

NPSEN-BP

19 November 1963

MEMO FOR RECORD

SUBJECT: Downstream levee inspection, Skagit River, Washington

1. Ray Wills, Project Planning; Larry Nichols, Estimates Section; Bob Yunker, F&M Branch; and Wes Edens made a visual inspection of the present levee system from the U.S. 99 Highway bridge to the mouths of the North and South Forks on 14 and 15 November. This inspection is intended to provide a basis for establishing a reliable cost estimate for proposed levee and channel improvement work.

2. Left bank levees above the Mt. Vernon shopping district are built between the river and a bituminous surfaced access road with the road located at the steep back slope's toe. Existing slopes are about 1 on $1\frac{1}{2}$ on the back side and 1 on 3 or $3\frac{1}{2}$ on the river side. A wide bench, generally 20 to 60 feet wide exists between the river and the levee toe. In most cases the riverward slope of the bench is well riprapped but steep. Yunker indicated that no objection would be forthcoming from F&M from extending our slopes well out onto this bench as long as the bank is stable. We decided that the most economical construction method would be to strip the existing levee and reshape it to provide a minimum 1 on 2 back slope. Select borrow will be added to fill out the levee section.

3. With only minor exceptions, all of the river's levees have generous river slopes but very steep back slopes. The top width varies from 3 to 12 feet in most areas with limited lengths of access road on top of the levees where no county road is near. In all cases levee improvement can be done between the road and the river.

4. We contacted Mr. Lloyd Johnson, Skagit County Engineer, and obtained information on the extent of ownership of prospective borrow pits and quarries. Larry Nichols inspected these sources which are located on quadrangle sheets by F&M.

5. On the basis of average midchannel velocities at design flood discharge and of the amount of riprap presently used on the existing levees, it is apparent that the 400 linear feet per mile of riprap which is included in the present estimate will be adequate.

6. Design questions which remain to be resolved include the minimum levee topwidth which will be adequate where maintenance access roads run adjacent to the levees. From the viewpoint of all sections, will we have to consider the entire levee system, from the most upstream point of our work to the mouths, as one project and bring it all up to our standards for top width and slopes?

7. Our levee top profile was found to be outdated by local levee work. A rebuilding project has raised the existing work at station 5470+00 on the North Fork left bank. The State Game Department has leveed the right bank of freshwater slough below our proposed channel improvement. This levee may be high enough to protect this area from the design flood.

cc: F&M
Estimates
Proj Plng - Skrinde

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EDENS