

SPEC 1.17

WOODLAND PULP, LLC
&
ST. CROIX TISSUE INC

WOODLAND, MAINE

SPECIFICATION NO. MS-001
MILL STANDARDS
REVISION # 1 – February 23, 2004
REVISION #2 – November 23, 2015

DATE: 11/23/15

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 MILL STANDARDS

STANDARD MILL CONDITIONS AND HARDWARE COMPONENTS

PURPOSE

This specification defines the standard plant conditions and general services to be utilized within the mill. All equipment is to be designed in accordance with the criteria specified below.

Vendors of equipment, which utilize these classes of hardware or drive components are required to use only the manufacturers and makes designated. Normally no other make will be accepted, but in a case where an exception may be recommended or desirable, written consent must be obtained from the Engineer before a substitution will be permitted.

Unless the Engineer is advised otherwise, the purchase order by WOODLAND PULP, LLC and ST. CROIX TISSUE, INC. to equipment vendors will be issued on the basis that the designated manufacturers, makes and services will be utilized, and claims for additional costs due to this requirement will not be considered thereafter.

MILL SERVICES AND PLANT CONDITIONS

Plant Utilities

<u>Item</u>		<u>Unit</u>	<u>Amount</u>
10.01	Mill Water		
	Pressure – Design	psig	60-80
	Temperature – Design	°F	34-85
10.02	Process Steam		
	Low Pressure	psig/°F	6-/310
	Medium Pressure	psig/°F	160/500
	High Pressure	psig/°F	875/850
	Motive Steam For		

Thermo Compressor	psig/°F	875/850
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10.03	Power Supply (3 phase, 60 Hz)		
	Low Voltage	Volts	480
	Medium Voltage	Volts	2,300
	High Voltage	Volts	13,800

10.04	Control Power (1 phase, 60 Hz)	Volts	120
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10.05	Air		
	Design – Mill/Instrument	psig	55-85

Site Conditions

<u>Item</u>		<u>Unit</u>	<u>Amount</u>
20.01	Wind Loading – Design (BOCA Building Code)	mph	90
20.02	Earthquake (BOCA) Zone		2
20.03	Ambient Temperature		
	Winter	°F Low	40
	Summer	°F High	100
20.04	Elevation		
	Above Mean Sea Level	ft.	118
20.05	Building Layout To Conform To Mill Grid		

LIST OF HARDWARE**Suggested or Approved Equal
Manufacturer, Make or Class**

30.01	Hex bolts	ANSI A193, heavy, hexagonal, SAE J429C-Gr. 5
30.02	Hex Nuts	ANSI A194, heavy, hexagonal, SAE J429C-Gr.5
30.03	Grease fittings	Alemite or approved equal
30.04	Hydraulic Oil	Currently using Mobil
30.05	Gear box lubricating oil	Mobil
30.06	Bearing lubricating oil	Mobil
30.07	Turbine oil	Mobil
30.08	Hydraulic oil filters	Fram or equal
30.09	Grease	Mobil
31.01	MC Pumps (thick stock pumps)	Ahlstrom / Warren
31.02	Centrifugal stock pumps	Ahlstrom / Goulds / Bingham
31.03	Centrifugal liquid pumps	Ahlstrom / Goulds / Bingham
31.04	Sump Pumps	Flygt
31.05	Metering pumps	Moyno / Milton Roy / Microyal
31.06	Agitators	Lightnin / IMPCO / Beloit
31.07	Mechanical Seals	Durametallic, Safematic, A.E.S
31.08	Pumps seals and packing	Industrial packing
34.01	Lined pipe (no gaskets)	Resistoflex, Kynar / TFE
34.02	Carbon steel piping Connections 2" and down	Screwed ANSI B2.1 Socket weld steam and gases

34.03	Carbon steel piping Connections 2-1/2" and up	Flanged ANSI B16.5 or B16.1 Butt weld, ANSI B16.25 Steam and gas to be seamless Pipe or any service over 150#
34.04	Fabricated stainless steel	A312, 316 L domestic only <u>Suggested or Approved Equal Manufacturer, Make or Class</u>
<u>LIST OF HARDWARE</u>		
34.05	Threaded joint compound Teflon liquid seal (tape not Permitted)	Loctite
34.06	Tubing for hydraulic and lubricating oils	NFPA and JIC hydraulic standards (316SS)
34.07	Tubing fittings	Parker Hannifin
34.08	Tubing supports	316SS or aluminum (depending on area) Unistrut, or approved equal
34.09	Manual steam valves	Edwards, Yarway, Powell, Crane & Walworth
34.10	Steam control valve	Fisher
34.11	Steam traps	Yarway, Armstrong, Dresser, Sarco
34.12	Safety relief valves	Consolidated
34.13	Air traps	No preference
34.14	Unit heaters	Electric (owner approved), Grinnell or Trane (Steam) w/120V fan
34.15	Heat exchangers	Depends on Application
34.16	Water columns	No preference
34.17	Knife gate valves	DeZurik, Fabri (metal seated)
34.18	Seal water flex. Hose 1/2" teflon	Parker Hannifin
34.19	Stock check valves	Crane, Fabri
34.20	Water pressure regulators	Ashcroft, Fisher
34.21	Air pressure regulators	Wilkerson
34.22	Quick-connect joints	Evertight

34.23	Globe valves	Yarway, Edwards, Powell, Crane, Walworth, Vogt
34.24	Vacuum breaker	No preference
34.24	Ball valves	Neles-Jamesbury, Fisher
<u>LIST OF HARDWARE</u>		<u>Suggested or Approved Equal Manufacturer, Make or Class</u>
34.26	Packing	Industrial Packing
34.27	Plug valves	Tuflin, Durco, Neles-Jamesbury
34.28	FRP resin	Hetron 980
34.29	Butterfly valves	Fisher, Jamesbury, Velan
34.30	Sampling valves	BTG
34.31	Pipe supports	Grinnell
34.32	Strainers, cleaners Basket type, full length	Armstrong, Sarco
34.33	Manways	Check design, Concave
34.34	Expansion joints	Rubber, Garlock SS-American BOA Dependent on Application
34.35	CLO2 service valve	Comline, Tuflin or equal w/on-off throttle
34.36	Chain handwheels for valves	Babbitt or OEM
34.37	Chiller	Trane, York
34.38	Air Purification	West Vaco
34.39	Air Conditioning (HVAC)	Liebert
35.01	Thermal insulation	Silicone, Fiberglass
36.01	Permanent hoists	CM. Northern Crane, Yale
39.01	Worm gear speed reducers	Falk, Radicon, David Brown
39.02	Helical gear in-line speed reducers	Linkbelt

39.03 Helical gear parallel shaft reducers over 8900 in lb. Output torque. No shaft mounted speed reducers Falk, Linkbelt, Foote Jones

LIST OF HARDWARE

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39.04 Helical gear parallel shaft reducers. Under 8900 in lb output torque. No shaft mounted speed reducers Falk, Linkbelt, Foote Jones

39.05 Gear speed reducer service factor For the selection of gear reducers a service factor shall be applied to the motor nameplate rating to determine the mechanical rating of the reducers. The following service factors shall be used.

Application Service Factor

Normal Duty 1.50
Heavy Duty 1.75

Gear reducers shall be sized for continuous duty, 24 hours per day and 365 days per year.

39.06 Shaft mounted gear reducer Not permitted, unless approved by Purchaser

39.07 Roller chain ANSI standard, Rexnord, Diamond US Made

39.08 Fluid drive hydraulic (variable speed) American Standard, Haaglund

39.09 Drives American Standard, Haaglund

39.10 Couplings & spacer couplings Falk, Dodge (low speed), AtraFlex

39.11 Sprockets ANSI standard, Taper lock bushings up to 3" bore. 3-1/16" and above straight bore. Flangeless hubs. Martin

39.12 Driver sprockets Hardened teeth

39.13 V-belts Goodyear

39.14	V-belt sheaves	Dodge
39.15	Hydraulic couplings	Twin Disc, American Standard

LIST OF HARDWARE

		<u>Suggested or Approved Equal Manufacturer, Make or Class</u>
39.16	Shafting diameters	15/16, 1-7/16, 1-15/16, 2-7/16, 2-15/16, 3-7/16, 3-15/16, 4-7/16, 4-15/16, 5-7/16 (inches)
39.17	Bearing pillow blocks for all services	SKF ductile iron or cast steel housing. Four mounting holes for shaft sizes 1-15/16" and larger
39.18	Bearings	SKF hydraulic mounting, large bearings. Manufacturers fig. Shall be listed in maintenance manual
39.19	Keyways	ANSI B17.2 square Parallel with ends rounded
39.20	Hydraulic power units	Vickers, Oilgear, Haaglund
39.21	Cylinders	Parker-Hannafin or approved equal
40.01	All electrical equipment	Applicable standards of ANSI, NEMA, and UL
41.01	Substation Power Transformer	ABB, Virginia, Square D
41.02	Lighting Transformer	Cutler Hammer, GE, ABB, (copper winding only)
41.03	460 volt switchgear	GE, Cutler Hammer
41.04	13.8 and 2.3 kV Switchgear	GE, Cutler Hammer
41.05	Motor control centers (460 volt) And individual starter	Furnas Series
41.06	Medium voltage motor control centers (2300 volt)	Allen Bradley 1500 Series, 400A Vacuum Bottle
41.07	120 volt AC motor (1/2 hp and less)	US Motor, 120 Volt, 1 phase, 60 Hz motors

41.08	460 volt AC motors (3/4 hp and less)	US motor, totally enclosed fan cooled. High Efficiency. 460 volt 3 phase, 60 Hz motors induction type with Class 155(F) insulation, 1.15 service factor. Nema design B unless otherwise approved. Thermal switch over 100 HP.
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LIST OF HARDWARE

		<u>Suggested or Approved Equal Manufacturer, Make or Class</u>
41.09	Medium Voltage (2.3 KV) AC Motors (250 hp and up)	US Motor, TEFC for Pulping, OD or WP II for boiler and machine area, 2300 volt, 3 phase 60 Hz Class 155 (F) insulation, 1.15 service factor. Nema design B. Thermal switch. 6 stater and 2 bearig RTD's 100 ohm Platinum
41.10A	DC Motors	US Motor, Reliance
41.10B	Inverter Duty AC Motors	US Motor, Reliance
41.11	Pulp machine drives	Reliance, Allen Bradley
41.12	AC variable frequency drives	Reliance, Allen Bradley
43.02	Pushbutton stations	Cutler Hammer, Furnas, Allen Bradley
43.03	Pilot lights	Cutler Hammer, Furnas, Allen Bradley
43.04	Limit switches	Allen Bradley, Cutler Hammer
43.05	Control fuses	Buss, Gould Shawmut
43.06	Fuse fittings	Gould Shawmut, Allen Bradley
43.07	Relays (for Motor Control)	Avoid if possible, Cutler Hammer, Porter Brumfield, Allen Bradley
43.08	Timers	Agastat
43.09	Wire markers	Brady or approved equal
43.10	Enclosures	Stahlin or approved equal NEMA type 112 in Electrical Rooms. Type 4X in field Stahlin w/SS Hardware
43.11	Motion switches	Ronan, Allen Bradley
44.01	Conductivity systems	TBI

44.02	Consistency Transmitters	BTG, Valmet
44.03	Field controllers	Foxboro
44.04	Converter current / pneumatic	Fisher 546 (not Valve Mounted)

LIST OF HARDWARE

		<u>Suggested or Approved Equal Manufacturer, Make or Class</u>
44.05	Converter electro / pneumatic	Fairchild
44.06	Density – nuclear	Kayray, Berthold
44.07	Density-refractometers	L.S.C.
44.08	D/P cell transmitters	Honeywell (Smart only)
44.09	Magnetic flowmeters	Yamatake (Smart only)
44.10	Mass flow	Foxboro, Honeywell
44.11	Rotameters	Fisher Porter or equal
44.12	ION measurement	Kajahni, Foxboro
44.13	Level controllers (displacer type)	Fisher
44.14	Water level indicators	No preference
44.15	Glass gauge indicator	No preference
44.16	Level transmitter D/P cell	Honeywell (Smart only)
44.17	Level transmitter ultrasonic	Milltronics
44.18	Level transmitter capacitance	Drexelbrook
44.19	Level transmitter nuclear	Berthold
44.20	Level transmitter bubbler	Avoid if possible
44.21	Pressure transmitters	Honeywell (Smart only)
44.22	Pressure repeaters	Fairchild
44.23	Pressure & temperature gauges	Ashcroft
44.24	PH measurement	TBI

44.25	Radioactive instrumentation	Berthold, Kayray
44.26	Speed transmitters	Avtron
44.27	Flow switches	No preference
44.28	Level switches (float)	Magnetrol, Mercaid

LIST OF HARDWARE

Suggested or Approved Equal Manufacturer, Make or Class

44.29	Level switches (nuclear)	Berthold
44.30	Level switches (ultrasonic)	No preference
44.31	Level switches (capacitance)	Drexelbrook
44.32	Limit switches	OEM
44.33	Safety switches	No preference
44.34	Speed switches	No preference
44.35	Proximity switches	Allen Bradley
44.36	Temperature switches	Ashcroft
44.37	Temperature transmitters	Honeywell (Smart only)
44.38	Thermocouples	No preference
44.39	RTD's	No preference
44.40	Resistance bulbs	No preference
44.41	Thermometers	No preference
44.42	Globe control valves	Fishes, Neles-Jamesbury
44.43	Ball control valves	Fisher, Neles-Jamesbury
44.44	Butterfly control valves	Fisher, Neles-Jamesbury
44.45	Solenoid valves	Asco
44.46	Temperature regulating valves	Ashcroft
44.47	Plug valves (On/Off)	Fishes, Neles-Jamesbury
44.48	Gate valves	Crane, Powell

44.49	Damper drives	Bailey, Beck
44.50	Remote water indicator	Diamond
44.51	Distributed control system	Honeywell
44.52	Programmable logic controllers	Allen Bradley or Honeywell LM

LIST OF HARDWARE

		<u>Suggested or Approved Equal Manufacturer, Make or Class</u>
44.53	Process control field tubing	316SS Seamless
44.54	Tubing for instrumentation	316SS Seamless
44.55	Tubing raceway and supports -- corrosive areas -- other areas	Unistrut or approved equal 316SS Aluminum or Galvanized
44.56	Multitube bundles	No preference
44.57	Single Tube Runs	No preference
44.58	Process control tubing fittings	Parker
44.59	Terminals	No preference
44.60	Instrumentation cables	Belden, Alfa
44.61	Control cables	Per Spec
44.62	Wire markers	Brady
44.63	Cable trays	"B" Line or approved equal Material depends on area of mill
44.64	Flange Transmitter – Isolation Ball Valves and purge	Fabri