

Ecological design and restoration of river bank revetment

Dr. ChunBao Yang

General Institute of Water Resources and Hydropower
Planning and Design, The Ministry of Water Resources

Content

- 1. The history of river bank revetment
- 2. River bank forms
- 3. Ecological design of bank revetment
- 4. Ecological restoration of disharmonious revetment
- 5. Design Suggestions

1. The history of river bank revetment

Bank revetment

The structure between land and river.

Ancient times

The Yellow River bank began building 2500 years ago.

Focused on flood control and channel regulating

Recent years

The process of modern urbanization and ecological civilization.

Integrated functions: ecology, landscape, leisure, tourism



1. The history of river bank revetment

Ecological bank revetment

Harmony between humans and nature.

Stability

the requirement of flood discharge, drainage, shipping, etc.

Ecological functions

the material circulation, energy flow, plant growth, animal habitat , etc.



2. River bank forms

Different landforms and climates produce different river forms.

Natural bank

Formed by natural action of many years.

Engineering bank

Made by artificial production and actions.

Composite bank

Combines natural characters and engineering measures.



3. Ecological design of river bank revetment

Key design point

Apply natural materials, flexible structures or porous concrete structures.

For river bank revetment, ecological designs and measures mainly include following types.



Plant revetment



Riprap revetment



Rock revetment

3. Ecological design of river bank revetment



Stone gabion revetment



Wood pile or imitation wooden pile revetment



Ecological bag revetment



Ecological concrete revetment

Partial improving

No surplus space behind the bank

- take exterior decoration
- use viewing railings
- build tourist trails



4. Ecological restoration of disharmonious revetment

Overall upgrading

Ample space behind the bank

Demolish the disharmonious revetment



New design of the river bank



5. Design suggestion

The integration of a variety of bank revetment forms can be designed, to improve the adaptability, stability and diversity.

Gabions

Wooden piles

Riprap

Ecological concrete

Plants

Ecological bag

Heavy
protection
area

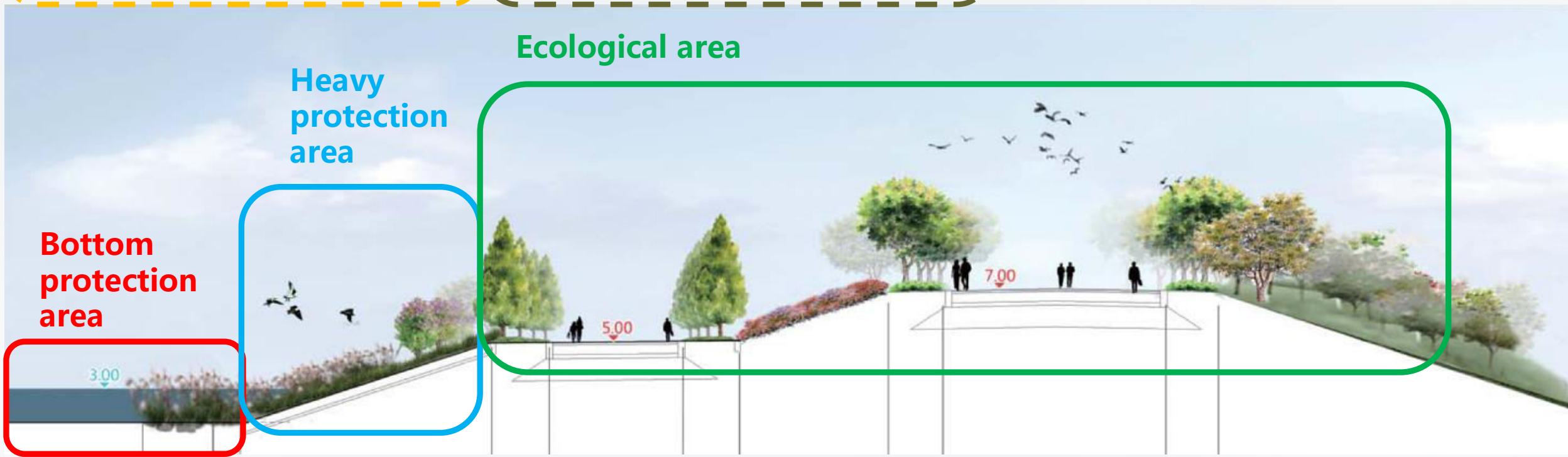
Ecological area

Bottom
protection
area

3.00

5.00

7.00



Thanks for your kind attention!

Email: yangcbchina@163.com

Dr. ChunBao Yang