

NOTES

- 15-MAIN OIL PUMP - #5A
- 16-6-OIL TANK CLEANOUT HOLES-3 IN EACH SIDE-MAY BE USED FOR LIFTING.
- 17-6-1/2 DIA. HOLES FOR 1 1/2 DIA. FOUNDATION BOLTS
- 18-HAND TRIP KNOB
- 19-CONTOUR OF LAGGING
- 20-GLAND CONDENSER-FOR DETAIL SEE GLAND LEAKOFF PIPING DRAWING
- 21-OIL LEVEL SIGHT INDICATOR
- 22-VENT SCREW-LOOSEN TO ALLOW AIR TO BLEED FROM GOVERNOR'S HYDRAULIC SYSTEM WHEN FIRST PUT INTO SERVICE IF GOVERNOR HAS BEEN TAKEN DOWN, DRAINED & REFILLED.
- 23-MANUAL SPEED ADJUSTMENT KNOB TO BE BACKED OUT AND LOCKED DURING AUTOMATIC SPEED CONTROL.
- 24-LOW OIL PRESSURE ALARM SWITCH
- 25-PNEUMATIC DUMP VALVE
- 26-ALL CUSTOMER'S CONNECTIONS, SCREWED OR FLANGED WILL HAVE A TOLERANCE OF .01" IN ANY DIRECTION-EXCEPT AS NOTED.

- 1-STEAM INLET AND EXHAUST PIPING MUST BE PROPERLY SUPPORTED SO AS NOT TO EXCEED ALLOWABLE FORCES AND MOMENTS GIVEN.
- 2-HOLDING DOWN BOLTS SHOULD NOT BE RIGIDLY LOCATED UNTIL TURBINE IS IN PLACE ON BASEPLATE AS BOLT HOLES IN BASEPLATE MAY VARY SLIGHTLY
- 3-ALL PIPE CONNECTIONS TO EXTEND A MINIMUM OF 3" BEYOND LAGGING.
- 4-AN ATMOSPHERIC RELIEF VALVE OF SUFFICIENT SIZE TO PASS 111,000 LBS. PER HOUR WITH A MAXIMUM PRESSURE OF 45 LBS. AND SET TO OPEN AT 85 LBS. SHOULD BE PLACED IN THIS LINE. NO VALVE SHOULD BE PLACED BETWEEN RELIEF VALVE AND TURBINE.
- 5-THIS DIMENSION INCREASES TO 8 1/2" WHEN REMOVING UPPER HALF OF TURBINE CASING.
- 6-LOW OIL TRIP
- 7-1-KEYWAY-1.000" WIDE X 3/8" DEEP
- 8-TACHOMETER (VIBRATING REED)
- 9-SENTINEL VALVE
- 10-ALLOW FOR GROUTING
- 11-SHIMS
- 12-SPEED RANGE - SIGNAL AIR PRESSURE: 3" AIR - 5100 R.P.M. 15" AIR - 6200 R.P.M.
- 13-CUSTOMER PROVIDE ADEQUATE SUPPORT ALONG THESE BEAMS OR FOUNDATION TO BE 50" BUILT AS TO SUPPORT THESE BEAMS.
- 14-APPROXIMATE OIL TANK CAPACITY = 200 GALLONS

CUSTOMER'S STEAM CONNECTIONS

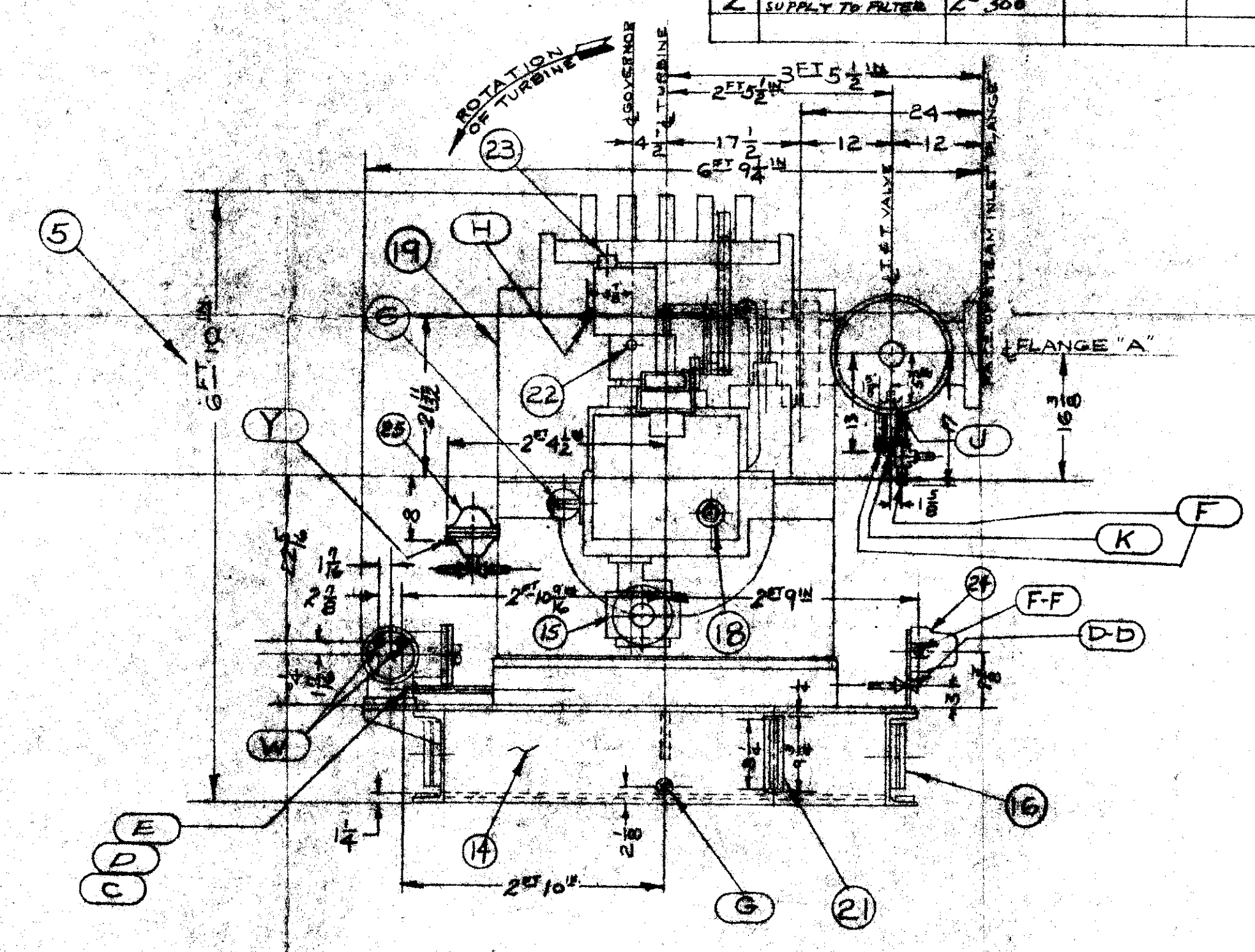
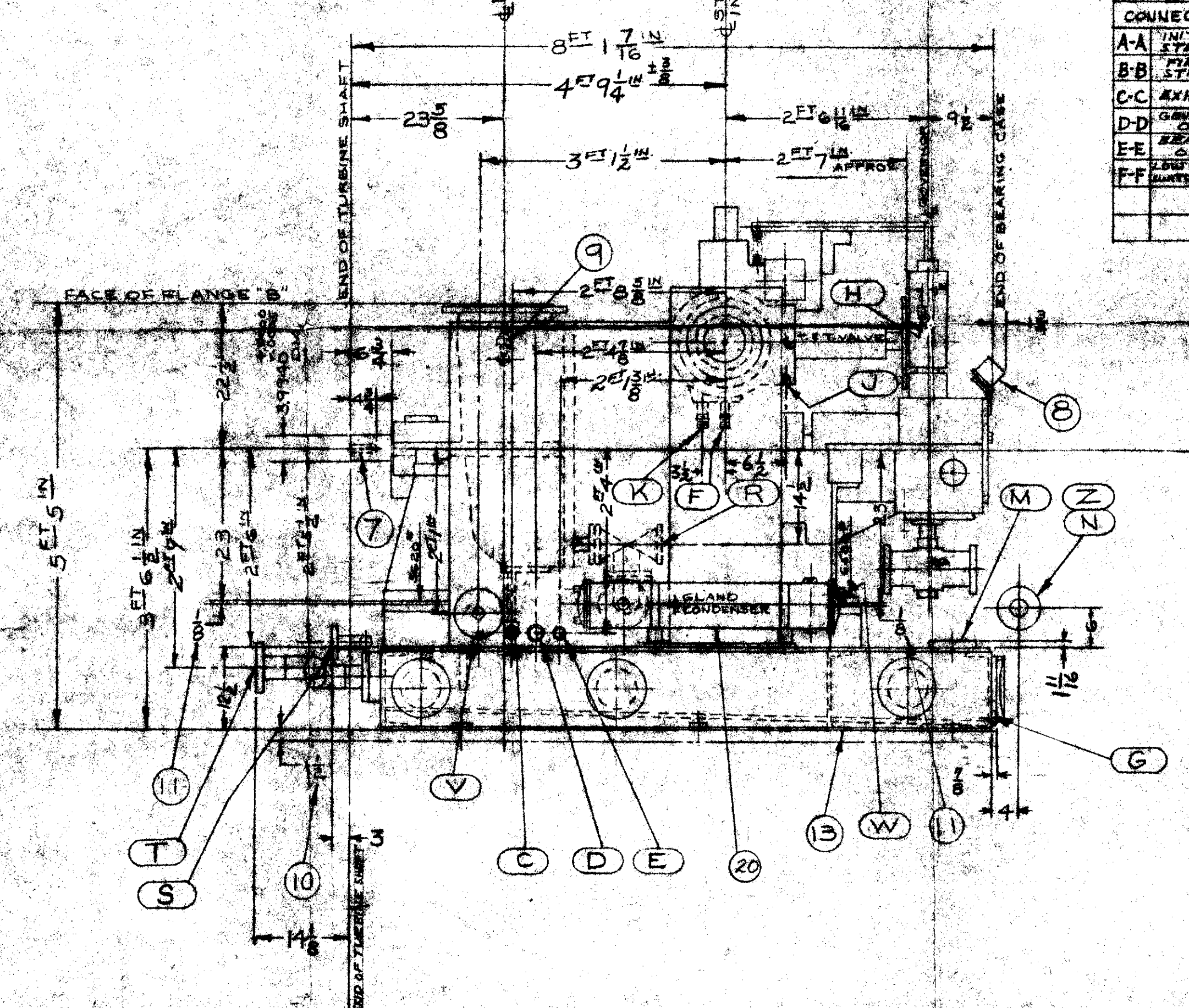
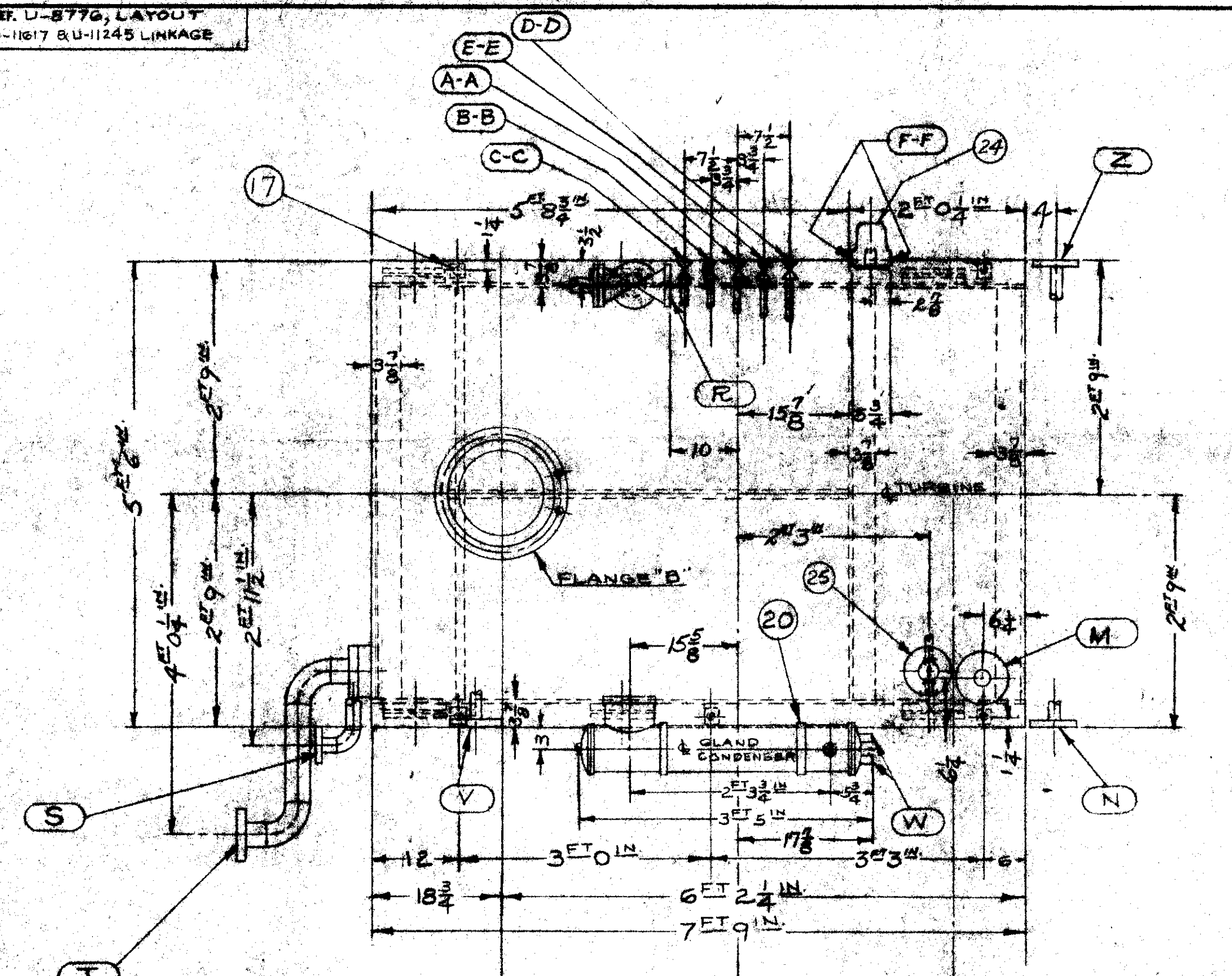
FLANGE	ASA SIZE	O.D.	B.C.	NO. HOLES	DIA. HOLES	MIN. FLANGE THICKNESS	RAISED FACE	REMARKS
A TURBINE	600#	6 1/2	14	11 1/2	12	1 1/2	2 X 3/4 DIA	NOTE #26
B EXHAUST	150#	12	19	17	12	1 1/2	16 X 1/2 DIA	NOTE #26

CUSTOMER'S CONNECTIONS

CONNECTION	SIZE	VALVE REQUIRED	VALVE SUPPLIED BY	PIPE TO	REMARKS
C EXHAUST END CASING DRAIN	1 1/2" PIPE THD.	YES	CUSTOMER		NOTE #26
D STEAM END CASING DRAIN	3/4" PIPE THD.	YES	CUSTOMER		NOTE #26
E WATER SOLENET LEAKOFF MANIFOLD	1/2" PIPE THD.	NO		OPEN DRAIN	NOTE #26
F T & T VALVE ABOVE BRAINE BEAT	1/2" PIPE THD.	YES	CUSTOMER		NOTE #26
G OIL TANK DRAIN	3/4" PIPE TAP				PLUG
H PNEUMATIC SPEED CONTROL TUBING	1/4" S.A.E. TUBING				NOTE #26
J T & T VALVE LEAKOFF	1/2" PIPE TAP	NO		OPEN DRAIN	NOTE #26
K T & T VALVE BLOWDOWN	1/2" PIPE THD.				NOTE #26
L AUX. OIL PUMP SUCTION	3/4" 300#			AUX. OIL PUMP	NOTE #26
M AUX. OIL PUMP DISCHARGE	2" 300#			AUX. OIL PUMP	NOTE #26
N					
P					
R OIL RETURN FROM COOLER	1 1/2" 300#			COOLER	NOTE #26
S OIL SUPPLY TO COMPRESSOR	1 1/2" 150#			COMPRESSOR	NOTE #26
T OIL SUPPLY TO COMPRESSOR	3/4" 150#			COMPRESSOR	NOTE #26
V GLAND LEAKOFF TO S LINE	3/8" 150#			S LINE	NOTE #26
W CONDENSER WATER CONNECTION	1/2" PIPE TAP				NOTE #26
Y PNEUMATIC DUMP VALVE CONNECTION	1/2" PIPE TAP				NOTE #26
Z OIL FILTER	2" 300#				NOTE #26

CUSTOMER'S CONNECTIONS

CONNECTION	SIZE	VALVE REQUIRED	VALVE SUPPLIED BY	PIPE TO	REMARKS
AA INITIAL SYSTEM	1/2" PIPE TAP	AT	GRUBS BORED	OTHERS	CONNECTION TO COMPRESSOR NOTE #26
BB EXHAUST	1/2" PIPE TAP	AT	GRUBS BORED	OTHERS	CONNECTION TO COMPRESSOR NOTE #26
CC EXHAUST	1/2" PIPE TAP	AT	GRUBS BORED	OTHERS	CONNECTION TO COMPRESSOR NOTE #26
DD GLAND LEAKOFF	1/2" PIPE TAP	AT	GRUBS BORED	OTHERS	CONNECTION TO COMPRESSOR NOTE #26
EE EXHAUST	1/2" PIPE TAP	AT	GRUBS BORED	OTHERS	CONNECTION TO COMPRESSOR NOTE #26
FF LOW OIL POINT	1/2" PIPE TAP	AT	GRUBS BORED	OTHERS	CONNECTION TO COMPRESSOR NOTE #26



#96517

OUTLINE
 WORTHINGTON CORPORATION
 STEAM TURBINE DIVISION
 WELLSVILLE, N. Y. U. S. A.
 DRAWN: M. COOK DATE: 10-14-58
 TRACED: SCALE: 3/4" = 1'-0"
 CHECKED: P.A.M. 10-15-58
 APPROVED: 10-16-58
 FIRST SO: U-12475

REVISED FOR C.O.W.S. AND LETTERS BY 10/14/58	REMOVED TOLERANCES & ADDED NOTE #26	ADDED TAP FOR 1/2" PIPE TAP	ADDED CONNECTION FOR COMPRESSOR
D	C	B	A

#96517

TURBINE DATA SHEET

U - 12475

Purchaser - Clark Brothers Company

User - Celanese Corporation of America

Location - Pampa, Texas

Shop Order Number - U-12475 - Serial Number -22164 - Form - 7S

Number of Turbine Stages - 7 Rateau

Driven Machine - Clark Centrifugal Compressor

Turbine Rating - 5840 HP at 5900 RPM (Normal)
5960 HP at 6200 RPM (Maximum)

Turbine Rotation - Left Hand (CCW) Viewed From Governor End

Inlet Steam Conditions - 600 psig., 725°F. T. T.

Exhaust Pressure - 65 psig.

Casing Material - Cast Steel

Shaft Packing - Labyrinth; Steam End - 6 rings
Exhaust End - 4 rings

Type of Governor - Woodward PG-Pl.

Lubrication - Pressure

Auxiliary Oil Pump - Electric Motor Driven #2 GR Rotary Pump. Capacity
57 GPM at 80 psig. Cut In Pressure - 65 psig.,
Cut Out Pressure - 66 psig. (Governor Oil Pressure)

Overspeed Governor Trip Setting - 6630 RPM (Sparkless)

Low Oil Pressure Trip Setting - 9 psig. Must Have 11 psig. Bearing Oil
Pressure To Be Reset.

Pneumatic Dump Valve To Open At - 5 psig. Falling Air Pressure

Trip Throttle Valve Trip Setting - 25 psig. Must Have 35 psig. Governor Oil
Pressure To Be Reset.

Casing Sentinel Valve Set To Open At - 80 psig.

#96517

TURBINE DATA SHEET

U - 12475

Number of Steam Inlet Valves - 5 Automatic Venturi

Bearing Oil Pressure - 20 psig.

Governor Oil Pressure - 80 psig.

Temperature of Oil Leaving Cooler - 110°F.

Quantity of Cooling Water Required - 68 G. P. M. - 85 °F. Fresh Water

Main Bearing Clearances - Steam End - .004" to .006"
Exhaust End - .0050" to .0065"

Total Thrust Bearing Float - .010" Min. to .015" Max.

Maximum Allowable Wear on Thrust Shoes Before Replacement is Necessary - .006"

CRITICAL SPEED - 3975 R. P. M.

Governor Air Pressure Signal - Turbine Speed Relationship:

15 psig. - 6200 R. P. M.
3 psig. - 5100 R. P. M.

STEAM INLET VALVE DATA:

Valve Number - 3 - 4 - 2 - 5 - 1

Opening Order - 1 - 2 - 3 - 4 - 5

Lead (Inches) - .453 - .453 - .453 - .394 - .431 Min. Lift

Quantity of Circulating Water Required For Gland Condenser - 20 GPM - 85°F.

APPROXIMATE WEIGHTS OF PRINCIPAL PARTS

	<u>POUNDS</u>
Turbine (Including T & T Valve, Oil Piping and Lagging)	12,200
Baseplate	5,000
Accessories	<u>350</u>
Approximate Total Weight	17,550
Upper Half of Turbine Casing	3,850
Turbine Rotor	1,070