15.0 LAKE STABILIZATION STRUCTURES

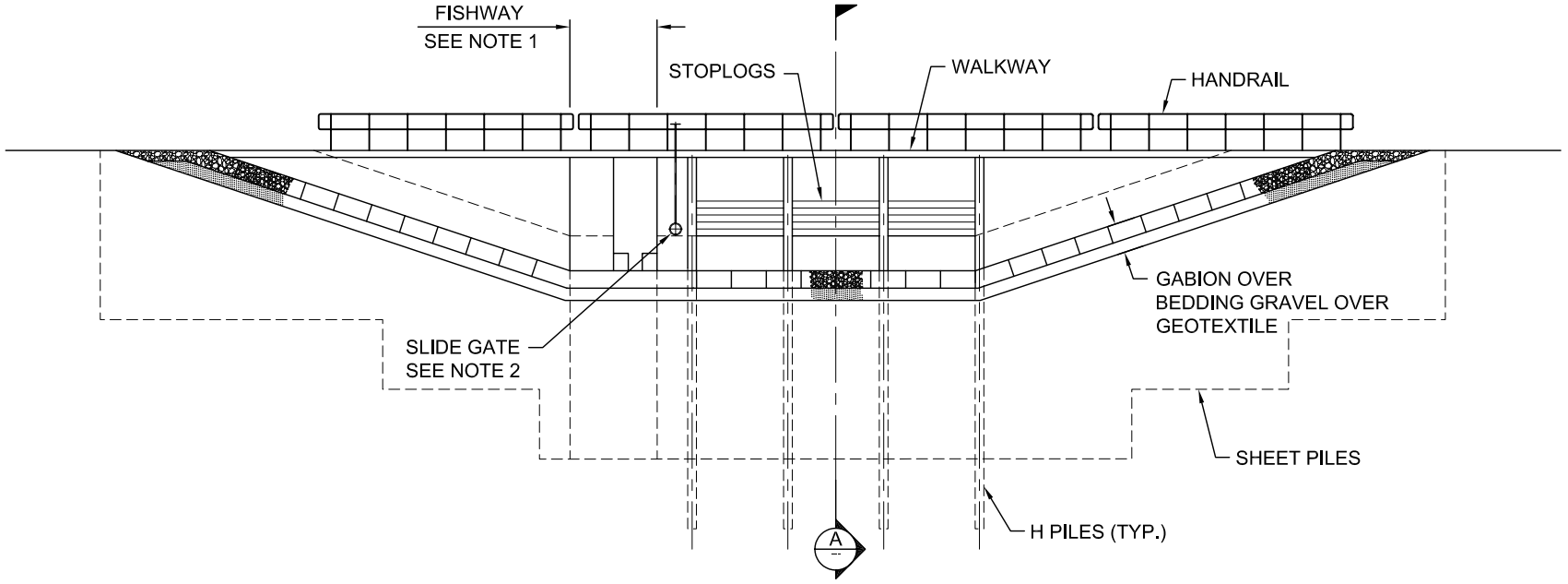
15.1 General

Lake stabilization structures are generally used to maintain the water level in a lake or similar water body within a preferred operating range. Establishing the preferred operating range can be difficult since it generally requires finding a balance between a number of competing objectives including maintaining lake water levels for recreation, avoiding the potential for higher flood levels, providing appropriate water levels for fish and wildlife, and providing water levels for flood irrigation (i.e. backflooding) and to facilitate withdrawal by domestic, municipal, and other users.

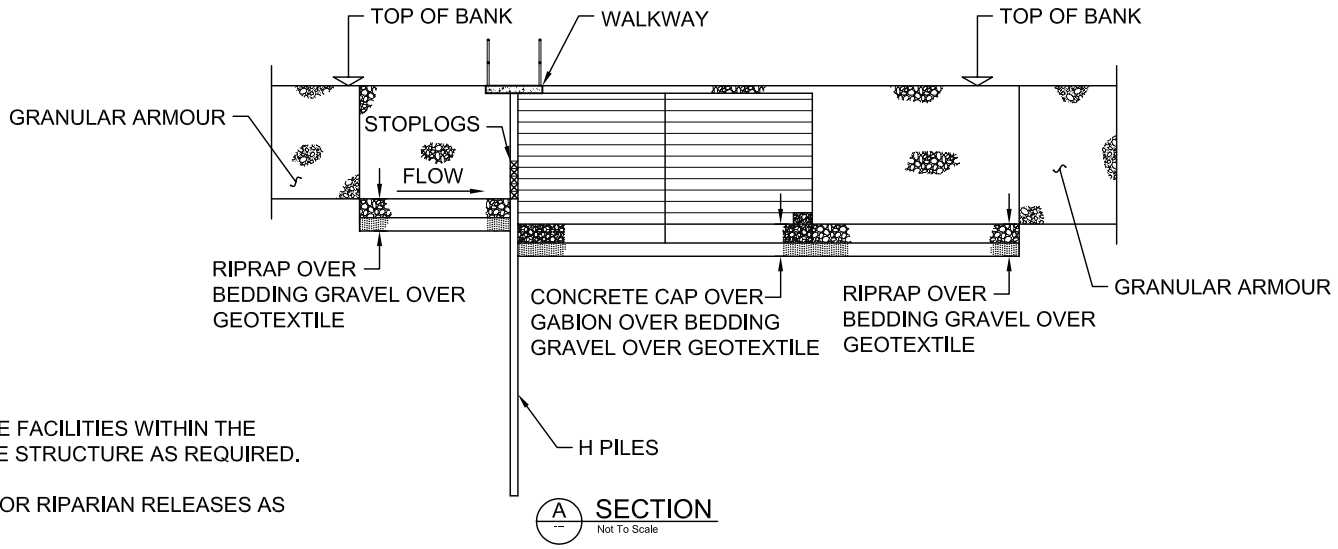
Structure types and requirements will depend on many factors including site conditions, the required design operating range of the lake, discharge requirements including flood releases, and fish passage and downstream riparian requirements. Therefore, the information contained in this section is intended to present some details of the more commonly used lake stabilization structure arrangements that have been used within the province rather than provide definitive design guidelines.

In general, the lake stabilization structure is commonly designed as a low head uncontrolled weir structure. The structure consists of a steel sheet pile wall located at the outlet channel for the lake as illustrated in Figure 15-1. A weir section is usually incorporated within the sheet pile wall, and a gated low level outlet pipe may be provided to permit riparian releases. Erosion protection typically consists of gabions and riprap. Where some water level control is needed, provisions for installing stop logs at the weir can be incorporated. Steel H-piles may be used to support the stop logs and the access walkway. In cases where provisions are needed to facilitate the movement of fish past the structure, a fishway is provided as discussed in Section 16.7.

Some of the structures described in the other sections can also be used as lake stabilization structures.



DOWNSTREAM ELEVATION
Not To Scale



SECTION
Not To Scale

NOTES:

1. INCORPORATE FISH PASSAGE FACILITIES WITHIN THE STRUCTURE OR AROUND THE STRUCTURE AS REQUIRED.

2. INCORPORATE SLIDE GATE FOR RIPARIAN RELEASES AS REQUIRED.

ALBERTA TRANSPORTATION
CIVIL PROJECTS BRANCH

ALBERTA ENVIRONMENT
WATER MANAGEMENT OPERATIONS

WATER CONTROL STRUCTURES - SELECTED DESIGN GUIDELINES

GENERAL ARRANGEMENT OF A LAKE STABILIZATION STRUCTURE

DATE:	CAD FILE:	FIGURE No.:
November 2004	99008A15-1.dwg	15-1