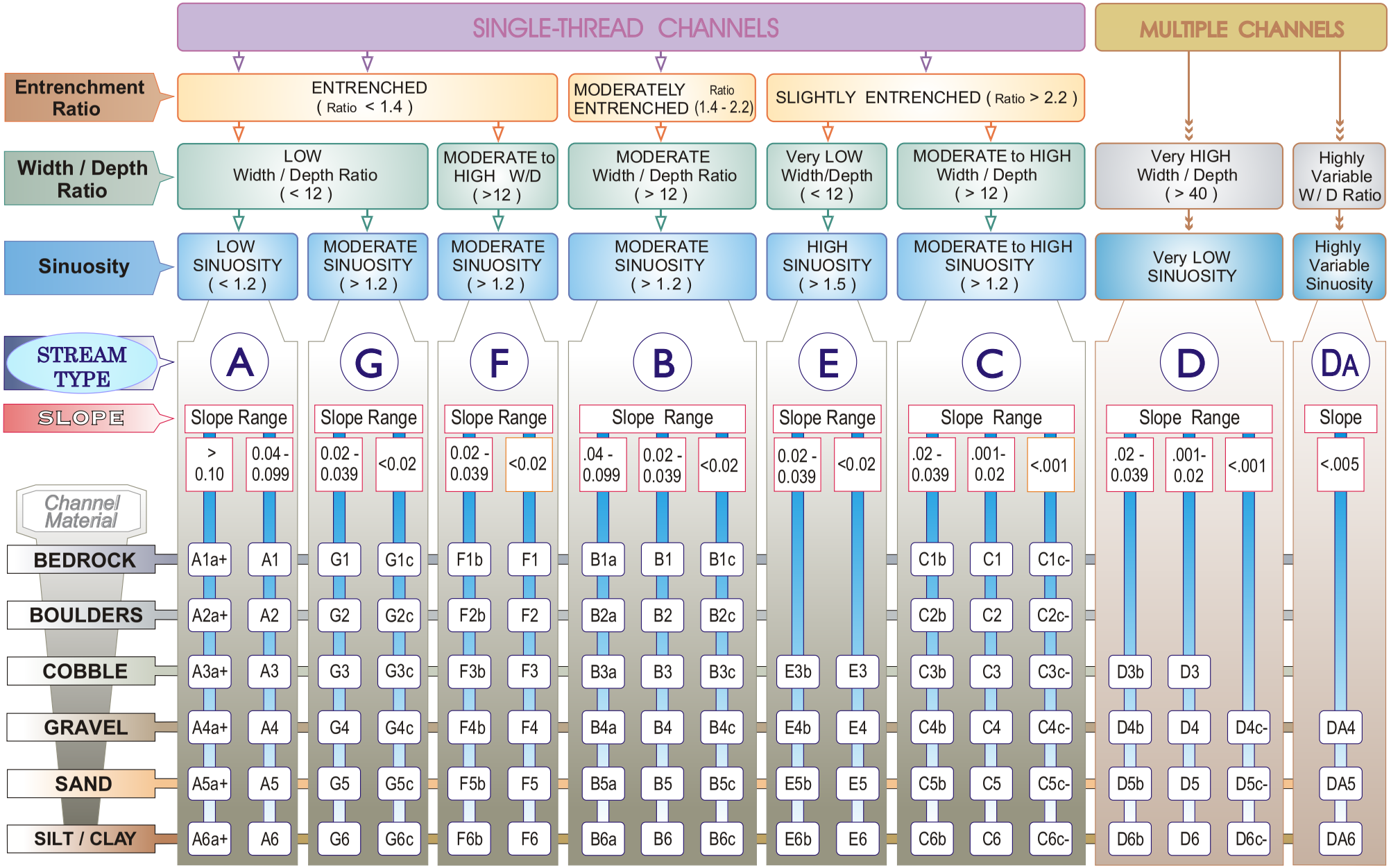
Appendix 7

Stream Classification Key, Channel Incision Exhibits, and Channel Evolution Model Schematic Drawings

The Key to the Rosgen Classification of Natural Rivers



KEY to the *ROSGEN* CLASSIFICATION of NATURAL RIVERS. As a function of the "*continuum of physical variables*" within stream reaches, values of ***Entrenchment*** and ***Sinuosity*** ratios can vary by +/- 0.2 units; while values for ***Width / Depth*** ratios can vary by +/- 2.0 units.

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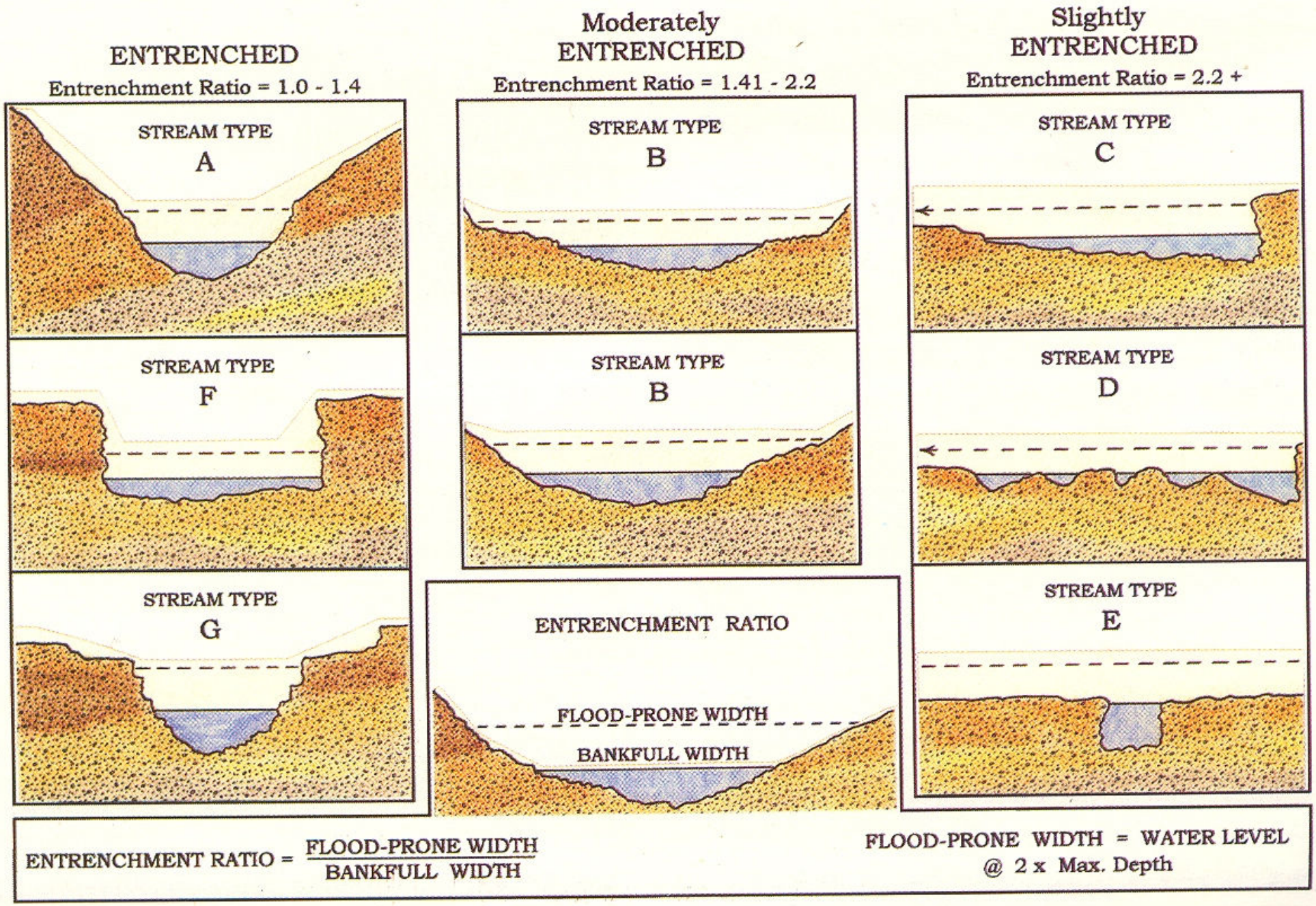
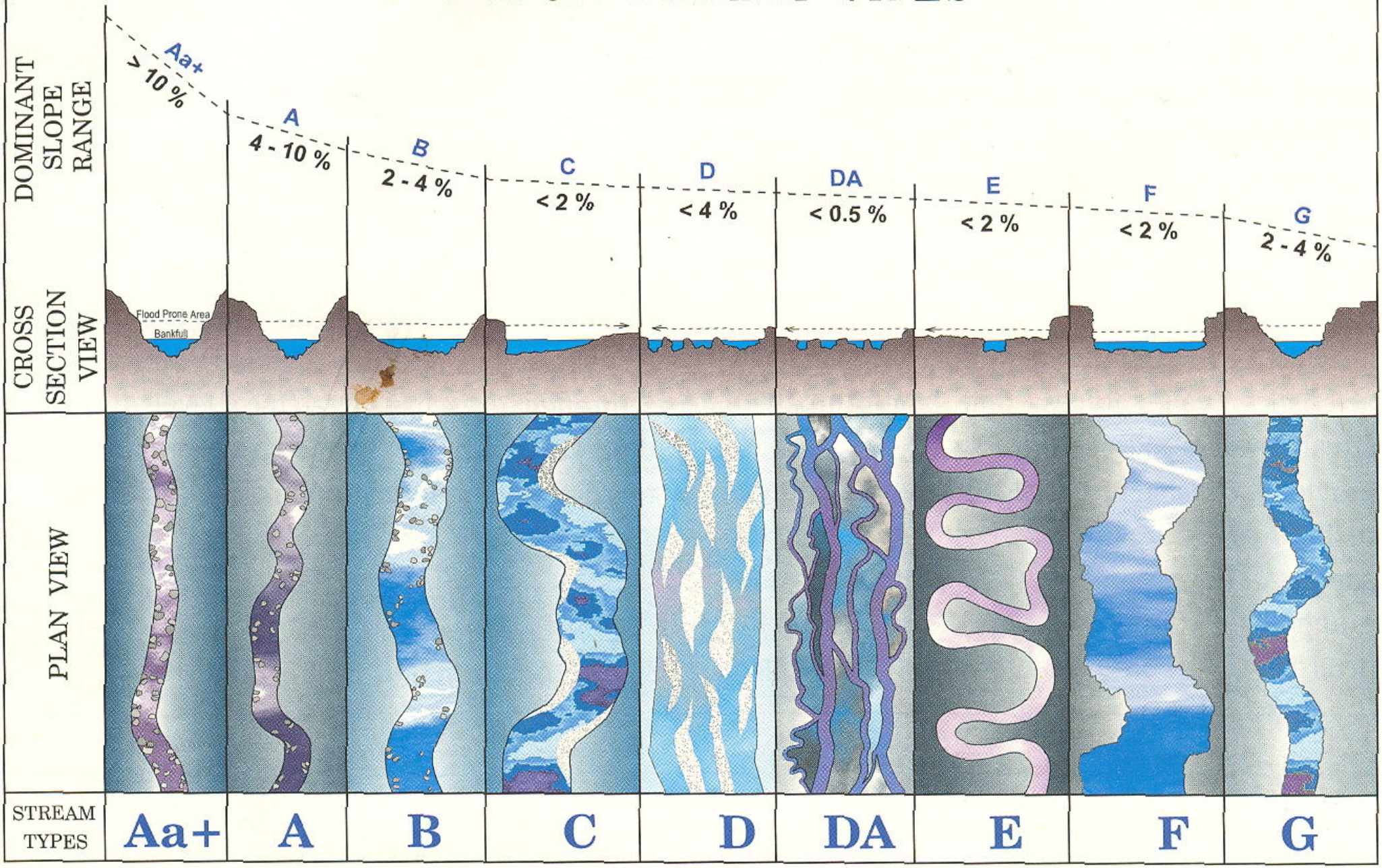
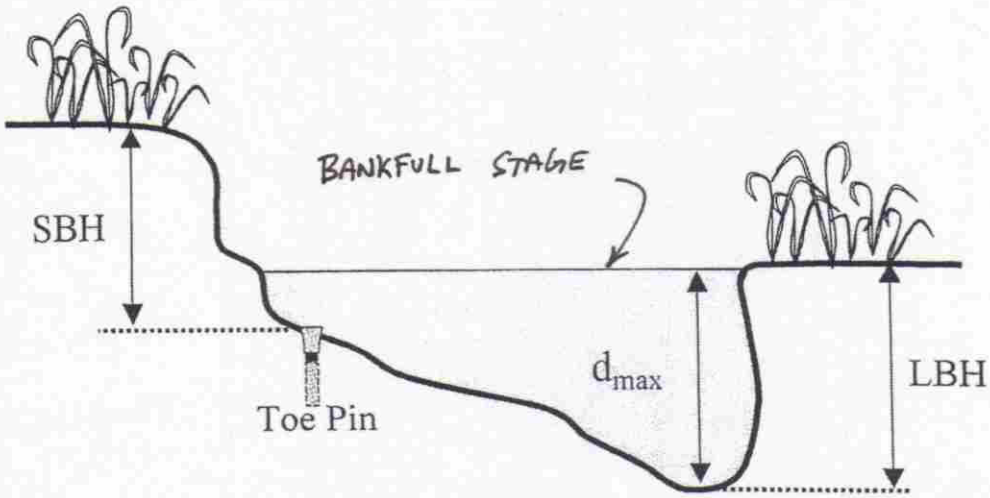


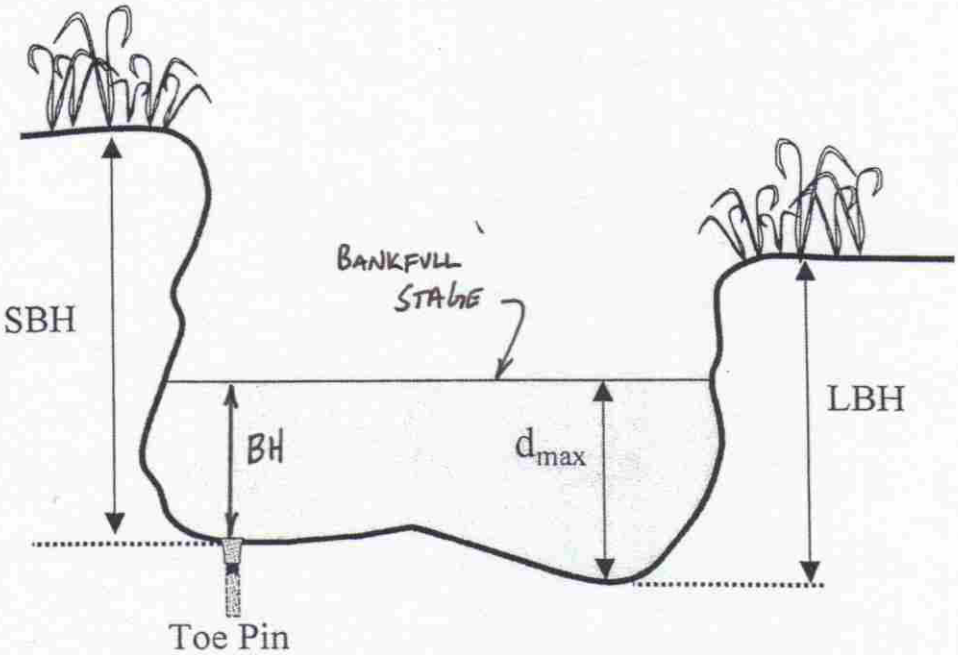
FIGURE 5-10. Representative entrenchment ratios for cross-sections of various stream types.

LONGITUDINAL, CROSS-SECTIONAL and PLAN VIEWS of MAJOR STREAM TYPES



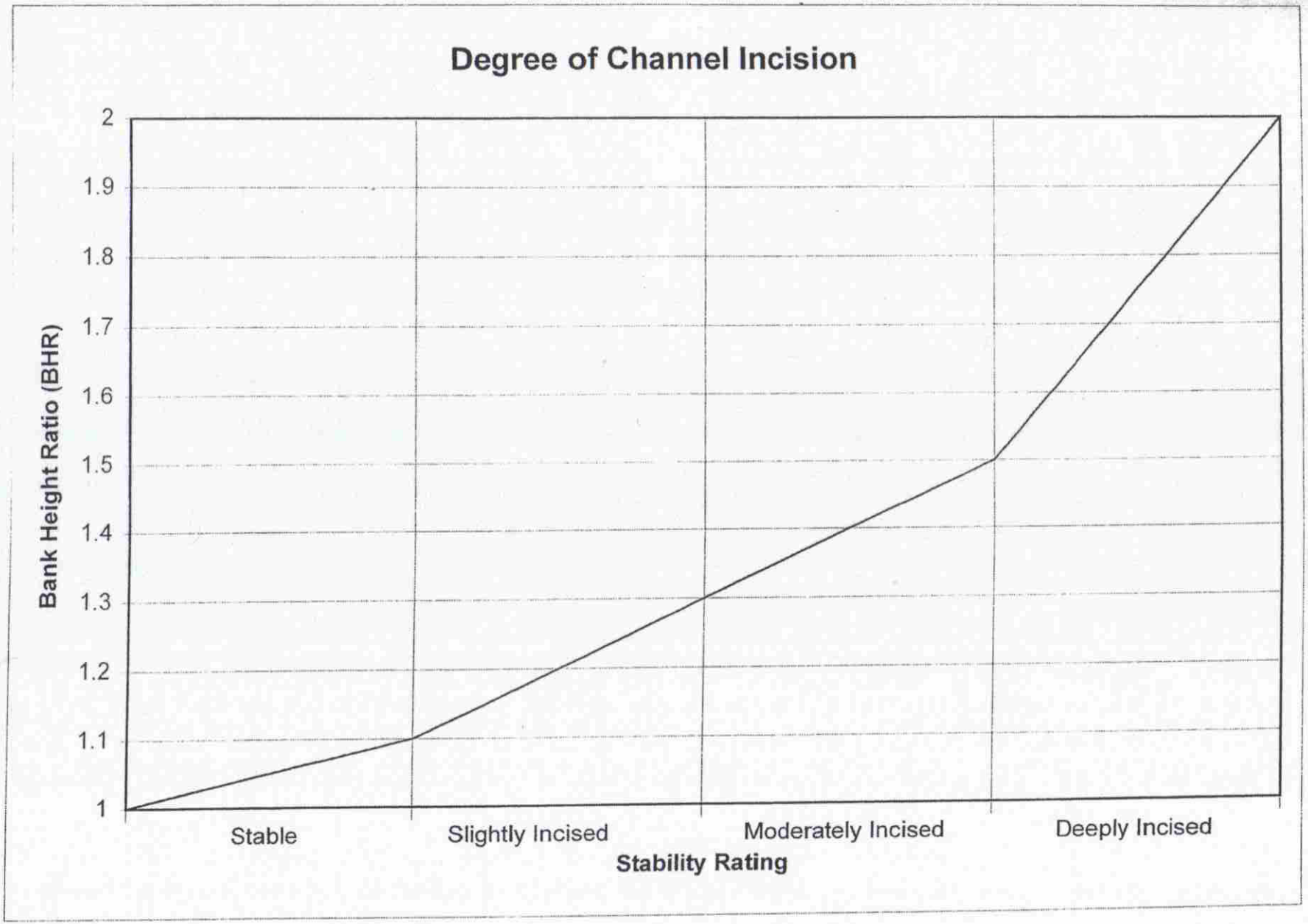
Bank Height Terminology





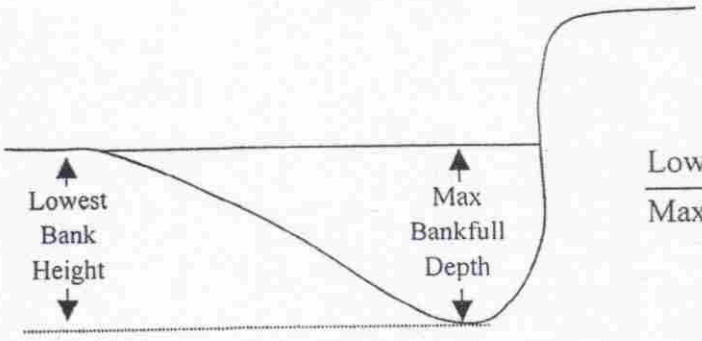
SBH= Study Bank Height
LBH= Low Bank Height
d_{max}= Max depth @ bankfull
BH = BANKFULL HEIGHT

- DEGREE OF CHANNEL INCISION = $\frac{LBH}{d_{max}}$
- BANK HEIGHT RATIO = $\frac{SBH}{BH}$


Degree of Channel Incision
Bank Height Ratio (BHR)
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
Stable
Slightly Incised
Moderately Incised
Deeply Incised
Stability Rating

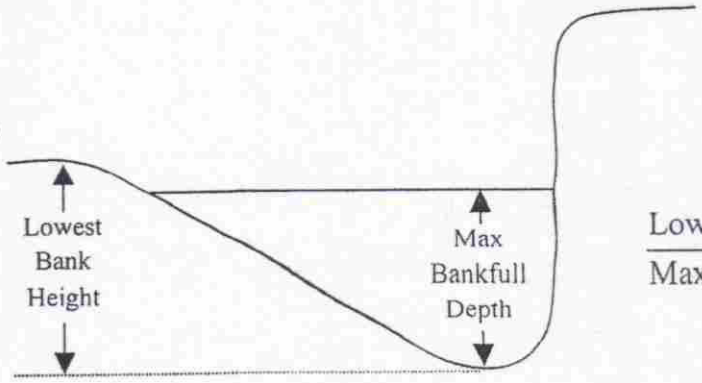
Examples of Bank Height Ratio (BHR) Categories for Stability Evaluation

A)



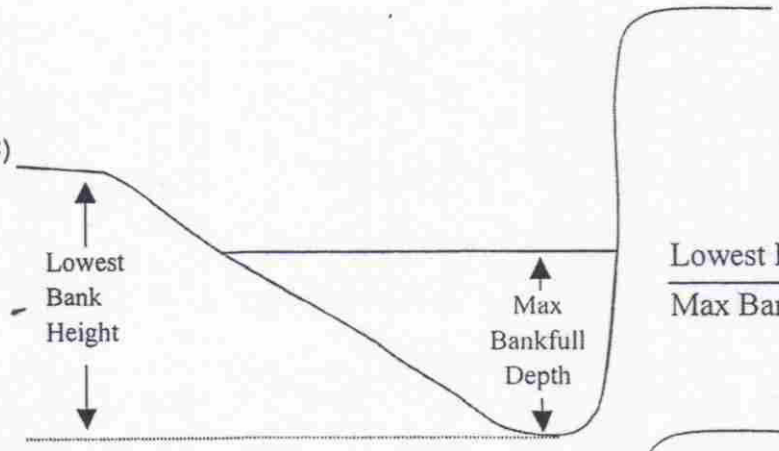
$$\frac{\text{Lowest Bank Height}}{\text{Max Bankfull Depth}} = \text{BHR} = 1.0 \text{ (Stable)}$$

B)



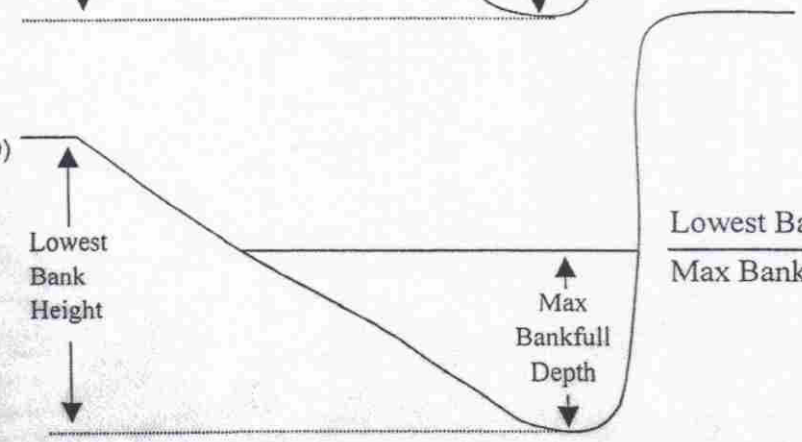
$$\frac{\text{Lowest Bank Height}}{\text{Max Bankfull Depth}} = \text{BHR} = 1.2 \quad \text{(Slightly Incised)}$$

C)



$$\frac{\text{Lowest Bank Height}}{\text{Max Bankfull Depth}} = \text{BHR} = 1.45 \quad \text{(Moderately Incised}$$

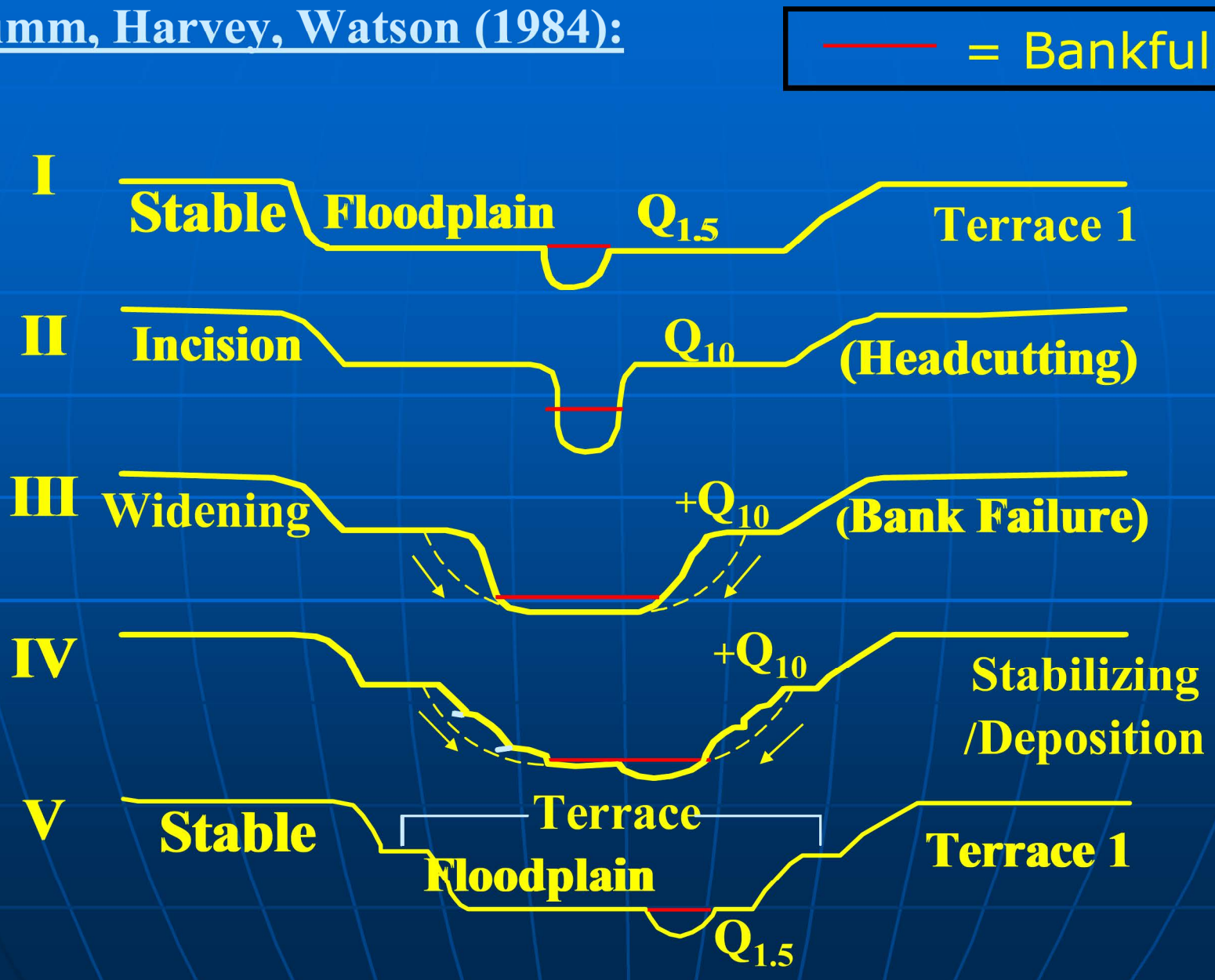
D)



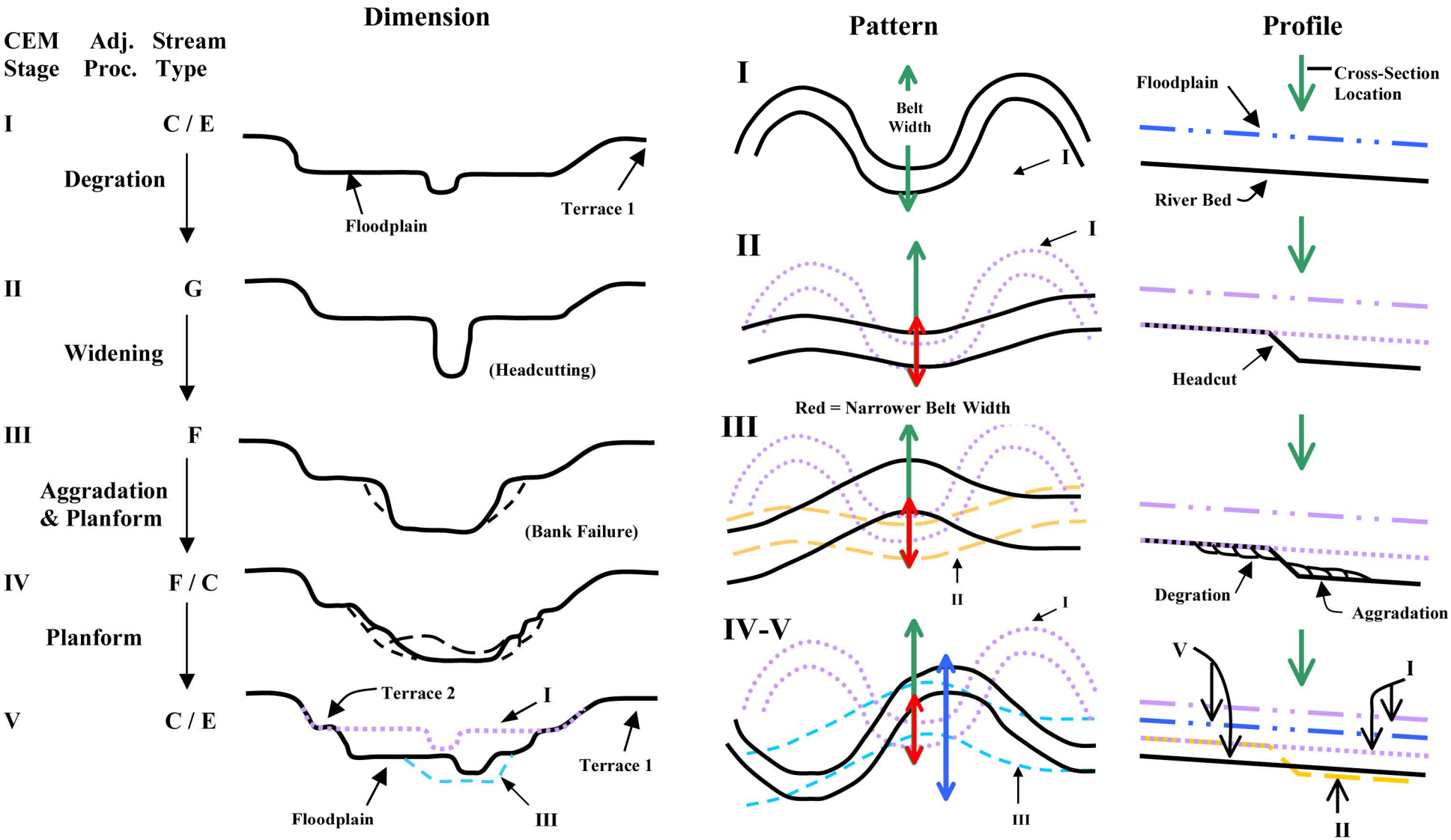
$$\frac{\text{Lowest Bank Height}}{\text{Max Bankfull Depth}} = \text{BHR} = 1.63 \quad \text{(Deeply Incised)}$$

Channel Evolution Model

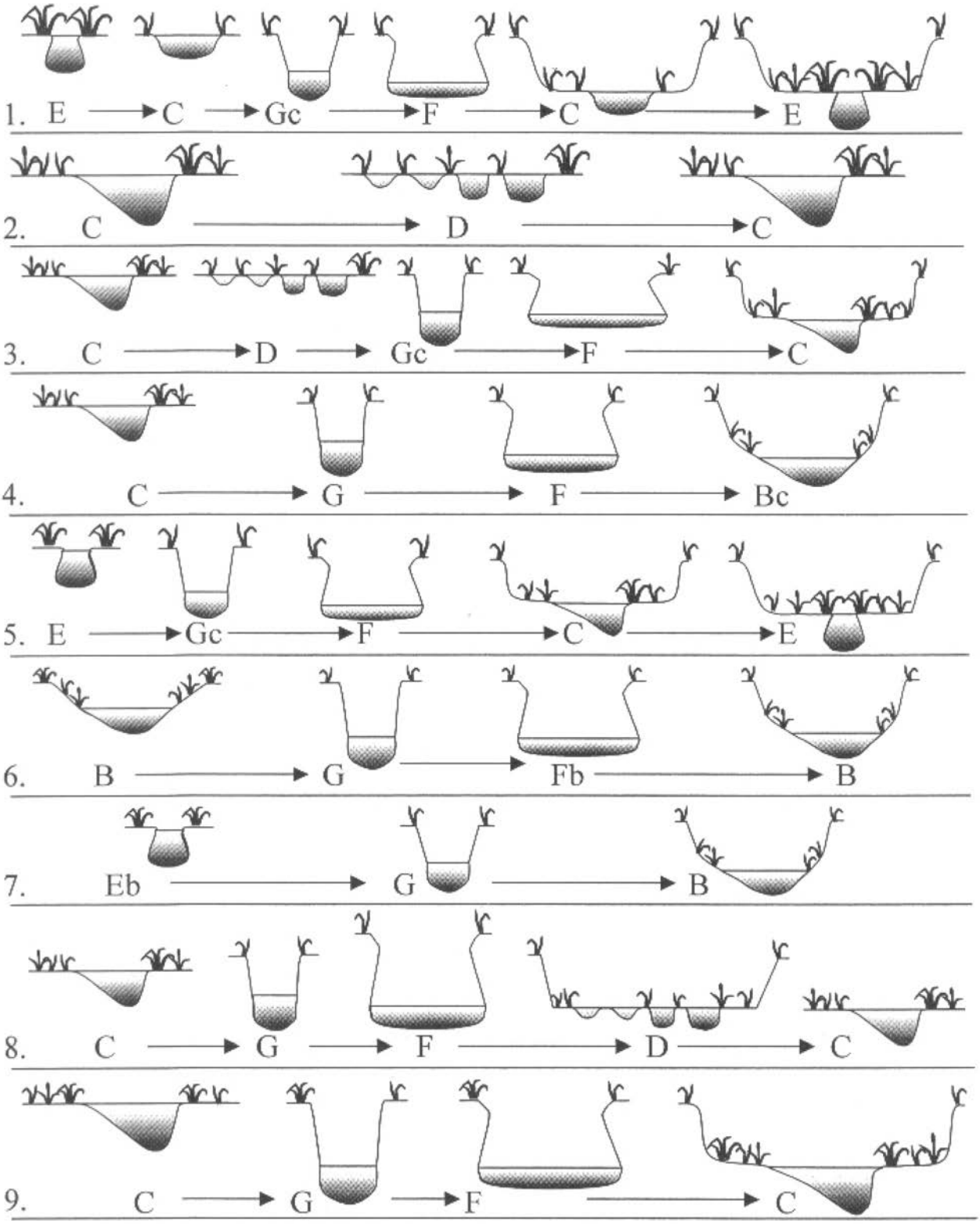
Schumm, Harvey, Watson (1984):



F-stage Channel Evolution Process (VTDEC-Modified from Schumm, 1977 & 1984 and Thorne et al, 1997)



Various Stream Type Succession Scenarios



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