Upstream Inline Water Control Structure 3 - Compartment
(See Page 2)

A Minimum Of 5' Area Around Bioractor Chamber Not To Be Disturbed Except For Pipe Trenching

"x 6"

Flow

Existing Tile Line

Flow

End Cap

A

5

Typical

Tee

Tee

Collection Manifold 6" Perforated CPT

6" Non-Perforated Supply Line (See Note 5)

Distribution Manifold 6" Perforated CPT 108 Ft. Long Total

Bioractor Chamber Length

L = _____Ft.

6" Non-Perforated Return line (See Note 5)

PLAN

SECTION A-A

CAP ALTERNATIVE 1

Cap Bioractor Chamber With Additional Wood Chips (See Note 1)

Wood Chip Media (See Notes 4 & 5)

Bioractor Chamber Length

W = _____Ft.

Mound Ground (See Note 9)

Existing Ground

Line Bottom And Sides Of Trench With Plastic (See Note 3)

W

SECTION A-A

CAP ALTERNATIVE 2

Cap Bioractor Chamber With Soil See Note 2 Allow 1.0 Foot For Settlement And Diversion Of Surface Water

Existing Ground (See Note 9)

Line Bottom Of Bioractor Chamber With Geotextile (See Note 6)

Line Top Of Bioractor Chamber With Geotextile (See Note 6)

Mound Wood Chips 0.7 Feet Above Bioractor Chamber Prior To Placement Of Geotextile

Bench Mark EL_____

Description______________________________

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1. Utilize CAP ALTERNATIVE 1 for the bioractor chamber unless traffic over the top is anticipated.
2. For CAP ALTERNATIVE 2, fill the area above the bioractor 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.
3. Set bottom of bioractor chamber to drain towards exit end.
4. Line bottom and sides of bioractor chamber with plastic, minimum 4 mil thickness. Overlap any splices at least 6 inches. Wrap plastic carefully around ties that enter/exit the chamber; no need to seal around ties.
5. Route supply line to centerline of entrance end and return line from centerline of exit end of bioractor chamber.
6. Wood chip media must be reasonably free from dirt, sawdust, leaf litter, other fine textured media and other contaminants. Do not use cedar or redwood chips because of their tannin content. Do not use treated or painted wood chips. Oak may be used if mixed with other allowable wood species and does not constitute more than 50% of the mix.
7. Obtain approval of engineer on the wood chips prior to installation.
8. Geotextile (non-woven, needle punched)

Minimum criteria

Grain tensile strength (a) ASTM D 4632 202
Elongation at failure (%) ASTM D 4632 2 50
Trapezoidal tear strength (b) ASTM D 4535 39
Puncture strength (a) ASTM D 6246 433
Ultraviolet light (% retained strength) ASTM D 4535 min 50

Apparent opening size (AOS) ASTM D 4751 max 0.22 mm (US sieve size 70)
Permeability sec-1 ASTM D 4491 min 0.70
Overlap splices at least 6 inches.
9. Grade site for positive drainage away from the bioractor chamber. Spread soil in designated location away from bioractor.

DENTRIFYING BIOREACTOR TYPE 4 - DOUBLE STRUCTURE CAPABILITY WITH DWM/MONITORING CAPABILITY

United States Department of Agriculture
Natural Resources Conservation Service

IL ENG-134

Sheet of
**TYPICAL SECTION**

**UPSTREAM STRUCTURE**

- Water Control Structure
  - 3 - Compartment
  - H<sub>1</sub> = ______ ft.
  - d<sub>1</sub> = ______ in.
  - H<sub>2</sub> = ______ ft.
  - d<sub>2</sub> = ______ in.

- Water Control Structure
  - 2 - Compartment
  - H<sub>3</sub> = ______ ft.
  - d<sub>3</sub> = ______ in.

- Non-perforated Pipe (ft)
  - 6" Non-perforated Pipe (ft)
  - 6" Perforated CPT (ft)
  - Tee 6" x 6" 1
  - Tee 6" x 6" 1
  - Elbows 6"
  - Wood Chips (cu. yd.)
  - 4 Mil Plastic (sq. yd.)
  - Geotextile (sq. yd.)
  - Excavation (cu. yd.)

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

**TYPICAL SECTION**

**DOWNSTREAM STRUCTURE**

- d<sub>4</sub> 6 In. Dia. Non-Perf. Pipe
  - Coming From Outlet Of Bioreactor
  - (See Note 2)

- d<sub>5</sub> 6 In. Dia. Non-Perf. Pipe
  - Back To Main Tile Line
  - (See Note 4)

- Coupler
- Elev. ______

**NOTES:**

1. Install a minimum of 20 feet of non-perforated pipe adjacent to the water control structure, on all lines: upstream, downstream and center. Pipe must be PVC, dual-wall CPT, or CMP.

2. PVC pipe must conform to ASTM Standard D2241 or D1785, with material 1120 or 1220. Dual-wall CPT must conform to ASTM Standard F2306 or F2648. CMP must conform to ASTM Standard A760 or A745.

3. Couplings between the water control section and the non-perforated pipe must be water tight.

4. Stop boards must provide must tight seals under a minimum of 1 foot pressure head (except notched boards).

5. Mark location of structure using post or manufactured marker flag for safety in the field.

6. Place structure and pipe coupler on a stable base. A stable base may be compacted earth, compacted fill sand, or a concrete pad. Extend the stable base no less than 1 foot around structure.

7. Excavated material placed around structure and pipes must be hand compacted in 4" lifts.