



National and International Experience with Green Noise Barriers

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Outline

- Review of available green noise barriers
- Green noise barrier questionnaire
- Past experience with green noise barriers
- Concluding remarks
- Questions



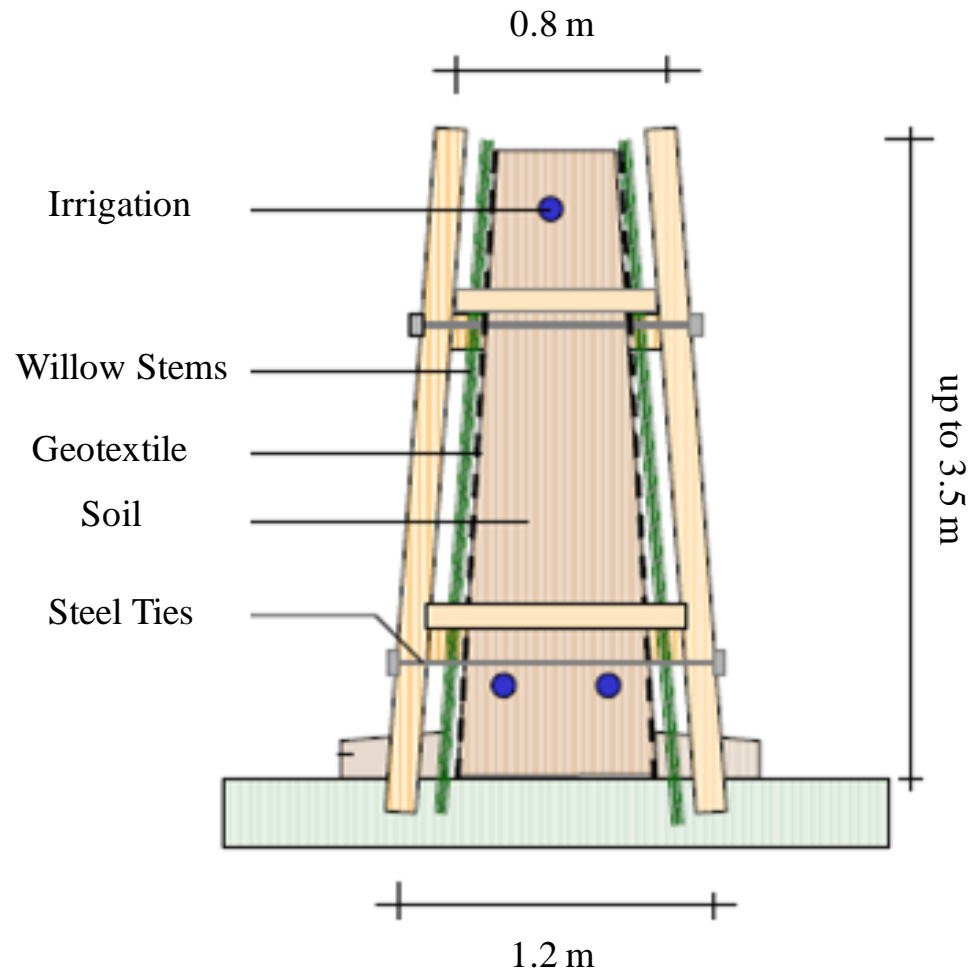
Review of Available Green Noise Barriers



Green Noise Barriers

- The Living (Willow) Wall
- PileByg
- Criblock
- Timbergrid
- Evergreen
- Recywall
- Supported Earth Embankments
- Deltalok

The Living (Willow) Wall



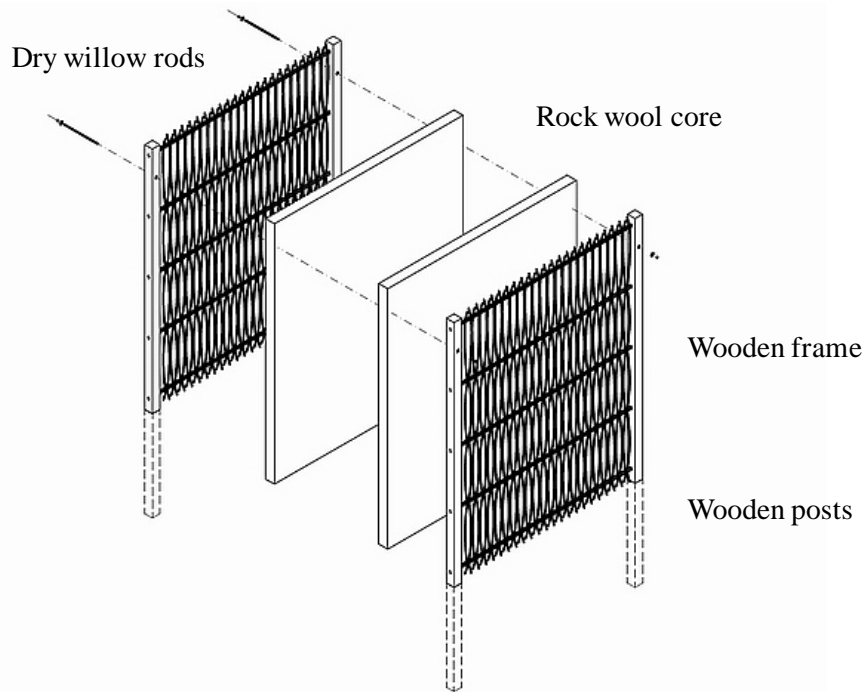
The Living (Willow) Wall



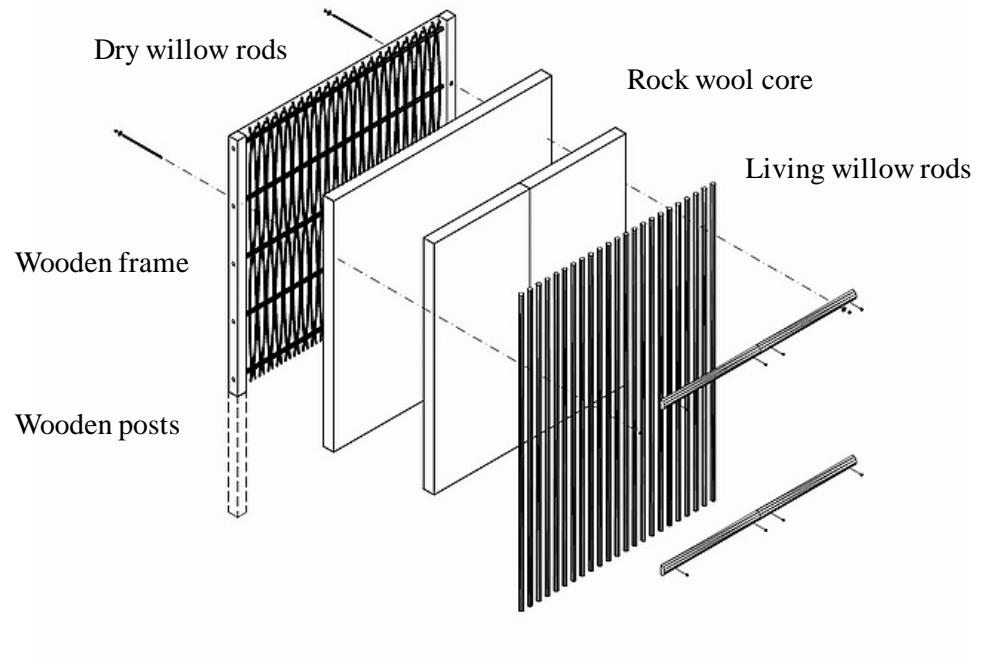
The Living (Willow) Wall



PileByg



Dry PileByg



Living PileByg

Dry PileByg



Dry PileByg



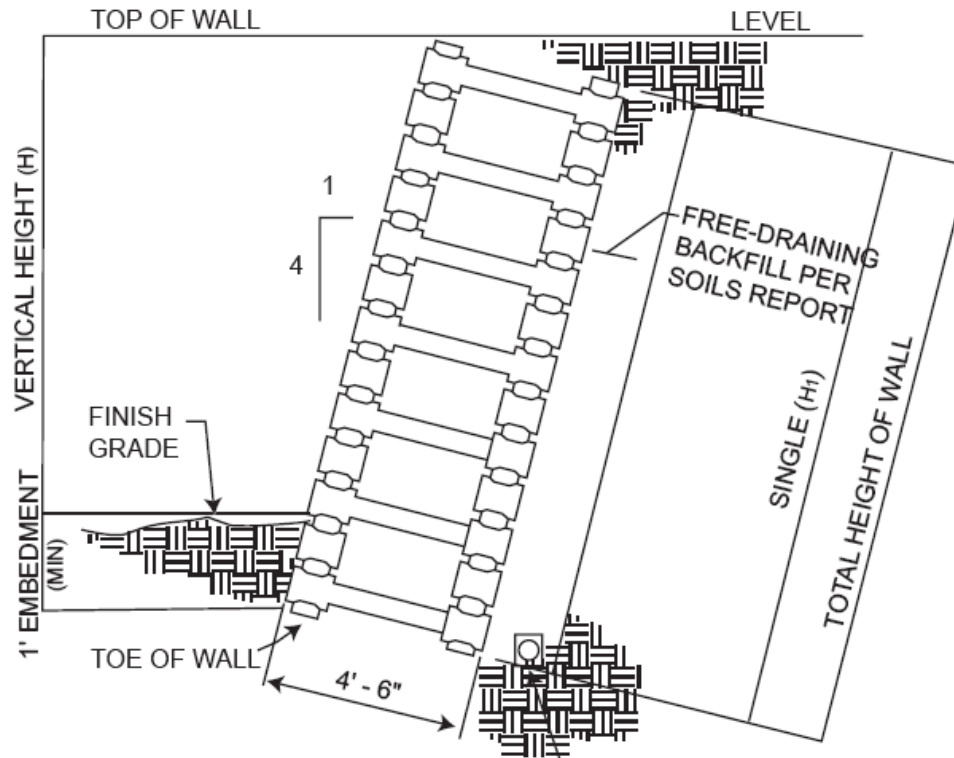
Living PileByg



Living PileByg



Cribblock

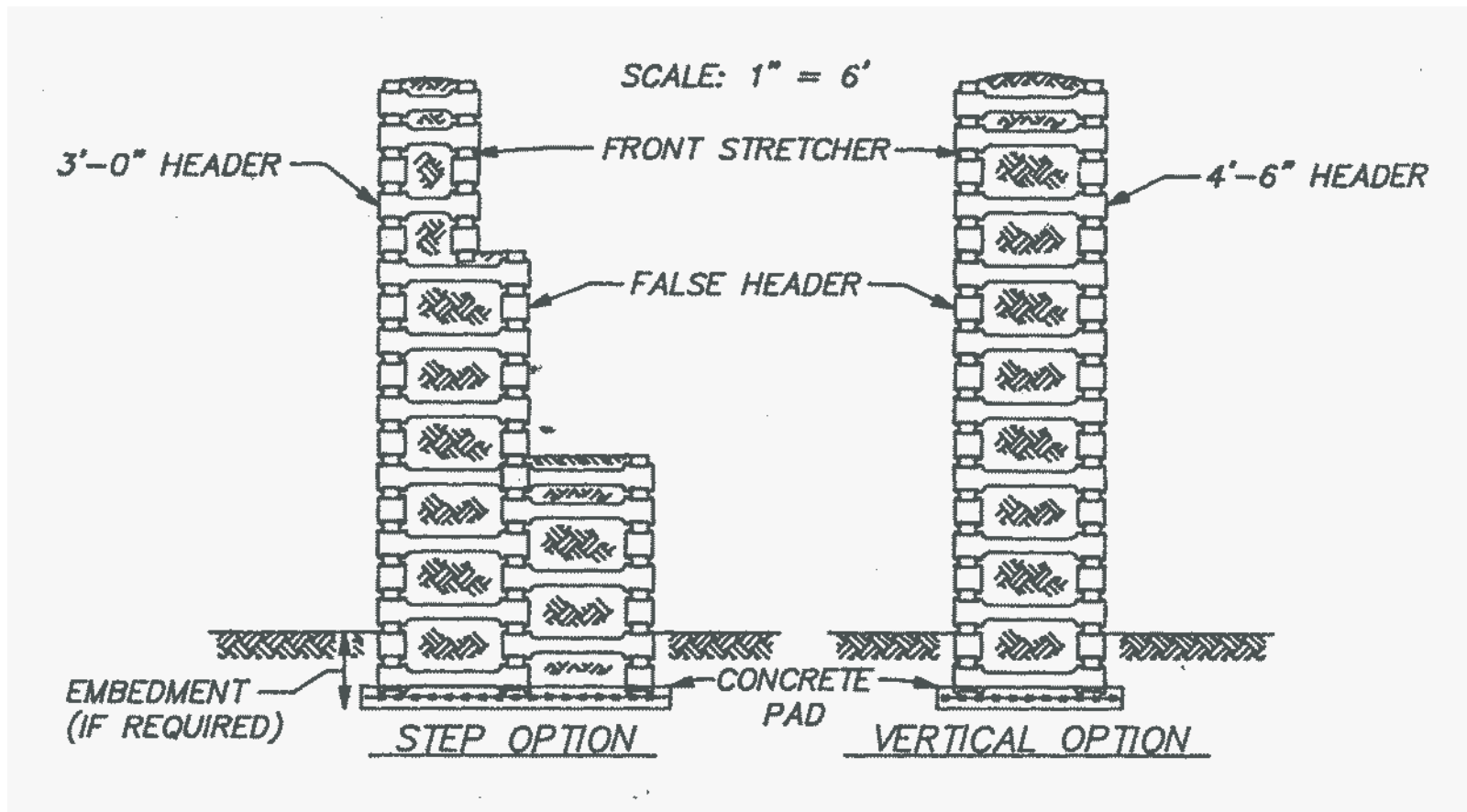


DRAINAGE TO BE SPECIFIED BY SOILS ENGINEER. MANUFACTURER ADVISES AS A MINIMUM A 4 INCH PERFORATED PVC SUBDRAIN ENCASED IN 3 CU. FT./FT. OF 3/4" CRUSHED ROCK WRAPPED IN A FILTER FABRIC.

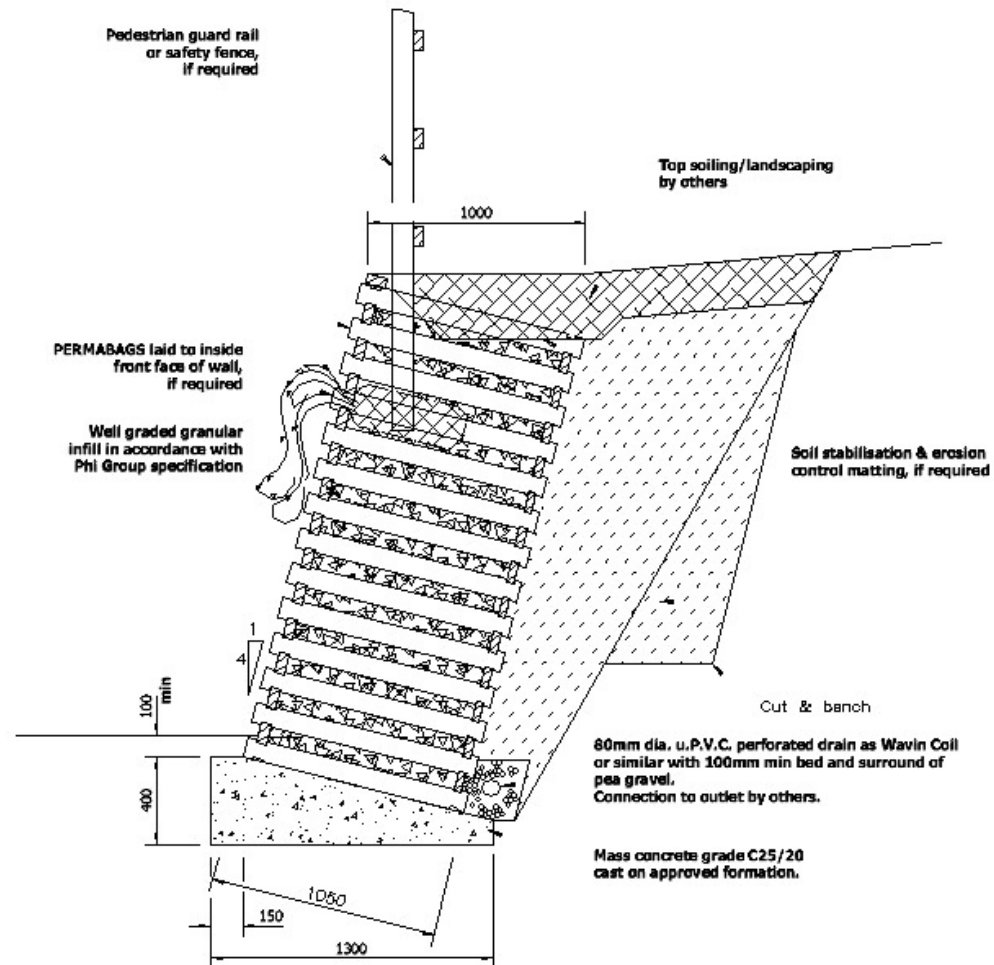
Cribblock



Cribblock



Timbergrid



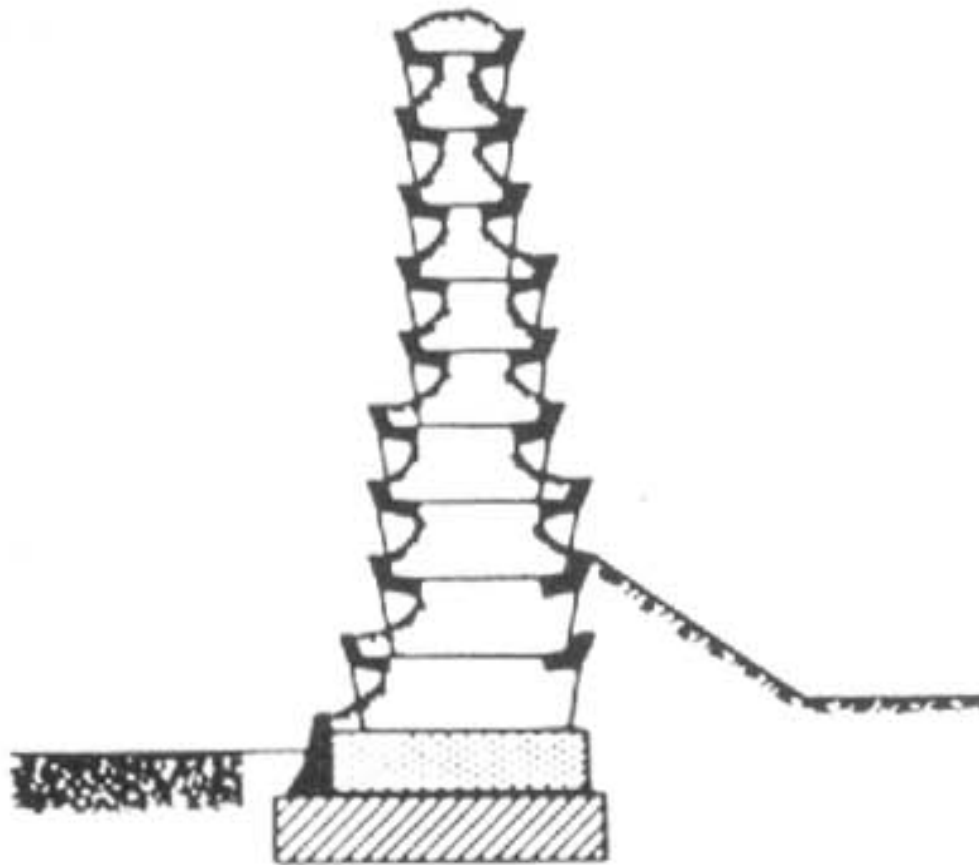
Timbergrid



Timbergrid



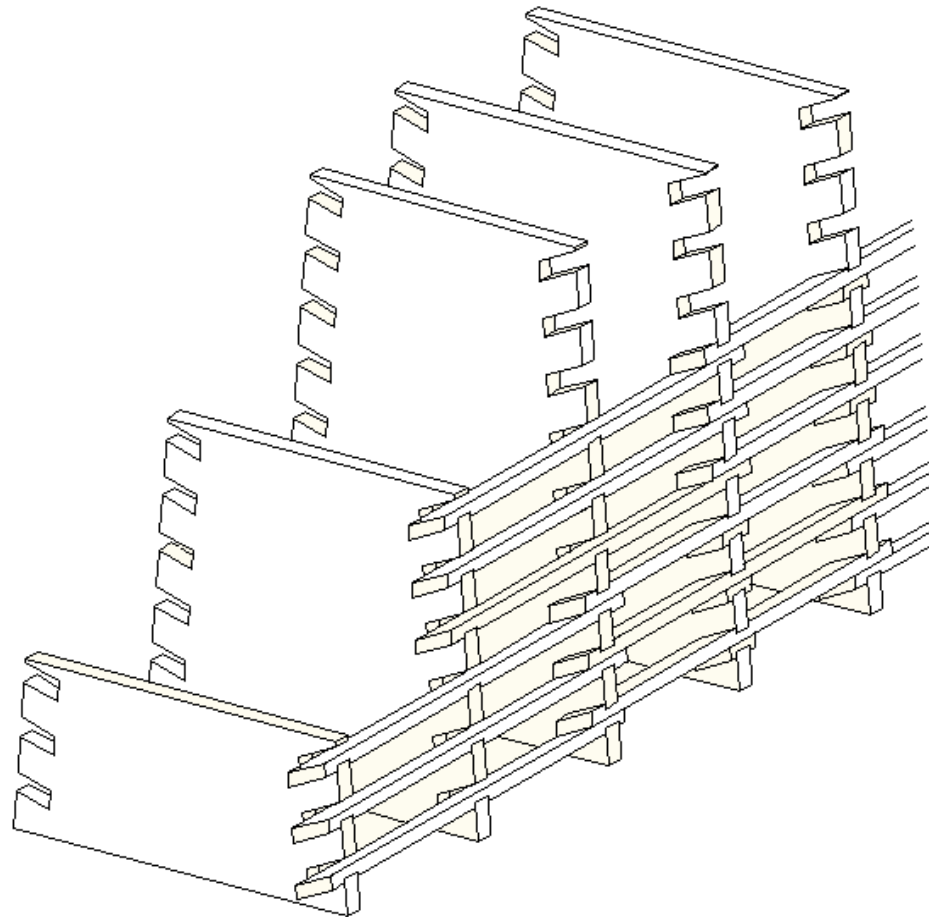
Evergreen



Evergreen



Recywall



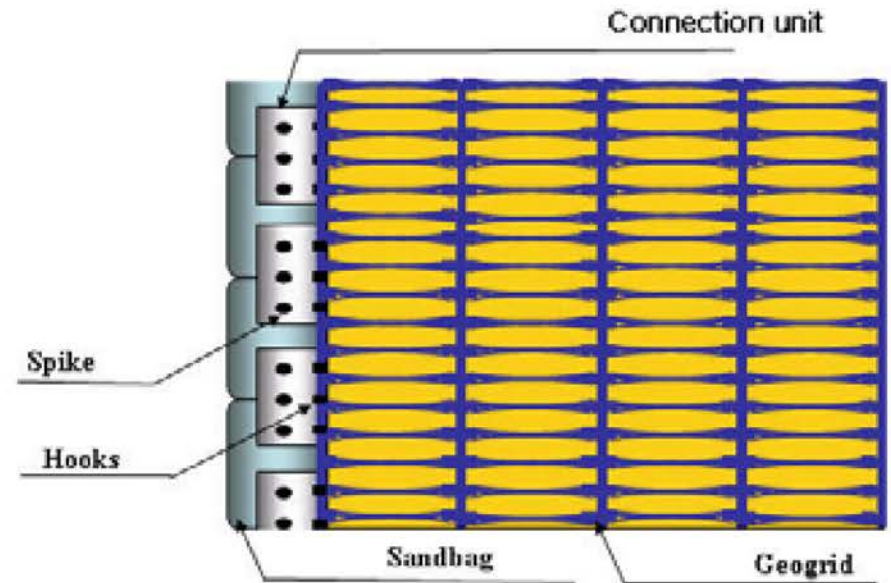
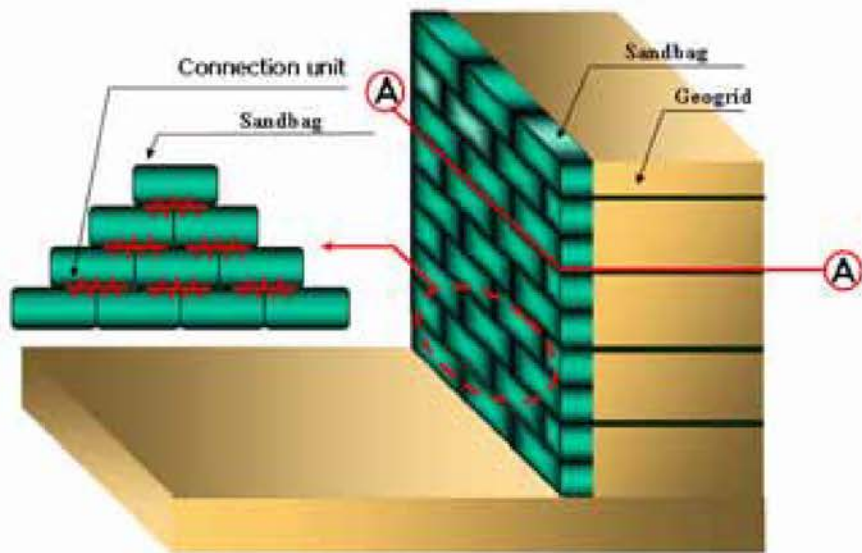
Supported Earth Embankments



Supported Earth Embankments



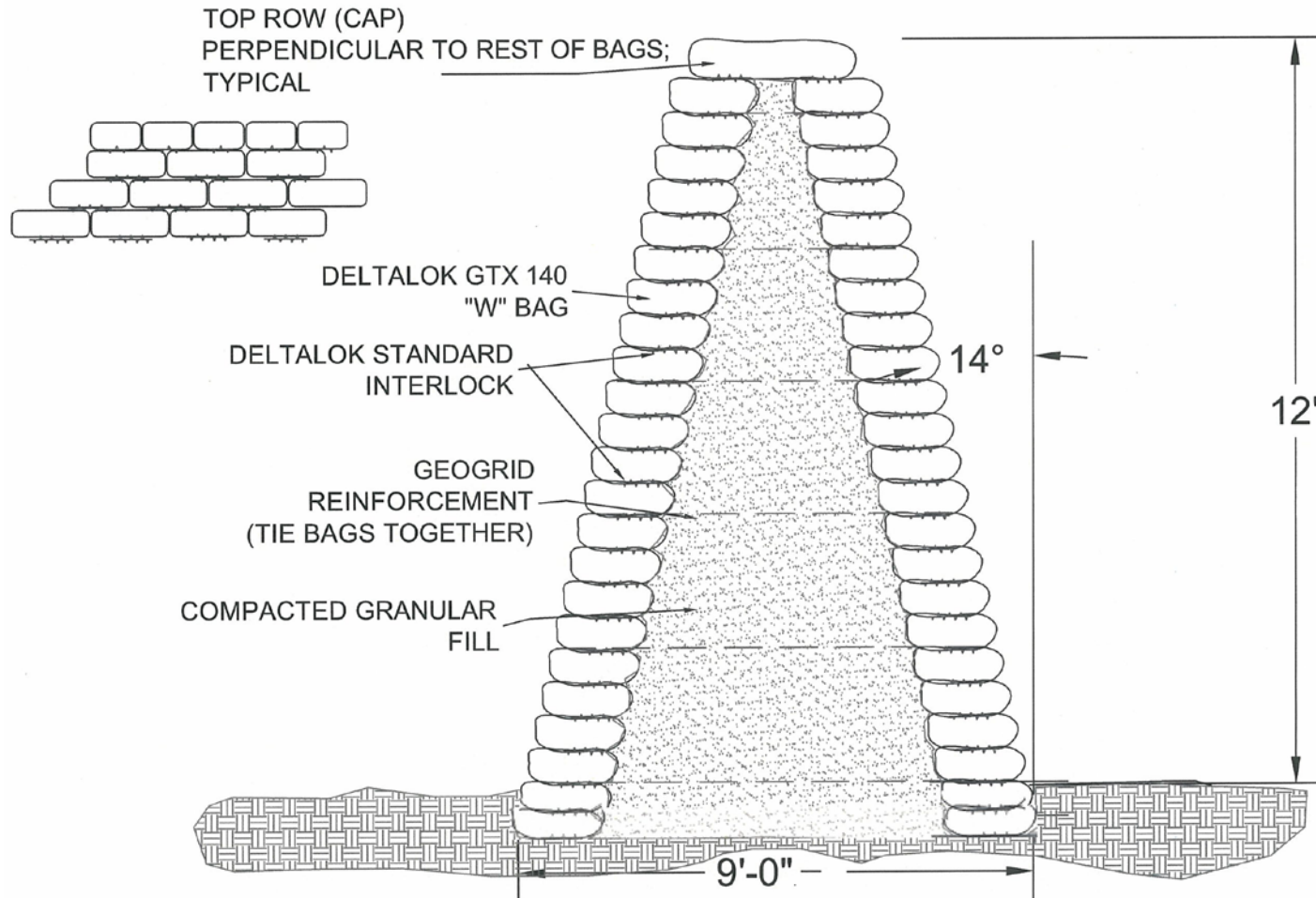
Deltalok



Deltalok



Deltalok



Deltalok



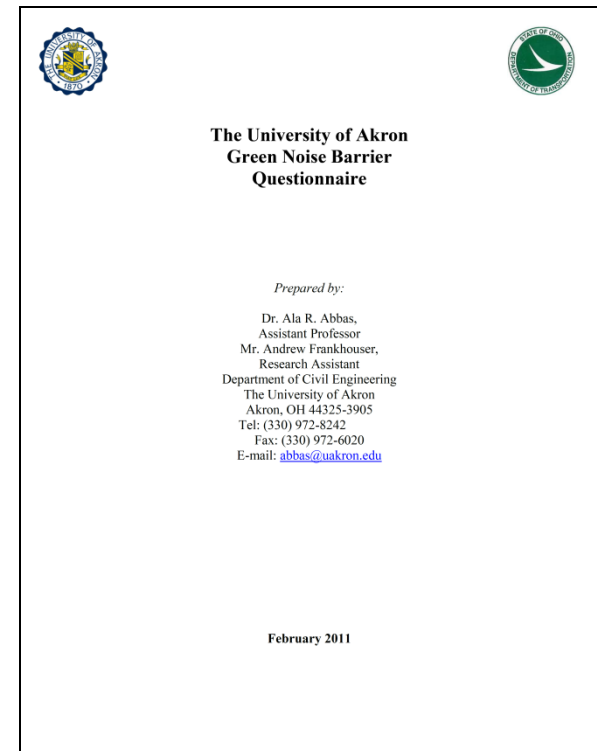
Rendering by Ohio DOT



Green Noise Barrier Questionnaire

Green Noise Barrier Questionnaire

- Sent out to more than 300 experts in traffic noise
- Five main sections:
 - General information
 - Preconstruction
 - During construction
 - Post construction
 - Additional information
- Written responses/
follow-up phone questions





Past Experience with Green Noise Barriers



The Ontario Experience

- Many green noise barriers have been constructed in the Province of Ontario, Canada using the [Living \(Willow\) Wall](#) design
- Most of these barriers were constructed very recently
- Furthermore, none of these barriers were constructed along a major highway
- Therefore, their performance may not reflect how they would perform along a major highway

The New Hampshire Experience

- **Three green noise barriers** constructed in the early 1990s:
 - The first barrier was constructed in 1992 in Manchester, NH along I-93
 - The other two barriers were constructed shortly thereafter in the Nashua, NH
- All three barriers were constructed using the **Evergreen** concrete planter design

The New Hampshire Experience

- The Manchester barrier:
 - Length: 1700 ft
 - Height: 8 to 24 ft
 - Orientation: North-South
 - Cost: \$950,000
 - Noise level: 75 dBA (before) and 65 dBA (after)
 - Still in service

The New Hampshire Experience



The New Hampshire Experience



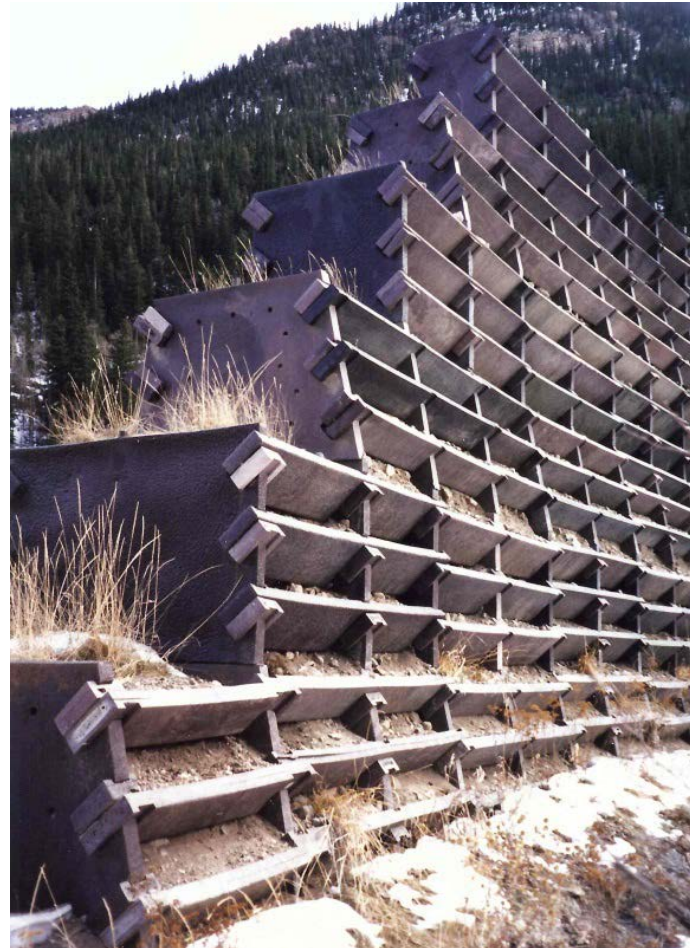
The Colorado Experience

- A green noise barrier was constructed along I-70 in Silver Plume, CO in 1994
- The barrier was constructed under the Colorado Type II noise barrier program
- It was constructed using **recycled plastic**
- From the description provided, it seems that it utilized a similar technology to that of the **Recywall**

The Colorado Experience

- The Silver Plume barrier:
 - Mountainous location
 - Length: 1200 ft
 - Height: 9 to 14 ft
 - Orientation: East-West
 - Target noise reduction: 5 dBA (old CDOT optimization standard)
 - Still in service

The Colorado Experience





The Wisconsin Experience

- A green noise barrier was constructed along I-94 in Milwaukee, WI in 1994
- The barrier was constructed using the Recywall design that uses recycled plastic
- This project was part of a formal research study led by WisDOT in collaboration with HNTB

The Wisconsin Experience

- The Milwaukee barrier:
 - Length: 520 ft
 - Height: up to 21 ft
 - Orientation: North-South
 - Target noise reduction: 8 dBA
 - Cost: \$395,000 (\$285,902 for structure and \$109,981 for vegetation)
 - Not in service

The Wisconsin Experience



The Wisconsin Experience





Concluding Remarks

Concluding Remarks

- Several concerns have been raised regarding the performance of green noise barriers
- Main concerns include:
 - The ability to capture and retain moisture
 - The ability to incorporate suitable vegetation
 - The ability to resist erosion
 - The height limitations of the barrier
- Vegetated retaining walls have mainly been successful in geographic regions with moderate climates and abundant moisture



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Questions ?

