

- NOTES:
- Utilize CAP ALTERNATIVE 1 for the bioreactor chamber unless traffic over the top is anticipated.
 - For CAP ALTERNATIVE 2, fill the area above the bioreactor chamber with soil, tamped for compaction. Use topsoil for at least the top 6" Vegetate according to Conservation Practice Standard 342 unless the area is to be cropped.
 - Set bottom of bioreactor chamber to drain towards entrance end.
 - Line bottom and sides of bioreactor chamber with black plastic, minimum 4 mil thickness. Overlap any splices at least 6 inches. Wrap plastic carefully around tiles that enter/exit the chamber; no need to seal around tiles.
 - Route supply line to centerline of entrance end of bioreactor chamber.
 - Wood chip media must be reasonably free from dirt, fines, and other contaminants. Do not use oak, cedar or redwood chips because of their tannin content. Do not use treated wood chips.
 - Obtain approval of engineer on the wood chips prior to installation.
 - Geotextile (non-woven, needle punched) Minimum criteria:
 Grab tensile strength (lb) ASTM D 4632 ___ 202
 Elongation at failure (%) ASTM D 4632 ___ ≥ 50
 Trapezoidal tear strength (lb) ASTM D 4533 ___ 79
 Puncture strength (lb) ASTM D 6241 ___ 433
 Ultraviolet light (% retained strength) ASTM D 4355 ___ min 50
 Apparent opening size (AOS) ASTM D 4751 ___ max 0.22 mm (US sieve size 70)
 Permittivity sec⁻¹ ASTM D 4491 ___ min 0.70
 Overlap splices at least 6 inches.
 - Grade site for positive drainage away from the bioreactor chamber. Spread spoil in designated location away from bioreactor.

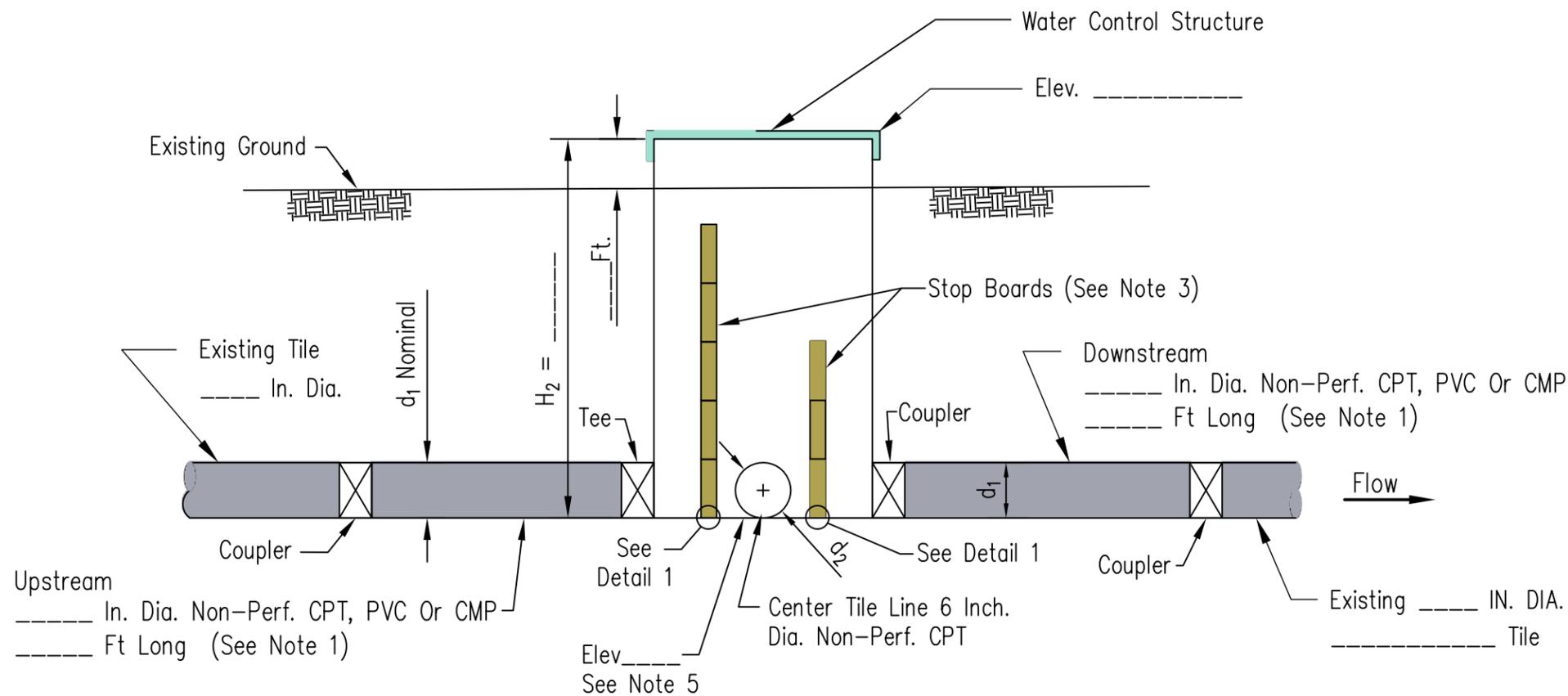
Bench Mark El. _____
 Description _____

Date	9/15/16
Designed	
Drawn	M. QUINONES
Checked	
Approved	

DENITRIFYING BIOREACTOR
 TYPE 1 - SINGLE STRUCTURE
 WITHOUT DWM

United States Department of Agriculture
 Natural Resources Conservation Service

Landowner	Location
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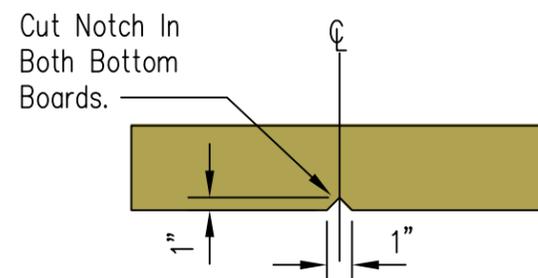


TYPICAL SECTION

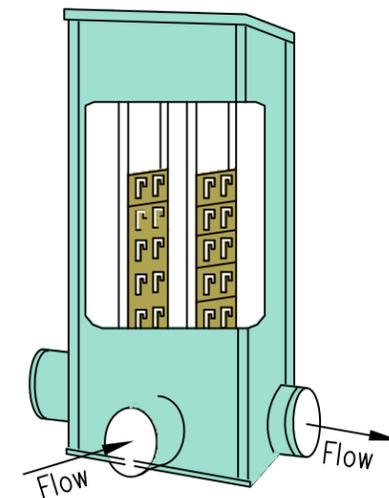
- NOTES:
1. Install a minimum of 20 feet of non-perforated tile adjacent to the water control structure, on all 3 lines: upstream, downstream and center.
 2. Couplings between the water control section and the non-perforated tile must be water tight.
 3. Stop boards must provide water tight seals under a minimum of 1 ft. pressure head (except notched boards).
 4. Mark location of structure using post or manufactured marker flag for safety in the field.
 5. Set elevation of bioreactor chamber bottom at least 0.2 feet above structure/tile flow line.

QUANTITIES*	
Water Control Structure 3 - Compartment H ₂ = _____ft. d ₁ = _____in. d ₂ = _____in.	1
___" Non-perforated Pipe (ft)	
6" Non-perforated Pipe (ft)	
___" Perforated CPT (ft)	
Tee ___" x 6"	1
Tee 6" x 6"	
Elbows 6"	
Wood Chips (cu. yd.)	
4 Mil Black Plastic (sq. yd.)	
Geotextile (sq. yd.)	
Excavation (cu. yd.)	

* Quantities Do Not Include Tile/Pipe Couplers
Or Extra Material For Geotextile/Plastic Overlap



DETAIL 1



IN-LINE CONTROL STRUCTURE

Date	9/15/16
Designed	
Drawn	M. QUINONES
Checked	
Approved	

**TYPE 1 BIOREACTOR IN-LINE
WATER CONTROL STRUCTURE
3 - COMPARTMENT**

United States
Department of
Agriculture
USDA
Natural Resources
Conservation Service

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Landowner		Location	
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