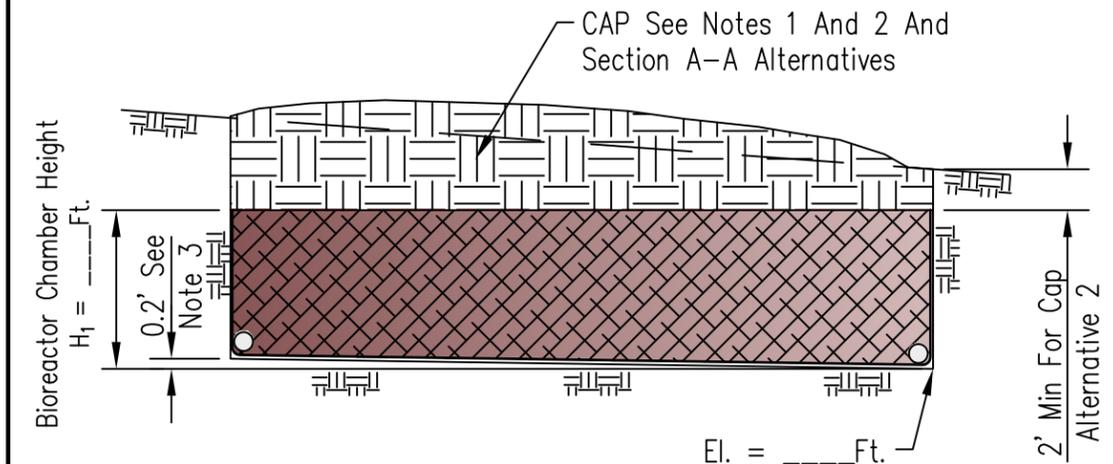
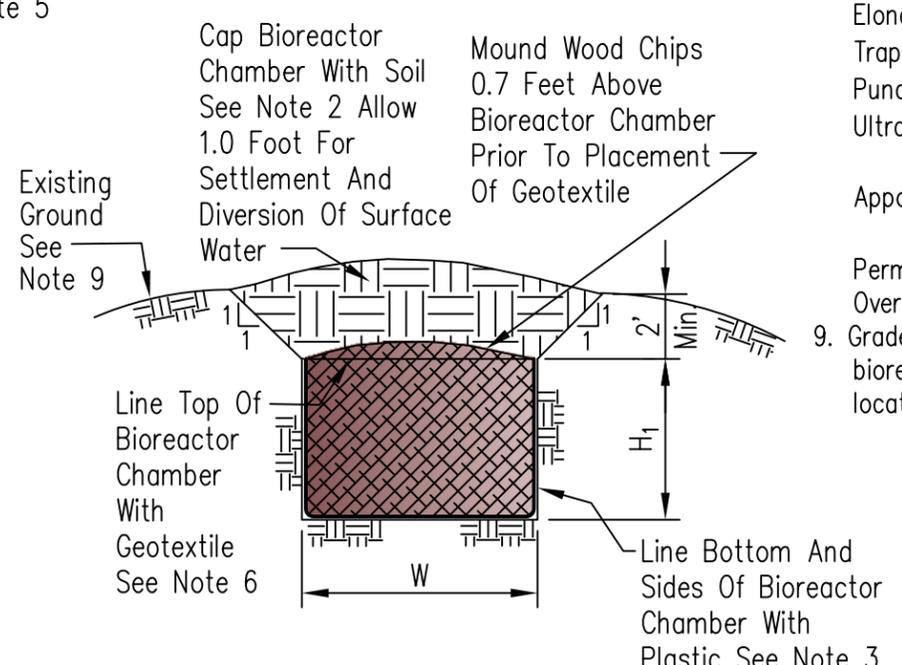


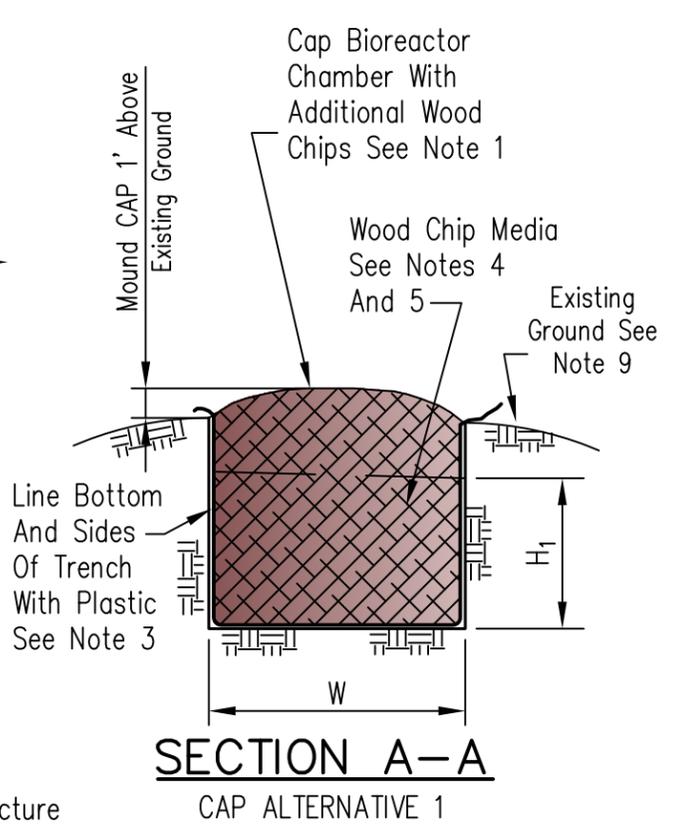
PLAN



ELEVATION



SECTION A-A
CAP ALTERNATIVE 2



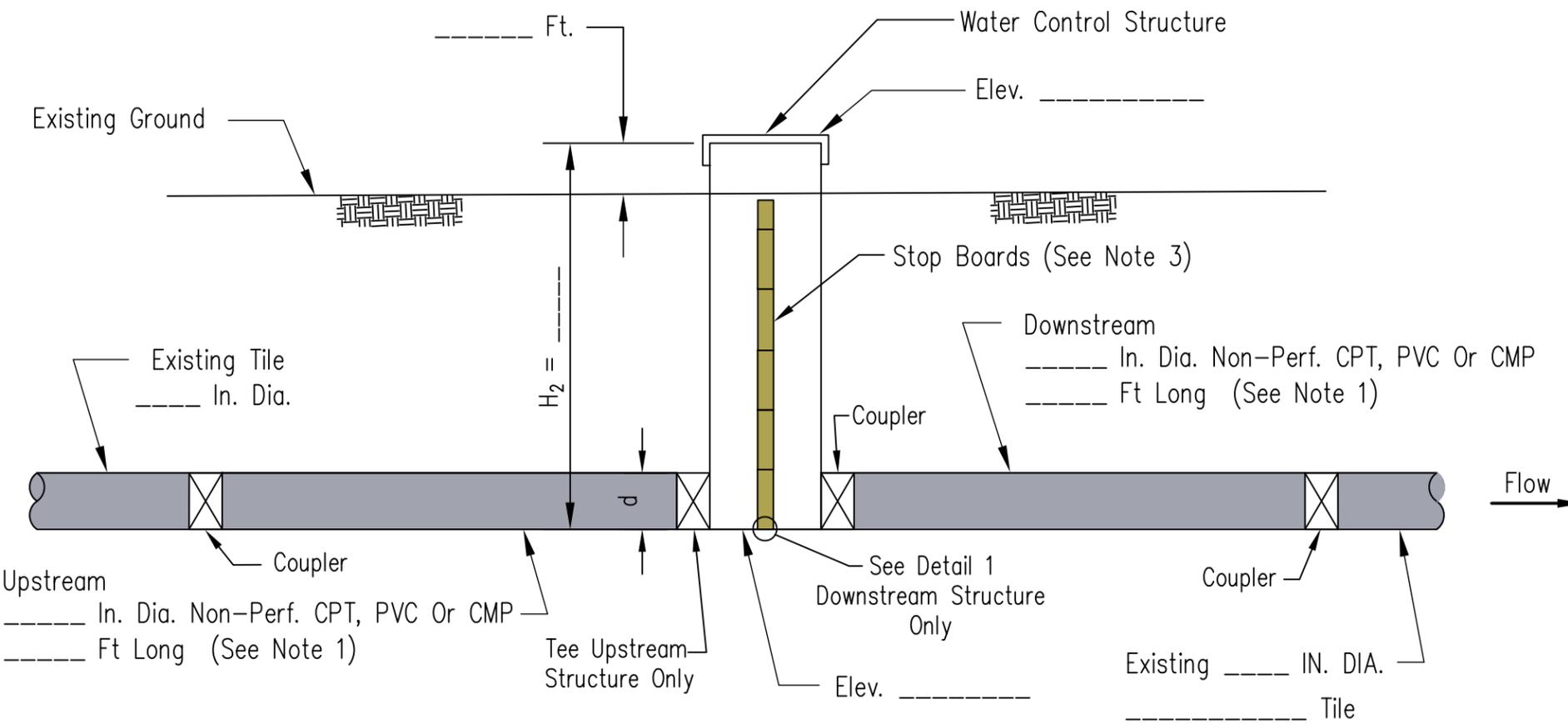
SECTION A-A
CAP ALTERNATIVE 1

- 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 exit 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 and return line from centerline of exit 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 ____ \geq 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 _____	
Designed _____	Drawn M. QUINONES 9/15/16
Checked _____	Approved _____
DENITRIFYING BIOREACTOR	
TYPE 2 - DOUBLE STRUCTURE	
WITHOUT DWM	
United States Department of Agriculture USDA Natural Resources Conservation Service	
File No. IL ENG-132	Drawing Set
Page 1 of 2	Sheet of

Landowner _____	Location _____
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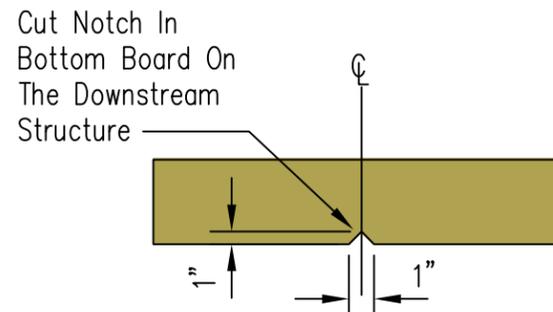
TYPICAL SECTION
EACH STRUCTURE

NOTES:

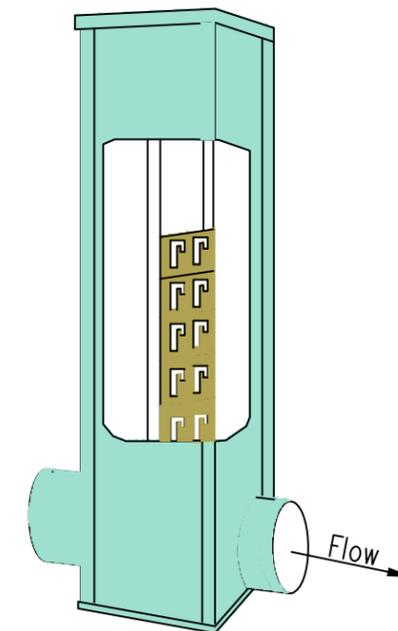
1. Install a minimum of 20 feet of non-perforated tile adjacent to the water control structure, both upstream and downstream.
2. Couplings between the water control section and the non-perforated tile must be water tight.
3. Stop boards must provide water tight seals under a minimum of 1 ft. pressure head (except notched board).
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 downstream structure/tile flow line.

QUANTITIES*	
Water Control Structure 2 - Compartment H ₂ = _____ft. d = _____in	2
___" Non-perforated Pipe (ft)	
6" Non-perforated Pipe (ft)	
___" Perforated CPT (ft)	
Tee ___" x 6"	2
Tee 6" x 6"	2
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
DOWNSTREAM STRUCTURE ONLY



IN-LINE CONTROL STRUCTURE

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

**TYPE 2 BIOREACTOR IN-LINE
WATER CONTROL STRUCTURES
2 - COMPARTMENT**



Landowner	Location
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