

Specification of Dam on Mill Creek - Luzerne County, Pa.

The body of the dam may be constructed with round timbers, (the exterior faces excepted, which must be made flat,) laid up in the form of crib work, notched and locked at the points of contact, and well secured with 2 inch oak trenails. The timbers or ties running with the stream, to be nine feet from center, to center. The bottom or bed of the stream being rock, the surface must be carefully levelled to receive the bottom course of ties, so as to give them an even and solid bearing, these shall be of white oak, not less than fifteen inches in diameter at the largest end, all other ties not less than 12 inches. The largest ends to be laid down the stream, and form such slope as the timbers will naturally make.

The range timbers, (or timbers crossing the stream,) not to be less than ten inches in diameter, and to be laid 7 feet from center to center, with the exception of the upper course, which must be  $3\frac{1}{2}$  ft. from center to center, 12 inches in diameter, and flattened on top to suit the slope, and form firm, and even bearings for the reception of the covering planks.

The cribs, and interstices between the timbers, are to be filled with stone, in a careful, and compact manner, as the engineer may direct. The upper slope of the dam, to be laid with a declivity of 3 feet base, to 1 foot perpendicular rise, and to be covered with two courses of planks - the first course to be of hemlock, or pine two inches thick, and laid with close joints, one half the 2<sup>d</sup> course to be of  $2\frac{1}{2}$  inch pine or hemlock, and the other (on top part) to be of white oak three inches thick, - all the upper course to be laid so as carefully to break joints with the 1<sup>st</sup> course - The covering must be secured to the ribs, with oak trenails, as may be directed.

The dam is to be secured on the upper side, with a double course of 2 inch plank sheet piling, carefully fitted to the rock bottom, and spiked to the range timbers, the 2<sup>d</sup> course, must be so put on, as to break joints with the first, great care must be taken, to make this part of the work as perfectly water tight as possible, before the graveling is thrown upon it. - The gravel filling must be of good quality, carefully put in, and carried up to the height of at least 6 feet above the toe of the dam, from this point it must slope up stream, at an inclination of not less than two feet base to one foot rise, and down stream to the crest of the dam, or about 1 ft. rise, to 6 ft. base; the lower slope of the dam will have a declivity of one foot, to each foot and a half base, and be covered with white oak planks, not less than four inches thick, each plank to be secured to two of the range timbers with iron bolts 1 inch square, and 16 inches long, and to the other two ribs, with 2 inch oak trenails. One third of the timber used

in the dam, to be of white oak, and the remainder of pine, or hemlock. The rock at the North end of the dam, must be dressed true, and even, so as to admit the covering plank of the dam, to be lapped on, and make a close joint. Two sluices must be left in the dam, if required for drawing off the water, in which case, they must be planked on the bottom, and sides, with two inch planks, the cost of which will be considered an offset to the stone filling dispensed with. At the South end of the dam, a triangular guard (see plan) must be made, on the lower slope, to protect the abutment in time of floods, this will be formed of timber cribbing, bolted to the dam, filled with stone, and covered with white oak plank, laid with open joints, and well spiked.

The masonry of the abutment, is to be of the same character as that described in the specification for the Lock, and to be provided with iron bolts three feet long, in each four feet square of face wall, to attach pine, and plank, sheathed with boards, in the same manner as the Lock, or if preferred by the engineer, the bolts may be inserted in each six feet square, in which case recesses shall be formed in the wall, for the reception of the posts, so as to make their outer surface flush with the face of the wall. The South end of the dam, between the abutment, and toe sheet piling, must be covered, or faced, with two courses of two inch plank, made as near water tight as possible. - The abutment is to be connected with the head of the Lock, by a wall faced with plank and boards, in the same manner as the abutment walls. The whole is to be finished with a substantial embankment made of gravel, or other suitable material, and of such form as the engineer may direct.

All the materials used in the dam, abutments &c. must be of good quality, and the work be executed in such manner as the engineer shall approve.

Submitted December 1855, with plan.

Edw. J. Gay

C. Engineer