Stream Restoration – Case Studies

3/13/19

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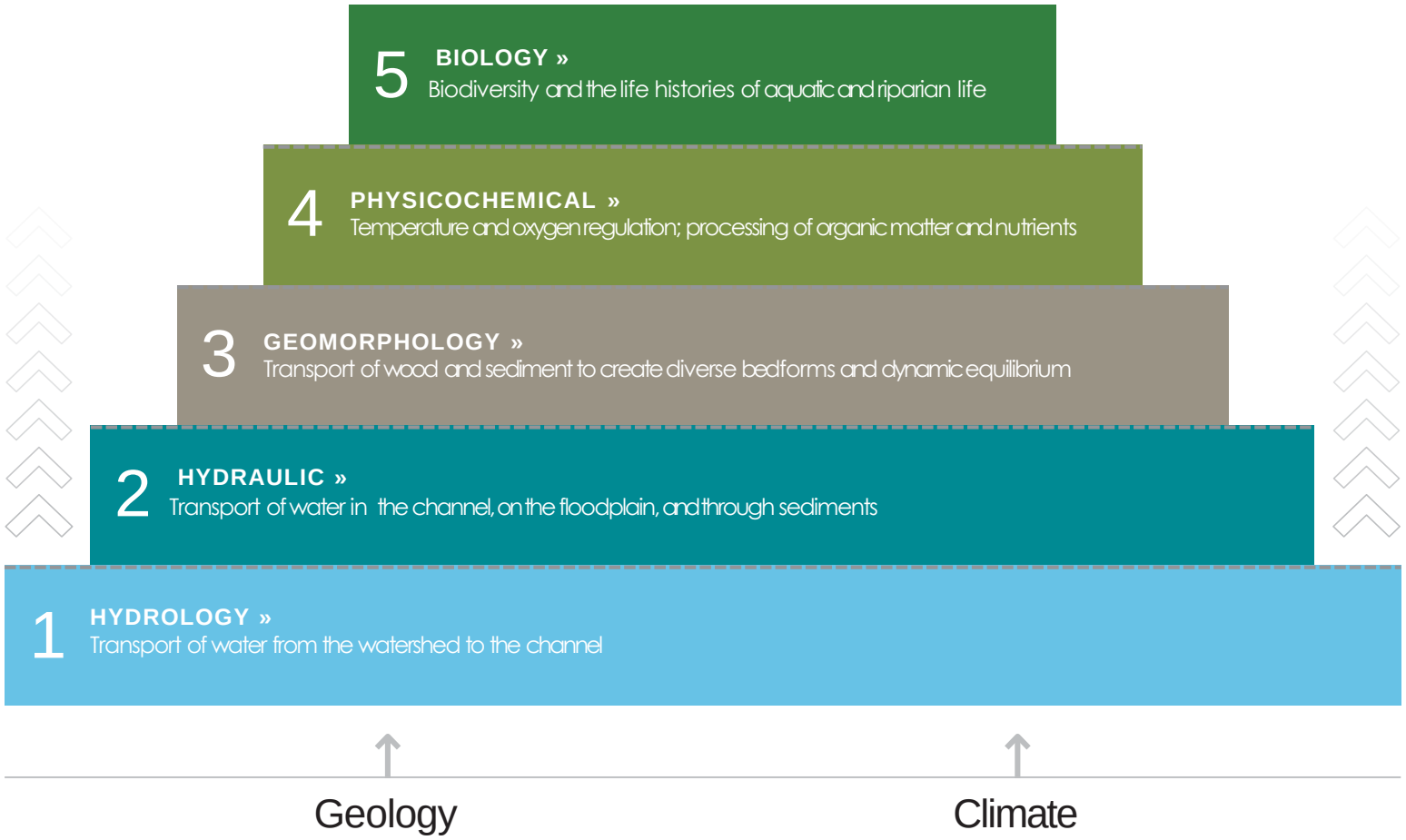
Outline

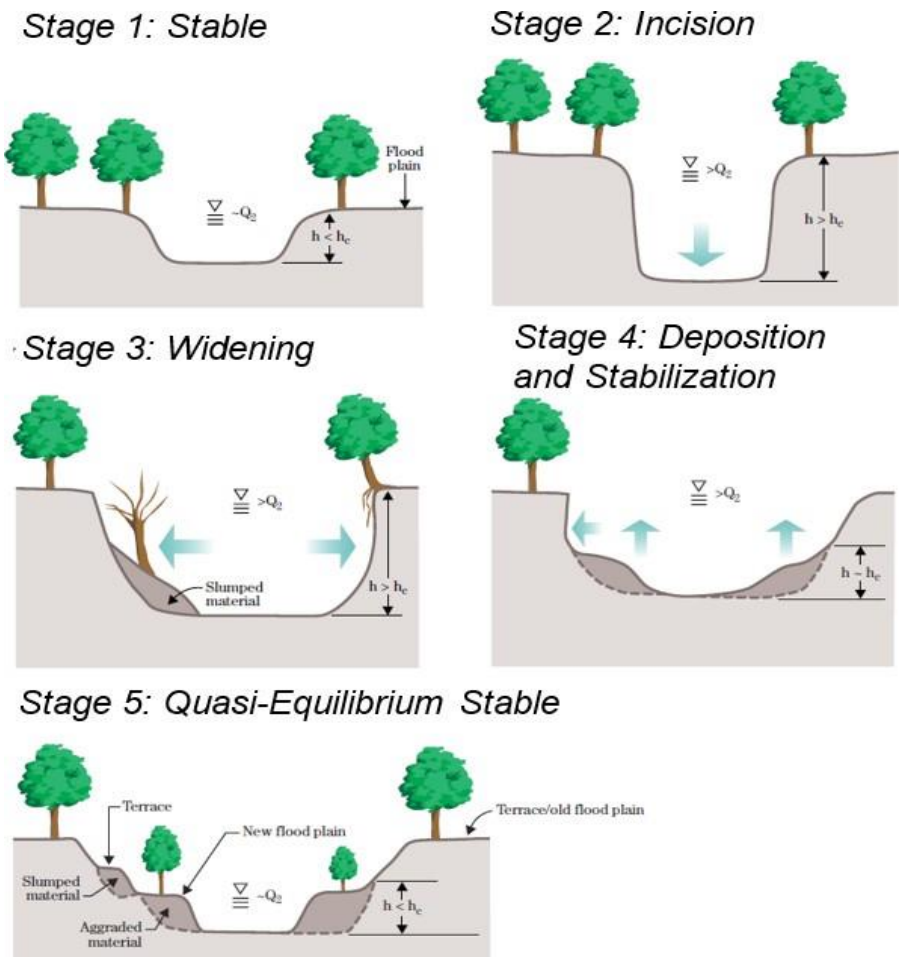
- Stream Functions & Conditions
- Types of Stream Restoration
- Case Studies
- Summary

Stream Functions Pyramid



(Fischenich 2006)

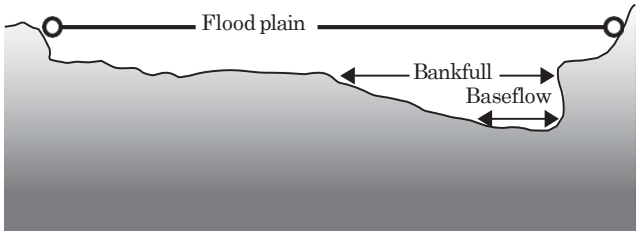
Stream Conditions

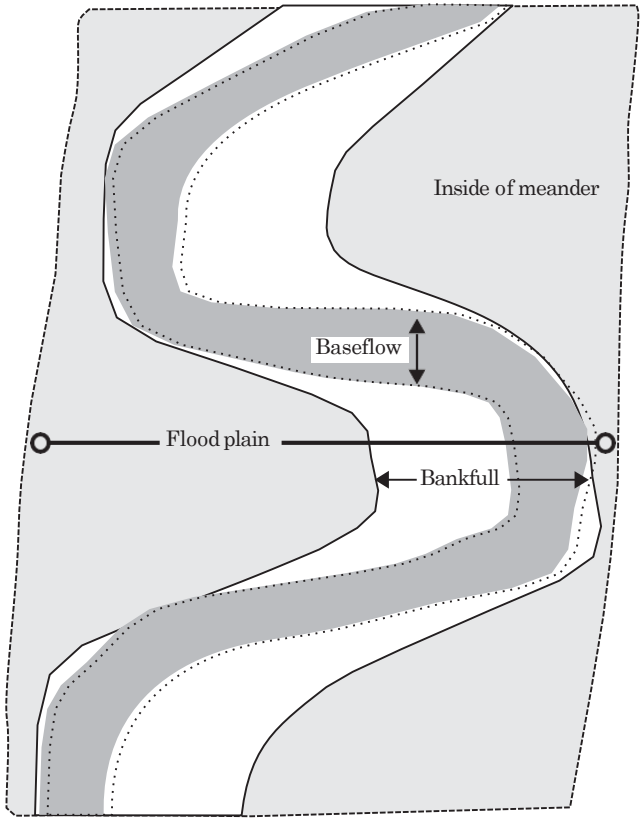


Channel Evolution Model with Channel Cross Sections (Schumm et al. 1984)

Rivers are alive and part of a larger system

Relationship between Baseflow, Bankfull, and Floodplain

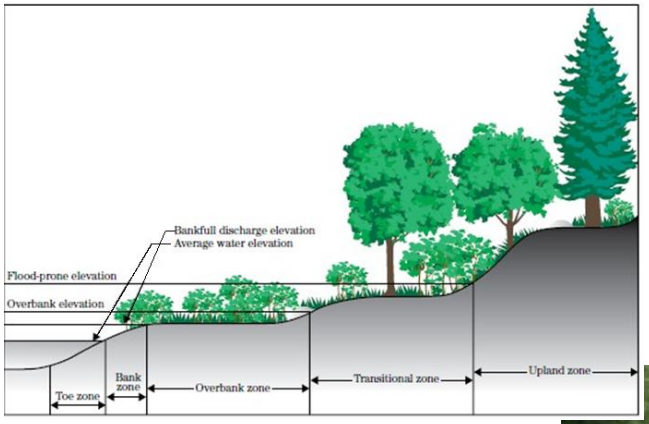




(Rosgen 1996)

Restoration Features

Vegetation



Stream Stabilization

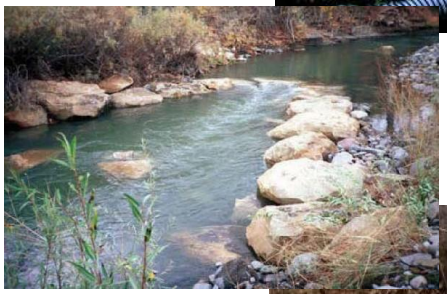
Dam Removals

Stream Stabilization Practices

1. Bank and Toe Protection

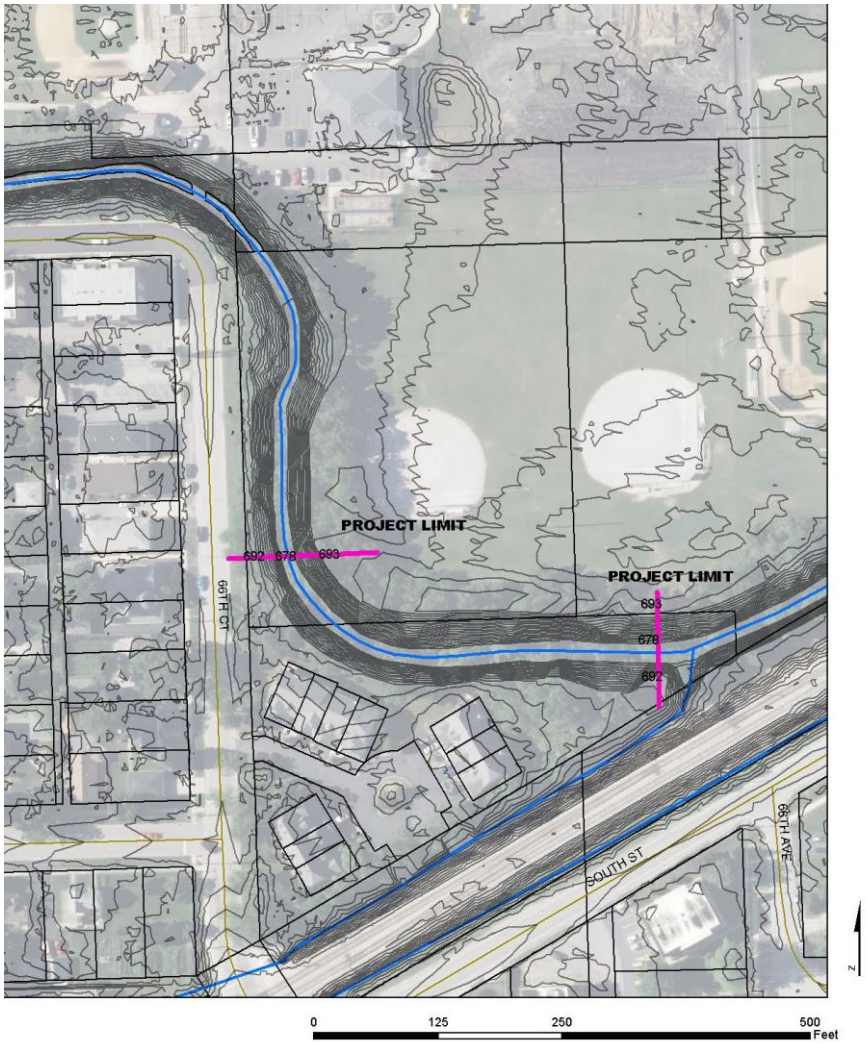
2. Bank Stabilization

3. Grade Control Structures



4. Flow Deflection Structures

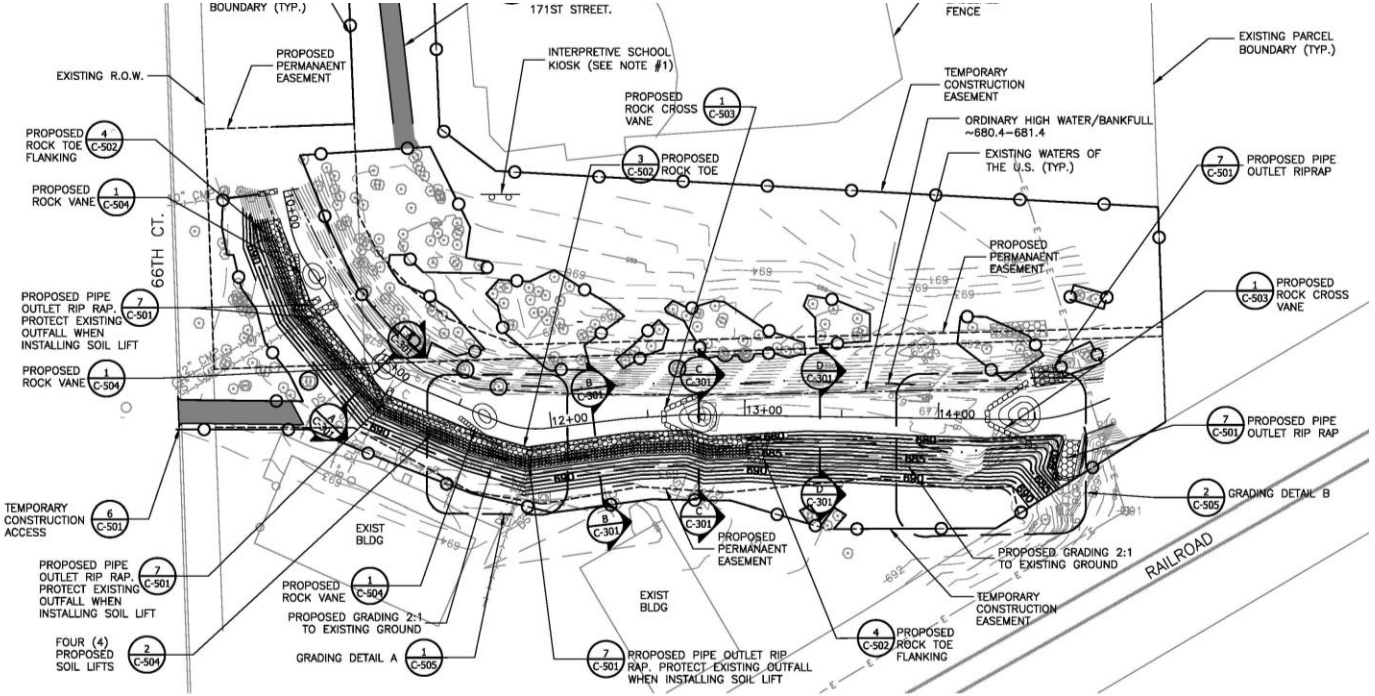
Midlothian Creek – Site Location

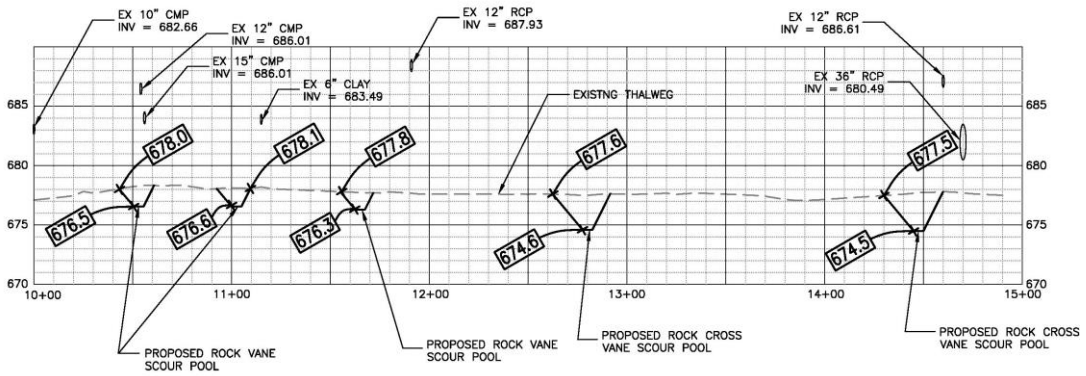


- Located in Tinley Park, IL
- Drains to the Little Calumet River Watershed
- Drainage Area: 7.8 sq. mi.
- 500 Linear Feet of Creek Restoration
- Issues: Unstable Slopes and Bank Erosion

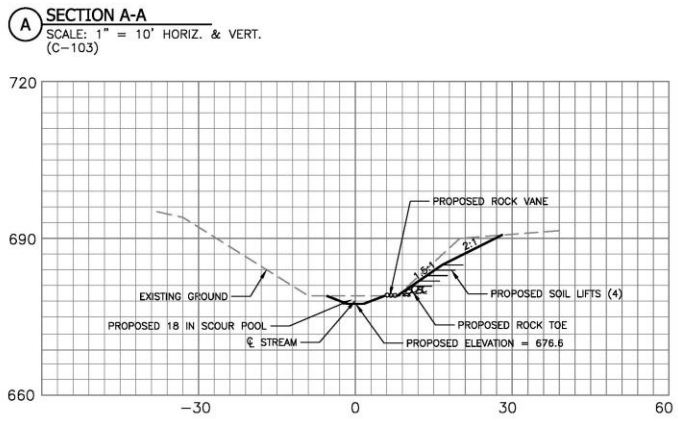
Midlothian Creek - Photos

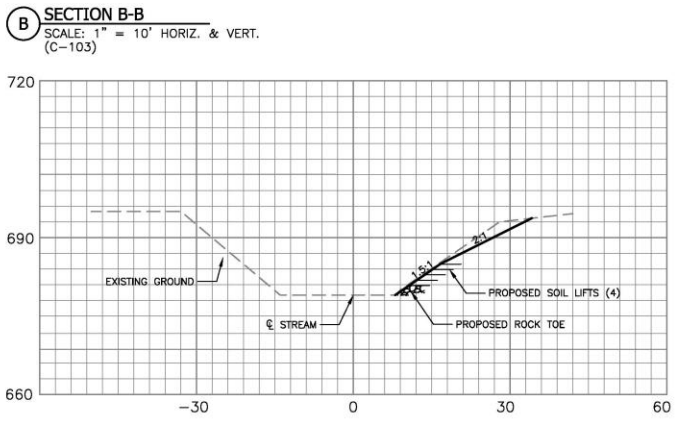
Midlothian Creek – Site Plan & Profile

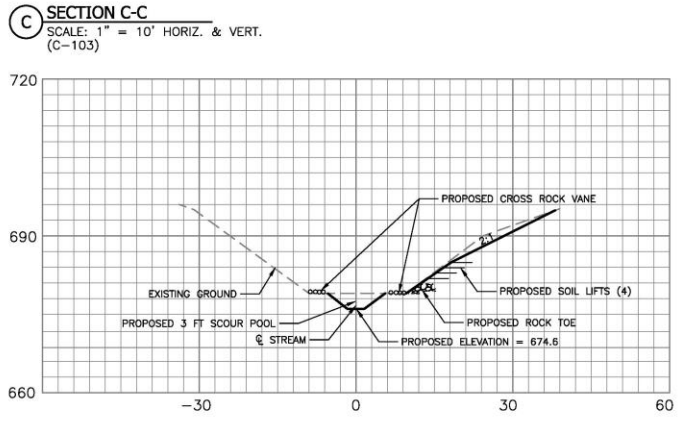


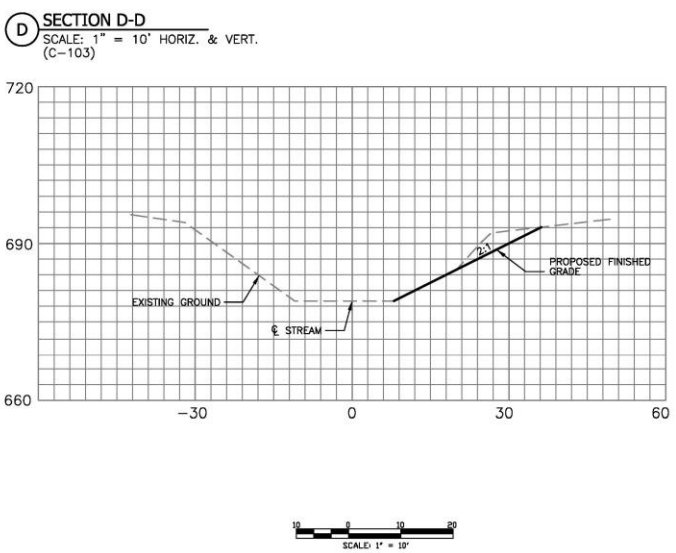


Midlothian Creek – Cross Sections

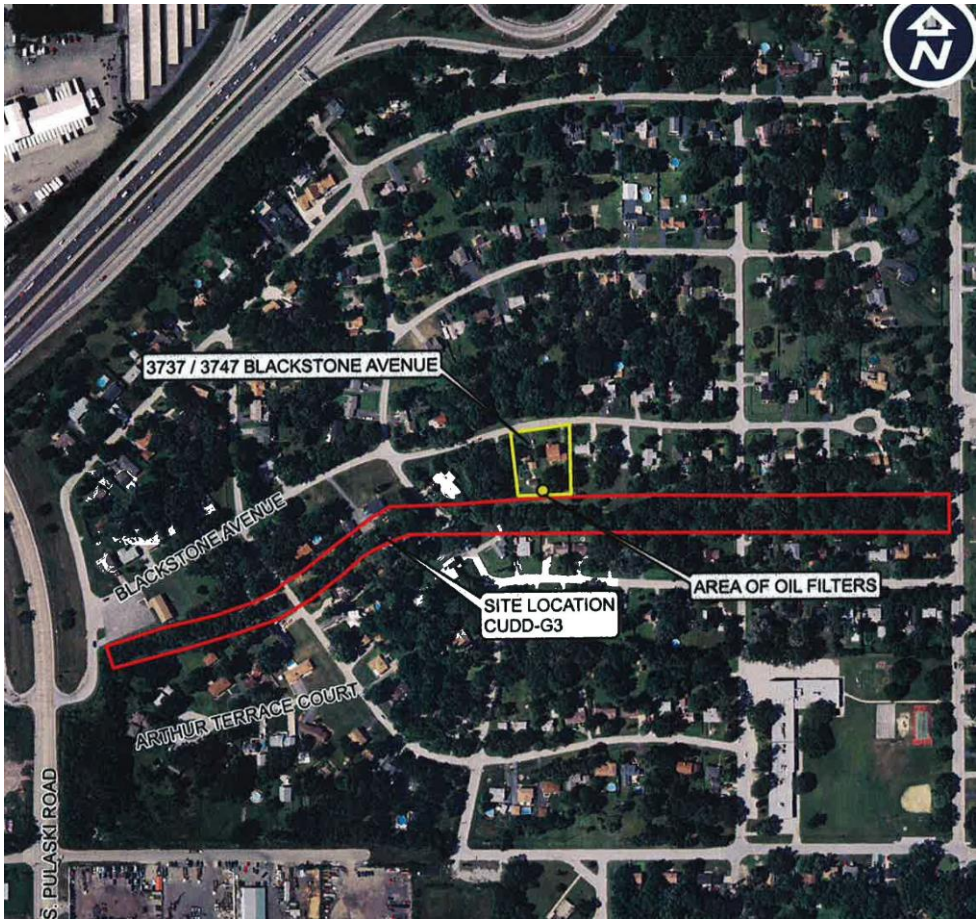








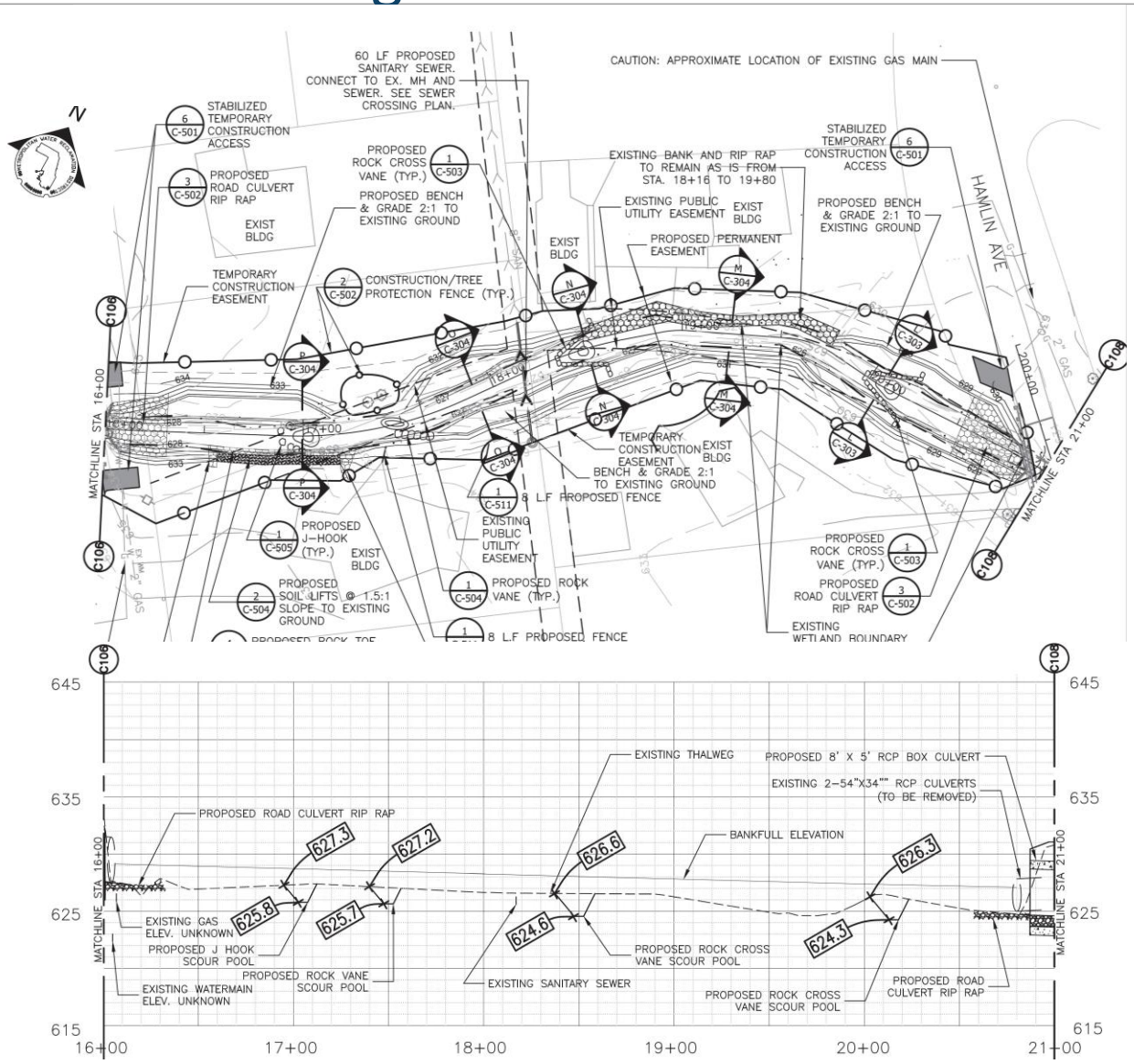
Calumet Union Drainage Ditch – Site Location



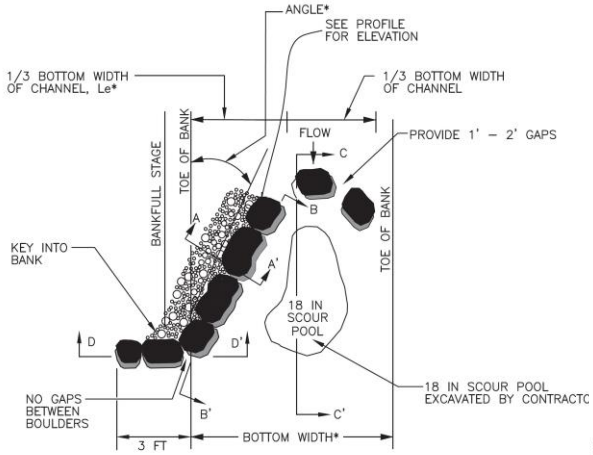
- Located in Markham, IL
- Drains to the Little Calumet River Watershed
- Drainage Area: 0.4 sq. mi.
- 2,500 Linear Feet of Creek Restoration
- Issues: Bank Stability and Flooding

Calumet Union Drainage Ditch - Photos

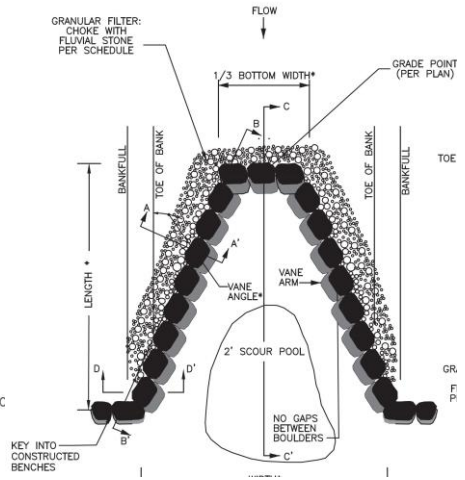
Calumet Union Drainage Ditch - Site Plan & Profile



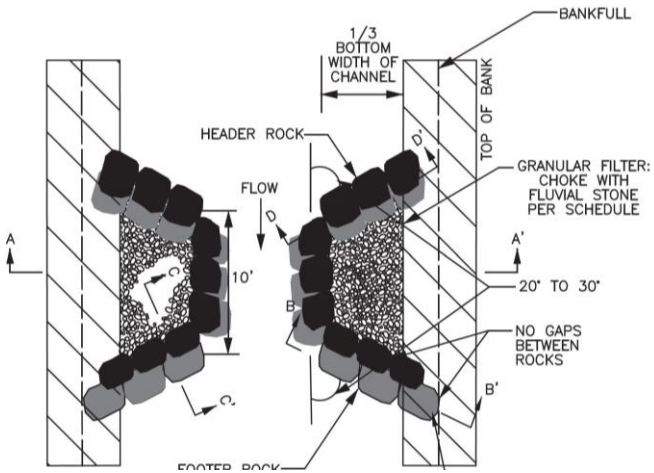
Calumet Union Drainage Ditch – Stabilization Details



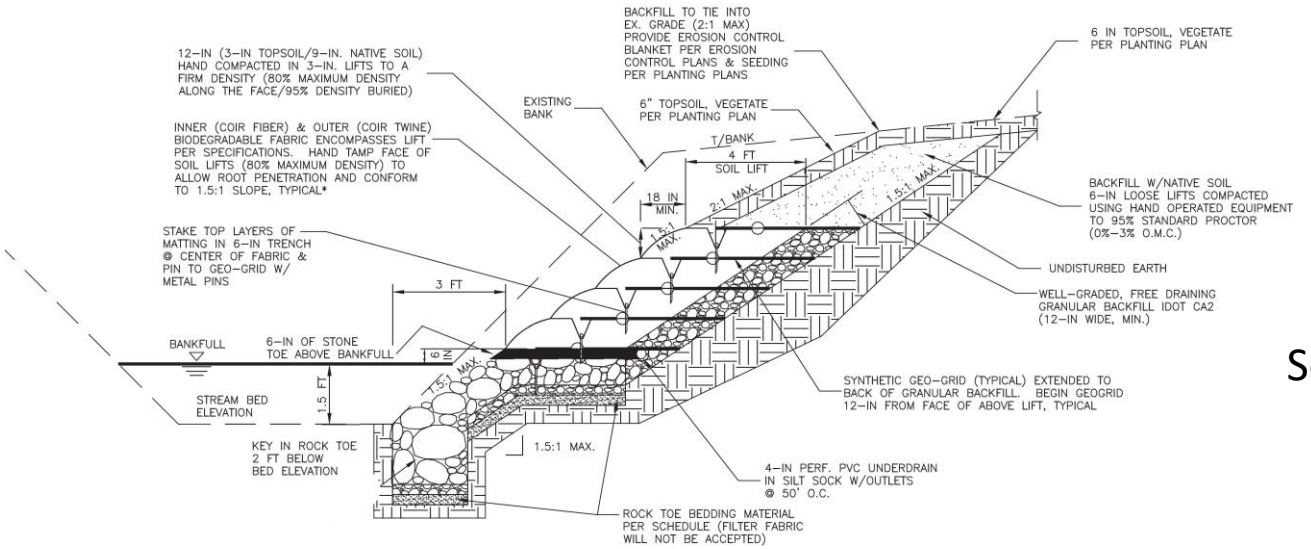
J-Hook



Rock Cross Vane



Double Wing Deflector



Soil Lift

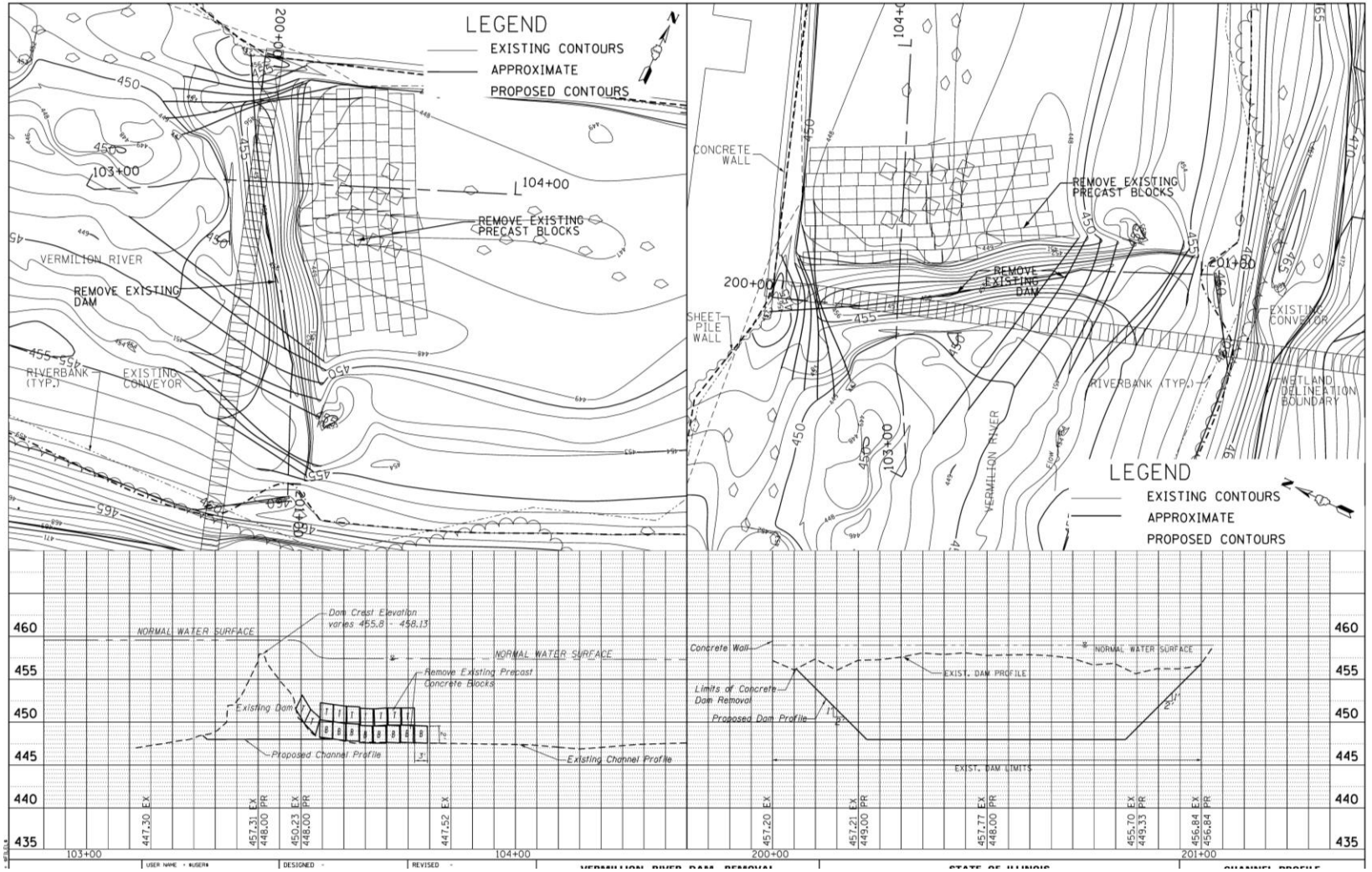
Vermillion River Dam Removal – Site Location

Dam Located in Oglesby, IL

Vermillion River Dam Removal – Soil Borings

Soil Boring Locations

Vermillion River Dam Removal – Plan & Profile



Summary

- Midlothian Creek stream restoration project addresses bank stability and erosion problems for 500 linear feet of stream using bio-engineering and in-stream structures.
- Calumet Union Drainage Ditch stream restoration project addresses bank stability and flooding problems for 2,500 linear feet of stream using bio-engineering, in-stream structures, bankfull benches, and culvert upsizing.
- Vermillion River Dam Removal project returns the river to its natural state prior to the dam.

QUESTIONS?

Thank You!

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