

1 Q. Please provide, in tabular form, the penstock can diameter and thickness and thickness to
 2 diameter ratio in all three penstocks both for the existing state and proposed alternative?

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5 A. The penstock can diameter, thickness, and thickness-to-diameter ratio are provided in Table 1
 6 (Penstock 1), Table 2 (Penstock 2), and Table 3 (Penstock 3). The values for the replacement 17-
 7 foot diameter penstock used in the estimate are the same as the existing penstock; however,
 8 steel grades will differ from the current penstock. The plate thickness of the replacement 17-
 9 foot diameter section will be finalized during detailed design; as such, the requested
 10 information is not available at this time. Project contingency is available to account for potential
 11 changes in thickness during the final design.

Table 1: Existing State – Penstock 1

Internal Diameter (mm)	Plate Thickness (mm)	Thickness-to-Diameter Ratio
5181.6	11.1125	0.0021
	11.1125	0.0024
4648.2	12.7	0.0027
	14.2875	0.0031
	15.875	0.0034
	17.4625	0.0038
	19.05	0.0041
	19.05	0.0046
	20.6375	0.0050
	22.225	0.0054
4114.8	23.8125	0.0058
	25.4	0.0062
	26.9875	0.0066
	28.575	0.0069
	30.1625	0.0073
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	31.75	0.0077
	33.3375	0.0081
	34.925	0.0085
	36.5125	0.0089
38.1	0.0093	
39.6875	0.0096	
41.275	0.0100	

Table 2: Existing State – Penstock 2

Internal Diameter (mm)	Plate Thickness (mm)	Thickness-to-Diameter Ratio
5181.6	11.1125	0.0021
4648.2	11.1125	0.0024
	12.7	0.0027
	14.2875	0.0031
	15.875	0.0034
	17.4625	0.0038
	19.05	0.0041
	19.05	0.0046
4114.8	20.6375	0.0050
	22.225	0.0054
	23.8125	0.0058
	25.4	0.0062
	26.9875	0.0066
	28.575	0.0069
	30.1625	0.0073
	31.75	0.0077
	33.3375	0.0081
	34.925	0.0085
	36.5125	0.0089
	38.1	0.0093
	39.6875	0.0096
41.275	0.0100	

Table 3: Existing State – Penstock 3

Internal Diameter (mm)	Plate Thickness (mm)	Thickness-to-Diameter Ratio
5181.6	11.1125	0.0021
	11.1125	0.0024
4648.2	14.2875	0.0031
	19.05	0.0041
	15.875	0.0034
	17.4625	0.0038
	19.05	0.0041
	15.2146	0.0033
	16.5862	0.0036
	18.3896	0.0040
	20.6375	0.0050
	17.78	0.0043
4114.8	16.2052	0.0039
	17.0688	0.0041
	17.9324	0.0044
	18.7706	0.0046
	20.2692	0.0049
	24.257	0.0059
	21.0566	0.0051
	21.6916	0.0053
	22.3266	0.0054
	22.9616	0.0056
	23.5966	0.0057
	24.2316	0.0059
	24.8666	0.0060
	29.3878	0.0071
	26.035	0.0063
	26.9494	0.0065
	27.813	0.0068
32.8168	0.0080	
29.2608	0.0071	
30.2514	0.0074	
31.2674	0.0076	
32.2834	0.0078	
33.0962	0.0080	
38.8112	0.0094	
41.275	0.0100	