

JUSTIFICATIONS FOR ALLOWING 12" ECOWATTLE ORIGINALS IN PLACE OF 18" STRAW LOGS

Request: To allow contractor to use 12" EcoWattle Original (wood chip) erosion control logs (11222048) in place of 18" erosion control logs as specified in plans (11222049).

Assumptions:

- 18" erosion control logs are invariably made with a straw or other low-weight material.
- The reason for specifying 18" erosion control logs instead of 12" logs is the engineer's belief that 12" logs do not have the height and thickness to perform adequately. The proposed change reflects that the field proven performance of 12" EcoWattle Originals achieves or surpasses 18" straw logs.
- 12" EcoWattle Original erosion control logs are manufactured with wood chip (mulch) core material and weigh 10 - 11 pounds per linear foot as compared to 2 – 3 pounds per linear foot for 18" straw logs.

Durability

One key to measuring erosion control log performance is for the log to work properly during its first rain event and maintain its functionality during many more rain events with a functional duration of at least three years. EcoWattle Originals conform to the terrain preventing undermining immediately. The wood chips in EcoWattle Originals will easily last that three years and the netting is manufactured to degrade in 36 – 48 months. Straw will not hold up for 36 months.

Flow-through – why the need for log height beyond 12" is core material dependent.

EcoWattle Originals work by reducing the water flow rate creating some temporary ponding, which allows the sediment and suspended solids to settle behind the logs. As the water flows through the EcoWattle, still suspended sediment and particulates are filtered by the mulch, which has been designed to promote the filtration.

Straw logs often collapse and mat – upon becoming saturated, the flow through properties of straw logs are greatly reduced. This increases pooling, which creates the appearance that the 18" height is needed.

This is critical – there is a point at which the height of the erosion control log becomes less important than the core material. The proper core material will

allow sufficient flow through to keep the ponding from overflowing in all but extreme rain events.

EcoWattles do not collapse or mat; they maintain their flow-through rate, minimizing the risk of overflow.

Floating / Undermining – a serious erosion and sediment control issue.

An erosion control log must conform to the terrain to prevent floating and undermining. A lightweight log requires staking and should be placed in a trench. A heavy, flexible log cannot float and naturally conforms to the terrain; it does not require trenching and requires staking only on mid-slope locations.

Straw logs are light. According to the website of one of the leading manufacturers of straw logs, their 20" x 10' straw logs weight 2.5 lbs per foot. Their 12" x 20' logs weigh 2 lbs per foot.

<http://www.landmsupplyco.com/ErosionControlBlankets.html> - scroll down to straw wattles)

The low weight of straw logs means that to prevent undermining, straw logs need to be properly staked through the log to prevent them from "floating". See the Straw Logs installation instructions at L & M's website. The manufacturer recommends staking AND trenching to avoid undermining; trenching is not required by TxDot specifications. Even when properly staked with stakes at 4' centers, undermining is predictable between the stakes.

Because of their weight, about 10 - 11 pounds per linear foot, 12" EcoWattle Originals do not require staking or trenching to prevent undermining (staking is necessary only for mid-slope locations to prevent movement during heavy rain events).

Straw logs are manufactured to be fairly rigid for shipping – the low mass enables them to be coiled on a pallet, a shipping method, which will not work if the height of the logs is inconsistent. This rigidity prevents the straw logs from easily conforming to the terrain. 12" EcoWattle Originals are purposefully manufactured to be flexible so that they immediately conform to the terrain. EcoWattles are shipped on 4' x 10' pallets; 12" EcoWattle Originals are straight during shipping. (The high mass of the wood chips doesn't allow easy coiling.)

Positive results in the field –

Several TxDot Area Engineers have experience with allowing 12" EcoWattle Originals on projects after approving change order requests. Here are two – Patrick Ryan in Jasper (409-384-9096) & Bill Reitman in Corpus (361-364-6402).