



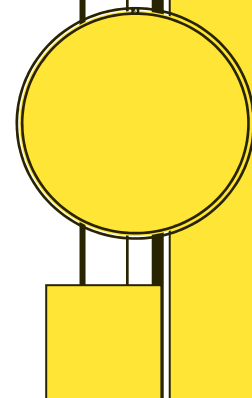
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XYZ PAPER COMPANY

Anytown, USA

*No. 21 Paper Machine
Former, TAD, Dryer Cans & Reel
January 05, 2008*

Prepared by Michael Peeples
PO Number: 4500481251
Job Number: 2840



XYZ PAPER COMPANY

Anytown, USA

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GLASS Personnel

The GLASS team consisted of the following personnel:

- Mike Peebles
- Tom Masse

XYZ Contact

Mr. Tom Pearson, Maintenance Engineer, oversaw the work performed during this outage.

Work Performed

GLASS provided the following services:

- Inspection of the key rolls in the Former
- Inspection of the Sole Plates in the Former section
- Inspection of the TAD and rolls around the TAD
- Inspection of Dryer cans 7, 9 and 10
- Inspection of the Reel

Report Contents

The contents of this report are separated into the following sections:

- Explanation of services performed
- Recommendations based on the inspection results
- Sketches showing the inspection results

Representation of Data

Throughout this report, data will be shown with arrows (\uparrow , \downarrow , \leftarrow , \rightarrow) indicating the alignment condition of the operator's side of the component with respect to the drive side.

- **Red** data indicates the alignment of the component as initially inspected.
- **Green** data indicates the alignment of the component after making adjustments.

Background

Several bearings were changed out since the previous alignment effort. GLASS, LLC was asked to inspect the rolls for which the bearings were changed and provide support if alignment was necessary. The soleplates were also inspected as part of an ongoing study of machine settling effects.

Inspection References

The Inspection References were:

- *Vertical Attribute (Level)* - Level to earth
- *Horizontal Attribute (Square)* – Perpendicular to the Brass Plug baseline. The targets used were located adjacent to the Former, TAD and Dryer 12.

Inspection Results

As seen in Sketch 284-1, the inspection revealed that the level conditions are worsening over time. The last inspection showed the rolls in the Former to average 0.050"↑ on the operator's side. Currently, the rolls have an alignment condition of 0.090"↑. All of the rolls in the Former section could not be aligned during this shutdown, so no adjustments were made.

The sole plates were inspected again and are documented in Sketch 2840-2.

Recommendations

Clearly, the building is settling on the drive side of the Forming section. This is typical with paper machines and must be dealt with before severe profiling problems arise. There are several options which are done frequently:

- Adjust the level condition by re-cantilevering the forming section.
- Adjust the level condition by adding shims under the drive side support structure.

The Forming section should be placed in a level to Earth condition, or 0.010" high on the drive side, to counter the vertical misalignment.

Background	GLASS was asked to inspect the TAD, as well as its lead in and lead out rolls.
Inspection References	The Inspection References were: <ul style="list-style-type: none">➤ <i>Vertical Attribute (Level)</i> - Level to earth➤ <i>Horizontal Attribute (Square)</i> – Perpendicular to the Stainless Steel Target Bushing baseline. The targets used were located adjacent to the Former, TAD and Dryer 12.
Inspection Results	The rolls in this section were found in similar alignment conditions as previously, with the exception of the lead-out roll. The lead-out roll was adjusted from 0.054"↓ to 0.007"↓, at the operator's side bearing. The TAD was not adjusted, as GLASS was informed that when the fabric is installed, there is no way to hold the TAD in an aligned condition.
Recommendations	Align all of the rolls in this section to a tolerance of +/- 0.010" and then pin the bearing housings to maintain alignment conditions.

Background

Several bearings were changed out since the previous alignment effort. GLASS was asked to inspect dryer cans 7, 9 and 10.

Inspection References

The Inspection References were:

- *Vertical Attribute (Level)* - Level to earth
- *Horizontal Attribute (Square)* – Perpendicular to the Stainless Steel Target Bushing baseline. The targets used were located adjacent to the Former, TAD and Dryer 12.

Inspection Results

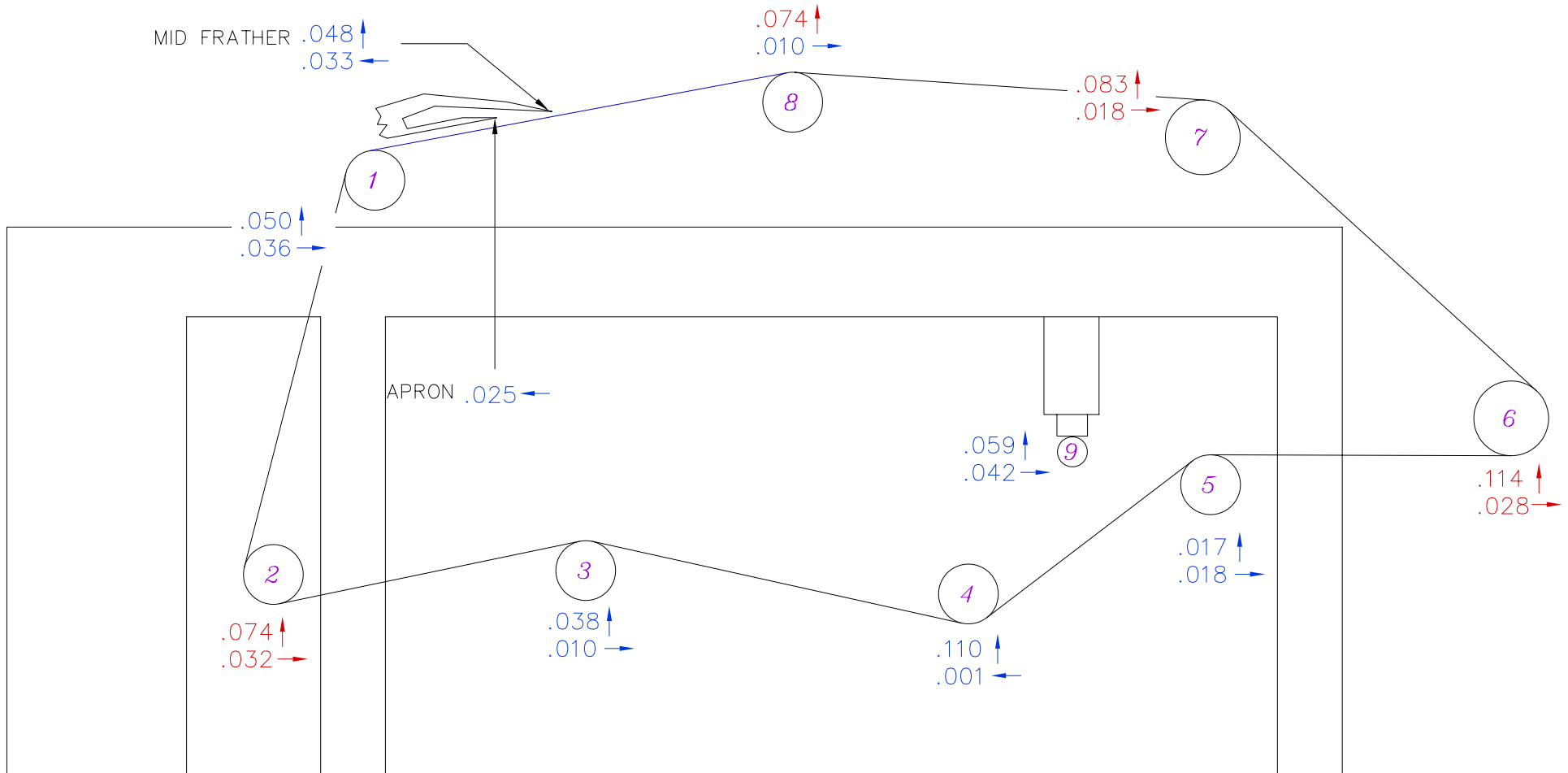
Dryer 9 was the only can which needed alignment. Initial inspection showed it at 0.032"→. The operator's side bearing housing was adjusted until Dryer 9 was at 0.006"→.

Recommendations

GLASS has no record of the felt rolls being aligned. Inspect all of the felt rolls and align all of the rolls in this section to a tolerance of +/- 0.010". Misalignment of the felt rolls causes excessive felt wear and stresses the bearings unequally.

Background	As part of the overall alignment inspection, GLASS was asked to inspect the Reel.
Inspection References	The Inspection References were: <ul style="list-style-type: none">➤ <i>Vertical Attribute (Level)</i> - Level to earth➤ <i>Horizontal Attribute (Square)</i> – Parallel to the Reel Drum.
Inspection Results	The Reel Drum was inspected and was found to be aligned, at 0.004” ↓. Rolls 2 and 3 were both inspected and found to have misalignment by as much as 0.056” . Both rolls were shimmed and slid individually, until aligned conditions were achieved.
Recommendations	The Reel operates best when the Primary arms are timed such that the spool is aligned to the drum. Previous inspections showed adjustments were necessary from outage to outage. The last few times an alignment effort was made on the Reel, the procedure to operate the Primary arms could not be executed. GLASS recommends that the Primary arms be the concentration of the alignment effort during the next alignment inspection on the Reel.

DELTA FORMER WET END ROLLS



NOTES: (1) NO SCALE INTENDED.
 (2) UNLESS OTHERWISE NOTED, DATA INDICATES THE LOCATION OF THE TENDING END OF EACH COMPONENT RELATIVE TO THE DRIVE END WHICH IS CONSIDERED THE DATUM.

(3) DATA IN RED INDICATES THE ALIGNMENT OF COMPONENTS AS INITIALLY INSPECTED.
 (4) DATA IN BLUE INDICATES THE ALIGNMENT OF COMPONENTS AS PREVIOUSLY INSPECTED.
 (5) COMPONENT NUMBERING SYSTEM DEVISED BY GLASS FOR REFERENCE ONLY.

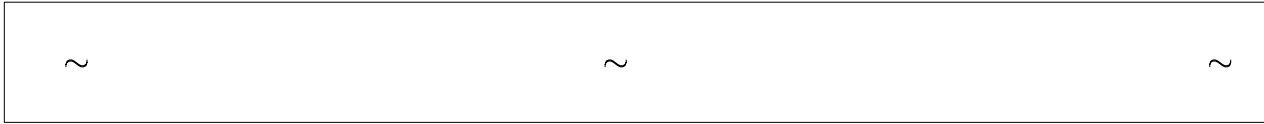
TITLE	DELTA FORMER	
MACHINE	NO. 1 PAPER MACHINE	
DRAWN FOR	XYZ PAPER COMPANY ANYTOWN, USA	
DATE	01/05/2009	
SKETCH	2840-1	

DELTA FORMER SOLE PLATES

±.000

±.000

±.000



DRIVE SIDE

HEAD BOX

TOP VIEW

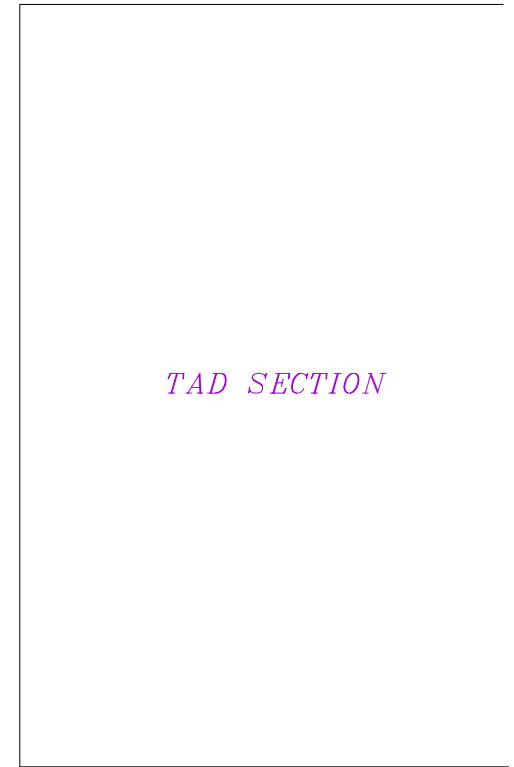
TENDING SIDE



+ .061

+ .060

- .004



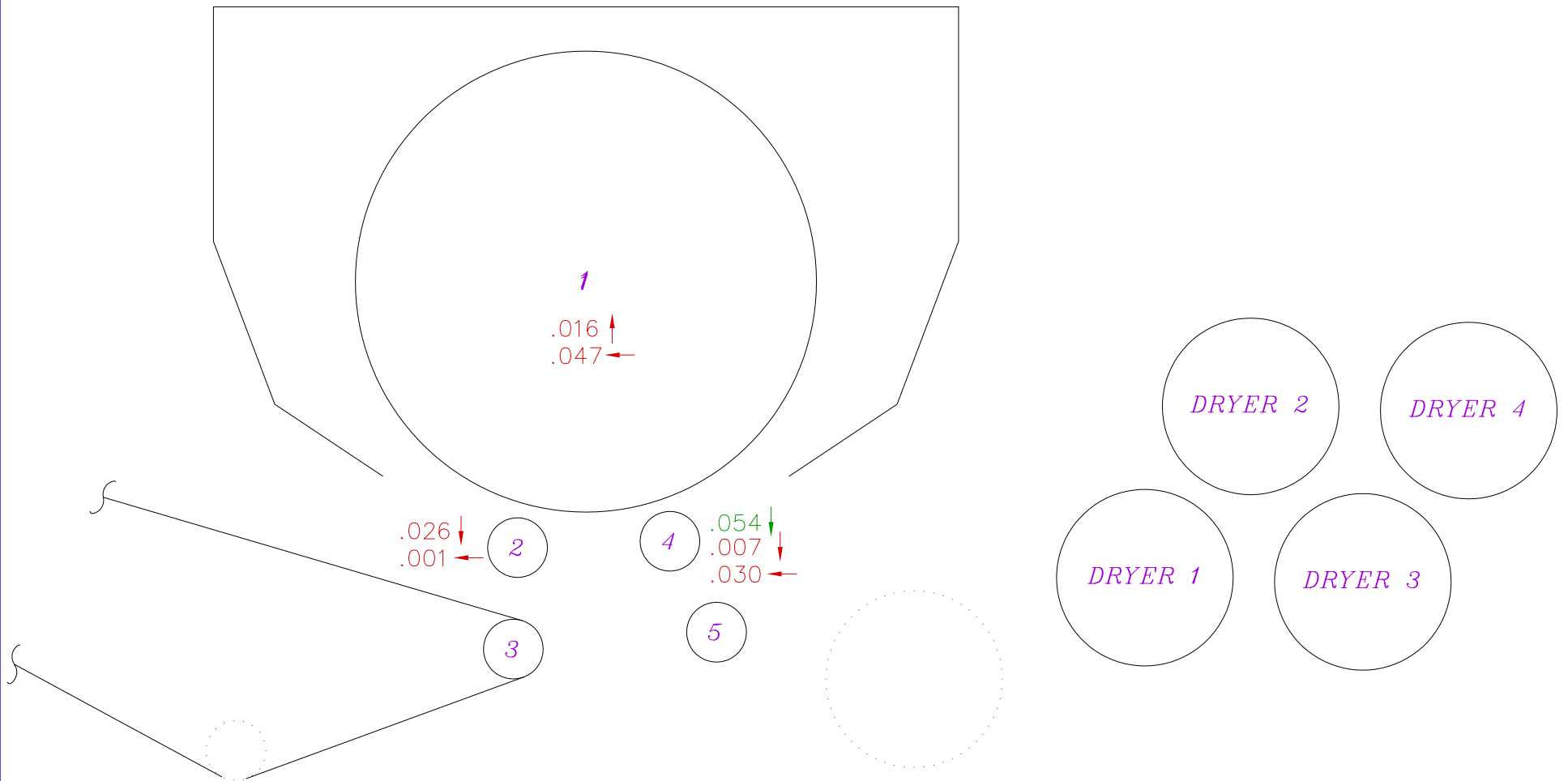
TAD SECTION

NOTES: (1) NO SCALE INTENDED.
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(3) DATA IN RED INDICATES THE ALIGNMENT OF COMPONENTS AS INITIALLY INSPECTED.
 (4) COMPONENT NUMBERING SYSTEM DEvised BY GLASS FOR REFERENCE ONLY.

TITLE	SOLE PLATE LEVEL CONDITIONS	
MACHINE	NO. 1 PAPER MACHINE	
DRAWN FOR	XYZ PAPER COMPANY ANYTOWN, USA	
DATE	01/05/2009	GLASS GREAT LAKES ALIGNMENT SURVEY SERVICES
SKETCH	2840-2	

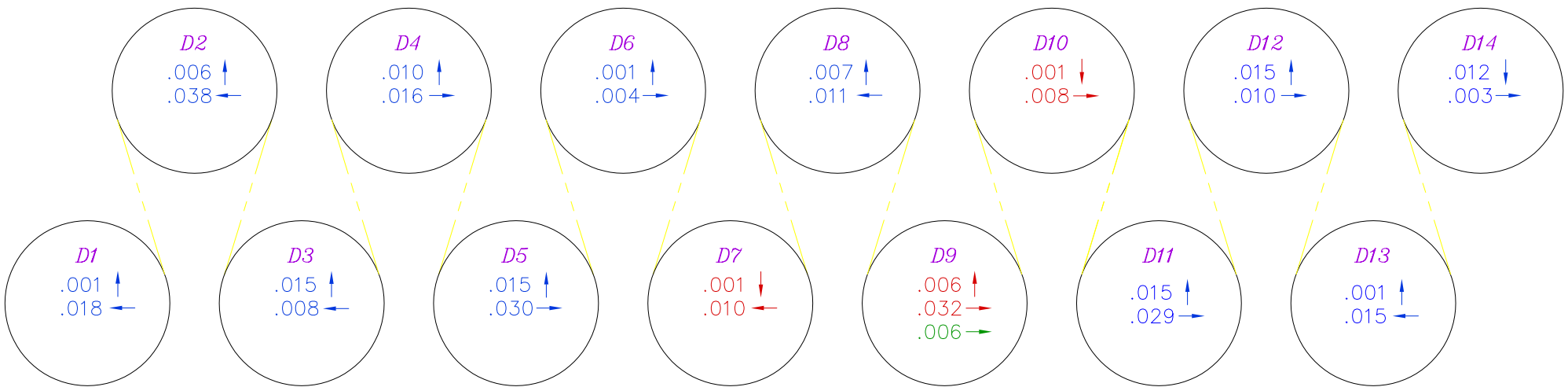
THROUGH AIR DRYER ROLLS



NOTES: (1) NO SCALE INTENDED.
 (2) UNLESS OTHERWISE NOTED, DATA INDICATES THE LOCATION OF THE TENDING END OF EACH COMPONENT RELATIVE TO THE DRIVE END WHICH IS CONSIDERED THE DATUM.

(3) DATA IN RED INDICATES THE ALIGNMENT OF COMPONENTS AS INITIALLY INSPECTED.
 (4) DATA IN GREEN INDICATES THE ALIGNMENT OF COMPONENTS AFTER ADJUSTMENT.
 (5) COMPONENT NUMBERING SYSTEM DEVISED BY GLASS FOR REFERENCE ONLY.

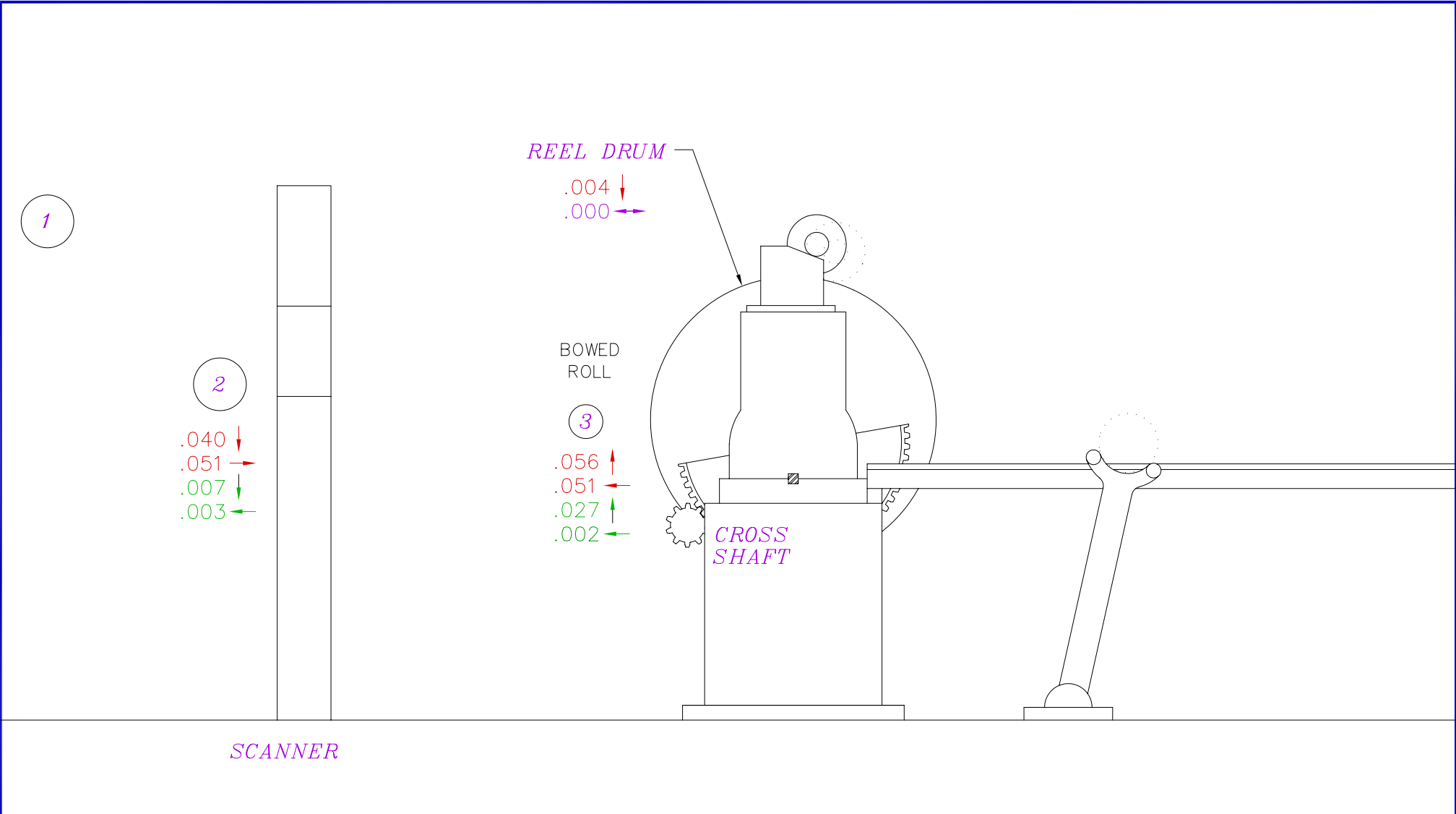
TITLE	THROUGH AIR DRYER	
MACHINE	NO. 1 PAPER MACHINE	
DRAWN FOR	XYZ PAPER COMPANY ANYTOWN, USA	
DATE	01/05/2009	
SKETCH	2840-3	



NOTES: (1) NO SCALE INTENDED.
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(3) DATA IN **RED** INDICATES THE ALIGNMENT OF COMPONENTS AS INITIALLY INSPECTED.
 (4) DATA IN **GREEN** INDICATES THE ALIGNMENT OF COMPONENTS AFTER ADJUSTMENT.
 (5) DATA IN **BLUE** INDICATES THE ALIGNMENT OF COMPONENTS INSPECTED PREVIOUSLY.

TITLE	FIRST DRYER SECTION	
MACHINE	NO. 1 PAPER MACHINE	
DRAWN FOR	XYZ PAPER COMPANY ANYTOWN, USA	
DATE	01/05/2009	GLASS GREAT LAKES ALIGNMENT SURVEY SERVICES
SKETCH	2840-4	



NOTES: (1) NO SCALE INTENDED.
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(3) DATA IN RED INDICATES THE ALIGNMENT OF COMPONENTS AS INITIALLY INSPECTED.
 (4) DATA IN GREEN INDICATES THE ALIGNMENT OF COMPONENTS AFTER ADJUSTMENT.
 (5) COMPONENT NUMBERING SYSTEM DEvised BY GLASS FOR REFERENCE ONLY.

TITLE	REEL	
MACHINE	NO. 1 PAPER MACHINE	
DRAWN FOR	XYZ PAPER COMPANY ANYTOWN, USA	
DATE	01/05/2009	
SKETCH	2840-5	