Seattle Stormwater Manual
Public Review Draft Figure Redlines

Figure Redlines for Volume 2 - Construction Stormwater Control

heavy-duty wire staples, tie wires, or hog rings

Joints in filter fabric shall be spliced at posts.

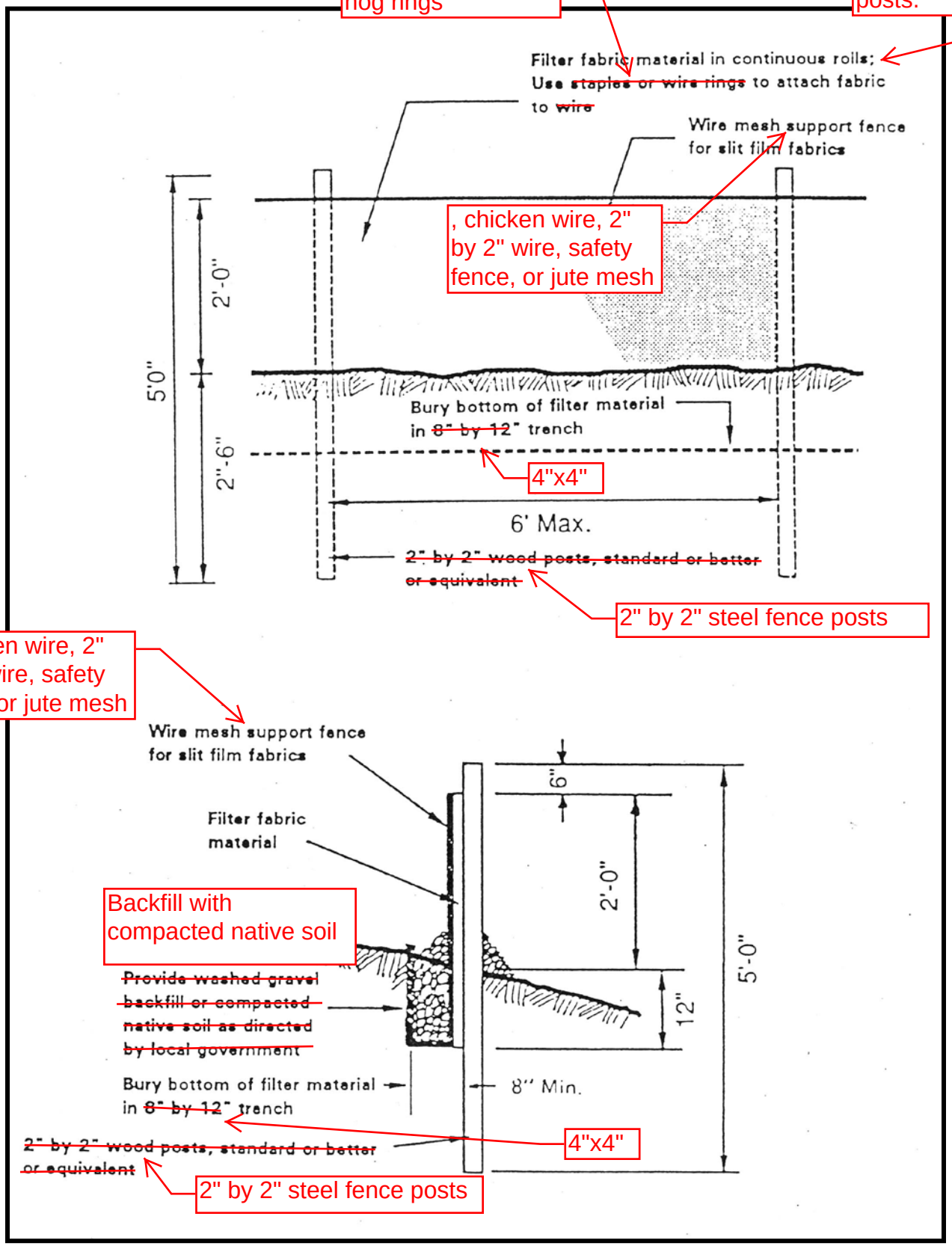
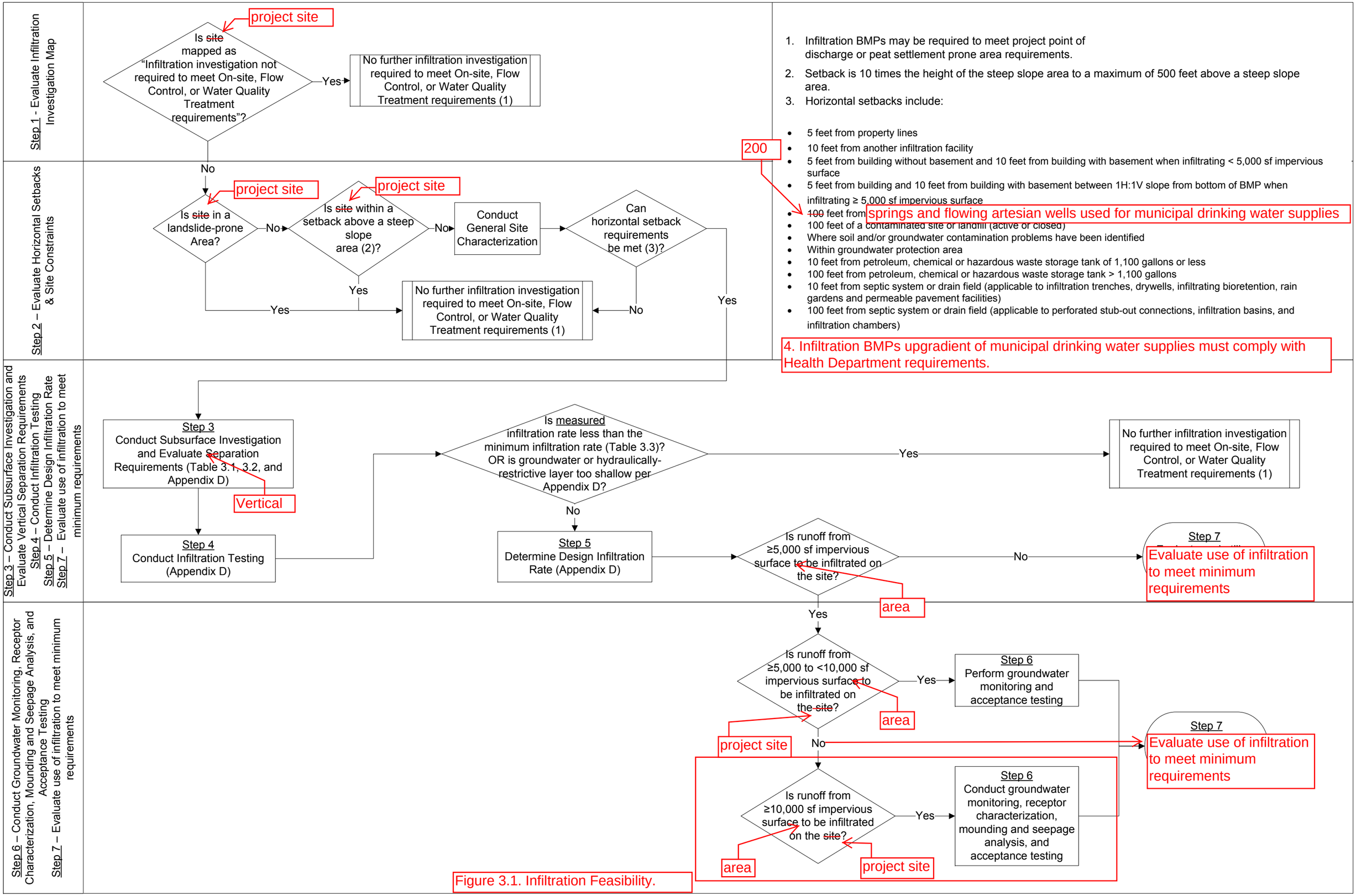


Figure 14. ~~Silt~~ Fence Details.

Filter

Figure Redlines for Volume 3 - Project Stormwater Control



1. Infiltration BMPs may be required to meet project point of discharge or peat settlement prone area requirements.
2. Setback is 10 times the height of the steep slope area to a maximum of 500 feet above a steep slope area.
3. Horizontal setbacks include:

- 5 feet from property lines
- 10 feet from another infiltration facility
- 5 feet from building without basement and 10 feet from building with basement when infiltrating < 5,000 sf impervious surface
- 5 feet from building and 10 feet from building with basement between 1H:1V slope from bottom of BMP when infiltrating ≥ 5,000 sf impervious surface
- ~~100~~ feet from springs and flowing artesian wells used for municipal drinking water supplies
- 100 feet of a contaminated site or landfill (active or closed)
- Where soil and/or groundwater contamination problems have been identified
- Within groundwater protection area
- 10 feet from petroleum, chemical or hazardous waste storage tank of 1,100 gallons or less
- 100 feet from petroleum, chemical or hazardous waste storage tank > 1,100 gallons
- 10 feet from septic system or drain field (applicable to infiltration trenches, drywells, infiltrating bioretention, rain gardens and permeable pavement facilities)
- 100 feet from septic system or drain field (applicable to perforated stub-out connections, infiltration basins, and infiltration chambers)

200

4. Infiltration BMPs upgradient of municipal drinking water supplies must comply with Health Department requirements.

Figure 3.1. Infiltration Feasibility.

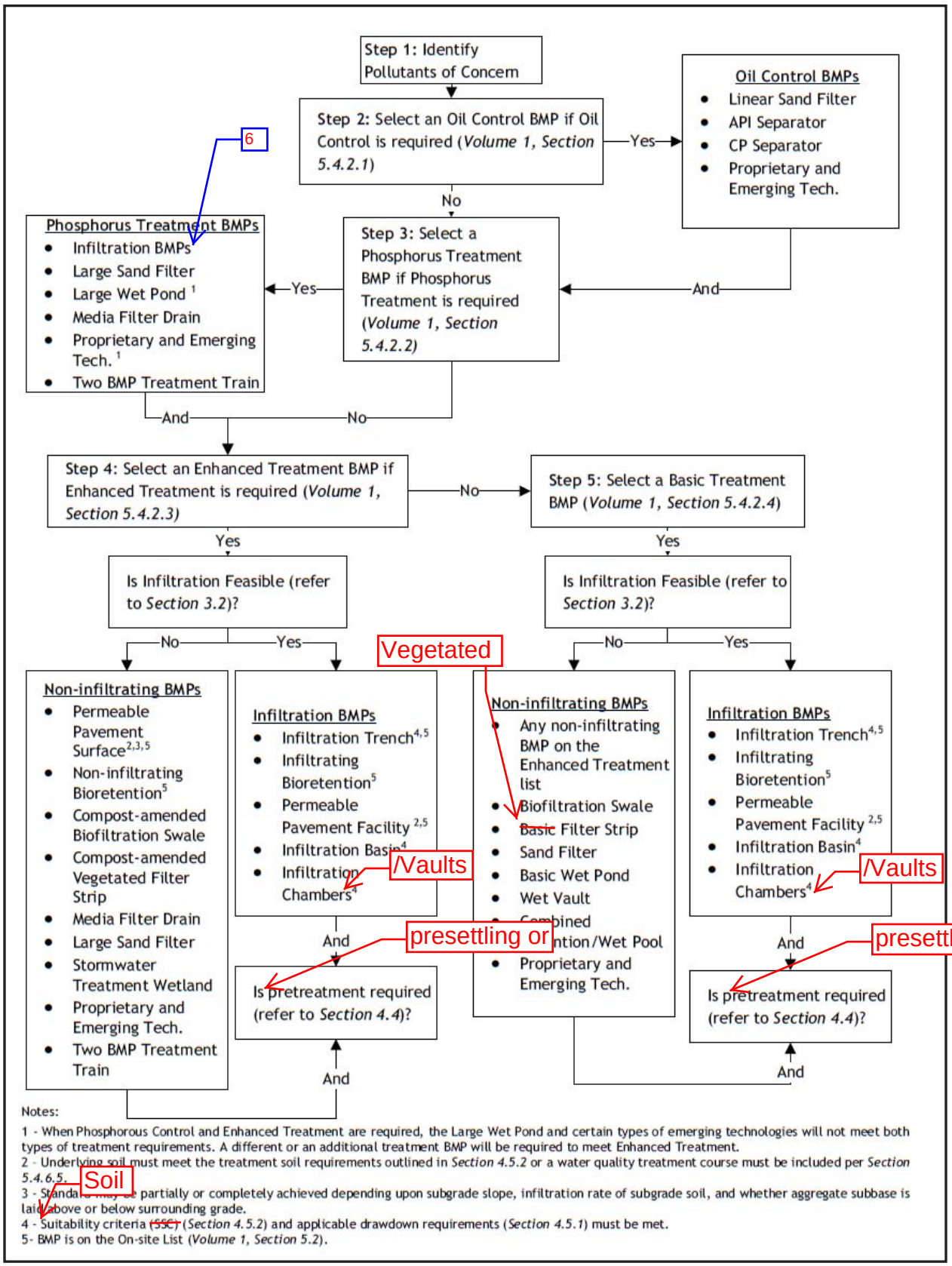


Figure 3.2. Water Quality Treatment BMP Selection Flow Chart.

6. If the infiltration BMP is within 1/4 mile of a phosphorus sensitve water (or tributary to that water), native soil must meet soil suitability criteria (Section 4.5.2) to be used to meet Phosphorus Treatment. If the infiltration BMP is a minimum of 1/4 mile away, native soil does not have to meet the soil suitability criteria to be used to meet Phosphorus Treatment requirements if infiltration into native soil is preceded by a Basic Treatment BMP.

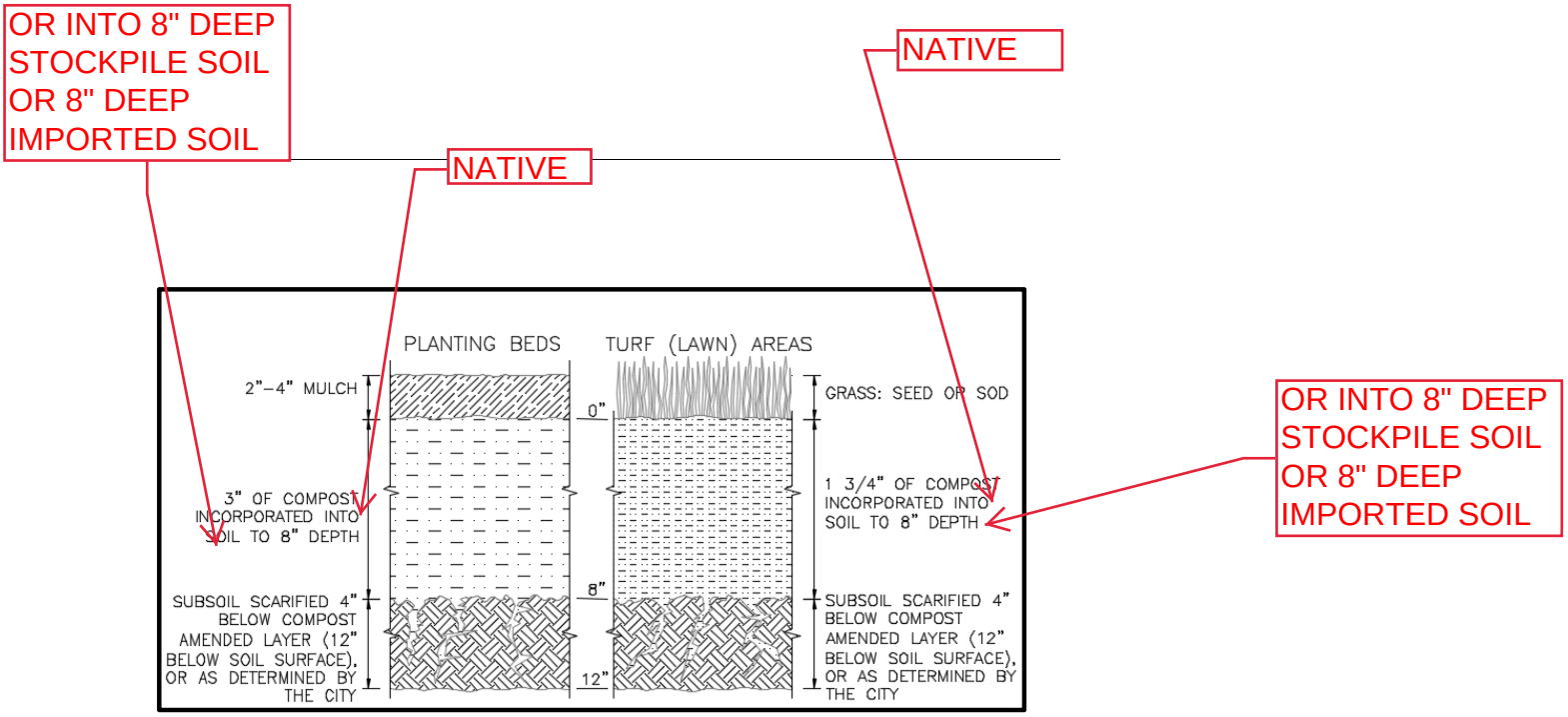


Figure 5.1. Cross-section of Soil Amendment.

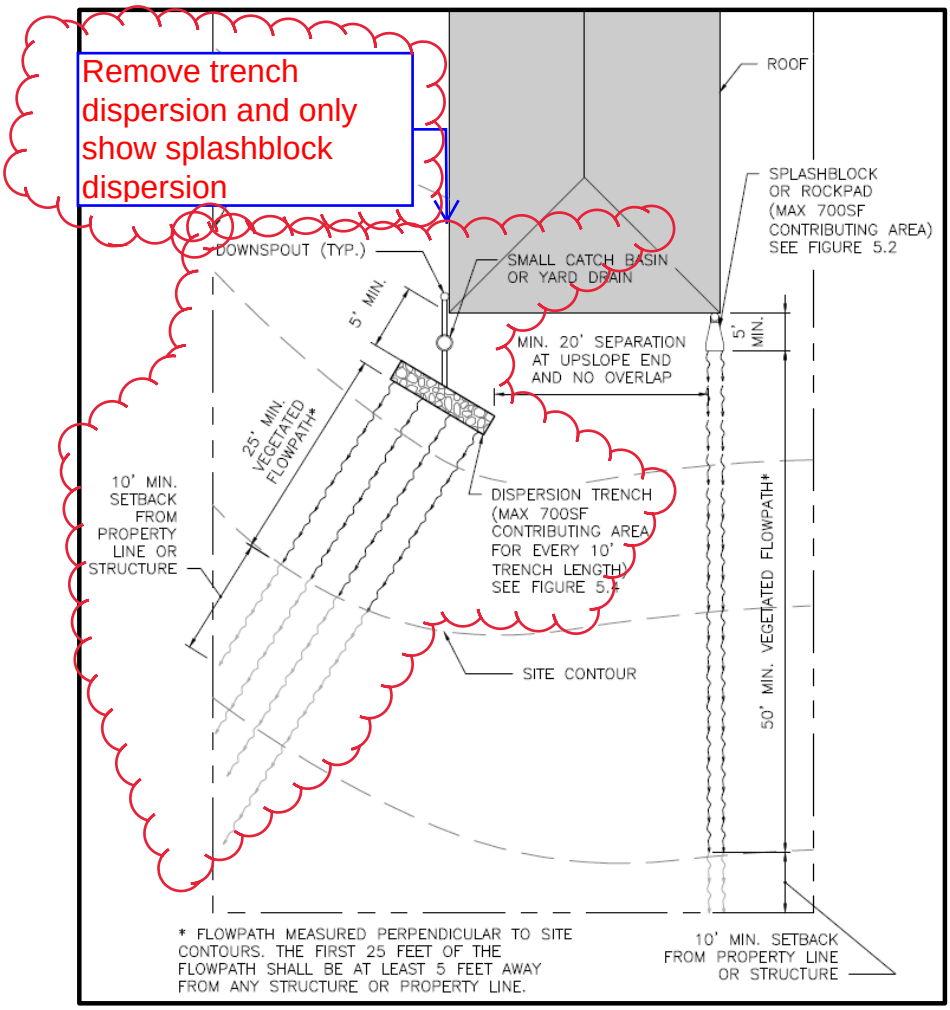


Figure 5.3. Typical Downspout Splashblock ~~and Dispersion Trench Plan.~~

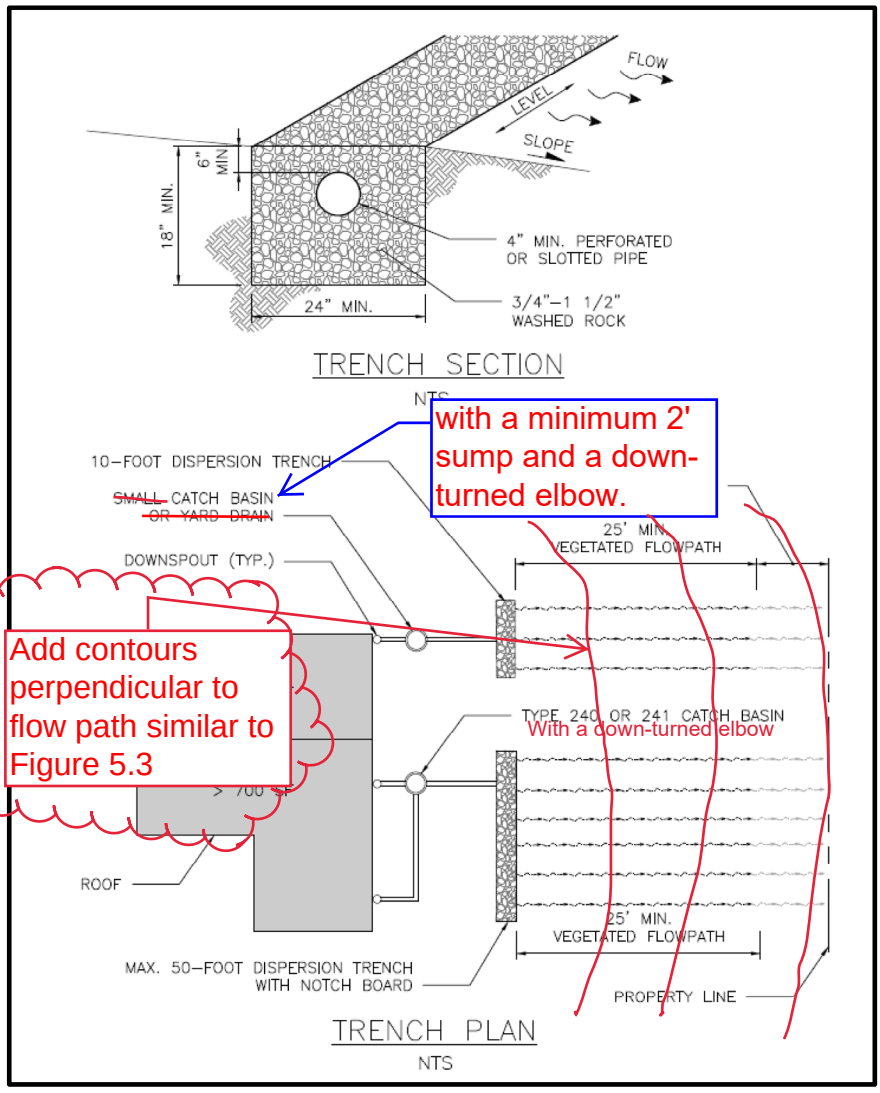


Figure 5.4. Typical Downspout Dispersion Trench.

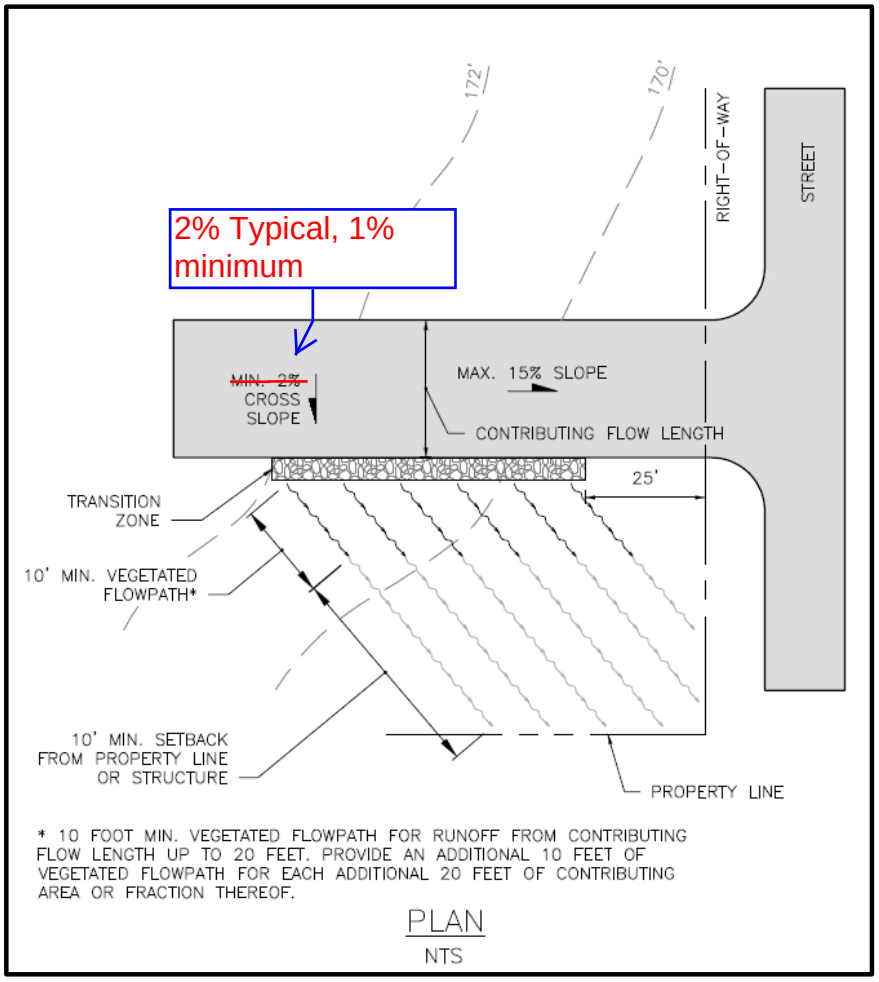


Figure 5.5. Typical Sheet Flow Dispersion for Flat and Moderately Sloping Driveways.

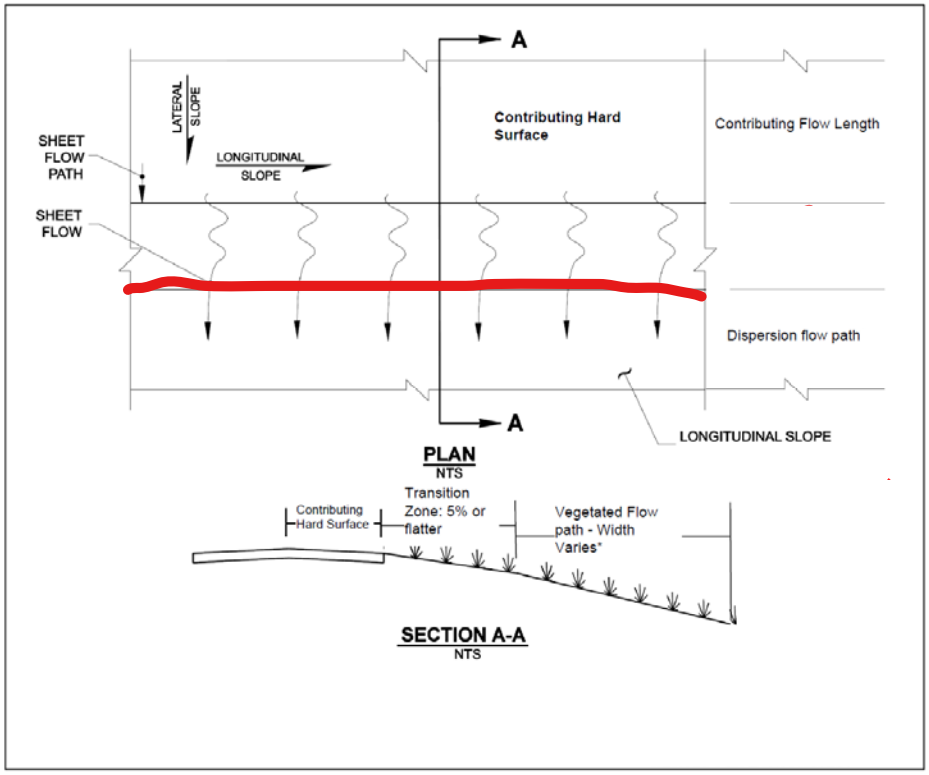


Figure 5.7. Typical Sidewalk and Trail Compost-Amended Strip for Moderately Sloping Sidewalks or Trails.

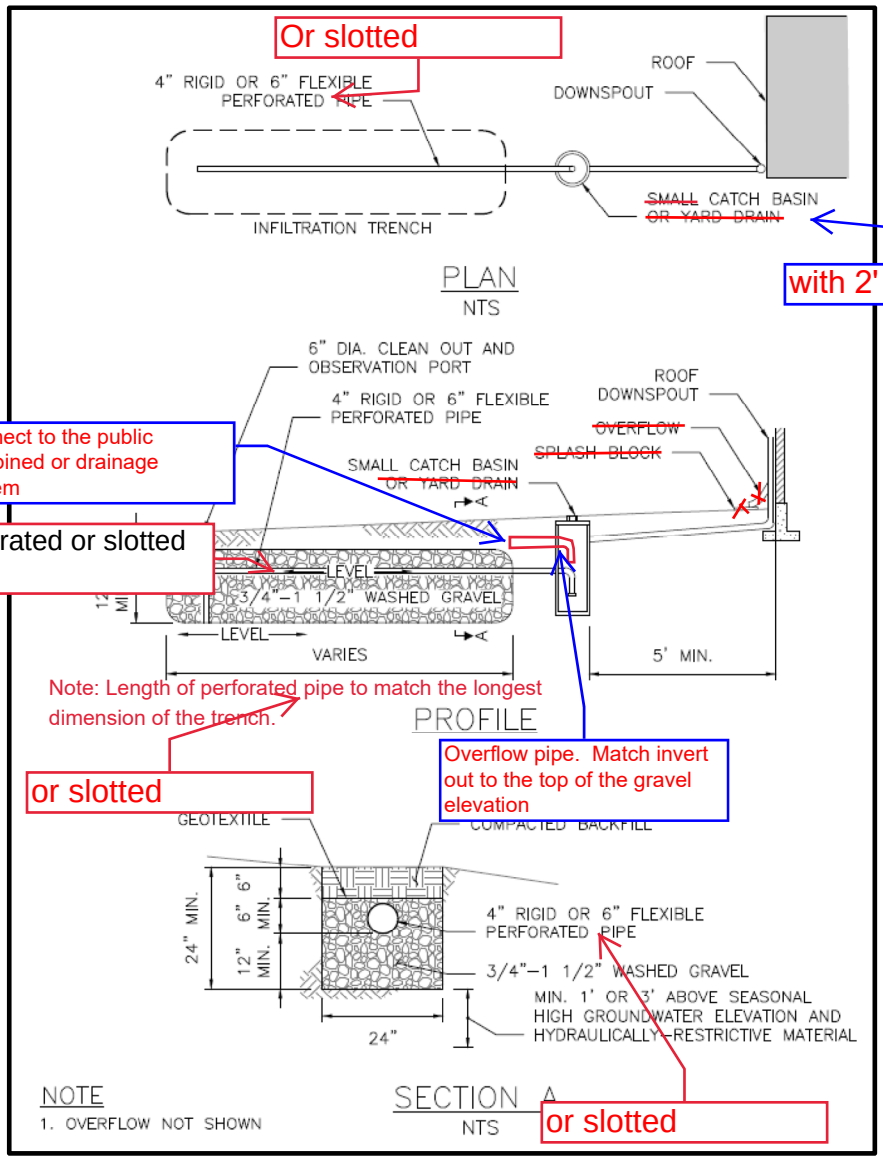


Figure ~~5.7~~. Typical Infiltration Trench Receiving Concentrated Flow.

5.8

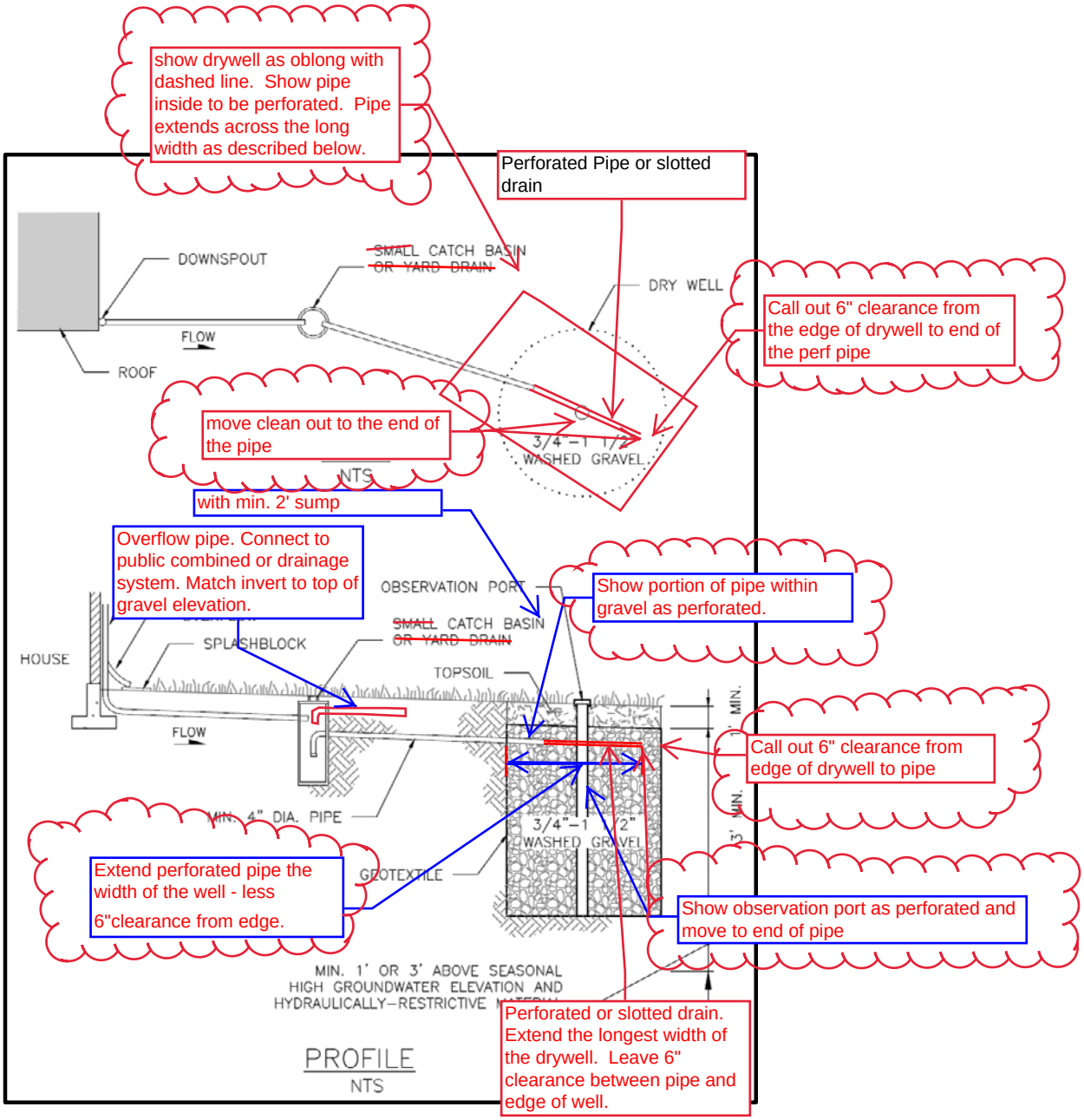


Figure ~~5.9~~. Typical Infiltration Drywell.

5.10

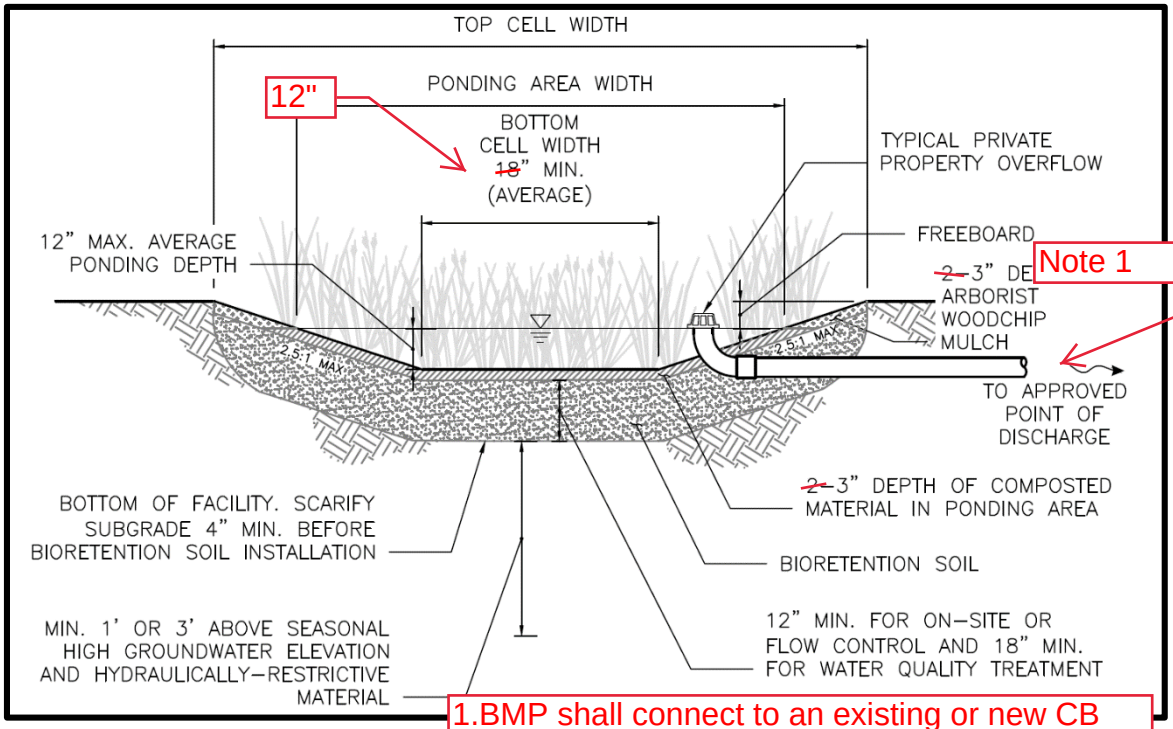


Figure 5.11 **Infiltrating Bioreter** **).**

1.BMP shall connect to an existing or new CB with a minimum 2' sump and a down turned elbow prior to connecting to the public combined or drainage system.

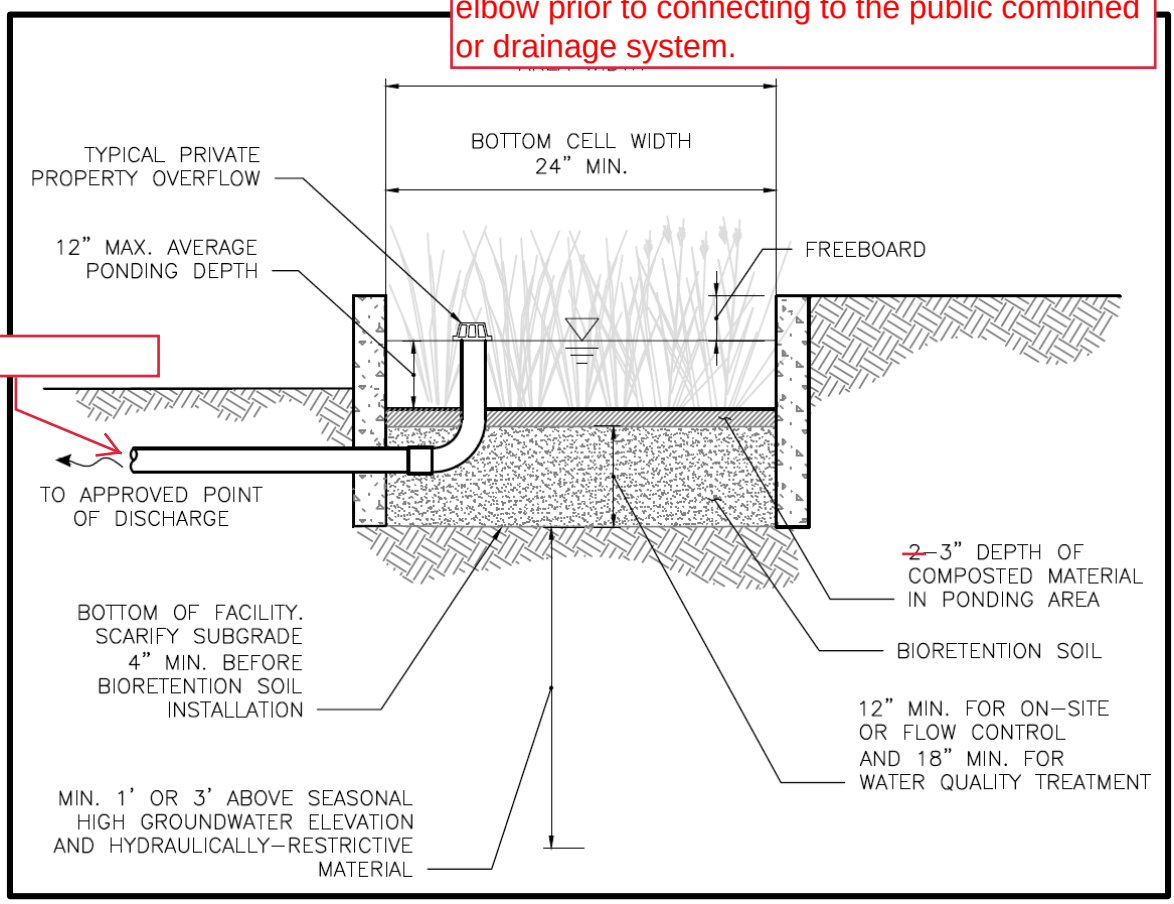


Figure 5.12 **Infiltrating Bioretention Facility with Vertical Sides (without Underdrain).**

1.BMP shall connect to an existing or new CB with 2' minimum sump and a down turned elbow prior to connecting to the public combined or drainage system.

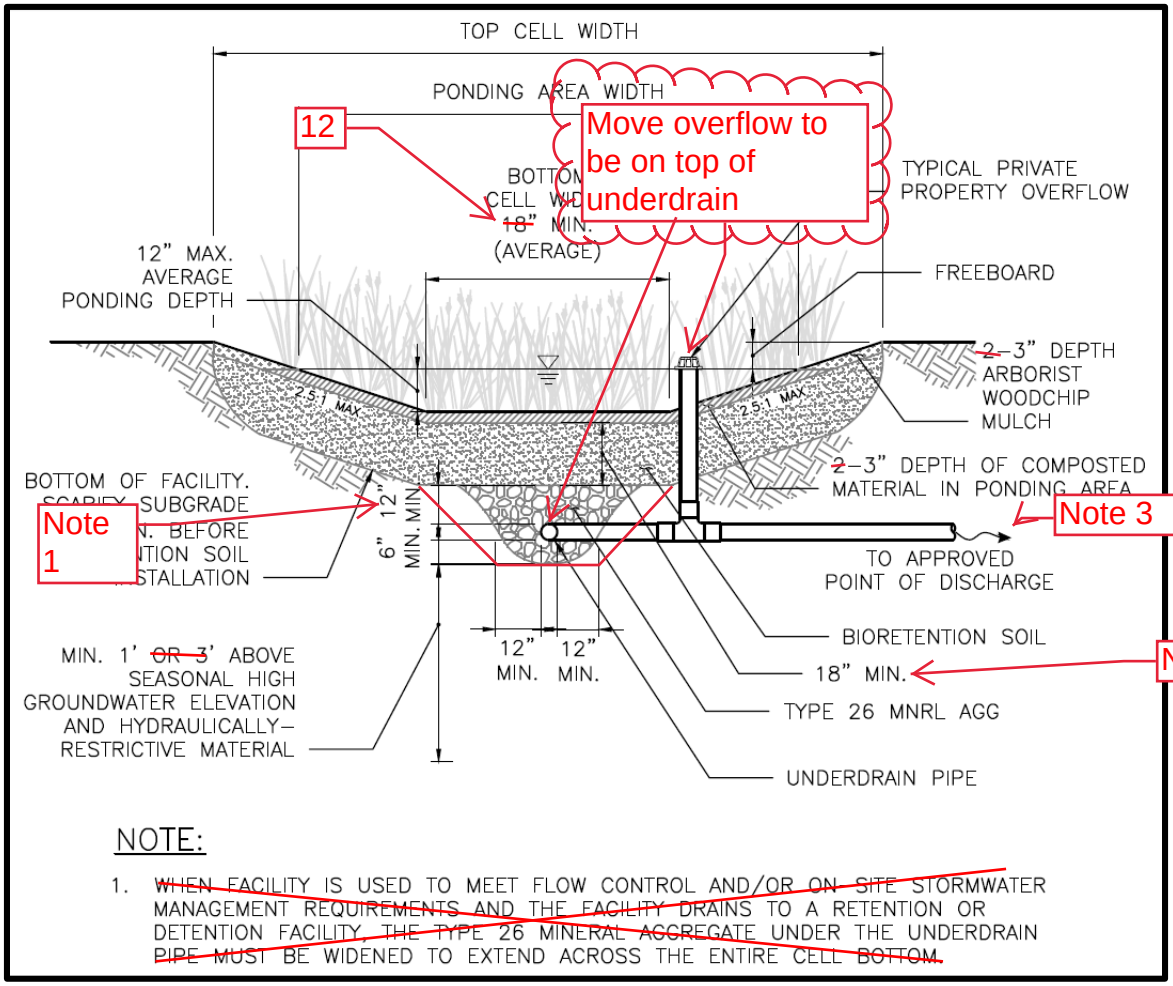


Figure 5.13 **Infiltrating Bioretention Facility with Sloped Sides (with Underdrain).**

1. Depth may be reduced up to 6" if needed to drain the facility by gravity while meeting applicable engineering standards.
2. Bioretention soil depth may be reduced to 12" if the BMP is used for on-site stormwater management or flow control and cannot drain by gravity otherwise.
3. BMP shall connect to an existing or new CB with 2' minimum sump and a down turned elbow prior to connecting to the public combined or drainage system.

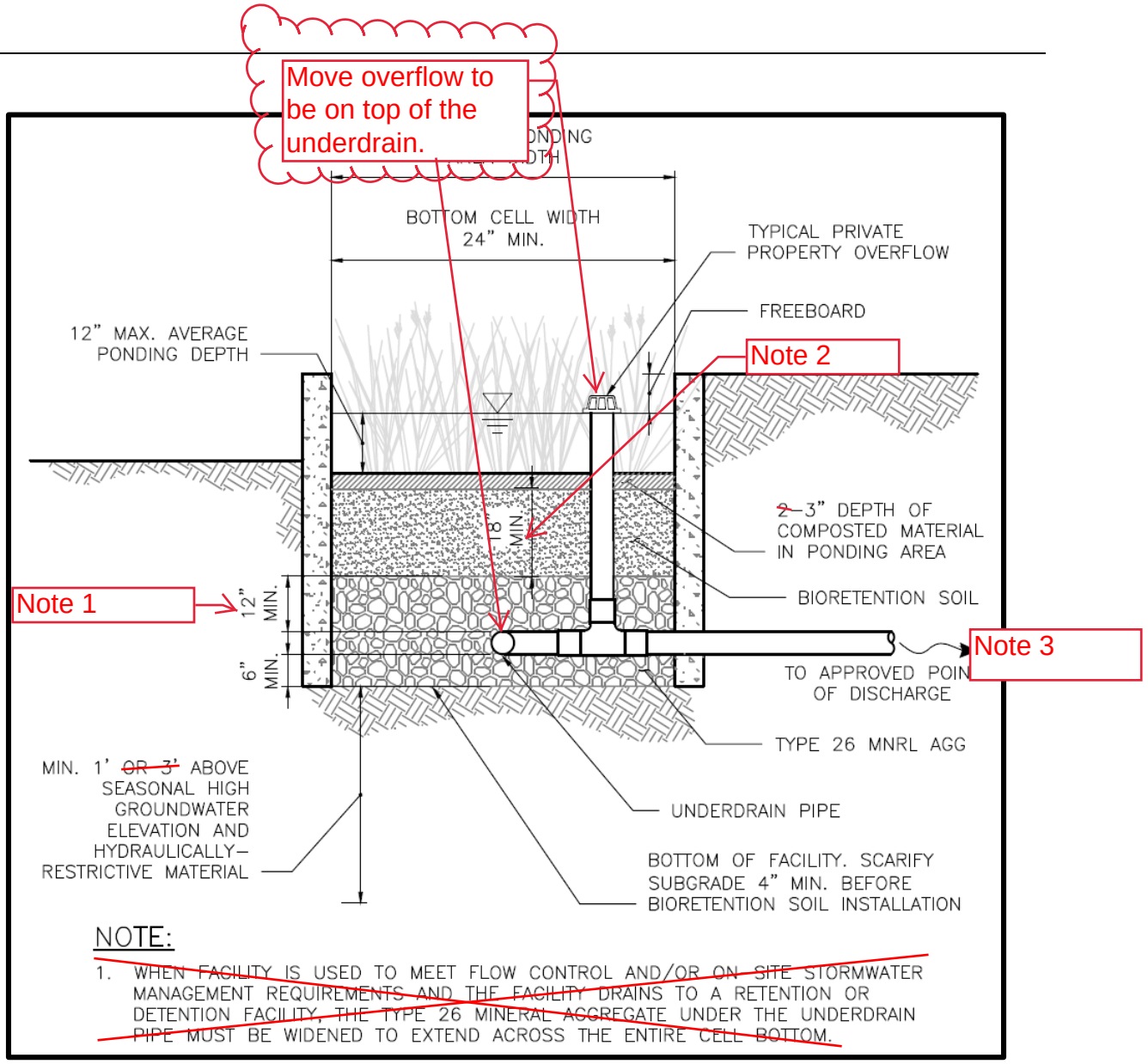
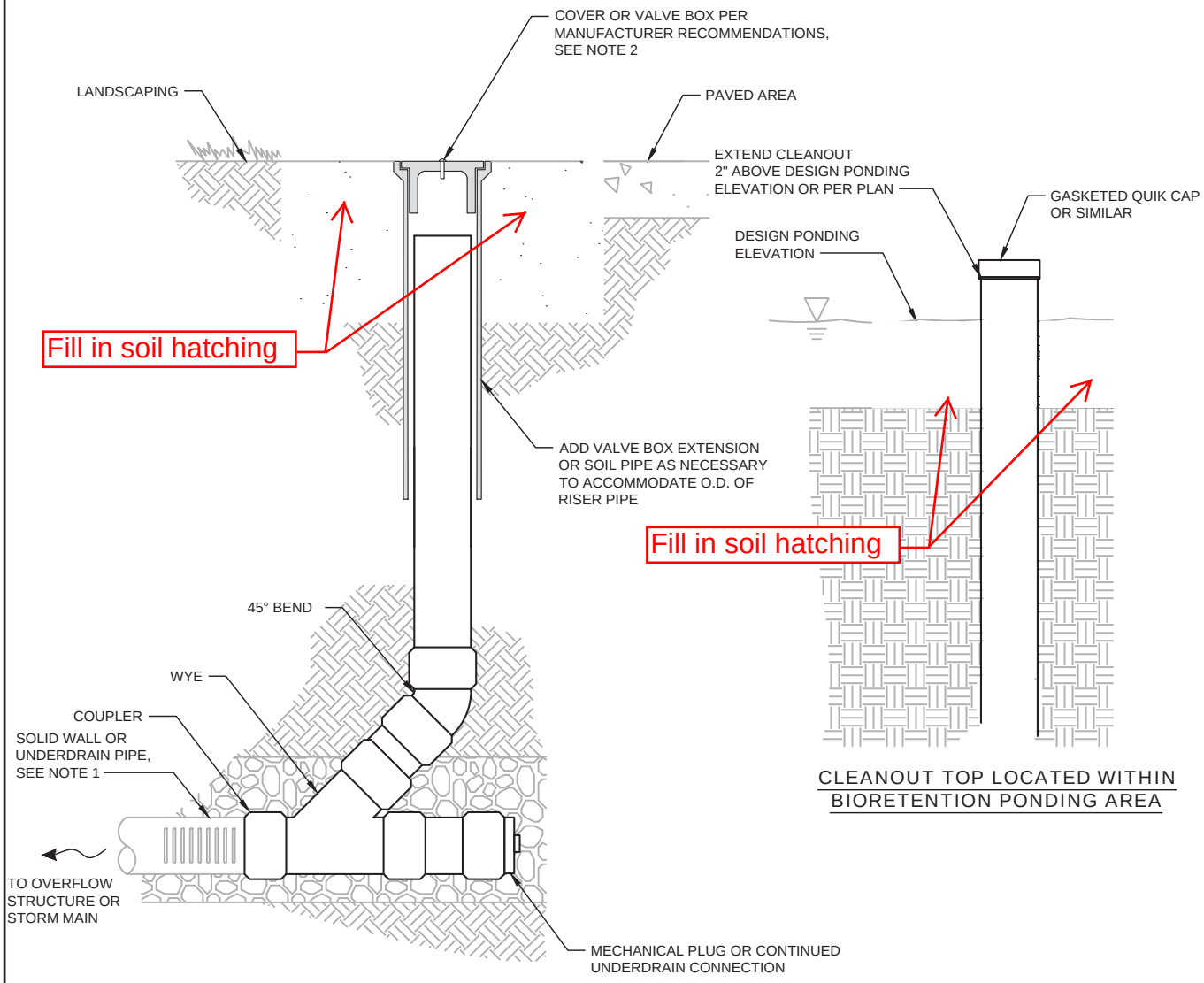


Figure 5.14 **Infiltrating Bioretention Facility with Vertical Sides (with Underdrain).**

1. Depth may be reduced up to 6 inches if needed to drain by gravity while meeting applicable engineering standards.
2. Bioretention soil depth may be reduced to 12" if the BMP is used for on-site stormwater management or flow control, and cannot drain by gravity otherwise.
3. BMP shall connect to an existing or new CB with 2' minimum sump and a down turned elbow prior to connecting to the public combined or drainage system.



CLEANOUT TOP LOCATED WITHIN BIORETENTION PONDING AREA

TYPICAL CLEANOUT CONFIGURATION

NOTES:

1. UNDERDRAIN PIPE DIAMETER TO BE 4-INCHES MIN. PRIVATE, 8-INCHES MIN. PUBLIC.
2. CLEANOUT COVER TO BE LOCKING WITH ALLEN HEAD BOLT, MARKED "DRAIN CLEANOUT," "CLEANOUT," "CO," OR SIMILAR.
3. CLEANOUT PIPE SHALL BE SAME SIZE AND MATERIAL AS UNDERDRAIN PIPE.
4. CLEANOUTS SHALL BE INSTALLED TO ALLOW FOR MAINTENANCE ACCESS TO ALL PIPES.
5. CLEANOUT RISER TOP SHALL BE LOCATED OUTSIDE OF FACILITY UNLESS APPROVED OTHERWISE, AND OUTSIDE OF PONDING AREAS WHERE POSSIBLE.

Figure 5.15

STORMWATER FACILITY CLEANOUT

for facility outside of the right-of-way

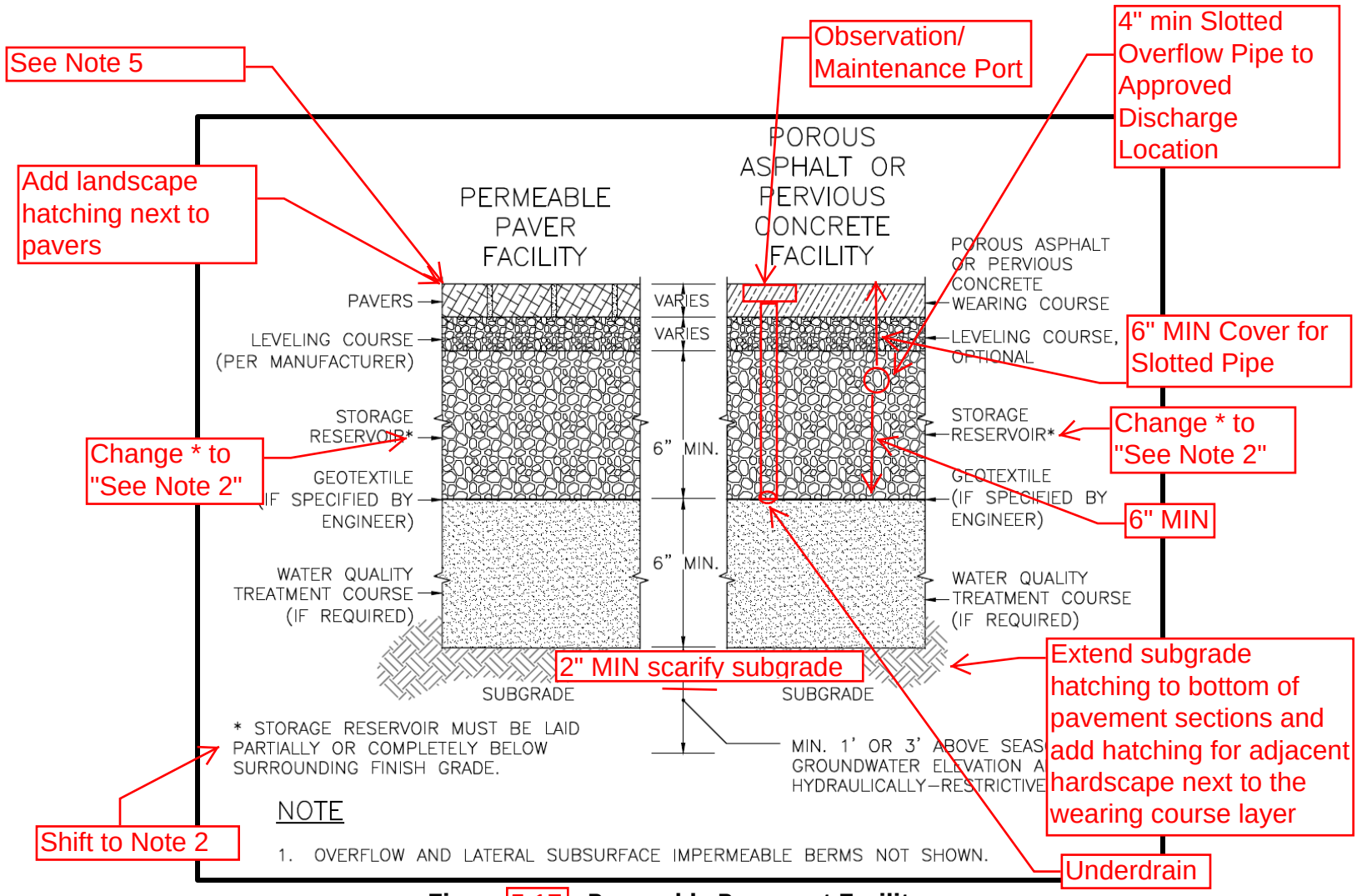
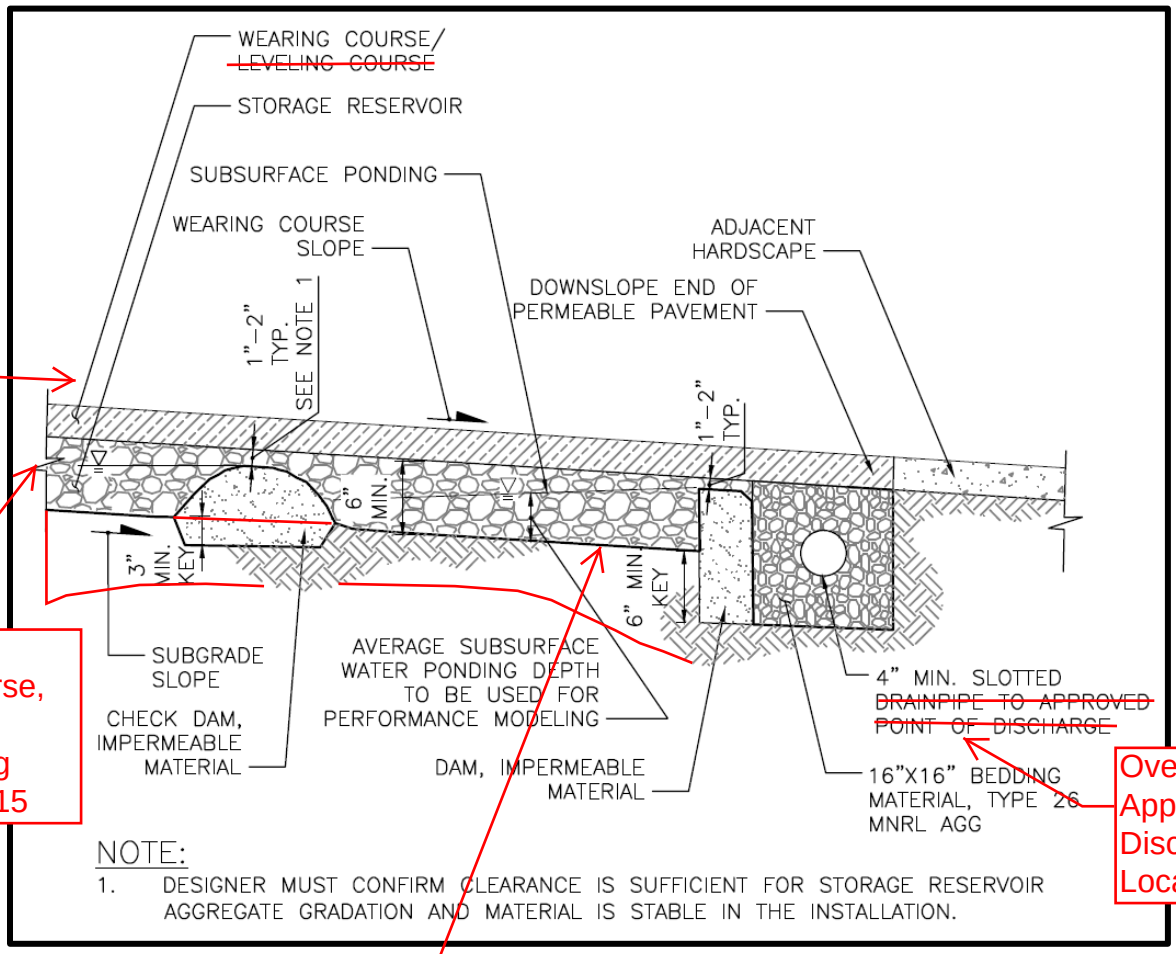


Figure 5.17 Permeable Pavement Facility.

3. The designer shall review the existing subgrade soil characteristics and water quality treatment course (if required), and determine if geotextile is needed. Additional guidance on geotextile design is provided in Appendix E.

4. The water quality treatment course shall be comprised of a media meeting the treatment soil criteria (Section 4.5.2) or the sand media material specification for sand filters (Section 5.8.5).

5. Concrete band or other edge restraint manufactured for the intended use must be used at edge of permeable paver facility.



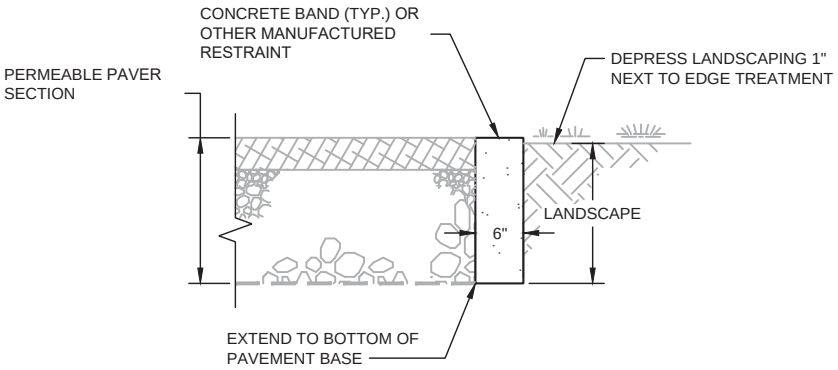
Sheet flow

Add layer for "Leveling Course, Optional" Match hatching from Figure 5.15

Overflow Pipe to Approved Discharge Location

Figure 5.18 **Typical Permeable Pavement Facility with Checkdams.**

Add 6" layer for the Water Quality Treatment Course (if required) below the Storage Reservoir layer



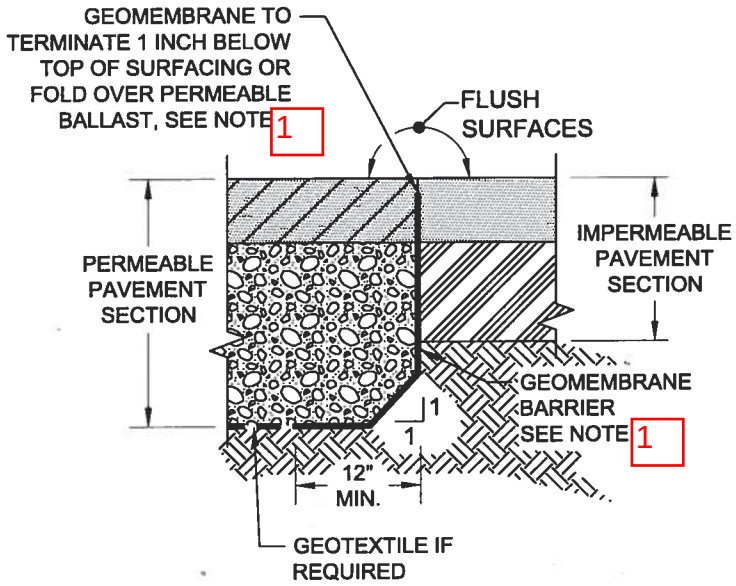
CONCRETE BAND AT LANDSCAPE

Figure 5.19

Permeable Pavement
Concrete Edge Treatment.

NOTES:

Geomembrane barrier seams shall overlap at least 18" or per manufacturer's recommendations. Geomembrane barrier shall extend the linear length of the permeable section when adjacent to standard pavement.



GEOMEMBRANE BARRIER BETWEEN PAVEMENT TYPES

NTS

1 Geomembrane barrier shall provide an impermeable barrier between standard and permeable section. It shall be installed 1" below finished grade of surfacing, as shown. Alternatively, the liner shall fold over the permeable ballast a minimum of 6" or further if recommended by the geotechnical engineer.

Figure 5.20. Permeable Pavement Geomembrane Edge Treatment.

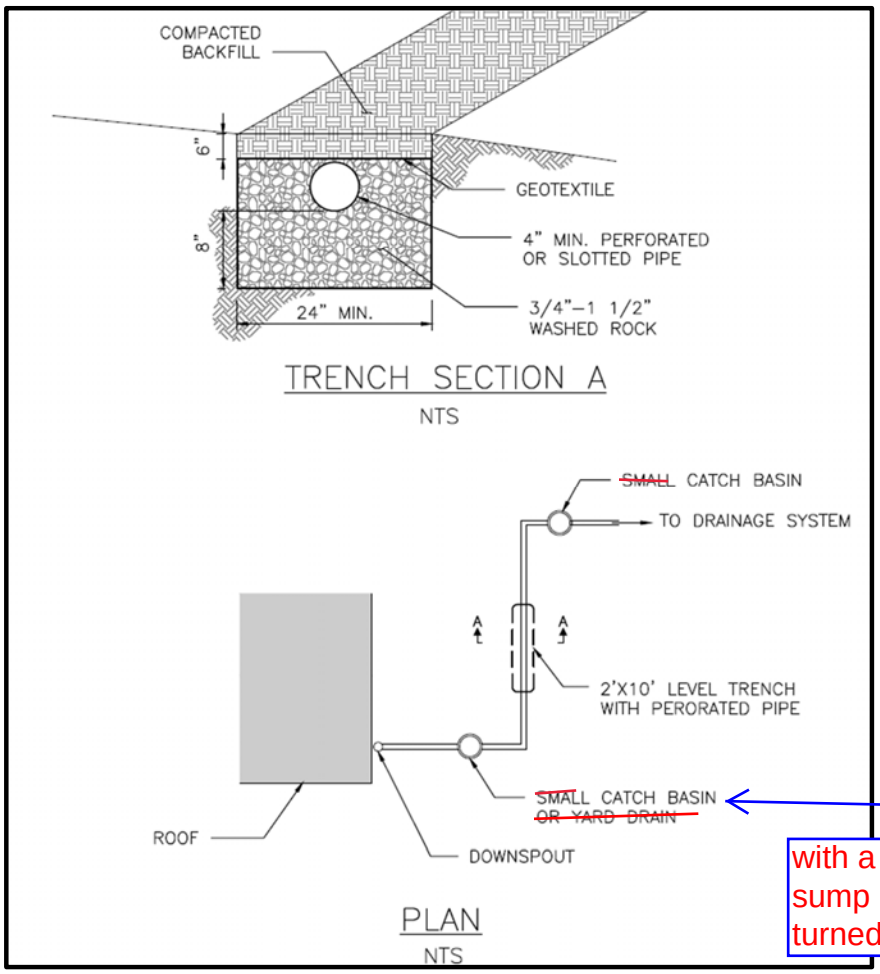


Figure ~~5.17~~. Perforated Stub-Out Connection.

5.21

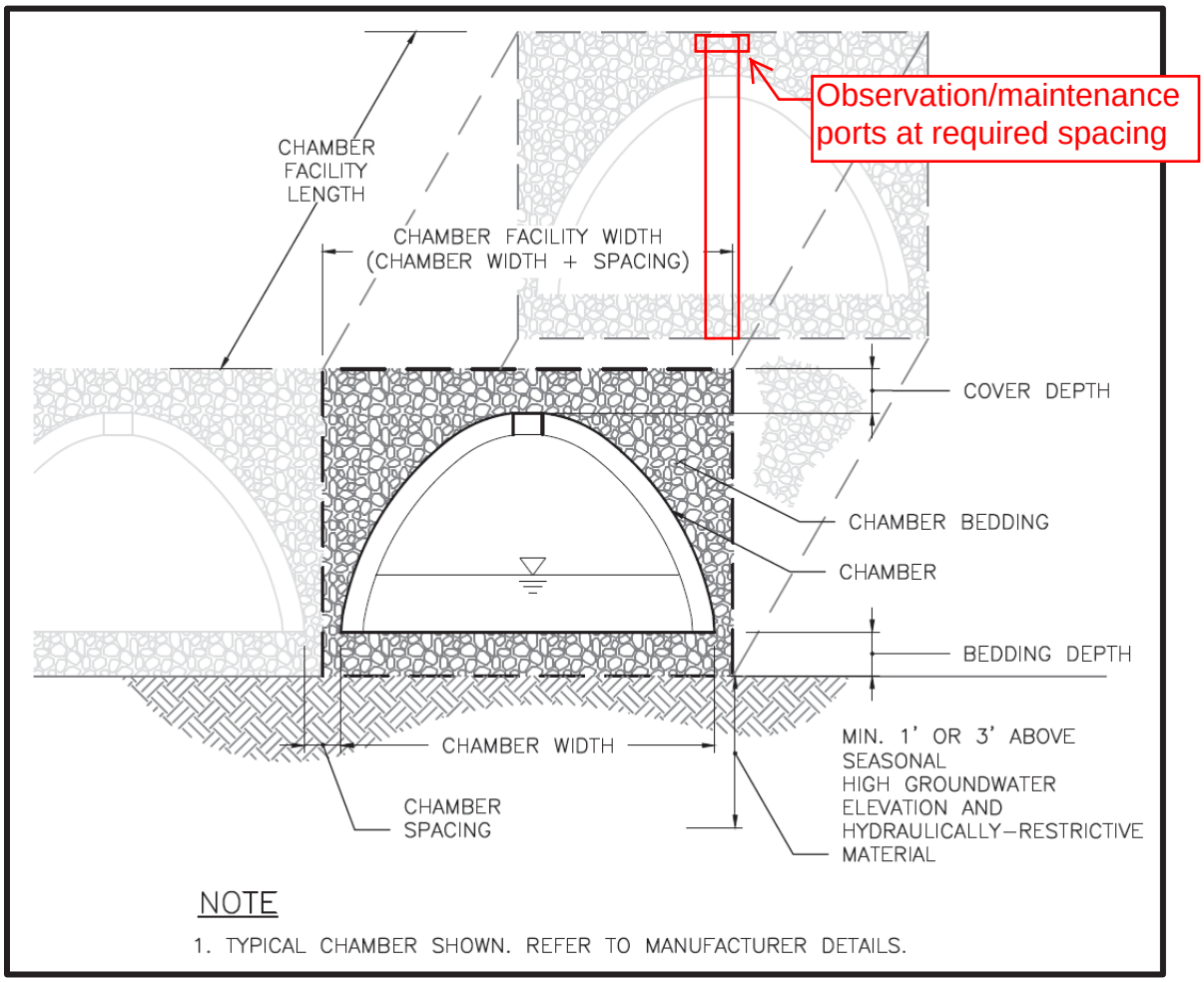
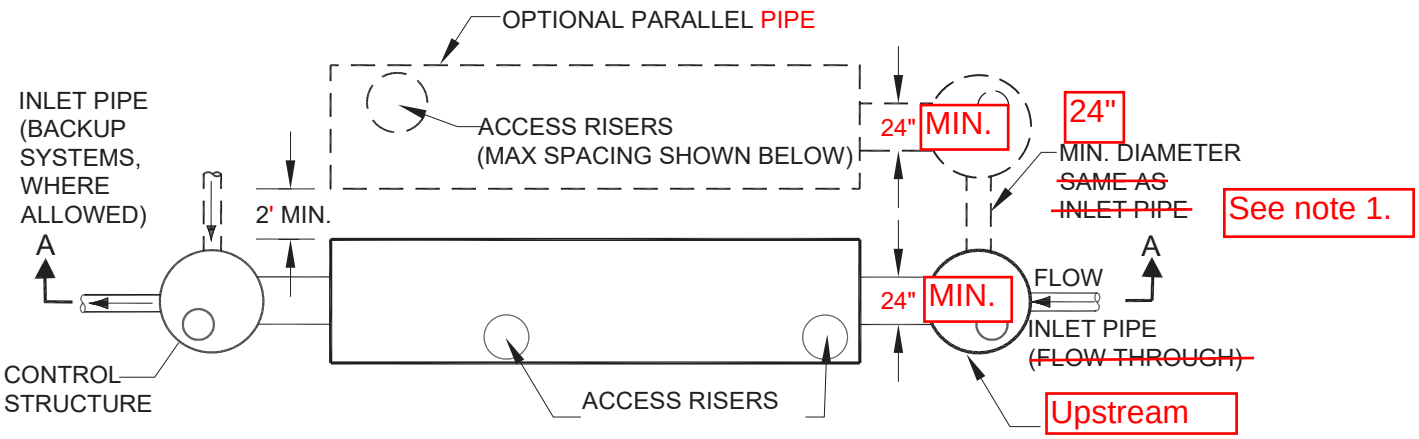


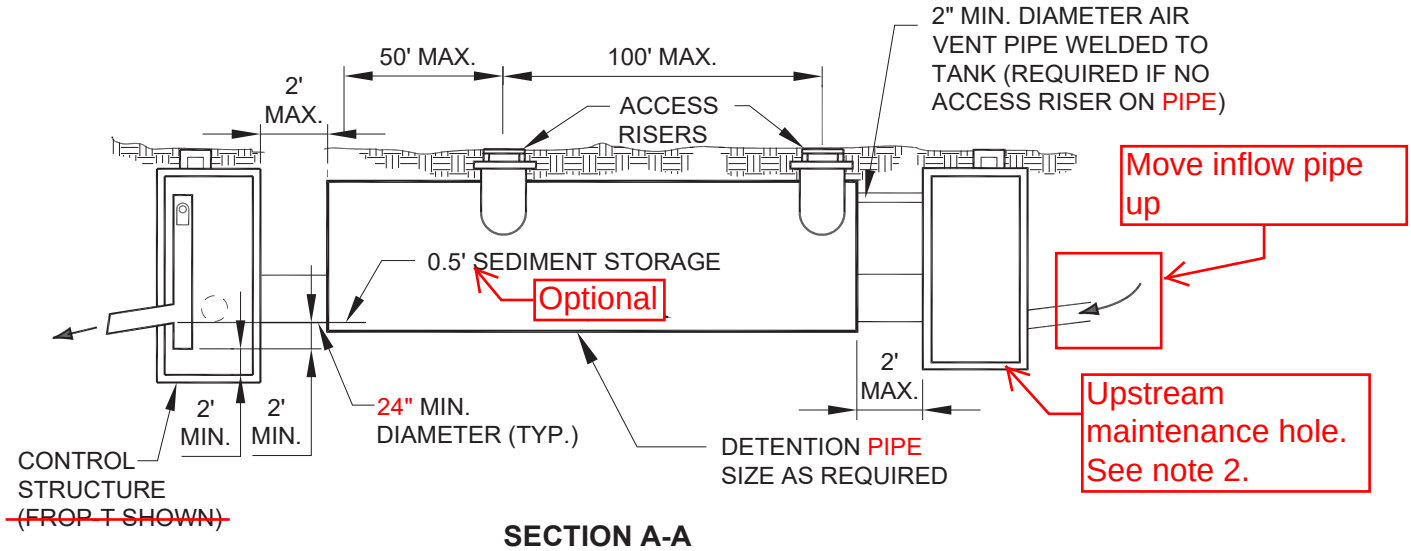
Figure ~~5.18~~. Typical Infiltration Chamber.

5.22



PLAN VIEW
NTS

"FLOW-THROUGH" SYSTEM SHOWN SOLID.
DESIGNS FOR "FLOW BACKUP" SYSTEM AND PARALLEL PIPES SHOWN DASHED

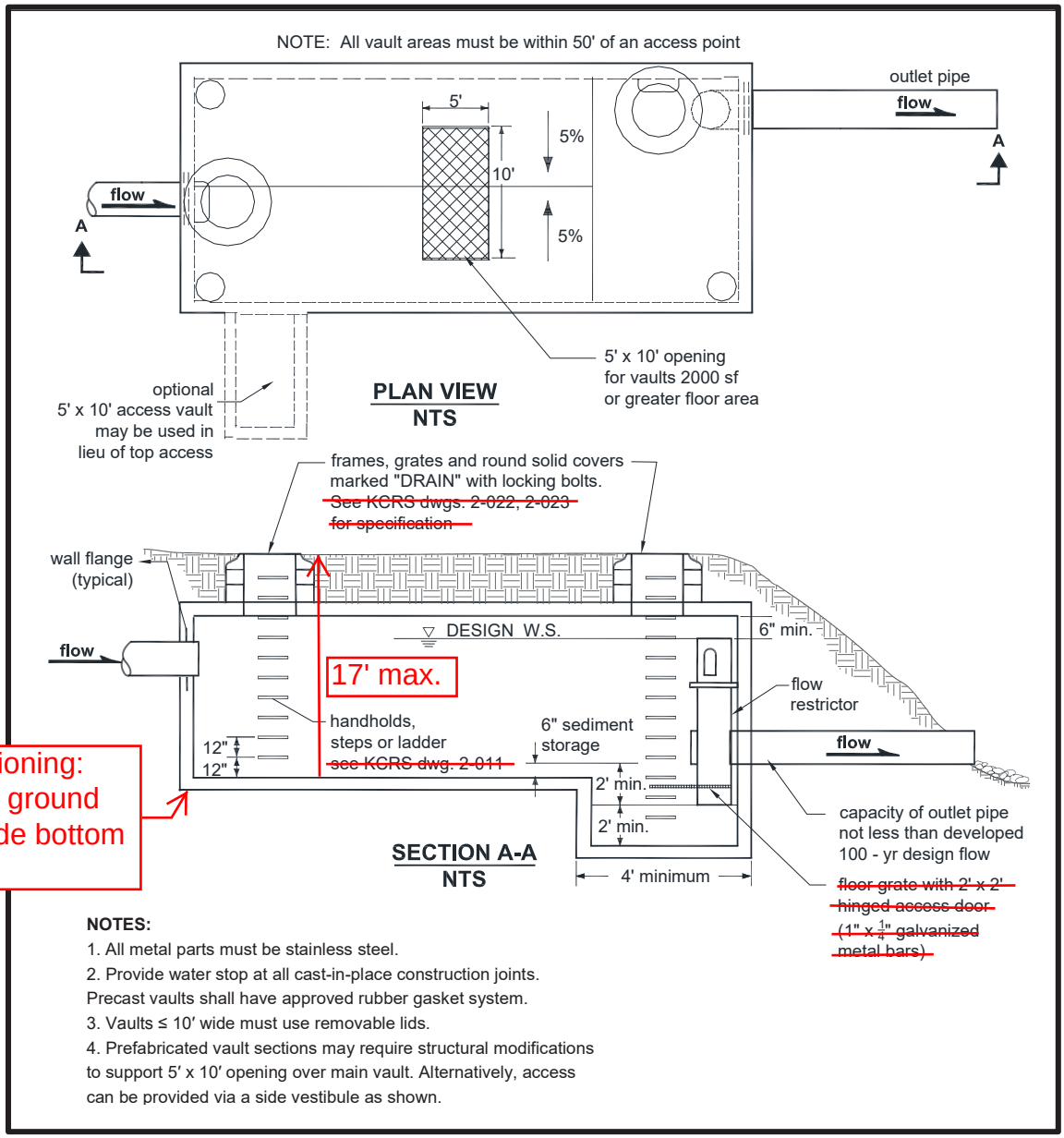


SECTION A-A
NTS

"FLOW-THROUGH" SYSTEM SHOWN SOLID.

NOTES:
1. See Standard Plan No. 270 to determine the minimum pipe diameter for installations in the right-of-way.
2. Upstream maintenance hole is required in the right-of-way. For a detention pipe on private property, the upstream maintenance hole can be replaced with a cleanout or maintenance riser if the detention pipe is less than or equal to 50 feet long.
3. All metal parts shall be corrosion resistant.

Figure 5.26 Typical Detention Pipe for Private Property.



Adjust dimensioning:
- 17' max from ground surface to inside bottom of structure

NOTES:

1. All metal parts must be stainless steel.
2. Provide water stop at all cast-in-place construction joints. Precast vaults shall have approved rubber gasket system.
3. Vaults ≤ 10′ wide must use removable lids.
4. Prefabricated vault sections may require structural modifications to support 5′ x 10′ opening over main vault. Alternatively, access can be provided via a side vestibule as shown.

Figure 5.27 Typical Detention Vault.

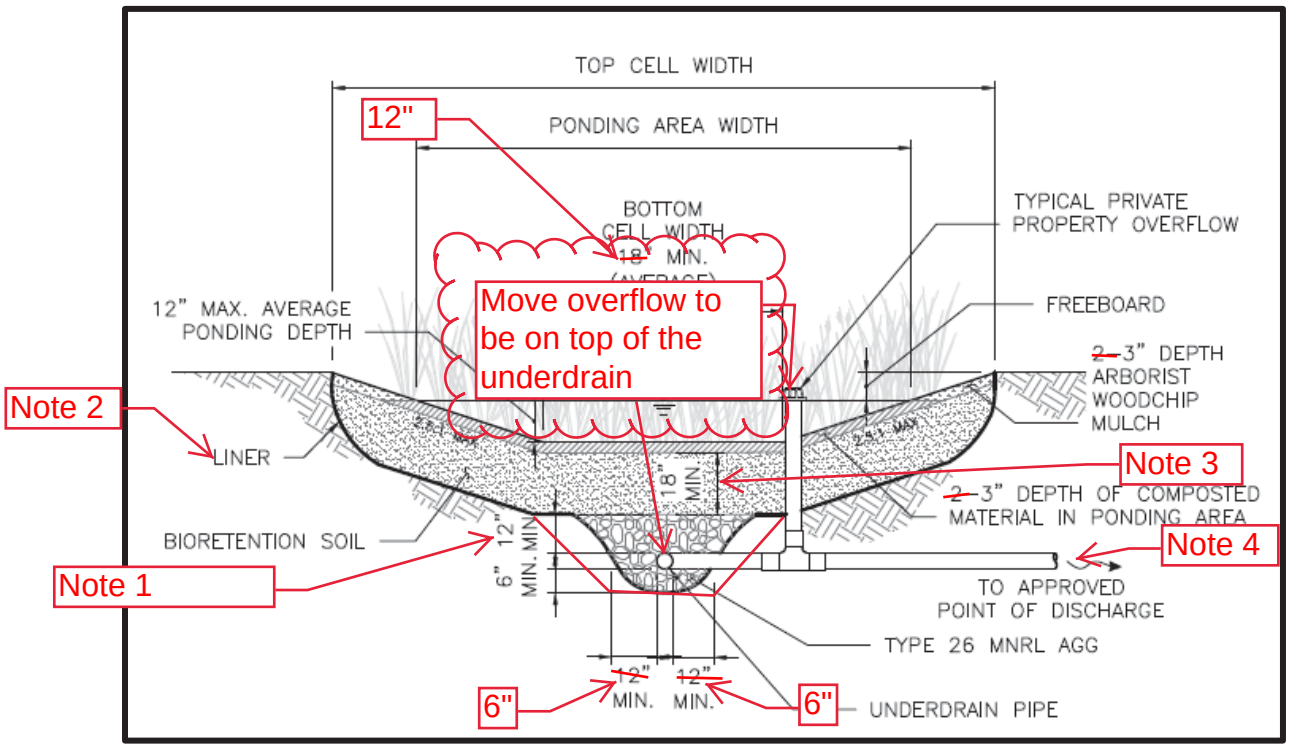


Figure ~~5.24~~. Non-infiltrating Bioretention Facility with Sloped Sides.

5.29

1. Depth may be reduced up to 6" if needed to drain facility by gravity while meeting applicable engineering standards.
2. See Appendix E-7
3. Bioretention soil depth may be reduced to 12" if the BMP is used for on-site stormwater management or flow control and cannot drain by gravity otherwise.
4. BMP shall connect to an existing or new CB with a minimum of a 2' sump and down turned elbow.

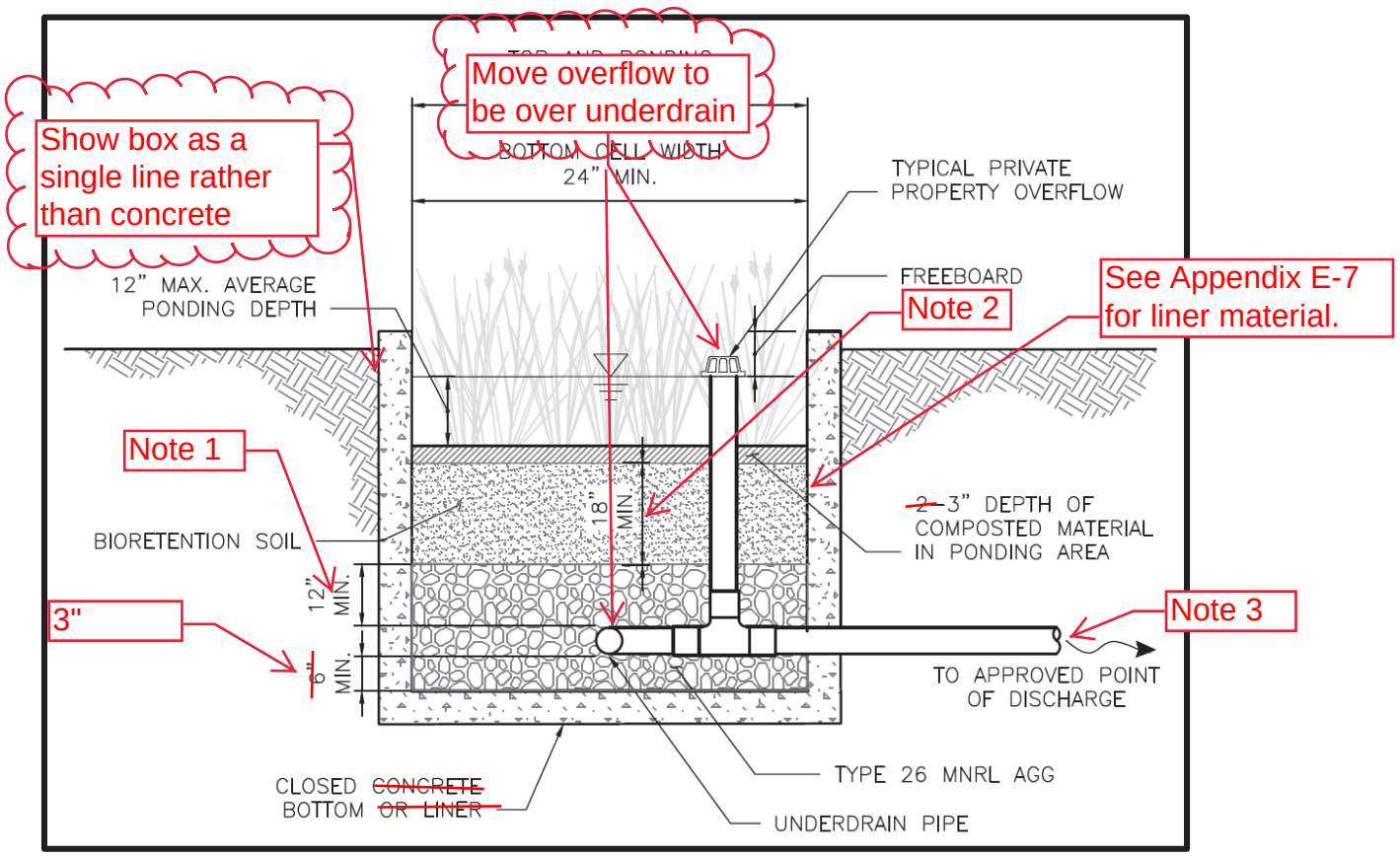
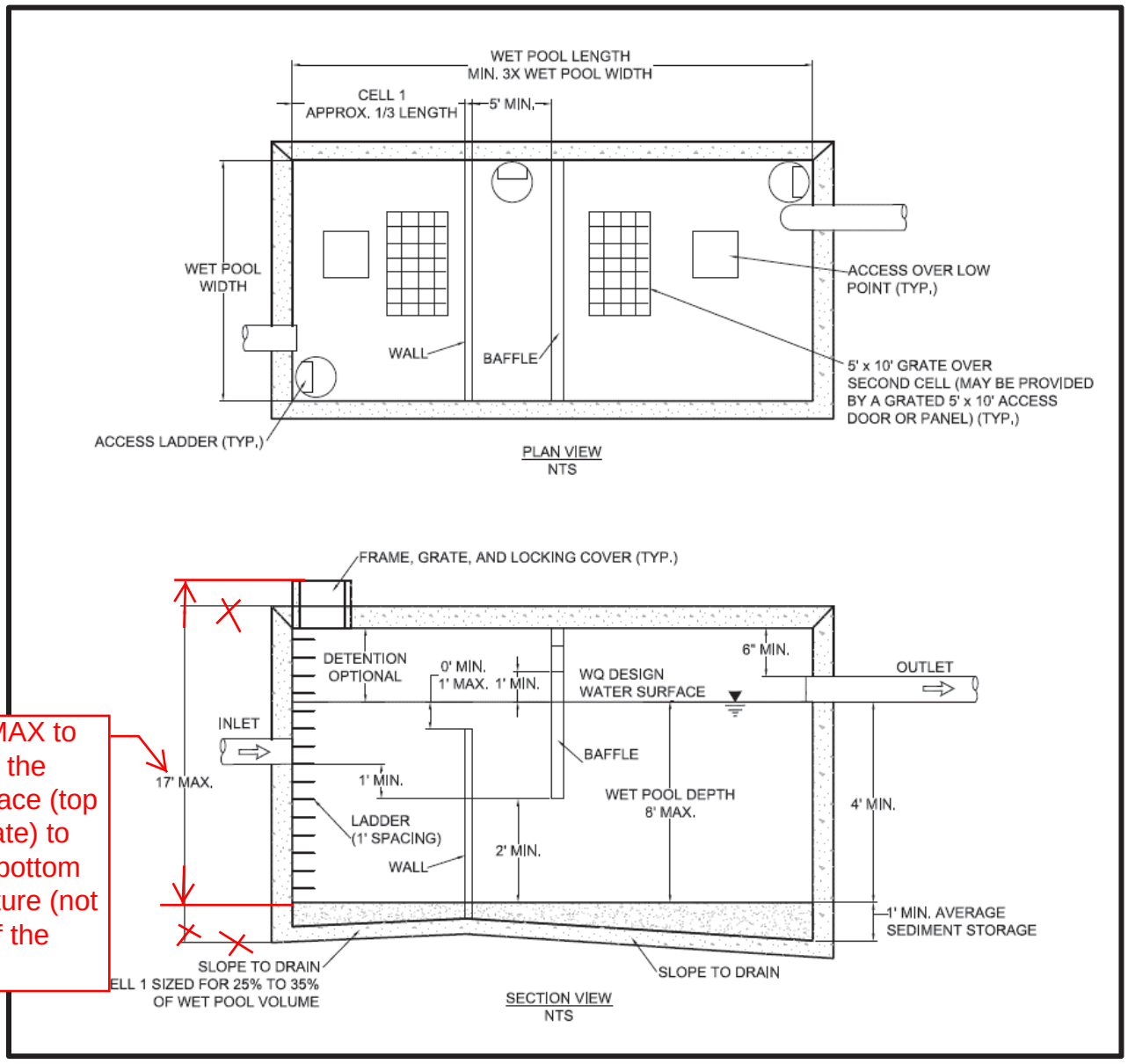


Figure ~~5.25~~. Non-infiltrating Bioretention Facility with Vertical Sides.
5.30

1. Depth may be reduced up to 6 inches if needed to drain the facility by gravity while meeting applicable engineering standards.
2. Bioretention soil depth may be reduced to 12" if the BMP is used for on-site stormwater management or flow control and cannot otherwise drain by gravity.
3. BMP shall connect to an existing or new CB with a minimum 2' sump and a down turned elbow.



Adjust 17' MAX to be between the ground surface (top of frame/grate) to the interior bottom of the structure (not to bottom of the structure)

Figure ~~5.27~~. Typical Wet Vault.

5.32

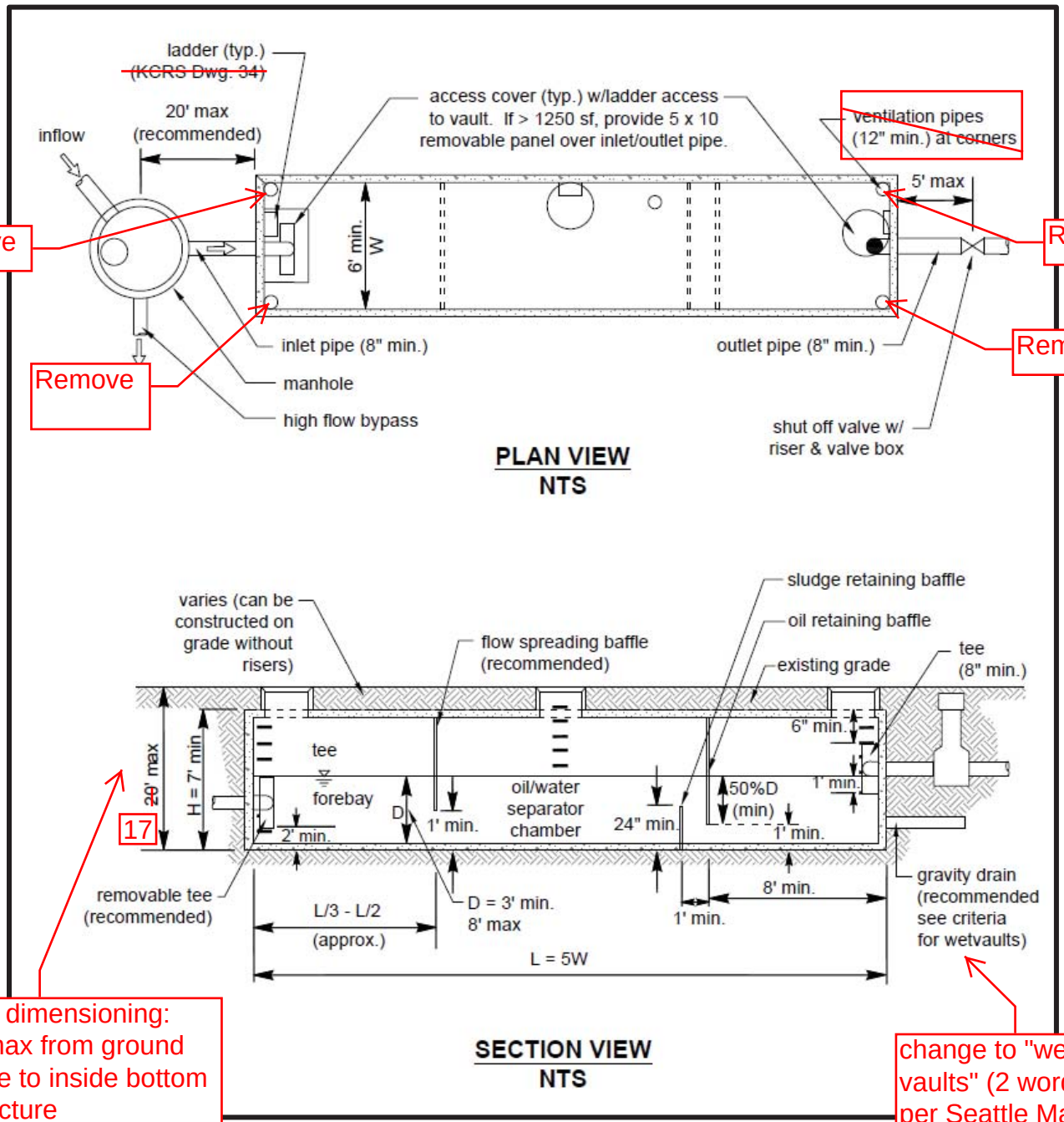
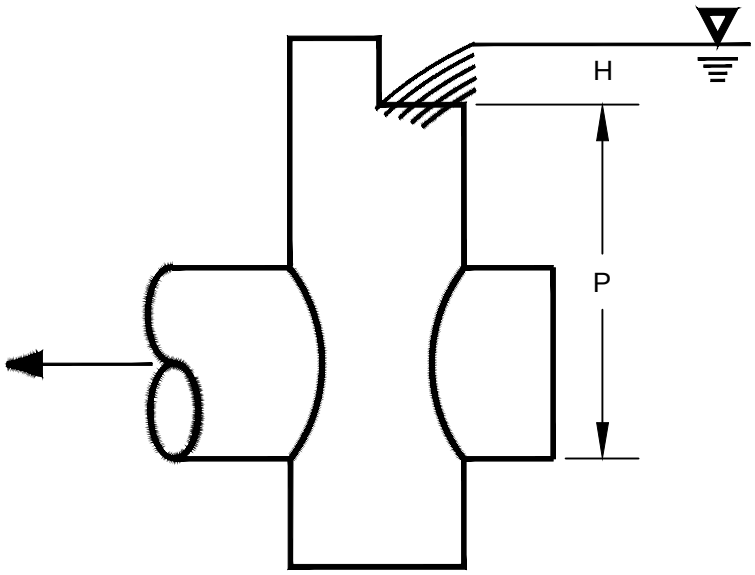


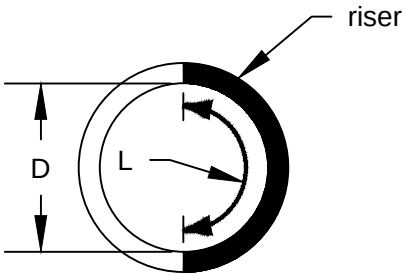
Figure ~~5.28.~~ Typical API (Baffle Type) Separator.

5.33

Figure Redlines for Appendix E - Additional Design Requirements and Plant Lists



Section



Plan

Q = C (L - 0.2H)H^3/2
where
Q = flow (cfs)
C = 3.27 + 0.40 H/P (ft)
H, P are as shown above
L = length (ft) of the portion of the riser circumference as necessary not to exceed 50% of the circumference
D = inside riser diameter (ft)
Note that this equation accounts for side contractions by subtracting 0.1H from L for each side of the notch weir.

NOT TO SCALE

Figure E.3

Rectangular, Sharp-Crested Weir