LIVING SOUND WALLS

OTEC 2015
NOEL ALCALA, PE
ODOT NOISE COORDINATOR
LIVING SOUND WALL TERMS

- Living Sound Walls (LSWs)
- Earthen Berms
- Earthen Mounds
- Sound Mounds
- Green Noise Barriers
EXISTING ODOT LIVING SOUND WALLS
# LIVING SOUND WALLS
## THE NATIONAL PICTURE
*(SOURCE: FHWA NOISE BARRIER INVENTORY)*

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>NATIONAL %</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONCRETE/BLOCK/BRICK</td>
<td>85%</td>
</tr>
<tr>
<td>WOOD</td>
<td>7%</td>
</tr>
<tr>
<td>OTHER</td>
<td>3%</td>
</tr>
<tr>
<td>METAL</td>
<td>3%</td>
</tr>
<tr>
<td>BERM</td>
<td>2%</td>
</tr>
</tbody>
</table>
LIVING SOUND WALLS
THE NATIONAL PICTURE
(SOURCE: FHWA NOISE BARRIER INVENTORY)

- Washington, Colorado, Oregon
- 96% Constructed Pre-1999
- 4% Constructed Post 1999
- Only 5 States Have Constructed Berms As Noise Barriers Post 1999 (Including Ohio)
ODOT’S STANDARD NOISE WALL MATERIALS
EXISTING ODOT LIVING SOUND WALLS
SUM-77 CANTON
EXISTING ODOT LIVING SOUND WALLS
MIA-75 TROY
EXISTING ODOT LIVING SOUND WALLS
FRA-270/70 EAST SIDE COLUMBUS
EXISTING ODOT LIVING SOUND WALLS
MRW-71 NEAR MARENGO
EXISTING ODOT LIVING SOUND WALLS
CUY-480
EXISTING LIVING SOUND WALL TECHNOLOGIES THAT WE KNOW OF

- 3:1 SLOPE $
- 2:1 SLOPE $
- 1:1, 1.5:1 SLOPE GEOGRID $$
- GREENLOXX $$$
- GEOCELL/DEFENCELL (STeeper THAN 1:1) $$$$
- DELTALOK (STeeper THAN 1:1) $$$$$
LIVING SOUND WALLS
GEOGRID TECHNOLOGY (SS863)
LIVING SOUND WALLS
GEOCELL/DEFENCELL TECHNOLOGY
LIVING SOUND WALLS
DELTALOK TECHNOLOGY
LIVING SOUND WALLS
GREENLOXX TECHNOLOGY
LIVING SOUND WALL BENEFITS

- Earthen mound will perform better acoustically
- Better choice for ODOT for short term and long term maintenance
- Construction cost is cheaper so we’re saving taxpayer dollars
- Life cycle cost is significantly cheaper than standard noise wall
- Earthen berm absorbs air pollutants from vehicles
- It’s green which is what the overall public and green groups want
- No issues or risk relative to manufacturing and transporting materials
- Material deterioration is a non-issue
- Graffiti is a non-issue
- Efflorescence (that occurs with concrete walls) will never be an issue
- Damage from vehicle strikes will never be an issue
LIVING SOUND WALL BENEFITS

- It’s non-invasive to the earth. No drilling/augering.
- No need for crane equipment
- No need to survey public for color and texture
- Material sourcing can be local
- Provides habitat for native plant and animal species
- A berm increases/has a neutral impact on property values vs a concrete wall
- A berm is more aesthetic when looking from your back deck/patio
- Feeling of openness is preserved on the resident’s side
- ODOT’s traffic noise manual- if feasible to construct and meets the recommendations in the noise analysis, the living sound wall is the first choice
LIVING SOUND WALL CHALLENGES

- Space for wall limits and room to construct Potential ecological impacts
- Underground utilities
- Tower lighting
- Drainage concerns
- Clear zone considerations and policies
- Vegetative choices for unmowable LSWs
- Desire to mow
- Recognition in the analysis/design phases if LSW is feasible
- Changing the culture and thought process (out of the box)
- Opportunities will be limited
- Waste area identification; berm opportunity?
UPCOMING LIVING SOUND WALL RESEARCH FY2016

- Determine all benefits (cost, etc) of earthen berm of various heights and slopes compared to similar height concrete barriers with a focus on acoustics. 35 private berms to be tested
- Benefitting from another option for a noise barrier
- Currently very little data and research about the acoustic benefit of earthen berms compared to concrete and fiberglass.
UPCOMING ODOT LIVING SOUND WALL PROJECTS
THANK YOU FOR ATTENDING!!
QUESTIONS, COMMENTS?

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LIVING SOUND WALL IN SLOVENIA