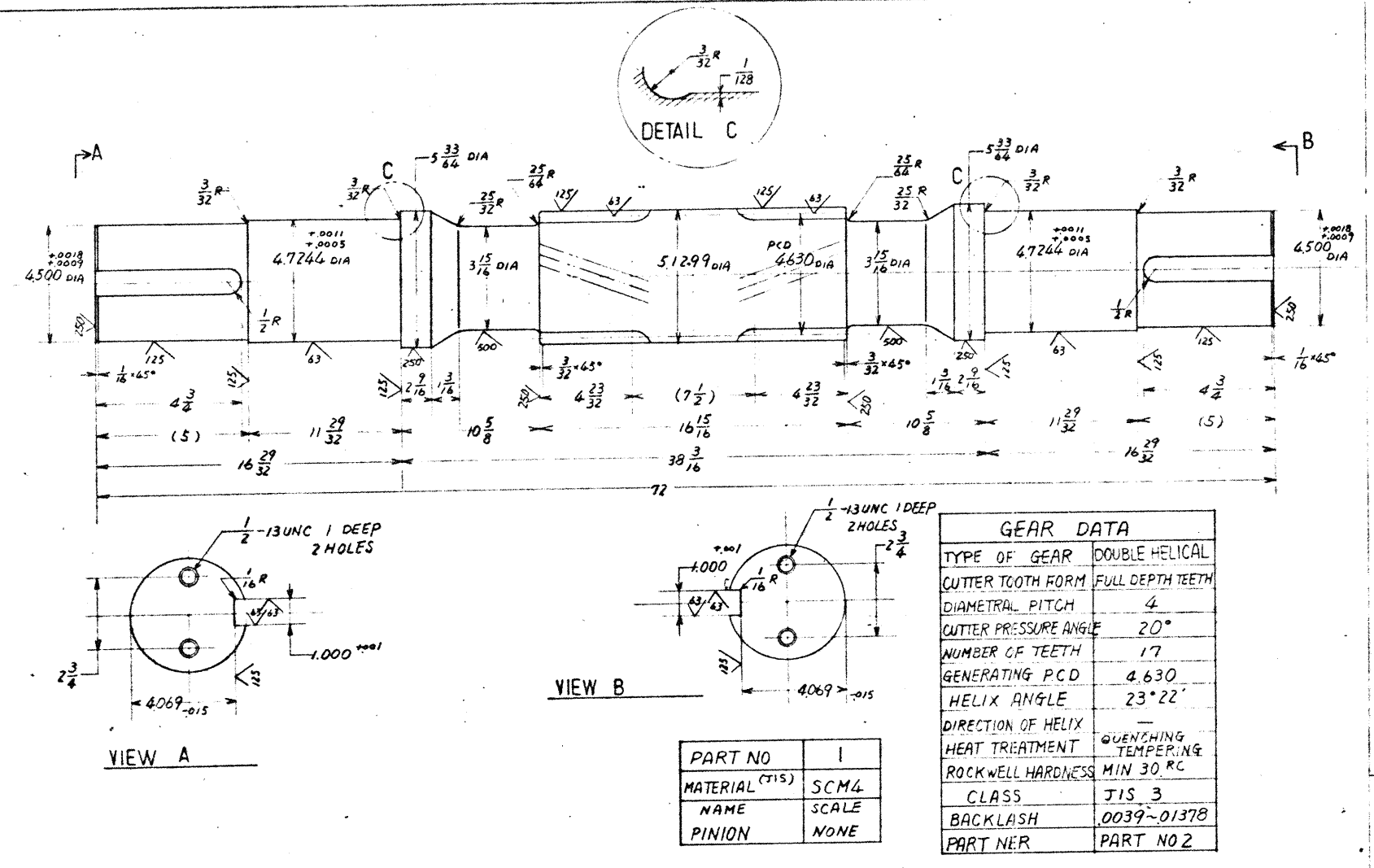
OPERATING MACHINERY
 GEAR REDUCER PARTS DETAIL 1/10

NORTH EAST CAPE FEAR RIVER BRIDGE
 DESIGNING SECTION
 APPROVED: [Signature]
 DRAWN: [Signature]

OPERATING MACHINERY
 GEAR REDUCER
 PARTS DETAIL 1/10

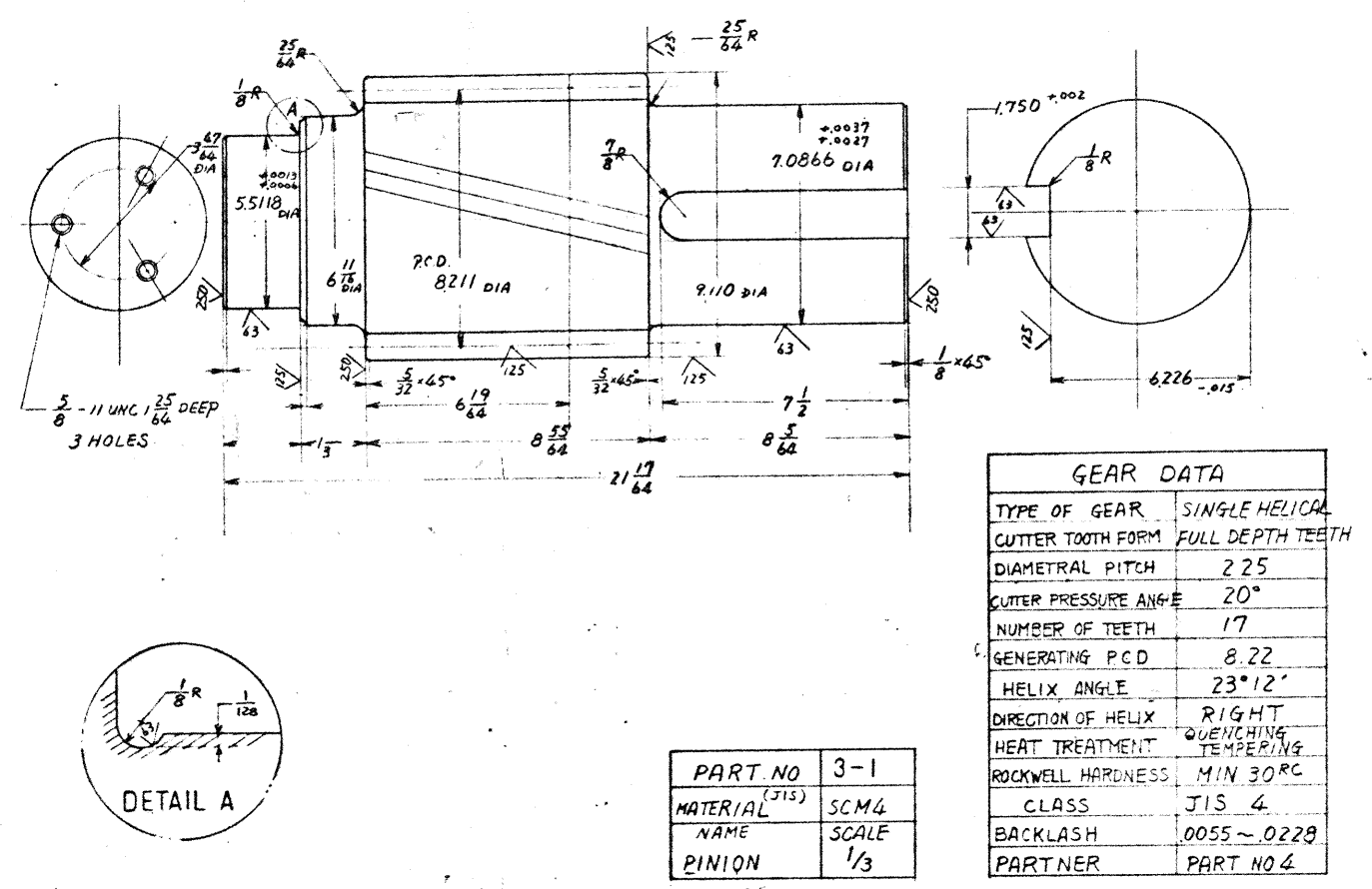
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REVISIONS			
NO	DATE	DESCRIPTION	BY



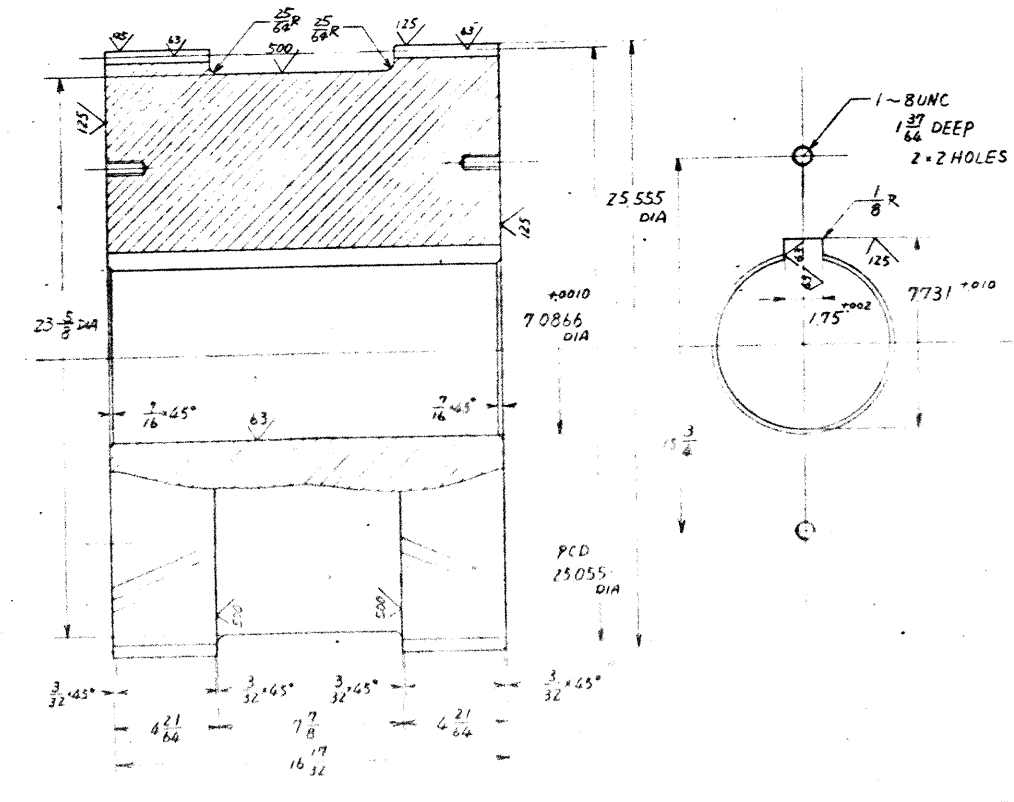
GEAR DATA	
TYPE OF GEAR	DOUBLE HELICAL
CUTTER TOOTH FORM	FULL DEPTH TEETH
DIAMETRAL PITCH	4
CUTTER PRESSURE ANGLE	20°
NUMBER OF TEETH	17
GENERATING PCD	4.630
HELIX ANGLE	23°22'
DIRECTION OF HELIX	—
HEAT TREATMENT	QUENCHING TEMPERING
ROCKWELL HARDNESS	MIN 30 RC
CLASS	JIS 3
BACKLASH	.0039-.01378
PART NER	PART NO 2

PART NO	1
MATERIAL (TIS)	SCM4
NAME	SCALE
PINION	NONE



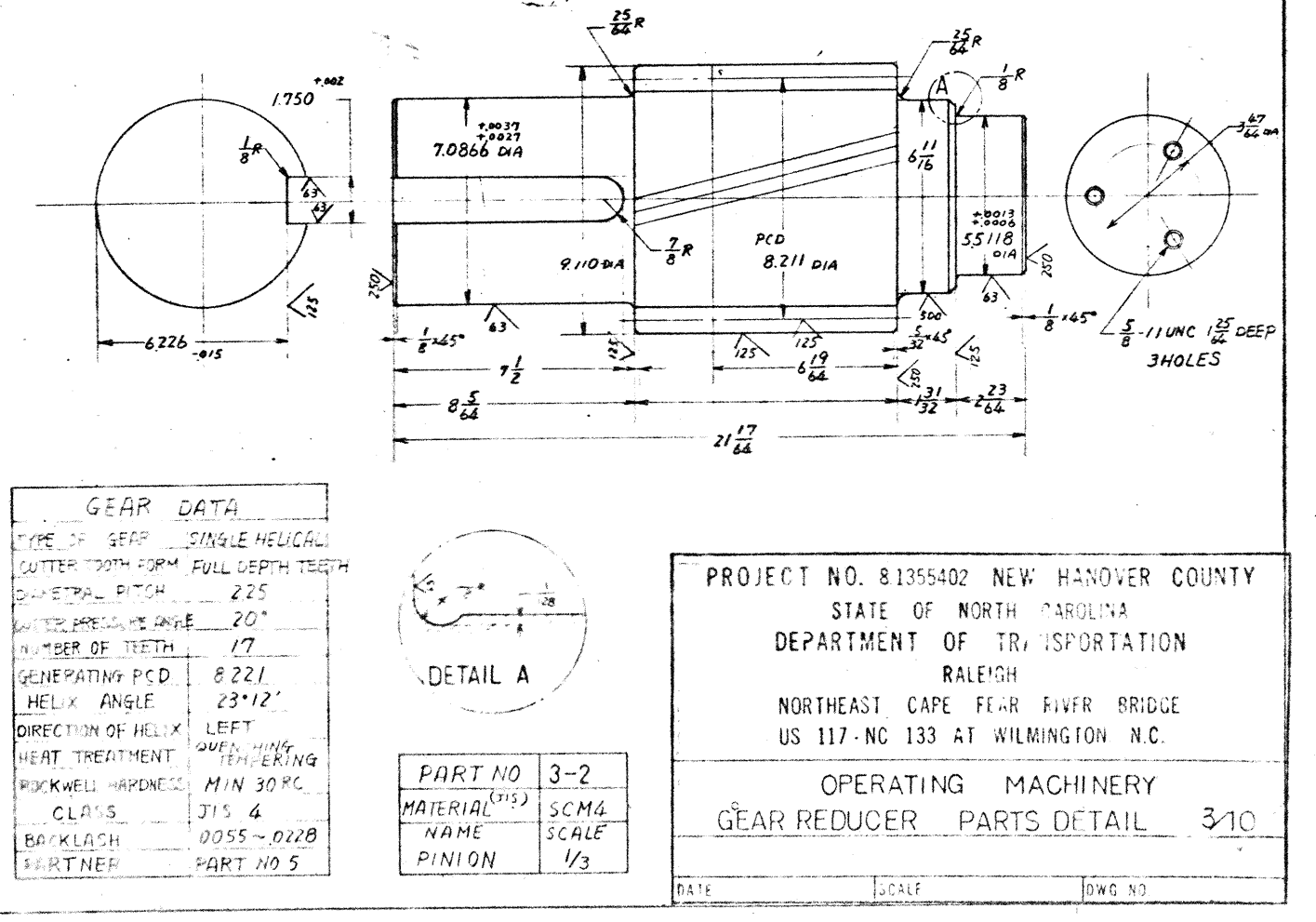
GEAR DATA	
TYPE OF GEAR	SINGLE HELICAL
CUTTER TOOTH FORM	FULL DEPTH TEETH
DIAMETRAL PITCH	2.25
CUTTER PRESSURE ANGLE	20°
NUMBER OF TEETH	17
GENERATING PCD	8.22
HELIX ANGLE	23°12'
DIRECTION OF HELIX	RIGHT
HEAT TREATMENT	QUENCHING TEMPERING
ROCKWELL HARDNESS	MIN 30 RC
CLASS	JIS 4
BACKLASH	.0055-.0228
PART NER	PART NO 4

PART NO	3-1
MATERIAL (TIS)	SCM4
NAME	SCALE
PINION	1/3



GEAR DATA	
TYPE OF GEAR	DOUBLE HELICAL
CUTTER TOOTH FORM	FULL DEPTH TEETH
DIAMETRAL PITCH	4
CUTTER PRESSURE ANGLE	20°
NUMBER OF TEETH	92
GENERATING PCD	25.055
HELIX ANGLE	23°22'
DIRECTION OF HELIX	—
HEAT TREATMENT	QUENCHING TEMPERING
ROCKWELL HARDNESS	MIN 22 RC
CLASS	JIS 3
BACKLASH	.0051-.018
PART NER	PART NO 1

PART NO	2
MATERIAL (TIS)	45C
NAME	SCALE
GEAR	1/4



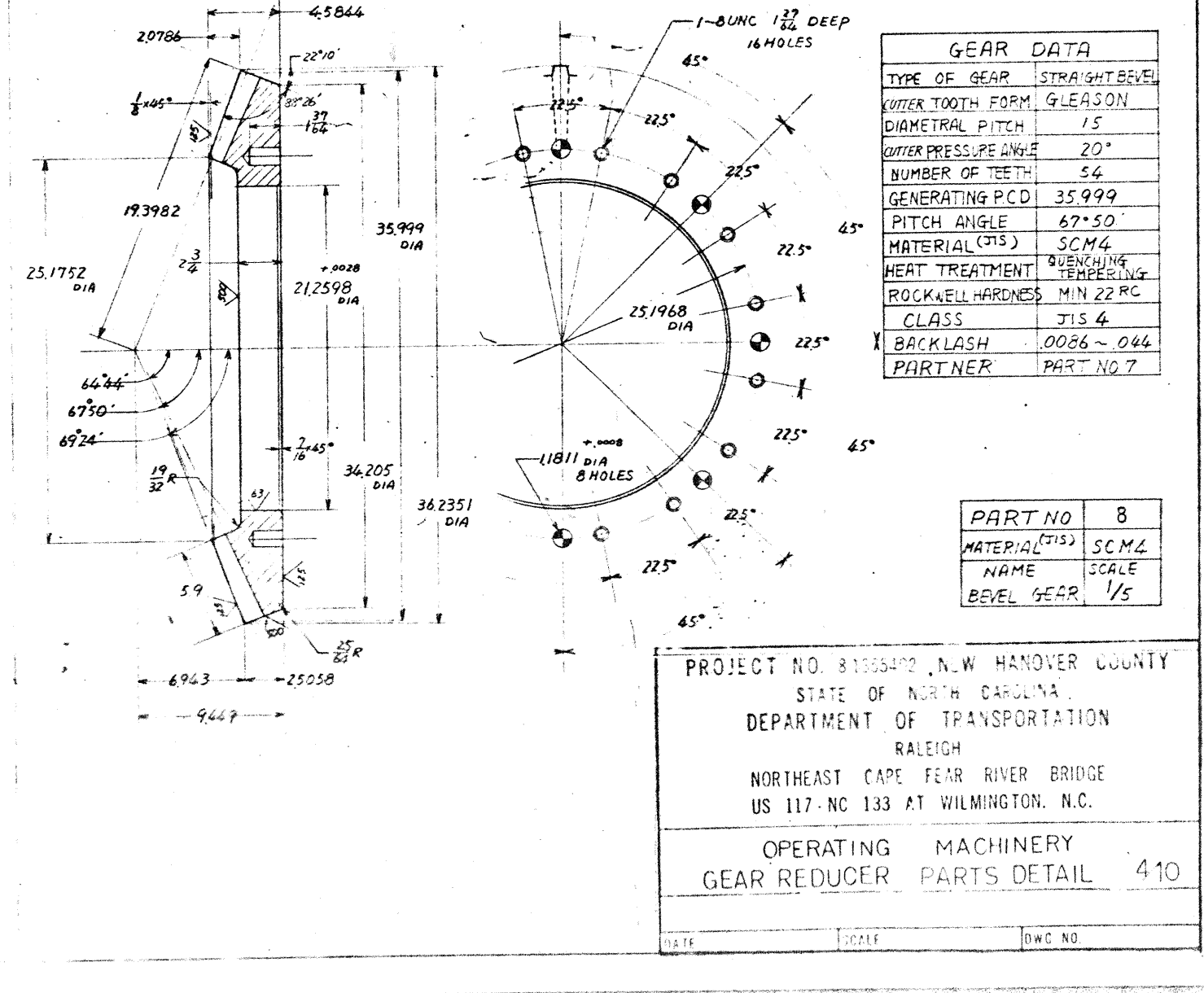
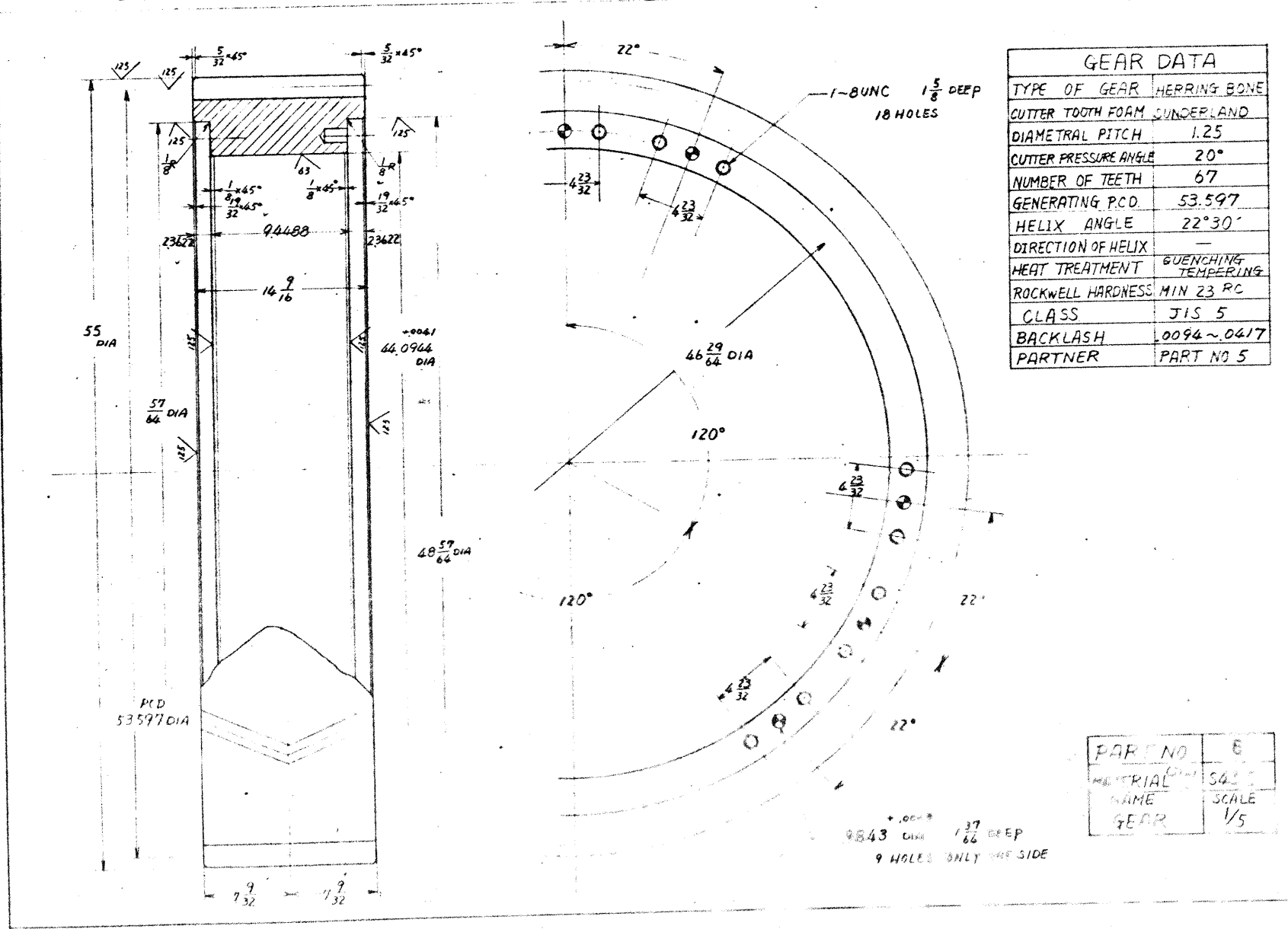
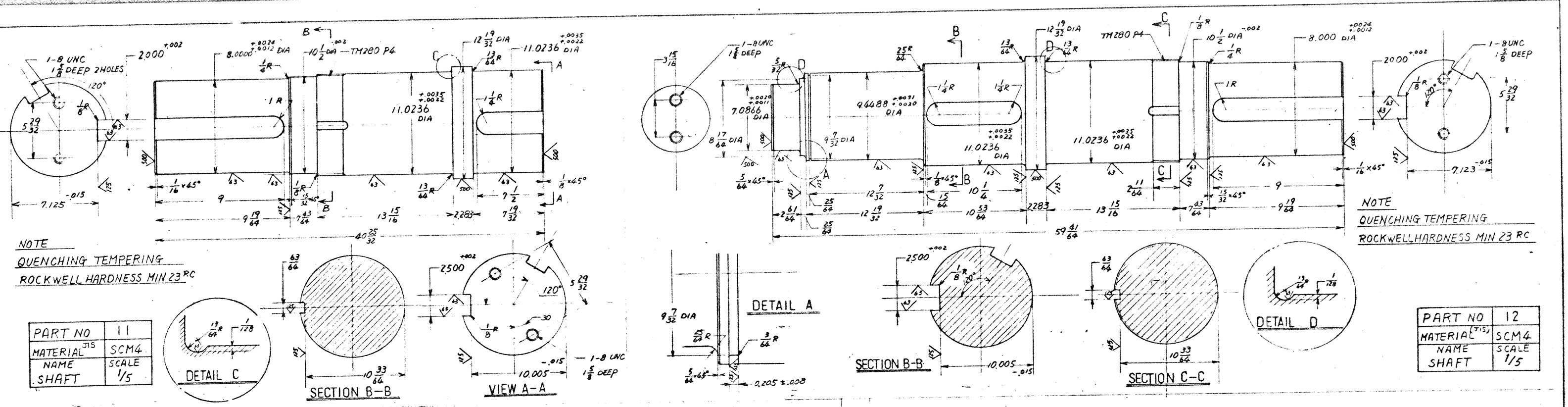
GEAR DATA	
TYPE OF GEAR	SINGLE HELICAL
CUTTER TOOTH FORM	FULL DEPTH TEETH
DIAMETRAL PITCH	2.25
CUTTER PRESSURE ANGLE	20°
NUMBER OF TEETH	17
GENERATING PCD	8.221
HELIX ANGLE	23°12'
DIRECTION OF HELIX	LEFT
HEAT TREATMENT	QUENCHING TEMPERING
ROCKWELL HARDNESS	MIN 30 RC
CLASS	JIS 4
BACKLASH	.0055-.0228
PART NER	PART NO 5

PART NO	3-2
MATERIAL (TIS)	SCM4
NAME	SCALE
PINION	1/3

PROJECT NO. 81355402 NEW HANOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTHEAST CAPE FEAR RIVER BRIDGE
 US 117-NC 133 AT WILMINGTON N.C.

OPERATING MACHINERY
 GEAR REDUCER PARTS DETAIL 3/10

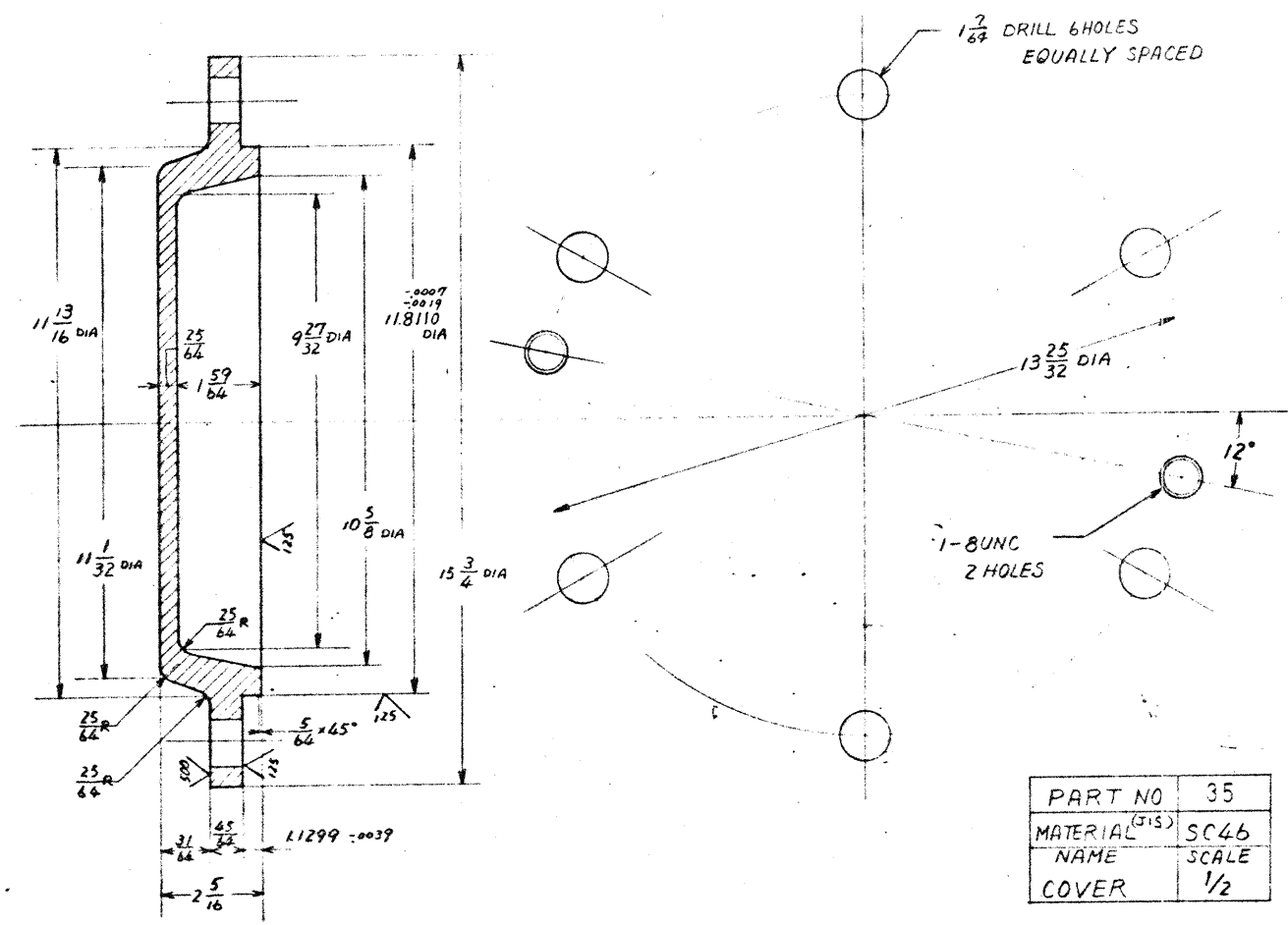
NORTH EAST CAPE FEAR	NO	31377
OPERATING MACHINERY		
GEAR REDUCER		
PARTS DETAIL		310
DATE	SCALE	DWG NO



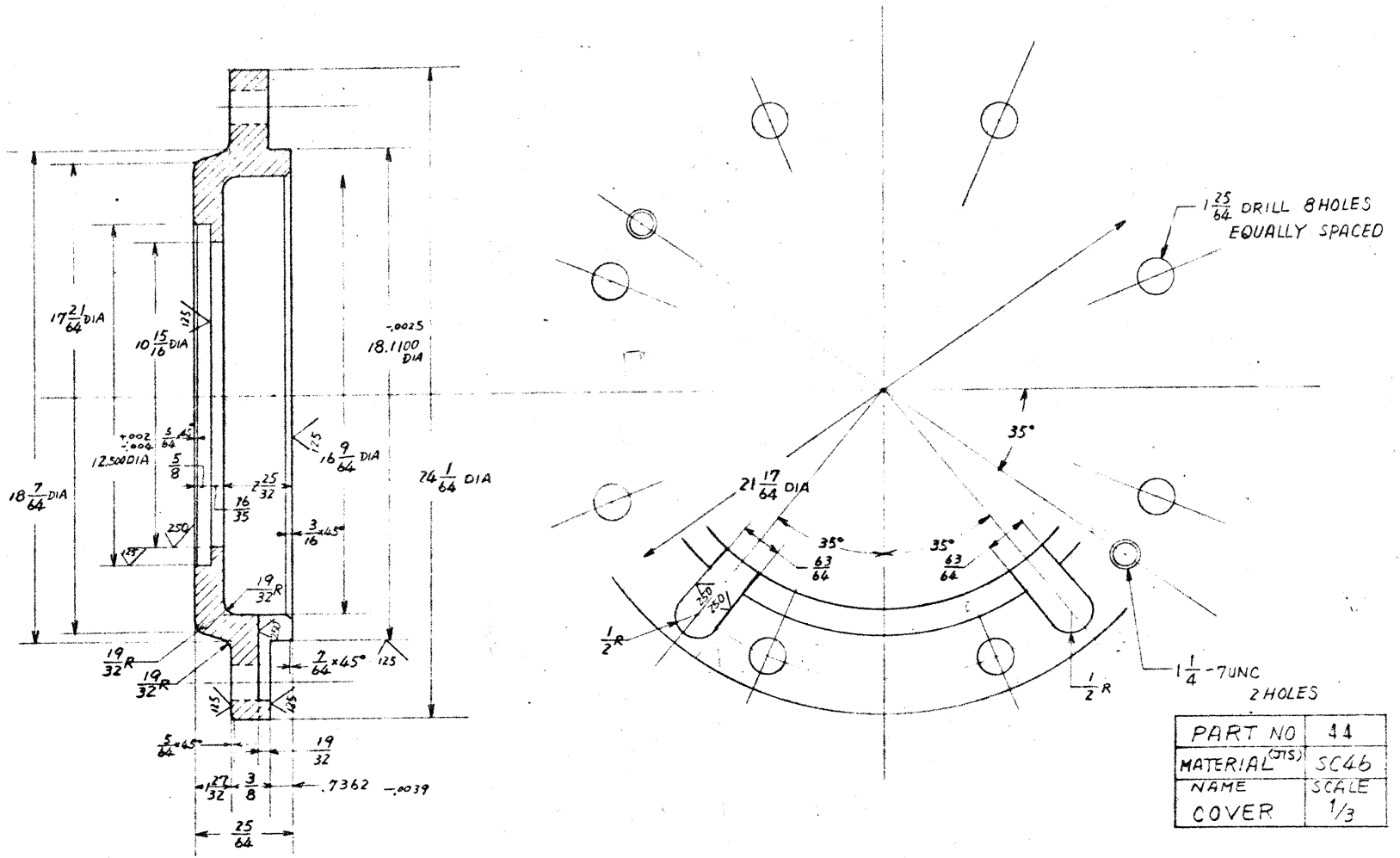
REVISIONS		
NO	DATE	DESCRIPTION

NORTHEAST CAPE FEAR RIVER BRIDGE	31377
OPERATING MACHINERY	
GEAR REDUCER	
PARTS DETAIL 410	
SCALE	H-165
DATE	

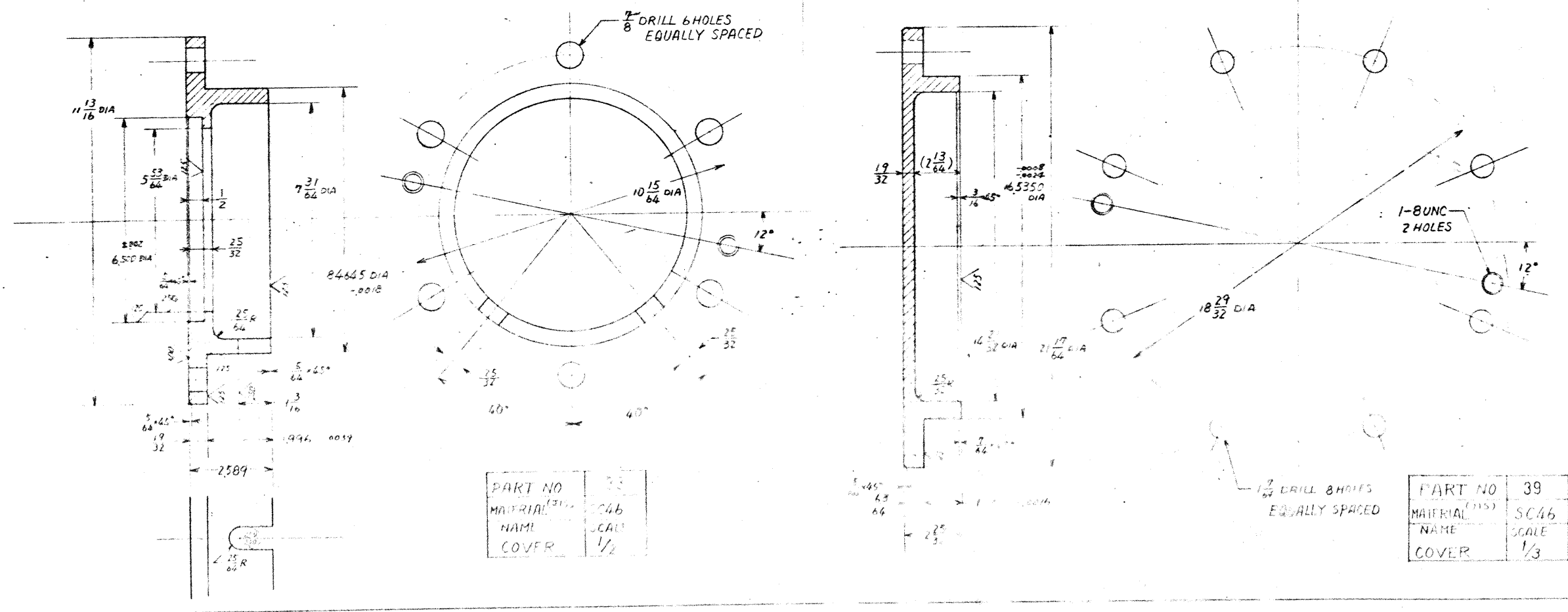
REVISIONS			
NO	DATE	DESCRIPTION	BY



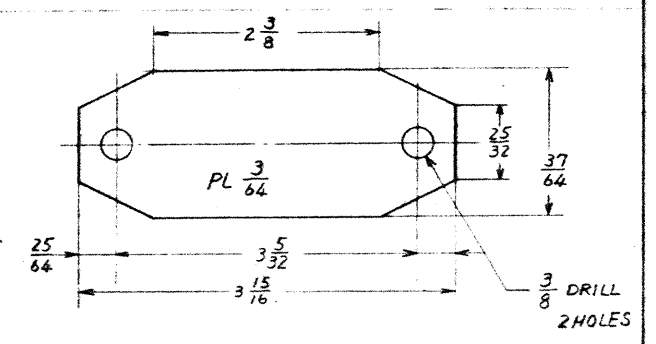
PART NO	35
MATERIAL (ST)	SC46
NAME	SCALE
COVER	1/2



PART NO	44
MATERIAL (ST)	SC46
NAME	SCALE
COVER	1/3



PART NO	39
MATERIAL (ST)	SC46
NAME	SCALE
COVER	1/2



PART NO	69
MATERIAL (ST)	SPC1
NAME	SCALE
WASHER	1/1

PROJECT NO. 8.1355402 NEW HANOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTHEAST CAPE FEAR RIVER BRIDGE
 US 117-NC 133 AT WILMINGTON, N.C.

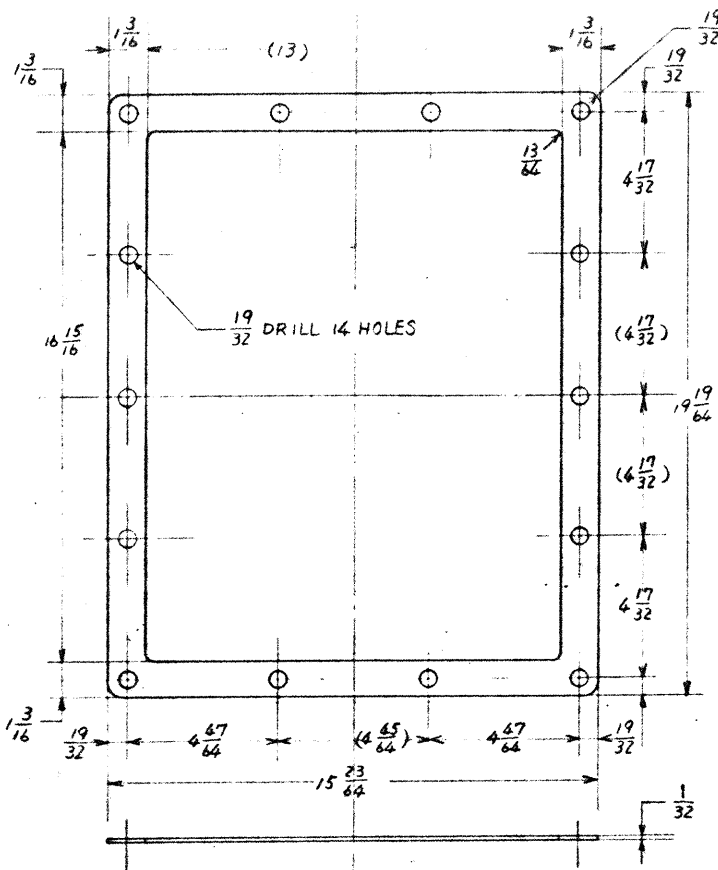
OPERATING MACHINERY
 GEAR REDUCER PARTS DETAIL 6/10

SCALE DWG. NO.

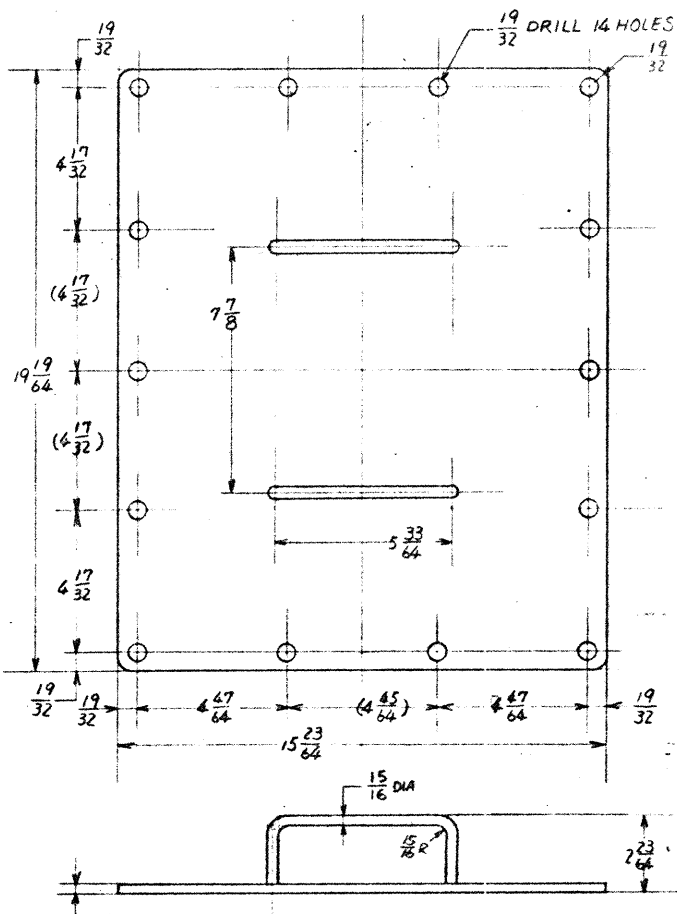
NORTHEAST CAPE FEAR RIVER BRIDGE
 OPERATING MACHINERY
 GEAR REDUCER
 PARTS DETAIL 6/10
 SCALE AS SHOWN
 ITEM NO. H-167
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]

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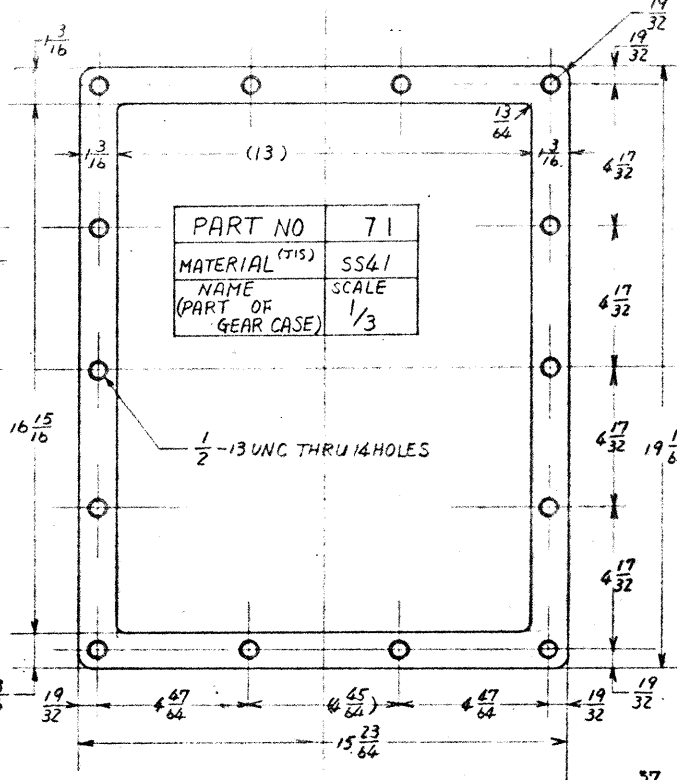
REVISIONS		
NO	DATE	DESCRIPTION



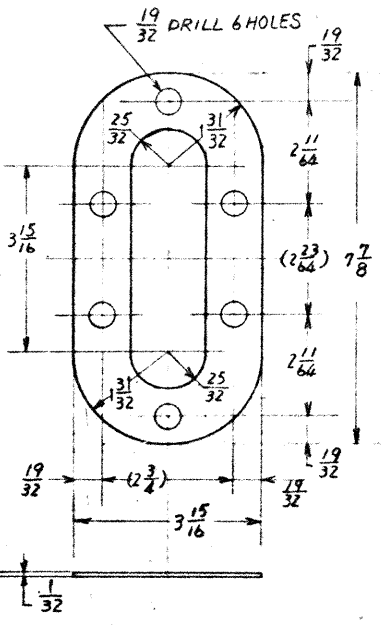
PART NO	60
MATERIAL (TIS)	ASBESTOS
NAME	GASKET
SCALE	1/3



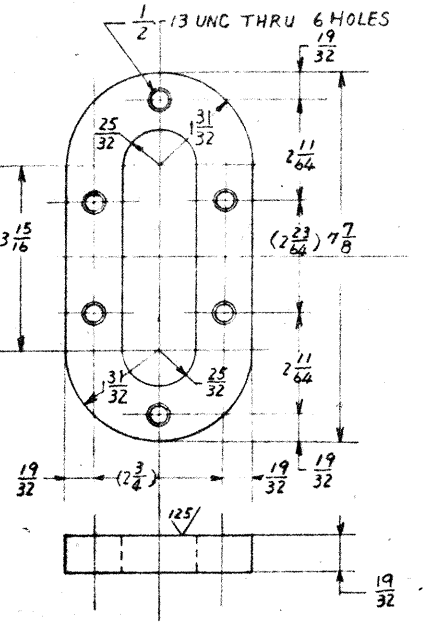
PART NO	59
MATERIAL (TIS)	SS41
NAME	HOLE COVER
SCALE	1/3



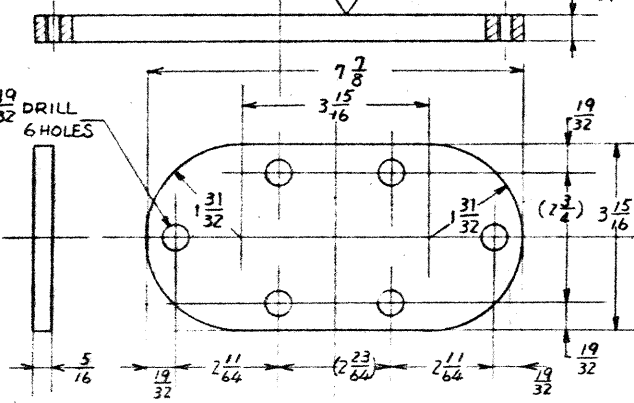
PART NO	71
MATERIAL (TIS)	SS41
NAME	(PART OF GEAR CASE)
SCALE	1/3



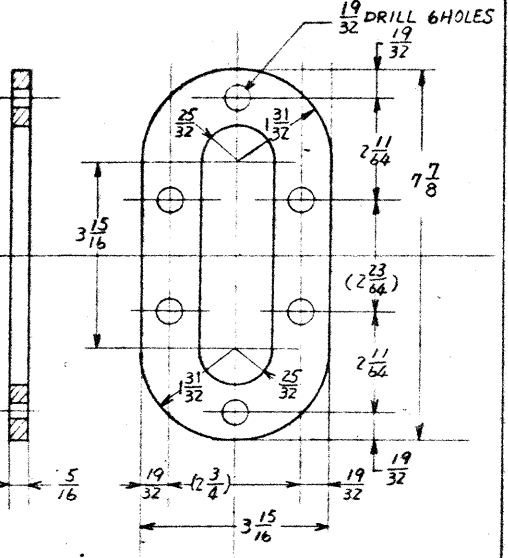
PART NO	65
MATERIAL (TIS)	ASBESTOS
NAME	GASKET
SCALE	1/2



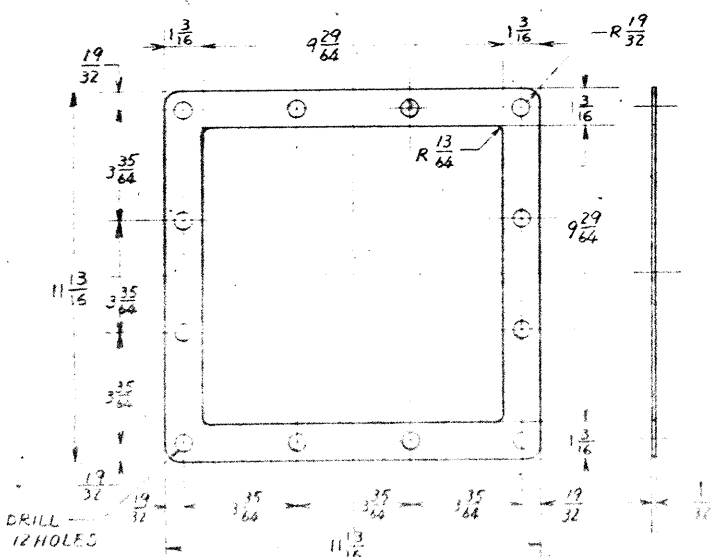
PART NO	72
MATERIAL (TIS)	SS41
NAME	(PART OF GEAR CASE)
SCALE	1/2



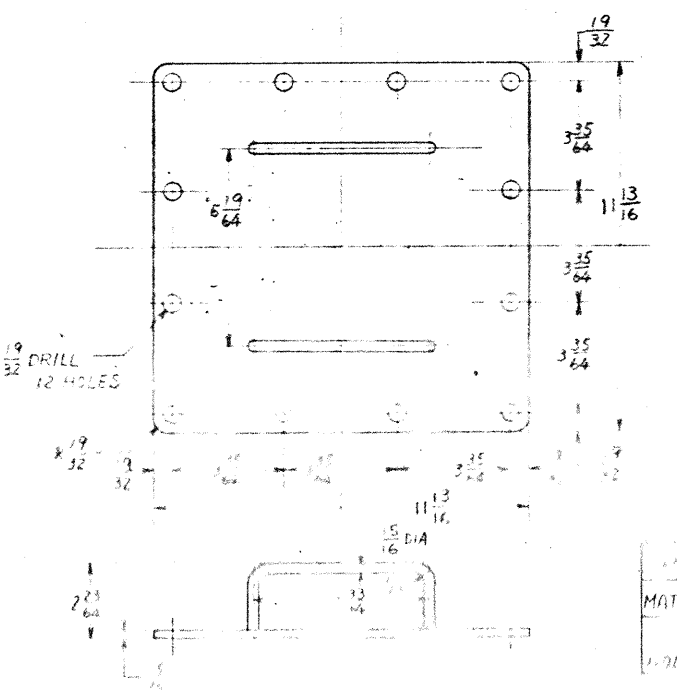
PART NO	64
MATERIAL (TIS)	ACRYL
NAME	ACRYLCRESIN PLATE
SCALE	1/2



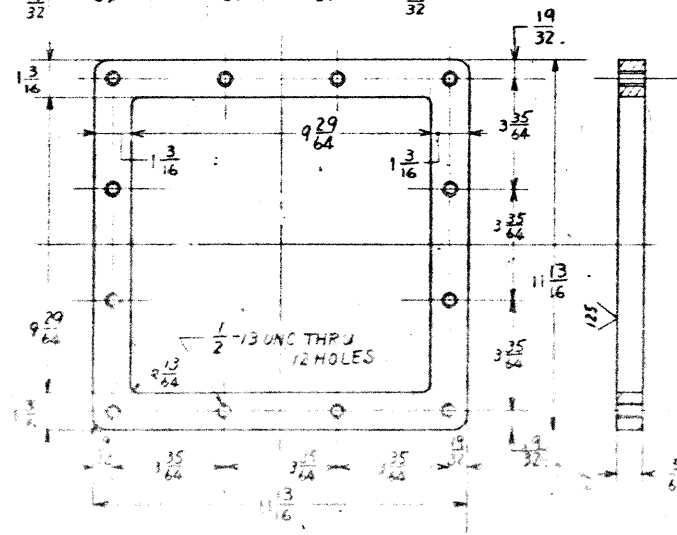
PART NO	63
MATERIAL (TIS)	SS41
NAME	HOLDER PLATE
SCALE	1/2



PART NO	62
MATERIAL (TIS)	ASBESTOS
NAME	GASKET
SCALE	1/3



PART NO	61
MATERIAL (TIS)	SS41
NAME	HOLE COVER
SCALE	1/3

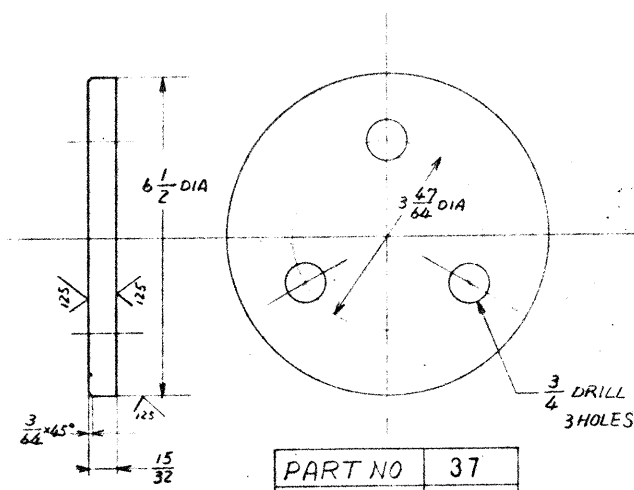


PART NO	70
MATERIAL (TIS)	SS41
NAME	(PART OF GEAR CASE)
SCALE	1/3

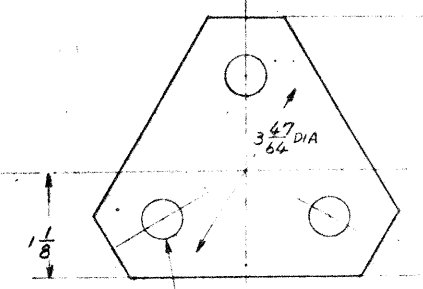
PROJECT NO. 8.1355402 NEW HANOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTHEAST CAPE FEAR RIVER BRIDGE
 LS 117-NO 133 AT WILMINGTON, N.C.

OPERATING MACHINERY
 GEAR REDUCER, PARTS DETAIL 7/10

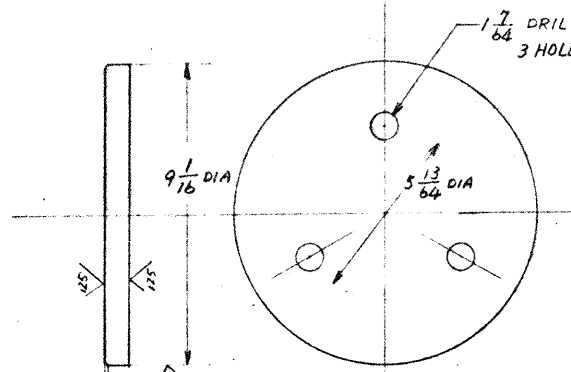
NORTHEAST CAPE FEAR BRIDGE	YARD NO	31377
DESIGN SECTION	OPERATING MACHINERY	
APPROVED	GEAR REDUCER	
DATE	PARTS DETAIL	7/10
SCALE		
NO. 117-NO 133 ENGINE ROOM, MITCHELL HEAVY INDUSTRIES, LTD.		



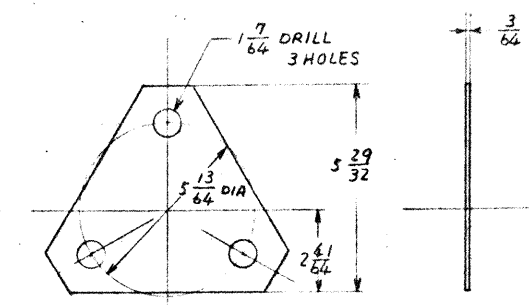
PART NO	37
MATERIAL (STIS)	SS41
NAME	SCALE
HOLDER PLATE	1/2



PART NO	38
MATERIAL (STIS)	SPC1
NAME	SCALE
LOCK WASHER	NONE

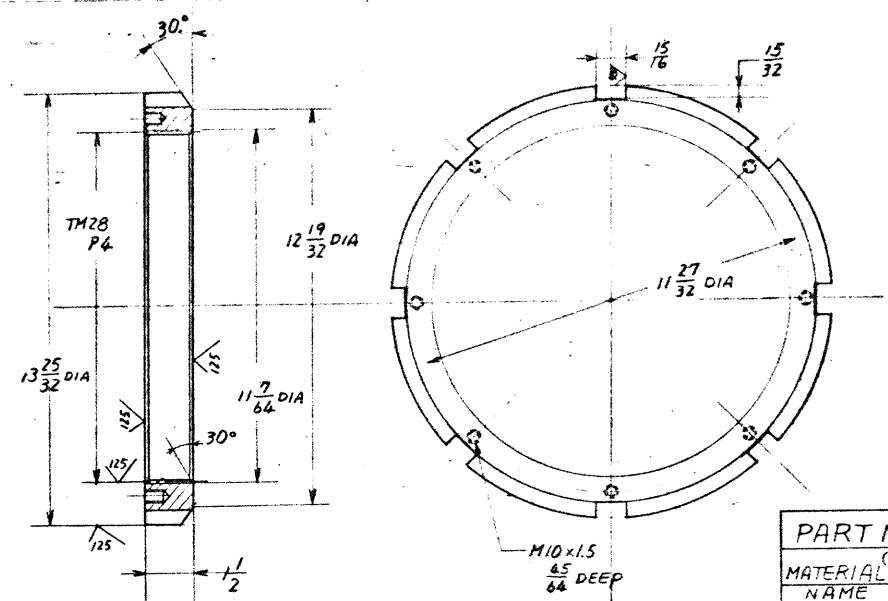


PART NO	42
MATERIAL (STIS)	SS41
NAME	SCALE
HOLDER PLATE	NONE

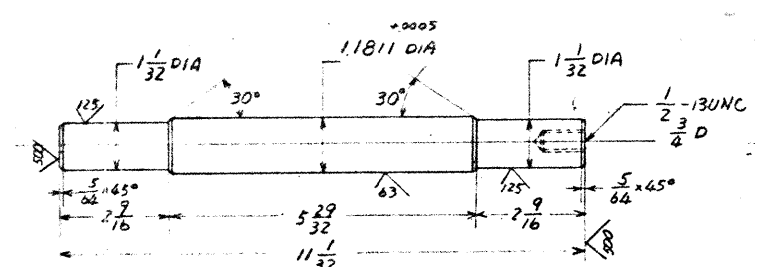


PART NO	41
MATERIAL (STIS)	SPC1
NAME	SCALE
LOCK WASHER	NONE

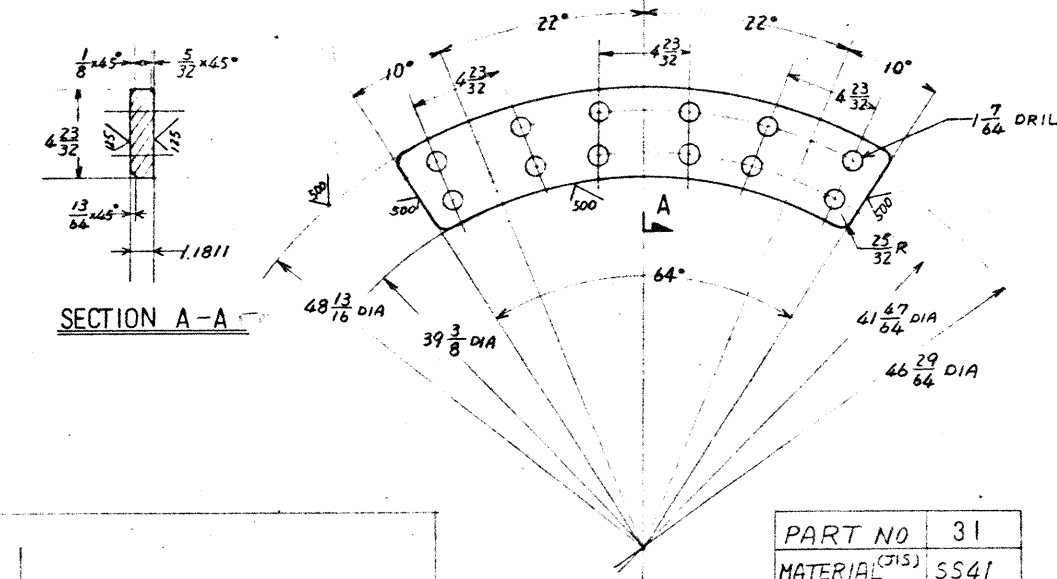
PART NO	88
MATERIAL (STIS)	SPC1
NAME	SCALE
LOCK WASHER	NONE



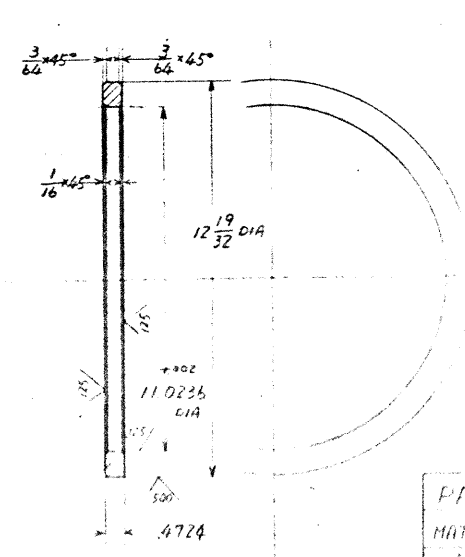
PART NO	29
MATERIAL (STIS)	SS41
NAME	SCALE
SHAFT NUT	



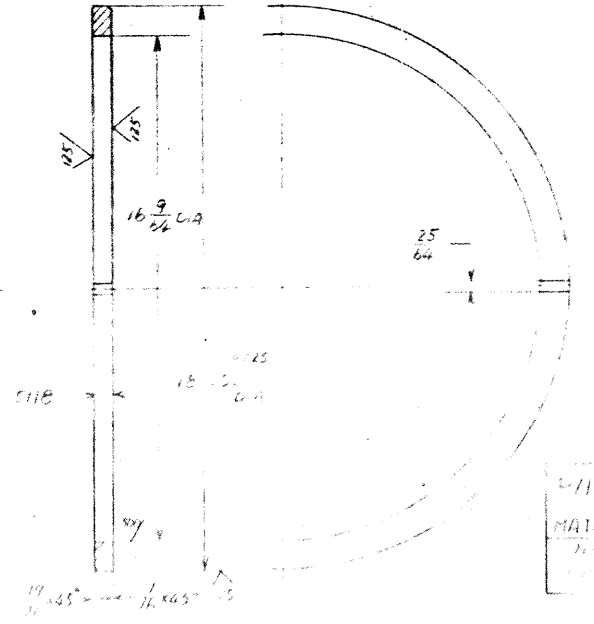
PART NO	67
MATERIAL (STIS)	S40C
NAME	SCALE
PIN	1/2



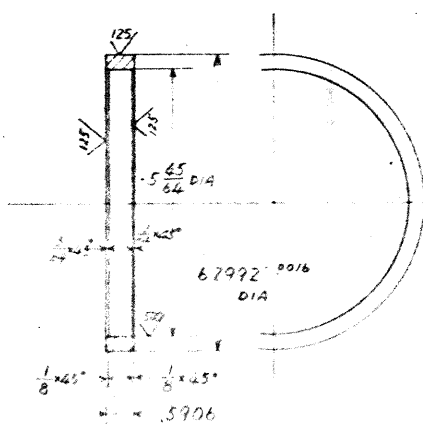
PART NO	31
MATERIAL (STIS)	SS41
NAME	SCALE
HOLDER PLATE	1/5



PART NO	46
MATERIAL (STIS)	SPC1
NAME	SCALE
COLLAR	1/3



PART NO	48
MATERIAL (STIS)	SS41
NAME	SCALE
COLLAR	1/2



PART NO	49
MATERIAL (STIS)	SS41
NAME	SCALE
COLLAR	1/2

PROJECT NO. 8.1355402 NEW HANGOVER COUNTY
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NORTHEAST CAPE FEAR RIVER BRIDGE
 HS 117-NC 133 AT WILMINGTON, N.C.

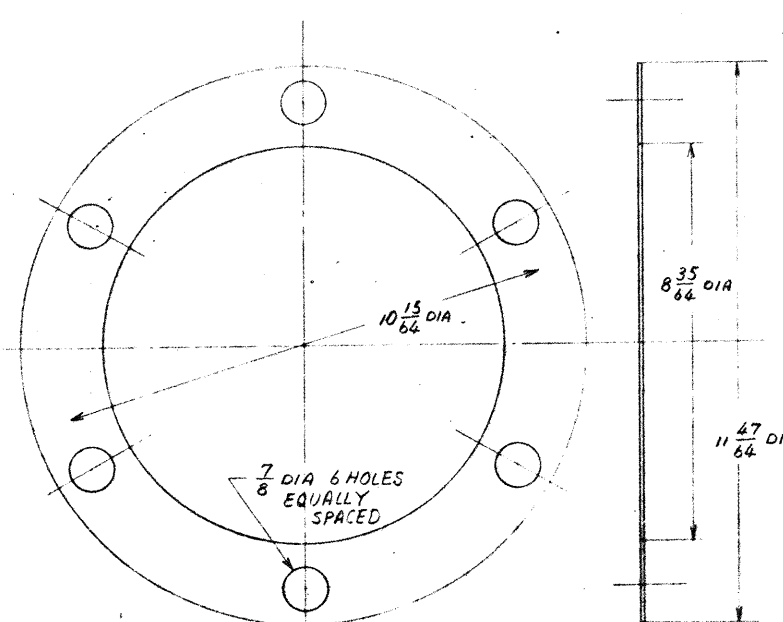
OPERATING MACHINERY
 GEAR REDUCER PARTS DETAIL 8/10

REVISIONS		
NO	DATE	DESCRIPTION

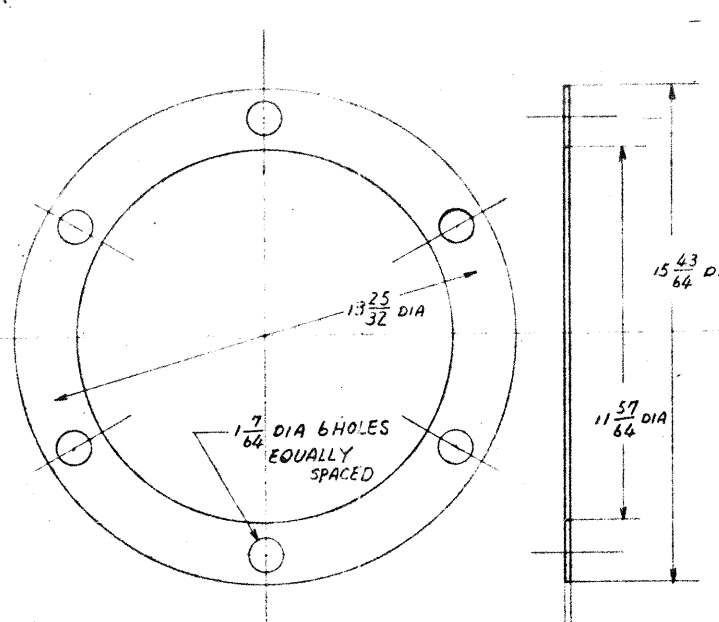
NORTHEAST CAPE FEAR RIVER BRIDGE
 YARD NO. 31377
 OPERATING MACHINERY
 GEAR REDUCER
 PARTS DETAIL 8/10
 DATE: 04.17.77 SCALE: AS SHOWN
 DRAWING NO. H-169
 PROJECT NO. 8.1355402

DESIGNED BY
 CHECKED BY
 APPROVED BY
 DATE: 12.84

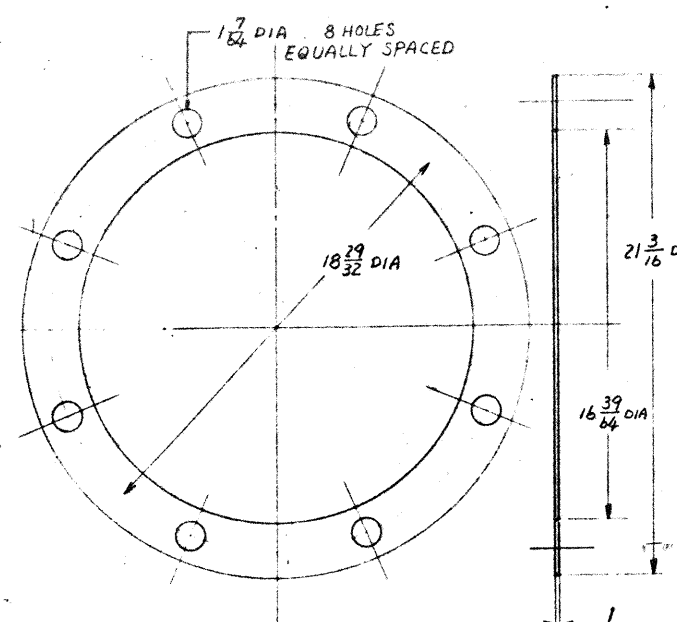
REVISIONS			
NO	DATE	DESCRIPTION	BY



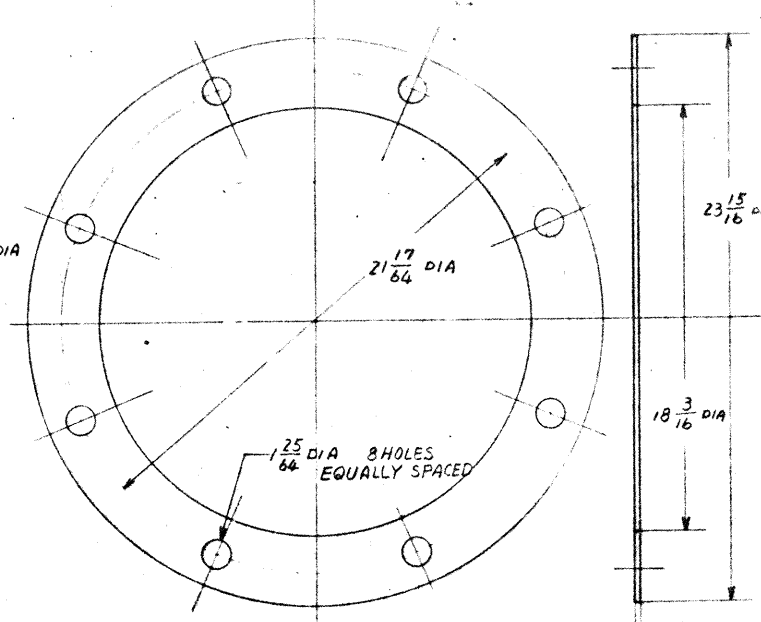
PART NO	34
MATERIAL (TIS)	ASBESTOS
NAME	GASKET
SCALE	1/2



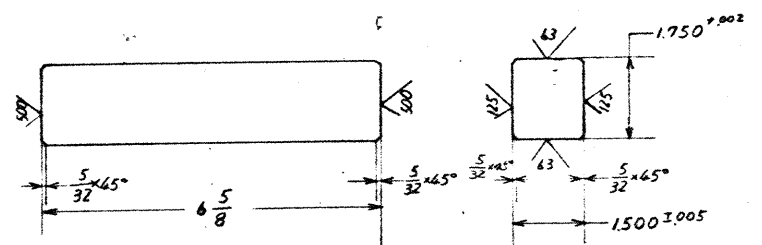
PART NO	36
MATERIAL (TIS)	ASBESTOS
NAME	GASKET
SCALE	1/3



PART NO	40
MATERIAL (TIS)	ASBESTOS
NAME	GASKET
SCALE	1/4

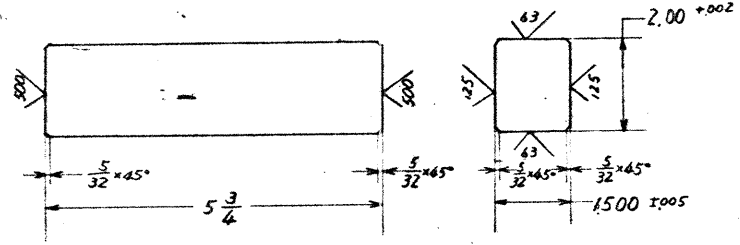


PART NO	45
MATERIAL (TIS)	ASBESTOS
NAME	GASKET
SCALE	1/4



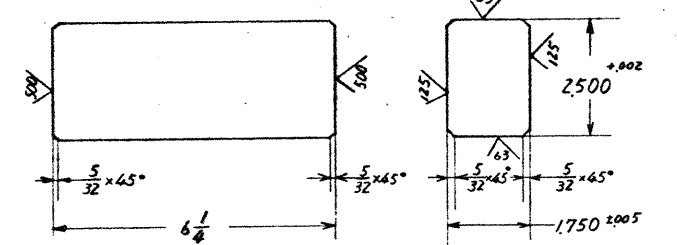
PART NO	52
MATERIAL (TIS)	S45C
NAME	KEY
SCALE	NONE

NOTE
QUENCHING TEMPERING
ROCKWELL HARDNESS MIN 20RC



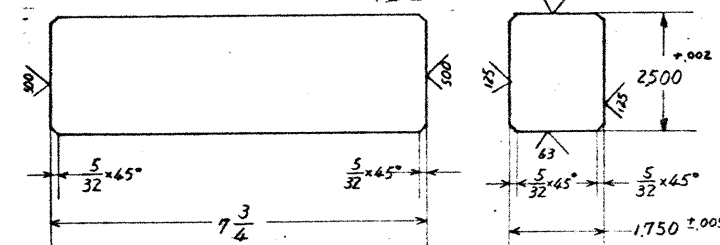
PART NO	53
MATERIAL (TIS)	S45C
NAME	KEY
SCALE	NONE

NOTE
QUENCHING TEMPERING
ROCKWELL HARDNESS MIN 20RC



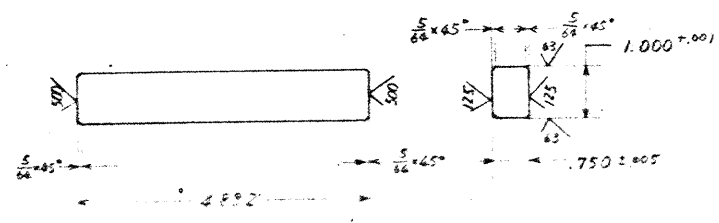
PART NO	57
MATERIAL (TIS)	S45C
NAME	KEY
SCALE	1/2

NOTE
QUENCHING TEMPERING
ROCKWELL HARDNESS MIN 20RC



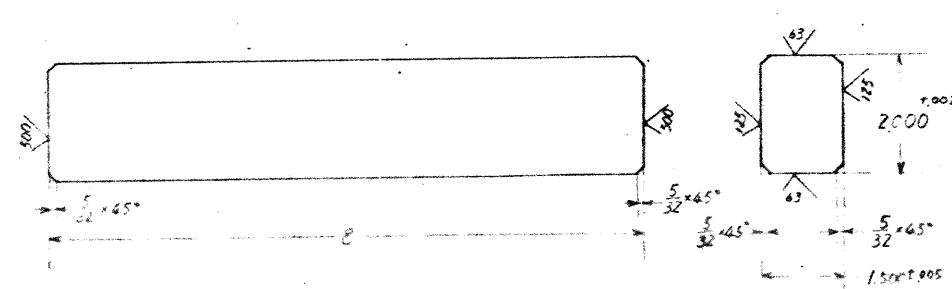
PART NO	56
MATERIAL (TIS)	S45C
NAME	KEY
SCALE	1/2

NOTE
QUENCHING TEMPERING
ROCKWELL HARDNESS MIN 20RC



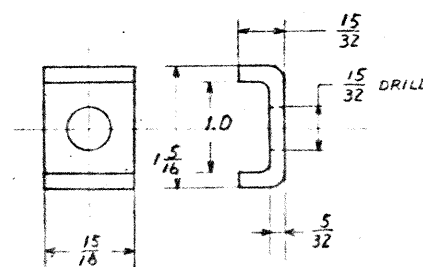
PART NO	51
MATERIAL (TIS)	S45C
NAME	KEY
SCALE	1/2

NOTE
QUENCHING TEMPERING
ROCKWELL HARDNESS MIN 20RC



PART NO	55
MATERIAL (TIS)	S45C
NAME	KEY
SCALE	NONE

NOTE
QUENCHING TEMPERING
ROCKWELL HARDNESS MIN 20RC

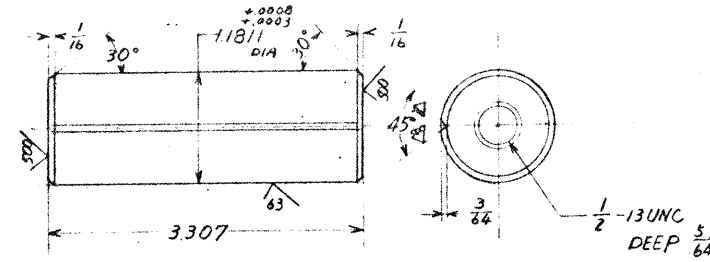


PART NO	30
MATERIAL (TIS)	S541
NAME	SHAFT WASHER
SCALE	1/1

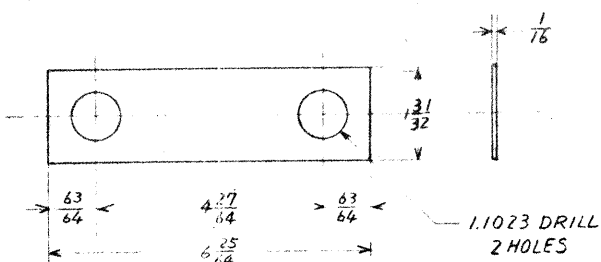
PROJECT NO. 8.1355402 NEW HANOVER COUNTY
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
NORTHEAST CAPE FEAR RIVER BRIDGE
US 117-NC 133 AT WILMINGTON, N.C.
OPERATING MACHINERY
GEAR REDUCER PARTS DETAIL 9/10

NORTHEAST CAPE FEAR RIVER BRIDGE
PARTS DETAIL 9/10
OPERATING MACHINERY
GEAR REDUCER
PARTS DETAIL 9/10
SCALE AS SHOWN
DATE 04-7-77
BY: [Signature]
CHECKED: [Signature]
APPROVED: [Signature]
WILMINGTON, N.C. 28402
WILMINGTON TRUCK AND EQUIPMENT INDUSTRIES, LTD.

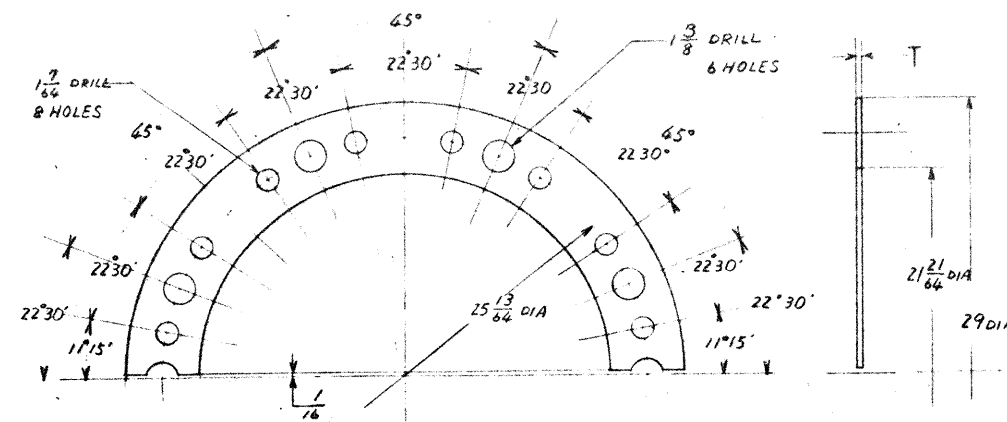
12 A
12 B



PART NO	73
MATERIAL	S45C
NAME	SCEAL
PIN	1/1

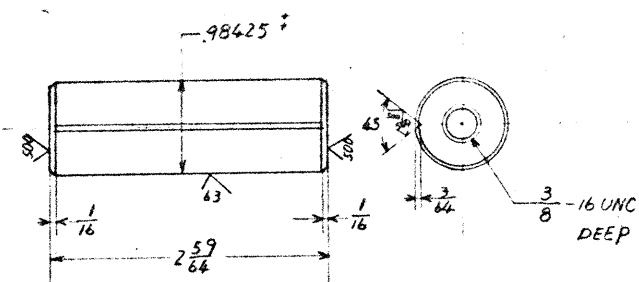


PART NO	54
MATERIAL	SS
NAME	SCEAL
WASHER	1/2

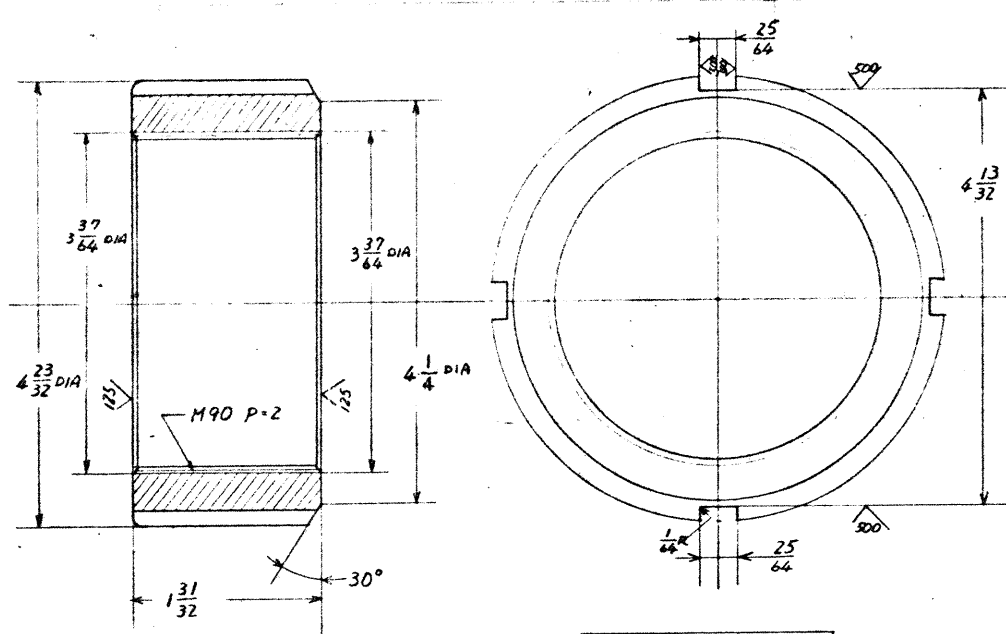


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.01968	4
.011811	8
.003937	8
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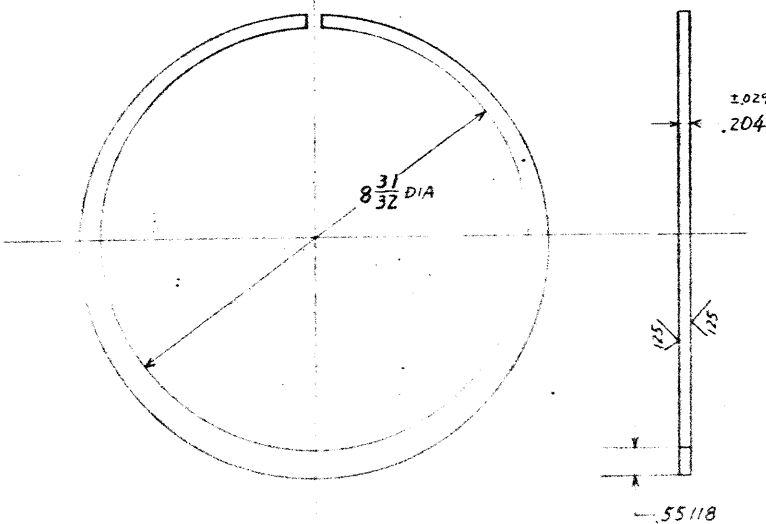
PART NO	15
MATERIAL	SPC 1
NAME	SCALE
SHIM	1/5



PART NO	74
MATERIAL	S45C
NAME	SCEAL
PIN	1/1

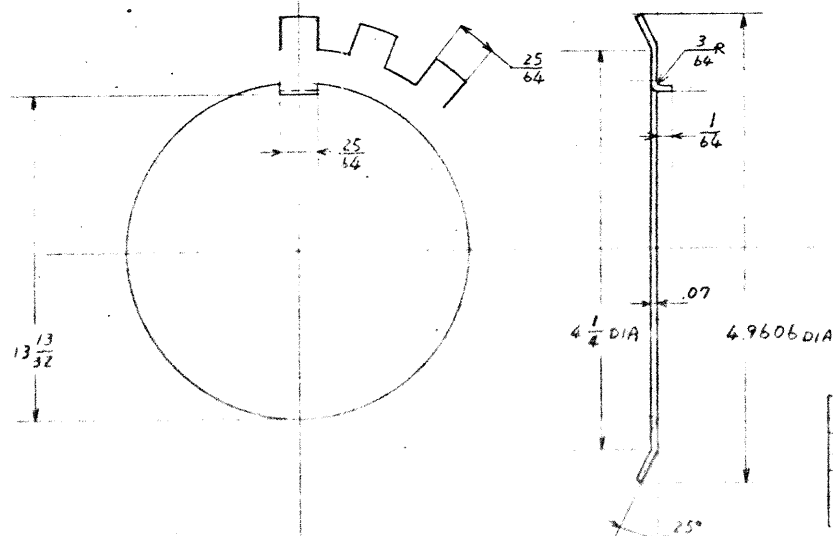


PART NO	26
MATERIAL	S45C
NAME	SCEAL
SHAFTNUT	1/1



5240 (5158 2804)

PART NO	28
MATERIAL	SUP3
NAME	SCEAL
STOPRING	



PART NO	27
MATERIAL	SS41
NAME	SCEAL
WASHER	1/1

PROJECT NO. 8.1355402 NEW HANOVER COUNTY
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
NORTHEAST CAPE FEAR RIVER BRIDGE
US 117-NC 133 AT WILMINGTON, N.C.

OPERATING MACHINERY
GEAR REDUCER PARTS DETAIL 10/10

REVISIONS		
NO	DATE	DESCRIPTION

NORTHEAST CAPE FEAR RIVER BRIDGE	31377
OPERATING MACHINERY	
GEAR REDUCER	
PARTS DETAIL 10/10	
SCALE 10/10	
ITEM	
DATE	
BY	
APPROVED	
DESIGNED BY	
CHECKED BY	
DATE	
BY	
APPROVED	

